

## Wisconsin Department of Natural Resources SWIMS Project Summary

### General Project Information

**Project ID:** GBF1603\_PlumCreek  
**Name:** Sediment Budget and Sediment Source Apportionment Study for Plum Creek  
**Type:** Great Lakes Restoration Initiative  
**Subtype:** Toxics and Areas of Concern  
**Status:** ACTIVE  
**Start Date:** 06/01/2016  
**End Date:** 12/31/2018  
**Purpose:** Plum Creek is part of the Total maximum Daily Load (TMDL) and watershed management plan for total phosphorus (TP) and total suspended solids (TSS) in the Lower Fox River basin. The Lower Fox River Green Bay AOC has proposed BUI targets for eutrophication and undesirable algae based on achieving the load reductions identified in the TMDL for 7 subbasins, including Plum Creek. Based on SWAT model output, agricultural land in Plum Creek is estimated to contribute 94 to 95 percent of annual loading of TP and TSS, respectively. However, recent stream inventories of Plum Creek by Outagamie County indicate that 24 of the 43 miles inventoried had actively eroding banks. Preliminary estimates are that these banks could be contributing 45 percent of the TSS annual loading measure at the USGS gauge. If stream processes are producing almost half of the annual loading of TSS, the proposed TMDL goal to reduce TSS by 70 percent will not be achievable through upland soil conservation practices alone.

**Objective:** One of the first steps in the sediment TMDL process along with identifying targets is to identify the major sources of sediment. A stream corridor-based sediment budget and source apportionment study is needed to quantify the proportion of the TP and TSS loading originating from in-stream sources of bank and channel erosion compared to soil erosion. Gully erosion associated with headward extension of stream networks also needs to be quantified as a possible TP and TSS source.

This proposal describes a combined sediment budget/fingerprinting approach that will help identify the proportion of annual loading of TP and TSS originating from stream corridor sources. The results from this study will be compared to expected field contributions based on RUSKE2 calculations and measured TP and TSS loading from the USGS water quality monitoring stations. The source assessment results can be used in all subsequent steps of the TMDL process, including monitoring and targeted implementation of the plan.

**Comments:** Project ID shortened to allow for 20 character LDES limit

**Outcome:** Products from this study will include GIS maps and spreadsheets of stream corridor sources and sinks of sediment and TP. A presentation will be given and made available to project partners and local watershed groups. A journal article will be published with the results, with submittal to a journal (to be selected with input from partners) at the end of year 2.

**Study Design:** This study will build off of previous stream corridor inventories of sediment sources conducted by Outagamie County and additional sampling activities by others that are being conducted in the Plum Creek watershed. This study will take two years to complete, the first year for writing a QAPP, compilation of existing data, watershed reconnaissance of geomorphic setting, and collection of field data. The second year is needed for laboratory analyses, data workup, and publishing results. As part of the sediment budget approach, the USGS will conduct an inventory of sediment sources and sinks using a river walk approach aerial photo analyses.

**QA Measures:** A QAPP will be developed during the first years of the study.

### People

Name	Role	Status	Start Date	End Date	Organization	Comments
DINSMORE, DONALEA	TEAM_MEMBER	ACTIVE	02/14/2017		Wisconsin DNR	
KUPSKY, BRIANNA G	COORDINATOR	ACTIVE	06/01/2016	12/31/2019	Wisconsin DNR	
OSHEA, MEGAN C	COORDINATOR	ACTIVE	01/30/2017	08/31/2017	Wisconsin DNR	
PAPPAS, VICTOR C	TEAM_MEMBER	COMPLETE	02/14/2017	01/15/2020	Wisconsin DNR	

### Project Statuses

Date	Reported By	Status	Comments
10/26/2017	DONALEA DINSMORE	Progress: 25-50% Complete	The study is proceeding as expected Field sample collection for upland soils, gullies, banks, and stream soft sediment has been completed except for the ongoing monthly in situ suspended sediment sampling. Rapid geomorphic assessments and river walks have been completed. Sample processing and submission to WSLH is 50% complete. There were no problems to report this quarter.
03/26/2018	SAMUEL WETTACH	Progress: 25-50% Complete	Through 2018 Q1 reporting, the study is proceeding as expected.

