

**TECHNICAL REPORT AND AUDIT OF RESOURCES OF THE RENO CREEK  
ISR PROJECT, CAMPBELL COUNTY, WYOMING, USA  
LATITUDE 43°36'52" TO LATITUDE 43°44'51" NORTH  
LONGITUDE 105°37'22" TO LONGITUDE 105°47'17" WEST**

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## GLOSSARY

**Alluvial Fan** – A cone-shaped deposit of alluvium (material transported by a stream) made by a stream where it empties into a level plain or meets a lesser gradient.

**Aquifer** – A saturated permeable geologic unit that can transmit quantities of water under ordinary hydraulic gradients.

**Aquitard** – A less permeable bed in a stratigraphic sequence. An aquifer overlain and underlain by aquitards is considered in a confined state.

**Arkose** – A fine to coarse grained sandstone composed primarily of detritus from the weathering of a granitic highland. Principal constituents are a feldspar and silica.

**Assay** – The value of  $U_3O_8$  in samples, usually analyzed by 'wet chemical' or spectrographic methods. Comparison of this 'chemical' value to a 'radiometric equivalent' is important to establish the state of equilibrium of a uranium deposit.

**AUC – AUC LLC** – A Delaware Corporation exploring the Reno Creek uranium deposit in Wyoming.

**Audit** – A process of examining data to make sure it is fit for a given purpose. This involves profiling the data and assessing the impact of poor-quality data on a desired outcome such as resource estimation.

**Behre Dolbear** – Behre Dolbear & Company (USA), Inc., a subsidiary of the Behre Dolbear Group Inc. and the entity that prepared this report.

**Central Processing Plant (CPP)** – A plant connected to well fields via pipeline that extracts uranium by precipitation. The product may be a concentrated slurry or yellowcake.

**CIMM** – The Canadian Institute of Mining and Metallurgy

**CIMM Best Practices** – Standards established by the CIMM for the definition and estimation of Mineral Resources and Mineral Reserves, including the technical components required to meet the standards.

**CBM** – Coal Bed Methane

**Cutoff** – The factor used to separate minable material and waste such that only material classified above the cutoff will be extracted in order to recover the mineral of interest. Evaluation of a deposit expected to be mined by in-situ recovery uses a grade  $\times$  thickness product (GT) to qualify a mineralized intercept for inclusion as a resource.

**Disequilibrium** – See equilibrium

**Elution** – Process of extracting one material from another by washing with a solvent to remove adsorbed material from an adsorbent (as in washing of loaded ion-exchange resins to remove captured ions); used to obtain uranium ions during the in-situ recovery process.

## **GLOSSARY**

**(CONTINUED)**

**Environmental Impact Statement (EIS)** – A document required by the National Environmental Policy Act (NEPA) for certain actions “significantly affecting the quality of the human environment.” An EIS is a tool for decision-making, describing positive and negative environmental effects of a proposed action, and usually also listing one or more alternative actions that may be chosen instead of the action described in the EIS.

**Equilibrium** – A uranium deposit is in equilibrium when the proportion of uranium to naturally occurring daughter products (isotopes produced by the radioactive decay of uranium) is not disturbed. A deposit or a part of a deposit is in disequilibrium when there is a disparity (favorable or unfavorable) in the normal ratio between uranium and its daughter products. One cause of disequilibrium is oxygenated groundwater moving through the host rock. Uranium can be mobilized and moved down the groundwater gradient; thus, the uranium content of the host rock can be overestimated or underestimated, if calculations are based solely upon the radioactivity of remaining daughter products.

**Facies** – General appearance or nature of one part of a geologic unit as contrasted with other parts.

**Fee Ownership (fee simple right)** – The ownership of real property, with the accompanying rights of selling, leasing, occupying, or mortgaging property.

**Fluvial** – A fluvial sedimentary deposit consists of material transported by suspension or laid down by a river or stream.

**Grade Thickness** – A product (GT) of multiplying the grade of a mineralized intercept by its thickness. It is useful to qualify an intercept as minable.

**GPM** – Flow rate of a liquid measured in gallons per minute.

**Gamma Ray, Single Point Resistance, and Spontaneous-potential Logs** – Records of downhole radioactive intensity and electrical properties of geologic units penetrated by a drill hole. The logs are interpreted to derive the value and position of uranium mineralization, rock types, and rock properties, sometimes described as ‘electric logs’.

**Humate** – Containing humic acid, which is a principal component of humate (humic) substances. These are the major organic constituents of soil (humus), peat, coal, many upland streams, dystrophic lakes, and ocean water. Humic acid is produced by bio-degradation of dead organic matter.

**Hydrogeological Testing** – A study of groundwater flow to test the integrity of the isolation by aquitards of the host sands. Usually performed using a combination of a pumped well and a series of observation wells.

**ICP – Inductively Coupled Plasma** – A laboratory tool for chemical elemental analyses with high sensitivity, precision, and relative freedom from interferences. ICP used in combination with digests identifies a specific procedure.



## **GLOSSARY**

**(CONTINUED)**

**Indicated Mineral Resource** – An ‘Indicated Mineral Resource’ is that part of a Mineral Resource for which quantity, grade or quality, densities, shape, and physical characteristics can be estimated with a level of confidence sufficient to allow the appropriate application of technical and economic parameters, to support mine planning and evaluation of the economic viability of the deposit. The estimate is based on detailed and reliable exploration and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings, and drill holes that are spaced closely enough for geological and grade continuity to be reasonably assumed.

**Inferred Mineral Resource** – An ‘Inferred Mineral Resource’ is that part of a Mineral Resource for which quantity and grade or quality can be estimated based on geological evidence and limited sampling and reasonably assumed, but not verified, geological and grade continuity. The estimate is based on limited information and sampling gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes.

Due to the uncertainty, which may attach to Inferred Mineral Resources, it cannot be assumed that all or any part of an Inferred Mineral Resource will be upgraded to an Indicated or Measured Mineral Resource as a result of continued exploration. Confidence in the estimate is insufficient to allow the meaningful application of technical and economic parameters or to enable an evaluation of economic viability worthy of public disclosure. Inferred Mineral Resources must be excluded from estimates forming the basis of feasibility or other economic studies.

**In-Situ Recovery (ISR)** – A mining process used to recover minerals such as uranium through wells installed in a deposit. A leaching solution is pumped into the deposit where it makes contact with the ore. The solution bearing the dissolved ore content is then pumped to the surface and processed.

**Injectivity** – The capacity for a host rock to accept fluids.

**Interstices** – Pore spaces between the constituent mineral grains of a geologic unit.

**IX** – Ion exchange

**Klinkenberg** – Klinkenberg Air P&P is a method of analyzing permeability and porosity of a host rock sample.

**LAS** – Log ASCII Standard file

**Leach Amenability** – Suitability of a geologic unit, in terms of its geochemistry, mineralogy, and permeability, for the leaching and extraction of specific minerals (e.g., in-situ recovery of uranium).

**Lithology** – Physical character of a rock (rock type, mineralogy, particle size distribution, etc.) generally determined megascopically or with the aid of a hand lens.

**Lixiviant** – A liquid medium used in hydrometallurgy to selectively extract the desired metal from the ore or mineral. It assists in rapid and complete leaching. The metal can be recovered from it in a concentrated form after leaching.

**md – Millidarcy** – The customary unit of measurement of permeability. One thousandth of a darcy.

## **GLOSSARY**

**(CONTINUED)**

**Measured Mineral Resource** – A ‘Measured Mineral Resource’ is that part of a Mineral Resource for which quantity, grade or quality, densities, shape, and physical characteristics are so well established that they can be estimated with confidence sufficient to allow the appropriate application of technical and economic parameters, to support production planning and evaluation of the economic viability of the deposit. The estimate is based on detailed and reliable exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings, and drill holes that are spaced closely enough to confirm both geological and grade continuity.

**mg/L – Milligrams per liter** – Unit of measure for dissolved constituents in solution.

**Mineral Resource** – A ‘Mineral Resource’ is a concentration or occurrence of natural, solid, inorganic, or fossilized organic material in or on the Earth’s crust in such form and quantity and of such grade or quality that it has reasonable prospects for economic extraction. The location, quantity, grade, geological characteristics, and continuity of a Mineral Resource are known, estimated, or interpreted from specific geological evidence and knowledge.

**Nose** – In a cross section, perpendicular to the trend of a roll, uranium occurs in a C-shaped configuration much like the leading edge of an airplane wing. This is the richest part of a roll front.

**NRC** – United States Nuclear Regulatory Commission

**Patented Mining Claim** – Claim on federal land for which the Federal Government has conveyed the title, thus making it private land. Claim owner has exclusive title to locatable minerals and, in most cases, to surface.

**Permeability** – The state or quality of a material or membrane that causes it to allow liquids or gases to pass through it.

**Pilot Plant** – A pattern of a limited number of injector and recovery wells simulating characteristics of a full-scale mining operation.

**Porosity** – The ratio of the aggregate volume of interstices (space) in rock or soil to its total volume, usually stated as a percentage.

**PRB** – Powder River Basin, in north central Wyoming and southern Montana. A major structural feature containing major petroleum, coal, and uranium resources. The uranium host units are composed of fluvial sediments generally described as arkosic sandstones.

**Production Unit** – Individual well fields equipped with a header house.

**Project** – The whole of an operation: infrastructure, extraction equipment, recovery or process equipment, and other parts of an extraction facility. Can be applied to a proposed or active venture.

**Protore** – A zone in a roll front down the groundwater gradient, similar in configuration to a nose, containing mineral at a grade below a mining cutoff.

**QP** – A Qualified Person or Professional under the requirements of Canadian National Instrument 43-101.

## **GLOSSARY**

**(CONTINUED)**

**Resource Unit** – A block of mineral that can be described by location, volume or tonnage, quality, and contained mineral.

**Royalty** – The mineral owner's or royalty holder's share of the value of minerals produced.

**Satellite Plant** – A facility that may produce a solution enriched in uranium or a resin loaded with uranium that may be readily transported to another facility for precipitation and drying.

**Sigma Theta** – The standard deviation of wind direction. It can be used to calculate atmospheric stability, and as an indicator of wind direction sensor problems.

**Technical Study** – A stand-alone disclosure of scientific or technical information made by an issuer, including disclosure of a mineral resource or mineral reserve, concerning a mineral project on a property material to the issuer. It is based upon information prepared by or under the supervision of a qualified person or approved by a qualified person.

**Terrestrial** – A terrestrial sedimentary deposit is made on land above tidal reach because of the activity of glaciers, wind, rain-wash, and stream (fluvial) systems.

**tif – or TIFF (Tag Image File Format)** – A common format for exchanging raster graphics (bitmap) images between application programs.

**WYDEQ** – Wyoming Department of Environmental Quality

**Transmissivity** – For a saturated confined aquifer, transmissivity is equal to the hydraulic conductivity (a measure of permeability) times the thickness of the aquifer. A term used to describe the rate of flow of ground water.

**Yellowcake** –  $U_3O_8$  or 'uranium' used by the industry to describe the product of a mining and processing operation. Sold in semi-transparent private transactions via spot market or long-term contract in United States dollar (US\$) per pound.

## **1.0 SUMMARY**

Uranium Energy Corporation (UEC) engaged Behre Dolbear & Company (USA), Inc. (Behre Dolbear) to review and provide a revised technical report and audit of the uranium resources at the Reno Creek ISR Project (Project), Campbell County, Wyoming, USA, integrating the uranium resources present within the properties UEC acquired from Uranerz Energy Corporation on May 1, 2018. The Reno Creek Project is operated by AUC LLC, a subsidiary of UEC. Dr. Robert E. Cameron and Mr. Robert D. Maxwell, who are Qualified Persons under Canadian National Instrument (NI) 43-101, were appointed by Behre Dolbear to supervise and be responsible for the study. Mr. Maxwell visited the Project on October 10, 2018.

UEC purchased all the issued and outstanding shares of Reno Creek Holdings Inc. through a share purchase agreement with each of the Pacific Road Resources Funds and Bayswater Uranium Corporation and thereby acquired AUC and the Project effective May 9, 2017. UEC also acquired the North Reno Creek ISR Project from Uranerz Energy Corporation (Uranerz), a wholly owned subsidiary of Energy Fuels Nuclear effective May 1, 2018. The North Reno Creek Project is located immediately adjacent to and within AUC's existing Reno Creek Project permitted boundary.

This report incorporates changes in, and updates to the Reno Creek property since the issuance of the previous Canadian National Instrument (NI) 43-101 report titled "Technical Report and Audit on the Resources of the Reno Creek Project, Campbell County, Wyoming, USA" dated July 31, 2016. These changes and updates comprise:

- 1) Receipt from relevant state and federal authorities of additional permits and licenses, including the permits from the State of Wyoming and the Nuclear Regulatory Commission's Source Materials License necessary to build and operate the Project.
- 2) Acquisition of the Uranerz 'North Reno Creek Project' holdings and data.
- 3) Update of the North Reno Creek Unit resources to include the Uranerz Acquisition.

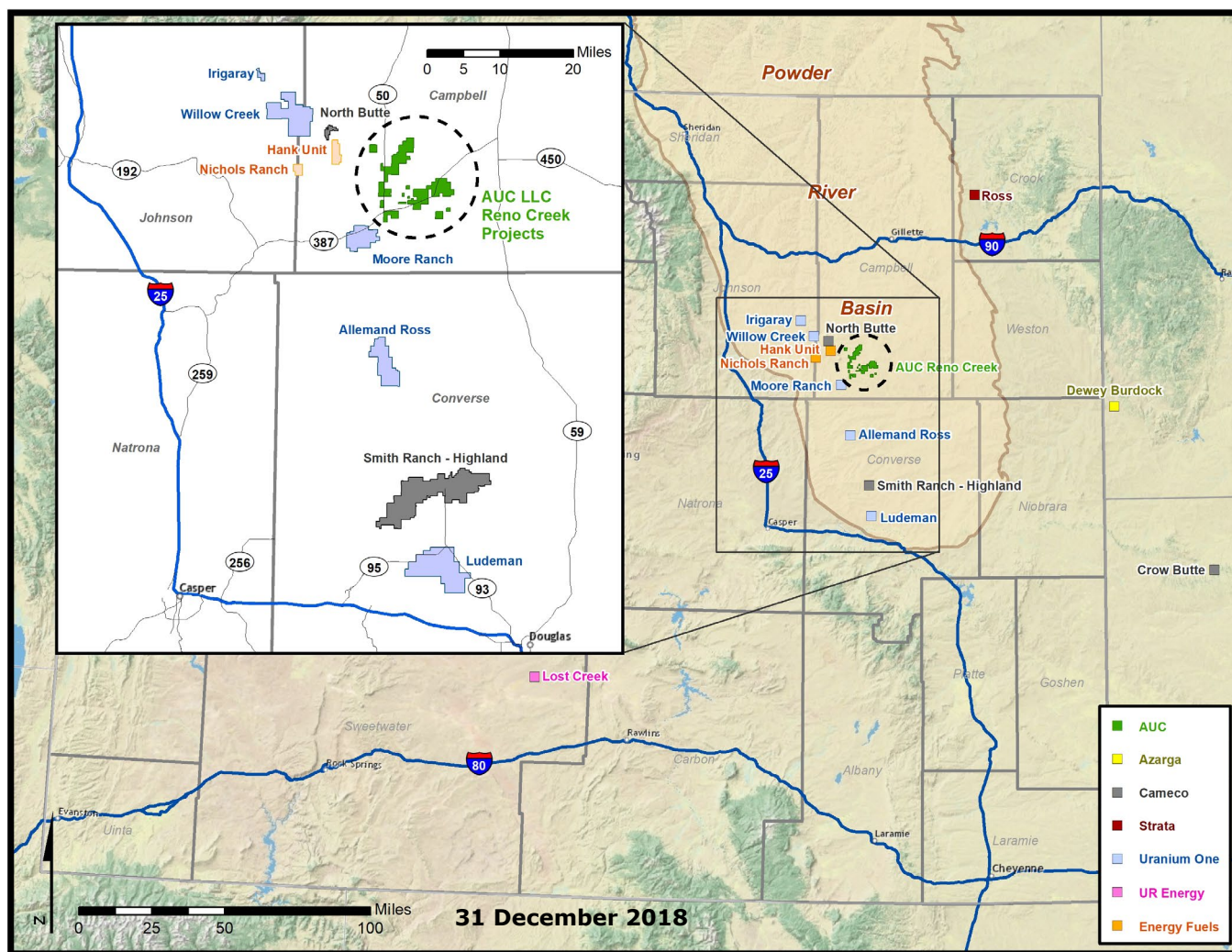
## **1.1 PROPERTY DESCRIPTION AND LOCATION**

The Project consists of five resource units: North Reno Creek, Southwest Reno Creek, Moore, Pine Tree, and Bing. North Reno Creek is within 5 miles of Moore, Pine Tree, and Bing (Figure 1.1).

- The North Reno Creek Unit, which includes the recently acquired Uranerz North Reno Creek Project and the adjacent Southwest Reno Creek Unit, is consolidated into a single operational unit and is currently permitted (except for the Uranerz Acquisition, which is in the process of being added to the permit) for mining by in-situ recovery (ISR) methods. The permitted portion of the Project will include approximately 14 ISR Production Units and a Central Processing Plant (CPP) which is located on land owned by AUC. The approved permit boundary encompasses the production units and CPP.
- The Moore Unit lies approximately 5 miles to the northwest of the Reno Creek Unit and approved permit area. The Moore Unit will be connected to the CPP via pipelines.
- The Pine Tree Unit lies approximately 5 miles to the southwest of the Reno Creek Units, immediately southeast of the intersection of U.S. Highway 387 and Wyoming Highway 50, also known as Pine Tree Junction. The Pine Tree Unit will be connected to the CPP via pipelines.
- The Bing Unit lies west of Wyoming Highway 50, 3 miles north of Pine Tree Junction. The Bing Unit will be connected to the CPP via pipelines.

The Project is in the Pumpkin Buttes Uranium District in Campbell County, Wyoming in the south-central portion of the Powder River Basin.

Figure 1.1 depicts the general site location of the Project and surrounding area. The North Reno Creek and Southwest Reno Creek Units are located 7.5 miles southwest of Wright, 31 miles northeast of Edgerton, and 41 miles south of Gillette. The primary access roads to the Moore Resource Unit, from Highway 387, are Wyoming Highway 50 and the Clarkelen Road, which runs north and south and is a Campbell County-maintained all-weather gravel road. Additionally, there are private, two-track roads established from coal bed methane (CBM) development and agricultural activity, which provide access to other areas within the Project. No part of the Project is more than 2 miles from a public, all weather road.



**Figure 1.1. Reno Creek ISR Project location**  
(Source: AUC)

AUC is the current owner, controller, and operator of the Reno Creek Project. The Project presently controls approximately 20,409 acres, consisting of 549 unpatented lode mining claims, 5 State of Wyoming mineral leases, and 36 private (fee) mineral leases, including additions since 2016. AUC has executed surface use and access agreements with all landowners who hold surface ownership within the proposed ISR mining permit boundary at

North Reno Creek and Southwest Reno Creek including leases on state land. AUC has secured the majority of surface use and access agreements needed from landowners within the Moore Unit. Surface use and access agreements for the Bing and Pine Tree Units will be negotiated in the future.

## **1.2 HISTORY AND STATUS**

Owners or operators of properties in the Project, prior to acquisition by AUC, were American Nuclear/TVA, Cleveland Cliffs Iron Company, Energy Fuels, International Uranium Corporation, Power Resources Inc., Rio Algom Mining Corporation, Rocky Mountain Energy (RME), Strathmore Mining Corp., and Utah International Mining Corporation. Exploration and development work consisted of drilling vertical holes with documentation of stratigraphy and radiation via downhole geophysical logging. The most significant activity was Rocky Mountain Energy's operation of a pilot plant on the North Reno Creek property with limited production (approximately 1,200 pounds of  $U_3O_8$ ). The pilot plant received full NRC and Wyoming government approval for restoration and reclamation in 1983.

There has been no exploration drilling on the property since Behre Dolbear's 2016 report was issued. As of the date of this report, AUC has completed a total of 978 rotary holes, 19 core holes, and 47 monitoring wells within the North Reno Creek, Southwest Reno Creek, and Moore Units.

To date, data from 10,151 uranium exploration and development drill holes that have been drilled by AUC and previous uranium exploration companies on, and nearby, the five Resource Units are held by AUC. Data from the drilling, including survey coordinates, collar elevations, depths, and grade of uranium intercepts, have been incorporated into AUC's database.

As a result of energy development over the past 50 years, all the properties where AUC's deposits exist have existing or nearby electrical power, gas, and have adequate phone and internet connectivity. The local economy is oriented to coal mining and oil and gas production as well as ranching operations that provide a well-trained and capable pool of workers for ISR production and processing operations. AUC has leases, surface use, and access agreements within the proposed mining permit area to enable construction and operation of all required facilities.

Specific permits have been acquired to conduct the work proposed for the property. Table 1.1 summarizes the status of permits and licenses. In summary, the NRC completed its review of the Source Materials License application for the Project Permit Area, which was submitted October 5, 2012. The NRC published the Record of Decision which documents the NRC staff's decision to issue a material license to AUC for the Reno Creek ISR Project on February 3, 2017. The NRC issued the Source Materials License to AUC for the Project on February 17, 2017.

AUC is currently working on a significant revision to the Permit to Mine (Permit) to incorporate the North Reno Creek Project recently purchased from Uranerz Energy Corporation into the Permit. This permitting action will allow AUC to mine the resources acquired as part of the transaction. Other action will be to file periodic reports with regulating agencies.

<b>TABLE 1.1</b> <b>SUMMARY OF PROPOSED, PENDING, AND APPROVED PERMITS FOR THE</b> <b>RENO CREEK ISR PROJECT</b>		
<b>Regulatory Agency</b>	<b>Permit or License</b>	<b>Status</b>
<b>Federal</b>		
U.S. Nuclear Regulatory Commission (USNRC)	Source Materials License (10 CFR 40)	Application submitted October 5, 2012. NRC Record of Decision and License <b>received</b> February 2017.
U.S. Army Corps of Engineers (ACOE)	Determination of Jurisdictional Wetland	Wetland delineation <b>was completed and forwarded to ACOE in April 2012.</b>
US Environmental Protection Agency (USEPA)	Aquifer Exemption (40 CFR 144, 146)	Aquifer Exemption for Class III UIC injection and production wells <b>approved by EPA</b> in October 2015.
<b>State</b>		
Wyoming Department of Environmental Quality/Air Quality Division (WDEQ/AQD)	Air Quality Permit	WDEQ/AQD Air quality permit to construct <b>issued</b> September 2016. 1-yr extension granted until September 2019 in correspondence dated August 10, 2018.
WDEQ/Water Quality Division (WQD)	Groundwater Reclassification (WDEQ Title 35-11)	Aquifer reclassification application <b>approved</b> by WDEQ/WQD – 2 <sup>nd</sup> quarter 2015.
	Underground Injection Control Permit (Deep Disposal Well) (WDEQ Title 35-11)	Class I UIC Permit application <b>approved</b> by the WDEQ/WQD in July 2015.
DEQ/Land Quality Division (LQD)	Underground Injection Control Class III Permit (Permit to Mine) (WDEQ Title 35-11)	Permit to Mine & Class III UIC Permit application submitted January 2013. <b>Approved by WDEQ</b> in July 2015.
	Mineral Exploration Permit (WDEQ Title 35-11)	<b>Approved</b> Mineral Exploration Permit DN #401 is currently in place for the exploration actions of Reno Creek Project areas.
	Construction Storm Water NPDES Permit (WDEQ Title 35-11)	Construction Storm Water NPDES authorizations will be secured annually under a general permit based on projected construction activities. The Notice of Intent will be filed at least 30 days before construction activities begin.
	Underground Injection Control Class V (WDEQ Title 35-11)	The Class V UIC permit will be applied for following installation of an approved site septic system during facility construction.

On October 1, 2018 the State of Wyoming became an Agreement State with the U.S. Nuclear Regulatory Commission (NRC). By becoming an Agreement State, Wyoming has assumed the regulatory functions which would otherwise be the responsibility of the NRC. Since becoming an Agreement State the Wyoming Department of Environmental Quality, Land Quality Division (LQD) requested current ISR Permit to Mine (Permit) operators to combine their NRC Source Material License (SML) with their LQD Permit. AUC LLC has complied with this request and submitted a consolidated Permit/SML to the LQD Uranium Recovery Group on October 9, 2018. The consolidated document is currently under review by LQD staff.

### 1.3 GEOLOGY AND MINERALIZATION

Geologic characteristics of the Uranerz Acquisition are the same as the North Reno Creek and Southwest Reno Creek units, as the units are essentially adjacent and comingled. The uranium deposits within the Project area occur in medium to coarse-grained sand facies in the lower portion of the Eocene-age Wasatch Formation. The uranium mineralization occurs as interstitial fillings between and coatings on the sand grains along roll front trends formed at a bio-chemical interface within the host sandstone aquifers. Sinuous fronts of mineralization occur in up to five sandstone units. Stacking of roll front mineralization occurs at many places throughout the Project causing resources to occur at different stratigraphic levels in the same area.

Sandstones are commonly cross-bedded, graded sequences fining upward from very coarse at the base to fine grained at the top, representing sedimentary cycles from 5 feet to 20 feet thick. Stacking of depositional cycles has resulted in sand body accumulations over 200 feet thick. The North Reno Creek, Southwest Reno Creek, Moore, and Bing Units share similar stratigraphy and geology. The Pine Tree Unit lies slightly higher in the stratigraphic section.

Roll front uranium minerals in the unoxidized zone are commonly coffinite ( $U(SiO_4)_{1-x}(OH)_4x$ ) and uraninite ( $UO_2$ ). Low concentrations of vanadium (less than 100 ppm) are sometimes associated with the uranium deposits.

### 1.4 MINERAL RESOURCES

As seen in Table 1.2, the acquisition of the Uranerz property increased the Measured and Indicated Resources of AUC by 18% (26 million versus 22 million pounds). Measured and Indicated Mineral Resources for the Reno Creek ISR Project total 32 million tons with a weighted average grade of 0.041%  $U_3O_8$  and a weighted average thickness of 13.0 feet containing 26 million pounds of  $U_3O_8$  in-place, as presented in Table 1.2. Inferred Mineral Resources total 1.87 million tons with a weighted average grade of 0.045%  $U_3O_8$  and a weighted average thickness of 11.2 feet containing 1.37 million pounds of  $U_3O_8$  in-place, as presented in Table 1.3.

It is the authors' opinion that the resources stated in this technical report are properly estimated by AUC using appropriate methodologies that are compliant with NI 43-101 standards and result in an appropriate estimation of quantities and grades. It is also the authors' opinion that the triangulation gridding method used for volumetric measurements is an appropriate way to estimate quantities and grades given the sinuous and irregular nature of the deposits.

The results of the estimation of Inferred  $U_3O_8$  Mineral Resources at the Project are summarized in Table 1.3.



