



## CITY OF SHELL LAKE 2009 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 February, I'm using this report to satisfy both conditions.

We have not run the diversion since July 18, 2005. Since we have been experiencing below average rainfalls, the level of Shell Lake continues to decline. The attached chart shows an overall steady decline since May 2003. On 12/1/09 the lake level was 1217.3.

In this section of the report, you'll find an attachment entitled "Lake Studies-Permit required and Long-Term Monitoring Protocol – 2009". This spreadsheet will show you the tests that were conducted and the respective dates the information was gathered.

Also in this section of the report, you'll find an attachment entitled "Lake Studies-Permit required and Long-Term Monitoring Protocol-2010. This spreadsheet shows both the monitoring and projects planned for 2010. Here you will note the change in direction that the TOC approved in 2008 which calls for reducing the number of lake and river studies while implementing new projects which should reduce non-point pollution to the lake.

The first white tab contains an updated spreadsheet entitled "Summary of Sampling Requirements by Year". This spreadsheet (prepared by Kathy Bartilson) shows the changes in the Long Term Study Protocol as approved by the TOC.

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

Lake Studies-Permit required and Long-Term Monitoring Protocol-2009							Updated 12/09
Parameter	Date of Collection						Remarks
	Feb. Or Mar.	Spring- Right After Ice-Out	Mid- June	Mid- July	Mid- Aug.	Sept.	
Permit Required Monitoring					8/31/09		If no diversions occur, Total & methylated mercury in August each year at inlet str.
Eurasian Water Milfoil			6/14/09	7/22/09	8/24/09	10/8/09	Transects at landings and vegetative beds
Zebra Mussel Veliger			6/24/09	7/22/09	8/12/09	9/17/09	2 stations-North Basin, 2 stations-South Basin, 1 station at main landing
Zebra Mussel Adult			Installed	X	X	Removed	-Adult plate samplers on docks
Spiny Water Fleas			6/24/09	7/22/09	8/12/09	9/17/09	2 stations-North Basin, 2 stations-South Basin, 1 station at main landing
Invasive Species along pipe corridor		5/20/09	6/30/09	7/31/09	8/26/09		Check for invasive species & Erosion control
Hydrogeology	X	X	X	X	X	X	USGS Contract-field work completed
Benthic Inv. Study of Lake littoral areas			6/9/09				Study completed by St. Croix Tribe
<b>Projects to be completed with Lake Protection Grant</b>							
Lake Phosphorus Study Conduc- ted by USGS	X	X	X	X	X	X	Study started in 2009
Ind. Park Stormwater Project				7/09 designed by Cooper Engineer - ing			Construction completed in 2009
City Park Bio Cell		5/21/09 Surveyed					Site was surveyed 5/09-design being prepared by Land Cons.
Lake Access Improvement Projects							Installed one gully control str & one educational kiosk

**Yellow River Studies-Permit required and Long-Term Monitoring Protocol – 2009 Updated 12/09**

Parameter	Approximate Date of Collection	Remarks
River levels at Hector Dam	-weekly when diversion is running and August annually	Started 11/3/03 This year – 8/14/09
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
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.  This year-8/31/09
	-Mercury, total -Mercury, methylated	In august annually, even if diversions do not occur each year. 8/31/09

**Lake Studies-Permit required and Long-Term Monitoring Protocol-2010**

**Revised 12/09**

Parameter	Approximate Date of Collection						Remarks
	Feb. Or Mar.	Spring- Right After Ice-Out	Mid- June	Mid- July	Mid- Aug.	Sept.	
Permit Required Monitoring					X		If no diversions occur, Total & methylated mercury in August each year at inlet str.

