

CITY OF SHELL LAKE 2011 ANNUAL REPORT FOR TECHNICAL OVERSIGHT COMMITTEE

To: Members of the Technical Oversight Committee

From: Bradley A. Pederson, City Administrator, Shell Lake, Wisconsin

According to condition #53 of our DNR permit, we are to submit an annual report by January 31 each year to DNR, the Voigt Intertribal Task Force, GLIFWC and the St. Croix Band. Also, according to condition #63 we are to provide an annual progress report to members of the Technical Oversight Committee prior to the annual meeting. Since our annual meeting is scheduled for March 5, 2012, I'm using this report to satisfy both conditions.

We have not run the diversion since July 18, 2005. In 2010, the lake level increased 5 inches over the previous year, and we ended the year at 1217.74 MSL. In the beginning of 2011, we received good rainfall and the lake level rose to 1218.58 MSL (5/31/11) only to fall down to 1217.37 MSL in November, 2011. (note: the lake would have to rise approximately 3' before the City would consider running the diversion.)

In this section of the report, you'll find an attachment entitled "Lake Studies – Permit required and Long-Term Monitoring Protocol – 2011". This spreadsheet will show you the tests that were conducted and the respective dates the information was gathered in 2011.

Also, in this section of the report, you'll find an attachment entitled "Lake Studies-Permit required and Long-Term Monitoring Protocol-2012". This spreadsheet shows the monitoring planned for 2012. As you can see, this list is tentative based on the action of the TOC.

The first white tab contains an updated spreadsheet entitled "Summary of Sampling Requirements by Year". This spreadsheet (prepared and continually updated by Kathy Bartilson) shows the changes in the Long Term Study Protocol as approved by the TOC. The next page shows the progress on each of the special projects that Kathy mentions in her spreadsheet.

The remaining white tabs contain either monitoring results or progress on the various projects that the City has implemented.

Please review this annual report and don't hesitate to give Lake Coordinator, Dave Vold a call at 715/468-7679 if you have questions or recommendations. We'll also plan to review it and ask for your input at the next TOC meeting. Thanks for your help in assisting the City in meeting its permit obligations.

Invasive Species Monitoring

(This section contains information about Shell Lake's Invasive Species Monitoring and inspection program)

Zebra mussel and spiny water flea veliger

Again in this year, the City Crew used two fine-mesh nets to collect lake samples for zebra mussel veliger and spiny water fleas. In 2011, the samples were collected in five locations on Shell Lake on 6/28, 7/28, 8/29, and 10/6. Once the samples were collected, they were sent to DNR for analysis. Again in 2011, all samples were negative. (see attached report)

Pipeline Corridor Inspections

Refer to reports enclosed in this section

Invasive Species Inspection Program

- a. Clean Water Clean Boats: Again this year with the assistance of a DNR grant, the City hired four inspectors who inspected trailered watercraft entering Shell Lake. They staffed our main landing 14 hours per day, seven days throughout the summer. A power point presentation is enclosed in this section which gives the details of 2011. Over 200 hours were also spent inspecting at the Round Lake Access.
- b. Monitoring of Vegetative Beds and Landings for Eurasian Milfoil: Kris Larsen performed these inspections on 6/11, 7/24, 8/15 and 9/23. His written reports to the City indicated that he had boated across and inspected the weed beds of Shell Lake. He verified that there was no Eurasian milfoil found during these inspections. (note: Kris Larsen is an invasive species specialist with WI DNR)
- c. Adult Zebra Mussel Monitors: Three monitors were installed on docks around the lake in June 2011 and removed in September 2011. No zebra mussels were observed.
- d. VHS Testing: One hundred fifty yellow perch were collected from Shell Lake (Washburn County, WI) by Don Taylor (St. Croix Tribal Natural Resources Dept) on October 31, 2011. Water temperature at the time of collection was 6.6C. The fish arrived to the University of Minnesota Veterinary Diagnostic Laboratory in good condition with no apparent sign of disease. (see attached report)

Invasive Species Education Program

Letter from Mayor: The enclosed letter was sent to all Shell Lake property owners with an attachment called "Beach Maintenance Activities" – a DNR publication.

