

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 72-16887
Exam Date: 08/29/2018

1. Current Owner:
GEORGE E SANTEE, JR PO BOX 2341 IDAHO FALLS ID 83403-2341 (208) 522-0202
2. Accompanied by: George E Santee Jr

3. **SOURCE:**
GROUND WATER

TRIBUTARY:

B. OVERLAP REVIEW

1. Other water rights with the same place of use: 72-7536
2. Other water rights with the same point-of-diversion: N/A

C. DIVERSION AND DELIVERY SYSTEM

New well with a Grundfos® 20 h.p. submersible motor and pump that is tied into existing system that supplies water to a four-tower center pivot that uses drop sprinklers and an end-gun.

1. LOCATION OF POINT OF DIVERSION:

GROUND WATER L8 (NW¼SW¼) Sec. 9, Twp 15N, Rge 20E, B.M. CUSTER County
Method of Determination:

2. Solocator® application using an Apple® iPhone plus aerial imagery, GPS, and ArcMap verification.

PLACE OF USE: IRRIGATION

Twp	Rge	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
15N	20E	8																6.6 L 5	6.6
15N	20E	9									0.3 L 8	23.0 L 8							23.3

Total Acres: 29.9

Method of Determination: Aerial imagery and ArcMap verification and field observations indicate that no new acres have been developed.

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
D0062338	Grundfos	20	See attached manufacturers specifications	Grundfos 14B700C6	3 inch pump outlet

*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
Flowmeter	Poly Sonic	GE	PT 878	2283	N/A	April 2018

2. Measurements:

Pivot operating with drop sprinklers: **211 gpm**Pivot operating with drop sprinklers & end-gun: **270 gpm****E. FLOW CALCULATIONS**

Measured Method: _____

GE Panametric model PT 878 Polysonic flow meter

See attached Measuring Device Verification Form and Photos of meter reading.

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$$V_{IR} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = (29.9) \times (3.5 \text{ AF}) = 104.65 \text{ AF} \rightarrow \mathbf{105.0 \text{ AF}}$$

$$V_{DR} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = (0.57 \text{ cfs}) \times (214 \text{ days}) = \mathbf{242 \text{ AF}}$$

$$V = \text{Smaller of } V_{IR} \text{ and } V_{DR} = \mathbf{105.0 \text{ AF}}$$

2. Volume Calculations for Other Uses: **N/A****G. NARRATIVE/REMARKS/COMMENTS**

On August 29, 2018 Jana Reeder (IDWR employee) and I performed a field exam for Water Permit 72-16887 on property located approximately 9.25 miles north of Challis. The application for permit to divert 0.57 cfs of groundwater from a new well plus two existing wells for irrigation of up to 42.6 acres was filed on May 31, 2012. The Permit to Appropriate Water was issued on August 13, 2012. Proof of Beneficial Use was due on September 01, 2017 and Proof was submitted on April 03, 2017.

George Santee Jr, the applicant, showed us the developed water use for the irrigation component of the permit. We observed a 29.9 acre POU being irrigated by a four tower center pivot with drop sprinklers and an end-gun. As mentioned above, the application was filed for up to 42.6 acres of irrigation and the map submitted with the application identifies 12.7 acres that were proposed to be added to the existing 29.9 acre Place of Use (POU). Mr. Santee intended to irrigate the additional acres using hand lines however he chose not to develop them so the POU remains at 29.9 acres.

Narrative Continued

Prior to the development of this permit the POU was irrigated using two groundwater Points of Diversion (POD) with water right 72-7536 (0.28 cfs/29.9 acres) that provides 0.01 cfs per acre. This Application for Permit was filed with the intent to obtain a standard flow rate of 0.02 cfs per acre. The two existing wells were drilled in 1996 and combined into a single system that has never been modified in any way. Mr. Santee indicated that the wells still use the original pumps and motors that were installed in 1996. The new well (D0062338) drilled with this permit has been connected to the system and by itself produces enough water (field exam measurement indicated up to 0.60 cfs) for a flow rate of 0.02 cfs per acre. The two existing wells have not been used since the new well was put into production and are now simply back-up wells.

