STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 93-7191
Exam Date: 5/22/2013

1. Current Owner: JAMES P DEVER

And/Or

LYNN C DEVER
4170 FOUR CORNERS RD
TENSED ID 83870
(208)596-5306

2. Accompanied by: No one accompanied me – Permission given to visit the property from Lynn Dever Owner
Phone No:
Address:
Relationship to Permit Holder:

3. **SOURCE** UNNAMED STREAM — **TRIBUTARY** SQUAW CREEK

B. OVERLAP REVIEW

1. Other water rights with the same place of use: 93-7242
2. Other water rights with the same point of diversion: 93-7242

C. DIVERSION AND DELIVERY SYSTEM

1. **LOCATION OF POINT(S) OF DIVERSION:**

UNNAMED STREAM	SW1/4SW1/4	Sec. 10,	Twp 44N,	Rge 04W, B.M.	BENEWAH County	(Beginning of Reach)
UNNAMED STREAM	NW1/4NW1/4	Sec. 15,	Twp 44N,	Rge 04W, B.M.	BENEWAH County	(Ending of Reach)
UNNAMED STREAM	NW1/4NW1/4	Sec. 15,	Twp 44N,	Rge 04W, B.M.	BENEWAH County	

Method of Determination: GPS and Visual Inspection

2.

PLACE OF USE: WILDLIFE STORAGE, STOCKWATER STORAGE AND FIRE PROTECTION STORAGE

Twp Rge Sec	NE				NW				SW				SE				Totals
	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
44N 04W 15						X											

PLACE OF USE: STOCKWATER

Twp Rge Sec	NE				NW				SW				SE				Totals
	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
44N 04W 10											X						
44N 04W 15						X											

Method of Determination: Visual Inspection and GIS

3. _YES_ Delivery System Diagram Attached (required). Indicate all major components and distances between components. Indicate weir size/pipe as applicable.

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
N/A					

Code to correspond with No. on map and aerial photo

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
NONE						

2. Measurements: This permit is for in-stream stockwater and a pond on the stream. There was no diversion that could be measured.

E. FLOW CALCULATIONS ___Additional Computation Sheets Attached

Measured Method:

Permit allowed = 0.2 cfs for stockwater
Standard limits in-stream stockwater to 0.02 cfs

I am recommending 0.02 cfs for the stockwater component of this water right.

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$V_{I.R.}$ = (Acres Irrigated) x (Irrigation Requirement) =_____

$V_{D.R.}$ = [Diversion Rate (cfs)] x (Days in Irrigation season) x 1.9835 =_____

V = Smaller of $V_{I.R.}$ and $V_{D.R.}$ =_____

2. Volume Calculations for Other Uses:

The pond capacity was calculated at 0.6 acre feet of volume with 0.11 acre feet for evaporation for a total of 0.7 acre feet of storage. There is no seepage, since this is an on-stream pond. The owner stated this pond was 5 to 6 feet average depth. The permit limited the stock to 2 head of mixed animals, but there were 4 horses in the pasture at the time of the exam, so I used the 4 horses to determine the stockwater use out of the pond. Range cattle and horses both consume 12 gpd per the Field Examiner's handbook. The volume need for stockwater is less than the capacity of the pond, so no additional water is needed beyond the 0.7 af for capacity and evaporation. According to Idaho code and rules, we do not determine a volume for in-stream stockwater, the calculations below are for the volume of stockwater storage that is allowable.

12 gpd stock X 4 head X 365 days / 325850 = 0.05 total annual acre feet of use per year.

G. NARRATIVE/REMARKS/COMMENTS

This owner filed two water right applications for 2 ponds and in-stream stockwater use. This water right is for wildlife storage, stockwater storage, and fire protection storage for a pond and in-stream stockwater use. The in-stream stockwater use goes from the outlet of the pond covered by 93-7242 in Section 10 through the pond for this water right in section 15 until is crosses under the fence designating the property boundary. There is a state owned pond on the other side of the property (west) that is not associated with this water right. The unnamed stream is a runoff stream, and only provides water during runoff events. There was no water in the stream at the time of the field exam. The in-stream stockwater place of use is a general border around the stream to prevent applying this water right to another stream in the general area.

