STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
**BENEFICIAL USE FIELD REPORT**

**A. GENERAL INFORMATION**

**Permit No:** 97-7309
**Exam Date:** 09/11/2008

1. Current Owner:
RAYMOND A HAROLD 502 S 1040 E #A113 AMERICAN FORK UT 84003-3384
CHARLOTTE B HAROLD 3579 S 400 W NIBLEY UT 84003-3384

2. Accompanied by: Julie Arnoldson
Phone No: 435-340-0967
Address: 3579 S 400 W NIBLEY UT 84003-3384
Relationship to permit Holder: Applicant's daughter

3. **SOURCE:** BLUE CREEK

**Tributary** PRIEST RIVER

**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:**
BLUE CREEK SW¼ NW¼, Sec. 21, Twp 57N, Rge 04W, B.M. BONNER County
BLUE CREEK SE¼ NE¼, Sec. 20, Twp 57N, Rge 04W, B.M. BONNER County

Method of Determination: GPS and Arcmap. PODs located at -116°50.935, 48°16.544, and -116°51.181, 48°16.589.

**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 | |
| 57N | 04W | 20 | 14.0 | 0.8 | | 8.0 | | | | | | | | | | | | | 22.8 |
| 57N | 04W | 21 | | | | | | 1.2 | 15.0 | | | | | | | | | | 16.2 |

Total Acres: 39.0

**PLACE OF USE:** STOCKWATER

| Twp | Rng | Sec | NE | | | | NW | | | | SW | | | | SE | | | | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | NE | NW | SW | SE | NE | NW | SW | SE | NE | NW | SW | SE | NE | NW | SW | SE | |
| 57N | 04W | 20 | X | X | X | X | | | | | | | | | | | | | |
| 57N | 04W | 21 | | | | | | X | X | | | | | | | | | | |

Method of Determination: Arcmap and Field Exam.

3.

Delivery System Diagram Attached (required). Indicate all major components and distances between components.
X 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
X 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 |
|---|---|---|---|---|---|
| PORTABLE PUMP | BRIGGS AND STRATTON | 5 | | | |

## D. FLOW MEASUREMENTS

1.

| Measurement Equipment | Type | Make | Model No. | Serial No. | Size | Calib. Date |
|---|---|---|---|---|---|---|
| SPRINKLER NOZZLE PSI METHOD | | | | | | |

2. Measurements: Utilized PSI gage to determine average operating pressure for applicant's sprinkler system during active irrigation.

## E. FLOW CALCULATIONS

X Additional Computation Sheets Attached

Measured Method: Applicant irrigated with two runs of 8 sprinkler pipe at one time, incorporating 16ea ¾ Full Circle, Brass Impact Sprinklers, with 11/64th nozzles. The sprinkler line were set to run off main trunk hand line at intervals. 4 sprinklers tested per line (1st, 4th, 6th, and 8th on each run of sprinkler pipes)

- PSI readings = 46 psi No.1, 44 psi No.4, 44 psi No.6, and 43 psi No.8.
  - (46 psi + 44 psi + 44 psi + 43 psi) / 4 = 44 psi average operating pressure.
- Rainbird sprinkler performance data for part No. L3030H ¾ inch full circle, brass impact sprinklers result in the following flow rates:
  - 16ea 11/64th nozzles at 44 psi = 5.6 gpm x 16ea nozzles = 89.6 gpm.
  - Total operating flow rate = 89.6 gpm = **0.20 cfs**

## F. VOLUME CALCULATIONS

1. Volume Calculations for irrigation:

$V_{I.R.}$ = (Acres Irrigated) x (Irrigation Requirement) = 39.0 acres x 3 afa = 117 af

$V_{D.R.}$ = [Diversion Rate (cfs)] x (Days in Irrigation season) x 1.9835 = 0.20 cfs x 214 x 1.9835 = 84.9 af = 85.0 af

V = Smaller of $V_{I.R.}$ and $V_{D.R.}$ = **85.0 af**

2. Volume Calculations for Other Uses:

STOCKWATER annual volume = 50 head mixed stock x 12 gpd x 365 days = 219,000 gpy / 325,850 gp af = 0.67 af = **0.7 af**
Final stockwater annual volume rounded up to 0.7 af to account for department standards for significant figures admin memo No.6

As this is a surface water source, there will be annual volume applied to irrigation. The annual volume applied to stockwater is carried to licensing, but there will be no Maximum Diversion Volume applied to the license.

