

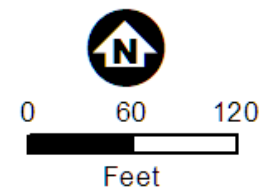
Rosland Park Stormwater Filtration BMP- Project Update








Nine Mile Creek Watershed District
June 3, 2021

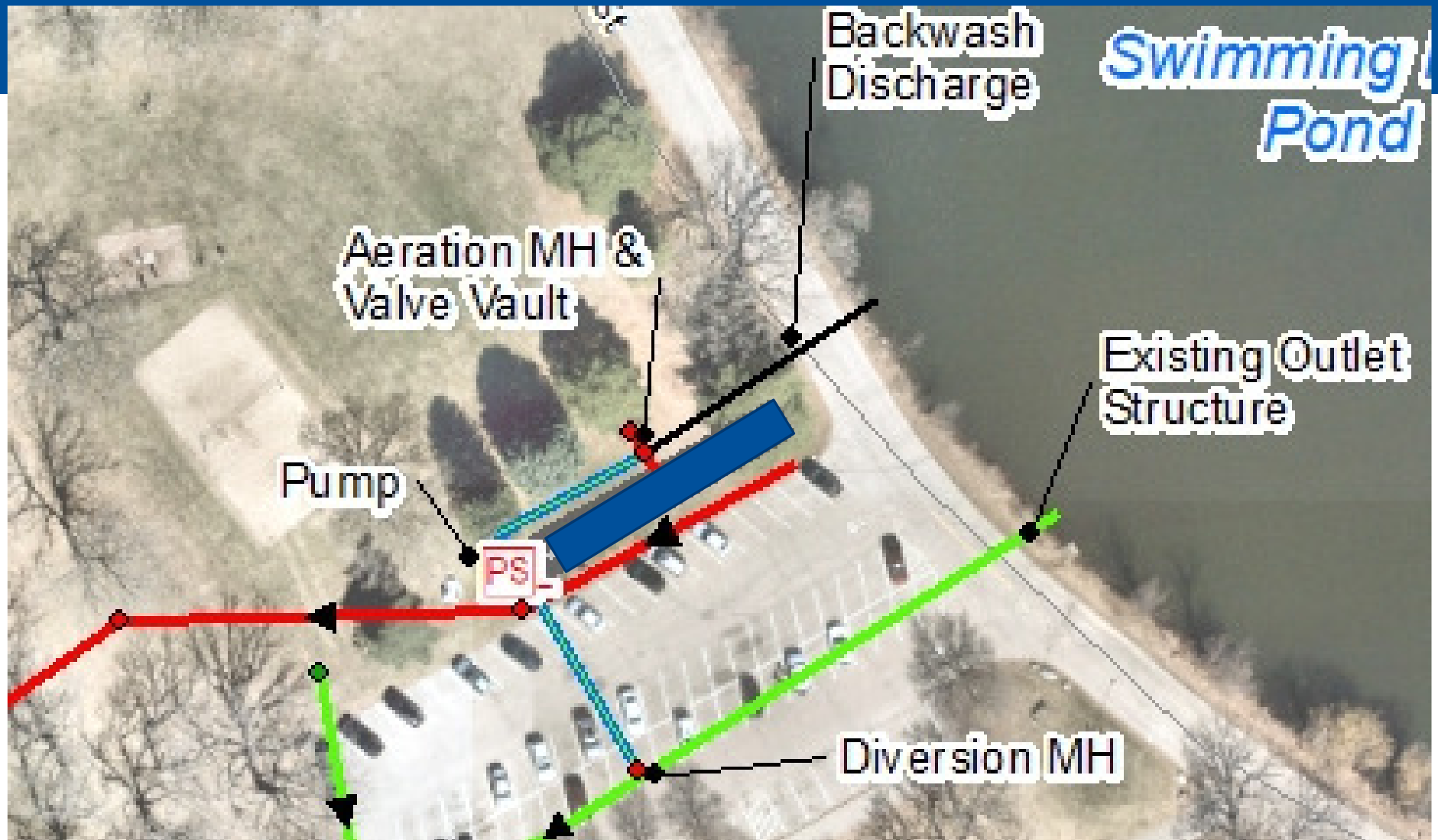
Kurt Leuthold, PE

