

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 63-35217
Exam Date: 01/06/2025

1. Current Owner:
RONALD WATSON 10105 GABICA ST MIDDLETON ID 83644-5754 AND/OR
ELIZABETH KUCHINSKI-WATSON 10105 GABICA ST MIDDLETON ID 83644
2. Accompanied by: RONALD WATSON
Phone No: (559)-250-6383
Address: SAME AS MAILING
Relationship to permit Holder: SELF

3. SOURCE:

GROUND WATER

Method of Determination: GARMIN GPS map 76 and GIS.**B. OVERLAP REVIEW**

1. Other water rights with the same place of use: YES Overlap

Water Right No.	Source	Purpose of Use	Basis
63-32524	UNNAMED DRAINS	IRRIGATION	DECREEED 2009
63-32523	LAWRENCE KENNEDY DRAIN	IRRIGATION	DECREEED 2009
63-163	BOISE RIVER	IRRIGATION	DECREEED 2009
63-179B	BOISE RIVER	IRRIGATION	DECREEED 2009
63-21761	BOISE RIVER	IRRIGATION	DECREEED 2009

Comments: The rights overlapping the permit place of use (POU) are complimentary to the service area for Canyon County Co LTD. The permit is for groundwater irrigation supplemental to surface water shares held by the permit holder.

2. Other water rights with the same point-of-diversion: NO Overlap

Water Right No.	Source	Purpose of Use	Basis
NONE	NA	NA	NA

Comments: No rights share the permitted well head point of diversion (POD).

C. DIVERSION AND DELIVERY SYSTEM

1. **LOCATION OF POINT(S) OF DIVERSION: GPS COORDS: W116.594538°, N43.69207°**

GROUND WATER L1 (SE¼ SE¼), Sec. 8, Twp 04N, Rge 02W, B.M. CANYON County

Method of Determination: GARMIN GPS map 76, GIS, and Canyon County tax parcel data.**PLACE OF USE:** RECREATION & IRRIGATION STORAGE

Twp	Rng	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
04N	02W	8																X L1	

PLACE OF USE: IRRIGATION FROM STORAGE

Twp	Rng	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
04N	02W	8																1.6 L1	1.6

Total Acres: 1.6

Method of Determination: GIS and Canyon County tax parcel data.

3.

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

X 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

X 1:24,000 or greater.

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
D0097248	Unknown	2.0	Unknown	RPS	90GPM @ 30' TDH

D. FLOW MEASUREMENTS

1.

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

2. Measurements:

E. FLOW CALCULATIONS

Additional Computation Sheets Attached

Measured Method: A pump curve was provided by the manufacturer of the solar pump (Table 1, below). The well drillers report included the static water level (+1) and an 18ft drawdown during pump testing. Combining the drawdown depth and the open discharge on top of a 2ft waterfall to determine a total dynamic head of approximately 20ft.

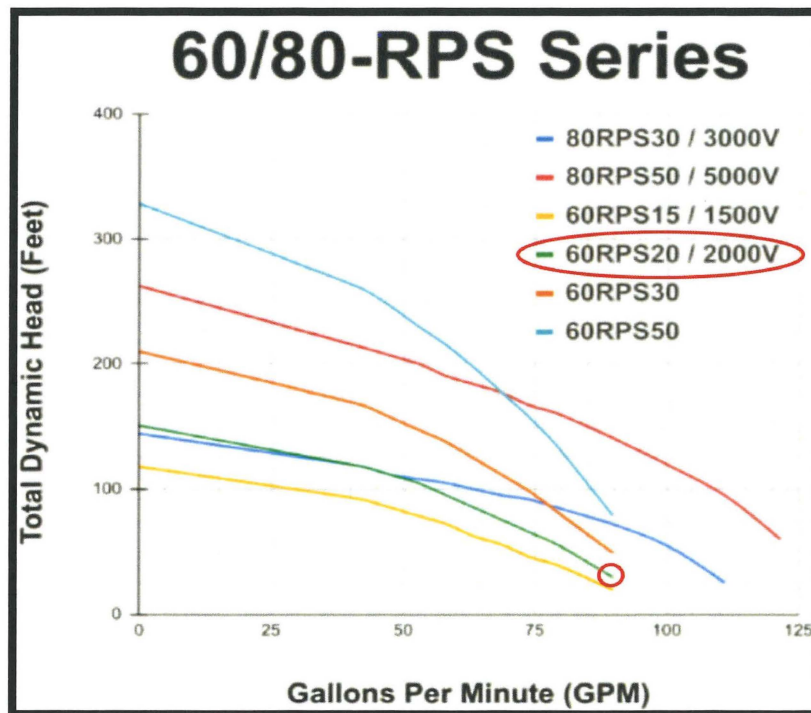


Table 1- Pump curve provided by RPS (solar pump manufacturer). The green line represents the system installed.

