

Ministry of Energy and Mines  
BC Geological Survey

**BC Geological Survey  
Assessment Report  
37247**

Assessment Report  
Title Page and Summary

TYPE OF REPORT [type of survey(s)]: Geophysical

TOTAL COST: 8146.40

AUTHOR(S): Angelique Justason SIGNATURE(S): <SIGNED> A.Justason

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S): n/a YEAR OF WORK: 2017

STATEMENT OF WORK - CASH PAYMENTS EVENT NUMBER(S)/DATE(S): 5652915 and 5663001

PROPERTY NAME: Hixon Gold

CLAIM NAME(S) (on which the work was done): Hixon Gold (1013059, 1051404 and 1042906)

COMMODITIES SOUGHT: gold, silver, lead

MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN: 093G.015, 093G.013, 093G.014

MINING DIVISION: Cariboo NTS/BCGS: 93G/07 and 93G/08: TRIM 093G.048

LATITUDE: 53 ° 26 ' 41.5 " LONGITUDE: 122 ° 29 ' 40.6 " (at centre of work)

OWNER(S):  
1) Tom Hatton 2) Angelique Justason

MAILING ADDRESS:  
Po Box 111, Wells BC V0K2R0 336 Front Street, Quesnel BC V2J2K3

OPERATOR(S) [who paid for the work]:  
1) same 2) same

MAILING ADDRESS:  
\_\_\_\_\_  
\_\_\_\_\_

PROPERTY GEOLOGY KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude):  
quartz, replacement, greenstone, tuff, Barkerville Terrane, Quesnel Terrane,

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS: 3384 ,7787, 8343, 9322,12129,16423,25689, 27776, 28644, 29467, 34649, 35658, 36159


# Self Potential Geophysical Survey at the Hixon Gold Mineral Claims

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Hixon Gold Mineral Claim Group  
Cariboo Mining District

NTS 093G/07 and 093G/08  
TRIM 093G.048  
Centered near 533560E, 5921880N (UTM Nad 83)  
(Lat/Lon: 53° 26' 41.5" N, 122° 29' 40.6" W)  
Mineral Claims 1013059, 1021404 and 1042906

Prepared for  
Tom Hatton and Angelique Justason  
(owners/operators)  
c/o PO Box 111  
Wells, BC  
V0K 2R0

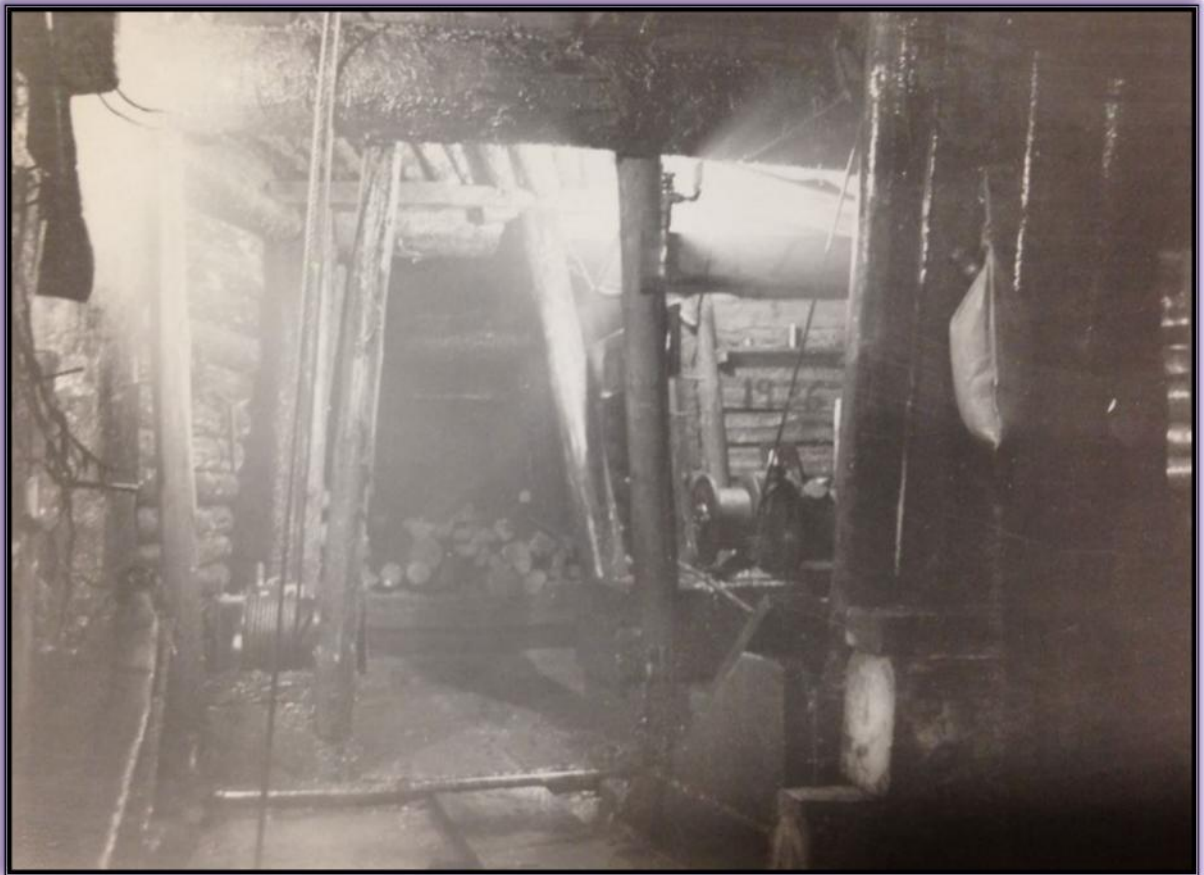
By  
Angelique Justason  
  
**Tenorex GeoServices**  
336 Front Street  
Quesnel, BC  
V2J 2K3

June 2018

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### Appendix 1: SP Geophysical Survey Data and Maps



Above Photo: 200ft level at the winze (October 1936)

## **Summary**

Angelique Justason and Tom Hatton acquired mineral rights at the 'Hixon Gold' claim group in August 2012 and have continued to expand the property since to a size of 2927.55 hectares. The property has an interesting history of hardrock exploration dating back to 1865 when visible gold was found in quartz during ditch construction to support the adjacent placer mining activities. By spring of 1866, Mr Hixon wrote the first prospecting report on the property and by summer of the same year lode gold developments were being made on the property. Numerous individuals and companies have since explored this property, developed hard rock and placer mines in general close proximity to one another, built mills and recovered gold, silver, lead and zinc here. The history here is quite detailed in most accounts and, until recently, little mine plan records, stope records, milling/production records have been found in the public record. The owners now have access to original records of the Quesnelle Quartz Mining Company and digitizing of these records are in progress.

The 2017 exploration program saw a 2.0 line kilometer self potential survey extension along the previous year's survey. The survey results highlighted possible fault zones, conductive and narrow rock units, or contacts. Additional gridded surveys are now recommended, especially at and adjacent to the Main Target area, along with other detailed mineral exploration and mapping activities throughout the property.

## Property Description and Access

The project area is located about four kilometers north east of Hixon, BC and straddles Hixon Creek. The contiguous 770.34 hectare ‘Hixon Gold’ property is made up of eight mineral claims and fully encompasses the historical Quesnelle Quartz Mine and other early mine developments. An additional 2157.21 hectares was acquired immediately adjacent the original group in July 2016 with focus on targeting the slivers of Barkerville Terrane which have been identified on regional geology maps.

