

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
IN-OFFICE REVIEW/BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATIONPermit No: 63-34127

Exam Date: 10/4/2016

1. Does this qualify for an in-office field exam (IDAPA 035.02.r)? X Y N
- Irrigation of 5 acres or less
 - Storage of up to 14.6 AF for stockwater purposes only
 - Any use other than irrigation or storage, if the combined diversion rate is 0.24 cfs or less
 - Other < >

PLEASE NOTE: An in-house exam was started on this permit, but a field examination was required to verify the water uses. The Department's current aerial photography, was not adequate to verify the uses.

2. Current Owner: Name: Kieth O'Neal Helmick
Owner of Record Correct? X Y N
Address of Record Correct? Y N
If No: Address

Tax parcel data shows Keith O'Neil Helmick as the owners of the property.

Mr. Helmick accompanied us on the field examination.

3. Beneficial Use Fees have been paid: X Y N Receipt No: C0
4. SOURCE TRIBUTARY
Spring Lester Creek

Method of Determination: GPS and Visual Inspection.

Change in Source: Y X N

B. OVERLAP REVIEW

1. Other water rights with the same place of use: NO Overlap

Water Right No.	Source	Purpose of Use	Basis
63-15028	Lester Creek	Stockwater	Decree

Comments: Water right 63-15028 is an in-stream stockwater right from Lester Creek for the same ranch. The same cattle using this permit can drink directly from the creek or from the stockwater trough filled by the spring. The stockwater pond from the spring is further up the hill to the west. Which keeps the cattle out of the riparian area.

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

Water Right No.	Source	Purpose of Use	Basis
NONE			

Comments: There are no other rights diverted from this spring. The in-stream stockwater right 63-15028 is approximately 350 feet west of the spring in the same 40 acre tract. This spring is tributary to Lester Creek, but it appears as though the two sources only connect during times of extreme runoff.

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

Source	Govt. Lot	¼	¼	¼	Sec.	Twp.	Rge.		County
Spring		NE	NE	SE	14	1N	9E	B.M.	ELMORE
								B.M.	
								B.M.	

Method of Determination: GPS and Visual Inspection.Change in POD? X N Amendment Required? X N**2. PLACE OF USE:** Use: Stockwater 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	
1N	9E	14													S				
		Lot #																	
Total Acres =																			

Method of Determination: GPS and Visual InspectionChange in POU? X N Amendment Required? X N x Delivery System Diagram Attached (required). Indicate all major components and distances between components.

Indicate weir size/pipe as applicable.

 X Aerial Photo Attached (required for irrigation of 10+ acres). Photo of Diversion and System Attached

4. Well or Diversion Identification No.*	Motor Make	Hp-CC	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
Re-lift Pump	Honda 4 Stroke	25 cc	AY5* GCalt-25759	Honda - WX 10	WATJ-1247213

*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: A Mannings Equation was used for the stockwater and a pump curve for the domestic use.

E. FLOW CALCULATIONS

____ Additional Computation Sheets Attached

Measured Method:

This pond was constructed on top of a spring/boggy area, so there is no diversion to the pond. It is basically an on-spring pond.

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$$V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = \underline{\hspace{2cm}}$$

$$V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = \underline{\hspace{2cm}}$$

$$V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} = \underline{\hspace{2cm}}$$

2. Volume Calculations for Other Uses:

See attached pond sheet:

This pond is used for stockwater, so it does have multiple fills. The pond is fairly small, but naturally refills enough to water the livestock in this pasture. This pasture supplies the same livestock covered by water right 63-34128, but this is separated into a completely different pasture. The cattle are moved back and forth to avoid overgrazing of one pasture to the other.

Pond Capacity = 0.1 af (See Spreadsheet)

Pond Evaporation = 0.1 af (See Spreadsheet)

Pond Seepage = 0 af (See Spreadsheet)

Stockwater use = (120 head X 12 gpd X 365 days) / 325850 = 1.6 af

Total Storage Use = 1.8 af

Permit allows 0.8 af

I am recommending a storage volume for this permit of 0.8 af. The stockwater use from this pond should be counted as multiple refills, since the cattle also have the option of drinking directly from Lester Creek.

G. PURPOSE OF USEIrrigation ____Y____N # Stock 120 Domestic # of Homes ____Other: Stockwater Storage.

Change in Purpose of Use? ____Y____N

Method of Determination: Field Visit

If Yes: From Use _____ To Use _____ Amount _____ CFS _____ AFA _____

H. NARRATIVE/REMARKS/COMMENTS

This permit is qualified for an in-house exam, but I was unable to see enough information in the Department's available aerial photography to verify the pond size. Therefore, a field examination was done on this permit.

