



Source: Edward Fink via <https://www.google.com/maps/@v9hl=en&pb=11x0x52b3358b00f03595%3A0xbb2eb606af17fdbd>

Jevne Park Stormwater Improvement Project Feasibility Study

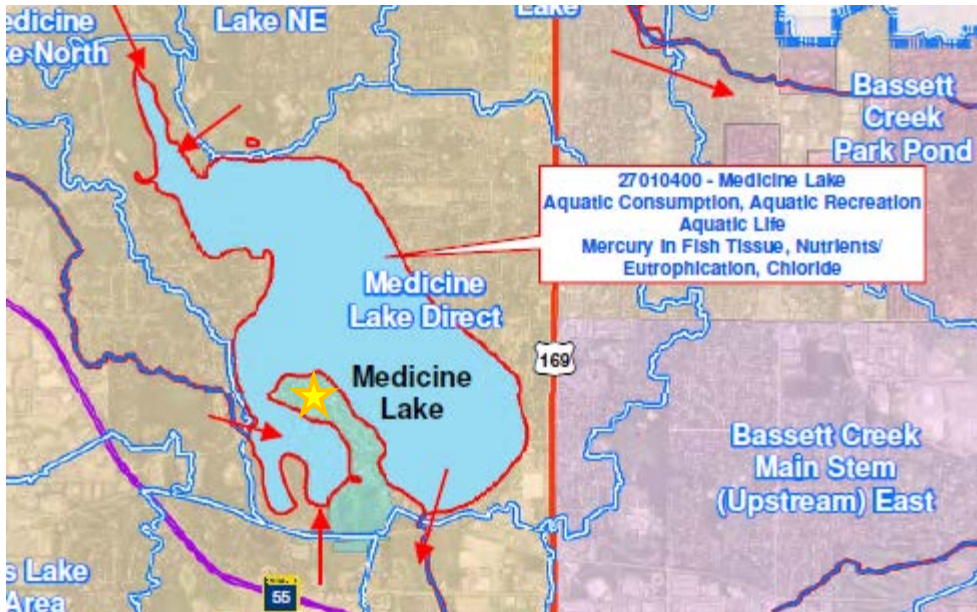
City Council Meeting
February 4, 2019



Prepared for Bassett Creek Watershed
Management Commission



Jevne Park Stormwater Improvement Project



- Increase flood storage for smaller, more frequent events
- Improve drainage
- Increase water quality treatment of runoff to reduce sediment and phosphorus load to Medicine Lake
- Improvements to wildlife habitat

project site photos



Source: Google Maps

Existing Conditions: Data Collection



Watershed Map



Existing Conditions – Peak Flood Elevations

Event	Existing Conditions
<i>Jevne Park Wetland (MLD-039A)</i>	
1-yr (100% chance in any given year)	889.3
2-yr (50% chance in any given year)	889.6
10-yr (10% chance in any given year)	890.0
100-yr (1% chance in any given year)	890.4
<i>Wetlands South of Peninsula Road (MLD-039B)</i>	
1-yr	888.8
2-yr	889.0
10-yr	889.6
100-yr	890.4

Peninsula Road Overtops at ~889.7

Existing Conditions – Water Quality Removal

Component	Existing Conditions	Total Phosphorus Removal (lbs/yr (%))
<i>Jevne Park Wetland (MLD-039A)</i>		
Permanent Pool Volume (ac-ft)	0.031	2.9 lbs TP/yr (29% removal)
Flood Pool Volume (ac-ft)	2.52	
<i>Wetlands South of Peninsula Road (MLD-039B)</i>		
Permanent Pool Volume (ac-ft)	0.28	1.9 lbs TP/yr (57% removal)
Flood Pool Volume (ac-ft)	4.79	