Title Number	Claim Name	Owner*	Title Type	Map Number	Issue Date	Good To Date**	Status	Area (ha)
1011635	HIXON GOLD	111317 (50%) & 133276 (50%)	Mineral Claim	093G	2012/AUG/01	2017/NOV/20	GOOD	250.34
1011669	HIXON GOLD	111317 (50%) & 133276 (50%)	Mineral Claim	093G	2012/AUG/01	2017/NOV/20	GOOD	38.51
1011717	HIXON GOLD	111317 (50%) & 133276 (50%)	Mineral Claim	093G	2012/AUG/02	2017/NOV/20	GOOD	115.56
1011719	HIXON GOLD	111317 (50%) & 133276 (50%)	Mineral Claim	093G	2012/AUG/02	2017/NOV/20	GOOD	57.77
1013059	HIXON GOLD	111317 (50%) & 133276 (50%)	Mineral Claim	093G	2012/AUG/02	2017/NOV/20	GOOD	19.26
1013060	HIXON GOLD	111317 (50%) & 133276 (50%)	Mineral Claim	093G	2012/AUG/02	2017/NOV/20	GOOD	19.26
1021404	HIXON GOLD	111317 (50%) & 133276 (50%)	Mineral Claim	093G	2013/AUG/02	2017/NOV/20	GOOD	173.35
1042906	HIXON GOLD	111317 (50%) & 133276 (50%)	Mineral Claim	093G	2016/MAR/18	2017/NOV/20	GOOD	96.29
1045189	GOLD RIDGE 1	133276 (100%)	Mineral Claim	093G	2016/JUL/07	2017/NOV/20	GOOD	269.62
1045190	GOLD RIDGE 2	133276 (100%)	Mineral Claim	093G	2016/JUL/07	2017/NOV/20	GOOD	346.72
1045191	GOLD RIDGE 3	133276 (100%)	Mineral Claim	093G	2016/JUL/07	2017/NOV/20	GOOD	365.89
1045192	GOLD RIDGE 4	133276 (100%)	Mineral Claim	093G	2016/JUL/07	2017/NOV/20	GOOD	288.86
1045193	GOLD RIDGE 5	133276 (100%)	Mineral Claim	093G	2016/JUL/07	2017/NOV/20	GOOD	231.21
1045195	GOLD RIDGE 6	133276 (100%)	Mineral Claim	093G	2016/JUL/07	2017/NOV/20	GOOD	327.56
1045196	GOLD RIDGE 7	133276 (100%)	Mineral Claim	093G	2016/JUL/07	2017/NOV/20	GOOD	327.34

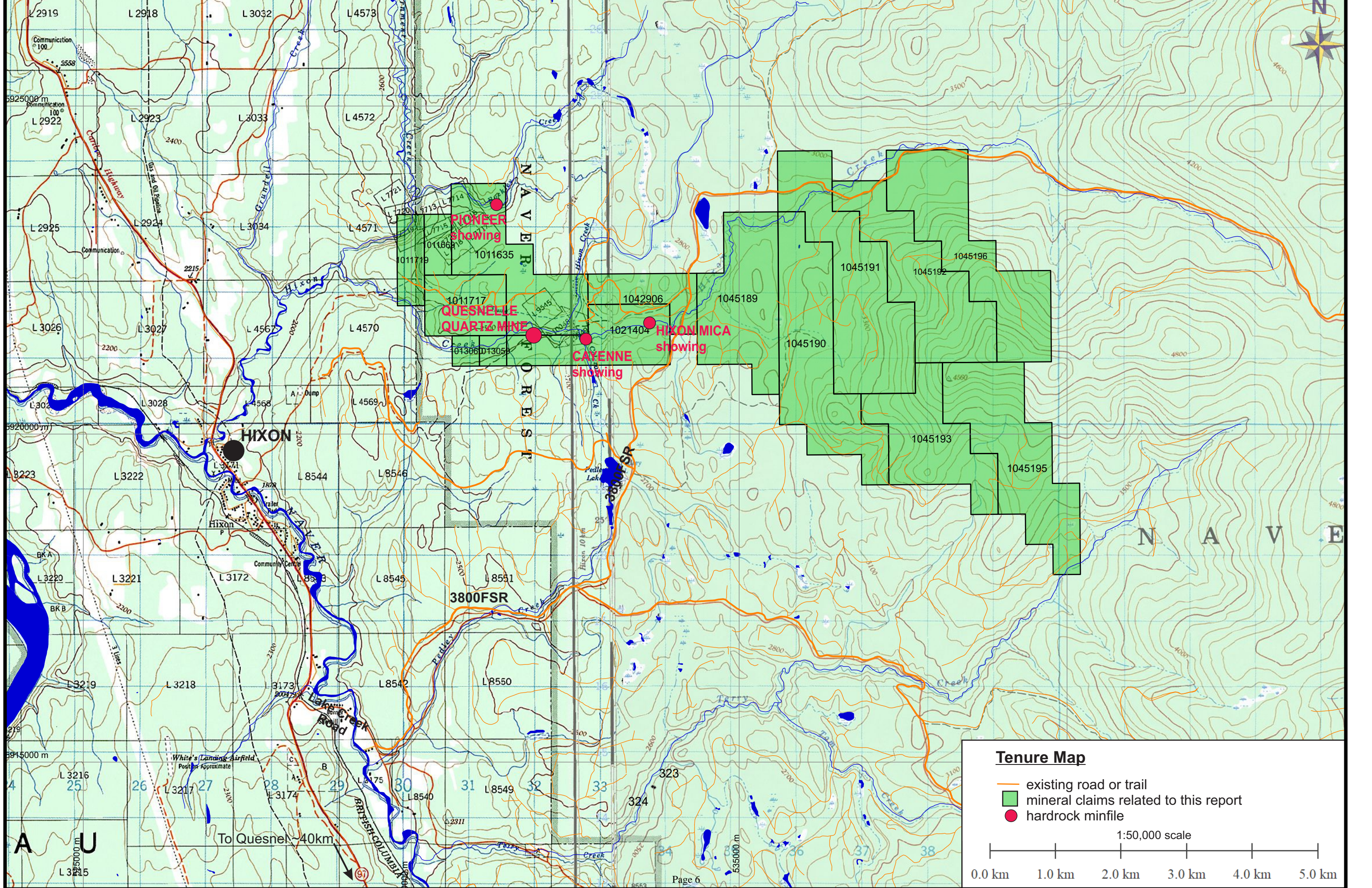
\* 111317 is Tom Hatton and 133276 is Angelique Justason

**TOTAL ha 2927.55**




\*\* good to date related to this report

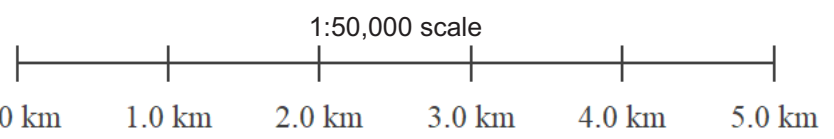
Direct access can be made to the property and work sites by forest service roads; which, mainly within the original Hixon Gold group, was partly constructed on the original mining access roads and ditchlines. Field personnel travelled to the property each day directly from Quesnel. Two access routes are available: one accesses the claim from the east using the 3800 Forest Service Road (FSR) off of Lake Creek Road (south of Hixon) and the other accesses the claim generally from the west at Hixon using Hixon Creek Road (located at the north end of Hixon). Elevations at the property range from 680 to 1450 meters above sea level. The property has seen much of the fir and spruce harvested in recent years and active logging in the area continues. Most roads remain open within the claim group and continue to provide excellent vehicular access from the months of May to November each year, although an unusually warm and dry winters has seen the season extended from March to end of November in recent years. The summer of 2017 was unusually dry and although not as high of a fire hazard rating as the rest of the Cariboo, work was carefully conducted in consideration of the exceptionally dry and hazardous year to be working in the bush. Vehicles were not parked in grass or allowed to remain idle along a grassy road along with other safety measures such as not digging with a shovel in the dry ground as sparks were observed when hitting certain rocks.

Several sets of Crown granted mineral claims have been located here. Most have long since reverted back to the Crown and been cancelled, including two in recent years: 10048 (Cottonwood Mineral Claim) and 10049 (Fractional Mineral Claim). The Washburn Lateral Claim, Lot9545, first granted in 1920 to Henry Carry, has both active surface and undersurface rights at present, and a more thorough historical search of this lot is recommended to determine, with certainty, the complete and accurate status of the lot. While this lot is in a prospective area, it is not known to contain any previous mine developments or encumber any access or activities at the Hixon Gold claim group.



