LCT HOLDINGS INC.

B.C. Assessment Report

on the

2015 Geological Program

Big Bulk Prospect

North-Western British Columbia
Kalum Mining Region

Latitude: 55.64591 degrees; Longitude: -129.35917 degrees
NTS 103P – Nass River

Owner: LCT Holdings Inc.
Operator: LCT Holdings Inc.

Work Carried Out By:

GEOREFERENCE ONLINE LTD.
Suite 301
850 West Hasting Street
Vancouver, B.C.
V6C 1E1

Report Prepared By:

Clinton Smyth, P. Geo

January 11, 2016

Table of Contents

List of Figures

List of Photos

List of Tables

1.0 Summary

The Big Bulk Project is located in northwestern BC approximately 50km southeast of Stewart, and 20km north-northeast of the village of Alice Arm. It lies within the Kalum Mining District and is centered on 55.64591 degrees North and 129.35917 degrees West.

The Big Bulk claim block consists of 7 contiguous claims covering an area of 3,025 hectares. The claims are 100% owned by LCT Holdings Inc., having been purchased from Teck Corporation in April, 2015.

The property is in an area of good infrastructure and resources. The newly permitted Kitsault Mo Mine and its old town of Kitsault is a 170 kilometer drive from the well-resourced town of Terrace. A powerline runs to the town of Kitsault, and the property is only 30 kilometers west of Highway 37.

Access to the property for the 2015 season was by road to Kitsault, a short boat transfer across to Alice Arm, and another 19 km drive up the Kitsault River. From that staging location at Kilometer 19, it is an 8-minute helicopter flight to the property on the southern shore of Kitsault Lake.

The area has seen an extended exploration history dating back to approximately 1910. It includes the Dolly Varden, North Star and Torbit past-producing mines, which operated in the Kitsault River valley at intermittent times from 1919 to 1959, and produced silver, lead, zinc, copper and gold.

In 2001 and 2002 Teck Cominco conducted extensive surface exploration on the Big Bulk property, and in 2003, Canadian Empire Exploration Corp drilled 11 diamond holes on the property, and found visible gold at surface. One of these boreholes intersected 21.33m grading 0.86% Cu and 0.41g/t Au near surface, and 53.03m at depth (142.95 to EOH) grading 0.31% Cu and 0.20g/t Au.

In 2008, Durango Capital Corp drilled a number of diamond holes on the Big Bulk claim held by Dolly Varden Silver Corporation, and in 2009, Anglogold followed with another three ~700m deep diamond holes targeting chargeability anomalies detected in an IP survey carried out by Durango Capital Corp in 2008.

The Big Bulk property lies on the east limb of a large scale antiform gently plunging to the northwest known as the Mt. McGuire anticline.

The part of the McGuire anticline covered by the property is a thick sequence of lower Jurassic Hazelton volcanic rocks with lesser sediments and subvolcanic intrusives.

There is considerable evidence for a similarity between the Mt. McGuire anticline and the economically important McTagg anticline to the north, which hosts very large gold/copper porphyry deposits, and the very high grade Brucejack epithermal/mesothermal gold deposit.

While millions of dollars have been spent on drilling at Big Bulk, a much lesser investment has been made in geological mapping of the prospect and its surrounds – in particular structural geological mapping, which materially assists in identifying drilling targets.

No comprehensive petrological studies have been carried out at Big Bulk.

The goals of the 2015 field season were the following:

(a) To provide a high-resolution photogrammetric base from which to conduct geological mapping which would link historical structural work on and near the property to definition of drill targets on the property;
(b) To conduct channel sampling of areas of the property which had yielded high levels of gold or copper in historical rock sampling surveys – both for geochemical and petrological study.

The photogrammetry was achieved using a DJI Phantom III quadcopter carrying a high resolution digital camera, and by processing stereo-photos using the Pix4D software system. The channel sampling was conducted by a two-person team using a diamond saw, hammer and chisel.

Eight high quality orthophotographs and digital elevation models were produced to aid high resolution geological mapping at Big Bulk.

Fifty channel samples were collected, analysed, photographed and archived as both cut specimens and pulps for further work.

The total cost of the work completed was $47,644.00.

This work has demonstrated that UAV (drone) photogrammetry at Big Bulk can cost-effectively produce data critical to enhanced geological mapping of the Big Bulk prospect. Large data sets are now ready for interpretation by experts in the field of photogrammetric mapping, in preparation for ground-truthing their results during the field season of 2016.

It is recommended that the photogrammetric results of the 2015 surveys be submitted for detailed interpretation as soon as possible, in order that they be available in time for the 2016 season.

Surprisingly low gold values were returned by the channel samples collected during 2015, given the levels in samples previously collected in the same areas by a number of different operators.

It is recommended that a subset of the samples be returned to ALS Chemex for repeat analysis, and that a split of the same subset be submitted to an alternative laboratory for check analysis.

At the same time a detailed evaluation should be undertaken to identify any differences (positional or constitutional) which may exist between the channel samples and the proximal historical samples with high gold values. After evaluation against the new orthophotos, there is a possibility that the majority of the channel samples in the Bonnie East Zone were collected from the same horizon – an horizon which may be depressed in gold values.

2.0 Property Description

2.1. Location

The project is located in northwestern BC approximately 50km southeast of Stewart (Figure 1), and 20km north-northeast of the village of Alice Arm (Figure 2). It lies within the Kalum Mining District and is centered on 55.64591 degrees North and 129.35917 degrees West.

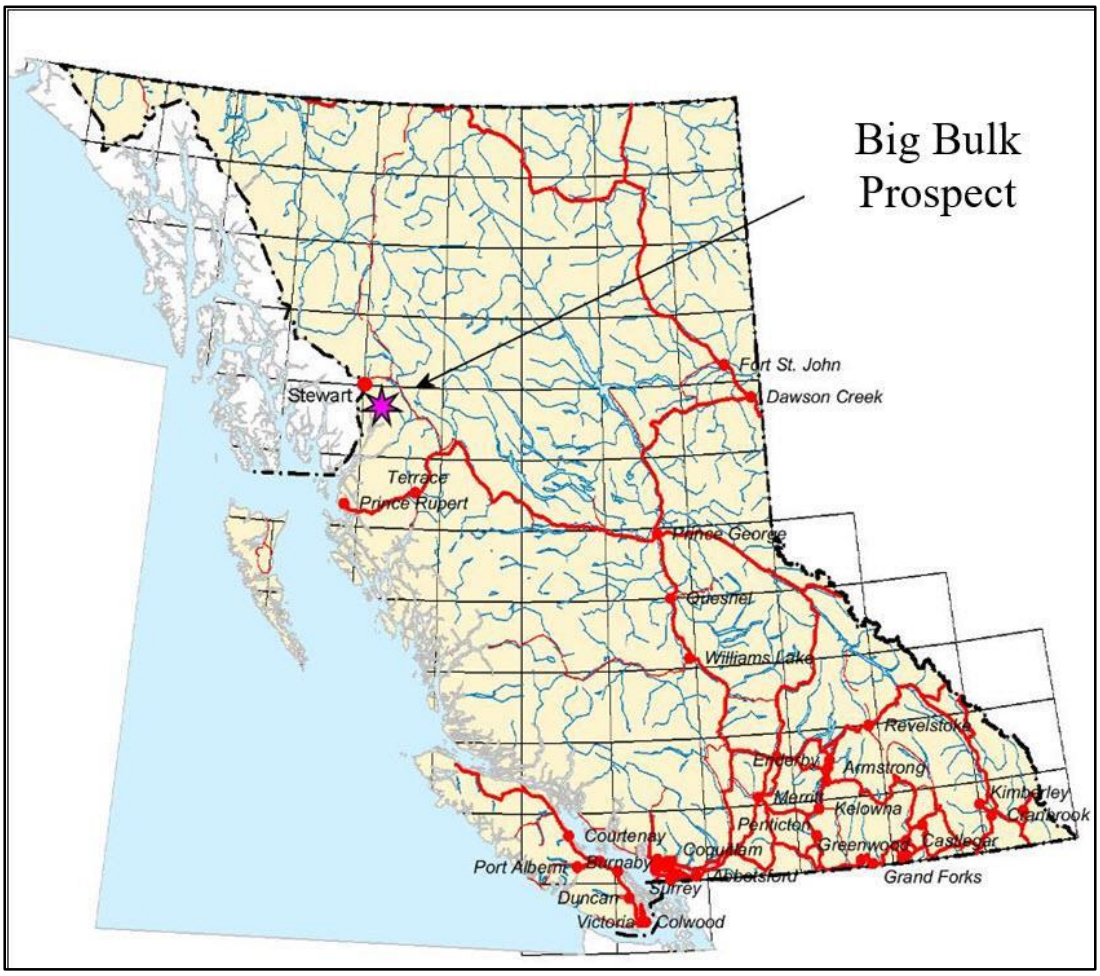


Figure 1: Property Location

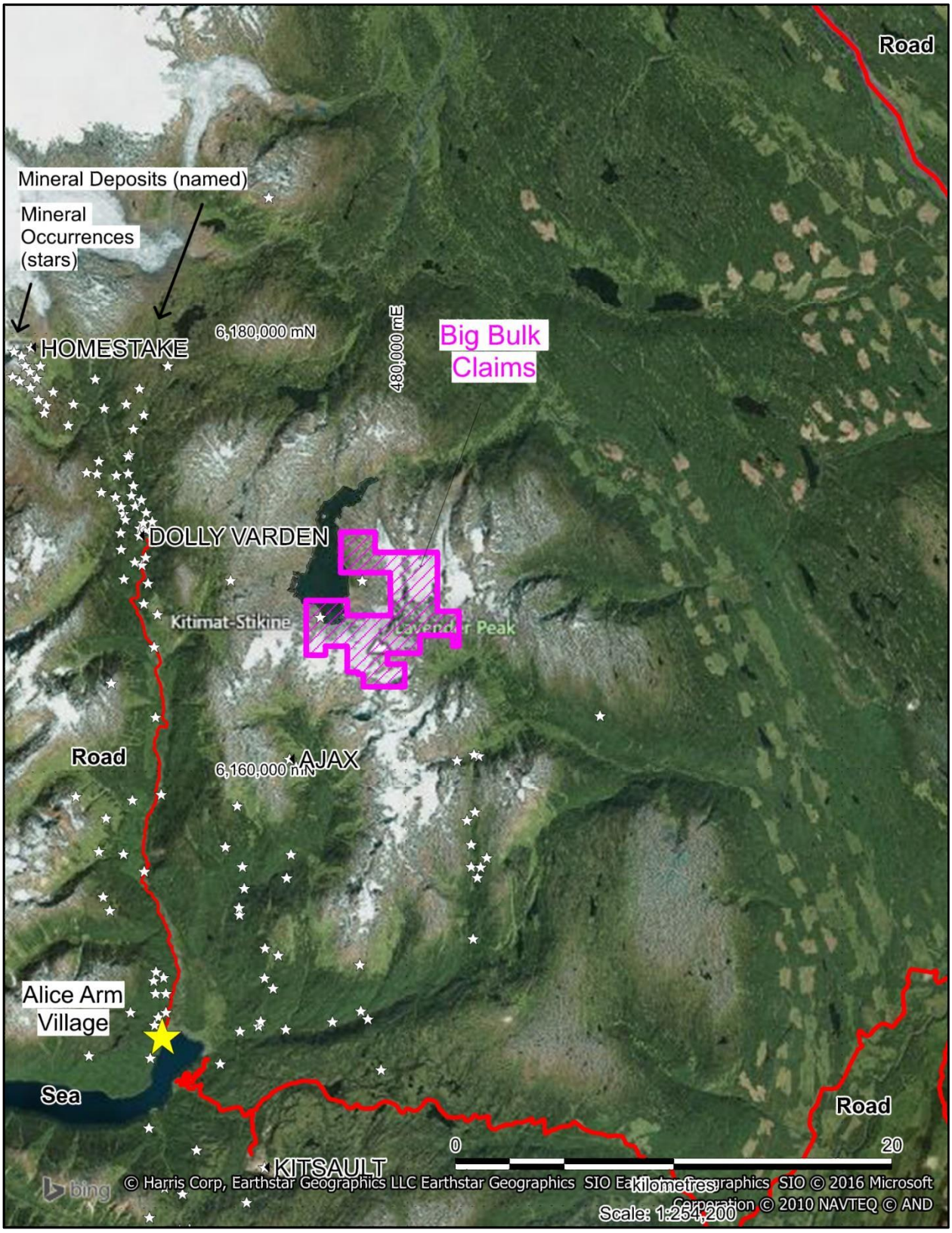


Figure 2: Features surrounding the Big Bulk claims.

2.2. Title Description

The Big Bulk claim block consists of 7 contiguous claims covering an area of 3,025 hectares. The claims are 100% owned by LCT Holdings Inc., having been purchased from Teck Corporation in April, 2015. Teck had staked these claims on 2001. They are listed in below in Table 1 and shown on a map in Figure 3.

Title Number	Claim Name	Issue Date	Good To Date	Status	Area (ha)
385586	KL 2	2001/apr/03	2017/oct/05	GOOD	400
385587	KL 3	2001/apr/03	2018/oct/05	GOOD	500
385591	LAVENDER 3	2001/apr/03	2017/oct/05	GOOD	300
385592	LAVENDER 4	2001/apr/03	2016/oct/05	GOOD	450
385602	LAVENDER 5	2001/apr/03	2018/oct/05	GOOD	500
385603	LAVENDER 6	2001/apr/03	2016/oct/05	GOOD	500
385604	LAVENDER 7	2001/apr/03	2016/oct/05	GOOD	375
				Total:	**3025**

Table 1: List of Claims

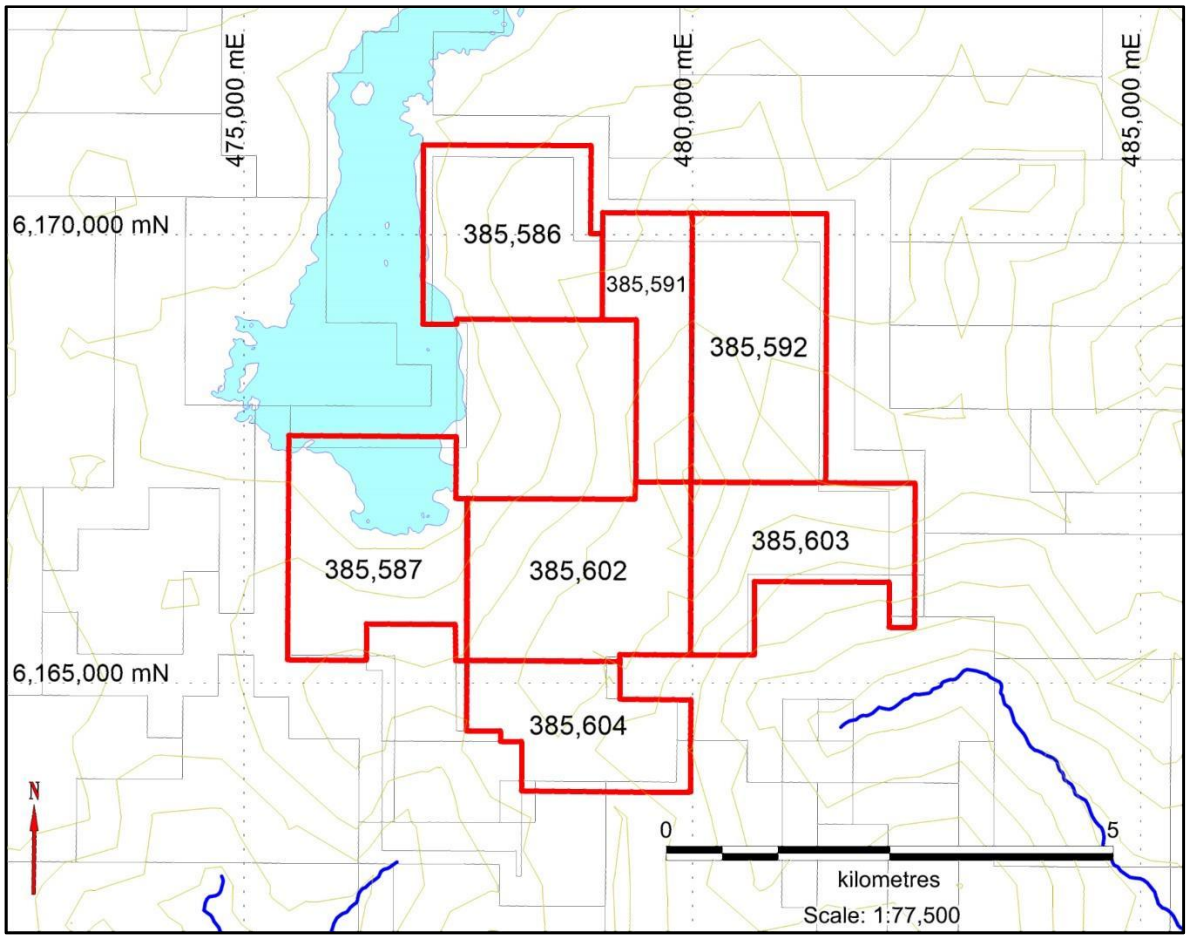


Figure 3: Big Bulk prospect claims map.

2.3. Access

Access to the property for the 2015 season was by road to Kitsault (Figure 2), a short boat transfer across to Alice Arm, and another 19 km drive up the Kitsault River. From that staging location at Kilometer 19, it is an 8-minute helicopter flight to the property on the southern shore of Kitsault Lake.

2.4. Infrastructure and Local Resources

The property is in an area of good infrastructure and resources. The newly permitted Kitsault Mo Mine and its old town of Kitsault (Figure 2) is a 170 kilometer drive from the well-resourced town of Terrace. A powerline runs to the town of Kitsault, and the property is only 30 kilometers west of Highway 37.

2.5. Physiography

The property lies within the Skeena coastal physiographic unit, which is characterized by rugged topography. Elevations on the property range from the Kinskuch Lake level of approximately 1100 meters to over 2200 meters on Lavender. Valleys are steep-sided and U- to V-shaped.

2.6. Climate

The climate is coastal, with abundant rain from June to October. Extraordinary accumulations of snow throughout the winter months can exceed 8 meters and access to the area can be hampered by low cloud and foul weather.

3.0 History

The area has seen an extended exploration history dating back to approximately 1910[1]. Earliest recorded information dates back to provincial government Annual Reports from 1915. The primary area of exploration has been centered in the Kitsault River area with lesser exploration in the Lahte Creek-Illiance River valley, the Dak River area and the area surrounding Kinskuch Lake.

The Dolly Varden, North Star and Torbit mines are past-producing mines, which operated in the Kitsault River valley at intermittent times from 1919 to 1959, and produced silver, lead, zinc, copper and gold. These deposits were originally considered to be "veins" hosted along a tensional fault system but were later studied by Devlin and Godwin (1987) and interpreted to be an exhalative, stratiform deposit. The Kitsault River valley as well as the surrounding area saw extensive exploration for a number of metals during the early part of the 20th century.

Copper and gold mineralization was extensively explored in an area historically known as the "Copper Belt", located west of the Kitsault River near its headwaters. A number of showings, such as the Homestake Ridge (now the Homestake Deposit), Vanguard Copper, Red Point and Vanguard Gold are located in this area. Numerous other showings such as the Sault, Ace/Galena and Wolf are all located in the Kitsault River/Kisault Lake area.

The Homestake Ridge trend has seen numerous exploration programs of trenching, surface work and underground development during the period from 1914 to 1939. Numerous programs involving prospecting, geological mapping, rock and soil geochemistry, geophysics and diamond drilling have been carried out by Canex Aerial Explorations Limited, 196(?); Dwight Collison, 1964-1979; Newmont Canada, 1979-80; S.Coombes, D. Nelles and Cambria Resources Limited, 1986-88; Noranda Exploration Company Limited, 1989-91; Lac Minerals (Barrick Resources), 1994; Teck Corp., 2000; and Teck-Cominco, 2001.

The Red Point prospect, also within the "CopperBelt", was discovered during the 1910's and was subsequently explored by adits on the higher-grade copper prospects. The prospect was acquired by Dolly Varden Minerals Incorporated and was explored by geological, geochemical and geophysical methods and was later trenched and drilled.

Sporadic exploration throughout the Kitsault River valley has been conducted over many of the known showings. Of note are the silver lead zinc deposits of the Dolly Varden, Wolf, Torbit and Northstar deposits, which were explored during the period 1964 to 1990. These deposits have been explored by geophysical, geological and geochemical methods and in some cases have been trenched and /or drilled.

[1] History up to 2002 has been summarised from Evans (2003).

South of Kitsault Lake, the Sault property was discovered in 1966 by Cominco Ltd. and was explored intermittently until 1990. The property has been described by Tupper and McCartney (1990), as referenced from company reports by MacRobbie, as mineralized carbonate deposits restricted to syn-sedimentary grabens which acted as traps for local accumulation of carbonate, sulphate and minor sulphide mineralization. Cominco (1984) and Oliver Gold Corporation and joint venture partners Aber Resources Limited and Tanqueray Resources Limited (1989) drilled the property and conducted geological geochemical and geophysical work.

The area of the Illiance River and Lahte Creek saw numerous discoveries of relatively small veins commonly hosted within shear structures with high silver values associated with lead and zinc mineralization. The area first received attention during the period from early 1910's through the 1920's. Exploration activity increased again during the 1950's- 1960's, during which time numerous companies were active in the area. Hudson Bay Exploration and Development Co. explored this same area during 1980-81 to explore the rhyolite hosted lead-silver float and occurrences, which were discovered originally in 1916 and were re-discovered in 1980. The occurrence is known as the Left Over showing.

Exploration to the northwest of the Illiance River and southwest of Lahte Creek near Mt. McGuire was focused on a porphyry molybdenum deposit known as the Ajax. Minfile inventory reports 178,540,000 t combined reserves at 0.070% molybdenum.

Northwest of Lahte Creek in the area south and east of Kinskuch Lake copper showings were first explored in the 1930's. The area was sampled by Brittania Mines in 1939 and was drilled in 1955-56 by Northwestern Explorations Limited, establishing a small reserve of a few million tons of 0.4% copper on the Bonnie zone. Forest Kerr Mines Ltd. conducted geological, geophysical and diamond drilling during 1965. Cyprus Exploration Corp. explored the property by geological, geochemical surveys and diamond drilling during 1966. In 1970 Ken Addison Mines Ltd. conducted geophysical surveys and a limited diamond drill program. The property was restaked in 1979 as the Big Bulk and was mapped and sampled by Prism Resources in 1980. Procan Resources drilled five diamond drill holes in 1982. The property was again looked at in 1990 and 1991 by the joint venture partnership of Oliver Gold Corporation, Aber Resources Ltd. and Tanqueray Resources Ltd. The joint venture conducted extensive geological mapping, geochemical sampling, trenching and prospecting. During 1989 the joint venture also carried out a regional survey. The 1991 program focused on the Big Bulk area and was primarily a blast trench, geological mapping and prospecting program. The author's results and conclusions of the 1990-1991 programs suggest porphyry copper-gold deposit potential as evidenced by the alteration assemblage of the Big Bulk area.

In 2001 (Evans, 2002)and 2002 (Evans, 2003) Teck Cominco conducted extensive surface exploration on the Big Bulk property, and in 2003, Canadian Empire Exploration Corp drilled 11 diamond holes on the property (Thurston, 2003). In 2008, Durango Capital Corp drilled a number of diamond holes on the Big Bulk claim held by Dolly Varden (Smyth, 2009), and in 2009, Anglogold followed with another three ~700m deep diamond holes targeting chargeability anomalies detected in an IP survey carried out by Durango (Smyth, 2010).

4.0 Geological Setting

4.1. Regional Geology

The Big Bulk property lies on the east limb of a large scale antiform gently plunging to the northwest known as the Mt. McGuire anticline.

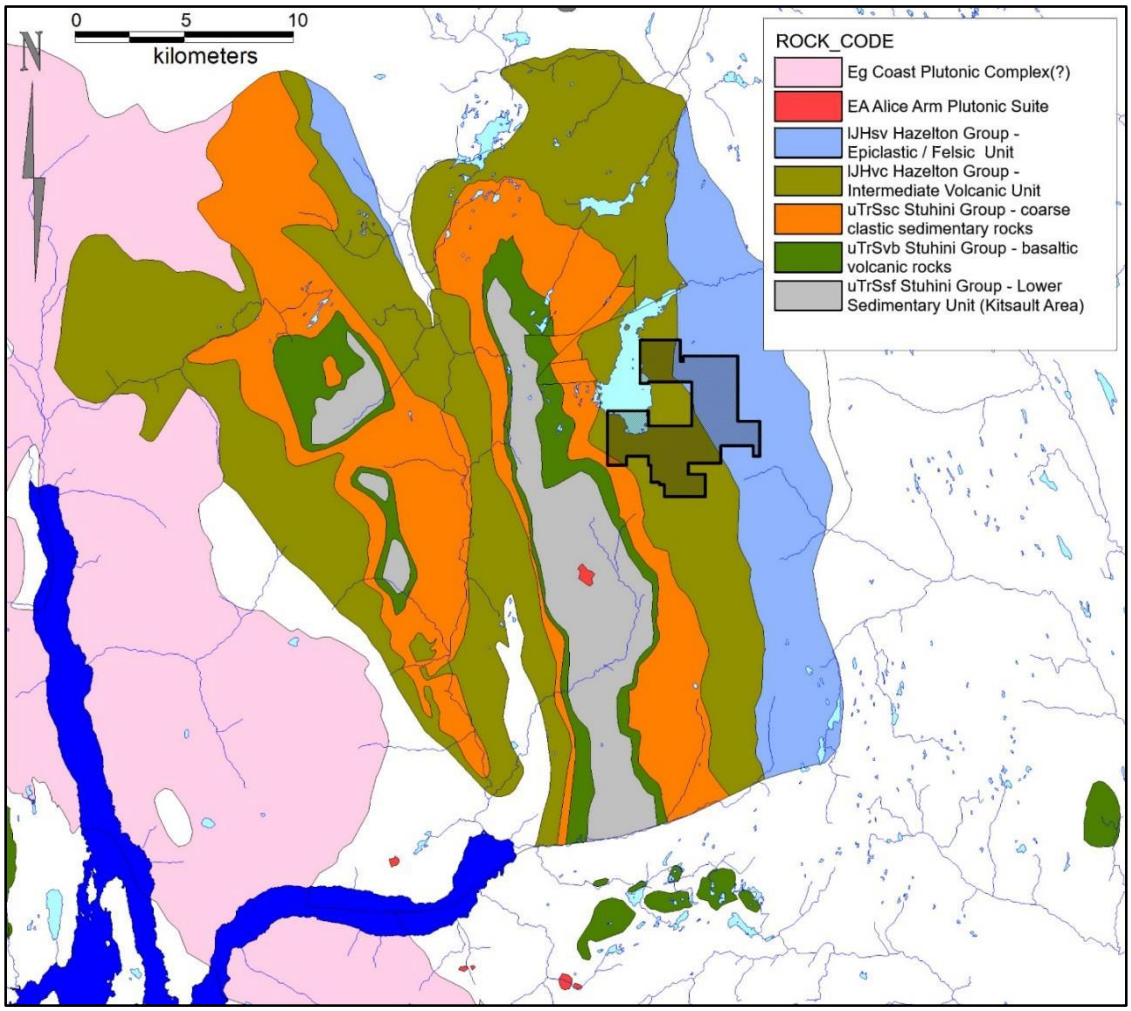


Figure 4: Geology in the region of the Big Bulk property.

