Buried Placer and Lode Deposits

Yentna Mining District Alaska

by

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Summary: This brief report will examine the data indicating the possible locations of buried and preserved placer deposits. This is made possible by recent computer upgrades and the re-examination of the available data.

These preserved and buried channel placer deposits represent a significant under-investigated resource that has been profitably mined in parts, and are indicated by these historic operations.

We are grateful for and acknowledge the excellent work conducted by those who came before us and the Alaska D.G.G.S: “During the summer of 1998, an interdisciplinary geologic mapping team from DGGS spent about three weeks in the field to carry out reconnaissance-level field investigations. Our work was concentrated in an area of approximately 428 square miles (1,097 square kilometers) in portions of the Talkeetna B-2, B-3, B-4, C-2, and C-3 quadrangles. DGGS’s efforts focused on determining and understanding the geologic environments of the Petersville mining district[1], especially with respect to gold mineralization and deposition. New geophysical data have been critical to our efforts to extrapolate bedrock geologic contacts beneath the Quaternary cover that dominates the majority of the study area, as well as into areas we were unable to reach on the ground.”

I have downloaded all the data and assembled it into a Geographic Information System.

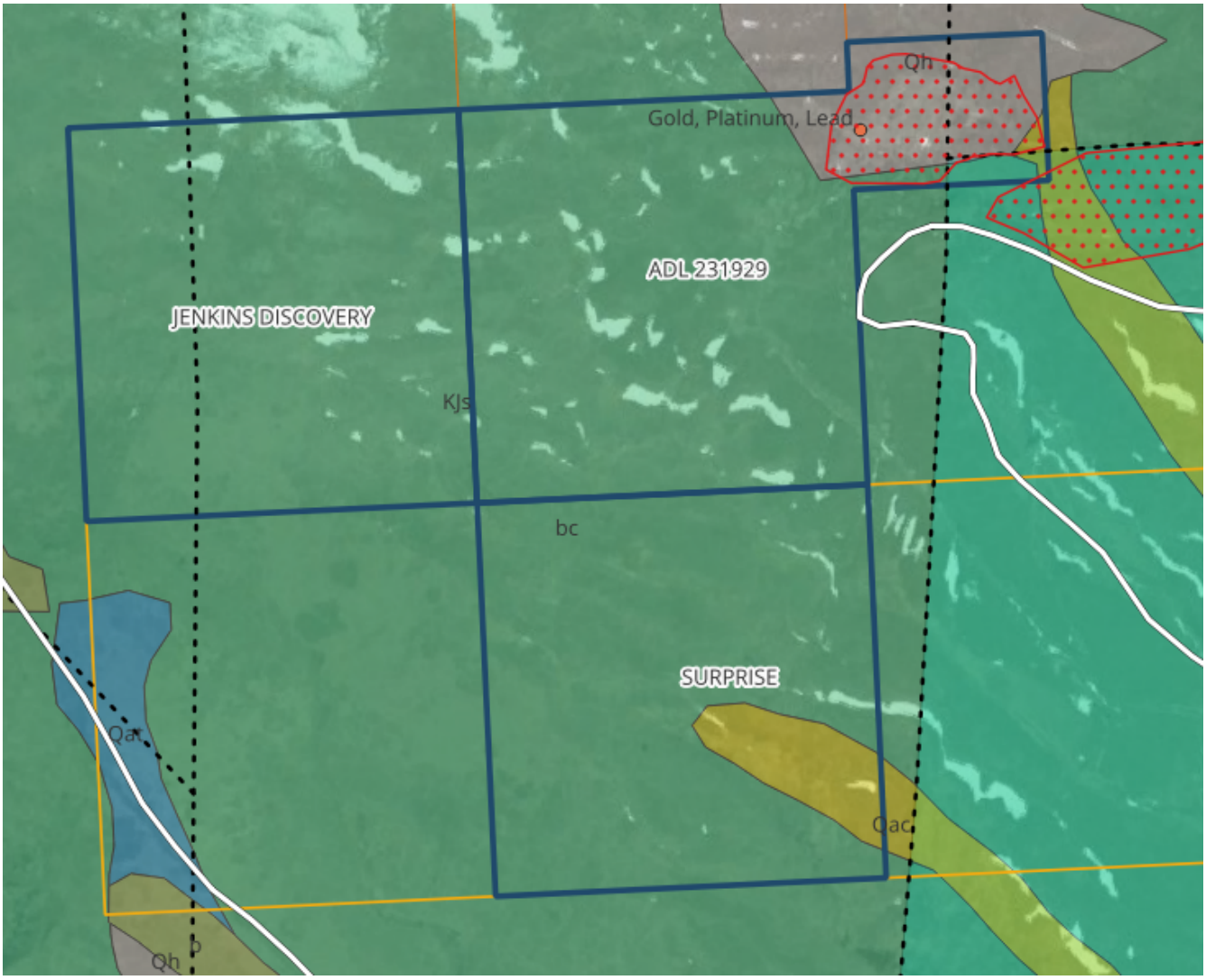
“While most exploration efforts typically focus on hardrock[2] mineral prospects, our work in the Petersville district has shown that significant precious metal resources may be contained within the poorly consolidated and unconsolidated deposits that blanket the lowlands. We readily recovered particulate gold and platinum from bulk samples collected from a range of Tertiary sedimentary rocks and Pleistocene glacigenic sediments.”

