

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 94-9501

Exam Date: 07/09/2018

1. Current Owner:
WHITEMAN LUMBER CO INC 32859 E CANYON RD CATALDO ID 83810
2. Accompanied by: David Bradley Corkill
Phone No: 208-682-4602
Address: Same as above
Relationship to permit Holder: Whiteman Lumber Co INC Representative

3. **SOURCE:**
GROUND WATER

Method of Determination: Arcmap and DRG

B. OVERLAP REVIEW

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

Water Right No.	Source	Purpose of Use	Basis

Comments: _____

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

Water Right No.	Source	Purpose of Use	Basis

Comments: _____

C. DIVERSION AND DELIVERY SYSTEM

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

GROUND WATER L2 (SW¼ SE¼), Sec. 29, Twp 49N, Rge 01E, B.M. KOOTENAI County

Method of Determination: Arcmap and GPS. POD located at -116° 21.485, 47° 33.647.

PLACE OF USE: INDUSTRIAL

Twp	Rng	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
49N	01E	29															X		
49N	01E	29															X		
																	L2		

Method of Determination: Arcmap and field examination.

3.

X Delivery System Diagram Attached (required). Indicate all major components and distances between components. Indicate weir size/pipe as applicable.

X 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
Well - A0020103		5			

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
NONE						

2. Measurements: Unable to perform flow measurement due to piping from well going directly into watering system.

E. FLOW CALCULATIONS

X Additional Computation Sheets Attached

Measured Method: Theoretical pumping equation estimates flow at 0.20 cfs. See attached theoretical pumping equation worksheet. The theoretical pumping equation was completed to validate flow calculations, which were nearly identical, obtained from sprinkler performance data worksheets and number of sprinklers in system calculated below:

PSI gage at well POD read 42 psi during operation of log watering.

Applicant Sprinkler Rain Bird 3/8" nozzle: 25.8 gpm x 2 sprinklers = 51.6 gpm

Applicant Sprinkler Rain Bird 3/16" nozzle: 5.6 gpm x 7 sprinklers = 39.2 gpm

Total diversion rate = 51.6 gpm + 39.2 gpm = 90.8 gpm = **0.20 cfs**

F. VOLUME CALCULATIONS

1. Volume Calculations for irrigation: N/A

$$V_{IR} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) =$$

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

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

2. Volume Calculations for Other Uses:

Industrial water use: 90.8 gpm x 60 min x 24 hrs = 129,600 gpd x 152 days = 19,699,200 gallons / 325850 gallons/af = 60.45 af = **60.0 af** Maximum Volume (rounded down to comply with admin memo, app processing memo No.6, Significant Figures).

G. NARRATIVE/REMARKS/COMMENTS

Field exam performed with the applicant's representative, David Bradley Corkill, showed a well being used to water logs at a lumber mill for industrial purposes. The well, A0020103, had a 5 HP pump which diverted water directly into a log watering system. I was unable to perform a flow measurement because water was diverted directly into the watering system with no proper place to perform measurement. Data collected from Rain Bird sprinkler performance data sheets were used to derive the diversion rate of 90.8 gpm or 0.2 cfs. A theoretical pumping equation was used to validate the sprinkler performance data sheet derived value, and produced an identical flow rate of 89.1 gpm or 0.2 cfs. The well pump was estimated to be 85 feet down and the system running at 40 psi (equation attached). A diversion rate of 0.35 cfs was permitted, but based on theoretical pumping equation values, the maximum diversion rate for industrial use will be licensed for 0.20 cfs.

The commercial component permitted for was to serve bathrooms at the lumber company buildings across the street from the log watering yard. The applicant had an existing water right 94-8115 that covered domestic use for the lumber company buildings served from a separate well than the industrial component's well. As such, the commercial component was removed from license, and POD for well associated with commercial component, to mitigate a stacking of water rights. In this process, the portion of the industrial use located in the NWSE of Section 29 was removed, as it is covered by the existing water right 94-8115.

The log watering operation has two pole mounted 3/8" nozzle sprinklers, and seven tripod mounted 3/16 nozzle sprinklers that operated 24 hrs a day, 7 days a week. Applicant stated he operates the watering system from the first part of June through October each year. The season of use was adapted from permitting to reflect 1 June to 31 October (152 days). The annual volume was calculated equaling $90.8 \text{ gpm} \times 60 \text{ min} \times 24 \text{ hrs} = 129,600 \text{ gpd} \times 152 \text{ days} = 19,699,200 \text{ gallons} / 325850 \text{ gallons/af} = 60.45 \text{ af} = \mathbf{60.0 \text{ af}}$ annual volume, which will be carried forward to license.

