

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 96-9691

Exam Date: 08/06/2020

1. Current Owner:
WESTWOOD VILLAGE HOMEOWNERS ASSN 1621 WESTWOOD DR
PO BOX 1941 SANDPOINT ID 83864-0905

2. Accompanied by: Jerry Binder
Phone No: 509-553-3051
Address: 1001 N. Garry Drive, Liberty Lake WA 99019
Relationship to permit Holder: Permit holder's representative, Westwood Village home owner

- | | |
|---|------------------------------------|
| 3. SOURCE:
PEND OREILLE RIVER | <u>Tributary</u>
COLUMBIA RIVER |
|---|------------------------------------|

Method of Determination: Arcmap and DRG.

B. OVERLAP REVIEW

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

Water Right No.	Source	Purpose of Use	Basis

Comments: _____

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

Water Right No.	Source	Purpose of Use	Basis

Comments: _____

C. DIVERSION AND DELIVERY SYSTEM

1. LOCATION OF POINT(S) OF DIVERSION:

PEND OREILLE RIVER NW¼ SE¼, Sec. 28, Twp 57N, Rge 02W, B.M. BONNER County

Method of Determination: GPS. POD is a pump in the Pend Oreille River located at -116°34.504, 48°15.507.

PLACE OF USE: IRRIGATION

[illegible]

Total Acres: 6.0

PLACE OF USE: IRRIGATION STORAGE, WILDLIFE STORAGE, and RECREATION STORAGE

[illegible]

PLACE OF USE: IRRIGATION FROM 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	
57N	02W	28			3.0 L2														3.0

Total Acres: 3.0

Method of Determination: Field exam and Arcmap aerial imagery.

3.

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

☒ Indicate weir size/pipe as applicable.

Map Attached Showing Location(s) of point(s) of diversion and place(s) of use (required). Scale must be

☒ 1:24,000 or greater.☒ Aerial Photo Attached (required for irrigation of 10+ acres).☒ Photo of Diversion and System Attached

4.

Well or Diversion ID No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
PUMP IN RIVER	BALDOR	15		PURIST PUMP	

D. FLOW MEASUREMENTS

1.

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

2. Measurements: Applicant's water system consisted of submerged intake pipe that was buried up to the motor, then buried main line to a point it discharged into a pond; due to inadequate pipe requirements, a flow measurement was not able to be taken.

E. FLOW CALCULATIONS☒ Additional Computation Sheets Attached

Measured Method: The applicant has an old motor and pump installed in their water system. Extensive online research was conducted associated with Baldor motors, and it was found the applicant's motor has been discontinued. Current like model and HP motors ALL have a 400 gpm pump capacity. Photographs from the applicant's system install showing data plates and 15 hp pump motor were taken United Crown Pump and Drilling to collect additional information on the applicant's pumping components. Subject matter experts at United Crown assisted in matching standardized straight centrifugal pump motor operational capacity to the applicant's motor. A resulting Type "B" Rating Curve for a 15 HP pump motor configured the same as the applicants was used to derive pump performance equaling 400 gpm or 0.89 cfs.

F. VOLUME CALCULATIONS

1. Volume Calculations for irrigation:

$$V_{IR} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 6.0 \text{ acres} \times 3.0 \text{ afa} = 18.0 \text{ af}$$

$$V_{DR} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = 0.12 \text{ cfs} \times 214 \text{ days} \times 1.9835 = 50.9 \text{ af}$$

$$V = \text{Smaller of } V_{IR} \text{ and } V_{DR} = 18.0 \text{ af}$$

2. Volume Calculations for Other Uses:

- This is a surface source water right that includes direct flow irrigation and irrigation from storage uses; there is no maximum diversion volume applied to the license, but there are annual volumes associated with pond storage and irrigation from storage water usage
- See attached pond analysis worksheet.
- Wildlife storage and recreation storage annual volume = 2.2 af (pond capacity) + 9.5 af (seepage and evaporation loss) = **11.7 af** respectively.
- Irrigation from storage (multiple fill) annual volume = 3.0 acres x 3.0 afa = 9.0 af

G. NARRATIVE/REMARKS/COMMENTS

Field exam performed on 8/6/2020 with the applicant's representative, Jerry Binder, showed water being diverted from the Pend Oreille River for multiple storage components, as well as irrigation direct flow and irrigation from storage use(s). At the POD, applicants had installed a 3 inch intake pipe at the end of their dock, with submerged main line that routes to a small pump house located along the shore. An old 15 HP Baldor motor driven pump routes water from the pump house via 2 inch line up grade to the applicant's pond where it discharges for storage.