**Tenure Map**

-  existing road or trail
-  mineral claims related to this report
-  hardrock minifile



## **Regional Geology** (extracted from Thomas, 2009, Open File 6225)

The area is underlain mainly by rocks of the Quesnel Terrane, but significant areas are underlain by the Slide Mountain and Barkerville Terrane. The most prominent geological feature of the area is the roughly pear-shaped Cretaceous Naver pluton, which is almost completely surrounded by Proterozoic(?) to Palaeozoic(?) rocks belonging to the Snowshoe Group. The southern tip of the pluton invades Middle - Upper Triassic rocks of the Nicola Group. The Barkerville Terrane is formed of Proterozoic(?) to Palaeozoic(?) metasedimentary rocks of the Snowshoe Group bounded on its western and northern margins and along most of its eastern margin by a single continuous thrust, the Eureka thrust. The terrane and the Naver pluton, together, are believed to form the core of a broad northwestward plunging arch, around which the thrust is folded (Struik et al., 1990). On the western, northern, northeastern and southeastern margins of the Naver pluton, the Snowshoe Group is represented by schistose quartzite, schist, phyllite, marble, amphibolite, siltite and minor quartzite, whereas along the eastern margin of the Barkerville Terrane the group includes orthoquartzite, schistose quartzite, schist and phyllite (Struik et al., 1990).

The Mississippian-Permian Crooked Amphibolite of the Slide Mountain Terrane occurs in discontinuous narrow units along the Eureka thrust west of the Naver pluton. The unit includes serpentinite, sheared ultramafic rocks, amphibolite and talc (Struik et al., 1990).

MapPlace shows the Quesnel Terrane to consist mainly of volcanic, volcanoclastic and sedimentary rocks belonging to either the Takla Group (north of latitude 53°N) or the Nicola Group (south of 53°N). In essence the groups represent the same stratigraphic interval; the arbitrary change in name at 53°N is presumably an artifact of mapping in different areas by different geologists. In this report, Nicola Group is adopted for this stratigraphic interval following the usage of Struik et al. (1990), who assign a Middle to Upper Triassic age. Volcanic and volcanoclastic rocks of this group are present west of the Naver pluton, in contact along the Spanish thrust with a narrow development of Nicola Group sedimentary rocks, which is separated from the pluton by a narrow belt of sedimentary rocks of the Snowshoe Group. The contact between the two sedimentary units is the Eureka thrust (Struik et al., 1990). Enigmatically, mapping by Moynihan and Logan (2009) failed to reveal evidence for thrust-sense shearing along the contact. They concluded that a large contrast in metamorphic grade between the units and the presence of normal-sense kinematic indicators near the contact were indicative of a normal fault or shear zone.

Struik et al. (1990) describe volcanic/volcanoclastic rocks of the Nicola Group west of the Naver pluton as augite porphyry basalt tuff, breccia, minor flows and tuffaceous argillite and siltite, together with local andesitic basalt. Sedimentary rocks of the group west, north and immediately east of the pluton include slate, argillite, phyllite, fine-grained and minor coarse-grained greywacke, and lesser amounts of tuff and tuffaceous siltite and argillite. In this area (near X on the regional geology map) Moynihan and Logan (2009) mapped the subunit as a black phyllite unit.

Also present in the Quesnel Terrane are scattered small developments of Oligocene-Pliocene conglomerate and coarse clastic sedimentary rocks, and small areas of Miocene-Pleistocene basaltic volcanic rocks belonging to the Chilcotin Group (Fraser Bend or Alexandria Formation).



The earliest intrusion in the survey area is a very small Early Jurassic syenitic- monzonitic intrusion within volcanic/volcaniclastic rocks of the Nicola Group just west of the Spanish thrust.

The largest intrusion in the survey area, and the most prominent geological feature, is the pear-shaped Early Cretaceous Naver pluton. It comprises mainly granite and granodiorite, and has yielded a U-Pb age of  $113 \pm 1$  Ma (Struik et al., 1992). It intrudes mainly the Barkerville Terrane.

Detailed property scale mapping will be conducted in future.

### **Mineralization** (partly extracted from Thomas, 2009, Open File 6225)

Metalliferous bedrock past producers in the survey area include the Pioneer and Quesnelle Gold Quartz properties located within sedimentary rocks of the Nicola Group, close to the boundary with volcanic/volcaniclastic rocks of the Nicola Group to the west. The Pioneer mineralization is within carbonaceous shale, and consists mainly of argentiferous galena and sphalerite within a quartz vein, which also yielded anomalous gold values. In 1927 four tonnes of ore was mined producing 809 grams of silver, 126 kilograms of lead and 2 kilograms of zinc.



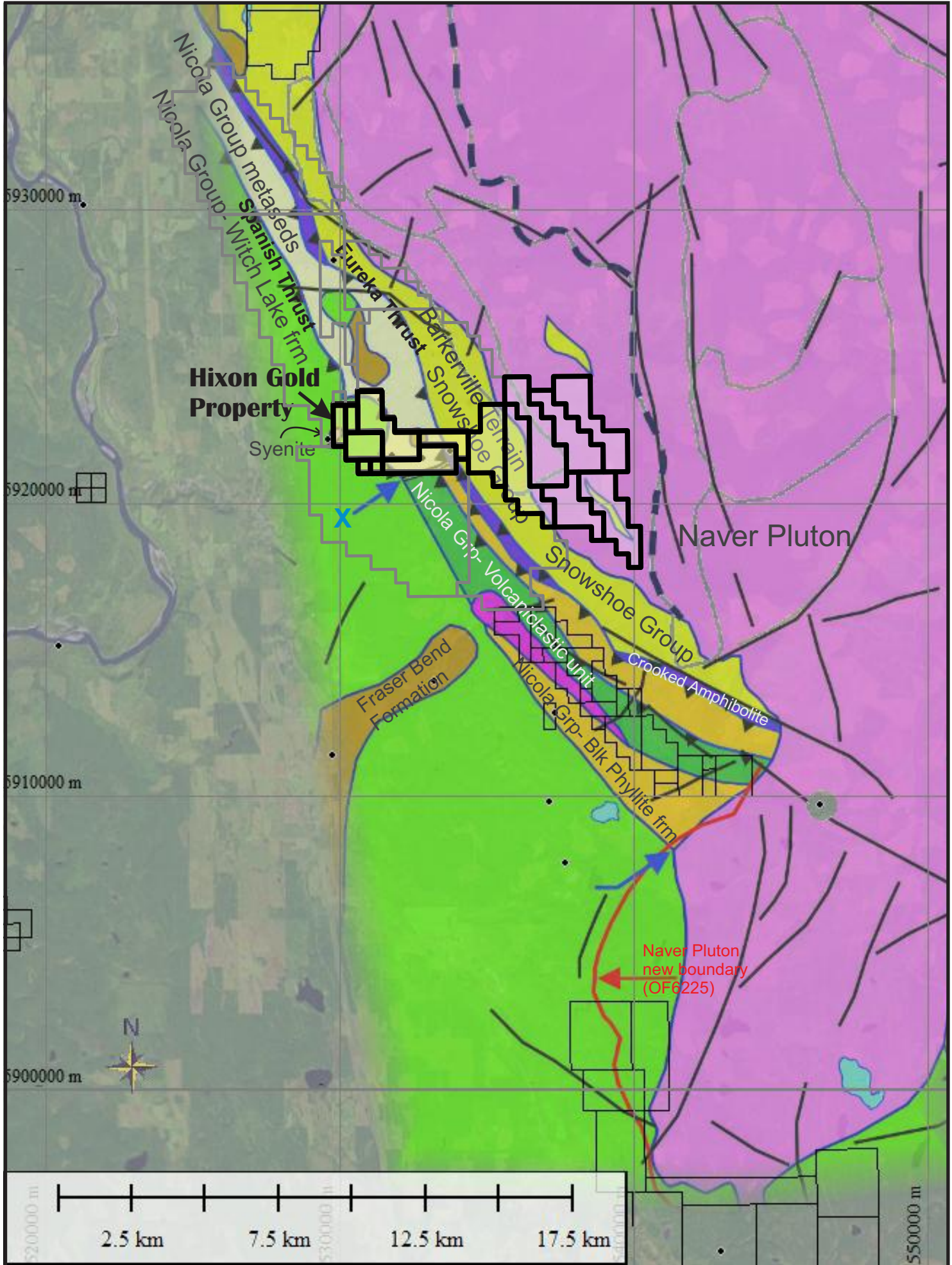
Above Photo: The East Drift face at 31ft, Level 5 (Nov.5, 1936)

In spite of its location within sedimentary rocks of the Nicola Group, the Quesnelle Gold Quartz deposit is reported to be associated with a highly sheared and hydrothermally altered zone within which greenstones contact quartz sericite schists. Steeply dipping, fairly closely spaced quartz veins, a few centimeters to about 1.8 m wide, occur in the greenstone near the contact. Gold mineralization occurs in the veins and the country rock. Mineralization includes native gold, native silver, galena, sphalerite, chalcopyrite, molybdenite, arsenopyrite, pyrrhotite and pyrite.

