

Nelson, Dan

From: Nelson, Dan
Sent: Thursday, December 10, 2020 9:18 AM
To: 'tfmullen@northwestgroundwater.com'
Cc: Frederick, Adam
Subject: RE: Permit 95-13374

Thank you Tom. I just wanted to make sure I have this correct for you.

Dan

From: tfmullen@northwestgroundwater.com [mailto:tfmullen@northwestgroundwater.com]
Sent: Thursday, December 10, 2020 9:15 AM
To: Nelson, Dan <Dan.Nelson@idwr.idaho.gov>
Cc: Frederick, Adam <Adam.Frederick@idwr.idaho.gov>
Subject: RE: Permit 95-13374

Hi Dan,

I went through the numbers below. I think this is reasonable and agree with the amounts.

Thanks

Tom

From: Nelson, Dan <Dan.Nelson@idwr.idaho.gov>
Sent: Thursday, December 10, 2020 7:22 AM
To: tfmullen@northwestgroundwater.com
Cc: Frederick, Adam <Adam.Frederick@idwr.idaho.gov>
Subject: RE: Permit 95-13374

Hello Tom,

I am still struggling a bit with the waterfall portion of this use. When I redid the numbers, I came up with some very different numbers. I want you to look it over to make sure I am seeing this correctly. In my previous emails, I missed that you didn't include the evaporation losses in the total water needed to operate the falls in the last bullet point on page 2, and I totally missed the last three lines on page 2. After looking at these numbers once again, I found the following:

Pond Capacity = 0.14 af

Pond Evaporation = 0.03 af

Water Fall Capacity Not Including Pond Capacity = 0.21 af

Water Fall Evaporation Losses = 0.08 af

Total Aesthetic Storage Required → $0.14 \text{ af} + 0.03 \text{ af} + 0.21 \text{ af} + 0.08 \text{ af} = 0.46 \text{ af}$

Total Aesthetic From Storage Requirement → $0.21 \text{ af} + 0.08 \text{ af} = 0.29 \text{ af}$

We still can't license the permit for more than the following:

Permit Allows	0.34 af total
Minus Pond Capacity	-0.14 af
Minus Pond Evaporation	-0.03 af
Allowable Aesthetic From Storage	0.17 af

This being the case, you would need the additional volumes on the new application for permit:

Aesthetic Storage → 0.46 af – 0.34 af from proposed license = 0.12 af (Rounded to 0.1 af) needed for new application for permit

Aesthetic From Storage → 0.29 af – 0.17 af from proposed license = 1.2 af (Rounded to 0.1 af) needed for new application for permit.

The irrigation components would change on the new application for permit unless the acreage is over 1 acre.

I wanted to share this with you to make sure I understood everything and that I am giving you good information. I am sorry I missed the evaporation of the water fall in my earlier emails. This is why I try to double check everything as much as possible. Does this make sense to you and does it seem reasonable. If this is confusing, please give me a call so we can work through the numbers. I am being overly cautious on this one, because of the new application for permit you are filing.

Thank you for your patience.

Daniel Nelson
 Water Right Analyst 3
 Idaho Department of Water Resources
 Telephone (208) 287-4856
 Fax (208) 287-6700 (attn: Dan Nelson)

MEMORANDUM

TO: Water Right File 95-13374

FROM: Daniel Nelson – Analyst 3

DATE: December 9, 2020

SUBJECT: Licensing Review of Water Right 95-13374

The field exam for this right was performed by Certified Water Right Examiner Thomas Mullen of North Groundwater Consultants, LLC. Mr. Mullen recommended 0.04 cfs for diversion to storage, 0.03 cfs for aesthetic use, 0.25 af for aesthetic storage, and 0.14 af for aesthetic from storage.

Beneficial Uses:

Mr. Mullen described this use as a 5 Hp pump (Hayden Pump) diverting water from Hayden Lake to a small aesthetic pond. Water from the pond is then diverted by a 40 Hp pump (Pond Pump) up 80 feet to the top of water fall that flows back into the pond. The water in the water fall is recirculated.

Mr. Mullen confirmed that there was not a line from the Hayden Lake pump to the top of the water fall feature. After consulting with Department staff, it was determined that there is no aesthetic water use, since there is no water being diverted to the water falls except through the pond.

Mr. Mullen also confirmed that the irrigation associated with this permit is not being diverted from this system. The permit holder is using water from North Kootenai Water and Sewer District to irrigate the park.

Since no water is being diverted directly from the Hayden Pump to the water fall, the aesthetic portion of this permit will not be carried forward to licensing. Since no water is being diverted for irrigation of the park from this water system, the irrigation, irrigation storage, and irrigation from storage components will not be carried forward to licensing.

Mr. Mullen also confirmed that a new permit would be needed to address the shortfall of diversion rates and volumes.

Point of Diversion: Place of Use:

Mr. Mullen provided a map showing the place of use and point of diversion. I was able to replicate Mr. Mullen's maps and the area that he provided, so I feel his assessment is reasonable.

PLEASE NOTE: The permit placed the point of diversion in Government Lot 3 (SENW) of Section 17, Township 51 North, Range 3 West. The field examiner also stated that the point of diversion was in Government Lot 3. The Point of diversion is in what is called in the plat map as the Hydrologic Protection Zone, so it is outside of Government Lot 3. The point of diversion is in the SENW, but it is not in Government Lot 3. No amendment is necessary to correct this, since Government Lot 3 includes a portion of the SENW. This is just to clarify the location to match the Public Land Survey and the Plat Map supplied to the county. Please see the attached plat map attached to this memorandum.

The Place of use for this permit above the Hydrologic Protection Zone, so it is in Government Lot 3 (SENW) of Section 17, Township 51 North, Range 3 West.

Diversion Rate and Volume:

Mr. Mullen provided a diversion rate and volume table that seems reasonable. I then reviewed this and sent a similar table back to Mr. Mullen without the aesthetic use and using his volumes. I did make some errors, which have been corrected. The table below shows the actual diversion rates and volumes as they should be licensed for this permit and the additional rates and volumes that will be needed on the new application for permit.

