

BONANZA MINING CORPORATION

SHAG PROPERTY GEOLOGICAL SUMMARY

Shag Property Sediment Hosted Zinc Project

July 16, 2018

Bonanza Mining Corporation has acquired an option to purchase a 100% interest in two mineral claims named Shag 2 and Shag Mag, that comprise the Shag zinc -lead property located in the Rocky Mountains of southeastern British Columbia near the towns of Canal Flats, 35 km to the southwest and Radium Hot Springs, 24 km to the west. The Shag 2 claim consists of 7 claim units and the Shag Mag claim consists of 24 units.

In conjunction with the Shag claims option agreement, Bonanza has subsequently staked an additional adjoining claim totaling 83 claim units to cover northwest-southeast strike extensions of the prospective geological trend giving the Shag property now a strike length of 15 kilometers and covering a total area of 2,850 hectares/28.5 square kms.

The Shag zinc-lead property is very well located and can be readily accessed by major BC forestry service roads from Canal Flats and Radium, however the upper portion of Shag creek valley will require helicopter support unless a field camp is established there.

Active Nearby Mining and Exploration Projects

Approximately 25 km north of the Shag property is the Mount Brussiloff - BayMag magnesite mine which hosts one of the largest high purity crystalline magnesite ever discovered. The deposit contains in excess of 50 million tonnes of high-grade magnesite ore and has been in production since 1982. The Bay Mag mine is hosted in the same dolomite formations that host the Shag zinc mineralization.

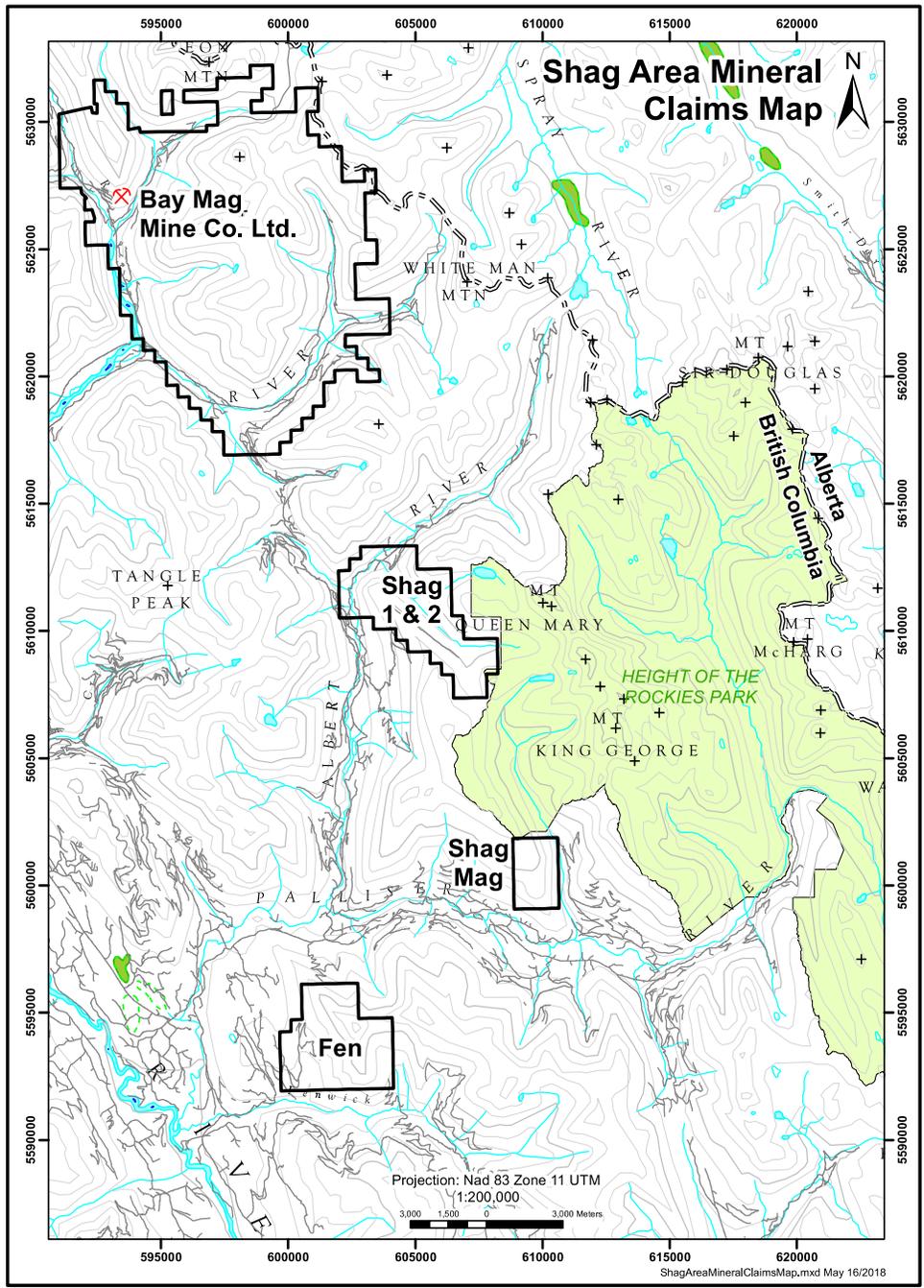
Recently the Kootenay West open pit gypsum mine was approved by the BC provincial government and its' mine construction is planned to start this Summer. It is expected to produce 400,000 tonnes of gypsum per year over a 43 year life-span.

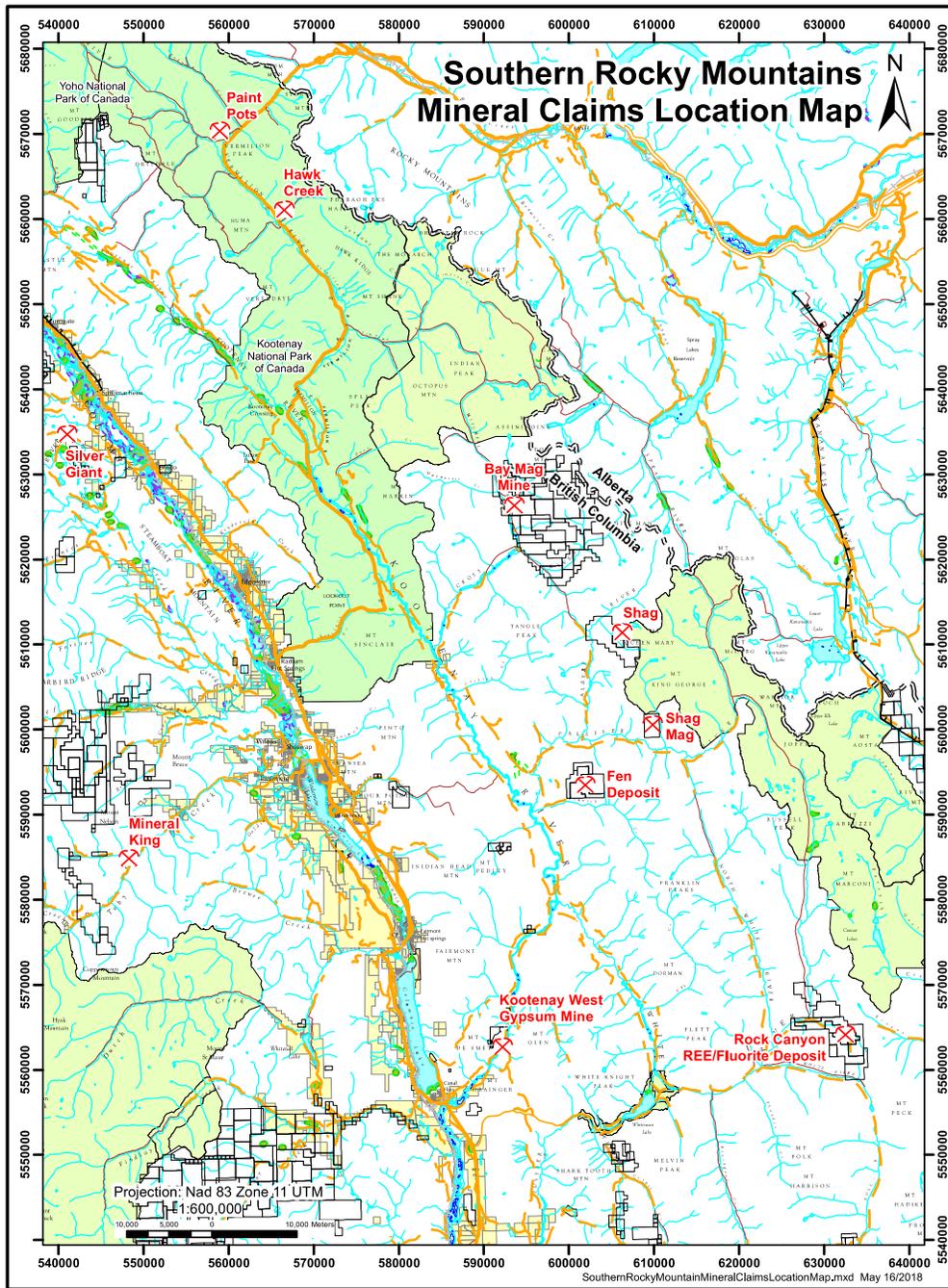
This new mine is situated alongside the major forestry service road between Canal Flats and the Shag property, approximately 12 km northeast of Canal Flats and approximately 30 km southwest of the Shag property.

As well, there are several active exploration projects nearby including the Fen zinc-lead project that is located near the head of Fenwick creek, approximately 10 km

southwest of the Shag property and the Mt. Pedley barite deposit located approximately 30 km west of the Shag property.

Also, the significant Rock Canyon Creek Rare Earth – Fluorite deposit is located approximately 55 km to the southeast of the Shag property.





Exploration History of the Shag Property

Zinc and lead mineralization on the Shag property was first discovered by Chris Graf in 1977 during a regional sedimentary hosted lead-zinc exploration program in the Southern Rockies of BC, which was funded by Riocanex Ltd., the Canadian exploration subsidiary of Rio Tinto Ltd.

Subsequently there have been 9 separate mineral exploration programs conducted on the Shag property from 1977 to 1998 that included diamond drilling by Riocanex Ltd. in 1978 and 1979, and further diamond drilling by Esso Minerals Canada Ltd. in 1981 and 1982.

These exploration programs are recorded in BC Ministry of Mines assessment report #'s 7036, 7382, 8091, 9678, 10143, 11170, 17814, 20538, 21885 and 26716.

The Shag property is designated Minfile # 082JNW002 and the Minfile description of the property is as follows:

“ The Shag claims are located approximately 24 km east of Radium Hot Springs and 9 km west of the BC-Alberta border.”

“Regionally the area is underlain by middle Cambrian Cathedral formation carbonates, laterally equivalent Chancellor formation shales and limestones and upper Cambrian McKay Group shales.”

“A number of small lead-zinc showings occur in a thick, massive to well-bedded limestone-dolostone unit of the middle Cambrian Cathedral formation.”

“Most of the showings on the Shag property consist of galena and pale yellow to orange sphalerite in granular or brecciated dolostone, overlain by dark laminated limestone. The sulfide concentrations appear to be restricted to two horizons, although a number of megascopically similar horizons occur in the succession. The dolostone at the BM showing (the largest individual showing) consists of an erosional, basal surface overlain by massive, irregularly laminated dark dolomite capped by a coarse fragmental breccia or fenestral dolomite. This succession of cyclical beds is capped by dark, well layered limestone.”

“Coarsely crystalline, yellow sphalerite and galena with traces of pyrite occur as blebs and/or disseminations within sparry dolomite or dark argillaceous limestone that is interstitial to breccia fragments, or as disseminated grains in more massive dolomite. Sphalerite and galena also occur within carbonate veinlets and shears.”

