

Landlocked Basin Flooding

June 25, 2020

Valley Branch Watershed District Board Meeting

Introduction

- 2019: Wettest year ever recorded for central Washington County since records began in 1891
- 2015-2019: Wettest 5 years
- 2010-2019: Wettest 10 years
- Landlocked Basins: Water only leaves through evaporation and seepage. Those processes can't keep up with the extreme amounts of precipitation the area has received, so water levels have risen.
- Result: In parts of VBWD, lakes are flooding roads even after they've been raised several feet. Homes and septic systems are flooding. VBWD has encouraged some homeowners to evacuate.
- Long Term: Groundwater and lake levels will remain high for months and years. Flooding at landlocked basins is not like river flooding that's usually over within a week.

Introduction

- Several residents and communities have expressed concerns regarding high water levels at several landlocked basins. The Managers held an emergency meeting on June 8, 2020, to visit some of these areas.

Watershed District Roles and Requirements

- Watershed districts are special purpose units of local government that manage water resources on a watershed basis. One purpose listed in Minnesota Statutes for metro watershed districts is to minimize public capital expenditures needed to correct flooding and water-quality problems.

Watershed District Roles and Requirements

- Watershed districts are required to prepare 10-year watershed management plans. Developing these plans involves significant public and government outreach. For any watershed district (including VBWD) to implement flood management projects, the project needs to be identified in the watershed district's plan. If the project isn't included, a plan amendment is needed. The current VBWD Watershed Management Plan was developed in 2013–2015 and adopted in 2015. The plan includes discussion on some of the flooding issues currently being brought to the VBWD Board and does include some projects. However, it does not include projects (or descriptions in enough of the required detail) for creating permanent outlets or other actions at many of the basins with high water. Developing and adopting a plan amendment is a several-month process.

Watershed District Roles and Responsibilities

- Various metro watershed districts have taken different roles in addressing flooding. In general, most metro watershed districts limit their role to providing technical guidance to communities needing assistance in flood fighting, building projects and taking action in areas along ***intercommunity*** runoff and flow paths. For example, in 2019, the cities within Nine Mile Creek Watershed District in the southwest metro primarily handled the high-water issues on their own. They consulted with Nine Mile Creek Watershed District because they wanted/needed its buy-in, but the cities led the efforts. Nine Mile Creek Watershed District's role was primarily to help evaluate for potential downstream impacts. Some examples last year in Nine Mile Creek Watershed District include pumping of Shady Oak Lake in Minnetonka and pumping of Arrowhead Lake in Edina.

Watershed District Roles and Responsibilities

- The VBWD has constructed some flood management projects which include intercommunity runoff and flow paths. These include Project 1007, the Olson Lake Estates Outlet Project, and the Downs Lake Flood Duration Reduction Project. As these are VBWD projects, VBWD is responsible for their operation and maintenance.

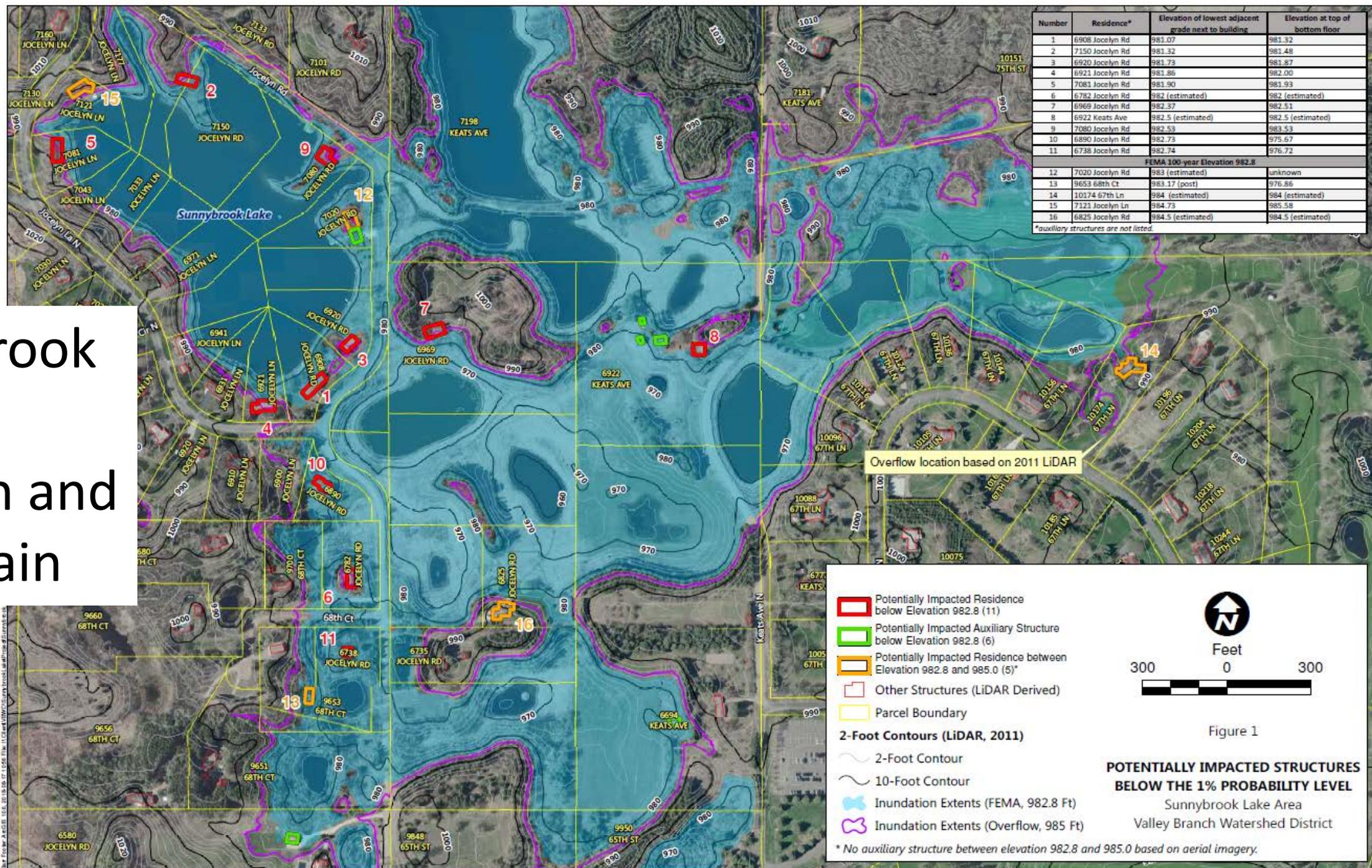
Watershed District Roles and Responsibilities

- The VBWD cannot prevent precipitation nor can it solve all these flooding problems on its own. Project priorities need to be established and their cost-benefits need to be reviewed. And above all, help is needed from the cities/townships, county, state, and federal government. The VBWD has been communicating with representatives from these government units, asking for assistance in addressing the flooding. More communication and clearer communication is needed, including posting the actions that the Managers will take to the VBWD website.

Actions for Consideration

- Sunnybrook Lake
- Legion Pond
- Friedrich's Pond
- Klawitter Pond
- Reid Park Ponds
- Others