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	X	X	X	X	X	X	USGS has completed field work on this 3-yr study
VHS Testing							Plan to test only if diversion is started

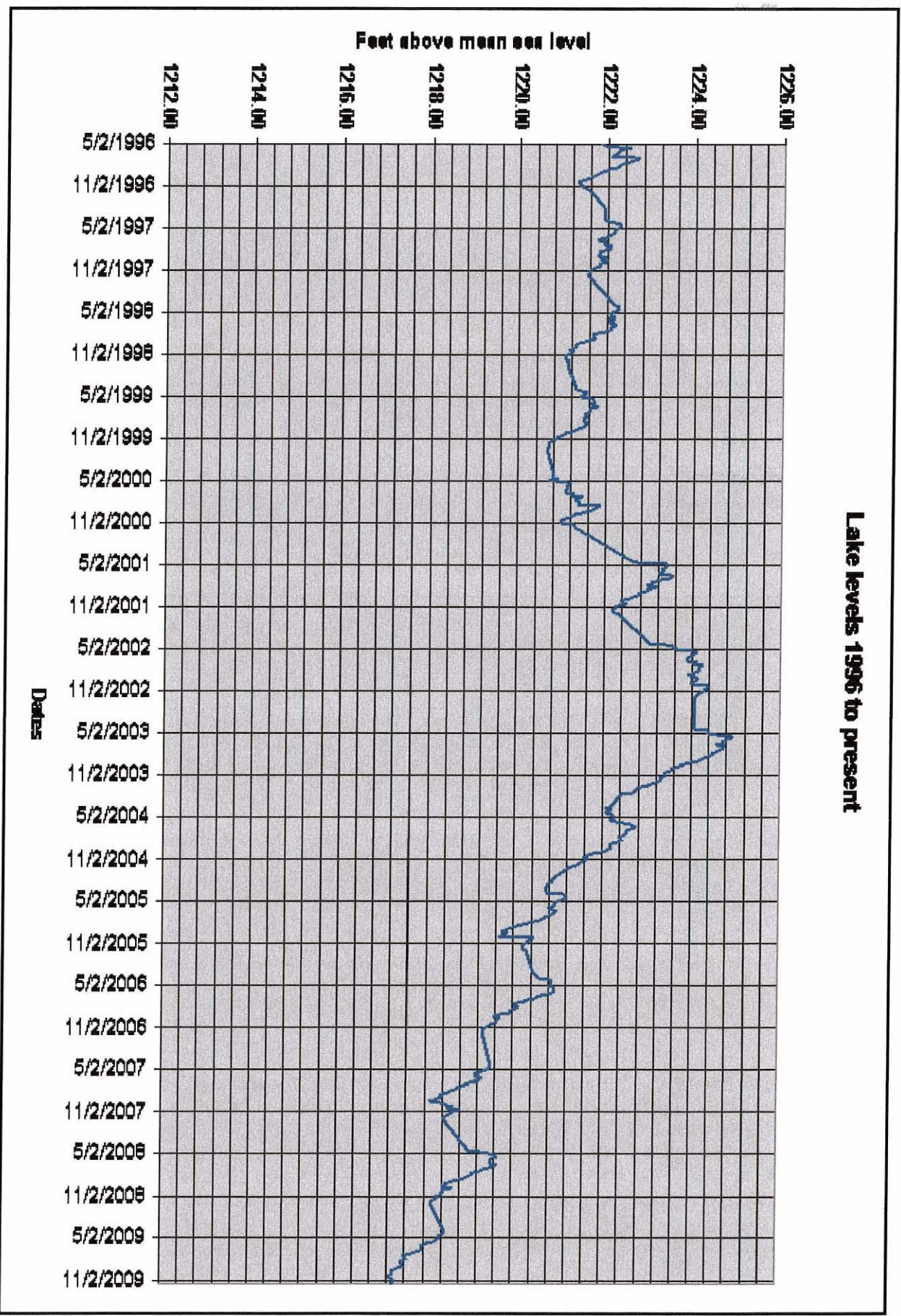
**Projects to be completed with Lake Protection Grant**

Lake Phosphorus Study Conduc- ted by USGS	X	X	X	X	X	X	Started in 2009 Will be completed in 2011
Ind. Park Stormwater Project					X		Construction completed in 2009
City Park Bio Cell					X		Construction planned 2010
Lake Access Improvement Projects	X	X	X	X	X	X	A study has been completed and work will continue on education & erosion control

**Yellow River Studies-Permit required and Long-Term Monitoring Protocol – 2010 Revised 12/09**

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River levels at Hector Dam	-weekly when diversion is running and August annually	Started 11/3/03
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
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.
	-Mercury, total -Mercury, methylated	In august annually, even if diversions do not occur each year.

