Ministry of Energy, Mines & Petroleum Resources
Mining & Minerals Division
BC Geological Survey

Assessment Report
Title Page and Summary

TYPE OF REPORT [type of survey(s)]: Archaeological Impact Assessment **TOTAL COST:** $14,254

AUTHOR(S): Morgan Bartlett, Robbin Chatan, Konstantin Lesnikov **SIGNATURE(S):**

NOTICE OF WORK PERMIT NUMBER(S)/DATE(S): MX-8-271 / December 22, 2011 **YEAR OF WORK:** 2012

STATEMENT OF WORK - CASH PAYMENTS EVENT NUMBER(S)/DATE(S): 5421553

PROPERTY NAME: Island Copper East Block

CLAIM NAME(S) (on which the work was done): Mo 4, Mo 5

COMMODITIES SOUGHT: N/A

MINERAL INVENTORY MINFILE NUMBER(S), IF KNOWN: 092L 273

MINING DIVISION: Nanaimo **NTS/BCGS:** 092L/11 / 92L.054

LATITUDE: -127 ° 22 ' 21 " **LONGITUDE:** 50 ° 35 ' 18 " **(at centre of work)**

OWNER(S):
1) NorthIsle Copper and Gold Inc. 2)

MAILING ADDRESS:
#2050-1111 West Georgia Street
Vancouver BC V6E 4M3

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

MAILING ADDRESS:

PROPERTY GEOLOGY KEYWORDS (lithology, age, stratigraphy, structure, alteration, mineralization, size and attitude):
Bonanza Volcanics, Quatsino Formation, Karmutsen Formation, Island Plutonic Suite, porphyritic granitoid rocks, granodiorite, andesite, basalt, limestone, Upper Triassic, middle Jurassic, Island Copper Mine

REFERENCES TO PREVIOUS ASSESSMENT WORK AND ASSESSMENT REPORT NUMBERS: AR 2659, 1681, 14393, 15884, 15707, 11460, 15024, 15077, 15367, 16510, 15024, 15077, 15367, 16510, 17368, 32722

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TYPE OF WORK IN THIS REPORT	EXTENT OF WORK (IN METRIC UNITS)	ON WHICH CLAIMS	PROJECT COSTS APPORTIONED (incl. support)
GEOLOGICAL (scale, area)			
Ground, mapping			
Photo interpretation			
GEOPHYSICAL (line-kilometres)			
Ground			
Magnetic			
Electromagnetic			
Induced Polarization			
Radiometric			
Seismic			
Other			
Airborne			
GEOCHEMICAL (number of samples analysed for...)			
Soil			
Silt			
Rock			
Other			
DRILLING (total metres; number of holes, size)			
Core			
Non-core			
RELATED TECHNICAL			
Sampling/assaying			
Petrographic			
Mineralographic			
Metallurgic			
PROSPECTING (scale, area)			
PREPARATORY / PHYSICAL			
Line/grid (kilometres)			
Topographic/Photogrammetric (scale, area)			
Legal surveys (scale, area)			
Road, local access (kilometres)/trail			
Trench (metres)			
Underground dev. (metres)			
Other	Archaeological Impact Assessment	Mo 4, Mo 5	14,254.53
		TOTAL COST:	14,254.53

NorthIsle Copper and Gold Inc.

2012 Archaeological Impact Assessment Report
RUPERT GRID
ISLAND COPPER EAST BLOCK

Located in the Northern Vancouver Island Area
Nanaimo Mining Division
NTS 092L/11
50º 35’ North Latitude
127º 22’ West Longitude

-prepared by-

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November, 2012

SUMMARY

In February 2012, *NorthIsle Copper and Gold Inc*. has contracted *Sources Archaeological and Heritage Research Inc.*, to conduct an archaeological impact assessment (AIA) within Mineral Tenures #509468 and #509469, located in the Rupert Inlet area, northern Vancouver Island, BC.

2012 Archaeological impact assessment has covered two areas of high archaeological potential identified during the preliminary field reconnaissance in 2011. The location of two high potential areas is as follows:

1. along the banks of Waukwaas Creek approximately 2 km inland of where it drains into the eastern portion of Rupert Inlet (southern end of IP line 03).
2. along the banks of Rupert Creek approximately 4 km upstream from its confluence with Waukwaas Creek (approximately at the mid-point of the IP survey line 05)

A total of four shovel tests and 30 auger tests were conducted within the two areas. Matrix of each shovel and auger test was described and the material was screened though ¼' hand screens. All subsurface tests were excavated to a depth judged to be culturally sterile, until obstructions were encountered, or until a depth was reached where it was no longer practical for shovel test excavation.

2012 Field archaeological investigations encountered no aboriginal heritage sites, features, remains, or deposits in survey areas. No buried archaeological materials, including shell midden deposits, artifacts, fire-cracked rock, faunal remains, or features, were encountered during subsurface testing. No culturally modified trees were encountered during the 2011 and subsequent 2012 archaeological surveys.

Based on the 2012 AIA, it is highly unlikely that further archaeological work will be required.. Should previously unrecorded archaeological remains be encountered during any phase of this mining development, the following recommendations are made:

1. That NorthIsle Copper and Gold Inc. inform all contractors and personnel working in all proposed geophysical IP survey grid lines that both recorded and unrecorded archaeological remains in British Columbia are protected from disturbance, either intentional or inadvertent, by the Heritage Conservation Act (RSBC 1996, Chapter 87) and Section 51 of the Forest Practices Code Act (1995);
2. That NorthIsle Copper and Gold Inc promptly informs the Quatsino First Nation (Coal Harbour) and the Kwakiutl First Nation (Fort Rupert/Port Hardy) of the particulars of any unanticipated archaeological discoveries; and
3. In the event that previously un-identified archaeological remains are encountered within these areas, all activities must immediately be suspended. Archaeological Permitting and Assessment Section, B.C. Archaeology Branch, Ministry of Tourism, Culture, and the Arts (Victoria), the Quatsino First Nation and the Kwakiutl First Nation must be informed as soon as possible of the location and type of the archaeological remains and the nature of the disturbance.

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1.0 INTRODUCTION

This report details results of the 2012 exploration program performed on the Rupert Claim Block by NorthIsle Copper and Gold Inc. Rupert Claim Block is an E-W-trending group of mineral claims 12 km long and 5.5 km wide stretching from the east end of Rupert Inlet and approximately 15 km southeast of Port Hardy, British Columbia (Figure 1).

2012 exploration program consisted entirely of archaeological work. Sources Archaeological and Heritage Research Inc. was contracted to conduct an archaeological impact assessment (AIA) within Mineral Tenures No 509468 and No 509469

2.0 PROPERTY TITLE

As of October 2012, Island Copper East Block Property comprises 12 mineral claims staked in March and May 2005 by Moraga Resources Ltd (Table 1). The property area totals 5,272.49 hectares. All claims are currently held by NorthIsle Copper and Gold Inc.

Tenure No	Tenure Name	Area (ha)	Issue Date	Expiry Date
509465	mo 1	492.27	2005/mar/23	2013/may/11
509466	mo 2	492.52	2005/mar/23	2013/may/11
509467	mo 3	492.26	2005/mar/23	2013/may/11
509468	mo 4	492.52	2005/mar/23	2013/may/11
509469	mo 5	492.26	2005/mar/23	2013/may/11
509470	mo 6	492.51	2005/mar/23	2013/may/11
509471	mo 7	492.26	2005/mar/23	2013/may/11
509472	mo 8	492.52	2005/mar/23	2013/may/11
509474	mo 9	492.26	2005/mar/23	2013/may/11
509475	mo 10	492.52	2005/mar/23	2013/may/11
512103	FILL 12	123.05	2005/may/05	2013/may/11
513183	CONNECT01	225.53	2005/may/22	2013/may/11
Total (ha)		**5,272.49**		

Table 1: Rupert Claim Block Tenures

Figure 1: Property Location Map

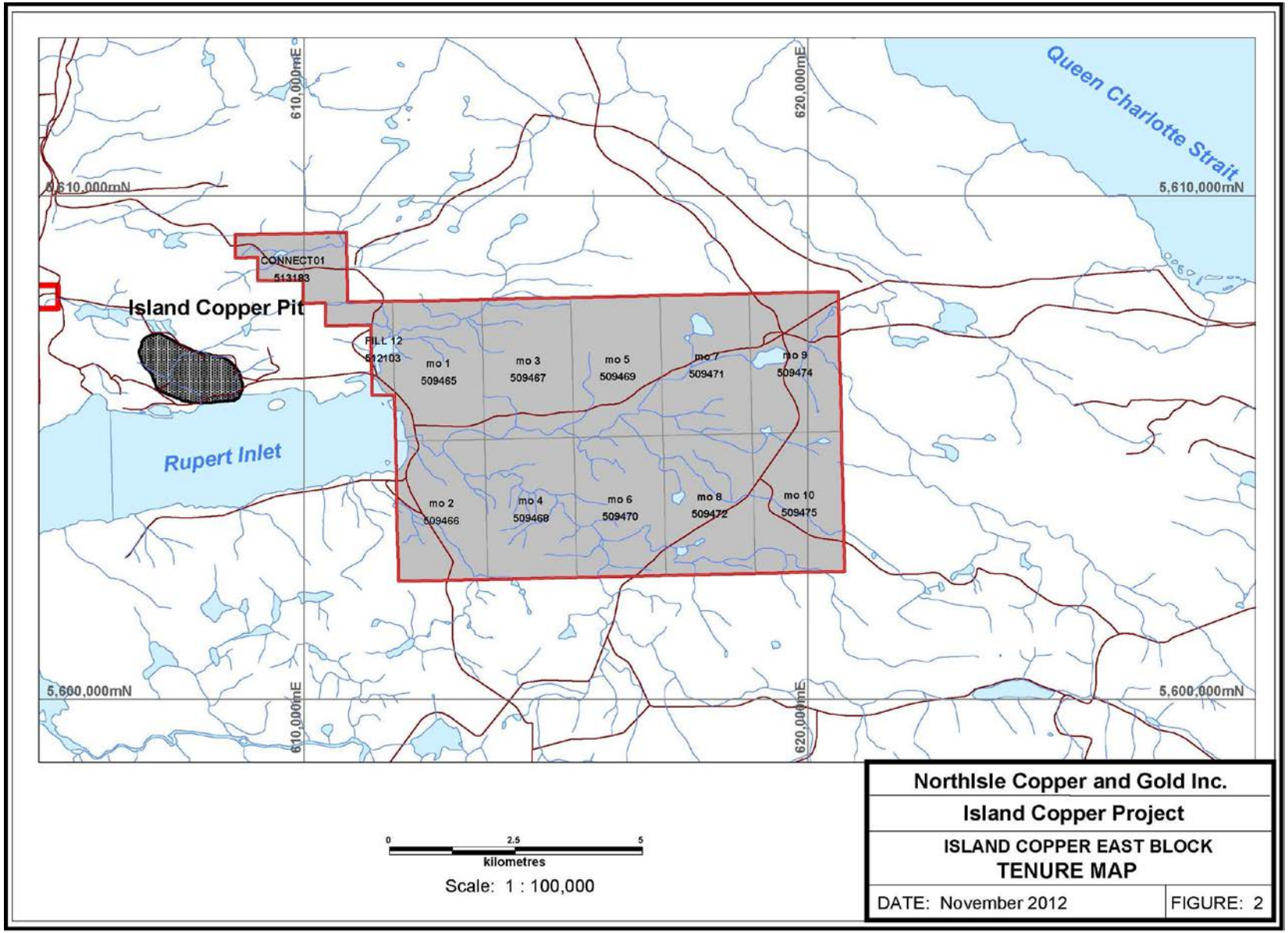

Figure 2: Tenure

3.0 LOCATION, ACCESS AND PHYSIOGRAPHY

The Rupert Claim Block is located in the northern Vancouver Island, centred approximately at 50º 36' North Latitude and 127º 23' West Longitude and it is on the NTS map sheet 092L/12. Claim block extends from the tip of Rupert Inlet on the West and 8.8 km inland to the East.

Topography of the property is characterized by low, flat, till covered areas with very subtle relief. Elevations range from sea-level to 120 m.

Vegetation comprises a mix of second- and first-growth forest of fir, hemlock, spruce and cedar. Parts of the claim block are swampy. Logging has been active across the property for several decades so second growth areas are highly variable in terms of age, density and ease of access. Approximately 50% of the property area has been clear cut.

Climate is typical of coastal areas of British Columbia with an average annual rainfall in nearby Coal Harbour of 203 cm (Environment Canada online data). Monthly precipitation varies from a low of 4.7 cm in July, to a high of 32.7 cm in November. Temperatures are generally moderate at sea level with average daily minimum temperatures not lower than 0° at Coal Harbour.

An extensive network of radio controlled logging roads provides good access to most areas of the Rupert Claim Block. These roads exhibit a wide range of conditions, however, with the worst being completely impassable to vehicles. The Island Highway (Route 19) cuts through the eastern part of the property. Port Hardy is about 15 km drive to the North along this route.

4.0 PROPERTY EXPLORATION HISTORY

In 1962, the British Columbia Department of Mines and the Geological Survey of Canada jointly flew an airborne magnetic survey covering the northern part of Vancouver Island. This survey delineated a belt of north-westerly-trending magnetic highs north of Holberg and Rupert Inlets. Considerable exploration of these anomalies ensued, mostly focused on skarn-type iron deposits. During 1963 and 1964 several programs, mainly of stream sediment sampling, were conducted by numerous companies. No significant discoveries were made, however, and by 1965 very little interest was shown in the region (Muntanion and Witherley, 1982).

Things changed, however, with the discovery of the Island Copper Mine located 3.5 km west of the current Rupert Area boundary as described by Perelló et al. (1995). A local prospector named Gordon Melbourne staked a magnetic anomaly at Bay Lake near the eastern end of Rupert Inlet and in 1965 discovered chalcopyrite in float, then the bedrock source by trenching. Utah Construction and Mining Co. (Utah) optioned the property in January, 1966 and immediately began a program of mapping, soil sampling and ground geophysics, quickly followed by drill testing beginning in the spring of 1966. The discovery hole – the eighty-second of the program – was drilled in February, 1967 and intersected an 88 m interval grading 0.45% Cu. This was the first deep, follow-up hole drilled. This deposit was developed into the Island Copper Mine, with

production beginning in October, 1971 and continuing until December, 1995. The mine produced 345 million metric tonnes (t) of ore with average grades of 0.41% copper, 0.017% molybdenum, 0.19 g/t gold and 1.4 g/t silver (Perelló et al., 1995).

The Island Copper mine is located about four kilometers west of the Rupert Property. The property is almost entirely overburden-covered but was explored between the late 1960s and 2005.

Table 2 (Baker, 2006, modified) summarizes all known exploration work carried out on the area comprising the Rupert Claim Block.

Program/Zones	Geochemistry	Geophysics	Drilling	Reference
1967–70 Ballinderry, Riviera Expo, Opex, Lorri	1210 soil samples	39.9 line-km IP, 56 line-km mag.		(Baird, 1970; Baird, 1968; Singhai, 1970b)
1974-1980 Utah East 86 Group			12 DDHs (R-01 to 12) for 1561.8m BQ; 545.6m NQ	(Kaiway, 1974; Lamb, 1976, 1977, 1980a, b)
Prior to 1982 Unknown			23 DDHs (C-31, C-98, C-99, C-312 to 314, C-330 to 333, BC-01, BC-03 to 14), at least 14 DDH prior to 1970	Location recorded on 1982 report map (Fleming et al. 1983), mentioned in (Singhai, 1970a)
1981 – 1982 Utah East 86 Group		124.8 line-km IP/Res., VLF-EM, and mag.		(Fleming et al., 1983)
1983 – 1984 Utah East 86 Group			4 DDHs (R-013 to 016) totalling 555.0m of NQ	(Clarke, 1986a; Fleming, 1983b; Holland and Fleming, 1984)
1985 Utah East 86 Group	1713 soils		1DDH R-017 totalling 169.5m of NQ	(Clarke, 1986a; Fleming, 1985a)
1986 Utah East 86 Group	2159 soils, select 1985 soils re-analyzed		1 DDH R-018 totalling 305m	(Clarke, 1986b, c; Fleming, 1986a, b, 1987; Fleming and Clarke, 1987)
1988 Utah East 86 Group	72 soils, 48 pit samples			(Fleming, 1988)
1993 Utah East 86 Group			3 DDHs (R-019 to 021) totalling 648.3m of NQ	(Fleming, 1993)
2005 Lumina Rupert Property	138 soil samples	Approx. 600 km DIGHEM V-DSP airborne EM/Res/Mag	8 DDHs (R-022 to R-029) totaling 1,108.7m of NQ	(Baker, 2006)
2011 NorthIsle Island Copper East Block		21 line km IP/Res		(Lesnikov, 2012)
Totals	5292soils, 48 pit samples		52 DDHs total meterage unknown	

Table 2: Rupert Exploration History

4.1 Riviera Mines and Ballinderry Exploration 1967 to 1970

In 1967, Utah staked 661 claims along strike from the Island Copper deposit and named it the Expo Property after the World's Fair hosted in Montreal that year. This included a large portion of the western half of the current Rupert Property. Records of work done on claims by other companies during this time are incomplete likely due to selective filing for assessment credits.

In 1968 Riviera Mines Ltd. performed a 6.3 line-km IP survey on parts of the Expo and Har claim groups south of Rupert Inlet (Baird, 1968). Areas of weakly anomalous chargeability were delineated on the Expo claims.

In 1969 Ballinderry Exploration obtained parts of the Expo claim block and conducted a 33.6 line km IP survey, collected 1210 soil samples which were analyzed for copper and completed a 56 line-km magnetometer survey (Baird, 1970; Singhai, 1970b). Two east-west trending steeply-dipping magnetic anomalies were identified and attributed to granite dykes with pyrrhotite, pyrite, and chalcopyrite mineralization.

4.2 Utah 1974 to 1984

By 1974 Utah had re-acquired and consolidated the Expo claims east of Rupert Inlet. Utah drilled five BQ diamond drill holes totalling 888.2m (holes R-001 to R-005) in the summer of 1974. The drilling was presumably to test previously identified geophysical and geochemical anomalies attributed to the Rupert Stock, although the intention is not stated (Kaiway, 1974). Six more holes were drilled between 1976 and 1980 (R-006 to R-012) totalling 545.6 m of NQ and 673.6 m of BQ. No mention of significant mineralization in any of the reports covering this period (Lamb, 1976, 1977, 1980a).

Exploration efforts were renewed in 1981 and a two year program of ground geophysical (IP / resistivity, mag., VLF-EM) and soil geochemical surveys was undertaken with 124.8 line-km of ground geophysics completed. Three geophysical trends were delineated (Clarke, 1983; Fleming et al., 1983):

- The Dyke Trend – originally known as anomalies 81-8, 81-9, 81-11, and 82-1, this group of east-west trending chargeability highs and associated magnetic highs has been attributed to porphyritic dykes extending eastward from the Rupert Stock.
- Quatsino Trend – Comprising chargeability anomalies 81-12 and 82-3, that are located near the inferred contact with Quatsino Limestone to the north and is interpreted to be related to skarn in the limestone. The anomaly is partially contained within the Rupert Property.
- M-1 Anomaly – A small, low-amplitude magnetic high in the southern part of the claim block.

Another trend called the Parson Bay Trend was identified but attributed to pyrite mineralization in Bonanza Group volcanic rocks and was ignored as an exploration target. Subsequent drilling

in 1983 and 1984 (DDHs R-013 to -016, totalling 555.0 m of NQ) tested the strike length of the Dyke Trend. All diamond drill holes confirmed the presence of the Rupert Stock-like intrusive rocks and holes R-014 and R-015 returned anomalous copper and molybdenum (30 feet of 0.12% Cu, 0.048% Mo and 10 feet of 0.10% Cu, 0.008% Mo, respectively).

4.3 Utah 1985 to 1993

Diamond drilling of the Dyke Trend chargeability anomalies continued in 1985 with one drill hole, R-017, on the far east of the anomaly (Clarke, 1986a). This intersected Parsons Bay Formation from top to bottom and so closed off the eastern extent of the Rupert Stock. The following year the M-1 low amplitude magnetic anomaly was tested with diamond drill hole R-18 (Clarke, 1986b). The hole intersected magnetite alteration with higher than normal magnetic susceptibility (relative to other data from the same unit). The magnetite alteration was interpreted to be the cause of the M-1 anomaly.

Contemporaneous with the diamond drilling discussed above, a large soil geochemistry survey was undertaken around (Clarke, 1986c; Fleming, 1985a, b, 1986a, b). The survey consisted of 2559 samples with about every second sample being analyzed for copper, molybdenum, lead, zinc, gold, silver, arsenic, and manganese (2435 samples) and 30 element ICP (124 samples + unknown number rerun from 1985 survey). The geochemical survey returned weak anomalies across most of the area except for some anomalous values of Zn, Cu, Au, Mo, and As in the western portion of the survey centered on hole R-017. Further drilling was recommended.

In early 1988 a follow-up geochemical survey was performed taking 48 samples from shallow (0.3 to 1.0 m deep) pits and 72 line samples (Fleming, 1988). Samples from pits 15 and 16 returned anomalous values including 0.06% Mo, 0.13% Cu, 0.75% Zn and 1.1 g/t Au. Further trenching and drilling was recommended for this area. It was not until 1993 that the area would again see drilling. The drilling included a final three holes, one in each of the main areas of previous concern, the far-east anomaly (R-019), the M-1 anomaly (R-020), and the Rupert Stock in the northwest of the property (R-021) (Fleming, 1993). All three holes resulted in low geochemical values and no further drilling was recommended.