Sunnybrook Lake Location and Floodplain



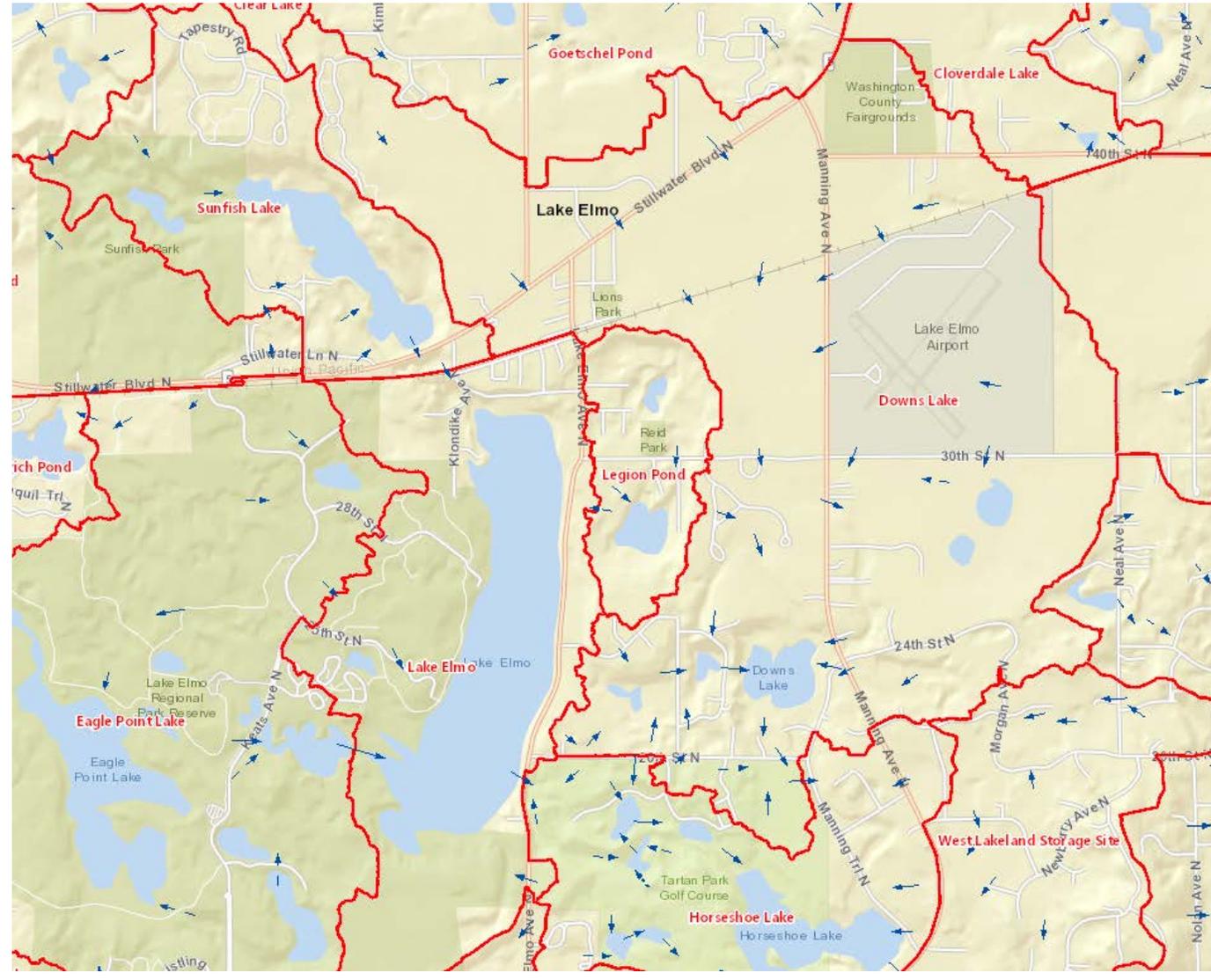
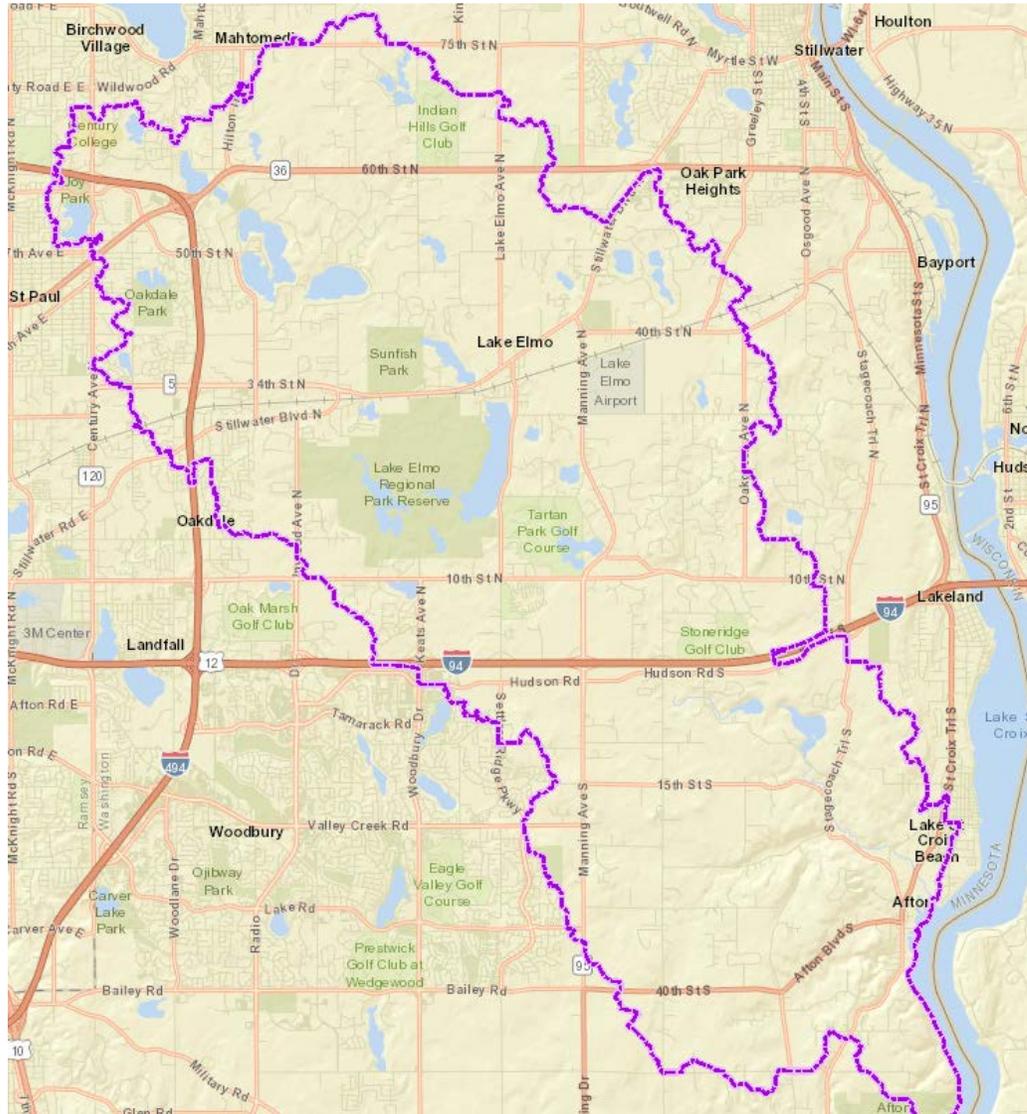
Actions to Consider: Sunnybrook Lake

1. Bond for purchasing and removing eight additional homes at Sunnybrook Lake. (See later sections for using bonds to purchase other homes, too.) This process will take approximately 6 weeks. Some of these homes could possibly be floodproofed, as originally planned, but VBWD should have the funds available to potentially purchase them if floodproofing is not feasible.
2. Approve right-of-first refusal agreement with Alisa and Bill Bonta.
3. Order appraisals for the:
 - a. Gary and Mary Wisbar property.
 - b. Angie and Greg Wentz property (three parcels).
 - c. Alisa and Bill Bonta property.
4. In 2021, evaluate the consequences of Sunnybrook Lake overflowing along its natural overflow path through Indian Hills Golf Club and, eventually, Goetschel Pond. Determine if allowing an uncontrolled overflow is acceptable.

Purchasing Homes

- Barr has drafted an application to submit to the DNR. If successful, the DNR might have \$300,000 for purchasing flooding homes and removing them from the floodplain. Requires at least a \$300,000 match and that the land stay within public ownership.

