Uranerz
ENERGY CORPORATION

February 19, 2014

Attn: Document Control Desk
Director, Office of Federal and State Materials and
Environmental Management Programs
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

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RE: Uranerz Energy Corporation, Nichols Ranch Project, Source Materials License SUA-1597, Docket No. 40-9067, License Condition 12.8 Request for Additional Information Response

Dear Director and Deputy Director,

In a letter dated February 14, 2014, the Nuclear Regulatory Commission (NRC) requested additional information regarding Uranerz Energy Corporations (Uranerz) Source Material and Byproduct License SUA-1597 Pre-operational License Condition 12.8. Uranerz had previously submitted a response to License Condition 12.8 in a letter dated October 8, 2013. With this letter and response, Uranerz requests that the October 8, 2013 submittal be withdrawn and replaced with this letter and response.

License condition 12.8 states:

Prior to the preoperational inspection, the licensee shall provide the following information for the airborne effluent and environmental monitoring program in which it shall develop written procedures to:

12.8 A "Discuss how, in accordance with 10 CFR 40.65, the quantity of the principal radionuclides from all point and diffuse sources will be accounted for , and verified by , surveys and or/ monitoring."

12.8 B "Evaluate the member(s) of the public likely to receive the highest exposure from licensed operations consistent with 10 CFR 20.1302."

12.8 C " Discuss and identify how radon (radon-222) progeny will be factored into analyzing potential public dose from operations consistent with 10 CFR Part 20, Appendix B, Table 2."

12.8 D "Discuss how, in accordance with 10 CFR 20.1501, the occupational dose (gaseous and particulate) received throughout the entire license area from licensed operations will be accounted for, and verified by, surveys and/or monitoring."

The attached document details the methods and evaluations that Uranerz will implement to address the license condition and request for additional information. Additionally Uranerz has developed Radiation Protection Standard Operating Procedures (SOPs), submitted to the NRC on October 8, 2013 and January 14, 2014, that contains information regarding how Uranerz will comply with License Condition 12.8.

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These SOPs were reviewed by NRC Health Physics staff during the two pre-operational inspections that took place on November 18-20, 2013 and January 28-30, 2014 and were found to be adequate.

Furthermore, Uranerz is submitting with this response an Effluent Sampling Plan, RAD-LOG-39. This plan describes how Uranerz characterizes the point and diffuse sources, the monitoring methods, and the assessment for dose calculations.

Upon the NRC receiving this document, Uranerz requests that license be amended and License Condition 12.8 be removed from the license.

If you should have any questions regarding this matter or this proposed plan, please contact me by phone at 307-265-8900 or by e-mail at mthomas@uranerz.com.

Sincerely,

Mike Thomas
Vice President Regulatory and Public Affairs
Uranerz Energy Corporation

Attachment

cc: Ron Linton, Project Manager, NRC
Linda Gersey, Lead Inspector, NRC

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Uranerz Energy Corporation Nichols Ranch ISR Project
Responses to the NRC Request for Additional Information, Pre-operational License Condition 12.8, February 14, 2014.

By letter dated October 8, 2013 (UEC, 2013a), Uranerz Energy Corporation (UEC, or the licensee) submitted a response to Condition 12.8 of its Materials License SUA-1597 (NRC, 2011a). License Condition (LC) 12.8 states the following:

Prior to the preoperational inspection, the licensee shall provide the following information for the airborne effluent and environmental monitoring program in which it shall develop written procedures to:

URZ Response:

Uranerz has developed standard operating procedures for performance of all aspects of the airborne effluent and environmental monitoring program. These procedures are referenced in Attachment 1, Effluent Sampling Plan (RAD-LOG-39). ADM-SOP-08, Quality Assurance Program (QAP), covers all aspects of Uranerz's QAP including effluent monitoring program. This includes auditing, inspections, and review of data consistent with NRC Regulatory Guide 4.15.

LC 12.8(A): Discuss how, in accordance with 10 CFR 40.65, the quantity of the principal radionuclides from all point and diffuse sources will be accounted for, and verified by, surveys and/or monitoring.

URZ Response:

In accordance with 10 CFR 40.65 Uranerz performs environmental monitoring in order to account for all point and diffuse sources of radioactive material. This monitoring includes both long lived radioactive particulate air sampling and short lived (radon and its progeny) radioactive air sampling. Sampling locations are placed in areas of highest predicted effluent concentrations based upon site specific meteorological data and resulting wind roses. In 2014 Uranerz convened a Safety and Environmental Review Panel (SERP), Uranerz SERP #: SERP-1-2014, which analyzed site specific meteorological data and compared environmental air sampler locations to verify adequate placement (see Attachment 2).

In order to quantify particulates emitted from mining operations Uranerz performs environmental air sampling as required in LC 11.9 and NRC Regulatory Guide 4.14, Radiological Effluent and Environmental Monitoring at Uranium Mills. Long lived radionuclides are collected on air filtering media and radon progeny are monitored using RadTrak dosimeters as provided by Landauer Inc. Annually, Uranerz also retrieves soil samples from each environmental monitoring station. Analysis of the sampling media is performed at NVLAP accredited offsite laboratories. Once results are received, comparisons will be made to determine if results from monitoring significantly exceed design objectives.

LC 12.8(B): Evaluate the member(s) of the public likely to receive the highest exposures from licensed operations consistent with 10 CFR 20.1302.

URZ Response:

In accordance with 10 CFR 20.1302 Uranerz has identified the member of the public expected to be the maximally exposed individual. Contrary to previous submittals by Uranerz, Uranerz has since constructed workforce housing where employees may reside during off shift hours. Based on occupancy factors these off shift employees would be considered the maximally exposed members of the public.

An environmental monitoring station has been placed near the workforce housing and will quantify exposure from airborne particulates, radon and radon progeny, and gamma dose. In addition a gamma dosimeter and a RadTrak radon detector will be placed inside the living space for more accurate exposure monitoring. In order to calculate the number of hours workers' would spend in workforce housing, Uranerz has made the conservative assumption that workers' will not spend more than an average of four nights a week in workforce housing. Assuming 50 weeks worked a year and staying 12 hours each night, this would equal 2,400 hours a year. Once operations commence Uranerz may adjust this value based on employee surveys and/or additional electronic tracking software, such as Kronos.

