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Report on Prospecting at Claim 1199564  
on the Federal Mine Property  
Teck Township  
Larder Lake Mining Division

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*May 13, 2016*

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## **Introduction**

This report is written for submission to the Ministry of Northern Development and Mines to fulfill the assessment work requirements for part of the historic Federal Mine property. This report summarizes the activities completed in the period of May 3, 2016 on the un-patented mining claim 1199564. This report was prepared by Canadian Malartic Corporation (CMC) geologist Christopher A. L. Clarke, P. Geo under supervision from Mark Masson, P. Geo.

## **Summary**

The claim 1199564 in Teck Township is associated with the historic Federal Mine property, whose shaft is located on claim 1222223. The claim is held by Canadian Malartic Corporation and it is contiguous with other claims on the Federal Mine property which Canadian Malartic also holds. Claim 1199564 was staked on July 7, 2003. Workers for Canadian Malartic conducted a prospecting and sampling program to fulfill the work requirements of the claim. Historically, the Federal Mine property has been the focus of extensive exploration both above and below ground.

## **Property Descriptions and Access**

Claim 1199564, is situated along the north-eastern edge of the Town of Kirkland Lake in Teck Township, District of Temiskaming, Larder Lake Mining Division, Ontario, Canada (Figure 1). Claim 1199564 can be accessed along the east side of Goodfish road, 1.5-2km from the intersection of Duncan Ave and Goodfish Rd and ranges 80-300m from the road. There are several ATV trails/old dirt roads leading to the claim. The property is almost immediately north of a residential neighborhood and abandoned residential lots. To the immediate east of the claim is a man-made dam which defines the Wright-Hargreaves mine tailings pond to the east.

The claim is composed of one, un-patented unit roughly 16 hectares in size. The surface right owner (SRO claim #L2093) is FiveTwelveFourteen Property Investments Inc. The claim hosts a large pond/swamp within its central and north-eastern quadrant.

