

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 95-17127
Exam Date: 8/25/2016

1. Current Owner:
TIMOTHY GRAY 23617 N LAKEVIEW BLVD RATHDRUM ID 83858 (208) 755.9872
And/Or
HEATHER GRAY 23617 N LAKEVIEW BLVD RATHDRUM ID 83858 (208) 755.9872

2. Accompanied by: Timothy Gray

3. **SOURCE:**
SPRING

TRIBUTARY:
SINKS

B. OVERLAP REVIEW

1. Other water rights with the same place of use: 95-17178
2. Other water rights with the same point-of-diversion: None

C. DIVERSION AND DELIVERY SYSTEM**1. LOCATION OF POINT(S) OF DIVERSION:**

SPRING SE¼NW¼SW¼ Sec. 29, Twp 53N, Rge 02W, B.M. KOOTENAI County

Method of Determination: GPS and maps. POD location standing on bank of pond nearest spring location at 47°54.498, 116° 36.525

2.

PLACE OF USE: 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	
53N	02W	29										X							

PLACE OF USE: RECREATION 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	
53N	02W	29										X							

PLACE OF USE: IRRIGATION 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	
53N	02W	29									2.0	10.0	1.7						13.7

Total Acres: 13.7

PLACE OF USE: IRRIGATION 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	
53N	02W	29										X							

Method of Determination: Google Earth and Arc map.

3.

Delivery System Diagram Attached (required). Indicate all major components and distances between components.

X Indicate weir size/pipe as applicable.X Map Attached Showing Location(s) of point(s) of diversion and place(s) of use (required). Scale must be 1:24,000 or greater.X Aerial Photo Attached (required for irrigation of 10+ acres).X Photo of Diversion and System Attached

4.

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

*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

2. Measurements:

E. FLOW CALCULATIONS

Measured Method:

_____ Additional Computation Sheets Attached

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$$V_{IR} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) =$$

$$V_{DR} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 =$$

$$V = \text{Smaller of } V_{IR} \text{ and } V_{DR} =$$

$$2. \text{ Volume Calculations for Other Uses: } 13.7 \text{ ACRES} \times 3.0 \text{ ACRE FEET} = 41.4 \text{ AF}$$

SEE ATTACHED POND ANALYSIS SHEETS FOR STORAGE CALCULATIONS

G. NARRATIVE/REMARKS/COMMENTS

Field exam with Mr. Gray showed a pond with a surface area of 0.6 acres. Applicant said the spring was located at the bottom of the pond and maintained the pond level even with the irrigation from it. Pond had an average depth of 7 feet with a small island in the middle. Pond was stocked with trout for fishing for wounded warriors and other events at ranch. Applicant had put a stilling well connected to the pond so he would have clean water and no threat of blowing up a pump. At time of exam, bailed hay had just been picked up and irrigation was resuming again. A 2 hp pump pulled water from the pond to various hoses, including a water reel gun. Water reel gun was running at 58 psi with a 1/2 inch head producing around 50 gpm. That reel gun was moved around property for irrigating hay crops. There were smaller lines fed by the pond where hose and sprinklers were used to irrigate grassy areas around pond and orchards. Google Earth images will be included with the field exam to show how the system works. They are images from before the permit was issued, but there are no current images from Arc Map showing how system works. After this permit was issued, applicant came in and filed a new application for permit 95-17178 for overlap uses from a well. That permit when it is licensed will have overlap with this license. New pond analysis tool was used at time licensing that wasn't used at time of application. New tool has a lower value for evaporation because of a better understanding of climate data throughout the year. Fire protection and recreation storage will be given 4.9 acre feet of storage and irrigation of 13.7 acres will be given 41.4 acre feet. Overall annual storage volume will be 46.3 acre feet.

Have conditions of permit approval been met? ☒ Yes ☐ No**H. RECOMMENDATIONS****1. Recommended Amounts**

<u>BENEFICIAL USE</u>	<u>PERIOD OF USE</u>	<u>DIVERSION RATE</u>	<u>ANNUAL VOLUME</u>
IRRIGATION STORAGE	01/01 to 12/31		46.3 AF
IRRIGATION FROM STORAGE	04/01 to 10/31		41.4 AF
FIRE PROTECTION STORAGE	01/01 to 12/31		4.9 AF
RECREATION STORAGE	01/01 to 12/31		4.9 AF

