

YUKON PLACER MINING AND EXPLORATION OVERVIEW 2004

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Even prior to the arrival of European explorers to the Yukon, placer mining had been conducted by First Nations people, who recovered native copper nuggets from the White River area in southwestern Yukon. Explorers from the Hudson Bay Company first reported fine gold on the banks of the Pelly River around 1850. In 1874, coarse gold was discovered on a tributary of the Liard River, and in 1885 significant quantities of gold were found on river bars of the Stewart. Gold was discovered in the Fortymile area on both sides of the border the following year, and by 1893, active mining was taking place on Miller and Glacier creeks in the Sixtymile district.

On August 17, 1896, the discovery of nugget gold on Rabbit Creek (renamed Bonanza) set off the Klondike gold rush. By 1900, over a million ounces (30 million grams) was being mined in a season, at that time completely by hand. Later years saw the arrival of large-scale mining with dredges and heavy equipment.

Today, over 100 years later, placer mining is still an important sector in the Yukon's economy. Over 16.5 million crude ounces (513 tonnes) of placer gold have been produced to date in the Yukon – at today's prices that would be worth more than \$7 billion.

PLACER MINING

Approximately 500 people were directly employed at 163 placer mines in 2004 – and at least several hundred more were employed in businesses and industries that serve the placer mining industry. Most of the placer operations are small and family-run, with an average of three or four employees.

The majority of active placer mining operations were in the Dawson Mining District (116), followed by the Whitehorse Mining District (25), and the Mayo Mining District (21) (Fig. 1). One operation was reported as active in the Watson Lake Mining District.

The total Yukon placer gold production in 2004 was 101,108 crude ounces (3.1448 million g), compared to 50,888 crude ounces (1.5828 million g) in 2003 (Fig. 2). The value of this 2004 gold production was \$42.9 million, more than double the \$42.9 million mined in 2004. It should be noted that over 20,000 ounces (600 000 g) was reported as royalties in March; this probably reflects 2003 production and may have inflated the apparent production for 2004 for some areas.

Over 90% of the Yukon's placer gold was produced in the Dawson Mining District, which includes the unglaciated drainages of Klondike River, Indian River, West Yukon (Fortymile and Sixtymile rivers, and the Moosehorn Range) and lower Stewart River. The remaining gold came from the glaciated Mayo and Whitehorse mining districts, which include the placer areas of Clear Creek, Mayo, the Dawson Range, Kluane, Livingstone and Whitehorse South.

Reported placer gold production from Indian River drainages in 2004 increased compared to the previous year, from 16,126 crude ounces (501 580 g) to 36,279 crude ounces (1 128 400 g). Most of this increase came from operations in Dominion Creek.

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In Klondike area drainages, production rose to 20,031 crude ounces (623 030 g), at least partly because of an increase in gold coming from operations on Last Chance Creek.

A large increase was seen in West Yukon placer gold production, mainly due to increased output from operations on Sixtymile River. Royalty totals for the 2004 season were more than triple the previous year, at 20,454 crude ounces (636 190 g).

Reported production from operations in the Lower Stewart drainages nearly quadrupled in 2004, to a total of 15,617 crude ounces (485 740 g). Most of the increase came from operations on Thistle and Black Hills creeks.

As usual, little gold was reported from Clear Creek drainages although several operations were active in 2004. The total reported gold from royalties increased slightly to 341 crude ounces (10 600 g).

In the Dawson Range, reported placer gold production dropped slightly to 1619 crude ounces (50 370 g).

In the Mayo area, gold production increased somewhat in 2004 to 2539 crude ounces (78 970 g). Significant increases were seen in Owl and Duncan creeks.

In the Kluane area, reported placer gold production rose slightly to 1670 crude ounces (51 940 g).

The Livingstone area remained inactive; however 17.2 crude ounces (535 g) of gold were reported in royalties.

Conversely, although some mining activity took place in the Whitehorse South area (which includes Moose Brook and Wolverine creek), no gold was reported in royalties.

PLACER EXPLORATION

Although it is essentially unreported, exploration on placer mining properties has been a part of the process for many miners since they began to mine. Traditional methods of sampling and exploration include auger, reverse circulation and churn drilling, and geophysics including seismic surveys, ground-penetrating radar and magnetometer surveys. Trenching and bulk sampling also continue to be well used methods of testing placer ground.