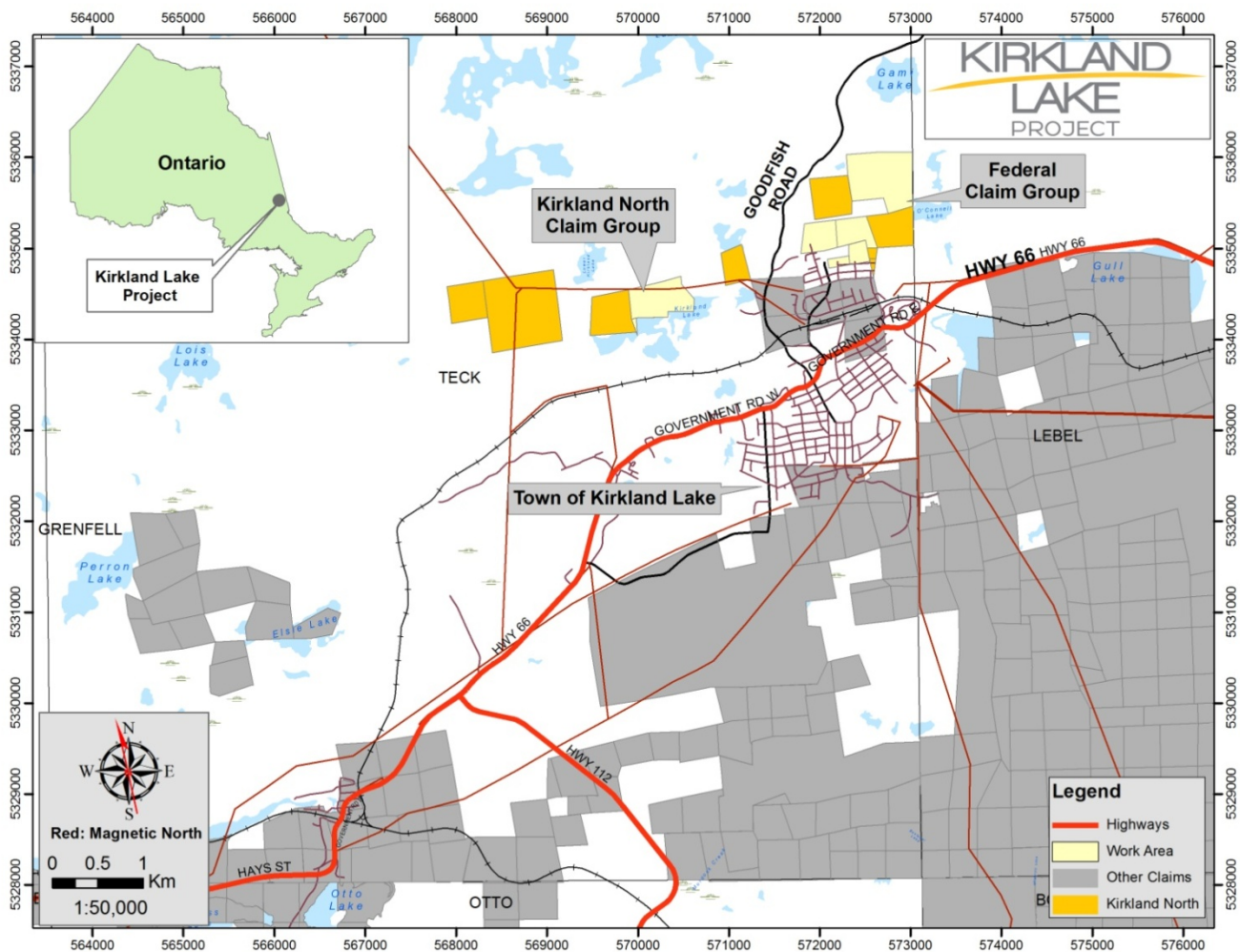


Figure 1: Location of Teck Township relative to the Province of Ontario and Canadian Malartic Claims (shaded grey); where the claims 1242952, 1242943 and 1199564 are located (shaded pale orange).

