

Rainbow Wells \$13 Trillion Mineral Appraisal Resource Estimate Meta-Prospectus for the Cima Volcanic Formation & East Mojave National Scenic Area

Coalesce Mine Land-Invest completes a \$13 Trillion Mineral Appraisal & Resource Estimate for the Cima Volcanic Field & East Mojave National Scenic Area (EMNSA). A Supergiant Mine area of 230 Sq/mi. of Cinder Cones & Lava Fields to the entire 2,410 Sq/mi. of the EMNSA containing Gigatons of Cinder, Quartz, Obsidian, Granite, Gold, Silver, Iridium, Platinum, Palladium, Ruthenium, Zirconium, Antimony, Chromium, Niobium, Tungsten, Tin, Molybdenum, Titanium, Cobalt, Copper, Manganese, Zinc, Magnetite, Iron & Lead, and over 30 other materials with existing mines, occurrences or detected from Osmium, Yttrium, Terbium & Dysprosium Heavy Rare Earths and Lanthanum, Cerium, Neodymium & Samarium Light Rare Earths and Radioactive Elements such as Uranium & Thorium known to occur in all volcanic structures. These precious metals and strategic minerals were detected in moderate to high anomalous amounts in all historical prospectus and previous mining history in and around the Cima Volcanic Formation, Cima Dome and entire East Mojave National Scenic Area; located around Rainbow Wells (city) in the Mojave National Preserve. This report was prepared by Chris Edwards for Coalesce Development.

The Rainbow Basin Natural Area is part of the geologic Barstow Formation located approximately 8 miles north of Barstow, CA, the region is considered to be part of the Ivanpah uplift in The Badlands of the Mojave Desert. The Barstow Formation is 50 miles long by 10 miles wide and 2.5 miles deep located within the 2,410 square miles of the EMNSA. According to the National Geological Survey, USGS & NPS, the Cima Volcanic Field covers a surface area of 230 square miles, 6000 feet to 3 Km deep, has 70 Lava Tube's or vents and exposed feeder dikes and lava bombs reaching the surface, consisting of 50 Cinder Cones of 2-80 Megatons with 60 Lava Flows of multiple layers ranging from 3 feet to 500 feet deep, 100-1,100 meters wide and up to 9,000 meters long & the cinder cones are as much as half a mile in diameter and 200 to 650 feet in height.

This executive summary presents results from a nine month analysis of many geologic and mineral appraisal prospectuses in and around the Cima Volcanic Formation & Lava Fields located within the Rainbow Basin of the Barstow Formation in the East Mojave National Scenic Area (EMNSA). This Mineral Appraisal & Resource Estimate is the basis for a new claim area and new minerals claims; thus requiring a new prospectus for the entire 2410 sq/mi of the EMNSA in the Mojave National Preserve. This report independently validates a new minerals claim and new claim area that includes analysis of private mineral rights appraisals related to the Cinder Cones that were conducted in 1983, 1987, 1988, 2018 & 2021, before and after the Desert Preservation Act of 1994 that shut-down the mines.

The summary includes 4 early prospectuses conducted by private companies from 1983, 1987, 1988 and 2018. USGS, NPS, BLM & U.S. Bureau of Mines geology reports and mineral prospectus of the area were uncovered from 1916, 1953, 1954, 1969, 1979, 1983, 1987, 1990, 1991, 1992, 1996, 1998, 2005, 2006, 2007, 2009, 2017 & 2018. Over one-hundred official sources are provided in this article as references to provide additional known knowns, known unknowns and unknown unknowns insights into the mineral potential of the EMNSA. Many prospectus on the Cima Volcanic Formation and EMNSA provide highly accurate surveys, testing and maps that would provide targets for discovering commercial potential of previous mines and detecting the unknown delivery points, veins and mother lodes that are produced by the volcanic events and found in the lava fields. The 20 previous mines in the

area, adjacent mountain ranges and entire EMNSA needs further exploration to determine the commercial possibilities and our claim of new materials such as Iridium & Platinum group metals, Yttrium & Osmium and heavy rare earth minerals, Neodymium light rare earths and Thorium & Uranium radioactive elements known to occur in all volcanic structures.

Our initial impression is we have found a National Treasure dubbed The Holy Grail. This monumental finding in the Mojave Desert is characterized as "the largest find of Iridium & Rare Earths in the world". It's being referred to as a "Pot Of Gold At The End Of The Rainbow". **Iridium is considered the second-densest naturally occurring metal (after Osmium), named after the Greek goddess of the rainbow, Iris, because of these vibrant hues, though the metal itself is silvery-white and extremely hard. Rainbow Obsidian at the Cima Dome is also known as Iris Obsidian, Fire Obsidian, Heaven's Eye, or Sheen Obsidian, all referring to the iridescent, rainbow-like colors.**

Given the geological richness and historical mining context of the Cima Volcanic Formation and the EMNSA, there exists a opportunity for the U.S. government, Indigenous Tribes and all stakeholders to engage in strategic negotiations and exploration initiatives. The U.S. Fish & Wildlife Service has recently been ordered to review the National Wildlife Refuge System to audit the value of their lands. By leveraging advanced modern detection methods, with a proprietary artificial intelligence dashboard and our comprehensive geological research on this project, we can unlock the potential of this national treasure, while still protecting the environment. In addition, Coalesce has developed a plan for "Freedom Cities" with Indigenous Tribes for rebuilding Baker, Primm and the EMNSA into an "Oasis in the Desert" at Primm to support the two operating mines, Brightline Rail stop and future Primm airport.

Key Findings

****Historical Drilling & Insights**:** The earliest private prospectus in 1983 by Baker Mill cited the first platinum group finds from a 15Kt formation of volcanic ash a 3.9 oz/ton of Gold, 2.7 oz/ton of Palladium. In the 1983 Feasibility Report: "Concurrently so and based on findings the assay results show: Gold at 2.37 OPT, Silver at 10.0 OPT. In a report in 1983, NTS Scientific Services Group concluded that the site tested contained Gold at 3.90 OPT, Palladium at 2.90 OPT. In 1988, a Ronald Howard prospectus of several volcos from random samples in 160 acres of one volco at 10.4 ounces per ton of Gold, 3% of Cobalt per ton and several rare earths. In 1988, Alpha Research reported from drill holes of 38 grams/ton of Gold, 15 of Silver, 32 of Platinum, 2 of Rhodium, 87 of Osmium, 12 of Ruthenium, 22 of Palladium, 113 of Iridium. HMS Mineral Processing Inc in 1988 reported a range of 8-225 oz/ton of Gold, 5-32 oz/ton of Silver, 4-30 oz/ton of Other from drill holes around the cinders. A private prospectus was completed in 2018 which reported grade values used in this Prospectus: Gold: 2 OPT at 87% extraction; Silver: 3 OPT at 87% extraction; Palladium .25 OPT at 85% extraction; Cobalt at 5% per weight per ton at a 35% extraction.

****Flame Burn Tests**:** Flame burn tests further corroborated the presence of gold, silver, cobalt, tungsten and other valuable minerals with potential for diverse mineral extraction.

****Surface Material Limitations**:** 3 USGS reports of from 1969, 1987 & 2006 focused solely on surface material, while private prospectuses provided in-depth analyses from boreholes and flame burns. No technology was used to find underground metals that employ principles like Induction, Pulse Induction (PI), Very Low Frequency (VLF), LIDAR and Spectroscopic Identifiers with 3D imaging to map the surface materials and subsurface structures.

