

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 63-11116

Exam Date: 9/22/2016

1. Current Owner:

KATHY F HENRICKSON 5705 E GREENHURST NAMPA ID 83651 (208)466-1742 Or

TERRY R HENRICKSON 5705 E GREENHURST NAMPA ID 83651 (208)466-1742

2. Accompanied by: Terry Henrickson

Phone No:

Address:

Relationship to Permit Holder:

3. SOURCE:

GROUND WATER

TRIBUTARY:

B. OVERLAP REVIEW1. Other water rights with the same place of use: Nampa Meridian Irrigation District rights.2. Other water rights with the same point-of-diversion: 63-8279, 63-8430A & 63-9353**C. DIVERSION AND DELIVERY SYSTEM**1. LOCATION OF POINT(S) OF DIVERSION:

GROUND WATER NW¼SE¼ Sec. 6, Twp 02N, Rge 01W, B.M. CANYON County

GROUND WATER NW¼SE¼ Sec. 6, Twp 02N, Rge 01W, B.M. CANYON County

GROUND WATER SE¼SE¼ Sec. 6, Twp 02N, Rge 01W, B.M. CANYON County

Method of Determination: GPS points collected at each well. Digital PLSS mapping.

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	
02N	01W	6			2.0	11.0	7.0 L 3	10.0 L 4		1.0					34.0	3.0		3.0	71.0

Total Acres: 71

Method of Determination: Irrigated fields measured using ArcMap tools and satellite imagery.

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
Well 1	GE	20	FNJ622522	Unknown	8" open discharge
Well 2	Unknown	7.5	Unknown	Unknown	Unknown
Well 3	Unknown	7.5	Unknown	Unknown	D0066169

*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

2. Measurements: No measurements collected during exam.**E. FLOW CALCULATIONS**☒ Additional Computation Sheets AttachedMeasured Method: **Theoretical**

$$Q = \frac{8.8 * (\text{Efficiency}) * \text{hp}}{\text{depth to water} + 2.31 * (\text{psi}) + \text{friction}}$$

Efficiency = 0.70

Depth to water = 50-100 ft.

psi = 20 & 7.5

hp = 20

See attached theoretical sheet.

Theoretical Total = 2.30 cfs

Measured Method: **Weirs (2ft) (well 1)**

S Weir: Water observed at 0.35' = 1.39 cfs*

N. Weir: Water observed at 0.28' = 0.998 cfs*

* Significant error can be assumed considering the weirs were largely submerged, and are not fully functional measuring devices.

Total well 1 diversion with weir measurement estimate = 2.39 cfs

Measured Method: **Area * Velocity estimate (well 1, south weir)**Area of the wetted perimeter = 2.044 ft²

Average velocity during test = 0.847 ft/x

 $Q_{S, \text{Weir}} = 2.044 * 0.847 = 1.73 \text{ cfs}$

Permit	1.42 cfs
B.U. Standard Allowance	1.42 cfs
B. U. Proof Fee	\$100 → 0.21 to 1.00 cfs
Measurement or Theoretical Rate	2.57 cfs
Additional B.U.	1.33 cfs

License Recommendation **1.33 cfs****

** An additional BU fee of \$25 will need to be paid to gain the full 1.33 recommended diversion rate.

PAID 12-29-2016

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$$V_{IR} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) = 71 \text{ ac} * 4.5 \text{ af/ac} = 319.5 \text{ af}$$

$$V_{DR} = [\text{Diversion Rate (cfs)}] \times (\text{Days in Irrigation season}) \times 1.9835 = 1.42 \text{ cfs} * 260 * 1.9835 = 732.3 \text{ af}$$

$$V = \text{Smaller of } V_{IR} \text{ and } V_{DR} = 319.5 \text{ af}$$

2. Volume Calculations for Other Uses: None.

G. NARRATIVE/REMARKS/COMMENTS

The field exam was conducted on September 22, 2016 by department agents Patrick Kelly and Aaron Skinner. We were accompanied by permit holder and property owner Terry Henrickson. The recommendation for 1.33 cfs, 319.5 af on 71 acres is based on information collected during the exam.

The application was filed by Terry in 1990. Current county taxlot data indicates Mr. Henrickson is the current owner of the land. No further information or changes to the license regarding ownership is required at this time.

The permit recognizes two POD's for wells that were drilled in the 70's. A third well (Well 3) was drilled in 2014 as a replacement to the well in the NWSE QQ (Well 2). Well 2 is still used as a backup/emergency well. Department digital points were correlated to GPS points in an effort to clean up some of the mapping tools for both POD and well layers. A licensing amendment will be made to add the third diversion to the right.