## G. NARRATIVE/REMARKS/COMMENTS

Administrative Note: Applicant submitted their statement of completion signed 6/25/1994. There is a field exam date on record reflecting 9/11/2008. Review of Permit backfile resulted in no information pertaining to a completed field exam. Department staff gained contact with Applicant's daughter and scheduled a follow up field exam for 5/28/2020. Due to the longevity of the time between when applicants fulfilled their part in the process submitting a statement of completion, and the Department's finalization of a quality field exam, there are gaps in both farming practices and accurate information to develop this Permit for licensing.

Field exam conducted with the applicant's daughter, Julie Arnoldson, on 5/28/2020 showed a portable generator water transfer pump being used to divert water from the creek to irrigate with sprinkler hand line at the POU. Additional water was diverted for use to water stock by portable stock tanks. Back in 1994, applicant's had a developed pad and more permanent pumping operation, but current irrigation practices use two separate points to irrigate the POU, from which they alternated sites using the portable water transfer pump. Applicant irrigated with two runs of 8 sprinkler pipe at one time, incorporating 16ea ¾ Full Circle, Brass Impact Sprinklers, with 11/64th nozzles. The sprinkler line were set to run off main trunk hand line at intervals. 4 sprinklers tested per line (1st, 4th, 6th, and 8th on each run of sprinkler pipes)

- PSI readings = 46 psi No.1, 44 psi No.4, 44 psi No.6, and 43 psi No.8.
    - (46 psi + 44 psi + 44 psi + 43 psi) / 4 = 44 psi average operating pressure.
- Rainbird sprinkler performance data for part No. L3030H ¾ inch full circle, brass impact sprinklers result in the following flow rates:
    - 16ea 11/64th nozzles at 44 psi = 5.6 gpm x 16ea nozzles = 89.6 gpm.
    - Total operating flow rate = 89.6 gpm = **0.20 cfs**, which will be applied as the maximum diversion volume for licensing.

The Stockwater diversion rate is equal to 0.02 cfs, which is the Department standard for 50 head of range cattle.

At time of permit, applicant was authorized 45 acres of irrigation. During follow on field exam, irrigated acreage was traced out. During licensing review, Arcmap aerial imagery was used to trace out irrigation, which equaled 39.0 acres. The annual volume for irrigation equals $V_{DR}$ = [Diversion Rate (cfs)] x (Days in Irrigation season) x 1.9835 = 0.20 cfs x 214 x 1.9835 = 84.9 af = 85.0 af. However, as this is a surface water source, there is no volume applied to irrigation.

During the field exam, stock use was observed in the form of hoof marks, trails, and eroded embankments along with cow pies; the stock had been rotated to another field at the time of exam, but evidence of stock use was observed. The annual volume for stockwater equals 50 head mixed stock x 12 gpd x 365 days = 219,000 gpy / 325,850 gp af = 0.67 af = **0.7 af**
Final stockwater annual volume rounded up to 0.7 af to account for department standards for significant figures admin memo No.6. There is no maximum diversion volume applied to this license due to the surface water source, only annual volume for stockwater.

At time of licensing, the permitted POU for irrigation component acres per PLS QQ, and the irrigation Place of Use PLS QQ were found to be inaccurate, see below:
POU: authorized on permit = Irrigation 58N01W32SWSE.
POU: verified at time of licensing = Irrigation 58N01W32SWSE and 58N01W32SESE.

Season of Use: authorized on permit = 03/15 to 10/31 (for Irrigation component).
Season of Use: verified at time of licensing = 04/01 to 10/31 (corrected to standard use for irrigation component).
An Application for Amendment was initiated, and mailed with cover letter to applicant on 10 August 2020.

Conditions 03A, 26A and X02 were removed from permit at time of licensing. Condition R62 was added to describe that this right shall provide no more than 0.02 cfs per acre nor more than 3.0 afa per acre at the field headgate for irrigation of the place of use. All other conditions remain on permit to licensing. There are no overlap concerns for this water right.

