

## HORSESHOE LAKE MANAGEMENT COMMITTEE AGENDA

5:00 P.M. - THURSDAY, SEPTEMBER 11, 2014

Woodland Police Station - Council Chambers  
200 East Scott Avenue  
Woodland, WA 98674

- I. Call to Order
- II. **Minutes for July 10, 2014** (August Meeting Cancelled)
- III. Continued Business
  - A. Goals & Priorities
    - Grant Opportunities
      - DOE Water Quality Grant - Application**
      - DOE Water Quality Grant - Information by Cowlitz County
    - Milfoil Eradication
      - Carp
      - Chemicals
      - Good Weeds**
    - Pollution Control
      - Septic Tanks & Drainage Systems - Map
  - B. Water Quality Testing
    - **Water Quality Testing Graphs**
  - C. Pump & Lake Update
    - **Lake/River Tracking Report (Includes Pump GPM)**
    - **Pump Shut-Off Levels**
- IV. New Business
- V. Other
- VI. Adjourn - Next Meeting October 9, 2014 at 5:00 P.M.

**CITY OF WOODLAND**  
**HORSESHOE LAKE COMMITTEE MINUTES**  
**JULY 10, 2014**

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  
Walt Church  
Mike Curry (Absent)  
Bill Dunlap  
Terry Jones  
Francis Patnode (Absent)  
Pat Rychel (Absent)  
Neil Van Horn

**MAYOR/COUNCIL/OTHER:**

Scott Perry, Councilmember

**STAFF:**

Jody Bartkowski, Engineering Technician

**MINUTES**

The June 12, 2014 minutes were approved as presented.

**CONTINUED BUSINESS**

**A. Pump and Lake Update.** Discussion was held regarding winch replacement for pulling pump screens, screen cleaning schedule, Pacific Corp's intent to reduce water flow, low water flow effect on the Lake, how pump flow works, levels at which the pump shuts off, flow consistency, readings being "a picture in time", and modifying the lake tracking report to include pump gallons per minute (GPM).

**B. Water Quality & Sampling.** Discussion ensued regarding use of the Washington Department of Fish and Wildlife's (WDFW) hydrolab, location of the Walt's Meats test, additional sampling by WDFW, phosphorous and E. Coli levels, dissolved oxygen and pH patterns around the Lake, and the drain pipe across from Raspberry Park.

Further discussion ensued regarding Clark County septic data, as-builts, building permits, and dye testing.

**C. Goals and Priorities.** The following items were discussed:

**Weed (Milfoil) Eradication.**

Grass Carp – The lack of visible carp, the lack of surface milfoil, the desire for carp, viability of carp transferred from Silver Lake, fishing and transferring carp by cooler full, cancellation of the Silver Lake Derby, members contacting Stacie Kelsey of the Washington Department of Fish & Wildlife (WDFW) directly, use of carp in Oregon, and the historical use of carp.

Chemicals – The need for an update from Ms. Kelsey regarding the use of Horseshoe Lake as a "test Lake" for chemical application. Scott Perry reported that he is receiving monthly data from vendors.

**Grant Opportunities.** Discussion ensued regarding 2015 Centennial Clean Water Program funds awarded to Cowlitz County for Silver Lake and Horseshoe Lake water quality testing. What does the grant cover, what is the next step, and how will this work the with current WDFW testing?

**Pollution Control.** Walt Church discussed the storm facility at second and Davidson. Details included its similarity to you grease trap, why was it placed in the current location, lack of coverage for Dunham, what it does, filtering of trash/oil, what it does or doesn't do for Phosphorus, easements to the Lake, and the possibility of the addition of a filtration system.

Further discussion ensued regarding use of the Horseshoe Lake Restoration Project report as a basis for action, the need for input from Bart Stepp (Public Works Director, scheduling a field trip for members to view drainage areas, drainage mapping, and potential grant funding.

Additional discussion was held regarding stormwater from Walt's Meats, status of the garbage dump that slide into Horseshoe Lake, the lack of a sewage system at Columbia Pacific/White Timber, the Cowlitz Counties lack of adequate response regarding septic systems, creating a map of the Horseshoe Lake shoreline, and public notification for projects within the shoreline area.

**NEW BUSINESS**

None

**OTHER**

**Final Report Horseshoe Lake Restoration Project.** Walt presented a copy of the report and requested that everyone review it, most specifically the tables. Discussion ensued regarding the need to follow its recommendation, it's use when applying for grants, the percentage of water being returned to the River, how water levels affect phosphorous, funding for improved storm drainage, and the ordinary high water mark.

**ADJOURNMENT**

The meeting was adjourned at approximately 6:35 p.m. The next regular meeting will be held Thursday, July 10, 2014, 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

## Jody Bartkowski

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**From:** Kelsey, Stacie L (DFW) [Stacie.Kelsey@dfw.wa.gov]  
**Sent:** Thursday, July 24, 2014 8:19 AM  
**To:** William Dunlap  
**Cc:** Jody Bartkowski; Francis Patnode; Mike & Marsha Curry; Neil Van Horn (neilvh02@gmail.com); Pat Rychel (prychel@pacifier.com); Scott Perry; Scott Perry; Terry Jones (tjswimdad@aol.com); Tom Golik (goliktom@yahoo.com); Walt Church (124church@comcast.net); Bart Stepp; Grover Laseke  
**Subject:** Re: New Weed Problem  
**Attachments:** unknown.jpg

That is big leaf pondweed and one of the good guys! It helps provide cover for juvenile fish. What we really want gone is the icky stuff like milfoil!

Sent from Region 5

> On Jul 24, 2014, at 8:13 AM, "William Dunlap" <[goobergrandpa@gmail.com](mailto:goobergrandpa@gmail.com)> wrote:

>

> My wife spotted some new growth floating in Horseshoe Lake yesterday so I got in my boat and checked it out. These weeds are in the middle of the Lake, just north of my home, very close to the 3rd buoy from the park. The weed patch is about 50 by 50 feet. I pulled up a handful and took the picture below of it. I hope this weed does not proliferate like the milfoil did. I have never seen weeds in this area of the lake before.

