

## HORSESHOE LAKE MANAGEMENT COMMITTEE AGENDA

5:00 P.M. - THURSDAY, JANUARY 14, 2016

**WOODLAND COMMUNITY CENTER  
782 PARK STREET**

**Woodland, WA 98674**

Call to Order

Citizen Communications for items NOT on the Agenda

Citizen Communications for items ON the Agenda

I. Approval of Minutes for **October 8, 2015 and November 12, 2015**

II. Continued Business

A. Lake Update

- WA State Dept of Transportation-Pump
- WA Dept of Fish and Wildlife
- **Lake Tracking**

B. Water Quality

- Centennial Grant Update
  - Approval Pending Lab Accreditation**
  - Purchase of Mooring Buoys**
- Milfoil
  - Weevils**
  - Aquatic Vegetation Management Plan**

C. Budget

- **2016 Update**

III. New Business

A. None

IV. Other

A. **Newspaper Article - Lakes Heating Faster**

V. Adjourn - Next Meeting February 11, 2016 at 5:00 P.M.

**CITY OF WOODLAND**  
**HORSESHOE LAKE COMMITTEE MINUTES**  
**OCTOBER 8, 2015**

The regular meeting of the Horseshoe Lake Management Committee (HSLMC) was held on the above date, at the Woodland Police Station - Council Chambers, 200 East Scott Avenue, Woodland, WA 98674.

Chairman Tom Golik called the meeting to order at approximately 5:02 p.m. Roll call found the following:

**COMMITTEE MEMBERS:**

Tom Golik, Chairman  
Mike Curry  
Bill Dunlap  
Terry Jones (Absent)  
Francis Patnode (Absent)  
Scott Perry  
Pat Rychel  
Neil Van Horn

**MAYOR/COUNCIL/OTHER:**

Grover Laseke, Mayor

**STAFF:**

Jody Bartkowski, Engineering Technician

**MINUTES**

Approval of the August 13, 2015 minute was postponed until November.

**CONTINUED BUSINESS**

- A. Lake Update.** Staff presented e-mails from Mike London, Washington State Department of Transportation (WSDOT) regarding pump updates and debris removal. Open discussion was held regarding garbage at the pump, trash and logs along the newly exposed Horseshoe Lake (HSL) Shoreline, and Make a Difference Day.

Staff discussed a call from the Washington State Department of Fish and Wildlife (WDFW) regarding ownership of the outlet structure and presented pictures of damage. Discussion ensued regarding ownership, responsibility, funding, and current water level.

- B. 2016 Budget Request/Milfoil.** Scott Perry distributed an aerial photo of HSL showing weed growth. Discussion ensued regarding the recent carp delivery, use of chemicals, how long chemical treatments work, the alum treatment, growth due to sunlight, use of grass carp in Oregon, ways to combat milfoil, contacting other agencies for input, other lakes with milfoil problems, the need to take action, and budgeting for the long term.

- C. Water Quality.**

**Centennial Grant - Water Quality Testing** - Staff presented a newly proposed testing map and discussed progress on the Quality Assurance Project Plan (QAPP) and Standard Operating Procedures.

- A. Update Contact List.** Staff requested a review of current contact information. Updated copies will be presented at the next meeting.

**OTHER**

**Committee Membership.** Scott Perry reported that he knows someone interested in joining the Committee. Discussion ensued regarding current activities, the number of committee positions, appointment by Mayor, and contacting Francis Patnode.

**ADJOURNMENT**

The meeting was adjourned at approximately 6:30 p.m. The next regular meeting will be held Thursday, November 12, 2015, at 5:00 p.m. at the Woodland Police Station - Council Chambers, 200 East Scott Avenue, Woodland WA 98674.

\_\_\_\_\_  
Tom Golik - Chairman

\_\_\_\_\_  
Date

\_\_\_\_\_  
Jody Bartkowski - Secretary

\_\_\_\_\_  
Date

**CITY OF WOODLAND**  
**HORSESHOE LAKE COMMITTEE MINUTES**  
**NOVEMBER 12, 2015**

The regular meeting of the Horseshoe Lake Management Committee (HSLMC) was held on the above date, at the Woodland Police Station - Council Chambers, 200 East Scott Avenue, Woodland, WA 98674.

Chairman Tom Golik called the meeting to order at approximately 5:05 p.m. Roll call found the following:

**COMMITTEE MEMBERS:**

Tom Golik, Chairman  
Mike Curry  
Bill Dunlap (Absent)  
Terry Jones  
Francis Patnode (Absent)  
Scott Perry  
Pat Rychel  
Neil Van Horn

**MAYOR/COUNCIL/OTHER:**

Hilarie Larson, Cowlitz County Health

**STAFF:**

Jody Bartkowski, Engineering Technician

**MINUTES**

The August 13, 2015 minutes were approved as presented. Approval of the October 8, 2015 minutes was postponed until December.

**CONTINUED BUSINESS**

**A. Lake Update.** Discussion was held regarding pump repairs by the Washington State Department of Transportation (WSDOT), increased flow, continued presence of debris, screen repairs, postponement of fish counts due to boat ramp closure, and requesting an update on lake structure repairs from the Washington State Department of Fish and Wildlife.

**B. Water Quality.**

**Centennial Grant - Water Quality Testing** - Hilary Larson, Cowlitz County Health Department, gave an update on acceptance of the Quality Assurance Project Plan (QAPP). Discussion ensued regarding status, testing dates, required training, map changes, testing twice in the summer, hours for testing, and lab use. It was determined that Standard Operating Procedure (SOP) training will be scheduled for 1:30 p.m., December 1, 2015 in Council Chambers and Lake testing will be scheduled for December 7, 2015 at 1:00 p.m. pending final approval of the QAPP.

**Milfoil** - Discussion was held regarding the Committee's main goal, milfoil control methods, draining the Lake, other lakes that are drained annually, separation between the Park and the Lake, what it takes to permanently kill milfoil, milfoil's root system, creation of a workgroup, developing a vegetation management plan, input from other

jurisdictions, getting an updated weed survey, additional grant applications, utilizing Ms. Larson's time, and Silver Lake's latest grant application.

Further discussion was held regarding contacts within other agencies, permitting, historical research, SolarBees, weevils, and what comes next. The December regular meeting will be used as a work session to review the Department of Ecology "*Citizen's Manual for Developing Integrated Aquatic Vegetation Management Plans*".

