

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 96-9550
Exam Date: 08/06/2020

1. Current Owner:
IDAHO DEPT OF FISH & GAME 2885 W KATHLEEN AVE COEUR D ALENE ID 83815
2. Accompanied by: Miles Benker
Phone No: 208-790-3181
Address: Same as above
Relationship to permit Holder: Permit Holder's representative

3. **SOURCE:**
FISH CREEK
UNNAMED STREAM
GROUND WATER

Tributary
COCOLALLA CREEK
SINKS

Method of Determination: Arcmap and DRG.

B. OVERLAP REVIEW

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

Water Right No.	Source	Purpose of Use	Basis
96-4551	GROUND WATER	STOCKWATER	STATUTORY CLAIM
96-4552	COCOLALLA CREEK	STOCKWATER	STATUTORY CLAIM

Comments: Rights 96-4551 and 96-4552 are both statutory claims owned by Idaho Department of Transportation. The water rights use ground water and Cocolalla Creek water respectively for stockwater purposes that overlap this right's POU in NWNE ¼¼ 40 acre tract, section 19. As this right's water use is designated as a wetland restoration area, no stockwater use will be authorized in the future, and there is no concern for overlap between 96-4451, 96-4552, and this right.

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:**

FISH CREEK SE¼ NW¼, Sec. 19, Twp 55N, Rge 02W, B.M. BONNER County (pond 4, -116°37.370, 48°06.149)
GROUND WATER NE¼ NW¼, Sec. 19, Twp 55N, Rge 02W, B.M. BONNER County (pond 6)
UNNAMED STREAM NE¼ NW¼, Sec. 19, Twp 55N, Rge 02W, B.M. BONNER County (pond 1, -116°37.371, 48°06.364)
GROUND WATER NE¼ NW¼, Sec. 19, Twp 55N, Rge 02W, B.M. BONNER County (pond 1)
GROUND WATER NW¼ NE¼, Sec. 19, Twp 55N, Rge 02W, B.M. BONNER County (pond 2)
GROUND WATER NW¼ NE¼, Sec. 19, Twp 55N, Rge 02W, B.M. BONNER County (pond 3)
GROUND WATER SE¼ NW¼, Sec. 19, Twp 55N, Rge 02W, B.M. BONNER County (pond 4)
GROUND WATER SE¼ NW¼, Sec. 19, Twp 55N, Rge 02W, B.M. BONNER County (pond 5)
UNNAMED STREAM NE¼ NW¼, Sec. 19, Twp 55N, Rge 02W, B.M. BONNER County (pond 6, -116°37.370, 48°06.149)

Method of Determination: Field Exam and GPS; 6 ponds are influenced by individual groundwater PODs located within the pond high water mark. Pond 1 has a concrete headgate POD, GPS point listed above. Pond(s) 4 and 6 have rock weir PODs, GPS point listed above.

PLACE OF USE: WILDLIFE STORAGE, RECREATION STORAGE, and FIRE PROTECTION 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	
55N	02W	19		X			X			X									

Method of Determination: Field exam, Arcmap aerial imagery, and Ducks Unlimited Cocolalla Lake: Wetland and Creek Restoration Project DU Project No. US-ID-79-1.

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 1:24,000 or greater.

X

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

X

X Photo of Diversion and System Attached

X

4.

Well or Diversion ID No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
NONE					

D. FLOW MEASUREMENTS

1.

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

2. Measurements: N/A

E. FLOW CALCULATIONS

Measured Method: N/A

F. VOLUME CALCULATIONS

1. Volume Calculations for irrigation: N/A

$$V_{IR} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) =$$

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

$$V = \text{Smaller of } V_{IR} \text{ and } V_{DR} =$$

2. Volume Calculations for Other Uses:

See the attached 6ea pond analysis worksheets.

G. NARRATIVE/REMARKS/COMMENTS

Field exam performed on 7/28/2020 with the applicant's representative, Miles Benker, showed six (6) ponds with associated wetland areas using groundwater sources in each pond, an unnamed stream, and Fish Creek water for multiple storage beneficial uses. Each pond is influenced from within the high water line by groundwater, resulting in one groundwater POD per pond for wildlife, recreation, and fire protection storage uses. Pond No.6 was constructed as an instream pond, with a rock weir POD allowing water to discharge downstream to pond No.1. Pond No.1 has a primary concrete headgate POD that enables water level control within the large wetland impoundment area, and which releases flow downstream toward Cocolalla Lake; pond No.1 also has two earthen spillways that allow storage water to flow into co-located wetland impoundment areas but are not considered PODs. In total, there are 6ea groundwater PODs, and 3ea surface water source PODs that were developed in during construction of the Idaho Fish and Game's Cocolalla Lake: Wetland and Creek Restoration Project DU Project No. US-ID-79-1. As the 9 PODs developed are either instream flow or groundwater influencing pond storage, there is no diversion rate applied to this license.

During the field exam, it was identified that permit approved pond No.7 was not developed, resulting in the removal of one groundwater POD and water use in the SWNE (¼¼) of Twp 55N, Rge 02W, Section 19 during licensing review. Six ponds were developed within the POU, and provide multiple storage beneficial uses. A pond analysis worksheet was compiled for each of the ponds as annotated below:

WATER RIGHT 96-9550 POND ANALYSIS WORKSHEET RESULTS FOR 13 EA PONDS							
Pond Name	Surface Area (ac)	Max Depth (ft)	Average Depth (ft)	Pond Capacity (af)	Seepage Loss (af)	Evaporation Loss (af)	Total Volume Required (af)
No.1	2.4	4	2.5	6	0	0.6	6.6
No.2	0.9	4.0	3.0	2.7	0	0.6	3.3
No.3	0.5	4.0	3.0	1.5	0	0.6	2.1
No.4	0.6	4.0	3.0	1.8	0	0.6	2.4
No.5	1.1	4.0	3.0	3.3	0	0.6	3.9
No.6	0.7	4.0	3.0	2.1	0	0.6	2.7
TOTALS	6.2			17.4	0	3.6	21.0
WILDLIFE STORAGE, RECREATION STORAGE, and FIRE PROTECTION STORAGE ANNUAL VOLUME =							21.0

Following the field exam, Mr. Benker provided a final report for the wetland project, which was used in the process of licensing this permit. The 6.2 acres of pond storage and wetland impoundment correlates between the Arcmap POU shapes designated for pond storage and the final report data. The average depths for each pond's storage was slightly deeper than normally designated using the equation (max depth x 0.4 = avg depth) due to the area around each pond that provides shallow water impoundment for wetland riparian areas. The wildlife storage, recreation storage, and fire protection storage beneficial uses are not additive, and the maximum diversion volume recommended for licensing equals the sum of six pond's total volume = **21.0 af**.

Conditions 082 and 26A were removed from the permit during licensing review. Conditions 219 and 220 were updated to reflect pond analysis size and volume data. All other conditions on permit will remain on the license. Overlap concerns: rights 96-4551 and 96-4552 are both statutory claims owned by Idaho Department of Transportation. The water rights use ground water and Cocolalla Creek water respectively for stockwater purposes that overlap this right's POU in NWNE ¼¼ 40 acre tract, section 19. As this right's water use is designated as a wetland restoration area, no stockwater use will be authorized in the future, and there is no concern for overlap between 96-4451, 96-4552, and this right. There are no additional overlap concerns for this right.

