

*Should questions arise during the processing of this application please contact:
Norm Young - ERO Resources Corp. (208) 373-7983*

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DEPARTMENT OF
WATER RESOURCES

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No. 72-16625

1. Owner: Christopher W. James Trust and FirstFruits Foundation

Phone No.: 208-879-4560

Current Address: P.O. Box 510, Challis, Idaho 83226

2. Accompanied by: Christopher James

EXAM DATE: June 28, 2007

Address: P.O. Box 510 Challis, Idaho 83226

Phone No.: 208-879-4560

Relationship to Permit Holder: Mr. James is Trustee for the Permit Holders

3. Source: Garden Creek

Tributary to: Salmon River

B. OVERLAP REVIEW

1. Other water rights with the same place of use: 72-106J, 72-109J, 72-4174C and 72-10486C (all for irrigation purposes); 72-16274 and 72-16624 (for domestic purposes).

2. Other water rights with the same point of diversion: 72-106C, 72-106F, 72-106H, 72-106J, 72-109F, 72-109J, 72-10486A, 72-10486C, 72-16729, 72-16730, 72-16731, 72-16732, 72-16733, and 72-16734.

C. DIVERSION AND DELIVERY SYSTEM

1. Point(s) of Diversion:

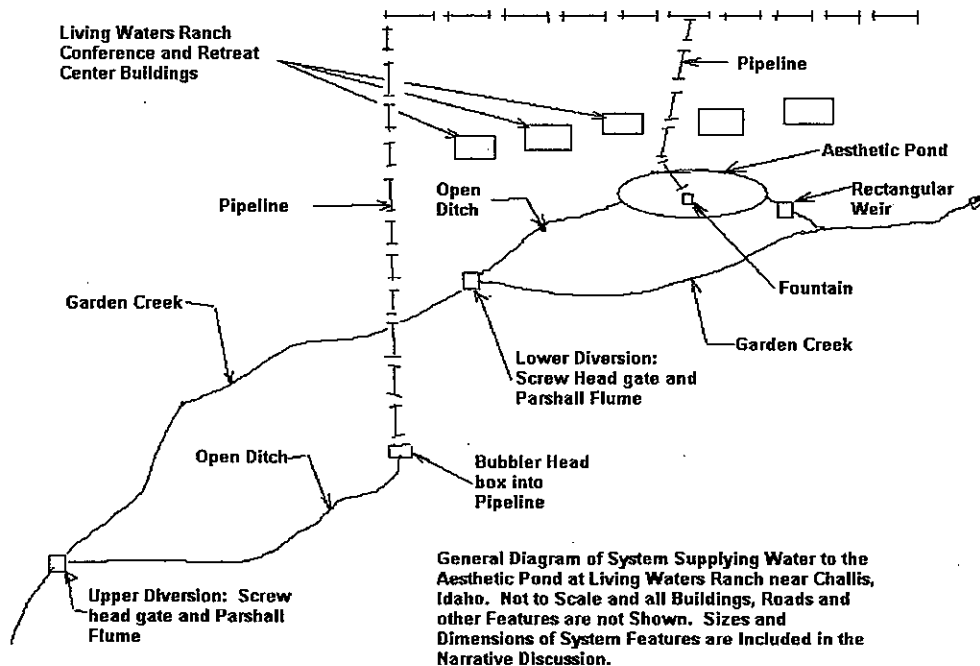
[illegible]

2. Place(s) of Use:

Indicate Method of Determination Survey Plat and GPS

[illegible]

3. **Delivery System Diagram:** Indicate all major components and distances between components. Indicate weir size / ditch size / pipe i.d. as applicable.



Scale: 1" = NTS

☒ Copy of USGS Quadrange Attached Showing location(s) of point(s) of diversion and place(s) of use (required).

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

☒ Photo of Diversion and System Attached

4.

Well or Diversion Identification No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
Lower Diversion	N.A.	N.A.	N.A.	N.A.	14" screw gate to a ditch about 2 ft wide by 18 in deep
Upper Diversion	N.A.	N.A.	N.A.	N.A.	14" screw gate to a ditch about 2 ft wide by 18 in deep

*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
Flume with staff gage	Parshall	N.A.	N.A.	N.A.	12"	N.A.

2. **Measurements:** 0.58 cfs

E. NARRATIVE / REMARKS / COMMENTS

Lower Point of Diversion from Garden Creek (SWNENW Lt 3, Section 2, Township 13N, Range 18E).