Extensive online research was conducted associated with Baldor motors, and it was found the applicant's motor has been discontinued. Current similar model & HP motors all designate 400 gpm pump capacity shown on pump performance curves. Photographs from the applicant's system showing data plates and 15 hp pump motor were taken to United Crown Pump and Drilling to collect additional information regarding the applicant's pump components. Subject matter experts at United Crown assisted in matching a standardized straight centrifugal pump motor operational capacity with the applicant's motor. A resulting Type "B" Rating Curve for a 15 HP pump motor configured the same as the applicants was used to derive a pump performance equaling 400 gpm or 0.89 cfs. The applicant's diverting works is in excess of the permit approved diversion rate of 0.34 cfs. The diversion rate of **0.34 cfs** for diversion to storage is recommended as the maximum diversion rate for licensing purposes. The direct flow portion of the applicant's permit is recommended for a diversion rate of **0.12 cfs**, which equals the 6.0 acres irrigation x 3.0 afa that accounts for irrigation of common areas by Westwood Village HOA.

During licensing review, department staff reached out to the Mr. Binder to discuss the excess in diversion rate. The applicant is currently seeking an addition water right that will cover the aesthetic flow through that is not accounted for on the current permit. The applicant submitted the application for permit for right 96-9838 on 01/04/2021, and the diversion rate applied for by applicant under right 96-9838 accounts for the excess up to the applicant's pump capacity.

During the field exam, the common area of Westwood Village was walked, and active irrigation observed. The applicant's direct flow irrigation system consists of the main pipeline routing to the storage pond, with several branch pipes and irrigation risers-to-pressurized sprinkler connectors for irrigation. In this fashion, the entirety of the direct flow irrigation system is charged when the pump is operating, and irrigation is cycled by changing out pressurized sprinkler heads. Arcmap aerial imagery coupled with field map sketches were used to trace out the irrigation POU, which equals 6.0 acres. The annual volume applied to the irrigation beneficial use equals 6.0 ac x 3.0 afa = 18.0 af, but as this is a surface source water right, there is no volume metric applied to the irrigation (direct flow) beneficial use for licensing purposes.

The pond has a surface area of 1.1 acres, a maximum depth of 5 feet, average depth of 2 feet, a pond capacity of 2.2 af, seepage loss of 8.0 af, and estimated evaporation loss of 1.5 af. The pond has a multiple fill volume for irrigation from storage use equal to 9.0 af. The total volume required on an annual basis equals 20.7 af, but due to the surface water source is not included toward a maximum diversion volume. The annual diversion volume(s) applied to the wildlife storage and recreation storage beneficial use(s) equals 2.2 af (pond capacity) + 9.5 af (seepage and evaporation loss) = **11.7 af**, which will be carried forward to licensing. The storage pond is the established POU for the multiple storage components for licensing purposes. The annual volume associated with irrigation from storage use equals 3.0 ac x 3.0 afa = 9.0 af, and accounts for irrigation from the small pond at the head of the storage pond(s). Water is routed from the pump to the ponds, and fills from within the pond high water mark. Water from the pond flows down grade through storage segments that include two weirs constructed to manage water levels in each segment of the pond. As water flows through the pond, it reaches the lowest elevation area of the pond and overflow is discharged back to the Pend Oreille River via a headgate and six inch pipe.

The irrigation from storage POU consists of small irrigated corridors around homes and walkways. The applicants divert water from two separate points from the pond using smaller pumps for distribution to two different pressurized sprinkler

system zones. The irrigation from storage system is separate from the direct flow irrigation system that services the common areas. During the exam, several areas of small lawn spaces in between homes, their drive ways, and surface roads were observed. Arcmap aerial imagery was used during licensing review along with field exam maps to trace out the irrigation from storage POU, which equals 3.0 acres. The annual volume applied to the license for irrigation storage and irrigation from storage equals 3.0 ac x 3.0 afa = **9.0 af**.

