YMEP Report
McQueston River Valley Alluvial Gold

Claim Names: Najo #1
Grant #: P514192
Project Location: McQueston River, Mayo Mining District
NTS: 115P11
Centre of claim: 63°33’54.20” N, 137°23’57.44” W

Submitted by:
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Date: November 17, 2020

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Executive Summary

This project sought to conduct grade definition of an existing resource in order to mine later in the summer of 2021. This is a placer project focussing on fine-grained alluvial gold.

The broad river valleys of the Yukon have large volume deposits of fine-grained gold in river gravels. Historically, these fine gold deposits were mined by hand in the 1880's before the discovery of coarse gold on the 40-mile and Klondike rivers. There has been little modern placer mining of this type of gold. These represent a large-scale and under-utilized resource that can be mined much more efficiently than the coarse gold found in smaller creek valleys due to lack of overburden and economies of scale.

Kryotek has been researching and experimenting with Yukon fine gold exploration and recovery techniques since 2009 in preparation for economic grade definition and mining.

The Najo placer claims are in the McQuesten River plain close to the North Klondike Highway. The block of 10 claims has been partially stripped and test pitted, but no systematic exploration has taken place.

Sampling in the summer of 2019 by Jerry Reid showed gold grades averaging 0.6g per cubic meter at 3m depths. This was determined by panning 23, 20L samples, concentrating the gold on a shaker table and weighing all recovered gold. Three fire assays of 1kg raw gravel samples at 3m depths showed 0.5-1.7g/t (1-2.4g/m3).

Based on these results and previous work by Kryotek in adjacent claims a grade definition project was conducted in 2020 to guide a mining plan. Drilling, geophysics and bulk sampling took place in May-July 2020. Based on the findings of the exploration program a larger bulk sample was taken in August 2020 using a processing plant and centrifugal concentration system specifically designed to capture fine gold.

Three wash plants were used to test their effectiveness on this type of gold and gravel. A 30 m/hr trommel with Dream Mat sluice, 10 m/hr vibrating screen with Knudsen centrifuge concentrators and a custom-built 85 cubic meter per hour vibrating screen deck with Bennet oscillating sluice boxes.

Gold recovery was acceptable, with the Bennet Box system showing the most promise for full-scale mining. Testing of this gold was challenging as gold weighing in samples required a shaker table and experienced operator. Fine, flat gold particles made continuing colours per pan an unreliable indicator of grades. (Note: work was completed on claim Najo 1 only.)

Introduction

This project sought to thoroughly explore a high-grade region of river gravels. We used a combination of electrical resistivity geophysics, drilling, test pitting and bulk sampling to prove the resource for mining. The goal was to identify point bars in abandoned channels that served as concentrators of heavy minerals as well as obtain an average grade estimate over the property.

Location and Access

The property is 80 km south of Dawson City, located on the right limit of the McQuesten River roughly 800m upstream of the Klondike Highway bridge. It is a block of ten claims covering the sweep of an abandoned and infilled oxbow channel. There is a gravel access road 1km long suitable for 2WD vehicle traffic from the North Klondike Highway to the property. Access is via the North Klondike Highway.

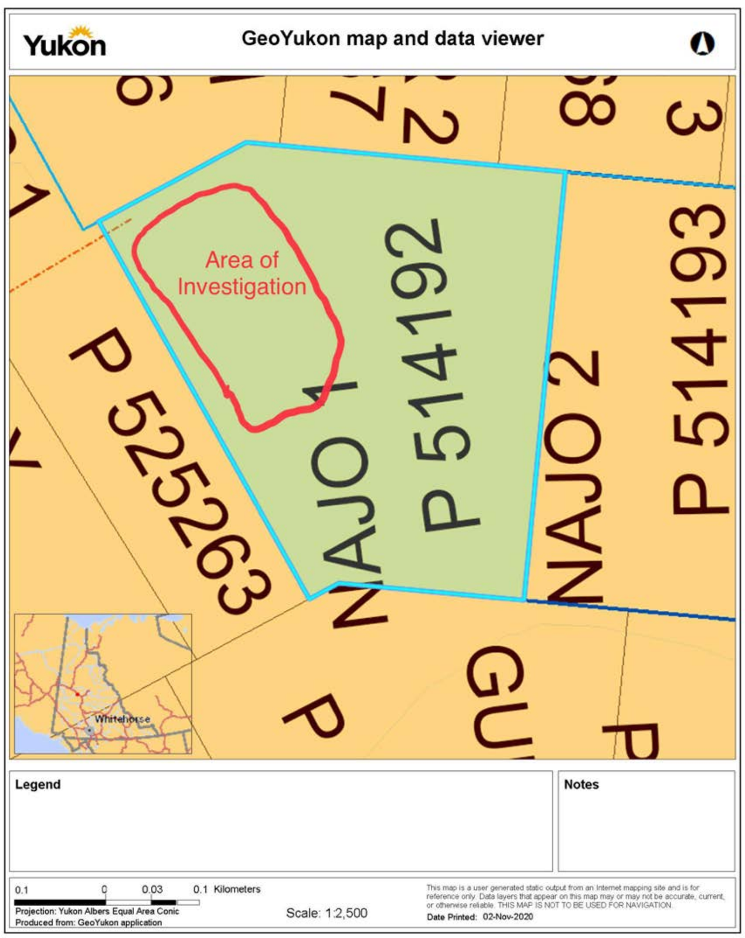


Figure 1. Location of Claim Block, detail.

Placer Tenure

The property consists of ten claims owned 100% by Kim Fields (Reid Mining). Najo 1 was leased by Kryotek for the summer of 2020. Claim Najo #1 had previously been stripped by the owners in a 100mx300m clearing to gravel and a 30mx20m pit to 3m depth excavated.

Quartz Tenure

There are no quartz claims under or adjacent to this property.

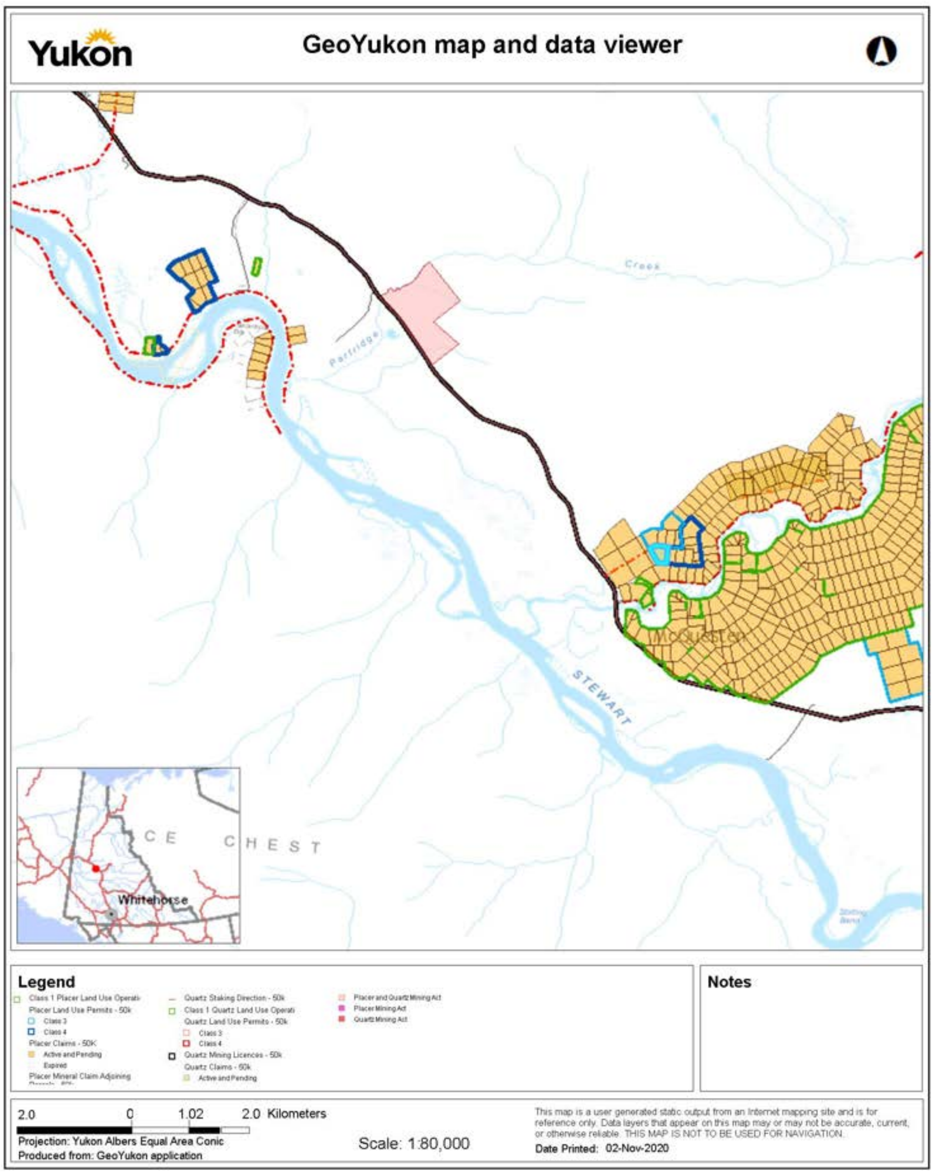


Figure 2. Location of claims relative to Stewart River Valley

History of Exploration and Mining

The following history of the area is largely referenced and extensively quoted from Stirling, 2005.

Richard Poplin, Charles McCoskey, Benjamin Beach and George Marks discovered gold on the bars of the Stewart River in the spring of 1883. They entered the Yukon from Juneau by way of the Dyea Pass and prospected the river from its mouth to the McQuesten region. They were among the first prospectors to venture northward into this region.

News of the gold on the Stewart River reached the outside world, and in 1885 approximately 75 men came into the Yukon via the Dyea Pass to work the bars. On average a man could earn $30 (one- and one-half ounces) per day and occasionally up to $100 (five ounces) per day.

High levels of activity continued on the Stewart until the fall of 1886 when a discovery of coarse gold was made on the Fortymile River. In the spring of 1887, there was a rush to the Fortymile area that left the Stewart mostly abandoned.

It is estimated that 5,000 ounces of gold was recovered from 1883 – 1886 using rockers. In 1887 the yield dropped to about $5000 (250 ounces), but this was partly due to the withdrawal of most of the miners to the Fortymile area.

William Ogilvie and a party that included his son Morley tested several locations on the river with a small dredge in 1902 and 1903. In 1908, Ogilvie formed the Yukon Basin Gold Dredging Company, a public company, of which he was president. One of the dredging sites was a left limit bench known as Steamboat Bar or Nelson's Point. It is located about five miles downstream from the mouth of the McQuesten River. Here the company ran one steam-powered dredge for two seasons. The capacity of the dredge commissioned in 1908 was reported as 35,000 cubic yards / month. The dredging operation has been described as a limited success.

Further evidence of dredging is seen on a right-limit bench upstream of the McQuesten River and also on a right-limit bar a few miles upstream from the McQuesten.

