

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 96-8516

Exam Date: 09/02/1998

1. Current Owner:
UNIVERSITY OF IDAHO REGENTS 875 PERIMETER DR MS3162 MOSCOW ID 83844-3162
2. Accompanied by: Tim McDonald (local contact)
Phone No: 208-292-1737 (Charles Buck)
Address: Unknown
Relationship to permit Holder: Charles Buck – U of Idaho Employee (Tim McDonald local contact)

3. SOURCE:
SAND CREEK

Tributary
LAKE PEND OREILLE

Method of Determination: Arcmap and DRG

B. OVERLAP REVIEW

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

Water Right No.	Source	Purpose of Use	Basis
96-2177	Sand Creek	Irrigation / Domestic	License

Comments: _____

2. Other water rights with the same point-of-diversion:

Water Right No.	Source	Purpose of Use	Basis

Comments: It is unclear whether there are two points of diversions between the two rights or one common diversion point.

C. DIVERSION AND DELIVERY SYSTEM

1. LOCATION OF POINT(S) OF DIVERSION:

SAND CREEK NW¼ NE¼, Sec. 15, Twp 57N, Rge 02W, B.M. **BONNER County**

Method of Determination: Maps and GPS. POD located at -116° 33.142, 48° 17.574

PLACE OF USE: IRRIGATION

Twp	Rng	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
57N	02W	15		23.0	24.0											0.7			47.7

Total Acres: 47.7

PLACE OF USE: IRRIGATION STORAGE

[illegible]

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	
57N	02W	15		23.0	24.0												0.7		47.7

Total Acres: 47.7

Method of Determination: Google Earth and Arcmap

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 1:24,000 or greater.

☒ X

Aerial Photo Attached (required for irrigation of 10+ acres).

☒ X

Photo of Diversion and System Attached

☒ X

4.

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

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
5 GALLON BUCKET						

2. Measurements: See original field exam in backfile.

5 gallon bucket filled in 60 seconds = 5 gpm x 40 sprinklers = 200 gpm or 0.45 cfs

E. FLOW CALCULATIONS

Measured Method: N/A

____ Additional Computation Sheets Attached

F. VOLUME CALCULATIONS

1. Volume Calculations for irrigation:

$$V_{IR} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 47.7 \text{ AC} \times 3.0 \text{ AF} = 143.1 \text{ AF}$$

$$V_{DR} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = 0.45 \text{ CFS} \times 214 \times 1.9835 = 191.0 \text{ AF}$$

$$V = \text{Smaller of } V_{IR} \text{ and } V_{DR} = 143.1 \text{ AF}$$

2. Volume Calculations for Other Uses: See attached pond analysis sheet

G. NARRATIVE/REMARKS/COMMENTS

Northern Region was tasked with licensing permits that had been examined during the late 1990's and early 2000's. This file required a 2nd field exam to try and verify the diversion rate, place of use, and annual volume. The original field exam was performed on 9/2/1998 and was conducted by David Pagel.

The 2nd field exam was performed on 9/14/2018 with Tim McDonald. I performed a solo exam of the property earlier in the day in-between field exams. During my earlier exam I walked the property and found most of the components of the system. The point of diversion was in rough shape with the pump house wall being broken out and room being full of trash. There were two pumps visible inside with a pipeline heading up the hill to the place of use. It was unclear though whether there were two points of diversions or just one single intake for both pump. There was buried main line on the property with risers for the irrigation pipe. Mr. McDonald filled in some of the questions about the system but not all aspects of it. The farm had not been in operation since sometime after 2011. Mr. McDonald said they had used the irrigation system when a driving range was installed on the property around 2013. He had got the pump working that summer in order to irrigate the driving range. I was told that the property was up for sale and would hopefully be purchased by the City of Sandpoint.

Because I was unable to perform a measurement at time of 2nd exam I was forced to rely on the original field exam's 5 gallon measurement. The original exam stated a 5 gallon bucket test was performed on one of the sprinklers and filled in 1 minute. The examiner stated there were 40 sprinklers and recommended a diversion rate of 0.45 cfs. The license will be issued with a diversion rate of 0.45 cfs based upon original field examiners recommendation. The Northern Region needed to decide how the pumping system worked and how it related to Water Right 96-2177 which was for irrigation in the NWNE for 21 acres. Right 96-2177 field exam showed a 10 hp being used for the irrigation of 21 acres. The original field exam for this right did not state how the two pumps worked in relation to each other. It is our belief that the field examiner measured the diversion rate of the 15 hp and not the rate of both pumps combined. This water right will be overlapped with 96-2177 using condition X35 and combining the two diversion rates to 0.81 cfs and the irrigation of 47.7 acres.