4.4 Lumina Resources, 2005 Exploration Program

Lumina Resources Corp. 2005 exploration program included geophysical survey, soil geochemistry survey and drilling. In May 2005 a helicopter borne DIGHEM electromagnetic/resistivity/magnetic survey was performed. Approximately 600 line km were flown. Line separation was 200m and lines were flown north-south. Based on magnetic and resistivity patterns (Klein, 2005a) a porphyry copper-gold target was identified.

Since no outcrop data was attainable, 138 soil samples were collected across the geophysical target area along north-south oriented grid lines. A selective leach method (digestion in a hot

hydroxylamine hydrochloride) was used to dissolve amorphous hydrous iron oxide which can be an effective scavenger of mobile metal ions. Samples were analyzed for 63 elements via ICPMS.

Subsequently, eight NQ drill holes (R-022 to R-029) were drilled within the main target area for 1108.7 metres. There was no significant mineralization in 2005 drill holes, only indications of a large hydrothermal alteration system in several holes. The east-west trending dyke system intersected by BHP was not encountered in 2005 drilling.

4.5 NorthIsle Copper and Gold Inc., 2011 Exploration Program

In October 2011 NorthIsle Copper and Gold Inc. conducted a reconnaissance geophysical IP survey which covered most of the ground staked by Lumina Resources in 2005 in Rupert area. Survey was designed to target a possible porphyry type copper-gold-molybdenum mineralization east of the Island Copper deposit.

A total of 21 line kilometres were surveyed. Survey grid consisted of 11 parallel lines; each line was approx. 2 km long. Spacing between lines was 1000m, except for the spacing between the two easternmost lines which were 2700m apart.

2011 IP survey has detected several anomalies with chargeability greater than 10 milliVolts/Volt (mV/V). Anomalies were detected it the western part of the survey grid, i.e. there were no significant chargeability highs in the eastern third of the property. Chargeability anomalies create an east-west oriented trend over six km long. This chargeability anomaly is open to the west towards the Rupert Stock and to the north-east. Another parallel east-west trend was defined about 400 meters to the South. This trend roughly coincides with the porphyritic dyke intersected in several historic drill holes.

In May and June 2011, an archaeological Preliminary Field Reconnaissance (PFR) survey was performed along the cut lines prepared for IP survey. No visible archaeological or post-1846 aboriginal traditional use sites or features were encountered during the 2011 archaeological PFR.

Three zones of perceived high archaeological potential for surface/subsurface sites and CMTs were identified during the PFR survey. These zones of high archaeological potential include:

1. area located along the eastern shore of Rupert Inlet
2. are located along the banks of Waukwaas River
3. area located along the banks of an unnamed creek draining Beaver Lake and subsequently joining with the Waukwaas River

5.0 REGIONAL GEOLOGY

The most recent description of the regional geology of the Rupert area is given by Nixon et al. (2006) and the following summary is taken predominantly from Nixon's paper and references therein. Figure 3 shows the bedrock geology of northern Vancouver Island.

Vancouver Island is comprised of Upper Paleozoic to Lower Mesozoic rocks of Wrangellia – a tectonostratigraphic terrane that occurs discontinuously northward as far as central Alaska. This terrane was amalgamated to the Alexander Terrane of the Alaskan Panhandle (together comprising the Insular Superterrane) by Late Carboniferous time. Subsequently, these terranes were accreted to North America between the Middle Jurassic and the mid-Cretaceous. Thus, Vancouver Island records an early allochthonous history, and a later history with commonality to the North American margin.

The pre-accretion history of Wrangellia is represented by the Paleozoic Sicker Group and the Middle Triassic Karmutsen Formation. The Sicker Group comprises marine Devonian to Early Permian volcanic and sedimentary rocks that host VMS deposits such as at Myra Falls. The Karmutsen conformably overlies the Sicker Group and comprises basaltic and minor sedimentary rocks that underlie about 50% of Vancouver Island. This unit is up to 6000 m thick. Richards et al. (1991) argued that the Karmutsen was initiated by, and extruded above a mantle plume and recent geochemical data support an oceanic plateau origin for the Karmutsen (Greene et al., 2006). The Karmutsen is in turn conformably overlain by the Quatsino Formation of limestone consistent with a period of quietude following impingement of a mantle plume.

The Bonanza Arc (DeBari et al., 1999) formed along the length of Vancouver Island during accretion of Wrangellia. Owing to later tiling, products of this arc from various crustal depths are all preserved. These include the Westcoast Crystalline Complex, Island Intrusions and the Bonanza Group volcanic rocks. DeBari et al. (1999) argue that all these components have similar ages and geochemical signatures and that they are therefore all products of a single arc. Ages for these rocks range from ca 190 to 169 Ma. Stockic rocks of the Island Intrusions are responsible for porphyry copper mineralization on Vancouver Island.

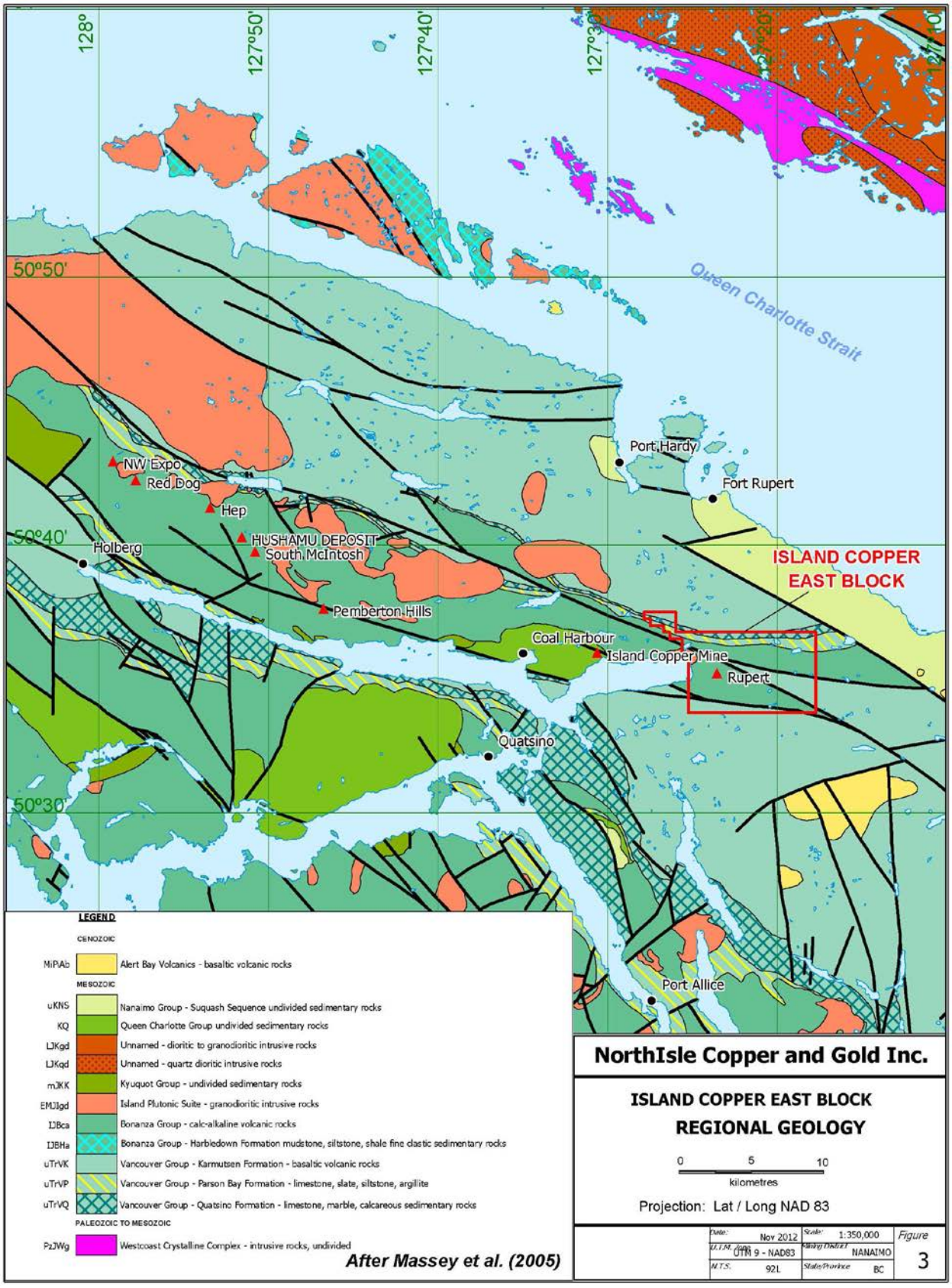

Figure 3: Regional Geology

6.0 PROPERTY GEOLOGY

6.1 Lithology

The following geological description of the Rupert Property is summarized from a compilation map by (Fleming, 1983a) and from the map by (Nixon et al., 2000). The property is underlain by a sequence of East-West-trending upper Triassic to middle Jurassic volcanic and lesser sedimentary rocks belonging to the Vancouver and Bonanza Groups (Figure 4). In general, the sequence is progressively younger southward. Table 3 summarizes the characteristics of these rock units. The northern part of the property is underlain by mafic volcanic rocks of the Karmutsen Formation. These thickly bedded to massive flows form the topographically highest points in this part of Vancouver Island.

Immediately to the south, the Karmutsen is conformably overlain by the Quatsino Formation of fine-grained (micritic), massive to weakly bedded grey limestone. In this area, the Quatsino Formation is approximately 100-200 m thick. Lying above the Quatsino Formation is the Parson Bay Formation comprising thinly-bedded siltstone and mudstone on the Rupert Property.

Most of the core of the Rupert Property is underlain by "Bonanza" volcanic rocks that occur above the Parson Bay rocks. These generally comprise a monotonous sequence of massive andesitic volcanic rocks but in drill core local well-bedded tuffaceous units were encountered. Owing to displacement across the Rupert Fault, the Karmutsen is also exposed along the southern part of the property.

The northeast corner of the property is underlain by a fault-bound, unconformably overlying clastic wedge of Upper Cretaceous sedimentary rocks correlative to the Nanaimo Group.

The core of the property is intruded by a series of east-west dykes interpreted to be apophyses emplaced eastward from the Rupert Stock. This granodiorite body crops out at the northeast corner of Rupert Inlet, immediately east of the Island Copper Mine. The Rupert Stock is part of the Jurassic Island Stockic suite responsible for porphyry Cu-Au-Mo mineralization at Island Copper.

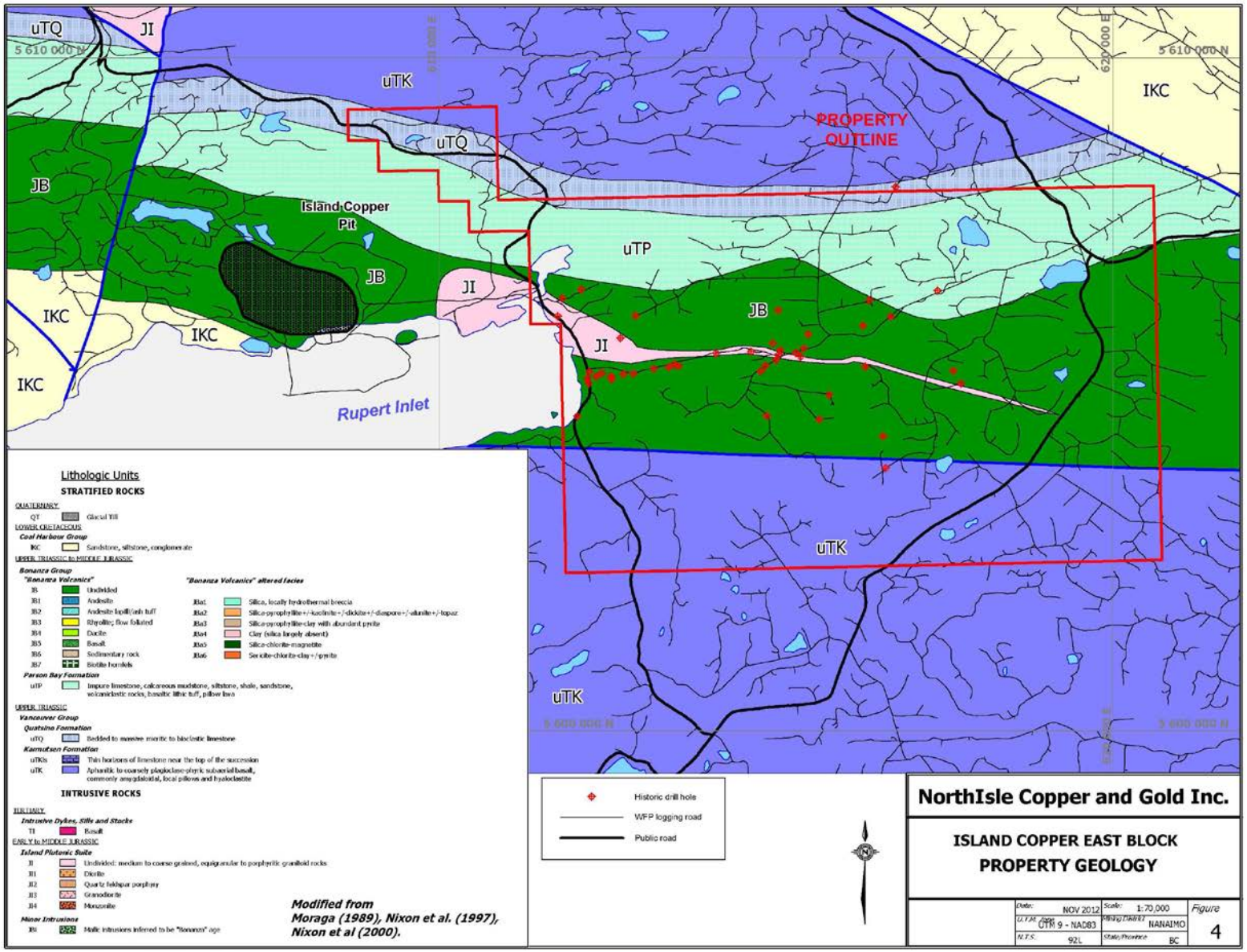

Figure 4: Property Geology

Table 3: Rupert Lithologic Units

STRATIFIED ROCKS:

QUATERNARY

QT gravel, boulder till, local mud-rich laminated till

UPPER CRETACEOUS

Nanaimo Group

uKN Sandstone, siltstone, conglomerate, minor coal

UPPER TRIASSIC to MIDDLE JURASSIC

Bonanza Group

"Bonanza Volcanics"

JB Undivided volcanic rock

JB1 Andesite: green, variably massive / coherent facies, feldspar-phyric, hyaloclastite breccia common

JB2 Andesite lapilli and/or ash tuff: green, volcaniclastic facies comprising angular to rounded coarse ash to block-sized fragments, locally fine-grained ash size, local charred wood fragments

JB3 Rhyolite: coherent and volcaniclastic facies

JB4 Dacite

JB5 Basalt

JB6 Sedimentary rocks: undivided

JB7 Hornfels, biotite-rich contact metamorphosed Bonanza volcanic rocks

Parson Bay Formation

uTP Impure limestone, calcareous mudstone, siltstone, shale, sandstone, volcaniclastic rocks, basaltic lithic tuff, pillow lava

UPPER TRIASSIC

Vancouver Group

Quatsino Formation

uTQ Bedded to massive micritic to bioclastic limestone

Karmutsen Formation

uTKls thin limestone horizons near top of succession

uTK Aphanitic to coarsely plagioclase-phyric subaerial basalt, commonly amygdaloidal, local pillows and hyaloclastite breccia

INTRUSIVE ROCKS:

TERTIARY
Intrusive dykes, sills and stocks
TI Basalt, medium-grained weakly to unaltered with chilled margins

EARLY TO MIDDLE JURASSIC
Island Stockic Suite
JI Undivided: medium to coarse-grained, equigranular to porphyritic granitoid rocks
JI1 Diorite
JI2 Quartz-feldspar porphyry
JI3 Granodiorite
JI4 Monzonite
Minor Intrusions
JB1 Mafic intrusions inferred to be "Bonanza" age

6.2 Structure

The layered units underlying the Rupert Property generally dip gently to steeply southward, although bedding orientation data are very rare. Deformation of the area has been described by Nixon et al. (1994) and is summarized below.

Phase 1: Post-Early Jurassic to Pre-Cretaceous Deformation
The first deformational event is related to an east-northeast directed compressional event that resulted in regional tilting of the Lower Jurassic and older strata to form the Victoria arch. In addition flexural slip folding and the development of northwesterly trending thrust faults occurred during this deformation event. Northeast directed compression is indicated by the presence of locally well developed, northwesterly striking, stylolitic cleavage in the Quatsino limestone.

Phase 2: Post-Mid to Pre-Late Cretaceous Deformation:
The second deformational event postdates deposition of the mid-Cretaceous Coal Harbour Group sediments and may predate deposition of the Upper Cretaceous Nanaimo Group. Northerly directed compression resulted in an episode of intense strike-slip faulting and lesser thrusting. Faults formed during this deformation event are dominantly northwesterly trending structures that have in many cases produced significant drag folding in adjacent strata where the units are well bedded. The most obvious northwesterly trending faults are high-angle dextral strike slip faults with a south-side up sense of motion. It is the presence of this generation of faults that cause most of the stratigraphic repetitions that occur in the map area.

The Holberg fault is a curvilinear south-side up thrust fault that formed during this second deformational event in response to northward directed stresses. This important structure places Upper Triassic strata on the south side of Holberg Inlet adjacent to mid-Cretaceous and older strata on the north side of the inlet. The most convincing kinematic indicator for movement on

the Holberg fault is the presence of many northerly verging, gently plunging drag folds in the footwall. Minor coaxial thrust faults and a well-developed stylolitic cleavage in limestones in the footwall also demonstrate this sense of motion. Some of the major NW trending dextral strike-slip faults in the area are splays off the Holberg fault.

Phase 3: Tertiary Deformation
The third deformational event in the area is characterized by northwesterly to north-northwesterly directed extension that postdates the deposition of the Upper Cretaceous Nanaimo Group sediments. This phase of deformation is represented by minor north-easterly to east north-easterly striking normal faults that affect Upper Cretaceous and older strata. Northeast striking Tertiary dikes intruded during this final phase of deformation.

6.3 Mineralization and Alteration

No significant mineralization was observed on the Rupert Property. Owing to low topographic relief and thick glacial till very few outcrop exposures are present. Cu / Mo mineralization, disseminated pyrite and hydrothermal alteration were observed in core only.

7.0 2012 EXPLORATION PROGRAM

Archaeological Impact Assessment (AIA) was the only exploration program performed on the East Claim Block in 2012. NorthIsle has contracted Sources Archaeological and Heritage Research Inc. (SOURCES) from Vancouver for this survey.

In 2011, prior to the AIA, SOURCES had completed a preliminary field reconnaissance (PFR) of 11cutlines prepared for the geophysical IP survey. No visible pre-1846 archaeological and post-1846 aboriginal traditional use sites and features were found in the non-permit archaeological PFR archaeological survey of the proposed geophysical IP survey grid area. However, during the survey of this particular geophysical IP survey grid area three areas were observed to possess a high archaeological potential that warrant further archaeological assessment, including subsurface testing, under a BC HCA Site Inspection Permit.

Two areas of high archaeological potential were revisited in February 2012 under permit HCA 2012-0019, issued to Hartley Odwak for further subsurface testing and investigation.

The archaeological impact assessment was carried out in accordance to the procedures set out in the British Columbia Archaeological Impact Assessment Guidelines (Appland and Kenny 1998) and the permit application for HCA Inspection Permit 2012-0019.

Four basic objectives of the 2012 AIA were:

1. to identify and evaluate archaeological resources encountered within the areas of study

2. to identify and assess all impacts on archaeological resources that might result from the proposed development
3. to recommend measures for managing any impacts by the proposed development on archaeological resources
4. to prepare a final report outlining the methods and results of the assessment, including recommendations for impact management

7.1. Field Survey Coverage and Procedures

The fieldwork component of the Archaeological Impact Assessment survey was conducted between the 15th and 16th of February, 2012.

Two areas surveyed in 2012 are located within the proposed geophysical IP survey grid lines (See Appendix 2):

1. along the banks of Waukwaas Creek approximately 2 km inland of where it drains into the eastern portion of Rupert Inlet (southern end of IP line 03).
2. along the banks of Rupert Creek approximately 4 km upstream from its confluence with Waukwaas Creek (approximately at the mid-point of the IP survey line 05)

The presence of fresh water resources within the study areas and raised fluvial terraces were considered to present a suitable location for prehistoric sites. Shovel and auger tests were judgmentally placed, generally between 3 m and 12 m apart in areas of perceived moderate and high archaeological potential.

One shovel test (ST #1) and 17 auger tests (ATs #2-18) were competed in locations judged to have higher potential for buried cultural deposits along the associated fresh water resources in the vicinity of proposed geophysical IP survey line 03.

Thirteen ATs (ATs #1-3 and 5-14) and three STs (STs #1-3) were excavated to depths ranging from 37cm to 118 cm. in areas along IP survey line 05. These subsurface tests were also judgmentally placed in locations considered to possess a higher potential for buried cultural deposits.

All subsurface testing was spaced between ≤1m and 15m for auger tests, and between ≤5 m and 20 m for shovel tests as prescribed by permit HCA 2012-0019. The decision to implement subsurface testing was contingent upon soil penetrability, perceived site depth and the size of pertinent landforms, and microtopography. ATs were drilled into the substrata at 10 cm to 15 cm increments, the matrix was described and the material screened through ¼’ hand screens. STs ranged in size from 30 cm by 30 cm to 50 cm by 50 cm and were excavated based on natural stratigraphic layers, when possible, or in arbitrary 10 cm to 20 cm increment levels. As with the ATs, the matrix of each ST was described and the material screened though ¼’ hand screens. All ATs and STs were excavated to a depth judged to be culturally sterile, until obstructions were

encountered, or until a depth was reached where it was no longer practical for shovel test excavation.

