

**YUKON TERRITORIAL GOVERNMENT
EXPLORATION INCENTIVES PROGRAM
PROJECT 95 - 079**

**TARGET EVALUATION ON
THE STEWART RIVER**

JUNE 12 - AUGUST 15, 1995

Dredging Lease DL94-01, Placer Prospect Leases PL9645, PL9644, PL9643

**TRANSVERSE MERCATOR PROJECTION CO-ORDINATES
137°32' longitude - 63°36' latitude
PLACER CLAIM SHEETS 115P-12 & 115P-5**

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1. BACKGROUND

The property investigated consists of a ten mile dredging lease on the Stewart River, and 7 miles of adjacent placer prospect leases. The dredging lease commences approximately one mile downstream from the confluence of Clear Creek and extends 10 miles downstream. The dredging lease covers the gravel reserves within the wetted perimeter of the river, including gravel bars. The placer prospect leases include 2 leases totalling 6 miles located on the left limit of the Stewart River, across the river from the confluence of Independence Creek. There is also a one mile lease located on an island which is close to the left limit shore of the Stewart River, upstream from the confluence of Independence Creek. See **Maps 1 and 2** for the property location. The coordinates of the property are latitude 63° 36' and longitude 137° 32'.

The property can be reached by river boat launched from the McQuesten River airstrip, which is located on the banks of the Stewart River, approximately 16 miles upstream of the property. There is a bush trail which parallels the river to Independence Creek. At present, this road is suitable for 4 x 4 traffic in dry weather, with the exception of some swampy sections. Access could be upgraded inexpensively, however the access trail area is covered by native land claims, and permission to use the trail may be difficult to obtain.

The Stewart River valley is broad and flat. There are intermittent patches of thawed ground, but much of the valley is permafrost.

The Stewart is a large river known for gold deposits on its numerous bars. The river is constantly cutting its banks, abrading old bars, and reforming new ones. The banks adjacent to the river are known to carry low grade gold concentrations, and gold from these banks creates the rich, shallow, bar deposits. This gold has an extremely fine grain size. McConnell in his 1900 Geological Survey of Canada report states, *"The gold on the Stewart River bars is fine, and there is every reason to believe that it has been concentrated from the high gravel and sand banks described above as occurring along the valley from the Mayo down to the McQuesten. The gravels nearly everywhere contain scattered colours and they are constantly being undermined and carried away by the river."*

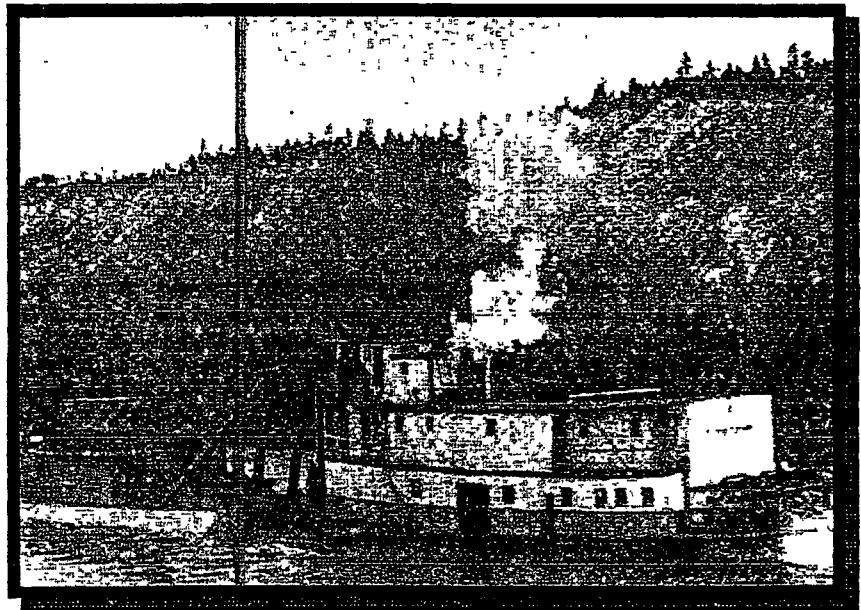
2. SUMMARY OF PREVIOUS RELEVANT INVESTIGATIONS

The Stewart River was the first major gold producing river in the Yukon Territory. According to William Ogilvie's book, *"Early Days on the Yukon,"* gold was being mined on the Stewart as early as 1885. R. J. McConnell said in his Geological Survey of Canada report in 1900, *"Exploration of the Tintina Valley from the Klondike to Stewart River", "The Stewart River bars were found to be auriferous as early as 1885, and in that and the two succeeding years, it is estimated the yield amounted to about \$100,000 dollars."* This represents over five thousand ounces of gold mined with shovels and gold rockers.