Mayo Historical Society, Gold & Galena. (Mayo, Yukon, 1990), p.22.
Mayo Historical Society, Gold & Galena. (Mayo, Yukon, 1990), p.25.
Geological and Natural History of Canada, Annual Report. 1888-1889.

Modern Exploration

Prior to 1984, Fred Chudy and family mined on a right-limit bench about 2km downstream from the McQuesten airstrip. The operation was successful in recovering fine gold using a shaking sluice.

In 1984 Bob Stirling began working in the McQueston Airstrip area. From 1985 to 1989 prospecting and hand mining took place on the KING claim. A portion of the Chudy operation is located on the claim.

Following an air photo study in 1990 the Mucky Face, Lorraine, Hawk and Golden Heart claims were staked upstream. The results of prospecting and test pits indicated a potential economic deposit. Test pits, stripping and hand mining continued in 1992 and 1993.

Jim Coates staked three claims on the McQueston River adjacent to the proposed property in 2010 and a lease in 2012 following results from riverside panning in 2010 that showed 50-200 colors/pan. These claims were explored further with drilling, test pitting and both electrical resistivity and induced polarization geophysics. This was the northernmost extension of fine gold exploration by Coates in the Tintina Trench. Other economic deposits were explored on the Pelly River near Hoole Canyon upstream of Ross River and roughly 90 km downstream of Faro in the Glenlyon Range.

Regional Placer Geology

The geological setting of the McQuesten property has cut-off meanders that have been preserved and gravel outcrops at or near surface in places. There has been no reworking of materials since the time of the cut-offs. The gravels are at higher elevations than present features of the river which suggests deposits of older age.

A 50m high escarpment and plateau to the north is interpreted as Pre-Reid glacial outwash. The claims are located on alluvial gravels in an abandoned channel of the McQueston River. The upper elevation of the gravel on the claims is approximately 1-3m above the summer water level of the present river channel.

Bedrock outcrops in the banks and bottom of the active McQueston River channel approximately 800m to the west of these claims. The bedrock appears to be a decomposed granodiorite showing no signs of glacial scouring.

Gold is fine grained, and flakes are generally less than 2mm in diameter. An average large flake is 1mm diameter. It was estimated that it takes 500,000 colours of gold to make one ounce. This number was calculated from 2 composite samples collected and analyzed in 1991 by Bob Stirling from the Dry Bars area. In deposition areas the gold composition is 50% fine grained and 50%

flakes. In sluice concentrate, garnet is as prevalent as magnetite. The fineness of the gold is 83% (Stirling, 2015).

Kryotek has conducted extensive prospecting activities in the McQueston River valley. These have included: canoeing from Keno City to the Klondike River Crossing down the river and panning point bars to determine distribution of gold, auger drilling, geophysics and test pitting of Kryotek claims in the McQueston Valley and contract exploration of Barlow and Clear Creeks for other miners (sonic and auger drilling, geophysics). The Barlow and Clear Creek work showed trends that we believe have an effect on the gold type and distribution in the McQueston Valley. Fine gold was found in friable Eocene conglomerates bedrock that was drilled in Barlow and Clear creeks which extended from 6m below the surface to 30m depths. Gold grades of 0.1-0.2g/t were ubiquitous in this bedrock which was soft enough to drill with a large auger drill.

Gold grades were found to be relatively low (2-7 colors/pan) along the majority of the McQueston River until it entered the Tintina Trench. Grades abruptly and consistently increased at this point to 40-60 colours/pan, reaching grades of 100-200 colors/pan at approximately the location of the proposed project. We hypothesize that much of this gold is re-mobilized Eocene paleoplacer weathered from the conglomerates in Clear Creek and transported into the McQueston valley in a pre-Reid deglaciation flood that entered the valley to the east and upstream of the proposed project. This flood could have selectively deposited the gold in the McQueston Valley, the outwash plain to the west and 50m high glacial gravel escarpment to the north.

The McQueston River would have re-worked and concentrated gold in point bars and skim bars. Gold characteristics (flat, bright, 80-85% fineness) are consistent between the Clear Creek conglomerates and river valley golds.

This would help explain the rich grades on Steamboat bar and the Dry Bars property near the McQueston Airstrip just downstream from the confluence of the Stewart and McQueston. Gold grades here are significantly higher on average than those found upstream on the Stewart.

The combination of glacial flooding, reworking of outwash and its position at the edge of the pre-Reid and Reid glacial limits may have served to create a concentration of fine gold in this location.

Regional Bedrock Geology

Bedrock geology is MID-CRETACEOUS mKC: CASSIAR SUITE: medium to coarse grained, equigranular to porphyritic rocks of largely felsic (q) composition; medium to coarse grained, equigranular to porphyritic (K-feldspar) granite and biotite quartz monzonite; biotite-hornblende quartz monzonite and granodiorite4. The following is the Bedrock Geology Legend for the area.

PROTEROZOIC AND PALEOZOIC

PPa: AMPHIBOLITE metamorphosed mafic rocks including amphibolite (1) and ultramafic rocks (2) of unknown association; i.e.) may belong in part or entirely to Nisling, Nasina, and Slide Mountain assemblages and (3), mafic-ultramafic intrusions within Nasina assemblage
1. medium to dark green weathering chlorite (+/-biotite) schist, amphibolite, banded amphibolite gneiss, garnet amphibolite; minor chloritic quartz-mica schist, graphitic quartz-mica schist, quartzite, and limestone
2. variably altered and serpentinized ultramafic rocks
3. calcareous actinolite-plagioclase-chlorite-biotite schist, plagioclase-actinolite-chlorite schist, and lesser carbonaceous phyllite and quartzite; metamorphosed ultramafic rocks including dunite and pyroxenite, locally serpentinized

UPPER PROTEROZOIC TO LOWER CAMBRIAN PCH:
HYLAND consists upwards of coarse turbiditic clastics (1), limestone (2) and fine clastics typified by maroon and green shale (3); may include younger (4) units; includes scattered mafic volcanic rocks (5) (Hyland Gp.)

1. thin to thick bedded, brown to pale green shale, fine to coarse grained quartz- rich sandstone, grit, and quartz-pebble conglomerate; minor argillaceous limestone; phyllite, quartzofeldspathic and micaceous psammite, gritty psammite and minor marble (Hyland Gp., Yusezyu)
2. 2. grey weathering, dark grey to grey white, thin to thick bedded, very fine crystalline limestone, locally sandy; calc-silicate and marble; may locally include carbonate members within (1) or (4) (Hyland Gp., Algae Lake , limestone member of Yusezyu)
3. 3. distinctive, recessive, maroon weathering, interbedded maroon and apple-green slate; "Oldhamia" trace fossils; rare grey chert; locally basal member and interbeds of quartz siltstone, sandstone and quartz-pebble conglomerate (Hyland Gp., Narchilla , Senoah , Arrowhead Lake)
4. 4. quartzose clastic rocks as described in (1); mostly(?) equivalent to (1) but may include younger units (Hyland Gp., mostly(?) Yusezyu)
5. 5. dark brown- and green- to light grey-weathering dark green volcanic rocks, commonly with calcite filled vesicles, breccia, tuff, and agglomerate; minor interbedded shale, chert, siltstone, and limestone (Hyland Gp.)
6. MID-CRETACEOUS
7. mKqC: CASSIAR SUITE: medium to coarse grained, equigranular to porphyritic rocks of largely felsic (q) composition; medium to coarse grained, equigranular to porphyritic (K-feldspar) granite and biotite quartz monzonite; biotite-hornblende quartz monzonite and granodiorite.
8. Q: QUATERNARY
9. unconsolidated glacial, glaciofluvial and glaciolacustrine deposits; fluviatile silt, sand, and gravel, and local volcanic ash, in part with cover of soil and organic deposit

Physiography and Vegetation

The claim is located in the McQueston River Valley at an elevation of about 1300 feet or 390 meters. There is bedrock outcrop roughly 800 m to the west within the river channel, but none has been found on the claims. The terrain is a flat vegetated floodplain with well-drained soils and widely spaced trees. Poplar, spruce, and willow are moderately dense. No permafrost is present in gravels on the property but may exist in fine-grained soils.

Black bears, grizzly bears, moose, lynx, coyotes, wolves, hawks, owls, ducks and brown bats frequent the area.

Exploration Target

We believed this property to be an un-mined and largely unexplored fine gold target.
High grade zones located in abandoned skim bar deposits were a target of the exploration. These are thin lenses (30-50 cm thick) that form just offshore of upstream point bars. Hydrodynamics in the river lead to low-velocity regions that allow heavy minerals to drop out of the bedload during flood events. Gold grades are enriched and are associated with 6-10cm cobbles, coarse sand, magnetite and hematite, all of which appear to settle in similar areas, likely due to similar specific gravity with relation to grain size.

18 holes were drilled using a 15mm (6") auger technique, ERT surveys were conducted, fifteen 5 cubic meter test pits were dug, a 100 cubic meter test sample using a centrifuge test plant, 200 cubic meter test sample using a floating test plant with vortex sluice system, then a 2,000 cubic meter bulk sample processed with a 85 meter/hour custom-built wash plant incorporating dual centrifuges as well as dual oscillating Bennet sluice boxes.

The drill samples were collected in 20L buckets and brought to Whitehorse. Each bucket was sieved into five sieve sizes and the finest two sieves were panned. Gold colours were collected and counted. Sieve size volumes were recorded in order to determine a grain size distribution for proper sizing of sluice plants.

Samples were panned, and gold weighed for grade. Grain size analysis of gravel was used to size the shaker deck system and the sluices on the processing plant. Gold grain size distribution was also used to determine the ideal recovery system. Samples were processed using a *Knudsen* centrifugal concentrator, a *LeTrap* sluice, a *Bennet* oscillating sluice box (which has been used successfully at the Dry Bars property near the McQueston airstrip by Ampex Mining), and a vortex riffle *DreamMat* sluice matting.

Previous Work on the Property

There is evidence of trenches on the property that appear to be forty or more years old, judging by vegetation overgrowth and tree rings in trees growing in the trenches. Assessment reports from the 1980s describe seismic programs conducted to determine depth to bedrock.

A small operation with one person, a compact excavator and conventional sluice box operated on a nearby oxbow lake in 2014. Recoveries are not known.

Jerry Reid of Reid Mining took 23 samples at 3m depths using an excavator. Each 20L sample was panned and gold weighed. Grades averages 0.6g/m. Three fire assays of 1kg raw gravel samples from 3m depths indicated gold grades of 0.5 to 1.7 g/t.

Grades were promising enough for Reid Mining to strip a 100mx300m area and dig a 20mx30mx3m pit to place a floating plant.

Exploration Rationale

Much of the fine and flake gold present in these deposits was previously considered to be unrecoverable using conventional sluice boxes. Gold prices have also been historically too low to support mining. However, with higher gold prices and recent advances in sluice mats, magnetic black sand removal and enhanced gravity recovery of fine gold these deposits are now economic.

