

# Yukon placer mining 2021 development and exploration overview

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## Introduction

Yukon's placer mining industry continues to display its resilience through another mining season during a worldwide pandemic. The pandemic continues to bring delays and challenges that affect many facets of the industry, ranging from interruptions in the supply chain to isolation requirements for workers. Despite these challenges, production value remained high, and new production was noted from a number of creeks that have not produced in the recent past. With an expanding number of placer creeks producing and stable production from the traditional mining areas, the industry continues to display its economic significance for the territory.

## Climate for mining

The 2021 mining season was delayed in most districts due to high precipitation throughout the winter months. Favorable sluicing conditions arrived by early May in Dawson, with average daily high temperatures of 15°C. Southern Yukon also experienced warm spring conditions, which prompted rapid snowpack melt, causing high water levels in most prominent drainages. The Yukon River swelled, and flooding occurred in the Southern Lakes region including Lake Laberge, Marsh Lake and in several Yukon communities. As high temperatures continued throughout summer, water levels subsided and precipitation remained low across the territory. In Dawson, only 33 mm of precipitation was recorded in the two-month period from June 7 to August 7. Favorable weather across the Yukon continued into the fall, with a late onset to winter. The first temperature reported below -10°C was recorded on October 18. Minimal precipitation accumulated in late fall and several operators in the Dawson area sluiced later than anticipated.

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## Gold production and value summary

Based on export tax reporting, as of November 8, 2021, Yukon placer gold production is 77,695 crude ounces, (Fig. 1). The average gold price this season was CDN\$2243, which amounts to CDN\$139 million in production revenue. This marks the fifth year in a row where production exceeded 70,000 crude ounces, which speaks to the industries stability. Production remained high despite challenges and growing mining costs; diesel price is up 12% this year compared to last year.

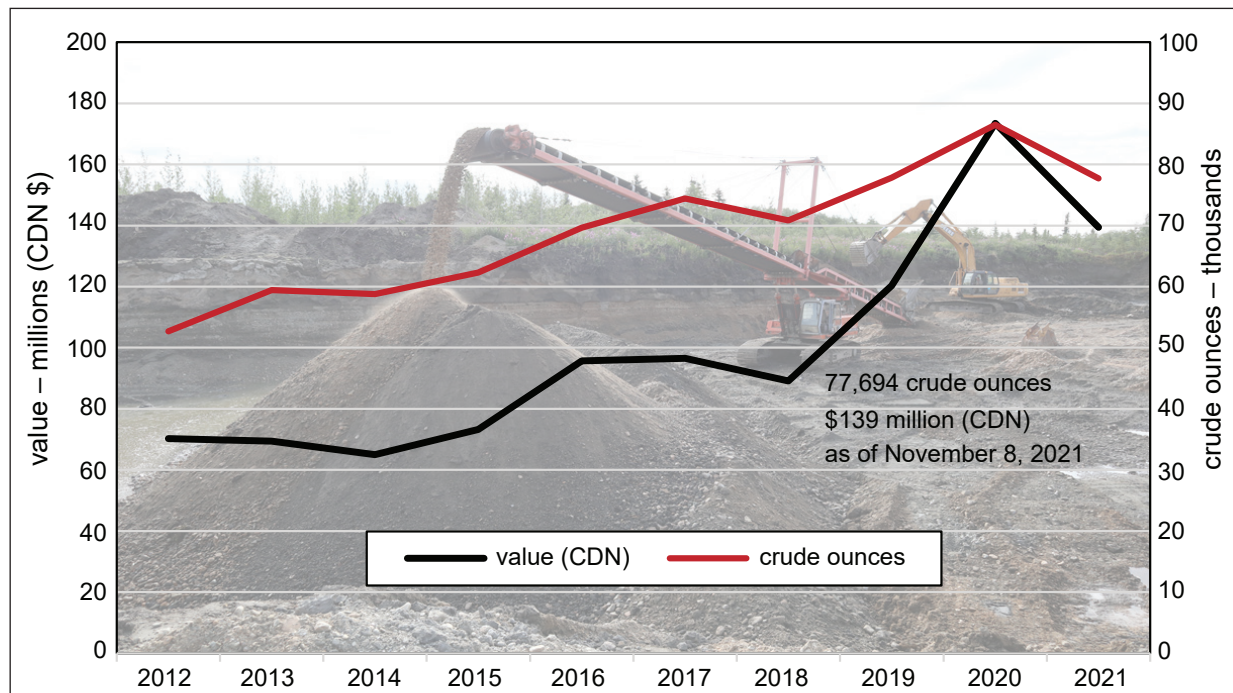
Growth in the industry is evident; one new and five formerly dormant creeks report production this year. Twelve Mile Creek, in the West Yukon district, is a new placer drainage reporting production. Creeks that have been dormant for many years, but recorded production this season are Australia Creek (Indian), Boucher Creek (West Yukon), Gem Creek (Mayo), Bennett Creek (Mayo) and Webber Creek (Nansen). The price of gold remains high, which promotes strong and consistent production, and when paired with exploration occurring in most placer districts, suggests an increase in production is likely into the near future.

