Rimrock Road Proposed Pond Project

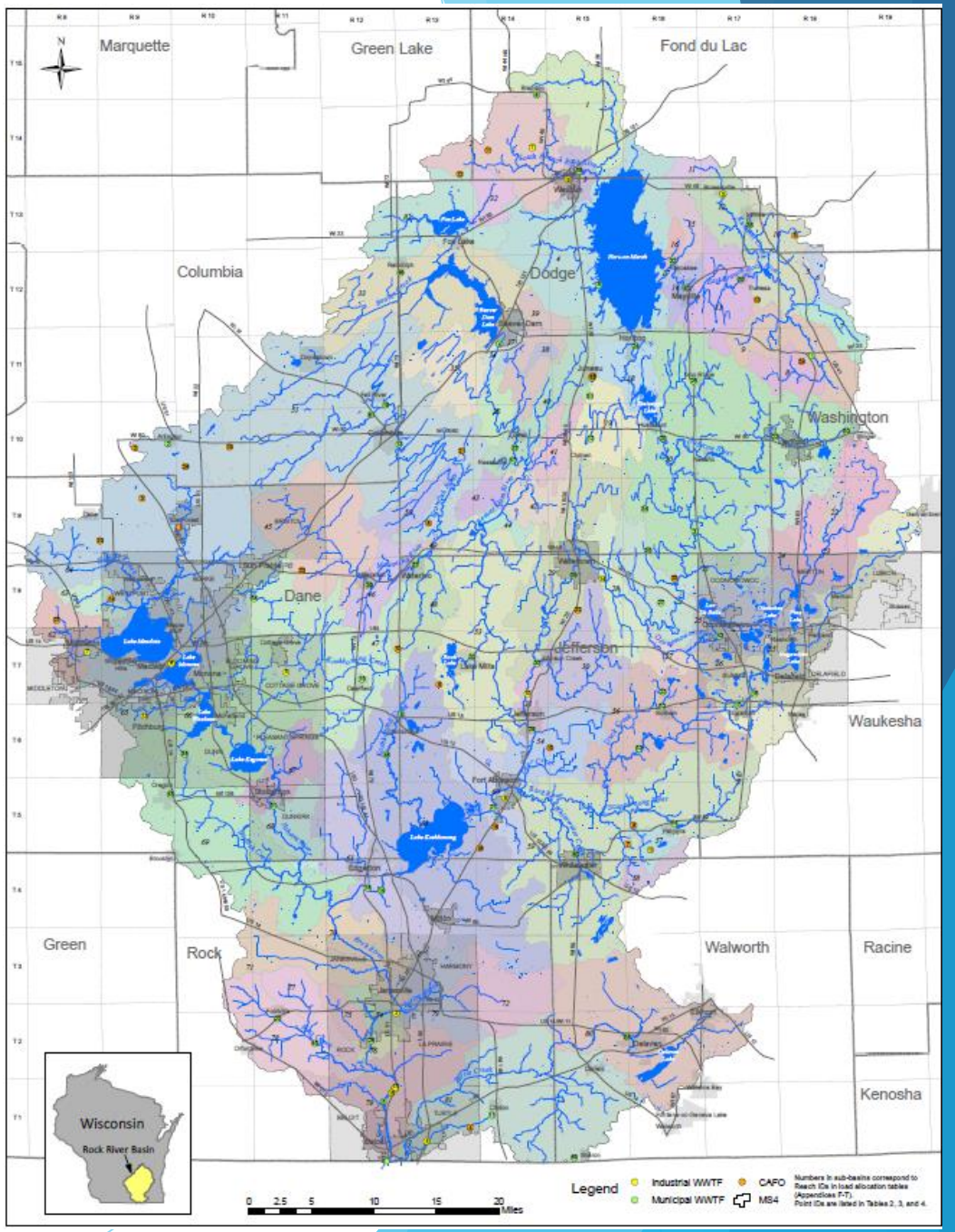
Jojo O'Brien – City of Madison

WHY We Improve Water Quality

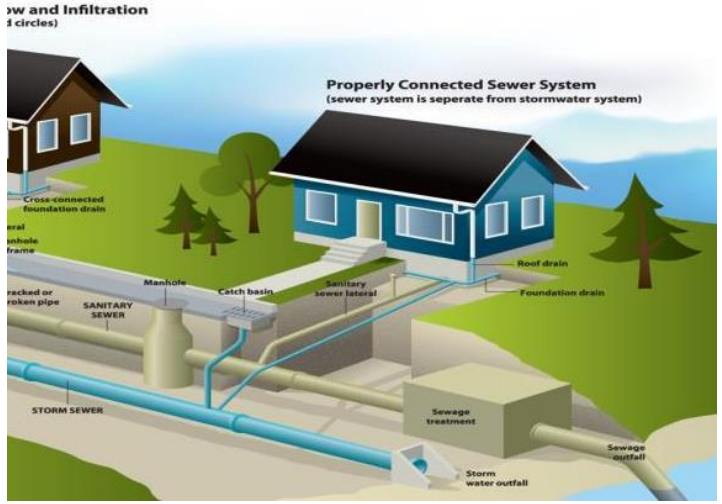
- Project is proposed to improve water quality
- Better for lakes, people, and animals
- Our water impacts downstream water
  - Rock River → Mississippi River → Gulf of Mexico

WHY We Improve Water Quality

- Clean Water Act
  - Rock River Basin
    - Back calculation of specific sediment and Phosphorus goals for each reach of the river.
  - Adaptive Management
    - Watershed based goal vs End of Pipe treatment
    - Allows for money that would have been spent at WWTP to be spent up in the watershed.
      - This is really important for the Yahara lakes since the outfall for WWTP is downstream of the Yahara chain of lakes.
- DNR Permit
  - Sanitary vs storm sewer
  - Prove you are cleaning runoff before it reaches the lakes