Have conditions of permit approval been met? _X_ Yes ____ No

## H. RECOMMENDATIONS

### 1. Recommended Amounts

| Beneficial Use | Period of Use | Rate of Diversion | Annual Volume |
|---|---|---|---|
| IRRIGATION | 04/01 to 10/31 | 0.20 CFS | |
| STOCKWATER | 1/01 to 12/31 | 0.02 CFS | 0.7 AF |
| | **Totals:** | 0.20 CFS | |

### 2. Recommended Amendments

____ Change P.D. as reflected above _X_ Add P.D. as reflected above ____ None

_X_ Change P.U. as reflected above ____ Add P.U. as reflected above ____ None

## I. AUTHENTICATION

Luke Bates - Water Resource Agent

Field Examiner's Name _____ Date 8/20/2020

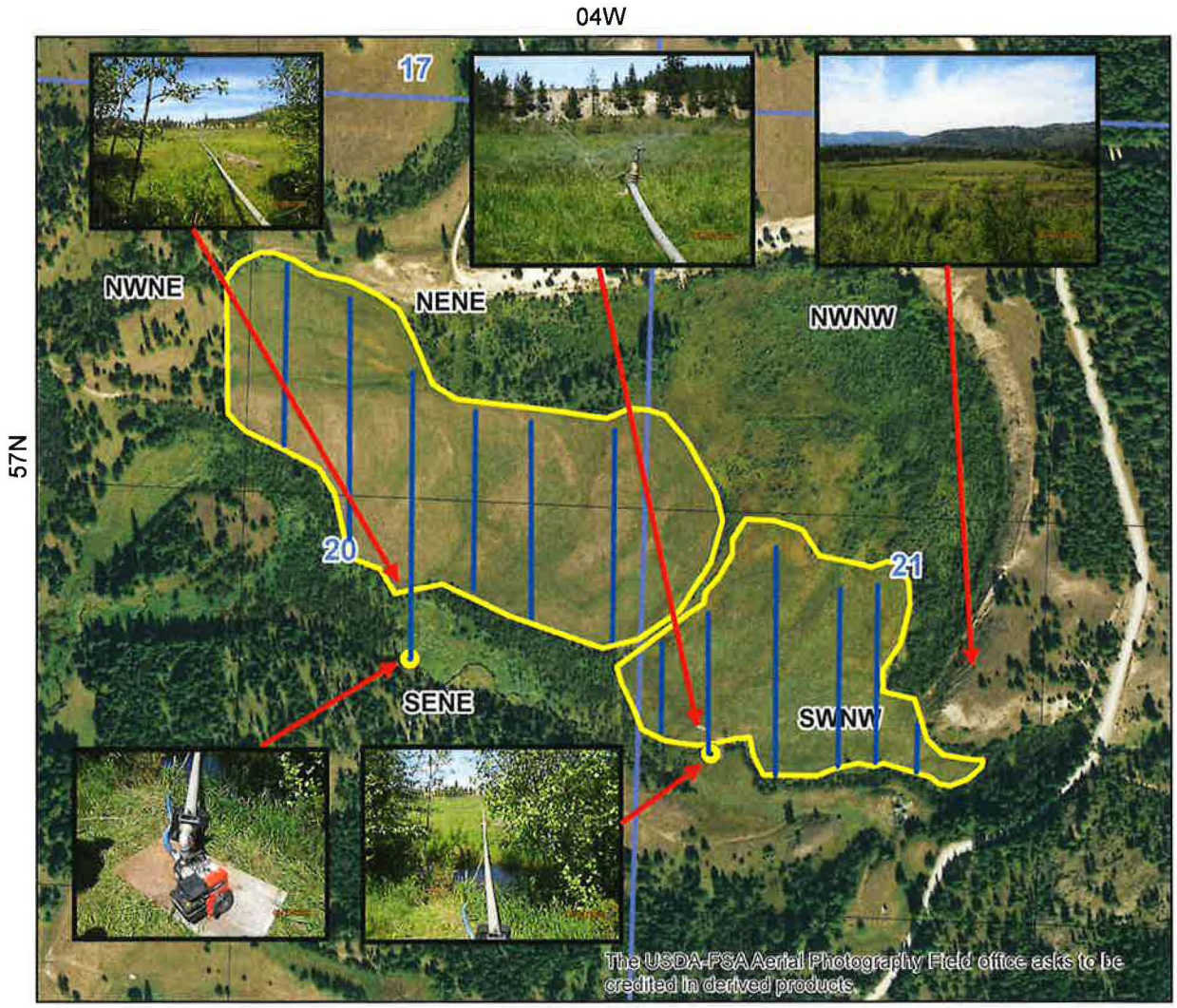
Reviewer _____ Date 8/21/2020

State of Idaho
Department of Water Resources

# Attachment to Field Exam

97-7309

IRRIGATION system diagram.