During licensing review discrepancies between the application and permit were found regarding irrigation acreage. The original application for permit was amended and received by the department on 9/24/2018. Within this amended application 1.6 acres irrigation in the SWNE section 26, and 7.2 acres in the SWNE section 28 were identified. These values were used when the permit was developed. Researching the backfile shows a 2nd Amended application for permit was received by the department on 3/1/2019. The 2nd amendment identifies 9.5 acres of irrigation in the SWNE section 28. It appears the permit was drafted and approved using the incorrect amendment, which resulted in incorrect and smaller irrigation acreage values applied to the permit. Due to the 2nd amendment running through advertising with 9.5 acres identified, and the 2nd amendment permit superseding the first amendment, the finalized license values equal to a total of 9.0 acres observed at time of field exam shall be used to license this permit. This is being done to correct administrative data entry errors and is not being considered enlargement of the permit for licensing purposes.

Condition 259 was updated during licensing review to reflect pond volume data and irrigation from storage volume metrics following the field exam. All other conditions on the permit will remain on the license. There are no overlap concerns for this water right. The applicant has applied for an addition water permit No. 96-9838, which accounts for additional diversion rate and adds aesthetic storage and aesthetic flow through beneficial uses for the same pond associated with this right. Overlap between rights 96-9691 and new application for permit 96-9838 shall be identified in the development of the new right 96-9838, once developed.

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>Rate of Diversion</u>	<u>Annual Volume</u>
IRRIGATION	04/01 to 10/31	0.12 CFS	
IRRIGATION STORAGE	01/01 to 12/31		9.0 AF
IRRIGATION FROM STORAGE	04/01 to 10/31		9.0 AF
WILDLIFE STORAGE	01/01 to 12/31		11.7 AF
RECREATION STORAGE	01/01 to 12/31		11.7 AF
DIVERSION TO STORAGE	01/01 to 12/31	0.34 CFS	

Totals: 0.34 CFS

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 *Luke Bates* Date 01/04/2021

Reviewer *Adam Fink* Date 1/7/2021

State of Idaho
Department of Water Resources
Attachment to Field Exam
96-9691

IRRIGATION system diagram.



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

0 0.035 0.07 0.14 Miles



IRRIGATION STORAGE, RECREATION STORAGE, and WILDLIFE STORAGE system diagram.



-
- A horizontal number line representing distance in miles. The line starts at 0 on the left and ends at 0.16 on the right. There are major tick marks labeled 0, 0.04, 0.08, and 0.16. Between each of these major tick marks, there are four smaller, unlabeled tick marks, dividing each 0.04-mile segment into five equal parts of 0.008 miles each.



State of Idaho
Department of Water Resources
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IRRIGATION FROM STORAGE system diagram.

