Wisconsin Wastewater Operator’s Association

Receiving Water Quality Credits – Phase 2

October 12, 2016
Recognition

City of Sparta

Monroe County Land
Conservation Department
Welcome to Sparta, Wisconsin

Sparta is the county seat of Monroe County, nestled in the beautiful rolling hills of western Wisconsin. Once known for the healing powers of the local artesian springs, Sparta is now most recognized as the junction of the Elroy-Sparta and La Crosse River bike trails. Sparta’s claim as the "Bicycling Capital of America" is based upon the first rail bed in Wisconsin to be converted to bike trails between Sparta and Elroy. Sparta is also recognized for our proximity to Fort McCoy, the largest Military base in Wisconsin. Hunting and fishing opportunities abound in the area as does award winning golf at River Run Sparta Golf Course. Sparta is home to many unique shops in our historic downtown district and world recognized manufacturers in our growing business parks. The quality of life in Sparta is second to none. Come for business, come for pleasure, stay for a lifetime.
Figure 1: City of Sparta Stream Location Map
Phase 1 - Planning

A. Collected Additional Data
   - La Crosse River
   - Contributing Upstream Creeks
   - Groundwater

B. WWTF
   - Phosphorus Data Review
   - Industrial Contributors
   - Operations Review

C. Non-Point Phosphorus
   - Monroe County LCD
   - Field Trips
   - Alternatives Discussed
La Crosse River & City Information

La Crosse River
- Phosphorus: 0.098 mg/l
- Flow (average): 102.5 MGD

City of Sparta
- Phosphorus: 0.7 mg/l
- Flow (average): 1.0 MGD

City Phosphorus Contribution – 3.6%

Note: City Water Supply Phosphorus – 0.27 mg/l
Required Phosphorus Reduction at WWTF

Sparta Phosphorus WQBEL – 0.075 mg/l

At Current Flow – 1,404 lb/yr
At Design Flow – 2,913 lb/yr

Required Phosphorus Non-Point Reduction at 2:1 Ratio

At Current Flow – 2,808 lb/yr
At Design Flow – 5,826 lb/yr
“It ain’t what you don’t know that gets you into trouble.

It’s what you know for sure that just ain’t so.”
Plan

Four Year Water Quality Trading Plan

- Complete Resource Upgrades Throughout the Community.
- Secure Non-City Funding Sources.
- Secure Non-Point Source Phosphorus Credits
- Reduce Future WWTF Capitol and Operational Costs for Phosphorus Upgrades.
Sparta WPDES Permit

12-1-12  Permit Effective Date

5-8-14  Received WDNR Approval of Phosphorus Facility Plan and Notice of Intent to Conduct Water Quality Trading

6-11-14  Received WDNR Approval of Water Quality Trading Plan to Complete:
- Stream Bank Stabilization
- Silt Trap Lake Dredging
- Wet Detention Pond Construction
- Grade Stabilization Structures
- Other Non-Point Source Upgrades
Phase 2

- Complete Resource Upgrades Throughout the Community.
- Secure Non-City Funding Sources.
- Complete Water Quality Trading Projects Located Outside the City.
<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>6-27-14</td>
<td>Stream Bank Stabilization along Farmers Valley Creek Completed</td>
</tr>
<tr>
<td>9-29-14</td>
<td>Phosphorus Trading Documentation Report Submitted to WDNR</td>
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# Sparta Water Quality Trading
## Completed - 2015

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
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<tbody>
<tr>
<td>1-30-15</td>
<td>Silt Trap Lake Dredging Completed</td>
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<tr>
<td>2-10-15</td>
<td>WDNR Approval of Phosphorus Credits for 2014 Work</td>
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<tr>
<td>9-30-15</td>
<td>Stream Bank Stabilization along La Crosse River Completed</td>
</tr>
<tr>
<td>Date</td>
<td>Description</td>
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<tr>
<td>2-12-16</td>
<td>Phosphorus Trading Documentation Report Submitted to WDNR</td>
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<td>8-1-16</td>
<td>Stream Bank Stabilization Along Farmers Valley Creek Completed</td>
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<tr>
<td>9-1-16</td>
<td>Stream Bank Stabilization Along La Crosse River Completed</td>
</tr>
<tr>
<td>9-23-16</td>
<td>Stream Bank Stabilization Along Beaver Creek Completed</td>
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<tr>
<td>10-3-16</td>
<td>Stream Bank Stabilization Along Bailey Creek Started</td>
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Figure 2: City of Sparta Stream Bank & Other Improvements Status