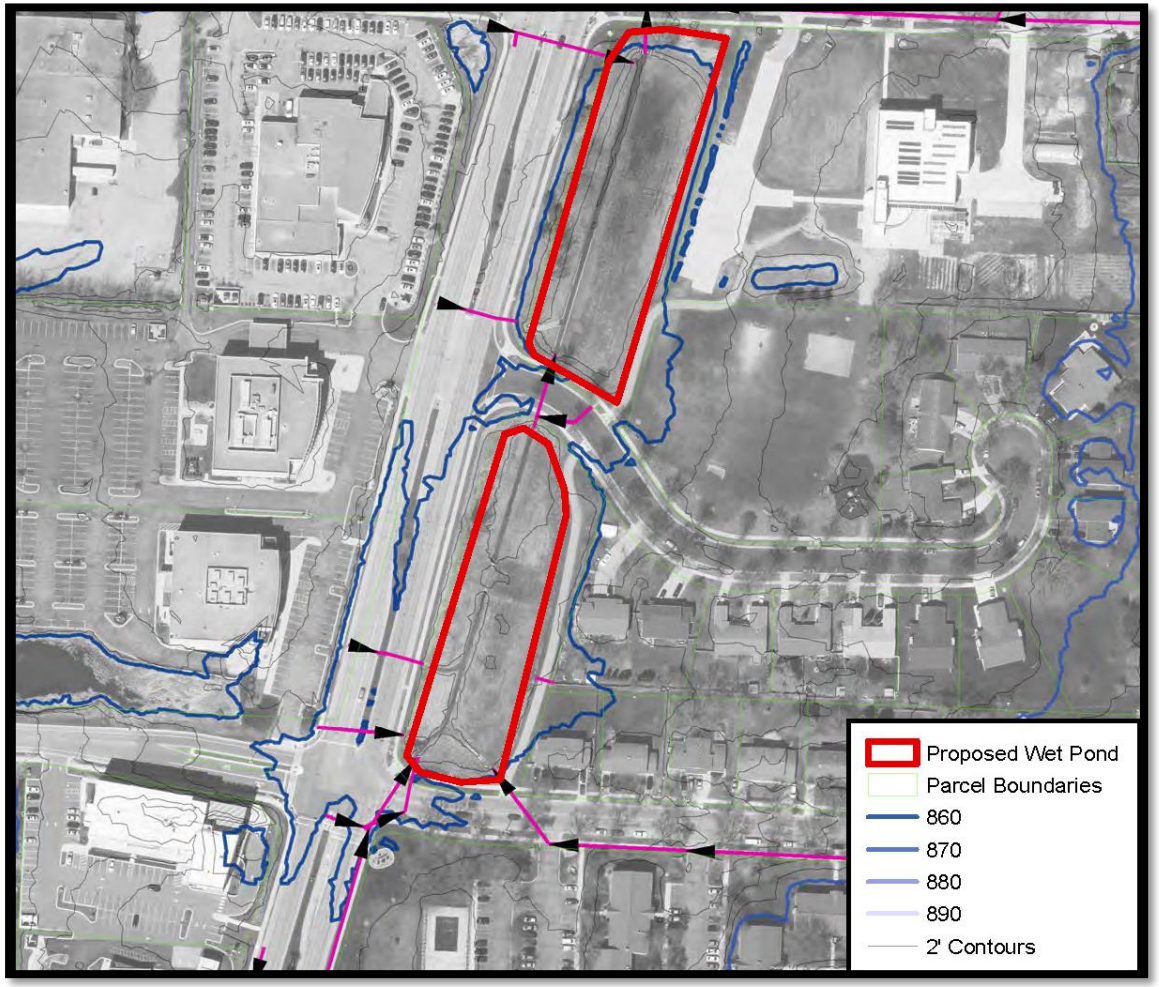
Why is Stormwater Quality an Issue in Cities?