The present plant configuration at the Nichols Ranch Unit is equivalent to a typical In Situ Recovery (ISR) satellite facility. The elution, precipitation, and drying circuits presented and approved in the license application are not installed at this time and will require a NRC pre-operational inspection before use of this equipment will be allowed. Despite not having dryer operations, Uranerz will use the near site environmental monitoring location (NR-7/NA-6) which will be used to determine the quantity of radionuclides emitted from the Central Processing Plant (CPP). This information will be used to calculate a dose to the maximally exposed individual and will be reported in the semi-annual effluent report. Changes to operations which may impact the maximally exposed individual will be evaluated annually during the ALARA review.

For clarification, as presented in a previous submittal from October 8, 2013 a MILDOS evaluation predicted a dose at location 7 – 4.5 that resulted in a dose of 119 mrem. This value was a typographical error such that the decimal point was accidentally removed when results were transferred to excel for analysis. The correct dose for location 7 – 4.5 should be 0.522 mrem/year for the maximum dose and 0.119 mrem/year when corrected to the 40 hour work week.

LC 12.8(C): Discuss and identify how radon (radon-222) progeny will be factored into analyzing potential public dose from operations consistent with 10 CFR Part 20, Appendix B, Table 2.

URZ Response:

In accordance with 10 CFR Part 20, Appendix B, Table 2, radon progeny will be factored into analyzing potential public dose from operations. With the use of RadTrak monitors at site boundary locations the results are assumed to be in equilibrium with Radon and its progeny. These results will be compared to the DAC for Radon progeny, 1E-10 uCi/mL which is based on a 50 mrem/year model. When data is reviewed, dose assessments may be used to help verify and validate data points. Justification for unusable data will be incorporated and reported in the semi-annual effluent report.

In response to discussions with NRC staff regarding controlled and uncontrolled areas Uranerz has a tracked document (RAD-LOG-35) that states where controlled and restricted areas are maintained. Controlled areas primarily reside within fenced boundaries and access points are conspicuously posted. Controlled areas also include buildings with locks which restrict access, such as header houses. Currently, the only restricted area is within the CPP where all access doors are locked. Uranerz has the authority through surface use and consent agreements with the landowner to remove unauthorized individuals present in these areas. These restrictions apply to Nichols Ranch only since construction has not commenced at the Hank Unit. With these designated controlled and restricted areas any other area is considered to be an unrestricted use area. This includes any area directly outside of the fenced CPP facility and outside of the Production Area. Taking this into consideration, an environmental air monitoring station (NR-7/NA-6) is located at the predicted highest concentration area directly outside of the fenced CPP facility for public dose assessment purposes. This monitoring location is also located next to the work force housing which is the maximally exposed member of the public.

LC 12.8(D): Discuss how, in accordance with 10 CFR 20.1501, the occupational dose (gaseous and particulate) received throughout the entire license area from licensed operations will be accounted for, and verified by, surveys and/or monitoring.

URZ Response:

In accordance with 10 CFR 20.1501 occupational doses will be calculated through monitoring of exposures from radon and its progeny, particulate radiation, and external radiation. Occupational concentration characterization occurs through various collection methods.

The first is the modified Kusnetz method for radon and its progeny. The modified Kusnetz method samples are taken as required in NRC Regulatory Guide 8.30 and is specified in Attachment 1, Effluent Sampling Plan. Inside the CPP, locations are selected based on highest predicted concentrations. These locations will be refined once operations have stabilized and an air flow study can occur with more finite data for positioning of sampling locations. Additionally, header houses and deep disposal well (DDW) buildings will be sampled at least monthly using the modified Kusnetz method.

The second method is using RadTrak or track-etch dosimeters for radon and its progeny. For the CPP facility, eight RadTraks will be placed on the fence line surrounding the CPP in order to characterize the effluents in the outdoor controlled area. In the active portion of Production Area (PA) #1, RadTraks will be placed at three surrouding Coal-Bed Methane (CBM) wells and one location on the west end of the PA #1 fence line. As development continues in PA #1, additional monitoring locations may be established. These locations are chosen based on review of on-site meteorological data. This data was determined to represent long term conditions as presented in the February 18, 2014 Uranerz SUA-1597 L.C. 12.7 license condition submittal.

Uranerz will assign workplace concentrations for radon in the Production Areas as well as the CPP surrounding fenced area for annual occupational dose assessments. Averaged concentrations taken from routine radon sampling (modified Kusnetz) will be analyzed with averaged measurements taken from RadTrak dosimeters. The analysis will compare the data points with the most conservative concentrations being applied to workers. Concentrations from header houses and surrounding CBM wells will apply to the Production Area, and likewise, CPP concentrations and surrounding fence line dosimeters will apply to facilities inside the CPP fence line. Occupancy times for DDW are predicted to be negligible and data is expected to be used for informational purposes only.

Particulate radiation concentrations will be calculated based on routine sampling of header houses, DDW buildings, and CPP as specified in NRC Regulatory Guide 8.30. That data will be analyzed with environmental air monitoring data and the most conservative values will be assigned as workplace concentrations, as described in the previous paragraph.

External radiation exposure will be assigned by personal dosimetry or, if not issued, then as work group dose. Each work group will have at least one person assigned external monitoring dosimetry and high risk work groups, such as plant operators, will have all individuals assigned personal dosimetry.

Total occupational dose or Total Effective Dose Equivalent (TEDE) will be applied to individuals summing the three sources of exposure. Occupancy factors for each area will be assigned for each work group (i.e. operators, wellfield workers, radiation safety staff...). Work performed under Radiation Work Permits will be monitored separately from the routine sampling program and the concentrations will be included in the TEDE calculation. Results will be reported to employees on an annual basis as required and summarized in the semi-annual effluent report.

