

STATE OF IDAHO  
DEPARTMENT OF WATER RESOURCES  
BENEFICIAL USE FIELD REPORT

**A. GENERAL INFORMATION**

**Permit No:** 97-7376  
**Exam Date:** 06/09/1999

1. Current Owner:  
WESLEY WALRAVEN PO BOX 21 NORDMAN ID 83848-0021
2. Accompanied by: WESLEY WALRAVEN  
Phone No: 208-443-0234  
Address: SAME AS ABOVE  
Relationship to permit Holder: PERMIT HOLDER

3. **SOURCE:**  
FOX CREEK

**Tributary**  
KALISPELL CREEK

**Method of Determination:** Arcmap and DRG

**B. OVERLAP REVIEW**

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

Water Right No.	Source	Purpose of Use	Basis

Comments: \_\_\_\_\_

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

Water Right No.	Source	Purpose of Use	Basis

Comments: \_\_\_\_\_

**C. DIVERSION AND DELIVERY SYSTEM**

1. **LOCATION OF POINT(S) OF DIVERSION:**

FOX CREEK NW¼ SW¼, Sec. 21, Twp 61N, Rge 05W, B.M. BONNER County

Method of Determination: Map and GPS. POD from Fox Creek location -117°00.010, 48°37.278.

**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	
61N	05W	21											X						

Method of Determination: Arcmap and Field Exam.

3.

Delivery System Diagram Attached (required). Indicate all major components and distances between components.  
☒ 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.

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

☒ 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					

**D. FLOW MEASUREMENTS**

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
NONE						

2. Measurements: N/A

**E. FLOW CALCULATIONS**

☒ Additional Computation Sheets Attached

Measured Method: Calculated flow using Manning's Flow Calculation, worksheet attached. Calculation resulted in 2.77 cfs (FULL PIPE), but field exam showed pipe at POD was at ½ FULL condition. Utilizing addition Manning Flow Calculations for ½ Full conditions (separate worksheet), slope values were taken from initial calculations worksheet to compute the resulting 1.11 cfs diversion rate.

**F. VOLUME CALCULATIONS**

1. Volume Calculations for irrigation: N/A

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

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

$$V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} =$$

2. Volume Calculations for Other Uses:

See attached pond analysis sheet.

**G. NARRATIVE/REMARKS/COMMENTS**

An initial field exam was performed on 6/9/1999, and upon licensing review it was identified there was a lack of supporting documentation to license. As such, a second field exam was performed to update file with current property owner and permit owner Wesley Walraven on 07/10/2019. The exam showed one ponds that was being fed by Fox Creek, being used by applicant for recreational purposes.

The application for permit authorized a DIVERSION TO STORAGE rate of 2.0 cfs. At time of field exam water flowed from POD to pond using a 10 inch PVC pipe that ran 650 ft with minimal slope. Using arcmap DRG layer, area from POD to pond is in a flat basin, and approximately 5 feet elevation change in entire run was determined. The pipe was subsurface, with no way of taking flow measurements. It was noted the pipe at POD was only half full. Using 2 ea Manning's Equations to incorporate rise/run factors and 10 inch PVC pipe diameter, a diversion rate of 2.77 cfs was calculated for a FULL PIPE condition. As applicant stated and field exam verified, pipe only pulled water from creek at a HALF-PIPE full condition. As a result, the diversion to storage rate of 1.1 cfs was determined using ½ full pipe condition worksheet, and 1.11 cfs will be applied to license.

The pond has a surface area of 0.5 acres with a max depth of 9 feet, an average depth of 3.6 feet, an estimated seepage rate of 0.5 af, and an estimated evaporation rate of 0.3 af. The pond was traced out using arcmap 2015 imagery and has an earthen dam, but no head gate. Water is fed from Fox Creek to the pond, and the pond has a high water outflow pipe located in the pond that returns water downstream. Pond analysis tool was used to determine the annual volume and seepage/evaporation rates for the pond. At time of permitting, 24 af was applied to permit. Based on pond development and current pond analysis sheet calculations, the annual volume equals 2.6 af. The license will be issued with an annual volume of 2.6 af for recreation storage, but there is no maximum diversion volume applied to license.

