



**Report on 2020 Placer Exploration Program**

**Lake Creek, YMEP Grant #2020-001**

**Whitehorse Mining District, Yukon Territory**

**for**

**Kirk Potter**

**by**

**William LeBarge, P. Geo.**

**Geoplacer Exploration Ltd.**

Location of centre of property: 61°21'50"N and 134°19'18"W  
NTS map sheet: 105E/08  
Mining District: Whitehorse  
Date: December 13, 2020

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## **Executive Summary**

The following is a report on the 2020 placer exploration program on Lake Creek, under YMEP Grant #2020-001, for Kirk Potter, by Geoplacer Exploration Ltd. The Lake Creek project area is in the south-central part of the Yukon and lies approximately 90 km by air northeast of Whitehorse and 50 km east of Lake Laberge.

Yukon Government royalty records currently show 653 ounces recovered from Lake Creek. Lake Creek surficial geology is characterized by a sequence of interglacial stream gravels (pay gravels) which are overlain by McConnell-age glaciolacustrine silts, glaciofluvial deltaic sandy gravel and boulder-rich glacial till.

Lake Creek was first prospected and staked during the 1898 rush to the Livingstone placer gold camp. Some small-scale hand mining was done during the early 1900's, but by 1915 the creek was deserted, and it was not until 1930 when T. Kerruish made a new discovery that any work was done. His claims were kept in good standing by until 1954. In the spring of 1959 G. Murdoch and J. Ballentine staked ground on Lake Creek, which they worked on a small scale until 1961. During 1973 two small operations were on the creek; G. Asuchak and T. Ames/E. Hill. Mr. Asuchak continued on a small scale until the 1982 season. In 1992, W. Carrell and D. Gonder Jr. tested ground near the headwaters of the creek. In 1983, E. Kosmenko began work on Lake Creek, and he has held the ground and optioned it to various operators until the present day.

Interpreted features from the high resolution imagery obtained by the drone include a remnant glacial moraine, several meltwater channels and a dissected kame terrace (glaciofluvial gravels).

Resistivity surveys showed that bedrock was interpreted to be 12 m from surface on the longitudinal line (RES20-LAKE1M-01) and up to 16 m deep in the upstream cross-valley line (RES20-JENAB1-01). A buried boulder gravel channel was interpreted on line RES20-LAKE1M-01 at 8 m below surface, which correlates well with observations of the mining exposure on the right limit of the creek below the survey. A potential gravel channel was interpreted in a bedrock depression on line RES20-JENAB1-01, at approximately 12 m below surface, and approximately 90 m from the start of the line.

Future placer exploration programs should consist of additional cross-valley resistivity surveys upstream of RES20-JENAB1-01, in order to better delineate the orientation, depth and extent of the potential buried gravel channel on the left limit. If possible, a drill should be brought in to confirm interpreted depths and sample the gold content of the channel. Given the boulder-rich nature of the ground, the drill should either be a cased reverse circulation (R/C) drill (which has an inside diameter of 6 inches or greater) or a similarly-sized sonic drill. If drilling is not logistically possible, slow progress may be made progressively upstream by stripping the active mining cut face using mechanical or hydraulic means.

Placer gold potential remains in other parts of Lake Creek, including on unmined portions of the right limit and where meltwater channels have transected the valley. These areas should also be investigated.

## **Introduction**

The following is a report on the 2020 placer exploration program on Lake Creek, under YMEP Grant #2020-001, for Kirk Potter, by Geoplacer Exploration Ltd.

## **Location and Access**

Lake Creek lies in the south-central part of the Yukon approximately 90 km by air northeast of Whitehorse and 50 km east of Lake Laberge (Figure 1, Figure 2).

The centre of the Lake Creek property is located at 61°21'50"N and 134°19'18"W; on NTS map sheet 105E/08, in the Whitehorse Mining District. Lake Creek is a right limit tributary of the South Big Salmon River (Figure 3).

Access to the property from Whitehorse can be gained by fixed-wing, helicopter or winter road. The winter road crosses the Teslin River and is available usually only at the height of the winter season.

There are several intermittently maintained bush airstrips, and several all-terrain vehicle suitable trails traverse the field area. A 1700 metre airstrip is situated in the South Big Salmon river valley near Lake Creek. The geographic coordinates of that airstrip are 61°21'58"N and 134°22'19"W. Another, unknown quality airstrip approximately 1 km in length is located at the mouth of Martin Creek at geographic coordinates 61°18'14"N and 134°19'42"W. Finally, a 700-metre-long airstrip of unknown condition is located at the mouth of May Creek, at geographic coordinates 61°16'19"N and 134°10'16"W.

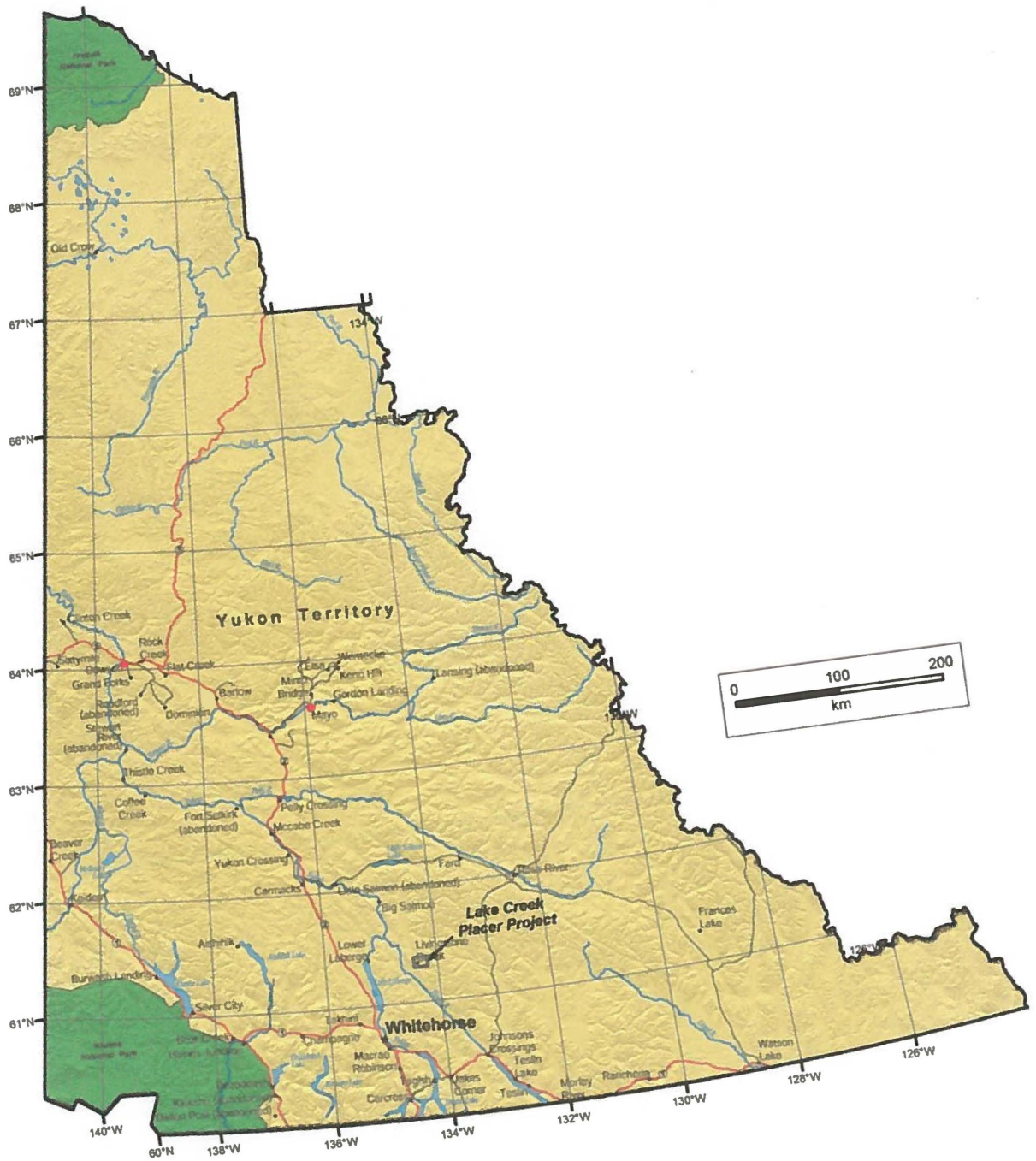


Figure 1 - Location of the Lake Creek Project, Yukon.

## Placer Tenure

Table 1 details the status of the Lake Creek claims and prospecting leases.

**Table 1 –Claims and Prospecting Lease Status, Lake Creek.**

| Grant Number | Status | Length/Name | Claim Owner          | Staking Date | Recording Date | Expiry Date |
|--------------|--------|-------------|----------------------|--------------|----------------|-------------|
| IW00735      | Active | 1 mile      | Daniel Aitken - 100% | 2020-04-02   | 2020-04-14     | 2022-05-10  |
| IW00737      | Active | 1 mile      | Logan Potter - 100%  | 2020-04-02   | 2020-04-15     | 2022-05-11  |
| P12170       | Active | JENAB I     | Kirk Potter – 100%   | 1981-05-20   | 1981-05-21     | 2022-11-20  |
| P12171       | Active | JENAB II    | Kirk Potter – 100%   | 1981-05-20   | 1981-05-21     | 2022-11-20  |
| P12172       | Active | JENAB III   | Kirk Potter – 100%   | 1981-05-20   | 1981-05-21     | 2022-11-20  |
| P12173       | Active | JENAB IV    | Kirk Potter – 100%   | 1981-05-20   | 1981-05-21     | 2022-11-20  |



Plate 1 - View of Lake Creek, looking downstream (west). Photo taken September 20, 2020.

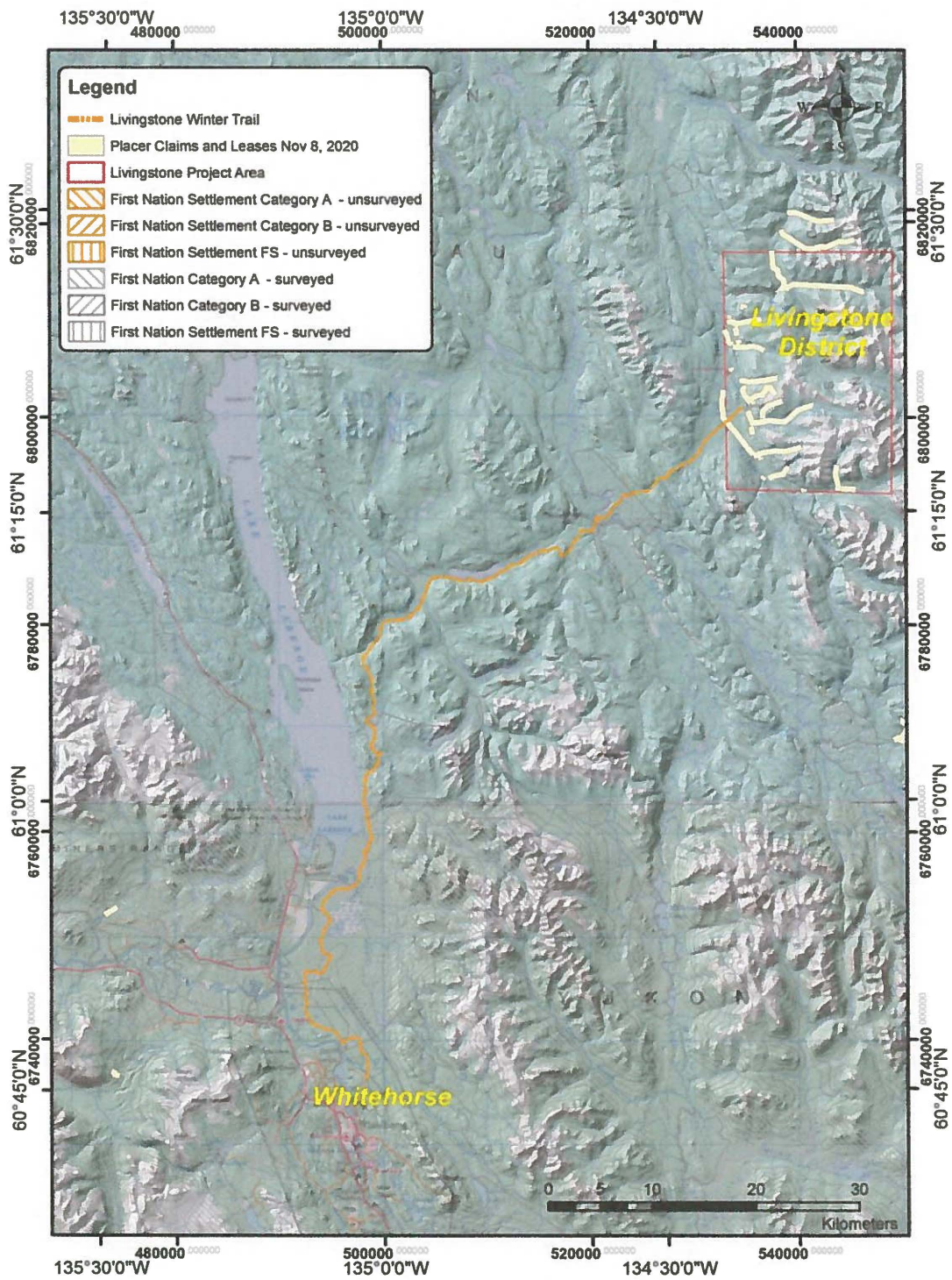


Figure 2 - Location of Lake Creek Placer Project (Livingstone District), 90 km northwest of Whitehorse.

