

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

RECEIVED

JAN 11 2005

Department of Water Resources
Southern Region

A. GENERAL INFORMATION

Permit No. 45-13513

410 RICHARD SMITH

1. Owner: SPRINGDALE ACRES HOMEOWNERS ASSOCIATION

Phone No. 208-878-8382

Current Address: P.O. Box 910 BURLEY, ID 83318

2. Accompanied by: JEFFREY S. RAU P.E. BROCKWAY ENGR

EXAM DATE: 11/23/2004

Address: 2016 N. WASHINGTON ST SUITE 4

Phone No 208-736-8543

TWIN FALLS, ID 83301

Relationship to Permit Holder: CONSULTANT

3. Source: GROUNDWATER tributary to N/A

DEPARTMENT OF WATER RESOURCES

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B. OVERLAP REVIEW

1. Other water rights with the same place of use: 45-7697 + 45-7375

2. Other water rights with the same point of diversion: 45-7697 + 45-7375

C. DIVERSION AND DELIVERY SYSTEM

1. Point(s) of Diversion:

Ident No.	Gov't Lot	1/4	1/4	1/4	Sec.	Twp.	Rge.	County	Method of Determination/Remarks
		SE	SE	SW	30	10S	24E	CASSIA	
		NE	NE	NW	31	10S	24E	CASSIA	

FIELD EXAM +

2. Place(s) of Use:

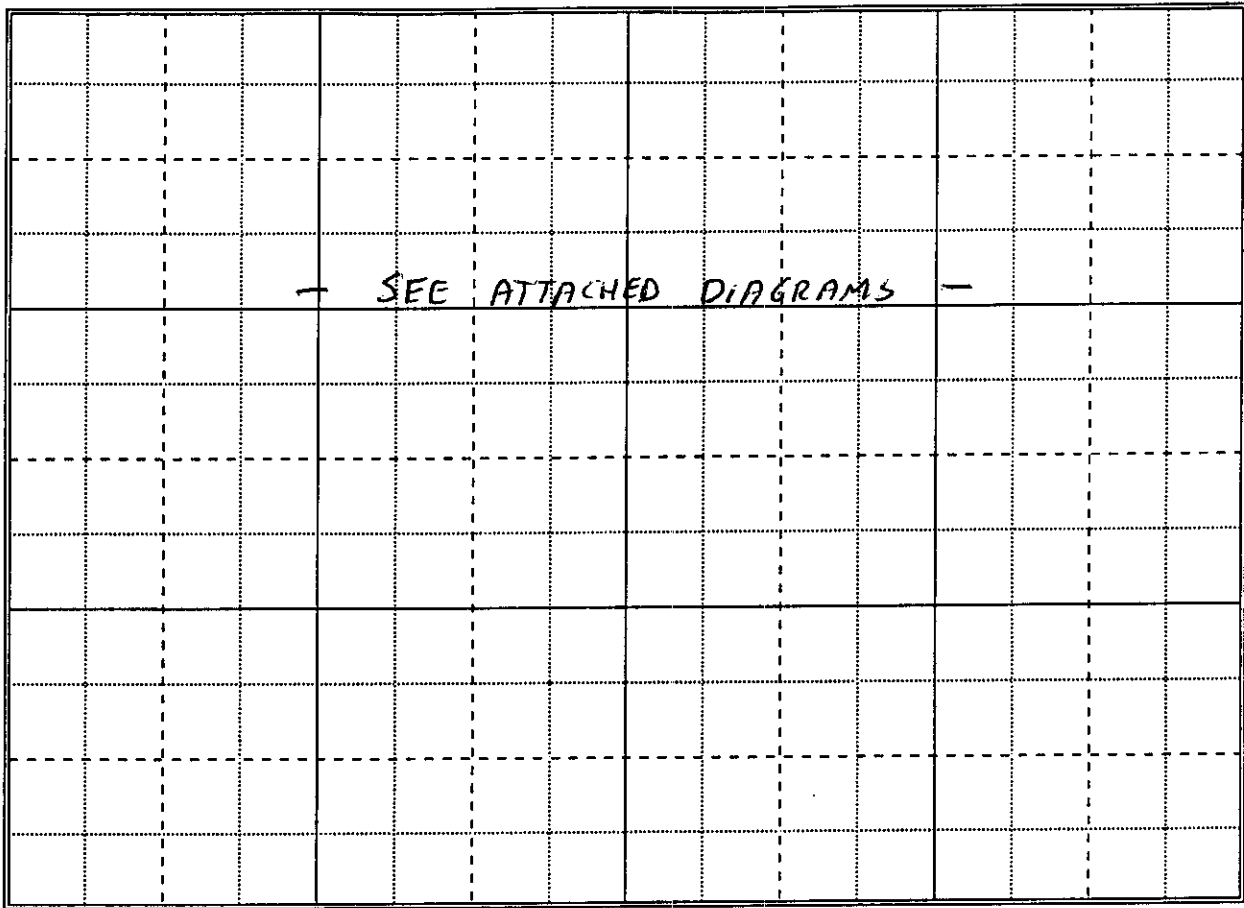
Indicate Method of Determination USGS QUAD

