

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No: 37-8798
Exam Date: 6/27/2012

1. Current Owner: SUN VALLEY CO A WYOMING CORP
PO BOX 10
SUN VALLEY ID 83353
(208) 622-4111
2. Accompanied by: Chris Share
Phone No: (208)720-3222
Address: PO Box 10, Sun Valley, ID 83353
Relationship to Permit Holder: system operator

3. SOURCE
SPRINGS

TRIBUTARY
WARM SPRINGS CREEK

B. OVERLAP REVIEW

1. Other water rights with the same place of use: The only water right that overlaps the POU is 37-2678 (same spring, for heating); all other water rights in the same QQ are for the City of Ketchum municipal, Natural Energy heating (different POU), and Osborne (fire protection, different POU).
2. Other water rights with the same point of diversion: 37-2678 (overlapping only one spring, since the neighbors spring was physically disconnected from this system).

C. DIVERSION AND DELIVERY SYSTEM

1. LOCATION OF POINT(S) OF DIVERSION:

SPRINGS NW1/4SW1/4NW1/4 Sec. 14, Twp 04N, Rge 17E, B.M. BLAINE County

Method of Determination: Garmin GPS Map76S, ArcMap esri and 2004 – 2013 imagery

2.

PLACE OF USE: HEATING

Twp	Rge	Sec	NE				NW				SW				SE				Totals
			<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	<u>NE</u>	<u>NW</u>	<u>SW</u>	<u>SE</u>	
04N	17E	14					X												
							L 10												

Method of Determination: Garmin GPS Map76S, ArcMap esri and 2004 – 2013 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.

<u>Well or Diversion</u> <u>ID No.*</u>	<u>Motor Make</u>	<u>Hp</u>	<u>Motor Serial No.</u>	<u>Pump Make</u>	<u>Pump Serial No. or Discharge</u> <u>Size</u>
A0018532 (tag located inside spring house)					
<u>Booster pump:</u>	US Electric	5 Hp	model G72009A		4 inch to 4 inch high density polyethylene pipe to the heat exchanger

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

D. FLOW MEASUREMENTS

1.

<u>Measurement</u> <u>Equipment</u>	<u>Type</u>	<u>Make</u>	<u>Model No.</u>	<u>Serial No.</u>	<u>Size</u>	<u>Calib. Date</u>
None						

2. Measurements:

Theoretical: could not complete due to some information missing (3 ft approximate lift from spring to heat exchanger, but the psi was unknown, and there was no way to test it).

4 inch high density polyethylene pipe, pipe conversion: 0.44 cfs maximum capacity

Weir Measurement (calculations taken from the U of I Measurement Book):

21 inch (1.75 ft) wide 13 inch (1.08 ft) deep:

1.5 ft X 1.08 ft = 5.2 cfs

2.0 ft X 1.08 ft = 6.99 cfs

The spring capacity can easily be said to be 5.2 cfs (using the low scale).

Assume 151 days per year for the system activation: December thru March, plus 15 days each in November and April (Nov. 15 – April 15 season of use, as calculated by Brockway for water right 37-8205). This snow melting system does not run 24 hrs per day 7 days per week, but is rather turned on and off during actual snow fall occasions requiring the pavers to be heated to melt the snow and ice from building up. For this reason, the entire diversion rate is required during those demand time periods to heat the chemicals at the heat exchanger, which is run through the ¾ inch buried poly pipe under the pavers surrounding the lodge and sidewalk areas. When the 145 degree spring water is not diverted to the heat exchanger, the entire flow is direct discharged through the concrete weir located at the spring, directly north to the river. When the 145 degree spring water is diverted to the heat exchanger, it at no time mixes with the chemical, but is used solely for heating the chemical run through the looped ¾ inch poly pipe buried under the pavers, then the spring water is diverted through a bypass and direct discharged through a pipe located at the bridge east of the heat exchanger, to the river. Therefore, it is:

RECOMMENDED:

Heating November 15 – April 15 (to compensate for early and late ski season and snow fall), at 0.35 cfs

E. FLOW CALCULATIONS

Measured Method:

None.

F. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

None.

2. Volume Calculations for Other Uses:

This snow melting system operates at a fixed flow rate. The maximum is required to melt during a snowfall event. The system flow cannot feasibly be adjusted to exactly match the heat requirement of the many snowstorms that will occur over a given year. Instead, the system is turned on and off whenever snow melting is required, and turned off when snow melting is no longer required. Due to this method of operation, the annual volume that should be licensed is best calculated by estimating a conservatively high number of days each year that the system will be operated. A 90 % level was selected as a reasonable criteria to ensure that the annual licensed volume is sufficient. The Hyndman site is likely a better representative of the POU site conditions, due to it also being a lower elevation. Therefore, the 90 % volume calculation was based on 62 days per year of snowfall (see NRCS SNOTEL evaluation conducted by Brockway, attached to field examination).

RECOMMEND:

A diversion rate of 0.35 cfs X 62 days (90% level) X 1.9835 = 43.04 = 43.0 acre-feet.

G. NARRATIVE/REMARKS/COMMENTS

The POD/spring overlaps with water right 37-2678. Originally there were two springs on the system, but the one spring from the neighbor was physically disconnected (per Chris Share 208.720.3222, system operator). At the time of the field examination, no heat exchange was taking place for snow melting through the 3/4 inch buried pipe system that is looped under the pavers surrounding the lodge, under the overlapping roof, and the outlining sidewalks on the north side of the lodge running to the east and west. When the heat exchange system is not running for snow melting, all flow from the spring is open discharged into the river thru the concrete weir located north of the pump house. At the spring is a 5 Hp US Electric model G72009A booster pump with 4 inch discharge to 4 inch buried high density polyethylene pipe running west to east to the heat exchanger. The 145 degree spring water enters the exchanger, heats of the chemical solution that is transported through the 8 inch stainless pipe located on the west side of the bridge, then reduces to a buried 3/4 inch poly pipe under the pavers. At the bridge there is a bypass pipe for the spring water that open discharges to the river. At no time does the spring water and the chemical solution come in direct contact with each other. Beneficial Use is only for heating the pavers for snow melting. The Lodge is not connected to this system, but is heated completely with electricity. The season of use can be assumed to be 151 days per year for the snow melting system activation (December thru March, plus 15 days each in November and April, as calculated by Brockway for water right 37-8205 for snow melting in a similar location, using the NRCS SNOTEL sites for Hyndman and Dollarhide for 1982 - 2009). For this reason, the season of use will be changed to November 15 thru April 15, making up an early and late ski season.

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>
HEATING	11/15 to 04/15	0.350 CFS	43.00 AF
<u>Totals:</u>		0.350 CFS	43.00 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

Field Examiner's Name



Date: 3/14/2014



37-8798 POU: Snowmelting system. A looped heat exchange system, under the Pavers that make up the sidewalks and area surrounding the lodge and under the porched areas.

Sun Valley Ski Resort Lodge

POD: 37-8798 and one of 37-2678's springs

Source: Esri, DigitalGlobe, GeoEye, Earthstar, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

37-8798

POU + POD

S. Hernandez



POD: 37-8798, and 37-2678 (only this spring, and not the neighbors)
Using same PLS as determined for water right 37-2678.

37-8798 ArcMap esri Imagery 1:400

Source: Esri, DigitalGlobe, GeoEye, Earthstar, USDA, USGS, AEX, IGN, IGP, and the GIS User Community

37-8798

POD Location

S Hemphill



Source: Esri, DigitalGlobe, GeoEye, Earthstar, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

37 - 8798

© 11/2000

37-8798 POU: Snowmelting system. A looped heat exchange system, under the Pavers that make up the sidewalks and area surrounding the lodge and under the porched areas.