Totals: 46.30 AF

2. Recommended Amendments

☐ Change P.D. as reflected above ☐ Add P.D. as reflected above ☒ None

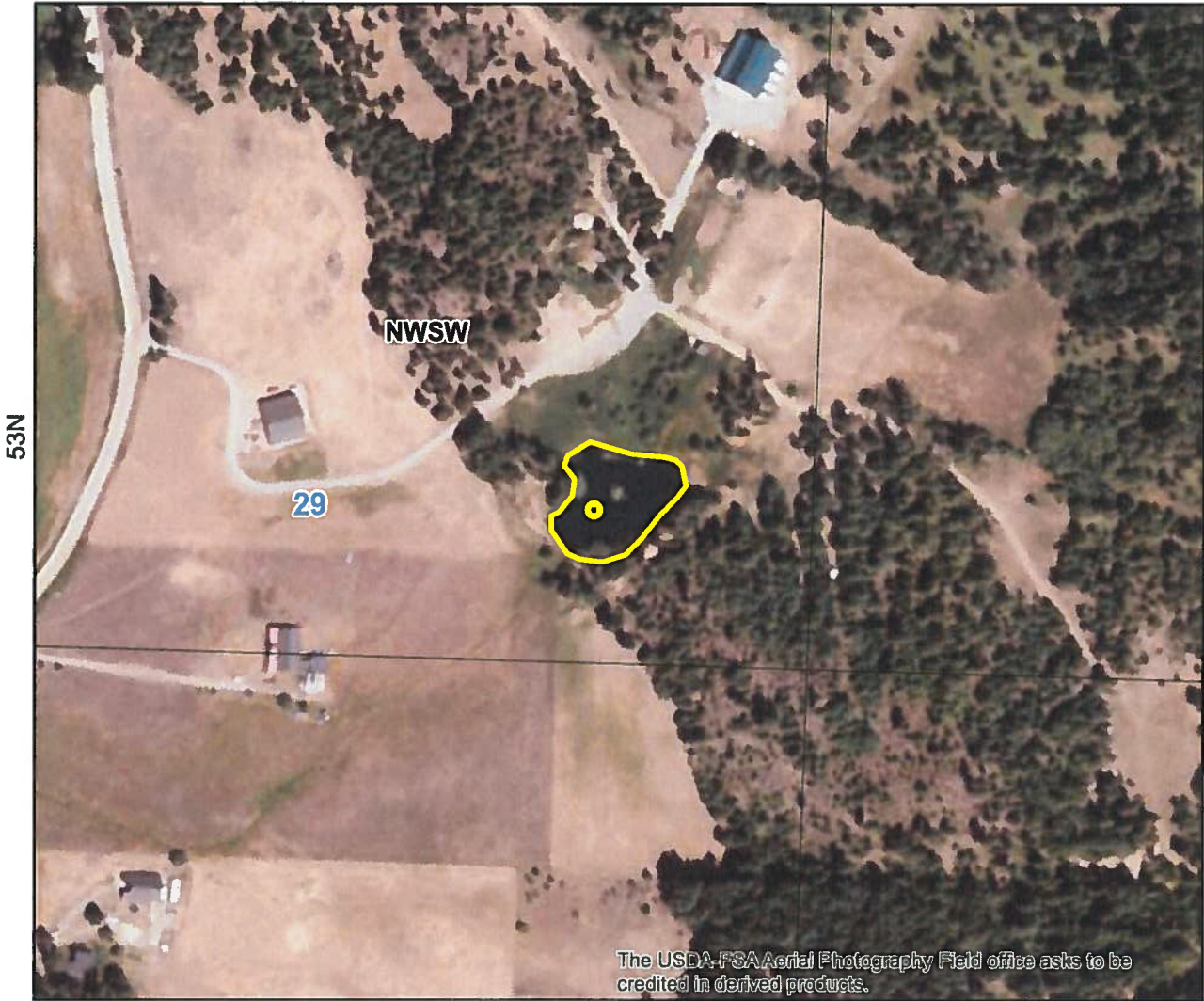
☐ Change P.U. as reflected above ☐ Add P.U. as reflected above ☒ None

