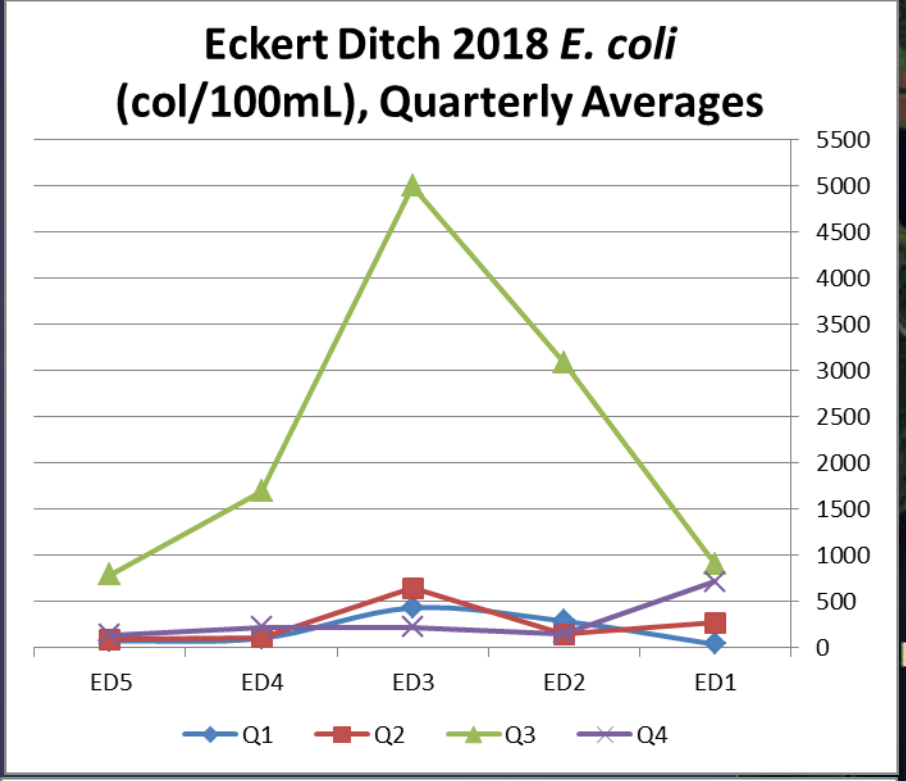
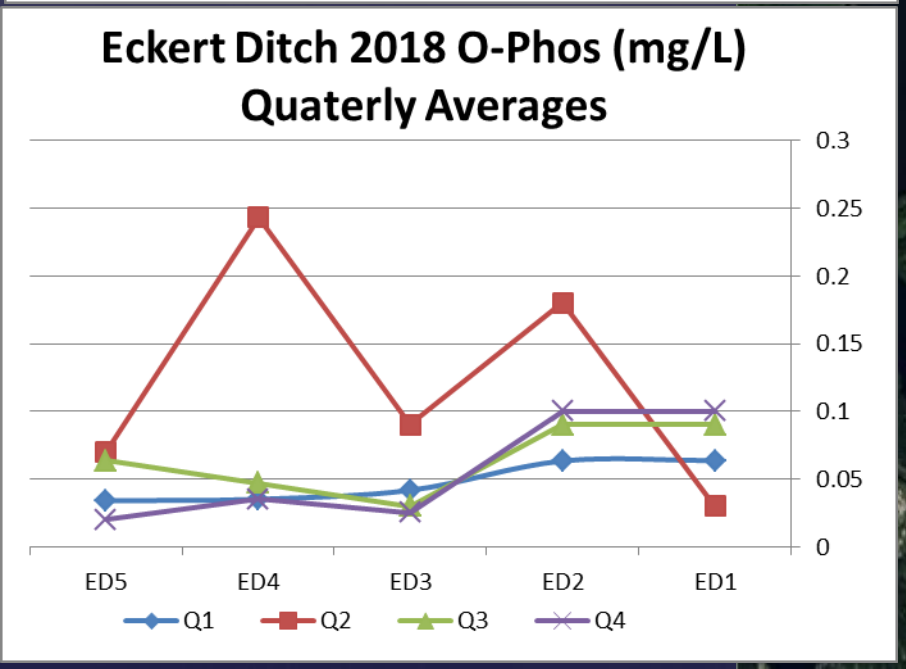
The University of Akron