The original examiner recommended the irrigation of 52 acres. Using Arcmap along with 1998 aerial photography we were able to more accurately trace out 47.7 acres of irrigation. Because 1998 was the year of the original field, we feel confident we are licensing the proper acreage. The permit was also issued for irrigation storage and irrigation from storage. A small pond was located during the 2nd field exam which was mainly dry because the farm was no longer in use. The original field exam stated the pond would be filled in the fall prior to the lowering of the lake which dries up the point of diversion. The applicant would then perform any late season irrigation from the pond using a portable pump. The pond was traced out to have a 0.5 acre surface area and a maximum depth of 6.8 feet or average of 2.7 feet. The pond analysis tool showed an initial fill of 1.4 acre-feet with 1.2 acre-feet needed for evaporation and seepage and a refill volume of 2.4 acre-feet for irrigation from storage. It is unclear from the original exam if the pond water was used in a specific area for irrigation or possibly a specific crop which needed a late season watering. Because we are unsure, the same area will be shown as the irrigation component. The season of use was corrected to our current standards for the irrigation and irrigation from storage component.

Conditions 026 and 01G will be removed from the license as they are no longer needed. Conditions X15, R62, X35, 259, and 220 will be added to the license. These conditions are needed to describe the pond, irrigation requirement, and point of diversion requirements. Condition X35 was added to address the only overlap concern which is for Water Right 96-2177 which is also in the name of the University of Idaho Regents. As mentioned above, X35 will limit the diversion rate to 0.81 cfs and limit the irrigation to 47.7 acres. An amendment of permit was needed as the irrigation applied for was not adequate in the SWNE and not applied for at all in the NWSE. They had applied for more than enough irrigation in the NWNE to shift acres around to cover the total use.

Have conditions of permit approval been met? X 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>
IRRIGATION	04/01 to 10/31	0.45 CFS	0.0 AF
IRRIGATION STORAGE	01/01 to 12/31	0.00 CFS	5.0 AF
DIVERSION TO STORAGE	06/01 to 11/15	0.45 CFS	0.0 AF
IRRIGATION FROM STORAGE	04/01 to 10/31	0.00 CFS	5.0 AF