Legion Pond: Location



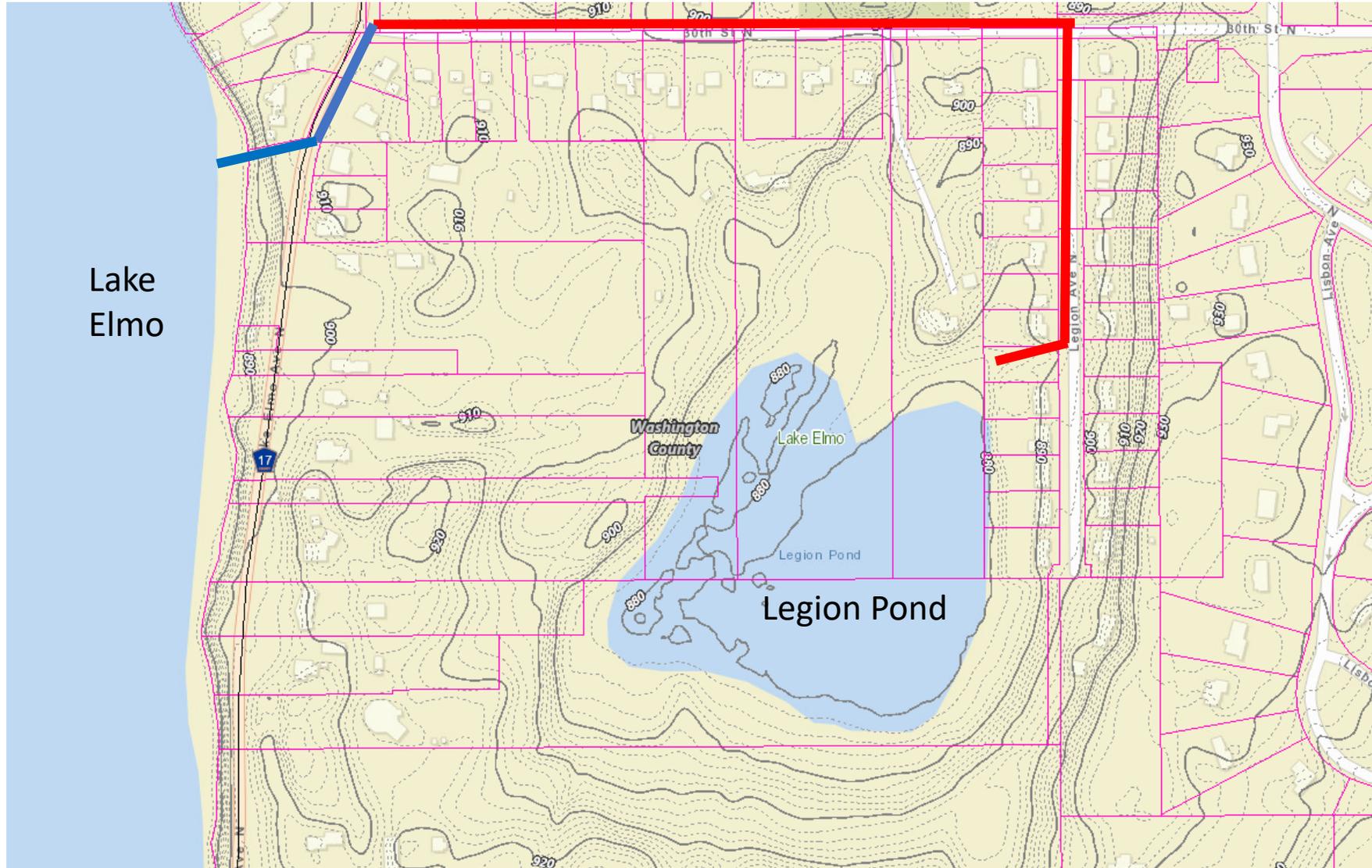
Legion Pond: Flooding History

- Currently:
 - Approximately 7 homes affected by high water
 - All but 1 former low septic systems have been connected to a community sewage treatment system
- Past:
 - 1980: Flooding (~5 septic systems) led City to do study; no pumping, residents built berm
 - 1985: City pumped to Lake Elmo (through Willard Morton's property, according to resident)
 - 1987: City ordered project to pump; permit obtained, but pumping wasn't done
 - FEMA has had the area mapped as floodplain since at least 2010

Actions to Consider: Legion Pond

1. Finalize the plan for temporary pumping from Legion Pond to Lake Elmo. (Next slides have more details.)
2. Submit a water appropriations permit application to the DNR for temporary pumping. (Done last week.)
3. Pay % of the cost to conduct emergency pumping from Legion Pond to Lake Elmo and ask the City of Lake Elmo to pay %.
4. Budget in 2021 to conduct a feasibility study for a permanent outlet from Legion Pond.
5. Prepare a plan amendment to include a project to construct an outlet from Legion Pond.
6. If the project cost is \$500,000 or more, fund it via 70% ad valorem tax, 25% subwatershed tax, and 5% special assessment to adjacent landowners. If the project is less than \$500,000, fund it via 100% ad valorem tax. Seek grants to reduce project costs.

Legion Pond: Possible Route for Pumping

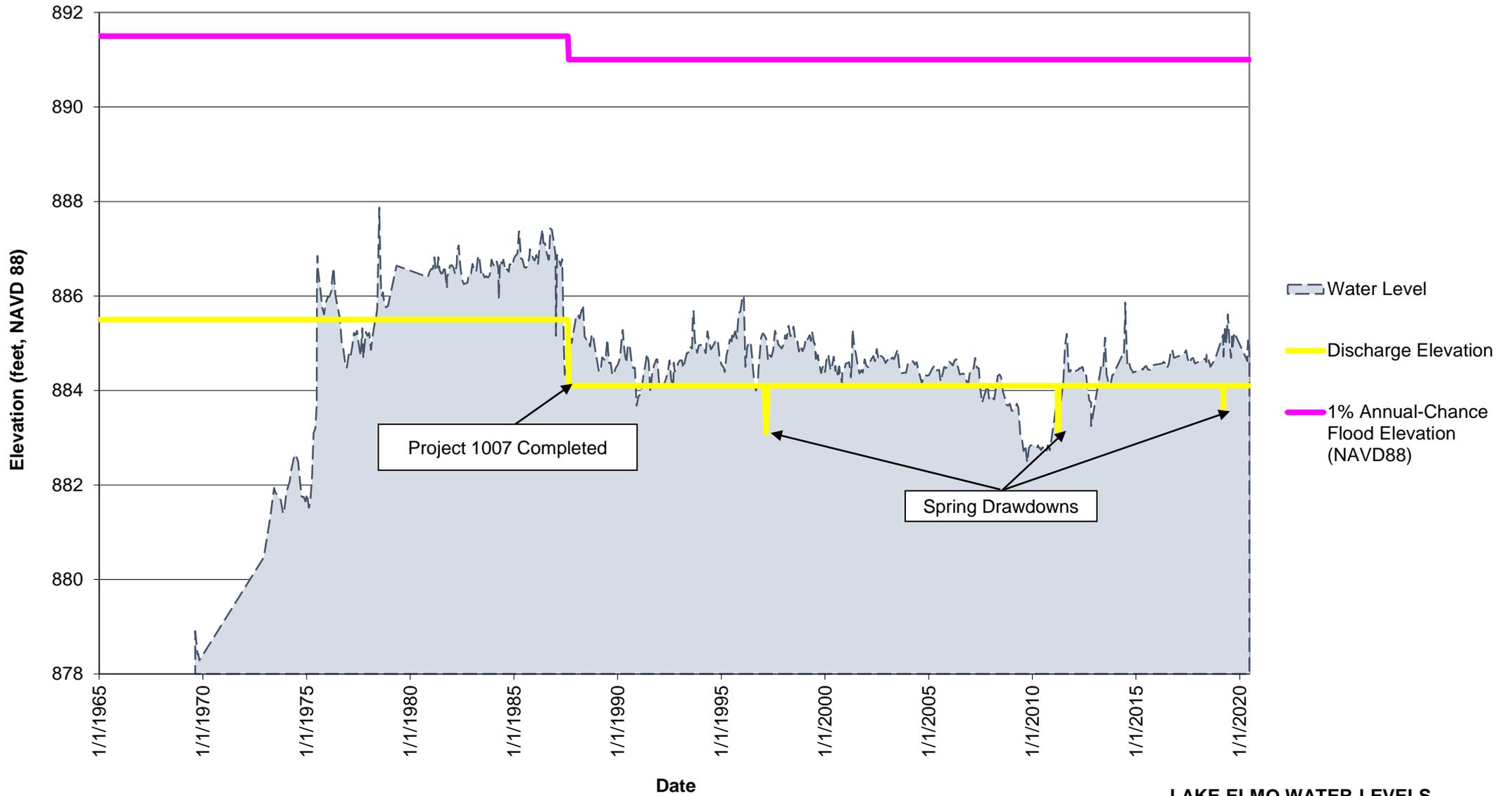


Legion Pond: Water Quality

- Samples collected on June 17, 2020
 - E. coli: 4 most probable number (mpn)/100 mL
MPCA lists waters as impaired if 1260 mpn/100 mL or monthly average of 126 mpn/100 mL
 - Chlorophyll-a: 9.6 ug/L
Water quality standard for Lake Elmo is 14 ug/L; Lake Elmo is typically around 2 ug/L
 - Other results: not yet available

Legion Pond: Water Quantity

- Lake Elmo's water level is about 7 inches over the discharge (outlet) level; about 1 foot below the DNR's OHW and more than 6 feet below its 1% annual chance flood level
- Pumping will not have a noticeable impact on the water level of Lake Elmo, given its huge surface area and the relatively small volume of water from Legion Pond



LAKE ELMO WATER LEVELS
Valley Branch Watershed District

Legion Pond: Invasive Species

- None noted by Washington Conservation District in Legion Pond
- Lake Elmo has Eurasian watermilfoil, hybrid watermilfoil, curlyleaf pondweed, and narrow-leafed cattail

Legion Pond: Estimated Pumping Cost

- Depends on pump size, driveway/road crossings, re-fueling frequency, groundwater inflows
 - Groundwater inflows could be significant
- Washington County provided cost estimate
- Barr discussed project with pump rental company to get more specific cost estimate
- 1 Month: \$97,000-\$234,00
- 2 Months: \$147,000-\$254,00

Low end is the estimated based on discussion with pump rental company and assuming similar operations costs as Downs Lake

- Minnesota Statute 471.345 requires public bid process if the amount of the contract is estimated to exceed \$ 175,000. Legal counsel should advise whether there are exemptions for emergencies.