Have conditions of permit approval been met? X Yes No

H. RECOMMENDATIONS

1. Recommended Amounts

<u>Beneficial Use</u>	<u>Period of Use</u>	<u>Annual Volume</u>
WILDLIFE STORAGE	01/01 to 12/31	21.0 AF
RECREATION STORAGE	01/01 to 12/31	21.0 AF
FIRE PROTECTION STORAGE	01/01 to 12/31	21.0 AF

Totals: 21.0 AF

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

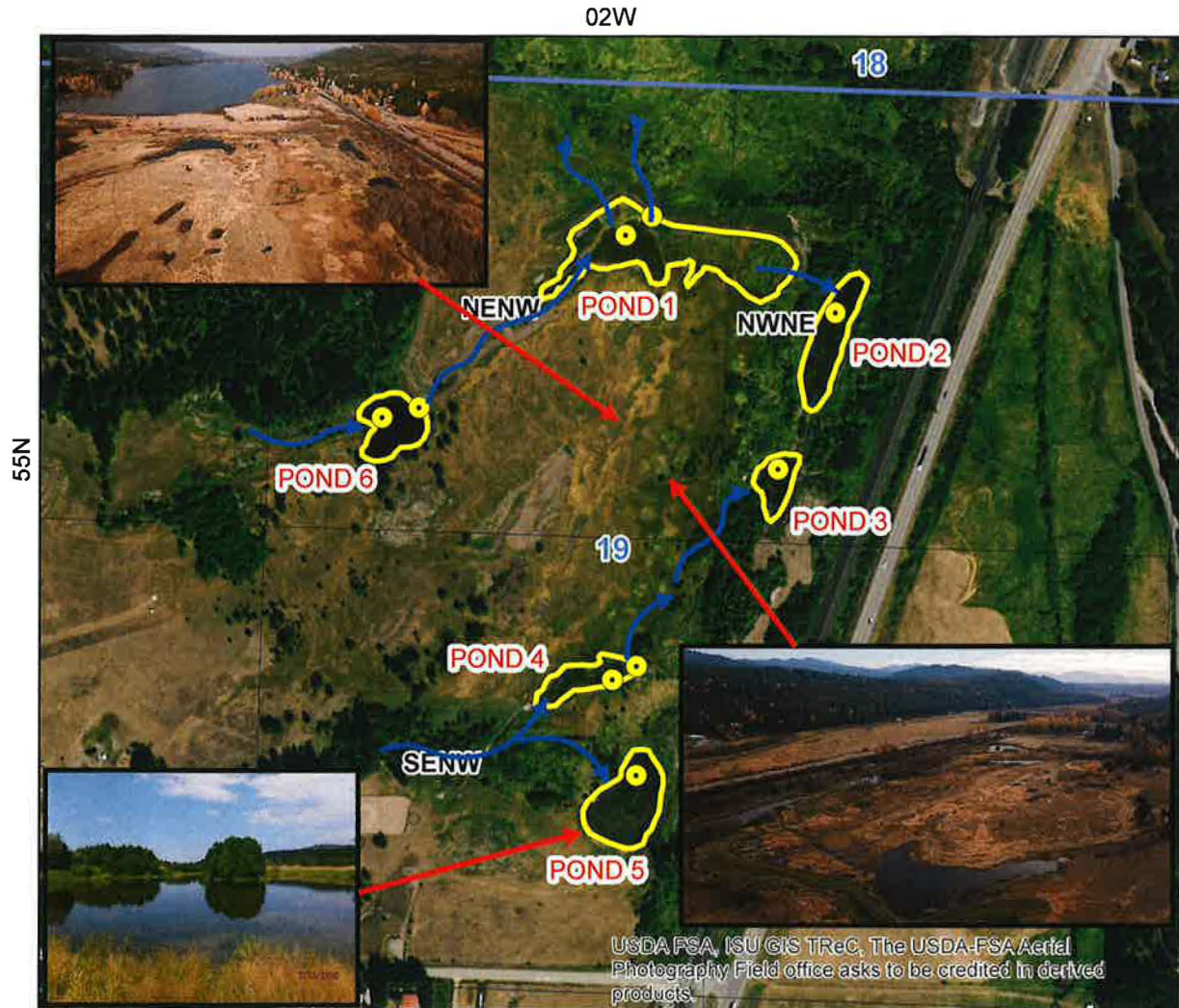
Luke Bates - Water Resource Agent

Field Examiner's Name JSB Date 12/8/2020
Reviewer Adam Fink Date 12/11/2020

Reviewer Adrian F. Smith Date 12/11/2020

State of Idaho
Department of Water Resources
Attachment to Field Exam
96-9550

WILDLIFE STORAGE, RECREATION STORAGE, and FIRE PROTECTION STORAGE system diagram.



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

0 0.05 0.1 0.2 Miles

NOTE: Reference Final Report, Cocolalla Lake:
Wetland and Creek Restoration Project DU
Project No. US-ID-79-1 for site specific photographs.



Total Storage Calculations		
FILE NUMBER	96-9550	This spreadsheet has been designed by Idaho Department of Water Resources to estimate the total seepage, evaporation and fill capacity required for a pond.
REVIEWER	Luke Bates	
DATE	12/7/2020	
POND 1		User Input Calculated value Formula Explanations
Print Page to PDF		
Surface Area (AC.)	2.4	"Surface Area" is automatically carried over from the "Seepage Loss" sheet.
Average Pond Depth (FT.)	2.5	"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)	6.0	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)	0	The "Multiple Fill Volume Above Initial Fill" is the acre-feet of water required to meet a from storage component if the from storage 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)	0.6	The "Estimated Evaporation Loss" is automatically carried over from the "Evaporation Loss" sheet.
Total Volume Required (AF)	6.6	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.

