

Uranerz Energy Corporation, Nichols Ranch ISR Project, Meteorological and Climatological Comparisons for 2nd Draft License Condition 12.7

While processing the license application during the past few years, NRC raised several questions regarding the characterization of local meteorological/climatological conditions at the proposed Nichols Ranch ISR Project. More specifically, NRC's interest was focused on characterizing site conditions by using 12 months of data from an on-site meteorological station. In response to NRC's RAIs, Uranerz provided detailed, long-term meteorological and climatological data and discussions from sources which included the National Weather Service (NWS) Station in Gillette, (which is less than 50 miles northeast of the site); Antelope Coal Company's on-site weather station near Wright, Wyoming (21 miles east of the site); Kaycee, Wyoming (35 miles west-southwest of the site); and Midwest, Wyoming (25 miles south-southwest of the site). In addition to all of this information, MILDOS modeling was completed using atmospheric stability data from three locations: NWS data from Gillette covering a period from 1996 through 2005; Antelope weather station data covering a period from 1987-2006; and most importantly, data from North Butte (now known as Cameco North Butte project) weather station which covered a 12 month period from 1978 to 1979. The importance of the North Butte data is that the station was very much in the vicinity of the Nichols Ranch ISR Project. The following excerpt from the RAI Response provides a brief reminder of the former weather station.

“The atmospheric stability data was established from an on-site meteorological station that was located very near the Hank/Nichols project area. The station was established to develop on-site stability data in support of the “old Uranerz” North Butte NRC license application, which was approved by NRC. The distance between the former North Butte project site and the Hank site is only about one mile, and the distance to the Nichols site is approximately 5 miles. Because of the very short distance involved, atmospheric stability data from this station is certainly appropriate to use for MILDOS modeling at the Hank and Nichols project sites. Lastly, and perhaps more importantly, there is no evidence to suggest that there is some unique meteorological or climatological condition in the Hank and Nichols area that so drastically departs from Gillette, North Butte and Antelope that significant differences would appear in estimated doses generated by the MILDOS model.

The meteorological station was operated for a full year (October 1978 through September 1979). The data set included hourly average wind speed, wind direction and sigma theta values. The instruments were set at an elevation of 10 meters above the ground surface. Following EPA Guidance on Air Quality Modeling (1986), the data were processed to produce hourly stability classifications.”

In the RAI Response, Uranerz provided the results from the three MILDOS runs using the data sets listed above. Again, as a brief reminder, the table below provides a direct comparison of the MILDOS estimates for boundary locations at the Nichols Ranch Unit and Hank Unit. A review of the table not only shows that all three data sets predict doses well below the 100 mrem limit, it shows tight and consistent agreement with predicted doses by direction/location. The slightly higher estimates for the North and South locations, based on Gillette data, comes as no surprise when a comparison is made of the wind roses for Gillette, Antelope and North Butte.

Total Effective Dose Commitment at Site Boundary Locations (Highest 3 Years from MILDOS Model Runs)

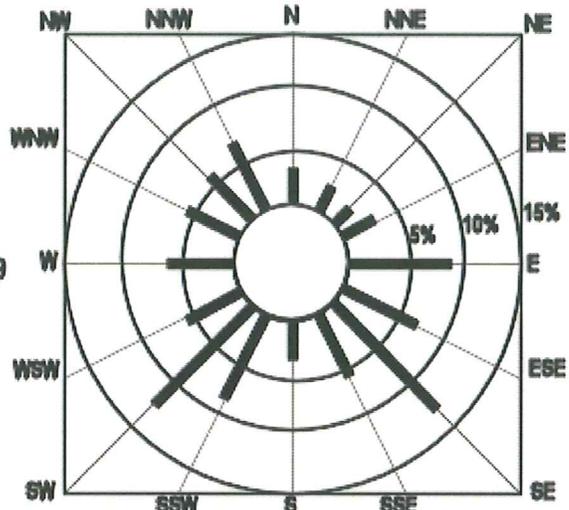
	Antelope Weather Station (1987-2006)	Gillette, WY Weather Station (1996-2005)	North Butte Weather Station (1978-1979)
	TEDE mrems/Year	TEDE mrems/year	TEDE mrems/year
Nichols Ranch			
North	1, 1, .7	2, 2, 2	1, 2, .9
South	.4, .4, .3	.4, .5, .3	.3, .3, .2
East	2, 2, 1	.9, .9, .6	.9, .9, .6
West	4, 4, 3	3, 3, 3	8, 8, 6
Hank			
North	.2, .4, .4	.8, .4, .4	.3, .4, .4
South	.4, .5, .4	.6, .8, .7	.3, .3, .3
East	7, 11, 9	3, 5, 5	4, 6, 5
West	1, 1, 1	1, 2, 1	3, 4, 4

Note: All values are many times lower than the 100 mrem limit on public exposure.

