YUKON MINING INCENTIVES PROGRAM

YMIP PROJECT 97 - 055

FORTYMILE RIVER BENCH TARGET EVALUATION FOR PLACER GOLD

MAY 1 - NOVEMBER 30, 1997

TRANSVERSE MERCATOR PROJECTION CO-ORDINATES
latitude 64^0 17' - longitude 140^0 40'
PLACER CLAIM SHEET 116C-7
Placer Prospect Lease ID00023

prepared by
William Claxton

Box 460, Dawson City
Yukon, Y0B-1G0

Table of Contents

1. History

The Fortymile is one of the most historic placer gold rivers in the Yukon Territory. The Fortymile was the site of a major gold rush which started in 1886 and lasted until the discovery of Bonanza Creek in 1896. This was the first major gold rush in the Yukon, during which approximately 14,000 ounces of gold were recovered by 200 - 300 hand miners. The Fortymile supported several dredges in the early 1900's. One small dredge, powered by steam and processing approximately 50 cubic yards of gravel per hour, worked its way upstream from the mouth of the river, approximately 8 miles, to the lower end of the Fortymile canyon. This dredge recovered approximately 8,000 ounces in 4 years. At least 4 other dredges worked the Fortymile River gravels on both sides of the Alaska - Yukon border. Total placer gold production for the Fortymile drainage was estimated at approximately 534,000 ounces, as of 1996.

2. Geology

The Fortymile River originates in Alaska, with the downstream 23 miles of the river located in the Yukon. The Fortymile is a relatively large river, encompassing a drainage of approximately 16,600 km^2. Peak flows in the river at breakup can approach 1,000 m^3 per second; average flow has been calculated to be approximately 178 m^3. Stream width varies with water flow, but is on average approximately 70 m wide. The velocity is quite swift, averaging 1.25 m/sec.

The Fortymile River is located on the floor of a steep walled valley. The aerial photograph, **Map 1**, shows the terrain defined by the Fortymile River watercourse. The valley floor is generally quite narrow, an average of approximately 500 m, occasionally widening to in excess of 1500 m; in these wide bowls there are benches of gravel. These benches are located at 3 distinct elevations. The highest bench terrace, situated approximately 450 feet above the water course, is of Pre-Reid origin and consists of fine sandy gravel; this gravel is barren or very low grade in gold content. The mid-level gravel terrace has been deposited approximately 120 feet above the valley floor. This gravel is Reid age in origin. The aggregate is sandy and well washed with large cobbles and occasional boulders, sometimes in excess of 3 feet in diameter. This gravel carries gold in varying quantities. The gravel has been deposited in bands of from 6 inches to 3 feet thick. These bands of gravel carry low grade quantities of very fine flake gold. Gold has been concentrated on and into bedrock and in the gravel above bedrock in non-continuous pay streaks. The lowest bench is located approximately 40 feet above the river. This bench is comprised of Reid age gravels similar to the bench gravel located at the 120 foot level. The valley bottom through which the river cuts consists of a stable incised channel containing well sorted and washed sandy gravel with common large cobbles to 12 inches in diameter and numerous large boulders, some of 4 to 5 feet in diameter. The gravel in the river channel contains fine gold throughout the top gravel layers with a concentration having built up on and just above bedrock. Occasional pockets of coarse gold are found in the river gravels, particularly in the vicinity of creeks and gulches feeding into the river.

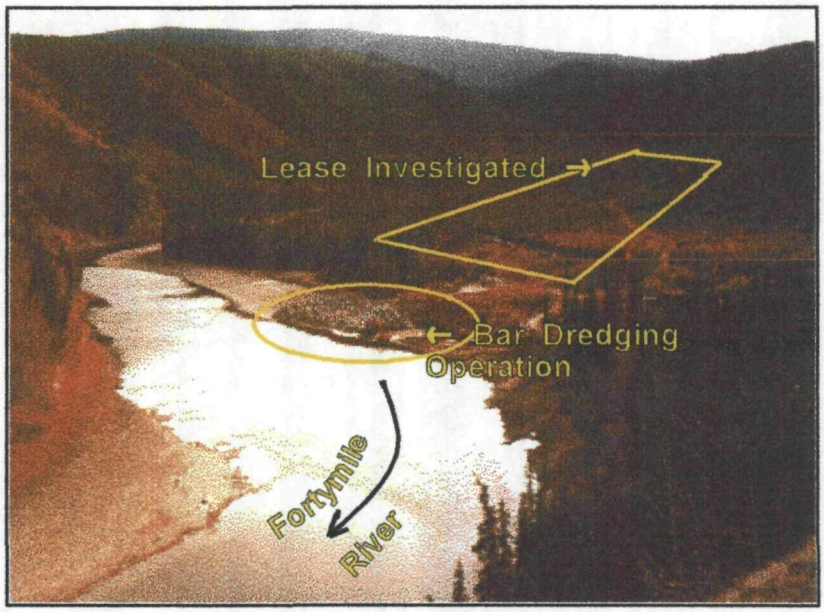
A layer of muck, usually frozen, caps the gravel deposits in the Fortymile valley. This muck varies from a few inches to 20 feet or more in thickness. The gravel in the river and on the terraces is well washed and rounded and varies from 6 to 30 feet or more in thickness, with an average of approximately 18 feet. Bedrock is generally schist with some basalt. Igneous intrusions of quartz can be seen in the faults in the valley walls.

The upper reaches of the Fortymile River are known for coarse gold; nuggets weighing several

ounces have been recovered. In the Canadian section of the Fortymile, located in the lower reaches of the valley, the gold is generally fine with flat flakes, although some localized pockets of coarse gold +10 mesh have been found. Probably the origin of most of the gold is from the upper reaches of the river and the tributaries feeding into the Fortymile.