“In 1977, Rio Tinto Canadian Exploration Ltd. staked the Shag claims along the Shag creek drainage.”

“In 1978, Rio Tinto completed geological mapping, prospecting, diamond drilling and soil sampling on the claims. Highlights from the prospecting include rock sample 703 which assayed 48.4 % zinc and sample 702 which assayed 28% lead and 11.1% zinc (Assessment report 7036).”

“In 1979, Rio Tinto conducted geological mapping, prospecting, soil sampling and six diamond drill holes totaling 460.6 meters. Highlights include drill hole 79-4 which returned 2.8 meters grading 3.77 grams/t silver and 1.22% zinc. (Assessment report 8091).”

“Work in 1981 by Esso Resources Canada Ltd. included geological mapping, geochemical sampling and diamond drilling and resulted in the discovery of a 600 meter length of weakly mineralized dolostone (Red Bed showing). Drill hole 81-2 intersected 14.6% zinc and 30.35 g/t silver over 1.3 meters (assessment report 10143).”

“In 1982, Esso Resources completed prospecting and diamond drilling. Highlights of the drilling include drill hole 82-2, which returned 1.47 meters grading 10.15% zinc (Assessment report 11170).”

“In 1988, Delta Geoscience Ltd. was contracted by Chris Graf of Ecstall Mining Corporation to conduct ground geophysical surveys.”

“In 1990, Toklat Resources Inc. completed geochemical sampling and geophysical surveys. Highlights of the sampling include rock sample 90-3, which assayed 0.54% zinc (Assessment report 20538).”

“In 1991, Teck Corp. conducted soil sampling, geological mapping and limited prospecting.”

“In 1998, Ecstall Mining Corporation completed a petrographic and chemical analysis of rock samples from the Shag claims.”

Geology and Mineralization on the Shag property

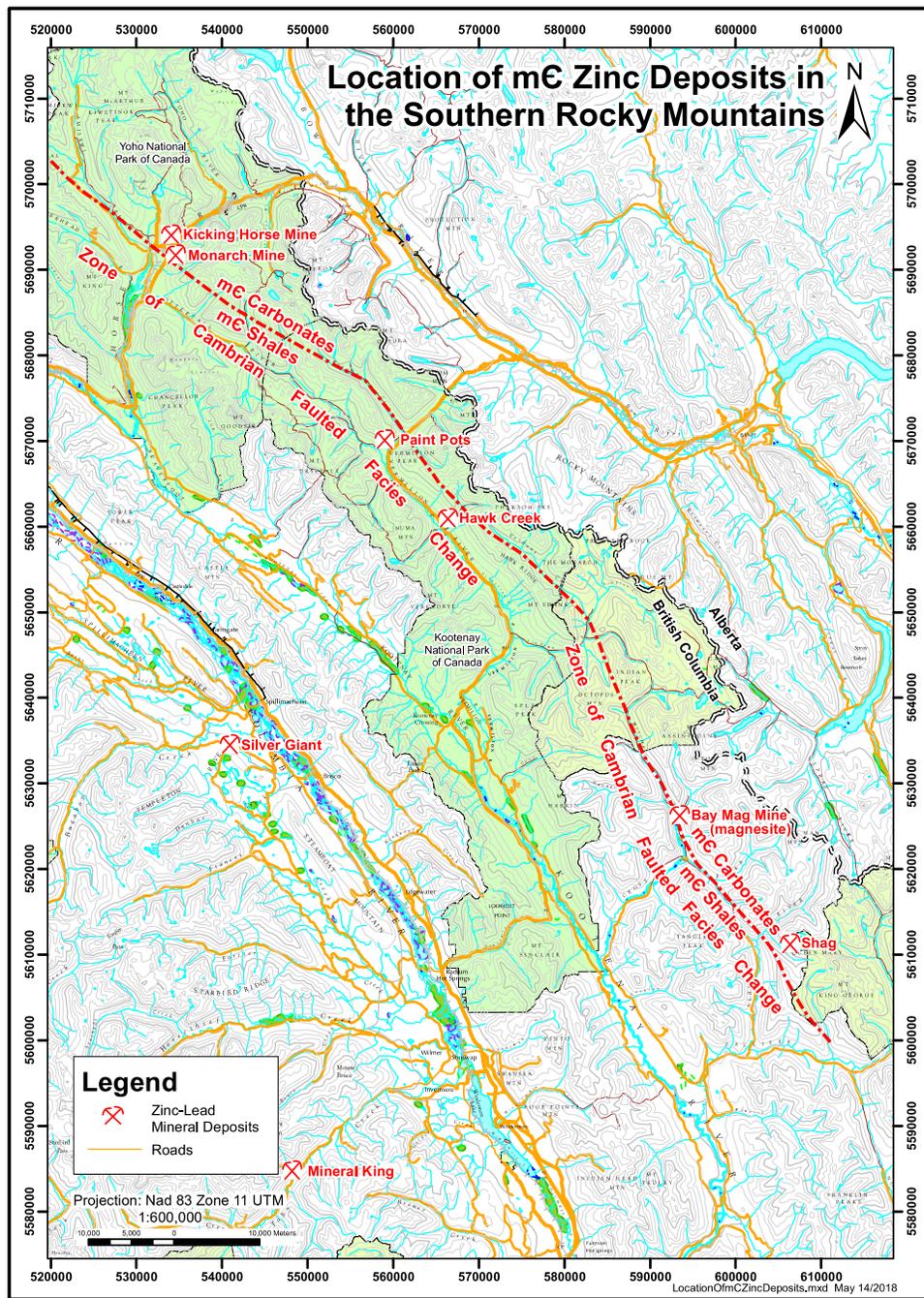
The zinc-lead mineralization on the Shag property is interpreted to belong to the Mississippi Valley type (MVT) model of sedimentary zinc deposits of which many example deposits occur worldwide. There are numerous MVT mines and deposits located along the Mississippi Valley that gave this style of zinc deposit its model name.

Similar MVT zinc deposits relevant to the Shag property include the Pine Point district in the Northwest Territories near Great Slave Lake, the Monarch-Kicking Horse deposits in the southern BC Rockies near Field BC and the Metaline zinc deposits in northeastern Washington State just south of the BC-USA border.

The past producing Monarch and Kicking Horse zinc-lead mines are located on steep cliffs in Yoho National Park near the town of Field, BC, approximately 100 km northwest of the Shag property.

The mines are on strike with each other either sides of the Kicking Horse River. The Monarch mine consists of two parallel deposits, the East and West Monarch ore bodies that are 198 meters apart and the Kicking Horse mine also consists of two parallel deposits, that are 64 meters apart, the Kicking Horse No. 1 and No. 2 ore bodies.

The two Kicking Horse ore bodies appear to line up with the two Monarch ore bodies across a gap of 1,158 meters. Because of this fact and because they both occur in essentially the same structural and stratigraphic positions it is probable that they are parts of a major ore zone that has been eroded by the Kicking Horse Valley.



As well, with modern mineral exploration methods and knowledge it is probable that these deposits would have been found to continue for a considerable distance along strike into the mountains both to the north and south.

Between their discovery in 1884 and when operations were ordered to be discontinued by the Canadian Parks Service in 1952, their combined production totaled 842,500 tons containing 10.0% zinc, 7.0% lead and 1.2 oz/t g/t silver.

The southern Rocky Mountains are dominantly made of lower Paleozoic sediments that were deposited in a narrow sedimentary basin. From lower Cambrian through middle Ordovician time, deposition in the basin was controlled by a NW – trending facies boundary that separated a carbonate bank or shoal environment and platform carbonates on the east from a deeper water shale basin on the west.

GSC geologist Jim Aiken carried out extensive mapping of the lower Paleozoic rocks in the southern Rocky Mountains and named the facies boundary the “Kicking Horse Rim”.

Aiken was also able to recognize repetitions in the style of sedimentation of the carbonate facies on a regional scale, which he termed “Grand Cycles”. A Grand cycle consists of a lower sequence of shales which grade upwards through a central zone of interbedded limestones and shales, into an upper unit of massive carbonates.

Each of the three units that comprise a Grand Cycle are separately mappable formations, and the cumulative thickness of one Grand Cycle may be over 500 meters. Aitken was able to recognize and regionally map 5 separate Grand Cycles in the Cambrian succession. His model was used to correlate the carbonate formations exposed on the Shag property with those mapped by the GSC for over 125 km north along trend to the Kicking Horse valley and beyond.

The carbonate units cannot be traced westward across the facies boundary, which is thought to represent a northwest trending fault zone that was active during lower Paleozoic time and formed a steep escarpment that controlled deposition in the basin.

The major zinc-lead mineral deposits in the middle Cambrian carbonates of the southern Rocky Mountains are all located close to this facies boundary, ie. Monarch mine, Kicking Horse mine, Paint Pots/Ochre Hill, Hawk Creek and Shag. The Baymag Mount Brussiloff magnesite mine is also located near this facies boundary.

The basal Palaeozoic formation in the area is the extensive lower Cambrian Gog quartzite succession (+1,000 m thick). The next unit is the Mount Whyte formation (137 m thick) which is mainly comprised of shales and interbedded limestones and forms the lowest unit of the first Grand Cycle. It is overlain by massive carbonates of the Cathedral formation (300 m thick), the uppermost unit of the first Grand Cycle and hosts the Monarch and Kicking Horse deposits.

The Stephen shale (130 m thick) overlies the Cathedral formation and is the lowest unit of the second Grand Cycle. It is overlain by massive carbonates of the Eldon

formation (330 m thick), which is the top unit of the second grand Cycle and hosts zinc mineralization on the Shag property.

The third Grand Cycle is wholly contained in the Pika formation (270 m thick) which grades upwards from basal shales to massive carbonate rocks.

The shaley Arctomys formation (300 m thick) overlies the Pika formation and is the basal unit of the fourth Grand Cycle. It is overlain by massive carbonates of the Waterfowl formation (200 m thick) that is the uppermost unit of the fourth Grand Cycle and hosts much of the zinc mineralization on the Shag property.

The Sullivan formation (430 m thick) overlies the Waterfowl formation and forms the shaley recessive basal unit of the fifth and final Grand Cycle. It grades upwards into massive carbonates of the Lyell formation (370 m thick) which is the upper unit of the fifth and final Grand Cycle.

The ~5,000 foot (1,524 meter) thick sequence of middle Cambrian sedimentary strata in the southern Rocky Mountains at the Monarch-Kicking Horse mines area near Field BC, extends continuously south-easterly to the southern end of the Shag property where they abruptly disappear to the south under the Palliser River valley and do not outcrop again.

All of the Cambrian formations from the top of the Cathedral formation to the top of the Lyell formation have been mapped on the Shag property. The Monarch-Kicking Horse horizon is estimated to lie at a depth of 160 meters below the Albert river on the north end of the Shag property.

The host of most of the lead-zinc showings and zinc soil anomalies on the Shag property is dolomitized and pseudobrecciated carbonate horizon at the top of the Waterfowl formation just below its contact with the overlying Sullivan formation.

As well, a number of lead-zinc showings and soil anomalies on the Shag property are located along a second dolomitized and pseudobrecciated horizon at the top of the Eldon formation below the base of the Pika formation.

!!!! Put 2 Aiken figures here !!!!

The Monarch-Kicking Horse deposits occur in the peritidal zone of a thick succession of massive to thin bedded platformal limestones and dolomites of the middle Cambrian Cathedral formation. They are located approximately ½ mile (~800 meters) east of the northwest-southeast striking regional facies transition from thick bedded carbonate formations to thin bedded shales and limestones of the time equivalent middle Cambrian Chancellor formation.

