Yukon placer mining 2022 development and exploration overview

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Introduction

Placer mining in the Yukon remains a strong and innovative industry, and has the potential for a modern record-high reporting this season. The number of active operations is similar to previous years and 147 of them reported sluicing activity. Of the active operations, 72% are in the Dawson area, 20% are in central Yukon (South McQuesten, Mayo, Keno, Canadian, Big and Nansen) and 8% are in southern Yukon (Kluane, Livingstone, Whitehorse South, Nisutlin). For the sixth consecutive year, reported placer gold production exceeds 70,000 crude ounces. Crude ounces represent an unrefined measure. Placer gold can contain inclusions of quartz or other matrix material or impurities such as silver and copper. These impurities, on average, account for 20% of the mass.

Climate for mining

Yukon weather and snowpack conditions were similar in all districts with above-normal precipitation blanketing most of the territory throughout the winter and continuing into March. In Dawson, cumulative precipitation was well above median on April 1, and 463% of the climate normal for the winter period. This delayed mobilization and access for operations to commence their spring stripping programs. The average low temperature for Dawson in April was –11°C. Cooler temperatures and delayed thawing hindered sluicing in most districts and many operations commenced sluicing in early June. Tributaries of the Yukon River all reported high flows throughout the summer, with heavy precipitation events in July, August and September across the Yukon. This culminated in landslide-related road closures affecting the Klondike Highway, disrupting the supply chain. A mild fall that extended well into October, with a mean average temperature of -2.6°C in Dawson, resulted in favorable conditions for sluicing until the end of the month.

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Gold production summary

Yukon placer gold production, for the reporting period of April 1 to November 8, 2022, was 80,165 crude ounces. The average gold price per ounce this season was CDN$2335, which amounts to CDN$149.8 million in production revenue (Fig. 1). The production revenue for 2022 is the second highest value reported from the Yukon placer industry: in 2020, the reported value was CDN$173.4 million.

There are ten placer mining areas in Yukon and the majority of reported production is from those located in west-central Yukon (Klondike River, Indian River, Lower Stewart and West Yukon). Of these areas, the majority of placer production is reported from the Indian River area which includes the Indian River proper, Dominion Creek, Sulphur Creek and Quartz Creek. The distribution of placer gold production is derived from the royalty reporting collected by the Yukon Mining Recorder as of November 8, 2022 (Fig. 2).

Development highlights

Indian River area

The Indian River district has the highest concentration of large-scale operators (20+ employees) in the Yukon, which contributes to the district consistently generating the highest gold production. In 2022, placer gold produced from the Indian River area amounted to 36,787 crude ounces or 47% of the total Yukon production. This is the highest reported production from this area since 2018. Within the district, Indian River proper reported the highest production with 14,749 crude ounces, followed by Eureka Creek (6570 crude ounces), Dominion Creek (5665 crude ounces) and Quartz Creek (5066 crude ounces).

One of the largest operations in the Yukon is Fine Gold Resources Ltd., who targeted a deep left limit bench and right limit side pay on Eureka Creek this season. A transition of ownership to the La Prairie Group from Alberta was initiated; Fine Gold Resources Ltd. remained the operator for the season.

