FOURTH QUARTER 2010 DATA REPORT FOR METEOROLOGICAL MONITORING ENERGY FUELS RESOURCES CORPORATION URANIUM MILL LICENSING SUPPORT PIÑON RIDGE MILL MONTROSE COUNTY, COLORADO

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1.0 INTRODUCTION

This quarterly report provides meteorological data required for the assessment of air quality. The data collected during the Fourth Quarter 2010 augments the environmental baseline study at Energy Fuels Resources Corporation (EFR) proposed Piñon Ridge Mill (the "Site") located in Montrose County, Colorado. Twelve months of meteorological and air quality data were collected from the second quarter 2008 through the first quarter 2009 and was subsequently summarized in the Meteorology, Air Quality and Climatology Report, revision 1, dated October 9, 2009 and prepared by Kleinfelder West, Inc. (Kleinfelder). Meteorological and ambient air data were collected at five air monitoring stations (network) from the second quarter 2008 through the first quarter 2010, comprising 24 months of data which is twice the minimum required for permitting purposes. Ambient air monitoring was suspended at the end of the first quarter 2010 per the proposed changes to the monitoring program outlined in a letter to CDPHE dated March 12, 2010 and subsequently approved by CDPHE. In accordance with the approved monitoring program changes, meteorological monitoring will continue through the first quarter 2011. Ambient air and meteorological monitoring will resume prior to the start of mill construction.

The project is under the regulation of the Colorado Department of Public Health and Environment (CDPHE) and will require a mill license (radioactive material license) by CDPHE's Radiation management Program and construction permits by CDPHE's Air Pollution Control Division to construct and operate. Monitoring sites were chosen according to guidance outlined in Nuclear Regulatory Commission (NRC) Regulatory Guide (Reg. Guide) 3.63, Onsite Meteorological Measurement Program for Uranium Recovery Facilities – Data Acquisition and Reporting (NRC Reg. Guide 3.63); and Environmental Protection Agency (EPA) Meteorological Monitoring Guidance for Regulatory Modeling Applications (MMGRMA) (EPA-454/R-99-005).

The Site is located 14 miles northwest of Naturita at 16910 Highway 90, Montrose County, Colorado. The property consists of approximately 880 acres that include the Southwest ¼ of the Southeast ¼ of Section 5, all of Section 8, the North ¼ of Section 17, and the Southeast ¼ of the Northwest ¼ of Section 17, Township 46 North, Range 17 West, of the New Mexico Principal Meridian. See Figure 1 for the site layout.

2.0 MONITOR SITE DESCRIPTIONS

2.1 Selection of Monitoring Sites

Selection of meteorological monitoring station locations was based on the siting criteria set forth in NRC Reg. Guide 3.63. The monitoring locations were selected near the Site boundaries. Wind direction is predominantly from northwest and from the southeast depending on time of day due to the presence of a down-valley/up-valley flow through the area.

The two meteorological monitoring locations are discussed below:

Air Monitoring Site #1: This location is also referred to as Met Site 1 and is located near the northern boundary of the Site. This location includes the 10 meter (10m) meteorological tower.

Air Monitoring Site #2: This location is also referred to as Met Site 2 and is located near the eastern boundary of the Site. This location includes the 30 meter (30m) meteorological tower.

2.2 Locations

The Site is located at 16910 Highway 90, Montrose County, Colorado. See Table 1 and Figure 1 for locations of the meteorological monitoring sites.

Table 1
Meteorological Site Locations

Site ID	UTM Zone 12 (NAD83)	
	Easting	Northing
Met Site 1 (North Site) – 10m Tower	695211.43	4237487.24
Met Site 2 (East Site) – 30m Tower	695930.42	4235452.56

3.0 DATA COLLECTION AND COMPLETENESS

According to the Prevention of Significant Deterioration (PSD) regulations, the data recovery goal for meteorological data is 90 percent data recovery per quarter. Meteorological data were collected continuously at Met Sites 1 and 2 from October 1 to December 31, 2010 and are reported in Appendix A. EPA Air Quality System (AQS) data qualifiers were used to flag invalid data. Data qualifiers used for meteorological data this quarter include: BA – Maintenance/Routine Repairs, AQ – Collection Error, AZ – Audit and IL – Seasonally Out of Service.