Janna Kieffer, PE

Project Overview

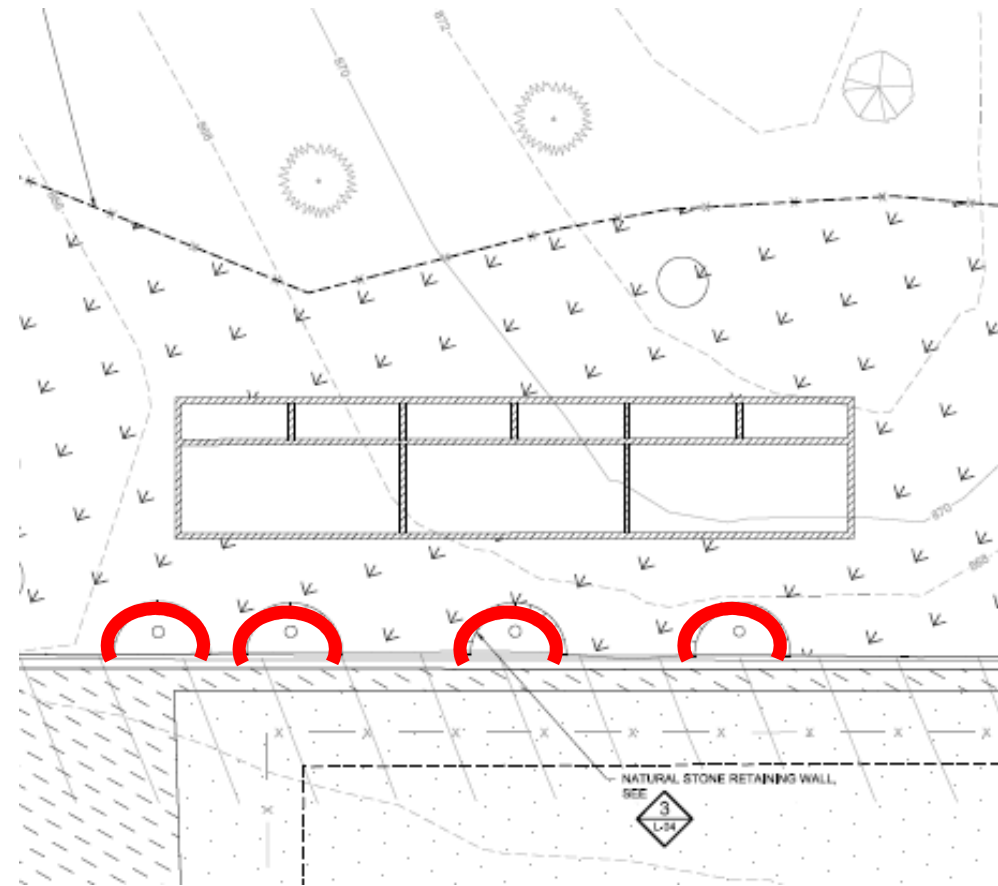


-  Filtration Vault
-  Proposed Storm Sewer
-  Storm Structure
-  Pump Station
-  Existing Storm Sewer
-  Inflow Pipe
-  Backwash

