

Wisconsin Department of Natural Resources SWIMS Project Summary

General Project Information

Project ID: GL00E02024_GBF1601_ALGAE

Name: Assessing Cyanobacterial Harmful Algal Blooms (CHABs) in Lower Green Bay

Type: Great Lakes Restoration Initiative

Subtype: Toxics and Areas of Concern

Status: ACTIVE

Start Date: 04/15/2016

End Date: 06/30/2018

Purpose: Although HABs are common in Green Bay, assessments specific to HABs and associated toxins are more limited. A more robust assessment of the duration and extent of CHABs and associated toxins as well as the conditions associated with HAB formation is necessary to assess the status of the beach closings impairment for the AOC, to assess the risk to swimmers, and to inform other AOC impairment decisions.

Objective: Identify the extent, severity, toxicity, and temporal trends of HABs in Lower Green Bay

- 1.) Determine feasibility of using a beach health risk predictive tool (e.g. nowcast in Virtual Beach) for estimating recreational risk that can be implemented locally and provide daily assessments.
- 2.) Provide relevant supporting data necessary to develop HAB modelling tools for predicting HAB productivity and spatial patterns.
- 3.) Assess whether monitoring protocols used in this project are transferrable to HAB assessments and drinking water source protection activities in Lake Winnebago
- 4.) Develop a data set that can be used to inform decisions about anticipated recreational water standards (3 monitoring seasons)
- 5.) Develop management recommendations for managing CHAB recreational risk associated with restoring Bay Beach.
- 6.) Provide samples and supporting data for compatible research objectives of key collaborators at UW-Milwaukee, NOAA, and USGS
 - a. Understand the genetic potential for cyanobacteria to produce toxins
 - b. Better understand the dynamics and relationship between bloom formation and nutrients
 - c. Provide data for ground-truthing remote sensing and NOAA's forecasting efforts

Comments: Contracts with UW-M - Todd Miller as PI and NEW Water - Erin Wilcox

Outcome: Three years of algae, toxin, and related data that aid in understanding the dynamics of algae blooms in Lower Green Bay. Preliminary assessment of a predictive model that can be useful for understanding recreational risk in near real-time.

Study Design: Sample stations overlap existing NEW Water routine collection so weekly samples collected in deeper water. Two stations established in nearshore area by Bay Beach and along east shore of lower Green Bay where grabs will be collected more frequently. Three continuous buoys will be use - 2 deployed for project to look at both in location bloom formation and transport by wind, wave, current.

QA Measures: Project-specific QAPP developed with sample duplicates and comparability checks

People

Name	Role	Status	Start Date	End Date	Organization	Comments
DINSMORE, DONALEA	PROJECT_LEAD	ACTIVE	06/01/2016	12/31/2017	Wisconsin DNR	
LaLiberte, Gina D	PROJECT_MANAGER	ACTIVE	06/15/2016		Wisconsin DNR	
Miller, Todd	TEAM_MEMBER	ACTIVE	07/18/2016		University of Wisconsin - Milwaukee	
OSHEA, MEGAN C	PROJECT_LEAD	ACTIVE	06/15/2016	08/31/2017	Wisconsin DNR	
PAPPAS, VICTOR C	TEAM_MEMBER	COMPLETE	02/14/2017	01/15/2020	Wisconsin DNR	
Wilcox, Erin	TEAM_MEMBER	ACTIVE	07/18/2016		Green Bay Metropolitan Sewerage District	

Project Statuses

Date	Reported By	Status	Comments
10/25/2017	DONALEA DINSMORE	Progress: 25-50% Complete	Seasonal monitoring through October 31. Lab samples will need to be processed. Buoy deployed at the end of July and operated through October.
01/11/2018	SAMUEL WETTACH	Progress: 25-50% Complete	Seasonal monitoring and sampling finished on October 25. Total of 162 samples collected for 2017 season from 8 different sampling sites by NEW Water. Sensors were performing as expected and the 2017 data will be analyzed in the off-season.