At time of licensing, the permitted POU and POD were found to be inaccurate, see below:

POD: issued on permit = 61N05W21SESW  
 POD: verified at time of licensing = 61N05W21NWSW  
  
 POU: issued on permit = 61N05W21SESW  
 POU: verified at time of licensing = 61N05W21SWSW

An Application for Amendment was initiated, and mailed with cover letter to applicant.

Conditions 01M and 18B were removed from licensing as they are no longer needed. Condition 219 was added to describe the pond features using a pond analysis sheet. Condition 220 was added to describe storage of water by total capacity and total surface area. Condition 004 was added to describe property right of way limitations. There are no overlap concerns.

Have conditions of permit approval been met? ☒ 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>
RECREATION STORAGE	1/01 to 12/31		2.6 AF
DIVERSION TO STORAGE	1/01 to 12/31	1.11 CFS	

**Totals:** 1.11 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

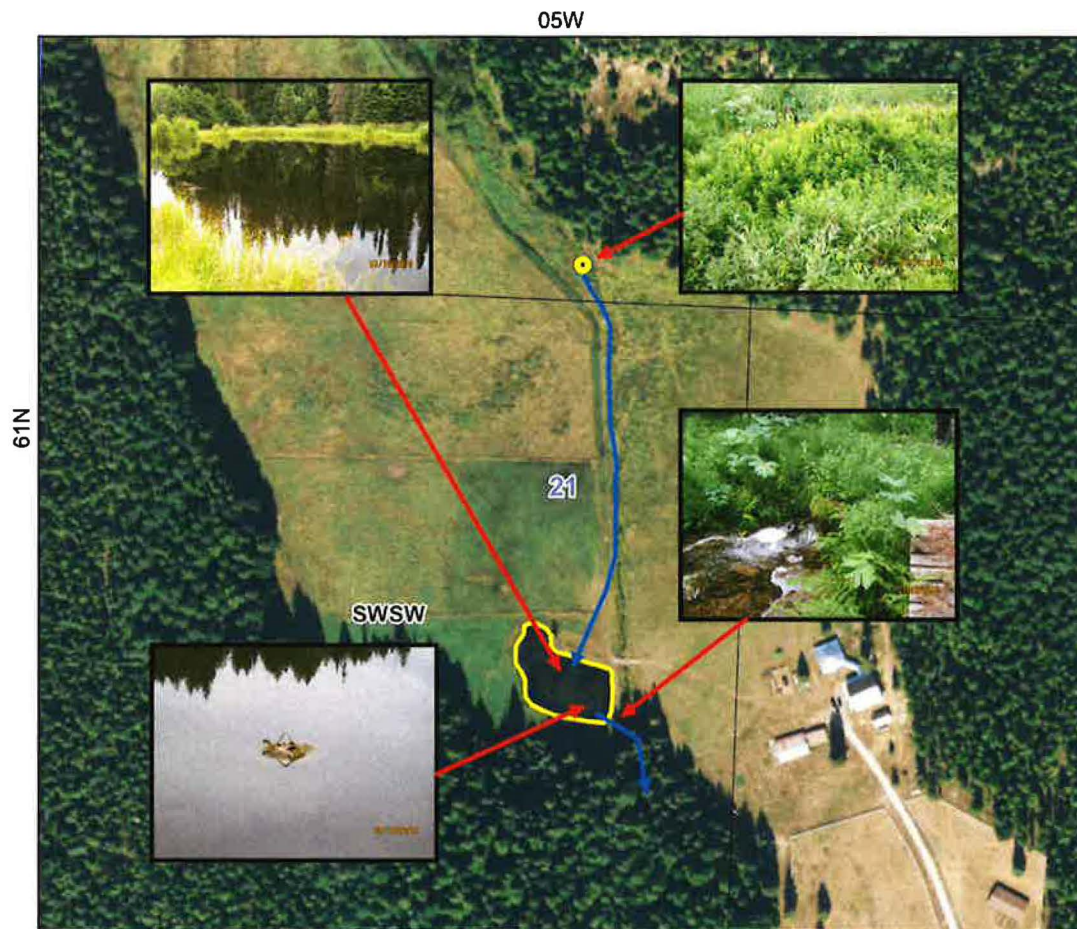
**I. AUTHENTICATION** Luke Bates - Water Resource Agent