In his summary report of 1915 for the Mayo area, *Exploration in Southwestern Yukon*, by D. D. Cairnes states, *"Steamboat Bar, which is situated about four miles below the McQuesten, and is the richest ever discovered on the Stewart, is reported to have yielded for some time at the rate of \$140 per day per man as worked with a rocker."* This translates to over three ounces of gold per yard in the gravel. McConnell said of the Stewart River bar

mining in 1885 and 1886, *"In three years it is estimated that the yield amounted to about \$100,000"* (approximately 5,000 ounces). My dredging lease covers the famous Chapman Bar, which rivalled Steamboat Bar in the richness on the bar diggings. William Ogilvie said in his book *Early Days on the Yukon*: *"They marked the bars that would pay as they determined them in this way, but striking Chapman's Bar, about ninety miles up, they found it so good that they determined to work it for the summer. The average per man for the season was about one hundred dollars per day, which, with rockers to wash it with, was considered extraordinary."*

As well as early-day miners, there were also several bucketline dredges which operated on the Stewart River. In the early 1900's two small, mobile dredges were put to work on the Stewart River bars. One of these dredges was said to have produced 100 ounces of gold per day. The accompanying photo shows one of the dredges being pushed up the Stewart River by a paddle wheeler.



Small Dredge Being Barged to Steamboat Bar Circa 1902

The Stewart River is a Type 1, or salmon spawning stream. In the past there has been a moratorium on dredging leases and instream development on the river. Hence the bars of the Stewart have not been examined for mechanized mining potential since the increase in gold price in the mid-1970's. However, this moratorium has been recently lifted and the river is now open to development so long as the criteria for a Type 1 stream are met.

There are no large-scale placer mines currently operating on the Stewart River, although there are a few small scale operations and hand-miners.

3. WORK PERFORMED

The focus of this project was to evaluate the property for floater dredging potential. We examined the property to determine gold presence, to calculate grade projections, and to establish the depth of gravel to water-table. We examined both the gravel bars and the adjacent bank ground.

We had a crew of up to 5 people working on the project. We covered the property taking pan

samples from exposed gravel on bars and in cut banks. Using the results of this preliminary prospecting work, we delineated sites for further work.

We ran a series of small bulk samples by shovelling into a small sluice plant which we built for this test work. The plant has a 1' wide by 4' long sluice run equipped with nomad matting and expanded metal. Because the bulk sampling work was done by hand with no discharge to the river, it did not require a water licence. We tested a number of different mesh screens and riffle designs in the plant for optimum gold recovery. We also experimented with using different angles on the sluice run and with different angles for the hopper so the gravel slides evenly into the run. We plan to use the information gained in designing a production plant for the property.

We dug a series of 18 pits on the bank ground. Pits are located an average of 100' from the river. The size of these excavations is 3' wide by 5' long by 4' deep. We panned samples from the top gravel and also from the gravel at the bottom of each hole. We processed a 20 litre pail of gravel from each pit. Each pail of gravel was screened through a 14 mesh screen. It was then carefully fed into a small sluice run equipped with nomad matting. The resulting concentrate was run over a cleanup table twice. The colours were counted and examined for size and shape. All trays, sluice box and mats were well cleaned before running each new sample.

We analyzed the gold recovered from gravel samples to get an idea of the size and shape of the free gold particles. We also determined the value, on average, of a typical colour by weighing a series of 4 samples of Stewart River gold. This allowed us to project rough grade estimates from the gravel that we sampled.

4. RESULTS

We found gold present in most of the samples which we took on the gravel bars. Bar gravel is significantly richer near the surface with values declining deeper into the gravel. Bulk sampling on bar gravel indicated a grade figure of 38 yards per ounce. This represents the grade of the gravel on the bar on which we did the bulk samples, rather than an overall average grade for bar deposits. Local concentrations of gold on the bars may give differing grade figures.

The samples which we took from the excavations in the bank ground indicated an average grade figure of 64 yards per ounce. We did not find gravel in all of the excavations, indicating that the overburden is greater than 5 feet in the areas where we did not find gravel. The number of colours in the samples from the gravel surface were higher than the number of colours from the bottom of the excavations. Thus it is likely that the bank gravel, representing ancient river bar deposits, is richer on the surface as are the gravel bar deposits.

The gold is generally extremely fine, although some of the gold consists of very thin flakes. Most of the colours will pass through an 80-mesh sieve screen. We weighed typical groups of a number of gold colours using a gunpowder scale capable of weighing to .01 grains. Because the colours vary in size, and because we did not have a scale capable of weighing one colour, we found it necessary to weigh representative groups of colour samples to obtain an average weight for a typical Stewart River colour. See Table 5.

We determined that, on average, 1 colour of Stewart River gold weighs 2.2×10^{-3} grains; there are 220,000 colours to the troy ounces, on average. We found that in samples with few gold colours, the gold particles tended to be fine with no flakes. Thus grade is probably lower than this method would indicate when only fine gold is found in sampling.

