

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 75-14030

Exam Date: 10/3/2012

1. Current Owner: Vessey Fishing & Trading Company LLC
PO Box 981865
Park City UT 84098
2. Accompanied by: Jerry Myers
Phone No: 208.394.2126
Address: 194 Indian Creek Road
North Fork, Idaho 83466
Relationship to Permit Holder: Ranch Manager

3. **SOURCE**

Spring

TRIBUTARY

Indian Creek

B. OVERLAP REVIEW

1. Other water rights with the same place of use: none
2. Other water rights with the same point of diversion: none

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

SPRING NE1/4NE1/4NE1/4 Sec. 12, Twp24S, Rge 19E, LEMHI County

Method of Determination: GPS and Visual Inspection.

2.

PLACE OF USE:

Twp Rge Sec

RECREATION and RECREATION STORAGE

	NE				NW				SW				SE				Totals
24N 19E 12	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	0.23
	X																

PLACE OF USE:

Twp Rge Sec

DIVERSION TO STORAGE

	NE				NW				SW				SE				Totals
24N 19E 12	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	
	X																

Total Acres: 0.23

Method of Determination: GIS Mapping and Visual Inspection.

3. YES Delivery System Diagram Attached (required). Indicate all major components and distances between components. Indicate weir size/pipe as applicable.
- YES Map Attached Showing Location(s) of point(s) of diversion and place(s) of use (required). Scale must be 1:24,000 or greater.

YES Aerial Photo AttachedYES Photo of Diversion and System Attached**D. FLOW MEASUREMENTS**X Additional Computation Sheets Attached

1. Measurements: Stop watch and five gallon bucket: 20 gallons per minute or 0.04 cfs

E. FLOW CALCULATIONS

Manning's Measurement 0.32 cfs

The field exam measurement yielded 0.04 cfs. However, the measurement was taken late in the season when there was very low flow. In this case the Manning's Measurement is a better indicator of the actual year around flow.

The field examiner noted that the water delivery pipe appeared to flow half full. The Manning's calculations are based on a half full pipe. The calculations were done using the Excel spreadsheets available on Wnet. The Wetted Perimeter and X-Sectional Flow Calculator values were used in the Manning's Equation Calculator for Flow Rate in a Circular Conduit Flowing Full.

Total recommended rate of diversion is limited by the permit: 0.30 cfs

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation: NONE

2. Volume Calculations for Other Uses:

$$\frac{\text{Manning's } 0.32 + \text{Measured } 0.04}{2} = \underline{0.18 \text{ cfs}}$$

The average between the Manning's measurement and the bucket measurement, taken during the field exam, is the average between the maximum capacity flow to the pond and the low water flow late in the season. This average was used to determine the annual acre feet.

Recreation:

$$(0.18) \times (365) \times (1.9835) = \underline{130 \text{ AFA}}$$

Recreation Storage:

$$\underline{11 \text{ feet average depth} \times 0.23 \text{ acres} = 2.53 \text{ AF}}$$

Evaporation Loss Calculation: 0.46 AFA

(see attached sheet)

Seepage Loss Calculation 4.2 AFA

(see attached sheet)

$$2.53 \text{ (pond volume)} + 0.46 \text{ (evaporation loss)} + 4.2 \text{ (seepage loss)} = 7.19 \text{ AF}$$

Permit volume 4.4 AF

Total Recommended acre feet per year is 4.4 AF per year

$$\text{Recreation flow through: } 130 \text{ (annual acre feet)} - 4.4 \text{ (pond volume)} = \underline{125.6 \text{ Recreation}}$$

G. NARRATIVE/REMARKS/COMMENTS

A spring located in T24N R19E Section 12, NENENE, Lemhi County, supplies water for a pond. Water flows from the spring to the west, southwest through a beaver dam complex and along a dirt road for approximately 0.18 miles long (972 feet). The pipe travels under Indian Creek approximately 100 feet southwest of the spring and flows over the creek a bridge just upstream from the pipe discharge

location. From the pipe discharge, water travels in a small channel another 38 feet to the pond. Water discharges to Indian Creek about 80 feet from the pond.

Water flows to the pond year around. However, there is stand pipe next to the pipe opening that is a shutoff handle. This handle turns an underground gate if there is ever a need to turn off the water supply to the pond.

Water rights 75-4379C and 75-4377 irrigate the land around the pond but do not flow into the pond, and water from the spring is not used to irrigate this land.

According to the permit the spring is located in T24N R19E Section 12, NW ¼ NE ¼ NE ¼. The GPS location and observation show the spring to be located in T24N R19E Section 12, NE ¼ NE ¼ NE ¼.