I. AUTHENTICATIONField Examiner's Name Adam Finkert Date 1-11-2017Reviewer Morgan Case Date 1-12-2017

State of Idaho
Department of Water Resources
Water Right License
95-17127

IRRIGATION STORAGE, FIRE PROTECTION STORAGE, and RECREATION STORAGE

02W



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

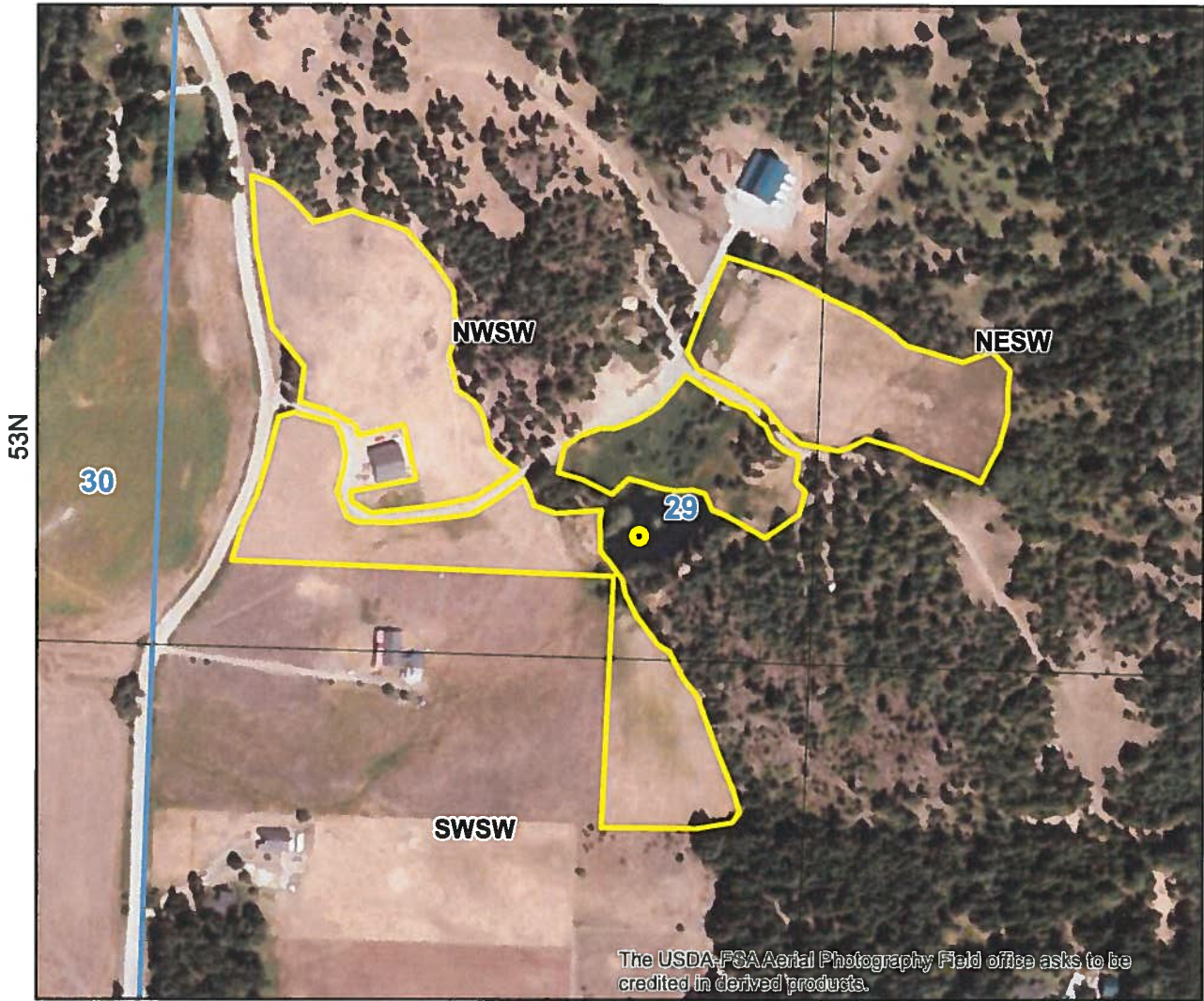
0 0.035 0.07 0.14 Miles



State of Idaho
Department of Water Resources