NWNW 4

NENW 10

14

04N12E

Sun Valley Ski Resort Lodge

ArcMap esri Imagery 1:628

SWNW 5

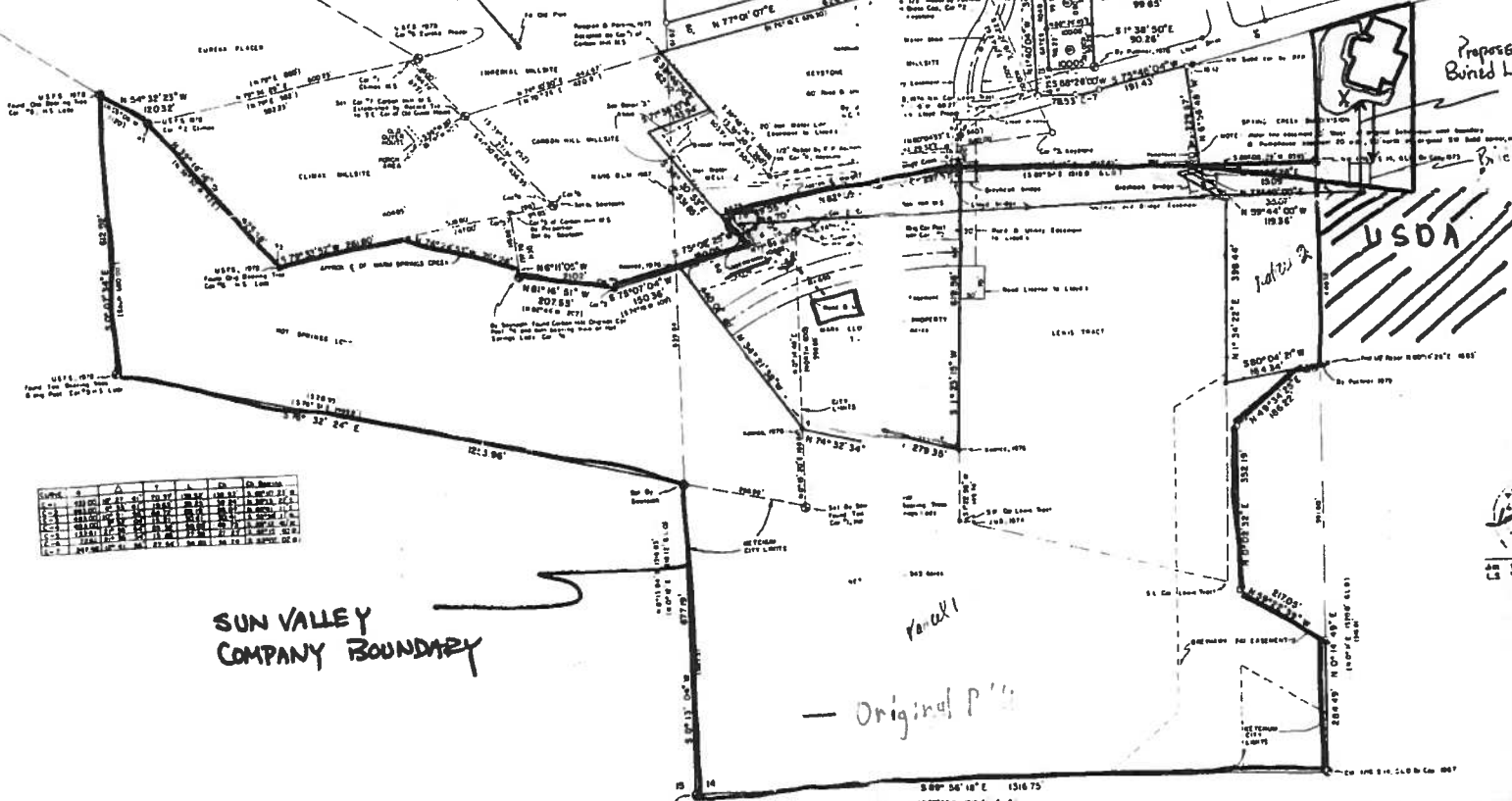
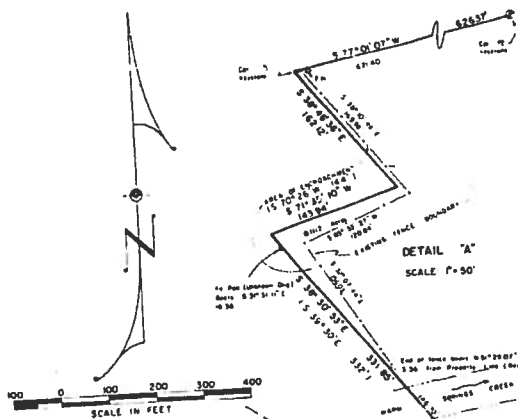
SENW



Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community

37-8789

S. Hemerday



LEGEND

- Found 1" Pipe
- Found 5/8" Rebar
- Found 1/2" Rebar
- Boss Cap
- Set 5/8" x 30" Rebar
- Set 1/2" x 24" Rebar
- Record Dimensions
- Fence
- Power Line
- Property Line
- Water Line

RECEIVED

100-1-1967
Department of Water Resources
Southern Region Office

STATE OF IDAHO
COUNTY OF BLAINE
I HEREBY CERTIFY THAT THIS SURVEY
WAS FILED FOR RECORD IN MY
OFFICE AT THE REQUEST OF
James Butler
AT 3:55 O'CLOCK P.M.
Sept. 30 A.D. 1967
RECORDED IN BOOK ON PAGE
OF
MARIE EVELYN
CLERK OF COURSE
By Dale Meyer
DEPUTY

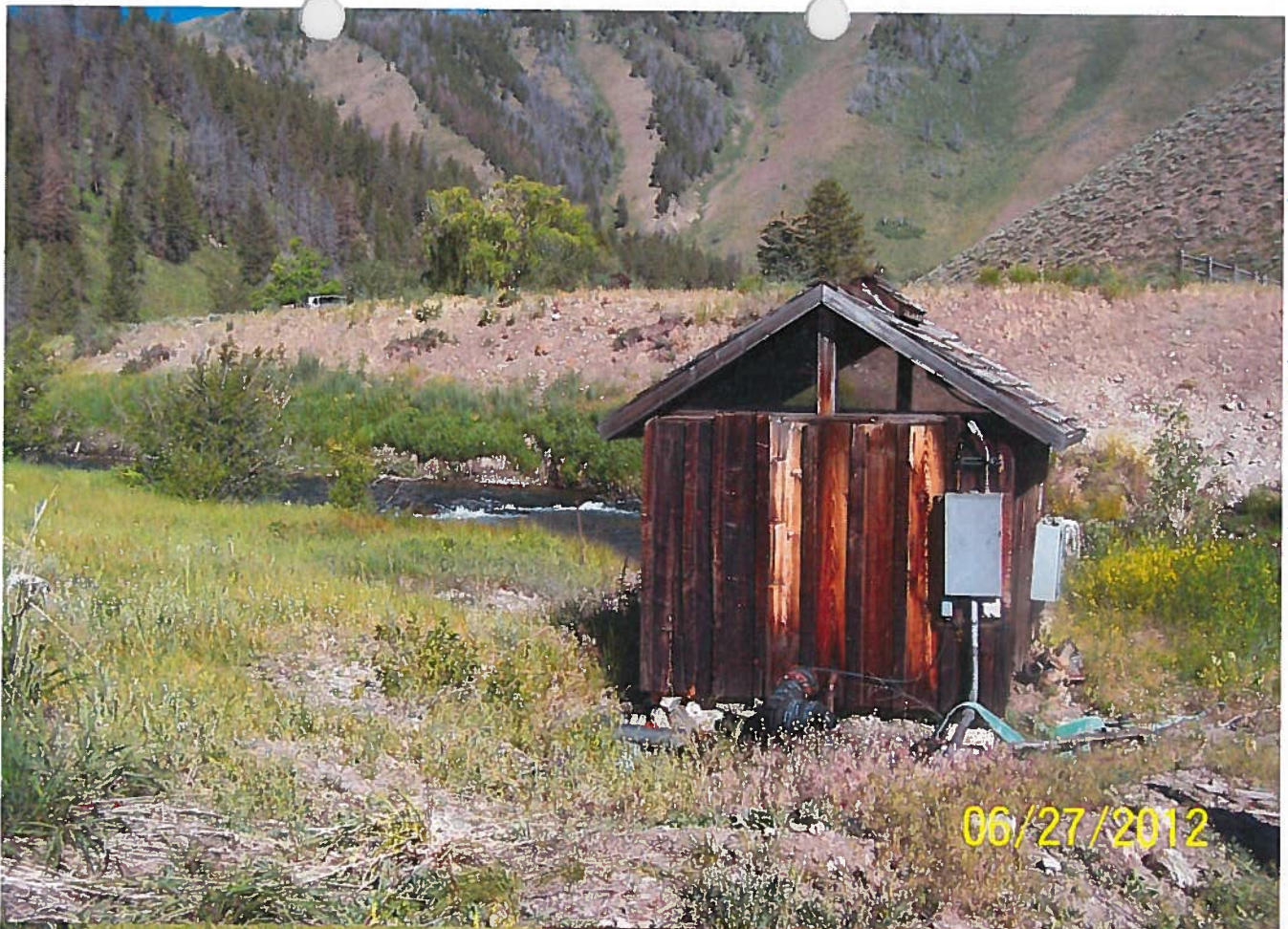
CERTIFICATE OF SURVEYOR

We hereby certify that we are registered land
surveyors in the State of Idaho and that this
plan is a true and accurate map of a survey
made by us.

Richard D. Foy
9-23-67
Richard D. Foy
L.S. #3421
Bruce T. Blair
L.S. #907

RECORD OF SURVEY for COZY LAND CO	
IN Sec. 16, T.4N., R.18E., S.14N., Blaine Co Idaho	
Surveyed Engineered	Civil Engineers and Land Surveyors PO Box 425 Ketchum, Idaho 1007 West Spruce Road

7-3982
37-02678



POD:

10 tag
ADD1853
located
inside
pump
house

145°
spring

06/27/2012



ADD18532

4" discharge
to
4" high
density
polyethylene
pipe,
running
east
to the
heat
exchange

06/27/2012



concrete
ditch with
boardwalk
concrete
weir +
overflow
for
non-ski
season,
open
discharge
to river



Capacity
of system

21" wide
x 13" deep
weir
measuremen

37-2678

March 1992



Inside of Spring House



Spring House Looking SW

(Warm Springs Cr. in Foreground)

Overlapping POD

37-2578 + 37-8798

RECEIVED
DEC 08 1992



At
POD,
5 Hp
US
Electric
model
G72009A
booster
pump
inside
the pump
house,
4" discharge
to 4"
high
density
polyethylene
pipe
that
runs
to the
heat
exchanger

