

MEMORANDUM

Date: February 10, 2011
To: Water Right File 13-7495
From: cpadilla
Re: Licensing Memo

The system associated with this right is for an "on-stream" pond. Water bubbles up from a lava bed at the pond and then flows into Cold Springs Ck. I wondered if the source should be known as springs but I don't have enough evidence to make a recommendation that would contradict the field examiner's.

The field examiner recommended a volume of 0.6 af based on the capacity of the pond. The department should include evaporation and seepage into the volume since those losses will need to be accounted for to keep the pond full. In addition, a volume should be assigned to the stockwater that reflects that amount of water the animals consume annually. The permit was for mixed stock so I will base the volume for stockwater on the most consumptive type of stock, cattle, so the right holder doesn't get shorted.

Volume Calculations

Capacity of Pond	0.6 af
Evaporation	0.26 af (see attachment)
Seepage	0.34 af ¹
	<u>1.2 afa</u>

Table 2 for Water for Cattle In-Stream Diversion

<u>100 cattle</u>	<u>1.3 afa</u>
Total	2.5 afa

There is one other right on this source on Cold Springs Ck, 13-679, for irrigation in the amount of 1.6 cfs about a mile downstream. To fill the pond associated with 13-7495 in 24 hours or less, the source must be producing 0.3 cfs ($0.3 \times 1.9835 = 0.6$ af). If the source can provide 1.6 cfs, there is plenty water available to keep the pond full and provide the stockwater drinking water.

¹ $\Delta s = Q_{in} + P - ET - S$

Where

Δs = Change in storage (don't know the rate of flow going into pond/have to assume that the amount of water going into the pond is the same amount going out since the pond stays at a certain level)

Q_{in} = Flow going into the pond (0.6 afa)

P = precipitation (precip deficit solved from evap figure above of 0.26 af)

ET = find what best characterizes the area you are working with from ET Idaho

S = seepage (this can be solved for since seepage is unknown) or $S = Q_{in} + P - ET - \Delta s$

$S = 0.6 \text{ afa} - 0.26 \text{ afa} = 0.34 \text{ afa}$

POU NOTE

The pond lies very closely on the QQ line. Sincere there is a margin in error between PLS and Imagery on ArcView of 30-50', the POU will be recorded within the NWNE only.

BENEFICIAL USE NOTE

It was clear when this right was permitted that storage was the goal of the right holder. The application and permit request a volume of water and discuss the development of a pond. The permit reflects live flow components instead of storage but can be changed during licensure since storage was the intent all along.

Evap Evaluation for 13-7495

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

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Soda Springs (NWS --108535)

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	Annual
Mean	mm/day												mm		
Monthly ^c	~~0.49~~	~~0.51~~	0.32	1.43	2.24	3.29	3.89	3.23	1.98	0.90	~~0.29~~	~~0.47~~	482	0	482
15-Day Moving Average ^d	0.49	0.50	0.27	1.56	2.30	3.27	3.95	3.10	1.99	1.00	0.25	0.48	527.2mm/annually or 1.73af/acre x 0.153 acre 0.26 af		
7-Day Moving Average ^e	0.49	0.46	0.29	1.48	2.29	3.25	3.85	3.19	1.95	0.98	0.30	0.46			
3-Day Moving Average ^f	0.49	0.36	0.30	1.46	2.26	3.26	3.88	3.23	1.95	0.92	0.28	0.46			
Standard Deviation	mm/day												mm		
Monthly	0.67	0.81	1.07	0.84	1.57	1.03	1.77	1.45	1.00	0.80	0.86	0.65	158	0	158
15-Day Moving Average	0.67	1.00	0.88	1.20	1.40	1.38	1.38	1.49	1.24	0.89	0.96	0.59			
7-Day Moving Average	0.93	1.31	1.22	1.81	2.12	1.99	1.95	1.80	1.86	1.32	1.29	0.77			
3-Day Moving Average	1.30	1.74	1.75	2.43	3.06	2.63	2.76	2.53	2.65	1.92	1.83	1.16			
20% Exceedance	mm/day												mm		
Monthly	0.01	0.32	0.81	2.26	2.81	4.19	4.85	3.92	2.72	1.30	0.32	0.15	609	0	609
15-Day Moving Average	0.30	0.56	1.41	3.23	4.16	5.24	5.51	4.77	3.43	2.11	0.70	0.22			
7-Day Moving Average	0.53	0.91	1.88	4.05	4.85	5.68	5.79	4.95	3.80	2.56	1.08	0.48			
3-Day Moving															