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Field Guide to the Geology and Orogenic Gold Mineralization in the Archean Bradley Peak & South Pass Greenstone Belts, Wyoming

RELEVANT GOLD

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I. INTRODUCTION

Over the last seven years and on behalf of Relevant Gold Corporation (RGC), Big Rock Exploration LLC (BRE) has completed initial geological and orogenic gold mineral potential evaluations within the Neoarchean (2.8-2.6 Ga.) Bradley Peak and South Pass granite-greenstone terranes of Wyoming. The Bradley Peak area is a classic Archean greenstone belt composed largely of metavolcanic rocks of tholeiitic and komatiitic affinities capped by clastic and chemical metasedimentary rocks. Orogenic gold mineralization in the Bradley Peak area is Greenstone belt dominated by metagreywacke with marginal komatiites, pillow basalts, mixed schists, and iron formation. The South Pass greenstone belt is dominated by metagreywackes of the Miners Delight Formation in fault contact with marginal komatiites, pillow basalts, mixed schists, and iron formation. Gold mineralization in the South Pass area is associated with reverse sense wedge-shaped Reidel P-type shear zones. A 1:20,000 scale bedrock geology compilation map of the Bradley Peak area was completed by BRE's Peterson in 2023 and a 1:50,000 scale bedrock geology map of the South Pass greenstone belt was completed by BRE's Peterson in 2022. These two bedrock geology maps (that are continually digitally updated) form the foundation upon which RGC is evaluating the orogenic gold mineralization in Wyoming. Screen captures of these maps form the majority of the figures in this short field guide.

In the summer of 2023 (published in January,2024), the Wyoming State Geological Survey (WSGS), in conjunction with the U.S. Geological Survey, completed a large (2,123,800 acre) regional-scale aeromagnetic/radiometric survey of south-central Wyoming, including the South Pass and Bradley Peak areas. The outcome of the WSGS-USGS regional aeromagnetic survey has for the first time shown the correlation of the South Pass and Bradley peak greenstone belts in a regional geophysical picture, which is shown in Figure 1.

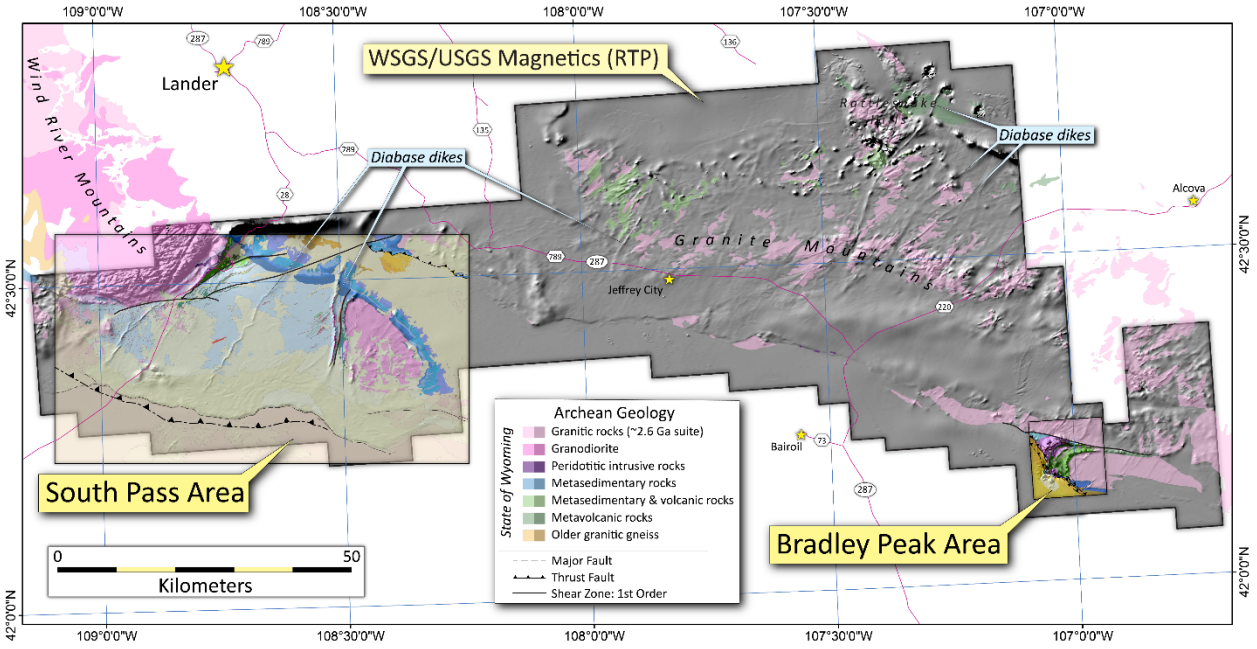


Figure 1. Geology maps of the Bradley Peak & South Pass areas overlain the WSGS/USGS magnetics.

II. REGIONAL GEOLOGIC SETTING, WYOMING PROVINCE

In January 2026, BRE's Peterson presented a talk, on behalf of RGC, at the AME Roundup titled "The Rifted Abitibi in Wyoming, Think About That". That talk described the regional geologic setting of the Wyoming Province and its link to orogenic gold deposits of the Archean Superior Province. The slides from that presented are presented herein in Appendix 1.

III. DIGITAL GEOLOGIC COMPILATIONS

Three sources of geologic information have been compiled to form the digital foundation upon which RGC is conducting its exploration for orogenic gold deposits in the Bradley Peak area. These sources include two 1:24,000 scale maps of the Bradley Peak quadrangle (Bayley, USGS 1968; Hausel, WSGS 1994) and the 1:100,000 scale map of Jones and Gregory, WSGS 2011. Geological map data from all of these published works have been digitally compiled by BRE for RGC into a seamless, coherent bedrock geological map of the district by Peterson, 2024. A simple screenshot of this compilation map is given in Figure 2, and a zoomed-in image of the Description of Map Units is shown in Figure 3.

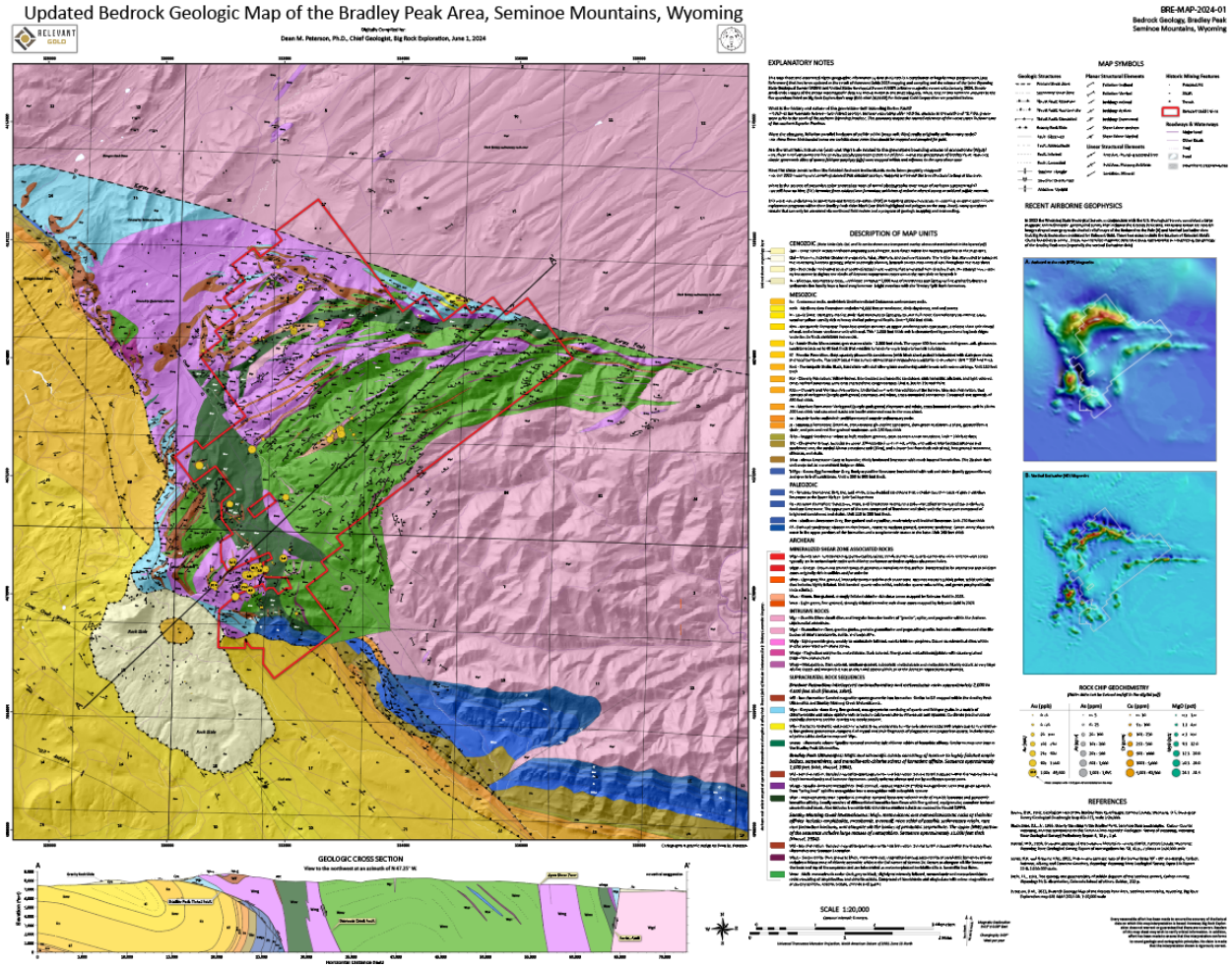
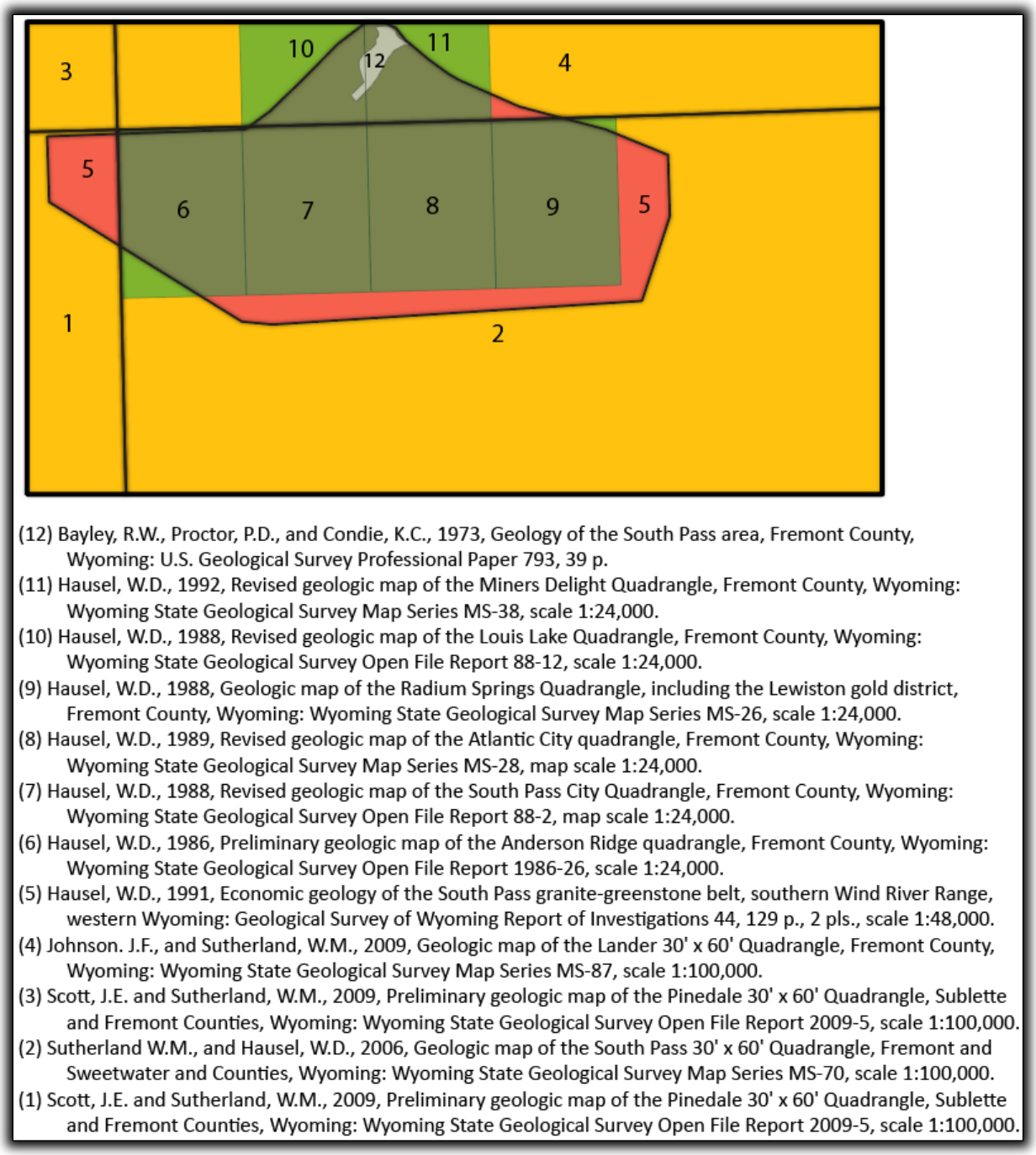


Figure 2. Digitally compiled bedrock geologic map of the Bradley Peak granite-greenstone terrane.



Figure 3. Description of Map Units of the digital bedrock geologic map of the Bradley Peak granite-greenstone terrane.

Over the last 50 years, the U.S. Geological Survey (USGS) and Wyoming State Geological Survey (WSGS) have completed numerous geological mapping programs within the South Pass granite-greenstone belt and adjacent areas. Geological map data from all published works, see map boundaries and references in Figure 4, have been digitally compiled by BRE for RGC into a seamless, coherent bedrock geological map of the district. A simple screenshot of some elements of the recently compiled bedrock geologic map of the South Pass granite-greenstone terrane is presented in Figure 5 and a zoomed-in image of the Description of Map Units for this compilation is shown in Figure 6.



(12) Bayley, R.W., Proctor, P.D., and Condie, K.C., 1973, Geology of the South Pass area, Fremont County, Wyoming: U.S. Geological Survey Professional Paper 793, 39 p.
(11) Hausel, W.D., 1992, Revised geologic map of the Miners Delight Quadrangle, Fremont County, Wyoming: Wyoming State Geological Survey Map Series MS-38, scale 1:24,000.
(10) Hausel, W.D., 1988, Revised geologic map of the Louis Lake Quadrangle, Fremont County, Wyoming: Wyoming State Geological Survey Open File Report 88-12, scale 1:24,000.
(9) Hausel, W.D., 1988, Geologic map of the Radium Springs Quadrangle, including the Lewiston gold district, Fremont County, Wyoming: Wyoming State Geological Survey Map Series MS-26, scale 1:24,000.
(8) Hausel, W.D., 1989, Revised geologic map of the Atlantic City quadrangle, Fremont County, Wyoming: Wyoming State Geological Survey Map Series MS-28, map scale 1:24,000.
(7) Hausel, W.D., 1988, Revised geologic map of the South Pass City Quadrangle, Fremont County, Wyoming: Wyoming State Geological Survey Open File Report 88-2, map scale 1:24,000.
(6) Hausel, W.D., 1986, Preliminary geologic map of the Anderson Ridge quadrangle, Fremont County, Wyoming: Wyoming State Geological Survey Open File Report 1986-26, scale 1:24,000.
(5) Hausel, W.D., 1991, Economic geology of the South Pass granite-greenstone belt, southern Wind River Range, western Wyoming: Geological Survey of Wyoming Report of Investigations 44, 129 p., 2 pls., scale 1:48,000.
(4) Johnson. J.F., and Sutherland, W.M., 2009, Geologic map of the Lander 30' x 60' Quadrangle, Fremont County, Wyoming: Wyoming State Geological Survey Map Series MS-87, scale 1:100,000.
(3) Scott, J.E. and Sutherland, W.M., 2009, Preliminary geologic map of the Pinedale 30' x 60' Quadrangle, Sublette and Fremont Counties, Wyoming: Wyoming State Geological Survey Open File Report 2009-5, scale 1:100,000.
(2) Sutherland W.M., and Hausel, W.D., 2006, Geologic map of the South Pass 30' x 60' Quadrangle, Fremont and Sweetwater and Counties, Wyoming: Wyoming State Geological Survey Map Series MS-70, scale 1:100,000.
(1) Scott, J.E. and Sutherland, W.M., 2009, Preliminary geologic map of the Pinedale 30' x 60' Quadrangle, Sublette and Fremont Counties, Wyoming: Wyoming State Geological Survey Open File Report 2009-5, scale 1:100,000.

Figure 4. Index map listing the original published bedrock geology maps that have been digitally compiled and seamlessly integrated into a new bedrock geology map compilation.

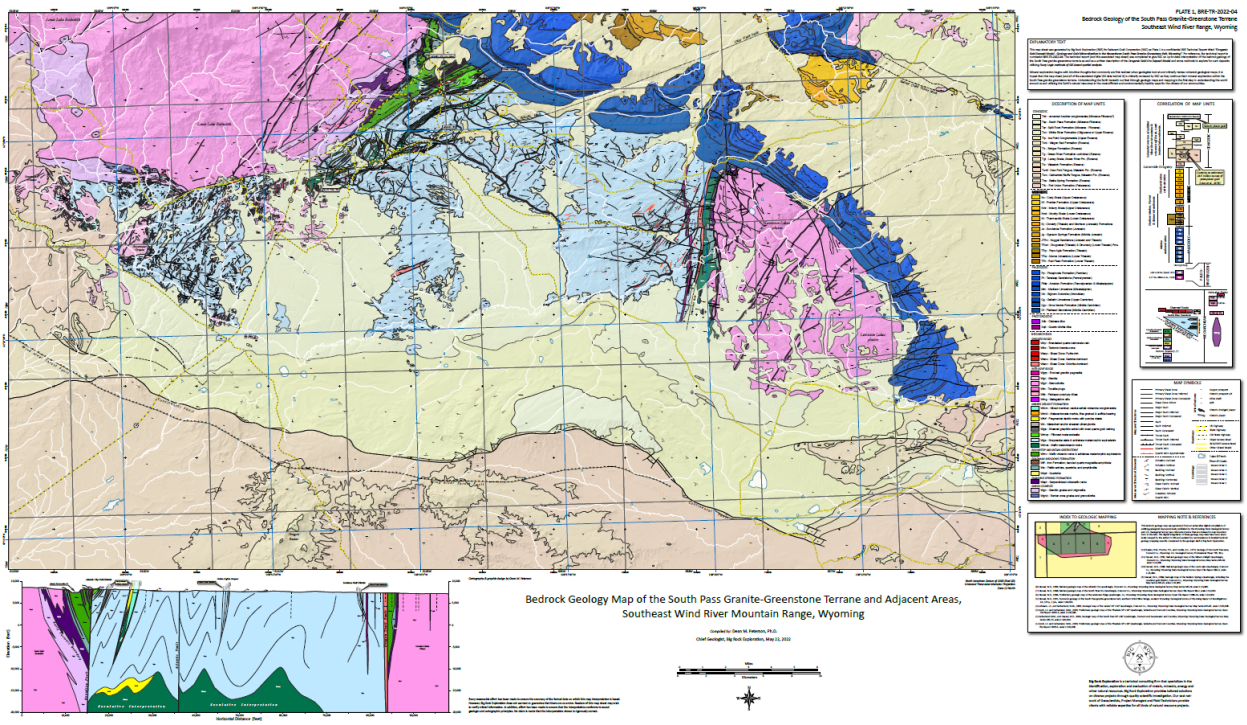


Figure 5. Digitally compiled bedrock geologic map of the South Pass granite-greenstone terrane.

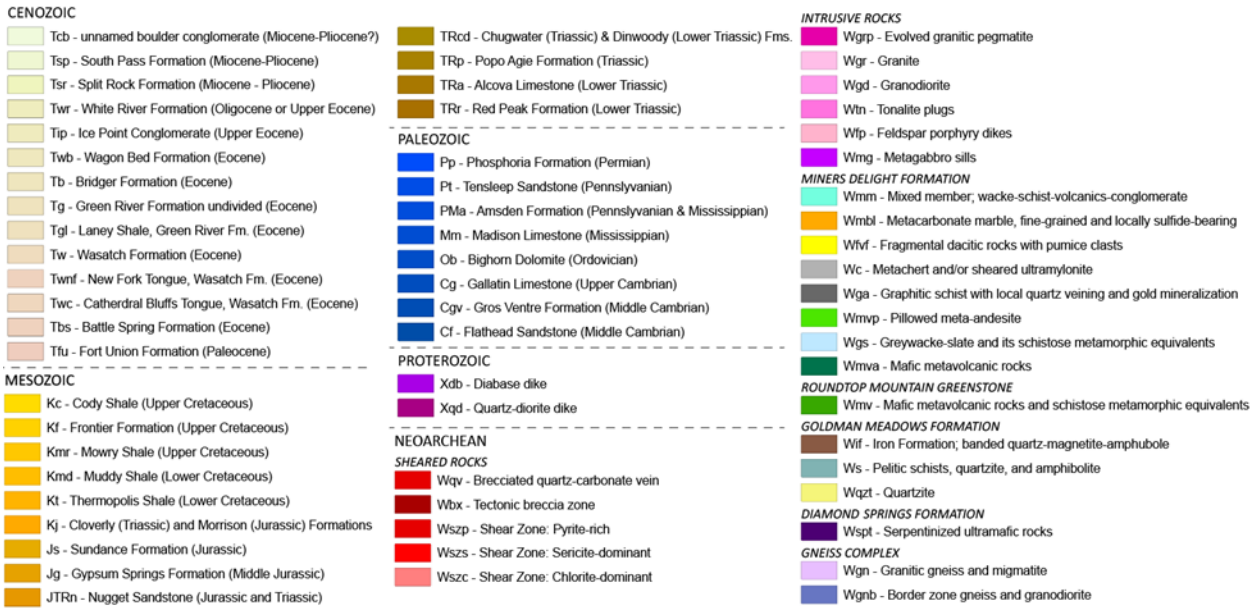


Figure 6. Stratigraphic column (i.e., Description of Map Units) for the digital bedrock geologic map of the South Pass granite-greenstone terrane.

IV. GEOLOGY OF THE BRADLEY PEAK GRANITE-GREENSTONE TERRANE

The Seminoe Mountains form a Precambrian cored Laramide uplift near the southern margin of the Wyoming craton. At the base of this southwest-directed uplift is the Bradley Peak Thrust Fault, which juxtaposes crystalline Archean rocks on top of Paleozoic and Mesozoic sedimentary rocks. The core of the range consists of Archean age crystalline supracrustal rocks greater than 2. 7 billion years old (>2. 7 Ga) folded into a northwest-trending, subvertical-plunging anticline intruded by granodiorite (>2.6 Ga).

The upper greenschist to amphibolite-grade supracrustal rocks have been subdivided by Hausel (1994) into three mappable units. The lowermost unit, the Sunday Morning Creek meta volcanics, consists of 11,000 feet of mafic schists with a minor amount of ultramafic serpentinites and schist. This unit is overlain by a middle unit, the Bradley Peak ultramafics, which consist of 1,000 feet of ultramafic and mafic metavolcanic rocks. These rocks include several mappable ultramafic flows that grade upward from cumulate serpentinite flow bottoms to tremolite-talc-chlorite schist spinifex flow tops. Compositions and textures indicate they are peridotitic and basaltic komatiites. The uppermost unit, informally named the Seminoe formation, consists of 4,000 feet of metasedimentary rocks including metagreywacke, banded iron formation, and pelitic schist, with minor amounts of mafic and ultramafic schist. All of these units have been intruded by large masses of metagabbro.

Exploration of the district has identified more than 100 million tons of banded iron formation, narrow high-grade gold veins, localized copper-silver-gold veins, gold placers, serpentine, jade, asbestos, kimberlitic indicator minerals, and anomalous zones of zinc and lead. A geologic cross section through the Bradley Peak area is given in Figure 7, and the line of section is shown in Figure 2.

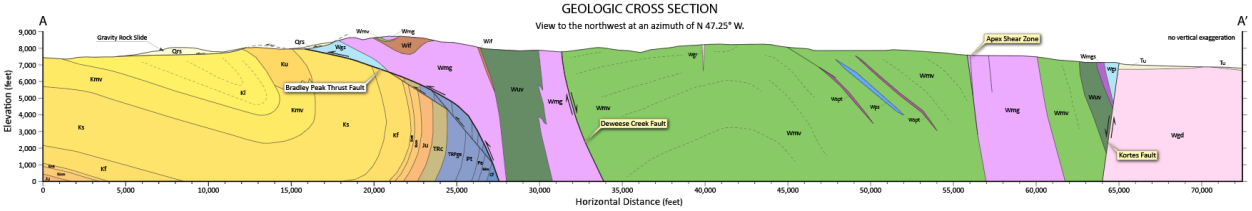


Figure 7. Geologic cross section through the Bradley Peak area. Unit labels given in Figure 3.

Previous Investigations

Iron ore deposits of the Seminoe Mountains were initially investigated by Hendricks (1902) and Dickman (1906), both of whom recognized relatively small reserves of high-grade iron ore in the Pattison Basin area along the southern margin of Bradley Peak. The Bradley Peak area, at the western edge of the Seminoe Mountains, was initially mapped by Lovering (1929), who examined the Precambrian geology emphasizing its iron ore potential. Many years later, Bishop (1964) mapped a large portion of the Seminoe Mountains east of Bradley Peak, and Blackstone (1965) mapped a portion of the Bradley Peak 7’30” Quadrangle with emphasis on the Bradley Peak thrust fault. Bayley (1968) remapped the Bradley Peak Quadrangle as part of a U.S. Geological Survey field project.

A study on the geology, petrology, and geochemistry of the Bradley Peak area was completed by Klein in 1981. Klein (1981) recognized the Seminoe Mountains as a fragment of an Archean greenstone belt that hosted several metakomatiite flows. Hausel] (1989a; 1991a) remapped the supracrustal rocks of the Seminoe Mountains greenstone belt using the earlier work of Klein (1981), Bayley (1968), Blackstone (1965), and Bishop (1964) as a foundation.

History

In June 1871, troops under the command of General Bradley of Fort Sanders and General Thayer of Nebraska, set out on an expedition to the Seminoe Mountains to search for reported rich deposits of argentiferous galena (Ferry, 1871). A 1869 report by Lieutenant R.H. Young of Fort Steele had described three prospectors returning from the Seminoe Mountains with samples of quartz assaying $2,000 a ton (1,500 oz/ton) in silver (Morrow, 1871). Instead of finding silver-rich lead deposits, gold-quartz veins were discovered by Mr. Ernest, a gold prospector from Laramie who accompanied the 1871 expedition. Ernest's discovery was made along the flank of Bradley Peak. Shortly after General Bradley's expedition, a second expedition led by General Morrow, along with Captain DeWeese of Fort Steele, reached the southern flank of the Seminoe Mountains.

Several gold prospects were staked following these historic expeditions. Most of the prospects were located on well-defined, gold-quartz veins along the flank of Bradley Peak and included the Ernst, Mammoth, Break of Day, Jesse Murdock, Slattery, and Edward Everett prospects in what was initially known as the Ernst mining district. In several instances, the ore reportedly assayed as high as $100 per ton in gold (5 opt), and in one case ran as high as $250 per ton (12 opt) (Morrow, 1871). In 1873, everything appeared propitious following the erection of a stamp mill by the owners of the Ernst gold mine (Reed, 1873), but in the following year, all prospecting and mining came to an abrupt halt. According to a 1874 Congressional report, many of those living in the mining camp were killed in an Indian raid, and the few survivors were driven from the district (Reed, 1874). A cavalry expedition to the district reported that all 30 cabins and the stamp mill were vacated (Rawlins Sentinel, September 11, 1874).

The Seminoe district was avoided by the miners and prospectors for the next few years. As many as four years after the conflict, an 1878 Congressional report (Reed, 1878) stated: *A visit to the Seminoe Mountains found the mining camp for the most part deserted. A sample collected from the Ernst tunnel at this time assayed $106.20 in gold per ton (5.14 opt).* The report went on to state: *Other prospects in this locality afford quite good indications; and now that the Indians are no longer to be feared there, I shall expect a revival of interest in it on the return of more prosperous times* (Reed, 1878).

This optimistic report apparently did not hold true, for in a 1881 Congressional report, Corey wrote: *shafts went down to a little depth and tunnels had been ambitiously started when this camp too was broken up by a band of hostiles*. It is not clear if this report refers to the earlier 1874 Indian raid or a 1881 raid. In any case, if hostile attacks were not enough, the mining properties were also held in litigation, for it was also stated: *... this property, long in litigation, has just been fully cleared as to its title, and the present undisputed owners are preparing to commence work the next season ...* (Corey, 1881).

According to the Engineering and Mining Journal some mines in the district were purchased by the Penn Mining Company in 1885. Aughey (1886) reported that the company extended the Deserted Treasure tunnel (possibly the original Ernst mine) to a length of 200 feet. The ore from the mine was described as having free-milling gold in a four-foot-wide quartz vein with associated pyrite and chalcopyrite. The company constructed a 10-stamp mill and concentrator which successfully handled about 22 tons of ore per day (Warren, 1885; Aughey, 1886). Plans were made to construct another stamp mill after the Penn Mining Company struck a 6-foot-thick gold-bearing vein (EMJ, v. 42, October 9, 1886, p. 265).

Another mine operated by the Penn Mining Company, the King mine, ran almost parallel to the Deserted Treasure mine, but more southwesterly and northeasterly. In 1886, improvements in the King mine included a 120-foot drift with a 54-foot-deep winze. At the bottom of the winze, the ore was 5 feet thick. Seventy tons of the King ore reduced by the mill yielded $700 in gold, but the sulfides were not saved. The East King mine shaft (an extension of the King property) and cross-cut encountered a streak of very high grade, gold bearing quartz. Other properties in the district included the Jennie, Meager, and Bennett properties.

In addition to the lode mines, some placer activity was also reported in the district. The EMJ (v. 42, October 9, 1886, p. 265) reported two placer miners named Hanley and Firth worked a claim that yielded $0.30 to the pan. For several years after 1886, not much was reported about the Seminoe district, although Ricketts (1888) noted the occurrence of iron in the district. Then in 1894, the EMJ (v. 58, December 29, 1894, p. 615) reported the Penn Mining Company had resumed work on its gold mines in the Seminoe Mountains after a 6-year shut down.

During this period, the mines were enlarged. The King mine was extended from 120 feet in 1886 to 700 feet in 1896. The vein varied from 1 to 4 feet wide with an average width of 30 inches. Assays of the vein quartz averaged $25 in gold per ton (1.2 opt) (EMJ, v. 62, August 8, 1896, p. 135). The ''Penn mine" tunnel was also extended to 165 feet with a 135-foot-deep winze on a 3- to 5-foot-wide vein. Drifts were driven along the ore body for a distance of 100 feet in each direction. The ore from the mine averaged $20 in gold per ton (1.0 opt) and carried some copper. The stamp mill, however, recovered only $3 to $4 in gold per ton due to the refractory nature of the ore (EMJ, v. 62, August 8, 1896, p. 135).

In 1902, some interest in iron was expressed when Hendricks (1902) examined the high-grade iron deposits in the Pattison Basin area along the southern flank of Bradley Peak for the Lake Superior Iron Company. He estimated the Pattison Basin deposits included one million tons of ore averaging 60 percent iron.

In 1906, claims were staked for gold around the south side of Bradley Peak, where a tunnel was apparently initiated several hundred vertical feet below the workings of the old Penn Mining Company. The purpose of this tunnel was to cut the veins on all the claims found on the mountain. It was the intention of these claimants to run drifts along all the veins encountered in the exploratory tunnel (Wyoming Industrial Journal (WIJ), v. 8, no. 3, August, 1906, p. 14-15). The WIJ (v. 8, no. 4, September, 1906, p. 7) later reported the Seminoe Gold Mining Company had driven this tunnel in 100 feet, but there is no present day evidence that this project continued any farther.

Also in 1906, more interest in the extensive iron deposits in the Seminoe Mountains was reported when the Western Iron Ore Company acquired claims in the district. The company intended to patent all of its holdings (WIJ, v. 8, no. 2, July, 1906, p. 8). At about the same time, Dickman (1906) reported some of the iron deposits in the district yielded weak precious metal anomalies.

The first detailed description of the iron deposits was made by Lovering (1929). Another detailed investigation was made 37 years later by the U.S. Bureau of Mines (Harrer, 1966). Harrer estimated about 100 million tons of taconite (banded iron formation) occurred in the vicinity of Bradley Peak. In 1951, a geophysical investigation of the iron deposits in the Pattison Basin area was made by Wilson Exploration Company for Empire State Oil Company of Thermopolis, Wyoming. Later, the U.S. Geological Survey completed an aeromagnetic survey of the district (Philbin and McCaslin, 1966).

IV. GEOLOGY OF THE SOUTH PASS GRANITE-GREENSTONE TERRANE

The Neoarchean South Pass granite-greenstone terrane is located at the southeastern tip of the Wind River Mountain Range, is one of several fragmented, metamorphosed, volcanic-sedimentary Archean supracrustal terranes exposed in the cores of Laramide uplifts of the Wyoming Province (Fig. 1).

Regional Geologic Framework

Prior to focusing in on the Archean geology and orogenic gold mineral potential of the South Pass granite-greenstone terrane, one should gain an understanding of the structural framework of the Laramide orogeny in western Wyoming and its thick-skinned thrust fault origin of the Wind River Mountain Range. In map view, the NW-SE trending Wind River Mountains are bounded to the northeast by Paleozoic and Mesozoic sedimentary rock sequences and on the southwest by coarse clastic rocks of Early Tertiary age (see Fig. 4). This asymmetry on the bounding rocks of the Wind River Mountains is the result of southwest directed motion along the Wind River Thrust, a thick-skinned thrust that brought Precambrian rocks up and over the Paleozoic and Mesozoic sedimentary section. A schematic regional geology map of west-central Wyoming as well as a cross section through the Wind River Mountains within the South Pass area is presented in Figure 8.

An important endpoint of a review of Figure 8 is that the Archean cratonic rocks that were thrust upwards at depth from the northeast to their current position along the Wind River thrust during the Laramide orogeny seemingly moved in mass as a coherent block with little internal deformation. As such, one can assume with some confidence that structural fabrics that BRE geologists have measured, which are vitally important of targeting orogenic gold mineralization, within the Archean supracrustal rocks can be directly related to each other in a coherent structural setting. Many of these measured structural elements, if interpreted correctly, reflect the late-forming structural setting that formed synchronous with gold mineralization in the South Pass granite-greenstone belt.

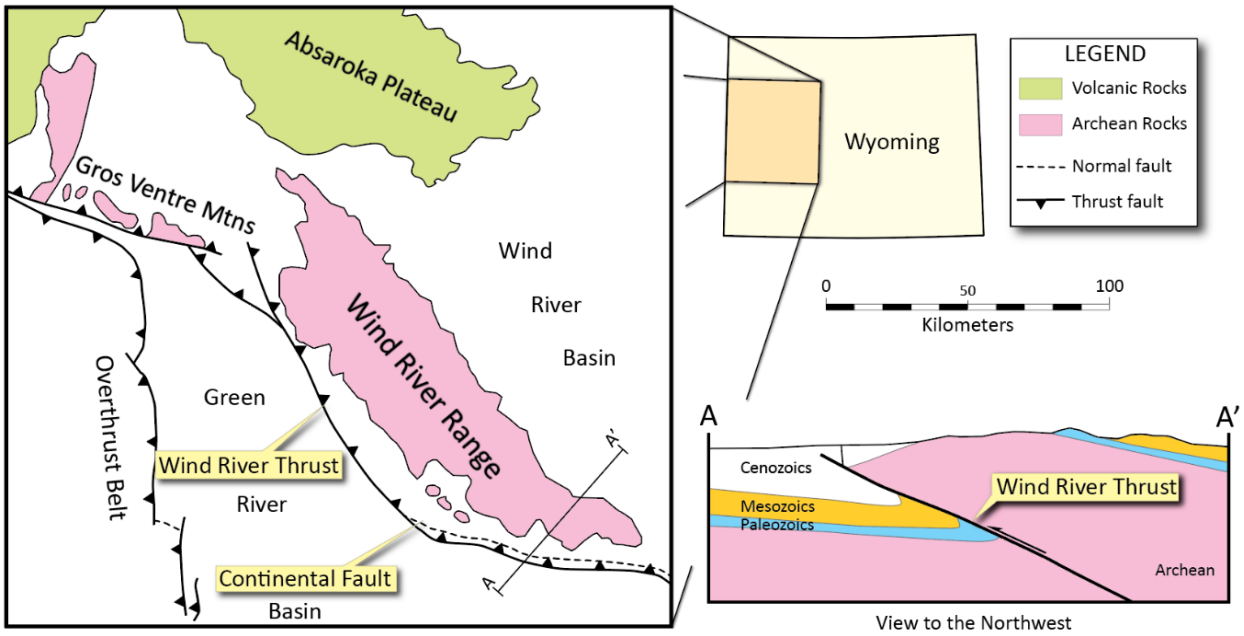


Figure 8. Schematic regional geology map of west-central Wyoming and geologic cross section through the southeast end of the Wind River Mountains.