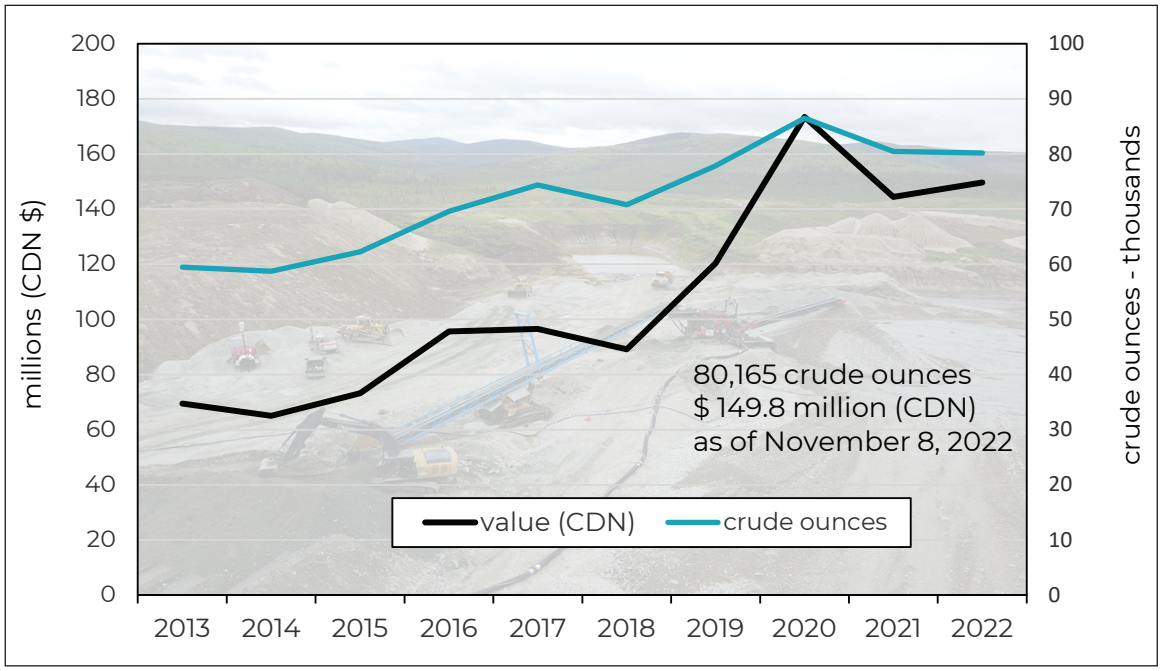

Figure 1. *Total placer gold production in crude ounces and its value in Canadian dollars for the past ten years.*

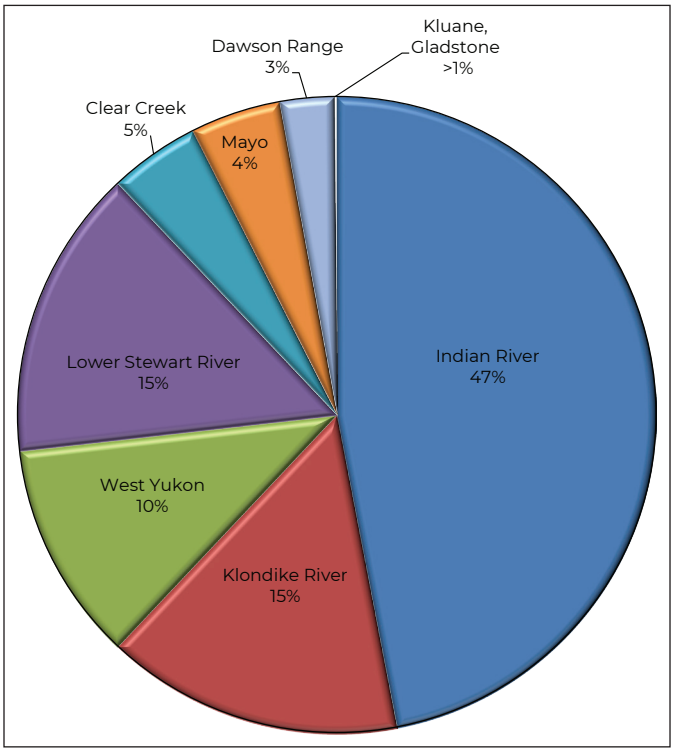

Figure 2. *Placer gold production distribution according to district in 2022.*

They completed a left limit bench cut measuring 91 by 91 m (300 × 300 ft) and averaging 20 m (65 ft) deep, and sluiced a total of 25,000 yards of material. An additional six claims on the right limit were worked. Next season the new owners will continue mining and exploring the deep left limit bench with a goal of developing the most efficient method of stripping the deposit.

Treadstone Gold conducted their fourth season of mining on upper Eureka Creek where they have optioned ground from Fine Gold Resources Ltd. Mining predominately occurred on the right fork of Eureka Creek, at the mouth of a small unnamed tributary (Fig. 3). Paleo Eureka Creek gravel buried under an alluvial fan sequence derived from the small tributary is targeted as pay. On June 21, operator Travis Delawski unearthed a mummified calf mammoth (named Nun cho ga meaning “big animal baby”). Treadstone Gold is acknowledged for their significant contribution to palaeontological research.