Known knowns, known unknowns and unknown unknowns of mineral resources in the East Mojave National Scenic Area

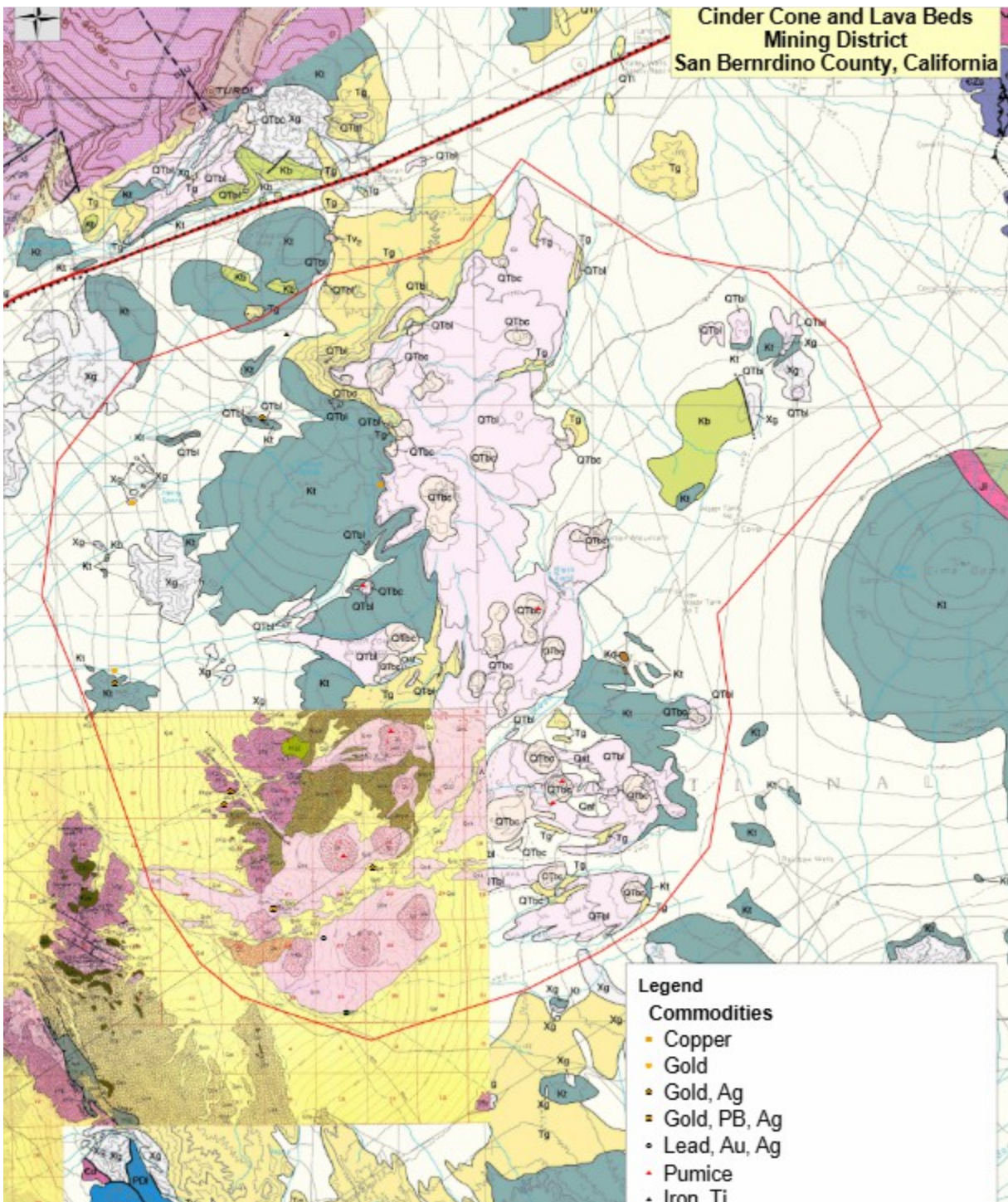
[1991 USGS Evaluation of Metallic Mineral Resources and their Geologic Controls in the East Mojave National Scenic Area](#) in response to a request from the National Mineral Resource Assessment Program (NAMRAP) featuring the Cima Volcanic Formation & Cima Dome. Volcanic protoliths are most commonly of felsic compositions, dacites and rhyodacite, though locally there appears to have been sparse to abundant mafic and ultramafic rocks within the rock sequences. Some of the mountain ranges that have widespread metallic occurrences and show geochemical anomalies in various sample media are the Providence Mountains, Clark Mountain Range, Ivanpah Mountains, and the New York Mountains parts of the Piute Range, the Fenner Valley area, the general area of Cima Dome, Old Dad Mountain area and areas west to Soda Lake, and the Cima volcanic field. Much less endowed with known occurrences of all of the various types of deposits considered above are the Granite Mountains, the central parts of the Piute Range, the Fenner Valley area, the general area of Cima Dome, Old Dad Mountain area and areas west to Soda Lake, and Cima volcanic field.

[2006 USGS Geology and Mineral Resources of the East Mojave National Scenic Area.](#)

"Restricting judgments concerning the presence of undiscovered metal resources in the EMNSA only to currently known types of deposits and to regionally representative tonnages for such deposits would undoubtedly yield small estimates for volumes of many metals that might be exploited. The question of mineral-resource potential for these types of gold-bearing epithermal deposits of Tertiary age within the EMNSA is difficult to address at this time. There is simply inadequate information available to us to outline reasonably constrained permissive terranes, or favorable tracts, on the large pediments in the EMNSA. Select mineralized samples from gold-silver, quartz-pyrite veins that show high gold/silver ratios might be one method that could be used to discriminate mid-Miocene veins from others. It is possible that economically significant concentrations of many metals remain to be discovered in many parts of the EMNSA. The presence of any mineralization, the type of mineralization, and the extent and intensity of mineralization in the covered areas is essentially unknown."

The **likelihood is high**, however, that those areas in the EMNSA covered only by a thin cap of gravels could host mineralization similar to that known in the adjoining mountain ranges. Most buried epigenetic mineral deposits do not respond to standard geophysical methods, particularly at the coarse spacing of the data-collection points available for our evaluation. Widespread distribution of numerous types of deposit (including copper skarn, lead-zinc skarn, tin-tungsten skarn, polymetallic vein, gold-silver quartz-pyrite vein, low-fluorine porphyry molybdenum, gold breccia pipe, volcanic-hosted gold) petrogenetically associated with igneous rock in many parts of the EMNSA is indicative of a metallogenic environment that may be the site of **future discoveries** of types of mineral deposits that are not now recognized by the exploration community.

Historical Mining In The Cima Volcanic Formation



[Cima](#) and [Aiken](#) mines operated from 1950s to 1994, with reports suggesting that 10% and 3% of their 30MT each of resources were extracted off their tops. Their mining activity included only volcanic glass, cinder, quartz, obsidian, gold and silver; whereas the 6-60K ounces of gold and silver income was enough income to pay for the mining operation. Significant megatons of tailings at the Cima and Aiken mines remain for immediate testing or processing. A 2021 Minedat citation of a [Former Pumice Deposit/Mine](#) located 1/2 mile West

of the Aiken Cinder Cone, in sec. 8, T13N, R12E, SBM, (5.3 miles) E. of Indian Spring, (5.4 miles) S. of Button Mountains, S. portion of the Cinder Cone Lava Beds, S. of Black Tank Wash). [Rainy Day Mine](#) on a South end Cinder Cone in the Cima Volcanic Field is A Gold, Silver & Lead occurrence/prospect located in sec. (21?) 27, T13N, R11E, SBM, (2.6 miles) S. of Indian Spring (NE of Old Dad Mountain).

