2020 Crane Lake Improvement Project

March 21, 2019

Overview - Location Map

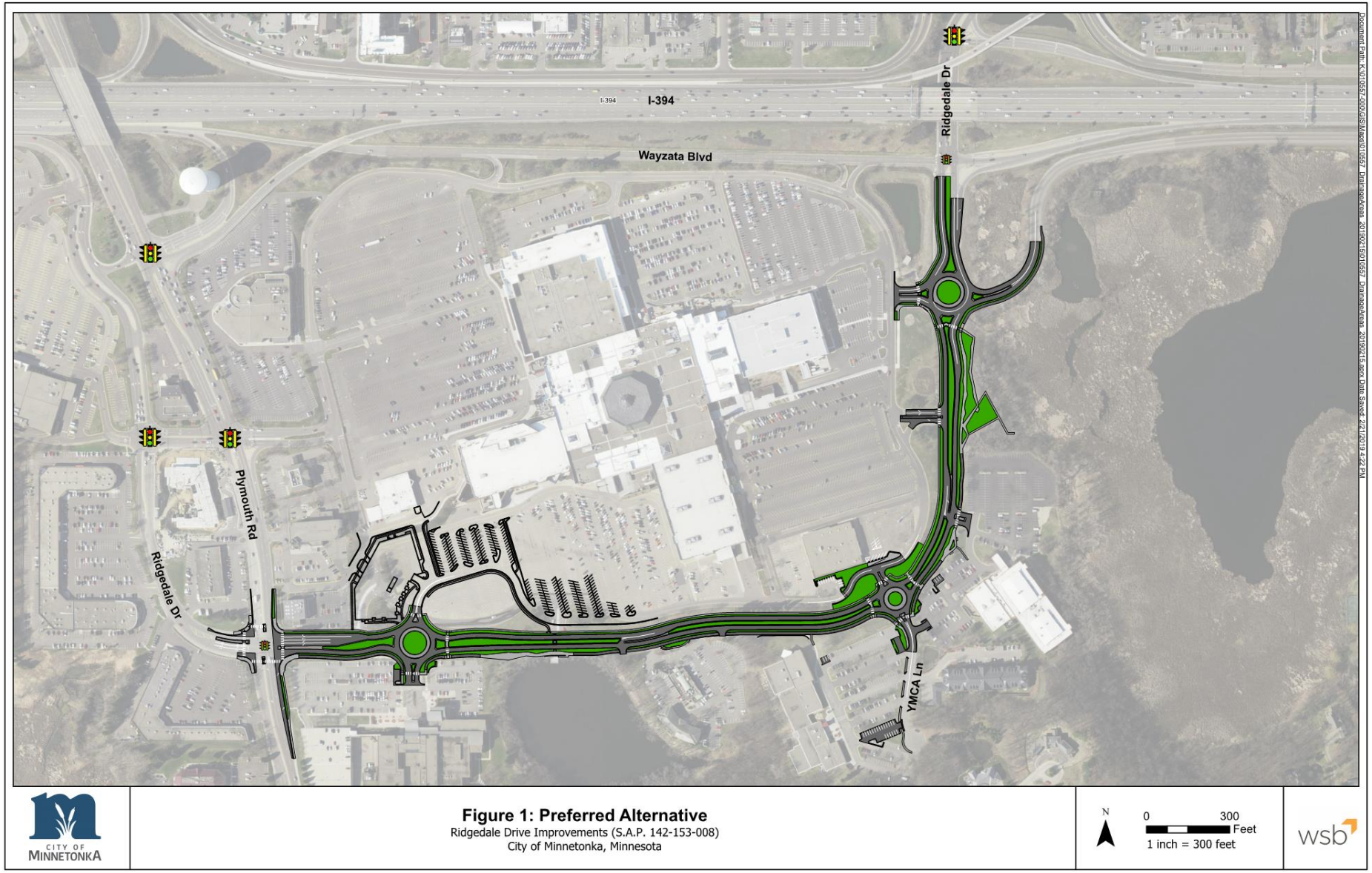
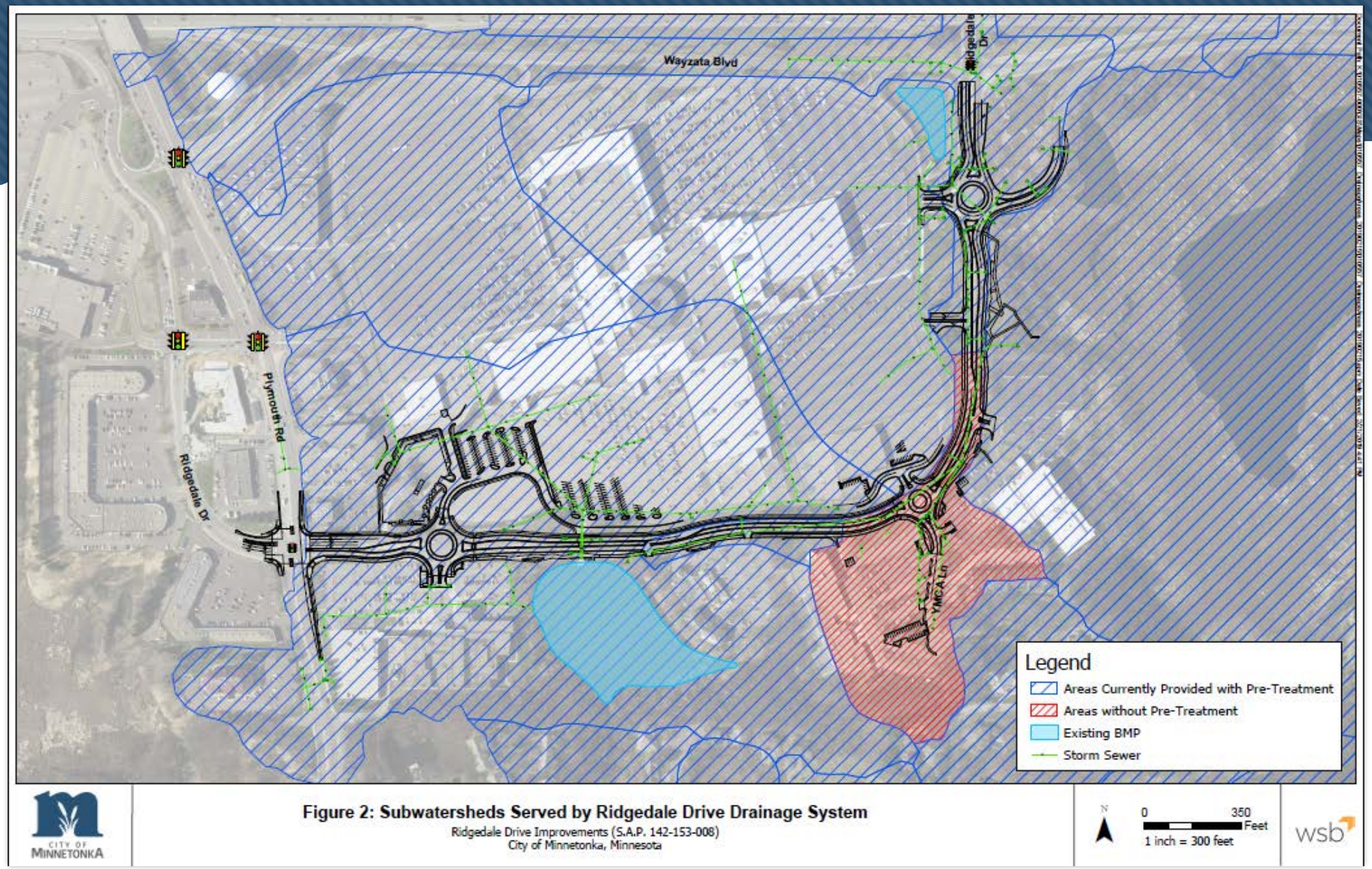