3.Property Description

The property which I investigated is a one mile long second tier placer prospecting lease on the left limit of the Fortymile River. The co-ordinates are latitude 64^0 17', and longitude 140^0 40'. The bench is located 15 miles upstream from the confluence of the Fortymile and Yukon Rivers. The downstream end of the bench is located approximately one half mile upstream from Marten Creek. The bench is located 1000 feet back from the mean low water mark of the Fortymile River. The location of the bench can be seen in the accompanying photograph. This lease consists of Reid origin benches from 40 to approximately 120 feet in elevation above the river channel. This bench ground ranges from 300 to 1000 feet in width and is approximately 1 mile long. The ground is frozen and is covered with typical permafrost vegetation, consisting of a thick layer of moss, scrubby black spruce, and low scrubs such as labrador tea, blueberries, and low bush cranberries. The property is shown on the aerial photograph in **Map 1**, and on the claim sheet, **Map 3**. In this section of the river it can be seen that a wide valley has been formed by the twisting river channel.



1st tier bench lease with bar dredging operation working on a river bar in the foreground.

The grant number of the lease is ID00023. This lease is shown on NTS map and claim sheet 116C-7. The location of the property is plotted on **Maps 2 and 3**.

4. Objectives

The objective of this target evaluation was to undertake a preliminary examination of the property for its potential for supporting floater dredge mining. I am involved in a venture which has been experimenting with a floater dredge mining operation on the Fortymile on a frozen bench close to this property. This floater mining operation can be seen in the photograph on page 3. The operation consists of a long narrow pond into which makeup water is continually pumped, to keep the water level constant. The pond water thaws the long cut face allowing the excavator dig the thawed material from the face and feed it to the floating processing plant. This mining method is extremely cost effective for the following reasons: Tailings are stacked automatically by conveyor

eliminating the need for heavy equipment. Process water is recycled in the pond so that only a small amount of water is required to keep the pond level constant. The plant can be moved quickly to remain close to the pay gravel face, and reclamation costs are minimal. Because the gravel can be mined cheaply, the pay grade of a gravel deposit can be much less than placer gravel which is mined conventionally.

Floater Dredge working on frozen bench. Note the dredge pond behind the floating gravel processing plant.

In assessing the suitability of frozen terrace ground for dredging, the following criteria must be met:

- the deposit must have a relatively flat contour.
- the gravel sluicing section should not be in excess of 8 - 10 meters.
- the deposit should be relatively large, so that a working cut face of at least 150 m can be established. A long cut face will allow enough gravel to thaw each day to sustain steady production.
- muck depths should not be excessive (unless very good values are found in the underlying gravel).
- gold in sufficient quantity to be profitable must be present (sluicing costs are approximately $1 per yard excluding stripping costs).
- the deposit must be accessible by existing or easily constructed road.
- the elevation above the river must not be so high that water pumping costs become prohibitive (make up water must be supplied continually to the dredge pond.)

Because of the large size of this terrace, over 100 acres in area, my first objective was to define a specific area with the most promising development potential. I wanted to focus the work so that hopefully a mineable gravel body would emerge from the exploration program, as opposed to performing a cursory evaluation ranging over the whole lease. Because the bench is located 1000 feet back from the river and is covered with thick bog, it was difficult to pinpoint a likely location to begin the work. (With ground adjacent to the river there is usually gravel exposed in the bank and this can be readily sampled to give a preliminary indication and to aid in planning further evaluation work.)

5. Equipment Used

- To gain access to the property over the course of the project we used a 4x4 truck, and a 4x4 ATV.
- To drill the property we used a 6" auger drill mounted on a Nodwell carrier.
- For stripping, cleanup work and general clearing work for the drill we used a Caterpillar D6C dozer with angle blade and ripper.
- To transport drill samples we used a Caterpillar 920 Loader.
- To support the drill and heavy equipment we used a fuel truck and a 4x4 service/welding truck with a complete compliment of tools.
- To process the drill samples we used an 8 inch Tyler screen, a 1" gas powered portable water pump, a 1 ft. x 4 ft long tom equipped with rubber matting, an 18" electrically powered spiral gold wheel, and various tubs, pails and gold pans.

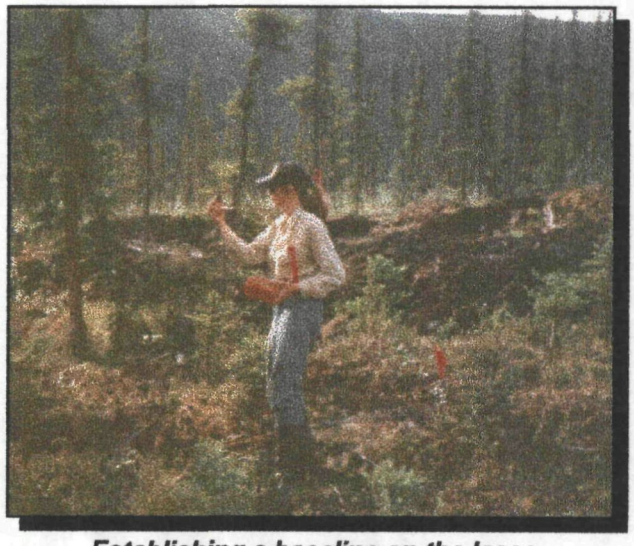
6. Work Description

The first work which we performed was to traverse the property on foot to familiarize ourselves with the ground and to determine a specific section of the bench on which to concentrate my work. I decided to perform my work program on the downriver portion of the lease. I made this decision for the following reasons:

- Road access could be easily established by extending the existing road to the property.
- Gold values have been found in the low bench gravels on the claims fronting the river, and also on the bar fronting the claims.
- Vegetation was not overly dense in this area.
- The area appeared to be relatively flat although it slopes gently up to the base of the high bench.

