

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 11-7435

Exam Date: 6/6/2008

1. Current Owner: CANYON ESTATES PROPERTY OWNERS ASSN
PO BOX 177
FISH HAVEN ID 83287
2. Accompanied by: Reed Thornock
Phone No: (801) 540-0028
Address: SAME AS ABOVE
Relationship to Permit Holder: ONE OF THE HOMEOWNERS

3. SOURCE TRIBUTARY
GROUND WATER

B. OVERLAP REVIEW

1. Other water rights with the same place of use: NONE
2. Other water rights with the same point of diversion: NONE

C. DIVERSION AND DELIVERY SYSTEM**1. LOCATION OF POINT(S) OF DIVERSION:**

GROUND WATER

NW1/4NW1/4

Sec. 15, Twp 16S, Rge 43E, B.M.

BEAR LAKE County

Method of Determination: AERIAL PHOTOS AND VISUAL INSPECTION

2.

PLACE OF USE: DOMESTIC

Twp Rge Sec	NE				NW				SW				SE				Totals
	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
16S 43E 10											X	X					
16S 43E 15			X		X	X	X	X									

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Method of Determination: AERIAL PHOTOS AND VISUAL INSPECTION

Permit No: 11-7435

3. **Delivery System Diagram:** Indicate all major components and distances between components. Indicate weir size/pipe i.d. as applicable.

SEE ATTACHED SHEET.

YES Copy of USGS Quadrangle Attached Showing location(s) of point(s) of diversion and place(s) of use (required).

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
POINT OF DIVERSION	GOULD CENTRIPRO	15 Hp	MODEL # 6M151	GOULD CENTRIPRO	MFG # G27519E
BIG RE-LIFT PUMP	Baldor	7.5	Catalog # JPM3 709T	G & L GOULD	SN 3 2138128
SMALL RE-LIFT PUMP	BERKLEY	1.5	131134	BERKLEY	81835
NEW WELL	NONE	N/A	NONE	NONE	NONE

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

D. FLOW MEASUREMENTS

1.

<u>Measurement Equipment</u>	<u>Type</u>	<u>Make</u>	<u>Model No.</u>	<u>Serial No.</u>	<u>Size</u>	<u>Calib. Date</u>
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

2. Measurements: The system was designed to have the well pump fill the 250,000 gallon storage tank and shut off. The water in the tank then supplies the water needs until the tank drops below a certain level. Most of the homes are summer or weekend residences, so there wasn't a great need for water at the time I did the field exam. Therefore, the pump was not operating and all of the water being used was being diverted from the storage tank. Therefore, no measurement of the well was possible, so I used a theoretical calculation.

E. FLOW CALCULATIONS

YES Additional Computation Sheets Attached

Measured Method: THEORETICAL CALCULATION, SEE ATTACHED SHEET.

Per the Theoretical Calculation, I am recommending that this permit be licensed with a diversion rate of 0.16 cfs.

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$$V_{I.R.} = (\text{Acres Irrigated}) \times (\text{Irrigation Requirement}) =$$

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

$$V = \text{Smaller of } V_{I.R.} \text{ and } V_{D.R.} =$$

2. Volume Calculations for Other Uses:

I used the standard of 0.6 afa per home per in-house use and 0.6 afa for exterior use for a total of 1.2 afa per home. There are 33 lots, therefore, the total annual volume is 39.6 afa (33 X 1.2 afa = 39.6 afa).

G. NARRATIVE/REMARKS/COMMENTS

Field exam narrative:

This permit is diverted from a single well in the SWNWNW S15 T16S R43E by a 15 Hp submersible pump. The water from the well is diverted uphill to the Northwest approximately 450 ft to a 250,000 gallon storage tank. From the storage tank, the water is diverted back down hill to the well house. At the well house the water is pressurized by 2 pumps. The big re-lift pump is a 7.5 Hp variable speed pump, and the small re-lift pump is 1.5 Hp pump. There are also two 50 gallon pressure tanks used to help maintain pressure in the system. From that point the water is delivered through a buried mainline to the 33 lot subdivision.