Precambrian Architecture – South Pass Granite-Greenstone Terrane

To gain an understanding of the geology and orogenic gold mineral potential within the South Pass granite-greenstone terrane, it is best to begin with first principals, herein a model (Hoffman, 1990) of the tectonic setting that accounts for the structural juxtaposition of coherent sub-vertical stratigraphic sequences that are seemingly unique to Archean granite greenstone terranes (Figure 9).

In the Hoffman (1990) Trench-Arc-Progradation (TAP) model, Archean greenstone belt volcanic-sedimentary stratigraphic sequences originate as accumulations of materials on the seafloor. By analogy to what we see on the modern seafloor, such accumulations can include a wide variety of bathymetric highs (Fig. 9). These high-standing accumulations of rocks get scraped off the Archean seafloor in trenches and accumulate as lozenges of rocks bounded originally by major low-angle thrust fault decollements. With time the thrust fault-bounded stratigraphic sequence lozenges steepen to near vertical orientation as additional bathymetric highs get accreted onto the growing Archean cratonic nucleus. Later arc-type granitoid plutons intrude these steepened, fault-bounded, lozenges of volcanic-sedimentary (greenstone belt) sequences to form the classic granite-greenstone terranes. It is the early decollement thrusts that are most important to the formation of orogenic gold deposits as once steepened they extend sub vertically downwards and tap into zones of the middle to lower crust where metamorphic dehydration reactions occur, and gold-bearing hydrothermal fluids are sourced.

Bayley et al. (1973) and Hausel (1991) have described the Neoarchean rocks of the South Pass area as an elongate greenstone belt folded into a synclinorium of metamorphosed volcanic, sedimentary, and plutonic rocks regionally metamorphosed to greenschist and amphibolite facies, and locally overprinted by a later retrogressive greenschist facies event. The axis of the belt is paralleled by foliation, shear

zones, and lower order fold axes, and has been intruded along its flanks by granite and granodiorite. Considering the Hoffman (1990) TAP model for the origin of granite-greenstone belts described above, the author of this report has serious issues with this simple long-standing *"sagduction"* interpretation of the stratigraphy and structure of Neoarchean greenstone belts in general, and the South Pass greenstone belt in particular. A simplified cross-sectional view of the sagduction style synclinorium interpretation of the South Pass area advocated by Bayley et al. (1973) and Hausel (1991) is given in Figure 10.

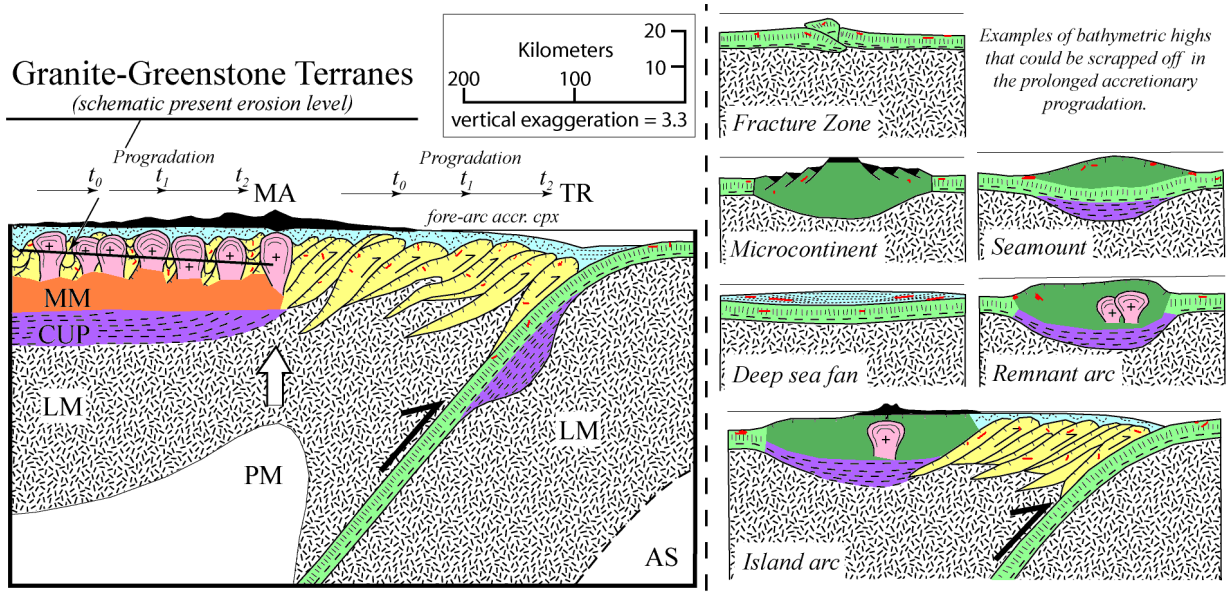


Figure 9. Model for the formation of Archean granite-greenstone terranes (Hoffman, 1990). Supracrustal rocks forming the greenstone belts are interpreted to originate as bathymetric highs on the Archean seafloor that get scrapped off in the prolonged accretionary progradation of a tectonic trench system. The boundaries between supracrustal sequences (primary shear zones) originate as thrust faults that steepen with time.

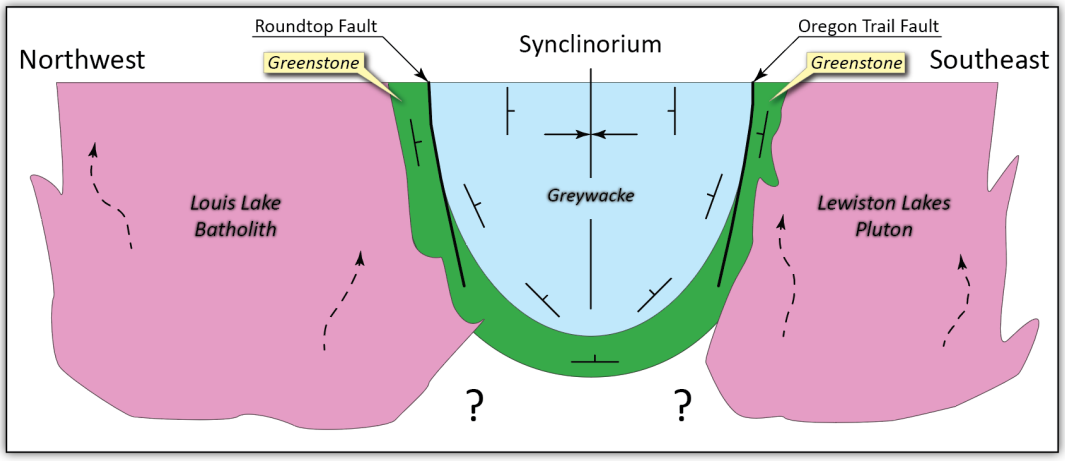


Figure 10. Synclinorium model for the formation of Neoarchean South Pass granite-greenstone terrane. Strike and dip symbols show expected stratigraphic topping directions of greenstone and greywacke units.

A different approach to interpreting the overall architecture of the South Pass granite-greenstone belt is to apply Hoffman's (1990) TAP model of the formation of granite-greenstone belts (Fig. 9) to the South Pass granite-greenstone terrane. Such a model must conform to what is known stratigraphically and structurally within the greenstone belt.

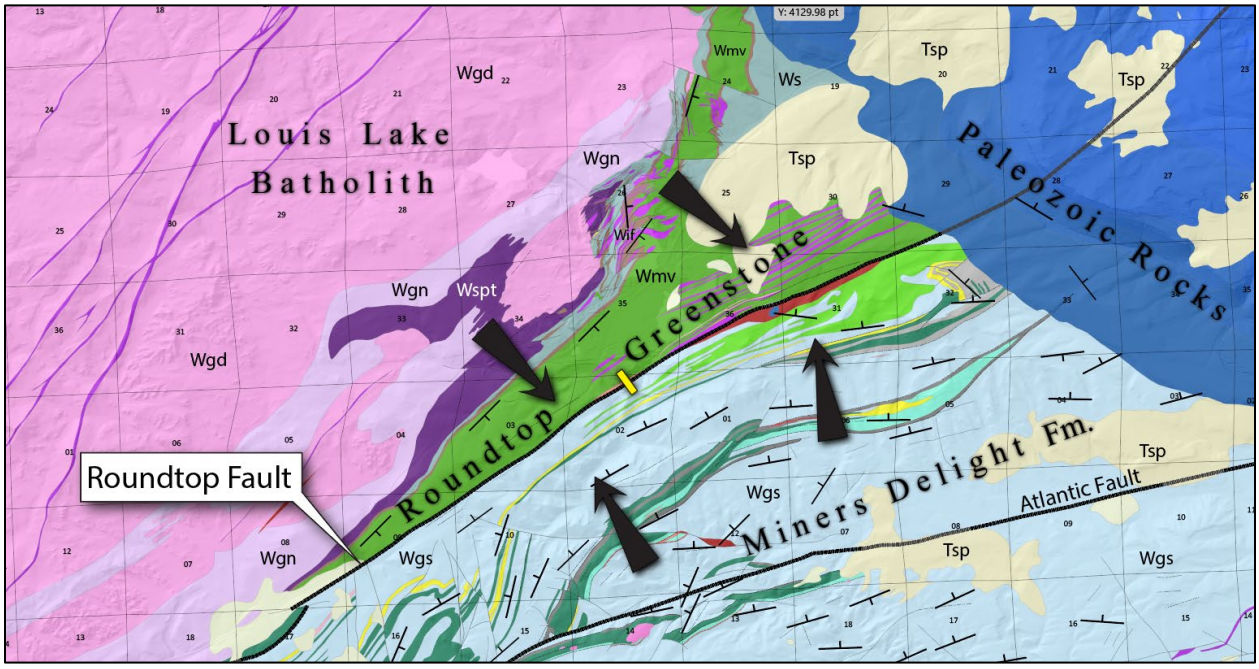


Figure 11. Map showing the opposing stratigraphic topping directions (thick black arrows) based on measured inclined bedding measurements between the northwest topping Miners Delight Formation and the southeast topping Roundtop Mountain Greenstone.

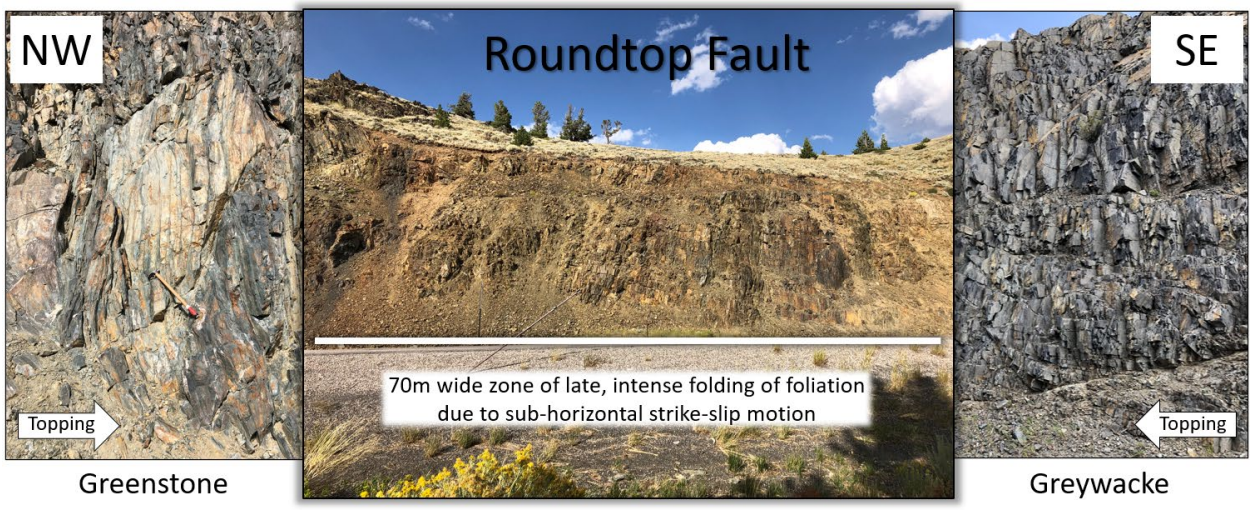


Figure 12. Outcrop views of the well-exposed Roundtop Fault. Location shown as yellow rectangle in Figure 11.

As is clearly demonstrated in Figure 11, the stratigraphic topping directions of the Miners Delight Formation (topping to the northwest), and the conformable Diamond Springs Formation/Goldman

Meadows Formation/Roundtop Mountain Greenstone sequences (topping to the southeast) do not in any sense define a synclinal structure. If such an original structure were present (Fig. 9), the Miners Delight Formation would top to the southeast. These two opposing stratigraphic sequences are juxtaposed together along the Roundtop Fault, an early-formed major Archean structure that late in its history records sub-horizontal strike-slip motion (Figure 12).

A holistic interpretive model that integrates a modified stratigraphic interpretation of the South Pass granite-greenstone terrane within the concept of the Hoffman (1990) Trench-Arc-Progradation model for the formation of granite-greenstone belts (Fig. 9) is presented in Figure 13. In this interpretive model, the Neoarchean supracrustal stratigraphy has been modified via the separation of the lithostratigraphic greenstone rock units into seemingly coherent stratigraphic sequences that one can interpret into their original environment of deposition. These environments include:

1) *an old gneiss terrane (map units Wgn and Wgnb) that represents the proto-Archean craton,*

2) *a Mid Ocean Ridge type sequence of ultramafic lavas and sills (map unit Wspt) overlain by thin chemical/clastic sedimentary horizon (map units Wqtz-Wif-Ws) that is capped by basaltic pillow lavas (map unit Wmv) of the Roundtop Mountain Greenstone, and*

3) *an oceanic seamount type sequence of subaqueous mafic to intermediate volcanic (map units Wmva, Wmvp, Wmm) overlain by shallow water fragmental felsic (map unit Wfvf) volcanic rocks that may represent classic stratovolcanoes. The volcanic rocks are capped by an extensive ring plain of volcanic-derived clastic sediments (map unit Wgs).*

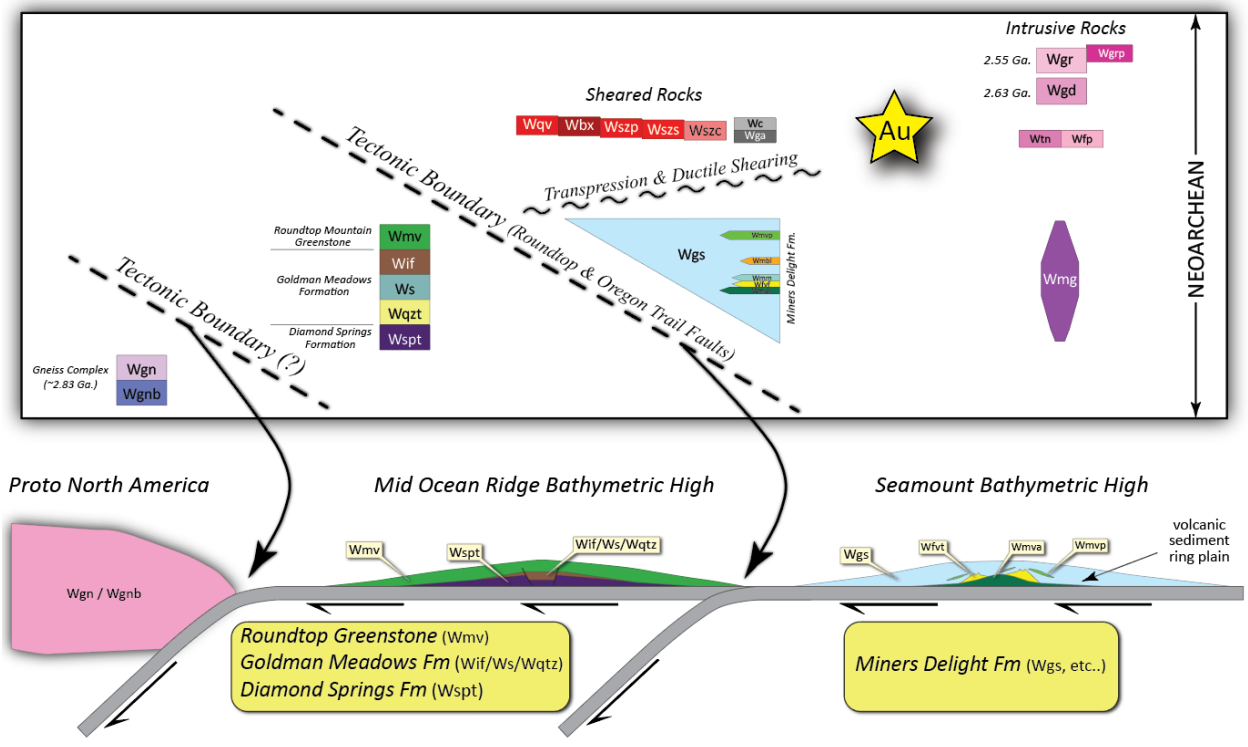


Figure 13. Schematic interpretive model for the origin and structural juxtaposition of the Neoarchean supracrustal sequences within the South Pass greenstone belt.

The boundaries between these three lithostratigraphic sequences of rocks (Fig. 13) are interpreted to be tectonic and akin to the Hoffman (1990) model of the formation of granite-greenstone belts (Fig. 8). With this framework set, we can now dive into the details of the linked stratigraphy, structure, and mineralization within the South Pass granite-greenstone terrane.

Precambrian Stratigraphy – South Pass Granite-Greenstone Terrane

The stratigraphy of the Precambrian rocks of the South Pass granite-greenstone belt are briefly described below from the interpreted oldest to youngest map units as well as in context to the overall holistic interpretive model presented in Figure 13. It should be noted herein that the descriptions presented in this section of this report are largely taken from the geological literature as neither the author nor the geological staffs of BRE or RGC have mapped the geology of the region for any prolonged length of time or in any sort of regional detail.

Gneiss Complex – Proto North America

Two compiled map units comprise the Gneiss Complex of the South Pass granite-greenstone terrane (Figure 14). These units include granitic gneiss and migmatite (map unit ***Wgn***) and a border zone of intermixed gneiss and granodiorite (map unit ***Wgnb***). As taken from the description of the gneiss complex rocks of Hausel (1991) given below, the likely origin for these units is an ancient basement or earlier supracrustal succession tectonically interleaved as early Archean thrust splinters into the South Pass supracrustal sequences (Figure 13). The northwestern margin of the greenstone belt (Figure 14) is marked by gneiss intruded by granodiorite of the Louis Lake batholith and intermixed with supracrustals of the greenstone belt. The gneiss zone, or "mixed margin" of Bayley et al. (1973), consists of strongly foliated felsic gneiss and granitic migmatite (***Wgn***) intruded by weakly to moderately foliated Louis Lake granodiorite. The gneiss and migmatite enclose concordant amphibolite, tonalite gneiss, and ultramafic enclaves (Talpey, 1984) with subordinate metagreywacke, mica schist, fuchsitic gneiss and schist, and rare sillimanite schist and banded iron formation. The felsic gneiss has augen and migmatitic textures of more severely foliated fabric than the granodiorite and supracrustals, indicating that it has been subjected to a more intense strain history (Talpey, 1984).

The gneiss complex is also intercalated with supracrustal rocks of the greenstone belt. For example, near the Atlantic City iron mine, the complex is interleaved with metasedimentary rocks of the Goldman Meadows Formation. A few miles southwest, gneiss is intercalated with rocks of the Diamond Springs Formation. Along the East Sweetwater River near the western extent of the greenstone belt, layers of gneiss and granodiorite (***Wgnb***) are complexly interleaved with metasedimentary rocks of the Miners Delight Formation. Only limited exposures of the gneiss complex occur along the southeastern margin of the greenstone belt, and relationships of the gneiss and supracrustals are ambiguous.

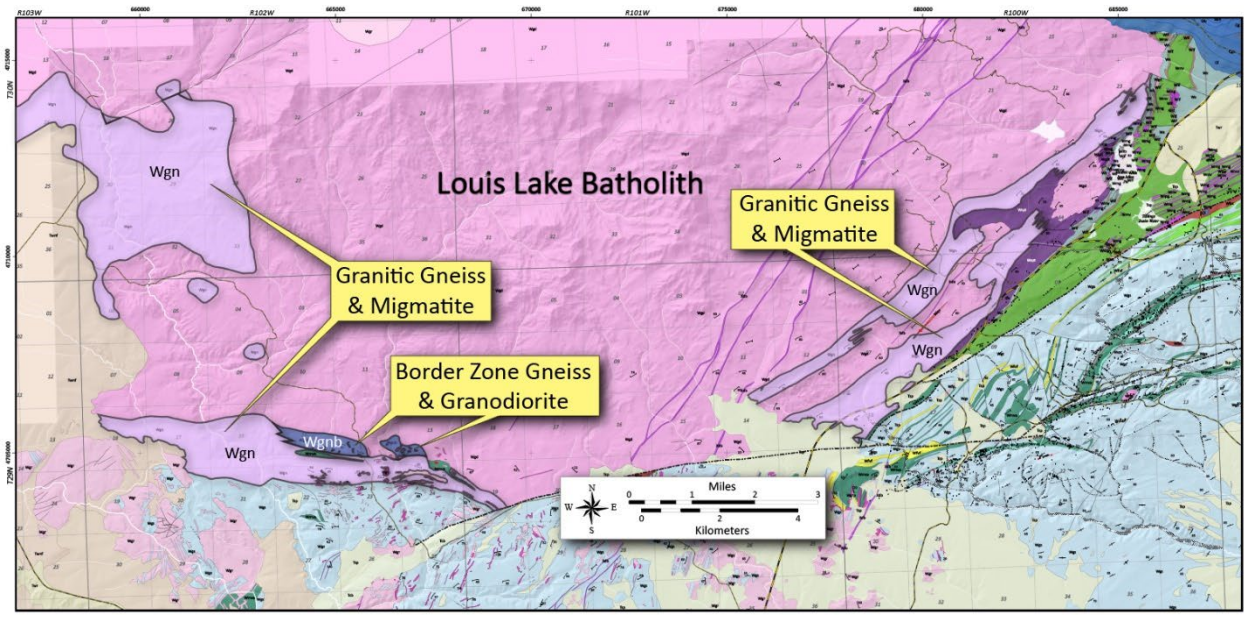


Figure 14. Annotated screenshot of the northwest corner of Plate 1 showing the location of the gneiss complex map units of the South Pass granite-greenstone terrane.

Amphibolite enclaves of the gneiss complex exhibit a more intense tectonic fabric than the amphibolite's of the Diamond Springs Formation, at the base of the supracrustal succession. Geochemically, the amphibolite enclaves are slightly enriched in TiO_2 relative to modern mid-ocean ridge basalts (Talpey, 1984), and possess amphibolite- to greenschist-facies mineral assemblages. Two possible origins for the gneiss complex were considered by Talpey (1984) and Hull (1988): (1) differentiated border zone of the Louis Lake batholith; and (2) a remnant of an older basement.

The isotopic data of Stuckless et al. (1985) suggest the felsic gneiss was derived from a protolith older than the Louis Lake granodiorite. They also noted that the garnet-bearing felsic gneisses deviated significantly from the Louis Lake Pb-Pb isochron and were probably not related to the granodiorites. This, in combination with the lack of chemical and isotopic similarity to the granodiorite, supports a separate genesis for the rocks of the gneiss complex. The data, along with the complex interlayering with the supracrustal units, imply that the most probable origin of the gneiss complex is an ancient basement or earlier supracrustal succession that was *tectonically interleaved as thrust splinters into the base of the South Pass supracrustal rocks*.

Greenstone Sequence – Mid Ocean Ridge Bathymetric High

Harper (1986) interpreted the Archean mafic to ultramafic igneous and intercalated metasedimentary rocks northwest of the Roundtop Fault (Fig. 12) as representing the remnants of a southeast-facing dismembered ophiolite suite. In this guidebook, the author has combined Harper's (1986) interpretation with Hausel's (1991) conformable lithostratigraphy (the *Diamond Springs* & *Goldman Meadows Formations* and *Roundtop Mountain Greenstone*) into the informally named ***Greenstone Sequence*** utilizing the holistic model presented in Figure 13. The two areas within the South Pass granite-

greenstone terrane where rocks of the Greenstone Sequence are exposed include the supracrustal rocks to the northwest of the Roundtop Fault and to the east of the Oregon Trail Fault (Figure 15).

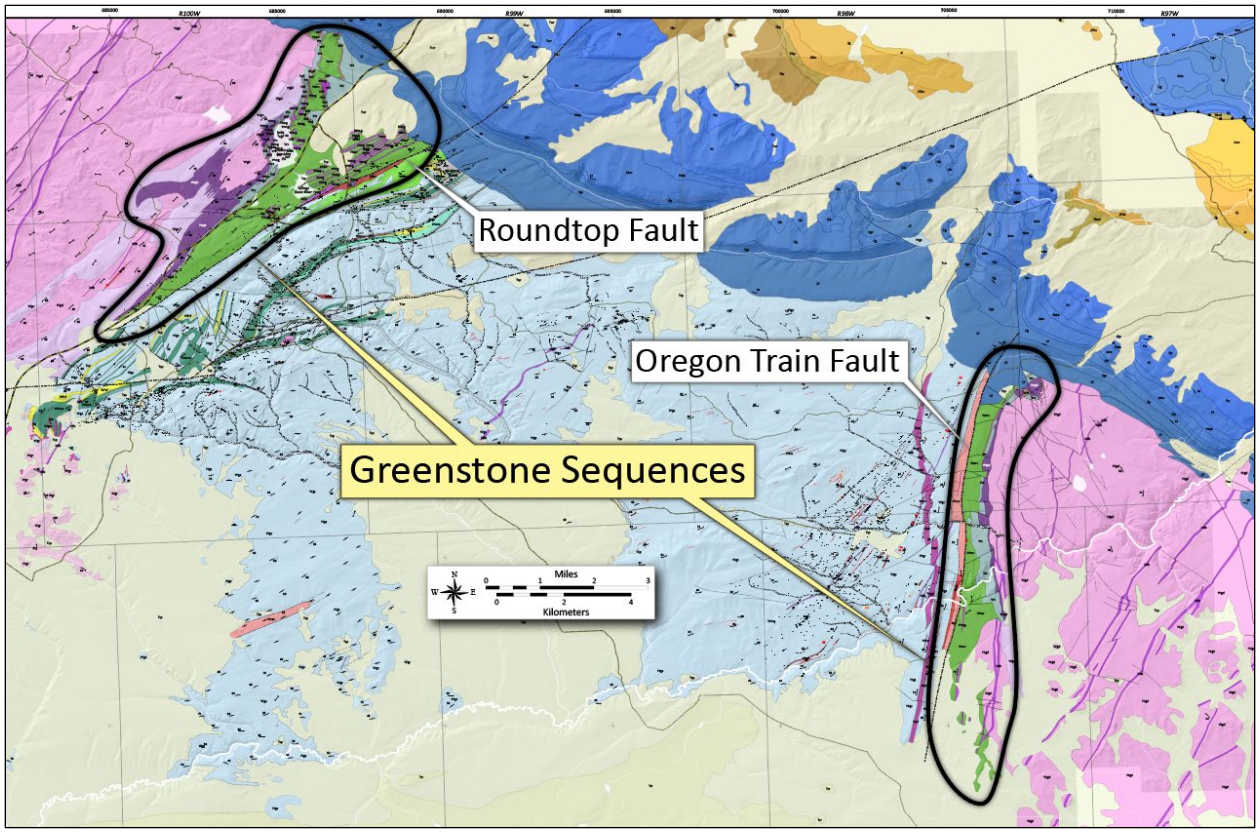


Figure 15. Location map of the Greenstone Sequences that bound the northwestern and eastern margins of the South Pass greenstone belt.

The rocks of the Greenstone Sequence are best described by Harper (1986) in the northwest segment, immediately to the northwest of the Roundtop Fault (Fig. 15). Here the rocks have been multiply deformed and metamorphosed with the most prominent structures being a pronounced subvertical foliation and steeply plunging (70° to 90°) stretching lineation to the SW. Pillow lavas are stretched parallel to the lineation and typically have aspect ratios of 10:3:1. Bedding in the iron formation show polyphase folding with fold axes parallel to the stretching lineation (Bayley et al., 1973). The intrusive contact between the Louis Lake batholith and the basal portions of the Greenstone sequence (largely map unit Wspt) is extensively deformed and lineated (Harper, 1986).

Metamorphosed igneous rocks of the Greenstone Sequence can be classified chemically (Jensen, 1976) into two main groups, which include ultramafic komatiites and tholeiitic (both high iron and magnesium) basalts as is shown in Figure 16. Field relationships have shown that these mafic to ultramafic igneous rocks include both subaqueous lavas (pillowed & massive basalts and komatiite flows) and high-level subvolcanic sill-like intrusions of diabase, gabbro (map unit ***Wmg***), peridotite, and rare pyroxenite (Hausel, 1991). Short descriptions of the rock types that make up the map units of the Greenstone

Sequence formations are given below from the bottom to the interpreted top of this package of deep water, Mid-Ocean Ridge type rocks.

Diamond Springs Formation – All rock types of Hausel's (1991) Diamond Springs Formation have been combined into map unit ***Wspt*** in this guidebook and include serpentinite, tremolite-talc-chlorite schist, and amphibolite.

Serpentinites form dark green to brownish green colored, massive to schistose serpentinites containing abundant serpentine, disseminated magnetite, and minor chlorite and talc. The serpentinites locally contain asbestos and commonly are reddish colored due to hematite oxidation of disseminated magnetite. Relict cumulate olivine and pyroxene textures are locally preserved and serpentinite contacts are generally conformable, suggesting these relatively fine-grained rocks are metamorphosed komatiitic lava flows or peridotitic sills (Hull, 1988).

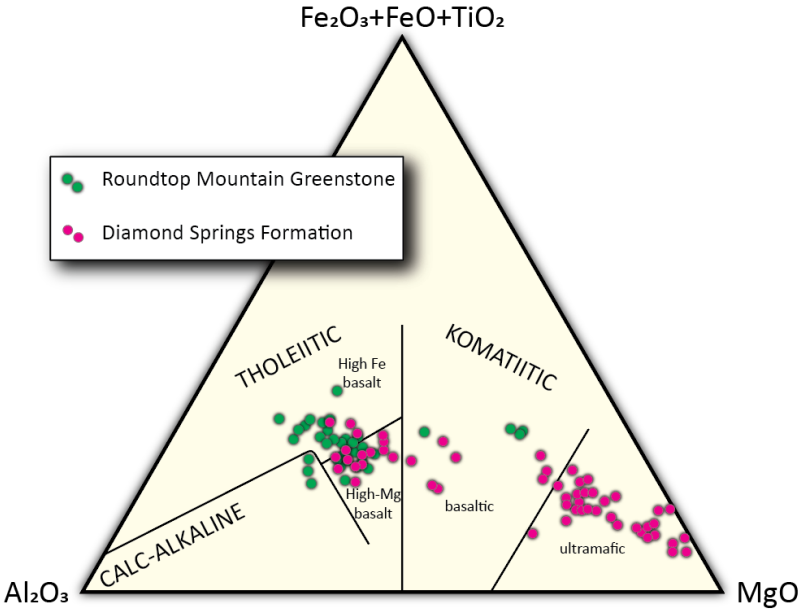


Figure 16. Jensen (1976) cation plot for rocks of the Greenstone Sequence separated into the basal Diamond Springs Formation (magenta) and upper Roundtop Mountain Greenstone (green).

Tremolite-talc-chlorite schists of the Diamond Springs Formation are grey-green to grey, schistose rocks with varying amounts of amphibole (tremolite/actinolite to anthophyllite), chlorite, talc, serpentine, carbonate, and two generations of opaque minerals (Hull, 1988). The rocks often exhibit varying degrees of carbonatization and serpentinization and are believed to represent sheared ultramafic igneous rocks.

Amphibolites of the Diamond Springs Formation are dark gray to black, taxitic hornblende-amphibolites with variable schistose, hornfelsic, diabasic, and gabbroic textures. These rocks are principally hornblende-plagioclase (± quartz) amphibolites with subordinate biotite and chlorite. Locally, these rocks have been retrogressively metamorphosed to greenschist facies and include chlorite-sericite-epidote-quartz-feldspar assemblages. Textures vary but indicate basalt to diabase protoliths. Pillow structures have also been recognized west of the Atlantic City iron mine thus both flows and sills are present.

The komatiitic and tholeiitic rocks of the Diamond Springs Formation are overlain by the Goldman Meadows Formation. Rocks of the Goldman Meadows Formation include quartzite, banded iron formation, pelitic schist, and amphibolite.

Goldman Meadows Formation - The Goldman Meadows Formation was named by Bayley (1965) for exposures northwest of Goldman Meadows in Sec. 26, T30N, R100W. The type section described by Bayley and others (1973) included mica-andalusite schist, biotite-chlorite-garnet schist, quartz-magnetite iron formation, chlorite-amphibole-magnetite-garnet schist, quartz-mica schist, chlorite-amphibole-garnet schist, quartz-mica-andalusite schist, quartzite, and feldspathic quartz-biotite schist. Bayley's type exposures are presently buried by the Atlantic City mine tailings and are submerged under the lake occupying the open pit of the Atlantic City iron mine (see below). Hausel (1991) subdivided rocks of the Goldman Meadows Formation into two distinct lithologies: 1) a quartzite-bearing (map unit ***Wqtz***) schist member that includes pelitic schists and massive to schistose amphibolites (map unit ***Ws***); 2) an iron formation member composed of several stratigraphic horizons of banded quartz-magnetite-amphibole iron formation (map unit ***Wif***).

Quartzites (Wqtz) of the Goldman Meadows Formation are commonly light colored, white, gray, or brown, but some outcrops appear green where fuchsite colors bedding surfaces. The rock is fine to medium grained, vitreous, and recrystallized, and it exhibits no primary sedimentary structures other than bedding. Quartz mosaics with numerous minute colorless mica flakes and traces of tourmaline are visible in thin section (Hausel, 1991). Chemical analyses by Hausel (1991) show anomalous chromium (400 ppm) in fuchsitic quartzite and relatively high iron content (8.41 % Fe_2O_3) in light reddish-brown quartzite.

Schists (Ws) of the Goldman Meadows Formation includes pelitic schists, thin quartzites (***Wqtz*** above), and massive to schistose amphibolites. The pelitic schists are principally porphyroblastic, with large andalusite porphyroblasts in fine- to medium-grained muscovite. Many porphyroblasts are replaced by muscovite and quartz. Less common are quartz-muscovite schists, biotite (chlorite) schists, garnet-mica schists, and quartzite. Amphibolite units are generally thin, but at some locations, the amphibolite's form relatively thick sections. Chemically the foliated hornblende amphibolites fall between the more mafic tholeiites of the Diamond Springs Formation and the more iron-rich tholeiites of the Roundtop Mountain Greenstone.

Iron Formation (Wif) of the Goldman Meadows Formation has been the subject of considerable interest because of the iron deposits that were mined along the northwestern flank of the greenstone belt. Lithologically, these rocks are hard, dense, laminated rocks with alternating layers of magnetite and chert and varying amounts of amphibole. The layers are commonly plicated, 0.1 to 0.5 inch thick, but may be as much as 2 inches thick. The rock is black to dark gray with fine-grained hornfelsic texture and is highly magnetic. The siliceous layers, interpreted as recrystallized chert, consist of fine-grained quartz mosaics with intergranular euhedral magnetite and amphibole. The magnetite-rich layers are formed of euhedral magnetite and crystalline magnetite aggregates with minor quartz and amphibole (Bayley and others, 1973). Well-foliated lenses and selvages of quartz-chlorite schist, chlorite-garnet schist, and chlorite-amphibole- garnet-magnetite schist are interlayered with the iron formation in the vicinity of

the Atlantic City mine (Bayley and others, 1973). These selvages and the iron formation commonly contain conformable quartz lenses and veins that are boudinaged parallel to foliation. Later quartz and carbonate veins and veinlets also cut foliation. Along the southeastern flank of the greenstone belt, the magnetite-chert banded iron formation grades southward into hematite-quartz iron formation. Within one-quarter mile of the Oregon Trail, the iron formation is intruded by metagabbro, and no other iron formation is found south of the metagabbro.

Roundtop Mountain Greenstone – The Roundtop Mountain Greenstone was named by Bayley (1965) for exposures on Roundtop Mountain in Sections 30 and 31, T30N, R99W. The formation rests conformably on the Goldman Meadows Formation and consists primarily of greenstone, greenschist, and amphibolite. Mica schist, hornblende-mica schist, minor metatuff, tremolite/actinolite schist, chlorite schist, and rare grunerite schist are also present. Exposures of the Roundtop Mountain Greenstone are found in both limbs of the South Pass synclinorium (Hausel, 1991). Along the northwestern flank, greenstones and greenschists at Roundtop Mountain grade into amphibolites to the southwest. Rocks of the Roundtop Mountain Greenstone in the eastern flank of the synclinorium are entirely amphibolite facies.

Greenstones (Wmv) consist primarily of pillow basalts of tholeiitic affinity (Fig. 16) that have been variably metamorphosed to amphibolite and locally intensely deformed and sheared to various types of green-colored schists (Fig. 12). In thin section the greenstones and green schists are almost entirely composed of chlorite, actinolite, epidote, and minor apatite (Hausel, 1991). The original plagioclase is entirely sausseritized. The amphibolite-facies rocks are composed of blue-green hornblende, plagioclase, and minor quartz, epidote, and chlorite. Numerous foliation/bedding parallel sill-like elongate zones of metagabbro (***Wmg***) occur throughout the greenstones and are considered to have originally been subvolcanic basaltic intrusions that fed subsequent pillowed lava flows. The top of the formation is marked by a broad zone of carbonated breccias and intensely folded schists. This deformation zone represents a major break in the geologic record (Fig. 12).