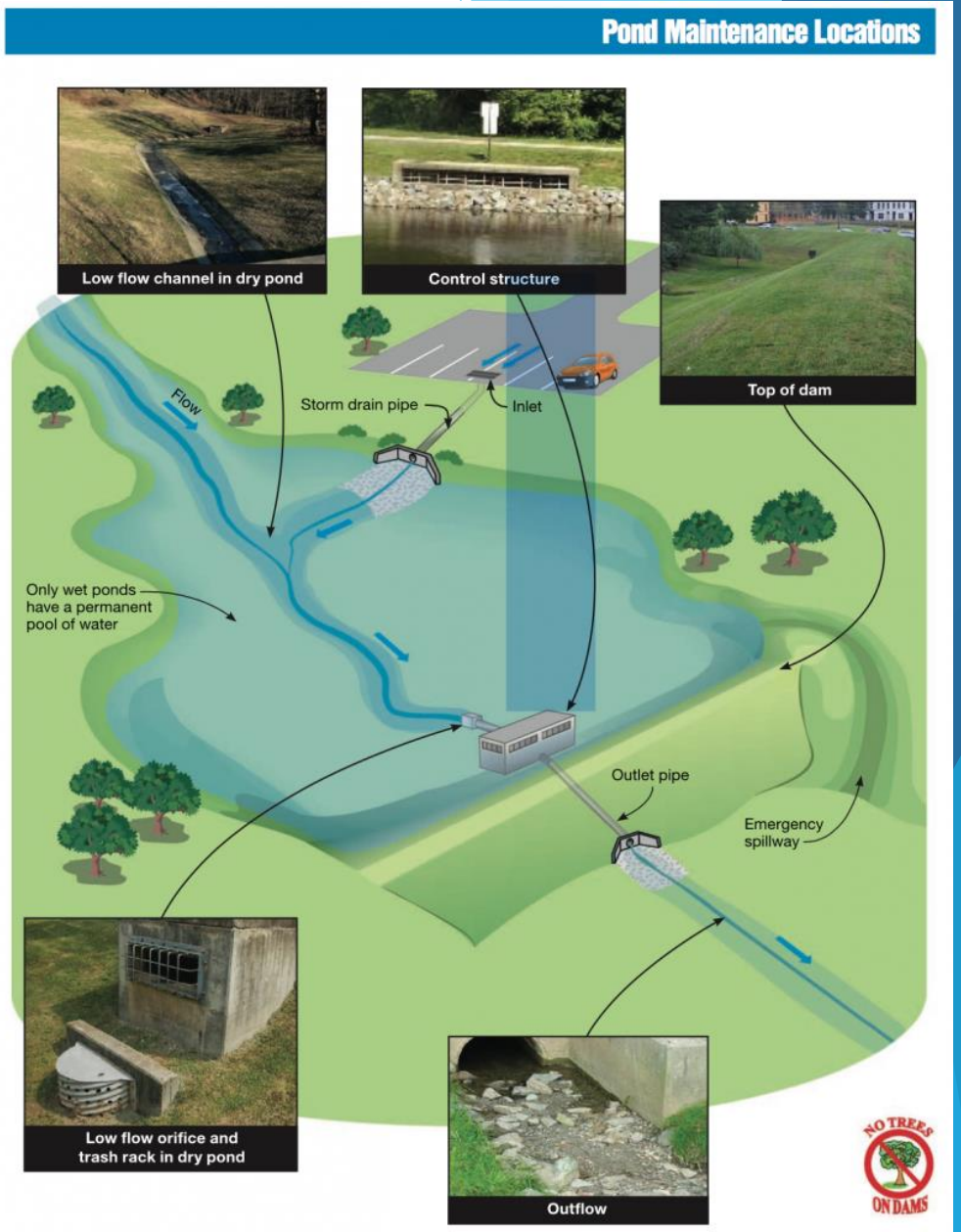


Developed Landscape

- Roads and storm sewers are really efficient at moving water and nutrients
- No place for water to soak into
- Dissolved phosphorus passes through most treatment
- Controlling the source is the key

How Ponds Work





How Ponds Work-Dry Pond

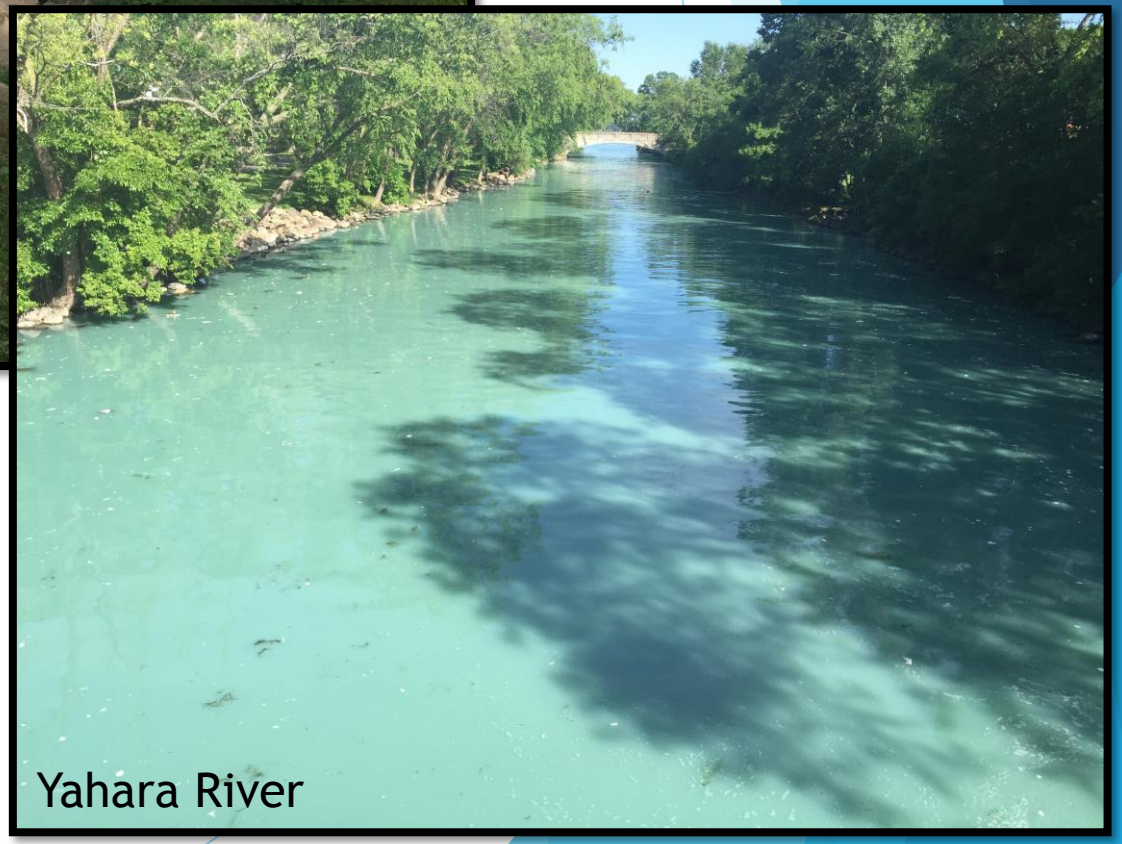
Holds stormwater temporarily when it rains; fills and empties like a bathtub

How Ponds Work-Wet Pond

Wet ponds permanently hold stormwater. When it rains, the ponds retain additional stormwater, and the pond water rises. The ponds slowly drain down to their permanent level after it rains.