“TERTIARY PLACERS

The earliest geologic studies of what is now the Petersville mining district concluded that economically significant modern placer deposits were the product of reworked preexisting placers in the Tertiary sedimentary rocks (Capps, 1913, 1925; Mertie, 1919), a contention supported by the coincidence of recognized placers with the distribution of Tertiary sedimentary rocks throughout the region. Much of

1 There is no “Petersville mining district”, they are referring to the Yentna Mining District.
2 This report will mention a few small lodes.

the Petersville mining district is underlain by up to 2,950 feet (900 meters) or more of moderately consolidated to unconsolidated Tertiary sedimentary rocks of the Kenai Group (figure 1). The Group is divided into the Pliocene Sterling Formation and the Miocene coal-bearing Tyonek Formation, separated by an angular unconformity."



Map 1, created by this author. The primary bedrock on the property is unit Kjs. Tertiary Unit Tps Sterling Formation, shown as light blue. Unit Qac are buried channels, bc is shallow buried bedrock. The buried channel crossing into "Surprise" claim appears to be a former channel of Peters and Bird Creeks. The Potato Patch placer/lode mine is in red. Dashed black lines are faults. Side of each claim is 1320'.

"Paleocurrent data and clast lithology indicate that these sediments were probably derived from the Alaska Range to the north. The massive drainage system that deposited these sediments also transported and concentrated gold and platinum liberated by erosion from lode sources in the mountains.

Although no quantitative sampling was carried out during this reconnaissance-level study, a bulk gravel sample of less than one-quarter cubic yard collected from the basal contact of the Sterling Formation was concentrated using a portable sluicebox and panned to yield more than 20 specks of visible gold. The very fine-grained nature of the gold would probably require specialized equipment in order to be efficiently recovered by a commercial placer operation, but the potential resources in the large volume of Tertiary gravel are significant. There is currently one known mining operation exploiting the placer potential of the Sterling Formation gravels south of the Petersville mining district, but none within the district."

Image 1, cut in Tertiary Sterling Formation conglomerate deposit below the Potato Patch. Note the large sand wedge. The entire mass has been tilted by geologic forces.

“GLACIER -RELATED PLACERS

The modern landscape of the Petersville mining district was shaped largely by the action of massive glaciers during the last Ice Age, which also had a profound effect on the distribution and preservation of many placer deposits (figure 1).