Conditions 046 and X05 were removed from the license. All other conditions remain on license. There are no overlap concerns for this water right.

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>	<u>Annual Volume</u>
INDUSTRIAL	06/01 to 10/31	0.20 CFS	60.0 AF
<u>Totals:</u>		0.20 CFS	60.0 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 Luke Bates - Water Resource Agent

Field Examiner's Name Adam Fink Date 4/30/2020
 Reviewer GABT Date 4/28/2020

State of Idaho
Department of Water Resources
Attachment to Field Exam
94-9501

INDUSTRIAL system diagram.

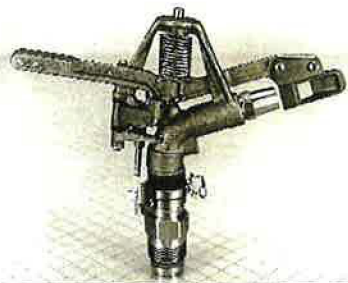
01E



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

0 0.035 0.07 0.14 Miles





PERFORMANCE DATA

85EHD-LA

85EHD-LA

1 1/4" Full or Part Circle,
Brass Impact Sprinklers

Bearing: 1 1/4" Male NPT, Brass

Trajectory Angle: 17°

Operating Range: 20-100 psi

Flow Rate: 17.1-127.7 GPM

Radius: 48-108 ft.

FEATURES

- Heavy duty brass construction
- Stainless steel wear buttons, springs and fulcrum pin
- Locking stainless steel trip collars
- Chemically resistant washers
- Full or Part Circle operation
- Two-year warranty

BENEFITS

- Internal straightening vane increases distance of throw
- Stainless steel buttons protect trip mechanism from wear
- Corrosion and grit resistant
- Built to last

Straight Bore Nozzle (SBN-5) with Plug (Stream Height: 14 ft.)

PSI @ Nozzle	NOZZLE SIZE															
	11/32"		3/8"		13/32"		7/16"		15/32"		1/2"		17/32"		9/16"	
	Rad.	GPM	Rad.	GPM	Rad.	GPM	Rad.	GPM	Rad.	GPM	Rad.	GPM	Rad.	GPM	Rad.	GPM
25	52	17.10	55	20.30	57	23.40	60	26.70	60	30.30	60	33.80	60	37.10	60	42.30
30	57	18.80	59	22.30	62	25.70	63	29.30	65	33.20	67	37.10	67	40.80	67	46.40
35	60	20.30	62	24.10	65	27.80	67	31.70	70	35.90	71	40.10	73	44.10	73	50.20
40	62	21.80	65	25.80	67	29.70	70	33.90	72	38.50	75	42.90	76	47.20	79	53.70
45	65	23.10	67	27.40	70	31.60	72	36.00	75	40.80	77	45.60	80	50.10	80	57.10
50	67	24.40	69	28.90	72	33.30	74	38.00	77	43.10	79	48.10	82	52.90	84	60.20
55	69	25.50	71	30.30	74	34.90	76	39.70	79	45.30	82	50.30	84	55.60	86	63.20
60	71	25.80	73	30.80	76	35.90	78	41.60	81	47.40	83	53.00	86	58.80	88	66.50
65	72	26.90	75	32.00	77	37.40	80	43.30	83	49.90	85	55.30	88	61.20	90	69.40
70	74	28.10	77	33.30	79	38.90	82	45.10	84	51.40	87	57.50	89	63.50	92	72.20
75	76	29.20	78	34.50	81	40.30	83	46.80	86	53.30	89	59.60	91	65.80	93	74.90
80	77	30.40	80	35.70	82	41.80	85	48.40	88	55.10	90	61.60	93	68.10	95	77.50
85	79	31.50	81	37.00	84	43.20	86	50.00	89	56.90	92	63.50	94	70.30	97	80.00
90	80	32.70	83	38.30	85	44.60	88	51.50	91	58.50	93	65.30	96	72.40	98	82.20
95	82	33.90	84	39.50	87	46.00	89	53.00	92	60.00	95	67.10	97	74.40	99	84.30
100	83	34.00	85	40.10	88	47.40	91	54.50	93	61.50	96	68.90	98	76.40	101	87.20

Low Pressure Nozzle (LPN-5)

(Stream Height: 10 ft.)

