

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 57-11663

Exam Date: 7/16/2014

1. Current Owner: J & M CATTLE INC
ATTN JON MORTENSEN
12971 BAILEY RD
MELBA ID 83641
(208) 899-1570
2. Accompanied by: Tanner Hoagland
Phone No: (208) 899-1570
Address: Same As Above
Relationship to Permit Holder: Feedlot Manager

3. **SOURCE****TRIBUTARY**

GROUND WATER

B. OVERLAP REVIEW

1. Other water rights with the same place of use: 57-1010 and 57-7245
2. Other water rights with the same point of diversion: 57-1010 and 57-7245

C. DIVERSION AND DELIVERY SYSTEM1. **LOCATION OF POINT(S) OF DIVERSION:**

GROUND WATER SE1/4NE1/4 Sec. 13, Twp 01S, Rge 03W, B.M. OWYHEE County

GROUND WATER NE1/4SE1/4 Sec. 13, Twp 01S, Rge 03W, B.M. OWYHEE County

Method of Determination: Visual Inspection and GPS

2.

PLACE OF 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	
01S 03W 13			X	X									X	X			

Method of Determination: Visual Inspection and GIS

3. YES Delivery System Diagram Attached (required). Indicate all major components and distances between components. Indicate weir size/pipe as applicable.
YES Aerial Photo Attached (required for irrigation of 10+ acres).
YES 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
North Well	Franklin	7.5	Model # FPS60	Franklin	FPS60
Main Well	Franklin	7.5	Model # FPS60	Franklin	FPS60
Relift Pump #1	Baldor	5	Model # Jmm3212T	Berkley	LTH-5
Relift Pump #2	Baldor	5	Model # Jmm3212T	Berkley	1C051

*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
NONE						

2. Measurements: We couldn't measure the water at the time of the exam, because the pipeline was buried. We used a pump curve attained from the owner's pump installer – K&M Water Works, Inc. and a theoretical calculation.

E. FLOW CALCULATIONS X Additional Computation Sheets Attached

Measured Method:

Theoretical = 0.38 cfs
 Pump Curve = 0.28 cfs
 Permit allowed = 0.66 cfs

License recommend for 0.28 cfs. The pump curve was supplied by the owner, and the theoretical was an estimation of the efficiency of the system. The pump curve suggests an efficiency of 55% instead of the 70% used in the theoretical. If you use the 55% efficiency, then the theoretical calculation would match the pump curve.

F. 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:

Please See Attached Spreadsheet.

Commercial Use Calculation = 12 af (From Spreadsheet)

Maximum Capacity of System = 0.28 cfs X 1.9835 X 365 days = 202.7 af

I am recommending 12 af for this license, since the capacity of the system is not used. The majority of the capacity is used for stockwater under water right 57-7245.

G. NARRATIVE/REMARKS/COMMENTS

Water for this permit is diverted from two wells and delivered to 3 storage tanks. From the storage tanks, the water is then transferred to a holding tank in the pump house where 2 - 5 Hp pumps pump the water to water troughs in the big calf pens, the milk mixing and bottle washing barn, and to a truck fill spout. The young calves in the hutches are watered out of a water truck. The milk mixing barn also has a shop included in it.

Water rights 57-1010 and 57-7245 supply the stockwater for this feedlot. They do not have any commercial use associated with them, therefore, this permit was filed to cover the commercial use only. Calculations from the spreadsheet show there is adequate water under water rights 57-1010 and 57-7245 to cover the stockwatering needs for this facility. Water rights 57-2006A and 57-2007C and Reynolds Creek Irrigation District cover irrigation uses around the feedlot. The land application of waste water from this feedlot is used on ground covered by these rights.

This permit included the land that was used for land application of the wastewater as part of the place of use. Since the land used for land application is covered by existing water rights, it was not included as a place of use in license recommendation. The volume calculations were determined per conversations with the owner. A letter was sent to the owner to confirm our calculations were correct. (The owner did not respond to the letter within the 14 day deadline, so I am assuming that the volumes calculated are reasonable.)

We removed conditions 1(26A) and 2(046). Condition 6 (121) was changed to condition 103 per standards. We kept conditions 3 and 5(01M). We added condition F06 to show that the other stockwater rights are diverted out of the same wells as this permit.