Legion Pond: Estimated Pumping Cost

	Month 1	Month 2	Month 3	Month 4	Month 5	Comments
Washington County (Buelow Operating) - 1100 gpm, Original Quote from County (assuming 24/7 operation)						
Monthly Cost	\$211,564	\$30,026	\$30,026	\$30,026	\$30,026	- Assumes pump capacity of 1100 gpm. If groundwater inflow rates is close to 1000 gpm, this pump will be undersized and have minimal impact and would need to run continuously and may not keep up with groundwater and stormwater inflows.
Cumulative Cost	\$211,564	\$241,590	\$271,616	\$301,642	\$331,668	- Assumes 17 driveway/road crossings. Unclear if this is located on the N or S side of 30th Street N. Conversation with Rain for Rent indicated concern about the alignment along the south side of the road due to the number of crossings and headloss. - Assume 10' of intake hose. Unless the pump is submerged in the pond, this intake length is likely too short. - Assumes 2500' of discharge hose. I estimated that this may need to be ~2700 ft. - There are two storm sewer structures at Lake Elmo Ave N at 30th Street N. Will require a road crossing to discharge to either structure. Not clear if this is accounted for. - Assumes system operating 24 hours/day for monthly operations and fuels costs. - Includes 20% contingency
Washington County (Buelow Operating) - 1100 gpm, Quote from County Revised by JAK2 to update quantities for intake length, discharge length (assuming 24/7 operation)						
Monthly Cost	\$223,706	\$30,026	\$30,026	\$30,026	\$30,026	- Assumes pump capacity of 1100 gpm. If groundwater inflow rates is close to 1000 gpm, this pump will be undersized and have minimal impact and would need to run continuously and may not keep up with groundwater and stormwater inflows.
Cumulative Cost	\$223,706	\$253,732	\$283,758	\$313,784	\$343,810	- Assumes 17 driveway/road crossings. Unclear if this is located on the N or S side of 30th Street N. Conversation with Rain for Rent indicated concern about the alignment along the south side of the road due to the number of crossings and headloss. - Assume 100' of intake hose. - Assumes 2700' of discharge hose. - There are two storm sewer structures at Lake Elmo Ave N at 30th Street N. Will require a road crossing to discharge to either structure. Not clear if this is accounted for. - Assumes system operating 24 hours/day for monthly operations and fuels costs. - Includes 20% contingency

Legion Pond: Estimated Pumping Cost

	Month 1	Month 2	Month 3	Month 4	Month 5	Comments
<i>Rain for Rent (Below Operating) - 3000 gpm (assuming 24/7 operation)</i>						
Monthly Cost	\$108,599	\$60,227	\$60,227	\$60,227	\$60,227	<ul style="list-style-type: none"> - Assumes pump capacity of 3000 gpm. If groundwater inflow rates is close to 1000 gpm, this pump could run ~12 hours per day to keep up with groundwater and stormwater inflows. - Assumes crossing at 30th Ave N and 12-13 driveway/road crossings along north side of road. Can discharge to CB/MH structure at NE corner of Lake Elmo Ave and 30th Street N (CB122A or OCS120) - Assumes 2700' of discharge hose. - Assumes system operating 24 hours/day for monthly operations and fuels costs. - Does not include contingency
Cumulative Cost	\$108,599	\$168,826	\$229,053	\$289,280	\$349,508	
<i>Rain for Rent (Below Operating) - 3000 gpm (assuming 12/7 operation)</i>						
Monthly Cost	\$97,904	\$49,532	\$49,532	\$49,532	\$49,532	<ul style="list-style-type: none"> - Assumes pump capacity of 3000 gpm. If groundwater inflow rates is close to 1000 gpm, this pump could run ~12 hours per day to keep up with groundwater and stormwater inflows. - Assumes crossing at 30th Ave N and 12-13 driveway/road crossings along north side of road. Can discharge to CB/MH structure at NE corner of Lake Elmo Ave and 30th Street N (CB122A or OCS120). - Assumes 2700' of discharge hose. - Assumes system operating 12 hours/day for monthly operations and fuels costs. - Does not include contingency
Cumulative Cost	\$97,904	\$147,436	\$196,968	\$246,500	\$296,033	

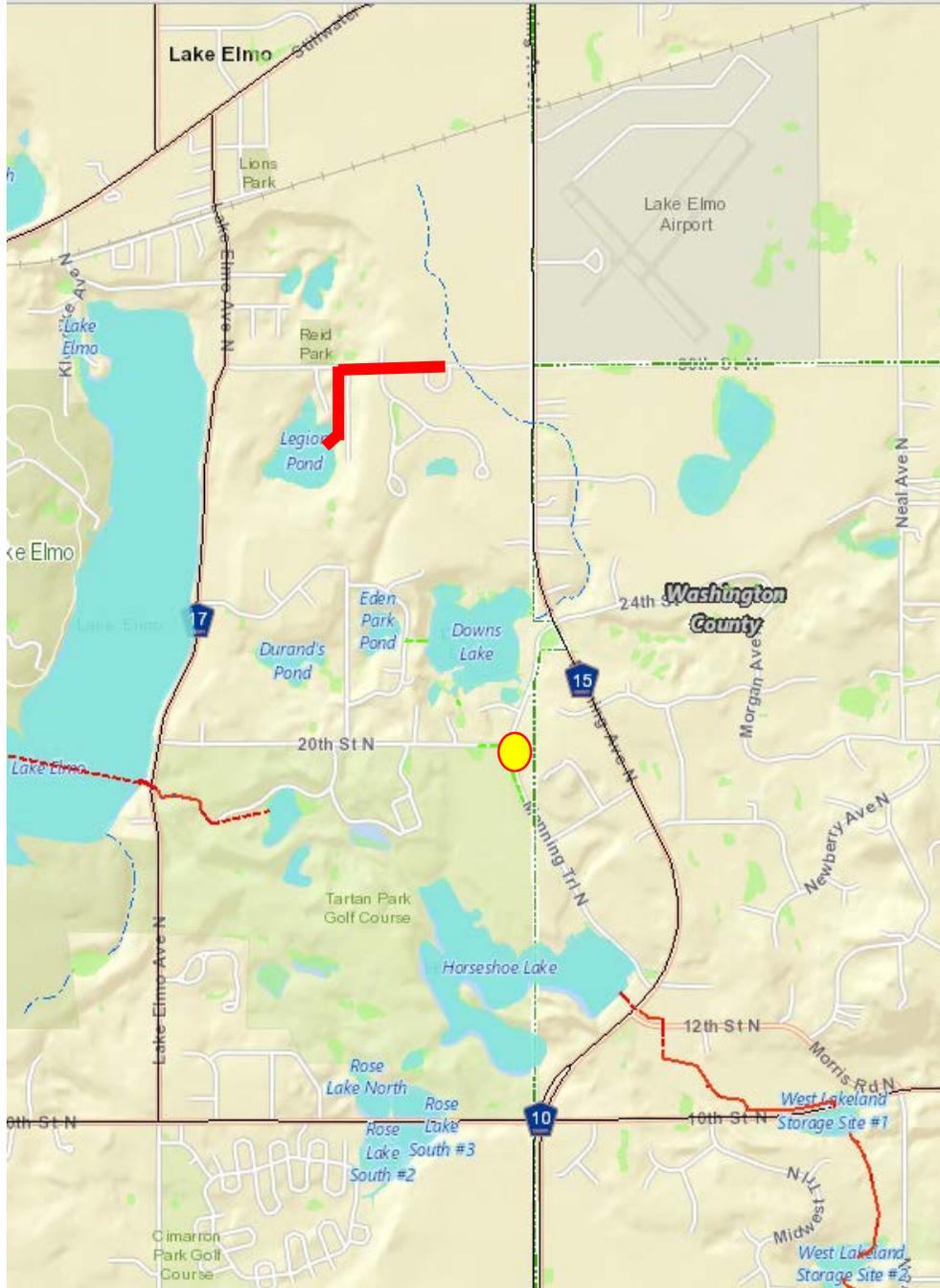
Legion Pond: Estimated Pumping Cost

	Month 1	Month 2	Month 3	Month 4	Month 5	Comments
Rain for Rent (Below Operating) - 1500 gpm (assuming 24/7 operation)						
Monthly Cost	\$96,732	\$54,113	\$54,113	\$54,113	\$54,113	- If groundwater inflow rates is close to 1000 gpm, this pump will be undersized and have minimal impact and would need to run continuously and may not keep up with groundwater and stormwater inflows.
Cumulative Cost	\$96,732	\$150,845	\$204,958	\$259,071	\$313,184	- Assumes 12 driveway/road crossings. I estimated from aerial photo review up to 22 crossing along Legion Ave N and 30th Street N. - Assumes 2700' of discharge hose. - There are two storm sewer structures at Lake Elmo Ave N at 30th Street N. Will require a road crossing to discharge to either structure. Not clear if this is accounted for. - Assumes system operating 24 hours/day for monthly operations and fuels costs. - Does not include contingency

Letters to all properties adjacent to Legion Pond and properties adjacent to Lake Elmo (approximately 140) sent last Friday. Letter said VBWD has applied for DNR permit to pump from Legion Pond to Lake Elmo.