Situated near the western margin of the Bowser basin, the property is primarily located over lower to middle Jurassic volcanics and sediments deposited in a marine environment, as well as sub-volcanic

intrusions. This sequence is collectively known as the "Hazelton Group" which consists of a well-mineralized sequence formed in an island arc environment. This sequence in the Kitsault area is bounded by Tertiary intrusives to the west and the marine-lacustrine Bowser basin to the east. The Hazelton Group in the Kitsault area has undergone west to east compression, which has resulted in asymmetric folding and thrusting, and produced only low grade greenschist metamorphism of the rocks (Evans, 2003).

Coller (2008) provided evidence of rift inversion structures associated with the Mt McGuire anticline, a possible alternative to the above-mentioned “asymmetric folding” interpretation of the larger structures in the area (Figure 5).

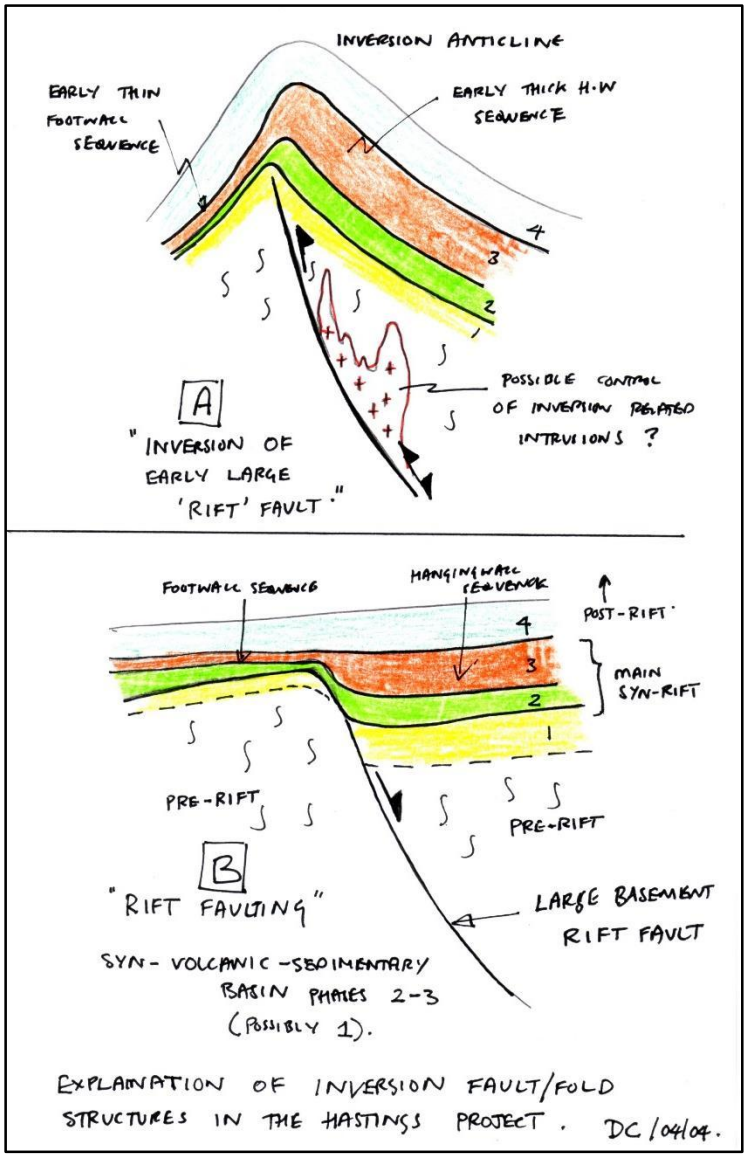


Figure 5: Sketch illustrating inversion structures around Big Bulk (Coller, 2008).

If Coller's interpretation is correct, it is another important aspect of similarity between the Mt. McGuire anticline and the economically important McTagg anticline (Nelson and Kyba, 2014) to the north (Figure 6).

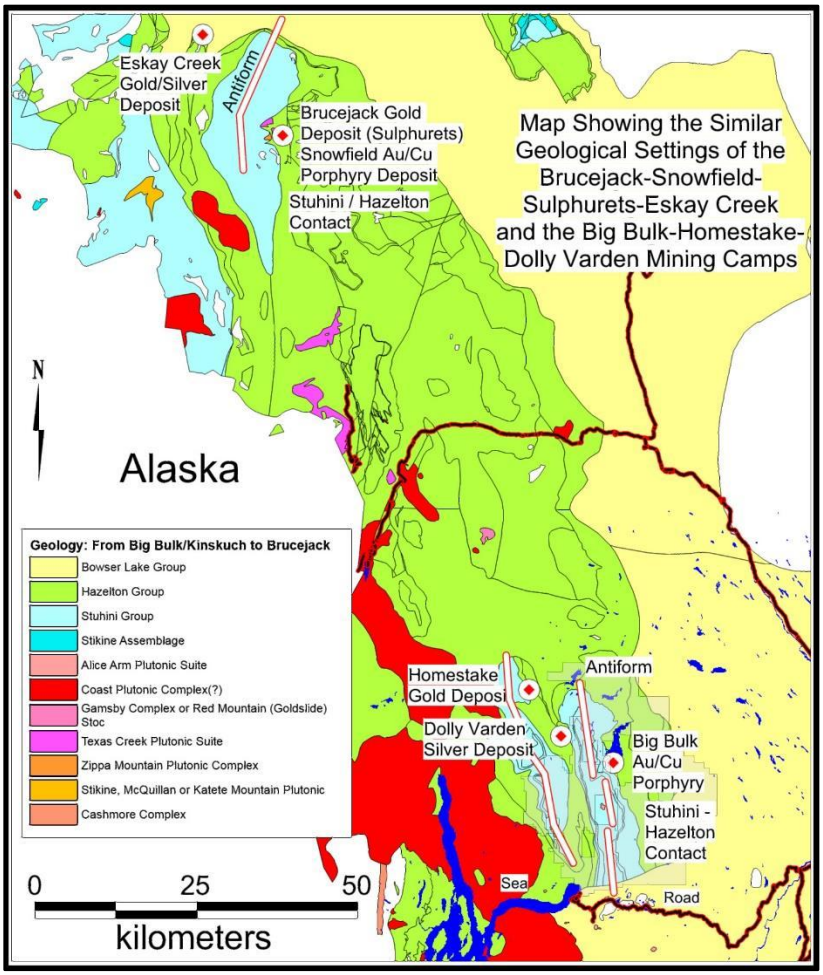


Figure 6: Map showing the McTagg antiform near Brucejack/KSM and the Mt. McGuire antiform near Big Bulk.

4.2. Regional Mineralisation

The Kitsault area is the southern limit of a continuous belt of the Hazelton group which hosts the highly profitable Eskay Creek VMS deposit. The Eskay deposit occurs in sediments overlying felsic volcanics in a setting at the top of the Hazelton volcanics.

Another system in the same stratigraphy that remains undeveloped is the Red Mountain deposit with a resource of 13.2 Mt @ 0.074 opt Au. The system is related to —190 mya Goldslide intrusions which are also present throughout the area including intrusions along the southern shore of Kinskuch Lake.

The Dolly Varden camp (Figure 6) owned by New Dolly Varden Minerals Inc. is located in the Kitsault River valley approximately 20 km north of Alice Arm. The Dolly Varden Camp hosts an existing resource of 515 Kt grading 11.04 opt Ag. Previous production from the Dolly Varden, North Star and Torbrit mines totaled

19.9 million oz. Ag, and 11 million lbs of Pb. Recent work (Devlin, 87 and others) suggests this system is a possible VMS system.

Recent research (Kyba, 2014) has highlighted the possible role of the Stuhini/Haselton unconformity in localizing mineral deposits. The proximity of that contact to the Big Bulk property is illustrated in Figure 7.

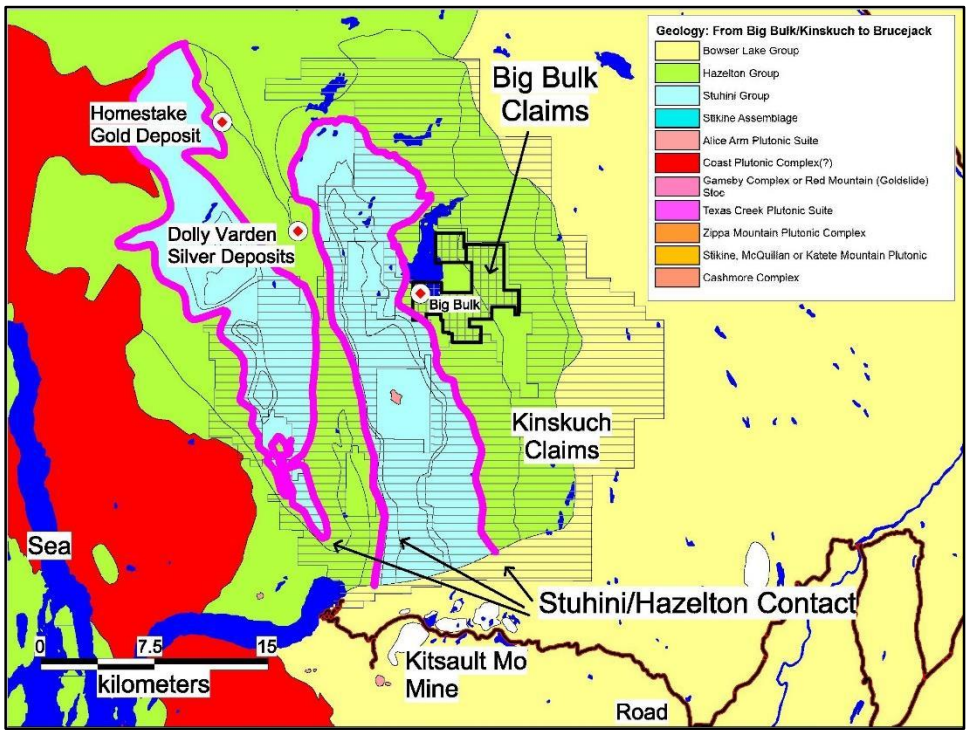


Figure 7: Map highlighting the Stuhini/Hazelton contact in the region of the Big Bulk property.

4.3. Property Geology

The part of the McGuire anticline covered by the property is a thick sequence of lower Jurassic Hazelton volcanic rocks with lesser sediments and subvolcanic intrusives (Figure 4). Stratigraphy is complex reflecting a high energy volcanic submarine environment with local rapid facies changes. In general units strike NW with common moderately to steep easterly dips. Some open folds were noted in the sediments (Evans, 2003), which were considered compatible with previously observed folds in the region (Dawson, Alldrick and Greig).

Tops evidence seen in several locations (Evans, 2003) supports the McGuire anticline structure which exposes upper Triassic Stuhini group sediments and mafic volcanics west of the property.

Numerous large NE faults are apparent on the topography and orthophotos but no significant offset has been noted. Some of these faults have alteration along them and often coincide with dramatic facies changes perhaps reflecting a primary structure (ie. graben faults), these have clearly had late offset with several senses of offset and perhaps block faulting in Cretaceous or Tertiary time.

Evans (2003) identified a number of target areas exist on the property, and stated that “In general these include a large complex subvolcanic Au porphyry system in the Big Bulk area. This system is related to a "Goldslide" type intrusive complex and there maybe potential for high grade structural gold zones as well in this Sulphurets style system.”

4.4. Porphyry-Type Gold/Copper Targets

In 2003, Canadian Empire Exploration Corp’s (CEEC) borehole BB-03-02 on the property confirmed its porphyry gold/copper potential with porphyritic monzonite intersections of 21.33m grading 0.86% Cu and 0.41g/t Au near surface, and 53.03m (142.95 to EOH) grading 0.31% Cu and 0.20g/t Au (Thurston, 2003).

4.5. Epithermal/Structural-Type Gold Targets

Also in 2003, CEEC reported the discovery of visible gold (Figure X) at surface on the property close to the shore of Kinskuch Lake (Thurston, 2003).

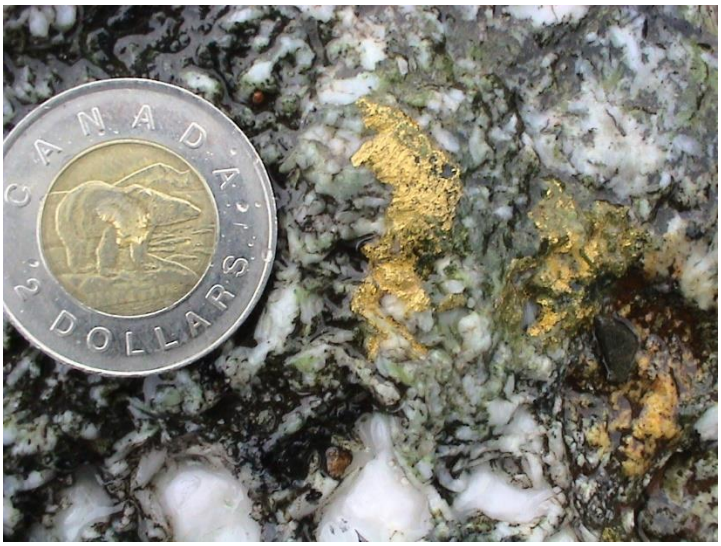


Figure 8: Visible gold found at surface at Big Bulk (Brianne Zone, Area 10, Figure 11) in 2003.

Later, in 2008, Durango Capital Corp. reported numerous surface rock samples taken from the property which graded above 500ppb Au in areas where sampling by Teck (Evans, 2003) had produced similar rock sample gold grades (Figure 10).

These three phases of surface rock sampling confirm the epithermal/structural gold deposit potential of the property.

5.0 2015 Exploration

The 2015 fieldwork was carried out from the 2nd of August, when the field team left Vancouver, to its return on the 18th of August. Accommodation on site was in tents, using the old AngloGold core shed (now the property of Dolly Varden Silver Corporation) as an office-kitchen. Due to weather delays, a night was spent in both Kitsault and Alice Arm en route to site.

On the 14th of August the field team hosted a one-day visit by three geologists from the Geological Survey of British Columbia which has initiated a multi-year research project in the area.

Photo 1: Dolly Varden Silver core shed was kindly offered as accommodation in Alice Arm.

Photo 2: Staging position at Kilometer 19 on the Kitsault River valley road.

Photo 3: Tented accommodation at Big Bulk, with core shed and Lavender Peak in background

Photo 4: Geological Survey of BC geologists inspecting gossanous outcrop at Big Bulk.

5.1. Critique of Exploration to Date and 2015 Exploration Objectives

5.1.1. Geological Mapping

While millions of dollars have been spent on drilling at Big Bulk, a much lesser investment has been made in geological mapping of the prospect and its surrounds – in particular structural geological mapping,

which materially assists in identifying drilling targets. This, despite the obvious evidence of significant regional structures in and around the Big Bulk area (Coller, 2008), the types of which are known to produce foci of fluid-flow and associated mineralization (Kyba and Nelson, 2014).

The limited structural work that has been done in the area has been done either at a very large scale (Coller, 2008), or an intermediate scale (e.g.: Evans, 2003). Very little significant work has been carried out at the outcrop mapping or "trenching" scale. The main reason for the lack of surface geological mapping at Big Bulk is the ruggedness of the terrain, and the inclement weather.

Low-altitude drone photography can provide very high quality, high resolution, mapping information, and, if, photographs are taken with the right hardware and processed with the right software, orthophotographs and digital elevation models (DEMs) of the surveyed areas may be produced – both of which can be powerful aids to geological mapping (Bemis et al, 2014).

5.1.2. Petrology

Despite an informative review of Big Bulk drilling results by Panteleyev (2008), and a petrological pilot study by Vancouver Petrographics Ltd (2009), no study has brought these two works together in the context of all historical drilling and geological mapping at Big Bulk. Such a study would likely cast valuable light on the mineralizing events at Big Bulk – particularly on their relative timing, and the likelihood of finding more of one or the other type of mineralization (porphyry or epithermal) in economic quantities – given sufficient knowledge of surrounding lithologies and structures.

5.1.3. Fieldwork Objectives

The goals of the 2015 field season were the following:

(c) To provide a high-resolution photogrammetric base from which to conduct geological mapping which would link historical structural work on and near the property to definition of drill targets on the property;
(d) To conduct channel sampling of areas of the property which had yielded high levels of gold or copper in historical rock sampling surveys – both for geochemical and petrological study.

The photogrammetry was achieved using a DJI Phantom III quadcopter carrying a high resolution digital camera, and by processing stereo-photos using the Pix4D software system (Photos 1 and 2 overleaf). As listed in Table 2, nine missions were flown, one of which was abandoned due to adverse weather before any photography could begin, and one of which was terminated prematurely because of an aircraft crash.

Orthophotos produced from each mission are presented in Appendix B. Appendix B also includes, in Figure 33, one example of a digital surface model (DSM). The information present in Figure 32 and Figure 33 were used as inputs for the 3D view of Mission 7 processed photogrammetric results shown in Figure 25.

Mission	Target Area	Date Flown	Comment
1	Bonnie	10-Aug-15	Focus on S of peninsula
2	Brianne	10-Aug-15	Focus on site of VG discovery in 2003
3	Brianne	10-Aug-15	Focus west of VG discovery
4	Bonnie East	13-Aug-15	Focus on N of Bonnie East
5	Bonnie East	13-Aug-15	UAV crashed in mountain. Found it.
6	Bonnie East	13-Aug-15	Focus on S of Bonnie East
7	Brianne	15-Aug-15	Extended, higher altitude survey around VG.
8	Abandoned		
9	Bonnie	15-Aug-15	Focus on N of peninsula

Table 2: Listing of photogrammetric missions flown.

Survey reports for each mission are included in Appendix G.

The channel sampling was conducted by a two-person team using a diamond saw, hammer and chisel (Photos 3 and 4 overleaf).

Figure 9 shows, plotted over a Bing satellite image, where within the Big Bulk property boundaries the channel-sampled areas are located, and Figure 10 and Figure 11 show the locations of the same areas in greater detail, plotted over orthophotographs produced from the photogrammetric work presented in this report. Also shown in Figure 10 and Figure 11 are thematically-presented results for gold in rock samples collected by Teck in 2001 and 2002, and Durango in 2008, illustrating the relatively high levels of gold reported in these in the Bonnie East area, and relatively low sample density in the Brianne area. A legend for the gold thematic symbols is presented in Figure 12.

All collected channel samples were submitted to ALS-Chemex laboratories in Vancouver for analysis by fire assay. The certificate of analysis is presented in Appendix D.

Before submission of the samples to the laboratory, centimeter-scale sub-samples were cut with a diamond saw from the channel samples for photography and future detailed description, possibly to be supplemented by thin-section preparation and description. At the same time a magnetic susceptibility measurement was taken on a suitably robust piece of each channel sample. Two cut sub-samples were prepared for each channel sample, and both were photographed. All these photographs are presented in Appendix F.

After their fire-assay analysis by ALS-Chemex, the sample pulps were recovered by the author, and subjected to analysis by a Niton XL3 XRF Analyser. The results of these analyses are also presented in Appendix F, and include the magnetic susceptibility measurements mentioned above. Selected XRF results and the magnetic susceptibility measurements are repeated beneath corresponding photographs in Appendix F.

Photo 5: Phantom III quadcopter during take-off at Big Bulk.

Photo 6: View of operator from quadcopter during survey at Big Bulk.

Photo 7: Cutting first side of a channel sample at Big Bulk.

Photo 8: Chiseling out a channel sample at Big Bulk.

5.2. Bonnie Zone

5.2.1. Photogrammetry

Orthophotographs for the two missions flown over the Bonnie Zone are presented in Figure 26 and Figure 34 in Appendix B.

5.3. Bonnie East Zone

5.3.1. Photogrammetry

Orthophotographs for the three missions flown over the Bonnie East Zone are presented in Figure 29, Figure 30 and Figure 31 in Appendix B.

5.3.2. Channel Sampling

Channel sampling results for Bonnie East, Areas 1 to 9 are presented in Figure 13 to Figure 22 below. Sample locations with sample numbers are shown in the maps in Appendix C.

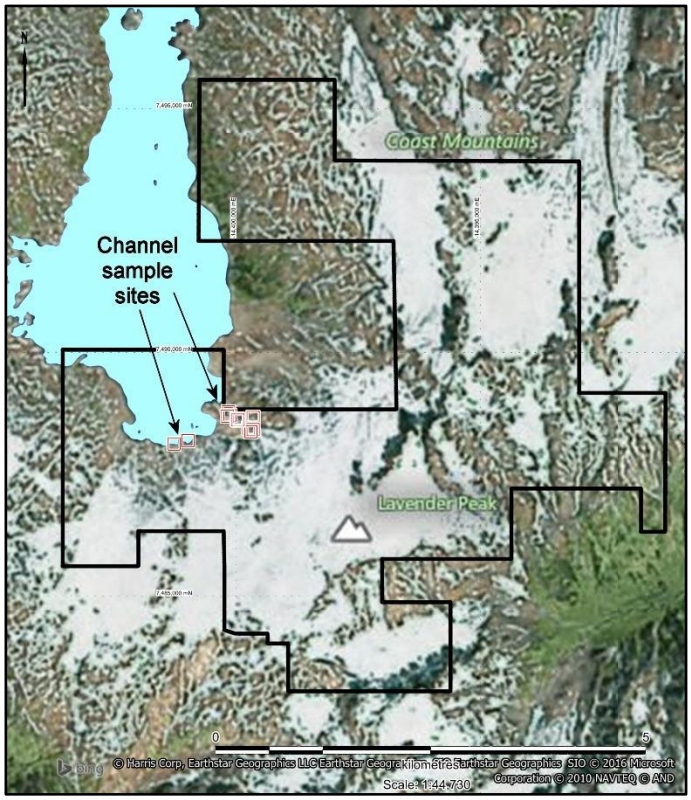


Figure 9: Map showing channel sample sites with respect to Big Bulk property boundaries.

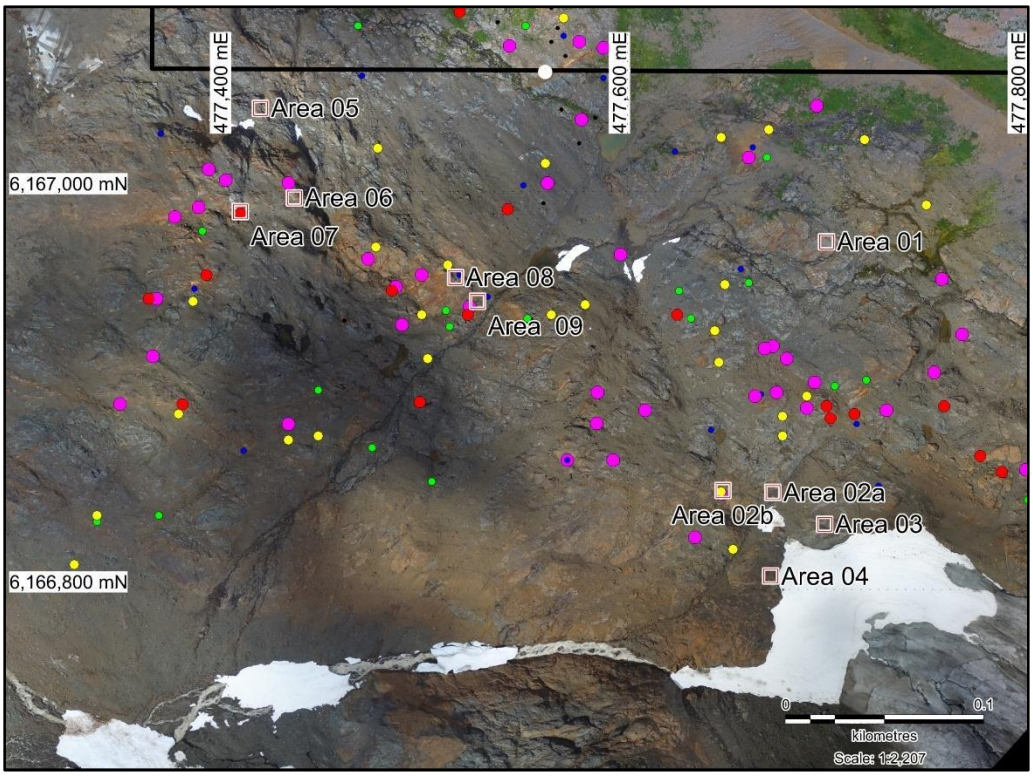


Figure 10: Channel sampling areas with surrounding historical rock sample gold values at Bonnie East (legend in Figure 12).

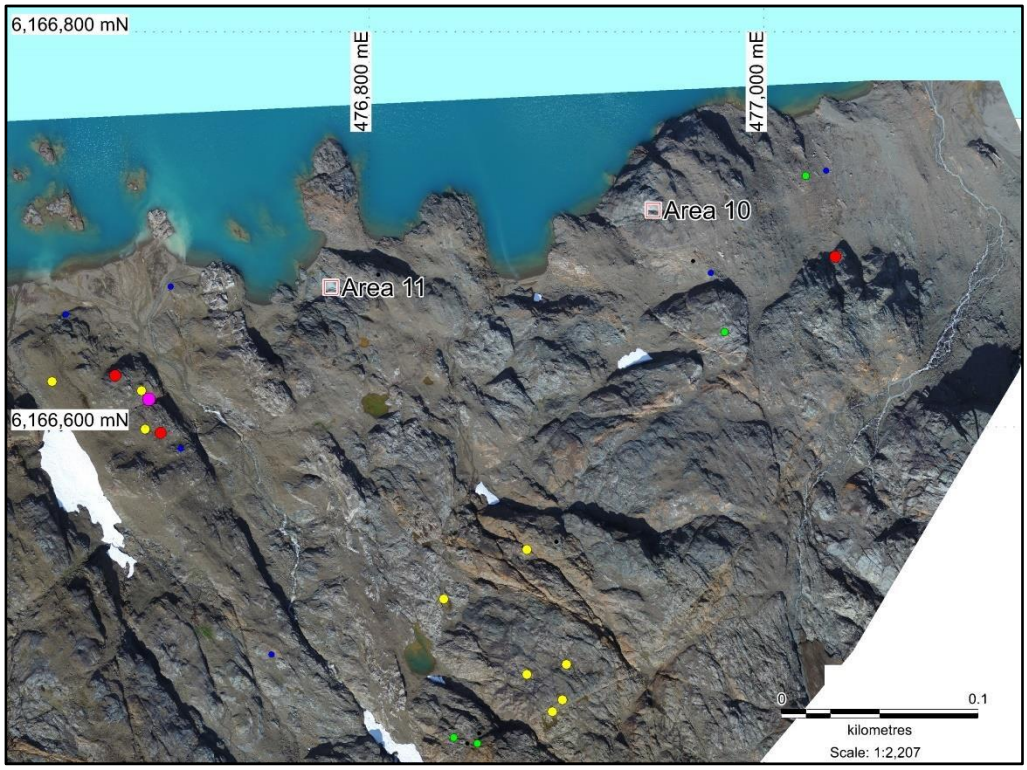


Figure 11: Channel sampling areas with surrounding historical rock sample gold values at Brianne (legend in Figure 12).