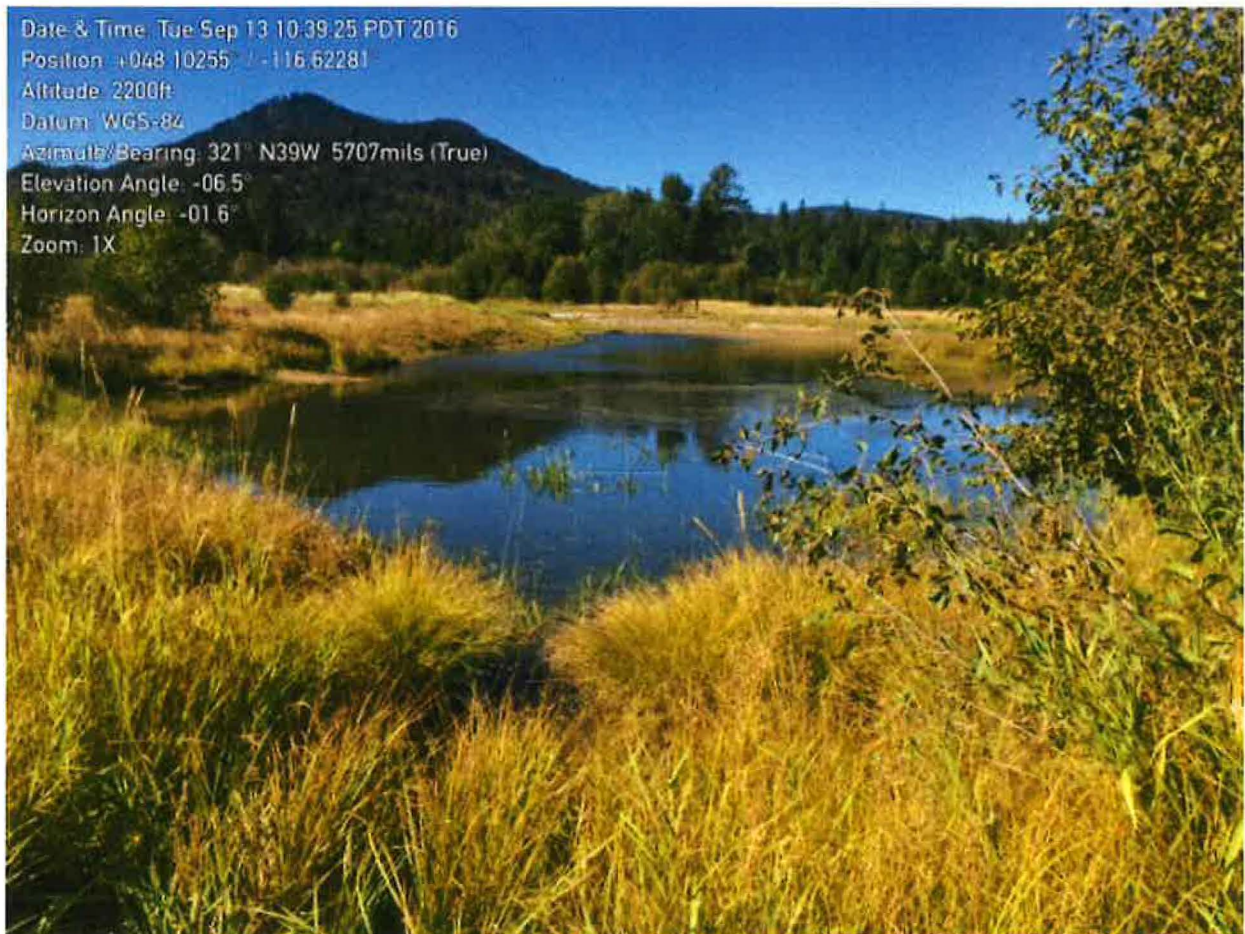
Total Storage Calculations		
FILE NUMBER	96-9550	This spreadsheet has been designed by Idaho Department of Water Resources to estimate the total seepage, evaporation and fill capacity required for a pond.
REVIEWER	Luke Bates	
DATE	12/7/2020	
POND 2		User Input Calculated value Formula Explanations
Print Page to PDF		
Surface Area (AC.)	0.9	"Surface Area" is automatically carried over from the "Seepage Loss" sheet.
Average Pond Depth (FT.)	3	"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)	2.7	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)	0	The "Multiple Fill Volume Above Initial Fill" is the acre-feet of water required to meet a from storage component if the from storage 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)	0.6	The "Estimated Evaporation Loss" is automatically carried over from the "Evaporation Loss" sheet.
Total Volume Required (AF)	3.3	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.

Total Storage Calculations		
FILE NUMBER	96-9550	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
REVIEWER	Luke Bates	
DATE	12/7/2020	
POND 3		Print Page to PDF
Surface Area (AC.)	0.5	"Surface Area" is automatically carried over from the "Seepage Loss" sheet.
Average Pond Depth (FT.)	3	"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)	1.5	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)	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). 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)	0.6	The "Estimated Evaporation Loss" is automatically carried over from the "Evaporation Loss" sheet.
Total Volume Required (AF)	2.1	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.

Total Storage Calculations		
FILE NUMBER	96-9550	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
REVIEWER	Luke Bates	
DATE	12/7/2020	
POND 4		Print Page to PDF
Surface Area (AC.)	0.6	"Surface Area" is automatically carried over from the "Seepage Loss" sheet.
Average Pond Depth (FT.)	3	"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. 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.
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Estimated Seepage Loss (AF)	0.0	The "Estimated Seepage Loss" is automatically carried over from the "Seepage Loss" sheet.
Estimated Evaporation Loss (AF)	0.6	The "Estimated Evaporation Loss" is automatically carried over from the "Evaporation Loss" sheet.
Total Volume Required (AF)	2.4	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.

Total Storage Calculations		
FILE NUMBER	96-9550	This spreadsheet has been designed by Idaho Department of Water Resources to estimate the total seepage, evaporation and fill capacity required for a pond.
REVIEWER	Luke Bates	
DATE	12/7/2020	
POND 5		User Input Calculated value Formula Explanations
Print Page to PDF		
Surface Area (AC.)	1.1	"Surface Area" is automatically carried over from the "Seepage Loss" sheet.
Average Pond Depth (FT.)	3	"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)	3.3	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.
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Estimated Evaporation Loss (AF)	0.6	The "Estimated Evaporation Loss" is automatically carried over from the "Evaporation Loss" sheet.
Total Volume Required (AF)	3.9	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.

Total Storage Calculations		
FILE NUMBER	96-9550	This spreadsheet has been designed by Idaho Department of Water Resources to estimate the total seepage, evaporation and fill capacity required for a pond.
REVIEWER	Luke Bates	
DATE	12/7/2020	
POND 6		User Input Calculated value Formula Explanations
Print Page to PDF		
Surface Area (AC.)	0.7	"Surface Area" is automatically carried over from the "Seepage Loss" sheet.
Average Pond Depth (FT.)	3	"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)	2.1	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.
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Total Volume Required (AF)	2.7	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.



Final Report

Cocolalla Lake: Wetland and Creek Restoration Project DU Project No. US-ID-79-1

PROJECT LOCATION:
Lat. 48° 6' 12" N, Long. 116° 37' 23" W
Bonner County, ID

OWNER/ MANAGER:
Idaho Department of Fish and Game

PLANNERS:
Tina Blewett, Ducks Unlimited, 509-828-7257
Kathy Cousins, Idaho Fish and Game, 208-769-1414

ENGINEERS:
Brian Heck, PE, Ducks Unlimited, 509-922-6497
Brian Marker PE (Idaho), Ducks Unlimited

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1. PROJECT INFORMATION:

DU PROJECT #:	US-ID-79-1
DU PROJECT NAME:	Cocolalla Lake Enhancement
PROJECT START DATE:	10/04/2011
PROJECT END DATE:	05/30/2017
PROJECT STATUS:	Completed
REPORTING PERIOD:	Final Report
LOCAL DU CONTACT:	Tina Blewett, 509-828-7257 (office/mobile)
IDFG CONTACT:	Kathy Cousins, 208-769-1414 (office)
INVOICING CONTACT AT DU:	Kamala Netter, 360-885-2011 (office)

DEQ SUBGRANT AGREEMENT SUMMARY:

SUBGRANT #:	S525
EFFECTIVE DATE:	09/29/2014
EXPIRATION DATE:	12/31/2018
SUBGRANT AMOUNT:	\$96,938.00
LOCAL MATCH:	\$92,500.00
TOTAL PROJECT BUDGET:	\$189,438.00

The match does not include work done on initial feasibility, conceptual design, permitting, and grant writing by IDFG, DU, and the NRCS.