## Development highlights

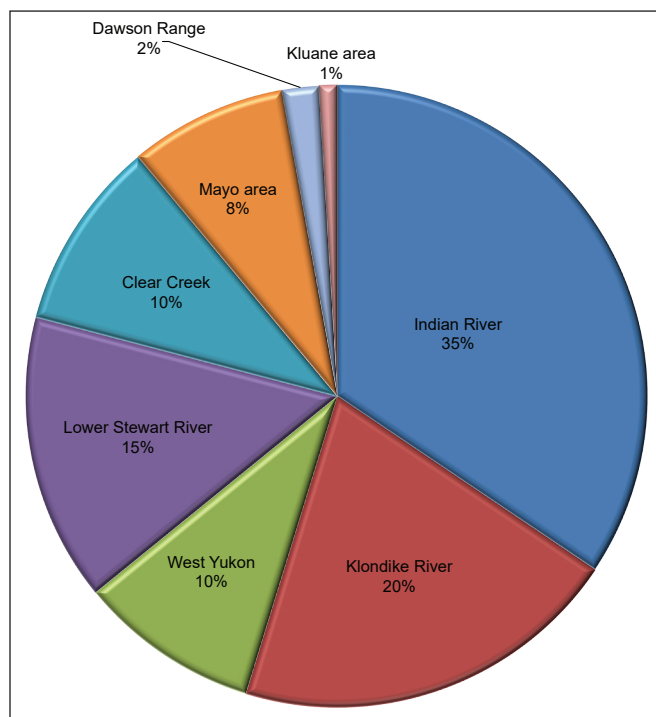
### Indian River

The Indian River drainage continues to be the main placer producing district, yielding a total of 26,698 crude ounces this season. This accounts for 34% of the Yukon's total placer gold production (Fig. 2). Production decreased by 12% this season when compared to production in 2020. The main stem of the Indian River remains the largest contributor, producing 56% of the gold derived from the district. Dominion Creek is the second largest contributor, reporting 19% of the reported production from the Indian River drainage. The third largest contributor to Indian River production is Sulphur Creek producing 8%, followed closely by Wounded Moose Creek at 7%.

Slate River Mining, operating on lower Indian River, is recognized this season for their exceptional reclamation work, and they were the recipients of this years' Robert E. Leckie award. The three-person operation uses excavator mounted conveyors, which reduces fuel consumption. The operation uses efficient mining techniques allowing them to process and reclaim a



**Figure 1.** Total placer gold production in crude ounces and its value in Canadian dollars from 2012 to 2021.



**Figure 2.** Distribution of placer gold production by district in 2021.

substantial amount of ground effectively (Fig. 3). Having been active on the lower Indian River since 1994, they are a long-standing operator that takes pride in their mining techniques and reclamation work.