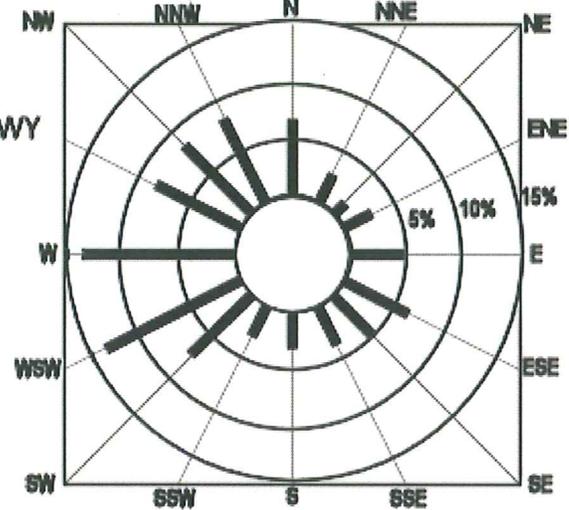
As noted above, the Gillette data base projects a slightly higher dose rate at the north boundary of the Hank and Nichols Ranch Units compared to the other two data sets. A view of the wind roses below shows that Gillette has a more pronounced wind from the south, whereas southerly winds at North Butte and Antelope are nearly identical. An overall comparison of the three wind roses shows that although Antelope and North Butte are quite similar, Gillette also has a wind profile that shares a lot in common with the other two sites

WIND ROSE COMPARISON

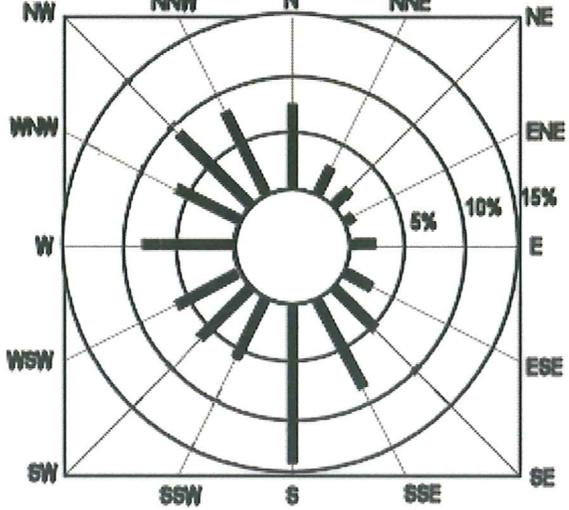
PUMPKIN BUTTES, WY
Annual Percent Frequency
of Surface Wind Direction
All stability classes
October 1978 - October 1979



ANTELOPE MINE - Wright, WY
Wind Rose 1987 - 2006



GILLETTE, WY
Annual Wind-Run Rose
1996 - 2005



To better illustrate this point, the table below compares wind direction by four cardinal points (North, South, East and West) and by composites from eight additional directions. The importance of the composites is twofold: (1) the highest percentage of wind comes from these sectors (see table below) and (2) in siting instrument locations, one must position a downwind instrument such that it is most likely to be in the path of the majority of the prevailing wind, and conversely, an upwind monitor (control) must be placed so that it receives the least amount of wind from the proposed affected area.