Due to the microtopography of proposed geophysical IP survey grid lines 03 and 05, a linear arrangement of the subsurface tests was favored over a geometric grid, enabling subsurface testing along the modern and paleo terraces which are situated parallel to the current creek beds. In both locations, two (2) lines of subsurface tests were completed, both running approximately parallel to the creek bank and ranging from 5 m to 12 m apart. This linear testing configuration continued along the fluvial terraces until either hindered by microtopography or by the maximum allowable distance for conducting subsurface testing, a distance of 50 m outside of the area of impact. The spacing and placement of all subsurface tests were determined by the use of handheld GPS devices, hip chins, compasses, clinometer and/or pace and compass traverses. These locations were tied in with existing mapped features, including permanent local topographic features.

No buried archaeological materials, including shell midden deposits, artifacts, fire-cracked rock, faunal remains, or features, were encountered during subsurface testing of the fluvial terraces in the vicinity of IP survey grid lines 03 and 05.

No sub-surface or buried archaeological deposits or palaeosols were found in the natural exposures encountered in this survey

No culturally modified trees (CMTs) were encountered during the preliminary field reconnaissance survey and subsequent permitted archaeological impact assessment,.

No human remains or burial features were encountered in 2011and 2012 archaeological surveys.

7.2. Personnel

SOURCES field crew consisted of field director Kennedy Richard B.A. and archaeologist Aviva Finkelstein B.A.

Damien Walkus was a Quatsino First Nation Representative /Field Assistant and Charles Wilson was a Kwakiutl First Nation Representative/Field Assistant. Konstantin Lesnikov was liaison on behalf of NorthIsle Copper and Gold Inc.

8.0 DISCUSSION OF RESULTS

The AIA survey under HCA permit 2012-0019 covered an estimated 100% of the areas of high archaeological potential within Mineral Tenures #509469 (Mo 5) and #509468 (Mo 4).

The archaeological investigations encountered no aboriginal heritage sites, features, remains, or deposits. The archaeological survey of the proposed NorthIsle Copper and Gold Inc. geophysical IP survey grid lines did not encounter any archaeological surface, subsurface, CMT sites or post 1846 traditional use sites.

Two causes may explain negative results of the 2012 survey:

- Floods may have destroyed original topography and impacted areas that may have been originally of higher archaeological potential
- Possible standing or felled western redcedar CMTs may have been removed during the commercial logging in late 1920s

Although this proposed development area is located within a glaciated river valley exhibiting paleo river terraces, the investigation of natural exposures and the implementation of supplementary sub-surface testing of these topographical features failed to find any evidence for sub-surface archaeological remains. Previous impacts from recurrent flooding events along Waukwaas Creek and its tributaries may have irreparably altered the original topography, and permanently impacted areas that may have been originally of higher archaeological potential.

The mature and old growth stands that included western hemlock, amabilis fir, Sitka spruce, and western redcedar that were located within the general vicinity of the proposed NorthIsle Copper and Gold Inc. proposed geophysical IP survey grid lines 03 and 05 were commercially logged in the late 1920s (Slim 2003:7). It is possible that any standing or felled western redcedar CMT features with marketable timber may have been present in these old-growth stands, which were removed during this logging episode. However, there was no evidence for any aboriginal CMTs that were commercially logged in this study area. The presence of CMT features located within adjacent areas provides evidence that wood resources were exploited by prehistoric occupants in this area of the inner coastal waters of Rupert Inlet.

9.0 RECOMMENDATIONS

Based on the estimated archaeological survey coverage of 100% of proposed NorthIsle Copper and Gold Inc. geophysical IP survey grid lines under permit HCA 2010-0019, it is highly unlikely that further archaeological work will be required. However, should the proposed mining operations expand outside of the current impact areas or survey coverage area within Mineral Tenures #509469 and #509468 (Mo 4), additional archaeological work may be required.

Should previously unrecorded archaeological remains be encountered during any phase of this mining development, the following recommendations are made:

- That NorthIsle Copper and Gold Inc. inform all contractors and personnel working in all proposed geophysical IP survey grid lines that both recorded and unrecorded archaeological remains in British Columbia are protected from disturbance, either intentional or inadvertent, by the Heritage Conservation Act (RSBC 1996, Chapter 87) and Section 51 of the Forest Practices Code Act (1995);

- That NorthIsle Copper and Gold Inc promptly informs the Quatsino First Nation (Coal Harbour) and the Kwakiutl First Nation (Fort Rupert/Port Hardy) of the particulars of any unanticipated archaeological discoveries; and
- In the event that previously un-identified archaeological remains are encountered within these areas, all activities must immediately be suspended. Archaeological Permitting and Assessment Section, B.C. Archaeology Branch, Ministry of Tourism, Culture, and the Arts (Victoria), the Quatsino First Nation and the Kwakiutl First Nation must be informed as soon as possible of the location and type of the archaeological remains and the nature of the disturbance.

These recommendations apply solely to physical archaeological evidence of past human activity and in no way attempt to encompass or represent any traditional land use or aboriginal rights and title concerns of the Quatsino First Nation or the Kwakiutl First Nation.

10.0 CONCLUSIONS

2011 and 2012 archaeological surveys of NorthIsle Copper and Gold Inc. geophysical IP survey grid lines did not encounter any archaeological surface, subsurface, CMT sites or post 1846 traditional use sites.

It is highly unlikely that further archaeological work will be required along surveyed IP lines. However, should the proposed mining operations expand outside of the current impact areas or survey coverage area, additional archaeological work may be required.

Respectfully submitted,

Konstantin Lesnikov, Project Geologist
NorthIsle Copper and Gold Inc.
Vancouver, British Columbia

Appendix A: Bibliography

BIBLIOGRAPHY

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Fleming, J. A., 1983b, Assessment Report - Stock Group of Mineral Claims. Utah Mines Ltd., British Columbia Assessment Report 11460, pp. 13.

Fleming, J. A., 1985a, Assessment Report - Geochemical Survey on the Mars and Pluto Group of Claims. Utah Mines Ltd., British Columbia Assessment Report 15024, pp. 63.

Fleming, J. A., 1985b, Soil Geochemical Survey on the East 86 Group of Claims. Utah Mines Ltd., British Columbia Assessment Report 15077, pp. 84.

Fleming, J. A., 1986a, Assessment Report - Geochemical Survey on the Har and Expo Group of Claims.Utah Mines Ltd., British Columbia Assessment Report 15367, pp. 47.

Fleming, J. A., 1986b, Assessment Report - Soil Geochemical Survey on the East 86 Group of Claims. Utah Mines Ltd., British Columbia Assessment Report 15707F, pp. 56.

Fleming, J. A., 1987, Assessment Report - Geochemical Survey on the Rupert Property. Utah Mines Ltd., British Columbia Assessment Report 16510, pp. 39.

Fleming, J. A., 1988, Soil Geochemical Survey East 88 Group of Claims. BHP-Utah Mines Ltd., British Columbia Assessment Report 17368, pp. 23.

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Nixon, G. T., Hammack, J. L., Koyanagi, V. M., Payie, G. J., Haggart, J. W., Orchard, M. J., Tozer, T., Archibald, D. A., Friedman, R. M., Palfy, J., and Cordey, F., 2000, Geology of the Quatsino-Port McNeill Map Area, Northern Vancouver Island, B.C. Ministry of Energy and Mines Geoscience Map 2000-6.

Nixon, G. T., Hammack, J. L., Koyanagi, V. M., Payie, G. J., Panteleyev, A., Massey, N. W. D., Hamilton, J. V., and Haggart, J. W., 1994, Preliminary geology of the Quatsino - Port McNeil map areas, northern Vancouver Island, (92L 12, 11). Paper 1994-1, Geological Fieldwork 1993, British Columbia Geological Survey, p. 63-85.

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Singhai, G., 1970b, Report on Geochemical land Magnetic Survey on Expo Claims. Ballinderry Exploration, British Columbia Assessment Report 2658, pp. 13.

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Appendix B: Statement of Expenditures

STATEMENT OF EXPENDITURES*
Rupert Claim Block

Archaeological Survey: Feb 14, 2012 to Feb17, 2012
SOURCES ARCHAEOLOGICAL AND HERITAGE RESEARCH INC.

Field Director K. Richards			
	Field	17.75 hours @ $77.50	$1,375.63
	Travel	20.75 hours @ $50.00	$1,037.50
Field Assistant A. Finkelstein			
	Field	17.75 hours @ $45.00	$798.75
	Travel	18.00 hours @ $40.00	$720.00
FN Field Assistant C. Wilson			
	Field + Travel	16 hours @ $45.00	$720.00
FN Field Assistant D. Walkus			
	Field + Travel	15 hours @ $39.00	$585.00
Field Expenses:			
Accommodation			$459.00
Food		8 days @ $50.00	$400.00
Vehicle (Sources)		1.157 km @ $0.65	$752.05
Ferry		2 trips @ $79.80	$159.60
Taxi			$95.00
Project Mgmt, Fieldwork Preparation & Associated Pre- and Post-Field Consultation:			
Project Preparation/Management		14.50 hours @ $65.00	$942.50
Photo archiving		4.35 hours @ $65.00	$282.75
Final AIA Report Preparation:			
Project Preparation/Management		11.25 hours @ $65.00	$731.25
Preliminary Reporting, Maps & Forms		79.50 hours @ $65.00	$5,167.50
Postage			$28.00
Total applied towards assessment:			**$14,254.53**

*HST excluded

Appendix C: Certificates of Qualification

ROBBIN CHATAN

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Vancouver, B.C. V5T 2G1

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e-mail: pukapuka@telus.net

CONSULTING ARCHAEOLOGY

2007 - present *SOURCES Archaeological and Heritage Research Inc.*, Vancouver, BC.
Directing Archaeologist.

1998 – 2007 *SOURCES Archaeological and Heritage Consultants*, Vancouver, BC.
Principal Archaeologist .

1997 - present Quatsino Traditional Use Study/Treaty Office, Quatsino First Nation, Coal Harbour, BC.
Contract Archaeologist.

2003-04 Quatsino Traditional Use Study Management Project Phase II: B.C. Capacity Initiative 2003-04.
Project Co Co-ordinator.

2002-03 Quatsino Traditional Use Study Management Project Phase I: B.C. Capacity Initiative 2002-03.
Project Co Co-ordinator.

1999 Quattishe Archaeology Project (BC Heritage Trust). **Excavation Director**.

1997-98 Quatsino Traditional Use Study (FRBC). **Project Co-ordinator/Research Director**.

1997 City of Port Alberni, Parks and Recreation, 4255 Wallace Street, Port Alberni, BC
Contract Archaeologist.

McLean Mill National Historic Site: 1997-99 Site Development Plan AIA. **Project Director**.

1997 *Golder Associates Ltd.*, Burnaby, BC.
Contract Archaeologist.

Clayoquot Sound Archaeological Inventory Study, Year 1. **Crew Chief**.

1995 - 96 *Millennia Research Inc.*, 204-10114 McDonald Park Road, North Saanich, BC.
Senior Archaeological Researcher.

B.C. HERITAGE CONSERVATION ACT PERMITS

I have personally held, either wholly or in part, the following Section 14 British Columbia Heritage Conservation Act Permits:

HCA Inspection Permit:	**2010** – 0082.
HCA Inspection Permit:	**2009** – 0314.
HCA Inspection Permit:	**2007** – 286.
HCA Inspection Permits:	**2006** – 058, - 186, - 284.
HCA Inspection Permits:	**2005** – 370, - 471.
HCA Inspection Permit:	**2004** – 221.
HCA Inspection Permits:	**2001** – 078, - 140, - 188.
HCA Inspection Permits:	**1999** – 338, - 399.
HCA Inspection Permits:	**1998** -- 212, - 246.
HCA Inspection Permit:	**1996** -- 020.
HCA Inspection Permits:	**1995** -- 098, - 169.

I have actively worked on a number of Sections 12 and 14 HCA Permits held by other employees/colleagues at *Millennia Research Inc., Golder Associates Ltd., SOURCES Archaeological and Heritage Consultants (1998-2007), SOURCES Archaeological and Heritage Research Inc. (2007 – present),* and the Quatsino First Nation. These are:

HCA Site Alteration Permit:	**2009** - 0275
HCA Inspection Permits:	**2009** – 0124, - 0126, -0353.
HCA Site Alteration Permit:	**2008** – 0074.
HCA Inspection Permits:	**2008** – 0163, - 0347.
HCA Inspection Permits:	**2007** – 046, - 231, - 273, - 276, -361, - 413.
HCA Site Alteration Permits:	**2006** – 275, - 351.
HCA Inspection Permits:	**2006** – 302, - 420.
HCA Inspection Permits:	**2004** – 060, - 182, - 281.
HCA Inspection Permit:	**2003** -- 048
HCA Inspection Permits:	**2002** -- 025, - 030, - 093, - 102, - 196, - 213, - 298, - 381.
HCA Inspection Permit:	**2001** – 312.
HCA Inspection Permits:	**1999** – 069, - 228.
HCA Inspection Permits:	**1996** – 296, - 300.
HCA Inspection Permits:	**1995** – 010, - 036, - 038, - 057, - 213.

RESEARCH FIELDWORK

2002 Vancouver Maritime Museum. Sevilla Nueva (Jamaica) Archaeological Project. Principal Investigator: Robyn Woodward. **Excavation Director.**

2000 Department of Archaeology, Simon Fraser University. Historic Levuka (Fiji) Archaeological Project: Nasova House Excavations. Principal Investigator: David V. Burley. **Field Director**.

1999 Quatsino Cultural Resource Management Programme, Quatsino First Nation, Coal Harbour. 1999 Quattishe Archaeological Project. Project Director: Ms. Alexandra Maas. **Excavation Director**.

1999 Department of Archaeology, Simon Fraser University. Historic Levuka (Fiji) Archaeological Project: Project Reconnaissance and Background Research. Principal Investigator: Dr. David V. Burley. **Senior Researcher**.

1994 Museum of the Rockies, Montana State University, Bozeman, MT. Glacier National Park Archaeological Project. Principal Investigator: Dr. B.O.K. Reeves. **Senior Field Assistant**.

1993 Department of Archaeology, University of Calgary. Bar U Ranch National Historic Site (1670R). Director: Dr. Gerald A. Oetelaar. **Assistant Director**.

1990 Department of Anthropology and Sociology, University of British Columbia. Crescent Beach (DgRr1) Archaeological Project. Principal Investigator: Dr. R.G. Matson. **Excavator**.

1989 Department of Anthropology and Sociology, University of British Columbia. Crescent Beach (DgRr1) Archaeological Project. Principal Investigator: Dr. R.G. Matson. **Excavator**.

LABORATORY RESEARCH PROJECTS

1989-1994 Laboratory of Archaeology, Department of Anthropology and Sociology, U.B.C., and Mass Spectrometry Lab, University of Calgary. **Graduate Researcher**

- Oxygen isotope analysis of archaeological butterclam and native little-neck clam shell from the Crescent Beach site (DgRr 1).

1990-1991 Museum of New Zealand (Te Papa Tongarewa), Wellington. **Honourary Assistant Curator of Zooarchaeology**.

- Analysis of Late Prehistoric fish bone from Motupore Island (AAK), a late prehistoric site in Papua New Guinea.

- Albacore Project: Determined estimates for live fish size and weight of Thunnidae/Katsuwonidae found in Oceanic archaeological assemblages.

- Analysis of archaeological fish bone from Waiwhau (T13/756).

1987 Laboratory of Archaeology, U.B.C. Museum of Anthropology. **Archaeological Lab Assistant**.

- Lithic debitage analysis on material from Hatt Creek sites (EeRj) and the Miliken Site (DjRi 3).

1986-1987 Laboratory of Archaeology, U.B.C. Museum of Anthropology. ANTH 406 report.

- Faunal analysis of archaeological fish bone from column samples recovered from the Point Grey site (DhRt 5), British Columbia.

TEACHING EXPERIENCE

2002-01 Department of Archaeology, Simon Fraser University. Teaching Assistantship *for Ancient Peoples and Places* (ARCH 100-3). Instructor: Dr. Diane Lyons.

2001-03 Department of Archaeology, Simon Fraser University. Teaching Assistantship for *Ancient Peoples and Places* (ARCH 100-3). Instructor: Dr. Ross Jamieson.

2001-01 Department of Archaeology, Simon Fraser University. Teaching Assistantship for *Human Origins* (ARCH 131-3). Instructor: Dr. Birute Galdikas.

2000-03 Department of Archaeology, Simon Fraser University. Teaching Assistantship for *Special Topics: The Vikings* (ARCH 332-3). Instructor: Dr. Erle Nelson.

1999-03 Distance Education/Archaeology, Simon Fraser University. Tutor Marker for *Ancient Peoples and Places* (ARCH100-3). Supervisor: Dr. Brian Hayden.

1999-01 Department of Archaeology, Simon Fraser University. Teaching Assistantship for the *Historical Archaeology* (ARCH 377-5). Instructor: Dr. David Burley.

1998-01 Department of Archaeology, Simon Fraser University. Teaching Assistant for *Zooarchaeology* (ARCH 340-5). Instructor: Mr. Bob Muir (Ph.D. candidate, Archaeology, SFU).

1997 North Island College, Port Alberni Campus. Teaching Assistant and Field Supervisor for *Archaeology Field School* (ANT 290). Instructor: Mr. David Ormandy.

1993-1994 Department of Archaeology, University of Calgary. Graduate Teaching Assistantship for the *Inroduction to Archaeological Science* (ARKY 201). Instructor: Dr. Barney Reeves.

1993 Department of Archaeology, University of Calgary. Graduate Teaching Assistantship for *Field Course in Archaeological Techniques* (ARKY 306) and *Advanced Archaeological Field and Analysis Techniques* (ARKY 506). Instructor: Dr. Jerry Oetelaar.

1992-1993 Department of Archaeology, University of Calgary. Graduate Teaching Assistantship for the *Inroduction to Archaeological Science* (ARKY 201). Instructor: Dr. Barney Reeves.

1989-1990 Department of Archaeology, University of Calgary. Graduate Teaching Assistantship for the *Inroduction to Archaeological Science* (ARKY 201). Instructor: Dr. Barney Reeves.

1989 Department of Archaeology, University of Calgary. Graduate Teaching Assistantship for the *Ceramic Analysis* (ARKY 471). Instructor: Dr. Jane Kelley.

MUSEOLOGY

1985-1989 U.B.C. Museum of Anthropology.

Museum Student Assistant.

1986 U.B.C. Museum of Anthropology.
Conservation Intern.

1986 South Pacific Pavilion, Expo 86.
Part-time Pavilion Attendant and Assistant Manager.

1980-1981 Nickle Arts Museum, University of Calgary.
Museum Assistant and Assistant Installation Technician.

EDUCATION

1998-05 Candidate, Ph.D. programme in Archaeology, Simon Fraser University.
1992-94 Student, Ph.D. programme in Archaeology, University of Calgary.
1992 Convocated with **Master of Arts Degree** (Thesis) in Archaeology at the University of Calgary.
1985-88 Completed three unclassified years in Museum Studies and Anthropology at the University of British Columbia.
1985 Convocated with **Diploma in Art History** from the University of British Columbia.
1981 Convocated with **Bachelor of Arts Degree** in Classical History and Civilization from the University of Calgary.

ACADEMIC AWARDS

2002-03 SFU Graduate Fellowship.
2001-02 SFU Graduate Fellowship.
2000-01 SFU Graduate Fellowship.
1993-94 Coutts Family Western Canadian Graduate Archaeology Scholarship.
1992-93 Province of Alberta Graduate Scholarship.
1991-92 Province of Alberta Graduate Scholarship.
1990-91 Province of Alberta Graduate Scholarship.
1988-89 Province of Alberta Graduate Scholarship.
1986-87 B.C. Cultural Fund Scholarship in Museum Studies.
1985-86 B.C. Cultural Fund Scholarship in Museum Studies.
1984 University of British Columbia Summer Scholarship.

HONOURARY AND VOLUNTEER POSITIONS

2005 Organiser, Grad Seminar Series, Department of Archaeology, Simon Fraser University.
2004-05 Committee Member, Archaeological Graduate Space Committee, AGC, Department of Archaeology, Simon Fraser University.
2004 Member, Organising Committee, Ninth Annual International Orangutan Awareness Week, Orangutan Foundation International (Biruté Mary Galdikas), November 7-13, Simon Fraser University.
2002 Session Co-organiser, "Boulevards of Power and Avenues of Resistance: Space and Landscapes in Colonial Contexts", ***35th Conference on Historical and Underwater Archaeology***, Society for Historical Archaeology, 8-12 January, Mobile AB.
2001 Member, Organising Committee, 2001 ***British Columbia Archaeology Forum***, Simon Fraser University, 26-27 October.
2000 -01 Organiser, Grad Seminar Series, Department of Archaeology, Simon Fraser University.
1999–01 Co-Chair, Archaeology Graduate Caucus (AGC), Department of Archaeology, Simon Fraser University.
1995–99 Publications Editor, ***The Midden***, ASBC.
1997-98 Acting Co-chief Editor, ***The Midden***, ASBC.
1992-94 Co-organizer, Wednesday Lunch Hour Lecture Series, Department of Archaeology, University of Calgary.
1981 Co-organiser, ***Conference on Near Eastern and Egyptian Prehistory***, Nickle Arts Museum, University of Calgary.