A 2021 [Wmk Builders Products Prospectus](#) on the Quarry, [Cinder Cone Lava Beds District](#), identifies the same Ultramafic, Olivine basalt layers located at and pinpoints 26 primary cinder cones for mining. The older flows are weathered and eroded, while the younger ones appear fresh and may have-been extruded in historic times. The cinders are red to black, coarse- to medium-cellular, and are less than one eighth of an inch to six inches in their longest dimension, but locally are agglutinated to form masses up to 2 to 3 feet across. Volcanic bombs are abundant, especially along bedding planes. Samples contained 46.10% SiO₂, 16.39% Al₂O₃, 11.17% Fe₂O₃, 2.09% K₂O, 4.75% Na₂O, 7.73% CaO, and 6.16% MgO, and 47.76% SiO₂, 16.42% Al₂O₃, 11.12% Fe₂O₃, 2.04% K₂O, 4.36% Na₂O, 7.83% CaO, and 6.77% MgO, respectively. About 7.8 million tons of cinder resources remain at the Aiken Mine in 1990. Total production from the Cima Cinder Mine is unknown, but 130,000 tons of cinders were sold to Aiken Builders Products from 1954 to 1961 (Tognoni, 1983, p. 26). About 8 million tons of volcanic cinders were at Cinder the Aiken Mine in 1983 (Tognoni, 1983, p. 25). Volcanic cinder resources remaining at the Cima Cinder Mine are unknown, but are substantial (Rumsey and McMahan, 1985, p. 8).

Historical records of the Gold, Silver, Tungsten mines in the area are well known. Minerals mined throughout the Mojave National Preserve region included ores of gold, silver, lead, copper, iron, molybdenum, tungsten and zinc. USGS (MRDS) ID# 16066553 found Gold, Silver & Zinc at the "[Rainbow Wells Prospect](#), Marl Mountains. A Gold, Silver & Zinc occurrence/prospect located in sec. 13, T13N, R12E, SBM, (0.4 mile) W of Rainbow Wells.

Rainbow Wells [Unnamed REE pegmatite occurrence](#) of Titanium, Iron, Rare Earth, Zirconium & Uranium located at the S border of sec. 26, T13N, R12E, SBM, (1.7 miles) SW of Rainbow Wells, West of the Aiken Mine, towards the Marl Mountains. Pegmatites are crucial sources of Rare Earth Elements (REEs) and other strategic metals like lithium, tantalum, and niobium, formed from the final, water-rich crystallization of granitic magma, concentrating incompatible elements into large crystals or gempockets.

****East Mojave National Scenic Area Mining Activity**:**

Economically significant concentrations of many metals may possibly remain to be discovered in many parts of the EMNSA (see also Wetzel and others, 1992) [U.S. Bureau of Mines \(1990\). Mineral Investigation of the East Mojave National Scenic Area U.S. Bureau of Mines Open-File Report MLA 6-90: Volume 1, Table 2: No. 153, p. 90.](#)

[Russ Prospect](#) at Marl Mountains, A Gold & Silver prospect located in sec. 26, T13N, R12E, SBM, (2.6 miles) SSW of Rainbow Wells. The [Marl Mountains](#) have a history of gold deposits around Marl Springs, with early small-scale prospecting dating to the 1860s with epithermal quartz veins in volcanic and granitic rocks, part of the broader Mojave Desert gold region.

1969 USGS [The ages of three uranium minerals](#) in the Magnetite & Pegmatite around the [Cima Dome](#). Xray analysis of the dig showed 10% Uranium & Niobium, 5 to 10% Titanium, 1

to 5% Calcium, Thorium & Yttrium, 0.1 to 0.5% Al, Ce, Dy, Br, Fe, Gd, Nd, Pb, Sm, Yb, 0.01 to 0.05% Ho, Lu, Mn, Mg, Sr, Tm, 0.001 to 0.005% Ba, Sc and 0.0001 to 0.0005% Be. [1954 USGS Radioactive Deposits in California](#) Minedat: [Chromite occurrence at Cima Dome](#).

The [Teutonia Silver Mine](#) or [Dutch Silver Mine](#) at the Cima Dome is a former lode lead, gold and silver occurrence/mine located in sec. 11, T14N, R13E, SBM, 0.9 km (0.5 mile) N of [Teutonia Peak](#), often mentioned in USGS reports alongside the Teutonia batholith, a significant granite body. Nearby Deposits at 1.6 miles to the American Opportunity Silver Prospect, and 3 miles to the ([Lucky Lode](#)) [Silver Star Tungsten Occurrence](#), [Silverado-Tungstite Mine & Billy Boy Mine](#).

Nearby operations such as the [Paymaster Mine](#) at 5-10 miles East reported significant gold output of \$75,000 at 1910 to 1914 prices. The [2017 BLM Geology and Mineralization of Old Dad Mountain](#) is located 2 miles to the Southeast of the Cima formation were home to several gold mines, most notably the Paymaster Mine, active around 1900-1914, [Lucky Mine](#) A former lode Gold, Copper, Lead & Silver occurrence and mine & [Oro Fino Mine](#) A former lode Gold occurrence and mine (part of the Seventeen Mile Point area), all three yielding significant gold from quartz veins within gneiss and quartzite formations. US Bureau of Mines records of Oro Fino showed 528 tons which yielded 400 ounces of gold and 20,594 ounces of silver. The Paymaster Mine generated excitement by the discovery of high grade gold quartz located in 1930. This also caused a revival of interest in this area and a large number of claims have been located in the vicinity of the Paymaster Mine. They extracted 16 tons of ore which was milled at the Wanderer mill and it is stated they recovered \$100 per ton on the plates.

These mines, along with others like the [Telegraph Mine](#), were part of a gold rush spurred by discoveries near Halloran Springs in the early 1900s, with activity peaking during the Great Depression due to increased gold prices. The Telegraph mining district is located in the northern Big Burro Mountains and contains diverse range of mineral deposits. Laramide vein and volcanic epithermal deposits of precious- and base-metals, fluorite, manganese, uranium, other commodities have been discovered and mined in the district.

The [Telegraph Mine](#) was discovered November 9, 1930 by A. A. Brown and Ralph Brown of Salina, Utah. One sample showed free gold in calcite and quartz and assayed up to \$800 per ton in gold (At 1930's gold prices). Total known production amounts to 1,700 lbs Cu, 1 oz Au, 1,350 oz Ag, 37,800 lbs Pb, minor Zn, 220 long tons of manganese ore, and 16,603 short tons of fluorite. In addition, stratabound uranium deposits occur in the Wild Horse Mesa area. Office of Mineral Exploration, USGS, sponsored drilling in 1968 (Owens, 1980, p. 13) indicate a total measured tonnage of 72,750 tons of ore at a grade of 0.5 oz/ton gold and 1.16 oz/ton silver (U.S. Bureau of Mines, 1990, p. 79)

The [Beale Mountains](#) are located northeast of the Kelso Mountains, and east of the Marl Mountains, about five miles from the Kelso Cima road, in the Cinder Cone National Natural Landmark, with the iron ore [Vulcan Mine](#) area is 2 miles Northeast of the Cima Volcanic Field hosts significant, though largely historical, gold, silver and copper deposits. The Vulcan Mine is reported by the USGS as a former lode Gold, Silver & Copper occurrence/mine with veins that carries 2-3% of Copper and 32 grams of Gold per ton.

The [Soledad Mountain](#) / [Golden Queen Mine](#), a productive zone with veins of gold, silver, pyrite, and other minerals, historically yielding millions, with operations continuing today

despite earlier dormancy. Soledad Mountain contains an unusually large number of individual veins within a relatively small area. Gold and Silver mineralization occurs in a swarm of mainly northwest-striking, subparallel to anastomosing, low-sulfidation, epithermal quartz veins that formed in faults and fractures within the Miocene rhyolitic volcanic units. Several of Soledad Mountain's mines were consolidated into the [Golden Queen Mining Company](#) in 1935 until 1942 when Order L-208 was enacted effectively outlawing mining of non-strategic metals such as gold and silver during wartime.