Miners Delight Formation – Seamount Volcanic/Volcaniclastic System

The Miners Delight Formation is largely a metagreywacke sequence of volcaniclastic rocks that are estimated to be 5,000 to 20,000 (?) feet thick (Hausel, 1991). The formation is dominated by gray to dark brown feldspathic and biotitic metagreywacke that in areas of high metamorphic grade becomes a compositionally banded biotite-plagioclase schist. Stuckless and others (1985) reported a Rb-Sr whole-rock isochron age of 2.8 ± 0.1 Ga. for the greywackes of the formation. The well exposed Miners Delight Formation has been the focus of BRE's and RGC's work in the area as it hosts all the historic orogenic gold deposits and historic prospects within the South Pass granite-greenstone terrane.

Numerous workers have mapped and described a diversified package of lithologies within this sequence of rocks but overall, it is dominated by metagreywacke, which underlies about 95 percent of the exposed Miners Delight Formation. The aerial distribution (Fig. 17) of the various rock types and associated map units within the Miners Delight Formation are given in Table 1 and brief descriptions of each map unit within the formation will be given below.

Table 1. Details on the distribution of rock types within the Miners Delight Formation.

ROCK TYPE	MAP UNIT	ACRES	AREA %
Greywacke	Wgs	66,080.4	94.76%
Amphibolite	Wmva	1,434.5	2.06%
Pillowed Andesite	Wmvp	462.2	0.66%
Mixed Member	Wmm	310.4	0.45%
Dacitic Fragmental Rocks	Wfvf	292.0	0.42%
Felsic Intrusive Rocks	Wfp, Wtn	26.1	0.04%
Sheared Rocks	Wga, Wc, Wqv, Wbx, Wszc, Wszs, Wszp	1,128.7	1.62%
Marble	Wmbl	1.9	0.00%
	Totals:	69,736.2	100.00%

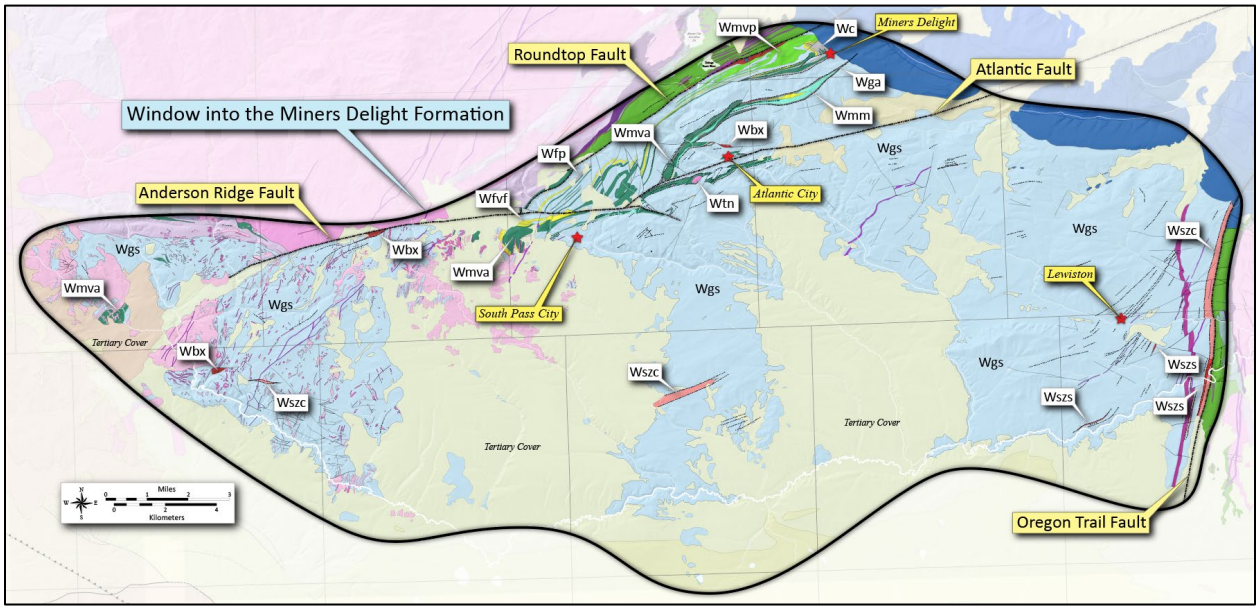


Figure 17. Annotated geologic map of a portion of the South Pass granite-greenstone terrane highlighting the locations of separate map units of the Miners Delight Formation.

Major Rock Unit - Metagreywacke

Feldspathic and biotitic metagreywacke (map unit ***Wgs***) dominates the Miners Delight Formation (Table 10) and generally occurs as fine-grained, steeply dipping (Fig. 18), bedded turbidite with bedding-parallel foliation. In weakly metamorphosed areas the metagreywacke exhibits primary sedimentary structures including graded beds, crossbeds, and channel structures. Greenschist-facies metagreywackes show crude alignment of mineral and rock fragments, but amphibolite-facies metagreywackes show pronounced megascopic foliation and have lost most traces of primary textures and structures (Condie, 1967).

In some areas the rocks contain abundant gray to brown, almond-shaped porphyroblasts elongated in the plane of foliation. In all respects, the porphyroblasts resemble andalusite, Bayley and others (1973) confirmed that near granitic rocks the porphyroblasts were originally andalusite but are almost entirely replaced by sericite with poikiloblastic quartz and biotite. In the western segment of the South Pass greenstone belt (Fig. 17), a myriad of granitic dikes cut amphibolite-facies, compositionally banded biotite schists and migmatites of the Miners Delight Formation (Fig. 18B).

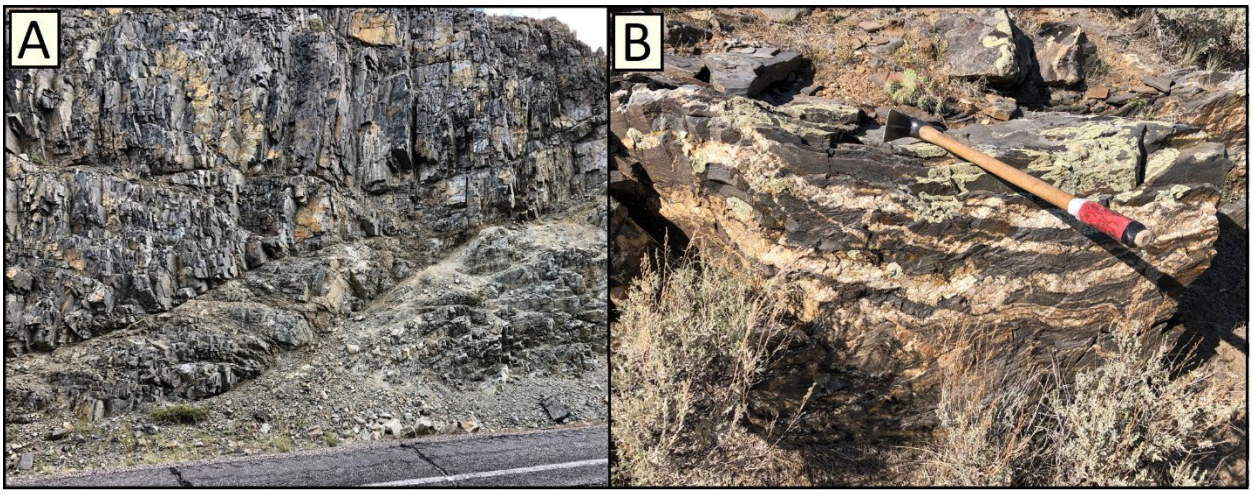


Figure 18. Typical exposures of the metagreywacke (Wgs) unit of the Miners Delight Formation; A) thin bedded, steeply-dipping turbidites exposed in the State Highway 28A roadcut, and B) compositionally-banded biotite-schist/migmatite outcrop from the southwestern segment of the Miners Delight Formation.

An important piece of information concerning the metagreywackes and the Miners Delight Formation is Condie's (1967) whole rock data of map unit ***Wgs***. As can be seen in Figure 19, the source rocks of the clastic material that compose the metagreywackes can be classified geochemically as dacitic to andesitic in composition. There are no such source rocks within the "Greenstone Sequence". These data are one of the foundations of the proposed interpretive model for the origin and structural juxtaposition of the Neoarchean supracrustal sequences within the South Pass greenstone belt (Fig. 13).

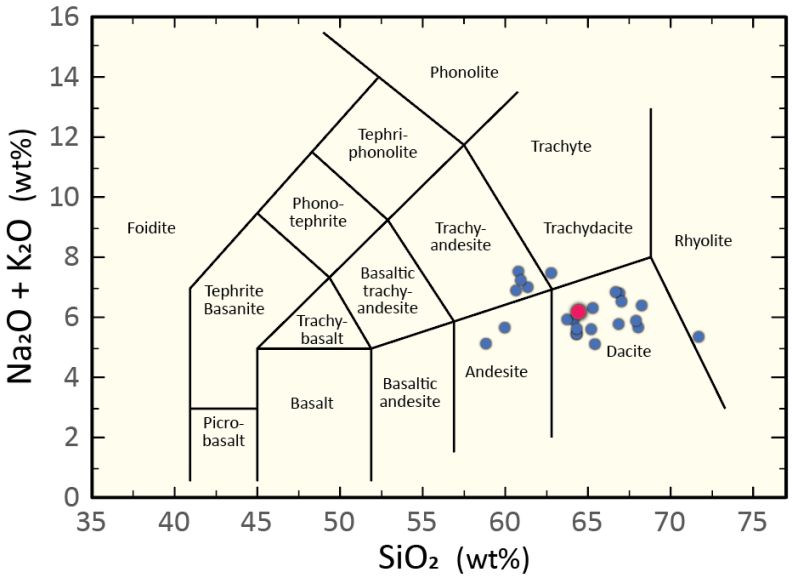


Figure 19. Source rocks for the Miners Delight Fm. based on the Na_2O+K_2O vs SiO_2 IUGS chemical classification of volcanic rocks. The average composition shown as the red circle. Geochemical data taken from Condie (1967).

Minor Rock Units

Graphitic schist *(Wga)* occurs as narrow schistose bands of black to steel grey, fine-grained, sheared graphitic schists bounding wedge-shaped shear panels of metavolcanic ***(Wmva*** and ***Wfvf)*** and metasedimentary ***(Wmm*** and ***Wgs)*** rocks in vicinity of the ghost towns of South Pass City and Miners Delight (Fig. 17). The bands of graphitic schist are pock-marked by numerous historic prospect pits due to the presence of numerous shear-hosted auriferous quartz veins.

Mafic amphibolite *(Wmva)* consists of foliated hornblende-plagioclase amphibolites that occur dominantly in the northwestern portion of the Miners Delight Formation in the area bracketed by the Roundtop and Atlantic faults (Fig. 17). In this area mafic amphibolites occur as prominent internal zones within wedge-shaped shear zones as well as thin and elongate bedding and foliation parallel horizons. The amphibolites are fine to medium-grained, dense, black, weakly to strongly foliated, equigranular rocks that are locally subophitic and hornfelsic. The presence of both volcanic and subvolcanic textures indicates this unit is a mixture of flows and sills (Hausel, 1991). The metadiabasic to subophitic texture of these rocks and local crosscutting relationships with adjacent rocks led Bayley and others (1973) to interpret the amphibolites to be metamorphosed gabbro dikes and sills. Bow (1986), who was impressed by the common fine-grained to schistose fabric and identified local pillow, vesicular, and variolitic textures, interpreted the amphibolites to be volcanic.

Bayley and others (1973) **mixed member *(Wmm)*** of the Miners Delight Formation consist of a variety of schistose interlayered rock types including thin layers of metamorphosed greywacke, basalt, amphibolite, conglomerate, tremolite/actinolite schist, chlorite schist, rare grunerite schist and quartzofeldspathic gneiss. As can be seen on Figure 17, this unit is confined to the internal zones of discrete wedge-shaped shear zones and are interpreted by the author to be tectonites.

Metachert *(Wc)* of the Miners Delight Formation are enigmatic rocks that in outcrop appear texturally like banded chert. The map distribution of this unit is largely near the ghost town of Miners Delight within or adjacent to discrete wedge-shaped shear zones (Fig. 17). The “metacherts” are dark gray to black, thinly banded, extremely hard and massive rocks with conchoidal fracture that rings when struck by a hammer. Portions of these rocks appear to be sheared and recrystallized while other portions appear only weakly silicified. In thin section these rocks vary from fine-grained mosaics of quartz with minor muscovite, chlorite, and feldspar in a preferred orientation to true mylonites and ultramylonites. The mylonites exhibit angular mineral grains and quartz, feldspar, and mica augen in a crushed groundmass that is so fine grained that individual grains are generally not recognizable except under high magnification (Hausel, 1991).

Marble *(Wmbl)* has only been identified at one locality in the South Pass greenstone belt south of the Mary Ellen mine in SE/SW of Sec. 14, T29N, R100W adjacent to a shear zone that has been prospected by shallow pits. There, the intensely folded and sulfide-bearing unit varies from fine-grained metacarbonate to medium-grained marble. Hausel (1991) interprets this unit as a metamorphosed travertine deposit while the author interprets this single map unit as a carbonate-altered shear zone.

Pillowed andesite *(Wmvp)* of the Miners Delight Formation is found immediately south of the bounding Roundtop fault to the west-northwest of the ghost town of Miners Delight (Fig. 17). These rocks occur as massive flows, porphyries, and pillowed and vesicular rocks with dominant calc-alkaline chemistry. Porphyritic trachytic andesites contain hornblende and plagioclase phenocrysts oriented parallel to the strike of the flows, in a dark green to gray matrix. The groundmass consists of biotite, hornblende, feldspar, and quartz (Bayley and others, 1973).

Metadacite *(Wfvf)* of the Miners Delight Formation forms thin stratigraphic units associated with amphibolites ***(Wmva)*** and within wedge-shaped shear zones to the north / northwest of the South Pass City – Atlantic City area. Field observations by the author of a single large exposure of these rocks have shown that the dacitic rocks are fragmental textured with coherent dacite lava blocks intermixed with rounded blocks of pumice. Such rocks are common components of andesitic to dacitic stratovolcanoes.

Archean Granitoids

There are three recognized episodes of Neoarchean felsic intrusive emplacements within the South Pass granite-greenstone terrane (Hausel, 1991). The initial episode produced small tonalitic stocks ***(Wtn)*** and feldspar porphyry ***(Wfp)*** dikes, which intruded along shear zones in the supracrustal terrane prior to regional metamorphism. The second event was a cratonization event involving the emplacement of large granodiorite ***(Wgd)*** plutons (Louis Lake batholith and Lewiston Lakes pluton) along the margin of the greenstone belt. The third event generated dome-like granitic ***(Wgr)*** plutons and dikes as well as evolved granite pegmatites ***(Wgrp)*** that intruded the supracrustal pile principally in the western portion of the greenstone belt (see Fig. 20).

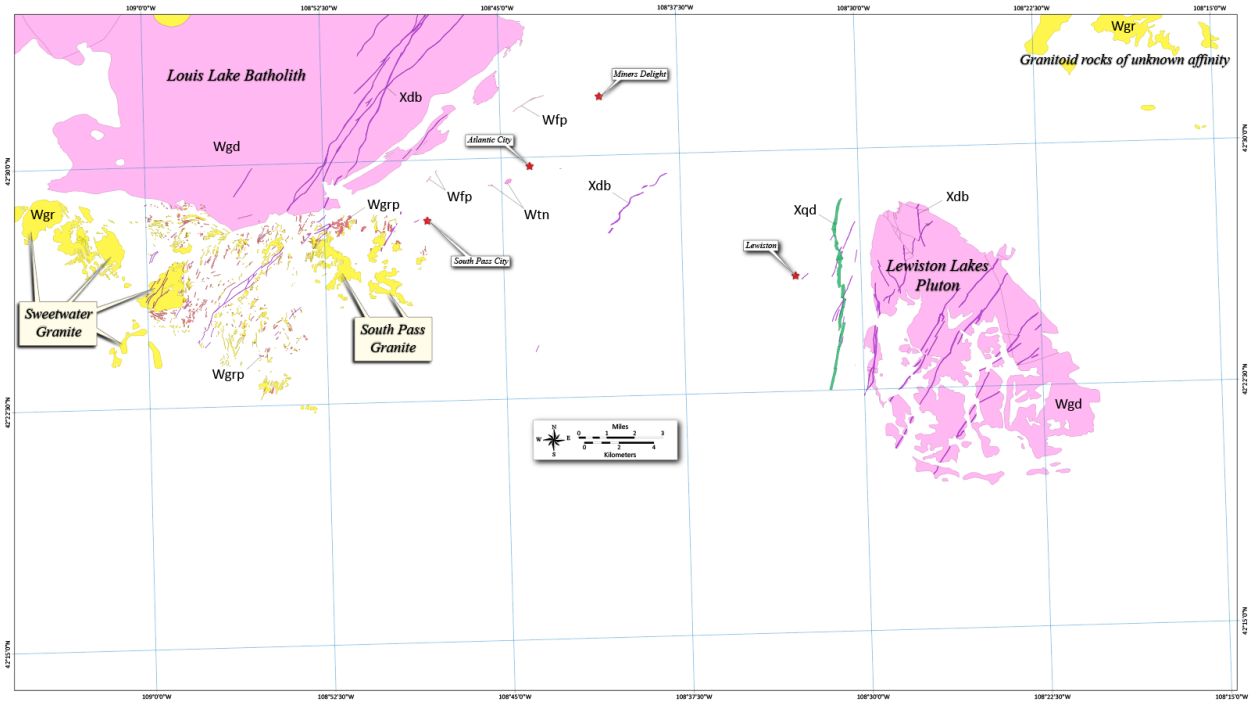


Figure 20. Location map of intrusive rocks within the South Pass granite-greenstone map area.

Phase 1 Granitoids

Phase 1 granitoids of two distinct types occur within supracrustal rocks of the South Pass granite-greenstone terrane but only comprise a very small proportion (36.39 acres or 0.0054% of the compilation) of the map area (Fig. 20). Rocks of this suite include: 1) small tonalite plugs ***Wtn*** that occur within a wedge-shaped shear zone immediately south of the Atlantic Fault, and 2) foliation/shear-zone parallel feldspar porphyry dikes ***Wfp*** within the Miners Delight Formation and Roundtop Mountain Greenstone.

There are two known locations where these early felsic intrusive rocks are mineralized. Bayley and others (1973) reported a sheared feldspar porphyry dike in Sec. 36, T30N, R100W contains quartz stringers in joints with some disseminated arsenopyrite. The Mary Ellen stock southwest of Atlantic City (Sec. 14, T29N, R100W.) hosts a prominent northwest dipping quartz vein that carries visible gold. The vein trends north before making a distinct bend to the northwest, following the trend of conjugate fractures in the tonalite.

Phase 2 Granitoids

Rocks of the second granitic event include granodiorites ***(Wgd)*** of the 250-square-mile Louis Lake batholith along the northwestern margin and the 40-square-mile Lewiston Lakes pluton along the eastern flank of the greenstone belt (Fig. 20). According to Bayley and others (1973), the Louis Lake batholith has rather uniform granodioritic composition. The rock is dominantly plagioclase with lesser microcline, quartz, biotite, hornblende, sphene, and magnetite. Plagioclase is commonly sericitized and sparsely sausseritized and the mafic minerals are partly chloritized. Epidote is often disseminated in the granodiorite as well as in veinlets. The Lewiston Lakes pluton is chiefly pinkish white to salmon colored biotite granodiorite. Pegmatites are noticeably absent in this pluton; the rock has medium-grained granular texture with autoliths of dark gray hornblende-biotite tonalite (Day and others, 1988). Isotopic studies show the Louis Lake batholith formed about 2,630 ± 20 Ma from a >3.5 Ga tonalite protolith (Hull, 1988). The exact age of the Lewiston Lakes pluton is unknown but is probably similar to the Louis Lake batholith.

Phase 3 Granitoids

The third granitoid phase includes two granite ***(Wgr)*** plutons that intrude Miners Delight metasedimentary rocks in the western part of the greenstone belt (Fig. 20). Considerable confusion has arisen over the names of these granites, but since Bayley and others (1973, p.18) named the pegmatitic granite west of South Pass City the South Pass pluton this name is retained here (see also Hausel, 1988). Farther west, along the Sweetwater River and Lander Creek (Sec. 35, T29N, R102W), is a fine- to medium-grained leucocratic granite that is referred to as the Sweetwater granite by Hausel (1991). These two plutons may be part of the larger Bears Ears pluton described by Stuckless and others (1985), who reported ages from 2,504 ± 40 to 2,575 ± 50 Ma.

The South Pass pluton is a dome shaped, weakly foliated granite with porphyritic texture and grades into garnet-bearing pegmatitic granite. The Sweetwater granite is fine to medium grained with crosscutting aplite dikes. This is a leucocratic, light gray to white granite composed of quartz, biotite, plagioclase, and

microcline with numerous crosscutting quartz-feldspar aplite dikes. The foliation in the country rock xenoliths rafted into the granite conforms to regional foliation and exhibits no rotational component. Age relationships between the Sweetwater granite and the Louis Lake granodiorite to the north could not be determined by Hausel (1991) in the field.

Proterozoic Mafic Dikes

The Archean terrane is cut two generations of Proterozoic mafic dikes. These dikes include a swarm of dominantly northeast trending Proterozoic diabase dikes ***(Xdb)*** throughout the area and a prominent north-south trending quartz diorite ***(Xqd)*** dike east of Lewiston (Fig. 20).

The diabase dikes ***(Xdb)*** form conspicuous ridges in the Louis Lake batholith (Fig. 21) and Lewiston Lakes pluton but are less conspicuous in the supracrustal rocks. The rocks are fine- to medium-grained diabase with equigranular, porphyritic, and taxitic textures. Mineralogically, the dikes consist of plagioclase, chlorite, carbonate, and uralite replacement of augite, with some epidote, iron oxide, and leucoxene (Bayley and others, 1973). Locally, portions of the dikes are pervasively replaced by epidote. The dikes are 10 to 200 feet wide, can be followed for several mikes along strike, have chilled margins and display spheroidal weathering in outcrop.

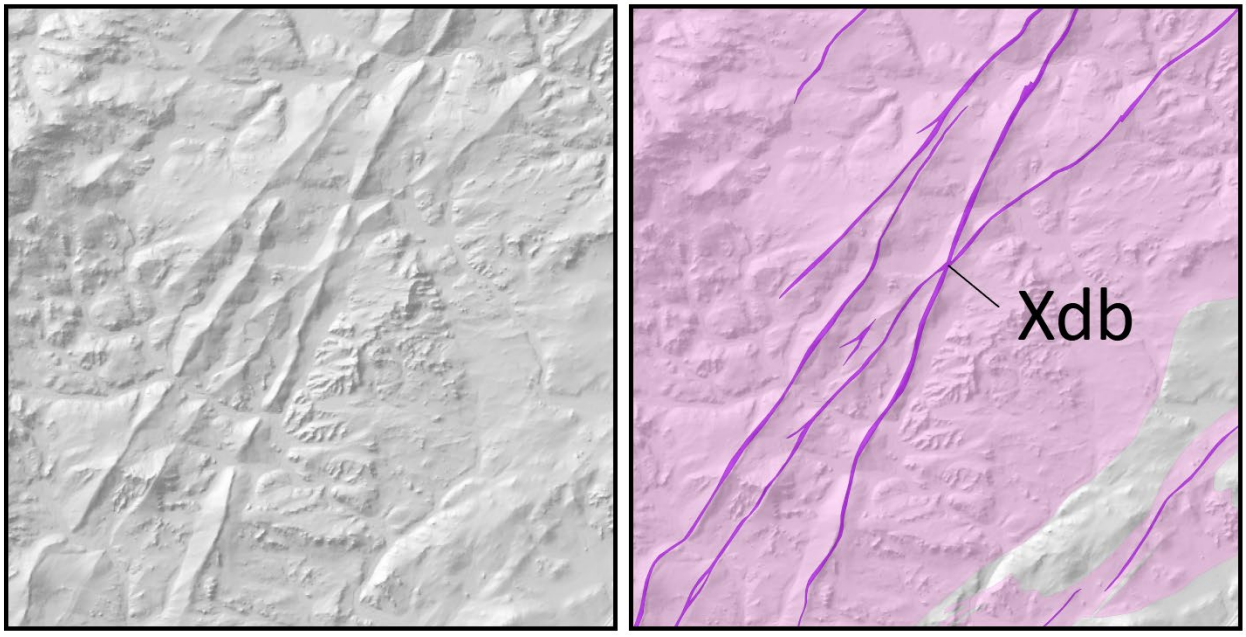


Figure 21. Digital elevation model of a portion of the Louis Lake batholith (left) overlain by GIS geology polygons of map units Wgd (pink) and Xdb (purple).

Harlan and others (2003) completed a paleomagnetism study of the prominent quartz diorite dike ***(Xqd)*** east of Lewiston and reports a U–Pb analyses of baddeleyite and zircon concordia upper intercept age of 2170 ± 8 Ma for this dike. As well, they used these data to interpret an apparent polar wander path of the South Pass greenstone belt back to the southern margin of the Superior craton (Fig. 2).

Precambrian Structure - South Pass Granite-Greenstone Terrane

The supracrustal rocks of the South Pass granite-greenstone belt have been affected by a long and complex deformation history that yielded discrete structures favorable for developing orogenic gold mineral systems (Bow, 1986; Hausel, 1991). While writing this guidebook, the author has developed an interpreted four-phase structural history (D_1 to D_4) that seemingly accounts for many of the features mapped by BRE and others within the South Pass granite-greenstone terrane. Also, this new structural history interpretation, which is given in Table 2, attempts to fit the holistic model presented herein for the formation of the South Pass greenstone belt (Figures 9 and 13).

Table 2. Interpreted structural history of the South Pass granite-greenstone terrane.

AGE	EVENT	DETAILS	RESULT
Neoarchean	D_1	Compression due to thrust stacking and accretion of supracrustal sequences onto proto craton	Isoclinal folding of sedimentary rocks, development of bedding parallel foliation, amphibolite facies metamorphism
Neoarchean	D_2	Subhorizontal regional transpression focused via reactivation of primary D_1 thrust faults	Mylonite development along primary structures, pop-up flower structure shears developed in adjacent rocks, orogenic gold mineralization
Neoarchean	D_3	Doming due to Phase 2 & 3 granitoid events, minor localized refolding of metasedimentary rocks	Contact metamorphism of supracrustal rocks adjacent to granitoid intrusions, late brittle faulting
Early Tertiary	D_4	Laramide Orogeny	Development of the Wind River Thrust and Continental Faults, reactivation of Archean structures, late brittle faulting

D_1 - Supracrustal Sequence Assembly

The first major episode of compressive deformation and metamorphism began in response to the collision of Archean supracrustal bathymetric highs onto the margin of a gneissic (map unit ***Wgn***) Archean craton as presented in Figures 9 and 13. Results of this deformation includes the rotation of all units into sub-vertical orientations and northeast trending, tight, upright or isoclinal folds in the Miners Delight Formation. Continued compressive deformation produced regional foliation, localized shearing, and transposed layering parallel to the original bedding. In many places, the original bedding was obliterated and overprinted by foliation. Isoclinal axial fold surfaces parallel regional foliation, suggesting the foliation formed during development of the isoclinal folds (Hausel, 1991). The regional lithological & structural architecture of the supracrustal rocks of the South Pass greenstone belt we see today was largely formed during the first deformation (D_1) event. This architecture includes the **primary structures** (i.e., Roundtop & Oregon Trail Faults that separate metagreywackes of the Miners Delight Formation from the “greenstones” of the Diamond Springs, Goldman Meadows, and Roundtop

Mountain Formations) that began as thrust faults and at the end of D_1 become subvertical, terrane-bounding deep-seated structures into the newly accreted continental crust.

This initial episode of deformation was accompanied by regional metamorphism to amphibolite grade, except for a small region surrounding Roundtop Mountain along the northern margin of the greenstone belt that was raised to greenschist facies. Amphibolite-facies metagreywackes and pelitic schists are represented by the assemblage oligoclase-quartz-biotite-garnet-andalusite (or cordierite). The andalusite is typically replaced by sericite and quartz. Greenschist-facies basaltic rocks on Roundtop Mountain are represented by the common chlorite grade assemblage, chlorite-actinolite-albite-epidote.

D_2 – Transpressional Induced Shearing

The second phase of Archean deformation is interpreted to have formed due to a transpressional event that focused sub-horizontal strike-slip motion along the deep-seated primary structures developed in D_1. Results of D_2 strain can be seen in outcrop (Fig. 22) as well as in the district-scale geology map (Fig. 23) and associated interpreted geologic cross section (Fig. 24).

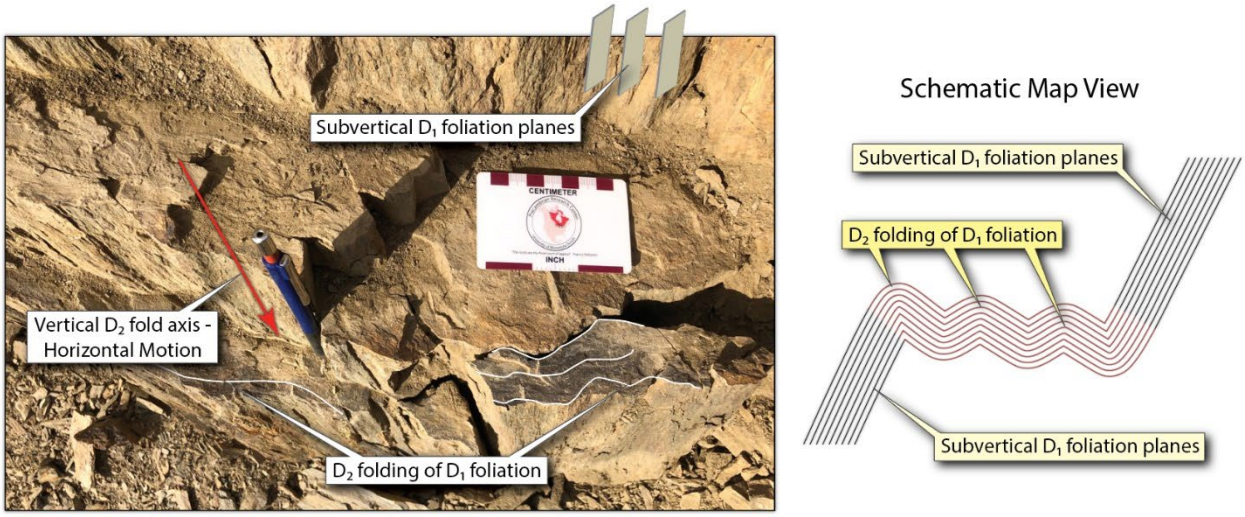


Figure 22. Outcrop photograph within the 70 meter-wide mylonitic zone (see Fig. 12) of the Roundtop Fault where D_2 folding of subvertical D_1 foliation is ubiquitous.

Orogenic gold mineralization within the South Pass granite-greenstone terrane is interpreted to be synchronous with late phases of D_2 when lower crustal metamorphic fluids were tapped by D_2 motion of the D_1 terrane-bounding primary structures. Buoyant auriferous hydrothermal fluids rose upwards through the crust along the primary structures and became focused in the middle to upper crust along secondary D_2 shear zones (Fig. 25) that formed in zones of compression about the primary strike-slip motion planes (i.e., the Primary Roundtop & Oregon Trail Faults).

Hausel (1991) states that the lode-gold mineralization within the district is located within foliation-parallel shear zones that in the Lewiston district appear to be relatively simple, paralleling the limb of a regional fold. In the South Pass-Atlantic City district, most of the shears are more complex, paralleling foliation along or adjacent to lithologic contacts with rocks of contrasting competency. During D_2

deformation, the original D_1 folds within the Miners Delight Formation were strongly deformed into broad synform-antiform arches (Bayley and others, 1973). The folding style associated with this event is typically open folding with fold axes nearly perpendicular to the first-stage fold hinges. Many small-scale folds related to this event plunge steeply southeast to southwest and have chevron geometries (Hausel, 1991).

D_3 – Pluton Doming

The third phase of deformation was synchronous with the emplacement of granodiorite and isolated dome-like granite plutons (second and third granitic event plutons) and was accompanied by local contact metamorphism and metasomatism. Secondary microcline replaces primary feldspar and some sillimanite developed in the gneiss adjacent to the Louis Lake batholith north of Anderson Ridge. Minor remobilization of gold may have occurred at this time. This stage of deformation may have been synchronous with secondary folding and contact metamorphism.

A **retrograde metamorphic event** occurred at 1.4 Ga. Biotite interpreted to have formed from metamorphic fluids in a fault zone within the Louis Lake batholith west of Iron Mountain yielded a 1.4 Ga. K-Ar date (Bayley and others, 1973). This event produced broad areas of secondary epidote and chlorite in the Louis Lake batholith. Lower Proterozoic mafic dikes that cut the batholith exhibit some actinolite-chlorite-epidote alteration, and rocks of the bordering gneiss complex are sericitized and chloritized (Bayley and others, 1973).

D_4 – Laramide Orogeny

A description of the Laramide orogeny is well beyond the scope of this report. The fourth deformational event D_4 produced brittle fracturing in response to the uplift of the South Pass region by the Wind River Thrust during the Laramide orogeny. Structures of this event are quite distinct from the earlier ductile fault or shear zone systems that predominantly parallel isoclinal fold hinges and foliation. These much later brittle faults bear no obvious relationship to the older structural fabric in most cases. Many Laramide structures cut regional foliation and bedding at high angles. A few Archean structures were reactivated during the Laramide orogeny. Reactivated Archean structures include the Roundtop and Anderson Ridge faults where ductile Archean foliation and mylonitic textures are overprinted by brittle buckle folds with chevron and kink geometries as well as late carbonate-filled breccias.

Analysis of D_2 Structures & Orogenic Gold

Perhaps the best way to get a glimpse of the interpreted structural architecture of the South Pass granite-greenstone terrane is to look at the new geologic cross section, presented at a scale of 1:50,000 on Plate 1, in a bit of detail. The location map presented in Figure 23 displays the location of the line of cross section A – A' (Fig. 24) as well as the compiled and modified structural elements (faults and shear zones) categorized into the deformation events outlined on Table 2.

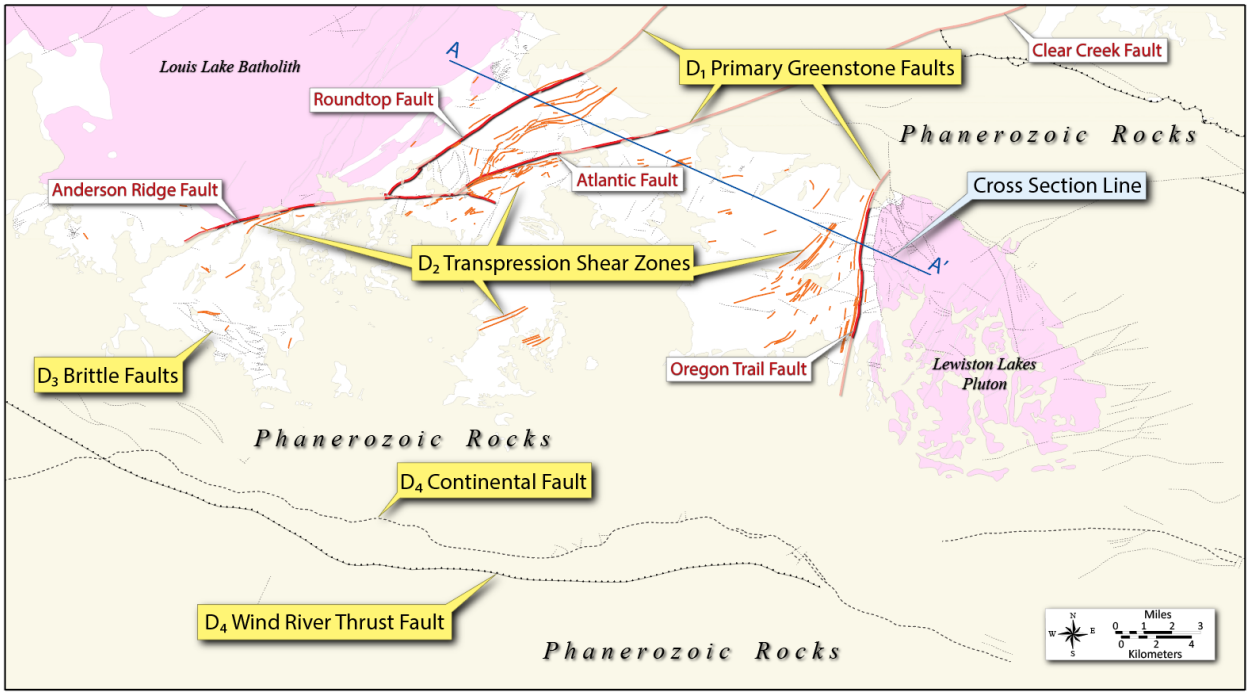


Figure 23. Location map of cross section A – A' and associated deformation event structural elements.

There are several fundamental questions on the structure and architecture of the South Pass granite-greenstone terrane that remain unanswered with the data in hand. First and foremost is the relationship of the Roundtop and Oregon Trails Faults. Do these structures connect to the northeast beneath the Phanerozoic cover? Are these the same fault? How does the Anderson Ridge and Atlantic/Clear Creek faults relate to the Roundtop Fault?