Kryotek purchased a *Knudsen* centrifugal concentrator plant with two 75cm diameter concentrator bowls, vibrating screen deck and auger-feed system. This plant is designed to capture gold smaller than 1 mm in diameter. This was compared with a vortex-riffle sluice fed by a trommel and oscillating sluice system (*Bennet Box*) to capture gold in the 1-3mm range.

Geophysical investigations conducted by Kryotek and supported by other literature have been shown to identify high-resistance zones typical of cobble layers within a sandy matrix. Induced polarization shows high chargeability zones associated with high mineralization and black sand deposits. Combining the two shows high-resistance zones typical of high-energy infilled stream channels with high chargeability zones near their bases. These are the locations of the skim bars and the high gold-bearing zones.

Program Logistics

Equipment was trucked from Whitehorse along the North Klondike Highway to the McQueston Bridge turnoff, then trucked 1km on a gravel road to the site. Personnel drove to site as needed. The site has an all-weather gravel surfaced access road. 15 rounds trips per site were required. The large processing plant and Cat 225 excavator were trucked to site with a semi truck. Camp consisted of trailers and campers and was on site.

Program Work Schedule

- April 2020: Used Bobcat skid-steer to plop deep snow off access road and dig initial test pits. Drill 10-15 3 m deep holes on Najo#1 claim. Pan samples. Conduct grain size analysis.
- May 2020: Geophysics, 5 cubic meter test pitting.
- May 2020: Move centrifugal plant and Kubota 080 excavator to site.
- June 2020: Test pit, process with centrifugal plant, calculate recovery.
- July 2020: Move floating test trommel to property, move Cat 225 excavator to property. Begin deep test pitting. Test high-grade zone using floating trommel plant with Dream Mat vortex matting.
- July 2020: Remove trommel, begin building shaker deck oscillating box wash plant. More test pitting with Cat 225 excavator and geophysics
- August 2020: Build shaker deck/Bennet Box wash plant. Plant finished in late August. Conduct 2,000 cubic meter bulk sample.
- September 2020: Reclaim site, remove equipment.

Electrical Resistivity Geophysics

Ten (10) Lippman 4-point AC Electrical Resistivity and Induced Polarization geophysical surveys were conducted over the areas of interest to determine depth of the water table, gravel thicknesses and variations in gravel grain size.

Induced Polarization surveys identified areas of magnetic black sand concentration that show higher chargeability than surrounding barren areas. This will further refine the distribution and depth of deposits. Ten 100m long surveys took four days. Work was conducted in May and June of 2020.

Auger Drilling

A 6" auger drilling program was conducted in May 2020 to drill 18, 3 m deep boreholes. The samples were identified with GPS coordinates and stored in plastic bags. They were sieved in 4 sieve sizes and panned with *Garret* gold pans.

Initial Test Pitting

Test pitting was initially conducted using a *Kubota 080* excavator rented from TotalTrac Yukon. This 10-ton excavator could dig to 2.5-3 m depths in these ground conditions. Deeper holes rapidly filled with groundwater – see photo below showing a test pit filled almost to the surface with groundwater.

Figure 3. Test pit filled with groundwater. Area of investigation prior to significant bulk sampling. Note red-coloured gravel patches. These contained significantly more and coarser gold than the surrounding grey gravels.

A 50 cubic meter test from five near-surface pits was conducted with this excavator and the centrifugal plant. Twenty grams of gold was recovered during this test for a grade of $32/yd. Some of this gold (roughly 1/3) was different in character from that in the drill samples, being larger, reddish-stained nuggets and three-dimensional flakes. There is a strong potential that this gold was trapped in the test plant and released into the sample despite repeated cleanings and pressure-washings of the internal mechanisms of the plant. It is also possible that this test-pitting happened to encounter an anomalously high-grade zone.

Figure 4. Test pitting with centrifugal plant and Kubota 080 excavator

Deeper pits were required, and the auger drill was unable to penetrate a cobble layer with boulders up to 50 cm in diameter. Kryotek purchased a 25-ton Cat 225 excavator with the capability to reach to 6 m depths. This machine worked well, and we were able to determine that a geophysical contact at 4-5 m depths was a frozen silt layer that acted as a false bedrock for the alluvial gravels above.

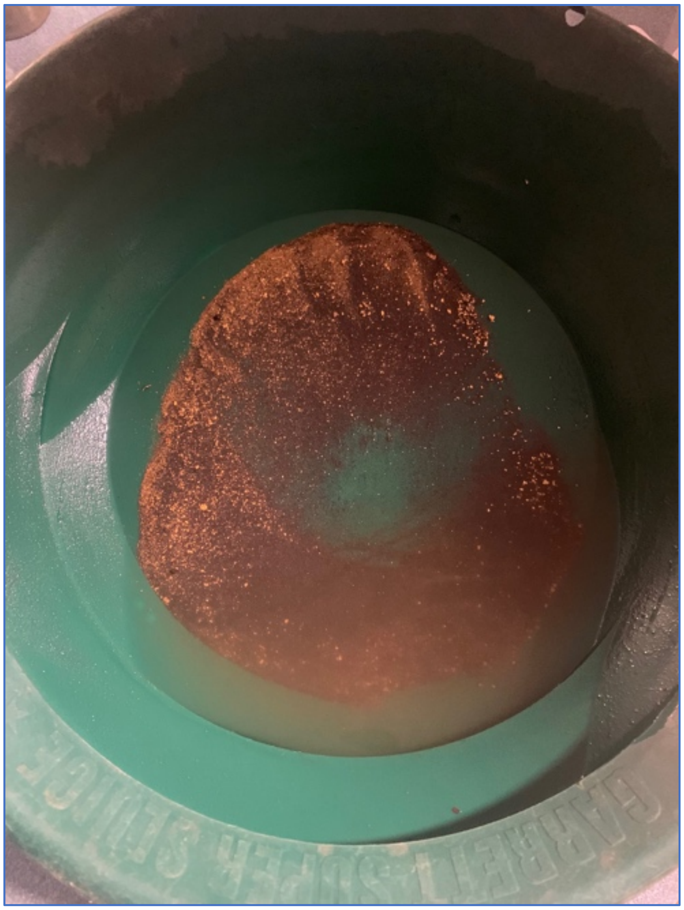


Figure 5. Gold recovered with centrifugal plant. Note the large pieces that are likely remnants released from the testing plant machinery.

Floating Plant Testing Attempt

The 225 excavator and a D8 bulldozer were used to dig a small pond for the floating trommel test plant. The trommel was electric-powered, 1 m wide by 3 m long with a Dream Mat sluice, 3” Honda pump, vibrating pre-was feed hopper and 5 m tailings conveyor. We hoped to use this plant to test the viability of using a floating system to test areas with high groundwater conditions and fine gold. Unfortunately, we were unable to keep the fine tailings from filling the pond and grounding the barge.

The gravel walls of the pond were also loose enough that slumping continually filled in the pond and required frequent removal with the excavator. The mobility of the gravel and difficulty in maintaining a deep enough pond led us to abandon the floating trommel concept. It was difficult to determine gravel volumes for accurate testing purposes and tailings became easily mixed with unprocessed material.

Figure 6. Testing with floating trommel and Dream Mat system

The Dream Mat vortex riffles were tested by repeatedly panning material at the end of the sluice. We found that there was considerable escapement of flake gold which tumbled in the turbulence and did not permanently settle in the riffles. Different water volumes, feed rates and screen sizes were tried with limited success. Eventually it was decided that oscillating boxes with Dream Mat carpeting were likely better at capturing and retrieving the fine gold.

As the test pitting, drilling and initial bulk samples produced significantly different results we were not able to arrive at a grade definition. The higher-grade gold was present in a 30-60 cm thick layer of large cobbles and small boulders 1-2 m below surface but was highly variable in aerial distribution. We were unable to pinpoint a paystreak or consistent pattern, with grades as high as $35/m3 found next to areas with no gold.

Bulk Testing

We decided that the best solution was to conduct a 2000+ cubic meter oscillating sluice boxes built by Ken Bennet and tuned for Stewart River fine gold. We purchased a 4x8' Dillon Screen vibrating deck sorter from Kluane Drilling that had previously been used at the True North Gems project. We then built a pre-wash hopper, 40' tailings conveyor and adjustable feed flow system that allowed the operator to direct gold-bearing fines either into a set of oscillating Bennet sluice boxes and/or a pair of sequentially mounted Knudsen centrifugal concentrators. A Mitsubishi electronic sped controller was installed to precisely control the oscillator speed on the Bennet boxes. A water injection system was installed in the feed director to agitate the feed slurry and prevent premature settling of gold particles. A 6" pump was used to supply high-pressure water. Building of this plant took approximately 1 month, largely due to technical issues with the electrical supply and control system. A D8 bulldozer and the Cat 225 excavator were used to pile a 2,000 m testing pile, selectively targeting the high-grade zone.

The Cat 225 excavator was used to feed the test plant for four days from August 25-29. Fine tailings were panned constantly to determine gold loss from the sluices and centrifuges. The centrifuges were easily overwhelmed by variations in feed rate and grain size, so the entire feed flow was re-diverted into the sluice boxes. Fine gold escapement was minimal (as tested by frequently panning tailings) with a 120 RPM oscillator speed.

Figure 7. Bulk testing using Cat 225 excavator and shaker deck plant with oscillating sluice boxes.

After processing 2,000 cubic meters the Nomad matting in the sluices was removed, washed and brought to the gold cleaner in Dawson City who used a vibrating table to separate the gold. 16 grams were recovered for a average grade of $0.64/m3. This gold was extremely fine and flakey, with very small little Z-dimension. It appears to be finer than the gold recovered at the McQueston Airstrip.

Averages	Color Count	% Count
Flakes	1.0	1.13%
Colors	8.9	10.00%
Micro	79.0	89.88%

Table 1. Test pit and Drill hole results summary

Assuming 16129 colors/gram, or 500,000 colors/oz this produced an average grade of $15.71/m3.

When only counting flakes greater than 1mm in dimension this was reduced to $3.32/m3. When counting all gold highest grades per borehole were $41.77/m3, and lowest were $2.84.

Plus 3/8"	50.63%
Plus 1/8"	16.68%
Plus 1/16"	8.52%
Minus 1/16"	20.95%
Swell Factor	16.88%

Table 2. Grain size distribution averages over all samples

Based on the grain size breakdown we decided to screen to 1/8", reducing the sluiced/centrifuged volume to 34% of raw feed volume without significantly restricting feed rate.

We also came to the conclusion that counting colors is not a reliable method of estimating grade. This gold is extremely flat and almost two-dimensional. Bulk sampling, screening and using a shaker table to process every sample is likely the only method for getting an accurate gold weight. Our assumption of 500,000 colors/oz was likely overestimating gold content by half an order of magnitude.

