

LAGI 2020
fly ranch

DESIGN THE
FUTURE
of
FLY RANCH



Power. Water. Food. Shelter. Regeneration.

LAGI 2020
FLY RANCH
WEATHER DATA
AND
REFERENCES



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LAGI 2020 FLY RANCH WEATHER DATA AND REFERENCES

The information provided in this supplemental document was obtained from the online database of the Desert Research Institute (DRI) Western Regional Climate Center (WRCC) weather station in Hualapai Flat located at 40°54'4.00"N, 119°19'59.00"W and about two miles north of Fly Ranch.

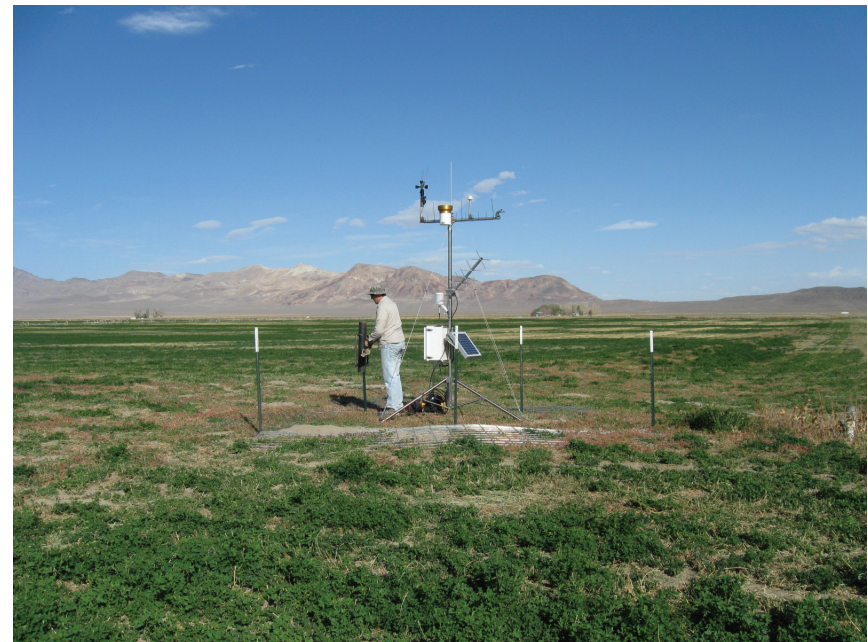
This PDF—a supplement to the LAGI 2020 Fly Ranch design guidelines document—provides a summary of the weather data collected at this WRCC weather station.

For complete information and datasets not included in this summary, including barometric pressure, dew point, relative humidity, and soil moisture, please go to:

<https://wrcc.dri.edu/cgi-bin/rawMAIN.pl?nvnhua>.