A significant geologic discovery occurred on the left limit bench of Indian River in the fall, on Fine Gold Resource's property. As the operator continued to mine laterally into the limits of the valley, a White Channel gravel terrace was encountered. The Indian River and local tributaries have eroded into the White Channel terrace and reworked gold from the deposit (Fig. 4). The thickness of the terrace deposit is 14 m (45 ft) and possibly increases farther into the hillside. The White Channel paystreak volume within the terrace remains unknown, however strong production in recent years adjacent to the terrace suggests some of it has been reworked. Trending upstream into the Australia Creek drainage, this Pliocene deposit could be extensive and become a significant gold contributor to the Indian River drainage.



**Figure 3.** Slate River Mining's cut and processing plant on the lower Indian River.



**Figure 4.** Fine Gold Resources cut in 2021 where they exposed a White Channel terrace on the left limit of Indian River.

There was a hub of activity this season near the mouth of Australia Creek: Lonesome Dove Mining was sluicing on the lower portion and Metallic Minerals was exploring farther upstream. Two drill campaigns were undertaken, and a total of 21 auger, 155 sonic and 49 reverse circulation drillholes completed. In the headwaters of Australia Creek, drilling targeted the modern valley, which could consist of reworked portions of the Pliocene deposit found upper Indian River. The White Channel gravel deposit that was exposed on the Indian River is believed to be the same deposit that the drilling campaigns were targeting.

This year was the second season for NBC Contracting, who was operating on lower Dominion Creek, leasing claims from Gimlex. A left limit cut with a 3.6 m (12 ft) sluice section was the target for the season, and they sluiced over 200,000 yd<sup>3</sup> (152 910 m<sup>3</sup>) of material. A project funded by a Yukon Mineral Exploration Program (YMEP) grant last year delineated the cut worked this season. Later in the 2021 season the company explored for potential *in situ* gravel preserved beneath dredge tailings and had encouraging results. As exploration continues the far limits of the valley continue to prove economic and they extend their operations farther laterally in the valley.

Whitman Gulch, a left limit tributary of Gold Run Creek operated by 536784 Yukon Inc. is one of three monitoring operations in the district (Fig. 5). This season the two-person operation sluiced 4000 loose yd<sup>3</sup> of material from the narrow drainage. Pay gravel thickness varies from 0.3 to 1.5 m (1–5 ft) in the narrow gulch. Numerous old-timer workings such as ladders and shafts were encountered, along with an abundance of Ice Age mammal fossils.

Treadstone Aggregate is not new to working the upper Eureka Creek drainage, but the placer setting they targeted this season was. For the first time, the modern gulch bottom of upper Eureka Creek was mined by the 12-person crew. Old-timer shafting was encountered, but this season was the first time any mechanized mining has occurred in that locale. Overlying the coarse, muddy gravel was a thick section of loess containing massive ice. A cut from last year on the left limit Pliocene bench deposit was extended.

Favron Enterprises mined two different dredge deposits on Sulphur Creek this season. The first cut they mined was a continuation of last years work and targeted virgin Sulphur Creek gravel under dredge tailings (Fig. 6). A sonic drill program completed in the spring



**Figure 5.** Monitoring at Whitman Gulch conducted by 536784 Yukon Inc.; one of three monitoring operations in the Indian River drainage.

discovered a lateral continuation of 1.2 m (4 ft) of virgin gravel, which allowed delineation of a cut. The second setting they mined was on the left limit, outside of the dredged area. Despite lower Sulphur Creek undergoing significant dredge activity in the past, minable deposits continue to be discovered. With a crew of eight employees, they sluiced 180,000 yd<sup>3</sup> (137 620 m<sup>3</sup>) of material, and exploration within the dredge limits is expected to continue next year.

### **Klondike River drainage**

The Klondike River is the second highest placer gold producing district in the Yukon; 15,773 crude ounces were reported, which accounted for 20% of the total production in 2021. The top three Klondike River drainages are Paradise Hill, Lovett Hill and Hunker Creek with 4156, 2734 and 2705 crude ounces reported respectively.

