Silver Creek
The Team

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Outline

- Project Recap
- Basin Evaluations
- Pollutant Quantification
- Surveying Results
- Deliverables
- Team Budget
- Product Price
Project Recap

- Evaluating 3 of 4 detention basins along the Silver Creek Drain.
- Silver Creek drains to Plaster Creek, and eventually the Grand River.
- Goal: to increase detention time, improve water quality, and daylight Silver Creek where possible.
Project Recap

Basin Evaluations

Pollutant Quantification

Survey Results

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Product Price
Basin Evaluation: Calvin

- Challenges:
  
  1. Water Table Elevation (depth)
  2. Size Constraints (plan view area)
Basin Evaluation: Southfield

- Goal: Daylight Silver Creek through the basin
- Challenges: inlet location, clay liner, and basin elevation
Basin Evaluation: Otsego

Challenges:
- Single inlet/outlet
- Clay liner
- Water table

Possible Design:
- Install weir structure around inlet/outlet to detain a certain volume of water
- Replace soil with a filtering media and utilize underdrains to outlet water
## Pollutant Quantification

<table>
<thead>
<tr>
<th>EMCP in pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSS</td>
</tr>
</tbody>
</table>

### Kreiser (base)
- TSS: 160124
- BOD: 24029
- TP: 405
- DP: 140
- TKN: 2015
- NO2+3: 3391
- Pb: 68749
- Cu: 55633
- Zn: 374950
- Cd: 5284

### % Removed by Open Channel
- Kreiser (treated): 81
- Kreiser (leftover to Calvin): 205

### Calvin (base)
- TSS: 267211
- BOD: 39103
- TP: 661
- DP: 223
- TKN: 3296
- NO2+3: 5665
- Pb: 113091
- Cu: 91611
- Zn: 633390
- Cd: 8780

### Calvin (plus Kreiser leftover)
- TSS: 297635
- BOD: 969
- TP: 359
- DP: 4182
- TKN: 7734
- NO2+3: 111083
- Pb: 742125

### % Removed by Open Channel
- Calvin (treated): 81
- Calvin (leftover to Southfield): 218

### Southfield (base)
- TSS: 258930
- BOD: 39140
- TP: 611
- DP: 207
- TKN: 3331
- NO2+3: 4739
- Pb: 115069
- Cu: 92849
- Zn: 802866
- Cd: 8454

### Southfield (plus Calvin leftover)
- TSS: 315480
- BOD: 1347
- TP: 555
- DP: 5172
- TKN: 9457
- NO2+3: 131728
- Pb: 1018082

### % Removed by Riparian Buffer
- Southfield (treated): 60
- Southfield (leftover to Otsego): 291504

### % Removed by Open Channel
- Otsego (treated): 81
- Otsego (leftover) (total amount untreated): 7630

### Otsego (base)
- TSS: 76418
- BOD: 11589
- TP: 191
- DP: 66
- TKN: 982
- NO2+3: 1540
- Pb: 33342
- Cu: 26814
- Zn: 196407
- Cd: 2508
## Pollutant Quantification

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<td><strong>EMCp in pounds</strong></td>
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<td><strong>TSS</strong></td>
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<tr>
<td>---------</td>
</tr>
<tr>
<td>Total Pollutants with no treatment</td>
</tr>
<tr>
<td>Kreiser % of contributing pollutants</td>
</tr>
<tr>
<td>Calvin % of contributing pollutants</td>
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<tr>
<td>Southfield % of contributing pollutants</td>
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<tr>
<td>Otsego % of contributing pollutants</td>
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Surveying Southfield

Project Recap

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Surveying Southfield

Survey Results

Project Recap  Basin Evaluations  Pollutant Quantification  Survey Results  Deliverables  Team Budget  Product Price
Deliverables

In May, our team expects to deliver:

1. An in-depth evaluation of all 3 of the basins, including the pros and cons of feasible design alternatives.
2. A complete hydrologic and hydraulic analysis of the contributing Silver Creek watershed using a computer model.
3. A detailed design plan and schematics of the Calvin and Southfield basins.
## Team Budget

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<tr>
<td>$0 : Amount Approved</td>
<td>$0 : Amount Spent</td>
<td>$0 : Amount Needed</td>
<td></td>
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</table>
Cost Estimate

Labor:
1. Field Inspection
   a. Field Survey, 40 hrs @ $110/hr. $4,400
   b. Office Coordination, 2 hrs @ $70/hr. $140
   Sub-Total $5,000
2. Engineering
   a. Engineer, 160 hrs @ $70/hr. $11,200
   b. Drafting, 80 hrs @ $50/hr. $4,000
   Sub-Total $15,200

Modify Detention Basin Bottom:
Construction for Calvin improvements $20,000-$35,000
Construction of Southfield channel $25,000-$35,000
Site Clearing $4,000-$8,000
Southfield Excavation (~1000 cu. yds) $100,000-$125,000
Sub-Total $139,000-$193,000

Structures:
New Inlet Construction (Southfield) $50,000-$80,000
New Outlet Construction (Calvin) $50,000-$80,000
Sub-Total $100,000-$160,000

Miscellaneous:
Soil Erosion and Sedimentation Control $2,000-$5,000
Plain Rip rap 100 Sq. Yd. $4,000-$6,000
Sub-Total $6,000-$11,000

Project Total $276,000-$395,000
Questions?