Figure 3. *Upper Eureka Creek where Treadstone Gold mined in 2022. The view is looking downstream towards the Indian River valley.*

Little Flake Mine ULC processed 3.8 million ft^2 (353 000 m^2) of material from the Indian River valley this season. The thirty-person crew employed two sluice plants 24/7, which collectively processed 400 yd^3 (306 m^3)/hr. Material targeted by the operator was situated in the middle of the Indian River valley and consists of a cobble-pebble gravel up to 3 m (10 ft) thick. A 200-acre (809 371 m^2) section on the Indian River valley bottom was reclaimed by contouring overburden and top coating the area. The Robert E. Leckie award for excellence in environmental stewardship was awarded to Little Flake Mine ULC this year, as they are recognized for their progressive reclamation.

A new operation on Green Gulch, a tributary to Sulphur Creek, commenced sluicing in the Indian River district. Lucky Dog Mining leased claims from DK Gold Inc. and with a crew of six people completed a 40 m (130 ft) wide by 70 m (230 ft) long cut (Fig. 4). They progressively mined up the drainage and sluiced 10,000 yd^3 (7645 m^3). A noticeable gutter in the bedrock was targeted for sluicing, along with all rounded material and up to 0.9 m (3 ft) of bedrock. Activity on Green Gulch occurred from 1979 to 2005; it then remained dormant until 2021 when DK Gold Inc. purchased the property.

Figure 4. *Drone image looking up Green Gulch, with Lucky Dog Mining's active cut in the foreground.*

Yukon Heliski had a significant discovery this season on Sulphur Creek, in an area heavily worked by dredging in the 1940s and 1950s. For several seasons, the drainage has been investigated for economic pay remaining under dredge tailings. This season Yukon Heliski found an area with up to 1.5 m (5.0 ft) of virgin Sulphur Creek gravel, which was thicker and more extensive than expected (Fig. 5). Coarse gold was found associated with the pay gravel.

Figure 5. *P. Wright, with Yukon Heliski, investigating the virgin Sulphur Creek gravel in the 2022 cut.*

Klondike River area

The Klondike River is the second highest gold producing area, accounting for 15% of the Yukon's total placer gold. Production from the Klondike River drainages dropped by 28% in 2022, reporting 11,832 crude ounces. This decrease is primarily due to a drop in production from Paradise Hill, Klondike River proper and Last Chance Creek. The largest contributors in the Klondike River area are Lovett Hill (2734 crude ounces), Paradise Hill (2303 crude ounces) and Hunker Creek (2118 crude ounces).

Lovett Hill Corp. took over mining from Northern Shoveler Resources Ltd. on Lovett and Jackson hills. Lovett Hill Corp. aggressively approached the hills this season, moving overburden both mechanically and hydraulically (Fig. 6). They used hydraulics on the north-facing side (Jackson Hill side) of the property to thaw and liberate Klondike outwash gravel. Stripping the uppermost layers of the high terrace exposed a previously unidentified lake sediment. This deposit may be the first physical evidence for Glacial Lake Yukon, the 2.5 million year old glacial lake that formed when the Yukon River reversal occurred. Gold production focused on the Lovett Hill side of the deposit where a portion of the pay streak was targeted. Thrusted bedrock blocks were encountered suggesting that relatively young tectonic activity has disrupted the pay gravel.

Figure 6. *Lovett Hill Corp. stripping Lovett Hill mid-season of 2022.*

In fall 2021, on Bonanza Creek, A. Hollis acquired American Hill and Fox Gulch claims from D. Jackson. In 2022, A. Hollis and an assistant processed material they were able to liberate from the historic ditches or 'races' that were created by hydraulic operations in the early 1900s. They also worked a high-level bench on the property early in the season. They began efficiently stripping the deposit by employing a custom fabricated track-mounted conveyor.

Since the Gold Rush, this area has been heavily worked, and in order to target remnant pay gravel A. Hollis has been extensively compiling and interpreting historic data. The historic data include photos from the Dawson City Museum, air photos of various vintages, dredge data, and historic drilling information from the 1950s.

