The Uniqueness of the ZNZ Limestone Quarry

Site History

Areas that are now some of the harshest deserts environments were once deep lakes and lush marsh systems. Ancient pluvial lakes dominated the western landscape of United States, especially those within the Great Basin of North America. Throughout the Pleistocene, rainwater and runoff filled landlocked basins. Over time, as more water became available with the increased moisture, the lakes enlarged and spread across places with lower elevations creating enormous pluvial lakes.

Just as pluvial lakes are created by climate fluctuations, they are also destroyed by them. In the post-ice age era, the continental ice sheets melted causing a shift in world weather patterns producing a trend to arid lands that were once inland seas.
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At its peak about 1.2 MM years ago, increasing local volcanic and geothermal activities increased within the Great Basin and was responsible for a unique metamorphic reaction in existing mineral structures. In the specific area of the ZNZ Limestone Quarry, this resulted in the formation of what is now known as Caloxite.

Christopher Shaw, ACT's geologist, researched at the library of the Mackey School of Mines in Reno, Nevada, the occurrence of Miocene age (Tertiary Epoch) freshwater limestone in Nevada, and found a reference to a historic high quality limestone mine in 1910 in the Mopung Hills of Churchill County in the Nevada Bureau of Mines and Geology Bulletin 83, Geology and Mineral Deposits of Churchill County, Nevada, 1974. On page 77 of that publication there is a description of a limestone mine on the railroad land. It shows the construction of a limestone kiln on the right of way in 1910 in a photo (Figure 9.1) and gives a description of the existing limestone mine on section 17, T23N, R29E. The mine was on private, former Railroad lands and adjacent to unclaimed BLM land. On page 51 of that publication is the quote "…around 1910 a small tonnage was shipped to the Pacific coast for agricultural purposes" (from Vanderburn, W.O., 1940, reconnaissance of mining district in Churchill county, Nevada: US Bur. Mines Inf. Cir. 7093, p.37)

The uniqueness of Caloxite.

Limestone consist predominately of Calcium, Magnesium, Iron, Sodium, Silicone and other trace elements. Since the ZNZ Caloxite Quarry is located within an ancient pluvial lake site it is considered a *Fresh water Limestone*.Compared to the oceanic limestone, freshwater has minimal Sodium which is not desirable for agricultural mineralization.

Unique to the ZNZ is the increased volcanic and geothermal activities under the 800 ft deep Lake Lahontan. This activity produced a rare but not unheard-of metamorphic reaction, where volcanic and/or geothermal has heat penetrated the porous limestone layers and converted partially the predominant Calcium Carbonate into Calcium Oxide.

Caloxite originates from a rare sedimentary lakebed of compacted Gastropods, water plants, and other microcrustaceans. It is almost 100% fossilized colloidal material. Through its formative stages, it has become a natural carbonated bio-diverse source of bio-minerals and nutrients. It can enrich the soil with a wide spectrum of water-soluble, colloidal, nano-scale minerals that dissolve naturally and won't overwhelm the chemistry of the soil or existing saprophytic relationship.

Geologists conclude that the late Miocene Pliocene epoch created a rare situation to produce this mineral deposit. Caloxite is rich in minerals and easily assimilated by plants and animals. This dual benefit is uniquely found in this deposit.