Water Right License
95-17127

IRRIGATION FROM STORAGE

02W



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

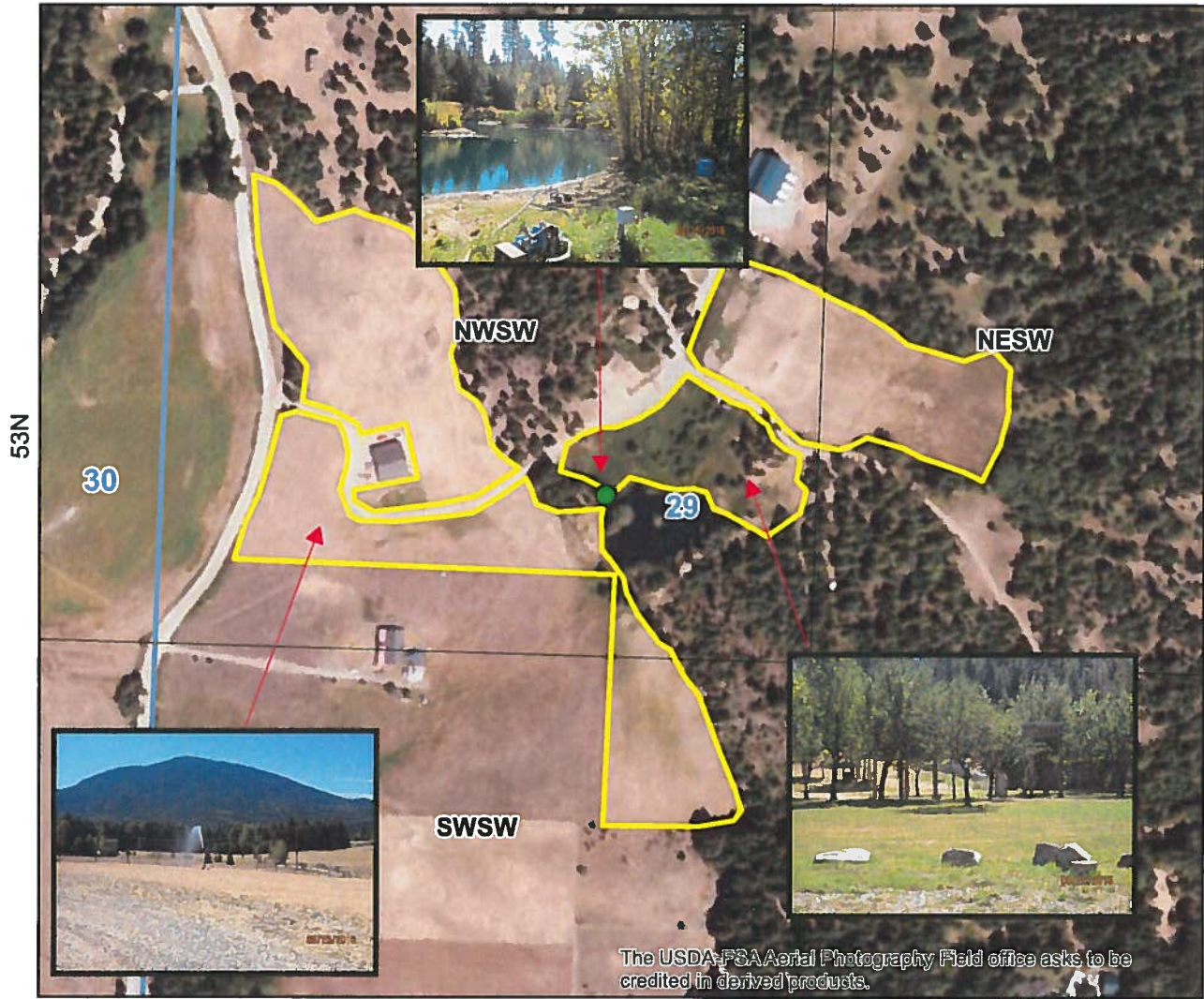
0 0.045 0.09 0.18 Miles



State of Idaho
Department of Water Resources
Water Right License
95-17127

SYSTEM DIAGRAM

02W



0 0.045 0.09 0.18 Miles

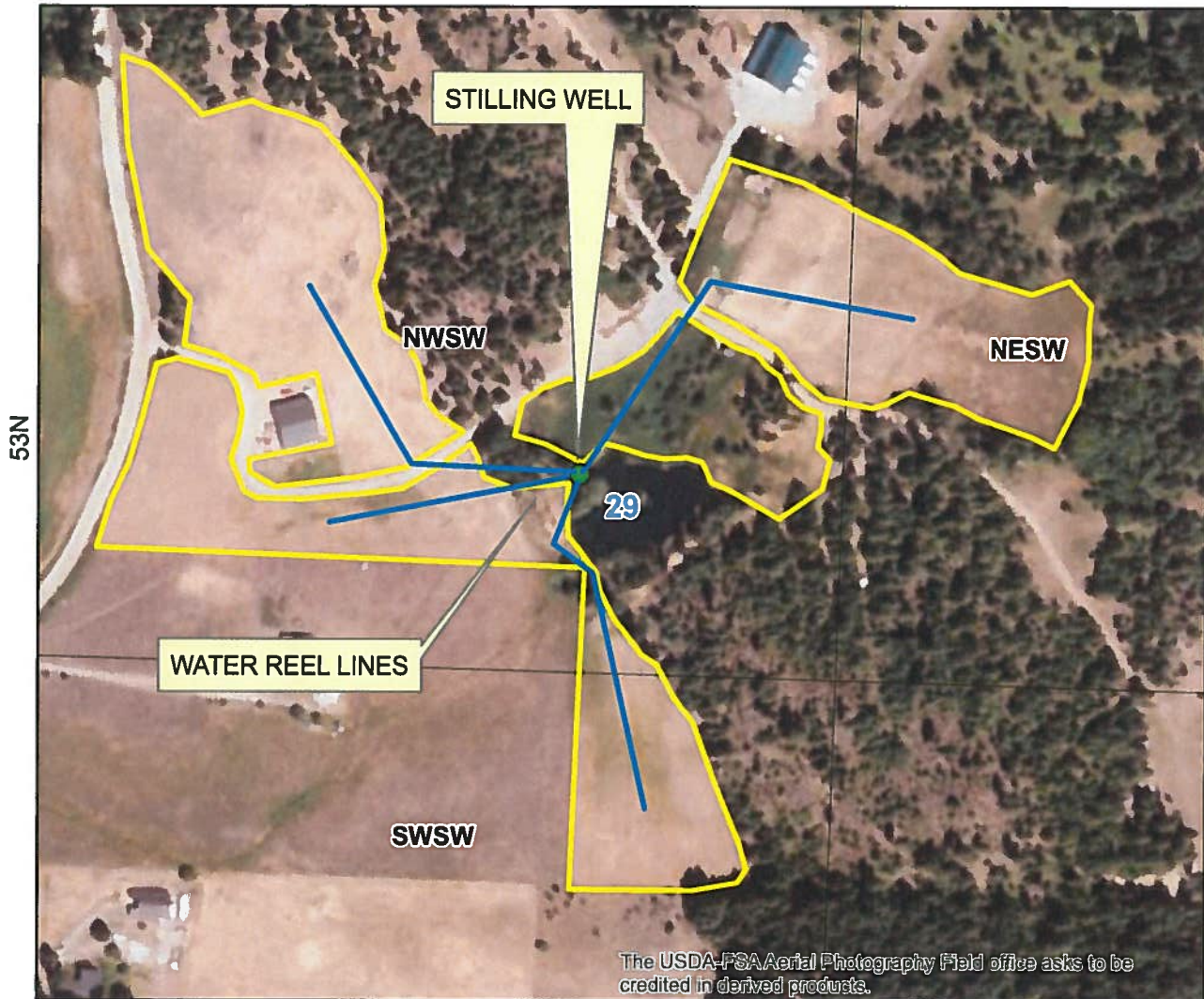
- Place Of Use Boundary
- Townships
- PLS Sections