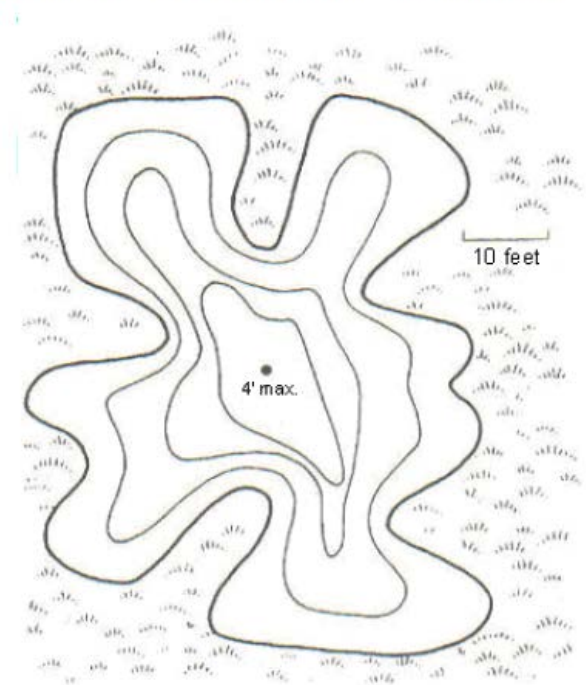
Existing Conditions – Wetlands, Buffers, and Trees



Permitting/Habitat Considerations

- Preserving wetland type/depth
- A complex of wetland types interspersed with upland provides optimum habitat
- Shallow water (no more than 4 ft)
- Flatter Slopes
- Variable/Undulating Depths
- Larger, irregular shape
- Floating logs, nest boxes, etc.
- Seeding and planting for more diverse species
- Wetland buffer

FIGURE 1. Diagram of a good basin design; this design emphasizes shallow slopes and depths (each line represents one foot of depth), and good shoreline features. Adjacent uplands are seeded to native grasses.



Source: MnDNR Excavated Ponds for Wildlife



BCWMC Buffer Requirements

Wetland Classification*	Buffer Width (Average/Min) (ft)
Preserve	75 ft avg / 50 ft min
Manage 1	50 ft avg / 30 ft min
Manage 2	25 ft avg / 15 ft min
Manage 3	25 ft avg / 15 ft min

*Based on MnRAM Classification - Jevne wetland was classified as a Manage 1 as part of the MnRAM completed with the Wetland Delineation

Because this project does not trigger the typical application of the buffer rules (1-acre of new or fully-redeveloped impervious), at a minimum, the BCWMC would like to see the minimum buffer standards applied

Concept Summary

- **Concept 1:** Developing additional flood and water quality treatment volume within **existing wetland footprint** in Jevne Park
- **Concept 2:** Developing additional flood and water quality treatment volume in **expanded wetland footprint** in Jevne Park



Concept 1



Install 25' wetland buffer, where appropriate.

Include habitat features such as turtle logs, water fowl nesting boxes, etc.