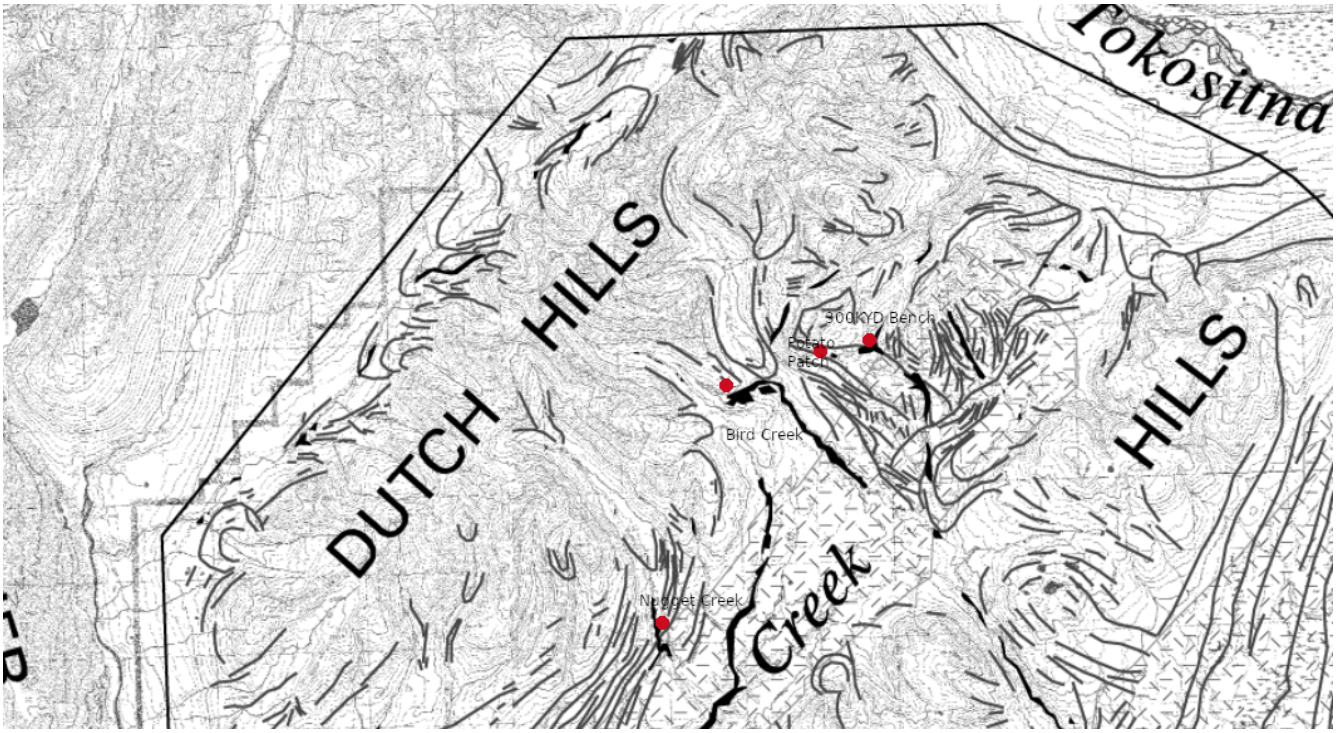


Fig 1 from the article, placer mines as red dots, placers are black, ice limits gray lines.

“During the early Naptowne glaciation, which began about 25,000 years ago, almost all of the district was inundated by glacial ice as thickening glaciers originating in the southcentral Alaska Range spread into the lowlands south of the range. Following the culmination of the Naptowne glaciation about 18,000 years ago, the expanded glacier systems began thinning and receding as the climate ameliorated and less glacial ice formed. During this phase, two ice caps persisted on the summits of the central and northeastern Peters Hills. A complex of overlapping morainal arcs and lobes of this age in the northeastern trough between the Peters Hills and Dutch Hills is evidence that fluctuations of ice from the Dutch Hills interacted nonsynchronously with fluctuations of glaciers from the Peters Hills and from the Tokositna River valley.

“During the final phase of the Naptowne glaciation, which ended about 9,500 years B.P., compound trunk glaciers continued to drain the southern flank of the central Alaska Range through the Yentna River valley, Kahiltna River valley, and Tokositna River valley. These massive ice streams apparently formed barriers across the mouths of nearly ice-free tributary valleys, forming several glacier-dammed lakes in the vicinity of Dutch Hills and Peters Hills.”