2. EXECUTIVE SUMMARY

This project is an agriculture-to-wetland restoration. The project activities will benefit many wetland dependent species including waterfowl, as well as numerous trout species, improve the water quality in the creek by decreasing temperature and reducing sediment, and improve structural complexity for wildlife. Accomplishments included: 1) wetland and wildlife habitat restoration and enhancements, 2) water quality improvements, 3) Fish Creek channel restoration, and 4) fish habitat/passage enhancements. Channel restoration involved increasing the sinuosity of the Fish Creek channel to capture water that is currently being diverted to the railroad ditch. Channel design included floodplain reconnection to allow overbank flow during spring runoff. Installation of rock drop structures repaired existing head cut problems. Shallow water wetland habitats were restored and enhanced. Control measures were taken to reduce the quantity of non-native vegetation, and encourage the growth of native species.

3. PROJECT BACKGROUND, OBJECTIVES, AND EXPECTED BENEFITS

BACKGROUND: Cocolalla Lake is an 805-acre public lake situated 15 miles south of Sandpoint in Bonner County, Idaho. The Idaho Department of Fish and Game (IDFG) and Ducks Unlimited (DU) partnered to accomplish wetland and creek restoration on approximately 155 acres on a Wildlife Management Area (WMA) wildlife mitigation parcel at the southern end of the lake. This area is accessed from South Cocolalla Loop Road east of State Highway 95. Historical conditions at the project site included portions of Fish Creek which had been straightened and ditched, and wetlands which were drained and subsequently farmed for decades. The meadow had several large areas dominated by a monoculture of reed canarygrass (*Phalaris arundinacea*), a common cultivated hay grass in this region, which has little value for waterfowl or other wildlife. As a result of drainage, the water table had been lowered, compromising the wetland and pollutant filtration function of the property. Currently, Fish Creek is diverted to the east side of the property which prevents spring sheetflow, water infiltration, and wetland recharge across the WMA segment; the current Fish Creek

channel braids and much of the flow diverts and is lost to the railroad drainage ditch to the east of the property. Additionally, there are also multiple head cuts present along the channel of Fish Creek.

Previous restoration on the property included the removal of livestock, and installation of ditch plugs on an existing agricultural drain to slow the flow of drainage and improve aquifer and wetland recharge. This also decreased sediment and nutrient load to Cocolalla Lake.

WATER QUALITY: Cocolalla Lake is listed on Idaho's draft 2012 Integrated Report as not supporting the cold water aquatic life beneficial use due to dissolved oxygen and total phosphorus. The lake has a surface area of 805 acres and a mean depth of 27.7 feet. Nutrient pollution in the lake causes seasonal dissolved oxygen sags in the water column, and periodic blooms of blue-green algae. In April, 2001, the U.S. Environmental Protection Agency (EPA) approved the Clark Fork/Pend Oreille Subbasin Assessment and Total Maximum Daily Load (TMDL). The TMDL set a numeric target for total phosphorus at 8 µg/L, which would achieve the State of Idaho dissolved oxygen criteria of 6 mg/L, and restore conditions back to fully supporting beneficial uses of the lake. Meeting the 8 µg/L target would require an 89 percent reduction in total phosphorus. Fish Creek, a tributary to Cocolalla Lake, is listed on Idaho's 2010 Integrated Report as not supporting the cold water aquatic life and salmonid spawning beneficial uses due to sediment and temperature. A source analysis of pollutants to Cocolalla Lake makes Fish Creek accountable for 10 percent of the phosphorus load and 24 percent of the sediment load to Cocolalla Lake. A total phosphorus load reduction of 593 lbs/yr in Fish Creek is required in the Cocolalla Lake phosphorus TMDL. The Fish Creek sediment TMDL requires a 34.5 percent sediment load reduction (528 tons/yr) to restore the aquatic life and salmonid spawning beneficial uses in Fish Creek. In April, 2008, the EPA approved the Pend Oreille Lake Tributaries Temperature TMDLs: Addendum to the Pend Oreille Lake Subbasin Assessment and TMDL. In this TMDL shade reduction requirements of 16 to 31 percent are required along the entire Fish Creek channel. Meeting the shade reduction requirements will restore temperature to natural background conditions for aquatic life. This agriculture to wetland project will reduce total phosphorus loading to Cocolalla Lake, and reduce sediment and temperature loading in lower Fish Creek, important spawning ground for westslope cutthroat trout (*Oncorhynchus clarki lewisi*).

EXPECTED OUTCOMES AND BENEFITS: Expected outcomes and benefits of this 319 project include restoration of wetland and Fish Creek channel form and function. Water quality benefits include reduction of pollutants from the railroad ditch, decrease in sediment, temperature and nutrient load to Fish Creek and Cocolalla Lake. It will also cool and extend perennial flow to Fish Creek which is important for both fisheries and water quality. Wetland recharge from overbank flow of Fish Creek will filter and prevent transport of nutrients and sediment to Cocolalla Lake. Redirecting flow of Fish Creek will also prevent railroad-associated pollutants from entering Cocolalla Lake.

TIMELINE: This project took several years to accomplish. IDFG and DU collected feasibility data, including a topographic survey and groundwater monitoring, in 2011. IDFG performed a wetland delineation to aid in planning restoration activities. IDFG and DU completed the final design of the wetland and stream restoration elements in 2012. Funding was secured through the Idaho Department of Environmental Quality, and Bonneville Power Administration (BPA) in 2015. Initial restoration was completed at the site in October of 2015, which included creation of ponds and other shallow excavations to increase wetland habitat and diversity, new alignment for sections of Fish Creek, control of the aggressive non-native reed canarygrass, and stream channel enhancements such as large woody debris and rock riffles. IDFG performed seeding of native grass species to areas disturbed during construction. In September 2016, IDFG, DU and IDEQ inspected the restored areas

and found that native vegetation from seeds present in the soils was establishing in areas where the reed canarygrass was suppressed; as a consequence, further seeding and planting efforts were put on hold, and IDFG plans to continue rigorous monitoring to determine if future plantings are needed.

In early 2016, a high water event occurred causing Fish Creek to jump its banks and flow uncontrolled into one of the excavated wetlands, causing a head-cut along the edges of the wetland. Immediate action was taken to hire a contractor to repair and reinforce the banks of the creek and wetland. Once high water receded and site conditions were favorable, additional repair work was completed. See attachment "Additional plan set of work completed June 6-8, 2016" for details. An inspection of the site by DU, IDFG, and IDEQ took place on September 13, 2016. The site was visited through the winter of 2016-'17, and during high-water run-off in late winter and spring of 2017, to detect any new issues. A site visit occurred in May 2017 by the DU engineer, who concluded that there was no further damage to the site from high-water. Monitoring will continue by IDFG through 2017 and 2018.

PUBLIC BENEFIT: This site was little known and little used by the surrounding community before construction, but was seeing increased use in the first month after construction. Fall rains filled the excavations, creating new features to explore. Locals have been seen walking, exercising dogs, riding horses, and scoping waterfowl hunting opportunities in the numerous new wetlands.

Figure 1. Location map.