Mr. Mullen found the following:

Pond Capacity = 0.14 af

Pond Evaporation = 0.03 af

Water Fall Capacity Not Including Pond Capacity = 0.21 af

Water Fall Evaporation Losses = 0.08 af

Total Aesthetic Storage Developed → $0.14 \text{ af} + 0.03 \text{ af} + 0.21 \text{ af} + 0.08 \text{ af} = 0.46 \text{ af}$

Total Aesthetic From Storage Developed → $0.21 \text{ af} + 0.08 \text{ af} = 0.29 \text{ af}$

We still can't license the permit for more than what was permitted. The following are the calculations I used to determine the amount of water we can license and the amount of water that needs to be applied for in the new application for permit the permit holder is planning on filing:

Permit Allows	0.34 af Maximum Allowable Storage
Minus Pond Capacity	-0.14 af
<u>Minus Pond Evaporation</u>	<u>-0.03 af</u>
Allowable Aesthetic From Storage	0.17 af

I am recommending 0.3 af for aesthetic storage (rounded from 0.34 af) and 0.2 af for aesthetic from storage (rounded from 0.17 af) for a total volume of 0.3 af (rounded from 0.34 af). The unrounded amounts will be used in condition 219

This being the case, the permit holder would need the additional volumes on the new application for permit:

Total Aesthetic Storage → 0.46 af – 0.34 af from proposed license = 0.12 af (Rounded to 0.1 af)

0.12 af is needed for new application for permit to make the aesthetic storage completely covered.

Aesthetic From Storage → 0.29 af – 0.17 af from proposed license = ^{0.12}1.2 af (Rounded to 0.1 af)

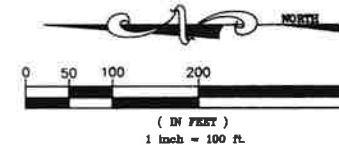
0.12 af is also needed for the new application for permit to make the aesthetic from storage completely covered.

Conditions:

Conditions 004, 219, 220, and R05 will be carried forward to licensing. Conditions 219 and 220 will be updated to the current amounts authorized by the permit (see table above). Condition R05 will be updated to the current version that exchanges “will” for “may” due to the water district being inactive.

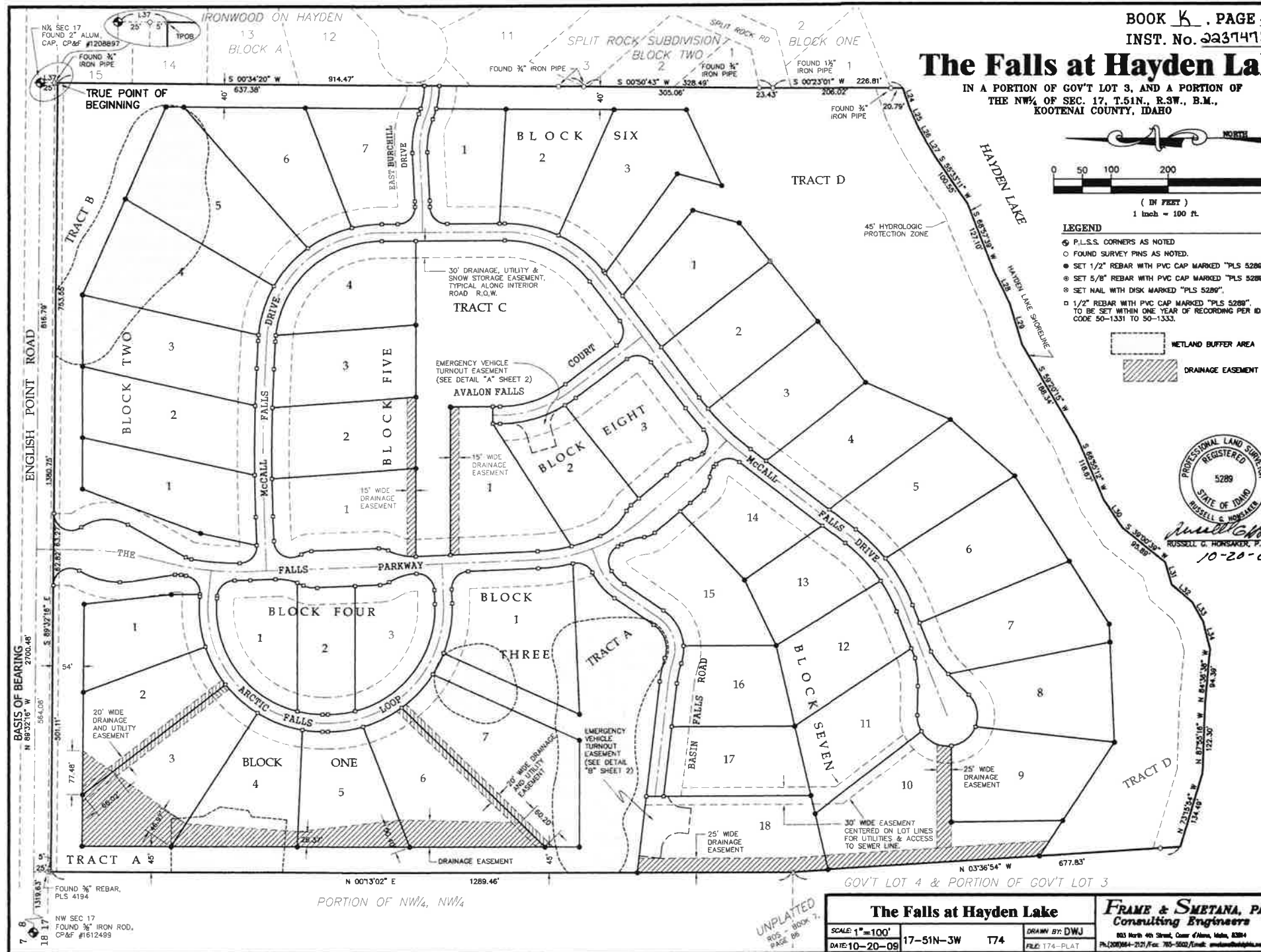
The Falls at Hayden Lake

IN A PORTION OF GOV'T LOT 3, AND A PORTION OF
THE NW¼ OF SEC. 17, T.51N., R.3W., B.M.,
KOOTENAI COUNTY, IDAHO



LEGEND

- ⊙ P.L.S.S. CORNERS AS NOTED
- FOUND SURVEY PINS AS NOTED.
- SET 1/2" REBAR WITH PVC CAP MARKED "PLS 5280".
- ⊙ SET 5/8" REBAR WITH PVC CAP MARKED "PLS 5280".
- ⊙ SET NAIL WITH DISK MARKED "PLS 5280".
- 1/2" REBAR WITH PVC CAP MARKED "PLS 5280".
TO BE SET WITHIN ONE YEAR OF RECORDING PER IDA CODE 50-1331 TO 50-1333.