>

> Mr. Bill

>

>

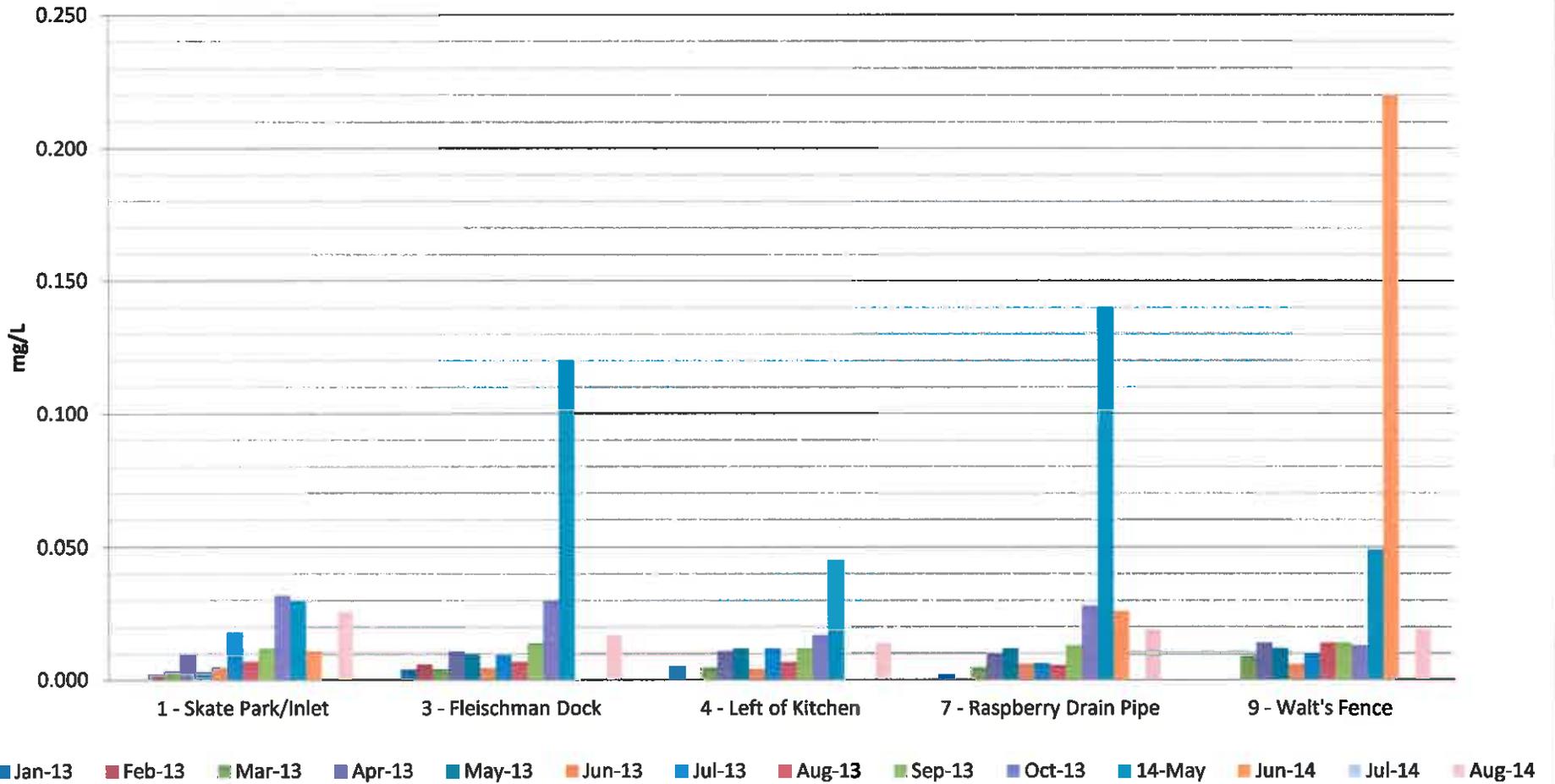
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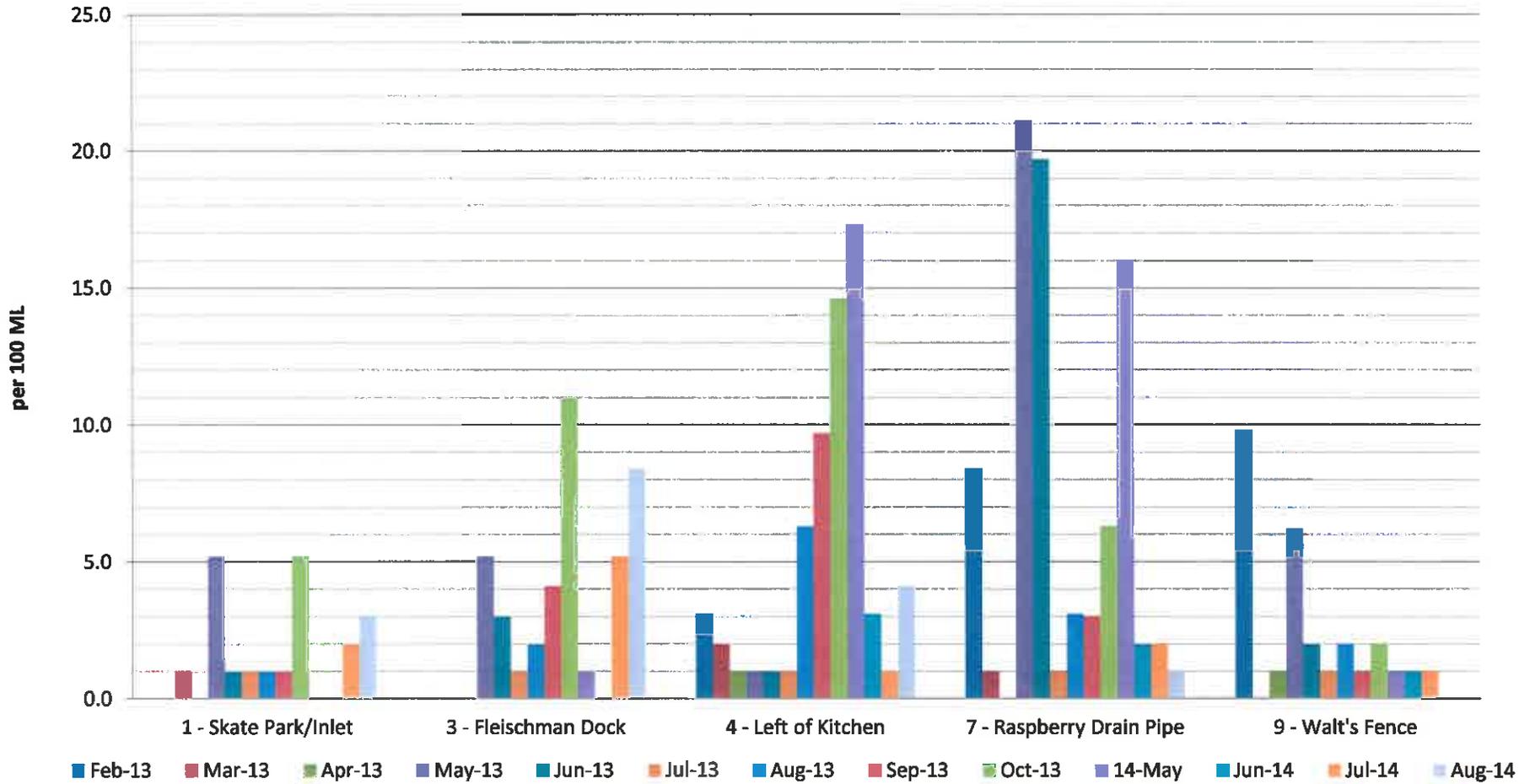
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### Horseshoe Lake Addy Lab Test Results Phosphorus