**C. Budget.** Discussion ensued regarding the Committee's request and recommended budget cuts.

**NEW BUSINESS**

**A. Contact List Update.** Copies were distributed and this item is to be removed from the agenda.

**OTHER**

**Committee Membership.** Discussion ensued regarding Francis Patnode's status and contact by Tom Golik.

**ADJOURNMENT**

The meeting was adjourned at approximately 6:15 p.m. The next regular meeting will be held Thursday, November 12, 2015, at 5:00 p.m. at the Woodland Police Station - Council Chambers, 200 East Scott Avenue, Woodland WA 98674.

\_\_\_\_\_  
Tom Golik - Chairman

\_\_\_\_\_  
Date

\_\_\_\_\_  
Jody Bartkowski - Secretary

\_\_\_\_\_  
Date

**HORSESHOE LAKE TRACKING  
2016**

Date	River Level 8:00 AM	Days High Temp	24-Hr Rainfall	Lake			Valve Status (Turns Open)	Pump (GPM)	Comments
				Level	Temp	Visibility			
1-Jan-16		42°	0.00				Closed	Off	Weather station #9 down, used #20.
2-Jan-16	9.92	38°	0.00				Closed	Off	
3-Jan-16	9.24	35°	0.05	-12	42°	8	Closed	Off	
4-Jan-16	9.26	36°	0.05				Closed	Off	
5-Jan-16	9.22	39°	0.12				Closed	Off	
6-Jan-16	9.12	45°	0.00				Closed	On	Lake is partially frozen.
7-Jan-16	9.35	47°	0.00				Closed	On	
8-Jan-16	9.31	48°	0.00				Closed	On	
9-Jan-16	9.46	46°	0.04				Closed	On	
10-Jan-16	9.39	53°	0.00				Closed	On	
11-Jan-16	9.44						Closed	On	
12-Jan-16	9.56						Closed	On	Level projected.
13-Jan-16	9.52						Closed	On	Level projected.
14-Jan-16	9.89						Closed	On	Level projected.
15-Jan-16	10.11						Closed	On	Level projected.
16-Jan-16									
17-Jan-16									
18-Jan-16									
19-Jan-16									
20-Jan-16									
21-Jan-16									
22-Jan-16									
23-Jan-16									
24-Jan-16									
25-Jan-16									
26-Jan-16									
27-Jan-16									
28-Jan-16									
29-Jan-16									
30-Jan-16									
31-Jan-16									

**HORSESHOE LAKE TRACKING  
2015**

Date	River Level 8:00 AM	Days High Temp	24-Hr Rainfall	Lake			Valve Status (Turns Open)	Pump (GPM)	Comments
				Level	Temp	Visibility			
1-Dec-15	11.61	45°	0.48				Closed		
2-Dec-15	12.91	39°	0.32				Closed		
3-Dec-15	12.96	46°	0.53				Closed		
4-Dec-15	13.08	49°	0.28				Closed	3,479	
5-Dec-15	13.14	47°	0.74				Closed		
6-Dec-15	13.17	55°	0.74	-36	42°	7	Closed		
7-Dec-15	17.97	60°	1.61				Closed	4,085	
8-Dec-15	19.30	60°	2.15				Closed		
9-Dec-15	20.60	57°	0.45				Closed	Off	Pump turned off due to high river.
10-Dec-15	22.30	51°	0.82				Closed	Off	River at action flood stage.
11-Dec-15	21.67	46°	0.64				Closed	Off	
12-Dec-15	20.35	46°	0.78				Closed	Off	Level projected.
13-Dec-15	18.68	45°	0.48	-22	40°	7	Closed	Off	Level projected; very wet level rising.
14-Dec-15	16.74	47°	0.04				Closed	Off	Level projected.
15-Dec-15	16.12	40°	0.28				Closed	Off	Level projected.
16-Dec-15	15.50	45°	0.14				Closed	Off	
17-Dec-15	15.34	52°	1.44				Closed	Off	
18-Dec-15	15.20	52°	0.34				Closed	Off	
19-Dec-15	15.89	47°	0.10				Closed	Off	
20-Dec-15	15.60	46°	0.46	-16	45°	8	Closed	Off	
21-Dec-15	15.30	52°	0.92				Closed	Off	
22-Dec-15	15.39	45°	0.34				Closed	Off	
23-Dec-15	14.13	45°	0.82				Closed	Off	
24-Dec-15		44°	0.40				Closed	Off	
25-Dec-15		42°	0.04				Closed	Off	
26-Dec-15	12.50	41°	0.03				Closed	Off	
27-Dec-15	12.19	38°	0.24	-12	45°	8	Closed	Off	
28-Dec-15	12.23	41°	0.03				Closed	Off	
29-Dec-15	12.08	40°	0.10				Closed	Off	
30-Dec-15	11.83	47°	0.01				Closed	Off	
31-Dec-15	11.47	41°	0.00				Closed	Off	

**HORSESHOE LAKE TRACKING  
2015**

Date	River Level 8:00 AM	Days High Temp	24-Hr Rainfall	Lake			Valve Status (Turns Open)	Pump (GPM)	Comments
				Level	Temp	Visibility			
1-Nov-15	9.62	62°	0.77				Closed		
2-Nov-15	9.35	62°	0.12				Closed	2,146	
3-Nov-15	8.91	57°	0.05	-71	61°	6	Closed		
4-Nov-15	8.33	51°	0.00				Closed		
5-Nov-15	8.39	50°	0.03				Closed		
6-Nov-15		67°	0.00				Closed	2,457	
7-Nov-15		52°	0.71				Closed		
8-Nov-15		55°	0.15	-65	60°	6	Closed		
9-Nov-15		60°	0.00				Closed	2,190	
10-Nov-15	8.53	48°	0.02				Closed		
11-Nov-15	8.35	59°	0.36				Closed		
12-Nov-15	8.29	47°	0.32				Closed		
13-Nov-15		56°	0.36				Closed	2,774	
14-Nov-15	9.31	58°	0.10				Closed		
15-Nov-15	12.30	54°	0.30	-58	55°	5	Closed		
16-Nov-15	14.88	45°	1.29				Closed	2,955	
17-Nov-15	15.09	55°	1.30				Closed		
18-Nov-15	17.96	50°	0.24				Closed	3,932	
19-Nov-15	18.71	50°	0.36				Closed		
20-Nov-15	14.15	54°	0.00				Closed	3,257	
21-Nov-15	12.91	50°	0.00				Closed		
22-Nov-15	12.77	46°	0.00				Closed	Level projected.	
23-Nov-15	10.83	47°	0.38	-50	50°	6.5	Closed	3,241 Level projected.	
24-Nov-15	9.59	43°	0.17				Closed	Level projected.	
25-Nov-15		49°	0.00				Closed	3,240	
26-Nov-15		50°	0.00				Closed		
27-Nov-15		52°	0.01				Closed		
28-Nov-15	10.34	54°	0.01				Closed		
29-Nov-15	11.11	47°	0.00				Closed		
30-Nov-15	11.65	37°	0.04	-43	40°	8	Closed	3,330 Cold weather improved visibility.	