PSI @ Nozzle	NOZZLE SIZE							
	3/8"		7/16"		1/2"		5/8"	
	Rad.	GPM	Rad.	GPM	Rad.	GPM	Rad.	GPM
20	48	17.80	51	24.00	54	30.80	56	46.00
25	52	20.30	55	26.70	58	33.80	61	51.50
30	55	22.30	60	29.30	63	37.10	67	56.50
35	59	24.10	64	31.70	68	40.10	72	61.10
40	63	25.80	68	33.90	72	42.90	77	65.40
45	66	27.40	72	36.00	75	45.60	82	69.50
50	68	28.90	73	38.00	77	48.10	85	73.30
55	70	30.30	75	39.70	80	50.30	89	77.30

PART NUMBERS AND ORDERING INFORMATION

Ordering Example

To order an 85EHD-LA sprinkler with a 3/8" Brass Straight Bore Nozzle the part number would be:

MAKE YOUR SPRINKLER
CHOICE FROM CHART 1

A23962- +

CHOOSE NOZZLE SIZE(S)
FROM CHART 2

24 =

ADD THEM TOGETHER TO
CREATE THE PART NUMBER

A23962-24

Chart 1: 85EHD-LA

PART NUMBER:
FIRST HALF

SPRINKLER ONLY

Sprinkler without
Nozzle

A23960

SPRINKLER WITH SINGLE NOZZLE INSTALLED

Sprinkler with
SBN-5

A23962-

Chart 2

PART NUMBER: SECOND HALF

NOZZLE

Brass Straight
Bore Nozzle (103043-)

SBN-5

11/32"	3/8"	13/32"	7/16"	15/32"	1/2"	17/32"	9/16"	5/8"	11/16"
22	24	26	28	30	32	34	36	40	44

Brass Low Pressure
Nozzle (108149-)

LPN-5

11/32"	3/8"	13/32"	7/16"	15/32"	1/2"	17/32"	9/16"	5/8"	11/16"
22	24	26	28	30	32	-	-	40	-



RAIN BIRD

PERFORMANCE DATA

30H

30H

3/4" Full Circle, Brass Impact Sprinkler

Bearing: 3/4" Male NPT, Brass
Trajectory Angle: 27°
Operating Range: 25-80 psi
Flow Rate: 2.9-13.1 GPM
Radius: 40-56 ft.

FEATURES

- Heavy duty brass construction
- Stainless steel springs and fulcrum pin
- Chemically resistant washers
- Dual nozzle ports
- Two-year warranty

BENEFITS

- Wide range of flow rates
- Corrosion and grit resistant
- Built to last

Brass Straight Bore Nozzle (SBN-3) with Plug (Stream Height: 9 ft.)

PSI @ Nozzle	NOZZLE SIZE							
	9/64"		5/32"		11/64"		3/16"	
	Rad.	GPM	Rad.	GPM	Rad.	GPM	Rad.	GPM
25	40	2.90	41	3.50	41	4.30	42	5.10
30	40	3.10	42	3.90	44	4.70	45	5.60
35	41	3.40	43	4.20	45	5.10	47	6.00
40	41	3.60	44	4.50	46	5.40	48	6.40
45	42	3.80	44	4.70	46	5.70	49	6.80
50	42	4.10	45	5.00	47	6.10	50	7.20
55	43	4.20	45	5.20	48	6.30	50	7.60
60	43	4.40	46	5.50	48	6.60	51	7.90
65	44	4.60	46	5.80	49	6.90	51	8.20
70	44	4.80	47	5.90	49	7.20	52	8.50
75	45	5.00	47	6.10	50	7.40	52	8.80
80	45	5.10	48	6.30	50	7.70	53	9.10

Brass Straight Bore Nozzle (SBN-3) with Spreader (LAN-1) (Stream Height: 9 ft.)

PSI @ Nozzle	NOZZLE SIZE									
	9/64" x 3/32-7"		5/32" x 3/32-7"		11/64" x 3/32-7"		3/16" x 3/32-7"		3/16" x 1/8-20"	
	Rad.	GPM	Rad.	GPM	Rad.	GPM	Rad.	GPM	Rad.	GPM
25	40	4.20	41	4.80	41	5.60	42	6.40	42	7.40
30	40	4.60	42	5.30	44	6.10	45	7.00	45	8.10
35	41	4.90	43	5.70	45	6.60	47	7.50	47	8.70
40	41	5.20	44	6.10	46	7.00	48	8.10	48	9.30
45	42	5.60	44	6.50	46	7.40	49	8.50	49	9.90
50	42	5.90	45	6.80	47	7.90	50	9.00	50	10.40
55	43	6.10	45	7.10	48	8.20	50	9.40	50	10.90
60	43	6.40	46	7.40	48	8.60	51	9.90	51	11.40
65	44	6.70	46	7.80	49	8.90	51	10.20	51	11.80
70	44	6.90	47	8.10	49	9.30	52	10.70	52	12.30
75	45	7.20	47	8.30	50	9.60	52	11.00	52	12.70
80	45	7.50	48	8.70	50	10.00	53	11.50	53	13.10

Brass Straight Bore Nozzle with Vane (SBN-3V) with Plug (Stream Height: 10 ft.)