5. CONCLUSIONS AND RECOMMENDATIONS

In most areas we looked at on the property, gold is present in paying quantities in the surface layer of the gravel. There is some gold in the underlying gravel. It is not clear from our work whether the gold occurs in the lower gravel depths in distinct layers or is distributed in a low grade concentration through the gravel. Gold could be concentrated on bedrock, but bedrock depth in this section of the Stewart River is reported to be extremely deep, anywhere from 90 feet to 120 feet or even deeper. It would be difficult to reach bedrock with a floater dredging operation.

We believe a moderate volume, approximately 100 yards per hour, portable operation which could be set up quickly to mine a bar and then move on to the next bar, would be successful. The bars occur on both sides of the river and many of them are on islands, an outfit which is transportable by barge on the river would be the most effective and environmentally acceptable.

We are particularly interested in the dry back channels which are formed between islands and the river bank at low water; there are numerous back channels on this lease. This ground would be easy to mine, because the slough could be blocked off at either end temporarily while mining took place. The flood channel could then be opened up after the mined area was restored so that it could pass flood water in the year following mining.

Bank deposits also look promising. Grade figures for gravel sampled are good, averaging 64 yds/oz. The banks have heavy vegetation, mainly spruce trees, and sandy overburden ranges from a depth of 2' to greater than 4'. Removing the vegetation and overburden would increase the costs of mining over floater mining on a gravel bar.

We recommend more work be done on this property to delineate probable reserves and establish grade figures over a wider portion of the property.

Table 1
7 Lb. Grab Samples

Sample #	# Colours	Comments
Bar 1		
1-E33a	10	8-10' of silt overburden gold in gravel only
1-E33b	13	
1-E33c	17	
1-E33d	20	
1-E33e	16	
1-E32	3	silt
1-E31	0	
1-E30a	3	
1-E30b	5	
1-E27a	3	
1-E27b	5	
1-E25	10	
1-E23	6	
1-E20	2	
1-E18	7	
1-E15	15	
1-E14	12	
1-E11	7	small colours
1-E9	20	
1-E1	1	
Bar 2		
2-E1a	10	
2-E1b	15	
2-E4	10	small colours
2-E5a	16	

Sample #	# of Colours	Comments
2-E5b	20+	
2-E6a	40	
2-E6b	7	
2-E7a	40	
2-E7b	33	
2-E7c	25	
2-E8	3	
2-E9	17	
2-E10	10	
Bar 3		
3-E27a	5	
3-E27b	10	
3-E20	10+	
3-E17	3	
3-E14	29	
3-E13	10+	
3-E5	10+	
Bar 4		
4-E2	30	fine
4-E6	40	fine
4-E11a	15	
4-E11b	20	
4-E14	10	fine
4-E17	3	

Table 2
7 Lb. Samples from Bar 1

Sample #	# Colours	Comments
1-B1	100+	surface, some flakes
1-B2	88	surface, some flakes
1-B3	95	surface
1-B4	120	surface, some good flakes
1-B5	70	from 1' down
1-B6	40	1½' down
1-L1	20+	surface
1-L2	40+	surface
1-L3	40	surface
1-L4	8	2' down, fine colours
1-L5	15	2½' down, fine colours
1-L6	18	3', very fine colours

Table 3
Bulk Samples from Bar 1

Bulk Sample #	Volume Processed	Gold Recovered	Grade yds/oz	Comments
1-Bulk 1	1 yd ³	12 grains	40	lots of gold is very fine
1-Bulk2	20 yds ³	32 grams	19	includes some flakey gold
1-Bulk3	3 yds ³	7 grains	71	lots of black sand
1-Bulk4	4 yds ³	21 grains	23	taken to 1 yard deep

Average grade is 38 yards³ per one ounce of gold recovered.

Table 4
7 Lb. Samples from Gravel Bars

Sample #	# Colours	Comment
Bar 5		
5-L1	5	fine colours
5-L2	14	fine colours
5-L3	5	
5-L4	0	
5-L5	9	fine colours
5-L6	5	
5-L7	0	
5-L8	25	3 flakes
5-L9	11	fine colours
5-L10	14	
5-L11	25	larger colours
5-L12	22	2 small flakes
5-L13	20	
5-L14	24	flakes
5-L15	10	from 1' down
5-L16	1	
5-L17	1	
5-L18	0	
5-L19	1	
5-L20	0	

Sample #	# Colours	Comment
Bar 2		
2-L20	6	
2-L21	4	
2-L22	0	
L	8	
2-L24	1	
2-L25	0	
2-L26	4	
2-L27	7	
2-L28	17	very fine colours
2-L29	21	very fine colours
2-L30	5	
2-L31	3	
Bar 3		
3-L32	45	3 flakes
3-L33	50	fine colours
3-L34	100+	some flakes
3-L35	100+	5 flakes
3-L36	25	
3-L37	1	
3-L38	80+	