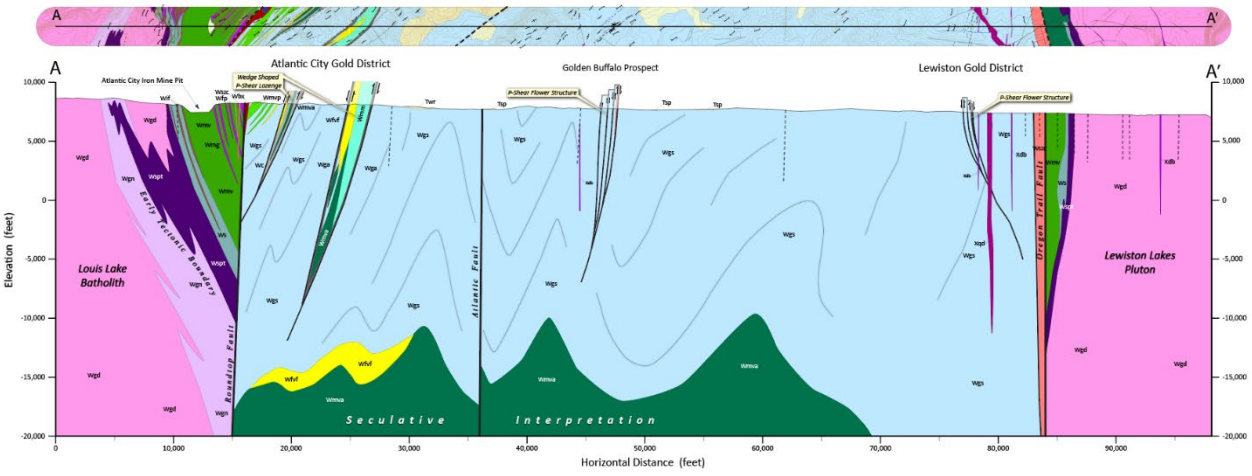


Figure 24. Geologic cross section A-A' across the South Pass granite-greenstone terrane.

The geological cross section presented in Figure 24 highlights the authors interpretation of the geology and structure of the South Pass granite-greenstone terrane with the data in hand and utilizing several decades of experience working in Archean granite-greenstone belts of the Canadian Shield. This

experience includes the recognition that secondary shear zones are ultimately linked to the primary structures as depicted in Figure 25.

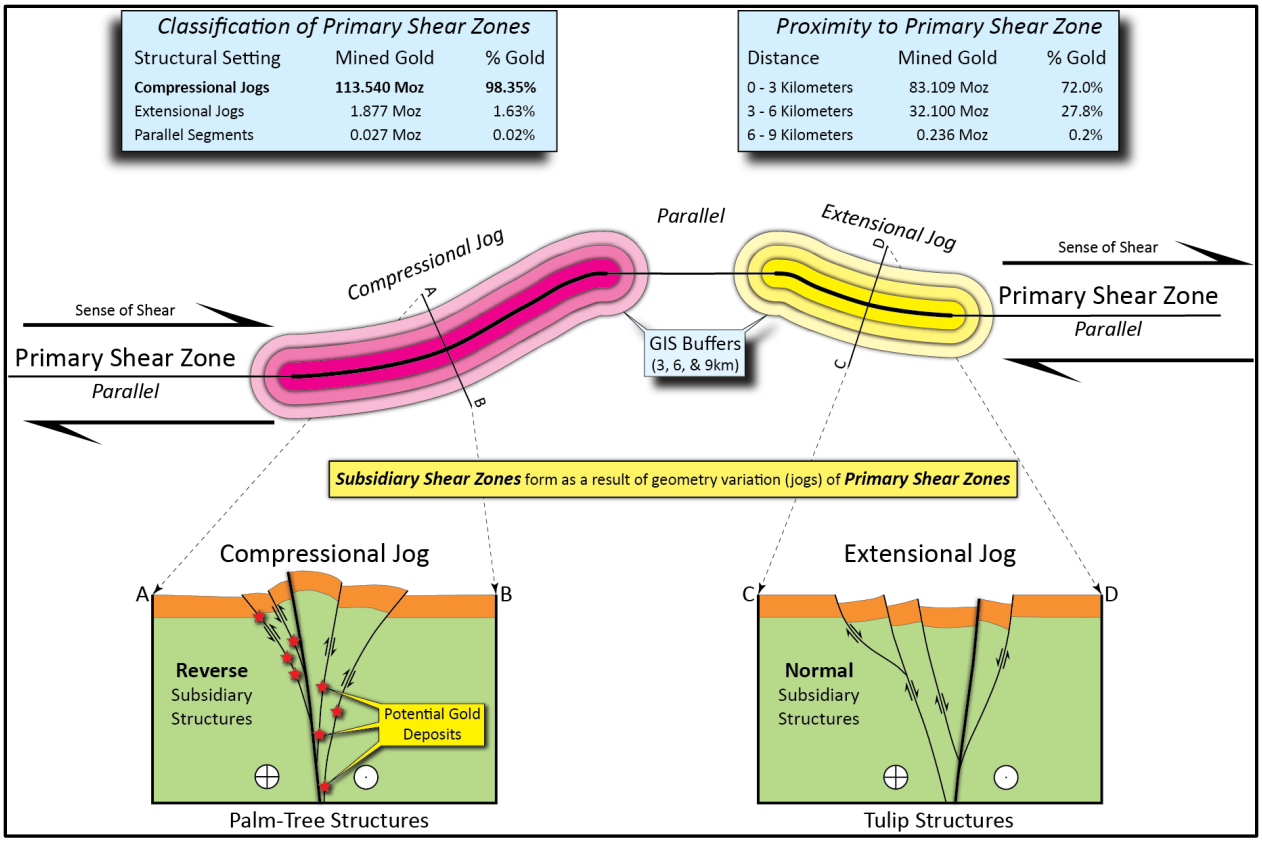


Figure 25. Visual representation (schematic map & cross-sectional views) and tabular results of Peterson's (2001) analysis of orogenic gold mines and major structures in the analog mining camps.

The cross-section interpretation of these secondary structures at depth goes several orders of magnitude below any known data, which would be 400 feet at the Carissa Mine. However, the geology and structures related to Archean orogenic gold systems worldwide are known to extend to depths up to 10,000 feet. Closeup views of the cross section given in Figure 24 are presented for the Atlantic City Gold District in Figure 26, the Golden Buffalo prospect in Figure 27, and the Lewiston Gold District in Figure 28 respectively.

Unlike the Golden Buffalo prospect and the Lewiston Gold District where metagreywacke ***(Wgs)*** literally forms ~99% of the rocks in the immediate area, the Atlantic Gold District has more variable mapped geology including amphibolite ***(Wmva)***, pillowed andesite (***Wmvp)***, dacitic fragmental rocks ***(Wfvf)***, and mixed volcanic and sedimentary rocks ***(Wmm)***. The act of creating the new geologic compilation map and seamless digital datasets by the author set in motion some new interpretations of the geologic and structural framework of the area, which includes the Atlantic City Gold District. One of the new interpretations is the hypothesis that many of these variable rock units are coherent shear-bounded

blocks of rock that were transposed upwards in wedge-shaped shear zones (Fig. 25) during D_2 transpression.

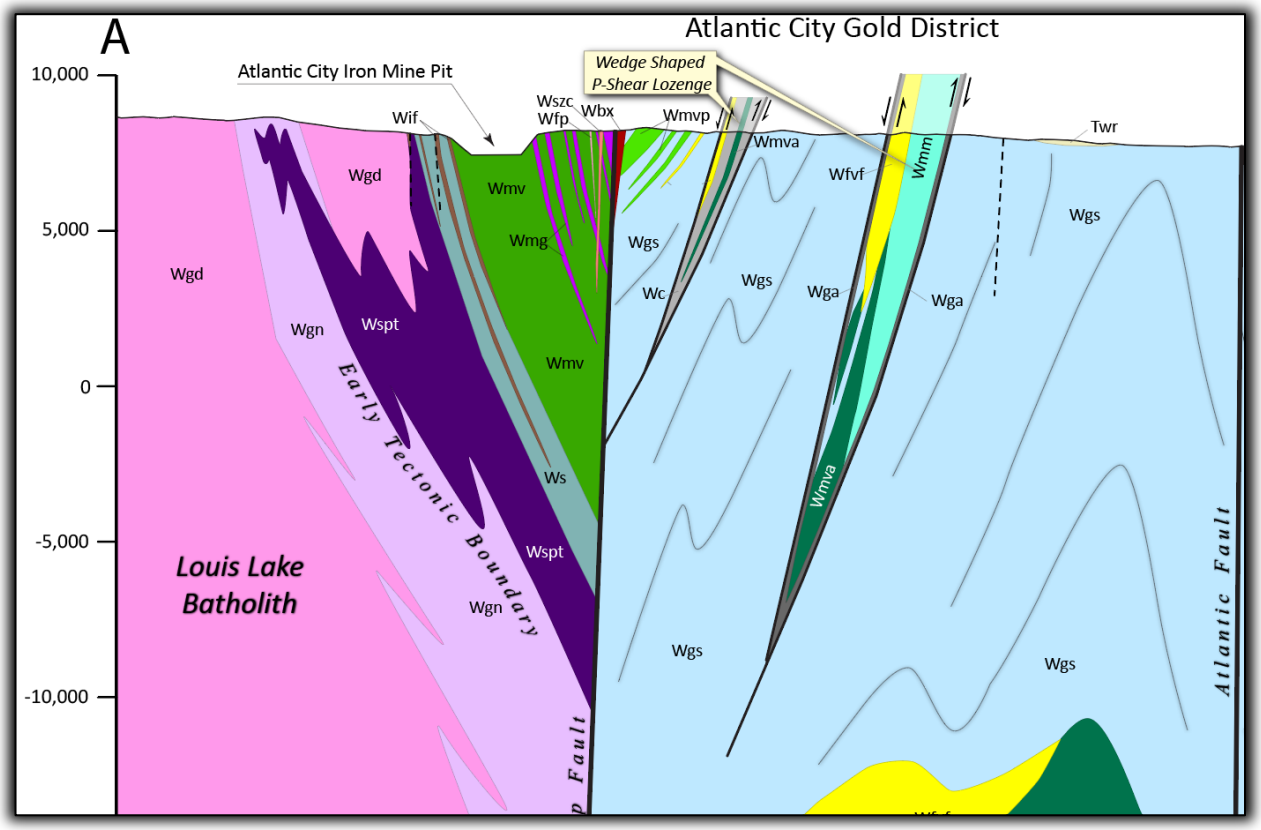


Figure 26. Geologic cross section through the Atlantic City Gold District.

It is much more difficult to develop a true understanding of the structural setting of the Golden Buffalo prospect and Lewiston Gold District areas since essentially all the exposed rocks are similar looking metagreywacke ***(Wgs)***. However, discrete zones of shearing have been mapped (Hausel, 1991) and are interpreted by the author to be upwards transposed wedges of metagreywacke (Wgs) that were caught up in reverse-motion flower structure P-shear zones during D_2 transpression. The cross-sectional views of this interpretation are given in Figure 26 for the Golden Buffalo prospect and in Figure 27 for the Lewiston Gold District.

Analysis of the architecture, geology, and structure within the South Pass granite-greenstone terrane leads to a strong inference that all the known orogenic gold mineralization within the district is related to secondary shear zone structures developed during D_2 transpression. Such a structural setting is common within Archean orogenic gold camps and it has become quite clear to the author, BRE staff, and RGC that the auriferous secondary shear zones throughout the South Pass granite-greenstone terrane are largely Reidel P-shears, and the simplistic views of three areas (Figures 26-28) do not give any details of what one may see at depth during drilling.

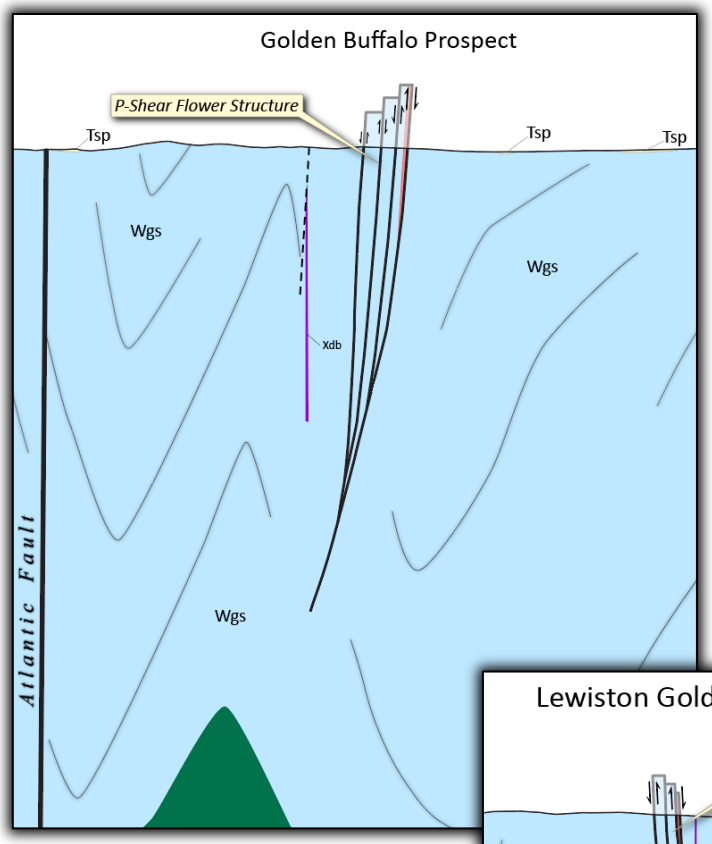


Figure 27. Geologic cross section of the Golden Buffalo Prospect.

Schaubs and Wilson (2002) described in detail the relative roles of folding and faulting in controlling orogenic gold mineralization in the Victoria goldfields of Bendigo, Australia, where the hosts rocks are largely interbedded greywacke-slates like the Miners Delight Formation. A modified version of Schaubs and Wilson's (2002) Figure 6A is given in Figure 29, which highlights some of the auriferous quartz vein settings that may occur adjacent to the P-shear structures identified in the South Pass granite-greenstone terrane.

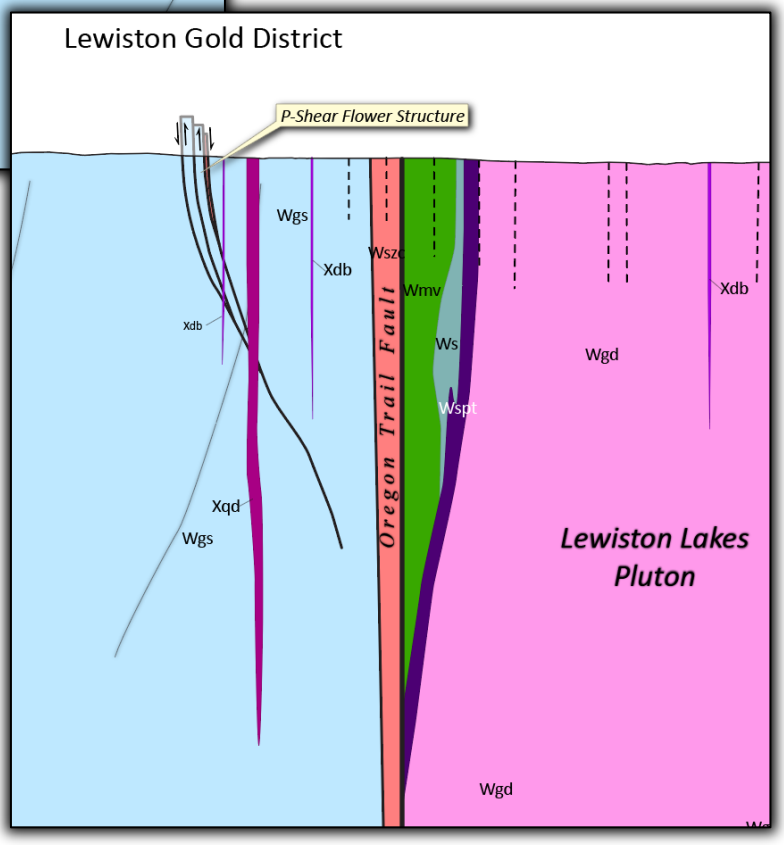


Figure 28. Geologic cross section through the Lewiston Gold District.

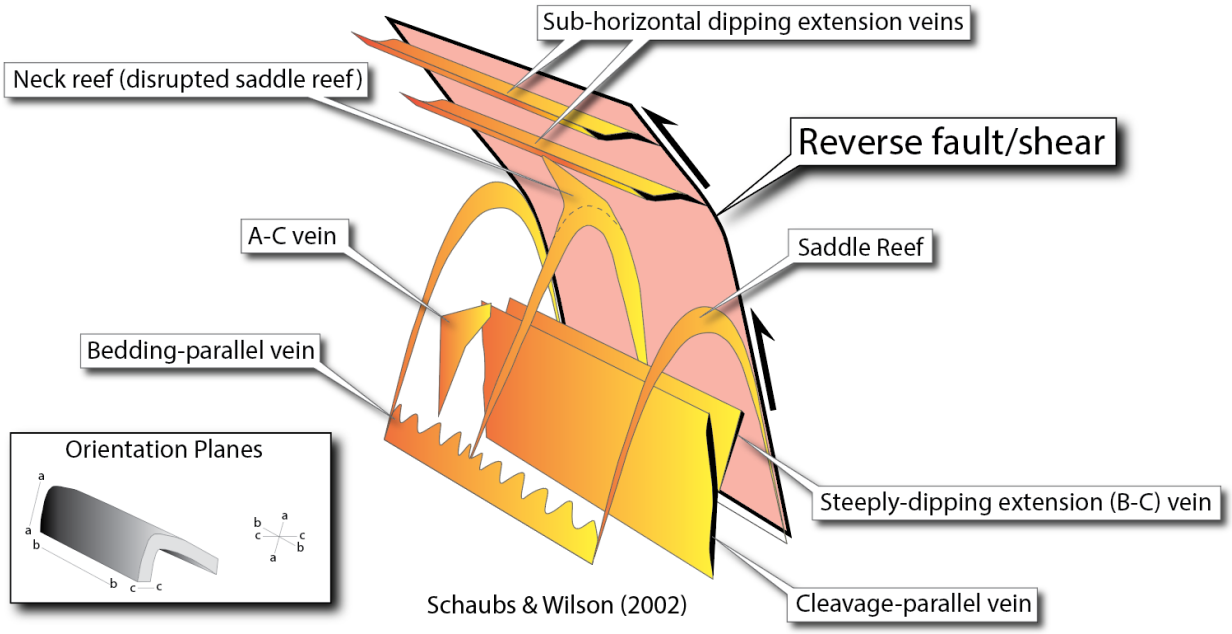


Figure 29. Three-dimensional diagram of auriferous quartz vein types identified along the Deborah anticline of the Bendigo gold fields, Victoria, Australia. Modified from Schaubs & Wilson, 2002.

Precambrian Mineralization - South Pass Granite-Greenstone Terrane

Gold was first discovered in the Lewiston district of the South Pass granite-greenstone belt in 1842 along the eastern margin of the complex. Other discoveries followed, including the discovery of high-grade gold mineralization at the Carissa Mine along the central portion of the greenstone belt in 1867. Some high-grade gold was recovered from the Lewiston and the South Pass-Atlantic City districts, and one large 34-ounce placer gold nugget that was recovered from Rock Creek along the western flank of the greenstone belt resides in the Los Angeles Museum of Natural History. In addition to hard rock and placer gold, a significant iron ore deposit was found along the northern edge of the South Pass greenstone belt. Some minor copper, silver, tungsten, asbestos, and granite pegmatite beryl/ruby have also been reported within the region. A map depicting the general location of these styles of mineralization within the South Pass granite-greenstone terrane is presented in Figure 30 and brief descriptions of these mineralization types are provided in the subsections below.

Orogenic Lode Gold

Accounts of past producing gold properties in the South Pass Greenstone Belt (Bow, 1986; Hausel, 1991) document historic mining on a small scale, at narrow widths, and largely confined to oxidized ores associated with shear zones that were mined above the water table (<80 feet). Available data suggests that much of the strike length of a given shear-hosted vein system is anomalous in gold with localized steeply plunging high-grade ore shoots systematically occurring parallel to the trend and plunge of stretching lineations within shear zones.

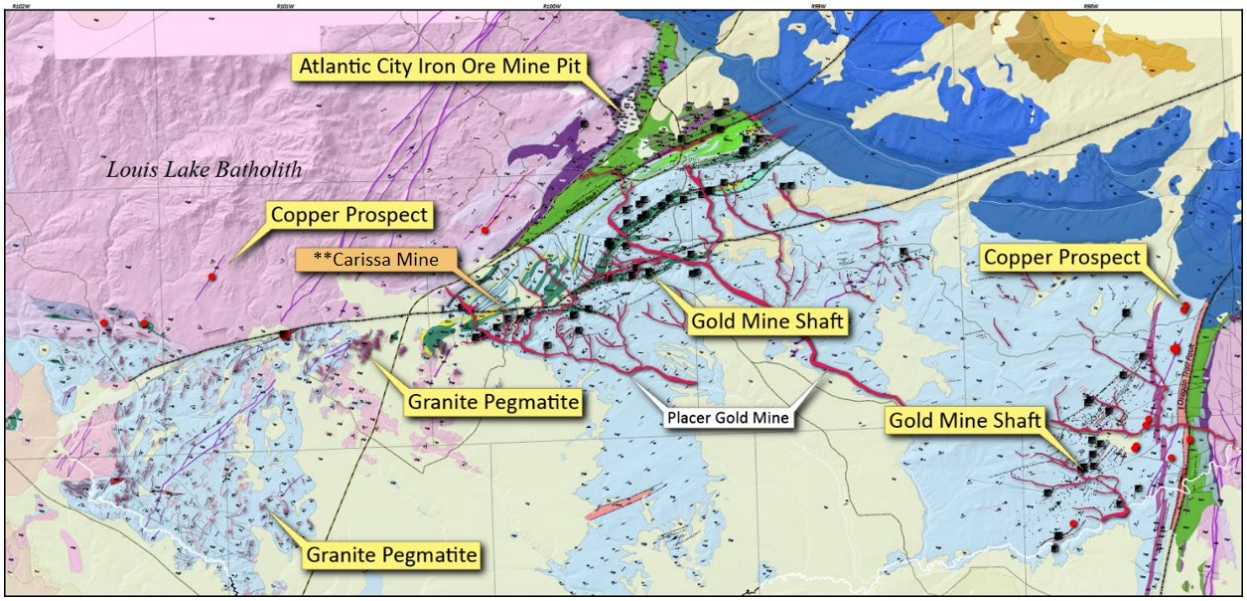


Figure 30. Location map of the various styles of mineralization within the South Pass granite-greenstone terrane.

The deepest and best documented gold mine in the South Pass granite-greenstone terrane is the Carissa Mine immediately outside of South Pass city (see Fig. 30 for location). The mine was developed down to a depth of 400 feet along five main levels along a shear zone composed of quartz-biotite-hornblende schist ***(Wmva)*** with abundant gold-bearing quartz-arsenopyrite-pyrrhotite veins. The shear strikes 70° and dips 85° to the north. A vertical long-section, redrafted from H.S. Macfarlane's 1995 report on the Carissa Property for the Carissa Mining Corporation, parallel to the strike of the main ore zone is presented in Figure 31 and shows the steep raking nature of gold-rich zones within the plane of the main shear zone.

Big Rock Exploration's (BRE) recent work in the South Pass greenstone belt confirms the observations of Bow (1986) and Hausel (1991) who showed that gold mineralization is associated with shear zone hosted quartz veins and vein arrays. As well, gold mineralization generally correlates with biotite and sulfide content (pyrrhotite>pyrite>arsenopyrite), and the shear hosted quartz veins generally display 3- to 10-meter-wide alteration envelopes of bleached, sericitized and/or silicified greywacke.

Placer Gold

Gold in placers (Fig. 30) is concentrated at or near bedrock and in some layers above bedrock on impermeable clay. Most nuggets recovered in recent years are irregular to flat, often having rounded to jagged edges. For the most part, these nuggets give the impression of mechanical transport. Microscopic gold from Wilson Bar in the Lewiston district was reported by Day and others (1988) to be of two types: (1) rounded to irregular shaped gold suggestive of mechanical transport, and (2) wire gold derived from a nearby lode or geochemically precipitated.

Historical information on recovered nuggets is notably lacking, but the available reports describe nuggets weighing up to 5 ounces (Hausel, 1991). Two samples found on Rock Creek before 1905 are of particular interest. One was described as a fist-size piece of gravel covered and filled with about 24

ounces of gold, suggesting it was a nugget with mixed country rock. The other rock specimen reportedly contained an estimated 630 ounces (nearly 40 pounds) of gold (Wyoming Industrial Journal, 1905, v. 6, no. 12, p. 18). Other heavy minerals, scheelite and cassiterite, were identified in concentrates from the Stout placer on Rock Creek. Scheelite also occurs in the Crow's Nest placers east of Atlantic City, and both scheelite and cassiterite were identified in placers in the Lewiston district (Day and others, 1988).

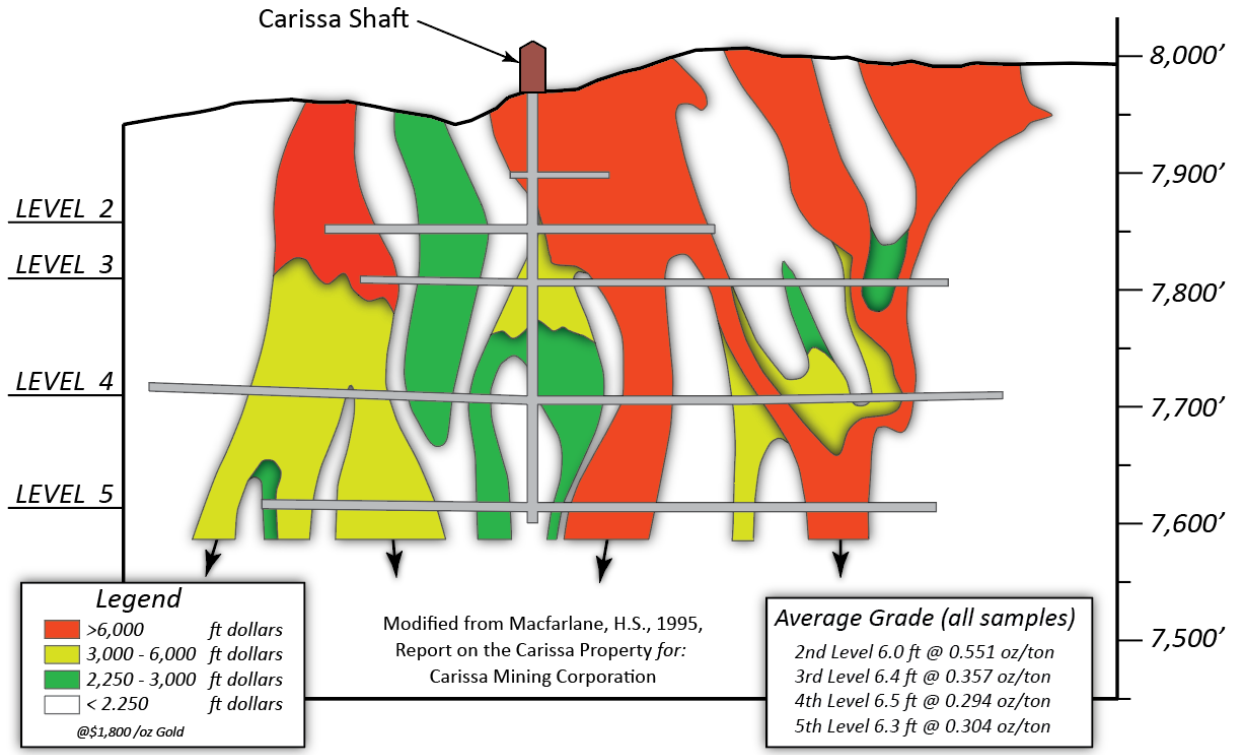


Figure 31. Long section through the Carissa Mine.

Iron Ore

The discovery and development of the Atlantic City iron ore mine (Fig. 30) in the Goldman Meadows Formation of the South Pass greenstone belt is one that grew out of the consequences of the Japanese bombing of Pearl Harbor on December 7, 1941. As a result of an immediate need for steel, the U.S. government built a fully integrated steel plant at Provo, Utah where all the needed raw materials were located within the state or nearby. The steel plant was operated as a government facility until June 1946 when it was sold to U.S. Steel Corporation. By the early 1950's the quality and quantity of the iron ore deposits in Utah were diminishing and there was a need to discover and develop a new iron ore source to supply the plant. In June 1953, U.S. Steel hired Dr. Paul Procter (head of the geology department, Missouri School of Mines) and Chuck Dahl, who was his field assistant, to search for a deposit of taconite iron formation in southern Wyoming. By August of that year, they had worked westward to the south end of the Wind River Mountains. Development of the large taconite (iron ore) deposits in the 1950s led to the opening of the Atlantic City iron mine, which produced more than 90 million tons of iron ore between 1962 and 1983 from banded iron formation in the Goldman Meadows Formation.

Copper Prospects

Bayley et al. (1973) describe the copper prospects of the South Pass granite-greenstone terrane (Fig. 30) as thin gold-bearing quartz-calcite veins, also containing chalcopyrite, that occur in shear zones related to the major faults. The faults displace the gold-quartz veins described above, and therefore the copper-gold veins in the fault zones represent a separate and later epoch of mineralization. The veins are commonly only a few inches thick. They have been extensively prospected by test pitting, but nothing has been produced from them. Assayed samples from three test pits show traces of gold, and spectrographic analyses show up to 5 percent copper. The copper is found in chalcopyrite and malachite. Limonite stains most exposures, and most chalcopyrite seen is partly altered to limonite. The wallrocks adjacent to this set of veins, mostly sheared and brecciated sericite-altered graywacke, are rather soft and bleached and found in zones as much as 100 feet wide along certain of the major east-trending faults.

Granite Pegmatites

Pegmatites in the Anderson Ridge area (Fig. 30) enriched in microcline were selectively mined after the Second World War for feldspar. These coarse-grained granites also contain minerals of interest to collectors, such as schorl tourmaline, green tourmaline, aquamarine beryl, green beryl, tantalite, arsenopyrite, and almandine garnet (Hausel, 1991).

[INSERT TAB PAGE HERE]

VI. FIELD STOPS – BRADLEY PEAK GREENSTONE BELT

Eight field stops have been identified that display some of the classic features of the Archean Bradley Peak Greenstone Belt exposed in the Seminoe Mountains of the Wyoming Province. Such features include stratigraphy, structure, alteration, and mineralization. A location map of the eight field stops is given in Figure 32, followed by short descriptions of each of the field stops

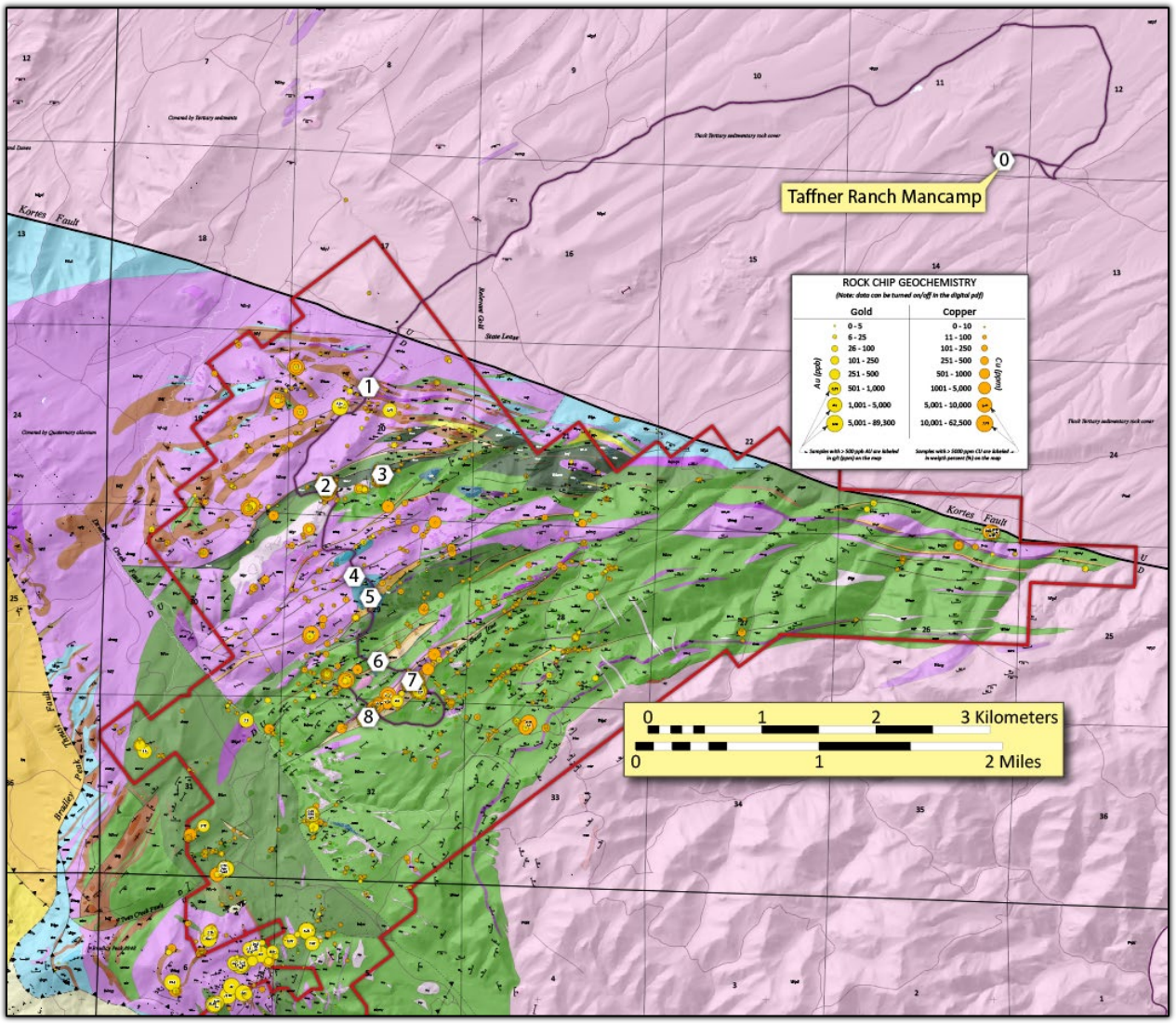


Figure 32. Location map of field stops in the Bradley Peak area.

Stop 1: Iron Formation & Gabbros

The first quick stop on the Bradley Peak field tour includes sub-vertical exposures of chert-magnetite-grunerite iron formation (Wif) and metagabbro (Wmg) from the top of the metavolcanic sequence at Bradley Peak (Fig. 33). The iron formation displays beautiful soft-sediment chevron folding that can be observed immediately adjacent to the roadway. These exposures show the outcome of millions of years of differential weathering and erosion and are perfect examples of the authors field tenet “the distribution of outcrop is neither random nor representative”.



Figure 33. Outcrops of banded iron formation (Wif) and metagabbro (Wmg), University of Wyoming field camp students for scale.

Stop 2: Kortes Spinifex-Textured Komatiites and Cu-bearing Granitoids

At stop #2 we'll look at some exposures of spinifex-textured (Fig. 35) and schistose komatiites that are exposed immediately north of the APEX access roadway (Fig. 34). Immediately to the south are small Au-Cu bearing pits & piles from historic trenching within of the largest known late granitoid on the property.

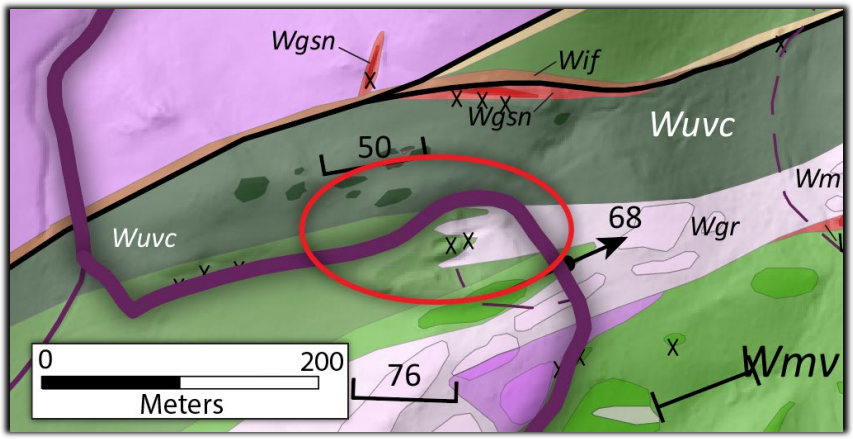


Figure 34. Geology map of Stop #2.



Figure 35. Scattered boulders of spinifex-textured komatiite.

Stop 3: Kortes East - Copper-rich Quartz Veins

Approximately 500 meters east of Stop #2 is an area of complex geology hosting two NE-striking copper-rich quartz veins (Fig. 36). These copper-rich veins have very interesting geochemistry which includes precious metals, pathfinder metals, and base metals (Table 3). The complex quartz veins are hosted in tholeiitic (Wmv) and komatiitic (Wuv) metavolcanic rocks and are cut by a Late Archean granitoid (Wgr) intrusion and Paleoproterozoic diabase dikes and irregularly shaped intrusions (Xdb).