The Cayenne showing, containing gold and silver and lying just west of the Naver pluton, is also located on a metasedimentary subunit of the Nicola Group. It includes a 0.6 to 1.2 m wide quartz vein and several smaller quartz stringers cutting highly altered and weathered quartz sericite schist.

An industrial mineral showing of mica is located within the Barkerville Terrane near the east end of the property straddling both sides of Hixon Creek.

Regional Geology Map (georeferenced from Open File 6225)



## **Exploration History**

Mineral exploration and development at the Hixon Gold property has been intermittent since quartz excitement was first reported in 1865 when men working on the ditch here reported visible gold in quartz. The following synopsis offers only a brief and partial account of hardrock exploration and mining activities at the heart of the property, the area nearest the Quesnelle Gold Quartz Mine, since first discovered in 1865.

The first recorded prospecting party to visit the property with specific intent of inspecting the newly discovered lode gold mineralization was reported in late spring of 1866. Mr JF Hixon and his prospecting party set out for the creek on May 9, 1866 and returned to report to Mr WR Spalding on June 14, 1866. (Cariboo Sentinel, July 9, 1866 and The British Colonist, June 21, 1866)

By September 1866, shafts are reported to have been sunk on the Stewart and Washburn Locations (Cariboo Sentinel, Sept 24, 1866) and the first arrastras were reported to be built onsite(?) by a Mexican man, familiar with their function, in 1867. Reports indicate gold was often panned from the oxidized rock near and at surface.

By Russell and Bowman's inspection of the property in 1878, 1885 and 1886, numerous developments had been made at various locations within the Crown Granted Mineral Claims located along a series of auriferous ledges as shown on the snapshot of his map (attached).

Development activities on the quartz continued on and off over the years until 1933 when the Quesnelle Gold Quartz Mining Company Ltd (NPL) continued more active development on the property before finally erecting a 25T/day cyanide test plant in winter of 1938. The mill had a capacity to crush up to 50T/day. Over 4000 feet of tunneling was reported here (this number has yet to be confirmed against the mine plans and survey data). MinFile records indicate that 207oz gold and 275oz silver was produced from 2257 tons of rock. Drilling, geology, muck sampling, assay records of muck and rock are noted in text of some documents but detailed map records and are sporadic and incomplete for this five year period of development. The location of replacement ore is of specific interest as it is known to exist at the property and was observed onsite by the present owners in 2013. More details may come available as additional resources are located and digital records are updated on the internet or found in publicly accessible archives. As these details are located and digitized, they will be added to the 3d model and database as an ongoing project and reported in near future with a more thorough geological report on the property.

Early development here met many difficulties including the management of a surplus of groundwater, access to rail for supplies and heavy equipment, access to a qualified assayer and, later on, access to Barkerville/Richfield, political debate (and denied requests) about engineering roads from Barkerville to the mines at Hixon Creek, posting then pricey bonds for mining roads, paying insurance premiums, locating and keeping quality employees/management, as well as the other numerous issues most mines faced then (and now) including all the wartime hardships. The Quesnelle Gold Quartz Mine temporally

shut down the mill in March 1939 after completing its first bulk sampling activities on 4 levels but additional development work, including drilling of the lower levels, was planned to continue (The Prince George Citizen, March 30, 1939). Unfortunately, by July of the same year the Company was liquidating its assets (The Prince George Citizen, July 6, 1939: page 6).

More recent mineral exploration at the property has been recorded in various reports including regional geological surveys and more detailed works which are recorded in the provincial government Assessment Report Indexing System (ARIS). Select highlights are mentioned hereafter.

In the early 1970's, Bethlehem Copper Corporation conducted geological mapping, geochemical surveys (579 soil samples of select elements) and surface four drill holes totaling 450 meters.

In 1979, Esperanza Explorations optioned the ground from Vic Guinet and Andrew Harman. Limited geological investigations were made and select rock samples were assayed (ARIS 7787)

By 1983, Golden Rule Resources continued on with geological mapping, geophysical surveys, geochemical surveys and 4 drill holes totaling 354 meters.

In 2000, reclamation work was completed near the Briscoe Pit and at the Quesnelle Gold Quartz Mine and Mill Site. It was carried out under Section 17 of the Mines Act at a cost of \$5,900 paid for under the consolidated revenue fund. The contract was awarded to Lawayne Musselwhite and basic report provided by Brian McBride, Inspector of Mines for the 24<sup>th</sup> Annual BC Mine Reclamation Symposium in Williams Lake in 2000.

From 2004-2008, Cayenne Gold Mines Ltd conducted exploration at their property which included the present claim group and ground near Pedley Lake. 8 drill holes were recorded with a total length of 1452 meters and the majority of the drill logs and assays are recorded in the present database but not otherwise discussed in this report. Additional recorded work includes trenching, geochemical surveys and geologic mapping.

In August 2012, the property was allowed to lapse and the present owners acquired a portion of the forfeited ground which included the main historical workings of the Quesnelle Gold Quartz Mine, Washburn Ledge, Stewart Ledge, Morrison Ledge and the Pioneer Mine.

In August 2013, additional contiguous mineral rights were acquired to the east and included the



Cayenne and Mica showings. Grassroots exploration and detailed research is ongoing.

In 2012 and 2013, 3,14 Lkm self potential geophysical surveying was conducted and strong correlations were made to known mineralized zones where gold and silver mining was previously conducted. The northern extension of the conductive anomalies are defined (so far) 500m to the northwest of the historical minesite, highlighting additional mineral potential here, and is open to the northwest and to the southeast.

In 2014, nine rock samples were taken from the vicinity of the Quesnelle Quartz Mine and adjacent reverted Crown granted mineral claims. Weakly calcareous rock (possible replacement) with 30-50% sulphides were assayed and returned anomalous values up to 7.25g/t gold and 30.7g/t silver.

In late 2015, the Cottonwood and Cottonwood Fraction Crown granted mineral claims were cancelled and reverted back to the Crown, giving 100% mineral rights in that area to the overlapping Hixon Gold claim group owners via BC Mineral Titles.

In March 2016, additional ground was staked and a 2.5Lkm self potential geophysical survey was conducted.

In July 2016, the Gold Ridge mineral claim group was staked.

2017 saw 2.0Lkm self potential geophysical surveying conducted along each end of the 2016 survey and is subject of this report.

## **2017 Exploration**

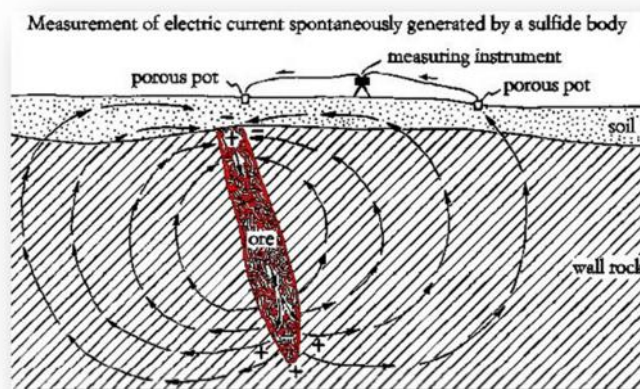
2017 exploration was conducted by Tenorex GeoServices and included preparing and conducting 2.0 line kilometers of ground for a self potential geophysical survey. Both the western and eastern ends of the 2016 survey was extended, in addition to another section of road and forested area along the eastern edge of the survey area. The road surveys, except for the tie in station along the main forest service road, were tight changed to 10m lengths and pink flagging put on the ground or nearest vegetation to mark the station locations. Most ribboned locations that were hung up were labelled in the field with a permanent black marker with the last four digits of the UTM Nad83 easting. The purpose of the survey was to highlight possible mineralized rock or veins, faults or contact zones which may be buried under glacial till and overburden of unknown depths.. The strike of the roads in this area make for a good reconnaissance survey as it crosses the target areas nearly perpendicular to the strike of the regional geological contacts, faults and strike veins. Anomalous readings were outlined and more detailed exploration is planned to continue.