We did a rough survey of the section of the bench which we planned to investigate. The purpose of this initial survey was as follows:

- to establish visual reference points in the form of a grid on the bench (because the ground is located away from the river it is difficult to maintain a bearing.)
- to confirm that this bench is level enough to be suitable for development of a dredging project.



Establishing a baseline on the lease.

- to get a rough idea of the volume contained in the area which I was assessing.

In this survey, we used a hand level and compass to lay out a baseline following a rough contour. This baseline consisted on a line along 2 axes. Refer to **Map 4** to show the location of the baseline. The first axis roughly parallels an active mining operation on a lower bench, located on claims fronting the prospecting lease, the second axis roughly parallels the river.

We used the Cat to strip a long narrow cut along the rim of the bench; this cut was approximately 1000 feet long and 20 feet wide. The purpose of this work was as follows:

- to gain access to surface gravels for preliminary analysis, if there was any gravel close to the surface.

- to start the ground thawing to allow for excavating pits with the excavator.

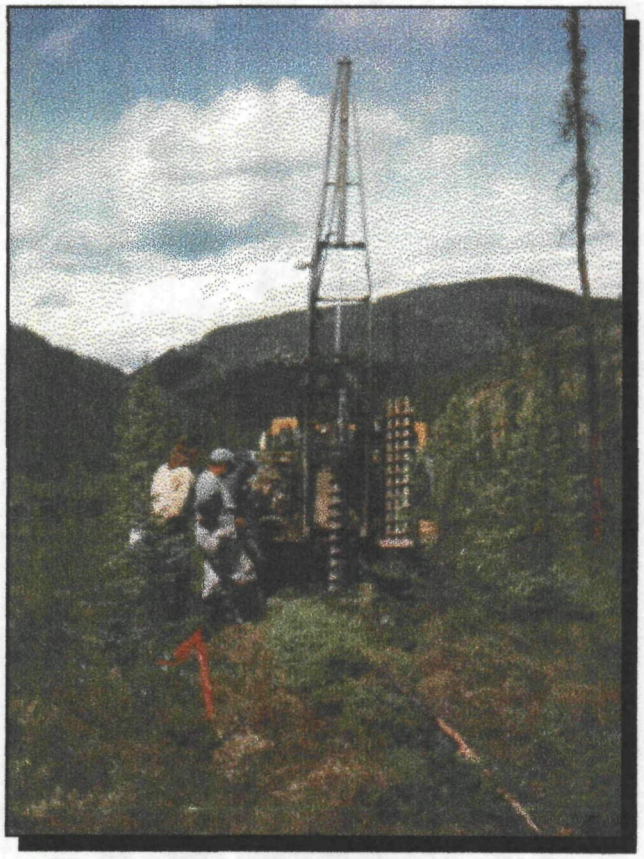
- to establish rudimentary access for tracked equipment and ATV traffic.

When we did this stripping work with the cat we found that the muck depths varied greatly. We were exposing 'fingers' of gravel interspersed with deep muck pockets rather than exposing a contiguous gravel body.

I had originally intended to excavate trenches with an excavator to sample the bench gravel. However, I decided that a drilling program would be better for the preliminary evaluation work, based on the results of the cat work which we performed. Experience on the Fortymile has shown that stripping muck in excess of 8 to 10 feet deep adds too much to the mining costs. A substantial portion of this bench appeared to have deeper muck depth than this and therefore would not be minable at the current gold price. A drill would be able to delineate ground with prohibitive muck depths much more quickly than by using an excavator. While I felt that excavating trenches would be better for the purpose of evaluating gravel, drilling would be better for determining where the minable gravel was.

I had a 6 inch drill mounted on a Nodwell trucked to Clinton Creek. The drill was walked in on the Fortymile access road to the property.

We drilled a series of holes at intervals along the baseline, which was 750 m long. Using the information which we gained from drilling on the baseline, we laid out a series of

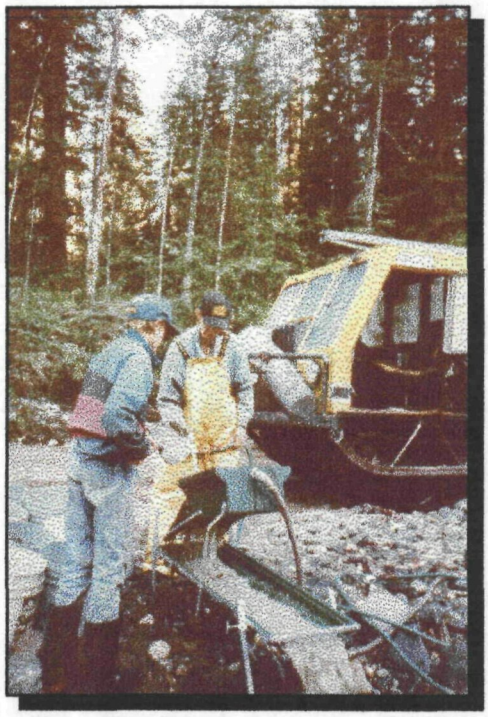


Drilling on the lease with a 6 inch auger drill.

crosscut lines along the baseline at right angles to it. We took levels along the cross cut lines at 30 meter intervals to establish the grade at which the terrain sloped up to the base of the bench. We drilled holes on the crosscut lines. In total, we drilled 18 holes with a total cumulative depth of 254 feet.

We bagged all of the gravel which was brought up from the holes. The bags were labelled, and we used the cat and the Nodwell to transport the samples back to the road where they were stockpiled. We used the loader to transport the samples from the stockpile location to the cleanup lab.

