

FIELD EXAM CHECKLIST
 PERMIT # 79-14088 STAFF CP DATE 11/28/16
PREPARE LICENSING FILE (Left side)

- ☒ Copy of permit approval & proof report (place on top)
- ☒ Copy of original application for permit
- ☒ Copy of Proof of Beneficial Use Exam fee required \$ 50 Exam fee paid \$ 50
- ☒ Copies of any Amendments/Assignments/Ownership Docs

EXAM PREPERATION (Right side)

- ☒ Blank Beneficial Use Field Report form
- ☒ Aerial photo (system diagram map to be completed with permit owner)
- ☒ Well log (attach to field exam)
- Conditions: Measuring device requirements? _____ Installed? _____
- Other (supplemental conditions, limits, etc.)? _____
- Overlap: POD? _____
- POU? _____

Ownership

Taxlot / ID SOS match?

If new owner, collect Assignment of Permit form / Ownership Change form in field.

EXAM APPOINTMENT

owner or rep phone #? _____

Owner or rep will be present at exam (someone familiar with system)¹?

Exam date/time/place?

If cannot get from web or other references: directions to site? approx driving time from office?

System on/operating normally during exam (not always required)?

SYSTEM INFOPump Diversion

Approx HP?

Owner can provide pump curve?

Pump set or lift?

Approx operating psi?

Approx mainline pipe diameter?

Approx # sprinklers? Nozzle size?

Gravity Flow

Ditch capacity?

Weirs or Flumes installed?

Special Remarks:**POST FIELD EXAM**

- ☒ Exam date data entered
- ☒ Ad Hoc data entry & license shapes
- ☒ Exam file prepared – see N:\WR Field Exams\LicenseFileOrganization
- none Licensing amendments required _____ If so, received?
- ☒ Draft license & WR Layout maps OR _____ Void permit

¹ OK to do exam w/o anyone present if owner agrees in advance, provides info so you can find p/d, how system works, how recognize p/u etc. Usually limited to small systems – spring/creek/well for cabins, few acres irrigation, minor stockwater/wildlife/recreation etc.

11/2016

IN-OFFICE BENEFICIAL USE FIELD REPORT

Permit No: 79-14088

Examiner: CP

Date: 11/28/2016

In-office qualification (IDAPA 035.01.r): ☐ Irrigation ≤ 5 acres
☒ Stockwater storage ≤ 14.6 af
☐ Total diversion rate ≤ 0.24 cfs and not irrigation or storage

Current Owner Name: Hunt Hatch

Address: PO Box 115 Kamiah, Idaho 83536

Beneficial Use Fee Paid: \$50.00

Receipt: C077846

Source: Unnamed Stream

Source change? ☒ N ☐ Y Change clarifies originally intended source.
 If not – void permit.

Point of Diversion			NE				NW				SW				SE			
Twp	Rge	Sec	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE
32N	02W	19													X			

Method of Determination: Pond and dam found in aerial imagery, location from digital PLS mapping

POD change? ☒ N ☐ Y

Place of Use			NE				NW				SW				SE				Totals
Twp	Rge	Sec	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
32N	02W	19													X				

Method of Determination: Aerial imagery and digital PLS mapping

POU change? ☒ N ☐ Y

Purpose of Use: Stockwater Storage

Purpose change? ☒ N ☐ Y

Method of Determination: Storage (pond) apparent in aerial images

Standard Season of Use: 01/01 - 12/31

Update required on license? ☒ N ☐ YOverlap Review POD overlap? ☒ N ☐ Y WR's:Analysis Attached ☐ Comments: No other active permit or application POU/POD in Q-QPOU overlap? ☒ N ☐ Y WR's:

Comments: Same as above

Diversion Rate Permitted Rate: - cfs BU Standard Limit: - cfs
 BU Fee Limit: - cfs Theoretical (optional): - cfs
Recommended Total Div Rate: - cfs

