



City of Medicine Lake

10609 South Shore Drive • Medicine Lake, Minnesota 55441 • (763)542-9701

Capital Improvement Plan

Status Update – 2/1/2021

Capital Improvement Plan (CIP) Overview

- Key Infrastructure Projects
 - Aged: Sanitary lift station, roads, sewer leakage, storm water control
 - Consider: City water/hydrants & underground utilities
 - Up to \$6.3M in project costs
 - Long-term mindset - 50+ years
- Maintenance Reserve Fund
 - Currently saving \$180K per year
 - Saving & paying cash not feasible
 - Exploring 30-year financing with minimal tax impact
- Planning Considerations
 - Best to approach this as one project
 - Rebuilding road is the best time to do the other projects
 - Funding programs work best if consolidated
 - Interest rates at an all-time low & should be locked in

Capital Improvement Planning – Key Items

	Infrastructure Item	Key Issue	Action Summary	Cost Est.
1	Sanitary Lift Station (Refurb or Replace)	50 Years Old & Past Useful Life	<ul style="list-style-type: none"> - Inspection/Proposal in early 2021 - Range of options from fix to replace 	\$1,157,000
2	Sewer Laterals (Install PVC Liner)	Inflow & Infiltration	<ul style="list-style-type: none"> - Phase II of Main Sewer Relining Project - 133 Laterals & 26 In-Yard Manholes 	\$1,006,000
3	Road Construction (New Base & Surface)	Road Deteriorating	<ul style="list-style-type: none"> - 2 Phase Replacement - (3a) Peninsula Rd (3b) Kaiser/Colonial 	\$1,312,000
	Storm Water Control (Culverts & Retention)	Storm Water Flow & Retention	<ul style="list-style-type: none"> - Replace culverts throughout city - Excavate current Jevne retention pond 	\$160,000
	Sewer Manholes (Install PVC Liner)	Inflow & Infiltration	<ul style="list-style-type: none"> - 21 In-Street – Do w/ New Road - 26 In Yards – Do w/ Sewer Lateral 	\$168,000
	City Water System (Hydrants & Curb Stops)	Fire Safety & Future Planning	<ul style="list-style-type: none"> - Key Long-Term Decision - Install w/ New Road For Best Pricing 	\$1,540,000
4	Buried Utilities (Remove Above-Ground)	Utility Poles Aesthetics	<ul style="list-style-type: none"> - Bury mainline cable & remove poles - Underground hookup to each home 	\$1,000,000

Total: \$6,343,000

Capital Improvement Planning – Funding

	Infrastructure Item	Cost Est.
1	Sanitary Lift Station (Refurb or Replace)	\$1,157,000
2	Sewer Laterals (Install PVC Liner)	\$1,006,000
3	Road Construction (New Base & Surface)	\$1,312,000
	Storm Water Control (Culverts & Retention)	\$160,000
	Sewer Manholes (Install PVC Liner)	\$168,000
	City Water System (Hydrants & Curb Stops)	\$1,540,000
Total:		\$5,343,000

- Cost estimates are high-level & include 30% buffer
- Planning for full-cost but will negotiate bids for each project
- High-Level Funding Scenarios
 - \$.6M Cash from Maintenance Reserve
 - \$4.7M in loans via bonding programs
 - Explore grants & state-bonding support
 - Interest rates at all-time low - enabling impressive affordability
- Scenario A – \$180K Maintenance Reserve Budget
 - 30-year term
 - Must find \$1M in cost reductions (Borrow \$3.7M)
 - No increase in Maintenance Reserve needed
- Scenario B – \$230K Maintenance Reserve Budget
 - 30-year term
 - Supports full project (Borrow \$4.7M)
 - \$50K increase in Maintenance Reserve (~\$285 per household)

