

# Yukon placer mining 2018 development overview

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Bond, J.D. and van Loon, S., 2019. Yukon placer mining 2018 development overview. In: Yukon Exploration and Geology Overview 2018, K.E. MacFarlane (ed.), Yukon Geological Survey, p. 17–24.

## Introduction

The placer mining industry was strong in 2018, bolstered by a successful year in 2017. Gold prices were favourable and the number of sluicing operations was comparable to previous years. Placer gold production, according to royalty reporting, indicates that 2018 will yield a return similar to 2017, once the winter reporting season concludes in April. Strong production numbers were filed for the main stems of the Indian River, Sixtymile River, Quartz Creek and Bonanza Creek. Once again the Indian River drainage accounted for the majority of the placer gold produced with 54% of the total Yukon production.

## Climate for Mining

The sluicing season began early in Dawson and Mayo due to favourable temperatures. The average daily high reported from Dawson for May was 18.9°C; a high of 24°C was reported on May 10. Precipitation was variable during the month, and 13 rain days were reported in Mayo and zero rain days reported in Haines Junction. This precipitation trend continued through the summer with only 33 mm of rain falling in Haines Junction in July and August, whereas 110 mm fell in Mayo in June. The Klondike experienced little precipitation in July as only 9 mm were reported. Scarce rainfall in the southwestern part of the territory forced the closure of at least one high-elevation operation in the Ruby Range. Temperatures were warm in most districts through July with the average daily high temperature reaching 24.5°C in Dawson. Fall sluicing temperatures were favourable through September and Dawson City had an average high of 12°C and average low of -2.3°C. Similar temperatures were also experienced in Mayo. Early October temperatures cooled rapidly in Dawson and Mayo and recovered during the middle of the month allowing miners to wrap up their season.

## Gold Production and Value Summary

Placer gold production, according to royalty reporting, indicates that 2018 is on track for a similar year to 2017. The final reporting numbers for 2017 totaled 74,400 crude ounces, valued at \$96.5M CDN. This was the highest value since 1989 when taking into account inflation, and the highest production total since 2004. As of December 7, a total of 66,200 crude ounces have been reported, which is about 1600 crude ounces less than this time last year (Fig. 1). Factors affecting profit margins include a minor reduction in gold price and increased diesel costs. The average gold price fell by 3% from last year and 8% from 2016, whereas the diesel price climbed by 20% from

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the previous year according to retail prices in Whitehorse (NRC, 2018). Fuel bills account for approximately 30% of the production cost and therefore this kind of price increase greatly impacts the industry.

The distribution of production from the various regions did not vary considerably in 2018. Overall the unglaciated terrain produced 90% of the gold, and the glaciated terrain produced 10%. This ratio has remained consistent for many years. Within the unglaciated terrain, Indian River production accounted for 54% of the total, which was up by 1% from last year. Production from the West Yukon increased from 8 to 10% of the total, largely due to activity in the Sixtymile River. Production from the lower Stewart River area fell by 4%.

