

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATIONPermit No: **2-10465**Exam Date: **02/07/2020**

1. Current Owner: Name: **DALE VAN ES AND/OR JACKIE VAN ES**
Representative: **SPF WATER ENGINEERING LLC**
Security Interest: **RABO AGRIFINANCE INC**

Owner of Record Correct? X Y NAddress of Record Correct? X Y N

If No: Address:

Note: Water right permit 2-10465 is NOT located within the geographic boundary of a Water District and shall be flagged as "No Water District" (NWD).

2. Beneficial Use Fees have been paid: X Y N Receipt No: C105790

3. SOURCE

SNAKE RIVER

TRIBUTARY

COLUMBIA RIVER

Method of Determination: ArcGIS and Field ExaminationChange in Source: Y X N**B. OVERLAP REVIEW**

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

Water Right No.	Source	Purpose of Use	Basis
57-12006	Ground Water	Stockwater / Commercial	Permit / Active
2-10576	Snake River	Stockwater	Permit / Active
57-11673	Ground Water	Stockwater / Commercial	License / Active
57-2254	Ground Water	Irrigation	License / Active
2-10238	Snake River	Irrigation	License / Active
2-10239	Snake River	Irrigation	License / Active
2-10240	Snake River	Irrigation	License / Active
2-10241	Snake River	Irrigation	License / Active
2-10242	Snake River	Irrigation	License / Active
2-10243	Snake River	Irrigation	License / Active

Comments: A review of the property in ArcGIS and a place of use comparison shows two water rights and two permits that directly overlap the place of use. This permit (2-10465) along with permits 57-12006 and 2-10576 are newly acquired permits and are utilized at this dairy in addition to ground water right 57-11673. Rights and permits listed above are owned by the Applicant and are directly tied to and used for the dairy facility with the exception of right 57-2254, which is for irrigation use.

Right 57-2254 has combined acre and volume limits with the multiple Snake River irrigation rights listed and has a separate combined rate limit of 2.10 cfs with 57-11673. The Snake River irrigation rights, including ground water right 57-2254, are owned by the Applicant and all overlap the place of use at the dairy but are NOT directly tied to or used at the dairy. The exception is permit 2-10576 (see #2 below) which is diverted from the Snake River for dairy stockwater use in addition to this permit.

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

Water Right No.	Source	Purpose of Use	Basis
2-10238	Snake River	Irrigation	License / Active
2-10239	Snake River	Irrigation	License / Active
2-10240	Snake River	Irrigation	License / Active
2-10241	Snake River	Irrigation	License / Active
2-10242	Snake River	Irrigation	License / Active
2-10243	Snake River	Irrigation	License / Active
2-10576	Snake River	Stockwater	Permit / Active

Comments: A review of the property in ArcGIS and a point of diversion comparison shows several water rights with the same single point of diversion on the Snake River. These rights are for irrigation and all have combined acre and volume limits with 57-2254. These irrigation rights are owned by the Applicant under Desert Farms Real Estate LLC but are NOT directly tied to or used at the dairy.

The exception is permit 2-10576, which is diverted from the Snake River for stockwater use at the dairy. This permit and permit 2-10576 are both for stockwater use, are both diverted from the Snake River, and are both used to supplement well water at the dairy.

C. DIVERSION AND DELIVERY SYSTEM

1. LOCATION OF POINT(S) OF DIVERSION:

Source	Govt. Lot	¼	¼	¼	Sec.	Twp.	Rge.		County
SNAKE RIVER	1		NW	NW	23	02N	04W	B.M.	OWYHEE

Method of Determination: ArcGIS and Field Examination. The point of diversions legal description is correct. Water rights and permits associated with this point of diversion on the Snake River, including this permit, are all located on a single spatial data point (#303026) in ArcGIS. The State of Idaho owns the property at the Snake River pump station and the Applicant has an easement agreement.

Change in POD? X N Amendment Required? X N

2. PLACE OF USE: Use: STOCKWATER

TWP	RGE	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
02N	04W	28									X	X	X						
02N	04W	29													X			X	
		Lot #																	
Total Acres =																			

Method of Determination: Tax Parcels, ArcGIS, and Field Examination

Change in POU? X N Amendment Required? X N

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

 N/A Indicate weir size/pipe as applicable.