Minimal activity has occurred on All Gold Creek in recent years, but a new operation commenced this season. M&M Mining initiated operations on the high-level bench deposit on the left limit of the drainage



**Figure 6.** Right limit cut on lower Sulphur Creek at Favron Enterprises Ltd. In situ Sulphur Creek gravel is situated on bedrock under dredge tailings.

that Dulac Mining last pursued in 2016. Leasing from Dulac Mining, M&M Mining completed a sizable cut using two mini-excavators. The father-and-son team began to understand the characteristics of the heavy pay channel as the season progressed and they panned their way throughout the cut to determine the limits of the pay channel.

Kohlman Exploration leased a portion of their property to J. McIntyre this season, and he was able to expose virgin Bonanza Creek gravel. Outside of the dredge limit an 18 by 55 m (60 × 180 ft) cut was made on an outside bend of Bonanza Creek, downstream from the mouth of Fortynine Gulch. Bonanza Creek pay gravel was up to 2 m (6 ft) thick and consisted of very coarse boulders, overlain by colluvium and organics (Fig. 7).

On upper Eldorado Creek, Bear Creek Logging spent their first season mining at the confluence of Chief Gulch and Eldorado Creek, under an option agreement

with Dulac Mining. The three person operation focused on mining the bedrock surface, and sluicing up to 1.2 m (4 ft) of bedrock. Cumulatively they sluiced 8000 loose yd<sup>3</sup> of material and also completed reclamation on ground previously mined by Dulac Mining.

Unusual bedrock was uncovered at the mouth of Last Chance Creek by Ace Placer Mining Ltd. this season. A basalt flow was revealed when a cut on a low-level bench of Hunker Creek was stripped to bedrock. The basalt is a unit of the Carmacks Group, which is a Late Cretaceous volcanic group (72 Ma). As the basalt was deposited, it flowed over a laminated, fine-grained sediment (Fig. 8). This was the second season that the Sailors targeted a series of low-level benches on the left limit of Hunker Creek that have been buried by a thick section of frozen black muck. On the downstream side of the bench, flow direction indicates the gravel is



**Figure 7.** Virgin Bonanza Creek gravel exposed at J. McIntyre's cut in 2021. Jeff Bond is used for scale to depict the coarseness of the gravel.



**Figure 8.** The bedrock exposure on the low-level Hunker Creek bench targeted by Ace Placer Mining Ltd. in 2021.

derived from Last Chance Creek, suggesting that the tributary eroded and reworked the continuous Hunker Creek bench that was once present. Not only did they uncover intriguing bedrock, but a considerable amount of old-timer workings were also found.

A new operation moved into the mouth of Hunker Creek last year, and a first full season of sluicing commenced this spring. Slonski and Elgie operated with a five-person crew and sluiced 200,000 yd<sup>2</sup> (167 225 m<sup>2</sup>) of material. The main target for the operator is Klondike River gravel situated on the bedrock contact, which is overlain by 3 m (10 ft) of sand derived from Hunker Creek (Fig. 9).



**Figure 9.** Slonski and Elgie's cut on the left limit of the Klondike River valley. The stratigraphy consists of Klondike River gravel overlain by sand derived from Hunker Creek.

## West Yukon

The Sixty Mile River accounts for the majority of production from West Yukon, with 4831 crude ounces reported this season. Production from its tributaries remain steady with 559 crude ounces from Bedrock Creek, 522 crude ounces from Ten Mile Creek and 353 crude ounces from California Creek. Two drainages to highlight for their production in West Yukon this season is Boucher Creek, which was previously dormant; and Twelvemile Creek, a new placer producing drainage for the territory.

K-1 Mining focused their efforts in the modern valley of Bedrock Creek this season. With a crew of up to four employees they spent 500 hours sluicing (Fig. 10). Exploration has been conducted on the left limit bench in the drainage. A season mining in the valley bottom resulted in intermittent gold distribution, indicating that the main pay channel may partially remain locked up on the bench.

Hardclay Resources Services was active for their sixth year on California Creek. Since 2016, they have optioned the claims from Yukon Exploration Green Gold Inc. and mined in the valley bottom and a right limit bench deposit. This season they formed a partnership with F. Lewis of the Gold Rush TV show, which increased activity in the drainage.