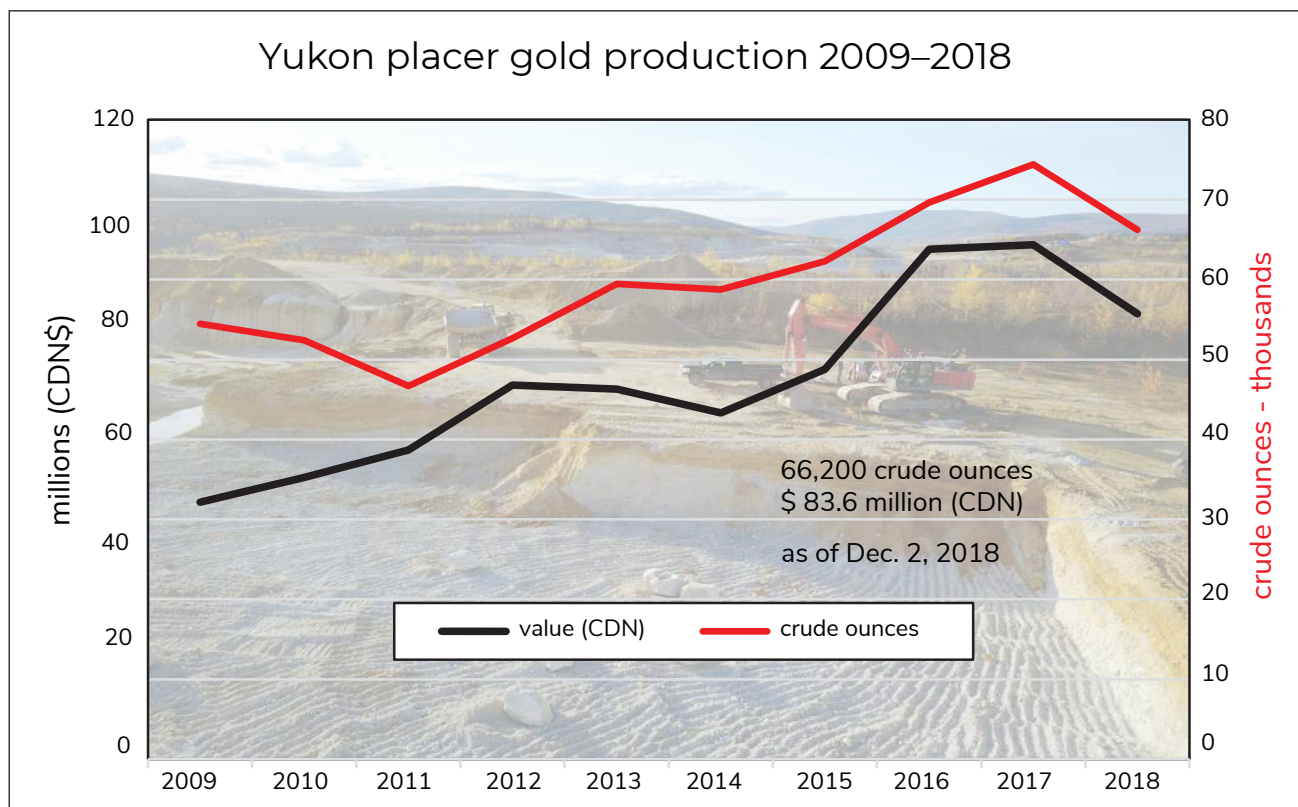
## Development Highlights

### Indian River Drainage

Production from the main stem of the Indian River increased to more than 18,000 crude ounces in

2018, an increase of more than 4000 crude ounces from 2017. This was largely driven by an increase in production from the Little Flake Mine and a focus by Fine Gold Resources to develop their left limit claims above the mouth of Eureka Creek. In addition, mining on the Gimlex claims above the mouth of Quartz Creek resumed under an option agreement with Gold Rush's Rick Ness. Overall, production from the drainage remained consistent with nearly 35,000 crude ounces reported (Fig. 2).

Large scale operations by Schmidt Mining continued on the right limit bench of Quartz Creek. A number of cuts were in various stages of development throughout the course of the season as they extended upstream into Little Blanche Creek. A zone of thrust bedrock blocks were encountered in the bench cut, which uplift the pay gravel by 6 to 8 m. The thrusts occurred prior to deposition of the upper White Channel gravel and therefore there is no surface evidence of the tectonic disturbance.



**Figure 1.** Yukon placer gold production according to export tax reporting for the last ten years. The 2018 reporting season has yet to conclude and will likely reach levels similar to those in 2017.

