



Sediment & Nutrient Reduction and Habitat Restoration
USEPA-Great Lakes Restoration Initiative Project



Grant Number: GLRI 00E01450
Semi Annual Report #5
April – September 2017
October 30, 2017



<http://www.newwater.us/projects/silver-creek-project/>



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Grant Number: # 00E01450
**Project Title: Silver Creek Sediment & Nutrient Reduction
and Habitat Restoration**

Budget & Project Periods: \$421,481, Year 3: 1st half

Reporting Period Covered: April 1, 2017 to September 30, 2017

Principal Investigator: Jeff Smudde, NEW Water (GBMSD) Watershed Programs Manager

Project Goals:

Reduce agricultural nonpoint runoff by installing permanent conservation measures

Restore biological habitat of Silver Creek

Achieve sediment and nutrient goals consistent with state water quality standards

- ✓ Total Phosphorus (TP): 0.075 mg/L for tributary streams
- ✓ Total Suspended Solids (TSS): TMDL target of 18 mg/L

1. Project Summary

The Silver Creek sub-watershed has been selected by NEW Water, the brand of the Green Bay Metropolitan Sewerage District (GBMSD), for a five-year demonstration area to evaluate an Adaptive Management (AM) Strategy consistent with Wisconsin Administrative Code NR 217.18, that allows point sources such as NEW Water to pursue alternative permit compliance options for reducing total phosphorus (TP) and total suspended solids (TSS) from its discharge. In addition to its own funding, NEW Water is utilizing a five-year GLRI grant to supplement the many Silver Creek components including sub-awards for research projects, best management practice (BMP) implementation, and contractual/consulting efforts. Water and soil chemistry, conservation and nutrient plan information, and field data are continually being updated and input into models and GIS. Private Agronomists and staffs from the Natural Resource Conservation Service (NRCS) and Brown and Outagamie Counties continue working with landowners and growers throughout this 4,800-acre sub-watershed to improve agricultural practices and construct BMPs. The Oneida Nation is a large landowner in the sub-watershed owning 68% of the cropped fields and is a major partner in the project.

Fifteen mile Silver Creek is located in the Duck Creek Watershed of the Lower Fox River Basin in northeast Wisconsin. This Basin is a Great Lakes Restoration Initiative (GLRI) Priority Watershed and has been deemed an Area of Concern (AOC) by the International Joint Commission due to the persistence of pollutants and the degradation of habitat. Because of these pollution concerns, the Lower Fox River has an EPA approved Total Maximum Daily Load (TMDL) Plan which requires reduction of TP and TSS in the Fox River to comply with State water quality criteria. To aid in meeting the Fox River TMDL, the goal for Duck Creek (one of 16 watersheds in the Lower Fox River) is a 76% reduction of TP from agricultural sources. NEW Water is piloting AM using conservation measures and BMPs on agricultural properties surrounding Silver Creek to see if this is a feasible compliance option for reducing TP and TSS in a sub-watershed that feeds into Duck Creek.

The results of the AM pilot project will be utilized to create a framework to address water quality improvements for other sub-watershed projects within the Lower Fox River basin, and potentially similar projects at a full watershed scale throughout the Great Lakes.

2. GLRI WORK PLAN updates

Brief updates to the Silver Creek Pilot Project and accomplishments for this reporting period are summarized in the sections below. Please refer to previously submitted semi-annual reports for detailed overviews and descriptions of the various tasks outlined in the grant application work plan.

A. Partner and Committee Involvement

Most partners are very active members on all committees described in the work plan. While some committee meetings are highly planned and orchestrated such as the Landowner/Grower and Stakeholder annual meetings, oftentimes committee meetings are impromptu conference calls or “in-the-field” gatherings in response to time critical events or needed decisions. Members of the **Steering Committee** (CH2M and the Agronomists, NEW Water, Oneida Nation, and County staffs) met in early spring to discuss proposed crop rotations and BMP construction on Oneida properties. The **Steering Committee** members also met to discuss the 2017 growing season and annual efforts with landowners and growers to update Conservation Plans (CP) and Enhanced Nutrient Management Plans (ENMP).

