

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 65-23684
Exam Date: 08/26/2020

1. Current Owner:
KENNETH T BROOKS 3001 SCHOONER DR EL DORADO HILLS CA 95762 AND
ELIZABETH M BROOKS 3001 SCHOONER DR EL DORADO HILLS CA 95762
2. Accompanied by: Kenneth T Brooks
Phone No: (415) 235-6262
Address: 3001 Schooner Dr El Dorado Hills CA 95762
Relationship to permit Holder: Same

3. **SOURCE:** MIDDLE FORK PAYETTE RIVER Tributary
PAYETTE RIVER

Method of Determination: Permit application, IDWR records, and field examination.

B. OVERLAP REVIEW

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

Water Right No.	Source	Purpose of Use	Basis

Comments: none

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

Water Right No.	Source	Purpose of Use	Basis

Comments: none

C. DIVERSION AND DELIVERY SYSTEM

1. **LOCATION OF POINT(S) OF DIVERSION:**
MIDDLE FORK PAYETTE RIVER NW¼ NW¼, Sec. 26, Twp 10N, Rge 04E, B.M. BOISE County

Method of Determination: Field examination

PLACE OF USE: IRRIGATION

Twp	Rng	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
10N	04E	26						0.2											0.2

Total Acres: 0.2

Method of Determination: Aerial Imagery, ArcMap Tools, and observation during field exam.

3.

X 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.

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

X 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
		2.0		STA-RITE Pro-Storm DS3HG	2"

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date

2. Measurements:

E. FLOW CALCULATIONS

 Additional Computation Sheets Attached

Method:

Theoretical Pump Calculation

2 hp pump set at a pressure of 55psi with a 12 foot lift from the river.

$$(8.8) \times (2 \text{ hp}) \times 0.70 / [(12) + (55 \times 2.31)] = 0.09 \text{ cfs or } 39.8 \text{ gpm}$$

Beneficial Use Standard

$$0.23 \text{ acres} \times 0.03 \text{ cfs/acre} = 0.01 \text{ cfs}$$

Admin AP memo no. 17 states that a rate of flow in excess of 0.02 cfs/acre is often necessary for irrigation of a small acreage, due to restricted system design mechanics and poor economy of scale. To correspond with practical design procedures, the Department will accept rates of diversion as high as 0.03 cfs/acre for irrigation of up to five acres without the justification that a rate greater than 0.02 cfs is necessary. Irrigation for 0.23 acres in this right's POU is allowed a rate up to 0.03 cfs/acre, and therefore a rate 0.03cfs/acre multiplied by 0.23 acres results in a diversion rate of 0.01 cfs. This rate of 0.01 cfs is recommended for licensing.

F. VOLUME CALCULATIONS

1. Volume Calculations for irrigation:

$$V_{IR} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = (0.23 \text{ acres}) \times (3.5 \text{ af}) = 0.8 \text{ af}$$

$$V_{DR} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = (0.01 \text{ cfs}) \times (246 \text{ days}) \times 1.9835 = 4.9 \text{ af}$$

$$V = \text{Smaller of } V_{IR} \text{ and } V_{DR} = 0.8 \text{ af}$$

2. Volume Calculations for Other Uses:

None

G. NARRATIVE/REMARKS/COMMENTS

The field exam was conducted on August 26, 2020 by water resource agent Allen Bradbury. Permit holder and property owner, Tom Brooks, accompanied the agent on the field exam. Current Boise County tax parcel data confirms Kenneth Thompson and Elizabeth M Brooks to be the current owners of the property pertinent to the place of use (POU) and point of diversion (POD). No ownership change is required.

Water is drawn from the Middle Fork Payette River using a STA-RITE Pro-Storm DS3HG 2.0 HP pump. The pump is contained in a small pump house about 12 feet above the river. The pump house is located at the southeast corner of the place of use. The line for the intake is attached to a log and floats in the water near the shore. Water is pump another 12 to 15 feet uphill via a 2 inch discharge line to buried sprinklers.

The permit was approved on 7/31/2017 and proof was submitted on 10/26/2017 and authorized the irrigation of 1.5 acres. The place of use was measured at 0.23 acres from imagery on Google Earth. Irrigation consisted of pop up sprinkles irrigating lawn and landscaping. I am recommending a POU based on the apparent acres irrigated as calculated from Google Earth imagery and rounded according to Admin memo 6 of 0.2 acres.