## Lower Stewart River

Production from lower Stewart River has slightly decreased from last year, but still reported 11,602 crude ounces this season. Henderson Creek is the major contributor with 5332 crude ounces, following with Barker Creek (1643 crude ounces), Kirkman Creek (1003 crude ounces) and Scroggie Creek (947 crude ounces). Production has been cumulatively increasing in lower Stewart River since 2018, and is the third highest gold producing district in the Yukon.



Figure 10. K-1 Mining & Services sluicing at their operation on Bedrock Creek. The view is looking upstream.

Schmidt Mining relocated their Barker Creek operation from mid-drainage to the mouth, near its confluence with the Stewart River. A 450,000 ft<sup>2</sup> (41 806 m<sup>2</sup>) cut, ranging in thickness from 3.7 to 4.3 m (12–14 ft) was completed. The new location is much shallower compared to their previous location 12 km upstream where overburden was up to 11 m (36 ft) thick.

HC Mining had a successful season on Henderson Creek, completing two large cuts lower in the drainage. The larger cut was located on the right limit, and extended a length of 1.5 km. Up to four wash plants were employed at the same time and enabled the operator to sluice material at a rate of up to 500 yd<sup>3</sup> (382 m<sup>3</sup>)/hr. A second cut on the left limit of the drainage was located at the mouth of a small unnamed tributary. Grades increased at this location because the tributary had reworked high-level bench gravel into the valley bottom.

In Black Hills Creek, Stuart Placer Ltd. mined upstream from Kernine Creek and sluiced a total 100,000 yd<sup>3</sup> (76 455 m<sup>3</sup>) of material this season (Fig. 11). Stratigraphy in Black Hills Creek is consistent except where tributary confluences are encountered; tributaries contribute local gulch gravel to the drainage and overlie modern Black Hills Creek gravel. At the end of April 2021 the drainage lost long-time miner Richard Cull. His legacy will remain along dozens of Yukon placer creeks.



**Figure 11.** A large cut on the right limit of Black Hills where Stuart Placers spent the season mining.

## Clear Creek and Mayo areas

Production in Clear Creek progressively increased from 2018 to 2020. Several large operators in the area were responsible for the districts growth. With changes in mining locations and scale of operations this year, production decreased by 25%. The major contributors in the Clear Creek and Mayo areas are Josephine Creek, Granite Creek and Clear Creek.

Josephine Creek was the top producer in the Clear Creek and Mayo districts, reporting 3863 crude ounces this season. Schmidt Mining Corp. spent several seasons preparing to mine the drainage, but did not conduct extensive sluicing until this season (Fig. 12). The drainage is a glaciated valley, with and the majority of placer gold is situated in till. Surficial material thickness is shallow, with only 5 m (16 ft) of overburden. The pay unit, a matrix-supported till is up to 0.9 m (3 ft) thick and situated on the bedrock contact. Two populations of gold are recovered from Josephine Creek; flattened nuggets and subangular, chunky gold with quartz inclusions.



**Figure 12.** Schmidt Mining processing up to 150 yd<sup>3</sup>/hr on Josephine Creek in 2021.

P. Phillips continued to progressively mine upstream at their property on right fork Clear Creek. This year they intercepted an alpine till on the left limit, which they had not encountered before. This marks the limit for the maximum extent of locally derived ice from the headwaters of Clear Creek. Stratigraphy changes at this limit as the till overlies local Clear Creek gravel, and may be responsible for, or a contributor of the gold in the drainage. The Phillips mined with a crew of five employees and sluiced material at a rate of up to 80 yd<sup>3</sup> (61 m<sup>3</sup>)/hr with their trommel.

Bennett Creek, is a tributary of Minto Creek in the Mayo Mining district. The creek has been historically worked but more recently explored by S. Wozniak and K. Wilson. This season marks the first time that the creek has been mechanically mined. K. Wilson relocated from Minto Creek and began test mining the lower portion of the drainage where it empties from the confines of a narrow valley. Sonic drilling was completed to map gold distribution in the lower portions of the drainage.