Field Examiner's Name Adm Fink Date 6/30/2020

Reviewer [Signature] Date 5/6/2020

State of Idaho  
Department of Water Resources  
**Attachment to Field Exam**  
97-7376

RECREATION STORAGE system diagram.



- 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	97-7376
REVIEWER	Luke Bates
DATE	4/21/2020

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.)	3.6	"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)	1.8	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. <b>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.</b>
Multiple Fill Volume Above Initial Fill to Fulfill From Storage Needs- "Multiple Fills" (AF)	0	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). <b>Note: You must have a "From Storage" component exceeding the initial fill on the permit to include a volume in this space.</b>
Estimated Seepage Loss (AF)	0.5	The "Estimated Seepage Loss" is automatically carried over from the "Seepage Loss" sheet.
Estimated Evaporation Loss (AF)	0.3	The "Estimated Evaporation Loss" is automatically carried over from the "Evaporation Loss" sheet.
Total Volume Required (AF)	2.6	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.

WR 97-7376

MANNING EQUATION WORKSHEET FOR 10 INCH DIAMETER PVC PIPE, WITH 5 INCHS OF WATER  
FLOWING AT TIME OF FIELD EXAM (HALF-FULL PIPE CONDITION)

DIVERSION RATE DERIVED = **1.11 CFS**

This engineering calculator determines the Flow within a partially full pipe (&1/2 full) using the Manning equation. This calculator can also be used for uniform flow in a pipe, but the Manning roughness coefficient needs to be considered to be variable, dependent upon the depth of flow.

**Partially Full Pipe Flow Calculations - U.S. Units**

II. Calculation of Discharge, Q, and average velocity, V  
for pipes more than half full

**Instructions:** Enter values in blue boxes. Calculations in yellow

**Inputs**

Pipe Diameter, D =  in  
Depth of flow, y =  in

(must have  $y \geq D/2$ )

Full Pipe Manning  
roughness,  $n_{full}$  =   
Channel bottom  
slope, S =  ft/ft

**Calculations**

$n/n_{full}$  =   
Partially Full Manning  
roughness, n =

**Calculations**

Pipe Diameter, D =  ft  
Pipe Radius, r =

Circ. Segment Height, h =  ft

Central Angle, q =  radians  
Cross-Sect. Area, A =  ft<sup>2</sup>

Wetted Perimeter, P =  ft  
Hydraulic Radius, R =  ft  
Discharge, Q =  cfs  
Ave. Velocity, V =  ft/sec

pipe % full  $[(A/A_{full}) * 100\%]$  =

**Manning's Equation Calculator for Flow Rate in a Circular Conduit Flowing Full**

$S = 0.0077$  ft/ft  
 $n = 0.009$  manning's coefficient  
 $d = 10.0$  pipe diameter (inches)  
 $D = 0.83$  pipe diameter (feet)  
 $r = 0.42$  pipe radius (feet)  
 $A = 0.55$  area (ft<sup>2</sup>)  
 $WP = 2.62$  wetted perimeter (ft)  
 $R = 0.21$  hydraulic radius (ft)