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Date	Reported By	Status	Comments
08/17/2018	SAMUEL WETTACH	Progress: 50-75% Complete	Particle size analyses was completed. Amendment was set in place. This quarter was spent running the fingerprinting models and completing the sediment/P budgets. There were no problems to report this quarter. The study is proceeding as expected. This quarter was spent running some additional fingerprinting models and readying the data for publication if not already in the National Water Information System and Wisconsin Surface Water Integrated Monitoring System. Additional sediment sampling was done as part of another related study funded through the Great Lakes Restoration Initiative.
09/30/2018	DONALEA DINSMORE	Progress: 75-100% Complete	Data Assessment and final report preparation underway. Presentation given during previous quarter has been delivered. We agreed that the final deliverable will be a proceedings paper so we can expedite the publication
04/12/2019	DONALEA DINSMORE	Progress: 75-100% Complete	Awaiting a Final peer-reviewed report which will be published as a proceedings document and a presentation to stakeholders. Manuscript is in management review pre-publication..
07/29/2019	DONALEA DINSMORE	Progress: 75-100% Complete	Proceedings Paper at SEDHYD Conference serves as the final report for the grant. Data release is yet to be published; however raw data from SLH should be in SWIMS. Still discussing presentation to stakeholders.
10/29/2019	DONALEA DINSMORE	Complete	Report published in the form of a proceedings paper. Discussions will continue with the project team and stakeholders about the implications of this work for on-the-ground BMPs and messaging.

### Project Status Detail

#### Answer Set: 2019 Q1

Question	Answer
1. Reporting Timeframe (Q1) (Q2) (Q3) (Q4):	Q1 2019
2. Amount expended this reporting period:	0 - Final invoicing being held until deliverables completed.
3. Subcontracts or subgrants awarded this reporting period:	0
4. QAPP (Project Plan) status:	Approved
5. Local services and/or products purchased this reporting period:	NA
6. Number of jobs created this reporting period:	NA
7. Work accomplished this reporting period:	Analysis of the final suspended sediment samples were completed by the laboratory and the fingerprinting statistics performed. PI met with technical team to discuss findings of the fingerprinting assessment and evaluate whether additional assessment is recommended. UWGB provided insight on the availability of a data set that includes dissolved P which is relevant to the overall source apportionment. Manuscript was accepted for presentation at sedimentation conference and will be published as a proceedings paper.
8. Work goals for coming reporting period:	Finish remaining edits on manuscript and submit for publication. Fingerprinting results will be evaluated in the context of routine soil P values and oxalate-extractable P to consider the P bioavailability of the various sources. Study results will be presented to stakeholders in AOC and factored into the prioritization of management actions.

#### Answer Set: 2018 Q3

Question	Answer
1. Reporting Timeframe (Q1) (Q2) (Q3) (Q4):	
2. Amount expended this reporting period:	
3. Subcontracts or subgrants awarded this reporting period:	
4. QAPP (Project Plan) status:	

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Question	Answer
5. Local services and/or products purchased this reporting period:	
6. Number of jobs created this reporting period:	
7. Work accomplished this reporting period:	
8. Work goals for coming reporting period:	

**Answer Set: 2018 Q2**

Question	Answer
1. Reporting Timeframe (Q1) (Q2) (Q3) (Q4):	
2. Amount expended this reporting period:	
3. Subcontracts or subgrants awarded this reporting period:	
4. QAPP (Project Plan) status:	
5. Local services and/or products purchased this reporting period:	
6. Number of jobs created this reporting period:	
7. Work accomplished this reporting period:	
8. Work goals for coming reporting period:	

**Answer Set: 2018 Q1**

Question	Answer
1. Reporting Timeframe (Q1) (Q2) (Q3) (Q4):	
2. Amount expended this reporting period:	
3. Subcontracts or subgrants awarded this reporting period:	
4. QAPP (Project Plan) status:	
5. Local services and/or products purchased this reporting period:	
6. Number of jobs created this reporting period:	
7. Work accomplished this reporting period:	
8. Work goals for coming reporting period:	

**Answer Set: 2017 Q3**

Question	Answer
1. Reporting Timeframe (Q1) (Q2) (Q3) (Q4):	
2. Amount expended this reporting period:	
3. Subcontracts or subgrants awarded this reporting period:	
4. QAPP (Project Plan) status:	
5. Local services and/or products purchased this reporting period:	
6. Number of jobs created this reporting period:	
7. Work accomplished this reporting period:	
8. Work goals for coming reporting period:	

**Answer Set: 2017 Q2**

Question	Answer
1. Reporting Timeframe (Q1) (Q2) (Q3) (Q4):	
2. Amount expended this reporting period:	
3. Subcontracts or subgrants awarded this reporting period:	
4. QAPP (Project Plan) status:	
5. Local services and/or products purchased this reporting period:	

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<b>Question</b>	<b>Answer</b>
6. Number of jobs created this reporting period:	
7. Work accomplished this reporting period:	
8. Work goals for coming reporting period:	