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

H. RECOMMENDATIONS

1. Recommended Amounts

<u>BENEFICIAL USE</u>	<u>PERIOD OF USE</u>	<u>DIVERSION RATE</u>	<u>ANNUAL VOLUME</u>
Recreation	01/01 to 12/21	0.30 CFS	125.6 AF
Recreation Storage			4.4 AF
Diversion to Storage		0.30 CFS	
	<u>Totals:</u>	0.30 CFS	125.6 AF 130

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

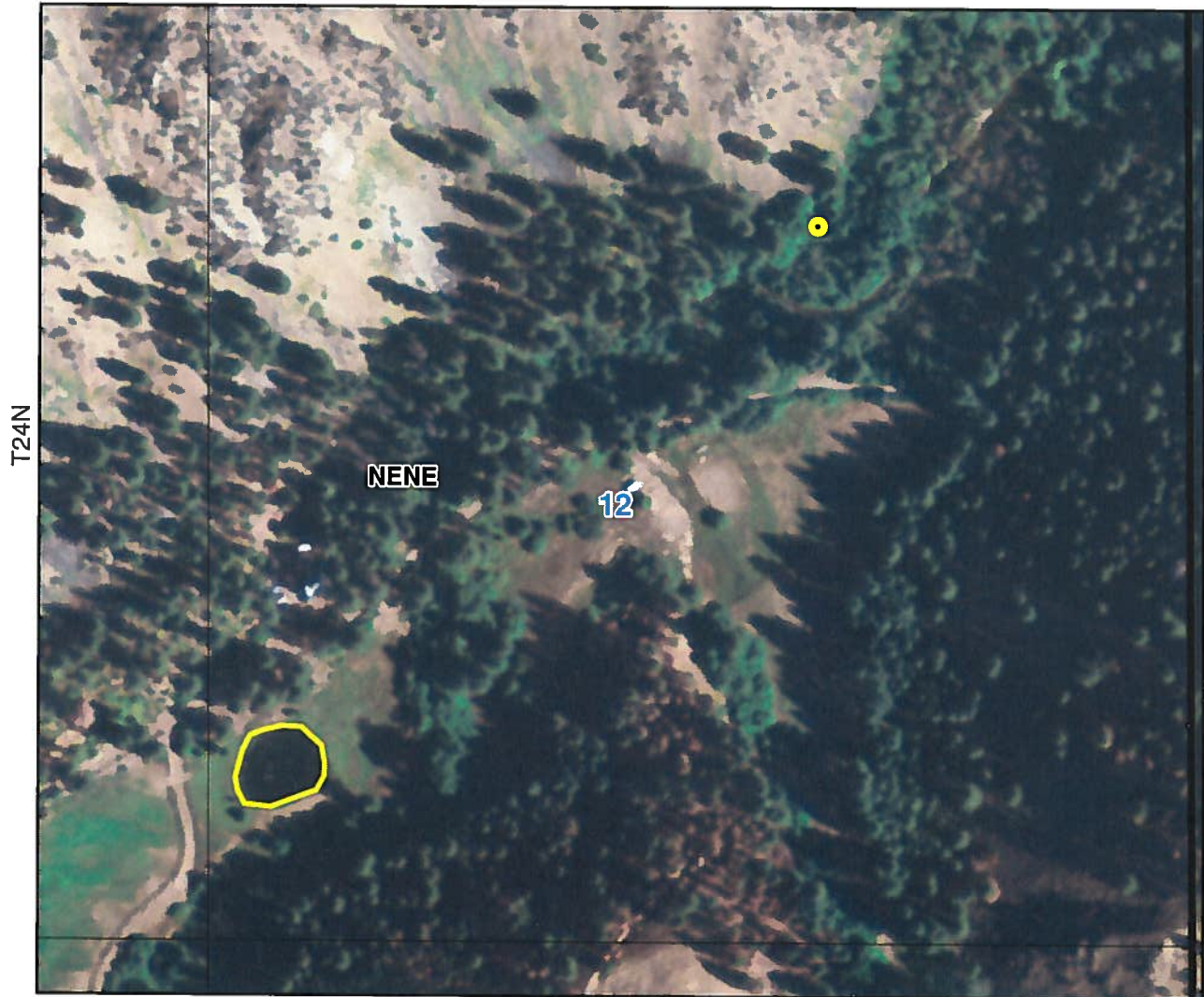
Field Examiner's Name Sandra Thiel Date _____
 Reviewer _____ Date _____

State of Idaho
Department of Water Resources

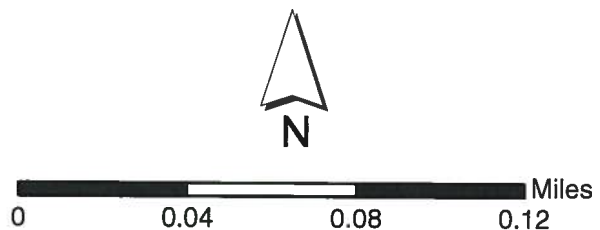
Attachment To Water Right License 75-14030

This map depicts the RECREATION place of use boundary for this water right at the time of this approval and is attached to the approval document solely for illustrative purposes.