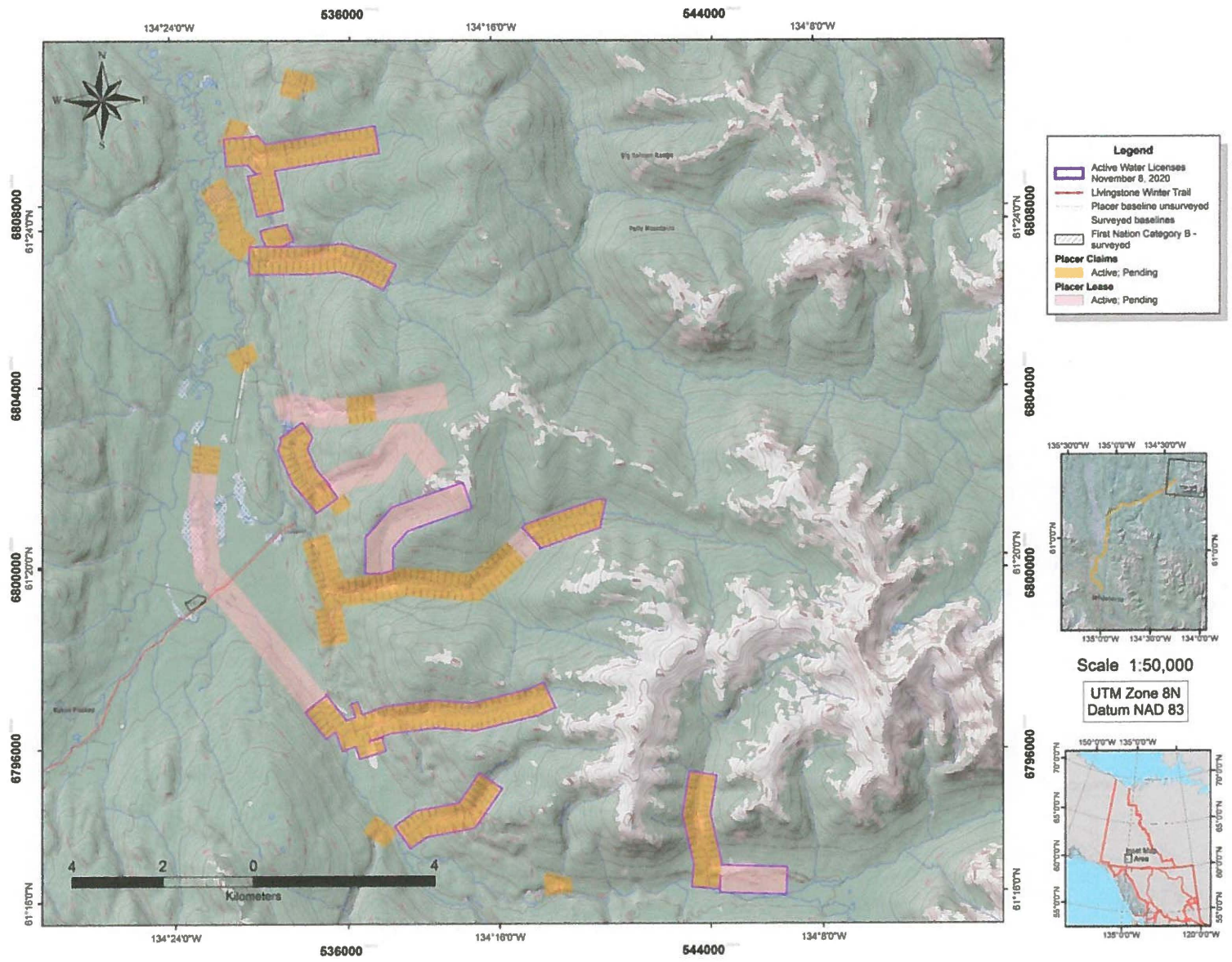


Figure 3 – Livingstone Creek area placer prospecting leases, placer claims and active water licenses, November 8, 2020.

## History of Exploration and Mining

The Livingstone Creek area was first prospected in 1894 by Joseph E. Peters (LeBarge, 2007). In 1898, Mr. Peters returned to the area with Mr. George Black and together they discovered gold on the Livingstone Creek itself, naming it after Black's friend M. Livingstone.

Lake Creek was first prospected and staked during the 1898 rush to the Livingstone placer gold camp. Some small-scale hand mining was done during the early 1900's, but by 1915 the creek was deserted, and it was not until 1930 when T. Kerruish made a new discovery that any work was done. That year, Mr. Kerruish installed a hydraulic plant and mined the creek nearly every year until his death in 1944. His claims were kept in good standing by Beada Louise Kerruish until 1954. In the spring of 1959 G. Murdoch and J. Ballentine staked ground on Lake Creek, which they worked on a small scale until 1961.

During 1973 two small operations were on the creek; G. Asuchak and T. Ames/E. Hill. Mr. Asuchak continued on a small scale until the 1982 season. In 1992, W. Carrell and D. Gonder Jr. tested ground near the headwaters of the creek. In 1983, E. Kosmenko began work on Lake Creek, and he has held the ground and optioned it to various operators until the present day. Yukon Government royalty records currently show 653 ounces recovered from Lake Creek. Previous historic data has said that over \$40,000 in gold was recovered in the past, at much lower gold prices than those of today (LeBarge, 2007).

## Bedrock Geology

The Livingstone District is underlain primarily by metasedimentary and meta-igneous rocks of Yukon-Tanana Terrane, and is bounded on the west with late Paleozoic volcanic and sedimentary rocks (Semenof Formation) along the Big Salmon Fault. The Semenov block is assigned to Quesnellia Terrane, and those units are bounded on the west by metasedimentary rocks of the Stikinia terrane (Colpron, 2006).

East and north of the South Big Salmon River lie five successions of metasedimentary and metavolcanic rocks: the Snowcap complex, and the Livingstone Creek, Mendocina, Last Peak and Dycer Creek successions (Colpron, 2006, 2017; Figure 4). These occur in two structural domains separated by d'Abbadie fault. The Dycer Creek succession occurs east of the fault while all other successions occur west of the fault (Figure 4; Colpron, 2017).

Figure 5 shows that lower reaches of Lake Creek are dominated by quartzite, quartz-muscovite schist and metasedimentary rocks (map unit PDS1) of the Snowcap complex. In upper Lake Creek, rocks include NW-trending black carbonaceous phyllite and schist (map unit PDS6). An outcrop of calcareous chloritic schist (map unit PDS3) partially transects Lake Creek at its middle reaches (Colpron, 2006; 2017).

## Mineral Occurrences

Several bedrock mineral occurrences are noted in the area. These are given in Table 2, below.

Table 2 - Mineral Occurrences (MINFILE) of the Livingstone Creek area, YGS 2018.

| MINFILE NUMBER | NAME          | DEPOSIT TYPE                    | STATUS  | PRODUCER | COMMODITY                                   |
|----------------|---------------|---------------------------------|---------|----------|---|
| 105E 001       | LIVINGSTON    | Vein Polymetallic Ag-Pb-Zn+/-Au | Showing | N        | Copper, Silver, Lead, Gold                  |
| 105E 020       | SYLVIA        | Vein Polymetallic Ag-Pb-Zn+/-Au | Showing | N        | Copper, Gold, Zinc, Silver, Lead            |
| 105E 042       | LAKE          | Vein Au-Quartz                  | Showing | N        | Gold  |
| 105E 043       | GERM          | Unknown                         | Anomaly | N        | Gold  |
| 105E 047       | MAYBE         | Unknown                         | Anomaly | N        | Gold, Lead                                  |
| 105E 053       | DEET          | Vein Polymetallic Ag-Pb-Zn+/-Au | Showing | N        | Antimony, Gold, Arsenic, Lead, Silver, Zinc |
| 105E 049       | LITTLE VIOLET | Unknown                         | Unknown | N        |   |
| 105E 063       | NICKELINE     | Ultramafic - Nickel             | Showing | N        | Antimony, Cobalt, Nickel, Arsenic           |
| 105E 054       | TRERICE       | Unknown                         | Unknown | N        |   |
| 105E 056       | BRENDA        | Unknown                         | Unknown | N        |   |



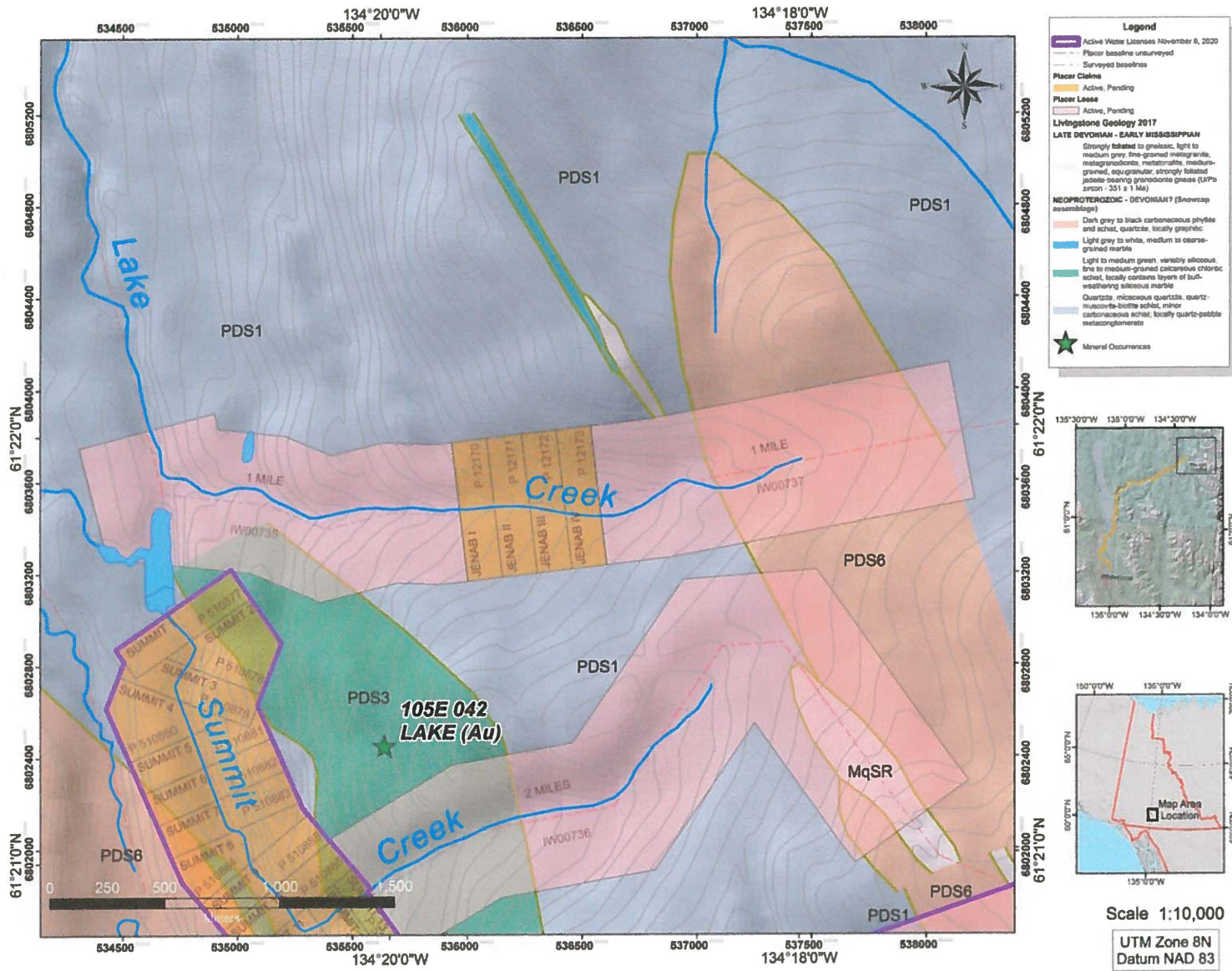


Figure 5 - Bedrock geology of Lake Creek (after Colpron, 2017).