We began processing the samples using a Le Trap sluice long tom as drilling was underway, to gain immediate information in an attempt to help structure the project. I decided to abandon this approach after drill cuttings from 1 hole were processed; I was sceptical of the ability of the unit to save gold. We decided to process the samples later with equipment we knew to be accurate, rather than sacrificing accuracy for immediate results. Instead, we panned samples of the drill cuttings while drilling was underway to get an indication of gold presence. The number of colours obtained from the panning of drill cuttings were added to the number of colours obtained from later processing of the samples, and the total number of colours obtained are shown in the results in **Table 1**.



Processing samples with the Le Trap long tom sluice.

Samples processed in the cleanup lab where treated as follows:

- The sample bag containing the gravel was weighed.
- The gravel from the sample bag was screened using a 8 mesh Tyler screen.
- Oversized material from the screening was panned to check for coarse gold.
- Fines from the screening were processed through a long tom.
- The long tom mats were washed in a small tub.
- The material from the long tom mats was processed through a spiral gold wheel to extract the concentrate consisting of black sand, heavy minerals, and gold colours.
- The concentrate saved by the gold wheel was dried and the gold colours were counted, picked out with tweezers, and examined with a magnifying glass.
- The sampling equipment was cleaned thoroughly in preparation for treating the cuttings from the next drill hole, to avoid contamination of samples.

After the drilling was completed we used the cat to strip the muck that had thawed down in the area we stripped, to expose more gravel for future testing with a backhoe. We established drainage over the length of this stripping work to facilitate thawing and drying of the ground by cutting a ditch along the downhill side, and establishing a series of runoffs to carry water out of the cut.

7. Results

Experience has shown that generally, gold bearing gravels on the Reid age gravel benches of the Fortymile are more or less homogeneous and of relatively low grade. Stripping frozen muck to a depth of in excess of approximately 8 feet makes the cost of mining these deposits prohibitive at a gold price of less than US$400. For this reason, drill holes were abandoned if gravel was not encountered by the time the drill had penetrated 8 to 10 feet of muck. We abandoned 7 of the 18 holes which we drilled due to excessive muck depths.

10 of the 18 holes which we drilled encountered gravel before the cut off point of 8 feet of muck was reached. (In one hole we drilled through 13 feet of muck to a 3 foot layer of gravel). The gravel retrieved from all of these holes carried gold values. The gold we recovered was fine and flakey, typical of Fortymile benches. We didn't recover any coarse gold from the samples we processed.

I have developed a method for evaluating the tenor of Fortymile gravel based upon the number of gold colours found in a given weight of gravel. Analysis performed on Fortymile gold previously has shown that, on average, it takes 163,484 colours to make one troy ounce of Fortymile gold. While obviously this figure varies as the size of colours in any representative sample, it has proven accurate for establishing rough estimates of pay grade in typical Fortymile gravel.

Grade figures have been calculated in terms of the volume of gravel required to produce one troy ounce of raw gold. The method which we used to calculate the number of bank cubic yards of gravel per ounce of raw placer gold is outlined as follows:

1. Calculate the portion of a yard which is contained in the sample using the following formula (a bank cubic yard of gravel weighs 3,200 lbs.):
   weight of sample ÷ weight of 1 yd of gravel (3,200 lb.)

2. Determine the number of colours contained in a yard using the following calculation:
   number of colours in the sample ÷ portion of yard in the sample

3. Calculate the number of cubic yards required to produce 1 oz of raw gold (1 ounce of Fortymile gold contains 163,484 colours):
   163,484 colours per ounce ÷ number of colours in 1 cubic yard of gravel

For example: if a sample of gravel weighs 320 lbs. and contains 100 colours, then the number of bank yards required to produce one ounce of gold is calculated as follows:

1. 320 lb sample ÷ 3,200 lb. per yard = 0.1 of a yard in the sample

2. 100 colours ÷ 0.1 of a yard = 1,000 colours/yd.

3. 163,484 colours per oz. ÷ 1,000 colours per yard = 163.5 yd. per oz.

Table 1 gives the approximate weight of the gravel retrieved from each drill hole, the number of colours retrieved and the approximate grade of the ground, calculated using the method as outlined.

The tenor of the ground, based on averaging the results calculated for each drill hole is that **193 cubic yards of gravel are required to produce 1 troy ounce of raw placer gold.**

Using the information gathered from the drilling, I have plotted the approximate boundaries of the mineable portion of the gravel deposit (i.e. the area which has overburden less than 8 feet deep) This work involved some assumptions and interpolation, but I believe it should be relatively accurate. **The volume of the deposit has been calculated in bank cubic yards as follows:**

400 m long x 80 m wide x 4 m deep x 1.3 yd^3 /m = 166,400 yd^3

An estimate of the quantity of raw placer gold in the deposit can be calculated by using the following formula:

volume of deposit in bank cubic yards ÷ # of bank cubic yards per oz of gold

or

166,400 ÷193 = 862 oz of raw placer gold

The deposit is estimated to contain approximately 862 ounces of raw placer gold.

8. Conclusions and Recommendations

This project was successful in accomplishing the objectives which I defined. This ground has met the following requirements for establishing a viable dredging deposit:

- The deposit is located on flat terrain; the muck depth is not excessive (averaging approximately 3 feet in depth).
- the gravel depth to bedrock is shallow enough to accommodate dredging (averaging approximately 12 feet including 2 feet of bedrock
- the volume of gravel is sufficient to warrant development, and to establish a long enough cut face to sustain production.
- The pay grade would make exploitation of the deposit viable, but the profit margin would be slim at a gold price below $300 after stripping and start-up costs are factored into mining costs. I have calculated the value of the gravel to be $ 1.69 Canadian per bank cubic yard at a gold price of $295US (using a purity factor of .82 for Fortymile gold.)