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Date	Reported By	Status	Comments
04/26/2018	DONALEA DINSMORE	Progress: 50-75% Complete	Data analysis continued with NEW Water taking the lead in compiling data. Algae enumerations lag, with sample results available through June. Planning for 2018 season and contract development began
09/30/2018	DONALEA DINSMORE	Progress: 50-75% Complete	Data assessment will need to wait for complete analyses. Algal community determinations are longest time. All samples being delivered to laboratories following end of season. Presentations and publications based on the data generated have been scheduled in September and October. Data is being sent to GLOS and shared with NOAA for satellite CI assessment.
12/31/2018	DONALEA DINSMORE	Progress: 50-75% Complete	Added assessment of currents and waves in the past 6 months. Model calibration for hydrodynamics expected in early 2019.
03/31/2019	DONALEA DINSMORE	Progress: 50-75% Complete	Sample analyses proceeding. Microcystin results are in progress as are the algal cell counts. Wave and currents initial model calibration nearing completion with data from 2018.
10/29/2019	DONALEA DINSMORE	Progress: 50-75% Complete	Phase 1 sampling and analysis is complete and project team will be preparing a report of 2016-2018 operations. Season 1 of the Phase 2 is nearing completion.

Project Status Detail

Answer Set: Q4 2019

Question	Answer
1. Reporting Timeframe (Q1) (Q2) (Q3) (Q4):	Q4
2. Amount expended this reporting period:	New Water \$11,501
3. Subcontracts or subgrants awarded this reporting period:	NA
4. QAPP (Project Plan) status:	NA
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:	<p>Sampling</p> <p>Sampling for Phase 2 ended the second week of October at NEW Water locations and sampling for Bay Beach and Joliet Park ended the second week of October by UWGB.</p> <p>In 2019, 174 total samples were collected from 8 sites in lower Green Bay (n = 174 in 2018, n=166 in 2017).</p> <p>In addition to collecting samples from 1 m for nutrients, samples were collected from 0 and 1 m for cyanotoxin analysis. All cyanotoxin samples were delivered to UW-Milwaukee by Oct 21, 2019.</p> <p>Continuous Monitoring Station NEW Water was unable to deploy their continuous monitoring station at the mouth of the Fox River due to PCB dredging at the mouth of the river for the entirety of the field season.</p>
8. Work goals for coming reporting period:	Complete data analysis for 2019 season, assess results from 2016 - 2018

Answer Set: Q3 2019

Question	Answer
1. Reporting Timeframe (Q1) (Q2) (Q3) (Q4):	Q3
2. Amount expended this reporting period:	Invoices for New Water \$3499 and UW Milwaukee \$20,559
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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Question

- 6. Number of jobs created this reporting period:
- 7. Work accomplished this reporting period:

Answer

0

Sample collection continued through September for Phase 2 project. Sample results for Phase 1 algae enumeration samples are in progress at the State Laboratory. Data from phase 1 have been compiled and quality assured. USACE ADCPs deployed in May were retrieved in mid-July. UW-Milwaukee continued monitoring for currents and waves, adjusting locations as appropriate.

Complete phase 1 data assessment with project team, developing appropriate graphics to illustrate the findings. Retrieve buoys and deployed equipment from the field and perform routine maintenance including removal of zebra mussels. Begin toxin analyses by ELISA with paired samples by LC/MS/MS.

- 8. Work goals for coming reporting period:

Answer Set: Q2 2019

Question

- 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:

Answer

Q2
NEW Water \$3499

Sampling
Sampling for Phase 2 began mid-May at NEW Water locations and sampling for Bay Beach and Joliet Park began the first week of June by UWGB. This year, NEW Water is continuing to collect a surface water sample as well as a sample from 1 meter in tandem with NEW Water's aquatic monitoring program and nutrient analysis. The focus of cyanotoxin sampling locations during Phase 2 is back to the original 4 sites – GB 16, 22, 32, and 41, and BB and JP continue to remain the priority locations with sampling occurring twice weekly during the month of June. Sampling at the buoy locations, Sites 23 and Longtail (LT), are sampled every other week.

Continuous Monitoring Station
NEW Water was unable to deploy their continuous monitoring station at the mouth of the Fox River due to PCB dredging at the mouth of the Fox River. The continuous monitoring station near the light house in lower Green Bay was deployed in late May and will be retrieved mid-July and again in early October. NEW Water is hoping to deploy the Fox Mouth continuous monitoring station but remains dependent on the dredge schedule.