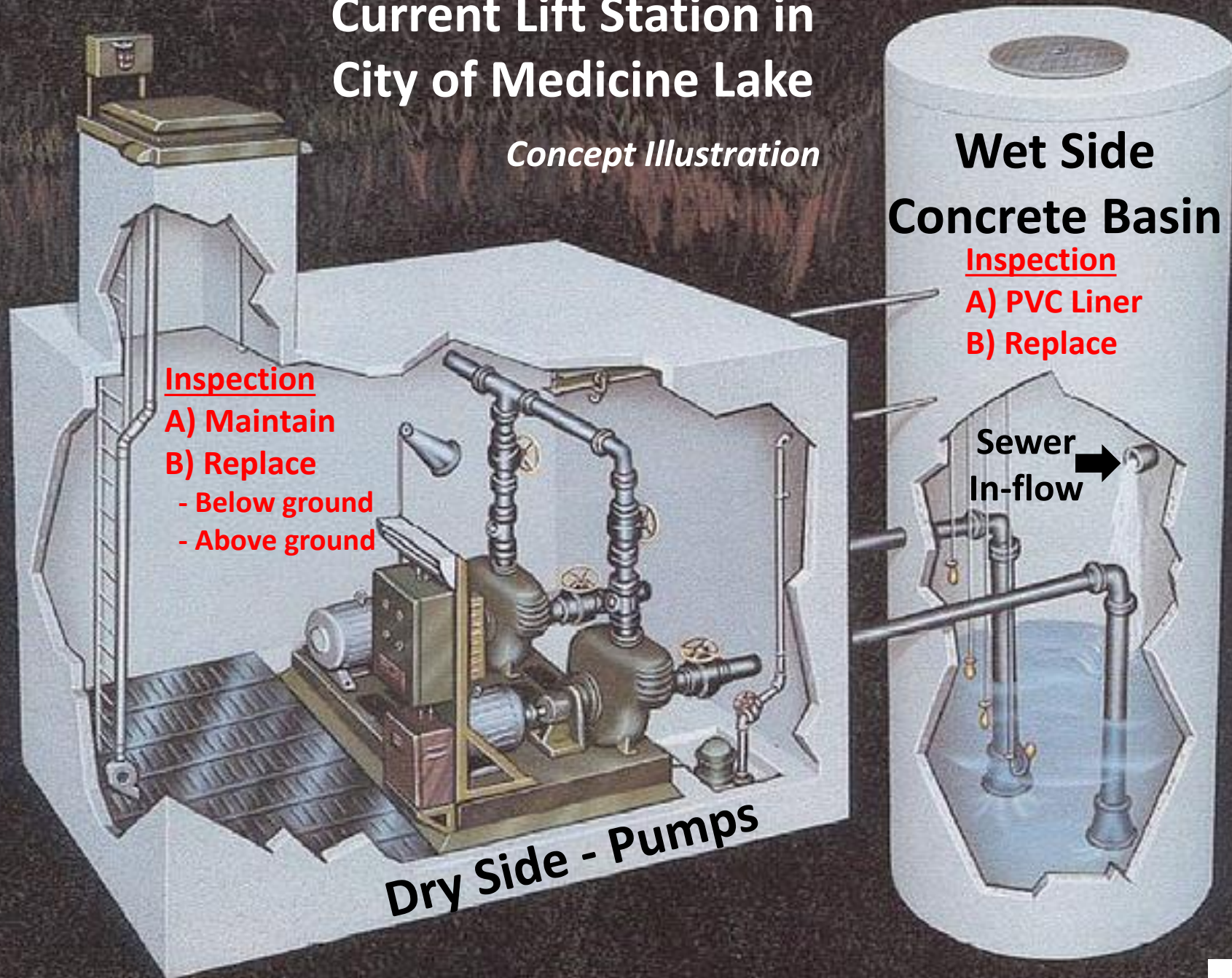
Buried Utilities project is currently regarded as Out of Scope, but can be added once key-project funding is defined