Weekly and monthly checks were performed on meteorological equipment at each met site according to standard operating procedures (SOPs) presented in the Energy Fuels Resources Corporation Uranium Mill Licensing Support Ambient Air Monitoring Plan, Piñon Ridge Mill Site, 2008.

Met Site 1 includes the 10m tower and the following parameters are measured based on EPA MMGRMA guidance:

- wind speed, wind direction, and sigma theta
- vertical wind speed,
- temperature,
- relative humidity,
- delta temperature,
- barometric pressure,
- solar radiation,
- precipitation, and
- evaporation.

At the 10m level, wind speed, wind direction, sigma theta, vertical wind speed, and delta temperature are measured. At the 2m level, temperature, relative humidity, delta temperature, barometric pressure, and solar radiation are measured. At the ground level, precipitation and evaporation are measured.

Met Site 2 includes the 30m tower and the following parameters are measured based on EPA MMGRMA guidance:

- wind speed, wind direction, and sigma theta,
- vertical wind speed,
- temperature,
- relative humidity,
- delta temperature,
- barometric pressure, and
- solar radiation.

At the 30m level, wind speed, wind direction, sigma theta, vertical wind speed, and delta temperature are measured. At the 2m level, temperature, relative humidity, delta temperature, barometric pressure, and solar radiation are measured.

Sigma theta values for both met sites are calculated from wind monitor readings. Wind gusts are measured at both of the met sites. The measurement indicates the speed of the gust based on a 3-second average of the wind speed, along with the gust direction and time of the gust.

Data recovery was calculated for each parameter at both of the meteorological sites. As shown in Table 2, data completeness at Met Site 1 was between 99.8 and 100.0 percent for all parameters except evaporation, which was at 92.5 percent. Data recovery at Met Site 2, also shown in Table 2, was between 99.5 and 99.6 percent for all parameters. All parameters at both sites exceeded the 90 percent data recovery goal. The reduction in evaporation data completeness was due to invalidation of data during several extended precipitation events in October, the only month the evaporation pan was in service during the fourth quarter 2010.

Table 2
Data Recovery for Meteorological Parameters

Meteorological Parameter	Data Recovery Met Site 1	Data Recovery Met Site 2
Wind Speed	100.0%	99.6%
Wind Direction	100.0%	99.6%
Sigma Theta Wind	100.0%	99.6%
Vertical Wind Speed EPS Avg	100.0%	99.6%
Vertical Wind Speed EPS Std	100.0%	99.6%
Vertical Wind Speed CFT Avg	100.0%	99.6%
Vertical Wind Speed CFT Std	100.0%	99.6%
2m Temperature	100.0%	99.5%
10m Temperature	100.0%	N/A
30m Temperature	N/A	99.5%
DeltaT Avg	100.0%	99.5%
Precipitation Total	99.8%	N/A
Relative Humidity Avg	100.0%	99.6%
RH Temperature Avg	100.0%	99.6%
Barometric Pressure	100.0%	99.6%
Solar Radiation Avg	100.0%	99.6%
Evaporation Level Avg	92.5%	N/A
Gust Speed	100.0%	99.6%
Gust Direction	100.0%	99.6%
Gust Time	100.0%	99.6%

N/A – Not Applicable. Sensors for 10-meter Temperatures, Evaporation, and Precipitation were not installed at Met Site 2. Sensors for 30-meter Temperature were not installed at Met Site 1.