The proposed rate of diversion was 0.03 cfs on the original application, permit, and proof of beneficial use. The theoretical discharge calculation for the 2.0 Hp pump, based on a lift of 12 feet, operating at 55 psi, yielded a theoretical flow of 0.09 cfs or 39.8 gpm. According to Admin AP memo no. 17, to correspond with practical design procedures, the Department will accept rates of diversion as high as 0.03 cfs/acre for irrigation of up to five acres without the justification that a rate greater than 0.02 cfs is necessary. Since this right only irrigates a POU of 0.23 acres it is allowed a rate up to 0.03 cfs/acre, and therefore a rate 0.03cfs/acre multiplied by 0.23 acres results in a diversion rate of 0.01 cfs. I am recommending the standard beneficial use rate of 0.01 cfs for licensing.

Conditions 026A was removed as per department licensing standards. Condition 121 was updated to 103 as per department licensing standards.

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

H. RECOMMENDATIONS**1. Recommended Amounts**

<u>Beneficial Use</u>	<u>Period of Use</u>	<u>Rate of Diversion</u>	
IRRIGATION	03/15 to 10/31	0.01 CFS	

Totals: 0.01 CFS

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

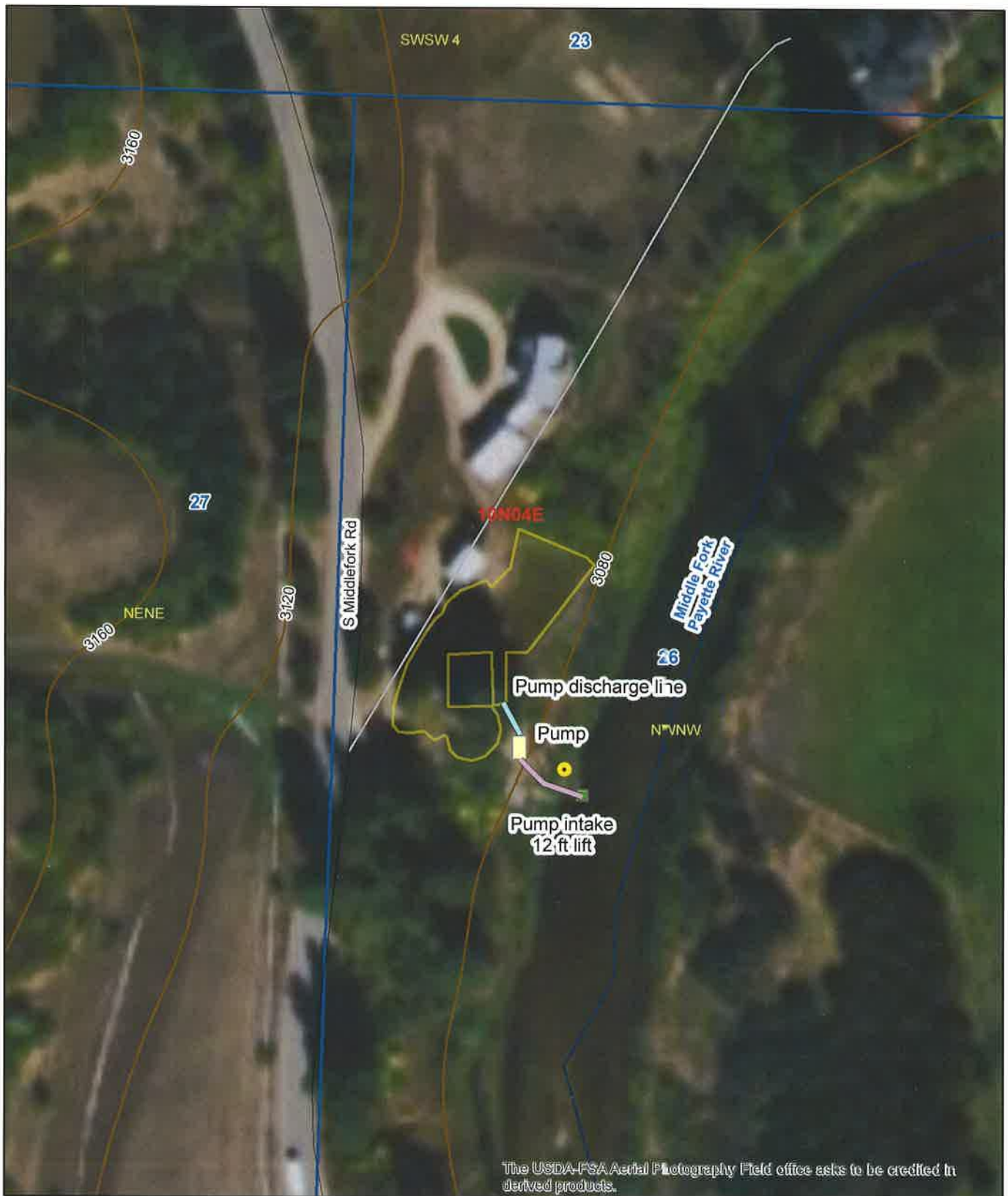
I. AUTHENTICATION Allen Bradbury - Water Resource Agent, Senior