This is a small comma shaped pond that was excavated in spring/boggy area. The spring filled the pond. During the field exam, it looked like while constructing the pond, they chased the spring source around to find the highest flow. This highest flow appears to be located on the southeastern edge of the pond. Therefore, I marked this area as the point of diversion instead of the middle of the pond.

It is unlikely that cattle are kept at this location all year and it appears as though the cattle are moved back and forth between the pasture described in water right 63-34128 and this pasture during the months grazing is available. The cattle being run on this place are heifers, so they will be moved down to a more temperate climate once the snow starts to fall or they start to calf. This is private property, so the cattle are kept on the ranch for as long as mother nature allows them to be kept there. Decreed water right 63-15028 allowed year round use, so I think it would be detrimental to the rancher if we reduced the stockwater season to try and match the weather patterns. There is good feed in this area, so the rancher will keep them up there as long as possible without risking losses due to the weather.

Condition 3 (R05) will be carried forward to licensing. Conditions 1 (220) will be carried over to licensing, but will be corrected with the new acre foot amounts – 0.1 af for total capacity and 0.05 af for pond surface area. Condition 2 (219) will be carried over to licensing, but will be corrected with the new acre foot amounts – 0.1 af for initial fill, 0.1 af for replacement losses, and 0.6 af for multiple fills for stockwater use. Condition 6 (121) will be changed to 103 as is standard. No additional conditions should be needed. Conditions 4 (X02) and 5 (26A) will be removed at licensing per Department standards.

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

I. RECOMMENDATIONS

1. Recommended Amounts

<u>BENEFICIAL USE</u>	<u>PERIOD OF USE</u>	<u>DIVERSION RATE</u>	<u>ANNUAL VOLUME</u>
Stockwater Storage	01/01 to 12/31		0.8 AFA

Totals: 0.8 AFA

PLEASE NOTE: No volume is required, because this permit is limited in conditions to 13,000 gpd. 13,000 gpd should be more than enough to supply the water for this ranch.

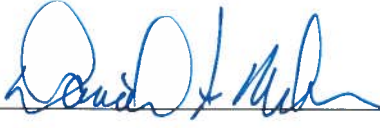
2. Recommended Amendments

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

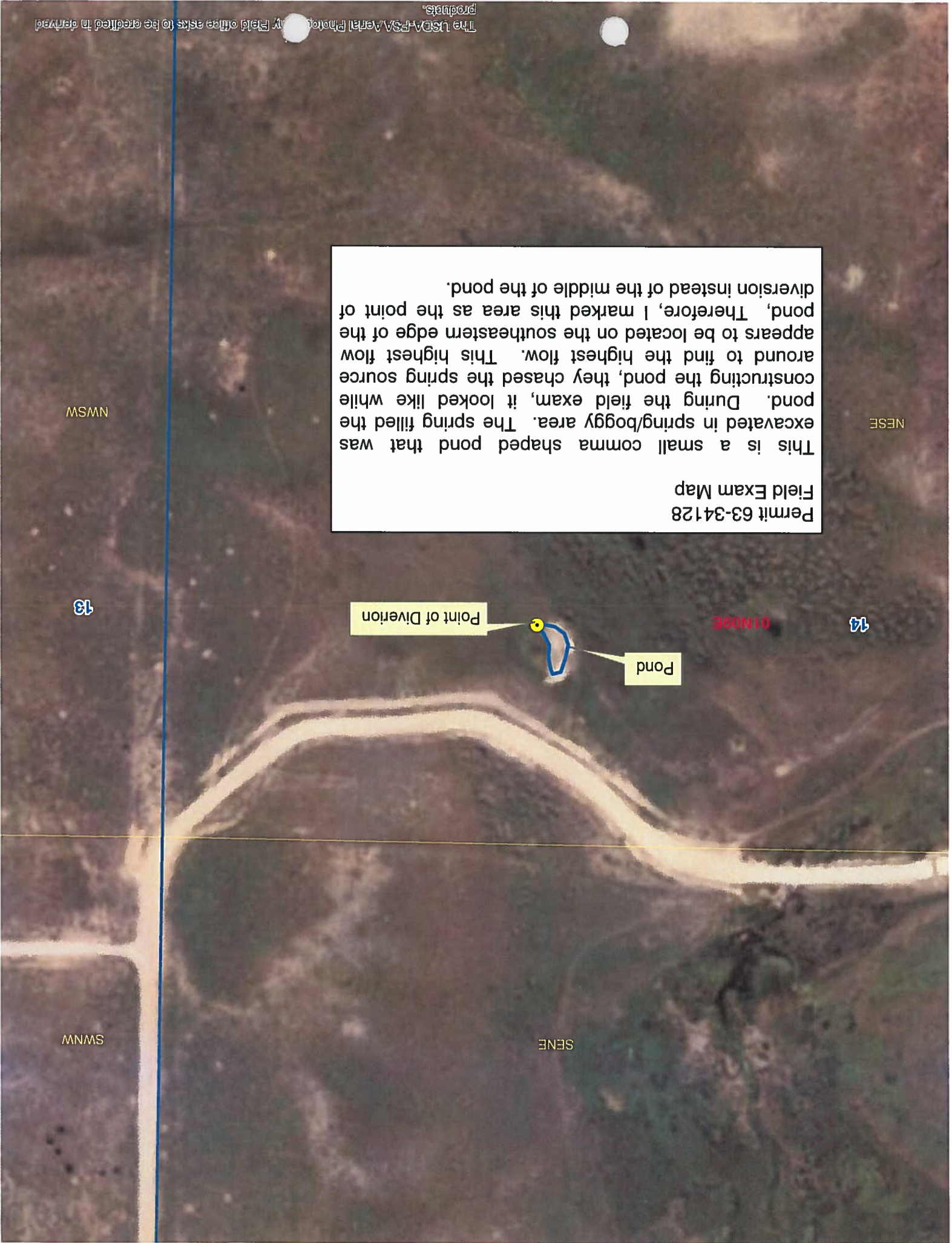
☐ Change P.U. as reflected above ☐ Add P.U. as reflected above ☐ None