The **Modeling Committee** (CH2M, UWGB, and NEW Water) will meet in fall 2017 when actual 2017 data will be added to the SWAT model. The **Monitoring Committee** (UWGB, USGS, NEW Water, Oneida Nation, and CH2M) met in the previous reporting period prior to the startup of seasonal sampling. The **Outreach Committee** met to discuss the Kids Monitoring project (see Outreach), the dedication ceremony for the InterSeeder donation to Brown County, and the development of Silver Creek Project Signage. NEW Water and CH2M meet weekly to discuss overall pilot project progress and oversight.

While in the early startup of the project, the **Implementation Committee** developed the overall “full-extent” direction of the project, now many of the same members are heavily involved in other pertinent work efforts. In 2016, another committee was formed, the **Wetlands Committee** made up of staff from NEW Water, US Fish Wildlife Service, Ducks Unlimited, Natural Conservancy, and NRCS. They met nearly a dozen times, either in person or via conference calls, to discuss wetlands construction and the complex issues of permitting wetlands with open waters near an operating airport.

B. Landowner Contacts and Communication

Now that nearly all landowners and growers are managing their fields according to Conservation Plans (CPs) and Enhanced Nutrient Management Plans (ENMPs), Agronomist contacts and communications are routine and ongoing at least on a semi-yearly basis (spring and fall). Sign up of Operational Cost Share Agreements (CSA) is ongoing; Structural CSAs signups are decreasing as the proposed BMP installations are mostly contracted and on their way to full implementation. Fifteen structural CSAs and fourteen operational CSAs have been signed. Three CSAs with permanent structural BMP installations and maintenance plans were recorded on Deeds in August 2017. Only two or three landowners are still recalcitrant and do not want to be involved in any government programs. Our County staffs have nearly daily and weekly contacts with those landowners engaged in contractual field work. Due to persistent visits by one very diligent Outagamie County staff, Nikki Raimer, one of the reluctant landowners has voluntarily made a number of structural improvements as well as crop rotation and tillage changes. All the CPs and ENMPs, site visits, BMP implementation QA/QC, and construction and operational changes to agricultural fields are meticulously recorded on iPads using a Verification App developed by CH2M explicitly for the Silver Creek Project.

C. Water Quality Monitoring

NEW Water staff collected 135 grab and 41 event samples while USGS and UWGB staff collected 12 grab samples. 188 samples were analyzed for TSS and TP at NEW Water’s certified laboratory according to analytical procedures outlined in the approved QAPP.

D. GIS

During this reporting period the Geographic Information System (GIS) was manually populated with data that had been previously documented in stand-alone CPs and ENMPs. Five sets of data and comments from the 2015 Planned and Actual, 2016 Planned and Actual, and 2017 planned CPs and ENMPs were entered during the summer of 2017. Data transferred from the CPs to GIS included field boundary inspection notes, cost share documentation, owner/grower acceptance of proposed structural and operational BMPs, and Agronomist comments on proposed BMPs. Data transferred from the ENMPs included crop rotations, tillage practices, soil property data, SnapPlus modeling data, and fertilizer and manure application. The data will be quality checked in October-November 2017. CH2M has developed an updated Verification App for iPad which facilitates live-streaming data entry. Starting in October 2017, Agronomists and County staff will use the updated App for entry of CPs and ENMPs with SnapPlus modeling; design, construction and maintenance field visits, and CSA documentation into the GIS. When fully populated and developed by December 2017, the GIS will have extraordinary query capabilities to extract conservation improvements and detailed information on phosphorus reducing practices on a field by field and year by year basis.

E. Conservation Plans and Installation of Conservation Measures

CPs and ENMPs were updated for the planned 2017 growing season. Table 1 show BMPs contracted and/or implemented during this reporting period. Per an October 25, 2017 email from US EPA GLRI Project Officer Victoria Raymond, the EAGL reporting table will be submitted in April 2018 as part of Semi-Annual Report #6.

The most appropriate and effective BMPs are planned and constructed to ensure TP and TSS reduction results are achieved to the greatest extent possible. It must be noted that the GLRI work plan/budget identified a certain number of potential BMPs to install in order to estimate some measure of funding requested. As described in numerous sections of the work plan, the following information was used to determine what kind and how many structural BMPs would be ultimately installed:

- baseline data collection,
- field walks,
- in-field discussions about implementing the most appropriate BMPs on specific fields, and
- CPs and ENMPs that are targeted and specific to each field in the project area.