**HORSESHOE LAKE TRACKING  
2015**

Date	River Level 8:00 AM	Days High Temp	24-Hr Rainfall	Lake			Valve Status (Turns Open)	Pump (GPM)	Comments
				Level	Temp	Visibility			
1-Jan-15		39°	0.00				20		
2-Jan-15		38°	0.00				20	3,857	
3-Jan-15		42°	0.00				20		
4-Jan-15		50°	1.00	0	42°	8'	20		
5-Jan-15		53°	0.15				20	3,640	
6-Jan-15		45°	0.01				20		
7-Jan-15		45°	0.01				20		
8-Jan-15		40°	0.00				20		
9-Jan-15		48°	0.00				20	4,121	
10-Jan-15	13.74	43°	0.02				20		
11-Jan-15	11.75	44°	0.08				20		
12-Jan-15	11.70	49°	0.01	0	40°	8'	20	-	Mike-R'ptd Green stuff floating on top. Rec'd Complaint-Bart investigated green stuff at beach-not due to oil/grease or residue from local seeding. Algae cloud.
13-Jan-15	11.41	52°	0.00				30	3,161	Screens cleaned.
14-Jan-15	11.21	51°	0.01				30		
15-Jan-15	11.09	43°	0.62				30		
16-Jan-15	12.05	52°	0.02				Fully Open	3,957	
17-Jan-15	12.46	58°	1.28				Fully Open		
18-Jan-15	12.86	57°	0.23				Fully Open		
19-Jan-15	13.59	50°	0.00				Fully Open		
20-Jan-15	13.91	46°	0.00				Fully Open	4,279	PW requested pump be turned off.
21-Jan-15	13.75	48°	0.00				Fully Open	Off	Tested water quality.
22-Jan-15	13.79	47°	0.00				Fully Open	Off	
23-Jan-15	13.36	46°	0.18				Fully Open	Off	
24-Jan-15	13.01	62°	0.03	-2	40°	9'	1/2 Open	Off	
25-Jan-15	12.71	49°	0.02				1/2 Open	Off	
26-Jan-15	12.47	51°	0.01				1/2 Open	Off	
27-Jan-15	12.44	48°	0.10				1/2 Open	Off	
28-Jan-15	11.91	56°	0.00				1/2 Open	Off	
29-Jan-15	11.60	54°	0.00				Closed	Off	
30-Jan-15	11.29	50°	0.01	-10	40°	9'	Closed	Off	
31-Jan-15	11.16	45°	0.00				Closed	Off	

**HORSESHOE LAKE TRACKING  
2014**

Date	River Level 8:00 AM	Days High Temp	24-Hr Rainfall	Lake			Valve Status (Turns Open)	Pump (GPM)	Comments
				Level	Temp	Visibility			
1-Dec-14	14.04	40°					Closed	3,547	
2-Dec-14	13.75	44°					Closed		
3-Dec-14	12.28	49°					Closed		
4-Dec-14	13.18	40°					Closed		
5-Dec-14	13.46	46°					Closed	3,491	
6-Dec-14	13.67	53°					Closed		
7-Dec-14	13.90	51°		-14	42°	8'	Closed		
8-Dec-14	13.83	50°					Closed	3,250	Screens cleaned.
9-Dec-14	13.75	58°					Closed		
10-Dec-14	13.91	63°					Closed		
11-Dec-14	13.10	62°					Closed		
12-Dec-14	14.00	54°					Closed		Level projected; tested water quality.
13-Dec-14	12.00	45°					Closed		
14-Dec-14	11.51	54°					Closed		
15-Dec-14	10.79	52°		-8	42°	8'	Closed	2,921	
16-Dec-14	10.41	51°					Closed		
17-Dec-14	10.28	47°					Closed		
18-Dec-14	10.68	48°					Closed	3,234	
19-Dec-14	9.80	51°					Closed		Level projected.
20-Dec-14	9.77	56°					Closed		Level projected.
21-Dec-14	10.38	56°					Closed		Level projected.
22-Dec-14	11.20	52°		-4	42°	8	Closed		Level projected.
23-Dec-14	12.78	49°					Closed		Level projected.
24-Dec-14		48°					Closed		
25-Dec-14		47°					Closed		
26-Dec-14		45°					Closed	3,712	
27-Dec-14		44°					Closed		
28-Dec-14		45°		2	42°	8	Closed		Time to open the valve!
29-Dec-14		46°					20	3,650	
30-Dec-14		37°					20		
31-Dec-14		39°					20		

**HORSESHOE LAKE TRACKING  
2014**

Date	River Level 8:00 AM	Days High Temp	24-Hr Rainfall	Lake			Valve Status (Turns Open)	Pump (GPM)	Comments
				Level	Temp	Visibility			
1-Nov-14	13.53	55°		-30	58°	6'	Closed		
2-Nov-14	13.36	53°					Closed		
3-Nov-14	12.04	56°					Closed	3,421	
4-Nov-14	13.64	58°					Closed		
5-Nov-14	13.21	59°					Closed		
6-Nov-14	12.86	61°					Closed		
7-Nov-14	13.06	61°					Closed		
8-Nov-14	11.48	59°					Closed	Level projected.	
9-Nov-14	11.55	59°					Closed	Level projected.	
10-Nov-14	12.84	54°					Closed	3,016	
11-Nov-14	12.68	58°					Closed		
12-Nov-14	12.57	48°					Closed		
13-Nov-14	11.35	43°					Closed		
14-Nov-14	9.74	39°					Closed		
15-Nov-14	9.72	47°					Closed	COLD - low 25.	
16-Nov-14	9.48	48°					Closed	COLD - low 26.	
17-Nov-14	9.47	48°					Closed		
18-Nov-14	9.36	43°					Closed	2,713	
19-Nov-14	9.10	50°					Closed		
20-Nov-14	8.96	46°					Closed		
21-Nov-14	10.73	42°					Closed	2,574	
22-Nov-14	11.06	49°					Closed		
23-Nov-14	11.34	51°		-20	45°	6'	Closed		
24-Nov-14	11.41	51°					Closed	2,830	
25-Nov-14	10.51	59°					Closed		
26-Nov-14	11.29	62°					Closed	2,586	
27-Nov-14	10.63	62°					Closed	Tested water quality (LOTS OF ALGAE).	
28-Nov-14	13.67	55°					Closed	Level projected.	
29-Nov-14	16.00	43°					Closed		
30-Nov-14	16.06	42°		-18	43°	6'	Closed	COLD - low 25.	