State of Idaho
Department of Water Resources
Water Right License
95-17127

SYSTEM DIAGRAM

02W



0 0.035 0.07 0.14 Miles

-  Place Of Use Boundary
-  Townships
-  PLS Sections



GOOGLE IMAGES TO SHOW HOW THE IRRIGATION AND FARMING OPERATION WORKS FOR 95-17127



IMAGE FROM 8-26-2014. YOU CAN SEE IRRIGATION CIRCLE FROM WATER REEL.

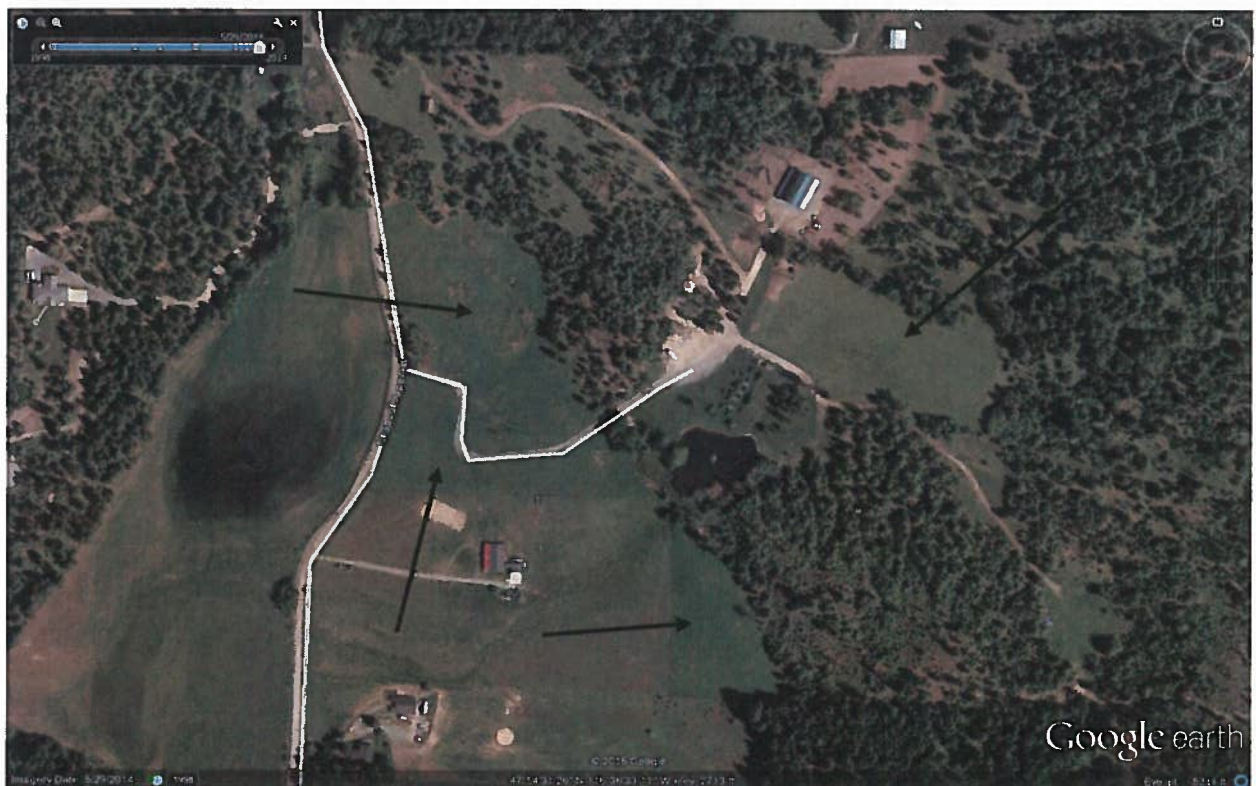


IMAGE FROM 5-29-2014. YOU CAN TELL THE DIFFERENCE IN HOW GREEN IRRIGATED FIELDS ARE COMPARED TO FIELDS THAT AREN'T.