Attachment 1

Effluent Sampling Plan

RAD-LOG-39

Revision Number: New
Effective Date: February 20, 2014

Document: RAD-LOG-39
Approved By: _____

Effluent Sampling Plan

Type and Location	Radionuclides	Instrumentation	Frequency	LLD/MDC	Procedures
Central Processing Plant Isotropic Analysis (at locations of highest predicted concentrations)	Particulates-U-Nat, Ra-226, Th-230, Pb-210	Radeco HD-66A, H-809VII, and H-809VI. Glass Fiber filter paper	Semiannually for two years	U-Nat= 3E-11, Ra-226= 3E-11, Th-230= 3E-13, Pb-210= 1E-11 µCi/mL	RAD-SOP-09 Airborne Radioactive Material Monitoring and Controls
Central Processing Plant Airborne Particulates (at locations of highest predicted concentrations)	Gross α	Radeco HD-66A, H-809VII, and H-809VI. Glass Fiber filter paper,	Monthly	U-Nat- 3E-12 µCi/ml	RAD-SOP-03 Operational Radiation Safety Program RAD-SOP-09 Airborne Radioactive Material Monitoring and Controls
Central Processing Plant Radon Daughter (at locations of highest predicted concentrations)	Radon Daughters	Lapel Samplers, Buck M-30 with a flow of 3LPM	Weekly Initially, afterwhich frequency is based upon regulatory guidance 8.30.	0.033 WL (Modified Kusnetz)	RAD-SOP-03 Operational Radiation Safety Program RAD-SOP-09 Airborne Radioactive Material Monitoring and Controls
Central Processing Plant (Exterior) (at locations of highest predicted concentrations)	Radon Daughters	8 RADTRAK© dosimeters surrounding the Central Processing Plant	On a six month basis	0.06 pCi/L	RAD-SOP-09 Airborne Radioactive Material Monitoring and Controls RAD-SOP-17 Radiological Effluent and Environmental Monitoring Program
Environmental Monitoring Stations License Boundary NA-2,NA-3, NA-4 (BKG), NA-5 Plant to Licensed Boundary NA-6 (near plant) NA-1 (Nearest Resident) ***Additional stations may be placed at injection and recovery spills that are reportable, since no reportable spills have occurred these are future locations******	Gamma (Located at Each Environemtnal Monitoring Station)	Landauer InLight OSL with aluminum oxide detector	Quarterly for one year	0.1mrem	RAD-SOP-17 Radiological Effluent and Environmental Monitoring Program
	Particulates-U-Nat, Ra-226, Th-230, Pb-210	F&J Specilaty Products DF-40L-AC 1 to 40 LPM, DF-30L-AC 1 to 30 LPM. Glass Fiber filter paper	Quarterly composits of weekly samples for one year	U-Nat= 1E-16, Ra-226= 1E-16, Th-230= 1E-16, Pb-210= 1E-15 µCi/mL	RAD-SOP-17 Radiological Effluent and Environmental Monitoring Program
	Radon Daughters (Located at each Environmental Monitoring Station)	RADTRAK© Type DRNF	Quarterly for one year	0.06 pCi/L	RAD-SOP-09 Airborne Radioactive Material Monitoring and Controls RAD-SOP-17 Radiological Effluent and Environmental Monitoring Program
Header House Radon Daughters (Interior) - HH-1, HH-2, HH-3	Radon Daughters	Lapel Samplers, Buck M-30 with a flow of 3LPM	Weekly Initially, after which frequency is based upon regulatory guidance 8.30.	0.033 WL (Modified Kusnetz)	RAD-SOP-03 Operational Radiation Safety Program RAD-SOP-09 Airborne Radioactive Material Monitoring and Controls
	Gross α	Radeco HD-66A, H-809VII, and H-809VI. Glass Fiber filter paper,	Initially monthly, based upon data review sampling frequency may be changed	U-Nat- 3E-12 µCi/ml	RAD-SOP-03 Operational Radiation Safety Program RAD-SOP-09 Airborne Radioactive Material Monitoring and Controls

Effluent Sampling Plan

Type and Location	Radionuclides	Instrumentation	Frequency	LLD/MDC	Procedures
Header House Radon Daughters (Exterior) - HH-1, HH-2, HH-3	Gamma	Ludlum Model 19, Thermo Eberline RO-20,	Weekly documented in the RSO weekly report	Verify less than 2 mR/hr	RAD-SOP-09 Airborne Radioactive Material Monitoring and Controls
	Radon Daughters	RADTRAK© Type DRNF	Four stations surrounding well field intitially. Changed every six months	0.06 pCi/L	RAD-SOP-09 Airborne Radioactive Material Monitoring and Controls RAD-SOP-17 Radiological Effluent and Environmental Monitoring Program
Deep Disposal Well House (Interior)	Radon Daughters	Lapel Samplers, Buck M-30 with a flow of 3LPM	Weekly Initially, after which frequency is based upon regulatory guidance 8.30.	0.033 WL (Modified Kusnetz)	RAD-SOP-03 Operational Radiation Safety Program RAD-SOP-09 Airborne Radioactive Material Monitoring and Controls
	Gross α	Radeco HD-66A, H-809VII, and H-809VI. Glass Fiber filter paper,	Initially monthly, based upon data review sampling frequency may be changed	U-Nat- 3E-12 µCi/ml	RAD-SOP-03 Operational Radiation Safety Program RAD-SOP-09 Airborne Radioactive Material Monitoring and Controls
Deep Disposal Well House (Exterior)	Gamma	Ludlum Model 19, Thermo Eberline RO-20	Weekly documented in the RSO weekly report	Verify less than 2 mR/hr	ADM-SOP-01 Routine Environemntal, Safety, and Health Inspections RAD-SOP-03 Operational Radiation Safety Program
Radium-226 Concentration in Production Fluid	U-nat, Th-230, Ra-226, Pb-210	Outside Laboratory	Quarterly for one year		RAD-SOP-17 Radiological Effluent and Environmental Monitoring Program