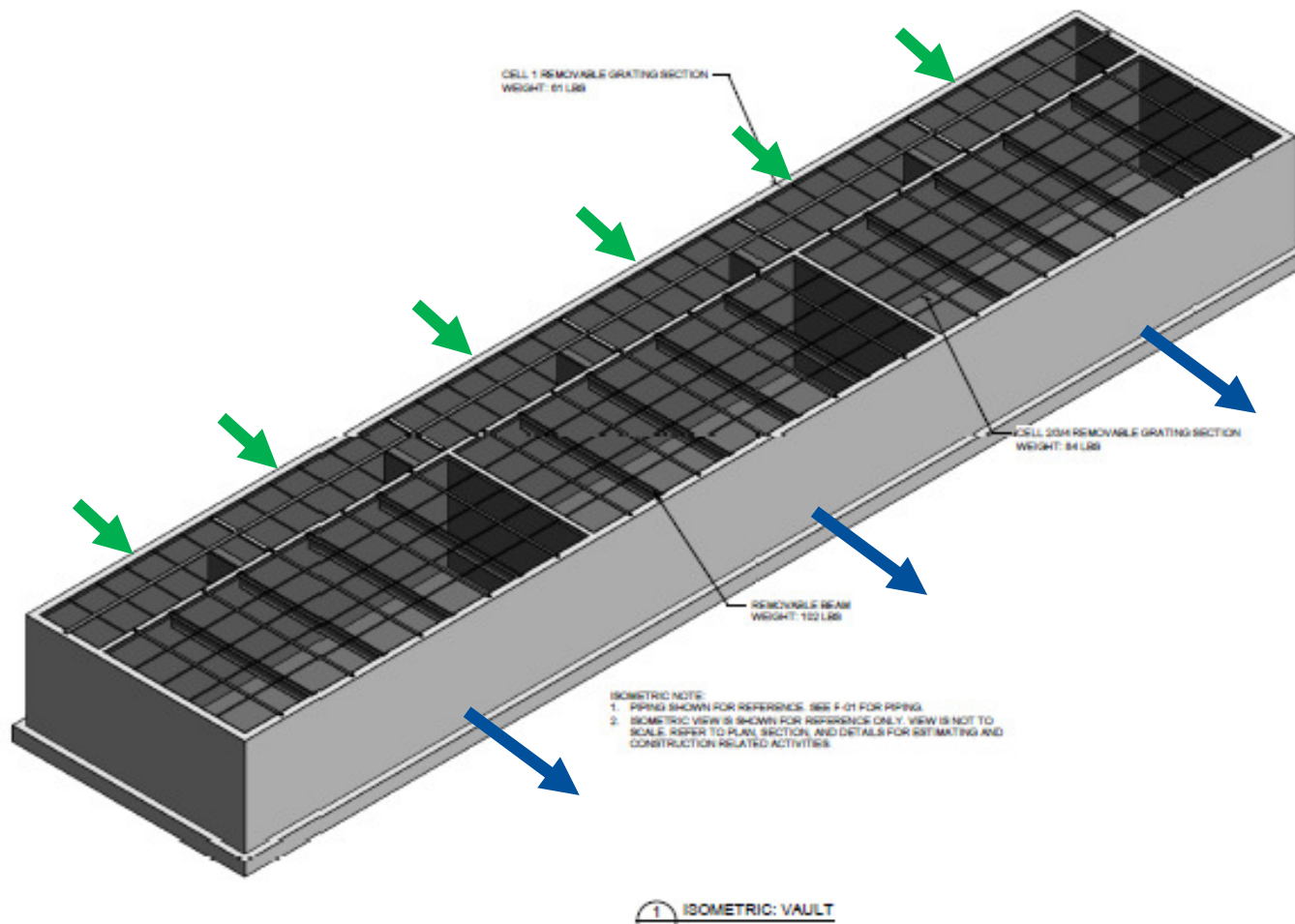




Previous Version



Isometric view of filter vault



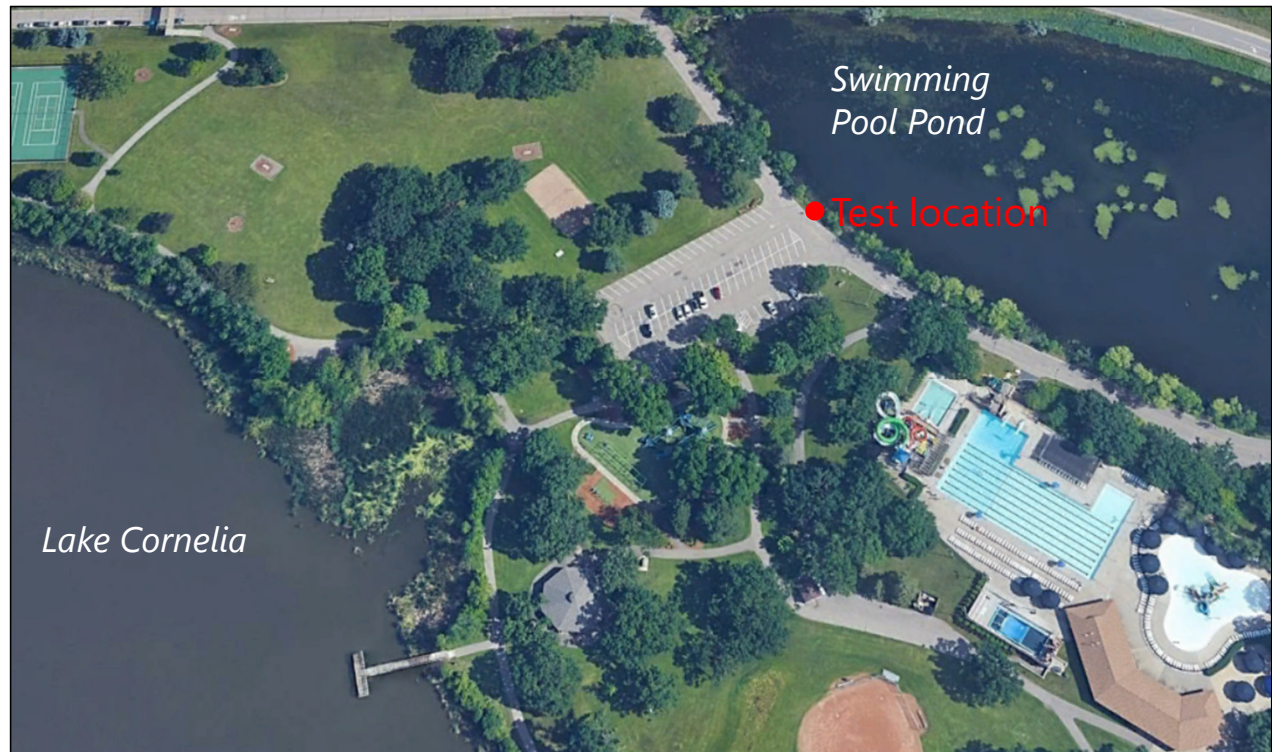
- Pretreatment cell(s)
- Three filtration cells
 - Upflow filter design
 - Discharge pipe from each cell to monitor flow and water quality

Opinion of cost

Design Concept	Concept-Design Opinion of Total Cost for Design/Construction	Concept-Design Opinion of Total Cost Range (-15%, +20%)
Design Concept #2A (November 2020)	\$1.2 million	\$982,000 - \$1.4 million

Filtration Media- Column Testing

- Tested 10 media & media combinations
- Tests completed between May 3 and May 14
- Treated water directly from Swimming Pool Pond