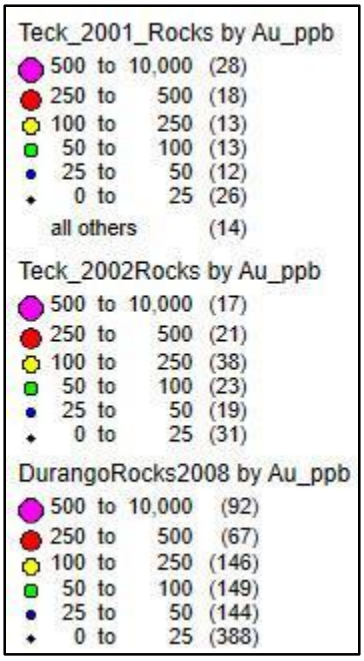


Figure 12: Legend for gold values plotted in Figure 10 and Figure 11.

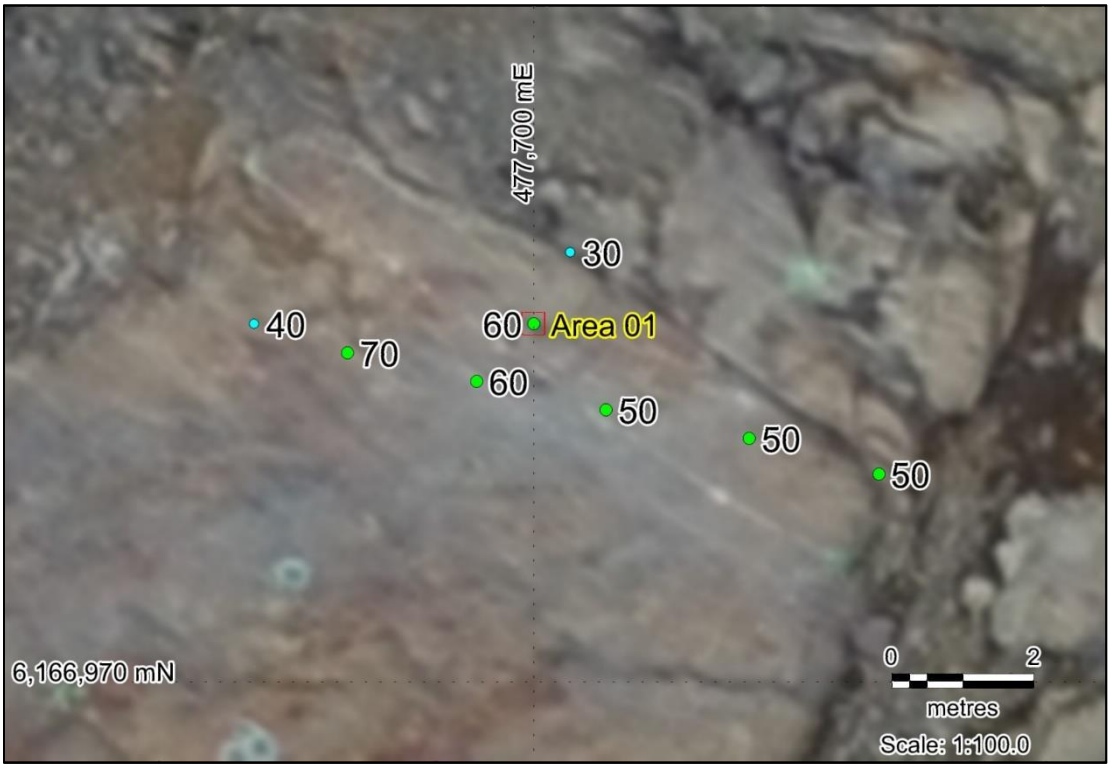


Figure 13: Gold channel sampling results for Area 1 (Bonnie East).

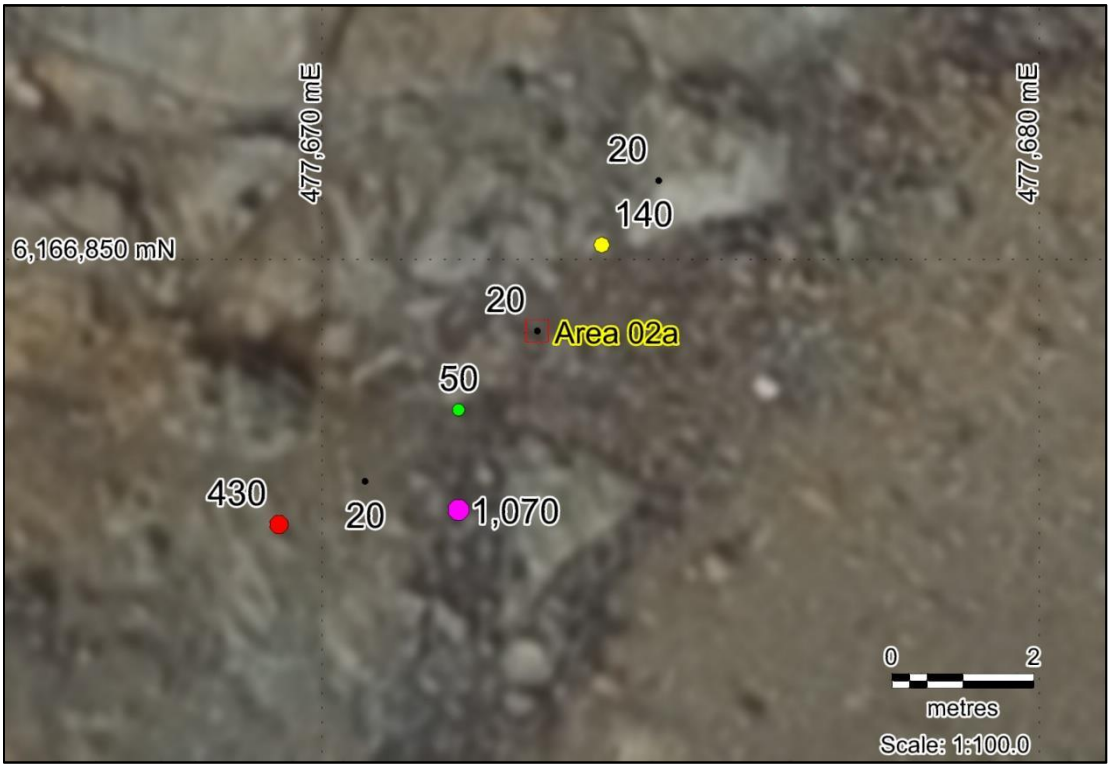


Figure 14: Gold channel sampling results for Area 2a (Bonnie East).

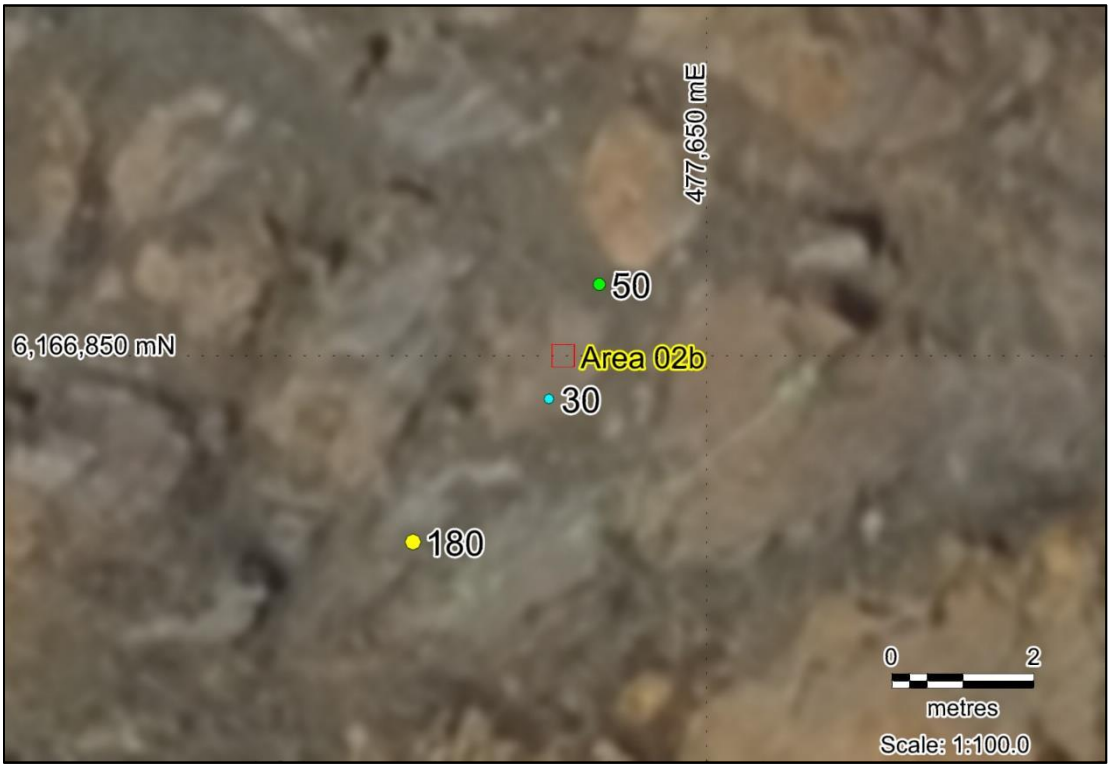


Figure 15: Gold channel sampling results for Area 2b (Bonnie East).

Figure 16: Gold channel sampling results for Area 3 (Bonnie East).

Figure 17: Gold channel sampling results for Area 4 (Bonnie East).

Figure 18: Gold channel sampling results for Area 5 (Bonnie East).

Figure 19: Gold channel sampling results for Area 6 (Bonnie East).

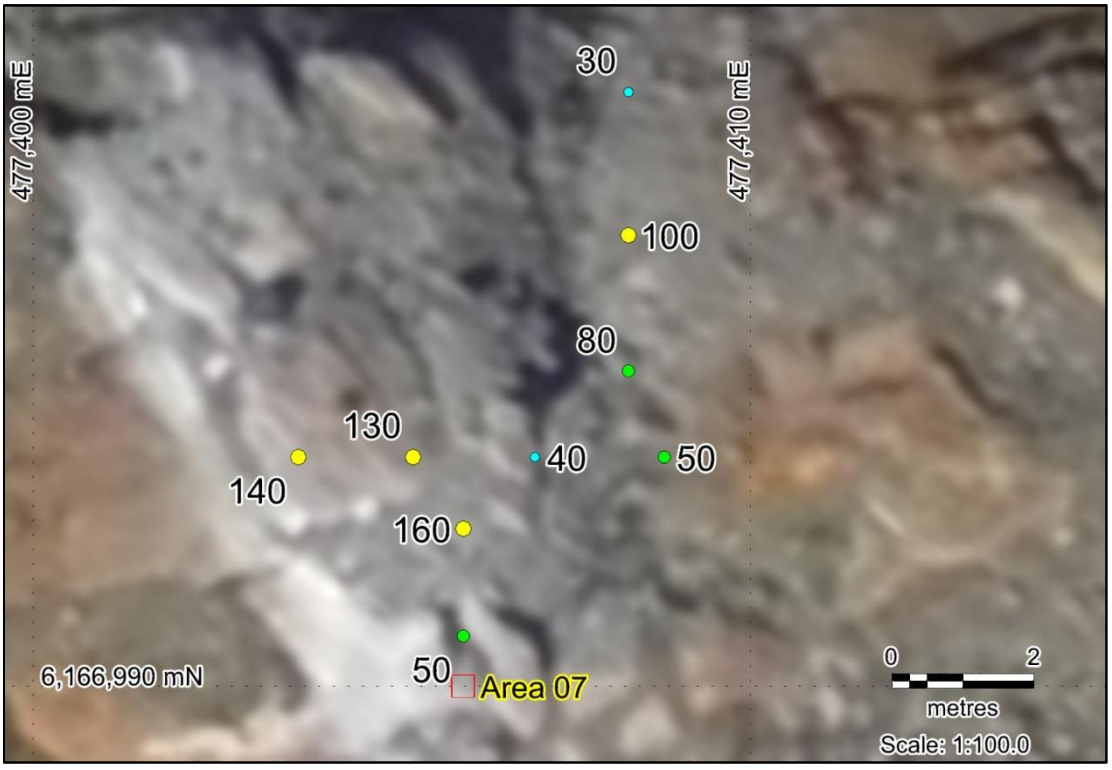


Figure 20: Gold channel sampling results for Area 7 (Bonnie East).

Figure 21: Gold channel sampling results for Area 8 (Bonnie East).

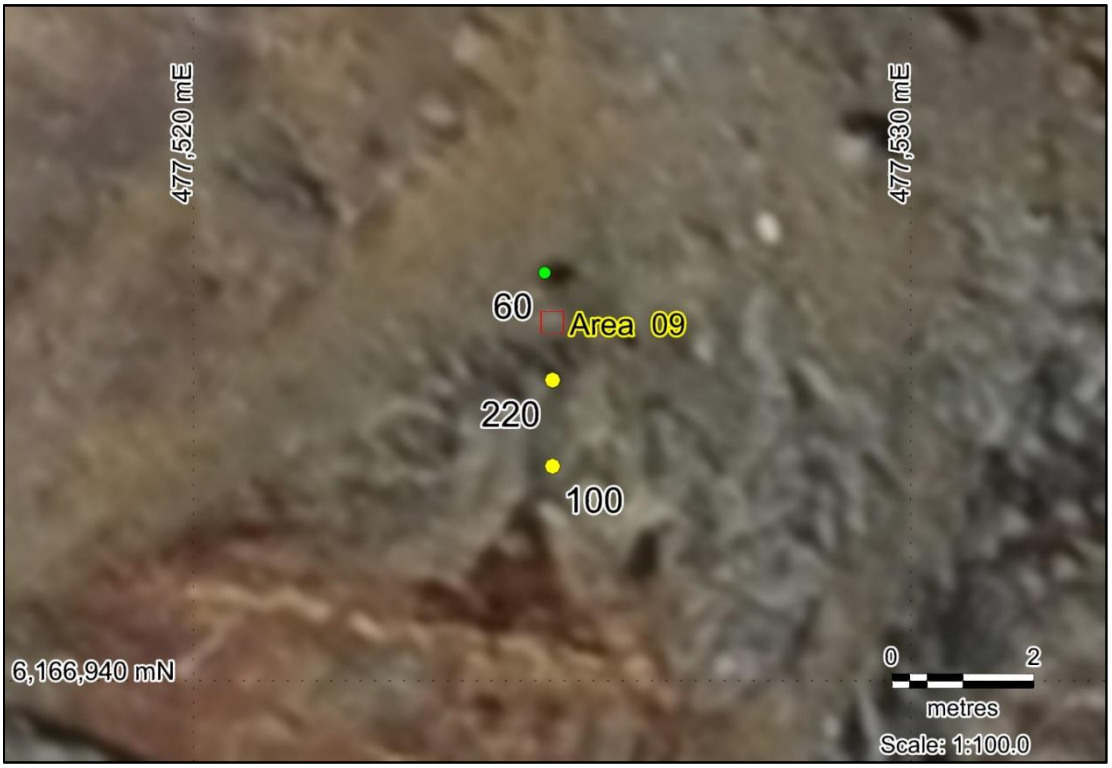


Figure 22: Gold channel sampling results for Area 9 (Bonnie East).

Figure 23: Gold channel sampling results for Area 10 (Brianne).

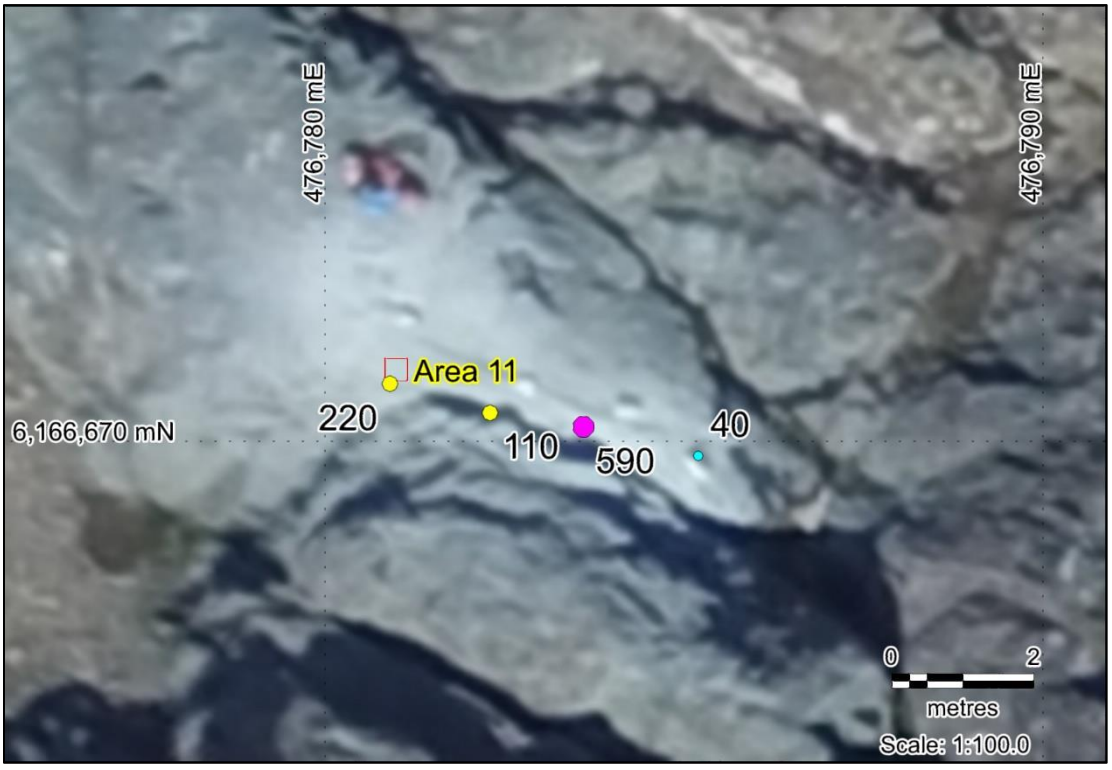


Figure 24: Gold channel sampling results for Area 11 (Brianne).

5.4. Brianne Zone

5.4.1. Photogrammetry

Orthophotographs for the three missions flown over the Bonnie East Zone are presented in Figure 27, Figure 28 and Figure 32 in Appendix B.

One rendition of the DSM derived for Mission 7 is presented as an underlay for Figure 32 in Figure 33.

5.4.2. Channel Sampling

Channel sampling results for Brianne, Areas 10 and 11 are presented in Figure 23 and Figure 24 above. Sample locations with sample numbers are shown in the maps in Appendix C.

5.5. Summary of Results

Eight high quality orthophotographs and digital elevation models have been produced to aid high resolution geological mapping at Big Bulk.

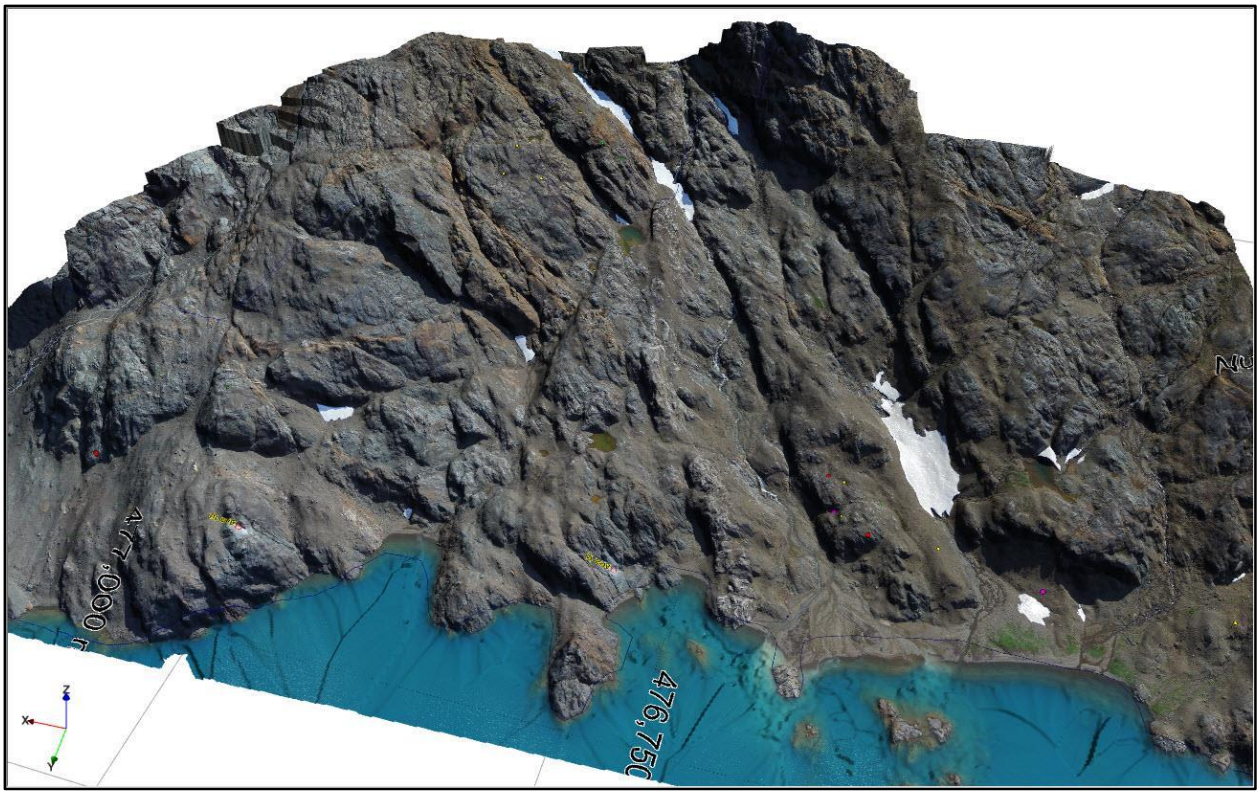


Figure 25: 3D view of the Mission 7 orthophoto draped over the DSM for the Brianne Zone (cf: Figure 11).

Fifty channel samples were collected, analysed, photographed and archived as both cut specimens and pulps for further work.

6.0 Statement of Costs

The total cost of the work presented in this report was $47,644.00, as summarized in Table 3 below.

Big Bulk Project 2015 Assessment Report Expediture

Expense Category	Cost (C$)	%
Helicopter	$4,590	10
Staff Time (breakdown below)	$32,740	69
Photogrammetry equipment and processing	$1,800	4
Field Costs (material, food, fuel, etc)	$3,505	7
Laboratory	$1,857	4
Vehicles	$2,017	4
Hotels	$271	1
Communications	$864	2
Miscellaneous	$0	0
Total:	**$47,644**	

Geological Staff Timesheets Summary

	Field	Field	Field	Field	Field	Office	
	Conner Coen (Rugged Edge Holdings)	Camilla Smyth (GOL)			Clinton Smyth (GOL)	Clinton Smyth (GOL)	
Daily Rate	$300	$220			$800	$800	
Days worked							
July 2015						4	
Aug	14	17			17	3	
Sept						5	
Oct						2	
Total:	14	17			17	14	
Cost:	$4,200	$3,740	$0	$0	$13,600	$11,200	**$32,740**
							Total

Table 3: Summary of Costs

7.0 Conclusions and Recommendations

It has been demonstrated that UAV (drone) photogrammetry at Big Bulk can cost-effectively produce data critical to enhanced geological mapping of the Big Bulk prospect. Large data sets are now ready for interpretation by experts in the field of photogrammetric mapping, in preparation for ground-truthing their results during the field season of 2016.

It is recommended that the photogrammetric results of the 2015 surveys be submitted for detailed interpretation as soon as possible, in order that they be available in time for the 2016 season.

Surprisingly low gold values were returned by the channel samples collected during 2015, given the levels in samples previously collected in the same areas by a number of different operators.

It is recommended that a subset of the samples be returned to ALS Chemex for repeat analysis, and that a split of the same subset be submitted to an alternative laboratory for check analysis.

At the same time a detailed evaluation should be undertaken to identify any differences (positional or constitutional) which may exist between the channel samples and the proximal historical samples with high gold values. After evaluation against the new orthophotos, there is a possibility that the majority of the channel samples in the Bonnie East Zone were collected from the same horizon – an horizon which may be depressed in gold values.

C. P. Smyth P. Geo

8.0 References

Alldrick, D. J. 1986. Geology of the Kitsault River Area; BC Geological Survey Open file 1986-2.

Alldrick, D. J. 2006 Rifts and Rewards: Exploration Potential of Ancient & Modern Rifts. Presentation at the Exploration RoundUp, Vancouver, January, 2006

Bemis, Sean P., Steven Micklethwaite, Darren Turner, Mike R. James, Sinan Akciz, Sam T. Thiele, and Hasnain Ali Bangash. "Ground-Based and UAV-Based Photogrammetry: A Multi-Scale, High-Resolution Mapping Tool for Structural Geology and Paleoseismology." Journal of Structural Geology 69 (December 2014): 163–78. doi:10.1016/j.jsg.2014.10.007.

Coller, D., 2008. Hastings Structural Project. Appendix G in Smyth (2009) "Report on the Hastings Project"

Devlin, B. D., and Godwin, C. L. 1986a. Geology of the Dolly Varden Camp, Alice Arm Area, (103P/11,12): British Columbia Ministry of Energy, Mines and Petroleum Resources, Paper 1986a-1 p. 327-330.

Evans G., 2001. 2001 Geological & Geochemical Report on the Homestake Ridge Property Skeena Mining Division B. C. for Teck Corp. AR# 26,540

Evans G. and Lehtinen J. 2001. 2001 Geological & Geochemical Report on the Homestake Ridge Property Skeena Mining Division B. C. for Teck Corp. AR# 26,719

Evans G., 2003. 2002 Geological & Geochemical Report on the Kit Group Skeena Mining Division British Columbia for Teck-Cominco Ltd. AR# 27,122

Greig, C.J., Anderson, R.G., Daubeny, P.H., Bull, K.F. and Hinderman, T.K.(1994): Geology of the Cambria Icefield: regional setting for the Red Mountain gold deposit, northwestern British Columbia; in Current Research 1994-A; Geological Survey of Canada, pages 45-56.