Analysis performed by the Yukon Consolidated Gold Corp. showed that when a deposit was mined, pay grades were approximately 5% - 10% higher than projected grade established from drilling. Hopefully I could expect the same grade enhancement for this deposit.

I recommend that more drilling be performed within the boundaries of the deposit to confirm the

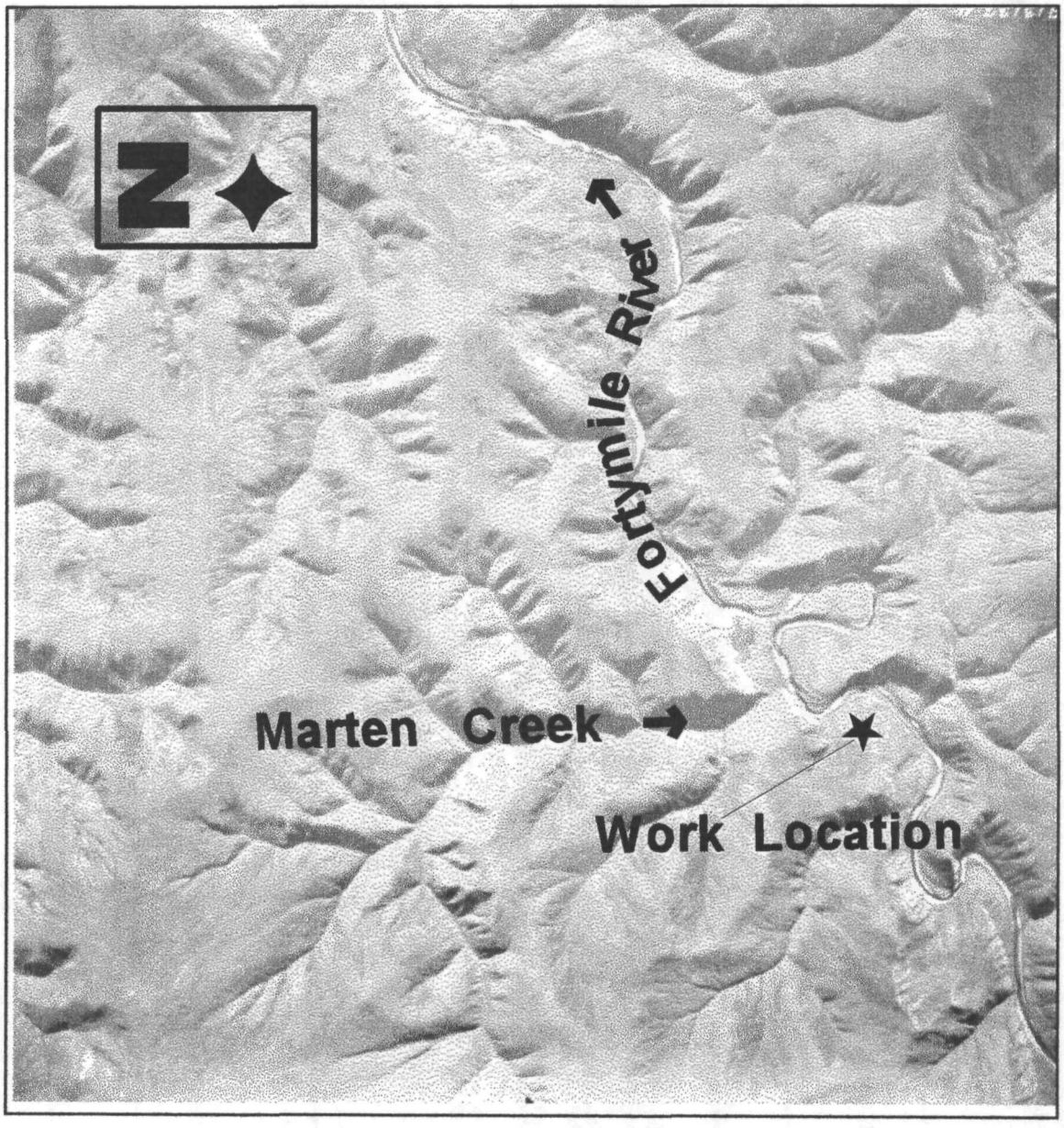
grade. More drilling should be undertaken outside of and adjacent to the perimeter of the boundary of the deposit to try to extend the limits of the gravel reserve. Processing a small bulk sample of the gravel (50-100 yd) would help to give confidence to the grade established by drilling.

Preliminary evaluation work should be undertaken on the remainder of the lease; this target evaluation examined only a small portion of the gravel contained in the lease. It is likely that more gravel would be proved up with a similar or better grade.