Tatra Ventures Ltd. acquired Upper Gauvin Gulch on Bonanza Creek this year, allowing them to consolidate the upper claims with their pre-existing lower claim block. With a three-person crew they initiated mining on the upper reaches of the drainages, focusing on the left limit, Pliocene bench (Fig. 7). Bulk testing was completed on different areas of the bench to gain a better understanding of the pay extent. Towards the end of the season, they identified a higher-grade channel within the bench, which will remain an important focus in 2023. With the addition of the bench deposit to the unmined valley bottom, a large amount of minable ground is remaining in this Upper Bonanza Creek tributary.

Figure 7. *Aerial view looking up Gauvin Gulch at Tatra Ventures Ltd. operation, mining on the left limit.*

K.T. Mining excavated a section of virgin Hunker Creek gravel on the left limit of the drainage. Their operation is located immediately downstream from Little Gem Gulch and employs a two person crew. The cut measured 30 ft (9 m) in width and happened to expose a section of buried Hunker Creek side pay, overlain by colluvium and massive ice. The side pay likely escaped dredging due to the narrow valley-bottom setting and thick cover of frozen silt, visible in Figure 8. This discovery proves that even in prominent Klondike drainages side pay still exists, which is encouraging for the historic district.

Figure 8. *K.T. Mining's operation active on the left limit of Hunker Creek, immediately below Little Gem Gulch.*

Favron Enterprises Ltd. was sluicing on Dago Hill this season, dividing efforts between Hunker Creek and their Sulphur Creek property. A 100,000 ft^2 (9290 m^2) cut that was 21 m (70 ft) deep was prepared for sluicing, and half of the cut material was processed this season. Frozen gravel was encountered in the lowermost 4.5 m (15 ft) of the cut, which decreased production this season. On Bremner Hill, a tributary of Last Chance Creek an additional 30,000 yd of material that was excavated and stockpiled in 2018 was sluiced. Activity also included a large stripping program and reclamation on 300,000 ft^2 (27 870 m^2) of previously mined ground. Favron Enterprises Ltd. is the recipient of a Robert E. Leckie Award this year, recognized for their responsible and innovative exploration and mining practices.

West Yukon area

In West Yukon, production increased by 15%, with the most noticeable production derived from the Sixty Mile River (5710 crude ounces). This season 8722 crude ounces were reported, the highest reported production from the placer area since 2008 (13,416 crude ounces). In the Fortymile drainage, production from Bruin Creek increased by 59% (399 crude ounces) and by 207% from Browns Creek (415 crude ounces). In the past few years activity in the Browns Creek area has been progressively increasing, and this season 4 operations reported production. Aside from Sixty Mile River, the next highest producing creeks in West Yukon are Bedrock Creek (644 crude ounces) in the Sixty Mile River drainage and Kenyon Creek (562 crude ounces) in the Moosehorn Range.

Bruin Creek is a large, right limit tributary of the Fortymile River, with headwaters located immediately off the Top of the World Highway. Sandro Frizzi, with support from the Yukon Mineral Exploration Program (YMEP), has been exploring in the drainage. Mechanized mining was initiated in the drainage in 2020, and it has been an active drainage in the West Yukon area since then. Chrysos Mining moved into the lower portion of the drainage in 2019 and this season they acquired the claims in the upper reaches of the drainage, to be the sole claim holder on Bruin Creek. Mining these upper claims this season, Chrysos Mining is targeting a low-level, discontinuous bench deposit on the right limit (Fig. 9).

Figure 9. *Chrysos Mining processing a low-level, right limit bench deposit on Bruin Creek.*

M2 Gold Mines Limited mined two different placer settings on the Sixty Mile River this season. The first was on the floodplain and the second was a mid and high-level bench on the right limit, with the upper bench located 24 m (80 ft) above the floodplain. Evaluating the bench potential has occurred for several seasons, with sluicing on both levels initiated this year. Preservation of the mid-level bench is discontinuous, whereas on the high-level bench the width of pay is more extensive than thought. Each plant sluiced for 2000 hours, and an 18-person crew was employed at the mine. A large reclamation program was also completed on previously mined areas upstream from camp.

With a crew of five personnel, No Name Resources Inc. spent the season mining two locations in the Ten Mile Creek drainage (Fig. 10). They focused on mining a prominent high-level White Channel bench on the left limit of the drainage. Two cuts were completed, each consisting of a 10 m (33 ft) section of gravel. With a 1.5 m (5 ft) diameter trommel, they were processing 120 yd^3 (92 m^3)/hr when in silty gravel and 180 yd^3 (138 m^3)/hr in sandier material. The pay streak remained on the rim of the bench as they mined and is defined by an increase of white silt within the gravel and coarse gold grains.