## Jody Bartkowski

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**From:** Larson, Hilarie [LarsonH@co.cowlitz.wa.us]  
**Sent:** Monday, January 11, 2016 2:09 PM  
**To:** Jody Bartkowski  
**Subject:** RE: HSLMC Meeting Thursday

Hi Jody,

I won't be able to join you, unless you want to dial me in on your iphone and put me on speaker ☺ I'm not sure how much I could hear, but it might be worth a shot?

I just got done testing Silver Lake this morning. The darn probe quite working, again! I'll know if I have to send it in for repair or not by tomorrow.

Perhaps it's a small condolence that we will have worked out some of the kinks when we finally start HSL.

When will we start HSL?

The manager of ALS that I work with was out of the country during the holidays. He and I had just began discussions of chlorophyll accreditation, and then things went on a holiday pause. I reached him as soon as he returned. The good news is that they confirmed their wiliness to pursue accreditation, and they projected that their paper work will be turned in by the end of this week. We don't know how long the state will take to review their application. With this in process, I am going to request a temporary accreditation waiver. It is not very likely that they will approve it, but it's worth a try.

Sincerely,  
Hilarie

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**From:** Jody Bartkowski [mailto:[bartkowskij@ci.woodland.wa.us](mailto:bartkowskij@ci.woodland.wa.us)]  
**Sent:** Monday, January 11, 2016 12:14 PM  
**To:** Larson, Hilarie  
**Subject:** HSLMC Meeting Thursday

Hi Hilarie ☺

Are you going to be able to join us on Thursday? Any grant update?

Thanks,  
~JODY

**IT'S BOAT SHOW SEASON! SHOP NOW & SAVE!**



Sur-Moor Shackle Buoy

★★★★★ (0)  
**\$129.99**

Qty: 1



Taylor Made Sur-Mark II Regulatory Buoy with Label

★★★★★ (0)  
**\$259.99**



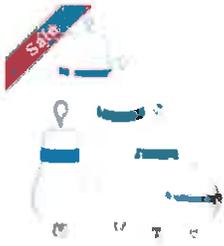
Taylor Made Sur-Mark Regulatory Buoy with Label

★★★★★ (6)  
**\$294.99**



Jim Buoy Mark V Mooring Buoy

★★★★★ (0)  
 6 models to choose from  
**\$129.99 - \$324.99**



Jim Buoy Deluxe Series Mooring Buoy

★★★★★ (0)  
 6 models to choose from  
**\$64.99 - \$349.99**



Jim Buoy Mooring Buoy

★★★★★ (1)  
 2 models to choose from  
**\$124.99 - \$139.99**



Sur-Moor T3C Mooring Buoy

★★★★★ (2)  
 4 models to choose from  
**\$89.99 - \$219.99**



Sur-Moor Blue-Stripe Mooring Buoy

★★★★★ (0)  
 4 models to choose from  
**\$99.99 - \$279.99**



Dockmate Mooring Buoy

★★★★★ (15)  
 2 models to choose from  
**\$99.99 - \$119.99**  
~~\$79.99 - \$89.99~~



Sur-Moor Shaped Buoy

★★★★★ (0)  
 2 models to choose from  
**\$149.99 - \$179.99**



Sur-Moor Taper Buoy

★★★★★ (0)  
 2 models to choose from  
**\$139.99 - \$399.99**



Sur-Mark Buoy Labels

★★★★★ (1)  
**\$39.96 - \$49.99**



**IT'S BOAT SHOW SEASON! SHOP NOW & SAVE**

Home > Anchor & Docking > Mooring Buoys

**Jim Buoy Mark V Mooring Buoy**

**Key Features**

- 1/8" thick outer shell
- High density polyurethane foam core
- Designed to prevent loss of flotation

Our Price **\$129.99 - \$324.99**

Low Price Guarantee

CHOOSE YOUR ITEM



Tweet **G+1** 0

Like 0

ROLL ON TO ZOOM IN

VIEW LARGER

**CHOOSE YOUR ITEM**

Click Item Number to View Full Product Details				ADD TO WISH LIST	ADD SELECTED
ITEM	RATING	DESCRIPTION	SIZE	PRICE	
<a href="#">95714</a>	★★★★★ (0)	1/2" Swivel And Eye	18"	\$129.99 In Stock	
<a href="#">95715</a>	★★★★★ (0)	2" Tube	18"	\$129.99 Ships within 6-7 business days	
<a href="#">95717</a>	★★★★★ (0)	5/8" Swivel And Eye	24"	\$184.99 In Stock	
<a href="#">96219</a>	★★★★★ (0)	2" Tube	24"	<del>\$179.99</del> <b>\$159.99</b> In Stock	
<a href="#">96221</a>	★★★★★ (0)	5/8" Swivel And Eye	30"	\$324.99 Ships within 6-7 business days	
<a href="#">96222</a>	★★★★★ (0)	2" Tube	30"	\$294.99 Ships within 6-7 business days	

ADD TO WISH LIST | ADD SELECTED



**IT'S BOAT SHOW SEASON! SHOP NOW & SAVE**

Home > Anchor & Docking > Mooring Buoys

**Jim Buoy Deluxe Series Mooring Buoy**

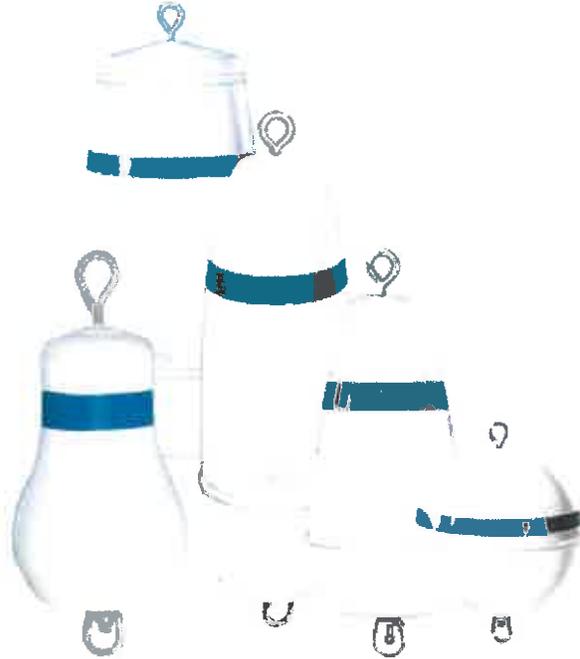
**Key Features**

- Hot-dipped galvanized hardware
- Molded-in eye bolts
- CJ-19 coating resists extreme conditions