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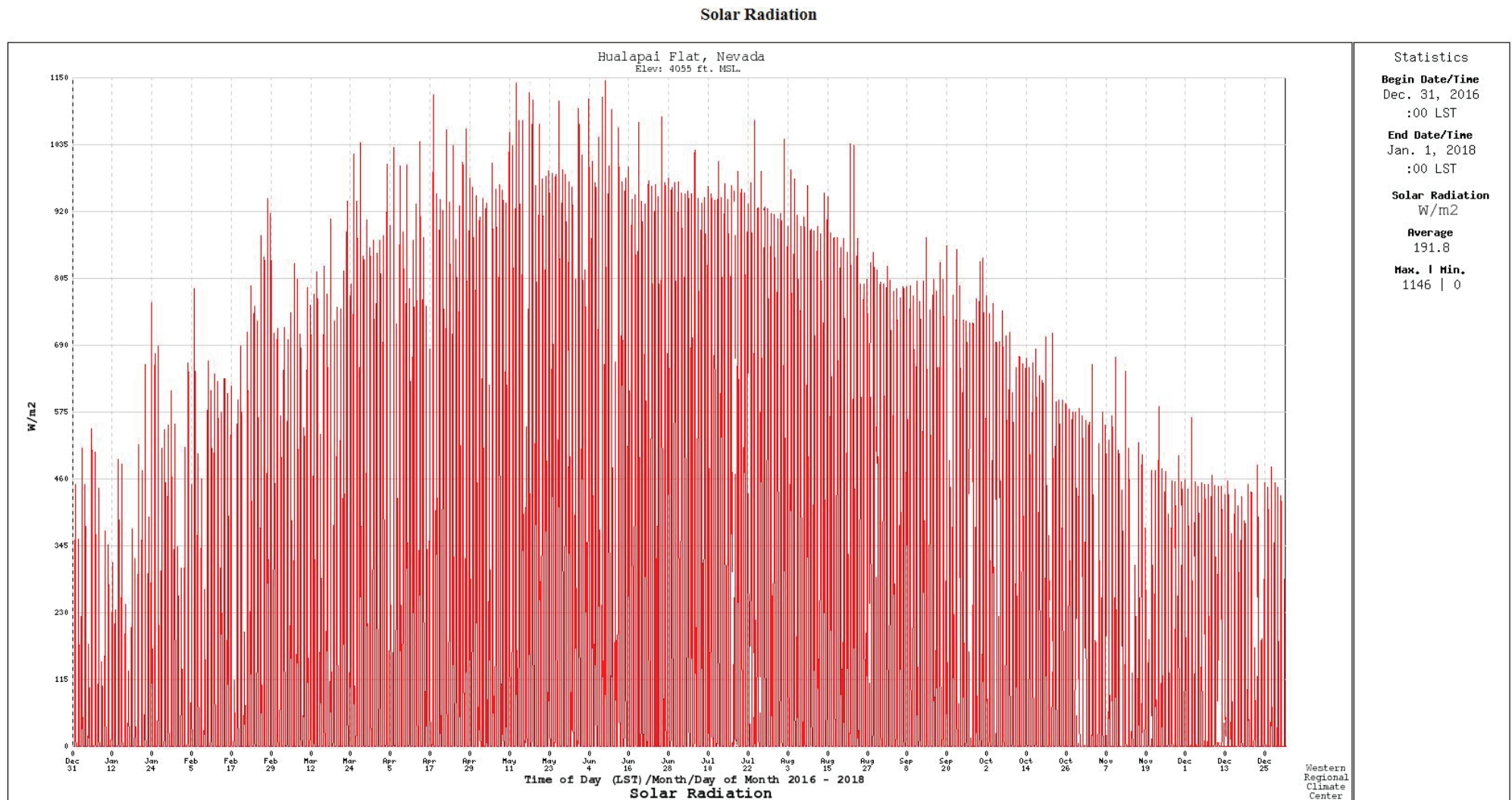
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View looking to the weather station by DRI taken October 2012.

SOLAR RADIATION

Fly Ranch gets its fair share of sunlight. The graph below was generated from the DRI database for Hualapai Flat weather station over the course of 2017, and is a representative look at solar resources available at the site.



WIND

Wind most often comes from the northwest, sometimes from the west, southeast, and southwest, rarely from due north or south, and almost never from the northeast. The strongest gusts come from the southwest.

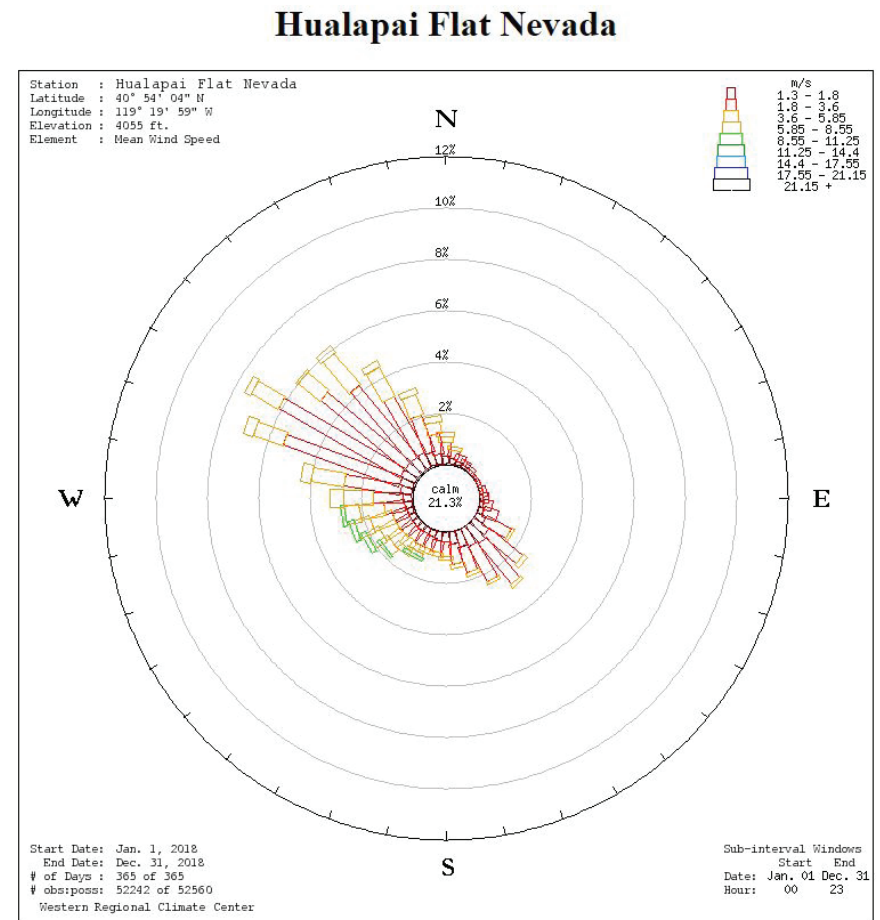
With winds below 1.3 meters per second (m/s) more than 20% of the year, Fly Ranch is not the windiest of places on Earth, but that doesn't mean wind harvesting solutions shouldn't be considered. In fact, winds can exceed the cut-in speed* of many turbines for a third of the year.