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

 X 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
Motor #1 (West)	GE	250	Z11Z296R034R-5	N/A	N/A
Motor #2 (West)	US Electric	250	G01-BF85A-M-DL	N/A	N/A
Motor #3 (East)	Westinghouse	350	I-518166	N/A	N/A
Motor #4 (East)	GE	200	5K6278XH1A	N/A	N/A

*Code to correspond with No. on map and aerial photo

* The above information is for the four motors located at the Snake River pump station used to deliver water for this permit, permit 2-10576, and the associated Snake River irrigation rights listed above.

Two (2) existing wells adjacent to the dairy (57-11673 & 57-12006) are the primary source of water for the dairy. A third well (57-2254) located north of the dairy is used for irrigation and has combined acre and volume limits with Snake River irrigation rights and a separate rate limit when combined with 57-11673. The primary ground water wells adjacent to the fresh water holding pond are used only if necessary to fill the holding pond, otherwise the pond is typically filled with Snake River water from the four pumps at the Snake River pump station. Due to the fact that one or all of the pumps at the Snake River station can fill the pond, the full diversion rate should be granted.

Right 57-11673 and permit 57-12006 are for stockwater and commercial use and have 3 points of diversion each. One of the 3 points of diversion includes the point of diversion for right 57-2254 which, by itself, has one point of diversion.

D. FLOW MEASUREMENTS

1. Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
None	N/A	N/A	N/A	N/A	N/A	N/A

2. Measurements: A field examination was conducted on 2/6/2020 to verify number and type of dairy stock, commercial uses, point of diversion, and place of use. No measurement was conducted due to the system piping configuration being buried underground. A second point of diversion field visit was conducted on 2-14-20 to collect pump and motor information to calculate a theoretical diversion rate (see E below and attached pictures).

E. FLOW CALCULATIONS

 X Additional Computation Sheets Attached

Measured Method:

The field examination and the Idaho Department of Agriculture's "Animal Water Intake in Gallons per Day" specification sheet was used as a guide for stockwater/dairy rates and volumes. The stockwater rate and volume for this dairy was determined based on the attached dairy use spreadsheet. A theoretical rate was calculated for the Snake River pumps based on current pump specifications as a flow measurement was not possible.

Theoretical Diversion Rate for Snake River Pump Station (see attached spreadsheet for 4 Snake River pumps):

WEST Pump Station = 5.70 cfs

EAST Pump Station = 6.26 cfs TOTAL = 11.96 cfs

Water right 2-10238 = 0.72 cfs

Water right 2-10239 = 3.28 cfs

Water right 2-10240 = 0.49 cfs

Water right 2-10241 = 2.20 cfs

Water right 2-10242 = 0.71 cfs

Water right 2-10243 = 4.76 cfs

Total = 12.16 cfs

The capacity of the pump system is less than the water rights currently being diverted from the Snake River pumping plant. A condition will be needed that limits the diversion rate of 2-10238, 2-10239, 2-10240, 2-10241, 2-10242, 2-10243, and 2-10465 to a combined diversion rate of **12.16 cfs**.

STOCKWATER RATE (3.75 cfs) - See attached dairy use spreadsheet:

Permit = 3.59 cfs.

> I am limited to the permitted rate of 3.59 cfs for stockwater use.**F. VOLUME CALCULATIONS**

1. Volume Calculations for Irrigation:

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

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

$$V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} = \underline{\text{N/A}}$$

2. Volume Calculations for Other Uses: **Stockwater****Theoretical Volume for Snake River Pump Station: 11.96 cfs x 1.9835 x 365 = 8,658.77 af**

The pumps can provide 8,659 af if diverted continuously (11.96 cfs X 1.9835 X 365 days = 8,658.77 af). A pump capacity of 8,659 af is greater than the 4,158 af allowed when all of the Snake River irrigation rights and this stockwater right of 227 af are combined, so volume is not needed in the water right conditions.

STOCKWATER VOLUME (226.5 af) - See Attached Dairy Use Spreadsheet:

Permit = N/A

> I am recommending a volume of 227 af for stockwater use.**G. PURPOSE OF USE**Irrigation Y X N # Stock 5,000 Milking, 600 Dry, 2,500 Young Domestic # of Homes Other: Change in Purpose of Use? Y X NMethod of Determination: Proof of Beneficial Use, ArcGIS, and Field Examination.If Yes: From Use To Use Amount CFS afA **H. NARRATIVE/REMARKS/COMMENTS**

A field examination was conducted on site and a review of the property was conducted in ArcGIS. There are several water rights with the same point of diversion on the Snake River. All Snake River water rights are owned by the Applicant and are not directly tied to or used at the dairy. The exceptions are this permit and permit 2-10576, which are both for stockwater use at the dairy and are diverted from the Snake River pump station to fill the holding pond at the dairy. Water is then pumped out of the holding pond into a small water treatment facility to be chemically treated before being used at the dairy. Snake River water under these permits for stockwater use supplements well water at the dairy and is intermingled with irrigation rights.