Water is diverted from Garden Creek using a rock-lined lead-in channel without a check structure. After leaving the stream channel, the ditch has a 14" screw gate control structure with a spill back to the creek. An IDWR identification tag wired to the structure is No. A0002512. Just below the control gate is a 12" Parshall flume. The measurement on the staff gage at the time of the field visit was 0.28 ft corresponding to a flow of 0.58 cfs (Ref. USBR Water Measurement Manual, Page 274). A GPS measurement made about 50 ft northwest of the control structure read:

WP 272 N44° 29' 25.7" W114° 18' 31.3" 6036 ft elev.

Upper Point of Diversion from Garden Creek (SENESE Section 3, Township 13N, Range 18E).

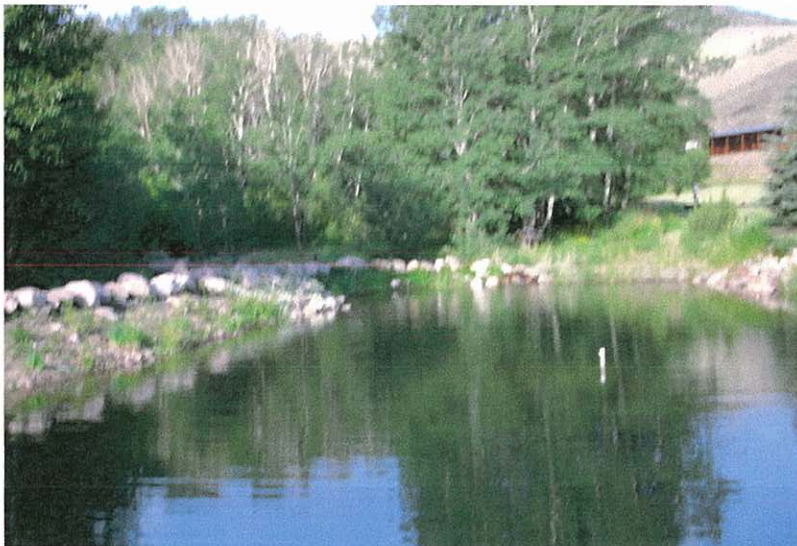


This ditch heads in Garden Creek using a rock check structure reinforced (repaired) with a plastic tarp. The ditch has a 14" screw control head gate and a 12" Parshall flume (photo attached). The reading at the time of the field measurement was 0.2 feet on the installed staff gage corresponding to a flow of 0.35 cfs (Ref. USBR Water

Measurement Manual, Page 274). The ditch follows a steep hillside for about 3/8 mile before entering a buried pipeline through a bubbler control box. Excess flow from the bubbler enters a ditch used to irrigate land in the SWNW Section 2. The buried pipeline provides water for irrigation of land on both the north and south sides of Garden Creek, primarily in the NENW Section 2. Flow is also piped to an aeration fountain in the aesthetic pond. The fountain was not in use at the time of the field visit. A GPS reading taken along the ditch between the control structure and the Parshall flume read:

WP 266 N44° 29' 00.0" W114° 19' 02.4" 6191 ft elev.

Aesthetic pond (NENW (Lot 3) Section 2, Township 13N Range 18E).



The pond size (estimated by pacing) is 90 ft at the downstream end, 110 ft long and 30 ft at the upstream end. It has steep sides and a depth estimated at more than 6 feet in some places and an average depth of about 5 ft. The volume is estimated to be $((90 + 30)/2)(110)(5) = 33,000$ cubic feet or approximately 3/4 acre-foot. The ditch entering and leaving the pond is about 18 to 24 inches wide by about 12 to 18 inches deep. The depth of flow at the time of the field

visit was about 4 inches. The pond discharges over an open spillway with about a 4-ft high water fall. The spillway is not equipped with flashboards or other mechanisms to control the height of storage in the pond, but could easily be adapted to do so. A rectangular weir with a 12-inch throat is located in the outflow ditch about 30 ft below the pond. The reading on the staff gauge was 0.3 ft at the time of the field visit. This corresponds to a flow rate of 0.55 cfs according to the table for standard suppressed rectangular weirs in the USBR Water Measurement Manual (Page 260). Mr. James indicated that this flow rate is typical of the flow through the pond for the past several months. The water in the pond was clear without moss or algae growth. Fish were not observed in the pond. The discharge from the pond enters Garden Creek at a point about 150 ft below the pond. A GPS reading taken at a point on the crest left of the spillway read:

WP 270 N44° 29' 27.6" W114° 18' 23.6" 6009 ft elev.

Garden Creek in the reach receiving the return flow from the pond is an estimated 15 feet wide and 6 inches deep. The average velocity was visually estimated at 2 feet per second for an estimated discharge of about 15 cfs at this location at the time of the field visit.

