



Ox Creek TMDL

Work Plan Summary

Public Meeting
November 4, 2009
Benton Charter Township Hall



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Ox Creek TMDL Work Plan

Discussion Overview



USEPA Storm Water Pilots



Ox Creek



Salt Creek, Indiana



Minnehaha Creek, Minnesota



Work Plan Summary



Next Steps



TMDL Development

Problem Solving Framework



Practical approach using key questions ...



WHY the concern



WHAT reductions are needed



WHERE are the sources



WHO needs to be involved



WHEN will actions occur



Ox Creek



Ox Creek TMDL Work Plan

Phased Approach



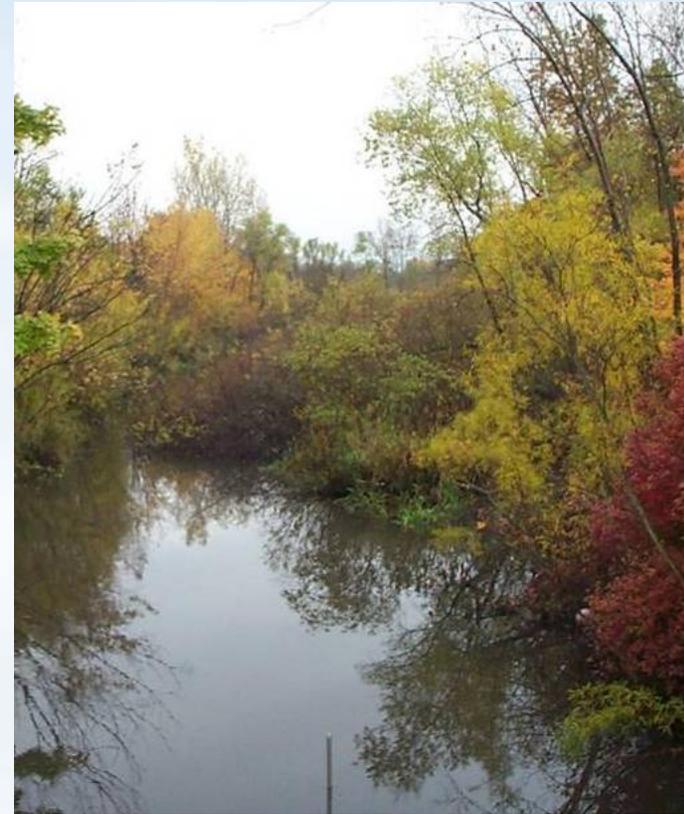
Phase 1

- Watershed Characterization***
- Source Assessment***
- Linkage Analysis -- Initiate***