I found that 14 of the 33 lots have been developed, but the remaining 19 were empty. There is evidence that the each of the undeveloped lots have set up to receive both electricity and water from the buried service lines. It appears as though they put in the same trench or a side by side trench.

There is a second well, but it doesn't have a pump installed. There is an amendment of permit filed on this permit to include the second well. This shouldn't be a problem, as long as the pump is not installed until the amendments are in place.

This permit discusses the possibility that surface water was used on this ground. After reviewing the aerial photos and being on the ground, I discovered that it is highly unlikely that this ground has ever been irrigated from surface water. There is a ditch running through the subdivision, but it appears to be delivering water to a field to the east of the subdivision. There is no evidence that there has ever been irrigation on the lands under the footprint of the subdivision. The subdivision sits on a hillside, and I would assume that any attempt at irrigation could washout the entire hillside. Permit 11-7436 for the same owner was issued at the same time as this permit and both permits were given this condition. From my research and observations, I would say that the overlapping water right falls only on ground described by permit 11-7436. Therefore, I am recommending that the surface water conditions be removed from the license, because I don't believe it was ever used on this ground. I couldn't find any other overlapping water rights on this ground either.

I am also concerned about the condition on the permit that limits the irrigation of the lots to 1/10 of an acre. The irrigation for these homes is very small, but most of them are between 1/10 to 2/10 of an acre. I didn't find any of them that were shown on the 2004 aerial photos that irrigated more than 2/10 of an acre, but all of them were irrigating more than the 1/10th acre allowed. The contour of the hill the subdivision is built on prevents any major irrigation. It appears as though they need to level a general piece of hillside to safely build the home. The portion of the hill that is leveled not covered by the house or the driveways is then irrigated. It is doubtful that they would clear anymore ground than necessary, so it is highly unlikely they would ever exceed the 2/10ths of an acre mark.

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

Please Note: The 1/10th of an acre condition was not followed, and there doesn't appear to be any overlapping surface water on this property. Therefore these conditions were not followed.

H. RECOMMENDATIONS**1. Recommended Amounts**

<u>BENEFICIAL USE</u>	<u>PERIOD OF USE</u>	<u>DIVERSION RATE</u>	<u>ANNUAL VOLUME</u>
DOMESTIC	01/01 to 12/31	0.160 CFS	39.60 AF
<u>Totals:</u>		0.160 CFS	39.60 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