An upsurge of placer exploration in 2004 was due, to a large extent, to activity by a single joint venture. Boulder Mining Corporation, a Vancouver-based company, began exploration of a prospect in the Indian River area south of Dawson City, along with Western Prospector Group. The property was discovered by long-time prospector and miner Pete Risby, and consists of a large-volume bench deposit which lies above the modern valley of Indian River. Generalized stratigraphy consists of a Tertiary, 'White Channel' gold-bearing gravel on a bedrock terrace, which is in part overlain by glaciofluvial and glaciolacustrine sediments deposited during the earliest pre-Reid glaciation. A total of 795 placer claims in 3 zones (Upstream, Downstream and Ruby benches) were staked on a 21-km stretch of Indian River, and cover an estimated 8300 hectares.

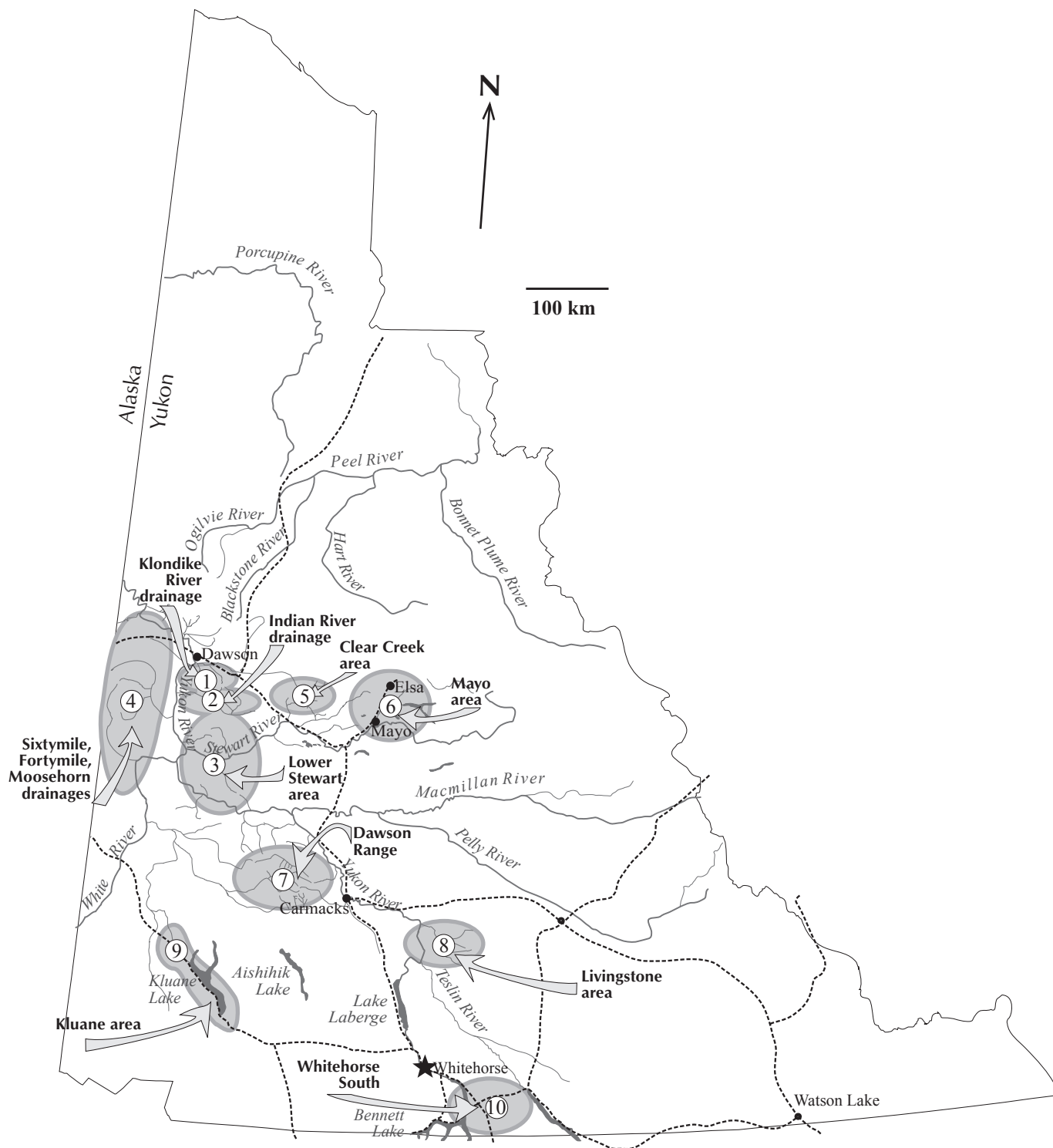


Figure 1. Yukon placer mining areas.

