

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 57-7640

Exam Date: 5/30/2012

1. Current Owner: DAVID L PUTNAM
18080 SHORTCUT RD
OREANA, ID 83709
(208)888-1593

And

THOMAS T NICHOLSON
10330 W STARDUST DR
BOISE ID 83709
(208)375-5255

2. Accompanied by: David Putnam

Phone No: Same as AboveAddress: Same as aboveRelationship to Permit Holder: Permit Holder.3. **SOURCE****TRIBUTARY**

GROUND WATER

B. OVERLAP REVIEW

1. Other water rights with the same place of use: No Significant Overlap
2. Other water rights with the same point of diversion: No Significant Overlap

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

GROUND WATER

SW1/4NW1/4

Sec. 28, Twp 04S, Rge 01E, B.M.

OWYHEE County

Method of Determination: GPS and Visual Inspection.

2.

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	
04S	01E	28							16.0										16.0

Total Acres: 16

Method of Determination: GIS Mapping and Visual Inspection.

3. YES Delivery System Diagram Attached (required). Indicate all major components and distances between components. Indicate weir size/pipe as applicable.
- YES Map Attached Showing Location(s) of point(s) of diversion and place(s) of use (required). Scale must be 1:24,000 or greater.
- 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
Site Tag # D0009025	Hitachi	30	689568E	Submersible	UTCi

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

Please Note: The well's power panel stated that a 25 Hp well could have also been used. Please see Dan Nelson's memo dated 6/1/2012.

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
Thyme Flyte	Polysonic					3/28/2012

2. Measurements: Please see Dan Nelson's memo dated 6/1/2012.

E. FLOW CALCULATIONS

Computation Sheets Attached

____ Additional

Measured Method:

Polysonic flow meter used to measure the well. 0.82 cfs was the diversion rate measured. Please see Dan Nelson's memo dated 6/12/2012.

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$$V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 16 \times 4.5 = 72 \text{ annual acre feet.}$$

$$V_{D.R.} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = 0.18 \times 260 \times 1.9835 = 92.8 \text{ annual acre feet.}$$

$$V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} = 72 \text{ annual acre feet.}$$

2. Volume Calculations for Other Uses:

NONE

G. NARRATIVE/REMARKS/COMMENTS

The water for this permit is diverted from a well in the Southwest corner of the property located in T4S R1E S28 SWNW. The water is diverted from the well into a mainline that travels north to the end of the property that irrigated the northern field. The mainline also travels in a easterly direction to the end of the property. A spur comes off of the mainline west of the driveway to irrigate the southwesterly field. Another spur travels north on the east side of the driveway to irrigate a small corner of the property next to the yard. The two eastern fields are irrigated from the mainline east along the road.

There was some concern about the measurement done on this field exam. I asked Dan Nelson to review the measurement, which he did. Please refer to Mr. Nelson's memo dated June 1, 2012.

No other water was used on the property except for an exempt well for the domestic uses and yard irrigation. This system did not irrigate the yard area.

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	03/15 to 11/15	0.180 CFS	72.00 AF
<u>Totals:</u>		0.180 CFS	72.00 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