DANIEL A. NELSON – SENIOR AGENT

Field Examiner's Name

Daniel A. Nelson

Date

10-12-08

Reviewer

Nick Van Dyke

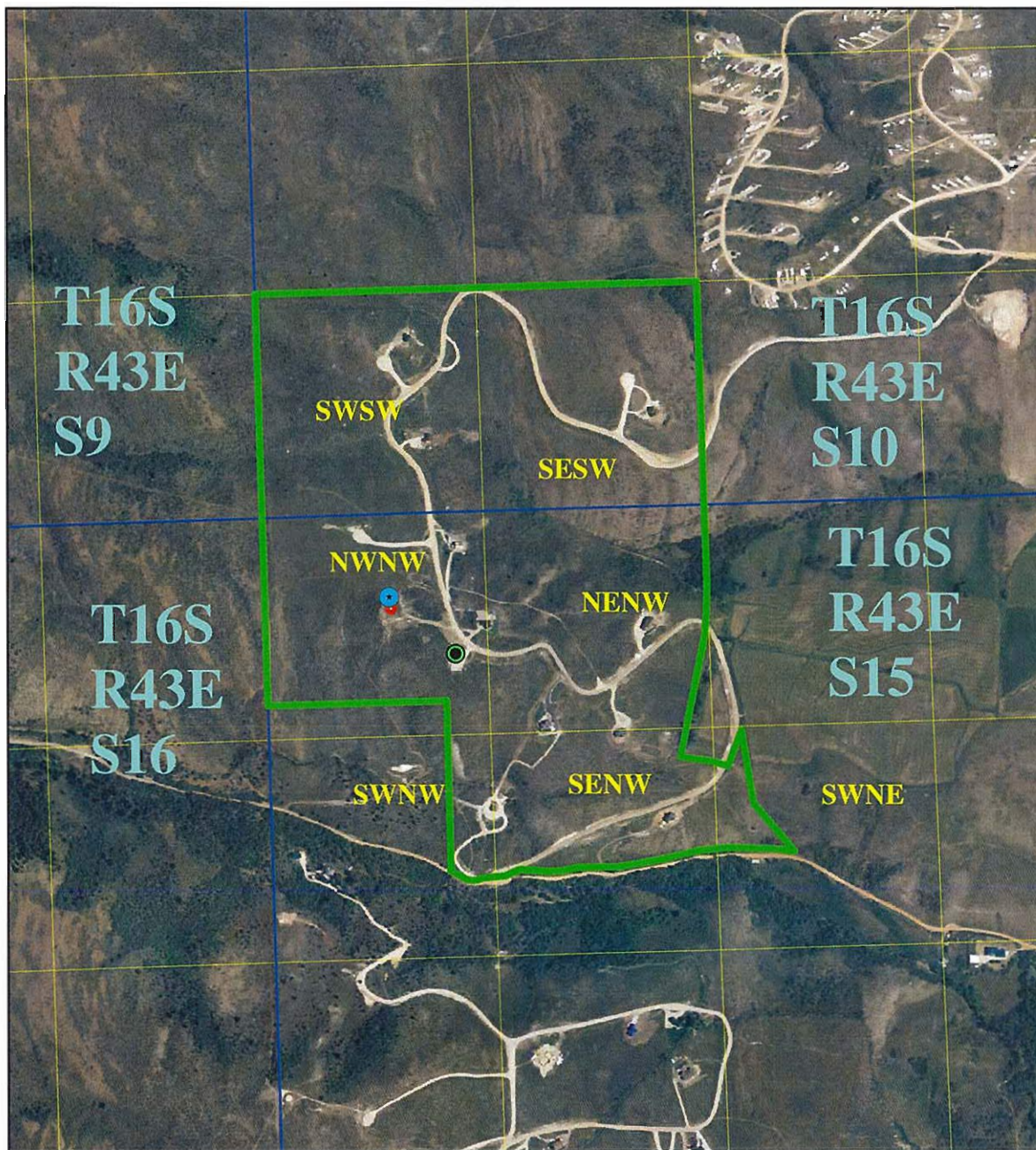
Date

8/14/08

SEAL

FIELD EXAM 11-7435

SYSTEM DIAGRAM

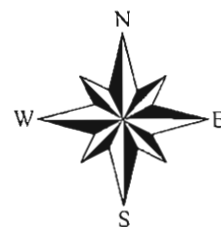


Legend

-  Point of Diversion
-  Place of Use
-  well house
-  water tank
-  New Well Location
-  Sections
-  QQ