02W

57N



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

0 0.0425 0.085 0.17 Miles

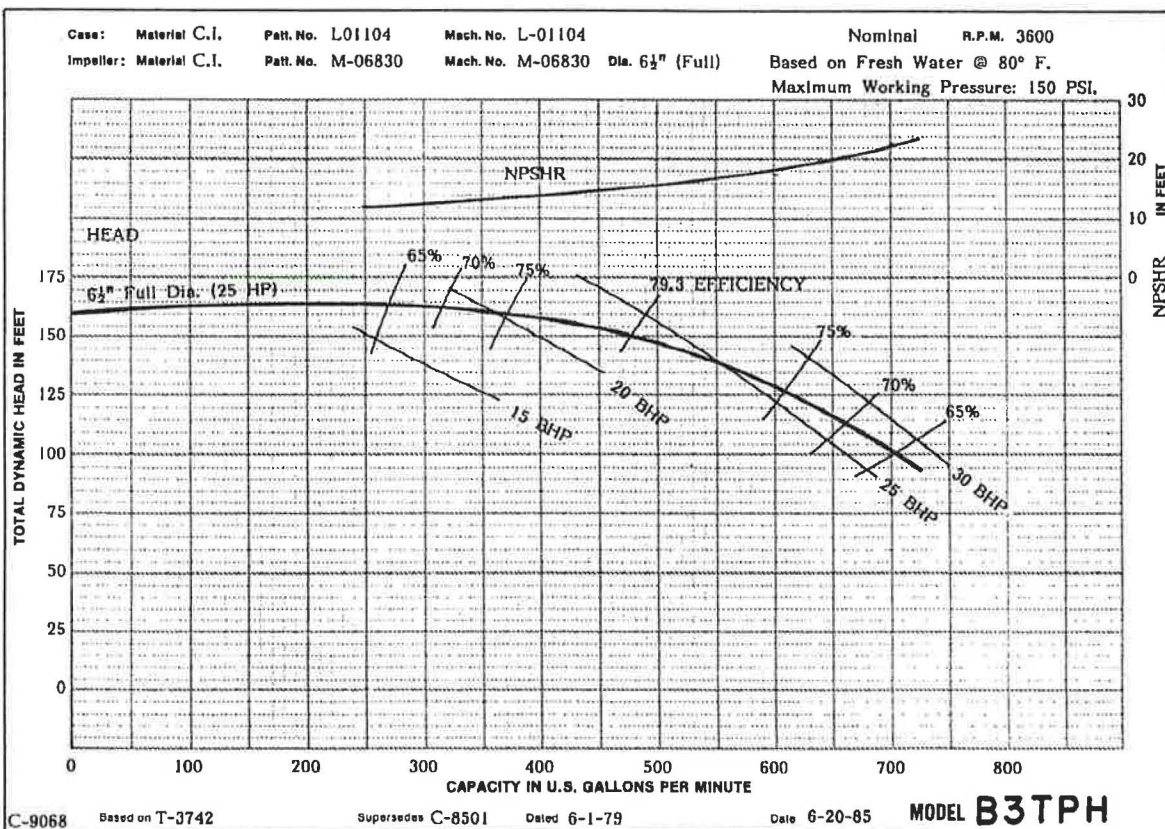
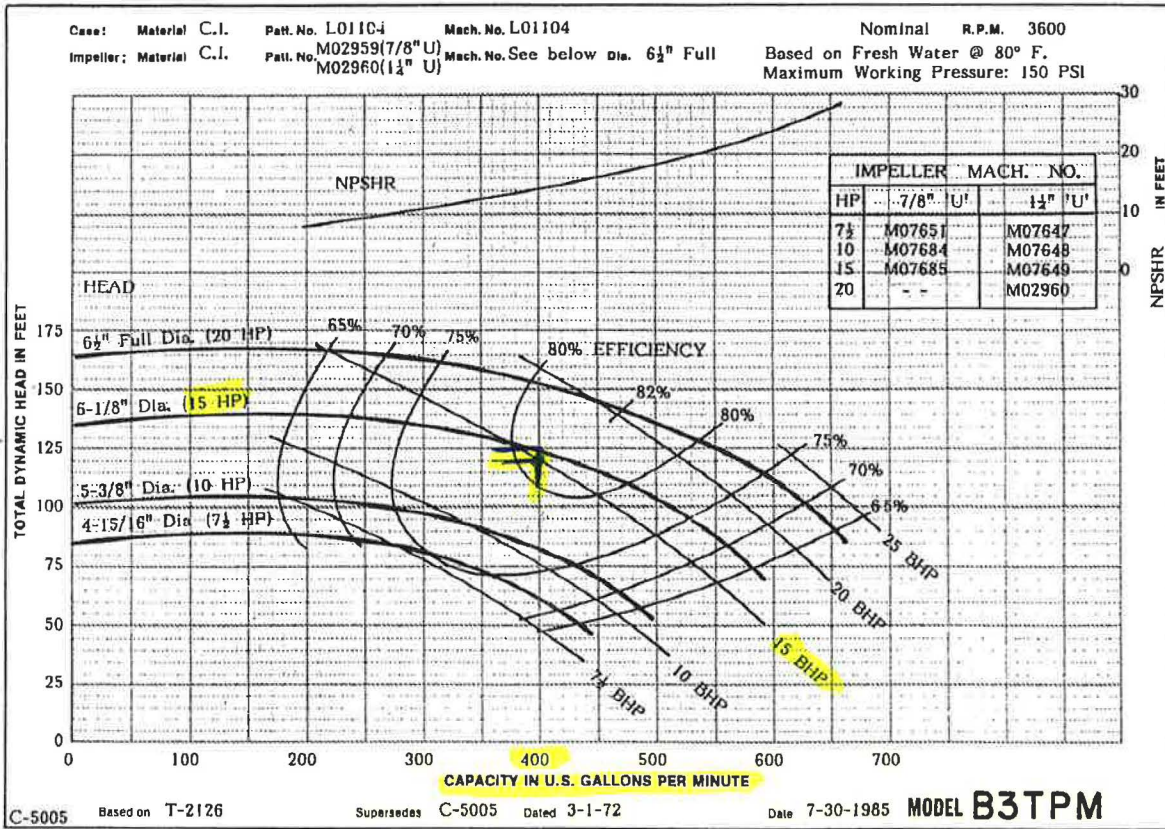