Sandra Thiel

Field Examiner's Name



Date

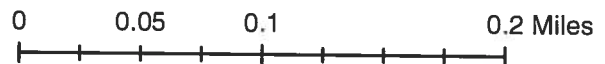
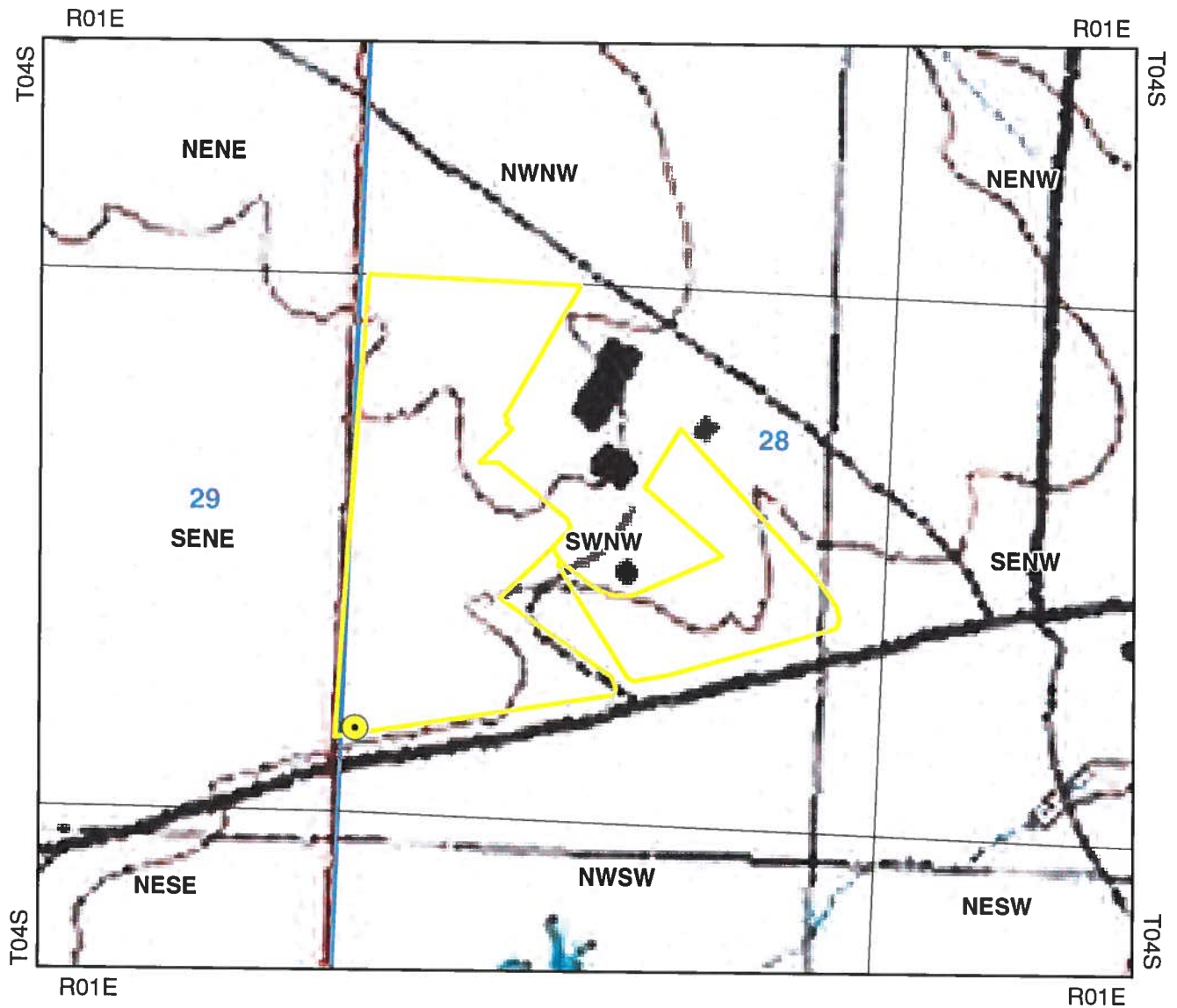
June 19, 2012