There are two water rights (57-11673 & 57-2254) and two permits (2-10576 & 57-12006) that are owned by the Applicant that overlap the place of use and are directly tied to the dairy facility with the exception of 57-2254. Right 57-2254 is for irrigation use and has combined acre and volume limits with the Snake River irrigation rights. These Snake River irrigation rights, including ground water right 57-2254, all overlap the place of use at the dairy but are not directly tied to or used at the dairy.

There are four pumps and two penstocks at the Snake River pump station for a total of 1,050 HP (see attached pump spreadsheet). Pump information was collected from the Snake River pump stations to calculate a theoretical rate and volume as a flow measurement was not possible. The two 250 HP pumps at the West pump station are typically used to fill the holding pond with Snake River water for the dairy however, all four pumps could be used together or separately as needed to fill the pond. All four pumps are also used to deliver irrigation water under the Snake River irrigation rights.

Two wells (57-12006 & 57-11673) are utilized as the primary source of water for this dairy. The water delivery system for this permit consists of a 16 inch diameter buried mainline that carries pressurized water from the existing Snake River pump station west towards the dairy and irrigation fields. From the mainline there is a split where a smaller buried mainline leads towards the dairy then makes a "T" near the holding pond. At the "T" there are two main valves, one valve allows Snake River water to fill the fresh water holding pond (primary source) and the other valve allows water from one of the two primary wells to fill the holding pond only when needed (per Applicant). There is a third smaller valve used for overflow and/or untreated Snake River water to be diverted to the lagoon (or other dairy operations). There is a small vertical pump (with VFD) located at the holding pond that is used only to divert water from the holding pond to the water treatment facility then on to the main storage tank. There is some mixing of Snake River water and well water when the well is occasionally used to fill the holding pond or when treated Snake River water from the holding pond is stored in the main storage tank located behind the milking parlor, which also stores well water. Note that commercial uses for the dairy are covered by the two primary wells per the Applicant.

Water diverted for stockwater use from the Snake River pump station (permits 2-10465 and 2-10576) supplements water from the two primary wells and is intermingled with Snake River irrigation rights. The dairy configuration consists of a currently used system of pumps and pressure controls associated with the dairy. All main lines are buried under-ground. Applicant confirmed that they have a total of 5000 milking cows, 600 dry cows, and 2500 heifers. No wash pen, hospital barn, or misters at this dairy (see attached dairy use spreadsheet).

Conditions for Licensing:

The stockwater use under this permit is for a dairy operation using water from the Snake River to supplement ground water. Currently, rights 57-11673 and 57-2254 when combined shall not exceed a total diversion rate of 2.10 cfs and right 57-11673 has a volume limit of 327.2 af. Currently, rights 57-2254, 2-10238, 2-10239, 2-10240, 2-10241, 2-10242 and 2-10243 when combined shall not exceed a total annual maximum diversion volume of 4,158 af at the field headgate for the irrigation of 924 acres.

I am recommending that the stockwater use for this permit be licensed for a total of 3.59 cfs and 227 af with a two part condition X35:

First X35 Condition – The stockwater use under this permit is for an existing dairy that has been using ground water right 57-11673 for the commercial and stockwater portion. Permit 2-10465 was filed to cover a significant portion of the stockwater use to allow the ground water wells to be used for commercial uses. One of the wells does supply the pond used for stockwater purposes, so there needs to be a combined condition. Water rights 57-11673 and 2-10465 when combined should be limited to 3.75 cfs and 327 af for stockwater purposes. The diversion rate is limited to the number of cattle found at the time of the field exam. We used the standard of the amount of diversion rate that is required for all of the animals to consume their daily water intake in a 2 hour period. We need to use the full volume described in 57-11673 for stockwater instead of the total volume found for stockwater of 227 af in this condition, because we can't use a combined condition that would limit 57-11673. By defining that the combined limitation is only for stockwater purposes, it also doesn't limit the water user's option of using more of the well water for commercial purposes than they did originally, and it allows permit 2-10465 to cover any stockwater use that was converted to commercial purposes under water right 57-11673.