<b>TABLE 1.2</b> <b>RENO CREEK ISR PROJECT</b> <b>SUMMARY OF MEASURED AND INDICATED MINERAL RESOURCES – IN-PLACE<sup>1</sup></b>				
<b>Unit</b>	<b>Tons<sup>2</sup> (millions)</b>	<b>Weighted Average Thickness (feet)</b>	<b>Weighted Average Grade (%U<sub>3</sub>O<sub>8</sub>)</b>	<b>Pounds U<sub>3</sub>O<sub>8</sub><sup>2</sup> (millions)</b>
<b>North Reno Creek<sup>3</sup></b>				
Measured	7.12	14.3	0.042	5.92
Indicated	8.05	11.7	0.036	5.76
<b>Total</b>	<b>15.2</b>	<b>13.0</b>	<b>0.039</b>	<b>11.68</b>
<b>Southwest Reno Creek</b>				
Measured	4.68	12.9	0.043	3.94
Indicated	4.08	10.4	0.038	3.08
<b>Total</b>	<b>8.77</b>	<b>11.6</b>	<b>0.040</b>	<b>7.03</b>
<b>Moore</b>				
Measured	2.32	10.3	0.048	2.20
Indicated	2.31	9.0	0.042	1.92
<b>Total</b>	<b>4.63</b>	<b>9.6</b>	<b>0.044</b>	<b>4.12</b>
<b>Bing</b>				
Measured	0.30	14.6	0.038	0.23
Indicated	0.71	12.4	0.032	0.45
<b>Total</b>	<b>1.02</b>	<b>13.0</b>	<b>0.033</b>	<b>0.67</b>
<b>Pine Tree</b>				
Measured	0.57	14.0	0.056	0.63
Indicated	1.83	12.2	0.051	1.87
<b>Total</b>	<b>2.40</b>	<b>12.6</b>	<b>0.053</b>	<b>2.51</b>
<b>Reno Creek Project</b>				
Measured	14.99	13.2	0.0433	12.92
Indicated	16.98	11.1	0.039	13.07
<b>M + I Total</b>	<b>32.0</b>	<b>12.1</b>	<b>0.041</b>	<b>26.0</b>
<sup>1</sup> Cutoff ≥ 0.20 GT (grade × thickness per intercept) <sup>2</sup> Columns may not add due to rounding <sup>3</sup> Includes Uranerz Acquisition				

<b>TABLE 1.3</b> <b>RENO CREEK ISR PROJECT –</b> <b>SUMMARY OF INFERRED MINERAL RESOURCES – IN-PLACE<sup>1</sup></b>				
<b>Unit</b>	<b>Tons<sup>2</sup> (millions)</b>	<b>Weighted Average Thickness (feet)</b>	<b>Weighted Average Grade (%U<sub>3</sub>O<sub>8</sub>)</b>	<b>Pounds U<sub>3</sub>O<sub>8</sub><sup>2</sup> (millions)</b>
<b>North Reno Creek<sup>3</sup></b>				
Inferred	1.57	9.7	0.040	1.26
<b>Southwest Reno Creek</b>				
Inferred	0.20	8.6	0.033	0.13
<b>Moore</b>				
Inferred	0.13	8.0	0.035	0.09
<b>Bing</b>				
Inferred	0.00	0.0	0.00	0.00
<b>Pine Tree</b>				
Inferred	0.02	6.8	0.040	0.01
<b>Reno Creek Project</b>				
<b>Inferred Total</b>	<b>1.92</b>	<b>9.5</b>	<b>0.039</b>	<b>1.49</b>
<sup>1</sup> Cutoff ≥ 0.2 GT (grade × thickness per intercept) <sup>2</sup> Columns may not add due to rounding <sup>3</sup> Includes Uranerz Acquisition				

The reader is cautioned that due to the uncertainty that may attach to Inferred Mineral Resources, it cannot be assumed that all or any part of an Inferred Mineral Resource will be upgraded to an Indicated or Measured Mineral Resource from continued exploration. Confidence in the Inferred Mineral Resource estimate is insufficient to allow the meaningful application of technical and economic parameters or to enable an evaluation of economic viability worthy of public disclosure. Inferred Mineral Resources must be excluded from estimates forming the basis of pre-feasibility or other feasibility studies.

The authors consider that the work AUC completed at all units confirms the pre-2010 information and that the resources of the Project meet NI 43-101 standards for currently compliant resources and that there is a reasonable expectation that the Measured and Indicated Mineral Resources will be converted through future efforts to production status. There is also the reasonable expectation that with additional in-fill drilling, some of the Inferred Mineral Resources will be converted to Indicated and Measured Mineral Resources. The QPs' reasonable expectations are based upon the following factors:

- 1) Drilling by AUC at the Southwest Reno Creek Unit between 2010 and 2013 confirmed that uranium mineralization reported by previous operators is present at the locations shown on historical maps. AUC's confirmation was performed by drilling step-out holes (100 feet from old holes), in accordance with recommendations by the authors. Continuity was confirmed on a large scale by approximately 800 holes that joined two mineralized areas over a mile apart. AUC drilling in this area (located in the west half of Section 31, T 43N, R73W) added resources.

- 2) Additional data and mineral interests acquired since 2012 include 526 drill holes (an 11.4% increase) and 640 acres across the North Reno Creek, Southwest Reno Creek, Moore, and Pine Tree Units.
- 3) All uranium deposits in the 80-mile long Powder River Basin trend consist of bands of narrow classic C-shaped roll fronts, as found at the Reno Creek Deposit.
- 4) The mineral forming process and the resulting deposits do not vary within the trend nor are they expected to vary within the Reno Creek Project.
- 5) The North Reno Creek, Southwest Reno Creek, Moore, Bing, and the Uranerz Acquisition exhibit mineralization within a continuous geologic sandstone section. In addition, all five units exhibit overlying and underlying aquitards that are continuous across AUC's holdings.
- 6) The authors have reviewed maps covering the competitor's operations and positions (not available for publication) showing continuity of sandstone horizons between resources units.

### **1.5 PROPOSED RECOVERY TECHNIQUE**

AUC has determined that essentially all significant mineralization and resources in the permit area lie either in fully saturated areas or are deep enough below the water table to be reasonably accessible using in-situ recovery (ISR) methods. The ISR process, contemplated by AUC, is a phased, iterative approach in which AUC will sequentially construct and operate a series of Production Units. Each Production Unit will include individual well fields equipped with a header house. AUC expects each header house will serve between 15 to 30 recovery wells and 25 to 50 injection wells (recovery and injection wells collectively referred to as production wells), depending upon the design of each well field.

### **1.6 CONCLUSIONS AND RECOMMENDATIONS**

The Uranerz Acquisition increased the Measured plus Indicated resources of the project approximately 18% and essentially provided unification of resources in the permitted area. The authors conclude the Measured and Indicated Mineral Resources containing approximately 26 million pounds of  $U_3O_8$  in-place for the Reno Creek ISR Project are compliant with Canadian NI 43-101 guidelines. The authors conclude there is limited to moderate risk that the estimate of quantity, quality, and physical characteristics of the resources of the Project will be unfavorably affected by future investigation.

Behre Dolbear recommends:

- 1) Continue ongoing interpretation and further refinement of zoning and mapping of the major roll fronts and sub-rolls.
- 2) Give additional attention to the three-dimensional aspect of the roll fronts.
- 3) Complete additional detailed work to refine roll front interpretations in each proposed Production Unit before final mine design.
- 4) Plan drilling programs for the Bing and Pine Tree Resource Units to commence in a more favorable uranium market.

## **2.0 INTRODUCTION**

### **2.1 PURPOSE OF THE REPORT**

This Technical Report and audit were developed for AUC to describe and estimate the uranium resources at the Reno Creek ISR Project (Project) that are compliant with the requirements of Canadian National Instrument (NI) 43-101 and 43-101F1 and that incorporate the resources at the North Reno Creek property that were acquired from Uranerz Energy Corporation on May 1, 2018.

This report incorporates changes in, and updates to the property since the issuance of the previous Canadian National Instrument (NI) 43-101 report titled "Technical Report on the Resources of the Reno Creek Project, Campbell County, Wyoming, USA" dated July 31, 2016. These changes and updates comprise:

- 1) The purchase on May 1, 2018 of the uranium property adjoining AUC's Reno Creek Project from Uranerz; and
- 2) Receipt from relevant state and federal authorities of additional permits and licenses, including all of the permits from the State of Wyoming necessary to build and operate the Project.

### **2.2 SOURCES OF INFORMATION AND DATA**

This report has been constructed and compiled from information and data including drill hole location maps and data sheets; gamma-ray, resistivity, and self-potential curves plotted by depth; and core hole data from recent drilling by AUC as well as historical data. Behre Dolbear's work was conducted in October and November 2018.

AUC and UEC personnel drafted portions of this report, primarily related to history, land holdings, and licensing. These were reviewed by Behre Dolbear's QPs for accuracy and are included in the report. A draft of the report was provided for review, and AUC and UEC suggestions were incorporated.

### **2.3 QUALIFIED PERSONS/PROFESSIONALS AND AUTHORS**

AUC, through Behre Dolbear, engaged the QPs listed below to undertake the Technical Report and audit for the Reno Creek ISR Project.

**Mr. Robert D. Maxwell**, Behre Dolbear & Company (USA), Inc. Senior Associate and geologist, is a contributing author of this report. He has over 30 years of professional experience, most of it in uranium exploration, development, and evaluation. He has been involved in several evaluations related to major uranium project acquisitions. Mr. Maxwell conducted a review of AUC and Uranerz reports and data. He field checked the Project on June 19, 2012, July 27, 2012, May 19, 2016, June 7, 2016, and October 10, 2018. There has been no material change to the scientific or technical information about the property since that date. Mr. Maxwell is a Qualified Person under Canadian National Instrument 43-101 through the American Institute of Professional Geologists and is responsible for the preparation of all this report except Section 14.0 and the results contained herein.

**Dr. Robert L. Cameron** has over 40 years of experience in geostatistical analysis of ore reserves, computerized mine planning, mine design, computerized studies for mine production optimization, ultimate pit limit optimization, mine efficiency studies, equipment selection and utilization and operations research. He has completed geostatistical estimations or resource and reserve reviews or audits on over 350 mining properties worldwide during his career. Currently, Dr. Cameron is a Registered Member of the Society of Mining, Metallurgy and Exploration and a Member and Qualified Person of the Mining and Metallurgical Society of America in mining and ore reserves. He meets the requirements for "Competent Person," as defined in the Australasian JORC Code and the requirements

for “Qualified Person,” as defined in Canadian National Instrument (NI) 43-101 for the purpose of Mining and Mineral Resource and Ore Reserve estimation and reporting. In addition, he is an Associate Mineral Appraiser of the International Institute of Mineral Appraisers. He routinely reviews and audits geostatistical calculations, ore reserves statements, minerals resources statements, computerized minerals models, mine designs and their forward-looking cash flow projections. Dr. Cameron has been involved in several (independent) technical reports for the Stock Exchange of Hong Kong (SEHK), the United States markets under the Securities and Exchange Commission (SEC), Singapore Exchange (SGX), Alternate Investment Market (AIM) of the London Stock Exchange, Toronto Stock Exchange (TSX), and Vancouver Stock Exchange (VSE) in recent years.

Dr. Cameron served as the Vice President, Technical Services for Frontier Mining Ltd. and was responsible for overseeing all technical, engineering, and review for project development for Frontier Mining in Kazakhstan. His responsibilities also included ex-pat oversight of the day-to-day operations of the Naimanjal Mine, a heap leach gold project in Kazakhstan, internal mine project review and oversight as well as initial geostatistical resource and reserve assessment of potential mine acquisitions for Frontier Mining in China, Indonesia, and Central Asia. Dr. Cameron also had responsibility for supervising, reviewing and quality assurance of all ore reserve work performed by Behre Dolbear as their Director and Vice President of Geostatistics and Mine Planning. He has extensive experience in geostatistics, computerized mine planning and ore reserve estimation using classical and geostatistical ore reserve modeling, selection of mining related computer software, ore reserve audits, computer applications, mineral commodity studies, computer modeling of commodities, and remediation of abandoned mine sites. Additionally, he has a vast knowledge of the full range of mine planning and resource/reserve computer software. Dr. Cameron is responsible for section 14.0 of this report.

**Mr. Myron N. (Ron) Benda** is a geologist and research specialist with more than 28 years in the mining industry, oil and gas industry, and environmental consulting. He has broad experience in evaluating historical geological databases and technical data review in support of developing new mineral resources in both “Brownfield” and “Greenfield” sites. Mr. Benda has assisted with the geological review and preparation of reports. He is a Qualified Professional in Geology with the Mining and Metallurgical Society of America, and a Registered Professional Geologist (Wyoming).

## **2.4 CURRENCY AND UNITS OF MEASUREMENT**

All references to currency are United States dollars (US\$). Units of measurement are the English system of inches, miles, tons, etc.

### **3.0 RELIANCE ON OTHER EXPERTS**

Behre Dolbear acknowledges the previous and current AUC and UEC personnel who contributed to the compilation of this report. Mr. Jim Viellenave and Mr. Dayton Lewis provided information about the business, history, permitting, and reviewed other details. Mr. Leland Huffman of UEC provided information about production processes and permitting.

Behre Dolbear has relied on information provided by AUC regarding property title, legal rights held, and ownership. Behre Dolbear has not independently researched land and/or mining rights.

## **4.0 PROPERTY DESCRIPTION AND LOCATION**

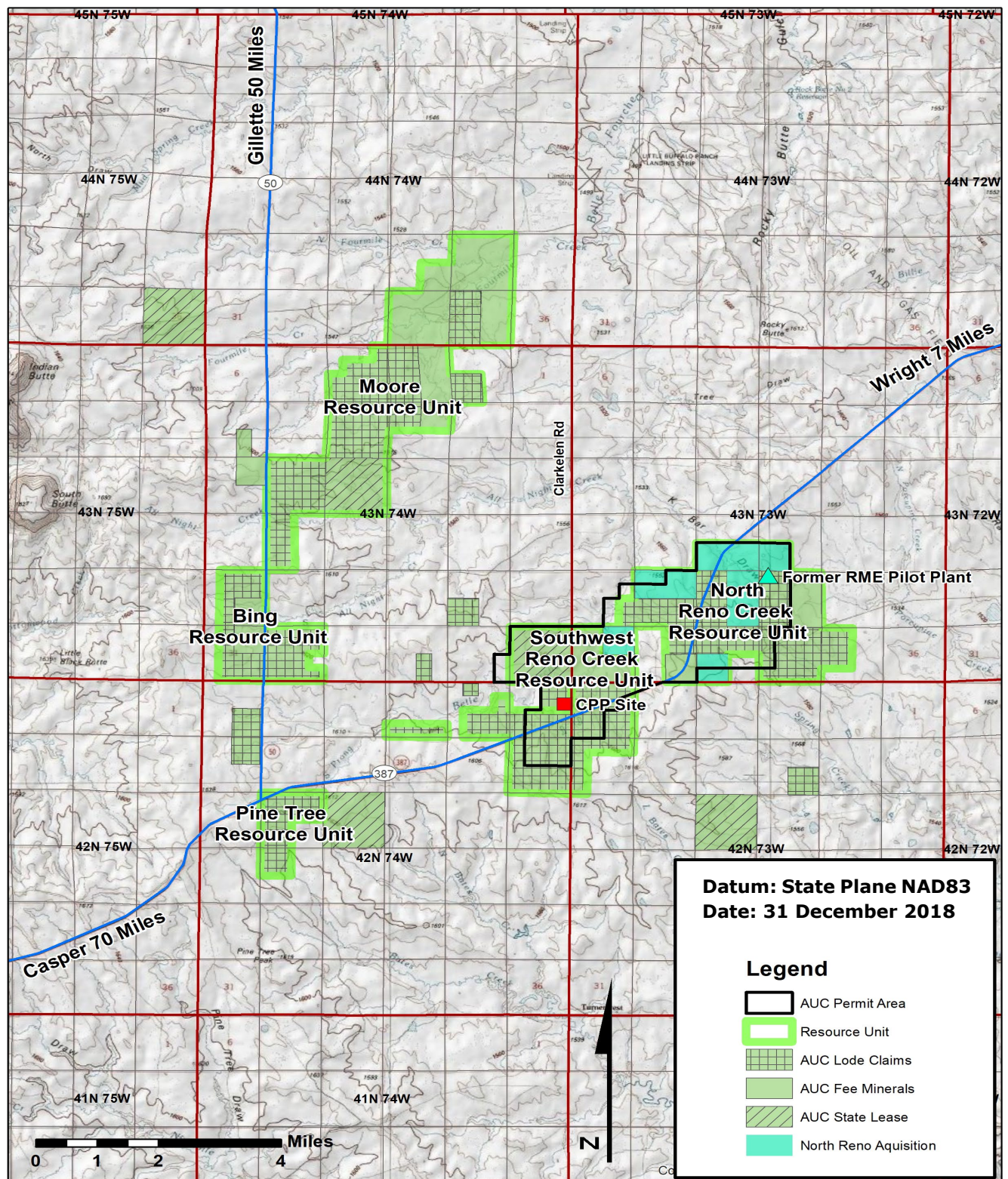
### **4.1 PROPERTY DESCRIPTION**

The Reno Creek ISR Project is composed of five units individually named based on exploration history and location (Figure 4.1). The North Reno Creek (includes the Uranerz Acquisition), Southwest Reno Creek, Moore, Pine Tree, and Bing Units contain roll front uranium mineralization in the same and contiguous stratigraphic horizons.

- The contiguous North Reno Creek, Southwest Reno Creek, and Uranerz Acquisition Units are consolidated and are currently partially permitted for mining by ISR methods, and will include up to 14 ISR Production Units and a Central Processing Plant (CPP) located on land owned by AUC. The mine permit boundary and CCP site are shown on Figure 4.1. The Moore, Pine Tree, and Bing Units will be added into the mine permit, via an amendment to AUC's license and permit to mine, at an appropriate time in the future.
- The Moore Unit lies approximately 5 miles to the northwest of the Reno Creek proposed permit area. Nearly 180 drill holes were added to the Moore Unit since 2012, in addition to 320 acres of mineral interests. The Moore Unit will be connected to the CPP via pipelines.
- The Pine Tree Unit lies approximately 5 miles to the southwest of Reno Creek, immediately southeast of the intersection of U.S. Highway 387 and Wyoming Highway 50, also known as Pine Tree Junction. Current plans also envision that the Pine Tree Unit will be connected to the CPP via pipelines. Since 2012, data from approximately 40 drill holes were added to the Pine Tree Unit.
- The Bing Unit lies approximately 5 miles west of the Reno Creek Units adjacent to (west) Wyoming Highway 50, 3 miles north of Pine Tree Junction. The Bing Unit will be connected to the CPP via pipelines.

Collectively, AUC controls mineral lands within the Project totaling approximately 20,409 acres. The controlled lands consist of 10,980 acres of unpatented lode mining claims, 3,840 acres of State of Wyoming mineral leases, and 5,589 acres of private mineral leases. Mineral ownership status and resource areas are shown on Figure 4.1.







Surface ownership at the Project consists of both privately owned (fee) ranch lands and lands owned by the State of Wyoming. State surface ownership corresponds to state mineral ownership. The breakdown of land status, including private fee, unpatented mining lode claims, and state leases for the Reno Creek ISR Project, is shown in Table 4.1.

<b>TABLE 4.1</b>			
<b>RENO CREEK ISR PROJECT ACREAGE</b>			
<b>Township and Range</b>	<b>State of Wyoming Leases (Acres)</b>	<b>Fee Mineral Leases (Acres)</b>	<b>Federal Lode Mining Claims (Acres)</b>
T42N R73W	640	0	1,000
T42N R74W	640	0	2,560
T43N R73W	0 <sup>1</sup>	2,765	2,600
T43N R74W	1,280	1,057	4,460
T44N R74W	0	1,767	360
T44N R75W	640	0	0
<b>Total</b>	<b>3,200</b>	<b>5,589</b>	<b>10,980</b>
<sup>1</sup> We dropped State of Wyoming Lease 0-43508, Section 36-4373 in December 2018. The total acres are reduced to 19,769.			

## 4.2 LOCATION

The approximate latitude and longitude location for each resource unit follows.

- **North Reno Creek<sup>1</sup>** Latitude 43°40'36.23" North – Longitude 105°37'21.87" West
- **Moore** Latitude 43°44'50.84" North – Longitude 105°43'59.56" West
- **Pine Tree** Latitude 43°36'52.22" North – Longitude 105°46'35.91" West
- **Bing** Latitude 43°39'39.35" North – Longitude 105°47'17.33" West

<sup>1</sup>Includes Southwest Reno Creek and Uranerz Acquisition

## 4.3 MINERAL TENURE, RIGHTS, AND ROYALTIES

AUC has executed surface use and access agreements with all landowners who hold surface ownership within the proposed ISR mining permit boundary at the North Reno Creek and Southwest Reno Creek Units, including fee ownership of the 40-acre CPP site and leases on state land. AUC has secured the majority of surface use and access agreements needed from landowners within the Moore Unit. Additional access agreements associated with the Pine Tree and Bing Units will be negotiated in the future.

AUC holds 549 unpatented lode claims on federally owned minerals, including the claims on and around the CPP site. No royalties are due to the federal government from mining on lode claims. The claims will remain under AUC's control, provided AUC adheres to the required Bureau of Land Management (BLM) filing and annual payment requirements. Legal surveys of unpatented claims are not required and to the authors' knowledge have not been completed. Payments for state and private leases and BLM mining claim filing payments are up to date, as of October 2018.

State mineral leases have a 5% gross royalty attached. Royalties on fee mineral leases vary with the ownership of the minerals. Fee or private minerals have varying royalty rates and calculations, depending on the agreements negotiated with individual mineral owners. In addition, surface use and access agreements may include a

production royalty, depending on agreements negotiated with individual surface owners at various levels. AUC has calculated that the average combined mineral plus surface production royalties applicable to the Project, including the Uranerz Acquisition is 3.88%. This estimate was provided by AUC and relied upon by the authors.

#### **4.4 OTHER SIGNIFICANT FACTORS OR RISKS**

No significant factors or risks are known that may affect access, title, or the right or ability to perform work on the property. Petroleum well development on UEC holdings will probably continue and are not considered a significant risk.

## **5.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE, AND PHYSIOGRAPHY**

### **5.1 TOPOGRAPHY, ELEVATION, AND VEGETATION**

Topography in the Reno Creek area, including the Uranerz Acquisition, Moore, Pine Tree, and Bing resource areas ranges from generally flat to gently rolling hills, although numerous drainages dissect the area. AUC's properties lie within the Northwestern Great Plains and Powder River Basin (PRB) of Wyoming, USA. The elevation in the area ranges from approximately 4,500 feet to 5,300 feet above mean sea level.

All drainages in the area are ephemeral in nature (Figure 4.1). The predominant source of surface water is from thunderstorms and spring snow melts. The watershed hydrology includes man made livestock ponds and small reservoirs for the Wyoming Pollutant Discharge Elimination System (WYPDES) discharge sites, from CBM de-watering activities.

Environmental investigations and surveys confirmed that neither sage grouse nor other threatened or endangered species are present within at least 2 miles of the boundary of the proposed mining permit area. In addition, no archeological or cultural resources that are eligible for the National Register were identified. Additional details concerning environmental issues are found in Section 20.0.

Vegetation within and near to the Project area is generally described as mixed grass prairie dominated by wheat grasses, various bunch grasses, and sagebrush shrub lands. Less abundant vegetation types of grassland and meadow grassland are interspersed among the major vegetation communities, within and along the ephemeral drainages (Figure 5.1 and Figure 5.2).



**Figure 5.1. View west from North Reno Creek Unit in Section 27 R43N T73W**  
(Source: Behre Dolbear)



**Figure 5.2. View east to the Pine Tree Unit**  
(Source: Behre Dolbear)

## **5.2 ACCESS TO THE PROPERTY**

AUC's properties are in the southern portion of the PRB in the Pumpkin Buttes Uranium District in Campbell County, Wyoming. They are in an area utilized for livestock grazing, oil and gas production, and CBM production.

The North Reno Creek/Uranerz and Southwest Reno Creek Resource Units are located 7.5 miles southwest of Wright, and 31 miles northeast of Edgerton on Wyoming Highway 387. Access to North Reno Creek, Southwest Reno Creek, and Pine Tree Units, from the east and west, is via Wyoming Highway 387. Access to the Bing Resource Unit is provided via Wyoming Highway 50.

The primary access roads to the Moore Resource Unit from Wyoming Highway 387 are Wyoming Highway 50 and the Clarkelen Road that runs north and south and is a Campbell County-maintained all-weather gravel road. Additionally, there are private, two-track roads established from the CBM development and agricultural activity, which provide access to other areas within the Project. No part of the Project is more than 2 miles from a public, all weather road.

## **5.3 PROXIMITY OF THE PROPERTY TO POPULATION CENTERS AND TRANSPORTATION**

The Project is in southwest Campbell County, Wyoming. The nearest community is Wright, a small, incorporated town (population approximately 1,800) at the junction of Wyoming Highway 387 and Wyoming Highway 59, located 7.5 miles to the northeast of the North Reno Creek Resource Unit. Gillette, a major local population center with a regional airport, is located along Interstate 90, 41 miles north of the Project area via Wyoming Highway 59. The towns of Edgerton and Midwest are in Natrona County and lie southwest of the Project on Wyoming Highway 387. Casper is a major population center with a regional airport and lies approximately 80 miles to the southwest on Interstate 25. A major north-south railroad, used primarily for haulage of coal, lies approximately 20 miles east of

the Project. Most necessary equipment and supplies that are needed for the day-to-day operation are available from these towns and cities. Specialized equipment for the well fields or CPP may need to be acquired from outside the state.

#### **5.4 CLIMATE AND LENGTH OF OPERATING SEASON**

The Project area is subject to extremes in temperature from summer to winter months ranging from 100°F in July and August to -25°F in December and January. Yearly precipitation totals typically range between 10 inches and 15 inches. Snow accumulation depths throughout the winter months are between 30 inches and 60 inches per year. Winds from the southwest are predominant and commonly range from 10 miles to 40 miles per hour. Evaporation rates are relatively high and are related to surface air temperatures, water temperatures, wind speed, and relative humidity. Despite occasional muddy spring and cold winter conditions, work can be effectively carried on year around on the Reno Creek ISR Project.

AUC installed a meteorological station at the eastern end of the North Reno Creek Resource Unit to determine the sub-regional weather and baseline meteorological conditions required for licensing and permitting. This meteorological station has been providing continuous digital hourly-averaged meteorological data over the past 8 years. The meteorological data collected include wind speed, wind direction, sigma theta, temperature, relative humidity, barometric pressure, solar radiation, precipitation, evaporation, and evaporation pan water temperature. The data gathered are also effective for evaluation of the Uranerz Acquisition.

#### **5.5 SURFACE RIGHTS FOR ISR OPERATIONS, POWER, MINING PERSONNEL, AND LAND AVAILABLE FOR PROCESSING FACILITIES**

As a result of energy development over the past 50 years, all of AUC deposits, including the Uranerz Acquisition, have existing or nearby electrical power, gas, and have adequate phone and internet connectivity. The local economy is geared toward coal mining and oil and gas production as well as ranching operations, providing a well-trained and capable pool of workers for ISR production and processing operations.

AUC has leases and surface use and access agreements within the proposed mining permit area to enable construction of all operational facilities. AUC has developed several arrangements with landowners to obtain both surface and groundwater for its operational needs.

