

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 63-34497

Exam Date: April 29, 2025

1. Current Owner:
HARRY L BETTIS PO BOX 187 NAMPA ID 83653-0187
2. Accompanied by: Don Stewart
Phone No: 208-866-5604
Address: 5401 Willow Creek Rd Eagle, ID
Relationship to permit Holder: Foreman of Aikman Ranch, owned by Harry Bettis

3. **SOURCE:**

SOUTH FORK WILLOW CREEK

Tributary

WILLOW CREEK

Method of Determination: In-person field exam, ArcMap DRG data, Statement of Completion

B. OVERLAP REVIEW

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

Water Right No.	Source	Purpose of Use	Basis
63-34498	Willow Creek	Irrigation Storage	Permit

Comments: WR 63-34498 is a complete place of use overlap, appropriating 644 AFA for irrigation storage. This permit is also owned by Harry Bettis. Condition X35 has been placed on WR 63-34497 limiting 63-12361, 63-34498, and 63-34497 to 2060 AFA.

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

Water Right No.	Source	Purpose of Use	Basis
63-34498	Willow Creek	Irrigation Storage	Permit
63-12361	South Fork Willow Creek	Irrigation storage, irrigation from storage, stockwater storage, stockwater from storage	License

Comments: WR 63-34498 and 63-34497 both list a POD located at the dam.

C. DIVERSION AND DELIVERY SYSTEM1. **LOCATION OF POINT(S) OF DIVERSION:**

SOUTH FORK WILLOW CREEK SW¼ NE¼, Sec. 31, Twp 06N, Rge 01E, B.M. GEM County
43.81673, -116.38288

Method of Determination: In-person field exam, OnX GPS

PLACE OF USE: RECREATION 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	
06N	01E	31			X	X									X	X		X	
06N	01E	32									X	X	X	X					

CP

PLACE OF USE: AESTHETIC 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	
06N	01E	31			X	X									X	X		X	
06N	01E	32									X	X	X	X					

CP

Method of Determination:

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.

N/A

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
N/A	N/A	N/A	N/A	N/A	N/A

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
N/A	N/A	N/A	N/A	N/A	N/A	N/A

2. Measurements: No flow measurements were collected at the time of the field exam.

E. FLOW CALCULATIONS

There is no characteristic of flow associated with the system associated with WR 63-34497.

F. VOLUME CALCULATIONS**1. Volume Calculations for Recreation and Aesthetic Storage:**

The reservoir surface area was measured at 55.8 acres, using 2024 esri imagery. I determined 2024 to be the most appropriate year to measure the reservoir surface area since imagery appears to be the fullest for the development period in 2024. I measured what appeared to be the high-water mark of the reservoir. The ranch manager stated that the maximum depth of the reservoir is 65 ft.

Reservoir Capacity:

$$55.8 \text{ acres} * 0.4 * 65\text{ft} = \mathbf{1,450.8 \text{ AFA}}$$

Seepage loss for 48.5 acres on CL soil:

$$55.8 \text{ acres} * 0.003 \text{ ft/day} * 365 \text{ days} = \mathbf{61.1 \text{ AFA}}$$

Evaporative Losses:

$$(190.97 \text{ mm/yr} / 304.8) * 55.8 \text{ acres} = \mathbf{34.9 \text{ AFA}}$$

Total Annual Volume:

$$1,450.8 \text{ AFA} + 61.1 \text{ AFA} + 34.9 \text{ AFA} = \mathbf{1,546.8 \text{ AFA}}$$

G. NARRATIVE/REMARKS/COMMENTS

A permit to appropriate 2060 AFA for recreation and aesthetic use was issued on June 20, 2019. The permit was later amended twice to update condition number three addressing a combined diversion volume. Proof of beneficial use was submitted to the department on February 3, 2025 after the permit was reinstated upon receiving late proof of beneficial use and proper examination fee. An in-person field exam was conducted on April 29, 2025, accompanied by Don Stewart.

Permit 63-34498 is a complete place of use overlap for irrigation storage, appropriating 644 AFA. WR 63-12361 is a license that includes irrigation storage and stockwater storage, overlapping with the place of use of 63-34497. Both permits are also owned by Harry Bettis. Condition X35 was placed on WR 63-34497 limiting 63-12361, 63-34498, and 63-34497 to 2060 AFA for recreation storage, aesthetic storage, and irrigation storage. Condition X35 should be updated according to the licensed volume for WR 63-34497.