Thus, the final tally of implemented BMPs will likely not meet the numbers listed in the original grant application budget narrative. A revised primary budget narrative with no object class category changes in the "other" category was updated in September 2015 and submitted in Semi-Annual Report #1 to allow for a maximum flexibility in implementing the most appropriate BMPs based on the above. The updated budget was also resubmitted in Semi-Annual Report #4.

Table 1 GLRI-funded BMPs this reporting period

FIELD or BMP UID (201000)	BMP	NRCS code	Total Acres CONTRACTED	CSA
24	FILTER STRIP	412	0.70	SC0018
43	FILTER STRIP	412	2.20	SC0012
842	FILTER STRIP	412	1.00	SC0012
784	OUTLET STABILIZA		0.43	SC0012
50	FILTER STRIP	412	0.90	SC0013
151	CAP	342	0.20	SC0015
67	FILTER STRIP	412	1.50	SC0015
775	FILTER STRIP	412	1.00	SC0015
776	FILTER STRIP	412	0.90	SC0016
828	CAP	342	0.40	SC0005
123	CAP	342	0.50	SC0005
ONF42	CAP	342	0.20	SC0005
ONF42	CAP	342	2.00	SC0005
Total Structural			11.93	
CNL	CC	340	5	SCNS1009
516	CC AND RT	340/329	21.75	SCNS1009
518	CC AND RT	340/329	27.38	SCNS1009
569	RT	329	13.42	SCNS1009
509	RT	329	10.34	SCNS1009
546	RT	329	0.92	SCNS1009
499	CC AND RT	340/329	29.66	SCNS1012
497	CC AND RT	340/329	9.50	SCNS1012
498	CC AND RT	340/329	9.09	SCNS1012
561	CC AND RT	340/329	10.51	SCNS1012
563	CC AND RT	340/329	8.00	SCNS1014
564/626	CC AND RT	340/329	5.10	SCNS1014
622	CC AND RT	340/329	64.61	SCNS1015
577	CC AND RT	340/329	36.83	SCNS1015
616	CC AND RT	340/329	10.43	SCNS1015
551	CC & 2(RT)	340/329	16.74	SCNS1016/17
552	CC & 2(RT)	340/329	15.79	SCNS1016/17
553	CC & 2(RT)	340/329	17.78	SCNS1016/17
618	CC & 2(RT)	340/329	3.24	SCNS1016/17
562	CC	340	16.10	SCNS1018
Total Operational			332.19	
Total Silver Creek GLRI funded			344.12	
	BMP		acres	
	CAPS		3.30	
	filter strips		8.2	
	outlet stabilization		0.43	
	total structural contracted		11.93	
	total operational contracted		332.19	
	total BMPs NEW Water GLRI funded		344.12	
CC: cover crops RT: Residue/Tillage Management CSA: cost share agreement UID: unique identification				

F. Biological Assessment



Silver Creek benthos sampling took place on June 2, 2017, at the monitoring site just upstream of Florist Drive. This is the fourth year that the biological sampling is taking place at this location. As in previous years, a composite sample was collected representing the habitats within that reach and the sample was shipped to University of Wisconsin - Superior to pick out and isolate the organisms from the vegetative debris in the water. Jim Snitgen, Water Resources Supervisor at the Oneida Nation recently received the vials with the organisms and he will be identifying the organisms in the next two weeks. The photo to the left shows Silver Creek as it appeared during this year's sampling.

G. Managed Grazing – Paired Field Monitoring

Oneida Nation: the Oneida portion of this project is to transition 97 acres of corn fields on sloping elevations to continuous cover and grazing pastures. The watering system and “fool proof” fences were installed to keep heifers in their designated enclosures. Additional fencing was installed around the monitoring equipment, too, as the heifers did some damage early last winter. In June and July, the summer watering system was put in place. The winter water system installation began in September.

