

EXPLORATION AND MINING IN SKEENA REGION, BRITISH COLUMBIA

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SUMMARY AND TRENDS

Activity in the exploration and mining industry in northwest British Columbia increased to a near-record level in 2010. Mine development expenditures amounted to \$241.5 million. Exploration totaled about \$172 million and drilling amounted to 350 000 m (Figures 1 and 2). The outlook for 2011 is positive.

The Endako open pit molybdenum mine is in the midst of a \$498 million expansion and modernization project. The Huckleberry open pit copper-molybdenum mine is developing a mine plan that will incorporate new resources and potentially extend mine life many years. Foremost among proposed new mines are Red Chris and Galore Creek, both copper-gold projects. Work toward development certificates awarded under the British Columbia and Canadian Environmental Assessment acts

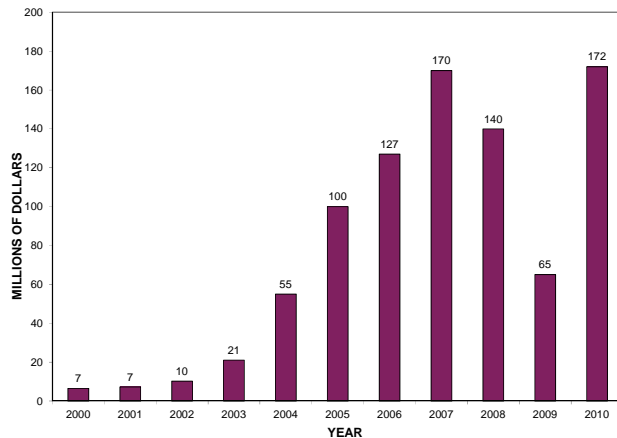


Figure 1. Annual exploration expenditure, Skeena Region.

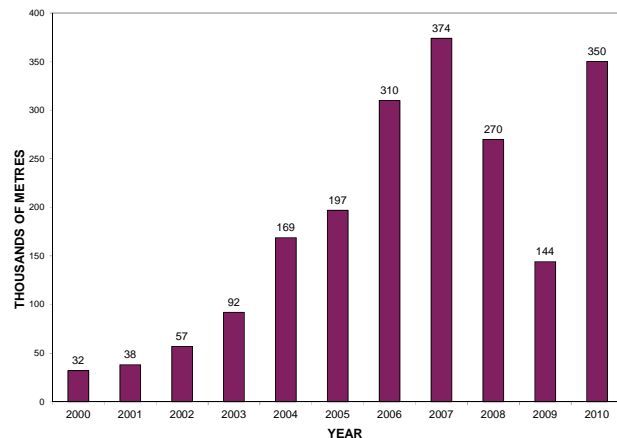


Figure 2. Annual exploration drilling, Skeena Region.

continued on other projects proposed for mine development: KSM gold-copper, Kitsault molybdenum, Kutcho Creek copper-zinc, Morrison copper and Schaft Creek copper-gold-molybdenum. The Tulsequah Chief copper-zinc-gold-silver mine development project has new owners and may be reactivated. Figure 3 shows major mines, small mines and proposed mines in Northwest region. Metal production and mine reserves are listed in Table 1.

Among small mines, Fireside barite benefited from high demand for its product and strengthened its seasonal operation. Consolidated ownership of the Yellowjacket gold project will enable a resumption of mining. Development continues at the Dome Mountain underground gold project near Smithers.

The Canadian federal and British Columbia provincial governments have pledged to build a high-capacity power transmission line in northwest British Columbia. The Northern Transmission Line completed its public comment period in the fall of 2010 within the Environmental Assessment process with strong positive response, including support from the Tahltan First Nation. Start of construction of this infrastructure project could begin in early 2011.

Mineral exploration expenditures rose sharply in 2010 to \$172 million, compared with \$65 million in 2009. There were 55 drilling projects and 18 projects that had \$2 million or more in expenditure. Drilling, at 350 000 m, was up substantially from 144 000 m in 2009. Significant achievements and exploration highlights to the time of writing in December were (in the order that they appear in the text):

- 1) Yellowjacket – high grade lode gold re-discovered by placer mining
- 2) Red Chris – new copper-gold resource and reserve estimates; 50 000 m drill program
- 3) KSM – Iron Cap zone delineated, a major addition to copper-gold resources
- 4) Schaft Creek – porphyry copper project reactivated and progressing toward feasibility
- 5) Kitsault – scope of environmental assessment set; high grade molybdenum intersections at Roundy Creek prospect
- 6) Kutcho Creek – high grade copper-zinc intercepts from Esso lens
- 7) Brucejack-Snowfield – project acquired by Pretium Resources; 51 000 m drill program will

Mines and Proposed Mines

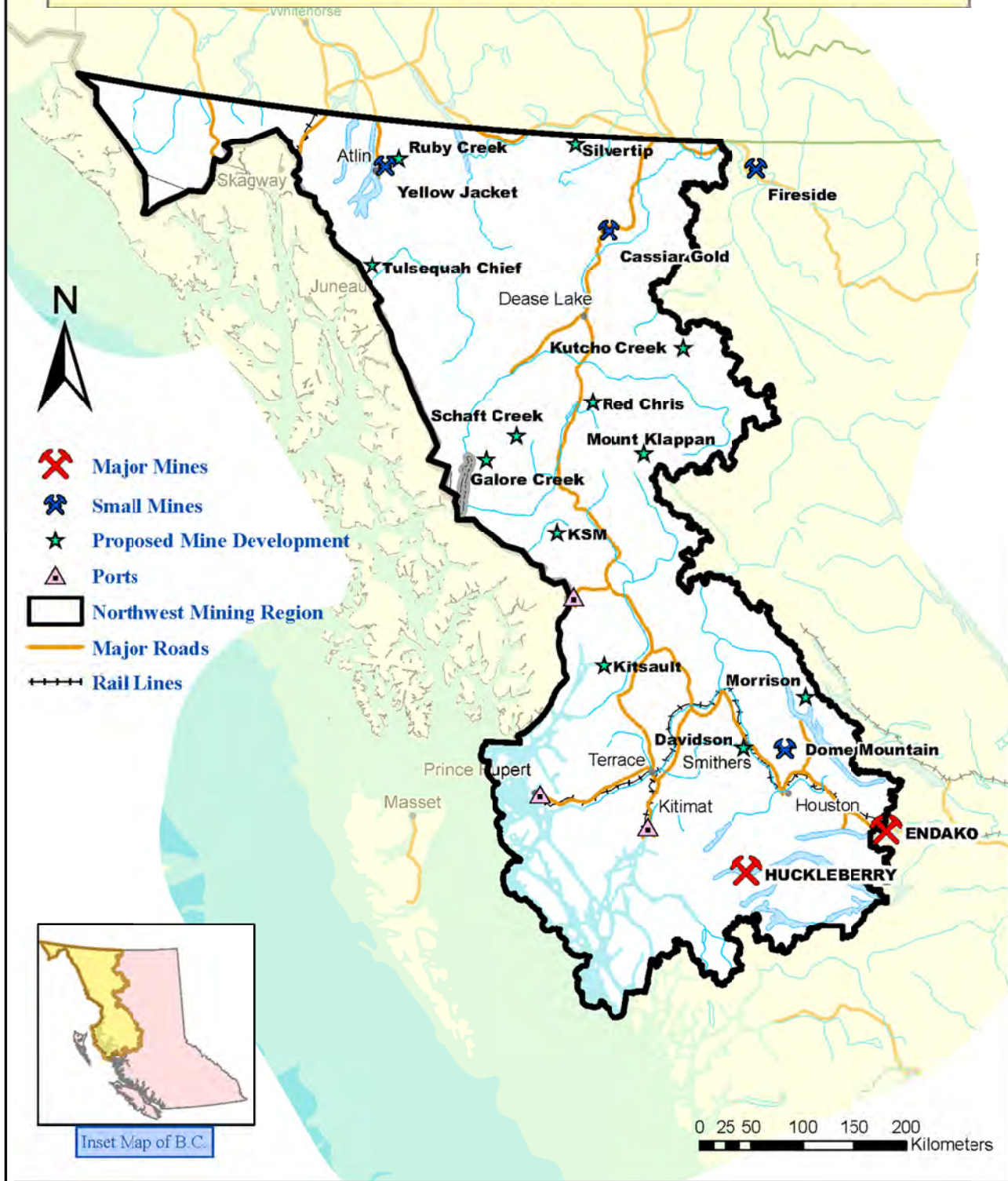


Figure 3. Mines and proposed mines, Skeena Region; Endako and Fireside are outside Skeena region but are administered by Skeena region.

TABLE 1. MINE PRODUCTION AND RESERVES, SKEENA REGION

Mine	Operator	Production (2009)	Reserves (Dec.31, 2009)	Tonnes milled (2009)	Grade
Endako	Thompson Creek Metals Company (75%) & Sojitz Corporation	4504 tonnes molybdenum	280 100 000 tonnes at 0.047% Mo (includes low-grade stockpile)	9 759 000	0.059% Mo
Huckleberry	Huckleberry Mines Ltd. (50% Imperial Metals Corp.)	20 834 tonnes copper, 6.56 tonnes molybdenum, 10.8 kg gold	14 010 000 tonnes at 0.362% Cu, 0.005% Mo (on May 11, 2010)	6 133 700	0.377% Cu, 0.006% Mo
Fireside	Fireside Minerals Inc.	16 000 tonnes (in 2010)	165 400 (not NI 43-101 compliant)	22 000 (in 2010)	

add to gold-copper resources

- 8) GJ – copper-gold project optioned by Teck Resources
- 9) Silverhope – porphyry copper-molybdenum discovery
- 10) Bell Copper – Xstrata reconsiders deep copper resource
- 11) Lone Pine – new molybdenum zone
- 12) Silvertip – acquired by Silvercorp; major exploration program
- 13) BA – exploration of new silver volcanogenic prospect
- 14) Chist Creek – new volcanogenic massive sulphide zone
- 15) Coles Creek – significant gold intercept

MINES AND QUARRIES

MAJOR METAL MINES

The **Endako** open-pit molybdenum mine (MINFILE 093K 006) is 75% owned and operated by Thompson Creek Metals Company. Sojitz Corporation, a major Japan-based molybdenum-trading company, holds 25% interest. In 2009, the mine produced 4504 tonnes of molybdenum from 9 759 000 tonnes of ore with an average grade of 0.059% Mo. Decreased metal output compared with 2008 resulted from lower grade ore and lower throughput. Molybdenum recovery was 78.4%. The mine employs 265 people. In-situ and stockpile ore reserves on the property at the beginning of 2010 were 280.1 Mt grading 0.047% Mo at a cut-off grade of 0.02% Mo. Thompson Creek forecasts Endako production in 2010 will be 4230 tonnes of molybdenum. Cost of molybdenum production was \$6.13 per pound in 2009 and is estimated at \$9 in 2010. Ore is mined from the West Denak pit located 3.5 km from the mill along the arcuate trend of the ore zone (Figure 4). The ore passes through an in-pit crusher and is delivered to the mill via a 3 km conveyor. Recurring problems with the conveyor resulted in periodic trucking of ore.



Figure 4. Endako molybdenum mine, mining in the West Denak pit, June 2010.

Construction is underway to modernize and expand capacity of the Endako mill from 28 000 to 52 000 tonnes of ore per day (Figure 5). The company estimates capital expenditure in 2010 to be \$240 million. A total of \$85.2 million was spent in the two preceding years. The Endako mine and mill began operation (at 16 000 tonnes per day) in 1965 at a cost of just \$22 million; completion of the \$498 million expansion and modernization project will



Figure 5. Endako molybdenum mine; mill, commissioned in 1965 continued in operation in June, 2010 while a new mill was under construction.

enable treatment of lower grade ore and to lower the operating cost on a per tonne basis. New semi-autogenous (SAG) and ball mills, a modern flotation circuit and an upgrade of the roaster circuit are included. A workforce of 500 is building the project; completion is scheduled for late 2011. Output in 2011 is estimated at about 5000 tonnes Mo, increasing to 6800 tonnes in 2012 when benefits of the expansion and modernization project are realized.

Endako is a porphyry molybdenum deposit within the early Cretaceous Francois Lake granite batholith. The ore body is a 3.5 km long vein system that changes in strike along its length from west-northwest in the Endako pit to northerly in the Denak pit, resulting in an arcuate shape. The zone is 400 m wide and extends more than 400 m below surface at a moderate southerly dip. Mineralization is related to intrusion of the Casey aplite which domed and fractured the older and coarse grained Endako phase of the batholith. Post-mineral cross faults segment the ore zone into the Endako, East Denak and West Denak pits. In the long-term mine plan these will merge into a large 'Super-Pit'. Exploration took place 2 to 3 km northwest of West Denak pit, comprising 12 000 m of drilling. The Endako ore vein system was found to continue and an increase in the molybdenum resource is expected. Further drilling is anticipated in 2011.

The **Huckleberry** copper mine (MINFILE 093E 037) is operated by Huckleberry Mines Ltd. It is owned 50% by Imperial Metals Corp. and 32% by Mitsubishi Material Corporation with the remaining 18% shared equally among Dowa Mining Ltd, Furakawa Company Ltd and Marubeni Corporation. The mine is located 123 km by road south of Houston at the foot of Huckleberry Mountain and employs 275 people including camp and trucking contractors. Copper concentrate is trucked to the port of Stewart for shipment to Japan and molybdenum concentrate is trucked to Vancouver. In 2009 Huckleberry milled 6 133 700 tonnes of ore from the Main Zone Extension (MZX) pit grading 0.377% Cu and 0.006% Mo (Figure 6). Metal production amounted to 20 834 tonnes of copper, 6.56 tonnes of molybdenum and 10.8 kg of gold. Copper recovery was 90.2% but molybdenum recovery was 1.87%. Proven and probable reserves on May 11, 2010 were 14 010 000 tonnes at a grade of 0.362% Cu and 0.005% Mo and a strip ratio of 0.56:1. Forecast 2010 production is 29 000 tonnes of copper.

Huckleberry is a porphyry copper deposit related to the late Cretaceous Bulkley intrusions. In the Main zone, copper mineralization occurs in hornfelsed and fractured Hazelton Group volcanic rocks adjacent to a 500 m diameter granodiorite stock. The arcuate ore zone is 150 to 200 m wide by 600 m long and rims the contact of the stock. The mined-out East zone was larger, measuring 150 m wide by one km long, and centred on a fault-controlled 40 m wide granodiorite dike that trends at 105°. Ore in both zones is a stockwork of quartz, pyrite and chalcopyrite, crosscut by gypsum-filled fractures (Figure 7). The Main and East zones are disrupted by the



Figure 6. Huckleberry copper mine; mining in the MZX pit in September 2010, low grade stockpile and mill in the background.



Figure 7. Huckleberry copper mine; ore from the MZX pit, biotite hornfels with chalcopyrite and gypsum filling fractures.

reactivated 105 fault which resulted in 100 m of right lateral offset of ore. MZX is the faulted portion of the Main zone north of the 105 fault. Instability in the MZX pit results from splays of the 150 fault, which is located behind and oblique to the high wall.

The future of Huckleberry lies in development of the Saddle zone and Main zone 'Super pit' which could provide ore to 2013 and 2025 respectively. The Saddle zone is a ridge of bedrock left between the MZX and Main pits. The Super pit resource comprises material below and peripheral to the Main zone. The measured and indicated resource in the two zones is 182.9 Mt at a grade of 0.321% Cu. The inferred resource is 45.4 Mt at a grade of 0.288% Cu. To mine this material will require the removal of 40 Mt of waste rock and tailings from the Main zone pit and construction of a new tailings impoundment. Both of these, in turn, require geotechnical assessment, engineering design and permit amendments, resulting in a near-term ore shortfall. A 4400 m drilling program was undertaken to locate ore that is readily accessible. Targets included the areas immediately east and west of the MZX pit, and a low hill that lies on trend

with the 60° to 70° south plunge of the Main ore zone. There is also 6 Mt of stockpile material grading 0.20% to 0.26% Cu.

INDUSTRIAL MINERAL QUARRIES

Fireside Minerals Ltd made steady improvements to its summer-seasonal **Fireside** barite operation (MINFILE 094M 003) located 125 km east of Watson Lake. Fireside Minerals, a private company, relocated its office from Red Deer, Alberta to Kelowna, British Columbia. The company reduced its reliance on contractors by purchasing most mining equipment it requires, including a new dozer, excavator, blast-hole drill and several ore trucks. Mining of 22 000 tonnes of rock from the Bear Pit yielded 16 000 tonnes of barite recovered from jigs at the minesite (Figures 8, 9). There was also a pre-season stockpile of 6000 to 8000 tonnes of barite. All the barite was trucked to the company's grinding and bagging plant in Watson Lake. To the end of November, over 18 000 tonnes of pre-sold barite was shipped and the plant continued to operate with orders to fill in early 2011 (A. Allan, personal communication, 2010). At the south end of the Bear pit, the barite vein was found to be discontinuous and diamond drilling is proposed to evaluate this area prior to mining in 2011.