GOV'T LOT 4 & PORTION OF GOV'T LOT 3

The Falls at Hayden Lake

SCALE: 1"=100'
DATE: 10-20-09 17-51N-3W T74

DRAWN BY: DWJ
FILE: 174-PLAT

FRAME & SMETANA, PA
Consulting Engineers

803 North 4th Street, Coeur d'Alene, Idaho, 83814
Ph: (208) 664-2121 / Fax: 785-5502 / Email: andreas@framesmetana.com

UNPLATED
905 - BOOK 7
PAGE 66

Nelson, Dan

From: Nelson, Dan
Sent: Friday, December 04, 2020 8:20 AM
To: 'tfmullen@northwestgroundwater.com'
Cc: Frederick, Adam
Subject: RE: Permit 95-13374

Tom,

Thank you for pointing out the mistakes I made. I am sorry about that. They should read as follows:

The permit authorizes 0.34 af for Aesthetic Storage and 0.14 af for Aesthetic from Storage. The Actual Use Developed == Pond Capacity is ~~1.4 af~~ **0.14 af** + Pond Evaporation is 0.03 af + Aesthetic from Storage (Total Waterfall Use including waterfall volume and waterfall evaporation losses) is 0.21 af = 0.38 af total water needs.

AND

Beneficial Use	Period of Use	Recommended Amounts for Licensing of Permit 95-13374		Recommended Amounts for filing a New Application for Permit		Totals Needed for Project	
		Rate of Diversion	Annual Volume	Rate of Diversion	Annual Volume	Rate of Diversion	Annual Volume
Diversion to Storage	3 15 to 10 31	0.04 cfs		0.09 cfs		0.13 cfs	
Irrigation	3 15 to 10 31	Not Developed	Not Developed	0.03 cfs		0.03 cfs	
Irrigation Storage	3 15 to 10 31	Not Developed	Not Developed		3.2 af		3.2 af
Irrigation From Storage	3 15 to 10 31	Not Developed	Not Developed		3.0 af		3.0 af
Aesthetic Storage	1 1 to 12 31		0.3 (0.34 af rounded)		~~0.01~~ 0.1 (0.04 af Rounded)		0.4 af (0.35 afa rounded)
Aesthetic From Storage	3 15 to 10 31		0.2 (0.17 af Rounded)		0.1 af (0.04 af Rounded)		0.3 (0.21 af rounded up)
Aesthetic	Aesthetic Use is not needed if Hayden Lake Pump does not deliver water to top of the waterfall.						

Thank you again for catching the mistakes. That is why I double check things with the person who has done the work.

Dan Nelson

From: tfmullen@northwestgroundwater.com [mailto:tfmullen@northwestgroundwater.com]
Sent: Thursday, December 03, 2020 4:06 PM
To: Nelson, Dan <Dan.Nelson@idwr.idaho.gov>
Cc: Frederick, Adam <Adam.Frederick@idwr.idaho.gov>
Subject: RE: Permit 95-13374

Hi Dan,

Nelson, Dan

From: Nelson, Dan
Sent: Thursday, December 03, 2020 2:16 PM
To: 'tfmullen@northwestgroundwater.com'
Cc: Frederick, Adam
Subject: Permit 95-13374

Hello Tom,

First I want to tell you that you did an awesome job on the field examination you did for Permit 95-13374 for Falls At Hayden Lake Homeowner's Association. With the information you provided, I was able to include this in a staff meeting that included my supervisor. They were all impressed with the work that you did.

After we reviewed the file, we made a couple of determinations on how the permit should be licensed. I want to run this by you and get your feedback. I have also included Adam Frederick on this email, to let him know how we plan to license this permit.

The first thing we spoke about was if there is a line directly from the 5 Hp Haden Lake Pump. There doesn't appear to be any direct pipeline from the Hayden Lake Pump (5 Hp Pump) to the top of the waterfall. Since there is no direct pipeline from the Hayden Lake Pump to the top of the waterfall, there will be no need for an aesthetic use. It was determine in the meeting that we could only consider an aesthetic use if Hayden Lake water is diverted from Hayden Lake directly to the top of the waterfall. Therefore, everything that was considered to be aesthetic use in the permit is actually an Aesthetic From Storage use.

This is how I see volumes based on the use permitted in 95-13374. The permit authorizes 0.34 af for Aesthetic Storage and 0.14 af for Aesthetic from Storage. The Actual Use Developed == Pond Capacity is 1.4 af + Pond Evaporation is 0.03 af + Aesthetic from Storage (Total Waterfall Use including waterfall volume and waterfall evaporation losses) is 0.21 af = 0.38 af total water needs. (PLEASE NOTE: A portion of the Aesthetic Use should be considered being used as Aesthetic From Storage, so we can increase the Aesthetic from Storage volume amount from the 0.14 af permitted, but we can't increase the 0.34 af limit Aesthetic Storage approved in the permit.) Since we are limited to a maximum of 0.34 af of aesthetic storage, this is how I feel the volumes should be allocated

Pond Fill =	0.14
Pond Evaporation =	0.03
Aesthetic from Storage	
=	0.17
Permit Storage Limit =	0.34

By allocating the storage volumes this way, it will make sense for the license and provide a good start for the new application for permit that will be needed. The new application for permit is needed, because the diversion rate for the diversion to storage is too low for this system, and it will give them the opportunity to increase their volume for the aesthetic from storage and allow them 5 additional year to create the irrigation use if they choose to do that in the future.