TABLE 5
GOLD PARTICLE WEIGHT CALCULATIONS

SAMPLE	# OF COLOURS	WEIGHT OF SAMPLE IN GRAINS	AV. WEIGHT OF 1 COLOUR
1	420	0.55	1.3×10^{-3} grains
2	117	0.26	2.3×10^{-3} grains
3	114	0.31	2.7×10^{-3} grains
4	196	0.65	2.5×10^{-3} grains

on average, 1 colour weighs 2.2×10^{-3} grains

There are 486 grains in 1 troy oz.

$\therefore 486 \div 2.2 \times 10^{-3} = 220,000$ colours /oz of gold

Table 6
Samples from Excavations in Bank Ground

Grade figures are calculated from 20L samples

Excav #	Top Pan # Colours	Bottom Pan # Colours	20 L Samples # of Colours	Grade yds/oz	Comments
1M	37 fine	3 flakes	108 13 are flakes	64	100' from river
2M	13 fine	53 fine	299 21 small flakes	23	100' from river
3M	7 large	35 fine	67 fine colours	103	150' from river
4M	35 some lrg	10 fine	115 36 small flakes	60	100' from river
5M	4 fine	0	no concentrate	—	200' from river sandy, hits water at 4'
6M	0	0	0	—	150' from river no gravel, only sand
7M	0	0	0	—	150' from river only sand
8M	0	0	no concentrate	—	100' from river only sand
9M	14 fine	—	175 17 small flakes	39	100' from river
10M	0	0	no concentrate	—	200' from river only sand, 10' deep
11M	0	0	no concentrate	—	100' from river only sand
12M	0	0	no concentrate	—	200' from river 7' deep
13M	2	4	134 9 are large	51	100' from river very tight gravel
14M	32 fine	3 fine	83 12 small flakes	83	175' from river gold is a darker colour

Table 6 - continued
Samples from Excavations in Bank Ground

Grade figures are calculated from 20L samples

Excav #	Top Pan # Colours	Bottom Pan Colours	20L Samples # of Colours	Grade Yds/Oz	Comments
15M	12 fine	2 fine	79 12 small flakes	87	100' from river, darker gold 2' sandy overburden
16M	0	0	0	—	75' from river, only sand
17M	13 fine	0	219 fine colours	31	150' from river colours are very fine
18M	12 fine	0	73 fine colours	94	100' from river 5' to gravel

Average grade for excavations in which gravel was found is 64 yds/oz.