Exploration on this property consisted of an extensive program of auger drilling, rotonasonic drilling, ground-penetrating radar, bulk sampling and geological mapping. The total cost of this program was well over the initial projected expenditures of \$500 000 and represents the largest placer exploration program undertaken in recent history by a public company in Yukon. Agreements are to spend a further \$750 000 prior to December 31, 2005; \$1.25-million prior to December 31, 2006; and \$2.5-million prior to December 31, 2007.

Auger drilling on the Downstream bench early in the program resulted in a weighted average gold grade in five holes of 2.3 grams per tonne (g/t) gold over 6.1 m. On the Upstream bench, the weighted average gold grade of 10 holes along a 3500-m length and 750-m width was 0.58 g/t gold over 21.5 m.

Rotosonic drilling results included intersections of 3.16 g/t over 0.9 m, 1.08 g/t over 1.7 m, and 0.319 g/t over 2 m. Cut-off grades for the deposit are estimated to be 0.1 g/t.

Bulk sampling by excavator in test pits increased the gold grades compared to drilling, as well as recovering coarser gold, with several nuggets in the +1 gram range. Some typical gold grades in test pits were 0.411 g/t over 0.8 m, 0.586 g/t over 0.93 m, and 0.220 g/t over 1.12 m. Individual bulk sample weights were in the range of 12.3 to 34 tonnes.

In the fall, Boulder Mining Corp. staked hundreds of quartz claims over local sedimentary rocks, targeting a quartz-pebble conglomerate, which in sampling has proven to have disseminated grains of fine gold throughout. The possibility exists that this may be a paleoplacer deposit which was a source for both the bench deposits and the local placer gold in Indian River.

Similar geologic and geomorphic settings to that of Indian River exist in other unglaciated drainages in the Yukon, specifically in Fortymile and Sixtymile areas. Although limited placer exploration has taken place on alluvial terraces in these areas, they remain poorly understood. It is possible that significant quantities of gold lie in these bench deposits, which have yet to be methodically evaluated.

Figure 2. Yukon gold production figures and average US gold price, 1971-2004.

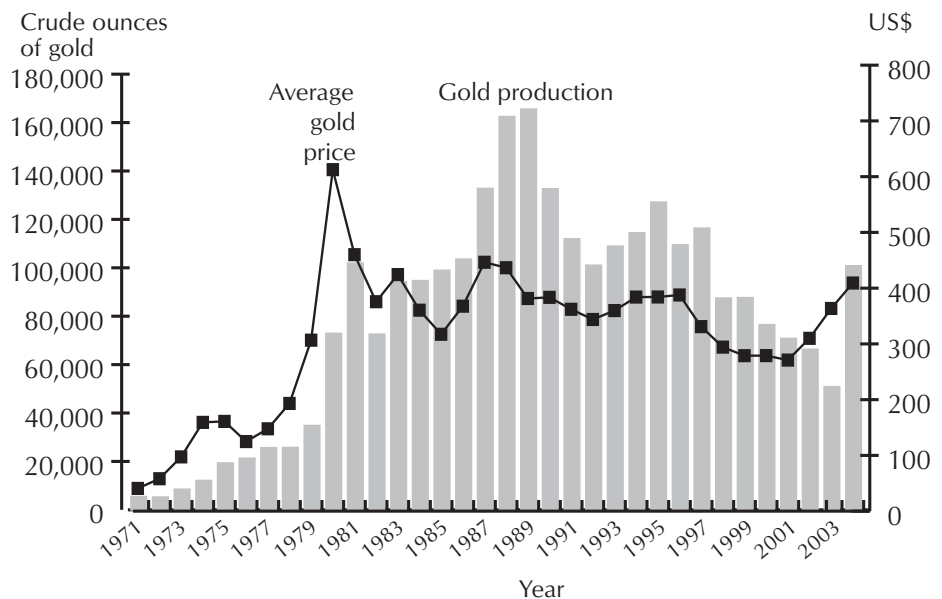




Figure 3. Boulder Mining Corporation's rotasonic drill in operation in the Indian River area in 2004. The drill was successful in recovering intact stratigraphic samples of gravel in core which was processed for heavy minerals and gold after detailed descriptions and documentation.

The long-term health of the Yukon's placer mining industry requires that new placer gold reserves be discovered as traditional mining areas become depleted. With the application of new placer exploration and research techniques and new ideas, additional placer gold reserves may be found in non-traditional, more complex geological settings.