Effluent Sampling Plan

Objective	Group	Purpose	Dose Assessment	Decision Rule	Procedures
Evaluate Dose to the Public	Workforce Housing	Validate that dose is less than 100mrem per year	Particulate-NA-4,NA-6 Radon NR-5, NR-7, *inside workforce housing Gamma- NR-5, NR-7 *inside workforce housing	If dose is validated at well less than 100mrem per year , no further actions. If potential exists to exceed limit a dose assesment will occur to validate the data	RAD-SOP-14 Radiation Dose Assessment
	Workforce Housing	Demonstrate dose constrant rule	Particulate- NA-4, NA-6	If dose is validated at less than 10mrem per year, no further action. If potential exists to exceed limit a dose assessment will occur to validate the data.	RAD-SOP-14 Radiation Dose Assessment
Evaluate Occupational Dose	Office Worker	Demonstrate adequacy of existing programs by validating less than 10 percent. (10CFR 20.1502(a)(1)	Airborne Particulate- Semiannually Radon Daughter-consistent with Reg Guid 8.30 Gamma- data from badged office workers	If the current program consistently overestimates dose, no further action. If potential for underestimation of dose evaluate alternative in estimation of methods and or monitoring	RAD-SOP-14 Radiation Dose Assessment
	Lab Worker	Demonstrate that current program adequately assesses or overestimates dose	Airborne Particulate- Quarterly Radon Daughter-consistent with Reg Guid 8.30 Gamma- data from badged lab worker	If the current program consistently overestimates dose, no further action. If potential for underestimation of dose evaluate alternative in estimation of methods and or monitoring	RAD-SOP-14 Radiation Dose Assessment
	Well Field Development	Demonstrate that current program adequately assesses or overestimates dose	Airborne Particulate- Averages of header houses concentrations from routine sampling Radon Daughter-Averages of header concentration and surrounding wellfield RADTRAK dosimeters. Gamma- badges	If the current program consistently overestimates dose, no further action. If potential for underestimation of dose evaluate alternative in estimation of methods and or monitoring	RAD-SOP-14 Radiation Dose Assessment

Effluent Sampling Plan

Objective	Group	Purpose	Dose Assessment	Decision Rule	Procedures
Evaluate Occupational Dose	Operations	Demonstrate that current program adequately assesses or overestimates dose	Airborne Particulate- Averages of plant concentrations from routine sampling Radon Daughter-Averages of plant concentration and surrounding RADTRAK dosimeters. Gamma- badges	If the current program consistently overestimates dose, no further action. If potential for underestimation of dose evaluate alternative in estimation of methods and or monitoring	RAD-SOP-14 Radiation Dose Assessment
	ESH staff	Demonstrate that current program adequately assesses or overestimates dose	Airborne Particulate- Combinations based on occupancy times Radon Daughter-Combination based on occupancy times Gamma- badges	If the current program consistently overestimates dose, no further action. If potential for underestimation of dose evaluate alternative in estimation of methods and or monitoring	RAD-SOP-14 Radiation Dose Assessment

Attachment 2

Uranerz Energy Corporation

SERP-1-2014

Uranerz
ENERGY CORPORATION

February 3, 2014

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Re: Uranerz Energy Corporation, Nichols Ranch Project, Source Materials License SUA-1597, Docket No. 40-9067, License Condition 11.9 and 12.7

Dear Mr. Linton and Ms. Gersey,

The NRC requested additional information from Uranerz Energy Corporation (Uranerz), during the January 30, 2014 inspection, in response to License Conditions 11.9 and 12.7. Through discussion with NRC, Uranerz evaluated the existing air monitoring station locations and concluded that the additional meteorological data collected and submitted pursuant to License Condition 12.7 resulted in relocating three air monitoring stations to optimize radiological airborne monitoring consistent with License Condition 11.9.

Uranerz utilized the Safety and Environmental Review Panel (SERP) to evaluate the desired air monitoring locations. The SERP concluded and approved the new air monitoring locations which were only slightly removed from the original locations. A copy of the SERP is enclosed for the NRC staff review.

If you have any questions regarding this matter, please contact me at 307-265-8900 or by email at mthomas@uranerz.com.

Sincerely,

Mike Thomas
Vice President Regulatory Affairs
Uranerz Energy Corporation

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Environmental Air Sampling Locations SERP

Overview

The In-situ Recovery (ISR) process involves the injection of lixiviant into sub-surface aquifers to remove uranium. The lixiviant is composed of oxygen (O^2), carbon dioxide (CO^2) and bi-carbonate. The fortified lixiviant will release the uranium from the sub-surface sandstones into solution. The uranium rich solutions are then pumped from the host sandstones to surface and collected on resins in the Central Processing Plant. The solutions, minus the uranium, are re-fortified with O^2, CO^2, and bi-carbonate to be re-injected into the sub-surface sandstone where the process is repeated.

With the circulation of fluids between the processing plant and the wellfield there is a potential for emission of radionuclides into the atmosphere. Emmission of radionuclides can occur from a variety of sources, but it is important to properly place environmental samples in a variety of locations in order to properly determine the quantity and location of emitted radionuclides. Due to the potential for emission the Nuclear Regulatory Commission (NRC) has developed guidance that helps licensees determine these monitoring locations.

For baseline sampling locations a wind rose (see Appendix A) from Antelope Mine was used to determine locations. Antelope Mine is located 30 miles south-southeast of Nichols Ranch.

NRC Regulatory Guide 4.14 states the requirements for posting environmental air monitoring stations before operations begin in order to determine background levels associated with the mine site. In this regulatory guide it states that there need to be three locations at or near the boundary area, one at the nearest residence, and one background or control location. This should equal at least five monitoring locations. Uranerz established these locations in Figure 2-25 in the license application.

In response to the license application the NRC determined that locations were inadequately established and that further data was needed. This resulted in license condition 12.7 from License Number SUA-1597 which states:

"The licensee shall install a meteorological station within the license area and collect meteorological data for a period of 1 year at a data recovery rate of 90 percent prior to commencement of operations. The collection of meteorological data will continue until data are determined to be representative of long term conditions at the Nichols Ranch ISR Project. The data collected shall include, at a minimum, temperature, windspeed, and wind direction. Data submitted shall include an annual wind rose and a summary of the stability classification."

The NRC also stated in license condition 11.9:

"Radiological monitoring will be conducted for airborne particulate radioactivity and radon-222 at appropriate environmental monitoring locations in accordance with the criteria in Regulatory Guide 4.14 (as revised) during operations to demonstrate compliance with 10 CFR 20.1301, 10 CFR 20.1501 and 10 CFR Part 40, Appendix A, Criterion 7.

Consistent with Regulatory Guide 4.14 (as revised), the licensee shall establish air particulate sampling stations in the three sectors with the highest predicted radioactivity concentrations resultant from operations and co-locate radon air samplers, direct radiation and soil sampling with the air particulate sampling stations."

The licensee reviewed local meteorological data (see Appendix B)to meet requirements in license condition 12.7. This review was completed in order to determine if changes need to be made to environmental air monitoring stations. The review for proposed changes will take place under a Safety and Environmental Review Panel (SERP) to determine if proposed changes will meet the NRC requirements for sampling of air particulates and radon air samplers. Any approved changes must not change both basic health and safety requirements and basic potential environmental impacts assessed as part of the licensing process. The review panel will also take into account radiological considerations in order to maintain the As Low As is Reasonably Achievable (ALARA) principle.