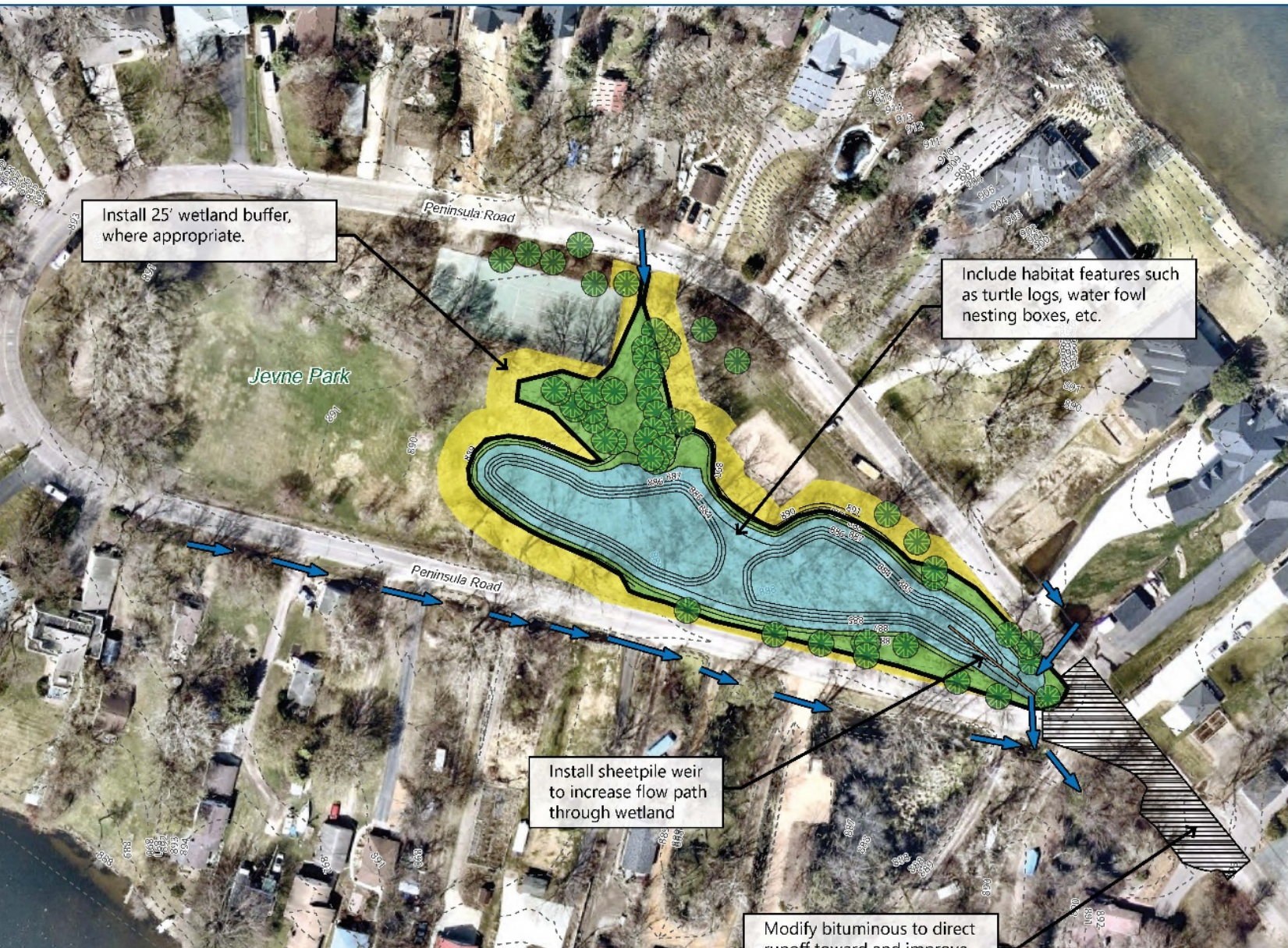
Install sheetpile weir to increase flow path through wetland

Modify bituminous to direct runoff toward and improve

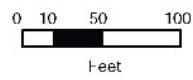
- Approximate Wetland Boundary
- Wetland Area
- Open Water
- Wetland Buffer
- Existing Culverts
- Sheet Pile Weir
- Existing Topography
- Proposed Topography
- Surveyed Tree



Concept 2



- Approximate Wetland Boundary
- Wetland Area
- Open Water
- Wetland Buffer
- Existing Culverts
- Sheet Pile Weir
- Existing Topography
- Proposed Topography
- Surveyed Tree



Comparison of Areas

Component	Existing Conditions	Concept 1	Concept 2
Open Water (ac)	0.06 ac	0.39 ac	0.72 ac
Average Depth (ft)	0.6 ft	1.9 ft	1.6 ft
Max Depth (ft)	1.1 ft	3.7 ft	3.7 ft
Wetland (ac)	0.86 ac	0.92 ac	1.16 ac
Buffer (ac)	0.15 ac	0.47 ac	0.53 ac
Tree Removal (#)	--	8	24
Potential Tree Replacement (#)*	--	4	12