Comments: The pump curve indicates a maximum rate of 90 GPM (0.20cfs) when the total dynamic head is 20 ft (open discharge). The system is only capable of operation when insolation is adequate to fully charge the solar panels (no batteries), so refill of the pond is limited to peak daylight hours. I recommend that the license is issued for the full permitted rate of 0.16cfs.

F. VOLUME CALCULATIONS

1. Volume Calculations for irrigation:

$$V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 1.6 \text{ acres} \times 5.0 \text{ AFA} = 8.0 \text{ AF annually}$$

$$V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = 0.16\text{cfs} \times 260 \text{ days} \times 1.9835 = 82.5 \text{ AF annually}$$

$$V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} = 8.0 \text{ AF}$$

2. Volume Calculations for Other Uses:

IRRIGATION STORAGE

@ 5 AF/acre x 1.6 acres irrigation = 8.0 AF

RECREATION STORAGE

0.2 Sq-acre (area) x 2/5 x 12ft (max depth)= 1.0 AF

798.77 / 304.8 x 0.2 sq-acre = 0.5 AF annual evaporative loss

G. NARRATIVE/REMARKS/COMMENTS

On August 25, 2023, the Department received the Statement of Completion for permit 63-35217. The field examination was conducted on January 6, 2025, escorted by Ron Watson, the permit holder. Mr. Watson is seeking a more reliable source for storage water for an existing pond which normally fills due to a high groundwater table authorized by WR 63-34114. The storage elements under the existing right allow for irrigation/recreation storage and irrigation supplemental to surface water shares with Canyon County Water Co. held by the permit holder. Mr. Watson explained while escorting the field examination that the pond water level has been in decline for several years necessitating a permit to divert additional water. The permit is essential a copy of right 63-34114 apart from the addition of a diversion to storage from the new well head POD source.

A 2 Hp submersible solar pump set at approximately 122 ft delivers water into the pond via a buried 2" plastic pipe. The solar power system has no batteries, so a cutoff switch goes "on line" when insolation is sufficient to fully power the pump. A float valve sensor on the southside of the pond energizes the pump when the float is lowered.

The irrigation from storage system has not changed since the field examination for right 63-34114 in 2018. The system diagram for irrigation from storage is available in the backfile for right 63-34114. A 5Hp pump conveys water from the pond to a manifold which distributes water to 27 rainbird impact sprinklers for the irrigation of 1.1 acres of pasture when surface water is not available, and to a K Line with 5 Nelson rotary sprinklers connected to one of three 2" risers which irrigate the area surrounding the pond.

The testing documented on well drillers report indicates a 18ft drawdown and a static water level of +1 ft. The 2" plastic pipe has an open discharge from a stone waterfall about 2 ft above ground level. The pump curve provided by RPS (table 1) indicates at a total dynamic head of 20 ft the pump has a maximum rate of 90 GPM (0.20cfs). I recommend the license is issued for the full permitted diversion to storage rate of 0.16cfs.

The grass grown within the POU feeds several horses. At the time of the examination, the horses were being kept in a baren <0.4-acre enclosure in the southwest of the parcel. Mr. Watson stated that the enclosure is the "sacrifice field" which the horses are kept in throughout the winter decimating any vegetation, so the area is reseeded each spring and usually is mostly recovered by late in the summer. The areas irrigated within the POU cover approximately 1.6 acres. As previously explained in the field examination report for right 63-34114 surface water is delivered at irregular intervals making it difficult to further reduce the annual volume for irrigation. I recommend the statutory limit of 5.0 AF/acre (8.0 AF annually) for irrigation storage and irrigation from storage for 1.6 acres.

The pond has a surface area of approximately 0.2 acres, a maximum depth of about 12ft., a calculated capacity of 1.0 AF, and 0.5 AF in annual evaporative losses. I recommend the license is issued for the full permitted recreation storage volume of 1.5 AF annually.

Finally, I recommend the license is issued with conditions 259, 220, 943, WB7, X35, R61, R70, X59, and 103. Condition 046 was removed and condition 121 was replaced with condition 103 per current guidance.