For this discussion I will refer to the two existing wells as "old well east" and "old well west". The two existing wells are 165 feet apart and are located along the northeast edge of the pivot field. The new well (D0062338) is located approximately 270 feet northeast of the two existing wells. There are two electrical supply panels located at Old well east and provide a means of locking out the power supply to all three wells. There is a McCrometer mechanical (propeller) flowmeter (model MW504, serial number 14-08645) installed on the new well (D0062338) that measures in gallons per minute (gpm) and incorporates a volume totalizer.

A flow rate for the new well was measured using a GE Panametrics model PT 878 Polysonic flowmeter. Data was collected when (1) the pivot was operating with just the drop sprinklers and (2) with the drop sprinklers and the end-gun. The parameters at the point of measurement are: carbon steel pipe with a wall thickness of 0.119 in. and an outside diameter of 4.03 in. using a transducer (403) spacing of 3.64 inches. Ten flow rate measurements were recorded at one-minute intervals and indicate 211 gallons per minute (gpm) without the end-gun (File name Log 09) and 270 gpm with the end-gun (File name Log10). A flow rate of 270 gpm is the equivalent of 0.60 cfs and indicates a fully-developed diversion rate for water permit 72-16887.

This application was filed identifying a total of three POD's (two existing and one new well). Because the two existing wells were not used for the development of this permit I recommend identifying only the new well as the POD for water right 72-16887. Permit conditions requiring lockable works and a measuring device with a data logger have been met. I recommend licensing water permit 72-16887 for a diversion rate of 0.57 cfs and a volume of 105.0 AFA for the irrigation of 29.9 acres per IDAPA rule 37.03.02 Beneficial Use Exam Rules (03/29/2012).

George Santee Jr. requested via a telephone conversation on Tuesday October 02, 2018 to have SPF Water Engineering removed as Representative from 72-16887. Mr. Santee wishes to be recorded as the Current Owner of 72-16887.

Have conditions of permit approval been met? ☒ Yes ☐ No

H. RECOMMENDATIONS

1. Recommended Amounts

<u>BENEFICIAL USE</u>	<u>PERIOD OF USE</u>	<u>DIVERSION RATE</u>	<u>ANNUAL VOLUME</u>
IRRIGATION	04/01 to 10/31	0.57 CFS	105.0 AF
	<u>Totals:</u>	0.570 CFS	105.0 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

I. AUTHENTICATION

Field Examiner's Name  Date 10/05/2018

Reviewer _____ Date _____

Field Exam 72-16887

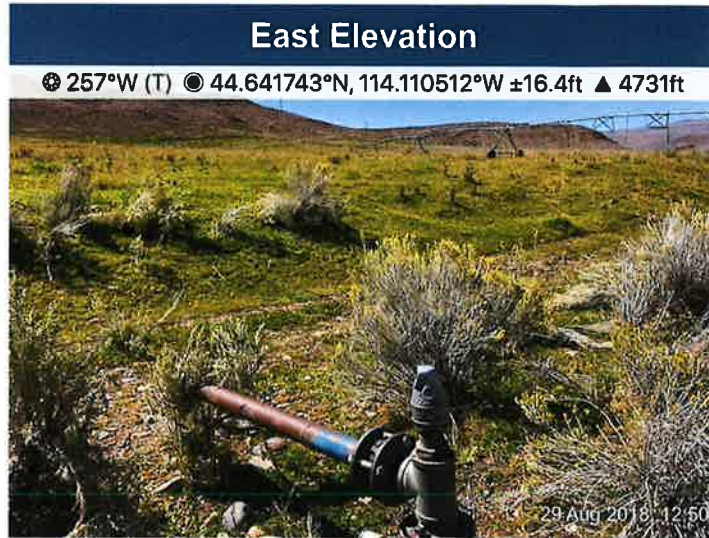


Above: Flow meter with drop sprinklers and end gun: 270 gpm

Below: Flow meter with drop sprinklers only: 211 gpm



Field Exam 72-16887



Above: POU with Old Well West in Foreground
Below: POU with New Well D0062338 in Foreground



Field Exam 72-16887



Above and Below: McCrometer Mechanical (propeller)
Flow Meter installed on New Well (D0062338)