UWGB: The station setup scheduled to this point in the project is about 100% of what was expected for the pretreatment phase of the study. Two paired edge-of-field (EOF) monitoring stations have been fully operational since June 2016. The two farm field catchments are directly adjacent to each other (South and North sites), and the monitoring stations are configured to collect continuous discharge and turbidity data, as well as automated event samples from their respective catchments. Turbidity and minimum water sampling intervals can be adjusted remotely. The catchments are contained within a single field where corn was planted and then harvested as silage prior to September 21, 2016 and September 30, 2017. Rainfall and soil moisture were higher than normal in spring 2017, and the soil often did not dry out much before another rain event, thus more than expected usable event data was collected compared to 2016. As of September 30, 2017, twelve paired runoff events were recorded. Work projected for the next six months includes ongoing pre-treatment sample collection during runoff events as they occur. The Principle Investigators will establish a pre-treatment relationship between the two catchments for each constituent by end of March 2018. Additional quality control water samples and data will be collected in summer of 2018. The photo above shows the fields that were converted to managed grazing operations.



Grazing Specialist: To assist the grower with all the complexities of intensive rotational grazing, a Grazing Specialist was hired this year. Per the Grant Work Plan and the Quality Management Plan, a Professional Services Agreement was drawn up for a one year period with option to renew for one year. The chosen candidate has 30 years of managed grazing experience and will meet at least weekly with the Grazing Manager. He will assess pasture conditions using pasture quality scoring techniques and conduct forage inventory estimates as needed. Written assessment results will be submitted with quarterly invoicing.

H. Vegetated Water Treatment Systems (Oneida Nation/UWGB) (Sub-Award)

Oneida Nation: In April/May 2017, the Professional Services Agreement between NEW Water and the Oneida was revised to include management and design oversight by the US Fish and Wildlife Service. The Oneidas retained responsibility as the sub-awardee and EPA acknowledged the change. The VWTS construction work effort is nearly complete. The excavator work was bid and a local contractor was put on contract in early August 2017. The berm and structures were constructed and finished in early September. The berm was also seeded and vegetation is established. The basin area is graded and winter wheat has been planted for soil establishment over the winter months. Projected work for the next reporting period includes dormant seeding of the final seed mix in late November, or as weather allows. To encourage vegetation establishment, the water control structures will likely remain open to prevent long-term soil saturation. The site will be evaluated over the next year to determine if drain tile is necessary to allow for future mowing or harvest of the established grass mix.

UWGB: The Principle Investigators continue sampling and data analyses on plant (grasses and legumes) uptake of soil phosphorus from various plots. Goal 1-1 Tissue P: Phosphorus analysis of 2015 and 2016 samples has been completed. Data analysis and final quality assurance checks for the 2015 field season are ongoing. The Investigators expect to complete statistical analyses for this portion of the project prior to the next progress report. Goal 1-2: All sample analyses (plant and soil) are completed. Data analyses and final quality assurance checks are ongoing. Now that the VWTS construction is complete, projected work for Goal 2 is the monitoring of its functionality and effectiveness. The Investigators will evaluate soil properties, harvestable biomass, and biomass P concentrations over several years. A modification to the Sampling QAPP was submitted to EPA in August 2017 and is awaiting approval.

<i>Oneida Nation-VWTS Sub-award policy requirements</i>	
<i>Has Oneida Nation submitted their invoices in a timely manner?</i>	Yes, an invoice is submitted after the work is performed
<i>Is Oneida Nation payment history consistent with progress to date?</i>	Yes, as per work plan
<i>Date of most recent Oneida Nation invoice?</i>	12/21/2016
<i>Is the Oneida Nation providing VWTS reports/updates? Is there sufficient progress?</i>	Yes the construction project is nearly complete.
<i>Is the Oneida Nation experiencing any issues completing activities identified in the VWTS work plan?</i>	Not at this time
<i>Summarize any management actions taken by the grantee to correct any Oneida Nation-VWTS issues</i>	N/A
<i>At the time of this report, were any sub-awards made that were not included in the work plan?</i>	No

<i>UWGB-VWTS Sub-award policy requirements</i>	
<i>Has UWGB submitted their invoices in a timely manner?</i>	Yes, invoices are submitted quarterly
<i>Is UWGB payment history consistent with progress to date?</i>	Yes, as per work plan
<i>Date of most recent UWGB invoice?</i>	8/23/2017
<i>Is UWGB providing VWTS reports/updates? Is there sufficient progress?</i>	Yes, when invoices are submitted. Monitoring continues
<i>Is UWGB experiencing any issues completing activities identified in the VWTS work plan?</i>	Not at this time

<i>Summarize any management actions taken by the grantee to correct any UWGB-VWTS issues</i>	N/A
<i>At the time of this report, were any sub-awards made that were not included in the work plan?</i>	No

I. Brown County (Sub-Award)

Brown County Land and Water Conservation staff continues to provide assistance to the Project such as working on partner project signage, InterSeeder scheduling, outreach to Silver Creek farmers and the media regarding the InterSeeder and other equipment usage to enhance BMP efforts.