Table 3. Geochemistry of quartz vein rock samples from Stop #3.

	Precious Metals		Pathfinder Metals								Base Metals		
CODE	AU	AG	AS	BI	MO	SB	SE	SN	TE	W	CU	PB	ZN
Wqv	0.879	3.2	514.5	19.4	3.4	2.0	10.0	0.4	12.7	1.7	33,650	11	1,163
Wqv	0.414	4.4	178.3	14.6	4.0	9.9	46.0	0.5	10.0	2.6	13,770	47	2,007
Wqv	0.274	5.6	267.2	27.3	11.5	9.2	51.0	2.1	14.6	0.8	49,740	12	3,246
Wqv	0.181	3.8	680.4	16.4	5.4	13.0	81.0	1.3	9.5	1.0	2,441	322	1,150
Wqv	0.148	2.1	220.3	10.0	0.6	7.6	32.0	1.3	6.5	1.0	742	13	835
Wqv	0.134	100.0	177.5	16.1	5.2	1.6	145.0	0.8	11.4	1.2	62,500	10	599
Wqv	0.121	8.4	324.6	27.3	1.0	3.7	218.0	1.8	24.6	3.8	12,460	16	1,702

Note - All analytical values in ppm

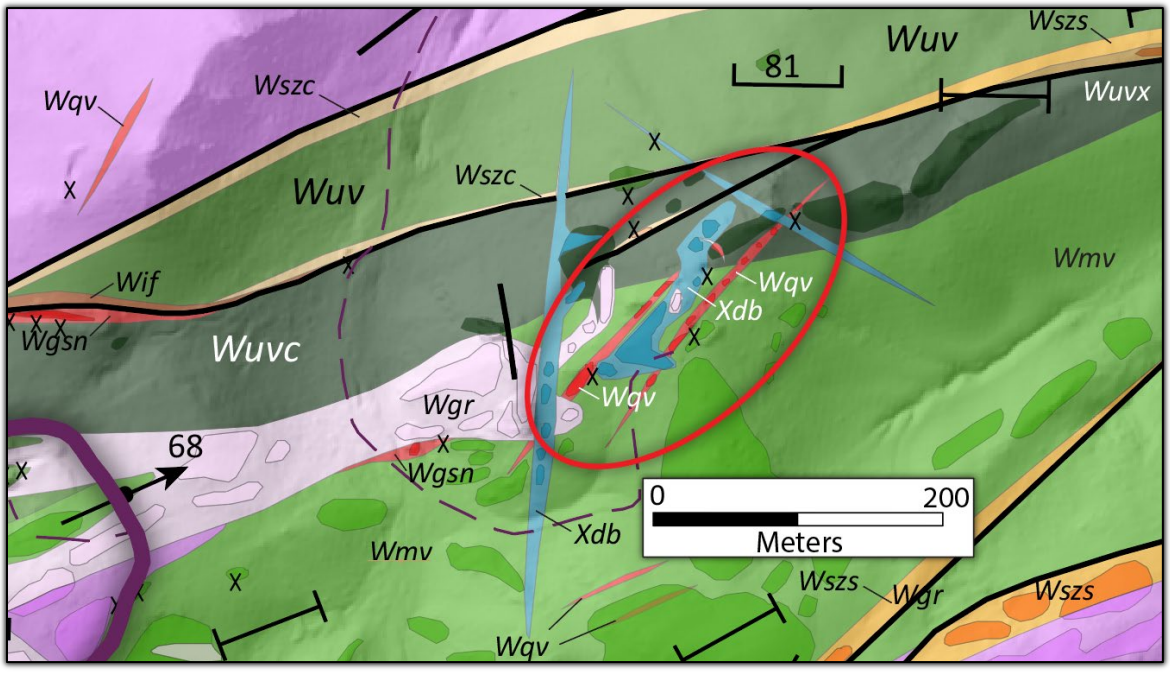


Figure 36. Geologic map of Stop #3.

Stop 4: Sericite-Ankerite-Chlorite Shear with Lineated Quartz Rods

An interesting outcrop of sericite-ankerite-chlorite schist was observed and mapped by the author during a June 2026 field stint and perhaps represents one of the most highly deformed rocks in the project area. The outcrop is unique due to the pervasive presence of finger-size lineated quartz rods (Fig. 37) plunging 70° to the NE at a trend of 054°. The location of stop 4 is given in Figure 38.



Figure 37. Outcrop (A) and detailed (B) photos of the lineated shear zone of Stop #4.

Stop 5: CPEX Shear Zone

In June of 2026 a large area (~500m x 150m) of grey, fine- to medium-grained, rusty weathering sericite-ankerite-fuchsite-chlorite schists with abundant quartz veins interlayered with black weathering, emerald-green ultramafic schists were discovered along the roadway to the APEX drilling area (Fig 38). This newly discovered significant zone of shearing has been tentatively named the CPEX shear zone, and its sigmoidal has striking similarities to the BPEX and APEX shear zones immediately to the south, as can be seen in the geologic map presented in Figure 38. Photographs of a CPEX outcrop area and a closeup view of the rusty nature of the CPEX shear zone rocks are presented in Figure 39.

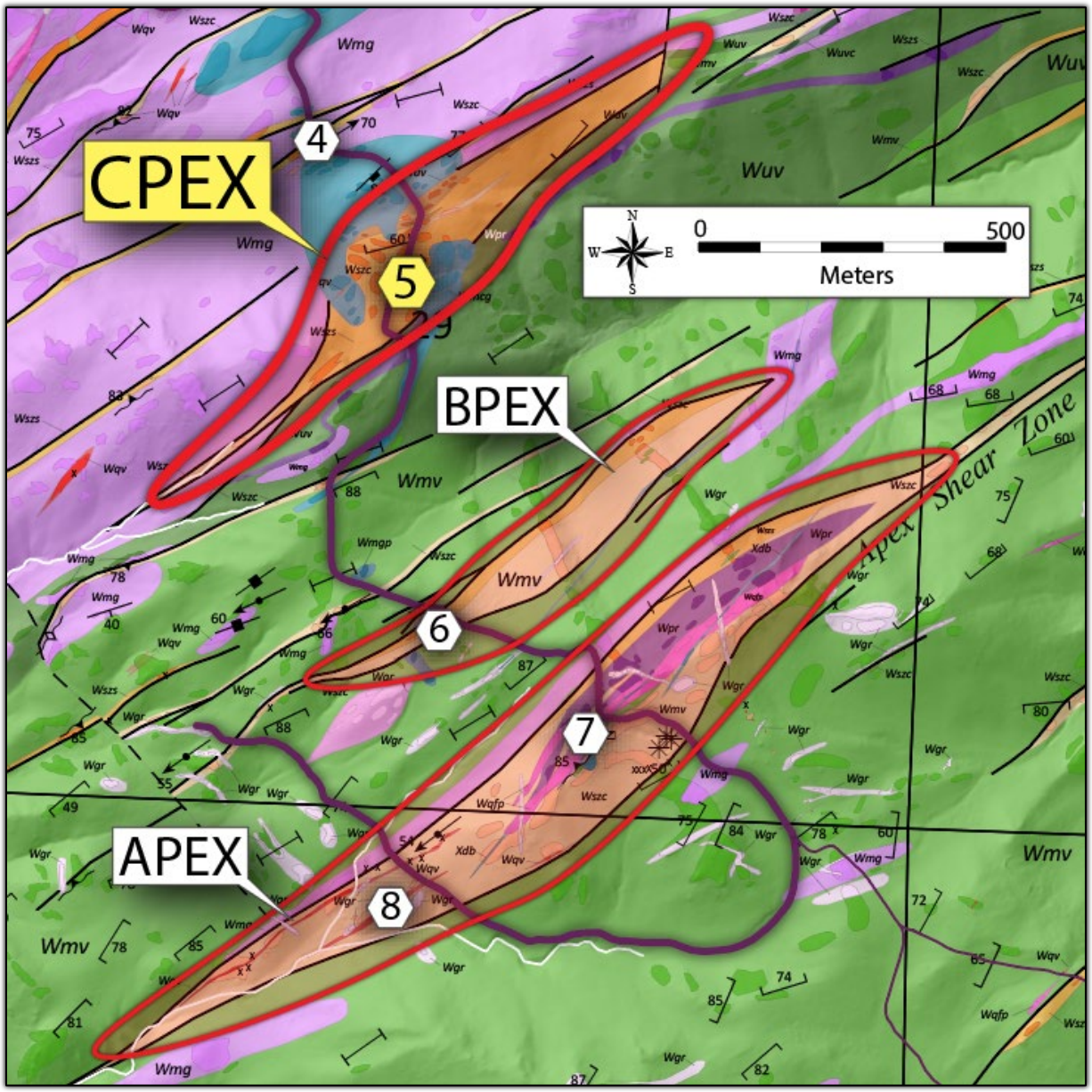


Figure 38. Bedrock geologic map of field trip stops 5-9, highlighting the CPEX (Stop #5), BPEX (Stop #6), and APEX (Stops 7-8) shear zones. Note the structural similarities and sigmoidal shapes of these zones of shearing.



Figure 39. Outcrop (A) and closeup photographs from the CPEX shear zone.

Stop 6: BPEX Shear Zone

The BPEX shear zone (Fig. 38) was initially discovered in early June 2025 by RGC's Brian Lentz during the University of Wyoming field camp and mapped in some detail by later in the 2025 field season by the author. This shear zone consists of a narrow NW marginal zone of rusty quartz-sericite-fuchsite-ankerite schist that abruptly transitions to the SE to a dark-green, fine-grained chlorite schist with local quartz-epidote alteration. Abundant quartz veins occur throughout the BPEX shear zone. In addition, a 2025 drill pad constructed 30m to the NW of the mapped BPEX shear zone exposed a narrow (~1.5m) zone of rusty-weathering, strongly lineated sericite schist (Fig. 40).



Figure 40. Outcrop view of a narrow rusty zone in a strongly lineated sericite schist.

2025 Apex Drill Program

On January 21, 2026, RGC reported its results from its 2025 diamond drill program at the Apex Shear Target, part of the 100%-owned Bradley Peak Gold Camp in the Seminoe Mountains, central Wyoming. A plan view map of the 2025 APEX drilling is presented in Figure 41 and cross-section in Figure 42. The 5,102m HQ diamond core drilling program, the first ever completed at Apex, has confirmed the presence of a large, fertile Archean orogenic gold system, such as those in the Canadian Abitibi Belt, characterized by:

- *Consistent anomalous gold mineralization (>50 ppb Au) in all 12 drillholes,*
- *A continuous 70–100 m wide gold-bearing shear corridor hosted in favorable greenstone rocks,*
- *Intense hydrothermal alteration, quartz-carbonate veining and sulfide mineralization, and*
- *A strong multi-element pathfinder geochemical signature typical of Abitibi-style Archean gold systems.*

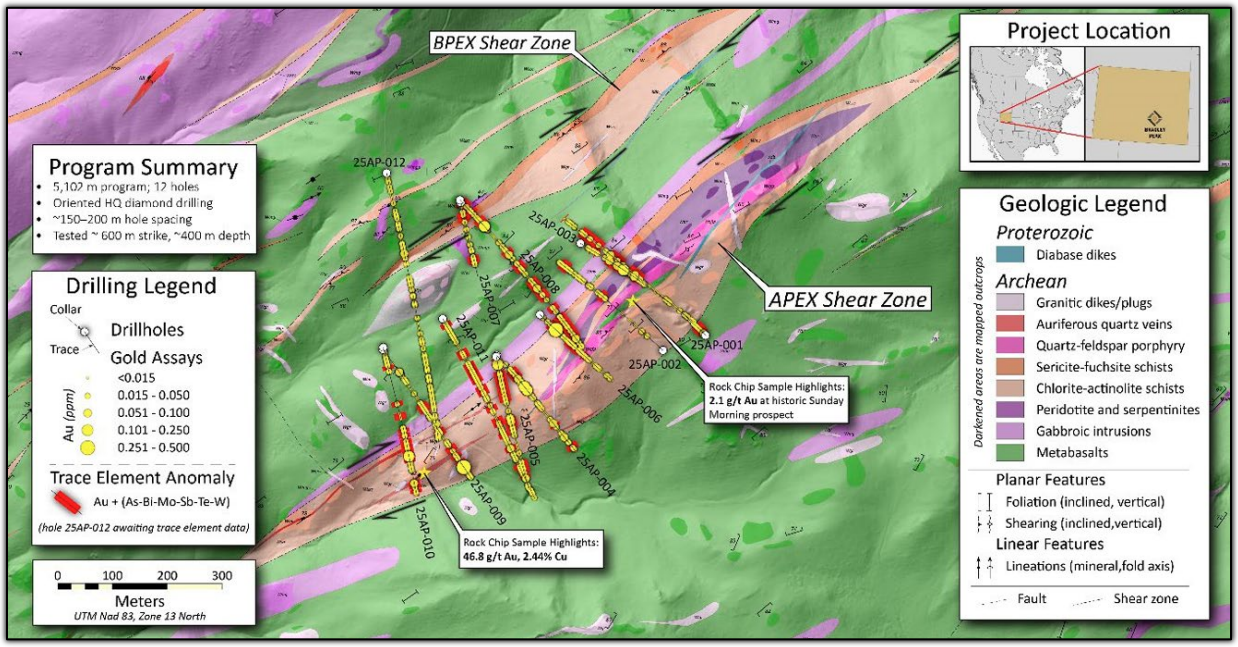


Figure 41. Plan View map of drill holes 25AP-001 through 25AP-012 along with the newly identified BPEX shear zone and the syn-tectonic intrusive body. Drill holes show gold mineralization, pathfinder elements and drill traces projected to surface.

Drilling tested approximately 600 m of strike within the >2.5 km Apex shear corridor using 12 widely spaced drillholes designed to constrain lithology, structure, and mineralization as defined by surface mapping, 3D structural modelling, geophysical magnetic surveys, and rock chip sampling. Importantly, drilling also confirmed the presence of a parallel mineralized shear zone (“BPEX”) situated approximately 200 m northwest of the main Apex shear, adding scale and structural complexity to the system. While no individual intercept from this first-pass program defines an ore shoot, every hole intersected gold-bearing structures and multi-element anomalies within a consistent shear corridor, confirming the orogenic gold potential of Apex and validating the Company’s exploration model for the broader Bradley Peak Gold Camp. Notable gold intervals include (represented as core length):

- *0.42 g/t Au over 1.35 m in hole 25AP-009 from 382.45 m to 383.80 m (hole depth)*
- *0.40 g/t Au over 0.91 m in hole 25AP-006 from 62.70 m to 63.61 m*
- *0.23 g/t Au over 0.56 m in hole 25AP-010 from 322.25 m to 322.81 m*

- *0.22 g/t Au and 0.19% Cu over 0.43 m in hole 25AP-003 from 135.74 m to 136.17 m, adjacent to a >3 m quartz vein. This zone was cut where the strike and dip projection extends from the surface high-grade exposures, confirming a broad mineralizing shear corridor at Apex with the ability to carry high-grade gold.*
- *0.20 g/t Au over 1.60 m in hole 25AP-008 from 111.63 m to 113.23 m*
- *Several intercepts of >0.1% copper (Cu), lead (Pb) and zinc (Zn) mineralization within the Apex Zone.*

The 2025 program was designed to (1) test the vertical continuation of favorable host rocks and shear structures identified at surface, (2) evaluate the hanging wall and footwall contacts of the Apex shear, along with its overall structural geometry, (3) test the presence and continuity of hydrothermal alteration zoning and, (4) confirm the continuation of quartz-carbonate veining. The spacing of drill holes was intentionally broad (150-200m spacing) to evaluate system scale, continuity and boundaries, and hole orientations were varied to determine dip on the shears. Drilling results confirmed:

- *The Apex and BPEX targets are part of a larger fertile orogenic gold target than previously understood.*
- *Validation of the Company's 3D structural models, with multiple near-vertical mineralized shears intersected across 600 m of the Apex corridor.*
- *Alteration and sulfide mineralization are localized primarily along the hanging-wall side of the corridor,*
- *Intense hydrothermal alteration manifested as ankerite–sericite–chlorite ± fuchsite and albitization, complex quartz veining, and mineralization.*
- *A distinctive, strongly altered ultramafic marker unit follows the hanging-wall contact of the Apex shear and was hit in several holes. In many major Archean gold camps, similar ultramafic units sit next to big gold-hosting shears and help guide drilling toward higher-grade zones.*
- *The system remains open along strike and at depth, with gold-bearing alteration and veining intersected to at least 400 m vertical depth.*
- *Defined consistent anomalous gold and pathfinder element mineralization within the 70-100 m thick hanging wall zone of Apex and additional zones at BPEX.*

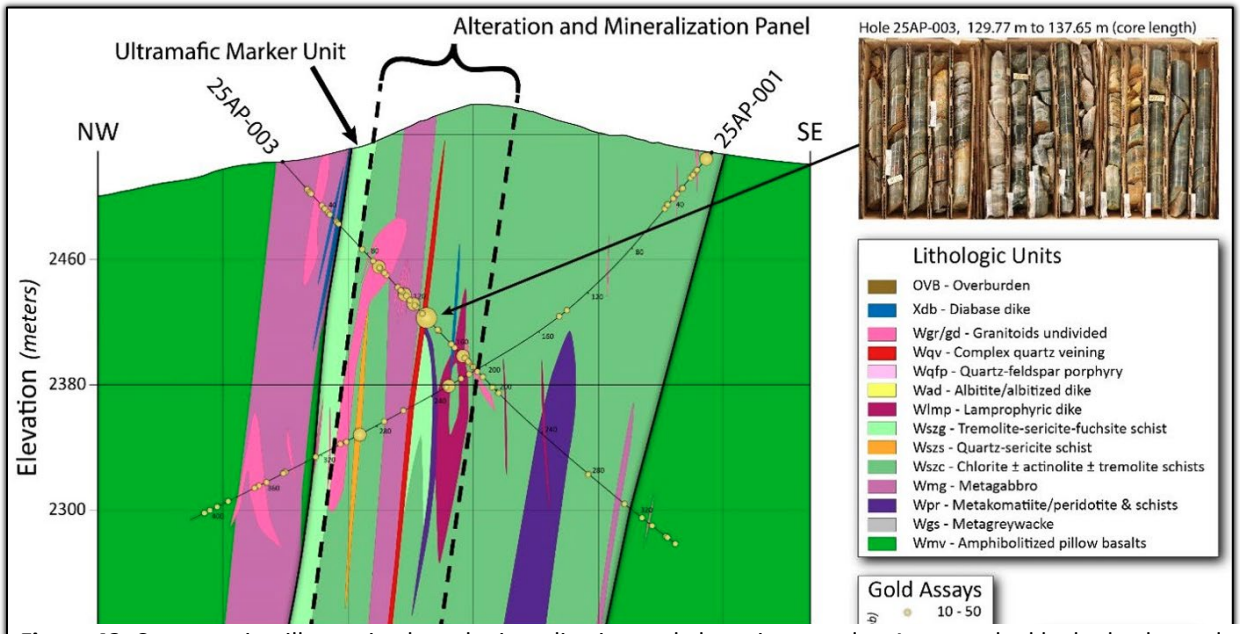


Figure 42. Cross-section illustrating broad mineralization and alteration panel at Apex marked by hydrothermal alteration, gold mineralization and pathfinder element geochemistry. This zone was cut where the strike and dip projection extends from the surface high-grade exposures Apex, confirming a broad mineralizing shear corridor at Apex with the ability to carry high-grade gold.

Stop 7: Apex Shear Zone Central Core

The Apex shear zone was quickly mapped by RGC in 2023, and this and subsequent mapping and sampling revealed a classic Archean shear zone. The shear zone is hosted within a sequence of banded amphibolites (mafic metavolcanic rocks) that show increased banding and cataclastic shear deformation adjacent to the Apex shear zone. Rock types mapped within the confines of the shear zone include amygdaloidal pillow basalts, chlorite-actinolite schists, tremolite-rich ultramafic schists, quartz-feldspar porphyry dikes, deformed and cross-cutting granitoid dikes, auriferous quartz veins, and Paleoproterozoic diabase dikes and irregular intrusions. A bedrock geologic map of the APEX shear zone is given in Figure 38 and interesting outcrop photographs are presented in Figure 43.



Figure 43. Outcrop photographs from the central zone of the Apex shear zone. Amygdaloidal pillow basalt (A); abrupt strain partitioning between pillow basalt (Wmv) and chlorite schist (Wszc) with a boudined granitoid (Wgr) dike (B); quartz-feldspar porphyry (C); massive tremolite-rich ultramafic schist (D); and Paleoproterozoic porphyritic diabase (E).

Stop 8: Apex Shear Zone Auriferous Quartz Vein

In 2023 and 2024 RGC completed robust geologic mapping and sampling programs at their Bradley Peak project. During this work 1,992 outcrops were mapped and described, and 753 rock samples were collected, described, and analyzed. One of the many highlights of that work was the rediscovery of a 3m-wide auriferous quartz vein located at the SW end of the APEX shear zone (Fig. 44) that returned 46.8 ppm Au. Stop 8 will visit this auriferous quartz vein (Fig. 38) as well as adjacent sheared wall rocks.

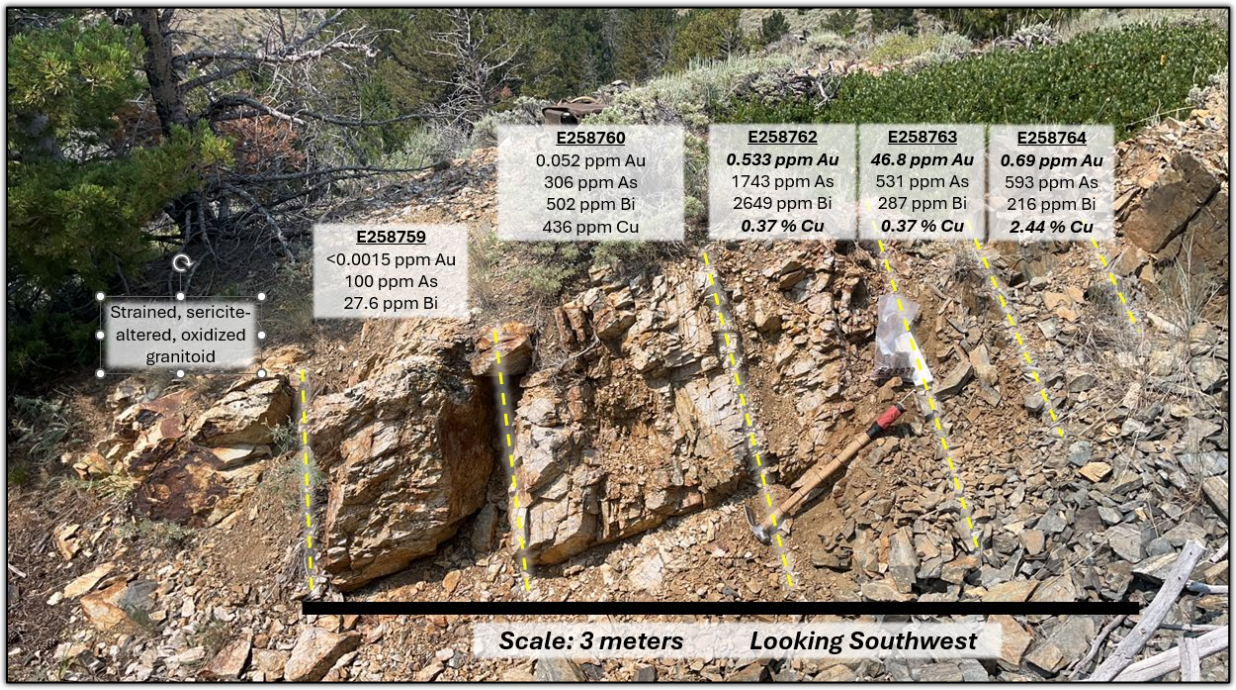


Figure 44. Outcrop photograph of the 3m wide auriferous quartz vein at the SW end of the APEX shear zone.

VI. FIELD STOPS – SOUTH PASS GREENSTONE BELT

The field tour of Relevant Gold's properties in the South Pass granite-greenstone belt includes seven generalized stops (Fig. 45) that highlight a few aspects of the geological and orogenic-gold mineralization framework of the district that the company has developed over the last decade or so. Each of the stops will begin with an initial review of the company's 1:50,000 scale bedrock geology compilation map (Plate 1, BRE-TR-2022-04) to set the stage as well as a review of one of the series of recently completed 1:10,000 scale bedrock geology and geochemistry (Au-As) maps. These more detailed maps include BRE-MAP 2023-01 (Golden Buffalo), BRE-MAP-2023-02 (Lewiston), and BRE-MAP-2023-04 (Shield-Carissa).

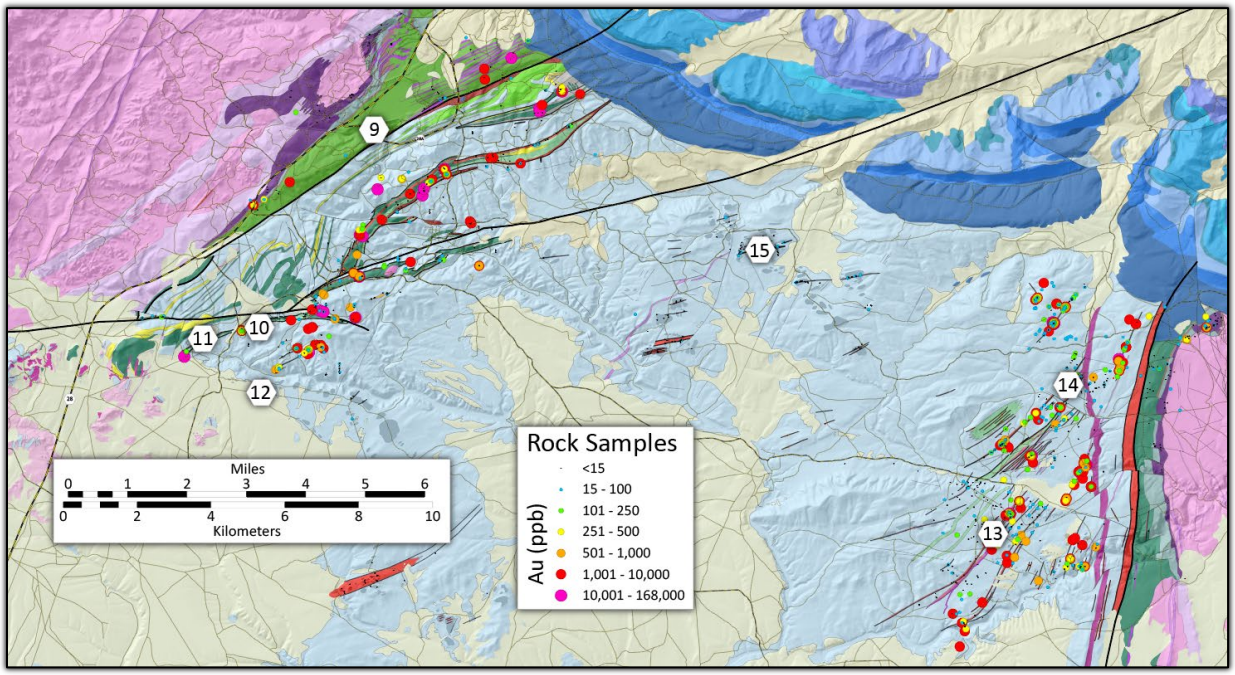


Figure 45. Location map of field stops in the South Pass area.

South Pass VTEM Survey

On June 18, 2026, RGC announced the results from a 2,807 line-km Versatile Time Domain Electromagnetic ("VTEM") and magnetics survey completed across its 100%-owned South Pass Gold Camp in Wyoming, USA. The survey identified 44 EM anomalies, including 15 high-priority targets, and outlined structural corridors at Lewiston that are traceable for more than 3 kilometers along strike and to more than 400 meters depth. Several high-priority targets coincide with known gold-bearing structures, historic workings, surface geochemical anomalies and projected extensions of mineralized trends identified through the Company's 2024 drilling and 2025 exploration programs. VTEM Survey Highlights include:

- *44 EM anomalies identified across South Pass, including 15 high-priority targets and approximately 20 additional favorable targets.*

- *Results reveal structural corridors traceable for more than 3 km along strike and to more than 400 depth at Lewiston.*
- *Several high-priority targets occur within the Burr-Lewiston corridor and along projected extensions of mineralized structures identified through the Company's 2024 and 2025 drilling, mapping and sampling programs.*
- *Priority anomalies coincide with multiple independent exploration indicators, including known gold-bearing structures, historic workings, mapped shears, surface geochemistry, and magnetic anomalies.*
- *Results provide additional subsurface targeting vectors for the Company's planned 2026 drill program at Lewiston and broader follow-up work across the rest of the South Pass Gold Camp.*

The VTEM survey was designed to improve the Company's understanding of structural architecture, alteration distribution and potential controls on mineralization throughout the South Pass Gold Camp, especially the Lewiston-Burr zone. The airborne survey was completed on 75 m line spacing and generated high-resolution resistivity and magnetic datasets to help identify concealed structures, conductive features and magnetic anomalies for drill targeting and target ranking. Interpretation of the VTEM data indicates that numerous conductive and resistive anomalies occur along major structural corridors already recognized through geological mapping, historical mining activity, geochemical sampling and previous drilling. Several of the highest-priority VTEM anomalies occur along projected extensions of structures intersected during the Company's 2024 Burr drill program, providing an important link between geophysical responses and known mineralized trends. This interpretation is further supported by the Company's 2025 mapping and sampling program at Lewiston, which extended the Burr mineralized trend by more than 2.5 km southwest of the 2024 drill area and identified multiple parallel mineralized shear corridors in the southern Lewiston area.

Electromagnetic responses may reflect a range of geological conditions, including lithology, structure, hydrothermal alteration, sulfide mineralization, groundwater and/or clay-rich zones. At South Pass, the conductive features identified by the VTEM survey are interpreted to reflect one or more of the following:

- *Sulfide-bearing shear zones that may contain pyrite, pyrrhotite and arsenopyrite;*
- *Graphitic or reactive sedimentary horizons that may act as favorable traps for gold mineralization; and*
- *Linear zones of hydrothermal alteration and fluid flow along major structural corridors.*

Preliminary inversion and plate modelling indicate that prioritized EM anomalies exhibit low apparent resistivity and/or resistivity gradients, steeply dipping geometries consistent with structurally controlled mineralization, depth extents ranging from near surface to several hundred metres vertically, and strike continuity along known and interpreted structural corridors. Conductive anomalies are exploration targets and do not, on their own, confirm the presence of gold mineralization. Follow-up mapping, ground verification, geophysical refinement and drilling are required to evaluate the significance of individual anomalies.

Stop 9: Roundtop Fault Roadcut

The first stop on this field tour of the South Pass area is located along a long roadcut that crosses one of the most important structural elements of the South Pass granite-greenstone belt. This structure is the terrane-bounding Roundtop Fault, which separates metavolcanic rocks of the Roundtop Greenstone from greywacke-slates of the Miners Delight Formation. The significance of the Roundtop Fault (and similar primary shear zones within the South Pass granite-greenstone belt) cannot be understated. This importance has been described in detail previously in this guidebook (see Figures 9, 11, 12, 13, 22, 24, 25, 26 and associated text). Key features to observe at Stop 9 (Fig. 46) include:

1) Strong subvertical and locally anastomosing D_1 foliations,
2) Steeply southwest plunging mineral lineations,
3) The series of narrow pyritic shear zones, and
4) The folding of D_1 foliations by strike-slip D_2 motion in the guts of the Roundtop Fault.

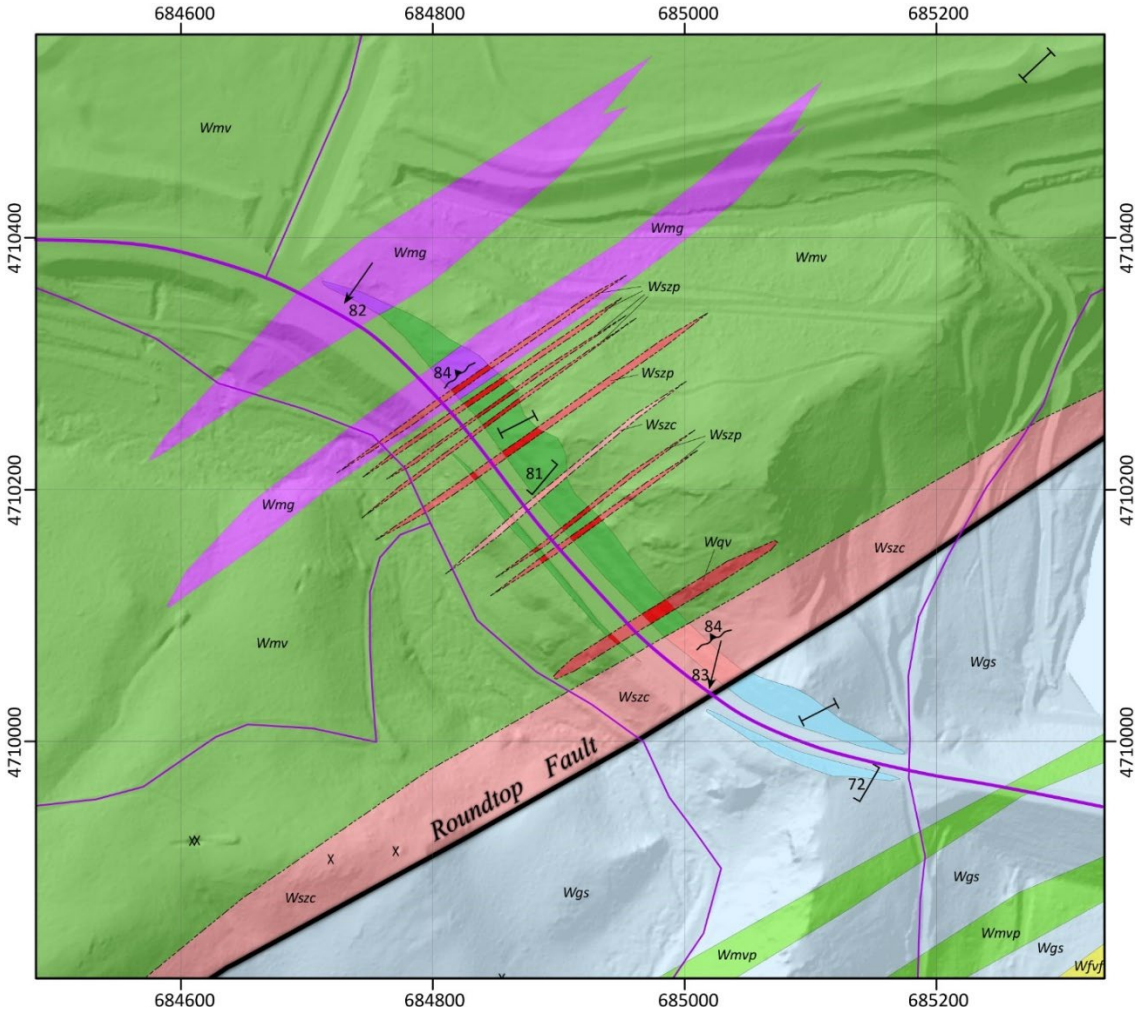


Figure 46. Bedrock geologic map of a large roadcut across the Roundtop Fault zone. The outcrop geology was quickly mapped by Big Rock Exploration in 2021.

Stop 10: Carissa Mine

Pioneers heading to Oregon on the Emigrant Trail first discovered placer gold in the Sweetwater River of the South Pass area in 1842, but miners were kept away for the next 25 years due to Native American hostilities. In 1867, a group of soldiers based out of Ft. Bridger heard the tales of gold along the Sweetwater & followed the drainages to a vein of quartz on a high knob of rock along Willow Creek. They set the first gold claim in Dakota Territory in June of 1867. In the fall of that year, they returned to Ft. Bridger boasting of their discovery & started a gold rush. By the spring of 1868 the town of South Pass City had sprung up to support the miners. Hundreds of miners dug into the hills in the area. Most early miners used pans, sluice boxes & other simple mining equipment to get the easy surface gold. The easy surface gold was quickly depleted, forcing miners to go underground.

Money from Salt Lake & Chicago was used to build larger operations, and the Federal Gold Mining Company was formed by a logging magnate from Chicago to fund the development of the Carissa lode which saw its largest era of growth at the turn of the last century. In the late 1920s another period of growth brought more expansion to the Carissa Mine. A nearby mill building was moved to the Carissa site & a new head frame was constructed. The 1929 stock market crash emptied the coffers of the businessmen funding the operation. Another attempt was made in 1946, just after World War II, to reopen the mine. Money brought new equipment & technology to the Carissa Mine and new systems increased the efficiency of the mine, which struggled along until the late 1950s.

In the 1980s, Dan Hausel of the Wyoming State Geological Survey (WSGS) began his geological mapping and research into the South Pass area. His investigations of the Carissa Mine indicated that the mine hosted an identifiable reserve of more than 109,000 ounces averaging 0.343 to 0.850 oz/ton with a cutoff grade of 0.299 oz/ton (Hausel, 1991). But due to scattered drilling and lack of deep drilling on this property, this high-grade zone is probably much more extensive along strike and at depth. The high cutoff grade combined with the essentially untested large tonnage low-grade mineralized zone associated with the property (>1000 feet wide and >1000 feet long) suggests actual gold resources are much greater.