AUC has purchased 40 acres upon which to build and operate its CCP (Figure 4.1). The site is currently equipped with buildings, power, telephone, water tank, and domestic waste disposal. The site is located within the Southwest Reno Creek Resource Unit near the intersection of Wyoming Highway 387 and the Clarkelen County Road. AUC has also leased the 8 mining claims that lie on and around the CPP site.

## **6.0 HISTORY**

### **6.1 PRIOR OWNERSHIP AND OWNERSHIP CHANGES**

Between 2004 and 2007, Strathmore Minerals Corporation and American Uranium Corporation acquired lands in the Reno Creek ISR Project area. In 2007, they entered into a joint venture partnership to consolidate the Reno Creek properties. In 2010, Strathmore Minerals Corporation and American Uranium Corporation subsequently sold the North Reno Creek and Southwest Reno Creek properties and the Pine Tree, Moore, and Bing properties and the holding company, AUC LLC, to AUC Holdings. UEC purchased all the issued and outstanding shares of Reno Creek Holdings Inc. through a share purchase agreement with each of the original Pacific Road Resources Funds and Bayswater Uranium Corporation and thereby acquired AUC and the Project effective May 9, 2017. UEC also acquired the North Reno Creek ISR Project from Uranerz Energy Corporation (Uranerz), a wholly owned subsidiary of Energy Fuels Nuclear effective May 1, 2018. The North Reno Creek Project is located immediately adjacent to and within AUC's existing Reno Creek Project permitted boundary. The Project's history, prior to the Strathmore/AUC era, is described below.

#### **6.1.1 North Reno Creek and Southwest Reno Creek Units**

Substantial historical exploration, development, and mine permitting were performed at North Reno Creek. Beginning in the late 1960s and continuing into the mid-1980s, Rocky Mountain Energy (RME), a wholly owned mining subsidiary of the Union Pacific Railroad, drilled approximately 5,800 exploration holes on their holdings, much of which AUC controls today. Exploration drilling delineated approximately 10 miles of roll front uranium deposits. By the mid-1970s, a partnership was formed between RME, Mono Power Company (Southern California Edison), and Halliburton Services to develop and mine Reno Creek using ISR methods.

In 1992, RME's Reno Creek project was acquired by Energy Fuels Nuclear Inc. (EFI). Over the next decade, EFI and its successor, International Uranium Corporation (IUC), continued to advance their Reno Creek holdings toward full permitting and uranium recovery. In 2001, IUC's property was sold to Rio Algom Mining Corp. Thereafter, Rio Algom holdings were acquired by Power Resources Inc. (a United States subsidiary of Cameco), which dropped its claims in 2003.

Most of Southwest Reno Creek was controlled and explored by American Nuclear Corporation (ANC) and the Tennessee Valley Authority (TVA). Approximately 700 holes were drilled during the life of the joint venture.

#### **6.1.2 Moore, Pine Tree, and Bing Units**

Exploration was conducted in the 1960s, near and on AUC's Pine Tree, Bing, and Moore properties by Cleveland Cliffs Iron Company (Cleveland Cliffs) and Utah International Mining Company (Utah International). Utah International held lands that comprised all of AUC's Pine Tree resource area in Sections 17 and 20, T42N, R74W and a portion of the Moore resource area in Section 3, T43N, R74W and Sections 26 and 35, T44N, R74W. Surface and mineral leases, as well as federal claims held by Utah International, Inc., were known as the 'A' Group (Pine Tree Property) and 'B' Group (Moore Property).

In the late 1970s, Utah International became Pathfinder Mines, Inc. and continued development of the Pine Tree and Moore properties, as possible open pit mining operations. By the early 1980s, activities consisted of assessment drilling to maintain leases and claims on areas containing the main mineralization. During the 1980s, RME obtained ownership of claims and leases on and in the area of the Moore properties. RME continued evaluation of these properties with annual assessment drill programs until about 1990.

The Bing project was explored exclusively by Cleveland Cliffs. Several hundred exploration holes were drilled and a limited hydrologic testing program was conducted in the area in the 1970s.

## **6.2 TYPE, AMOUNT, QUANTITY, AND RESULTS OF WORK BY PREVIOUS OWNERS**

AUC has acquired data sets from companies that previously evaluated the uranium deposits in the area, including Areva, Cameco, Strathmore, and other sources. AUC now controls thousands of geophysical logs, maps, reports, and other data that are pertinent to all the Reno Creek Resource Units.

### **6.2.1 Disequilibrium Studies**

RME conducted extensive coring and assay testing to confirm uranium values and evaluate potential disequilibrium at the Reno Creek and Moore Units. Twenty-three core holes on the AUC property were tested foot-by-foot through extensive portions of the production zone sandstone, with multiple comparisons run. In some cases, RME tested as much as 130 feet of sandstone; 2 feet to 40 feet were tested bracketing all of the intercepts that met or exceeded the 0.02% radiometrically equivalent  $U_3O_8$  ( $eU_3O_8$ ) cutoff grade. Twenty core holes were located on the North Reno Creek Unit and 3 core holes were on the Moore Unit.

RME ran three separate comparisons on a foot-by-foot basis.

- Beta Minus Gamma versus Closed Can
- Chemical (Fluorimetric) Analysis versus Downhole Probe
- Delayed Fission Neutron (DFN) versus Downhole Probe

All these tests were designed to estimate a level of potential uranium disequilibrium between a grade derived in a manner that either directly measures uranium or measures an indirect factor that closely relates to uranium concentrations and a radiometric grade from the downhole probe or closed can test<sup>1</sup>. Disequilibrium is represented by a ratio between the chemical and radiometric analyses. Favorable measurements exceed 1.0 while unfavorable measurements are less than 1.0.

Thirty-four separate intercepts, averaging greater than 0.02%  $eU_3O_8$  (compositing the hundreds of half foot measurements described above), were extracted from the 23-core hole database. The 34 intercepts had 46 comparisons conducted using a combination of methods. The results of these comparisons are shown in the weighted averages below:

- Beta Minus Gamma versus Closed Can ..... 1.80
- Chemical Analysis versus Probe..... 1.47
- DFN versus Probe..... 1.21

Of the 46 comparisons, 37 were favorable (greater than 1.0) and 9 were unfavorable (less than 1.0). Of the 9 unfavorable results, 6 were greater than 0.8. Three of the 9 were less than 0.8.

Sample RN 43C is the one intercept for which it is possible to suggest dispersion of uranium by oxidizing groundwater. It is the shallower of the two intercepts in the hole and is in an area that has approximately a 20-foot to 30-foot head above the shallow intercept. This means that solution mining can be used as an extraction method in this location because it requires the presence and circulation of ground water as part of the extraction process.

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<sup>1</sup>Reliant on gross gamma ray measurements and the potential fractionation of uranium from its daughter products.

Utah International/Pathfinder also conducted equilibrium analyses on four drill holes at the Pine Tree project. They evaluated 57 separate half-foot intervals using a chemical analysis by x-ray fluorescence and compared those measurements to radiometric analyses. Over those samples, the average ratio of chemical to radiometric was 1.10. All the intervals were in excess of 0.05%  $U_3O_8$ , which was Utah's open-pit mining cutoff grade at the time. No equilibrium data are available for the Bing deposit.

## **6.2.2 North Reno Creek and Southwest Reno Creek**

RME reports, maps, and cross sections in AUC's possession indicate that over 5,800 exploratory holes were drilled by RME in the greater Pumpkin Buttes area, with at least 1,083 holes completed on the North Reno Creek Unit. AUC possesses survey data, electric logs, and lithologic logs for nearly all RME's drill holes at North Reno Creek. ANC and TVA drilled approximately 700 holes on the Southwest Reno Creek Unit, and while few electric logs are available, maps and data that summarize the results of the work are incorporated into AUC's database and are used for current mapping and resource estimates.

Extensive hydrologic testing was conducted by RME to enable permitting, construction, and operation of an ISR pilot plant located near the northeast portion of the mineralized trend (Figure 4.1). The well patterns at the plant site were installed in the partially saturated portion of the local hydrologic regime to ensure that operations could be successfully conducted under low-head, partially saturated conditions. RME's pilot test pattern #2 (sodium bicarbonate extraction) was successfully operated and restored in an area with 20 feet to 30 feet of hydrologic head present above the low-grade mineralization (RME, 1981, 1982, and 1983). The fully saturated/partially saturated boundary was depicted on potentiometric maps by RME, and lies almost at the same position as Wyoming Highway 387, with partially saturated conditions being present east of the highway. Recent testing by AUC determined that current groundwater conditions remain similar to conditions in the 1980s. Further discussion of AUC's hydrologic investigations is found in Section 20.1.1 of this report.

RME also conducted a large scale Hydrogeologic Integrity Test and issued a two-volume report describing the results (RME, 1982). The investigation had two objectives.

- Determine if historical exploration holes, drilled prior to the enactment of drill hole plugging and abandonment regulations, had naturally sealed themselves.
- Determine if there is hydraulic communication between the production zone aquifer (PZA) and the overlying aquifer using a series of pump tests in the PZA.

RME's tests of historical drill holes indicated that all holes had been adequately sealed through the production zone aquifer and overlying aquitard. Pump testing by RME and subsequent testing by AUC showed that there was no detectable communication between the PZA and the overlying aquifer.

Following RME's exit from the project, further extensive hydrologic and baseline studies were performed for several years at North Reno Creek by EFI and its successor, IUC. IUC was pursuing permits for a commercial operation and installed a monitoring well ring around a mineralized area in Section 29, 43N, R73W (Figure 4.1). Copies of IUC's documents were acquired by AUC and were reviewed and used to aid current permitting efforts.

## **6.2.3 Moore Unit**

Drilling by Utah International/Pathfinder Mines was performed in the 1970s on what is now referred to as the Moore Unit resulting in identification of alteration fronts and resources in Sections 26 and 35, T44N, R74W and the east half of Section 3, T43N, R74W. The Utah/Pathfinder Moore drilling consists of more than 1,000 holes identified as drill hole B-series (B-1 through B-1066).



Upon acquisition of leases and claims in the Moore property area, RME drilled extensively in the 1980s. The locations were selected to extend known mineralized trends and to more closely identify alteration fronts. RME also installed six wells and conducted a multi-well pump test that determined favorable saturated ground water conditions exist at the Moore Unit (Hydro Engineering for Union Pacific Resources, 1987).

Data acquired by AUC for the Moore Unit includes 327 paper logs, reports, cross sections, and an electronic database containing coordinates, natural gamma ray log counts per second (CPS) data, and uranium intercept data for approximately 1,390 holes. RME, Pathfinder, and Cleveland Cliffs originally generated the data.

#### **6.2.4 Pine Tree Unit**

Drilling by Utah International/Pathfinder Mines, in the 1970s on their Pine Tree property, resulted in general identification of alteration fronts in what is now AUC's Pine Tree Unit in Sections 17 and 20, T42N, R74W. The total amount of drilling during this time consisted of more than 400 holes identified as the A-series (A-1 through A-480). AUC has acquired logs for 288 of those drill holes as well as Pathfinder's tabulations of survey information and uranium intercept data, all of which have been incorporated into AUC's Pine Tree database.

#### **6.2.5 Bing Unit**

Cleveland Cliffs drilled several hundred holes in the general Bing resource area including wells constructed for pump testing purposes. Cleveland Cliff's pump test data from one of the tests indicated that pumping rates of over 20 gallons per minute (gpm) were achieved. The drilling was conducted from 1968 through 1982.

AUC's data acquisition for the Bing area included approximately 200 electric logs to support the AUC resource estimate, but did not include intercept reports. AUC personnel scanned the original electric logs to estimate thickness and grades of radiometric equivalent  $U_3O_8$  ( $eU_3O_8$ ) for use in resource estimates for the Bing Unit.

### **6.3 HISTORICAL MINERAL RESOURCE ESTIMATES**

Strathmore Minerals Corporation prepared two Canadian NI 43-101 Mineral Resources Reports for the Reno Creek Properties, titled: "Reno Creek Uranium Property Campbell County, Wyoming" and "Southwest Reno Creek Uranium Property Campbell County, Wyoming," both updated on January 30, 2009. Mr. Charles D. Snow was the author of both reports.

Using a polygonal resource estimation method, Mr. Snow reported resources of 5.7 million tons at an average thickness of 11.9 feet and average grade of 0.065%  $U_3O_8$  in-place for a total of 7.4 million pounds (Measured and Indicated) of  $U_3O_8$  at North Reno Creek. Mr. Snow's Southwest Reno Creek Technical Report reported resources of 2.6 million tons at an average thickness of 11.4 feet and average grade of 0.068% for a total of 3.5 million pounds (Measured and Indicated) of  $U_3O_8$  at Southwest Reno Creek.

The combined units reported approximately 8.3 million tons at an average grade of 0.066%  $U_3O_8$  and an average thickness of 11.7 feet for a total of 10.9 million pounds of Measured and Indicated  $U_3O_8$ .

An additional 2.6 million tons at an average thickness of 13.2 feet and average grade of 0.065%  $U_3O_8$ , containing 3.4 million pounds of Inferred Mineral Resources of  $U_3O_8$  in-place were reported in North Reno Creek. At Southwest Reno Creek, Mr. Snow reported an additional 1.2 million tons at an average thickness of 11.4 feet and average

grade of 0.057%, containing 1.3 million pounds of Inferred Mineral Resources of  $U_3O_8$ . The Snow reports did not estimate the resource by individual roll front<sup>2</sup>.

## 6.4 PRODUCTION

Limited production (approximately 1,200 pounds of  $U_3O_8$ ) occurred at RME's pilot ISR operation, located in North Reno Creek (Figure 4.1). RME applied for and received a research and development (R&D) pilot plant license in 1978 from the NRC and Wyoming DEQ. RME tested two injection/recovery patterns under the license (RME, 1981, 1982, and 1983). Both were conducted in an area of lower grade mineralization (0.038%  $U_3O_8$ ) than the average of the deposit.

In January 1979, RME completed a 100 gpm pilot plant. Two test patterns were installed and operated. Pattern #1 utilized a sulfuric acid lixiviant at a pH of 1.7 because of high recoveries indicated in amenability tests. Testing at Pattern #1 began in February 1979 and was terminated in November 1979 because results from this pattern were unsatisfactory. Severe permeability losses were noted and despite attempts to improve recovery and injectivity, the acid pattern ultimately proved that this formation could not be leached effectively using acid lixiviants. Restoration and stabilization of the groundwater of Pattern #1 was acknowledged and signed off by the Nuclear Regulatory commission (NRC) in March 1986. AUC possesses reports and letters from government agencies documenting hydrologic conditions, operation of the well fields, restoration, and regulatory signoff of the facility (RME, Reno Creek Pattern #2 Restoration Reports and Addenda, 1983).

Operation of Pattern #2 began in October 1980 using a sodium carbonate ( $Na_2CO_3$ )/sodium bicarbonate ( $NaHCO_3$ ) lixiviant and hydrogen peroxide ( $H_2O_2$ ) oxidant. Pattern #2 was constructed as a modified 5-spot pattern, consisting of 2 recovery wells, 4 injection wells, and 6 monitor wells. Pattern #2 was operated from October 1980 to December 1980. The results, coupled with the column leach test results, led RME to switch to carbonate lixiviant for further testing and commercial development. Uranium recovery and average head grade were especially encouraging. Uranium head grade peaked at 65 mg/L and approximately 1,200 pounds of  $U_3O_8$  were recovered. In order to demonstrate restoration, leaching was stopped while  $U_3O_8$  concentrations were still at 15 mg/L.

Restoration of Pattern #2 began in December 1980 and continued until April 16, 1983. All groundwater parameters returned to baseline ranges with the exception of pH, uranium, and vanadium. Of these parameters, all were either below Wyoming Department of Environmental Quality (WDEQ) Class I Groundwater Standards (domestic use) or do not have Class I maximum concentration limits (WDEQ, 1980). Pattern #2 pilot testing culminated in regulatory signoff in June 1983 with the approval of carbonate leaching for commercial operations at Reno Creek under Materials License Number SUA-1338.

There has been no production from the Southwest Reno Creek, Moore, Pine Tree, or Bing Units.

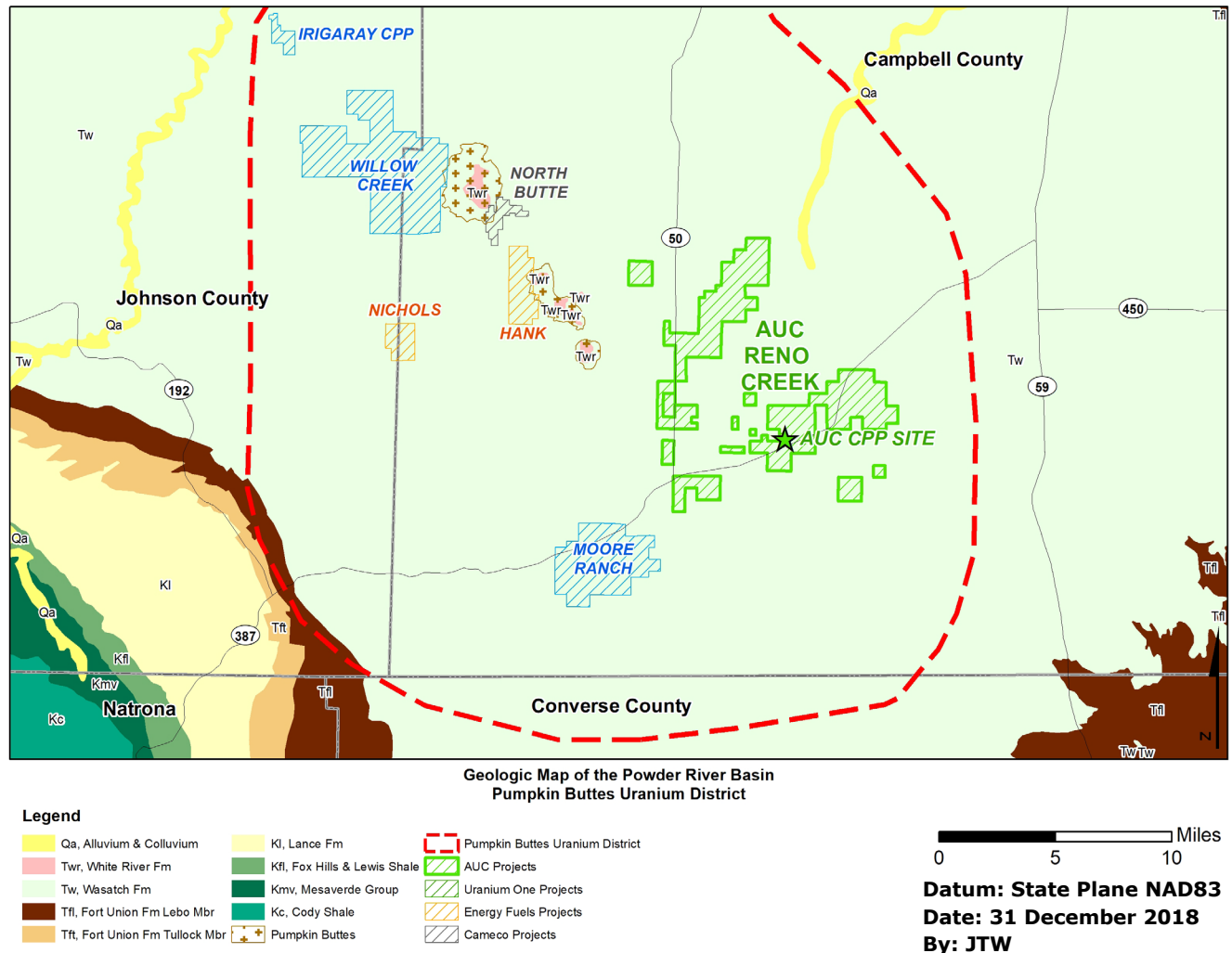
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<sup>2</sup>The reader is cautioned that due to the uncertainty, which may attach to Inferred Mineral Resources, it cannot be assumed that all or any part of an Inferred Mineral Resource will be upgraded to an Indicated or Measured Mineral Resource, because of continued exploration. Confidence in the Inferred Mineral Resource estimate is insufficient to allow the meaningful application of technical and economic parameters or to enable an evaluation of economic viability worthy of public disclosure. Inferred Mineral Resources must be excluded from estimates forming the basis of pre-feasibility or other feasibility studies.

## 7.0 GEOLOGICAL SETTING AND MINERALIZATION

### 7.1 REGIONAL GEOLOGY

The Project is in the Pumpkin Buttes Uranium District in the central PRB of Northeastern Wyoming, as shown in Figure 7.1. Outcrop and host rock geology consists primarily of sedimentary units of the Eocene-age Wasatch Formation.



**Figure 7.1. Geologic map of the Powder River Basin Pumpkin Buttes Uranium District (Source: AUC)**

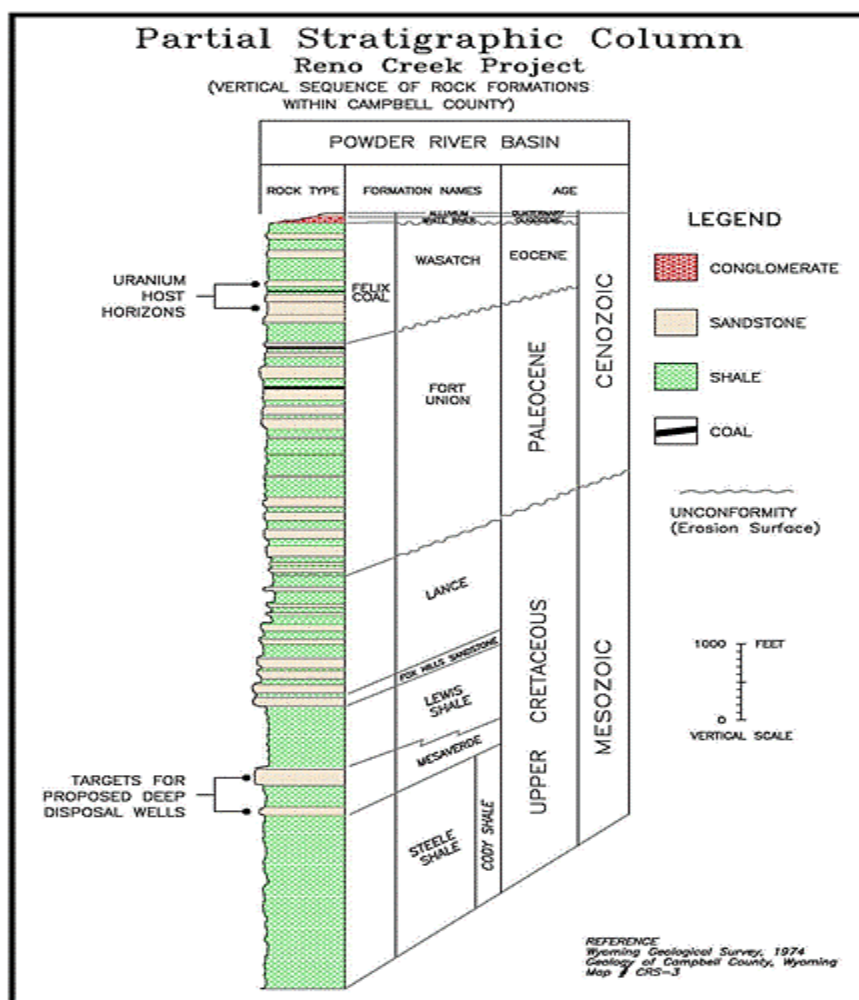
Active uranium projects in various stages of permitting, design, construction, operation or on standby in the Pumpkin Buttes District posted on the map include AUC's Reno Creek project, Uranium One's Moore Ranch and Willow Creek/Irigaray projects, Energy Fuels (Uranerz) Hank and Nichols Ranch projects, and Cameco's North Butte Project.

The Eastern Wyoming Uranium District encompasses an area of about 31,000 square kilometers (12,000 square miles) in Campbell, Johnson, and Converse counties. The first uranium discoveries in the PRB near Pumpkin Buttes were in 1951 (Davis, 1969). Limited surface production began in 1953 followed by ISR development at Irigaray

and Christensen Ranch. Other uranium deposits were found along a 60-mile northwest-southeast trend in the southern part of the PRB.

The PRB extends over much of northeastern Wyoming and southeastern Montana, and consists of a large north-northwest-trending asymmetric syncline. The basement axis lies near the western edge of the basin, and the present surface axis lies to the east of the basement axis near the Pumpkin Buttes, approximately 10 miles west of the project. The basin is bounded by the Big Horn Mountains to the west, the Black Hills to the east, and the Hartville Uplift and Laramie Mountains to the south.

The PRB is filled with sediments of marine and continental origin ranging in age from early Paleozoic through Cenozoic. Figure 7.2 depicts the upper portion of the stratigraphic column in the Reno Creek Project area. Sediments reach a maximum thickness of about 20,000 feet in the deepest parts of the basin. The top of the Precambrian is projected to be 17,500 feet deep in the Project area.



**Figure 7.2. Stratigraphic column – Wyoming Geological Survey, 1974 – Geology of Campbell County, Wyoming**

Following a long period of stability during the Mesozoic Period, tectonic forces of Late-Paleocene to early-Eocene age ushered in mountain building events related to the Laramide Orogeny. Uplift began to affect the western continental margin and modify the landscape of central and eastern Wyoming (Seeland, 1988). As a result of these

tectonic forces, the PRB was the site of active subsidence surrounded by orogenic uplifts (Big Horn Mountains, Laramie Mountains, Black Hills, etc.). Northward flowing rivers deposited repeated sequences of sandstones, mudstones, and minor coals comprising the Eocene Wasatch Formation. Sandstones form the uranium-bearing host horizons at Reno Creek and surrounding areas. The Wasatch Formation dips northwestward at approximately 1 degree to 2.5 degrees in this portion of the PRB (Sharp, et al., 1964).

During the Oligocene Epoch, regional volcanism to the west of the basin resulted in the deposition of tuffaceous claystone, sandstone, and conglomerate of the White River Formation. Remnants of the White River Formation overlie the Wasatch Formation, capping the Pumpkin Buttes. The volcanic ash is postulated by many to be the source of the uranium mineralization in the PRB.

The Wasatch Formation unconformably overlies the Fort Union Formation around the margins of the basin. However, the two formations are conformable and gradational toward the basin center and the Project area. The Wasatch contains thick lenses of coarse, cross-bedded, arkosic sands deposited in a moderate to high-energy fluvial environment and reaches a maximum thickness of 500 feet to 700 feet within the Project area. The Badger Coal is regarded as the approximate lower boundary of the Wasatch Formation in the Reno Creek, Moore, Pine Tree, and Bing areas.

CBM production present in parts of the Project area is from the Anderson/Big George Coal, at approximately 1,000 feet to 1,100 feet below ground surface. The coal seams occur approximately 600 feet below the base of the aquifer proposed for uranium ISR operations.

## **7.2 SITE GEOLOGY**

Mineralization in the Project area occurs in fluvial sandstones of the Eocene Wasatch formation. The sandstones are arkosic, fine- to coarse-grained, contain minor amounts of carbon trash, dispersed and in stringers, and contain local calcareous lenses. Unaltered sands are generally gray while altered sands are tan or pink, due to hematite ( $\text{Fe}_2\text{O}_3$ ) or show yellowish coloring due to limonite ( $2\text{Fe}_2\text{O}_3 \cdot 3\text{H}_2\text{O}$ ) (Utah International, Internal Memo, December 1971).