Figure 1: Preferred Alternative
Ridgedale Drive Improvements (S.A.P. 142-153-008)
City of Minnetonka, Minnesota

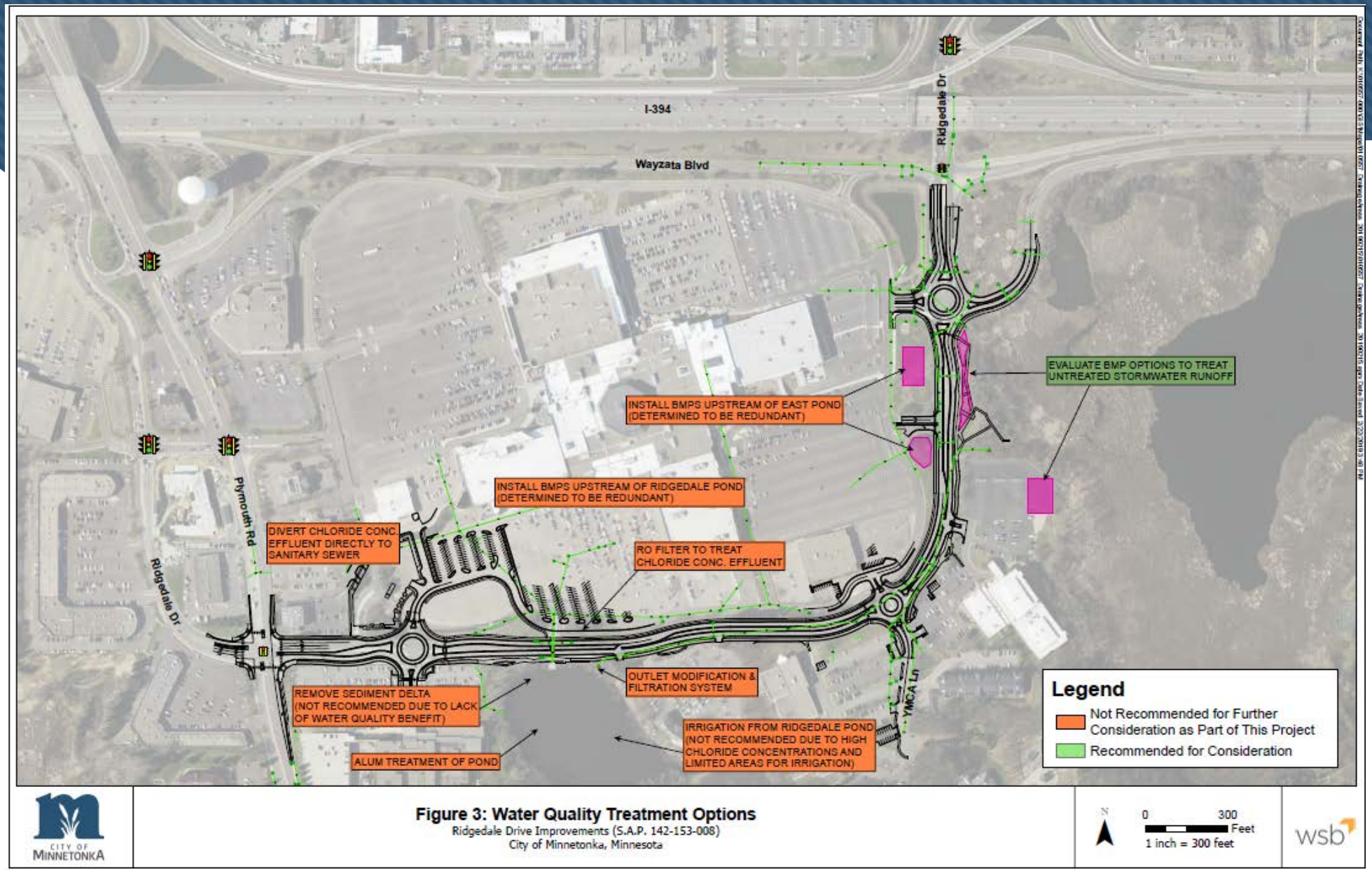
Primary Stormwater Objectives (refresher from September 2018)