Annual Volume

For Irrigation: cfs x 1.9835 x days = af
 acres x af/ac (FHR) = af
 Smaller of two volumes = af

For other uses:

2.5 af for stockwater storage (from permit)

0.4 af capacity

0.7 af consumption (30 head of cattle per memo #3)

1.4 af for replacement of losses by seepage and evaporation

IN-OFFICE BENEFICIAL USE FIELD REPORT

Recommended Amounts

Beneficial Use	Season of Use	Diversion Rate (cfs)	Annual Volume (af)
Stockwater Storage	01/01 - 12/31		2.5

Totals

cfs

2.5 af

Amendments Required

☐ Change P.D.☐ Add P.D☒ None☐ Change P.U.☐ Add P.U.☐ Other:

Conditions: Remove previous conditions, add 259 and 220

Have conditions of permit been met? ☒ Y ☐ N

Narrative:

Permit 79-14088 authorized an annual storage volume of 2.5 af for stockwater storage. This volume is less than 14.6 af, qualifying this permit for an in-office field examination. This exam was completed on 11/28/2016 by WRA Cody Parker.

The locations of the POD and POU were found using aerial imagery, and descriptions for these locations were confirmed using digital PLS mapping. The POU is the approximately 0.1-acre reservoir created behind the dam (the POD) built across the un-named stream.

A review of the existing water rights and active permits in the area showed no overlap for the POU/POD for this permit. I did not include the place of use overlap sheet from workflow, because this was the only WR listed on it.

I determined that the annual storage volume should be 2.5 af, corresponding to the permitted volume. The Application for Permit suggests that the average depth of the reservoir is 6 feet. Judging from the topo map, the maximum depth is likely around 10 feet which, when multiplied by 0.4, gives an average depth of 4 feet. This is close to the average depth estimated by the landowner. Because this is an in-office field exam for a relatively small reservoir, I decided to consider the liberal estimate for average depth of 6 ft, rather than 4 ft. For the pond analysis, I factored in a pond capacity of 0.42 af (6 ft average depth x 0.07 acres surface area), with evaporative and seepage losses totaling 5.2 af. The total required volume was 5.9 af. This calculation comes from using the soil type that results in the greatest seepage losses. Another reasonable option for soil type provides a much lower estimate of seepage losses and reduces the total required volume to 0.9 af. For this reason, I have recommended the license for the permitted 2.5 af. Conditions 219 and 220 have been added to define the annual storage volume limit and the physical dimension of the reservoir.

Workflow

Exam Date Entered ☒
 POU/POD shapes ☐
 Combined Rights Entry ☐
 Wild & Scenic Entry ☐
 Draft License and Map ☒
 Other:

Supporting Documents

Aerial Photograph ☒ Well Log ☐
 POU/POD Map ☒ Diagrams ☐
 LandSat ☐ Theoretical ☐
 Photographs ☐ Other:
 Site Visit ☐ Date:

Authentication

Field Examiners Name: Cody ParkerDate: 11/28/16Reviewer: Angela McGinnisDate: 12/9/16

State of Idaho
Department of Water Resources
Map of POU/POD
79-14088

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

02W



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

0 0.005 0.01 0.02 Miles



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	79-14088
REVIEWER	Cody Parker
DATE	11/28/2016

User Input
Calculated value
Formula Explanations

INPUTS

Pond Surface Area (AC.)	0.07	AC.
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Pond Surface Area (SQ. FT.)	3049	SQ. FT.
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I used the following method to obtain my Soil Classification information:	NRCS Web Soil Survey	
My Soil Classification is	GC	
Suggested Seepage Rate (FT./DAY)	0.2000	FT./DAY

Formula: (Surface Area X Seepage Rate) X 7.48 = Gallons Per Day Loss
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Convert to GPD	4562	GPD
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Total Seepage Loss (AFA)	5.1	AFA
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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.

