

Memorandum

Date: February 19, 2013

To: File 86-11909

From: Dennis Owsley

Re: License split

After discussions with members of the water right section, it was determined that this right be split into two separate rights, due to the fact that there are two disconnected water sources associated with water right 86-11909. There are two ponds located on the property, referred to as the "north" and "south" ponds. The north pond is used for storage of irrigation water and recreation uses, the south pond is used as storage for power uses and recreation. Due to the fact that the two ponds are not connected, the water right will be split as follows to reflect to two different sources:

For the pond used for irrigation storage and recreation (northern pond):

Irrigation Storage: 11 AF

Irrigation from Storage: 11 AF

Recreation Storage: 4.95 AF (4.3 AF of storage + 0.65 AF of evaporation)

} 86-11909

For the pond used for power storage and recreation (southern pond):

Power Storage: 3.6 AF

Power from Storage: 1.5 AF

Recreation Storage: 4.15 AF (3.6 AF of storage + 0.55 AF of evaporation)

} 86-12012

Total Recreation Storage = 9.1 AF (limit of both ponds)

Memorandum

Date: January 23, 2013

To: File 86-11909

From: Craig L. Saxton

Re: Volume Calculation

Irrigation Storage:

- Northern Pond Only (1 pond)
- surface area = 0.6 acres
- depth = 12 feet
- $(0.6 \text{ acres})(12 \text{ feet})(0.6) = 4.3 \text{ AF}$
- evaporation Loss = *accounted for under recreation storage*
- no seepage losses
- refills = continuous seepage from bottom of pond
- Total irrigation storage = **11 AF** which includes Pond Volume, Evaporation Losses, and refills

Irrigation from Storage:

- Northern Pond Only (1 pond)
- **11 AF** which includes refills

Recreation Storage:

- Northern and Southern Pond (two ponds)
- Both ponds: Surface area = 1.1 acres
- Depth = 12 feet
- $(1.1 \text{ acres})(12 \text{ feet})(0.6) = 7.9 \text{ AF}$
- Evaporation Loss = 1.2 AF
- No seepage losses
- Total = ~~10.1 AF~~

9.1 AF

Power Storage:

- Southern pond only (1 pond)
- Surface area = 0.5 acres
- depth = 12 feet
- $(0.5 \text{ acres})(12 \text{ feet})(0.6) = 3.6 \text{ AF}$

Power from Storage:

- Southern pond only (1 pond)
- Surface area = 0.5 acres
- Only 3 feet of storage pond available for power from storage
- $(0.5 \text{ acres})(3 \text{ feet})(\text{no slope factor}) = 1.5 \text{ AF}$

Totals:

Total capacity of the two ponds is 7.9 AF

Total evaporative losses for both ponds is 1.2 AF

Total storage or water required to keep both ponds full year round = ~~10.1~~ 9.1 AF ^{0.20}

Irrigation use from draining and refilling pond is 11 AF

Permit is limited to 11 AF

Summary:

Irrigation Storage 11 AF

Irrigation from Storage 11 AF

Recreation Storage ~~10.1~~ 9.1 AF ^{0.20}

Power Storage 3.6 AF

Power from Storage: 1.5 AF

11.0 AF

Precipitation Loss Calculation

Date: January 23, 2013

Prepared by: Craig L. Saxton

Water Right No: 86-11909

Purpose of use: Recreation Storage

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 =

330	304.8	1.1
(From ET Idaho)		

$P_d = 1.19$ AFA



* Use the Precipitation Deficit for 'P' value

ET_{Idaho} 2012 -- Evapotranspiration and Consumptive Irrigation Water Requirements for Idaho

Please send suggestions for improving this site to robison at kimberly dot uidaho dot edu Copyright 2012, University of Idaho.

Dworshak Fish Hatchery (NWS -- 102845)

Statistics based on thirty year normal spans 1972 to 2009 years

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	Annual
Mean ^j	mm/day												mm		
Monthly ^c	-1.84	-1.10	-0.10	1.24	1.84	3.22	4.54	4.14	2.31	0.48	-1.86	-2.06	330	0	330
15-Day Moving Average ^d	-1.77	-1.38	-0.09	1.16	1.88	3.13	4.60	4.06	2.28	0.70	-1.82	-1.94			
7-Day Moving Average ^e	-1.81	-1.22	-0.09	1.19	1.88	3.15	4.58	4.08	2.31	0.63	-1.90	-1.96			
3-Day Moving Average ^f	-1.81	-1.14	-0.10	1.22	1.82	3.19	4.57	4.14	2.34	0.53	-1.89	-2.02			
Standard Deviation ^k	mm/day												mm		
Monthly ^c	1.35	1.16	1.48	0.98	1.90	0.90	1.62	1.33	1.26	1.51	1.31	1.57	118	0	118
15-Day Moving Average ^d	1.33	1.63	1.38	1.45	2.04	1.37	1.37	1.40	1.63	1.25	1.49	1.46			
7-Day Moving Average ^e	2.02	2.13	1.82	2.14	2.63	2.04	1.72	1.93	2.10	1.72	2.18	2.01			
3-Day Moving Average ^f	2.87	2.88	2.56	2.86	3.73	2.89	2.40	2.56	2.76	2.50	3.03	2.81			
20 % Exceedance ^l	mm/day												mm		
Monthly ^c	-0.95	-0.22	0.66	1.84	2.86	3.80	5.44	5.02	3.56	1.03	-0.69	-1.16	409	0	409
15-Day Moving Average ^d	0.21	0.55	1.88	2.97	4.66	5.21	6.08	5.76	4.08	2.27	0.14	0.00			
7-Day Moving Average ^e	0.52	1.13	2.76	4.20	5.54	5.87	6.63	6.18	4.63	2.69	0.99	0.33			
3-Day Moving Average ^f	0.73	1.62	3.32	4.85	6.09	6.66	6.92	6.54	5.01	2.95	1.23	0.51			