Have conditions of permit approval been met? X yes ___ no

F. FLOW CALCULATIONS

X Additional Computation Sheets Attached

Measured Method:

At the time of the field visit water was being diverted into and through the pond from only the lower diversion. The measurement on the staff gauge of the 12" Parshall flume located at this point of diversion at the time of the field visit was 0.28 ft corresponding to a flow of 0.58 cfs (Ref. USBR Water Measurement Manual, Page 274). A measurement of 0.55 cfs using the 12" rectangular weir located downstream of the pond supported this measurement.

The upper diversion can supply water to the pond through a pipeline supplying water to a fountain installed in the pond. Water was being diverted through the upper diversion at the time of the field visit for irrigation using the ditch and pipeline system, but the fountain was not operating at the time of the field visit. The discharge rate from the pipeline through the fountain and into the pond has been estimated at 0.23 cfs (see attached notes).

G. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation: N.A.

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

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

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

2. Volume Calculations for Other Uses:

The volume of the pond is estimated to be about 3/4 acre foot. Because the pond can be filled within 24 hours at the authorized diversion rate of 0.4 cfs, a storage component is not requested.

The annual volume diverted through the pond at the authorized diversion rate for the authorized season of use of April 1 to October 31 (214 day season) is:

$$\underline{(0.4 \text{ cfs})(1.9835 \text{ af/cfs-day})(214 \text{ days/year}) = 169.8 \text{ af/year}}$$

H. RECOMMENDATIONS

1. Recommended Amounts

Beneficial Use	Period of Use From To	Rate of Diversion Q (cfs)	Annual Volume V (afa)
Aesthetic	04/01 10/31	0.4 cfs	169.8 afa
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
Totals:		<u>0.4 cfs</u>	<u>169.8 afa</u>