Purple Loosestrife

Again this year City staff identified locations of Purple Loosestrife infestations throughout the corporate boundaries. The plant was eradicated by the city crew on public property and property owners were notified of their infestations and were asked to eradicate. . Refer to attached inventory.

Lake Studies-Permit required and Long-Term Monitoring Protocol-2011							Revised 12/11
Parameter	Date of Collection						Remarks
	Feb. Or Mar.	Spring- Right After Ice-Out	Mid- June	Mid- July	Mid- Aug.	Sept.	
Permit Required Monitoring							Refer to note on bottom of page 2.

Eurasian Water Milfoil			6/11/11	7/24/11	8/15/11	9/23/11	Transects at landings and vegetative beds
Zebra Mussel Veliger			6/28/11	7/28/11	8/29/11	10/6/11	2 stations-North Basin, 2 stations-South Basin, 1 station at main landing
Zebra Mussel Adult			X	X	X	X	-Adult plate samplers on Docks-nothing reported in 2011
Spiny Water Fleas			6/28/11	7/28/11	8/29/11	10/6/11	2 stations-North Basin, 2 stations-South Basin, 1 station at main landing
Invasive Species along pipe corridor			6/28/11	7/29/11	8/31/11		Check for invasive species & Erosion control
Hydrogeology							USGS has completed field work on this 3-yr study. Final report in 2012.
VHS Testing						10/31/11	Completed by St. Croix Tribal Native Resources
Groundwater Monitoring	2/14/11		6/30/11			11/9/11	Measure water level elevation in 6 wells on a quarterly basis

Projects to be completed with Lake Protection Grant

Lake Phosphorus Study Conducted by USGS	X	X	X	X	X	X	Started in 2009. Will be completed in 2011. Final report in 2012(note: This study was extended 1 yr to collect more run-off info.)
Ind. Park Stormwater Project							Construction completed in 2009
City Park Bio Cell			X				Construction completed in 2011.
Lake Access Improvement Projects	X	X	X	X	X	X	Resource Management Plans completed. Erosion Control Projects on South Bay & North Landings completed.
Town Square Rain Gardens		X	X				Rain Gardens were constructed in 2011.

Yellow River Studies-Permit required and Long-Term Monitoring Protocol – 2011 Revised 12/11		
Parameter	Approximate Date of Collection	Remarks
River levels at Hector Dam	-weekly when diversion is running and August annually	River level recorded on 8/16/11 as 1026.51 MSL
Aerial Photography of River	-first 2 weeks in august – annually	Completed on 8/27/03; 8/1/04 8/14/05;8/5/06 9/1/07;8/6/08 8/12/09;8/10/10; 8/9/11
Permit related Monitoring	-3 sites on River -Dissolved Oxygen -Temperature -Dissolved Gas Saturation -pH -Conductivity -Biological Oxygen Demand -Suspended Solids -Total Phosphorus -Dissolved Phosphorus -Total Kjeldahl Nitrogen -Ammonia -Nitrate plus Nitrite Nitrogen	Up to date- Started in '03 Once in every calendar quarter during diversions and in August annually, even if diversions do not occur each year. Done: 8/30/11
	-Mercury, total -Mercury, methylated	Refer to note below

Note: Mercury monitoring was dropped on the lake and river by DNR in concurrence with The TOC on 8/17/10 and will resume when:

1. The monitoring will be resumed if the lake level reaches 1220.0 feet mean sea level, Regardless of the time of year (as proposed by the City.)
2. The monitoring will be resumed at least two weeks in advance of any future diversion, regardless of the time of year (in addition to item 1 above, unless a recent test results is available from within the previous 12 months).
3. Water quality sampling is required in Shell Lake in 2012, 2013 and 2014 under the Shell Lake Diversion Long-Term Monitoring Protocol. Total and methylated mercury testing must be included in one of these three years of sampling, both on Shell Lake and at the 3 sites on the Yellow River.