Field Examiner's Name Allen Bradbury Date 10/26/20

Reviewer Patricia Kelly Date 10-27-2020

65-23684 BROOKS

0.01 CFS IRRIGATION from MIDDLE FORK PAYETTE RIVER for 0.23 ACRES



- Point of Diversion
- Place of Use

0 0.025 0.05 Miles
1 inch = 0.02 miles 1 inch = 100 feet

BENEFICIAL USE FIELD REPORT CALCULATIONS

Permit #: 65-23684
 Permit Name: Kenneth T Brooks

Proof Due: 8/1/2019
 Priority Date: 1/26/2017
 Approved Date: 7/31/2017

Proof Subm: 10/26/2017
 Exam Date: 6/26/2020

Flow Rate 0.00 to 0.20
 Fee Rate 0.03
 Exam Fee \$50.00

0.00 to 0.20	\$50.00	2.01 to 3.00	\$150.00
0.21 to 1.00	\$100.00	3.01 to 4.00	\$175.00
1.01 to 2.00	\$125.00	4.01 to 5.00	\$200.00

Source MFK Payette R
 Tributary Payette R

Max Rate Per Acre: 0.03
 Max Volume Per Acre: 3.50

	cfs	gpm
Proposed Rate	0.03	13.46
Permit Rate	0.03	13.46
Proof Report	0.03	13.46
Irrig. Only	0.03	13.46
Stockwater		0.00
Domestic		0.00

Acres Proposed:	1.5
Acres Permitted:	1.5
Acres Developed:	0.23

FLOW CALCULATIONS

Meter Type: n/a
 Meter Reading: 0.000 cfs

Nozzle Size	
Input # heads:	
Input gpm/head	
gpm/line	0.0
cfs/line	0.00

Theoretical Method

	Est. Pump Set	minus 10' =			
Q = (8.8) X (HP) X E	HP =	E =	H =	PSI =	Q =
TDH	2.0	70.0%	12	55	0.09
					39.77
					cfs gpm

TDH = [(LIFT) + (PSI X 2.31)]

TDH =	Lift =	PSI =	2.31
0.0			2.31

HP = Total Brake Horsepower of pumping plant (including booster)

Eff. = Pumping plant efficiency (assume 70% or 0.70)

TDH = Total dynamic head = [(LIFT) + (PSI X 2.31)]

PSI = Pumping pressure measured in PSI near pump

(if open discharge assume [0])

Q = rate of flow in cubic feet per second,

Recommended Flow Rate: 0.03

Consumptive Use	3.5	Headgate Requirement	3.5	
Season of Use	3/15	10/31	=	246 days
Volume (VIR)	0.23	X	3.5	= 0.8 af
Volume (DR)	0.030	x	246	= 1.9835
BU Standard Rate	0.23	X	0.03	= 0.01 cfs
Rate/acre	0.030	/	0.23	= 0.130 cfs/ac

V I.R. = (Acres Irrigated) x (Irrigation Requirement)

V D.R. = [Diversion Rate (cfs)] x (Days in Irrigation season) x 1.9835

V = Smaller of V I.R. and V D.R.

Recommendation Standards for diversion rate (choose most restrictive)

0.03 Permit Rate – the rate applied for

0.03 Fee Rate – the maximum rated paid for on the fee schedule.

0.01 Beneficial Use (BU) standard = x.x ac * 0.020 cfs/acre

0.00 Measured Value – the value measured in the field

0.09 Theoretical Rate - the rate calculated

65-23684 Brooks

irrigation from Middle Fk Payette R.

Measured 0.23 acre POU

Legend

 65-23684_Brooks

Google Earth

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100 ft





5 acres, Irrigation, Middle Fork Payette River



Figure 1. Pump house with 2" discharg line to irrigate lawn.



Figure 2. Pump house with 2" suction hose with approximately 12 feet of lift from Middle Fork Payette River.



Figure 3. Intake for 2" suction hose.



Figure 4. STA-RITE Pro-Storm DS3HG 2.0 HP pump.



Figure 5.
Approximately
0.23 acres of
irrigated lawn.



Figure 6. Irrigated
lawn.