**$Q = 2.77$  flow rate (CFS)**

**Channel Slope**

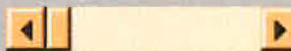
Slope Options



Manual Entry



Slope Calculator

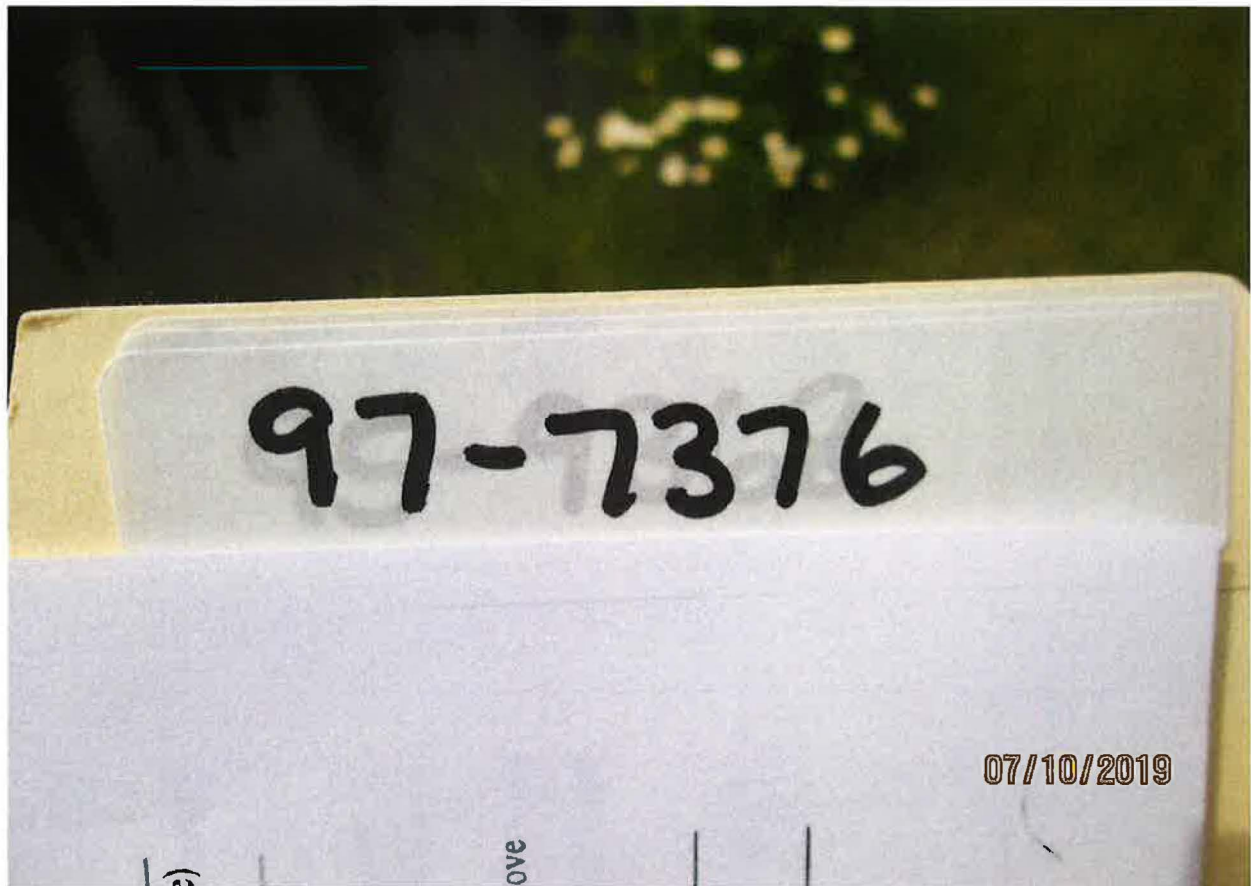
**Slope Calculator**Rise =  feetRun =  feetSlope,  $S = 0.0077$  ft/ft**Pipe Material, (n):**

plastic (pvc, abs)