Well 1	43d 31.979	-116d 29.620
Well 2	43d 32.325	-116d 30.008
Well 3	43d 32.319	-116d 30.063

Remarks found in the application state this is for additional acres not covered in the above rights in the existing system. A total of 71 acres were applied for scattered across Mr. Henrickson's farm in Section 6. Review of his ground water rights finds a total of 3 active rights (63-8279, 63-8430A & 63-9353). Backfile information was sought to identify where these rights were pertinent to his land. Shapes that were created through the adjudication period were updated to reflect the use more accurately. This was important when attempting to identify exactly where the user was "short" on acres. This process found that exactly 71 acres of irrigated land are not covered by a licensed right. This permit should be amended to reflect these areas that are in need of being licensed.

Overlap review found large surface water irrigation district rights associated with the property. Terry stated he maintains NMID shares for primary use. His other groundwater rights do not overlap in acres as each serve independent acres on his land. As a result, no combined use limits should be added.

Terry maintains three wells that are used to open discharge into ditches. Water is used in flood irrigation practices. Well 1 produces much of the groundwater used on the land. There are two 24" cipolletti weirs installed near the well. These are not fully functional measuring devices since there is no ventilation created and the devices become mostly submerged. But for purposes of the exam, they may provide some rough estimate numbers. Weir estimates represent a total diversion of 2.39 cfs from Well 1. Variance between the weir measurements and the 'orange peel' method question the exact diversion. A FlowTracker device could be used to gain more accurate numbers, but battery issues prevented us from collecting this information. 63-8430A currently authorizes the diversion of 0.53 cfs from this well.

Well 3 was drilled to replace an aging Well 2. This well operates with a submersible pump and motor system that could not be verified during the exam. Terry indicated that a 7.5 hp motor is installed on both Well 2 and Well 3. A well log for D0066169 was found showing a completed depth of 120'. Pressure is presumed to be 10 psi for open ditch discharge. Theoretical numbers suggest a diversion of 0.49 cfs from this well. Similar numbers can be assumed from the nearby Well 3.

63-8279 and 63-9353 provide a total of 1.69 cfs. A transfer was filed to add well 3 to these rights in 2014. Water right records describe all three wells within the NWSE QQ. Field observations found that well one is located in the SESE QQ. It appears a transfer should be filed to correct the legal descriptions of the diversions and identify all three water rights on all three of the wells since the system is connected.

In summary, Terry currently has 3 rights that authorize a total of 2.22 cfs, 684.5 af on 153 acres. The weirs at well one and area * volume method suggests a diversion rate higher than what the theoretical calculates. Going with what was observed, it is my belief that the additional 1.33 cfs has been diverted during the beneficial use period. This leaves 63-11116 to license the additional beneficial use of 1.33 cfs, 319.5 af and 71 ac.

An additional \$25 should be collected per the beneficial use fee schedule if Mr. Henrickson wishes to receive a license for anything greater than 1.00 cfs.

PAID 12-29-2014

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	03/01 to 11/15	1.33 CFS	319.5
	<u>Totals:</u>	1.33 CFS	319.5 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 Patrick Kelly Date 9-22-2016