### Horseshoe Lake Addy Lab Test Results E. Coli



# Pump Shut-off levels

**Jody Bartkowski**

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**From:** London, Mike [LondonM@wsdot.wa.gov]  
**Sent:** Wednesday, September 03, 2014 12:32 PM  
**To:** Jody Bartkowski  
**Subject:** RE: Horseshoe Lake Pump

The pump will cavitate when the intake is submerged in less than two feet of water. We have the float set to shut off at two feet eight inches.

So when the river drops down to a certain level the pump will shut itself off until the river rises enough to submerge the intake 2 feet 8 inches.

Sent from my Verizon Wireless 4G LTE smartphone

----- Original message -----

**From:** Jody Bartkowski  
**Date:** 09/03/2014 12:23 PM (GMT-07:00)  
**To:** "London, Mike"  
**Subject:** Horseshoe Lake Pump

Hi Mike -

The Horseshoe Lake Management Committee proposed another question. At what point does the float cause the pump to turn-off? Is it when the River hits a certain low depth? Any input is appreciated!

Thanks,  
~JODY

**HORSESHOE LAKE TRACKING  
2013**

Date	River Level 8:00 AM	Days High Temp	Lake			Valve Status (Turns Open)	Pump (GPM)	Comments
			Level	Temp	Visibility			
1-May-13	11.24							
2-May-13	11.16							
3-May-13	10.98							
4-May-13	11.05							
5-May-13	10.72							
6-May-13	10.58						3,201	
7-May-13	11.08							
8-May-13	11.15							
9-May-13	11.44						3,386	WSDOT (M London) visited pump.
10-May-13	11.68		0	68°	9-10'	Closed	3,486	Outlet leaking, weeds cleaned off.
11-May-13	12.20					Closed		
12-May-13	13.18					Closed		
13-May-13	13.50					Closed	3,364	
14-May-13	13.55					Closed		Tested water quality (started 8/2012).
15-May-13	13.20					Closed		
16-May-13	13.06					Closed		
17-May-13	13.02					Closed	3,431	
18-May-13	12.15					Closed		
19-May-13	12.22					Closed		
20-May-13	12.31					Closed	3,193	
21-May-13	12.26					Closed		
22-May-13	11.92		2			10		
23-May-13	11.59					10		
24-May-13	11.73					10	3,442	Screens cleaned.
25-May-13	12.04		7			10		
26-May-13	12.07					10		
27-May-13	12.88					10		
28-May-13	12.47					10	3,620	
29-May-13	13.83					20		
30-May-13	14.26					20		
31-May-13	13.89			71°		30	3,123	Outlet grate cleaned.

**HORSESHOE LAKE TRACKING  
2013**

Date	River Level 8:00 AM	Days High Temp	Lake			Valve Status (Turns Open)	Pump (GPM)	Comments
			Level	Temp	Visibility			
1-Jun-13	13.90	72°				30		
2-Jun-13	13.07	73°				30		
3-Jun-13	11.60	76°				30		Tested water quality.
4-Jun-13	11.54	84°				10	3,031	
5-Jun-13	10.78	82°				10		
6-Jun-13	10.66	83°				10		
7-Jun-13		79°				Closed		
8-Jun-13		77°				Closed		
9-Jun-13		74°				Closed		
10-Jun-13	10.90	70°				Closed	2,985	
11-Jun-13	10.50	62°				Closed		
12-Jun-13	9.94	63°				Closed		
13-Jun-13	10.70	62°				Closed		
14-Jun-13	10.48	69°				Closed	2,789	
15-Jun-13	10.24	82°				Closed		
16-Jun-13	10.51	74°				Closed		
17-Jun-13	10.10	75°				Closed	2,730	
18-Jun-13	10.37	70°				Closed		
19-Jun-13	10.96	65°				Closed		
20-Jun-13	10.71	68°				Closed		
21-Jun-13		72°				Closed	3,155	
22-Jun-13		78°				Closed		
23-Jun-13		69°	0	69°	10-11'	Closed		
24-Jun-13	11.20	66°				Closed		
25-Jun-13	11.50	68°				Closed	3,705	
26-Jun-13	11.66	72°				Closed		
27-Jun-13	11.79	81°				Closed		
28-Jun-13	11.99	91°				Closed		
29-Jun-13	11.94	90°		70°	10'	Closed		
30-Jun-13	12.00	96°	0	70°	10'	Closed		Park full, lots of paddlers and canoes.