2. Place G/L in box:

TWP	RGE	SEC	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
10S	24E	31		G/L			G/L												
10S	24E	30											G/L			G/L			

G/L = HEATING & COOLING

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



Scale: 1" = _____

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

☐ Aerial Photo Attached (required for irrigation of 10+ acres)

☒ 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
A 000 7817	—	15HP	—	BERKELEY	652 BM 6-15
A 000 7816	—	5HP	—	BERKELEY	4 CL M 23-5

*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
MAIN = MCROMETER	PROPELLOR	MCROMETER		97-8154-4	4"	4/30/02
HEAT PUMPS - COLD WATER MULTI JET METER #			DLJ 75	SEE PHOTOS	3/4"	N/A

2.

<u>OWNER</u>	<u>SER #</u>	<u>OWNER</u>	<u>SER #</u>
ZARBINSKY	005140	VEGWERT	005010
SMITH	005008	KIRK	005007
CHRISTIANSEN	005011	WHITE	005006
STONE	005003	SPELINS	005009

Measurements:

Springdale Acres HOA Site Vicinity Map



Springdale Acres Homeowners Association Beneficial Use Exam - Permit #45-13513



Lot 7 Block 1 - Stone Ser #005003



Lot 4 Block 1 - Smith Ser #005008

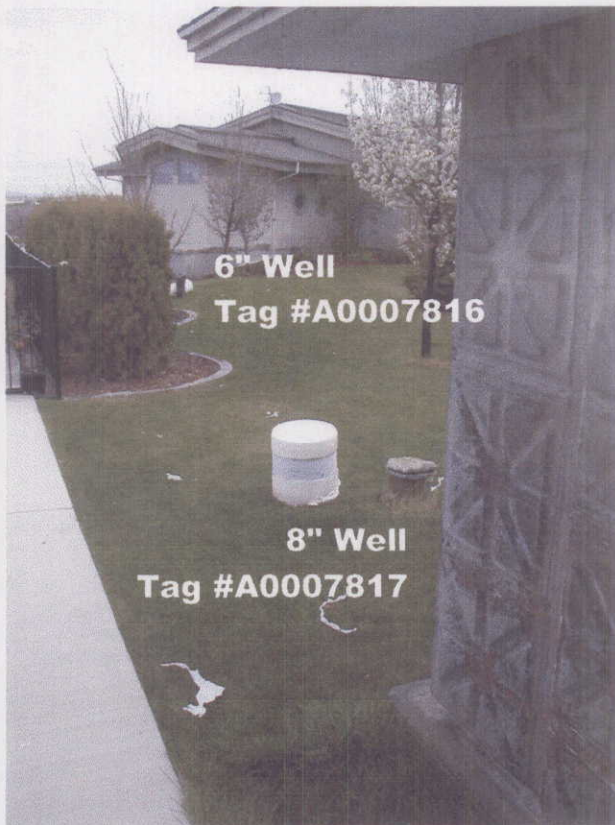


Lot 2 Block 1 - Zarbininsky Ser #005140

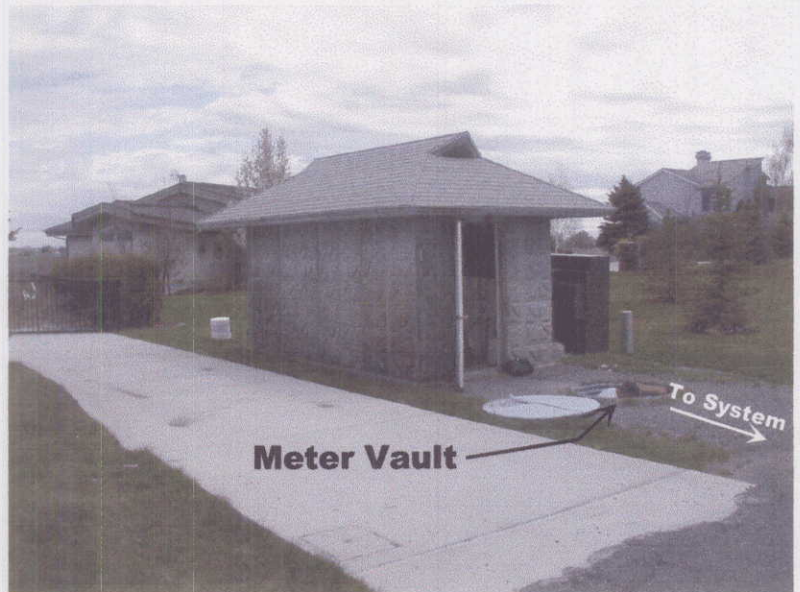


Lot 10 Block 1 - White Ser #005006

Springdale Acres Homeowners Association Beneficial Use Exam - Permit #45-13513



Well locations behind pumphouse



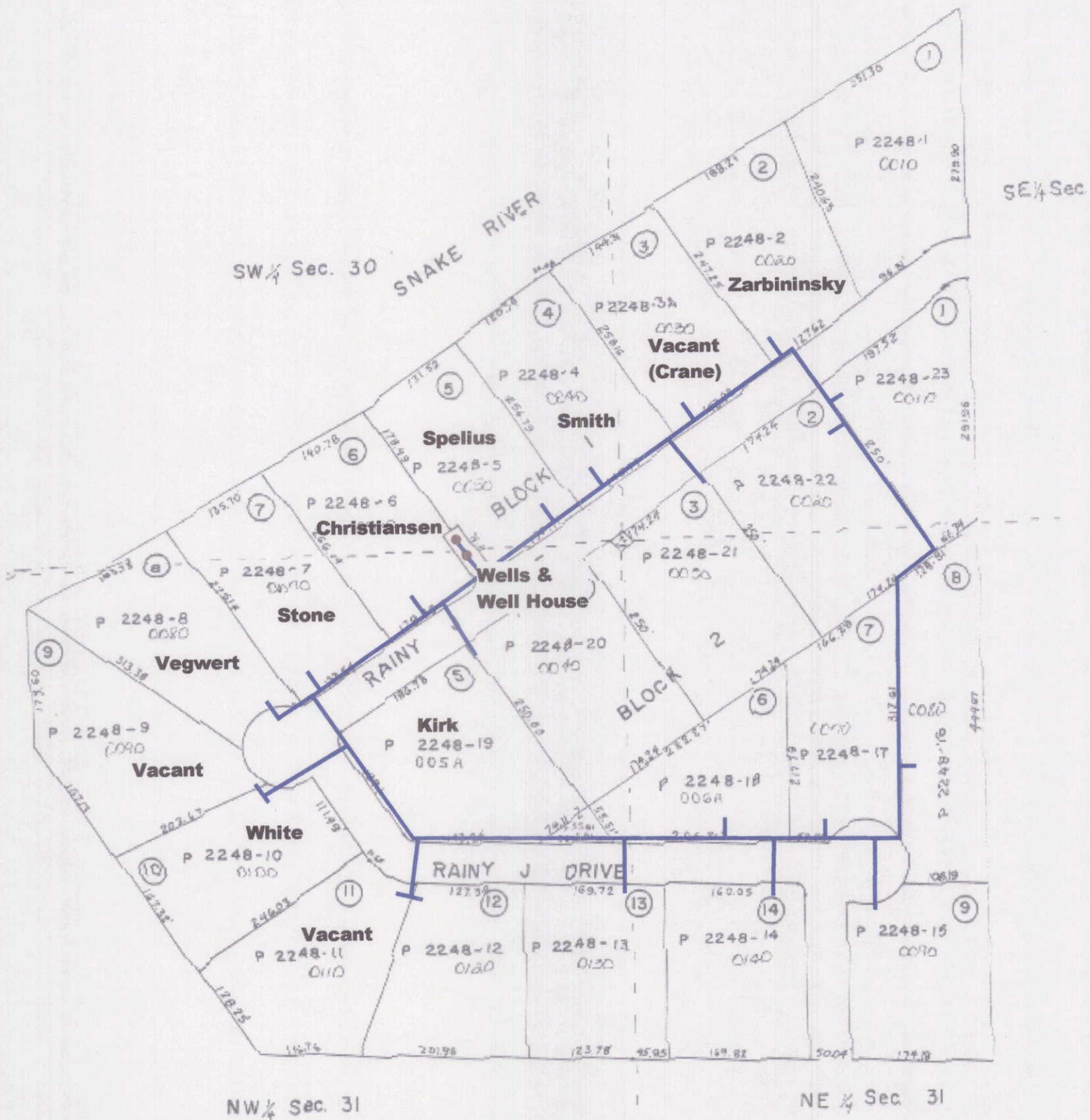
Pumphouse with pressure tanks & meter vault.



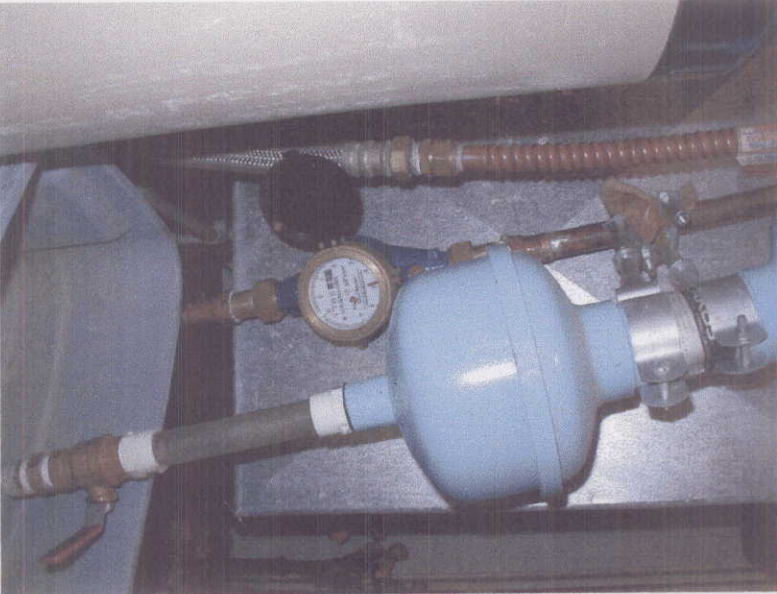
**Meter Vault - Meter = 4" McCrometer
Serial #97-8151-4**