4.0 DATA ANALYSIS

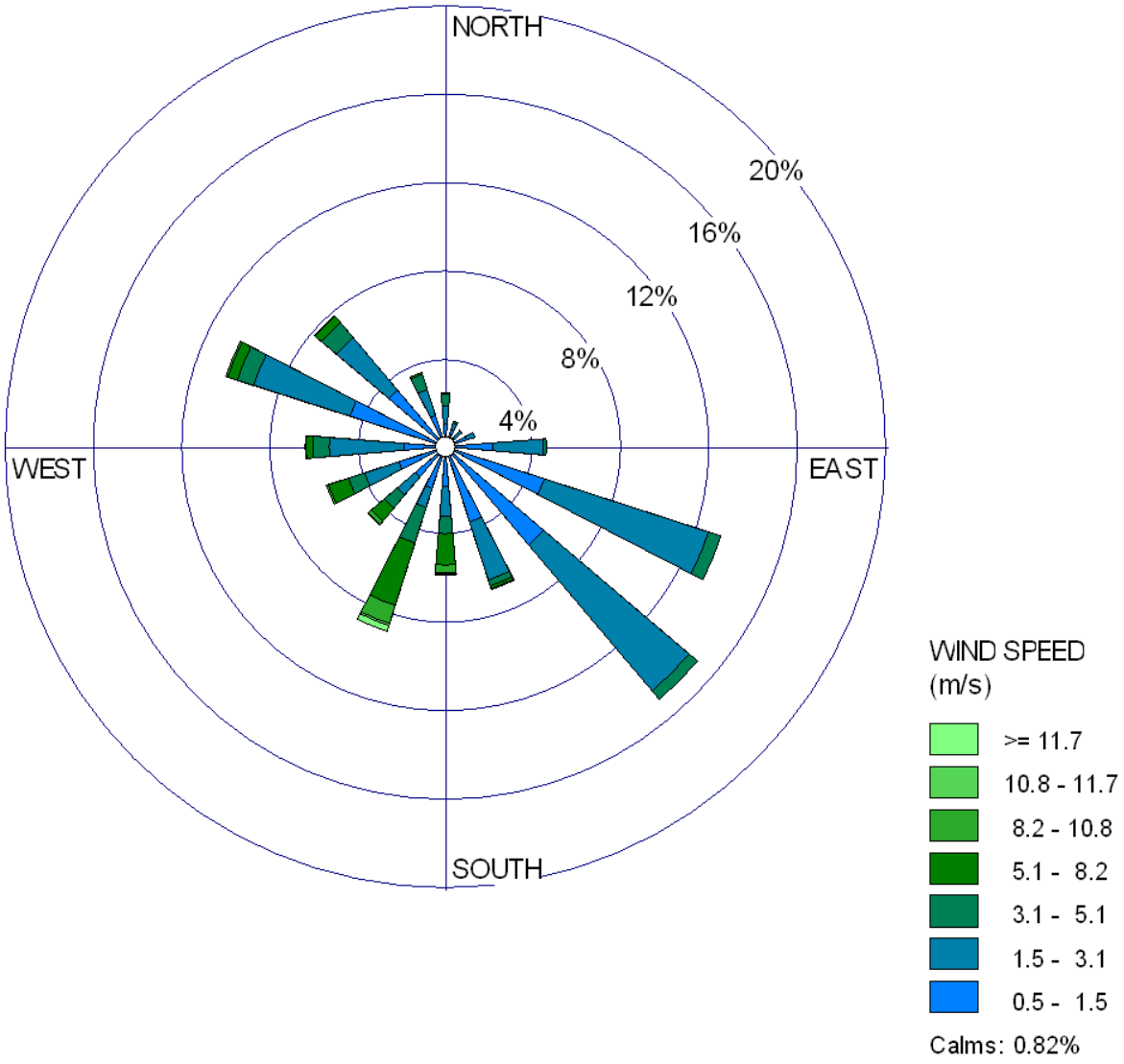
The monthly averages of meteorological parameters are summarized in Table 3.