### Survey Procedures and Methodology

The self potential geophysical method involves the measurement of naturally occurring electrical potentials between two points on the surface of the earth. It is a passive method which does not involve the introduction of sound waves, electrical currents or other intrusive mechanisms. This method, with

some operator experience, can give an indication of possibly locations economic deposits related to stratabound sulphide mineralization, or otherwise, by qualitatively analyzing the final data in both plan view and profile view of the corrected data. It has been found by the author to be an invaluable tool in outlining signatures which represent sulphide rich and economically important vein deposits, replacement type gold deposits, fault structures and their displacement, geologic contacts, lithologic correlation, stratigraphic markers and underground workings.

The equipment needed for a self potential survey is relatively simple and Tenorex's survey equipment consisted of a spooled length of 16gauge insulated copper wire, two non-polarized *Stelth and Tinker & Rasor* brand reference electrodes in a supersaturated solution of its own salt and a *Tinkor & Rasor CPV-4* digital voltmeter. An electrode is placed on each end of the spooled wire with an in-line voltmeter attached. The electrodes are placed on the ground at a known distance from one another and millivolt values are recorded along with any special notes about the soil or surrounding features. The measurement represents the naturally occurring electrical potential difference of the ground directly below the forward mobile electrode in relationship to the fixed electrode and has been found to correlate with conductivity. The values *do not* indicate the amount of gold, silver or any other economic values, nor does it detect depth of an anomaly but, this method can predict the presence of conductive metals and elements such as pyrite, pyrrhotite, chalcopyrite, covellite and graphite.



There are two different ways of setting up the equipment in the field to gather the field data: the roving pot or the leap frog method. Each has their advantages and disadvantages, but the end result is the same.

- The roving pot method involves leaving the negative pot at a stationary point while the positive pot is moved forward along the grid at points where readings are to be recorded until the length of wire on the reel is at its maximum or the area of interest is covered. This arrangement is best suited for large surveys.
- The leap frog method, on the other hand, uses a fixed short length of wire between the negative and the positive pot. At the start of each line, the positive pot is the forward pot; however, in order to move along the line after the initial reading, the negative pot is 'leap-frogged' past the positive pot to the next station. A reading is taken but because the negative pot is now the forward pot, the sign of the reading taken with the voltmeter must be reversed, as such with every time the negative pot is the forward pot. Calculations tend to be more tedious but this method helps to help minimize the effects of telluric activity on the survey results.

Careful planning should be considered when arranging a self potential survey: one should conduct an initial field inspection to determine the placement of the base station and orientation of the grid on which

the survey will take place. In most cases, a grid has already been established by previous exploration programs. The preferable placement of the base station and the grid's base line is in barren ground, or ground which is not expected to be anomalous. It should also be traversed to be sure any control stations are not in marshy or rocky areas. The orientation of the grid is best suited to be perpendicular to the strike of the country rock or perpendicular to the general expected trend of the potential anomaly. Line spacing and station spacing should also be carefully considered, depending on the target area and type.

Typical surveys have control stations established where each cut line crossed the baseline. The measurements taken at each control station are subsequently corrected to represent a value relative to the original base station which is given an arbitrary value of zero millivolts. During the survey, the shaded base electrode is firmly seated within the B- horizon of the soil at the base station location. The traveling electrode, which is connected to the positive voltmeter input, is placed in a hole dug down to the B-horizon of each sample site and protected from sunlight. Holes are consistently dug to a depth where the pots can be placed in the B-horizon, but it sometimes necessary to skip a station due to subcropping or outcropping of the country rock, significant man made disturbances or discovery of water or wetlands. A note should be made in whichever case may arise.

In the 2017 surveys, the lines were established along the edge of preexisting trails, mostly due to traffic concerns, and one section was run with an eastern bearing through the timbered area as indicated on the map: no grid was established for these reconnaissance surveys. The section of survey along the south eastern road spur and its joining with the middle survey line was conducted using the roving pot method and without a helper, making for slower progress than typical.

### Considerations in Qualitative Analysis

#### *Geology*

The self potential method is used in mineral exploration to outline sulphide bodies which contain pyrite, pyrrhotite and/or chalcopyrite. The equipment responds to good conducting sulphides, both oxidized and unoxidized bodies, graphite and oxidizing disseminated sulphides. Another feature of the self potential method is its ability to differentiate between anomalies caused by sulphides and anomalies caused by graphite. Sulphides typically produce a range of up to 350mV between the most positive and the most negative self potential readings while graphitic zones have a larger range between its most positive and its most negative values, typically up to several hundred millivolts. One must be careful not to rule out that graphitic zones may also contain sulphides or prospective veins. The self potential method has also been found by Tenorex to be useful in highlighting geologic contacts/units, fault zones and various prospective zones in exploration programs where rock exposure is minimal.

#### *Ground Conditions*

It is very important to note features encountered in the field that may affect the interpretation of the final self potential data. This may be ground disturbances, possible underground workings, presence of

oxidizing metal objects, known subcropping or outcropping of rocks, a high water table, known hydrocarbon contamination –anything notable that may affect the interpretation of the final data as each feature could affect self potential readings recorded while in the field. Ground disturbances made by man may skew reading either to the positive or to the negative depending on the type of disturbance. The varying depth of subcrop below surface is also important to consider. A graphitic unit, for example, located 20 feet below overburden will have a stronger negative self-potential reading than that of the same unit found at a depth of 100 feet below overburden. The clay content in overburden also affects self potential readings: it will mask an otherwise anomalous area. Also, any area encountered in the field with significant water content should be noted as it will invariably cause reading to be more positive than if the water was not present. It is also important to consistently remove the moss from the ground at each station in order to take a reliable measurement. Moss and rotting debris found in the varying thickness of the A-horizon also has a tendency to hold some amount of water also varying from one place to another and, of course, does not hold conductive properties. In conclusion, solid contact with the B-horizon must be insured at each station and ground conditions should be noted to make for the most reliable measurements and qualitative interpretation.

### *Telluric Currents*

Geomagnetic storms, induced by activity originating from the sun, typically diminish the reliability of self potential readings. It is, however, very easy to detect when such a storm is taking place while conducting a self potential survey. It has been observed in the past that if self potential readings are taken while a significant geomagnetic storm was active, readings will fluctuate sporadically with no commonly recurring value. It has been observed that readings can randomly ‘jump’ around up to a range of plus or minus 40 millivolts at any given point during an active storm. Reliable measurements are usually next to impossible to obtain during such solar activity. In an effort to track these solar events, real time solar activity data was observed at [www.spaceweather.com](http://www.spaceweather.com). If data cannot be observed while in the field, a chart of recent solar data is also available at the website. The solar wind data, velocity and proton density, presented on spaceweather.com is updated every 10 minutes and has been useful during all geophysical programs. The solar wind data is derived from real-time information transmitted to Earth from the ACE spacecraft and reported by the NOAA Space Environment Center. The ACE spacecraft is located at a point between the earth and the sun which enables it to give about a one hour advance warning of impending geomagnetic activity.

Tenorex’s general practice is to observe the density of protons per cubic centimeter before and after each self potential survey, and when possible, during each survey. Predicted activity is also observed for project planning purposes. If a large solar flare is actively hitting the earth’s atmosphere, a self-potential survey is found to be unreliable and has to be put on hold until the storm subsides. If SP readings were found to be sporadic while in the field, after checking all wire contacts, ground contacts, and checking the pots for any cracks, communication was made with base camp, if possible, to confirm if there was any significant solar activity. When returning to the field after such solar activity has settled, all the values for the line worked on the previous field day should be rechecked, corrected or redone, if



necessary, to confirm the accuracy of the data before work on subsequent lines commenced. No significant solar activity was noted for the days of the survey.