Brown County Sub-award policy requirements	
<i>Has Brown County submitted their invoices in a timely manner?</i>	Yes, on a yearly basis
<i>Is Brown County payment history consistent with progress to date?</i>	Yes, as per work plan
<i>Date of most recent Brown County invoice?</i>	1/3/2017
<i>Is Brown County providing reports/updates?</i>	Yes
<i>Is there sufficient progress?</i>	Yes
<i>Is Brown County experiencing any issues completing activities identified in the work plan?</i>	No
<i>Summarize any management actions taken by the grantee to correct any Brown County issues</i>	None
<i>At the time of this report, were any sub-awards made that were not included in the work plan?</i>	No

J. Wetlands

Ducks Unlimited is the lead and has the primary project oversight of the three wetlands complex construction efforts. After a 16-month delay due to airport proximity and nuisance waterfowl concerns, the permitting issues were finally resolved in September 2017 and construction efforts began (see Semi Report #2 for a Location Map). When the work plan was written it was thought that 20 acres in total would be installed but instead, 30 acres of impoundment areas and 117 acres of surrounding pollinator habitat were created. In 2016, 14 acres at site #2 and 20 acres at site #7 were taken out of production. Specific acreages are as follows:

Wetland complex site location	Impoundment acreage	Surrounding pollinator seeding acreage
#1	3	47
#2	4	18
#7	23	52

Gary VanVreede and Reena Bowman of the US Fish & Wildlife Service, one of the participating partners in the project, report that all dike projects were completed without any problems or weather issues. Projected work for the next reporting period is scheduled for late November when dormant seeding of the final vegetative cover in the wetland basin will be completed.



Photos of the wetland complex construction taken by Gary VanVreede on September 28, 2017. The photo above is site location #7 and the photo to the right is site location #1.

<i>Ducks Unlimited (DU) "Sub-recipient" policy requirements</i>	
<i>Has DU submitted their invoices in a timely manner?</i>	DU does not submit invoices to NEW Water
<i>Is DU payment history consistent with progress to date?</i>	yes
<i>Date of most recent DU invoice?</i>	N/A
<i>Is DU providing reports/updates?</i>	Yes
<i>Is there sufficient progress?</i>	Yes
<i>Is DU experiencing any issues completing activities identified in the work plan?</i>	No
<i>Summarize any management actions taken by the grantee to correct any DU issues</i>	None
<i>At the time of this report, were any sub-awards made that were not included in the work plan?</i>	No

K. Education/Outreach



<http://newwater.us/projects/silver-creek-project/>

NEW Water continues to use a wide variety of outreach tools including PowerPoint presentations, a website, factsheets, Twitter feeds, Facebook posts and newspaper and magazine articles to talk about the Silver Creek Adaptive Management Pilot. The Table below contains a list of venues where the Project was presented during this reporting period. Other outreach and educational efforts are described on the following pages.

2017 Date	Organization
April 13	Alliance for Great Lakes
April 25	Green Bay Conservation Partners Roundtable Event – UWGB
May 1	Clean River Clean Lakes Conference – Germantown
May 12	Student Monitoring C.R.E.W. Day
May 18	International Association of Great Lakes Research (IAGLR) – Detroit
May 23	UWGB Lifelong Learning tour and presentation at NEW Water
June 14	InterSeeder Ribbon Cutting Ceremony – Diederich Farm
June 14	GLC meeting, Chicago
August 22	Save the Bay Lower Fox Watershed Group, NWTC Green Bay
Sep 13	Dairy Education Conference – Green Bay
Sep 14-15	UW Madison – Geologic & Geotechnical Engineering 2 nd Tech Conference

Television News

Experts Work to Save Green Bay: by Milwaukee’s “Up Front with Mike Gousha,” which aired on WBAY Television in Green Bay on July 29, 2017 <http://www.wisn.com/article/experts-work-to-save-green-bay/10381807>

Follow up Interview (WEB Extra) Interview with Jeff Smudde, NEW Water Watershed Programs Manager, Silver Creek Project Manager <http://www.wisn.com/article/save-the-bay-web-extra/10381879>. The photo on the next page is of Jeff Smudde on the “Bay Guardian,” NEW Water’s sampling boat.