0 0.05 0.1 0.2 0.3 0.4 Miles

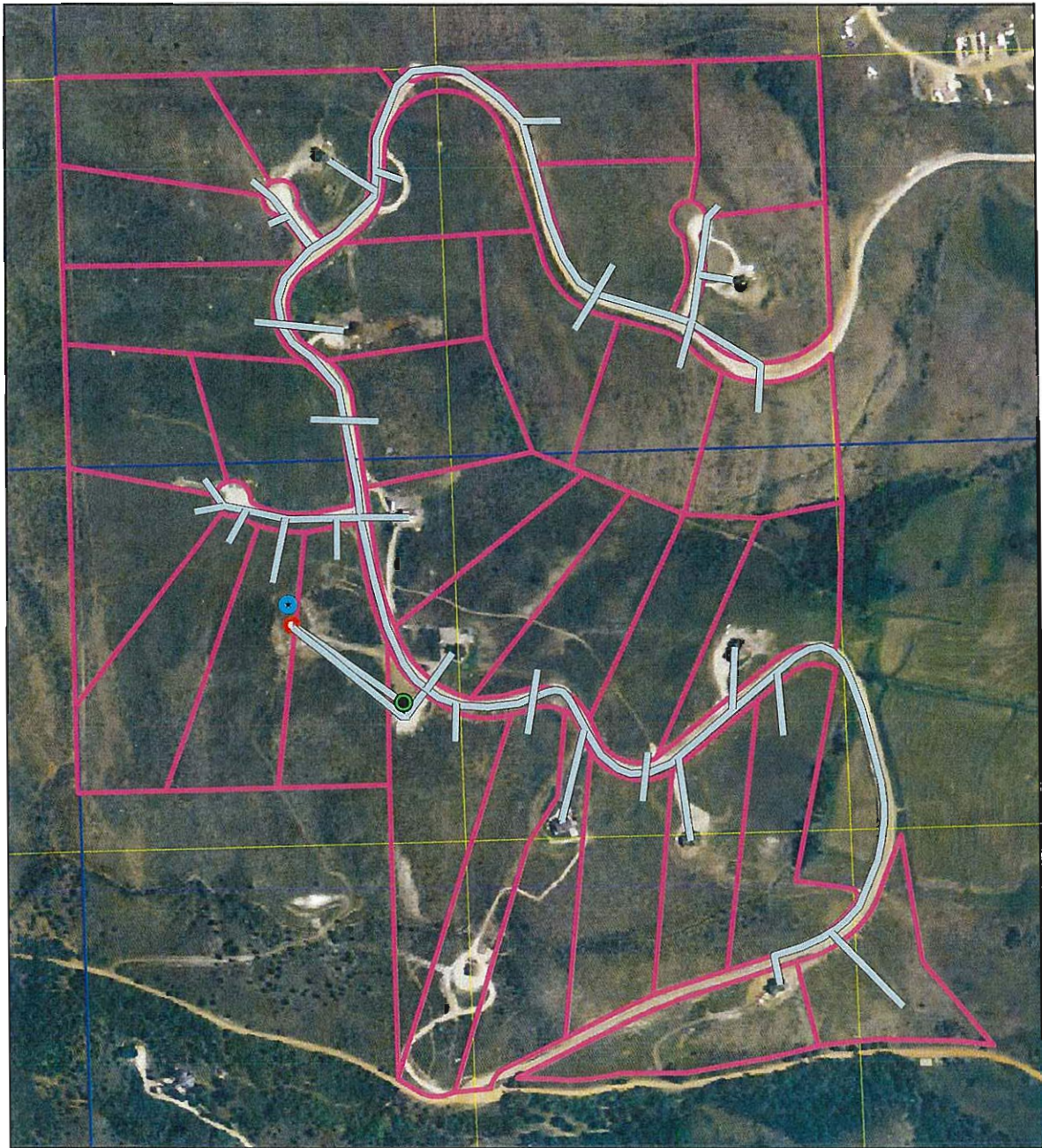
The water for this permit is diverted from the well to a 250,000 gallon storage tank. From the tank the water flows back to well house where it is relifted by a 7 1/2 Hp variable speed pump and a 1/2 Hp pump into the distribution lines. In the distribution lines the water is delivered to the individual homes. There are currently 14 homes on the system, but there is evidence that all 33 lots have been stubbed into the system.



2004 NAIP Photo
Map Created By
Dan Nelson
6/12/2008

FIELD EXAM 11-7435

SYSTEM DIAGRAM

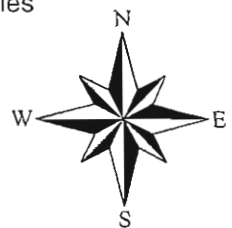


Legend

- New Well Location
- Point of Diversion
- Mainline
- well house
- water tank
- Canyon_Estates_Taxlots
- Sections
- QQ