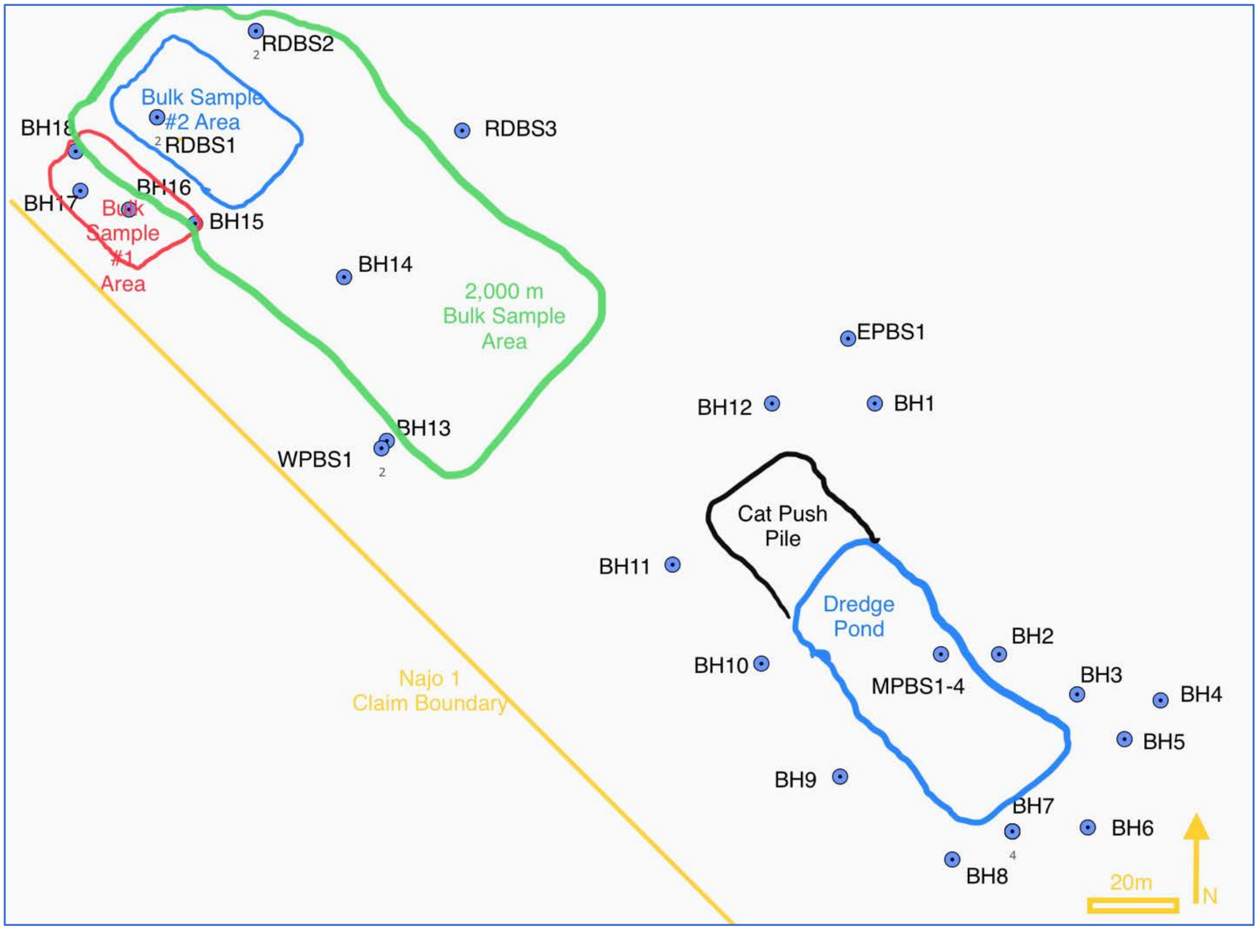


Figure 8. Map of Drill Holes, Test Pit and Bulk sample locations

Methodology Conclusions

Upon examination of the drilling, test pitting and bulk sampling it was determined that the gold concentrations are likely in very thin layers within cobble concentrations in the alluvial gravels. These cobble layers are not consistent in extent or depth. The surrounding gravels are mostly barren of gold values or other heavy minerals.

Using the Kubota 080 excavator is was possible for the operator to selectively target these high-grade zones in test pits, resulting in high-grade results. When the bulldozer and 225 excavator were used to make the bulk-sample pile they were less discriminate and mixed the high grade in with large quantities of surrounding low-grade materials as well as burying the high-grade zones. Much of the high-grade material was also buried by the bulldozer and may not have been included in the test.

Based on the results of the bulk sample the decision was made to not mine this property. While a very small operation that could selectively target individual high-grade zones may be viable a bulk-processing mine would likely not be due to attention required in delineating pay material. We also came to the conclusion that counting colors is not a reliable method of estimating grade.

This gold is extremely flat and almost two-dimensional. Bulk sampling, screening and using a shaker table to process every sample is likely the only method for getting an accurate gold weight. Our assumption of 500,000 colors/oz was likely overestimating gold content by half an order of magnitude.

Geophysical Imaging Results

The combination of resistivity and induced polarization geophysics was successful in delineating the water table, contact between gravel and underlying silt and picking out layers with concentrations of cobbles and magnetic black sands.

Geophysics Locations	Start		End	
MC1	63.564036	137.403458	63.564806	137.404155
MC2	63.564049	137.403585	63.564135	137.402861
MC3	63.56414	137.4028	63.564933	137.403484
MC4	63.563968	137.402971	63.564806	137.403883
MC5	63.564032	137.403263	63.564719	137.40398
MC6	63.563917	137.403083	63.56306	137.402618
MC7	63.564233	137.403661	63.564352	137.402973
MC8	63.565001	137.404268	63.565059	137.403776
MC9	63.563945	137.403598	63.563951	137.402805
MC10	63.564175	137.40289	63.563401	137.402242