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>DIVERSION RATE</u>	<u>ANNUAL VOLUME</u>
COMMERCIAL	01/01 to 12/31	0.280 CFS	12.00 AF
	<u>Totals:</u>	0.280 CFS	12.00 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 ☐ Other

I. AUTHENTICATION Daniel A. Nelson – Staff Hydrologist

Field Examiner's Name Daniel A. Nelson Date 7-21-14

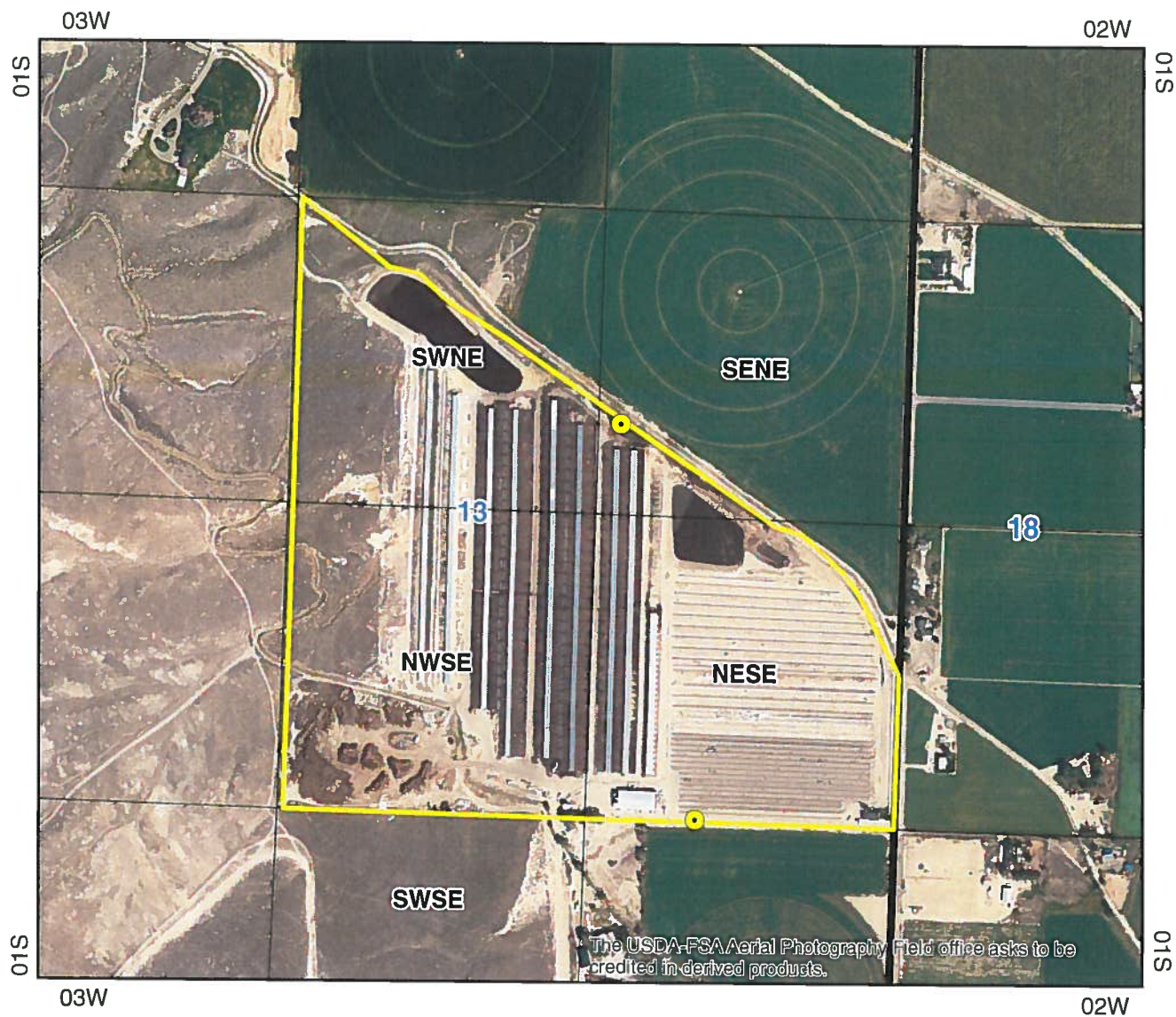
Reviewer _____ Date _____

State of Idaho
Department of Water Resources

Field Exam

57-11663

This map depicts the COMMERCIAL 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.



