

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 37-8778
Exam Date: 9/27/2012

1. Current Owner: BLACK BUTTE HILLS LLC
C/O GREGORY VIK
PO BOX 1607
BELLEVUE WA 98009
(425) 460-2542
2. Accompanied by: Not accompanied by anyone, but had verbal permission from the manager, Ron Gonsales.
Phone No: (208) 764-3904
Relationship to Permit Holder: Manager.
3. **SOURCE** UNNAMED STREAM **TRIBUTARY** SPRING CREEK

B. OVERLAP REVIEW

1. Other water rights with the same place of use: Yes. 37-8781 (the stockwater tank only overlaps); 37-20551 is within the same QQ but different POU.
2. Other water rights with the same point of diversion: None; 37-20551 ground water, and 37-8781 different POD/spillway are in the same QQ, but different PODs.

C. DIVERSION AND DELIVERY SYSTEM

1. LOCATION OF POINT(S) OF DIVERSION:

UNNAMED STREAM	L3 NW1/4SW1/4	Sec. 18,	Twp 02S,	Rge 16E, B.M.	CAMAS County
UNNAMED STREAM	NE1/4SE1/4	Sec. 13,	Twp 02S,	Rge 15E, B.M.	CAMAS County

Method of Determination: Garmin GPS Map 76S, ArcMap 2011 and esri Imagery

2. PLACE OF USE: STOCKWATER STORAGE and STOCKWATER FROM 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	
02S	15E	13													X				
02S	16E	18									X								
											L 3								

*Stockwater Storage (pond), and Stockwater from Storage (the steel stockwater tank located north and northwest of the pond). These are the very same stock tanks used for water right 37-8781. The 1000 mixed head (cattle/horses) can drink directly from the pond and the stockwater tank. At the time of the field examination, there was no live flow going into the stockwater tank (it was dry), but historically the tank is show on ArcMap, and there was evidence in the tank confirming that water had been diverted there and used for stock.

Method of Determination: Garmin GPS Map 76S, ArcMap 2011 and esri Imagery

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

☐ Photo of Diversion and System Attached (field exam pictures were lost when computer crashed, and were not able to be retrieved; for this reason close ups of ArcMap esri, 2011 imagery and field exam narrative are used).

Well or Diversion

ID No.* Motor Make Hp Motor Serial No. Pump Make Pump Serial No. or Discharge Size

Run off from snowmelt and springs make up the Unnamed Stream that is dammed up by a 4 - 6 ft earthen dam on the Southern storage pond, for water right 37-8778. The Unnamed Stream continues to flow northwest to the Northern storage pond for water right 37-8778, then continues through a culvert under the road where it discharges into a pond connected with water right 37-8781 (all gravity flow)

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

D. FLOW MEASUREMENTS

1.

<u>Measurement Equipment</u>	<u>Type</u>	<u>Make</u>	<u>Model No.</u>	<u>Serial No.</u>	<u>Size</u>	<u>Calib. Date</u>
------------------------------	-------------	-------------	------------------	-------------------	-------------	--------------------

None

3. Measurements:

None (no diversion measurements required since this is in-stream storage).

E. FLOW CALCULATIONS

Measured Method:

None.

F. VOLUME CALCULATIONS

1. Volume Calculations for Stockwater Storage:

Pond #1: Arc Map calculated Northern Pond: 0.1 acres X 3.0 ft average depth = 0.3 af + 0.2 evap. Loss = 0.5 af

Pond #2 Arc Map calculated Southern Pond: 0.1 acres X 5.0 ft average depth = 0.5 af + 0.2 evap loss = 0.7 af

Total Volume: 1.2 af*

*Seepage calculation for each is 0.0 af. SEE ATTACHED CALCULATION SHEETS

2. Volume Calculations for Other Uses:

(1000 mixed head cattle/horses X 12 gpd X 275 days)/325,850 = 10.13 af = 10.1 af

RECOMMEND:

Stockwater Storage	1.0 af (as permitted)
Stockwater from Storage	1.0 af (as permitted)
Total Annual Volume	1.0 af (as permitted)

cond. 254 for additional evap. loss off

*Administrative Memo, Licensing #14, Seepage Loss, Exceptions: *On-stream reservoirs will not be required to take extra measures to prevent seepage losses.....For this reason, no seepage loss was included in the total.*

G. NARRATIVE/REMARKS/COMMENTS

Pictures of the pond taken at the time of the field examination, were lost when my computer crashed and had to be rebuilt. Pictures from 9/27/2012 were not retrieved.