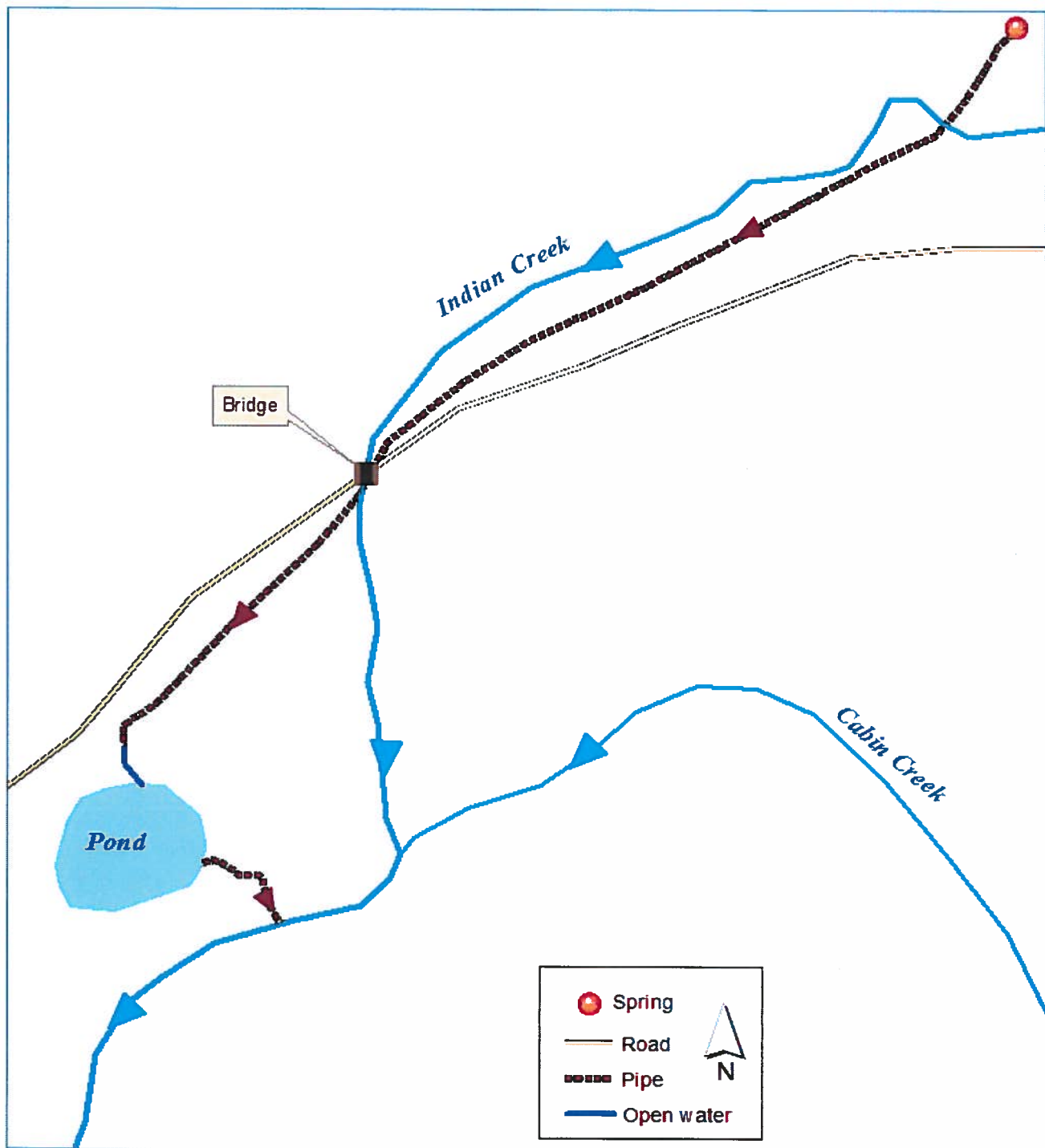
R19E



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



Water Distribution System Water Right 75-14030



The spring located in T24N R19E Section 12, NENENE (tag A0019121), Lemhi County, supplies water for a pond. Water flows from the spring to the west, southwest through a beaver dam complex and along a dirt road for approximately 0.18 miles long (972 feet). The pipe travels under Indian Creek approximately 100 feet southwest of the spring and flows over the creek at the bridge labeled in the image above. From the pipe discharge a small channel carries water another 38 feet to the pond. Water discharges to Indian Creek about 80 feet from the pond.