**HORSESHOE LAKE TRACKING  
2013**

Date	River Level 8:00 AM	Days High Temp	Lake			Valve Status (Turns Open)	Pump (GPM)	Comments
			Level	Temp	Visibility			
1-Jul-13	13.90	91°		76°		Closed		Water temperature rising!
2-Jul-13	13.07	85°				Closed	3,549	
3-Jul-13	11.60	81°				Closed		
4-Jul-13	11.54	75°				Closed		
5-Jul-13	10.78	76°				Closed	3,550	
6-Jul-13	10.18	80°				Closed		
7-Jul-13	10.19	78°				Closed		
8-Jul-13	9.94	81°				Closed		
9-Jul-13	9.71	88°				Closed		
10-Jul-13	9.52	77°				Closed		
11-Jul-13	9.20	75°				Closed		
12-Jul-13	9.16	72°				Closed	3,442	Tested water quality.
13-Jul-13	9.00	81°				Closed		
14-Jul-13	9.48	86°	-1	72°	8' 6"	Closed		Life vest board is empty.
15-Jul-13	9.55	85°				Closed		
16-Jul-13	10.35	90°				Closed		
17-Jul-13	10.63	76°				Closed		
18-Jul-13	10.35	79°				Closed		
19-Jul-13	10.35	81°				Closed		
20-Jul-13	10.07	80°				Closed		
21-Jul-13	9.46	79°				Closed		
22-Jul-13	8.31	79°	-3	73°	8'	Closed		Warm weather.
23-Jul-13	8.58	88°				Closed	3,299	
24-Jul-13	8.45	87°				Closed		
25-Jul-13	9.05	88°				Closed		
26-Jul-13	9.64	85°	-7	74°	8' 6"	Closed	3,200	Still hot.
27-Jul-13	9.42	79°				Closed		
28-Jul-13	9.04	72°				Closed		
29-Jul-13	8.91	78°				Closed		
30-Jul-13	9.18	79°				Closed	3,362	
31-Jul-13	9.36	73°				Closed		

**HORSESHOE LAKE TRACKING  
2013**

Date	River Level 8:00 AM	Days High Temp	Lake			Valve Status (Turns Open)	Pump (GPM)	Comments
			Level	Temp	Visibility			
1-Aug-13	9.44	67°				Closed		
2-Aug-13	9.37	70°				Closed		
3-Aug-13	8.84	81°	-9	73°	8'	Closed		Starting to look ugly.
4-Aug-13	8.32	88°				Closed		
5-Aug-13	7.63	87°	-12			Closed	2,953	Slowest drop during June/July in years!
6-Aug-13	7.54	90°				Closed		
7-Aug-13	7.75	86°				Closed		
8-Aug-13	8.03	81°				Closed		Tested water quality.
9-Aug-13	7.92	77°				Closed	2,474	
10-Aug-13	8.02	79°	-13	75°	8'	Closed		Still ok to swim.
11-Aug-13	8.30	75°				Closed		
12-Aug-13	8.12	81°				Closed	2,858	
13-Aug-13		86°				Closed		
14-Aug-13		82°				Closed		
15-Aug-13		77°				Closed		
16-Aug-13		86°				Closed	2,820	
17-Aug-13	9.78	82°				Closed		
18-Aug-13	9.43	83°	-15	75°	6' 6"	Closed		
19-Aug-13	8.34	81°				Closed	-	Pump off.
20-Aug-13	7.47	82°				Closed		
21-Aug-13		88°				Closed		
22-Aug-13		80°				Closed		
23-Aug-13		77°	-17	74°	6'	Closed	-	Pump off, swimming squirrel spotted!
24-Aug-13	9.68	79°				Closed		
25-Aug-13	8.39	69°				Closed		
26-Aug-13	8.28	76°				Closed	-	Pump off.
27-Aug-13	8.45	83°				Closed		
28-Aug-13	8.57	80°				Closed		
29-Aug-13	8.63	76°				Closed		
30-Aug-13	8.85	81°	-19	75°	6'	Closed	-	Pump off.
31-Aug-13		91°				Closed		

**HORSESHOE LAKE TRACKING  
2013**

Date	River Level 8:00 AM	Days High Temp	Lake			Valve Status (Turns Open)	Pump (GPM)	Comments
			Level	Temp	Visibility			
1-Sep-13		85°				Closed		
2-Sep-13		80°				Closed	-	Pump off.
3-Sep-13		80°				Closed		
4-Sep-13		74°				Closed		
5-Sep-13		71°				Closed		
6-Sep-13	8.67	67°				Closed	-	Pump off.
7-Sep-13	7.60	80°	-22	73°	7'	Closed		Rain appears to to be bringing level up.
8-Sep-13	7.64	83°				Closed		
9-Sep-13	7.54	81°				Closed	3,224	Screens cleaned.
10-Sep-13	7.68	86°				Closed		
11-Sep-13	8.34	95°				Closed		Tested water quality.
12-Sep-13	7.83	81°				Closed		
13-Sep-13	7.32	72°				Closed	3,071	
14-Sep-13	9.43	78°				Closed		
15-Sep-13	9.23	65°				Closed		
16-Sep-13	8.63	67°				Closed	-	Pump off.
17-Sep-13	8.01	70°				Closed		
18-Sep-13	7.39	74°				Closed		
19-Sep-13	7.34	79°				Closed		
20-Sep-13	7.42	72°	-26	71°	8'	Closed	3,363	
21-Sep-13	7.70	66°				Closed		
22-Sep-13	7.86	59°				Closed		
23-Sep-13	7.85	60°				Closed	3,530	
24-Sep-13	7.71	59°				Closed		
25-Sep-13	8.25	62°				Closed		
26-Sep-13	8.21	69°				Closed		
27-Sep-13	10.03	55°	-26	65°	7'6"	Closed	2,945	
28-Sep-13	11.83	62°				Closed		
29-Sep-13	12.47	56°				Closed		
30-Sep-13	13.09	60°	-23			Closed		Level coming back up, VERY rainy!