Field Exam 72-16887

East Elevation

⊗ 273°W (T) ● 44.642376°N, 114.109756°W ±16.4ft ▲ 4716ft

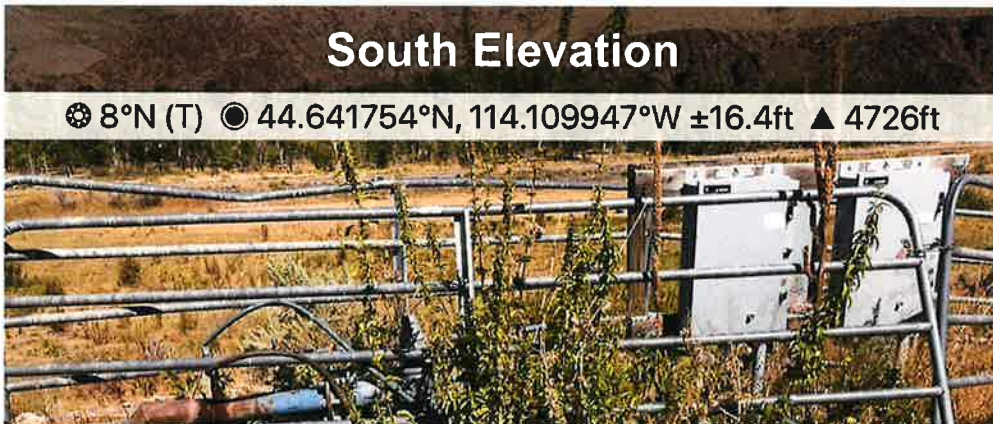


Above: POD_New Well D0062338 Flow Data Collection

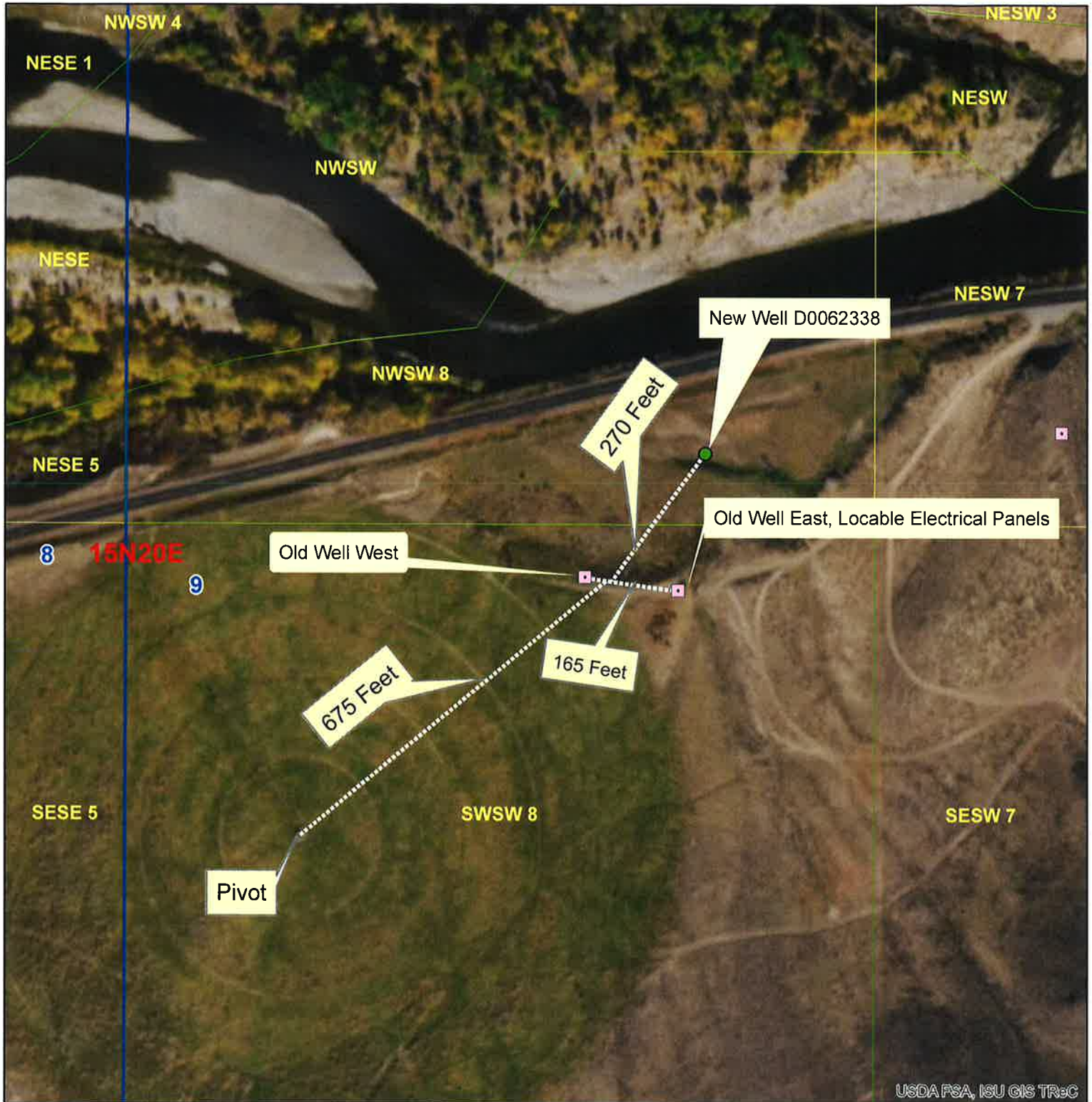
Below: Lockable Works_Old Well East

South Elevation

⊗ 8°N (T) ● 44.641754°N, 114.109947°W ±16.4ft ▲ 4726ft



72-16887 System Diagram



POU/POD 72-16887



Field Exam 72-16887

POU/POD 72-16887





Company name: -
 Created by: -
 Phone: -
 Fax: -
 Date: -

Description

Product name:	300S200-6-B
Product No.:	14B735C6
EAN:	5700393985872
Price:	On request

Technical:

Speed for pump data:	3450 rpm
