



## MEMORANDUM

**TO:** BCWD Board of Managers

**FROM:** Rebecca Oldenburg, Senior Water Resource Specialist

**DATE:** July 25<sup>th</sup>, 2023

**RE:** **Marketplace District Reuse Monitoring Proposal 2024**

In order to better understand the water quality of the ponds surrounding the Marketplace District for possible water reuse targeted investigatory monitoring is warranted. The water reuse would allow for a reduction in groundwater pumping for irrigation and help support creek baseflow, but this water must be viable for irrigation purposes. Chloride is a pollutant of concern when it comes to water reuse as terrestrial vegetation has a tolerance threshold before the water is too saline and can limit or inhibit growth and cause mortality. Turf grass has a variable tolerance threshold for chloride depending on the species; but can generally handle ranges between 70 and 355 mg/L, before it may begin to show signs of stress (EOR Technical Memo 7/5/2019). Additionally, grass cut with a low mowing height (shorter grass) like what is required for the Oak Glen Golf Course, is less saline tolerant (Liu, Todd, and Lo 2023).

The Washington Conservation District (WCD) currently performs water quality sampling on 18 basins in the Brown's Creek Watershed District on behalf of BCWD. The WCD has been collecting chloride samples on these basins and two additional wetlands for two years now. Chloride is an accumulating pollutant that ends up in waterways and waterbodies often from road salting and home water softeners. The WCD would implement a similar monitoring regimen to the baseline water quality samples being collected on other BCWD waterbodies, sampling biweekly after ice-out from roughly April-October. A chloride sample would be collected from the surface and a secondary sample would be collected from the bottom water of each pond. Sampling for the entire season allows for a fuller picture of how chloride concentration may vary during an irrigation season. If ponds have high salinity during the spring due to snowmelt and road runoff but tail off as the summer starts irrigation may still be possible, or a delayed schedule could be considered. This would still result in a reduction in groundwater use. Before the initial collection a bathymetry survey would be conducted to understand the depth and contours of each pond in order to accurately sample from the deepest location. This is an important consideration as many ponds' depth and volume vary with precipitation and can dry up in drought years, leaving the potential to effectively concentrate chloride in the water.

The total cost for the Marketplace District reuse monitoring for 2024 is **\$42,120**.

| Marketplace District Reuse Monitoring | Type   | Labor Cost        | Lab Cost        | Total Cost/Site   | Notes   |
|---------------------------------------|--------|-------------------|-----------------|-------------------|---|
| Marketplace Pond                      | LWQF1a | \$2,059           | \$441           | \$2,500           | 14x/yr surface chloride samples + hypo chloride samples       |
| 62nd St Pond                          | LWQF1a | \$2,059           | \$441           | \$2,500           | 14x/yr surface chloride samples + hypo chloride samples       |
| Wildwood Pines Pond                   | LWQF1a | \$2,059           | \$441           | \$2,500           | 14x/yr surface chloride samples + hypo chloride samples       |
| Washington Ave Pond                   | LWQF1a | \$2,059           | \$441           | \$2,500           | 14x/yr surface chloride samples + hypo chloride samples       |
| Autumn Woods Pond                     | LWQF1a | \$2,059           | \$441           | \$2,500           | 14x/yr surface chloride samples + hypo chloride samples       |
| Cottages Pond                         | LWQF1a | \$2,059           | \$441           | \$2,500           | 14x/yr surface chloride samples + hypo chloride samples       |
| Clinic Pond 1                         | LWQF1a | \$2,059           | \$441           | \$2,500           | 14x/yr surface chloride samples + hypo chloride samples       |
| Clinic Pond 2                         | LWQF1a | \$2,059           | \$441           | \$2,500           | 14x/yr surface chloride samples + hypo chloride samples       |
| Tower Dr Pond                         | LWQF1a | \$2,059           | \$441           | \$2,500           | 14x/yr surface chloride samples + hypo chloride samples       |
| Rec Center Pond                       | LWQF1a | \$2,059           | \$441           | \$2,500           | 14x/yr surface chloride samples + hypo chloride samples       |
| Parkwood Lane Pond                    | LWQF1a | \$2,059           | \$441           | \$2,500           | 14x/yr surface chloride samples + hypo chloride samples       |
| MnDOT Pond 1                          | LWQF1a | \$2,059           | \$441           | \$2,500           | 14x/yr surface chloride samples + hypo chloride samples       |
| MnDOT Pond 2                          | LWQF1a | \$2,059           | \$441           | \$2,500           | 14x/yr surface chloride samples + hypo chloride samples       |
| MnDOT Pond 3                          | LWQF1a | \$2,059           | \$441           | \$2,500           | 14x/yr surface chloride samples + hypo chloride samples       |
| MnDOT Pond 4                          | LWQF1a | \$2,059           | \$441           | \$2,500           | 14x/yr surface chloride samples + hypo chloride samples       |
| Bathymetry - all ponds                | BMA1   | \$4,620           | \$0             | \$4,620           | Rough bathymetry survey utilizing EOR's collector application |
| Total Lake WQ Monitoring              |        | \$35,505          | \$6,615         | \$42,120          |   |
| <b>Monitoring Summary</b>             |        |                   |                 |                   |   |
|                                       |        | <b>Labor Cost</b> | <b>Lab Cost</b> | <b>Total Cost</b> | <b>Notes</b>  |
| <b>Total Lake WQ Monitoring 2024</b>  |        | <b>\$35,505</b>   | <b>\$6,615</b>  | <b>\$42,120</b>   |   |

An alternative option is to monitor the four most prioritized ponds: Marketplace Pond, 62<sup>nd</sup> St Pond, Wildwood Pines Pond, and Washington Ave Pond.

The total cost for the same monitoring regimen as previously discussed for the four ponds is **\$11,232**.

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| Wildwood Pines Pond                   | LWQF1a | \$2,059           | \$441           | \$2,500           | 14x/yr surface chloride samples + hypo chloride samples       |
| Washington Ave Pond                   | LWQF1a | \$2,059           | \$441           | \$2,500           | 14x/yr surface chloride samples + hypo chloride samples       |
| Bathymetry - 4 ponds                  | BMA1   | \$1,232           | \$0             | \$1,232           | Rough bathymetry survey utilizing EOR's collector application |
| Total Lake WQ Monitoring              |        | \$9,468           | \$1,764         | \$11,232          |   |
| <b>Monitoring Summary</b>             |        |                   |                 |                   |   |
|                                       |        | <b>Labor Cost</b> | <b>Lab Cost</b> | <b>Total Cost</b> | <b>Notes</b>  |
| <b>Total Lake WQ Monitoring 2024</b>  |        | <b>\$9,468</b>    | <b>\$1,764</b>  | <b>\$11,232</b>   |   |