06/27/2012

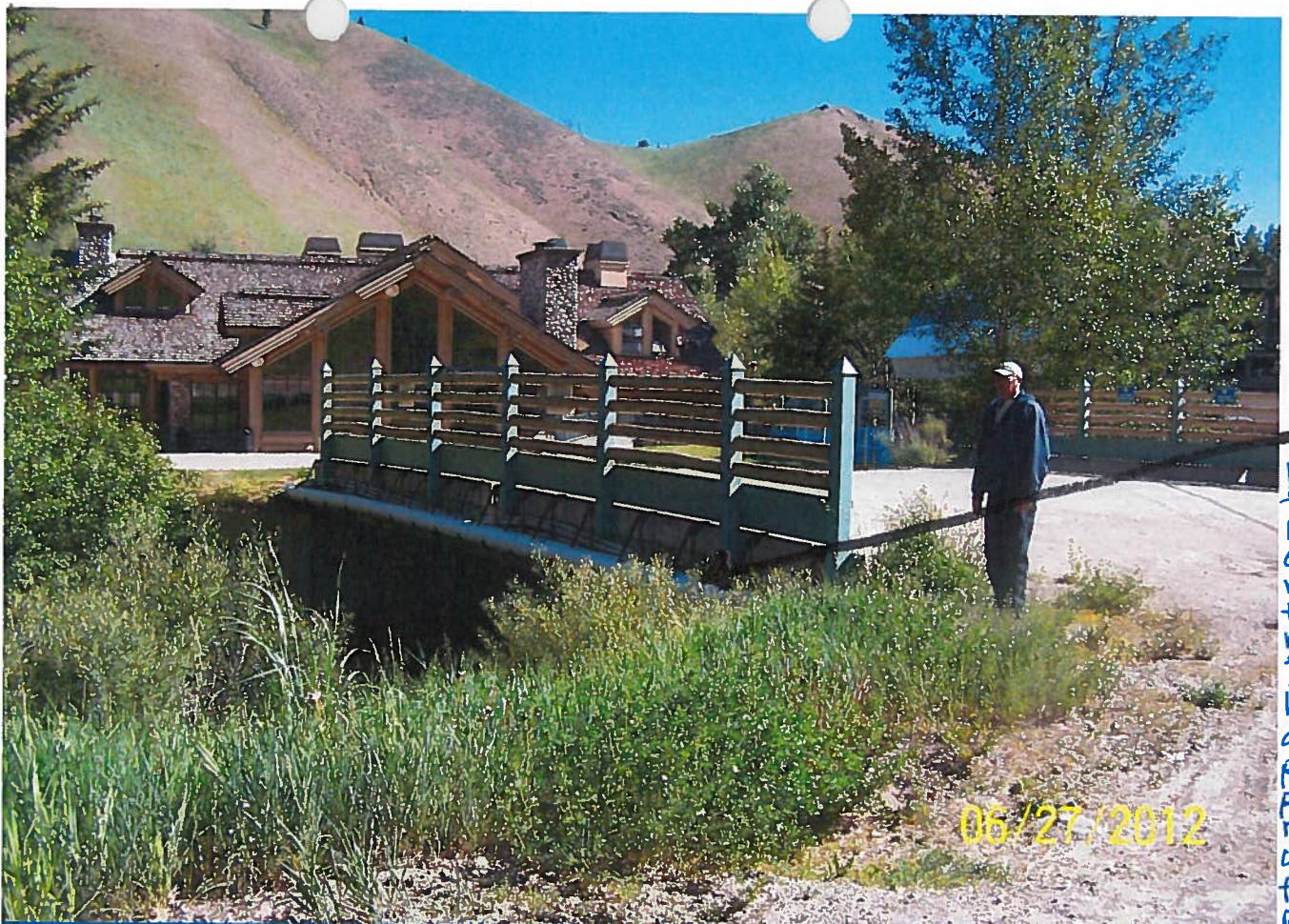


spring
water
discharge
to river

where
spring
water
comes into
heat
exchanger

heated
chemical
is piped
across
the river
at the
bridge
through
stainless
steel
pipe,
then
reduces
to a
3/4" looped
system
running
under
the
pavers

06/27/2012



8" Stainless Steel pipe with the liquid heated charcoal, reducing to multiple 3/4" high density polyethylene pipe running under the pavers surrounding the lodge + the sidewalk out front + the sidewalk in front of the house to the west