This paleogeographic facies transition zone has been called the Kicking Horse Rim and is interpreted to be a carbonate shoal complex active during middle and upper

Cambrian time (540-500 ma) consisting of peritidal strata , lying west of subtidal platform deposits and east of basinal and slope origin deposits.

The Monarch and Kicking Horse zinc deposits are hosted by peritidal dolomites (reef) in the lower part of the Cathedral formation.

These dolostone host rock units are all thick -bedded accumulations of carbonate bank material that are each overlain by accumulations of thin bedded subtidal limestone. Together this package of alternating dolostone and limestone forms part of a cyclical sequence of middle Cambrian strata deposited along the outer edge of a shallow water carbonate platform, adjacent to a large deep-water basin.

This middle Cambrian faulted facies change from shallow water limestones and dolomites to the east and deeper water shales to the west (Kicking Horse Rim) continues south easterly from the Monarch-Kicking Horse mines for over 100 km to and across the Shag property. This prospective sedimentary fault controlled contact zone also continues north from the Monarch-Kicking Horse deposits for approximately 50 km.

This type of geologic environment is basically similar to that of many large Mississippi Valley type zinc-lead deposits including the past producing world class Pine Point MVT district near Great Slave lake in northern Canada.

Almost the entire strike length of this zinc -lead favorable zone is now restricted to mineral exploration/development within a contiguous group of off limits National and Provincial Parks including Yoho, Banff, Kootenay, Jasper and Height of the Rockies Parks.

!!!! put a regional geology map here that shows the area from Monarch-Kicking Horse to the Palliser river here !!!!

The known zinc -lead mineralization on the Shag property occurs approximately 1.25 miles (2,000 meters) east of the northwest-southeast striking regional massive carbonates to thin bedded Chancellor shale facies transition, in the peritidal setting, primarily in two separate, middle Cambrian limestone-dolomite formations, the Eldon formation and the Waterfowl formation, that overly the Cathedral formation.

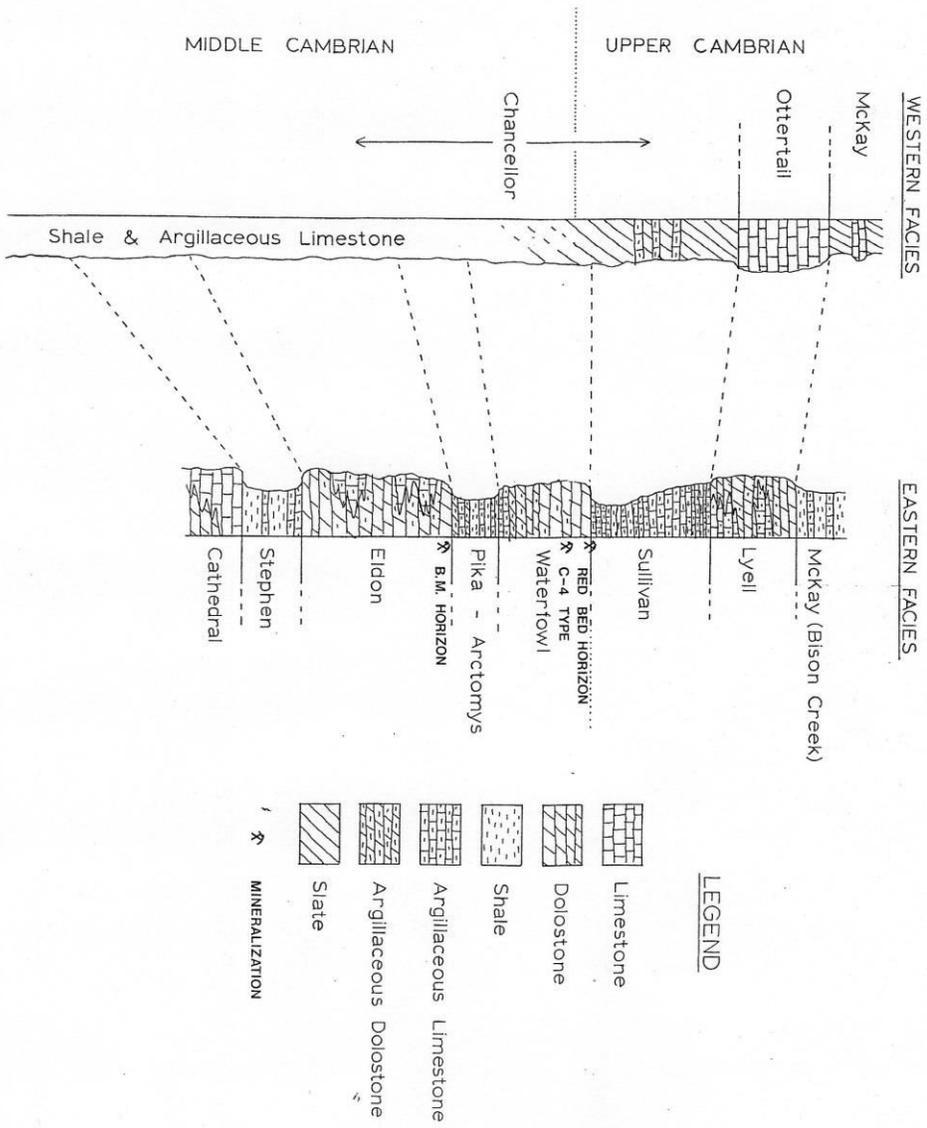
GSC Memoir 55 in by John Allan in 1914 describes the thicknesses, at Field, BC, of the Cathedral formation to be ~1,595 feet (486 meters), the overlying Stephen formation to be ~640 feet (196 meters) and the overlying Eldon formation to be ~2,728 feet (831 meters) thick. He did not define the overlying formations as Arctomys-Pika and Waterfowl or Sullivan so the thicknesses of these formations at Field, BC are not clear.

The Monarch and Kicking Horse zinc-lead deposits occur within a brecciated dolomite unit that forms a 60 meter stratigraphic interval in the lower 125 meters of the middle Cambrian Cathedral formation.

The Cathedral formation is about 340 meters thick at the BayMag mine, 20 km north of the Shag property but it does not outcrop on the Shag property except in a small area along the Albert river where only its' uppermost ~50 meters is exposed.

Assuming an approximate thickness of 340 meters for the Cathedral formation, the highly prospective 60 meter thick Monarch-Kicking Horse horizon should lie buried approximately 165 - 225 meters below the Albert river valley on the northern part of the Shag property.

FIGURE 4. STRATIGRAPHIC COLUMN AND CORRELATION CHART FOR GEOLOGIC FORMATIONS IN THE SHAG CLAIMS AREA



!!!! put Metalline maps here!!!!

Description of Zinc-Lead Showings on the Shag Property

Twenty zinc-lead showings have been discovered on the Shag property along a 5 km long section of the Shag creek valley. They consist of very fine to coarse grained, variably colored sphalerite, together with minor galena, that occur in the uppermost parts of at least two separate middle Cambrian dolostone units.

The mineralization consists mainly of fine to coarse-grained sphalerite and galena, though some showings suggest the occurrence of an associated peripheral pyrite zone. Sphalerite is much more abundant than galena, particularly along the lower B.M. mineralized horizon.

These showings are named C-3, Box, BM, B.M. Extension (float), B.M. Fractures, Galena (float), Pieces (float), Pad, C-4, Red Bed Type (float), Stripes (float), Rush, South Rush, Crackle, Red Bed, Pieces, Side, Tree Root, Cliff, Ross (float) and Kim.

The uppermost Eldon formation dolostone hosts the B.M. horizon mineralization, while the upper part of the middle Cambrian Waterfowl dolostone hosts both the C-4 type horizon and Red Bed horizon mineralization.

Most of the mineralized occurrences on the Shag property consist of coarse replacement sphalerite in either thin discontinuous disseminated zones, or in small pods, lenses or breccia zones.

Put Shag geology map with showing here

B.M. Horizon Mineralization

The B.M. horizon contains the **B.M.**, **B.M. Extension** (float), **B.M. Fractures** and **Galena** (float) showings that occur in dolostones at the top of the Eldon formation. The mineralization consists of small grains of amber or red colored sphalerite that occurs in discontinuous zones as spotty disseminations and replacements.

The **B.M.** showing is the largest mineralized exposure found on the property. Discontinuous outcrops, extending over 90 meters along strike, contain sphalerite as disseminations, spotty replacements and fracture fillings in distorted, burrowed and birdseye textured beds in a facies transition from an intertidal dolostone to a subtidal limestone.

The mineralization occurs near the upper contact of the Eldon formation with the overlying Arctomys-Pika formation. Stratigraphic thickness of the mineralized zone in outcrop appears to be about 3 meters and overall grade for this thickness is about 2% zinc. Two distorted and burrowed zones about 0.4 meters thick contain most of the mineralization.

The stratigraphic setting is demonstrably the most important influence on sphalerite distribution here. The host is a special dolostone facies, bounded roughly below by a recrystallized, bioclastic packstone of uncertain origin, characterized by a cyclic interval with heavily burrowed and distorted beds 0.2 to 0.3 meters thick interbedded with laminated birdseye textured slightly darker dolostones. This grades upward through birdseye textured rocks to a limestone with many shaley laminae and stylolitic residues, burrowing and lenses of algal packstones.

Minor amounts of sphalerite are present with white sparry dolomite in crackle breccias below the mineralized zone, and a grey, finely crystalline dolostone with birdseye texture hosts 1 – 2% sphalerite over about 30 cm as spotty replacements about four meters below the main mineralization.

A possible analog to this is present in the **B.M.Extension** showing where a talus slope occurs with blocks of pale, finely sucrosic dolostones with some fractures filled with coarsely crystalline, reddish sphalerite and white sparry dolomite. The main source of this talus is buried by barren talus from above but local derivation can be demonstrated. At the top of this talus cone is a grey, finely crystalline, laminated and birdseye textured dolostone with minor spotty replacements of sphalerite in the birdseyes. Hydrozincite wash on some barren rocks at this level indicates that some mineralization exists upslope.

The BM Extension showing is located 500 meters to the northwest of the BM showing.

The distribution of soil sample anomalies in zinc tends to support speculation that these are part of a footwall type of mineralization and poorly exposed upper parts of the transgressive sequence are mineralized in the B.M. style. The observation that the footwall mineralization and geochemical expression of this showing are better than those of the B.M. showing offers some encouragement about the chances of significant blind occurrences along this horizon.

The sphalerite at the **B.M** showing is contained in a zone that has a stratigraphic thickness of 3 meters. This mineralization is seen in a number of discontinuous outcrops along a length of 90 meters. The other showings along the B.M. horizon are similar but smaller.

The **BM Fractures** showing is located 100 m southeast of the BM Extension showing and consists of identical sphalerite fracture fillings and related replacements.

The **Galena** showing is a small float occurrence of galena that is located 300 meters due west of the BM showing. The host rock is a pale grey, finely crystalline, uniform dolostone with no brecciation. Galena occurs as small nodules amounting to approximately 1% of the float and the underlying bedrock is the top most unit of the Waterfowl formation.

A small open-ended zinc soil anomaly lies directly uphill (southwest) of the site but is not accompanied by a lead anomaly. This area was prospected but no mineralization was observed in bedrock.

The **Box** showing is a sphalerite -bearing zone located on the south side of the Albert river valley about 1.3 km east of the mouth of Shag creek. It occurs slightly lower in the section of the Eldon formation but within the same general BM Horizon. Scattered 10-20 cm sized pockets of gossan and hydrozincite-bearing boxworks, with occasional fresh sphalerite and rare reddish sphalerite fracture fillings, occur over about 3 meters of stratigraphic section and 31 meters along strike, with overall zinc values less than 1% zinc.

Red Bed Horizon Mineralization

This mineralized horizon occurs along the west side of the Shag valley within dolostones of the upper Waterfowl formation dolostones just below the overlying Sullivan formation.