**Verified 4/30/02 by Brockway Engineering
Within 1% of Fuji Test Meter**

Springdale Acres Homeowners Association General System Layout & Heat Pump Connections



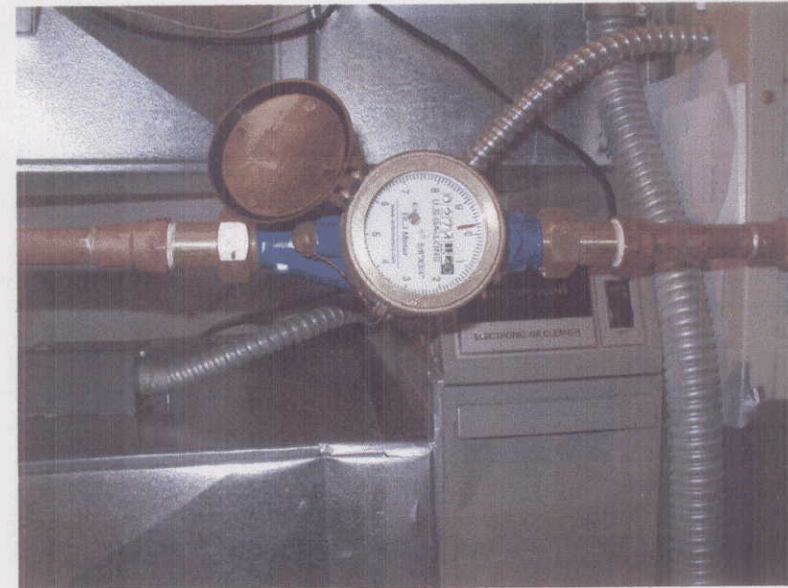
Springdale Acres Homeowners Association Beneficial Use Exam - Permit #45-13513



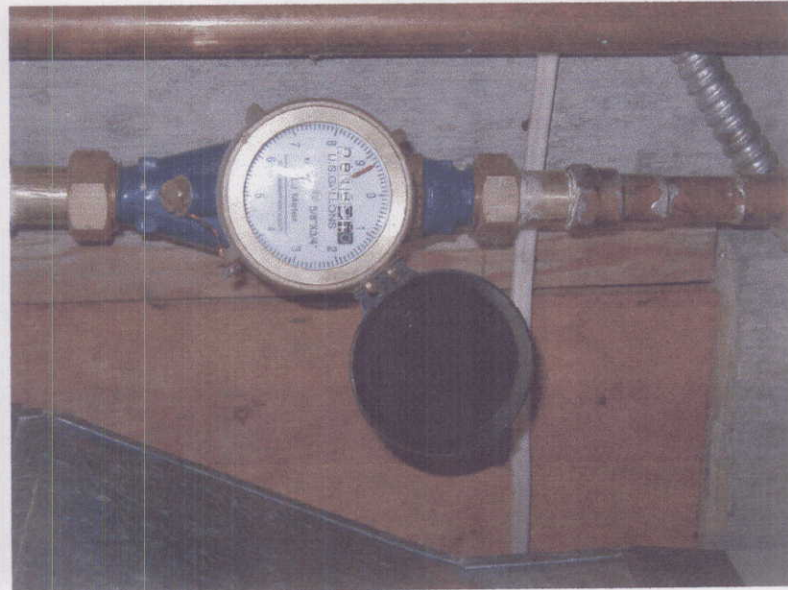
Lot 6 Block 1 - Christiansen Ser #005011



Lot 5 Block 1 - Spelius Ser #005009



Lot 5 Block 2 - Kirk Ser #005007



Lot 8 Block 1 - Vegwert Ser #005010

E. NARRATIVE/REMARKS/COMMENTS

Springdale Acres Homeowners Association
Beneficial Use Exam
Permit #45-13513

Narrative

The water permit under review is for beneficial use of groundwater for a total of 11 heat pump systems connected to the water system servicing the Springdale Acres Subdivision located in Sections 30 & 31, Township 10 South, Range 24 East. The permit was issued March 20, 2003 and an extension of proof was granted on February 17, 2004 extending proof deadline until April 1, 2005.