## **Surficial Geology and Glacial History**

The Livingstone District lies within the late Wisconsinan McConnell glaciation (Duk-Rodkin, 1999) and the most obvious glacial features are of that age. Older glaciations certainly would have blanketed the area, however all features of those earlier episodes have been overprinted by the most recent glacial advance.

Glacial features and surficial deposits in the Livingstone District were mapped by Hughes et al (1969), Klassen and Morison (1987) and later by Bond and Church (2006). Surficial deposits in the area are mainly till and colluvium, while an irregular glaciofluvial complex occurs in the South Big Salmon Valley near the mouth of Martin Creek (Klassen and Morison, 1987). The prominent valley that diverts the westerly flows of Livingstone, Lake and Summit Creeks is an ice-marginal channel (Hughes et al, 1969).

Indicators of former ice flow direction, mapped by Hughes et al (1969) and Klassen and Morison (1987) suggest that glaciers flowed north along the low valleys that cross the Semenof Hills into the South Big Salmon River Valley.

The placer gold-bearing creeks in the Livingstone area (including Lake Creek) are characterized by a sequence of interglacial stream gravels which are overlain by McConnell-age glaciolacustrine silts, glaciofluvial deltaic sandy gravel and boulder-rich glacial till (Levson, 1992).

On Lake Creek, regional ice flow initially blocked the lower reaches of the drainage, filling the valley with glaciolacustrine silts and clays and glaciofluvial gravels, and covering the gold-bearing interglacial placer gravels. As the ice sheet thickened, it crossed over the drainage transversely from south to north, and deposited a blanket of till which was later dissected by post-glacial meltwaters (Levson, 1992). The placer gold-bearing interglacial placer gravels were re-exposed by this down-cutting, which allowed their subsequent exploitation by historic and modern-day placer miners.

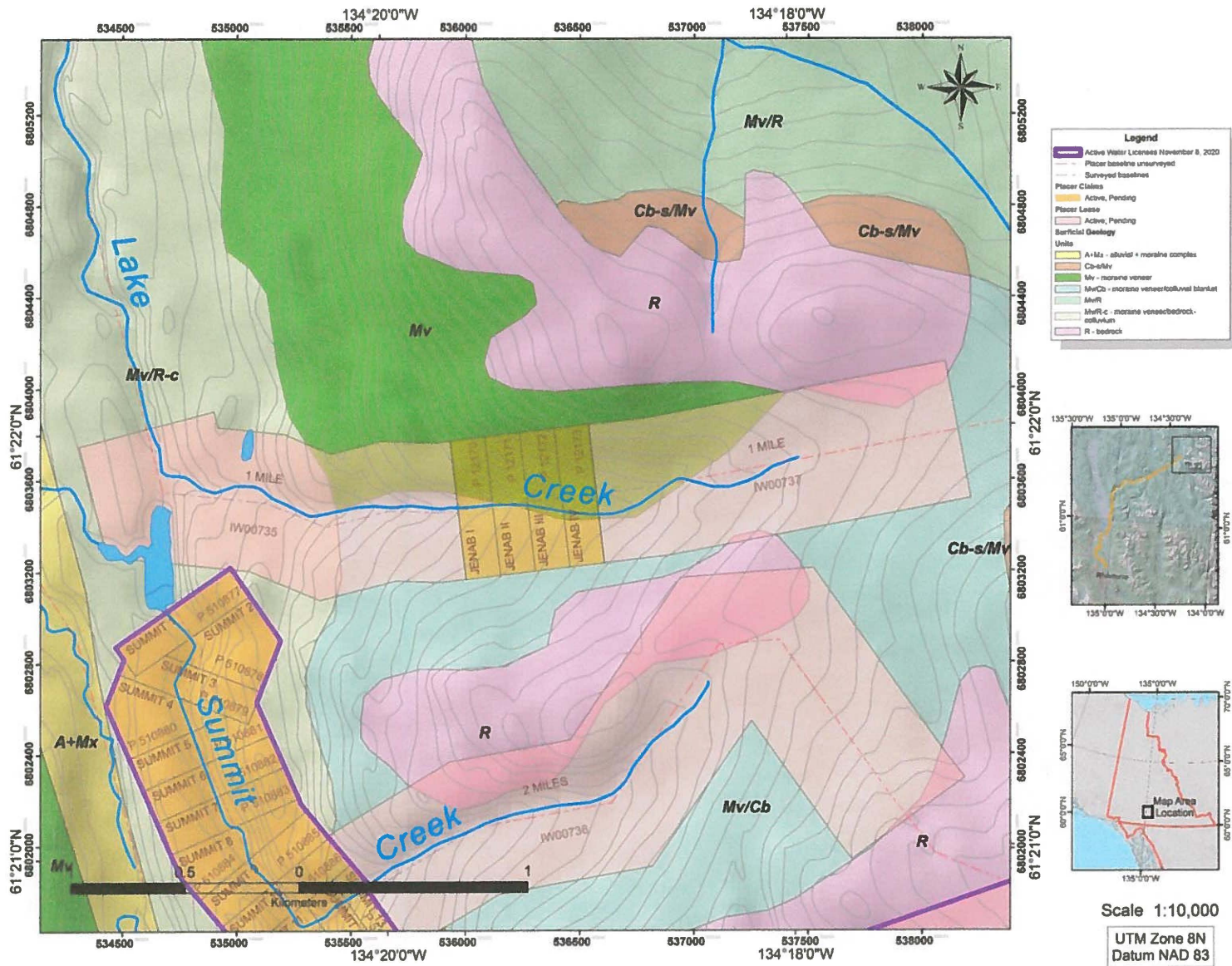


Figure 6 – Surficial geology of Lake Creek (after Klassen and Morison, 1987).

## September 2020 Placer Exploration Program

### Aerial Imagery Surveys

#### Overview

High-resolution satellite imagery and recent airphoto coverage is not available for many parts of the Yukon. Much of the imagery available online is unusable due to its low resolution, the presence of cloud cover, or it is simply outdated and no longer representative of the current geomorphology. Therefore, to aid in exploration and mine planning, a program of aerial imaging surveys was conducted on Lake Creek on September 20, 2020. Figures 7 to 13 show the processed orthomosaic images and 3D reconstructions of Lake Creek including the areas of Prospecting Leases IW00735 and IW00737 and Placer Claims JENABI-JENABIV. These images are also included as Appendix A.

#### Personnel and Methodology

The aerial imaging survey was conducted and processed and interpreted by William LeBarge of Geoplacer Exploration Ltd.

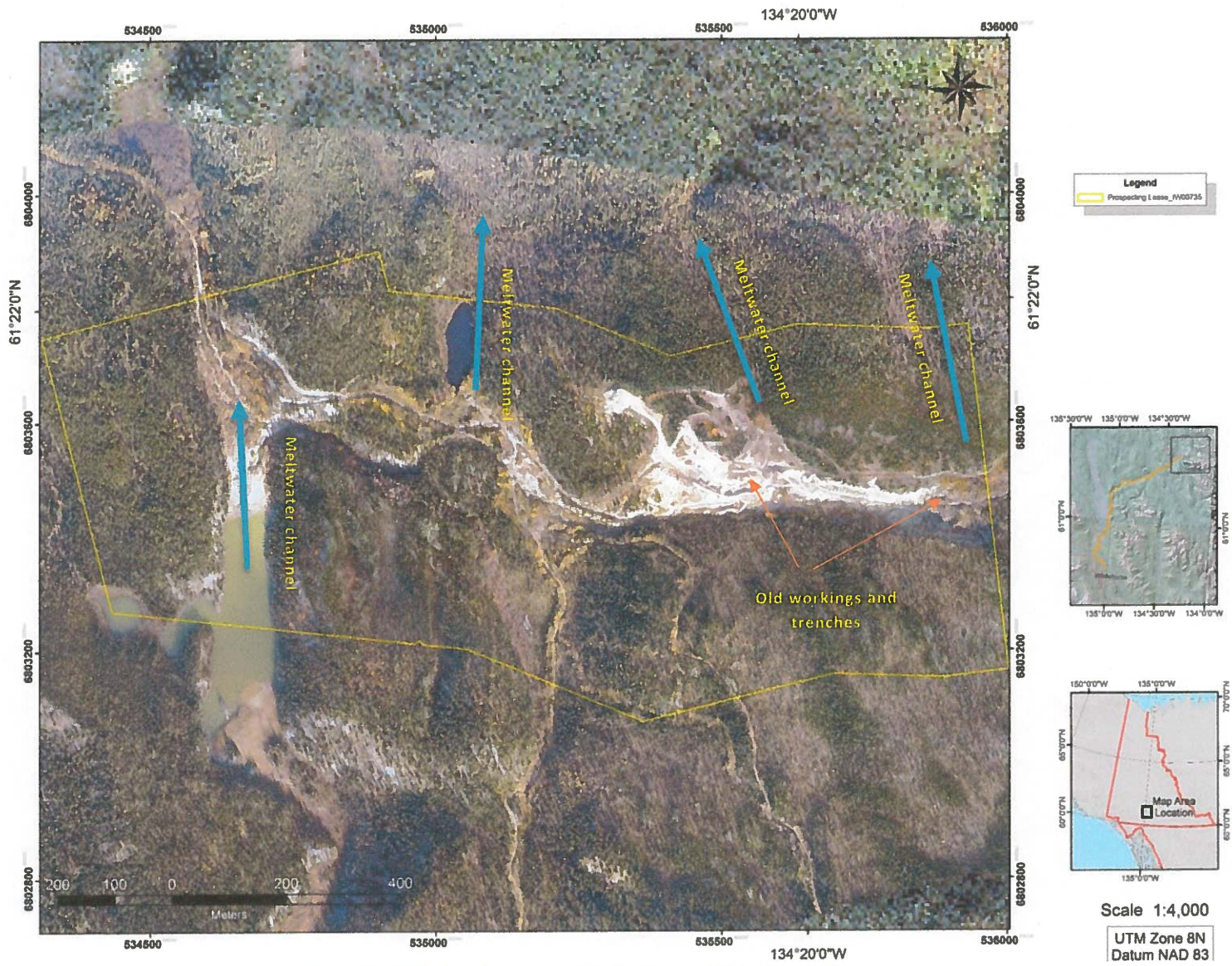
The type of drone used is a DJI Mavic 2 Pro, which has a high-resolution Hasselblad camera with a 1 inch photo sensor. Flight planning was done with the Pix4D capture program, and at least 80% overlap of photos was planned between photos within a flight line and between flight lines. Initial processing of the aerial survey is done in the field to check for integrity and data quality.