Phase 2

- Linkage Analysis -- Complete***
- TMDL Report***
- Implementation Strategy***



Ox Creek TMDL Work Plan

Phase 1

★ Watershed Characterization

✓ *Background Information*

✓ *Problem Statement*

✓ *Water Quality Indicators
& Targets*

✓ *Data Summary*



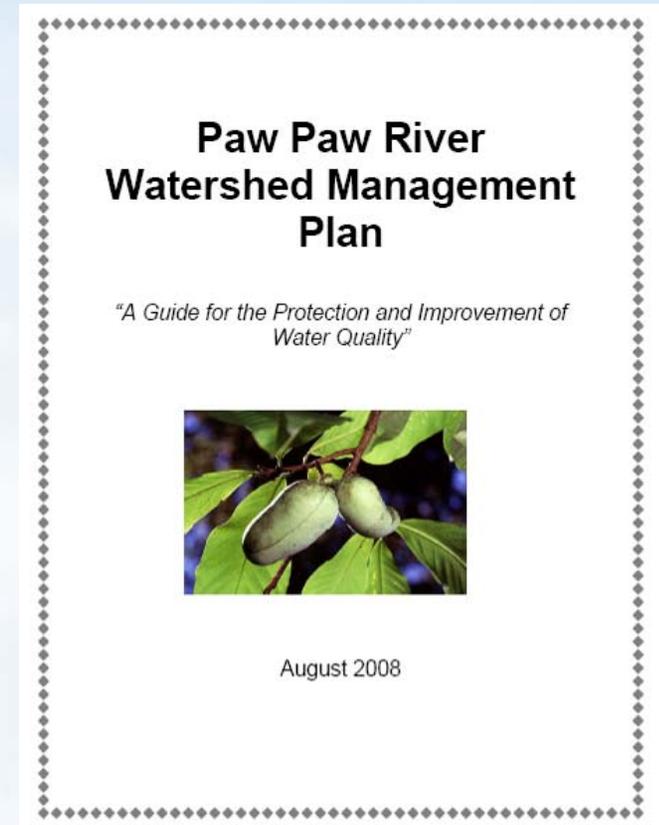
Ox Creek TMDL Work Plan

Watershed Characterization



Background Information

- ✓ ***Setting***
- ✓ ***Government Units***
- ✓ ***Demographics***
- ✓ ***Land Use / Land Cover***
- ✓ ***Climate / Hydrology***
- ✓ ***Geology / Soils / Topography***



Ox Creek TMDL Work Plan

Watershed Characterization



Problem Statement

- ✓ **Not meeting Other Indigenous Aquatic Life & Wildlife designated use**
- ✓ **Determined by poor macroinvertebrate community**
- ✓ **Supported by exceedances of:**
 - **water quality standards**
 - **sediment quality guidelines**



Ox Creek TMDL Work Plan

Watershed Characterization

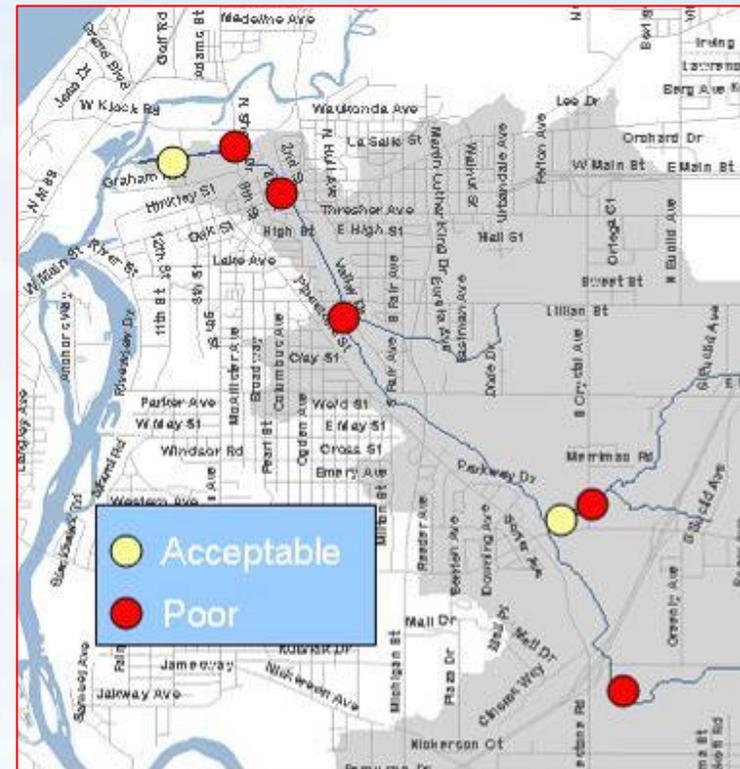


Water Quality Indicators & Targets

✓ **Macroinvertebrate scores**

✓ **Water quality standards**

Parameter	Chronic WQS (µg/L)	Acute WQS (µg/L)
Benzo(a)anthracene	2.6	46
Chrysene	1.5	46
Fluoranthene	1.6	28
Phenanthrene	1.4	9.4
Pyrene	2.5	45



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Watershed Characterization



Data Summary

✓ **Biological Surveys** (1969, 1976, 1991, 2001, 2006)

✓ **Sediment** (2001 & 2006)

✓ **TSS Study** (2007-08)
- Flow & Water Level

✓ **Caged Fish**

✓ **Brownfield studies**



Ox Creek TMDL Work Plan

Phase 1



Source Assessment



Source Data Review

- *NPDES Facilities*
- *Remediation Sites*
- *Leaking Underground Storage Tanks*
- *Land Use / Impervious Cover*