Harris S. 2003. 2003 Geological and geochemical Report on the FH Property, B.C. for Energulf Resources Inc. AR# 27,308

Kyba, J., 2014. The Stuhini – Hazelton unconformity of Stikinia: Investigations at KSM- Brucejack, Snip-Johnny Mountain and Red Chris areas, Paper No 240-7; 2014 GSA Annual Meeting, Vancouver

Lahti H., 2005. 2005 Report on the Stream Sediment Survey at the Kitsault Gold Property, Northwestern British Columbia. AR# 28,476

Nelson, J., 2007. The quiet counter-revolution: Structural control of syngenetic deposits: Geoscience Canada, v. 24, no. 2, p. 91-98.

Nelson, J., and Kyba, J., 2014. Structural and stratigraphic control of porphyry and related mineralization in the Treaty Glacier – KSM – Brucejack – Stewart trend of western Stikinia. In: Geological Fieldwork 2013, British Columbia Ministry of Energy and Mines, British Columbia Geological Survey Paper 2014-1, pp. 111-140.

Panteleyev, A. Observations on Big Bulk 2008 Drill Core Examination Appendix P in Smyth (2009) "Report on the Hastings Project"

Smyth, C. P., 2009. 2008 Report on the Hastings Project ARIS # 30581

Smyth, C. P., 2010. 2010 Drilling Report on the Kinskuch Project ARIS # 31436

Thurston, B. G., 2003. Report Summarizing the 2003 Diamond Drill Program on the Big Bulk Property, Canadian Empire Exploration Corp.

Tucker T. L., 1991. Geological and geochemical report on the Illiance Property Kitsault River area for Canadian Cariboo Resources Ltd. AR# 21,075

Tucker T. L., 1991. Geological and geochemical report on Evindson Creek Property Kitsault River area, B.C. for Canadian Cariboo Resources Ltd. AR# 21,142

Tupper D. W., 1990. Geological, geochemical and diamond drilling report on the Kits-Jade Project Kitsault Lake area, B.C. for Resources Ltd., Oliver Gold Corporation and Tanqueray Resources. (20,167)

Tupper D. W., 1990. Geological, geophysical and geochemical report on the Kits-Jade Project Kitsault Lake area, B.C. for Aber Resources Ltd., Oliver Gold Corporation and Tanqueray Resources. AR# 20,574

Tupper D. W. 1991. Geological and Geochemical Report on the Big Bulk Copper-gold porphyry prospect Kinskuch Lake, British Columbia for Aber Resources Ltd., Oliver Gold Corporation and Tanqueray Resources. AR# 21,915

Vancouver Petrographics Ltd, 2009. Petrographic report on 30 Samples from Big Bulk Project, NW BC. Appendix J in Smyth, C. P., 2010. 2010 Drilling Report on the Kinskuch Project ARIS # 31436

9.0 Software Used

All maps presented in this report were produced with the Mapinfo Software System (Version 12) enhanced with the Encom Discover Add-In (Version 2014).

Appendix A Statement of Qualifications

I, Clinton P. Smyth, certify that:

1. I am President of Georeference Online Ltd and my office address is Suite 301, 850 West Hastings Street, Vancouver, British Columbia, Canada, V6C 1E1.
2. I am a graduate of the University of Cape Town in 1982 with a Masters of Science degree in Geochemistry and a graduate of Imperial College, London, in 1985 with a Master of Science degree in Computer Science.
3. I am registered as a Professional Geologist with the Association of Professional Engineers and Geoscientists of British Columbia (Lic.# 33259). I have worked as a geologist for a total of 35 years.
4. I am the Exploration Manager for LCT Holdings Inc.
5. I am author of this report titled “2015 Geological Program, Big Bulk Prospect, North-Western British Columbia, Kalum Mining Region”.
6. I have prepared this report on the basis of data collected in the field by personnel under my supervision, and I have no reason to believe any of the data provided is in error.
7. I am a 50% owner of LCT Holdings Inc.

Dated January 11, 2016

Clinton P. Smyth

Appendix B Orthophotographs and example DSM

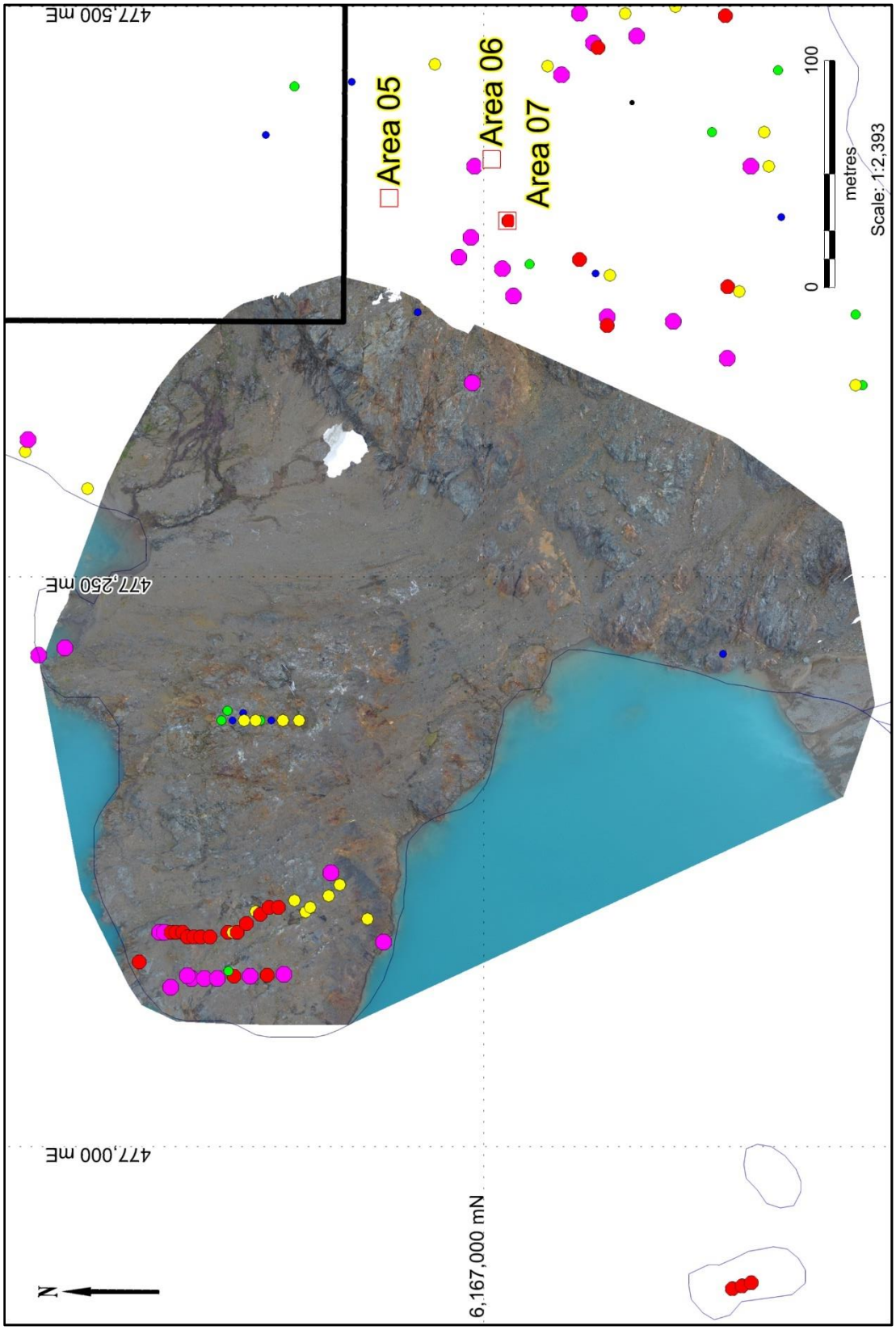


Figure 26: Mission 1 orthophoto (Bonnie Zone), with historical rock sample results (legend in Figure 12).

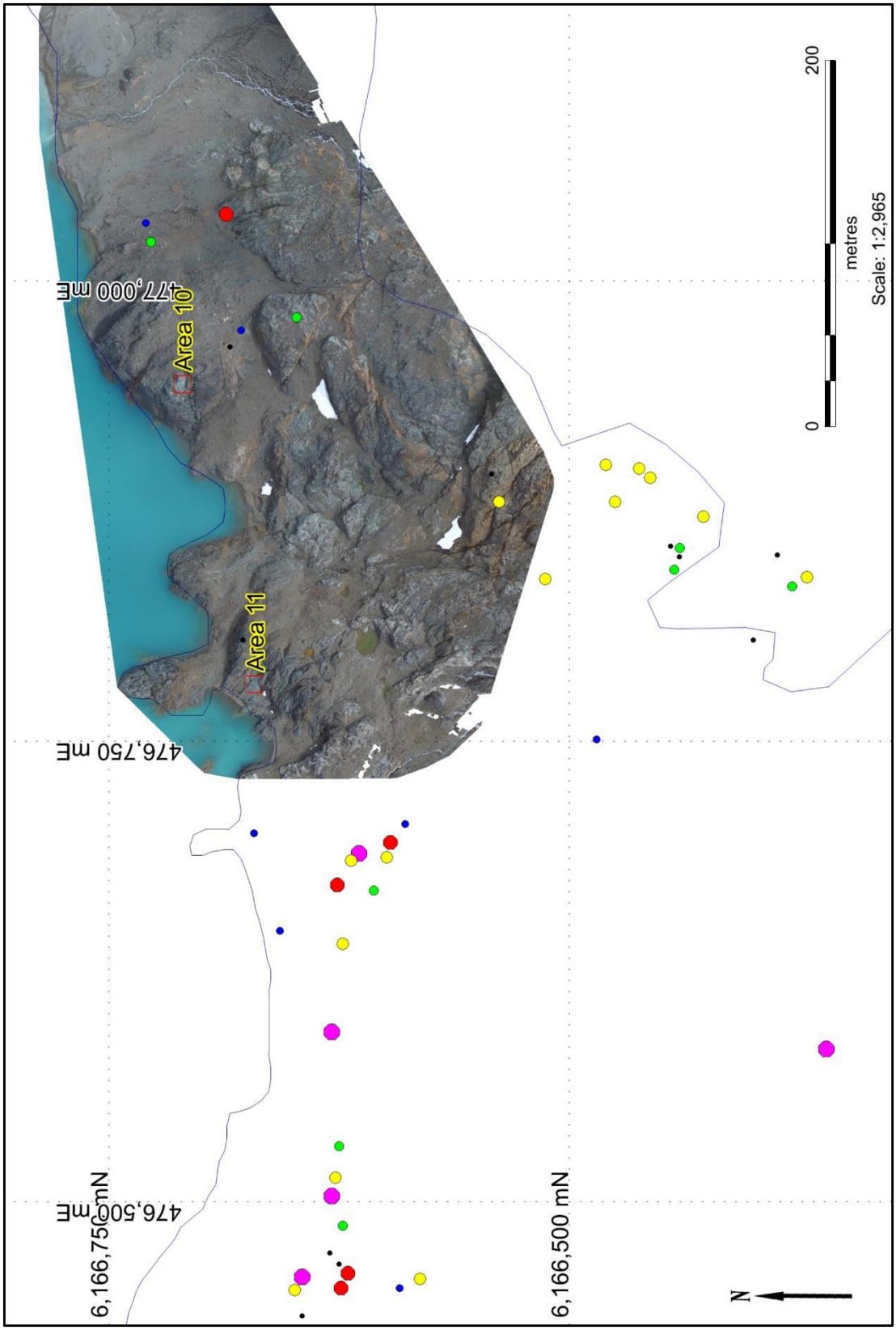


Figure 27: Mission 2 orthophoto (Brianne Zone), with historical rock sample results (legend in Figure 11).

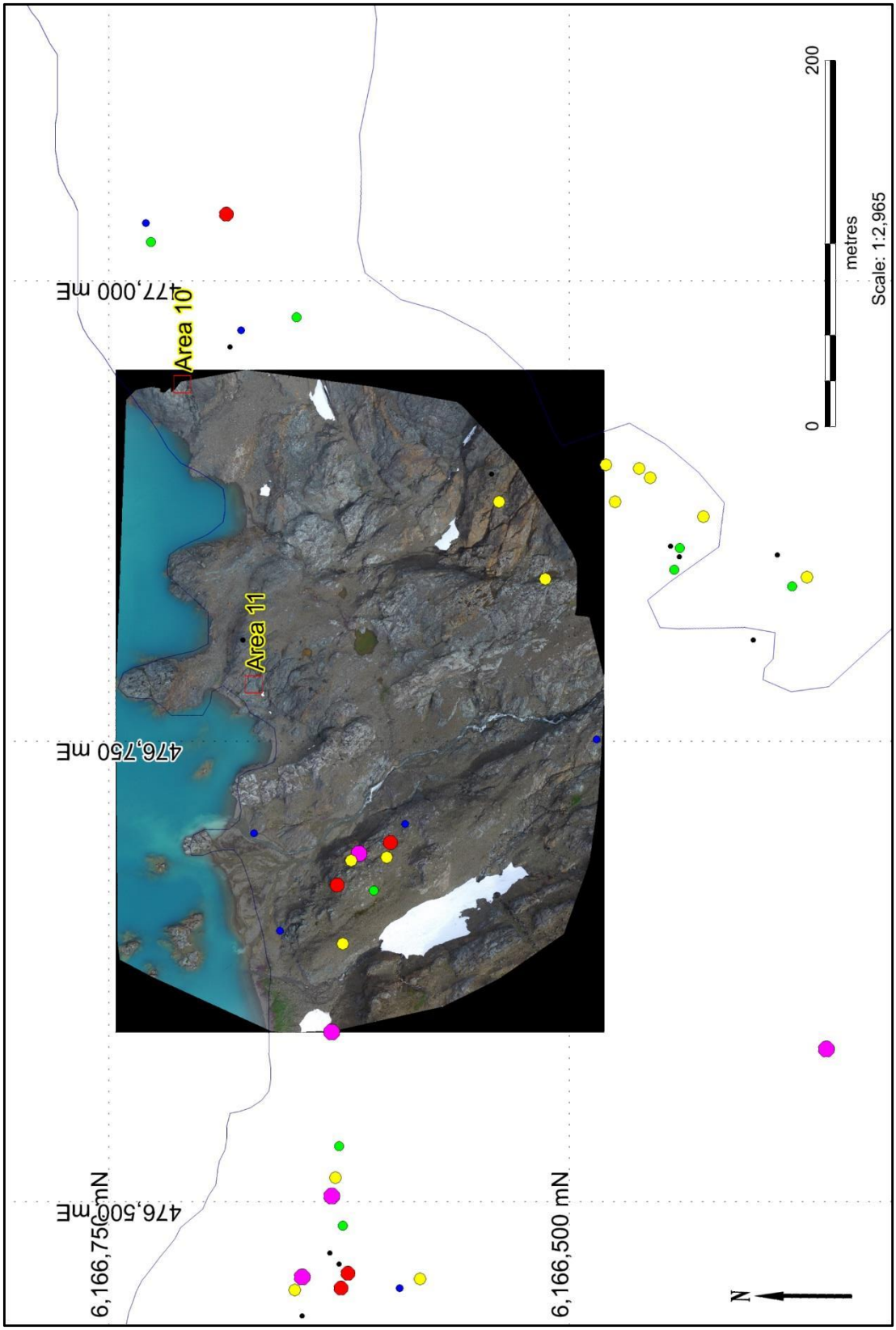


Figure 28: Mission 3 orthophoto (Brianne Zone), with historical rock sample results (legend in Figure 11).

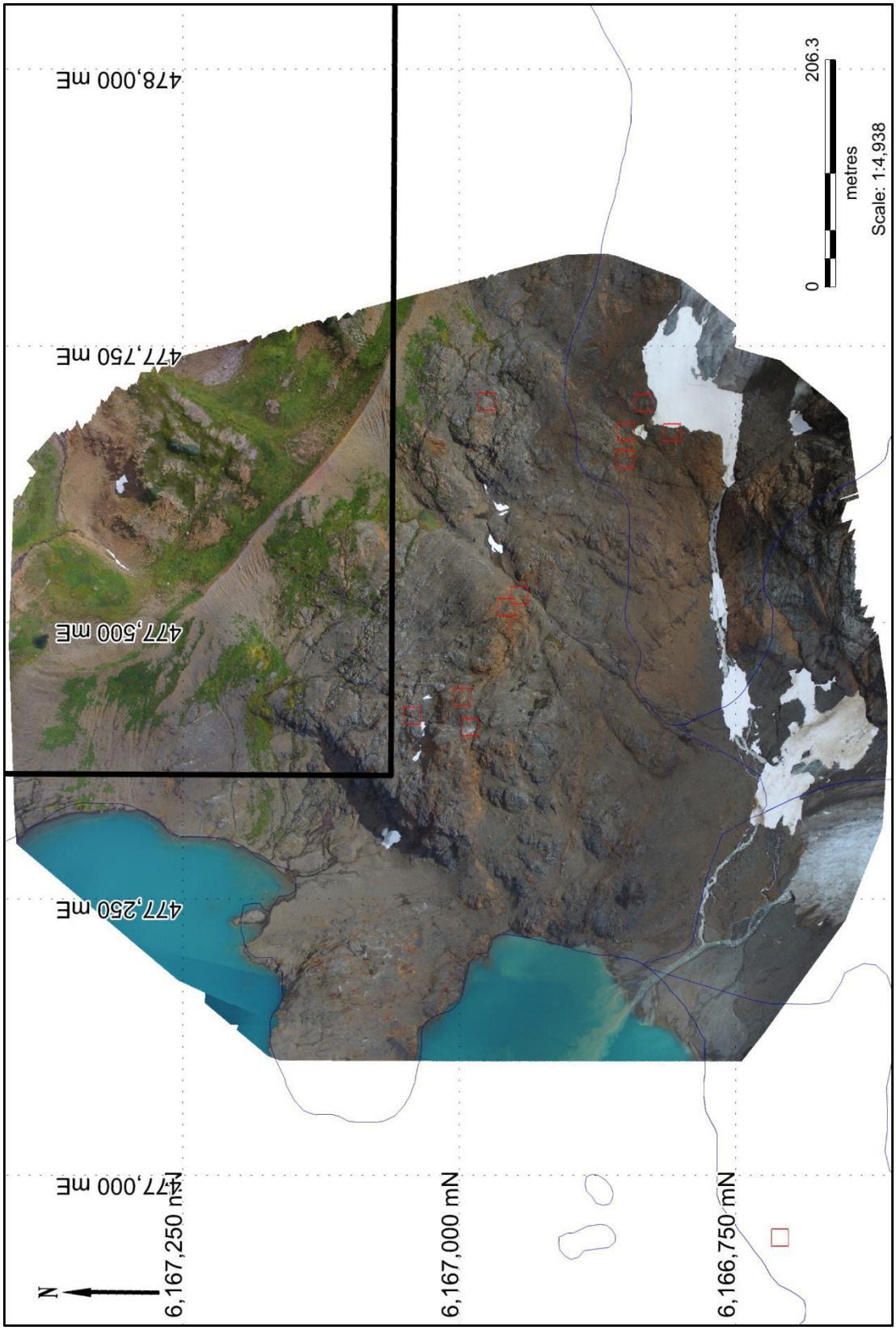


Figure 29: Mission 4 orthophoto (Bonnie East Zone).

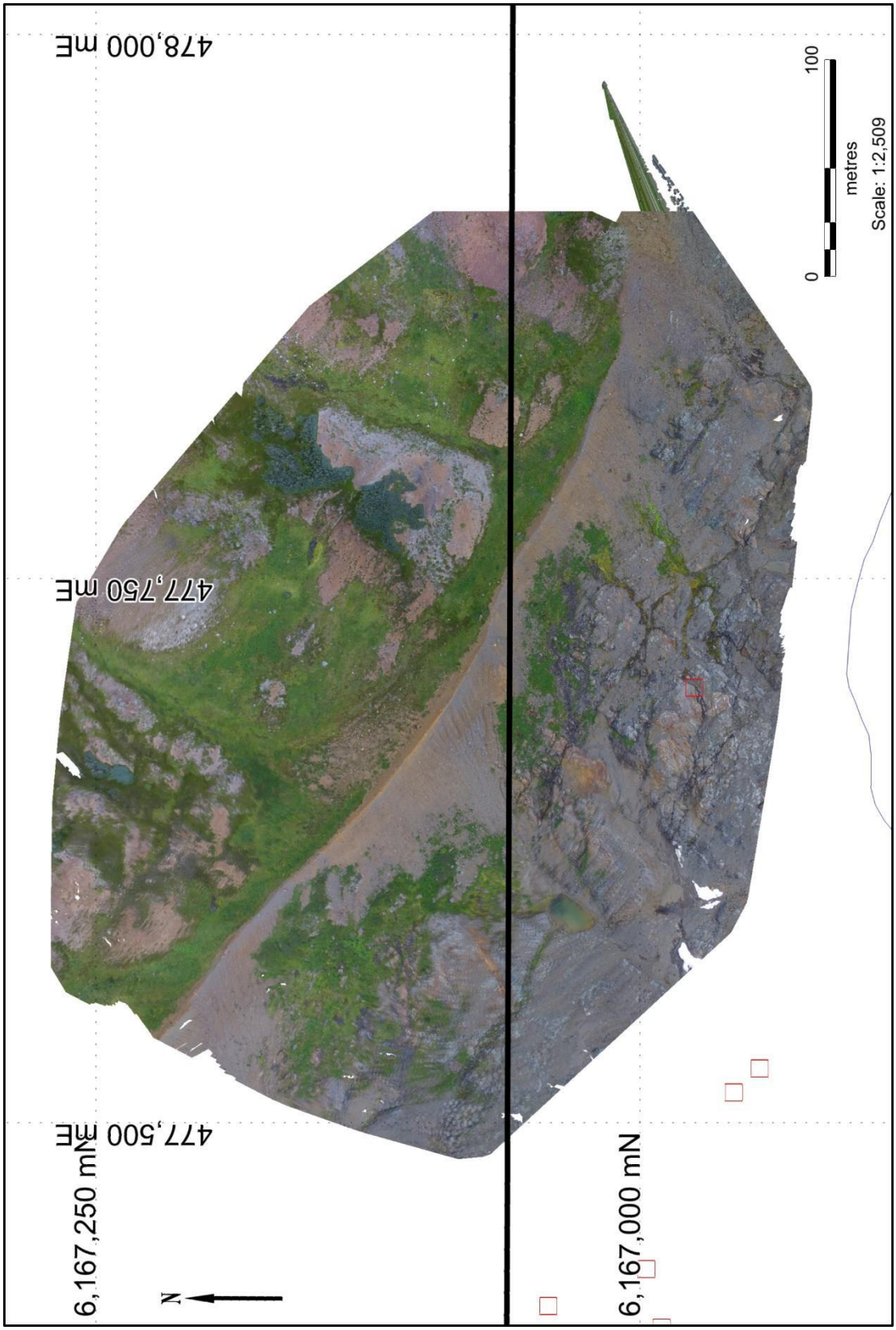


Figure 30: Mission 5 orthophoto (Bonnie East Zone).

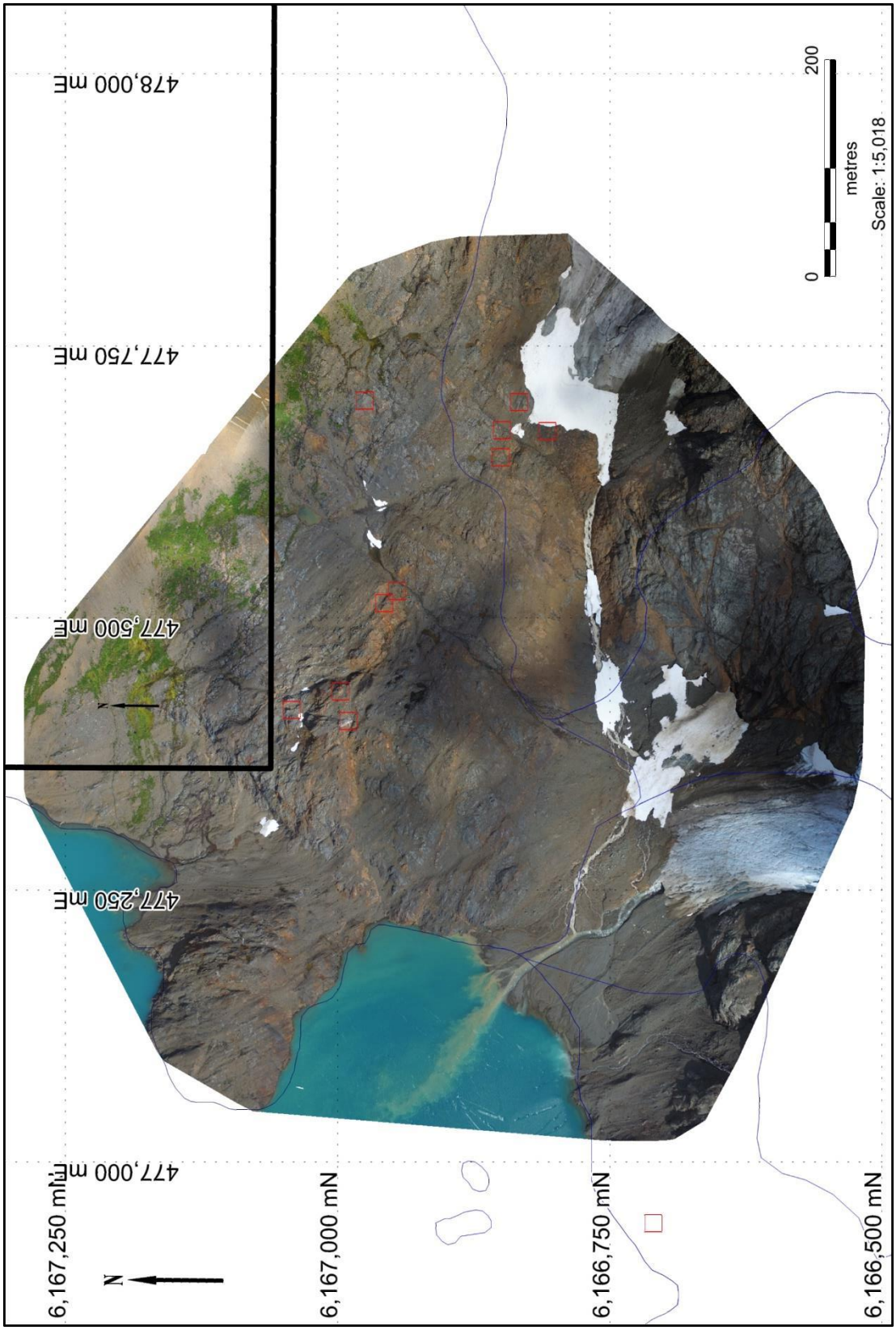


Figure 31: Mission 6 orthophoto (Bonnie East Zone).