Proposed Change

The proposed change to the license is to Figure 2-25 (see Appendix C) which is a map describing the location of baseline environmental air samplers. For a map of current environmental sampling locations see Appendix D. After review of on site meteorological data the licensee has determined that the three sectors with the highest predicted radioactivity concentrations resultant from operations is: 1) west of processing plant, 2) north-northeast of processing plant, and 3) south-southeast of processing plant. Taken this additional information the licensee has proposed new locations for environmental air samplers (see Appendix E). This change includes moving sample location NA-2 and NR-2 further to the east, moving sample location NA-5 and NR-6 closer to the western boundary, and also moving NA-3 and NR-3 closer to the northeast boundary. Another proposed change would be changing the background sample location from NA-2 to NA-4. These changes are to be implemented in order to ensure the licensee is in compliance with NRC Regulatory Guide 4.14 and license condition 11.9.

With the change the data would have to start as an individual data set. Results from the moved air samplers will not be able to be compared to historical data from original location, but may be compared to overall background results from baseline and pre-operational sampling.

Safety Considerations

The relocation of environmental air samplers will require lifting heavy equipment, including solar panels, batteries, and pumps. This will require the use of a Job Safety Analysis because there is not a procedure which covers the job activity. Long term there are no increased safety considerations.

Radiation Safety Considerations (ALARA Review)

The implementation of this change does not add any increased radiation hazards. This change will allow the radiation safety department more reliable data and will help the staff determine better dose considerations for members of the public.

Environmental Impact

Environmental impacts will be minimal surface disturbance. Since the stations are solar powered there will not be any further impacts from long term operations.

Wetlands

The proposed change will not have any environmental impacts.

Transportation

The proposed change does not have any long term transportation impacts.

Final Decommissioning

The proposed change will not have any impact with final decommissioning of the facility.

Air Quality Impacts

The proposed changes will help better quantify air quality impacts and will place the licensee in compliance with NRC requirements.

Ground Water Impacts

The proposed change will not have any ground water impacts.

Surface Water Impacts

The proposed change will not have any surface water impacts.

Wildlife Impacts

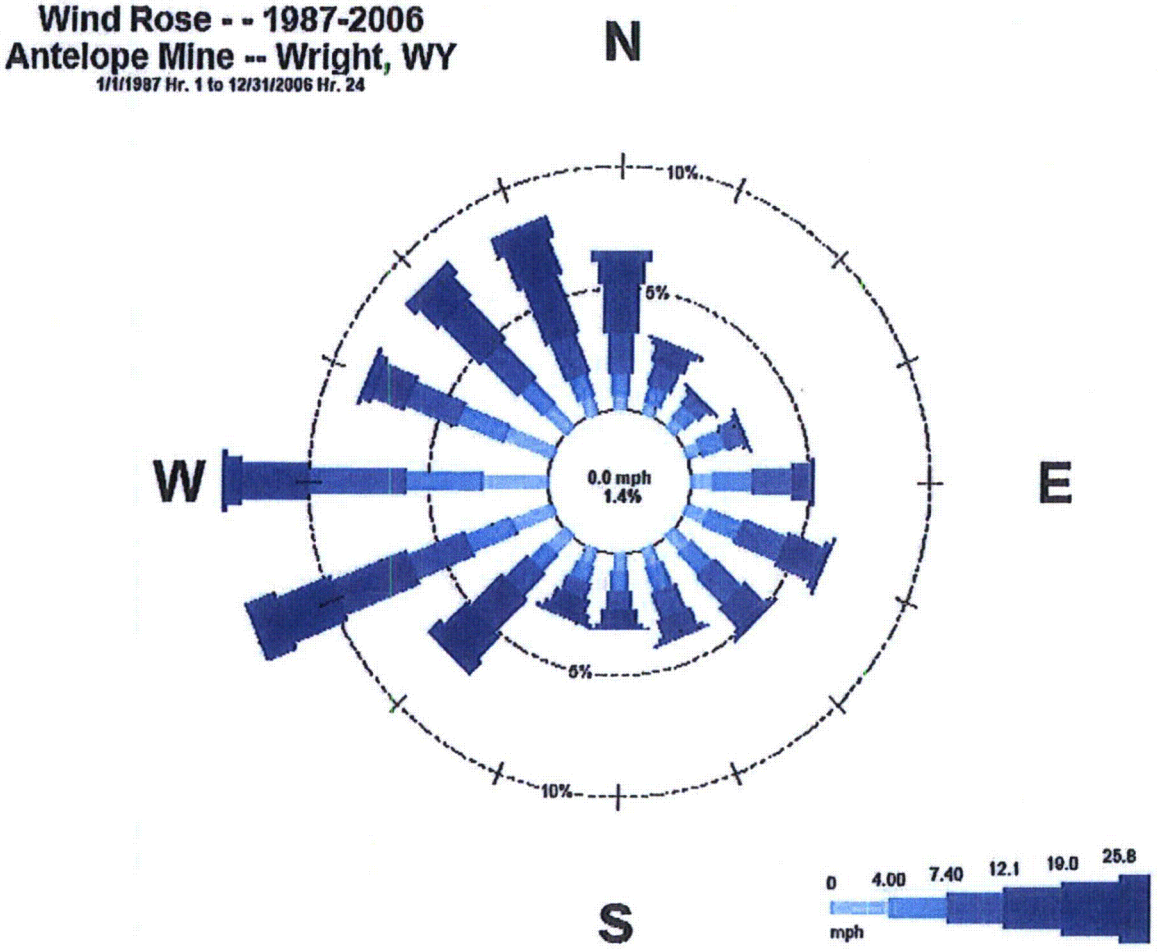
Wildlife will be prevented access through the use of cattle gates so that impacts will be kept to a minimum.

Conclusions

In order to stay in compliance with NRC requirements the licensee should approve this change. The change will allow for better data collection and more representative sampling.