Reviewer

Date

State of Idaho
Department of Water Resources
Water Right License
57-7640

Water Service Area Boundary for Merrilan M Simper



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



State of Idaho
Department of Water Resources
Water Right License

57-7640

Water Service Area Boundary for Merrilan M Simper



0 0.05 0.1 0.2 Miles

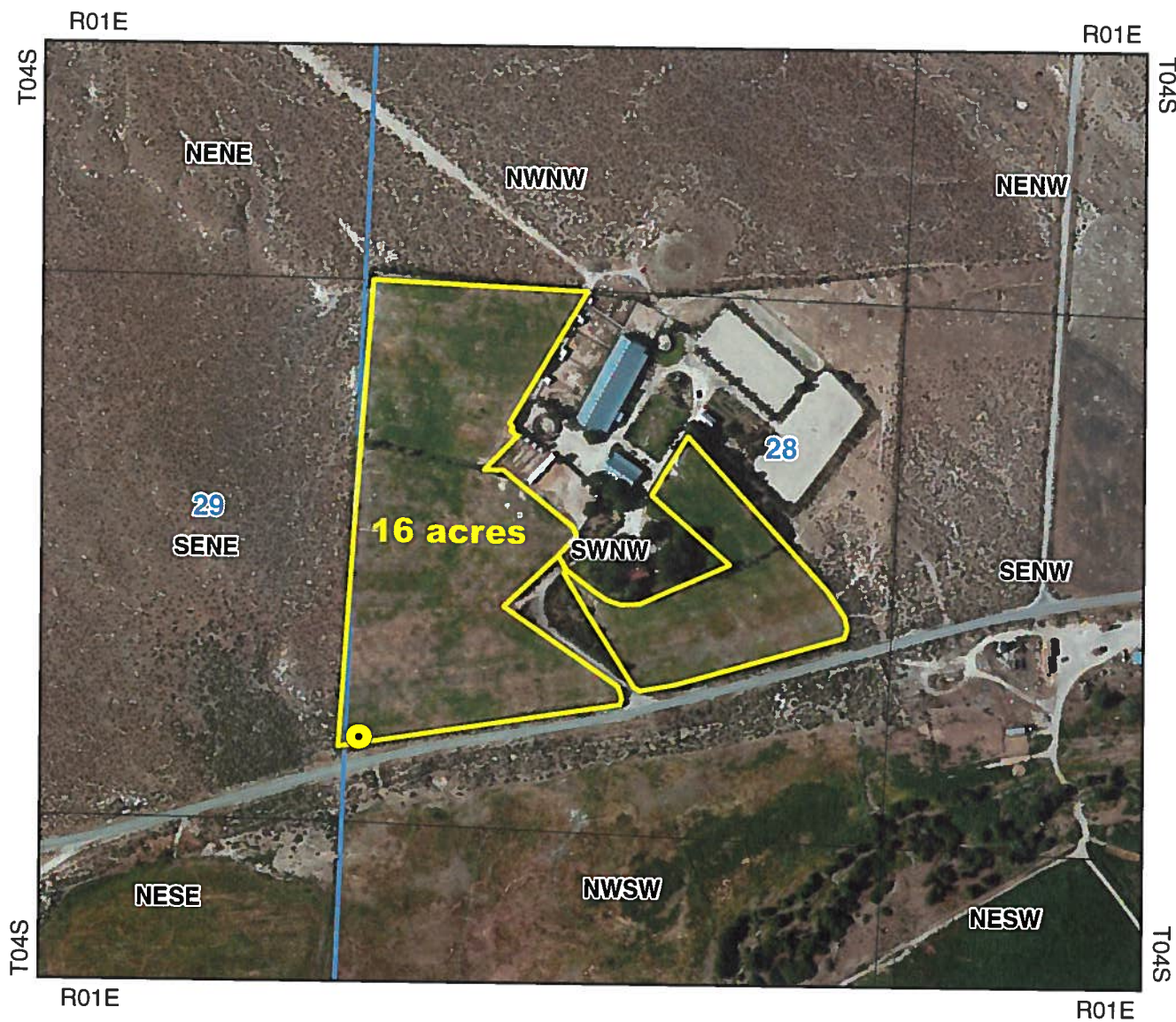
-  Point of Diversion
-  Place Of Use Boundary
-  Townships
-  PLS Sections
-  Quarter Quarters



State of Idaho
Department of Water Resources
Water Right License

57-7640

Water Service Area Boundary for Merrilan M Simper



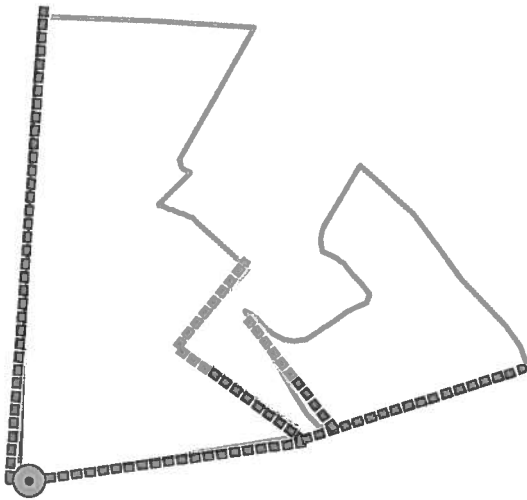
0 0.05 0.1 0.2 Miles

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



System Diagram

Permit 57-7640



The water for this permit is diverted from a well in the Southwest corner of the property located in T4S R1E S28 SWNW. The water is diverted from the well into a mainline that travels north to the end of the property that irrigates the northern field. The mainline also travels in an easterly direction to the end of the property. A spur comes off of the mainline west of the driveway to irrigate the southwesterly field. Another spur travels north on the east side of the driveway to irrigate a small corner of the property next to the yard. The two eastern fields are irrigated from the mainline east along the road.

