

[illegible]

PLACE OF USE: WILDLIFE STORAGE

TwpRge Sec	NE				NW				SW				SE				Totals
	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	
03N04W 34					X	X											
					L 8												

DIVERSION TO STORAGE same as WILDLIFE STORAGEMethod of Determination: **GIS and visual inspection**

3. yes Delivery System Diagram Attached (required). Indicate all major components and distances between components. Indicate weir size/pipe as applicable.
- yes Map Attached Showing Location(s) of point(s) of diversion and place(s) of use (required). Scale must be 1:24,000 or greater.
- yes Aerial Photo Attached (required for irrigation of 10+ acres).
- yes Photo of Diversion and System Attached

4.

Well or Diversion Identification No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
Site Tag # A0018578	AJAX	5	FR184T	Lift Pump	1740 RPM
	SuperE	?	Unknown	Unknown	3500 RPM

**Code to correspond with No. on map and aerial photo*

Previous pump was 25 hp Century with Berkley pump (see 2-10183). Appears pump has been downsized and pump to irrigation line setup reworked.

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
Thyme Flyte	Polysonic					3/28/2012
FlowTracker	Sonic					New

2. Measurements: Thyme Flyte measurement taken on outflow of pipe, east side of lift pump above 45 degree bend. Flow measurement determined to be 185 GPM (.41 cfs). Previous measurements on the well were 579 GPM so it appears pump has been downsized.

First FlowTracker measurement taken in concrete wastewater ditch, west side of Tax 53, Sec 34, T3N, R4W as it flows into culvert pipe leading to pond. Flow measurement determined to be .378 cfs. Second measurement taken in dirt wastewater ditch, east side of same lot as water flows into culvert pipe leading to pond. Flow measurement determined to be .365 cfs. Total wastewater flow equals .743 cfs into pond during irrigation season. Add the additional .41 cfs from Snake River water for overall diversion rate of 1.16 cfs.

E. FLOW CALCULATIONS

 X Additional Computation Sheets Attached

Measured Method:

FlowTracker flow rate from the concrete ditch measured .378 cfs. Flow rate from the dirt wastewater ditch measured .365 cfs. Total flow rate for wastewater equals .743 cfs.

Thyme Flyte measurement from irrigation system equals 185 GPM or .41 cfs.

F. VOLUME CALCULATIONS

1. Volume Calculations for Pond:

From wastewater:

$.378 \text{ cfs} + .365 \text{ cfs} = .743 \text{ cfs}$ (combined flow rate from waste water sources 3 days per week)

$260 \text{ days irrigation season} \div 7 \text{ days/week} = 37 \text{ weeks}$

$37 \text{ weeks} \times 3 \text{ days/week} = 111 \text{ days}$

$.743 \text{ cfs} \times 111 \text{ days} \times 1.9835 = \underline{163.5 \text{ AF}}$

From pump:

$185 \text{ GPM} \div 448 = .41 \text{ cfs}$ (flow rate from irrigation pump)

3 months non-irrigation season

Pump run 4 time per month to keep pond filled

$(3 \times 4) \times .41 \text{ cfs} \times 1.9835 = \underline{9.7 \text{ AF}}$

Other considerations:

$1.5 \text{ acre surface area} \times 5 \text{ ft pond depth (per owner)} = \underline{7.5 \text{ AF}}$ total pond volume.

Seepage and ET – (See Pond Seepage/ET spreadsheets)

Seepage = 914.4 AF (See worksheet)

Evaporation = 6.52 AF (See worksheet)

Wildlife = $2.5 \text{ AF surface area} \times 4.5 \text{ AF head gate requirement} = \underline{11.3 \text{ AF}}$ for yearly evaporation & seepage

G. NARRATIVE/REMARKS/COMMENTS

Permit 2-7468 was not identified during the field exam and licensing of 2-10327. Permit 2-7468 has an earlier priority date and will allow for additional storage water beyond that allowed by 2-10327. I will use the same field exam from 2-10327 to process 2-74678.

Notes on the permit identify water source as springs and run off via Gem Irrigation District Water. Field exam identified water source as wastewater. To clarify license, ditch does not flow during non-irrigation season.

The 2.5 acre pond covered under this permit uses waste water runoff from five fields during the irrigation season to keep the pond filled. During the non-irrigation season, Snake River water is used to maintain pond water level. The pond is used for wildlife, supplying wetlands for geese and ducks, fish habitat and birds.

