STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: **65-23551**
Exam Date: **02/06/2020**

1. Current Owner: Name: **RICK VAN VLIET & FAMILY DAIRY LLC**
Security Interest: **RABO AGRIFINANCE INC**

Owner of Record Correct? __X__ Y ____ N
Address of Record Correct? __X__ Y ____ N
If No: Address:

Note: Water right permit 65-23551 is located within the geographic boundary of **Water District #65** but is **NOT** included in the District (measurement order applies to surface water only) therefore, 65-23551 is **NOT** administered by WD65 **(EXC)**.

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

3. **SOURCE** **TRIBUTARY**
GROUND WATER

Method of Determination: ArcGIS, Field Examination, and Well Drillers Report.

Change 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
65-6683 (Van Vliet)	Ground Water	Domestic	Decreed /Active

Comments: A review of the property in ArcGIS and a place of use comparison shows one (1) water right that directly overlaps the place of use. Right 65-6683 (domestic use) overlaps the POU in the SENE and is owned by the applicant (Van Vliet) and used within the same dairy facility but is not connected to the two (2) wells serving the dairy. Several other irrigation water rights overlap the place of use but are owned by the Black Canyon Irrigation District, Lake Reservoir Company and Farmers Cooperative Irrigation Company and are not directly tied to or used within this property.

2. Other water rights with the same point of diversion: __X__NO Overlap

Water Right No.	Source	Purpose of Use	Basis

Comments: A review of the property in ArcGIS and a point of diversion comparison shows no water rights with the same points of diversion.

C. DIVERSION AND DELIVERY SYSTEM

1. **LOCATION OF POINT(S) OF DIVERSION:**

Source	Govt. Lot	¼	¼	¼	Sec.	Twp.	Rge.		County
GROUND WATER			NE	SE	11	07N	05W	B.M.	PAYETTE
GROUND WATER			NE	SE	11	07N	05W	B.M.	PAYETTE

Method of Determination: ArcGIS, GPS and Field Examination. The point of diversions legal descriptions are correct and match the actual on-the-ground point of diversions (confirmed by GPS).

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	
07N	05W	11			X	X									X				
		Lot #																	
																Total Acres =			

Use: **COMMERCIAL**

TWP	RGE	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
07N	05W	11			X	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
D0007474	FE	15	2366038120	N/A	N/A (76.0 psi w/ VFD)
D0060359	FE	10	2366028120	N/A	N/A (72.0 psi w/ VFD)

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

There are two (2) existing wells utilized under Permit 65-23551: D0007474 - Well ID# 289588 and D0060359 - Well ID# 293831. The well locations were marked with GPS.

D. FLOW MEASUREMENTS

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

2. Measurements: A field examination was conducted on 2/6/2020 to verify number and type of stock, commercial uses, well system configuration, point of diversions, and places of use. Both wells have no above-ground piping available to conduct a measurement therefore, a theoretical diversion rate was calculated for each well.

E. FLOW CALCULATIONS **X** Additional Computation Sheets Attached

Measured Method:

A field examination was conducted however, no measurement was possible due to the system's configuration. The field exam and the Idaho Department of Agriculture's "Animal Water Intake in Gallons per Day" specification sheet was used for stockwater/dairy rates and volumes. A theoretical diversion rate based on horsepower was calculated for each well to see if they could produce the rate requested (1.00 cfs). The stockwater and commercial rate was determined based on the attached dairy use spreadsheet.

Groundwater Theoretical Rate:

15 HP Well: 8.8 x 15.0 HP x 0.70 = 92.4 / ((19 ft + (76 x 2.31)) = **0.48 cfs**

10 HP Well: 8.8 x 10.0 HP x 0.70 = 61.6 / ((45 ft + (72 x 2.31)) = **0.29 cfs**

= 0.77 cfs

STOCKWATER RATE (1.47 cfs) - See attached dairy use spreadsheet:

Permit = 1.00 cfs

> I am limited to the well capacity and recommend a permitted rate of **0.77 cfs** for stockwater use.

COMMERCIAL RATE (0.31 cfs) - See attached dairy use spreadsheet:

Permit = 1.00 cfs

> I am limited to the well capacity and recommend a permitted rate of **0.77 cfs** for commercial use.

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$V_{I.R.}$ = (Acres Irrigated) x (Irrigation Requirement) = N/A

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

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

2. Volume Calculations for Other Uses: **Stockwater / Commercial**

Groundwater Theoretical Volume: 0.77 cfs x 1.9835 x 365 = **557.5 AF**

STOCKWATER VOLUME (88.94 AF) - See Attached Dairy Use Spreadsheet:

COMMERCIAL VOLUME (17.5 AF) - See Attached Dairy Use Spreadsheet:

TOTAL = 106 AF

NOTE: The total volume for commercial and stockwater use does not exceed the total capacity of the well.