The Unnamed Stream travels south to northwest to two ponds related to water right 37-8778. The southern pond is 0.1 acre X 5 ft average depth (0.5 af), which gravity flows through the POD/spillway located on the northwest side of the pond. The Unnamed Stream continues northwest through a dirt ditch to the northern pond which is 0.1 acre X 3 ft average depth (0.3 af), making the stockwater storage a total of 0.8 af. Along the northwestern end of the pond is a burn which runs along the roads edge, with the POD/culvert that runs under the road discharging to the pond for water right 37-8781. Water right 37-8778 and 37-8781 both have separate buried unknown size pipe that discharge to the same stock tanks. Beneficial use is for 1000 mixed head (cattle and horses) which are moved into the area 4/1 - 12/1. Stockwater Storage is for 1/1 - 12/31 (instream storage). The stock can drink from the stockwater storage ponds and the stockwater tanks. ArcMap Imagery from 1992 was used to show the area before the storage ponds were developed, and 2011 Imagery was used for drawing the actual shapefile due to the clarity. Imagery from 2004, 2006 and 2009 were also included in the field examination to historical use.

Have conditions of permit approval been met? ☒ Yes ☐ No

H. RECOMMENDATIONS

1. Recommended Amounts

<u>BENEFICIAL USE</u>	<u>PERIOD OF USE</u>	<u>ANNUAL VOLUME</u>
STOCKWATER FROM STORAGE	04/01 to 12/01	1.00 AF
STOCKWATER STORAGE	01/01 to 12/31	1.00 AF
	<u>Totals:</u>	1.00 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 Judy Hemmery Date 2/6/2014

TOTAL STORAGE

FILE NUMBER	37-8778 pond 1
REVIEWER	S. Hemenway
DATE	2/13/2014

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" depicts the actual surface area of the pond measured, determined by ArcMap, or estimated.
Average Pond Depth (in feet)	3	"Average Pond Depth" depicts the actual depth of the pond either measured or estimated.
Pond Capacity (in acre feet)	0.3	Pond Capacity is calculated by multiplying the Pond Surface Area by the Average Pond Depth.

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 <i>from storage</i> component if the <i>from storage</i> 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 is automatically carried over from the Seepage Loss Sheet
Estimated Evaporation Loss (in acre feet)	0.2	The "Estimated Evaporation Loss" is automatically is automatically carried over from the Evaporation Loss Sheet
Total Volume Required (in acre feet)	0.5	"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)	4.31	To determine the "Highest Daily Evaporation Rate" go to the Evaporation Loss Sheet and enter in the highest number recorded 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 multiplying 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 determined by dividing the "Daily Required 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	-208	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.
Days Required to Fill the Pond at 13,000 gallons per day	8	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.

Evaporation Loss Calculation

FILE NUMBER	37-8778 pond 1
REVIEWER	S. Hemenway
DATE	2/13/2014

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=	Evapotranspiration
P _d =	Precipitation deficit
P _d =	ET-P

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 ArcMap. 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	0.42	31	13.02
April	1.82	30	54.60
May	2.92	31	90.52
June	3.63	30	108.90
July	4.31	31	133.61
August	3.73	31	115.63
September	2.55	30	76.50
October	1.76	31	54.56
November	0.00	30	0.00
December	0.00	31	0.00

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.