PSI @ Nozzle	NOZZLE SIZE							
	9/64"		5/32"		11/64"		3/16"	
	Rad.	GPM	Rad.	GPM	Rad.	GPM	Rad.	GPM
25	42	2.90	44	3.50	45	4.30	46	5.10
30	43	3.10	45	3.90	46	4.70	47	5.60
35	44	3.40	46	4.20	47	5.10	49	6.00
40	45	3.60	47	4.50	48	5.40	50	6.40
45	46	3.80	48	4.70	49	5.70	52	6.80
50	46	4.10	49	5.00	50	6.10	53	7.20
55	47	4.20	50	5.20	51	6.30	54	7.60
60	47	4.40	50	5.50	51	6.60	54	7.90
65	48	4.60	51	5.80	52	6.90	55	8.20
70	48	4.80	51	5.90	53	7.20	55	8.50
75	49	5.00	52	6.10	54	7.40	56	8.80
80	50	5.10	52	6.30	55	7.70	56	9.10

Brass Straight Bore Nozzle with Vane (SBN-3V) with Spreader (LAN-1) (Stream Height: 10 ft.)

PSI @ Nozzle	NOZZLE SIZE									
	9/64" x 3/32-7"		5/32" x 3/32-7"		11/64" x 3/32-7"		3/16" x 3/32-7"		3/16" x 1/8-20"	
	Rad.	GPM	Rad.	GPM	Rad.	GPM	Rad.	GPM	Rad.	GPM
25	42	4.20	44	4.80	45	5.60	45	6.40	46	7.40
30	43	4.60	45	5.30	46	6.10	47	7.00	47	8.10
35	44	4.90	46	5.70	47	6.60	49	7.50	49	8.70
40	45	5.20	47	6.10	48	7.00	50	8.10	50	9.30
45	46	5.60	48	6.50	49	7.40	52	8.50	52	9.90
50	46	5.90	49	6.80	50	7.90	53	9.00	53	10.40
55	47	6.10	50	7.10	51	8.20	54	9.40	54	10.90
60	47	6.40	50	7.40	51	8.60	54	9.90	54	11.40
65	48	6.70	51	7.80	52	8.90	55	10.20	55	11.80
70	48	6.90	51	8.10	53	9.30	55	10.70	55	12.30
75	49	7.20	52	8.30	54	9.60	56	11.00	56	12.70
80	50	7.50	52	8.70	55	10.00	56	11.50	56	13.10