Pyrite ( $\text{FeS}_2$ ) is noted in several forms within the host sands. In unaltered sands, pyrite may be found as small to large single euhedral crystals associated with magnetite ( $\text{Fe} \cdot \text{Fe}_2\text{O}_3$ ), ilmenite ( $\text{FeTiO}_3$ ), and other dark detrital minerals. In altered sandstone, pyrite is absent or scarcely found as tarnished, very fine euhedral crystals. In areas of intense or heavy mineralization, pyrite may be found in massive, tarnished crystal aggregates (Utah International, Internal Memo, December 1971).

AUC's drilling, coupled with historical electric log datasets and CBM gamma ray logs, has enabled correlation of major uranium host sandstones and identification of continuous hydrostratigraphic units across the Project. AUC has also acquired lithologic logs for several hundred CBM pilot holes as well. In total, AUC controls data from 10,151 uranium exploration holes and 1,500 CBM logs in the Reno Creek ISR Project area.

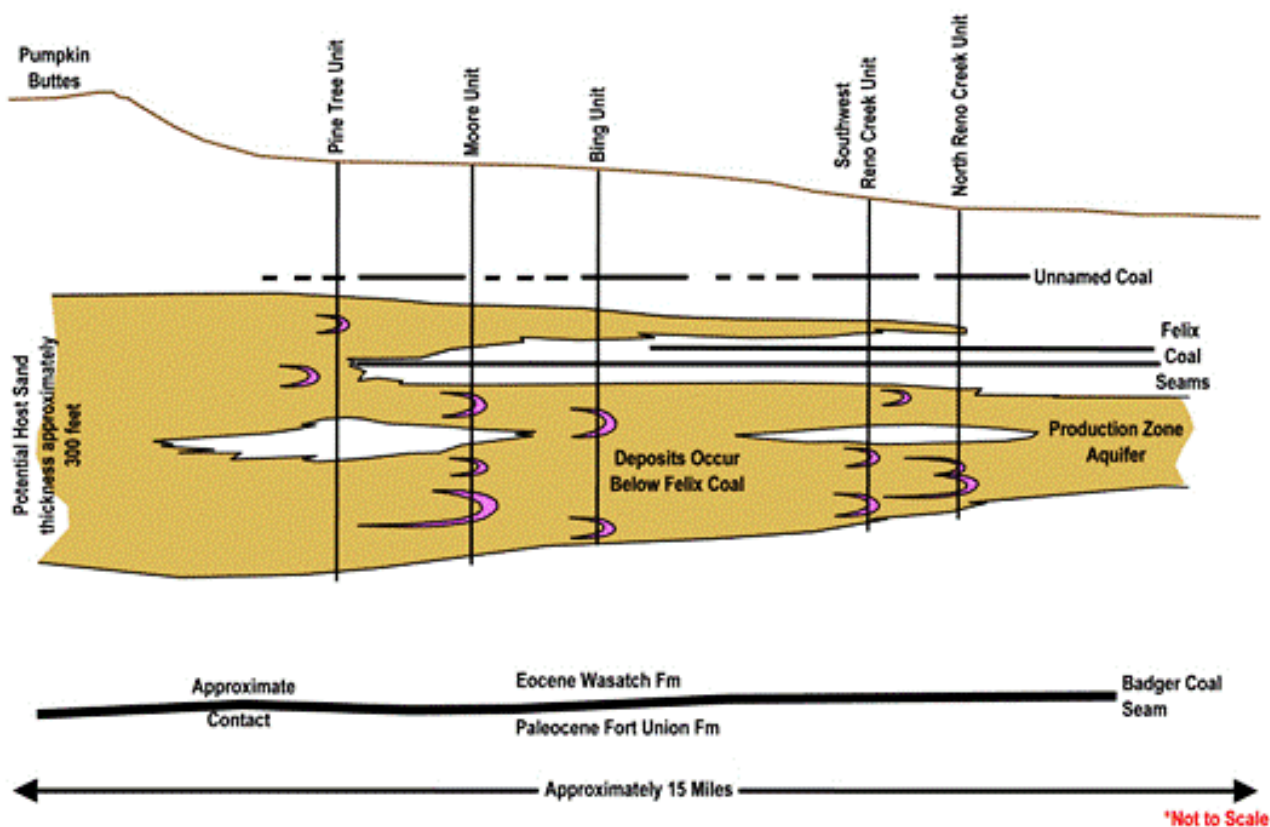
Hydrogeologic investigations by AUC and historical investigations by RME, IUC, and Cleveland Cliffs have resulted in a thorough understanding of the groundwater conditions across the Permitted area.

Structure in the Project area is limited to minor (1-2.5 degrees) westerly dips. Faults have not been observed or reported in literature in any of the Resource Unit areas.

Major hydrostratigraphic units present at the Reno Creek ISR Project are described below and discussed in Section 7.2.1. Impervious mudstone aquitards are shown as green on the drill hole column and the production zone units are shown in yellow (see Figure 7.4 below).

- The Overlying Aquifer at Reno Creek, including the Uranerz Acquisition, overlies the proposed production zone and also overlies the Felix Coal marker across the entire area. This overlying aquifer/sandstone is regarded as a host for mineralization at the Pine Tree Unit, as shown on Figure 7.2 and Figure 7.3.
- The Overlying Aquitard is a continuous confining mudstone unit providing isolation between the production zone and overlying aquifer in the Reno Creek, Moore, and Bing areas that includes the Felix Coal seams.
- The Production Zone Aquifer (PZA) is the host for uranium deposits at the North Reno Creek, Southwest Reno Creek, Moore, Pine Tree, and Bing Units.
- The Underlying Aquitard is a continuous confining mudstone unit providing isolation between the PZA and underlying discontinuous sandstone units occurring above the Badger Coal Seam.

### Diagram of Deposits in Relation to Local Coal Seams



**Figure 7.3. Diagram of deposits in relation to coal seams**  
(Source: AUC)

### **7.2.1 North Reno Creek/Uranerz Geology**

AUC has data from more than 3,400 drill holes in the North and Southwest Reno Creek Units that provide detailed information for characterizing the geology. Drill hole data acquired since 2012 has provided both in-fill and step-out information on the geology and resources. AUC has drilled extensively in the Southwest Reno Creek (772 holes) and North Reno Creek (174 holes) Resource Units, including rotary, core, and pilot holes for cased wells. In the North Reno Creek and Southwest Reno Creek Resource Units, the lower-most unit of the Wasatch Formation comprises the Underlying Aquitard, which lies below the Production Zone Aquifer (PZA) and above the Badger Coal. The aquitard is approximately 150 feet to 250 feet thick and consists of laterally continuous silt and clay rich mudstones, and locally, discontinuous lenticular sandstones. Based on geologic and hydrologic data at North Reno Creek and Southwest Reno Creek, sandstones within this unit do not meet the requirements of an aquifer.

The mineralized host sandstone, or PZA, overlies the underlying aquitard at North Reno Creek and Southwest Reno Creek. The PZA is a discrete and laterally continuous sandstone ranging from under 75 feet in thickness to approximately 220 feet thick. The sand unit occasionally contains semi-continuous mudstone lenses.

Hydrogeologic investigations by RME, IUC, and AUC have resulted in an understanding of the groundwater conditions in the North and Southwest Reno Creek Units, including the position of the water table in relation to mineralization. In the far eastern portion of the North Reno Creek Unit, the PZA is partially saturated and, in some areas, very limited uranium mineralization is present above the potentiometric surface of the PZA. Based on recent work by AUC, the mineralization in the uppermost, unsaturated portion of the PZA in North Reno Creek area Permit is insignificant (approximately 1% of North Reno Creek resources).

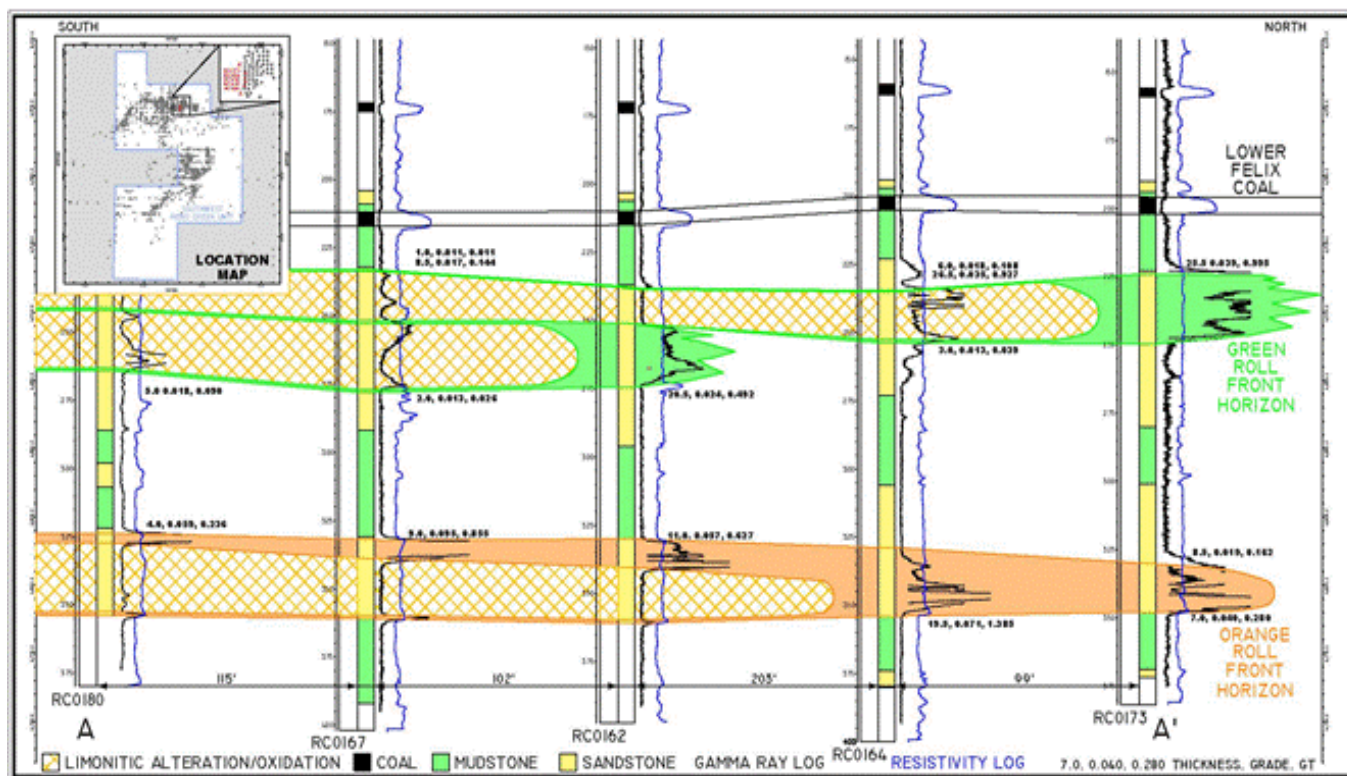
Sandstones within the PZA that host the uranium mineralization are commonly cross bedded, graded sequences fining upward from very coarse at the base to fine grained at the top, representing sedimentary cycles from 5 feet to 20 feet thick. Stacking of depositional cycles has resulted in sand body accumulations over 200 feet thick.

Wasatch sequences in the North Reno Creek and Southwest Reno Creek Resource Units dip slightly to the northwest. No faulting has been observed within the area.

AUC has divided the PZA host sandstone into five horizons to aid in tracking individual roll fronts. Fronts are mapped based on oxidized and reduced (redox) conditions. Oxidization (limonitic and hematitic stained sandstone) is the primary alteration product associated with the up-gradient side of the fronts (referred to as alteration fronts on subsequent figures).

The uppermost roll front horizon is coded as Green, followed by the Purple, Red, Orange, and Blue with increasing depth. The relationship of the Green and Orange horizons is depicted on a diagrammatic cross section for Southwest Reno Creek (Figure 7.4). The intervening Purple and Red roll fronts and the underlying Blue horizon are not present in the area represented in the Southwest Reno Creek diagram; upper and lower sub-rolls of the Green front are depicted on Figure 7.4.





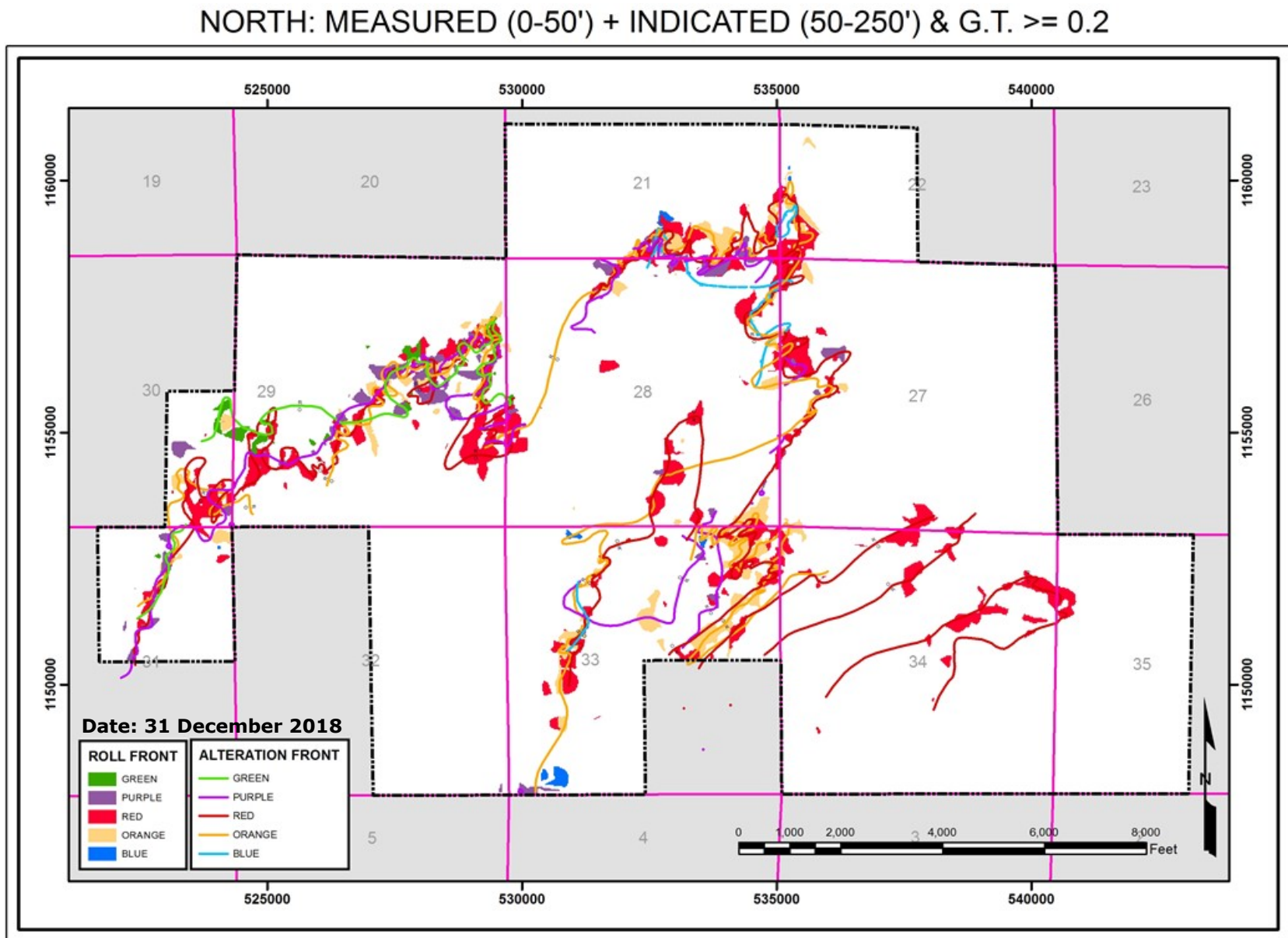
**Figure 7.4. Cross Section A-A' Southwest Reno Creek**  
(Source: AUC)

As shown in Figure 7.2, Figure 7.3, and Figure 7.4, the Felix Coal seams are laterally continuous in the North Reno Creek and Southwest Reno Creek areas and extend northward into the Moore and Bing areas. The Felix Coals and the underlying Badger Coal provide important correlation points across the entire project area and are readily identified on uranium exploration logs and CBM logs in this portion of the PRB.

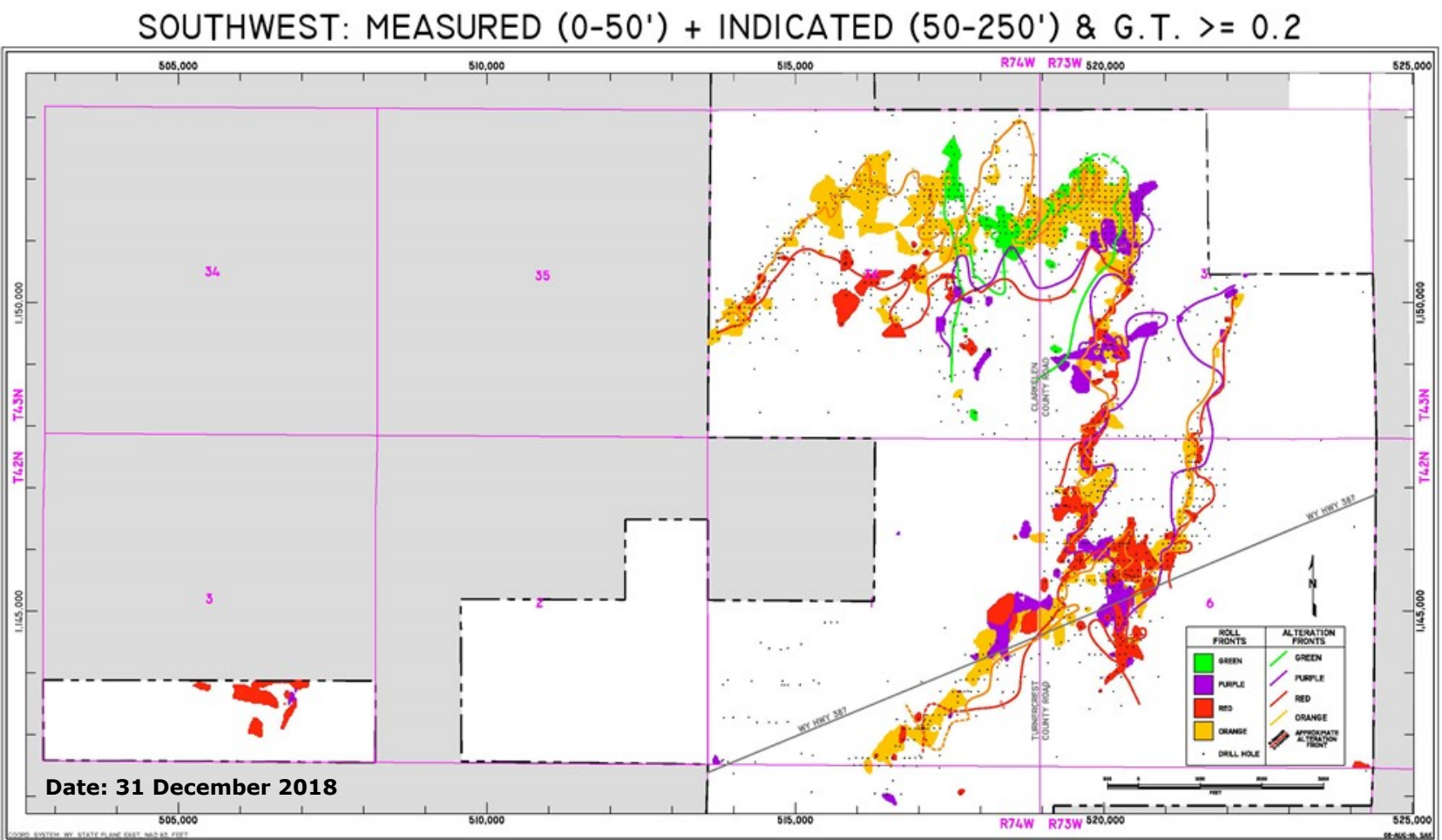
Resources and alteration fronts for the North Reno Creek and the Southwest Reno Creek Units are depicted on Figure 7.5 and Figure 7.6. Fronts (O/R lines on mineral resource figures) are drawn along the projected maximum down gradient extent of the redox interface for each horizon. Mineralized areas containing resources at or above the 0.2 grade-thickness (GT) cutoff, used for estimation of Measured and Indicated uranium resources in this report, are also depicted on the figures using colors corresponding to each horizon. At North Reno Creek (Figure 7.5), resources in the Green and Purple horizons are well developed in the northwest and north portion of the area. The fronts commonly occur above a mudstone break and are distinctly separated from the underlying fronts.

Future mapping in this area (and all resource units) will incorporate the use of three-dimensional (3-D) software to visually identify and correlate fronts and sandstone units. This will be done in addition to the use of electric logs, cross sections, and redox information from lithologic logs. Sub-rolls within each major horizon will be separately mapped to provide greater definition of the deposits.





**Figure 7.5. North Reno Creek Measured and Indicated Mineral Resources**  
(Source: AUC)



**Figure 7.6. Southwest Reno Creek Measured and Indicated Mineral Resources**  
(Source: AUC)

Only minor exploration has been conducted to test the Blue (deepest) horizon. An opportunity exists for expansion of resources along the Blue roll front trend by future drilling programs at North Reno Creek.

In Southwest Reno Creek (Figure 7.6), the Green front is well developed in the north-central portion of the unit. The Purple, Red, and Orange fronts display good continuity, are widely distributed, and host the majority of resources in the Southwest Reno Creek Unit. The Blue sandstone is not present in this area.

The Purple, Red, and Orange roll fronts are closely related vertically and laterally in the area and sub-rolls are common in all horizons. Continued geological evaluation, including use of cross sections, lithologic data, and mapping using 3-D software will provide detail for future development planning at Southwest Reno Creek.

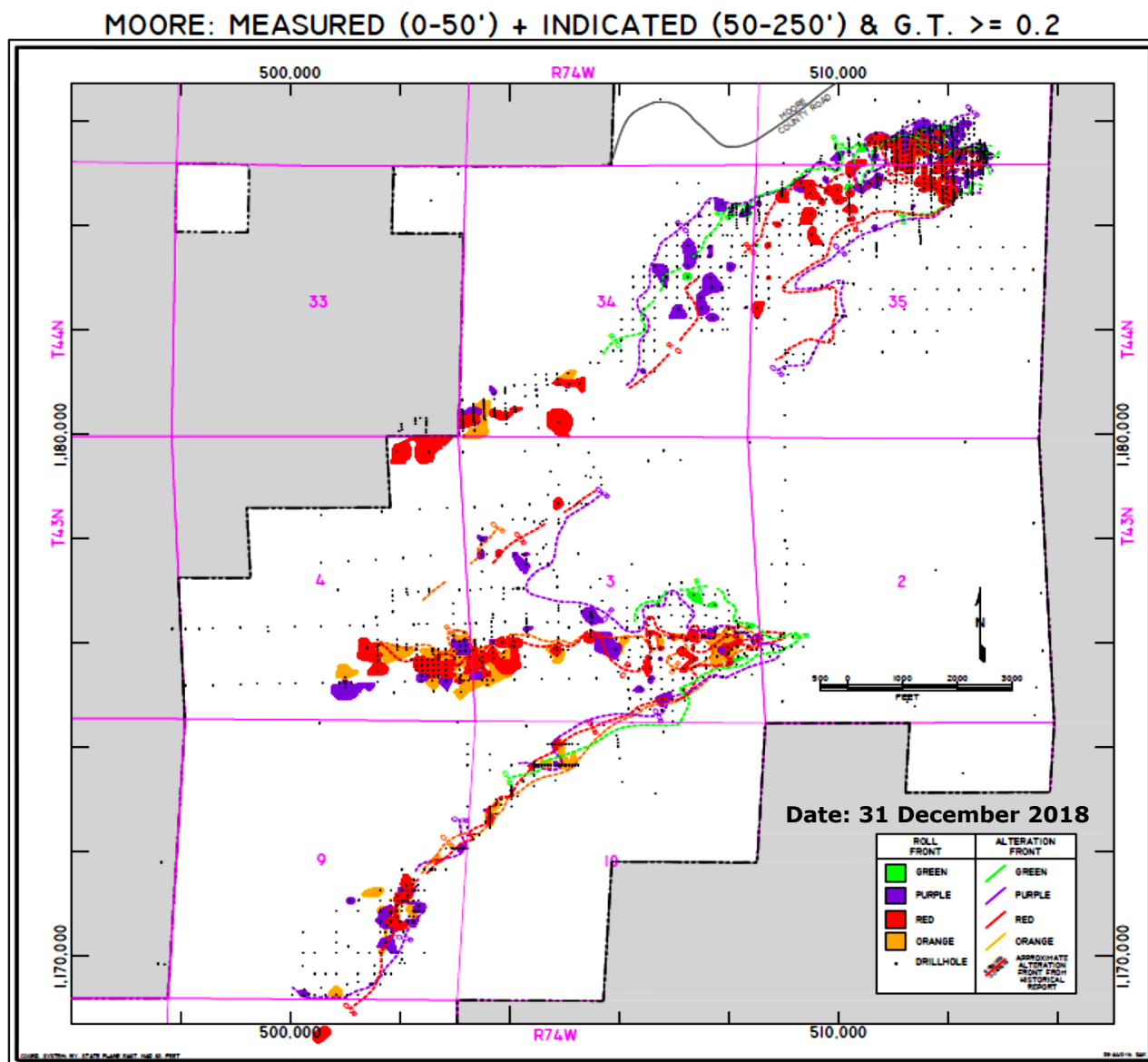
### **7.2.2 Moore Resource Unit Geology**

Completion of a 98-hole drilling program by AUC in late 2012 and acquisition of a new mineral lease in 2013 have enhanced AUC's position at the Moore Unit. The 320-acre property acquired encompasses historical drilling and resources located in the west half of Section 34, T44N, R74W providing an extension to resources previously controlled to the east.

AUC's drilling included 95 rotary holes and 3 core holes distributed within or near the edges of the previously known mineralized areas to provide geological information regarding lithology, mineralization, fronts, and alteration. Drilling by AUC confirmed that the geology at the Moore Unit is consistent with the Reno Creek and Bing Units. AUC now has data from more than 1,800 drill holes in the Moore Unit. The data acquired since 2012 provides both step-out and in-fill information.

AUC's logs, in combination with RME cross sections and CBM logs, enable correlations from the Moore area to the other units. There are two notably continuous coal beds approximately 40 feet to 50 feet apart within the upper portion of the section at the Moore Unit. The lower coal correlates with the Felix Coal bed, which is a marker bed in the Reno Creek resource area. The mineralized host sand lies 5 feet to 30 feet below this coal bed and at a depth of 200 feet to more than 350 feet below the surface. The host sand ranges from 80 feet to 150 feet in thickness.

In addition to AUC's 2012 drilling, AUC has copies of 327 geophysical logs in the Moore area. Historical lithologic logs are generally not available; however, interpretations of electric logs in combination with AUC's lithologic logs is adequate for mapping of alteration fronts. Figure 7.7 is based on historical maps and geologic interpretations and does not include ongoing front mapping by AUC. Gamma log signatures with thinner high gamma intervals are assumed to be "tails" on the oxidized side and thicker mineralized zones are assumed to be in the nose and/or protore zone in the unoxidized portion of the roll front.