APPENDIX A

Figure 2-10a
Annual Wind Rose 1987-2006 for Antelope



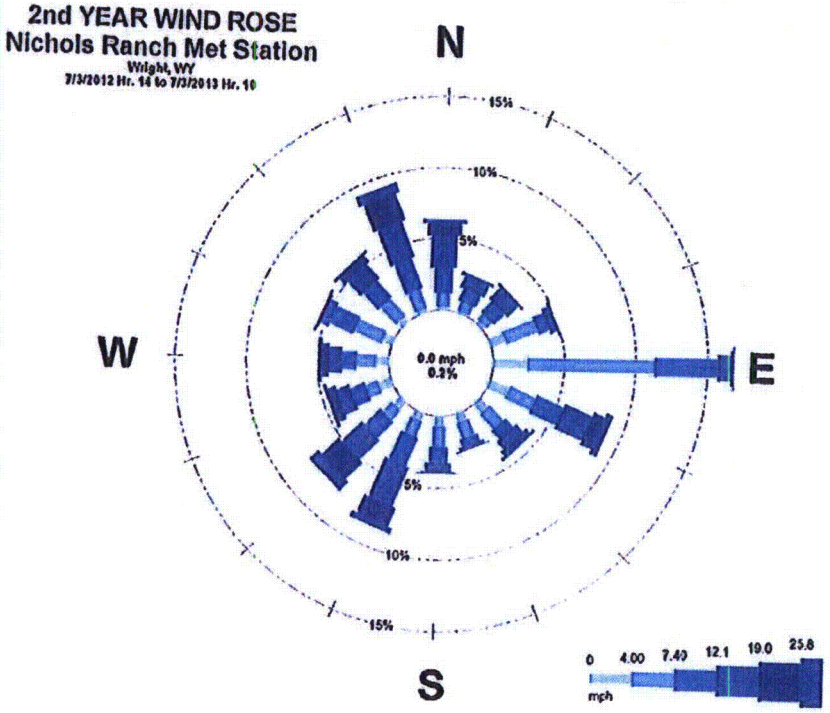
PAGE A-1

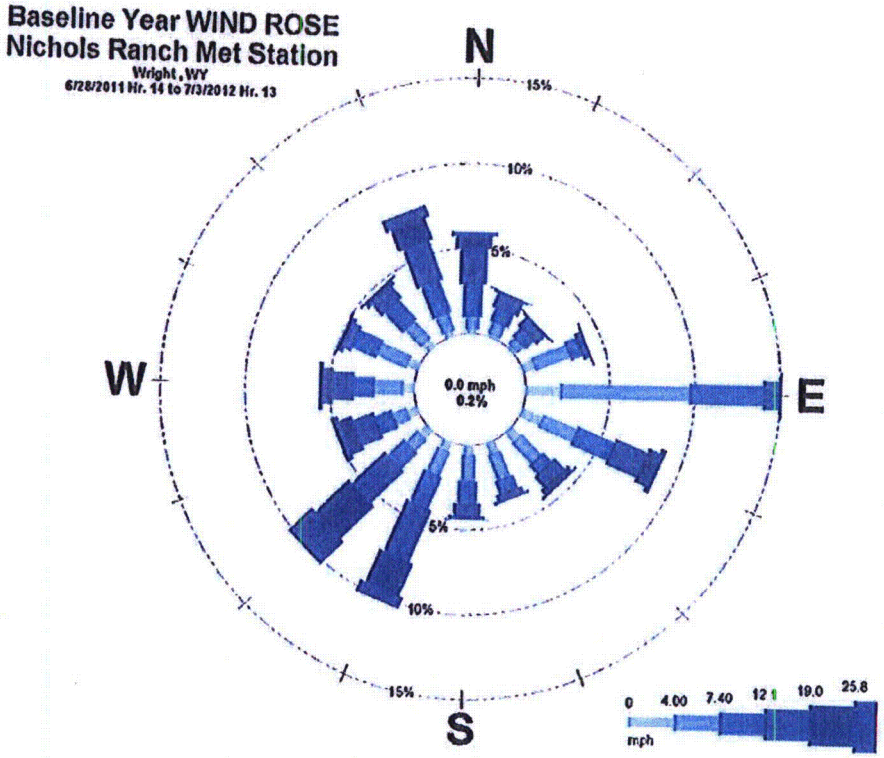
Figure 2-10a Annual Wind Rose 1987-2006 for Antelope.

APPENDIX B

Figure 3,
Nichols Ranch Wind Rose Comparison

Figure 3. Nichols Ranch Wind Rose Comparison.