Our Price **\$64.99** - ~~\$349.99~~

Low Price Guarantee

CHOOSE YOUR ITEM



ROLL ON TO ZOOM IN

VIEW LARGER

Tweet **G+** 0

Like 0

**CHOOSE YOUR ITEM**

Click Item Number to View Full Product Details				ADD TO WISH LIST	ADD SELECTED
ITEM	RATING	DESCRIPTION	DIMENSIONS	PRICE	
96225	★★★★★ (2)	1/2" Swivel And Eye	12"H x 12" dia.	<b>\$79.99</b> In Stock	
96224	★★★★★ (0)	3/8" Swivel And Eye	16"H x 10" dia.	<del>\$74.99</del> <b>\$64.99</b> In Stock	
96226	★★★★★ (0)	1/2" Swivel And Eye	24"H x 12" dia.	<del>\$79.99</del> <b>\$69.99</b> In Stock	
96227	★★★★★ (0)	1/2" Swivel And Eye	36"H x 12" dia.	\$124.99 Ships within 6-7 business days	
96228	★★★★★ (0)	5/8" Swivel And Eye	44"H x 22" dia.	\$349.99 Ships within 6-7 business days	
96230	★★★★★ (0)	2" Tube	44"H x 22" dia.	\$349.99 Ships within 6-7 business days	

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**Sur-Moor T3C Mooring Buoys**

**Key Features**

- Seamless, hard-skin, one-piece polyethylene shell
- Filled with EPS foam
- Tube-through-center design
- Hardware not included

Our Price **\$89.99 - \$219.99**

Low Price Guarantee

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ITEM	RATING	SIZE	PRICE
<a href="#">96624</a>	★★★★★ (2)	12" Diameter	<b>\$89.99</b> In Stock
<a href="#">96625</a>	★★★★★ (0)	15" Diameter	<b>\$119.99</b> In Stock
<a href="#">96626</a>	★★★★★ (1)	18" Diameter	<b>\$129.99</b> In Stock
<a href="#">96627</a>	★★★★★ (0)	24" Diameter	<b>\$219.99</b> Ships within 9-10 business days

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**Dockmate Mooring Buoys**

**Key Features**

- Rotational molded hard plastic
- Galvanized eye bolts run through buoy's center
- Recessed design protects your boat from hardware

Our Price ~~\$99.99 - \$119.99~~  
 Sale Price **\$79.99 - \$89.99**

Low Price Guarantee

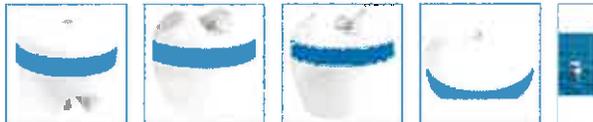
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ITEM	RATING	DIMENSIONS	DESCRIPTION	PRICE
<a href="#">73647</a>	★★★★★ (15)	12" diameter	32-lb. buoyancy	<del>\$99.99</del> <b>\$79.99</b> In Stock
<a href="#">73648</a>	★★★★★ (20)	15" diameter	50-lb. buoyancy	<del>\$119.99</del> <b>\$89.99</b> In Stock

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**SIMILAR ITEMS**



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### Sur-Moor Taper Buoys

**Key Features**

- More flotation at waterline
- Hard-skin polyethylene shell
- Filled with closed-cell foam
- Sandblasted finish

Our Price **\$139.99 - \$399.99**

Low Price Guarantee

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ITEM	RATING	DESCRIPTION	PRICE
<a href="#">96629</a>	★★★★★ (0)	18" buoy diameter	<b>\$139.99</b> Ships within 9-10 business days
<a href="#">96631</a>	★★★★★ (0)	30" buoy diameter	<b>\$399.99</b> Ships within 9-10 business days

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## ES to Discontinue Milfoil Solution Services

October 1, 2014

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EnviroScience and our Canadian subsidiary Milfoil Solution, LLC have made the difficult decision to suspend milfoil weevil culturing operations indefinitely as of January 1, 2015. Although we still believe that the weevils have a role in management of Eurasian watermilfoil, a combination of increased regulatory requirements, hybridization of the plant and increasingly unpredictable weather patterns over the past few years have dramatically increased costs. Although we are confident in the Milfoil Solution Process, it has proven not to be economically feasible for our company to continue the program.

We have offered this form of ecologically sustainable lake management since 1998, and the decision to discontinue the program is particularly difficult for us. Over the past 16 years, we have had the privilege of working with some of the most forward thinking and motivated volunteers, lake associations, communities, lake management professionals, and researchers across the United States and Canada. These opportunities and experiences have helped build and structure EnviroScience into the ecologically minded company it has become.

EnviroScience continues to believe in the process and feels that it could be a profitable enterprise using a smaller, regional operations. Currently, EnviroScience is fielding offers to interested parties for purchase of the Milfoil Solution® process. We are also aware that there a number of volunteer and nonprofit organizations looking into the possibility of culturing milfoil weevils, and we may be able to assist those efforts.

Although we will not be offering Milfoil Solution® and our Canadian subsidiary will be closing, EnviroScience, Inc. continues to grow and be leaders in the ecological consulting, ecological restoration, stormwater, bioassay / toxicity and commercial diving industries, with over 80 employees and projects across the United States. We will also continue to provide a full range of lake management services.

We'd like to thank our many clients for the trust and confidence you've shown in us over the years. We've received a great deal of support and satisfaction from offering a sustainable and natural alternative to our clients. While ES will no longer offer the Milfoil Solution® process, we look forward to continuing to assist you with our ecological and environmental services.

Please contact Cortney Marquette ([cmarquette@enviroscienceinc.com](mailto:cmarquette@enviroscienceinc.com) (<mailto:cmarquette@enviroscienceinc.com>)) with any questions.