Totals: 0.90 CFS

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

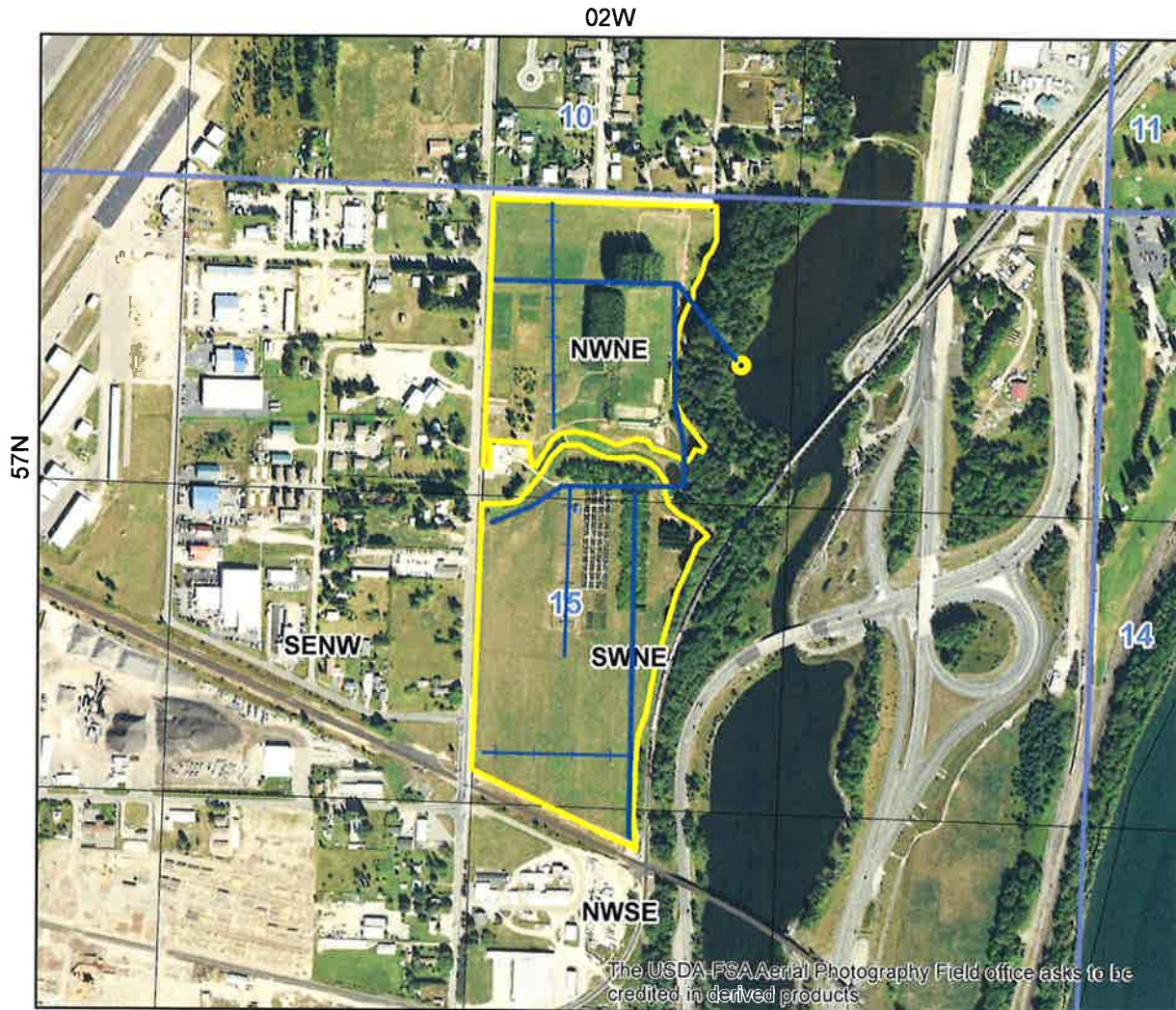
I. AUTHENTICATION

Adam Frederick - Water Resource Agent, Senior

Field Examiner's Name Adam Frederick Date 2/28/2019Reviewer Douglas Jones P.E. Date 3/19/2019