All of the aesthetic use from the waterfall is covered by the Aesthetic From Storage component. Taking this into account, The table your provided on page 2 of your narrative should be as follows:

Beneficial Use	Period of Use	Recommended Amounts for Licensing of Permit 95-13374		Recommended Amounts for filing a New Application for Permit		Totals Needed for Project	
		Rate of Diversion	Annual Volume	Rate of Diversion	Annual Volume	Rate of Diversion	Annual Volume
Diversion to Storage	3 15 to 10 31	0.04 cfs		0.09 cfs		0.13 cfs	
Irrigation	3 15 to 10 31	Not Developed	Not Developed	0.03 cfs		0.03 cfs	
Irrigation Storage	3 15 to 10 31	Not Developed	Not Developed		3.2 af		3.2 af
Irrigation From Storage	3 15 to 10 31	Not Developed	Not Developed		3.0 af		3.0 af
Aesthetic Storage	1 1 to 12 31		0.3 (0.34 af rounded)		0.01 (0.04 af Rounded)		0.4 af (0.38 af rounded)
Aesthetic From Storage	3 15 to 10 31		0.2 (0.17 af Rounded)		0.1 af (0.04 af Rounded)		0.3 (0.21 af rounded up)
Aesthetic	Aesthetic Use is not needed if Hayden Lake Pump does not deliver water to top of the waterfall.						

You will notice that I did some rounding based on the current Departmental standards that prevent us from issuing a license or permit for a diversion volume beyond a tenth of an acre-foot. This permit was issued against that standard in 2010, but the standards changed in 2018 and have addressed in Application Processing Memorandum #6. You can find this memo at <https://idwr.idaho.gov/files/legal/guidance/Application-Processing-Memo-06.pdf>. The license will have a condition that addresses the actual volume amounts. Although it could change dramatically before the license is issued, the condition should state something similar to the following:

Right 95-13374 authorize total annual storage volume of 0.34 acre-feet, 0.14 acre-feet to be used for the initial filling or carryover storage of the pond and 0.03 acre-feet for the replacement of losses caused by evaporation from the pond, and 0.17 af to provide recirculation and evaporation losses from aesthetic waterfall feature.

By using the above condition, it should clarify the actual volumes needed in the review of the proposed application for permit to determine if that everything is being adequately covered by the new application. That will hopefully prevent them from having to go through this process again.

I want to say again that you did a very good job on this field examination report. By spelling everything out, it will not only help in licensing this permit, but will also help in getting the new application for permit through the process. Please let me know what you think of my understanding of things, and if it will work for you and your client.

Respectfully,

Daniel Nelson
 Water Right Analyst 3
 Idaho Department of Water Resources
 Telephone (208) 287-4856
 Fax (208) 287-6700 (attn: Dan Nelson)

I have reviewed your email below and agree with your rationale for the recommended and new application for permit volumes and rates. I did notice a couple of typos. I have highlighted yellow.

Thanks again for your assistance in this.

Best regards,

Tom

From: Nelson, Dan <Dan.Nelson@idwr.idaho.gov>
Sent: Thursday, December 3, 2020 1:16 PM
To: tfmullen@northwestgroundwater.com
Cc: Frederick, Adam <Adam.Frederick@idwr.idaho.gov>
Subject: Permit 95-13374

Hello Tom,

First I want to tell you that you did an awesome job on the field examination you did for Permit 95-13374 for Falls At Hayden Lake Homeowner's Association. With the information you provided, I was able to include this in a staff meeting that included my supervisor. They were all impressed with the work that you did.

After we reviewed the file, we made a couple of determinations on how the permit should be licensed. I want to run this by you and get your feedback. I have also included Adam Frederick on this email, to let him know how we plan to license this permit.

The first thing we spoke about was if there is a line directly from the 5 Hp Haden Lake Pump. There doesn't appear to be any direct pipeline from the Hayden Lake Pump (5 Hp Pump) to the top of the waterfall. Since there is no direct pipeline from the Hayden Lake Pump to the top of the waterfall, there will be no need for an aesthetic use. It was determine in the meeting that we could only consider an aesthetic use if Hayden Lake water is diverted from Hayden Lake directly to the top of the waterfall. Therefore, everything that was considered to be aesthetic use in the permit is actually an Aesthetic From Storage use.

This is how I see volumes based on the use permitted in 95-13374. The permit authorizes 0.34 af for Aesthetic Storage and 0.14 af for Aesthetic from Storage. The Actual Use Developed == Pond Capacity is 1.4 af + Pond Evaporation is 0.03 af + Aesthetic from Storage (Total Waterfall Use including waterfall volume and waterfall evaporation losses) is 0.21 af = 0.38 af total water needs. (PLEASE NOTE: A portion of the Aesthetic Use should be considered being used as Aesthetic From Storage, so we can increase the Aesthetic from Storage volume amount from the 0.14 af permitted, but we can't increase the 0.34 af limit Aesthetic Storage approved in the permit.) Since we are limited to a maximum of 0.34 af of aesthetic storage, this is how I feel the volumes should be allocated

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=	0.17
Permit Storage Limit =	0.34

By allocating the storage volumes this way, it will make sense for the license and provide a good start for the new application for permit that will be needed. The new application for permit is needed, because the diversion rate for the diversion to storage is too low for this system, and it will give them the opportunity to increase their volume for the

aesthetic from storage and allow them 5 additional year to create the irrigation use if they choose to do that in the future.

All of the aesthetic use from the waterfall is covered by the Aesthetic From Storage component. Taking this into account, The table your provided on page 2 of your narrative should be as follows:

Beneficial Use	Period of Use	Recommended Amounts for Licensing of Permit 95-13374		Recommended Amounts for filing a New Application for Permit		Totals Needed for Project	
		Rate of Diversion	Annual Volume	Rate of Diversion	Annual Volume.	Rate of Diversion	Annual Volume.
Diversion to Storage	3/15 to 10/31	0.04 cfs		0.09 cfs		0.13 cfs	
Irrigation	3/15 to 10/31	Not Developed	Not Developed	0.03 cfs		0.03 cfs	
Irrigation Storage	3/15 to 10/31	Not Developed	Not Developed		3.2 af		3.2 af
Irrigation From Storage	3/15 to 10/31	Not Developed	Not Developed		3.0 af		3.0 af
Aesthetic Storage	1/1 to 12/31		0.3 (0.34 af rounded)		0.01 (0.04 af Rounded)		0.4 af (0.38 afa Rounded)
Aesthetic From Storage	3/15 to 10/31		0.2 (0.17 af Rounded)		0.1 af (0.04 af Rounded)		0.3 (0.21 af rounded up)
Aesthetic	Aesthetic Use is not needed if Hayden Lake Pump does not deliver water to top of the waterfall.						