Table 3. Geophysics Locations

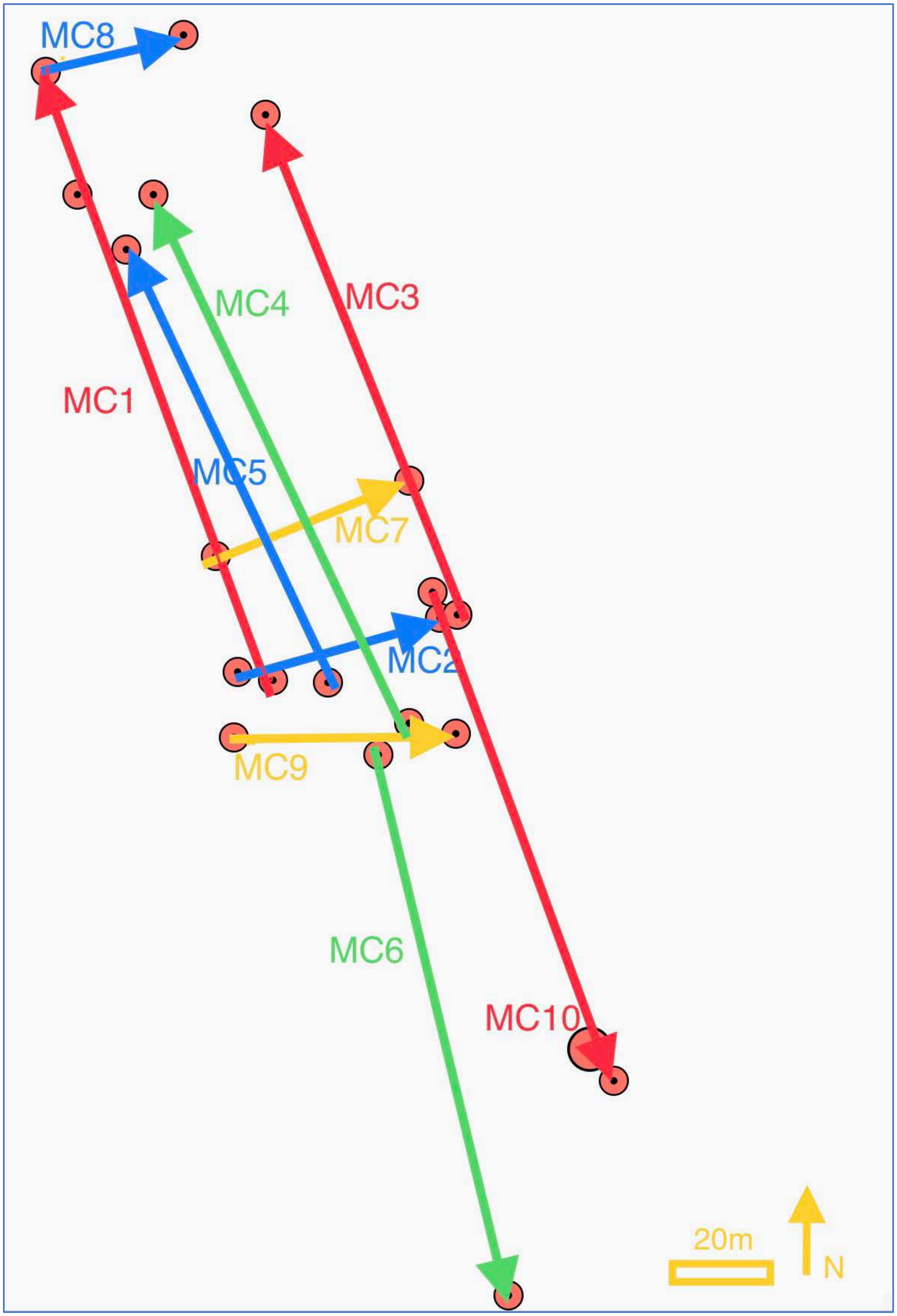


Figure 9. Geophysics Locations

MC1

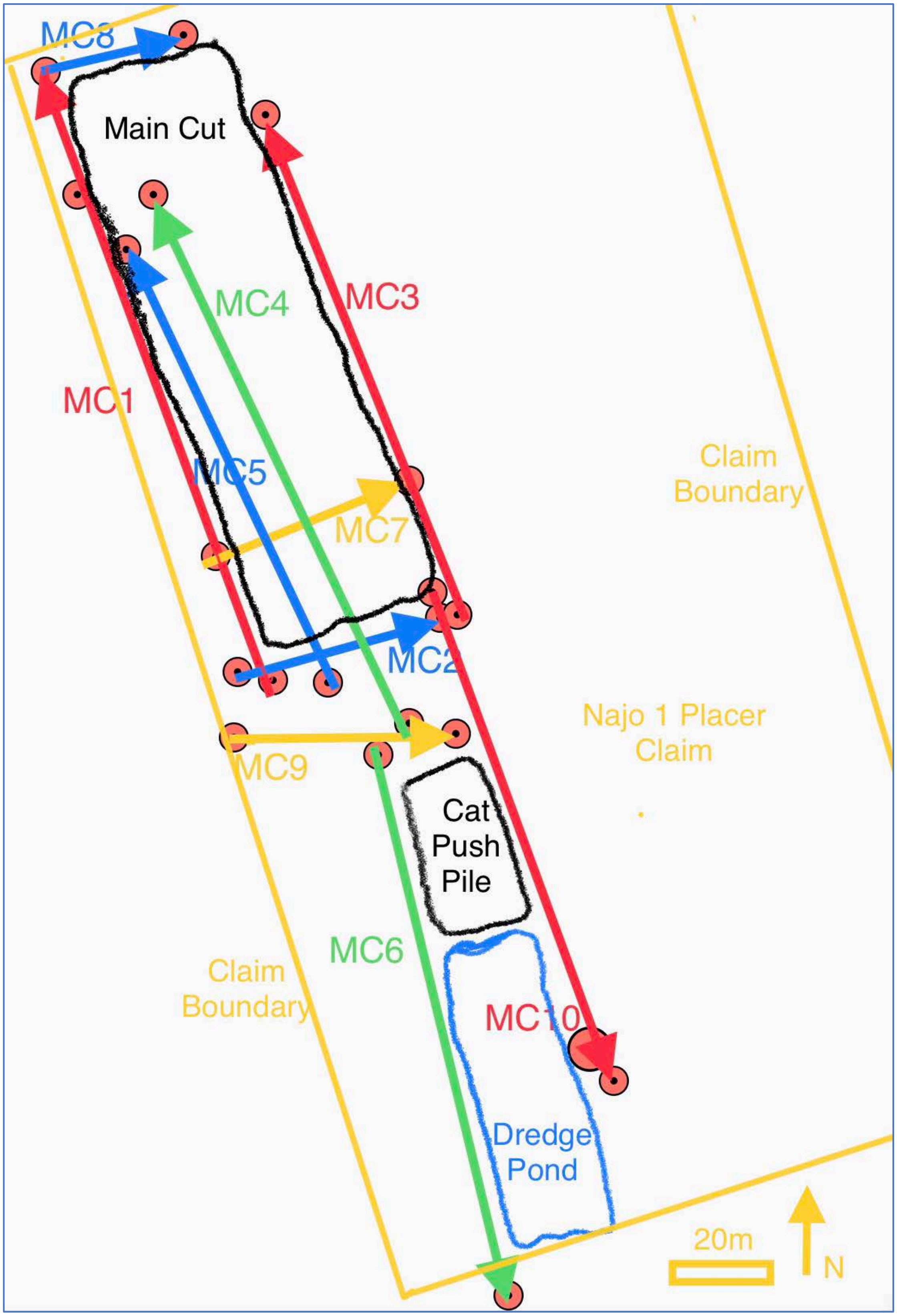
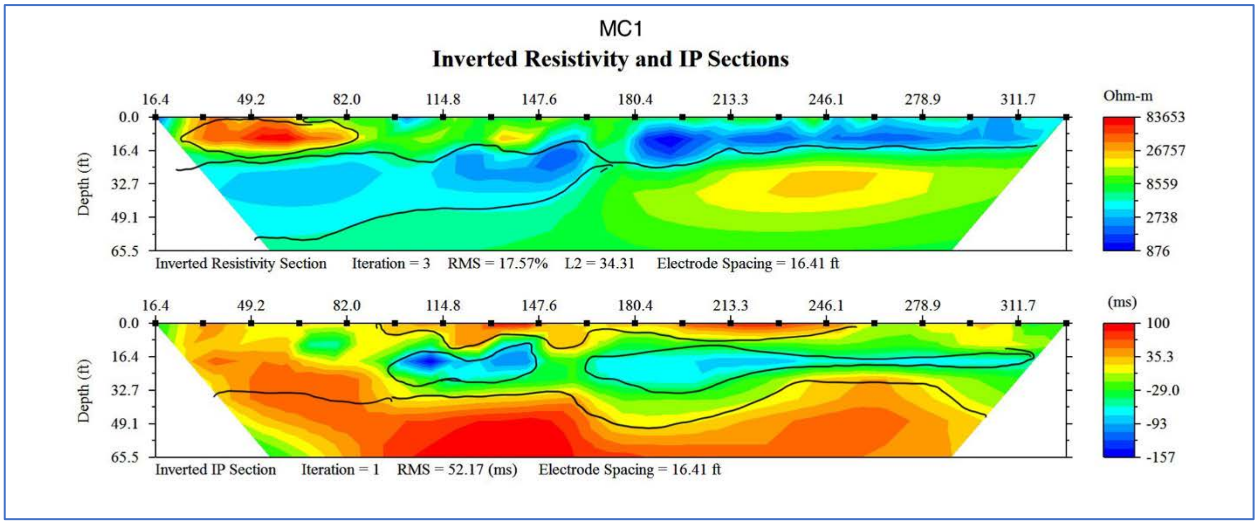
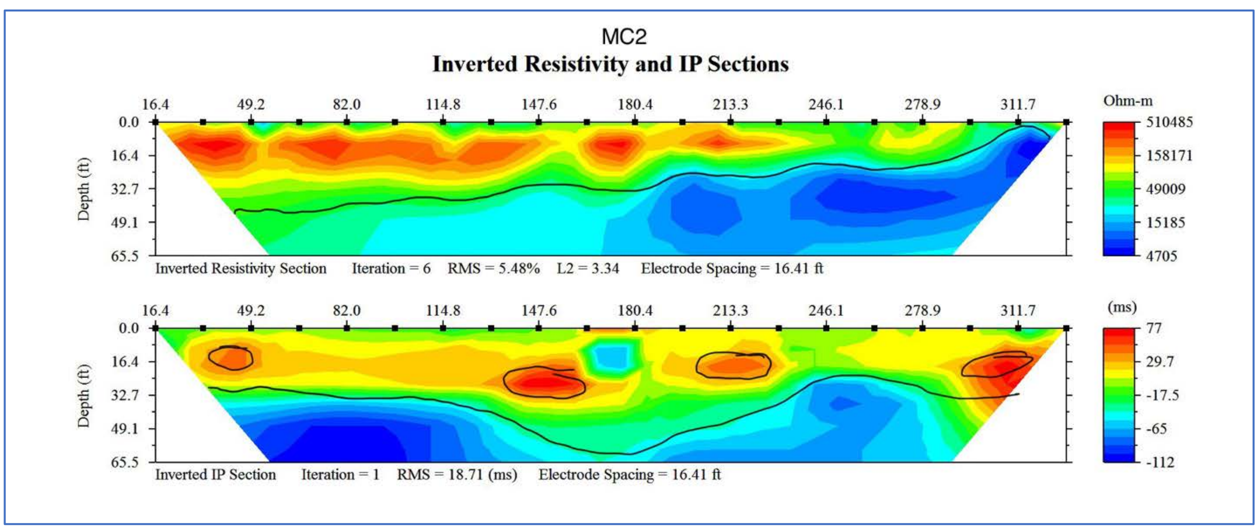


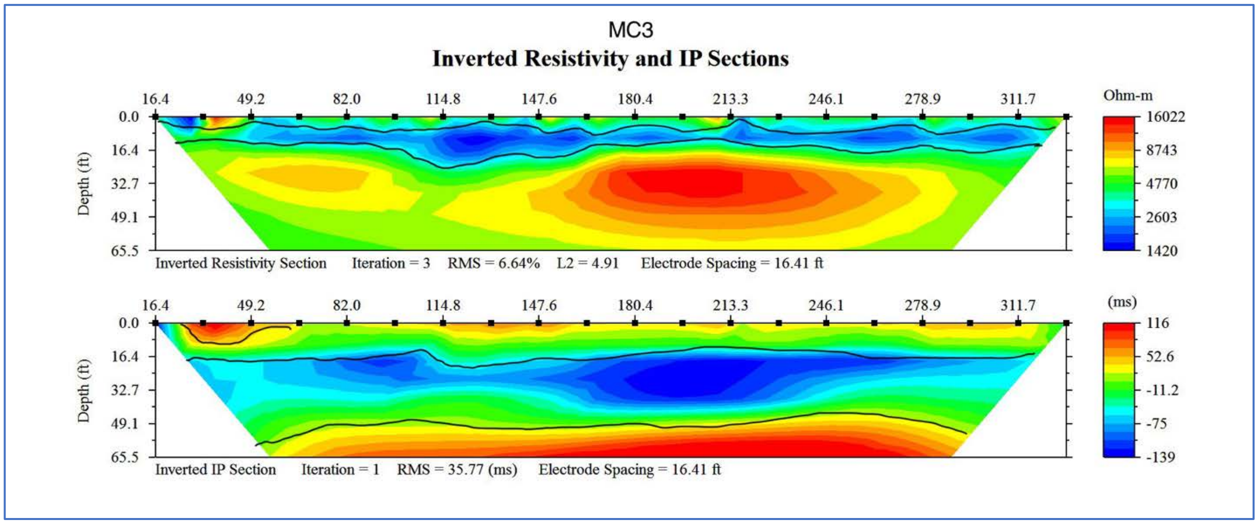
Figure 10. Geophysics Locations with cuts and pits for reference



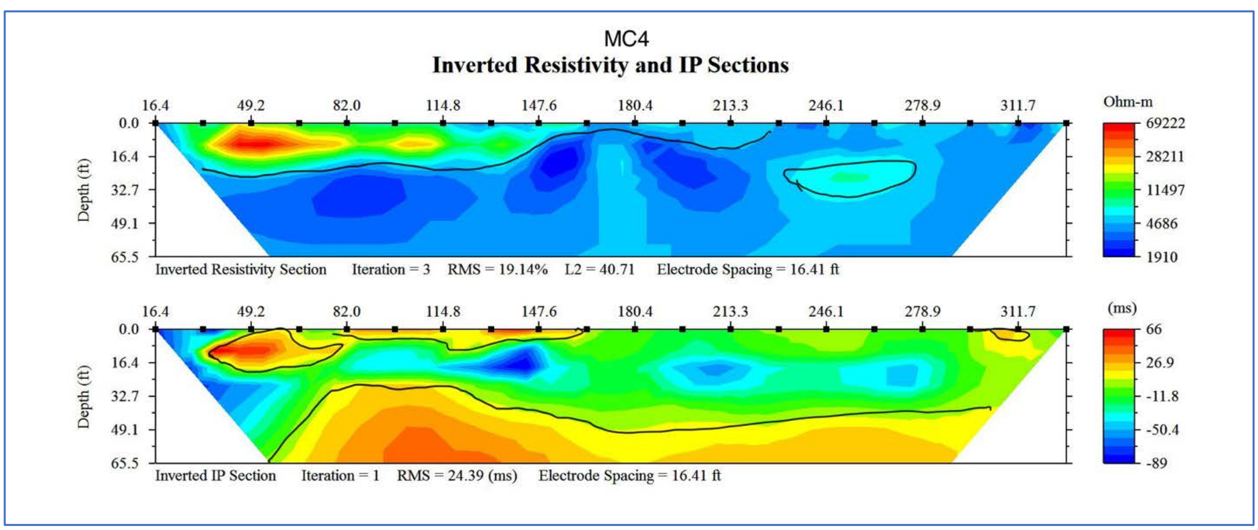
This survey runs south to north along the west side of the main cut. It shows a red, high-resistance zone near the start of the resistivity survey that corresponds to an area of dry, coarse gravel. Beneath this zone is a lower resistance region that is likely thawed or marginally frozen silt. The blue near-surface region from 180-320 on the horizontal axis is saturated sands and gravels above frozen silt. The IP image shows near-surface high IP readings from 90-246 on the horizontal scale. This corresponds with high grades in the near-surface test pits. Blue zones in the IP image are likely ice-rich permafrost.