Table 3
Monthly Average Meteorological Parameters

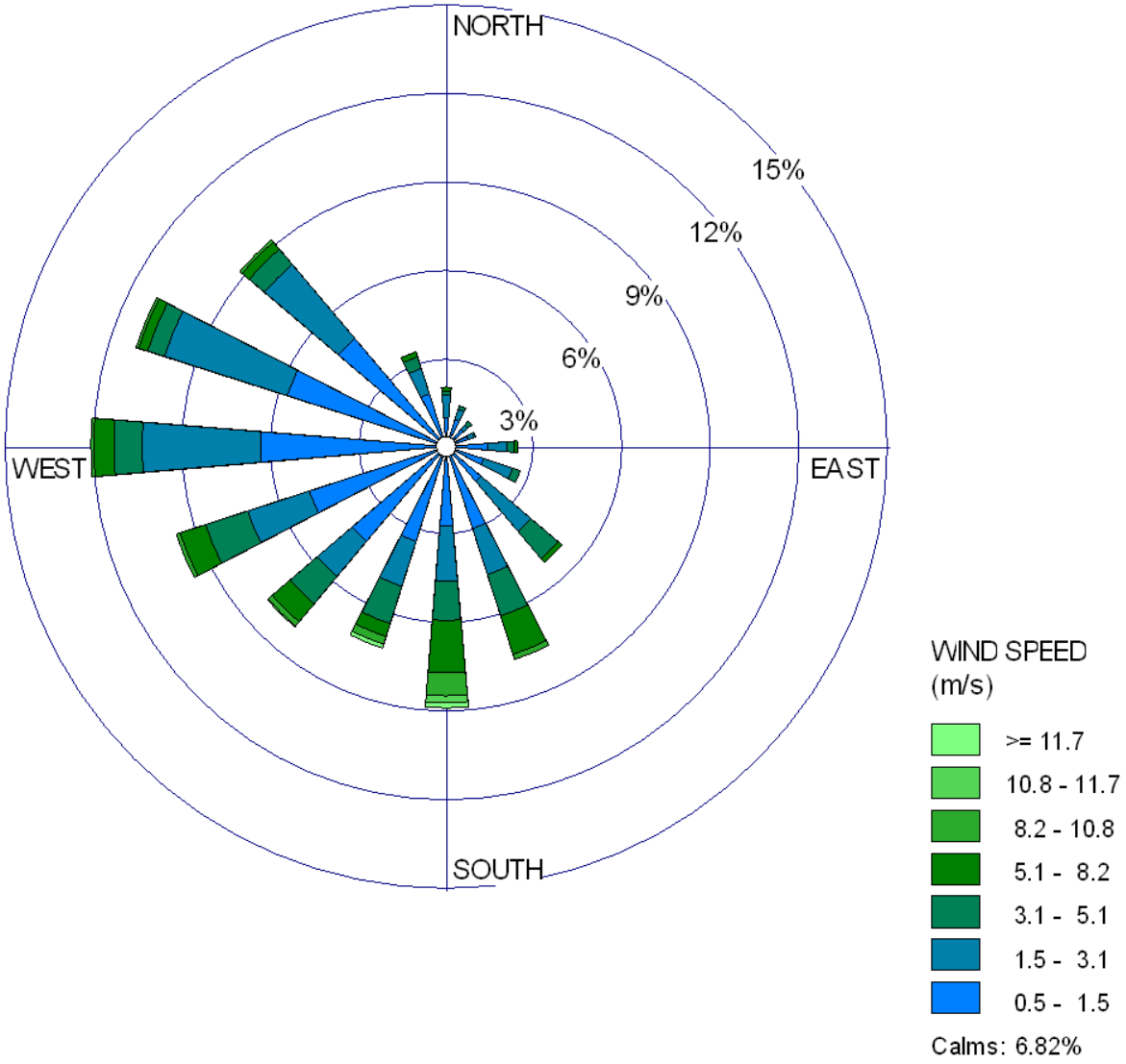
	October		November		December	
Meteorological Parameter	**Met Site 1**	**Met Site 2**	**Met Site 1**	**Met Site 2**	**Met Site 1**	**Met Site 2**
Wind Speed (m/s)	2.48	2.42	2.56	2.31	2.25	2.14
Wind Direction (deg)	180.95	247.76	181.07	237.11	193.85	239.04
Sigma Theta Wind	28.16	28.68	28.28	31.60	29.12	29.48
Vertical Wind Speed EPS (cm/s)	1.88	6.53	1.65	5.05	1.15	4.21
Vertical Wind Speed EPS Std	16.24	30.85	17.30	35.77	14.30	31.30
Vertical Wind Speed CFT (cm/s)	5.99	13.23	7.37	10.70	7.19	10.70
Vertical Wind Speed CFT Std	17.33	32.37	18.67	37.70	15.25	32.49
2m Temperature (ºC)	11.35	11.85	2.08	2.61	1.33	1.88
10m Temperature (ºC)	12.11	N/A	2.93	N/A	2.17	N/A
30m Temperature (ºC)	N/A	12.99	N/A	3.80	N/A	2.94
DeltaT (ºC)	0.76	1.14	0.85	1.19	0.83	1.06
Relative Humidity (%)	51.36	49.06	56.90	53.59	70.79	67.69
RH Temperature (°F)	53.08	54.14	36.46	37.54	35.00	36.12
Barometric Pressure (in. Hg)	24.70	24.62	24.64	24.56	24.60	24.52
Solar Radiation (W/m^2)	173.16	139.71	123.27	119.72	77.75	74.83
Gust Speed (m/s)	5.27	5.36	5.54	5.61	4.86	5.02
Gust Direction (deg)	178.56	255.51	169.80	239.32	184.74	248.91
Total Precipitation (in.)	1.56	N/A	0.76	N/A	1.13	N/A
Total Evaporation (in.) (1)	3.38	N/A	N/A	N/A	N/A	N/A
Average Daily Evaporation (in.) (1)	0.11	N/A	N/A	N/A	N/A	N/A