0 0.05 0.1 0.2 0.3 0.4 Miles

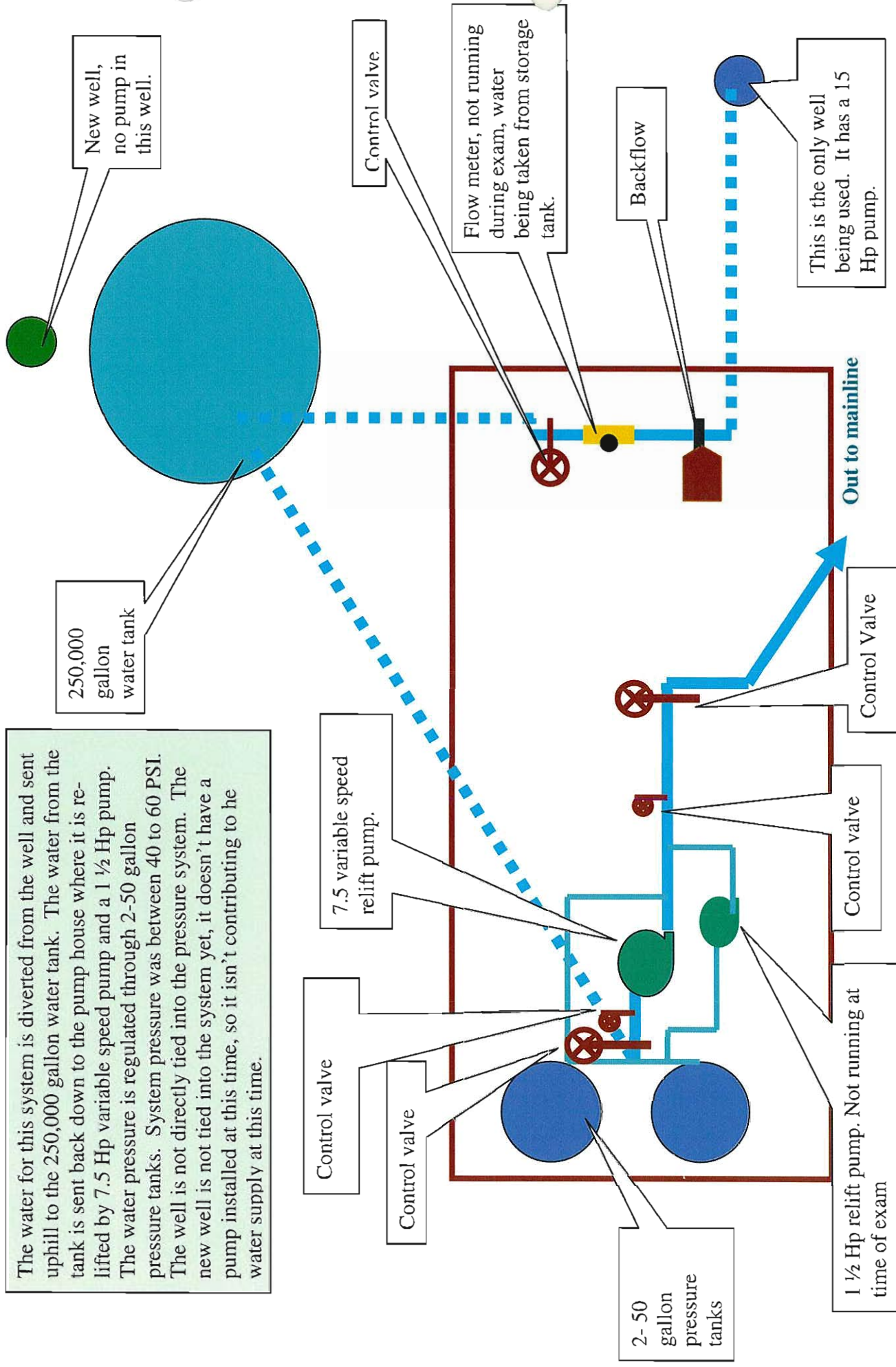
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2004 NAIP Photo
Map Created By
Dan Nelson
6/12/2008

SYSTEM DIAGRAM

The water for this system is diverted from the well and sent uphill to the 250,000 gallon water tank. The water from the tank is sent back down to the pump house where it is re-lifted by 7.5 Hp variable speed pump and a 1 ½ Hp pump. The water pressure is regulated through 2-50 gallon pressure tanks. System pressure was between 40 to 60 PSI. The well is not directly tied into the pressure system. The new well is not tied into the system yet, it doesn't have a pump installed at this time, so it isn't contributing to the water supply at this time.