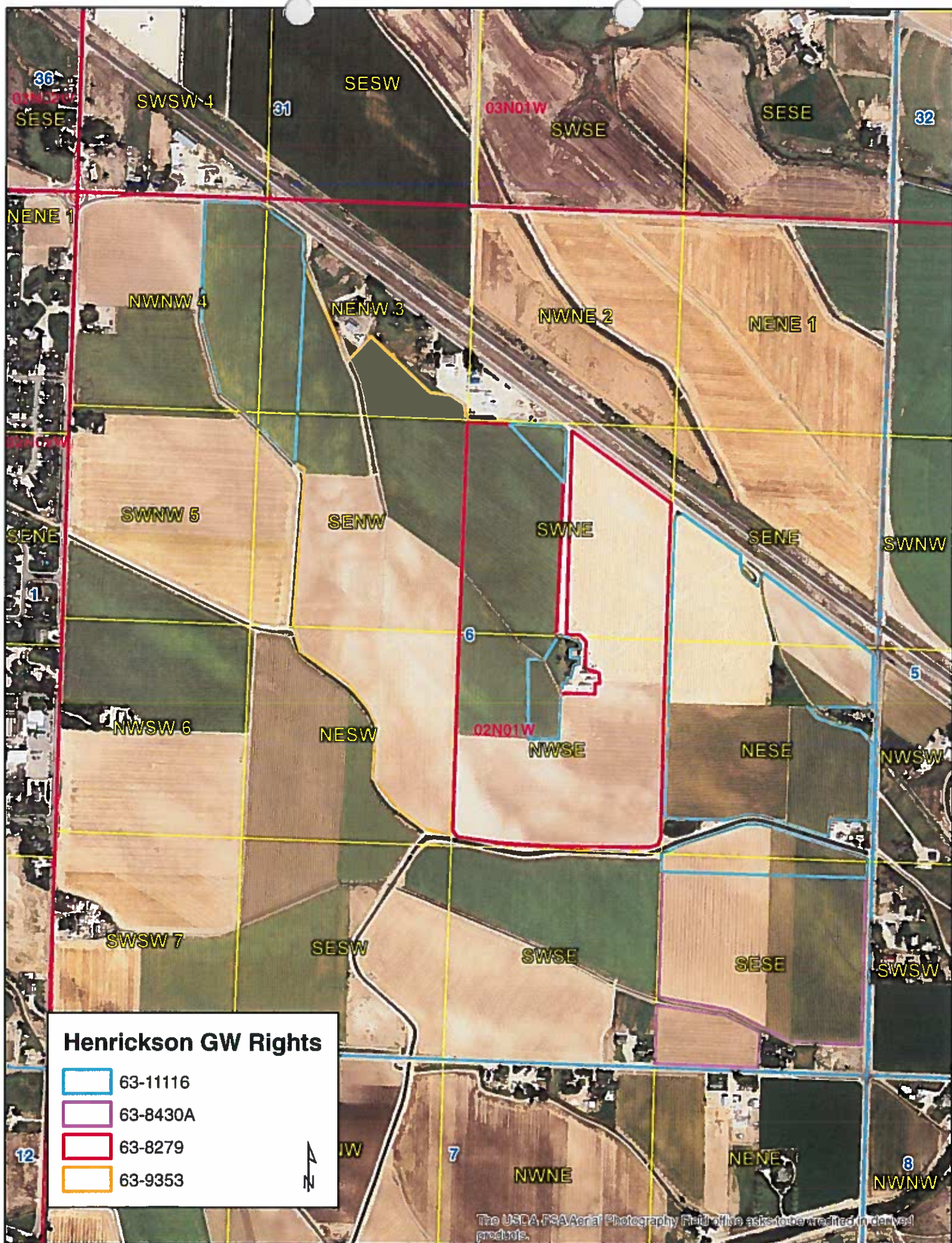
Reviewer _____ Date _____



63-11116 System Diagram

Water diverted from the three wells are delivered to open ditch. Water that passes to north end of ditch from Well 1 is delivered to fields north of the NMID irrigation ditch via buried pipe and over NMID ditch. System utilizes gated pipe for flood irrigation practices.





THEORETICAL HORSEPOWER EQUATION WORKSHEET (cjh 1/92)

Water Right No.: 63-11116
 Reviewer: Patrick Kelly
 Date of Review: 9/22/2016

P/D No.: WELL 1	Scenario 1	Scenario 2	Scenario 3
PUMP HORSEPOWER	20	20	20
BOOSTER HORSEPOWER	0	0	0
PUMPING LEVEL	50	75	100
DISCHARGE PRESSURE	10	10	10
RATE OF FLOW (cfs)	1.69	1.26	1.00 1.31
P/D No.: WELL 2 & 3	Scenario 1	Scenario 2	Scenario 3
PUMP HORSEPOWER	7.5	7.5	7.5
BOOSTER HORSEPOWER	0	0	0
PUMPING LEVEL	50	75	100
DISCHARGE PRESSURE	10	10	10
RATE OF FLOW (cfs)	0.63	0.47	0.38 0.49

The above calculates the formula =

$$Q = \frac{8.8 * (\text{Efficiency}) * \text{hp}}{\text{depth to water} + 2.31 * (\text{psi}) + \text{friction}}$$

Assumptions: 70 efficiency.
 No Friction

Examiners Notes:

Pump hp was collected from information found during the field exam based on motor plates and user description. Lift was estimated using well logs representing static water level to max depths. A discharge pressure of 10 psi was used based on common open pipe discharge systems. Theoretical average flow rate for the three wells is 2.30 cfs.

USE TYPEWRITER OR
BALL POINT PEN

State of Idaho
Department of Water Administration

RECEIVED

WELL DRILLER'S REPORT

JUN 2 1976

State law requires that this report be filed with the Director, Department of Water Administration within 30 days after the completion or abandonment of the well.