TESTING WITH A SAND SOURCE BOX



PROBING ON A RIVER BAR



BULK SAMPLING ON A BAR



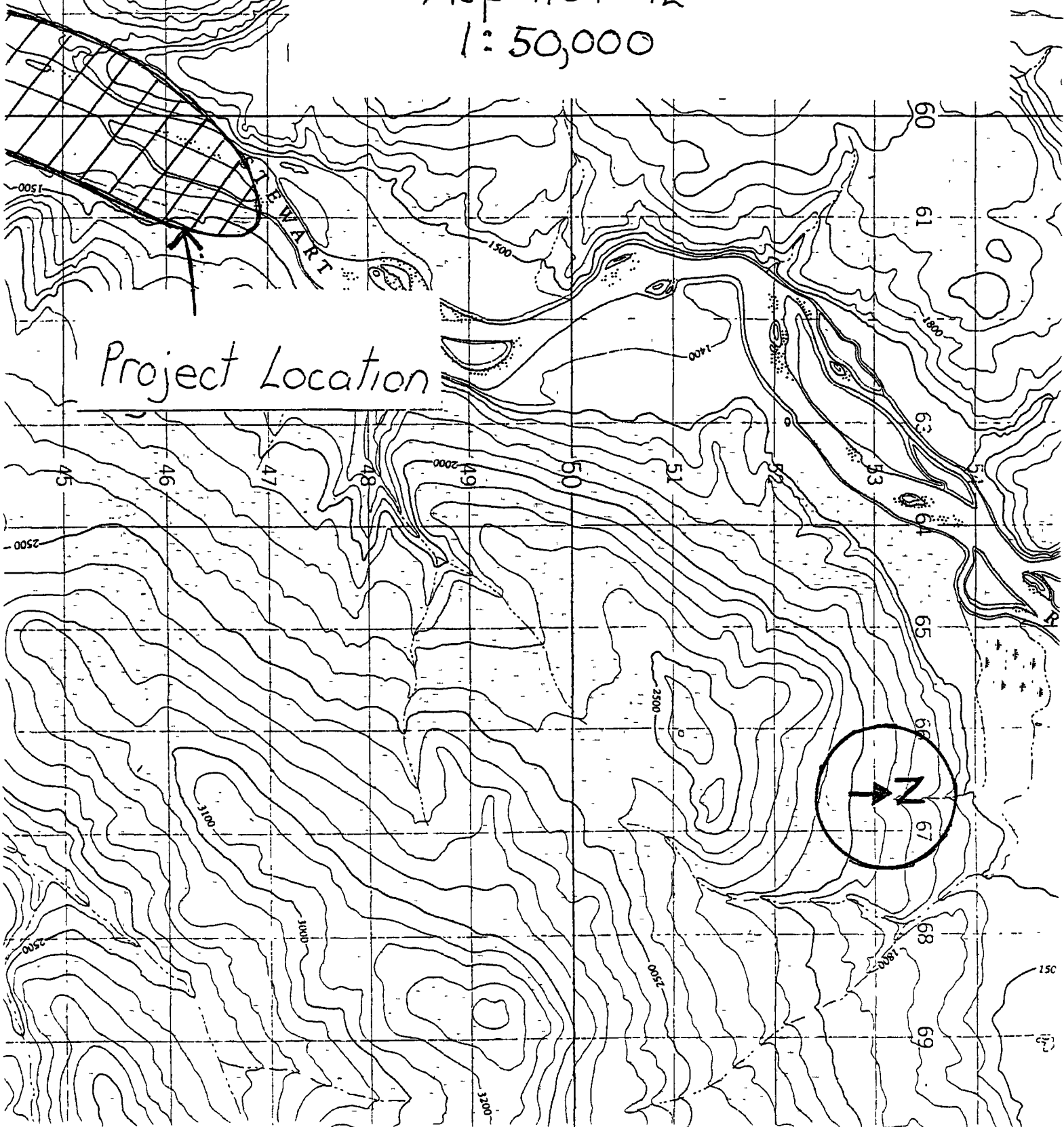
TEST PIT ON STREAM RIVER

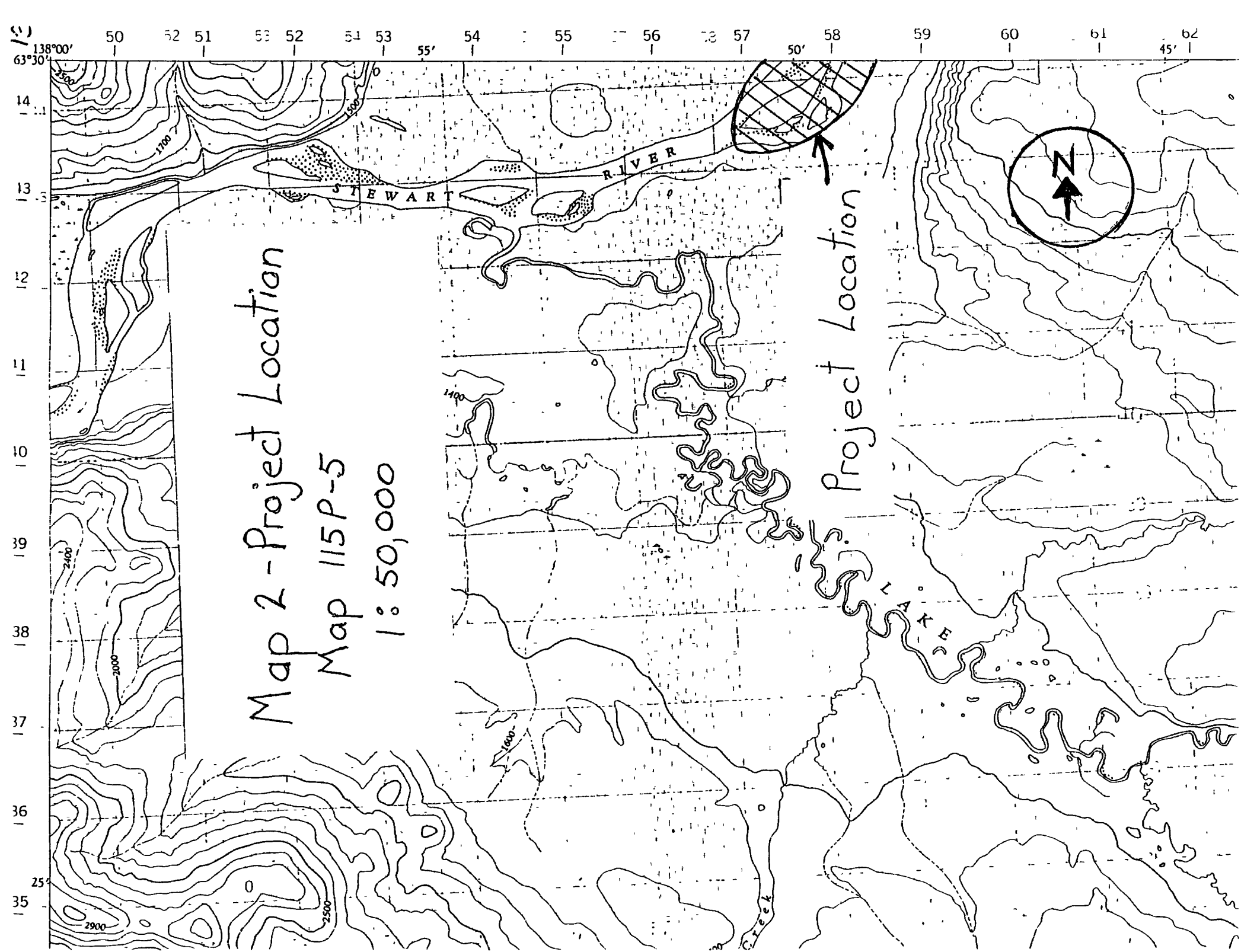
Map 1 - Project Location

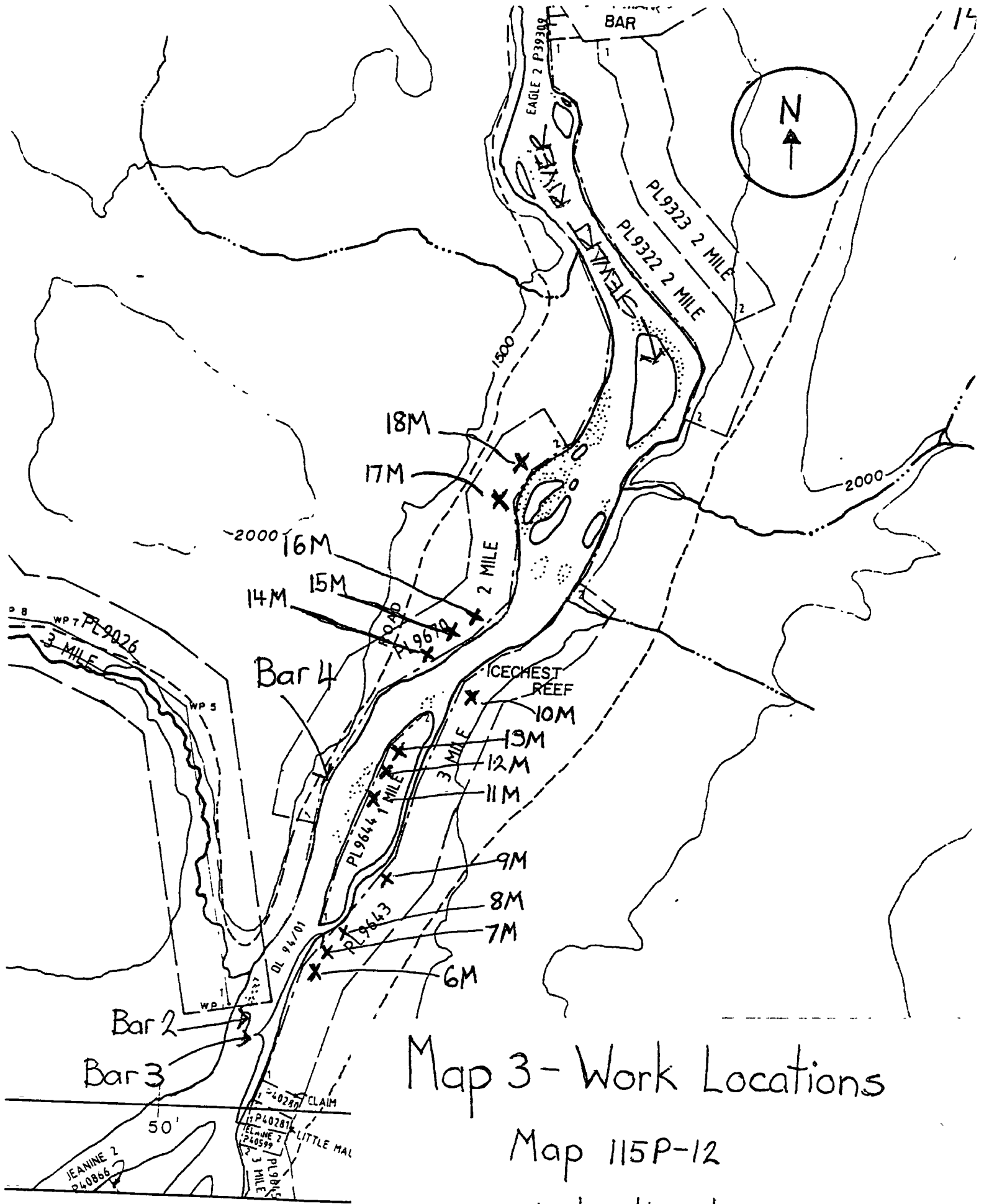
Map 115 P-12