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	79-14088
REVIEWER	Cody Parker
DATE	11/28/2016

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: Kooskia (NWS -- 105011)

Month	mm/day ¹	Days per month	mm/Month
Jan	-1.44	31	0.00
Feb	-0.52	28	0.00
March	-0.06	31	0.00
April	0.74	30	22.20
May	1.26	31	39.06
June	2.74	30	82.20
July	4.93	31	152.83
August	4.41	31	136.71
September	2.31	30	69.30
October	0.11	31	3.41
November	-1.14	30	0.00
December	-1.29	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 = 505.71

$$\left(\frac{505.71}{304.8} \right) \times 0.07 = 0.1 \text{ AFA}$$

Total Storage Calculations

FILE NUMBER	79-14088
REVIEWER	Cody Parker
DATE	11/28/2016

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.)	0.07	"Surface Area" is automatically carried over from the "Seepage Loss" sheet.
Average Pond Depth (FT.)	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)	0.42	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)	0.28	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)	5.1	The "Estimated Seepage Loss" is automatically carried over from the "Seepage Loss" sheet.
Estimated Evaporation Loss (AF)	0.1	The "Estimated Evaporation Loss" is automatically carried over from the "Evaporation Loss" sheet.
Total Volume Required (AF)	5.9	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.

Flow Rate into Pond (CFS)	1.00	The "Flow Rate into Pond" depicts the actual flow, either measured or estimated, into the pond. For offstream facilities, this will be equivalent to "diversion to storage" rate.
Highest Daily Evaporation Rate From Evaporation Tab. (mm/Day)	4.93	This number is carried over from the "Evaporation Loss" sheet. It is the highest recorded number in the "Precipitation Deficit Table".
Required Daily Maintenance Volume (AF/Day)	0.02	"Required Daily Maintenance Volume" is the maximum volume of water needed on any given day during the year to maintain pond volume. It is calculated by adding the highest daily evaporation loss to the average daily seepage loss in acre feet. The average daily seepage loss is calculated by dividing the "Estimated Seepage Loss" by 365 days. This is acceptable, since the seepage rate shouldn't vary throughout the season unless the pond completely freezes over during the winter months. The highest daily evaporation loss is calculated by dividing the Highest Daily Evaporation Rate by the 304.8 conversion factor and multiplying this number by the pond surface area to attain a combined daily acre feet requirement.
Minimum Maintenance Flow (CFS)	0.01	The "Minimum Maintenance Flow" is the minimum amount of flow required to maintain the level of the pond. This number is determined by dividing the "Maximum Required Daily Maintenance Volume" by 1.9835. This flow can be used to determine if the flow rate into the pond is adequate to maintain the pond level.
Days Required to Fill the Pond	0	The "Days Required to Fill the Pond" is calculated by dividing the "Pond Capacity" by the "Flow Rate" minus "Minimum Maintenance Flow" multiplied by 1.9835. This section will assist you in determining if the flow rate being diverted to the pond is adequate to fill the pond while maintaining the pond level. The length of time to fill the pond will help determine if the flow rate is adequate for the size of pond being proposed. <i>If this number is approximately 6 months (180 days) or more, the reviewer should have a discussion with the applicant to make sure he/she understands that it will take a significant length of time to fill the pond.</i>
Days Required to Fill the Pond at 13,000 Gallons per Day	17	Some water users may want to fill a pond under the 13,000 gallons per day domestic exemption. The "Days Required to Fill the Pond at 13,000 Gallons per Day" is calculated by converting the "Pond Capacity" and the "Required Daily Maintenance Volume" to gallons. The "Pond Capacity" is then divided by 13,000 gallons minus the "Required Daily Maintenance Volume" in gallons to determine the number of days to fill pond. <i>If this number is approximately 6 months (180 days) or more, the reviewer should have a discussion with the applicant to make sure he/she understands that it will take a significant length of time to fill the pond.</i> Negative values indicate that the supply of 13,000 gallons per day is not enough volume to overcome the required daily maintenance volume; the pond will never fill.