BERKELEY PUMPS

TYPE "B" RATING CURVES MOTOR DRIVE

CURVE	4075
DATE	1-2-86
PAGE	4.02
SUPERSEDES	
All previously issued	
4075 Curves	



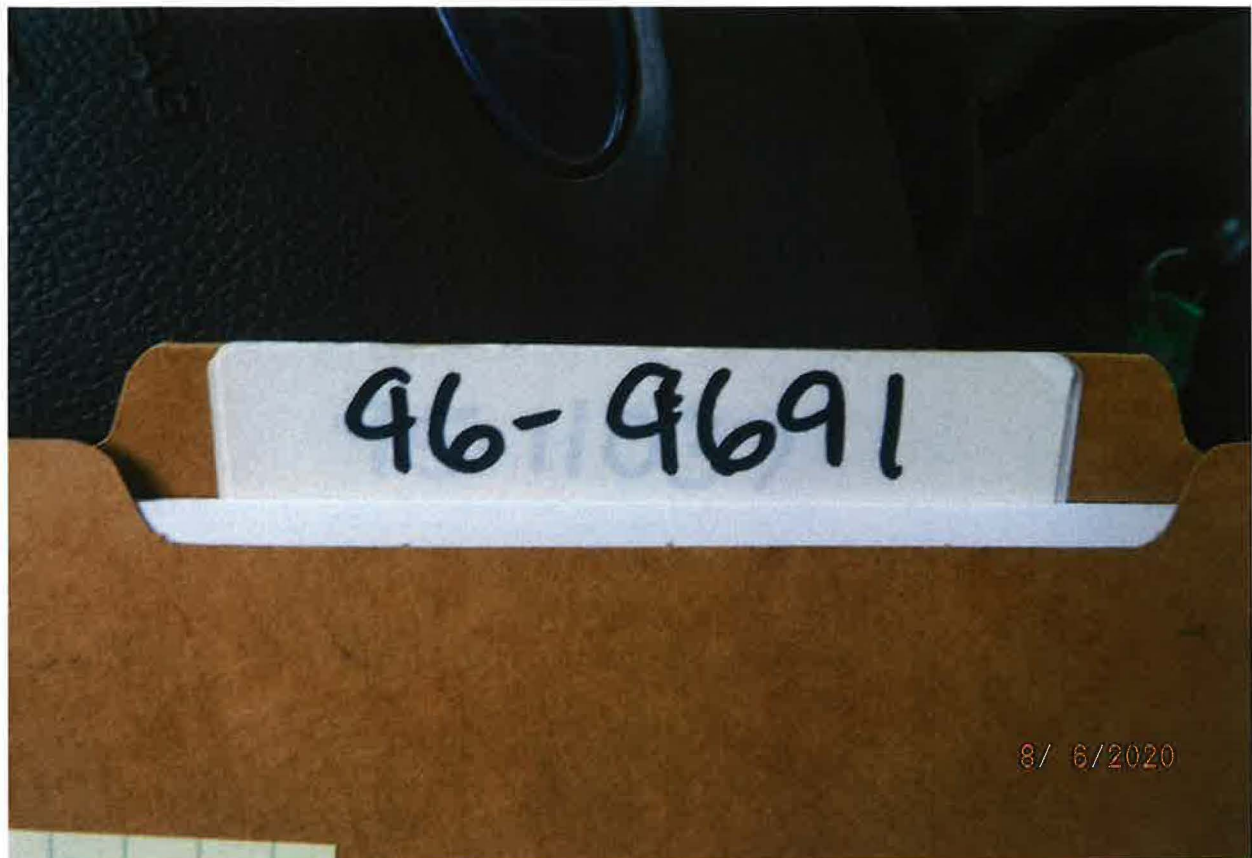
Total Storage Calculations

FILE NUMBER	96-9691
REVIEWER	Luke Bates
DATE	12/18/2020

This spreadsheet has been designed by Idaho Department of Water Resources to estimate the total seepage, evaporation and fill capacity required for a pond.