### Lake levels 1996 to present



### **Invasive Species Monitoring**

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

#### **Zebra mussel veliger and spiny water fleas**

In past years, the city crew had used one fine-mesh net to collect lake samples for both zebra mussel veliger and spiny water fleas. This year, at DNR's request, an additional net of a different size mesh was purchased to collect samples for each species separately. In 2009, the samples were collected in five locations on Shell Lake on 6/24, 7/22, 8/12, and 9/17. Once the samples were collected, they were sent to DNR for analysis. Again in 2009, all samples were negative. (see attached report)

#### **Pipeline Corridor Inspections**

Refer to reports enclosed in this section

#### **Invasive Species Inspection Program**

- a. Water Inspections: 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 for 2009.
- b. Monitoring of Vegetative Beds and Landings for Eurasian Milfoil: Kris Larsen performed these inspections on 6/14, 7/22, 8/24 and 10/8. 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 2009 and removed in September 2009. No zebra mussels were observed.

#### **Invasive Species Education Program**

Letter from Mayor: The enclosed letter was sent to all Shell Lake property owners with a brochure on Shoreland Restoration.

#### **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. Also, volunteers raised beetles which were distributed in the largest infestations. Refer to attached inventory.

<b>Spiney Water Flea Monitoring 2009</b>
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Lake	WBIC	County	Collector(s)	Region	Date Sample was Collected	Number of Samples	+/-	Analyzed by
Shell Lake	2496300	Washburn	Vold	NOR	6/24/2009	5	-,-,-,-,-	JAS
Shell Lake	2496300	Washburn	Vold	NOR	7/22/2009	5	-,-,-,-,-	JAS
Shell Lake	2496300	Washburn	Vold	NOR	8/12/2009	5	-,-,-,-,-	JAS
Shell Lake	2496300	Washburn	Vold	NOR	9/17/2009	5	-,-,-,-,-	JAS

<b>Zebra Mussel Monitoring Login 2009</b>
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Lake	WBIC	County	Collector(s)	Region	Date Sample was Collected	Number of Samples	+/-	Analyzed by
Shell Lake	2496300	Washburn	Vold	NOR	6/24/2009	5	-,-,-,-,-	JAS
Shell Lake	2496300	Washburn	Vold	NOR	7/22/2009	5	-,-,-,-,-	JAS
Shell Lake	2496300	Washburn	Vold	NOR	8/12/2009	5	-,-,-,-,-	JAS
Shell Lake	2496300	Washburn	Vold	NOR	9/17/2009	5	-,-,-,-,-	JAS



# City of Shell Lake

P.O. Box 520  
Shell Lake, Wisconsin 54871  
(715) 468-7679 Fax (715) 468-7638



Dear Shell Lake Property Owners:

Shell Lake quietly shed its wintry blanket last week. The sounds of waves lapping and loons singing are sure signs of spring.

Ready for the May 2 opening day of fishing season, we've rolled out a brand new 100-ft floating dock, Shell Lake's equivalent to a red carpet, made possible with a Recreational Boating Facilities Program grant. Shell Lake was also successful in obtaining a grant for Aquatic Invasive Species protection. We've hired and trained a full complement of boat inspectors to make sure that our city's greatest asset continues to be an Outstanding Resource Water for generations to come.

Shell Lake's aquatic invasive species prevention program is a model program in Wisconsin. Your support of the program is critical to preserve the quality of our lake and to fulfill the requirements of our DNR permit for lake discharge. There are four ways in which we ask you to support the invasive species program and help protect Shell Lake:

- Buy an annual launch permit for \$20
- Inspect your property and destroy any vegetative invasive species, such as purple loosestrife (informational brochure in City Hall)
- Maintain a natural shoreline
- Refrain from using fertilizers that contain phosphorous

A natural shoreline is a healthy shoreline; allowing native forbs and grasses to grow helps prevent invasive species from gaining a foothold on the shores of Shell Lake. Please remember that it is illegal to disturb the soil below the ordinary high water mark. We also urge and, in some cases, require that property owners maintain a 30-foot wide vegetative buffer above the ordinary high water mark.