Categorized in: [Uncategorized \(http://enviroscienceinc.com/category/uncategorized/\)](http://enviroscienceinc.com/category/uncategorized/)

---

**LEAVE A REPLY**



**Figure 1. Blue Lake**  
Multnomah County,  
Oregon

-  Weevil Stocking Sites
-  Monitoring Site



*Blue Lake 63 acres*

**2012 Progress Report of the  
Milfoil Solution® Program in**

**Blue Lake**

*Prepared for:*

**The Blue Lake Improvement Association**

*Prepared by:*



**EnviroScience, Inc.,**  
3781 Darrow Road, Stow, Ohio 44224  
(800) 940-4025 · [www.enviroscienceinc.com](http://www.enviroscienceinc.com)

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September 11, 2012

## I. Introduction

Eurasian watermilfoil (*Myriophyllum spicatum*, hereafter referred to as milfoil or EWM) is an exotic aquatic species that tolerates a wide range of growing conditions and out-competes native vegetation. Monocultures of milfoil limit recreational use, reduce biodiversity, and can cause detrimental changes to water temperature and dissolved oxygen in severe infestations. EnviroScience implemented a **Milfoil Solution**<sup>®</sup> program in 2010 using the native milfoil weevil to suppress milfoil growth at the request of the Blue Lake Improvement Association.

The North American beetle, the milfoil weevil (*Euhrychiopsis lecontei*), has been augmented in Blue Lake, Multnomah County, Oregon. This weevil is a specialist herbivore of milfoil and damages the plant in multiple ways. The most significant impact is caused by weevil larvae as they damage the meristem, or growing tip, and burrow through the stem. Nutrient flow in the plant is disrupted and the stem loses buoyancy and collapses in the water column. A cascading effect pulls neighboring plants lower into the water column and the rate of photosynthesis is significantly reduced in these stems.

The following is a project outline of **Milfoil Solution**<sup>®</sup> at Blue Lake:

Year	Survey Dates	Sites Established	Number of Weevils Stocked
2010	Initial: 8/14 Follow-up: 9/27	S1, S2, M1	12,000
2011	Initial: 7/14 Follow-up: 9/7	***	20,000*
2012	Final Follow-up: 7/23	***	***

\* 8,000 weevils were stocked in addition to the contracted amount of 12,000 at no extra cost due to an excess in the culturing facility and the time-sensitive nature of live organisms.

## II. Survey Methods

An initial survey is performed prior to weevil stocking and a follow-up survey is conducted six to eight weeks later. These surveys are integral in monitoring changes that occur in both the augmented weevil population and the health of the milfoil over the course of the program in order to make informed management decisions. Qualitative observations in these surveys include the overall density and health of milfoil, identification of native plant species present, and the presence of weevils and weevil-induced damage. Quantitative measurements include milfoil density and weevil population density. Milfoil density is determined by randomly collecting stems throughout the milfoil bed using a quadrat. This sample is then converted to the number of stems per square meter (stems/m<sup>2</sup>). Weevil population density (number of weevils per stem) is determined through lab analysis of stems sampled from three transect lines at each site. Identical survey methods are implemented for the final follow-up survey.

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### III. 2010 and 2011 Summary

EnviroScience biologists established two stocking sites in Blue Lake in 2010 (S1 and S2) (Figure 1). 6,000 weevils were stocked in each site for a total of 12,000. A monitoring site (M1) was established to compare conditions throughout the duration of the project. Prior to stocking weevils, an initial survey was performed at all three sites, gathering both qualitative and quantitative data to provide baseline information. All three sites contained little native plant diversity, with dense beds of EWM comprising most of the plant community. Only one adult weevil was found in 2010 and little weevil-induced damage was observed, indicating a small existing population. In 2011 20,000 weevils were stocked at S1 and S2 (10,000 at each site). An increase in the weevil population was observed from 2010 to 2011 after just one season of augmentation.

### IV. 2012 Follow-up Survey

**S1** – This bed of milfoil was patchy to moderately dense from the central area to the east side (towards the channel). Most stems were low growing and damaged. Multiple weevils were observed during the survey and during lab analysis (Table 1).

**S2** – This bed of milfoil contains relatively sparse clusters of stems containing extensive weevil-induced damage. An adult weevil was observed during the survey and many weevil life stages were identified during stem sample analysis in the lab. While the milfoil at this site is sparse and damaged, outer lying beds were observed to the west of the stocking zone.

**M1** – Moderately dense milfoil composes the majority of the plant community at this site. Milfoil here is noticeably healthier than at the stocking sites. A small weevil presence was detected from the analysis of samples.

In addition to Eurasian watermilfoil, plant species observed in the survey sites in 2012 included Curly leaf pondweed (*Potamogeton crispus*), Elodea (*Elodea canadensis*), Nitella (*Nitella spp.*), Sago pondweed (*P. pectinatus*), Small pondweed (*P. capillaceus*), Water Lily (*Nymphaea spp.*), Flat-stem pondweed (*P. zosteriformis*), and Chara (*Chara spp.*).

### V. Discussion

Based on positive results from the 2012 survey, it appears that the Milfoil Solution® program at Blue Lake has significantly reduced the milfoil infestation after just two years of stocking (Table 2). Signs of milfoil suppression include reduction in density of the milfoil, maintenance of the stems below the lake surface at a non-nuisance level, and open areas within the stocking site.

Stem samples from the stocking sites included weevil life stages and exhibited indicators unique to a weevil population such as holes in the stems, damage to the growing tip (meristem), and extensively damaged areas where larvae have burrowed down the stems. Since few weevils were found prior to stocking, this indicates that the weevil population is successfully overwintering and returning to the lake. The weevil population at the untreated monitoring site (M1) increased in 2011, but a decrease was noted in 2012. This may be explained by the increase in stem density at this site.

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The measured stem density of milfoil has decreased at both stocking sites (Table 2) and is expected to continue this trend as the weevil population grows. Many large, open areas were occupied by native aquatic plant species. Over the course of the program, areas of milfoil infestation have transitioned to a more natural distribution that supports a healthier ecosystem while improving recreational and aesthetic value.

#### **IV. Future Recommendations**

It is the recommendation of EnviroScience that annual monitoring is implemented as part of the milfoil management program when considering factors such as seasonal variability and the ability of milfoil to grow much faster than native species. Should the milfoil infestation rebound in the near future, a supplemental weevil stocking event should occur to deter future growth.

Please contact EnviroScience at (800) 940-4025 or [slomske@enviroscienceinc.com](mailto:slomske@enviroscienceinc.com) with questions regarding this report.

*^ Sarah - Scientist*

Lake Management Division  
EnviroScience, Inc.