(1) The evaporation pan was removed from service on November 1, 2010 for the winter.

The wind roses for Met Sites 1 and 2 are shown below. As can be seen in the wind rose below, the wind direction at the 10m tower site (Met Site 1) is predominantly from the southeast, with less frequent, yet still prominent northwest and southwest components. The southeast/northwest wind directions depict the down-valley/up-valley flow through the area. The wind direction at the 30m tower site (Met Site 2 wind rose, below) is distributed predominantly from the west with a significant south component.



Met Site 1: 10m Wind Rose



Met Site 2: 30m Wind Rose

5.0 QUALITY ASSURANCE PROGRAM

5.1 Calibrations

Calibrations of meteorological instruments are performed semi-annually and were not performed in the fourth quarter 2010.

5.2 Independent Audit Program

Independent auditing on the particulate matter equipment and meteorological instruments was performed by IML on October 27, 2010. A copy of the IML Quality Assurance Audit Report is included in Appendix B.

5.3 Internal Quality Control Procedures

In the event of any operational errors a corrective action procedure is implemented. The quality assurance manager for the site will investigate the cause and effect of the incident, take corrective action, and prepare a letter to the CDPHE Air Pollution Control Division (APCD) and the Radiation Management Unit (RMU), as necessary. No operational errors occurred in the fourth quarter 2010.

6.0 PERSONNEL

Project staff and their respective roles are detailed in Table 4. The overall project organization is shown schematically in the Project Organization Chart below.

Program administration, management, and quality assurance is performed by Energy Fuels Resources personnel. The Monitoring Team Leader will provide onsite oversight and will assist the field team with technical, operational, or other project-related issues. Meteorological equipment calibrations and audits and ambient air monitoring audits are performed by IML Air Science. Technical support is provided by Kleinfelder (KLF).