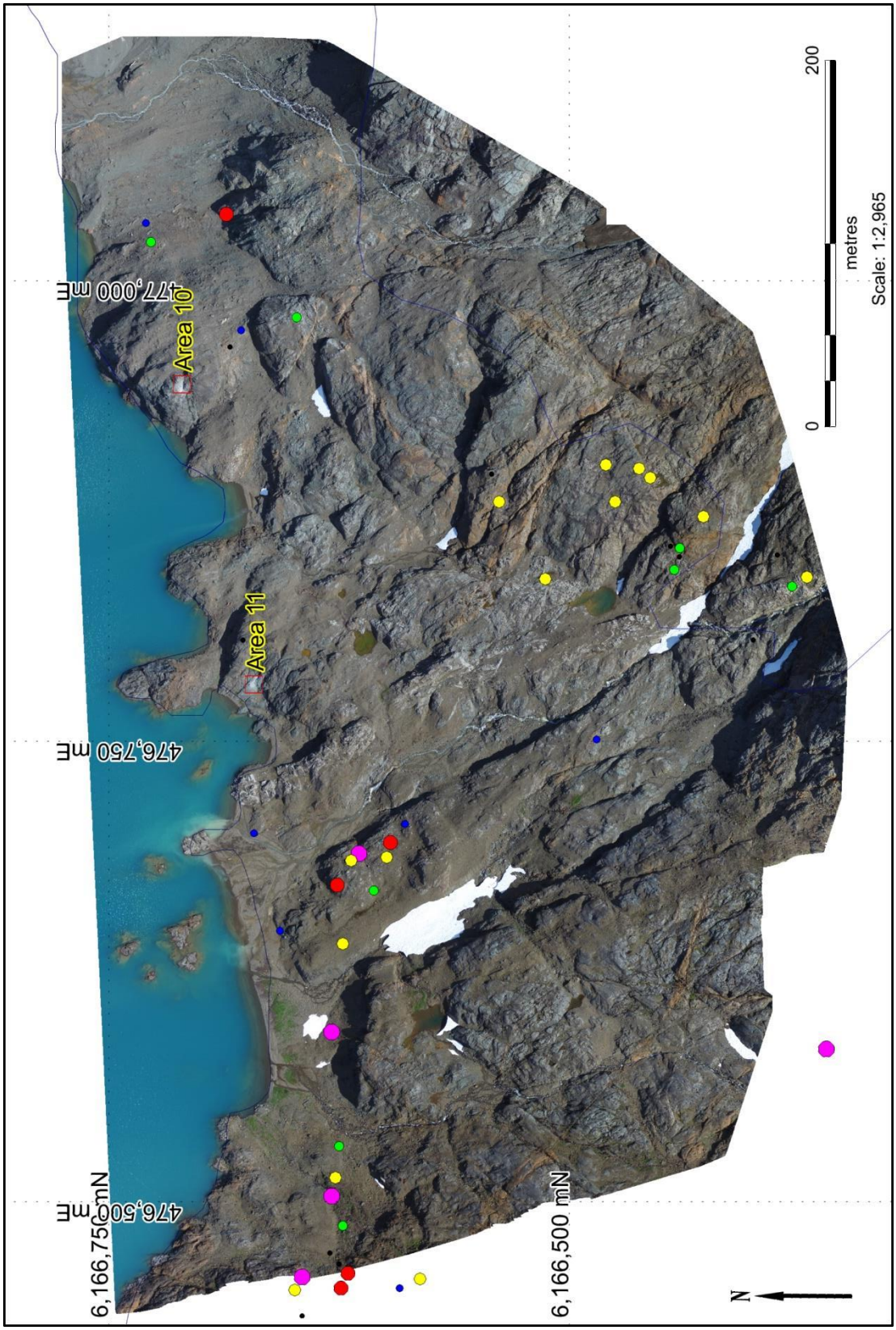


Figure 32: Mission 7 orthophoto (Brianne Zone) with historical rock sample results (legend: Figure 11).

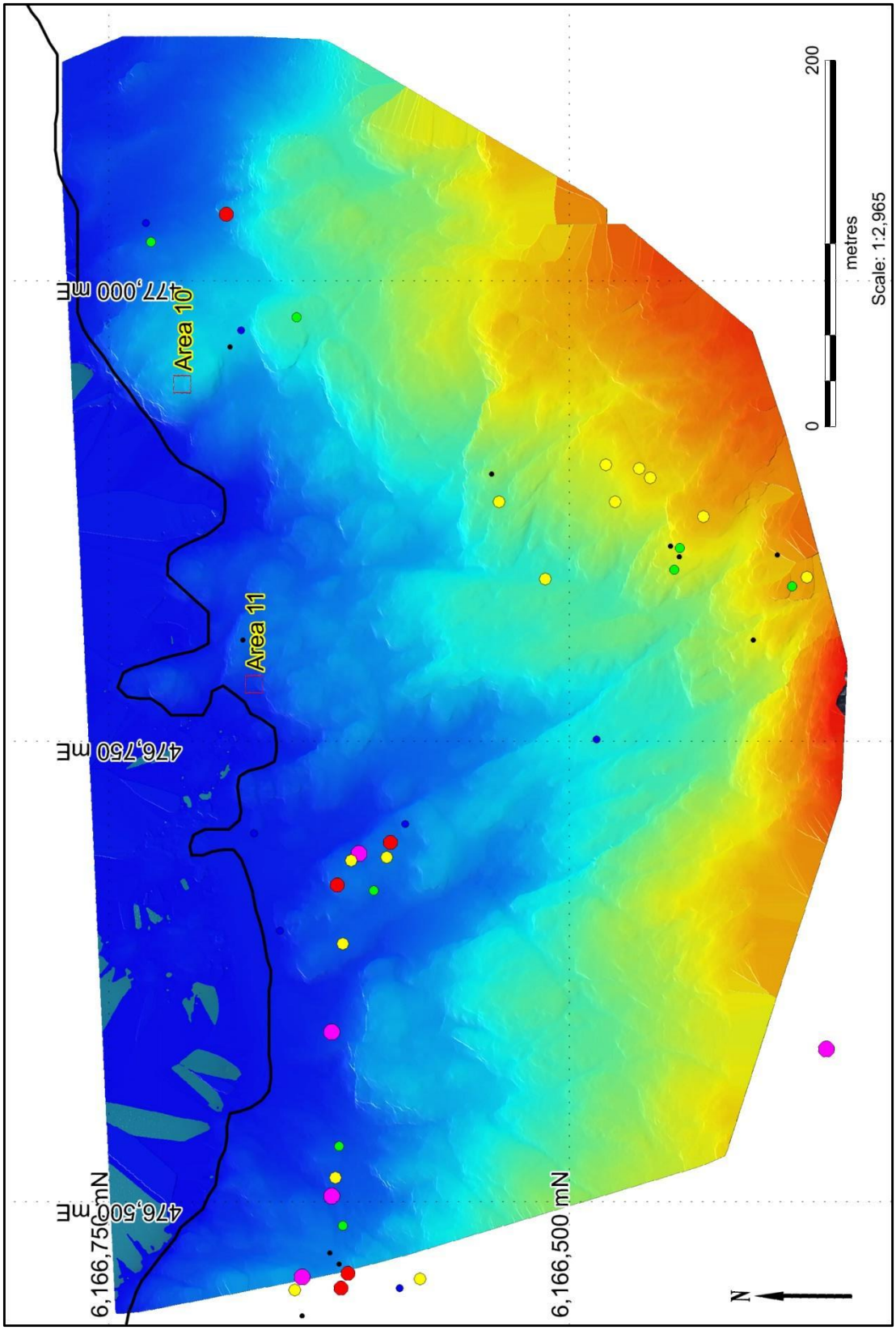


Figure 33: Mission 7 DSM (Brianne Zone) with historical rock sample results (legend in Figure 11).

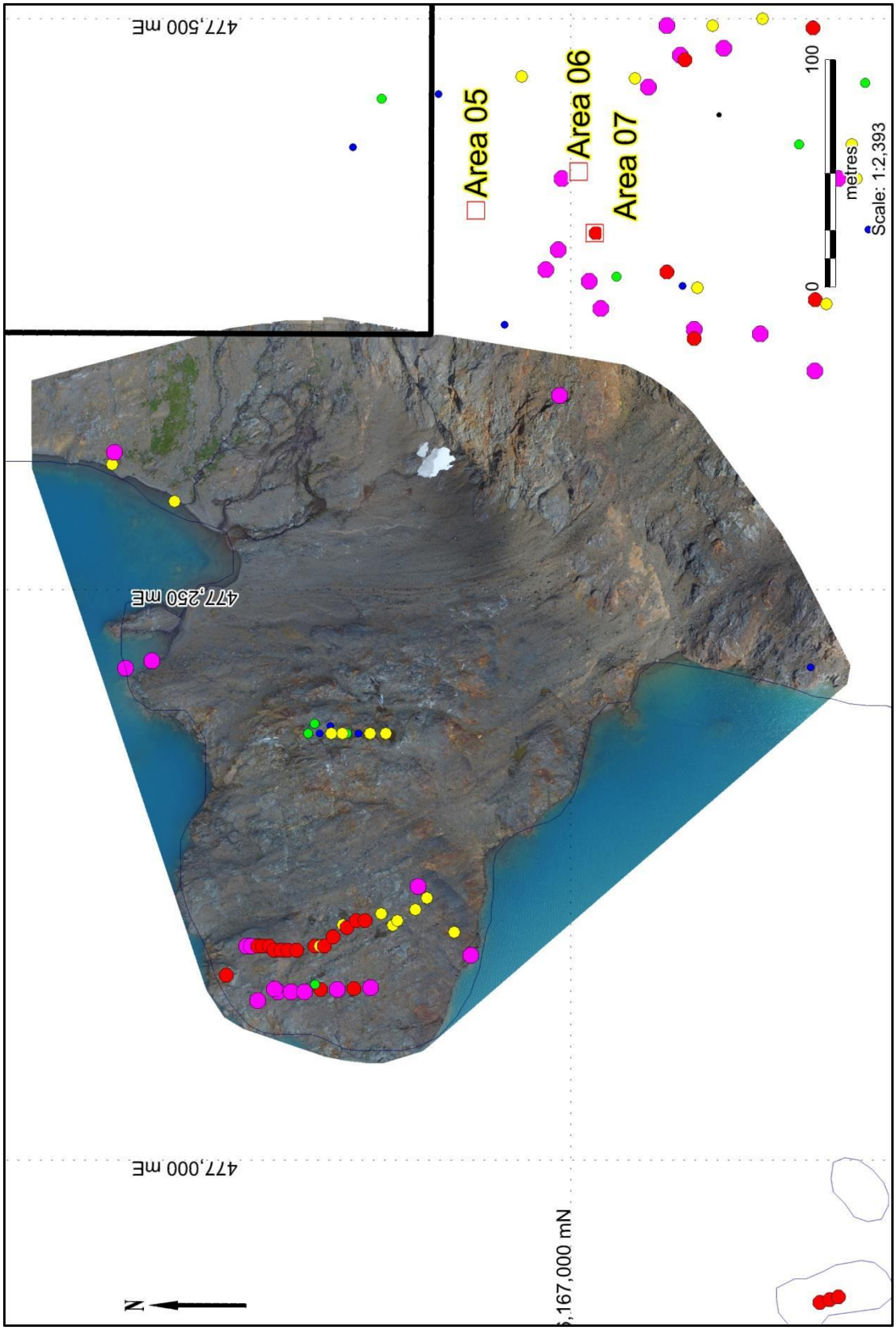
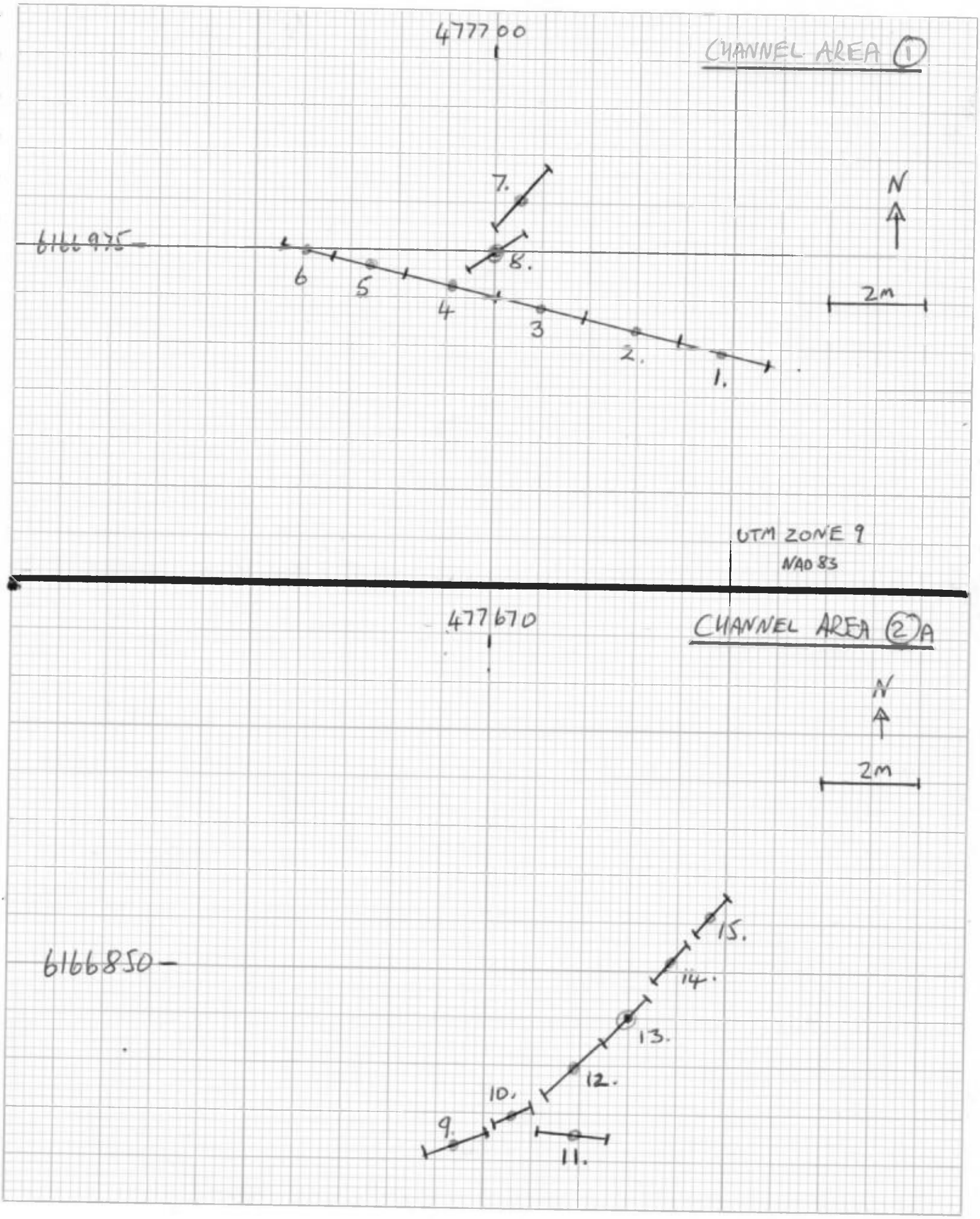
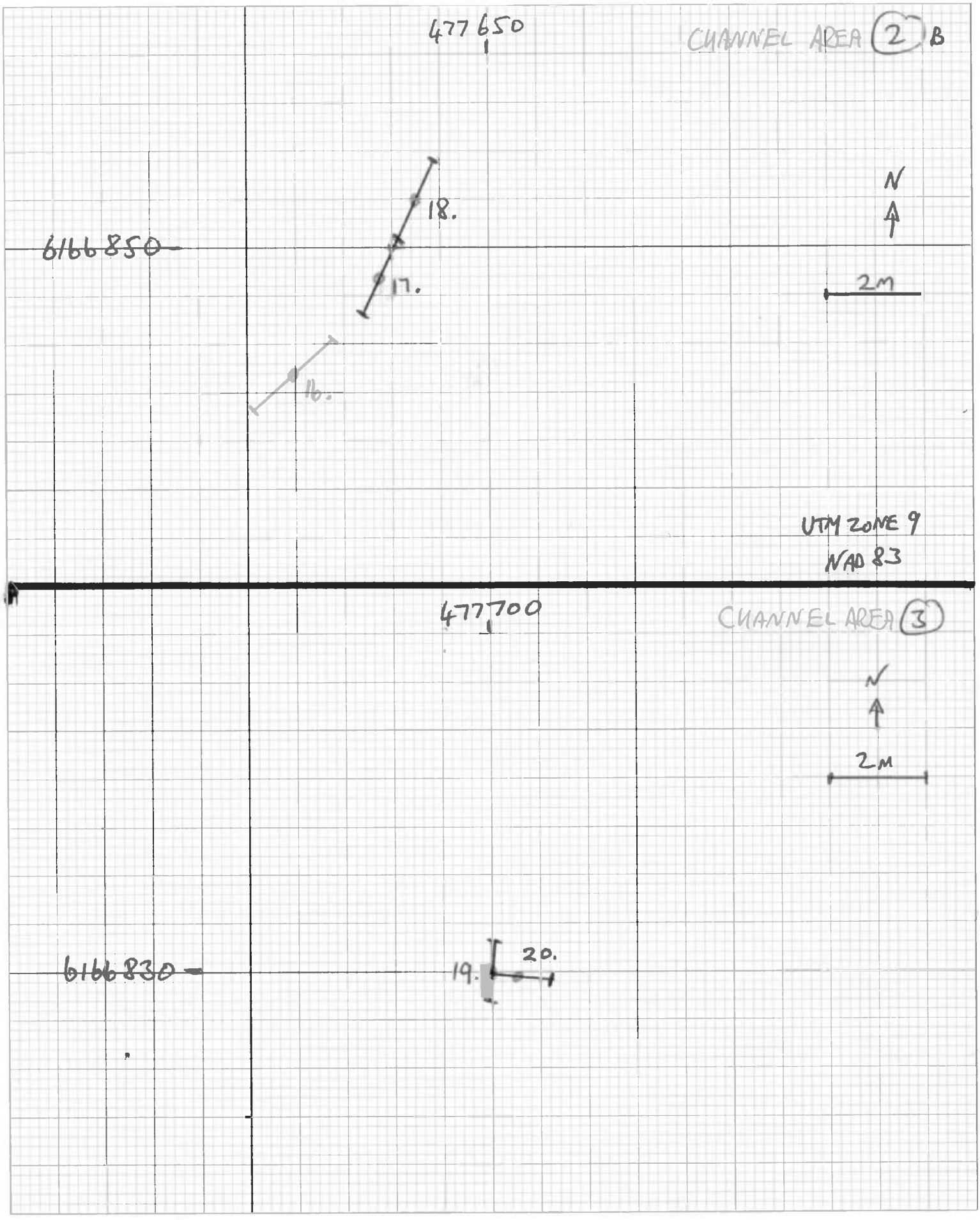
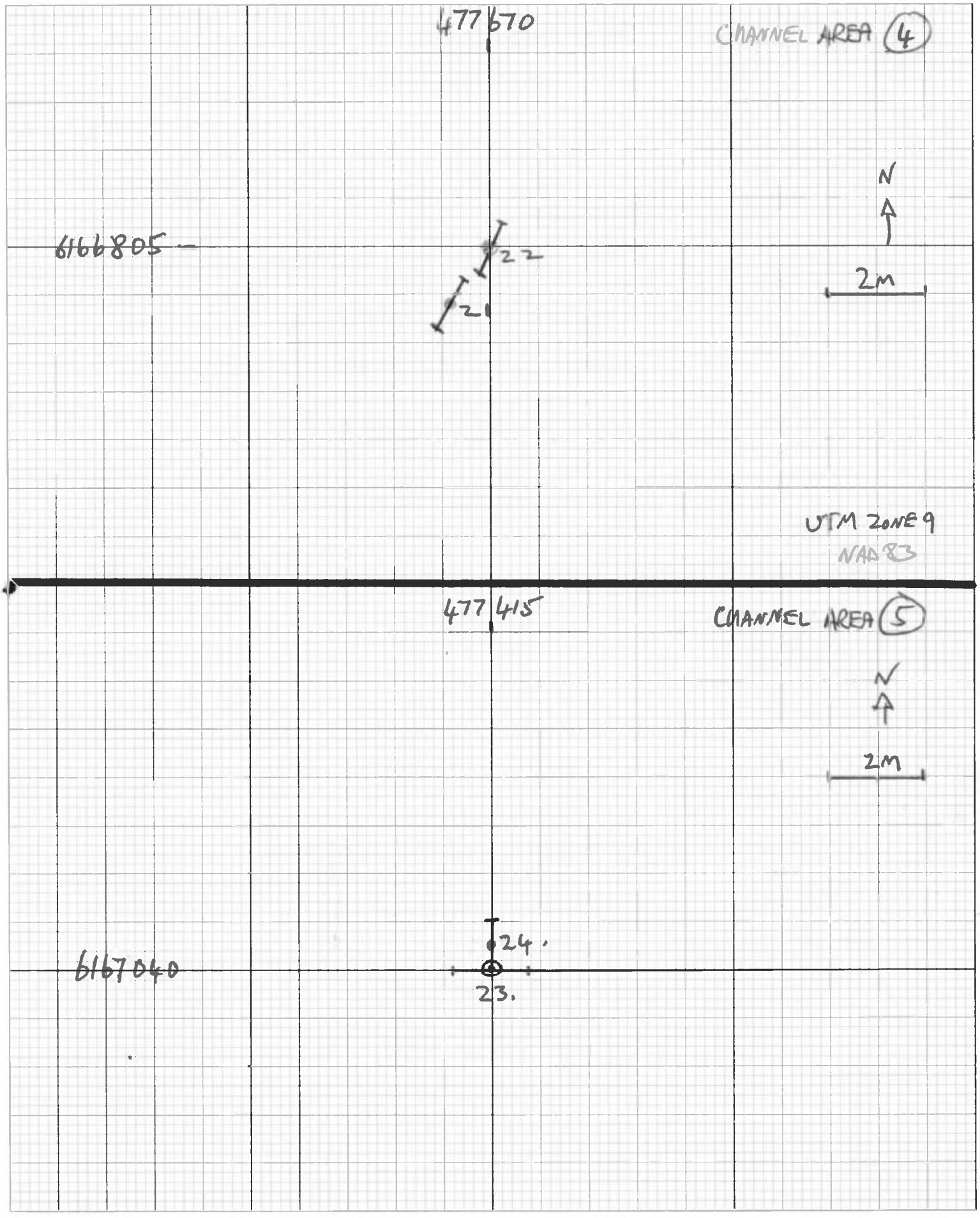


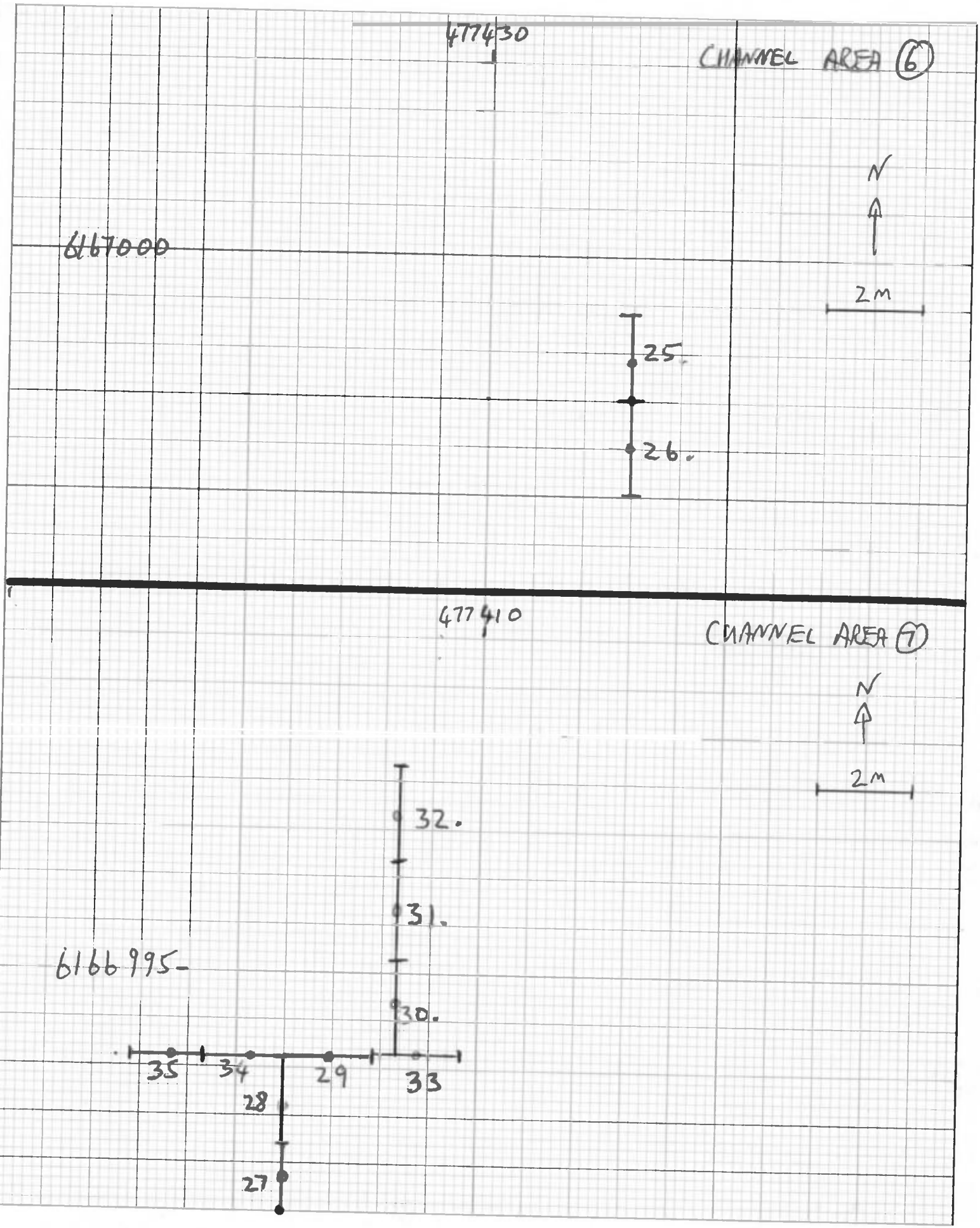
Figure 34: Mission 9 orthophoto (Bonnie Zone) with historical rock sample results (legend: Figure 11).