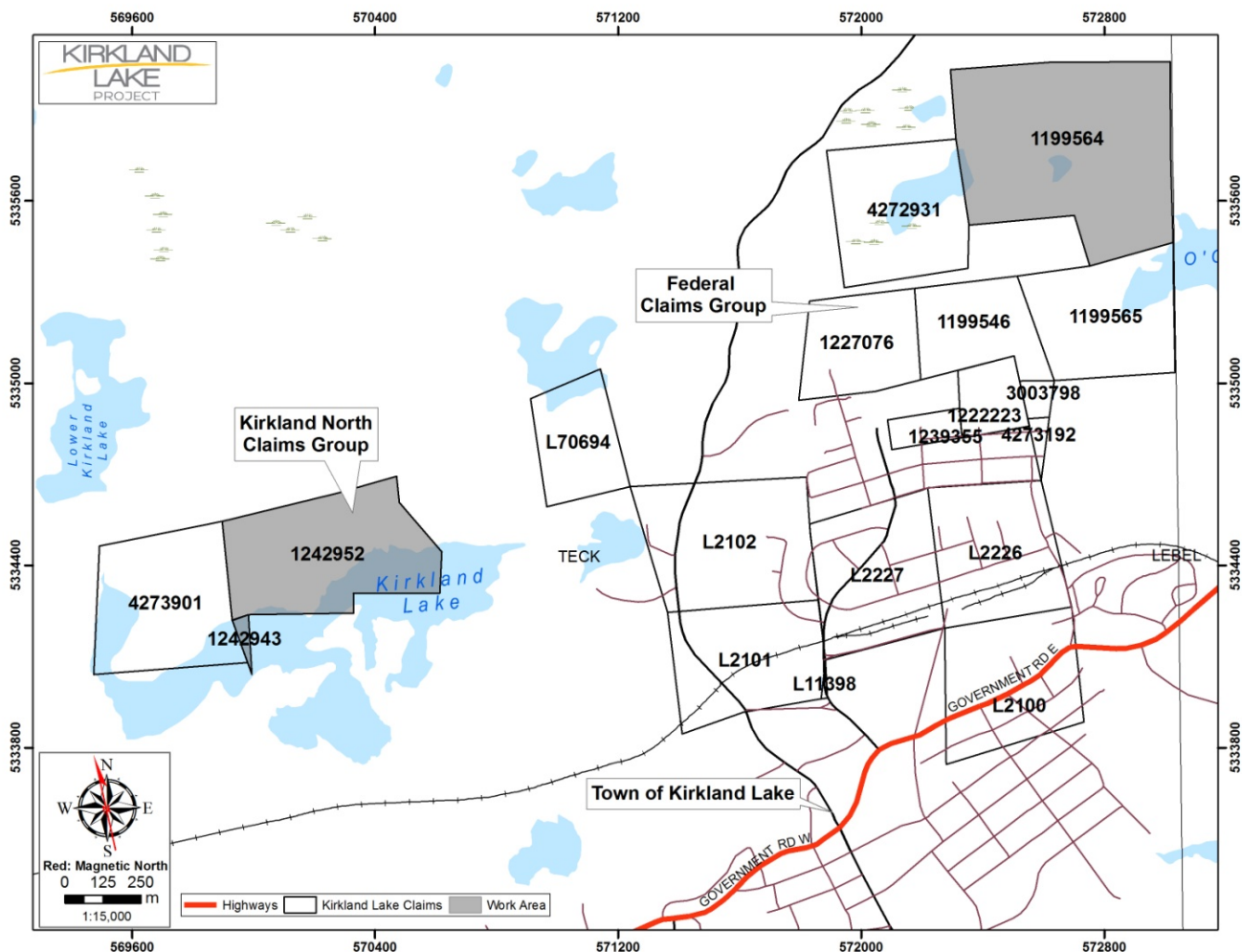


Figure 2: A 1:15,000 scale map showing MNDM listed mining claims for Teck Township in the area of the Municipality of Kirkland Lake. The claims 1242952, 1242943 and 1199564 are highlighted, each have a separate file for submission.

## History

Claim 1199564 was staked on July 7, 2003. No previous assessment has been reported on this claim, but the property has been part of previous claims and an active Mine. The most recent work conducted immediately adjacent to claim 1199564 was reported by Canadian Malartic Corporation in 2015 and consisted of prospecting and geochemical sampling. Work was also conducted by Vault Minerals in 2006 and published in 2013 under assessment files AFRI# 20000001685 and 20000001686. The Vault Minerals work was designed to assess the Kirkland Basin and Federal Kirkland historic

properties. Vault Minerals was 100% acquired by Queenston Mining Inc. which in turn was 100% acquired by Osisko Mining Ltd and was then acquired by a 50-50% agreement between Agnico Eagle and Yamana Gold who formed the Osisko properties into the Canadian Malartic Corporation. Vault Minerals conducted a mapping and sampling program on their claims on the Federal Mine property.

Historically, The Federal Mine property has had extensive and near continuous work conducted on it, most notably a 745 ft shaft which is currently capped in the northeast corner of claim #1222223. The underground workings consist of four levels situated at 200, 400, 500 and 700 feet below surface with pervasive drifting. Another notable period in the Federal Mine property was in 1986 and 1987, when a drill program was initiated by Goldhunter Explorations Inc. The drill program consisted of 27 diamond drill holes primarily targeting the mine workings on claim #1222223 and 1227076.

None of the historic drilling or stripping programs listed by Goldhunter Explorations Inc. or other assessment files appears to have been situated on claim 1199564. Only limited prospecting and mapping appears to have been reported on the claim area.