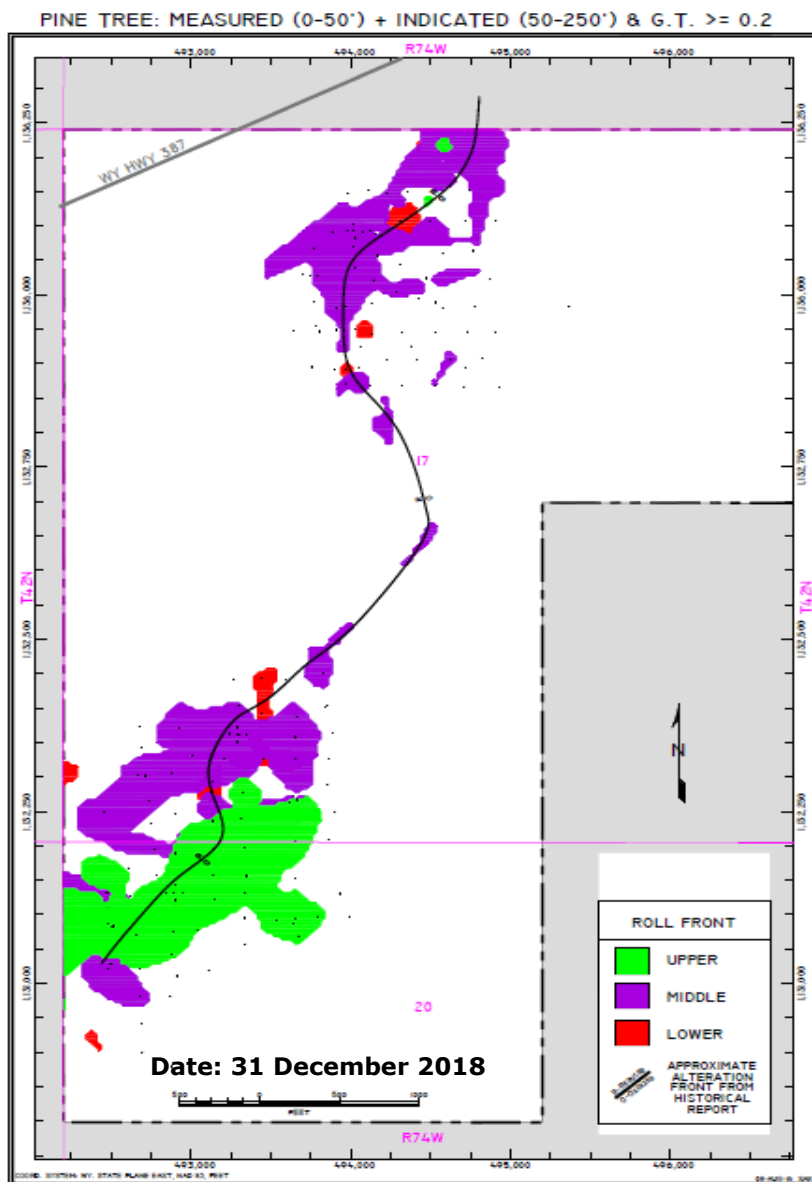


**Figure 7.7. Moore Measured and Indicated Mineral Resources**  
(Source: AUC)

### 7.2.3 Pine Tree Resource Unit Geology

On the basis of regional CBM well log correlations, the sands hosting mineralization at Pine Tree are stratigraphically located slightly higher in the Wasatch section than the host sands at North Reno Creek and occupy the projected stratigraphic position of the Felix Coal, which is absent at Pine Tree. The position of the mineralization is based on its stratigraphic relationship above the Badger and Big George Coals. AUC separated the roll front horizons into Upper, Middle, and Lower fronts at the Pine Tree Unit.

Where available, geophysical logs were used<sup>3</sup> to create cross sections. Lithologic logs are scarce so oxidation/reduction data, helpful for tracking individual roll fronts, is limited, at this time. AUC lacks historical data regarding the water table that would indicate which mineralization on Pine Tree may be above the water table. Mapping of the alteration front in Figure 7.8 is generalized, based on historical data, and may be upgraded by ongoing front mapping by AUC.



**Figure 7.8. Pine Tree Measured and Indicated Mineral Resources**  
(Source: AUC)

<sup>3</sup>Presently there are 308 geophysical logs in the Pine Tree Unit area.

#### **7.2.4 Bing Resource Unit Geology**

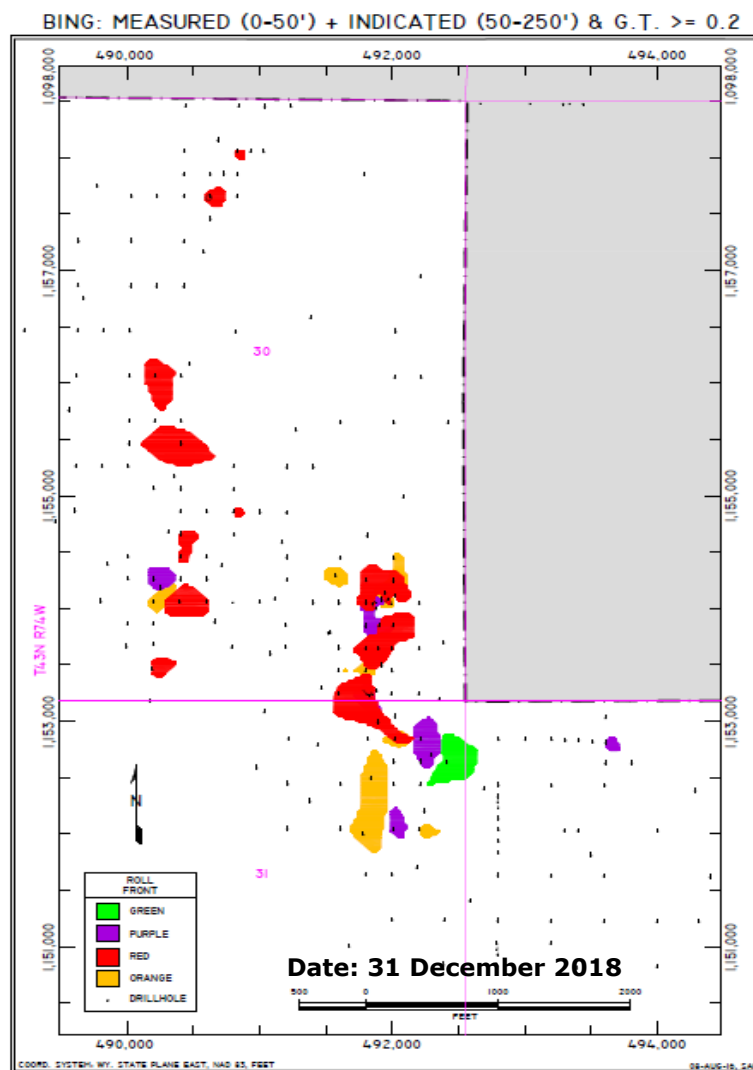
A review of CBM and historical geophysical logs and stratigraphy at the Bing Resource Unit, indicates it consists of interbedded sand and clay units of the lower Wasatch Formation. The mineralized sands appear to be similar to, and correlate with the host units at the Moore, North Reno Creek, and South Reno Creek Units. Interbedded finer sediments consist of clays and mudstone units as well as thin coal beds that range from 2 feet to 8 feet in thickness.

Based on regional correlations of CBM well logs, the Felix Coal marker bed is present in the Bing area. The host sand lies below the Felix Coal seam at a depth of 350 feet to 400 feet below the surface. The host sand ranges from 150 feet to 200 feet in thickness.

AUC divided the host sandstone into four horizons to aid in tracking individual roll fronts. The uppermost roll front horizon is coded as Green, followed by the Purple, Red, and Orange with increasing depth. Geophysical logs were used<sup>4</sup> to create cross sections and determine the mineralized roll front horizons. Lithologic logs are scarce so oxidation/reduction data helpful for tracking individual roll fronts is limited. Therefore, alteration fronts and results of ongoing roll front mapping are not included in Figure 7.9.

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<sup>4</sup>AUC has copies of 200 geophysical logs in the Bing Unit area.



**Figure 7.9. Bing Unit Measured and Indicated Mineral Resources**  
(Source: AUC)

### 7.2.5 Lithologic Characteristics

Lithologic data, generated by RME for the North Reno Creek and Southwest Reno Creek Units, is extensive.<sup>5</sup> Lithologic data from the other resource units is much less complete, but forms an adequate basis to enable geologic mapping for use in current resource estimates and for planning future drilling.

AUC drilled 946 exploration holes, well pilot holes, stratigraphic test holes, and core holes since August 2010 on the North Reno Creek and Southwest Reno Creek Units. Ninety-eight holes were completed by AUC at the Moore Unit.

AUC has collected approximately 717 feet of core from 19 core holes for analysis and lithologic examination. In addition, cuttings samples were collected at 5-foot continuous intervals for lithologic descriptions by AUC geologists

<sup>5</sup>AUC has over 1,000 historical lithologic logs on file.

from surface to total depth. Copies of electric logs, lithologic logs, and a collection of core and cuttings samples have been saved for future reference, and are stored in AUC's locked storage facility in Wright, Wyoming.

A series of deep stratigraphic test holes penetrating the total thickness of the Wasatch Formation, through the Badger Coal marker at the top of the Fort Union Formation, were drilled in each of AUC's 7-well clusters within the proposed mine permit area at the North Reno Creek and Southwest Reno Creek Units to provide a more detailed sub-regional control. Locations of the well clusters are shown in Section 20.0.

Details regarding lithology, permeability, and porosity can be found in this report in Section 13.1. Based on historical work, as well as current drilling, coring, and laboratory analyses, understanding of lithologic characteristics of the host sandstone, aquitards, and adjacent coals, sandstones, and mudstones is adequate to interpret geologic factors controlling uranium deposition and future ISR actions at all resource units.



## **8.0 DEPOSIT TYPE**

### **8.1 DEPOSIT TYPE AND GEOLOGIC MODEL**

Important economic uranium deposits occur in medium to coarse-grained sand facies of the Eocene Wasatch Formation in the Pumpkin Buttes Uranium District, which includes the North Reno Creek, Southwest Reno Creek, Moore, Bing, and Pine Tree deposits. Uranium mineralization at AUC's holdings occurs within the lower portion of the Wasatch Formation. The uranium mineralization occurs as interstitial fillings between and coatings on the sand grains along the roll front trends formed at geochemical reduction-oxidation (redox) boundaries within the host sandstone aquifers.

Roll front uranium minerals in the unoxidized zone are commonly coffinite ( $U(SiO_4)_{1-x}(OH)_4x$ ) and uraninite ( $UO_2$ ). Low concentrations of vanadium (less than 100 ppm) are sometimes associated with the uranium deposits.

Uranium deposits accumulated along the roll fronts at the down-gradient terminations of oxidation tongues within the host sandstones. The deposits occur within sandstones, which are intermittently interbedded with lenses of siltstone and claystone, commonly referred to as mudstones at the project due to the mixture of particle sizes. The thickness of the mineralization is controlled by the thickness of the sandstone host containing the solution-front.

Uranium deposits are generally found within sand units ranging from 50 feet to 200 feet in thickness, and at depths ranging from 170 feet to 450 feet below ground surface. Uranium intercepts are variable in thickness ranging from 1 foot to 30 feet thick. Thin, low-grade residual upper and lower limbs of the roll fronts are found in the less permeable zones at the top and bottom of oxidized sand units bounded by unoxidized mudstones.

While in solution, uranium is readily transported and remains mobile as long as the oxidizing potential of the groundwater is not depleted. When the dissolved uranium encounters a reducing environment, it is precipitated and deposited at the interface between the oxidizing and reducing environments known as the redox or alteration front.

Oxidation or alteration of the PZA sandstone in the Reno Creek area was produced by the down-gradient movement of oxidizing, uranium-bearing groundwater solutions. Uranium mineralization was precipitated by reducing agents and carbonaceous materials in the gray, reduced sands. The host sandstones, where altered, exhibit hematitic (pink, light red, brownish-red, orange-red) and limonitic (yellow, yellowish-orange, yellowish-brown, reddish-orange) alteration colors, which are easily distinguished from the unaltered medium-bluish gray sands. Feldspar alteration, which gives a "bleached" appearance to the sands from the chemical alteration of feldspars into clay minerals, is also present. Limonitic alteration dominates near the "nose" of the roll fronts. The remote barren interior portions of the altered sands are usually pinkish-red in color. The uranium mineralization is contained in typical Wyoming roll front deposits that are highly sinuous in map view. Figure 7.4 is a diagrammatic cross section of roll fronts using geophysical logs from the Southwest Reno Creek Resource Unit.

Carbon trash is occasionally present in both the altered and reduced sands. In general, the unaltered sands have a greater percentage of organic carbon (approximately 0.2%) than the altered sands (0.13%) in selected cores analyzed by previous operators. Carbon in unaltered sands is shiny, while dull and flaky in the altered sands. Pyrite is occasionally observed in reduced drill core, at concentrations of approximately 0.5%.

## **9.0 EXPLORATION**

Since 2016, AUC has conducted no exploration drilling. Since 2012, AUC completed 235 exploration holes, including 5 core holes. One hundred thirty-seven holes were completed on the North Reno Creek and Southwest Reno Creek Units and an additional 98-hole drilling program was completed at the Moore Unit. Combined, AUC completed a total of 1,044 holes since 2010 (see Section 10.0). The total includes 19 core holes. AUC has not conducted exploration on the Pine Tree or Bing Units.

Prior work by Uranerz on the acquired area, integrated into resource estimates in this report, consisted of a 50-rotary hole drilling program (20,152 feet). The Uranerz drilling program did not include cored holes.

## **10.0 DRILLING**

### **10.1 TYPE AND EXTENT OF DRILLING**

AUC's database now includes 10,151 drill holes, drilled by AUC and previous uranium exploration companies on and nearby the five Resource Units held by AUC. Of these, 6,016 drill holes are located on lands controlled by AUC. The historical data sets in AUC's possession were generated by competent companies that exercised rigorous standards and used acceptable practices of the day. All available data from geologic reports, drilling, survey coordinates, collar elevations, depths, electric log data, and grade of uranium intercepts, have been incorporated into AUC's system. Review and quality assurance/quality control (QA/QC) of AUC's files and databases for all resource areas was conducted by the authors, and the data was found to be adequate and sufficient to support the current Canadian NI 43-101-compliant Mineral Resource estimates contained in this report.

Drilling of 946 rotary holes, core holes, and monitoring wells was conducted from 2010 through 2013 by AUC within the North Reno Creek and Southwest Reno Creek Units. AUC has also completed a 98-hole rotary and core program at the Moore Unit. Evaluation of old and new data in all Resource areas is a continuing process. Mapping of fronts and mineralization in more detail will continue to refine general trends and sub-rolls within the Green through Blue horizons.

#### **10.1.1 North Reno Creek and Southwest Reno Creek Unit Drilling**

The North Reno Creek area was extensively explored from the late 1960s through 1991 by the Union Pacific Railroad and its subsidiaries, RME and Union Pacific Resources. Energy Fuels Nuclear (later IUC) and Power Resources acquired the properties and drilled an additional 300 to 400 holes in the 1990s and early 2000s period on the North Reno Creek unit as well as the acquired Uranerz property.

Additionally, ANC and the TVA explored Southwest Reno Creek during approximately the same period that RME was active in the area. ANC and TVA drilled approximately 695 holes in the general area on properties adjacent to RME's holdings. All the historical drilling and testing were conducted in accordance with the standard and accepted practices at the time.

North Reno Creek and Southwest Reno Creek Resource Units include approximately 2,665 historical drill holes and plugged wells within the Project permit boundary. Approximately 100 of the holes were cased wells that were plugged and abandoned by previous operators.

Since the 2012 resource estimate, AUC completed drilling of 137 holes in the North Reno Creek and Southwest Reno Creek Units. Overall, AUC drilled 946 holes from August 2010 through November 2013, including 16 core holes and 47 cased wells that will remain in place for an extended period for groundwater monitoring purposes. Recent drilling by AUC confirmed intercepts in the historical data by drilling step-out holes (100 feet from the old holes), in accordance with recommendations by the authors. Continuity was also confirmed on a large scale by drilling that joined two mineralized areas over a mile apart. AUC drilling in this area (located in the west half of Section 31, T43N, R73W), added resources.

Some holes were cased in order to be used as observation, monitor, or water supply wells. Other drill holes were plugged and abandoned in accordance with WDEQ/LQD Chapter 8 and per the WDEQ approved AUC Reno Creek Project Drilling Notification 401 (DN401).

AUC's practice in the Pumpkin Buttes Uranium District was to drill bore holes using 4¾-inch to 5¼-inch diameter bits by conventional rotary drill rigs circulating the drilling mud. The cuttings were collected over 5-foot intervals

and laid out on the ground in rows of 20 samples (100 feet) by the driller. The site geologist examined the cuttings, in the field, to determine lithology and geochemical alteration.

Upon completion of the drilling, drill holes were logged, from the bottom of the hole upward, with a gamma-ray, self-potential, and resistance probe. All of AUC's drill holes were logged by Century Geophysical Corporation, an independent downhole geophysical contractor (Figure 10.1), Lithologic and geophysical logs are stored electronically and on hard copy by AUC. A combination of historical intercepts and results of AUC's drilling was used for resource estimation.



**Figure 10.1. Drilling rig and logging truck from completed location on Southwest Reno Creek Unit**  
(Source: Behre Dolbear)

#### **10.1.2 Moore Unit Drilling**

A 98-hole drilling and coring program was completed on the Moore Unit in 2012. Drilling was done by several companies in the Moore resource areas. Wide-spaced drilling on traverse lines was done in the late 1960s by Cleveland Cliffs, which had a very large land holding in the PRB at that time. Cleveland Cliffs drilled 177 holes in the Section 9, T43N, R74W resource area.

Utah International/Pathfinder Mines, Inc. began grid drilling in the late 1960s on their holdings, which included much of the resource area in Sections 26 and 35, T44N, R74W and a portion of Section 3, T43N, R74W. They drilled the B-series of holes, which comprised over 1,000 drill holes through the late 1970s and into the early 1980s. Drill spacing over the resource area is generally 200 feet with some areas being drilled on 50-foot to 100-foot spacing.

In the 1980s, RME drilled more than 400 holes on the Moore resource area now held by AUC. In 1986, RME conducted a 6-hole hydrologic test site on the Moore deposit in Section 26, T44N, R74W on the Moore deposit. This test work confirmed strongly mineralized roll front trends and favorable hydrologic characteristics at the northern deposit on the Moore property. Core analysis and pump testing indicated sufficient permeability and hydraulic head to successfully accommodate ISR procedures. No abnormal leakage across the upper aquitard was detected during the 48-hour pump test, indicating that old drill holes are sealed within the area of influence of the test (RME Reno Creek Exploration 1987 Progress Report).

Data acquired by AUC for the Moore Unit includes 327 historical logs, reports, cross sections, and an electronic database containing coordinates, gamma ray log counts per second (CPS) data, and uranium intercept data for approximately 1,800 holes. The data was originally generated by RME, Pathfinder, and Cleveland Cliffs. A combination of historical intercepts and results of AUC's drilling was used for resource estimation.

### **10.1.3 Pine Tree Unit Drilling**

AUC has not drilled at the Pine Tree Unit at this time, but plans to in the future. Drilling in the Pine Tree area was performed by Utah International, Inc. and its successor, Pathfinder Mines, from the early 1970s into the mid-1980s.

More than 560 holes were drilled in and around the Pine Tree project area with two mineralized areas found in Sections 17 and 20, T42N, R74W. The mineralized areas lie about 1,500 feet apart. Drilling was done on a 200-foot offset grid. The majority of drilling was completed by the mid-1970s. A 5-hole hydrologic test pattern was set up in 1979 by Pathfinder Mines, but AUC does not have results of that test work.

Through data acquisition, AUC has obtained copies of drill hole geophysical logs for 288 of the A-Series of drill holes. Of these holes, 155 logs contained conversion factors (*i.e.*, k-factors, dead times, and water factors). Logs were scanned into electronic format and digitized using the Neuralog, Inc.™ hardware and software. The ".las" files were used to extract grade data.

Intercept values at a 0.05% cutoff grade were compared to the original intercept listing from Utah International, Inc. An adequate correlation was found between the two data sets. A combination of historical intercepts and results of AUC's digitization of the geophysical logs at a 0.01% cutoff grade was used for the current resource estimate.

### **10.1.4 Bing Unit Drilling**

AUC has not drilled at the Bing Unit at this time, but plans to in the future. AUC evaluated approximately 200 logs from the Bing property in Sections 30, 31, and 32, T43N, R74W. Cleveland Cliffs drilled the holes from 1968 through 1982. More than 109,000 feet of drilling was logged. The extracted intercepts, from digitization of the geophysical logs at a 0.01% cutoff grade, were used for the resource estimation.

## **11.0 SAMPLE PREPARATION, ANALYSES, AND SECURITY**

AUC developed Quality Assurance/Quality Control (QA/QC) procedures to guide drilling, logging, sampling, analytical testing, sample handling, and storage. The authors reviewed the QA/QC procedures and determined that AUC followed the procedures and documented their activities properly.

### **11.1 DOWNHOLE GEOPHYSICAL LOGGING**

Geophysical logging was routinely conducted for every drill hole completed on the property by AUC and its predecessors. Geophysical logs typically collected data for gamma ray, single-point resistance, and spontaneous potential. In later years, neutron and drill hole deviation logs were added. Geophysical logging was conducted by Century Geophysical of Tulsa, Oklahoma, a qualified independent contractor.

Natural gamma logs provide an indirect measurement of uranium content by logging gamma radiation in counts per second (CPS) at one-tenth foot intervals, CPS are then converted to equivalent  $U_3O_8$  ( $eU_3O_8$ ). The conversion requires an algorithm and several correction factors applied to the CPS value. The correction factors include a K-factor, dead time factor, and water factor. K-factors and dead times vary from probe to probe and can also vary in each probe over time, with each probe recalibrated on a regular basis at a U.S. Department of Energy test pit located in either Grand Junction, Colorado or Casper, Wyoming.

In all holes drilled by AUC, downhole deviation surveys provided true depth, azimuth, and distance from collar location. Deviation rarely exceeded 5 feet, so true depth correction is insignificant. AUC staff surveyed drill hole collar locations using GPS technology with 10-centimeter accuracy to provide easting and northing coordinates and elevations.

Century Geophysical delivered logging data daily to AUC in digital and hard copy paper formats to AUC's geologists via e-mail. Digital files consisted of ".tif" presentations of electric logs and digital data for all information was recorded on the ".las" files. AUC staff examined the logs and any QA/QC issues were identified and corrected. The logs were transferred to electronic versions of the geologist's lithology logs for efficient comparison of all geophysical and field logging data.

AUC stores recent and scanned historical logs in electronic format on an in-house secure server and hard copies are filed in metal cabinets in the Glenrock, Wyoming office. Electronic files are protected and backed up to prevent damage or loss.

### **11.2 CORE DRILLING**

AUC has collected 717 feet of core from 19 core holes. Sixteen of the locations are within the North Reno Creek and Southwest Reno Creek Resource Units and three core holes were completed at the Moore Resource Unit.

Core samples were collected by AUC in the field by the supervising geologist, boxed and labeled with appropriate identification. Core boxes were transported to the AUC locked warehouse and stored securely until they were sampled and sent for analysis. When each core hole was completed, it was logged using a downhole geophysical tool.

Core samples were selected and split for analysis in Wright, Wyoming at AUC's core storage facility. Each sample was documented and described in detail, and a sequenced sample identification number was given to each sample. The samples were wrapped in sealed plastic bags with the ID number placed inside the bag and written on the outside of the bag for repetitive reassurance that the correct sample ID would be used. Once all the samples were

prepared, a chain of custody was prepared for each laboratory. Chain of Custody forms are on file with AUC. Samples were either hand delivered to local laboratories or shipped to the out of town labs.

Laboratories used by AUC for analytical procedures on core samples were:

- **Core Laboratories, Denver, Colorado:** Permeability and Porosity (P&P), laser particle size analyses, x-ray diffraction (XRD)
- **Core Laboratories, Houston, Texas:** Nuclear Magnetic Resonance (NMR) effective porosity
- **Energy Laboratories, Casper, Wyoming:** Bottle roll, closed can, radiometric, and chemical analyses of metals including uranium
- **J.E. Litz and Associates, Golden, Colorado:** Column leach
- **Weatherford Laboratories, Casper, Wyoming:** P&P, bulk density
- **Inter-Mountain Labs, Inc., Sheridan, Wyoming:** Bottle roll, closed can, radiometrics, and chemical analyses of metals including uranium on samples obtained since 2012

The authors have reviewed the methodologies and QA/QC procedures employed by AUC, and the QA/QC procedures used by the independent analytical laboratories, contracted by AUC, and conclude that they provided results that are consistent and reliable over the years.

## 12.0 DATA VERIFICATION

### 12.1 DATABASE

AUC has conducted a major update of its database since the 2012 resource estimate. Additions were made to properties, over 500 drill holes were added, and tabulated intercept data and barren intervals were edited and restructured. To date, 10,151 drill holes have been drilled by AUC and former operators on and close to the 5 resource units evaluated. Electric log gamma data are available for more than 75% of these holes, and interval data (thickness, grade, and GT) are available for about 95% of the mineralized holes. Most of the additional holes were a result of the Uranerz Acquisition.

A total of 6,191 drill holes in AUC's Microsoft Access® database were used in the current resource estimate. Within the data set, 6,061 holes are on AUC's property, up from 4,613 holes in 2012 due to the inclusion of the Uranerz data. The drill hole data consists of logs, surveys, and data generated from 1,044 holes during AUC's drilling programs since 2010 and includes data generated by several companies previously operating in the area (see Sections 6.0 and 10.0).

Not all the 10,151 drill holes in the database are in close enough proximity to AUC's property to be used in the current estimate. Approximately 50 drill holes were not used in the current resource estimate that were used in the 2012 estimate, due to identification of problematic data during recent data validation processes.

#### 12.1.1 Data Preparation

Data preparation included locating, editing, and compiling drill hole location and downhole mineralized interval data for each roll front in each of the five resource units. This data was obtained from drill hole core and cutting description logs, electric logs, maps, cross sections, and digital databases acquired from previous operators in the area. Data was also obtained from 1,044 holes drilled and logged by AUC, lab analyses completed for AUC, and reports generated by AUC.

The following criteria were used to build databases for roll fronts in the five Reno Creek resource units.

- **Coordinate Data.** When coordinates for historical drill holes from different data sources were available, they were compared, maps were constructed, and a final set of coordinates adopted. In general, X-Y-Z coordinates obtained from multiple sources showed little variance. Coordinates were determined for AUC drill holes via field measurements using GPS instrumentation.
- **Downhole Data.** Mineralized intervals were identified in each drill hole using characteristics of shape and position of natural gamma radiation from electric logs. Cutoff criteria included 0.01% eU<sub>3</sub>O<sub>8</sub> grade and a 1.0-foot thickness. These low cutoffs were selected so that the low-end tail of the data distribution would be represented in the estimation methodology. No upper cutoff criteria were applied. Thicknesses and grades were multiplied to obtain Grade-Thickness (GT) values.
- **Drill Holes with Roll Front Code Data.** North-south and east-west cross sections were constructed and spatial continuity of roll fronts were determined for all resource units. Mineralized intervals were assigned a roll front code (Green, Purple, Red, Orange, Blue, Upper, Middle, or Lower). The codes reflect a local stratigraphic naming convention consistent with those used by operators in the region.