The [Providence Mountains](#) are 10-20 miles East of the Cima Volcanic Field. A Minedat official prospectus revealed .54 oz per ton of surface gold with 300Kt subsurface material. The Providence mine reported removing 72 tons of gold over 4 years from surface material where geology reports of the potential is 300KT in the formation, but admitted to lack of testing underground for veins. The select sample from the polymetallic veins at the [Bighorn Mine](#) A former lode Iron, Gold, Copper & Silver occurrence/mine near the south end of the Providence Mountains includes 22,000 ppb Gold (table 11, analysis no. 15). The main operation, the [Bonanza King Mine](#) A former Silver, Lead, Copper & Gold mine was highly profitable. Before a mill fire in 1885, the mine produced \$1.8 million in silver.

[Geology and Mineral Resources of the Providence Mountains GEM Resource Area](#) (1982), yielded substantial amounts of iron, silver, lead, and gold ore. A minimum of nineteen mines have been productive. There has been recovery of iron, gold, silver, lead, copper, zinc and tungsten from ore produced. In addition to these metals, molybdenum, cadmium, tantalum, barite, fluorite, perlite, pumice and clay occur in the area. Geochemical sampling indicates potential for tin, lead, silver, zinc, copper, molybdenum, tungsten, tin, cadmium, tantalum and fluorite are strategic materials. Materialization is widespread, with past producers or prospects scattered over most of the area. At 300 feet from portal, a winze was sunk to a depth of 30 feet, exposing 8 feet of sulphide ore to have an average of .75 oz per ton.

Of the over 3,000 [USGS Mine Records in San Bernardino County](#), 1,585 list gold as a primary commodity. The rest report a wide array of commodities, including silver, lead, zinc, and copper. According to the USGS, "Gold deposits are scattered throughout San Bernardino County. They occur in the Slate Range in the northwest, the Whipple Mountains in the southeast, the San Gabriel Mountains in the southwest, and the Clark Mountain area in the northeast" - read the full USGS report on San Bernardino gold mines here.

Geological Insights

****USGS Reports & Findings**:**

Three USGS reports documented the Cima formation revealing of Gold, Silver & Rare Earth's found together similar to those now being detected at the [Mountain Pass Mine](#). The 1987 report included 12 named prospecting sites on Page 19 citing a mean of .33 oz/ton of Gold, a "Gold Standard" for a commercial mine, high of .86 oz/ton with a significant find of 42 oz of Silver from 50lb grab of rocks. However, the report was from surface material such as panning, chips and rocks and inadequately addressed the spectrum of 40 metals and materials they claimed to explore citing only limited findings on Page 19 that did not reflect the area's potential. Other geologic maps and detailed petrologic studies describe the volcanic rocks adjacent to the study area and present geochemical data on gold contents of cinders from 3 volcanic cones (Katz, 1981; Breslin, 1982).

Three of the USGS reports from 1969, 1987 & 2007 failed-to-report on Rare Earth's & Radioactive Materials discovered at Mountain Pass and only reported on it's use as a Carbonate mine. This is despite the [1954 USGS Rare-Earth Mineral Deposits of the Mountain Pass District San Bernardino County California](#) report on the rare earth's at Mountain Pass in 1954 citing rare-earth oxide content of much of the carbonate rock is 5 to 15 percent; in some local concentrations of bastnaesite the rare-earth oxide content is as high as 40 percent.

[USGS 1953 Thorium Resources of the Mountain Pass District, San Bernardino County, California](#). The rare earths deposits of the Mountain Pass district were studied during the period 1949 to 1952 by several geologists of the US Geological Survey. Potash-rich igneous rocks and associated rare earths and thorium bearing carbonate rocks occur in a northwest-striking belt six miles long in the pre-Cambrian rocks. Thorite and monazite account for the largest part of the radioactivity,, Except for concentrations of monazite in and near the large Sulphide Queen carbonate body (fig 3) \$ the strongest radioactivity is attributable to thorite concentrated in the belt of rare earths mineralization5 particularly near some andesitic dike rocks. Radioactivity in the Sulphide Queen gold mine is several times surface background due largely to the mass effect of the surrounding wall rock0 The tailings pond about 300 feet east of the Sulphide Queen gold mine (figo 2') is radioactive (00 15 to 00 20 mr/hr).

[1979 USGS Principal Thorium Resources in the United States](#) prepared for the DOE & DOI. The thorium deposits are spacially and genetically related to three alkalic complexes of Cambrian age (Olson and others, 1977), the McClure Mountain Complex that includes the [mafic-ultramafic rocks](#) at Iron Mountain (Shawe and Parker, 1967), the Gem Park Complex (Parker and Sharp. 1970), and the complex at Democrat Creek (Heinrich, 1966, p. 339). Thorium in these deposits would be a byproduct either of rare earth or of niobium mining. The Iron Hill carbonatite body in the Powderhorn district, Colorado, and the Sulfide Queen carbonatite body in the Mountain Pass district, California, were evaluated.

In the [1987 USGS mineral resource appraisal report conducted for Congress and the President](#) the USGS detected 5000 ppm of Thorium an anomalous concentrations of the heavy rare earth Yttrium at the [Silver Prospect](#) in the NW side the Cima formation. They tested for 20 other heavy rare earth minerals, light rare earth minerals and suggested other radioactive elements were found in moderate of 500ppm to high anomalous values of 5000 ppm. The lode and percentage vales are similar to the nearby [Mountain Pass](#) Mine consisting of [ultrapotassic mafic dikes and rare earth elements with barium rich carbonatite](#), but claimed the Silver Prospect may not be of commercial value due to the smaller size of the formation they tested. At the [Cinder Cones-Lava Beds District: Raw Silver Cone Prospect](#), 12 samples were taken from veins and altered zones. Three samples contained traces and five had 0.05 to 0.32 oz/ton gold; three had traces and five had 0.4 to 1.8 oz/ton silver; one select sample from a 50-lb stockpile contained 41.3 oz/ton silver; 2 samples contained traces of copper and six had about 1% copper.

This 1992 USGS mineral resource report below was written for the Department Of Interior. It was the last report, citing the [1987 USGS mineral resource appraisal report conducted for Congress and the President](#), that was presented to Congress prior to when the Desert Preservation Act of 1994, was introduced by Diane Feinstein in January 1993. 1992 USGS [Mineral resource assessments entailed new geologic mapping in the volcanic field](#). (Greenwood, 1984; Wilshire and others, 1987). The problem with the 1992 report is that the

report did not cover "resource assessments" and only reported on the "age" and "geology" of the Cima Volcanic Field.

It is suspect that a resource assessment wouldn't include a resource assessment, yet it sources an earlier document that reported on locations with high amounts of surface Gold, Silver, Yttrium & Thorium. From the 1992 Report: They present mapping began as part of a "Wilderness Study Area mineral resource assessment", and will be combined with new mapping by R.E. Reynolds in the Solomons Knob and Valley Wells quadrangles, which include the northern part of the Cima volcanic field. Other current studies include isotopic and trace element investigation of the basalts (Farmer and others, 1991), and investigations of detachment faulting (Reynolds, 1990; Davis and others, 1990).