**HORSESHOE LAKE TRACKING  
2013**

Date	River Level 8:00 AM	Days High Temp	Lake			Valve Status (Turns Open)	Pump (GPM)	Comments
			Level	Temp	Visibility			
1-Oct-13	13.41	55°				Closed		
2-Oct-13	11.48	53°				Closed		
3-Oct-13	11.17	56°				Closed		
4-Oct-13	11.17	67°	-21	62°	8'6"	Closed	2,893	Clarity better, level rising, water is chilly.
5-Oct-13	10.70	73°				Closed		
6-Oct-13	10.65	73°				Closed		
7-Oct-13	10.57	61°				Closed	2,803	
8-Oct-13	10.52	60°				Closed		
9-Oct-13	10.09	62°				Closed		
10-Oct-13	9.92	58°				Closed		
11-Oct-13	9.75	59°				Closed	2,712	
12-Oct-13	10.21	59°				Closed		
13-Oct-13	9.28	60°				Closed		
14-Oct-13	9.01	65°	-21	59°	6'6"	Closed	2,656	Clarity is not great, sun is back out.
15-Oct-13	8.62	68°				Closed		
16-Oct-13	8.18	64°				Closed		
17-Oct-13	8.40	61°				Closed		
18-Oct-13	8.74	67°				Closed		Tested water quality (last of 2013).
19-Oct-13	8.71	67°	-23	59°	6'6"	Closed		
20-Oct-13	8.67	60°				Closed		
21-Oct-13	8.62	65°				Closed	2,306	
22-Oct-13	8.46	70°				Closed		
23-Oct-13	8.57	71°				Closed		
24-Oct-13	8.47	63°				Closed		
25-Oct-13	8.54	60°				Closed	2,315	
26-Oct-13	8.36	58°				Closed		
27-Oct-13	8.33	58°	-26	58°	7'	Closed		Height matches summer low.
28-Oct-13	8.40	61°				Closed		
29-Oct-13	8.34	60°				Closed		
30-Oct-13	8.28	55°				Closed		
31-Oct-13	8.94	55°				Closed		

**HORSESHOE LAKE TRACKING  
2013**

Date	River Level 8:00 AM	Days High Temp	Lake			Valve Status (Turns Open)	Pump (GPM)	Comments
			Level	Temp	Visibility			
1-Nov-13	9.03	58°				Closed		
2-Nov-13	9.05	57°				Closed		
3-Nov-13	9.35	51°				Closed		No report Mike's vacationing AGAIN ☺.
4-Nov-13	9.33	48°				Closed	2,180	
5-Nov-13	9.50	54°				Closed		
6-Nov-13	9.76	53°				Closed		
7-Nov-13	9.84	56°				Closed		
8-Nov-13	10.68	52°				Closed	2,600	
9-Nov-13	10.05	49°				Closed		
10-Nov-13	10.07	57°				Closed		
11-Nov-13	10.00	63°	-26	54°	7'6"	Closed		
12-Nov-13	10.00	56°				Closed		
13-Nov-13	9.90	55°				Closed		
14-Nov-13		50°				Closed		
15-Nov-13		47°				Closed	2,323	
16-Nov-13		48°				Closed		
17-Nov-13		53°	-27	52°	7'6"	Closed		
18-Nov-13		53°				Closed	2,602	
19-Nov-13		53°				Closed		
20-Nov-13		45°				Closed		
21-Nov-13		45°				Closed		
22-Nov-13		54°				Closed		
23-Nov-13		54°	-26	48°	9'	Closed		Better clarity, sun is shining.
24-Nov-13		50°				Closed		
25-Nov-13		50°				Closed	2,883	
26-Nov-13		46°				Closed		
27-Nov-13		52°				Closed	2,954	
28-Nov-13		52°				Closed		Happy Thanksgiving!
29-Nov-13		43°				Closed		
30-Nov-13		50°				Closed		

**HORSESHOE LAKE TRACKING  
2013**

Date	River Level 8:00 AM	Days High Temp	Lake			Valve Status (Turns Open)	Pump (GPM)	Comments
			Level	Temp	Visibility			
1-Dec-13		56°	-23	48°	9'	Closed		
2-Dec-13		48°				Closed		
3-Dec-13	13.45	43°				Closed	3,151	
4-Dec-13		39°				Closed		
5-Dec-13		32°				Closed		
6-Dec-13	11.05	31°				Closed	3,006	
7-Dec-13	10.45	32°	-20	42°	10'	Closed	Low 17°, brrrrr!	
8-Dec-13	11.21	28°				Closed	Low 13°, frozen across Walt's to Lake Ave.	
9-Dec-13	11.04	28°				Closed	Low 15°.	
10-Dec-13		33°				Closed	Low 27°.	
11-Dec-13	9.34	35°				Closed	Low 28°, warming up!	
12-Dec-13	9.48	40°				Closed		
13-Dec-13	9.32	44°				Closed	3,302	
14-Dec-13	9.36	42°				Closed		
15-Dec-13	9.33	43°	-18	42°	10'	Closed	Visibility is steady at 10.	
16-Dec-13	9.39	43°				Closed	3,285	
17-Dec-13	8.55	40°				Closed		
18-Dec-13	8.31	42°				Closed		
19-Dec-13	8.44	37°				Closed	3,255	
20-Dec-13	8.38	38°				Closed		
21-Dec-13	8.68	48°				Closed		
22-Dec-13	8.64	50°	-16	44°	10-11'	Closed		
23-Dec-13	8.65	51°				Closed	3,180	
24-Dec-13		40°				Closed		
25-Dec-13		39°				Closed	Merry Christmas!	
26-Dec-13		35°				Closed		
27-Dec-13		38°				Closed	3,375	
28-Dec-13	9.14	45°				Closed		
29-Dec-13	9.05	41°	-16	42°	10'	Closed		
30-Dec-13	9.09	42°				Closed		
31-Dec-13	9.12	46°				Closed		