STA-RITE® PRO-Storm™ DS3 Series

Self-priming centrifugal

PUMP PERFORMANCE

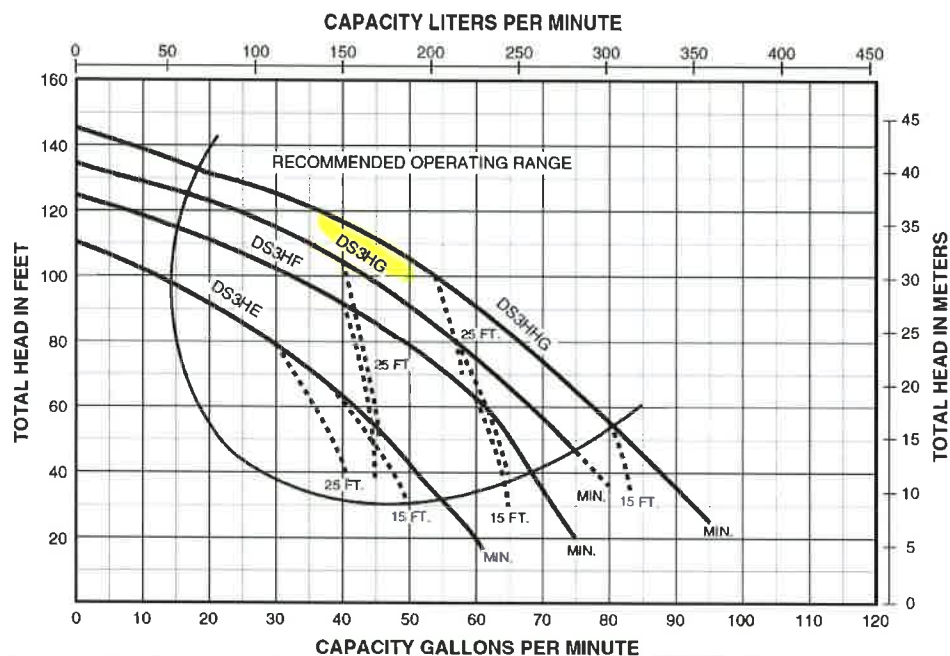


Figure 7. Pump performance curve chart.

PUMP PERFORMANCE (CAPACITY IN GALLONS PER MINUTE)

Catalog Number	HP	Discharge Pressure		Suction Lift in Feet				
		PSI	Feet Head	5'	10'	15'	20'	25'
DS3HE	1	20	46.2	48	45	40	37	33
		30	69.3	33	30	26	22	16
		40	92.4	15	10	—	—	—
DS3HF	1-1/2	20	46.2	64	62	60	57	54
		30	69.3	53	50	46	42	37
		40	92.4	35	30	25	19	—
DS3HG	2	20	46.2	72	70	67	65	62
		30	69.3	60	58	54	51	47
		40	92.4	45	42	37	30	27
		50	115.5	23	16	—	—	—
DS3HHG	2-1/2	20	46.2	83	80	77	74	71
		30	69.3	70	67	63	60	55
		40	92.4	56	52	48	40	35
		50	115.5	36	28	20	—	—

Figure 8. Pump performance table.

Bradbury, Allen

From: Tom Brooks <tom_brooks@trimble.com>
Sent: Friday, July 12, 2019 12:47 PM
To: Bradbury, Allen
Subject: RE: Brooks Pump - 581 Middlefork rd

The operating psi is set at 55 psi. the length of hose from river to pump is 20 ft and the lift from intake to pump is 12 feet

Tom Brooks, Manager, North American Sales

Trimble | Owner Division

1720 Prairie City Road, Suite 120

Folsom, California 95630

P: 916-294-2360 | M: 415-235-6262 | tom_brooks@trimble.com

From: Bradbury, Allen [mailto:Allen.Bradbury@idwr.idaho.gov]
Sent: Friday, July 12, 2019 9:53 AM
To: Tom Brooks <tom_brooks@trimble.com>
Subject: RE: Brooks Pump - 581 Middlefork rd

Thanks for sending the pump info. The only additional information I will need is the approximate operating psi and the number of feet of suction lift then I can calculate the theoretical flow rate of the pump as a comparison to what we measure in the field on Wednesday.

Allen

Water Resource Agent, Sr.

IDWR-Western Region

(208) 334-2190

From: Tom Brooks [mailto:tom_brooks@trimble.com]
Sent: Thursday, July 11, 2019 5:37 PM
To: Bradbury, Allen <Allen.Bradbury@idwr.idaho.gov>
Subject: Brooks Pump - 581 Middlefork rd

Hi Allen,

The pump I have installed is a Sta-Rite DS3HG-01. The attached has the pump curves in it. See you Wednesday at 1:30pm. Let me know if you need additional information or have questions.

Thanks,

Tom Brooks, Manager, North American Sales

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