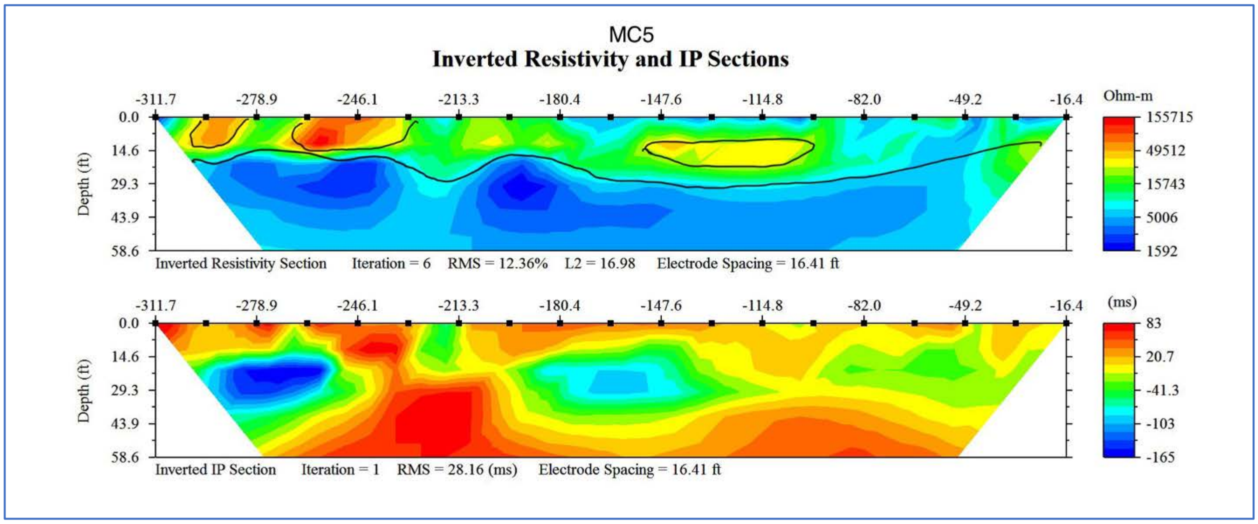
This survey parallels MC1, running south to north in the center of the excavation. It shows high resistance (red and orange) coarse gravels from surface to roughly 20 foot depth on from 16-213 feet on the horizontal scale. These correspond with several IP highs that may be magnetite deposits and were targeted for test pitting. Thawed silts are likely present at depths ranging from 35-14 foot depths below the gravels. These depths may be deeper than in reality, where test pitting excavated silts at 14-16 foot depths.



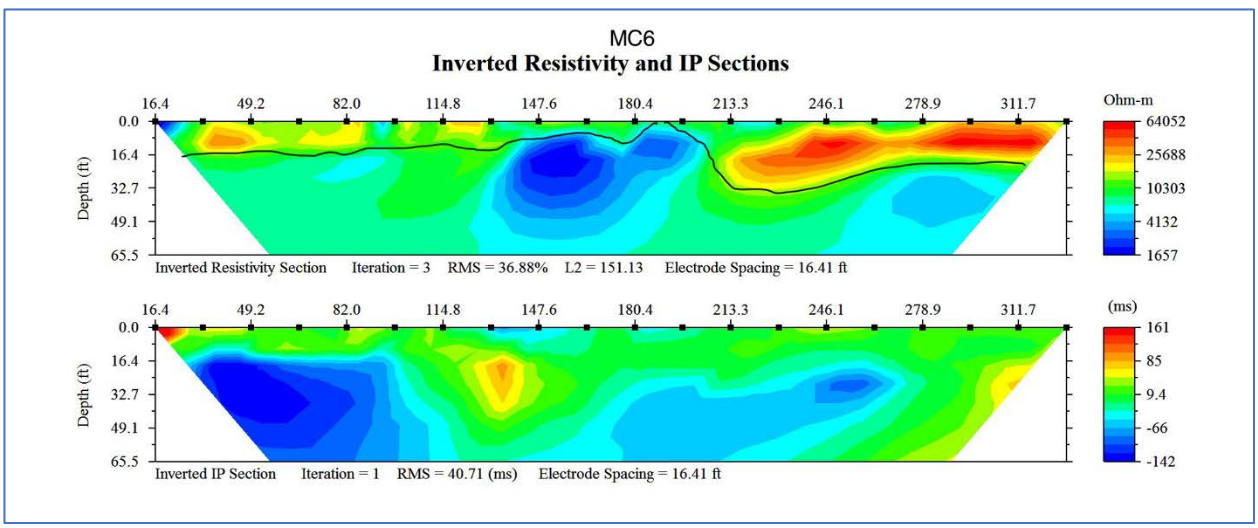
This survey parallels MC 1 and 2, running south to north along the east side of the excavation. It shows a layer of dry gravels from surface to roughly 5 foot depths. Below that saturated gravels (blue) extend to 12-16 foot depths. Frozen silt appears to be present below 16 foot depths. The IP image shows a small, high IP area between 16 and 50 feet on the horizontal scale. This corresponds with a bright red gravel encountered in test pits. A very thin IP high also runs near-surface across the image. This appears to be related to thawed silt channel infill. Below the gravel on the IP image (green) is a blue region that is consistent with ice-rich silt. There is a possible bedrock contact at 50 foot depths.



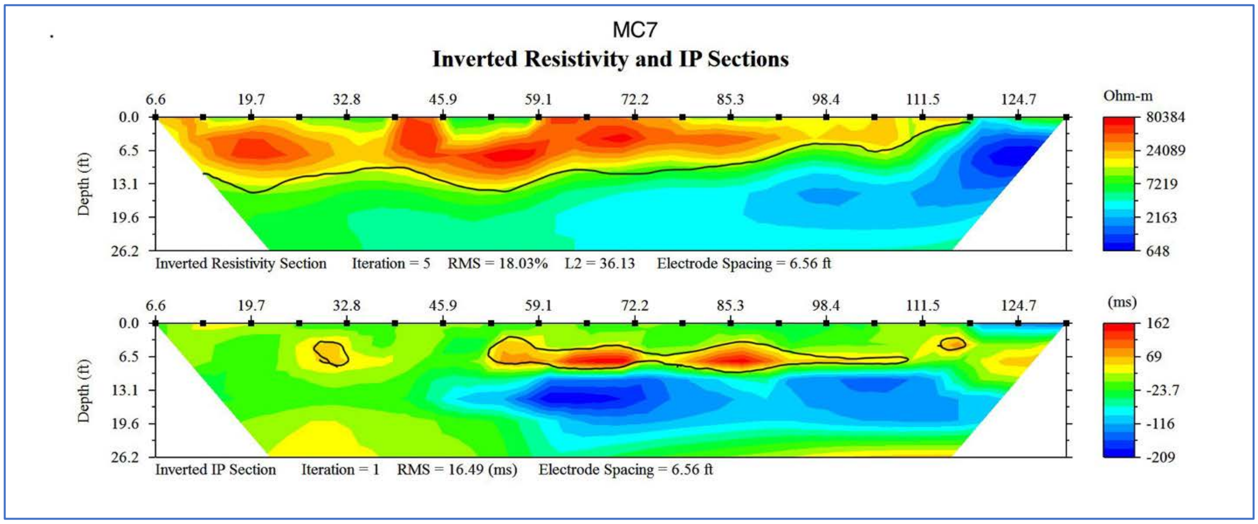
This survey runs south to north along the base of the excavation. An area of high resistivity and IP (red) between 20 and 80 on the horizontal scale and surface to 16 foot depths was initially thought to be a potential high-grade zone, but a bulldozer parked nearby likely skewed the readings. High IP near surface from 82-150 feet on the horizontal scale correspond with high-grade zones. Gravel depth appears to be 20-30 feet deep above silt.



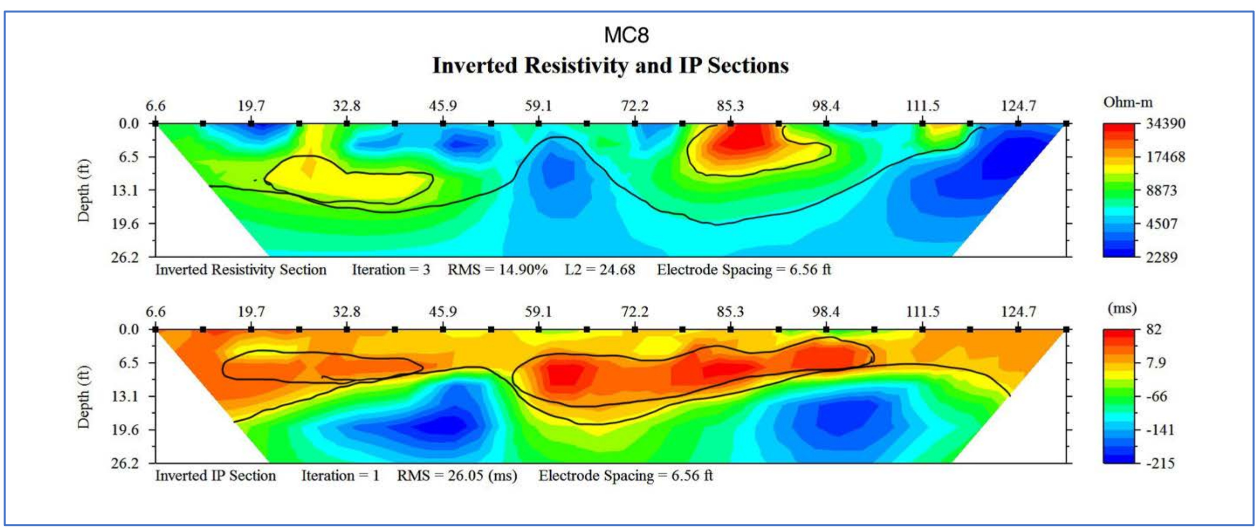
This survey was conducted along the top of the bulk sample stockpile. Dry gravels approximately 30 feet in height (red and green) overlay in-situ gravels (blue). High near-surface IP readings are likely due to the selectively piled high-grade red gravels containing considerable magnetic black sand. This pile may also have had metal worn from the excavator and bulldozer undercarriage.