**HORSESHOE LAKE TRACKING  
2014**

Date	River Level 8:00 AM	Days High Temp	Lake			Valve Status (Turns Open)	Pump (GPM)	Comments
			Level	Temp	Visibility			
1-Jan-14		43°	-8	45°	10'	Closed		
2-Jan-14		48°				Closed		
3-Jan-14		44°				Closed		
4-Jan-14		45°				Closed		
5-Jan-14	9.18	46°				Closed		
6-Jan-14	9.13	43°				Closed	3,222	
7-Jan-14	10.17	45°				Closed		
8-Jan-14		51°				Closed		
9-Jan-14		47°				Closed		
10-Jan-14	12.30	55°				Closed	3,193	
11-Jan-14	12.25	56°				Closed		
12-Jan-14	11.79	50°				Closed		
13-Jan-14	12.41	52°	-10	44°	10-11'	Closed	3,642	
14-Jan-14	15.86	47°				Closed		
15-Jan-14	13.94	44°				Closed		
16-Jan-14	12.43	43°				Closed		
17-Jan-14		38°				Closed		
18-Jan-14	10.97	48°				Closed		
19-Jan-14		47°				Closed		
20-Jan-14		50°				Closed		
21-Jan-14		46°	-10	44°	10'	Closed		
22-Jan-14		48°				Closed		
23-Jan-14		56°				Closed		
24-Jan-14		52°				Closed	2,581	
25-Jan-14		48°	-10	43°	10'	Closed		
26-Jan-14	9.81	49°				Closed		
27-Jan-14	9.77	41°				Closed	2,957	
28-Jan-14	10.81	43°				Closed		
29-Jan-14	11.73	52°				Closed		
30-Jan-14	12.12	47°				Closed		
31-Jan-14	11.05	46°				Closed	3,287	

**HORSESHOE LAKE TRACKING  
2014**

Date	River Level 8:00 AM	Days High Temp	Lake			Valve Status (Turns Open)	Pump (GPM)	Comments
			Level	Temp	Visibility			
1-Feb-14	12.16	50°				Closed		
2-Feb-14	10.67	45°				Closed		
3-Feb-14	10.62	44°				Closed	2,965	
4-Feb-14	10.25	39°				Closed		
5-Feb-14	10.02	30°				Closed		
6-Feb-14	9.69	24°				Closed		
7-Feb-14	9.72	30°				Closed		
8-Feb-14	9.71	33°				Closed		
9-Feb-14	10.60	33°				Closed		
10-Feb-14	10.81	41°	-7	44°	10'	Closed		Do NOT close the valve yet!
11-Feb-14	10.92	49°				Closed		
12-Feb-14	12.83	56°				Closed		
13-Feb-14	13.53	55°				Closed		
14-Feb-14	13.46	56°				Closed	3,164	Lake pump screens cleaned.
15-Feb-14	13.84	53°				Closed		
16-Feb-14	14.79	50°				Closed		
17-Feb-14	14.76	51°	1			20		Valve opened for first time this winter.
18-Feb-14	15.65	50°				20	4,025	
19-Feb-14	15.89	48°				20		
20-Feb-14	15.46	47°				20		
21-Feb-14	14.97	50°				20	4,057	
22-Feb-14	14.48	46°				20		
23-Feb-14	12.66	49°	1	45°	11'	20		
24-Feb-14	12.14	47°				20	3,496	
25-Feb-14	11.81	54°				20		
26-Feb-14	11.36	54°				Fully Open		
27-Feb-14	11.23	44°				Fully Open		
28-Feb-14	11.34	63°	0	46°	11'	Fully Open	3,463	

**HORSESHOE LAKE TRACKING  
2014**

Date	River Level 8:00 AM	Days High Temp	Lake			Valve Status (Turns Open)	Pump (GPM)	Comments
			Level	Temp	Visibility			
1-Mar-14	12.54	49°				Fully Open		
2-Mar-14	12.64	51°				Fully Open		
3-Mar-14	14.35	62°				Fully Open	3,653	
4-Mar-14	16.09	59°				Fully Open		
5-Mar-14	16.80	57°				Fully Open		
6-Mar-14	17.38	54°				Fully Open		
7-Mar-14	17.69	60°	2	51°	10'	Fully Open	4,446	Notice from Pacific Corp - flows ramped up to record levels. WSDOT turned pump OFF as requested by Public Works.
8-Mar-14	18.45	55°				Fully Open		
9-Mar-14	18.47	59°				Fully Open		
10-Mar-14	20.07	56°				Fully Open		Lake pump screens cleaned with WSDOT.
11-Mar-14	16.90	59°				Fully Open		
12-Mar-14	16.50	64°				Fully Open		
13-Mar-14	16.80	59°				Fully Open		
14-Mar-14	16.50	62°				Fully Open		
15-Mar-14	15.15	64°				Fully Open		
16-Mar-14	14.90	56°				Fully Open		
17-Mar-14	14.82	51°	3	53°	9'	Fully Open		
18-Mar-14	14.84	55°	5	53°	9'	20		
19-Mar-14	14.61	50°				20		
20-Mar-14	13.71	50°				20		
21-Mar-14	13.32	55°				20	3,821	WSDOT turned pump ON in last few days.
22-Mar-14	12.61	63°				20		
23-Mar-14	12.21	62°	0	53°	8'	20		Water murky.
24-Mar-14	11.58	71°				20	3,531	
25-Mar-14	11.23	57°				20		
26-Mar-14	12.02	50°				20		
27-Mar-14	12.72	58°				20		
28-Mar-14	13.89	55°				20	3,667	
29-Mar-14	14.57	55°	1	59°	9'	20		
30-Mar-14	5.23	54°				20		
31-Mar-14	15.46	62°				20	3,722	