Lower Hight Creek was dormant for several decades until Stepler Mining moved in early this spring. They optioned the ground from M. Powers and with a three person crew sluiced 15,000 yd<sup>3</sup> of material from a right limit bench (Fig. 13). Stepler Mining is not new to the district; they previously mined on the upper end of Hight Creek and on a tributary to Mayo Lake.

Granite Creek continues to have strong production, producing 3120 crude ounces this season from four operations (Fig. 14). The main claim owner, J. Davies,



**Figure 13.** Stepler Mining spent the season on Lower Hight Creek working ground leased from M. Powers.

leases ground to Earth and Iron, Dulac Mining and Gem Steel. Operations in Granite Creek continue to target till overlain by a thick package of outwash gravel and glaciolacustrine sediment. Earth and Iron worked an 80 by 130 m (262 × 426 ft) cut throughout the season and processed material at 200 yd<sup>3</sup> (153 m<sup>3</sup>)/hr in their double screen deck. Dulac Mining operated with a crew of up to eight personnel and targeted a sluice section 6 m (20 ft) thick. Gem Steel was active on Albert Creek, a right limit tributary to Granite Creek. This year was their first season sluicing in the drainage and they processed the coarse pay gravel with a custom built Derocker that fed into a screen deck.

Field research towards a Masters of Science project was completed in Granite Creek this summer by Jessi Steinke. This project, under the supervision of Dr. Brent Ward (Simon Fraser University) and Jeff Bond (Yukon Geological Survey), aims to characterize the placer settings within the alpine glaciated environment. Her initial results are reported in this volume.

### Dawson Range and Kluane areas

Production from the Dawson Range area decreased from 2274 crude ounces in 2020 to 1487 crude ounces in 2021. This 35% decrease in production could be contributed to a general decrease in activity in the Freegold and Nansen Creek area. Despite the decrease, strong production was reported from Canadian Creek. The next highest producing creeks are located in the Nansen district; Rabbit Creek and Nansen Creek.



**Figure 14.** View looking up Granite Creek valley with Dulac Mining's cut in the foreground.

With new exploration occurring in this area, growth is expected in the coming years.

Batavia Mining was active on the upper end of Canadian Creek for their third season. The New Zealand owned company had up to four employees and sluiced 80,000 yd<sup>3</sup> (61 164 m<sup>3</sup>) of material this season. Two placer settings were mined; a low-level right limit bench of Canadian Creek, and the modern gulch bottom of the right limit tributary, Patton Gulch (Fig. 15). Gold in the drainage is sourced locally from the Casino copper, gold, molybdenum and silver deposit situated in its headwaters.

Placer activity increased in the Casino area, with exploration occurring on Sunshine Creek and Isaac Creek this season. These are two tributaries of the Yukon River that drain to the east, from the Casino deposit. Ryanwood Exploration conducted a geophysical survey and completed 61 drillholes on Sunshine Creek and 10 drillholes on Isaac Creek.

Webber Creek has been inactive for a number of years' until Capital Gold Mining Corp. moved in this season. Situated in the Nansen district, this large tributary to Nansen Creek contains the typical thick deposit of sand at the base of the north facing slope. The sand posed a challenge for the five person operation, but they had a successful season.

In the Ruby Range, Gladstone Creek and Rabbit Creek, a tributary to Forth of July Creek, were the main producers. They reported 383 and 312 crude ounces, respectively. Tic Exploration on Gladstone Creek has been present in the drainage for three decades and they continue to target low-level benches, reworked modern gravel, and historic tailings. This season they employed up to six people. Rabbit Creek, to the east of Gladstone Creek, was mined by FTG Placers for the first half of the season. Later in the season they relocated to the Mayo area.



**Figure 15.** Active cuts on upper Canadian Creek in 2021. The view is looking downstream with Patton Gulch on the right side of the photo (Photo credit: Patrick Sack).