There are two paths for wastewater into the pond. First path – A north-south concrete ditch along the west side of the 5 acre lots supplies irrigation water to land owners under separate water licenses. At the southern end of the ditch, excess water flows into a buried pipe and travels east along the dirt road into the pond. FlowTracker measurements before the pipe determined the flow to be .378 cfs. Second path – Water applied to the land from the concrete ditch flows east across fields. Runoff collects in a north-south dirt ditch, flowing under the road and into the pond. FlowTracker measurements before the water passes under the road determined the flow to be .365 cfs. Waste water was observed in the dirt ditch along the southern most three fields, all of which were getting water from the concrete ditch on the day of the field exam. The total of the two waste water measurements was .743 cfs. This water flows through the pond and exits the north end of the pond, returning to the Snake River via a pond/canal system across property to the north.

During the non-irrigation season, the water level in the pond drops as water seeps back into the Snake River or evaporates. To prevent fish kill, water is pumped from the Snake River using an irrigation system that supplies water to fields south and east of the pond. The Snake River water is pumped from a vertical culvert using an Ajax lift pump, passes across a debris screen and into a tank with excess water flowing back into the river. From the tank, water is pumped by a SuperE pump into a 6" irrigation system. A valve in the system allows water to be diverted from the fields into the pond. Thyme Flyte measurements determined the system to be supplying 185 GPM. Mr. May indicated due to electricity prices, the pump was not operated last year but they normally pump every week or so as needed to keep the pond filled.

Have conditions of permit approval been met? X Yes No

H. RECOMMENDATIONS**1. Recommended Amounts**

<u>BENEFICIAL USE</u>	<u>PERIOD OF USE</u>	<u>DIVERSION RATE</u>	<u>ANNUAL VOLUME</u>
AESTHETIC STORAGE	01/01 to 12/31		10.0 AF
DIVERSION TO STORAGE	01/01 to 12/31	0.20 CFS	
<u>Totals:</u>		0.20 CFS	10.0 AF

2. Recommended Amendments

___ Change P.D. as reflected above ___ Add P.D. as reflected above ☒ None

___ Change P.U. as reflected above ___ Add P.U. as reflected above ___ Other

I. AUTHENTICATION

Field Examiner's Name Glen Gardner Date 6 Sept 2012

Reviewer _____ Date _____

State of Idaho
Department of Water Resources
Attachment To Water Right License
2-7468

This map depicts the DIVERSION TO STORAGE place of use boundary for this water right at the time of this approval and is attached to the approval document solely for illustrative purposes.



0 0.045 0.09 0.18 Miles

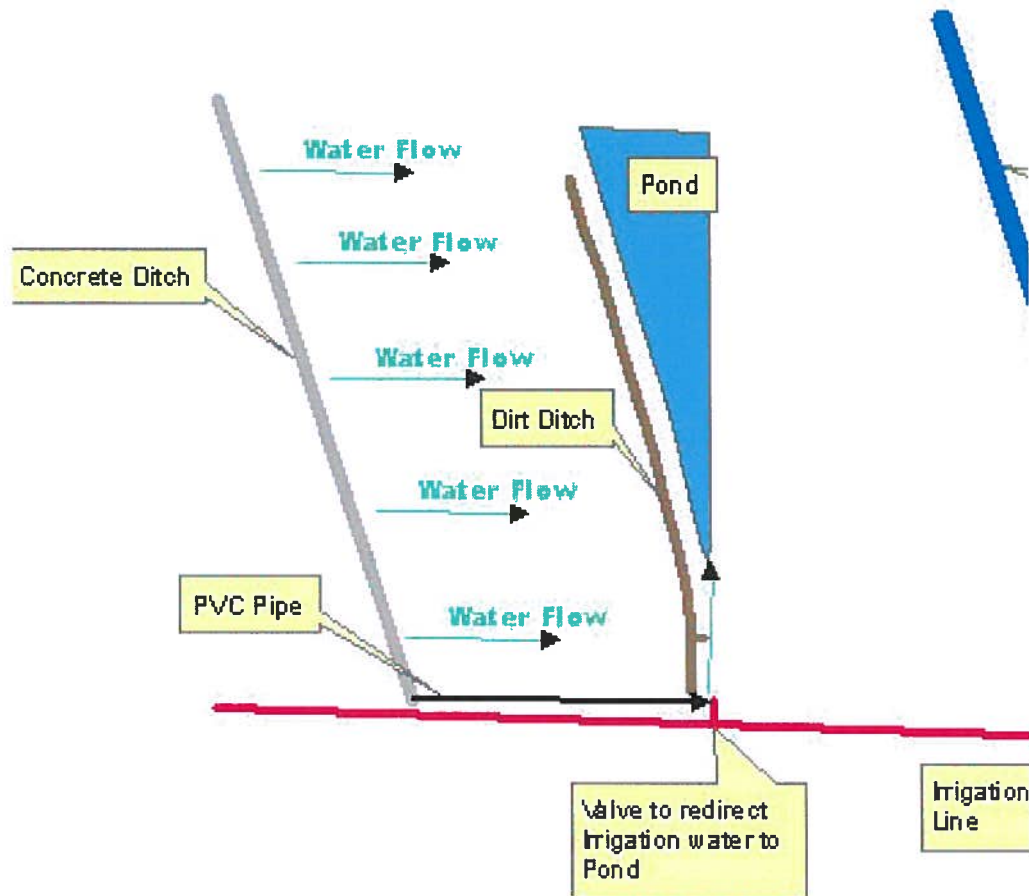
- Point of Diversion
- Place Of Use Boundary
- Townships
- PLS Sections
- Quarter Quarters