G. PURPOSE OF USE

Irrigation ____Y __X__N # Stock 1,600 Milking, 300 Dry, 1,600 Young Domestic # of Homes _____

Other: COMMERCIAL (Dairy operation)

Change in Purpose of Use? ____Y __X__N

Method 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 no water rights that overlap the same point of diversion however, there is one domestic water right that overlaps the place of use and is owned by the applicant. There are several irrigation rights that also overlap the place of use but are owned by the Black Canyon Irrigation District, Lake Reservoir Company, Farmers Cooperative Irrigation Company, and BLM but are not directly tied to this property.

No flow measurement was possible due to system configuration. The well piping configuration consists of a currently used system of pumps and pressure controls associated with the dairy. All main lines are buried under-ground. Two wells are utilized under this dairy operation and were located during the field examination. The well locations were verified with GPS and the well driller's reports. The well's D-Tags were also confirmed. The wells both have submersible pumps. There are two VFDs connected (inside the pump house) to deliver water more efficiently. There is also a 15 HP booster pump/motor inside the well house attached to a 6 inch diameter PVC line. The piping system is located inside the pump/well house attached to the dairy.

The dairy uses a plate cooler but the applicant said all water from the plate cooler is reused. The two wells serving the dairy have a direct line to the plate cooler. After the plate cooler, water flows into a 5,000 gallon holding tank and is distributed throughout the dairy. There is an additional 3,000 gallon holding tank that is rarely used and two 8,000 gallon milk tanks.

Owners confirmed that they have 1600 milking cows, 300 dry cows, and 1,600 heifers. Commercial use is for the dairy operation. No wash pen or hospital barn at this facility. Misters are used and are noted on the attached dairy use spreadsheet under "Wash Pen Estimate". All dairy and commercial uses are identified on the dairy use spreadsheet.

Conditions at licensing:
01M
103 (--121)
X05 "Commercial use is for a dairy operation"

Have conditions of permit approval been met? __X__Yes _____No

I. RECOMMENDATIONS

1. Recommended Amounts

BENEFICIAL USE	PERIOD OF USE	DIVERSION RATE	ANNUAL VOLUME
STOCKWATER	01/01 to 12/31	0.77 CFS	106 AF
COMMERCIAL	01/01 to 12/31	0.77 CFS	106 AF
	Totals:	**0.77 CFS**	**106 AF**

Note: It has been the practice of the Department to use the combined total of the volume for dairy type uses. The commercial and stockwater use is for a dairy operation therefore, I am recommending that the stockwater and commercial uses both be licensed for 0.77 cfs and 106 AF and when combined, licensed for a total of **0.77 cfs** and **106 AF**. That will allow the permit holder to adjust cow numbers and commercial use to allow for the full beneficial use of this right.

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

Other: < >

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

Field Examiner's Name Jes W. Erling Date 2/12/2020

Reviewer David A. Mabe Date 2-13-20

Water Right Permit 65-23551

DAILY FRESH WATER REQUIREMENT FOR DAIRY FACILITY

Rick Van Vliet

FOR: 65-23551
BY: JES ERLING
DATE: 2/6/2020

Stockwater Requirements

Animal Type	Number	Use/day	Total GPD	Total GPY	GPM if Diverted in 2 Hrs.
MILKING COWS	1,600.00	35.00	56,000.00	20,440,000.00	467
DRY COWS	300.00	14.00	4,200.00	1,533,000.00	35
HEIFERS	1,600.00	12.00	19,200.00	7,008,000.00	160
TOTAL GALLONS			**79,400.00**	**28,981,000.00**	**662**

Stockwater Diversion Rate Needed in CFS =	**1.47 CFS**
Stockwater Annual Volume Needed in AF =	**88.9 AF**

COMMERCIAL VOLUME REQUIREMENT

~~Wash Pen Requirements~~ **MISTERS**

GPM Per Nozzle	Number of Nozzels	Total Gpm	Time Per Use (in minutes)	Total Gallons / Day	Number of Days	Total GPY	
0.03	900.00	27	240.00	6,480.00	121.00	784,080.00	June 1st - Sept 31 = 121 days

Milking Parlor Requirements

Item	Gals/ Operation	Times/Day	Total GPD	Total GPY	GPM if Diverted in 2 Hrs.
BULK TANK	800.00	1.00	800.00	292,000.00	7
COW PREP	0.00	0.00	0.00	0.00	0
PIPELINES	450.00	2.00	900.00	328,500.00	8
PARLOR CLEANUP	690.00	2.00	1,380.00	503,700.00	12
WASHPEN CLEANUP	1,475.00	1.00	1,475.00	538,375.00	12
Total Milking Parlor Use				1,662,575.00	38

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
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	50.00	10.00	500.00	182,500.00	4
EMPLOYEE SHOWERS	0.00	0.00	0.00	0.00	0
& RESTROOMS	15.00	3.00	45.00	16,425.00	0
MAINTENANCE SHOP	25.00	1.00	25.00	9,125.00	0
TRUCK WASH	6,900.00	1.00	6,900.00	2,518,500.00	58
FEED MIX	1,450.00	1.00	1,450.00	529,250.00	12
TOTAL MISCELLANEOUS USES			8,920.00	3,255,800.00	74