Other: < >

J. AUTHENTICATION – DANIEL A. NELSON – STAFF HYDROLOGIST

Field Examiner's Name  Date 10-13-16

Reviewer _____ Date _____



Permit 63-34128
Field Exam Map

This is a small comma shaped pond that was excavated in spring/boggy area. The spring filled the pond. During the field exam, it looked like while constructing the pond, they chased the spring source around to find the highest flow. This highest flow appears to be located on the southeastern edge of the pond. Therefore, I marked this area as the point of diversion instead of the middle of the pond.

Point of Diversion

Pond

01N09E

14

13

MWSW

SWNW

SENE

Total Storage Calculations

FILE NUMBER	63-34127
REVIEWER	Dan Nelson
DATE	10/4/2016

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.)	0.045	"Surface Area" is automatically carried over from the "Seepage Loss" sheet.
Average Pond Depth (FT.)	2	"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)	0.0900	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)	1.6	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)	0.1	The "Estimated Evaporation Loss" is automatically carried over from the "Evaporation Loss" sheet.
Total Volume Required (AF)	1.8	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.

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	63-34127
REVIEWER	Dan Nelson
DATE	10/4/2016

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.

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

Precipitation Deficit

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

Month	mm/day ¹	Days per month	mm/Month
Jan	-2.34	31	0.00
Feb	-1.08	28	0.00
March	0.03	31	0.93
April	2.01	30	60.30
May	3.61	31	111.91
June	4.16	30	124.80
July	5.44	31	168.64
August	4.75	31	147.25
September	2.95	30	88.50
October	1.55	31	48.05
November	-1.98	30	0.00
December	-2.36	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 = 750.38

$$\left(\frac{750.38}{304.8} \right) \times 0.05 = 0.1108 \text{ AFA}$$

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	63-34127
REVIEWER	Dan Nelson
DATE	10/4/2016

User Input
Calculated value
Formula Explanations

INPUTS

Pond Surface Area (AC.)	0.045	AC.
-------------------------	-------	-----

Pond Surface Area (SQ. FT.)	1960	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."

Suggested Seepage Rates for Different Soil Types:

GW, GP, GM, GC, SW, SP and SM (silty sand, sand silt mixtures and gravel mixtures) = **0.2 ft per day**

OL and ML (inorganic silts - very fine sands, silty, or clayey fine sands) = **0.02 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**

MH, OH, PT and 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 by ground water) = **0 ft per day**

PLEASE NOTE: The initial basis for the Suggested Seepage Rates in the table above is found on Page 16 of Seepage from Fish Ponds, Bulletin 599, August 1989 Alabama Agricultural experiment Station, Auburn University, Auburn University Alabama. If you don't know the soil type, please refer to the map provided at the NRCS Web Soil Survey (Tab #1), an ArcMap Soil Classification Map (Tab #1.1), or published NRCS Soil Survey (Tab #1.2). Use "0" if the pond fill relies on the water table.

PHOTOGRAPHER AND DATE OF PHOTOS Daniel A. Nelson 10/4/2016

FILE NUMBER 63-34127



The photo above shows the pond and the heifers using the pond.

The photos below shows point where the top of the spring (southeastern corner of the pond) was excavated to fill the pond. The pond is actually comma shaped pond through the spring area, but it appears as though the majority of the water comes from the southeastern corner of the pond. The pond is only about 0.1 acres in surface area and 2 feet deep. The pond was dug to about 5 feet, but there is only about 2 feet of water in the pond. There is approximately 3 feet of dry ground above the water surface.