Final processing of air photos began with image editing software to normalize any extreme contrasts or unusual color balancing needed within the photo sets. A georeferenced orthophoto mosaic and 3D digital terrain model were then generated using Pix4D and Global Mapper software. The orthomosaic images and 3D models were interpreted for the presence of any obvious geomorphic landforms and anthropogenic features such as old mine workings and trenches.

#### Interpretation

The high resolution imagery obtained by the drone allowed for identification of landforms and geomorphology which would not have been possible with existing available public online satellite imagery. Figures 7 to 13 show the interpreted geomorphic features on the orthomosaics, as well as the Digital Terrain Models (DTM) and 3D renderings generated in Pix4D and Global Mapper from the aerial drone images. Obvious features include a remnant glacial moraine, several meltwater channels and a dissected kame terrace (glaciofluvial gravels). These features are consistent with the surficial mapping and ice-flow patterns in the drainage as defined by Bond and Church (2006) and Klassen and Morison (1987).

There may be increased placer potential in Lake Creek valley where it was transected by the meltwater channels, as the high rate of water flow in these zones would have had a concentrating and placer forming effect on the glacial sediments prior to the development of the modern Lake Creek valley. These areas should also be investigated in future exploration programs.



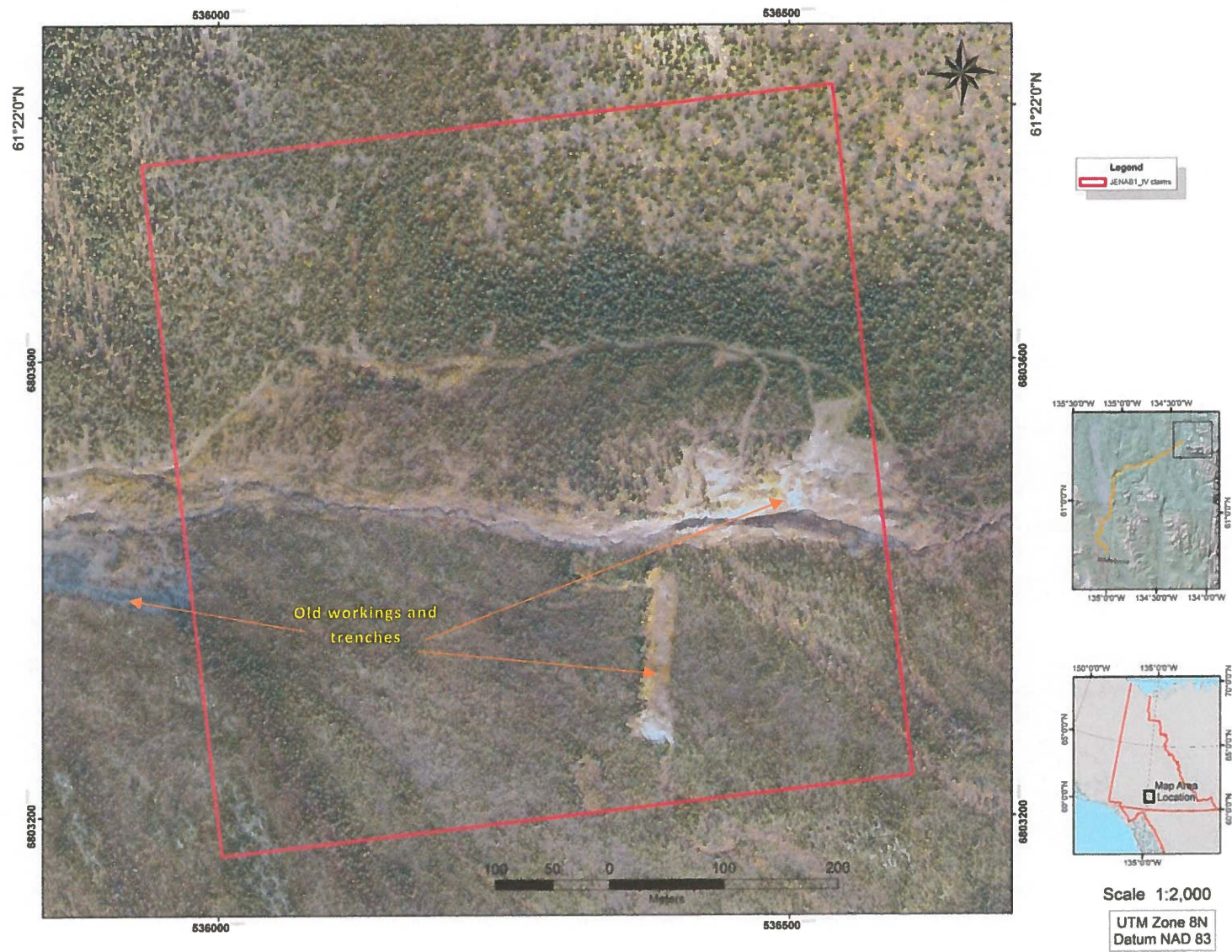


Figure 8 - Drone image of Placer claims JENAB1 to JENAB IV with interpreted features.

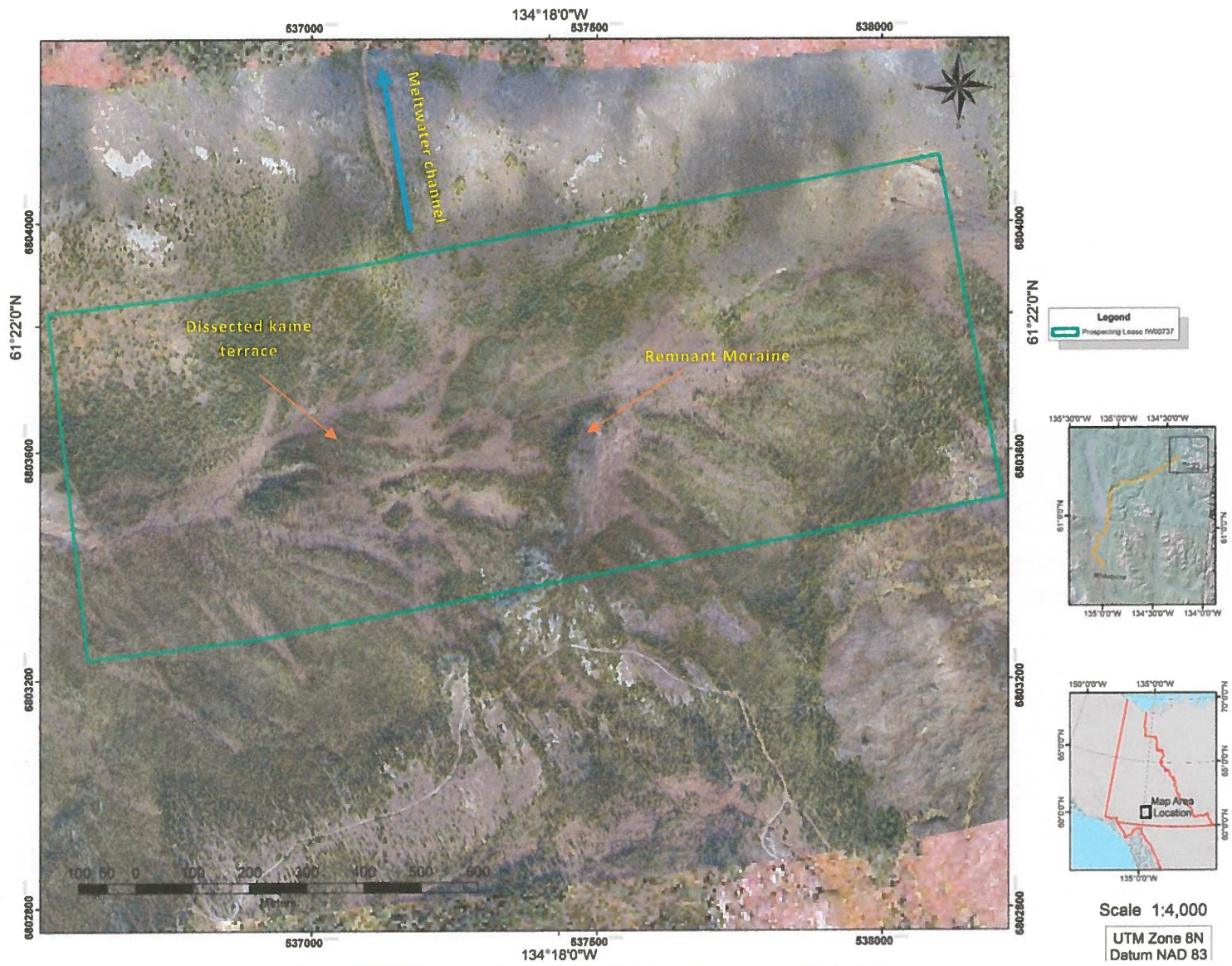


Figure 9 – Drone image of Prospecting Lease IW00737 on upper Lake Creek with interpreted geomorphic features.

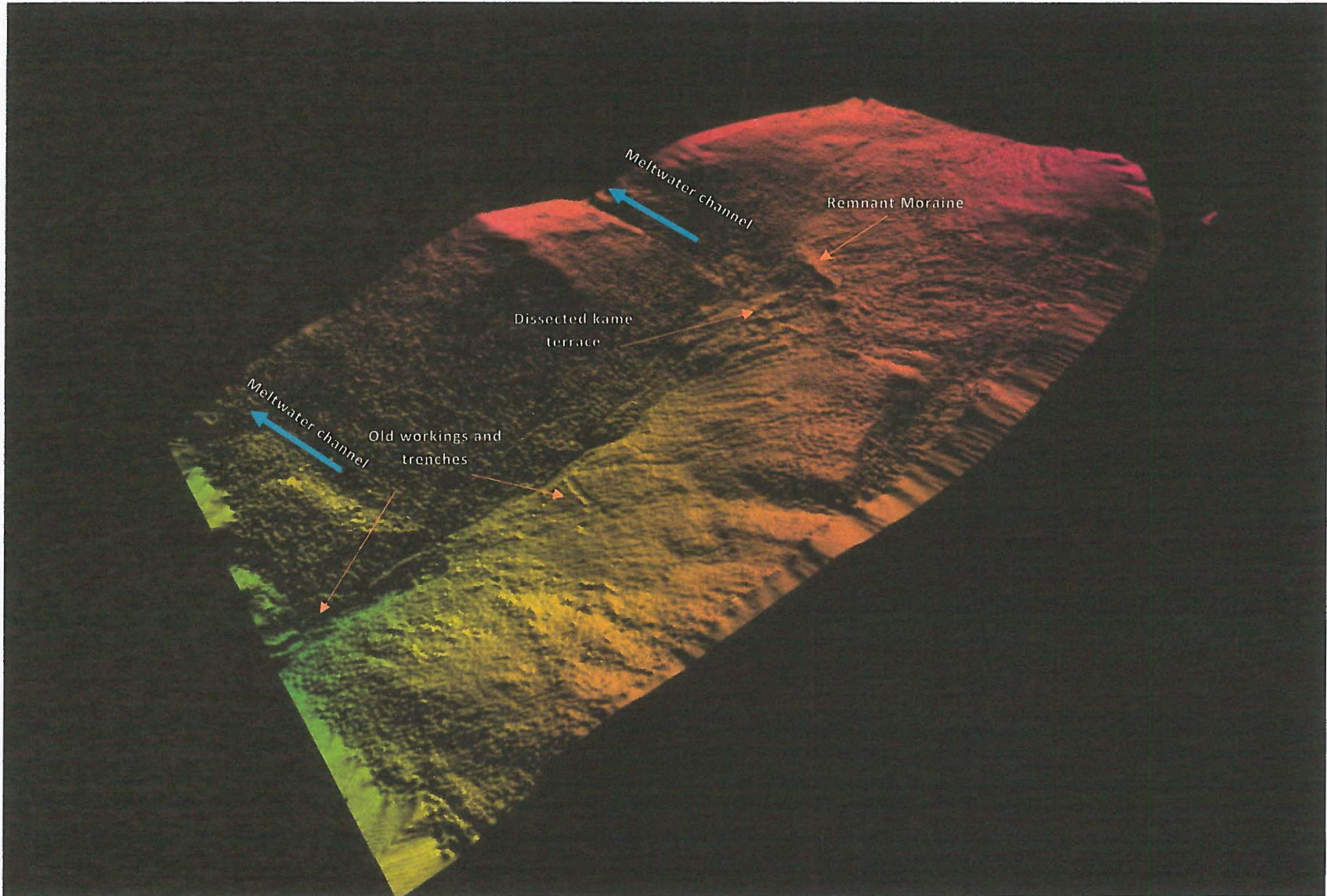


Figure 10 – Digital Terrain Model of upper Lake Creek, generated from drone aerial imagery, Global Mapper and Pix4D programs. Interpreted geomorphic and anthropogenic features are shown.