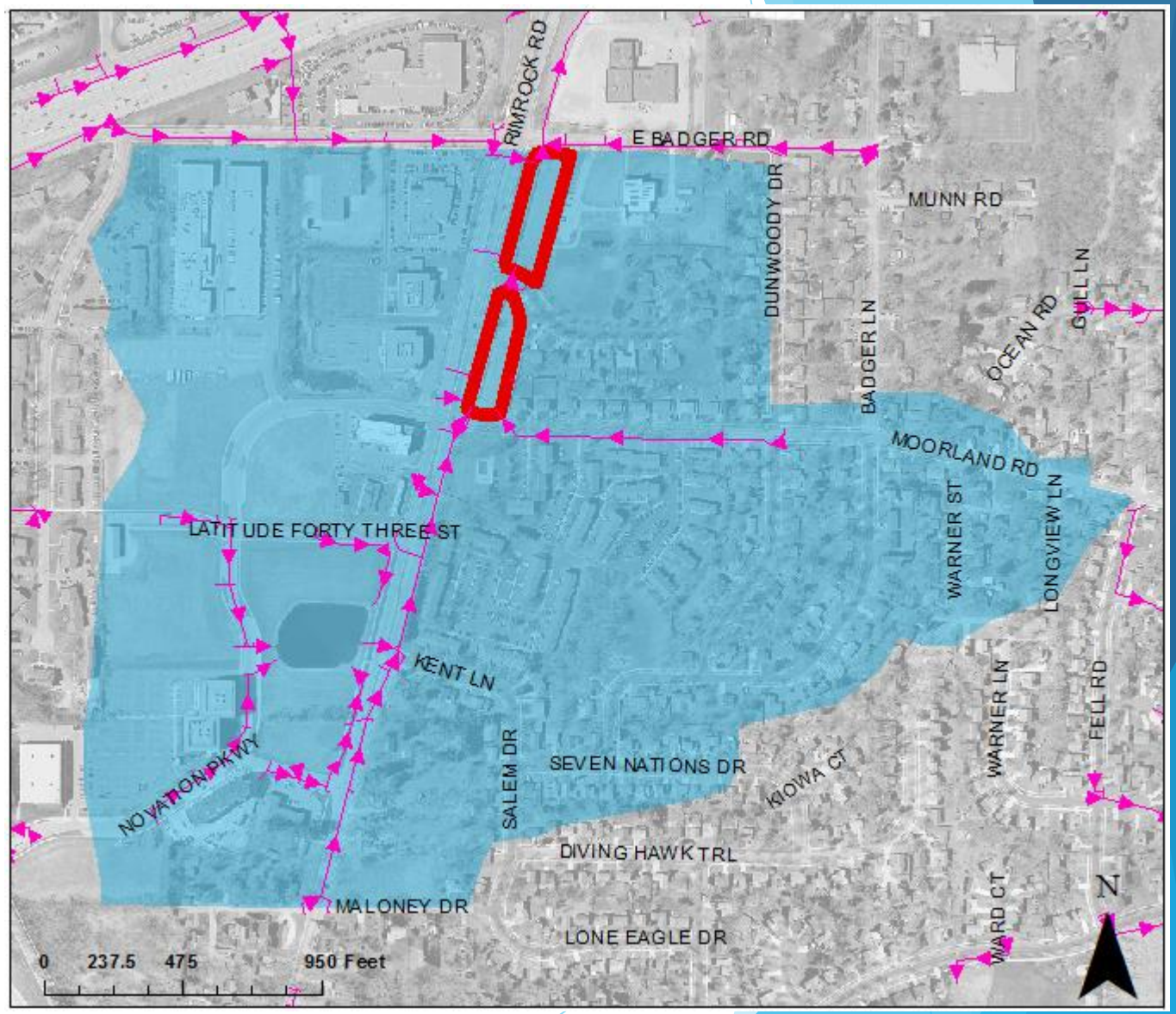
Poor Water Quality Impacts

Madison.com



Yahara River

Rimrock Road Ponds- Watershed



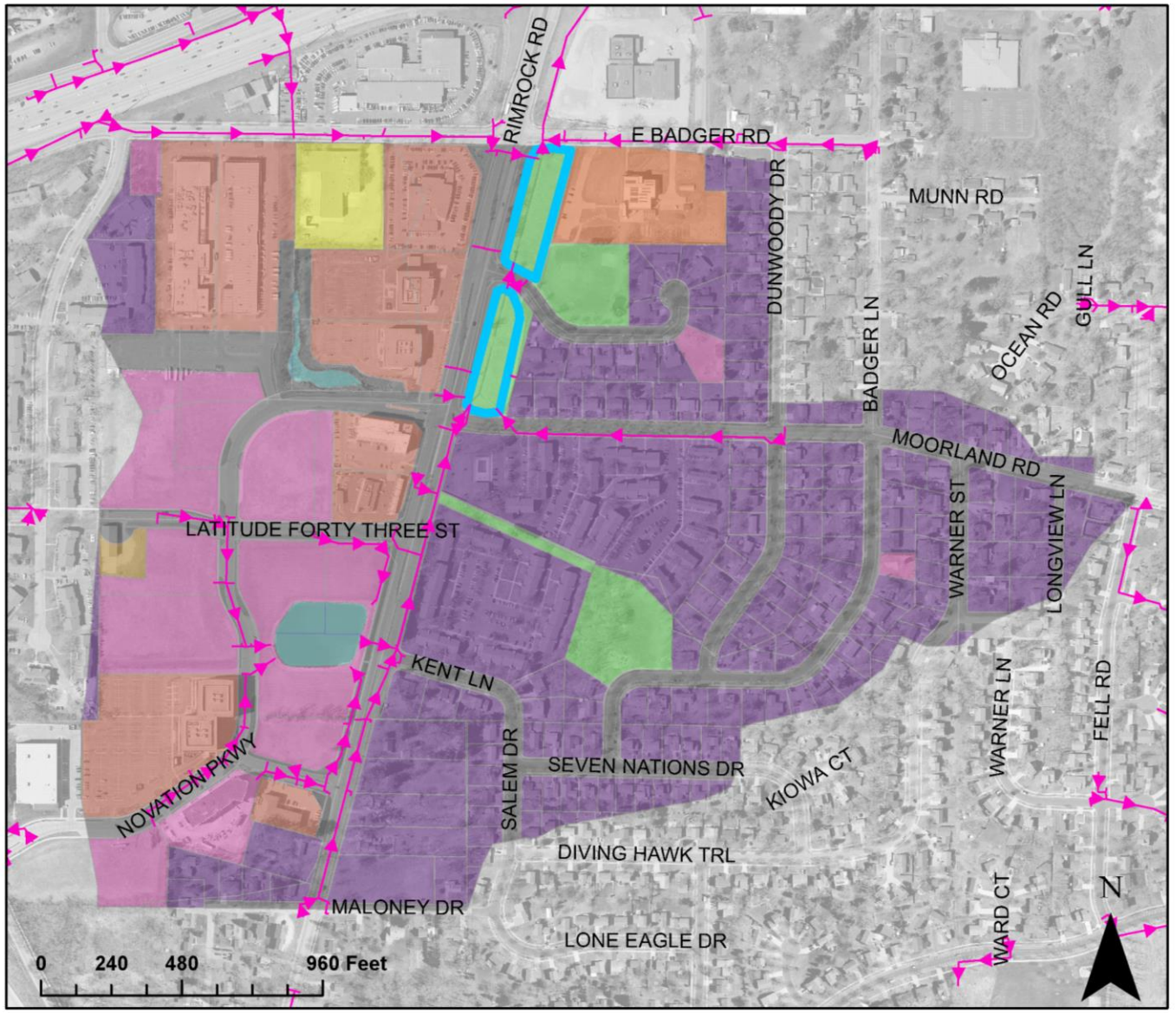
Watershed Draining to Rimrock Road Ponds

Water Quality at Rimrock Ponds-Pollutant Loading in the Watershed

Proposed Wet Pond

GENERALIZED_LANDUSE

- Commercial
- Industrial
- Institutional/Governmental
- Recreation
- Residential
- Transportation, Communications and Utilities
- Vacant Subdivided Land
- Water
- Wholesale and Retail Trade