The abundance of Caclium Oxide is truly an anomaly in the world of limestones. ACT has conducted over 15 assays from reputable assay labs showing calcium oxide of about 34 percent. The majority of the rock type is interbedded micrite, pelmicrite and biomicrite which consists of gastropod shells with minor amounts of bivalves. The calcium carbonate gastropod shells are cemented by a calcium carbonate and/or calcium oxide matrix. The oxygen rich freshwater environment allowed calcium oxide either as a primary component or an alteration product of the precipitation and lithification of freshwater shells. The calcium oxide and very minor iron oxide gives the deposit the rich yellow to orange color of the rock demonstrating the oxidizing environment. This is in contrast to most other limestone mines in the world which are mainly deposited in anoxic deep ocean sediments and are grey in color with almost no calcium oxide. Thus, the ZNZ Limestone mine is a high-grade limestone deposit with a majority component of calcium oxide and other micronutrients. ACT has drilled over a total of 560 feet of drilling with samples sent to 3 professional assay labs in the United States and Canada. The results obtained show the high grade of the calcium oxide with very valuable trace elements and no undesirable trace elements. The ZNZ Limestone Property has a total of 15.6 million tons of Measured and Indicated Resources. This freshwater limestone is a highly valued resource shippable by rail or truck to markets in the east and west coasts of America.

A comprehensive chemical analysis of Caloxite identifies the following Minerals:

Calcium oxide (CaO)	34.65 %
Iron oxide (Fe2O3)	02.76 %
Potassium oxide (K2O)	01.19 %
Magnesium oxide (MgO)	03.65 %
Manganese (II) oxide (MnO)	00.09 %
Phosphorus pentoxide (P2O5)	00.26 %
Silicon dioxide (SiO2)	21.95 %
Titanium dioxide (TiO2)	00.29 %
Vanadium oxide (V2O5)	00.01 %
Carbon (C)	06.35 %
Sulphur (S)	00.09 %
Aluminum oxide (Al2O3)	06.50 %
Barium oxide (BaO)	00.13 %
Micro Elements	00.38 % /

The macro elements are well researched elements highly beneficial to plant germination, growth and overall health. They are also proven soil mineralizers that create unique growing conditions.

The trace elements, also referred to as micronutrients, are an important part of Caloxite. The combined bouquet of trace elements work in synergy and independently to achieve the unique life promoting ability of this one of a kind matrix of minerals. Assays to date, have identified forty-seven different micronutrients within the matrix. This "bouquet" works together and produces effects such as enhanced seed germination and root growth, the promotion of anti-pathogenic properties, overall plant viability, enabling of protection against macro molecular damage, enhancement of metabolism and photosynthesis, and improvements in relative yield. These are but a few of the many studied benefits of the individual micro elements, many which are considered "essential". As a combined group, the elements complement each other and present to ACT an important target for further research.

Targeted Usage:

Caloxite is primarily used in agricultural as a **soil mineralizer**. Caloxite will correct the pH level in acidic soils that can occur as an existing soil issue or that is caused by the type of plants that have grown in the soil. In green house studies done at the College of Agriculture at the University of Nevada Reno, increases in pH levels have been as much as 80% with one application with residual neutralization seen in year two without further application.

The greenhouse experiment tested the effects of Caloxite on four different forages (Alfalfa, White clover, Smooth brome grass, and Tall fescues) on acid soil. The experiment showed immediate increase in soil fertility, nutrient dynamics and forage growth. There was immediate and long-term increase in soil pH, with an immediate decrease in iron content in the grass soils, an overall immediate increase in phosphorus concentration, and increase in plant biomass. In addition, Caloxite was extremely successful when applied with NPK (10-10-10) fertilizer. The combination of both Caloxite and fertilizer resulted in an immediate increase in soil pH, nitrate

and phosphorus concentration, and even greater increase in plant biomass of the four forages. Caloxite is an extremely effective soil fertility and management mineral that helps promote plants growths, and nutrient availability in nutrient deficient and acidic soil.

Caloxite is **chelatable**. Unlike Calcium Carbonate, Calcium Oxide, the source of calcium in Caloxite, is broken free naturally from carbon. This makes the calcium readily available to plants and animals.