The main Red Bed horizon is composed of 7 main showings and 3 float showings that constitute a 600 meter long thin zone of mineralization within Waterfowl formation dolostone at the contact with the overlying Sullivan formation limestone.

The **Rush, South Rush, Crackle, Red Bed, Pieces, Side, Tree Root, Cliff, Ross** float **Kim** and **Vug** showings on the east side of Shag valley all occur along the 600 meter long Red Bed horizon zone of mineralization between the Vug and Rush showings and consist of 10 – 80 cm thick and 1 to 3 meter long discontinuous zones of lead-zinc mineralization.

In fact, between these two showings, some sphalerite mineralization has been found at the top of the Waterfowl formation dolostone at every location that its contact with the overlying Sullivan formation can be exposed.

Separated from this main zone, but still associated with the Waterfowl-Sullivan contact, are the Christmas showing (1,500 meters to the northwest of the main horizon) and the Pieces float showing (450 meters to the southeast of the main horizon).

Red Bed horizon mineralization, exposed at surface, along this contact is generally thin (< 1 meter) and low grade (<1% - 5% zinc over 1 meter). Two drill holes that intersected this mineralization down dip of the surface showings did, however,

contain much higher zinc grades over greater thicknesses (see the section of this report describing drilling results).

These showings consist of either bands of small (1-2 mm), equant, disseminated, reddish sphalerite, together with some coarser grained pods that also contain galena, or as fracture fillings and disseminations of fine to coarse grained sphalerite and galena associated with sparry white dolomite in breccia or pseudobreccia pods within darker grey dolostone. The disseminated sphalerite occurs in variably concentrated lenses or bands, sometimes separated by non-mineralized horizons.

These showings occur as bands of small, disseminated, reddish sphalerite together with some coarser grained pods also containing galena, or as fracture fillings and disseminations of fine to coarse grained sphalerite and galena associated with sparry white dolomite in breccia or pseudo-breccia pods.

Mineralization at these showings is higher in grade than that at the B.M horizon, containing small pods 10 – 30 cm thick and 1 to 3 meters long with up to 30% galena and sphalerite.

The Red Bed and Kim showings are the most extensive zones of exposed mineralization along this horizon and have widths of 0.5 to 1.0 meters over lengths of 25 meters and 50 meters respectively.

At these two showings the sphalerite and galena bands and pods pinch and swell along the exposed strike lengths, but contain zones 10 to 30 cm thick and 1 to 3 meters long that contain greater than 30% galena and sphalerite.

The **Red Bed** showing is about 150 m north along strike from the Pieces showing. Here mineralization is exposed for about 30 m along strike in the form of a lens of dark grey finely crystalline dolostone with some relic clastic and birdseye textures that are irregularly replaced by reddish-orange equant, millimeter sized sphalerite grains and irregular anhedral galena up to 3 cm across.

One lens about 30 cm thick and 3 meters long is almost pure sulfide and grades up to 11.1% zinc, 2.8% lead and 4.0 oz/t silver. Most of the mineralized zone contains about 10% sulfide (dominantly sphalerite) and its maximum thickness is 1.0 meters and it averages 0.6 meters. Small amounts of dolomite and sphalerite cemented breccia are a minor accessory feature.

The **Kim** showing consists of numerous discontinuous outcrops along a 50 to 60 meters length, in which sphalerite mineralization is present at every location where the Waterfowl-Sullivan formation contact can be uncovered.

Visually the better mineralization seems to occur within a thin (10 cm) zone of dark grey dolostone that occurs directly beneath the Sullivan limestone. In this section, sphalerite occurs as small (1 to 2 mm), red, equant, disseminated crystals or in small

veins as replacement or fracture mineralization, sometimes in association with coarse white dolomite veins and occasionally with minor galena.

Below this section is a light grey, fine grained, sucrosic dolostone that is generally mottled or pseudobrecciated, and occasionally brecciated. This dolostone hosts disseminated sphalerite that is associated with fracturing and pseudobrecciation over a thickness of 0.5 to 2.0 meters. A chip sample across the mineralized section yielded an assay of 8.5% zinc over 0.7 meters.

In places along the Kim showing, 1 to 3 cm nodules of honey colored, coarse sphalerite occurs within the Sullivan formation limestone, up to 20 cm above the contact with the Waterfowl formation dolostone. A chip sample across such a section yielded an assay of approximately 2% zinc over 1 meter.

The **Crackle** showing is about 1 meter thick and has been hand trenched to expose the mineralization about 3 meters along strike. It contains about 5% sphalerite of an irregularly replacement habit with a crackle breccia overprint.

The **Crackle Showing Extension** and the **Side** showing consist of a number of irregular blocks of mineralization that protrude from underneath the overburden a few meters south and along strike from the original Crackle showing outcrops.

These blocks are presumed to be dislodged outcrop that is essentially in place. They contain up to 5 or 10% sphalerite over thicknesses of up to 0.5 meters. The sphalerite occurs as small (1mm), equant grains associated with white dolomite veinlets in a crackle breccia. The brecciation occurs within a fine grained, dark grey to black dolostone, as well as a medium grey somewhat coarser and sucrosic dolostone.

The **Side** showing is a small outcropping of the Sullivan- Waterfowl formation contact that has weak mineralization over a 0.5 meter wide exposure. The mineralization consists of 1mm, equant grains of orange-red sphalerite and a coarser grained galena pod, that are associated with white dolomite along replacement veins within a darker grey dolostone.

The **Rush** showing is about 0.7 meters thick, exposed in two outcrops five meters apart, with about 10% sphalerite and 3% galena.

The **South Rush** showing consists of approximately 5 or 6 outcrops that occur discontinuously along 30 meters of the Waterfowl-Sullivan formation contact, on strike and south of the Rush showing. It is similar to the Rush and other Red Bed horizon occurrences.

Sphalerite occurs as red equant 1 to 2 mm, disseminated replacement grains along fractures or as cavity fillings in the host dolostone. The dolostone is composed of an upper thin (20 cm) bed that is dark grey, well brecciated and almost rotten due to

weathering, and a lower medium grey, well-jointed, massive dolostone. The thin upper section contains most of the sphalerite (75%), which occurs in small vugs and fractures, and a minor amount of coarse (0.5 to 1 cm sized grains of galena along a fracture.

A chip sample taken across a 0.7 meter width assayed 2.85% zinc. 0.3% lead and 0.53 oz/t silver.

The **Vug** showing is located at the extreme southeast end of the main Red Bed horizon about 55 meters southeast of the Red Bed showing. It consists of two separate mineralized zones, 10 to 20 cm thick, that are each exposed over a length of a meter or two from beneath the overburden. They are separated by four meters of overburden.

The showing is located on the north side of a main avalanche chute, and occurs at a stratigraphic level of about 6 or 7 meters below the Waterfowl-Sullivan formation contact. Prospecting of the well-exposed Waterfowl dolostones in the adjacent avalanche chute did not yield any additional sphalerite or galena mineralization.

The mineralization within the Vug showing consists of fine (0.1 to 1 mm) red sphalerite grains, together with some coarser (up to 1 cm) galena that is associated with coarse, white sparry dolomite in a vuggy, well brecciated dolostone.

The surrounding dolostone is variably crystalline, light to medium grey, strongly pseudobrecciated and contains minor sphalerite, in a few places where it is adjacent to mineralized breccia zones. The mineralization in the brecciated zone of the Vug showing grades out into unmineralized, pseudobrecciated dolostone towards the avalanche chute.

The **Ross** float showing consists of a large (0.5 X 0.25 X 0.25 meter) boulder and a smaller one that contain approximately 5% sphalerite within a well altered and weathered, rubbly-brecciated, medium grey dolostone.

The **Pieces** showing consists of a number of dark grey, finely crystalline float blocks with up to 30% coarsely crystalline, flesh colored, replacement sphalerite and 3% to 5% very finely disseminated pyrite. These float pieces measure up to 0.5 to 0.25 meters in size. They do not appear to have been displaced a great distance. Although the Waterfowl-Sullivan formation contact directly above the float is not exposed, outcrop of the contact within 100 meters to either side does not contain mineralization.

The **Christmas** showing also occurs along the Red Bed horizon but is located on the north side of the NoName creek valley approximately 1.5 km north of the main Red Bed zone of showings.

The Christmas showing consists of a number of mineralized exposures within two side-by-side avalanche chutes. The northern stream channelway exposes two small, mineralized zones, containing a minor amount of replacement sphalerite and galena, just below the Waterfowl-Sullivan formation contact. The rest of the contact zone, though poorly exposed, is unmineralized. The southern channelway exposes an 8 meter length of a well mineralized dolostone bed containing abundant, fine grained, disseminated red and green colored sphalerite. This bed is in the order of 30 to 35 cm thick.

On the northern edge of the exposed channelway the bed consists of approximately 50% very finely disseminated green sphalerite within a light colored dolostone. Some darker (grey-brown), coarser (1 to 5 cm) sphalerite occurs as recrystallized grains within massive sections of fine-grained green sphalerite. The mineralized bed also contains large vugs, many of which are filled or lined with sparry, white dolomite, that do not contain sphalerite.

Along strike to the north the mineralized bed grades through a thin zone containing yellow and orange sphalerite into dolostone with somewhat coarser more typical red replacement sphalerite before it becomes covered by overburden. To the south the bed quickly loses its mineralization and passes into a typical medium grey variably crystalline, mottled Waterfowl dolostone.

The overlying bed contains some mineralization in a couple of basal portions, where it is in direct contact with massive sphalerite of the underlying bed.

Below the main mineralized bed, sphalerite occurs as individual, granular (1mm) replacement grains or as coarser crystals together with calcite in small pockets and veins. A continuous chip sample taken across a well mineralized section of the Christmas showing returned an assay value of 16.6% zinc and 1.4 oz/t silver across 0.5 meters.

The **Pieces** float showing mineralization was determined to have been locally derived, by using a THM kit on the associated zinc soil anomaly. It is dark grey, finely crystalline dolostone with up to 50% coarsely crystalline reddish orange sphalerite cementing breccia pods up to 30 cm across and replacing the host rock in an irregular fashion. Overall grade in three places of talus less than 0.5 meters across is about 10% zinc. The host bed is well-exposed 5 meters north along strike and is not mineralized.

C-4 Type Horizon Mineralization

The C-4 type mineralized horizon contains the **Pad, C-4, Red Bed type** (float) and **Stripes** (float) showings. All of these C-4 horizon showings studied in detail display stratigraphic control reflected by marked lateral and vertical facies changes that are analogous to those described at the C-4 showing. The relationship is presumably a combination of chemistry and permeability as influenced by primary facies.

The Stripes, C-4, Red Bed Type and Pad showings consist of fine to coarse grained, reddish-orange colored sphalerite and coarser galena in disseminated replacement bands or fracture fillings in small breccia pods.

The Pad showing occurs ~ 400 meters east of the C-4 showing, the Stripes showing is 400 meters west of the C-4 showing and the Red Bed type float showing occurs ~ 300 meters west of the Stripes showing giving the C-4 Mineralized horizon a length of at least 1.1 km

The **C-4** showing is one of the better mineralized occurrences on the property, having exposures on both sides of C-4 creek showing parts of a number of mineralized pods and lenses. These mineralized zones contain abundant small pale yellow, orange and red sphalerite in disseminated bands that contain some coarser grained galena. Mineralized zones contain from 5% to 20% sphalerite and galena over a width of 0.5 to 1.0 meters.

The C-4 showing also contains banded, coarsely recrystallized, yellow to green sphalerite in 20 to 30 cm thick slabs of float. These pieces of float contain 50% to 80% sphalerite and appear to be locally derived pieces of dislodged sphalerite veins.