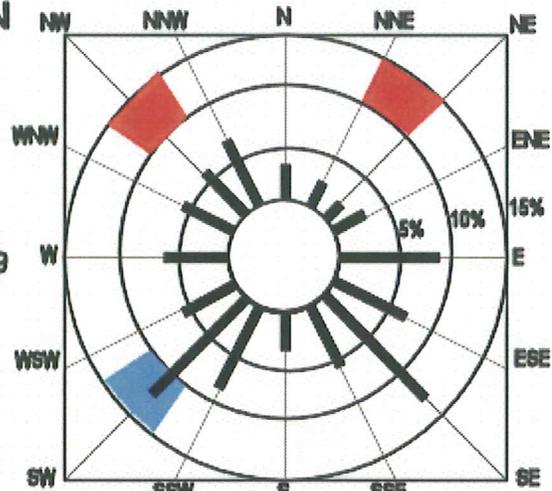
	Pumpkin Buttes (North Butte)	Wright, WY Antelope Mine	NWS Gillette, WY
Wind Direction %			
NNE, NE, ENE	8.7	7	6.5
SSE, SE, ESE	27.3	16	16.4
SSW, SW, WSW	28.2	25	21.1
WNW, NW, NNW	18.1	23	23.0
N	3.6	7	8.3
S	3.8	4	13.9
W	6.2	14	8.3
E	4.0	5	2.5

Percentages were rounded to the nearest tenth.

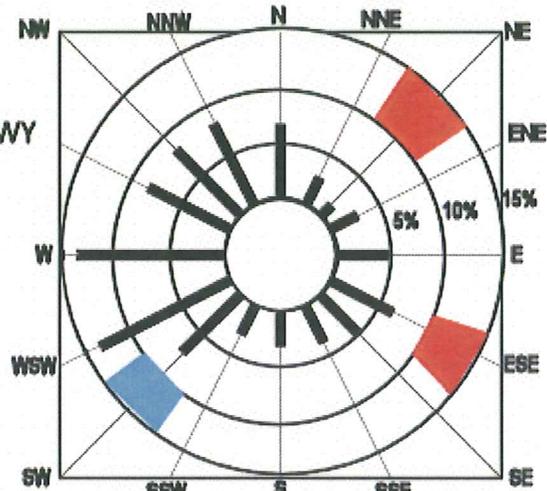
Using the data from the table above, downwind and upwind locations were plotted on the wind roses below. Points worth noting are: (1) all three data sets (Pumpkin Buttes (North Butte), Antelope and Gillette) support placing an upwind (control) monitor in a generally southwest location, (2) all three sets support placing a downwind monitor in a generally northeast location, and (3) the more pronounced SSE, SE and ESE component at Pumpkin Buttes (North Butte) supports a second downwind instrument location in a generally northwest direction.

WIND ROSE COMPARISON

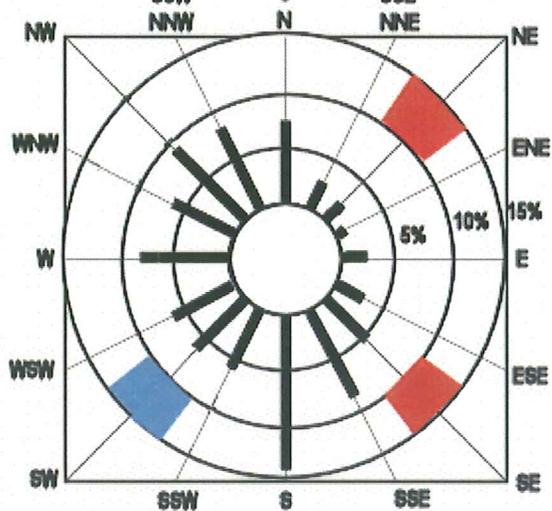
PUMPKIN BUTTES, WY
 Annual Percent Frequency
 of Surface Wind Direction
 All stability classes
 October 1978 - October 1979