You will notice that I did some rounding based on the current Departmental standards that prevent us from issuing a license or permit for a diversion volume beyond a tenth of an acre-foot. This permit was issued against that standard in 2010, but the standards changed in 2018 and have addressed in Application Processing Memorandum #6. You can find this memo at <https://idwr.idaho.gov/files/legal/guidance/Application-Processing-Memo-06.pdf> . The license will have a condition that addresses the actual volume amounts. Although it could change dramatically before the license is issued, the condition should state something similar to the following:

Right 95-13374 authorize total annual storage volume of 0.34 acre-feet, 0.14 acre-feet to be used for the initial filling or carryover storage of the pond and 0.03 acre-feet for the replacement of losses caused by evaporation from the pond, and 0.17 af to provide recirculation and evaporation losses from aesthetic waterfall feature.

By using the above condition, it should clarify the actual volumes needed in the review of the proposed application for permit to determine if that everything is being adequately covered by the new application. That will hopefully prevent them from having to go through this process again.

I want to say again that you did a very good job on this field examination report. By spelling everything out, it will not only help in licensing this permit, but will also help in getting the new application for permit through the process. Please let me know what you think of my understanding of things, and if it will work for you and your client.

Respectfully,

Daniel Nelson
Water Right Analyst 3
Idaho Department of Water Resources
Telephone (208) 287-4856
Fax (208) 287-6700 (attn: Dan Nelson)

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

RECEIVED
NOV 25 2020
DEPARTMENT OF
WATER RESOURCES

A Beneficial Use Field Report is prepared by a water right examiner as the result of an examination to clearly confirm and establish the extent of the beneficial use of water established in connection with a permit during the development period authorized by the permit and any extensions of time previously approved.

A. GENERAL INFORMATIONPermit No. 95-133741. Owner Falls at Hayden Lake Homeowners AssociationPhone No. 208-625-7567Current address 1110 W Park Place, #101, Coeur d'Alene, ID 838142. Examiner's name Thomas F Mullen, PGEXAM DATE 10/30/20203. Accompanied by Ken HollenbachEmail ken@aspenhomes.comAddress 11079 N ARCTIC FALLS LOOP, Hayden, ID 83835Relationship to permit holder Board memberPhone No. Same as above4. Source Hayden Laketributary to Sinks**B. OVERLAP REVIEW**1. Other water rights with the same place of use NA2. Other water rights with the same source and point of diversion NA**C. DIVERSION AND DELIVERY SYSTEM**

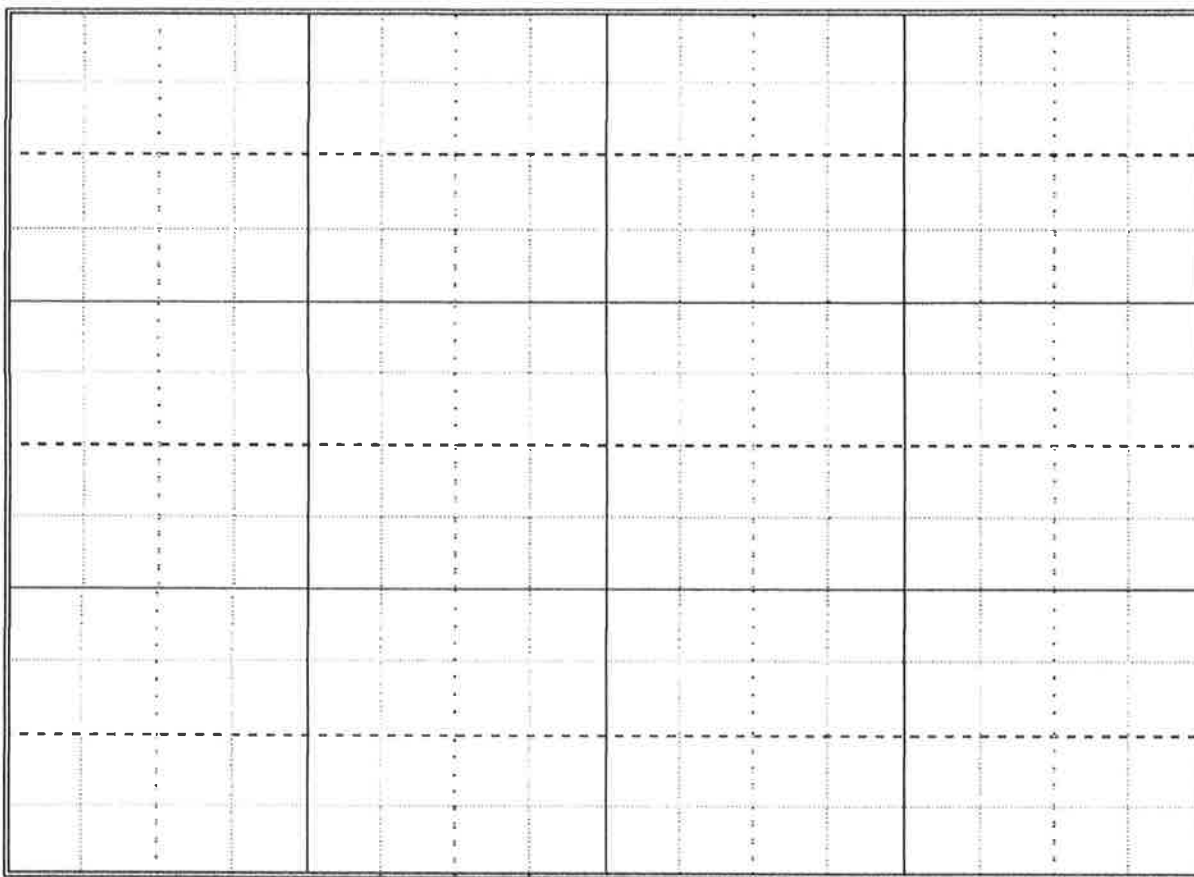
1. Point(s) of Diversion: POD location at 47°46'6.23"N; 116°44'7.83"W (Figure 1)

Ident. No.	Gov't Lot	¼	¼	¼	Sec	Twp	Rge	County	Method of Determination/Remarks
POD	3		SE	NW	17	51N	03W	Kootenai	Exam, GPS

2. Place(s) of Use: Method of determination Exam, GPS, Google Earth (Figure 2)

Twp	Rge	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
51N	03W	17								J									
										L3									

3. **Delivery System Diagram:** Indicate all major components and distances between components. Indicate weir size/ditch size/pipe diameter (inside), as applicable. Use the space provided or ☒ see attached.