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**Table 1. Weevil population analysis (weevils/stem), 2010-2012.**

Site	Parameter measured	August 14, 2010	September 27, 2010	July 14, 2011	September 7, 2011	July 23, 2012
<b>S1</b>	Total weevils	0.00	0.00	1.00	9.00	3.00
	Total stems	27.00	30.00	30.00	30.00	28.00
	Avg. weevils/stem	<b>0.00</b>	<b>0.00</b>	0.03	<b>0.30</b>	<b>0.11</b>
<b>S2</b>	Total weevils	1.00	0.00	3.00	9.00	12.00
	Total stems	30.00	30.00	30.00	30.00	30.00
	Avg. weevils/stem	<b>0.03</b>	<b>0.00</b>	0.10	<b>0.30</b>	<b>0.40</b>
<b>M1</b>	Total weevils	0.00	0.00	2.00	30.00	1.00
	Total stems	30.00	30.00	30.00	30.00	30.00
	Avg. weevils/stem	<b>0.00</b>	<b>0.00</b>	<b>0.07</b>	<b>1.00</b>	<b>0.03</b>

**Table 2. Densities of Eurasian watermilfoil (stems/m<sup>2</sup>), 2010-2012.**

Site	August 14, 2010	September 27, 2010	July 14, 2011	September 7, 2011	July 23, 2012
<b>S1</b>	114.4	91.7	307.4	96.3	36.1
<b>S2</b>	111.1	102.8	107.4	100.0	44.4
<b>M1</b>	125.0	129.7	188.9	107.4	150.0

The weeds in Blue Lake, Eurasian milfoil, curly leaf pond and the lilly pads have been mostly in the past controlled by herbicides, raking and pulling. That has changed in the past few years with the 2010 addition of microscopic weevils (little beetles), that in early summer through early fall feed on the Eurasian milfoil and cause them to die off. We are still in the early stages of testing these little creatures, but with the last survey in July 2011 showing the start of some progress towards slowing down the weeds especially on the west end with the east end also showing spotty results. We also added around 14,000 more weevil this summer along with the original 12,000 last year. The weevil were introduced to us by Sue Ellen Dollan one of our home owners and Enviro Science the contractor who put them in the lake. The solar-bees are also designed when adjusted to different tube intake levels to help kill the weeds. At this time the solar bees are adjusted for algae growth, only the east solar-bee is set for some weed control in shallower water than the other three. There still is some raking going on by home owners in certain areas and this practice will continue as residents see fit to clear small areas, until the weevil take control. This biological control is a new and exciting option to the previous herbicide practice that is not preferred by our local government and environmentalists.

The algae problem in middle to late summer of the past years is partially due to the weed problem and lack of circulation, high PH and temperature control of our lake. To combat the different types of algae, some toxic that shuts down our lake and other non-toxic that makes the water quality poor and stagnate, BLIA introduced the 3 solar bees (water circulators) to the lake in 2007 on a trial basis and were purchased in 2009 by BLIA donations and Metro with Metro having the ownership. BLIA still maintains a strong control along with Metro's staff in pursuing the solar bees maintenance and supervision of the units. DEQ along with Metro has been an integral partner to BLIA in maintaining Blue Lake. Metro yearly has a water quality intern on Blue Lake monitoring the lakes temperature, ph, clarity and overall quality that aides BLIA in pursuing the overall quality and performance of the lake. In 2011 BLIA with the help from Solar bee added a fourth unit in hopes of gaining better results of the water quality, mainly the algae problems. Solar bee has given us a two summer trial until October 2012 to test this fourth unit. At this time BLIA is responsible for the cost of the unit, but it is hopeful that Metro or another grant would help pay for the fourth unit. So far the summer of 2011's lake quality looks very good, with excellent clarity( SECHY LEVELS), good ph numbers and an overall quality of the lake that we haven't seen in 5 or 6 years. Let's hope and pray that this continues through the summer and early fall. Upcoming updates can be seen in following this web site in the months and years ahead.

[For an informative brochure, click this link.](#)

## [Blue Lake Improvement Association](#)

### [Weed & Algae Control](#)

[Aug 18](#)  
[2010](#)

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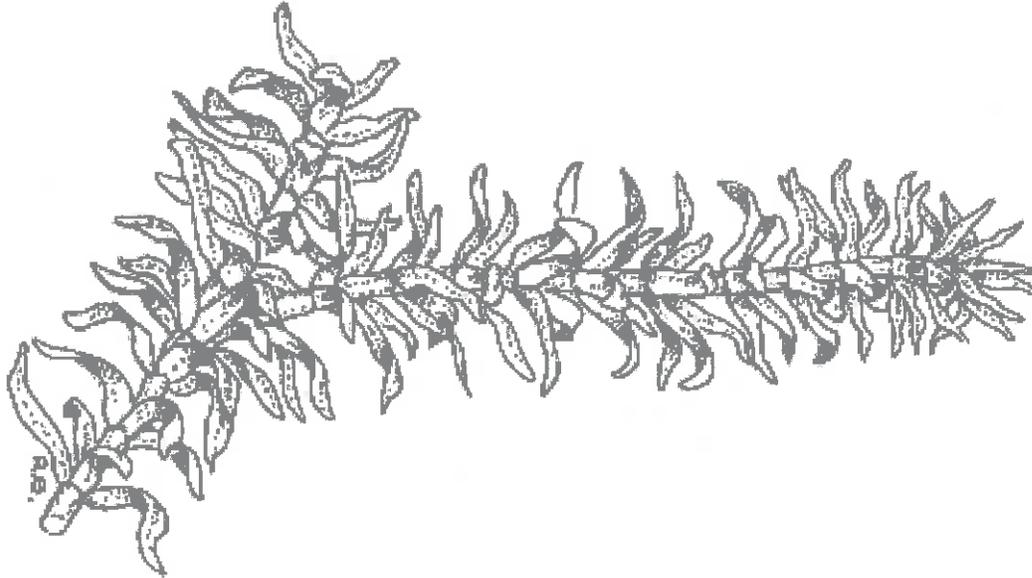
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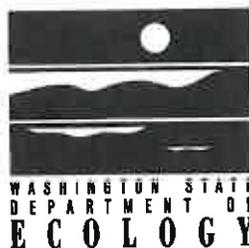
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First Edition