Sanitary Lift Station

Rehabilitation Project Overview

Current Lift Station in City of Medicine Lake

Concept Illustration



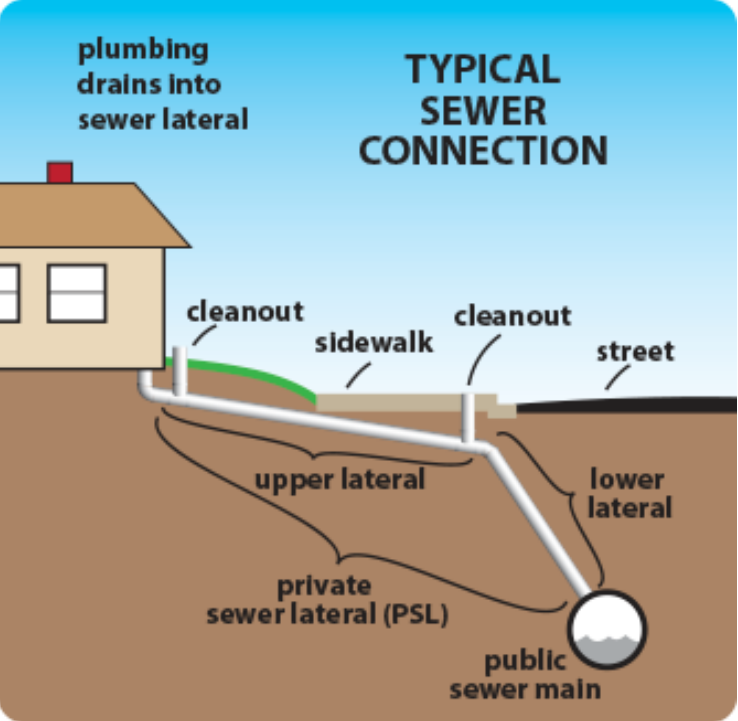
Sanitary Lift Station (LS) – Engineering Discussion

- Project Cost estimated at \$1,157,000
 - Assumes a full replacement of LS
 - Conducting diagnostic studies in February
 - Studying all LS elements – mechanical, structural & electrical controls
 - Continue partnering with City of Plymouth to maintain our LS
- Possible outcomes
 - 1) Rehabilitate the existing LS with appropriate upgrades using existing infrastructure
 - 2) Replace key elements of existing LS & preserve existing infrastructure
 - 3) Fully replace with a new submersible style LS (more commonly used today)

