

Memo

Date: September 26, 2011

To: Cherie
File 97-7311

From: Craig L. Saxton

RE: Consumptive use and Volume Calculations

At the time we issued this, it seems like we were identifying small ponds like this as non-consumptive. Now our practice is to take into account seepage and evaporation and therefore we do not think of ponds as non-consumptive anymore.

I used the 1992 aerial photography and found that the actual pond surface area is probably more like 1.5 acres.

$$(1.5 \text{ acres})(8 \text{ feet deep})(0.4 \text{ slope}) = 4.8 \text{ AF}$$

Using the 1.5 acre surface area and looking at the ET Idaho precipitation deficit, we end up with evaporative losses of 1.3 AF.

$$4.8 \text{ AF for fill} + 1.3 \text{ AF for evaporation Loss} = 6.1 \text{ AF}$$

Since we are permitted for 6 AF, let's call evaporation losses 1.2 AF.

As far as seepage, the permit states that the water is to be used to "maintain" the water level in the pond, so we can assume that there is a high water table and there is no seepage losses.

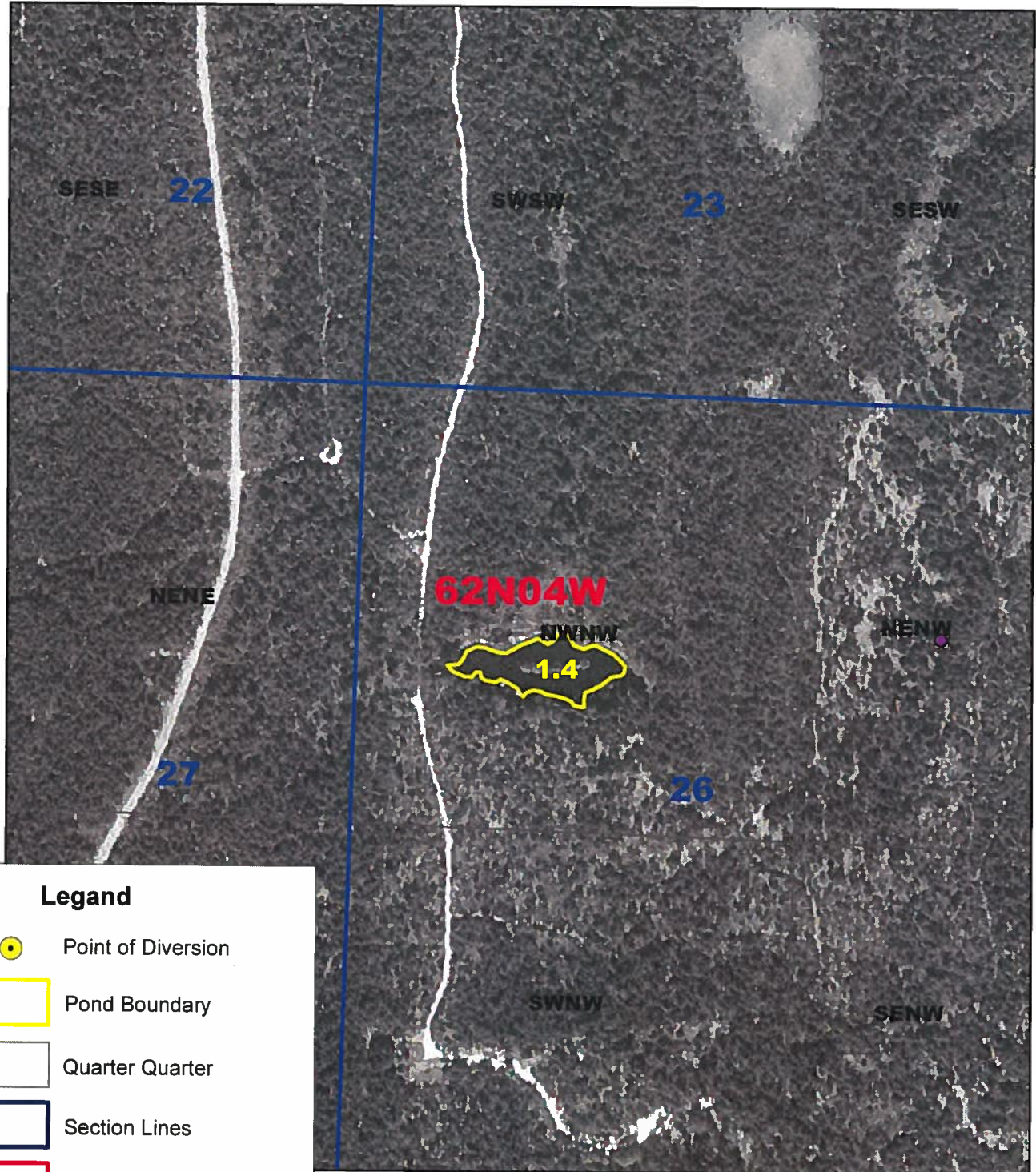
I suggest we add condition 219:

This right authorizes the diversion of an annual total of 4.8 acre-feet to be used for the initial filling of the pond and 1.2 acre-feet for the replacement of losses caused by evaporation.