Ohio Water Development Authority

Ohio Water Development Authority (OWDA) R&D Grant and OEPA 319:

Collaboration with the University of Akron College of Engineering

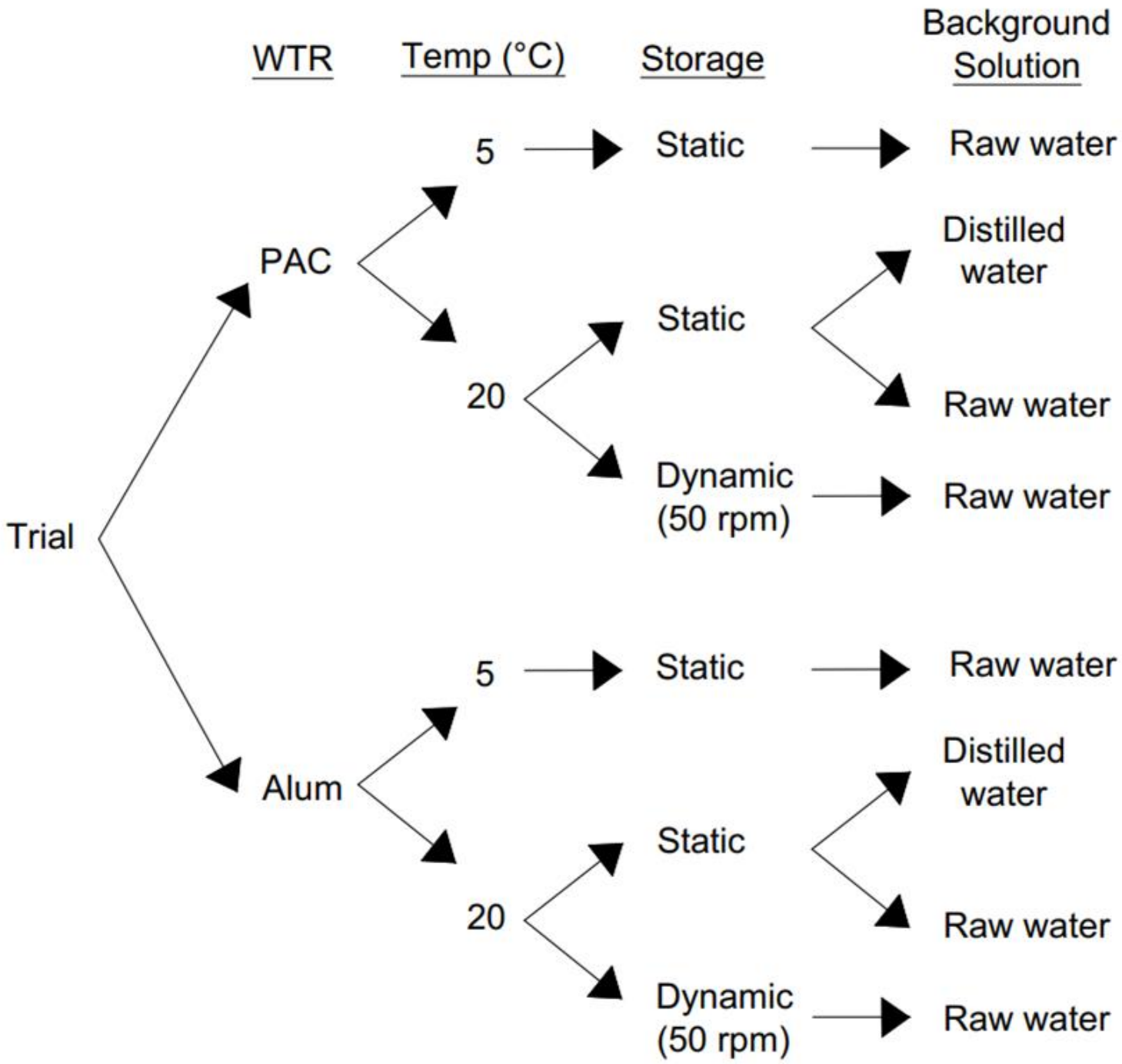

Eckert Ditch 2018 E. coli (col/100mL), Quarterly Averages
5500
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
ED5
ED4
ED3
ED2
ED1
Q1
Q2
Q3
Q4