In addition to the Carissa, a distinct belt of prospects and historic mines lie between the Carissa and Miners Delight mine along a 5-mile northeasterly trend in the belt. Mapping by the WSGS in the 1980s and Big Rock Exploration in the 2020s has identified numerous shear structures with steeply plunging lineation trends as well as numerous D_2 shear zones associated with D_1 isoclinal folds that may be favorable for saddle reef-type gold mineralization. There is little evidence that any of the historic operations recognized the steeply plunging structures as being significant. A bedrock geologic map of the Carissa Mine area is given in Figure 47.

Key features to observe at Stop 10 include:

1) The shear parallel auriferous quartz vein, the “Carissa Vein”, in the glory hole at the shaft site,
2) The Miocene South Pass formation (map unit Tsp) cover that obscures the underlying Archean supracrustal rocks,
3) The antiquity and scale of the Carissa Mine mill, and
4) Think about how a modern underground operation would look.

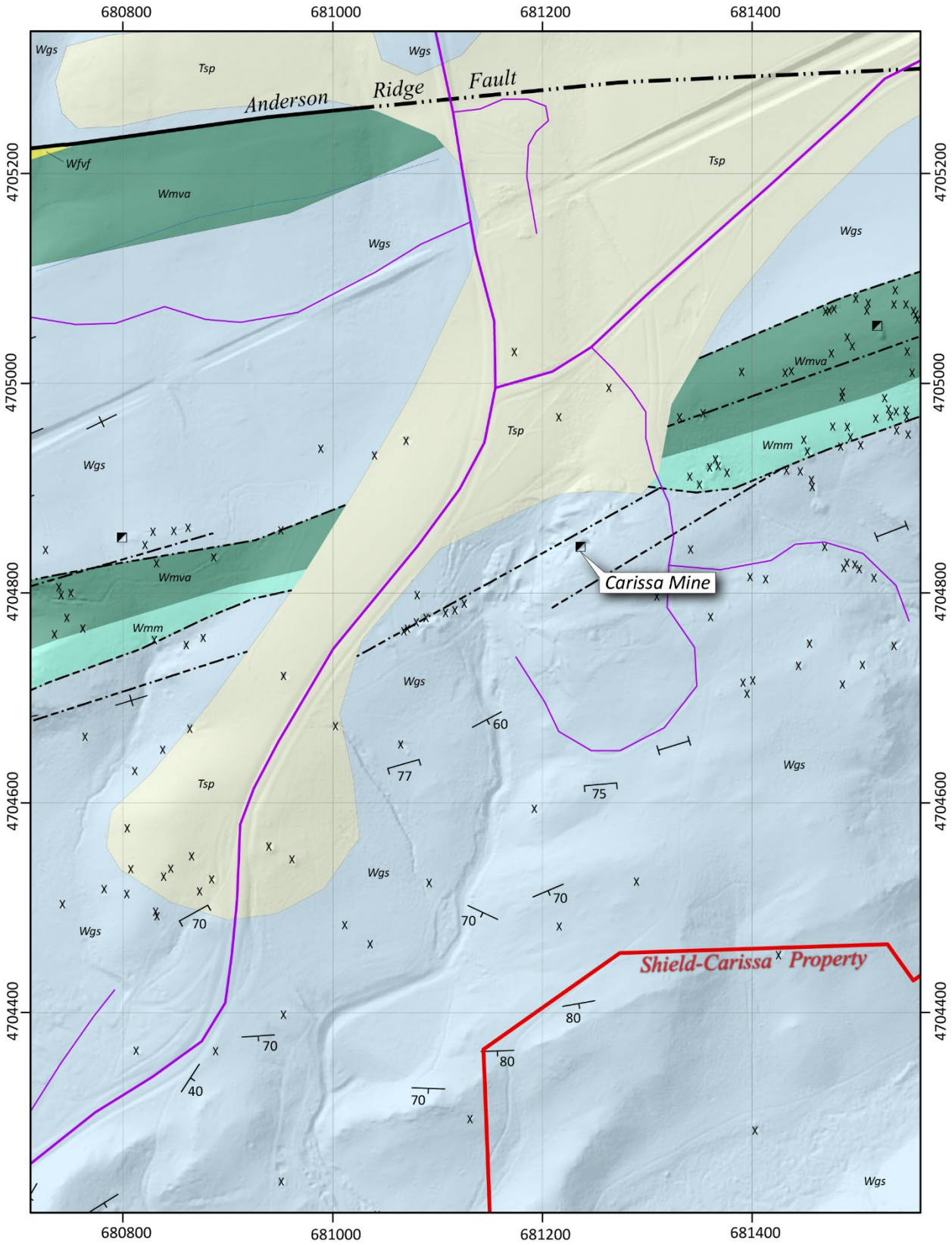


Figure 47. Bedrock geologic map of the Carissa Mine area. Compiled from Hausel, 1991.

Stop 11: Railroad Cut Shear Zone

Approximately ½ mile west of the Carissa Mine (Stop 10) is an old railroad cut that exposes the northern boundary of the wedge-shaped shear zone that hosts the Franklin, Carissa, and Barr gold mines (Fig. 48). This wedge-shaped shear zone is immediately south of the Anderson Ridge Fault, which represents one of the major structures within the South Pass – Atlantic City mine district. Four distinct rock types are perfectly exposed in the railroad cut. To the north of the wedge-shaped shear zone are greywacke-slate (Wgs) of the Miners Delight Formation locally cut by thin, <1m wide, tantalum-bearing pegmatite dikes (Wgrp) from the South Pass pluton. In sharp contrast to these seemingly weakly-deformed host rocks, the northern margin of the wedge-shaped shear zone includes a panel of intensely deformed and folded tremolite phyllonites and hornblende amphibolites that are interpreted to have upwards through the crust from several kilometers of depth.

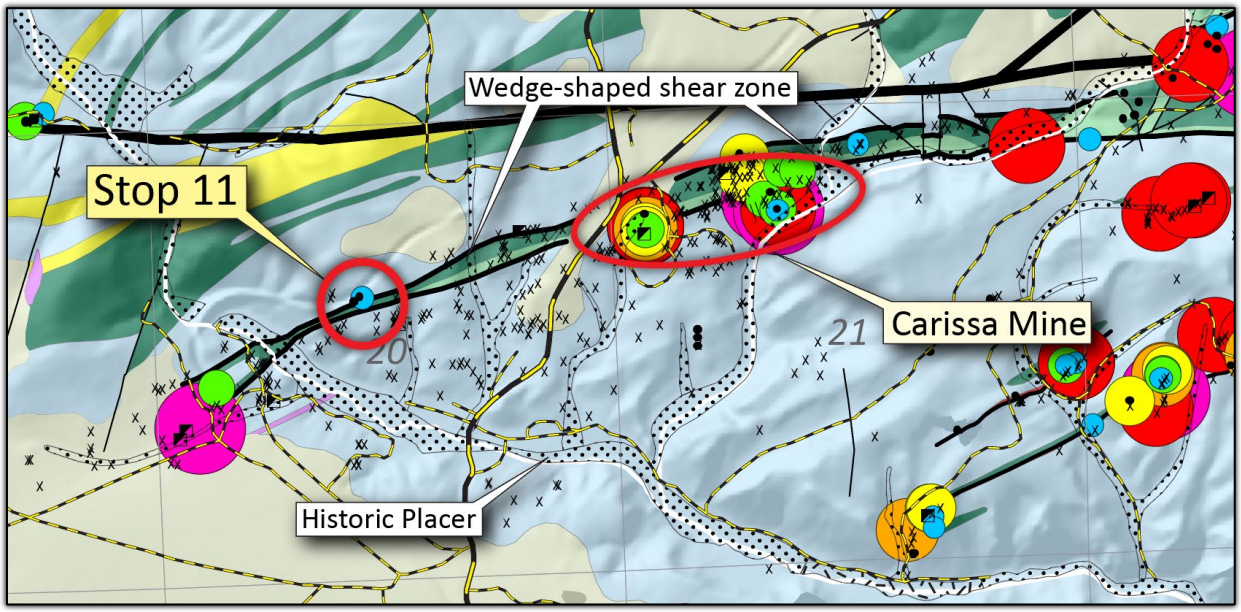


Figure 48. Geologic and gold geochemical map of the stop 11 area. See Figure 45 for the gold geochemistry legend of rock samples (colored circles).

Stop 12: Shield-Carissa Overview

Stop 12 is intended to be a quick overview (Fig. 49) of RGC's Shield-Carissa claim block from a vista on the south side of Willow Creek. As outlined in the description of Stop 10, soldiers based out of Ft. Bridged panned gold and followed Willow Creek from the Sweetwater River in 1867 and discovered the "vein of gold" at what would become the Carissa Mine. From this vantage point RGC principals will highlight what they have initially done and currently know of the geology and orogenic gold potential of the claim block.

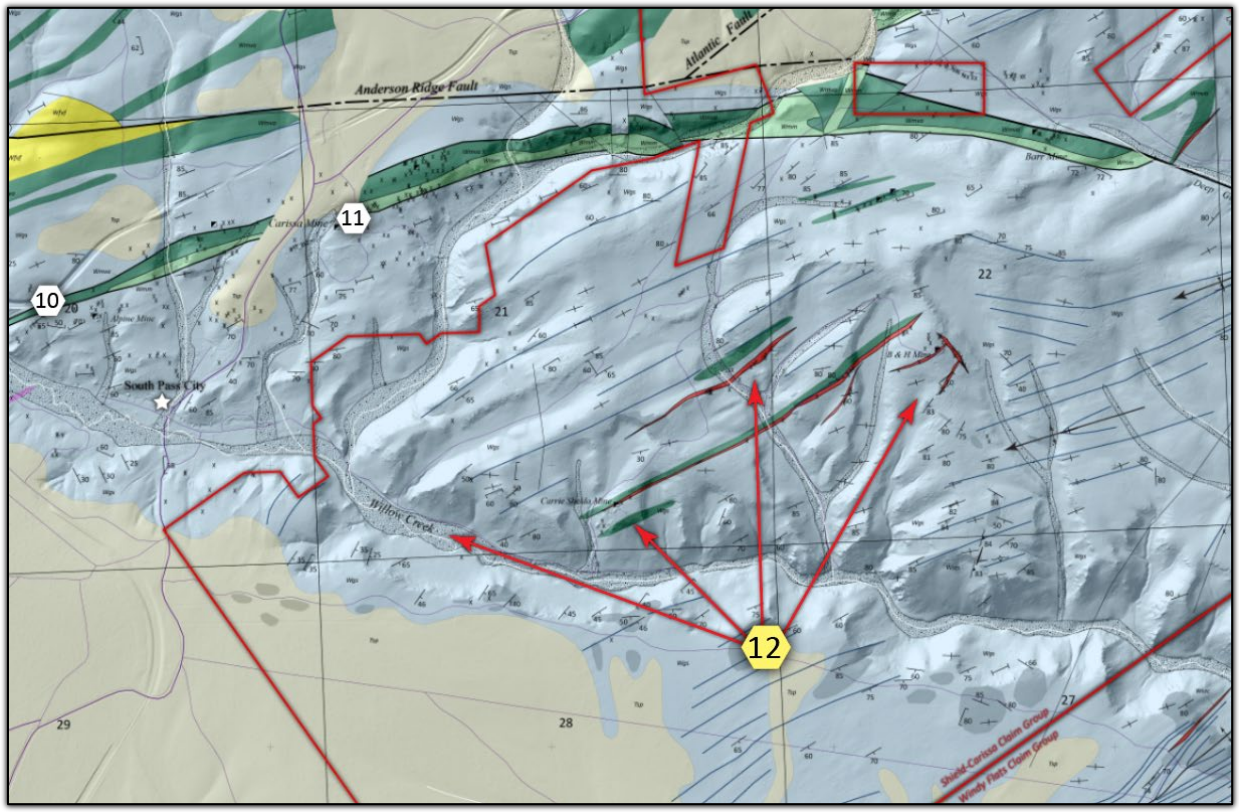


Figure 49. Geologic map of the vista view provided by the overlook at Stop 12.

Lewiston District

The large (13,890 acre) Lewiston property is centered within the historic Lewiston Mining District and hosts several historic gold mines, including the Burr, Hidden Hand, Lone Pine, and Goodhope mines. The mines are inaccessible due to caving at portals and/or reclamation efforts. In addition, none of the mines are believed to be much deeper than 100 feet and there has not been any deep drilling, thus the continuation of the shears, which vary from 2 to 40 feet wide, downdip is untested. Gold occurs in fractures in quartz and in association with pyrite, pyrrhotite, and arsenopyrite. Wallrock alteration includes chlorite, hematite, sericite, and tourmaline. Historic reports show the gold tenor of the Lewiston mines ranged from a trace to as much as 3,100 oz/ton. Samples taken in shear structures often produce anomalous gold values, but the district has not been systematically sampled. Relevant Gold's Lewiston property encompasses a 10-kilometer-long mineralized shear zone trend, and the company has identified six distinct areas of interest, including the Hidden Hand - Burr, Heavy Hand, Northstar, Goodhope, Lone Pine, and the South target areas.

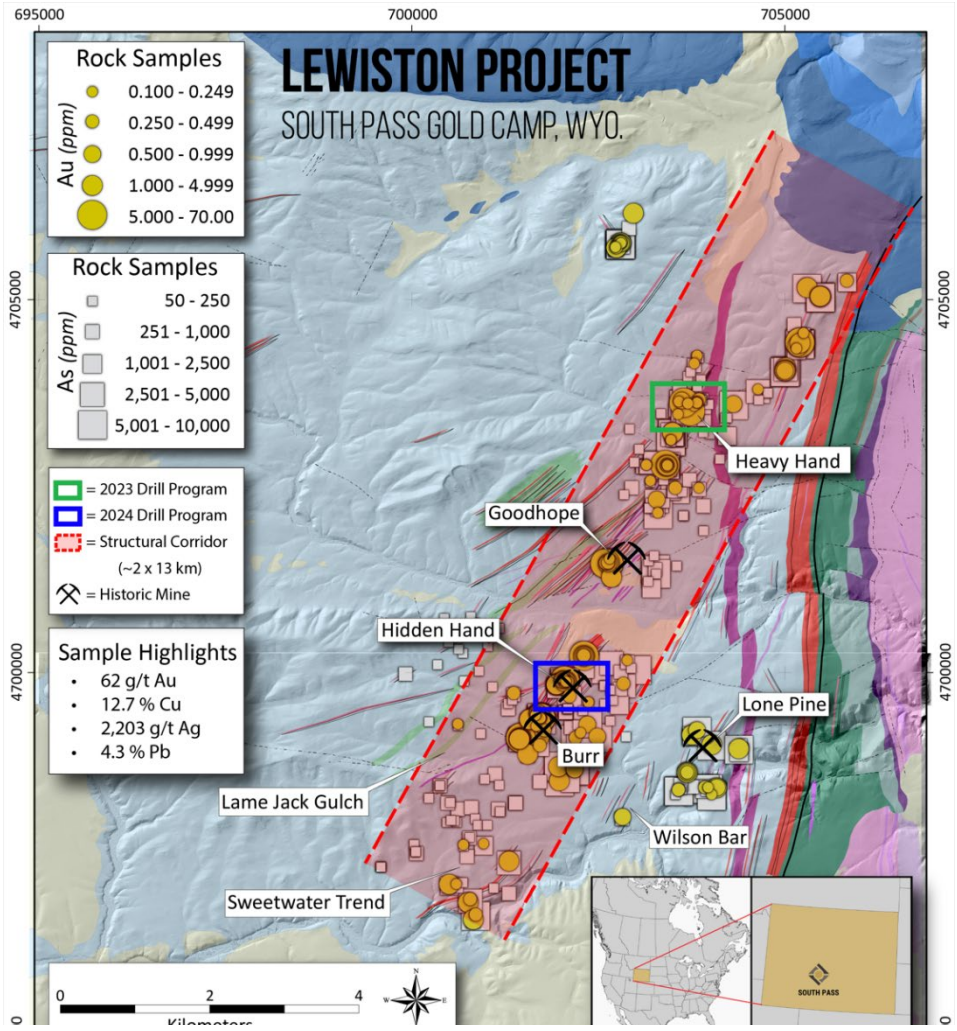


Figure 50. Geology map showing the Lewiston mineralized trend with primary historic producing mines, RGC drilling target areas, and surface rock sample assays for Gold (Au) and arsenic (As) shown in ppm.

Stop 13: Hidden Hand – Burr Mine Target Area

The Hidden Hand shaft was sunk on a 10-to 30-foot-wide, N40°E trending, 62°NW dipping shear in chloritized, hematitic metagreywacke. The shaft was sunk 110 feet deep and the shear zone explored by at least 640 feet of drifts prior to 1926. Ore mined from the 30-foot level assayed as high as 75 oz/ton gold. In 1916, about 1,000 tons of ore with an average grade of 4 oz/ton gold were stockpiled. One rich shoot yielded specimen-grade ore that assayed up to 106,330 ppm (3,100 oz/ton) gold (Hausel, 1991).

The Burr lode was the first significant deposit found in the district. The mine is located at coalescing and intersecting shear zones, which produced intense fracturing and brecciation. A N49°E trending, 78°NW dipping shear is intersected by a N73°W trending cross shear at the Burr adit. A few hundred feet west, the Amanda incline was sunk on the intersection of the N73°W trending cross shear with a N40°E trending strike shear that coalesces with a N56°E trending shear. South of the Burr mine, another prominent cross fault may intersect the Burr shear near the Irish Jew prospect. Sporadic rich pockets were mined that yielded 858 ppm to 8,580 ppm (25 oz/ton to 250 oz/ton) gold with some rare specimen grade material that assayed as high as 57,970 ppm (1,690 oz/ton) gold. One 16-foot-wide zone was reported to have averaged 17.15 ppm (0.5 oz/ton) gold (Hausel, 1991). In 1893, a small pocket of ore was intersected that yielded nearly 2,900 ounces of gold (Hausel, 1991). In addition to gold, the Burr mine contains tungsten, with scheelite occurring in stringers, veinlets, lenses, pods, and specks conformable to the gold horizon on the 25-foot level. Samples yielded from 2.5% to 70% WO_3 and the mineralized zone was estimated to average 5% WO_3 (Hausel, 1991).

On December 13, 2024, RGC announced the results of the first ever drill program in the Hidden Hand – Burr mine target area. The program included six HQ diamond core drill holes totaling 1,026 m, and each hole intersected shear-hosted gold mineralization below and lateral to historical mine workings. The results confirm a large orogenic gold footprint with strong discovery potential for follow up drilling at Lewiston. Geochemical results, all reported as core lengths, of this drilling include:

- *2.2 g/t Au over 1.5 m within a broad zone of mineralization averaging 1.4 g/t Au over 2.4 m,*
- *1.3 g/t Au over 1.85 m within a broad zone of mineralization averaging 0.33 g/t Au over 9.2 m,*
- *1.8 g/t Au over 0.8 m,*
- *1.2 g/t Au over 0.81 m within a shear-hosted gold zone averaging 0.13 g/t Au over 23 m.*

“Finding concentrated gold within broad halos of gold mineralization is exactly what you want to see in an orogenic gold system and getting these results from every single hole opens strong exploration potential warranting aggressive follow-up drilling in all directions at Burr,” said Relevant Gold CEO, Rob Bergmann. “We’re delighted with the positive results from our 2024 efforts at both Lewiston and Bradley Peak and are looking forward to continuing to unlock the tremendous discovery potential of these Abitibi-like gold belts in Wyoming.”

This first-ever drilling program at Burr was designed to test gold-mineralized shear zones below the depth of historical mining (~30 m vertical depth) while also testing the strike extension of the gold system discovered at the Heavy Hand target in 2023 four kilometres (km) to the Northeast. All six holes

successfully intersected the primary Lewiston shear zone corridor, and importantly, all six holes contained reportable gold mineralization. These results begin to define the orientation, vein geometry, alteration, and mineralization at Burr, revealing at least three concentrated 'panels' of mineralization adjacent to and extending below the historical mine-workings. Assays and geologic logging support the company's model for a stacked system of near vertical structures hosting orogenic quartz/carbonate veins with pyrite-pyrrhotite-arsenopyrite sulfide mineralization. These results also support a potential 4 km strike length extension of the primary shear zone corridor at Lewiston. Drilling highlights (Fig. 50) include:

Hole 24HH-1:

- *7.25 m core length averaging 0.18 g/t Au from 12.75 m.*

Hole 24HH-2:

- *11 m core length averaging 0.13 g/t Au from 9 m; and*
- *1 m core length at 0.8 g/t Au from 75 m.*

Hole 24HH-3:

- *1.85 m core length of 1.3 g/t Au within 9.2 m core length averaging 0.33 g/t Au from 10.97 m.*

Hole 24HH-4:

- *0.81 m core length of 1.2 g/t Au within 23 m core length averaging 0.13 g/t Au from 10 m.*
- *2.2 g/t over 1.5m within 2.4 m core length averaging 1.4 g/t Au from 103.2 m.*
- *0.73 m core length at 0.5 g/t Au from 128.42 m.*

Hole 24HH-5:

- *4.9 m core length averaging 0.21 g/t Au from 15.85 m.*
- *0.5 g/t over 1 m within 2.25 m core length averaging 0.25 g/t from 40.75 m.*
- *2.2 m core length averaging 0.17 g/t Au from 49.8 m.*
- *0.5 m core length averaging 0.4 g/t Au from 102.43 m.*

Hole 24HH-6:

- *0.8 m core length of 1.8 g/t Au from 69 m.*

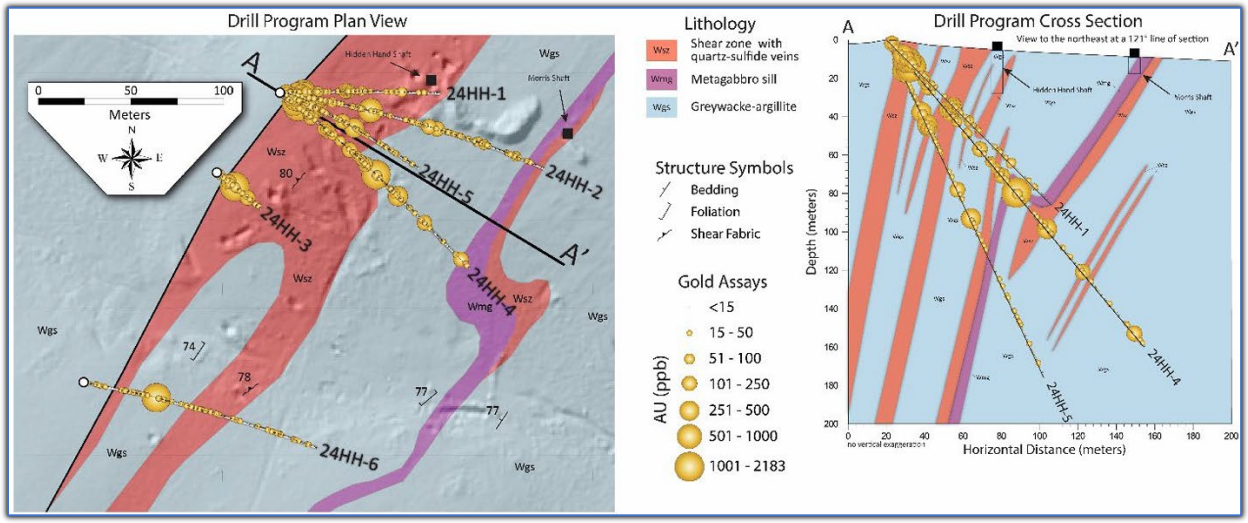


Figure 51. (Left) Plan view geologic map with drill hole traces and gold results and the cross-section line AA'. (Right) Cross-section A – A' with geology and drill traces with associated gold results for holes 24HH-1, 24HH-4 and 24HH-5 and approximate shaft locations for the Hidden Hand and Morris mines.

Stop 14: Heavy Hand Target Area

The Heavy Hand target area includes a 500-meter-wide corridor hosting multiple mineralized shear zones. Numerous Relevant Gold rock-chip samples in this area have returned high-grade multi-oz/ton gold assays from the surface. On February 15, 2024, RGC announced the results of its 1,560m diamond drilling program at its Heavy Hand target. Drilling intersected shear-hosted gold mineralization in 10 of 11 drill holes, cutting multiple near-vertical shear zones across a 500 m wide corridor, 600 m along strike, and to vertical depths of 225 m, illustrating a sizeable oxide gold footprint in the near surface of a prominent orogenic gold system. Mineralized shear structures are highlighted by 10 m (core length) averaging 0.35 g/t Au in hole 23-LD011 and 6 m (core length) averaging 0.29 g/t Au in Hole 23-LD010 including 1 m (core length) of 0.96 g/t Au. Narrow higher-grade shears are highlighted by 0.5 m (core length) of 1.9 g/t Au. and 0.7m (core length) at 1.72 g/t Au.

Eleven holes were completed, totaling 1,560 m of HQ diamond core drilling (Fig. 50) at the Heavy Hand target with over 90% (10 of 11) of drill holes intersecting reportable gold mineralization (0.1 g/t Au or greater). Assay Highlights include:

Hole 23-LD011:

- *10 m core length averaging 0.35 g/t Au from 273m – 283m; including 1 m of 0.96 g/t Au from 273 m – 274 m.*
- *2 m core length averaging 0.37 g/t Au from 302 m – 304 m within fresh Arsenopyrite-Pyrite-Pyrrhotite mineralization.*

Hole 23-LD010:

- *5 m core length averaging 0.16 g/t Au from 18 m – 23 m.*
- *0.7 m core length of 1.72 g/t Au from 78 m – 78.7 m.*
- *6 m core length averaging 0.29 g/t Au from 99 m – 105 m.*
- *10 m core length averaging 0.10 g/t Au from 137 m – 147 m.*

Hole 23-LD009:

- *2.4 m core length averaging 0.30 g/t Au from 13.71 – 16.10 m.*
- *4 m core length averaging 0.18 g/t Au from 80 m – 84 m.*

Hole 23-LD007:

- *0.5 m core length of 1.9 g/t Au from 69 m-69.6 m.*

Hole 23-LD002A:

- *10.34 m core length averaging 0.1 g/t Au from 117.14 m – 127.48 m within a larger 33.5 m strongly altered hematite-chlorite-biotite-sericite-sulfide shear zone.*

A bedrock geology, gold geochemistry, and drill hole location map of the Heavy Hand drilling area is presented in Figure 51 and accompanying cross section is given in Figure 52 respectively.

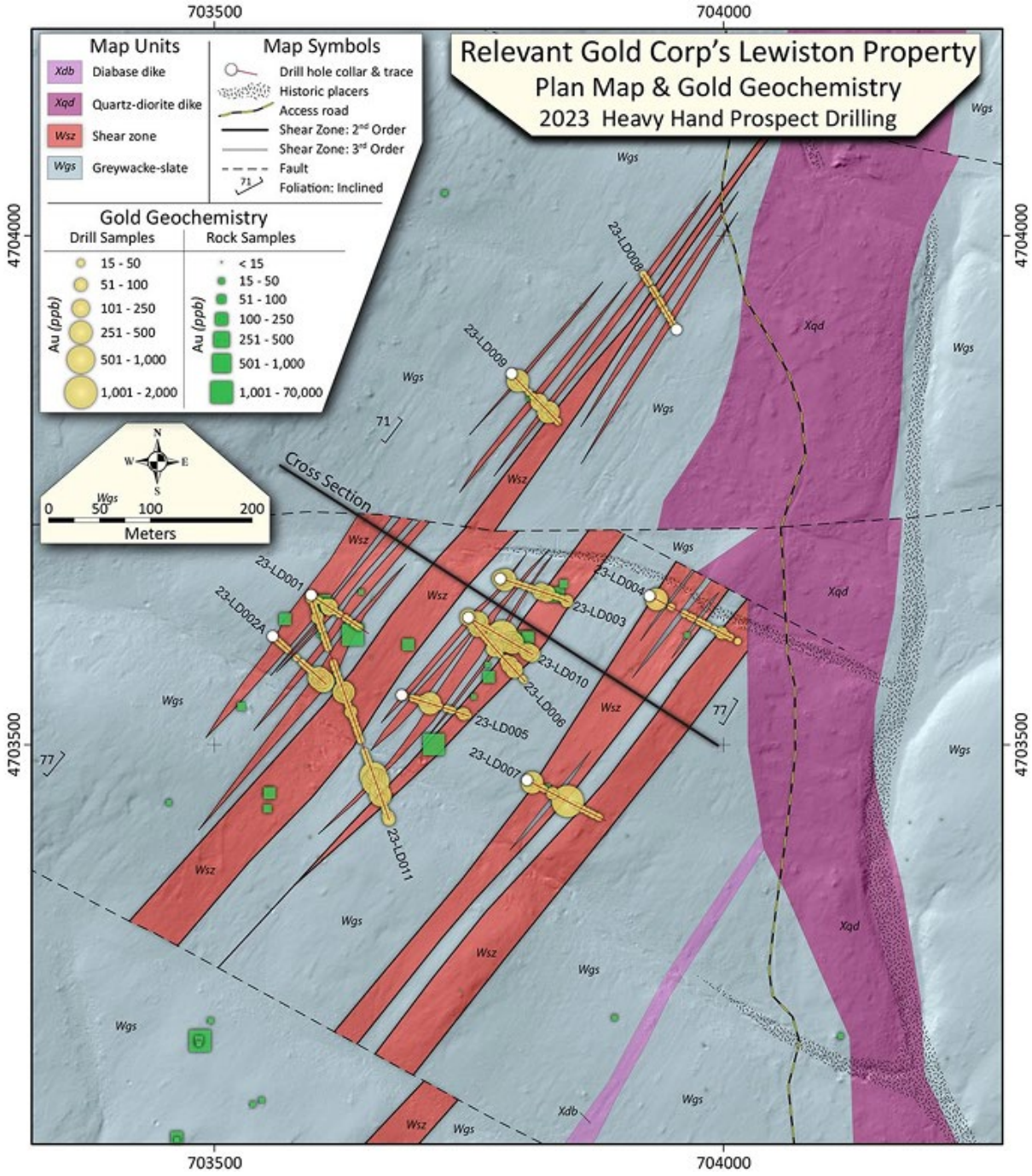


Figure 52. Plan view map of the Heavy Hand target with drill hole traces in red, gold assays in yellow and surface rock chip gold assays in green (100 ppb = 0.1 g/t) along with geology projected to surface. The cross-section line is also illustrated as a NW-SE slice in Figure 52.

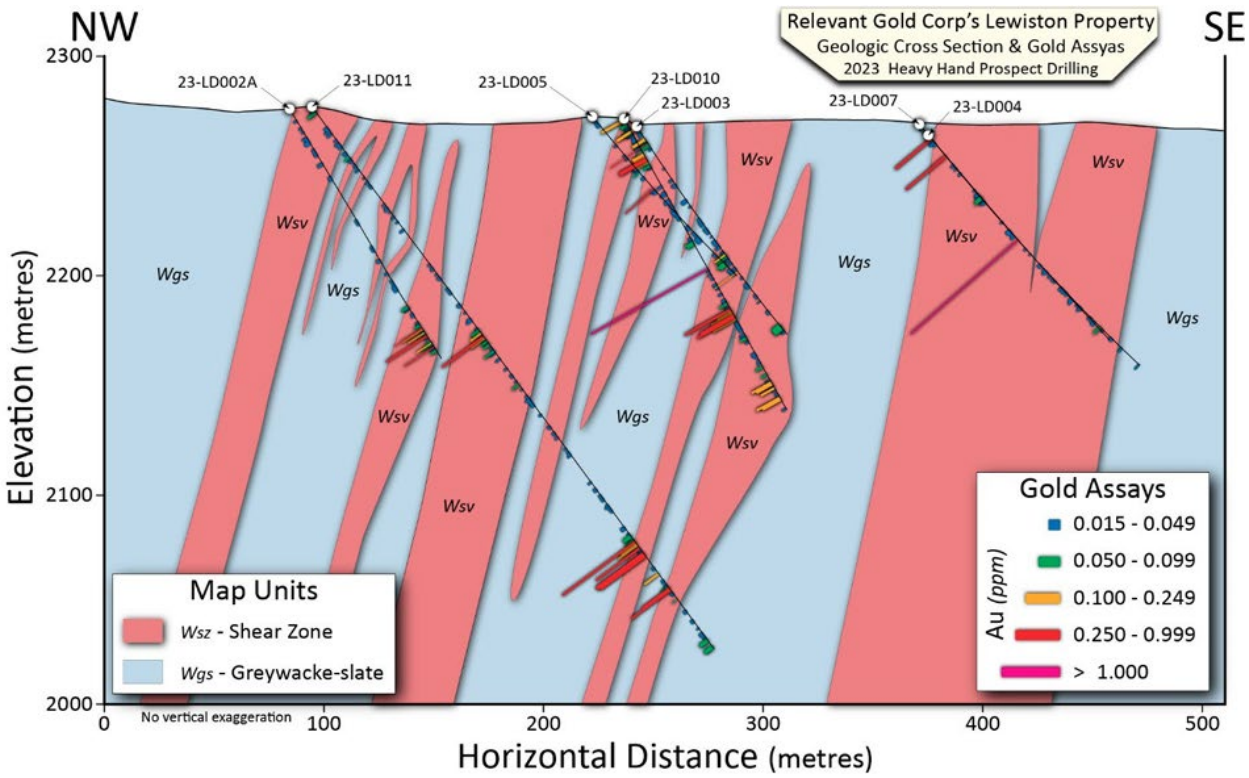


Figure 53. Cross section of drill holes looking NE illustrate gold assays and geology.

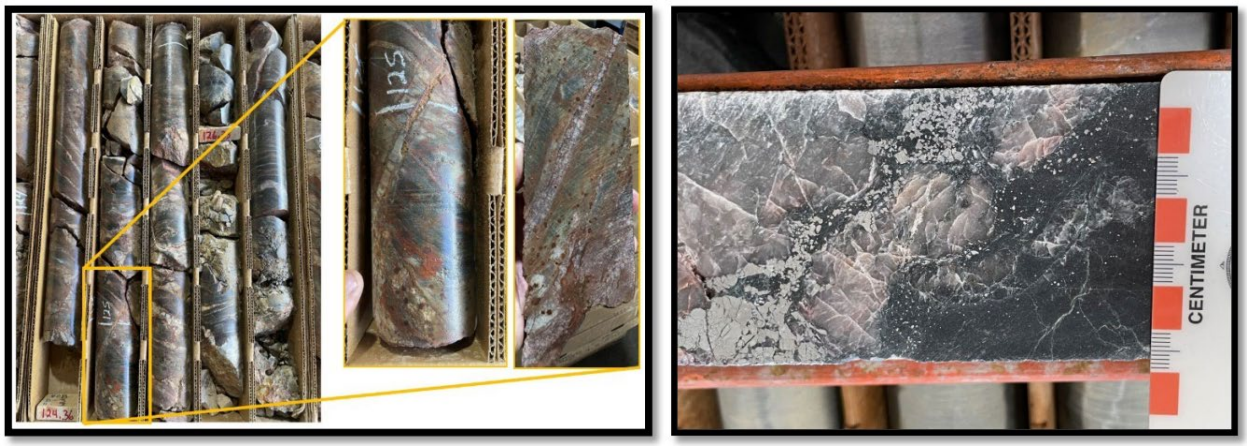


Figure 54. Photo (Left) of a section of core from hole 23-LD002A displaying intense hematite, chlorite, sericite alteration, complex quartz-carbonate veining and rusty oxidized remnant sulfides. Photo (Right) of core from hole 23-LD011 displaying fresh, unaltered, fine to coarse grained, euhedral arsenopyrite within a complex quartz-carbonate vein with dark green chlorite alteration selvages.

Stop 15: Golden Buffalo Target Area



Figure 55. Bonanza-grade gold.

The 20m wide anastomosing Golden Buffalo Shear Zone (GBSZ) was first excavated in 2020 by the previous operator, Golden Buffalo Mining (GBM), where GBM exposed and reportedly excavated approximately 400+ ounces of high-grade gold mineralization, including visible coarse bonanza grade gold (Fig. 53), out of the quartz vein rich GBSZ. In 2022, Relevant Gold completed 26 holes for a total of 3,478m of both HQ and PQ oriented diamond core drilling aimed at supplying the Company with subsurface data necessary for vectoring towards an opportunity of scale.

The proof-of-concept drilling program confirmed the presence of a large-scale orogenic system at Golden Buffalo with the GBSZ tested along 700m of strike and to depth of 300m. The structure (Fig. 54), veining and mineralization observed in core are indicative of a long-lived complex orogenic system with multi-stage episodic quartz veining both parallel and perpendicular (extension veins) to shear structures. Significant pyrrhotite-pyrite sulfide assemblages were found to be associated with shearing and veining at depth, below the oxidation profile.