## **Property Geology**

The claim 1199564 is situated within the prolific Kirkland Lake gold camp which is part of the Abitibi Greenstone belt in the Superior Province. The Abitibi Greenstone belt is Archean in age and is composed of greenschist facies volcanic and sedimentary rocks with localized syn-post tectonic intrusions of granitic to dioritic dykes to batholiths. The Abitibi Greenstone belt forms an east plunging synclinerium between the Abitibi batholith, northeast of Timmins and the Round Lake batholith, south of Kirkland Lake. Mesozoic aged kimberlitic dykes are also present in the Kirkland Lake Camp but are rare in occurrence. The Kirkland Lake Camp hosts Keewatin (2750-2700 Ma) and Temiskaming (2690-2670 Ma) aged assemblages associated with the Abitibi Greenstone belt. The Keewatin assemblages

within the Kirkland Lake Camp are composed of the greenschist facies volcanoclastic-sedimentary lithologies of the: Pacaud, Deloro, Stoughton-Roquemaure, Kidd-Munro, Tisdale, Kinojevis, and Blake River groups. The Temiskaming assemblage within the Kirkland Lake camp is the Temiskaming group, noted for its non-marine, variably metamorphosed, pyroclastic and clastic-sedimentary (conglomerate) lithological units. Temiskaming group meta-sedimentary rocks form along the north facing side of the Larder Lake-Cadillac Deformation Zone (LLCDZ), a major east-west structural control associated with chemical alteration and sulphide mineralization. The LLCDZ length coincides with a folded and deformed sinuous belt of sedimentary rocks of Temiskaming age.

Claim 1199564 hosts Temiskaming meta-sediments (conglomerate) and a Kinojevis mafic intrusive suite (gabbro, **Error! Reference source not found.**). The Temiskaming sediments are present in the south of the claim while the mafic intrusives are in the north of the claim. The inferred contact from Ontario Geological Survey maps is striking northeast, through the centre of the claim. Both map units host various degrees of structural deformation from brittle (faults) to ductile (foliation/shearing).

To the North of the claim are a series of Keewatin aged basic volcanics (greenstone) of the Kinojevis Group. To the south are a series of Temiskaming meta-sedimentary units and felsic-intermediate intrusives (syenite-diorite).

## **General Description of Sampled Rock Units**

### ***Greenstone facies gabbro***

**Grain Size:** Fine to medium, euhedral and equigranular

**Texture:** massive

**Alteration:** Generally fresh with weak chlorite-carbonate alteration

**Mineralization:** <1-1mm anhedral pyrite disseminated within matrix

**Magnetism:** weak

**Veining:** There are <1% abundant, <1-3mm thick, milky quartz-carbonate stringers and <1% abundant discontinuous black chlorite fracture-fill



***Deformed polymict conglomerate***

**Clasts:** Polymict; various igneous and volcanic pebble to cobble sized clasts which are matrix supported

**Sorting:** Moderately sorted, clasts form strata which can be gradational or sharply change in size

**Matrix:** Tuffaceous with fine bedding/deformation

**Deformation:** clasts display pressure shadows and elongation parallel to bedding; the matrix also displays a bedding/foliation along this same plane roughly striking NE-SW with weak undulations.

**Alteration:** Beige-Red colouration suggests sericite-hematite; <1% abundant bright red jasperoid alteration clasts

**Mineralization:** trace abundant, 1-2mm anhedral disseminations of pyrite within the tuffaceous matrix and around the red jasper