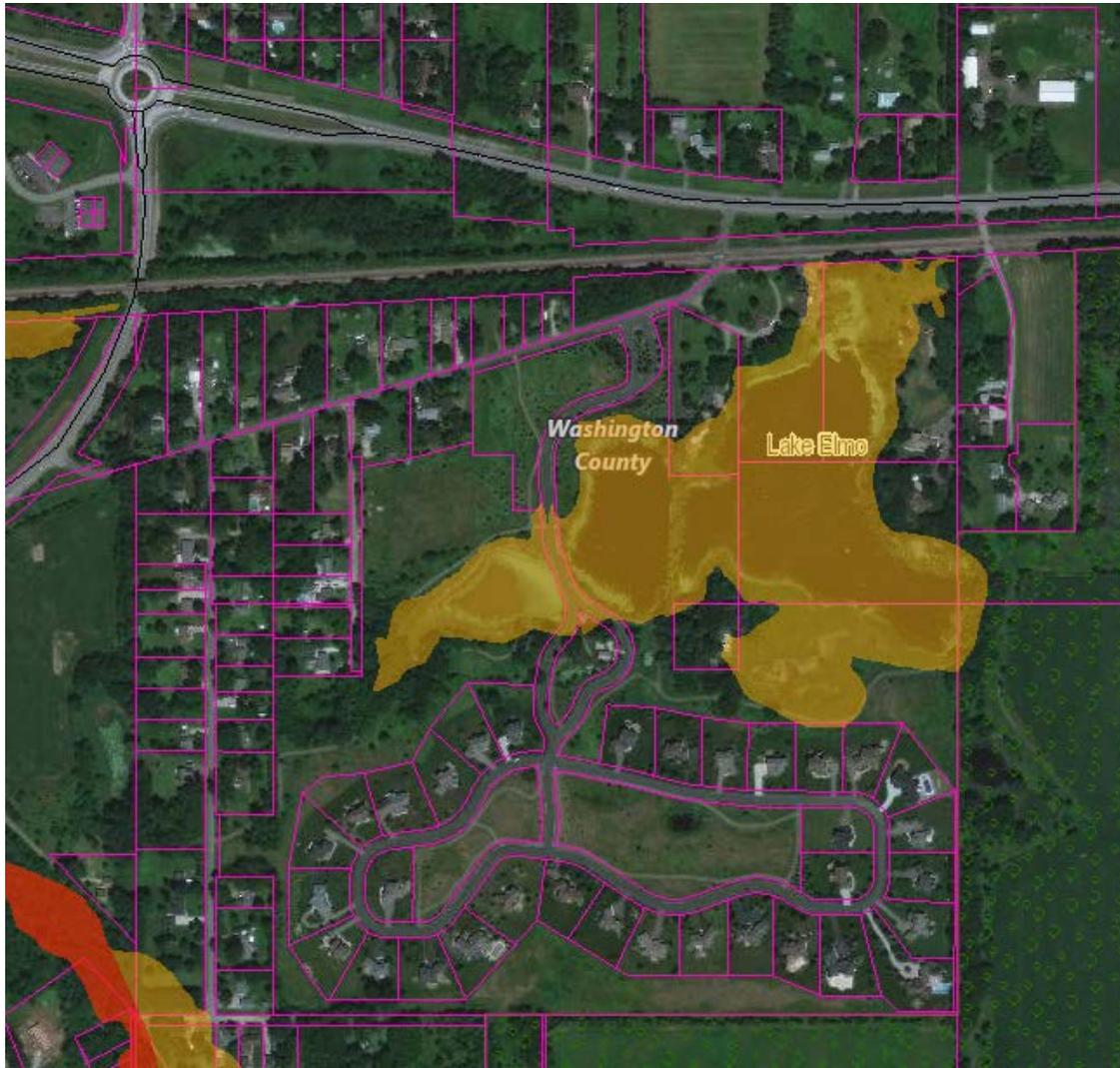
Comments received:

- Concern with impact on Lake Elmo
 - Degrading water quality, concern with bacteria
 - Increasing water level and causing additional shoreline erosion
 - Erosion/scouring at end of pipe in Lake Elmo
- Request to pump to areas that drain to Downs Lake instead of Lake Elmo



- Pumping to Downs Lake watershed would require another pump at Downs Lake (yellow dot)
- Fewer road/driveway crossings to pump east rather than west on 30th, but would need to pump that can take water to a much higher elevation (red line shows a possible pump route; gravity once near 30th St Circle North to Downs Lake)
- Going south, would drain to Eden Park Pond and require 2 additional pumps (from Eden Park Pond and Downs Lake)
- Going north to basins within Reid Park, would require ~3 additional pumps (likely 2 at Reid Park and 1 at Downs Lake)

Friedrich's Pond: Location



- Pond's floodplain has been mapped by FEMA since at least 2010

Friedrich's Pond: Ellenbecker Property



Friedrich's Pond: Ellenbecker Property and Driveway



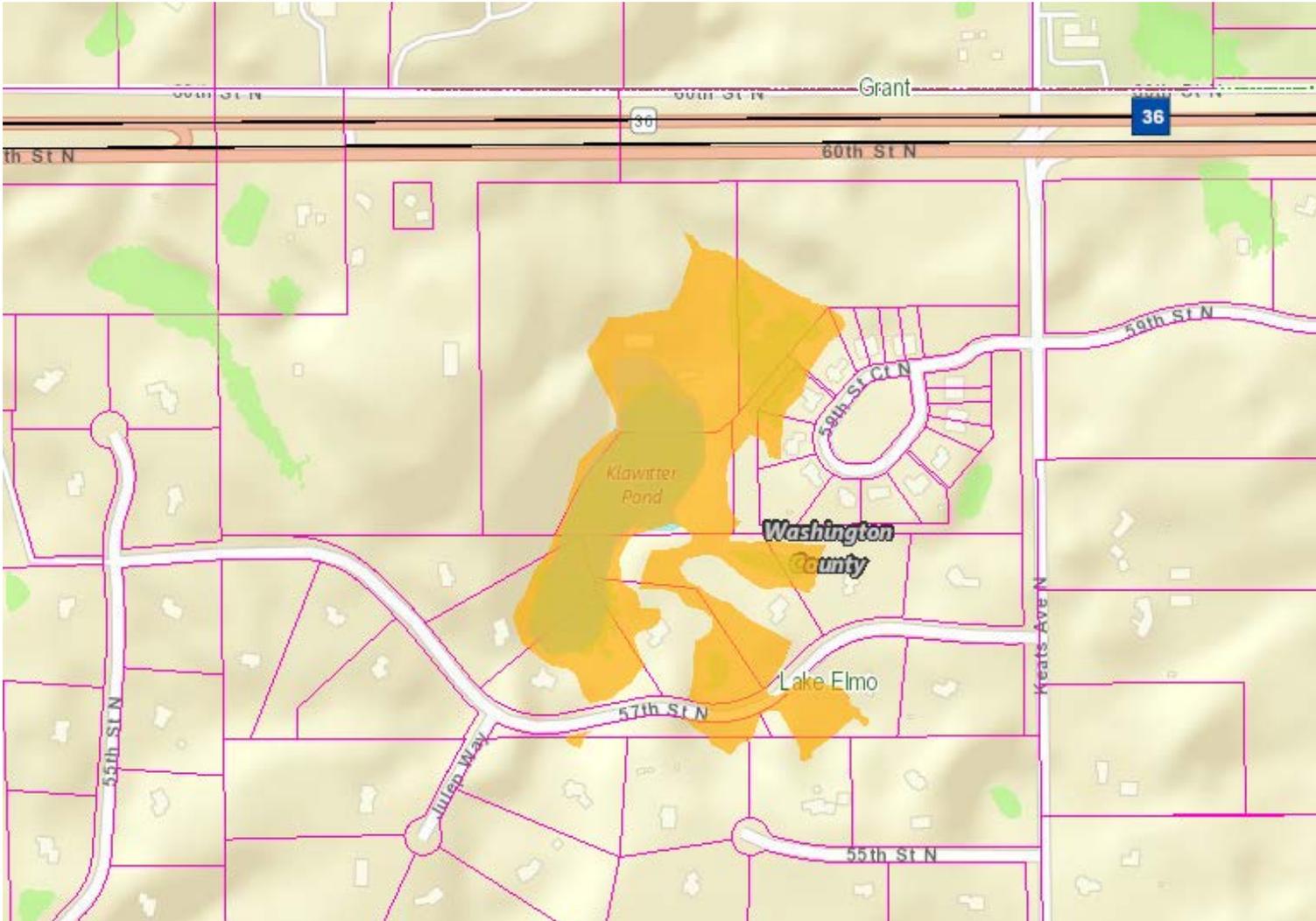
County Cost Estimate to Pump:

- \$156,000
- Assumes 4 weeks of pumping and 10 road crossings; if can pump through HOA and private land with no road crossings, cost would be closer to \$95,000; does not include fueling and operations, traffic control, permits, etc.
- Washington County assessed value of Ellenbecker property: \$266,700
- Appears there could be 2 other homes below the natural overflow of the pond
- If pond overflows, several (~4) homes along RR, north of 31st St N, would likely flood

Actions to Consider: Friedrich's Pond

1. Approve Dan Ellenbecker's right-of-first refusal.
2. Order appraisal.
3. Finalize and submit DNR grant application to help pay for the home purchase.
4. Utilize bonding (as in in Sunnybrook Lake Item 1) to purchase the property, if necessary. Seek grants to reduce the project cost.
5. After weighing the cost of purchasing other homes with basements below the overflow elevation, prepare a plan amendment to include an outlet from Friedrich's Pond.
6. If the project cost is \$500,000 or more, fund it via 70% ad valorem tax, 25% subwatershed tax, and 5% special assessment to adjacent landowners. If the project is less than \$500,000, fund it via 100% ad valorem tax. Seek grants to reduce project cost.

Klawitter Pond: Location



Actions to Consider: Klawitter Pond

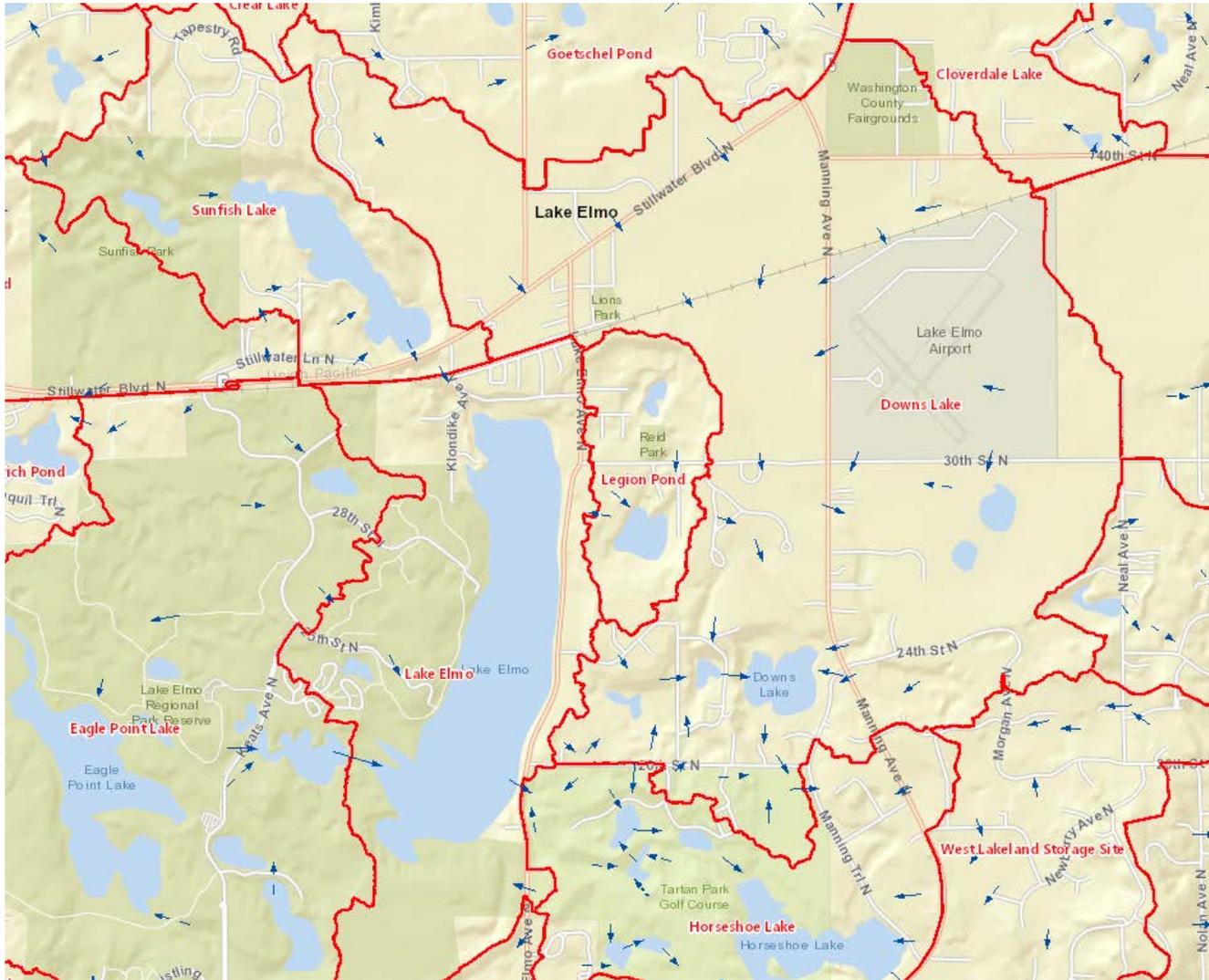
1. Obtain a cost estimate to move Doug Lovett's home to higher ground. Washington County assessed value of property = \$445,700
2. Finalize and submit DNR application to help pay for home purchase.
3. Utilize bonding (as in Sunnybrook Lake Item 1) to move home or purchase the property. Seek grants to reduce the project cost.

(As the barn was recently reconstructed without a permit from VBWD, VBWD can provide technical assistance for building a berm, but consider not providing funds for its construction. If necessary, remind the City of Lake Elmo of its responsibility for ensuring structures are not constructed within FEMA floodplains.)