Sewer Laterals

Relining Laterals & Manholes Project Overview

Lateral Connections



Inflow & Infiltration

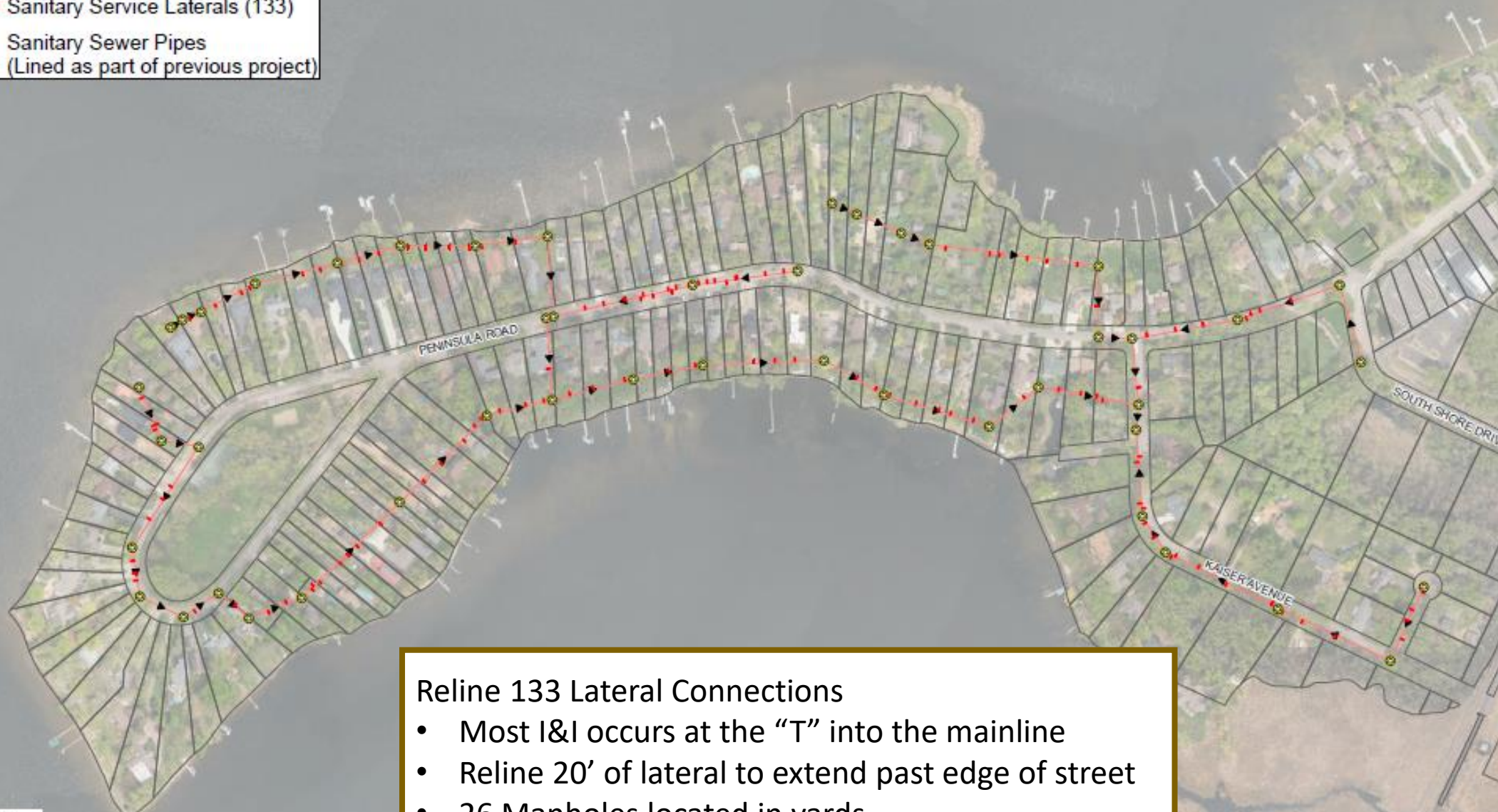


Sewer Relining



Legend

- Sanitary Sewer Manholes (47)
- Sanitary Service Laterals (133)
- Sanitary Sewer Pipes
(Lined as part of previous project)



Reline 133 Lateral Connections

- Most I&I occurs at the “T” into the mainline
- Reline 20’ of lateral to extend past edge of street
- 26 Manholes located in yards
- 21 Manholes located in street



SEI

DATE	DATE
FILE	CHOOSE
PROJECT	FILE NO.
	1573.45
	FILE NAME
DESIGNED BY	DEH
CHECKED BY	MSS
DATE	DATE
1993	2007.05

2020 CIP PLANNING STUDY
SANITARY MANHOLE &
LATERAL REHAB

Sewer Laterals– Engineering Discussion

- Project Cost estimated at \$1,006,000
 - Reline all lateral connections throughout city
 - Reline all manholes on the lake-side
 - Same technology as the relining of the mainline sewer
 - Applying for I/I grant money (same program used with mainline project)
 - Explore an option for citizens to pay for an inspection/repair up to house
- Exploring two options
 - 1) Reline from sewer main up lateral past edge of road (15 +/- feet)
 - 2) Reline from sewer main up lateral 1-2 feet to reline just the “wye” connection

Advantage of going out past the road is to avoid digging into a new street if they have a lateral problem in the future

Road Replacement

Rebuild Road & Enhance Storm Water Flow/Retention

Road Replacement 2-Phase Concept

PCI Summary

- Colonial Circle → 91 Avg PCI
- Kaiser Avenue → 83 Avg PCI
- Peninsula Road → 61 Avg PCI



• Road Segments Under 50 PCI

Storm Water Flow & Retention



- Replace culverts throughout city
- Slightly raise elevation of road in flood areas
- Excavate existing holding pond at Jevne Park

Road Replacement – Engineering Discussion

- Project Cost estimated at \$1,640,000
 - \$1,312,000 for road project
 - \$160,000 for new culverts & excavate Jevne holding pond
 - \$168,000 for relining manholes in street
- Scope is to recreate same road style as we have today
 - No curb/gutter, same width, no sidewalks, etc.
 - Depth of base will be reinforced from what we have today
 - Project involves completely rebuilding base structure & resurfacing
- Will do this in two phases (1-Peninsula Road 2-Kaiser/Colonial)