- 8. Work goals for coming reporting period:

Data assessment meeting, complete sampling for 2019. Begin delivering toxin samples to Milwaukee

Answer Set: 2019 Q1

Question

- 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:

Answer

Q1 2019
13,118
NA
loaded in QA Track
NA
1
Data analysis from NEW Water completed and added to project

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Question

Answer

database. Toxin data is in progress; however instrument failed near the end of March so analysis of 2018 samples could not be completed.

Buoy maintenance - we will prepare both buoys for re- deployment including testing of the solar charging system, testing of all sensors, datalogging equipment, cellular communications, and camera connectivity. All sensors will be re- calibrated and components replaced as necessary. Buoy data was transmitted to the Great Lakes Observing System and the National Data Buoy Center as was accomplished in 2018. The Green Bay East buoy will be outfitted with a camera. The mooring system will be redesigned to have two anchors instead of three, and include use of rope and chain instead of all chain in order to facilitate a more seamless buoy deployment and retrieval. We will be working with Brennan Engineering to deploy a third buoy specifically for measuring wave height and direction near dredging activities.

Initial calibration of the hydrodynamic model neared completion. Local meteorological data from the buoys and NEW Water monitoring station to improve the accuracy. NEW Water data was uploaded into SWIMS. The remaining toxin and algae samples from the 2018 field season will be analyzed. Data will be uploaded to SWIMS database and work will begin to statistically analyze toxin data in order to understand the environmental drivers of toxin occurrence in the lower Green Bay AOC. The initial hydrodynamic model will be finalized with agreed-upon deliverables to include posting to a website for visualization. A preliminary Virtual Beach model will be developed as part of a USGS training session. Once these efforts are complete a subgroup of the team will meet to begin work on the grant report for 2016-18.

8. Work goals for coming reporting period:

Answer Set: 2018-Q4

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:

Q4 - Oct - Dec 2018
 \$12,000 (UWM)
 None
 No change
 laboratory supplies, Buoy hardware
 1 - Buoy Technician
 In this past reporting period we conducted work associated with the retrieval of our two Green Bay data buoys, and analysis of algal toxins in water samples collected from Green Bay. The two Green Bay West and Green Bay East buoys were retrieved by boat with help from Christopher Houghton (UW- Green Bay) on October 17th. Buoy hulls were power washed and all sensors, cables, solar panels cleaned with dilute acetic acid. Cables were inspected and repaired as necessary. The buoy hardware (datalogger, backup data storage device, cellular modem, solar charge regulator, inertial measurement unit) was removed from both buoys and tested for any failures. Batteries were recharged and the solar charging system tested. The buoy well electronics shelving was redesigned to allow easier access in the field. The electronics circuit controlling the camera on the Green Bay West buoy was repaired. All buoy data was archived on UW-Milwaukee servers as well as on our MySQL database on GoDaddy's server. This data is being prepared for saving to the Surface Water Integrated Monitoring System (SWIMS). Post- deployment calibration procedures have begun to convert data from the 9- degrees of freedom inertial measurement units on both buoys to estimate wave height and direction from the 2018 deployment.

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Question

Answer

Frozen water samples were received and archived in our freezers from the 2018 field campaign. Sub- aliquots were lyophilized and all have now been extracted for the analysis of 12 microcystin congeners by liquid chromatography tandem mass spectrometry. Approximately half of these samples were analyzed during this past reporting period. In addition, two dozen samples have been analyzed for microcystins using the Abraxis enzyme- linked immunosorbent assay for microcystins, the Abraxis protein phosphatase 2A inhibition assay, the Abraxis strip- test for microcystins, and the new MBio light deck instrument for microcystins and cylindrospermopsin.

8. Work goals for coming reporting period:

In the upcoming reporting period we will prepare both buoys for re- deployment including testing of the solar charging system, testing of all sensors, datalogging equipment, cellular communications, and camera connectivity. All sensors will be re- calibrated and components replaced as necessary. In addition, we will be reviewing protocols for transmitting data to the Great Lakes Observing System and the National Data Buoy Center as was accomplished in 2018. The Green Bay East buoy will be outfitted with a camera. The mooring system will be redesigned to have two anchors instead of three, and include use of rope and chain instead of all chain in order to facilitate a more seamless buoy deployment and retrieval. We will be working with Brennan Engineering to deploy a third buoy specifically for measuring wave height and direction near dredging activities.