One significant feature of the C-4 mineral showings is that they occur in two separate dolostone beds in an area that is characterized by lateral facies changes and this combination of zinc mineralization with the potential for vertical repetitions along an interfingering contact makes it an attractive exploration target.

Interestingly the C-4 showing area has no lead or zinc soil anomaly, possibly due to topography or overburden.

At the **Pad** showing, the sphalerite and galena occur as coarse-grained disseminations in a white sparry dolomite matrix of a small crackle breccia zone within a darker colored dolostone. The host rock is a medium grey, finely crystalline dolostone that has been crackle brecciated.

White sparry dolomite appears to have preceeded the red sphalerite and galena, and nodules of galena up to 5 cm across have been found. Selected grab samples show up to 10% ZnS and 2% PbS although the overall grade of the showing is approximately 1% combined.

The Stripes and Red Bed type showings are both float occurrences that are located 400 m and 700m to the west of the C-4 showing. Though they both occur along strike with the C-4 showings, the mineralization within these float blocks has an appearance that is similar to that of the Red Bed horizon showings which occur on the east side of Shag valley.

The **Stripes** showing as exposed, consists of numerous talus blocks with fracture fillings and bed-like replacements of sphalerite. One large block, believed to be approximately in place, displays three bed-like belts of 15-30% reddish-orange 0.2-0.5 cm sphalerite. Each bed is about 25 cm thick, over a total exposed thickness of over 1 meter. These belts display a relic pseudobreccia texture and are separated by more uniformly crystalline grey dolostone with only traces of sphalerite. Exposure is poor, but the cyclicity, high grade of some selected grab samples (up to 80% sphalerite), and apparent lateral continuity of the mineralization are very encouraging.

The **Redbed Type** float showing is known only as float containing 3-5% red sphalerite in talus blocks up to 0.8 meters across. The texture is a relic pseudobreccia, like the Stripes showing. Few samples have been found but those seen lack the grade and bed-like appearance of the Stripes replacements. The appearance of the mineralization is very similar to the Redbed Horizon type of showings across the valley on the east side of Shag creek. Although no galena was found, the soil sample that drew attention to the location contained 650 ppm lead and probably indicates galena occurrences in the showing.

The **C-3** showing occurs approximately 1.2 km west of the mouth of Shag creek in the uppermost Cathedral formation on a very steep cliff face over 275 meters high at the north end of Shag Ridge above a long talus slope that extends another 214 meters to the Albert River.

A mineralized zone occurs, however, in outcrop at the base of the cliff and consists of a series of reddish-orange sphalerite bearing, vertical, solution breccia channels and fracture zones, each about 15 cm wide, spaced randomly at approximately 1 meter intervals across a width of 9 meters. The average grade in these narrow mineralized solution zones would be about 5% zinc. The rock between these zones is unaffected by solution and barren of sulfides.

Most of the mineralization has been found in the talus, as it is too steep to prospect much of the cliffs. At least 3 types of sphalerite, reddish-orange, black and honey colored, cementing breccia fragments in typical Mississippi Valley type fashion, are in the talus.

Black, honey and reddish-orange colored sphalerite are found in samples collected from the talus, but only the reddish-orange variety has been traced to outcrop, where it occurs in the vertical solution channels described above. Five grab samples from the talus assayed between 5% and 27% zinc, with negligible lead values.

Samples containing the other two varieties of sphalerite generally have higher zinc values, as their brecciation and mineralization is usually much stronger. Most of the mineralization is fracture filling but sphalerite rims breccia fragments up to 2.5 cm across. White sparry dolomite also commonly occurs with the sphalerite, filling fractures and cementing small breccia fragments. Many of these breccia fragments

have been strongly replaced by fine-grained pyrite that is only visible when the specimens have been cut and polished.

Approximately 60 meters west, at the same elevation, a set of similar, but pyrite containing, vertical solution features occur over a width of 9 meters. No sphalerite was observed, but may occur in small amounts. Also a one meter wide rusty streak was observed to run down the cliff face and onto the talus below, approximately 150 meters east and 60 meters above the zone of observed sphalerite mineralization. This location was only observed from a helicopter and no surface prospect has been done on it.

In the vicinity of the sphalerite mineralization the host rock is dolomitized, while only 30 meters west it is a limestone. This showing occurs less than 350 meters east of middle Cambrian facies transition from massive carbonates to thin bedded shales.

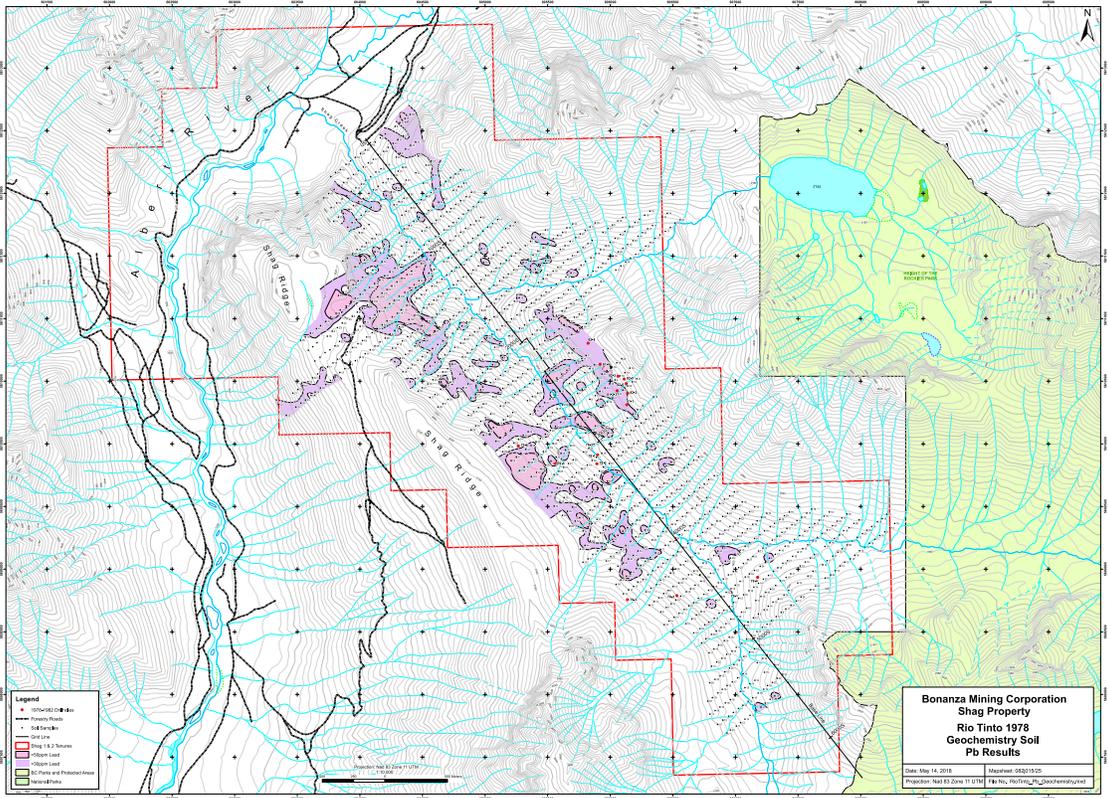
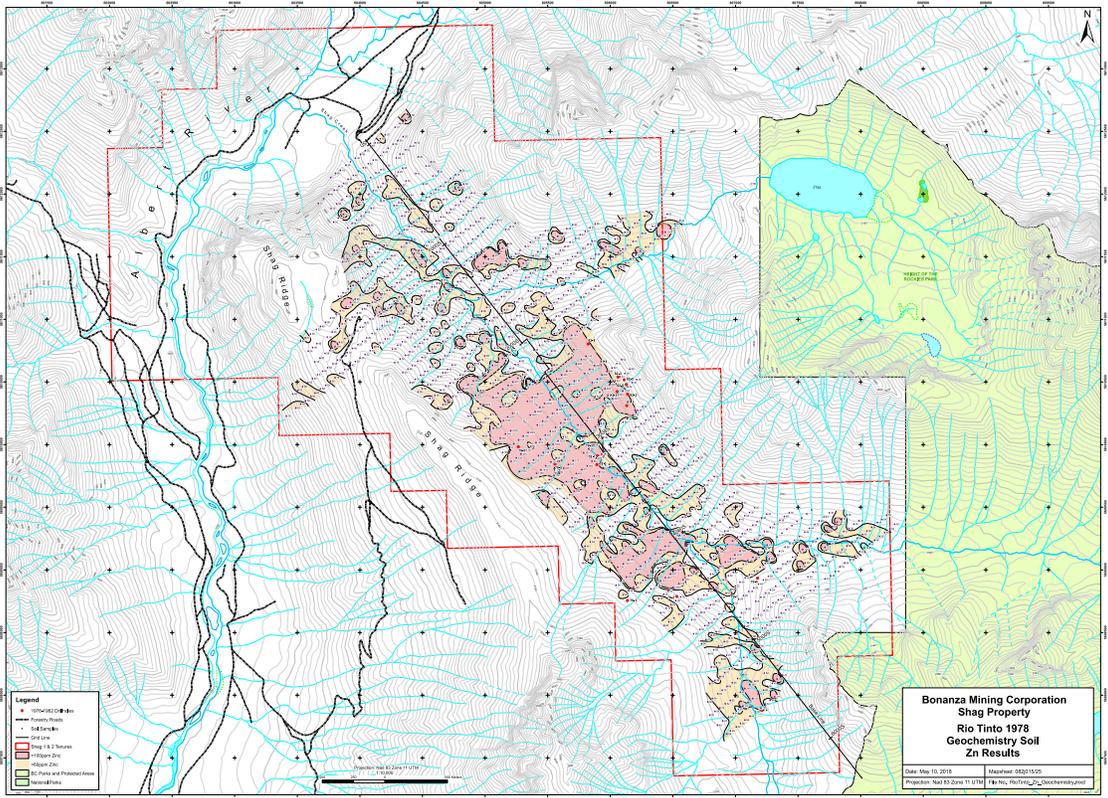
Soil Sampling Surveys

Three separate soil sampling surveys and two separate stream sediment sampling surveys have been conducted on the Shag property. The first survey was a regional stream sediment sampling program by Chris Graf for Riocanex in 1977, that led to the initial discovery of zinc mineralization along the Shag valley and it was followed by a detailed soil sampling survey along the Shag creek in 1978.

1.) In 1978, Riocanex established a 6 km long baseline along the Shag valley, extending southeasterly from the mouth of Shag creek. A total of 550 soil samples were then collected at 50 meter intervals on northeast and southwest cross lines 100 meters apart.

Anomalous zinc values were established at 400 ppm zinc and the data suggested that most of the anomalous areas could be related to either C-4, BM or Red Bed mineralized horizons.

Anomalous lead values were established at 75 ppm lead, and one prominent 300 meter long lead anomaly centered at 1000S 6+00W was outlined and it has not been related to known mineralization.



2.) In 1981, Esso Minerals conducted a heavy mineral steam sediment sampling program on the property.

In 1988 Ecstall Mining Corporation hired line cutters who established a 10.9 line-km grid consisting of 5 northwest-southeast striking lines 2.2 km long on both sides of Shag creek along the lower slopes of the Shag valley, upon which an IP survey was subsequently conducted.

3.) In 1990 Ecstall conducted a soil sampling survey on this cut grid, collecting 551 samples at 25 meter intervals along cross lines spaced 100 meters apart from the same general area as Riocanex's 1978 survey. As well, the exploration program included the addition of 1.5 line-km of blazed and flagged grid, stream sediment sampling and a limited VLF-EM survey.

A strongly pronounced zinc geochemical anomaly measuring 150 m by 180 m was located on lines 2+00W and 3+00W from 18+00N to 20+00N. Extremely anomalous values were returned from this area, most being in the 2000-4000 ppm zinc range. Prospecting revealed considerable hydrozincite staining and some sphalerite mineralization within this anomalous area.