* The speed at which turbines begin to convert kinetic energy into electrical energy (around 3 m/s)

Hualapai Flat Nevada - Wind Frequency Table (percentage)

Latitude : 40° 54' 04" N	Start Date : Jan. 1, 2018										Sub Interval Windows							
Longitude : 119° 19' 59" W	End Date : Dec. 31, 2018										Start				End			
Elevation : 4055 ft.	# of Days : 365 of 365										Date Jan. 01				Dec. 31			
Element : Mean Wind Speed	# obs : poss : 52242 of 52560										Hour 00				23			
(Greater than or equal to initial interval value and Less than ending interval value.)																		
Range (m/s)	N	NNE	NE	ENE	E	ESE	SE	SSE	S	SSW	SW	WSW	W	WNW	NW	NNW	Total	
1.3 - 1.8	0.6	0.3	0.2	0.2	0.3	0.6	1.8	1.5	0.9	0.6	0.5	0.5	0.8	1.2	1.4	1.2	12.7	
1.8 - 3.6	1.1	0.5	0.3	0.3	0.5	1.6	4.1	2.7	1.4	1.1	1.1	1.4	2.9	10.6	8.9	4.0	42.5	
3.6 - 5.85	0.6	0.2	0.0	0.1	0.2	0.2	0.4	0.3	0.3	0.5	1.1	1.9	2.6	2.8	3.1	2.1	16.2	
5.85 - 8.55	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.6	1.3	1.2	0.7	0.5	0.6	5.7	
8.55 - 11.25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.2	0.0	0.0	0.1	1.2	
11.25 - 14.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.3	
14.4 - 17.55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
17.55 - 21.15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
21.15 -	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total(%)	2.8	1.1	0.5	0.6	1.0	2.5	6.3	4.5	2.7	2.6	3.8	5.7	7.6	15.4	13.8	8.0	78.6	
Calm (<1.3)																	21.3	
Ave Speed	3.7	3.2	3.1	3.2	3.2	2.8	2.6	2.6	3.0	4.0	4.9	5.1	4.2	3.3	3.2	3.5	2.7	

The wind rose diagram and frequency table on this page were generated from the DRI database for Hualapai Flat weather station. They provide a visual summary of wind activity over the course of the year 2018.



PRECIPITATION

Rainfall varies year to year with greatest accumulations in the spring. The graphs on this page were generated from the DRI database for Hualapai Flat weather station for the years 2015, 2017, and 2018*. 2015 was a dry year, as it was for many western states.

Precipitation in the Granite Range to the west of the site accumulates as snow pack throughout the fall and winter. Spring runoff from the Granite Range down and across Fly Ranch brings a substantial amount of additional water onto the site by way of a series of washes that empty into the Hualapai flat.