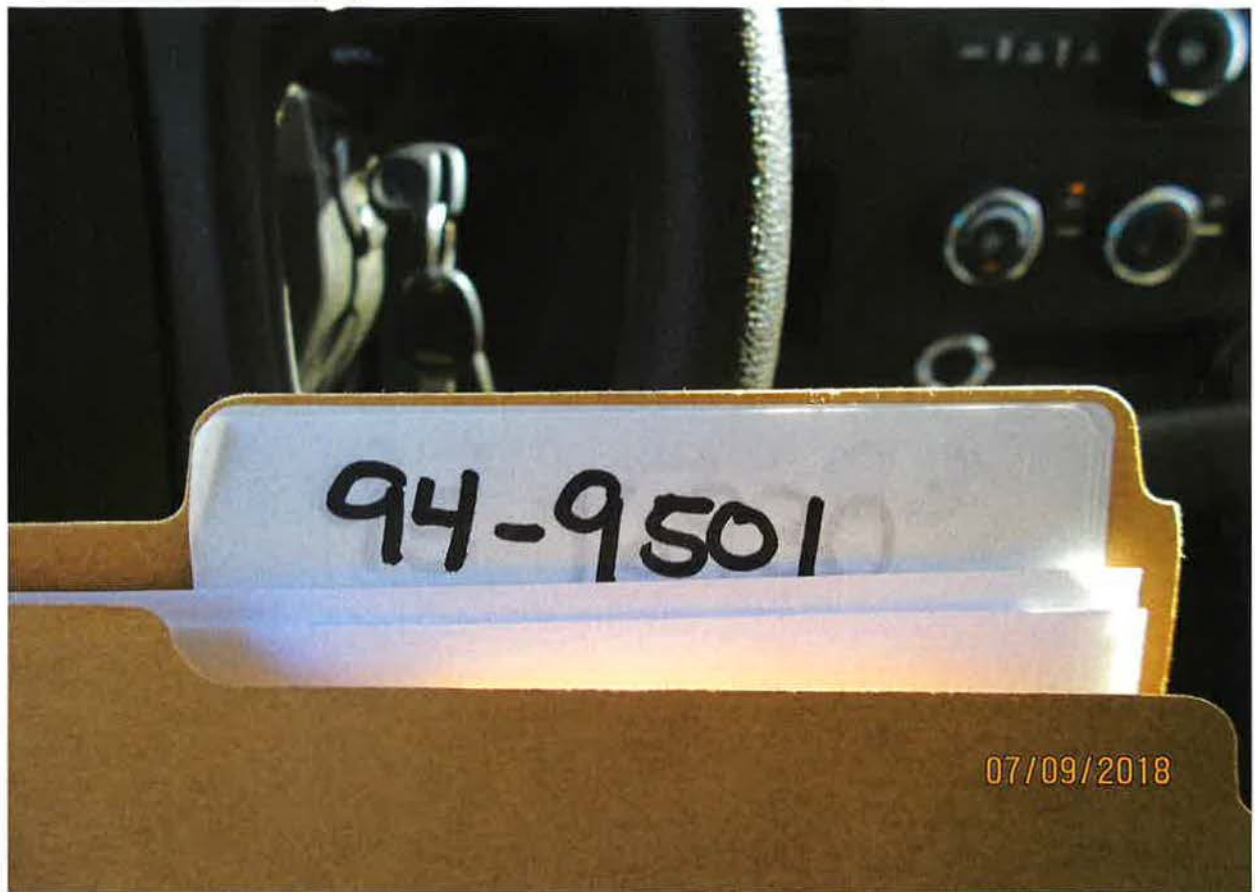
PART NUMBERS AND ORDERING INFORMATION

Ordering Example	MAKE YOUR SPRINKLER CHOICE FROM CHART 1	CHOOSE NOZZLE SIZE(S) FROM CHART 2	ADD THEM TOGETHER TO CREATE THE PART NUMBER
To order a 30H sprinkler with an 11/64" Brass Straight Bore Nozzle and a 1/8" 20° Brass Low Angle Spreader Nozzle the part number would be:	A08402-	11-08	= A08402-11-08

Chart 1	PART NUMBER: FIRST HALF
SPRINKLER ONLY / PLUG	
Sprinkler without Nozzle	A08401
Sprinkler without Nozzle plus Brass Plug	A08411
SPRINKLER WITH SINGLE NOZZLE INSTALLED	
Sprinkler with SBN-3 and Plug	A08413-
Sprinkler with SBN-3V and Plug	A10713-
Sprinkler with RFN-3 and Plug	A08414-
SPRINKLER WITH COMBINATION NOZZLES INSTALLED	
Sprinkler with SBN-3 and LAN-1-7	A08403-
Sprinkler with SBN-3 and LAN-1-20	A08402-
Sprinkler with SBN-3V and LAN-1-7	A10703-
Sprinkler with SBN-3V and LAN-1-20	A10702-
Sprinkler with LPN-3 and LAN-1-20	A08405-

Chart 2		PART NUMBER: SECOND HALF												
NOZZLE		3/32"	7/64"	1/8"	9/64"	5/32"	11/64"	3/16"						
Brass Straight Bore Nozzle (105842-)	SBN-3	—	—	—	09	10	11	12						
Brass Straight Bore with Vane (106131-)	SBN-3V	—	—	—	09	10	11	12						
Brass 7° Low Angle Spreader (100225-)	LAN-1-7	06	07	08	09	10	11	—						
Brass 20° Low Angle Spreader (100226-)	LAN-1-20	06	07	08	09	10	11	—						
Brass Low Pressure Nozzle (104538-)	LPN-3	—	—	—	09	10	11	12						
RAIN FLOW NOZZLE		GPM:	3.5	4	4.5	5	5.5	6	6.5	7.5	8	9	10	11
Brass Rain Flow (111089-)	RFN-3	03-50	04-00	04-50	05-00	05-50	06-00	06-50	07-50	08-00	09-00	10-50	11-00	
Brass Plug (100225)		Bold nozzle size numbers denote the most common nozzle choices.												

For flow rate information on RFN-3 see page 40.



POD



POU INDUSTRIAL LOG WATERING





POU SPRINKLER



POU INDUSTRIAL LOG WATERING



POU INDUSTRIAL LOG WATERING