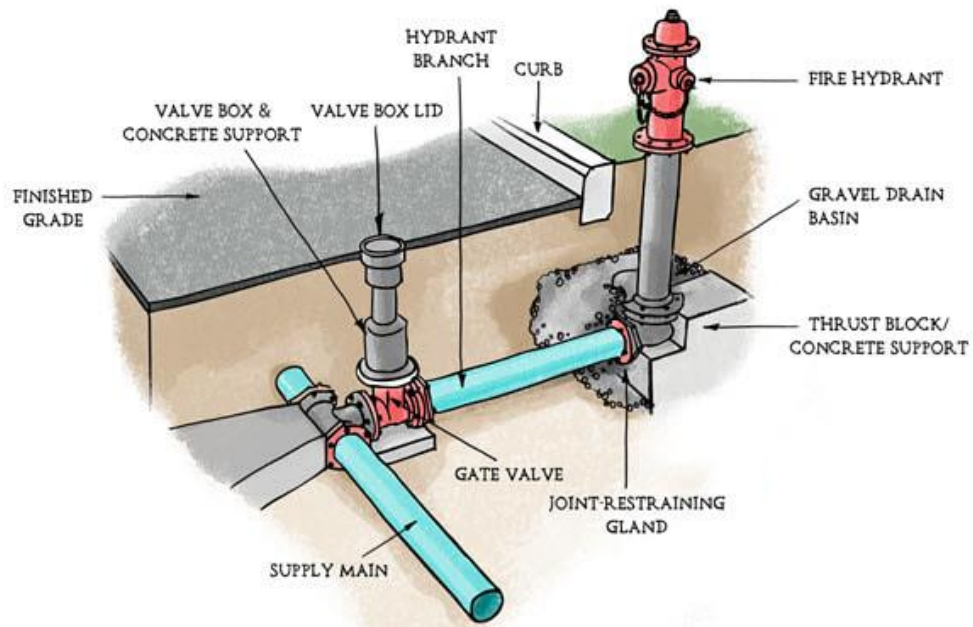
City Water/Hydrants

Install City Water Hydrants

Dump Tank Water Supply



Fire Hydrant Water Supply



Fire Scenario Planning

Fire Scenario – Single-story home

gpm = gallons per minute

- 25% Fire Engulfed = 100 gpm
- 50% Fire Engulfed = 200 gpm
- 100% Fire Engulfed = 600 gpm
 - 400 gpm for main house
 - 200 gpm for neighboring homes

gpm doubles for a two-story home

Medicine Lake is increasingly becoming a two-story home community

Fully engulfed fires typically shift to protecting outside exposure

MLFD Water Capacity

- MLFD brings 5000 gallons to fire scene
 - MLFD Fire Engine = 1000 Gallons
 - MLFD Tanker = 3500 Gallons
 - PFD Fire Engine = 500 Gallons
- Provides enough water for basic scenarios
- 4-8 Min water for 100% engulfed scenarios

- Takes about 10 minutes to fill/dump tanker
- Bring in tankers from neighboring cities if MLFD's tanker vehicle fails

- Hydrants provide unlimited water supply

MLFD Long-Range Planning

Budgetary & Operations Considerations

- MLFD is 22% of city's operating expense
 - \$86,150 budgeted for 2021
- 2 Fire Engines & 1 Tanker are old/used
 - Maintenance cost for vehicles
 - Tanker likely needs to be replaced by 2030
 - No vehicle replacement fund in place
- Hydrants will
 - Reduce vehicle expense
 - Simplify fire-response protocols
 - Reduce # fire-fighters needed per incident
 - Better protect our citizens & their property

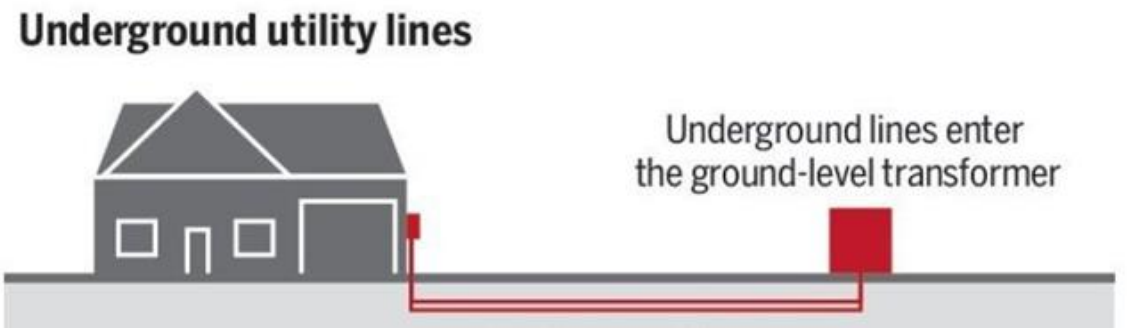
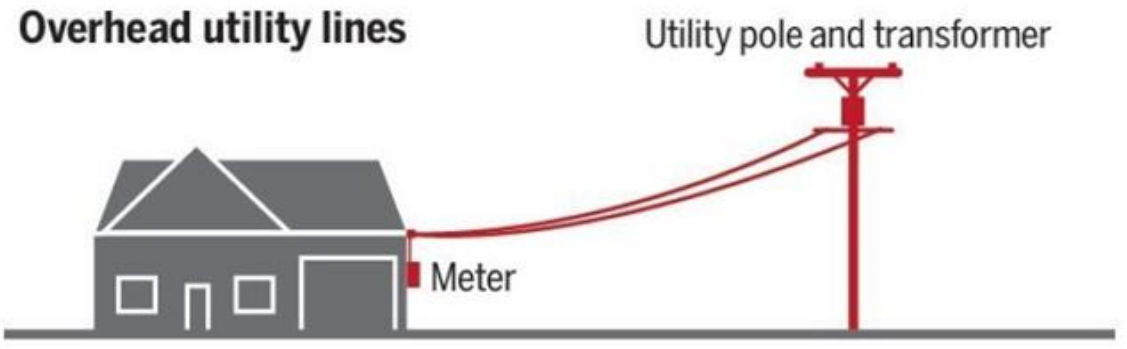
City Water/Hydrants – Engineering Discussion