“No Holocene moraines were identified in the field area, although at least some of the moraines close to Kahiltna Glacier and other modern glaciers outside the study area are probably assignable to the

Holocene-age Alaskan Glaciation. Any significant placers of pre-Naptowne age were probably buried by till and associated sediments during the early, waxing phase of the Naptowne glaciation.

“The potential for preservation of such buried placers is highest where ice was relatively thin, for example, downglacier from bedrock highs in the Fairview Mountain area in a situation that provided downstream erosion shadows and where ice scouring was less intense than where the ice was thicker and faster moving.

“Buried placers, if present, might provide significant economic resources much like they have at Anvil Mountain near Nome and at Valdez Creek along the Denali Highway (Collier and others, 1908; Reger and Bundtzen, 1990). Although not visible at the surface, the bedrock or false-bedrock channels in which these deposits are potentially located might be identified using ground-penetrating radar, refraction seismic methods, or other geophysical methods.

“Known placer deposits of middle Naptowne age formed in ice-free valleys and sideglacial stream channels of the Mills Creek basin near Fairview Mountain, probably by the reworking of pre-existing placers in local Tertiary bedrock and by the concentration of particulate gold and platinum that were distributed in the local till (Capps, 1913, 1925; Mertie, 1919).

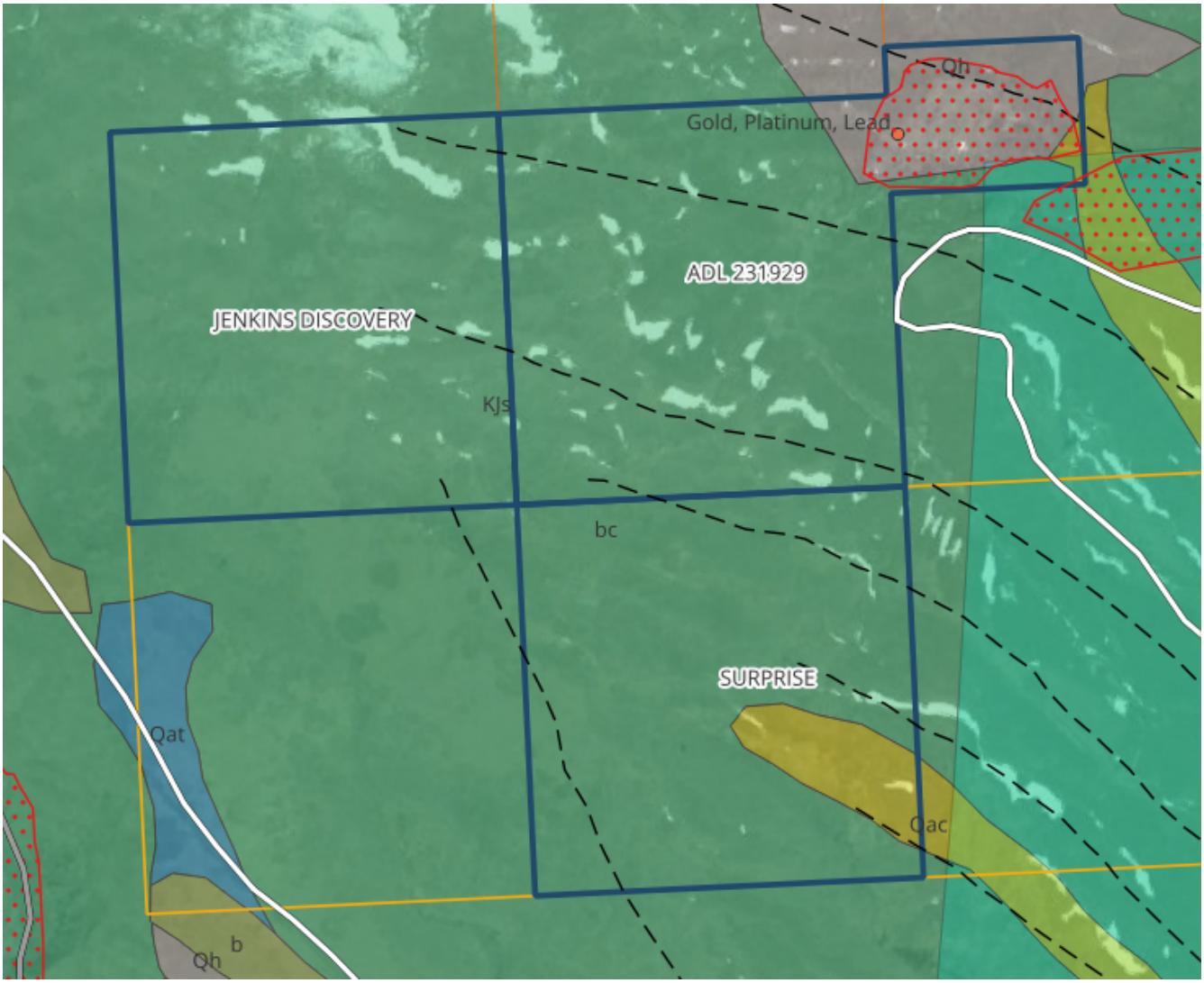
“Placers of this age also formed in the arcuate upper drainage of Willow Creek, which follows the eastern margin of the former Peters Creek glacier in the lowland trough between the eastern Dutch Hills and the eastern Peters Hills.