Scale: 1" = _____ See Figures 1 and 2

- ☒ Copy of USGS Quadrangle 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
Lake Pump	Groundfos	5	NA	CR10-6	65 gpm
Pond Pump	Pentair	40	NA	B6ZBHH	1900 gpm

*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
NA						

2. **Measurements:** _____

NA - no practical means to measure flow in field.

E. NARRATIVE/REMARKS/COMMENTS

See attached narrative

Has the permit holder met all conditions of permit approval, including any mitigation requirements and/or measuring device installation requirements? ☐ Yes ☒ No If no, what must be done to meet the permit requirements?

A new permit application will be prepared to account for the increased rate of diversion and annual volumes determined during the field exam. Also the new permit will contain irrigation, irrigation, and irrigation from storage components in the event that the Owner develops irrigation for the property.

F. FLOW CALCULATIONS☐ Additional computation sheets attached

Measured Method:

Lake pump diverts water from Hayden Lake to Pond through approximately 700 feet of 2-inch diameter poly pipe.

Elevation difference between lake and pond is approximately 96 feet. operating pressure 50 psi is assumed.

Theoretical pumping equation estimates flow as follows:

$$(5\text{HP})(8.8)(0.7) / 96 \text{ ft} + (50 \text{ psi} \times 2.3.067 \text{ ft/psi}) + 30 \text{ ft (poly pipe friction loss)} = 0.13 \text{ cfs} = 57.3 \text{ gpm}$$

G. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

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

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

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

2. Volume Calculations for Other Uses:

H. RECOMMENDATIONS**1. Recommended Amounts**

Beneficial Use	Period of Use		Rate of Diversion Q (cfs)	Annual Volume V (afa)
	From	To		
Diversion To Storage	3/15	10/31	0.04	
Aesthetic	3/15	10/31	0.03	
Aesthetic Storage	1/1	12/31		0.25
Aesthetic From Storage	3/15	10/31		0.14
Totals:			0.04	0.25

2. Recommended Amendments

- ☐ Change P.D. as reflected on page 1 ☐ Add P.D. as reflected on page 1 ☒ None
☐ Change P.U. as reflected on page 1 ☐ Add P.U. as reflected on page 1 ☐ Other

I. AUTHENTICATION

Field Examiner's Signature

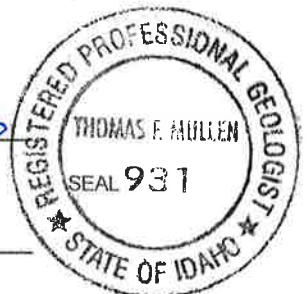
Thomas F. Mullen
Certified Water Rights Examiner No. 143

Date

11/24/2020

Reviewer

Date



C:\Users\lfm\OneDrive\NWGWC\Projects\01173-01



Point of Diversion (POD)

Aesthetic Place of Use (POU)



0

2000 feet

Source: Google Earth, 2018; Kootenai County GIS



**Northwest Groundwater
Consultants, LLC**

01173-01

NOVEMBER 2020

SITE LOCATION MAP

**Application for Water Right Permit
The Falls At Hayden Lake
Kootenai County, Idaho**

FIGURE

1

The information included on this graphic representation was compiled from a variety of sources and is subject to change without notice. NWGC makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a land survey product nor is it designed or intended as a construction design document. The use or misuse of the information contained on this graphic representation is at the sole risk of the party using or misusing the information.

November 18, 2020

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Point of Diversion (POD)



Aesthetic Place of Use (POU)

Water Lines



0

200 feet

Source: Google Earth, 2015; Kootenai County GIS



**Northwest Groundwater
Consultants, LLC**

01173-01

NOVEMBER 2020

POD-POU LOCATION MAP

Application for Water Right Permit
The Falls At Hayden Lake
Kootenai County, Idaho

FIGURE

2

THE FALLS AT HAYDEN LAKE
BENEFICIAL USE REPORT NARRATIVE
WATER RIGHT PERMIT NO. 95-13374

The Falls at Hayden Lake Homeowners Association (Homeowners Association) constructed an aesthetic water feature consisting of a pond and waterfalls. Water is diverted from Hayden Lake to a lined pond in a day use picnic area near the shoreline of Hayden Lake for benefit of owners and guests of the Falls at Hayden Lake residential community. To enhance the aesthetic environment, the lined storage pond supplies a water feature (i.e., waterfalls) constructed in the natural rock ledges. The water feature recaptures and recirculates water in pond situated in the picnic area.

EXISTING WATER RIGHT

Permit No. 95-13374 - Permit specifies a maximum diversion rate of 0.04 cfs and maximum diversion volume of 3.34 AF. The source of water is Hayden Lake. The permit lists the following listed beneficial uses:

Beneficial Use	Period of Use	Rate of Diversion	Annual Volume
Diversion to Storage	3/15/ to 10/31	0.04 cfs	
Irrigation	3/15 to 10/31	0.03 cfs	
Irrigation Storage	1/1 to 12/31		3.2 AF
Irrigation from Storage	3/15 to 10/31		3.0 AF
Aesthetic	3/15 to 10/31	0.03 cfs	
Aesthetic Storage	1/1 to 12/31		0.34 AF
Aesthetic from Storage	3/15 to 10/31		0.14 AF

FIELD EXAM

The Homeowners Association received a Notice: Statement of Completion Due dated September 30, 2020. The Homeowners Association contracted with Northwest Groundwater Consultants (NWGC) to prepare the Statement of Completion and Proof of Beneficial Use. The field exam confirmed the following conditions.