Rated flow:	317 US gpm
Max flow:	412 US gpm
Rated head:	197 ft
Impeller reduc.:	B
Shaft seal for motor:	CER/CARBON
Approvals on nameplate:	CE,CSACUS
Curve tolerance:	ISO 9906:2012 Grade 3B
Pump Number:	14B700C6
Stages:	6
Model:	A
Valve:	pump with built-in non-return valve

Materials:

Pump:	Stainless steel DIN W.-Nr. 1.4301 AISI 304
Impeller:	Stainless steel DIN W.-Nr. 1.4301 AISI 304
Motor:	Stainless steel DIN W.-Nr. 1.4301 AISI 304

Installation:

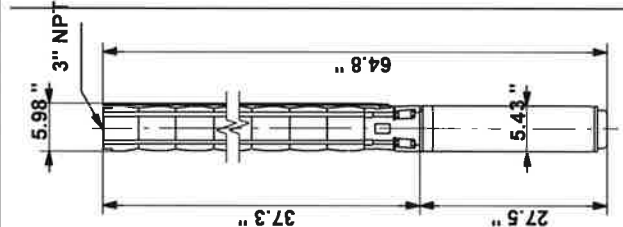
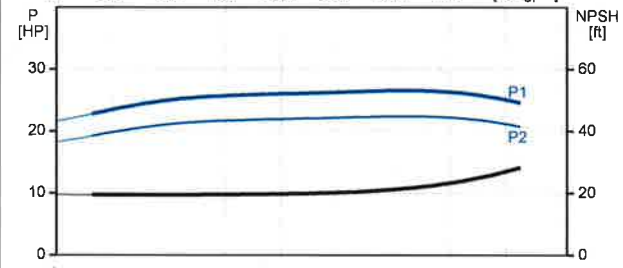
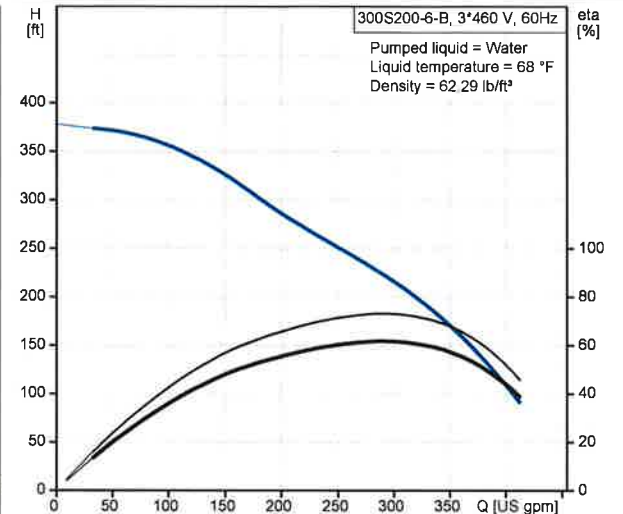
Pump outlet:	3" NPT
Motor diameter:	6 inch