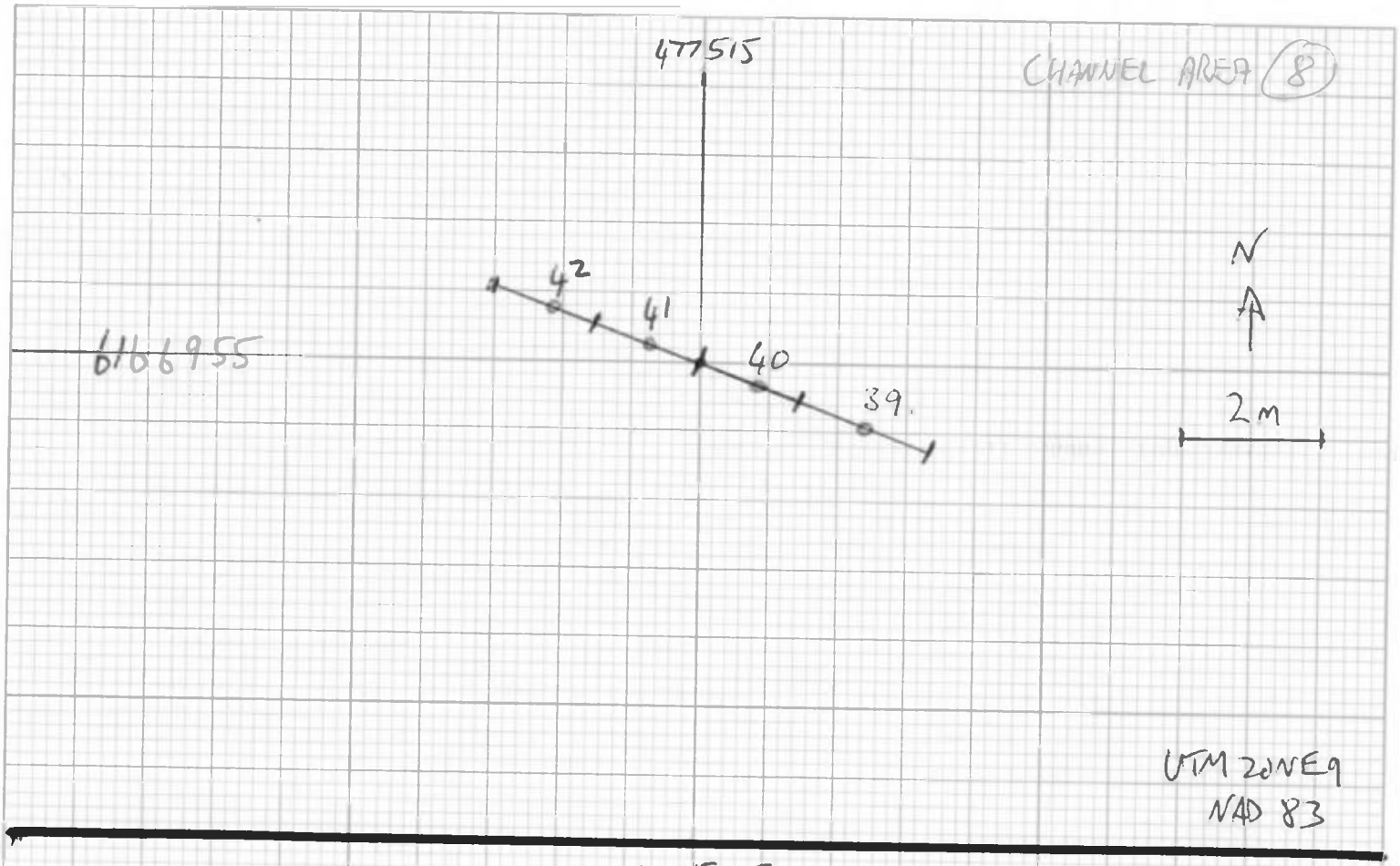
Appendix C Channel Sample Location Maps

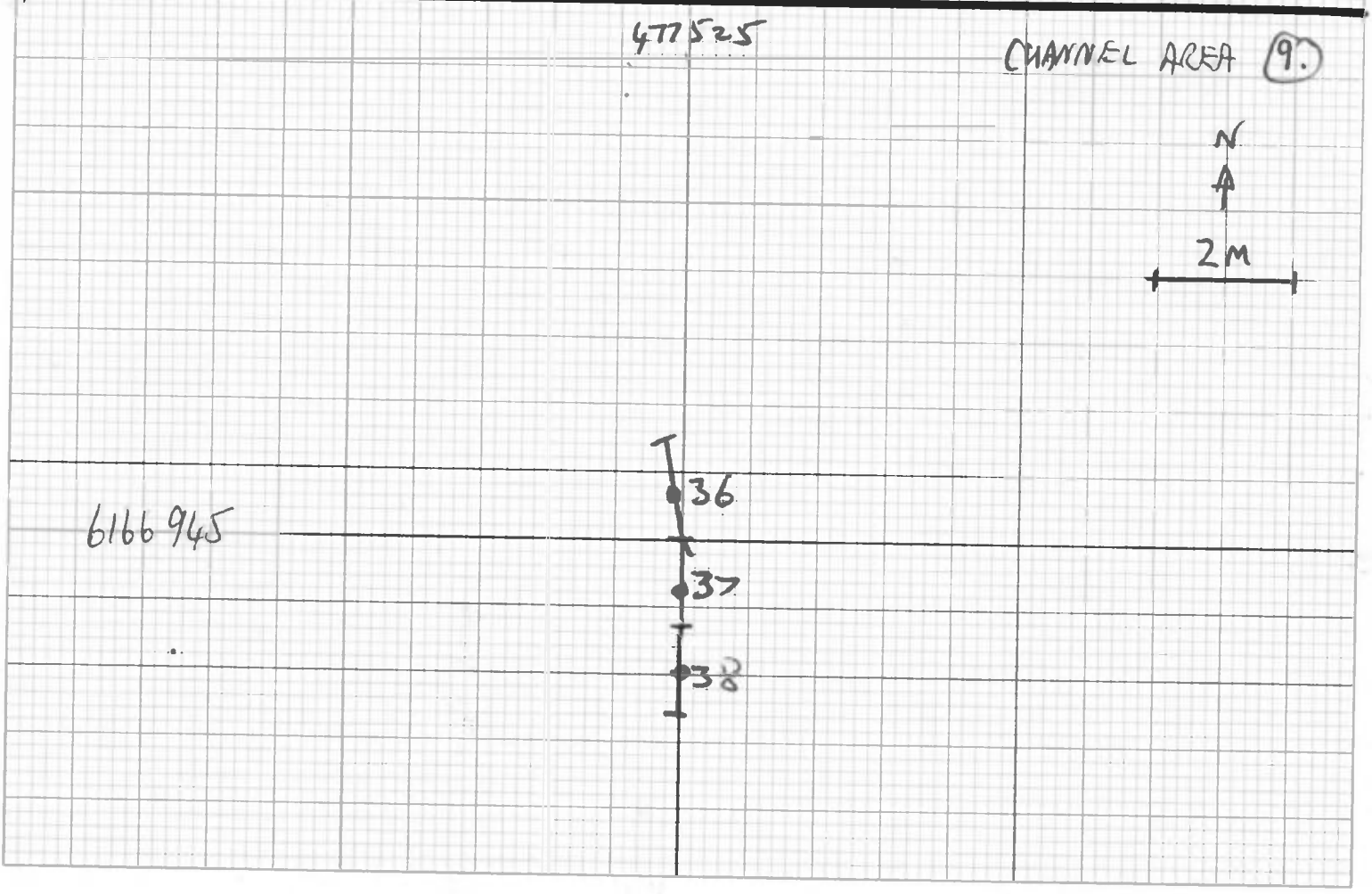

4777 00
CHANNEL AREA (1)
N
2m
6166975
7.
8.
6
5
4
3
2.
1.
UTM ZONE 9
NAD 83
477670
CHANNEL AREA (2)A
N
2m
6166850
15.
14.
13.
12.
10.
9.
11.





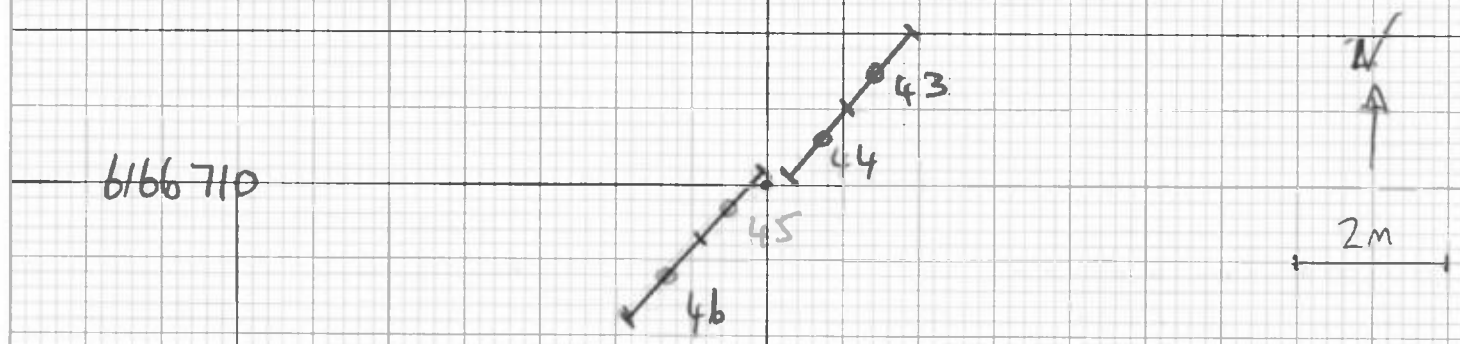






476 945

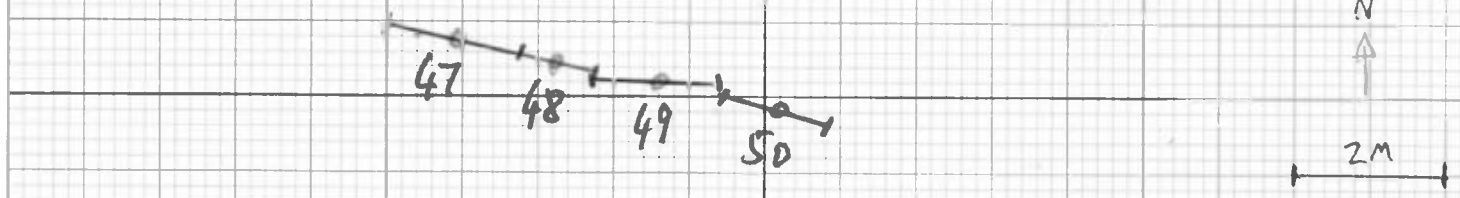
CHANNEL AREA (10)



6166710

476 785

CHANNEL AREA (11)



6166665

Appendix D Channel Samples Assay Certificates

ALS Canada Ltd.
2103 Dollarton Hwy
North Vancouver BC V7H 0A7
Phone: +1 (604) 984 0221 Fax: +1 (604) 984 0218
www.alsglobal.com

To: **GEOREFERENCE ONLINE LTD.**
301 - 850 W. HASTINGS STREET
VANCOUVER BC V6C 1E1

Finalized Date: 21- SEP- 2015
Account: GEOONL

CERTIFICATE VA15135704

P.O. No.: LCT01

This report is for 50 Rock samples submitted to our lab in Vancouver, BC, Canada on 4- SEP- 2015.

The following have access to data associated with this certificate:

CLINTON SMYTH		

SAMPLE PREPARATION

ALS CODE	DESCRIPTION
WEI- 21	Received Sample Weight
LOG- 22	Sample login - Rcd w/o BarCode
CRU- 32	Fine Crushing 90% <2mm
SPL- 21	Split sample - riffle splitter
PUL- 35a	Pulv 1 kg split to 95%<106 um
CRU- QC	Crushing QC Test
PUL- QC	Pulverizing QC Test
BAG- 01	Bulk Master for Storage

ANALYTICAL PROCEDURES

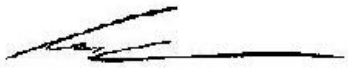
ALS CODE	DESCRIPTION	INSTRUMENT
Au- AA26	Ore Grade Au 50g FA AA finish	AAS

To: **GEOREFERENCE ONLINE LTD.**
ATTN: CLINTON SMYTH
301 - 850 W. HASTINGS STREET
VANCOUVER BC V6C 1E1

This is the Final Report and supersedes any preliminary report with this certificate number. Results apply to samples as submitted. All pages of this report have been checked and approved for release.

***** See Appendix Page for comments regarding this certificate *****

Comments: Sample ID discrepancy between sample submittal form and on the sample bags. CS01 – CS50 vs CH01 – CH50

Signature: 

Colin Ramshaw, Vancouver Laboratory Manager

ALS Canada Ltd.
2103 Dollarton Hwy
North Vancouver BC V7H 0A7
Phone: +1 (604) 984 0221 Fax: +1 (604) 984 0218
www.alsglobal.com

To: GEOREFERENCE ONLINE LTD.
301 - 850 W. HASTINGS STREET
VANCOUVER BC V6C 1E1

Finalized Date: 21- SEP- 2015
Account: GEOONL

CERTIFICATE OF ANALYSIS VA15135704

Sample Description	Method Analyte Units LOR	WEI- 21 Recvd Wt. kg 0.02	Au- AA26 Au ppm 0.01
CS01		5.72	0.05
CS02		6.00	0.05
CS03		5.86	0.05
CS04		9.20	0.06
CS05		5.12	0.07
CS06		2.34	0.04
CS07		5.96	0.03
CS08		3.12	0.06
CS09		5.36	0.43
CS10		2.74	0.02
CS11		4.18	1.07
CS12		4.30	0.05
CS13		2.76	0.02
CS14		2.86	0.14
CS15		2.36	0.02
CS16		7.12	0.18
CS17		5.76	0.03
CS18		6.82	0.05
CS19		3.26	0.06
CS20		3.40	0.03
CS21		5.86	0.40
CS22		4.68	0.09
CS23		3.80	0.20
CS24		2.10	0.10
CS25		5.62	0.05
CS26		5.36	0.21
CS27		3.24	0.05
CS28		4.18	0.16
CS29		3.26	0.04
CS30		3.44	0.08
CS31		4.58	0.10
CS32		3.80	0.03
CS33		3.20	0.05
CS34		4.12	0.13
CS35		3.18	0.14
CS36		4.36	0.06
CS37		2.82	0.22
CS38		2.86	0.10
CS39		4.28	0.02
CS40		4.04	0.07

Comments: Sample ID discrepancy between sample submittal form and on the sample bags. CS01 – CS50 vs CH01 – CH50

***** See Appendix Page for comments regarding this certificate *****

ALS Canada Ltd.
2103 Dollarton Hwy
North Vancouver BC V7H 0A7
Phone: +1 (604) 984 0221 Fax: +1 (604) 984 0218
www.alsglobal.com

To: GEOREFERENCE ONLINE LTD.
301 - 850 W. HASTINGS STREET
VANCOUVER BC V6C 1E1

Finalized Date: 21- SEP- 2015
Account: GEOONL

CERTIFICATE OF ANALYSIS VA15135704

Sample Description	Method Analyte Units LOR	WEI- 21 Recvd Wt. kg 0.02	Au- AA26 Au ppm 0.01
CS41		4.20	0.08
CS42		3.68	0.07
CS43		3.20	0.18
CS44		3.58	0.02
CS45		2.76	0.01
CS46		4.14	0.03
CS47		5.04	0.22
CS48		3.28	0.11
CS49		4.84	0.59
CS50		5.54	0.04

Comments: Sample ID discrepancy between sample submittal form and on the sample bags. CS01 – CS50 vs CH01 – CH50

***** See Appendix Page for comments regarding this certificate *****

ALS Canada Ltd.
2103 Dollarton Hwy
North Vancouver BC V7H 0A7
Phone: +1 (604) 984 0221 Fax: +1 (604) 984 0218
www.alsglobal.com

To: **GEOREFERENCE ONLINE LTD.**
301 - 850 W. HASTINGS STREET
VANCOUVER BC V6C 1E1

Finalized Date: 21- SEP- 2015
Account: GEOONL

CERTIFICATE OF ANALYSIS VA15135704

CERTIFICATE COMMENTS

LABORATORY ADDRESSES

Processed at ALS Vancouver located at 2103 Dollarton Hwy, North Vancouver, BC, Canada.

Applies to Method:			
Au- AA26	BAG- 01	CRU- 32	CRU- QC
LOG- 22	PUL- 35a	PUL- QC	SPL- 21
WEI- 21			

Niton XRF Scan and Magnetic Susceptibility Measurements

SNUM	AuPPB	As	S	K	Ca	Sc	Ti	V	Cr	Mn	Fe
CS01	50	32	11629	37753	22322	105	2501	215	42	1899	47887
CS02	50	39	11121	39602	16724	61	2541	222	32	1514	48801
CS03	50	37	12543	38355	19738	83	2437	207	58	1585	55547
CS04	60	38	19810	38858	22363	106	2395	233	35	1741	70538
CS05	70	53	20682	35130	24803	91	2195	204	22	1798	68231
CS06	40	38	15388	33188	19338	-9	2328	217	32	1581	55334
CS07	30	38	13681	34795	23146	87	2494	245	24	1649	49325
CS08	60	63	15859	40419	21506	119	2592	228	41	1565	54542
CS09	430	214	49062	32042	10769	-9	1908	166	36	1273	173917
CS10	20	9	4603	16468	13638	48	1416	130	30	1089	33199
CS11	1070	374	59209	21095	12486	-9	1157	118	-9	1644	245475
CS12	50	24	11507	34039	31237	100	2383	205	27	1099	45107
CS13	20	11	15870	39146	61210	160	1861	191	25	1497	46279
CS14	140	26	12856	37118	25097	91	2338	190	30	1057	41378
CS15	20	11	9017	34163	35885	115	2277	197	25	1144	31885
CS16	180	64	14943	40332	15583	109	2050	245	40	1244	59678
CS17	30	14	10326	35646	36951	128	1679	188	27	1423	39239
CS18	50	65	10783	42854	29574	133	1911	199	44	1574	44724
CS19	60	55	23477	31614	35310	120	1494	164	-9	1310	72865
CS20	30	13	4270	28687	41924	148	1717	177	20	1092	30094
CS21	400	138	24705	36324	25507	82	1414	146	27	799	73171
CS22	90	51	10115	39702	34441	148	1773	200	23	1210	43684
CS23	200	35	14755	27930	30852	-9	2206	254	25	1449	66421
CS24	100	24	12977	32609	24257	100	2410	271	31	1481	65403
CS25	50	22	5521	35965	41397	159	1955	235	22	1091	37973
CS26	210	89	10259	33527	10564	59	1841	205	34	632	43204
CS27	50	32	5947	35894	28456	141	2191	232	-9	725	37479
CS28	160	61	4743	31552	20907	78	1818	197	35	574	29240
CS29	40	33	2552	20272	35179	168	3169	181	29	1071	42560
CS30	80	26	9786	35250	37589	178	3566	246	33	1364	61907
CS31	100	33	9267	38272	22592	107	2100	229	24	1273	55402
CS32	30	16	4822	32689	41441	167	1898	206	26	1009	38283
CS33	50	41	2459	18630	26124	-9	2244	153	-9	521	23923
CS34	130	107	9531	26109	10641	-9	1486	166	22	344	27196
CS35	140	167	9872	36972	8273	56	2354	254	20	238	30361
CS36	60	41	8992	35200	20160	92	3018	232	39	909	35029
CS37	220	112	18356	35284	50138	185	2447	217	24	1724	56433
CS38	100	58	11660	36020	16423	63	2675	258	36	789	52412
CS39	20	35	10004	35158	29088	107	2539	264	64	1293	54524
CS40	70	73	20160	36459	28954	139	2294	214	67	1391	60852
CS41	80	44	15398	40799	31208	154	2547	232	46	1384	51189
CS42	70	88	13086	39228	18778	103	2690	244	41	883	47444
CS43	180	9	3364	17838	81628	209	2014	210	-9	1052	47427
CS44	20	-9	-9	22305	49323	216	2556	232	-9	981	44618

All values in ppm, except Au (ppb) and Magnetic Susceptibility [-9 means not detected].

Niton XRF Scan and Magnetic Susceptibility Measurements

SNUM	AuPPB	As	S	K	Ca	Sc	Ti	V	Cr	Mn	Fe
CS45	10	6	-9	10473	95252	202	1249	155	-9	666	23934
CS46	30	8	741	14389	46429	192	1733	195	-9	854	40538
CS47	220	47	2076	1795	195467	243	376	93	-9	2594	42591
CS48	110	39	2149	27467	26125	-9	2417	303	-9	3802	95123
CS49	590	135	9850	7087	78745	394	1936	259	-9	2961	96085
CS50	40	46	1978	19491	40608	205	3340	263	-9	2625	72971

All values in ppm, except Au (ppb) and Magnetic Susceptibility [-9 means not detected].

SNUM	Co	Ni	Cu	Zn	Se	Rb	Sr	Zr	Mo	Pd	Ag	Cd
CS01	230	40	239	117	3	102	178	50	3	-9	-9	-9
CS02	226	36	190	201	4	112	155	52	4	-9	-9	-9
CS03	317	40	200	108	5	105	128	49	4	-9	-9	-9
CS04	401	51	89	302	7	102	160	52	3	-9	-9	-9
CS05	372	49	167	272	9	93	210	48	41	-9	-9	-9
CS06	322	47	176	178	5	93	264	50	42	-9	-9	-9
CS07	222	40	189	108	4	97	257	49	-9	-9	-9	-9
CS08	235	50	100	164	5	111	158	52	6	-9	-9	-9
CS09	879	-9	7118	337	12	95	44	41	33	-9	15	-9
CS10	204	81	191	52	5	77	77	41	-9	-9	16	26
CS11	1010	62	6278	1260	26	76	53	19	22	-9	43	-9
CS12	194	43	698	65	7	94	128	58	6	-9	-9	-9
CS13	193	77	424	35	7	97	193	57	6	-9	-9	-9
CS14	242	55	530	393	4	109	78	65	5	-9	-9	-9
CS15	173	34	274	58	-9	88	213	68	4	-9	-9	-9
CS16	233	44	135	171	5	118	52	33	14	-9	-9	-9
CS17	181	65	150	98	5	96	95	31	7	-9	-9	-9
CS18	255	35	71	60	4	113	77	33	4	-9	-9	-9
CS19	292	78	96	56	6	86	224	36	4	-9	-9	-9
CS20	-9	67	417	52	2	70	298	41	-9	-9	-9	-9
CS21	360	48	1181	44	8	98	72	36	15	-9	-9	-9
CS22	154	27	365	51	4	92	125	41	4	-9	-9	-9
CS23	213	52	1394	424	10	89	141	27	11	-9	-9	-9
CS24	-9	68	900	103	8	100	89	28	13	-9	-9	-9
CS25	170	51	357	72	2	86	140	38	6	-9	-9	-9
CS26	144	49	355	99	3	86	49	36	9	-9	-9	-9
CS27	-9	52	330	52	4	87	160	37	3	-9	-9	-9
CS28	150	40	195	222	3	76	102	32	2	-9	-9	-9
CS29	-9	65	121	67	-9	51	167	56	-9	-9	-9	-9
CS30	170	61	190	98	5	81	115	53	-9	-9	-9	-9
CS31	-9	50	241	59	5	97	105	38	7	-9	-9	-9
CS32	-9	52	253	49	4	81	254	37	4	-9	-9	-9
CS33	93	26	89	48	-9	40	75	33	3	-9	-9	-9
CS34	202	38	236	57	3	64	33	25	8	-9	-9	-9
CS35	146	40	331	78	5	90	36	34	4	-9	-9	-9
CS36	147	26	318	100	5	112	102	59	21	-9	-9	-9
CS37	274	44	629	111	10	101	111	49	11	-9	-9	-9
CS38	169	54	270	66	6	107	39	55	8	-9	-9	-9
CS39	159	50	285	81	7	93	97	42	8	-9	-9	-9
CS40	226	69	504	143	6	102	78	42	8	-9	-9	-9
CS41	267	48	319	80	6	107	99	50	10	-9	-9	-9
CS42	282	31	320	79	6	109	53	51	7	-9	-9	-9
CS43	-9	64	367	49	-9	22	1303	35	4	-9	-9	-9
CS44	-9	65	305	53	4	26	1466	36	4	-9	-9	-9

All values in ppm, except Au (ppb) and Magnetic Susceptibility [-9 means not detected].

SNUM	Co	Ni	Cu	Zn	Se	Rb	Sr	Zr	Mo	Pd	Ag	Cd
CS45	-9	46	128	25	-9	13	1254	24	3	-9	-9	-9
CS46	-9	46	237	55	-9	20	960	26	3	-9	-9	-9
CS47	-9	63	297	798	-9	4	736	12	3	-9	-9	-9
CS48	-9	88	448	243	-9	59	465	33	-9	-9	-9	-9
CS49	-9	99	1840	440	-9	10	2820	36	9	-9	-9	-9
CS50	-9	93	757	271	-9	27	1160	45	4	-9	-9	-9

All values in ppm, except Au (ppb) and Magnetic Susceptibility [-9 means not detected].

SNUM	Te	Cs	Ba	W	Hg	Th	U	Sb	Pb	Sn	MagSusc
CS01	-9	-9	720	-9	-9	-9	-9	-9	-9	-9	0.21
CS02	-9	-9	695	-9	-9	-9	-9	-9	21	-9	0.27
CS03	-9	17	786	32	-9	-9	-9	-9	8	-9	0.25
CS04	-9	36	736	45	-9	-9	-9	-9	76	14	0.26
CS05	-9	25	726	-9	10	-9	-9	-9	138	-9	0.20
CS06	-9	20	667	39	-9	-9	-9	-9	29	-9	0.25
CS07	-9	25	679	30	-9	-9	-9	-9	10	-9	0.42
CS08	-9	27	651	36	-9	-9	-9	-9	30	-9	0.15
CS09	79	58	700	77	-9	-9	-9	39	150	-9	0.18
CS10	192	112	999	-9	-9	-9	-9	59	-9	24	0.33
CS11	113	81	805	85	-9	-9	9	56	399	25	0.17
CS12	-9	35	536	-9	-9	-9	-9	-9	6	-9	0.45
CS13	-9	35	1619	39	8	-9	6	-9	-9	-9	0.34
CS14	-9	29	578	-9	8	-9	-9	-9	67	-9	0.22
CS15	-9	-9	616	-9	-9	-9	-9	-9	6	-9	0.21
CS16	-9	25	504	-9	7	-9	-9	-9	55	-9	0.40
CS17	-9	22	574	-9	-9	-9	-9	-9	-9	-9	0.27
CS18	-9	-9	529	33	-9	-9	-9	-9	-9	-9	0.24
CS19	-9	36	2127	52	9	-9	-9	-9	-9	-9	0.22
CS20	-9	24	2403	33	-9	-9	-9	-9	-9	-9	0.22
CS21	-9	31	418	35	-9	-9	-9	-9	10	-9	0.12
CS22	-9	18	399	39	-9	-9	-9	-9	-9	-9	0.29
CS23	-9	17	547	-9	7	-9	-9	-9	15	-9	0.30
CS24	-9	30	631	37	8	-9	-9	-9	12	-9	0.28
CS25	-9	31	651	30	-9	-9	-9	17	-9	-9	0.43
CS26	-9	22	558	27	-9	-9	-9	-9	-9	-9	0.10
CS27	-9	-9	495	-9	8	-9	-9	-9	-9	-9	0.34
CS28	-9	20	568	-9	-9	-9	-9	16	35	-9	0.20
CS29	-9	35	564	-9	8	-9	-9	27	-9	-9	0.20
CS30	-9	36	744	40	-9	-9	-9	-9	17	-9	0.30
CS31	-9	25	788	-9	8	-9	-9	-9	-9	-9	0.32
CS32	-9	28	771	38	-9	-9	-9	-9	-9	-9	0.35
CS33	-9	-9	317	-9	-9	-9	4	-9	-9	-9	0.62
CS34	-9	-9	439	-9	7	-9	-9	34	-9	-9	0.22
CS35	-9	-9	487	-9	7	-9	-9	68	28	-9	0.30
CS36	-9	-9	318	42	-9	-9	6	-9	12	-9	0.21
CS37	-9	31	516	45	-9	-9	-9	22	9	-9	0.12
CS38	-9	18	433	35	-9	-9	-9	-9	-9	-9	0.21
CS39	-9	16	432	33	-9	-9	-9	-9	8	-9	0.30
CS40	-9	16	438	39	-9	-9	-9	-9	11	-9	0.06
CS41	-9	25	429	-9	7	-9	6	-9	-9	-9	0.17
CS42	-9	16	420	48	-9	-9	7	17	-9	-9	0.16
CS43	-9	26	833	-9	8	-9	-9	-9	32	-9	5.26
CS44	-9	31	940	-9	7	-9	-9	-9	128	-9	10.40

All values in ppm, except Au (ppb) and Magnetic Susceptibility [-9 means not detected].