Figure 10. *No Name Resources Inc. operation on a high-level bench in the Ten Mile Creek drainage.*

Lower Stewart area

The Lower Stewart area is the third largest gold producer in the Yukon, reporting 11,560 crude ounces. Production from Lower Stewart remained consistent this year, dominated by production from the Henderson Creek drainage (6067 crude ounces). Kirkman Creek is the second largest contributor, reporting 9% (1037 crude ounces) of the reported production from the Lower Stewart area. The third largest contributor is Scroggie Creek producing 8% or 921 crude ounces.

Henderson Creek, the top producing drainage in the Lower Stewart area has two active operations in the drainage. The larger of the two, H.C. Mining Ltd., sluiced 1.5 million ft^2 (139 355 m^2), predominately from the valley bottom of the lower portion of the drainage. Employing up to 4 wash plants operating 24/7, the 30-person crew completed several large cuts throughout the season. In Figure 11, three Macon wash plants operating in unison are responsible for the operation processing a large volume of pay. An extensive sonic drilling program to evaluate the lowermost 2 km of the drainage was completed in the spring.

Figure 11. *Three wash plants being fed by a Hitachi 470 excavator at H.C. Mining Ltd. operation on Henderson Creek.*

Fellhawk Enterprises Ltd. completed their fourth season on North Henderson Creek, leasing claims from H.C. Mining Ltd. The creek gradient decreased as they moved upstream throughout the season, concluding the year by sluicing material from a 49 by 271 m (160 × 890 ft) cut. An increase of gold was observed as they mined into the reach with a lower gradient. A YMEP-funded project was also completed on an unnamed left limit tributary of upper Henderson Creek. Using Northern Sonic to complete twenty-seven 6” diameter sonic drill holes, they identified the presence of side pay and a thick section of economic gravel in the valley bottom.

Aquila Mining and Exploration Ltd. optioned Mariposa Creek, a tributary of Scroggie Creek from Z. Bidrman. Operating with six people, they focused on processing historic tailings from the drainage. While excavating into the far right limit of the modern valley, they uncovered a bench deposit, shown in Figure 12. The bench deposit consists of 3.5 m (11.5 ft) of colluvium overlying an oxidized, cobble-pebble gravel of unknown thickness. Further exploration will determine the extent and economics of this deposit.

Figure 12. *Aquila Mining and Exploration Ltd. operation on Mariposa Creek. The bench deposit is visible on the right side of the drainage.*

New production is reported from Larsen Creek, a right limit tributary of Black Hills Creek. In the fall of 2021 2074098 Alberta Ltd. staked the drainage and stripping commenced in the spring of 2022. With a three-person crew, they spent a month sluicing material from a 30 by 165 m (100 × 540 ft) cut at the mouth of the drainage (Fig. 13). A boulder-cobble gravel up to 0.6 m (2 ft) thick is situated on the undulating bedrock contact. The operation also completed a cut on Dome Creek and concluded their season reprocessing historic cat-mining tailings from the 1980s.

Figure 13. *2074098 Alberta Ltd. cut at the mouth of Larsen Creek. The view is looking up Larsen Creek.*

Mayo, Keno and Clear Creek area

Mayo district production decreased by 49% (reporting 3578 crude ounces), largely due to a reduction of operations in Granite Creek. Production is reported from Keystone Creek, which is the first year of mechanized mining in the drainage. Consistent production is reported from the Clear Creek area accounting for 5% of the overall production with 3601 crude ounces of gold reported. Production is distributed among a number of drainages in the Clear Creek area including Clear Creek (1824 crude ounces), Josephine Creek (1043 crude ounces) and Big Creek (659 crude ounces).

Wally Creek is a locally named left limit tributary of Clear Creek. M. Hollingsworth and J. Colosimo have been exploring the drainage since they purchased the claims from K. Wilson in 2014. Mining was initiated in the valley bottom of the drainage, and in the last two seasons focus has shifted to a high-level right limit bench (Fig. 14). An increase in coarse gold was noted from the valley bottom immediately downstream from a right limit tributary that intersects the bench deposit, encouraging the operators to explore farther upslope where they discovered a deposit.