Field Exam Map for 02-10327

System Diagram

& 2-7468



The 2.5 acre pond covered under this permit uses waste water runoff from five fields during the irrigation season to keep the pond filled. During the non-irrigation season, Snake River water is used to maintain pond water level. The pond is used for wildlife, supplying wetlands for geese and ducks, fish habitat and birds.

There are two paths for waste water into the pond. First path - A north-south concrete ditch along the west side of the 5 acre lots supplies irrigation water to land owners under separate water licenses. At the southern end of the ditch, excess water flows into a buried pipe and travels east along the dirt road into the pond. FlowTracker measurements before the pipe determined the flow to be .378 cfs. Second path - Water applied to the land from the concrete ditch flows east. Runoff collects in a north-south dirt ditch, flowing under the road, into the pond. FlowTracker measurements before the water passes under the road determined the flow to be .365 cfs. Waste water was observed in the dirt ditch along the southern most three fields, all of which were getting water from the concrete ditch on the day of the field exam. The total of the two waste water measurements was .743 cfs.

During the non-irrigation season, the water level in the pond drops as water seeps back into the Snake River or evaporates. To prevent fish kill, water is pumped from the Snake River using an irrigation system that supplies water to fields south and east of the pond. The Snake River water is pumped from a vertical culvert using an Ajax lift pump, passes across a debris screen into a tank with excess water flowing back into the river. From the tank, water is pumped by a SuperE pump into a 6" irrigation system. A valve in the system allows water to be diverted from the fields into the pond. Thyme Flyte measurements determined the system to be supplying 185 GPM. According to Mr. May, the pump is turned on long enough to fill the pond when water is needed.

11:07+170.126E 00PM 00R

Snake River
Water supplied to

02-10327

02-7468

MODE SELECT

OUTER DIAMETER
4.300 IN

OUTER DIAMETER
4.301 IN

PIPE MATERIAL
CS.95

WALL THICKNESS
0.115 IN

INNER LINING
NO LING.

TYPE OF FLUID
WATER

SENSOR MOUNTING
Q

TYPE OF SENSOR
SMALL

SPACING
4.30 IN U

06-15 10:5900 *R
+170.155E 00PM

6-15 10:59Am

Snake River
Water supplied to

02-10327

02-7468

MODE SELECT

OUTER DIAMETER
4.300 IN

OUTER DIAMETER
4.301 IN

PIPE MATERIAL
CS.95

WALL THICKNESS
0.115 IN

INNER LINING
NO LING.