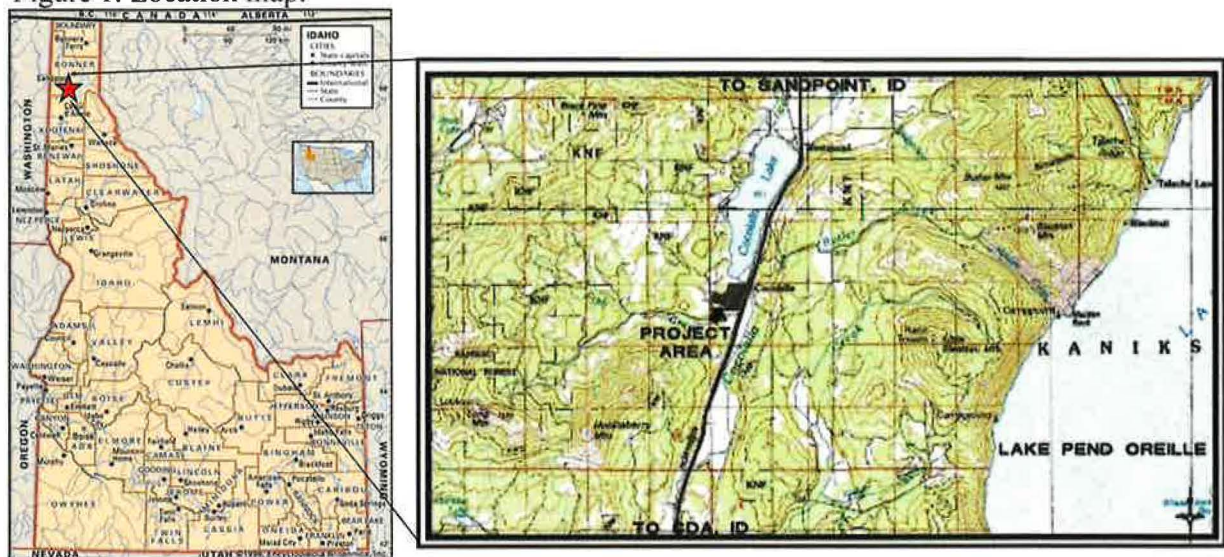
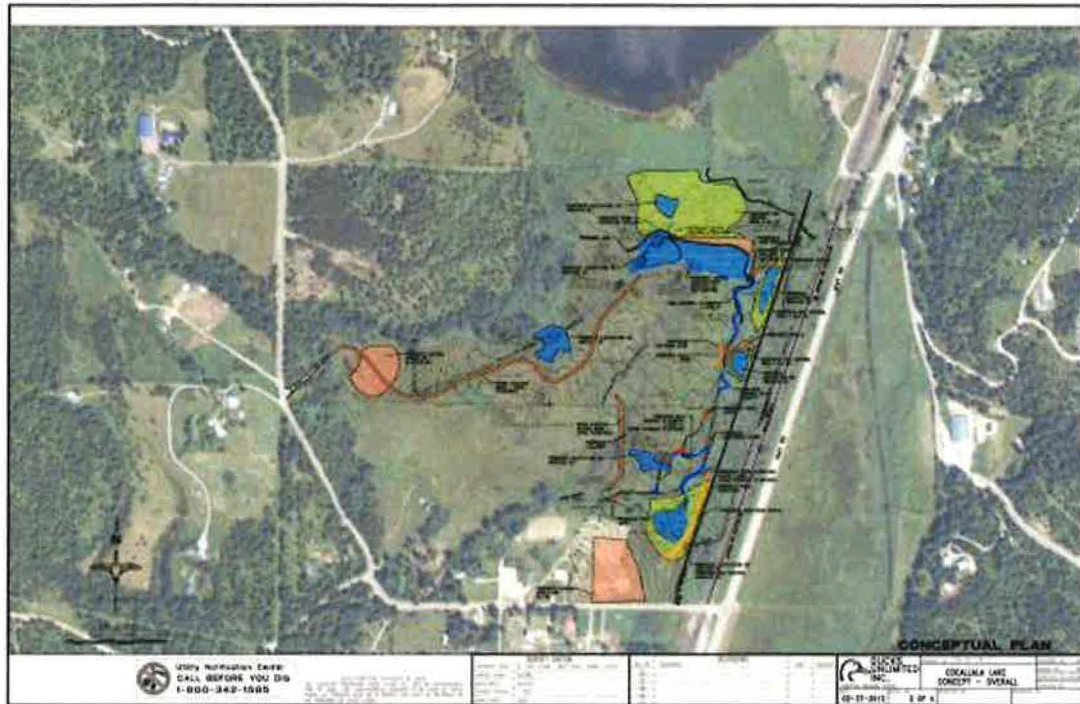


Figure 2. Engineering plan sheet of the conceptual design.



4. COMPARISON OF PROPOSED AND ACTUAL ACCOMPLISHMENTS

Table 1. BMP Actual Accomplishments. See Tasks below for descriptions of accomplishments.

Channel Bank Vegetation (ac)	The suppression of invasive reed canarygrass during restoration efforts has resulted in the native vegetation naturally recruiting (desired condition).
Channel Stabilization (ft)	825 linear feet
Riparian Herbaceous Cover (ac)	1.65 acres
Shallow Water Management for Wildlife (ac)	6.2 acres
Stream Habitat Improvement and Management (ac)	30 ac
Tree/Shrub Establishment	The suppression of invasive reed canarygrass during restoration efforts has resulted in the native vegetation naturally recruiting (desired condition).
Water and Sediment Control	125 acres (entire project area at southern end of Lake)
Wetland Enhancement (ac)	15-20 acres of shallow sheet water overflow during spring run-off
Wetland Restoration (ac)	6.2 acres
Wetland Wildlife Habitat Management (ac)	56 acres (affected area at southern end of Lake)

TASK 1: Mobilization / Site Preparation and Permitting

Responsible Party: Ducks Unlimited, Inc.

Proposed: Assist IDFG with final permitting and preparation of SWPPP (stormwater pollution prevention plan). Staking of wetland excavation sites, upland fill areas, and water control structure site installation. Survey stakes will also be placed to mark new Fish Creek stream channel including marking proposed rock drop weirs along stream channel. Contractor mobilization will include transfer of required equipment and manpower resources to the restoration site.

Actual: Tasks were accomplished as proposed.

TASK 2: Stream and Wetland Restoration

Responsible Party: Ducks Unlimited, Inc.

Proposed: Excavation of seven shallow water wetland developments totaling 5.3 acres with 4:1 slope, and average water depth of 2-3 feet. Creation/restoration of approximately 1,025 linear feet (LF) of Fish Creek. Construction of five engineered rock drop weirs along the restored Fish Creek Channel, and installation of one water control structure and spillway to control water levels and therefore manage for desired wetland vegetation, and reduce non-native reed canarygrass.

Actual: Initial restoration was completed in December 2015: Excavation of six shallow wetland excavations, totaling 3.7 acres in size with a 4:1 slope, and average water depth of 2-3 feet. Plus, an additional 2.5 acres of shallow wetland impoundment due to the dike, totaling 6.2 acres of wetland restoration. Restoration of 825 LF of Fish Creek channel. Note: One segment approximately 450 LF long that was on the bid set of engineering plans was not executed. The channel in that segment was defined, and passed through an intact riparian area. Therefore, during construction, project partners decided against earthwork to re-work the channel in that location, because disturbing the intact riparian vegetation would have a negative impact on water quality and habitat. Six rock weirs were installed along Fish Creek channel. A dike approximately 950 LF long and 10-foot top width was constructed with one water control structure, and two spillways. One spillway is adjacent to the water control structure at the west end and the other is at the east end of the dike.

In April 2016, repairs were completed after a high water event in February of 2016 caused erosion: Rock reinforcement was placed along stream channel and wetland edge.

In June 2016, touch-up work and final repairs were completed: See attachment detailing the activities and locations of this work. The majority of the work was adding rock to spillways, outlets, and wetland edges that were affected by high water and wind-caused wave erosion.