Water Quality at Rimrock Ponds-Commercial, Car Dealership

Proposed Wet Pond

GENERALIZED_LANDUSE

- Commercial
- Industrial
- Institutional/Governmental
- Recreation
- Residential
- Transportation, Communications and Utilities
- Vacant Subdivided Land
- Water
- Wholesale and Retail Trade

Water Quality at Rimrock Ponds-Commercial, Gas Station

- Proposed Wet Pond

GENERALIZED_LANDUSE

- Commercial
- Industrial
- Institutional/Governmental
- Recreation
- Residential
- Transportation, Communications and Utilities
- Vacant Subdivided Land
- Water
- Wholesale and Retail Trade

Water Quality at Rimrock – Parks & Recreation, Badger Rock Park

Proposed Wet Pond

GENERALIZED_LANDUSE

- Commercial
- Industrial
- Institutional/Governmental
- Recreation
- Residential
- Transportation, Communications and Utilities
- Vacant Subdivided Land
- Water
- Wholesale and Retail Trade

Water Quality at Rimrock - Residential

Proposed Wet Pond

GENERALIZED_LANDUSE

- Commercial
- Industrial
- Institutional/Governmental
- Recreation
- Residential
- Transportation, Communications and Utilities
- Vacant Subdivided Land
- Water
- Wholesale and Retail Trade

Water Quality at Rimrock - Transportation

Proposed Wet Pond

GENERALIZED_LANDUSE

- Commercial
- Industrial
- Institutional/Governmental
- Recreation
- Residential
- Transportation, Communications and Utilities
- Vacant Subdivided Land
- Water
- Wholesale and Retail Trade

Water Quality at Rimrock Ponds-Badger Rock School

GENERALIZED_LANDUSE

- Commercial
- Industrial
- Institutional/Governmental
- Recreation
- Residential
- Transportation, Communications and Utilities
- Vacant Subdivided Land
- Water
- Wholesale and Retail Trade

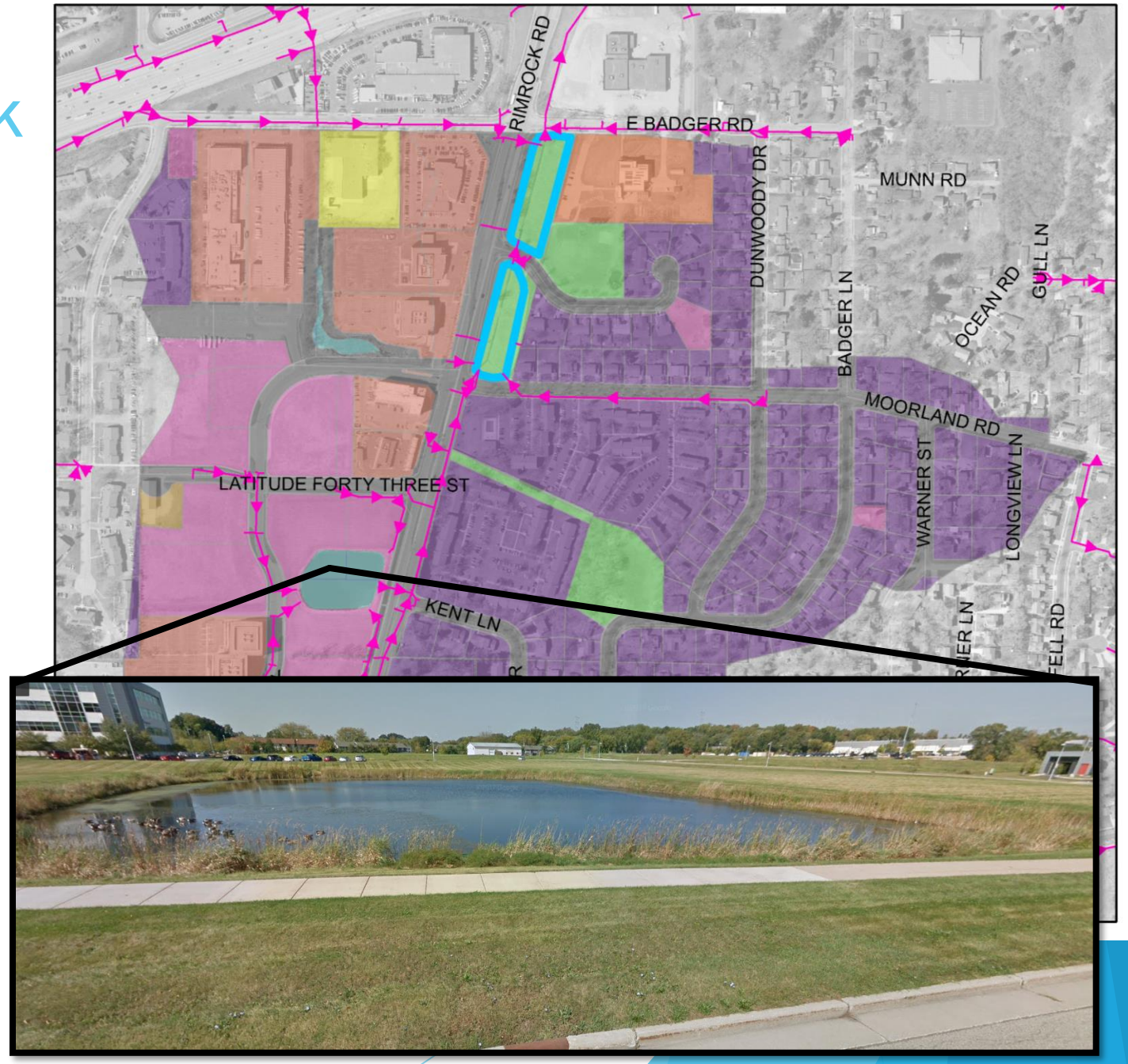
- Capture/use rainwater on roof, using underground storage tanks that store 45,000 gallons.
- Prairie grasses→infiltration, rain gardens