[1996 USGS Magmatic infiltration and melting in the lower crust and upper mantle beneath the Cima volcanic field, California](#). Other quenched melt compositions range from those comparable to the host basalts to those with intermediate Silicon compositions and elevated Aluminum, Alkalies, Titanium, Phosphorus, and Sulfur; groundmass compositions of CVF basalts are consistent with infiltration of fractionates of those basalts, but near-solidus melting may also contribute to formation of glass with intermediate silica contents with infiltration only of volatile constituents.

[2005 USGS Mineral Resources of the Cinder Cones Wilderness Study Area](#) cited geologic maps and detailed petrologic studies of volcanic rocks adjacent to the study area and present geochemical data on gold contents of cinders from 3 volcanic cones.

From a [2006 USGS report on surficial geologic map of the Mesquite Lake quadrangle](#) cited French (1983) presented intensity/duration precipitation data in the context of groundwater resources for southern Nevada while Turner (1990) analyzed stream and playa sediments with NURE (National Uranium Resource Evaluation) data. Ivanpah Valley: a "limitless supply of water can be obtained from wells 10 to 50 feet deep." Aerial Tour of the [Cadiz Aquifer](#) under the Providence Mountains. [How the Aquifer Works](#).

A [2007 USGS Geology and Mineral Resources of the East Mojave National Scenic Area](#) report (below) cited the Ivanpah Mountains, with eight surrounding mines, located 10 miles north of the Cima formation, had concentrate samples of moderately to highly anomalous concentrations of Copper, Manganese, Lead, Silver, Gold, Cobalt, Bismuth, Antimony, Molybdenum, Tungsten, Tin, Beryllium, Thorium, Lanthanum, Cerium, Neodymium, Samarium, Terbium and Dysprosium. Rock samples have anomalous concentrations of Cu, Zn, Co, Mn, Pb, Ag, As, Bi, W, Sn, Mo, Be, & B. NURE samples contain anomalous concentrations of La, Ce, Lu, Sm, Eu, Tb, Yb, & Dy. A private prospectus in 2018 reported anomalous concentrations of Cu, Mn, Ag, Zn, Co, Bi, Sn, Mo, Be, Th, Nb, Tb & Yb with Rock samples of Cu, Pb, Ag, Zn, As, Sb, Mn, Bi, B, Sn, Mo.

[2009 USGS Thorium Deposits of the United States— Energy Resources for the Future?](#).

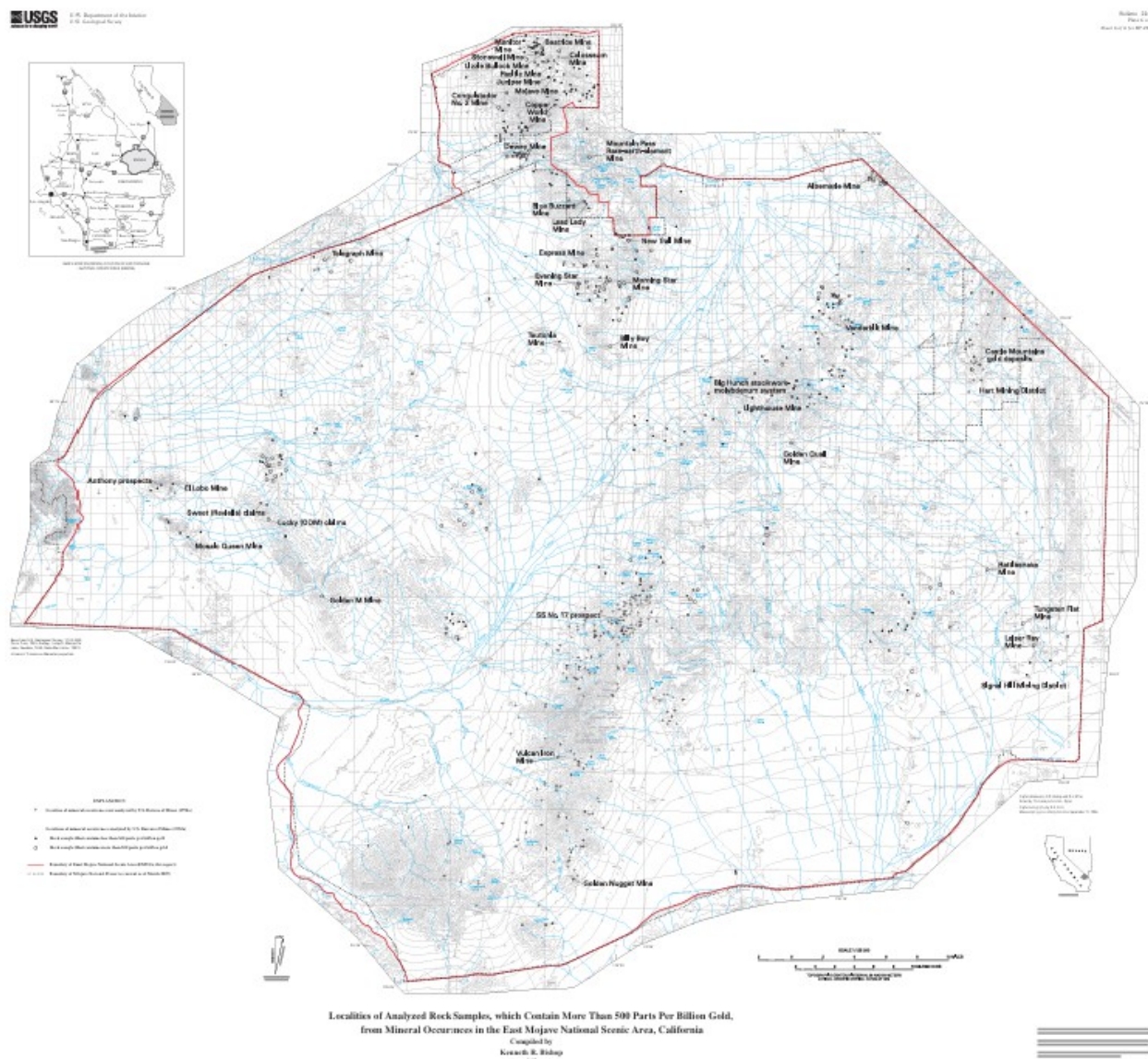
Another prominent, Thorium- and REE-bearing carbonatite mass in the United States is the Mountain Pass deposit. The MP carbonatite deposit has world-class REE reserves of Lanthanum, Cerium, Praseodymium, Neodymium, Promethium, Samarium, Europium, Gadolinium, Terbium, Dysprosium, Holmium, Erbium, Thulium, Ytterbium, Lutetium, Scandium & Yttrium of carbonatite deposit of more than 33 million tons of ore with an average grade of 8.9 percent rare earth oxide (Castor and Nason, 2004). The typical ore contains about 10–15

percent bastnasite (the ore mineral), 65% calcite and (or) dolomite, and 20–25 percent barite, plus other minor accessory minerals. The massive carbonatite core is called the Sulphide Queen body, which has an overall length of 730 m and width of 120 m (Olson, 1954).

[Green Gold Mine](#), Clark Mountain A former Pb-Cu-Zn-Au-Ag occurrence/mine. By 1870 many silver-bearing veins had been discovered and explored on the north slope of Clark Mountain, 10 miles north of Mountain Pass. During the next 25 years, these mines yielded about \$5M worth of silver. In this first cycle, copper deposits were found and explored at and near the Copper World Mine, 5 miles west of MP on Clark Mountain; lead deposits were worked at the Mohawk mine, 4 miles W; and gold and copper deposits on Mineral Hill, 4 miles SE of MP.