User Input
Calculated value
Formula Explanations

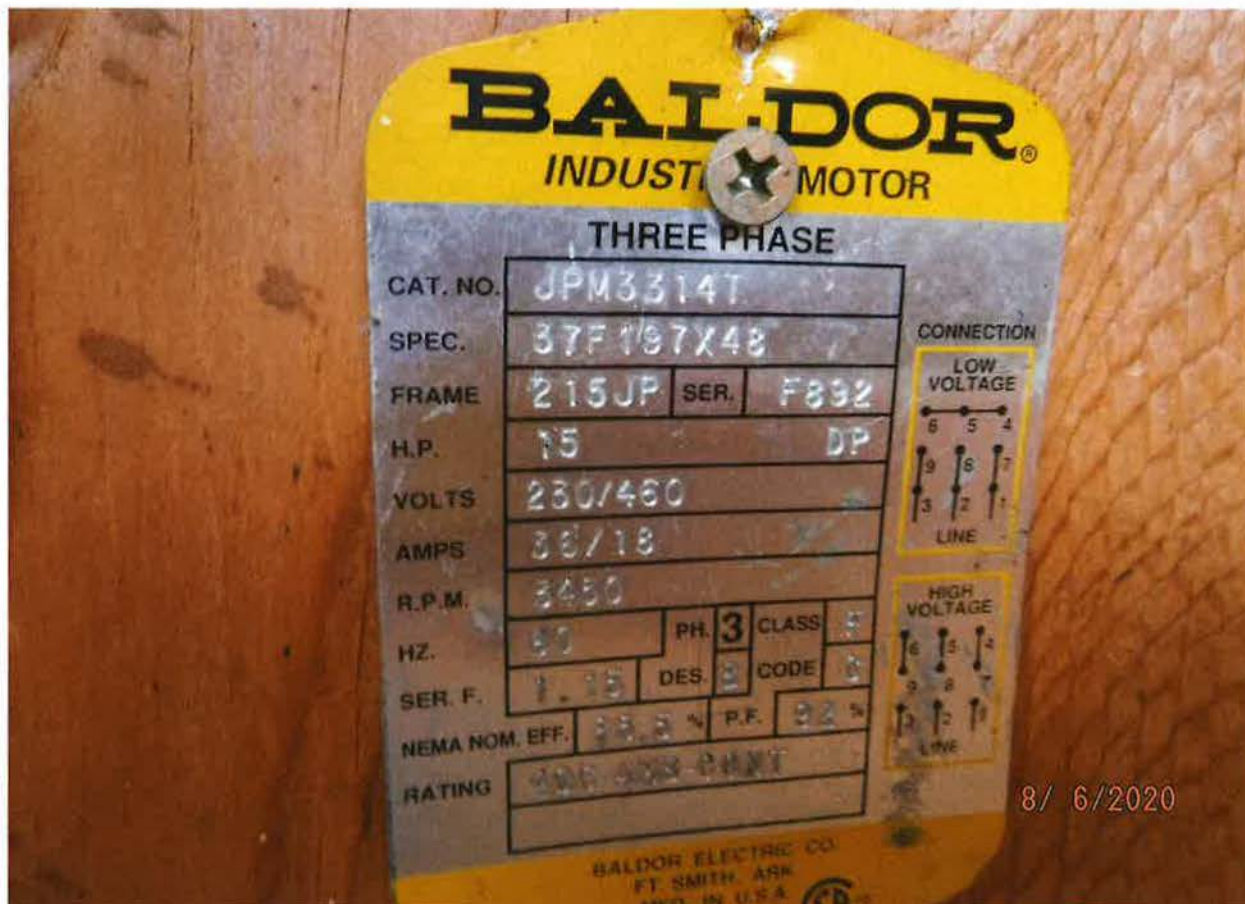
Surface Area (AC.)	1.1	"Surface Area" is automatically carried over from the "Seepage Loss" sheet.
Average Pond Depth (FT.)	2	"Average Pond Depth" depicts the actual depth of the pond either measured or estimated. Note: If you know the maximum depth and not the average depth, the Field Examiner's Handbook 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)	2.2	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)	9	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)	8.0	The "Estimated Seepage Loss" is automatically carried over from the "Seepage Loss" sheet.
Estimated Evaporation Loss (AF)	1.5	The "Estimated Evaporation Loss" is automatically carried over from the "Evaporation Loss" sheet.
Total Volume Required (AF)	20.7	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.