Caloxite is a **high-grade nitrogen-buster**. When urea (46-0-0), anhydrous ammonia (82.5-0-0) or diammonium phosphate (18-36-0) is banded into the soil, an equivalent amount of calcium is precipitated. The plant roots cannot access nitrogen in an environment containing more than 32 percent ammonium. Roots can be killed, but usually they grow around the fertilizer bands. After the soil microbes have converted much of the banded ammonium to nitrate, then the roots can begin to use the nitrogen. When extra soluble calcium, like that found in Caloxite, is applied with the fertilizer, it lowers the pH of the fertilizer band, thus reducing its toxicity. If calcium is applied beyond precipitation requirements, it stimulates ammonium absorption by plants.

Adding supplemental calcium has increased the rate at which plants absorb ammonium by as much as 100 percent. As some of the ammonium is changed to nitrate the previously precipitated calcium is gradually resolubilized, adding to the available soluble calcium concentrations that increase yield.

The **increased ammonium absorption** caused by calcium provides beneficial results. Photosynthesis increases and greater amounts of carbon dioxide are captured by the plant from the air, which increases the plant's organic building blocks. When plants absorb more ammonium, less nitrogen remains in the soil and is subject to leaching. Also, surplus nitrogen absorbed by plants is stored and is available to promote growth all season. In trials, both bermudagrass and rye grass showed this effect, with denser growth and color(chlorophyll-photosynthesis) throughout the season.

Perhaps the most beneficial effect of applying calcium with ammonium is that plants change their normal pattern of depositing energy stores (carbohydrates, metabolites). As results shows, rice plants had progressively lower leaf weight and progressively higher grain weight as calcium levels increased. This increase continued with all calcium concentrations. One report showed that adding soluble calcium to rice paddy water resulted in up to 15 percent of the flag leaf's energy production being transported to the filling seeds (as opposed to 5 percent without calcium). Rice weights increased 14 percent when extra calcium was applied at seed fill.

Caloxite has proven to **increase total biomass** when applied. A study by Sunland Analytical showed that in comparison to a control planting, that even with equal germination percentages, the biomass was 125% of the control. Other studies have shown as much as 60% biomass increases.

As a water conservation tool, Caloxite is a major **supporter of water economy**. As a distributed Limestone and when used as an agricultural crop supplement, Caloxite strengthens the plants soil bacteria's, **allowing the plant to require up to 35% less water for survival.** This aids the crop in drought and heatwave tolerance.

Caloxite contains a **slow release action** that removes the need for the farmer to constantly top-dress his crops in a seasonal manner. Application can be done every few years, depending on selected grain size. This helps the farmer manage the fields in an inexpensive manner, greatly reducing total cost.

This unique combination of growth promoting elements combined with cost reductions per acre allows Caloxite when properly applied to result in higher profits for farmers and more abundant foods supplies for consumers.

Caloxite is OMRI Listed and may be used in certified organic production or food processing and handling according to the USDA Organic Program regulations.

