

## **Mining Brines: A New Exploration and Production Model for the Minerals Extraction Industries**

**Thomas B. Smith<sup>1</sup>, Thomas Smith<sup>2</sup>, and Robert Benson<sup>3</sup>**

<sup>1</sup>US Strategic Minerals Exploration, LLC

<sup>2</sup>PE, SPE

<sup>3</sup>PhD

### **Abstract**

How can brine be mined? One first must understand what mining means. Mining, digging, chipping, or simply moving surface sediments has occurred in one form or another for as long as humans and other land mammals have existed on Earth. Fast forward to present - several NASA space programs have focused explicitly on mining or simply rock collecting on nearby asteroids and Mars. Why do we go to such great lengths to mine elsewhere when we have so many mines right here on our planet?

Exploration is in our DNA!

What is a hybrid exploration approach? Hybrids result from mixing two different methods hoping to find a better, improved way of doing something. Why is this better? For one, the surface footprint of this type of brine mining operation is usually less than 10 acres in size. In our search for LiquidOre™ brines which contain valuable minerals, we use a rotary drilling rig typically used to drill for oil, gas, or geothermal water. Once we reach the brine reservoir, we again use tried and true equipment and methods to complete the well to produce the brine and deliver it to surface storage tanks. At that point, the processing step is variable and tailored to the specific minerals to be extracted from the brine. New projects aimed at extracting Lithium from brines are under various stages of planning and development throughout the world. Typical brine mining for Lithium using surface evaporation ponds requires a much larger mine site and is environmentally and logistically challenged in all but a few areas of the world.

US Strategic Minerals Exploration and a host of other "out of the barrel" thinkers are currently developing processing technology to take CO<sub>2</sub> from the atmosphere and use it in a CCUS process with our LiquidOre™ brines to permanently store it as an alkaline earth carbonate product, such as aggregate commonly used for road base and in concrete. Demonstration scale testing is planned at a suitable in-field site where Calcium and Magnesium Chloride-rich brines are available to further evaluate the efficiency and economic viability of our ex-situ CCUS technology.

The Cane Creek Petroleum Play, Paradox Formation, Utah    Tuesday, July 26    11:25 AM