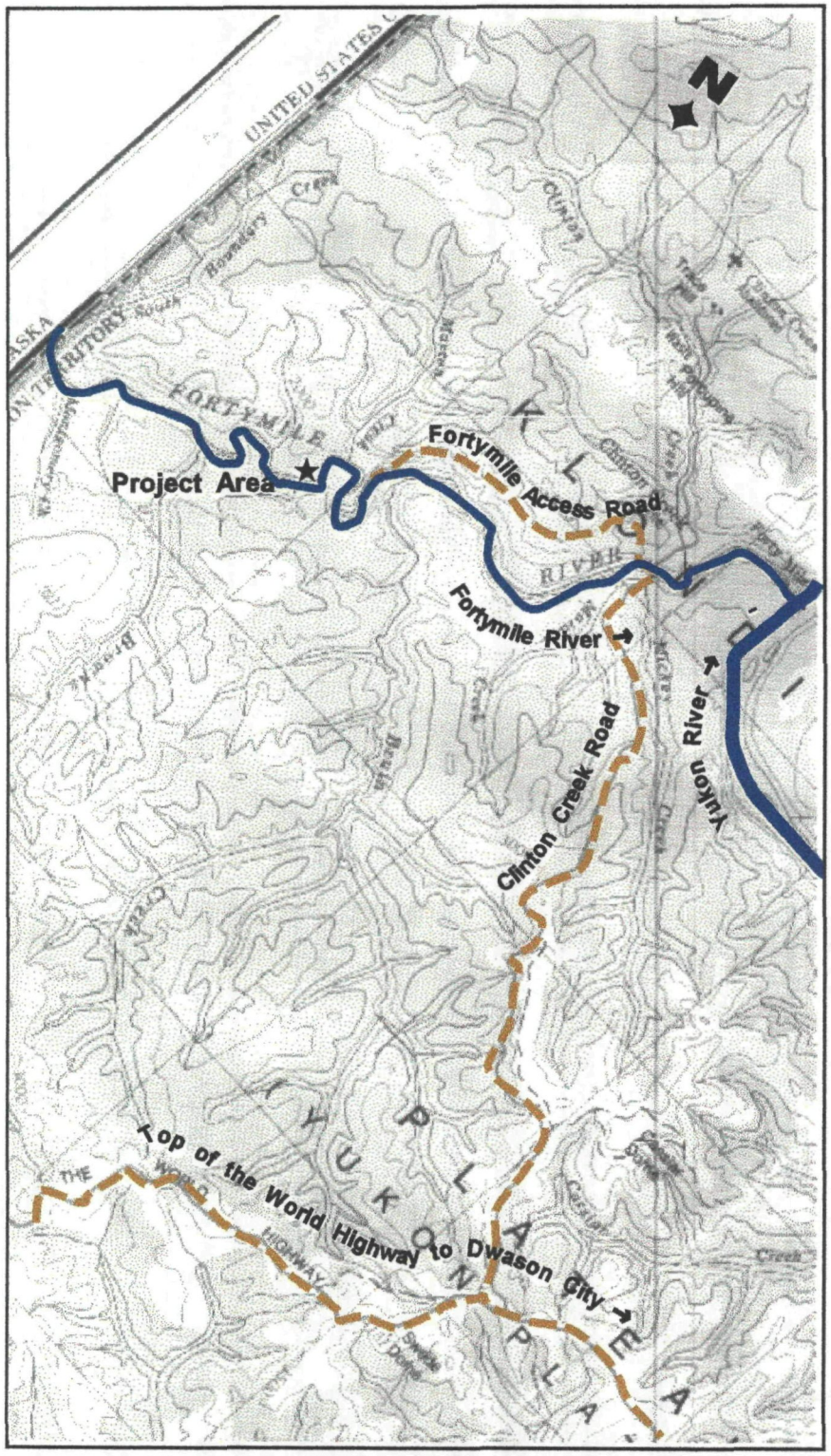
TABLE 1
Samples from 6" Auger Drill Holes

Drill Hole #	Total Depth in ft.	Depth Drilled in feet Muck/Gravl/Bdrk			Weight Samps. in lbs.	# of Clrs	Yd^3 per oz	Comments
BL1	8	8	–	–	–	–	–	frozen muck
BL2	13	13	–	–	–	–	–	4 feet muck, 9 feet sand, lots of ice
BL3	13	13	3	1	60	–	–	too much muck
BL4	28	1	14	13	550	111	253	includes 2 flakes, very fine colours, drilled deeply into bedrock as we didn't know what bedrock looked like
BL5	23	3	19	–	440	143	157	(Le Trap 1 flake, 1 med colour, 8 very fine colours, black sand, bottom foot was grey in colour - bedrock?
BL6	13	13	–	–	–	–	–	sandy overburden
2BL7	10	1½	8½	–	180	36	255	hit boulder at 10', fine colours
2BL8	16	2½	13½	–	330	52	324	hit hard layer (boulders?) at 10', fine colours
2BL9	20	½	13½	6	312	82	194	first 8½' of gravel was thawed, fine colours,
2BL10	8	8	–	–	–	–	–	8' frozen muck
2BL11	8	8	–	–	–	–	–	
2BL12	21	7	13	1	240	53	231	fine colour, fine colours
BL13	15	7	6	2	180	72	128	some black sand
BL14	18	8	8	1	240	49	250	gravel layer has 3' gravel, 4' sand, 2' gravel
BL15	13	4	6	3	160	137	60	
2BL16	8	8	–	–	–	–	–	
2BL17	8	8	–	–	–	–	–	
2BL18	12	5	4	3	150	96	79	1 medium colour, 1 flake