IMAGE FROM 7-14-2013. YOU CAN SEE IN THIS IMAGE HOW CATTLE HAVE BEEN MOVED TO LOWER FIELD AND HAVE EATEN GRASS DOWN TO WHERE IT APPEARS BROWN.

Total Storage Calculations (Pond only)

FILE NUMBER	95-17127
REVIEWER	Adam Frederick
DATE	1/11/2017

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

User Input
Calculated value
Formula Explanations

Surface Area (AC.)	0.6	"Surface Area" is automatically carried over from the "Seepage Loss" sheet.
Average Pond Depth (FT.)	7	"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 suggests multiplying the maximum depth by 0.4 to get the average depth, or you can use any method that seems reasonable to attain average depth.
Pond Capacity (AF)	4.2	Pond Capacity is calculated by multiplying the Pond Surface Area by the Average Pond Depth. If you know the capacity, divide the capacity by surface area and enter the average pond depth in the space above. Note: If pond capacity is determined using a method shown on the "Pond Capacity" sheet, the user may need to modify the value of "Pond Capacity" (cell B9) manually. Note that if the value is modified manually, the formula will be altered for future use.
Multiple Fill Volume Above Initial Fill to Fulfill From Storage Needs- "Multiple Fills" (AF)	0	The "Multiple Fill Volume 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). 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 (AF)	0.0	The "Estimated Seepage Loss" is automatically carried over from the "Seepage Loss" sheet.
Estimated Evaporation Loss (AF)	0.7	The "Estimated Evaporation Loss" is automatically carried over from the "Evaporation Loss" sheet.
Total Volume Required (AF)	4.9	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.

Total Storage Calculations (Irrigation of 13.7 acres)

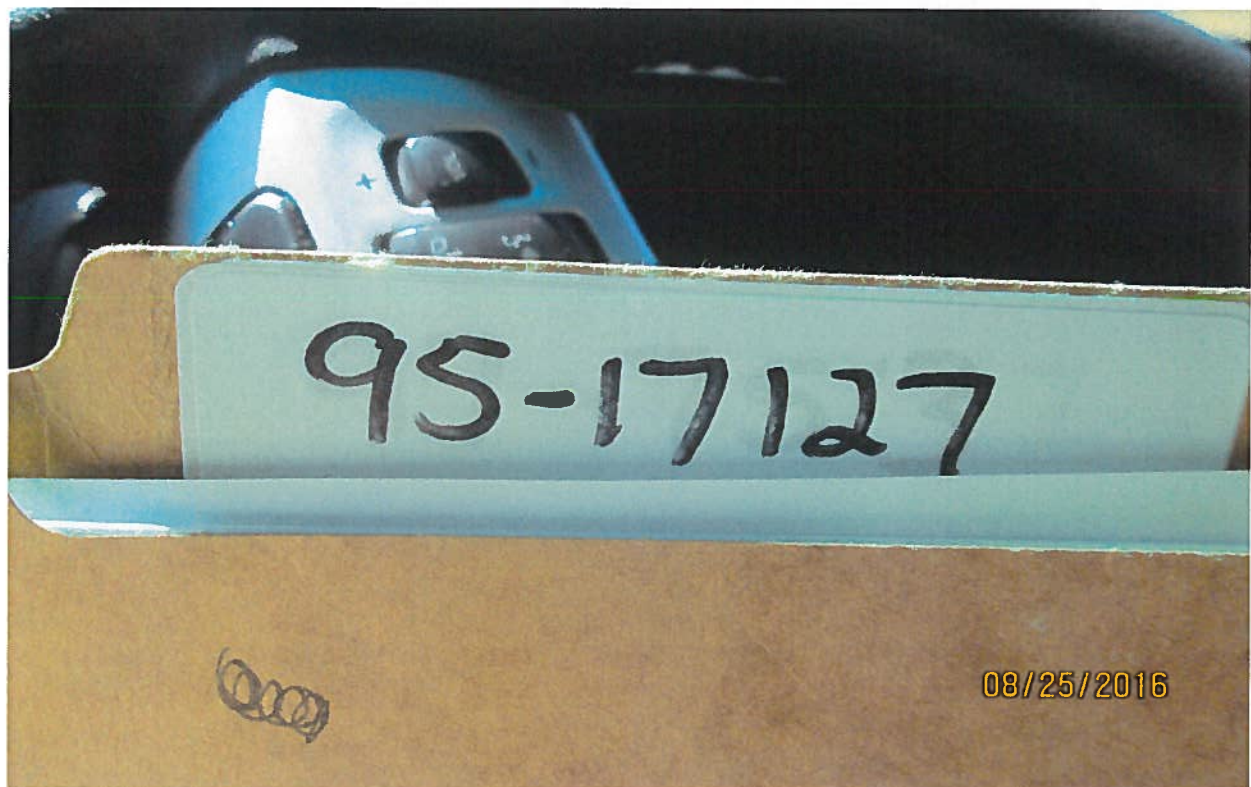
FILE NUMBER	95-17127
REVIEWER	Adam Frederick
DATE	1/11/2017