The field exam was completed by Jeffrey S. Rau, P.E. (WR Examiner No. 05-127) of Brockway Engineering, PLLC on November 23, 2004 with Jerry Vegwert of Springdale HOA accompanying. The system consists of two wells connected to a series of pressure tanks located in a pump house adjacent to Lots 5 & 6 of Block 1. The line from the pressure tanks exits the building and passes through a 4" McCrometer meter prior to a 4" distribution loop to the subdivision. Individual connections are made to each residence as shown on the supporting documentation. Individual connections are not metered. Two water rights for the irrigation and in-house domestic use are appurtenant to this system (45-7697 & 45-7375). When combined, these rights allow for a total of 0.21 cfs for domestic purposes and 0.22 cfs for irrigation. Annual diversion allowed under these two rights are 44.0 AFA for irrigation and a total diversion volume of 57.2 AFA. Permit #45-13513 was issued for cooling and heating beneficial use for 0.29 cfs which would be additional to the above mentioned flow rates.

Included with this exam are meter readings from 8/1/03 to 10/1/04 for the 8 meters installed on the system. Average annual use ranged from 0.77 AFA to 6.51 AFA as shown on the data sheets included. Annual volume use varied widely due to occupancy and use of heat pump systems in residences. IDWR provided design guidelines for estimating annual volume and peak flow rate for heating systems. A spreadsheet based on average heating & cooling days for 30 years of record for Burley, ID is included with this exam. The IDWR calculations show that based on an average 2,500 square foot home and a 10 degree temperature drop (measured by Jerry Vegwert) an average annual volume per connection is approximately 6.2 AFA. This closely agrees with the average amounts observed Spelius & Stone residences. I recommend an annual diversion volume of 68.3 AFA which equates to 6.2 AFA for 11 connections. Peak flow rate per connection is approximately 9.5 gpm which closely agrees with field measurements taken on the discharge pipes from several of the heat pump systems. Recommended diversion rate = 105 gpm or 0.23 cfs.

A total of 8 heat pump systems are installed at the following locations: Block 1: Lots 2, 4, 5, 6, 7, 8, 10 Block 2: Lot 5. Additional systems are planned for Block 1: Lots 3, 9, 11. Stub outs are provided on the system for these lots and comply with the requirement of proof based on the stub out rule. The existing heat pump systems were evaluated and each meter was photographed and the serial number logged for the exam. The photos of the meters and representative serial number are shown on the attached photo pages. All meters appeared to be installed correctly and operating in a correct manner.

Conditions of Approval (Per Permit Dated March 20, 2003)

- 1: Proof submitted February 2005. Extended to April 1, 2005 by IDWR. Proof made by deadline.
- 2: Right is subject to all prior water rights.
- 3: Wells were already drilled prior to permit issuance. No new well activity under this permit.
- 4: Water for heat pumps is non-consumptive. Water is returned to Snake River as outlined in the permit application to IDWR.
- 5: Water used in heat pump systems is potable water from community water systems. Water quality complies with IDEQ standards.

- 6: Meters installed on each heat pump supply line. Meter readings to be taken annually on December 31st and reported to IDWR along with system volume information from 4" McCrometer meter. System McCrometer meter verified by Brockway Engineering to within 1% of Fuji test meter on 4/30/02.
7. OK
8. 8 systems installed. Remainder systems are stubbed out for residences as outlined earlier.

Conditions of approval for Permit 45-13513 have been met.