### *Topographic Effect*

Topographic highs and lows must be considered when interpreting the self potential data. Topographic lows or flat lying areas may have a high water table and even be marshy. Such areas tend to produce strong positive values. If an anomalous zone should occur here it may not be as apparent. In contrast, a topographic high or a very low water table tends to produce strong negative values. It is, however, possible to dampen the effects of topography on self potential readings. The two prepared pots must be placed in two separate canvas bags filled with damp loam or sawdust. Both pots are then in contact with medium of constant pH and the influence of varying acidity is strongly attenuated. As a result, readings become more uniform, the background displays a narrower range, anomalies at or near swamps and meadows are better defined and anomalies on hills are less negative and less exaggerated (Burr, 1982).

Although this method of dampening the effects of topography is not practiced by Tenorex on a regular basis, the topographic highs, lows and marshy areas are carefully considered in the final interpretation of the self potential data.

### *Wire Conditions*

On rare occasions, the spool wire may break or may have become exposed. In addition, it is possible that the connectors between the wire and pots or the wire and voltmeter may have become loose or disconnected. Care must be taken to not kink or pull excessively on the wire and also to not pull on or bend the wire at the connectors. Spurious readings may result and broken wires can add cause much delay to a survey.

### *Radio Transmission*

Use of hand held radios for communication between the field crew is very important while conducting a self potential survey using the long wire method; however, it can also impede the survey or corrupt the raw data gathered in the field. Self potential readings must not be taken while transmitting over a hand held radio. The radio transmission interferes with the voltmeter and skews the values. The person taking the readings can, however, receive a transmission without skewing the data; but it is very important for this person not to transmit while transcribing the readings.

## Results and Discussion

The 2017 self potential survey data is presented in Appendix 2 and shows the corrected data found for each survey station. A total of 183 stations were measured over a total distance of 2.0 line kilometers. As recommended in the 2016 report, the self potential survey stations were tight chained and a spacing of 10m was chosen. After the field survey, the data was processed using excel, corrected and analyzed. The corrected data is also plotted on the attached maps. The western end of the road survey and the eastern survey area has not yet been tied to the 2016 survey area, as the 2016 survey itself still has to be physically tied to each other at Hixon Creek when it is physically safe to do so. Knowing that, interpretation of the data is not otherwise affected.

. The following was outlined upon review of the final data:

- The western line appears to have one 50m wide conductive anomaly and may be in response to a graphitic rock unit, possible mineralized veins (southern extension of the Hercules Shaft <1860s?>) and/or fault zone.
- The western line had more sporadic looking values than anticipated and may or may not be a function of solar flares which wasn't otherwise noted or perhaps a loose wire. A short check survey should be conducted if found necessary. E8 and E55 were the most negative values with anomalous values of -37 and -40mV along two narrow sections.
- The middle line in the timbered area is tied to the eastern line and shows one generally weak anomaly at station m4 at -48mV.
- Station S11 with a reading of -21mV was the most negative or noteworthy reading found on the short spur road located just north of Hixon Creek at the eastern portion of the survey area. This may be related to the -48mV reading picked up on the line to the north and may be a fault zone or contact between differing rock units.

The continued reconnaissance self potential geophysical survey of 2017 highlighted two conductive anomalies which may be related to mineralization, faults and/or geologic contacts. The property and future mechanical exploration program may well benefit from a gridded mobile metal ion soil sampling program and or self potential geophysical survey. These, especially the SP survey, will help to delineate the best target areas with much precision for trenching and drilling. A database of historical sampling and drill core samples etc should be continued in support of future exploration programs. Detailed and systematic mineral exploration is highly recommended and should include an IP survey nearest the main target area to highlight prospective structures at depth, MMI soil sampling, a gridded SP geophysical survey and detailed bedrock mapping and rock sampling across the entire property.

## Statement of Qualifications

I, Angelique Justason of Quesnel, British Columbia certify the following:

- I am 50% owner of the Hixon Gold mineral claims and 100% owner of the contiguous Gold Ridge mineral claims.
- I planned and conducted the 2017 geophysical survey at the Hixon Gold property.
- I am experienced in building and using self potential geophysical equipment.
- I have studied geology and earth science at Camosun College and the University of Victoria.
- I have successfully completed and received certificates for the Advanced Prospecting Course (1992) and Petrology for Prospectors Course (1993).
- I have 4 seasons work experience with the BC Geological Survey and the Geological Survey of Canada assisting with various regional mapping projects throughout BC and the Yukon.
- I was employed in the Cariboo Region as a junior geologist, prospector and mine surveyor for over 9 years and held a supervisory position for over 6 years, also assisting with permits and reports and other duties as needed.
- I have been an avid prospector for over 27 years and have spent the last 18 years conducting mineral exploration activities in the Cariboo area.

Signed,



Angelique Justason

**Cost Statement**

For assessment work conducted March 26, June 14, July 2, August 19-20, 2017.

Tenorex GeoServices: prep & geophysics (11man days @ 477.27/day).....	\$ 5250.00
4x4 truck (605km @0.68/km).....	\$ 411.40
Chain saw (prorated day rate for minor use one morning only: 1/3 <sup>rd</sup> of \$30/day)..	\$ 10.00
Self potential equipment rental (3 days @ \$25/day).....	\$75.00
Research, data entry, GIS and report (40 hrs x \$60/hr).....	<u>\$ 2400.00</u>
	\$8,146.40

**Total Assessment Credits Applied \$7,903.60**

*Value requested to be to be deposited to Angelique Justason's PAC account = \$ 242.80*

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Struik L.C., et al (1990). Geological Survey of Canada, Open File 2172, Geology of Prince George (East Half), Map Area (93G/E).