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

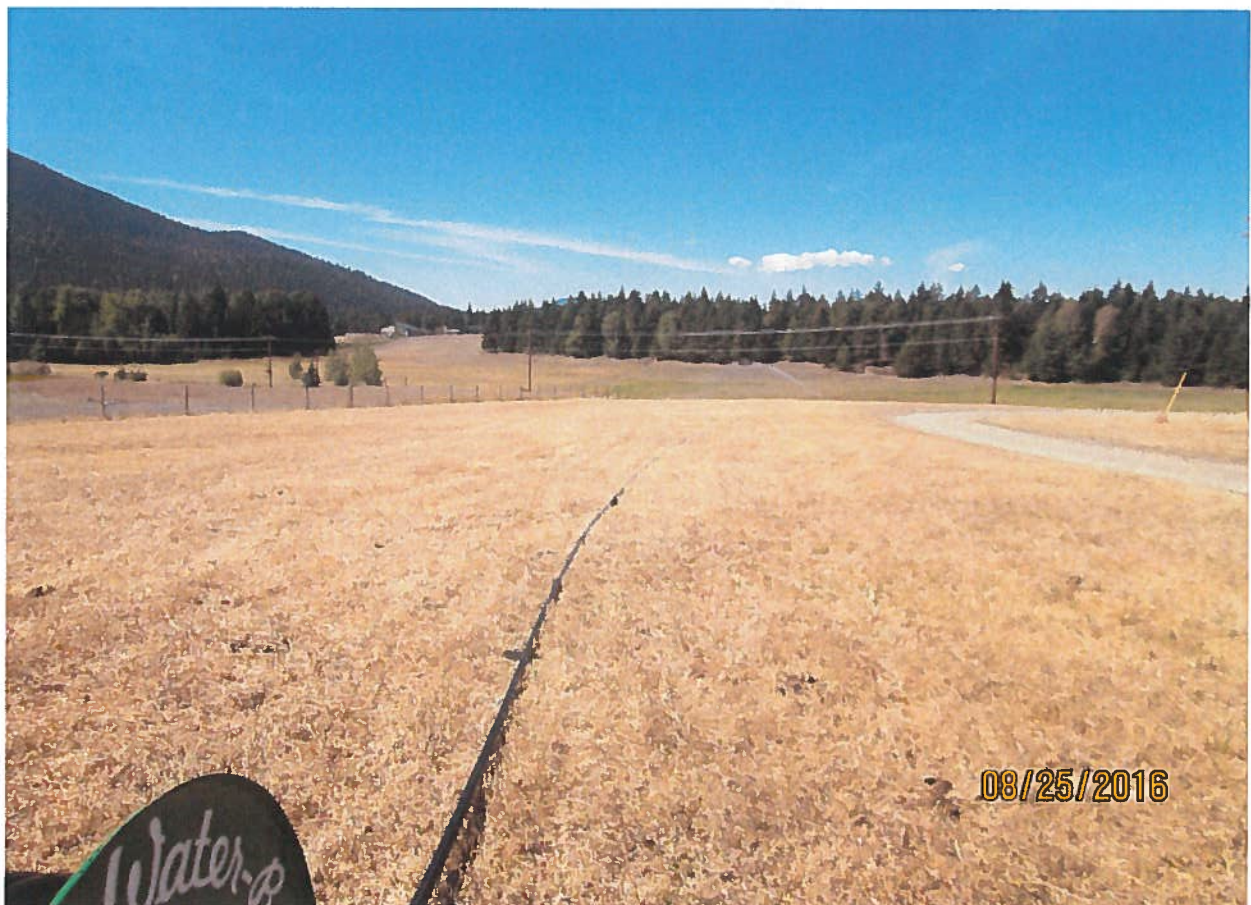
User Input
Calculated value
Formula Explanations

Surface Area (AC.)	0.6	"Surface Area" is automatically carried over from the "Seepage Loss" sheet.
Average Pond Depth (FT.)	7	"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 suggests multiplying the maximum depth by 0.4 to get the average depth, or you can use any method that seems reasonable to attain average depth.
Pond Capacity (AF)	4.2	Pond Capacity is calculated by multiplying the Pond Surface Area by the Average Pond Depth. If you know the capacity, divide the capacity by surface area and enter the average pond depth in the space above. Note: If pond capacity is determined using a method shown on the "Pond Capacity" sheet, the user may need to modify the value of "Pond Capacity" (cell B9) manually. Note that if the value is modified manually, the formula will be altered for future use.

Multiple Fill Volume Above Initial Fill to Fulfill From Storage Needs- "Multiple Fills" (AF)	41.4	The "Multiple Fill Volume 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). 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 (AF)	0.0	The "Estimated Seepage Loss" is automatically carried over from the "Seepage Loss" sheet.
Estimated Evaporation Loss (AF)	0.7	The "Estimated Evaporation Loss" is automatically carried over from the "Evaporation Loss" sheet.
Total Volume Required (AF)	46.3	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.