80% Exceedance^m	mm/day												mm		
Monthly ^c	-2.94	-2.26	-1.38	0.67	0.66	2.36	3.67	3.06	1.59	-0.67	-2.91	-3.10	206	0	206
15-Day Moving Average ^d	-5.15	-3.84	-3.22	1.42	-1.01	1.11	1.90	1.54	0.32	-1.82	-4.38	-4.11			
7-Day Moving Average ^e	-7.14	-5.86	-4.43	4.27	-5.77	1.64	0.85	-0.74	3.78	-4.60	-7.58	-6.69			
3-Day Moving Average ^f	11.86	10.56	-7.72	7.64	10.05	7.92	4.40	-5.65	8.24	10.04	12.15	11.23			
Ave Highest P_{def}	mm/day												--		
15-Day Moving Average ^g	0.09	0.28	1.17	2.48	3.49	4.27	5.48	5.10	3.34	1.61	0.11	0.03			
7-Day Moving Average ^h	0.34	0.89	2.06	3.66	4.67	5.47	6.04	5.83	4.11	2.25	0.49	0.16			
3-Day Moving Average ⁱ	0.57	1.36	2.86	4.44	5.49	6.23	6.55	6.31	4.61	2.63	0.98	0.40			
Ave Lowest P_{def}	mm/day												--		
15-Day Moving Average ^g	-3.22	-2.22	-1.29	0.00	0.30	1.90	3.51	2.88	1.14	-0.54	-2.98	-3.21			
7-Day Moving Average ^h	-4.95	-3.99	-2.81	1.90	-1.87	0.03	2.13	1.35	0.45	-2.34	-5.06	-4.98			
3-Day Moving Average ⁱ	-8.20	-7.03	-5.49	4.89	-6.29	3.55	0.90	-1.59	3.72	-5.32	-8.42	-8.23			
Special normal distribution parameters for monthly, seasonal, and annual intervals															
Skew ^m	-0.08	-1.01	-0.13	0.17	-0.29	0.88	0.28	-0.12	0.71	-0.13	-0.76	-0.11	-0.09	0.00	-0.09
Kurtosis ^o	0.52	4.01	0.63	3.94	0.74	3.78	0.86	0.50	3.08	0.72	3.02	0.60	2.93	0.00	2.93

^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

^h Mean of the highest/lowest 7-day period average in month

ⁱ Mean of the highest/lowest 3-day period average in month

^j This value represents the *mean value* for the parameter for the month over the 'normal' period of record. Generally, the 'normal' period is the last thirty years with data.

^k This value represents the *standard deviation* for the parameter for the month over the 'normal' period.

^l This value represents the *value* for the parameter that has a 20% chance of being exceeded that month during any particular year. Conversely, there is an 80% chance that the parameter value will be less than the *value* shown.

^m This value represents the *value* for the parameter that has a 80% chance of being exceeded that month during any particular year. Conversely, there is an 20% chance that the parameter value will be less than the *value* shown.

ⁿ This value represents the *skewness (asymmetry) of the distribution of the parameter values* for the month (year) over the 'normal' period. A value near zero indicates that the distribution approximates a normal (Gaussian) and symmetrical distribution. A negative skew indicates that the parameter distribution has relatively few low values compared to high values. A positive skew indicates that the distribution has relatively few high values compared to the number of low values. A skew value near 1 indicates that the underlying distribution approximates a lognormal distribution.

^o This value represents the *kurtosis* of the parameter value distribution for the month (year) over the 'normal' period. Kurtosis is a measurement of the height to width ratio of the probability distribution, or the *peakedness (slenderness)*. A normal (Gaussian) distribution has a kurtosis of 3. A high kurtosis distribution has a sharper peak and longer tails, while a low kurtosis distribution has a more rounded peak and shorter tails.

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The citation for the evapotranspiration data used from this site should be: *Allen, Richard G. and Clarence W. Robison, 2012. Evapotranspiration and Consumptive Irrigation Water Requirements for Idaho: Supplement updating the Time Series through December 2008, Research Technical Completion Report, Kimberly Research and Extension Center, University of Idaho, Moscow, ID.*

Questions regarding the data should be addressed to Clarence W. Robison or Richard G. Allen, University of Idaho, Kimberly Research and Extension Center, 3793 North 3600 East, Kimberly, ID 83341. Telephone (208)-423-6610

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