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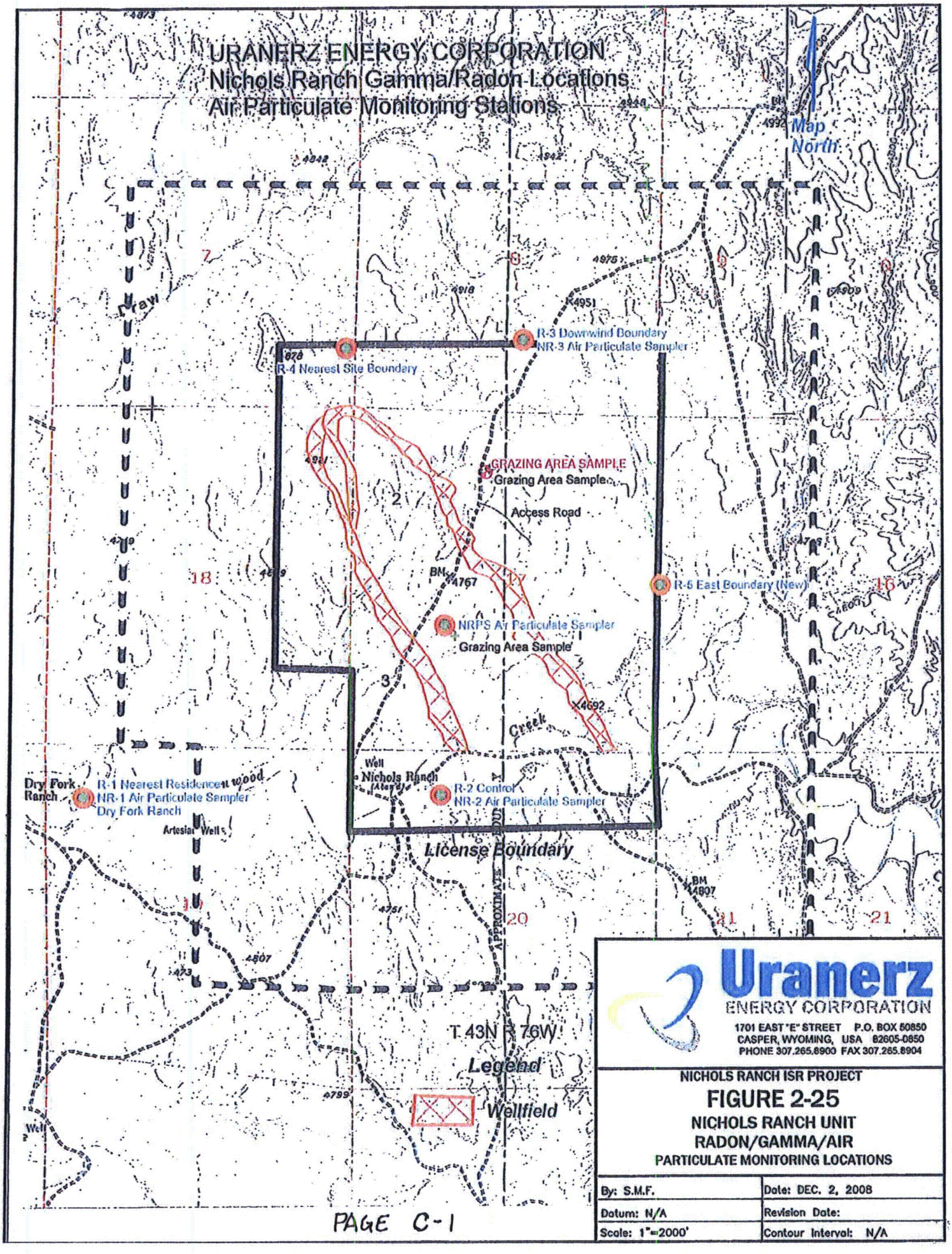
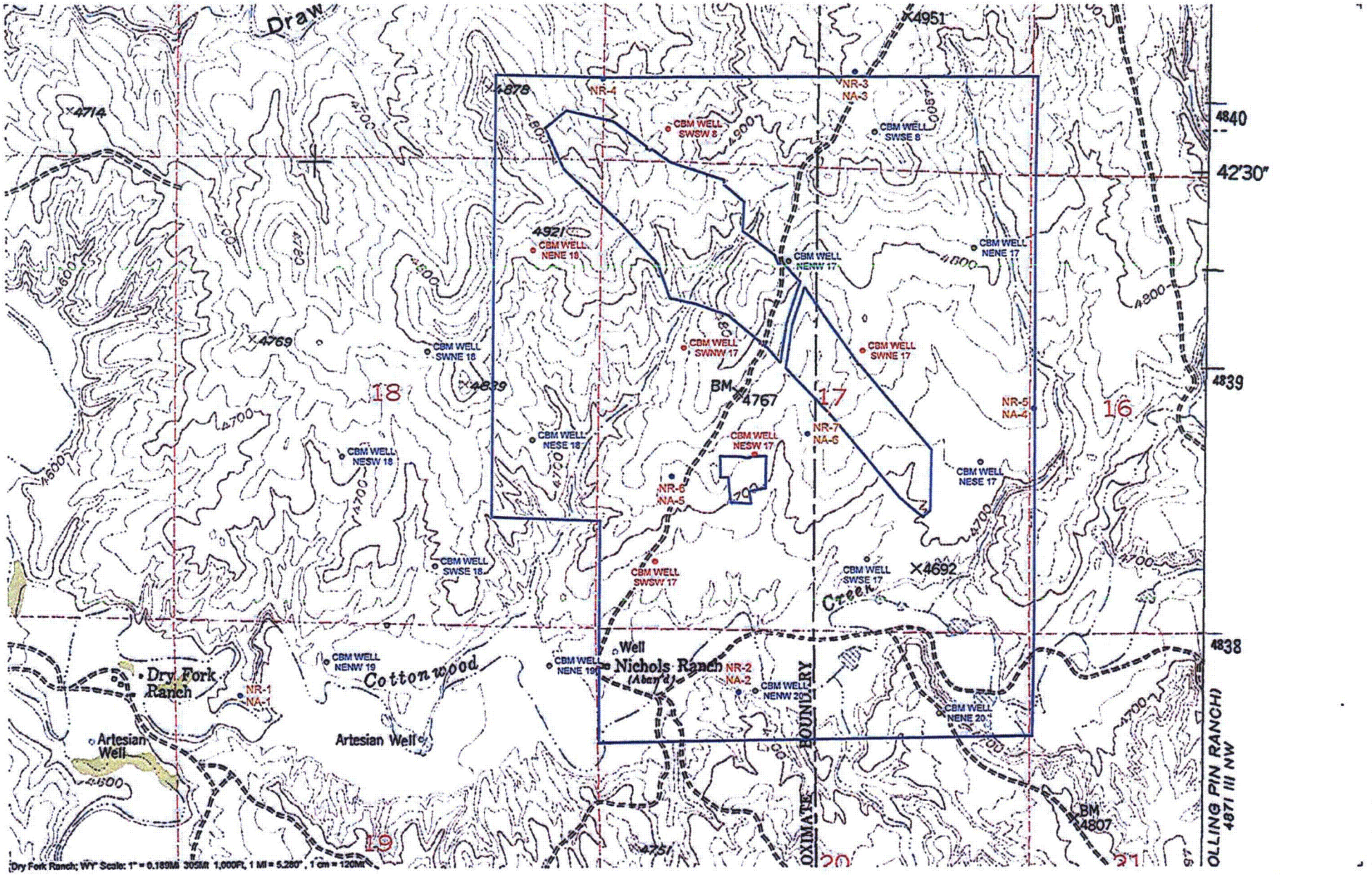
APPENDIX C