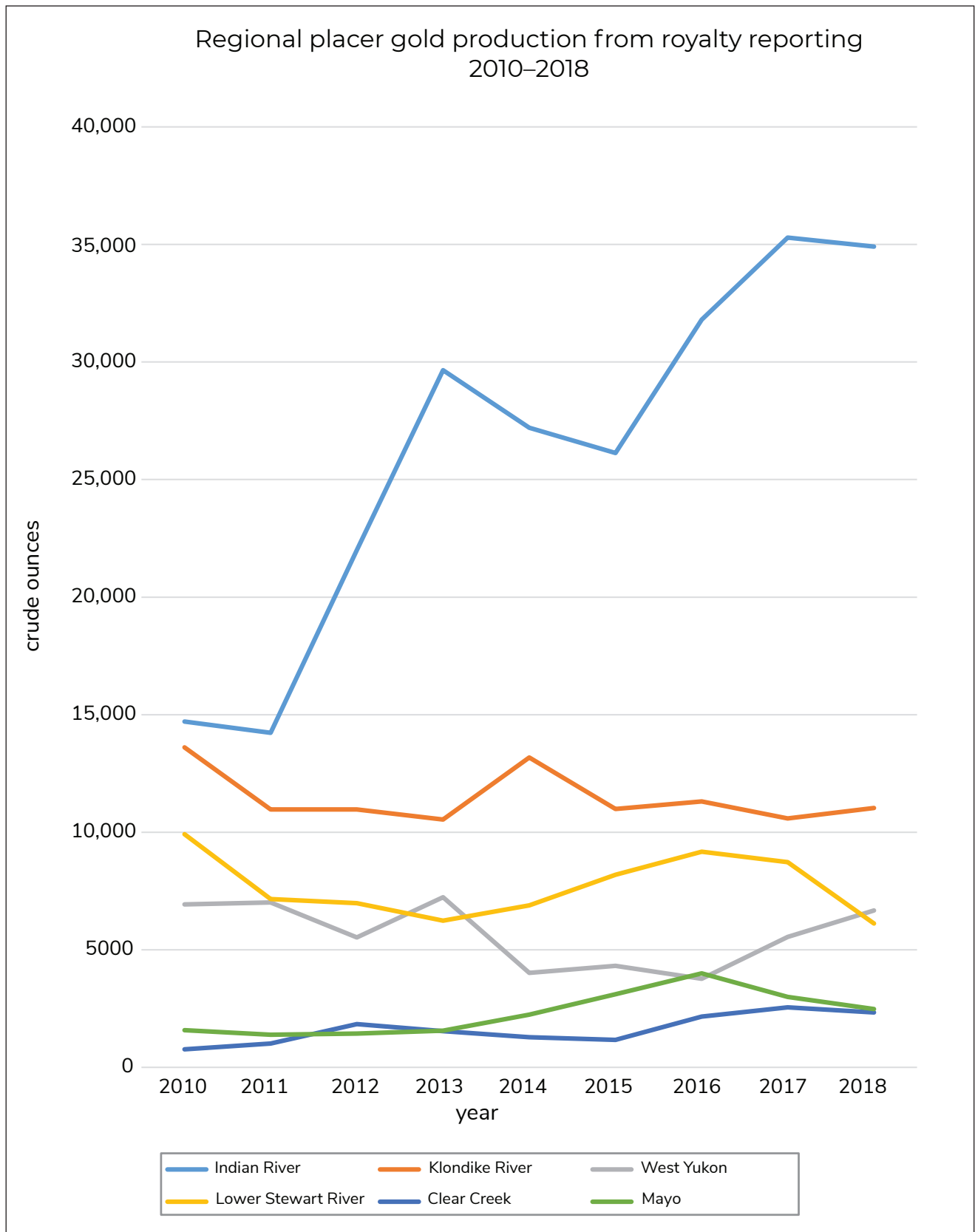


Figure 2. Placer gold production from the various mining regions in Yukon from 2010 to 2018. Values are tabulated according to royalty reporting data as of December 2, 2018.