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Project Location







Map 3 - Work Locations

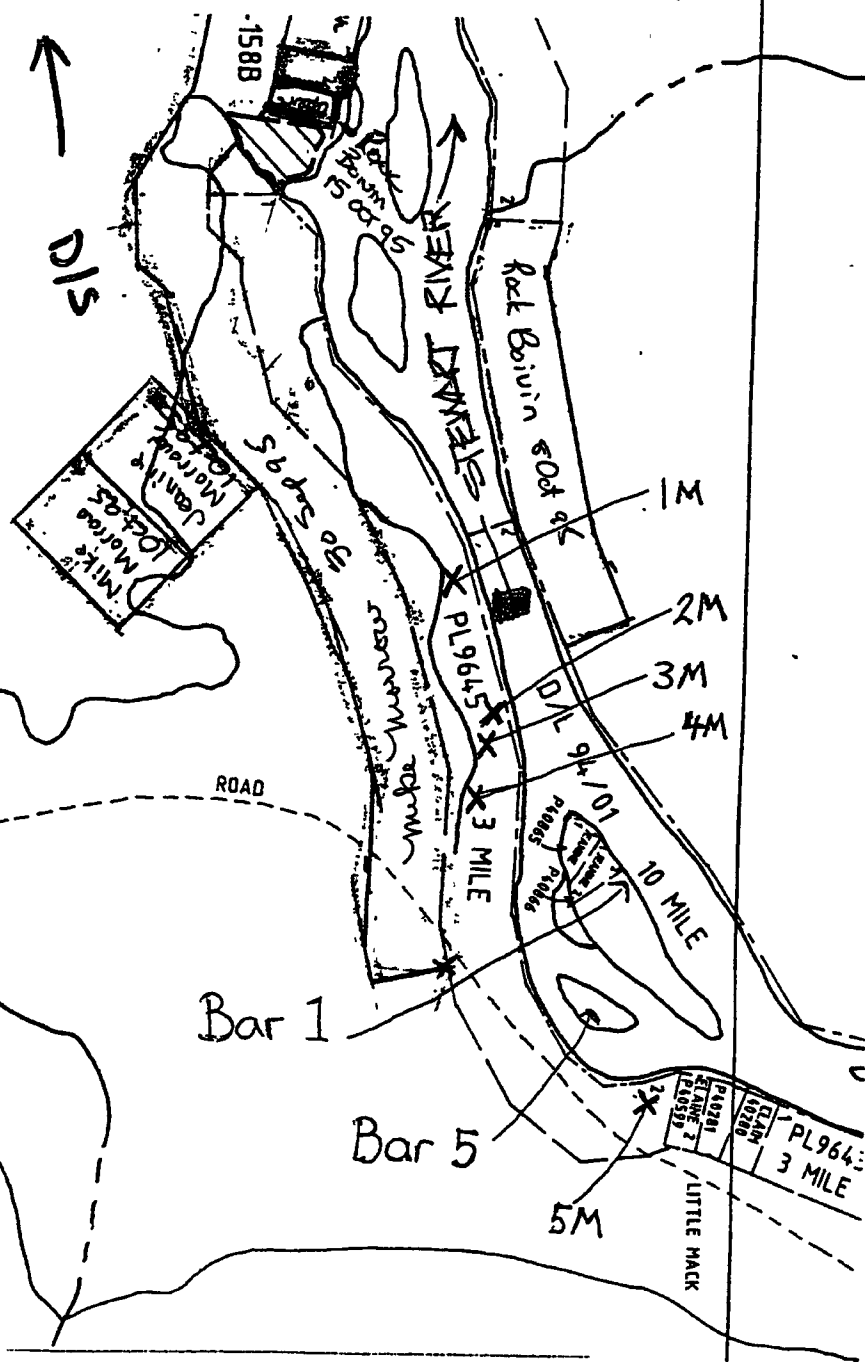
Map 115P-12

1 inch = 1/2 mile

Map 4 - Work Locations

Map 115P-5

1 inch = $\frac{1}{2}$ mile



Additional Information

People who worked on the project:

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Dredging Lease DL94-01, Placer Prospect Leases PL9645, PL9644, PL9643

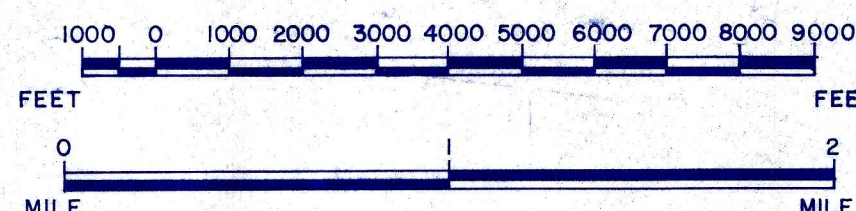
115-P-12 75-079

LATITUDE 63°30' TO 63°45'
LONGITUDE 137°30' TO 138°00'