Water flows to the pond year around. However, the stand pipe with the blue base is a shutoff handle for turning an underground gate is there is a need to turn off the water supply to the pond.

Water Distribution System Water Right 75-14030



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MEMORANDUM

TO: Water Rights File 75-14030
FROM: Sandra Thiel
DATE: October 25, 2012
SUBJECT: Condition of approval: *Use of water under this right shall be non-consumptive*

Listed under the Conditions of Approval for water right permit 75-14030 is the condition that *use of the water under this right shall be non-consumptive*. However, the pond is 0.23 acres and evaporation is estimated at 0.46 AFA.

The application for permit 75-14030 was received by the Department on November 13, 2001. At that time the Salmon-Clearwater moratorium was in place. This moratorium limited the Department's ability to grant new water rights for consumptive use in basin 75, the Salmon River basin. Ponds with a surface area of less than 0.5 acres were considered de minimis and permits for these smaller storage rights were granted during the moratorium. A note in the Application for Permit State Office Analysis, dated February 13, 2002, indicated that the pond had less than 0.5 acre feet of surface area. The de minimis pond size enabled the Department to process the application.

The condition requiring use to be non-consumptive will be removed at licensing because it is contradictory to our current view of ponds having a consumptive use due to evaporation and possibly seepage losses. Removing the condition is not an enlargement of use because the use was developed as intended by the permit.

Manning's Equation Calculator for Flow Rate in Any Open Channel

S = 0.0494 ft/ft

n = 0.009 manning's coefficient

A = 0.05 area (ft²)

WP = 0.53 wetted perimeter (ft)

R = 0.09 hydraulic radius (ft)

Q = 0.32 flow rate (CFS)

Channel Slope

Slope Options

☐ Manual Entry ☒ Slope Calculator

Slope Calculator

Rise = 49.67 feet

Run = 1005.44 feet

Slope, S = 0.0494 ft/ft

Channel Material, (n):

plastic (pvc, abs)

**Wetted Perimeter and X-Sectional Flow Calculator for
Flow Rate in a Circular, Rectangular, V-Notch, or Trapezoidal Open Channel**

Select Channel Type from Pull Down Menu

Circular

Input Parameters

Depth = 0.17 feet (depth of the flow of water)

Radius = 0.17 feet (radius of circular channel)

Input Parameter 3 = Not Used

Input Parameter 4 = Not Used

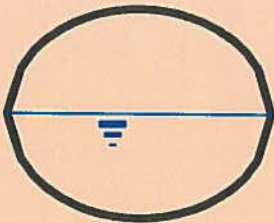
Cross Sectional Area of Flow

A = 0.05 square feet

Wetted Perimeter

WP = 0.53 feet

Channel Type Sketch



Precipitation Loss Calculation

Date: October 25, 2012
Prepared by: Sandra Beer Thiel
Water Right No: 75-14030

P = Precipitation
ET= Evapotranspiration
 P_d = Precipitation deficit
 P_d = P- ET

P_d

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

P_d = convert to AFA: (mm/yr) / (convert to feet) x # acres =
606 / 304.8 x 0.23
(From ET Idaho)

P_d = 0.46 AFA



* Use the Precipitation Deficit for 'P' value

FILE NAME 75-14030
REVIEWER -----Sandy Thiel
DATE ----- 24-Oct-12

MAXIMUM DAILY WATER USE FOR DOMESTIC PURPOSES

INPUTS

NOTES/RESULTS

FORMULAS

POND

SURFACE AREA (SQFT) ----- 10057.28

SEEPAGE RATE (FT/DAY) ----- 0.05

SUGGESTED CONVERT TO GPD ----- 3761 GPD

0 = NATURALLY FILLED FROM GW, OR LINED

0.5 = CLAY SOILS

1.5 = LOAMS

3.0 = GRAVELS

FORMULA: $SA * SEEPAGE LOSS = POI$

CONVERSION: 1 CUFT = 7.48 G

NOTE: ASSUMES CONTINUOUS REPL

TOTAL Seepage Loss (AFA) ----- 42 AFA

TOTAL = FILL RATE + EVAP + SEEPAG

How to calculate Seepage with known change in storage. Example.