MEMORANDUM

TO: Water Rights File 57-7640
FROM: Daniel A. Nelson
DATE: June 1, 2012
SUBJECT: Flow Rate Analysis

During a field exam with Sandy Thiel for water right 57-7640, we ran into a discrepancy concerning the flow rate measured and the theoretical calculation. I was asked to perform an analysis of the system to verify the flow rate. The amount measured was between 70 and 90 gpm or 0.20 cfs with an average of approximately 82 gpm or 0.18 cfs. The property owner told us that he runs approximately 32 sprinklers. The sprinklers are Nelson R2000 1/8 inch nozzle sprinklers. We measured one of the sprinklers and the pressure of that sprinkler was 38 psi. The Specification Sheet on the 1/8 inch R2000 Nelson Sprinkler states that at 40 psi, the flow rate is 2.89 gpm. 32 sprinklers X 2.89 gpm equals 92.48 gpm or .21 cfs, which is very close to the amount measured.

The power panel had a pump sticker stating that the pump was a 30 Hp pump. A hand written note on the power panel stated that the pump was a 25 Hp pump. The well log states that there is a 93 ft draw down and the owner's pressure gauge showed a pressure at the pump of 45 psi. Using the Theoretical calculation I determined the following:

$$[(8.8)(\text{Hp})(0.70)]/[\text{Lift} + (\text{psi} \times 2.31)] = Q \text{ in cfs}$$

$$\text{30 Hp Pump} = [(8.8)(30)(0.70)]/[93 + (45 \times 2.31)] = 0.97 \text{ cfs}$$

$$\text{25 Hp Pump} = [(8.8)(25)(0.70)]/[93 + (45 \times 2.31)] = 0.81 \text{ cfs}$$

$$\text{Unknown Pump Hp} = \{0.18 \text{ cfs} \times [93 + (45 \times 2.31)]\} / 8.8 \times 0.70 = 5.75 \text{ Hp to pump with well log lift and known psi}$$

$$\text{Unknown Lift 30 Hp Pump} = [(8.8 \times 30 \times 0.7) / 0.18] - (45 \times 2.31) = 923 \text{ ft lift} - \text{This isn't possible since the well was only drilled to 685 feet per the well log.}$$

$$\text{Unknown Lift 25 Hp Pump} = [(8.8 \times 25 \times 0.7) / 0.18] - (45 \times 2.31) = 752 \text{ ft lift} - \text{This isn't possible since the well was only drilled to 685 feet per the well log.}$$

The above information suggests that the pump in this well is a 5 to 7.5 hp pump. Another possibility is that the bowls in the pump have been trimmed or altered to account for cavitation of the pump or air in the pumping system. The well log shows that there is a strong possibility that there is water cascading from the 45 to 60 foot range to the pumping level of 93 feet. Cascading water is the primary cause of cavitation in a well pump, and trimming the bowls and reducing the well capacity is one cure for cavitation. Whereas the measurement and the sprinkler calculations are so close, I recommend that the measurement be used to determine the flow rate, since the pump information can't be verified.