The remaining water samples from the 2018 field season will be analyzed by LC- MS/MS. Data will be uploaded to SWIMS database and work will begin to statistically analyze toxin data in order to understand the environmental drivers of toxin occurrence in the lower Green Bay AOC.

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:
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:

Q3

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: 2017-Q4

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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: DEFAULT

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:	

Actions

Action	Detailed Description	Start	End Date	Status
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Monitoring Stations

Station ID	Name	Comments
10046831	Bay Beach Center 24"	
10046799	Fox River - GBMSD 16	
10046802	Fox River Mouth - GBMSD Continuous Monitor Site	
10046803	Green Bay Entrance Light - GBMSD Continuous Monitor Light	
10046832	Joliet Park Beach Center	
10046800	Lake Michigan Green Bay - GBMSD 22	
10048665	Lake Michigan Green Bay - GBMSD 23	
10048666	Lake Michigan Green Bay - GBMSD 25	

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Station ID	Name	Comments
10033640	Lake Michigan Green Bay - GBMSD 32	
10046801	Lake Michigan Green Bay - GBMSD 41	
10051179	Lake Michigan Green Bay - Longtail	

Assessment Units

WBIC	Segment	Local Name	Official Name
70	1	Green Bay (Inner Bay, Aoc)	Green Bay
70	2	Green Bay (GI Shoreline)	Green Bay
117900	1	Lower Fox River (Mouth To Depere Dam)	Fox River

Lab Account Codes

Account Code	Description	Start Date	End Date
GL044	Harmful Algal Blooms in Lower	04/06/2016	12/31/2016
GL051	HARMFUL ALGAL BLOOMS IN LOWER	01/01/2017	06/30/2018

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
06/14/2016 12:58	COMPLETE	FOX RIVER ALGAE	10046799	Fox River - GBMSD 16
06/21/2016 10:42	COMPLETE	FOX RIVER ALGAE	10046799	Fox River - GBMSD 16
06/27/2016 09:31	COMPLETE	FOX RIVER ALGAE	10046799	Fox River - GBMSD 16
06/29/2016 11:54	COMPLETE	GREEN BAY ALGAE	10046801	Lake Michigan Green Bay - GBMSD 41
06/29/2016 12:15	COMPLETE	GREEN BAY ALGAE	10033640	Lake Michigan Green Bay - GBMSD 32
06/29/2016 12:34	COMPLETE	GREEN BAY ALGAE	10046800	Lake Michigan Green Bay - GBMSD 22
07/06/2016 10:54	COMPLETE	FOX RIVER ALGAE	10046799	Fox River - GBMSD 16
07/13/2016 08:30	COMPLETE	GREEN BAY ALGAE	10046801	Lake Michigan Green Bay - GBMSD 41
07/13/2016 08:50	COMPLETE	GREEN BAY ALGAE	10033640	Lake Michigan Green Bay - GBMSD 32
07/13/2016 09:06	COMPLETE	GREEN BAY ALGAE	10046800	Lake Michigan Green Bay - GBMSD 22
07/13/2016 09:50	COMPLETE	FOX RIVER ALGAE	10046799	Fox River - GBMSD 16
07/14/2016	COMPLETE	GB BAY BEACH AL	10046831	Bay Beach Center 24"
07/14/2016	COMPLETE	GB JOLIET PARK A	10046832	Joliet Park Beach Center
07/19/2016	COMPLETE	GB BAY BEACH AL	10046831	Bay Beach Center 24"
07/19/2016	COMPLETE	GB JOLIET PARK A	10046832	Joliet Park Beach Center
07/19/2016 10:34	COMPLETE	LOWER BAY ALGAE	10046801	Lake Michigan Green Bay - GBMSD 41
07/19/2016 10:54	COMPLETE	LOWER BAY ALGAE	10033640	Lake Michigan Green Bay - GBMSD 32
07/19/2016 11:26	COMPLETE	LOWER BAY ALGAE	10046800	Lake Michigan Green Bay - GBMSD 22
07/19/2016 11:50	COMPLETE	FOX RIVER ALGAE	10046799	Fox River - GBMSD 16
07/21/2016 08:15	COMPLETE	JOLIET PARK ALGAE	10046832	Joliet Park Beach Center
07/21/2016 13:20	COMPLETE	BAY BEACH COMP	10046831	Bay Beach Center 24"
07/26/2016	COMPLETE	GB BAY BEACH AL	10046831	Bay Beach Center 24"
07/26/2016	COMPLETE	GB JOLIET PARK A	10046832	Joliet Park Beach Center
07/26/2016 14:23	COMPLETE	GREEN BAY ALGAE	10046801	Lake Michigan Green Bay - GBMSD 41