TYPE OF FLUID
WATER

SENSOR MOUNTING
Q

TYPE OF SENSOR
SMALL

SPACING
4.30 IN U

06-15 10:5900 *R
+170.155E 00PM

6-15 10:59Am

11:07+170.126E 00PM 00R
+ 2.086E 0FPS 00R
+00000 *10 G 00R
-00000 *10 G 00R

11:08+166.692E 00PM 00R
+ 2.043E 0FPS 00R
+00033 *10 G 00R
-00000 *10 G 00R

11:10+169.598E 00PM 00R
+ 2.080E 0FPS 00R
+00050 *10 G 00R
-00000 *10 G 00R

11:11+172.240E 00PM 00R
+ 2.112E 0FPS 00R
+00067 *10 G 00R
-00000 *10 G 00R

11:12+165.635E 00PM 00R
+ 2.030E 0FPS 00R
+00084 *10 G 00R
-00000 *10 G 00R

11:13+169.334E 00PM 00R
+ 2.076E 0FPS 00R
+00101 *10 G 00R
-00000 *10 G 00R

11:14+170.126E 00PM 00R
+ 2.086E 0FPS 00R
+00118 *10 G 00R
-00000 *10 G 00R

11:15+167.220E 00PM 00R
+ 2.050E 0FPS 00R
+00135 *10 G 00R
-00000 *10 G 00R

11:16+165.900E 00PM 00R
+ 2.034E 0FPS 00R
+00152 *10 G 00R
-00000 *10 G 00R

11:17+166.956E 00PM 00R
+ 2.047E 0FPS 00R
+00169 *10 G 00R
-00000 *10 G 00R

11:18+168.805E 00PM 00R
+ 2.070E 0FPS 00R
+00185 *10 G 00R
-00000 *10 G 00R

11:19+161.907E 00PM 00R
+ 1.984E 0FPS 00R
+00202 *10 G 00R
-00000 *10 G 00R

11:19+161.907E 00PM 00R
+ 1.984E 0FPS 00R
+00202 *10 G 00R
-00000 *10 G 00R

SCANNED

NOV 14 2018

Discharge Measurement Summary

Date Generated: Tue Jun 26 2012

File Information

File Name CONCRETEDITCH.WAD
Start Date and Time 2012/06/26 08:35:36

Site Details

Site Name
Operator(s) GLEN

System Information

Sensor Type FlowTracker
Serial # P4554
CPU Firmware Version 3.7
Software Ver 2.30
Mounting Correction 0.0%

Units (English Units)

Distance ft
Velocity ft/s
Area ft²
Discharge cfs

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.5%	5.7%
Velocity	1.0%	5.6%
Width	0.2%	0.2%
Method	3.3%	-
# Stations	6.6%	-
Overall	7.5%	8.1%

Summary

Averaging Int.	40	# Stations	8
Start Edge	LEW	Total Width	3.000
Mean SNR	32.5 dB	Total Area	1.631
Mean Temp	65.67 °F	Mean Depth	0.544
Disch. Equation	Mid-Section	Mean Velocity	0.2318
		Total Discharge	0.3779

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	08:35	1.30	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	08:35	1.70	0.6	0.300	0.6	0.120	0.2746	1.00	0.2746	0.120	0.0330	8.7
2	08:37	2.10	0.6	0.700	0.6	0.280	0.2831	1.00	0.2831	0.280	0.0793	21.0
3	08:39	2.50	0.6	1.000	0.6	0.400	0.2405	1.00	0.2405	0.400	0.0963	25.5
4	08:40	2.90	0.6	1.000	0.6	0.400	0.2011	1.00	0.2011	0.400	0.0805	21.3
5	08:42	3.30	0.6	0.700	0.6	0.280	0.2349	1.00	0.2349	0.280	0.0658	17.4
6	08:43	3.70	0.6	0.300	0.6	0.120	0.1539	1.00	0.1539	0.150	0.0230	6.1
7	08:43	4.30	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.

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AUG 24 2012

Discharge Measurement Summary

Date Generated: Tue Jun 26 2012

File Information

File Name DIRTDITCH.WAD
Start Date and Time 2012/06/26 09:10:19

Site Details

Site Name
Operator(s) GLEN

System Information

Sensor Type FlowTracker
Serial # P4554
CPU Firmware Version 3.7
Software Ver 2.30
Mounting Correction 0.0%

Units (English Units)

Distance ft
Velocity ft/s
Area ft²
Discharge cfs

Discharge Uncertainty

Category	ISO	Stats
Accuracy	1.0%	1.0%
Depth	0.4%	0.9%
Velocity	0.8%	1.6%
Width	0.1%	0.1%
Method	2.2%	-
# Stations	3.6%	-
Overall	4.4%	2.1%

Summary

Averaging Int. 40 # Stations 14
Start Edge LEW Total Width 2.900
Mean SNR 33.9 dB Total Area 1.880
Mean Temp 60.43 °F Mean Depth 0.648
Disch. Equation Mid-Section Mean Velocity 0.1943
Total Discharge 0.3653