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

Total mm/year = 647.34

$[(\text{mm/yr}) \div (\text{convert to feet})] \times (\text{Surface area of pond, in acres}) = \text{Evaporation Loss in Acre Feet}$

(647.34 ÷ 304.8) X 0.10 = 0.2 AFA

SEEPAGE CALCULATIONS

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

FILE NUMBER	37-8778 pond 1
REVIEWER	Sandy Hemenway
DATE	2/13/2014

INPUTS

SQ. FT. Calculator Pond Surface area in acres
0.1

POND SURFACE AREA (SQ. FT.)	4356
-----------------------------	------

SUGGESTED SEEPAGE RATE (FT/DAY)	0.0003
---------------------------------	--------

Use the table below to find the "SUGGESTED SEEPAGE RATES".

FORMULA: (Surface Area X Seepage Rate) / 7.48 = Gallons Per Day loss

CONVERT TO GPD	10	GPD
----------------	----	-----

TOTAL SEEPAGE LOSS (AFA)	0.0	AFA
--------------------------	-----	-----

SUGGESTED SEEPAGE RATES FOR DIFFERENT SOIL TYPES:
SM (silty sand, sand silt mixtures) = 0.20 ft per day
ML (inorganic silts - very fine sands, silty, or clayey fine sands) = 0.016 ft per day
SC (clayey sands, sand clay mixtures) = 0.007 ft per day
CL (Low to medium plasticity clays) = 0.003 ft per day
CH (high plasticity clays) = 0.0003 ft per day
LINED PONDS (liners can be chemical, fabric, or bentonite) = 0 ft per day
Ponds Intercepting Groundwater (excavated ponds filled with shallow Ground Water) = 0 ft per day

TOTAL STORAGE

FILE NUMBER	37-8778 pond 2
REVIEWER	S. Hemenway
DATE	2/13/2014

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" depicts the actual surface area of the pond measured, determined by ArcMap, or estimated.
Average Pond Depth (in feet)	5	"Average Pond Depth" depicts the actual depth of the pond either measured or estimated.
Pond Capacity (in acre feet)	0.5	Pond Capacity is calculated by multiplying the Pond Surface Area by the Average Pond Depth.

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 <i>from storage</i> component if the <i>from storage</i> 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 " <u>From Storage</u> " componet exceeding the intial 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 is automatically carried over from the Seepage Loss Sheet
Estimated Evaporation Loss (in acre feet)	0.2	The "Estimated Evaporation Loss" is automatically 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)	4.31	To determine the "Highest Daily Evaporation Rate" go the the Evaporation Loss Sheet and enter in the highest number recorded 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 caluated 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 multiplying 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 "Daily Required 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	-346	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.
Days Required to Fill the Pond at 13,000 gallons per day	13	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.

Evaporation Loss Calculation

FILE NUMBER	37-8778 pond 2
REVIEWER	S. Hemenway
DATE	2/13/2014

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= Evapotranspiration
P _d = Precipitation deficit
P _d =ET-P

USING THIS SPREADSHEET

To ascertain the evaporation from a pond, you will need to go to the Kimberly 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 ArcMap. 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	0.42	31	13.02
April	1.82	30	54.60
May	2.92	31	90.52
June	3.63	30	108.90
July	4.31	31	133.61
August	3.73	31	115.63
September	2.55	30	76.50
October	1.76	31	54.56
November	0.00	30	0.00
December	0.00	31	0.00

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.

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

Total mm/year = 647.34

$[(\text{mm/yr}) \div (\text{convert to feet})] \times (\text{Surface area of pond, in acres}) = \text{Evaporation Loss in Acre Feet}$

(647.34 ÷ 304.8) X 0.10 = 0.2 AFA

SEEPAGE CALCULATIONS

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

FILE NUMBER	37-8778 pond 2
REVIEWER	Sandy Hemenway
DATE	2/13/2014

INPUTS

SQ. FT. Calculator Pond Surface area in acres
0.1

POND SURFACE AREA (SQ. FT.)	4356
-----------------------------	------

SUGGESTED SEEPAGE RATE (FT/DAY)	0.0003
---------------------------------	--------

Use the table below to find the "SUGGESTED SEEPAGE RATES".