CANADA

DEPARTMENT OF NORTHERN AFFAIRS AND NATIONAL RESOURCES
NORTHERN ADMINISTRATION AND LANDS BRANCH
MINING AND LANDS DIVISION

SCALE 1:31,680



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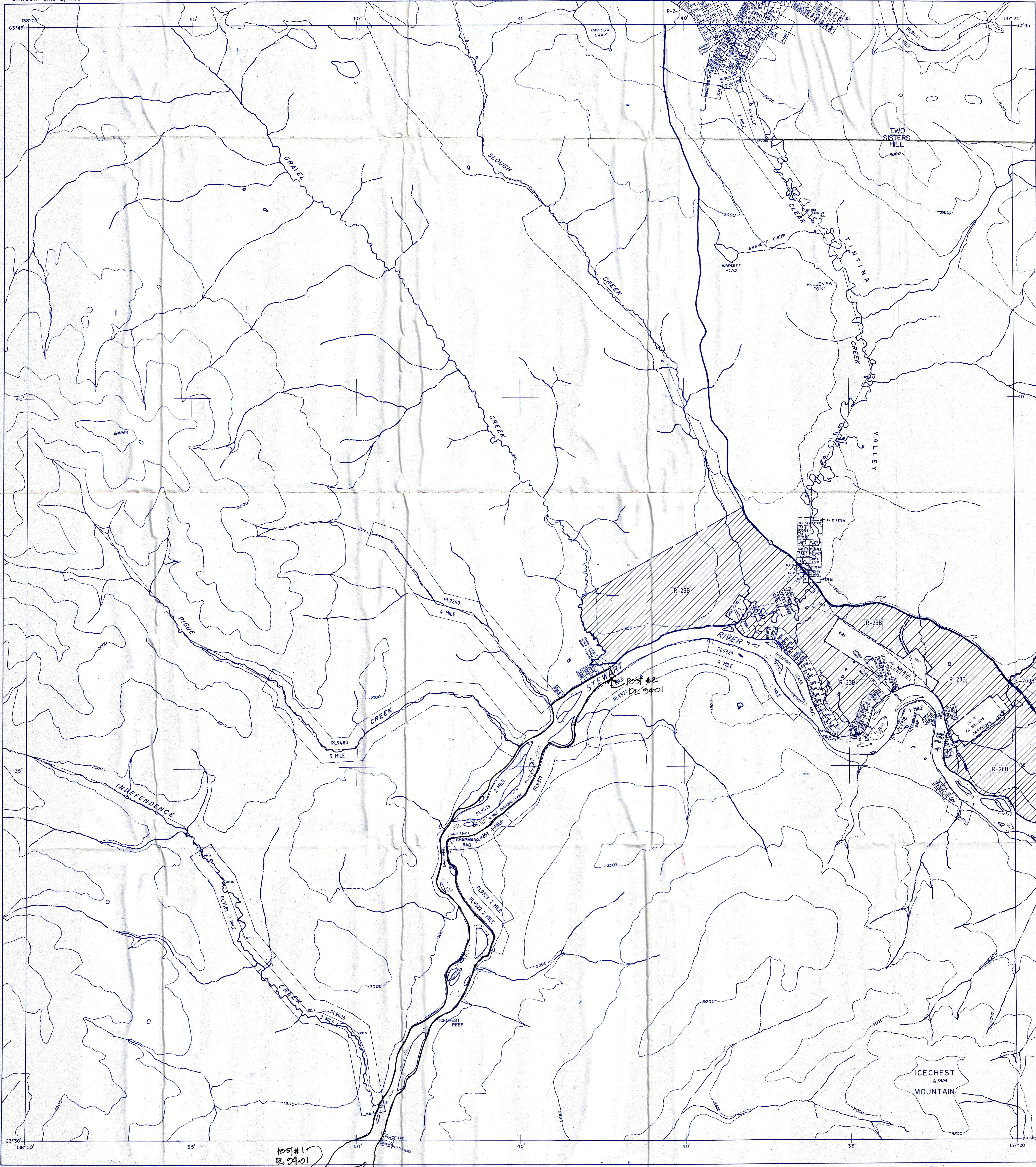


Note: Entry on certain lands is withdrawn from staking
in cross-hatched areas to facilitate the settlement
of Native Land Claims without prejudice to Existing
Surface and Subsurface Rights.

115-O-16	115-P-13	115-P-14
115-O-9	115-P-12	115-P-11
115-O-8	115-P-5	115-P-6

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06 OCT 94
10 OCT 94 L
28 SEPT 94
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