

Wisconsin Department of Natural Resources SWIMS Project Summary

General Project Information

Project ID: Mallalieu Lake
Name: Mallalieu Lake tmdl development monitoring
Type: TMDL/303d Projects
Subtype: Refine Load Estimates
Status: COMPLETE
Start Date: 07/04/2006
End Date: 06/30/2007
Purpose: The purpose of this project is to collect in-lake water quality samples to be used in the development of a TMDL for Lake Mallalieu, which is on the 303d list. The lake is listed for pH exceedances and poor water quality due to phosphorus. Water quality is currently being collected by DNR staff as part of the Tier 1 non LTT monitoring program from the Willow River above Lake Mallalieu. Continuous flow is also being monitored in the Willow River by USGS. The combination of load monitoring from the river site and in-lake monitoring will be used to develop a phosphorus TMDL.

Objective: This TMDL monitoring project was one of four conducted in WCR during 2006-07. Lake and stream sampling was conducted bi-weekly and begin in June 2006 and continue until September 2006. Lake Mallalieu is a man made riverine lake located within the channel of the Willow River. Since 2004, Lake Mallalieu and an upstream reach of the Willow River have been included on the Environmental Protection Agency's (EPA) 303(d) impaired waters list. The lake is designated as high priority for eutrophication and ph impairments due to excess phosphorus, while the upstream reach of the river is a low priority for dissolved oxygen impairments. The river's designation is due to excess phosphorus and biological oxygen demand (BOD).

The Clean Water Act and USEPA (United States Environmental Protection Agency) require Total Maximum Daily Load (TMDL) goals be developed for 303(d) listed waters. In light of this, Wisconsin's Department of Natural Resources (WDNR) is required to prepare a phosphorus TMDL for Lake Mallalieu and its associated drainage area. Development of the TMDL goals has required monitoring of annual phosphorus loading upstream of the lake and of in-lake water quality conditions.

Comments:
Outcome: Monitoring of phosphorus loads occurred in years 1991, 1999, 2003, and 2006. After monitoring was complete, a land use model using the Soil and Water Assessment Tool (SWAT) was developed to evaluate the effect of land management changes on the quality of water entering Lake Mallalieu (Almendinger 2008). In-lake water quality was modeled using the BATHTUB model (Oldenburg 2008). Information gathered from both the SWAT and BATHTUB models has been used to develop in-lake load reduction goals for the Lake Mallalieu/Willow River TMDL.

Due to excessive phosphorus, Lake Mallalieu is not currently meeting water quality criterion as defined in NR 102.04 (1); Wisconsin Administrative Code. In short, Lake Mallalieu currently cannot support a warm water sport fishery nor does it serve as a 'high quality' recreational resource for its users.

Study Design:
QA Measures:

People

Name	Role	Status	Start Date	End Date	Organization	Comments
BARTILSON, KATHY M	COORDINATOR	ACTIVE	10/07/2012		Wisconsin DNR	
SCHREIBER, KENNETH W	COORDINATOR	ACTIVE	07/04/2006			

Project Statuses

Date	Reported By	Status	Comments
03/08/2010	KENNETH SCHREIBER	Complete	

Actions

Action	Detailed Description	Start	End Date	Status
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Wisconsin Department of Natural Resources SWIMS Project Summary

Action	Detailed Description	Start	End Date	Status
Monitor or Propose 303(d) Listing	Continue monitoring the Willow River, St. Croix County for sediment, phosphorus loading related to an impaired waters listing. Since 2004, Lake Mallalieu and an upstream reach of the Willow River have been included on the Environmental Protection Agency's (EPA) 303(d) impaired waters list.	07/01/2009	06/30/2010	COMPLETE
Monitor Watershed (Status,Sources,Impairments)	Basic waters inventory monitoring should be conducted on the seven waters so designated in this watershed. Lake Mallalieu is a man made riverine lake located within the channel of the Willow River. Since 2004, Lake Mallalieu and an upstream reach of the Willow River have been included on the Environmental Protection Agency's (EPA) 303(d) impaired waters list. The lake is designated as high priority for eutrophication and ph impairments due to excess phosphorus, while the upstream reach of the river is a low priority for dissolved oxygen impairments.	01/01/2010		VERIFY

Monitoring Stations

Station ID	Name	Comments
563121	Lake Mallalieu - Deep Hole	
563132	Lake Mallalieu - Mid-Lake	
564006	Mallalieu Lake - Mallalieu Lake	
563146	St. Croix River - Orange St. Ramp	