Second X35 Condition – A condition will be needed that limits the diversion rate of 2-10238, 2-10239, 2-10240, 2-10241, 2-10242, 2-10243 and 2-10465 to combined diversion rate of 12.16 cfs. 12.16 cfs is the combination of the existing water rights, which is higher than the pump capacity. Permit 2-10465 can't add additional diversion from the river, because the river pumps don't have the capacity to deliver the existing irrigation rights.

Conditions:

01M
103
004
X35

Have conditions of permit approval been met? ☒ Yes ☐ No**I. RECOMMENDATIONS****1. Recommended Amounts**

<u>BENEFICIAL USE</u>	<u>PERIOD OF USE</u>	<u>DIVERSION RATE</u>	<u>ANNUAL VOLUME</u>
STOCKWATER	01/01 to 12/31	3.59 CFS	227 af
<u>Totals:</u>		3.59 CFS	227 af

2. Recommended Amendments☐ Change P.D. as reflected above ☐ Add P.D. as reflected above ☒ None☐ Change P.U. as reflected above ☐ Add P.U. as reflected above ☒ None

Other: < >

J. AUTHENTICATION - Jes Erling: Water Resource Agent, Sr.

Field Examiner's Name Jes W. Erling Date 2-26-2021

Reviewer Danish A. Nuker Date 3-1-2021

Water Right Permit 2-10465



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DAILY FRESH WATER REQUIREMENT FOR DAIRY FACILITY

Page 1
Dale Van Es

FOR: 2-10465
BY: JES ERLING
DATE: 2/7/2020

Stockwater Requirements

Animal Type	Number	Use/day	Total GPD	Total GPY	GPM if Diverted in 2 Hrs.
MILKING COWS	5,000.00	35.00	175,000.00	63,875,000.00	1458
DRY COWS	600.00	12.00	7,200.00	2,628,000.00	60
HEIFERS	2,500.00	8.00	20,000.00	7,300,000.00	167
TOTAL GALLONS			202,200.00	73,803,000.00	1685

Stockwater Diversion Rate Needed in CFS = 3.75 CFS

Stockwater Annual Volume Needed in AF = 226.5 AF

COMMERCIAL VOLUME REQUIREMENT

Wash Pen Requirements

GPM Per Nozzle	Number of Nozzles	Total Gpm	Time Per Use (in minutes)	Total Gallons / Day	Number of Days	Total GPY	No Wash Pen / No Misters
0.00	0.00	0	0.00	0.00	0.00	0.00	

Milking Parlor Requirements

Item	Gals/ Operation	Times/Day	Total GPD	Total GPY	GPM if Diverted in 2 Hrs.	
BULK TANK	0.00	0.00	0.00	0.00	0	WELL USE
COW PREP	0.00	0.00	0.00	0.00	0	WELL USE
PIPELINES	0.00	0.00	0.00	0.00	0	WELL USE
PARLOR CLEANUP	0.00	0.00	0.00	0.00	0	WELL USE
WASHPEN CLEANUP	0.00	0.00	0.00	0.00	0	WELL USE
Total Milking Parlor Use				0.00	0	

HOSPITAL BARN USE

Item	Gals/ Operation	Times/Day	Total GPD	Total GPY	GPM if Diverted in 2 Hrs.	
BULK TANK	0.00	0.00	0.00	0.00	0	
COW PREP	0.00	0.00	0.00	0.00	0	
PIPELINES	0.00	0.00	0.00	0.00	0	No Hospital Barn
PARLOR CLEANUP	0.00	0.00	0.00	0.00	0	
WASHPEN CLEANUP	0.00	0.00	0.00	0.00	0	
Total Milking Parlor Use				0.00	0	

MISCELLANEOUS USES

Item	Gal/ Operation	Times/Day	Total GPD	GALS/YEAR	Gpm if diverted In 2 hrs.	
TOWEL WASHING	0.00	0.00	0.00	0.00	0	WELL USE
EMPLOYEE SHOWERS	0.00	0.00	0.00	0.00	0	WELL USE
& RESTROOMS	0.00	0.00	0.00	0.00	0	WELL USE
MAINTENANCE SHOP	0.00	0.00	0.00	0.00	0	WELL USE
TOTAL MISCELLANEOUS USES			0.00	0.00	0	WELL USE