Legend:
- Completed Stream Bank Improvements
- Potential Stream Bank Improvements
- Wetland Area
- City of Sparta WWTP
- City of Sparta Corporate Limits
- Potential Wet Detention Pond Location
- Silo Trap Cleaned Every 2 Years
- Completed Stream Bank Improvements

This map is a digital representation of the City of Sparta's stream bank and other improvements status. The map highlights various locations and features, including completed and potential stream bank improvements, wetland areas, and specific locations within the city.
Example Stream Bank – Before Stabilization
Example Stream Bank – After Stabilization

Example Stream Bank – After Stabilization
Example Grade Stabilization Site – Before Upgrade

Example Grade Stabilization Site – After Upgrade
Example Grade Stabilization Site – After Upgrade

Example Grade Stabilization Site – After Upgrade
Sparta, WI
Farmers Valley Creek
Lunker Structure To Be Installed Along Upgrade
6-13-14
Sparta, WI
Farmers Valley Creek
Lunker, Flat Limestone Construction Practice
6-13-14

Sparta, WI
Farmers Valley Creek
Stabilized/Finished Section
(Looking Downstream, At Where Creek Enters
The La Crosse River)
6-13-14
Sparta, WI
Farmers Valley Creek
Stabilized/Finished Section
(Looking Upstream Lunker on Left Side of Stream Bank)
6-13-14

Sparta, WI
Farmers Valley Creek
Stabilized/Finished Section
(Looking Upstream at North Bank, Lunker Under Flat Limestone at Streambank)
6-13-14
Downstream Looking For East Avenue Bridge
Sparta, WI
La Crosse River
Stabilized/Finished Section
(Looking Upstream)
Start to 50' Location
September 17, 2015

At 50' Location - New Stone Water Fall
September 17, 2015
Sparta, WI
La Crosse River
Stabilized/Finished Section
(Looking Upstream)
At 300' Location
September 17, 2015
Sparta, WI
La Crosse River
Stabilized/Finished Section
(Looking Across River)
Tree Stabilizer
At 700' Location
September 17, 2015
Sparta, WI
La Crosse River - Golf Course
Construction On-Going
September 2, 2015

Sparta, WI
La Crosse River - Golf Course
Pre-Construction Condition
September 2, 2015
Sparta, WI
La Crosse River Sediment Removal
January 2015

Scraping Sediment

An employee of St. Joseph's Equipment removes sand and silt from a sediment trap on Perch Lake near the first green at River Run Golf Course last week. The sediment trap, located near where the La Crosse River empties into Perch Lake, is cleaned out every other year. Photo by Ted Radde.
Non-Point Source Reduction

- Expect up to 40% of Required P Reduction at Current Flow Rates for the Four Year Plan

- After Two Years – City has Secured 353 lb/yr Phosphorus Credits which is 25% of Required Phosphorus Reduction at Current Flow Rate

- City is Planning to Complete Additional Non-Point Source Reduction Work in 2016 and 2017

- Some of 2016 and 2017 Resource Upgrades are Planned to be Located Outside the City
City of Sparta

- $52/lb. P  **Capital Cost of Exist P Treatment System**
- $4/lb/P  **Operating Cost of Exist P Treatment System**
- $2,000/lb. P  **Projected Capital Cost for New P Treatment**
- $12/lb. P  **Projected Operation Cost for New P Treatment**
- $250/lb. P  **Average Capital Cost for Non-Point Source Phosphorus Projects**
- $2/lb. P  **Projected Non-Point Source Maintenance Costs**
Summary

- Water Quality Trading is Less Costly than Treatment

- 250 lb/yr Projected Phosphorus Credits for 2016 for City

- 600 lb/yr Phosphorus Credits Completed to Date for City

- Public Resource Upgrade Include:
  - Improve Water Quality
  - Improve Recreation
  - Improve Fishing
  - Educational Tool
  - Improve Access
My first computer