These Bastnäsite Indices (BIs) were then applied to data collected by eight airborne and spaceborne imaging spectrometers over the Mountain Pass [Sulfide Queen mine](#), which is located fourteen kilometers northeast of the Sulfide Queen mine with the results proving that these indices can effectively detect REEs in rock formations where rare earth fluorocarbonates have accumulated. Independent geochemical analyses confirmed that an REE ore grade of 3.253 wt% or greater is sufficient for detection using these indices. From the [1954 USGS Rare-Earth Mineral Deposits of the Mountain Pass District](#) the [Birthday Claim](#) A baryte-Ce-REE-Au-Ag-Pb deposit/mine, spectroscopic test showed the presence of considerable rare-earth oxides, fluorine, and CO₂ and indicated the mineral was bastnaesite.

Gold occurrences in East Mojave National Scenic Area greater than 500 ppb in rock samples



In 2007, a [Mineral Occurrences in the East Mojave National Scenic Area](#) prospectus performed by Kenneth R. Bishop for the USGS identified the Localities of Analyzed Rock Samples which Contain More Than 500 Parts Per Billion Gold. "Our evaluation of the 197 samples in the database that contain abundances of Gold in excess of 500 ppb indicates that no type of metallic-mineral deposit appears to exist in the Mesozoic mesothermal environment of the EMNSA which does not contain significant Au (pl. 6). By far, the most abundant deposit type whose samples contain Au in excess of 500 ppb is polymetallic vein, reflecting its predominance in the EMNSA (table 15)."

500 ppb (parts per billion) gold in rock samples is a very good find, indicating significant mineralization, especially as it's well above background levels (0.5-5 ppb) and often a key indicator for commercial deposits, with samples exceeding this value frequently leading to drilling and successful discoveries in exploration projects. While commercial mines often look for grams per tonne (g/t), 500 ppb (0.5 g/t) is a good start, and finding it in grab samples often leads to discovering much higher-grade zones (e.g., 1-9 g/t or 1,000-9,000 ppb) nearby, as

seen in several projects. Nonetheless, distribution of Gold values in the geochemical-data matrix shows that approximately 200 of the 1,050 rocks analyzed from the EMNSA by the U.S. Bureau of Mines (1990a) include concentrations of Gold higher than, or equal to, 500 ppb, a value considered by many exploration geologists as suggestive for pursuing evaluations in mesothermal geologic environments.

In 2018, the USGS's report on [Rare Earth Element Deposits in the Southeast Mojave Desert](#) is investigating the genetic relationship between rare earth element deposits at Mountain Pass, California and Music Valley (Pinto Mountains, California) and extend these studies across a 130-km long belt of alkaline Proterozoic rocks in the Ivanpah Valley of the southeast Mojave Desert. Such a combined study would significantly improve our knowledge of rare earth element deposits in this unusual extensional terrane of the EMNSA.

****Delivery Points for Mining**:**

According to all prospectus and according to all experts in the prospecting business state the primary objective of prospecting is to identify "delivery points" within volcanic tubes or vents and deep veins within the lava formations. All historical prospecting efforts and at all the mines in the area stated they failed to search for these critical areas. The 1992 USGS reported "The source vents for these flows have not been identified". According to the National Geological Survey, the Volcanic Field has 71 [Lava Tube's](#) or Vents, 40+ Cinder Cones of 2-80MT and 68 Lava Flows which is 15 miles long by 15 miles wide and 6000 feet deep.

A [1992 USGS Geologic Map of the Marl Mountains Quadrangle](#), prepared for the Department of Interior identified 68 lava flows but "The source vents for these flows have not been identified." It's these source vents that provide the "Mother lodes," or rich primary mineral deposits, are typically found in specific geological structures, such as fault zones and quartz veins, rather than volcanic-style "source vents". They form through hydrothermal processes where mineral-rich fluids deposit metals within fractures in the bedrock.

\$13 Trillion Mineral Appraisal & Resource Estimate

The base value in 1 Gigaton of volcanic glass, quartz, granite, obsidian and rainbow obsidian in the cinder cones range between \$100-\$500+ per ton or \$100B-\$500B. From the meta-analysis report suggests the mineral value of the various materials contained in the reported 200MT-1GT in the Cima Volcanic Formation to be \$200B-\$4T. The low estimate of \$200B from 200MT with ¼ oz of Gold per ton valued at \$1000, a \$1T value from a Gigaton. The median estimate at 200MT with 1 oz per ton valued at \$4000 per oz, would be \$800B with a high estimate from a Gigaton of material at 1 oz per ton would be over \$4T in present value. If the 1 Gigaton structure contained just 1 oz/ton of Gold & Silver at today's price of \$4.5K per ounce, 1 oz/ton of Iridium & Platinum Group at \$4.5K and \$4K+ per ton of Rare Earth's & Radioactive Materials, similar to the gold, rare earths and radioactive material extracted from the Mountain Pass Mine, 20 miles Northwest, the present value would be \$13 Trillion.

[Gold prices](#) remain 65% higher year-to-date at \$4550 per ounce, while silver is up about 150% ytd at \$80 per ounce. [Platinum prices](#) set for biggest monthly gain in 39 years hitting a record high of \$2,478.50 per ounce, heading for its biggest yearly growth on record of 146%. [Yttrium prices](#) exploded from under \$8/kg to \$120-\$300+/kg, a 4,400% surge.

Research and Future Exploration

Geological Correlation:

Our research establishes a direct connection between Ultramafic lava & Olivine rock formations in [Peridotite](#) basalts at the [Cima Volcanic Formation](#) and the presence of heavy metal iridium, platinum group, heavy rare earth minerals such as Osmium and radioactive materials that are present in all volcano's. These basalts valued as a source for chromium, platinum, diamonds, and other minerals, while also revealing mantle processes. Igneous rocks rich in magnesium and iron with a color index greater than 90 are defined as ultramafic. The composition of the Cima formation is the same as the Iridium mines in South Africa's [Kroondal Operations](#), Montana's [Stillwater Complex](#), [Bushveld Complex](#), [Hawaiian Volcano's](#) and [Native Iridium](#) further support this correlation. Layered intrusions with cumulate peridotite are typically associated with sulfide or chromite ores. Sulfides associated with peridotites form nickel ores and platinoid metals; most of the [platinum](#) used in the world today is mined from the [Bushveld Igneous Complex](#) in [South Africa](#) and the [Great Dyke](#) of [Zimbabwe](#).[\[68\]](#) The chromite bands found in peridotites are the world's major source of [chromium](#).[\[69\]](#)

[USGS](#) reported in 1916 that Iridium, Gold, Iridium & Platinum Group are generally found together in the Barstow Formation; specifically in large veins in and around the volcano's, lava tubes, lava fields, and vents. The volcanic flows and bombs are abundant, especially along bedding planes. The basalt flows are composed of fine- to medium-grained phenocrysts of plagioclase, olivine, and some augite, set in a dense intergrowth of plagioclase laths, interstitial olivine, magnetite, augite and dark glass (Joseph, 1984) [USGS Cinder Cone Map](#).

From AI: Iridium is highly concentrated in ultramafic lavas like komatiite, providing a rare window into the Earth's mantle composition. Most of the Earth's native iridium, a siderophile ("iron-loving") element, sank to the core during the planet's formation. This process left the crust and mantle significantly depleted of the element. Iridium content: The high temperatures at which komatiites form allows them to be rich in platinum-group elements (PGEs), including iridium. [Platinum in the Earth's Crust](#) originates from ultra-mafic igneous rocks. It can therefore be associated with rocks like chromite and olivine. Erratic behavior of platinum-group elements along an olivine–Cr-spinel cotectic in sulfide-undersaturated basaltic magma: roles of Cr-spinel and alloys.