No flow measurements were collected at the time of the field exam since there is no diversion rate associated with this right. The depth of the reservoir is estimated to be 65 feet by Don and the surface area of the pond is 55.8 acres measured by the high-water mark shown in ArcGIS 2024 aerial imagery. These values were used in item F to determine the reservoir capacity, evaporative losses, and seepage losses. ArcGIS 2024 esri imagery was the most appropriate to measure surface area, as 2024 is the year with the largest surface area during the development period of WR 63-34497.

Condition 18C was placed on permit 63-34497, requiring the permit holder to provide the department means acceptable to measure the amount of water entering the reservoir and the amount of water released from the reservoir. This is useful for overlapping water rights that include irrigation from storage, to measure an irrigation volume which is not necessary for this right. The reservoir is in a valley and collects run-off from the hills, leading to an inaccurate measurement if the flows were to be measured at the inlet. For these reasons, condition 18C will be removed from the license and the owner is not required to measure the flow at the inlet and outlet of the reservoir. Four staff gages have been installed at various depths of the reservoir to provide accurate depth measurements at all times, meeting condition 222. Condition 01H was replaced with R02, 18B was replaced with R40, and 121 was replaced with 103 per department standards. A lockable device was installed after the field exam and a staff gage to measure the reservoir capacity was repaired after the field exam to meet conditions 01H and 222.

Have conditions of permit approval been met? X Yes _ No

H. RECOMMENDATIONS**1. Recommended Amounts**

Beneficial Use	Period of Use	Annual Volume
RECREATION STORAGE	01/01 to 12/31	1,550 AFA
AESTHETIC STORAGE	01/01 to 12/31	1,550 AFA

Totals: 1,550 AFA

2. Recommended Amendments

____ Change P.D. as reflected above ____ Add P.D. as reflected above X None

____ Change P.U. as reflected above ____ Add P.U. as reflected above X None

I. AUTHENTICATION Kate Englund - Water Resource Agent

Field Examiner's Name Kate Englund Date 08/05/2025

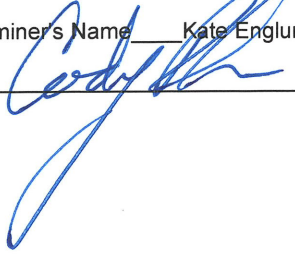
Reviewer  Date 10-28-25



Figure 1 System diagram including place of use outline measured from the high-water mark, point of diversion (hydraulic headgate at dam), and four staff gages used to measure active reservoir level.