Liquid:

Pumped liquid:	Water
Maximum liquid temperature:	104 °F
Max liquid temperature at 0.15 m/sec:	86 °F
Liquid temp:	68 °F
Density:	62.29 lb/ft³
Kinematic viscosity:	1 cSt

Electrical data:

Motor type:	MS6
Applic. motor:	NEMA
Rated power - P2:	20 HP
Power (P2) required by pump:	20 HP
KVA code:	F
Main frequency:	60 Hz
Rated voltage:	3 x 440-460 V
Start. method:	direct-on-line
Service factor:	1.15
Rated current:	33.0-32.0 A
Cos phi - power factor:	0.86-0.84
Rated speed:	3450-3470 rpm
Enclosure class (IEC 34-5):	IP68
Insulation class (IEC 85):	F





Company name: -
Created by: -
Phone: -
Fax: -
Date: -

Description	Value
Motor protection:	None
Thermal protec:	external
Built-in temperature transmitter:	yes
Motor Number:	78355546

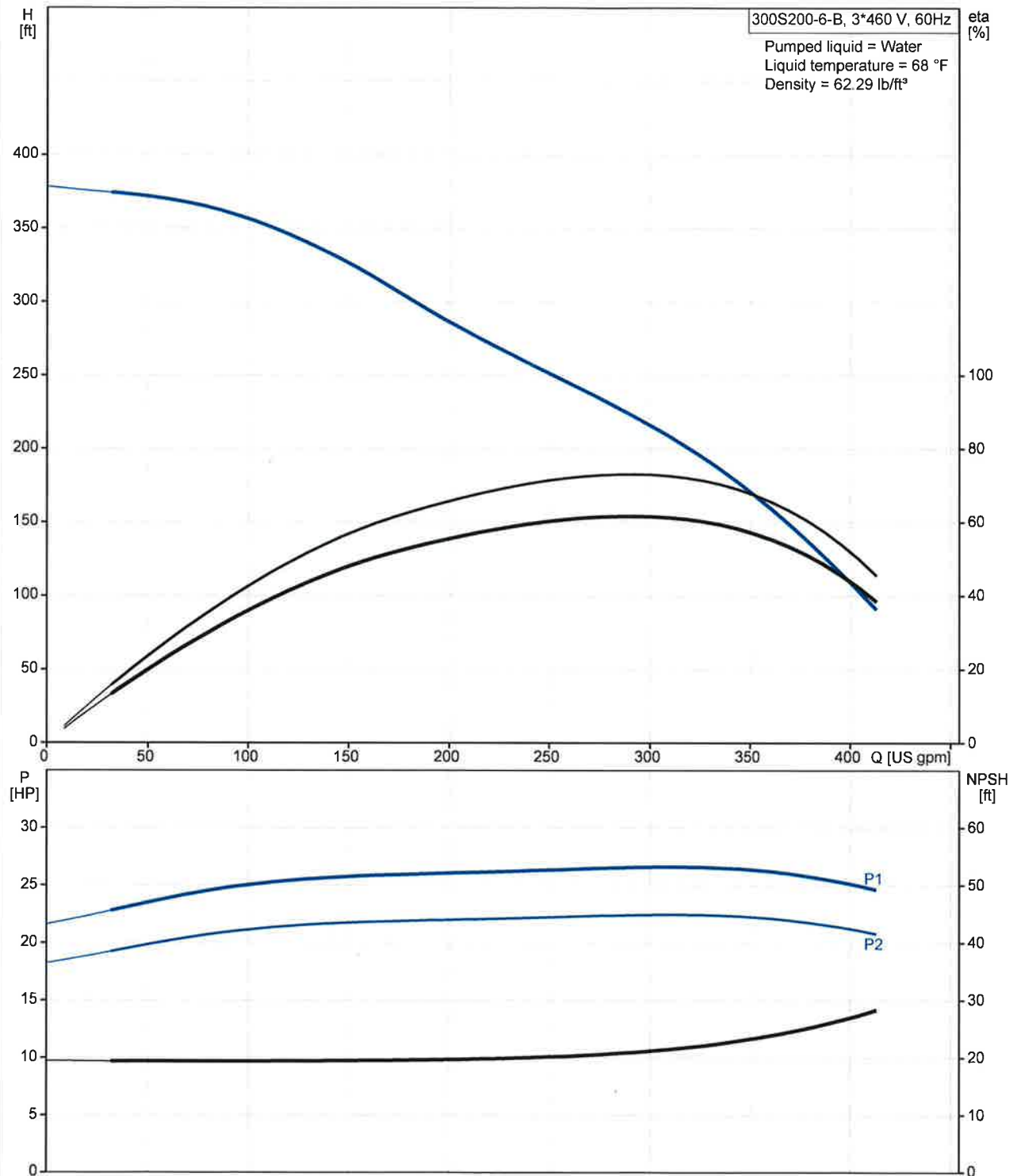
Others:	
Net weight:	198 lb
Gross weight:	220 lb
Shipping volume:	4.94 ft³
Sales region:	Namreg