- The point of diversion (POD) consists of a 5 HP pump (lake pump) located in a pump house near the shoreline of Hayden Lake. A 2-inch diameter poly pipe extends into the lake and another 2-inch diameter poly pipe conveys water approximately 700 feet from the pump to the lined pond located in the picnic area approximately 96 feet above lake level.
- The theoretical pumping equations estimates that an approximate discharge as follows:
 - $(5\text{HP})(8.8)(0.7) / 96 \text{ ft} + (50 \text{ psi} \times 2.3.067 \text{ ft/psi}) + 30 \text{ ft (poly pipe friction loss)}$
= 0.13 cfs = 57.3 gpm

- The pond size is approximately 50 feet long by 25 feet wide with a depth of 5 feet. Surface area of the pond is approximately 1250 sf. The pond is lined.
- A 40 HP pump (pond pump) located in a wet well adjacent to the pond recirculates water from the pond to the top of the water feature (waterfalls). The pump is rated at 1900 gpm (4.2 cfs). The top of the waterfalls is approximately 80 feet above the pond. The pond pump conveys water to the top of the falls via an 8-inch diameter pipe. The pipe traverses upslope approximately 300 feet (personal communication with Mr. Ken Hollenbach, Homeowners Association).
- The waterfalls is typically operated daily between 9 am and 11 pm from mid-April to the end of October (personnel communication with Mr. Ken Hollenbach, Homeowners Association).

Field Exam Findings

The field exam determined the following findings:

- The lake pump diverts water from Hayden Lake to the pond and exceeds the permitted diversion rate of 0.04 cfs.
- No water was being used for irrigation. According to Mr. Hollenbach, the irrigation of the picnic area is connected to a separate system and that is operated by North Kootenai Water and Sewer District (NKWSD).

WATER USE CALCULATIONS

Pond

- Total pond (lined) capacity = 25 ft x 50 ft x 5 ft = 6250 cf = 0.14 AF
- Surface area = 25 ft x 50 ft = 1250 sf = 0.03 ac
- Seepage loss = 0.0 AF (lined pond)
- Pond evaporation loss (see attached pond evaporation loss calculation) = 0.03 AF
- Total Pond Volume = pond volume + evaporation losses from pond = 0.14 AF + 0.03 AF = 0.17 AF
-

Waterfalls

- Waterfalls size = 120 ft x 25 ft = 3000 sf = 0.07 ac
- Volume of water to operate falls (assumes 3-ft thick sheet of water covering surface area of falls) = 3000 sf x 3 ft = 9000 cf = 0.21 AF
- Falls evaporation loss (see attached falls evaporation loss calculation) = 0.08 AF
- Total water needed to operate falls = 4.2 cfs and 0.21 AF

Total water to be diverted from Hayden Lake = 0.08 AF (falls evaporation loss) + 0.21 AF (recirculated water in falls) + 0.17 AF (pond volume and pond evaporation loss) = 0.46 AF

Total water diverted from Hayden Lake = 0.13 cfs and 0.5 AF (roundup from 0.46 AF)

RECOMMENDED VOLUMES

Diversion to Storage (3/15 to 10/31)

- 57.2 gpm = 0.13 cfs

Aesthetic (3/15 to 10/31)

- 1900 gpm = 0.42 cfs (recirculated amount)

Aesthetic Storage (1/1 to 12/31)

- 0.17 AF (total pond volume) + 0 AF (seepage loss) + 0.08 AF (falls evaporation) = 0.25 AF

Aesthetic From Storage (3/15 to 10/31)

- 0.21 AF (amount of water diverted from storage and recirculated)

Total Amounts

- 0.13 cfs
- 0.5 AF

Because the recommended volumes for aesthetic use exceed the maximum volumes in Permit No. 95-13374, it is recommended that Permit No. 95-13374 be licensed for the original rate and volumes as stated in the permit and that a new permit be prepared to account for the differences. Below is a breakdown of the total volumes listed above for aesthetic use. In addition, irrigation components are listed below to be included in the new permit.

Beneficial Use	Period of Use	Recommended Amounts to be Licensed		Recommended Amounts to be included in a New Permit	
		Rate of Diversion	Annual Volume	Rate of Diversion	Annual Volume
Diversion to Storage	3/15/ to 10/31	0.04 cfs		0.09 cfs	
Irrigation	3/15 to 10/31			0.03 cfs	
Irrigation Storage	1/1 to 12/31				3.2 AF
Irrigation from Storage	3/15 to 10/31				3.0 AF
Aesthetic	3/15 to 10/31	0.03 cfs		0.39 cfs	
Aesthetic Storage	1/1 to 12/31		0.25 AF		
Aesthetic from Storage	3/15 to 10/31		0.14 AF		0.07 AF

PHOTOGRAPHS

Permit No.95-13374

**Falls at Hayden Lake Homeowners Association
Beneficial Use Field Report**

Pump House

Located near shoreline
of Hayden Lake



Lake Pump

5 HP pump



PHOTOGRAPHS

Permit No.95-13374

Falls at Hayden Lake Homeowners Association
Beneficial Use Field Report

Water Intake Line

2-inch poly pipe
extending into Hayden
Lake



Pond



PHOTOGRAPHS

Permit No.95-13374

Falls at Hayden Lake Homeowners Association
Beneficial Use Field Report

Waterfalls



PHOTOGRAPHS

Permit No.95-13374

**Falls at Hayden Lake Homeowners Association
Beneficial Use Field Report**

Pond Pump

40 HP located in wet
well adjacent to pond



Pond 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	01173-01
REVIEWER	NWGC
DATE	11/18/2020

User Input
Calculated value
Formula Explanations

INPUTS

Pond Surface Area (AC.)	0.03	AC.
-------------------------	------	-----

Pond Surface Area (SQ. FT.)	1250	SQ. FT.
-----------------------------	------	---------

I used the following method to obtain my Soil Classification Information:	NRCS Web Soil Survey	
My Soil Classification Is	Lined	
Suggested Seepage Rate (FT./DAY)	0.0000	FT./DAY

Formula: (Surface Area X Seepage Rate) X 7.48 = Gallons Per Day Loss
--

Convert to GPD	0	GPD
----------------	---	-----

Total Seepage Loss (AFA)	0.0	AFA
--------------------------	-----	-----

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.