The soil geochemical survey by Riocanex in 1978 also returned strongly anomalous zinc values in the same area.

The geophysical IP data gathered in 1988 reveals that no significant resistivity/chargeability responses were found in this area, suggesting a chiefly non-conductive zone of mineralization may be the source of the zinc soil anomaly.

A number of less well defined zinc anomalous areas were located as a result of this survey, the most pronounced of these being a 40m by 200m high in the order of 1000ppm zinc located across lines 1+00W, 2+00W and 3+00W at coordinate 2+00N.

The VLF-EM survey did not extend far enough northward to cover these zinc anomalous areas.

4.) In 1991, Teck Exploration Ltd. added a further 2.9 line-km of grid expansion to the northern and western boundaries of the 1990 grid where they conducted a soil sampling program to extend the 1990 soil anomalies and collected 121 soil samples.

Both the 1978 and the 1990 soil sampling programs outlined several large zinc anomalies on both sides of a 5 km long section of the Shag valley. Some of these zinc anomalies also are anomalous in lead, however the lead anomalous areas are more restricted than the zinc anomalies.

Put Toklat/Teck zinc and lead soil maps here

Geophysical Surveys

1.) As mentioned above, in 1988 Ecstall Mining Corporation engaged a geophysical contractor to conduct a gradient IP chargeability and resistivity survey on the 10.9 line-km cut grid that had been established.

The survey found 4 main IP chargeability high anomalies that are flanked by areas of high resistivity while the lowest resistivity zones correspond very well to the chargeability highs. The stronger anomalies persist to the west off the surveyed area.

A very strong chargeability and resistivity anomaly that occurs at station 7+60N on line 4+00W appears to be close to surface and is likely part of a much larger anomaly at depth.

These 4 anomalies have very similar responses to IP case histories from the Pine Point MVT district and the Silvermines and Tynagh carbonate hosted zinc deposits in central Ireland.

The contractor recommended further IP surveying both to the east and west to improve the understanding of the depth and spatial positions of the interesting zones and to cover a larger area of the property.

As well he recommended that if drilling was to be undertaken from the 1988 results then vertical drill hole should be collared in the center of each of the 4 anomalies and drilled to a depth of 150 meters.

No further IP surveying was ever conducted on the Shag property and none of the 4 anomalies were ever drilled.

Put Hendrickson Geophysical maps here

2.) As was mentioned in the previous section, in 1990, Ecstall engaged a geological contractor to conduct soil sampling and a limited amount of VLF-EM surveying on the same grid where the 1988 IP survey was conducted.

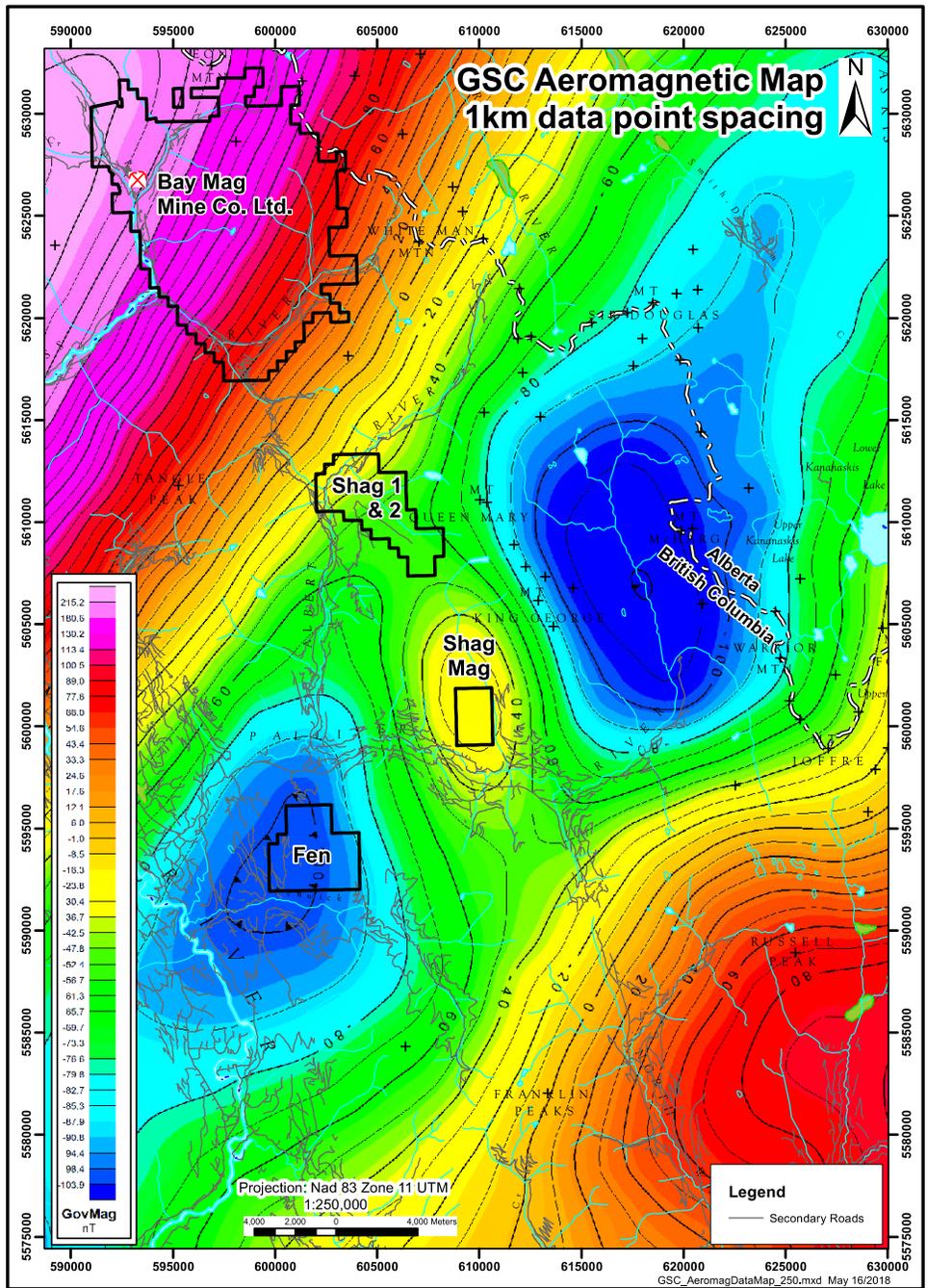
The VLF-EM survey was conducted using a Geonics EM-16 instrument over significant resistivity anomalies that resulted from the 1988 IP survey on the southern portion of the grid only. In-Phase and Quadrative data and Fraser-Filtered data were collected.

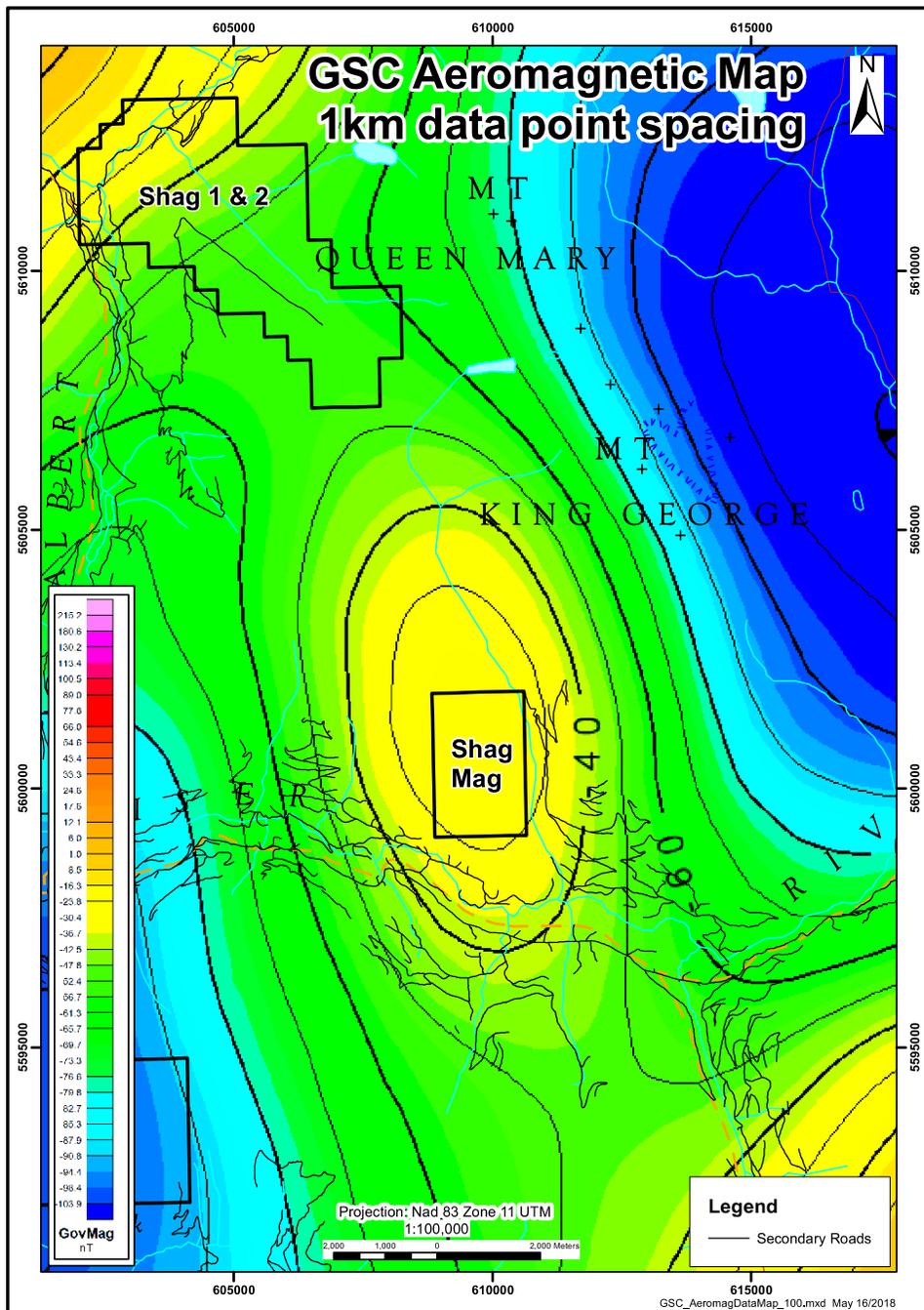
Within the area that received VLF-EM coverage, a well-defined, relatively continuous conductor was located across lines 2+00 to 7+00 W at approximately 8+00N. This linear expression confirms the presence of the IP chargeability high anomaly that was found at 7+60N on line 4+00W in 1988.

Soil sample results did not show any significant anomalous values over the anomalous area however, leaving its cause/source unknown.

3.) A regional airborne magnetic survey conducted by the GSC over the southern Rocky Mountains has outlined a major linear magnetic low feature that trends northeasterly for over 200 km from Canal Flats towards Red Deer Alberta.

This magnetic low feature is approximately 30 km wide and it passes underneath the Shag property where, within this regional magnetic low, an interesting magnetic high anomaly measuring 2 km east-west by 4 km north-south occurs.





Diamond Drilling

Four separate, small diamond drilling programs have been conducted on the Shag property, two by Riocanex and two by Esso Minerals.

Put a map showing all drill hole locations here

1.) In **1978, Riocanex** conducted a small drill program using a Hydrowink drill, that consisted of three short holes totaling 159.5 meters. These 3 drill holes 78-1, 78-2 and 78-3 were drilled around the BM showing because incomplete exposure of the BM showing and the nature of the sulfide occurrences at the BM extension, located 500 meters to the northwest, indicated that the habit, true thickness, grade and proximal extensions of the showings should be tested by a preliminary drill program.