Commercial Diversion Rate Required if Diverted in 2 Hrs. in CFS = 0.00 CFS

Commercial Annual Volume Required in AF = 0.0 AF

Stockwater Volume Requirement in AF =	226.49
Commercial Annual Volume Requirement in AF =	0.00
TOTAL VOLUME REQUIRED =	226.49
Stockwater Diversion Rate Requirement in CFS =	3.75
Commercial Diversion Rate Requirement in CFS =	0.00
TOTAL DIVERSION RATE REQUIRED =	3.75

Page 2
Dale Van Es

Pump Name	Stock well	Dairy Well	East Well	West Well	Back up well	
PUMP HORSEPOWER	0	0	0	0	0	
BOOSTER HORSEPOWER	25	0	0	0	0	
PUMPING LEVEL	4	0	0	0	0	
DISCHARGE PRESSURE	65	0	0	0	0	
FRICTION	0	0	0	0	0	
RATE OF FLOW (cfs)	1.00	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	Totals
Rate of Flow (gpm)	448	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!

NOTE: This pump is only used to divert Snake River water from the holding pond to the treatment facility.

The above calculates the formula =

$$Q = \frac{(\text{Efficiency}) * \text{hp}}{\text{depth to water} + 2.31 * (\text{psi}) + \text{friction}}$$

Assumptions %70 efficiency.

Acres Requirement For Dairy Transfer.

Water Right Diversion Rate =	0.00 CFS
Water Right Diversion Volume =	0 AF
Water Right Acres =	0 Acres
Historic Consumptive Volume =	0 AF
Dairy Diversion Rate Needed =	3.75 CFS
Dairy Volume Needed =	226.49 AF
Reduction of Irrigation Based On Water Right Diversion Rate =	#DIV/0! Acres
Reduction of Irrigation Based On Water Right Diversion Volume =	#DIV/0! Acres
Reduction of Irrigation Based on Historic Consumptive Use =	#DIV/0! Acres

THEORETICAL HORSEPOWER EQUATION WORKSHEET (cjh 1/92)

Water Right No.: **2-10465**
 Reviewer: **Jes Erling**
 Date of Review: **2/14/2020**

P/D No.:

PUMP HORSEPOWER
 BOOSTER HORSEPOWER

PUMPING LEVEL

DISCHARGE PRESSURE

RATE OF FLOW (cfs)

WEST / Pump #1
250
0
10
230
2.85
1277

WEST / Pump #2
250
0
10
230
2.85
1277

EAST / Pump #1
350
0
10
230
3.98
1788

EAST / Pump #2
200
0
10
230
2.28
1021

The above calculates the formula =

$$Q = \frac{8.8 * (\text{Efficiency}) * \text{hp}}{\text{depth to water} + 2.31 * (\text{psi}) + \text{friction}}$$

Assumptions: %70 efficiency.
 No Friction

Examiners Notes:

The pumps for this system are 2 - 250 HP pumps on one 16 inch OD penstock (west pumps) and one 350 HP and one 200 HP pump on the other 16 inch OD penstock (east pumps). Applicant says one of the 250 HP pumps is used to fill the holding pond with Snake River water. Applicant says running approximately 230 psi at each pump station when system is at full operation. The calculations above show that a lift of 10 feet for each pump station. The total maximum diversion rate for the system based on current horsepower, lift, and psi is **11.96 cfs (5,368 gpm)**.



Looking at holding pond that is filled with Snake River water. Water is pumped out of holding pond into a water treatment facility where it is chemically treated and used within the dairy.



Looking at chemical treatment facility for Snake River water being pumped from adjacent holding pond.



Looking at valves to fill holding pond with Snake River water and well water if needed (green treatment shed can be seen directly across pond).



Looking at holding tank for well water and treated water from the Snake River used for dairy operations.



Looking at deck flush holes within the dairy's milking parlor.



Looking at deck flush holes within the dairy's milking parlor.



Looking at holding pens and beds for approximately 2,500 heifers located up the hill from main dairy.



Looking at main dairy facility for approximately 5,000 milking cows and 600 dry cows.



Looking at Snake River pump station 1,050 HP total (4 pumps - 2 pumps per 16 inch OD penstock)



Looking at Snake River pump station 1,050 HP total (4 pumps - 2 pumps per 16 inch OD penstock)