Measurement Results

St	Clock	Loc	Method	Depth	%Dep	MeasD	Vel	CorrFact	MeanV	Area	Flow	%Q
0	09:10	1.30	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0
1	09:10	1.50	0.6	0.500	0.6	0.200	0.1850	1.00	0.1850	0.100	0.0185	5.1
2	09:11	1.70	0.6	0.600	0.6	0.240	0.1745	1.00	0.1745	0.120	0.0210	5.7
3	09:12	1.90	0.6	0.600	0.6	0.240	0.2090	1.00	0.2090	0.120	0.0251	6.9
4	09:13	2.10	0.6	0.700	0.6	0.280	0.2165	1.00	0.2165	0.140	0.0303	8.3
5	09:15	2.30	0.6	0.800	0.6	0.320	0.2231	1.00	0.2231	0.160	0.0357	9.8
6	09:16	2.50	0.6	0.800	0.6	0.320	0.2270	1.00	0.2270	0.160	0.0363	9.9
7	09:17	2.70	0.6	0.800	0.6	0.320	0.2142	1.00	0.2142	0.160	0.0343	9.4
8	09:18	2.90	0.6	0.800	0.6	0.320	0.1857	1.00	0.1857	0.160	0.0297	8.1
9	09:19	3.10	0.6	0.800	0.6	0.320	0.1824	1.00	0.1824	0.160	0.0292	8.0
10	09:20	3.30	0.6	0.800	0.6	0.320	0.1998	1.00	0.1998	0.160	0.0320	8.8
11	09:21	3.50	0.6	0.800	0.6	0.320	0.1742	1.00	0.1742	0.160	0.0279	7.6
12	09:23	3.70	0.6	0.800	0.6	0.320	0.1617	1.00	0.1617	0.279	0.0452	12.4
13	09:23	4.20	None	0.000	0.0	0.0	0.0000	1.00	0.0000	0.000	0.0000	0.0

Rows in italics indicate a QC warning. See the Quality Control page of this report for more information.

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AUG 21 2012

Precipitation Loss Calculation

Date: June 29, 2012
Prepared by: Glen Gardiner
Water Right No: 2-10327 and 2-4768

P = Precipitation
ET= Evapotranspiration
 P_d = Precipitation deficit
 P_d = P- ET

P_d

Found at: <http://www.kimberly.uidaho.edu/ETIdaho/>

$$P_d = \text{convert to AFA: } \frac{(\text{mm/yr})}{304.8} \times \# \text{ acres} =$$

787	304.8	2.5
(From ET Idaho)		

$P_d = 6.46 \text{ AFA}$

* Use the Precipitation Deficit for 'P' value

ET_{Idaho} 2009: Evapotranspiration and Consumptive Irrigation Water Requirements for Idaho

Please send suggestions for improving this site to robison at kimberly dot uidaho dot edu Copyright 2010, University of Idaho.

Parma (AgriMet --PMAI) Statistics based on thirty

For a different land cover or crop click on the above link.

You can highlight this table and copy via the clipboard to a Microsoft Excel or OpenOffice spreadsheet to plot or otherwise work with this data.

Open water - small stock ponds														
Precipitation Deficit (Click here for a graph)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Growing Season ^a	Non Growing Season ^b
Mean	mm/day												mm	
Monthly ^c	0.36	0.52	1.68	2.43	3.24	4.21	5.03	4.49	3.12	1.58	0.21	0.38	787	0
15-Day Moving Average ^d	0.41	0.47	1.68	2.46	3.22	4.25	5.07	4.44	3.09	1.61	0.26	0.30		
7-Day Moving Average ^e	0.39	0.49	1.66	2.45	3.25	4.23	5.06	4.46	3.10	1.61	0.21	0.36		
3-Day Moving Average ^f	0.36	0.51	1.67	2.44	3.24	4.20	5.03	4.48	3.11	1.58	0.20	0.36		
Standard Deviation	mm/day												mm	
Monthly	0.83	0.49	1.12	0.64	2.06	0.75	0.80	0.77	0.55	0.86	0.48	0.88	125	0
15-Day Moving Average	0.79	0.58	0.98	0.81	1.96	1.03	0.61	0.70	0.77	0.85	0.62	0.74		
7-Day Moving Average	1.05	0.75	1.17	1.21	2.38	1.44	0.75	0.82	1.06	1.26	0.90	1.13		
3-Day Moving Average	1.45	1.02	1.56	1.77	2.84	1.96	1.03	0.97	1.37	1.70	1.21	1.63		
20% Exceedance	mm/day												mm	
Monthly	0.16	0.89	2.29	2.84	4.31	4.81	5.48	4.90	3.40	1.99	0.68	0.10	893	0
15-Day Moving Average	0.54	1.17	3.00	3.60	5.46	5.48	5.80	5.20	4.02	2.76	1.09	0.55		
7-Day Moving Average	0.76	1.56	3.44	4.44	5.57	5.90	6.13	5.41	4.33	3.10	1.53	0.75		
3-Day Moving														