Enclosed is a flyer on shoreland restoration with simple instructions on how to begin restoring your shore. A DVD is also available from Lake Coordinator Dave Vold at City Hall. The Washburn County Land Conservation Department, located in the Washburn County Courthouse in Shell Lake, will assist in design and has a recommended plant list for this area. Their phone number is (715)468-4654.

The use of fertilizers containing phosphorous is prohibited. If you *must* apply fertilizer to your lawn or garden, please take a moment to ensure that the product you are using is phosphorous free. Phosphorous runoff into the lake causes algal blooms that degrade the quality of our lake, affecting its health and, consequently, the value of your Shell Lake property.

For those of you who live in the Twin Cities area, zebra mussels have invaded Prior Lake and pose a serious threat to inland lakes in Wisconsin. If your boat travels from lake to lake, please perform hot water washing and thorough inspection yourself before launching on Shell Lake. With your support and cooperation, we hope to keep zebra mussels out of Shell Lake.

As the Mayor of Shell Lake and a lakeshore property owner myself, I appreciate your support of the city's initiatives to keep Shell Lake free of invasive species. I look forward to seeing you at the annual meeting of the Shell Lake Inland Lake Protection District on June 27!

Donna Barnes-Haesemeyer, Mayor  
City of Shell Lake

TO: Dave Vold  
City of Shell Lake

FROM: Kris Larsen

DATE: June 22, 2009

RE: June surveillance for EWM

On June 14, 2009 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: July 29, 2009

RE: July surveillance for EWM

On July 22, 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: August 24, 2009

RE: August surveillance for EWM

On August 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: October 14, 2009

RE: Fall surveillance for EWM

On October 8, 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.

**Shell Lake Aquatic Invasive Species Project - 2009**  
Purple Loosestrife Inventory Sheet

<u>Site Number</u>	<u>Date</u>	<u>Location</u>		<u>Water Body</u> (if applicable)	<u># of Plants</u>	<u>Extent of Infestation</u>			<u>Lake, ditch, etc.</u>
		<u>Address</u>				<u>.0.1 acre</u>	<u>.1-.5 acre</u>	<u>&gt;0.5 acre</u>	
1	7/13/2009	328	Donovan Cove Rd	Shell Lake	30				Road Ditch
2	7/13/2009		Wetland by Sand Rd	N/A	1				Road Ditch
3	7/15/2009		Old Hwy B	N/A	10				Wetland
4	7/23/2009	137	South Lake Dr	Shell Lake	5				Lakeshore
5	7/23/2009	911	South Lake Dr	Shell Lake	1				Lakeshore
6	7/23/2009		Airport Parcel 237A	Shell Lake	5				Lakeshore
7	7/31/2009	330	Donovan Cove Rd	Shell Lake	1				Lakeshore
8	8/3/2009		North Lake Access	Shell Lake	30				Lakeshore
9	8/3/2009		Parcel 18A(Access)	Shell Lake	30				Lakeshore
10	8/3/2009	1001	East Lake Drive	Shell Lake	10				Lakeshore
11	8/3/2009	Parcel 6	South Lake Dr	Shell Lake	1				Lakeshore
12	8/3/2009	Parcel 8	South Lake Dr	Wetland	10				Wetland
13	8/3/2009	Class C Access	South Lake Dr	Shell Lake	30				Lakeshore
14	8/3/2009	Class C Access	Diversion Ditch	Shell Lake	20				Lakeshore
15	8/3/2009	Class B Access	South Lake Dr	Shell Lake	20				Lakeshore
16	8/6/2009	Class C Access	Donovan Cove	Parcel 903	10				Lakeshore
17	8/11/2009	1701	South Lake Dr	Parcel 31	3				Lakeshore
18	8/11/2009	Parcel 36	South Lake Dr	Shell Lake	20				Lakeshore
19	8/11/2009	1411	South Lake Dr	Shell Lake	15				Lakeshore
20	8/11/2009	1431	South Lake Dr	Shell Lake			X		Lakeshore

Action taken

Beetles were placed at following sites: 8, 9, 12, 13, 14, 15

City crew cut plants and sprayed roundup on the following sites: 8, 9, 13, 14, 15

The plants were dug up by landowners or sprayed with roundup on all remaining sites.