**Answer Set: 2017 Q1**

<b>Question</b>	<b>Answer</b>
1. Reporting Timeframe (Q1) (Q2) (Q3) (Q4):	
2. Amount expended this reporting period:	
3. Subcontracts or subgrants awarded this reporting period:	
4. QAPP (Project Plan) status:	
5. Local services and/or products purchased this reporting period:	
6. Number of jobs created this reporting period:	
7. Work accomplished this reporting period:	
8. Work goals for coming reporting period:	

**Answer Set: 2016 Q4**

<b>Question</b>	<b>Answer</b>
1. Reporting Timeframe (Q1) (Q2) (Q3) (Q4):	
2. Amount expended this reporting period:	
3. Subcontracts or subgrants awarded this reporting period:	
4. QAPP (Project Plan) status:	
5. Local services and/or products purchased this reporting period:	
6. Number of jobs created this reporting period:	
7. Work accomplished this reporting period:	
8. Work goals for coming reporting period:	

**Answer Set: DEFAULT**

<b>Question</b>	<b>Answer</b>
1. Reporting Timeframe (Q1) (Q2) (Q3) (Q4):	
2. Amount expended this reporting period:	
3. Subcontracts or subgrants awarded this reporting period:	
4. QAPP (Project Plan) status:	
5. Local services and/or products purchased this reporting period:	
6. Number of jobs created this reporting period:	
7. Work accomplished this reporting period:	
8. Work goals for coming reporting period:	

**Actions**

Action	Detailed Description	Start	End Date	Status
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**Monitoring Stations**

Station ID	Name	Comments
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**Assessment Units**

WBIC	Segment	Local Name	Official Name
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## Wisconsin Department of Natural Resources SWIMS Project Summary

### Lab Account Codes

Account Code	Description	Start Date	End Date
GL048	PLUM CREEK SEDIMENT BUDGET	08/29/2016	12/31/2017

### Forms

Form Code	Form Name
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### Methods

Method Code	Description
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### Fieldwork Events

Start Date	Status	Field ID	Station ID	Station Name
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### Documents

Title	Description	Author	Published	Comments
Companion Presentation - Stream Corridor Sources of Suspended Sediment and Phosphorus from an Agricultural Tributary to the Great Lakes	Presentation at SEDHYD Conference on the Source Apportionment in Plum Creek	Faith Fitzpatrick	06/25/2019	
Plum Creek Update	Presentation of draft results of sediment fingerprinting Project Plan with DNR approvals	Faith Fitzpatrick	05/01/2018	
QAPP - Sediment Budget and Sediment Source Apportionment Study for Plum Creek		Faith Fitzpatrick	03/13/2017	NRCS work written in as a contingency in the event arrangements can be made.
QAPP Approval Signature Page	Official EPA approval of QAPP	Jennifer Conner	03/21/2017	
Quarterly Report - 2018 Q1 - Sediment Budget and Sediment Source Apportionment Study for Plum Creek	USGS' quarterly report for 2018Q1 for the Sediment Budget and Sediment Source Apportionment Study for Plum Creek.	Faith Fitzpatrick	03/26/2018	
Quarterly Report - 2018 Q2 - Plum Creek Sediment Budget and Sediment Source Apportionment Study - USGS	USGS' quarterly report for 2018 Q2 for the Sediment Budget and Sediment Source Apportionment Study for Plum Creek.		07/01/2018	
Quarterly Report - July - September 2017	USGS report of project activities to date	Faith Fitzpatrick	10/26/2017	
Quarterly Report 2018 Q3 USGS		Fitzpatrick	10/09/2018	
Sediment Budget and Sediment Source Apportionment Study for Plum Creek	Statement of work for Plum Creek project.	Megan O'Shea	06/16/2016	
Sediment Budget and Sediment Source Apportionment Study for Plum Creek - Scope of Work	Final Scope of Work for USGS for the Sediment Source Apportionment Study for Plum Creek in the Lower Green Bay Fox River Area of Concern (AOC).	Faith Fitzpatrick	05/24/2016	
Stream Corridor Sources of Suspended Sediment and Phosphorus from an Agricultural Tributary to the Great Lakes	Publication of findings from Sediment Fingerprinting on Plum Creek	Faith Fitzpatrick		
Stream Corridor Sources of Suspended Sediment and Phosphorus from an Agricultural Tributary to the	Proceedings Paper - Stream Corridor Sources of Suspended Sediment and Phosphorus from an Agricultural Tributary to the Great Lakes	Faith Fitzpatrick	06/25/2019	

## Wisconsin Department of Natural Resources SWIMS Project Summary

Title	Description	Author	Published	Comments
Great Lakes				

### Budget

Combined Budgets:

Combined SLOH:

Combined Total:

### Funding

Organization	Source	Type	Amount	Start Date	End Date
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