**Magnetism:** weak to moderate

**Veining:** There <1% abundant milky quartz-carbonate veins

***Trachyte***

**Grain size:** aphanitic

**Texture:** massive, sub-conchoidal fracturing

**Alteration:** purplish-brown weathering colour, weak patches of red hematite alteration

**Mineralization:** 0.5% abundant, 1-2mm disseminations of anhedral pyrite

**Magnetism:** weak-moderate

**Veining:** isolated, sub-planar stringers of <2mm thick quartz-carbonate which are <<1% abundant.

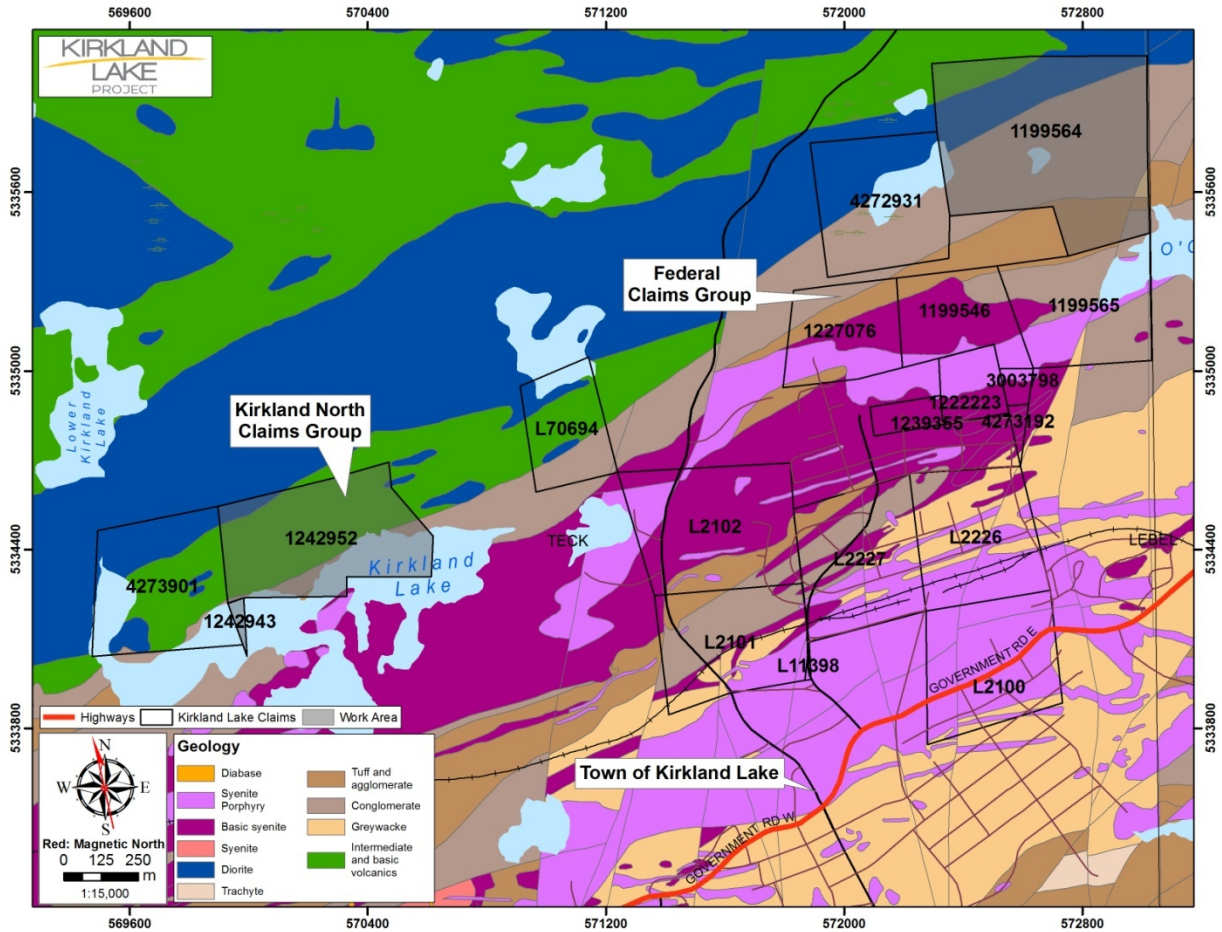


Figure 3: Local Geology in the Claim area north of Kirkland Lake. The map shows the bands of Temiskaming meta-sediments intruded with felsic-intermediate intrusives and Keewatin volcanics in contact to the north of the Temiskaming sediments.