A new operation, Yukon Heliski, commenced work on Sulphur Creek, targeting left limit side pay previously drilled by the Yukon Consolidated Gold Corporation (Fig. 3). With the help of Yukon Geological Survey historic data compilation efforts, the mine was able to quickly locate an area of economic pay and make their first season a success. Additional work completed on the claims includes resistivity geophysics and drilling that was co-funded by the Yukon Mineral Exploration Program.

Following the Dawson City Gold Show in May, the Yukon Geological Survey organized a field trip to Adrian Hollis' mine to learn about conveyor mining methods. More than 30 participants attended and were given

detailed explanations on the construction, engineering, operating costs, capacity and limitations to employing excavator-mounted conveyors at a mine site. This low-cost method of earth moving is ideal for both stripping and transporting pay in many situations. In addition, the technique is conducive for material segregation, which facilitates reclamation top-coating.

### **Klondike Drainage**

Production from the Klondike River drainage was split between Bonanza and Hunker creeks. In addition, there was an increase in production from the Klondike River main stem with the re-starting of Tatra Ventures mine.



**Figure 3.** A view looking upstream on Sulphur Creek at Yukon Heliski's operation. In the 2018 cut, miners extracted pay gravel from under a unit of loess (silt) and massive ice overburden.

Overall production from the Klondike drainage was slightly higher than 2017 with 11,029 crude ounces reported (Fig. 2). This accounts for 17% of the total Yukon production.

Tatra Ventures operated one of the largest placer mines in the drainage, located on the Klondike River floodplain upstream from Bear Creek subdivision. Proximity to the Klondike River makes groundwater management challenging, and upwards of seven diesel powered pumps are required to dewater the pit. They have two years of mining left on this ground, and are considering a conversion to hydro-electricity to meet next seasons pumping requirements. This will greatly reduce emissions associated with the operation.

Production from Favron Enterprises' Dago Hill property, a left limit White Channel gravel on Hunker Creek, was steady with mining activity occurring at a number of locations. A significant hydraulic monitoring effort occurred near Dago Gulch below the north slope of

Dago Hill. This site is well located in-line with the White Channel paystreak that is concentrated on a low-level Hunker Creek bench and onto the colluvial slope of the hill (rim). Exploration on the property consisted of five sonic drill holes completed on the left limit, high-level bench of Last Chance Creek.

A stretch of historic ground was mined on Hunker Creek immediately upstream from Gold Bottom Creek. The "Hunker Narrows" is a section of the valley that could not be dredged due to the limited width of the valley bottom (Fig. 4). Old-timer underground workings and some mechanized mining has occurred on the property, but it had never been fully opened up. Work by Coulee Resources, in partnership with D. Millar, focused on the left limit below Delhi Hill where Hunker Creek gravel is overlain by coarse weathered bedrock and White Channel tailings off the bench rim.



**Figure 4.** A view looking downstream on Hunker Creek toward the Hunker Narrows. The former White Channel gravel pay streak was only partially left on Delhi Hill. The remainder was eroded onto the rim of the hill and into the valley bottom.

## West Yukon

Production from West Yukon continued to increase in 2018, largely due to activity along the Sixtymile River. A total of 6671 crude ounces were reported with more than 5500 crude ounces mined out of the Sixtymile River valley (Fig. 2). This included production from M2 Gold Mines, Hawk Mining and K-1 Mining.

M2 Gold Mines expanded operations on Sixtymile River with a crew of 12, running two plants. A variety of settings were mined including the high-level bench and modern point bars adjacent to the river. Their New Zealand-style mining method is ideally suited for the shallow deposits along the modern bars, and allows for systematic production (Fig. 5).

Spere Exploration has been actively prospecting Swede Creek, a left limit tributary to the Yukon River near Dawson City, for the past five years. This work has been completed utilizing the Yukon Mineral Exploration Program, and included geophysics, drilling, hand shafting and test pitting. In 2018, a 300 m<sup>3</sup> bulk test was completed and had very encouraging results returning 403 g of coarse gold. This equates to a value of \$45/m<sup>3</sup> or \$5/feet<sup>2</sup> in ground only 4 m (13 feet) deep.



