

PRC Project Overview

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PRC Focus

- Intercept and capture dissolved phosphorus in a multi-barrier system
 - BMPs, environmental features help but no one area is a home run
- On-farm approach
 - Surface water
 - Field tiles
 - A variety of farm conditions
- Edge of waterways
 - Municipal drain
 - Stream

Three approaches to garner dissolved Phosphorus

- Precipitation
- Ion Exchange (IX)
- Ligand Exchange, i.e., chemi-sorption

Precipitation

- Precipitation of phosphate with metallic atoms such as Ca, Fe or AL
- Fast process
- Not easily reversible
- Example
 - Slag projects UTRCA
 - Waterloo Biofilter (Jeanette Creek Pump Station)
 - Muddy River (Medway Pump Station)
 - U of Windsor hydrogel (Roesch)

Ion Exchange (IX)

- Physical sorption (Electrostatic attraction)
- Weak sorption
- Outersphere complex
- Very fast process
- Virtually Unlimited Regeneration (reversibility)
- Examples from Roesch and Chippewa sites:
 - Smart Sponge
 - PO4 Sponge
 - Nutriloxx
 - Biochar
 - Zeolite

Ligand Exchange

- Chemical sorption – Use of coagulants/flocculants
- Strong sorption – electro-chemical
- Innersphere complex – ESSRE, nano particles
- Fast process
- Regeneration (reversibility) – Metamaterial PO₄ Sponge

Our 5 Year Budget Ending March 31st 2022

- Revenue 70:30 Government to PRC partners
- Administration and Communication 25%
- Installations 35%
 - Field systems
 - Municipal drain/stream systems
- Testing 25%
- Maintenance 15%

Future Needs

- Annual Budget of \$ 70,000
- Need multi-year funding program
- Need partners
 - Amounts will be based on specific program rules
 - 50:50 or other formula
- On-farm structures remain