Water right 93-7242 located in Section 10 kind of overlaps both the in-stream beginning point of diversion and the place of use for the in-stream stockwater. The beginning point for the in-stream point of diversion begins at the outlet of the pond described in water right 93-7242. The pond for 93-7242 is rather small, and is also on the same stream.

Conditions X02, 082 and 004 were removed, since they are no longer needed on the license.

Have conditions of permit approval been met? __X__Yes _____No

H. RECOMMENDATIONS

1. Recommended Amounts

BENEFICIAL USE	PERIOD OF USE	DIVERSION RATE	ANNUAL VOLUME
WILDLIFE STORAGE	01/01 to 12/31		0.70 AF
STOCKWATER	01/01 to 12/31	0.020 CFS	
STOCKWATER STORAGE	01/01 to 12/31		0.10 AF
FIRE PROTECTION STORAGE	01/01 to 12/31		0.70 AF
	Totals:	0.020 CFS	0.70 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 Daniel A. Nelson – Staff Hydrologist

Field Examiner's Name Daniel A. Nelson Date 11-5-2013

Reviewer_____ Date_____

State of Idaho
Department of Water Resources

Field Exam Map

93-7191

This map depicts the WILDLIFE STORAGE, STOCKWATER STORAGE, AND FIRE PROTECTION 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.