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

H. RECOMMENDATIONS

1. Recommended Amounts

<u>Beneficial Use</u>	<u>Period of Use</u>	<u>Rate of Diversion</u>	<u>Annual Volume</u>
RECREATION STORAGE	01/01 to 12/31		1.5 AF
DIVERSION TO STORAGE	01/01 to 12/31	0.16 CFS	
IRRIGATION STORAGE	03/01 to 11/15		8.0 AF
IRRIGATION FROM STORAGE	03/01 to 11/15		8.0 AF

Totals:

0.16 CFS

9.5 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. AUTHENTICATION

Bob Howe - Water Resource Agent, Sr.

Field Examiner's Name

Date

Reviewer

Date



Figure 1- System Diagram- The pond is filled by a solar pump at the well head when the solar panels receive adequate insolation, and the float sensor is lowered (on position). Water is conveyed via a buried 2" plastic pipe with a control valve to allow the discharge to bypass the waterfall in colder months through a buried 2" plastic pipe.

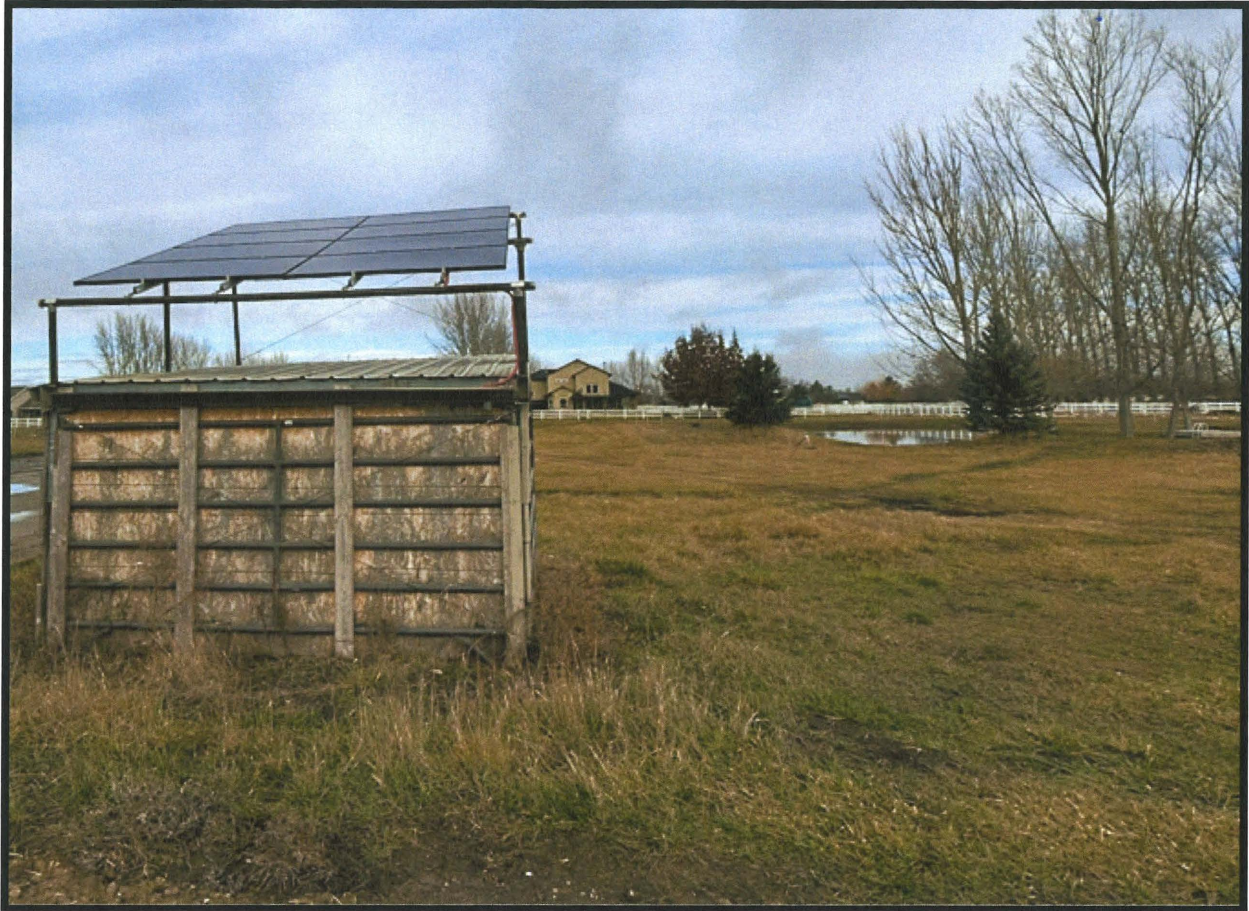
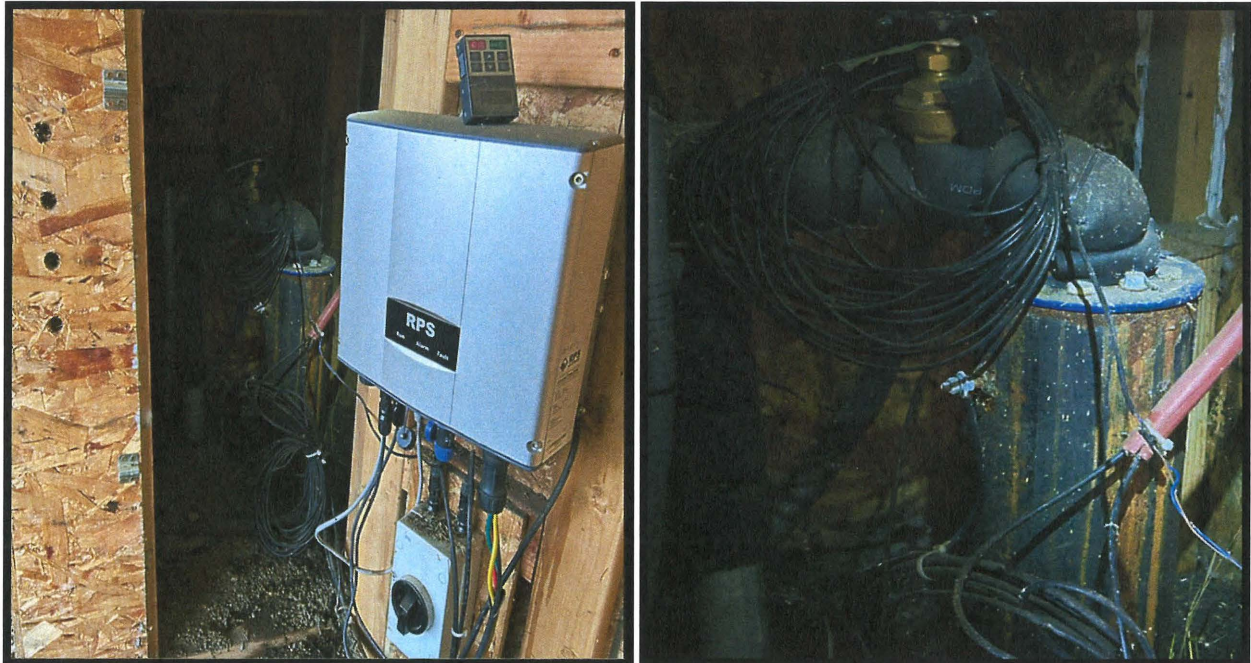