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Start Date	Status	Field ID	Station ID	Station Name
07/26/2016 14:40	COMPLETE	GREEN BAY ALGAE	10033640	Lake Michigan Green Bay - GBMSD 32
07/26/2016 14:55	COMPLETE	GREEN BAY ALGAE	10046800	Lake Michigan Green Bay - GBMSD 22
07/26/2016 15:18	COMPLETE	FOX RIVER ALGAE	10046799	Fox River - GBMSD 16
07/28/2016 08:43	COMPLETE	BAY BEACH ALGAE	10046831	Bay Beach Center 24"
07/28/2016 09:06	COMPLETE	JOLIET PARK ALGAE	10046832	Joliet Park Beach Center
08/01/2016 10:11	COMPLETE	GREEN BAY ALGAE	10046801	Lake Michigan Green Bay - GBMSD 41
08/01/2016 10:29	COMPLETE	GREEN BAY ALGAE	10033640	Lake Michigan Green Bay - GBMSD 32
08/01/2016 10:57	COMPLETE	GREEN BAY ALGAE	10046800	Lake Michigan Green Bay - GBMSD 22
08/01/2016 11:13	COMPLETE	FOX RIVER ALGAE	10046799	Fox River - GBMSD 16
08/01/2016 13:24	COMPLETE	JOLIET PARK GB 8	10046832	Joliet Park Beach Center
08/01/2016 14:08	COMPLETE	BAY BEACH GB 8-1	10046831	Bay Beach Center 24"
08/03/2016	COMPLETE	GB BAY BEACH AL	10046831	Bay Beach Center 24"
08/03/2016	COMPLETE	GB JOLIET PARK A	10046832	Joliet Park Beach Center
08/08/2016 11:12	COMPLETE	GREEN BAYALGAE	10046801	Lake Michigan Green Bay - GBMSD 41
08/08/2016 11:26	COMPLETE	GREEN BAY ALGAE	10033640	Lake Michigan Green Bay - GBMSD 32
08/08/2016 11:51	COMPLETE	GREEN BAY ALGAE	10046800	Lake Michigan Green Bay - GBMSD 22
08/08/2016 12:08	COMPLETE	FOX RIVER ALGAE	10046799	Fox River - GBMSD 16
08/10/2016	COMPLETE	GB BAY BEACH AL	10046831	Bay Beach Center 24"
08/10/2016	COMPLETE	GB JOLIET PARK A	10046832	Joliet Park Beach Center
08/12/2016 08:28	COMPLETE	JOLIET PARK ALGAE	10046832	Joliet Park Beach Center
08/12/2016 08:45	COMPLETE	BAY BEACH ALGAE	10046831	Bay Beach Center 24"
08/15/2016 09:42	COMPLETE	GREEN BAY ALGAE	10046801	Lake Michigan Green Bay - GBMSD 41
08/15/2016 10:06	COMPLETE	GREEN BAY ALGAE	10033640	Lake Michigan Green Bay - GBMSD 32
08/15/2016 10:39	COMPLETE	GREEN BAY ALGAE	10046800	Lake Michigan Green Bay - GBMSD 22
08/15/2016 14:45	COMPLETE	FOX RIVER ALGAE	10046799	Fox River - GBMSD 16
08/16/2016	COMPLETE	GB BAY BEACH AL	10046831	Bay Beach Center 24"
08/16/2016	COMPLETE	GB JOLIET PARK A	10046832	Joliet Park Beach Center
08/19/2016 08:50	COMPLETE	NA	10046832	Joliet Park Beach Center
08/19/2016 09:11	COMPLETE	NA	10046831	Bay Beach Center 24"
08/22/2016 08:07	COMPLETE	GREEN BAY ALGAE	10046801	Lake Michigan Green Bay - GBMSD 41
08/22/2016 08:28	COMPLETE	GREEN BAY ALGAE	10033640	Lake Michigan Green Bay - GBMSD 32
08/22/2016 08:47	COMPLETE	FOX RIVER ALGAE	10046800	Lake Michigan Green Bay - GBMSD 22
08/22/2016 09:13	COMPLETE	FOX RIVER ALGAE	10046799	Fox River - GBMSD 16
08/23/2016 12:11	COMPLETE	JOLIET PARK ALGAE	10046832	Joliet Park Beach Center
08/23/2016 12:45	COMPLETE	BAY BEACH ALGAE	10046831	Bay Beach Center 24"
08/25/2016	COMPLETE	GB BAY BEACH AL	10046831	Bay Beach Center 24"
08/25/2016	COMPLETE	GB JOLIET PARK A	10046832	Joliet Park Beach Center
08/29/2016	COMPLETE	GB BAY BEACH AL	10046831	Bay Beach Center 24"
08/29/2016	COMPLETE	GB JOLIET PARK A	10046832	Joliet Park Beach Center
09/01/2016 09:15	COMPLETE	JOLIET PARK ALGAE	10046832	Joliet Park Beach Center
09/01/2016 09:24	COMPLETE	BAY BEACH ALGAE	10046831	Bay Beach Center 24"
09/06/2016 11:06	COMPLETE	FOX RIVER ALGAE	10046799	Fox River - GBMSD 16
09/07/2016	COMPLETE	GB BAY BEACH AL	10046831	Bay Beach Center 24"
09/07/2016	COMPLETE	GB JOLIET PARK A	10046832	Joliet Park Beach Center
09/09/2016	COMPLETE	GB BAY BEACH AL	10046831	Bay Beach Center 24"
09/09/2016	COMPLETE	GB JOLIET PARK A	10046832	Joliet Park Beach Center
09/13/2016 13:24	COMPLETE	JOLIET PARK ALGAE	10046832	Joliet Park Beach Center
09/13/2016 14:45	COMPLETE	BAY BEACH ALGAE	10046831	Bay Beach Center 24"