Experts Work to Save Green Bay

84 Shares



Updated: 5:43 PM CDT Jul 29, 2017



Advertisement



The bay of Green Bay has an annual "dead zone" caused by the breakdown of accumulated cyanobacteria.

Signage:

NEW Water has started designing signs to be displayed for the project. There are three signs in prototype development and coordination with the Oneida Nation is underway as many of the signs will be posted on Oneida properties. Each sign will have the appropriate GLRI Logo and language as required by the Grant Terms and Conditions. Following is a description of each of the proposed signs.

BIG sign	This sign would be 3ft x 4ft. There would be one of these signs in the watershed, explaining a broad overview of the project with pictures and maps. In coordination with the Oneida Nation, a location will be selected that is very visible to people either walking or driving past, for example near the walking trail on Florist Drive.
Conservation Area sign	This sign would be approximately 8x10in. It would be used in locations to mark out a buffer strip, grassed waterway, WASCB, etc., and viewable from the roadway. This sign also may be installed along a BMP practice such as a long buffer strip or grassed waterway to provide clear understanding of what the area is to agricultural operators.
Road sign	This sign would be approximately 8x10 in. This sign would be placed on a post near the roadway, near a field that has been significantly improved by the project. This could be either at the field access or other most visible location. The intent of this sign is to give some credit and recognition to the grower/owner that cooperated with the project team and installed management practices to improve the field. The hope is that these signs would be a bit of a status symbol and growers and owners would be proud to have this in front of their property.

Save the Bay's Work Continues

US Congressman Mike Gallagher. On September 27, 2017 US Congressman Mike Gallagher praised the Silver Creek Effort in his weekly update: *"Silver Creek Adaptive Management Watershed – Outagamie County staff continued to work with New Water to continue BMP installation and verification. This project has strongly benefitted from a broad partnership between New Water, local agronomists, the LCD, the Oneida Tribe, and most importantly, a group of committed landowners. The project team recently worked through the permitting of four new wetland restoration sites. The sites were challenging due to their proximity to Austin Straubel International Airport and their potential for attracting wildlife."* <https://gallagher.house.gov/issues/save-bay>

I'm proud to carry on Reid Ribble's mission and legacy of #SaveTheBayNEW. My vision going forward is that we will continue to build a viable community that works toward clean water and sustains a healthy Lake Michigan. Click [here](#) to read Save the Bay updates and to find out about upcoming events in the 8th District.



NEW Water Annual Report 2016: This yearly report prominently displayed and described the work efforts at Silver Creek Sub-watershed. Click on the pamphlet cover on the left to link to read the entire document. Or visit <https://www.paperturn-view.com/us/new-water/new-water-annual-report-2016?pid=MTU15143#>



NEW Water 2016 Annual Report

Water Knows No Boundaries

Silver Creek Project
Partnering for Water Quality

What if we banded together to improve water quality? At NEW Water, we believe we can accomplish more if we do. That's why we have branched out into the watershed to forge partnerships to improve what's happening on the land, so that our area waters will be cleaner.

The Wisconsin snow melt each spring carries a heavy runoff of sediment and phosphorus into the bay of Green Bay, leading to a "dead zone." NEW Water has convened partners for a pilot project to help stem the tide. In 2016, the second year of the Silver Creek Adaptive Management Pilot Project, the team planted cover crops, installed grassed waterways, and greened up shores with buffer strips of vegetation. Scientific data collection and analyses from 2016 indicate

Great Lakes RESTORATION

This project has received a \$1.67 million grant from the Great Lakes Restoration Initiative of the U.S. Environmental Protection Agency (EPA) under an assistance agreement to NEW Water. The contents of this document do not necessarily reflect the views and policies of the Environmental Protection Agency, nor does the EPA endorse trade names or recommend the use of commercial products mentioned in this document.