Vertically dipping barite veins at Fireside are associated with a gabbro dike of inferred Paleozoic age that was emplaced into strata of the Kechika Group (Figure 10), and may be related to rifting of the early Paleozoic North American continental shelf (see Wojdak, 2008). The Bear pit resource, as of November 2010, is 165 400 tonnes of barite-rock which requires removal of 419 300 tonnes of waste rock down to 710 m elevation, a 2.54:1 waste-to-ore strip ratio. The resource, though not NI 43-101 compliant, is considered adequate to plan a 5-year mine life producing 30 000 tonnes of barite per year. Disseminated barite occurs locally along the margin of the Bear vein but is not included in the resource estimate. The specific gravity for sales specification was lowered to 4.1 from 4.2, enabling the processing of lower grade ore.



Figure 8. Fireside barite mine; benching south wall of the Bear pit, July 2010.



Figure 9. Fireside barite mine; ore truck on the 4.2 km haul from the Bear pit to the processing plant.

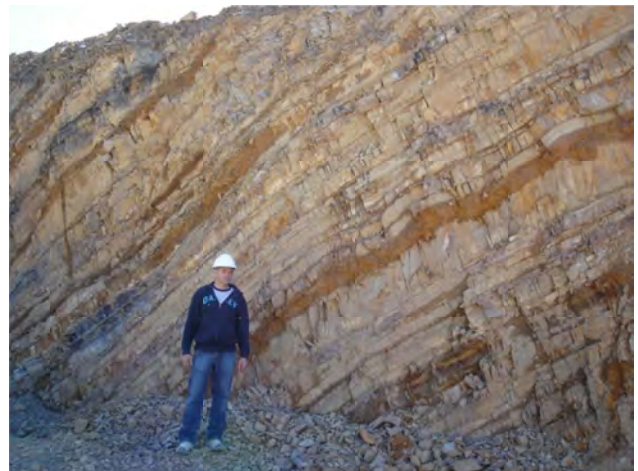


Figure 10. Fireside barite mine; Keith McLeod (General Manager) against a bench of Kechika siltstone, host to the West Bear vein.

Jade in northwest British Columbia is mined chiefly by Cassiar Jade Contracting. Total production in 2010 is estimated at 150 tonnes of high-value gemstone from three localities: **Provencher Lake** produced about 85 tonnes (MINFILE 104I 073, 092), Kutcho about 60 tonnes (MINFILE 104I 078) and **Cassiar** about 5 tonnes (MINFILE 104P 005). At both Provencher and Kutcho, located 80 and 90 km respectively east of Dease Lake, the jade that is recovered occurs equally as “placer” boulders in glacial till and as lenses in bedrock. Angular boulder

trains in the till are traced using an excavator to their source in bedrock. Nephrite jade is formed at the contact between tectonically emplaced serpentinite and argillite of the Cache Creek terrane east of Dease Lake, and of the Slide Mountain terrane at Cassiar. The Kutcho site is worked under an agreement with The Continental Jade Ltd and the Provencher site is under an agreement with Jade Guys Inc.

MINE DEVELOPMENT PROJECTS

No new major mines are in development in the region. The expansion project at the operating Endako mine is described above. Dome Mountain, a new small gold mine began construction and is described in this section. The status of two other small, permitted gold mines is reported below. And lastly, the **Tulsequah Chief** development project was purchased out of Receivership by Chieftain Metals Inc; the company filed a prospectus in late 2010 seeking a listing on the Toronto Stock Exchange. The previous owner, Redfern Resources Ltd, spent \$170.8 million on development of the Tulsequah Chief copper-zinc-lead-silver-gold mine during 2007 and 2008, in addition to monies spent exploring the property over the preceding 15 years. Transfer of the Environmental Assessment certificate and other permits to Chieftain is in progress. Chieftain plans to bring the interim water treatment back to the site and commence resource up-grade drilling in 2011 (T. Chandler, personal communication, 2010).

Metal Mountain Resources Inc began development of the **Dome Mountain** underground gold mine 35 km east of Smithers, through its wholly-owned subsidiary Gavin Mines Inc. A \$12 million staged financing agreement was struck with Minex Minerals Ltd. Minex is a private company with a corporate focus of acquisition, exploration and development of natural resources worldwide. Gavin Mines has a Mines Act permit to operate at a rate of 205 tonnes per day; ore will be shipped off-site for milling. The mine will be developed as a mechanized cut-and-fill operation with access from the existing 1290 m and 1370 m levels (Figure 11). Surface work comprised realignment and upgrade of the mine access road, site preparation for a sediment control pond, purchase of a modular steel building to house the water treatment plant and pouring the concrete foundation for its installation. Capital expenditure is estimated at \$4.3 million and start-up of underground development is scheduled for April 2011.

The probable mineral reserve (including dilution) in the Boulder and Boulder footwall veins (MINFILE 093L 276) is 135 131 tonnes grading 11.2 g/t Au at a diluted cut-off grade of 7.9 g/t Au. The undiluted indicated resource is 144 144 tonnes grading 17.7 g/t Au at the same cut-off. The inferred resource is 113 671 tonnes at 13.6 g/t Au. Dome Mountain comprises eight (or more) gold-bearing orogenic quartz veins within volcanic and

sedimentary rocks of the Hazelton Group. The mine operated during 1991-92 and produced 361.4 kg of gold (11 621 oz) from 30 890 tonnes of ore. The Boulder quartz-sulphide vein is in a fault and itself shows evidence of shearing. Principal ore minerals are pyrite and sphalerite with minor chalcopyrite, galena, arsenopyrite and tetrahedrite (Figure 12). Gold occurs in native form but is rarely visible and generally associated with pyrite.

Thirty-three exploration holes totalling 4724 m were drilled to explore for east and west extensions of the



Figure 11. Dome gold mine in September 2011, portal of the refurbished 1290-level, to be the main production level.

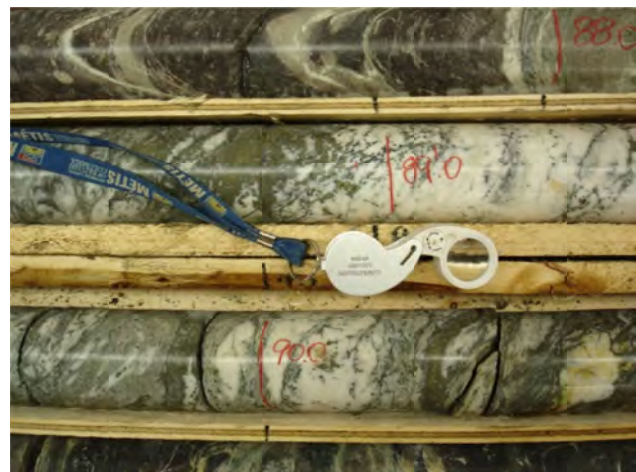


Figure 12. Dome gold mine; Boulder shear vein, consisting of quartz, pyrite, sphalerite and tetrahedrite in sheared maroon volcanic wallrock.

Boulder vein system beyond the underground workings. To the east, significant gold intercepts were obtained in a 300 m extension of the Boulder Footwall vein over a 140 m vertical extent. Holes were drilled on sections 40 m apart and further drilling is required to prove grade and continuity for a resource estimate. Drilling to the west on 20 m spaced sections confirmed continuity of the Boulder vein with significant gold content, but additional drilling is required to confirm grade for a resource estimate.

Eagle Plains Resources Ltd purchased 100% interest in the **Yellowjacket** gold property (MINFILE 104N 043), facilitating a resumption of work in September 2010. The project has a Mines Act permit for an open pit gold mine and onsite gravity concentrator to process up to 75 000 tonnes of ore per year (refer to *Exploration and Mining in BC – 2008* and *2009*). In order to define a resource for the next phase of mining, 64 reverse circulation holes were drilled in a 40 m by 100 m area, to an average depth of 35 m. The truck-mounted drill rig was able to do angle holes (Figure 13), important to assess gold content of the vertical quartz vein and listwanite zone along the 20 m wide Pine Creek fault. A resource estimate is not yet available. The tightly-spaced drilling and GPS-linked orthophoto mapping will be used in grade control during mining, expected to recommence in 2011.

Placer mining 700 m west of the Yellowjacket drill area by Cobalt Mining, under a lease agreement with Eagle Plains, exposed the historic Rock of Ages shaft. The much-storied shaft was sunk by placer miners in the early 1900s and was subsequently filled in and lost during natural and mining-assisted reworking of the creek gravels. Stripping and washing of the bedrock surface was followed by low-level aerial photography and detailed mapping and sampling (C. Gallagher, personal communication, 2010). Visible gold occurs in the same structure as at Yellowjacket (C. Downie, personal communication, 2010) and a channel sample returned 51.36 g/t Au across 5.2 m (Figure 14).

The **Cassiar** gold project was largely inactive in 2010. Hawthorne Gold Corporation was unable to continue development and exploration work it began in 2008 but in late October commenced a 7200 line-km airborne EM, magnetic and radiometric survey. The Cassiar project is a consolidation of several small closed or shut-down mines comprising (from north to south over a 10 km distance): underground workings of the Taurus, Sable and Plaza mines; the Table Mountain (Erickson) mine comprising a dozen adits and underground workings and 270 tonne per day gravity flotation mill; and the Cusac mine consisting of several more adits and underground workings. The mill requires restoration. Lode mining in the district produced 350 500 ounces (10 905 kg) of gold; placer mining contributing an additional 74 500 ounces (2317 kg) of gold. A discussion of property geology is given in *Exploration and Mining in BC – 2009*.



Figure 13. Yellowjacket gold project; reverse circulation drill on an angle hole in the historic placer channel of Pine Creek.



Figure 14. Yellowjacket gold project; stripped bedrock in the Pine Creek fault zone, visible gold was found near the Rock of Ages shaft.

MINE EVALUATION PROJECTS

At the **Red Chris** copper-gold project, a 55 000 m program of deep exploration drilling continued throughout the year (Figures 15, 16) while Imperial Metals Corporation developed the details of its mine plan for regulatory authorizations. Red Chris is located on a sub-alpine plateau 20 km southeast of the settlement of Iskut and 80 km south of Dease Lake. A new resource estimate was announced in May that incorporated results of the first 22 holes drilled by Imperial, and a feasibility study followed in November. Reserves and resources at a 0.2% Cu cut-off are:

- Proven and Probable Reserves – 301.549 Mt at 0.359% Cu and 0.274 g/t Au
- Measured and Indicated Resource – 489.151 Mt at 0.43% Cu and 0.42 g/t Au
- Inferred Resource – 437.939 Mt at 0.36% Cu and 0.39 g/t Au



Figure 15. Red Chris copper-gold project; looking south, deep drilling beneath the East zone.



Figure 16. Red Chris copper-gold project; new core shack under construction, the old core shack is in the area of proposed pit development.

Capital costs are estimated at \$443 million to develop a 30 000 tonne per day open pit mine and mill and to construct a 115 km power line to connect to the proposed Northwest Transmission Line from Bob Quinn.

Red Chris (MINFILE 104H 005) comprises the adjoining Main and East deposits, porphyry copper-gold zones developed in a monzodiorite stock dated at 204 Ma. The stock intrudes Stuhini Group volcanic rocks to the north and is overlain by, and faulted against, Bowser Lake Group sedimentary rocks to the south. Both ore zones

were drilled to a depth of 400 m by previous operators and in 2007 Imperial Metals commenced deeper drilling to expand the mineral resource. In 2010 Imperial used mainly 1000 to 1200 m deep holes to assess the higher grade deep resource at Red Chris, less than the 1500 m depth of its initial drillholes. The vertical holes drilled have negligible deviation. Mineral potential of the planned mill and tailings sites northeast of the deposit were assessed by, respectively, 13 and 10 drillholes. The plant site is underlain by pyroxene diorite to gabbro and the tailings impoundment by massive andesite, wacke and siltstone of the Stuhini Group; both areas are devoid of mineralization.

The East zone (EZ) fault controls both the east-northeast trending Red stock and the most intense quartz vein development, which, in turn, corresponds with the best copper and gold grades. At depth in the porphyry system, alteration comprises K-feldspar, biotite, magnetite and anhydrite. Closer to surface, *i.e.* within the planned open pit, alteration comprises sericite, pyrite, quartz, hematite, ferrodolomite and chlorite (C. Rees, personal communication, 2010). Study of molybdenite distribution, a minor ore component, is ongoing. Rafts of volcanic rocks between the Main and East zones suggest the Red stock has at least two intrusive centres. Zoning of gold to copper ratio and interpretation of a deep penetrating IP survey suggest a third intrusive centre may lie west of the Main zone, beneath the Gully zone (J. MacPherson, personal communication, 2010).

Redesign of the **Galore Creek** copper-gold project by partners Teck Corporation and NovaGold Resources Inc continued. The revised plan will involve locating the mill and tailings impoundment near Round Lake at about kilometre 75 of the access road. Eight holes were drilled to upgrade the mineral resource and to obtain rock to assess metallurgy of low grade ore (0.2-0.4% Cu equivalent). Geotechnical holes were drilled at either end of the proposed 12 km tunnel to link the mine to the proposed mill site (Figure 17). These encountered volcanic and sedimentary rocks, including limestone, of



Figure 17. Galore Creek copper-gold project; bluff of Paleozoic limestone, where the east portal of the proposed 12 km access tunnel is to be located.

the Paleozoic Stikine assemblage. Kilometre 91.5 marks the east end of the tunnel leading to Galore Creek valley. Other geotechnical and hydrological holes were drilled at the proposed plant site and in the valley. Reactivation of mine development depends on the results of a new feasibility study and involvement with the Environmental Assessment Process. Galore Creek (MINFILE 104G 090) is a porphyry copper deposit associated with alkalic intrusive rocks of late Triassic age. Measured and indicated resources total 785.7 Mt grading 0.52% Cu, 0.29 g/t Au and 4.87 g/t Ag.

Seabridge Gold Inc completed a preliminary feasibility study on its **KSM (Kerr-Sulphurets-Mitchell)** gold-copper project and anticipates submitting a joint application under the BC Environmental and Canadian Environmental assessment acts by June 2011. Of the 28 000 m drilled at KSM in 2010 more than half (15 400 m in 41 holes) was dedicated to the new Iron Cap deposit (Figures 18, 19). Mineralization at Iron Cap (MINFILE 104B 173) was known from five holes drilled by previous operators but the current work will result in a resource estimation and lead to modification of the proposed mine development. Seabridge contemplates a 120 000 to 180 000 tonne per day open pit mine at a currently estimated capital cost of \$3.4 billion. The site is 30 km southwest of Highway 37 near Bell II and 28 km southeast from the end of the Eskay Creek mine road.

The measured and indicated resources of the combined Kerr, Sulphurets and Mitchell deposits are 2137 Mt grading 0.57 g/t Au and 0.21% Cu, as determined in January 2010, plus an additional 758.5 Mt of inferred resources at slightly lower grades. Ore reserves in the three deposits total more than 1600 Mt grading 0.59 g/t Au and 0.20% Cu with byproduct values in silver and molybdenum (see table below for individual zone resource estimates).

In addition to Iron Cap, 6500 m of drilling at the western limit of the Sulphurets zone enlarged the resource area 700 m to the west, linking it with the Canyon zone. Results from the Canyon zone include 0.61 g/t Au and 0.13% Cu over 234.7 m. A lesser amount of drilling was done in the Mitchell (2600 m) and Kerr (1450 m) zones. The proposed development could involve a 23 km twin tunnel to link the mine to a mill and tailings site in Teigen

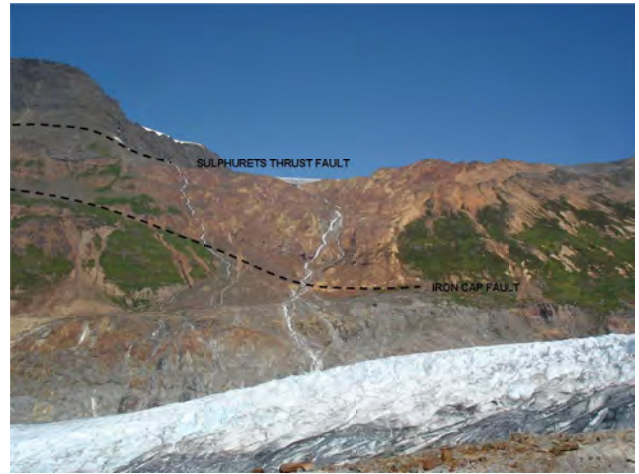


Figure 18. KSM copper-gold project; the Iron Cap zone above Mitchell glacier where most 2010 drilling was conducted. Major faults identified by Mike Savell.



Figure 19. KSM copper-gold project; Mike Savell (Project Geologist) overlooks the Iron Cap zone.

valley near Highway 37. One tunnel would transport crushed ore from the mine in a slurry pipeline and return water, diesel fuel and electrical power; the other would transport personnel and supplies.

The KSM porphyry deposits are associated with the Mitchell intrusions, high level diorite to monzonite plugs and dikes that intrude folded and faulted volcanic and sedimentary rocks of the Hazelton and Stuhini groups.

Zone	Reserve Category	Tonnes (millions)	Gold (g/t)	Copper (%)	Silver (g/t)	Molybdenum (ppm)
Mitchell	Proven and Probable	1335.4	0.61	0.16	2.93	60.4
Sulphurets	Probable	142.2	0.61	0.28	0.44	101.8
Kerr	Probable	125.1	0.28	0.48	1.26	Nil
Total	Proven and Probable	1602.7	0.59	0.20	2.58	59.4

The principal Mitchell zone is exposed in an erosional window below the Mitchell thrust fault; the upper fault sheet contains the displaced segment of the deposit, the Snowfield zone, 2 km east on the adjoining property. The Mitchell zone comprises schistose rocks with abundant sericite, disseminated pyrite and a strongly deformed quartz-pyrite-chalcopyrite stockwork containing remarkably uniform copper and gold grades. This phyllic assemblage appears to be superimposed on earlier chloritic and potassic events also with stockwork mineralization.