The staff at the Yukon Geological Survey and the Client Services and Inspection Division (Department of Energy, Mines and Resources, Yukon government) can provide information and advice regarding placer mining in the Yukon. Publications on placer mining in the Yukon are available through the Yukon Geological Survey office at Room 102, Elijah Smith Building, 300 Main St. Whitehorse, Yukon. Many recent publications and maps can be downloaded for free from our website at www.geology.gov.yk.ca.

APERÇU

Même avant l'arrivée des explorateurs européens au Yukon, des autochtones exploitaient des placers, notamment dans la région de la rivière White, dans le sud-ouest du Yukon, où ils récoltaient des pépites de cuivre natif. Vers 1850, des explorateurs de la Compagnie de la Baie d'Hudson ont été les premiers à signaler la présence d'or fin sur les berges de la rivière Pelly. En 1874, on a découvert de l'or grossier dans un tributaire de la rivière Liard, et en 1885 on a trouvé d'importantes quantités d'or dans des bancs de la rivière Stewart. L'année suivante, on a découvert de l'or dans la région de Fortymile, de part et d'autre de la frontière, et en 1893 on exploitait des placers dans les ruisseaux Miller et Glacier, dans le district de Sixtymile.

Le 17 août 1896, la découverte d'or en pépites dans le ruisseau Rabbit (que l'on a renommé Bonanza) a lancé la ruée vers l'or du Klondike. En 1900, on récoltait manuellement plus d'un million d'onces par saison. Plus tard, on s'est mis à exploiter les placers à grande échelle au moyen de dragues et d'équipement lourd.

Aujourd'hui, plus de 100 ans plus tard, l'exploitation de placers est encore un secteur important de l'économie du Yukon. Jusqu'à maintenant, plus de 16,5 millions d'onces (513 tonnes) d'or placérien brut ont été produites au Yukon, ce qui vaudrait plus de sept milliards de dollars au prix actuel de l'or.

En 2004, 163 exploitations de placers employaient environ 500 personnes, et plusieurs centaines d'autres personnes travaillaient dans des commerces et des industries fournissant des services à l'industrie des placers. Les exploitations de placers sont pour la plupart de petites entreprises familiales et emploient en moyenne trois ou quatre employés.

La plupart des exploitations de placers se trouvaient dans les districts miniers de Dawson (116), de Whitehorse (25) et de Mayo (21) (Fig. 1). Il y avait une exploitation active dans le district minier de Watson Lake.

À la fin de novembre 2004, 98 185 onces (3 053 900 g) d'or placérien brut avait été produit depuis le début de l'année au Yukon, en hausse par rapport à la production de 2003 qui s'est chiffrée à 50 888 onces (1 582 800 g) (Fig. 2). La valeur de cette production d'or en 2004 a atteint 41,8 millions de dollars, soit plus du double des 20,7 millions que valait la production de 2003. Il faut mentionner que plus de 20 000 onces (600 000 g) ont été déclarées comme des redevances en mars : cela correspond sans doute à de l'or produit en 2003 et pourrait avoir exagéré la production apparente de 2004 dans certaines régions.

Plus de 90 % de l'or placérien du Yukon a été produit dans le district minier de Dawson, qui comprend les régions non glaciaires de la rivière Klondike, de la rivière Indian, de l'ouest du Yukon (rivières Fortymile et Sixtymile et la chaîne Moosehorn) et le cours inférieur de la rivière Stewart. Le reste de l'or a été produit dans les districts miniers glaciés de Mayo et de Whitehorse, qui comprennent les zones de placers de Clear Creek, de Mayo, de la chaîne Dawson, de Kluane, de Livingstone et de Whitehorse Sud.

Il est évident que les réserves d'or placérien dans les parties non glaciaires traditionnellement exploitées du Yukon ont commencé à baisser, tandis que la production d'or dans les parties glaciaires du Yukon augmente. L'application de nouvelles techniques d'exploration et de recherche de placers pourrait permettre de trouver d'autres réserves d'or dans des cadres géologiques non traditionnels plus complexes, ce qui est essentiel pour assurer la santé à long terme de l'industrie des placers du Yukon. En 2004, la compagnie Boulder Mining de Vancouver, en collaboration avec le Groupe Western Prospector, a entamé un programme d'exploration pour les placers dans la région de la rivière Indian, au sud de Dawson (Fig. 2).