AI DO SET
DO SET

OUTER DIAMETER
6.0300 IN

PIPE MATERIAL
? CS,SS

WALL THICKNESS
0.1520 IN

KIND OF FLUID
? WATER

SENSOR MOUNTING
? U

TYPE OF SENSOR
? SMALL

DATA CHANGE
? NO

SPACING
4.172 IN U

ZERO MODE
CLEAR

ZERO MODE
AUT ZERO

05-30 10:5700 *R
+002.40 % AI2

MODE SELECT
TO CHECK

0213.8 MMSEC
099.95 % T0

11:05+ 92.460E 06PM 00R
+ 1.154E 0FPS 00R
+00000 *10 G 00R
-00000 *10 G 00R

11:06+ 90.611E 06PM 00R
+ 1.131E 0FPS 00R
+00000 *10 G 00R
-00000 *10 G 00R

11:07+ 87.440E 06PM 00R
+ 1.092E 0FPS 00R
+00017 *10 G 00R
-00000 *10 G 00R

11:08+ 75.553E 06PM 00R
+ 0.941E 0FPS 00R
+00026 *10 G 00R
-00000 *10 G 00R

11:09+ 78.723E 06PM 00R
+ 0.980E 0FPS 00R
+00034 *10 G 00R
-00000 *10 G 00R

11:10+ 72.118E 06PM 00R
+ 0.898E 0FPS 00R
+00042 *10 G 00R
-00000 *10 G 00R

11:11+ 82.157E 06PM 00R
+ 1.026E 0FPS 00R
+00050 *10 G 00R
-00000 *10 G 00R

11:12+ 73.439E 06PM 00R
+ 0.915E 0FPS 00R
+00058 *10 G 00R
-00000 *10 G 00R

11:13+ 74.496E 06PM 00R
+ 0.928E 0FPS 00R
+00066 *10 G 00R
-00000 *10 G 00R

11:14+ 86.912E 06PM 00R
+ 1.005E 0FPS 00R
+00074 *10 G 00R
-00000 *10 G 00R

11:15+ 77.402E 06PM 00R
+ 0.964E 0FPS 00R
+00082 *10 G 00R
-00000 *10 G 00R

May 30,
2012

average

00R 00R -00000 *10 G
00R 00R +00082 *10 G
00R 00R + 0.964E 0FPS
00R 00R 11:15+ 77.402E 06PM

00R 00R -00000 *10 G
00R 00R +00074 *10 G
00R 00R + 1.005E 0FPS
00R 00R 11:14+ 86.912E 06PM

00R 00R -00000 *10 G
00R 00R +00066 *10 G
00R 00R + 0.928E 0FPS
00R 00R 11:13+ 74.496E 06PM

00R 00R -00000 *10 G
00R 00R +00058 *10 G
00R 00R + 0.915E 0FPS
00R 00R 11:12+ 73.439E 06PM

00R 00R -00000 *10 G
00R 00R +00050 *10 G
00R 00R + 1.026E 0FPS
00R 00R 11:11+ 82.157E 06PM

00R 00R -00000 *10 G
00R 00R +00042 *10 G
00R 00R + 0.898E 0FPS
00R 00R 11:10+ 72.118E 06PM

00R 00R -00000 *10 G
00R 00R +00034 *10 G
00R 00R + 0.980E 0FPS
00R 00R 11:09+ 78.723E 06PM

00R 00R -00000 *10 G
00R 00R +00026 *10 G
00R 00R + 0.941E 0FPS
00R 00R 11:08+ 75.553E 06PM

00R 00R -00000 *10 G
00R 00R +00017 *10 G
00R 00R + 1.092E 0FPS
00R 00R 11:07+ 87.440E 06PM

00R 00R -00000 *10 G
00R 00R +00008 *10 G
00R 00R + 1.131E 0FPS
00R 00R 11:06+ 90.611E 06PM

00R 00R -00000 *10 G
00R 00R +00000 *10 G
00R 00R + 1.154E 0FPS
00R 00R 11:05+ 92.460E 06PM

00R 00R 099.95 % T0
00R 00R 0213.8 MMSEC

00R 00R TO CHECK
00R 00R MODE SELECT

00R 00R +002.40 % AI2
00R 00R 05-30 10:5700 *R

00R 00R AUT ZERO
00R 00R ZERO MODE

00R 00R CLEAR
00R 00R ZERO MODE

00R 00R 4.172 IN U
00R 00R SPACING

00R 00R ? NO
00R 00R DATA CHANGE

00R 00R ? SMALL
00R 00R TYPE OF SENSOR

00R 00R ? U
00R 00R SENSOR MOUNTING

00R 00R ? WATER
00R 00R KIND OF FLUID

00R 00R 0.1520 IN
00R 00R WALL THICKNESS

00R 00R ? CS,SS
00R 00R PIPE MATERIAL

00R 00R 6.0300 IN
00R 00R OUTER DIAMETER

00R 00R DO SET
00R 00R AI DO SET

R2000 Windfilter


ROTATOR®

R2000WF-6
U.S. & METRIC



R5
9 - 29 GPH
34 - 110 LPH



R10
.3 - 1.1 GPM
61 - 242 LPH



R10 TURBO
.6 - 2.1 GPM
140 - 469 LPH



R2000
.7 - 3.5 GPM
150 - 792 LPH



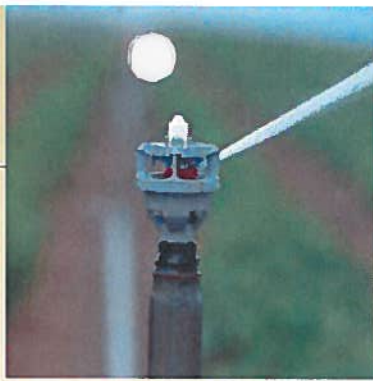
R2000WF
1.1 - 5.7 GPM
254 - 1295 LPH

The R2000WF is part of the Nelson Rotator® family of sprinklers.