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Start Date	Status	Field ID	Station ID	Station Name
09/15/2016 01:18	COMPLETE	GREEN BAY ALGAE	10046801	Lake Michigan Green Bay - GBMSD 41
09/15/2016 01:38	COMPLETE	GREEN BAY ALGAE	10033640	Lake Michigan Green Bay - GBMSD 32
09/15/2016 02:10	COMPLETE	GREEN BAY ALGAE	10046800	Lake Michigan Green Bay - GBMSD 22
09/15/2016 02:24	COMPLETE	FOX RIVER ALGAE	10046799	Fox River - GBMSD 16
09/16/2016	COMPLETE	GB BAY BEACH AL	10046831	Bay Beach Center 24"
09/16/2016	COMPLETE	GB JOLIET PARK A	10046832	Joliet Park Beach Center
09/19/2016	COMPLETE	GB BAY BEACH AL	10046831	Bay Beach Center 24"
09/19/2016	COMPLETE	GB JOLIET PARK A	10046832	Joliet Park Beach Center
09/21/2016 08:31	COMPLETE	GREEN BAY ALGAE	10046801	Lake Michigan Green Bay - GBMSD 41
09/21/2016 08:31	COMPLETE	GREEN BAY ALGAE	10046801	Lake Michigan Green Bay - GBMSD 41
09/21/2016 08:58	COMPLETE	GREEN BAY ALGAE	10033640	Lake Michigan Green Bay - GBMSD 32
09/21/2016 08:58	COMPLETE	GREEN BAY ALGAE	10033640	Lake Michigan Green Bay - GBMSD 32
09/21/2016 09:36	COMPLETE	GREEN BAY ALGAE	10046800	Lake Michigan Green Bay - GBMSD 22
09/21/2016 09:36	COMPLETE	GREEN BAY ALGAE	10046800	Lake Michigan Green Bay - GBMSD 22
09/21/2016 10:09	COMPLETE	FOX RIVER ALGAE	10046799	Fox River - GBMSD 16
09/21/2016 10:09	COMPLETE	FOX RIVER ALGAE	10046799	Fox River - GBMSD 16
09/22/2016	COMPLETE	GB BAY BEACH AL	10046831	Bay Beach Center 24"
09/22/2016	COMPLETE	GB BAY BEACH AL	10046831	Bay Beach Center 24"
09/22/2016	COMPLETE	GB JOLIET PARK A	10046832	Joliet Park Beach Center
09/22/2016	COMPLETE	GB JOLIET PARK A	10046832	Joliet Park Beach Center
09/28/2016	COMPLETE	GB BAY BEACH AL	10046831	Bay Beach Center 24"
09/28/2016	COMPLETE	GB JOLIET PARK A	10046832	Joliet Park Beach Center
09/28/2016 10:12	COMPLETE	FOX RIVER ALGAE	10046799	Fox River - GBMSD 16
09/30/2016 08:36	COMPLETE	JOLIET 9/30/16	10046832	Joliet Park Beach Center
09/30/2016 08:54	COMPLETE	BAY BEACH 9/30/16	10046831	Bay Beach Center 24"
10/03/2016	COMPLETE	BAY BEACH 10/03/16	10046831	Bay Beach Center 24"
10/03/2016	COMPLETE	JOLIET 10/03/16	10046832	Joliet Park Beach Center
10/03/2016 12:20	COMPLETE	GB 41T	10046801	Lake Michigan Green Bay - GBMSD 41
10/03/2016 12:36	COMPLETE	GB 32T	10033640	Lake Michigan Green Bay - GBMSD 32
10/03/2016 12:57	COMPLETE	GB 22T	10046800	Lake Michigan Green Bay - GBMSD 22
10/03/2016 13:21	COMPLETE	FOX RIVER 10/03/16	10046799	Fox River - GBMSD 16
05/23/2017 09:00	COMPLETE	GREEN BAY 41 TOI	10046801	Lake Michigan Green Bay - GBMSD 41
05/23/2017 09:20	COMPLETE	GREEN BAY 32 TOI	10033640	Lake Michigan Green Bay - GBMSD 32
05/23/2017 09:40	COMPLETE	GREEN BAY 22 TOI	10046800	Lake Michigan Green Bay - GBMSD 22
05/23/2017 10:05	COMPLETE	FOX RIVER 16 TOP	10046799	Fox River - GBMSD 16
05/31/2017 09:36	COMPLETE	GREEN BAY JOLIET	10046832	Joliet Park Beach Center
05/31/2017 10:16	COMPLETE	GREEN BAY BAY B	10046831	Bay Beach Center 24"
	CANCELLED		10046799	Fox River - GBMSD 16