Water Quality at Rimrock Ponds-Pond for Town of Madison

Proposed Wet Pond

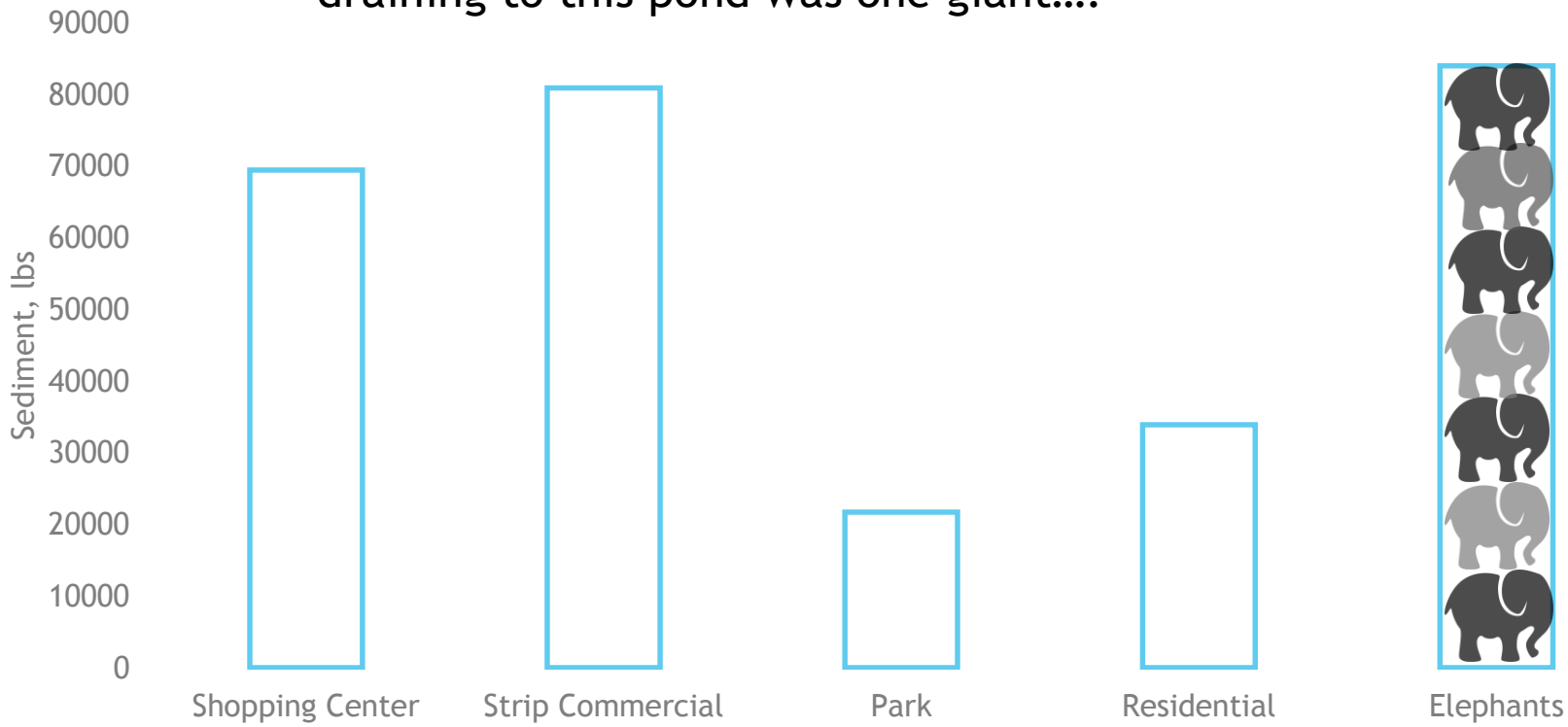
GENERALIZED_LANDUSE

- Commercial
- Industrial
- Institutional/Governmental
- Recreation
- Residential
- Transportation, Communications and Utilities
- Vacant Subdivided Land
- Water
- Wholesale and Retail Trade



Total Sediment (Total Suspended Solids) from Varying Land Uses

Imagine the entire area (142 acres) draining to this pond was one giant….