SNUM	Te	Cs	Ba	W	Hg	Th	U	Sb	Pb	Sn	MagSusc
CS45	-9	18	513	-9	7	-9	-9	-9	-9	-9	2.73
CS46	-9	23	745	-9	-9	-9	-9	-9	-9	-9	24.20
CS47	-9	27	244	-9	10	-9	-9	-9	117	-9	0.39
CS48	-9	39	1299	-9	-9	-9	-9	-9	34	-9	0.45
CS49	-9	47	652	67	-9	-9	-9	52	106	-9	0.67
CS50	-9	38	1119	37	-9	-9	-9	20	22	-9	0.74

All values in ppm, except Au (ppb) and Magnetic Susceptibility [-9 means not detected].

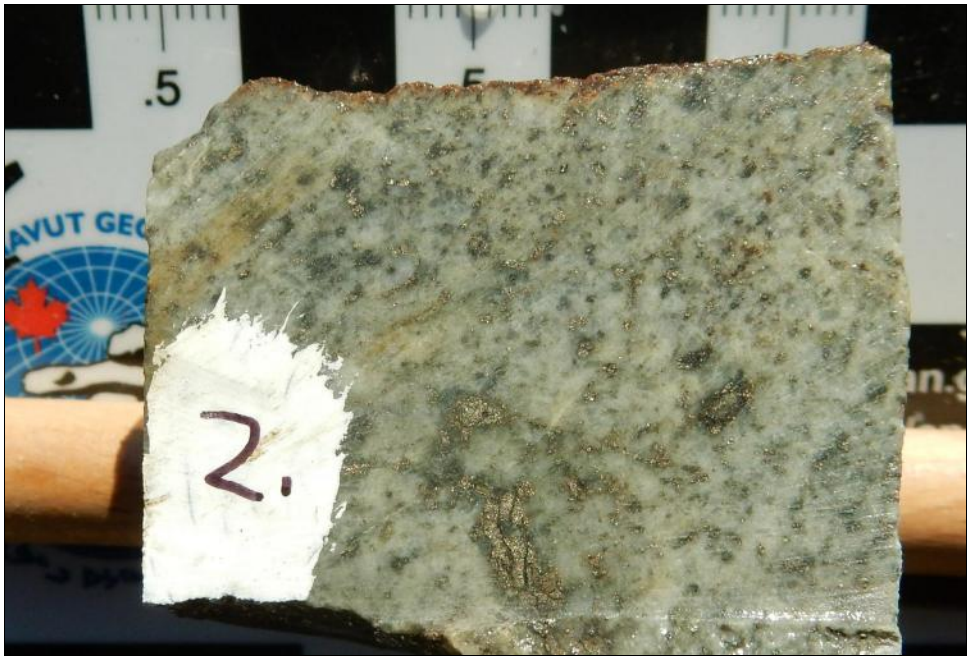
Appendix E Channel Sample Descriptions

Channel Sample Descriptions and Magnetic Susceptibilities

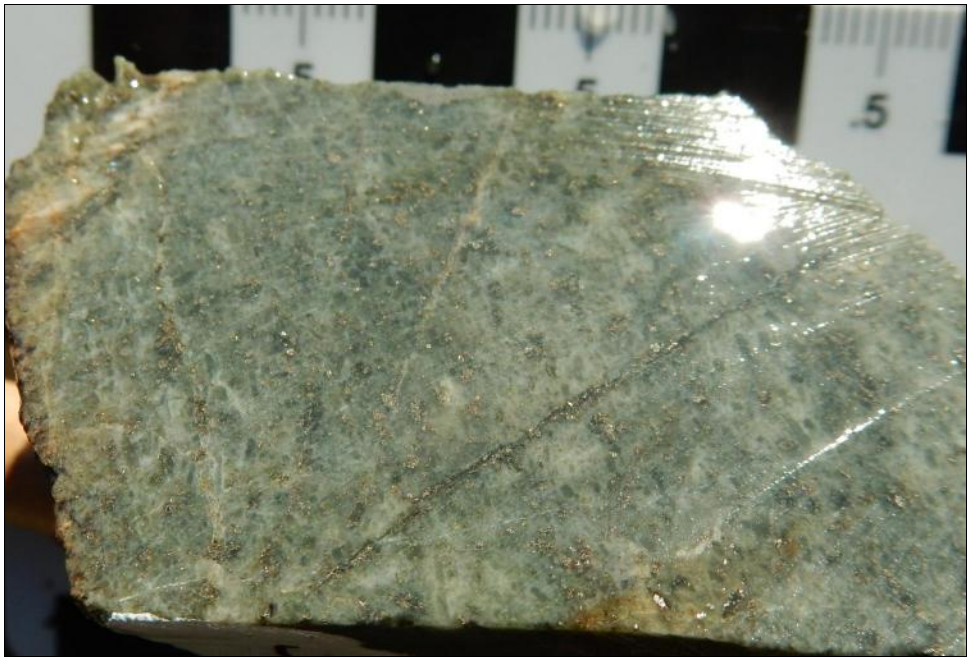
Area Name	Channel #	Easting	Northing	Length (m)	Direction	Magnetic Susceptibility	Notes
Area 01	CH01	477704.8	6166972.9	1.90	110	0.21	
Area 01	CH02	477703.0	6166973.4	2.00	110	0.27	
Area 01	CH03	477701.0	6166973.8	2.00	110	0.25	
Area 01	CH04	477699.2	6166974.2	2.00	110	0.26	
Area 01	CH05	477697.4	6166974.6	1.52	110	0.20	
Area 01	CH06	477696.1	6166975.0	1.22	110	0.25	
Area 01	CH07	477700.5	6166976.0	1.86	28	0.42	
Area 01	CH08	477700.0	6166975.0	1.35	56	0.15	
Area 02	CH09	477669.4	6166846.3	1.30	54	0.18	
Area 02	CH10	477670.6	6166846.9	0.89	54	0.33	
Area 02	CH11	477671.9	6166846.5	1.53	95	0.17	
Area 02	CH12	477671.9	6166847.9	1.63	40	0.45	
Area 02	CH13	477673.0	6166849.0	1.25	40	0.34	
Area 02	CH14	477673.9	6166850.2	1.00	40	0.22	
Area 02	CH15	477674.7	6166851.1	1.00	40	0.21	
Area 02	CH16	477645.9	6166847.4	2.20	35	0.40	
Area 02	CH17	477647.8	6166849.4	1.85	24	0.27	
Area 02	CH18	477648.5	6166851.0	1.85	24	0.24	
Area 03	CH19	477700.0	6166830.0	1.35	9	0.22	
Area 03	CH20	477700.5	6166829.9	1.19	94	0.22	
Area 04	CH21	477669.2	6166803.8	1.13	10	0.12	
Area 04	CH22	477670.0	6166805.0	1.30	10	0.29	
Area 05	CH23	477415.0	6167040.0	1.20	88	0.30	Length approximate; Measured from photographs.
Area 05	CH24	477415.0	6167040.5	1.00	5	0.28	Length approximate; Measured from photographs.
Area 06	CH25	477433.0	6166997.8	2.00	0	0.43	Direction approximate; Measured from photographs.
Area 06	CH26	477433.0	6166996.0	1.90	0	0.10	Direction approximate; Measured from photographs.
Area 07	CH27	477406.0	6166990.7	1.35	0	0.34	Direction approximate; Measured from photographs.
Area 07	CH28	477406.0	6166992.2	1.79	0	0.20	Direction approximate; Measured from photographs.
Area 07	CH29	477407.0	6166993.2	1.80	90	0.20	Direction approximate; Measured from photographs.
Area 07	CH30	477408.3	6166994.4	2.03	0	0.30	Direction approximate; Measured from photographs.
Area 07	CH31	477408.3	6166996.3	2.00	0	0.32	Direction approximate; Measured from photographs.
Area 07	CH32	477408.3	6166998.3	2.05	0	0.35	Direction approximate; Measured from photographs.
Area 07	CH33	477408.8	6166993.2	1.70	90	0.62	Direction approximate; Measured from photographs.
Area 07	CH34	477405.3	6166993.2	1.70	90	0.22	Direction approximate; Measured from photographs.
Area 07	CH35	477403.7	6166993.2	1.54	90	0.30	Direction approximate; Measured from photographs.
Area 09	CH36	477524.9	6166945.7	1.55	353	0.21	
Area 09	CH37	477525.0	6166944.2	1.30	353	0.12	
Area 09	CH38	477525.0	6166943.0	1.40	0	0.21	
Area 08	CH39	477517.4	6166954.1	1.90	285	0.30	
Area 08	CH40	477515.8	6166954.7	1.50	285	0.06	
Area 08	CH41	477514.3	6166955.2	1.70	285	0.17	
Area 08	CH42	477512.9	6166955.8	1.40	285	0.16	
Area 10	CH43	476946.4	6166711.4	1.30	45	5.26	Direction approximate; Measured from photographs.
Area 10	CH44	476945.7	6166710.6	1.30	45	10.40	Direction approximate; Measured from photographs.
Area 10	CH45	476944.5	6166709.7	1.30	45	2.73	Direction approximate; Measured from photographs.
Area 10	CH46	476943.7	6166708.8	1.30	45	24.20	Direction approximate; Measured from photographs.
Area 11	CH47	476780.9	6166670.8	1.70	90	0.39	
Area 11	CH48	476782.3	6166670.4	1.00	90	0.45	
Area 11	CH49	476783.6	6166670.2	1.48	85	0.67	
Area 11	CH50	476785.2	6166669.8	1.40	115	0.74	

Appendix F Channel Sample Photographs

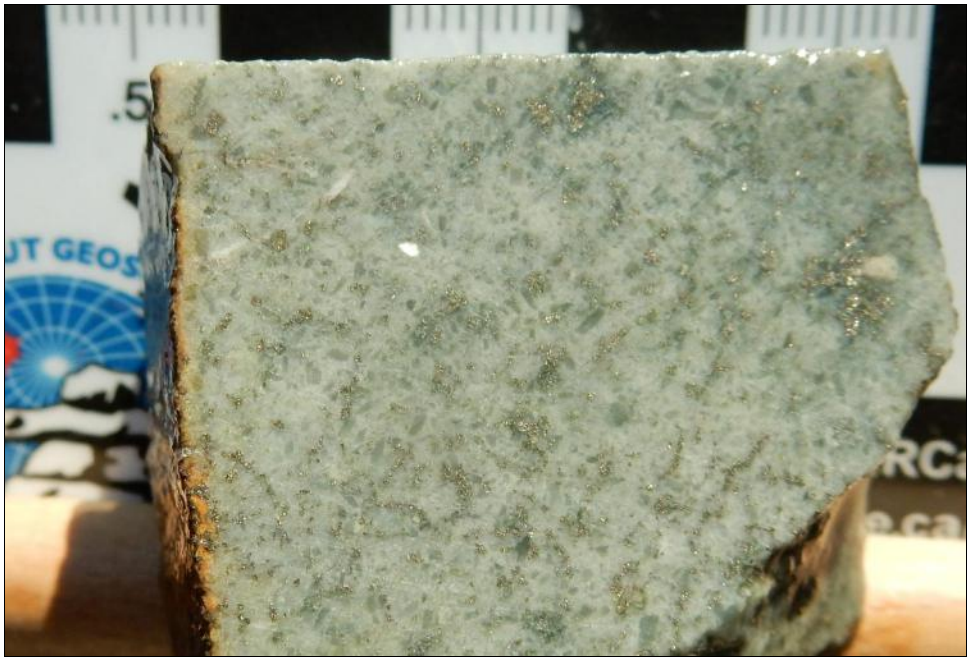
CS01a; Au 50; As 32; Cu 239; Zn 117; S 1.2; Fe 4.8; K 3.8; Ca 2.2; Sr 178



CS01b; Au 50; As 32; Cu 239; Zn 117; S 1.2; Fe 4.8; K 3.8; Ca 2.2; Sr 178



CS02a; Au 50; As 39; Cu 190; Zn 201; S 1.1; Fe 4.9; K 4.0; Ca 1.7; Sr 155

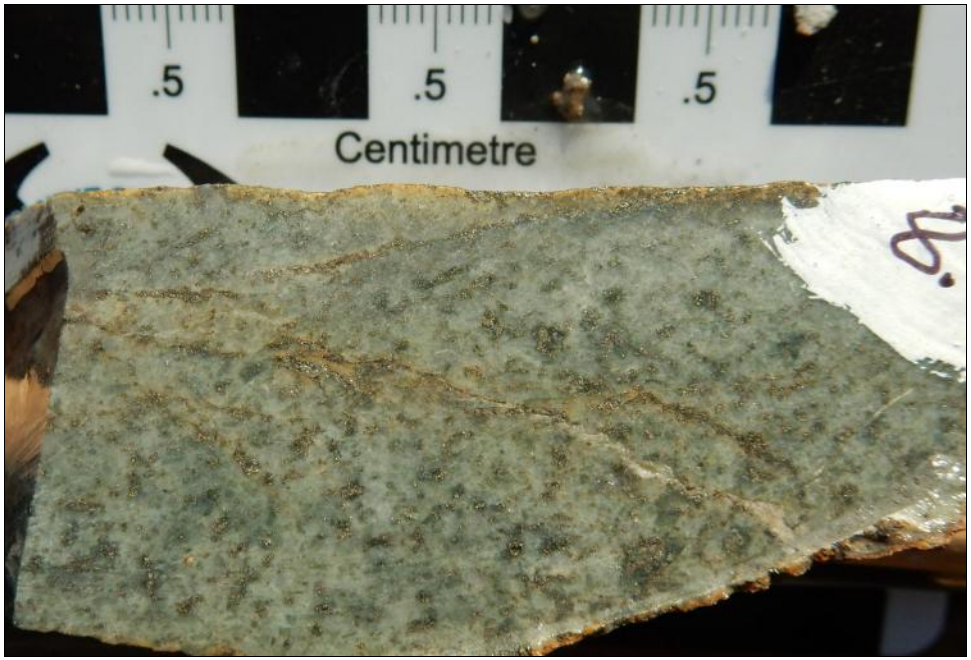


CS02b; Au 50; As 39; Cu 190; Zn 201; S 1.1; Fe 4.9; K 4.0; Ca 1.7; Sr 155

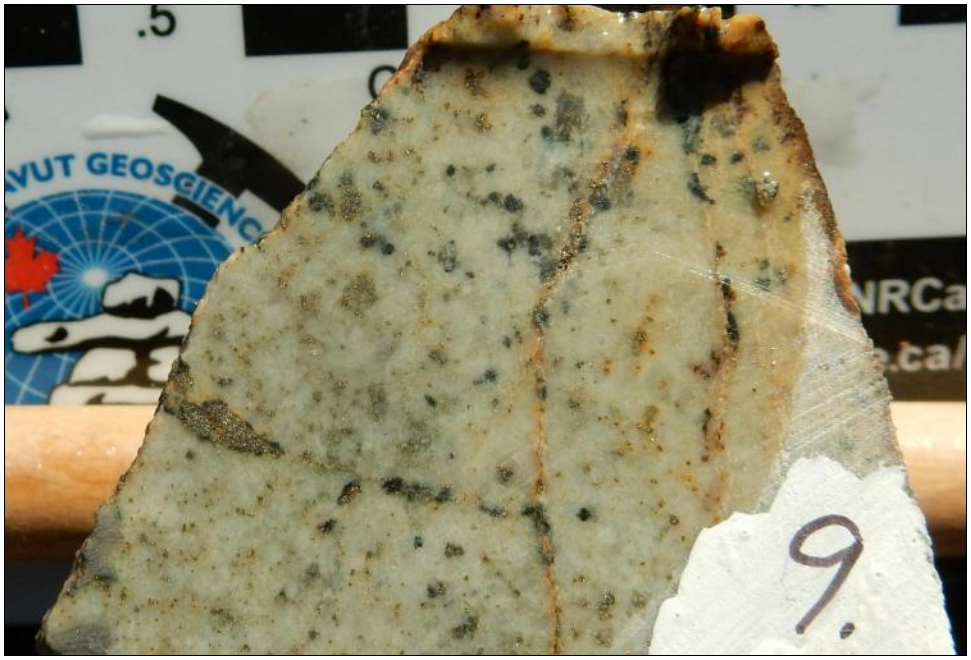
CS03a; Au 50; As 37; Cu 200; Zn 108; S 1.3; Fe 5.6; K 3.8; Ca 2.0; Sr 128

CS03b; Au 50; As 37; Cu 200; Zn 108; S 1.3; Fe 5.6; K 3.8; Ca 2.0; Sr 128

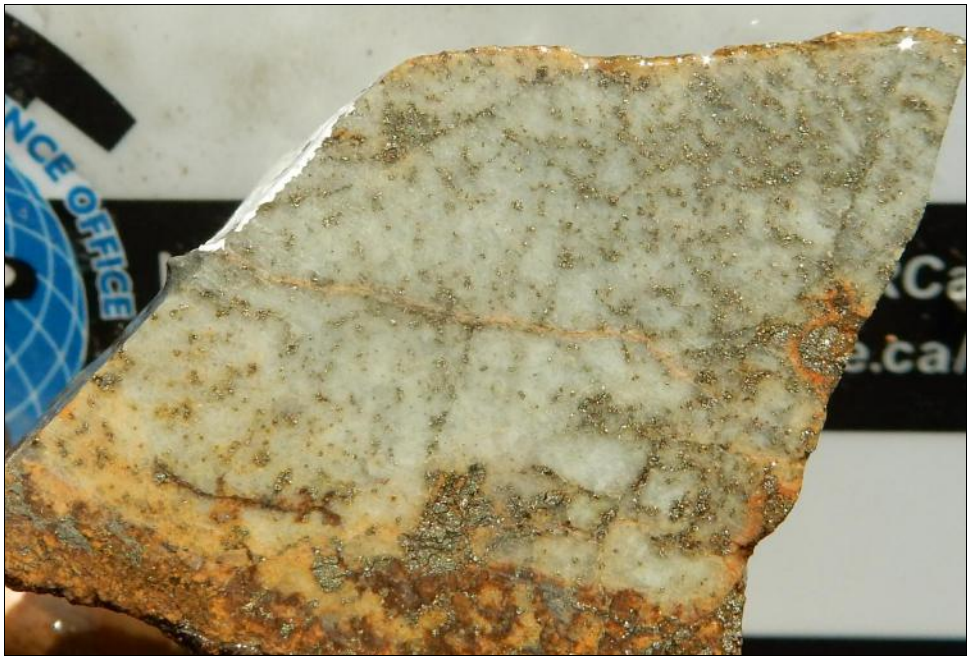
CS04a; Au 60; As 38; Cu 89; Zn 302; S 2.0; Fe 7.1; K 3.9; Ca 2.2; Sr 160



CS04b; Au 60; As 38; Cu 89; Zn 302; S 2.0; Fe 7.1; K 3.9; Ca 2.2; Sr 160

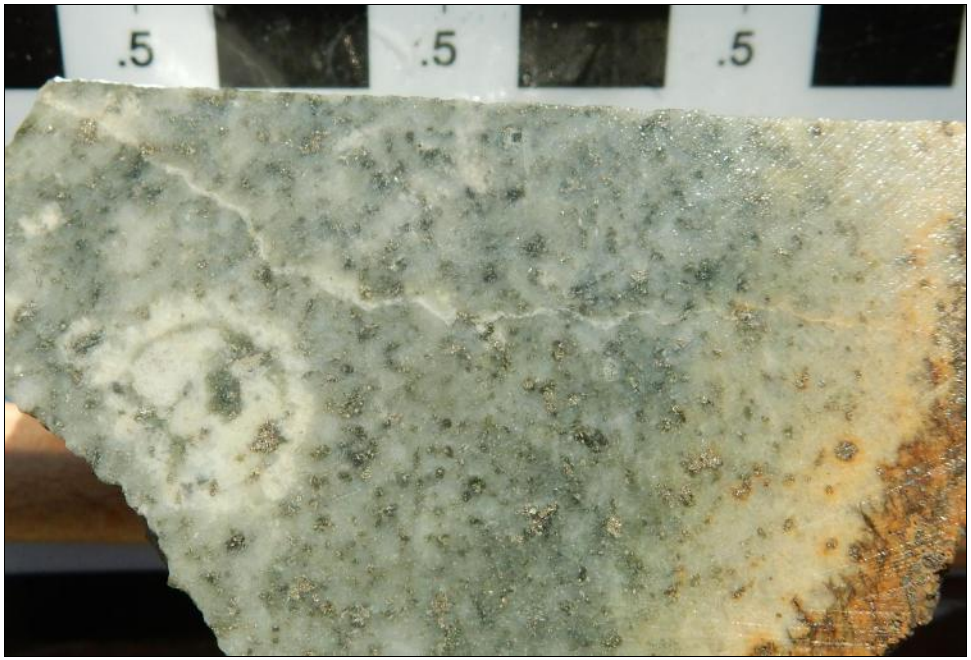


CS05a; Au 70; As 53; Cu 167; Zn 272; S 2.1; Fe 6.8; K 3.5; Ca 2.5; Sr 210



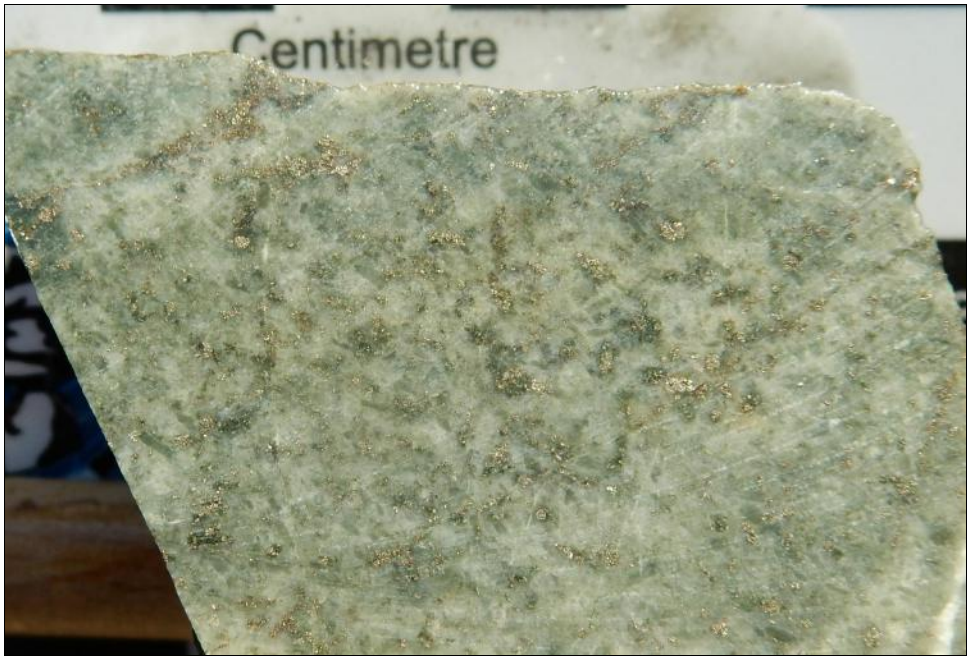
CS05b; Au 70; As 53; Cu 167; Zn 272; S 2.1; Fe 6.8; K 3.5; Ca 2.5; Sr 210

CS06a; Au 40; As 38; Cu 176; Zn 178; S 1.5; Fe 5.5; K 3.3; Ca 1.9; Sr 264



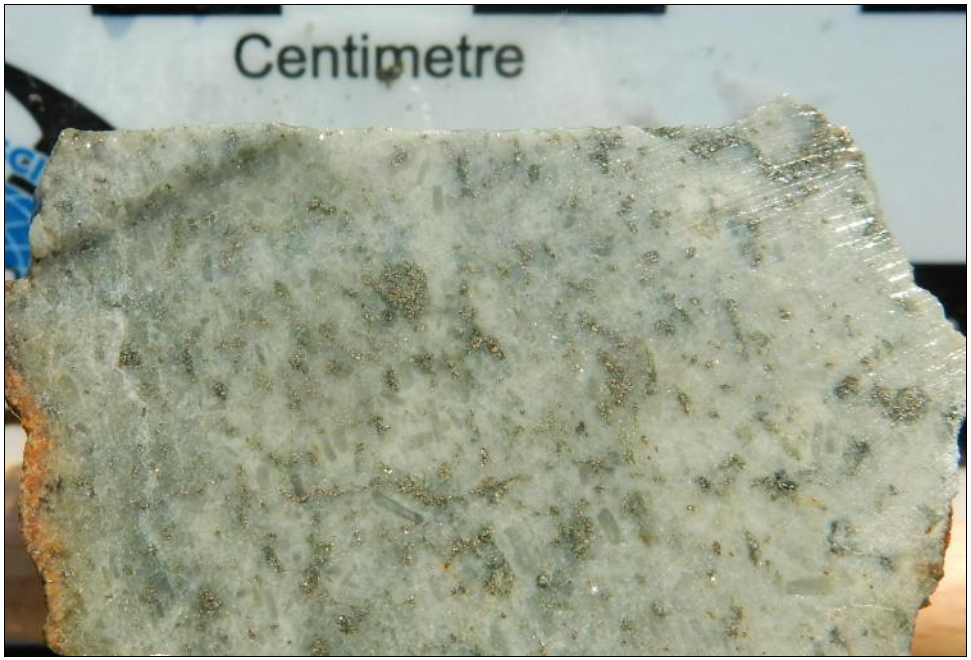
CS06b; Au 40; As 38; Cu 176; Zn 178; S 1.5; Fe 5.5; K 3.3; Ca 1.9; Sr 264

