Wolverton Creek Sediment Reduction
Clean Water Fund Targeted Watershed Program
Wolverton Creek Sediment Reduction
Wolverton Creek Sediment Reduction
Project Partners

- Buffalo-Red River Watershed District
- Wilkin SWCD
- Clay SWCD
- NRCS
- Landowners
The Project

- 3 Pronged Attack on Sediment
  - Install Sediment BMPS along Wolverton Creek
  - Expand Buffers on Wolverton Creek
    - 200-750+ feet wide
  - Restore Wolverton Creek to a stable natural stream
The Project

- Multi-Phase
  - Outlet Stabilization (complete)
  - Buffering and Side Inlets on Legal Drainage Systems (complete)
  - Wolverton Corridor
    - 3 Phased Reaches (A, B, and C)

Estimated 6,500 Ton per year Sediment Reduction
Past Efforts

- 2007 Clean Water Legacy Project – Clay SWCD, BRRWD
- Side Inlets
Past Efforts

- 2007 Clean Water Legacy Project – Clay SWCD, BRRWD
  - Surveyed Channel
  - Stabilized outlet with:
    - Side Inlets
    - Buffers
    - Rock Riffles and Stream Barbs
Past Efforts

Part 1: 2007 Clean Water Legacy Project – Clay SWCD, BRRWD
Past Efforts

- County Ditch Systems 2012-2015 – BRRWD
- Bufferstrips and Side Inlet pipes
Prioritize

- Identified as Impaired for Turbidity on the 2010 303d list
  - Impairment deferred by PCA in 2012 due to channelization/modified habitat
  - At that time, an estimated 49% Sediment reduction required
- Proposed Project Identified in the Upper Red TMDL
  - Restore Stable stream for Water Quality Improvement
  - Agricultural BMPs should be used
- Project features identified in the 2010 Revised Watershed Management Plan
- HUC-12 Priority Watershed for the BRRWD at this time.
  - Concept Plan finalized in 2013...just need funding
  - DNR Permit for work approved, WCA Approved
Target

- Homogenous Watershed – Similar Landuse throughout
- Watershed is flat, generally about 2 feet per mile
- Greatest Slope = Greatest Erosion potential along County Ditches and Wolverton Creek
  - Install buffers and side inlets on County Ditch Systems
    - Completed in 2015
  - Install Grade Stabilization structures on County Ditches 26, 22, and 5A
    - Completed in 2015
- Use Technology to TARGET IMPLEMENTATION
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- Landuse
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- Buffer Siting Flood Plain Mapping
- 2, 5, 10-year
Wolverton Creek Sediment Reduction

- Stream Power Index (SPI)
- Verified with Field survey + Aerial Photo Review
Wolverton Creek Sediment Reduction

- Side Inlet locations
## Wolverton Creek Sediment Reduction

### Environmental Quality Incentive Maps

![Map of Wolverton Creek Sediment Reduction](image)

<table>
<thead>
<tr>
<th>Parcel ID</th>
<th>Exclusion (CY)</th>
<th>Practice Standard 327</th>
<th>Practice Standard 342</th>
<th>Practice Standard 430</th>
<th>Practice Standard 484</th>
<th>Practice Standard 500</th>
<th>Practice Standard 582</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Conservation Cover</td>
<td>Critical Area Planting</td>
<td>Grade Stabilization Structure</td>
<td>Matching</td>
<td>Obstruction Removal</td>
<td>Open Channel</td>
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<tr>
<td></td>
<td></td>
<td>AC</td>
<td>$562.25/AC</td>
<td>AC</td>
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<td>280140600</td>
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<td>1.02</td>
<td>$838.32</td>
<td>2.95</td>
<td>$2,386.12</td>
<td>4</td>
<td>$19,162.00</td>
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</table>

**NOTE:** Payment rates are based on "General EQIP Traditional" rate.
Measure (Overall Project)

- Based on 2008 SWAT modeling average annual loading was around 14,000 Tons/year of sediment.
- Efforts to date have reduced the sediment loading to a little more than 10,000 Tons/year.
- Proposed Project will reduce sediment loading by:
  - Channel Restoration = 4,400 T/year in sediment Reduction
    - Based on USDA ARS work by Klimetz and Simon
  - Buffer Expansion = 500 T/year
    - Based on RUSLE
  - Side Inlet BMPs / Grade Stabilization Structures = 1,600 T/year
    - BWSR Calculator
- Total project Sediment Reduction = 6,500 T/year (1/3 in Reach B)