Educating our community – The Silver Creek "CREW" (Committed to Restoring and Enhancing our Waters) struck again in 2016. A team of students from Oneida Nation and Bay Port High Schools conducted field studies to learn about the waterways where they live, and the science of water. Water experts from NEW Water and the Oneida Nation led educational activities including water monitoring, aquatic invertebrate identification, and geological mapping.

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3rd Annual Student Monitoring Event: This article was published in NEW Water's June 2017 "MetroFlow" newsletter and is also posted on the NEW Water Silver Creek Website (<http://newwater.us/15179.aspx>)

May 12, 2017, was a bright and sunny day for the third year of the Silver Creek Student Monitoring Education outreach effort at the Silver Creek Adaptive Management Pilot Project. 20 students from Bayport and Oneida High Schools participated in this year's C.R.E.W. (Committed to Restoring and Enhancing our Waters) event. Oneida High School teacher Greg Holder, and Bayport High School teacher Ryan Weed selected students for this year's C.R.E.W. based on environmental essays they wrote. Three stations were set up to inform the students about stream invertebrates, water quality testing, and drone and GIS work in the watershed.

Jim Snitgen, Water Resources Supervisor for the Oneida Nation, described dozens of species he netted out of Silver Creek at the "Invertebrate Communities" station. The on-going study of stream species will show if **Best Management Practices** (BMPs) installed on agricultural fields help to improve stream health. The photo showing Jim and the students was taken from a camera mounted on the Oneida Nation's Drone.



Erin Houghton explaining how to read instrument data



Oneida Nation Drone Photo by Michael Arce

At the "Water Quality Assessment" station Erin Houghton, NEW Water Watershed Specialist, encouraged students to collect various water samples from Silver Creek and run field analyses for turbidity and phosphorus. They also measured and recorded stream data such as temperature, flow rate, dissolved oxygen, and specific conductance.



Oneida Nation Drone photo by Michael Arce

The "Drone and GIS" station was staffed by Oneida Nation Natural Resource Technicians Michael Arce and Tony Kuchma. Here the students learned about flying drones as well as training and pilot licensing requirements. Jeff Smudde, Watershed Programs Manager for NEW Water, demonstrated how G.I.S. and drone technology are used to track the progress of the project and the BMP installation practices.

After rotating through the three stations, the full group walked a recently completed **Grassed Waterway** and observed the importance of this type of BMP that helps prevent sediment and nutrients, such as phosphorus, from draining into streams and rivers. The day concluded with lunch at NWTC and a fun quiz to see what everyone learned at this year's C.R.E.W. day at Silver Creek.

GLRI Work Projected for Next Reporting Period:

Next steps during October 2017 to March 2018:

- Agronomists and county conservationists to identify fields, or portions of fields, to re-walk in spring 2018 in preparation for conservation planning and BMP implementation in summer/fall of 2018.
- Update CPs and ENMPs for "2017 Actual" implementation and "2018 Plan" implementation.
- CH2M to finalize updated GIS database and Collector App that integrates CP and ENMPs and fully CSAs into the project GIS database.
- Prepare new CSAs as needed and record on deeds when completed.
- Training on Collector Verification App 2.0 to support BMP field verification.
- Land Owner/Grower Appreciation Luncheon and Annual Stakeholder Meeting.
- Present project update to NEW Water Commission and other interested parties.
- Update SWAT modeling to reflect 2017 BMP implementation.
- Update Biological Monitoring evaluation with data collected in 2017.
- Committee meetings as needed.
- Develop 2018 Project Fact Sheet.
- Finalize sign designs, coordinate in-field placement.

3. Object Class Category Changes

None.

4. Problems Encountered

None. The months of April through June were considerably wetter than normal causing cropping delays, however, the additional precipitation resulted in more grab and event water quality sampling.