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

0 0.075 0.15 0.3 Miles



Permit 57-11663 System Diagram
By Dan Nelson

Water for this permit is diverted from two wells and delivered to 3 storage tanks. From the storage tanks, the water is then transferred to a holding tank in the pump house where 2 - 5 Hp pumps pump the water to water troughs in the big calf pens, the milk mixing and bottle washing barn, and to a truck fill spout. The young calves in the hutches are water out of a water truck. The milk mixing barn also has a shop included in it.

Land Application of Wastewater Area

North Well

Waste Lagoon

Big Calf Pens

Commercial Use Border

Large Storage Tank
26 Ft. Tall - 24 Ft Diameter

2 Storage Tanks
12 Ft. Tall - 12 Ft Diameter

Waste Lagoon

Calf Hutches

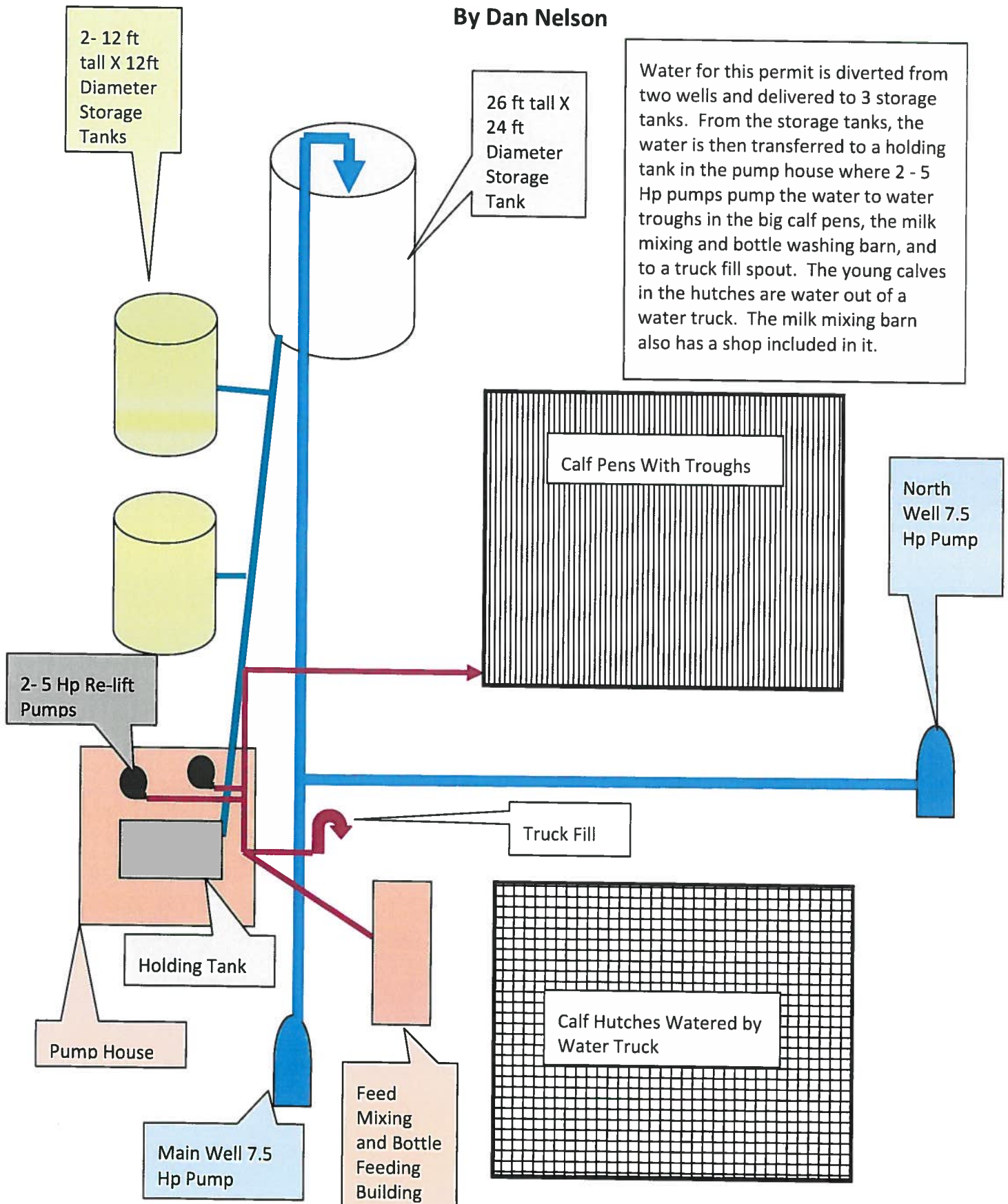
Main Well

Pump House

Milk Mixing Barn

System Diagram 57-11663

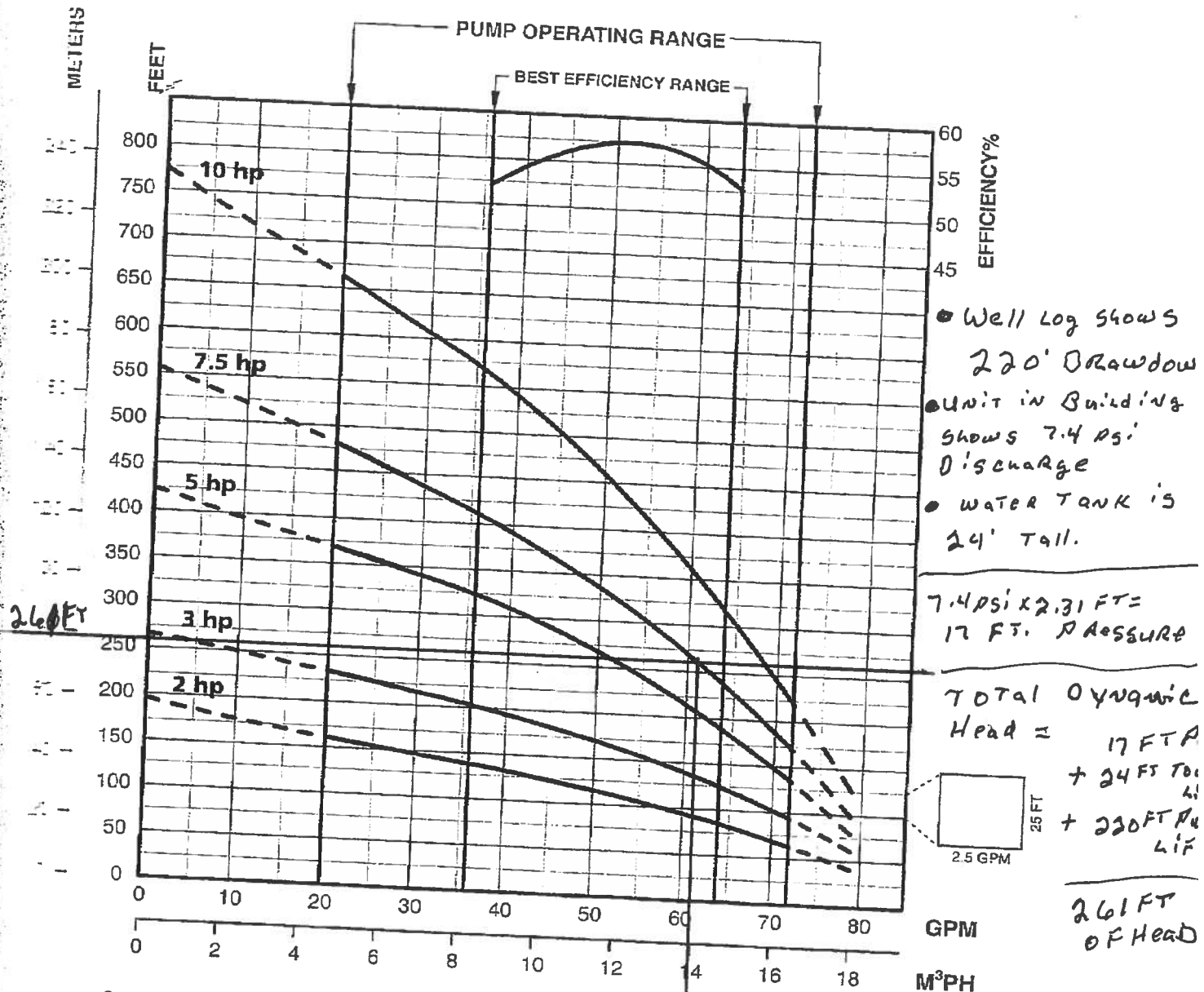
By Dan Nelson



Submersible Pumps

4" High Capacity Pumps

50 GPM Performance Curves



Per Pump Curve
Both wells should
Produce - 62 gpm
 $62 \text{ gpm} \times 2 = 124 \text{ gpm}$ or 0.28 cfs.