- **Alteration Front Data.** Core and cutting logs, electric logs, roll front plan maps, and cross sections were used to construct alteration front maps.
- **Composited Data.** Mineralized intervals in each drill hole were composited using roll front codes to derive a single composited thickness, grade, and GT value for each roll front in each drill hole.
- **Mineralized and Barren Data.** Intercept tables were prepared for each roll front. All intervals not meeting grade and thickness cutoffs were assigned thickness and grade values of 0.0.

All work described above was completed by AUC staff and reviewed and verified by the authors.

Separate digital databases were created for each roll front in each of the units in the Reno Creek ISR Project, as follows.

- **North Reno Creek Unit** – intervals within the Green, Purple, Orange, and Blue roll fronts. Data acquired for the Green, Purple, Red, Orange, and Blue in the Uranerz Acquisition were incorporated into the North Reno Creek Unit.
- **Southwest Reno Creek, Moore, and Bing Units** – intervals within the Green, Purple, Red, and Orange roll fronts. The Blue roll front is not present in these Units.
- **Pine Tree Unit** – intervals in the Upper, Middle, and Lower roll fronts.

Digital database records consist of X-Y-Z coordinates and composited roll front interval data (thickness, grade, and GT values). Coordinate data is in the Wyoming East State Plane, NAD 83 datum.

Data from the Microsoft Access® database was extracted to Microsoft Excel® tables for use in the resource estimation. Rockworks® software was used by AUC for the resource estimation.

Historical information in AUC's files consists of hundreds of maps, approximately 450 cross sections, tables, reports, and approximately 2,000 hard copy logs. Digital databases of coordinates, downhole intervals, and digitized electric logs are also available. Any paper logs, not in digital form, were digitized by AUC. The authors reviewed electric logs, cross sections, and maps produced by AUC and previous operators. In general, Behre Dolbear accepted the information except where described in this report.

### 12.1.2 Data Verification

The authors performed the following steps to verify data in the North Reno Creek Unit as well as the Uranerz Acquisition in the initial verification phase.

- **Drill Hole Data Integrity Check.** The authors compared original paper downhole logs with data in the digital databases by manually checking drill hole information on paper. Logs, grades and thicknesses, handwritten on paper logs, were sometimes inconsistent and not useable. When other data sources with equivalent information were examined, matches with data in the digital databases were found in all cases. AUC geologists relied on multiple sources for assembling roll front interval data and made new interpretations of the roll front intervals, when needed. Comparisons were made between plan maps showing intervals by drill hole and cross sections compiled from the original logs. No inconsistencies were found between the data accepted by the AUC geologists as being the best data and the digital database.

- **AUC Drill Hole Data.** The authors compared grades and thicknesses between the digital databases and paper logs from the AUC drilling. All holes checked matched the information in the digital database. AUC drilled holes have paper electric logs and cuttings/core logs, digital “. las” files, and computer-generated composites at different grade cutoffs. The digital information came directly from Century Geophysical and did not require manual data entry.
- **Drill Hole Location Coordinates.** Location and interval data were imported to the Micromine® software for additional location checking. Drill hole locations in the database were compared to paper maps with no errors detected.
- **Roll Front Coded Data.** The roll front intervals, as coded in the digital databases, were plotted by AUC and examined by cross section through the deposit. Sections plotted using the most recent digital files were seen to be the same data as stored in the database.
- **Cross-sections.** Behre Dolbear built 21 cross-sections (124 holes with 256 intercepts) in the northeastern portion of the Southwest Reno Creek Unit. A typical example of this construction is shown in Appendix 1.0. Behre Dolbear built 6 cross sections and reviewed 18 cross-sections built by AUC in the northern portion of the Uranerz Acquisition in order to identify and map deposits.
- **Resource Comparisons.** Intercepts for the sections were collected from AUC maps and the AUC database for two sand units each in areas of dense drilling and in an area of less dense drilling in the Southwest Reno Creek Unit in 2016 as well as a similar study in the Uranerz Acquisition for this report. Resources for these areas were estimated using general outline methodology. The resulting resources were 5.9% higher than AUC resources, a satisfactory comparison.

Additional data validation was performed using tabular data extracted from the primary Microsoft Access® database. Spreadsheets for all five areas were provided to the authors. Additional checks were made using Surfer® for surface generation (top of roll fronts) and Micromine® for database integrity checking and data display. The additional checking included the following:

- Data consistency, such as assuring that intervals do not overlap and needed data is not blank;
- Roll front correlation verification in two and three dimensions. This check was to ensure that the interpretations were reasonable and can be assigned with confidence to the roll fronts;
- Ensure that composites were correctly calculated; and
- Confirm that data entry for each roll front contains a zero where there is a barren interval.

Errors or uncertainties about roll front assignments were noted in the vertical locations for some roll fronts. Roll front interpretations from historical and AUC drill holes were reviewed and verified with the AUC geologists. The Microsoft Access® database was revised to include changes identified by the authors and AUC. Revised spreadsheets were generated for additional checking, validation, and resource estimation.

Some of the errors and questionable interpretations could not be verified with paper logs, maps, or other sources. Questionable drill hole data that could not be verified was not used in the resource estimation. Assignment of a value of zero (equivalent to designation as a barren point) would not be appropriate because it could be misleading.

The authors consider the data used for the resource estimation to be properly prepared and sufficiently accurate for the preparation of a resource estimate.

### **12.1.3 Data Adequacy**

The authors consider the data used for the resource estimate to be adequately prepared. Because interpretations of roll front zoning (Green, Purple, Red, Orange, and Blue) and roll front mapping is ongoing, the authors attached a lower confidence in the initial definition of roll fronts than in the thickness and grade data. Questionable roll front zoning interpretations were observed in fewer than 10% of the total number of drill holes and all were resolved in later iterations of the data analysis. All drill holes in which errors could not be resolved have been removed from the database used for the resource estimation.

The interpretations and thickness/grade data are judged sufficiently accurate for the preparation of a resource estimate. Database accuracy is considered a medium risk because some roll front interpretations are currently being reviewed and will be revised if needed in the future.

Ongoing interpretation and further refinement of the roll front definitions are recommended. The authors recommend that more attention be given to the three-dimensional aspect of the roll fronts. This will require use of appropriate software that can display the interpretations in 3-D.

The authors are satisfied that the digital data is adequate for 2-D resource estimation. It is recommended that additional work be completed to resolve roll front interpretations before completion of further studies.

## **12.2 CORE SAMPLING**

Extensive core hole drilling and sampling has been conducted by AUC and previous operators at the Reno Creek ISR Project. Core holes with current or historical disequilibrium data in the North Reno Creek and Southwest Resource Reno Creek Units are posted on Figure 12.1.

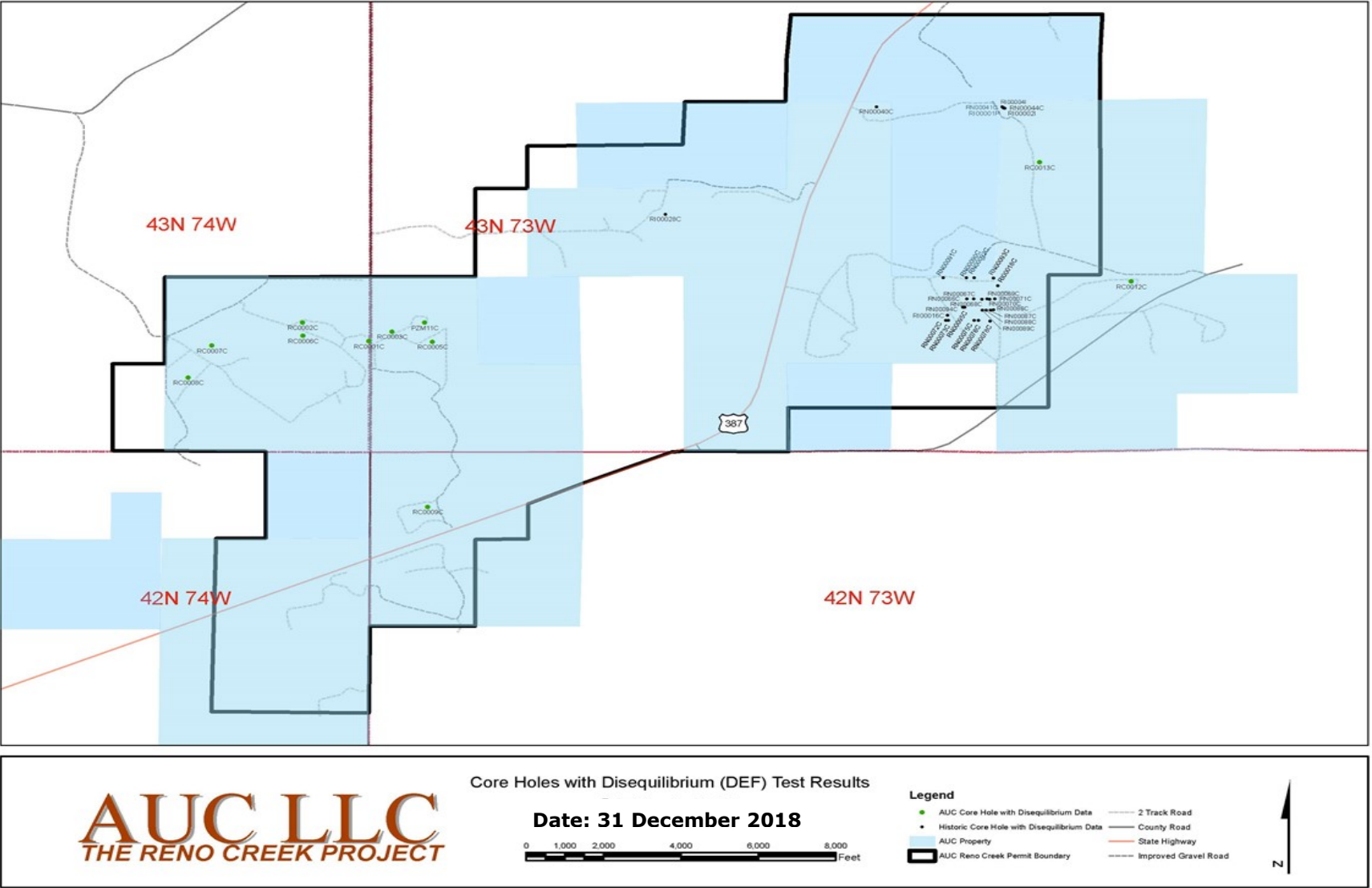


Figure 12.1. Core holes with equilibrium test results  
(Source: AUC)

To verify continuity and quality of mineralization, the authors sampled eight intercepts in three core holes (RC0007C, RC0009C, and RC0011C) drilled by AUC. The core holes examined are considered relevant to characterizing the condition of the comingled AUC and Uranerz Acquisition mineralization. The samples were chosen by selecting higher grade mineralization recorded on downhole radiometric logs. Cored intervals corresponding to the anomalies were checked for gamma radiation by a Mesa – 1 S/N 111 scintillometer to confirm the location of mineralization to be assayed. The samples were carried by the author to Energy Laboratories in Casper, Wyoming where they were assayed using EPA Method E901.1 for  $U_3O_8$  radionuclides as well as EPA Method SW6020 for  $U_3O_8$ , U, Se, Mo, and As. The results for  $U_3O_8$  are in Table 12.1. The methods are routinely used by industry to generate data for exploration and production and are derived from EPA standard methods.

<b>TABLE 12.1</b>					
<b>ANALYTICAL RESULTS FOR <math>U_3O_8</math></b>					
<b>Sample ID</b>	<b>Core Hole</b>	<b>Depth (feet)</b>	<b><math>cU_3O_8\%</math><sup>1,2</sup> (assay)</b>	<b><math>eU_3O_8\%</math><sup>1,3</sup> (closed can)</b>	<b>c/e ratio</b>
P 014162	RC0007C	380-380.5	0.173	0.135	1.28
P 014163	RC0009C	294-295	0.067	0.044	1.53
P 014164	RC0009C	296-297	0.061	0.039	1.57
P 014165	PZM11C	281-282	0.235	0.151	1.56
P 014166	PZM 11C	282-283	0.158	0.192	0.82
P 014167	PZM 11C	299-300	0.285	0.180	1.58
P 014168	PZM 11C	300-301	0.333	0.218	1.53
P 014169	PZM 11C	298-299	0.514	0.350	1.47
<sup>1</sup> The quality of mineralization is higher than average for Project resources because samples were selected from higher grade portions of mineralized intercepts.					
<sup>2</sup> Results using Method SW6020.					
<sup>3</sup> Results using Method E901.1.					

The assays confirm the presence of mineralization as well as a slightly favorable state of disequilibrium (c/e = greater than 1) in the portions of the deposit sampled. It is the authors' opinion the results are adequate for the purpose used in this technical report.

Drill hole nomenclature on maps by a past operator indicates that six core holes were drilled on Section 22 of the Uranerz Acquisition. A search of the current AUC file did not find assays for the cores.

## **13.0 MINERAL PROCESSING AND METALLURGICAL TESTING**

### **13.1 CORE ANALYSES**

AUC plans to use an ISR mineral extraction process to recover uranium from the host sandstone formations at the Reno Creek ISR Project. More specifically, AUC will employ a leaching solution composed of an oxidant and sodium bicarbonate for oxidation and complexation reactions to bring the uranium to the surface for further processing through a series of injection and recovery wells.

In order to determine if the proposed uranium recovery method will be applicable, AUC drilled 16 core holes within the North Reno Creek and Southwest Reno Creek Units to provide data regarding the amenability of uranium to leaching and insights regarding geochemistry, physical properties, and hydrologic properties of the sandstone host. In addition, AUC drilled three core holes in the Moore Unit for analysis of hydrologic and physical properties.

The authors reviewed the methodologies and QA/QC procedures employed by AUC and the QA/QC procedures used by the independent analytical laboratories contracted by AUC, and conclude that they provided results that are compliant with NI 43-101 standards.

The following tests and analyses were performed on the core samples.

- Vertical and horizontal permeability and porosity analyses by various methods in major lithologic units including aquitards (claystones, mudstones, siltstones), unmineralized sandstones, and mineralized sandstones;
- Effective porosity;
- Bulk density;
- Grain size analysis;
- Clay content and mineralogy;
- PZA sandstone lithology, mineralogy, and petrology;
- Uranium mineral(s) identification;
- Metallurgical testing by bottle roll and column leach using varied oxidants and lixiviant strengths;
- Assays of  $U_3O_8$  and closed can radiometric equivalent; and
- Testing provides data regarding amenability of uranium leaching and insights regarding geochemistry at the project.

#### **13.1.1 Permeability and Porosity Measurements**

At the Reno Creek Units, AUC recovered core samples from the Overlying and Underlying Aquitards, the Overlying Aquifer, and the Production Zone Aquifer. Core from multiple zones was recovered to evaluate the characteristics of each of the lithologic units that are important to mining operations. Core Labs in Denver, Colorado and Weatherford Laboratories in Casper, Wyoming analyzed samples for Permeability and Porosity (P&P). Samples in the Overlying Aquifer and Production Zone Aquifer were analyzed using the Klinkenberg Air P&P method. Samples from the Underlying and Overlying Aquitards were analyzed using a Liquid P&P method as well as the Klinkenberg Air P&P method (Table 13.1).

<b>TABLE 13.1</b>			
<b>PERMEABILITY AND POROSITY</b>			
<b>Zone</b>	<b>Method</b>	<b>Result</b>	
Production Zone Aquifer – Moore Unit	Air P&P	Average Porosity = 29.8%	Average Permeability Klinkenberg = 3,857 md
Production Zone Aquifer – Reno Creek	Air P&P	Average Porosity = 30.3%	Average Permeability Klinkenberg = 1,944 md
Overlying Aquitard – Reno Creek	Liquid P&P	Permeability Specific to Brine = 0.00087 md	
Underlying Aquitard – Reno Creek	Liquid P&P	Permeability Specific to Brine = 0.00058 md	

Eleven core samples were collected for P&P analyses from the PZA at the Moore Unit. Analyses were performed by Weatherford Labs in late 2012 and are summarized in Table 13.1. All values are very comparable to average P&P values from the PZA at the North and Southwest Reno Creek Units. Metallurgical and disequilibrium analyses were not performed using AUC's 2012 core from the Moore Unit; however, historical testing results are presented in the RME reports held by AUC. Due to proximity, these physical characteristics and values can be applied to the Uranerz Acquisition.

### 13.1.2 Effective Porosity – Nuclear Magnetic Resonance

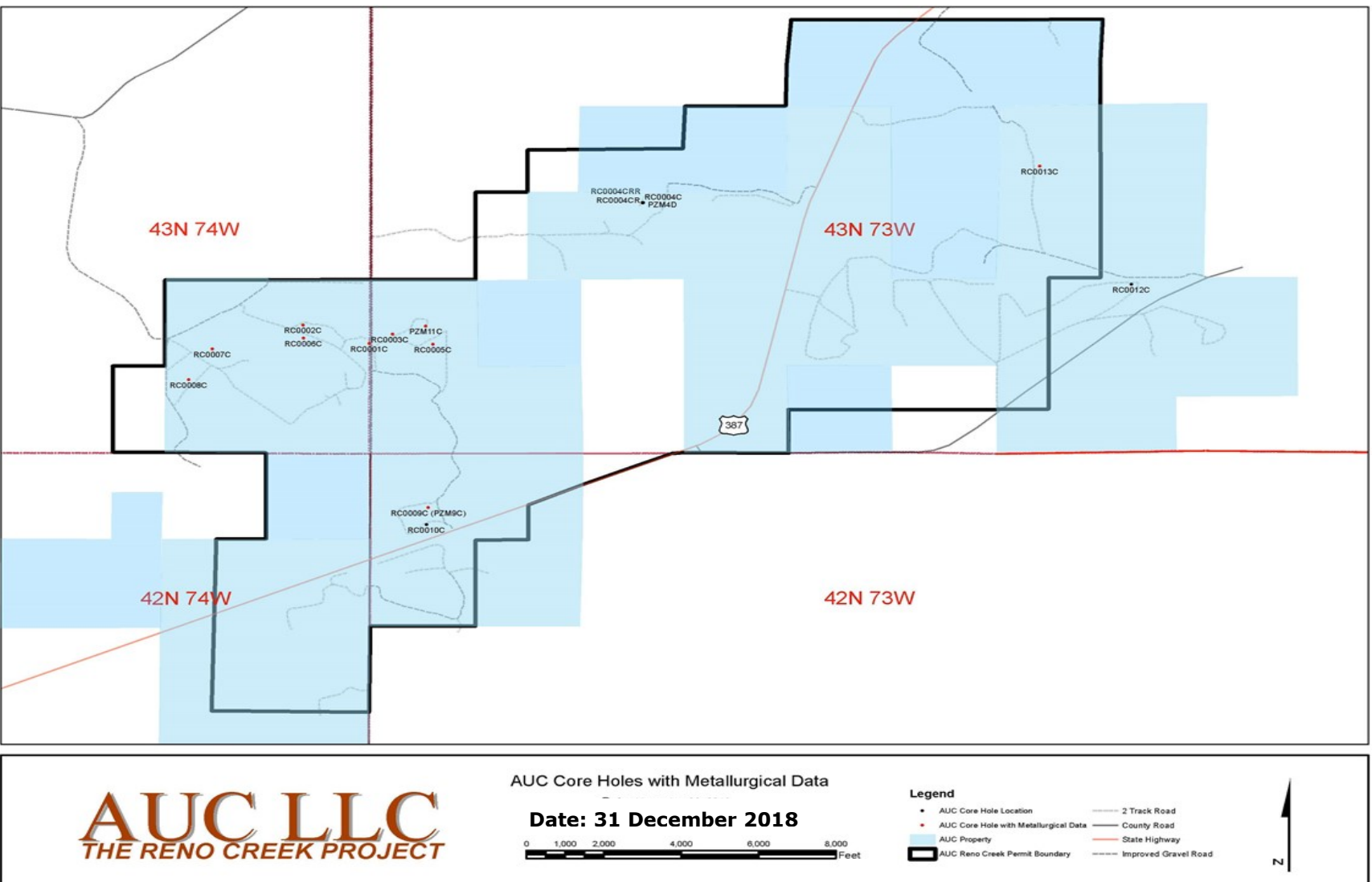
Core Labs in Houston, Texas conducted a single analysis of effective porosity on a PZA sandstone sample from core hole RC0007C. In this case, the Klinkenberg permeability was 1,801 md, the total porosity was 31.8%; however, the effective porosity measurement of this sample was 23.7%. Effective porosity excludes porosity related to bound water in clays resulting in a lower number (Table 13.2).

<b>TABLE 13.2</b>	
<b>NUCLEAR MAGNETIC RESONANCE (NMR) EFFECTIVE POROSITY ANALYSIS</b>	
Sample ID	004856
Borehole ID	RC0007C
Depth (feet)	379-380
Porosity (%)	30.4
Klinkenberg Permeability (md)	1,801
Air Permeability (md)	1,831
Porosity (%)	31.8
Effective Porosity (%)	23.7
Clay Bound Water	0.081
Qv by NMR	0.525

The P&P are within the normal range of ISR producing facilities and support the authors' conclusion that the mineralized sandstone is amenable to ISR production of uranium.

### 13.1.3 Metallurgical Testing

AUC conducted two types of metallurgical testing to verify the amenability of the deposits to ISR. Locations of the core holes used for testing are depicted on Figure 13.1.



**Figure 13.1. Core hole metallurgical data**  
(Source: AUC)



Since 2012, AUC conducted four additional bottle roll tests on four different core holes at Inter-Mountain Labs' facility in Sheridan, Wyoming. These are shown at the end of Table 13.3. Recoveries were similar to those tested previously.

<b>TABLE 13.3</b>						
<b>BOTTLE ROLL RESULTS</b>						
<b>Hole ID</b>	<b>Depth</b>	<b>Lixiviant</b>	<b>Grams of Core</b>	<b>Bottle Roll Hours</b>	<b>Number of Stages</b>	<b>Percent Recovery (%)</b>
<b>Energy Labs Bottle Roll Results</b>						
RC0001C	333-335	NaHCO <sub>3</sub> , 1 g/L; H <sub>2</sub> O <sub>2</sub> , 0.5 g/L	200	16	6	83
RC0002C	332-334	NaHCO <sub>3</sub> , 1 g/L; H <sub>2</sub> O <sub>2</sub> , 0.5 g/L	200	16	6	89
RC0002C	338.5-341	NaHCO <sub>3</sub> , 1 g/L; H <sub>2</sub> O <sub>2</sub> , 0.5 g/L	200	16	6	86
RC0006C	349.5-351.5	NaHCO <sub>3</sub> , 1 g/L; H <sub>2</sub> O <sub>2</sub> , 0.5 g/L	200	16	6	78
RC0006C	356-358	NaHCO <sub>3</sub> , 1 g/L; H <sub>2</sub> O <sub>2</sub> , 0.5 g/L	200	16	6	89
RC0007C	380-381	NaHCO <sub>3</sub> , 1 g/L; H <sub>2</sub> O <sub>2</sub> , 0.5 g/L	200	16	6	94
RC0007C	381-382	NaHCO <sub>3</sub> , 1 g/L; H <sub>2</sub> O <sub>2</sub> , 0.5 g/L	200	16	6	80
RC0008C	378.5-380	NaHCO <sub>3</sub> , 1 g/L; H <sub>2</sub> O <sub>2</sub> , 0.5 g/L	200	16	6	89
RC0009C (1)	268-271	NaHCO <sub>3</sub> , 1 g/L; H <sub>2</sub> O <sub>2</sub> , 0.5 g/L	200	16	6	82
RC0009C (2)	297-300	NaHCO <sub>3</sub> , 1 g/L; H <sub>2</sub> O <sub>2</sub> , 0.5 g/L	200	16	6	76
<b>Average</b>						<b>85</b>
<b>IML Bottle Roll Results</b>						
RC0003C	241-243	NaHCO <sub>3</sub> , 1.5 g/L; H <sub>2</sub> O <sub>2</sub> , 0.5 g/L	500	22	18	82
RC0005C	306-308	NaHCO <sub>3</sub> , 1.5 g/L; H <sub>2</sub> O <sub>2</sub> , 0.5 g/L	500	22	18	93
RC0011C	303-305	NaHCO <sub>3</sub> , 1.5 g/L; H <sub>2</sub> O <sub>2</sub> , 0.5 g/L	500	22	18	92
RC0013C	342-346	NaHCO <sub>3</sub> , 1.5 g/L; H <sub>2</sub> O <sub>2</sub> , 0.5 g/L	500	22	18	87
<b>Average</b>						<b>88</b>

Overall, bottle roll tests were performed by Energy Laboratories in Casper, Wyoming and by Inter-Mountain Labs, Inc. on select core from the North and Southwest Reno Creek Resource Units to test for recovery of uranium from the host rock. Bottle roll tests were performed on a variety of different portions of core targeting different grades and lithology. Tests were performed on 1-foot to 4-foot lengths of core.

The tests consisted of pulverizing 200 grams to 500 grams of core and adding 5 pore volumes of lixiviant ( $\text{NaHCO}_3$  and  $\text{H}_2\text{O}_2$ ) and then rolling in a bottle for 16 hours to 22 hours. The leachate was then separated from the core sample and analyzed for uranium and trace metal concentrations. Six to 18 bottle roll stages were performed on various core samples. After the final test, the pulp was assayed for any remaining uranium (Table 13.3).

#### 13.1.4 Column Leach

Column leach tests were run on 4 core samples from the Southwest Reno Creek Resource Unit. None were conducted since 2012. The samples were sent to J.E. Litz and Associates in Golden, Colorado. The procedure for small column tests was to charge a 2-inch diameter by 18-inch tall column with up to 1,000 grams of dry or damp mineralized core. Fresh formation water was used and prepared using a lixiviant solution of  $\text{NaHCO}_3$  and  $\text{H}_2\text{O}_2$ . The solution is then pumped up-flow through the column at approximately one pore volume per day.

The effluent discharging the column was sampled daily and the solutions submitted for uranium analyses. At the end of the test, the column is emptied and the solids filtered and washed. A weighted composite of the discharge and filtration solutions was submitted for additional analyses. The residue was dried, de-lumped, blended, and a  $\frac{1}{8}$ -split is prepared for uranium analysis. Uranium recoveries varied from 80% to 95% with an average recovery rate of 85.5% (Table 13.4).