**HORSESHOE LAKE TRACKING  
2014**

Date	River Level 8:00 AM	Days High Temp	Lake			Valve Status (Turns Open)	Pump (GPM)	Comments
			Level	Temp	Visibility			
1-Apr-14	14.95	52°				20		
2-Apr-14	14.23	57°				Fully Open		Lake level high, lowering for trail project.
3-Apr-14	13.59	57°				Fully Open		
4-Apr-14	13.35	56°				Fully Open	3,377	
5-Apr-14	12.67	55°				Fully Open		
6-Apr-14	12.26	64°	2	60°	10'	Fully Open		
7-Apr-14	11.63	75°				Fully Open	2,976	
8-Apr-14	11.37	69°				Fully Open		
9-Apr-14	11.50	62°				Fully Open		
10-Apr-14	11.19	64°				Fully Open		
11-Apr-14	11.63	67°				Fully Open		
12-Apr-14	11.74	64°				Fully Open		
13-Apr-14	11.68	72°	0	59°	10'	Fully Open		
14-Apr-14	11.74	70°				Fully Open		
15-Apr-14	11.50	60°				Fully Open	3,304	
16-Apr-14	11.78	56°				Fully Open		
17-Apr-14	12.53	54°				Fully Open		
18-Apr-14	12.51	60°				Fully Open	3,331	
19-Apr-14	12.47	58°				Fully Open		
20-Apr-14	12.32	63°	1	61°	10'	Fully Open		
21-Apr-14	11.82	64°				Fully Open	3,374	
22-Apr-14	11.33	54°				Fully Open		
23-Apr-14	12.13	53°				Fully Open		Screens cleaned.
24-Apr-14	13.38	60°				Fully Open		
25-Apr-14	14.63	57°				Fully Open	3,546	
26-Apr-14	14.45	56°	1	60°	10'	Fully Open		
27-Apr-14	13.87	55°				Fully Open		
28-Apr-14	13.85	63°	0.5	60°	10'	Fully Open	3,182	
29-Apr-14	13.83	78°				Fully Open		
30-Apr-14	13.81	85°				Fully Open		

**HORSESHOE LAKE TRACKING  
2014**

Date	River Level 8:00 AM	Days High Temp	Lake			Valve Status (Turns Open)	Pump (GPM)	Comments
			Level	Temp	Visibility			
1-May-14	13.69	88°				Fully Open		
2-May-14	14.38	75°				Fully Open	2,850	
3-May-14	13.53	59°				Fully Open		
4-May-14	12.89	60°	1	65°	10'	Fully Open		
5-May-14	12.85	61°				Fully Open	2,900	
6-May-14	13.55	66°				Fully Open		
7-May-14	14.15	66°				Fully Open		Began testing water quality for 2014.
8-May-14	13.95	57°				Fully Open		
9-May-14	13.96	57°				Fully Open	2,880	
10-May-14	14.04	65°				Fully Open		
11-May-14	14.03	70°	1	63°	10'	Fully Open		
12-May-14	13.97	78°				Fully Open	2,714	Weather getting warmer.
13-May-14	14.22	85°				Fully Open		
14-May-14	14.32	88°		67°		Fully Open		Weather is HOT.
15-May-14	13.36	82°				Fully Open		
16-May-14	12.87	72°				Fully Open		
17-May-14		69°				Fully Open		
18-May-14		60°				Fully Open		
19-May-14	14.44	72°				Fully Open	2,948	
20-May-14	14.20	74°				Fully Open		
21-May-14	14.34	73°				Fully Open		
22-May-14	13.92	81°				Fully Open		
23-May-14	13.38	70°				Fully Open	2,877	
24-May-14	13.68	68°				Fully Open		
25-May-14	13.59	67°				Fully Open		
26-May-14	13.77	70°	0	68°	8'	Fully Open		Murky.
27-May-14	13.47	68°				Fully Open	2,864	
28-May-14	13.78	61°				Fully Open		
29-May-14	13.99	67°				Fully Open		
30-May-14	13.69	76°	1	68°	8'	Closed	3,049	
31-May-14	14.50	75°				Closed		
1-Jun-14	13.40	74°				Closed		
2-Jun-14	12.59	75°				Closed	2,635	
3-Jun-14	13.13	71°				Closed		
4-Jun-14	12.95	73°				Closed		Tested water quality.
5-Jun-14	12.60	75°				Closed		
6-Jun-14	12.45	79°				Closed	2,910	
7-Jun-14	12.45	76°				Closed		
8-Jun-14	12.10	78°				Closed		
9-Jun-14	11.97	74°				25		Water above retaining wall.
10-Jun-14	11.37	75°				25		
11-Jun-14	11.20	80°				25		
12-Jun-14	10.98	63°				Closed		
13-Jun-14	10.82	63°				Closed	2,723	
14-Jun-14	10.65	69°				Closed		
15-Jun-14	10.65	67°	2	70°	8.5'	Closed		

**HORSESHOE LAKE TRACKING  
2014**

Date	River Level 8:00 AM	Days High Temp	Lake			Valve Status (Turns Open)	Pump (GPM)	Comments
			Level	Temp	Visibility			
16-Jun-14	10.58	64°				Closed	3,591	
17-Jun-14	10.38	60°				Closed		
18-Jun-14	10.65	74°				Closed		
19-Jun-14	11.36	78°				Closed		
20-Jun-14	11.36	73°				Closed	3,177	
21-Jun-14	11.26	77°				Closed		
22-Jun-14	11.50	82°	2	71°	9'	Closed		
23-Jun-14	11.63	80°				Closed	3,044	
24-Jun-14	11.33	77°				Closed		
25-Jun-14	10.60	80°				Closed		
26-Jun-14	10.84	65°				Closed		
27-Jun-14	10.70	70°				Closed	3,627	
28-Jun-14	10.57	70°				Closed		
29-Jun-14	11.12	74°				Closed		
30-Jun-14	11.22	82°	2	71°	9'	Closed	3,374	Mike C. gone for 2-weeks.