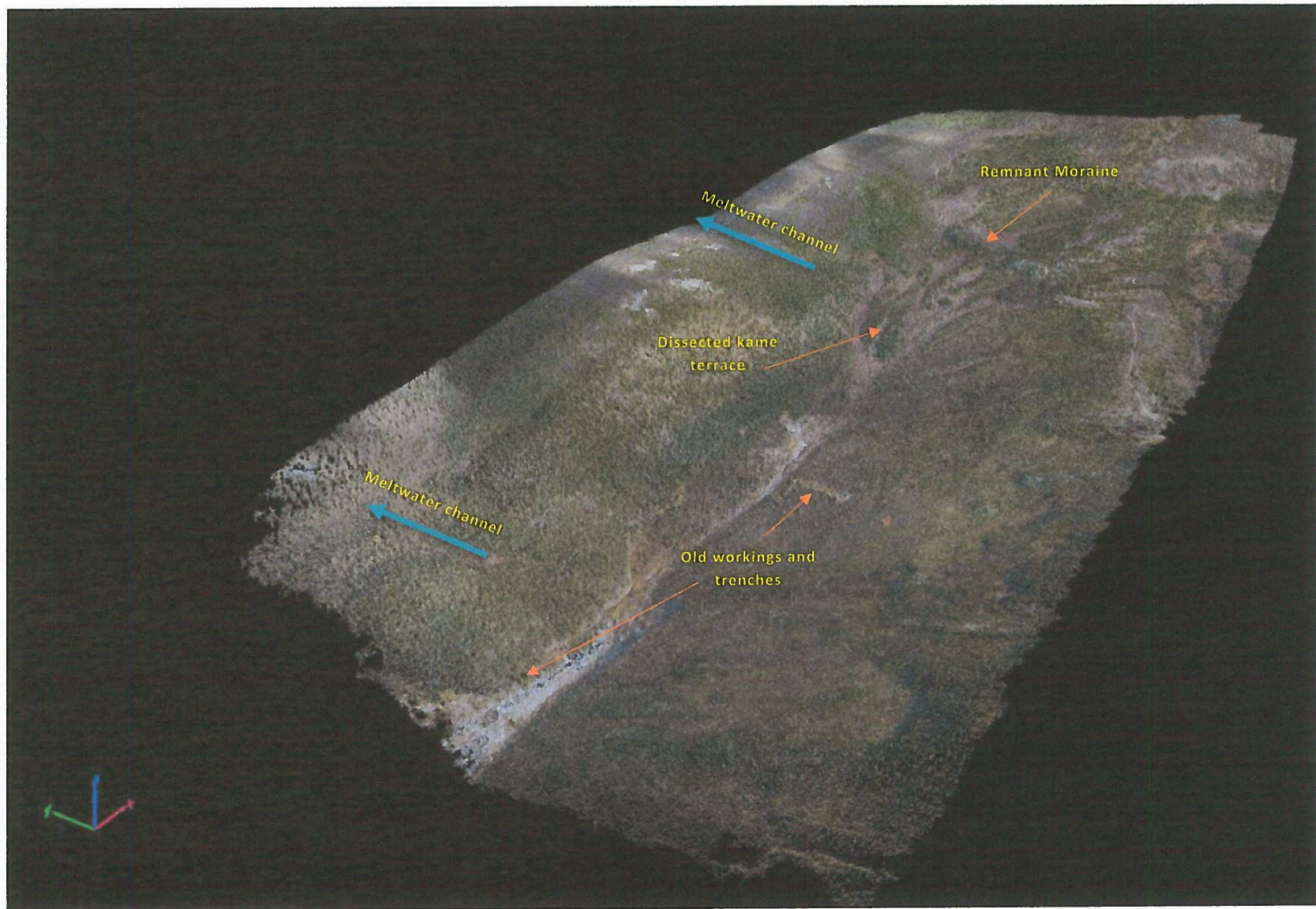


Figure 11 – Digital 3D rendering of upper Lake Creek, generated from drone aerial imagery, using the Pix4D program. Interpreted geomorphic and anthropogenic features are shown.

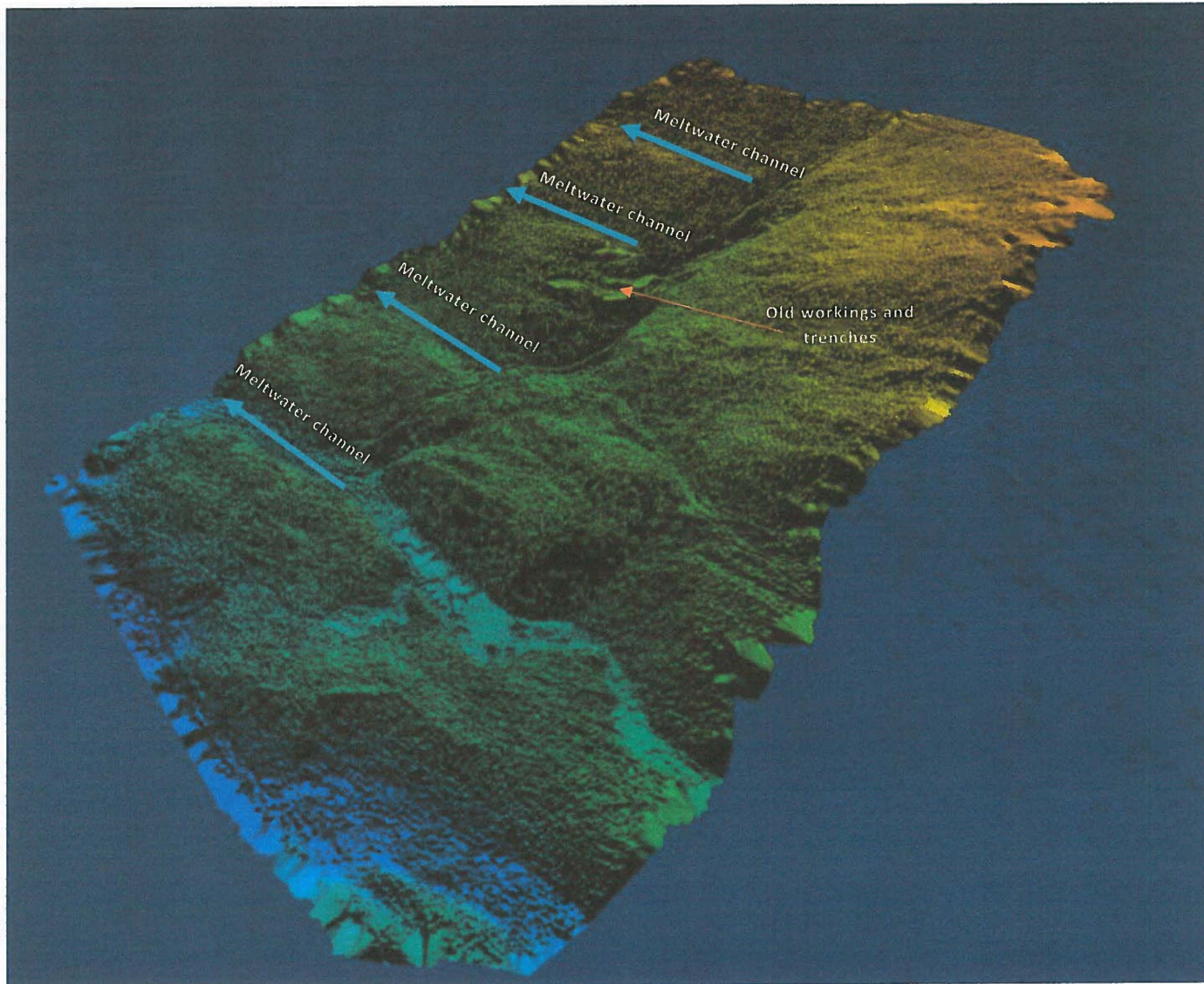


Figure 12 - Digital Terrain Model of lower Lake Creek, generated from drone aerial imagery, Global Mapper and Pix4D programs. Interpreted geomorphic and anthropogenic features are shown.

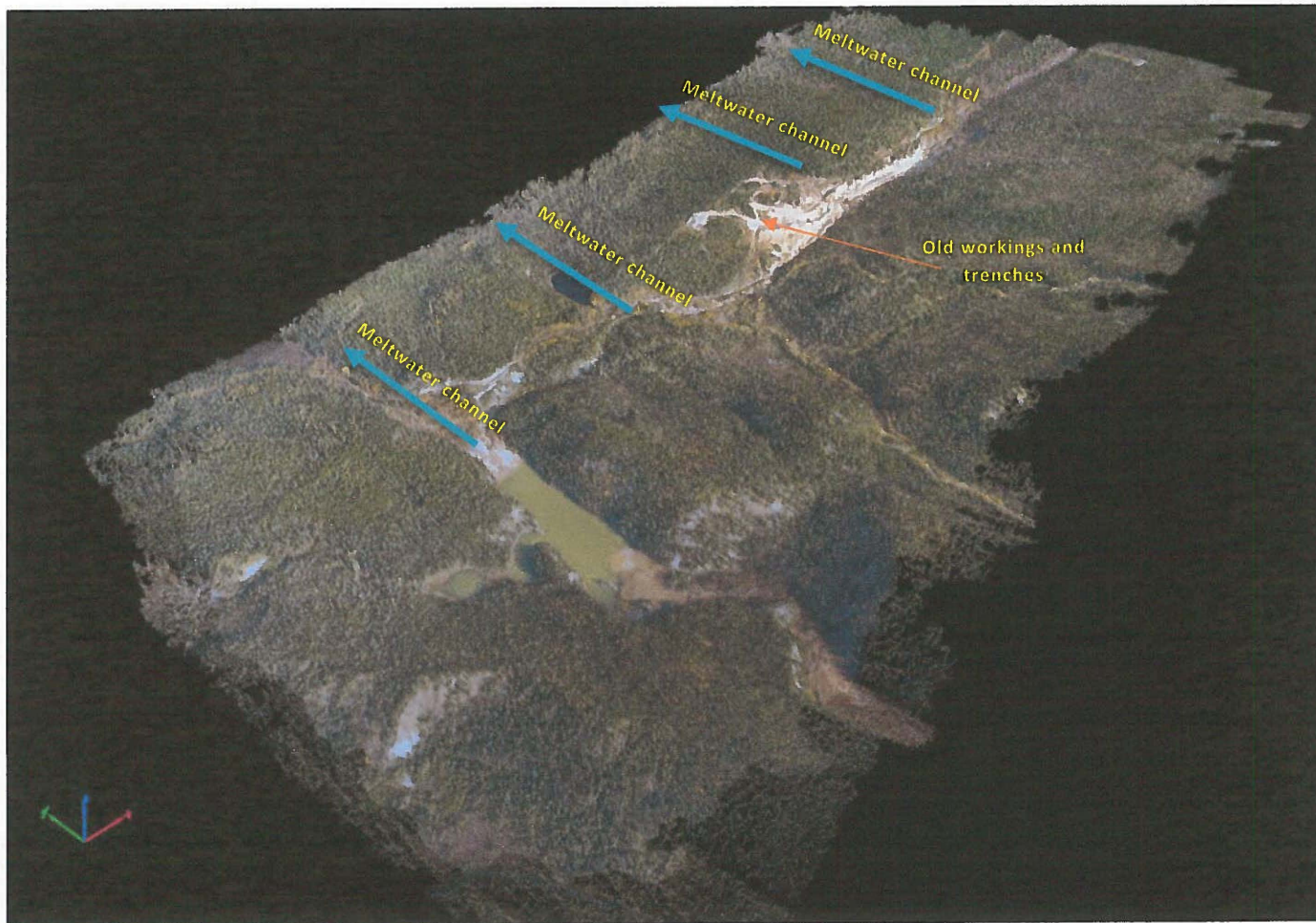


Figure 13 - Digital 3D rendering of lower Lake Creek, generated from drone aerial imagery, using the Pix4D program. Interpreted geomorphic and anthropogenic features are shown.