“Most of the known placers in the Petersville mining district have been located in the floodplains and terraces of streams that established their courses during and after the late Naptowne glaciation. The lack of a clear spatial relation between late Naptowne ice limits and the distribution of known placers indicates that late Naptowne glaciation probably did not have a significant effect on the formation of most placers. However, the presence of particulate gold and platinum in several random bulk samples of late Naptowne-age till and even lake sediments collected by DGGS in the study area indicates that the concentration of particulate gold and platinum from till and associated sediments contributed to the value of local placers.”

“PLACER RESOURCES IN THE PETERSVILLE
MINING DISTRICT

“While it is impossible to calculate reserves without more detailed thickness and distribution data as well as quantitative sampling, it seems clear from the reconnaissance mapping and sampling carried out by DGGS that the extensive unconsolidated deposits in the Petersville mining district potentially represent a significant resource that may locally be as rich as some low-grade hardrock mines. Given a sufficient increase in the market value of precious metals, mining of these extensive gravel deposits may become an economically viable option in the future.[3]”

3 Alaska Geosurvey News March 2000



Map 2, glacial ice limits shown as dashed black lines. These are targets for placer exploration, as the side channels of the glaciers will have concentrated the valuable minerals. The relationship of the buried channel in the Surprise claim to the ice limits are clear.