Pond 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	01173-01
REVIEWER	NWGC
DATE	11/18/2020

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: Porthill (NWS -- USC00107264)

Month	mm/day ¹	Days per month	mm/Month
Jan	-2.24	31	0.00
Feb	-1.56	28	0.00
March	-0.76	31	0.00
April	0.72	30	21.60
May	1.28	31	39.68
June	1.67	30	50.10
July	3.27	31	101.37
August	2.78	31	86.18
September	1.68	30	50.40
October	0.08	31	2.48
November	-2.28	30	0.00
December	-3.03	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 = 351.81

$$\left(\frac{351.81}{304.8} \right) \times 0.03 = 0.03 \text{ AFA}$$

Falls 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	01173-01
REVIEWER	NWGC
DATE	11/18/2020

User Input
Calculated value
Formula Explanations

INPUTS

Pond Surface Area (AC.)	0.07	AC.
-------------------------	------	-----

Pond Surface Area (SQ. FT.)	3000	SQ. FT.
-----------------------------	------	---------

I used the following method to obtain my Soil Classification Information:	NRCS Web Soil Survey	
My Soil Classification is	Lined	
Suggested Seepage Rate (FT./DAY)	0.0000	FT./DAY

Formula: (Surface Area X Seepage Rate) X 7.48 = Gallons Per Day Loss
--

Convert to GPD	0	GPD
----------------	---	-----

Total Seepage Loss (AFA)	0.0	AFA
--------------------------	-----	-----

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:
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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.

Falls Evaporation Loss Calculations

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REVIEWER	NWGC
DATE	11/18/2020

User Input
Calculated value
Formula Explanations

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

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Feb	-1.56	28	0.00
March	-0.76	31	0.00
April	0.72	30	21.60
May	1.28	31	39.68
June	1.67	30	50.10
July	3.27	31	101.37
August	2.78	31	86.18
September	1.68	30	50.40
October	0.08	31	2.48
November	-2.28	30	0.00
December	-3.03	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.

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As described above, precipitation offsets evaporation in winter months, so the net effect is that wintertime precipitation deficit is usually zero.

Total mm/year = 351.81

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

$$\left(\frac{351.81}{304.8} \right) \times 0.07 = 0.08 \text{ AFA}$$



Please send suggestions for improving this site to robison at uidaho dot edu

2020-11-18 08:11

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Coeur d'Alene 1E (NWS -- USC00101956)

Statistics based on thirty year normal spans 1971 to 2015 years

For a different land cover or crop click on the above link.

You can highlight this table and copy via the clipboard to a Microsoft Excel or OpenOffice spreadsheet to plot or otherwise work with this data.

Open water - shallow systems (ponds/streams) Precipitation Deficit (Click here for a graph)															
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Growing Season ^a	Non Growing Season ^b	Annual
Mean^j	mm/day												mm		
Monthly ^c	-2.24	-1.56	-0.76	0.72	1.28	1.67	3.27	2.78	1.68	0.08	-2.28	-3.03	52	0	52
15-Day Moving Average ^d	-2.44	-1.73	-0.79	0.68	1.28	1.60	3.20	2.76	1.78	0.19	-2.39	-3.06			
7-Day Moving Average ^e	-2.29	-1.63	-0.80	0.70	1.31	1.64	3.25	2.82	1.74	0.13	-2.30	-3.03			
3-Day Moving Average ^f	-2.25	-1.57	-0.78	0.72	1.28	1.66	3.27	2.80	1.70	0.09	-2.28	-3.03			
Standard Deviation^k	mm/day												mm		
Monthly ^c	1.77	1.28	1.59	0.91	1.37	1.42	1.15	1.22	0.98	1.55	1.43	2.13	128	0	128
15-Day Moving Average ^d	1.95	1.78	1.41	1.32	1.39	1.78	1.17	1.37	1.30	1.45	1.86	1.91			
7-Day Moving Average ^e	2.54	2.32	2.01	1.99	1.90	2.32	1.50	1.68	1.77	1.91	2.42	2.68			
3-Day Moving Average ^f	3.42	2.97	2.83	2.74	2.74	3.15	2.04	2.12	2.38	2.45	3.35	3.71			
20% Exceedance^l	mm/day												mm		
Monthly ^c	-1.19	-0.46	0.07	1.49	1.99	2.99	3.61	3.36	2.62	0.78	-1.44	-1.55	147	0	147
15-Day Moving Average ^d	0.14	0.27	1.21	2.38	3.25	3.81	4.35	4.04	3.45	1.79	0.00	0.00			
7-Day Moving Average ^e	0.34	0.82	1.94	3.21	4.10	4.65	4.87	4.57	3.70	2.40	0.65	0.26			
3-Day Moving Average ^f	0.55	1.13	2.27	3.82	4.79	5.23	5.20	4.95	4.08	2.65	0.97	0.38			
80% Exceedance^m	mm/day												mm		

RECEIVED

NOV 25 2020

DEPARTMENT OF
WATER RESOURCES



Northwest Groundwater
Consultants, LLC

November 24, 2020

Project No. 01173-01

Idaho Department of Water Resources
PO Box 83720
Boise, Idaho 83720-0098

**SUBJECT: FALLS AT HAYDEN LAKE HOMEOWNERS ASSOCIATION
PERMIT No. 95-13374
BENEFICIAL USE FIELD REPORT,**

On behalf of the Falls at Hayden Lake Homeowners Association (FHLHA), we respectfully submit the enclosed Statement of Completion and Beneficial Use Field Report for Permit No. 95-13374.

If you have any questions, or wish to discuss any items further, please do not hesitate to contact me at (208) 755-1094.

Sincerely,

NORTHWEST GROUNDWATER CONSULTANTS, LLC

Thomas F. Mullen, PG
Principal Hydrogeologist
Certified Water Rights Examiner No. 143

Enclosures

cc: Ken Hollenbach, FHLHA Board Member