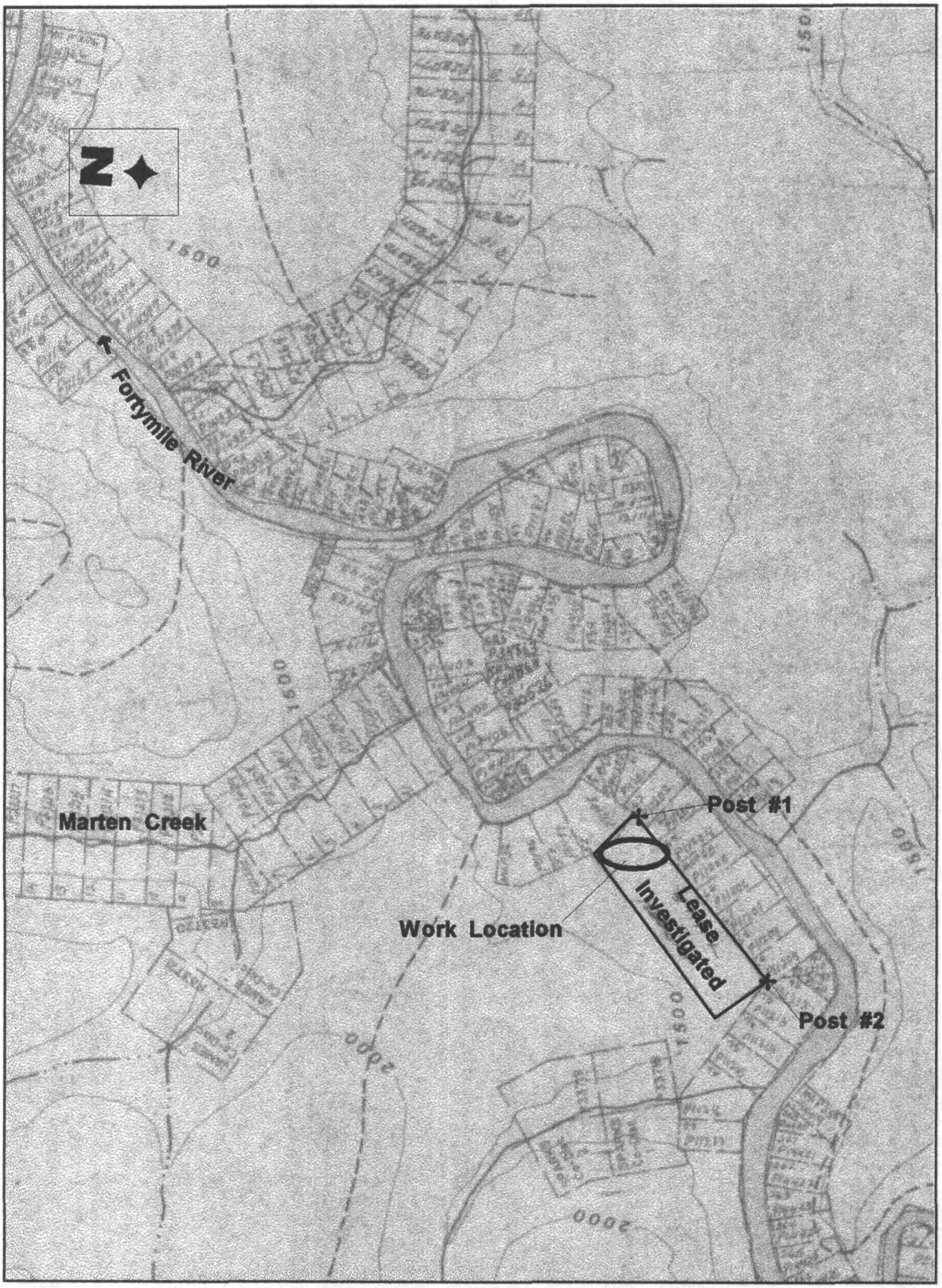
Average number of bank cubic yards required to produce 1 troy ounce of raw placer gold has been calculated to average **193 yd^3 oz of gold**.