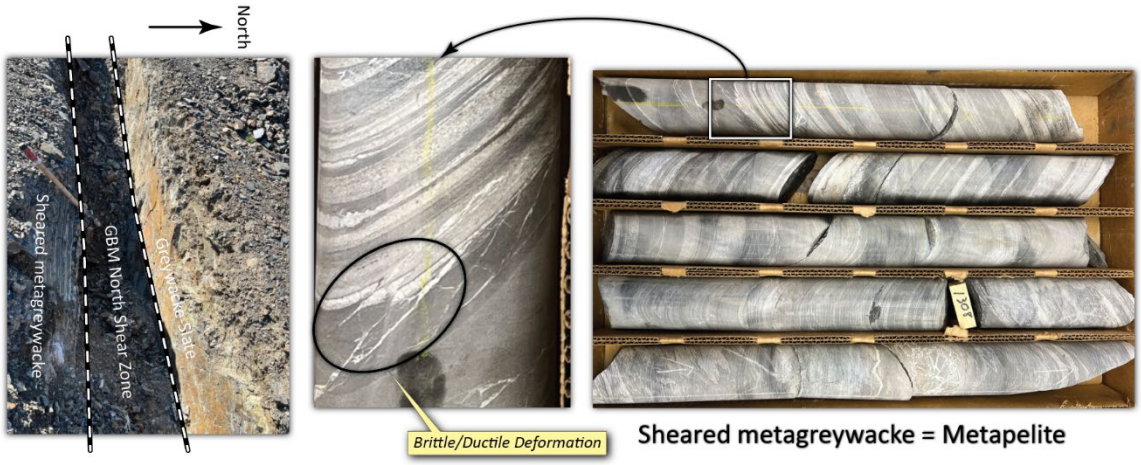


Figure 56. Structural features from trench exposures and drill core. Distinct strain partitioning can be observed in trench openings where typical greywacke-slate is converted into compositionally banded schists. Pervasive brittle-ductile features are evident in drill core.

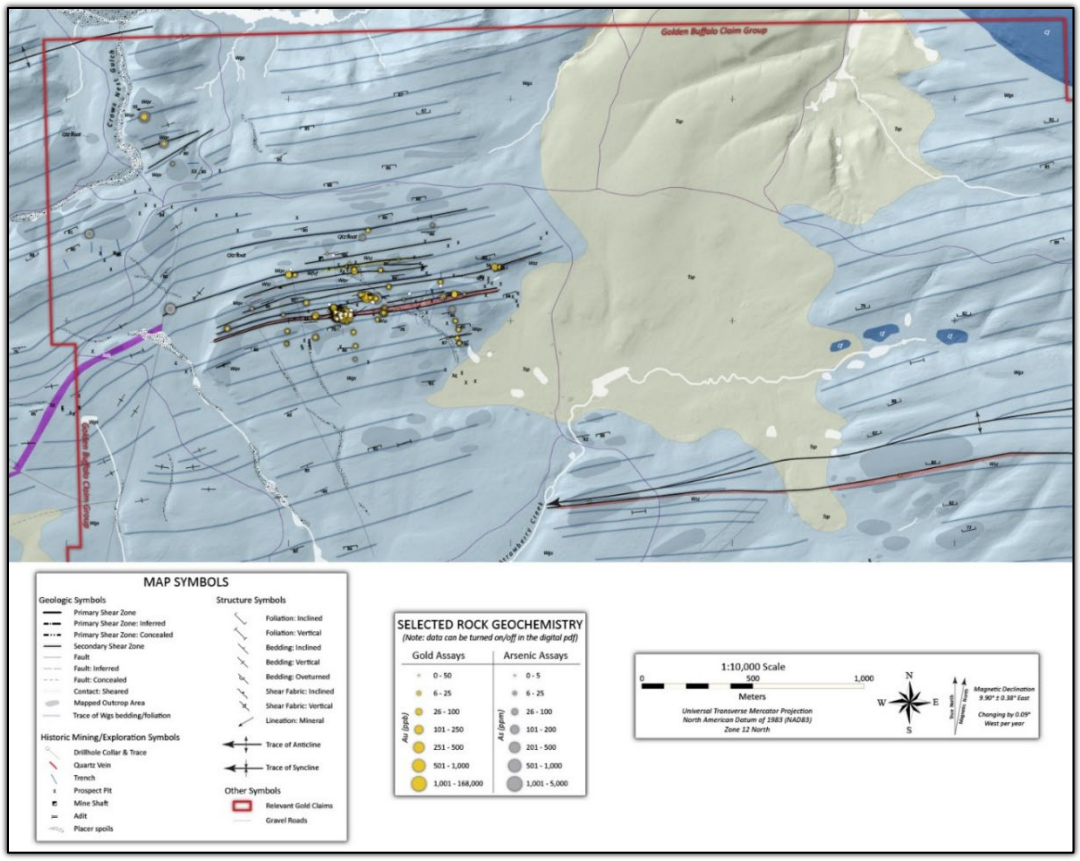


Figure 57. Bedrock geology and Au-As rock chip geochemistry map of a portion of the Golden Buffalo property. The thick highlighted black lines represent D_2 related secondary shear zones.

Geologic mapping on the Golden Buffalo property has largely been focused in the area around the discovery trench. This mapping was completed in 2021 and 2022 and included outcrop mapping at property (1:10,000), detailed (1:5,000), and trench (1:200) scales. Examples of geologic mapping products are presented at property scale in Figure 55 (snip of Peterson, 2023a), and at trench scale in Figure 56.

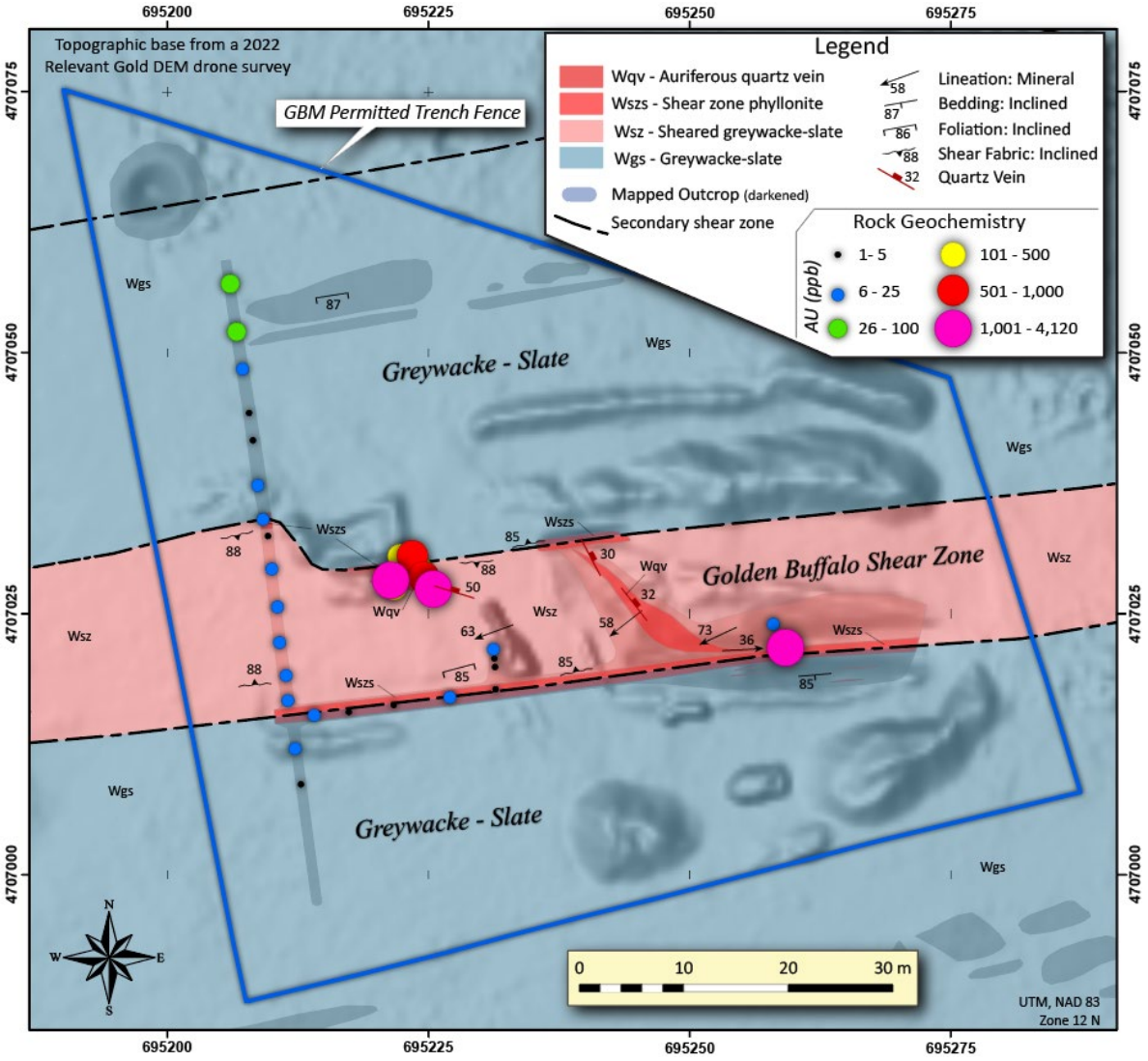


Figure 58. 2022 sample locations along the Northern and Southern contacts of the Golden Buffalo Shear Zone as well as the 50m N-S trench with systematic spaced samples. The fenced area was mapped at a scale of 1:200.

Key features to observe at Stop 15 include:

1) The discrete strain portioning that can be seen in the GBM trench.
2) Field recognition of shear zones by linear sage bush size, badger holes, and quartz chips.
3) Mineral lineations & perpendicular “rippled” auriferous extension veins.

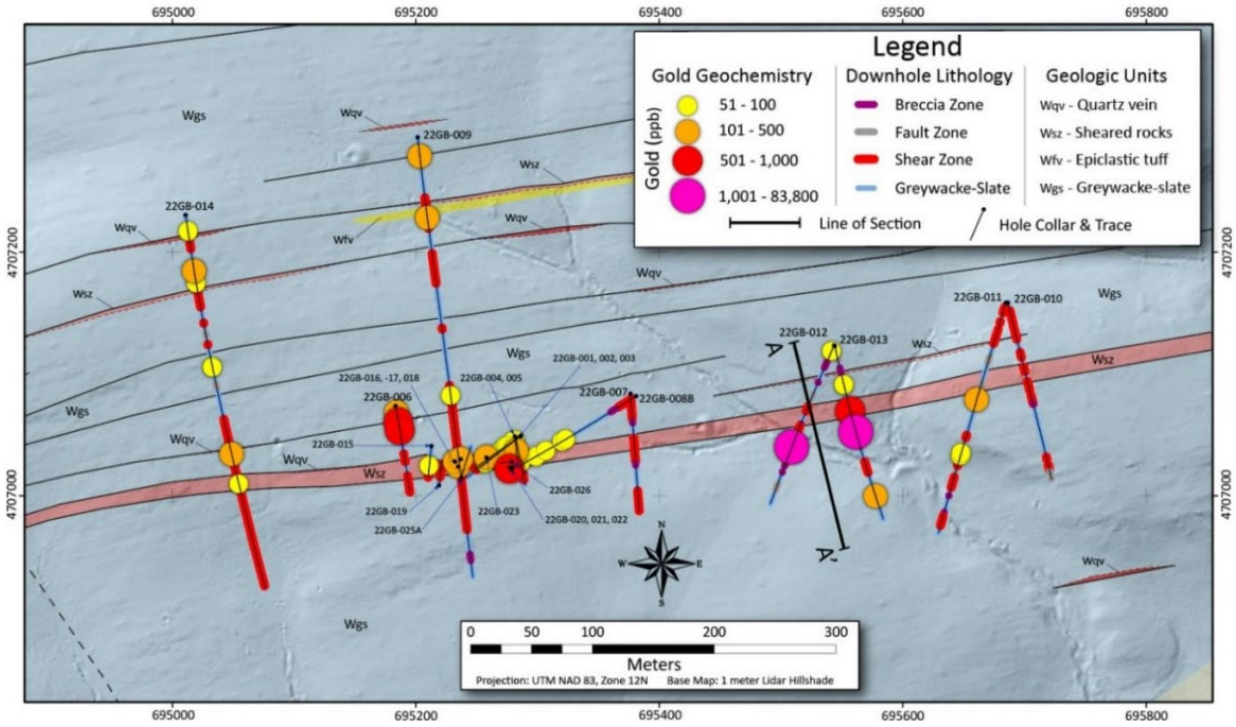


Figure 59. Plan view map of drill hole traces with downhole lithology and gold assays in ppb (100 ppb = 0.1 g/t) from the 2022 drilling campaign.

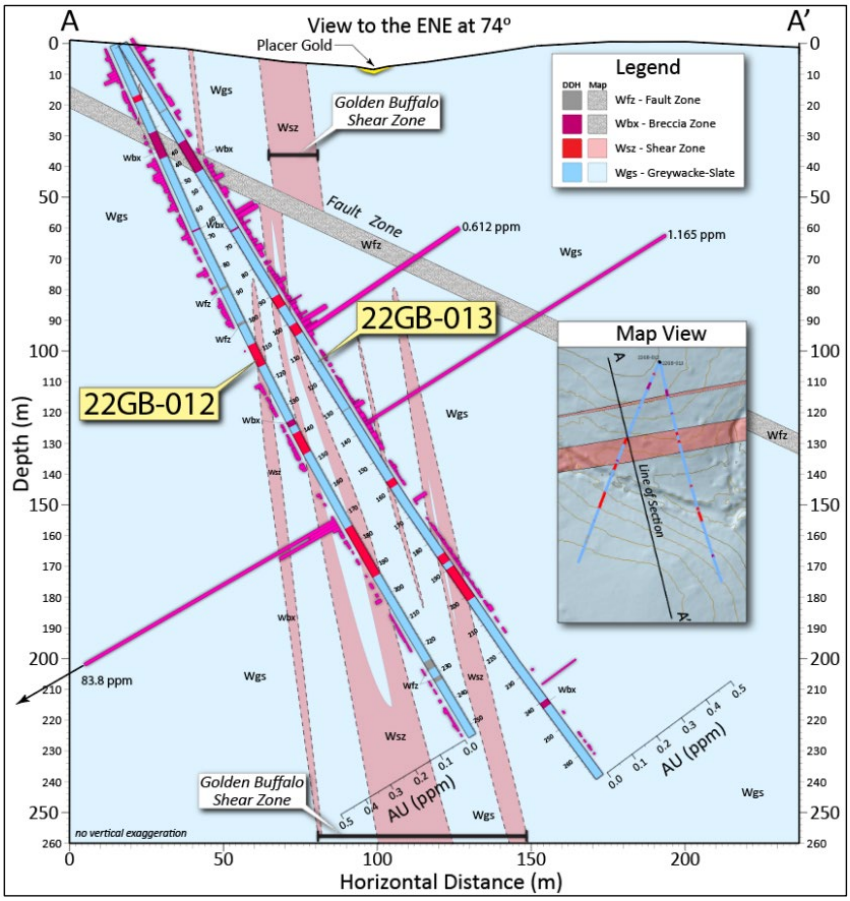


Figure 60. Cross section of holes 22GB-012 and 22GB-013.

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Appendix 1

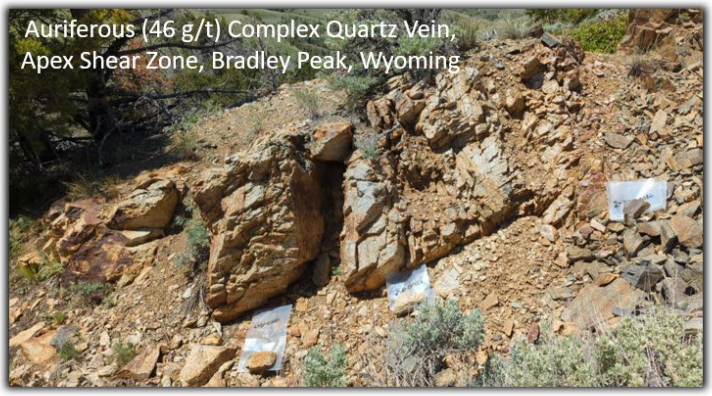
The Rifted Abitibi in Wyoming
Think About That

Dean Peterson, PhD.
Chief Geologist
Technical Advisor for Relevant Gold

AME Roundup Presentation
January 2026

The Rifted Abitibi in Wyoming

Think About That…



Dean M. Peterson

Chief Geologist, Big Rock Exploration
Technical Advisor, Relevant Gold Corp

AME ROUNDUP.

January 28, 2026

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The scientific and technical contents of this presentation have been approved by Mr. Brian C. Lentz, CPG, Chief Exploration Officer of the Company, who is a "Qualified Person" as defined by Canadian National Instrument 43-101 (Standards of Disclosure for Mineral Projects). Mr. Lentz is not independent of the Company.

Outline

- Introduction
  - Important geologic literature
  - Timeline of events
- Relevant Gold Corp's Wyoming Thesis
  - Exploration targeting criteria
  - Archean geology, Wyoming
- Correlating the Superior & Wyoming Cratons
  - Superior Province Maps
  - Paleogeographic/Tectonic Reconstructions
  - Protracted rifting, epicratonic basin sediments
  - The missing Abitibi-Wawa found
- RGC's Geologic Foundation & Initial Results
  - South Pass Greenstone Belt
  - Bradley Peak Greenstone Belt





Gold samples & nuggets from RGC's Golden Buffalo property

Introduction – Where it all Began for RGC

RGC's thesis built upon 100 years of scientific studies

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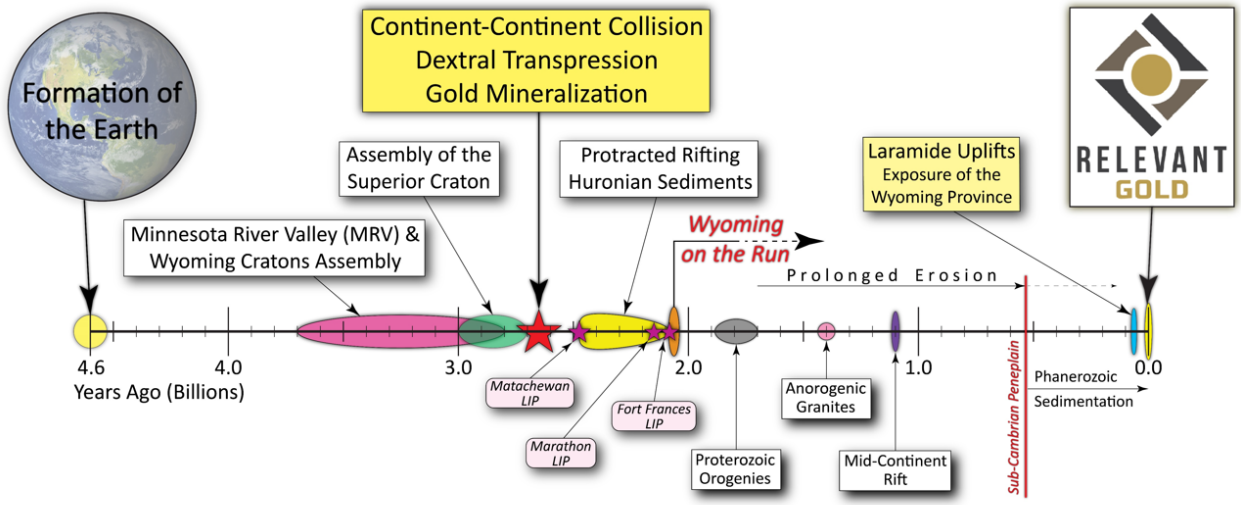
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Huronian stratigraphy & glaciations, LIP's & dike swarms, paleomagnetism, sutures, tectonics, geology, geochronology, geochemistry …

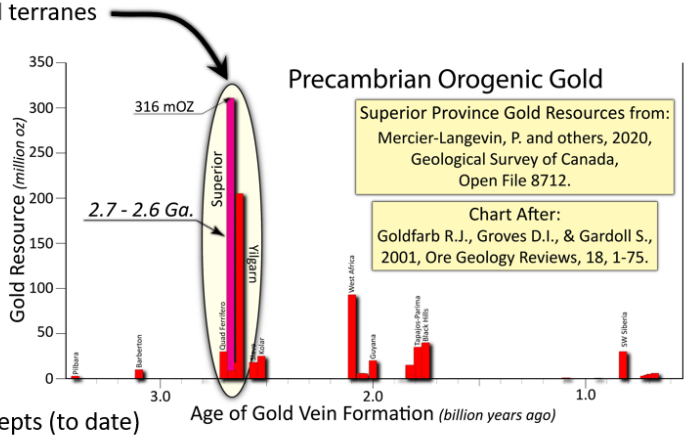
-- Nothing about Archean orogenic gold --

Geologic Timeline
Will touch on several of these items today



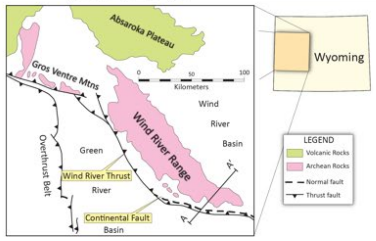
Relevant Gold's Wyoming Thesis
Exploration Targeting Criteria/Methods

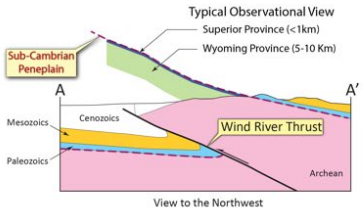
- Explore Precambrian orogenic gold mineral systems
  - Focus on Late Archean (~2.65 Ga) mineralized terranes
- Greenfield opportunities for scale
  - Wyoming, a mining friendly jurisdiction
  - Opportunities for large land positions
- Archean Orogenic Gold Experience
  - Geologic mapping & tectonic reconstructions
- Systematic exploration Process
  - Geology – Geochemistry – Geophysics
- Drilling
  - Initial small drilling programs to confirm concepts (to date)
  - Robust drill campaigns on identified targets (2026 ⟶)



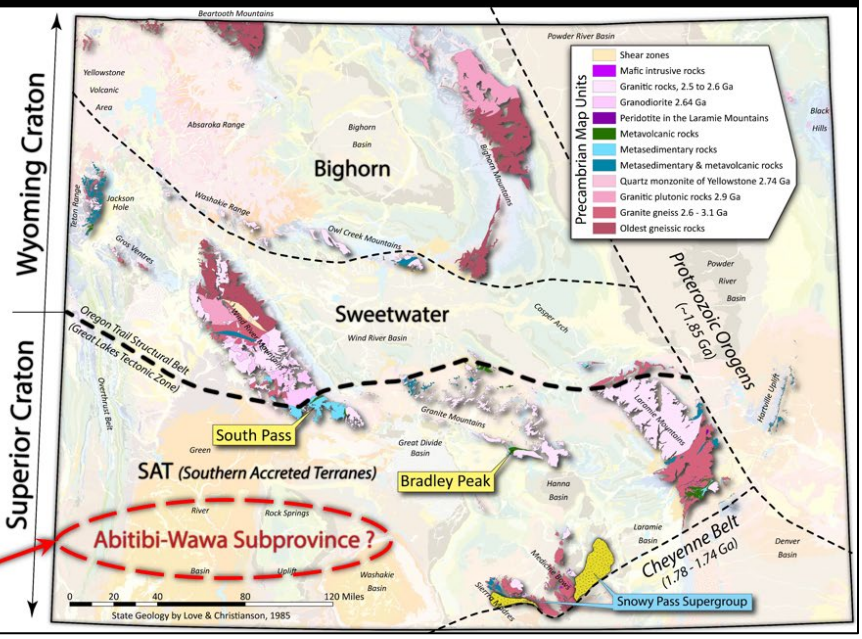
Archean Geology, State of Wyoming, USA

Laramide Uplifts





We'll Investigate this today



Correlation of the Superior & Wyoming Cratons

highlighting Bleeker et al., 2025 and Mammone et al., 2022

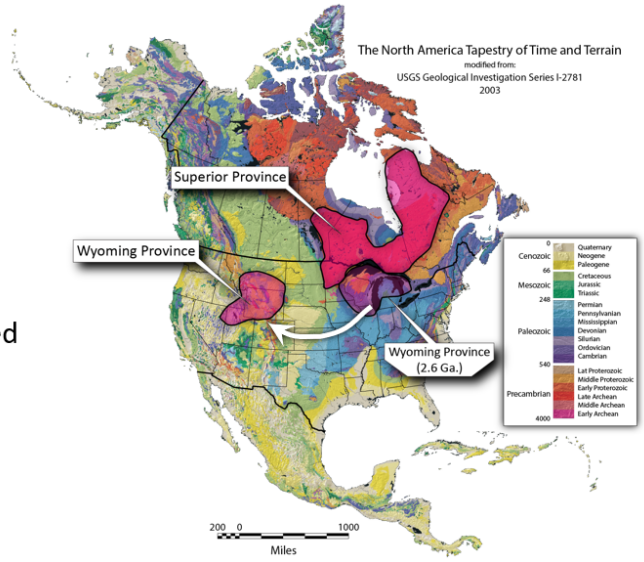
The Body of Evidence

Wyoming has been matched definitively to the southern margin of the Superior craton.

It rifted off with together with the Hearne craton and likely traveled together (& may have never separated).

These data are paleomagnetically constrained using dated dike swarm samples.

Robust correlation of the Paleoproterozoic sedimentary and mafic volcanic rocks of the Huronian & Snowy Pass Supergroups.

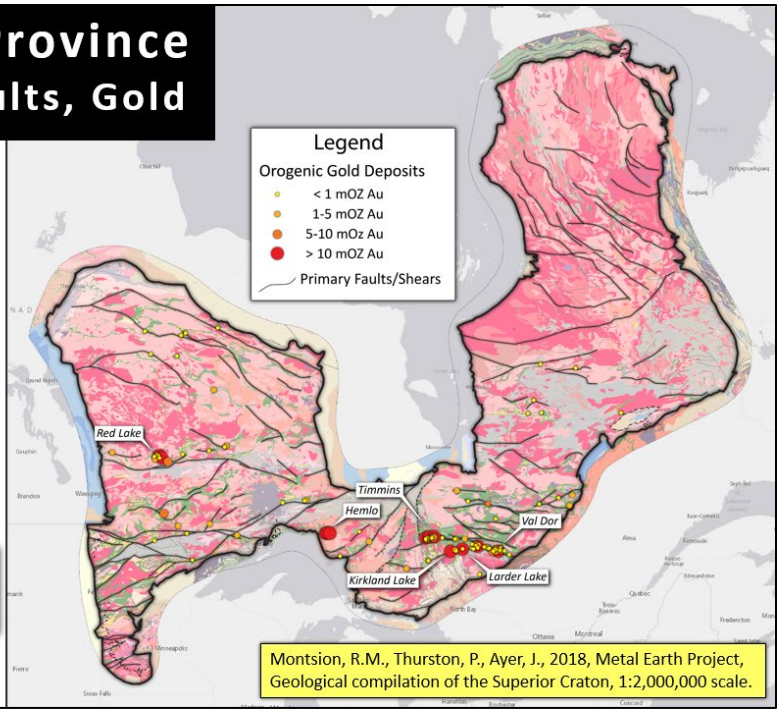


Superior Province
Geology, Faults, Gold

Superior Province facts

- Earth's largest fragment of Archean continental lithosphere,
- Gold resources >315 million oz,
- Deposits spatially associated with primary faults/shear zones.

What event(s) formed the Primary Structures associated with Gold??

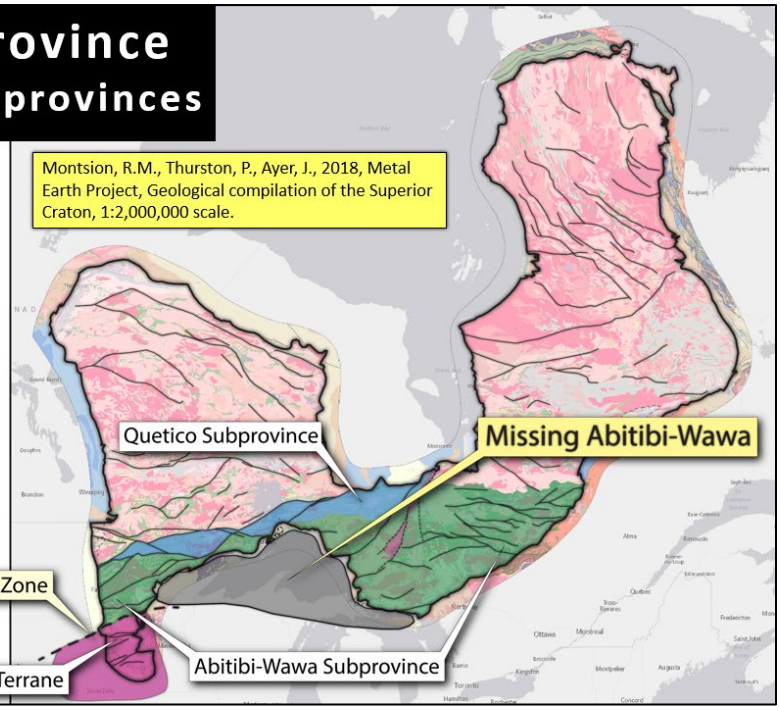


Superior Province
Southern Subprovinces

The Abitibi-Wawa granite-greenstone terrane is the southern-most subprovince of the Superior Province.

It's bounded to the north by the metasedimentary Quetico subprovince and to the south by gneissic rocks of the Minnesota River Valley Terrane (MRV) along the Great Lakes Tectonic Zone.

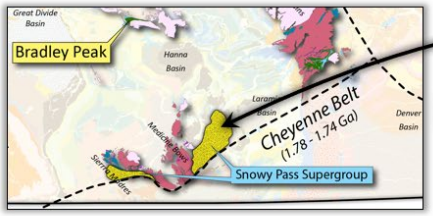
A large portion of the Abitibi-Wawa subprovince, centered on Lake Superior, is seemingly missing.



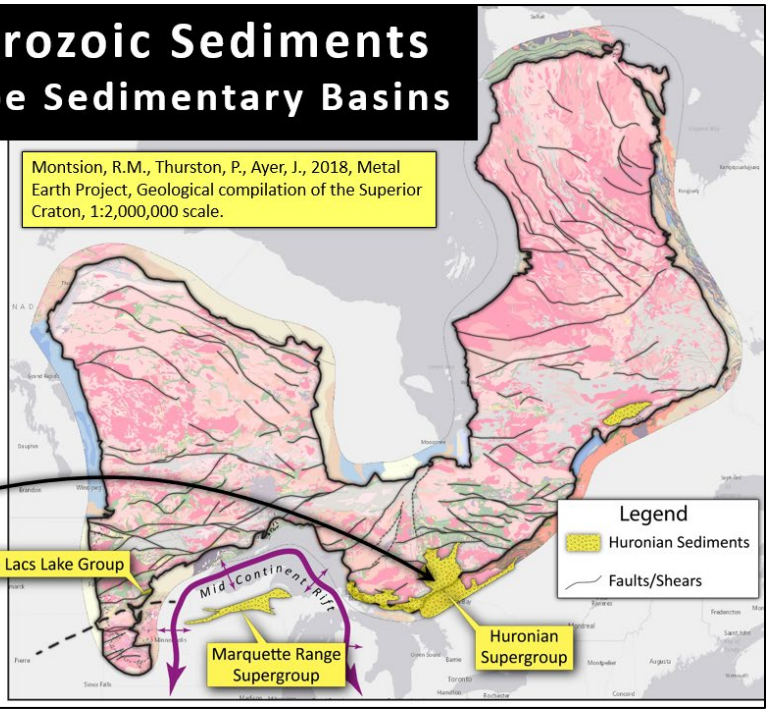
Paleoproterozoic Sediments
Huronian Type Sedimentary Basins

Huronian-type epicontinental basins were filled by sediments during the LIP-induced protracted (2480-2070 Ma) rifting of the Wyoming Province away from the Superior Province.

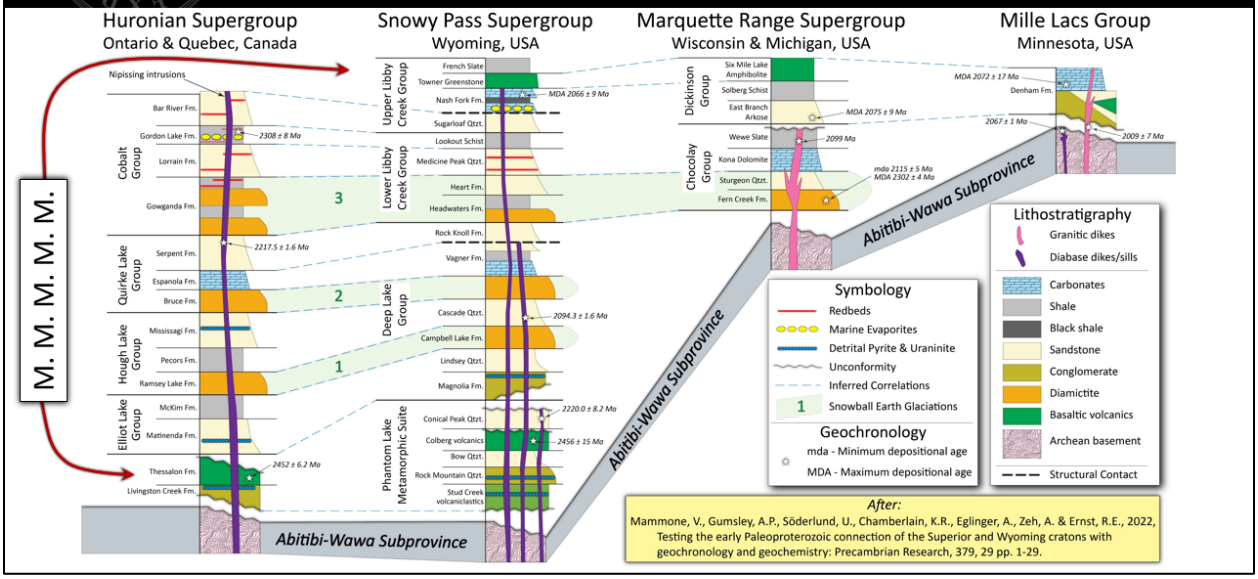
A **robust correlation** of these epicratonic sedimentary rock units in these now separated basins has been developed over the last 100 years.



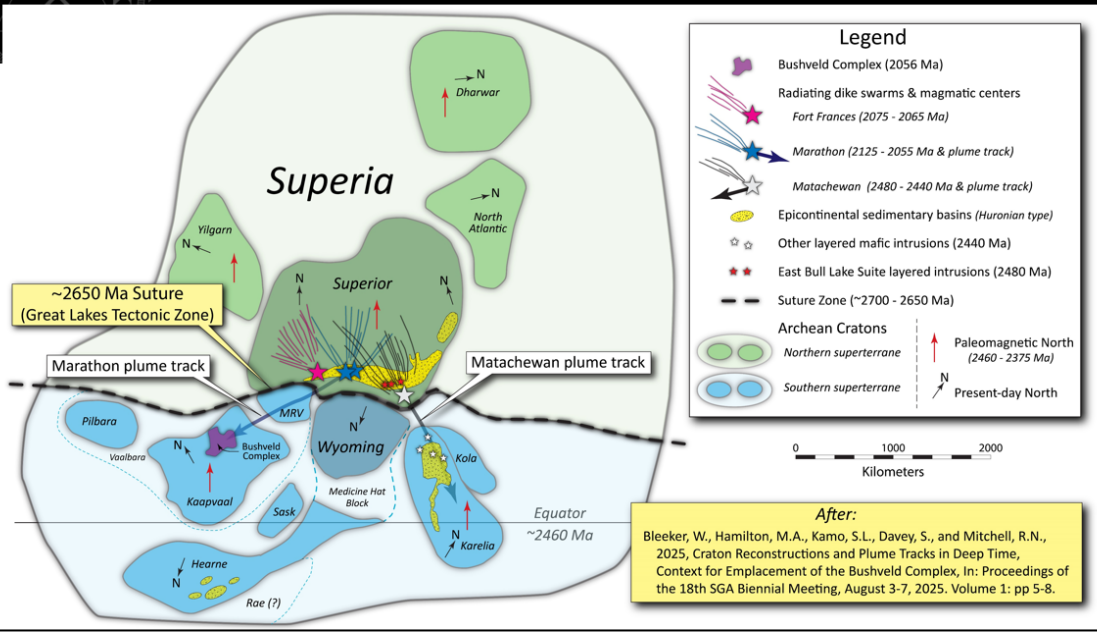
Huronian-type rocks in Wyoming



Paleoproterozoic Epicratonic Sediments
Supergroup Correlation Diagram



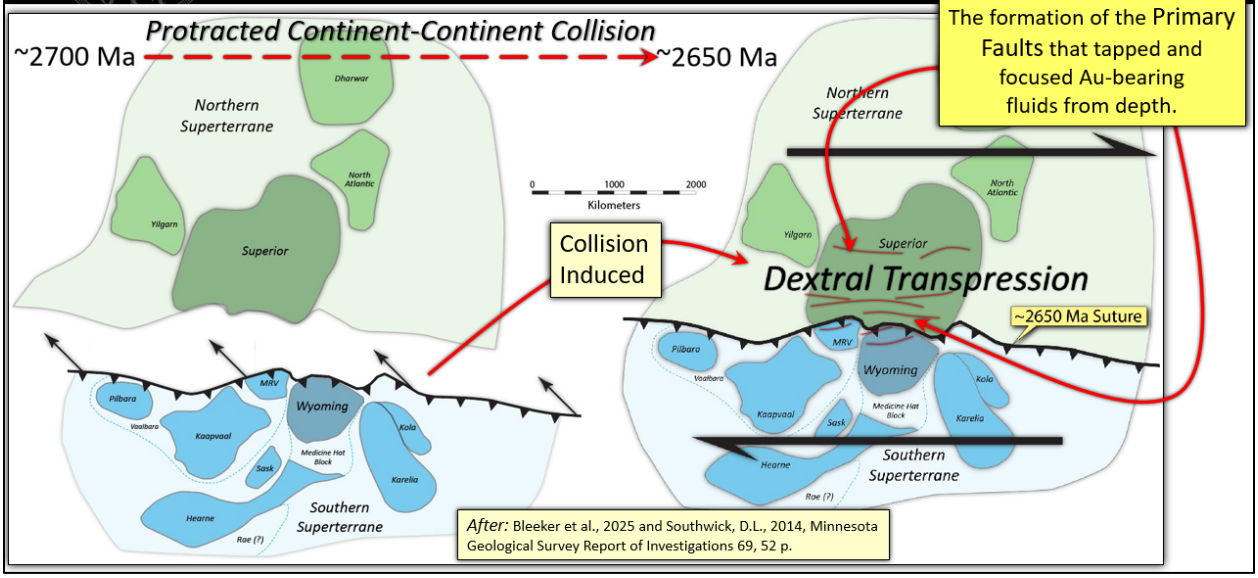
Late Archean Superia Craton, Schematic Map



After:
Bleeker, W., Hamilton, M.A., Kamo, S.L., Davey, S., and Mitchell, R.N., 2025, Craton Reconstructions and Plume Tracks in Deep Time, Context for Emplacement of the Bushveld Complex, In: Proceedings of the 18th SGA Biennial Meeting, August 3-7, 2025. Volume 1: pp 5-8.