PROFESSIONAL DEVELOPMENT

2002 Society for Historical Archaeology, ***35th Conference on Historical and Underwater Archaeology***, Mobile, AB, 8-12 January.
2001 ***British Columbia Archaeology Forum***, Simon Fraser University, Burnaby, BC, 26-27 October.
1994 Society for Historical Archaeology, ***27th Conference on Historical and Underwater Archaeology***, Vancouver BC, January.
1989 ***Circum-Pacific Prehistory Conference***, Seattle, WA, 1-6 August.

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Chatan, Robbin.
1992 *"Yours is the Sea, the Canoes, and the Nets": Late Prehistoric Fishing Economy on Motupore Island, P.N.G.* Unpublished MA thesis, Department of Archaeology, University of Calgary, Calgary.

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II. Journal Editorship

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1997a *Shell Middens, Sea Levels, and a Scottbluff-like Point*. ***The Midden*** 29(2, Summer).

1997b *1997 Field Schools*. ***The Midden*** 29(3, Fall).

1997c Untitled. ***The Midden*** 29(4, Winter).

CERTIFICATE

I, Konstantin Lesnikov, residing at 5065 Maitland Street, Burnaby, B.C., do hereby certify that:

1. I graduated from the Faculty of Mining and Geology at the University of Belgrade, Yugoslavia in 1991 with a B.Sc. degree in Petrology and Geochemistry.
2. From 1997 to present, I have been working for Canadian mining companies as a mineral exploration geologist. I have been actively involved in mineral exploration in Peru, Yukon Territory and British Columbia.
3. Since March 2007 I have been employed as a geologist with Western Copper Corporation and I am currently employed by NorthIsle Copper and Gold Resources.
4. I have participated in planning and supervising of the work described in this report.

Signed this 6th day of December, 2012

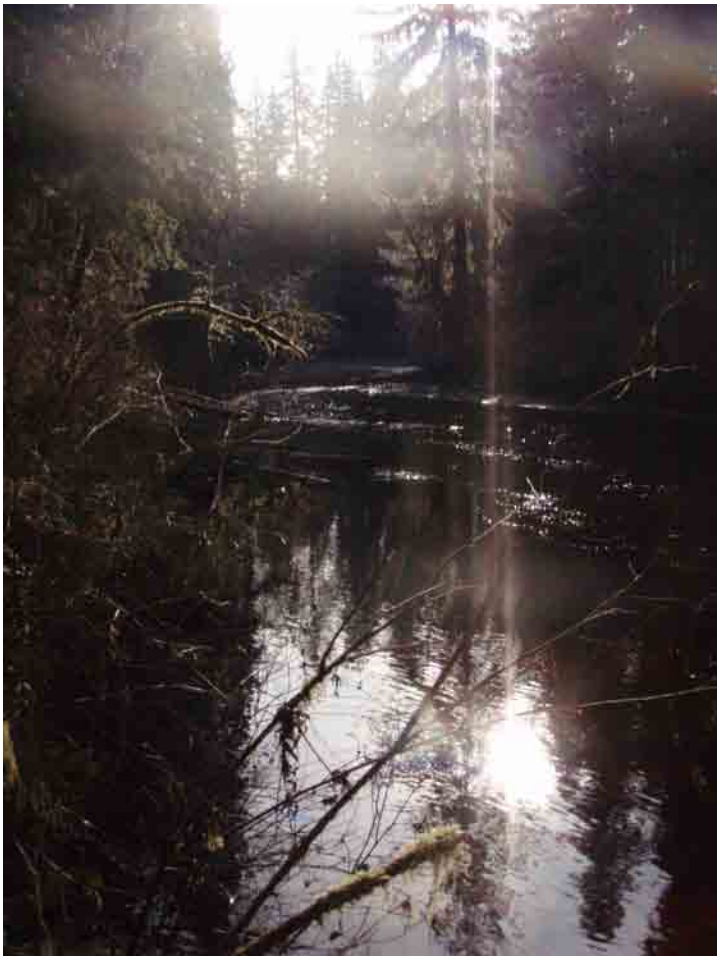
Konstantin Lesnikov

Appendix D: 2012 Archaeology Impact Assessment Report

SOURCES ARCHAEOLOGICAL & HERITAGE RESEARCH INC.

ARCHAEOLOGICAL IMPACT ASSESSMENT

NorthIsle Copper and Gold Inc., Island Copper East Block Property, Rupert IP Geophysical Survey Grid, Rupert Land District, Northern Vancouver Island, B.C.



HCA 2012-0019

PREPARED FOR

NorthIsle Copper and Gold Inc.
Vancouver B.C.

AUTHOR

Morgan Bartlett, BA

Robbin Chatan, MA

August 2012

Final Report

Archaeological Impact Assessment

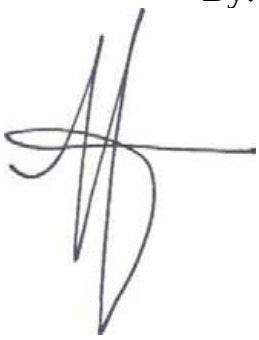
NorthIsle Copper and Gold Inc., Island Copper East Block Property, Rupert IP Geophysical Survey Grid, Rupert Land District, Northern Vancouver Island, B.C.

HCA Inspection Permit 2012-0019

Prepared for:

NorthIsle Copper and Gold Inc.
Vancouver, B.C.

By:



Morgan Bartlett, BA

Robbin Chatan M.A.

November, 2012

Credits

Prepared by:	*SOURCES Archaeological and Heritage Research Inc.*, Vancouver, BC
B.C. Heritage Inspection Permit:	HCA 2012-0019
Forest District:	North Island-Central Coast
First Nation Traditional Territory:	Quatsino First Nation, Kwakiutl First Nation
Project Supervisors:	Hartley Odwak, M.A. *(SOURCES)* Robbin Chatan**,** M.A. (*SOURCES*)
Field Director:	Kennedy Richard, B.A. *(SOURCES)* Kevin Robinson, M.A. *(SOURCES)*
First Nation Representation:	Charles Wilson (Kwakiutl First Nation) Damien Walkus (Quatsino First Nation) Cameron Davis (Quatsino First Nation) Frank Williams (Quatsino First Nation)
Report Author:	Morgan Bartlett B.A. Robbin Chatan M.A.
Editing:	Kennedy Richard, B.A.
Illustrations:	Morgan Bartlett B.A.
Report Formatting:	Morgan Bartlett B.A.

Acknowledgements

SOURCES Archaeological and Heritage Research Inc. expresses sincere gratitude to the Chief, Council and Administration of the Quatsino First Nation (QFN) for their co-operation throughout the term of this HCA Permit. Specific mention is given to Chief Councillor Tom Nelson and Council, Roy Dell (past Band Administrator), Wilma Mack, (current Band Administrator) David Schmidt (Quatsino Fisheries), Ralph Wallas (Quatsino Forestry Co-ordinator) and the Quatsino Traditional Use Study/Treaty Office for their assistance providing, support, information and expertise. We gratefully acknowledge the participation of Damien Walkus (QFN), Cameron Davis (QFN), Frank Williams (QFN) in the field component of this project.

SOURCES Archaeological and Heritage Research Inc. would also like to express our gratitude to the Chief, Council and Administration of the Kwakiutl First Nation (KFN) for their co-operation throughout the term of this HCA Permit. Specific mention is given to Chief Councillor Rupert Wilson Sr. and Council, Norman Champagne (Band Manager), Chrissy Chen (Fisheries Technician, Forestry Co-ordinator), and Randy Black (economic development officer at the time of fieldwork). We gratefully acknowledge the participation of Charles Wilson (KFN) in the field component of this AIA.

We sincerely thank Konstantin Lesnikov, Paul West-Sells, Jack McClintock, and Arnd Burgert of *NorthIsle Copper and Gold Inc., Vancouver,* for their assistance and co-operation, particularly in facilitating the logistics of this study and providing information on the proposed mineral exploration and mining and associated developments within these four B.C. Mineral Tenures in the Expo, Hushamu, Pemberton and Rupert area.

We would also like to acknowledge Al Mackie, Archaeologist, Archaeological Permitting and Assessment Section, British Columbia Archaeology Branch, Ministry of Tourism, Sports and the Arts (MTS&A), who is responsible for this project file.

Management Summary

1.0 Introduction

In February 2012 *SOURCES Archaeological and Heritage Research Inc. (SOURCES)* was contracted by *NorthIsle Copper and Gold Inc.* to conduct an archaeological impact assessment (AIA) of their proposed geophysical IP survey grid lines within Mineral Tenures #509469 and #509468 (Mo 4), Rupert Inlet, which are situated within asserted Quatsino and Kwakiutl traditional territory, on northern Vancouver Island, Rupert Land District. Prior this AIA, *SOURCES* had completed a preliminary field reconnaissance conducted in four separate geophysical IP survey grid areas: Hushamu, NW Expo, Pemberton, and Rupert (See Appendix 2). The areas of high potential, located primarily within the proposed Rupert geophysical IP survey grid lines, were subsequently revisited under permit HCA 2012-0019, issued to Hartley Odwak for further subsurface testing and investigation. The fieldwork component of this assessment was conducted between the 15th and 16th of February, 2012. The field crew consisted of field director Kennedy Richard B.A. and archaeologist Aviva Finkelstein B.A. representing *SOURCES*, assisted by Quatsino First Nation Field Assistant/Representative, Damien Walkus, and Kwakiutl First Nation Field Assistant/ Representative, Charles Wilson.

2.0 Results

The archaeological survey of the proposed *NorthIsle Copper and Gold Inc.* geophysical IP survey grid lines under HCA permit 2012-0019 covered an estimated 100% of the areas of high archaeological potential within Mineral Tenures #509469 and #509468 (Mo 4). The archaeological investigations encountered no aboriginal heritage sites, features, remains, or deposits in this survey.

3.0 Recommendations

Based on the estimated archaeological survey coverage of 100% of proposed *NorthIsle Copper and Gold Inc.* geophysical IP survey grid lines under permit HCA 2010-0019, it is highly unlikely that further archaeological work will be required. However, should the proposed mining operations expand outside of the current impact areas or survey coverage area within Mineral Tenures #509469 and #509468 (Mo 4), additional archaeological work may be required. Should previously unrecorded archaeological remains be encountered during any phase of this mining development, the following recommendations are made:

3.4 That *NorthIsle Copper and Gold Inc.* inform all contractors and personnel working in all proposed geophysical IP survey grid lines that both recorded and unrecorded archaeological remains in British Columbia are protected from disturbance, either intentional or inadvertent, by the Heritage Conservation Act (RSBC 1996, Chapter 87) and Section 51 of the Forest Practices Code Act (1995);

3.5 That *NorthIsle Copper and Gold Inc* promptly informs the Quatsino First Nation (Coal Harbour) and the Kwakiutl First Nation (Fort Rupert/Port Hardy) of the particulars of any unanticipated archaeological discoveries; and

3.6 In the event that previously un-identified archaeological remains are encountered within these areas, all activities must immediately be suspended. Archaeological Permitting and Assessment Section, B.C. Archaeology Branch, Ministry of Tourism, Culture, and the Arts (Victoria), the Quatsino First Nation and the Kwakiutl First Nation must be informed as soon as possible of the location and type of the archaeological remains and the nature of the disturbance.

These recommendations apply solely to physical archaeological evidence of past human activity and in no way attempt to encompass or represent any traditional land use or aboriginal rights and title concerns of the Quatsino First Nation or the Kwakiutl First Nation.

Table of Contents

1.0 Introduction

1.1 General Project

In February 2012, *SOURCES Archaeological and Heritage Research Inc. (SOURCES)* was contracted by *NorthIsle Copper and Gold Inc.* to conduct an archaeological impact assessment (AIA) of their proposed geophysical IP survey grid lines within Mineral Tenures #509469 and #509468 (Mo 4), Rupert Inlet, which are situated within asserted Quatsino and Kwakiutl traditional territory, on northern Vancouver Island, Rupert Land District. Prior this AIA, *SOURCES* had completed a preliminary field reconnaissance conducted in four separate geophysical IP survey grid areas: Hushamu, NW Expo, Pemberton, and Rupert. The areas of high potential, located primarily within the proposed Rupert proposed geophysical IP survey grid lines, were subsequently revisited under permit HCA 2012-0019, issued to Hartley Odwak for further subsurface testing and investigation. The fieldwork component of this assessment was conducted between the 15th and 16th of February, 2012. The field crew consisted of field director Kennedy Richard B.A. and archaeologist Aviva Finkelstein B.A. representing *SOURCES*, assisted by Quatsino First Nation Field Assistant/Representative, Damien Walkus, and Kwakiutl First Nation Field Assistant/ Representative, Charles Wilson.

1.2 Objective and Scope

Archaeological impact assessments conducted by *SOURCES* for the proposed *NorthIsle Copper and Gold Inc.* geophysical IP survey grid lines consists of four basic objectives:

1) to identify and evaluate archaeological resources encountered within the areas of study;

2) to identify and assess all impacts on archaeological resources that might result from the proposed development;

3) to recommend measures for managing any impacts by the proposed development on archaeological resources; and

4) to prepare a final report outlining the methods and results of the assessment, including recommendations for impact management.

1.3 Report Format

This final report follows the format outlined in ***Archaeological Impact Assessment Guidelines***[4] for Report Content – Impact Assessment Report (Apland and Kenny 1998, Appendix A Part 2 of 3). This document contains nine (9) sections, including this Introduction (Section 1). Section 2 (Proposed Project) presents the location and a brief description of the project. Section 3 (Project Area) deals with the environmental setting, ethnographic background, and a brief overview of the archaeological research previously conducted within the proximity of the *NorthIsle Copper and Gold Inc.* proposed geophysical IP survey grid lines. Section 4 (Methodology) outlines the basic research plan and its implementation, including the project aims, the procedures used for pre-field evaluation of archaeological site potential, the field survey methodology, site recording practices methods of evaluative testing, sampling, and recording used. Section 5 (Resource Inventory) contains the results of the archaeological investigation. Section 6 (Impact

Identification and Assessment) comprises a discussion of the previous, on-going, and possible future impacts. Section 7 (Evaluation of Research) consists of an evaluation of the methodology used in the archaeological impact assessment. Section 8 (Impact Management Recommendations) contains general recommendations for cultural resource management. Section 9 (References Cited) contains a list of all literary sources consulted in this report.

At the back of this report are four appendices which document various aspects of this project: a) Appendix 1 contains the shovel test log and soil descriptions for shovel test 1 and auger tests 2-18 (line 03), shovel tests 1-3 and auger tests 1-3 and 5-14 (line 05) and b) Appendix 2 contains a copy of the East Block Property Preliminary Field Reconnaissance (PFR) Report submitted to the client in April of 2012.

2.0 Proposed Project

The proposed *NorthIsle Copper and Gold Inc.* geophysical IP survey grid lines are located at the most easterly portion of Rupert Inlet, Quatsino Sound, northern Vancouver Island, approximately 11.5 km from Coal Harbour (Figure 1). The Rupert study area extends approximately 11 km east from the convergence of the Waukwaas Creek and Rupert Inlet in a series of north-south oriented 2 km transects.

The total area of the proposed geophysical IP survey grid lines within both east and west blocks cover approximately 88.15 km, however, the actual proposed mining and related impacts associated with *NorthIsle Copper and Gold Inc.'s* proposed exploration operations is estimated to be far less. The expected impacts incurred from this mineral extraction process will be localised, relating specifically to the allocated geophysical IP survey grid lines of the four (4) proposed areas.

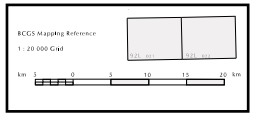
During *NorthIsle Copper and Gold Inc.'s* pre drilling assessment, the four geophysical IP survey grid lines (Expo, Hushamu, Pemberton and Rupert) will be examined by measuring properties such as magnetic susceptibility, electromagnetic potential, and chargeability by using induced polarization (IP) wires. These wires, which are pulled though the forest by hand following two (2) km long transects, measure the chargeability and geophysical signature of the substrate, indicating favourable locations to drill. These geophysical IP survey grid lines undergo linecutting, the removal of underbrush and immature trees to a trail width of one (1) meter, to enable the wires to pass though. No large timber is cut nor is subsurface disturbance required at this stage.

Once an exploration target has been identified, the location will be tested by the use of a diamond drill. These drills are heavy machines powered by diesel engines and mounted on steel frames known as skids, which are moved by bulldozer around the target area. Except where ground is very flat, a trail must be prepared to allow safe access for the drill rig. The trails are typically bladed about 3 m wide and excavated to form a level surface for passage of the drill rig. These trails are temporary and not intended for vehicle traffic and therefore, are not ballasted. At the chosen drilling location the trail is widened to create a drill pad, which is typically five (5)

FIG. 1

Island Copper East Block Property, Rupert Geophysical IP Survey Grid, Rupert Land District, Northern Vancouver Island, B.C.

Study Area



SOURCES ARCHAEOLOGICAL & HERITAGE RESEARCH INC.

(M. Bartlett) April 2012 | Non-Permit PFR

CHARLOTTE

STRAIT

Goletas Channel

Nahwitti

Shushartie R.

Georgie L.

Hardy Bay

Stranby R.

River

Nahwitti L.

Kains L.

San Josef R.

Quatse L.

Keogh River

Broughton

RUPERT

Holberg Inlet

Rupert Inlet

Clatsewe River

Sound

Neroutsos

Alice L.

Drury Int

92M 004

92M 005

92L 094

92L 095

92L 083

92L 084

92L 085

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meters wide. The trails will be laid out to avoid large timber and therefore, timber harvesting will consist of falling only if necessary to clear a path for the drill rig.

Decisions concerning further quarry development and/or mineral extraction, and subsequent expansion of these operations will be dependent upon the results of the assay preformed on the material collected from the diamond drill testing phase. Any additional development outside previously surveyed areas will require further permitting from the Archaeology Branch of British Columbia.

3.0 Project Area

3.1 Environmental Setting

The proposed *NorthIsle Copper and Gold Inc.* Rupert study area is found within the Coastal Western Hemlock biogeoclimatic zone, very wet maritime sub-zone, sub-montane variant (CWHvm1) (Meidinger and Pojar 1991:95-111; British Columbia, MoF 1994; Suttles 1990b:19).

3.1.1 Coastal Western Hemlock

The CWH biogeoclimatic zone is found at low to middle elevations, roughly between sea level and 900m asl. (Meidinger and Pojar 1991:95-111). This zone contains the highest annual precipitation of all biogeoclimatic zones within the province, possessing a cool mesothermal climate; cool summers with frequent hot and dry spells, and mild winters. The mean annual temperature is 8^{o}C, and ranges between 5.2^{o}C to 10.5^{o}C in the various sub-zones. About 85% of the precipitation occurs as rainfall, and the remaining 15% is snowfall.

The floral characteristics of the CWH biogeoclimatic zone consist of the predominance of western hemlock; a relatively sparse herb layer, and the common occurrence of several moss species (especially step and lanky moss) (Meidinger and Pojar 1991:98). Western hemlock (*Tsuga heterophylla*) is the dominant tree species within the forest cover, and western redcedar (*Thuja plicata*), Sitka spruce (*Picea sitkensis*), amabilis fir (*Abies amabilis*), and yellow cedar (*Chamaecyparis nootkensis*) are also commonly found. Shore pine (*Pinus contorta*) is present within the CWHvh1 sub-zone, primarily in wet boggy areas. Other tree species that occur in this zone include western yew (*Taxus brevifolia*), and in disturbed areas, such as areas impacted by logging and other developments, red alder (*Alnus rubra*) is commonly found.

Understory plants consist of shrubs, flowering plants, ferns, sedges, grasses, lichens and mosses, plus marine plants. Salal (*Gaultheria shallon*) is ubiquitous throughout this biogeoclimatic zone, and comprises the high percentage of ground cover. Common berry and fruit plants include gooseberries (*Ribes spp*.), salmonberry (*Rubus spectabilis*), thimbleberry (*R. parviflorus*), blackberry (*R. ursinus*), blackcap (*R. leucodermis*), Pacific crabapple (*Pyrus fusca*), huckleberries and blueberries (*Vaccinium spp*.), bunchberry (*Cornus canadensis*), and wild strawberries (*Fragaria chiloensis*). Skunk cabbage (*Lysichiton americanum*) and Devil's club (*Oplopanax horridum*) occur in moist areas. Other common plant species consist of stinging nettle (*Urtica dioica*), yellow-ladle liverwort (*Scapania bolanderi*), false azalea (*Menziesia ferruginea*), fern-leaved goldthread (*Coptis aspeiifolia*), false lily-of-the-valley (*Maianthemum dilatatum*), and heart leaved twayblade (*Listera cordata*). The fern family is primarily represented primarily by deer fern (*Blechnum spicant*), brachen fern (*Pteridium aquilinum*),

sword fern (*Polystichum munitum*), plus several other fern species. Mosses include step moss (*Hylocomium splendens*), flat moss (*Plagiothecium undulatum*), and lanky moss (*Rhytidiadelphus loreus*).

3.2 Ethnohistoric and Ethnographic Background

The proposed *NorthIsle Copper and Gold Inc.* geophysical IP survey grid lines are situated within the known traditional territories of two ethnohiostoric Quatsino tribal groups - the Huyalas (Hoyalas) and the Gusgimukw (Koskimox) as well as the traditional territories of the Kwaguʾt (Kwakiutl) First Nations.