62 gpm

THEORETICAL HORSEPOWER EQUATION WORKSHEET (cjh 1/92)

Water Right No.: 57-11663
 Reviewer: Dan Nelson
 Date of Review: 7/16/2014

P/D No.:	Senerio 1	Senerio 2	Senerio 3
PUMP HORSEPOWER	7.5	7.5	7.5
BOOSTER HORSEPOWER	0	0	0
PUMPING LEVEL	220	220	220
DISCHARGE PRESSURE	7	7.5	8
RATE OF FLOW (cfs)	0.20 88	0.19 87	0.19 87
			0.19 87.37

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 pump curves for this permit show the wells produce 62 gpm or 0.14 cfs each. There are two pumps, so the total diversion rate according to the pump curve is 0.28 cfs. These pumps are rated as 60 gpm pumps, so the pump curve appears to provide a more accurate estimate of the pumping rate. The pressure was taken from the owner's control panel, and the lift was taken from the well log.

Date: **October 17, 2012**
 Water Right Number: **57-00001**
 Water Right Holder: **A&Z Dairy Coop**
 Prepared By: **DANIEL A NELSON**

STOCKWATER REQUIREMENTS

Animal Type	Number of Animals	Gallons Per Day Per Calf	Total Gallons per Day	Acre Feet per Day Total
0 to 200 LBS Calves	8,000	1.50	12,000.0	0.0368
200 - 400 LBS Calves	7,000	3.30	23,100.0	0.0709
TOTAL =			35,100.0	0.1077

Please Note: See Administrative Memo Number 3 - Section 3 for Stock Water Calculation Process.

Stockwater Annual Volume Needed in AF =	39.3 AF
Stockwater Annual Volume Needed in Gallons =	12,811,500.0 Gallons

PLEASE NOTE: All Stockwater use is covered by water right 57-7245

Use	Times Per day	Gallons Per Use	Total Gallons Per Day	Total Acre Feet Per Day
Bottle Washin in Carts	12	50	600	0.0018
Hutch Washing	2	720	1440	0.0044
Office Use (2 Secretaries and 2 Managers)	4	15	60	0.0002
Truck Washing	1	50	50	0.0002
TOTAL =			2150	0.0066

Commercial Annual Volume Needed in AF =	2.4 AF
Commercial Annual Volume Needed in Gallons =	784,750.0 Gallons

Milk mixing - Milk for 2 feedlots are mixed at this facility.

Number of Bottles	Quarts per Day per Bottle	Gallons per Day per Bottle	Total Gallons of Bottle Milk Per Day	Hospital Milk Used Per Day in Pounds (No Water Added)	Gallons of Hospital Milk (LBS / 8.6)	Amount Of Bottle Milk Used Minus Hospital Milk	Amount of Water Needed to mix Powder Milk Per Day	Total Acre Feet Per Day
10,000	4	1	10000	12,000	1,395	8,605	8,605	0.026407

Bottle Mixing Water Annual Volume Needed in AF =	9.6 AF
Bottle Mixing Water Annual Volume Needed in Gallons =	3,140,697.7 Gallons

TOTAL COMMERCIAL USE in AF =	12.0 AF
TOTAL COMMERCIAL USE IN GALLONS=	3,925,447.7 Gallons

Permit 57-11663 should be licensed for the commercial amount only, since the stockwater is covered under water right 57-7245. Permit 57-11663 should be licensed for 12.0 Af.

Fresh Water Needs for Dairy Farms

[Home](#)[Conservation
planner](#)[Conservation
Funding Programs](#)[Wildfire
Management](#)[Nutrient
Management Plan](#)[Pest Management](#)[Pesticide
Application
Recordkeeping
\(PAR\)](#)[Animal Feeding
Operations](#)**Water Needs**[Troubleshooting](#)[Carbon
Sequestration](#)[Range
Management](#)[Farmstead](#)[Organic Farming](#)[Water](#)

By **Dean E. Falk**, Extension Dairy Specialist,
University of Idaho

Dairy cows and milking facilities require a reliable high quality water supply. Dairy production is changing with larger production units being planned and constructed. These dairy facilities require a water supply that can deliver high quality water to the cows at all times in sufficient amounts to meet both physiological and sanitation needs of the facility.