FORMULA: (Surface Area X Seepage Rate) / 7.48 = Gallons Per Day loss

CONVERT TO GPD	10	GPD
----------------	----	-----

TOTAL SEEPAGE LOSS (AFA)	0.0	AFA
--------------------------	-----	-----

SUGGESTED SEEPAGE RATES FOR DIFFERENT SOIL TYPES:
SM (silty sand, sand silt mixtures) = 0.20 ft per day
ML (inorganic silts - very fine sands, silty, or clayey fine sands) = 0.016 ft per day
SC (clayey sands, sand clay mixtures) = 0.007 ft per day
CL (Low to medium plasticity clays) = 0.003 ft per day
CH (high plasticity clays) = 0.0003 ft per day
LINED PONDS (liners can be chemical, fabric, or bentonite) = 0 ft per day
Ponds Intercepting Groundwater (excavated ponds filled with shallow Ground Water) = 0 ft per day

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

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

Fairfield (NWS --103108)

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	-1.43	-0.78	0.42	1.82	2.92	3.63	4.31	3.73	2.55	1.76	-0.83	-1.35	515	0	515
15-Day Moving Average ^d	-1.61	-1.10	0.39	1.90	2.85	3.64	4.41	3.64	2.43	1.73	-0.89	-1.39			
7-Day Moving Average ^e	-1.54	-0.93	0.41	1.85	2.88	3.61	4.38	3.72	2.47	1.72	-0.90	-1.39			
3-Day Moving Average ^f	-1.46	-0.78	0.42	1.84	2.91	3.63	4.32	3.73	2.52	1.75	-0.86	-1.34			
Standard Deviation	mm/day												mm		
Monthly	1.92	1.19	1.17	0.86	1.50	0.97	0.97	1.42	1.13	1.13	1.37	2.22	127	0	127
15-Day Moving Average	2.16	1.77	1.16	1.07	1.60	1.32	0.84	1.44	1.49	1.10	1.69	2.22			
7-Day Moving Average	2.80	2.48	1.52	1.60	1.99	1.84	1.24	1.63	1.85	1.62	2.19	2.86			
3-Day Moving Average	3.66	3.05	2.14	2.23	2.51	2.40	1.89	2.04	2.38	2.06	2.97	3.58			
20% Exceedance	mm/day												mm		
Monthly	-0.37	0.22	0.83	2.47	3.55	4.42	4.87	4.43	3.47	2.44	0.08	-0.36	594	0	594
15-Day Moving Average	0.59	0.93	1.67	3.34	4.65	5.15	5.33	4.77	4.00	2.94	1.06	0.52			
7-Day Moving Average	0.87	1.29	1.97	3.90	5.31	5.61	5.52	5.09	4.43	3.47	1.62	0.78			
3-Day Moving Average	0.97	1.50	2.47	4.77	5.76	6.05	5.82	5.36	4.68	3.94	2.03	1.04			

80% Exceedance	mm/day												mm		
Monthly	-2.40	-1.88	-0.28	0.88	2.31	2.67	3.72	3.42	1.22	0.97	-2.18	-2.93	399	0	399
15-Day Moving Average	-4.62	-3.77	-1.45	0.40	1.55	1.10	3.02	2.28	0.11	0.39	-4.01	-4.57			
7-Day Moving Average	-9.10	-7.95	-3.51	2.43	-0.22	1.36	1.37	0.75	2.21	3.19	-6.50	-6.87			
3-Day Moving Average	17.29	12.45	-7.66	6.53	-3.78	4.86	2.29	-1.91	6.30	6.15	11.23	11.05			
Ave Highest P _{def}	mm/day												--		
15-Day Moving Average ^g	0.30	0.49	1.29	2.79	3.85	4.58	4.95	4.28	3.20	2.59	0.54	0.26			
7-Day Moving Average ^h	0.68	1.03	1.74	3.46	4.72	5.29	5.29	4.83	3.94	3.12	1.09	0.60			
3-Day Moving Average ⁱ	0.86	1.33	2.18	4.10	5.31	5.78	5.64	5.12	4.40	3.54	1.64	0.82			
Ave Lowest P _{def}	mm/day												--		
15-Day Moving Average ^g	-2.90	-1.98	-0.48	1.02	1.95	2.70	3.74	3.03	1.55	0.92	-2.00	-2.74			
7-Day Moving Average ^h	-5.47	-4.14	-1.59	0.52	0.48	1.14	2.61	2.01	0.29	0.38	-3.68	-4.99			
3-Day Moving Average ⁱ	10.32	-7.27	-4.09	3.22	-2.07	1.27	0.50	0.04	2.18	2.46	-6.79	-8.89			
Special normal distribution parameters for monthly, seasonal, and annual intervals													--		
Skew	-0.40	-0.71	-0.28	0.24	-0.61	0.44	0.30	-0.65	0.88	0.03	-0.46	-0.52	0.00	0.00	0.00
Kurtosis	1.03	3.40	0.90	2.43	1.86	2.66	0.83	1.53	2.81	0.62	3.16	1.53	3.21	0.00	3.21