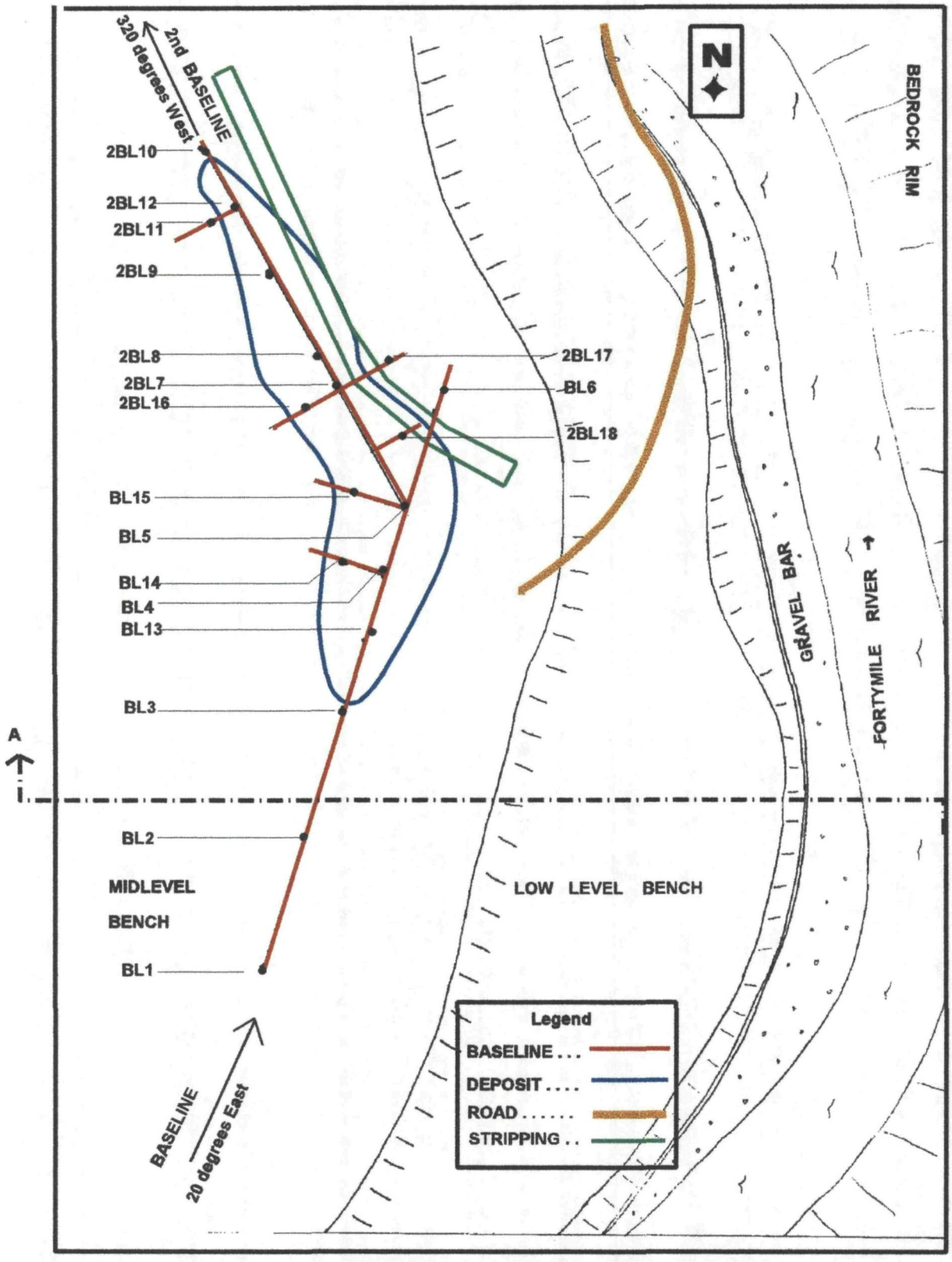
MAP 1 - AERIAL PHOTOGRAPH FORTYMILE RIVER VALLEY



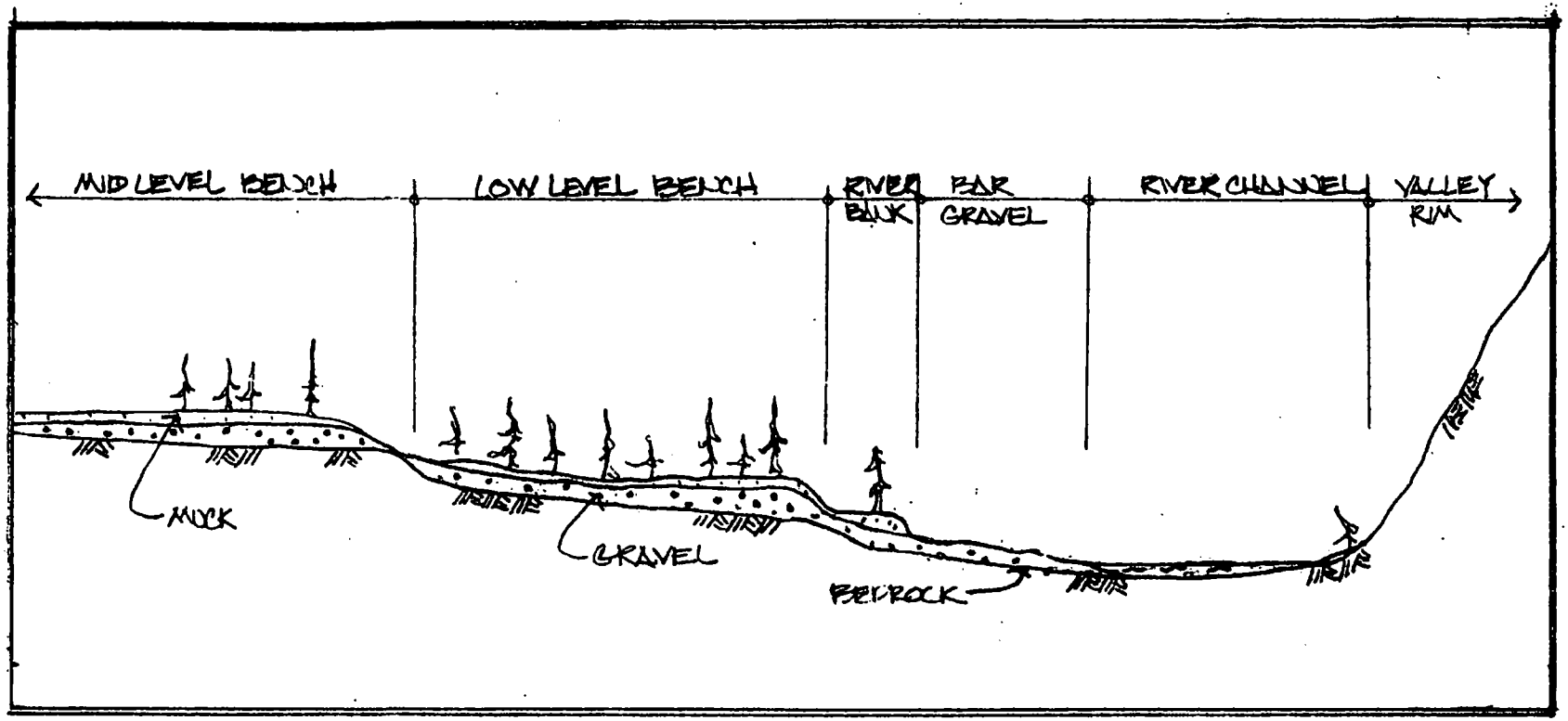
MAP 2 - PROPERTY LOCATION
scale: 1 inch = 4 miles



MAP 3 - CLAIM SHEET 116C-7 SHOWING LEASE LOCATION
scale: 2inches = 1 mile



MAP 4 - WORK LOCATIONS scale: 25mm = 100m (approx)



SECTION AA - PROFILE OF RIVER VALLEY scale: 25mm = 100m

Additional Information

People who worked on the project

Bill Claxton	Dawson City
Leslie Chapman	Dawson City
Sylvain Fleurent	Dawson City
Thomas Claxton	Dawson City

Property Investigated

Placer Prospect Lease ID00023

Report Preparation

Bill Claxton and Leslie Chapman prepared the report in 70 hours.