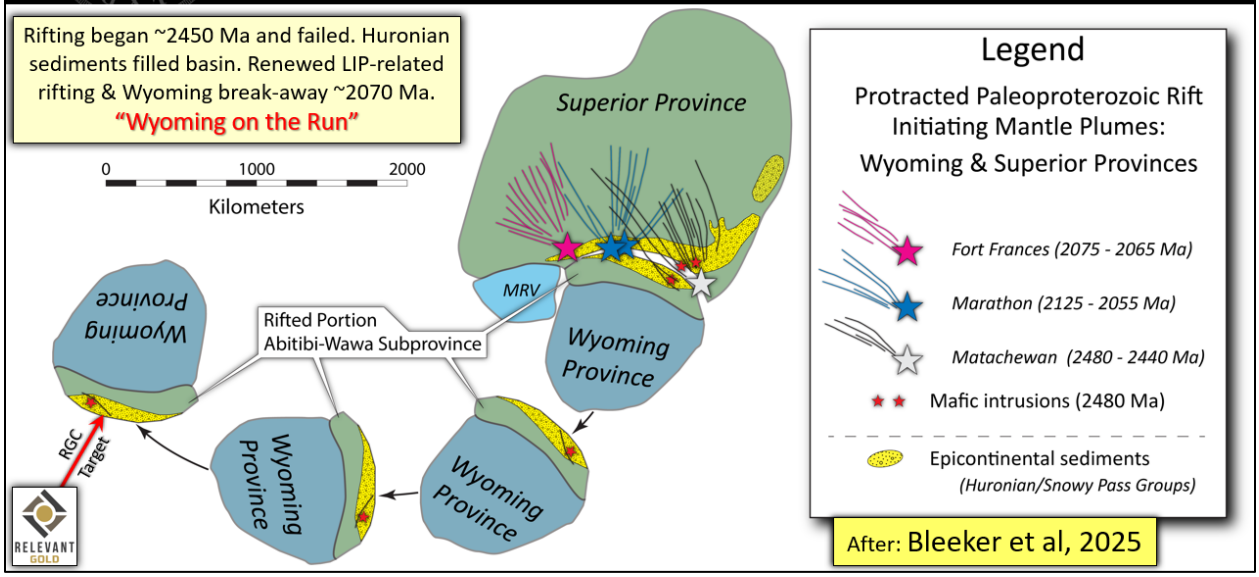
Continent-Continent Collision
Dextral Transpression, *Au Mineralization*

± 2650 Ma

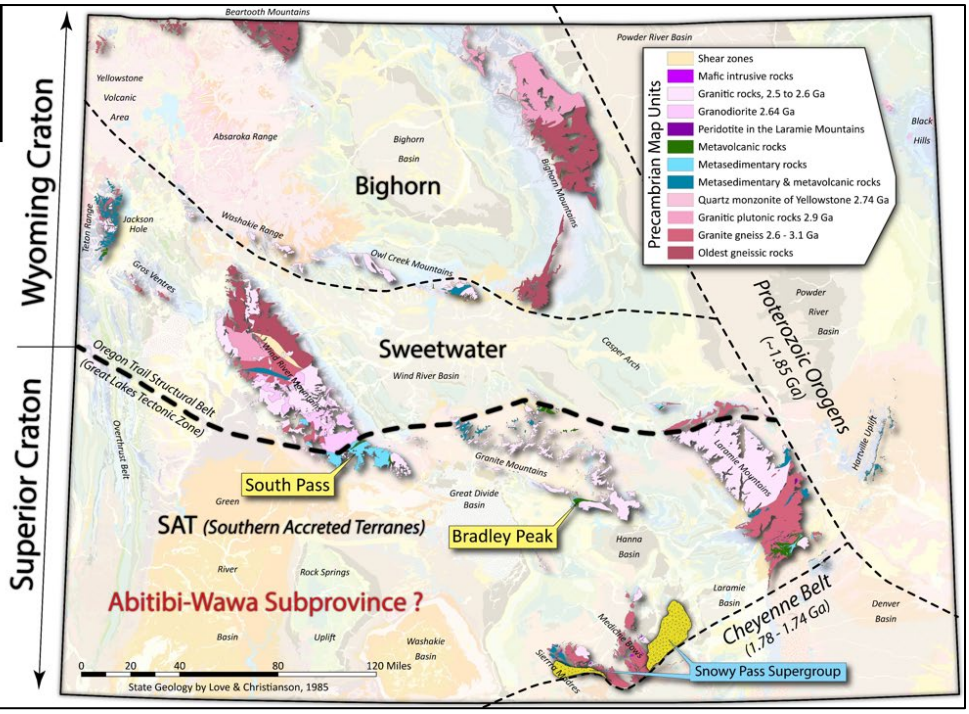


After: Bleeker et al., 2025 and Southwick, D.L., 2014, Minnesota Geological Survey Report of Investigations 69, 52 p.

Wyoming on the Run
Protracted rifting of the Wyoming Province



Wyoming



Relevant Gold Corp Results
The Building of a Robust Geologic Foundation

South Pass Greenstone Belt

- Shallow (~20°) SW-directed Laramide uplift along the basal Wind River Thrust Fault.
- Large (2,740 Km^2) geologic compilation & map.
- Greenstone belt dominated by metagreywacke with marginal komatiites, pillow basalts, mixed schists, and iron formation.
- Gold mineralization associated with reverse sense wedge-shaped Reidel P-type shear zones.

Bradley Peak Greenstone Belt

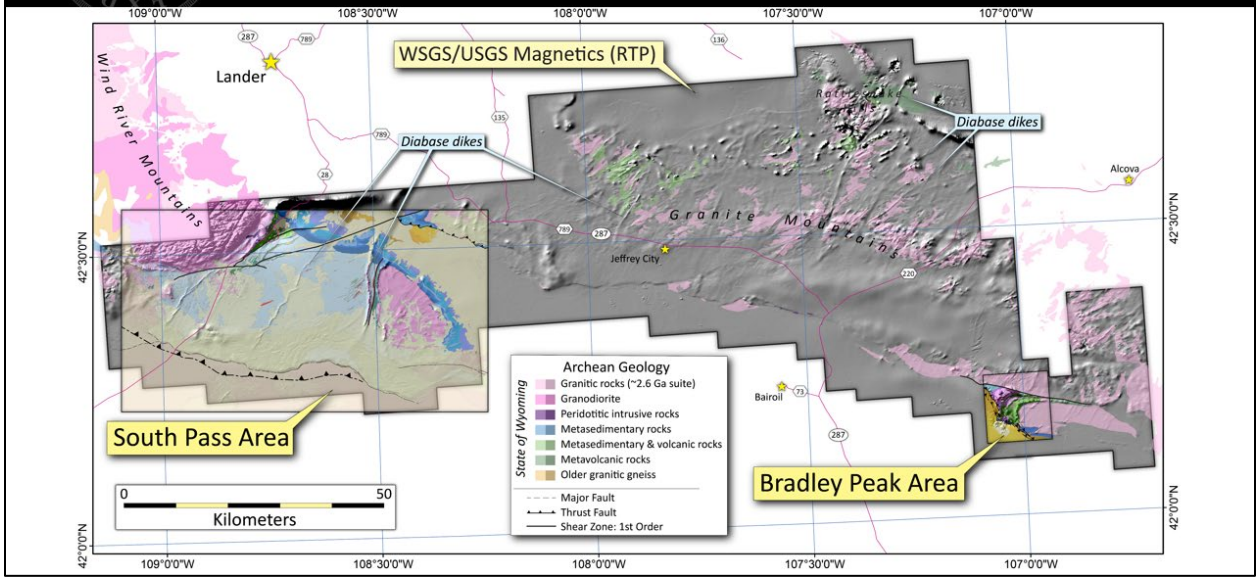
- Steep (~45°) SW-directed Laramide uplift along the basal Bradley Peak Thrust Fault.
- Small (164 Km^2) geologic compilation & map.
- Classic greenstone belt dominated by amphibolitic pillow basalts, spinifex-textured komatiites, iron formations, and gabbros.
- Gold mineralization associated Greenstone belt dominated by metagreywacke with marginal komatiites, pillow basalts, mixed schists, and iron

Relevant Gold Corp AME 2026 Core Shack

Booth 917 to see & discuss geology & initial drill results with RGC

Wednesday, Jan 28 – Thursday, Jan 29

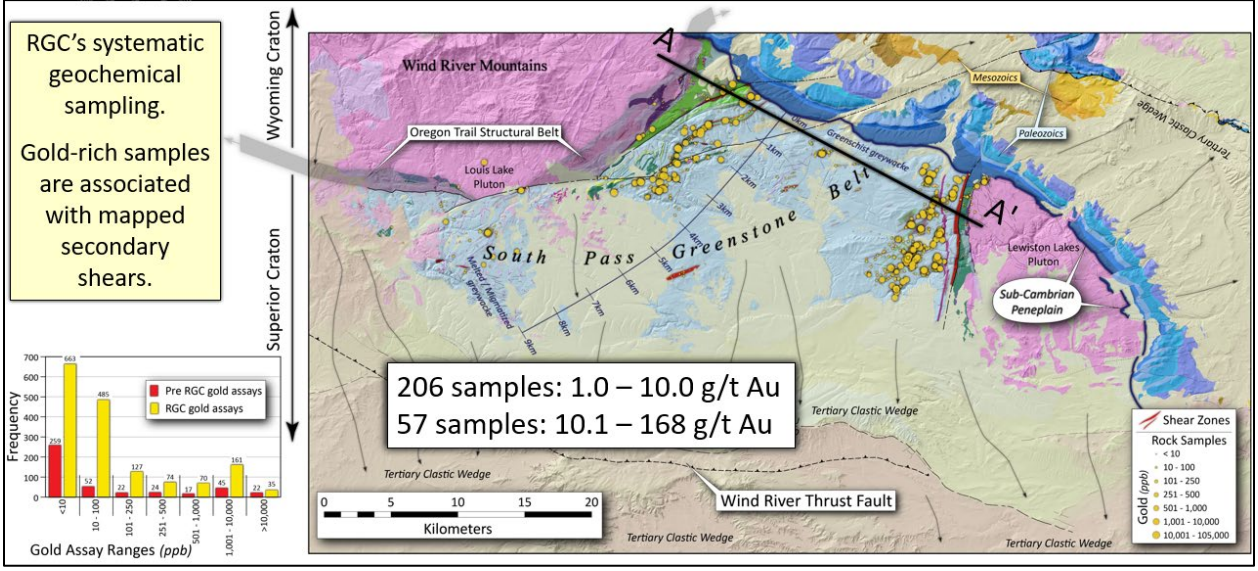
Relevant Gold's Project Area Maps
South Pass & Bradley Peak Greenstone Belts



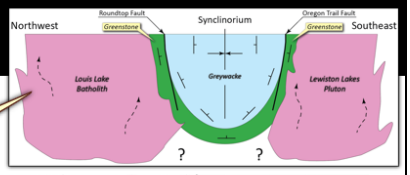
South Pass Greenstone Belt
RGC's Rock Sample Gold Geochemistry Data

RGC's systematic geochemical sampling.

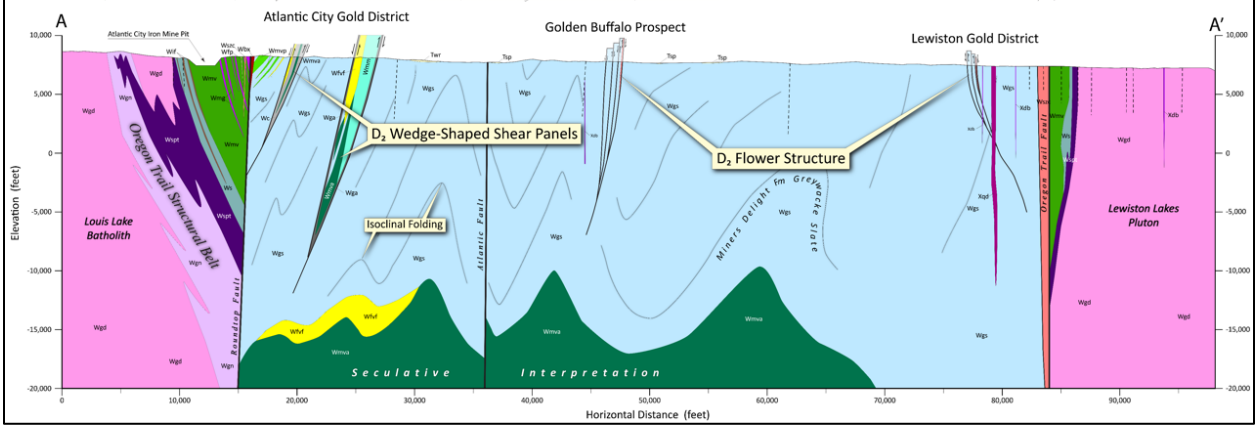
Gold-rich samples are associated with mapped secondary shears.



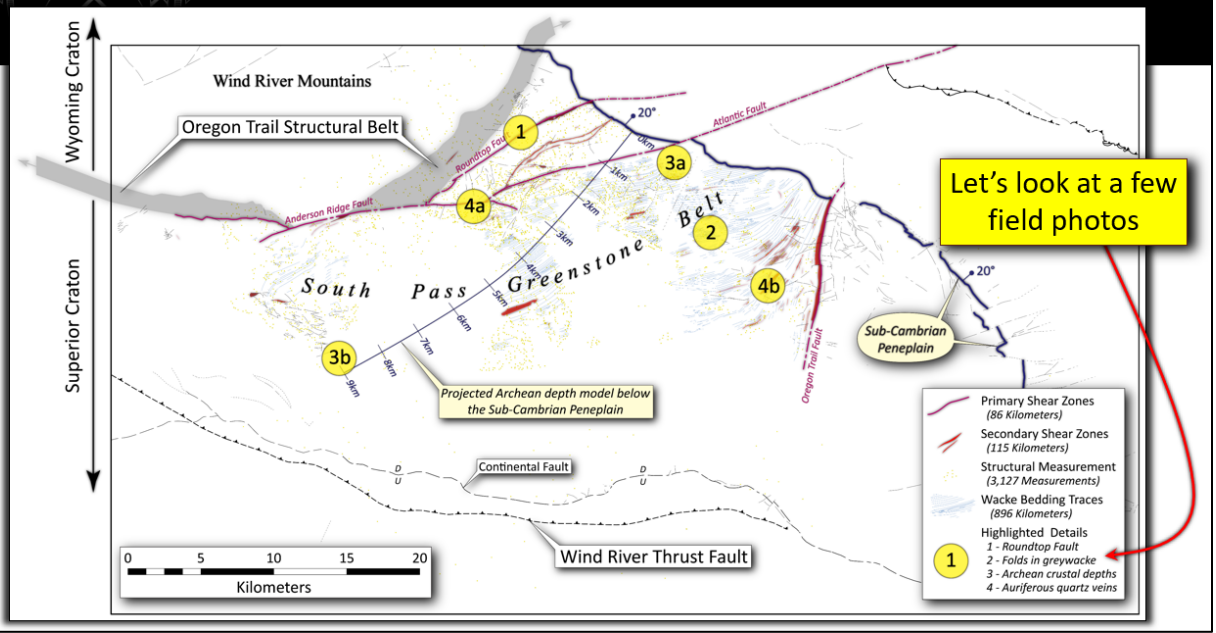
South Pass Cross Section A – A'
Interpretations Old & New



Old cross section in the literature

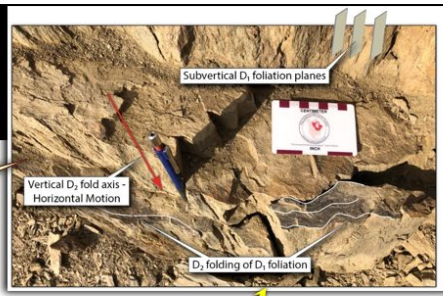


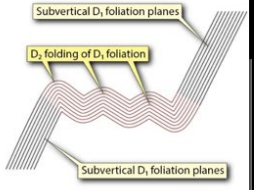
South Pass Structural Elements

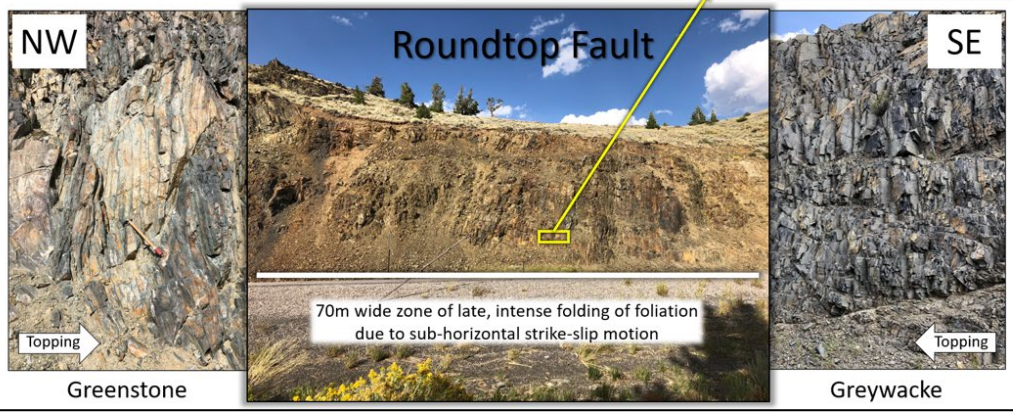


1 Roundtop Fault
Primary Shear

D_2 sub-horizontal dextral strike-slip motion folded preexisting sub-vertical D_1 foliation in the guts of the fault.

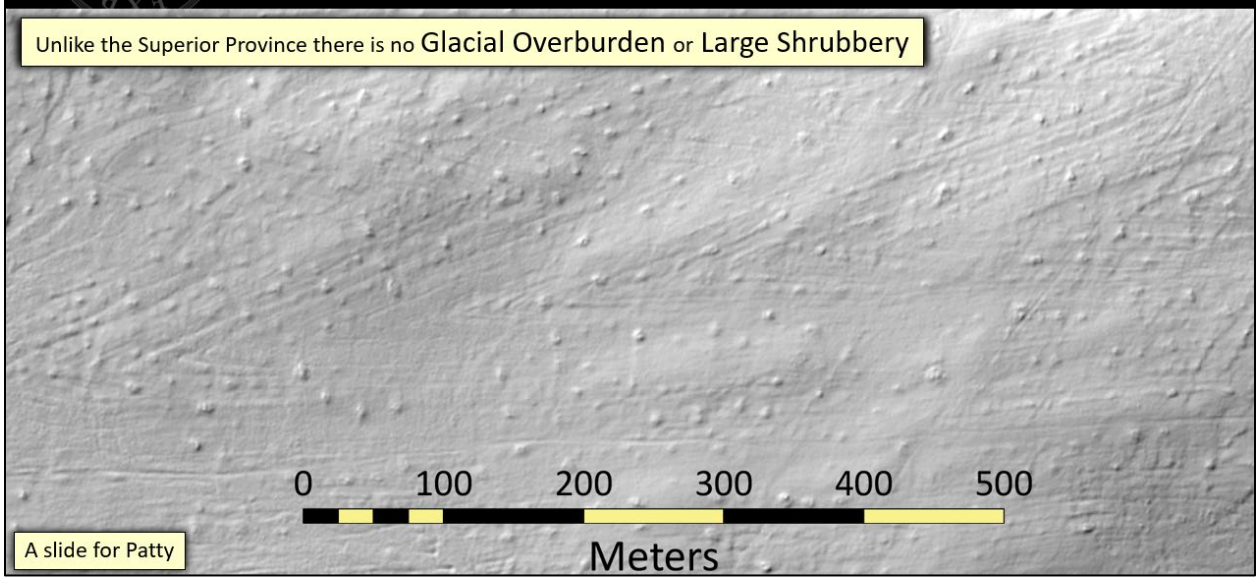






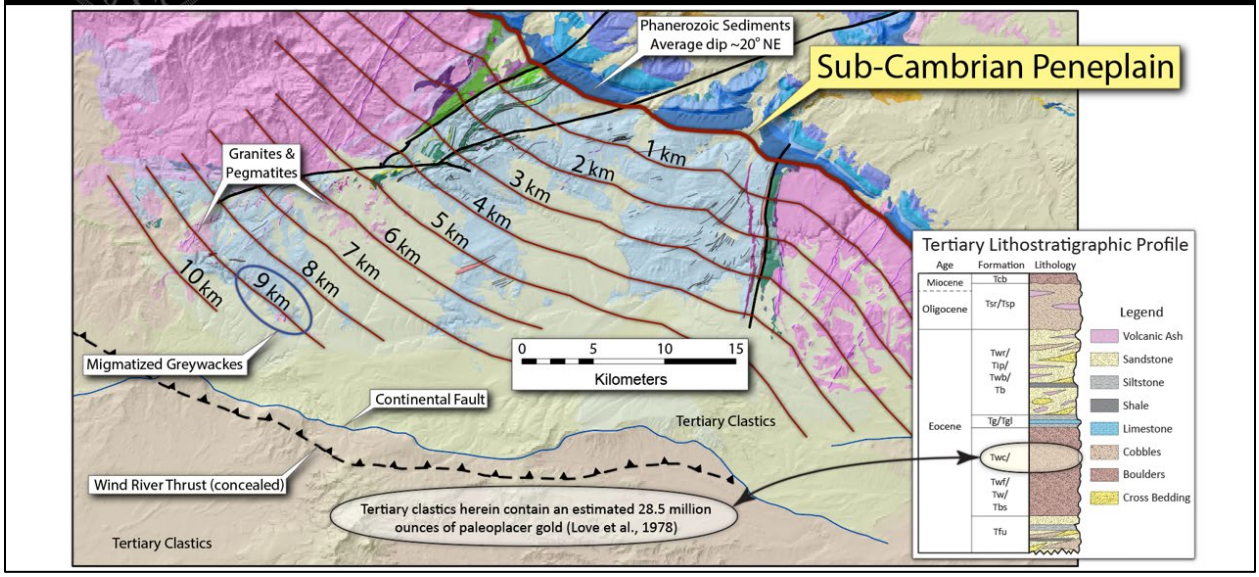
2 Isoclinal Folding, Lidar Revealed

Greywacke-slate of the Miners Delight Fm.



3 The Sub-Cambrian Peneplain

Understanding where one is in the Archean crust

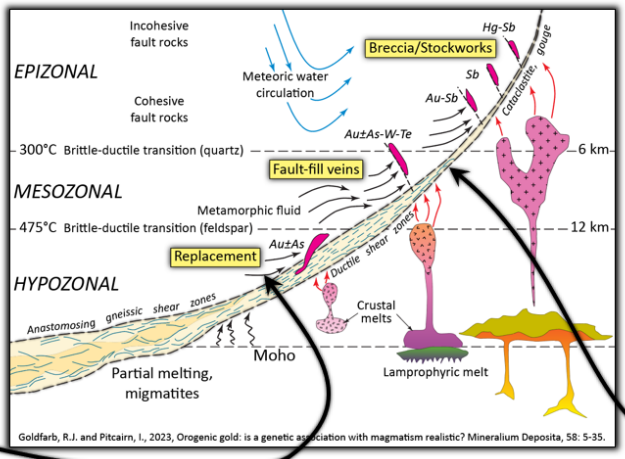


3 From a Bouma Sequence to Migmatite

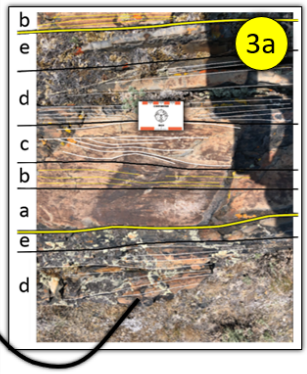
Outcrop views through 9 km of Archean crust

Schist-rich migmatite





Classic greenschist-grade greywacke-slate

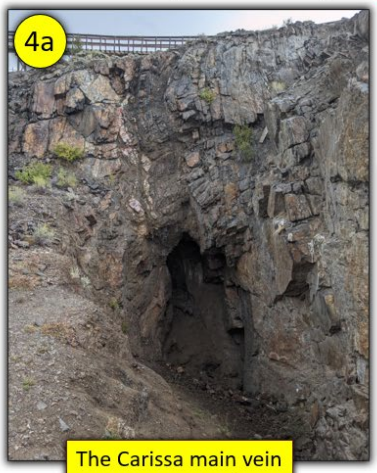


9.0 km ← — — — Depth below the Sub-Cambrian Peneplain — — — → 0.5 km

4 Auriferous Complex Quartz Veins

Views of Historic Mine Portals

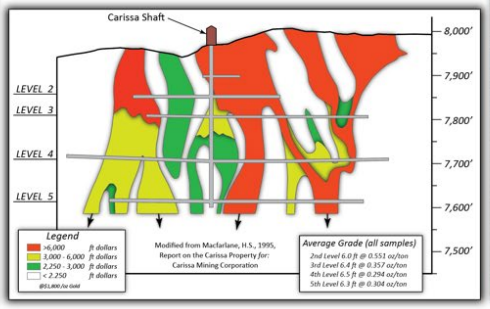
Carissa Mine, South Pass City



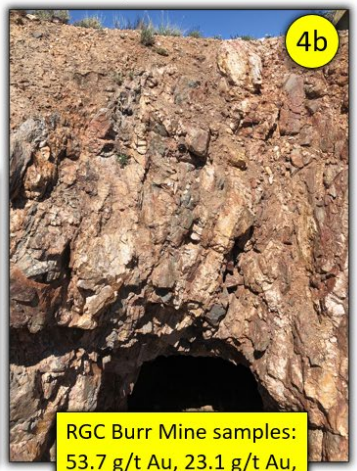
The Carissa main vein ~2.0m @ 11.8 g/t.

22.5 Kilometers

The Carissa Mine, South Pass city, was developed along a shear zone with abundant gold-bearing quartz-arsenopyrite-pyrrhotite veins down to a depth of 400 feet.



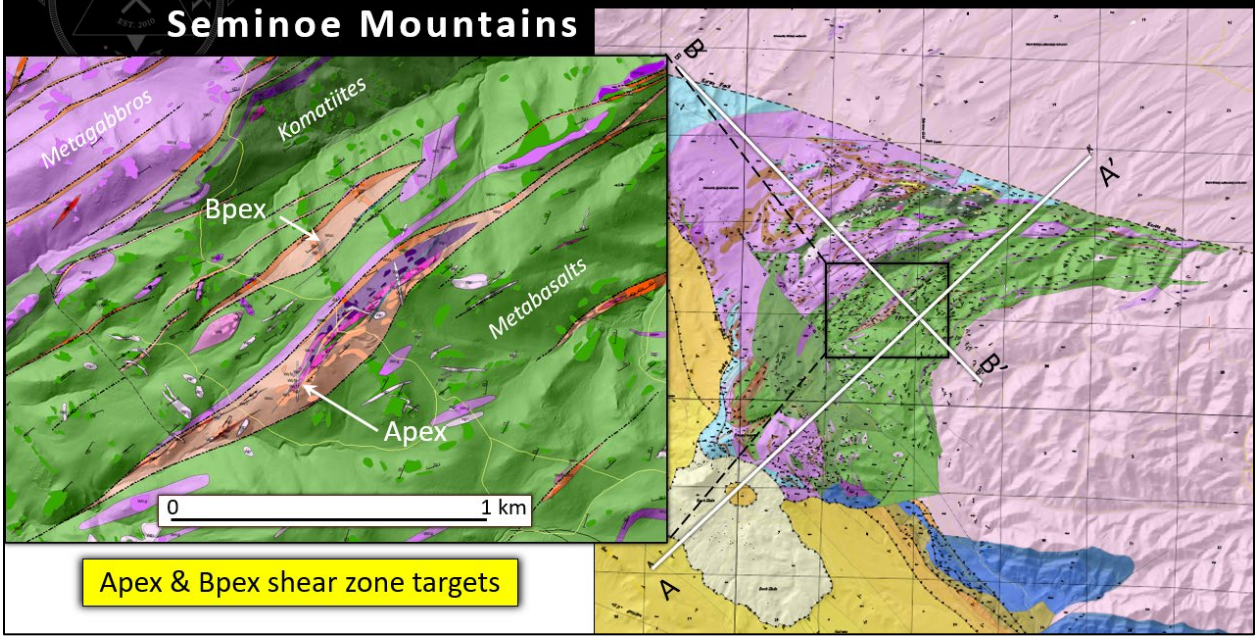
Burr Mine, Lewiston District



RGC Burr Mine samples: 53.7 g/t Au, 23.1 g/t Au, 19.0 g/t Au, 13.1 g/t Au.

Bradley Peak Project Geology Map

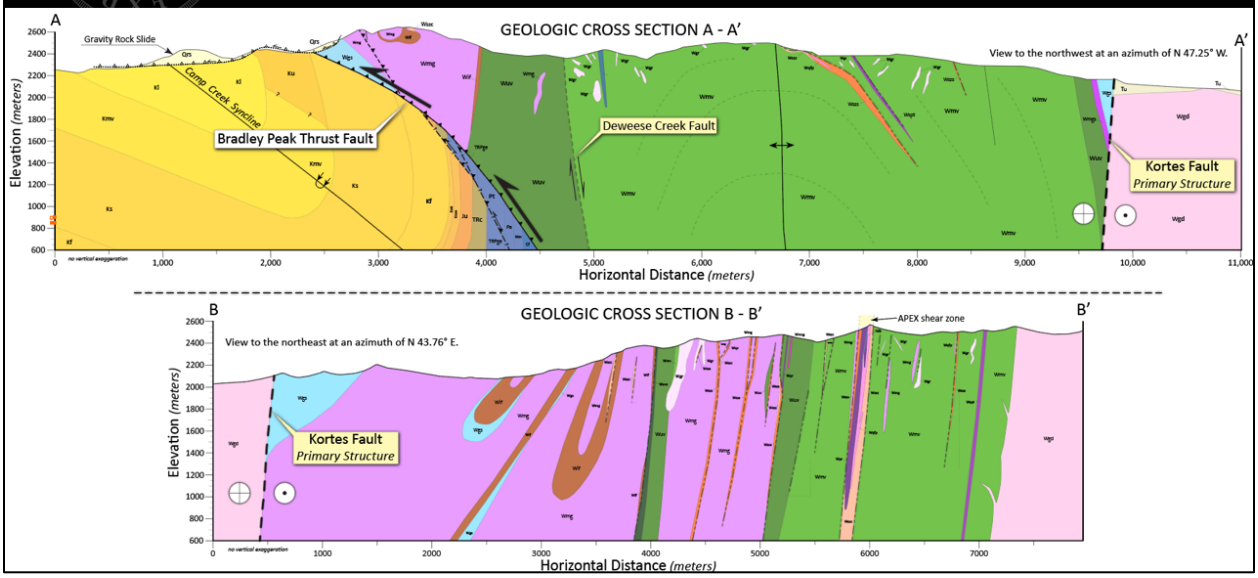
Seminoe Mountains

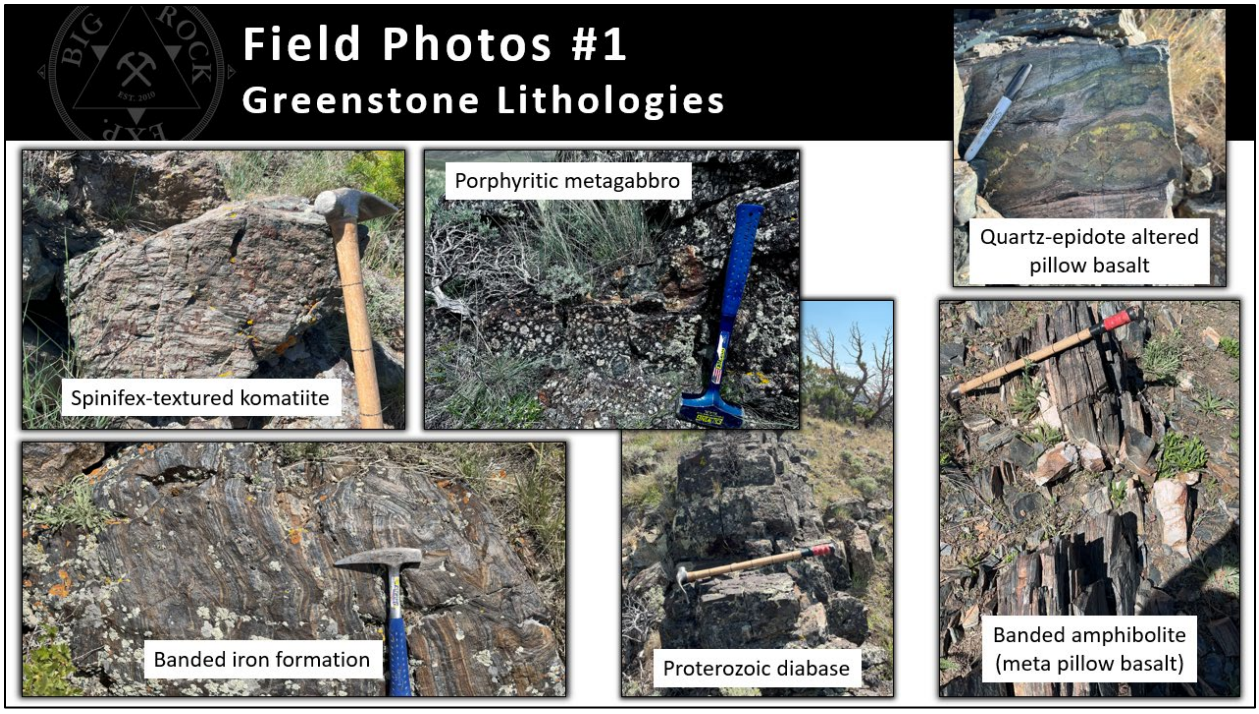


Apex & Bpex shear zone targets

Geologic Cross Sections A - A' and B - B'

Where the rubber hits the road

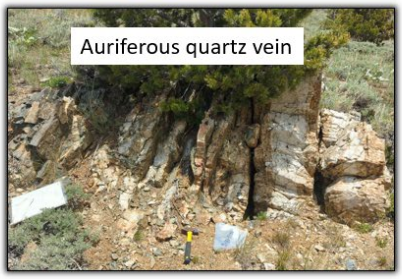



Field Photos #1
Greenstone Lithologies
Spinifex-textured komatiite
Porphyritic metagabbro
Quartz-epidote altered pillow basalt
Banded iron formation
Proterozoic diabase
Banded amphibolite (meta pillow basalt)

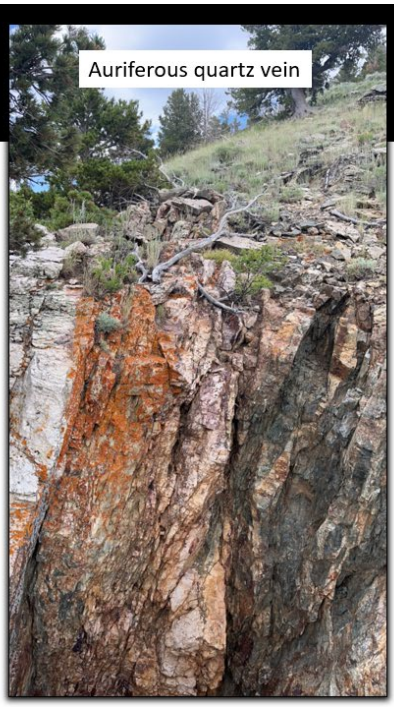

Field Photos #2
Shear Related Rocks
Fuchsite-Ankerite schist
Sericite-Ankerite-Pyrite schists
Quartz-Feldspar Porphyry
Chlorite-Actinolite schist

Field Photos #3
Alteration & Mineralization


Ankerite alteration

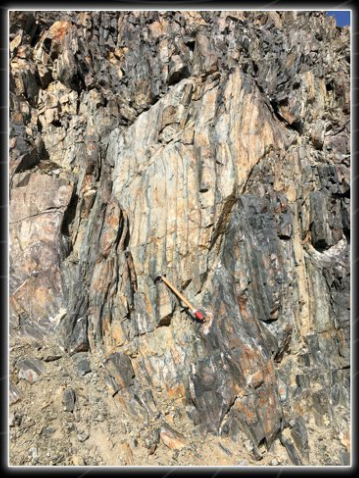

Auriferous quartz vein


Gossan of unknown affinity


Auriferous quartz vein

Thank You

EXPLORE



DISCOVER



"The rocks are the final court of appeal", Francis Pettijohn