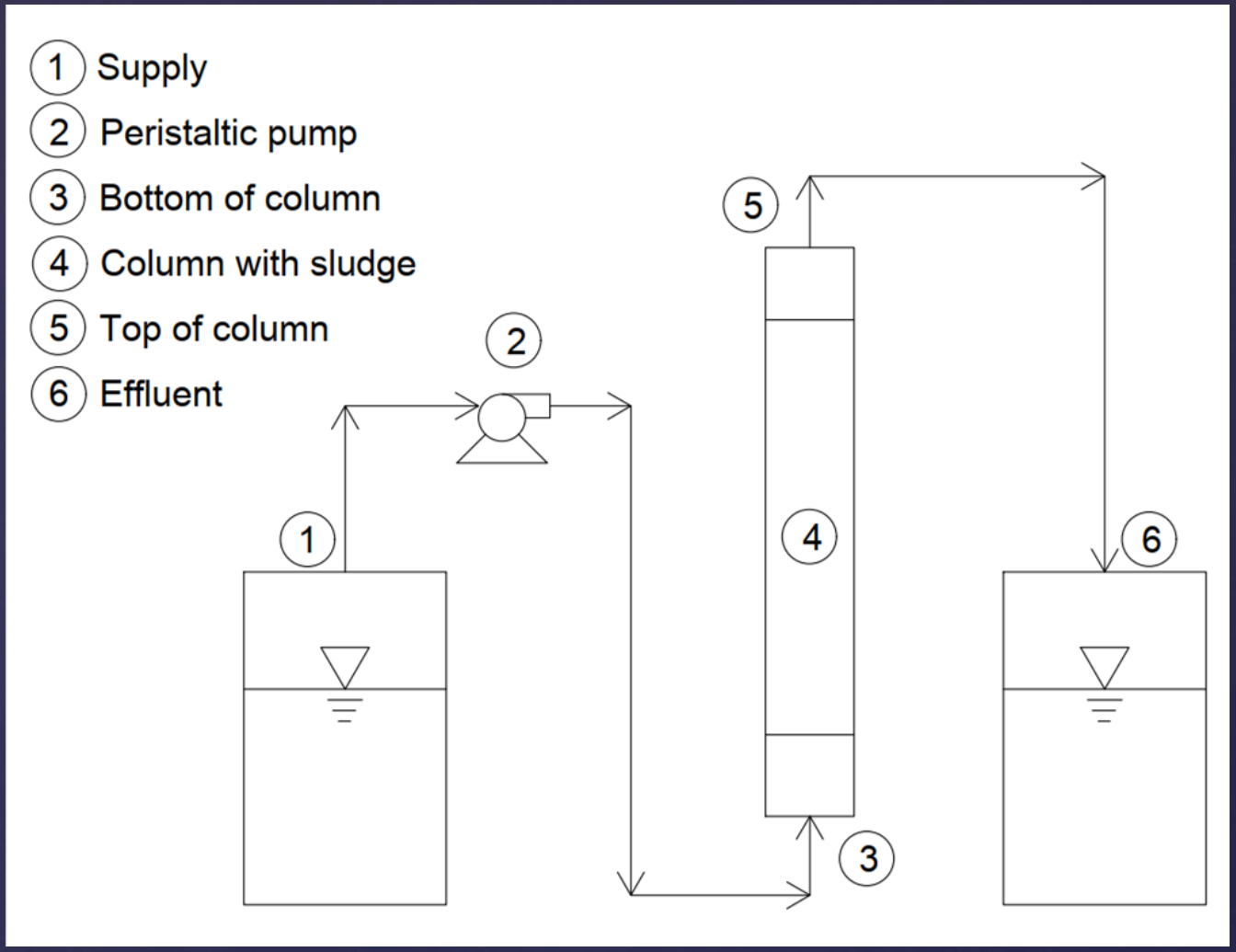

Eckert Ditch 2018 O-Phos (mg/L) Quaterly Averages
0.3
0.25
0.2
0.15
0.1
0.05
0
ED5
ED4
ED3
ED2
ED1
Q1
Q2
Q3
Q4