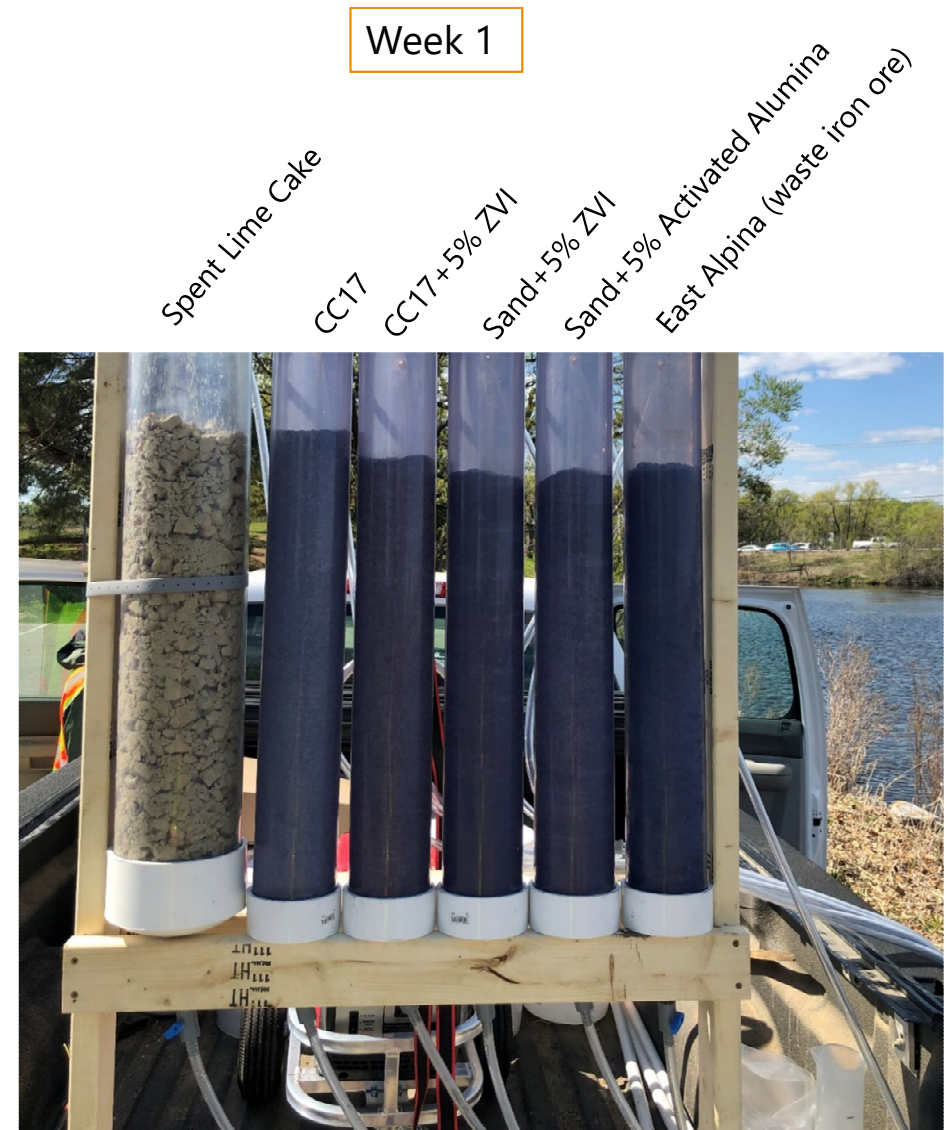


Filtration Media- Column Testing



Media Tested- Week 1

- Spent lime
- CC17 (crushed limestone)
- CC17 + Iron filings (ZVI)
- Granite Sand + Iron filings (ZVI)
- Granite Sand + 5% Activated Alumina (AASF50)
- East Alpina (waste iron ore)



Media Tested- Week 2

- Granite sand + 20% East Alpina (waste iron ore)
- Granite sand + 20% Mesabi Select (waste iron ore)
- Granite sand + 20% Iron Sand 1
- Granite sand + 20% Iron Sand 2