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

0 0.0175 0.035 0.07 Miles

N

State of Idaho
Department of Water Resources

Field Exam Map

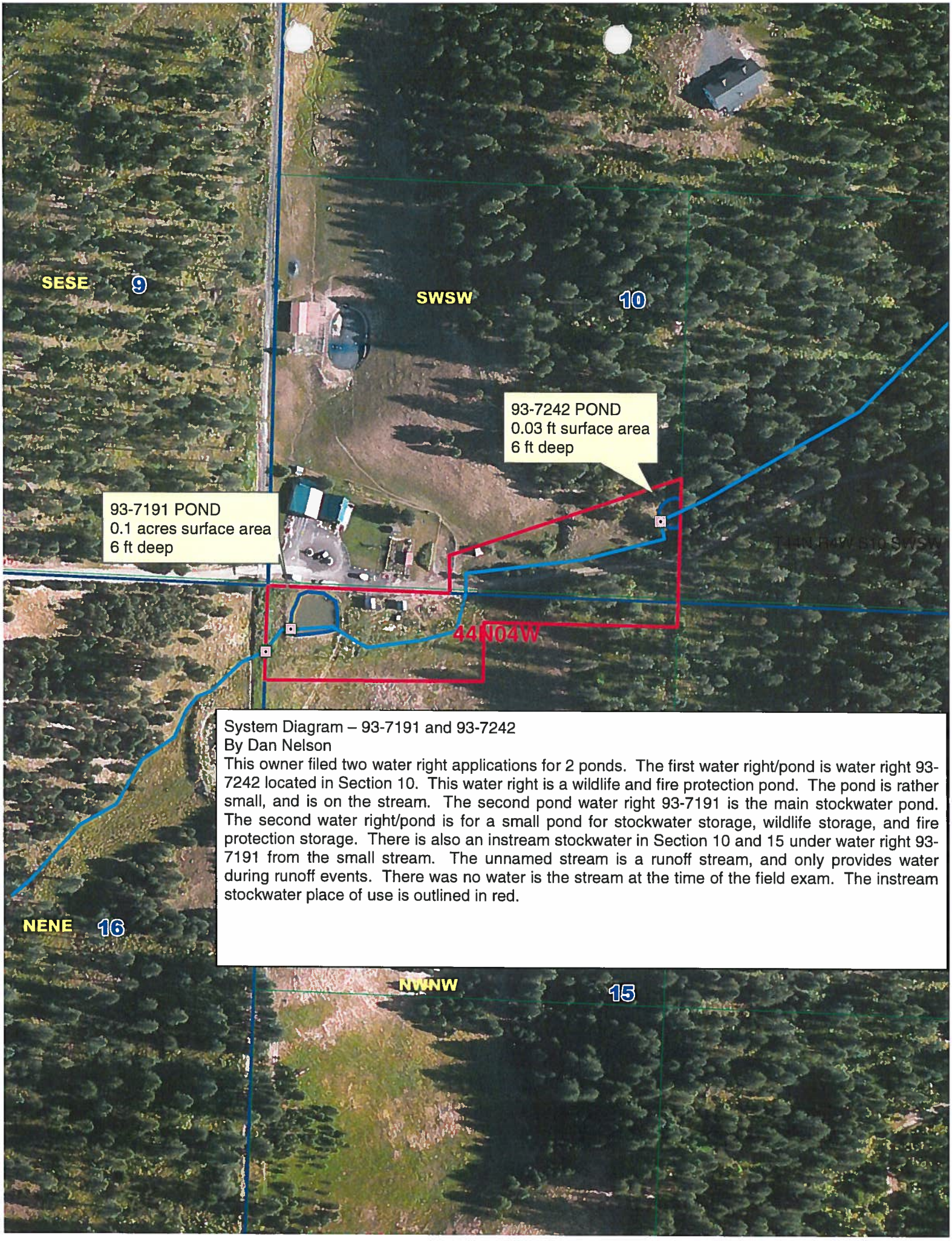
93-7191

This map depicts the STOCKWATER 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.

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

0 0.0175 0.035 0.07 Miles

N



System Diagram – 93-7191 and 93-7242
By Dan Nelson
This owner filed two water right applications for 2 ponds. The first water right/pond is water right 93-7242 located in Section 10. This water right is a wildlife and fire protection pond. The pond is rather small, and is on the stream. The second pond water right 93-7191 is the main stockwater pond. The second water right/pond is for a small pond for stockwater storage, wildlife storage, and fire protection storage. There is also an instream stockwater in Section 10 and 15 under water right 93-7191 from the small stream. The unnamed stream is a runoff stream, and only provides water during runoff events. There was no water is the stream at the time of the field exam. The instream stockwater place of use is outlined in red.

TOTAL STORAGE

FILE NUMBER	93-7191
REVIEWER	Dan Nelson
DATE	5/22/2013

This spreadsheet has been designed by Idaho Department of Water Resources to estimate the total seepage, evaporation and fill capacity required for a pond

Surface Area (in Acres)	0.1	"Surface Area" is automatically carried over from the "Seepage Loss Sheet"
Average Pond Depth (in feet)	6	"Average Pond Depth" depicts the actual depth of the pond either measured or estimated. Note: If you know the maximum depth and not the average depth, the field examiner's handbook suggest multiplying the maximum depth by 0.4 to get the average depth, or you can use any method that
Pond Capacity (in acre feet)	0.6	you know the capacity, divide the capacity by surface area and enter the average pond depth in the space above.

Volume Needed Above Initial Fill to Fulfill From Storage Needs- "Multiple Fills" (in acre feet)	0	The "Volume Needed Above Initial Fill" is the acre-feet of water required to meet a *from storage* component if the *from storage* component exceeds a one time fill. This section should not include the amount of water needed to fill the pond initially or the amount of water needed to maintain the pond level due to evaporation or seepage. For example: if a pond has a capacity of 5 acre feet and 2.5 acre feet of seepage and evaporation, but the pond is used for irrigation that requires 10 acre feet of from storage for the irrigation use, then you would insert 5 acre feet into this location (10 acre feet needed - 5 acre feet from the initial fill = 5 acre feet of additional storage needed). **PLEASE NOTE: You must have a "From Storage" component exceeding the initial fill on the permit to include a volume in this space.**
Estimated Seepage Loss (in acre feet)	0.0	The "Estimated Seepage Loss" is automatically carried over from the Seepage Loss Sheet
Estimated Evaporation Loss (in acre feet)	0.11	The "Estimated Evaporation Loss" is automatically carried over from the Evaporation Loss Sheet
Total Volume Required (in acre feet)	0.7	"The Total Volume Required" is calculated by adding the Pond Capacity, Multiple Fills, Seepage Loss, and Evaporation Loss amounts to determine the total amount of storage required.