GRUNDFOS®



Company name: -
Created by: -
Phone: -
Fax: -
Date: -

14B735C6 300S200-6-B 60 Hz



MEASURING DEVICE VERIFICATION

WMIS Number		Water District #	170
Date Inspected	8/29/18	Examiner	greeder/KASA
Diversion Name	New Well		
Contact	George Santee		
Contact Information			
Well Use	☒ Irrigation ☐ Stockwater ☐ Commercial ☐ Other:		
Tag Number	00062338	New tag?	
Tag Location	physical location including offsets		
Utility Info	Pole Number	Demand Meter SN#	

Flow Meter

Information:

Meter Type	Full profile mag ☐ Spooled ultrasonic ☐ Clamp-on/wetted transducer ☐		
	Other: prop		
IDWR Approved?	Yes ☐ No ☐ Variance approved ☐		
Meter Manufacturer	mcdrometer	Installation date	
Model Number	mw504	Serial Number	14-08645
Rate Units	gpm	Volume Units	gallons
Rate Multiplier	x1	Volume Multiplier	x100

Pipe Parameters:

Pipe Material	CS	Outside Diameter	4.03
Wall Thickness	.119	Spacing	3.64 (403)

Measurement:

Installed meter (totalizer reading)	Time	Total Gallons	Average Flow Rate GPM (M1)	Standard total gallons	Average Flow Rate GPM (M2)	% diff. (±)	Comments
248691	10:14:00	2200	216	209.3	209	+3.3	good meas.
248713	(10:18)						
248734	10:34	2800	265.1	270.7	270.7	-2.0	good meas.
248762	(10:56)						

Notes:

SS 4839
Instant PT878 = 211 gpm no end gun
270 gpm with end gun
Filename Log 09
Log 10

Measurement No. 1 (M₁) is the measured rate of flow from the permanently installed flow meter.

Measurement No. 2 (M₂) is the measured rate of flow from the measuring device being used to check the flow for the calibration.

Percent Difference = $(M_1 - M_2) / M_2 \times 100 = \pm \%$ (Acceptable is within $\pm 5\%$)

Calibration Multiplier = M_2 / M_1

$$\begin{array}{r} 4046.8 \\ - 1953.4 \\ \hline 2093.4 \end{array}$$

$$\begin{array}{r} 6164.96 \\ 8871.66 \\ \hline 2706.7 \end{array}$$