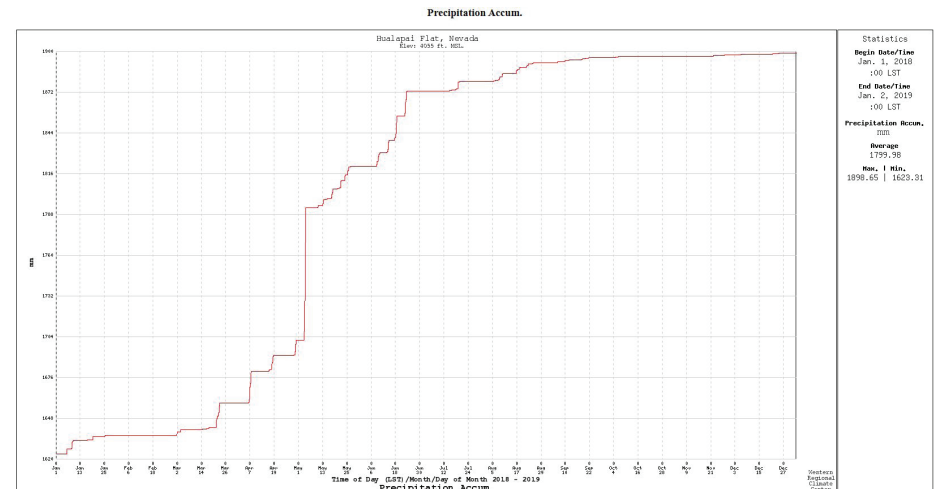
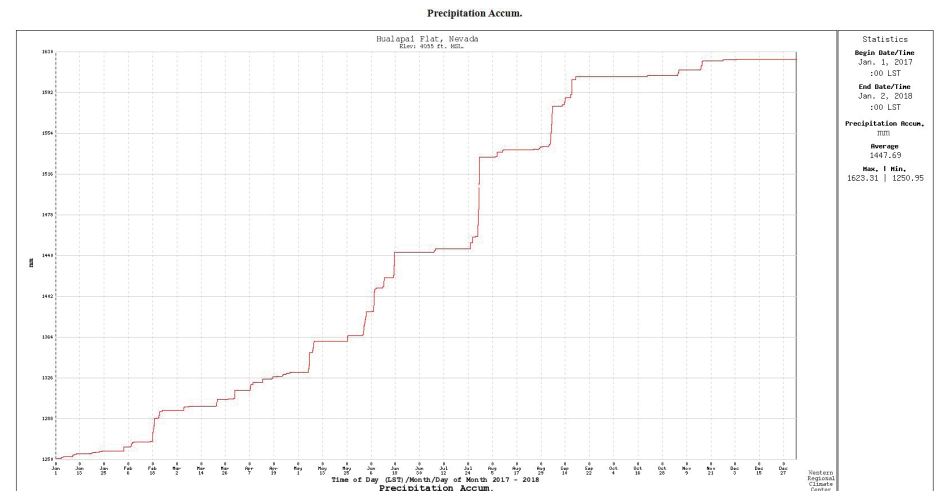
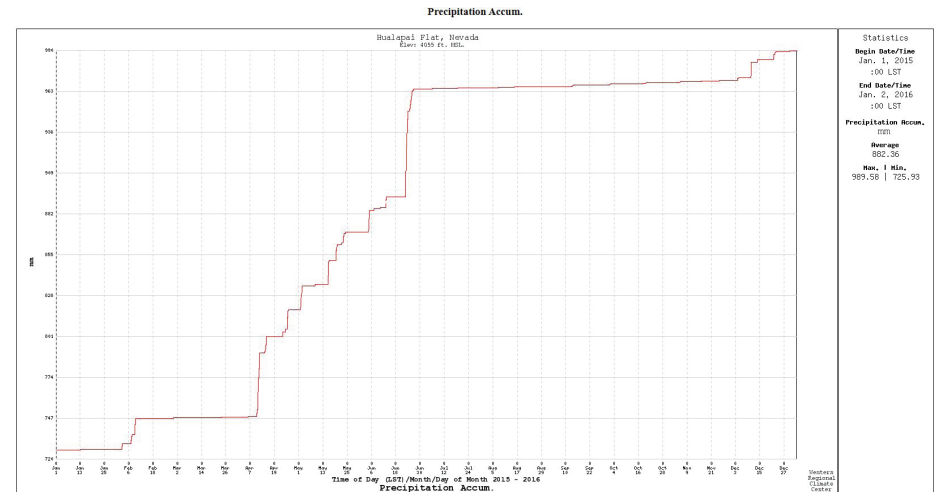
With nowhere to flow once it reaches the flat basin of Hualapai, the spring runoff saturates the alkalai mud and brings to life a seasonal ecosystem of fairy shrimp and other simple organisms.

Statistics
Begin Date/Time
 Jan. 1, 2015
 :00 LST
End Date/Time
 Jan. 2, 2016
 :00 LST
Precipitation Accum.
 mm
Average
 882.36
Max. | Min.
 989.58 | 725.93

Statistics
Begin Date/Time
 Jan. 1, 2017
 :00 LST
End Date/Time
 Jan. 2, 2018
 :00 LST
Precipitation Accum.
 mm
Average
 1447.69
Max. | Min.
 1623.31 | 1250.95

Statistics
Begin Date/Time
 Jan. 1, 2018
 :00 LST
End Date/Time
 Jan. 2, 2019
 :00 LST
Precipitation Accum.
 mm
Average
 1799.98
Max. | Min.
 1898.65 | 1623.31

* Irregularities in the data from this weather station during the year 2016 makes that year's graph unreliable.



AIR TEMPERATURE

Typical of a high desert climate, it gets very hot and very cold at Fly Ranch, sometimes both in the same day. Summer temperatures can exceed 38 °C (100 °F) and winter nights often dip below -10 °C (14 °F).

* As with the precipitation data, you might find some errant entries in the air temperature data prior to 2016.

Ave Air Temperature