Springdale Acres Homeowners Association

Heat Pump Volume Requirement

Based on March 25, 1988 IDWR Memorandum from Rick Sterling

Avg Home Size 2,500 Square Feet (Estimated)
Water Temp Drop 10 Degrees F (Measured by Jerry Vegwert)

	Heating Degree	Cooling Degree	Mean Outside	Desired Indoor	Heating Load	Volume Water	Peak Flow
	Days	Days	Temp (F)	Temp (F)	(BTU/hr)	Reqd (ac-ft)	Rate (gpm)
January	1138	0	28.3	72	47,742	1.04	9.5
February	867	0	34.1	72	41,406	0.79	8.3
March	731	0	41.5	72	33,321	0.67	6.7
April	489	2	48.8	72	25,346	0.45	5.1
May	268	15	56.9	72	16,497	0.26	3.3
June	90	98	65.3	72	7,320	0.17	1.5
July	19	232	71.9	72	109	0.23	0.0
August	30	205	70.7	72	1,420	0.21	0.3
September	175	55	61.0	72	12,018	0.21	2.4
October	458	1	50.3	72	23,707	0.42	4.7
November	827	0	37.4	72	37,801	0.75	7.6
December	1118	0	29.0	72	46,978	1.02	9.4

Total per Connection = 6.2 ac ft
Total for 11 Connections = 68.3 ac ft

Volume Calculation

Peak Flow Per Connection = 9.5 gpm
Peak for 11 Connections = 105.0 gpm
Peak for 11 Connections = 0.23 cfs

Flow Rate Calculation

Note: Heating/Cooling Degree Days & Mean Temp from Western Regional Climate Center 1971-2000 Monthly Avg., Burley, Idaho.
Estimated Peak Heating Load based on Normal Insulated home w/ R-19 Ceilings, R-13 Walls, Double Glazed Windows.

**Springdale Acres Meter Readings
Prepared by Brockway Engineering, PLLC
October 26, 2004**

Meter Readings Provided by Springdale HOA

	Zarbininsky (gal)	Smith (gal)	Sprius (gal)	Christianson (gal)	Stone (gal)	Vegwert (gal)	White (gal)	Kirk (gal)
8/1/2003	37,030	142,940	74,440	153,600	144,630	71,340	64,940	38,480
9/1/2003	47,040	238,040	183,870	350,350	215,650	115,510	128,080	54,900
10/1/2003	47,440	256,100	205,170	392,680	273,900	128,120	179,500	55,860
11/1/2003	54,530	302,110	280,520	478,970	369,200	174,700	255,450	55,860
12/1/2003	89,950	430,930	408,760	625,610	664,020	261,320	415,060	56,420
1/1/2004	132,830	573,030	583,540	807,460	981,100	354,640	598,910	64,850
2/1/2004	198,710	741,930	-	1,224,350	-	-	851,913	208,696
3/1/2004	239,870	922,400	-	1,310,220	-	-	1,051,570	212,628
4/1/2004	250,906	940,520	-	1,377,510	-	-	1,164,990	224,442
5/1/2004	269,090	982,040	1,833,760	1,411,030	2,138,960	645,230	1,244,960	224,510
6/1/2004	273,080	1,002,350	1,993,710	1,425,320	2,176,900	662,510	1,311,030	224,510
7/1/2004	273,080	1,053,390	2,059,325	1,501,020	2,201,120	667,240	1,350,810	224,510
8/1/2004	284,150	1,151,270	2,124,940	1,598,510	2,271,790	704,240	1,411,980	224,510
9/1/2004	286,510	1,224,030	2,151,850	1,652,440	2,314,820	713,790	1,415,630	224,510
10/1/2004	288,020	1,245,320	2,170,290	1,654,170	2,333,470	728,750	1,416,140	255,280
11/1/2004								
12/1/2004								

Springdale Acres Meter Readings
Prepared by Brockway Engineering, PLLC
October 26,2004