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Average	1.13	1.83	4.26	5.06	5.93	6.35	6.55	5.86	4.77	3.57	1.93	1.45			
80% Exceedance	mm/day												mm		
Monthly	1.02	0.09	0.72	1.81	1.19	3.73	4.27	3.65	2.44	0.80	0.15	1.01	649	0	649
15-Day Moving Average	1.80	0.63	-0.07	0.86	-1.62	2.71	3.99	2.78	1.61	0.33	1.07	1.67			
7-Day Moving Average	3.61	1.31	-1.70	0.49	-4.62	0.12	3.42	2.33	0.03	2.42	2.78	3.53			
3-Day Moving Average	6.50	3.24	-3.38	3.09	-7.67	4.13	2.35	1.03	2.84	4.63	4.68	7.02			
Ave Highest P_{def}	mm/day												--		
15-Day Moving Average ^g	0.32	0.81	2.36	3.23	4.39	5.05	5.45	4.98	3.60	2.29	0.72	0.33			
7-Day Moving Average ^h	0.58	1.28	2.94	3.96	5.29	5.47	5.74	5.20	4.04	2.89	1.09	0.67			
3-Day Moving Average ⁱ	0.90	1.61	3.60	4.60	5.73	5.92	6.13	5.60	4.48	3.50	1.46	1.04			
Ave Lowest P_{def}	mm/day												--		
15-Day Moving Average ^g	0.98	0.17	1.01	1.62	2.00	3.36	4.72	4.01	2.57	0.86	0.26	0.94			
7-Day Moving Average ^h	1.80	0.29	0.22	0.40	0.23	2.11	4.18	3.52	1.79	0.05	1.08	2.08			
3-Day Moving Average ⁱ	3.58	1.39	-1.28	1.34	-2.36	0.05	3.13	2.71	0.27	1.85	2.59	4.23			
Special normal distribution parameters for monthly, seasonal, and annual intervals													--		
Skew	0.02	0.79	-0.30	0.18	-0.24	0.87	0.18	-0.13	0.10	0.38	0.06	0.39	-0.36	0.00	-0.36
Kurtosis	0.48	3.05	0.90	3.33	0.79	4.27	0.67	0.61	2.53	0.87	2.52	1.26	2.40	0.00	2.40

^a Growing Season: This is usually the time from green up or planting in the spring to a killing frost or harvest in the fall. It is not applicable for entries without a growing season and will be blank.

^b Nongrowing Season: This is usually the time from a killing frost or harvest in the fall to the of green up in the spring. It is not applicable for entries without a growing season.

^c Mean of the average daily value for month

^d Mean of the fourteen 15-day period averages contained in the month

^e Mean of the twenty three 7-day period averages contained in the month

^f Mean of the twenty seven 3-day period averages contained in the month

^g Mean of the highest/lowest 15-day period average in month

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AUG 14 2012

Photographer and date of Photos Glen Gardiner June 15, 2012
File Number 02-7468



Photo of the pond from the northeast corner looking southwesterly. Gravel dike road on right side of picture.



Photo of the pond from the northwest corner looking southeasterly. Island in center of pond.



Dirt ditch travels along right side of access road

Photographer and date of Photos Glen Gardiner June 15, 2012
File Number 02-7468



Irrigation pump which pulls water from Snake River and supplies fields south of pond.



Excess water in tank flows back into Snake River.

Photographer and date of Photos Glen Gardiner June 15, 2012
File Number 02-7468



Shutoff valve prevents irrigation water flowing to fields during on-irrigation season. Water flows from riser on right, north into south end of pond. Valve across road prevents water from flowing to pond during irrigation season.



Culvert from concrete ditch delivers waste water to south end of pond.