Flow Rate Into Pond (in cfs)	0.00	The "Flow Rate" into the Pond depicts the actual flow either measured or estimated into the pond.
Highest Daily Evaporation Rate From Evaporation Tab. (in mm/day)	3.24	This number is automatically selected by picking the highest recorded number in the "Precipitation Deficit Table".
Maximum Required Daily Maintenance Volume (in acre feet per day)	0.00	"Maximum Required Daily Maintenance Volume" is the maximum volume of water needed on any given day during the year, and is calculated by adding the highest daily evaporation loss to the average daily seepage loss in acre feet. The average daily seepage loss is calculated by dividing the "Estimated Seepage Loss" by 365 days. This is acceptable, since the seepage rate shouldn't vary throughout the season unless the pond completely freezes over during the winter months. The highest daily evaporation loss is calculated by dividing the Highest Daily Evaporation Rate by the 304.8 conversion factor and multiplying this number by the pond surface area to attain a combined daily acre feet requirement.
Minimum Maintenance Flow (in cfs)	0.00	The "Minimum Maintenance Flow" is the minimum amount of flow required to maintain the level of the pond. This number is determine by dividing the "Maximum Required Daily Maintenance Volume" by 1.9835. This flow can be used to determine if the flow rate into the pond is adequate to maintain the pond level.
Days Required to Fill the Pond	-564	The "Days Required to Fill the Pond" is calculated by dividing the "Pond Capacity" by the "Flow Rate" minus "Minimum Maintenance Flow" multiplied by 1.9835. This section will assist you in determining if the flow rate being diverted to the pond is adequate to fill the pond while maintaining the pond level. The length of time to fill the pond will help determine if the flow rate is adequate for the size of pond being proposed. This number should be between 1 and 365 days for a project to be sucessful.
Days Required to Fill the Pond at 13,000 gallons per day	15	The "Days Required to Fill the Pond at 13,000 gallons per day" is calculated converting the "Pond Capacity" and the "Maximum Daily Maintenance Volume" to gallons. The "Pond Capacity is then divided by 13,000 gallons minus the "Maximum Daily Maintenance Volume" in gallons to determine the number of days to fill pond. This number should be between 1 and 365 if this pond is to described as a domestic use.

User Input
Calculated value
Formula Explanations

Evaporation Loss Calculation

FILE NUMBER	93-7191
REVIEWER	Dan Nelson
DATE	5/22/2013

This spreadsheet has been designed by Idaho Department of Water Resources to estimate the annual evaporation losses from a pond.

The acronyms used on the Kimberly Research Center website are defined below:
P = Precipitation
ET= Evapotransporation
P_d = Precipitation deficit
P_d =ET-P

User Input
Calculated value
Formula Explanations

USING THIS SPREADSHEET

To ascertain the evaporation from a pond, you will need to go to the Kimberley Research Center website. The link is found below . This web site provides the Precipitation Deficit for the area where the pond is located. The Precipitation Deficit is the total amount of free pan evaporation minus the precipitation for a given area, which gives the total amount of evaporative losses incurred by the pond. There are several weather sites that are used, and the entire state is pretty much covered. IDWR staff can find the nearest site using Arc Map. The shape file containing the sites can be found at X:/Spatial/Climate/ETIdahostations.shp .