- Project Cost estimated at \$1,540,000
 - Install water at same time as road construction
 - Includes 16 hydrants & isolation (shut-off) throughout city
 - Includes curb-stops for future residential hook up
 - Future residential hook-ups would not require any cuts into the road
- Installing water using directional boring is an alternative - \$2,700,000
 - Can be done separately from road construction
 - Typically only done this way if roads are in good condition & not being replaced
 - Requires a large hole to be cut into road every 400-500' for HDD access pits
 - Total project costs are around 57% more expensive than installing with road project
 - Future residential hook ups require excavating into the road at every lot

Underground Utilities

Remove Utility Poles & Provide Underground Service

Underground Utilities



Underground Utilities – Current Perspective

- Having underground utilities would be an aesthetic improvement
- Most cost-effective during road construction vs directional boring
- Project cost is \$1M + hookup at each house
 - \$1M provides mainline through city & service-stubs into each property
 - Work performed by Xcel Energy
 - Each homeowner would have TBD additional costs to connect to the service stubs
- This project is current regarded as Out of Scope
 - Must first confirm we can support the finances of the key infrastructure projects
 - Citizen input will be needed to bring this into scope
 - Utilities might be viable as we find cost savings in our other projects

Next Steps

Project Scoping & Financial Planning

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 - \$50K increase in Maintenance Reserve (~\$285 per household)
 - \$1M cost reductions could bring underground utilities back into scope

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Next Steps

1. **Lift Station** – Conducting in-depth analysis during February for mid-March proposal
2. **City Water Discussion** – Gather questions & host open forum at March meeting
3. **Financial Planning** – Preparing funding plan (Grants, State-Bond, Muni-Bond, Cash)

If you'd like a copy of the CIP Report or this presentation or have questions/insights email Chris Heim at chris_heim@hotmail.com

Please send questions by Feb 15th. Will prepare a FAQ for the March Council Meeting.

Timeline Planning

Month	Key Theme	Key Discussions	Preparing For Next Month
Feb	Public Awareness on Project Scope	<ul style="list-style-type: none"> - Present CIP scope overview - SEH engineering Q&A - Publish CIP Study for citizens to review 	<ul style="list-style-type: none"> - Gather questions from citizens - Prepare FAQ from citizen questions - Prepare preliminary funding proposal
March	Public Awareness on Funding Options	<ul style="list-style-type: none"> - Present FAQ - Open forum discussion with citizens - Present CIP funding options & ideas 	<ul style="list-style-type: none"> - Finalize CIP Study – incorporating feedback - Finalize proposed scope of CIP projects - Continue working on funding proposal
April	Request voting to approve project scope & funding	<ul style="list-style-type: none"> - Vote & resolution on CIP Study Scope - Present updates on CIP funding proposal - Open forum discussion with citizens 	<ul style="list-style-type: none"> - Finalize CIP funding proposal - Prepare final voting documents - Begin drafting bonding & grant proposals
May	Submit for state bonding Backup date for voting if not finalized in April	<ul style="list-style-type: none"> - Vote & resolution on CIP Funding Plan - SEH contracts on drafting proposals - Present proposed phases of work 	<ul style="list-style-type: none"> - Prepare standing bonding proposal - Prepare grant program applications - Meet with lobbyists & submit for bonding