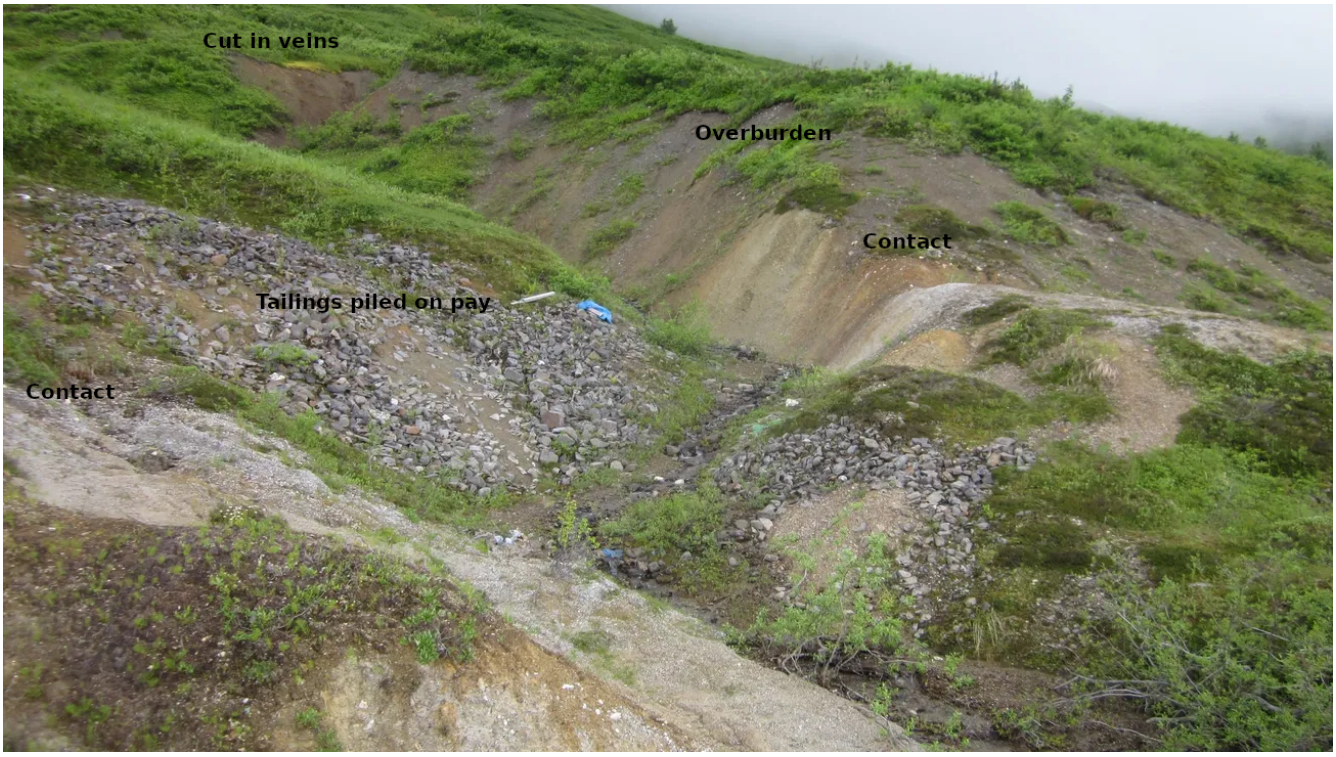
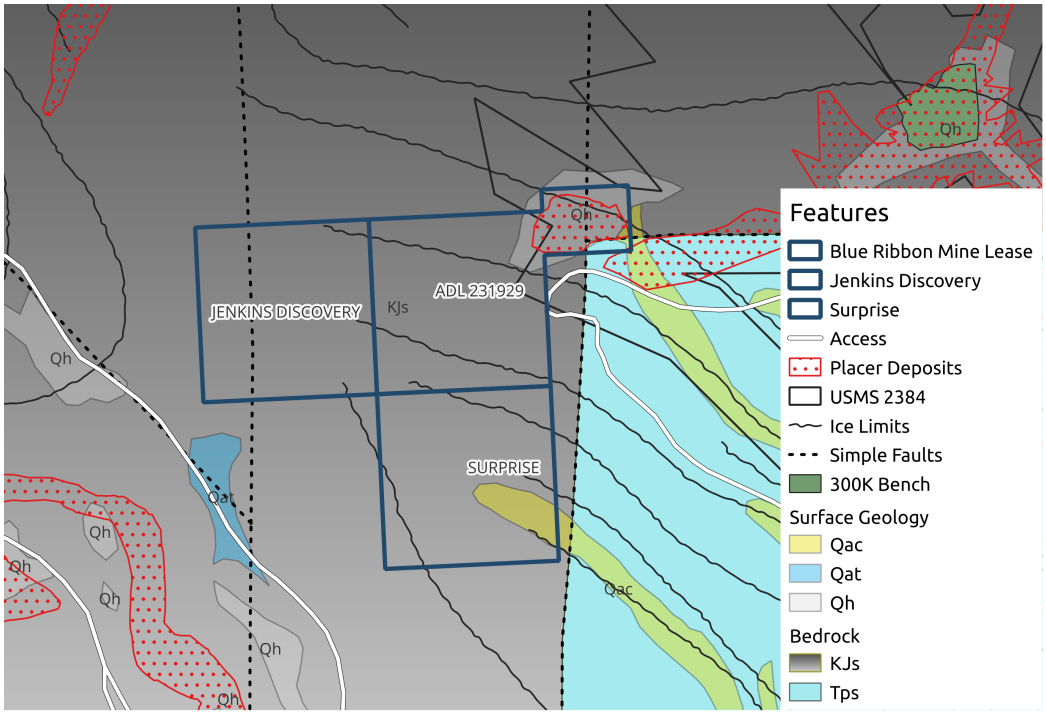
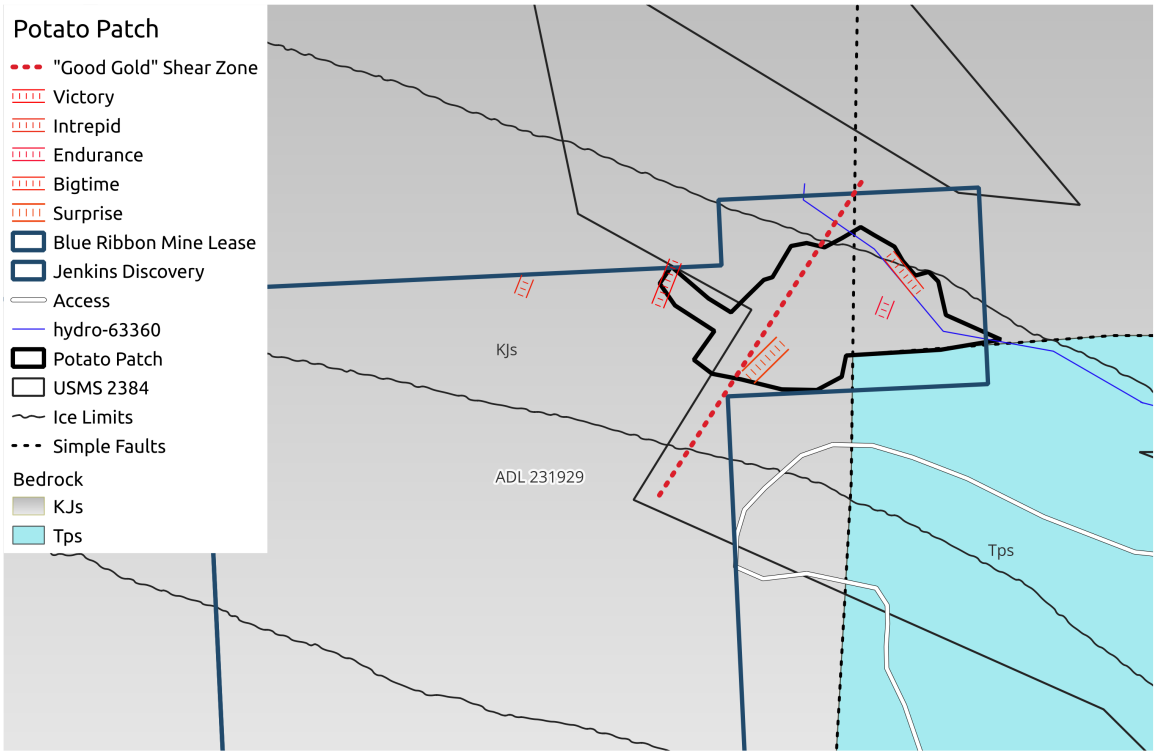


Image 1, exposure of pay and overburden, Potato Patch.



Map 3, General Geology, Blue Ribbon Mine.



Map 4, Map of general structure, known gold-bearing lodes, other features, Blue Ribbon Mine. Named Veins are shown as red ladders.

Additional details regarding the geology and mineral deposits may be found in documents on this site, or from the Company upon request.

In conclusion, these recent data provide targets for exploration and mining development.