## Description of Recent Work

The work conducted was prospecting, sampling and limited mapping. The goal of the work was to gain an understanding of the geology of the claim, identify historic trenches and pits, map outcrops, gather samples for gold and major-trace element abundances, and recording the locations using a GPS. The majority of the claim was overlaid with tailings and partially submerged in water a knob of Greywacke was exposed in the centre of the tailings pond which was sampled. The extreme southern portion of the claim had regular rock outcroppings of trachyte but the area was heavily affected by blow down from a recent windstorm which blocked access especially when coupled with areas still covered in

soft snow. A total of 5 grab samples were collected on the property (plus a blank and standard for QA/QC purposes) and sent for major oxide, trace element (reported separately) and gold assay to ALS minerals (see attached certificates).

## **Conclusions and Recommendations**

A grid should be established in a low impact manner to reduce disturbance of the environment and residents. Following the establishment of a grid an IP survey and limited stripping should be conducted pending the geochemical results of the grab sample analysis.

Respectfully Submitted,  
Christopher A. L. Clarke

## Data

*The work was carried out as follows:*

**Field:**

Prospecting      May 3, 2016

**Office:**

Report            May 5, 2016

*Persons who carried out the work:*

**Prospecting:**

Christopher A.L. Clarke      Larder Lake, On

Martyn Harrington          Kirkland Lake, On

**Report:**

Christopher A.L. Clarke

*Sample List (UTM zone 17 NAD 83)*

Waypoint	Northing	Easting	Rock Type
J257674	5335848	572700.7	Greywacke
J257675	5335867	572698.9	Greywacke
J257676	5335869	572722.9	Greywacke
J257677	5335550	572889.6	Trachyte
J257678	5335579	572824.1	Trachyte
J257679	5335521	572783	Trachyte

**May 3, 2016 – 1 Day Prospecting**

Workers: Christopher Clarke; Martyn Harrington

Weather: Sunny and warm

We drove our truck to 'Finn Town' which is the northern (unmapped) extent of Foss Rd. and parked our vehicle. Upon exiting the vehicle in Finn Town we proceeded north on foot towards the southwestern corner of the claim. From the southwestern corner we traversed north along the berm of the tailings pond until the balsams growing on the berm became too thick to navigate through at which point we walked along the surface of the tailings which were relatively solid and wet. We continued north until we approached the northwestern corner of the claim which had a private trailer and camp located near it at which point we followed an old road which ran coincident with the northern claim line and headed east. We walked east until we reached the witness post for the first claim post at which point we retraced our path until we could exit onto the tailings pond and head south. Heading south we observed a small island of rock outcrop jutting up from the tailings pond and we headed towards the island. The island was composed of greywacke with balsams and spruce growing on top of it. There appeared to be a trench within the greywacke. The trench hosted rusted greywacke with quartz-carbonate veining and trace <1mm pyrite grains. Three samples were taken J257674 to J257676. After sampling the island we headed south towards the south east corner of the claim but found it largely inaccessible due to swamp, soft snow and a large swath of blow down covering the southern and southeastern portions of the claim. We walked several north-south lines in this area and took samples J257677 to J257679 which were all in trachyte with varying degrees of alteration and trace to 0.5% pyrite mineralization (<1-2mm grains). Upon the completion of these lines we returned to the southwestern corner of the claim following the southern boundary of the claim as best as possible due to the severe blow down and deep soft snow. From the southwestern corner of the claim we retraced our steps to Finn Town and left in the Truck.