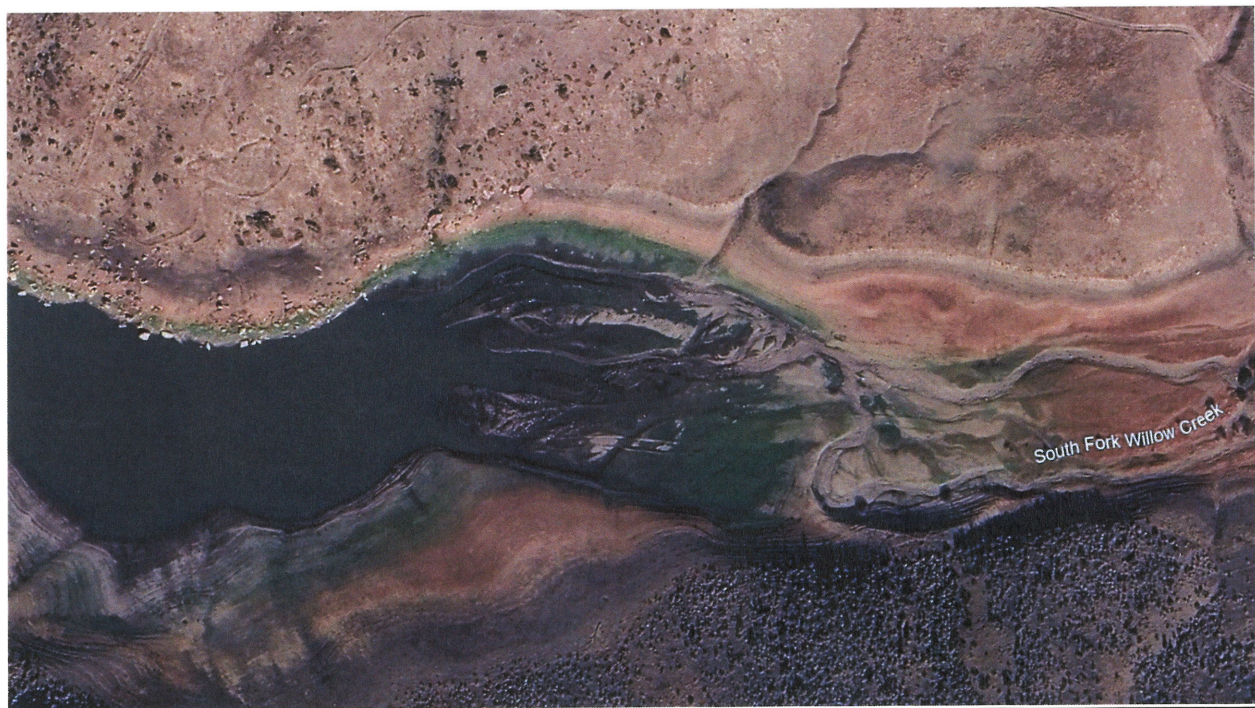


Figure 2 Inlet of reservoir from South Fork Willow Creek. Flow is variable throughout the year, reaching no flow during late summer.



Figure 3 Earthen Dam on the western end of reservoir. Hydraulic headgate is located within the dam.



Figure 4 Staff gages used to measure active reservoir level.



Figure 5 Staff gage used to measure reservoir capacity, at current reservoir level at the time of a dam inspection.



Figure 6 Photo of eastern half of reservoir. Photo taken facing east.



Figure 7 East facing photo taken from the point of diversion (hydraulic headgate). The photo includes a pipe vent, headgate cover, and western end of reservoir.



Figure 8 Photo of hydraulic headgate cover which was replaced after the field exam to install a lockable device.



Figure 9 Hydraulic headgate diversion located on the earthen dam at the west end of the reservoir.



Figure 10 Lockable device installed to the headgate cover after the field exam.

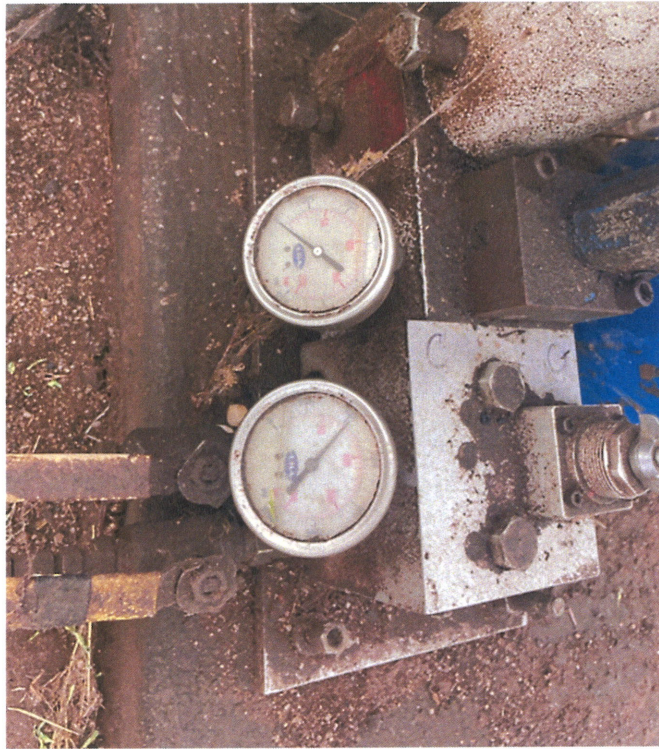


Figure 11 Pressure gages on hydraulic headgate.

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	63-34497
REVIEWER	KE
DATE	7/21/2025

User Input
Calculated value
Formula Explanations

INPUTS

Pond Surface Area (AC.)	48.5	AC.
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Pond Surface Area (SQ. FT.)	2112660	SQ. FT.
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I used the following method to obtain my Soil Classification information:	NRCS Web Soil Survey	
My Soil Classification is	CL	
Suggested Seepage Rate (FT./DAY)	0.0030	FT./DAY

Formula: (Surface Area X Seepage Rate) X 7.48 = Gallons Per Day Loss
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Convert to GPD	47408	GPD
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Total Seepage Loss (AFA)	53.1	AFA
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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.

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	63-34497
REVIEWER	KE
DATE	7/21/2025

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: Emmett 2E

Month	mm/day ¹	Days per month	mm/Month
Jan	0.00	31	0.00
Feb	0.00	28	0.00
March	0.00	31	0.00
April	0.31	30	9.30
May	0.47	31	14.57
June	0.97	30	29.10
July	1.53	31	47.43
August	1.53	31	47.43
September	0.88	30	26.40
October	0.54	31	16.74
November	0.00	30	0.00
December	0.00	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 = 190.97

$$[(190.97 \text{ mm/yr}) \div (\text{convert to feet})] \times (\text{Surface area of pond, in acres}) = \text{Evaporation Loss in Acre Feet}$$

$$(190.97 \div 304.8) \times 48.50 = 30.4 \text{ AFA}$$