^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

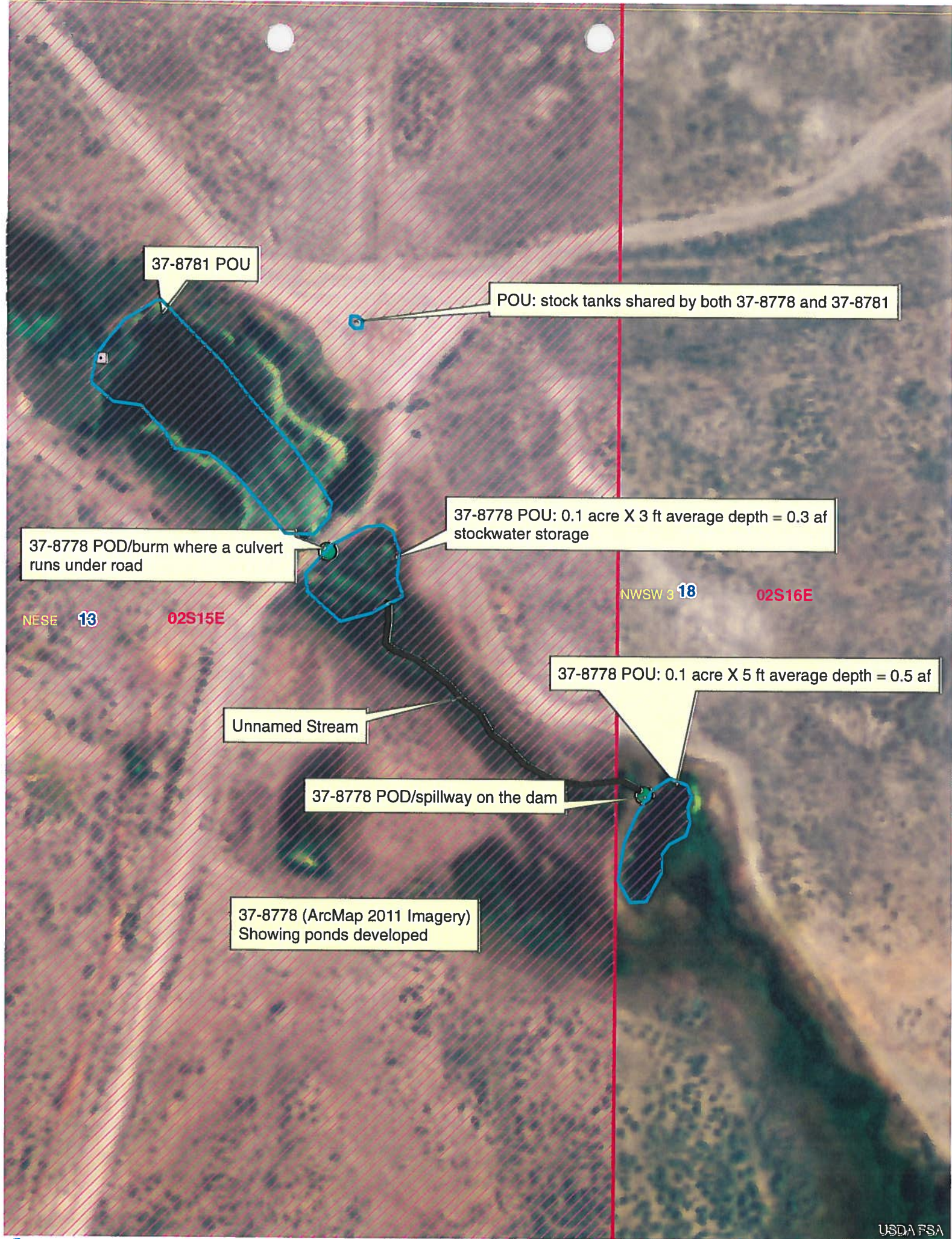
ⁱ Mean of the highest/lowest 3-day period average in month