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

0 0.05 0.1 0.2 Miles

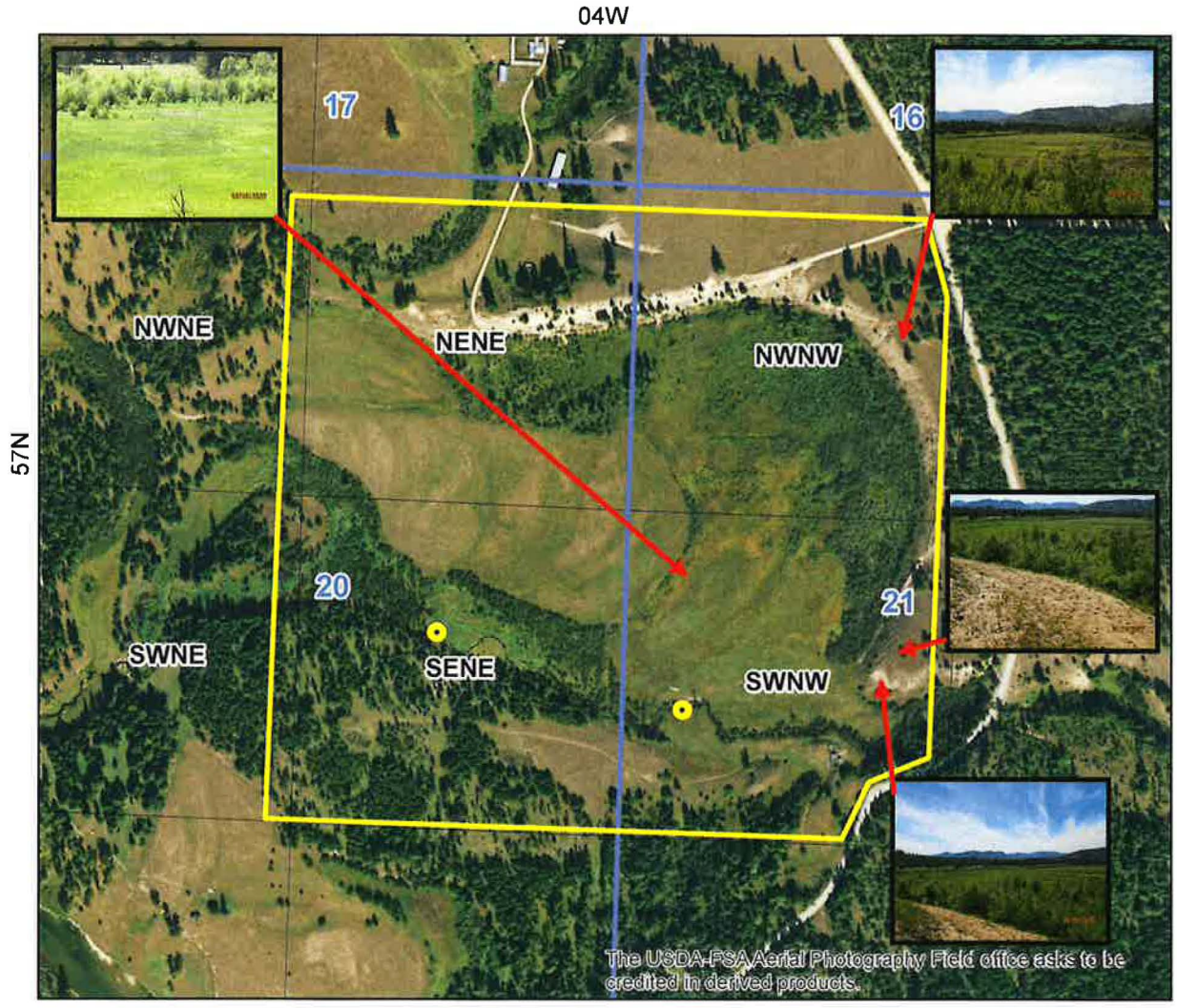
N

State of Idaho
Department of Water Resources

# Attachment to Field Exam

97-7309

STOCKWATER system diagram.




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

0 0.075 0.15 0.3 Miles

N

## PERFORMANCE DATA — L3030H

# L3030H

**3/4" Full Circle, Brass, Low Angle Impact Sprinkler**

**Bearing:** 3/4" Male NPT, Brass
**Trajectory Angle:** 10°
**Operating Range:** 25-60 psi
**Flow Rate:** 2.9-15.9 GPM
**Radius:** 34-48 ft.