Storm Water Load Estimates



Ox Creek TMDL Work Plan

Phase 1



Linkage Analysis

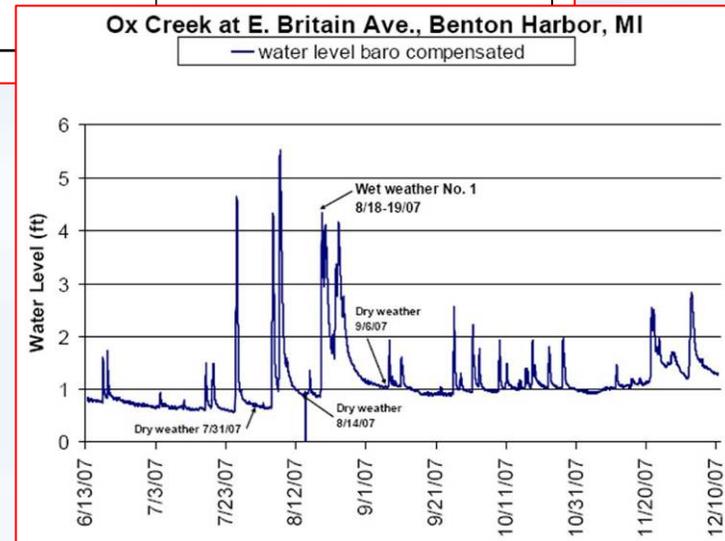
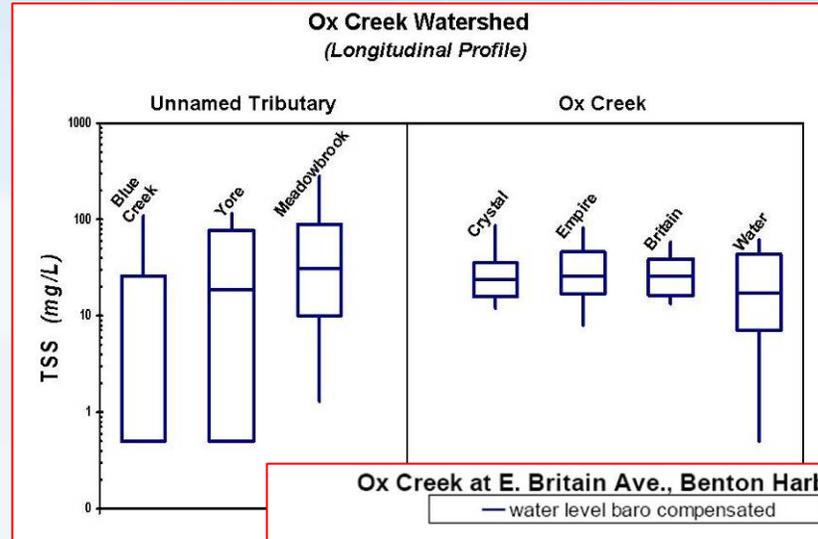