Iron Cap is in the upper sheet of the Mitchell thrust fault, and below the Sulphurets thrust (refer to geological map in EMBC-2009, Figure 1.12). Geological work on Iron Cap in 2010 identified two altered diorite to monzonite plutons (M. Savell, personal communication, 2010): an intensely silicified body containing 10% relict hornblende (altered to chlorite), and a mafic body with 30% relict hornblende and 5% potassium feldspar phenocrysts (Figure 20). Both phases are mineralized but chloritization dominates in the mafic phase. Chalcopyrite occurs finely disseminated and in veins with quartz and pyrite. Mineralization of epithermal character, with higher gold and silver grades, is also present at Iron Cap as quartz stockwork and breccias comprising more than 90% quartz in which the hostrock texture is obliterated. This mineralization is similar to zones on the nearby Brucejack property and demonstrates the transition from porphyry to epithermal styles in the Sulphurets district. Geological work at Iron Cap by Mike Savell has identified the distinctive ignimbrite breccia of the Mount Dilworth Formation, an important marker horizon in the Hazelton Group (Figure 21).

Other diverse studies conducted at KSM include structural geological mapping at the proposed tunnel portal and dam sites, bulk samples from Iron Cap drill core for metallurgical testing, radar surveys over glaciers and moraines in regard to waste rock placement, investigation of rhenium recovery from Mitchell ore, geotechnical drilling in Mitchell valley, high-pressure



Figure 20. KSM copper-gold project; K-feldspar intrusive rock in the Iron Cap zone.



Figure 21. KSM copper-gold project; new outcrop of Dilworth Formation felsic ignimbrite exposed by ablation of the Mitchell glacier, west of the Brucejack fault.

grinding test-work aimed at reducing power consumption and environmental baseline characterization.

There was a major program at the **Schaft Creek** copper-gold-molybdenum project by Copper Fox Metals Inc to gather information required for a feasibility study and to submit a project application to the BC Environmental Assessment Office. Work comprised geologic modeling that included re-logging and assaying of historic core, a three-dimensional IP and magneto-tellurics survey, and geotechnical, resource and ‘condemnation’ drilling. The feasibility study will evaluate a proposed 150 000 tonne per day open pit mine (Figure 22). A positive analysis will trigger a time-limited option for Teck Resources to earn back a larger share of the project from Copper Fox. Resource drilling focused on definition of higher grade material in the Liard zone for a starter pit. The mill and tailings impoundment are proposed to be located 5 km northeast of the deposit near Skeeter Lake. The open pit resource is 812 Mt grading 0.30% Cu, 0.020% Mo, 0.21 g/t Au and 1.8 g/t Ag (measured and indicated) at a 0.20% Cu equivalent cut-off. The ultimate pit features a 1700 m northern high wall



Figure 22. Schaft Creek copper project; view south over the Liard zone.

and an overall 1.9:1 strip ratio. Additional targets were drill-tested based on results of the IP survey and a new resource estimate is expected in early 2011.

Schaft Creek (MINFILE 104G 015) is a calcalkalic porphyry copper deposit formed near the eastern contact of the Hickman granodiorite batholith with Stuhini Group mafic volcanic rocks. The Galore Creek deposit is developed in alkalic rocks near the western margin of the Hickman batholith. Schaft Creek mineralization is dated at 222 Ma, nearly identical to the age of the batholith. Although not an alkalic porphyry deposit, Schaft Creek is similar to Galore Creek in that the deposit occurs in a unique part of a subhorizontal volcanic sequence consisting of tuff, breccias and epiclastic rocks. The principal Liard zone is fault-bounded by a steep structure to the east and by a 45° east-dipping structure to the west. Recent drilling has linked the Liard and northerly Paramount zones so they are considered now to be a single zone. The West Breccia zone lies further west, associated with a subvertical fault. The West Breccia zone is 30 to 200 m wide, extends more than 1000 m and consists of angular hematized fragments in a matrix of quartz, tourmaline, chlorite, specularite and sulphide minerals (Figure 23). The Liard zone comprises a subhorizontal quartz vein stockwork that is developed in volcanic rocks and less abundant granodiorite sills; this vein orientation accounts for the flat copper grade contours that characterize the deposit. Potassium feldspar alteration is pervasive in intrusive rocks and less intense in volcanic rocks where it is restricted to vein envelopes. Veins in the Liard zone are broken and disrupted on a small scale; veins commonly do not extend 10 cm without being segmented by fault-fractures (Figure 24).

Bornite is finely disseminated within pervasive potassium feldspar alteration and occurs coarse grained in quartz veins in the K-feldspar zone (Figure 25). Chalcopyrite accompanies bornite but only exceeds bornite in abundance in less altered rocks, typically chlorite-altered andesite, and in the West Breccia where it is the predominant copper mineral. Pyrite is a minor constituent of the Liard zone, far subordinate to bornite and chalcopyrite. Calcite is common in the Liard zone, both dispersed in andesite and as a constituent of late quartz veinlets in intrusive rocks. Pyrite is prominent in the West Breccia zone but because the Liard zone accounts for a large majority of the deposit tonnage, the overall acid generation potential is low. Epidote alteration overprints potassium feldspar in intrusive rocks marginal to copper mineralization. Chlorite and epidote are developed in volcanic rocks marginal to the copper zone.

The past-producing **Kitsault** molybdenum mine (MINFILE 103P 120) is located 140 km north of Prince Rupert. Avanti Mining Inc plans to open a new 40 000 tonne per day mine to exploit the same deposit at an estimated capital cost of \$837 million. Kitsault received its "Section 11 order" under the BC Environmental Assessment Process, which defines the scope of the project to be assessed and the potential



Figure 23. Schaft Creek copper project; West Breccia zone in hole CF-326, angular hematite-altered fragments.

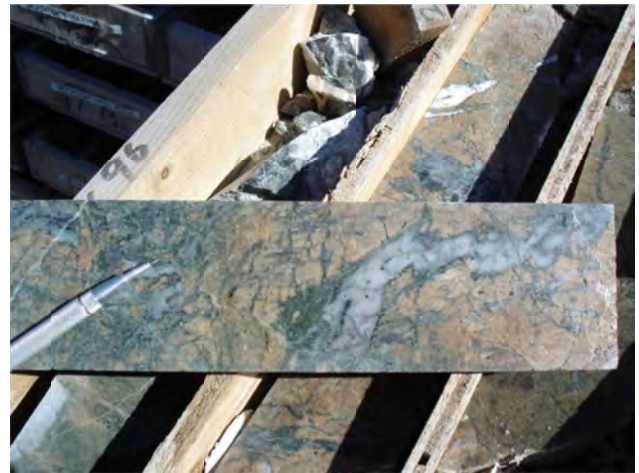


Figure 24. Schaft Creek copper project; Liard zone, quartz-bornite vein and pervasive K-feldspar alteration in hole CF-347, showing tectonic disruption of veins.



Figure 25. Schaft Creek copper project; Liard zone, altered feldspar in an intrusive rock with quartz-bornite vein, hole CF-347.

effects to be considered. The Kitsault mine operated from 1967 to 1972 and from 1981 to 1982 with a total production of 13 600 tonnes of molybdenum. The site is

still served by a power line and access road. Avanti and SeAH Holdings Corp, the largest steel producer in Korea, formed a strategic alliance that will fund the project through design engineering and Environmental Assessment. Work in 2010 comprised evaluation of alternate sites for a new mill and tailings impoundment, exploration of the Roundy Creek prospect aimed at identification of high-grade molybdenum, and preservation of historic drill core from the Bell Moly prospect. Kitsault has proven plus probable reserves of 232.5 Mt grading 0.081% Mo, determined in a feasibility study. Molybdenite occurs in an annular zone around an early Tertiary quartz diorite to quartz monzonite stock that intruded Bowser Lake Group greywacke and siltstone. Two other stocks with associated molybdenum mineralization are known on the property: Bell Moly and Roundy Creek.

The old mill location in the tight valley of Patsy Creek is considered too constrained for the new mill. The currently preferred new mill location is 1.5 km northeast of the open pit, atop the 160 m thick Widdzech basalt lava (Figure 26). A conveyor would transport crushed ore over the 200 m elevation difference between the pit and the mill. The columnar basalt, dated at 0.62 and 1.6 Ma, abuts the proposed adjacent tailings impoundment site at the head of non fish-bearing Patsy Creek (Figure 27). Bowser Lake Group rocks, partly covered by a thin veneer of peat and glacial deposits, underlie most of the planned tailings site. Detailed geological mapping, supplemented by magnetic data, was used to assess potential for a molybdenum-bearing intrusion. A monzonite dike was found and evaluated by one drillhole; the rock is altered but not veined or mineralized. Geotechnical drilling around the mine, mill and tailings sites amounted to 27 holes totalling 1500 m.

A site near Clary Lake, 5 km northeast of the Kitsault deposit, was considered and then rejected as a tailings site because its use could compromise possible future development of a currently sub-economic molybdenum resource at **Bell Moly** (MINFILE 103P 234), and because Clary Lake has a resident stocked trout population. In 1979 Bell Moly was estimated to contain 19.6 Mt grading 0.084% Mo (not NI 43-101 compliant). Avanti expended considerable effort to successfully salvage and re-box drill core that was left at the site of two separate exploration camps in 1967 and 1977 (Figure 28).

Roundy Creek (MINFILE 103P 113) lies 5 km west of Kitsault and comprises three contiguous zones of molybdenum mineralization that were explored by four companies between 1956 and 1983. Their work included 750 m of underground workings on two levels and 157 drillholes from surface and underground. In 1983 AMAX Mining Corp calculated resources of 1.45 Mt grading 0.180% Mo in the Sunshine Creek zone, 2.74 Mt grading 0.10% Mo in the Roundy zone and 50 000 tonnes grading 0.321% Mo in the Sunlight zone. The mineralized area lies near the head of steep north-flowing forks of Roundy Creek and despite detailed historic work is not well



Figure 26. Kitsault molybdenum mine; proposed mill site is on top of basalt bluff on the skyline.



Figure 27. Kitsault possible tailings impoundment area, showing Patsy Lake and bluff of columnar basalt.

understood (Figure 29). Two granite stocks are present; the western body contains an internal zone of ‘alaskite’ which comprises crowded quartz porphyry, silicified quartz-feldspar porphyry and minor, but very important, banded feldspar-molybdenite rock. This is likely an unusual form of unidirectional solidification texture (UST) that occurs in some molybdenum deposits but typically consists of alternating quartz and feldspar layers. The extremely high grade material at Roundy Creek is discontinuous and varies in attitude. Molybdenite is also present in a quartz stockworks. Avanti drilled 6 holes



Figure 28. Kitsault project; re-boxing and salvaging historic drill core at Bell Moly, a satellite prospect.



Figure 29. Roundy Creek prospect; geologists Bob Blair, Steve Maynard and Chris Atkins examine quartz-molybdenite veins in Sunshine Creek.

totalling 912 m at Roundy Creek; RC10-02 assayed 0.383% Mo over 81.0 m, including a 21.0 m interval grading 1.212% Mo.

At the **Kutcho Creek** copper-zinc project, located 100 km east of Dease Lake, Capstone Mining Corporation completed another preliminary economic assessment that built upon the 2009 study by focusing on a possible early production phase using high grade ore from the Esso deposit. The Esso ore lens is the smallest, deepest (at 450 to 500 m below surface) and least well defined of three

volcanogenic massive sulphide deposits (MINFILE 104I 060). Consequently, a major drilling program was undertaken to improve the understanding of the Esso lens resource. Thirty-four holes totalling nearly 18 000 m were drilled on the property. The most notable hole returned 10.30% Cu, 19.77% Zn, 2.86 g/t Au and 666.4 g/t Ag over a true thickness of 10.2 m. This material consists of crudely layered sphalerite, chalcopyrite, bornite and pyrite. The Esso lens was upgraded to an indicated resource; 1.816 Mt grading 2.69% Cu, 6.18% Zn, 0.66 g/t Au and 64.8 g/t Ag at a cut-off of 1.5% Cu.

The new resource estimate, along with new metallurgical data on the Esso lens, will be incorporated into a preliminary feasibility study. Currently, measured and indicated resources in the three lenses are estimated at 10.415 Mt grading 2.14% Cu, 2.85% Zn, 32.4 g/t Ag and 0.36 g/t Au. The inferred resource is estimated at 1.893 Mt at 2.09% Cu, 2.93% Zn, 33.6 g/t Ag and 0.46 g/t Au. Capstone contemplates development of a 2500 tonnes per day mine at an estimated capital cost of C\$133.5 million. The project continues in the pre-application stage of the Environmental Assessment Process. Geologically, the Kutcho deposits are arranged en echelon over a strike length of 3.5 km within schistose felsic volcanic rocks of early Triassic age (Figure 30). The geology and mineral potential of the Kutcho area is under investigation by the British Columbia Geological Survey (Figure 31).

The amended application to review proposed development of the **Morrison** copper-gold project was accepted by the BC Environmental Assessment Office in 2010. It is located 70 km northeast of Smithers. The review will be coordinated with federal agencies. Pacific Booker Minerals Inc proposes to build an open pit mine to operate at 30 000 tonnes per day. Twelve holes were drilled to provide material to study ARD potential of waste rock. Morrison (MINFILE 093M 007) is a porphyry copper deposit with a measured plus indicated resource of 206 869 000 tonnes grading 0.39% Cu, 0.20 g/t Au and 0.005% Mo. The inferred resource stands



Figure 30. Scott Caldwell and Paul Schiarizza (British Columbia Geological Survey) mapping structure and stratigraphy in the Kutcho Creek volcanogenic massive sulphide district.



Figure 31. Kutcho Creek; deformed conglomerate with felsic volcanic cobbles at the base of the sedimentary succession that overlies volcanic rocks of the Kutcho Formation.

at 56.524 Mt grading 0.40% Cu, 0.21 g/t Au and 0.005% Mo. The deposit is developed in a biotite-feldspar porphyry stock, one of the Babine intrusions of Eocene age.

For the **Mount Klappan** anthracite coal project, 150 km northeast of Stewart, Fortune Minerals Limited studied transportation options of moving its product to the port of Prince Rupert. The company favours gaining access for a proposed mine by upgrading the Dease Lake rail roadbed, owned by CN Rail which passes through the coal resource area, over constructing a 100 km access road from Highway 37. Fortune Minerals is searching for a partner to develop this major resource.

MINERAL EXPLORATION

Table 2 lists significant exploration projects in Skeena region. The locations of porphyry copper-gold, copper-molybdenum and molybdenum projects are shown on a map, Figure 32.

PORPHYRY COPPER PROJECTS

Porphyry copper deposits in the northwest often contain significant gold or molybdenum. Few deposits contain all three metals in economically significant amounts. Prospects in the Iskut-Stikine district are developed in late Triassic to early Jurassic igneous rocks within Stikine terrane prior to its accretion to North America. Pre-accretion porphyry prospects are primarily copper-gold projects; molybdenum is significant only at Schaft Creek. The intrusions are subalkalic, potassium-rich and of intermediate composition, typically monzonites and their volcanic equivalent. K-feldspar porphyritic rocks are common. Alkalic rocks, syenite and pseudoleucite-bearing trachyte that characterize the Galore Creek deposit, represent an end-member composition. Some of the copper-gold deposits in the

Stikine district have an extremely high gold to copper ratio, *i.e.* greater than 1 g/t gold for 1% copper. Depending on metal recoveries and relative prices, gold may be more economically important than copper in some deposits and occurrences that can be referred to as porphyry gold-copper projects. This includes the Mitchell, Sulphurets, Snowfield and Bronson Slope deposits.

Porphyry copper-molybdenum prospects predominate in the Skeena district. Some copper-gold prospects occur but the gold content is appreciably less than in the Iskut-Stikine district. Skeena district porphyry prospects are all contained in post-accretion intrusions comprising the extensive late Cretaceous Bulkley, and more localized Eocene Nanika and Babine calcalkaline intrusions. The three suites have separate distribution patterns but all occur within a transverse geologic feature known as the Skeena Arch. Bulkley and Babine intrusions are generally intermediate in composition; medium to coarse granodiorite is typical of the Bulkley suite and biotite-feldspar porphyry is characteristic of the Babine suite. Nanika intrusions contain more quartz and potassium feldspar, and comprise pink granite and quartz porphyry rhyolite dikes. The Huckleberry deposit is related to a Bulkley intrusion.