- Identify BMP opportunities for inclusion with the roadway project
- Identify areas that are not currently being treated
- Determine if enhancing current treatment facilities would be beneficial
- Improve Crane Lake Biology
- Recommend BMPs to address TP/TSS as well as Chlorides

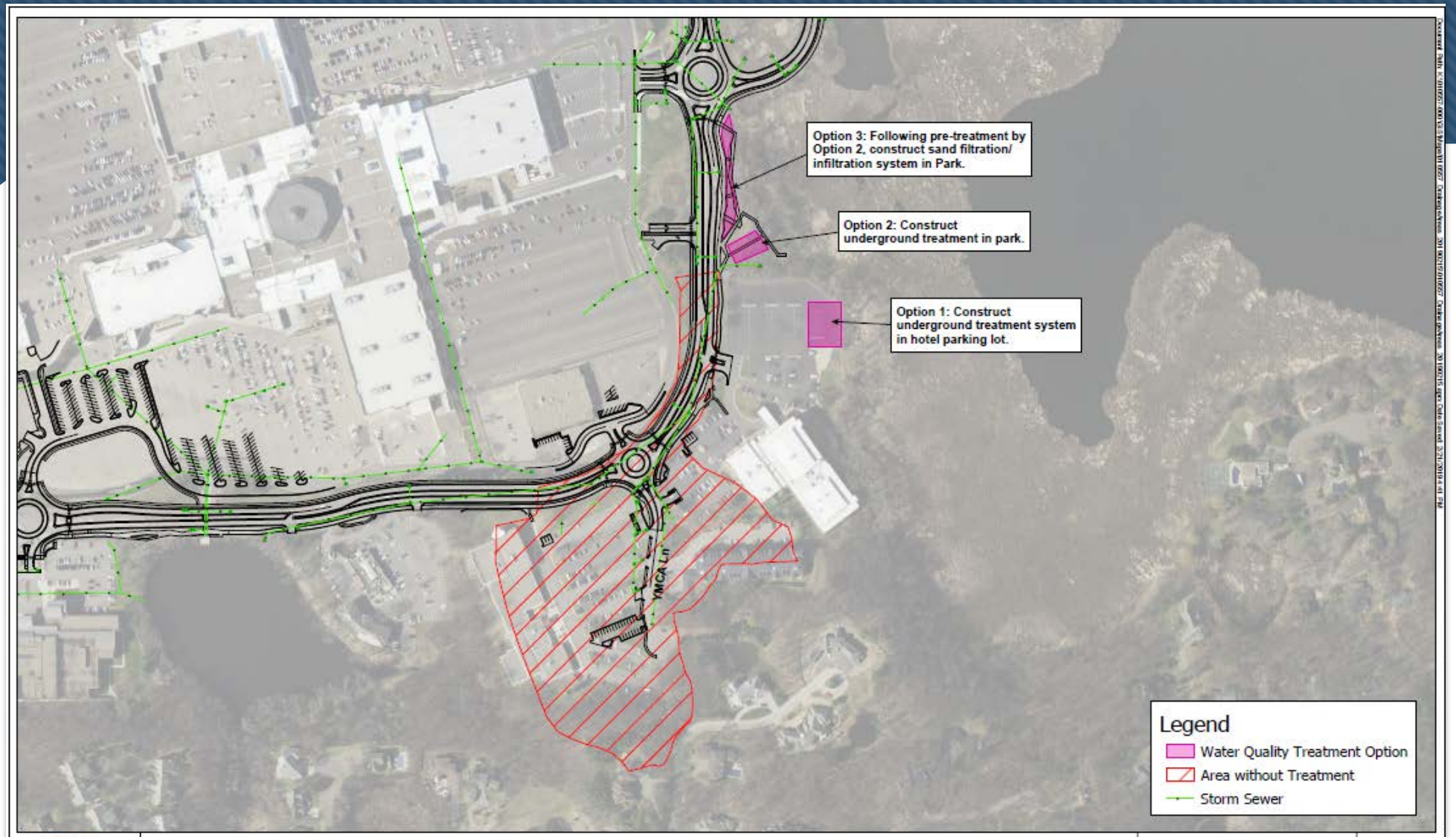
Existing Conditions



Feasibility Study



Proposed Improvements



Proposed Improvements

Option 1:

- Underground pipe gallery in hotel parking lot with approx. 12,250 CF storage

Option 2:

- Underground pipe gallery in park with approx. 12,250 CF storage

Option 3:

- Underground pipe gallery in park with approx. 12,250 CF storage
- Small lift station (.05 to 0.7 cfs) for secondary filtration/infiltration treatment in park
- Sediment removal at existing outfall to Crane Lake
- Educational kiosks in the park regarding stormwater features

Proposed Improvements

Table 5: Features, Costs, and Benefits of Improvement Options

BMP Improvement Options	Watershed Area (ac)	Targeted Pollutants	Raw Loading (lb/yr)	Existing Removal %	Proposed Removal %[3]	Estimated Pollutant Removal (lb/year)[3]	Estimated Total Project Cost	Annualized 30-Year Life Cycle Cost (for BMP only)	BMP's Cost per lb of Pollutant Removed
1. Construct underground treatment system in hotel parking lot	13.3	TSS	4800	0	59	2854	$472,027.00	$11,900.00[1]	$4.20
		TP	17.9	0	35	6.2			$1,920
2. Construct underground treatment system in park	13.3	TSS	4800	0	59	2854	$500,027.00	$12,800.00[1]	$4.50
		TP	17.9	0	35	6.2			$2,060
3. Construct underground treatment system in park plus secondary filtration/infiltration system	13.3	TSS	4800	0	72 to 75	3434 to 3599[4]	$582,837.00	$17,200.00[2]	$4.80-$5.00
		TP	17.9	0	47 to 60	8.4 to 10.7[4]			$1,600-$2,050

[1]Assumes a 30-year maintenance cost of $150,000 (annual maintenance cost of $5,000 to clean the underground structure) – estimated costs are in 2019 dollars.
[2]Assumes a 30-year maintenance cost of $200,000 (annual maintenance cost of $5,000 to clean the underground structure and full replacement of filtration media twice at $25,000 per replacement) - estimated costs are in 2019 dollars.
[3]Treating the 13.3 acre, untreated drainage area (7.28 acres of impervious, 6.02 acres of pervious). The watershed's P8 model was provided and used by WSB to model and evaluate the BMP improvement options. The estimates shown were derived from P8.
[4]Based on anticipated soil conditions, filtration is more likely than infiltration, which is the lesser of the two numbers shown.

Recommendation

Option 3:

- Underground pipe gallery in park with approx. 12,250 CF storage
- Small lift station (.05 to 0.7 cfs) for secondary filtration/infiltration treatment in park
- Sediment removal at existing outfall to Crane Lake
- Educational kiosks in the park regarding stormwater features

Construction Schedule

Council Consider Bid Award/Cooperative Agreements	May 2019
Start of construction	Jun. 2019
Construction Stage 1(YMCA Ln to I-394 on-ramp)	Jun. – Nov. 2019
○ Landscaping	Spring 2020
Construction Stage 2 (YMCA Ln to Plymouth Road)	Apr. – Sept. 2020
○ Landscaping	Spring 2021
Final completion	Jul. 2021

Construction schedule is coordinated with construction of adjacent redevelopment sites.

Chlorides Update

-The City has contacted the Metropolitan Council Environmental Services (MCES) about using the sanitary sewer for disposal of chloride contaminated effluent (CCE)

-MCES established a “chlorides team” to review all sources of chlorides in the sewer system and present findings to their executive team in the spring of 2019.

-City will not be considering these options as part of this project, but may pursue chloride management options in the future

Questions

Questions/Comments?

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