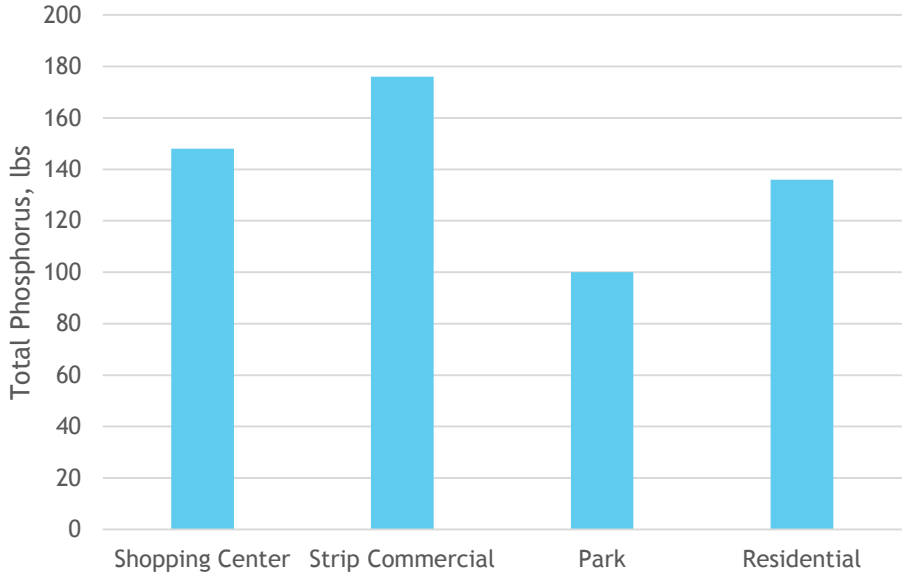


Total Pounds of Sediment Generated by 142 acres of Each Land Use

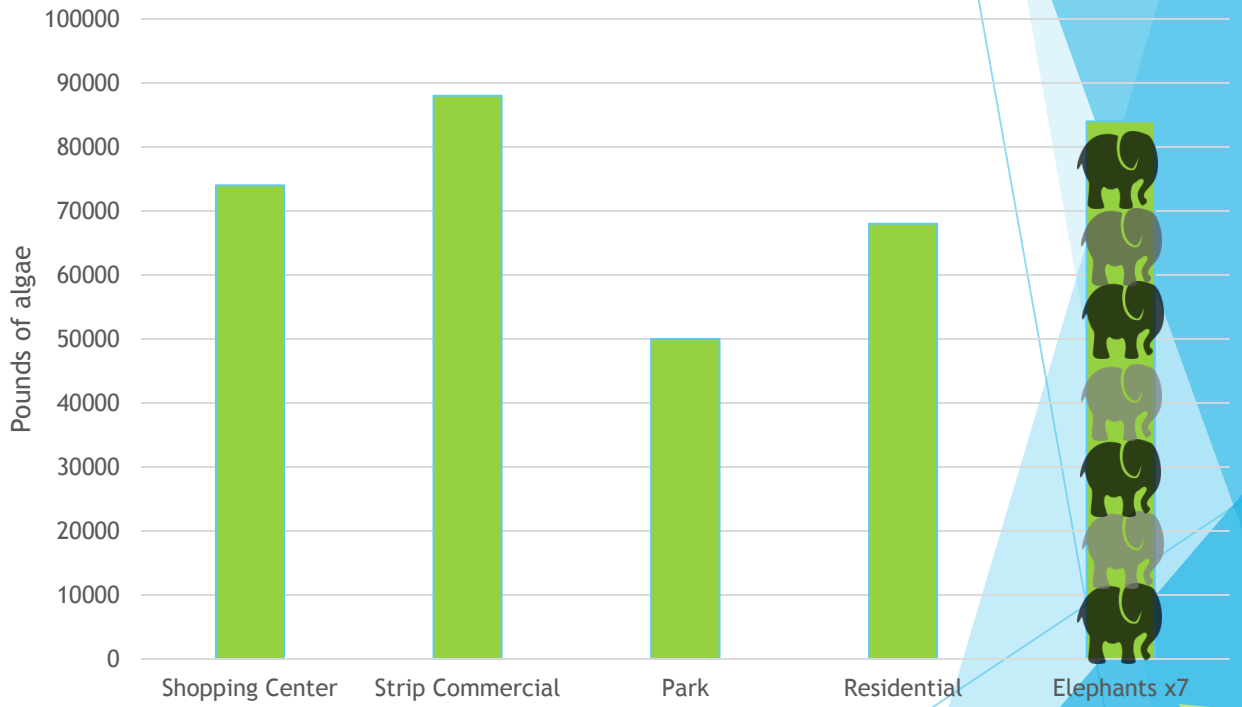
8400 lb of sediment weighs the same as 7 elephants!

Phosphorus Load from Varying Land Uses

Imagine the entire area (142 acres) draining to this pond was one giant….



Pounds of Phosphorus Generated from 142 acres of Each Landuse

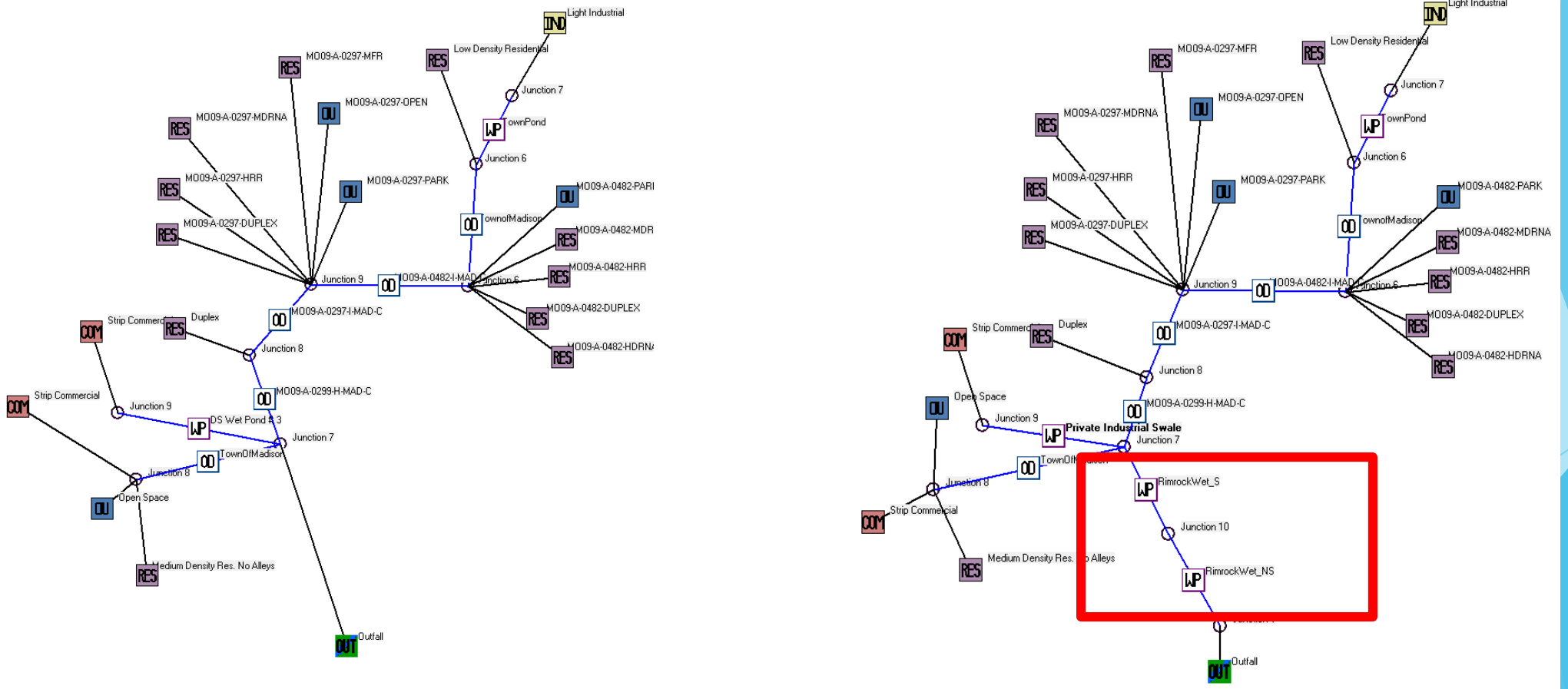


Pounds of Algae Generated from 142 Acres of Each Landuse

8400 lb of algea weighs the same as 7 elephants!