**Pipe Diameter (inches)**

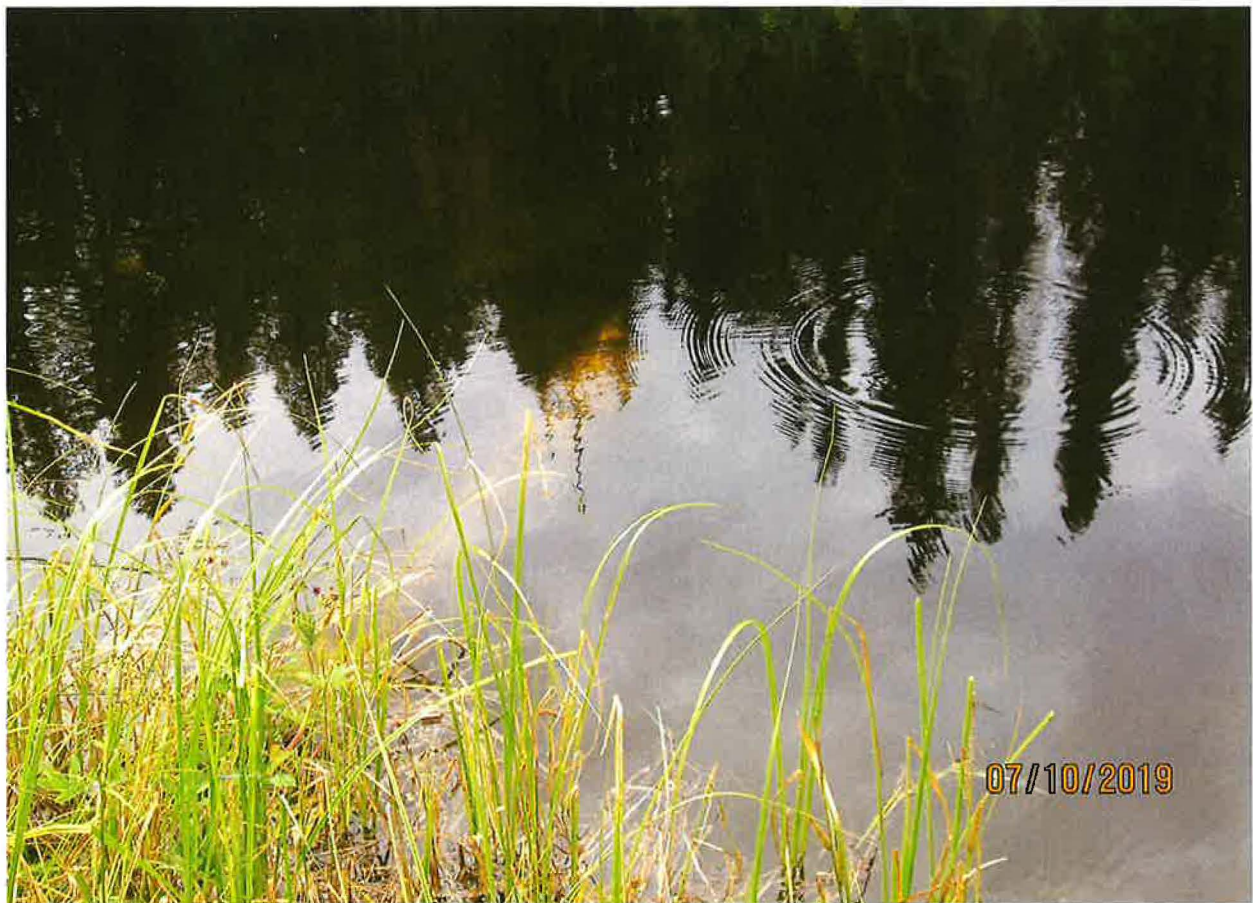
10.0 inches





UNNAMED STREAM POD HIDDEN UNDER OVERGROWN SERVICE BUSHES





INFLOW FROM POD TO POND



POND POU





POND POU







OUTFLOW PIPE TO RETURN WATER TO CREEK



POND POU





OUTFLOW FROM POND TO CREEK