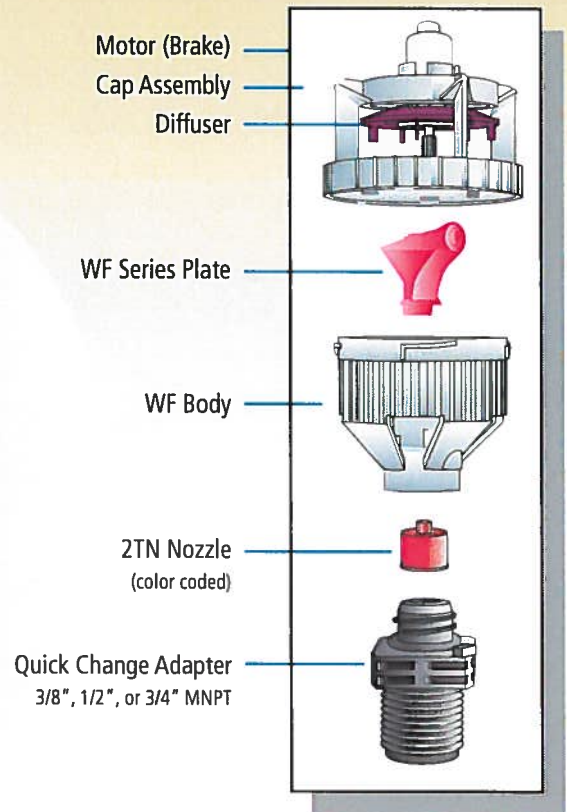
 **NELSON IRRIGATION CORPORATION**



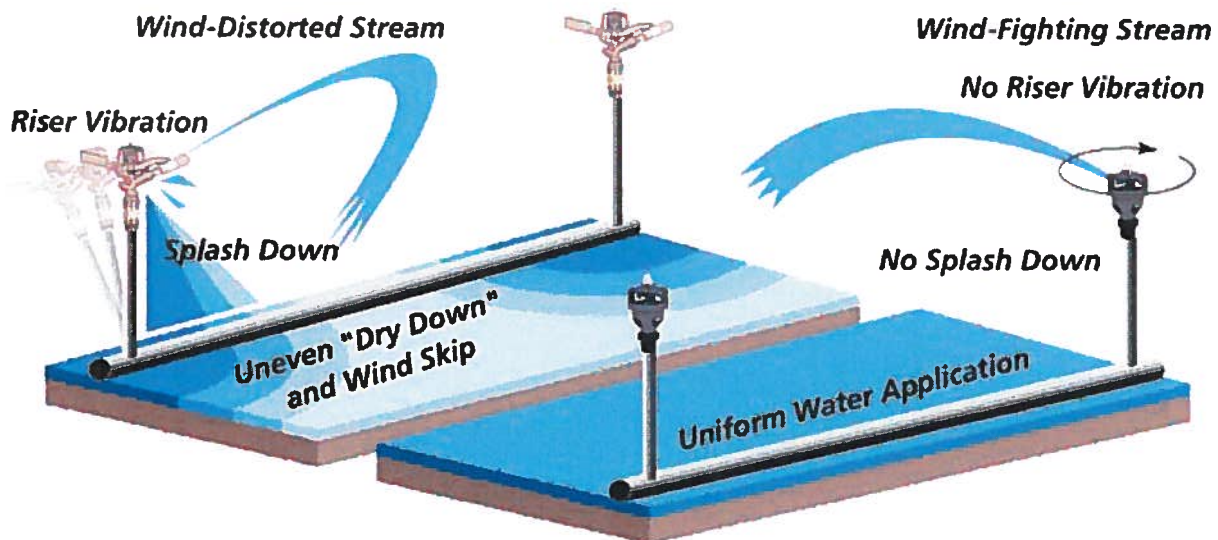
No other



agricultural sprinkler matches the uniformity



The drive arm of an impact sprinkler directs a harsh "splash down" that seals the soil and causes crop damage directly around the sprinkler, while barren "wind skip" areas develop where the distorted stream doesn't reach the crop.



The R2000WF Rotator® consistently delivers higher uniformity than impact sprinklers. It forms a tight wind-penetrating stream that is systematically broken up by a diffuser, filling in the water pattern. Its sweeping action gently distributes water droplets to the ground preventing soil compaction.

, dependability and durability of the R2000 Windfighter.

HIGH UNIFORMITY IN THE FIELD



Solid Set. Aluminum pipe, PVC, or Polyethylene.



Permanent Set.
Overhead irrigation for cooling.



Portable Systems. The R2000WF in combination with the Mini Regulator Drain Check provides the ideal germination sprinkler for PVC or polyethylene systems. Superb uniformity is achieved with low application rates while drain-down problems are virtually eliminated.



Wheel Line.

Nelson Cap Removal Tool
(#10689) The Cap Removal Tool makes gripping and removing the cap a snap.



A tool that increases profits.

The R2000WF has lower maintenance costs than other sprinklers because it's easy to repair, easy to clean, and proven reliable.

Higher uniformity delivers higher quality and yields, which in turn means higher profits ... bottom line.



Threaded Cap (Shut Off) for Acme Adapters (#10615)