<b>TABLE 13.4</b>				
<b>COLUMN LEACH TEST RESULTS</b>				
<b>Hole ID</b>	<b>Footage</b>	<b>Sample ID</b>	<b>Lixiviant</b>	<b>U<sub>3</sub>O<sub>8</sub> % Recovered</b>
RC0009C	268-271	11-11-59R	$\text{NaHCO}_3$ , 1 g/L; $\text{H}_2\text{O}_2$ , 0.5 g/L	83
RC0009C	297-300	11-11-60	$\text{NaHCO}_3$ , 1 g/L; $\text{H}_2\text{O}_2$ , 0.5 g/L	84
RC0009C	297-300	11-11-60B	$\text{NaHCO}_3$ , 1 g/L; $\text{H}_2\text{O}_2$ , 0.106 g/L	80
RC0002C	338.5-341	11-11-61A	$\text{NaHCO}_3$ , 1 g/L; $\text{H}_2\text{O}_2$ , 0.5 g/L	95

#### 13.1.5 Equilibrium Study

Equilibrium occurs when the relationship of uranium with its naturally occurring radioactive daughter products is in balance. Oxygenated groundwater moving through a deposit can disperse uranium down the groundwater gradient, leaving most of the daughter products in place. The dispersed uranium will be in a favorable state of disequilibrium ( $c/e$  = greater than 1) and the depleted area will be in an unfavorable state ( $c/e$  = less than 1). The effect of disequilibrium can vary within a deposit and has been observed to vary within an intercept. It follows that dispersed uranium will be more easily recovered than material from a depleted zone.

Prior to AUC's 2013 drilling program, AUC performed equilibrium studies on 21 samples from 9 cores obtained from Southwest Reno Creek. Two new core holes, RC0012C and RC0013C, were completed in North Reno Creek in 2013 and have been added to Table 13.5. Locations of core holes sampled and tested for disequilibrium are posted on Figure 12.1.

The samples varied in grade and depth to mineralization to test for different variables. Closed can analysis was the method used to determine the percent of radiometric  $\text{eU}_3\text{O}_8$ , which was then compared to the assay/chemical  $\text{U}_3\text{O}_8$

( $cU_3O_8$ ) for the same sample. Chemical analysis was conducted by ICP-MS. Twenty-two of 23 samples tested had favorable (greater than 1.0) disequilibrium. The  $cU_3O_8/eU_3O_8$  ratio ranged from 0.82 to 1.90, as shown in Table 13.5.

<b>TABLE 13.5</b>				
<b>EQUILIBRIUM STUDY RESULTS</b>				
<b>Core Hole</b>	<b>Depth (feet)</b>	<b><math>cU_3O_8</math> % (assay)</b>	<b><math>eU_3O_8</math> % (closed can)</b>	<b>c/e ratio</b>
RC0001C	333-335	0.030	0.026	1.16
RC0002C	332-334	0.087	0.054	1.62
RC0002C	338.5-341	0.289	0.253	1.14
RC0003C	241-243	0.205	0.108	1.90
RC0005C	306-308	0.099	0.068	1.46
RC0006C	349.5-351.5	0.026	0.020	1.32
RC0006C	356-358	0.110	0.061	1.79
RC0007C	380-381	0.250	0.145	1.72
RC0007C	380-380.5	0.173	0.135	1.28
RC0007C	381-382	0.077	0.071	1.09
RC0008C	378.5-380	0.840	0.562	1.49
RC0009C	268-271	0.059	0.049	1.20
RC0009C	294-295	0.067	0.044	1.53
RC0009C	296-297	0.061	0.039	1.57
RC0009C	297-300	0.068	0.052	1.31
PZM0011C	281-282	0.235	0.151	1.56
PZM0011C	282-283	0.158	0.192	0.82
PZM0011C	298-299	0.514	0.350	1.47
PZM0011C	299-300	0.285	0.180	1.58
PZM0011C	300-301	0.333	0.218	1.53
PZM0011C	303-305	0.074	0.043	1.72
RC0012C	296.5-297.5	0.143	0.082	1.74
RC0013C	342-346	0.102	0.064	1.59

The AUC assays, coupled with historical disequilibrium studies by RME, confirm the presence of a slightly favorable state of disequilibrium ( $c/e$  = greater than 1) in the portions of the deposit sampled. AUC used a 1.0 disequilibrium factor for resource estimates.

It is the authors' opinion the results are adequate for the purpose used in this technical report and that an adjustment for disequilibrium is not warranted.

### 13.1.6 Host Rock Characteristics

Sandstones at the Project are arkosic and/or feldspathic in composition. Quartz grains are a major component with moderate amounts of potassium and calcium feldspars. Accessory minerals include pyrite and calcium carbonate cement. Carbonaceous material is occasionally present in reduced portions of the sandstone.

Recent whole rock mineralogy work performed on core collected by AUC and reports from analytical work by RME in the late 1970s indicate that quartz ranges from 50% to 60%, feldspars comprise approximately 20% to 25%, and clays present as smectite, kaolinite, and illite may comprise up to 20% of the total.

### **13.1.7 Implications for the Uranerz Acquisition**

Since the Uranerz Acquisition is adjacent to and co-mingled with the portions of the deposits described above, physical characteristics of the Uranerz Acquisition can be assigned similar values.

## 14.0 MINERAL RESOURCE ESTIMATES

### 14.1 BACKGROUND

In-place  $U_3O_8$  Mineral Resources for the Reno Creek ISR Project were estimated and classified according to the CIM definition of a Mineral Resource classification of Measured, Indicated, and Inferred Mineral Resources.

### 14.2 RESOURCE ESTIMATION

The Mineral Resource estimated by AUC used computerized geologic and volumetric modeling methods. The estimation method used was a two-dimensional Delaunay triangulation and the software used was RockWorks®.

The Delaunay triangulation method connected data points (drill holes) via a triangular network with one data point at each triangle vertex, and constructed the triangles as close to equilateral as possible. Once the network was determined, the slope of each triangular plate was computed using the three vertex point values. Next, a 25-foot × 25-foot grid was superimposed over the triangular network, and each grid node (grid center) was assigned a Z-value, based on the intercept of the node and the sloping triangular plate. Only grid nodes falling within the boundary of the triangular network (convex hull) were estimated. Also computed was the distance of the grid node from a drill hole location and whether the node was located within AUC's property boundary. Next, the thickness and grade grids were multiplied to obtain a grade-thickness (GT) grid. Finally, the resource classification criteria, described in Section 14.3, was applied to the GT grid to obtain a classified resource.

The tonnage factor used in completing the resource estimate is 17 cubic feet per ton on a moisture-free (dry bulk density) basis. AUC tabulated bulk density measurements by RME and other historical operators and conducted 20 of its own measurements. The bulk density measurements ranged from approximately 16 to 18 cubic feet per ton, with an average of about 17.

### 14.3 MINERAL RESOURCE CLASSIFICATION METHOD

Based on the study results in this report, the Reno Creek ISR Project is classified as a Mineral Resource, according to the definitions from NI 43-101 Guidelines, as detailed in the Definition section of this report.

The continuity of the Reno Creek ISR Project roll fronts is demonstrated by drill hole results, as displayed on plan maps and cross sections. Thickness and grade continuity within the Project Units is also typical of roll front uranium deposits. Vertical continuity within roll fronts is more variable and some interpretations are questionable (as previously noted in Section 12.0).

For the Reno Creek Mineral Resource estimate, the classification strategy was based on the following three criteria.

- 1) Distance between a grid cell node (center) and a drill hole location, as follows:
  - a) **Measured** – 0 feet to 50 feet between node and drill hole locations.
  - b) **Indicated** – 50 feet to 250 feet between node and drill hole locations.
  - c) **Inferred** – 250 feet to 500 feet between node and drill hole locations.
- 2) A GT cutoff of 0.20.
- 3) Whether the grid cell was within AUC's property boundary, including the acquired properties.

These criteria were selected because they are consistent with those commonly used at the other ISR projects in the area and their application reflects the current level of geologic certainty of the resource.

#### **14.4 MEASURED AND INDICATED RESOURCES**

As noted in Section 14.2 of this report, the in-place resource was estimated separately for each roll front in each of the resource units. The roll front resources were summed for each unit. The results of the estimation of Measured and Indicated  $U_3O_8$  Mineral Resources for the Reno Creek ISR Project are reported in Table 14.1. On a combined basis, the Measured and Indicated Mineral Resources total 32 million tons grading 0.041%  $U_3O_8$  and a weighted average thickness of 12.1 feet containing 26 million pounds of  $U_3O_8$  in-place.

Acquisition of the Uranerz property increased the Measured plus Indicated resources of the North Reno Creek by approximately 4 million pounds of uranium (22 million pounds to 26 million pounds – 18% of the project total).

<b>TABLE 14.1</b> <b>RENO CREEK ISR PROJECT – SUMMARY OF MEASURED AND</b> <b>INDICATED MINERAL RESOURCES – IN-PLACE<sup>1</sup></b>				
<b>Unit</b>	<b>Tons<sup>2</sup></b> <b>(millions)</b>	<b>Weighted</b> <b>Average</b> <b>Thickness</b> <b>(feet)</b>	<b>Weighted</b> <b>Average</b> <b>Grade</b> <b>(%U<sub>3</sub>O<sub>8</sub>)</b>	<b>Pounds</b> <b>U<sub>3</sub>O<sub>8</sub><sup>2</sup></b> <b>(millions)</b>
<b>North Reno Creek<sup>3</sup></b>				
Measured	7.12	14.3	0.042	5.92
Indicated	8.05	11.7	0.036	5.76
<b>Total</b>	<b>15.2</b>	<b>13.0</b>	<b>0.038</b>	<b>11.68</b>
<b>Southwest Reno Creek</b>				
Measured	4.68	12.9	0.043	3.94
Indicated	4.08	10.4	0.038	3.08
<b>Total</b>	<b>8.77</b>	<b>11.6</b>	<b>0.040</b>	<b>7.03</b>
<b>Moore</b>				
Measured	2.32	10.3	0.048	2.20
Indicated	2.31	9.0	0.042	1.92
<b>Total</b>	<b>4.63</b>	<b>9.6</b>	<b>0.044</b>	<b>4.12</b>
<b>Bing</b>				
Measured	0.30	14.6	0.038	0.23
Indicated	0.71	12.4	0.032	0.45
<b>Total</b>	<b>1.02</b>	<b>13.0</b>	<b>0.033</b>	<b>0.67</b>
<b>Pine Tree</b>				
Measured	0.57	14.0	0.056	0.63
Indicated	1.83	12.2	0.051	1.87
<b>Total</b>	<b>2.40</b>	<b>12.6</b>	<b>0.053</b>	<b>2.51</b>
<b>Reno Creek Project</b>				
Measured	14.99	13.2	0.0433	12.92
Indicated	16.98	11.1	0.039	13.07
<b>Total</b>	<b>32.0</b>	<b>12.1</b>	<b>0.041</b>	<b>26.0</b>
<sup>1</sup> Cutoff ≥ 0.20 GT (grade × thickness per intercept)				
<sup>2</sup> Columns may not add due to rounding				
<sup>3</sup> Includes Uranerz Acquisition				

Maps illustrating spatial distribution of the U<sub>3</sub>O<sub>8</sub> resource in the five resource units of the Reno Creek ISR Project are presented in Figure 7.5 to Figure 7.9.

The Measured and Indicated Mineral Resources for the all resource units differ from the previous Behre Dolbear 2012 mineral resource estimation, principally due to the use of the 0.20 GT cutoff, AUC's drilling in 2012 and 2013, the addition of historical data from approximately 300 holes, and the Uranerz Acquisition.

The Mineral Resource estimates are considered by the authors to be compliant with CIMM best practice definitions and meet Canadian NI 43-101 standards for Measured, Indicated, and Inferred Mineral Resources.

## 14.5 INFERRED MINERAL RESOURCE

The results of the estimation of Inferred U<sub>3</sub>O<sub>8</sub> Mineral Resource in the Project are reported in Table 14.2 and total 1.92 million tons grading 0.039% U<sub>3</sub>O<sub>8</sub> and containing 1.49 million pounds of U<sub>3</sub>O<sub>8</sub> in-place.

<b>TABLE 14.2</b>				
<b>RENO CREEK ISR PROJECT – SUMMARY OF INFERRED MINERAL RESOURCES IN-PLACE<sup>1</sup></b>				
<b>Unit</b>	<b>Tons<sup>2</sup> (millions)</b>	<b>Weighted Average Thickness (feet)</b>	<b>Weighted Average Grade (%U<sub>3</sub>O<sub>8</sub>)</b>	<b>Pounds U<sub>3</sub>O<sub>8</sub><sup>2</sup> (millions)</b>
<b>North Reno Creek<sup>3</sup></b>				
Inferred	1.57	9.7	0.0410	1.26
<b>Southwest Reno Creek</b>				
Inferred	0.20	0.86	0.33	0.13
<b>Moore</b>				
Inferred	0.13	8.0	0.035	0.09
<b>Bing</b>				
Inferred	0.00	0.0	0.000	0.00
<b>Pine Tree</b>				
Inferred	0.02	6.8	0.040	0.01
<b>Reno Creek Project</b>				
<b>Inferred Total</b>	<b>1.92</b>	<b>9.5</b>	<b>0.039</b>	<b>1.49</b>
<sup>1</sup> Cutoff ≥ 0.2 GT (grade × thickness per intercept)				
<sup>2</sup> Columns may not add due to rounding				
<sup>3</sup> Includes Uranerz Acquisition				

The reader is cautioned that due to the uncertainty, which may attach to Inferred Mineral Resources, it cannot be assumed that all or any part of an Inferred Mineral Resource will be upgraded to an Indicated or Measured Mineral Resource, because of continued exploration. Confidence in the Inferred Mineral Resource estimate is insufficient to allow the meaningful application of technical and economic parameters or to enable an evaluation of economic viability worthy of public disclosure. Inferred Mineral Resources must be excluded from estimates forming the basis of pre-feasibility or other feasibility studies.

## 14.6 VERIFICATION OF ESTIMATE

The authors performed a check resource estimate on one of the roll fronts in each of the five areas. AUC's roll front digital data was imported to the Surfer® software to check the Mineral Resource estimation. AUC used the RockWorks® program, and estimations were made using a triangulation-gridding method. This method included generating separate grids for thickness and grade, identifying the cells within the property boundary, and combining the grids to calculate a GT. Grid dimensions were 25-feet × 25-feet. The calculated GT was used to estimate pounds.



The pounds estimated by the authors using the Surfer® triangulation-gridding method were within  $\pm 5\%$  of the results obtained by AUC. This variance is due to using slightly different origin coordinates for the Rockworks® and Surfer® grids, which results in slightly different values being calculated at grid node and triangle plate intersections. The variance is within an acceptable range.

For this report, the checks performed on the 2018 data built on the work done on the project in 2016. At that time, extensive checking was done on the data, correlations of the units, and verification of the resource estimation. In 2016, a significant number of correlations were identified as suspect and the geologists at that time revised many of the correlations. This was a thorough check and verification of the correlations. This level of detailed checking was not done on the new data. Some spot checks were made on the 2018 dataset, but it was observed that the same data compilation methods were used as in 2016. The AUC geologists provided correlations for the additional drill holes acquired from Uranerz.

The method and criteria used for the 2016 estimate were thoroughly checked at that time and are considered to produce a reasonable estimate of quantities and grades. In 2016, top elevation surfaces were generated for each unit and then overlaid. That showed where there were overlaps with units above or below. The top elevation grids and thickness grids were done in Surfer and Micromine was used to display the surface relationships. This was the basis for AUC revising some of the correlations at that time. This check was not done nor considered necessary on the 2018 data because of the extensive verification done in 2016.

The North Reno Creek resources compiled for this report were compared to a combination of earlier separate Uranerz and AUC resource estimates. The difference between the separate estimates (12.8 million) and the combined 2018 resource estimate (12.9 million) is less than 1%, well within a margin of error.

It is the authors' opinion that the resources, as estimated by AUC, were properly done and result in an appropriate estimation of the quantities and grades. The authors examined many of AUC's hundreds of cross sections and created many cross sections in Micromine® as a part of the resource check and data validation, affirming the stratigraphy, lithology, and continuity of mineralization. It is also the authors' opinion that the triangulation-gridding method used is an appropriate way to estimate quantities and grades for the irregular nature of the deposit.

The authors consider that the work AUC completed at all units confirms the pre-2010 information and that the resources of the Project meet NI 43-101 standards for currently compliant resources and that there is a reasonable expectation that the Measured and Indicated Mineral Resources will be converted through future efforts to production status. There is also the reasonable expectation that with additional in-fill drilling, some of the Inferred Mineral Resources will be converted to Indicated and Measured Mineral Resources. The QPs' reasonable expectations are based upon the following factors:

- 1) Drilling by AUC at the Southwest Reno Creek Unit between 2010 and 2013 confirmed that uranium mineralization reported by previous operators is present at the locations shown on historical maps. AUC's confirmation was performed by drilling step-out holes (100 feet from old holes), in accordance with recommendations by the authors. Continuity was confirmed on a large scale by approximately 800 holes that joined two mineralized areas over a mile apart. AUC drilling in this area (located in the west half of Section 31, T 43N, R73W) added resources.
- 2) Additional data and mineral interests acquired since 2012 include 526 drill holes (an 11.4% increase) and 640 acres across the North Reno Creek, Southwest Reno Creek, Moore, and Pine Tree Units.

- 3) All uranium deposits in the 80-mile long Powder River Basin trend consist of bands of narrow classic C-shaped roll fronts, as found at the Reno Creek Deposit.
- 4) The mineral forming process and the resulting deposits do not vary within the trend nor are they expected to vary within the Reno Creek Project.
- 5) The North Reno Creek, Southwest Reno Creek, Moore, and Bing Units exhibit mineralization within a continuous geologic sandstone section. In addition, all five units exhibit overlying and underlying aquitards that are continuous across AUC's holdings.
- 6) The authors have reviewed maps covering the competitor's operations and positions (not available for publication) showing continuity of sandstone horizons between resources units.

#### 14.7 MINERAL RESOURCE RISK

Mineral Resource estimation is based on data interpretation and extrapolation of limited sample volumes to very large volumes. Application of these tools can result in uncertainty or risk. Three elements of risk are identified for the Project.

- **Grade Interpretation Methods – Low to Moderate Risk.** Automated grade estimates depend on many factors and interpretation methods assume continuity between samples. A risk exists that a grade estimate at any three-dimensional location in a deposit will differ from the grade of mineralization mined.
- **Geological Definition – Moderate Risk.** The geological roll front interpretation by the AUC geologists was checked using several automated techniques. The host units are relatively flat lying, but there is a possibility of a misinterpretation of whether a split interval goes with one unit or another when multiple closely spaced intercepts are present. Additional questionable roll front interpretations were noted. Some of the interpretations were revised, but additional work is needed to ensure a remaining small percentage of interpretations are correct.
- **Continuity – Low Risk.** The authors have reviewed multiple maps, drilling records, and prior work at the Project that demonstrate and confirm the continuity of the roll fronts on the Reno Creek property.

#### 14.8 SUMMARY

The Project contains 26 million pounds of in-place  $U_3O_8$  Measured and Indicated Mineral Resources in North Reno Creek (including the Uranerz Acquisition), Southwest Reno Creek, Moore, Bing, and Pine Tree Units contained in up to 5 roll fronts. The weighted average thickness of this resource is 12.1 feet and the weighted average grade is 0.041%. The Reno Creek ISR Project resource has a reasonable expectation of being viable and should be considered for future ISR development for the following reasons.

- 1) The estimated resource is significant in size.
- 2) The resource estimate is consistent with previous historical estimates for the property.
- 3) Consistent with roll front deposits in the Wyoming basins, the Indicated and Inferred Mineral Resources are expected to contribute to the resource base with additional investigation.

- 4) Geologic conditions are consistent with surrounding properties with planned ISR projects.
- 5) Resources are estimated only when intercepts are:
  - a) bounded at the top and bottom by aquitards;
  - b) permeable and porous; and
  - c) below the water table.
- 6) Previous operation of a pilot in-situ well field on the site was successful.
- 7) The ground water in which the pilot well field was installed was successfully restored to pre-pilot plant conditions.
- 8) The ground surface area of the pilot test area was successfully reclaimed to pre-pilot plant conditions.

## **15.0 MINERAL RESERVE ESTIMATES**

The Mineral Resources described in this document do not qualify at this time as Mineral Reserves in the authors' opinion.

## **16.0 MINING METHODS**

Extraction of uranium from the Reno Creek Project is expected to be via the ISR methodology described in Section 17.0. The technology is well established and standard in the uranium industry and testing has verified the applicability of the ISR extraction method.

## 17.0 RECOVERY METHODS

The extraction of uranium from fluvial and shoreline facies via ISR has been successful in Wyoming, Nebraska, and Texas in the United States and Kazakhstan. Recovery rates vary with host rock and lixiviant characteristics and a general guideline is to consider that recovery would equal about 70% of the in-place resources estimated based on surface drilling.

The ISR process, contemplated by AUC, is a phased, iterative approach, in which AUC will sequentially construct and operate a series of Production Units. Each Production Unit will include individual well fields equipped with a header house. AUC expects each header house will serve between 80 and 100 wells, including 15 to 30 recovery wells and 25 to 50 injection wells (recovery and injection wells are collectively referred to as production wells) depending upon the design of each well field.

The Reno Creek ISR chemical process, proposed for uranium recovery, incorporates both the oxidation and complexation of uranium. Gaseous oxygen, hydrogen peroxide, or other oxidants oxidize the uranium, which is then complexed with bicarbonate in solution. The carbonate/bicarbonate production solution and oxidant are combined into a leaching solution or barren lixiviant. The lixiviant is injected into the mineralized sandstone formation, referred to as the PZA, through a series of injection wells that have been drilled, cased, cemented, and tested for mechanical integrity. Recovery wells pump the uranium-bearing solution or pregnant lixiviant from the PZA to the header house. The pregnant lixiviant will be transferred through a series of buried pipelines to a pressurized down flow ion-exchange column circuit in the CPP.

AUC anticipates that injection/recovery well patterns will follow the conventional 5-spot pattern, consisting of a recovery well surrounded by 4 injection wells. However, depending upon the configuration of the mineralization, more or fewer injection wells may be associated with each recovery well. In order to recover uranium effectively, and to complete groundwater restoration, all production wells will be completed so that they can be used as either injection or recovery wells. The dimensions of the patterns will vary depending on the configuration of the mineralized zone, uranium grade, and accessibility, but the injection wells will typically be between 75 feet to 125 feet apart.

Monitor wells will be placed in each Production Unit and will include both interior and exterior wells. Interior monitor wells will be located within the well field boundaries and will be screened, as necessary. Each Production Unit will also be surrounded by an exterior Monitor Well Ring to monitor for the potential horizontal movement of lixiviant beyond the extent of the well fields.

Within the CPP, the process uses the following steps to process uranium from the recovered solutions:

- Loading of uranium complexes onto ion exchange resin;
- Elution (removal) of the uranium complexes from the ion exchange resin;
- Precipitation of uranium from the eluate;
- Filtration, drying, and packaging of the uranium; and
- Reconstitution of the barren lixiviant by the addition of carbon dioxide and/or carbonate/bicarbonate and oxidant, which is recycled back to the Production Units for continuing operations.

During ISR operations, a slightly greater volume of water will be recovered from the PZA than is injected, to create an inward flow gradient into the Production Units. The difference between the amount of water recovered and injected is the well field "bleed." The bleed rate will be adjusted, as necessary, to ensure that an inward flow gradient is maintained.

The ISR process selectively removes uranium from the deposit. No tailings are generated by the process; thus, eliminating a major concern associated with conventional uranium mining and milling. When installing an ISR Production Unit, only limited surface disturbance occurs. During the operating life of the Production Unit, vegetation is re-established over the Production Unit and pipeline corridors to prevent erosion and build-up of undesirable weeds.

AUC states that it is confident that the ISR process can be successfully employed at the Reno Creek ISR Project since it has been demonstrated through a successful site-specific pilot test conducted by RME at Reno Creek, as discussed in Section 6.3 of this report. The pilot test program along with bench-scale bottle roll and column leach studies (Section 13.0) have demonstrated both the technical feasibility of mobilizing and recovering uranium with a carbonate lixiviant.

## **18.0 PROJECT INFRASTRUCTURE**

Because of energy development in the Project area over the past 50 years, all properties under AUC's control have existing or nearby access to electrical power, gas, telephone, and internet connectivity. AUC has secured leases and surface use and access agreements within the proposed mining permit area to enable construction of all operational facilities. Working with landowners, AUC has developed several arrangements to obtain both surface and groundwater for its operational needs. AUC has purchased 40 acres upon which to build and operate a CPP, as well as obtained a lease on the 8 claims on and around the CPP. The site is currently equipped with buildings, power, telephone, and water. The site is well located within the Southwest Reno Creek Resource Unit near the intersection of Wyoming Highway 387 and the Clarkelen County Road.



## **19.0 MARKET STUDIES AND CONTRACTS**

AUC has not performed a market study for the proposed Reno Creek production and has no contracts for delivery of uranium from the Project at this stage.

The product of the Reno Creek Project will be a powder form of uranium isotopes generally described as  $U_3O_8$  or yellowcake. In the nuclear fuel industry, it is referred to as “uranium” and traded in U.S. dollars per pound. Transactions are negotiated and prices are generally transparent. Transactions are in two forms: spot price and long-term contracts. Trading on the spot market may involve primary production, inventory adjustment, hedging, and/or action by commodity traders. Most primary production is sold via long-term contracts. It is expected that AUC will obtain long-term contracts to sell production from the Project.

The long-term contract price at the end of October 2018 (US\$31.25 from Cameco’s combination of Ux Consulting and Trade Tech reports) was in an almost flat trend, and slightly less volatile than the spot market price. The contract price is expected to remain in this region in the near term. The following factors may influence the market by the time Reno Creek could go into production:

- 1) New reactors in China and India;
- 2) The rate at which Japan is expected to continue to bring reactors back on line;
- 3) Government policies in Europe (including France, Germany, and Sweden), as they may re-think their policy of reducing dependence on domestic nuclear generation facilities; and
- 4) Quantity of inventories and cost to use.

## **20.0 ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACT**

The information presented in Section 20.0 is in accordance with the guidelines set forth in NI 43-101 and NI 43-101F1.

AUC submitted its Source Material license application to the NRC in October 2012. Its WDEQ application for a permit to mine was submitted in January 2013 (reference: AUC 2012 and AUC 2013). The area addressed by the license and permit applications is as shown in Figure 4.1 and includes the North Reno Creek and Southwest Reno Creek Resource Units.

The NRC completed its review of the Source Materials License application for the Project Permit Area, which was submitted October 5, 2012. The NRC published the Record of Decision which documents the NRC staff's decision to issue a material license to AUC for the Reno Creek ISR Project on February 3, 2017. The NRC issued the Source Materials License to AUC for the Project on February 17, 2017.

AUC has received its approved Permit to Mine from WDEQ, including the Class III UIC Aquifer Exemption (with EPA approval). In addition, AUC has received its approved Class I Deep Disposal Well Permit to install up to four wells from WDEQ (with EPA concurrence).

This permit area does not include the Moore, Bing, or Pine Tree Resource Units. License and permit amendments will be developed in the future.

The results of the baseline studies performed for the license and permit applications for the Reno Creek Project area plus those supporting ongoing and historical energy and other development activities indicate that specific environmental concerns are not likely for the Moore, Bing, or Pine Tree Resource Units.

### **20.1 ENVIRONMENTAL STUDIES AND ISSUES**

The regulatory approval risks are mitigated by the long history of intensive grazing and agricultural usage plus natural resource extraction in the immediate area of the Reno Creek Project. AUC's land holdings of 20,409 acres (approximately 34 square miles) are contained in an area of approximately 7 Townships (252 square miles).

