

In the Matter of:

CROW BUTTE RESOURCES, INC.

Submitted: 5/8/2015

(License Renewal for the In Situ Leach Facility, Crawford, Nebraska)



ASLBP #: 08-867-02-OLA-BD01

Docket #: 04008943

Exhibit #: NRC-015-00-BD01

Admitted: 8/18/2015

Rejected:

Other:

Identified: 8/18/2015

Withdrawn:

Stricken:

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- ° Personnel exposure monitoring;
- ° Qualified management of the safety program and training of personnel;
- ° Written radiation protection procedures; and
- ° Periodic audits by highly qualified outside parties and frequent inspections to assure the program is being conducted in a manner consistent with the ALARA philosophy.

The staff considers the program of in-plant safety sufficient to protect in-plant personnel by keeping radiation doses as low as reasonably achievable.

#### 4.3 Waste Disposal

The NRC has taken the position in regulations on uranium milling (10 CFR 40, Appendix A, Criterion 2) that byproduct material from uranium in-situ leach operations should preferably be disposed of at existing tailings disposal sites or other licensed radioactive burial grounds to avoid proliferation of waste sites. Therefore, the NRC shall require that solid wastes generated at the Ferret project be disposed of at an existing licensed radioactive waste disposal site (see Section 3.6.3 for further discussion on the disposal of byproduct material). To assure that all contaminated wastes remain under control of Ferret, the license will stipulate that an area within the restricted area be maintained for temporary storage of contaminated materials.

#### 5.0 MONITORING

##### 5.1 Ground Water

Ground-water monitoring will be done prior, during and after the proposed operation. Prior to well-field installation, ground-water data is collected to determine ground-water quality and define aquifer properties. This regional data is built upon during well-field development when data is collected to establish upper control limits and restoration criteria. During and following mining and restoration, additional ground-water monitoring is performed to verify the affect, if any, on the aquifer.

##### 5.1.1 Water-Quality Monitoring

Numerous water quality monitoring wells will be located in and around the various well fields as well as at the solar evaporation pond locations. All monitor wells will be sampled on a routine basis during extraction operations to determine if mining solutions are being contained within the mining zone. Monitoring for vertical excursions will take place in the first saturated aquifer overlying the mineralized zone. Due to the thickness and hydraulic properties of the underlying Pierre Shale, no excursion monitoring will take place below the mineralized zone. Monitoring for horizontal excursions will encircle the various mining units with wells completed in the mineralized formations at a distance not to

exceed 300 feet from the production area and spaced not more than 400 feet apart.

Excursion indicators will include chloride, sulfate, sodium, conductivity and alkalinity. Biweekly samples for these parameters will be collected from monitor wells associated with well fields during mining and restoration.

An excursion will be assumed if any two excursion indicators in any monitor well exceed their respective upper control limits (UCLs) or a single excursion indicator exceeds its UCL by 20 percent. The UCLs for each excursion indicator will be defined as the maximum baseline water quality value plus 20 percent.

If two UCL values are exceeded in a well or if a single UCL value is exceeded by 20 percent, a verification sample will be taken within 24 hours after results of the first analyses are received. If the second sample does not indicate exceedance of the UCLs, a third sample will be taken 48 hours after the first sample. If neither the second or third sample indicate exceedance of the UCLs, the first sample shall be considered in error. If the second or third sample indicates elevated levels of excursion indicators, the well will be placed on excursion status.

Should a well be confirmed to be on excursion status, a corrective action program will be required to return the water quality to baseline concentrations. During and following such an event, the sample frequency will be increased to weekly for the excursion indicators until the excursion is concluded.

If corrective actions have not been effective within 60 days since the first excursion verification, injection of lixiviant within the well field on excursion shall be terminated until such time as the problem is solved and aquifer clean-up is complete. Since ground-water travel times are relatively slow in these formations, the amount of lixiviant involved in the excursion is generally small, and it usually takes several weeks for water quality to begin to improve, the 60-day time limit is considered reasonable.

Quality Assurance (QA) procedures will be maintained by the Radiation Safety Officer. All QA programs will be conducted according to the Regulatory Guide 4.15 "Quality Assurance for Radiological Monitoring Programs (Normal Operations) - Effluent Streams and the Environment." Standard QA procedures will be maintained throughout the project life.

#### 5.1.2 Evaporation Reservoir Leak Detection Monitoring

Ferret has proposed to inspect the leak detection system sumps on a daily basis during operations. If a specified level of water is detected in the inspection sump, chemical assays will be used to confirm the source of the water. The chemical assay will be for conductivity, chloride, alkalinity, sodium and sulfate. The detection of a specified amount of liquid within