Project Organization Chart

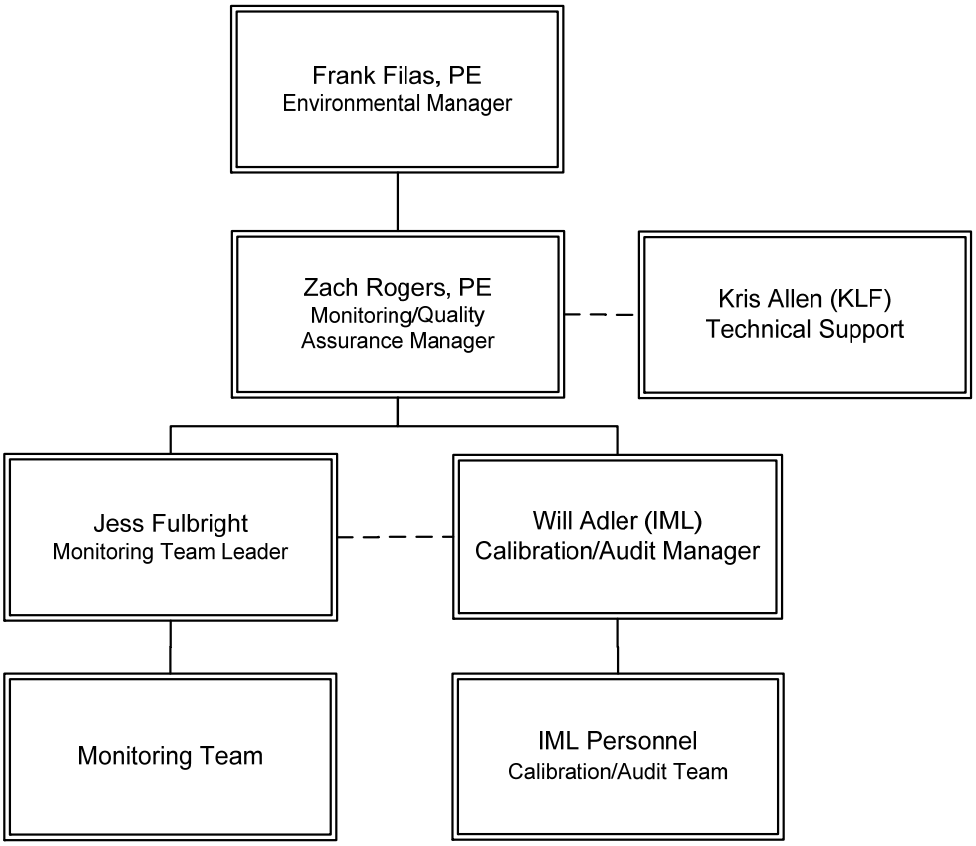


Table 4
Roles and Responsibilities

Name	Project Role	Responsibilities	Experience
Frank Filas, PE	Environmental Manager	Program Management	Engineering, Licensing, Operations Management
Zach Rogers, PE	Monitoring/Quality Assurance Manager	Project Management, Quality Assurance, Report Preparation	Project Management, Field Operations, Air Quality, Quality Control, Meteorology
Jess Fulbright	Monitoring Team Leader/ Health & Safety Officer	Field Operations Management, Sampling, Health & Safety Compliance	Field Operations, Health & Safety Compliance
EFR Personnel	Monitoring Team	Sampling	Field Operations
Will Adler (IML)	Calibration/Audit Project Manager	Project Management, Field Work/Calibration/ Audit	Project Management, Meteorology, Air Quality, Ambient Air Quality Modeling
IML Personnel	Calibration/Audit Team	Field Calibrations and Audits	Meteorology, Air Quality, Ambient Air Quality Modeling
Kris Allen, EIT (KLF)	Technical Support	Field Management, Air Quality Project Management	Air Quality, Field Management, Meteorology

7.0 STANDARDS AND REFERENCES

Colorado Department of Public Health and Environment (CDPHE), 2001. Ambient Air Monitoring Requirements for the Air Pollution Control Division of the Colorado Department of Public Health and Environment, Technical Services Program Air Pollution Control Division, April.

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Kleinfelder West, Inc., 2009. Meteorology, Air Quality and Climatology Report, revision 1. October 9.

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U.S. Nuclear Regulatory Commission Regulatory Guide, Office of Nuclear Regulatory Research, Regulatory Guide 3.63 – Onsite Meteorological Measurement Program For Uranium Recovery Facilities – Data Acquisition and Reporting, March 1988.