1. WELL OWNER Name <u>Larry Hennickson</u> Address <u>Manpa, Idaho</u> Owner's Permit No. _____		7. WATER LEVEL Static water level <u>25</u> feet below land surface <u>m</u> Flowing? ☐ Yes ☒ No G.P.M. flow _____ Temperature _____ ° F. Quality _____ Artesian closed-in pressure _____ p.s.i. Controlled by ☐ Valve ☐ Cap ☐ Plug																																									
2. NATURE OF WORK ☒ New well ☐ Deepened ☐ Replacement ☐ Abandoned (describe method of abandoning) _____		8. WELL TEST DATA ☐ Pump ☒ Bailor ☒ Other Discharge G.P.M. <u>400</u> Draw Down <u>10'</u> Hours Pumped <u>2</u>																																									
3. PROPOSED USE ☐ Domestic ☒ Irrigation ☐ Test ☐ Other (specify type) _____ ☐ Municipal ☐ Industrial ☐ Stock ☐ Waste Disposal or Injection		9. LITHOLOGIC LOG 033124 <table border="1"><thead><tr><th rowspan="2">Hole Diam.</th><th colspan="2">Depth</th><th rowspan="2">Material</th><th colspan="2">Water</th></tr><tr><th>From</th><th>To</th><th>Yes</th><th>No</th></tr></thead><tbody><tr><td>11"</td><td>0</td><td>6</td><td>Topsoil</td><td></td><td>X</td></tr><tr><td>11"</td><td>6</td><td>45</td><td>Coarse gravel</td><td></td><td>X</td></tr><tr><td>8"</td><td>45</td><td>114</td><td>rock</td><td></td><td>X</td></tr><tr><td>8"</td><td>114</td><td>119</td><td>clay</td><td></td><td>X</td></tr><tr><td>8"</td><td>119</td><td>125</td><td>rock</td><td>X</td><td></td></tr></tbody></table>		Hole Diam.	Depth		Material	Water		From	To	Yes	No	11"	0	6	Topsoil		X	11"	6	45	Coarse gravel		X	8"	45	114	rock		X	8"	114	119	clay		X	8"	119	125	rock	X	
Hole Diam.	Depth		Material		Water																																						
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8"	45	114	rock		X																																						
8"	114	119	clay		X																																						
8"	119	125	rock	X																																							
4. METHOD DRILLED ☒ Cable ☐ Rotary ☐ Dug ☐ Other																																											
5. WELL CONSTRUCTION Diameter of hole <u>8</u> inches Total depth <u>125</u> feet Casing schedule: ☒ Steel ☐ Concrete Thickness <u>250</u> inches Diameter <u>8</u> inches From <u>1</u> feet <u>44</u> feet _____ inches _____ inches _____ feet _____ feet _____ inches _____ inches _____ feet _____ feet _____ inches _____ inches _____ feet _____ feet _____ inches _____ inches _____ feet _____ feet Was a packer or seal used? ☐ Yes ☒ No Perforated? ☐ Yes ☒ No How perforated? ☐ Factory ☐ Knife ☐ Torch Size of perforation _____ inches by _____ inches Number _____ From _____ To _____ _____ perforations _____ feet _____ feet _____ perforations _____ feet _____ feet _____ perforations _____ feet _____ feet Well screen installed? ☐ Yes ☒ No Manufacturer's name _____ Model No. _____ Diameter _____ Slot size _____ Set from _____ feet to _____ feet Diameter _____ Slot size _____ Set from _____ feet to _____ feet Gravel packed? ☐ Yes ☒ No Size of gravel _____ Packed from _____ feet to _____ feet Surface seal depth <u>45</u> Material used in seal ☐ Cement grout ☐ Puddling clay ☒ Well cuttings Sealing procedure used ☐ Slurry pit ☐ Temporary surface casing ☒ Overbore to seal depth																																											
6. LOCATION OF WELL Sketch map location must agree with written location. (13) <table border="1"><tr><td>N</td><td></td><td></td><td></td></tr><tr><td>W</td><td></td><td>X</td><td>E</td></tr></table> Subdivision Name _____ Lot No. _____ Block No. _____ County <u>Canyon</u> <u>1/4</u> Sec. <u>6</u> T. <u>2</u> N. <u>1</u> E. <u>1</u> W.		N				W		X	E	10. Work started <u>5/6/76</u> finished <u>5/11/76</u>																																	
N																																											
W		X	E																																								
		11. DRILLERS CERTIFICATION Firm Name <u>S.O.S. Well Drilling</u> Firm No. <u>212</u> Address <u>2306 Canyon Dr</u> Date <u>5/14/76</u> Signed by (Firm Official) <u>Frank Schinner</u> and <u>Ken Smith</u> (Operator)																																									