Porphyry Copper-Gold Projects in Stikine terrane, Iskut District

Silver Standard Resources Inc continued a major program on the **Brucejack-Snowfield** property, employing up to eight drill rigs and completing a total of 51 000 m of diamond drilling. After the field season, Pretium Resources Inc agreed to purchase the Brucejack-Snowfield property for \$450 million in a combination of cash and shares. Open pit resources at Brucejack (as of December 1, 2009), including 900 historic holes, and at Snowfield (as of July 27, 2010) are as follows:

- Brucejack, measured plus indicated – 120.5 Mt grading 1.04 g/t Au, 16.9 g/t Ag
- Brucejack, inferred – 198.0 Mt grading 0.76 g/t Au, 11.2 g/t Ag
- Snowfield, Measured plus Indicated – 1095.3 Mt grading 0.63 g/t Au, 1.75 g/t Ag, 0.11% Cu, 89 ppm Mo, 0.49 g/t Re
- Snowfield, Inferred – 847.2 Mt grading 0.40 g/t Au, 1.53 g/t Ag, 0.07% Cu, 82 ppm Mo, 0.33 g/t Re

Brucejack saw the majority of work in 2010, with 33 100 m of drilling in 73 holes distributed between the Bridge, Galena Hill and West zones (Figure 33; MINFILE 104B 200, 196 and 193, respectively). The Brucejack resource includes the Gossan Hill (MINFILE 104B 190) and SG zones, but there was little work on these in 2010. The Bridge zone was expanded to more than 600 by 900 m and drillhole spacing was increased to 200 m (from 100 m) in order to determine the overall

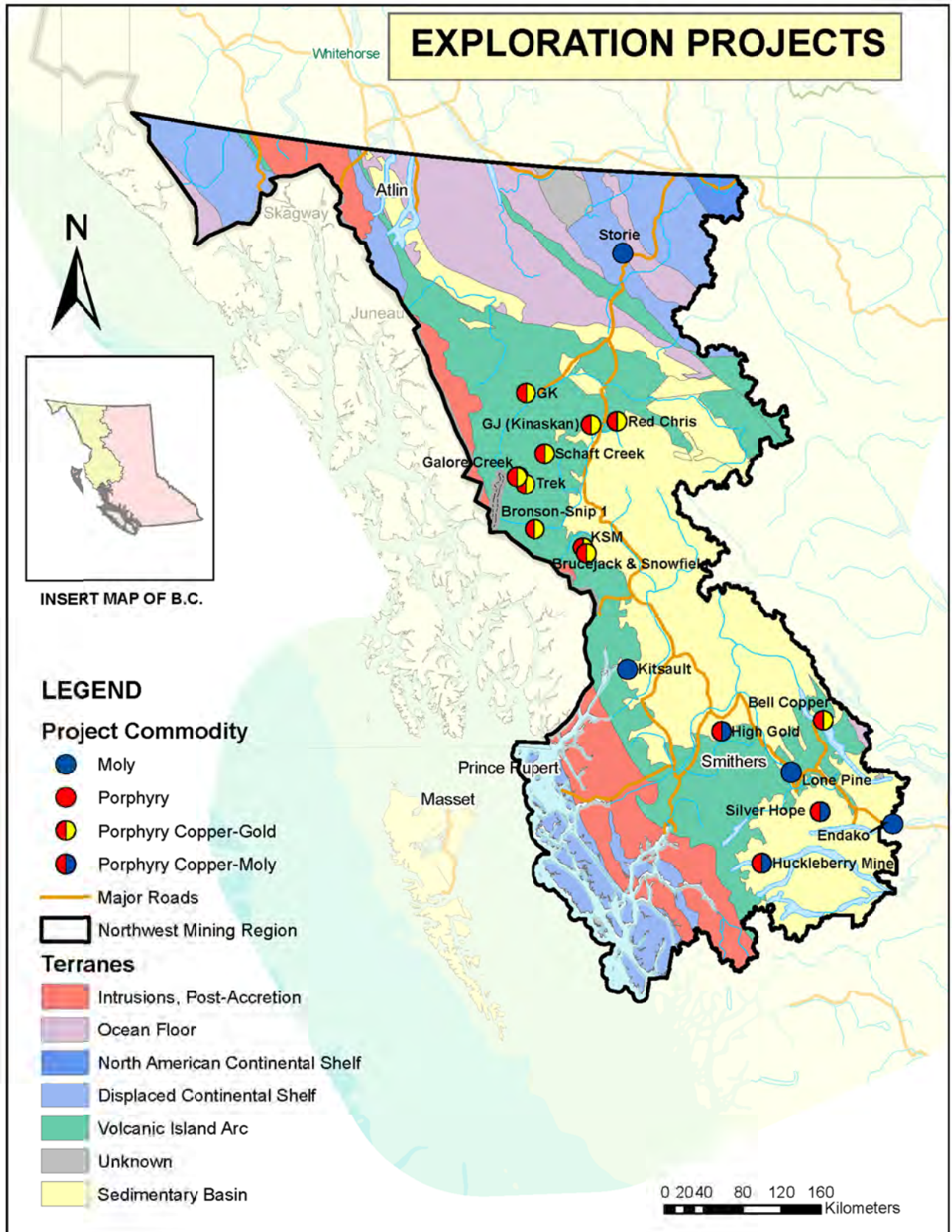


Figure 32. Porphyry-type exploration projects (copper, gold, molybdenum) in Skeena Region.

TABLE 2. MAJOR EXPLORATION PROJECTS, SKEENA REGION

Property	Operator	MINFILE (or NTS)	Commodity	Deposit Type	Work Program
American Boy	TAD Capital Corp	093M 047	Ag, Au	Intrusion Vein	DD (703 m, 8 holes)
Atlin Gold	Blind Creek Resources Ltd	104N 044	Au	Orogenic Vein	DD (1568 m, 11 holes)
BA	Great Bear Resources Ltd	104A 178	Ag, Zn, Pb	VMS	G; AB-EM (1000 km) ; DD (15,000 m, 85 holes)
Bear	Auramex Resource Corp	104A 024	Au	Vein	DD (1295 m, 3 holes)
Bell Copper	Xstrata Copper Canada Ltd	093M 001	Cu, Au	Porphyry	DD (3400 m, 6 holes)
Bonsai	Copper Creek Gold Corp	104B 383	Au, Ag, Zn, Cu	VMS	3D-IP (10.6 km); DD (3461 m, 11 holes)
Bronson	Skyline Gold Corp	104B 077, 004	Au, Cu, Fe	Porphyry, Vein	G; DD (3144 m)
Brucejack	Pretium Resources Inc	104B 193, 196	Au, Ag	Epithermal, Porphyry	G; DD (33,100 m, 73 holes)
Cassiar Gold	Haw thorne Gold Corp	104P 012	Au	Orogenic Vein	AB-EM
Cassiar Moly	Velocity Minerals Ltd	104P 035	Mo	Porphyry	DD (1398 m, 3 holes)
Chist	Paget Minerals Corp.	103I 185	Cu, Zn, Au, Ag	VMS	G; P
Clone	Canasia Industries Corp	103P 251	Au	Shear Vein	DD (1354 m, 16 holes); BU (34 tonnes)
Coles Creek	Callinan Mines Ltd	93E 041	Au, Ag	Epithermal	GC; IP (60 km); DD (7069 m, 20 holes)
Delta	Frontline Gold Corp	104A 165, 166	Cu, Zn, Au, Ag	VMS	GC; AB-EM (1421 km)
Big Missouri & Dilworth	Ascot Resources Ltd	104B 044, 092	Au, Ag	Epithermal Vein	DD (21,711 m, 68 holes)
Dome	Gavin Mines Ltd	093L 022	Au	Orogenic Vein	DD (4724 m, 33 holes); A; FS
Dunwell	Mountain Boy Minerals Ltd	103P 052	Ag, Au	Vein	DD (8021 m, 50 holes)
Elsiar	Eagle Plains Resources Ltd	103I 229	Au	Intrusion Vein	G; GC
Endako	Thompson Creek Metals Company Inc	093K 006	Mo	Porphyry	DD (13,778 m, 91 holes)
Engineer	BCGold Corp	104M 014	Au	Epithermal Vein	DD (1308 m, 13 holes)
Eva Lake	New Pacific Metals Corp	104N 017	Zn	Unknown	G; AB-EM
Fireweed	Shamrock Enterprises Inc	093M 151	Ag, Zn, Pb	Manto, Vein	DD (1854 m, 11 holes)
FR	Mountain Boy Minerals Ltd	104A 112	Au, Ag	Vein	DD (695 m, 5 holes)
Galore Creek	Galore Creek Mining Corp	104G 090	Cu, Au	Porphyry	EN; MS; GD (4531 m)
Georgie River	Auramex Resources	103O 013	Au	Vein	G; AB-EM (681 km)
Gin	CJL Enterprises Ltd	104H 031	Cu, Au	Porphyry	P; GC; IP
GJ	Teck Resources Limited	104G 034	Cu, Au	Porphyry	G; IP (27 km)
GK	Strategic Metals Ltd	104G 003	Cu, Au	Porphyry	GC; DD (928 m)
Granduc	Castle Resources Inc	104B 021	Cu, Ag, Au	VMS	DD (8223 m, 18 holes)
Grouse Mtn	Bard Ventures Ltd	093L 026, 251	Cu, Mo, Au	Porphyry ?	G; GC
Harry	Teuton Resources Corp	104B.020	Au	Vein	DD
Reed	Pacific Bay Minerals Ltd	104P 021	Zn, Pb, Ag, Mo	Skarn	TR (107 m)
High Gold	Argonaut Exploration Inc	093L 076	Cu, Mo, Au	Porphyry	G; IP (13 km); TR (171 m); DD (2542 m, 9 holes)
Homestake	Bravo Gold Corp	103P 216, 091	Au, Ag, Cu	Epithemal Vein	GC; DD (17,924 m, 48 holes)
Huckleberry	Huckleberry Mines Ltd	093E 037	Cu, Mo	Porphyry	GC, IP; DD (4400 m, 21 holes)
Indi	Nanika Resources Inc	104B 402	Au, Ag	Epithemal Vein	DD
Kalum	Eagle Plains Resources Ltd	103I 228	Au	Intrusion Vein	G; DD (420 m, 6 holes)
KSM	Seabridge Gold Inc	104B 103, 176	Au, Cu, Mo, Re	Porphyry	EN; MS; FS; DD (28,209 m, 90 holes)
Kitsault	Avanti Mining Inc	103P 120	Mo	Porphyry	G; A; EN; PF; DD (2412 m)
Kutcho Creek	Capstone Mining Corp	104I 060	Cu, Zn, Au, Ag	VMS	DD (17,970 m, 34 holes); PF
LCS	W. Lychak Contracting Ltd	093L.094	Cu	Redbed	DD (300 m, 6 holes)
Lone Pine	Bard Ventures Ltd.	093L 027, 028	Mo	Porphyry	A; DD (3427 m, 9 holes); PE A
Maroon	WCB Resources Ltd	103I 030	Au	Vein	TR; DD (599 m, 6 holes)
Morrison	Pacific Booker Minerals Inc	093M 007	Cu, Au	Porphyry	DD (1451 m, 12 holes)
Poly	Frontline Gold Corp	104A 177	Au, Ag	VMS	AB-EM (305 km); GC
Porphyry Creek	Duncastle Gold Corp	093M 061	Cu, Au	Porphyry	AB-EM, MG, RD (514 km); DD (1360 m, 3 holes)
Red Chris	Imperial Metals Corp	104H 005	Cu, Au	Porphyry	CD; GD; DD (55,000 m); FS

TABLE 2. CONTINUED

Property	Operator	MINFILE (or NTS)	Commodity	Deposit Type	Work Program
RC South	Bolero Resources Corp	104H 011	Cu, Au	Porphyry	GC; IP (55 km)
Red Cliff	Mountain Boy Minerals Ltd	104A 033	Au	Vein	DD (8929 m, 57 holes)
Red Cliff East	Nanika Resources Inc	104A 035	Au	Vein	8 ddh, 1100 m
Rock and Roll	Pacific Northwest Capital Corp	104B 377	Ag, Au, Zn, Cu	VMS	G
Schaft Creek	Copper Fox Metals Inc	104G 015	Cu, Mo, Au	Porphyry	IP (66 km); EN; GD; DD (6400 m)
SIB	Eskay Mining Corp	104B 376	Au, Ag, Zn, Cu	VMS	G; DD (3857 m, 5 holes)
Sidina	TAD Capital Corp	093M 038	Au, Ag	Vein	DD (804 m, 6 holes)
Silver Coin	Jayden Resources Inc	104B 150	Au, Ag, Pb, Zn	Epithermal Vein	DD (2801 m, 18 holes)
Silver Hope	Finlay Minerals Ltd	093L 256	Cu, Mo, Ag	Porphyry	DD (2036 m, 6 holes)
Silver Queen	New Nadina Explorations Limited	093L 002	Cu, Zn, Au, Ag	Porphyry, Vein	GP; DD (4110 m, 26 holes)
Silvertip	Silvercorp Metals Inc	104O 038	Ag, Pb, Zn, Au	Manto	G; AB-EM (4114 km); DD (10,913 m, 36 holes); EN
Snowfield	Pretium Resources Inc	104B 179	Au, Cu, Mo, Re	Porphyry	GD; MS; PF; DD (17,976 m)
Storie	Columbia Yukon Explorations Inc	104P 069	Mo	Porphyry	EN; DD (763 m, 3 holes)
Sweeney	Nanika Resources Inc	093E 076	Cu, Mo	Porphyry	DD (718 m, 2 holes)
Tatsamenie	Nakina Resources Ltd	104K 137	Au	Carlin	G; GC
Ted	Nanika Resources Inc	093E 086	Cu, Mo	Porphyry	DD (1274.8 m, 4 holes)
Tennyson	Teuton Resources Corp	104B 167	Cu, Au	Porphyry	DD (1698 m, 10 holes)
Todd Creek	Orestone Mining Corp	104A 001	Cu, Zn, Au, Ag	VMS	AB-EM (2172 km)
Trek	Romios Gold Resources Inc	104G 022	Cu, Au	Porphyry	G; GC; 3D-IP; DD (3975 m, 8 holes)
Turnagain	Hard Creek Nickel Corp	104I 119	Ni, Co, Pt	Magmatic	MS; PF; DD (410 m, 2 holes)
Voigtberg	BC Gold Corp	104G 146	Au, Cu	Porphyry	G; GC; P
Wann	Blind Creek Resources Ltd	104M 026	Au	Vein	G; P; TR
Wedeeene	Decade Resources Ltd	103I 169	Cu, Au	Vein, Porphyry	DD (5325 m, 19 holes)
Yellow Chris	Teuton Resources Corp	(104H.061)	Cu, Au	Porphyry	AB-EM
Yellow Jacket	Eagle Plains Resources Ltd	104N 043	Au	Orogenic Vein	G; RC (2206 m, 64 holes)
Zymo	Eastfield Resources Ltd	093L 324	Cu, Au	Porphyry	P; GC; IP (25 km)

Work Program Abbreviations:

A = access (trail, road construction on claims); AB-EM = airborne electromagnetics; AB-MG = airborne magnetics; AB-RD = airborne radiometrics; BU (X tonnes) = bulk sample (weight in tonnes if known); CD = condemnation drilling; CQ = coal quality testing; CT = carbonization test (coal); DD (Xm) = diamond drilling totalling X metres; EN = environmental baseline studies/monitoring, remediation work; FS = feasibility studies; G = geology, mapping etc.; GC = geochemical sampling (rock, soil, silt etc.); GD = geotech drilling; GP = geophysics (general); IP = Induced Polarization; 3D-IP; MG = magnetics; MK = marketing (primarily for industrial mineral products); MS = metallurgical studies; OB = overburden drilling; OP-BU = open-pit bulk sample; P = prospecting; PD = percussion drilling; PF = pre-feasibility studies; R = reclamation; RC = reverse circulation drilling; TR = trenching; UG (Xm) = X metres of underground development; UG-BU = underground bulk sample; UT = UTEM; VLF; WT = washability test (coal)

extent of the deposit. The program is expected to outline an inferred resource, rather than delineating measured and indicated resources. Gold tenor in the Bridge zone was found to increase to the southeast under an ice cap and to depth, so that some 2009 holes were deepened. Thickness of the Bridge zone ice cap increases southeast to a maximum drilled depth of 80 m. Holes collared on the ice were angled at -70° (instead of -50°) to avoid breaking the drill stem when the enclosing ice melted away (Figure 34).

The Brucejack area is underlain by Stuhini and Hazelton Group volcanic and sedimentary rocks that strike north-northwest, dip and face to the east, and are intruded by the Mitchell-Sulphurets monzonite stocks, dated at 192.7 Ma. The mineralized area, except the Bridge zone which is described separately below, is underlain mainly by andesitic tuff and flow rocks of the Unuk River Member (of the Betty Creek formation) and

underlying sandstone (Jack Formation). The volcanic-sedimentary sequence is cut by several east-trending zones of intense, pervasive quartz-sericite-pyrite alteration containing gold-bearing quartz veins, stockworks and breccias (Figure 35). In a few areas, sedimentary and volcanic horizons can be identified within the strongly altered zones, but commonly the parent rock cannot be identified (Figures 36, 37). The quartz-sericite zones form a 3 km long north-south arcuate belt within 500 to 800 m of the prominent Brucejack fault. Geological mapping determined that alteration and gold-silver mineralization follow the Stuhini-Hazelton contact zone but the relationship and timing with respect to the Mitchell-Sulphurets intrusions remains unclear (G. Febbo, personal communication, 2010).