**HORSESHOE LAKE TRACKING  
2014**

Date	River Level 8:00 AM	Days High Temp	Lake			Valve Status (Turns Open)	Pump (GPM)	Comments
			Level	Temp	Visibility			
1-Jul-14	11.53	97°				Closed		
2-Jul-14	11.64	83°				Closed		Tested water quality.
3-Jul-14	11.41	74°				Closed	3,287	
4-Jul-14	11.83	80°				Closed		
5-Jul-14	11.08	84°				Closed		
6-Jul-14	9.59	88°				Closed		
7-Jul-14	9.30	85°				Closed	3,032	
8-Jul-14	10.94	87°				Closed		
9-Jul-14	10.97	80°				Closed		Screens cleaned.
10-Jul-14	10.40	85°				Closed	3,150	
11-Jul-14	9.63	91°				Closed		
12-Jul-14	9.46	89°				Closed		Level projected.
13-Jul-14	9.41	72°				Closed		Level projected.
14-Jul-14	9.69	81°				Closed		Level projected.
15-Jul-14	9.81	89°				Closed		Level projected.
16-Jul-14	10.08	88°				Closed		Level projected.
17-Jul-14		82°				Closed		No level (working in field).
18-Jul-14		78°				Closed	2,766	No level (working in field).
19-Jul-14	10.47	86°				Closed		
20-Jul-14	10.18	70°				Closed		
21-Jul-14	10.26	81°				Closed		
22-Jul-14	10.30	78°				Closed		
23-Jul-14	9.63	66°				Closed		
24-Jul-14	8.79	70°				Closed		
25-Jul-14	8.15	78°	0	75°	8'	Closed	2,997	2 days of heavy rain kept water level up.
26-Jul-14	8.46	84°				Closed		
27-Jul-14	8.46	88°				Closed		
28-Jul-14	8.38	91°				Closed	2,630	
29-Jul-14	8.66	89°				Closed		
30-Jul-14	8.78	89°				Closed		
31-Jul-14	8.83	91°				Closed		

**HORSESHOE LAKE TRACKING  
2014**

Date	River Level 8:00 AM	Days High Temp	Lake			Valve Status (Turns Open)	Pump (GPM)	Comments
			Level	Temp	Visibility			
1-Aug-14	9.09	89°				Closed		
2-Aug-14	9.03	86°				Closed		Level projected 8/1 (vacation).
3-Aug-14	9.02	90°				Closed		Level projected 8/1 (vacation).
4-Aug-14	9.04	90°	-4	76°	8'	Closed	2,556	Screens cleaned; level proj 8/1 (vacation).
5-Aug-14	9.35	80°				Closed		Level projected 8/1 (vacation).
6-Aug-14	9.79	83°				Closed		Level projected 8/1 (vacation).
7-Aug-14	9.97	80°				Closed		Level projected 8/1 (vacation).
8-Aug-14	9.84	79°				Closed	2,956	Level projected 8/1 (vacation).
9-Aug-14	8.48	85°				Closed		
10-Aug-14	7.79	93°	-8	75°	8'	Closed		
11-Aug-14	8.00	98°				Closed	2,990	
12-Aug-14	8.43	75°				Closed		
13-Aug-14	8.76	76°				Closed		Tested water quality.
14-Aug-14	9.19	80°				Closed		
15-Aug-14	9.24	79°				Closed	2,901	
16-Aug-14	9.39	84°	-10	75°	8	Closed		
17-Aug-14	9.26	86°				Closed		
18-Aug-14	9.17	90°				Closed		
19-Aug-14	9.66	83°				Closed	2,972	
20-Aug-14	9.37	75°				Closed		
21-Aug-14	8.85	80°				Closed		
22-Aug-14	8.67	81°				Closed	1,009	
23-Aug-14	7.57	87°				Closed		
24-Aug-14	7.45	79°	-14	75°	7.5"	Closed		
25-Aug-14	7.49	89°				Closed		
26-Aug-14		92°				Closed	3,059	River gauge down.
27-Aug-14		88°				Closed		River gauge down.
28-Aug-14		8°				Closed		River gauge down.
29-Aug-14		76°				Closed	2,813	River gauge down.
30-Aug-14		74°				Closed		River gauge down.
31-Aug-14		76°				Closed		River gauge down.

**HORSESHOE LAKE TRACKING  
2014**

Date	River Level 8:00 AM	Days High Temp	Lake			Valve Status (Turns Open)	Pump (GPM)	Comments
			Level	Temp	Visibility			
1-Sep-14		81°				Closed		River gauge down.
2-Sep-14		74°	-17	75°	7.6"	Closed		River gauge down.
3-Sep-14		74°				Closed		River gauge down.
4-Sep-14	8.70	82°				Closed		
5-Sep-14	8.41	91°				Closed		
6-Sep-14	8.31	96°				Closed		
7-Sep-14	7.98	85°				Closed		
8-Sep-14	7.39							Level projected.
9-Sep-14	7.38							Level projected, 7.23 lowest projected.
10-Sep-14	7.43							Level projected.
11-Sep-14								
12-Sep-14								
13-Sep-14								
14-Sep-14								
15-Sep-14								
16-Sep-14								
17-Sep-14								
18-Sep-14								
19-Sep-14								
20-Sep-14								
21-Sep-14								
22-Sep-14								
23-Sep-14								
24-Sep-14								
25-Sep-14								
26-Sep-14								
27-Sep-14								
28-Sep-14								
29-Sep-14								
30-Sep-14								