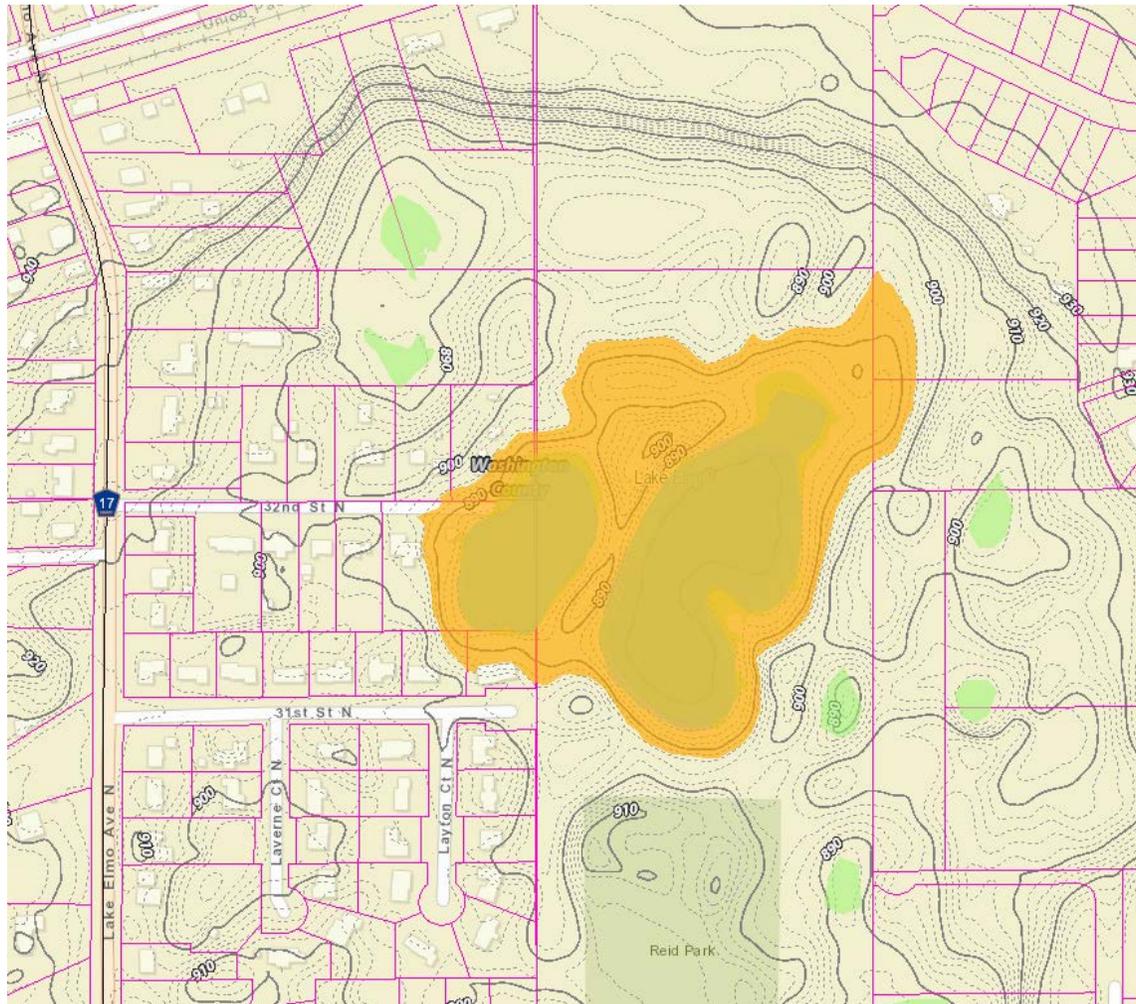
Actions to Consider: Klawitter Pond

4. Allocate budget to work with MnDOT for them to construct a project to treat runoff from Highway 36 and reduce runoff volume, if possible.
5. Prepare a plan amendment to include construction of an outlet from Klawitter Pond, which would include evaluating the cost-benefit.
6. If the project cost is \$500,000 or more, fund it via 70% ad valorem tax, 25% subwatershed tax, and 5% special assessment to adjacent landowners. If the project is less than \$500,000, fund the project via 100% ad valorem tax. Seek grants to reduce project cost.

Reid Park Ponds



Reid Park Ponds: FEMA Floodplain



- Appears to be 3 homes in floodplain
- Might be an additional 5 with low basements
- Most homes are now connected to city sewer, but there might be at least one of the lowest homes that isn't

Reid Park Ponds



Reid Park Ponds



Reid Park Ponds



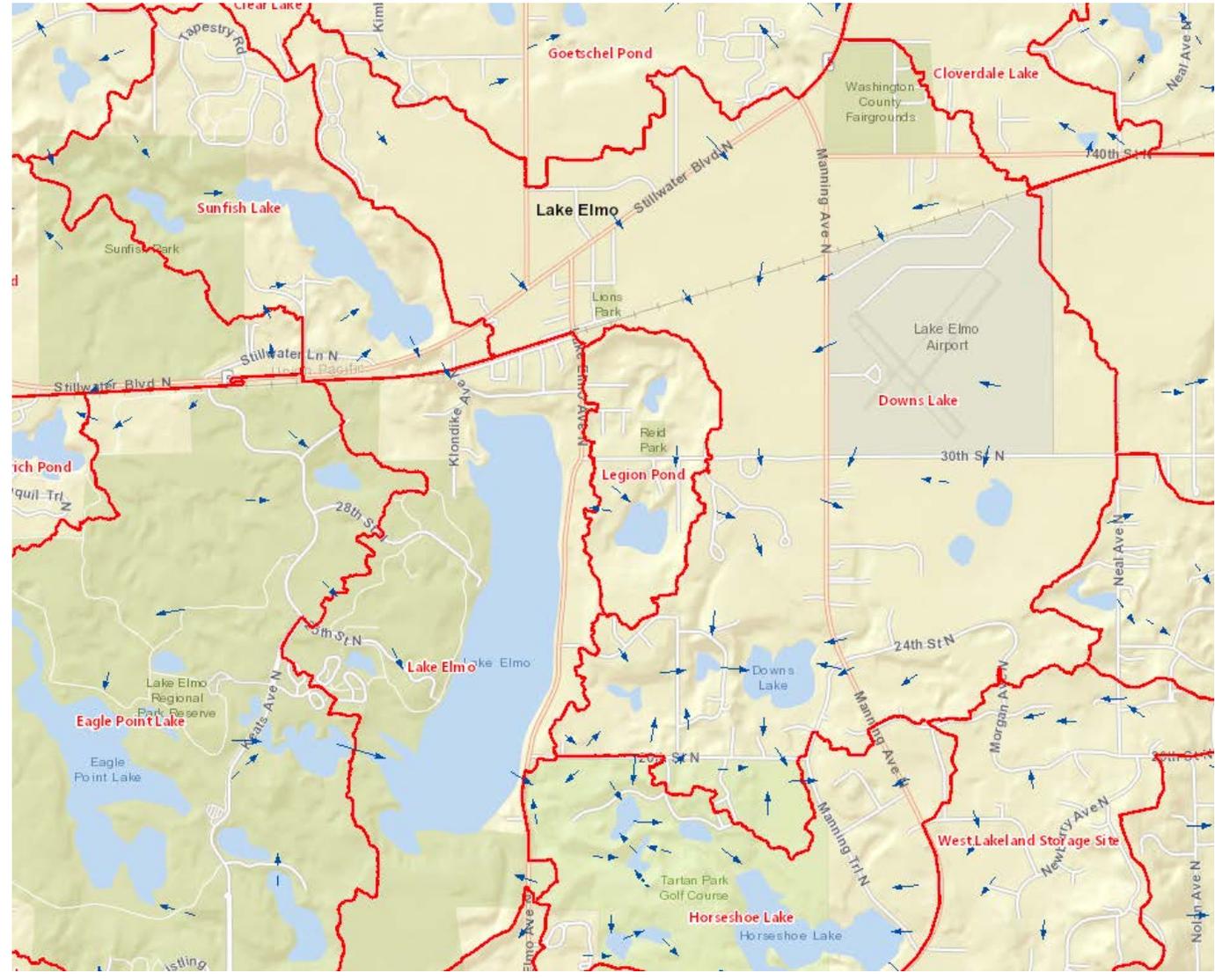
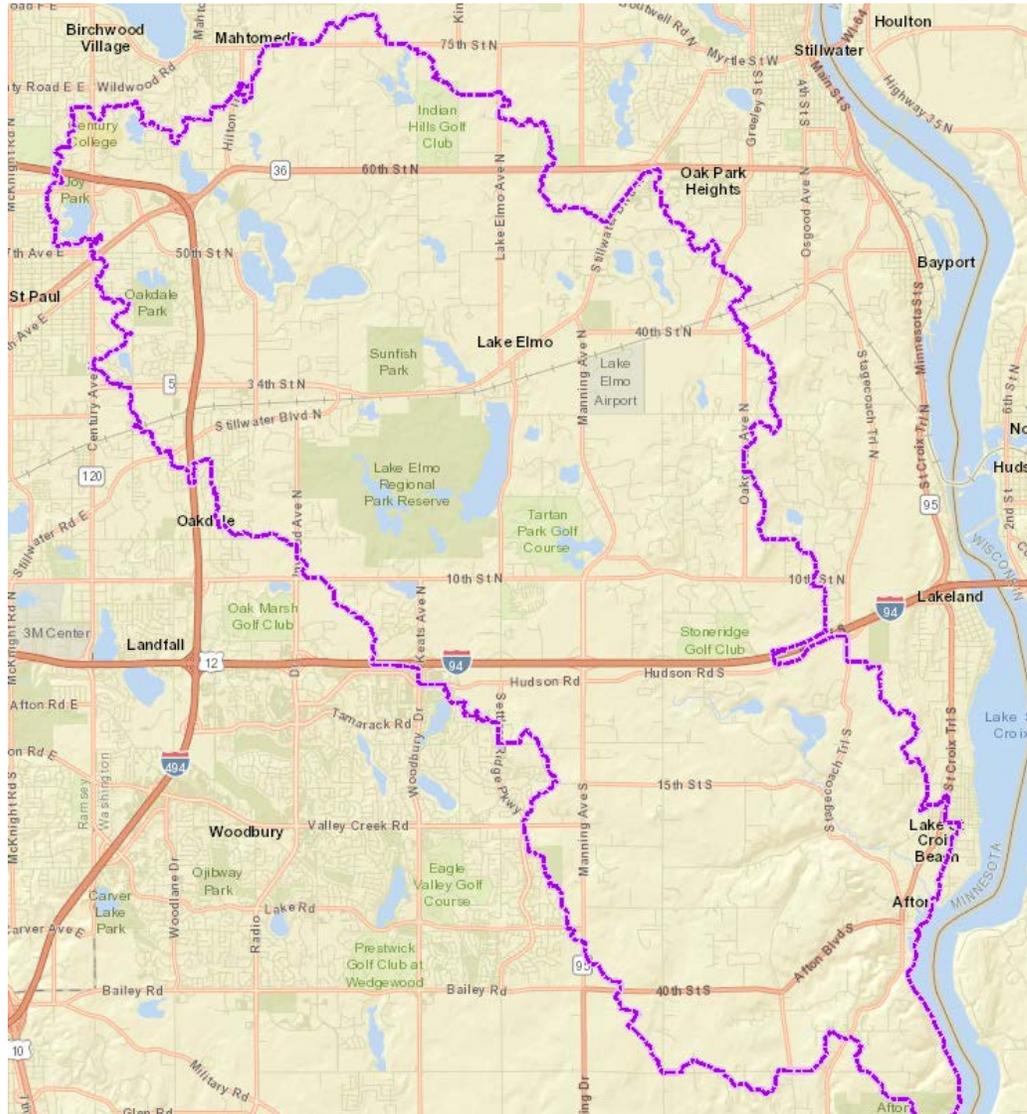
Reid Park Ponds