CS07a; Au 30; As 38; Cu 189; Zn 108; S 1.4; Fe 4.9; K 3.5; Ca 2.3; Sr 257



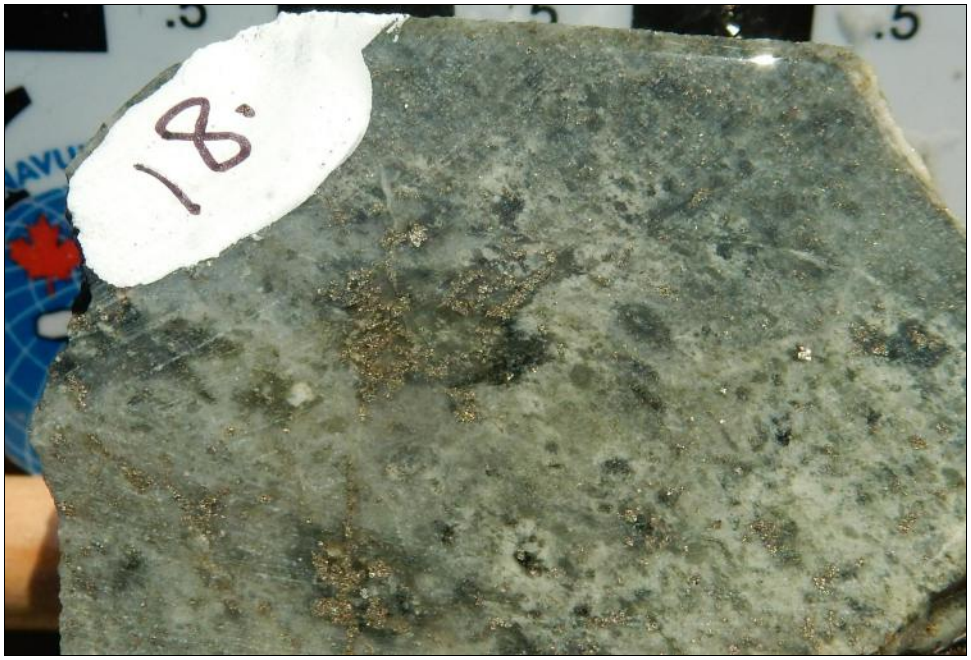
CS07b; Au 30; As 38; Cu 189; Zn 108; S 1.4; Fe 4.9; K 3.5; Ca 2.3; Sr 257

CS08a; Au 60; As 63; Cu 100; Zn 164; S 1.6; Fe 5.5; K 4.0; Ca 2.2; Sr 158



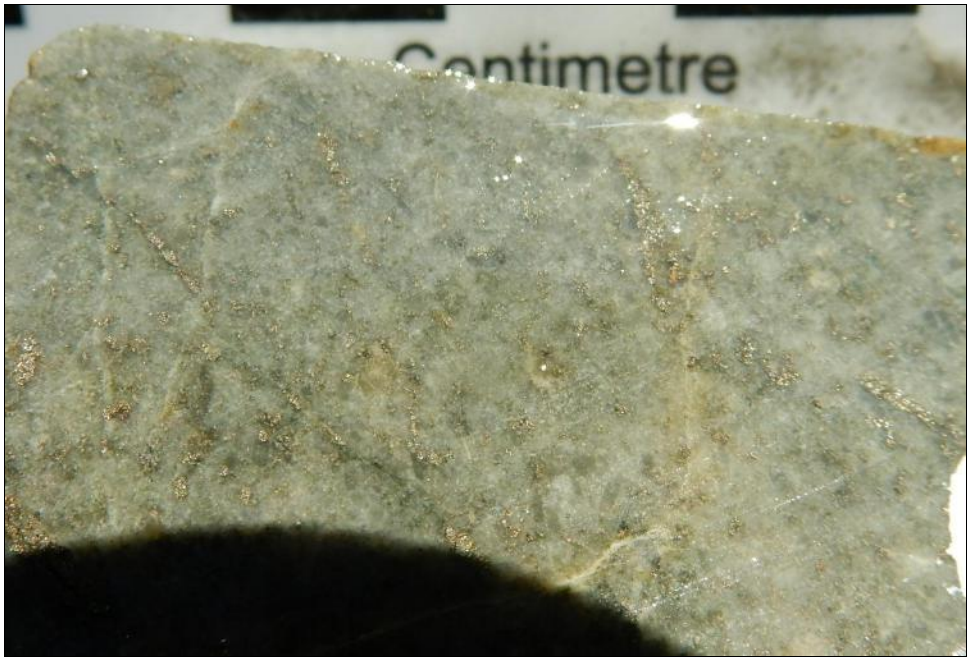
CS08b; Au 60; As 63; Cu 100; Zn 164; S 1.6; Fe 5.5; K 4.0; Ca 2.2; Sr 158

CS09a; Au 430; As 214; Cu 7118; Zn 337; S 4.9; Fe 17.4; K 3.2; Ca 1.1; Sr 44



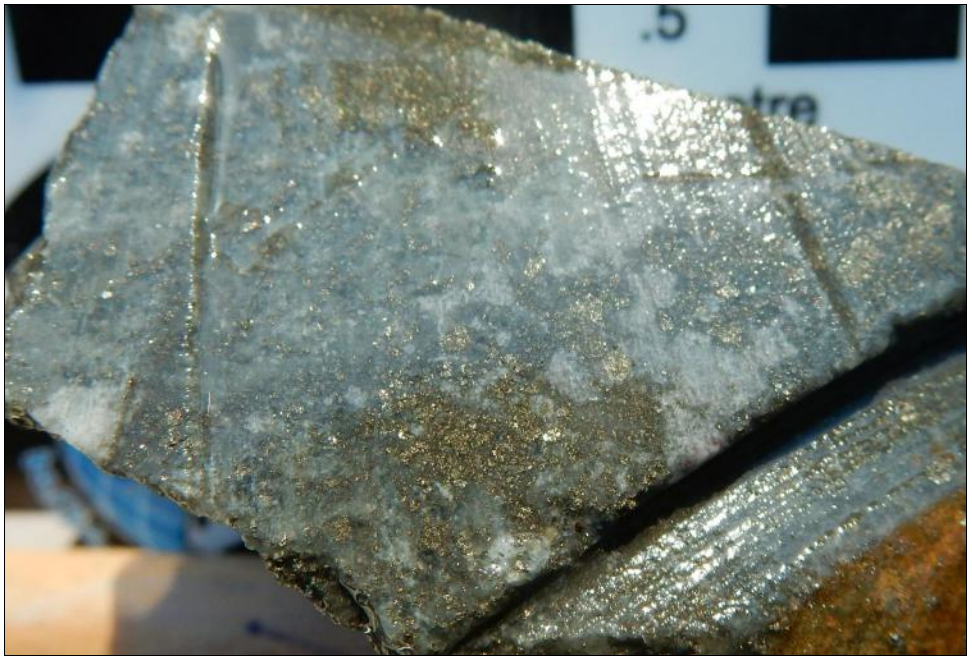
CS09b; Au 430; As 214; Cu 7118; Zn 337; S 4.9; Fe 17.4; K 3.2; Ca 1.1; Sr 44

CS10a; Au 20; As 9; Cu 191; Zn 52; S .5; Fe 3.3; K 1.6; Ca 1.4; Sr 77



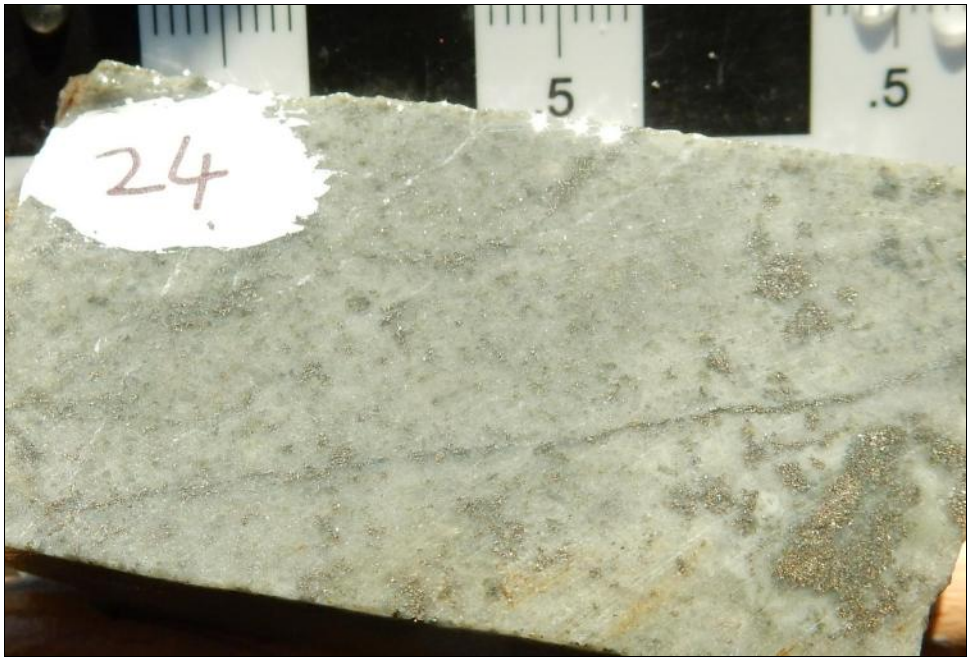
CS10b; Au 20; As 9; Cu 191; Zn 52; S .5; Fe 3.3; K 1.6; Ca 1.4; Sr 77

CS11a; Au 1070; As 374; Cu 6278; Zn 1260; S 5.9; Fe 24.5; K 2.1; Ca 1.2; Sr 53

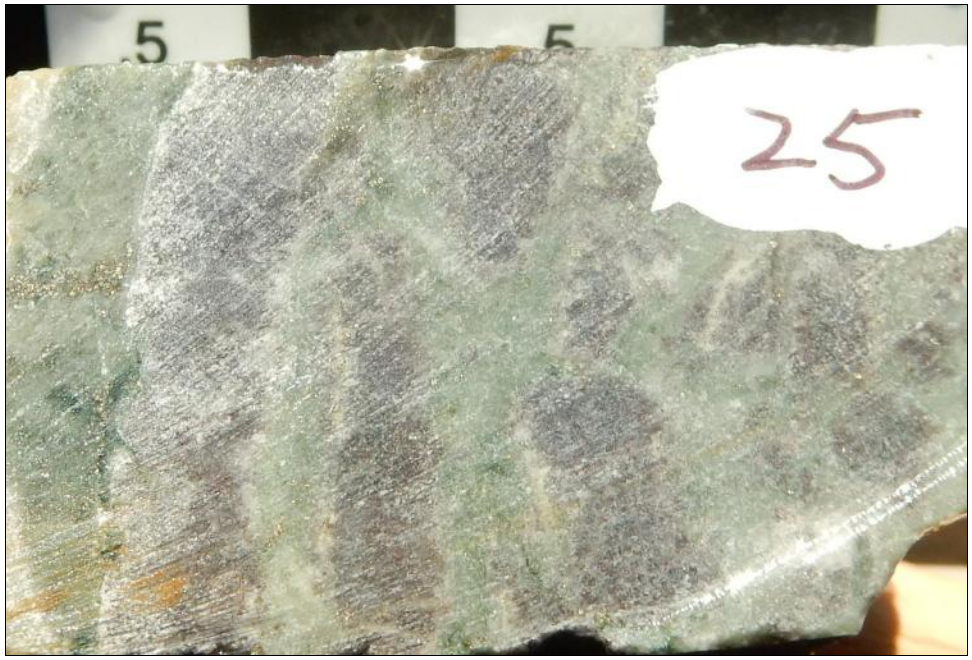


CS11b; Au 1070; As 374; Cu 6278; Zn 1260; S 5.9; Fe 24.5; K 2.1; Ca 1.2; Sr 53

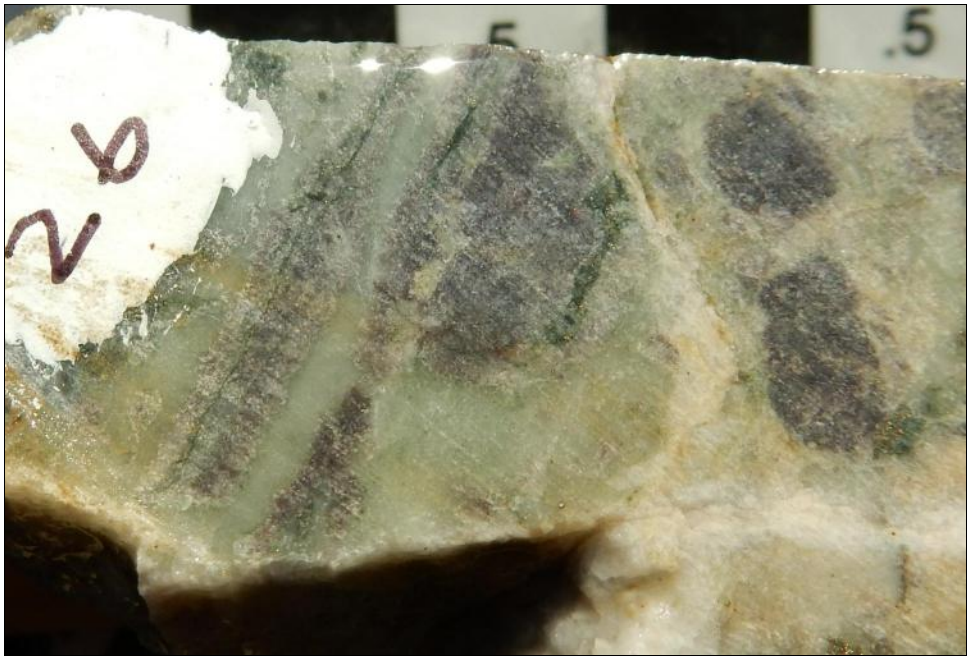
CS12a; Au 50; As 24; Cu 698; Zn 65; S 1.2; Fe 4.5; K 3.4; Ca 3.1; Sr 128



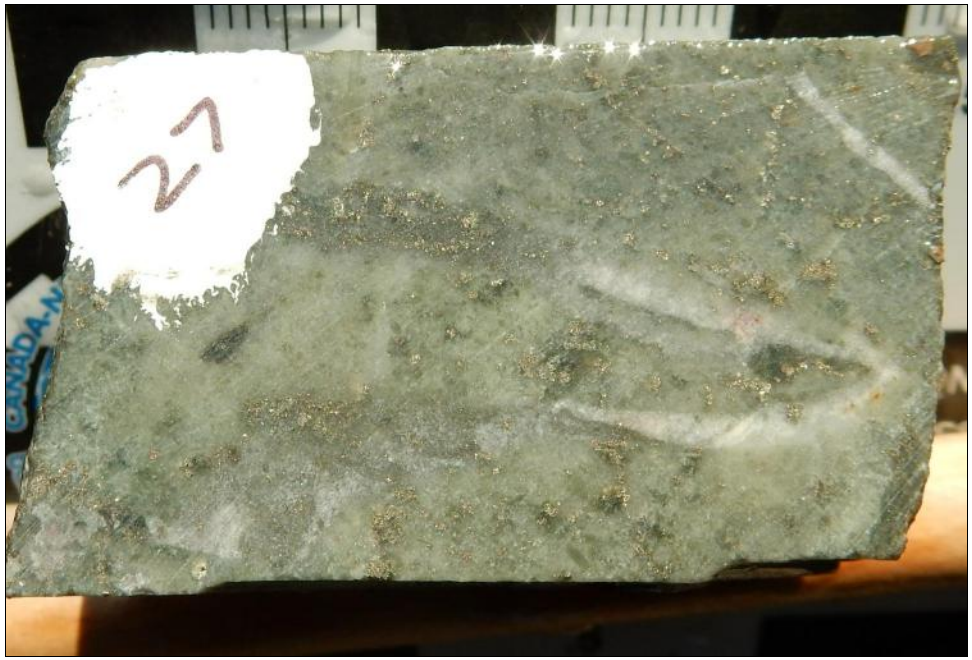
CS12b; Au 50; As 24; Cu 698; Zn 65; S 1.2; Fe 4.5; K 3.4; Ca 3.1; Sr 128



CS13a; Au 20; As 11; Cu 424; Zn 35; S 1.6; Fe 4.6; K 3.9; Ca 6.1; Sr 193



CS13b; Au 20; As 11; Cu 424; Zn 35; S 1.6; Fe 4.6; K 3.9; Ca 6.1; Sr 193



CS14a; Au 140; As 26; Cu 530; Zn 393; S 1.3; Fe 4.1; K 3.7; Ca 2.5; Sr 78

CS14b; Au 140; As 26; Cu 530; Zn 393; S 1.3; Fe 4.1; K 3.7; Ca 2.5; Sr 78

Appendix G Photogrammetric Survey Reports

Quality Report

Generated with Pix4Dmapper Pro - TRIAL version 2.0.100

Important: Click on the different icons for:

Help to analyze the results in the Quality Report

Additional information about the sections

Click here for additional tips to analyze the Quality Report

Summary

Project	dcim7
Processed	2015-12-25 09:58:56
Average Ground Sampling Distance (GSD)	5.91 cm / 2.32 in
Area Covered	0.2299 km^2 / 22.9944 ha / 0.0888 sq. mi. / 56.8498 acres
Time for Initial Processing (without report)	26m:12s

Quality Check

Images	median of 38114 keypoints per image	✓
Dataset	97 out of 98 images calibrated (98%), all images enabled	✓
Camera Optimization	4.37% relative difference between initial and optimized internal camera parameters	✓
Matching	median of 19555.3 matches per calibrated image	✓
Georeferencing	yes, no 3D GCP	⚠

Preview

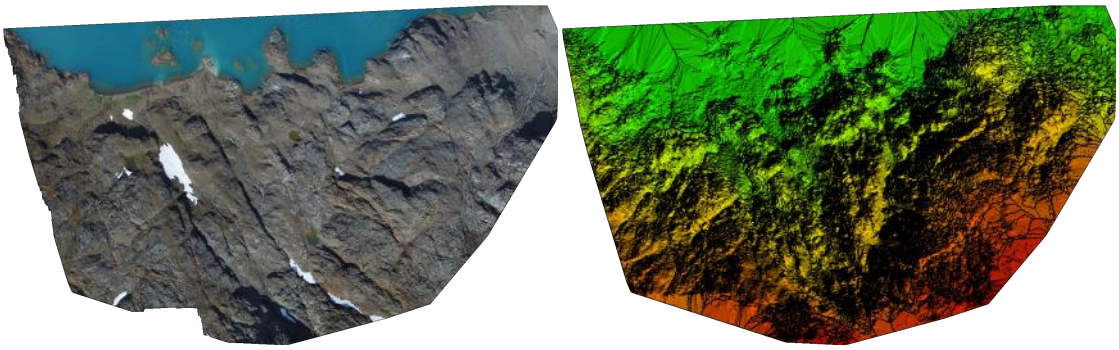


Figure 1: Orthomosaic and the corresponding sparse Digital Surface Model (DSM) before densification.

Calibration Details

Number of Calibrated Images	97 out of 98
Number of Geolocated Images	98 out of 98

Initial Image Positions

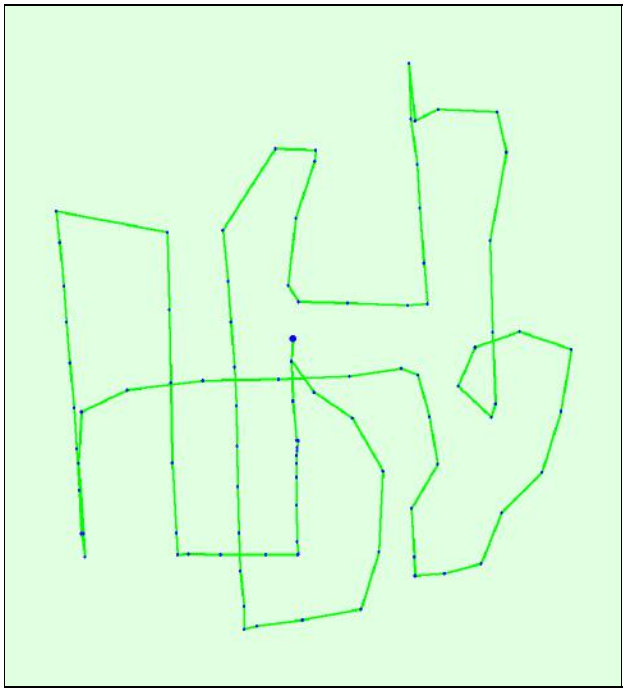


Figure 2: Top view of the initial image position. The green line follows the position of the images in time starting from the large blue dot.

Computed Image/GCPs/Manual Tie Points Positions

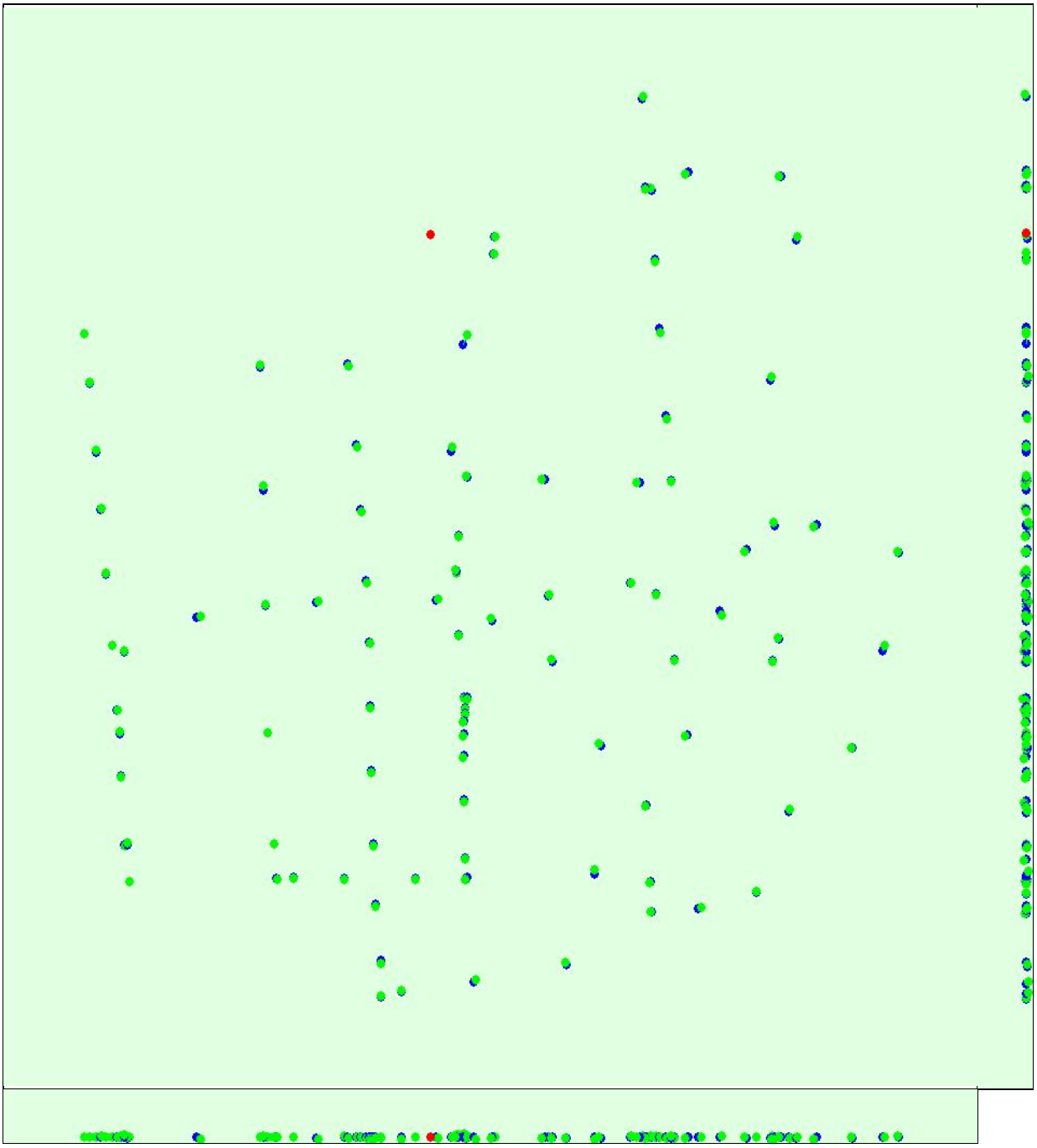


Figure 3: Offset between initial (blue dots) and computed (green dots) image positions as well as the offset between the GCPs initial positions (blue crosses) and their computed positions (green crosses) in the top-view (XY plane), front-view (XZ plane), and side-view (YZ plane).
Red dots indicate disabled or uncalibrated images.

Overlap

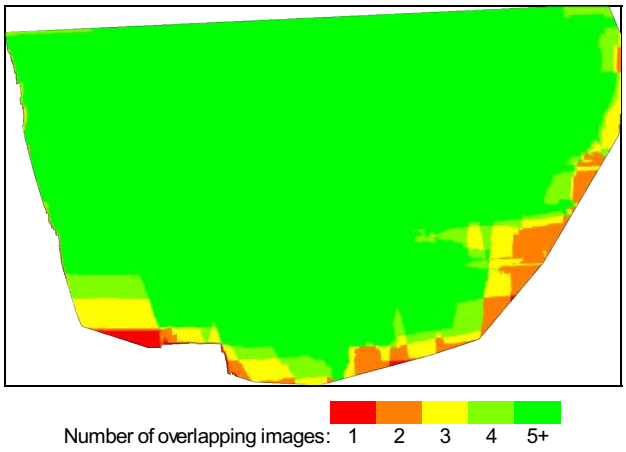


Figure 4: Number of overlapping images computed for each pixel of the orthomosaic.

Red and yellow areas indicate low overlap for which poor results may be generated. Green areas indicate an overlap of over 5 images for every pixel. Good quality results will be generated as long as the number of keypoint matches is also sufficient for these areas (see Figure 5 for keypoint matches).

Bundle Block Adjustment Details

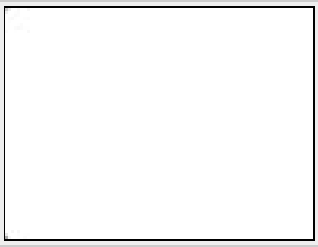
Number of 2D Keypoint Observations for Bundle Block Adjustment	1830025
Number of 3D Points for Bundle Block Adjustment	575935
Mean Reprojection Error [pixels]	0.221467

Internal Camera Parameters

FC300X_3.6_4000x3000 (RGB). Sensor Dimensions: 6.317 [mm] x 4.738 [mm]

EXIF ID: FC300X_3.6_4000x3000

	Focal Length	Principal Point x	Principal Point y	R1	R2	R3	T1	T2
Initial Values	2249.023 [pixel] 3.552 [mm]	1876.805 [pixel] 2.964 [mm]	1421.314 [pixel] 2.245 [mm]	-0.014	0.013	-0.000	0.001	0.000
Optimized Values	2347.337 [pixel] 3.707 [mm]	2020.618 [pixel] 3.191 [mm]	1497.638 [pixel] 2.365 [mm]	-0.010	0.009	0.004	0.001	0.001



The number of Automatic Tie Points (ATPs) per pixel averaged over all images of the camera model is color coded between black and white. White indicates that, in average, more than 16 ATPs are extracted at this pixel location. Black indicates that, in average, 0 ATP has been extracted at this pixel location. Click on the image to the see the average direction and magnitude of the reprojection error for each pixel. Note that the vectors are scaled for better visualization.