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# FINAL-2016

Account Number	Description	Actual 2014	Budget 2015	Budget 2016
<b>Park</b>				
<b>Community Center</b>				
101-000-000-575-50-31-00	Operating Supplies	\$9.69	\$250.00	\$250.00
101-000-000-575-50-38-00	Repairs/Maintenance: Supplies	\$0.00	\$0.00	\$0.00
101-000-000-575-50-42-00	Communications	\$707.21	\$750.00	\$750.00
101-000-000-575-50-47-00	Utilities	\$4,690.01	\$5,000.00	\$4,000.00
101-000-000-575-50-48-00	Repairs/Maintenance: Building	\$457.82	\$500.00	\$500.00
101-000-000-575-50-49-00	Miscellaneous	\$15.00	\$100.00	\$100.00
<b>Total Community Center</b>		<b>\$5,879.73</b>	<b>\$6,600.00</b>	<b>\$5,600.00</b>
<b>Park Facilities</b>				
101-000-000-576-80-10-00	Salaries	\$47,578.35	\$57,000.00	\$57,000.00
101-000-000-576-80-20-00	Personnel Benefits	\$20,194.31	\$22,000.00	\$22,000.00
101-000-000-576-80-31-00	Operating Supplies	\$1,045.87	\$5,000.00	\$5,000.00
101-000-000-576-80-32-00	Fuel Consumed	\$858.62	\$1,100.00	\$1,100.00
101-000-000-576-80-41-00	Professional Services	\$0.00	\$650.00	\$0.00
101-000-000-576-80-45-00	Rentals	\$4,818.00	\$3,500.00	\$3,500.00
101-000-000-576-80-47-00	Utilities	\$15,464.17	\$15,000.00	\$16,000.00
101-000-000-576-80-48-00	R & M: Buildings & Equipment	\$4,589.45	\$5,500.00	\$2,000.00
101-000-000-576-80-48-10	R & M: Community Garden	\$0.00	\$0.00	\$0.00
101-000-000-576-80-49-00	Miscellaneous	\$0.00	\$0.00	\$0.00
101-000-000-576-80-49-20	Horseshoe Lake Management	\$4,210.50	\$5,000.00	\$17,500.00
Funding for fish/carp \$12,500				
<b>Total Park Facilities</b>		<b>\$98,759.27</b>	<b>\$114,750.00</b>	<b>\$124,100.00</b>
<b>Nonexpenditures</b>				
101-000-000-589-00-00-00	Key Deposit Refunds: Comm Center	\$3,200.00	\$4,000.00	\$2,500.00
101-000-000-589-00-01-00	Key Deposit Refunds: HSL Shelter	\$1,450.00	\$1,500.00	\$1,500.00
<b>Total Nonexpenditures</b>		<b>\$4,650.00</b>	<b>\$5,500.00</b>	<b>\$4,000.00</b>
<b>Capital Expenditures</b>				
101-000-000-594-75-64-00	C/O Equipment: Community Center	\$0.00	\$0.00	\$0.00
101-000-000-594-76-63-00	C/O Building Structures: Park	\$0.00	\$3,500.00	\$0.00
101-000-000-594-76-64-00	C/O Equipment: Park	\$3,478.70	\$5,270.00	\$5,000.00
101-000-000-594-76-66-00	C/O Park: Copier	\$553.64	\$695.00	\$695.00
<b>Total Capital Expenditures</b>		<b>\$4,032.34</b>	<b>\$9,465.00</b>	<b>\$5,695.00</b>
<b>Transfer Out</b>				
101-000-000-597-00-00-03	Contribution to 001/General	\$26,458.00	\$25,150.00	\$25,150.00
	Contribution to 001/City Admin.	\$0.00	\$0.00	\$3,480.00
<b>Total Transfer Out</b>		<b>\$26,458.00</b>	<b>\$25,150.00</b>	<b>\$28,630.00</b>
<b>Total Park</b>		<b>\$139,779.34</b>	<b>\$161,465.00</b>	<b>\$168,025.00</b>
<b>Ending Fund Balance</b>				<b>\$7,107.00</b>
<b>Grand Total Park</b>				<b>\$175,132.00</b>

# As planet warms, the world's lakes heating even faster

By **JOBY WARRICK**  
*The Washington Post*

Lakes around the world are growing rapidly warmer, according to a new scientific study that warns of potential consequences ranging from depleted fisheries to harmful algae blooms that kill fish and contaminate water supplies for cities large and small.

Hotter freshwater lakes are yet another sign of global climate change, and their increasing temperatures are happening at a faster rate compared with the warming seen in the oceans and atmosphere, a team of scientists report in the peer-reviewed journal *Geographical Research Letters*.

The study is based on decades of measurements from 235 lakes that contain more than half the world's fresh water supply. On average, temperatures are rising by about six-tenths of a degree Fahrenheit per decade, a rapid increase by geological standards.

The results are a "wake-up call," especially for regions that rely on lakes for food and drinking water, said Henry Gholz, a program director for environmental biology at the National Science Foundation, which co-funded the research along with NASA.

"Our knowledge of how lakes are responding to global change has been lacking," Gholz said.

The study, the largest of its kind, involved more than 60 scientists who used temperature records as well as satellite data to gauge changes over time, from Lake Tahoe on the California-Nevada border to the tropical lakes of central Africa to partially frozen lakes in Scandinavia.

The most dramatic increases were observed at far-northern lakes, which are warming at an average rate of 1.3 degrees Fahrenheit per decade. But tropical lakes also are warming rapidly, the researchers found. Only a small number of warm-water lakes kept a constant temperature or cooled slightly, a departure from the norm that scientists attributed to local land-use changes such as reforestation that increased shade along the shoreline.

Even small variations in temperature can impact fish and other wildlife, the

researchers found. Most significant for many areas was the greater potential for harmful algae blooms, an explosive growth in populations of microscopic plants that can strip oxygen from the water and kill fish. Destructive algae blooms such as the one in Lake Erie in 2014 that contaminated the water supply for Toledo and other Ohio cities already are occurring more frequently worldwide.

Such events are important because of the role played by lakes in sustaining human populations in many parts of the world, said study co-author Stephanie Hampton, a professor at Washington State University's School of the Environment.

"Lakes are important because society depends on surface water for the vast majority of human uses—not just for drinking water, but manufacturing, energy production, irrigation and crops," Hampton said. "Protein from freshwater fish is especially important in the developing world."

## Algae blooms

A separate report earlier this month predicted the number of severe algae blooms would double over the next century because of a combination of warmer temperatures and increased pollution. By 2115, disruptive events such as the one in Toledo will be commonplace rather than exceptional, according to a team of U.S. researchers using climate and watershed models to project future trends. The scientists discussed their findings at the American Geological Union meeting in San Francisco.

Even reducing the amount of nutrient pollution that feeds algae growth—including fertilizers and human and animal waste—will not be enough to prevent destructive algae blooms if warming trends continue, said Noel Aloysius, a post-doctorate researcher at Ohio State University's Aquatic Ecology Laboratory who presented the findings.

"Our assessment of climate reveals less winter snow, more heavy spring rains and hotter summers," Aloysius said. "These are perfect growing conditions for algae."