## Resistivity Surveys

### Overview

A program of resistivity geophysical surveys was conducted in September, 2020. Two lines totalling 396 metres were conducted on Lake Creek. Figure 14 shows the location of the resistivity surveys and Table 3 shows the coordinates and other details of the survey lines.

Table 3 - Geographic coordinates and lengths of resistivity lines, Lake Creek, September, 2020.

| Lake Creek Resistivity Surveys, September 2020 |                |            |             |            |           |            |
|--|----------------|------------|-------------|------------|-----------|------------|
| Name   | Claim or Lease | Length (m) | Start Point |            | End Point |            |
|  |                |            | Latitude    | Longitude  | Latitude  | Longitude  |
| RES20-JENAB1-02                                | JENABI         | 189        | 61.36368    | -134.32634 | 61.36215  | -134.32563 |
| RES20-LAKE1M-01                                | IW00735        | 207        | 61.363913   | -134.32982 | 61.36440  | -134.33330 |

### Personnel and Methodology

The geophysical surveys were conducted, processed and interpreted by William LeBarge of Geoplacer Exploration Ltd., with field assistance by Adam Sternbergh. The Lippmann 4-Point Light Resistivity System was used, and this technique injects an electrical current into the subsurface through stainless steel spikes and then measures the remaining voltage at various distances away from the injection point. Ground materials have different resistances to the current, and give data points in a cross section of the subsurface. With the data points, a tomogram or pseudo section can be created representing changes of resistivity in the ground. Data was collected using Geotest software, while the inversion and data filtering was completed with RES2DINV software. Data points with poor contact resistance were exterminated and noisy data was filtered statistically with root mean squared data trimming. Two-dimensional tomograms were produced using least squares damped inversion parameters to display the resistivity properties and to display potential contacts.

### Limitations and Disclaimer

The interpreted sections provide an estimate of the conditions beneath the surface to the depths conducted and are within the accuracy of the system and methods. The data becomes more uncertain with depth and are more accurate toward the surface and is further complicated if there is permafrost present in the region. The materials are interpreted based upon local geology observed, as well as geologic knowledge of the area. Certain materials may be similar in composition and result in uncertain results. The accuracy of the information presented is not guaranteed and all mine development is the client's responsibility. William LeBarge of Geoplacer Exploration Ltd. accepts no liability for any use or application of these data by any and all authorized or unauthorized parties.

## Results

Figures 15 and 16 show the interpreted resistivity profiles from the two surveys on Lake Creek. Overall, contact resistance was low and resulting data quality was good. Bedrock was interpreted to be 12 m from surface on the longitudinal line (RES20-LAKE1M-01) and up to 16 m deep in the upstream cross-valley line (RES20-JENAB1-01). A buried boulder gravel channel was interpreted on line RES20-LAKE1M-01 at 8 m below surface, which correlates well with observations of the mining exposure on the right limit of the creek below the survey (see Plate 2, below).

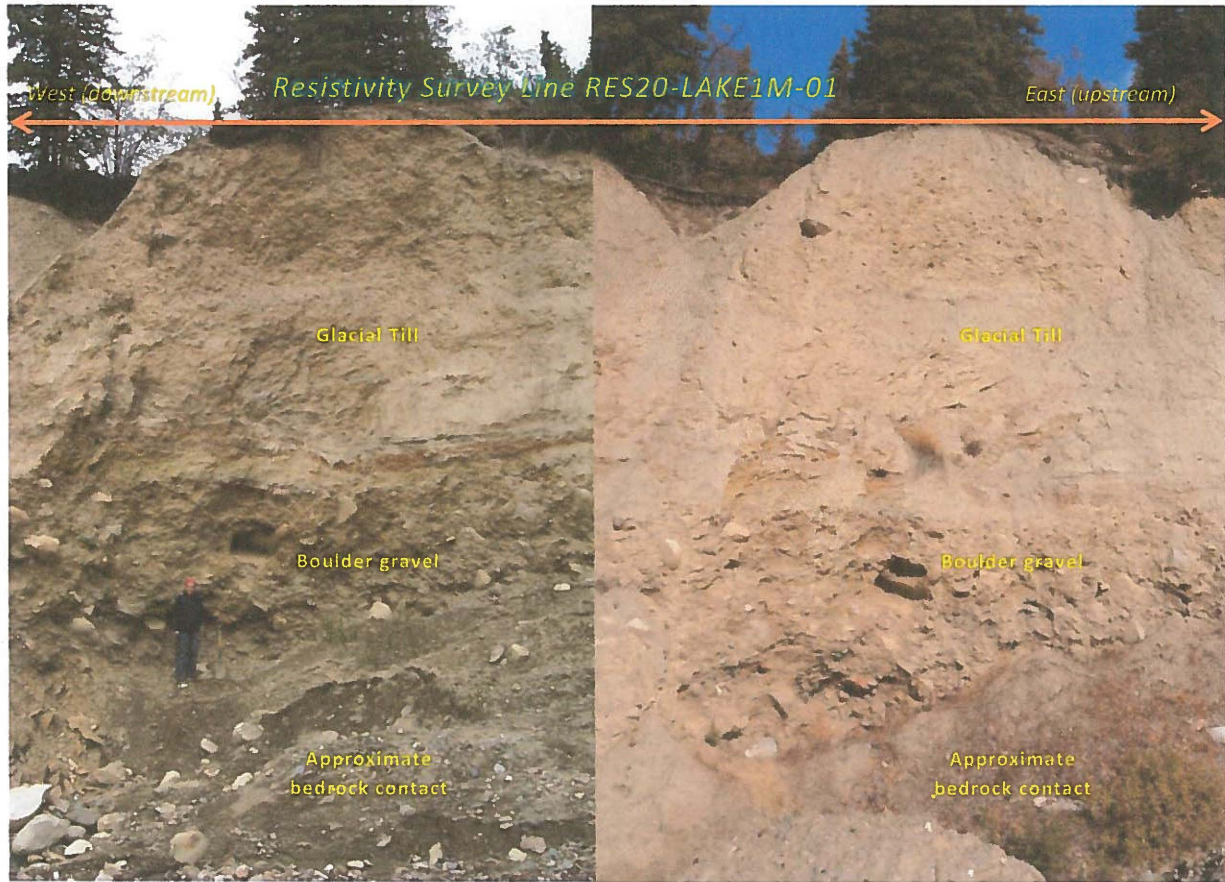


Plate 2 – Right limit mine exposure on Lake Creek, photos taken in 2000 (left) and 2020 (right).

A potential gravel channel was interpreted in a bedrock depression on line RES20-JENAB1-01, at approximately 12 m below surface, and approximately 90 m from the start of the line. Bedrock appears to be relatively flat for the first 85 m of the line (starting on the right limit or north side) although the thickness of overburden steadily climbs towards the left limit.

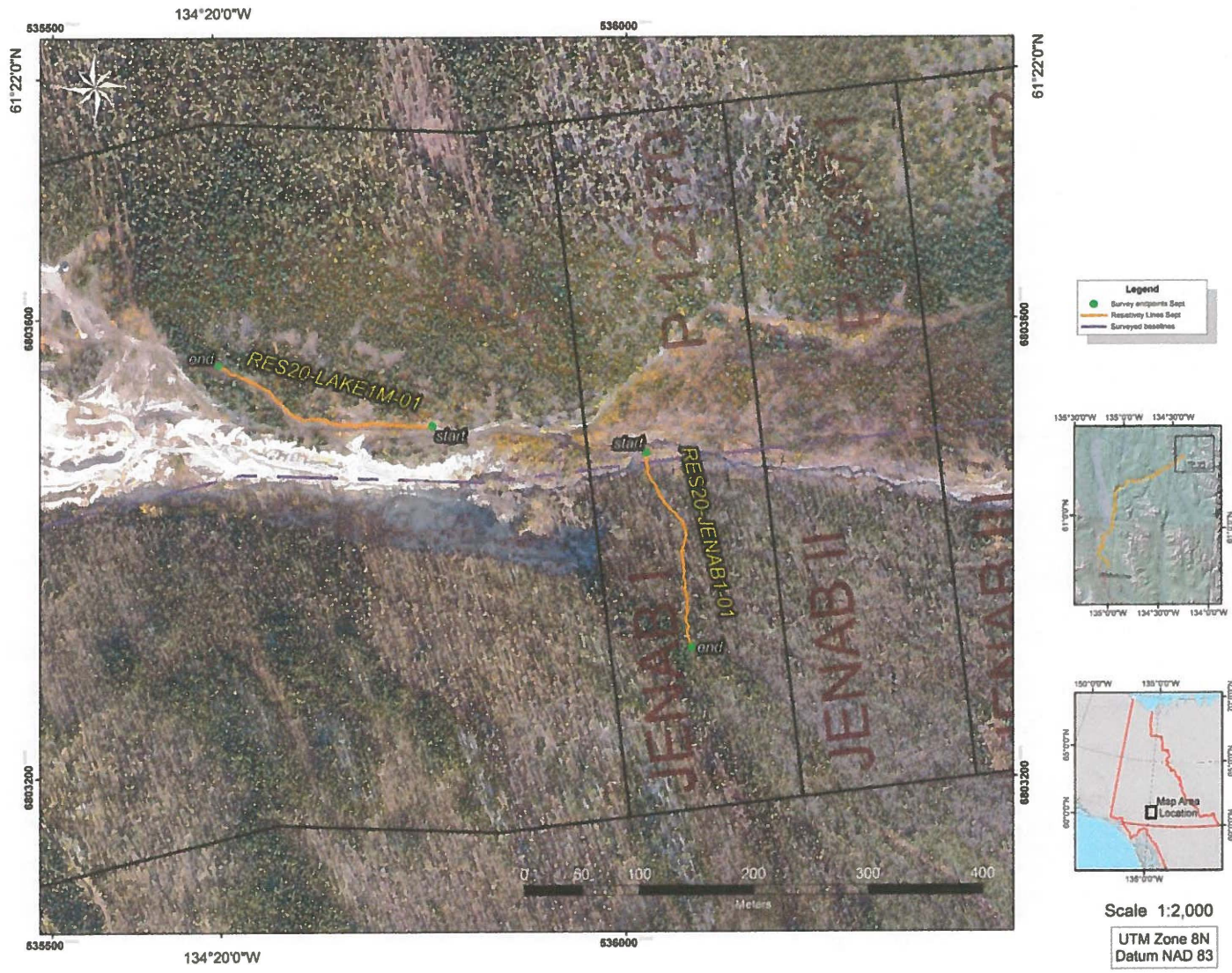


Figure 14 – Location of the two resistivity surveys conducted on Lake Creek in September, 2020.