Prospecting Diary for Christopher Clarke, B.Sc, M.Sc, P.Geo

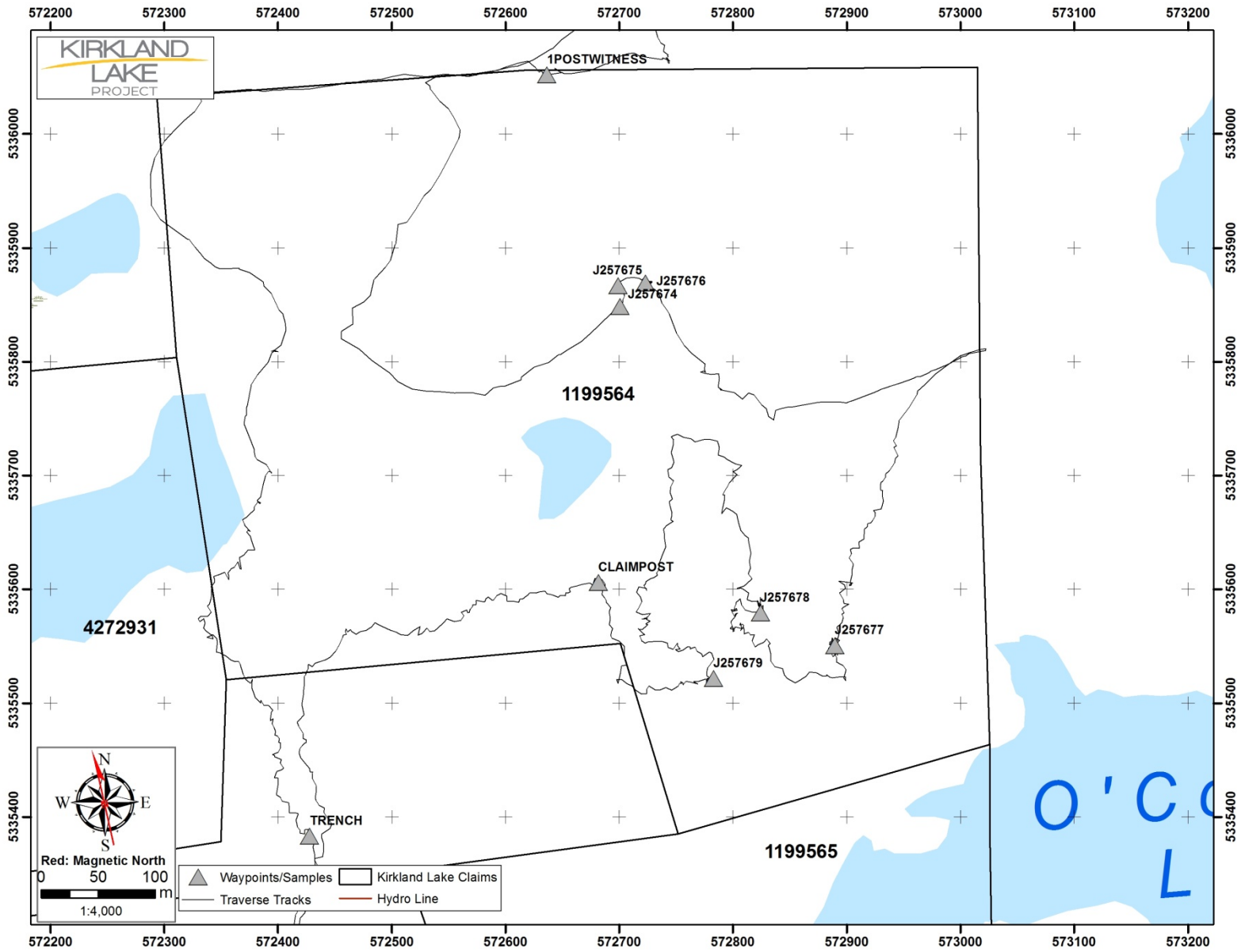


Figure 4: Map showing the GPS tracks and waypoints for the worker's traverses on May 3, 2016 for claim 1199564.