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### **Websites**

GeoGratis

<http://www.geogratias.gc.ca>

MapPlace

<http://www.empr.gov.bc.ca/Mining/Geoscience/MapPlace/Pages/default.aspx>

EMPR Property Files

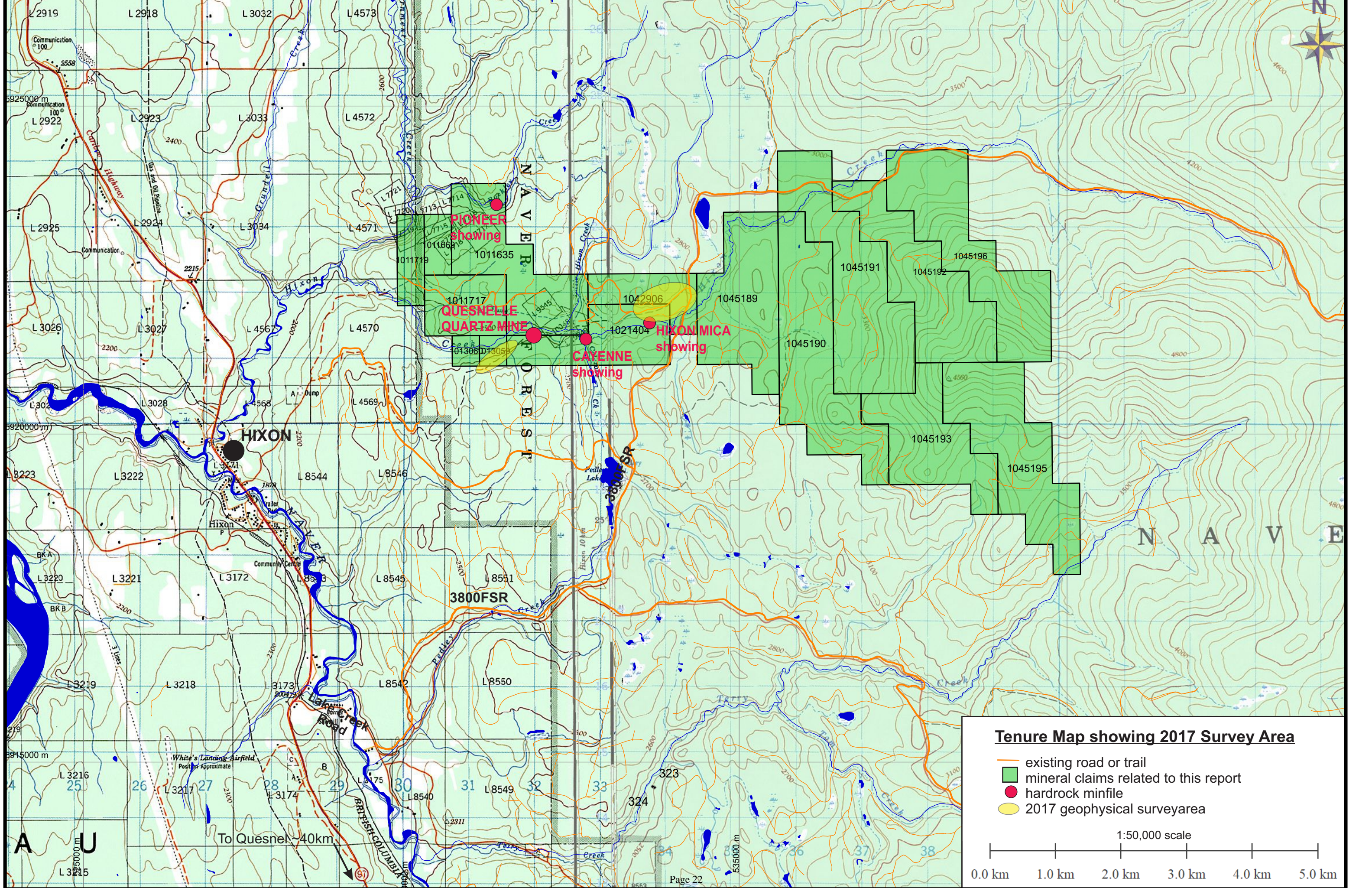
<http://propertyfile.gov.bc.ca>

Various historical newspaper archives from all over North America including:

<http://historicalnewspapers.library.ubc.ca>

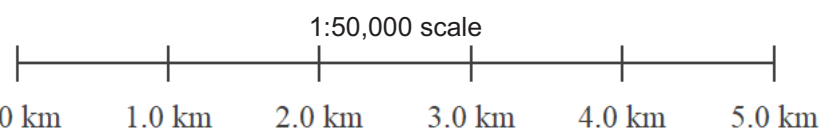
<http://pgnewspapers.lib.pg.bc.ca>

**Appendix 1:**  
**SP Geophysical Survey Data and Maps**



**Tenure Map showing 2017 Survey Area**

- existing road or trail
- mineral claims related to this report
- hardrock minifile
- 2017 geophysical survey area



A U  
L 3215

To Quesnel ~40km



2017 Self Potential Geophysical Survey

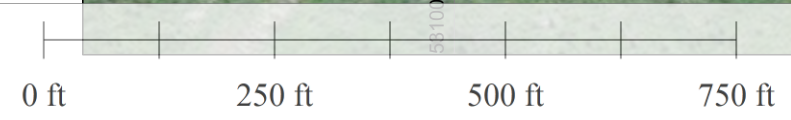
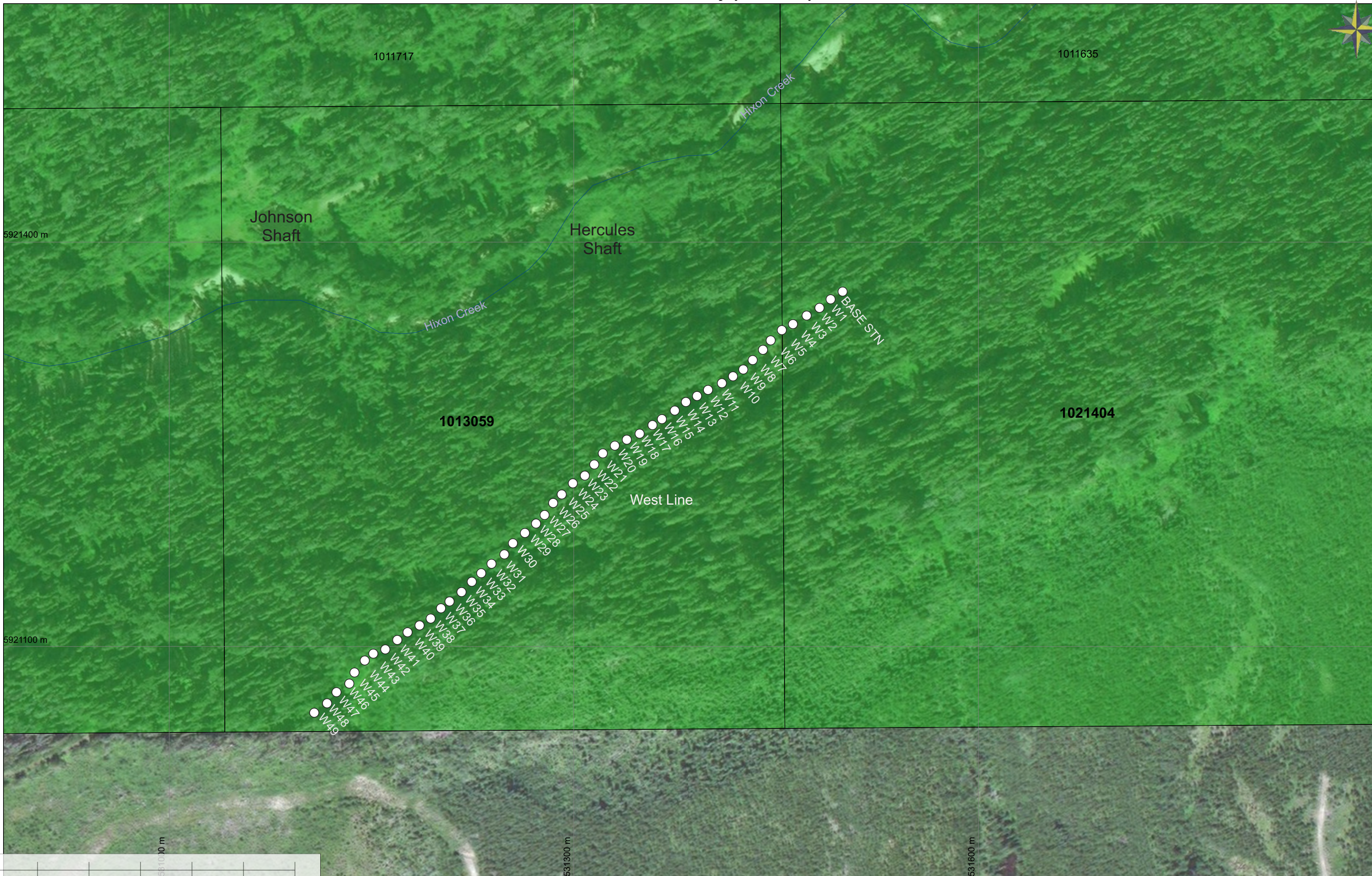
UTM E	UTM N	LINE	ID	reading(mV)	corrected(mV)	note
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531490	5921357	west	W1	-3	-3	centerline of road
531482	5921351	west	W2	-3	-3	middle of road
531472	5921346	west	W3	-6	-6	middle of road
531464	5921340	west	W4	-5	-5	the west line stations are in middle of road unless otherwise stated
531454	5921335	west	W5	-12	-12	
531446	5921328	west	W6	32	-32	
531440	5921321	west	W7	-9	-9	
531433	5921313	west	W8	-3	-3	
531426	5921305	west	W9	4	4	
531418	5921300	west	W10	5	5	
				-		new substn at last
531410	5921295	west	W11	1	6	
531401	5921290	west	W12	1	6	
531392	5921287	west	W13	-2	3	
531384	5921281	west	W14	-2	3	
531375	5921275	west	W15	-2	3	
531366	5921269	west	W16	-2	3	flucuating +/-5
531358	5921264	west	W17	-3	2	flucuating +/-5
531348	5921258	west	W18	-8	-3	flucuating +/-5
531339	5921253	west	W19	-16	-11	
531330	5921249	west	W20	-17	-12	
531322	5921243	west	W21	-25	-20	
				-		
531315	5921234	west	W22	-19	-39	
531308	5921226	west	W23	-30	-50	
531300	5921221	west	W24	-120	-140	
531292	5921213	west	W25	-170	-190	
531285	5921206	west	W26	-99	-119	
531278	5921198	west	W27	-40	-60	
531270	5921190	west	W28	5	-15	
531263	5921183	west	W29	5	-15	
531254	5921176	west	W30	7	-13	
531248	5921168	west	W31	26	6	
531239	5921161	west	W32	26	6	
531231	5921154	west	W33	18	-2	
				-		
531223	5921148	west	W34	-7	-9	
531217	5921141	west	W35	-15	-17	
531209	5921135	west	W36	-10	-12	
531202	5921129	west	W37	8	6	
531194	5921121	west	W38	6	4	
531185	5921117	west	W39	-15	-17	
531177	5921111	west	W40	8	6	
531169	5921106	west	W41	0	-2	
531161	5921098	west	W42	0	-2	
531151	5921097	west	W43	1	-1	
531145	5921089	west	W44	-1	-3	
531138	5921081	west	W45	6	4	