The data reported in the literature for water consumption for dairy facilities varies considerably. For example, in three different studies the water needs for lactating cow consumption, and milking center cleaning range between 40 to 50 gallons fresh water per cow per day. In these studies the free stall units were flushed with recycled lagoon water in all areas except the milk parlor and milk room. This concept reduces the amount of water that is introduced into the waste management system.

Texas data illustrates that water use on eleven dairy farms varied widely, depending on the type of manure removal system and other factors. The greatest variable was the use of sprinkler cow wash systems and/or flush systems versus manual manure removal. The total amount of fresh water used for sanitation and manure removal averaged 39.6 gallons per cow per day. The mean value for each farm ranged from 12.3 to 69.2 gallons per cow per day. The water used for cattle drinking water troughs on seven of the dairies studied averaged 28.7 ± 12.0 gallons per cow per day. Thus the Texas data average fresh

[BMP/Conservation Practices](#)[Reference](#)
Search

water use per cow per day for sanitation and drinking was 68.3 gallons. Their data showed wide differences in water use for facilities that flushed or had cow sprinklers versus those that used manual cleanup. The average water use for milking parlors and holding pens without flush or cow sprinklers averaged 19.9 ± 14.0 gallons per cow per day. In contrast, milking parlors and holding pens with sprinkler cow washers used an average of 47.1 ± 17.7 gallons per cow per day.

Calculating Herd Requirements for Fresh Water

It is possible to estimate fresh water use on individual dairies, even with the wide variation reported in the literature. Estimates for total requirements can be developed for drinking water, wash pen sprinklers (if used), and milk house and parlor. Water needs can be estimated by completing [Worksheet 1](#) (requires [Adobe Acrobat](#)) with information found in Tables 1-4.

Drinking Water Needs

Drinking water needs can be determined by using the information found in Table 1 and Table 2. Table 1 shows a typical herd makeup assuming a uniform year around calving, 13 month calving interval, a 33% replacement rate (1/2 supplying a calf), 50% female calves and males sold at birth for a 100 lactating cow herd.

Table 1: Typical Dairy Herd Composition

Category	Number	% of herd	Avg. weight (lbs.)
Milking cows	83	83	1400
Dry cows	17	17	1550

Total mature cows	100		
Heifers			
16 - 24 months	42	38	1050
13 - 15 months	13	12	800
9 - 12 months	19	17	600
5 - 8 months	19	17	400
3 - 4 months	9	8	250
0 - 2 months	9	8	150
Total replacements	111		

Water intakes for dairy cattle are influenced by several factors including dry matter intake, milk production, ambient temperature, and sodium intake. However, Table 2 provides a good estimate of water intake based upon size, milk production and temperature. The data from the water intake table when matched with the herd makeup table will estimate herd drinking water.

Table 2: Dairy Cattle Water Intake

Weight (lb)	Milk (lb)	40° & below	60°	80° F	
Lactating cows					
1400	20 ²	12.0	14.5	17.9	gal/day
	60 ²	22.0	26.1	24.7	
	80 ²	27.0	31.9	38.7	
	100 ²	32.0	37.7	45.7	

Dry cows				
1400 ¹		9.7	12.0	16.2
1600 ¹		10.4	12.8	17.3
Heifers				
1200 ¹		8.7	10.8	14.5
800		6.3	7.9	10.6
400		3.7	4.6	6.1
200		2.0	2.5	3.3
	¹ Maintenance and pregnancy			
	² Maintenance and milk production			

Wash Pen Needs

The wash pen can be a large user of fresh water on typical dairies. The amount used is dependent on line pressure, sprinkler orifice, number of sprinklers and minutes per day used. Table 3 shows the gallons per minute per sprinkler with different line pressure in pounds per square inch. The number of sprinklers in the wash pen, the minutes used per day and the nozzle discharge will determine water used in the wash pen.

Table 3: Nozzle Discharge (gpm)

	1/8" dia.	9/64" dia.	5/32" dia.	11/64" dia.	3/16" dia.
	2.96	3.74	4.61	5.54	6.64

40 psi					
45 psi	3.13	3.99	4.91	5.91	7.03
50 psi	3.3	4.18	5.15	6.19	7.41
55 psi	3.46	4.37	5.39	6.48	7.77

Milk House and Parlor Needs

Milk house and parlor waste can be estimated from data found in Table 4.