3.2.1 Huyalas (Hoyalas)

Huyalas comes from the anglicised word of the Kwak`wala *hu `ales* (Bouchard 1995:10), *xo `yalas* (Duff 1965); and *huyalas* (Galois 1994:360). This word has been translated as the "people of Hodzas", based on information from Mungo Martin (Duff 1965:64). Hodzas is reputedly a place located at the head of Rupert Inlet (Duff 1965:63-64; Bouchard 1995:10). The Huyalas traditional territory covered much of the upper or inner Quatsino Sound region, areas that later would become controlled by the ethnohistoric Gusgimukw. Their traditional territories comprised of Holberg, Rupert, and Neroutsos Inlets, including the Marble and Benson drainages, and the areas around Alice, Victoria, and Kathleen Lakes. In the upper Quatsino Sound, the Huyalas controlled land east of the Kewquodie Creek, including Drake Island, the site of *Xwatis* (Quattishe), and the Quatsino Narrows.

Close to the period of contact, in the late eighteenth century, various traditions state that the Huyalas were "wiped out". The disappearance of the Huyalas has been explained by two theories in the extant literature. According to Curtis (1915.10:306) the Huyalas people were devastated by an epidemic, but this interpretation has been recently challenged by Galois (1994:361), who notes that this date does not fit the known time or geographical spread of European disease in this region. The more plausible cause of the disappearance of the Huyalas, favoured by many researchers is the result of conflict with the Gusgimukw (Dawson 1888:70; Boas 1897:332, 1910.10:177-187; Drucker and Heizer 1967:19; Duff 1965:64).

3.2.2 Gusgimukw (Koskimo)

The word Koskimo is an anglicisation of the Gutʾsala word gusgimukw, which has been translated as meaning the "people of Kosaa" (Dawson 1887:68). *Kosaa* (Kosae/Kósuu `guseˊ or gusa yˇi) is the place name of a village site in Shuttleworth Bight, at the mouth of the Stranby River, and according to tradition was the place of origin for the Gusgimukw (Curtis 1915:306; Drucker and Heizer 1967:19; Wallas, in Galois 1994:367-368; Wallas and Whitaker 1981:18-20, 208).

The Gusgimukw originally lived in the Cape Scott area, and share common places of origin with the Nakamgalisala. At about the time of European-Kwakwakaʾwakw contact, or slightly earlier, the Gusgimukw expanded southwards into the Quatsino Sound area and waged war or a series of wars on the indigenous Huyalas people (Drucker and Heizer 1967:19; Galois 1994: 283, see above). Accounts concerning this Gusgimukw migration are vague as to the causes and timing. According to oral traditions, the Huyalas were completely "exterminated", and the Gusgimukw took control over the former Huyalas traditional territory in the inner Quatsino Sound, including

Holberg, Neroutsos and Rupert Inlets, and inland areas around Alice and Victoria Lakes. The separation between the Gusgimukw and Nakamgalisala peoples was probably completed by the beginning of the nineteenth century (Curtis 1915:306; Galois 1994:283, 285). The Gusgimukw may have also expanded into a portion of T'łatsinuxw territory eastwards from Cliffe Point on the south shore of Quatsino Sound (Galois 1994:352, Map 2.50, 353, Map 2.51, 367). Bouchard (1995:12-13), based on Boas' (1887c) map would extend this area to just north of Kwakuitl Point in Restless Bight. In September 1878 Dawson (in Cole and Lockner 1989:2:537) observed that the Gusgimukw occupied the "greater part of Quatsino Sound".

3.2.3 Quatsino First Nation - Recent History

During the early contact period the Quatsino tribal groups participated, both indirectly and directly, in the European maritime trade stage. With the establishment of Hudson Bay Company (HBC) post at Fort Rupert in 1849, the Quatsino had greater access to the western market and goods. During the 19th century, the traditional society of the Quatsino was irreconcilably impacted by various assimilation strategies used by Anglo-European colonizers, these included: Christianization, western education (i.e., residential schools), and the gradual integration of the Quatsino into the local commercial resource industries, such as sealing, whaling, fishing, forestry, and mining (Duff 1997). The official government policies concerning First Nations led to the creation of reserves and the alienation of the people from their traditional land-base. The introduction of European diseases into the aboriginal populations severely impacted the indigenous Quatsino societies. The high mortality rates resulted not only in a drastic decline in population and the loss of traditional knowledge and ways of life, but also led to the amalgamation and concentration of the survivors at the village site of *Quattishe* (#IR 1) near Quatsino Narrows. In the 1940s the Federal Government imposed the socio-political amalgamation of the Quatsino tribal groups under the present Quatsino Band. However, despite these impacts, the Quatsino have remained connected to the land and waters of their traditional territory.

3.2.4 The Kwagu'ł (Kwakiutl) Tribes

Traditionally the Kwakiutl people were composed of four constituent tribes, the Kwagu'ł (Kwakiutl), the K'umk'utis (Komkiutis), the Kwixa or K'umuyi (Kweeha/Komoyoi), and the 'Walas Kwagu'ł or Lakwi'lala (Walas Kwakiutl/Lakwilala), who reportedly were closely related (Galois 1994:188). Dawson (1887:72) notes that the Kwagu'ł tribes occupied seasonal sites together, or in villages not separated by great distances for a long time, and that it is difficult to trace their past movements.

The word *kwagu'ł* was anglicised to *kwakiutl* meaning "smoke of the world" (Duff 1965:43) or "beach at the north side of the river" (Boas 1897:330; Duff 1965:43; Galois 1994: 207). Bouchard (1995:31, note 76) writes that recent linguistic analysis indicates that the meaning of *kwagu'ł* as "powder, air breath, or smoke rising or being blown out of containment". According to Boas (1897), Kwagu'ł tribal territory extended from an area of Songhees Creek to the vicinity of the Nimpkish River along the north east coast of Vancouver Island, as well as Malcolm, Cormorant, and Hanson Islands, and parts of Turnour, Harbledown, West and East Cracroft Islands (see Bouchard 1995:31; Duff 1965:51; Galois 1994:189, Map 2.21 Kwakuitl Sites).

According to Boas (1966), Curtis (1915), and Galois (1994) this tribal group was composed of eight *numayms.*

According to some traditions, the Kwagu'ɬ origin places were located in Hardy Bay, Beaver Harbour, and Gilford Island, until an ancestor of one of the *numayams* decided to go south and establish a village site of *qalogwis* (*kalugwis - Karlukwees*; Bouchard 1995:32; Galois 1994:213, Kw18) on Nicholson Point, Turnour Island (Boas 1966: 45-46; Bouchard 1995:32; Galois 1994:208). This site became a major village of the Kwagu'ɬ tribe until the construction of Fort Rupert in 1849, when the Kwagu'ɬ and the other three Kwakiutl tribal groups moved to Beaver Harbour. Ethnohistoric documents from the early 19th century indicate that the Kwagu'ɬ also maintained a presence on Vancouver Island (Bouchard 1995: 33-34; Galois 1994:197). In 1835 Tolmie (1963:317-318) notes that three Kwakiutl tribes occupied north-eastern Vancouver Island, between "Lat. 50-30", with the Kwagu'ɬ tribe the most northerly of these tribes (see Galois 1994:197). Later James Douglas (1840) made reference to the "numerous Quakeeolth" people settled at the "Coal Mine" that is generally inferred to be the Suquash area around Single Tree Point (see Bouchard 1995:33; Galois 1994:197).

3.2.5 The Kwagu'ɬ (Kwakiutl) First Nation - Recent History

From the turn of the 19th century historic evidence indicates that the various Kwakiutl tribes were increasingly interacting with the Hudson's Bay Company (HBC), and were actively involved the maritime fur trade in the Broughton Strait area. In 1835 coal deposits were reported at Suquash, and the Kwagu'ɬ claimed ownership of these resources and made efforts to control access to them. Initially they would not permit the HBC to mine these coal resources and used coal as an important trade item (Galois 1994:200). In 1849 the HBC established Fort Rupert in Beaver Harbour to secure access to the coal, thus becoming the first permanent European settlement in Kwakwaka'wakw territory. Although Fort Rupert was not a viable success during its period of operation, between 1849 and 1882, it became the principal residence and economic focus of the four Kwakiutl tribes. The manoeuvring of the Kwakiutl tribal groups to become intermediaries in the HBC trade network resulted in inter-tribal conflict and competition in the 1850s, notably with the Nuxalk (Bella Coola) (Galois 1994:202). By the time Fort Rupert was closed in 1882, and superceded by Alert Bay on Cormorant Island as main European settlement within the region. In 1851 treaties between the chiefs of the Kwagu'ɬ and the Kwix̱a/K_'umuyoyi tribes and the HBC covered lands between Hardy Bay and McNeill's Harbour. These treaties excluded village sites and enclosed fields, and members of these two tribes were allowed to hunt and fish (Galois 1994:202).

3.2.6 Traditional Subsistence and Seasonal Patterns

The Quatsino and Kwakiutl peoples and their ancestors have traditionally exploited the various seasonally available natural resources within their traditional territories. The coastal and pelagic waters contained a myriad of marine resources, fish, mammals, shellfish, crustaceans, and sea grasses and kelp. Although there has been an emphasis on the dependence on Pacific salmon procurement among the ethnographic Northwest Coast cultures, the Quatsino and Kwakiutl had access to other significant marine resources within their territorial waters. Other resources, such as terrestrial mammals, birds, trees, and plants were also procured for both food and materials (see Pasco and Compton 1998).

The ethnographic cultures of the Northwest Coast are classified by researchers as "affluent hunters and gatherers". Like other hunter/gatherer societies, their seasonal cycle is characterised by periods of aggregation and separation, based on the seasonal availability and location of various natural resources. During the winter months the various clan segments would congregate at large winter village sites. The winter season was characterised by increased social interaction, and was considered to be the primary period of ceremonialism and ritual (i.e., potlatching and the winter ceremonials). Inversely, the other half of the year was characterised by the dispersal of family/*numaym* groups to various seasonal resource locations throughout the tribal landscapes (Boas 1897, 1966; Bouchard 1995; Codere 1990; Drucker 1965; Drucker and Heizer 1967; Duff 1965; Galois 1994).

3.2.7 Recorded Ethnographic and Traditional Use Sites

The nearest documented ethnohistoric occupation sites to this study area are comprised of two (2) resource procurement sites and seven (7) named places. At the head of Rupert Inlet, Galois (1994: 362-363) references x̲o·dzas, which was listed by Mungo Martin as the place where the "Xoyalas got their name" (Galois 1994: 362, Hy8) before they disappeared around the time of contact. In the same location, Galois also records the site *t'sik̲wi*, "a small fishery at the southern end of the trail to Beaver Harbour" (Galois 1994:374, Ks22), which was occupied temporarily by the Koskimo (G̲usgimukw) who acquired the Hoyalas (Xoyalas) territory after their disappearance.

Boas (1934: Map 5) inventories seven (7) sites at the end of Rupert Inlet. On the northern shore, he names three (3) sites: *gē´dzadē*, a location "having Heracleum lanatum Michx" (Boas 1934: Map 5/30), *wadzâ´ᵉlis*, a "river on [a] flat beach, Deer Island" (Boas 1934: Map 5/31), and *ts!ē´qwēᵉ*, a named trail leading to Beaver Harbour and Fort Rupert on the eastern coast of Vancouver Island (Boas 1934: Map 5/32). On the eastern shore of Rupert Inlet, Boas references three (3) sites located further inland than the northern sites. Located near an unnamed stream and intersecting with the study area are sites: *nEqEmāᵉlis*, "beach straight in front" (Boas 1934: Map 5/33), *ᵉmEkŭmāᵉlis*, "round thing (island) in front at beach" (Boas 1934: Map 5/34), *wax•waᵉs*, "rivers on ground" (Boas 1934: Map 5/35), and *k•1ē´dEgwis*, a "grassy beach" (Boas 1934: Map 5/36).

3.3 Archaeological Background

3.3.1 Culture History Sequence

As the result of continuing archaeological activity within Northern Vancouver Island, a prehistoric cultural sequence is continually being defined. The earliest recorded archaeological sites within asserted Quatsino traditional territory possess affinities to the Pebble Tool tradition (Carlson 1990), or the Old Cordilleran culture type (Matson and Coupland 1994), which dates between ca. 8000 - 5000 BP. The Pebble Tool Tradition artifact assemblages are characterised by the presence of unifacial pebble choppers and leaf-shaped bifacial tools. Sites with Pebble Tool Tradition-like artefacts were found in five beach lithic sites within Quatsino Sound (Apland 1982; Carlson 1990:62; Kenady 1970). Other artifact types present include leaf-shaped bifaces.

Apland (1982) infers that these assemblages pre-date 5000 BP, and represent a separate local archaeological tradition with affiliation to the southern Pebble Tool Tradition.

The Middle and Late Prehistoric sequence for the Kwakwa̱ka̱'wakw area is presented by Mitchell (1990:340-358). In his brief overview he emphasises middle and late prehistoric sites in the Hardy Bay and Beaver Cove area on Northern Vancouver Island (Beaver Cove EeSu 008, O'Conner EeSu 005, and Fort Rupert EeSu 014). For the Kwakwa̱ka̱'wakw area the Middle and Late Prehistoric sequence consists of the Obsidian culture type (ca. 5000 - 2500 BP) and the Queen Charlotte Strait culture type (ca. 1600 - 250 BP).

The Obsidian culture type is characterised by a "decided presence" of flaked obsidian blades made by the bipolar percussion technique, flaked stone tools (leaf-shaped projectile points), bone (composite harpoon valves, bipoints, ulna tools) and shell (mussel shell adzes and knives) implements, hammer stones, and abrasive stones. The faunal remains from Obsidian culture type-sites indicate a generalised or broad-scale subsistence economy based on shellfish, fish, bird, as well as marine and terrestrial mammal resource exploitation.

The Late Prehistoric Queen Charlotte Strait culture type, on the other hand, sees a new emphasis in artefact types and subsistence patterns. The artifact assemblages consist of flat-top hand mauls, stone discs, ground stone adzes, unilateral barbed bone points, bone harpoon points and valves, bone bi-points, splintered bone awls, whale bone bark beaters, bone spindle whorls, bone blanket and hair pins, and mussel shell adzes and knives. Although the faunal assemblages indicate the procurement of a wide range of species, the subsistence evidence from Queen Charlotte Strait assemblages suggest a pronounced emphasis on salmon and harbour seal exploitation. According to Wilson and Dahlstrom (1995:20), the Queen Charlotte Strait culture type represents "a clear continuum between the prehistoric past and ethnographic present".

3.3.2 Rupert Inlet: Recorded Archaeological Sites

Due to commercial logging operations and activities on the southern shore of Rupert Inlet, several archaeological sites of varying typologies have been recorded in this area. The nearest documented archaeological sites within the general vicinity of this study area include the following 12 separate sites: EdSu-2, EdSu-6 to -10, EdSu-17, EdSu-25 to -27, EdSu-29, and EdSu-30. These sites are located north and west of the study area and range in linear distance from 1.5 km to 5 km. Site EdSu-2 is located nearest the study area at approximately 1.5 km west, and is situated on the eastern shore of Rupert Inlet. The site consists of a partially buried subsurface shell midden and associated historic surface refuse (HCA 1978-0006, Johnson and Williamson 1978). Located approximately 3.5 km north of the study area, situated along the shore of an unnamed lake draining into the Washlawlis Creek, is site EdSu-17. This site is a documented 1.1 km section of the old First Nations Rupert Inlet to Fort Rupert trail, ethnographically known as ts!ē´qwē$^{\varepsilon}$ (HCA 2002-0196, Chatan).

Along the southern shore of Rupert Inlet are 10 sites, including five (5) coastal shell middens (EdSu-7, -9, -29, and -27) covering an approximate spatial area of 790 m^2, seven (7) clusters of a total of 23 aboriginally logged CMTs (EdSu-7, -8, 9, -25, -26, -29, and -30), one (1) lithic scatter site (EdSu-7), one (1) historical habitation feature (EdSu-9), and one (1) fishing weir feature (EdSu-10).

3.4 Previous Historical Industrial Developments

This study area has been previously impacted by commercial operations and activities associated with historic logging and mining. In the 1920s the veteran and old-growth forests were logged using coastal float and A-frame logging (Slim 2003:7; Plate 6). This targeted not only western redcedar but also other marketable tree species such as Douglas-fir and Sitka spruce. In some places, commercial logging extended as much as 1.5 km inland along major watersheds, such as Waukwaas Creek.

Along the northern shore of Rupert Inlet, situated approximately 3.5 east of the study area, is the deactivated Island Copper Mine; a 400 meter open pit mine with a surface area of 260 hectares (Wilton and Lawrence, 1999:173). Mining operations began in October of 1971 and terminated in December of 1995, at which time the excavated waste rock was dumped near the pit, creating 260 hectares of land extending into Rupert Inlet (Wilton and Lawrence, 1999:173). There have been no documented archaeological impact assessments for the Island Copper Mine or immediately adjacent areas.

3.5 Evaluation of Archaeological Potential

In the archaeological overview assessment of the former Port McNeill Forest District (now North Island-Central Coast Forest District) conducted by Wilson and Dahlstrom (1995), the entire shoreline, between elevations of 0 m asl and 250 m asl. of both Holberg and Rupert Inlets was designated as possessing high archaeological potential for surface and sub-surface sites and features. The proposed *NorthIsle Copper and Gold Inc.* geophysical IP survey grid lines are

located within this designated high potential zone. Based on nearby recorded ethnohistoric, Quatsino TUS evidence, and registered archaeological sites, as well as its proximity to the foreshore zone - important for its marine and terrestrial resources - this impact area is situated in a zone of high archaeological potential for both CMTs and surface/subsurface site types. Therefore, an AIA was required to address the potential presence of archaeological sites, including CMTs, within this proposed development impact area. Archaeological potential is significantly increased by the presence of a suitable topography for habitation, such as a sheltered coastal terrace, fluvial terrace, sources of fresh water, an appropriate beach zone for landing canoes, and the presence of remnant stands of old-growth or veteran trees.

4.0 Methodology

4.1 Introduction

The archaeological impact assessments described herein were carried out in accordance to the procedures set out in the ***British Columbia Archaeological Impact Assessment Guidelines***[4] (Appland and Kenny 1998) and the permit application for HCA Inspection Permit 2012-0019. The archaeological survey consisted of two components:

1) the identification and documentation of the majority of culturally modified trees (CMTs) of aboriginal origin within and adjacent to the proposed geophysical IP survey grid lines , and associated development areas, such as proposed road right-of-ways, etc.; and

2) the identification and documentation of surface and sub-surface sites and deposits found within and adjacent to these proposed geophysical IP survey grid lines and ancillary developments.

4.2 Pre-field Evaluation

Pre-field preparation and planning for the field crew began with a literature review, including a review of the more recent archaeological studies conducted within the immediate study area, and a review of the existing archaeological, ethnographic and traditional use research outlined in Section 3. The field team also examined pertinent 1:50,000 scale NTS topographic, 1:20,000 scale forest cover (TRIM), and a 1:5,000 scale of the development map of the proposed *NorthIsle Copper and Gold Inc.* geophysical IP survey grid lines prior to the field survey. Geographic information contained within these maps (*i.e*., location of cliffs, old growth forest, past and present drainage systems, known prehistoric beach or strand lines, terraces, degree of slope, proximity to both sea and fresh water shorelines, overall accessibility, etc.) was used to assign testable archaeological potential ratings to specific areas of the development, and to model the field survey. All of the above criteria formed the basis for pre-fieldwork planning and field survey strategies, and were expected to be amended if site potential was judged to be greater or lesser in the field.

4.2.1 Preliminary Field Reconnaissance Results

Field survey of the *NorthIsle Copper and Gold Inc.* geophysical IP survey grid lines aimed to focus on areas containing old growth tree species, particularly western redcedar, as well as areas adjacent to past and present drainages and along the coast, particularly beaches, coastal terraces, sheltered inlets and coves. The survey methodologies employed included a systematic ground

survey of the proposed mining impact areas within the mineral tenure. In this case, a non-permit pedestrian survey was conducted around the four (4) proposed geophysical IP survey grid line study areas to discern the two (2) specific locations where more thorough testing was deemed necessary under the AIA permit 2012-0019 (Figure 2). Where terrain and archaeological potential warranted, an area of 50 m or greater outside of these areas was also subject to inspection or sampling by the field crews. This survey strategy was designed to be both flexible to the shape, size, terrain, and existing forest cover within the project area, and to allow for the assessment of the immediate surrounding area outside the proposed area of impact in anticipation of possible expansion of mining operations around this point.

During the non-permit PFR, two (2) locations in the Rupert study area were deemed high potential and were recommended for further subsurface testing. These two (2) high potential areas are located near or directly adjacent to fresh water resources, such as Waukwaas and Rupert Creeks, and situated on moderately level terrain with a range in slope from 5% to 26%.

4.3 Field Survey

Post-survey, the supra-surface observations were enhanced by judgmental shovel testing under HCA permit 2012-0019. During this second archaeological survey, one (1) shovel test (ST) and 17 auger tests (ATs) were conducted within the vicinity of proposed geophysical IP survey grid line 03 in the Rupert study area. Along line 05 of the Rupert study area, three (3) STs and 13 ATs were excavated in areas judged to have high archaeological potential (see Section 4.4.2 below; Figures 3 and 4, and Appendix 1). All subsurface testing was spaced between ≤1m and 15m for auger tests, and between ≤5 m and 20 m for shovel tests as prescribed by permit HCA 2012-0019. The decision to implement subsurface testing was contingent upon soil penetrability, perceived site depth and the size of pertinent landforms, and microtopography. ATs were drilled into the substrata at 10 cm to 15 cm increments, the matrix was described and the material screened through ¼' hand screens. STs ranged in size from 30 cm by 30 cm to 50 cm by 50 cm and were excavated based on natural stratigraphic layers, when possible, or in arbitrary 10 cm to 20 cm increment levels. As with the ATs, the matrix of each ST was described and the material screened though ¼' hand screens. All ATs and STs were excavated to a depth judged to be culturally sterile, until obstructions were encountered, or until a depth was reached where it was no longer practical for shovel test excavation.