USE ADDITIONAL SHEETS IF NECESSARY

FORWARD THE WHITE COPY TO THE DEPARTMENT

WR#	Owner	Source
63-11433	HENRICKSON, GARY; HENRICKSON, JIM; HENRICKSON, LEVI; H	GROUND WATER
63-136	BOISE PROJECT BOARD OF CONTROL	BOISE RIVER
63-137B	BOISE PROJECT BOARD OF CONTROL	BOISE RIVER
63-198AJ	NAMPA & MERIDIAN IRRIGATION DISTRICT	BOISE RIVER
63-198AJ	NAMPA & MERIDIAN IRRIGATION DISTRICT	MORES CREEK
63-199B	NAMPA & MERIDIAN IRRIGATION DISTRICT	BOISE RIVER
63-199B	NAMPA & MERIDIAN IRRIGATION DISTRICT	MORES CREEK
63-200A	NAMPA & MERIDIAN IRRIGATION DISTRICT	BOISE RIVER
63-200B	NAMPA & MERIDIAN IRRIGATION DISTRICT	BOISE RIVER
63-200B	NAMPA & MERIDIAN IRRIGATION DISTRICT	MORES CREEK
63-2106	UNITED STATES OF AMERICA ACTING THROUGH	FIVEMILE CREEK
63-2109	UNITED STATES OF AMERICA ACTING THROUGH	MASON CREEK
63-233K	BOISE PROJECT BOARD OF CONTROL	BOISE RIVER
63-2388A	UNITED STATES OF AMERICA ACTING THROUGH	BOISE RIVER
63-2392B	NAMPA & MERIDIAN IRRIGATION DISTRICT	WASTE WATER
63-2392F	BOISE PROJECT BOARD OF CONTROL	WASTE WATER
63-251A	UNITED STATES OF AMERICA ACTING THROUGH	BOISE RIVER
63-2758B	ALEXANDERSON DAVIS RAINEY & WHITNEY; PLUNE FARMS INC	GROUND WATER
63-2758B	ALEXANDERSON DAVIS RAINEY & WHITNEY, PLUNE FARMS INC	INDIAN CREEK
63-2968	NAMPA & MERIDIAN IRRIGATION DISTRICT	GROUND WATER
63-30181	NAMPA & MERIDIAN IRRIGATION DISTRICT	BOISE RIVER
63-30181	NAMPA & MERIDIAN IRRIGATION DISTRICT	MORES CREEK
63-301A	UNITED STATES OF AMERICA ACTING THROUGH	BOISE RIVER
63-302A	UNITED STATES OF AMERICA ACTING THROUGH	BOISE RIVER
63-32695A	NAMPA & MERIDIAN IRRIGATION DISTRICT	GROUND WATER
63-32695B	NAMPA & MERIDIAN IRRIGATION DISTRICT	GROUND WATER
63-33251	BOISE PROJECT BOARD OF CONTROL	INDIAN CREEK
63-33253	BOISE PROJECT BOARD OF CONTROL	TENMILE CREEK
63-33739	NAMPA & MERIDIAN IRRIGATION DISTRICT	SPRINGS
63-373A	UNITED STATES OF AMERICA ACTING THROUGH	BOISE RIVER
63-8279	HENRICKSON, KATHY F; HENRICKSON, TERRY R	GROUND WATER
63-8430A	ELLIS, RONALD G; GREENHURST FARMS INC, HENRICKSON, TE	GROUND WATER
63-9353	HENRICKSON, KATHY F; HENRICKSON, TERRY R	GROUND WATER
63-9363	HENRICKSON, GARY; HENRICKSON, JIM; HENRICKSON, LEVI; H	GROUND WATER

[illegible]



Well #1
SESE Sec 6
43d 31.979
-116d 29.620

20 hp GE motor
FNJ622522

Discharges into open ditch. Water that moves right (north) enters buried pipe that delivers to NESE ditch.



Well #1
North end
2' Cipolletti weir

Considerable error may be assumed here since water does not ventilate and poor measurement location does not account for velocity head.

Observed ~ 0.28ft through device.



Well #1

South end
2' Cipolletti weir
Considerable error
may be assumed
here since device
is mostly
submerged and
poor measurement
location does not
account for
velocity head.

Observed ~ 0.35 ft
through device.



Well #2

43d 32.325
-116d 30.008

7.5 hp phase 1
US Electric motor
R-7200-04-977

Well was drilled
in late 70's

Provides primary
backup to ground
water system.



Well #3
NWSE Sec 6
43d 32.319
-116d 30.063

Well tag
D0066169



Well #3

7.5 hp motor

Water is diverted
from well to open
ditch via 6" PVC
water line.