Found at: http://www.kimberly.uidaho.edu/ETIdaho/online.php

Precipitation Deficit

Station: Twin Falls 2 NNE (NWS -- 109294)

Month	mm/day[1]	*Days per month*	mm/Month
Jan	**0.00**	*31*	***0.00***
Feb	**0.00**	*28*	***0.00***
March	**0.00**	*31*	***0.00***
April	**0.33**	*30*	***9.90***
May	**0.78**	*31*	***24.18***
June	**2.20**	*30*	***66.00***
July	**3.24**	*31*	***100.44***
August	**3.14**	*31*	***97.34***
September	**1.61**	*30*	***48.30***
October	**0.00**	*31*	***0.00***
November	**0.00**	*30*	***0.00***
December	**0.00**	*31*	***0.00***

[1]Negative monthly mean values should be entered in the above table as "0".

PLEASE NOTE: We cannot use the season average, because there are several areas in Northern Idaho with a negative Precipitation Deficit. Therefore, we must enter each monthly deficit, and enter in a zero (0) for each negative month. The reason for this is that precipitation can only offset evaporation to the extent of the evaporation.

Please enter the daily average Precipitation Deficit as shown in the example below.

Although it has sometimes been useful to consider wintertime evaporation to be zero, Allen and Robison (2007, p. 169) noted, "Evaporation during nongrowing (wintertime) periods varies widely . . . ."

Total mm/year =	***346.16***

[(mm/yr) ÷ (convert to feet)] X (Surface area of pond, in acres) = Evaporation Loss in Acre Feet

(***346.16*** ÷ ***304.8***) X **0.10** = **0.1 AFA**

Surface Area of Pond is automatically Carried over from the Seepage Loss Sheet.

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Surface Area of Pond is automatically Carried over from the Seepage Loss Sheet.

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.*

Potlatch 3 NNE (NWS -- 107301)

Statistics based on thirty year normal spans 1969 to 2001 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 Mircosoft 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[j]	mm/day												mm		
Monthly[c]	-2.20	-1.57	-0.74	0.33	0.78	2.20	3.24	3.14	1.61	-0.09	-2.26	-2.17	73	0	73
15-Day Moving Average[d]	-2.31	-1.83	-0.81	0.32	0.86	2.20	3.19	3.05	1.44	-0.01	-2.29	-2.07			
7-Day Moving Average[e]	-2.26	-1.64	-0.74	0.29	0.84	2.18	3.22	3.09	1.49	-0.06	-2.30	-2.18			
3-Day Moving Average[f]	-2.22	-1.54	-0.74	0.29	0.79	2.17	3.24	3.14	1.57	-0.08	-2.27	-2.19			
Standard Deviation[k]	mm/day												mm		
Monthly[c]	1.96	1.16	1.42	1.07	1.92	0.90	1.42	1.62	1.16	1.77	1.31	2.04	136	0	136
15-Day Moving Average[d]	1.98	1.56	1.52	1.45	2.06	1.30	1.45	1.68	1.60	1.62	1.65	1.90			
7-Day Moving Average[e]	2.50	2.24	2.02	2.10	2.77	1.95	1.92	2.29	2.05	2.24	2.35	2.63			
3-Day Moving Average[f]	3.35	3.08	2.75	2.95	3.84	2.81	2.68	3.04	2.69	3.06	3.30	3.48			
20% Exceedance[l]	mm/day												mm		
Monthly[c]	-1.26	-0.51	-0.06	1.39	1.45	2.69	3.97	4.08	2.92	1.05	-1.20	-0.98	158	0	158
15-Day Moving Average[d]	0.05	0.20	1.06	2.37	3.56	4.02	4.94	4.58	3.39	1.99	0.00	0.04			
7-Day Moving Average[e]	0.47	0.99	2.04	3.16	4.28	4.75	5.32	5.04	3.78	2.51	0.72	0.38			
3-Day Moving Average[f]	0.61	1.26	2.60	3.77	4.77	5.18	5.54	5.51	4.03	2.87	1.01	0.61			

PHOTOGRAPHER AND DATE OF PHOTOS DANIEL A NELSON 5/22/2013

FILE NUMBER 93-7191

The photo above shows where the unnamed stream goes under the road through the culvert. As you can see from this picture, the unnamed stream doesn't have any water in it. This picture was taken in May.

The photo below shows the pond and the 4 horses that were in this pasture.