The Bridge zone is underlain by a hornblende-feldspar monzonite stock (Figure 38) with an exposed

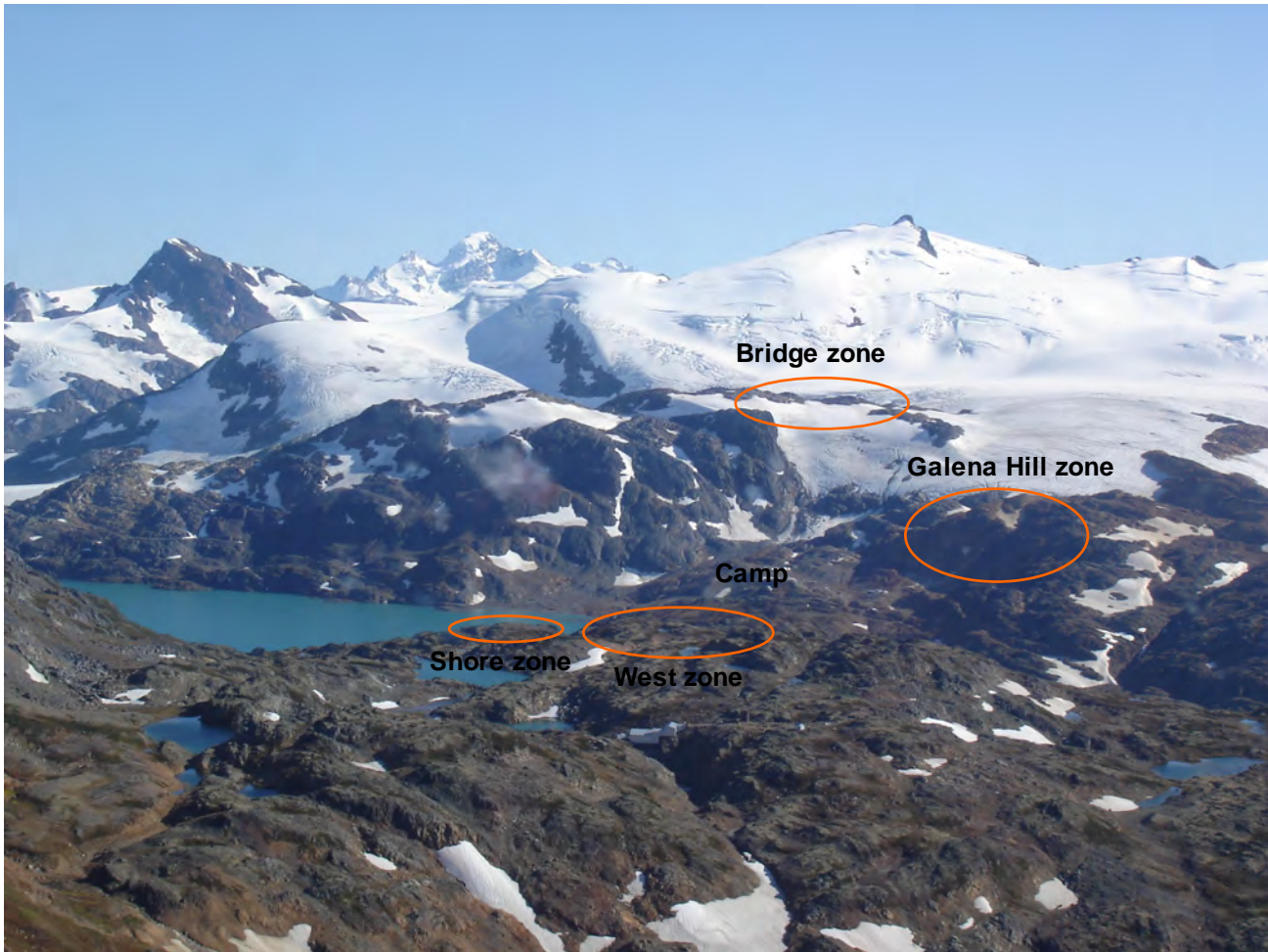


Figure 33. Brucejack project; southeast view toward Shore, West, Galena Hill and Bridge zones located sequentially south of the west end of Brucejack Lake toward the ice cap.



Figure 34. Brucejack project; Gayle Febbo mapping in the Bridge zone while (in the background) drilling proceeds on the ice cap.



Figure 35. Brucejack project; Galena Hill zone as seen from the exploration camp.

diameter of one kilometre, and is characterized by porphyry-style assay results. For example, SU-10, a deepened hole in the Bridge zone, graded 0.76 g/t Au over 601 m and ended in mineralization. Mineralization in the

Galena Hill, West and Shore zones has a more “transitional” to epithermal character and includes bulk tonnage and bonanza-grade intercepts (Figures 39, 40). For example, SU-106 in the Galena Hill zone encountered



Figure 36. Brucejack project; Shore zone SU-105, foliated quartz-sericite-pyrite alteration, protolith unknown.



Figure 37. Brucejack project; West zone SU-100 at 535 m, quartz-sericite-pyrite alteration, with relict sedimentary bedding?.

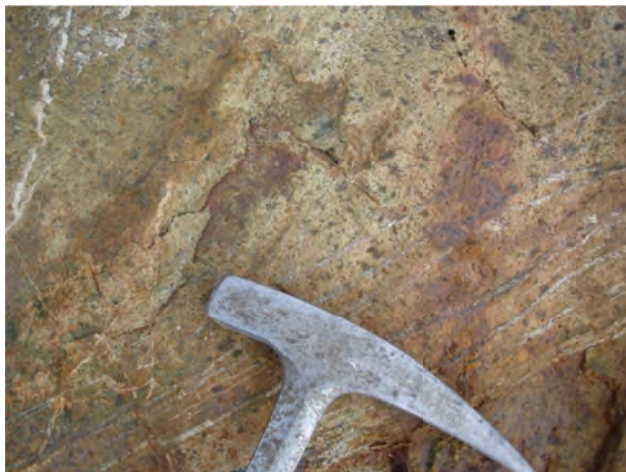


Figure 38. Brucejack project; intrusive rock texture in the Bridge zone outcrop with relict phenocrysts.

three separate intervals:

- 72.47 m grading 1.37 g/t Au and 15.0 g/t Ag,

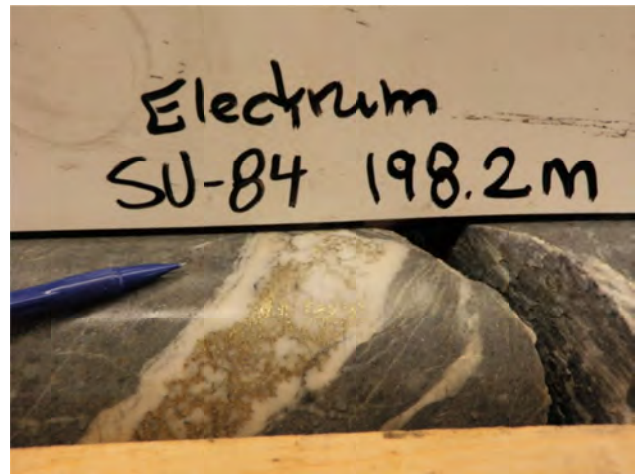


Figure 39. Brucejack project; Galena Hill zone SU-84, quartz-electrum vein grades 5480 g/t Au and 2140 g/t Ag over 0.44 m.



Figure 40. Brucejack project; geologists enjoy a lighter moment.

- 48.62 m grading 1.06 g/t Au and 25.75 g/t Ag; including 0.69 m with 1710 g/t Au and 1080 g/t Ag that was cut to 31.1 g/t Au, and
- 24.42 m grading 0.77 g/t Au and 7.31 g/t Ag

Silver Standard drilled 45 holes totalling nearly 18 000 m to upgrade and expand resources in the **Snowfield** gold-copper porphyry deposit (Figure 41), located 4 km north of Brucejack. The purposes of the drill program were to: (a) obtain geotechnical data; (b) obtain a metallurgical sample by recovering P-size core; (c) convert the inferred resource to measured and indicated; and (d) to better define the west, east and south margins of the Snowfield zones. Snowfield comprises two separate mineral zones:

- the Main (or North) copper-gold zone that is the upper portion of the Mitchell deposit which has been displaced 2 km east by the Mitchell thrust fault (see KSM above). Like Mitchell, the Main zone is characterized by an intense quartz-pyrite-chalcopyrite stockwork that is strongly crenulated by penetrative deformation (Figure 42). Gold occurs mainly in chalcopyrite; and



Figure 41. Snowfield project; drill camp on the gossan of the Upper Snowfield gold-molybdenum zone.



Figure 42. Snowfield project; intense and deformed quartz stockwork of Main (North) Snowfield gold-copper zone, PQ core from a metallurgical hole.

- the upper gold-molybdenum zone characterized by disseminated pyrite and a weak to moderate quartz-pyrite-carbonate stockwork in undeformed volcanic rocks. Gold is present mainly in anhedral, disseminated pyrite.

Drilling extended the Snowfield Main zone 1000 m to the southeast and by 200 to 300 m in width, so that the eastern limit of the zone corresponds approximately to the Brucejack fault. A representative hole, MZ-116, intersected 83 m grading 0.44% Cu and 1.45 g/t Au. At its southeast extent the Snowfield Main zone is an undeformed weak quartz stockwork (Figure 43). Drilling also increased the known extent of the Snowfield Upper zone 300 m to the south, in part beneath the ice cap on Josephine Ridge. For example, MZ-113 assayed 0.04% Cu and 0.98 g/t Au over 78 m (molybdenum was not reported). Evidence shows the Upper zone to be younger than the Main zone (Figure 44) but otherwise the relationship between the two sub-zones is unknown.

The **Glenora King** (GK) property (MINFILE 104G 003) near Telegraph Creek was drilled by Strategic



Figure 43. Snowfield project; MZ-117 at 228 m, quartz-sulphide veins in chlorite alteration, interval grades 0.44 g/t Au, 0.13% Cu, at southeast margin of the Main zone.



Figure 44. Snowfield project; fragment of deformed stockwork typical of the Main zone in the non-strained Upper zone. Implies a post-deformation origin to the Upper zone.

Metals Ltd. Volcanic rocks near the contact of a diorite to monzonite pluton contain shear and replacement zones with significant copper and gold values over a two kilometre-long trend along Winter Creek. Three holes tested bedrock below the showings (Figures 45, 46).

The **Red Chris South** property of Bolero Resources Corp was explored by an MMI geochemical survey and a 55 line km IP survey. The property includes the Ram showing (MINFILE 104H 011). The company plans to test porphyry copper-gold targets by drilling in 2011. Also to the south of Red Chris, Teuton Resources Corp completed a VTEM survey over its **Yellow Chris** property. And 20 km northwest of Red Chris, Solitaire Minerals carried out geological mapping and a geochemical survey on the **Summit B** (Kitty) claim (MINFILE 104H 015), one of four properties it holds in the district. The geology of Summit B property is not related to Red Chris geology.

Soil geochemical and IP surveys were carried out on the **Gin** property (MINFILE 104H 031), located 5 km



Figure 45. Drill set up on a ridge crest for the first hole on the GK (Glenora King) project to test below copper-gold showings on Winter Creek.



Figure 46. GK project; geologists Doug Eaton, Sarah Eaton and Richard Phillips inspect copper mineralization.

west of Red Chris, by Brett Resources. Brett relinquished its option from CJL Enterprises Ltd. The claims are underlain by propylitic altered volcanic rocks containing pyrite fracture veinlets.

Exploration of the **GJ** property (also known as **Kinaskan**) was reactivated by Teck Resources (Figure 47). The Donnelly zone (MINFILE 104G 086, 034) has a measured and indicated resource of 153.3 Mt at a grade of 0.321% Cu and 0.369 g/t Au. Mineralization is related to the east-northeast trending Groat stock, closely



Figure 47. GJ (Kinaskan) project; new camp construction on the alpine plateau that overlies the Donnelly porphyry copper-gold deposit.

comparable to the geologic setting at Red Chris 25 km to the northeast. The initial 27 km of a planned 180 line-km IP survey was completed, while core re-logging focused on alteration; both studies are designed to develop new targets on the poorly exposed alpine plateau (Figure 48). The area of interest extends 11 km north to the Quash showing (MINFILE 104G 161).

On the **Trek** property (MINFILE 104G 022), located 12 km southeast of Galore Creek, Romios Gold Resources Inc completed a small Titan-24 IP survey and nearly 4000 m of drilling on the North zone. Named for its location north of Sphaler Creek, the North zone consists of chalcopyrite-bearing veins and fracture zones (Figure 49) associated with northeast trending pink monzonite dikes that are from 0.2 to 10 m wide. The dikes cut Stuhini Group mafic volcanic, plagioclase and/or pyroxene-phyric, flows and breccias. TRK10-03 intersected 3.84% Cu, 1.82 g/t Au and 8.52 g/t Ag over 4.6 m. TRK10-05 returned a 10.0 m interval grading 0.76% Cu, 0.99 g/t Au and 1.30 g/t Ag. Thirty kilometres southeast, across an icefield, syenite and pseudoleucite volcanic rocks were mapped that closely resemble rocks at Galore Creek (Figure 50).

Skyline Gold Corporation explored the new Snip-1 shear-vein gold zone it discovered in 2009 southeast of the **Bronson** copper-gold deposit (MINFILE 104B 077). Two drilling programs were conducted; one early in the season and one late, totalling 3144 m. Structural geological mapping was performed by a technical climber in mid-season. Hole SK-10-08 of the first phase program intersected 17.46 g/t Au, 234 g/t Ag, 2.06% Cu, 0.88% Pb and 7.80% Zn over 2.65 m. Over a length of 144.1 m, including the high grade interval, the hole graded 0.63 g/t Au, 10.7 g/t Ag, 0.08% Cu, 0.06% Pb and 0.42% Zn. The hostrock is volcanic-derived greywacke with an overturned, near-vertical dip (D. Yeagher, personal communication, 2010). Mapping in the Johnny Creek gorge located the mineralized zone in outcrop with a true width of 15 m and a dip of 85° northeast. The new



Figure 48. Angular unconformity between Stuhini Group sedimentary rocks and Hazelton Group volcanic strata, north of GJ camp.



Figure 49. Trek project; chalcopyrite vein in mafic volcanic rock.



Figure 50. Dirk zone southeast of Trek; K-feldspar porphyry syenite (with epidote) and pseudoleucite porphyry are associated with copper mineralization.

prospect is on strike with the Twin vein at the closed Snip gold mine on the northwest side of the Bronson porphyry deposit.

Meanwhile, Skyline augmented the value of the Bronson porphyry deposit by adding magnetite to the resource estimate and then contracted a preliminary economic assessment. The deposit consists of a quartz-magnetite replacement and stockwork zone in the cupola of the Red Bluff syenite stock. The total measured plus indicated resource is 186.9 Mt grading 0.122% Cu, 0.36 g/t Au, 2.19 g/t Ag and 5.3% magnetite, at a \$9 per tonne cut-off and with a 0.77 strip ratio. Drilling is planned on a third target area, the Snip North porphyry system located north of the Iskut River (MINFILE 104B 312).

Paget Minerals Corporation prospected on its **Mount Dunn** prospect (MINFILE 104B 079), 70 km northwest of Stewart. Paget extended copper-gold mineralization south of where it drilled in 2009. Fourteen rock chip samples across quartz-chalcopyrite veins in a dike-like monzonite porphyry averaged 0.22% Cu and 0.44 g/t Au.

Teuton Resources Corp drilled 11 short holes on the **Tennyson** property, 40 km north of Stewart (MINFILE 104B 167). Three holes reportedly intersected porphyry-type copper-gold mineralization. TN10-05 intersected, over its full 88.4 m length, 0.32% Cu and 0.25 g/t Au.

At **Voigberg** (MINFILE 104G 146), BCGold Corp performed geological mapping and prospecting over coincident gold-in-soil (greater than 300 ppb Au) and IP chargeability anomalies. The area is modeled to be a copper-molybdenum porphyry system.

Porphyry Copper-(Molybdenum-Gold) Projects in the Skeena Arch

High Gold is the new name given by Argonaut Exploration Inc to a porphyry copper-molybdenum prospect originally called Hidden Valley, located 45 km west of Smithers (MINFILE 093L 076, Figure 51). Argonaut completed an IP survey, hand trenching and a 2500 m drilling program (Figure 52). A Bulkley granodiorite stock intrudes Hazelton Group volcanic rocks to the south and argillaceous sedimentary rocks of the Skeena Group to the north. Emplacement of the stock was controlled by an east-west, south-dipping fault. Vertical displacement on north-south block faults exposes different structural levels in the stock and its mineralized system (R. Cook, personal communication, 2010). Biotite and chlorite-biotite hornfels are developed in the country rocks and there is a pronounced pyrite halo to the north, in the sedimentary rocks. Fracturing is extensive and strongly developed. Early veins of quartz, molybdenite and local anhydrite have K-feldspar alteration envelopes. Later, orthogonal veinlets of pyrite, sparse chalcopyrite and chlorite have texturally destructive envelopes (Figure 53). Lastly, veins of quartz, barite and ferruginous carbonate are interpreted as an epithermal overprint (J. Nebocat, personal communication, 2010). The trench sample averaged 0.14% Cu, 0.007% Mo and 0.04 g/t Au over 172 m. Hole HG10-02 intersected 0.10% Cu, 0.020% Mo and 0.027 g/t Au over 156.3 m from the top



Figure 51. Drill core logging area on the High Gold project at the head of Kitsuns Creek, west of Smithers.



Figure 52. High Gold project; geologist Dan Meldrum logging drill core.

of bedrock.