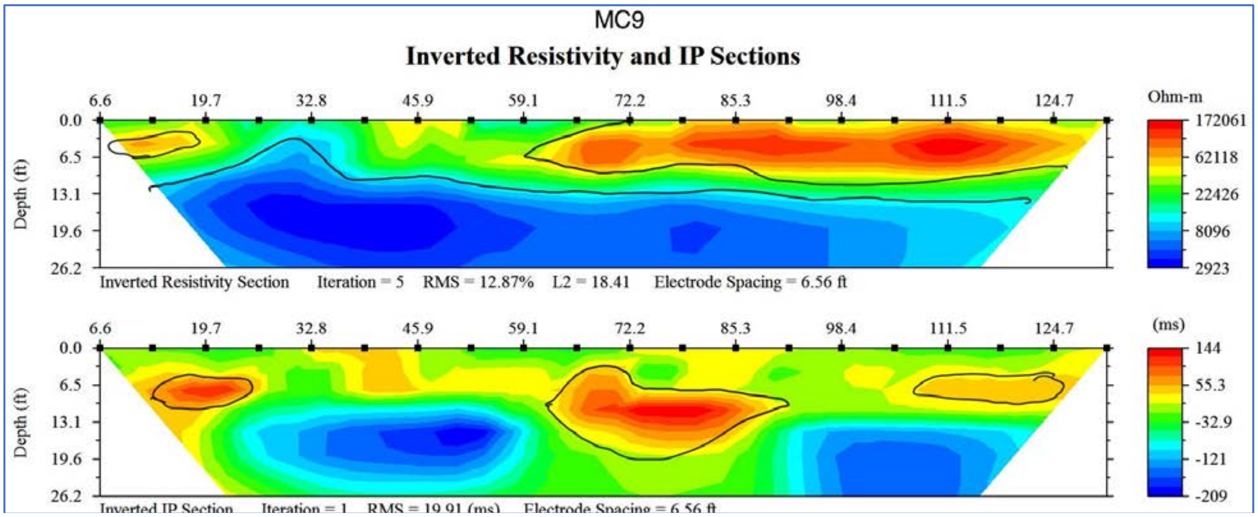
This survey runs north to south from the mid-point of the stripped area, paralleling the dredge pit. It shows a contact at roughly 16 feet below surface between surface gravels and underlying frozen silts. The silts show low IP readings (blue in lower image) that are consistent with ice-rich silts. The large blue area in the center of the upper image and corresponding green/yellow zone in the lower image are likely saturated gravels and thawing of underlying silts adjacent to the water-filled dredge pond. This survey has very high error, likely due to several bulldozers parked nearby. The red near-surface are in the upper resistivity image is likely dry, coarse gravel.



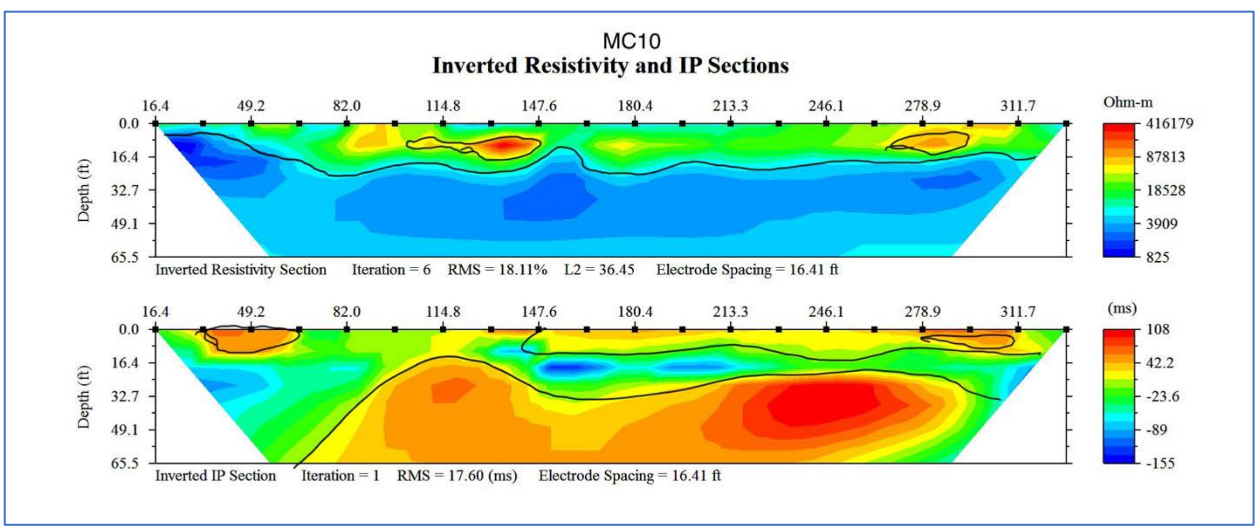
This high-resolution survey runs west to east across the cut. It shows the boundary between gravel and silt in the resistivity image at top (black line between green and red zones) at 8-13 foot depths. This survey also shows thin layers of high IP (circled in the IP image at bottom). These high IP zones are extremely thin (likely less than 2 feet thick) and discontinuous. It is likely that this image best shows the distribution of heavy minerals in the gravels.



This high resolution survey runs transversely along the north end of the cut. It shows the transition between gravel and silt at roughly 13 feet (confirmed by excavator test pitting) in both the resistivity and IP images. The IP images show high IP zones between 6 and 12 feet below surface and 19-40 and 60-100 feet on the horizontal scale. Gold distribution in this high IP zone was uneven, with some areas having 40-100 colors/pan and others less than 1. However, the zone was bright red gravel with abundant magnetic and non-magnetic heavy minerals.



This high-resolution survey runs across the cut from west to east. It clearly shows the boundary between gravel and silt at roughly 13 feet depth. The IP image shows several high-IP zones that roughly correspond to river channel morphology. Drilling in this area did not show elevated gold values and the region was non test-pitted.



This survey ran opposite and parallel to MC 6 from north to south along the east side of the cut and on the opposite side of the dredge pond. It shows a slightly deeper contact between gravels and silts of 16-18 feet below surface. Low resistivity and high IP readings below 20 foot depths indicate that the silt is likely thawed. Several near-surface high resistivity zones at 6-10 foot depths correspond with a cobble and boulder layer. Near-surface high IP readings did not correspond to higher gold contents.

Drilling Results

Drill samples were collected from the auger flights and placed in 20 litre buckets. Samples were wet-sieved, and each fraction was measured for volume to calculate grain size distribution and swell factor.

The fines portion smaller than 100 mesh was panned using a Garret gold pan. Tailings from the first panning were re-panned to ensure no gold was lost. Black sand was removed with a magnet and volume estimated. Gold was picked out and stuck to transparent tape.

Name	Latitude	Longitude
RDBS 1	63.58002000	-137.39702200
RDBS 1	63.58002000	-137.39702200
RDBS 2	63.58017400	-137.39662700
RDBS 2	63.58017400	-137.39662700
RDBS 3	63.58014800	-127.39633500
RDBS 3	63.58014800	-127.39633500
RDBS 4	63.57999600	-137.39579800
EPBS 1	63.57962500	-137.39424600
MPBS 1	63.57874600	-137.39358800
MPBS 2	63.57874600	-137.39358800
MPBS 3	63.57874600	-137.39358800
MPBS 4	63.57874600	-137.39358800
WPBS	63.57943000	-137.39612200
BHN1	63.57950900	-137.39455400
BHN2	63.57950900	-137.39414100
BHN3	63.57906200	-137.39387500
BHN4	63.57906200	-137.39364000
BHN5	63.57899100	-137.39332800
BHN6	63.57891000	-137.39313600
BHN7	63.57898000	-137.39299100
BHN8	63.57875300	-137.39328500
BHN9	63.57869600	-137.39382900
BHN10	63.57884400	-137.39428000
BHN11	63.57904500	-137.39459700
BHN12	63.57922200	-137.39495300
BHN13	63.57944300	-137.39610100
BHN14	63.57996010	-137.39735000
BHN15	63.57973500	-137.39627100
BHN16	63.57983100	-137.39686900
BHN17	63.57985600	-137.39713500
BHN18	63.57988900	-137.39733200

Table 4. Borehole, Test Pit and Bulk Sample Locations

Equipment Used

- Kubota 080 Excavator
- Caterpillar 225 Excavator
- Caterpillar D8 Bulldozer
- 6” Auger drill mounted on skid-steer
- Lippmann 4-point Resistivity/IP geophysics system
- Bobcat 205 skid-steer loader
- Knudsen centrifugal processing plant
- 36” x 120” internal helix trommel and 12KW generator
- Dillon Screen Vibratory wash plant and oscillating sluices
- 2 kw Honda generator
- 20kw Ingersoll Rand 3-phase generator
- 40KW Doosan 3-phase generator
- 1” Honda pump
- 3” Honda pump
- 6” Gorman Rupp diesel pump
- Chevrolet 3500 truck
- Flat deck 14,000 lb goose-neck trailer
- 18’ Enclosed trailer equipped with sampling and laboratory equipment
- Adventurer 910 truck camper
- Polaris Ranger 6x6 UTV
- Yamaha Kodak ATV
- ATV tub trailer
- Gold Wheel
- Le-Trap Long Tom
- Keene Long Tom
- Dream Mat Long Tom

Conclusions

This project determined that recoverable gold on the Najo 1 claim was not sufficient to support a mining operation with the equipment currently available.

Drilling results showed roughly $2/yard grades over the entire soil column to 3 m depth. The majority of the gold in drill holes was likely in small, laminar seams. However, a noticeable difference in gold grain size was observed across the property with large, coarse flat gold present on the north end of the property, becoming finer towards the south end.

Test pitting showed significantly better grades than drilling. This may have been accidental where pits arranged linearly happened to lay along a narrow-abandoned channel and the maximum digging depth of the Kubota 080 coincided with the richest grades.

Testing with a floating trommel and Dream Mat was impractical due to the sloughing of gravel into the pond, which also filled rapidly with fine tailings.

Large-scale bulk testing with a vibrating deck and oscillating sluice boxes was the most successful at quickly processing material and recovering almost all of the gold.

The testing showed that conventional sluice boxes lost much of the gold, Dream Mats required a very consistent water supply, centrifuges were effective but require significant maintenance and were limited in processing capacity. The oscillating sluice boxes set to 120 RPM with 2 cm oscillation radius were the most effective at catching nearly all the gold and processing enough capacity.

A combination of electrical resistivity and induced polarization geophysics was successful in delineating contacts between gravel and silt and identifying areas of inferred heavy mineral concentration. Electrode spacing of 2 m and a modified Schlumberger/Wenner array type processed with a modified least squares smoothing technique were most effective.

Personnel

- Jim Coates – Senior Geomorphologist and geophysicist, driller, heavy equipment operator
- Astrid Grawehr – Field technician, logistics, camp, sampler, drill helper, heavy equipment operator
- Jerry Reid -Heavy equipment operator
- Buzz LeGault-Heavy equipment operator and test plant tuner/fabricator

Timeline

Activity	Month	Days
Resistivity	June-July 2020	5
Initial Drilling	May 2020	5
Test Pitting	June 2020	8
Bulk Sampling	August 2020	10
Camp	Ongoing	50
Mobilization	Ongoing	6
Reporting	October-December 2019	5
Total Days		50

Table 5. Timeline of Events

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Appendix A

Geophysics Overview

Resistivity and Induced Polarization Geophysics will be used for this area as the electrical properties of gravel, silt, bedrock and frozen ground are distinct and easily definable. A Lippmann 4-point Resistivity System will be used.