Drill hole 78-1 was 61 meters long and it intersected spotty intervals of sparsely disseminated, replacement and fracture filling sphalerite mineralization in birdseye textured dolostone over a thickness of 15 meters, from 10 meters downhole to 25 meters downhole. It was collared on the east side of Shag creek about 40 meters east of the main BM showing.

Drillhole 78-2 was 61.3 meters long and it intersected spotty intervals of sparsely disseminated and replacement sphalerite in birdseye textured dolostone over an interval of 5.0 meters, from 1m to 6 meters downhole. It was collared on the west side of Shag creek about 30 meters southeast of the main BM showing.

Drillhole 78-3 was 37.2 meters long and it intersected spotty intervals of sparsely disseminated and replacement sphalerite in birdseye textured dolostone over an interval of 15 meters, from 10 m to 25 m downhole. The bottom 3 meters of the drillhole intersected a separate deeper zone of birdseye textured dolostone and it is not clear why the hole was stopped pre-maturely when it was still in prospective rock. It was collared on the east side of Shag creek about 40 meters northwest of the main BM showing.

The consistent habit and stratigraphic setting of the sphalerite were clearly demonstrated in all intersections. An apparent increase in grade and thickness to the north (drillhole 78-3) was not considered significant.

The best intersection was in hole 78-1 which contained an assayed interval of 3.95% zinc over 0.5 meters. A selected sample of 20 cms with 8.85% zinc represents the best grade.

2.) In **1979, Riocanex** conducted a second small diamond drill program again using a Hydrowink drill and cored 6 drill holes totaling 460.6 meters.

Drill holes 79-1, 79-2, 79-3 and 79-4 were designed to test the C-4 horizon mineralization. All four of these drill sites had an associated sphalerite showing and/or soil anomaly within 150 meters but only hole 79-4 yielded mineralization. The remaining three drill holes passed into the top of the Waterfowl dolostones, but were not necessarily drilled deep enough to intersect the C-4 horizon stratigraphic contact, however they did not encounter any sphalerite mineralization.

Drill hole 79-1 was 129.8 meters long and located 150 meters southeast of the C-4 showing. It was collared in the un-prospective Sullivan formation limestones and only entered the Waterfowl formation at 112.8 meters downhole but was unfortunately stopped at a depth of 129.8 meters only a short distance above where the prospective C-4 horizon birdseye textured dolostones and potential sphalerite mineralization would have been intersected.

Drill hole 79-2 was 56 meters long and located 350 meters southwest of the C-4 showing and 150 meters southeast of the Stripe showing. It too was collared in the overlying Sullivan formation limestones and entered the Waterfowl dolostones at 20 meters downhole where it intersected a 36 meter interval of birdseye textured, zebra textured and crackle and rubble brecciated dolostone, likely corresponding to the C-4 horizon, but the drill core was not mineralized. The drill hole ended in a crackle breccia and perhaps may have intersect sphalerite mineralization if it had been drilled a further 20 meters deeper.

Drill hole 79-3 was 89.2 meters long and located approximately 700 meters west of the C-4 showing and 350 meters west and upslope of the Stripes showing. It was also collared in the Sullivan limestones and entered the Waterfowl dolostones at 43.6 meters downhole where it contained some white dolomite veins and open space fillings within occasional crackle brecciated zones, but the drill core was un-mineralized.

Drill hole 79-4 was 73.2 meters long and located beside the Pad showing about 400 meters east of the C-4 showing. The drill hole was set up 55 meters west of the Pad showing and directed towards the showing, but was not long enough to undercut it. The casing was left in the hole.

It was collared in Waterfowl dolostones and intersected a 51.7 meter long interval of spotty sphalerite and galena mineralization. The mineralization generally does not exceed 1 % zinc, with the best mineralization occurring over an 11 meter interval near the top of the hole. A 3 meter interval from 11.4 m to 14.2 m assayed 1.22% zinc and a 0.3 m interval from 19.5 m to 19.8 m assayed 4.6% zinc and 1.47% lead.

The mineralization occurs in crackle-brecciated dolostone and in open space fillings and veinlets associated with white sparry dolomite. Some of the breccia zones are possibly collapse breccias.

Drill holes 79-5 and 79-6 were designed to test the BM horizon mineralization.

Drill hole 79-5 passed through the zone of interest and exhibited the same birdseye textured dolostone that is at the BM showing but no sphalerite mineralization was found. Drill hole 79-6 entered the zone of interest and showed minor sphalerite in dolostone but due to extreme freezing conditions the drill hole was abandoned with

sphalerite mineralization still present. The casing was left in place to deepen the hole but it was never re-entered.

Drill hole 79-5 was 74.8 meters long and located beside the Galena float showing about 300 meters due west and upslope from the main BM showing.

The hole was collared in Arctomys-Pika formation limestones and entered the top of the prospective Eldon formation dolostones at 56.6 meters downhole, which had some birdseye textures and random dolomite veining but was not mineralized.

The hole may have not been drilled deep enough to intersect the BM horizon which is the most prospective part of the Eldon formation.

Drill hole 79-6 was only 36.3 meters long and located approximately 600 meters west and upslope of the main BM showing and 200 meters west and upslope of the BM Extension and BM Fractures showings.

It was collared in Arctomys-Pika limestones and entered the top of the Eldon formation at 23.7 m downhole and intersected a 10 m interval of spotty sphalerite mineralization from 26.7 m to the end of the hole at 36.3 m.

The mineralization is in birdseye textured and veined dolostones that visually contain less than 1% zinc over the intersection and one selected drill core sample assayed 10.7% zinc. The sphalerite mineralization occupies all of the available fracture spaces but the fracture density was not high.

It was very unfortunate that this drill hole was stopped in zinc mineralization that was intersected over a 10 meter thickness. The casing was left in the hole.

3.) In **1981, Esso Minerals** conducted a small diamond drilling program using a light weight Hydro-Core 28 drill and cored 4 holes totaling 152 meters.

The four drill holes, 81-1, 81-2, 81-3 and 81-4 were designed to test the Red Bed horizon down dip to the east of the main Red Bed showing area.

Drill hole 81-1 was only 35 m long and collared approximately 30 meters behind (east of) the Red Bed showing.

This drill hole intersected a sharp Waterfowl-Sullivan horizon contact where anticipated, but the contact itself contained no mineralization. However 9 to 10 meters below the contact traces of sphalerite were visible in association with steep fractures in the Waterfowl formation dolostone.

Both the Waterfowl and Sullivan formation strata contained at least 1 – 2% finely disseminated pyrite, mainly in thin dark argillaceous layers. Within the 10 meters of

Waterfowl dolostone that was drilled, the most notable characteristics were the development of a moderate amount of pseudobrecciation and steep fracturing.

The last 0.5 m of core contained the most sphalerite, which occurs as a few small grains within thin irregular fractures. It was unfortunate this drill hole was stopped while still in prospective sphalerite bearing dolostone.

Drill hole 81-2 was a vertical hole 47.1 meters long and collared 150 meters northwest of hole 81-1 and approximately 33 meters east of the anticipated down dip projection of the Red Bed mineralized horizon.

The intersection of this horizon (the Waterfowl-Sullivan formation contact) was expected at a depth of 25 to 30 meters. However, a transitional contact was encountered at between 10.2 and 12.1 meters beneath 3.7 meters of fractured and broken Sullivan formation argillaceous limestone.

The transition consists in part of a sheared, almost cataclastic section of dolostone before encountering typical, but mineralized Waterfowl dolostones. The sphalerite mineralization continues over a 15 meter interval below the contact and includes a 3.3 meter section that assayed 10.25% zinc and ~ 1oz/t silver within a thicker 10.7 meter intersection that assayed 4.93% zinc.

The host dolostone is generally well brecciated and pseudobrecciated, with coarser white dolomite infillings in breccia zones. The mineralization consists mainly of very finely disseminated, light colored sphalerite, although some coarser sphalerite and galena in association with fractures. The major mineralization in this intersection consists of both very fine, strataform and larger fracture related sphalerite. Both however have characteristics that suggest they are related to early mineralization events. No sphalerite mineralization is found in any late fractures that typically have calcite associated with them instead of dolomite.

A relatively high amount of finely disseminated pyrite (1-3%) in the overlying argillaceous limestone as well as some pyrite in the contact dolostones in the hole and at a number of the larger showings within the Shag property, suggests a relationship between pyrite and lead-zinc mineralization.

The occurrence of the main mineralization horizon only 10 to 15 meters below the overburden has resulted in a mineralized section that is weathered and very rotten looking. Much of the sphalerite has been weathered out leaving open boxwork structures or fine sintery horizons, and some secondary zinc carbonate mineralization has been developed.

The main mineralization seems to occur in 2 one meter or more argillaceous bands containing very fine sphalerite, that are separated by, and contained within, sucrosic dolostones with much less, but coarser sphalerite that is related to fracturing. Below the mineralized section, the Waterfowl dolostone remains well brecciated and

pseudobrecciated, but is lighter colored, contains more and larger vugs, and has calcite instead of dolomite in much of the brecciation.

Drill hole 81-3 was 19.4 meters long and drilled from the same location as drill hole 81-2 but angled at 60 degrees in an attempt to duplicate the mineralized intersection in that hole.

However, extremely poor drilling conditions due to an intense fracturing subparallel to the drilling direction, forced the hole to be terminated prior to encountering the main mineralized horizon. This hole did intersect the Waterfowl- Sullivan formation contact where expected (in relation to hole 81-2), and contained some sphalerite in the Waterfowl dolostone at the contact.

Drill hole 81-4 was a vertical hole 50.2 meters long and collared approximately 200 meters northwest of holes 81-2/3, or about halfway between holes 81-2/3 and the Rush showing at the northwest end of the Red Bed horizon trend.

The hole passed through 10 meters of typical pyritic argillaceous limestone before encountering a small fault zone, below which are Waterfowl strata that include dolostone and a minor amount of argillaceous dolostone.

The Waterfowl-Sullivan contact occurred 5 to 10 meters above the level at which it was expected, if it is to be on strike with the outcrop sections along the Kim showing. The dolostone encountered was medium grey, variably crystalline, but generally coarse and porous, strongly brecciated, pseudobrecciated and fractured, and contained minor argillaceous sections.

Dolomite occurs as infillings in earlier breccias, but much of the brecciation is late and filled with calcite. Vugs and fractures containing large amber calcite crystals become increasingly common in the lower part of the hole. Only traces of sphalerite were found in this hole and these occur just below the Sullivan-Waterfowl contact, and in association with some strongly brecciated sections of the dolostone.

Drill hole 82-1 was 55.8 meters long and collared approximately 60 meters behind, in the downdip direction from the Pieces float showing at the southern end of the Red Bed horizon. This hole intersected the Waterfowl-Sullivan formation contact at a depth of 33 meters but no sphalerite or galena was visible at the contact, or within the 22 meters of the Waterfowl dolostones that were drilled.

The dolostone just below the contact variably crystalline, some what mottled and contains two very thin, pyritic argillaceous zones similar to those that appeared to localize the sphalerite mineralization along the main Red Bed horizon. Below the contact zone, the Waterfowl formation consists of a light colored, pseudobrecciated dolostone that gradually grades into a coarser, white vuggy dolostone.

Drill hole 82-2 was 96.9 meters long and collared 56 meters behind the main mineralized Red Bed mineralized horizon outcrop zone at a point between holes 81-1 and 81-2, about 60 meters southeast of hole 81-2. This hole intersected the Waterfowl-Sullivan contact at a depth of 46 meters and continued through 50 meters of Waterfowl formation strata.