This work and report were prepared by the University of Idaho Research and Extension Center at Kimberly, Idaho under contract with the Idaho Department of Water Resources. Work was supported by funding from IDWR and the Idaho Agricultural Experiment Station and Idaho Engineering Experiment Station. The authors gratefully acknowledge the long-term evapotranspiration data collection and long-standing advice provided by Dr. James L. Wright, USDA-ARS Kimberly (ret.), the more than two decades of high quality agricultural weather data collection by the U.S. Bureau of Reclamation AgriMet system, and the very long-standing, routine data collection by the hundreds of cooperative weather station volunteers across the state who, for more than one-hundred years, have faithfully observed daily air temperature and precipitation.

The citation for the evapotranspiration data used from this site should be: *Allen, Richard G. and Clarence W. Robison, 2009. 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

University of Idaho
A LEGACY OF LEADING
Copyright 2010, University of Idaho.



37-8781 POU

POU: stock tanks shared by both 37-8778 and 37-8781

37-8778 POD/burn where a culvert runs under road

37-8778 POU: 0.1 acre X 3 ft average depth = 0.3 af stockwater storage

NWSW 3 18 02S16E

NESE 13 02S15E

37-8778 POU: 0.1 acre X 5 ft average depth = 0.5 af

Unnamed Stream

37-8778 POD/spillway on the dam

37-8778 (ArcMap 2011 Imagery) Showing ponds developed

37-8781 POU

POU: stock tanks shared by both 37-8778 and 37-8781

37-8778 POU: 0.1 acre X 3 ft average depth = 0.3 af stockwater storage

37-8778 POD/burn where a culvert runs under road

NESE 13

02S16E

NWSW 3 18

02S16E

37-8778 POU: 0.1 acre X 5 ft average depth = 0.5 af

Unnamed Stream

37-8778 POD/spillway on the dam

37-8778 (ArcMap 1992 Imagery)
Prior to Proof of Beneficial Use being submitted on 10/1/1996

37-8781 POU

POU: stock tanks shared by both 37-8778 and 37-8781

37-8778 POU: 0.1 acre X 3 ft average depth = 0.3 af stockwater storage

37-8778 POD/burm where a culvert runs under road

NESE 13

02S15E

NWSW 3 18

02S16E

37-8778 POU: 0.1 acre X 5 ft average depth = 0.5 af

Unnamed Stream

37-8778 POD/spillway on the dam

37-8778 (ArcMap 2004 Imagery)

37-8781 POU

POU: stock tanks shared by both 37-8778 and 37-8781

37-8778 POU: 0.1 acre X 3 ft average depth = 0.3 af stockwater storage

37-8778 POD/burn where a culvert runs under road

NWSW 3 18

02S16E

N 08E 13

02S15E

37-8778 POU: 0.1 acre X 5 ft average depth = 0.5 af

Unnamed Stream

37-8778 POD/spillway on the dam

37-8778 (ArcMap 2006 Imagery)

37-8781 POU

POU: stock tanks shared by both 37-8778 and 37-8781

37-8778 POD/burn where a culvert runs under road

37-8778 POU: 0.1 acre X 3 ft average depth = 0.3 af stockwater storage

NWSW 18

02S16E

NE 33 13

02S15E

37-8778 POU: 0.1 acre X 5 ft average depth = 0.5 af

Unnamed Stream

37-8778 POD/spillway on the dam

37-8778 (ArcMap 2009 Imagery)

37-8778 Ponds (total size in acres)