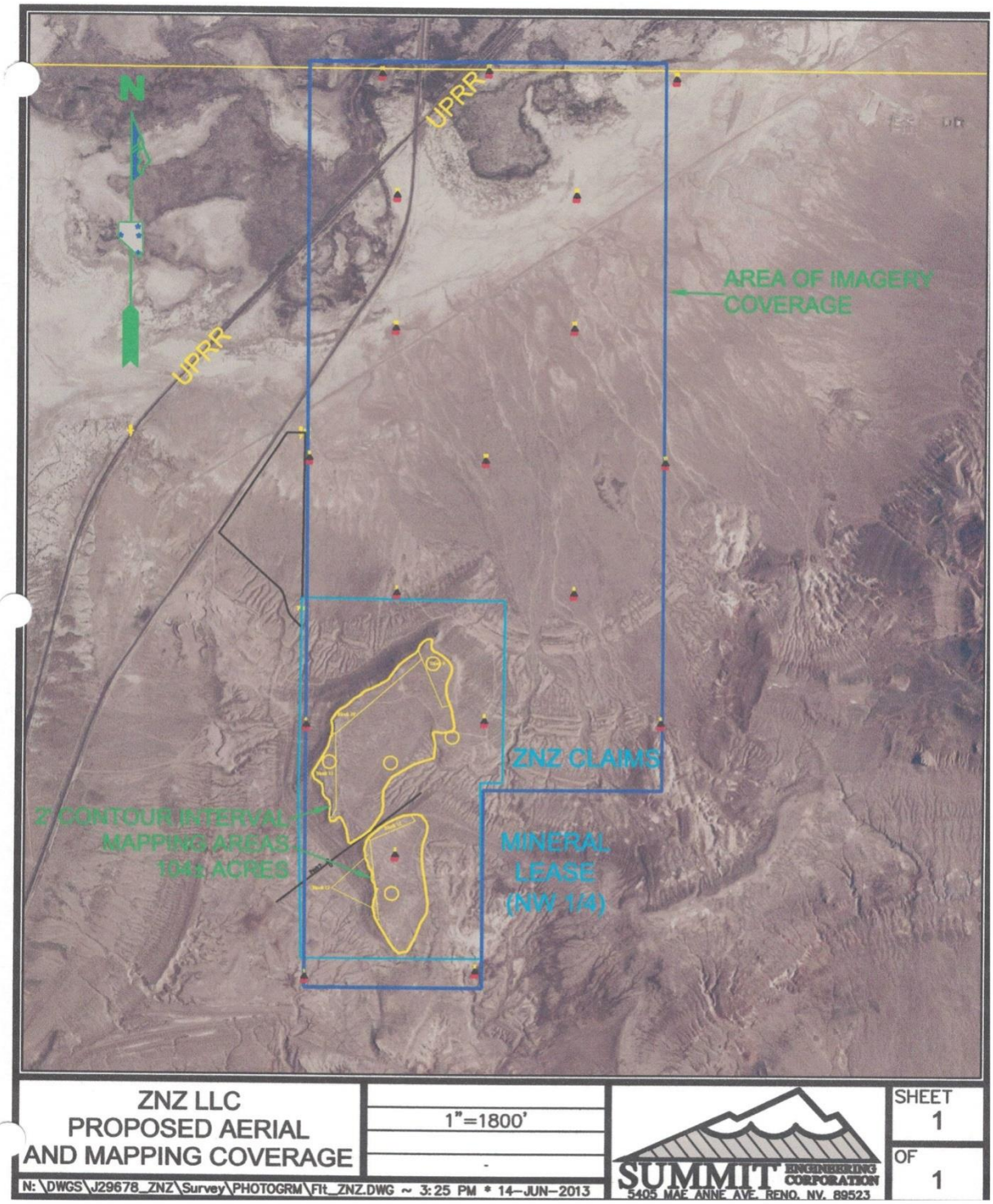
Site Status

The ZNZ Limestone Project is in Churchill County, Nevada, 30 miles north of Fallon, and 5 miles south of the Trinity Junction on Interstate 80. In addition, the project is adjacent to a rail site of the Union Pacific Railroad, allowing rail delivery to a West Coast Port for worldwide distribution. The ZNZ Limestone Project consists of 9 unpatented lode claims on BLM land and a signed mineral lease with Newmont Mining Corporation. All claims are fully owned by ZNZ, LLC, a Nevada Limited Liability Company

The ZNZ Limestone Project, according to the National Instrument 43-101 Technical Report prepared on June 11, 2013 (report on file and available for reference and/or verification), currently has 4.0 million tons of High-Grade Limestone Resource sufficiently well drilled and stock piled for immediate packaging and distribution. The ZNZ, LLC Project also currently holds the rights to another 11.6 million tons of Limestone Reserve yet to be extracted for future distribution.

A geologic study commissioned, was performed to a depth of 70 feet below ground surface. This study revealed the consistency of the deposit at depth over the extent of the project area. This information yields a deposit of an estimated 33,000,000 tons of product.

For more information visit: www.actnevada.com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