Due to the microtopography of proposed geophysical IP survey grid lines 03 and 05, a linear arrangement of the subsurface tests was favoured over a geometric grid, enabling subsurface testing along the modern and paleo terraces which are situated parallel to the current creek beds. In both locations, two (2) lines of subsurface tests were completed, both running approximately parallel to the creek bank and ranging from 5 m to 12 m apart. This linear testing configuration continued along the fluvial terraces until either hindered by microtopography or by the maximum allowable distance for conducting subsurface testing, a distance of 50 m outside of the area of impact. The spacing and placement of all subsurface tests were determined by the use of handheld GPS devices, hip chins, compasses, clinometer and/or pace and compass traverses. These locations were tied in with existing mapped features, including permanent local topographic features.

No sub-surface or buried archaeological deposits or palaeosols were found in the natural exposures encountered in this survey or during Subsurface Testing

FIG. 2 **Island Copper East Block Property, Rupert Geophysical IP Survey Grid.**

- Areas Selected for AIA Survey
- Sources 2011 Surveys
- Previously-logged area
- Proposed Drill Hole at Hushamu Deposit
- Proposed Geophysical Survey Line

Western Forest Products Roads

- Maintained
- Permanent
- Semipermanent
- Temporary
- Abandoned
- Deactivated

SOURCES ARCHAEOLOGICAL & HERITAGE RESEARCH INC.

(N. Weber, M. Bartlett) August 2012 | HCA 2012-0019

0 1 2 kilometres

615,000mE

620,000mE

625,000mE

5,610,000mN

5,605,080mN

R400

HWY 19

R600

R970

R960

R950

R920

HWY 19

M900

NW 41

PH13

Rupert Inlet

RUPERT MAIN

R1020

R1030

BEAVER MAIN

B400

B900

B430

B450

NW40

M950

MISTY MAIN

SPH MAIN

HWY 30

Wąwkwaas Creek

Areas Selected for AIA Survey

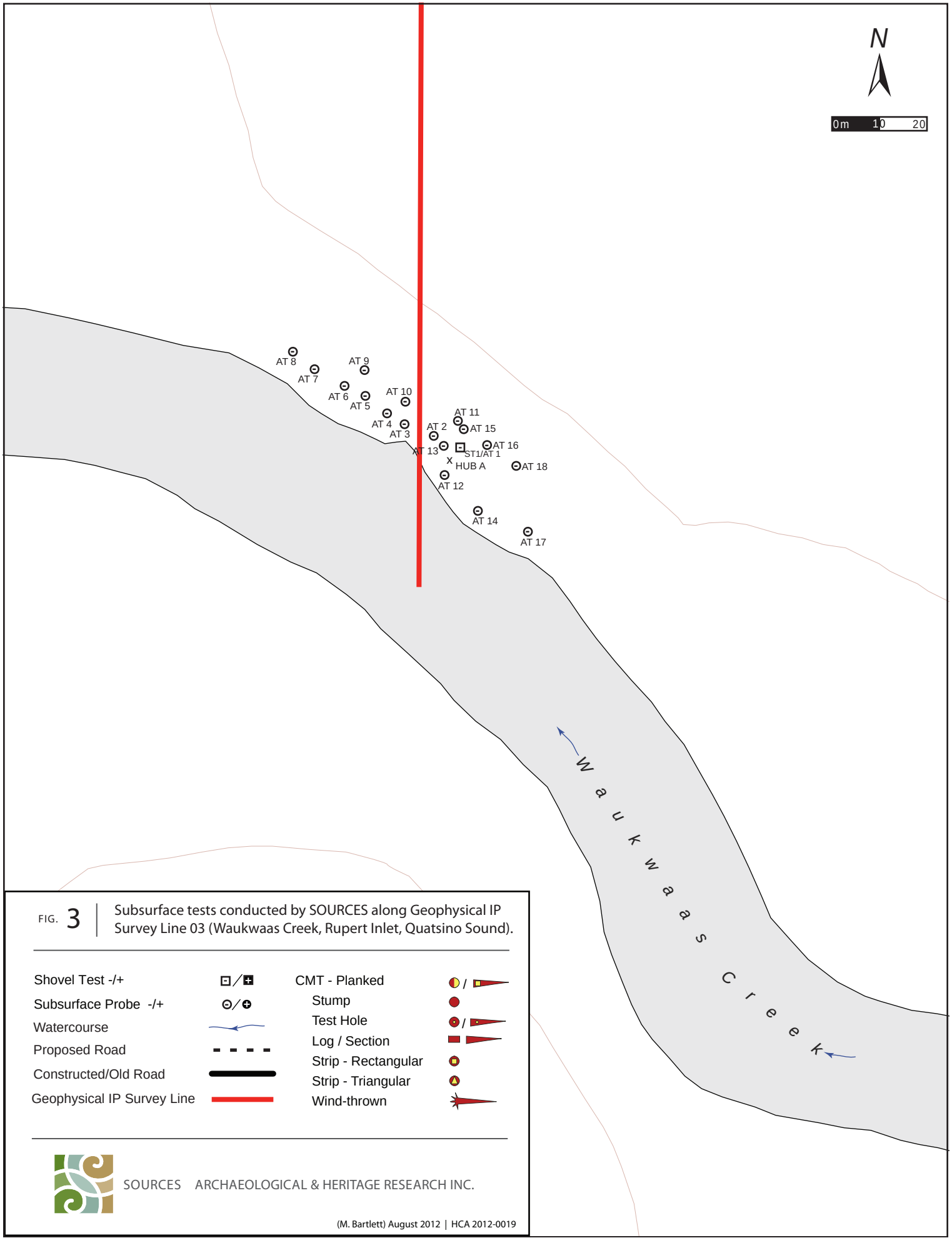

FIG. 3 | Subsurface tests conducted by SOURCES along Geophysical IP Survey Line 03 (Waukwaas Creek, Rupert Inlet, Quatsino Sound).

- Shovel Test -/+
- Subsurface Probe -/+
- Watercourse
- Proposed Road
- Constructed/Old Road
- Geophysical IP Survey Line
- CMT - Planked
- Stump
- Test Hole
- Log / Section
- Strip - Rectangular
- Strip - Triangular
- Wind-thrown

SOURCES ARCHAEOLOGICAL & HERITAGE RESEARCH INC.

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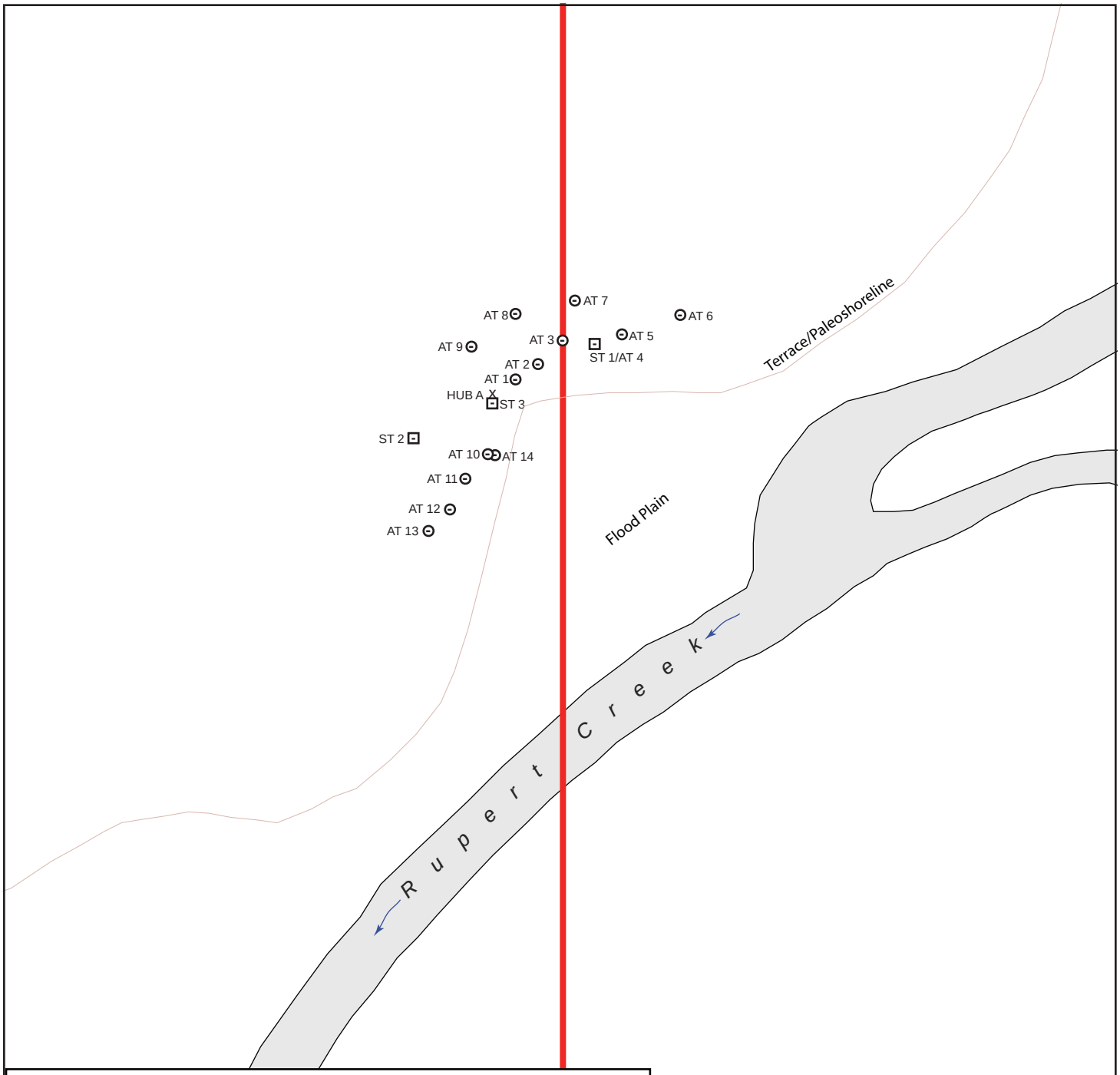


FIG. 4 | Subsurface tests conducted by SOURCES along Geophysical IP Survey Line 05 (Rupert Creek, Rupert Inlet, Quatsino Sound).

Shovel Test -/+

Subsurface Probe -/+

Watercourse

Proposed Road

Constructed/Old Road

Geophysical IP Survey Line

CMT - Planked

Stump

Test Hole

Log / Section

Strip - Rectangular

Strip - Triangular

Wind-thrown

N

0m 10 20

SOURCES ARCHAEOLOGICAL & HERITAGE RESEARCH INC.

(M. Bartlett) August 2012 | HCA 2012-0019

4.4 Site Recording Practises

4.4.1 Culturally Modified Tree (CMT) Survey

In areas of perceived low, moderate and high archaeological potential that were surveyed all redcedar standing, wind-thrown, dead-thrown, and commercially logged features (i.e., stumps) within the visual range of the surveyor/s were examined for the presence of CMT scars by proceeding from tree to tree or stand to stand. Other species of trees were also examined for cultural modifications if they fell within or along a transect. All Culturally Modified Trees (CMTs) discovered were to be recorded according to the standards contained in ***Culturally Modified Trees of British Columbia Handbook***[2] (British Columbia, Archaeology Branch 2001). CMTs were to be recorded using sequential CMT numbers along each geophysical IP survey gridline or other division of the proposed project.

The following information was to be recorded for each CMT: a) CMT number; b) Species; c) A/D (Alive/Dead); d) S/F (Standing/Fallen/Wind-thrown); e) slope (of land); and f) DBH (Diameter at Breast Height). The following information was to be recorded for each CMT feature identified: a) Class (Feature class); b) Type; c) Feature number; d) Length; e) Width; f) Depth/Thickness; g) HAG (Height above Ground); h) Side (Feature faces up, down or side slope); i) Dir (Direction feature is facing, cardinal); j) TMK (Tool marks present); k) NT (Nursing Tree, present, species); l) Core/Age (increment bore taken, minimal calendrical date of modification if possible; and m) digital image/s. CMT site boundaries are based on the criteria established in the B.C. Archaeology Branch Bulletin #12, ***"Defining Culturally Modified Tree Site Boundaries"***, dated 25 May 2004 (http://www.tsa.gov.bc.ca/ archaeology/ bulletin/12.htm). During the preliminary field reconnaissance survey and subsequent permitted archaeological impact assessment, no culturally modified trees were encountered.

4.4.2 Surface and Sub-surface Archaeological Sites

Within the assessment area there was a possibility for encountering other sub-surface and surface archaeological site types during the preliminary field reconnaissance survey. Areas judged to possess moderate to high archaeological potential were intensively surveyed for the presence of a variety of site types including exposed sites and features such as rock art, habitations, earthworks, cultural depressions, subsistence features, trails, canoe runs, burials, *etc*., using the methodology discussed above in Section 4.3. In locations of high potential for sub-surface or buried cultural matrices, permit HCA 2012-0019 was obtained to allow sub-surface testing by shovel and auger testing. Shovel and auger tests were judgementally placed, generally between 3 m and 12 m apart in areas of perceived moderate and high archaeological potential.

The presence of fresh water resources within this study area as a raised fluvial terraces presented a suitable locations for prehistoric sites. Within the vicinity of the proposed Rupert geophysical IP survey grid line 03, one (1) ST (ST #1) and 17 auger tests (ATs #2-18) were competed in locations judged to have higher potential for buried cultural deposits along the associated fresh water resources. These subsurface tests were excavated to depths ranging between 30 cm and 114 cm dbs, until known culturally sterile basal deposits were encountered, or as deep as feasibly possible, or until subsurface obstructions such as tree roots, rocks and bedrock prevented further excavation. Similarly, along the proposed Rupert geophysical IP survey grid line 05, 13 ATs (ATs #1-3 and 5-14) and three (3) STs (STs #1-3) were excavated to depths ranging from 37cm

to 118 cm. These subsurface tests were also judgmentally placed in locations considered to possess a higher potential for buried cultural deposits.

4.4.3 Burials

In the case where human burials and/or remains were encountered, *SOURCES* would follow the B.C. Archaeology Branch's policy on "***Found Human Remains***" (http://www.tsa.gov.bc.ca/archaeology/policies/found_human_remains.htm), dated 22 September, 1999. No human remains or burial features were encountered in this archaeological survey.

5.0 Survey Results and Resource Inventory

5.1 Survey Description and Results

This study area was accessed by vehicle from Port Hardy. The crew was transported to the Rupert geophysical IP survey grid line to conduct intensive shovel testing in the two (2) predetermined high potential areas. The survey of the proposed geophysical IP survey grid lines 03 and 05 were accessed by built WFP forestry haul roads, including spurs R1030, R1000, Rupert Main, and South Port Hardy Main from its junction with Highway 19.

The proposed geophysical IP survey grid lines 03 and 05, situated within the Rupert study area, are located within the confines of a glaciated valley at elevations ranging between 10 m and about 121 m above sea level (asl). The surrounding hill slopes range in average between 5% and 30% gradients and lack upper elevation benches or terracing along the glacial valley margins, although fluvial terracing was noted along both Waukwaas and Rupert Creeks.

5.1.1 Rupert Geophysical IP Survey Grid Line 03

The southern portion of the geophysical IP survey grid line 03 is located along the banks of Waukwaas Creek approximately 2 km inland of where it drains into the eastern portion of Rupert Inlet. Along the banks of this fresh water feature are modern fluvial terraces, which gently slope towards the western flowing creek. The forest cover along Waukwaas Creek is comprised of a sparse density of second growth western hemlock (95%), amabilis fir (5%) and red alder (along the creek), ranging from 50 cm to 1 m+ DBH (Plates 1 and 2). Second-growth western redcedar was noticeably absent in the present forest cover within this study area, barring one small tree. Large decaying remnant historically-logged stumps with sawn cut-faces and spring-board notching were observed and encountered throughout the study area, and are the visible evidence of the commercial logging episodes dating from the 1920s (Slim 2003:7). Examination of standing and wind-thrown trees during the survey failed to find archaeological or post-1846 traditional use CMT features. In the vicinity of the creek, heavy understory and groundcover was observed consisting of salmonberry, huckleberry, thimbleberry, Pacific bleeding heart, sword fern and several types of grasses. The bed of Rupert Creek is comprised of boulder and gravel beaches, fluvial flats and creek bars with an approximate channel width of 30 m and a depth ranging from 30 cm to 60cm. The southern bank is noticeably less developed than the northern bank, which is likely attributed to repeated seasonal flooding events. Approximately 2 meters above the northern creek bank, the soil profile begins to develop indicating a higher potential for buried cultural deposits.

Plate 1: ***NorthIsle Copper and Gold Inc.*** **Geophysical IP Survey Grid Line 03, Waukwaas Creek, facing east.** (Source: Aviva Finkelstein, P2150005.jpeg)

Plate 2: *NorthIsle Copper and Gold Inc.* Geophysical IP Survey Grid Line 03, Natural Exposure on the bank of Waukwaas Creek.
(Source: Blake Evans, P1020496.jpeg)

The examination of numerous soil exposures in the stream bank as well as wind-thrown tree holes and root masses indicate that the upper medium to dark brown organic soil horizons directly overly brown silty sand matrices and rounded gravels. No buried sub-surface archaeological deposits, including shell midden matrices or palaeosol horizons were found in the investigations of these natural exposures within proposed geophysical IP survey grid line 03.

These negative findings were verified by judgemental sub-surface shovel and auger testing (ST #1 and ATs #2-18) in areas that were deemed to possess higher archaeological potential along the gently sloping fluvial terrace. These were excavated between a minimum depth of 30 cm dbs (AT #15) and a maximum depth of 114 cm dbs (AT #17) (Figure 5, Plates 3 and 4, Appendix 1). All shovel and auger tests were located approximately 3 m to 10 north of the creek, parallel to the creek bank. The results of these ATs indicate that when present, the upper litter mat and organic soil horizons ranged in thickness between a minimum of 5 cm and a maximum of 23 cm dbs. These organic horizons directly overlay brown, golden brown or grey-brown silty sand deposits characterised by unsorted semi-angular to rounded gravels or the appearance of wood debris. Gravel content, size and density tend to increase with depth. Overall, the excavation was unhindered by the presence of buried obstructions, although the presence of sub-surface geological gravel deposits hindered excavation at times.

No buried archaeological materials, including shell midden deposits, artifacts, fire-cracked rock, faunal remains, or features, were encountered during subsurface testing of the gently sloping fluvial terrace.

5.1.2 Rupert Geophysical IP Survey Grid Line 05

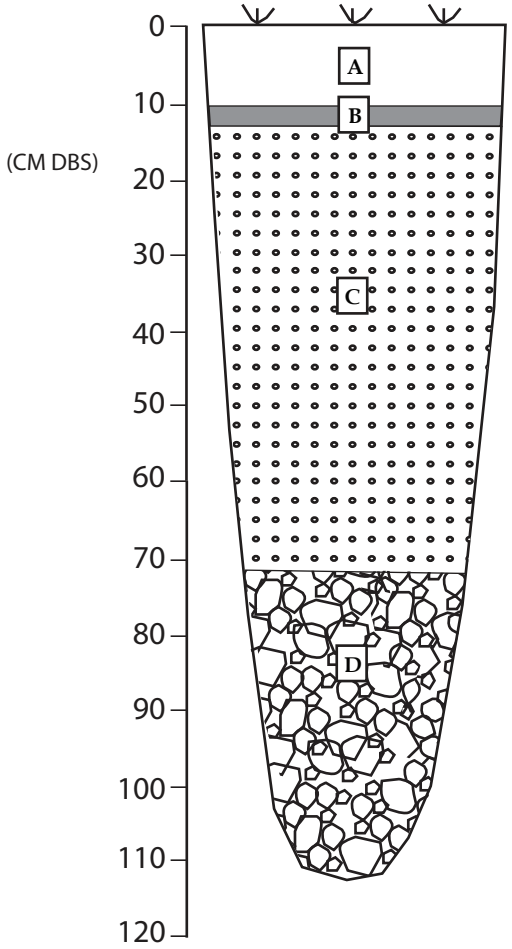
Comparable to geophysical IP survey grid line 03, line 05 intersects Rupert Creek at approximately the mid point of the survey line and exhibits many of the same topographical features. Along the banks of Rupert Creek are well-defined paleo-fluvial terraces benched 11 m to 14 m above the western flowing creek. Below the sheer-sided terrace is a level floodplain ranging in width from 21 m to 52 m, as measured from the bottom of the terrace to the creek. The forest cover along Rupert Creek is comprised of second growth western hemlock (95%), Sitka spruce (2.5%), red alder (along the creek) and several small western redcedar (2.5%). All second growth forest cover ranges from an approximate 30 cm to 70+cm DBH. Large decaying remnant historically-logged stumps with sawn cut-faces and spring-board notching were observed and encountered throughout the study area, and are the visible evidence of the commercial logging episodes dating from the 1920s (Slim 2003:7). Examination of standing and wind-thrown trees during the survey failed to find other archaeological or post-1846 traditional use CMT features. The sparse understory is comprised of salmonberry, huckleberry, thimbleberry, twisted stalk, skunk cabbage, sword fern and several types of grasses. Both the density of the groundcover and understory increased within closer vicinity to the creek. The bed of Rupert Creek is comprised of rounded boulder and gravel beaches, fluvial flats and creek bars with an approximate width of 6 m and a depth ranging from 10 cm to 40cm (Plate 5).