E

# RES20-LAKE1M-01

W

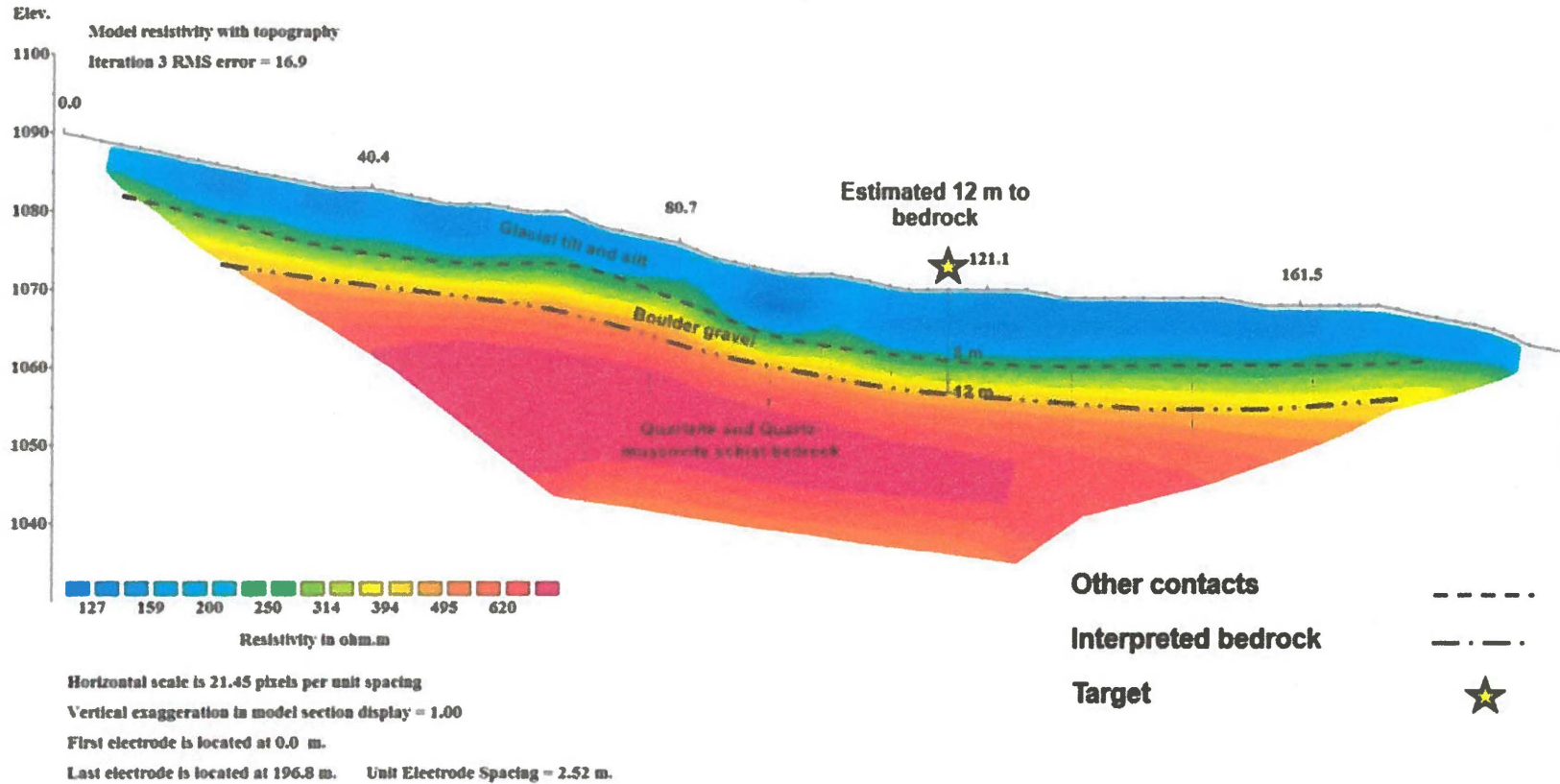


Figure 15 – Resistivity survey line RES20-LAKE1M-01 was conducted from upstream to downstream above an old mining cut on the right limit of Lake Creek, on Prospecting Lease IW00735. Glacial till, boulder gravel and bedrock are interpreted in the profile with bedrock depth at approximately 12 m below surface.

N

# RES20-JENAB1-01

S

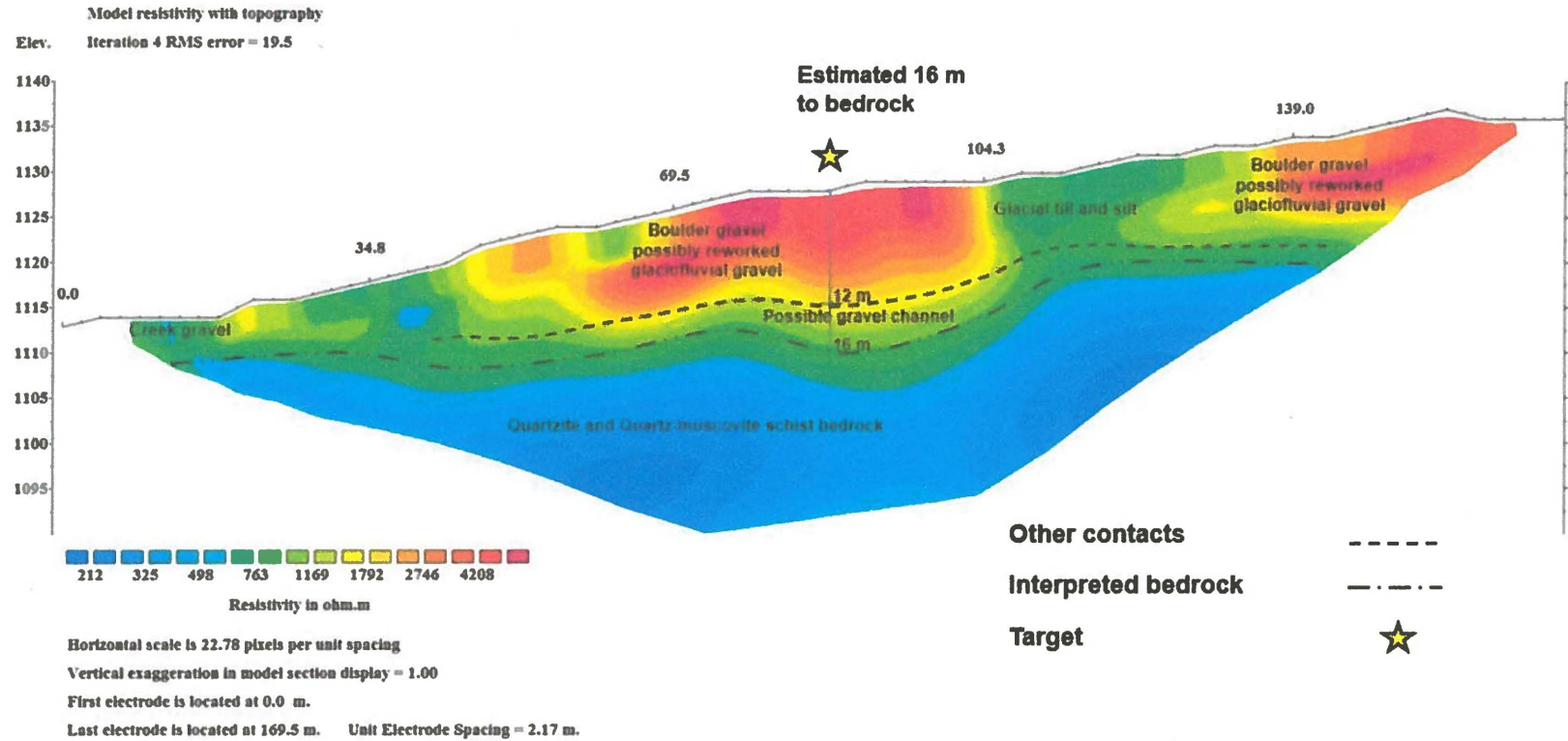


Figure 16 – Resistivity survey line RES20-JENAB1-01 was surveyed on the JENABI placer claim just upstream of the recent active mining cut on Lake Creek. Interpreted units in the profile include two upper boulder gravel channels, overlying a potential gravel channel at approximately 12 m below surface. Bedrock is interpreted at approximately 16 m below surface.

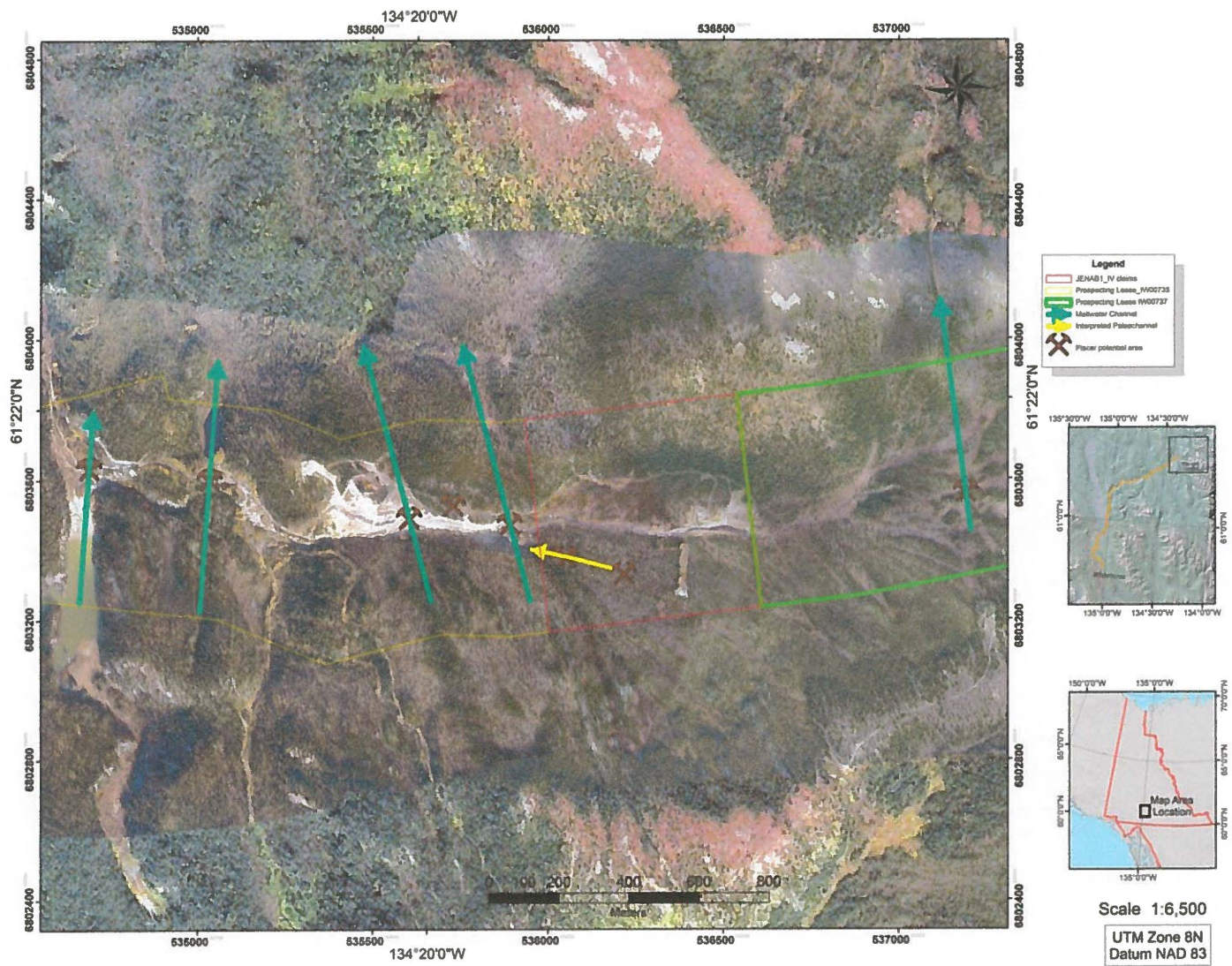


Figure 17 - Map showing interpreted features and areas of increased placer potential, Lake Creek property.