Field examiner stated that it takes 3 day's (72 hours) to fill the 0.5 AF pond at 0.1 cfs

First, we need to figure out how long it takes to fill a 0.5 acre-foot pond if you are continuously diverting 0.10 cfs:

$$AF = (\# \text{ day's})(1.9835)(\text{rate cfs})$$

$$0.5 \text{ AF} = (\# \text{ day's})(1.9835)(0.1 \text{ cfs})$$

Solve for # Days :

$$2.5 = \# \text{ Days to fill pond w/o accounting for evaporation or seepage}$$

If the examiner reported that it takes 3 day's to fill the pond, but we just found that it should only takes 2.5 day's to fill the pond at 0.1 cfs, we must be losing some water via evaporation and seepage.

We need to find out how much we are losing through evaporation and seepage by calculating the volume diverted in the 1/2 day difference:

$$AF = (1.9835)(0.5 \text{ day's})(0.10 \text{ cfs})$$

$$0.10 = \text{AF lost through evaporation and seepage}$$

The soil type is unknown so we used a estimated number of 0.05 since we think that the pond is partially sealed.

FILE NUMBER: 75-14030



The spring collection point shown above is located in T24N R19E Section 12, NENENE (tag A0019121).



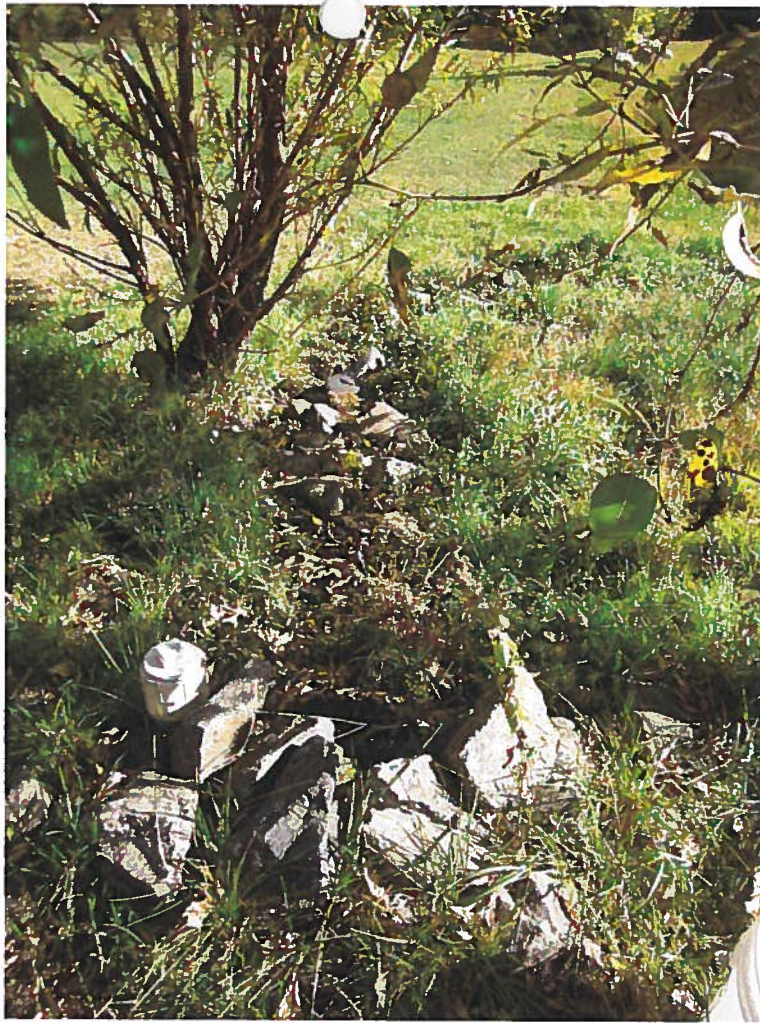
Pipe through beaver dam complex



A smaller pipe is encased in the pipe shown in this photo



The smaller pipe shown in the photo supplies water to the pond. The larger pipe originates upstream in Indian Creek and provides water to the hydropower turbine downstream.



A four inch pipe below the rocks supplies water to the pond through the small channel.

The photo below shows the pipe to the right of the bucket. Water flows to the pond year around. However, the stand pipe with the blue base is a shutoff handle for turning an underground gate if there is a need to turn off the water supply to the pond.





The water flows down the channel and into the pond at the boxed area shown above.



The pond has an outflow in the upper left that discharges to Indian Creek in the valley below