Figure 14. *A view looking up Wally Creek where a high-level bench has been exposed near the mouth of the drainage.*

K. Wilson, a long-time operator in the Mayo and Clear Creek area, recently shifted operations to Bennett Creek. An eight-person crew completed sluicing material from a cut 30 m (100 ft) wide by 457 m (1500 ft) long on the middle reaches of the drainage. Pay consists of up to 1.2 m (4.0 ft) of a poorly sorted, cobble-pebble gravel situated on till that acts as a false bedrock. The overall stripping ratio is favorable as overburden ranges in thickness from 0.9 to 3.0 m (3–10 ft).

Bardusan Placers Ltd. reinitiated mining on Thunder Gulch, opening a cut 30 m (100 ft) wide by 91 m (300 ft) long by 24 m (80 ft) deep, approximately 1.5 km upstream from its confluence with Lightning Creek. For the past five years, the three-person operation has focused mining at the confluence of Thunder Gulch and Lightning Creek. An enriched trough or gutter 18 m (60 ft) wide is cut into the bedrock surface, and has no distinguishable texture from the overlying reworked till. The Derocker wash plant processed up to 75 yd^3 (57 m^3)/hr, and water is supplied to the plant using a gravity-feed system. Gold is becoming more crystalline as the operator progresses upstream.

Dulac Mining reported production from Keystone Creek, a tributary of Mayo Lake, where they focused extraction on the apex of a fan delta landform (Fig. 15). This was the first year of mechanized mining in the drainage. Glaciers that once flowed westward in the Mayo Lake valley have influenced the ground. As Dulac Mining progressed upstream into the confines of the drainage, the stratigraphy became more predictable and less influenced by the ice sheet. Interglacial gravel was present and the bedrock channel was not reached on the right limit. Near surface deposits consist of a very high-energy boulder gravel up to 4 m (13 ft) thick, deposited during a deglacial reworking (flush) event.

Figure 15. *A view looking upstream on Keystone Creek of Dulac Mining's operation.*

A new operator, leasing claims from J. Davies, was active in the Granite Creek drainage this season. MDB Northern Mining and Exploration Inc. from Belgium arrived on the creek in late July, and by mid-September completed sluicing material from their second cut. Mining was initiated immediately downstream from the discovery production cut of 2013. The pay unit consists of brown oxidized till on bedrock measuring 13 m (43 ft) thick that is overlain by 7 m (23 ft) of grey gravel.

Dawson Range, Kluane and Whitehorse South areas

Reported production from the Dawson Range remained consistent this season; 2142 crude ounces were reported, which accounted for 3% of the total Yukon production in 2022. Canadian Creek and Nansen Creek contributed the majority of the production with 1103 and 682 crude ounces reported respectively.

Two operations were active in the Freegold area, one of which was D. Dodge on Seymour Creek. A variety of targets were evaluated using a sonic drill rig and by conducting 400 yd bulk samples. The drilling program identified a buried valley on the left limit of Seymour Creek, and tested the terraces present on lower Seymour Creek. D. Dodge and his crew of three completed five weeks of sluicing on Big Creek, immediately upstream from his camp location. They processed right limit side pay and unmined bedrock in a previous cut.

Webber Creek is a right limit tributary of lower Nansen Creek that was prospected and held by Eugene Curley from 1994 to 2020. E. Curley sold the claims to Capital Gold Mining Corp. in late 2020. Capital Gold Mining Corp. completed their second season in the drainage this year; the first half of the season consisted of stripping, testing and construction of settling ponds. By the end of July, the two-person operation identified a pay streak and commenced mining (Fig. 16). The pay gravel consists of an angular, orange, silty gravel with manganese staining.

Collectively, the Kluane and Gladstone areas reported 103 crude ounces as of November 8, 2022, with the majority of production reported from Ruby Creek (94 crude ounces). Additional reporting is noted in Fourth of July Creek (6 crude ounces) and Burwash Creek. Whitehorse South placer area has no reporting, but two small-scale operations were active in the Moose Brook Creek drainage.

Figure 16. *Aerial view looking upstream Webber Creek at Capital Gold Mining Corp.'s operation this season.*