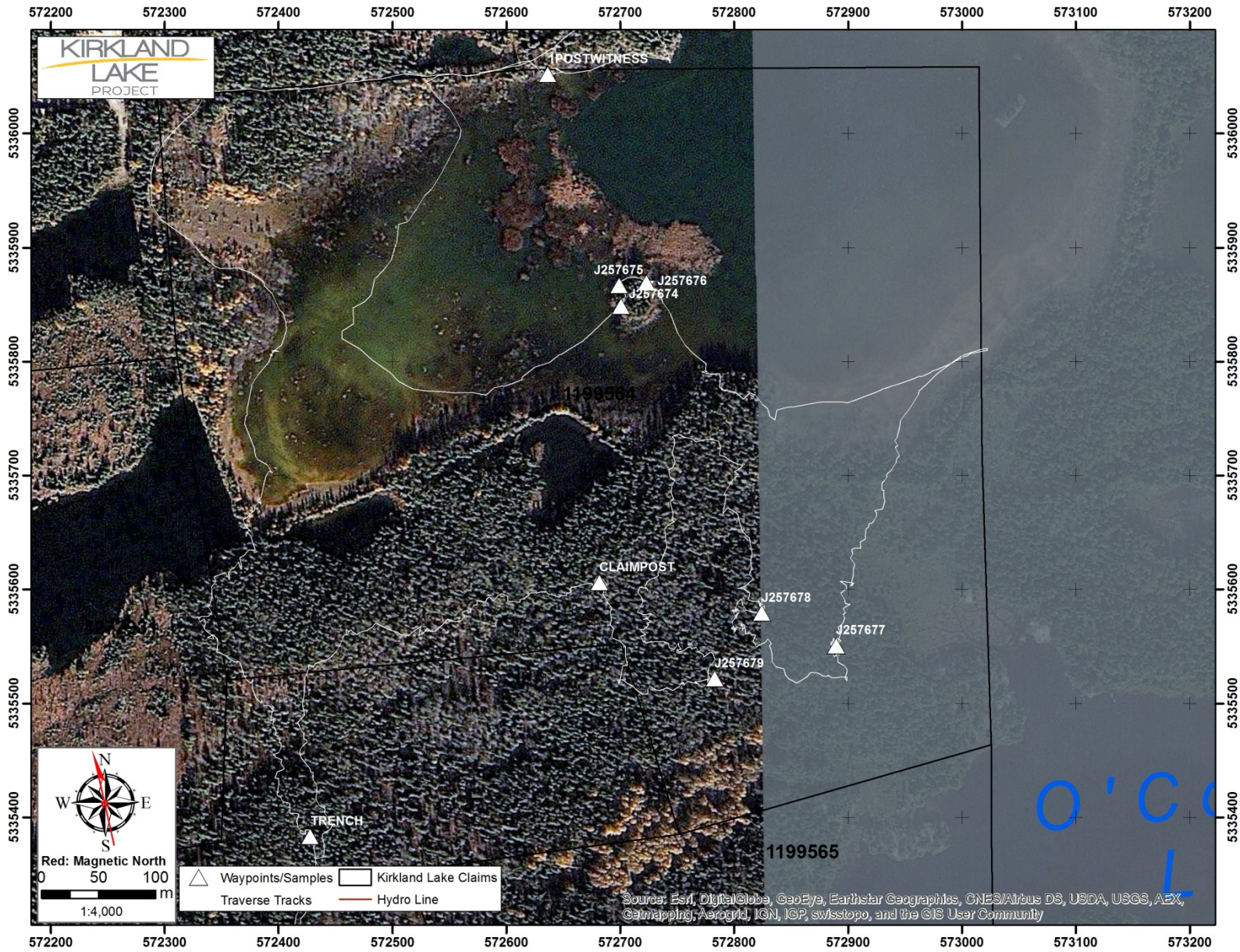


Figure 5: A 1:4,000 scale satellite map showing access and traverse tracks for claim 1199564.