

### Hansen / Taylor Ranch Uranium Project Update





### 2012 Uranium Recovery Workshop Denver, Colorado May 3, 2012 Rod Grebb - Vice President of Regulatory Affairs

### **Project Team**



#### **Black Range Minerals**

Tony Simpson Managing Director

**Ben Vallerine** Exploration Manager (Director)

Mike Drew Chief Financial Officer

**Rod Grebb** VP of Regulatory Affairs

Pat Siglin Geologist

Howard Harlan Development Geologist

Jerry Bryant Consultant

#### WWC Engineering

Ray Moores Permitting Program Manager

#### TREC Inc. (Mining & Processing Studies)

**Steve Hollister** *Program Manager* 

Wendy Stansbury Project Engineer

#### Kinley Exploration, LLC (U/G Borehole Mining)

Colin Kinley President / CEO

Tim Wright Senior Engineer

#### Ablation Technologies, LLC

Jim Coates President

Eric Coates Senior Vice President

#### **PB Communications**

Melissa Butcher Managing Partner



# **Tallahassee Creek Uranium District**

- Hansen project is largest uranium deposit in Colorado
- 30km NW of Cañon City
- Hosts AngloGold-Ashanti's Cripple Creek heap leach gold mine (historic production of 23Moz gold)
- Established mining industry and mining culture in the district
- Uranium first discovered in the district in 1954
- From 1954 until 1972 –16 small open pit and underground uranium mines operated in the Tallahassee Creek district
- More than 2,200 holes drilled for more than 1.15 million feet



## Hansen Uranium Deposit – Long Section







#### Underground Borehole Mining (continued)



- Mining method uses proven engineering concepts and known mining technology
- Significant reduction of environmental impact
- Target selective discriminatory mining method
- Controlled economic pace of mining
- Exponential reduction in overburden costs
- Comparative material reduction in capital costs







# **Paste Backfilling**

- Cement is mixed with barren sand material
- Mixing of the sand occurs at the blender where the cement slurry itself is mixed
- Small diameter piping is run down the hole from surface
- A pump, similar to the high pressure pump used for UBHM is used to jet grout the hole
- The slurry is sprayed as the pipe is rotated to ensure good coverage of the cavity
- If barren sand material is not used in the cement, air can be injected to foam the cement into the cavity





### What has been done to date?

- Kinley developed a comprehensive Desktop Study for Underground Borehole Mining the Hansen deposit
- Full economics for mining the structure and returning the ore to surface including CAPEX and OPEX were included
- Kinley performed Threshold Pressure testing on barren core at Missouri University of Science and Technology (MUST)





### What are we working on?

- Working closely with the team to get the UBHM process permitted for both a trial test and full scale mining of the deposit
- Assisting team members in the full scale economics of the Hansen project
- Designing a submerged air shroud assisted hydraulic jet test at MUST



# Hansen Underground Borehole Mining Layout





# Flow Chart Combining Hydraulic Mining and Ablation



#### **Hydraulic Miner**

Uses high pressure water to mine the ore.

#### **Ablation Skid**

Slurry from the hydraulic miner is pumped through the injection nozzles. This creates the high energy impact zone that scours the uranium from the host rock materials and <u>removes the patina</u>.

#### **Grain Removal Screen**

Screen system removes the grains fraction from the post-ablation slurry stream.

#### **Gravity Separation**

Elutriation system separates the light fines fraction from the target heavy minerals.

Heavy Fines to Mill

Light Fines Out

Water to DI/RO reclaimed



### **Ablation Results**





#### **Pre-Ablated Hansen Ore**

#### **Post-Ablated Barren Material**

# Permitting: Ablation Technology



6 CCR 1007-1, Part 1 states that "Ore" means naturally occurring uranium-bearing material in its natural form, to be processed for its uranium or thorium content, prior to chemical processing including but not limited to roasting, beneficiating, or refining, <u>and specifically</u> <u>includes material that has been physically processed, such as by</u> <u>crushing, grinding, screening, or sorting.</u>

- Testing will be performed on the barren material produced from Ablation to determine disposal method
- Ideal disposal method is to use barren material as cement/paste backfill for U/G mining or underground borehole mining



### **Summary**

- UBHM advantages
  - Cost effective targeted mining method
  - Low environmental impact
  - Worker safety
- Ablation advantages
  - Reduce waste stream
  - Increase transportability of ore
  - Reduction in processing costs



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Thank You ... Any Questions?