TASK 3: Contingency

Responsible Party: Ducks Unlimited, Inc.

Proposed: This was removed from the proposal as a non-eligible cost.

Actual: Not applicable.

TASK 4: Construction Management

Responsible Party: Ducks Unlimited, Inc.

Proposed: Ducks Unlimited engineer will manage the construction contractor on-site during construction, and inspect the constructed Cocolalla Lake wetland project.

Actual: Ducks Unlimited engineer was on-site for construction management of initial restoration earthwork and inspection in 2015, in April of 2016 for repairs after damage from the high-water event, and in June of 2016 for final touch-up earthwork and repairs to the site. DU hired and managed sub-contractors, directed them on-site, and inspected work before allowing sub-contractors to demobilize.

TASK 5: Reed Canarygrass Control, Re-seeding, Tree and Shrub Plantings

Responsible Party: Idaho Department of Fish and Game

Proposed: Mechanical and chemical control of approximately 7.25 acres of reed canarygrass. Dense stands of reed canarygrass areas will continue to be treated with herbicides to control its spread, and to promote the growth of native grasses, trees, and shrubs. Upland and wetland areas and will be restored with wetland or upland grass mix, native trees and shrubs, and aquatic plants where needed.

Actual: IDFG performed control on 8.62 acres of reed canarygrass, and seeded 7.8 acres with a native seed mix. During a site inspection in September 2016, IDEQ, DU, and IDFG discovered extensive regeneration of native plants. This is common after shallow earthwork to restore wetlands, if the area has healthy soils and an intact seedbank. Released from the competition by non-native grasses or other formerly farmed crops, and with restored hydrology, early successional plants from the natural seedbank will sprout the first year after restoration. Perennials may take longer to colonize the site, but will eventually appear if the seeds are present in the seedbank, or will be brought in by wind, water, and wildlife. IDFG will continue rigorous monitoring of the project site for at least another five years. If further seeding or planting efforts are needed, then IDFG will work to complete these actions. At present, the project site appears to have healthy soils and an intact native seedbank and it is expected that further recruitment of native species will occur with ongoing intensive weed control efforts.

TASK 6: Administrative Costs

Responsible Party: Ducks Unlimited, Inc.

Proposed: This task is for staff time spent on administrative duties related to the grant and project activities. These include reporting, invoicing, budget updates, communications with IDEQ, and meetings with project partners.

Actual: Completed as stated. Ducks Unlimited project biologist and other staff managed the IDEQ grant, provided invoices to IDEQ, and co-wrote the final report in conjunction with the IDFG.

5. PROJECT BUDGET AND MATCH REQUIREMENTS

Table 2. Budget Summary.

IDEQ:	\$96,938.00
LOCAL MATCH (IDFG and BPA):	\$92,500.00
TOTAL PROJECT BUDGET:	\$189,438.00

The match does not include work done on initial feasibility, conceptual design, permitting, and grant writing by IDFG, DU, and the NRCS before the award from the IDEQ, and does not include IDFG in-kind time and equipment for project management, reed canarygrass control, revegetation work, and monitoring.

Local match (48.8% of project budget) exceeds the minimum requirement by IDEQ for the 319 grant program.

See attached invoices to the IDEQ: Invoice #1, Invoice #2, Invoice #3, and invoices to IDFG for BPA funds and administration funds.

6. MONITORING

Proposed: Direct monitoring of water quality will be done by Idaho Department of Environmental Quality and a Cocolalla Lake Citizen Water Quality Monitoring Program volunteer. The following evaluations will be done prior to project implementation, then two years post-project implementation

using methods developed by Rosgen. Evaluations include 1) classify the channel and identify remnant channels to determine the evolutionary probability of the channel form and function; 2) conduct channel cross section, longitudinal survey and bankfull measurements to determine if additional flow diverted from the railroad ditch will not significantly change the channel dimension, pattern, and profile; 3) Take Wahlman pebble counts and McNeil core samples on point bars to estimate stream competency in transporting sediment; 4) conduct a stream bank inventory by characterizing the Bank Erosion Hazard Index, and Near Bank Stress in the channel to quantify sediment load from the stream banks. Monitoring of vegetation quantity and quality using the U.S. Fish and Wildlife Service's (USFWS) Habitat Evaluation Procedures (HEP) and other vegetation monitoring methods described in the statewide wildlife mitigation monitoring plan¹ will be completed by the Idaho Department of Fish and Game.

Actual Accomplishments: IDEQ staff have visited the site on several dates in 2016 and 2017, and the final outcome is that IDEQ has no issues with the project (most recent site visit by Tom Herron, pers comm. Kristin Larson on June 15, 2017). IDFG completed HEP and vegetation monitoring on the site prior to the construction effort and again in 2016 (year-1). IDFG plans to complete another HEP survey on the project site in year-5 and year-10.

7. ATTACHMENTS

Before and after photos of project elements

Engineering plan bid set for construction October - December 2015

Additional plan showing touch-ups completed June 2016

Invoices for the project accomplishments.

¹ Unnasch, R. S., S. K. Rust, D. Leptich, R. C. Martin, E. Bottum, G. Servheen and M. Terra-Burns. 2003. Monitoring and evaluation plan for Idaho wildlife mitigation projects. Idaho Conservation Data Center, Idaho Department of Fish and Game. Boise, ID. 35 pp.

Project Photos

Photo 1. Excavation 1 (see plan set) before construction (July 2012).



Photo 2. Excavation 1, same view as Photo 1, after construction (November 2015).



Photo 3. Excavation 2 before construction (August 2015). Note extensive reed canarygrass.



Photo 4. Excavation 2 after construction (September 2016).

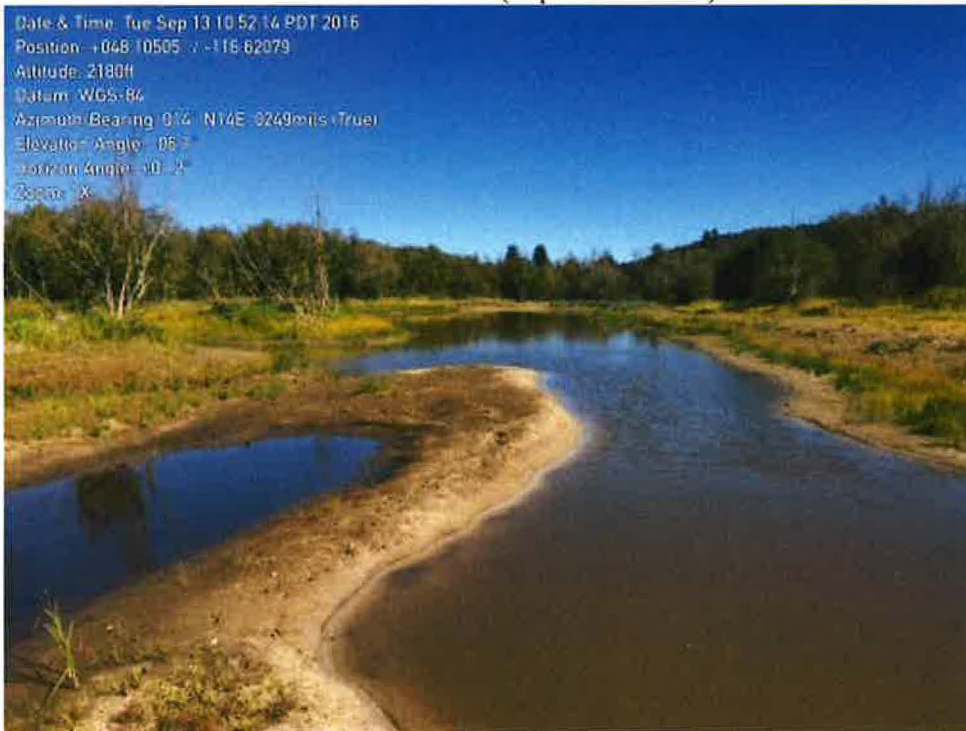


Photo 5. Excavation 6 before construction (August 2015).