GROUNDWATER THEORETICAL ANALYSIS

FILE: 11- 7435

DATE: 6-6-2008

BY: Dan Nelson.

THEORETICAL RATE OF FLOW: $Q = \frac{(8.8 \times (HP) \times (EFF.))}{TDH}$

Q = CFS

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)]

LIFT = Depth to water in FEET from land surface to pumping water level

PSI = Pumping pressure measured in PSI near pump (if open discharge assume [0])

$(8.8) \times (15) \times (0.70) = 92.4$
 $Q = \underline{\hspace{2cm}} = \underline{0.156 \text{ cfs.}}$

70 gpm.

$[(540.) + (22.3 \times 2.31)] = 591.5$

LIFT FROM:

PSI FROM:

NOTES ON PUMP:

Measurement ()

Measurement ()

Motor Make, Serial or ID

Owner ()

Owner ()

Pump Make, Serial or ID, rating

Area estimate ()

Estimate ()

Well Logs (X)

Owner Gage ()

Booster (Y) (N)

REMARKS: The well log shows a static water level of 530 FT., with a draw down of 10 FT after 4 hrs. of pumping 80 gpm. This is very close to my estimation by subtracting ~~total depth~~ static water level from the total depth and dividing by 2. $(563 - 530 / 2 + 530 = 546.5)$ with only 6.5 FT of lift difference, I decided to use the well log measurement. Using the topo map to estimate the ft of head required to pump the water to the water tank, I calculated approximately 40 FT of head. ~~with~~ with a standard ~~water~~ open discharge pressure of 5 psi $40 / 2.31 = 17.3 \text{ psi} + 5 \text{ psi} = 22.3 \text{ psi}$. The theoretical actually matched the pump test fairly close, so I am assuming this was the designed pumping rate. I am recommending 0.16 cfs.

PHOTOGRAPHER AND DATE OF PHOTOS DANIEL A NELSON 6/6/2008

FILE NUMBER 11-7435



The photo above shows the wellhead for the point of diversion.

The photo below shows the wellhead location in comparison to the well house shown on the right.



PHOTOGRAPHER AND DATE OF PHOTOS DANIEL A NELSON 6/6/2008

FILE NUMBER 11-7435



These are photos of the well house. The top photo shows where the well line enters the well house to be measured. The pipeline then leaves the well house and goes up to the 250,000 gallon water tank.



This photo shows where the water re-enters the well house from the water tank. The water comes in and is re-lifted by a 7.5 Hp variable speed pump and a 1 ½ Hp re-lift pump. The water pressure is regulated by the two pressure tanks in the rear of the diversion works.



This photo show the two re-lift pumps. The gray and silver pump is the 7.5 Hp variable speed pump, and the smaller gray and orange pump is the 1 ½ Hp pump.

PHOTOGRAPHER AND DATE OF PHOTOS DANIEL A NELSON 6/6/2008

FILE NUMBER 11-7435



These are the photos of the new well. This well is involved in the proposed amendment, so I included these picture for reference. However, there is no pump or electrical wiring connected to this pump at this time.



This well head is not properly sealed and there is a gap between the casing and the cover plate. Therefore, there is no water tight seal on this well. I wasn't too concerned about it, since it is waiting for the amendment to be approved before completing the pump installation.

PHOTOGRAPHER AND DATE OF PHOTOS DANIEL A NELSON 6/6/2008

FILE NUMBER 11-7435



These photos show how the power and water connections are marked for each undeveloped lot. Each of the undeveloped lots have been stubbed into this system.



PHOTOGRAPHER AND DATE OF PHOTOS DANIEL A NELSON 6/6/2008

FILE NUMBER 11-7435



These are panoramic photos of the subdivision. As you can see, there is not a great deal of development completed yet. Approximately 14 of the 33 lots have been developed.