5. Spending

April – September 2017			
Object Class Category	Activity	Semi Rpt #5 spending	Accumulative Spent to date
Personnel	Grant Specialist [to 9/30/2017]	\$ 11,373	\$ 49,445
Fringe Benefits	Grant Specialist [to 9/30/2017]	\$ 1,137	
Contractual	CH2M Hill [to 7/28/2017]	\$ 89,416	\$429,675
	Grazing Specialist [to 9/30/2017]	\$ 2,879	\$ 2,879
	AEG		\$ 7,000
Supplies	drone		\$ 2,341
Other	CostSharing/BMPs/misc* [to 9/30/2017] <i>*structural+operational+crop-loss CSAs (Oneida/private)</i>	\$ 30,109	\$ 87,268
	Grazing infrastructure	\$ 66,508	\$ 87,975
	Grazing UWGB [to 6/30/2017]	\$ 20,666	\$ 64,331
	Wetlands [to 9/30/17]	\$	\$ 8,994
	Oneida (sub) VWTS [to 9/30/17]	\$	\$ 1,226
	UWGB (Sub) VWTS [to 9/30/17]	\$ 2,458	\$ 39,800
	Brown County (sub) [to 9/30/2017]	\$	\$ 8,400
		TOTAL	\$224,546

A. Percent of budgeted amount spent for the 5-year project

~46.8% (\$789,335 / \$1,686,669)

Total 5-year approved amount \$ 1,686,669
 Drawdowns to date 6/28/2017 \$ 691,579

B. NEW Water, Oneida, DU In-kind Hours/Dollars

NEW Water	Semi #5 4/1/17 – 9/30/17 Hours	Semi #5 4/1/17 –9/30/17 Match \$
Watershed Programs Manager	545	\$20,710
Director of Environmental Programs	87	\$ 4,176
Water Resources Specialist	283.5	\$ 7,938
Lab Analyst	480	\$10,080
Communication & Education	197	\$ 5,040
Fringe (60%)		\$29,052
Total New Water Hours	1,593	
Total NEW Water personnel match \$ (WP semi-annual match \$61,688)		\$77,472
Oneida Nation In-kind \$		\$ 8,446
Ducks Unlimited In-kind \$		\$82,049

6. Funding Rate

Percentage of Grant Spent	% Federal	% Non Federal	Footnotes: DrawDown# \$/* * = \$1,686,669 total award	Footnotes NEW Water Match+Fringe+Oneida&DU in-kind/** ** = \$916,881 (non-federal total)
Mar 2015 – Sep 2015	12.36 ¹⁾	11.87 ²⁾	1) DD1 \$208,467*	2)54,762+\$32,857+\$21,181=\$108,800/** Correction after 7/2016 Assistance Amendment
Oct 2015 – Mar 2016	1.6 ³⁾	10.93 ⁴⁾	3) DD2&3 \$27,217*	4) \$48,918+\$29,351+\$21,904=\$100,173/** Correction after 7/2016 Assistance Amendment
Apr 2016 – Sept 2016	12.18 ⁵⁾	11.22 ⁶⁾	5) DD4&5 \$205,450/*	6)\$78,534+\$24,370/**
Oct 2016 –Mar 2017	5.9 ⁷⁾	8.2 ⁸⁾	7) DD6&7 \$100,198/*	8)\$65,534 +\$10,039/**
Apr 2017 – Sep 2017	8.9 ⁹⁾	18.3 ¹⁰⁾	9)DD8 \$150,247/*	10) \$77,472+\$8,446+\$82,049/**

7. Changes

Is there a change in principal investigator? No

8. Length of project

Will the project take longer than the approved project period? No

9. Drawdowns

Semi #	Interval	Drawdown Request #	Date	Amount
1	Mar 2015-Sep 2015	1	10/13/2015	\$208,467
2	Oct 2015-Mar 2016	2	05/17/2016	\$ 21,250
2	Oct 2015-Mar 2016	3	06/27/2016	\$ 5,967
3	Apr 2016-Sep 2016	4	07/01/2016	\$ 56,484
3	Apr 2016-Sep 2016	5	10/07/2016	\$148,966
4	Oct 2016-Mar 2017	6	12/9/2016	\$ 11,694
4	Oct 2016-Mar 2017	7	3/30/2017	\$ 88,504
5	Apr 2017-Sep 2017	8	6/28/2017	\$ 150,247
			Total to Date (as of Sep 30, 2017)	\$691,579.00