Since we are going to account for evaporation losses it is appropriate to remove the condition requiring the right to be non-consumptive.

Pond Surface Area 97-7311

1992 DOQQ Photography



Legend



Point of Diversion



Pond Boundary



Quarter Quarter



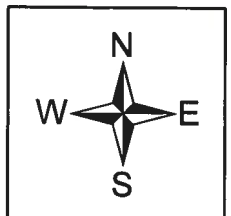
Section Lines



Township/Range Lines



Basin Boundary



Precipitation Loss Calculation

Date: September 8, 2011
Prepared by: Craig L. Saxton
Water Right No: 22-13417

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

P_d

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

P_d = convert to AFA: (mm/yr) / (convert to feet) x # acres =
259 / 304.8 x 1.5
(From ET Idaho)

$P_d = 1.3$ 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.

Bonnors Ferry (NWS --101079)

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 - shallow systems (ponds, streams)															
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	Annual
Mean	mm/day												mm		
Monthly ^c	-1.90	0.94	0.29	1.36	2.20	2.54	3.80	3.55	1.85	0.07	-1.96	-2.44	259	0	259
15-Day Moving Average ^d	-2.05	1.15	0.35	1.32	2.15	2.49	3.85	3.62	1.78	0.17	-1.93	-2.37			
7-Day Moving Average ^e	-1.99	1.04	0.32	1.32	2.19	2.49	3.83	3.59	1.81	0.10	-1.90	-2.40			
3-Day Moving Average ^f	-1.91	0.97	0.30	1.36	2.18	2.52	3.80	3.57	1.84	0.08	-1.90	-2.44			
Standard Deviation	mm/day												mm		
Monthly	1.52	1.04	1.11	0.82	1.53	0.86	1.15	1.26	0.87	1.33	1.57	1.81	134	0	134
15-Day Moving Average	1.62	1.47	1.11	1.17	1.67	1.31	1.03	1.22	1.31	1.22	2.02	1.76			
7-Day Moving Average	2.26	1.98	1.55	1.82	2.23	1.92	1.42	1.60	1.75	1.83	2.47	2.53			
3-Day Moving Average	3.18	2.59	2.18	2.53	2.96	2.75	1.96	2.23	2.29	2.43	3.25	3.50			
20% Exceedance	mm/day												mm		
Monthly	-1.01	0.14	0.97	2.19	2.96	3.31	4.30	4.26	2.62	0.87	-0.78	-1.42	376	0	376
15-Day Moving Average	0.05	0.31	1.70	3.03	4.29	4.59	5.19	4.86	3.70	1.91	0.02	0.00			
7-Day Moving Average	0.30	0.87	2.25	3.79	5.18	5.15	5.57	5.42	4.25	2.38	0.55	0.14			
3-Day Moving															

Average	0.49	1.20	2.78	4.54	5.75	5.89	5.92	5.79	4.55	2.78	0.81	0.32			
80% Exceedance	mm/day												mm		
Monthly	-2.98	2.03	-0.52	0.55	1.21	1.82	3.00	3.01	1.16	0.64	-3.57	-3.57	147	0	147
15-Day Moving Average	-4.78	3.12	-1.55	0.83	0.06	0.59	2.08	1.82	0.50	2.19	-4.73	-5.94			
7-Day Moving Average	-8.09	5.37	-2.97	3.09	-3.00	1.66	0.40	-0.06	3.08	4.59	-8.12	-8.88			
3-Day Moving Average	13.56	9.83	-5.75	6.93	-5.99	6.30	2.28	-4.63	5.83	6.97	14.22	13.55			
Ave Highest P_{def}	mm/day												--		
15-Day Moving Average ^g	0.05	0.20	1.26	2.46	3.43	3.59	4.59	4.39	2.77	1.31	0.04	0.02			
7-Day Moving Average ^h	0.17	0.59	1.96	3.40	4.50	4.63	5.20	5.07	3.65	2.00	0.33	0.07			
3-Day Moving Average ⁱ	0.34	0.97	2.42	4.05	5.13	5.44	5.74	5.49	4.08	2.33	0.63	0.21			
Ave Lowest P_{def}	mm/day												--		
15-Day Moving Average ^g	-3.23	1.78	-0.62	0.24	0.96	1.42	3.06	2.54	0.87	1.14	-3.03	-3.92			
7-Day Moving Average ^h	-5.32	3.36	-1.96	1.43	-0.89	0.30	1.87	1.22	0.55	2.84	-4.84	-6.49			
3-Day Moving Average ⁱ	-9.32	6.27	-4.53	4.21	-4.27	3.50	0.14	-1.47	2.96	5.29	-8.76	10.57			
Special normal distribution parameters for monthly, seasonal, and annual intervals													--		
Skew	0.00	1.04	-0.12	0.23	-0.37	0.77	0.09	-0.57	0.10	0.06	-1.53	-0.23	-0.72	0.00	-0.72
Kurtosis	0.57	4.39	0.65	2.31	0.95	3.96	0.64	1.43	2.47	0.72	5.82	0.75	3.35	0.00	3.35

^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