Photo 6. Excavation 6 after construction (September 2016).

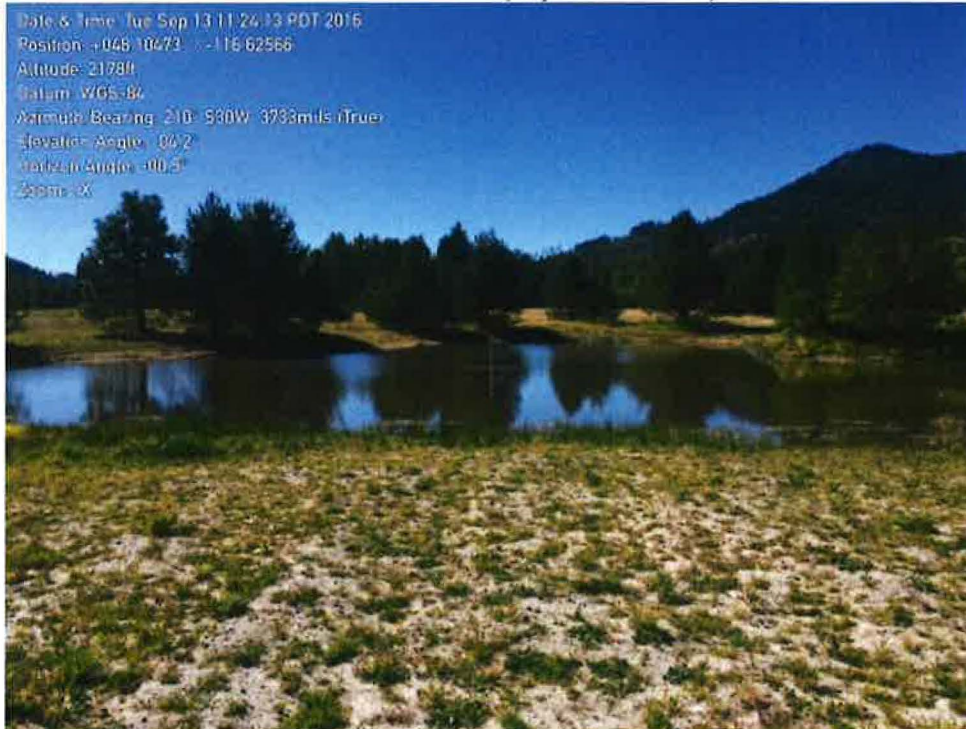


Photo 7. Area of proposed dike and water control structure, before construction (August 2015).



Photo 8. Dike with water control structure after construction (November 2015).



Photo 9. Dike after construction, facing the spillway (November 2015).



Photo 10. Excavation 5 after construction (November 2016).



Photo 11. Planting mound on east side of Excavation 5, view southerly, in November 2015.



Photo 12. Same planting mound in September 2016, after seeding and natural vegetation regrowth.

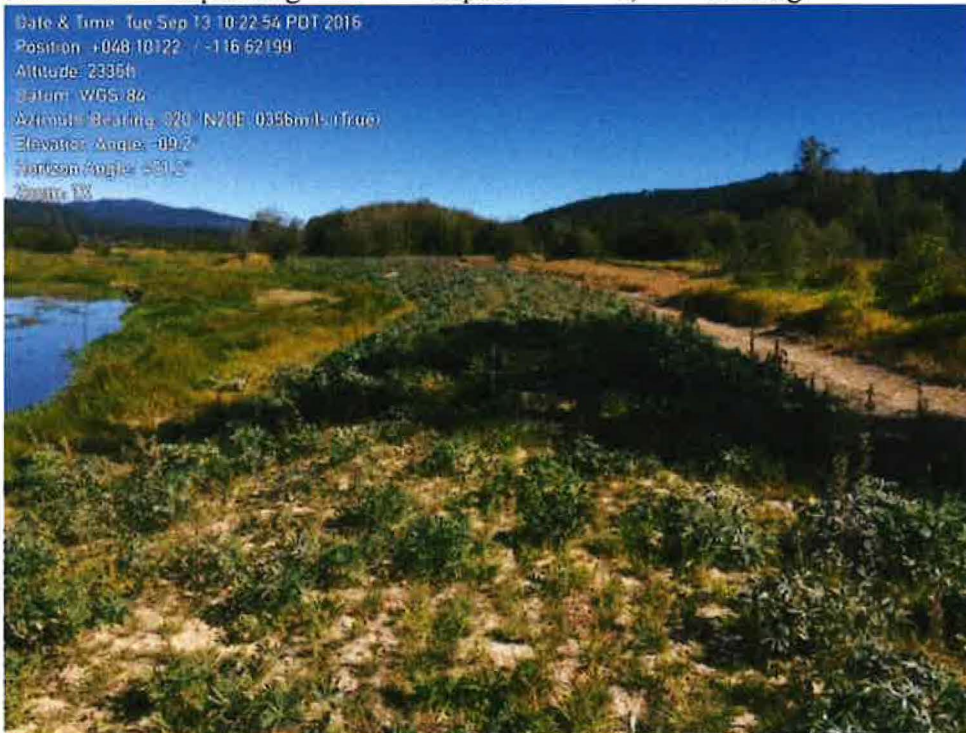


Photo 13. Excavation 6 showing rock added for repair, after erosion event (May 2017).



Photo 14. Rock drop chute constructed between wetlands (May 2017).



Photo 15. Rock weir/spillway. (May 2017).