More than 50% Reduction
Project Evaluation

- Annual Project Inspections
- Water Quality Monitoring Sites
  - The BRRWD has a RAL (S005-322)
  - PCA will be doing biological and other intensive monitoring around 2018
- Monitoring includes sediment
Landowners are Ready to Implement

- BRRWD has met at least annually with landowners for the last several years
- BRRWD will meet again this spring to get EQIP sign ups.
- Cultural/Social Barriers are low as BRRWD along with SWCDs have used annual meetings to educate landowners about project.
  - Project has been designed with significant landowner input
- Installation of side inlets, grade stabilization, and bufferstrips on County Ditch systems has been supported by landowners anxious to get work done along the Creek
  - This project is really a continuation of a multiphase project
- The BRRWD and their partner SWCDs work with project area folks regularly.
Other Benefits

- 26.2 miles of restored stable channel
  - 8.8 miles in Reach B
- 740 acres of permanently protected buffer
  - 287 acres in Reach B
- Reduced Peak Runoff due to metering through Side Inlet culverts
- Habitat Connectivity
- Pollinator Habitat
- Other Water Quality Benefits

Estimated 6,500 Tons per year Sediment Reduction
Other Benefits

- Source Water
## Costs – Phase 1 (Reach B)

<table>
<thead>
<tr>
<th>Outcome No. 1</th>
<th>Administration</th>
<th>Project Development</th>
<th>Engineering</th>
<th>Construction</th>
<th>Totals</th>
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<tbody>
<tr>
<td>57 Grade Stabilization Structures</td>
<td>$10,000</td>
<td>$20,000</td>
<td>$50,000</td>
<td>$270,000</td>
<td>$350,000</td>
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<tr>
<td>Outcome No. 2</td>
<td>$10,000</td>
<td>$30,000</td>
<td>$170,000</td>
<td>$2,690,000</td>
<td>$2,900,000</td>
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<tr>
<td>8.8 Miles of Stable Natural Channel</td>
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<td></td>
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<tr>
<td>Outcome No. 3</td>
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<td>$10,000</td>
<td>$410,000</td>
<td>$450,000</td>
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<tr>
<td>287 AcresExpanded / Permanent Buffers</td>
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<tr>
<td><strong>Totals</strong></td>
<td><strong>$30,000</strong></td>
<td><strong>$70,000</strong></td>
<td><strong>$230,000</strong></td>
<td><strong>$3,370,000</strong></td>
<td><strong>$3,700,000</strong></td>
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- **Total Project Costs:** $3,700,000
- **Requested Grant Costs:** $2,800,000
- **Estimated Local Match:** $900,000
  - Required Local Match (25% of Grant Funds): $700,000
  - Expected to come from a variety of non-state / local sources
- **Note:** $1.1 Million in Easement costs not included in above estimate
## Funding – Phase 1 (Reach B)

<table>
<thead>
<tr>
<th>Funding Source</th>
<th>Amount</th>
<th>Use of Funds</th>
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<tbody>
<tr>
<td>Enbridge Ecofootprint Grant</td>
<td>$100,000 (match)</td>
<td>Easements/Construction</td>
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<tr>
<td>Conservation Programs (EQIP)</td>
<td>$500,000 (match)</td>
<td>Construction</td>
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<tr>
<td>Water Management District / Landowner Assessment</td>
<td>$300,000 (match)</td>
<td>Construction, Project Development, and Tech. &amp; Eng.</td>
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<tr>
<td>Conservation Easement Programs (ie. RIM, CREP, etc.)</td>
<td>$1,100,000</td>
<td>Easements</td>
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<tr>
<td>Target Watershed Grant</td>
<td>$2,800,000</td>
<td>Construction, Project Development, Tech. &amp; Eng., Admin.</td>
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<td><strong>Total Phase 1 (Reach B)</strong></td>
<td><strong>$4,800,000</strong></td>
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- Long-Term Project maintenance will be financed through local assessment (Water Management District)
Timeline – Phase 1 (Reach B)

- 0 – 3 months
  - Set up Water Management District
  - Finalize Easement Acquisition Options and begin easement acquisitions
- 3 – 6 Months
  - Obtain Easements for Phase 1
- 6 – 12 Months
  - Bid Project and Begin Project Construction
- 12-24 Months
  - Complete Construction (Target for Phase 1 – 6/30/2018)
- 24+ Months
  - Project Maintenance
Questions?