Photo 1- Pump house with solar panels mounted on top. The trench for the buried 2" plastic pipe and sensor wire are still evident as a baren strip leading from the pumphouse to the southeast shore of the pond.



Photos 2a & 2b (left to right respectively)- (left) The solar charger and control panel mounted on the pump house door with the float sensor switch setting on top. (right) The well head within the pump house.



Photo 3- Standing northwest of the pond. The waterfall discharge (circled in blue) and the float sensor (circled in red) are on the south shore of the pond.



Photo 4- On the southwest shore of the pond facing east. The float sensor with the waterfall are seen in the right of the image.



Photo 5- Waterfall with 2" black plastic discharge bypass pipe visible submerged at the shore.



Photo 6- A Berkeley 5 Hp self priming centrifugal pump connected to a manifold for distribution of water throughout the irrigation from storage POU (image from FE for 63-34114).

POND CALCULATION SPREADSHEET

Seepage Loss Calculations		
This spreadsheet has been designed by Idaho Department of Water Resources to estimate the total annual seepage losses from a pond.		
FILE NUMBER	63-35217	User Input
REVIEWER	Bob Howe	Calculated value
DATE	1/6/2024	Formula Explanations
INPUTS		
Pond Surface Area (AC.)	0.2	AC.
Pond Surface Area (SQ. FT.)	8712	SQ. FT.
I used the following method to obtain my Soil Classification information:	NRCS Web Soil Survey	
My Soil Classification is	GrndWtr	
Suggested Seepage Rate (FT./DAY)	0.0000	FT./DAY
Formula: (Surface Area X Seepage Rate) X 7.48 = Gallons Per Day Loss		
Convert to GPD	0	GPD
Total Seepage Loss (AFA)	0.0	AFA
		Though sand and gravel seepage rates may actually be higher, the maximum allowable rate is 0.2 ft/day, pursuant to Administrative Memo "Seepage Loss Standards for Ponds and Reservoirs."
		Print Page to PDF

Evaporation Loss Calculations

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

FILE NUMBER **63-35217**
REVIEWER **Bob Howe**
DATE **1/6/2024**

User input
Calculated value
Formula Explanations

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

Use the link below to access the Kimberly Research Center website. This website provides the Precipitation Deficit for a station most representative of the pond under examination. The Precipitation Deficit is the total amount of free water surface 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 throughout the state. 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>.