Eckert Ditch 1
Cottonwood Creek
Rockwell #2
Eckert Ditch 3
Eckert Ditch 5
Eckert Ditch 4
Goothier Creek
Old Canal Creek

Characteristic	Alum WTR	PAC WTR
Water Content	48.42%	84.00%
pH	6.99	6.81
Dominant Particle size	Sand	Sand

WTR Characteristics


WTR
Temp (°C)
Storage
Background Solution
Trial
PAC
Alum
5
20
5
20
Static
Static
Dynamic (50 rpm)
Static
Static
Dynamic (50 rpm)
Distilled water
Raw water
Raw water
Distilled water
Raw water
Raw water
Raw water
Raw water

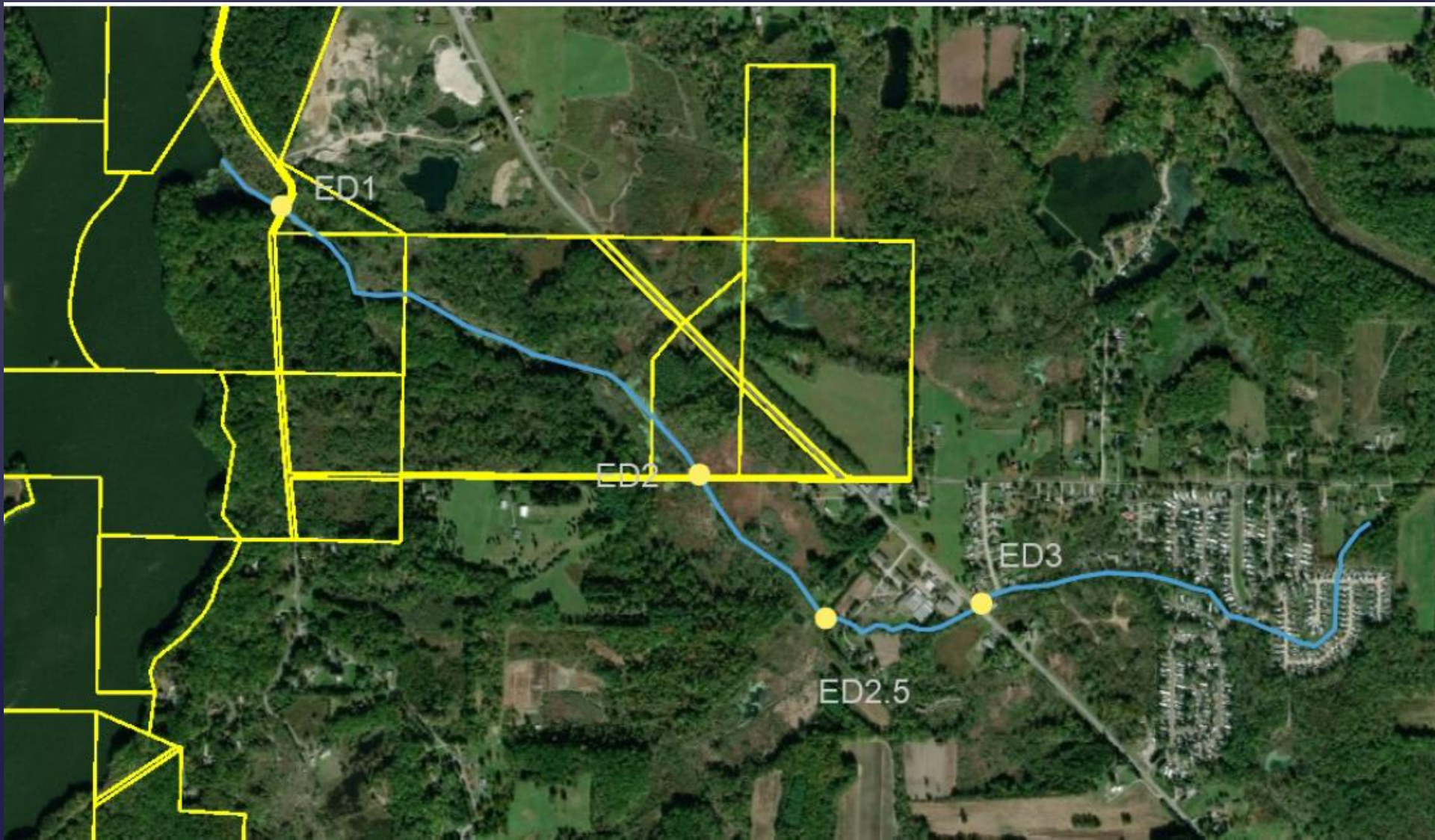