**Figure 5.** M2 Gold Mines operation on the Sixtymile River. After a thin layer of uneconomic gravel is stripped off, a single excavator can handle the bulk of the mining operation. In this cut, the excavator digs pay and feeds the plant. As the excavator moves along the mining face it drags the trommel in order to maintain the appropriate feed spacing.

## Lower Stewart River and Dawson Range

The main producing drainages in the lower Stewart River include Henderson, Kirkman, Scroggie, Black Hills and Maisy May creeks. Total production reporting is more than 6000 crude ounces, a reduction of nearly 1500 crude ounces from 2017 (Fig. 2). The main highlight from the district includes a late season staking rush in small tributaries to Henderson Creek.

In the Dawson Range, a significant exploration program was conducted by Ryanwood Exploration near the Coffee Gold project. This included 193 rotary air blast drill holes, 30 km of ground geophysics and 160 km of LiDAR. The program was completed using helicopters that minimized surface disturbance. Their work was primarily focused in Shovel, Boulevard, Excelsior and Sunshine creeks, all tributaries to the Yukon River. This is likely the largest placer exploration project in Yukon since the 1980s program on the Ladue River.

## Clear Creek and Mayo

Production, according to royalties from Mayo, dropped for the second year in a row, largely due to reductions from Granite and Duncan creeks. Nearly 5000 crude ounces was reported from the two areas in 2018 (Fig. 2). The reduction is expected to turn around in 2019 with new mines coming on stream in the Clear Creek district.

On lower Clear Creek, Wolfhead Discovery and Mining LLC moved closer to full-scale production with the construction of a new 400 yd<sup>3</sup>/hr Tyler 1100 T-class screen deck plant fitted with six sluice boxes (Fig. 6). More than 1500 feet of conveyors were moved onto the property to assist with feeding pay gravel to the plant. Exploration also continued with 78 auger drill holes and a LiDAR survey flown over the property.

On Big Creek, a tributary to the Little South Klondike River, Schmidt Mining continued exploration test pitting. A late season discovery was made that will help guide pay streak delineation in 2019. This property is anticipated to move into a development phase next year.



**Figure 6.** A view of the new wash plant and feeder being installed on Wolfhead Discovery and Mining's operation on lower Clear Creek.

## Yukon Artisanal and Small-Scale Mining Fellowship

The Yukon Geological Survey participated in a fellowship program organized by the Canadian International Resource and Development Institute (CIRDI) that is based in Vancouver, BC. One of CIRDI's goals is to connect developing nations with Canadian expertise in the fields of resource extraction. In September, thirteen representatives from five nations, comprising Peru, Ecuador, Guyana, Ghana and Ethiopia, visited Yukon to learn about Yukon's placer mining regulations and methods (Fig. 7). Participants included both mining regulators and industry representatives. YGS organized two days of mine site tours in the Klondike that included visits to a diverse number of geologic settings: Gold Hill (Dulac Mining), Canyon Creek (L. Cail and Schmidt Mining), Quartz Creek (Schmidt Mining), Dominion

Creek (A. Hollis and Dominion Gold Resources) and Sulphur Creek (Yukon Heliski). The purpose of the mine site tours was to learn about the geology, mine engineering, processing equipment and concentrate clean-up. The tour members were particularly interested in learning about mercury-free gold recovery techniques that they could communicate back to their respective countries. The fellowship was a success and highlighted Yukon's global position as a leader in placer mining technology, progressive regulations and security.

## References

Natural Resources Canada, 2018. Average Retail Prices for Diesel. Natural Resources Canada, <https://www.nrcan.gc.ca/energy/fuel-prices/4797> [December 3, 2018].



**Figure 7.** Delegates from the Yukon Artisanal and Small-Scale Mining Fellowship observe a clean-up at Marcel Dulac's property on Gold Hill.