FIELD EXAM DATE 8/6/2020



PUMP HOUSE – POD IS AN INTAKE PIPE IN THE PEND OREILLE RIVER



15 HP PUMP DIVERTS WATER FROM THE RIVER





EXAMPLE IRRIGATION RISER FOR PRESSURIZED SPRINKLERS



PRESSURIZED SPRINKLER WITH QUICK ATTACHMENT LINK



IRRIGATION POU



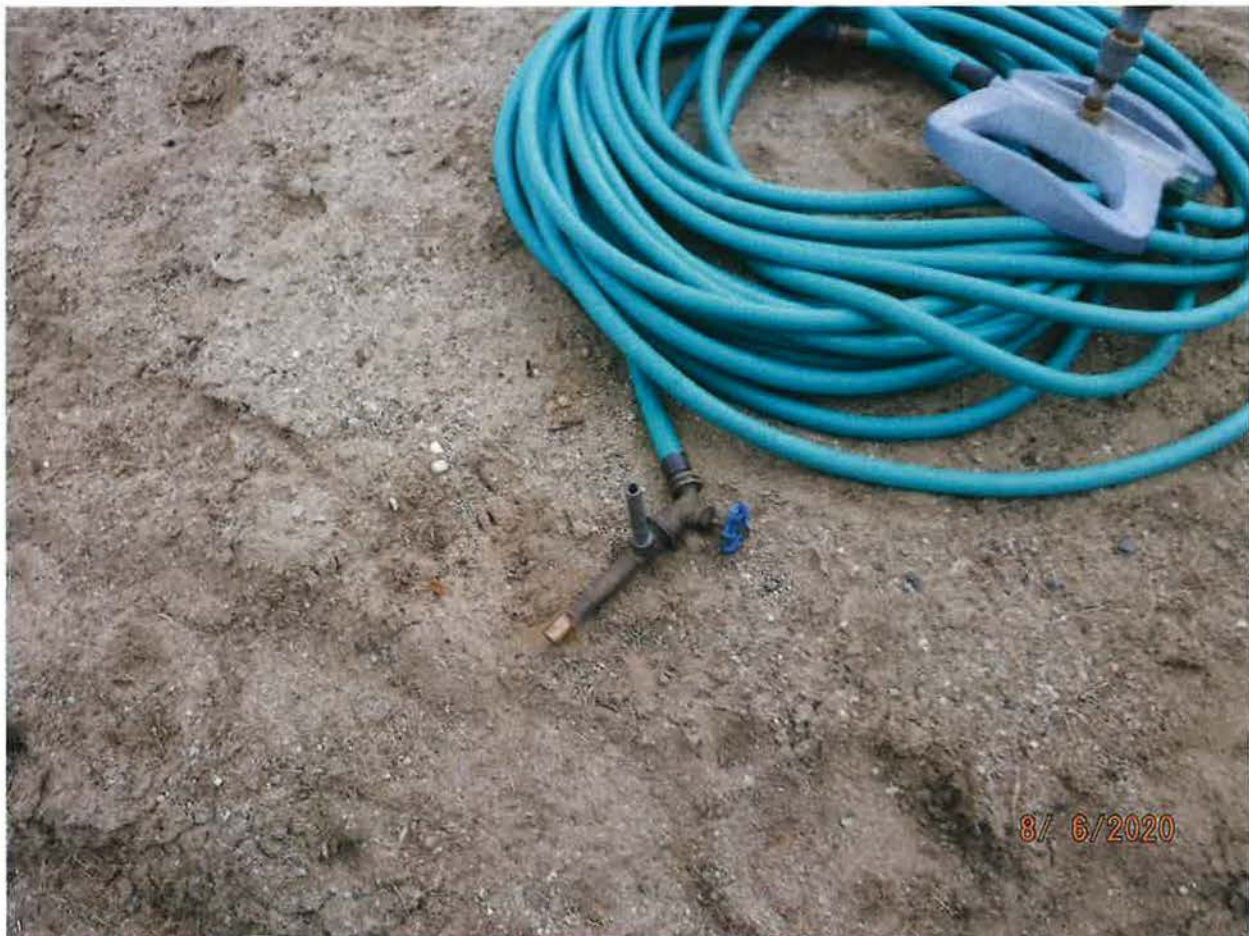


IRRIGATION POU





MULTIPLE SPRINKLER TYPES USED BY APPLICANT FOR IRRIGATION SYSTEM