The upper 10 meters of Waterfowl dolostone contains some zones with minor sphalerite, including a 1.47 meter section (53.12 – 54.59 meters) that yielded an assay of 10.15% zinc. The main mineralized zones consist of finely disseminated, red colored sphalerite together with a few coarser (0.5 to 2 cm) recrystallized sphalerite grains.

In places, the fine sphalerite appears to be oriented in bands paralleling the bedding direction. Above and below the main zones of sphalerite mineralization, only traces of sphalerite occur in association with late fracturing. No galena was visible in the section. The host dolostone is medium to dark grey, fine to medium grained and contains several argillaceous bands. Below the mineralized strata, the Waterfowl dolostones are generally light colored, coarsely crystalline, mottled or pseudobrecciated and well fractured and brecciated.

Drill hole 82-3 was 75.6 meters long and collared 70 meters down dip of the main mineralized outcrop zone at a point between holes 81-2 and 81-4, about 90 meters northwest of hole 81-2.

This hole intersected the Waterfowl-Sullivan formation contact at a depth of 48 meters and continued through 28 meters of Waterfowl strata. Minor sphalerite mineralization was encountered throughout the upper 11 meters of Waterfowl dolostone. The best intersection between (51.7 and 58.0 meters) yielded assay values of that averaged 3.07% zinc over 6.3 meters.

Within this zone, sphalerite occurs as small (0.25 – 0.5 mm) equant, reddish colored grains in 0.5 to 5 cm thick bands that parallel bedding. A minor amount of sphalerite, together with traces of smithsonite, also occurs in association with fracturing. The host dolostone is medium to dark grey, finely crystalline, argillaceous and contains approximately 1% very finely disseminated pyrite.

Below the mineralized section, the Waterfowl dolostone is light colored, variably crystalline, strongly pseudobrecciated and somewhat brecciated.

Traces of sphalerite, in association with fracturing, are found throughout the section of Waterfowl dolostone that was drilled

Drill hole 82-4 was 26.8 meters long and collared at the extreme northern end of the main Red Bed mineralized section, at a point about 38 meters beyond the Rush showing.

This hole encountered difficult drilling conditions within the overburden and was aborted before encountering bedrock.

Drill holes 82-5 and 82-6 were 112.2 meters long and 90.8 meters long respectively and collared between holes 82-2 and 82-3, directly downdip from hole 81-2. These two drill holes are both located approximately 80 meters downdip from the outcropping Red Bed mineralized horizon, and right between the three previously drilled holes (81-2, 82-2 & 82-3) that contained significant lead-zinc mineralization.

Both holes intersected the Waterfowl-Sullivan formation contact approximately where anticipated, however, each encountered only traces of sphalerite within the sections of Waterfowl dolostones drilled.

The upper few meters of Waterfowl dolostone in each hole drilled contain a few zones where visual estimates suggest a zinc content of approximately 0.1 to 0.5% over sections less than one meter.

The Waterfowl dolostone in both holes is again similar to the other holes drilled downdip from the main Red Bed horizon. It progresses from a medium grey, fine grained, more argillaceous dolostone near the Waterfowl-Sullivan formation contact, through a zone of lighter grey, variably crystalline, pseudobrecciated dolostone, to a light grey to white, coarse grained, vuggy and brecciated dolostone.

Recommended 2018 Exploration Program

A.) Geophysical Surveying

- 1.) A 3D IP survey should be conducted along the Albert river valley, at the north and northwest portions of the Shag property near the mouth of Shag creek.
- 2.) A ground magnetic survey should be conducted over the airborne magnetic high anomaly that was outlined by the GSC regional airborne magnetic survey along the west side of Queen Mary creek, at the southern end of the Shag property.
- 3.) Delta Geoscience geophysical recommendations August 1988-

add Delta's recommendations here

B.) Geological Mapping

Riocanex recommendation March 1979 – The area containing the BM, Red Bed, lead anomaly and Christmas showing should be remapped on a 1:5000 scale to clarify facies relationships with respect to the postulated arch structure here.

In places a prominently cyclic dolostone (C-8) with dark algal and pale sucrosic textures occupies up to 250 meters of section and appears to abut on the more widespread and uniform units. This represents a locally emergent part of a low "arch" that persisted when minor fluctuations in water depth caused pronounced variations in lithology and has probably been accentuated by reflux.

This shows a lateral equivalence to the second dolostone (Waterfowl formation), dividing limestone (Pika formation) and the upper parts of the BM host dolostone (Eldon formation) that renders mapping of these contacts ambiguous in places.

Along the southeast side of the property, the cliff and step limestone unit (Sullivan formation) shows a laterally equivalent irregular facies change to a pale crystalline dolostone (C-9), not readily distinguishable from the supratidal facies above it (Lyell formation). This posed a problem of mapping that was solved arbitrarily by projecting idealized contacts. Further work in Queen Mary creek to the south, will probably show this is a localized phenomena, and the C-4 horizon will be mappable.

On a larger scale, proximity to the Chancellor shales – middle Cambrian carbonates facies front is an important factor due to the patterns of facies development along the platform margin and the probable source of the mineralizing fluids in the shale basin. An important factor in the picture is the distribution of the favorable deepening sequences with respect to the cyclic dolostone unit (C-8), a special facies representing an arch and a focus for fluid movement that does not extend below the BM host dolostone (Eldon formation), which is also the lowest focus for mineralization.

The relationship between arch structures and Mississippi Valley Type zinc deposits is well documented in other areas and spatial relations, including the proximity of all known showings to this distinctive feature, tend to support this analogy. Similar contacts on the Shag property to those observed to be mineralized, occur below and along strike from the cluster of zinc showings, with no indications of mineralization. The localization of this exceptional cyclic sequence within the Shag claims area may be the reason for this.

Riocanex recommendation November 1979 - The major soil anomaly associated with the BM horizon is close to the cyclic dolostone facies boundary. A larger scale mapping of the area at a scale of 1:2500 is recommended.

C.) Prospecting and soil sampling

Riocanex recommendation March 1979 – Prospecting of the soil anomalies associated with the BM Extension, the C-4 horizon soil anomaly above it, and the lead anomaly southwest of lower Shag creek should be carried out for evaluation as possible drilling targets.

Riocanex recommendations August 1979 – The open-ended zinc soil anomaly southwest of the BM showing, up the hill along the C-4 horizon, should be soil sampled and prospected. The zinc soil anomaly that is continuous along the upper parts of the valley is disrupted by slides from Avalanche Ridge but the mineralization probably continues along the same key contact.

The Albert river dolostone (top of the Cathedral formation), not covered by the 1978 soil sampling survey nor properly prospected, should be examined carefully and traversed by six soil sampling lines to investigate the possibility of mineralization along this section.

Riocanex recommendations November 1979 - The attractive lead soil anomaly, at 1000S to 1300S and 550W to 750W, that was delineated by the 1978 soil sampling program should be prospected and hand trenched.

Examination of the zinc soil anomalies at 2200S – 550W and 2400S – 600W should also be conducted.

Teck Exploration recommendations September 1991 – Two anomalous zinc anomalous zones were identified along L 5+00W from 16+00N to 22+00N.

The first is a three station anomaly (600-1136 ppm zinc) zone located from 19+25N to 19+75N.

The second anomalous area is from 16+50N to 17+25N along L 5+00W. The highest anomaly is 1198 ppm zinc located at 17+25N and correlates with the highest lead value returned in the 1991 soil survey (110 ppm lead). This zone can be traced northeasterly through L 4+00W to L 3+00W (using the 1990 soil results on L3+00W and L4+00W). This zone also correlates with a 1988 IP anomaly centered at 16+25N along L 5+00W.

These two anomalous zones remain open upslope to the southwest. Prospecting in these areas did not uncover any mineralization but the outcrop was poor. Possible followup work should consist of extending the grid lines westward.

D.) Diamond Drilling

Riocanex recommendation March 1979 – If the BM Extension showing area is drilled, holes should be placed in a pattern between the extent of the soil anomaly and a point 60 meters at an azimuth of 290 degrees from drill hole 78-2, to test a possible variation in grade and thickness with distance from the cyclic dolostone contact. Adequate testing of this system will require at least 600 meters of drilling in ten holes.

Riocanex recommendations August 1979 – The BM horizon be tested by drilling along the BM Extension and probably also up Shag creek to look for lateral improvements in grade and thickness.

The rich Monarch-Kicking Horse deposits are hosted by the Cathedral formation 50 km north of the Shag property, in Yoho National Park, in a similar position with respect to the facies front but lower in the section. It is probable that this position in the section is within several hundred feet of the Albert river. The idea that it comprises the lower part of the lowest dolostone unit exposed on the Shag property is likely to be true but is not firmly established.

The lower exposed parts of the Albert river dolostone unit are texturally similar to the central parts of the rock unit hosting the Monarch-Kicking Horse deposits in Yoho Park. The potential size, habit and grade of these deposits is very attractive and if this type of mineralization occurs at the Shag property, it represents the best target for large, rich orebodies.

Zinc-lead showings are widespread on the Shag property and geochemical data indicate it is a regional center of mineralization. Testing for this is a much higher risk than drilling the exposed mineralized horizons but potential returns are also very high.

The Albert river dolostone exposed at Shag represents the top of the Cathedral formation. Using an ideal thickness of 1200 feet (366 meters) for the Cathedral formation at the Shag property, the setting for the Monarch-Kicking Horse deposits would lie 400 – 900 feet (122 – 275 meters) below the Albert river dolostone exposures. This clearly negates the attractiveness of exploring for a Monarch-Kicking Horse setting at Shag.

Given that the drill holes would not have been very deep or expensive it seems strange that Riocanex would have made this statement instead of drilling two or three holes to test the deeper target.

Riocanex recommendations November 1979 – The drill hole 79-6 should be re-entered and completed as the casing was left in the hole. An additional drill hole should be drilled 200 meters northwest of drill hole 79-6 to test the BM horizon further along the large zinc soil anomaly.

The BM horizon, to which the BM, BM Fractures and BM Extension showings, and the largest zinc geochemical anomaly on the Shag property are related, has not been sufficiently tested to rule it out as a possible large, low grade zinc orebody.

Esso recommendation 1981 - Two or three diamond drill holes comprising 200 meters of coring should be drilled to explore the C-4 horizon along the east side of Shag valley between the Pad showing and the Pieces showing as this area has not

been tested. There is a high zinc value to the east of the Pad showing whereas there is no zinc soil anomaly emanating from the Pad showing itself.

Esso recommendations December 1982 - A small grid of several 400 to 600 foot deep holes could be drilled in the downdip direction of the main Red Bed horizon behind (east) of the previously drilled holes that encountered significant mineralization, in order to fully test for a better and more continuous zone of stratabound sphalerite and galena in this direction.

The downdip extension of the Red Bed horizon has not been sufficiently drill tested to preclude the possibility of better and more continuous mineralization. Along the Red Bed horizon, the mineralization tends to be associated with bands of argillaceous, pyritic dolostone. This type of strata would be thicker and more common to the east, in the downdip direction, as one progresses off the carbonate bank toward the carbonate platform basin.

The persistent nature and large number of small sphalerite-galena showings along two similar stratigraphic horizons suggest there is some potential that this mineralization is an expression or small scale replica of a nearby "completely" blind ore body that could occur in a similar setting.

Possible host rock situations include further downdip extensions of the upper parts of the Waterfowl and Eldon formation dolostones, as well as that of the stratigraphically lower Cathedral formation dolostone. The latter hosts the Monarch and Kicking Horse lead-zinc deposits occurring further to the north along the same carbonate-shale facies boundary that passes through the Shag claims.

Though significant mineralization in a blind setting is always a possibility, surface work by Esso on the Shag claims resulted in no other zones warranting further prospecting or any other mineralization warranting diamond drilling, apart from that of the Red Bed mineralized horizon.