The examination of the numerous soil exposures in the stream bank as well as wind-thrown tree holes and root masses indicate that the upper medium to dark brown organic soil horizons directly overly golden-grey sandy silt matrices and rounded gravels. No buried sub-surface archaeological deposits, including shell midden matrices or palaeosol horizons were found in the investigations of these natural exposures within proposed geophysical IP survey gird line 05.

Plate 3: ***NorthIsle Copper and Gold Inc.*** **Geophysical IP Survey Grid Line 03, North wall of ST 1 showing transition between burnt silt and silty sand.**
(Source: Aviva Finkelstein, P2150005.jpeg)

Plate 4: ***NorthIsle Copper and Gold Inc.*** **Geophysical IP Survey Grid Line 03, Charles Wilson at AT1.** (Source: Aviva Finkelstein, P2150012.jpeg)

Shovel Test #1
Geophysical Survey Line 03



Shovel Test #2
Geophysical Survey Line 05

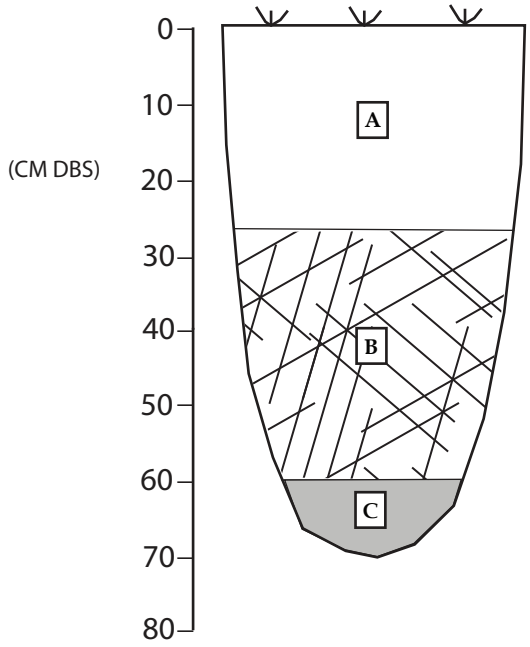


FIG. 5 | Shovel Test Profiles, ST#1 (Line 03) and ST# 2 (Line 05), Rupert Inlet, Northern Vancouver Island, B.C.

Scale: 1:10

SOURCES ARCHAEOLOGICAL & HERITAGE RESEARCH INC.

M. Bartlett
HCA 2012-0019
August 2012

Shovel Test #1

Strata:	Description:
A	Duff, organic horizon with forest and leaf litter.
B	Mottled orangey-brown burnt silt with 2% wood debris.
C	Light brown silty sand with rounded pebbles (1%) at 71cm.
D	Light brown silty sand with 5 - 7% rounded gravels at 1m dbs.

Shovel Test #2

Strata:	Description:
A	Duff, littermat, buried rotten tree.
B	Dark brown moist loam with 2 - 5% charcoal (forest fire).
C	Orange glacial till, silty clay. No rock.

These negative findings were verified by judgemental sub-surface auger testing (ATs #1-3 and 5-14) and shovel testing (ST #1-3) in areas that were deemed to possess higher archaeological potential along the paleo-fluvial terrace. These sub-surface tests were excavated between a minimum depth of 30 cm dbs (ST #1) and a maximum depth of 118 cm dbs (AT #2) (Plates 6 to 8, Appendix 1). All ATs and STs were located approximately 35 m to 63 m north of the creek bank, parallel to the creek. The results of these ATs and STs indicate that when present, the upper litter mat and organic soil horizons ranged in thickness between a minimum of 5 cm and a maximum of 47 cm dbs. These organic horizons directly overlay brown, golden, golden brown, golden-grey or grey silty sand and silty clay deposits characterised by unsorted semi angular to rounded gravels. Red/orange glacial till was also encountered exhibiting ash lenses and angular boulders and cobbles. Gravel content, size and density tend to increase with depth. Overall, the compacted sub-surface geological gravel deposits in addition to the presence of buried obstructions were difficult to excavate.

No buried archaeological materials, including shell midden deposits, artifacts, fire-cracked rock, faunal remains, or features, were encountered during subsurface testing of the paleo-fluvial terrace.

5.2 Survey Inventory

The archaeological survey of the proposed *NorthIsle Copper and Gold Inc.* geophysical IP survey grid lines did not encounter any archaeological surface, subsurface, CMT sites or post 1846 traditional use sites.

5.3 Negative Results

Although this proposed development area is located within a glaciated river valley exhibiting paleo river terraces, the investigation of natural exposures and the implementation of supplementary sub-surface testing of these topographical features failed to find any evidence for sub-surface archaeological remains. Previous impacts from recurrent flooding events along Waukwaas Creek and its tributaries may have irreparably altered the original topography, and permanently impacted areas that may have been originally of higher archaeological potential.

The recorded ethnographic and traditional use data indicate that the natural resources found along these fresh water resources were utilised by the ancestors of both the Quatsino and the Kwakiutl. This would have included plant and tree resources, fishing for chum salmon (*Oncorhynchus keta)*, cohoe salmon (*Oncorhynchus kisutch)* and rainbow trout (*Oncorhynchus mykiss)* found in Waukwaas Creek, as well as hunting and trapping activities. The mature and old growth stands that included western hemlock, amabilis fir, Sitka spruce, and western redcedar that were located within the general vicinity of the proposed *NorthIsle Copper and Gold Inc.* proposed geophysical IP survey grid lines 03 and 05 were commercially logged in the late 1920s (Slim 2003:7). It is possible that any standing or felled western redcedar CMT features with marketable timber may have been present in these old-growth stands, which were removed during this logging episode. However, there was no evidence for any aboriginal CMTs that were commercially logged in this study area. The presence of CMT features located within adjacent areas provides evidence that wood resources were exploited by prehistoric occupants in this area of the inner coastal waters of Rupert Inlet.

Plate 5: ***NorthIsle Copper and Gold Inc.*** **Geophysical IP Survey Grid Line 05, Rupert Creek, facing southwest.** (Source: Aviva Finkelstein, P2160020.jpeg)

Plate 6: ***NorthIsle Copper and Gold Inc.*** **Geophysical IP Survey Grid Line 05, Natural soil exposure located on the northern shore of Rupert Creek showing natural charcoal layer.** (Source: Aviva Finkelstein, P2160023.jpeg)

Plate 7: *NorthIsle Copper and Gold Inc.* Geophysical IP Survey Grid Line 05, South wall of ST 2 showing transition between loam and glacial till.
(Source: Aviva Finkelstein, P2160035.jpeg)

Plate 8: *NorthIsle Copper and Gold Inc.* Geophysical IP Survey Grid Line 05, Charles Wilson and Damien Walkus hand screening AT13.
(Source: Aviva Finkelstein, P2160030.jpeg)

5.4 Prediction of Further Resources

Based on the intensity of the survey and the sampling strategies employed, the potential for additional unrecorded archaeological resources within and immediately adjacent the proposed *NorthIsle Copper and Gold Inc.* proposed geophysical IP survey grid lines within Mineral Tenures #509468 (Mo 4) and #509469 is currently considered low. However, there is a possibility that previously unrecorded coastal and CMT sites may be located outside the surveyed area within Mineral Tenures #509468 (Mo 4) and #509469. Therefore, further archaeological work may be warranted should this mining development expand beyond the area of survey covered under this permit.

6.0 Impact Identification and Assessment

6.1 Impact Identification

The archaeological survey of the proposed *NorthIsle Copper and Gold Inc.* geophysical IP survey grid lines did not encounter any archaeological surface, subsurface, CMT sites or post 1846 traditional use sites.

7.0 Evaluation of Research

7.1 Accuracy of Predictive Archaeological Potential

7.1.1 Previous Overview Studies

Both the Wilson and Dahstrom (1995) AOA of the former Port McNeill Forest District and the Quatsino Traditional Use Site database and maps indicate that the immediate area around the shoreline of the end of Rupert Inlet is high archaeological or heritage potential. The AOA did not take into account such variables as localised topography (aspect, slope, etc.) or for previous impacts on heritage resources from commercial and private development in this specific area. The Quatsino TUS database clearly indicates that several natural resource procurement activities, such as the harvesting of marine resources, hunting and traplines as well as named aboriginal trails occurred in this vicinity of Rupert Inlet.

7.1.2 Pre-Field Assessment

Based on both the AOA and Quatsino TUS data, this development area was assessed to contain a high archaeological potential, especially for natural resource procurement sites. However, this study area has been previously impacted by commercial logging in the late 1920s, which may have altered the original archaeological potential rating for this study area.

7.2 Review of Strategy and Techniques

7.2.1 Inventory Strategy and Site Survey Techniques Appraisal

Combining gross measures of survey coverage with the survey methodology as described in detail in Section 4 suggest that the degree of confidence that can be placed in the survey results is high. The potential for unrecorded archaeological resources within and immediately adjacent to the proposed geophysical IP survey grid lines is considered to be low and highly unlikely.

7.2.2 Site Evaluation and Impact Assessment Appraisal

The archaeological survey covered 100% of the proposed geophysical IP survey grid lines included in the permitted archaeological impact assessment. In total, PFR surveys covered 60% of the proposed impact area located within the four study areas, Expo, Hushamu, Pemberton and Rupert.

7.2.3 Stated Objectives of the AIA and the Results

The stated objectives of this archaeological impact assessment are to identify and evaluate archaeological resources encountered within the area of study, to identify and assess all impacts on archaeological resources that might result from the proposed development, to recommend measures for managing any impacts by the proposed development on identified archaeological resources, and to prepare a final report outlining the methods and results of the assessment, including recommendations for impact management. No archaeological sites were identified in this study.

7.2.4 Subsequent Archaeological Studies Recommendations

Based on the coverage and results of the AIA survey of the proposed *NorthIsle Copper and Gold Inc.* geophysical IP survey grid lines within Mineral Tenures #509468 (Mo 4) and #509469, no further archaeological studies are recommended. However, should mining operations expand outside the current development impact area/s and/or outside the area of survey of this assessment, additional archaeological work may be warranted.

8.0 Impact Management Recommendations

The archaeological survey of the *NorthIsle Copper and Gold Inc.* geophysical IP survey grid lines covered 100% of the high potential areas within proposed geophysical IP survey grid lines 03 and 05. No archaeological surface, subsurface, CMT sites or post 1846 traditional use sites were encountered during this survey and assessment. Based on the estimated archaeological survey coverage of the current proposed *NorthIsle Copper and Gold Inc.* geophysical IP survey grid lines, it is highly unlikely that further archaeological work will be required.

8.1 General Recommendations

Should the proposed mining operations expand outside the current impact areas or survey coverage area with Mineral Tenures #509468 (Mo 4) and #509469, then additional archaeological work may be required. The following recommendations are made in the likelihood that any previously unidentified archaeological features, sites, or deposits are encountered during the scheduled *NorthIsle Copper and Gold Inc.* exploratory and extraction stages in this development. These recommendations are:

8.1.1 That *NorthIsle Copper and Gold Inc.* inform all contractors and personnel working within proposed geophysical IP survey grid lines that both recorded and unrecorded archaeological remains in British Columbia are protected from disturbance, either intentional or inadvertent, by the Heritage Conservation Act (RSBC 1996, Chapter 87) and Section 51 of the Forest Practices Code Act (1995);

8.1.2 That *NorthIsle Copper and Gold Inc.* promptly informs the Quatsino First Nation (Coal Harbour) and Kwakiutl First Nation (Fort Rupert/Port Hardy) of the particulars of any unanticipated archaeological discoveries; and

8.1.3 In the event that previously un-identified archaeological remains are encountered within these areas, all activities must immediately be suspended. Archaeological Permitting and Assessment Section, B.C. Archaeology Branch, Ministry of Tourism, Culture, and the Arts (Victoria), the Quatsino First Nation and the Kwakiutl First Nation must be informed as soon as possible of the location and type of the archaeological remains and the nature of the disturbance.

These recommendations apply solely to physical archaeological evidence of past human activity and in no way attempt to encompass or represent any traditional land use or aboriginal rights and title concerns of the Quatsino or Kwakiutl First Nation.

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APPENDIX 1: Subsurface Test Soil Descriptions

Subsurface Test Soil Description Log Database

Permit: 2012-0019
Type: AIA
Client: Western Copper and Gold
Project: Rupert Line 03

Unit	Location	Stratum	DBS	Soil Description	Results	Context
ST1/AT1	3.7 m @ 42° from Hub A	1	0-10cm	Duff, organic horizon with forest and leaf litter.	N	Natural
		2	10-13cm	Mottled orangey-brown burnt silt with 2% wood debris.	N	Natural
		3	13-71cm	Light brown silty sand with rounded pebbles (1%) at 71cm.	N	Natural
		4	71-112cm	Light golden brown silty sand with 5-7% rounded gravels at 1m dbs.	N	Natural
AT2	6m @ 301° from AT1	1	0-10cm	Duff, organic horizon with forest and leaf litter.	N	Natural
		2	10-78cm	Golden silty sand with 2% gravels.	N	Natural
		3	78+cm	Root mass.	N	Natural
AT3	6m @ 298° from AT2	1	0-8cm	Duff, root mat, forest debris.	N	Natural
		2	8-94cm	Brown sandy silt and 30-40% rounded, unsorted gravels (1-6cm in diameter)	N	Natural
		3	94+cm	Dense gravels.	N	Natural
AT4	5m @304° from AT3	1	0-10cm	Forest debris, root mat.	N	Natural
		2	10-74cm	Silty sand with dense compacted rounded gravels (unsorted 2-6cm in diameter).	N	Natural
		3	74+cm	Dense compacted rocks.	N	Natural
AT5	6m @ 316° from AT4	1	0-12cm	Duff, forest debris, rootmat.	N	Natural
		2	12-90cm	Silty sand and dense rounded unsorted gravels (1-5cm in diameter, 40%).	N	Natural
		3	90+cm	Compacted gravels.	N	Natural
AT6	5m @ 298° from AT5	1	0-10cm	Duff, rootmat.	N	Natural
		2	10-100cm	Brown sandy silt and dense rounded unsorted gravels (1-5cm in diameter, 40%).	N	Natural
AT7	7m @306° from AT6	1	0-9cm	Duff, forest debris.	N	Natural
		2	9-66cm	Brown sandy silt and dense rounded unsorted gravels (1-5cm in diameter, 40%).	N	Natural
		3	66+cm	Dense compacted rocks.	N	Natural
AT8	6m @ 314° from AT7	1	0-23cm	Duff, littermat.	N	Natural
		2	23-35cm	Brown silt and 2% pea gravel.	N	Natural
		3	35-50cm	Light brown to golden coarse silty sand and dense compacted gravels.	N	Natural
		4	50+cm	Impermeable gravel.	N	Natural

Unit	Location	Stratum	DBS	Soil Description	Results	Context
AT9	5m @ 0° from AT5	1	0-5 cm	Duff, organic horizon with forest and leaf litter.	N	Natural
		2	5-7cm	Mottled orange-brown burnt silt with 2-5% wood debris.	N	Natural
		3	7-105cm	Golden brown/grey silty sand.	N	Natural
AT10	5m @ 0° from AT3	1	0-5cm	Duff, organic horizon with forest and leaf litter.	N	Natural
		2	5-113cm	Golden brown silty sand with 2% rounded gravels <5cm in diameter.	N	Natural
AT11	5m @ 0° from AT1	1	0-15cm	Duff, litter mat.	N	Natural
		2	15-40cm	Brown silt and 10% rounded gravels.	N	Natural
		3	40-50cm	Moist brown silt and 20-30% unsorted gravels.	N	Natural
		4	50+cm	Dense compacted rocks.	N	Natural
AT12	7m @ 210° from AT1	1	0-10cm	Duff, organic horizon with forest and leaf litter.	N	Natural
		2	10-30cm	Mottled orange silty sand.	N	Natural
		3	30-107cm	Light brown, golden grey fine silt.	N	Natural
AT13	6m @ 0° from AT12	1	0-20cm	Duff, littermat.	N	Natural
		2	20-50cm	Golden grey sandy silt with 5% pea gravels (1-2cm diameter).	N	Natural
		3	50+cm	Compacted gravels.	N	Natural
AT14	10m @ 148° from AT12	1	0-37cm	Grey sandy silt.	N	Natural
		2	37-45cm	Mottled orange to bark brown sandy silt, no rocks.	N	Natural
		3	45-100cm	Golden grey silty sand, no rocks.	N	
AT15	6m @ 43° from AT13	1	0-25cm	Grey/brown silty sand.	N	Natural
		2	25-30cm	Grey/brown silty sand with 10-15% rounded gravels, 5-7cm in diameter.	N	Natural
AT16	6m @ 128° from AT15	1	0-10cm	Golden brown silty sand with 2% rounded gravels <5cm in diameter.	N	Natural
		2	10-58cm	Light brown silty sand with 30% rounded gravels 2-10cm in diameter.	N	Natural
AT17	11m @ 114° from 14	1	0-60cm	Grey-brown silt with 2% wood fragments, no rocks.	N	Natural
		2	60-114cm	Golden grey silty sand, 1%rounded pea gravels at 1m dbs.	N	Natural
AT18	7m @ 126° from AT16	1	0-15cm	Golden brown/grey silt	N	Natural
		2	15-52cm	Golden brown/grey silt, very moist and swampy.	N	Natural

Subsurface Test Soil Description Log Database

Permit: 2012-0019
Type: AIA
Client: Western Copper and Gold
Project: Rupert Line 05

Unit	Location	Stratum	DBS	Soil Description	Results	Context
AT1	5m @ 60° from HUB A	1	0-15cm	Duff, rootmat.	N	Natural
		2	15-21cm	Brown silty clay, no rocks.	N	Natural
		3	21-91cm	Golden sandy silt-clay with some orange sandy silt lenses. Overall, 10-15% gravels (subangular to rounded) into dense rocks (15%) at bottom with no clay.	N	Natural
AT2	10m @ 60° from HUB A	1	0-40cm	Dark brown loam with litter mat and rootlets.	N	Natural
		2	40-60cm	Mottled orange brown silt with 2-5% rounded gravels. Some charcoal.	N	Natural
		3	60-113cm	Golden grey/brown very fine sandy silty with 10% rounded gravels (<5cm diameter). Some charcoal.	N	Natural
		4	113-118cm	Golden grey/brown very fine sandy silty and with 10% rounded gravels (<5cm diameter). Moist with some mottled orange sandy/silt.	N	Natural
AT3	15m @ 60° from HUB A	1	0-5cm	Dark brown organic loam.	N	Natural
		2	5-25cm	Dark brown loam with 8-12% rounded gravels (0-5cm in diameter).	N	Natural
		3	25-42cm	Grey/golden sandy silt with (10-15%) rounded gravels (<3cm). Moist.	N	Natural
AT4/ST1	5m 80° from AT3	1	1-26cm	Duff, organics root mat.	N	Natural
		2	26-30cm	Brown silty clay with organics and 2% gravels. Wet.	N	Natural
		3	30+cm	Blue-golden siltstone bedrock.	N	Natural
AT5	5m @ 71° from AT4	1	0-8cm	Duff, littermat.	N	Natural
		2	8-43cm	Light brown mottled orange silty clay (glacial till over bedrock). Water table at 33cm.	N	Natural
		3	43+cm	Bedrock.	N	Natural
AT6	15m @ 71° from AT4	1	0-30cm	Duff, littermat.	N	Natural
		2	30-60cm	Red/orange glacial till with unsorted sub-angular to rounded gravels (<3cm diameter).	N	Natural
		3	60+cm	Bedrock.	N	Natural
AT7	10m @ 310° from AT5	1	0-23cm	Duff, littermat.	N	Natural
		2	23-80cm	Pale brown clay-like glacial till, no rocks, wet.	N	Natural
		3	80+cm	Bedrock, rocks.	N	Natural
AT8	10m @ 310° from AT3	1	0-38cm	Duff, littermat/root mat.	N	Natural
		2	38-78cm	Pale, mottled brown-orange silty clay with 2-5% pea gravels.	N	Natural
		3	78+cm	Bedrock.	N	Natural

Unit	Location	Stratum	DBS	Soil Description	Results	Context
AT9	10m @ 310° from AT1	1	0-47cm	Organics, littermat and roots.	N	Natural
		2	47-110cm	Orange-red glacial till, 2% gravels into more silty clay at the bottom. Wet.	N	Natural
		3	110+cm	Bedrock	N	Natural
AT10	5m @ 186° from HUB A	1	0-20cm	Duff, littermat.	N	Natural
		2	20-37cm	Pale brown silty wet clay with till, no rocks.	N	Natural
		3	37+cm	Rock.	N	Natural
AT11	5m @ 226° from AT10	1	0-23cm	Duff, littermat.	N	Natural
		2	23-50cm	Brown silty clay with gravels and 2% wood fragments.	N	Natural
		3	50-80cm	Grey silty sand and 10-15% gravels (sub angular to round, <2cm diameter).	N	Natural
		4	80+cm	Rocks.	N	Natural
AT12	5m @ 210° from AT11	1	0-21cm	Duff, root/littermat.	N	Natural
		2	21-57cm	Brown silty wet clay with 2-5% gravels (sub-angular to rounded).	N	Natural
		3	57+cm	Rocks.	N	Natural
AT13	5m @ 230° from AT12	1	0-10cm	Brown loam with root mat and organic matter.	N	Natural
		2	10-60cm	Mottled golden brown silt.	N	Natural
		3	60-68cm	Mottled golden brown silt with 2-5% rounded pea gravels.	N	Natural
		4	68-72cm	Grey/brown silty sand with <10% rounded gravels (3-5cm in diameter).	N	Natural
AT14	10m @ 0° from HUB A	1	0-8cm	Dark brown loam with organic littermat.	N	Natural
		2	8-92cm	Golden brown silt.	N	Natural
		3	92-103cm	Mottled grey brown very wet silt.	N	Natural
ST2	12m @ 310° from AT11	1	0-26cm	Duff, littermat, buried rotten tree.		
		2	26-60cm	Dark brown moist loam with 2-5% charcoal (forest fire).		
		3	60-70cm	Orange glacial till, silty clay. No rock.		
ST3	1m @ 0° from HUB A	1	0-20cm	Duff, charcoal (5%), ash (forest fire), littermat and roots.	N	Natural
		2	20-54cm	Ash, mottled glacial till (organge, grey and red, 5%), rocks, gravels (boulder/cobbles 5%, <12cm in diameter)	N	Natural
		3	54+cm	Large rocks, water table.	N	Natural

APPENDIX 2: East Block Property Preliminary Field Reconnaissance (PFR) Report

SOURCES ARCHAEOLOGICAL & HERITAGE RESEARCH INC.