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 ☐ Other

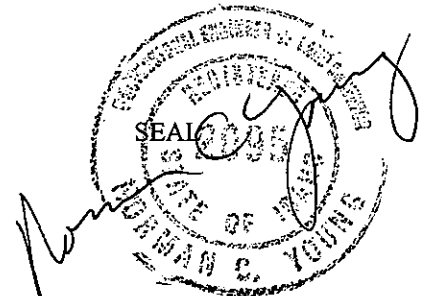
I. AUTHENTICATION

Field Examiner's Name Norman C. Young
Certificate Number 8-128

Date July 18, 2007

Reviewer _____

Date _____



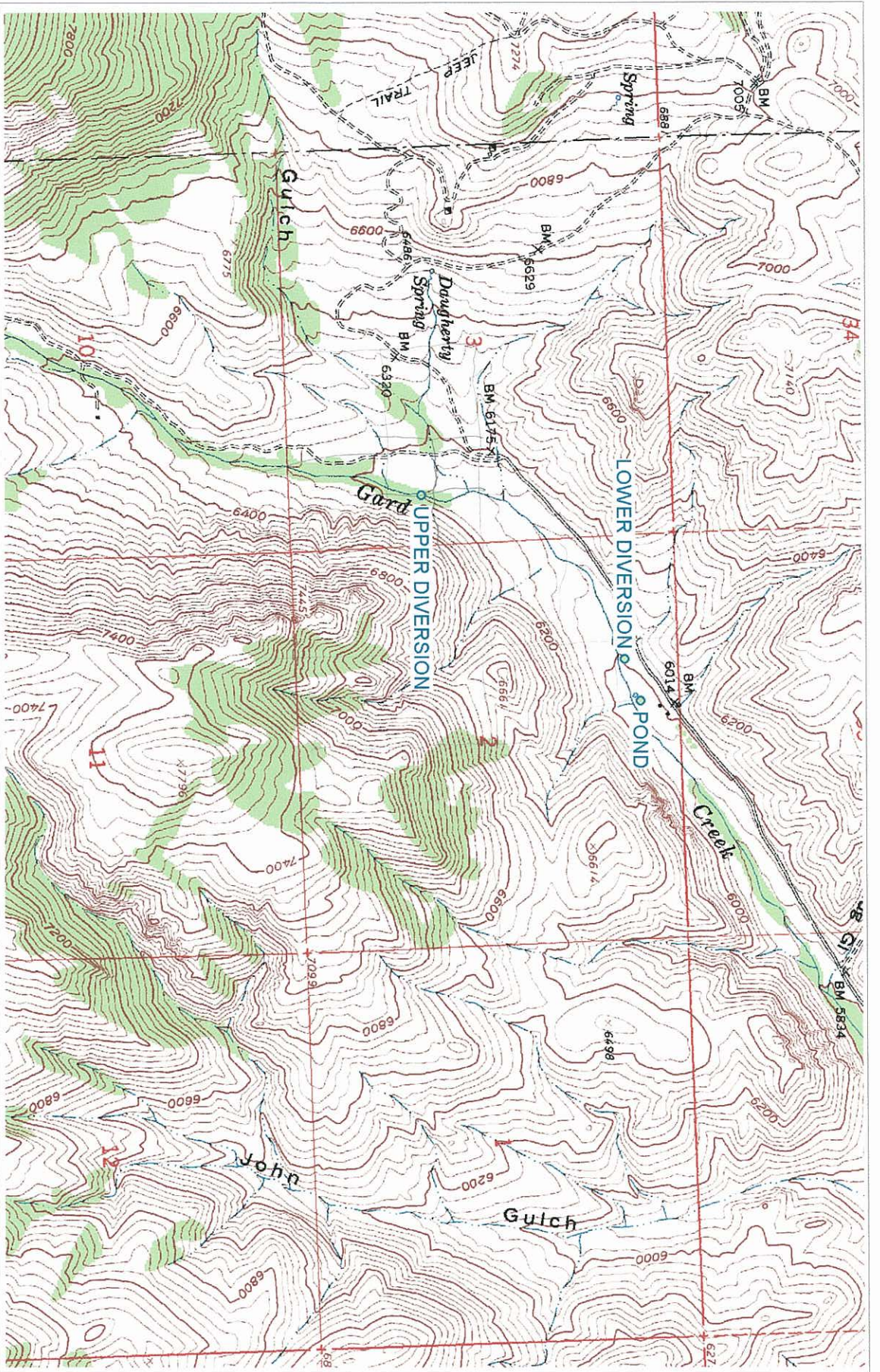


Figure 1. Living Waters Ranch Diversions and Pond Locations
(T13N, R18E, Sections 2 and 3, Custer County)

Living Waters Ranch
PO Box 1190
Challis, ID 83226
208-879-2888

Hedco, Inc.
Attn. Jack Hammond

June 8, 2004

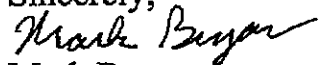
Dear Jack,

I put together the info you requested to help me come up with an estimate of the water use of our fountain.

The diameter of the pipe for the fountain is 2 inches. The length of the pipe from the ball valve to the end of the fountain cap is approximately 126 feet. The elevation from the ball valve to the end of the fountain cap is the same. The fountain cap is a galvanized threaded metal cap. We drilled a center hole in the middle of the cap with a 1/2 inch drill bit. We drilled eight holes around the side of the cap with a 3/16 drill bit. The water pressure in the irrigation system is 80 lbs. When the ball valve is fully opened the center fountain spray shoots 20 feet into the air. We normally operate the fountain with the center spray shooting five feet into the air. The ball valve at normal levels is open about one quarter of the way.

I hope this is all the info that you will need to give me an estimate of the water use that the fountain uses. Thanks for your assistance.

Sincerely,



Mark Bryan

Manager, Living Waters Ranch

Living Waters Ranch (LWR)

6/9/04

Flow Estimate for Pond Fountain

JSH

Given: Pipe Diameter = 2"
 Pipe Length = 126' (from Ball Valve)
 System Pressure = 80 psi (185 ft. of Head) at Ball Valve
 Cap Orifices = 1/2" Top of Cap
 " " = 8-3/16" Sides of Cap

Analysis: $Q = 19.636 K d^2 h^{1/2}$ where $d/D < 0.3$ ($0.5/2 = 0.25 < 0.3$ O.K.)

Solution: Assume $Q \approx 100$ gpm

$$H_f = \frac{2.44 \text{ ft}}{100 \text{ ft}} \times 126' = 3.07 \text{ ft}$$

$$\therefore h = 185' - 31' = 154 \text{ ft.} \quad K = 0.82 \text{ for Drilled Hole}$$

$$Q = 19.636 (0.82) (0.5)^2 (154)^{1/2}$$

$$Q = 49.95 \text{ gpm for } 1/2" \text{ Top Orifice}$$

$$Q = 19.636 (0.82) (0.1875)^2 (154)^{1/2} (8)$$

$$Q = 56.20 \text{ gpm for } 8 \text{ } 3/16" \text{ Side Orifices}$$

$$Q = 106.15 \text{ gpm}$$

$$\therefore H_f = \frac{27.2 \text{ ft}}{100 \text{ ft}} \times 126' = 34.3 \text{ ft} \rightarrow h = 185' - 34' = 151 \text{ ft.}$$

$$Q = 19.636 (0.82) (0.5)^2 (151)^{1/2} = 49.46 \text{ gpm}$$

$$Q = 19.636 (0.82) (0.1875)^2 (151)^{1/2} (8) = 55.65 "$$

$$\text{Total } Q = 105.11 \text{ gpm O.K.}$$

Maximum Flow with Valve Open: Use 105 gpm (0.234 CFS)