Estimating PO_4 Uptake

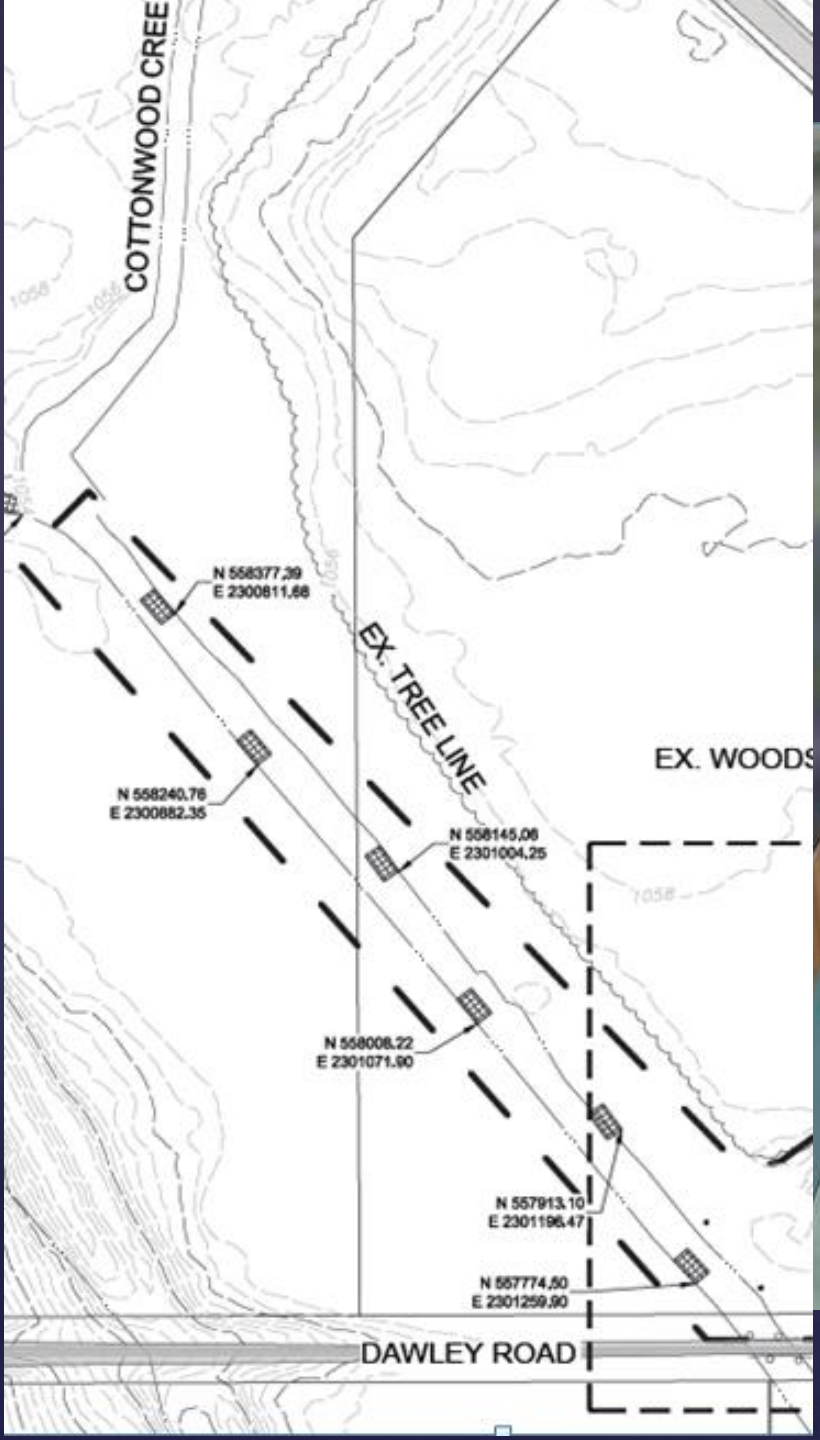
Alum WTR: 9.00 mg/g
PAC WTR: 7.14 mg/g

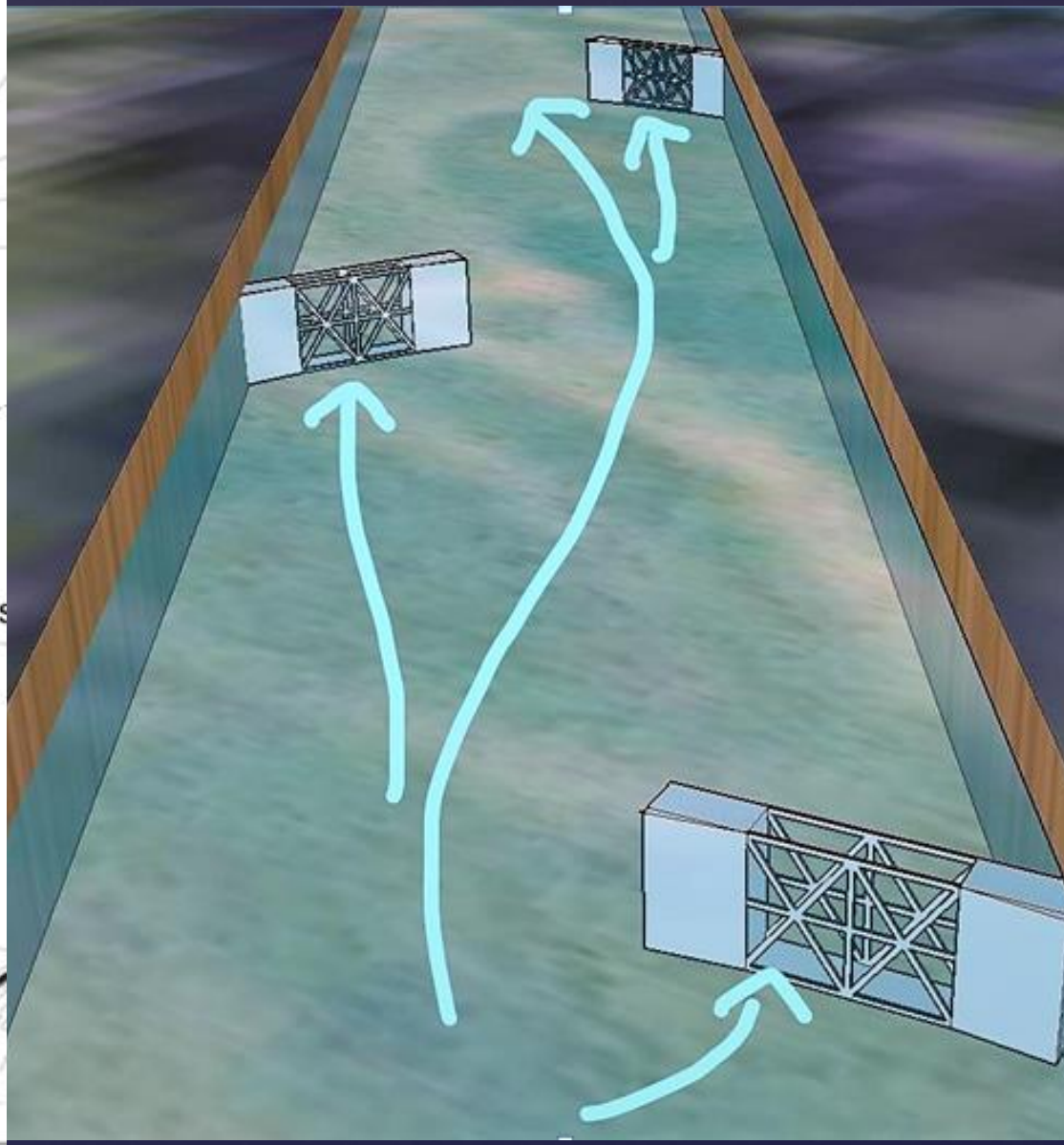
PO4 Uptake

Potential approaches to addressing Eckert Ditch nutrient loading