Instructions:

1. Use the link below to navigate to ET Idaho 2012.
2. Select the station which is most representative to your pond location.
3. Click Submit Query.
4. Under "Land Covers with Evapotranspiration Estimates," select "Open Water - Shallow Systems (ponds, streams)" or "Open Water - small stock ponds" depending on the pond size.
5. Click the link to "Precipitation Deficit."
6. Reference and copy (ctrl + C) the first subheading "Mean" values.
7. Click the "Paste Values from ET Idaho" button. The table will automatically enter a zero (0) for any negative precipitation deficit values.

Paste Values from ET Idaho

Print Page to PDF

Found at: <http://data.kimberly.uidaho.edu/ETIdaho/>

Precipitation Deficit

Station: **Caldwell (NWS -- 101380)**

Month	mm/day ¹	Days per month	mm/Month
Jan	-0.83	31	0.00
Feb	0.18	28	5.04
March	1.22	31	37.82
April	2.51	30	75.30
May	3.74	31	115.94
June	4.22	30	126.60
July	5.01	31	155.31
August	4.27	31	132.37
September	3.06	30	91.80
October	1.89	31	58.59
November	-0.12	30	0.00
December	-0.78	31	0.00

PLEASE NOTE: The seasonal average for precipitation deficit should not be used for calculations because precipitation often exceeds evaporation during wetter months of the year. If the pond is kept full, excess precipitation during wetter months does not serve to refill the pond during drier months.

For example, see Sandpoint KSPT (NWS -- 108137), the annual precipitation deficit is -106 mm. However, April through September have positive precipitation deficit values. To properly estimate the annual volume of water necessary to refill a pond due to evaporation losses, the table will automatically enter a zero (0) for each month that the precipitation value is reported as a negative value.

As described above, precipitation offsets evaporation in winter months, so the net effect is that wintertime precipitation deficit is usually zero.

Total mm/year = **798.77**

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

(**798.77**) ÷ **304.8**) X **0.20** = **0.5 AFA**

Total Storage Calculations		
FILE	63-35217	This spreadsheet has been designed by Idaho Department of Water Resources to estimate the total seepage, evaporation and fill capacity required for a pond.
REVIEWER	Bob Howe	
DATE	1/6/2024	
		User Input Calculated value Formula Explanations
Print Page to PDF		
Surface Area (AC.)	0.2	"Surface Area" is automatically carried over from the "Seepage Loss" sheet.
Average Pond Depth (FT.)	4.8	"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)	0.96	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)	8	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)	0.5	The "Estimated Evaporation Loss" is automatically carried over from the "Evaporation Loss" sheet.
Total Volume Required (AF)	9.5	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	0.16	The "Flow Rate into Pond" depicts the actual flow, either measured or estimated, into the pond. For offstream facilities, this will be equivalent to "diversion to storage" rate.
Highest Daily Evaporation Rate From Evaporation Tab. (mm/Day)	5.01	This number is carried over from the "Evaporation Loss" sheet. It is the highest recorded number in the "Precipitation Deficit Table".
Required Daily Maintenance Volume (AF/Day)	0.00	"Required Daily Maintenance Volume" is the maximum volume of water needed on any given day during the year to maintain pond volume. It 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 (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 "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	3	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. If this number is approximately 6 months (180 days) or more, the reviewer should have a discussion with the applicant to make sure he/she understands that it will take a significant length of time to fill the pond.
Days Required to Fill the Pond at 13,000 Gallons per Day	26	Some water users may want to fill a pond under the 13,000 gallons per day domestic exemption. The "Days Required to Fill the Pond at 13,000 Gallons per Day" is calculated by converting the "Pond Capacity" and the "Required Daily Maintenance Volume" to gallons. The "Pond Capacity" is then divided by 13,000 gallons minus the "Required Daily Maintenance Volume" in gallons to determine the number of days to fill pond. If this number is approximately 6 months (180 days) or more, the reviewer should have a discussion with the applicant to make sure he/she understands that it will take a significant length of time to fill the pond. Negative values indicate that the supply of 13,000 gallons per day is not enough volume to overcome the required daily maintenance volume; the pond will never fill.