Comparison of Estimated Volumes

Component	Existing Conditions	Concept 1	Concept 2
Jevne Park Wetland			
Permanent Pool (Water Quality) Volume (ac-ft)	0.03	0.72	1.63
Increase in Water Quality Volume (ac-ft)	--	+0.69	+1.60
Flood Pool Volume (ac- ft)	2.52	2.90	3.45
Increase in Flood Volume (ac-ft)	--	+0.38	+0.93

Peak Elevation Summary

Event	Existing Conditions	Concept 1	Concept 2
<i>Jevne Park Wetland (MLD-039A)</i>			
1-yr	889.3	889.1 (-0.2 ft)	888.8 (-0.5 ft)
2-yr	889.6	889.4 (-0.2 ft)	889.1 (-0.5 ft)
10-yr	890.0	890.0 (0.0 ft)	889.8 (-0.2 ft)
100-yr	890.4	890.4 (0.0 ft)	890.4 (0.0 ft)

Peninsula Road Overtops at ~889.7

Water Quality Treatment Summary

Component	Existing Conditions	Concept 1	Concept 2
<i>Jevne Park Wetland (MLD-039A)</i>			
TSS Removal (lbs/yr)	1601	2659 (+1058)	2804 (+2804)
TSS Removal Efficiency (%)	59%	84%	88%
TP Removal (lbs/yr)	2.9	7.0 (+4.1)	7.7 (+4.9)
TP Removal Efficiency (%)	29%	60%	66%

Project Benefits

- Improved drainage to Jevne Park wetland and reduction in standing water on road during smaller events
- Increased pollutant load reduction to Medicine Lake
- Improved wetland and upland habitat
- Educational opportunity
- Variation in the open space and future recreational opportunity (eg. Future benches, boardwalk/bridge, etc.)
- Only opportunity on peninsula to improve runoff water quality

Cost Summary

Concept 1

Total Project Cost* =

\$404,000

(\$324,000-\$526,000)

Annual O & M Cost** =

\$3,000/yr

Concept 2

Total Project Cost* =

\$562,000

(\$450,000-\$731,000)

Annual O & M Cost** =

\$3,000/yr

*BCWMC CIP has budgeted \$500,000 for ML-21 feasibility, design, and construction, estimated construction in 2020

**O & M Cost for wetland and buffer area maintenance based on typical restoration contractor cost (\$2,500-\$3,500/acre)

O & M Cost Concerns

Concept 1

Annual O & M Cost =**
~\$3,000/yr

Concept 2

Annual O & M Cost =**
~\$3,000/yr

**O & M Cost for wetland and buffer area maintenance based on typical restoration contractor cost (\$2,500-\$3,500/acre)



Cost:Benefit

Concept 1

**Increase in Annual TP
Removal = 4.1 lbs/yr**

**Annualized Cost =
\$24,000**

**Cost:Benefit =
\$5,800 per lb TP/yr**

Concept 2

**Increase in Annual TP
Removal = 4.9 lbs/yr**

**Annualized Cost =
\$32,000**

**Cost:Benefit =
\$6,600 per lb TP/yr**

*30-year annualized cost-benefit, considering annualized total project cost, annual maintenance, and the increase in annual TP removal

Next Steps

- Public Open House (late February)
- Develop draft feasibility report (April 2019) – including recommendations based on input from council, public, and results
- Present results of draft feasibility study to BCWMC (April 2019)
- Address any comments/questions/concerns from BCWMC & finalize feasibility study for BCWMC, including recommendation for project (May 2019)

Discussion/Questions?

overview – project location



data collection: wetland delineations

- Completed in 2018
- Approved by TEP
- 12 wetlands within project area
- No indication of accumulated sediment on wetland bottom