ANTELOPE MINE - Wright, WY
 Wind Rose 1987 - 2006

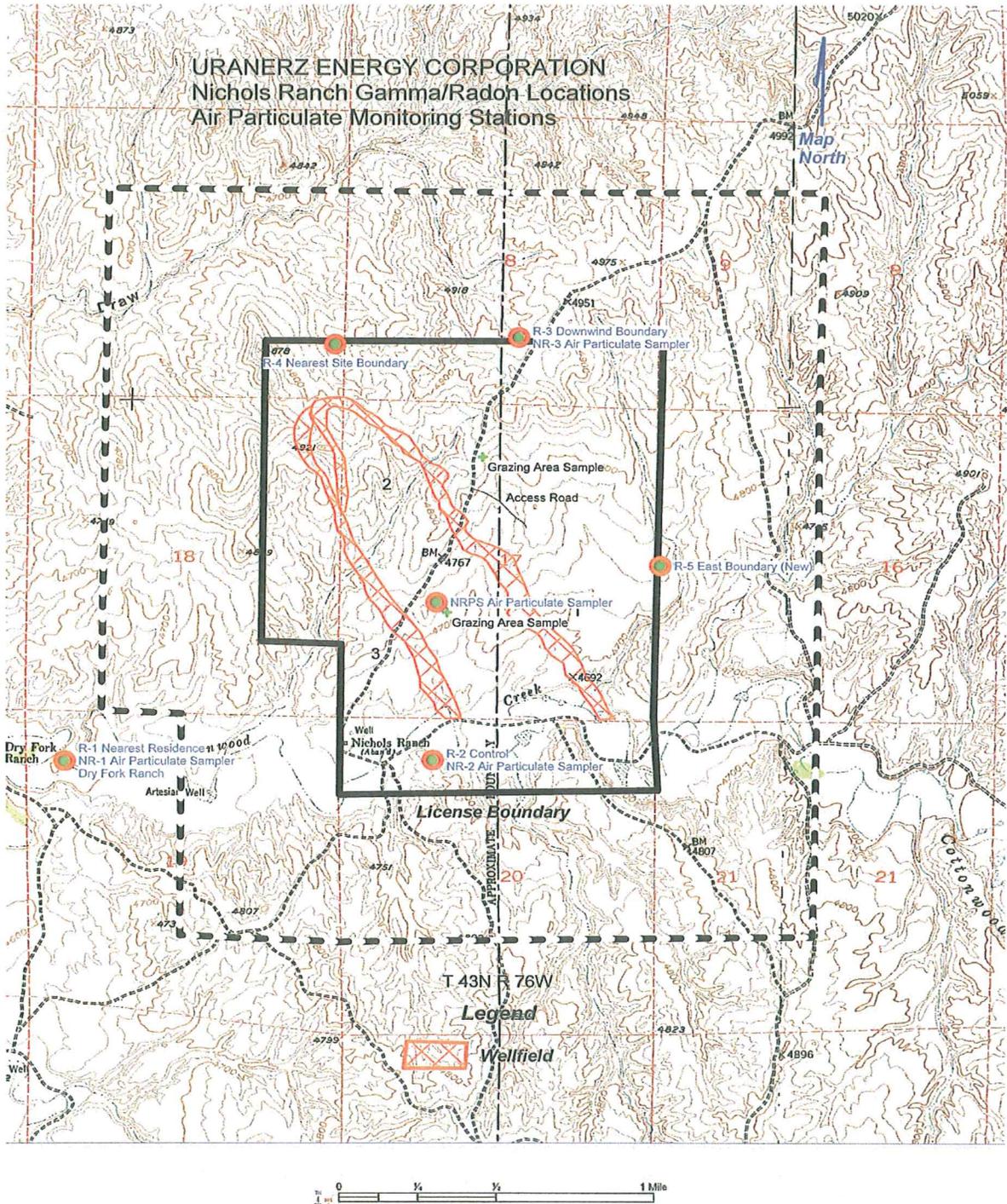


GILLETTE, WY
 Annual Wind-Run Rose
 1996 - 2005

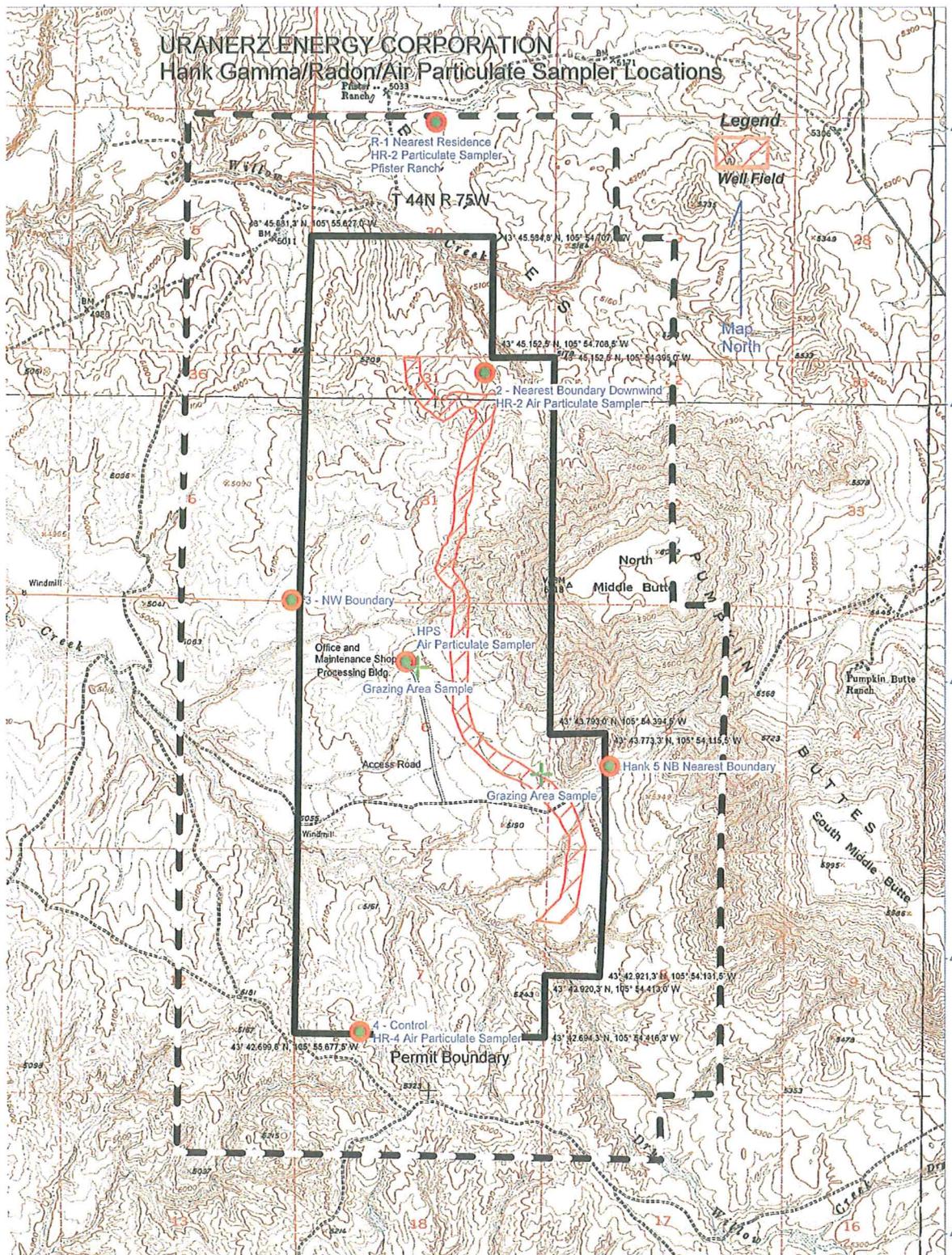


Downwind █
 Upwind █

Monitoring instruments (particulate, radon-222 and gamma) at the Hank and Nichols Ranch Units are located in conformance with the wind roses presented herein, particularly in conformance with the Pumpkin Buttes (North Butte) data. The following figures show the location of the particulate, radon and gamma monitors and the Nichols Ranch and Hank Units. These figures are also available in the Nichols Ranch ISR Project Technical Report as Figures 2-25 and 2-26.



URANERZ ENERGY CORPORATION Hank Gamma/Radon/Air Particulate Sampler Locations



Since one year's worth of monitoring has been completed at appropriate site locations based on the North Butte weather station, and since the locations have been further confirmed to be appropriate by the long term data from the weather stations at Wright and Gillette, Uranerz strongly believes there is no reasonable basis for a license condition that calls for another year's worth of data prior to start-up. The three separate MILDOS assessments that show estimated doses being orders of magnitude below the 100 mrem limit further support the position put forth by Uranerz on this license condition point. Lastly, since Uranerz has agreed to operate a weather station and compare the data with what has been provided thus far, and make any adjustments, if necessary, to the monitoring system, the license condition as currently written is excessive and has no discernible measure of added environmental or health benefit. For these reasons, Uranerz respectfully requests that the license condition be revised to eliminate the requirement that one year's worth of on-site data must be collected prior to operation.