UTM E	UTM N	LINE	ID	reading(mV)	corrected(mV)	note
531133	5921072	west	W46	-3	-5	
531124	5921065	west	W47	0	-5	
531117	5921057	west	W48	2	-3	
531108	5921051	west	W49	2	-3	end of line
533510	5921857	east	E1	-	0	
533520	5921861	east	E2	2	2	
533529	5921863	east	E3	2	2	
533539	5921866	east	E4	6	6	
533548	5921871	east	E5	-4	-4	
533558	5921875	east	E6	-5	-5	
533567	5921880	east	E7	-34	-34	
533576	5921885	east	E8	-40	-40	
533586	5921887	east	E9	-8	-8	
533596	5921891	east	E10	0	0	
533606	5921894	east	E11	0	0	
533615	5921895	east	E12	2	2	
				-		
533626	5921897	east	E13	-4	-2	
533636	5921899	east	E14	-4	-2	
533646	5921900	east	E15	-8	-6	
533656	5921900	east	E16	-20	-18	
533666	5921901	east	E17	-12	-10	
533676	5921901	east	E18	-34	-32	
533687	5921900	east	E19	-20	-18	
533696	5921903	east	E20	-13	-11	
533706	5921904	east	E21	-15	-13	
533716	5921907	east	E22	-28	-26	
533726	5921911	east	E23	-5	-3	
533735	5921915	east	E24	-6	-4	
533746	5921918	east	E25	0	2	
				-		
533756	5921921	east	E26	4	6	
533765	5921924	east	E27	7	9	
533775	5921925	east	E28	-10	-8	
533785	5921928	east	E29	0	2	
533795	5921930	east	E30	8	10	
533804	5921932	east	E31	10	12	
533813	5921934	east	E32	14	16	
533824	5921936	east	E33	5	7	
533834	5921939	east	E34	-7	-5	
533843	5921941	east	E35	-25	-23	
533853	5921944	east	E36	-12	-10	
533863	5921945	east	E37	-5	-3	
533872	5921949	east	E38	-5	-8	
533882	5921952	east	E39	-6	-9	
533891	5921958	east	E40	-8	-11	
533899	5921965	east	E41	-11	-14	
533906	5921972	east	E42	-13	-16	

UTM E	UTM N	LINE	ID	reading(mv)	corrected(mv)	note
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533919	5921987	east	E44	1	-2	
533926	5921994	east	E45	-6	-9	
533933	5922001	east	E46	-5	-8	
533940	5922008	east	E47	-14	-17	
533947	5922016	east	E48	5	2	
533953	5922024	east	E49	5	2	
533961	5922030	east	E50	-4	-7	
				-		
533967	5922038	east	E51	0	-7	
533976	5922044	east	E52	-3	-10	
<b>533983</b>	<b>5922051</b>	<b>east</b>	<b>E53</b>	-7	-14	
533991	5922057	east	E54	-13	-20	
533998	5922063	east	E55	-30	-37	
534006	5922069	east	E56	-5	-12	
534013	5922075	east	E57	-4	-11	
534022	5922081	east	E58	3	-4	
534029	5922088	east	E59	3	-4	
534037	5922093	east	E60	7	0	
534045	5922099	east	E61	3	-4	
				-		
534052	5922107	east	E62	0	-4	
534060	5922114	east	E63	-9	-13	
534066	5922121	east	E64	-12	-16	
534074	5922126	east	E65	5	1	
534081	5922134	east	E66	4	0	
534089	5922140	east	E67	8	4	
534096	5922146	east	E68	10	6	
534103	5922153	east	E69	3	-1	
534111	5922160	east	E70	9	5	
534118	5922167	east	E71	8	4	
534126	5922174	east	E72	6	2	
534133	5922182	east	E73	6	2	
				-		
534140	5922189	east	E74	0	2	
534149	5922196	east	E75	1	3	
534156	5922201	east	E76	7	9	
534164	5922208	east	E77	1	3	
534172	5922214	east	E78	6	8	
534179	5922221	east	E79	0	2	
534189	5922226	east	E80	0	2	
534197	5922229	east	E81	-4	-2	
534208	5922230	east	E82	-2	0	
			E53	-	-14	tie to the middle forested line
533990	5922045	mid	m1	3	-11	survey runs west to east
534004	5922045	mid	m2	-9	-23	
534010	5922045	mid	m3	-25	-39	
534020	5922046	mid	m4	-34	-48	
534032	5922046	mid	m5	-12	-26	
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534050	5922046	mid	m7	-4	-18	

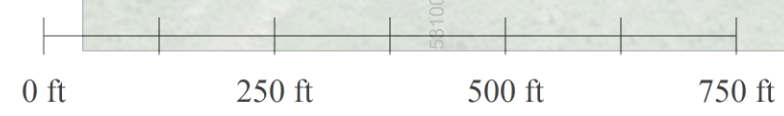
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534082	5922047	mid	m10	0	-14	
534091	5922047	mid	m11	3	-11	
534100	5922048	mid	m12	5	-9	
534110	5922048	mid	m13	10	-4	
534121	5922048	mid	m14	-5	-9	
534131	5922048	mid	m15	-17	-21	
534141	5922048	mid	m16	-7	-11	
534150	5922049	mid	m17	-10	-14	
534162	5922047	mid	m18	-5	-9	
534170	5922049	mid	m19	-8	-12	
534182	5922048	mid	m20	-8	-12	
534191	5922050	mid	m21	-7	-11	
534201	5922049	mid	m22	-3	-7	
534211	5922048	mid	m23	-4	-8	
534220	5922049	mid	m24	-8	-12	
534231	5922049	mid	m25	-5	-9	
534240	5922048	mid	m26	2	-2	this station tied to the spur road stn to south
				-		
534196	5921928	Spur	s1	15	13	survey runs east to west
534188	5921934	Spur	s2	6	4	south edge of road
534179	5921939	Spur	s3	16	14	south side of road
534170	5921942	Spur	s4	15	13	south side of road
534161	5921943	Spur	s5	15	13	"
534151	5921942	Spur	s6	4	2	"
				-		
534142	5921940	Spur	s7	9	11	south side of road
534132	5921936	Spur	s8	9	11	"
534123	5921932	Spur	s9	5	7	"
534115	5921925	Spur	s10	-7	-5	"
534107	5921919	Spur	s11	-23	-21	"
534099	5921911	Spur	s12	-19	-17	"
534092	5921904	Spur	s13	-7	-5	"
534040	5921855	Spur	s14	4	-1	"
534033	5921847	Spur	s15	12	7	"
534026	5921840	Spur	s16	-2	-7	"
534018	5921835	Spur	s17	10	5	
534010	5921829	Spur	s18	8	3	"
534085	5921897	Spur	s19	9	4	"
534078	5921889	Spur	s20	9	4	"
534070	5921882	Spur	s21	12	7	"
534062	5921876	Spur	s22	3	-2	
534055	5921868	Spur	s23	11	6	
534048	5921861	Spur	s24	10	5	

2017 Self Potential Geophysical Survey Stations

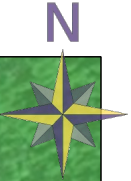


1:2,500 scale

2017 Self Potential Geophysical Survey Results (mV)



2017 Self Potential Survey Stations



1:2,500 scale

2017 Self Potential Geophysical Survey Results (mV)



0 m 50 m 100 m 150 m 200 m 250 m

1:2,500 scale