ED2

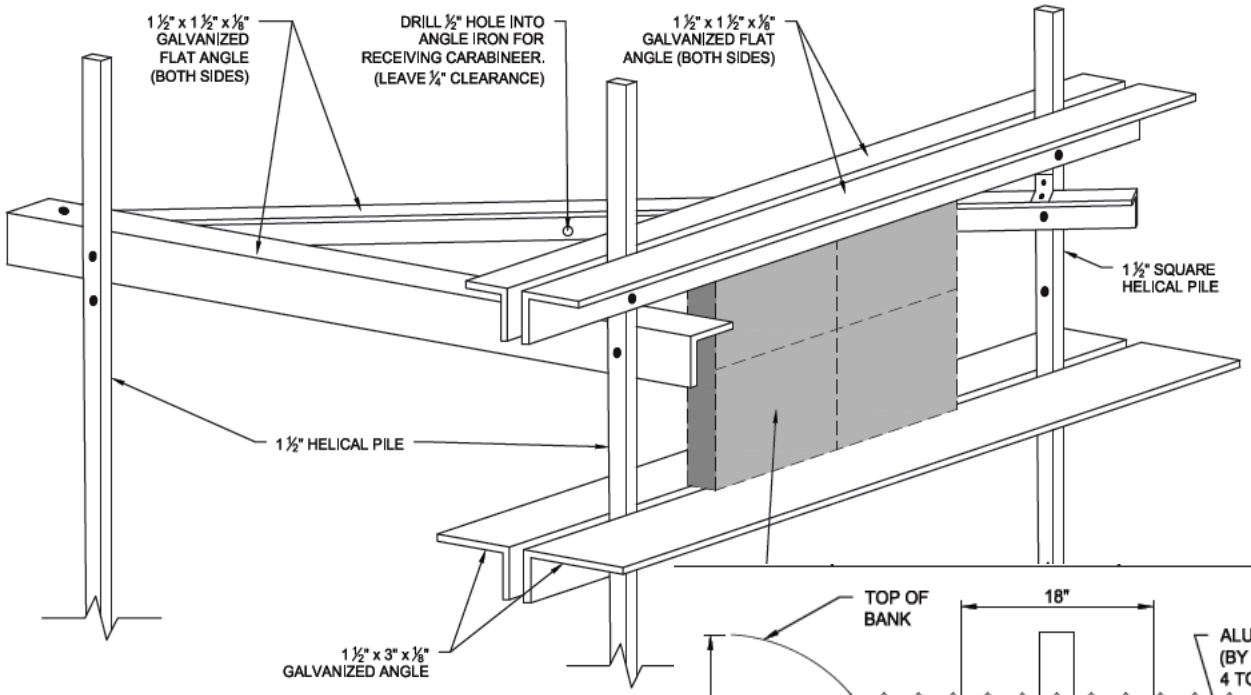

COTTONWOOD CREE
N 558377.39
E 2300811.68
EX. TREE LINE
EX. WOODS
N 558240.76
E 2300882.35
N 558145.06
E 2301004.25
N 558008.22
E 2301071.90
N 557913.10
E 2301196.47
N 557774.50
E 2301259.90
DAWLEY ROAD