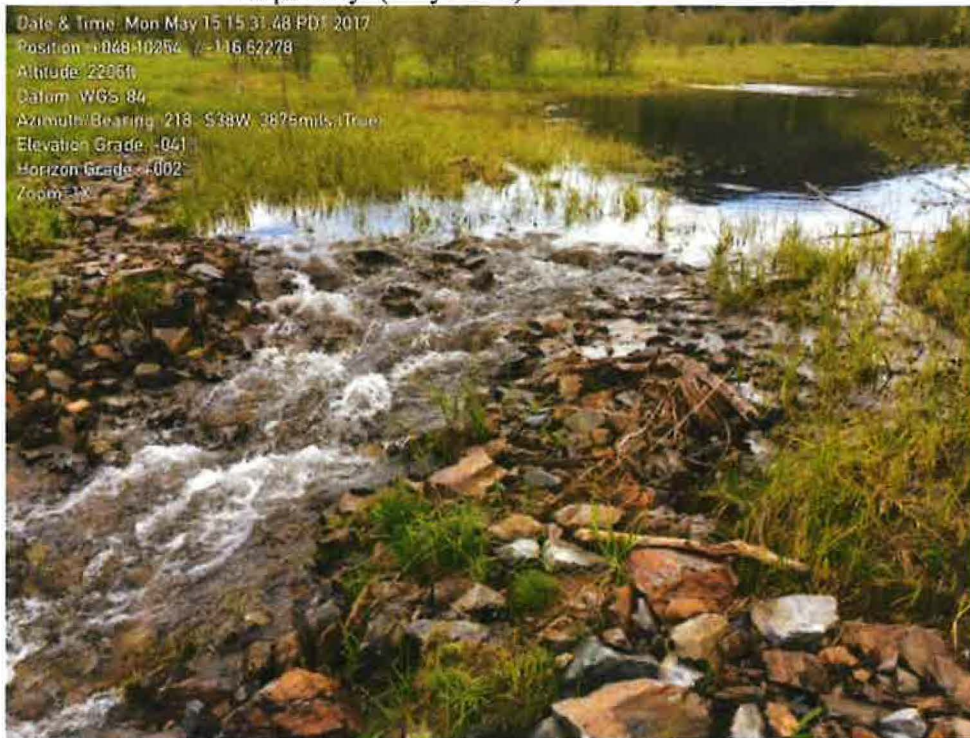
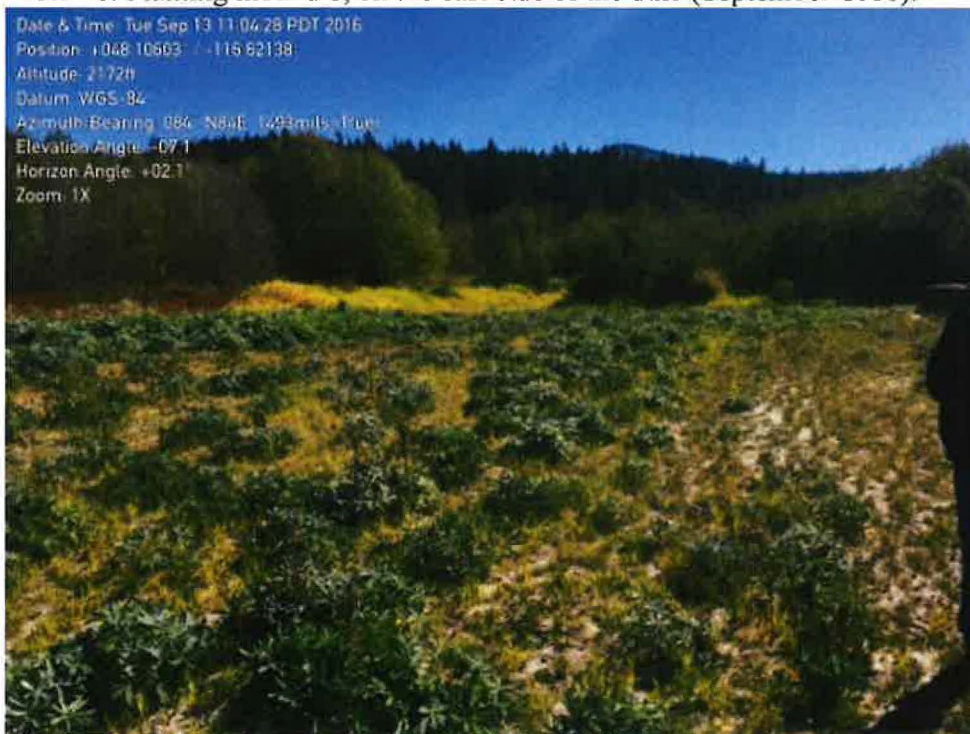


Photo 16. Planting mound 1, on the east side of the dike (September 2016).





POD – CONCRETE HEADGATE ALONG POND # 1 (PHOTO PROVIDED BY IDAHO FISH AND GAME)



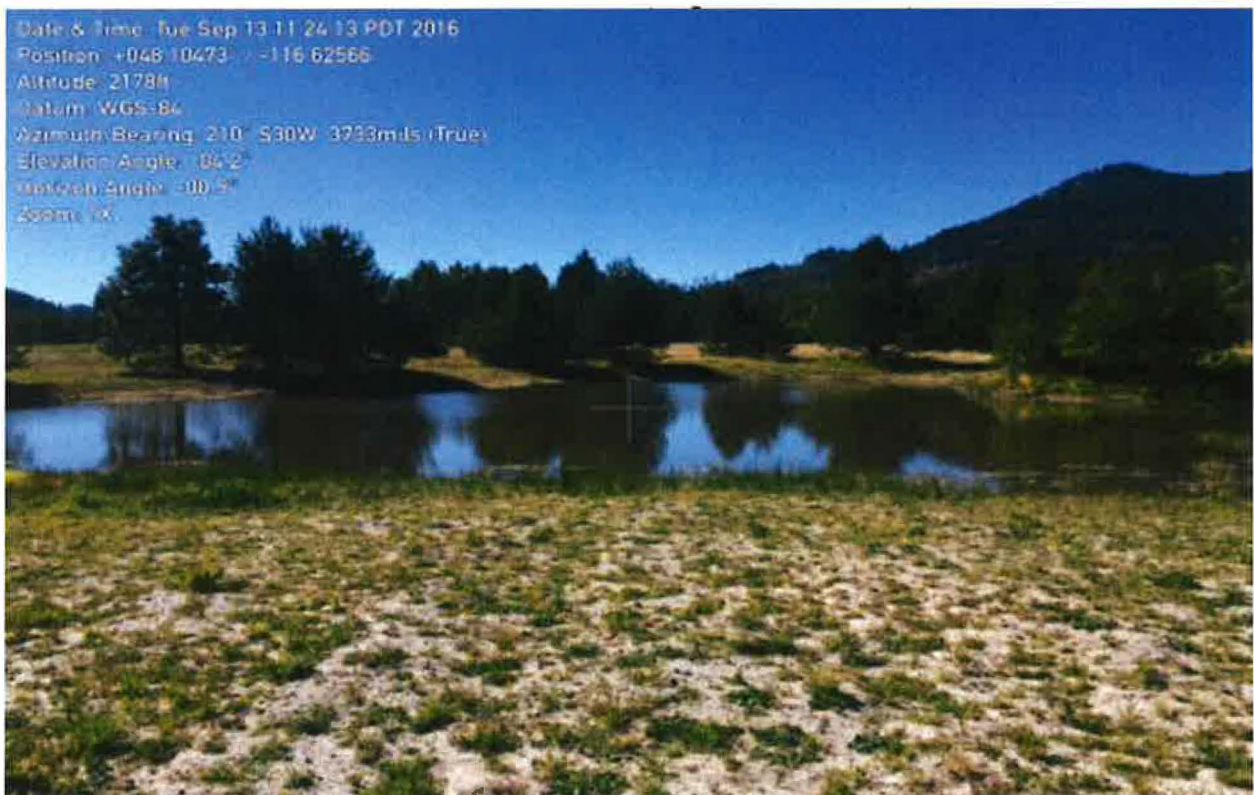
AERIAL OVERVIEW PONDS 1-3 WILDLIFE STORAGE, RECREATION STORAGE, AND FIRE PROTECTION STORAGE POU



AERIAL OVERVIEW – PONDS 1-5 (CLOCKWISE FROM 6 O'CLOCK POSITION) MULTIPLE STORAGE POU



POND 5 –MULTIPLE STORAGE POND POU



POND 6 – MULTIPLE STORAGE POU (PHOTO PROVIDED BY IDAHO FISH AND GAME)