Finlay Minerals Ltd discovered copper-molybdenum porphyry mineralization on its **Silverhope** property 36 km southeast of Houston, and 3 km south of Equity Silver mine (Figure 54). Drilling targeted Equity Silver style copper-silver mineralization as had been found in the nearby Gaul zone (MINFILE 093L 256), but testing of a strong IP chargeability anomaly encountered biotite quartz monzonite with a well-developed vein stockwork of chalcopyrite and molybdenite, accompanied by quartz



Figure 53. High Gold project; fracture-veined hornfels and granodiorite, containing quartz, sulphides and purple anhydrite.



Figure 54. Silverhope copper-molybdenum porphyry discovery team in the core shack; John Barakso, Gayle Febbo and Warner Gruenwald.

in some intervals. The intrusion resembles a Nanika quartz monzonite stock mapped nearby to the north. Fracture-controlled mineralization extends into the country rocks; biotite hornfels developed in a bedded tuff sequence and intercalated chert pebble conglomerate. These rocks are typical of the Skeena Group succession on the Equity Silver property. SH10-03 intersected 0.30% Cu, 0.019% Mo and 3.37 g/t Ag over 219.87 m (from 38.9 m depth). Two hundred metres north, SH10-05 intersected 0.29% Cu, 0.014% Mo and 1.6 g/t Ag over 209.71 m (from 6.7 m depth). Copper mineralization and alteration are characterized by potassium feldspar and secondary biotite (Figure 55).

A modest drilling program was conducted at the closed **Bell Copper** mine (MINFILE 093M 001) by Xstrata Copper Canada Ltd to test a deep resource. Bell Copper produced 77.2 Mt of ore containing 0.47% Cu and with a recovered grade of 0.17 g/t Au (Figure 56). The deposit is developed in a biotite-feldspar porphyritic granodiorite stock of early Tertiary age, assigned to the Babine suite of plutons. When the mine closed in 1992, a

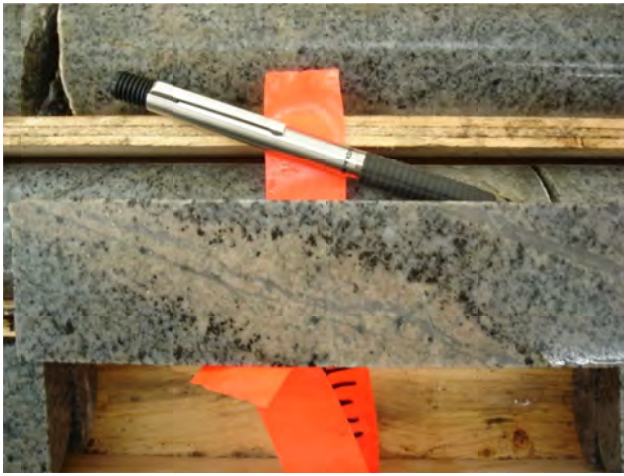


Figure 55. Silverhope project; quartz vein with K-feldspar-chalcopyrite envelope and margin of secondary biotite.



Figure 56. Closed Bell Copper mine on Newman Peninsula of Babine Lake.

resource of 70.4 Mt grading 0.44% Cu, 0.20 g/t Au located below the open pit and with a strip ratio of 1.9:1 was determined to be uneconomic at the prevailing copper price. Results have not been disclosed of the six holes (3400 m) that were completed in 2010.

The **Porphyry Creek** property of Duncastle Gold Corp, located 20 km northwest of Smithers, was explored by an airborne EM, magnetics and radiometric survey (514 line km), a ground geological follow-up and subsequent drilling. Three holes tested for a porphyry copper-molybdenum system near the Sultana prospect (093M 061) at the eastern contact of the Rocher Deboile granodiorite stock, a Bulkley pluton. Results of the October drilling program were not available at time of writing.

Zymo (MINFILE 093L 324) is a copper-gold prospect discovered in 2007 about 45 km west of Smithers. Eastfield Resources Ltd prospected the 2 km by 4 km porphyry system (as defined by IP chargeability, magnetics and soil geochemistry) west of previous drilling and found a mineralized float boulder that assayed 0.74% Cu and 0.70 g/t Au, providing incentive for further work on the property.

Silver Queen is known primarily as a polymetallic vein system with past production of gold, silver, zinc, lead, copper and cadmium (MINFILE 093L 002). But drilling by New Nadina Explorations Limited targeted porphyry copper mineralization with a 26-hole, 4100 m program (Figure 57). A single hole that tested an IP anomaly intersected a quartz-pyrite vein stockwork over 125 m. The company also placed covers over historic mine workings for safety reasons (Figure 58).

In early 2010, Nanika Resources Inc drilled two holes on the **Sweeney** property, 3 km north of the Huckleberry copper mine. Sweeney is also known as Ted and Wee (MINFILE 093E 076). S10-2 intersected strongly geochemically anomalous copper (the highest value was 1493 ppm Cu) over its 276 m length in propylitic-altered volcanic rock, an assemblage of chlorite, epidote, magnetite and pyrite.

Planned drilling of the **Poplar** copper-molybdenum prospect (MINFILE 093L 239) was delayed because of a social issue but is planned to commence in early 2011. The Poplar property is under exploration by Lions Gate Metals Inc and located 45 km southwest of Houston.

Gold Reach Resources Ltd flew a 1325 line km geophysical survey over its **Ox** and **Seel** properties in late 2009 (MINFILE 093E 101 and 105). A permit allowing a 50 line km IP survey was received in October, too late to begin the work in 2010.

PORPHYRY MOLYBDENUM PROJECTS

Molybdenum prospects occur in Cretaceous to Tertiary age plutons that postdate terrane accretion. There are two distinct areas of concentration, the Skeena Arch and the Atlin-Cassiar area. Skeena Arch molybdenum deposits are found in a number of intrusive suites: the early Tertiary Alice Arm and Nanika intrusions, late Cretaceous Bulkley intrusions and the Jurassic Francois Lake batholith. In the Atlin-Cassiar area, molybdenum



Figure 57. Silver Queen project; Mine Inspector Doug Flynn (white hat), Ellen Clements (pink hat) and Jim Hutter (blue hat) review procedures with the drill crew (dark hats).



Figure 58. Silver Queen project; covers were installed on historic underground workings for safety reasons.

occurs mainly in late Cretaceous batholiths, the Surprise Lake and Cassiar batholiths in particular, and also in Tertiary stocks.

Molybdenum deposits can be divided into batholith-hosted and stock-hosted types based on host intrusion, deposit morphology and alteration (Wojdak, in press). Those found in granite batholiths consist of a wide spaced molybdenite vein network that contains little quartz and developed in a passive environment. Deposits are laterally extensive, forming a tabular or blanket shape. Examples are the Endako mine and the Ruby Creek and Storie deposits. Molybdenum deposits associated with small, intermediate to silicic intrusions formed in a high energy, commonly explosive environment. An intense quartz stockwork developed above the intrusion or as a vertical annular zone around it. Multiple stages of mineralization are common and can lead to higher grade and stacked mineral zones. These include the Davidson, Lucky Ship, Lone Pine, Mount Haskins and the Alice Arm deposits including Kitsault.

Molybdenum in the Atlin - Cassiar District

Columbia Yukon Resources Inc. consolidated the ground position necessary to develop the **Storie** deposit (MINFILE 104P 069) near Cassiar. Three holes were drilled on claims optioned from Eveready Resource Corp that cover potential mill and tailings sites. A draft Project

Description was submitted to the BC Environmental Assessment Office. The measured plus indicated resource at Storie is 139.82 Mt grading 0.064% Mo. The inferred resource is 58.39 Mt grading 0.059% Mo; all resources are at a cutoff of 0.03% Mo. Mineralization is concentrated in a subhorizontal tabular zone between texturally distinct phases of the Troutline stock, a distinct body within the Cassiar granite batholith. Molybdenite occurs as fracture coatings associated with muscovite, as disseminations and in narrow quartz veinlets (Figure 59).

Velocity Minerals drilled three holes at the **Cassiar Moly** prospect (MINFILE 104P 035) to test mineralization between a surface showing and underground workings it reopened and sampled in 2009. The property is 4.4 km south of the Storie prospect and is underlain by granite and quartz-feldspar porphyry phases of the Troutline stock. All three holes intersected several 30 to 80 m wide zones grading 0.02% to 0.03% Mo.

Jennings is a recently discovered molybdenum skarn and porphyry deposit on the British Columbia – Yukon border 14 km northeast of the Silvertip silver manto prospect. The discovery hole was drilled in 2006 in the Yukon by Cumberland Resources Ltd, and was subsequently acquired by Agnico-Eagle Mines Ltd. Currently the property is accessed from the Silvertip road at a point in British Columbia. The property comprises three target areas; the most southerly is largely in British Columbia. Some 18 000 m of resource drilling took place on the central target, which lies north of the border (Figure 60). A granodiorite stock with quartz and feldspar phenocrysts intrudes thin bedded limy siltstone of the Kechika Group. Actinolite-garnet skarn, retrograde epidote-magnetite skarn and biotite hornfels are developed up to 100 m wide outboard of the stock. Early actinolite-molybdenite fractures are cut by quartz-molybdenite veins; the latter contain sparse green fluorite. Veins with wolframite and lesser ferberite occur peripherally to molybdenum mineralization.



Figure 59. Storie molybdenum project; the causative quartz-feldspar porphyry granite intrusion.



Figure 60. Jennings molybdenum discovery 500 m north of the BC-Yukon border.

Molybdenum in the Skeena Arch

Bard Ventures Ltd intersected a new molybdenum zone on its **Lone Pine** prospect (MINFILE 093L 027, 028) located 15 km north-northwest of Houston. Drilling of 9 holes (3427 m) targeted on a soil geochemical anomaly resulted in discovery of the 61 zone along the northern contact of the quartz-feldspar porphyry granite, 500 m northeast of the Alaskite zone (Figure 61). Mineralization at Lone Pine is developed in the quartz-porphyry marginal phase of a granite stock (Figure 62). Based on drilling to 2008, measured and indicated resources in the Alaskite zone are estimated at 110.34 Mt averaging 0.083% Mo with an additional 25.84 Mt inferred grading 0.088% Mo, at a cut-off of 0.04% Mo. The company retained P&E Consultants Inc to complete a NI 43-101 compliant Preliminary Economic Assessment. Preliminary findings indicate a significant decrease in the open pit stripping ratio from that previously reported (R. Kemp, personal communication, 2010). The results of P&E's economic evaluation are anticipated by late February 2011.

In the 2010 campaign, hole BD-10-61 intersected molybdenite mineralization over a 300 m length, including intervals of 0.04% Mo over 44.8 m from 133.6 m depth, and 0.04% Mo over 58.1 m beginning at 255.4 m. Significant silver values were also obtained; 12.51 g/t Ag over 37.2 m from 253.2 m depth. Perhaps of greater significance are the multiple intrusive phases (coarse granite, aplite to quartz porphyry and orthoclase porphyry), quartz stockworks and hydrothermal breccias that the hole intersected (Figures 63, 64, 65). Such features can characterize major molybdenum deposits. The best assay interval was from Hole BD-10-66, which averaged 0.05% Mo over 112.4 m. Further drilling in this promising target area is anticipated in early 2011.

Bard Ventures Ltd also explored **Grouse Mountain** which adjoins Lone Pine to the north (MINFILE 093L 026, 251). Ten polymetallic mineral occurrences,



Figure 61. Drilling in the 66 zone on the Lone Pine molybdenum project.



Figure 62. Lone Pine; quartz porphyry in the Alaskite and 66 molybdenum zones.

primarily veins, are associated with dikes and small stocks of the late Cretaceous Bulkley intrusions, and might be related to an underlying porphyry copper-molybdenum system. Geological and soil geochemical surveys were performed.

Exploration of the **Mac** prospect (MINFILE 093K 097) is being reactivated by AZ Copper Corp. The Mac property is located 75 km north of Burns Lake and contains an inferred resource of 100 Mt grading 0.07% Mo (not compliant with NI 43-101). Work is planned but had not begun at time of writing. The deposit is in a



Figure 63. Lone Pine; fractured granite porphyry and quartz-molybdenite veins in the 66 zone.

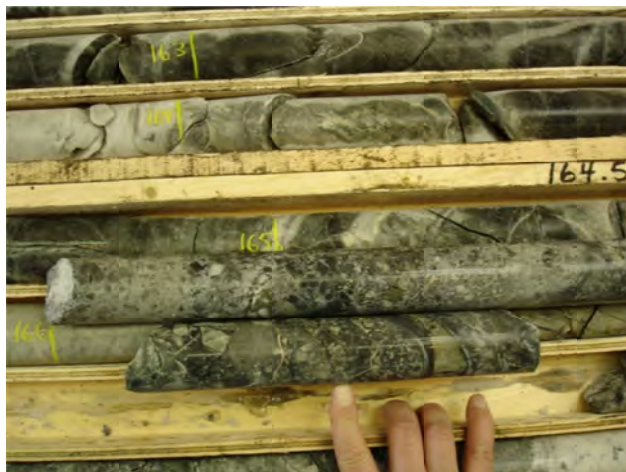


Figure 64. Lone Pine molybdenum project; hydrothermal breccia in the 66 zone.



Figure 65. Lone Pine molybdenum project; intramineral K-feldspar porphyry.

satellite stock of the Jurassic Francois Lake granite batholiths that hosts the Endako molybdenum mine 100 km to the southeast.

On the **Shan** property, BCM Resources Corp began an evaluation of re-opening an historic adit at about 470 m elevation to further explore the deposit (MINFILE 103I 114). Molybdenum fractures on the Shan property were determined to have two orientations: 340° with a subvertical dip; and a 010° set with a 50° east dip. The Shan prospect is in the Carpenter Lake batholith. It is described by Venable and Wojdak, 2009.

The long-inactive **Pitman** molybdenum prospect (MINFILE 103I 046) was acquired by Tajiri Ventures Corp. Molybdenite-bearing fractures and quartz veins occur in the Carpenter Lake granite batholith, dated at 53 Ma. An historic drillhole intersected 0.08% Mo over 55 m. Preliminary geological, geochemical and VLF surveys were carried out.

NICKEL IN ULTRAMAFIC ROCKS

The locations of nickel, massive sulphide and gold-silver projects are illustrated on a map, Figure 66.

Turnagain is a bulk-tonnage nickel prospect in a zoned ultramafic complex, located 70 km east of Dease Lake and owned by Hard Creek Nickel Corporation. Measured plus indicated nickel sulphide resources are estimated at 695 Mt at a grade of 0.174% Ni and 0.014% Co. From 2008 to mid-2010 the company envisaged production of a low grade concentrate to feed a proposed on-site hydrometallurgical facility. This scenario has a very large capital cost and large power requirement. Hence, recent work has focused on production of a direct-shipping concentrate. Metallurgical test work was performed on core from two new HQ holes drilled for that purpose. The composite sample graded 0.33% Ni. Flotation yielded 50% nickel recovery in a concentrate grading a minimum 25% Ni. The iron to magnesium ratio, a critical parameter of nickel concentrates, is within acceptable limits for smelting. Further test-work is ongoing.

The **Letain** nickel property of First Point Minerals Corp is located 85 km east of Dease Lake. The property is underlain by an oceanic crustal sequence of the Cache Creek Group including serpentinite. Awaruite, a nickel-iron alloy, is documented in some placer gold workings in the area (*e.g.* Wheaton Creek) and is the target of First Point's exploration. Geological mapping and sampling confirmed the presence of nickel-iron alloy and sought to outline areas of coarser grain size.