State of Idaho
Department of Water Resources
Attachment to Field Exam
96-8516

IRRIGATION and IRRIGATION FROM STORAGE / SYSTEM DIAGRAM



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

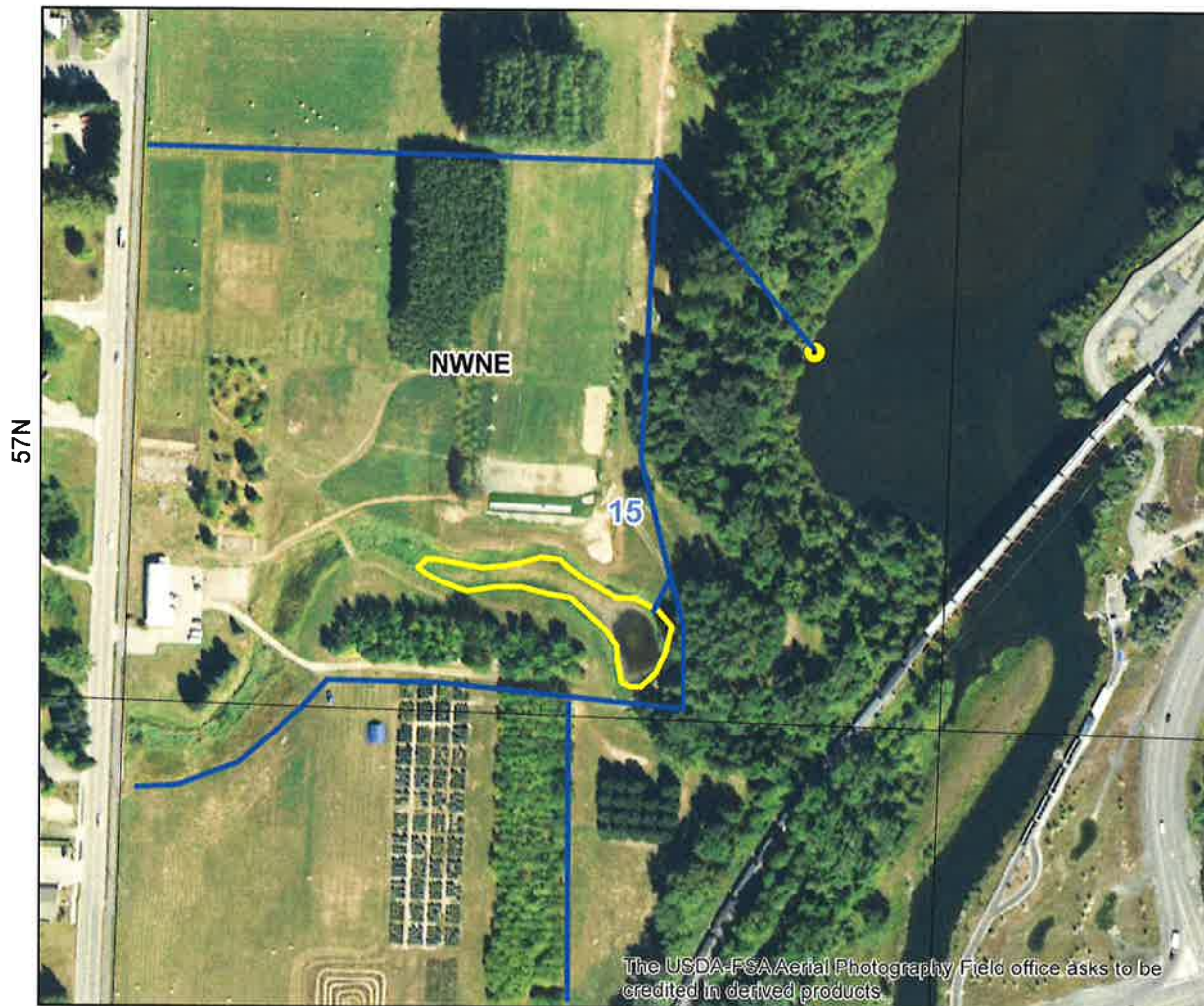
0 0.075 0.15 0.3 Miles



State of Idaho
Department of Water Resources
Attachment to Field Exam
96-8516

IRRIGATION STORAGE / SYSTEM DIAGRAM

02W



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

0 0.035 0.07 0.14 Miles



Total Storage Calculations

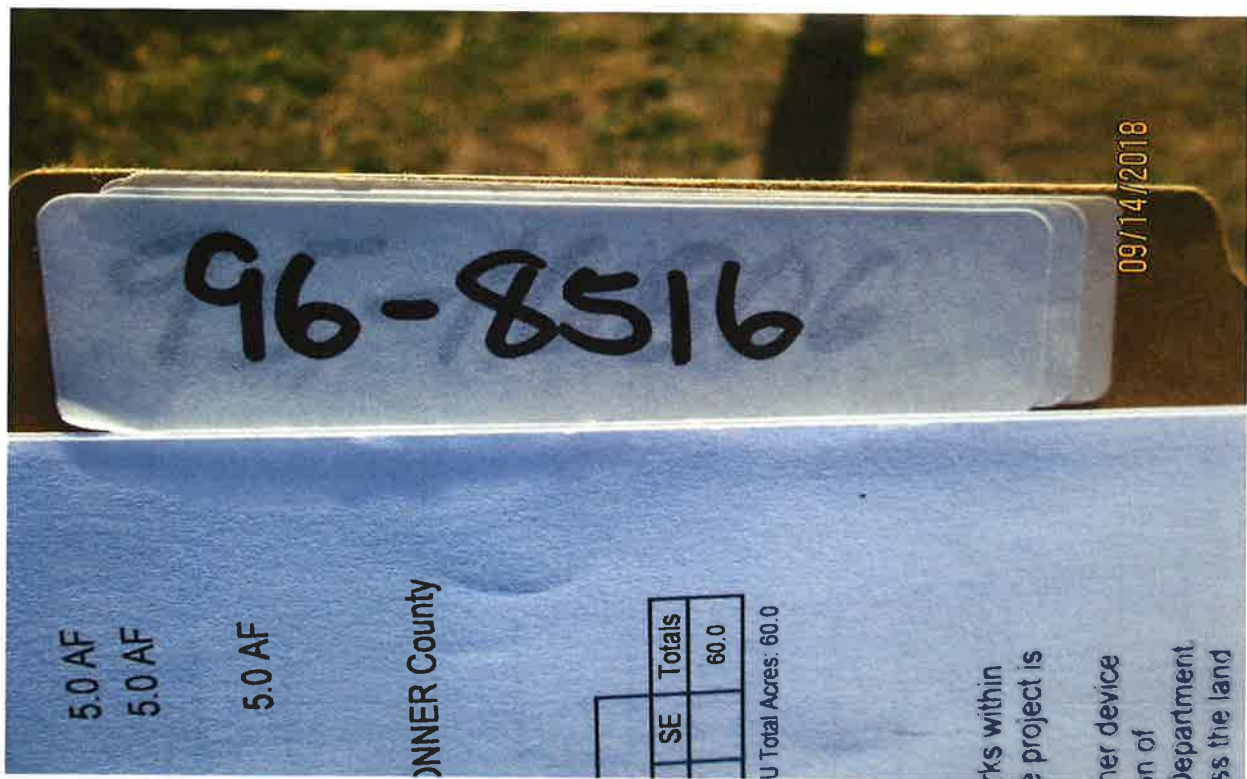
FILE NUMBER	96-8516
REVIEWER	Adam Frederick
DATE	2/8/2019