1 lb Phosphorus=500 lb algae

Modeling Water Quality Impact in WinSLAMM

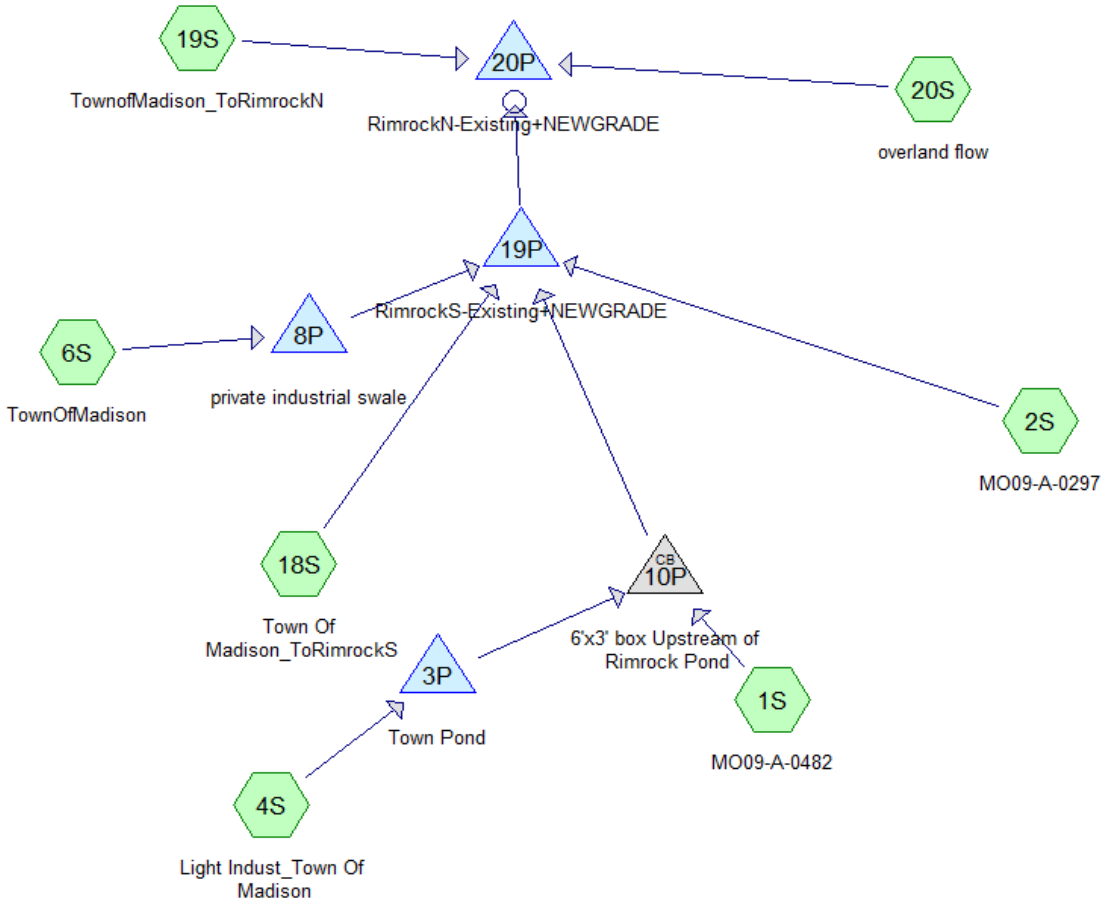


Particulate Solids: ([lb Before Ponds]-[lb After Ponds])= 12,771.8 lb annually

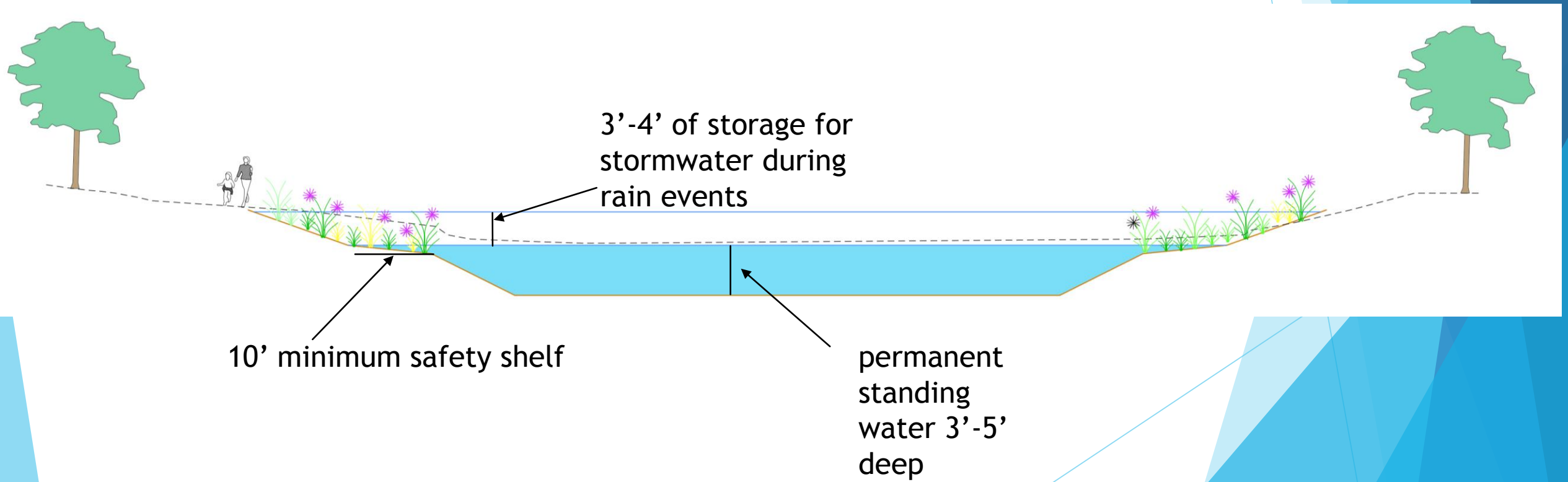
Total Phosphorus: ([lb Before Ponds]-[lb After Ponds])= 28.96 lb P annually = 14,480 lb algae annually

Hydrology=Water QUANTITY

- Need to maintain existing “peak flows”
- Convey 1% storm
  - 6.66” in 24-hours



Typical Wet Pond Design



What's next?

- We Know: Currently an opportunity to improve water quality
- We Don't Know: Community need and input. Additional soil boring data.
  - Public Input Meeting
  - Refine design based on community input
  - Build in late summer-late fall 2019

Questions?

- Contact info:
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  - Phone: (608) 266-9721

- http://www.cityofmadison.com/engineering/projects/rimrock-road-pond-retrofit-for-improved-water-quality