## Conclusions and Recommendations

The high resolution imagery obtained by the drone allowed for identification of landforms and geomorphology which would not have been possible with existing available public online satellite imagery.

Interpreted geomorphology on the orthomosaics and the Digital Terrain Models (DTM) showed several surficial features which are not shown on the available public geology maps. These include a remnant glacial moraine, several cross-valley meltwater channels and a dissected kame terrace (glaciofluvial gravels). Although not mapped, these geomorphic features are consistent with the surficial mapping and ice-flow patterns in the drainage as previously defined by Bond and Church (2006) and Klassen and Morison (1987).

Overall, contact resistance was low in the resistivity surveys and resulting data quality was good. Bedrock was interpreted to be 12 m from surface on the longitudinal line (RES20-LAKE1M-01) and up to 16 m deep in the upstream cross-valley line (RES20-JENAB1-01). A buried boulder gravel channel was interpreted on line RES20-LAKE1M-01 at 8 m below surface, which correlates well with observations of the mining exposure on the right limit of the creek below the survey. A potential gravel channel was interpreted in a bedrock depression on line RES20-JENAB1-01, at approximately 12 m below surface, and approximately 90 m from the start of the line. Bedrock appears to be relatively flat for the first 85 m of the line (starting on the right limit or north side) although the thickness of overburden steadily climbs towards the left limit.

Areas on Lake Creek with remaining prospective placer gold potential are shown on Figure 17. This map illustrates the interpreted geomorphological features including cross-valley meltwater channels and the potential buried paleochannel on the upstream unmined left limit.

Meltwater channels may have provided areas of pre-concentration in the valley which would increase the values of placer gold in the overlying sediments. Additionally, the places where the meltwater channels transect the Lake Creek valley may be the locale for inflection points in the valley gradient, which could also correspond with increased placer gold values. These areas should be targeted in future exploration programs.

Additional cross-valley resistivity surveys are recommended upstream of RES20-JENAB1-01, in order to better delineate the orientation, depth and extent of the potential buried gravel channel on the left limit.

If possible, a drill should be brought in to confirm interpreted depths and sample the gold content of the channel. Given the boulder-rich nature of the ground, the drill should either be a cased reverse circulation (R/C) drill (which has an inside diameter of 6 inches or greater) or a similarly-sized sonic drill.

If drilling is not logistically possible, slow progress may be made progressively upstream by stripping the active mining cut face using mechanical or hydraulic means.

## Statement of Costs, September 2020 Program, Lake Creek

Table 4 - Statement of Costs, Lake Creek, September 2020 Program

| Lake Creek Resistivity Surveys   | Rate              | Amount | Subtotal  | GST      | Total            |
|--|-------------------|--------|-----------|----------|------------------|
| Resistivity Surveys, two lines including report                        | \$12/line-metre   | 396 m  | \$4752.00 | \$237.60 | \$4989.60        |
| Drone Survey of Prospecting Lease IW00737, including assessment report | \$1000/creek-mile | 1 mile | \$1000.00 | \$50.00  | \$1050.00        |
| <b>Total Cost</b>  |                   |        |           |          | <b>\$6039.60</b> |

## Statement of Qualifications

### William LeBarge

I, William LeBarge, of 13 Tigereye Crescent, Whitehorse, Yukon, Canada, DO HEREBY CERTIFY THAT:

1. I am a Consulting Geologist with current address at 13 Tigereye Crescent, Whitehorse, Yukon, Canada, Y1A 6G6.
2. I am a graduate of the University of Alberta (B.Sc., 1985, Geology) and the University of Calgary (M.Sc., 1993, Geology – Sedimentology)
3. I am a Practicing Member in Good Standing (#37932) of the Association of Professional Engineers and Geoscientists of British Columbia (APEGBC).
4. I have practiced my Profession as a Geologist continuously since 1985.
5. I am President and sole shareholder of Geoplacer Exploration Ltd., a Yukon Registered Company.

Dated this 2<sup>nd</sup> day of December, 2020

William LeBarge, P. Geo.



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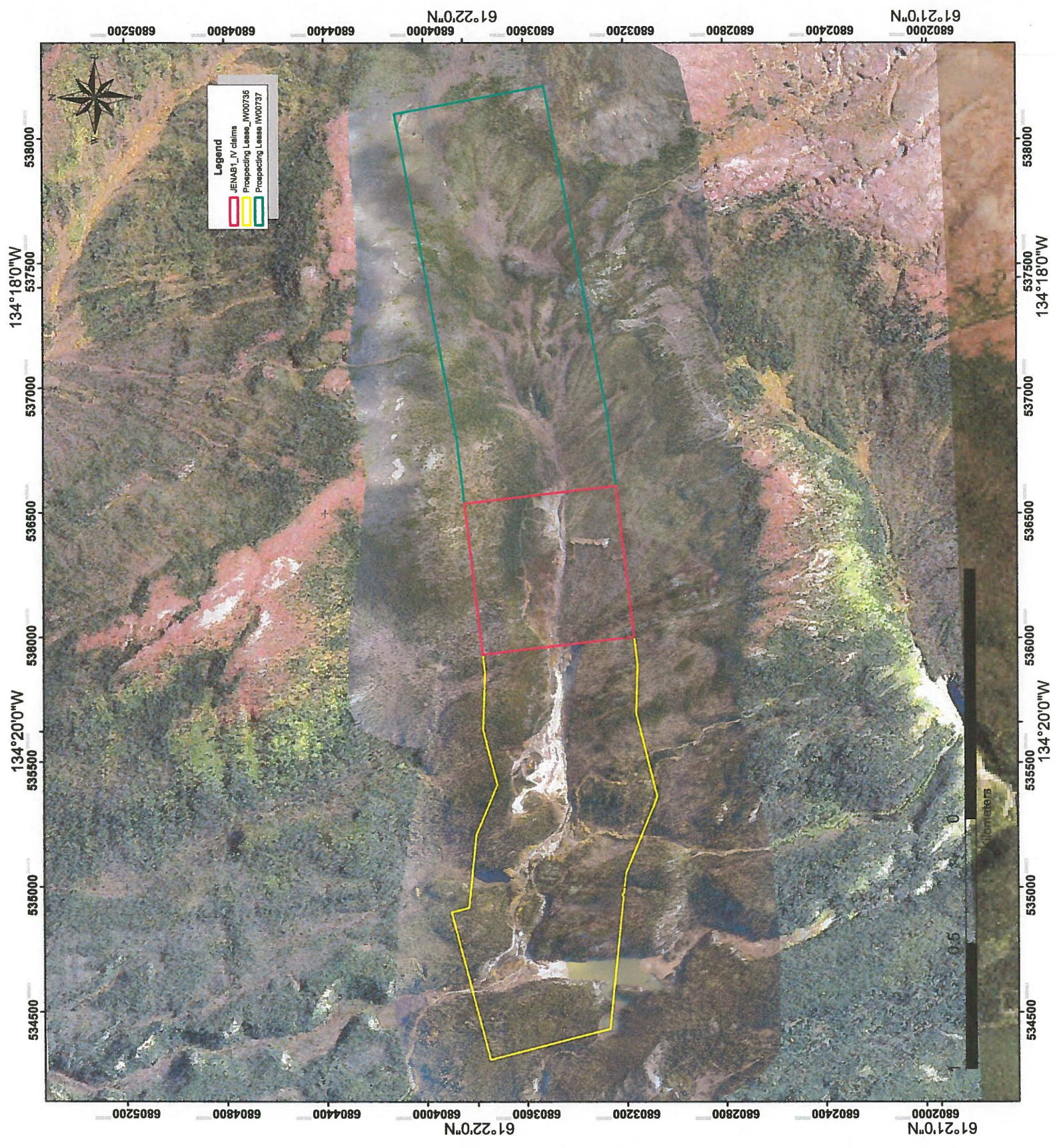
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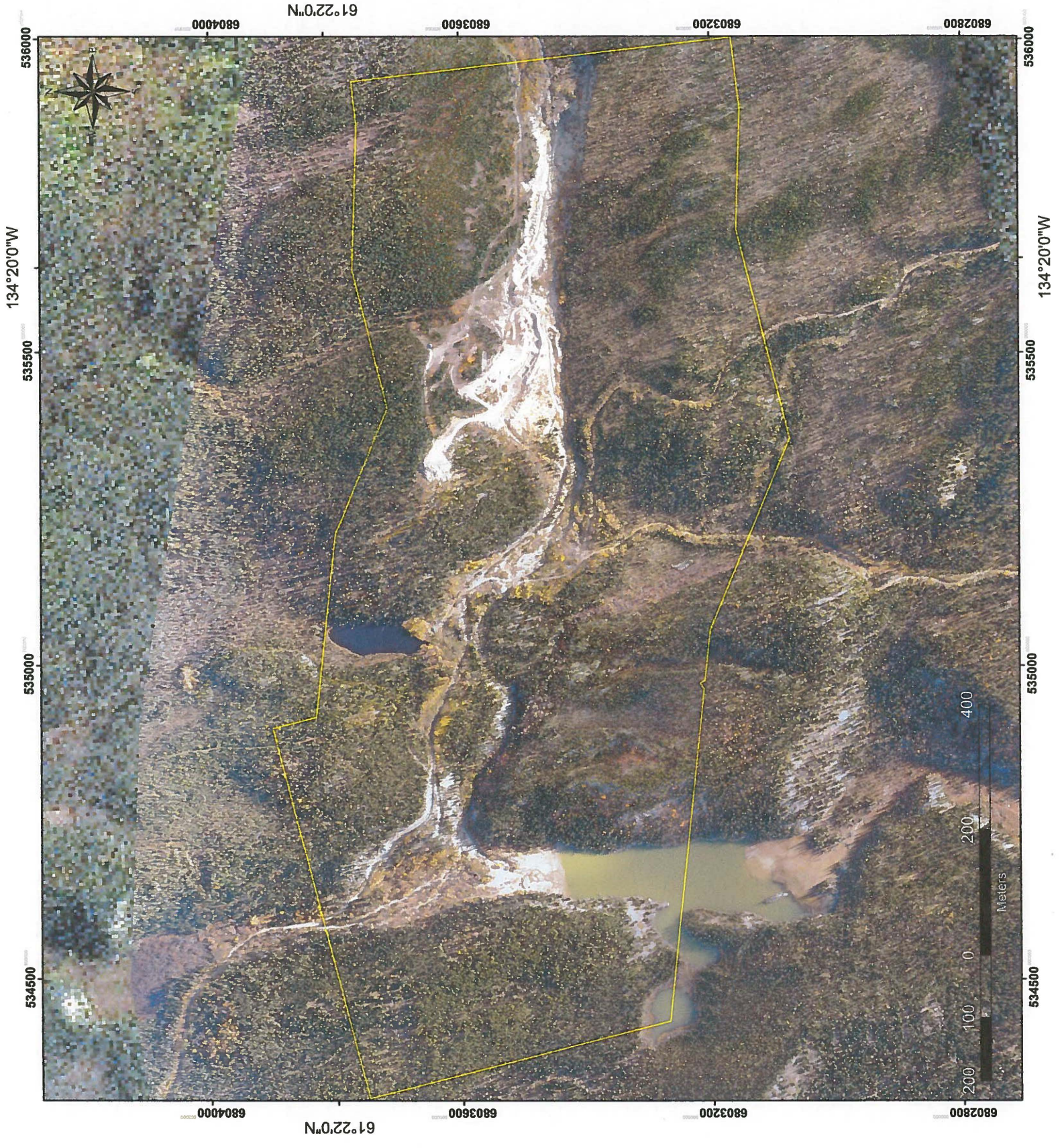
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**Appendix A - Drone Images**





134°20'0"W

134°20'0"W

536000

536000

535500

535500

535000

535000

534500

534500

6804000

61°22'0"N

6803600

6803200

6802800

6804000

61°22'0"N

6803600

6803200

6802800

200 100 0 200 400  
Meters



61°22'0"N

6803600

6803200

536500

536500

536000

536000

61°22'0"N

6803600

6803200

0 100 200

Meters