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

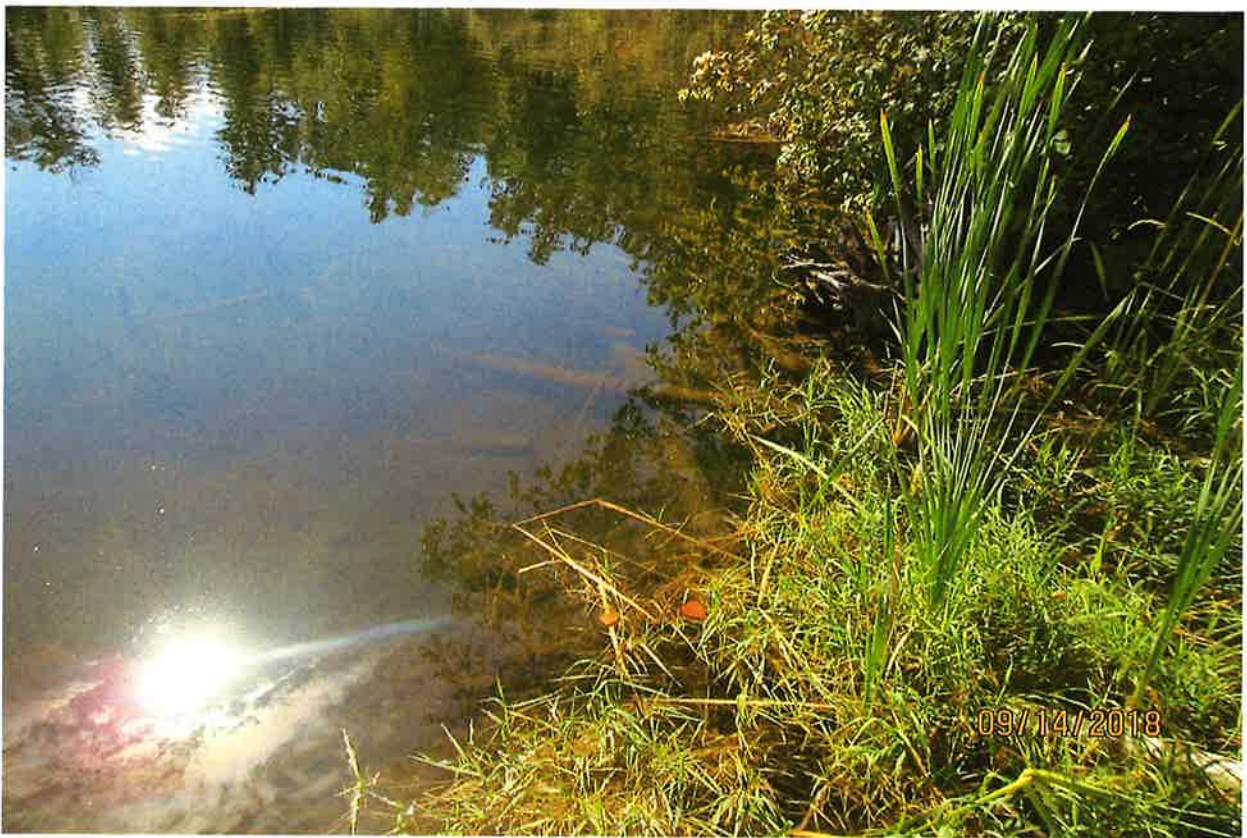
User Input
Calculated value
Formula Explanations