Irrigation from water reel. Applicant had just finished collect hay from cutting.



View from water reel down to irrigation sprinkler.



Psi gage on water reel.

KIFCO		MODEL B			140	X
MODEL B140 X 350' NELSON SR75		Nozzle size	SPRINKLER			Irrigated V Wetted D
			PSI	GPM	DIA	WIDTH
Area covered may vary depending on wind conditions, field dimensions & use of different sprinklers. Specifications are subject to change without notice.		.4"	40	27	149	119 X
		.4"	80	39	182	146 X
		.45"	35	32	154	123 X
		.45"	80	49	207	166 X
		.5"	35	40	164	131 X
		.5"	80	61	222	178 X
		.55"	35	49	172	138 X
		.55"	70	69	195	156 X
						Hour Avg. Str

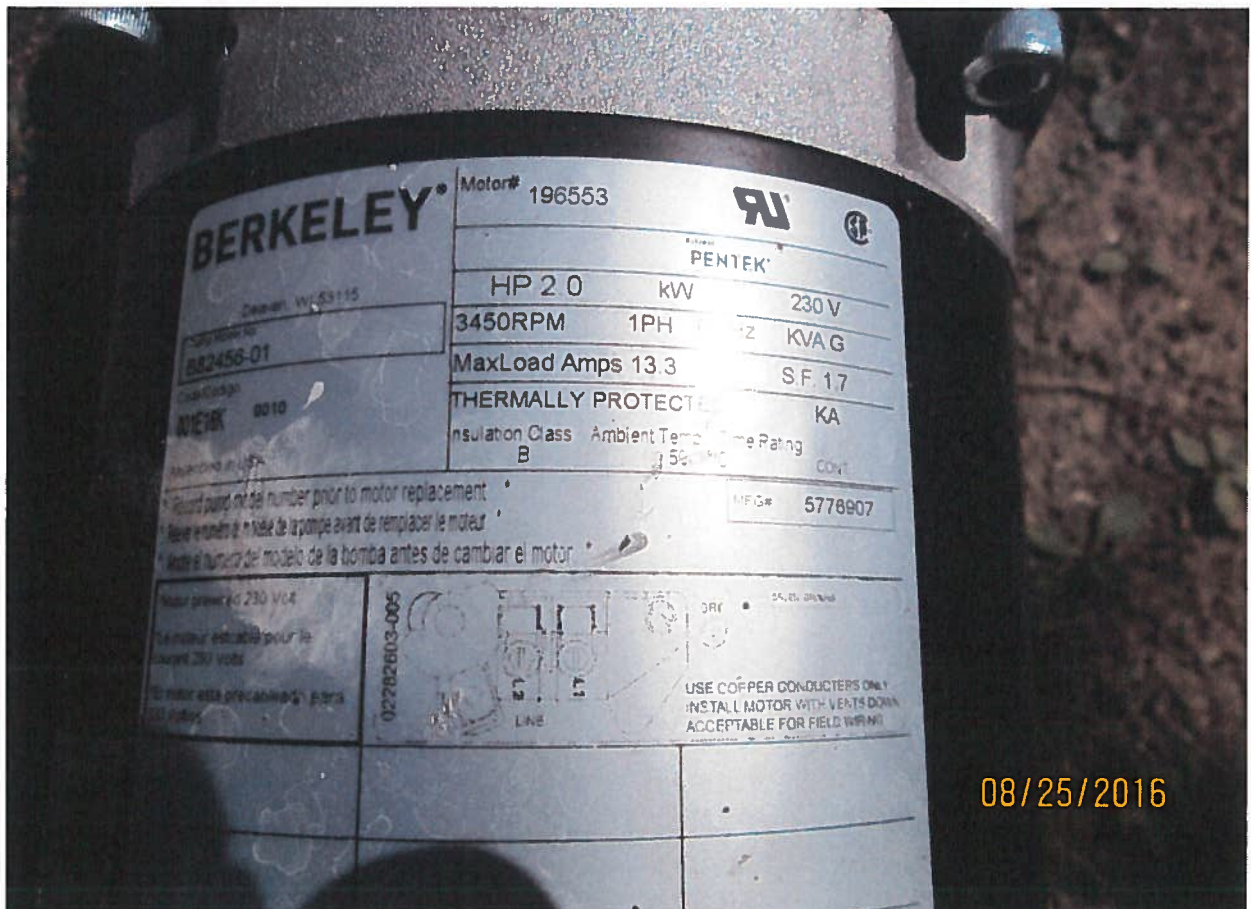
Rating curve for water reel, .5 inch head on sprinkler.



View of pond.



Stilling well adjacent to pond. 2 hp pump to irrigation.





South end of property.



Irrigation sprinkler.





Orchard and grass irrigation.