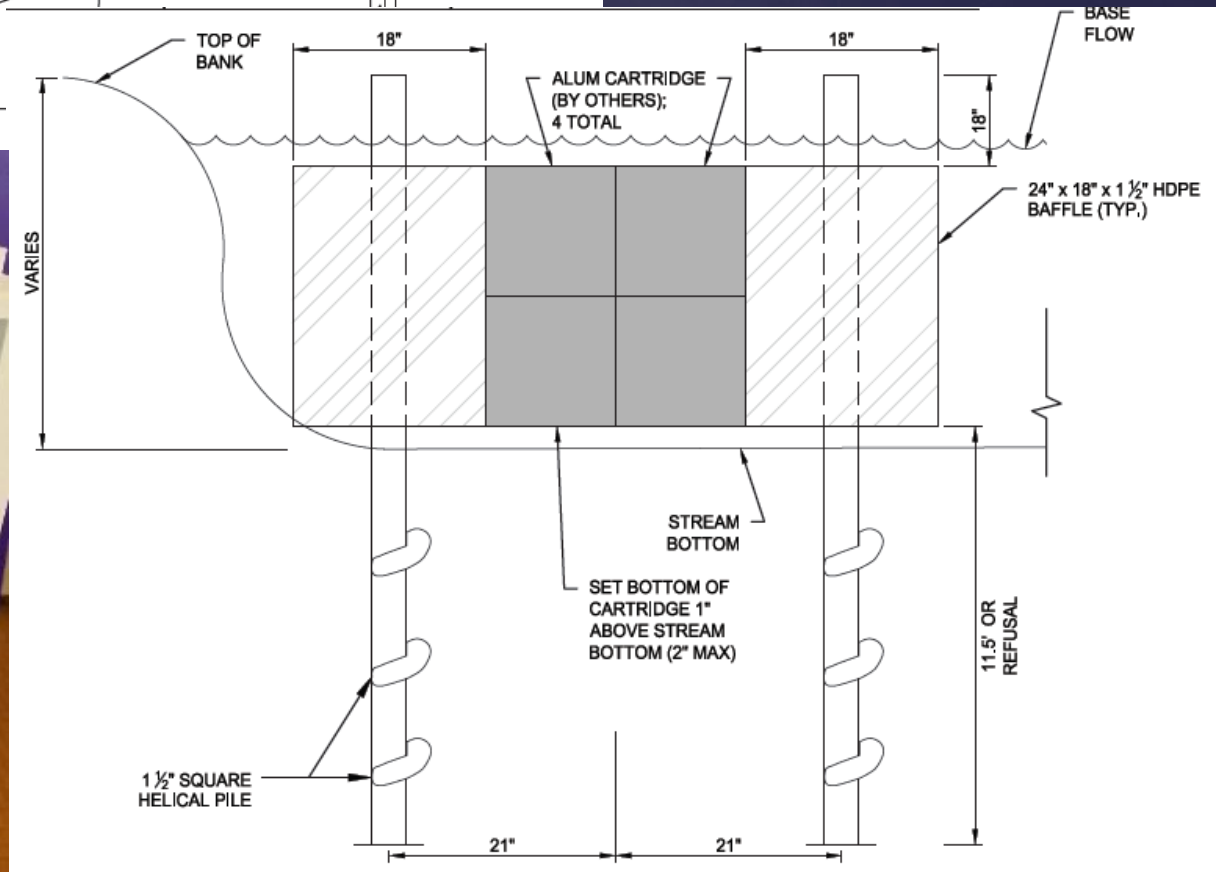


Alum WTR: 9.00 mg/g
PAC WTR: 7.14 mg/g

PO4 Uptake

Al-WTR structure





But, why?

- **Cartridge system pros:**
  - Relatively low impact installation
  - **Measurable** removal
  - Ability to refresh material and **permanently remove** contaminants
  - Beneficial reuse of regular water treatment material residuals
  - Customizable and scalable
  - Something fun for interns to do!

- **Cartridge system cons:**
  - Not a "set it and forget it" solution
  - Requires in-channel work
  - Currently cartridges are customized, can be expensive
  - Not intended for larger waterways
  - Not the end-all be-all solution
  - Maybe you don't have interns?