Figure 2-25,
Nichols Ranch Unit
Radon/Gamma/Air
Particulate Monitoring Locations


URANERZ ENERGY CORPORATION
Nichols Ranch Gamma/Radon Locations
Air Particulate Monitoring Stations
Map North
R-3 Downwind Boundary
NR-3 Air Particulate Sampler
R-4 Nearest Site Boundary
GRAZING AREA SAMPLE
Grazing Area Sample
Access Road
R-5 East Boundary (New)
NRPS Air Particulate Sampler
Grazing Area Sample
Well
Nichols Ranch
(Abd.)
R-2 Control
NR-2 Air Particulate Sampler
Dry Fork
Ranch
R-1 Nearest Residence
NR-1 Air Particulate Sampler
Dry Fork Ranch
Artesian Well
License Boundary
APPROXIMATE
T 43N R 76W
Legend
Wellfield
Uranerz
ENERGY CORPORATION
1701 EAST "E" STREET P.O. BOX 50850
CASPER, WYOMING, USA 82605-0850
PHONE 307.265.8900 FAX 307.265.8904
NICHOLS RANCH ISR PROJECT
FIGURE 2-25
NICHOLS RANCH UNIT
RADON/GAMMA/AIR
PARTICULATE MONITORING LOCATIONS
By: S.M.F.
Date: DEC. 2, 2008
Datum: N/A
Revision Date:
Scale: 1"=2000'
Contour Interval: N/A

APPENDIX D

Nichols Ranch Mining Unit
Current Sampling Locations



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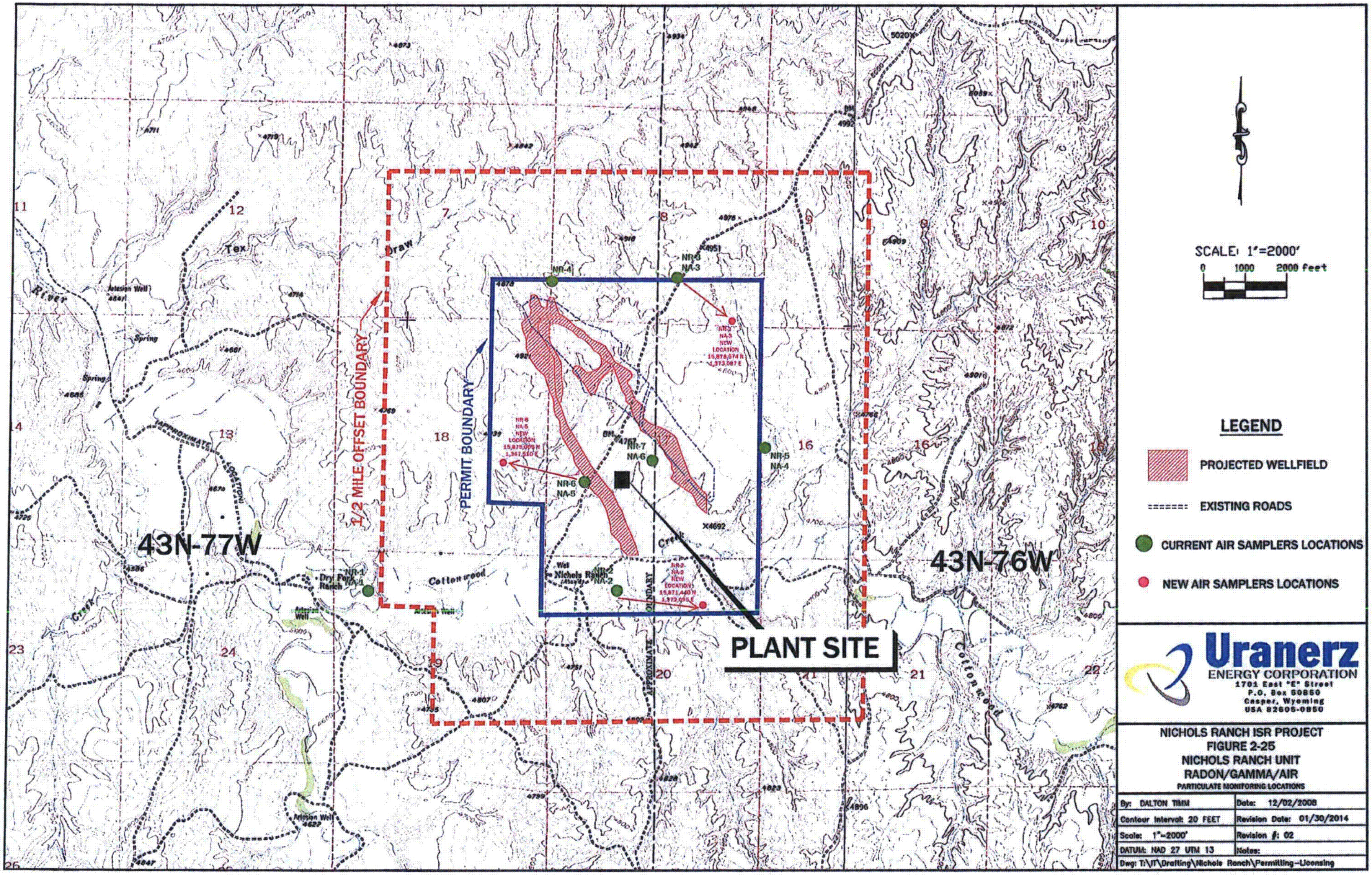
NICHOLS RANCH MINING UNIT
CURRENT SAMPLING LOCATIONS

APPENDIX E

Figure 2-25 Revision 2,
Nichols Ranch Unit
Radon/Gamma/Air
Particulate Monitoring Locations


SCALE: 1"=2000'
0 1000 2000 feet
LEGEND
PROJECTED WELLFIELD
EXISTING ROADS
CURRENT AIR SAMPLERS LOCATIONS
NEW AIR SAMPLERS LOCATIONS
43N-77W
43N-76W
1/2 MILE OFFSET BOUNDARY
PERMIT BOUNDARY
PLANT SITE
NR-1 NA-1
NR-2 NA-2
NR-3 NA-3
NR-4
NR-5 NA-4
NR-6 NA-5
NR-7 NA-6
Nichols Ranch
Dry Fork Ranch
Cottonwood Creek
Tex Draw
River
Uranerz
ENERGY CORPORATION
1701 East "E" Street
P.O. Box 50850
Casper, Wyoming
USA 82605-0850
NICHOLS RANCH ISR PROJECT
FIGURE 2-25
NICHOLS RANCH UNIT
RADON/GAMMA/AIR
PARTICULATE MONITORING LOCATIONS
By: DALTON TIMM
Date: 12/02/2008
Contour Interval: 20 FEET
Revision Date: 01/30/2014
Scale: 1"=2000'
Revision #: 02
DATUM: NAD 27 UTM 13
Notes:
Dwg: T:\IT\Drafting\Nichols Ranch\Permitting-Licensing