Week 2

Sand+20% East Alpina

Sand+20% Mesabi Select

Sand+20% Iron Sand 1

Sand+20% Iron Sand 2

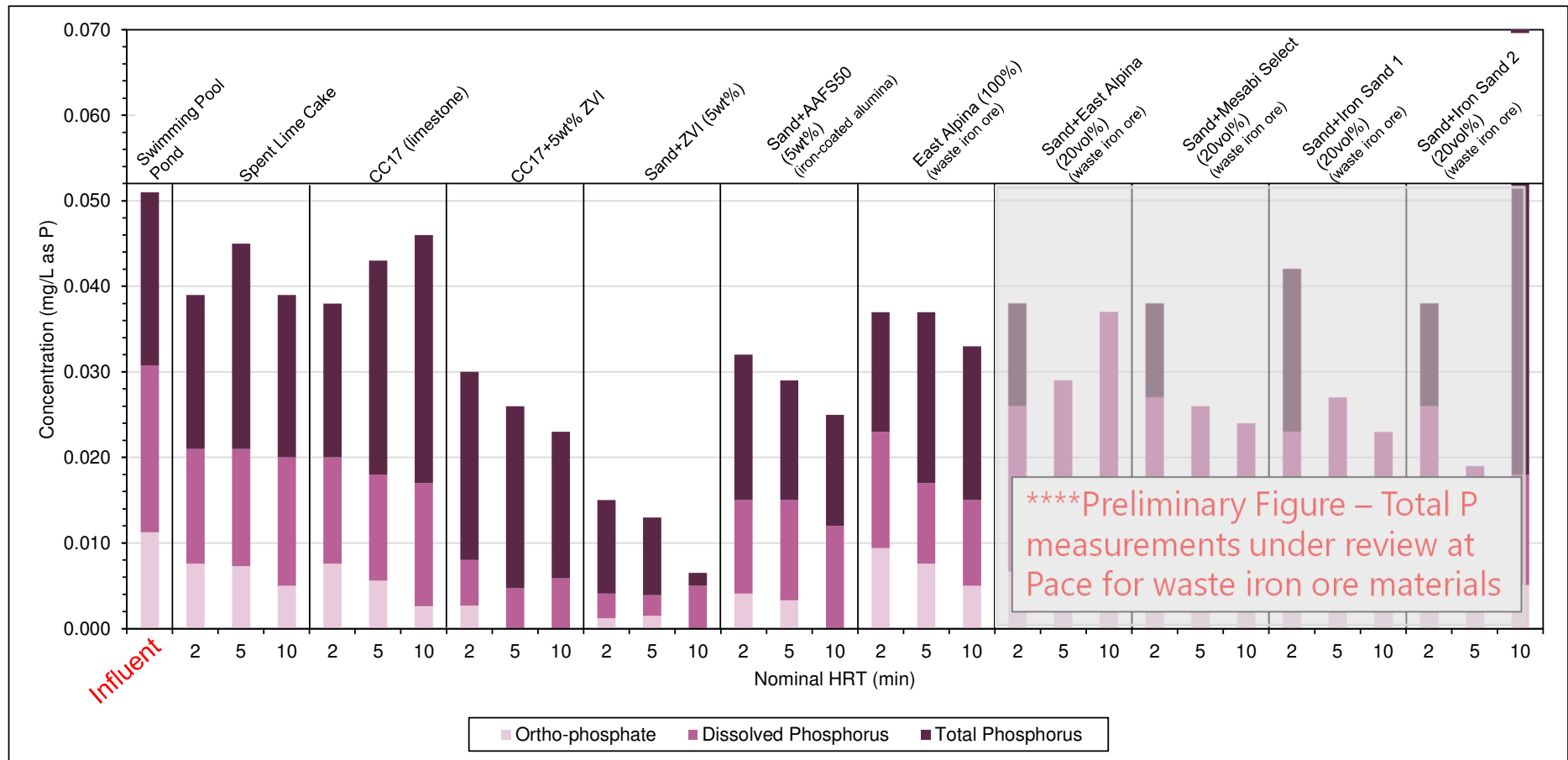


Week 2 – tested
addition waste iron
ore materials

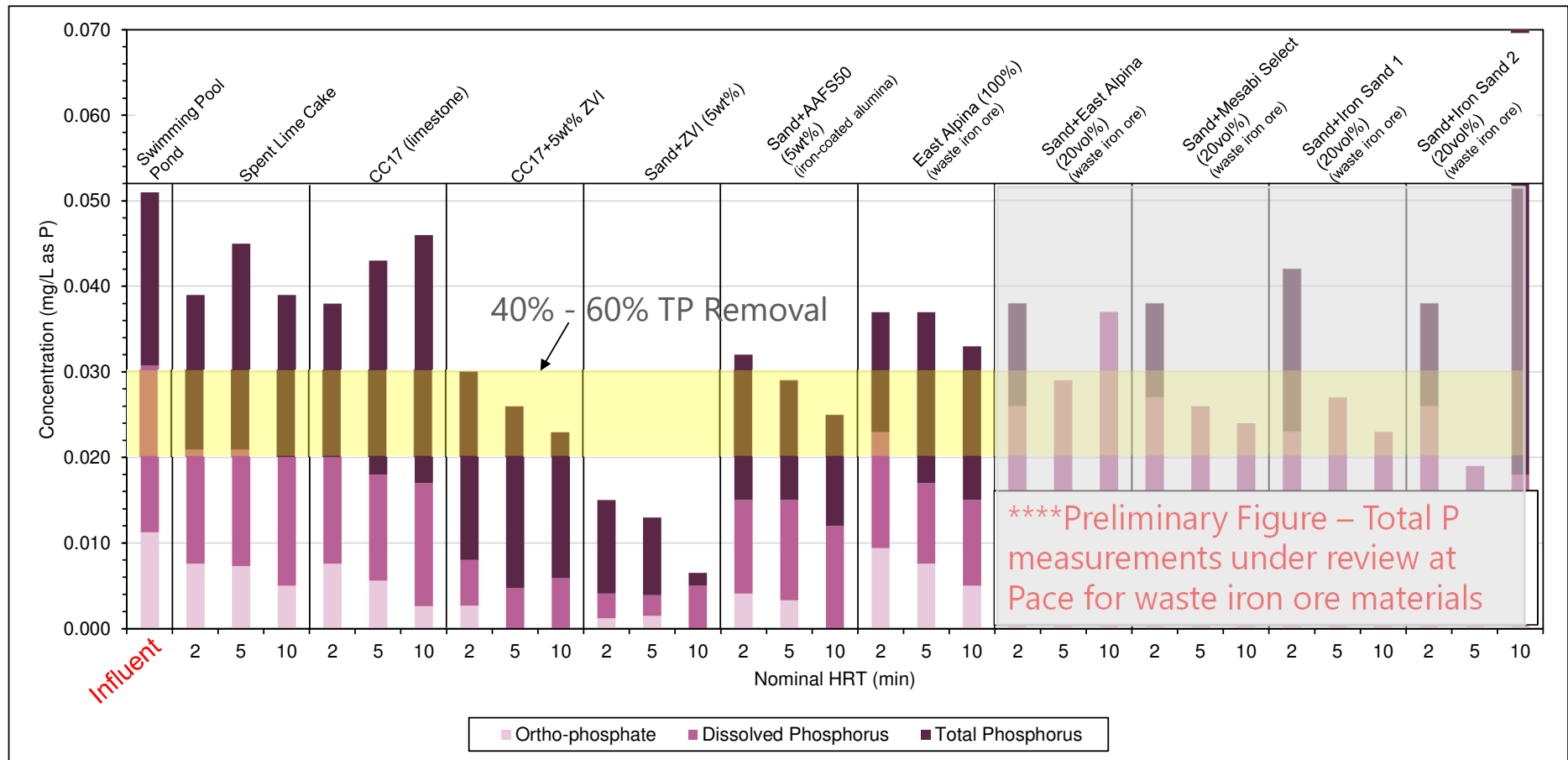


- Tested 3 hydraulic residence times per media (10, 5, and 2 min)
- 2 foot filter media depths
- Nutrients measured:
 - Field Reactive Phosphorus
 - Total and Dissolved Phosphorus
 - Orthophosphate
 - TKN

Phosphorus Removal



Phosphorus Removal



Column Media Tests

Conclusions

- Full-scale filter media selections:
 - Sand+Iron Filings (ZVI)
 - CC17+Filings (ZVI)
 - Sand+Activated Alumina (AAFS50)

A photograph of a wooden pier extending into a calm lake. The sun is low on the horizon, creating a bright glow and long shadows on the pier's wooden planks. Two people are standing at the end of the pier, looking out over the water. The background is a dense line of trees with some autumn-colored foliage. The word "Questions?" is overlaid in a large, bold, black font in the center of the image.

Questions?