MASSIVE SULPHIDE PROJECTS

Massive sulphide deposits in Northwest region comprise volcanogenic deposits, skarns, mantos, and some of uncertain deposit type. Volcanogenic deposits occur in strata of varying ages and terrane affiliation. The Tulsequah Chief deposit is in Paleozoic strata; Kutcho Creek is in rocks of early Triassic age and important deposits in the Stewart district are in Jurassic volcanic

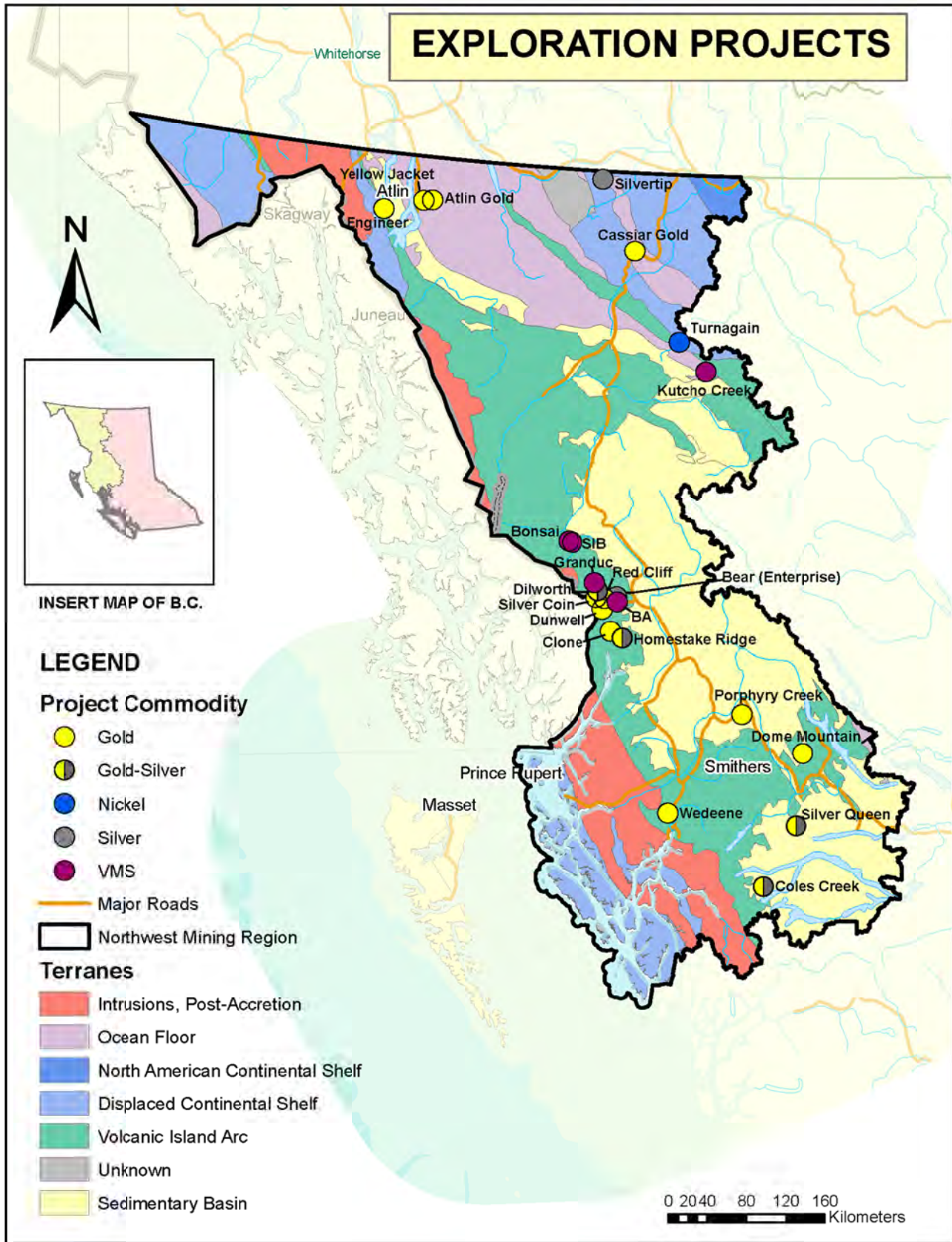


Figure 66. Polymetallic massive sulphide, gold-silver vein and nickel exploration projects in Skeena Region.

rocks. The latter include Eskay Creek, Granduc and Anyox.

Atlin - Cassiar District

New Pacific Metals Corp acquired the **Eva Lake** zinc property based on work by Noranda Mines Limited, which reported a drillhole in 1980 with a visual estimate of 20 to 50% sphalerite over 5.6 m at Weir Mountain (MINFILE 104N 017; ARIS 8638) located 40 km east of Atlin. Mineralization is of unknown deposit type but Sander Wang states that it is not a vein (personal communication, 2010). New Pacific conducted a VTEM survey but ground geophysics and drilling were deferred until 2011.

The **Silvertip** high-grade silver manto prospect was purchased by Silvercorp Metals Inc for \$15 million; installation of an all-season 49-man camp and a major exploration program followed (Figures 67, 68). Mineral resources calculated in March were derived from historic work; 71 472 m of drilling in 491 holes and 2400 m of trackless underground workings (at a 200 g/t Ag equivalent cut-off), and are as follows:

- Indicated - 2 349 055 tonnes at 352 g/t Ag, 6.73% Pb, 9.41% Zn and 0.54 g/t Au
- Inferred - 459 896 tonnes at 343 g/t Ag, 6.18% Pb, 9.81% Zn and 0.23 g/t Au

Work comprised a property-wide VTEM survey (4114 line km) and nearly 11 000 m of surface drilling focused on the east and south margins of the resource area (Figure 69). Silvercorp is conducting all necessary baseline and engineering studies necessary to submit an application for a small mine by mid-2011 (200 tonnes per day) with plans for construction to begin in mid-2012. The company's stated intent is to fund concurrent exploration from cash flow to increase reserves. This is a business model it has followed with considerable success in China.

Silvercorp report there are three types of mineralization on the property: contact, reef and exhalite. The most important type is massive sulphide bodies at the contact between Devonian limestone of the McDame Group and overlying black siltstone and grit of the Earn Group. Massive sulphide consists of sphalerite, galena, pyrrhotite and pyrite. Four mineral zones are identified from prior work: Discovery, Discovery North, Silver Creek and 65-zone. Reef-style mineralization occurs in limestone below the contact. Exhalite-type mineralization comprises stratiform, chert-sulphide-barite beds in the Earn succession; it is under evaluation as a low grade resource. Drilling focused on contact mineralization east of the Discovery zone and targeted an area where historic intercepts were too widely spaced to be included in the resource estimate. Significant intercepts include hole EW3-10-22, which cut 696 g/t Ag, 12.96% Pb and 14.48% Zn over 2.51 m. A new zone was discovered



Figure 67. Silvertip; a new 49-man camp was installed on the silver manto prospect that is suitable for exploration and, in the future, a mining crew.

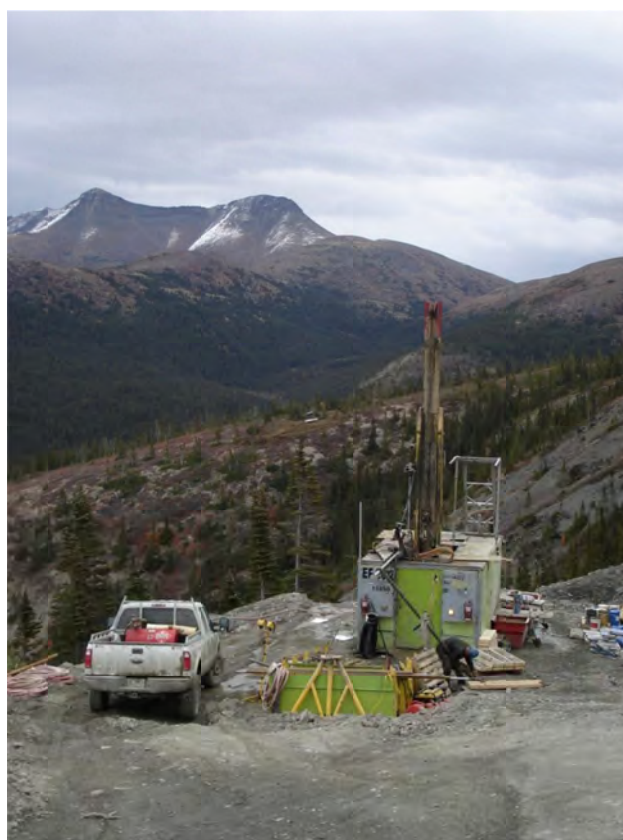


Figure 68. Drilling east on the Silvertip project to extend the Discovery zone eastward.

300 m south of the 65 zone. Hole EW8.4-10-28 recorded two intercepts: 286 g/t Ag, 4.63% Pb and 11.59% Zn over 4.10 m, and a 13.3 m interval averaging 289 g/t Ag, 5.33% Pb and 8.65% Zn.

The **Haskins-Reed** lead-zinc skarn prospect (MINFILE 104P 021) was excavator trenched by Pacific Bay Minerals Ltd. The skarn is developed in lower Cambrian Rosella Formation limestone, and likely related to a Tertiary granitic stock. The mineral zone ranged from 4 to 24.7 m wide; trench 4 averaged 1.21% Pb, 3.67% Zn,



Figure 69. Silvertip project; geologist Sheila Ulansky reviews galena-sphalerite drill intercept.

57.1 g/t Ag and 0.29 g/t Au over 24.7 m. Previous work by Pacific Bay shows that molybdenum and tungsten also occur locally in the skarn system.

Stewart - Iskut District

On the **SIB** property, Eskay Mining Corp drilled five 700 to 800 m deep drillholes in search of the fault-displaced continuation of Eskay Creek-type stratiform gold and silver-rich massive sulphides. In 2008 the Lulu zone (MINFILE 104B 376) returned a 10 m drill intercept grading 9.0 g/t Au, 405 g/t Ag and 0.19% Zn in a succession of Salmon River formation rhyolite and mudstone, 7.7 km along strike and directly correlative with the rich Eskay Creek deposit. Lulu zone mineralization is in the hangingwall of the Coulter Creek thrust, and is truncated along strike and down dip. The company states that some 130 holes have explored the hangingwall sequence but only 8 explored below it. All five 2010 holes were collared from the stratigraphic footwall; four penetrated the thrust fault and intersected the Eskay sequence of rhyolite, mudstone and pillow basalt. No significant mineralization was found but success in solving displacement on the Coulter Creek thrust fault provides confidence to continue the program.

Copper Creek Gold Corp explored the **Bonsai** prospect (MINFILE 104B 383) located 6 km southwest of the closed Eskay Creek mine. Stratabound massive to

framboidal pyrite at Bonsai is associated with rhyolite and Salmon River formation mudstone, a similar stratigraphic position to mineralized zones at Eskay Creek. However, previous drilling did not find significant gold or silver content. Eleven deep holes in the 2010 program tested a strong conductivity anomaly coincident with three-dimensional IP high chargeability anomalies and MMI soil survey results. Flow banded, brecciated rhyolite containing disseminated sulphide and geochemically anomalous silver was intersected.

Castle Resources Inc conducted an 8200 m drilling campaign on the **Granduc** massive sulphide deposit (MINFILE 104B 021). Drilling demonstrated copper mineralization extends 300 m below the limits of previous mining in the 1970s and 1980s, and over a 1000 m strike length. Historical drill intercepts were replicated, indicating that a portion of the historic resource remains. Granduc is a volcanogenic deposit with a total mineral inventory of 29.03 Mt grading 1.83% Cu, of which 15.4 Mt was mined. Pyrite, pyrrhotite and chalcopyrite comprise sulphide facies iron formation that occurs near the contact between mafic pillow lava and tuff with overlying chert and argillite. Key 2010 drill intercepts include GD10-02 which averaged 2.15% Cu over 16.75 m and GD10-12 which averaged 1.45% Cu over 33.48 m. A new resource estimate is anticipated. Partial rehabilitation of the 17 km access tunnel is planned in 2011 that will enable underground exploration.

Great Bear Resources Ltd has an option earn up to 70% interest in the **BA** project from Mountain Boy Minerals Ltd. The BA property (MINFILE 104A 178) is located 30 km northeast of Stewart near the head of the Bear glacier and is underlain by volcanic and sedimentary rocks of the Hazelton Group. Great Bear conducted a major program consisting of a 1000 line km VTEM survey, geological mapping and 15 000 m of drilling focused on the Barbara zone (Figures 70, 71). Project geologist Andrew Wilkins reports that most of the property is underlain by fragmental volcanic rocks of mafic to intermediate composition. These are overlain by felsic pyroclastic rocks, perhaps correlative with the Mount Dilworth Formation, which are in turn overlain by thin bedded to laminated mudstone, siltstone and chert of the Salmon River formation that includes the mineralized sequence. Salmon River sedimentary rocks are unconformably overlain by dark grey to black silty mudstone of the Bowser Lake Group.

Silver and base metal mineralization in the Barbara zone occurs in a sequence of grey, felsic volcanoclastic rocks, iron-rich mudstone, chert, jasper and finely laminated pyrite up to 100 m thick (Figure 72). Jasper is always accompanied by magnetite. Chert is commonly spheroidal and exhibits drusy cavities. The fine clastic and exhalite sequence is underlain by feldspar-phyric andesite, interpreted to be a subvolcanic intrusive body, and a distinctive heterolithic andesite breccia that is 5 to 10 m thick (A. Wilkins, personal communication, 2010). These are overlain by a local volcanic cobble



Figure 70. Drilling on the BA project, a volcanogenic massive sulphide project near Bear glacier and Cambria icefield.



Figure 71. BA silver project; geologists Andrew Wilkins and Lucia Theyn inspect drill core.

conglomerate and capped by more Salmon River mudstone. Mineralization comprises carbonate, quartz, sphalerite, galena and barite veining and replacement within the chert-jasper (exhalite) sequence, as breccia infilling within the subvolcanic andesite and as matrix replacement in the volcanoclastic unit. Surface work resulted in discovery of the North Extension, Wet Willy and Bod mineral zones located 300 m, 600 m and 2000 m, respectively, to the north of Barbara and in the same succession. Drilling highlights include:



Figure 72. BA silver project; folded chert and jasper of the mineral sequence within the Salmon River Formation, broadly correlative with the Eskay Creek deposit.

- 401.0 g/t Ag, 0.46% Cu, 4.14% Pb and 0.46% Zn over 3.05 m in BA-2010-82
- 69.8 g/t Ag, 0.01% Cu, 0.57% Pb and 1.53% Zn over 35.69 m in BA-2010-83
- 117.5 g/t Ag, 0.02% Cu, 1.18% Pb and 2.81% Zn over 15.24 m in BA-2010-147

At the **Rock & Roll** prospect (MINFILE 104B 377) Pacific North West Capital Corp conducted geologic mapping and relogging of core in order to prepare a new resource estimate. Stacked sulphide lenses occur within a sequence of argillite, siltstone and andesite of probable Triassic age. An historic inferred resource in the Black Dog zone contains 580 044 tonnes grading 2.4 g/t Au, 335.9 g/t Ag, 0.64% Cu, 0.79% Pb and 3.1% Zn. A new resource estimate is in progress.

The **Delta** (Stewart) property (MINFILE 104A 165, 166) was explored by Frontline Gold Corporation in search of an Eskay Creek-type massive sulphide deposit. A 1421 line-km VTEM survey and a mobile metal ion (MMI) soil geochemical survey were performed. The claims are underlain by a window of Stuhini and Hazelton group rocks surrounded by Bowser Lake Group sedimentary rocks. Frontline Gold Corporation also covered the **Poly** property in Bear Pass with a 2172 km VTEM survey and an MMI survey. These enlarged the previously known base and precious metal anomaly and identified four targets for further work.

At **Todd Creek** in the Stewart district, Orestone Mining Corp assumed control of the project by its acquisition of Intuitive Exploration Inc. An extensive VTEM survey (2172 line km) was carried out in search of volcanogenic massive sulphide mineralization.

Terrace - Smithers District

Chist Creek is a large volcanogenic alteration zone 15 km east of Lakelse Lake found by a British

Columbia Geological Survey mapping crew in 2007. The Barresi zone was discovered by Paget Resources Corp during follow-up mapping and prospecting. It is described as semimassive lenses and stringers of pyrite-sphalerite-chalcocopyrite-galena with associated quartz-sericite-pyrite alteration at the contact between mafic and felsic volcanic rocks of Paleozoic age. Paget reported rock sample assays up to 4.4 g/t Au and 92 g/t Ag, and local bonanza grades (to 685 g/t Au) from late, overprinting quartz-chalcocopyrite-pyrite veins.

Nineteen holes totalling more than 5300 m were drilled on the **Wedene** property near Kitimat by Decade Resources Ltd. Closely-spaced holes targeted the Jeanette copper vein (MINFILE 103I 169) that occurs in volcanic rocks recently reinterpreted by the British Columbia Geological Survey to be of Paleozoic age.

Exploration of the **Fireweed** silver-lead-zinc prospect (MINFILE 093M 151) was reactivated by Shamrock Enterprises Inc. The property is near Babine Lake, 50 km northeast of Smithers. Fireweed is a massive and disseminated sulphide deposit that is stratabound within Skeena Group sedimentary rocks and associated with rhyolite sills and dikes that are probably correlative with the Rocky Ridge volcanic sequence. The historic resource estimate is 580 000 tonnes grading 342 g/t Ag, 1.34% Pb and 2.22% Zn. Mineralization occurs preferentially in grey sandstone interbeds within a thick sequence of black siltstone and shale. During November, Shamrock completed eleven holes that mainly tested IP anomalies. A few holes tested continuity of previous intercepts. There were no results at time of writing.

GOLD – SILVER PROJECTS

Gold-silver projects in the region targeted mainly orogenic and intrusion-related veins. In some cases these veins have associated base metal values. Gold-silver projects occur in various geologic terranes and are currently concentrated in four areas: the 'Golden Triangle' (or Stewart district) where most are related to Jurassic intrusions of Stikine terrane; the Atlin area where they are related to orogenic emplacement of Cache Creek terrane, and to the terrane-bounding Llewellyn fault; the Cassiar area where gold veins are related to orogenic emplacement of Slide Mountain terrane; and, the Skeena Arch where gold veins are mainly related to Cretaceous-Tertiary intrusions and secondarily to Cretaceous orogenic events.

Epithermal and Orogenic Veins in the Atlin District

The historic **Engineer** gold mine (MINFILE 104M 014) on Tagish Lake was explored by BCGold Corp (Figure 73). Engineer comprises epithermal veins near the Llewellyn fault (Figure 74) that produced 560 kg of gold mainly in the 1920s. Ore grade was 39 g/t Au. In 2010,



Figure 73. Historic Engineer gold mine on Tagish Lake.