Virtually all of the 32 square miles have been used for stock grazing for more than 100 years. In addition, portions have been subject to dryland agriculture off and on since the early 20<sup>th</sup> Century, including the intentional removal of sagebrush over large portions of the region to enhance grazing.

Oil production commenced in the 1950s and has seen at least three major surges/booms including the present boom involving unconventional/shale/hydro-fracturing/horizontal drilling. As of June 2016, there are approximately 275 oil wells, which have been drilled and/or operated in the area of the Reno Creek Project (an additional 149 wells have a permit or are awaiting approval to drill), including at least 45 oil wells on AUC's land holdings with an additional 30 wells that have a permit or are awaiting approval to drill. In addition, there are approximately 200 miles of roads/pipelines/powerlines serving oil developments in the same area.

The coal bed methane production boom commenced in the 1990s, and is only now beginning to abate. As of February 2, 2014, there are about 1,500 CBM wells are operating or recently abandoned in the area of the Reno Creek Project, including 301 CBM wells on AUC's holdings. More than 450 CBM wells are on properties adjacent to AUC's holdings. In addition, there are more than 300 miles of roads, pipelines, powerlines, and pumping stations serving CBM production in the project area, including the Uranerz Acquisition.

The development of oil and CBM is subject to similar environmental review processes as a mining operation, such as Reno Creek. The CBM development for the entire PRB (including southeast Montana) was subject to a Federal/BLM Regional EIS before CBM leasing grew to current levels. CBM development in the PRB of Wyoming alone totals nearly 16,000 production wells plus thousands of miles of infrastructure. The day-to-day production permitting emerging from the final CBM EIS is conducted by the Wyoming Oil and Gas Conservation Commission (WOGCC), an agency that considers both environmental and operational factors, including cultural resources. Petroleum development has generated more than 10,000 acres of disturbances in the vicinity of the Project. The Project will generate less than 200 acres of disturbances (less than 3% of the Project area).

Oil development permitting involves primarily the WOGCC, but can involve the BLM as well during leasing activities for federally owned petroleum minerals. The BLM and the WOGCC consider environmental and operational factors in the permitting process.

One hundred percent of AUC's holdings have been subject to prior environmental baseline evaluations as part of the petroleum industry permitting process. The permitting of many oil and gas wells includes public hearings and comment. In addition, full permitting and licensing was accomplished for Uranium One's Moore Ranch ISR uranium facility immediately southwest of the Pine Tree Resource Unit.

AUC anticipates that no major issues will be raised that will prevent approval of the necessary permits or license amendments for the Moore, Bing, and Pine Tree Resources Areas. A summary of the results of site-specific environmental studies is given below.

#### **20.1.1 Surface and Groundwater Quality**

All streams within the proposed Project area and its 2-mile buffer are classified as ephemeral streams incapable of supporting fish populations or drinking water supplies. All drainages in the proposed project area are also ephemeral in nature. The nearest permanent streamflow is approximately 25 miles away. The predominant source of surface water is from thunderstorms and spring snowmelt. No land is used for crops or other irrigated vegetation within the proposed Project boundary. The few water bodies that do exist across the proposed Project area are scattered and small and are primarily man-made stock watering impoundments. The impoundments accumulate limited rainfall and snowmelt plus CBM discharge water and water from stock wells.

Within the proposed Project area, the Overlying Aquifer is considered to be the uppermost aquifer. Based on the depth to the top of the Overlying Aquifer and the observed sequence of finer grained silt and shale that overlies this aquifer, the Overlying Aquifer is isolated from the surface water drainages present in the proposed Project area. As all surface drainages in the Project area are characterized as ephemeral, the lack of a perennial wetting front and the distance between ground surface and the top of the Overlying Aquifer support this conclusion of isolation between surface water and the overlying aquifer.

The Underlying Unit (below the PZA) within the proposed Project area is comprised of relatively ratty sandstones that are discontinuous and often lenticular. This underlying unit is not continuous or hydraulically connected across the Project area, based on geologic data and potentiometric data. Based upon the extremely low well yields and hydraulic conductivities at wells completed in this underlying unit, this unit does not meet either NRC's or WDEQ's definition of an aquifer according to 10 CFR Part 40. Consequently, AUC is not required to monitor the Underlying Unit.

Rocky Mountain Energy (RME) conducted a series of hydrogeological investigations within the Project area in 1982. The significance of the Hydrogeological Integrity Study conducted by RME demonstrates that the numerous historical exploratory boreholes (those drilled before plugging regulations) do not provide a conduit to crossflow of groundwater between aquifer units, due to the natural sealing capacity of the swelling clays present in confining

units above and below the Production Zone sand. Recent pump testing and re-entry of many historical drill holes conducted across the Project area has also provided additional confirmation of hydraulic isolation of the Overlying Aquifer and Underlying Unit with respect to the production zone.

Groundwater flow in the Production Zone Aquifer (PZA) is to the northeast and structural dip is to the northwest at approximately 35 feet to 50 feet per mile. Geologic confinement of the PZA by the overlying and underlying aquitards exists across the entire project area. Aquifer conditions transition from fully saturated in the western portion of the Project area to partially saturated conditions in the eastern project area. Based on available information to date, partially saturated conditions exist in approximately 30% of the Project area.

### **20.1.2 Cultural and Historic Resources**

Cultural resources, protected under the National Historic Preservation Act (NHPA) of 1966, are non-renewable remains of past human activity. There are no culturally significant places listed in either the National Register of Historic Places (NRHP) or state registers for the Project area. An intensive Class III Cultural Resource Evaluation for the Project was conducted between August 5, 2010 and December 11, 2010. Seventy-nine cultural localities were identified within the Project area, all of which have been evaluated as not eligible for the NHRP.

Following the receipt of the Class III Survey, NRC commenced its Tribal Consultation under Section 106 of the NHPA. Thirteen high plains tribes spent several weeks surveying the Project property. In the end, no cultural resources eligible for listing on the NRHP were found.

The Project area is geographically located 7.5-miles from the Pumpkin Buttes, which has been identified as a traditional cultural property (TCP). The Project area is located well beyond the TCP boundary, which negates the necessity to obtain a mandatory Memorandum of Agreement (MOA) for the operation of the Project facility. Regardless, AUC commits to ongoing monitoring of historic and cultural resources as project development progresses. Mitigation measures consistent with approved ISR operations elsewhere in Wyoming are proposed by AUC to avoid or reduce cultural resource impacts.

### **20.1.3 Paleontological Resources**

The BLM utilizes the Potential Fossil Classification System (PFYC) for land use planning efforts and for the preliminary assessment of potential impacts and proper mitigation needs for specific projects. The entirety of the Project area is considered the Wasatch Formation, which the BLM designates a PFYC Class 5. This rating suggests that a very high relative abundance of vertebrate, invertebrate, or plant fossils may exist in the area. However, the Class III survey conducted in 2010 found no fossil or other paleontological evidence at the permitted area.

### **20.1.4 Visual and Scenic Resources**

A site-specific Visual Resource Management (VRM) evaluation for the Project area was conducted in July 2011, based on methods provided in the BLM Manual 8410. The key factors of landform, vegetation, water, color, influence of adjacent scenery, scarcity, and cultural modifications were evaluated and scored according to the rating criteria. If the visual resource evaluation rating is 19 or less, no further evaluation is required. Based on the site-specific evaluation, the total score of the scenic quality inventory for the permitted area is 8 out of a possible 32. Therefore, AUC expects no further evaluation is required for existing scenic resources and any changes to scenic resources from Project facilities.

### **20.1.5 Threatened, Endangered, or Candidate Species**

UEC engaged a consultant in 2018 to update Appendix D9 – Wildlife, of the Permit to Mine. The consultant concluded that no threatened, endangered, candidate, or proposed wildlife species have been documented in the Reno Creek wildlife review area during surveys in 2008, 2010, and 2011 and available data sets do not indicate the occurrence of any threatened and endangered species in the wildlife review area.

## **20.2 PERMITTING REQUIREMENTS, PERMIT STATUS, AND FINANCIAL ASSURANCE**

Permitting requirements, status, and financial assurance are discussed below.

### **20.2.1 Permit Status**

In summary, the NRC completed its review of the Source Materials License application for the Project Permit Area, which was submitted October 5, 2012. The NRC published the Record of Decision which documents the NRC staff's decision to issue a material license to AUC for the Reno Creek ISR Project on February 3, 2017. The NRC issued the Source Materials License to AUC for the Project on February 17, 2017.

The Permit to Mine for the Project was issued by WDEQ/WQD in July 2015 after a 60-day public comment period during which no public comments were received. The Aquifer Exemption for the Class III production wells was issued by WDEQ/WQD in October 2015, following approval by the EPA in October 2015. The Class I UIC Deep Disposal Well Permit was issued by WDEQ/WQD in June 2015.

AUC is currently working on a significant revision to the Permit to Mine (Permit) to incorporate the North Reno Creek Project recently purchased from Uranerz Energy Corporation into the Permit. This permitting action will allow AUC to mine the resources acquired as part of the transaction.

The Moore, Bing, and Pine Tree Resource Units will require that license and permit amendments be developed prior to construction or operations in these areas.

### **20.2.2 Financial Assurance**

Financial Surety will be required by the State of Wyoming. The Project will be secured for the entire estimated amount of total closure costs, which include groundwater restoration, facility decommissioning, and reclamation. The annual financial surety amount is based on the estimated amount of annual development that would require closure in the case of default by the owner.

## **20.3 COMMUNITY AFFAIRS**

AUC has an ongoing community affairs program, directed by senior staff, its environmental manager, and its land department. AUC maintains routine contacts with landowners, local communities and businesses, and the general public. AUC has hosted or been involved in several public meetings at various locations around Campbell County since 2011.

## **20.4 PROJECT CLOSURE**

### **20.4.1 Well Abandonment/Groundwater Restoration**

Groundwater restoration will begin as soon as practicable after uranium recovery in each well field is completed (as determined by Project economics). If a depleted well field is near an area that is being recovered, a portion of the depleted area's restoration may be delayed to limit interference with the on-going recovery operations. AUC plans to use a reductant, sodium sulfide, to enhance the groundwater restoration process.

Restoration completion assumes up to seven pore volumes of groundwater will be extracted and treated by reverse osmosis. Following completion of successful restoration activities, the injection and recovery wells will be plugged and abandoned in accordance with WDEQ/LQD regulations. Monitor wells will also be abandoned following verification of successful groundwater restoration.

### **20.4.2 Demolition and Removal of Infrastructure**

Simultaneous with well abandonment operations, the trunk and feeder pipelines will be removed, tested for radiological contamination, segregated as either solid 11e.(2) or non-11e.(2) then chipped and transported to appropriate disposal facilities. The header houses will be disconnected from their foundations, decontaminated, segregated as either solid 11e.(2) or non-11e.(2), then chipped and transported to appropriate disposal facilities. The CPP processing equipment and ancillary structures will be demolished, tested for radiological properties, segregated, and either scrapped or disposed of in appropriate disposal facilities based on their radiological properties.

### **20.4.3 Site Grading and Revegetation**

Following the removal of well field and CPP infrastructure, site roads, which the surface owner does not desire to keep, will be removed and the site will be re-graded to approximate pre-development contours and the stockpiled topsoil placed over disturbed areas. The disturbed areas will then be seeded.

## **20.5 PERMITS REQUIRED**

Specific permits will be acquired to conduct the work proposed for the property. Table 20.1 summarizes the list of permits and licenses needed for the Reno Creek Project.

**TABLE 20.1**  
**SUMMARY OF PROPOSED, PENDING, AND APPROVED PERMITS FOR THE**  
**RENO CREEK ISR PROJECT**

<b>Regulatory Agency</b>	<b>Permit or License</b>	<b>Status</b>
<b><i>Federal</i></b>		
U.S. Nuclear Regulatory Commission (USNRC)	Source Materials License (10 CFR 40)	Application submitted October 5, 2012. NRC Record of Decision and License <b>received</b> February 2017.
U.S. Army Corps of Engineers (ACOE)	Determination of Jurisdictional Wetland	Wetland delineation <b>was completed and forwarded to ACOE in April 2012.</b>
US Environmental Protection Agency (USEPA)	Aquifer Exemption (40 CFR 144, 146)	Aquifer Exemption for Class III UIC injection and production wells <b>approved by EPA</b> in October 2015.
<b><i>State</i></b>		
Wyoming Department of Environmental Quality/Air Quality Division (WDEQ/AQD)	Air Quality Permit	WDEQ/AQD Air quality permit to construct <b>issued</b> September 2016. 1-yr extension granted until September 2019 in correspondence dated August 10, 2018.
WDEQ/Water Quality Division (WQD)	Groundwater Reclassification (WDEQ Title 35-11)	Aquifer reclassification application <b>approved</b> by WDEQ/WQD – Second Quarter 2015.
	Underground Injection Control Permit (Deep Disposal Well) (WDEQ Title 35-11)	Class I UIC Permit application <b>approved</b> by the WDEQ/WQD in July 2015.
DEQ/Land Quality Division (LQD)	Underground Injection Control Class III Permit (Permit to Mine) (WDEQ Title 35-11)	Permit to Mine & Class III UIC Permit application submitted January 2013. <b>Approved by WDEQ</b> in July 2015.
	Mineral Exploration Permit (WDEQ Title 35-11)	<b>Approved</b> Mineral Exploration Permit DN #401 is currently in place for the exploration actions of Reno Creek Project areas.
	Construction Storm Water NPDES Permit (WDEQ Title 35-11)	Construction Storm Water NPDES authorizations will be secured annually under a general permit based on projected construction activities. The Notice of Intent will be filed at least 30 days before construction activities begin.
	Underground Injection Control Class V (WDEQ Title 35-11)	The Class V UIC permit will be applied for following installation of an approved site septic system during facility construction.

## **21.0 CAPITAL AND OPERATING COSTS**

UEC is developing a conceptual mine plan to support a revised Preliminary Feasibility Study that the Company plans on completing in 2019.



## **22.0 ECONOMIC ANALYSIS**

UEC is developing a conceptual mine plan to support a revised Preliminary Feasibility Study that the Company plans on completing in 2019.

## 23.0 ADJACENT PROPERTIES

Table 23.1 summarizes published project holdings of various uranium companies within 2 miles of the Reno Creek Project. Figure 1.1 and Figure 7.1 show the locations of selected properties within the Pumpkin Buttes Mining District.

<b>TABLE 23.1</b>				
<b>ADJACENT PROPERTIES<sup>1</sup></b>				
<b>Project</b>	<b>Ownership</b>	<b>Township</b>	<b>Range</b>	<b>Approximate Acreage</b>
Moore Ranch	Uranium One	T41/42N	R74/75W	3,214
Ruby	Cameco	T43N	R74W	Not Available
<sup>1</sup> TREC, Inc., October 13, 2010, "Technical Report Reno Creek Property, Campbell County, Wyoming," by Douglass Graves, P.E., for Uranerz Energy Corporation				

The estimates of in-place tonnage and grade presented in Table 23.2 are based on TREC, Inc.'s October 13, 2010, "Technical Report Reno Creek Property, Campbell County, Wyoming," by Douglass Graves, P.E. for Uranerz Energy Corporation.

<b>TABLE 23.2</b>			
<b>ADJACENT PROPERTY ESTIMATES OF IN-PLACE TONNAGE AND GRADE</b>			
<b>Project</b>	<b>Source</b>	<b>Tons</b>	<b>Average Grade % eU<sub>3</sub>O<sub>8</sub></b>
Uranium One Moore Ranch	BRS, 2006	2,950,306	0.100
Cameco Ruby Ranch	NA	NA	NA

The authors have not verified the information and data for the adjacent properties.

## **24.0 OTHER RELEVANT DATA AND INFORMATION**

A NI 43-101-compliant Pre-Feasibility Study (PFS) was commissioned by AUC (*Reno Creek Preliminary Feasibility Study Wyoming, USA*, May 9, 2014). The PFS incorporated the timely development of all the Reno Creek Units, beginning with North Reno Creek and Southwest Reno Creek followed by Moore, Bing, and Pine Tree. While reviewed by the authors, the results of that effort were not incorporated into this Mineral Resource estimate because it may be determined that the Preliminary Feasibility Study is subject to possible revisions or updating that are outside the scope of this report.

## **25.0 INTERPRETATION AND CONCLUSIONS**

The authors conclude the Measured and Indicated Mineral Resources of 26 million pounds of  $U_3O_8$  in-place for the Reno Creek ISR Project are compliant definitions for such Mineral Resources established by CIMM Best Practices and meet Canadian NI 43-101 standards.

The authors conclude there is limited risk that the estimate of quantity, quality, and physical characteristics of the Mineral Resources at the Project will be affected by future investigation.

## **26.0 RECOMMENDATIONS**

Behre Dolbear recommends:

- 1) Continue ongoing interpretation and further refinement of zoning and mapping of the major roll fronts and sub-rolls.
- 2) Give additional attention to the three-dimensional aspect of the roll fronts.
- 3) Complete additional detailed work to refine roll front interpretations in each proposed Production Unit before final mine design.
- 4) Plan drilling programs for the Bing and Pine Tree Resource Units to commence in a more favorable uranium market.

## 27.0 REFERENCES

- Behre Dolbear Canadian National Instrument 43-101 report titled "Technical Report on the Resources of the Reno Creek Project, Campbell County, Wyoming USA dated November 30, 2012.
- Behre Dolbear Canadian National Instrument 43-101 report titled "Technical Report on the Resources of the Reno Creek Project, Campbell County, Wyoming, USA" dated July 31, 2016.
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### DATE AND SIGNATURE

The undersigned qualified persons prepared, titled "Technical Report on Resources of the Reno Creek ISR Project, Campbell County, Wyoming, USA," dated 31 December 2018.

*Robert D. Maxwell*

Robert D. Maxwell  
AIPG #10913



31 December 2018



## CERTIFICATE OF QUALIFICATIONS

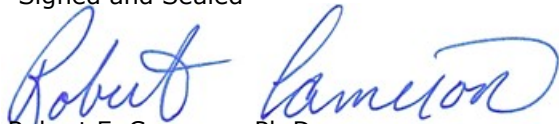
### ROBERT E. CAMERON, PH.D.

I, Robert E. Cameron, Ph.D., MMSA QP, do hereby certify that:

- 1) I am a consulting Resource and Reserve Specialist doing business as Robert Cameron Consulting at the address of 221 Dubois Street, Black Hawk, Colorado, USA, 80422.
- 2) I am a Qualified Person – No. 01357QP of the Mining and Metallurgical Society of America.
- 3) I am a graduate of The University of Utah with a B.S., M.S., and Ph.D. degrees in Mining Engineering.
- 4) I have practiced my profession since 1977. My relevant experience for the purpose of the Technical Report is Acting as a consulting resource and reserve specialist for 41 years specializing in the due diligence review, computerized mine design, mine optimization, geostatistical review, and resource and reserve audits of a wide variety of minerals.
- 5) I have read the definition of “Qualified Person” as set out in Canadian National Instrument 43-101 *Standards of Disclosure for Mineral Properties* (NI 43-101) and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101), and past relevant work experience, I fulfill the requirements to be a “Qualified Person” for the purposes of NI 43-101.
- 6) I am responsible for preparation of Section 14.0 of the “Technical Report and Audit of Resources of the Reno Creek ISR Project, Campbell County, Wyoming, USA” dated 31 December 2018.
- 7) I have not personally visited the properties that are the subject of this report.
- 8) I have had no prior involvement with the properties that are the subject of the Report except for my involvement with the previous Behre Dolbear Technical Reports.
- 9) I am independent of Uranium Energy Corporation as set out in Section 1.4 of the Canadian National Instrument 43-101.
- 10) I have read the Canadian National Instrument 43-101 and the Technical Report has been prepared in compliance with the Canadian National Instrument 43-101 and Form 43-101F1.
- 11) As of the date of the certificate, to the best of my knowledge, information, and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.
- 12) I consent to the filing of this Technical Report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public.

Dated this 31<sup>st</sup> day of December 2018.

“Signed and Sealed”



Robert E. Cameron, Ph.D.  
MMSA 01357QP

## **CERTIFICATE OF QUALIFICATIONS**

### **ROBERT D. MAXWELL**

I, Robert D. Maxwell do hereby certify that:

- 1) I am a Senior Associate of Behre Dolbear & Company (USA), Inc. 4255 South Buckley Road, Aurora, Colorado 80013
- 2) I am a graduate of Texas Western College with a Bachelor of Science in the Sciences, 1964 and the University of Colorado at Denver with a Master of Business Administration, 1991.
- 3) I am certified as Profession Geologist #10903 by the American Institute of Professional Geologists.
- 4) I have worked as a geologist and a mineral property evaluator. My relevant experience for the purpose of the Technical Report is:
  - Project Manager for resource evaluation for possible acquisitions or joint ventures of:
    - Akdala and South Inkai Kazakhstan uranium deposits for a confidential client
    - BHP Billiton Ambrosia Lake uranium holdings
    - Strathmore Ambrosia Lake uranium holding for a confidential client
    - Uranium Resources, Inc Grants mineral belt uranium holdings
  - Project Manager for Due Diligence for debt issuance by the Wyoming Business Council for two Wyoming uranium ISR projects.
  - Principal Investigator for resource evaluation for possible acquisitions or joint ventures of:
    - Homestake Mining Company Ambrosia Lake uranium holdings for Conoco
    - Bokum Corp. New Mexico uranium holdings for Conoco
    - Susquehanna Western Inc. south Texas uranium holdings for Conoco
    - Florence Arizona copper deposit for Conoco
    - Pathfinder Mines Wyoming uranium holdings for Cogema
    - Milwaukee Railroad northwestern USA minerals for ITT Rayonier
    - Kemmerer Coal Wyoming coal for Marathon Oil Company
- 5) I have read the definition of "Qualified Person" as set out in National Instrument (NI) 43-101 and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purposes of NI 43-101.
- 6) I am responsible for the preparation of all Sections except Section 14.0 of the "Technical Report and Audit on Resources of the Reno Creek ISR Project, Campbell County, Wyoming USA" dated 31 December 2018.
- 7) I visited the site June 19, 2012, July 27, 2012, May 19, 2016, June 7, 2016, and October 10, 2018.
- 8) I have had prior involvement with portions of the property that is the subject of the Technical Report as a principal investigator for Rio Algom Mining Corporation's due diligence prior to acquiring portions of the Project in the late 1990s. I was Project Manager for valuation of the 'Uranrez Acquisition' discussed in this report. I also was Project Manager for the preparation of the "Technical Report on Resources of the Reno Creek ISR Project, Campbell County, Wyoming USA" dated November 30, 2012 and a similar report dated July 31, 2016.
- 9) To the best of my knowledge, information, and belief, my section of Technical Report contains all scientific and technical information that is required to be disclosed to make the report not misleading.
- 10) I am independent of AUC LLC as set out in Section 1.4 of National Instrument 43-101.
- 11) I have read National Instrument 43-101F1, and the Technical Report has been prepared in compliance with National Instrument 43-101 and Form 43-101F1.

- 12) I consent to the filing of this Technical Report with any stock exchange and other regulatory authority and any publication by them, including electronic publication in the public company files on their websites accessible by the public.

Dated this 31<sup>st</sup> day of December 2018.

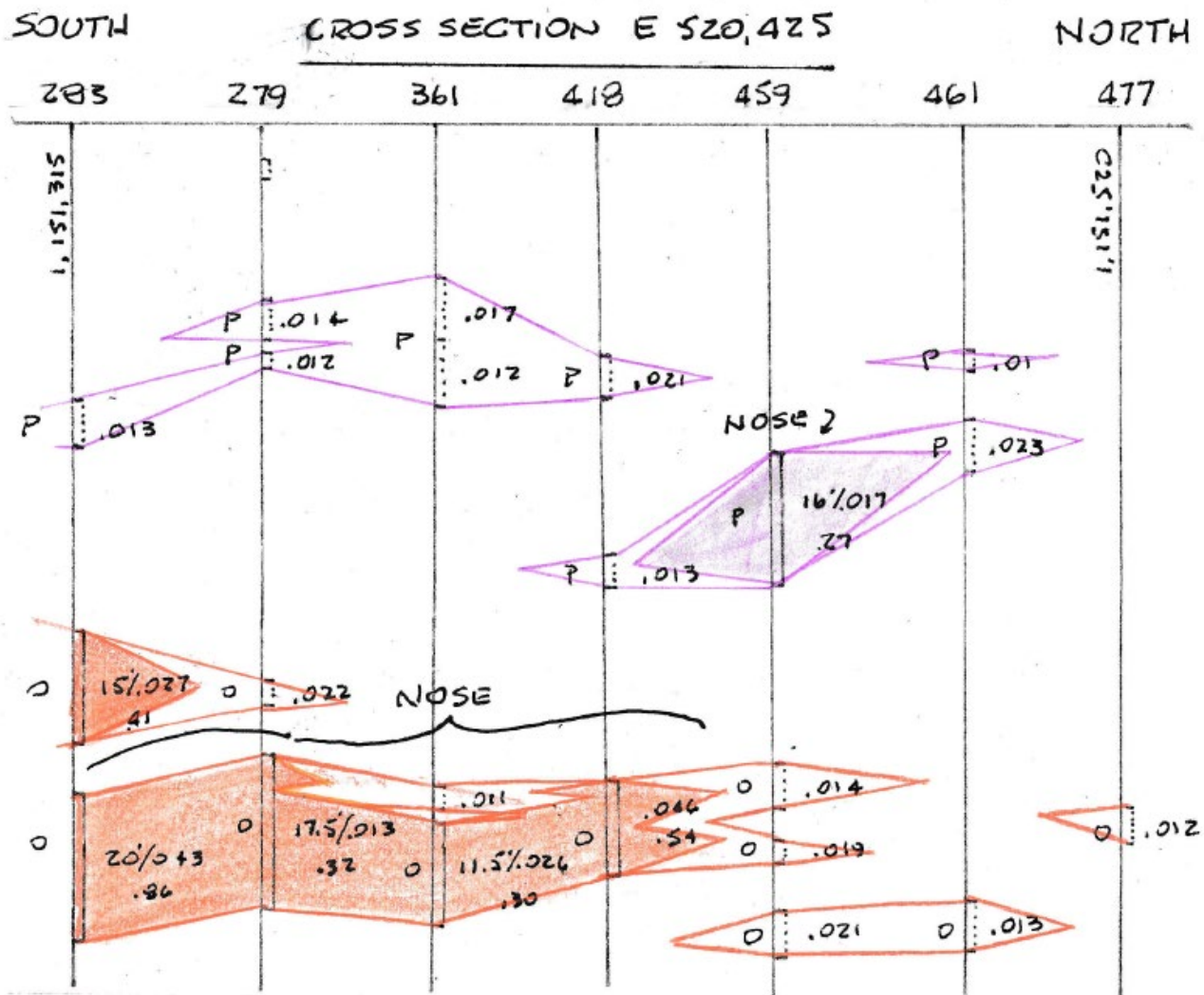
"Signed and Sealed"

*Robert D. Maxwell*  
Robert D. Maxwell  
AIPG #10903



**APPENDIX 1.0**

**SAMPLE OF BEHRE DOLBEAR CROSS-SECTION USED TO CHECK DATA ENTRY AND  
CORRELATION OF MINERALIZATION**



Vertical 1" = 20'	North/South Cross-section E 520,425 Southwest Reno Creek Unit Reno Creek Project Wyoming
Horizontal 1" = 100'	
Vertical Exaggeration = 5X	