Documents

Title	Description	Author	Published	Comments
NEW Water 2017 Q3 Quarterly Report	NEW Water's (Green Bay Metropolitan Sewerage District) quarterly report for 2017 third quarter for assessing cyanobacterial harmful algal blooms (CHABs) in the Lower Green Bay.	Sarah Bartlett	12/11/2017	
NEW Water 2019 Semiannual Report	Progress report for 07/01/2019 - 12/01/2019	Sarah Bartlett	12/01/2019	
NEW Water Progress Report 2018 Q1		Sarah Bartlett		

Wisconsin Department of Natural Resources SWIMS Project Summary

Title	Description	Author	Published	Comments
NEW Water Progress Report 2018 Q2		Sarah Bartlett		
UW Milwaukee 2017 status report	Summary of activities for 2017 season	Todd Miller	02/12/2018	
UW-GB Season Report - 6/1 - 10/31/2018	2018 Report on season progress	Chris Houghton	11/16/2018	
UW-Milwaukee 2018 Q4 Status Report	2018 status - Oct - Dec.	Todd Miller	02/02/2019	
UWM Quarterly Report	Third quarter of 2018	Todd Miller	09/21/2018	

Budget

Combined Budgets:

Combined SLOH:

Combined Total:

Funding

Organization	Source	Type	Amount	Start Date	End Date
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