Table 4: Volume of Milkhouse and Parlor Wastes

Washing Operation	Water Volume
Bulk Tank	
Automatic Wash	50 to 60 gal. per wash
Manual Wash	30 to 40 gal. per wash
Pipeline, in parlor Volume is higher for long stanchion barns)	75 to 125 gal. per wash
Pail Milkers	30 to 40 gal. per wash
Miscellaneous Equipment	30 gal. per day
Cow Prep Wash	
Automatic	1 to 4.5 gal. per wash per cow
Manual	0.25 to 0.5 gal. per wash per cow
Parlor Floor	40 to 75 gal. per day

PHOTOGRAPHER AND DATE OF PHOTOS DANIEL A NELSON 7-16-2014

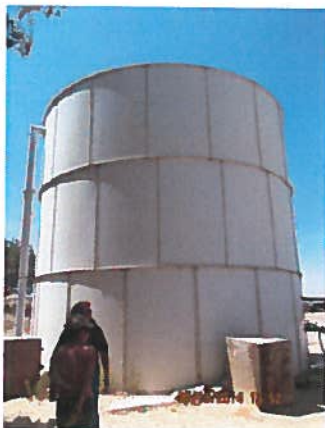
FILE NUMBER 57-11663



The photos above show the two wells. The well on the left is the North Well and the well on the right is the Main Well.

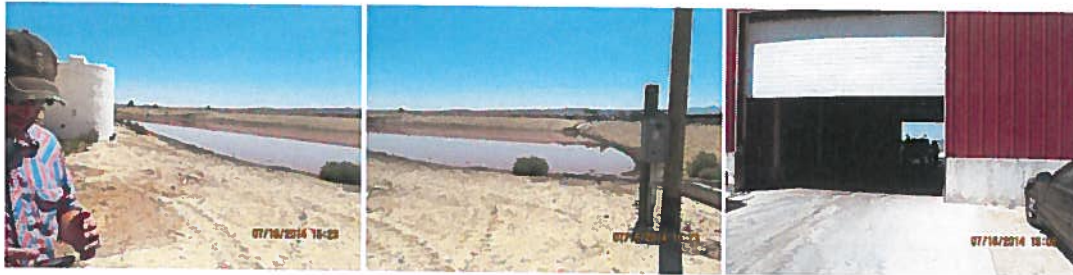


The photo above left is the pipeline going from the wells to the storage tanks. The two green tanks above are the small 12 ft tall by 12 ft diameter tanks. The tank below is the large storage tank. It is 24 ft tall and 26 feet in diameter with a capacity of 97,175 gallons.



PHOTOGRAPHER AND DATE OF PHOTOS DANIEL A NELSON 7-16-2014

FILE NUMBER 57-11663



The photos above shows one of the waste lagoon and the milk mixing and bottle washing barn in the left photo.



The photos above show the large calf pens that use water troughs. The bottom photos show the calf hutches that are water out of the water truck.



The photo below shows the water truck filling water buckets for the calves in the hutches.





State of Idaho

DEPARTMENT OF WATER RESOURCES

322 East Front Street • P.O. Box 83720 • Boise, Idaho 83720-0098

Phone: (208) 287-4800 • Fax: (208) 287-6700 • Website: www.idwr.idaho.gov

C.L. "BUTCH" OTTER
Governor

GARY SPACKMAN
Director

July 21, 2014

J&M CATTLE INC
ATTN JON MORTENSEN
1297 BAILY RD
MELBA ID 83641

RE: Field Examination of Permit 57-11663

Dear Mr. Mortensen:

This letter is in response to our conversations by telephone concerning the volumes and diversion rates for permit 57-11663. I wanted to make sure that we have all of the information correct. I have enclosed a spreadsheet that shows 12.0 acre-feet of water used for the commercial portion of your feeding operation. I have also provided a copy of the pump curve that I received from K&M Water Works, Inc. that shows that your wells produce 62 gallons per minute each for a total of 124 gallons per minute or 0.28 cubic feet per second. I am planning on licensing water right 57-11663 for 0.28 cfs and 12.0 af for commercial uses.

If you have any questions or concerns, please contact me.

Respectfully,

Daniel Nelson
Staff Hydrologist
Idaho Department of Water Resources
Telephone (208) 287-4856
Fax (208) 287-6700 (attn: Dan Nelson)
Email: dan.nelson@idwr.idaho.gov

Date: October 17, 2012
 Water Right Number: 57-00001
 Water Right Holder: A&Z Dairy Coop
 Prepared By: DANIEL A NELSON

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