Yahara Watershed Improvement Network (WINS)



Phosphorus is an Essential Element For Plant & Animal Growth

...but Excess Phosphorus

Can be an Environmental Concern





Rock River Basin TMDL – Yahara River Watershed

96,000 lb/yr

required reduction

- ✓ Stream Reach Specific
- ✓ Non-point sources
- ✓ Stormwater sources (municipal)
- ✓ Other point sources





Phosphorus Reductions Are Necessary

Average Phosphorus Concentrations in Wastewater at Nine Springs Plant





Point Sources

Nonpoint Sources



Phosphorus Reductions From All Sources

Zero Impact

Downstream

Yahara WINS

Public \$\$ Only Some Benefit





Watershed Opportunity

27% Urban 47% Cropland 19% Natural Vegetation

> Yahara WINS



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Regulatory Compliance Strategy Yahara Watershed Phosphorus and Sediment

Watershed based approach

All sources work together Fund affordable mix of Phosphorus reduction practices Allows for creativity and flexibility

Lower \$\$ Regulatory Compliance

Adaptive Management

rahar.

yaharawins.org

Net Environmental Benefit

Cost & Affordability

Community Acceptance

Technical Feasibility

Administration

Regulatory







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9 out of the 10 highest annual precipitation totals have occurred in the last ~20 years



Yahara

WINS





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Timing











Phosphorus Reduction Success

Guided By Adaptive Management Plan

Tracked Through Annual Reporting

Verification Through Modeling and Monitoring

Growing Farmer Participation



Phosphorus Reduction Success





Water Quality Monitoring

6 USGS + MMSD sampling sites







Phosphorus Reduction Success

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Municipal Biosolids Land Application Three Year Application Rotation Soil Test Threshold Phosphorus Availability Data

Low Disturbance Injection Over ½ pound per acre reduction in Phosphorus loss

Alternative Biosolids Products





Composting Evaluation Nutrient Availability Soil Health Impacts

Side by Side Comparison of Mixes Dairy Manure Dairy Manure Compost Biosolids Cake Biosolids Compost

















Thank you

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