### FEATURES

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

### BENEFITS

- Low angle fights strong wind conditions
- Great choice for pivot or under tree applications
- Corrosion and grit resistant
- Built to last

### Straight Bore Nozzle (SBN-3)

| PSI @ Nozzle | NOZZLE SIZE | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 9/64" | | 5/32" | | 11/64" | | 3/16" | | 13/64" | | 7/32" | | 15/64" | | 1/4" | | 17/64" | |
| | Rad. | GPM | Rad. | GPM | Rad. | GPM | Rad. | GPM | Rad. | GPM | Rad. | GPM | Rad. | GPM | Rad. | GPM | Rad. | GPM |
| 40 | 42 | 3.60 | 43 | 4.40 | 43 | 5.30 | 44 | 6.30 | 45 | 7.60 | 45 | 8.90 | 45 | 10.00 | 45 | 11.40 | 45 | 12.40 |
| 45 | 43 | 3.80 | 43 | 4.70 | 44 | 5.60 | 45 | 6.60 | 45 | 8.10 | 45 | 9.40 | 45 | 10.60 | 46 | 12.10 | 46 | 13.10 |
| 50 | 43 | 4.00 | 44 | 4.90 | 45 | 5.90 | 45 | 7.00 | 46 | 8.50 | 46 | 9.90 | 46 | 11.10 | 46 | 12.80 | 46 | 13.80 |
| 55 | 44 | 4.20 | 45 | 5.20 | 45 | 6.20 | 45 | 7.30 | 46 | 8.90 | 46 | 10.30 | 46 | 11.80 | 47 | 13.50 | 47 | 15.20 |
| 60 | 45 | 4.40 | 45 | 5.40 | 45 | 6.50 | 46 | 7.80 | 46 | 9.30 | 47 | 10.80 | 47 | 12.40 | 47 | 14.10 | 48 | 15.90 |

### Low Pressure Nozzle (LPN-3)

| PSI @ Nozzle | NOZZLE SIZE | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 9/64" | | 5/32" | | 11/64" | | 3/16" | | 13/64" | | 7/32" | | 15/64" | | 1/4" | | 17/64" | | 9/32" | |
| | Rad. | GPM | Rad. | GPM | Rad. | GPM | Rad. | GPM | Rad. | GPM | Rad. | GPM | Rad. | GPM | Rad. | GPM | Rad. | GPM | Rad. | GPM |
| 25 | 34 | 2.90 | 35 | 3.50 | 35 | 4.20 | 36 | 5.00 | 36 | 5.80 | 35 | 6.60 | 35 | 7.50 | 36 | 8.50 | 36 | 9.50 | 36 | 10.50 |
| 30 | 35 | 3.20 | 35 | 3.90 | 36 | 4.60 | 36 | 5.40 | 37 | 6.30 | 37 | 7.30 | 37 | 8.20 | 37 | 9.30 | 38 | 10.40 | 38 | 11.50 |
| 35 | 35 | 3.40 | 36 | 4.20 | 36 | 5.00 | 37 | 5.90 | 37 | 6.80 | 38 | 7.80 | 38 | 8.90 | 38 | 10.00 | 39 | 11.20 | 38 | 12.40 |
| 40 | 35 | 3.70 | 36 | 4.50 | 37 | 5.30 | 37 | 6.30 | 37 | 7.30 | 38 | 8.40 | 38 | 9.50 | 39 | 10.70 | 39 | 12.00 | 40 | 13.30 |
| 45 | 36 | 3.90 | 36 | 4.70 | 37 | 5.70 | 37 | 6.70 | 36 | 7.70 | 38 | 8.90 | 38 | 10.10 | 39 | 11.40 | 39 | 12.70 | 40 | 14.10 |
| 50 | 36 | 4.10 | 36 | 5.00 | 37 | 6.00 | 37 | 7.00 | 36 | 8.20 | 38 | 9.40 | 38 | 10.60 | 39 | 12.00 | 39 | 13.40 | 40 | 14.80 |

Chart data shown on 10 ft. riser.