Volume Used Per Month

	Zarbinnisky (gal)	Smith (gal)	Spelius (gal)	Christianson (gal)	Stone (gal)	Vegwert (gal)	White (gal)	Kirk (gal)
8/1/2003	37,030	142,940	74,440	153,600	144,630	71,340	64,940	38,480
9/1/2003	10,010	95,100	109,430	196,750	71,020	44,170	63,140	16,420
10/1/2003	400	18,060	21,300	42,330	58,250	12,610	51,420	960
11/1/2003	7,090	46,010	75,350	86,290	95,300	46,580	75,950	0
12/1/2003	35,420	128,820	128,240	146,640	294,820	86,620	159,610	560
1/1/2004	42,880	142,100	174,780	181,850	317,080	93,320	183,850	8,430
2/1/2004	65,880	168,900	618,471	416,890	572,781	143,752	253,003	143,846
3/1/2004	41,160	180,470	373,384	85,870	345,800	86,786	199,657	3,932
4/1/2004	11,036	18,120	128,879	67,290	119,358	29,955	113,420	11,814
5/1/2004	18,184	41,520	129,486	33,520	119,921	30,037	79,970	68
6/1/2004	3,990	20,310	159,950	14,290	37,940	17,280	66,070	0
7/1/2004	0	51,040	65,615	75,700	24,220	4,730	39,780	0
8/1/2004	11,070	97,880	65,615	97,490	70,670	37,000	61,170	0
9/1/2004	2,360	72,760	26,910	53,930	43,030	9,550	3,650	0
10/1/2004	1,510	21,290	18,440	1,730	18,650	14,960	510	30,770
11/1/2004								
12/1/2004								
Annual 8/03 to 7/04	273,080	1,053,390	2,059,325	1,501,020	2,201,120	667,240	1,350,810	224,510
Annual 9/03 to 8/04	247,120	1,008,330	2,050,500	1,444,910	2,127,160	632,900	1,347,040	186,030
Annual 10/03 to 9/04	239,470	985,990	1,967,980	1,302,090	2,099,170	598,280	1,287,550	169,610
Annual 11/03 to 10/04	240,580	989,220	1,965,120	1,261,490	2,059,570	600,630	1,236,640	199,420
Average	250,063	1,009,233	2,010,731	1,377,378	2,121,755	624,763	1,305,510	194,893
Annual 8/03 to 7/04	0.84	3.23	6.32	4.61	6.75	2.05	4.15	0.69
Annual 9/03 to 8/04	0.76	3.09	6.29	4.43	6.53	1.94	4.13	0.57
Annual 10/03 to 9/04	0.73	3.03	6.04	4.00	6.44	1.84	3.95	0.52
Annual 11/03 to 10/04	0.74	3.04	6.03	3.87	6.32	1.84	3.79	0.61
Average	0.77	3.10	6.17	4.23	6.51	1.92	4.01	0.60

F. FLOW CALCULATIONS

X Additional Computation Sheets Attached

Measured Method:

BASED ON IDWR GUIDELINES

$$Q \text{ (GPM)} = \frac{\text{HEAT LOAD (BTU/HR)}}{500 \times \Delta t} \quad (\text{SEE ATTACHED SHEETS})$$

G. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation: N/A

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

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

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

2. Volume Calculations for Other Uses:

SEE ATTACHED SHEET

H. RECOMMENDATIONS

1. Recommended Amounts

Beneficial Use	Period of Use From	To	Rate of Diversion Q (cfs)	Annual Volume V (afa)
HEATING / COOLING	1/1	12/31	0.23 cfs	68.3 AFA

Totals: 0.23 cfs 68.3 AFA

2. Recommended Amendments

* NON - CONSUMPTIVE

___ Change P.D. as reflected above ___ Add P.D. as reflected above X None
___ Change P.U. as reflected above ___ Add P.U. as reflected above ___ Other

I. AUTHENTICATION

Field Examiner's Name

Date 1/7/05

Reviewer

Date