Assessment Units

WBIC	Segment	Local Name	Official Name
2606900	1	Willow River (Mouth to Dam)	Willow River
2606900	2	Willow River (Ltl Falls to Willow Fls)	Willow River
2606900	3	Willow River (Willow Fls to 10 MI)	Willow River
2606900	4	Willow River (10 MI to 140 St)	Willow River
2606900	5	Willow River (140 St to 100th)	Willow River
2606900	6	Willow River (100th St to Anderson Spgs)	Willow River
2606900	7	Willow River (Anderson Spgs to New Rchmd Fl.)	Willow River
2606900	8	Willow River (New Richmond Flowage)	Willow River
2606900	9	Willow River (to confluence of branches)	Willow River
2606900	10	North Fork Willow River	Willow River
2606900	82	Race Branch Willow River	Willow River
2607100	1	Mallalieu Lake	Mallalieu Lake

Lab Account Codes

Account Code	Description	Start Date	End Date
WT073	TMDL MONITORING	07/01/2005	09/30/2006
WT086	TMDL MONITORING	10/01/2006	09/30/2007

Wisconsin Department of Natural Resources SWIMS Project Summary

Forms

Form Code	Form Name
CONTINUOUS	Continuous Data Upload
INORGANIC	Inorganic Lab - Field Data

Methods

Method Code	Description
HYDROLAB	Guidelines and Procedures for SWAT Team Continuous Meter Deployment
DNR-FPM-2301	Open Channel Flow Measurement 1988
GRAB SAMPLE	Water Grab Sample Guidelines and Procedures 2005

Fieldwork Events

Start Date	Status	Field ID	Station ID	Station Name
05/24/2006 10:05	COMPLETE	LM	563132	Lake Mallalieu - Mid-Lake
06/08/2006 13:15	COMPLETE	LM1	563132	Lake Mallalieu - Mid-Lake
06/22/2006 12:20	COMPLETE	LM1	563132	Lake Mallalieu - Mid-Lake
07/05/2006 10:30	COMPLETE	LM1	563132	Lake Mallalieu - Mid-Lake
07/25/2006 14:10	COMPLETE	LM1	563132	Lake Mallalieu - Mid-Lake
08/02/2006 12:30	COMPLETE	LM1	563132	Lake Mallalieu - Mid-Lake
08/17/2006 16:45	COMPLETE	LM1	563132	Lake Mallalieu - Mid-Lake
08/30/2006 11:30	COMPLETE	ML1	563132	Lake Mallalieu - Mid-Lake
09/13/2006 11:45	COMPLETE	LM1	563132	Lake Mallalieu - Mid-Lake

Documents

Title	Description	Author	Published	Comments
DESIGNATION OF SENSITIVE AREAS, LAKE MALLALIEU, ST. CROIX COUNTY	DESIGNATION OF SENSITIVE AREAS, LAKE MALLALIEU, ST. CROIX COUNTY	Deb Konkel	03/15/2006	
DRAFT Lake Mallalieu / Willow River TMDL Implementation Plan	TMDL Implementation Plan	St. Croix County Land and Water Conservation Department, WDNR	02/03/2012	
LAKE MALLALIEU IMPAIRED WATERS LISTING DOCUMENTATION	Data Documentation Lake Mallalieu Impaired Waters Listing Documentation, St. Croix County	Schreiber, Ken	05/11/2005	
Lake Mallelieu Implementation Project			04/01/2014	
MALLALIEU LAKE FY07 MONITORING PROPOSAL	MALLALIEU LAKE FY07 MONITORING PROPOSAL	Schreiber, Kenneth	07/01/2006	
MALLALIEU LAKE SENSITIVE AREA DESIGNATION - ORIGINAL MAP	MALLALIEU LAKE SENSITIVE AREA DESIGNATION - ORIGINAL MAP	Deb Konkel	03/15/2006	
MALLALIEU LAKE SENSITIVE AREA DESIGNATION - WILDLIFE AND FISH USE OF AQUATIC PLANTS	MALLALIEU LAKE SENSITIVE AREA DESIGNATION - WILDLIFE AND FISH USE OF AQUATIC PLANTS	Deb Konkel	03/15/2006	
Mallalieu Lake 2607100 Chla Package Rpt 2012	Condition Assessment Report	Aaron Larson	06/13/2011	
Mallalieu Lake 2607100 TP Package Rpt 2012	Condition Assessment Report	Aaron Larson	06/13/2011	
Mallalieu Lake Sensitive	Table of Contents	Deb Konkel	03/15/2006	

Wisconsin Department of Natural Resources SWIMS Project Summary

Title	Description	Author	Published	Comments
Area Designation - Final Report - Table Of Contents				

Budget

Combined Budgets:

Combined SLOH:

Combined Total:

Funding

Organization	Source	Type	Amount	Start Date	End Date
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