- Washington County pumping cost estimate was to north (recently built city-owned infiltration basin near RR). That basin drains to Downs Lake; cost estimate does not include additional pumping at Downs Lake.
- County cost estimate: \$49,000
- Assumes 4 weeks of pumping and no road crossings; does not include additional pumping at Downs Lake, fueling and operations, traffic control, permits, etc.
- No water quality data; groundwater likely a factor, more investigation into pumping capacity and duration needed (as well as communication with Lake Elmo re: pumping routes)

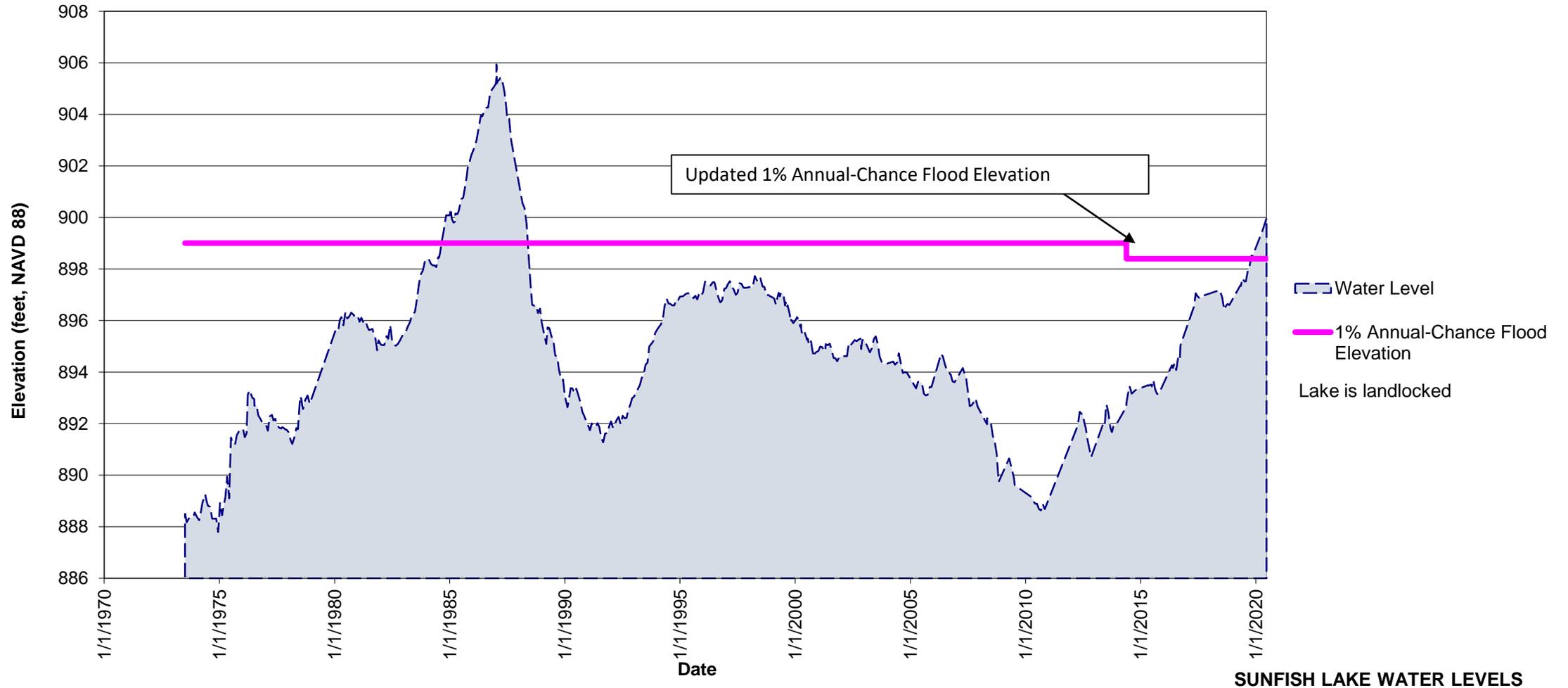
Actions to Consider: Reid Park Ponds

1. Develop a plan for temporary pumping—to Legion Pond, Lake Elmo Avenue, or the Downs Lake watershed. The first two options would discharge to Lake Elmo and the plan would likely need to address water quality. Testing is needed. The third option would involve pumping to a much higher elevation. The first and third option would require a series of pumps.
2. Submit a water appropriations permit application to the DNR for temporary pumping.
3. Pay % of the cost to conduct emergency pumping and ask the City of Lake Elmo to pay %.
4. Allocate budget in 2021 to conduct a feasibility study that looks at the cost-benefit of constructing a permanent outlet from Reid Park Pond versus purchasing homes.
5. Prepare a plan amendment to include construction of a possible outlet from the pond.
6. If the project cost is \$500,000 or more, fund it via 70% ad valorem tax, 25% subwatershed tax, and 5% special assessment to adjacent landowners. If the project is less than \$500,000, fund it via 100% ad valorem tax. Seek grants to reduce project cost.

Sunfish Lake: Location



Sunfish Lake



SUNFISH LAKE WATER LEVELS

Sunfish Lake



Sunfish Lake



Sunfish Lake



Actions to Consider: Sunfish Lake and Others

- Allocate budget in 2021 to conduct a comprehensive feasibility study for constructing permanent outlets for the other landlocked basins in the watershed. Seek assistance from communities, Washington County, the state, and the U.S. Army Corps of Engineers.
- U.S. Army Corps of Engineers has a Project Assistance to States and Tribes Program, which covers 50% of study cost. Requires additional work and costs, but overall cost to VBWD would still be less.

Other Considerations

- While time is of the essence for emergency pumping, it is necessary to communicate with and get feedback from Washington County officials (especially Commissioner Miron, Commissioner Kriesel, and Administrator Corbid), City of Grant officials, and City of Lake Elmo officials. Once plans are agreed upon and funding commitments are made, neighborhood residents at each basin should be informed.
- As VBWD has no public works department, request assistance from the City of Lake Elmo and Washington County in performing the pumping or hiring a contractor to perform the pumping. If neither is able or willing to assist, hiring a contractor (especially if public bidding process is required) could take several weeks.

Summary of Immediate Actions to Consider

1. Direct Barr to request Northland Securities to prepare \$5 million bond documents for purchasing and removing (or floodproofing) eight additional homes at Sunnybrook Lake, one at Friedrich's Pond, and one at Klawitter Pond.
2. Approve right-of-first refusal agreements with Alisa and Bill Bonta and Daniel Ellenbecker.
3. Order appraisals for the:
 - a. Gary and Mary Wisbar property.
 - b. Angie and Greg Wentz property (three parcels).
 - c. Alisa and Bill Bonta property.
 - d. Daniel Ellenbecker property.
4. Direct Barr to submit DNR Flood Damage Reduction Grant application for assistance in purchasing flooding homes.
5. Direct Barr to finalize a temporary pumping plan from Legion Pond to Lake Elmo and obtain bids from contractors.
6. Direct Barr to have Washington Conservation District collect water quality samples from Reid Park Ponds.
7. Authorize Barr to develop a plan for temporary pumping from Reid Park Ponds, obtain bids from contractors, and to submit a water appropriations permit application to the DNR for temporary pumping.
8. Authorize President Lucas to negotiate cost-share with City of Lake Elmo to pay the cost to conduct emergency pumping from Legion Pond to Lake Elmo and emergency pumping from Reid Park Ponds to Lake Elmo or the Downs Lake watershed.
9. Authorize President Lucas to order work for temporary pumping from Legion Pond and Reid Park Ponds.
10. Direct Barr to prepare information to post to the VBWD website.
11. Authorize Barr to obtain a cost estimate to move Doug Lovett's home at Klawitter Pond to higher ground.