IRRIGATION STORAGE, RECREATION STORAGE, WILDLIFE STORAGE POU – POND





WATER LEVEL CONTROL POINT IN POND





MULTIPLE STORAGE POU





IRRIGATION FROM STORAGE SYSTEM AT POND POU



PIPE FROM POND TO PUMP HOUSE FOR IRRIGATION FROM STORAGE USE



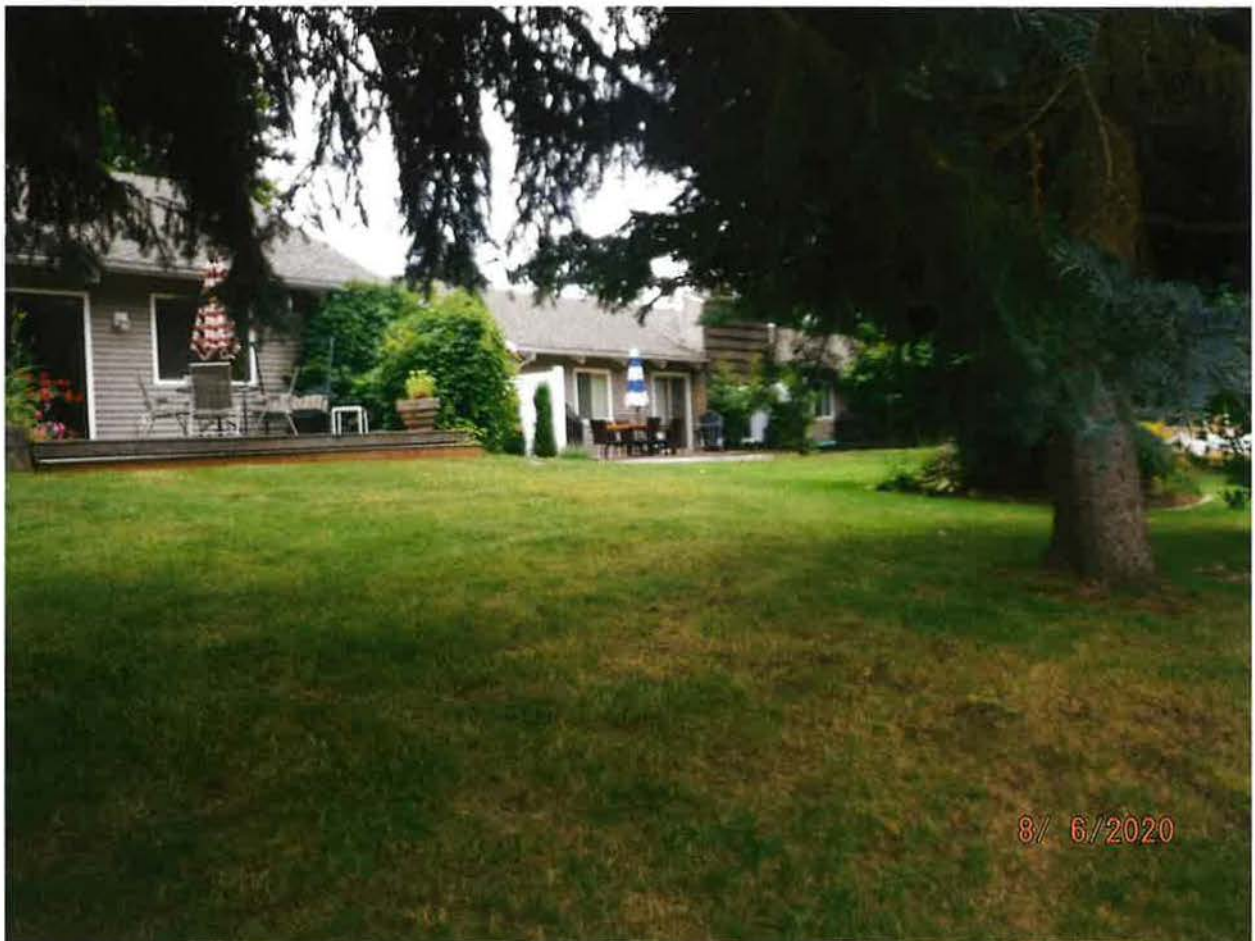
3 HP PUMP USED FOR IRRIGATION FROM STORAGE USE



IRRIGATION FROM STORAGE POU



IRRIGATION FROM STORAGE POU





IRRIGATION FROM STORAGE POU





IRRIGATION FROM STORAGE SYSTEM