Road Guard (#9879)
The R2000WF Rotator can be converted into a part-circle sprinkler.

Plate/Nozzle Options and Flow Performance in GPM and Ltr/h

Plate Options*	Recommended Nozzles	PSI						BAR				
		40	45	50	55	60	65	2.75	3.0	3.5	4.0	4.5
Purple WF12  Radius: 35-39' (10.7-11.9 m)	#10 Blue** 	1.12	1.19	1.25	1.31	1.37	1.44	254	266	286	306	328
	#11 Orange 	1.36	1.45	1.53	1.61	1.68	1.76	308	323	350	375	401
	#12 Purple 	1.61	1.70	1.80	1.89	1.98	2.06	365	380	412	442	469
Green WF14  Radius: 38-40' (11.6-12.2 m)	#13 Yellow (13/128) 	1.90	2.02	2.13	2.23	2.34	2.45	431	451	487	521	558
	#14 Green (7/64) 	2.15	2.28	2.40	2.53	2.64	2.75	487	509	550	590	626
Red WF16  Radius: 39-41' (11.9-12.5 m)	#15 Tan (15/128) 	2.53	2.67	2.82	2.97	3.11	3.24	574	597	647	695	737
	#16 Red (1/8) 	2.89	3.07	3.23	3.40	3.54	3.68	655	685	739	792	837
Gold WF18  Radius: 41-42' (12.5-12.8 m)	#18 Gold (9/64) 	3.68	3.89	4.11	4.30	4.48	4.66	834	869	940	1001	1060
Dark Brown WF20  Radius: 42-45' (12.8 - 13.7 m)	#20 Dark Brown*** 	4.48	4.76	5.00	5.25	5.47	5.69	1016	1062	1144	1222	1295

FOR APPLICATIONS BETWEEN 25 AND 40 PSI (1.7 AND 2.8 BAR) PLEASE REFER TO THE R2000LP LITERATURE. *All plate options are high angle. The performance data in this section has been recorded under ideal test conditions and may be adversely affected by poor hydraulic entrance conditions, slope, riser tilt, temperature, wind or other factors. Always be sure to use the nozzle size that is recommended for the plate. Always operate within the recommended pressure range. Only the nozzle and plate combinations grouped together in the above charts are recommended.