(Tentative upon Action of the TOC)

Lake studies-Permit required and Long-Term Monitoring Protocol-2012

Revised 1/12

Parameter	Approximate Date of Collection						Remarks
	Feb. or Mar.	Spring- Right After Ice-Out	Mid- June	Mid- July	Mid- Aug.	Sept.	
Permit Required Monitoring							Refer to note on bottom of page 2.
Water Chemistry		X					Sample 0.5 meter below surface. 21 constituents: BOD,NO+NO-N, NH- N, NH+organic-N(TKN), P(dissolved),Ca,Cl.Mg. Na, KpH, total alkalinity, hardness, F3, Mn, color, turbidity, suspended solids, dissolved solids, SO, and SiO. (3 locations)
Dissolved oxygen, temperature pH, and specific conductance	X	X	X	X	X	X	Vertical profiles are defined by measuring the four parameters from 0.05 meters below the lake surface to the lake bottom at 0.5-1.0 meter intervals (3 locations)
Total Phosphorus # of samples	(2) X	(2) X	(2) X	(2) X	(3) X	(2) X	0.5 meter from surface and 0.5 meter from bottom, except for Mid-Aug. when an additional sample from just below the thermocline will be analyzed. (3 locations)
Chlorophyll A		X	X	X	X		0-0.5 meter from the surface
Secchi depth		X	X	X	X		Index of clarity (3 locations)
Mid-summer Nitrogen and Phosphorus Species				X			0-.05 meter from the surface. NO+NO-N(dissolved), NH-N (dissolved), NH+organic-N (filtered), and P (dissolved) (3 locations)
Pesticide Scan		X					Sample on the first collection after spring runoff. Continued sampling can be added or reduced dependent of results as the monitoring progresses- (4 locations)
Eurasian Water Milfoil			X	X	X	X	Transects at landings and vegetative beds
Zebra Mussel Veliger			X	X	X	X	2 stations – North Basin, 2 stations – South Basin, 1 station at main landing
Zebra Mussel Adult			X	X	X	X	-Adult plate samplers on docks
Spiny Water Fleas			X	X	X	X	2 stations – North basin, 2 stations – South Basin, 1 station at main landing
Invasive Species along pipe corridor			X	X	X	X	Check for invasive species & Erosion control
Hydrogeology							USGS has completed field work on this 3-yr study. Final report 2012
VHS Testing							Plan to test only if diversion is started (refer to note on pg 2)
Groundwater Monitoring	X			X		X	Measure water level elevation in 6 wells on a quarterly basis. 3 times/year

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VHS Testing

The St. Croix Tribal Natural Resources Department completed VHS testing on Shell Lake on April 21, 2010 and October 31, 2011 and found no apparent sign of the disease. If grant money is available, they plan to repeat this test in 2012.



Bradley Pederson <shelllakeadm@gmail.com>

FW: Results for Shell Lake veliger-spiny sampling

1 message

Larsen, Kris H - DNR <Kris.Larsen@wisconsin.gov>
To: City of ShellLake <shelllakeadm@gmail.com>

Tue, Dec 20, 2011 at 9:34 AM

Hi Dave --

Here is the response from the lab that analyses the water samples. In order to protect the lake and its shoreline residents from any potentially destructive consequences from AIS in the lake which would bring about the closing of the diversion pipeline, I would like to continue monitoring for zebra mussel veligers.

-- Kris Larsen

From: Steinke, James A - DNR
Sent: Tuesday, December 20, 2011 08:25 AM
To: Larsen, Kris H - DNR
Subject: RE: Results for Shell Lake veliger-spiny sampling

Hi Kris,

All Shell Lake samples submitted for 2011 tested negative for invasives. Scott Van Egeren informed me that Shell Lake is on the list of lakes that do not have enough calcium in them to support shell growth for ZM's. I did analyze all the SWF samples. If you need a copy of the spread sheet let me know.

Jim

James Steinke
Plymouth Lab
1155 Pilgrim Road
Plymouth, WI 53073
(920) 892-8756 x 3035
james.steinke@wisconsin.gov

From: Larsen, Kris H - DNR
Sent: Monday, December 19, 2011 04:04 PM
To: Steinke, James A - DNR
Subject: Results for Shell Lake veliger-spiny sampling

Hi Jim --

I was wondering if you have the results of the lake samples for zebra mussel veligers and spiny water fleas for Shell Lake? If/when you get them could you forward a copy to me? The Shell Lake folks have a grant to do the sampling and need the results for their Final Report. Thanks.