Connect the Pieces

- ***Water Quality***
- ***Hydrology***
- ***Source Loads***



Examine Relationships



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Phase 2



Linkage Analysis

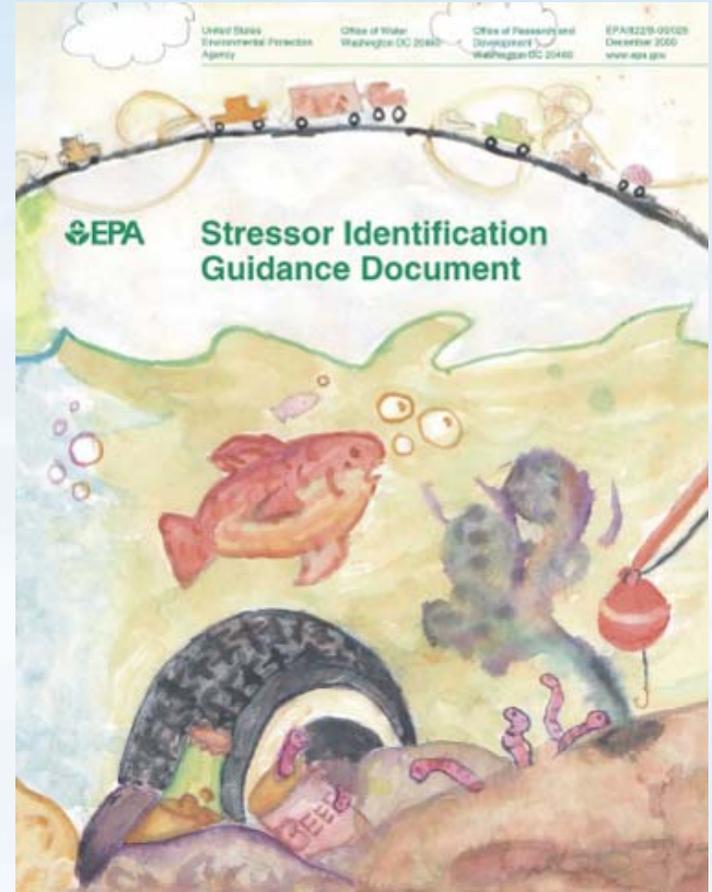


Stressor Identification



Examine Role of:

- ***Habitat***
- ***Sediment***
- ***Toxic Pollutants***
- ***Storm Water Hydrology***



Ox Creek TMDL Work Plan

Phase 2



TMDL Report -- Required Elements



- ✓ Applicable WQ Standards
- ✓ Loading Capacity
- ✓ Source Assessment
- ✓ Allocations
- ✓ Seasonal Variation
- ✓ Margin of Safety

$$\text{TMDL} = \text{WLA}_{\text{Point Sources}} + \text{WLA}_{\text{MS4}} + \text{LA} + \text{MOS}$$

TMDL Development

Problem Solving Framework



Practical approach using key questions ...



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Ox Creek TMDL Work Plan

Phase 2



Implementation Strategies

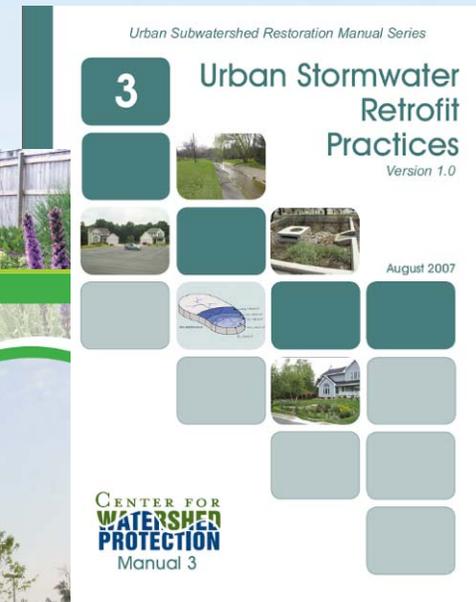
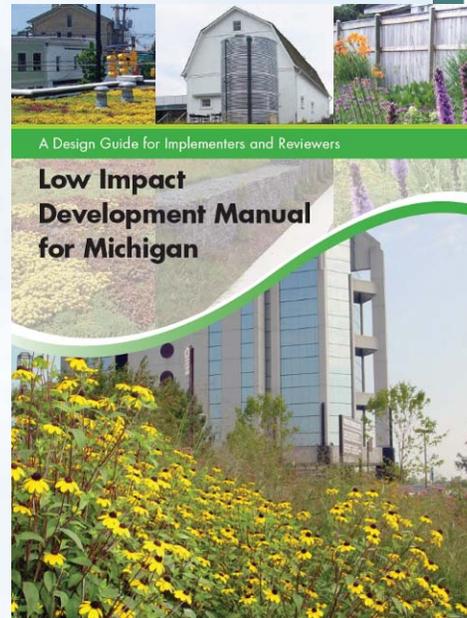


Storm Water Management



Program Coordination

- ***Local activities***
- ***State permits***
- ***Remedial actions***



Ox Creek TMDL Work Plan

Goal of Storm Water Pilots



Driving Principles

- ✓ ***Technically-based (logic path)***
- ✓ ***Meaningful (easily understood)***
- ✓ ***Value-added (connect to implementation efforts designed to solve problem)***



Ox Creek TMDL Work Plan

Next Steps



Questions



Feedback



**Additional
Information**



Ox Creek TMDL Work Plan

Next Steps



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