Always use a purple motor (brake) in combination with a #10 nozzle. *Always use a gold motor (brake) and brown plate in combination with a #20 nozzle.

Male Acme Outlet



MR

MRDC

MDC

1/2" (1.25cm) FNPT or Female Acme Inlet for direct connection to PVC or threaded adapters

Mini Regulator (MR) — For systems in which pressure ranges are excessive, the Nelson Mini Regulator provides uniform flow and distribution at each R2000WF through pressure regulation. Choose from 40, 45, or 50 PSI (2.8, 3.1 or 3.4 BAR) nominal pressures.

Mini Regulator Drain Check (MRDC) — To eliminate sprinkler drizzle during shut down and start up and for pressure regulation use the Nelson Mini Regulator Drain Check. It is available in the same nominal pressures as the Mini Regulator.

Mini Drain Check (MDC) — The MDC is a check valve only that opens 2-5 PSI (.14-.35 BAR) below the nominal pressure rating. Available in 20 and 35 PSI (1.4-2.4 BAR) options. Ideal when a check feature only is needed or when it is necessary to operate the R2000WF at different pressures that best suit environmental conditions.

WARRANTY AND DISCLAIMER: Nelson R2000WF Rotators are warranted for one year from the date of original sale to be free of defective material and workmanship when used within the working specifications for which the products were designed and under normal use and service. The manufacturer assumes no responsibility for installation, removal or unauthorized repair of defective parts and the manufacturer will not be liable for any crop or other consequential damages resulting from any defects or breach of warranty. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSES AND OF ALL OTHER OBLIGATIONS OR LIABILITIES OF MANUFACTURER. No agent, employee or representative of the manufacturer has authority to waive, alter or add to the provisions of this warranty nor to make any representations or warranty not contained herein. This product may be covered by one or more of the following U.S. Patent Numbers 4796811, RE33823, DE5312865, 5058806, 5372307, 5875815 and other U.S. Patents pending or corresponding issued or pending foreign patents.

innovation in irrigation™



NELSON IRRIGATION CORPORATION

848 Airport Road, Walla Walla, WA 99362-2271, U.S.A.

Tel: 509.525.7660 — Fax: 509.525.7907 info@nelsonirrigation.com

com — www.nelsonirrigation.com

NELSON IRRIGATION CORPORATION OF AUSTRALIA PTY LTD

35 Sudbury Street, Darra QLD 4074; P.O. Box 530, Summer QLD 4074

Tel: +61 7 3715 8555 — Fax: +61 7 3715 8666

info@nelsonirrigation.com.au www.nelsonirrigation.com.au

PHOTOGRAPHER AND DATE OF PHOTOS DANIEL A NELSON 5/30/2012

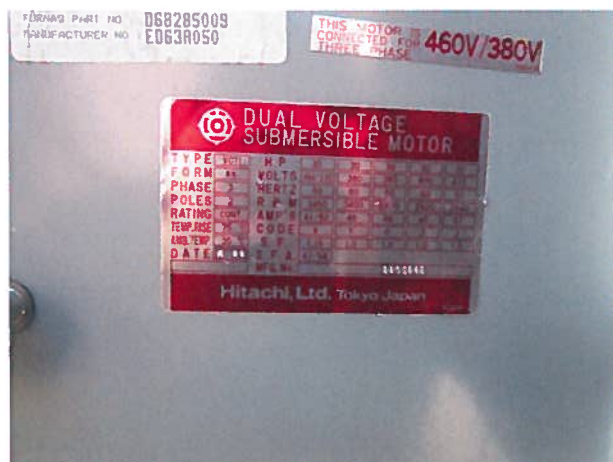
FILE NUMBER 57-7640



This is a photo of the well and distribution piping.



This is a photo of the pressure gauge showing 45 psi at the pump.



This is the tag giving the pump information. It should also be noted that there was a hand written note at the top of the power panel stating that the well was a 25 Hp pump.

PHOTOGRAPHER AND DATE OF PHOTOS DANIEL A NELSON 5/30/2012

FILE NUMBER 57-7640



The above photo shows the western field from the pump location.



The above photo shows the western field and the northern field from the gate or middle of the two fields next to the driveway.



This photo is taken of the eastern field pointing toward the home, which is behind the trees in the middle of the photo.