Self Help Lake Monitoring and Invasive Species Specialist
Wisconsin Department of Natural Resources
(☎) phone: (715) 635-4072
(☎) fax: (715) 635-4013
(✉) e-mail: kris.larsen@wisconsin.gov

Dear Lakeshore Property Owners,

We are once again getting ready for the summer season in Shell Lake. The season will begin on May 7, with the opening of fishing season. Our common goal as lakeshore property owners is to ensure that our lakes remain a valuable water resource for generations to come. As the City's Mayor and a lakeshore property owner myself, I ask that we work together in the following ways to protect our lakes:

- **Protect the Lake from Invasive Species.** Before launching, please take the time to inspect your watercraft and trailer(s). The owners' routine inspection and cleaning of their boats helps protect from aquatic invasive species such as Eurasian water milfoil, zebra mussels, and VHS. This includes draining all water from our boats and live wells and washing watercraft and trailers with hot water before they move from one water body to another. Our aquatic invasive species inspectors will again be at Shell Lake's main landing (Round Lake on high activity weekends) to make sure that boats are launched cleanly and quickly.
- **Inspect your property and destroy purple loosestrife.** We have an informational brochure available at City Hall.
- **Maintain a natural shoreline.** I continue to urge landowners to maintain a natural shoreline. Studies show that leaving lakeshores natural and establishing buffers will help protect the water quality in our lakes. If you'd like more information on this topic, please contact City Hall at 715-468-7679. The Washburn County Land Conservation Department, located in the Washburn County Courthouse in Shell Lake, will also assist in design and has a recommended plant list for this area. Their phone number is (715)468-4654. Remember: A natural shoreline is a healthy shoreline.
- **Refrain from using fertilizers that contain phosphorous** (Wisconsin has enacted legislation that restricts the use of fertilizers containing phosphorus).
- **Buy an annual launch permit for \$20.00** (even if you use a launch service). This fee not only assists the AIS inspection program, but also helps maintain the launch site.
- **Protect your beach.** With this letter, I'm attaching an informational sheet entitled "Beach Maintenance Activities". Please adhere to these rules as there may be fines for violations.
- **Volunteer to be a citizen lake monitor.** To learn more about the program, please call City Hall at 715-468-7679.
- **Adopt an Access.** Help us beautify and improve our accesses by volunteering your time to keep them clean. See attachment for details.
- **Attend the Lake Meeting.** Please join us for our annual lake meeting on Saturday, June 25, 2011 starting at 8:30 a.m. at the Shell Lake Community Center located near the City Park. This year our featured speaker is Paul Juckem of the U. S. Geological Survey. Paul will discuss the groundwater study which was recently completed in this area. This study has significance for all the lakes in this area. Coffee and rolls will be served, exhibits will feature information on invasives, shoreland buffers and rain gardens, etc.

Hope you enjoy our beautiful lakes and city this summer.

Sally Peterson, Mayor
City of Shell Lake

TO: Dave Vold
City of Shell Lake

FROM: Kris Larsen

DATE: 14 June 2011

RE: June surveillance for EWM

On June 11, Kris Larsen performed an inspection of the weed beds on Shell Lake. He boated across the beds looking for Eurasian Water Milfoil. He did not find any Eurasian Water Milfoil during the survey.

TO: Dave Vold
City of Shell Lake

FROM: Kris Larsen

DATE: 24 July 2011

RE: July surveillance for EWM

On July 24, Kris Larsen performed an inspection of the weed beds on Shell Lake. He boated across the beds looking for Eurasian Water Milfoil. He did not find any Eurasian Water Milfoil during the survey.

TO: Dave Vold
City of Shell Lake

FROM: Kris Larsen

DATE: 15 August 2011

RE: August surveillance for EWM

On August 13, Kris Larsen performed an inspection of the weed beds on Shell Lake. He boated across the beds looking for Eurasian Water Milfoil. He did not find any Eurasian Water Milfoil during the survey.

TO: Dave Vold
City of Shell Lake

FROM: Kris Larsen

DATE: 19 October 2011

RE: August surveillance for EWM

On September 23, Kris Larsen performed an inspection of the weed beds on Shell Lake. He boated across the beds looking for Eurasian Water Milfoil. He did not find any Eurasian Water Milfoil during the survey.