Platinum-group elements (PGE) have a strong affinity for sulfide melts, and PGE deposits are largely hosted by sulfide-bearing mafic and ultramafic rocks.

[Greenland](#) has no active volcanoes but hosts ancient ultramafic rock, just like the Cima Volcanic Formation. Greenland's volcanic and metamorphic rocks contain significant amounts of olivine, found primarily in ancient meta-serpentinite belts and Paleogene picrite lavas. Greenland is famous for ancient peridotites. Iridium in Greenland ice cores points to terrestrial (volcanic) sources, with a major mystery surrounding a large platinum/iridium anomaly in the Younger Dryas (YD) boundary layer.

April 24th 2025 [Platinum in the Earth's Crust](#) originates from ultra-mafic igneous rocks. It can therefore be associated with rocks like chromite and olivine. Erratic behavior of platinum-group elements along an olivine–Cr-spinel cotectic in sulfide-undersaturated basaltic magma:

roles of Cr-spinel and alloys. Platinum-group elements (PGE) have a strong affinity for sulfide melts, and PGE deposits are largely hosted by sulfide-bearing mafic and ultramafic rocks.

[The influence of chromite on osmium, iridium, ruthenium and rhodium distribution during early magmatic processes](#) in Ultramafic Lava & Olivine Rock. It is also known that volcanic rocks show positive correlations between Cr and IPGE and Rh with the most primitive lavas (olivine + chromite phyrlic) being enriched in these elements compared to the more fractionated lavas suggesting that chromite phenocrysts somehow influence and concentrate the IPGE and Ruthenium, Osmium, Iridium and Rhodium behavior.

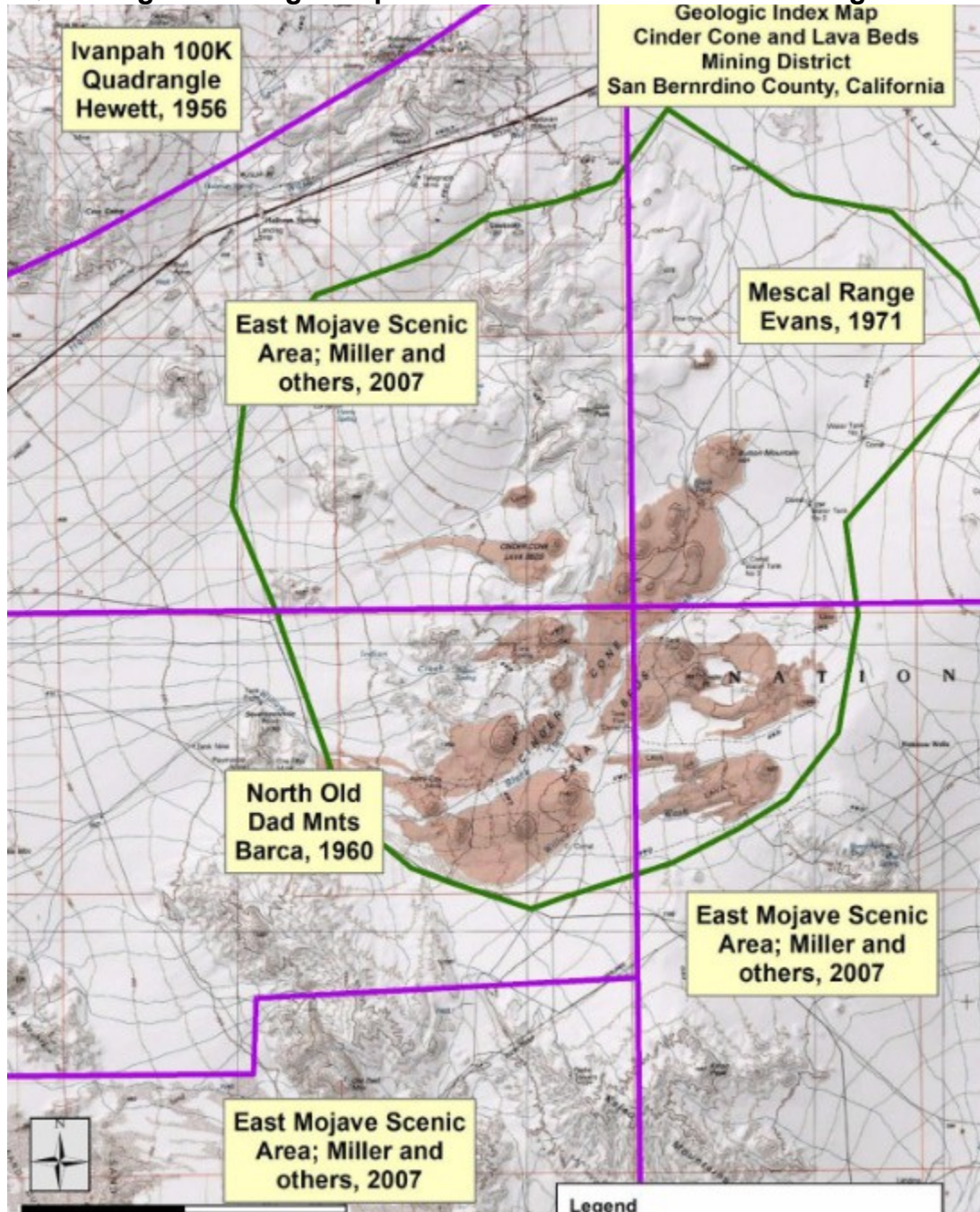
****Modern Detection Methods****: Unlike previous prospectuses, our exploration will implement advanced underground detection technologies to assess the mineral potential.

****Future Prospecting Goals****: We aim to investigate specifically 26 GPS located volco areas identified and named for mining in a 2021 geology report from over 50 volco's reaching the surface in total with 60 lava fields. Our expert prospectors will be focusing on our expertise of geological criteria looking for delivery points, veins and mother lodes across a minimum of 85K acres in the cima volcanic formation to 1.6M acres of the entire EMNSA. Our preliminary cost estimate for this extensive mineral prospecting initiative is \$100 million.

Recommendations for Stakeholder Engagement

Support funding for advanced geological surveys and exploration to fully assess the potential of the 6 identified areas, 3 different geologic formations, 4 lava layers for the 5 identified material types. Foster partnerships with indigenous tribes and private entities to create a unified approach to resource management. Prioritize the development of rare earth materials to reduce dependency on foreign sources and enhance national security. This summary serves as a foundation for discussions regarding the future of resource exploration.

Ivanpah Quadrangle - Geologic Map Cinder Cones & Lava Beds Mining District



The Cima Volcanic Field of the Marl Mountains Quadrangle is (~300 km²) Tertiary-Quaternary alkaline basalt field in the Ivanpah highlands in east-central Mojave Desert. The Volco area is recorded in the official records of San Bernardino County in Book 5826, pages 1673, 1664. However, over time that name appears to have expanded in subsequent filings to include more land as it is also described by the Bureau of Land Management as the SE Quarter of Section 28, Township 13 North, Range 11 East, but also does include the NE Quarter of Section 33, Township 13 North, Range 11 East. This description is from the Serial Register Pages of the Department of the Interior Bureau of Land Management run dated on June 6, 2012. [USGS 1992](#).

The Cinder Cone Lava Beds District is NE of the Old Dad Mountains, west of Teutonia Peak, north of the Kelso Mountains, southwest of Shadow Valley, west of the Ivanpah Mountains and south of Solomon's Knob in T.13 to 15N, R.10 to 13E, SBM. A former pumice deposit/mine located in sec. 8, T13N, R12E, SBM, 8.6 km (5.3 miles) E of Indian Spring (coordinates of record), and 8.7 km (5.4 miles) S of Button Mountain (coordinates of record), in the southern portion of the [Cinder Cone Lava Beds](#), S. of Black Tank Wash.