Figure 74. Engineer epithermal quartz-calcite-gold vein, on 5-level of Engineer mine.

underground drilling (Figure 75) was conducted from 5-level, the principal mine access; lower levels of the mine are flooded. Nine holes tested the Engineer vein between 5 and 6-level elevations. One of the holes intersected coarse electrum in a quartz-calcite breccia vein, returning a grade of 129.0 g/t Au and 121.6 g/t Ag over 1.0 m. One of four holes that explored the Double Decker vein also intersected coarse gold, grading 22.32 g/t Au and 17.59 g/t Ag over 0.96 m. The intercept is in the vicinity of 8-level, the lowest mine working. Work will resume in early 2011, including underground rehabilitation, bulk sampling and drilling. BCGold increased its land position



Figure 75. Underground at Engineer mine; geologists Gary Sidhu and Bruce Coates at the drill.

around the Engineer mine.

Blind Creek Resources Ltd drilled an additional eleven holes totalling 1568 m on its extensive property in the Atlin gold camp. The target of the **Atlin Gold** project is the source of placer gold deposits in the district (Figure 76). The holes were drilled along Otter Creek and along the Snake-Rant-Dominion lineament. Blind Creek is a private company and the results of drilling were not disclosed.

Wann River is a grassroots gold project of Blind Creek Resources Ltd located on the important Llewellyn fault near the south end of Tagish Lake (Figure 77). Numerous gold prospects occur along the 200 km length of the Llewellyn fault. At Wann River splays of the fault across a 1000 m wide zone segment intrusive, metamorphic, volcanic and sedimentary rocks of diverse age. Mapping and prospecting focused between the Brown showing (MINFILE 104M 026) and an historic trench on the lakeshore, a 500 m distance. Tracking auriferous boulders led to discovery of a 2 m wide quartz shear vein that was traced for 130 m along strike (Figure 78). The best sample returned 15.9 g/t Au and 440 g/t Ag



Figure 76. Placer gold mining on upper Otter Creek; the Atlin gold project drilled nearby for the source of two 60 oz gold nuggets found in 2009.



Figure 77. Prospecting camp on the Wann River gold project, shore of Tagish Lake.



Figure 78. Wann River project; geologist Clive Aspinall at the adit of the Brown gold vein showing.

(C. Aspinall, personal communication, 2010). Gold values were confirmed at the Brown showing, and two other gold-bearing quartz veins were found along with old trenches not listed in MINFILE. Further work is anticipated in 2011.

Troymet Exploration Corporation commenced an IP survey on the **Golden Eagle** property 50 km northwest of Atlin. The property is underlain by the Llewellyn fault and an intrusion that grades upward from granite to rhyolite. The area of the survey is along the Ben fault and

in the West Gully zone where drilling in late 2009 showed interesting mineralization (MINFILE 104M 044).

Constantine Metal Resources Ltd conducted a geological assessment of its newly acquired **Trapper Lake** gold project located 140 km south of Atlin and 45 km north of the Golden Bear mine road. Historic work delineated a 5 kilometre long alteration zone and a strong 2 km-long gold-in-soil anomaly with gold locally visible in soil (MINFILE 104K 078). Work in 2011 will be conducted by joint venture partner, Ocean Park Ventures Corp.

Epithermal and Intrusion-related Veins in the Stewart District

Teuton Resources Corporation completed two drillholes on the **Tennyson** property (MINFILE 104B 167) to test a gold-bearing arsenopyrite vein. The property is near Granduc, 35 km north of Stewart. The holes intersected a sericite alteration zone with 10% pyrite; analytic results were not available.

Ascot Resources Ltd continued to explore the **Big Missouri - Dilworth** property with a major drilling program comprising 21 700 m in 68 core holes. Quartz-calcite veins, stockwork and breccia contain pyrite, sphalerite and galena and variable amounts of gold and silver. Work focused on the Unicorn zone (MINFILE 104B 044) where 27 holes were drilled tracing the zone over a strike length of 1350 m and to 250 m below surface. Ascot reports the zone is 100 to 200 m wide and contains 100 to 2000 ppb Au with narrow higher grade zones. One of the best intercepts graded 8.99 g/t Au over 14.5 m. The Unicorn zone is described as a west dipping, structurally controlled epithermal system with previously unrecognized extensive high level "Premier porphyry" dikes and stocks. The Premier porphyry is a two-feldspar rock of granodiorite composition. The Province zone (MINFILE 104B 147), located 300 m southwest of Unicorn, was tested over an 800 m length by 17 holes drilled to 200 m depth. The zone is 50 to 200 m wide and contains 100-2000 ppb Au with narrow, steeply west-dipping quartz breccias containing higher gold grade.

Auramex Resource Corp worked in the Stewart district exploring the **Bear River, Georgie River and Tide North** properties. The work focused on the Enterprise zone (MINFILE 104A 024) north of Bear River, where a 742 km VTEM and magnetic survey was conducted and three holes totalling 1295 m were drilled. All three holes encountered faults with highly pressurized water and failed to find significant gold, silver or base metals. At the Georgie River gold vein prospect (MINFILE 103O 013), 681 line-km of VTEM-magnetic survey were flown. Geological ground work appraised targets for drilling. Similar geological work was done at Tide North to investigate anomalies from a 2009 airborne survey. Auramex increased its land position in the district

by purchase of the Ashwood property 17 km south of Stewart.

Jayden Resources Inc (formerly Pinnacle Mines) conducted a 2800 m drill program on the **Silver Coin** property (also known as Silver Butte, MINFILE 104B 150), located 24 km northwest of Stewart. Silver Coin is a joint venture between Jayden Resources, Mountain Boy Minerals Ltd and Nanika Resources Inc. Gold, zinc and silver-bearing epithermal veins and breccias occur in Hazelton Group andesitic volcanic rocks. The deposit is drilled at 20 m spacing. In September, Jayden announced an updated measured and indicated resource estimate of 27.16 Mt grading 0.96 g/t Au and 5.98 g/t Ag, based on a cut-off grade of 0.3 g/t Au. The inferred resource is 29.65 Mt grading 0.69 g/t Au and 6.00 g/t Ag. The resource area extends onto the adjoining **Indi** claims (MINFILE 104B 402) which were the subject of a 1000 m drilling campaign by Nanika Resources Inc.

Teuton Resources Corporation drilled several holes on the **Harry** property, located below the Granduc Road on the margin of the Salmon Glacier. The location is less than 1 km northwest of the historic Yellowstone occurrence (MINFILE 104B 039)

Decade Resources Ltd completed 57 core holes totalling nearly 9000 m in the Montrose zone on the **Red Cliff** property 25 km north of Stewart. The property is situated near the base of the extremely steep west wall of American Creek (Figure 79). Green and maroon andesite of the Hazelton Group is cut by a quartz vein and breccia zone. Early, weakly banded white quartz is brecciated and healed by fine grained grey quartz with pyrite and chalcopyrite. Holes are drilled in a series of tightly spaced fans at 5° increments of dip on lines of azimuth spaced 15° apart. Fifty tonnes of gold ore were shipped from Montrose in 1940 and 1941 (MINFILE 104A 033).

At **Red Cliff East**, Nanika Resources Inc drilled 1100 m in eight holes on the Waterloo zone (MINFILE 104A 035), 400 m from the Montrose zone drilled by Decade Resources. No results were released and a ground survey will be done to locate the property boundary before further drilling is undertaken. Extreme terrain requires careful work.

The historic **Dunwell** silver-gold mine (MINFILE 103P 052), which operated in the 1930s, was revived as an exploration project by Mountain Boy Minerals Ltd. The Sunbeam and Dunwell quartz veins are developed in a north-northeast fault, a splay of the prominent Portland Canal fault system. The veins dip steeply west and are mineralized with pyrite, galena, sphalerite, tetrahedrite and local native silver and argentite. Black pyritic shale to siltstone and purplish sandstone host the veins. Above the portal these rocks are cut by a pair of intermediate dikes. Mountain Boy explored below the underground workings over a 250 m strike length by drilling 50 close-spaced holes totalling over 8000 m (Figure 80).

The **FR** property of Mountain Boy Minerals Ltd is located 35 km north of Stewart and covers a polymetallic



Figure 79. Red Cliff gold project above American Creek north of Stewart; a steep slope drill set up.



Figure 80. Dunwell project; drill set up at the portal of the past-producing silver-gold mine.

quartz-carbonate vein (MINFILE 104A 112). The Liliane vein was tested by five holes.

The **Clone** gold property (MINFILE 103P 251), located 16 km west of Stewart, was drilled (16 holes) by Canasia Industries Corporation under option from Teuton Resources Corp. In addition, the company reported the extraction of a 34 tonne bulk sample with an average grade of 68.65 g/t Au. The location of this material is unclear; 9 tonnes were reported to have been transported by helicopter to Stewart. The property has been the subject of close-spaced drilling for many years but a

resource estimate has not been published. Shear-controlled quartz veins cut Hazelton Group volcanic rocks and contain disseminated native gold and sulphide minerals.

Bravo Gold Corp continued its aggressive exploration of the **Homestake** gold-silver prospect (MINFILE 103P 216) 35 km southeast of Stewart, completing nearly 18 000 m of drilling in 48 holes. Drilling focused on a northwest extension of the Homestake Ridge zone and, 800 m to the southeast, delineation of the Homestake Silver zone. Drilling at the Fox Reef zone (MINFILE 103P 093) southeast of Homestake Silver also returned encouraging intercepts. An Aerotem survey performed in 2009 showed a close coincidence between Th/K anomalies with both mineral zones, so other radiometric anomalies were targeted by 2010 drilling. Mineralization on the property consists of complex quartz-calcite veins and breccia, with associated sphalerite, galena, pyrite and chalcopryrite, in structures that are interpreted to be coeval with Hazelton Group volcanism. Vertical zoning is comparable to the epithermal Premier gold-silver mine: high silver near surface and high gold at depth. In May, prior to the drill season, Bravo announced a new resource estimate calculated at a 3 g/t Au cut-off:

- Main Homestake, 888 000 tonnes grading 6.69 g/t Au, 47.2 g/t Ag and 0.15% Cu (Indicated)
- Main Homestake, 1 140 000 tonnes grading 5.02 g/t Au, 50.9 g/t Ag and 0.25% Cu (Inferred)
- Homestake Silver, 1 200 000 tonnes grading 4.25 g/t Au, 158 g/t Ag and 0.02% Cu (Inferred)

Nanika Resources carried out prospecting and rock and soil sampling on the **Bulldog** Creek property, located 10 km south of Stewart. A zone of silicification, typically 5 to 10 cm wide quartz veins and breccia, was traced 1.5 km within granitic rocks. Silver and gold are associated with sporadic pyrite, sphalerite and galena.

Intrusion-related Gold in the Skeena Arch

On the **Kalum** property, 30 km north of Terrace, Windstorm Resources Ltd carried out a 6-hole 420 m drilling program on the Cirque and Tuppie gold zones (MINFILE 103I 228). The holes tested gold-bearing quartz veins in a granite batholith. The veins, typically 30-40 cm wide, are discontinuous along strike and to depth. There were no significant intercepts.

Eagle Plains Resources Ltd and a 0802906 BC Ltd performed geological mapping and a soil geochemical survey on the **Elsiar** property 40 km north of Terrace. Elsiar (MINFILE 103I 229) is an early-stage intrusion-related gold prospect.

The **Maroon Mountain** gold vein prospect (MINFILE 103I 030) 35 km north of Terrace was drilled by WCB Resources Ltd. The Bear vein was tested over a 323 m strike length by 600 m of drilling in six holes and

20.7 m of channel sampling (Figure 81). The best hole, WCB-01, intersected 18.9 g/t Au, 117 g/t Ag, 0.29% Cu, 6.20% Pb and 3.89% Zn over 0.3 m (Figure 82). Conglomerate and siltstone of the Bowser Lake Group host the shallow dipping Bear vein. Nearby aplite dikes from 1 to 5 m thick suggest the vein is derived from an intrusion.

TAD Capital Corporation used a truck-mounted rig to drill eight core holes on the historic **American Boy** (MINFILE 093M 047) prospect 7 km northeast of Hazelton (Figure 83). The holes tested three of seven quartz veins mineralized with arsenopyrite, sphalerite and galena (Figure 84). Vein textures are consistent with a low temperature of formation peripheral to a Bulkley granodiorite stock. Gold and silver are the metals of most interest, but no assay results were announced.

Tad Mineral Exploration Inc drilled six holes (800 m) on the **Sidina** property, 20 km northeast of Hazelton, to test gold-bearing quartz veins. The veins occur over a 30 to 40 m interval near the contact of a Bulkley granodiorite stock and Bowser Lake Group sedimentary rocks, and in particular are associated with late dikes that parallel the intrusive contact (Figure 85). Individual veins are 10 to 30 cm wide and contain pyrite, arsenopyrite, sphalerite and minor galena and tetrahedrite. Several samples returned over-limit tungsten values from geochemical analyses; assays were pending at time of writing. Drill core was logged and split in Smithers (Figure 86).



Figure 82. Maroon Mountain project; drill intercept of the auriferous Bear quartz-galena-sphalerite vein.



Figure 81. Maroon Mountain project north of Terrace; geologist Daithi MacGearailt views hand trench on the Bear gold vein.



Figure 83. Truck-mounted diamond drill on the American Boy silver-gold project, north of Hazelton.



Figure 84. American Boy project; geologist Andris Kikauka (purple fleece) inspects drill core to advise Dwight Harvey (driller, white hat) if the hole is terminated. Crew members Otto Paeseler and Neil Johnson look on.



Figure 85. Sidina gold project; quartz-sulphide vein at the contact between biotite hornfels and granodiorite.



Figure 86. Sidina core logging was relocated to Smithers after an early-winter storm.

At **Kisegas Mountain**, or KM project (MINFILE 093M 126), Rio Minerals Limited carried out geological mapping and trenching of gold-bearing quartz-base metal

veins related to Bulkley stocks. Kisegas Mountain is 60 km north of Hazelton.

Callinan Mines Ltd completed a 60 km induced polarization survey, and drilled 20 core holes totalling over 7000 m, on its gold-silver prospect at **Coles Creek** (MINFILE 093E 041, Figure 87), 90 km south-southwest of Houston. Cole-28 intersected 3.37 g/t Au, 15.3 g/t Ag, 2.04% Zn and 0.15% Pb over 21.25 m. Another interval 75 m higher in the hole graded 0.15 g/t Au, 68.9 g/t Ag, 2.00% Zn and 1.22% Pb over 11.55 m. Both intervals also contain over 10 000 ppm Mn (V. Sidic, personal communication, 2010). The mineralized zone lies within a fault graben (caldera?) of gently dipping Kasalka Group strata. Drill holes have penetrated more than 400 m of ignimbrite and epiclastic breccias. Clasts are predominantly rhyolite ranging from 1 to 3 cm in size; minor mudstone clasts are mainly in the same size range but locally can be up to 10 cm (Figure 88). Rare basalt clasts can also be up to 10 cm in size. Apparently discontinuous sphalerite-galena veins have irregular margins and occur within an interval of pervasive silicification.

Callinan Mines optioned the **Troitsa** property, a porphyry copper-molybdenum prospect 6 km west of Coles Creek, (MINFILE 093E 005).

No work was done at **Deer Horn** in 2010, but Golden Odyssey Mining Inc announced a resource estimate derived from its work in 2009 and historic work. The



Figure 87. Drilling on the Coles Creek gold-silver project, south of Tahtsa Reach.



Figure 88. Coles Creek project; rhyolite epiclastic breccias with locally abundant mudstone cobbles in the Kasalka Group.

indicated resource is 129 000 tonnes at an average grade of 5.71 g/t Au and 182.3 g/t Ag at a cut-off grade of 1 g/t Au. At the same cut-off, the inferred resource is 202 000 tonnes at an average grade of 6.06 g/t Au and 186.4 g/t Ag. Tellurium content of Golden Odyssey's drill intercepts ranged from 86 to 665 g/t, sufficient to be of economic interest.

OUTLOOK FOR 2011

Issuance of multi-year exploration permits to many projects in 2010 will enable more effective planning and a timely start to fieldwork for many operators. Government continues to make a concerted effort to consult with First Nations: seeking to learn about their concerns regarding mineral exploration and mine development, while communicating to them the impacts and benefits. If successful, these consultations will expedite resource decisions from a proponent and First Nation perspective.

Continued high copper and gold prices are expected that will provide incentive to mineral exploration. The trend of other commodity prices from coal to zinc is also favourable, so that the high levels of exploration and development activity are expected to continue in 2011. Porphyry copper projects in the Iskut-Stikine district, several uncommonly enriched in gold, will feature prominently in exploration, evaluation and development of new mines. A start on construction of the Northwest Transmission Line may trigger a construction decision by Imperial Metals on the Red Chris copper-gold project. Reactivation of the Galore Creek project may also occur, with Galore Creek Mining conducting a feasibility study of the redesigned project while applying for an amendment to its environmental assessment certificate.

Seabridge Gold Inc is anticipated to submit a project report to provincial and federal environmental assessment offices for the KSM gold-copper project. New ownership of the important Snowfield-Brucejack property may lead to stronger interest in development of its large gold-

copper resources. From a logistical perspective, the Snowfield-Brucejack project and adjoining KSM properties could work together to benefit from development and operational synergies. The projects share very challenging site conditions so that economic viability is not assured. There will be substantial lead time prior to development.

Other companies will continue to evaluate precious metal projects in the Stewart, Atlin, Cassiar and Skeena Arch districts for opportunities to develop small gold and silver mines in the near-term, building on the experience of the Yellowjacket and Dome Mountain projects. Silvertip is a prime example. These projects contain high grade mineralization that, when brought into production, have the ability to generate cash flow quickly to offset development costs.

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