University of Minnesota

Veterinary Diagnostic Laboratory
College of Veterinary Medicine
1333 Gortner Avenue
St. Paul, MN 55108

1-800-605-8787
612-625-8787
Fax: 612-624-8707
e-mail: vdl@umn.edu
www.vdl.umn.edu

Accession Number: D11-047446

Owner: THOMPSON, JERRY
WI TRIBAL CONSERVATION
ADVISORY COUNCIL (WTCAC)
E3200 1430TH AVE
PRAIRIE FARM, WI 54762

Veterinarian:
St Croix Tribal Natural Resources Dept
24663 Angeline Avenue
Webster, WI 54893

Site: SHELL LAKE
Received: 11/01/2011
Reference:
Species: Fish
Breed: Yellow Perch
Age: **Sex:**
Weight:

Specimen: 150 yellow perch were collected from Shell Lake (Washburn County, WI) by the St. Croix Tribal Natural Resources Dept on Oct 31, 2011. Water temperature at time of collection: 6.6C. The fish arrived to the VDL in good condition with no apparent sign of disease.

Virology: Tissue homogenate (30 pools of 5 fish each) were cultured on the EPC and FHM cell lines at 15C for 28 days, blind passed on day 14. Results... No virus isolated, VHSV Negative.

Species	Number (pooled samples)	Result
Yellow Perch	150 (30)	No virus isolated, VHSV Negative

Nicholas BD Phelps, MS, AFS-FHS Fish Health Inspector

WI Tribal Conservation Advisory Council

--- Report ---

Fax (715)3498302 Ph (715)3492195 ext: 5142

Fax:	Final:	Written: 12/02/2011	Addendum:
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Shell Lake Aquatic Invasive Species Project-2011
Purple Loosestrife Inventory Sheet

NAME: City of Shell Lake

Site Number	Date	Location			Water Body (if applicable)	# of Plants	Extent of Infestation			Lake, ditch, etc.
		Section	Town	Range			<0.1 acre	.1-.5 acre	>0.5 acre	
1	7/28/2011		1337 S Lake Dr		Shell Lake	5				Lakeshore
2	7/28/2011		DNR Land on Shell Lake		Shell Lake-So. Bay				X	Lakeshore
3	7/28/2011		DNR Island		Shell Lake-So. Bay				X	Lakeshore
4	8/4-8/5/11		Airport Land		Shell Lake-So. Bay				X	Lakeshore
5	8/9/2011	City land across from Bus Grg.			Wetland		X			Wetland
6	8/9/2011	111 S Lake Dr-(Tewalthomas)			Shell Lake	15				Lakeshore
7	8/10/2011		So Bay Access		Shell Lake	25				Lakeshore
8	8/10/2011		Access by Diversion Ditch		Shell Lake	25				Lakeshore
9	8/10/2011		Ron Rieman Property		Wetland	10				Wetland
10	8/11/2011		Donovan Cove Access		Shell Lake	15				Lakeshore
11	8/11/2011		336 Donovan Cove		Shell Lake	20				Lakeshore
12	8/11/2011		North Landing Access		Shell Lake	20				Lakeshore
13	8/11/2011		Winton Pratt Access		Shell Lake				X	Lakeshore
14	11-Aug		Wetland by Sand Rd		Wetland	3				Wetland
15	8/11/2011		Road Ditch on Donovan Cove		Shell Lake	5				Ditch
16	8/15/2011		Access #12-South Bay		Shell Lake	20				Lakeshore
17	8/15/2011		Rd. Ditch @ Drainage Way		Shell Lake	5				Ditch
18	8/15/2011		Wetland @ Cenex		Wetland	5				Wetland

Actions taken

The Mayor sent a letter to all lakeshore property owners asking them to remove purple loosestrife on their property.

If the City noticed purple loosestrife on private property, the owner received a letter or phone call.

The City Crew either pulled or sprayed Roundup to kill purple loosestrife on all city-owned property and accesses. (DNR treated theirs)

An article was placed in the Washburn County Register explaining how to identify purple loosestrife and methods of control.

An invasive species exhibit was displayed at the Lake District Annual Meeting.

A purple loosestrife plant was displayed in City Hall with brochures available to the public.

Initiated an "adopt and access" program in which an individual or group can adopt an access and monitor for invasive species.