Commercial Diversion Rate Required if Diverted in 2 Hrs. in CFS =	**0.31 CFS**
Commercial Annual Volume Required in AF =	**17.5 AF**

Stockwater Volume Requirement in AF =	88.94
Commercial Annual Volume Requirement in AF =	17.50
TOTAL VOLUME REQUIRED =	106.44
Stockwater Diversion Rate Requirement in CFS =	1.47
Commercial Diversion Rate Requirement in CFS =	0.31
TOTAL DIVERSION RATE REQUIRED =	1.78

Pump Name	Stock well	Dairy Well	East Well	West Well	Back up well	
PUMP HORSEPOWER	10	15	0	0	0	
BOOSTER HORSEPOWER	0	0	0	0	0	
PUMPING LEVEL	45	19	0	0	0	
DISCHARGE PRESSURE	72	76	0	0	0	
FRICTION	0	0	0	0	0	Totals
RATE OF FLOW (cfs)	0.29	0.47	#DIV/0!	#DIV/0!	#DIV/0!	0.77
Rate of Flow (gpm)	131	213	#DIV/0!	#DIV/0!	#DIV/0!	343.97

The above calculates the formula =

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

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 =	1.78 CFS
Dairy Volume Needed =	106.44 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

Looking at well (D0007474)

Well D0007474 location overview

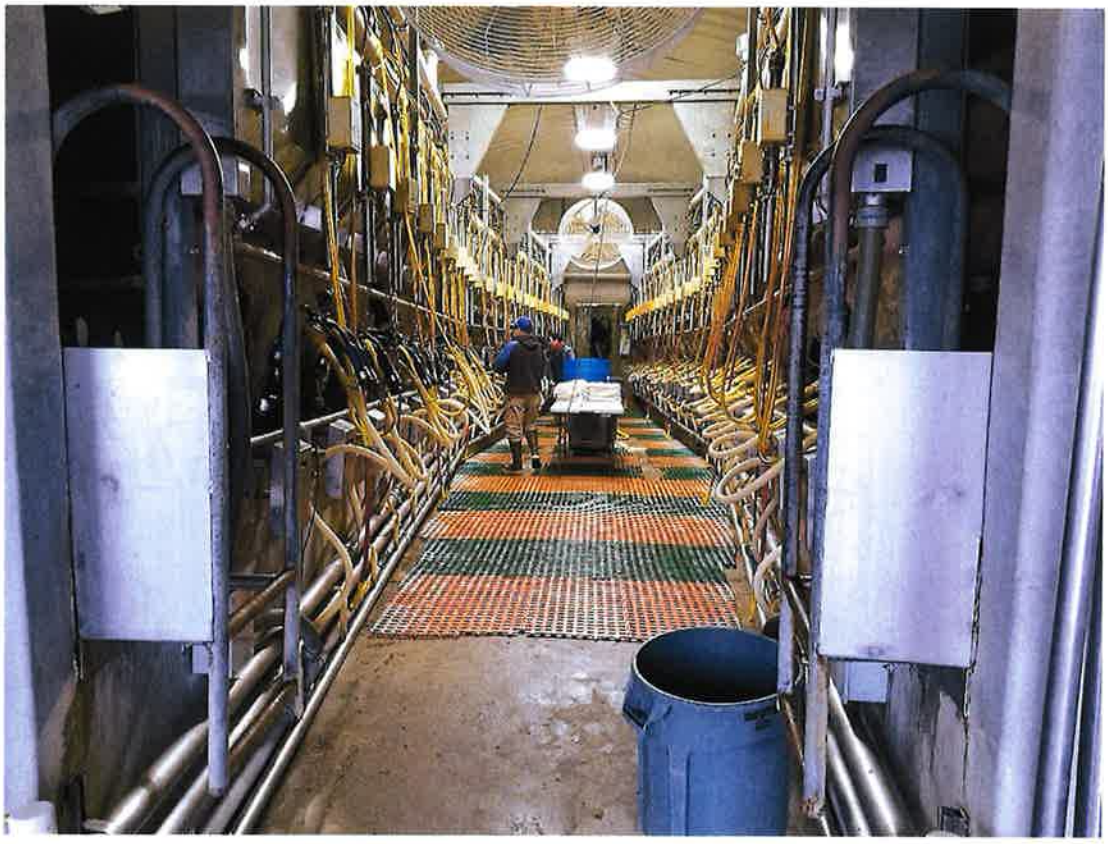
Looking at well (D0060359)

Well D0060359 location overview

Looking at washing machine facility

Looking at other commercial water uses associated with the dairy

Looking at plate cooler (water is reused).



Looking at milking parlor and drop hoses