heated pavers surrounding the lodge



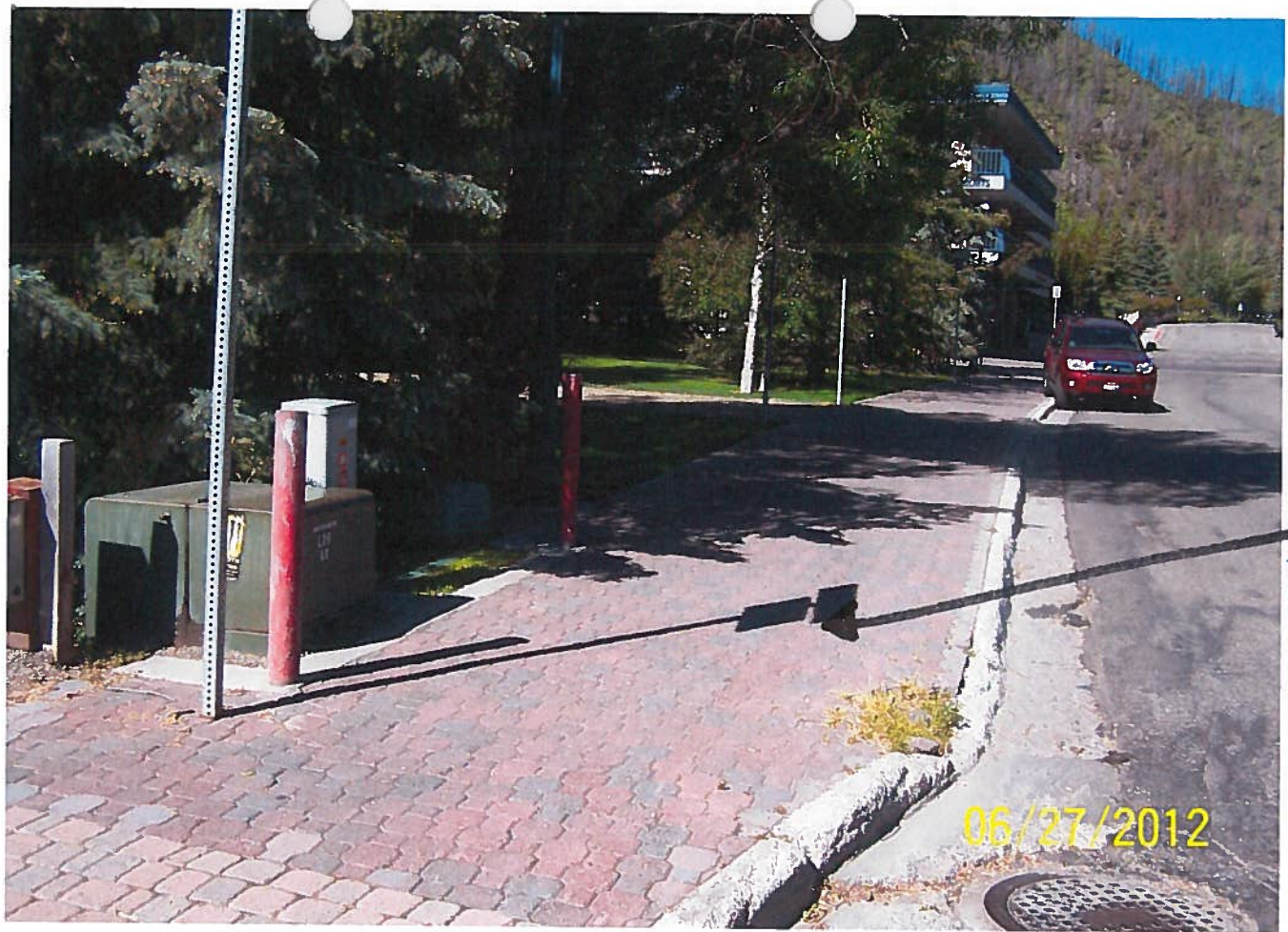
heated
pavers



heated
pavers
under
the
extended
roof of
the
lodge

37-8798

S. Hemenway



37-8798

S. Hernerway

NUMBER OF DAYS OF SNOWFALL, NOVEMBER - MARCH
NRCS SNOTEL SITES

Brockway Engineering 10/16/09

Water Year	No. Days Snow	
	Hyndman	Dollarhide
1982		85
1983		90
1984		64
1985		58
1986		76
1987		53
1988		66
1989	63	70
1990	39	55
1991	39	51
1992	46	53
1993	61	46
1994	38	45
1995	64	84
1996	58	71
1997	59	81
1998	40	62
1999	62	75
2000	53	47
2001	35	59
2002	42	59
2003	51	60
2004	46	60
2005	32	47
2006	55	78
2007	41	58
2008	54	71
2009	52	74

STATISTICS:

	Hyndman	Dollarhide
Mean	49.0	64.2
Std dev	10.1	12.8
Ex prob:		
0.5	51	61
0.75	58	74
0.8	59	76
0.9	62	82
0.95	63	85