PRELIMINARY FIELD RECONNAISSANCE

Island Copper East Block Property, Rupert IP Geophysical Survey Grid, Rupert Land District, Northern Vancouver Island, B.C.

Non-Permit

PREPARED FOR

NorthIsle Copper and Gold Inc.
Vancouver, B.C.

AUTHORS

Morgan Bartlett, BA
Robbin Chatan, MA

April 2012

SOURCES ARCHAEOLOGICAL & HERITAGE RESEARCH INC.
303–343 RAILWAY STREET, VANCOUVER BC CANADA V6A 1A4 www.sourcesarch.com T 604.251.3002 F 604.251.3001

Preliminary Field Reconnaissance (PFR) Report: Island Copper East Block Property

HCA Permit #: Non-permit **Project Officer: N/A**

Client:	*NorthIsle Copper and Gold Inc.*	**Client Contacts:**	Konstantin Lesnikov John McClintock
Locations:	Rupert Inlet, Waukwas Creek	**Development:**	Commercial Mineral Exploration
Land District:	Rupert	**FN Traditional Territories:**	Quatsino FN Kwakiutl FN

Development

Biogeoclimatic Zones:	CWHvm1 CWHvh1	**Mineral Tenures:**	#509465, 509466 509467, 509468, 509469, 509470, 509471, 509472, 509474, 509475, 509476, 509479 509480, 509481 509482, 509483	**Dates:**	2012/13
Geophysical IP Survey Grid:	Rupert	**Development Type:**	Geophysical Exploration	**Exploration Type:**	Diamond Drilling
Rupert: 24.0 km			**Total Area:** 24.0\ km		

Field Survey Summary

Project Supervisor:		Hartley Odwak, MA	**Field Directors:**	Kennedy Richard, BA	
Archaeologists:		Blake Evans, MA Aviva Finkelstein, BA	**First Nation Representatives:**	Charles Wilson (QFN) Mark Wallas (KFN) Frank Williams (QFN)	
Proponent Field Personnel:		Arnd Burgert, P. Geo.	**Survey Dates:**	25-28 May, 2011 21 June, 2011	
Heritage Concerns:	No	**Archaeological:**	No	**Traditional Use Site**	No
Features:	N/A	**Borden Block/s:**	EdSu, EdSt	**Permanent Site No./s:**	N/A

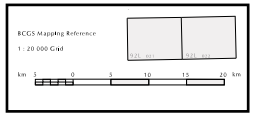
Report

Author:	Morgan Bartlett, BA Robbin Chatan, MA	**Illustrations:**	Nick Weber, MA
Attachments:	Figures 1-2; Plates 1-2.		

FIG. 1

Island Copper East Block Property, Rupert Geophysical IP Survey Grid, Rupert Land District, Northern Vancouver Island, B.C.

Study Area



SOURCES ARCHAEOLOGICAL & HERITAGE RESEARCH INC.

(M. Bartlett) April 2012 | Non-Permit PFR

1.0 POTENTIAL ASSESSMENT

1.1 Ethnographic Backgrounds

This proposed Rupert geophysical IP survey grid area is located within the asserted traditional territories of the Kwakiutl and Quatsino First Nations. Table 1.1 below summarises the eight (8) nearest documented ethnohistoric and ethnographic sites to the Island Copper East Block Property on Northern Vancouver Island (Boas 1934: Map 5; Bouchard 1995; Galois 1994).

Table 1.1: Nearest Documented Ethnohistoric/Ethnographic Sites

Geophysical IP Survey Grid	Location	Site Name	Site Type	References
Rupert	Rupert Inlet	*wadzāʾlis*	Cultural Landform, Named Place	Boas 1934: Maps 5/31
Rupert	Rupert Inlet	*ts!ēʾqwē*	Cultural Landform, Named Place	Boas 1934: Map 5/32
Rupert	Rupert Inlet	*nEqEmāʾlis*	Cultural Landform, Named Place	Boas 1934: Map 5/33
Rupert	Rupert Inlet	*mEkūmāʾlis*	Cultural Landform, Named Place	Boas 1934: Map 5/34
Rupert	Rupert Inlet, Waukwaas Creek	*wax·was*	Cultural Landform, Named Place	Boas 1934: Map 5/35
Rupert	Rupert Inlet, Coetkwaas Creek	*k·!ēʾdEgwis*	Cultural Landform, Named Place	Boas 1934: Map 5/36
Rupert	Rupert Inlet	*xo·dzas*	Cultural Landform, Named Place Traditional History, Origin Story Food Harvesting, Fishing Domestic, Dwelling	Galois 1994:362, Hy8
Rupert	Rupert Inlet, Washlawlis Creek	*Tsequae*	Domestic, Dwelling Food Harvesting, Fishing Cross-cultural Interaction, Communication Cultural Landform, Named Place	Galois 1994:372, Ks22; Boas Map 5/32

The nearest documented ethnographic sites are situated along or near the shoreline of Rupert Inlet. These consist of two (2) occupation sites that are located at the head of Rupert Inlet, and six (6) Kwakwaka'wakw named places. The two ethnohistoric village sites are associated with other activities such as season fisheries, a place of origin of the Hoyalas tribal group at *xo·dzas*, and for *Tsequae l*ocated at one end of the ethnohistoric trail between Rupert Inlet and Fort Rupert in Beaver Harbour (Port Hardy).

1.2 Archaeological Backgrounds

Prior to field survey there were three (3) registered archaeological sites situated within the vicinity of the proposed Rupert geophysical IP survey grid area (HCA 1978-006, Johnson and Williamson, 1978; HCA 1998-246, Maas and Chatan 1999). Table 1.2 below summarises these nearest recorded archaeological sites to this proposed *NorthIsle* geophysical IP survey grid study area.

Table 1.2: Nearest Registered Archaeological Sites

Geophysical IP Survey Grid	Borden No.	Site Type	Subtype	Descriptor	HCA Permit
Rupert	EdSu 002	Cultural Material	Subsurface	Shell Midden	1978-006
Rupert	EdSu 009	Cultural Material Culturally Modified Tree Historic	Subsurface Habitation	Shell Midden Cabin	1998-246
Rupert	EdSu 010	Subsistence Feature	Fishing	Fishing Weir	1998-246

All these recorded archaeological sites within the vicinities of the *NorthIsle* Rupert geophysical IP survey grid area are located on or near the shoreline of Rupert Inlet.

1.3 Summary of Archaeological Potential

The archaeological potentials for the proposed Rupert geophysical IP survey grid study area were determined by its proximity to known ethnohistoric, ethnographic, and archaeological sites; its geographical proximity to the inner coastal waters of Rupert Inlet, freshwater fish- and non-fish-bearing drainage systems, particularly Waukwaas Creek; as well as its known topographical and vegetation/forest settings. Table 1.3 below summarizes the archaeological potential ratings for this geophysical IP survey grid area.

Table 1.3: Predicted Archaeological Potentials

Geophysical IP Survey Grid	Location	Surface/Subsurface Site Potential	CMT Site Potential
Rupert	Rupert Inlet, Waukwaas Creek	Low-Moderate	Moderate-High

Therefore, based on these archaeological and CMT site potential assessments for the proposed Island Copper East Block Property, and following the criteria of the ***Quatsino Protocol*** (2002, 2007), the Preliminary Field Reconnaissance (PFR) surveys of this geophysical IP survey grid study area was required.

2.0 FIELD SURVEY

2.1 Pre-Field Research

Prior to the commencement of the field work component the field team examined a series of 1:50,000 scale NTS topographic, 1:20,000 scale, 1:20,000 scale, and 1:250,000 project location maps in order to target the highest archaeological potential areas for the proposed Island Copper East Block property. The targeted survey areas in this Rupert geophysical IP survey grid consisted of a series of twelve (01-12) straight and parallel flagged geophysical exploration lines.

2.2 Field Survey Methods

Field survey in the proposed *NorthIsle* Island Copper East Block property composed of the Rupert geophysical IP survey grid aimed to focus on the flagged geophysical lines containing mature second-growth and veteran old-growth tree species, higher elevation terraces and benches, as well as those areas adjacent to past and present drainage networks. The survey methodologies included a systematic surface ground survey of the proposed geophysical exploration impact areas. In the case of the flagged line-cutting areas, the pedestrian survey included field investigation along both the 1m flagged lines and the visible surrounding terrain. Where terrain and archaeological potential warranted it, an area of 50 m or greater outside of the flagged line was also subject to inspection by the field crews, especially between lines and coastal buffer zones. Such a survey strategy is designed to be both flexible to the shape, size, terrain and forest cover along marked lines, and to allow for the assessment of the immediate surrounding area outside the lines in case these lines are subsequently modified.

The field crew consisted of two (2) teams of two (2) individuals who navigated the proposed flagged *NorthIsle* geophysical IP survey grid lines in parallel traverses, or when warranted, the survey was intensified with parallel zigzag traverses. The survey covered transects ranging between a minimum of 10 m and a maximum of 100+ m (Figures 2-4). Traverse coverage depended upon the terrain and conditions encountered which either enhanced or hampered visibility. Overall, survey visibility ranged between poor (5 m – 10 m radius) in areas of high understorey density and height, and excellent (50+ m radius) in areas of relatively open understorey within second-growth stands or marshland.

During the survey, all natural cuts, exposures, as well as root masses and holes from dead- and wind-thrown trees encountered during the survey were inspected for the presence of buried archaeological remains, deposits, features, and palaeosols. No surface or subsurface archaeological remains were encountered in the examination of the natural exposures during the PFR surveys conducted in this proposed *NorthIsle* geophysical IP survey grid study area.

When encountered or known, all exposed rock outcrops were inspected for natural karst or karst-like features, such as caves, rock-shelters, overhangs, crevices, fissures, and sinkholes that could hold archaeological remains. No archaeological remains were discovered in the inspection of the geological features encountered in this survey.

The locations of survey coverage and site location was determined by the use hip chains, compasses, and clinometer, and where possible, by portable Geographical Positioning System (GPS) device. These were tied in

with existing mapped features, including permanent local topographic features and marked geophysical line stations.

2.3 Culturally Modified Tree Inventory

In areas of perceived low, moderate and high archaeological potential, all standing and fallen cedars within the visual range of the surveyor were examined by proceeding from tree to tree or stand to stand. Other species of trees were examined for cultural modifications if they fell within or along each transect. All CMTs discovered were to be recorded according to the standards contained in ***Culturally Modified Trees of British Columbia Handbook***[2] (British Columbia, Archaeology Branch 2001). Site extent or boundaries and feature composition would be determined in accordance to the B.C. Archaeology Branch Bulletin #12 (dated 25 May 2004) on "***CMT Site Boundaries***" (http://www.tca.gov.bc.ca/archaeology/bulletins/bulletin12_defining_culturally_modified_tree_site_boundaries.htm). CMT site boundaries are determined by feature distance (≤100m apart), feature distribution, and by about 10 m radius from the trunk or log section at a minimum, with exceptions based on clear topographical reasons or particular development concerns, such as safety criteria and development feasibility. No archaeological or post-1846 traditional use CMT features or sites were encountered in the PFR survey conducted in the *NorthIsle* Rupert geophysical IP survey grid area.

2.4 Burials

In the case where human burials and/or remains were encountered, *SOURCES* would follow the B.C. Archaeology Branch's policy on "***Found Human Remains***" (http://www.tca.gov.bc.ca/archaeology/policies/found_human_remains.htm), dated 22 September 1999. No human remains or burial features were encountered in the PFR survey of this proposed geophysical IP survey grid study area.

3.0 FIELD SURVEY RESULTS

3.1 Rupert Geophysical IP Survey Grid Survey Description

3.1.1 Survey Specifics

A) Access: This study area was accessed by vehicle from Port Hardy on the built forestry road networks by driving south on the built Coal Harbour (CH) M/L and then the built Port Hardy (PH) M/L. From this road this geophysical IP survey grid study area was accessed by foot.

B) Survey Crew and Spacing: The team consisted of four (4) individuals that were divided into separate crews of three (3), and two (2) individuals spaces at intervals between a minimum of 5 m and a maximum of 20 m apart. The estimated survey transect breadths ranged between 15 m and 110 m (Figure 2; Plates 1-2).

C) Survey Visibility Range: Survey visibility ranged between a minimum of poor/fair (5 m radius) and maximum of good (20 m – 35 m radius) depending upon the nature of the topography and the variable densities of the understorey encountered.

FIG. 2 **Island Copper East Block Property, Rupert Geophysical IP Survey Grid.**

- AIA Recommended Area
- Sources 2011 Surveys
- Previously-logged area
- Proposed Drill Hole at Hushamu Deposit
- Proposed Geophysical Survey Line

Western Forest Products Roads

- Maintained
- Permanent
- Semipermanent
- Temporary
- Abandoned
- Deactivated

SOURCES ARCHAEOLOGICAL & HERITAGE RESEARCH INC.

(N. Weber, M. Bartlett) April 2012 | Non-permit PFR

0 1 2 kilometres

615,000mE

620,000mE

625,000mE

5,610,000mN

5,605,080mN

R400

HWY 19

R600

R970

R960

R950

R920

HWY 19

M900

NW 41

M950

PH13

Rupert Inlet

RUPERT MAIN

R1020

R1030

BEAVER MAIN

B400

B900

B430

B450

NW40

MISTY MAIN

SPH MAIN

HWY 30

Wąwkwaas Creek

AIA Recommended

Plate 1. Rupert Geophysical IP Survey Grid - Charles Wilson (KFN) at the base of a large western redcedar snag. (Source: Kennedy Richard, P5280064.jpg)

Plate 2. Rupert Geophysical IP Survey Grid - Charles Wilson (KFN), Mark Wallas (QFN), and Blake Evans (*SOURCES*) crossing an un-named creek. (Source: Kennedy Richard, P5270011.jpg)

3.1.2 Observed Terrain

A) Elevation Range: This study area is composed of twelve (12) lines (01-12), 2000 m in length, the first 11 beginning and ending at UTM northing 5604450 and 5606450. The lines occur east at intervals of 960 m beginning at easting 612320 until line 12, which begins at easting 624630 and northing 5605150. Elevations in this area range between 50 m and 120 m asl.

B) Slope Range: The slopes range between a minimum of gently sloped (+/-5%) and a maximum of very steep (100+%) gradients. The terrain is undulating.

C) Drainages: This study area is bisected by several intermittent/ephemeral seasonal drainages flowing west and joining with the Waukwaas Creek.

D) Exposed Geological Features: No exposed geological features including karst or karst-like features were observed in this survey of the Rupert geophysical IP survey grid study area.

E) Natural Exposures: The examination of the natural exposures encountered during this survey such as wind-throw root holes and root masses, erosional cuts, *etc*., did not yield any evidence for buried archaeological remains or palaeosol horizons.

F) Subsurface Testing: No subsurface testing was conducted during this survey. However, three zones of high archaeological potential including subsurface testing were identified on Rupert geophysical IP survey grid lines 01, 03, and 05.

3.1.3 Observed Forest Cover:

A) Forest Cover Age Class: The moderate to high-density forest over in this study area consists of a mixture of old-growth stands with second-growth regeneration.

B) Stand Composition Ranges: Hemlock (10%-95%) with stem diameters ranging between 10 cm and 1+ m DBH; redcedar (2%-90%) with DBH measurements between 10 cm and 1.75 m; amabilis fir (10%-50%) with stem diameters between 5 cm and 90 cm DBH; and Sitka spruce (2%-30) with DBH measurements between 20 and 1m. Stands of red alder (30%-95%) with DBH measurements between 10 cm and 40 cm were encountered in highly disturbed areas.

C) Presence of Wind- and Dead-fall: Patches range between low and moderate density, some with large veteran/old-growth logs. There are some areas with occasional remnant wind-snapped stumps and standing snags.

D) Natural Scarring ("Cat-faces"): The examination of both standing stems and wind-thrown logs indicated that these trees were impacted by natural scars caused by impacts from wind or dead-throws, rock-slides, and arboreal pathologies.

E) Presence of Historic Commercial Logging: Evidence of a previous logging and shake-blocking episodes are found in patches with remnant felled stump features exhibiting sawn cut-faces and spring-board notching.

F) Culturally Modified Trees (CMTs): No CMT features were identified during this survey.

G) Understorey: Moderate to high density salal, huckleberry, devil's club, thimble berry and conifer saplings (hemlock, redcedar).

H) Ground Cover: Composed of mosses, skunk cabbage, bleeding heart, tall grasses, false lily of the valley, horsetail and ferns.

The archaeological PFR survey of the **Rupert geophysical IP survey grid area** covered an estimated 50% of its total area or a linear distance of about 12 km. No visible archaeological or post-1846 aboriginal traditional use sites or features were encountered either within or immediately adjacent the proposed impact areas. However, three zones of perceived high archaeological potential for surface/subsurface sites and CMTs were identified during the surveys in this geophysical IP survey grid area. These include the central section of Rupert geophysical IP survey grid line 01, located along the eastern shore of Rupert Inlet, the southern section of Rupert geophysical IP survey grid line 03, located along the banks Waukwaas River, and the central section of Rupert geophysical IP survey grid line 05, located along the banks of an unnamed creek draining Beaver Lake and subsequently joining with the Waukwaas River (see Figure 4).

4.0 IMPACT ASSESSMENTS

No visible pre-1846 archaeological and post-1846 aboriginal traditional use sites and features were found in the non-permit archaeological PFR archaeological survey of the proposed *NorthIsle* Rupert geophysical IP survey grid area. However, during the survey of this particular geophysical IP survey grid area three areas were observed to possess a high archaeological potential that warrant further archaeological assessment, including subsurface testing, under a BC HCA Site Inspection Permit.

5.0 RECOMMENDATIONS

5.1 Specific Recommendations

The non-permit archaeological PFR surveys conducted by *SOURCES* in the proposed *NorthIsle* Rupert geophysical IP survey grid area covered about 50% of the total geophysical exploration line impact areas. No pre-1846 archaeological or post-1846 aboriginal sites or features were encountered in this PFR field survey. However, three (3) zones were considered to possess high archaeological potential for the presence of archaeological surface/subsurface and CMT features and sites were identified during the PFR field surveys in the Rupert geophysical IP survey grid area (Figure 2). These identified high potential zones are:

5.1.1 The central section of Rupert line 01, located along the eastern shore of Rupert Inlet;
5.1.2 The southern section of Rupert line 03, located along the banks Waukwaas River; and
5.1.3 The central section of Rupert line 05, located along the banks of an unnamed creek draining Beaver Lake and subsequently joining with the Waukwaas River.

Based on these observations the Proponent, *NorthIsle Copper and Gold Inc*., has contracted *SOURCES* to conduct Archaeological Impact Assessments (AIAs) under a ***B.C. Heritage Conservation Act*** (RSBC 1996, Chapter 187) Site Inspection Permit 2012-0019 awarded to Hartley Odwak. This HCA permit will cover the archaeological assessments in these three areas of interest identified in this PFR field survey (HCA 2012-0019, Bartlett and Richard In Progress).

5.2 General Recommendations

With the exceptions of the three zones of high archaeological potential discussed above, based on the survey coverage and the negative findings, the remaining portions of the proposed *NorthIsle* Rupert geophysical IP survey grid area in the Island Copper East Block property is considered to possess low archaeological potentials and further work is highly unlikely. However, in the likelihood that any previously unidentified archaeological features, sites, or deposits may be encountered during the course of the proposed *NorthIsle* commercial mineral exploration operations in this geophysical IP survey grid area it is further recommended that:

5.5.1 That *NorthIsle Copper and Gold Inc*. informs all contractors and personnel involved in the proposed commercial mineral/geophysical exploration and ancillary developments that all unrecorded archaeological remains in British Columbia are protected from disturbance, either intentional or inadvertent, by the ***B.C. Heritage Conservation Act*** (RSBC 1996, Chapter 187), the ***Forest Planning and Practices Regulation*** (2002, Section 10), and the ***ILMB Vancouver Island Land Use Plan*** (December 2000); and;

5.5.3 In the event that previously un-identified archaeological remains are encountered, all activities in the area concerned must be immediately suspended. Archaeological Permitting and Assessment Section, B.C. Archaeology Branch, Ministry of Forests, Lands, and Natural Resource Operations (Victoria), and the Kwakiutl (Port Hardy, IR #1 Fort Rupert) and Quatsino (Coal Harbour, IR #18 Quattishe Subdivision) First Nations must be informed as soon as possible of the location and type of the archaeological remains and the nature of the disturbance.

These recommendations apply solely to physical archaeological evidence of past human activity and in no way attempt to encompass or represent any traditional land use or aboriginal rights and title concerns of the Kwakiutl and Quatsino Fist Nations.

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