Data will be collected and inverted using AGI Earth Imager 2D software. Noisy data points and electrodes with poor contact resistance will be removed and data will be filtered for spikes or depressions in resistivity. The software will produce two-dimensional tomograms using a smoothed, least squares damped and robust inversion parameters. Preliminary interpretations will be conducted on the processed data.

DC Electrical Resistivity Tomography

This technique injects a direct electrical current into the ground surface, and then measures the voltage that remains at a number of distances from the injection point. As different soils have different resistances to electrical current, a tomogram (subsurface diagram) of resistivity can be produced.

Induced Polarization Tomography

This technique is conducted simultaneously with the DC electrical resistivity. As the electrical current is injected into the ground, a charge is retained in soil and rock materials and then decays as a function of time. This differs according to the electrical properties of the ground materials and can be useful in differentiating subsurface material types and boundaries. In this case extremely low or negative IP readings will be used to identify massive ground ice and anomalously high IP readings indicate concentrations of magnetite and hematite black sands associated with gold concentrations.

Earth Imager 2D Software

Earth Imager 2D software (Advanced Geosciences Inc.) will be used to invert and process the geophysics data. This software produces two-dimensional tomograms of resistivity data. The images will be processed using both smoothed and robust inversion parameters in order to clarify transitions between material types as well as resistivity properties of those materials.

Appendix B

Test Pit and Drill Hole Results

	Drill/Sample	RDBS 1		RDBS 1		RDBS 2	
	Latitude	63.58002		63.58002		63.580174	
	Longitude	-137.397022		-137.397022		-137.396627	
	Sample Depth	2		1		1	
	Diameter						
		Red Gravel		Red Gravel		Red Gravel	
Averages							
1.0	Flakes	14		3		4	
8.9	Colors	39		2			
79.0	Micro	50		50		50	
3.5	Black Sand	1		1		1	
0.0	Garnets	0		0		0	
	Litres of Sample	10	13.5	10	10	10	11.5
50.63%	Plus 3/8"	8	59%	6	60%	8	70%
16.68%	Plus 1/8"	3	22%	2	20%	2	17%
8.52%	Plus 1/16"	2	15%	1	10%	0.5	4%
20.95%	Minus 1/16"	0.5	4%	1	10%	1	9%
16.88%	Swell Factor	25.93%		0.00%		13.04%	
Flakes >1mm	Gm/bucket	0.003286		0.00031		0.000248	
Avg	$/bucket	$0.25		$0.02		$0.02	
$2.32	$/yd	$12.65		$1.19		$0.67	
All gold	G/bucket	0.006386		0.00341		0.003348	
Avg	$/bucket	$0.49		$0.26		$0.26	
$15.71	$/yard	$24.59		$13.13		$9.02	

RDBS 2		**RDBS 3**		**RDBS 3**		**RDBS 4**		**EPBS 1**	
63.580174		63.580148		63.580148		63.579996		63.579625	
-137.396627		-127.396335		-127.396335		-137.395798		-137.394246	
1		1		1		1		10	
Red Gravel		Red Gravel		Red Gravel		Red Gravel		Pit Wall	
Lost 2+ mm									
2		0		0		0		0	
3		4		0		1		9	
50		50		25		50		40	
1		1		1		1		2	
0		0		0		0		0	
10	10.5	10	11.5	11	12.25	11	11.5	11	11.12
8	76%	8	70%	9	73%	10	87%	7	63%
2	19%	2	17%	1.5	12%	0.5	4%	2	18%
0.25	2%	0.5	4%	0.25	2%	0.25	2%	0.12	1%
0.25	2%	1	9%	1.5	12%	0.75	7%	2	18%
4.76%		13.04%		10.20%		4.35%		1.08%	
0.00031		0.000248		0		0.000062		0.000558	
$0.02		$0.02		$0.00		$0.00		$0.04	
$0.84		$0.67		$0.00		$0.17		$1.50	
0.00341		0.003348		0.00155		0.003162		0.003038	
$0.26		$0.26		$0.12		$0.24		$0.23	
$9.19		$9.02		$4.18		$8.52		$8.19	

MPBS 1		MPBS 2		MPBS 3		MPBS 4		WPBS	
63.578746		63.578746		63.578746		63.578746		63.57943	
-137.393588		-137.393588		-137.393588		-137.393588		-137.396122	
10		10		10		5		10	
Base of pit		Base of pit		Base of pit		Cobble layer 5 ft		Base of pit	
0		1		4		0		0	
9		10		40		6		2	
40		50		100		200		15	
3		10		4		10		5	
0		0		0		0		0	
9	11	12	16	11	13.5	11	14	11	15
5	45%	8	50%	8	59%	5	36%	10	67%
2	18%	2	13%	3	22%	2	14%	2	13%
1	9%	2	13%	0.5	4%	2	14%	1	7%
3	27%	4	25%	2	15%	5	36%	2	13%
18.18%		25.00%		18.52%		21.43%		26.67%	
0.000558		0.000682		0.002728		0.000372		0.000124	
$0.04		$0.05		$0.21		$0.03		$0.01	
$1.50		$1.84		$7.35		$1.00		$0.33	
0.003038		0.003782		0.008928		0.012772		0.001054	
$0.23		$0.29		$0.69		$0.98		$0.08	
$8.19		$10.19		$24.06		$34.42		$2.84	

BHN1		**BHN2**		**BHN3**		**BHN4**		**BHN5**	
63.579509		63.579509		63.579062		63.579062		63.578991	
-137.394554		-137.394141		-137.393875		-137.39364		-137.393328	
5		5		5		5		5	
South of pit		South off pit		East of pit		East of pit		East of pit	
0		0		0		0		0	
10		50		25		1		11	
200		200		200		200		40	
7		8		7		4		3	
0		0		0		0		0	
11	10	10	16	12	15	11	17	11	17
4	40%	5	31%	4	27%	8	47%	8	47%
1	10%	3	19%	2	13%	4	24%	4	24%
1	10%	2	13%	3	20%	0	0%	2	12%
4	40%	6	38%	6	40%	5	29%	3	18%
-10.00%		37.50%		20.00%		35.29%		35.29%	
0.00062		0.0031		0.00155		0.000062		0.000682	
$0.05		$0.24		$0.12		$0.00		$0.05	
$1.67		$8.35		$4.18		$0.17		$1.84	
0.01302		0.0155		0.01395		0.012462		0.003162	
$1.00		$1.19		$1.07		$0.96		$0.24	
$35.09		$41.77		$37.60		$33.59		$8.52	

BHN6		BHN7		BHN8		BHN9		BHN10	
63.57891		63.57898		63.578753		63.578696		63.578844	
-137.393136		-137.392991		-137.393285		-137.393829		-137.39428	
5		5		5		5		5	
East of pit		East of pit		East of pit		East of pit		East of pit	
0		2		0		0		0	
0		9		6		3		3	
0		30		0		50		50	
0		6		2		5		2	
0		0		0		0		0	
11	17	7	10	11	12	7	7	9	13
8	47%	4	40%	4	33%	1	14%	6	46%
4	24%	2	20%	3	25%	1	14%	2	15%
2	12%	1	10%	1	8%	1	14%	1	8%
3	18%	3	30%	4	33%	4	57%	4	31%
35.29%		30.00%		8.33%		0.00%		30.77%	
0		0.000682		0.000372		0.000186		0.000186	
$0.00		$0.05		$0.03		$0.01		$0.01	
$0.00		$1.84		$1.00		$0.50		$0.50	
0		0.002542		0.000372		0.003286		0.003286	
$0.00		$0.20		$0.03		$0.25		$0.25	
$0.00		$6.85		$1.00		$8.86		$8.86	

BHN11		BHN12		BHN13		BHN14		BHN15	
63.579045		63.579222		63.579443		63.5799601		63.579735	
-137.394597		-137.394953		-137.396101		-137.39735		-137.396271	
5		5		5		5		5	
East of pit		East of pit		East of pit		East of pit		East of pit	
0		0		1		0		0	
4		3		6		2		2	
100		100		30		10		50	
2		3		4		3		3	
0		0		0		0		0	
10	14	11	13	10	13	9	9	10	11.5
9	64%	8	62%	6	46%	3	33%	8	70%
2	14%	2	15%	3	23%	2	22%	1	9%
1	7%	1	8%	2	15%	2	22%	0.5	4%
2	14%	2	15%	2	15%	2	22%	2	17%
28.57%		15.38%		23.08%		0.00%		13.04%	
0.000248		0.000186		0.000434		0.000124		0.000124	
$0.02		$0.01		$0.03		$0.01		$0.01	
$0.67		$0.50		$1.17		$0.33		$0.33	
0.006448		0.006386		0.002294		0.000744		0.003224	
$0.50		$0.49		$0.18		$0.06		$0.25	
$17.38		$17.21		$6.18		$2.01		$8.69	

BHN16		**BHN17**		**BHN18**	
63.579831		63.579856		63.579889	
-137.396869		-137.397135		-137.397332	
5		5		5	
East of pit		East of pit		East of pit	
0		0		1	
3		4		0	
20		200		200	
2		4		2	
0		0		0	
12	13.5	10	10	8	11
9	67%	4	40%	5	45%
2	15%	2	20%	2	18%
0.5	4%	1	10%	2	18%
2	15%	3	30%	2	18%
11.11%		0.00%		27.27%	
0.000186		0.000248		0.000062	
$0.01		$0.02		$0.00	
$0.50		$0.67		$0.17	
0.001426		0.012648		0.012462	
$0.11		$0.97		$0.96	
$3.84		$34.09		$33.59	

Appendix C

Statement of Qualifications

James Coates

I, James Coates of 2180 2nd Avenue, Whitehorse, Yukon, Canada DO HEREBY CERTIFY THAT:

1. I am a Consulting Geomorphologist with current address at 2180 2nd Avenue, Whitehorse, Yukon, Canada, Y1A 6C4.
2. I am a graduate of the University of Calgary (B.Sc., 2004, Geography) and the University of Ottawa (M.Sc., 2008, Geography)
3. I have practiced my Profession as a Geomorphologist continuously since 2008.
4. I am President and co-owner of Kryotek Arctic Innovation Inc., a Yukon Registered Company.

Astrid Grawehr

I, Astrid Grawehr of 2180 2nd Avenue, Whitehorse, Yukon, Canada DO HEREBY CERTIFY THAT:

1. I am a practicing geoscience technician with approximately 3,000 hours of field experience.
2. I am a geophysics technician with over 1,000 hours of field time conducting resistivity/IP surveys.
3. I am a graduate of Bishop's University (B.A. Geography, 2008).
4. I am Director of Operations and co-owner of Kryotek Arctic Innovation Inc., a Yukon Registered Company.