## PART NUMBERS AND ORDERING INFORMATION

| Nozzle Ordering Example | MAKE YOUR NOZZLE CHOICE | | CHOOSE YOUR NOZZLE SIZE | | ADD THEM TOGETHER TO CREATE THE NOZZLE PART NUMBER |
|---|---|---|---|---|---|
| To order a 9/64" Brass Straight Bore Nozzle the part number would be: | 105842- | + | 09 | = | 105842-09 |

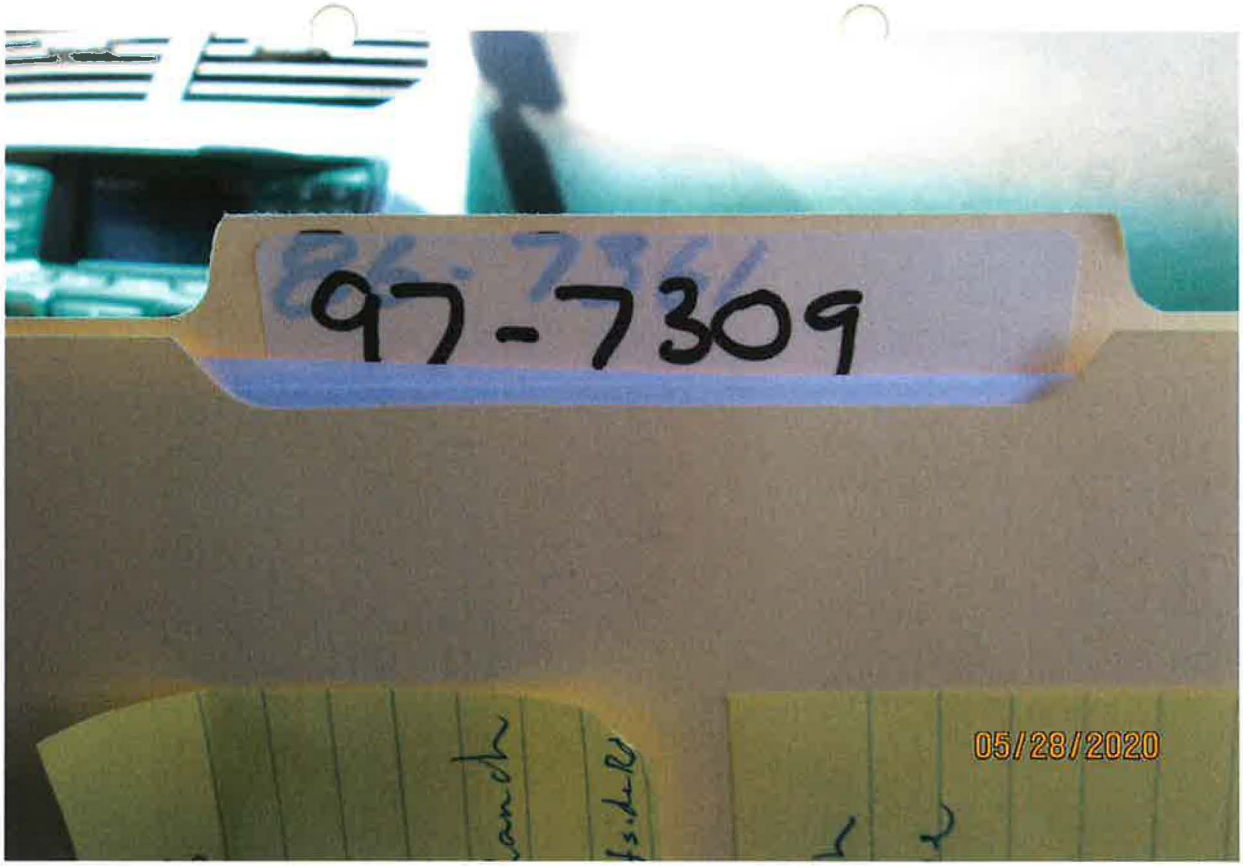
### Sprinkler Only

| SPRINKLER | |
|---|---|
| L3030H | A11640 |

**For model L3030H, sprinkler and nozzle must be ordered separately.**

### Nozzle Only

| NOZZLE | | 9/64" | 5/32" | 11/64" | 3/16" | 13/64" | 7/32" | 15/64" | 1/4" | 17/64" | 9/32" |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Brass Straight Bore Nozzle (105842-) | SBN-3 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | – |
| Brass Low Pressure Nozzle (104538-) | LPN-3 | 09 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| Brass Plug (100289) | | | | | | | | | | | |





POD - PORTABLE PUMP 5HP


PORTABLE 5HP PUMP MODEL 135232, TYPE 0126 01


POD – PORTABLE PUMP FROM CREEK


IRRIGATION POU


IRRIGATION POU


11/64 RAIN BIRD STRAIGHT BORE NOZZLE


IRRIGATION POU


STOCKWATER POU