FIGURES

Figure 1 – Site Layout

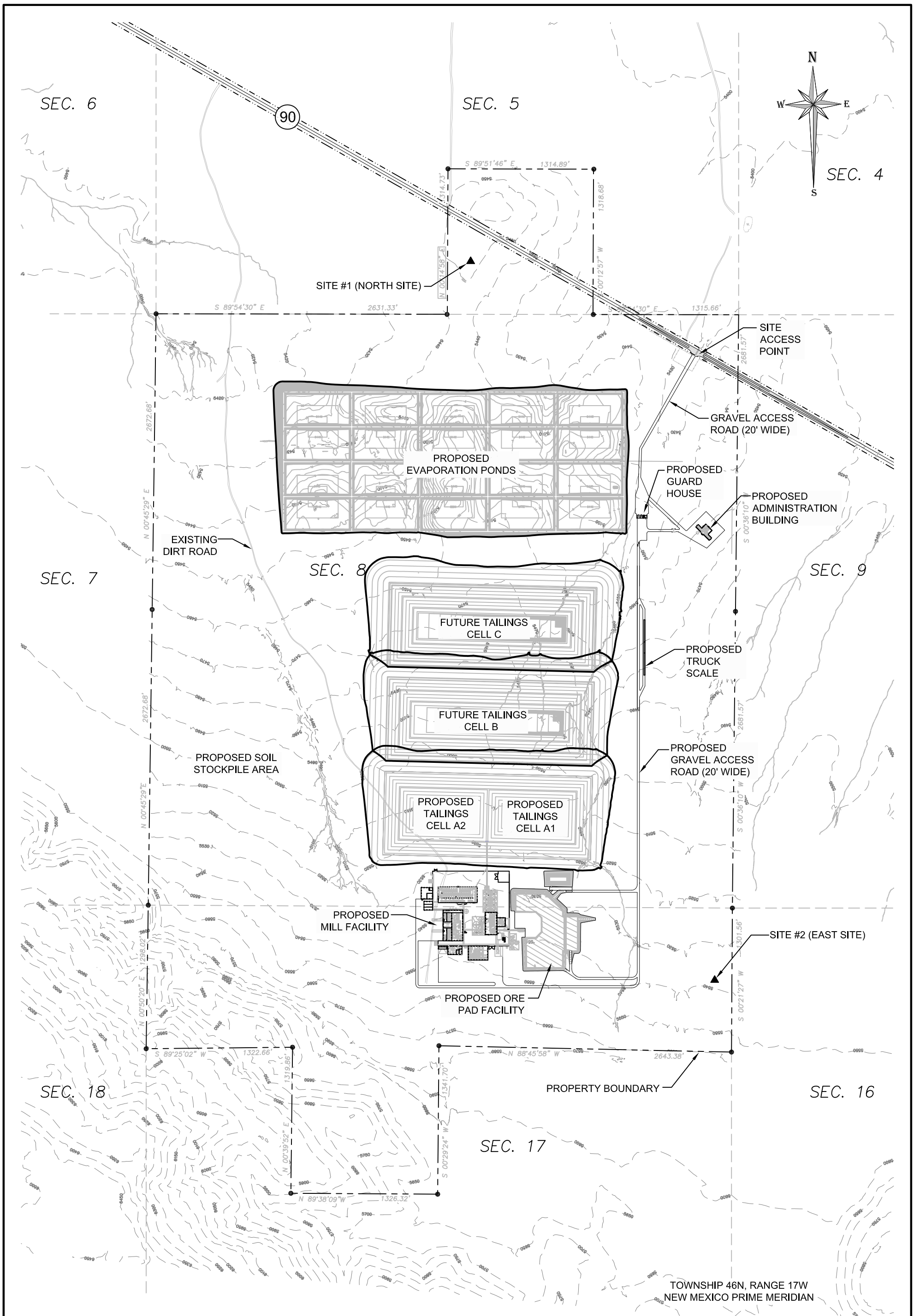

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FIGURE 1

PIÑON RIDGE MILL

METEOROLOGICAL SITE LOCATIONS

Scale	Created	Drawn by
1" = 800'	December 21, 2010	ZTR

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