Surface Area (AC.)	0.5	"Surface Area" is automatically carried over from the "Seepage Loss" sheet.
Average Pond Depth (FT.)	2.7	"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)	1.4	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)	2.4	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)	0.5	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)	5.0	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 (CFS)	0.45	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)	3.79	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)	0.01	"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	2	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	42	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.



Site map of property in parking lot.



Points of diversions.



View of diversion points and pump house.



View of pumps through giant hole in pump house. Pumps looked in bad shape and didn't even work.



Pipeline going uphill to place of use.



Irrigation place of use. Now turned into driving range.





Irrigation risers.





Irrigation risers.





Presumed point where pond was filled.



Upper end of pond filled with grass because of no maintenance.



Irrigation place of use.





Irrigation place of use.



STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
FIELD REPORT SUPPLEMENT

PERMIT # 70-08516



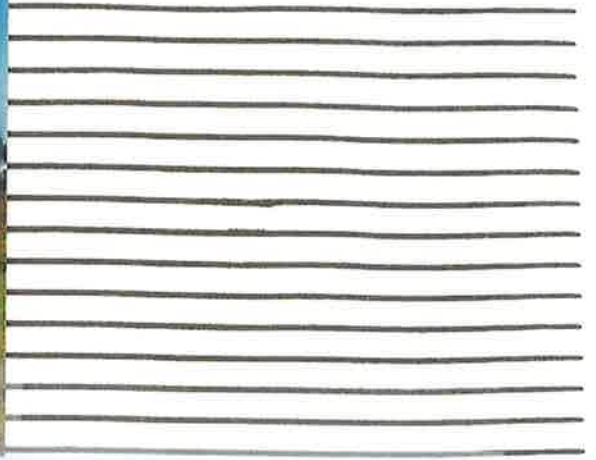
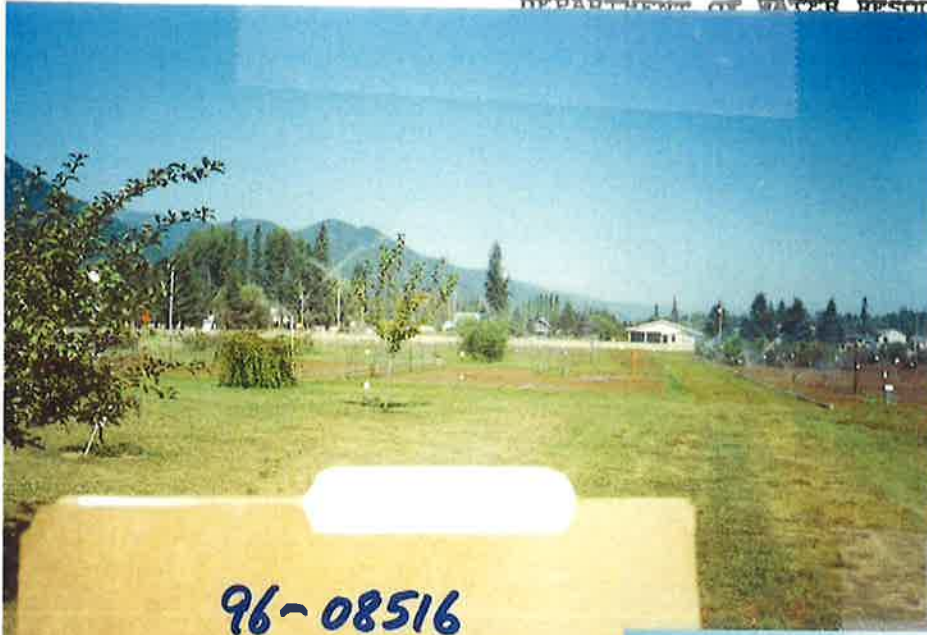
Point
of
diversion

#1 = 15 HP

#2 = 10 HP



Irrigation
Storage



place
of
use