The geological profile of the Rainbow Basin is characterized by diverse tectonic and [magmatic](#) activities, vents, flows and trailings, including ultramafic lava, olivine rock, peridotite layers in Paleozoic volcanic, Mesozoic continental volcanic, Paleogene fluvial-lacustrine sedimentary, and Phanerozoic granite formations where burial under layers of lava flows, as seen in California's Table Mountain basalts can perfectly preserve channel morphology and Gold deposits. The volcanic fields is composed of metavolcanic rocks are mostly greenstones that likely are intrusives whose age is not known; amphibolites are uncommon. Metaplutonic rocks include mafic gneisses, commonly with well-developed pygmatic folding of felsic segregations, strongly banded gneisses of intermediate composition, less common strongly foliated gneisses of granitic composition.

The basaltic rocks, which range from late Miocene to Holocene, were erupted from at least 70 vent, about 40 volcanic cones with about 60 lava flows, degraded cinder cones, plugs and crater-fill lava flows. The volcanic cones range from simple cones over multi-cratered mountains to eroded hills, and lava flows are up to 9.1 km (5.7 mi) long. Gravity data (Wilshire and others, 1987) indicate the presence of rocks of the Teutonia batholith to depths of about 10 km (R.C. Jachens, oral comm., 1991). The thickest sections of Miocene deposits occur in the Solomons Knob quadrangle toward the north end and west of the Cima volcanic field, and in the Indian Spring quadrangle south of the southern limits of the volcanic field. carbonates, Proterozoic gneisses, and Cretaceous granitic rocks (Reynolds, 1991,1992). The gravity slide blocks attain dimensions larger than 1.5 km long and 150 m thick.

History of the Cima Volcanic Formation, Lava Field & Cima Dome

Video: The Geologic History of the Cima Lava Field https://www.youtube.com/watch?v=_zLVGIYLRIM

1957 Bulletin of the National Geological Society: [Geomorphology of Cima Dome](#). A regional geological reconnaissance by Hewett (1956).

[Late Cenozoic landscape evolution on lava flow surfaces of the Cima Volcanic Field](#), December 1st 1985. The primary purposes of this paper is to identify the age, composition and surficial processes on the lava flow surfaces in the Cima Volcanic Field.

[K-Ar ages from the Cima Volcanic Field](#), December 1985. Generalized geologic map of the Cima volcanic field showing approximate locations of K-Ar samples from late Tertiary lava flows; Miocene volcanic rocks; Pliocene volcanic rocks containing 30 trace elements. [Multiple basaltic eruption cycles from single vents, Cima volcanic field, California; Evidence for polygenetic basaltic volcanism](#), Turrin, B.D., and Renne, P.R., 1987.

[USGS 1988 Mafic and Ultramafic Xenoliths from Volcanic Rocks of the Western United States](#): The Cima Volcanic Field is instructive with episodic eruption of xenolith-bearing basalts. The oldest rocks identified have xenoliths of feldspathic peridotite and gabbroid veins in peridotite as well as members of the Al-augite and Cr-diopside groups. The Cima formation periodic eruptions explains the development of "mini-mantle reservoirs" may suffice to explain some of the isotopic variation of basalts (the natural differences in the relative abundance of an element's isotopes (atoms with the same protons but different neutrons) in various materials, caused by physical, chemical, or biological processes that preferentially favor lighter or heavier isotopes, creating measurable shifts in their ratios). In contrast, most gabbroids from one Cima locality (No. 40) are amphibole-free gabbro-norites or olivine gabbro-norites, and from another Cima locality (no. 39) are gabbros with green spinel. TABLE VI-14. Modal and chemical compositions, composite xenolith Ki-5-127: Red Rose Cone.

[Hillslope Processes on Late Quaternary Cinder Cones of the Cima Volcanic Field](#), July 1989. Four basaltic cinder cones of the Cima volcanic field were studied in an attempt to understand the geomorphic and volcanic processes involved in the constructional and degradational evolution of late Quaternary cinder cones in an arid climate.

[Evidence of an asthenospheric magma source of the Cima volcanic field](#), using U-series isotope data, March 2002. The ranges of some of these major and trace element analyses of Magnesium Oxide (0.17-0.18), Iron (sub 2) Oxygen (sub 3) (10.86-11.64), Nickel (105-137), Chromium (102-148), Strontium (609-655), Zirconium (334-369), Rubidium (40-44).

[Holocene Flows of the Cima Volcanic Field, Mojave Desert, Part 2: Flow Rheology from Laboratory Measurements](#), December 2014. We are studying the rheology of a basaltic lava flow from a monogenetic Holocene cinder cone in the Cima lava field.

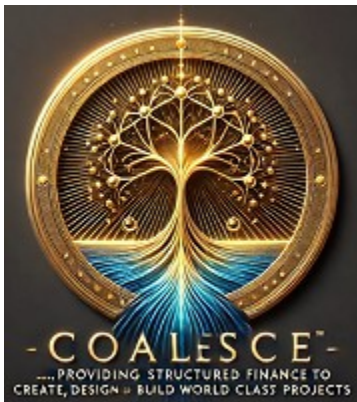
[Dating desert pavements in two different study areas: The Cima Volcanic Field and the desert of northeastern Badia, Jordan](#), October 2015. However, Dietze et al. (2011) demonstrate that these relative age indicators are problematic, because there is no direct relationship between the surface properties, soil development and the age of desert pavements because there are

only a very limited number of studies where luminescence dating was applied to decipher the chronology of these valuable sediment archives.

Post-eruptive sediment transport and surface processes on unvegetated volcanic hillslopes – A case study of Black Tank scoria cone, Cima Volcanic Field, August 15th 2016. The Black Tank Cone has exposed pyroclastic deposits with sparse-vegetation cover, providing excellent insight into understanding the causes and consequences of eruption-related properties of scoria cones on the post-eruptive sediment transport and degradation processes.

Multi-stage history of compound mantle xenoliths from Western USA: Implications for metasomatic processes in the deep mantle, December 2016. Using the Ti, K, Ca and Na content of our glasses we infer from the $\text{TiO}_2 + \text{K}_2\text{O}$ vs. $\text{CaO} + \text{Na}_2\text{O}$ diagram of Coltorti et al. (2000) that metasomatizing agents had carbonatitic and Na-alkalic affinities. Mineral, textural and compositional characteristics of the assemblages observed within the mantle xenoliths from Cima Cones reveal a continuous frame of metasomatic processes. In particular, a switch in metasomatism from Fe-Ti to Ca-rich silicate melt is evidenced by the presence of Fe-Ti oxides (ilmenite, armalcolite) overgrown by Ca-silicate mineral (titanite, kassite) rims.

Emplacement dynamics and timescale of a Holocene flow from the Cima Volcanic Field: November 15th 2017. Rheological and morphological study of a Holocene lava flow emitted by a monogenetic cinder cone in the Cima Volcanic Field. The rheology of Cima lavas was determined experimentally by concentric cylinder viscometry between 1550 °C and 1160 °C. The temperature of magma that forms a volcanic cinder cone is directly related to its mineral content, specifically its silica (SiO_2) levels. Cinder cones are almost exclusively formed from mafic, or basaltic, magma, which has low silica content and erupts at high temperatures. In this research we focused on lava flows whose parent cone can be identified unambiguously, situated in the SW corner of the volcanic field. The high temperatures (up to 800°C or more) associated with volcanic activity facilitate several processes that concentrate gold. This meta prospectus was prepared by Chris Edwards for Coalesce Mine Land-Invest.



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