ASSESSMENT REPORT

ON

EXPLORATION PROGRAMS 2007-2010

SBH PROPERTY

Birch Mountains, Athabasca Region, Alberta, Canada

DNI METALS INC.
(formerly Dumont Nickel Inc.)

by
Shahé F.Sabag MSc PGeo
Signing Date: August 15, 2010

Part-B
Technical Report

Metallic and Industrial Minerals Permits#: 9308060406*, 9308060407*, 9308060408*, 9308060409*, 9308060410*, 9308060411*, 9308060412*, 9308060413*, 9308060414*, 9308060415*, 9309010692*, 9310030798, 9310030799, 9310030800, 9310030801, 9310030802, 9310030803, 9310030804*, 9310030805, 9310030806*, 9310030807, 9310030808, 9310030809, 9310030861, 9310030862, 9310030863, 9310030864, 9310030865, and 9310030866.
*permits against which assessment expenditures are being applied

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F3: DNI Subsurface Stratigraphy Synthesis Study 2009-2010.
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TERMS OF REFERENCE

This Report summarizes exploration work and programs carried out during 2007-2010 by DNI Metals Inc. at its 100% held SBH Property, Alberta. The Report was prepared for DNI by S.Sabag PGeo, who was commissioned by DNI for its preparation, for filing toward assessment work requirements for the Property.

Much of this Report concerns itself with analytical and metals leaching testwork completed by DNI on samples collected from the Property, and focuses mainly on investigation of extractability of metals from metal enriched zones previously identified within the Second White Speckled Shale Formation. The Report also contains information from historic work previously completed by others over the geographic area currently under the Property and its vicinity. The foregoing historic work results were reviewed, synthesized and re-interpreted by DNI, and ist findings consolidated in 2008 into a NI-43-101 compliant technical report for the Property prepared also by the author of this Report, a copy of which is appended herein.

A number of reports from third-party consultants to DNI are appended herein summarizing their findings from studies and work programs commissioned by DNI. Given the ongoing nature of some of the third-party work, some of the reports therefrom included herein are in memorandum format intended to serve as progress summaries, and others represent interim reports from work that is ongoing.

As at the date hereof, additional work is in progress comprising continuation of testwork reported on herein, and work in preparation for a 2010-2011 winter drilling program for the purposes of classifying resources and collecting cored samples from the mineralized zones under exploration for expanded R&D leaching testwork.

Shahé F.Sabag PGeo
President & Chief Executive Officer
DNI Metals Inc.
August 15, 2010

1. SUMMARY

Property

DNI Metals Inc. holds a 100% interest in the SBH Property (the "Property") consisting of twenty-nine (29) contiguous Alberta Metallic and Industrial Mineral Permits (the "Permits"), representing an aggregate of 2,536 contiguous square kilometers (253,600 ha). The Permits extend over a 50kmx60km quadrant defined by T97-T103/R12-R17/W4, in northeast Alberta. The Property is located over the Birch Mountains, approximately 120 kilometers to the north of Fort McMurray, in the Athabasca oil sands region. DNI assembled the permits comprising the Property during 2008-2009 (certain portions allowed to lapse and re-acquired in 2010). DNI acquired the permits relying on extensive third-party historic exploration records.

DNI's 100% interest in the Property is subject to a traditional royalty retained by the Province of Alberta against metal production revenues therefrom. There are no other overriding royalties encumbering DNI's interest. The Permits grant DNI the exclusive right to explore for metallic and industrial minerals for fourteen years subject to traditional assessment work performance biannually, and also grant use of the surface for the purposes of mineral exploration work.

Coexisting rights to oil sands, oil and gas over the Property are held by third parties. There are four active oil sands operations under different stages of development adjacent to the Property's east and south boundaries (Horizon, Pierre River, Equinox and Fronteer). The Horizon oil sands mine is in production. There are active gas pipelines over the south-eastern parts of the Property.

DNI has been actively exploring the Property since its acquisition, predicated on recommendations of its NI-43-101 technical report prepared for the Property in 2008 (available on SEDAR) relying on extensive third-party public exploration records and databases from prior work dating back to the 1990's.

Permits Status & Assessment Work Expenditures

The permits comprising the Property have commencement dates ranging Jun30/2008, Jan29/2009 and Mar1/2010, and earliest first anniversary dates in 2010. The permits are contiguous and there are no prior year excess expenditures previously "banked" for use against renewals. An aggregate of $958,362 (including a 10% provision for administrative overheads) was spent on exploration activities on the Property during the period Sep/2007-Jun/2010 toward completion of considerable data consolidation and synthesis, subsurface stratigraphic database expansions and modeling, field sampling, leaching and bioleaching R&D testwork, historic drill core archives sampling and verification, and initial CO_2 sequestration baseline testwork. The aggregate expenditures are being applied against only thirteen of the permits (97,248ha) for assessment filing purposes.

Exploration Focus

DNI's primary exploration targets on the Property are metal accumulation zones hosted in polymetallic black shales associated also with considerable exhalative volcanogenic debris, bentonite development and extinction markers. The shales were discovered in 1995 by others, but could not be exploited at the time by then available metals recovery technologies. Advances over the past decade in the application of bioleaching to economic extraction of metals has significantly enhanced merits of polymetallic black shales worldwide as a long term future source to metals, and has similarly transformed the Alberta polymetallic shales from geological curiosities into prospective mineral opportunities.

The polymetallic zones are hosted in the Cretaceous Second White Speckled Shale Formation which is known to be near the surface over the entire Property, and is exposed throughout its eastern and southern parts. Several potential zones were identified by historic work, two of which have been confirmed by historic drilling. The shale hosted metal zones are envisaged to extend over vast areas (50-100 sq km each), occurring as flat-lying near-surface "blankets" amenable to extraction by open pit bulk mining methods. Two of the zones are recognized by DNI to host two Potential Mineral Deposits (under NI-43-101). The Property's large size is appropriate to the type and size of metal targets being sought by DNI.

Of collateral interest, is the suspected presence over the Property, and the surrounding Birch Mountains, of exhalative volcanogenic venting unique to the Birch Mountains, as a source to the volcanic debris, bentonites and metals discovered in the Speckled Shale. The potential of the foregoing to host sedimentary exhalative - SEDEX style - sulfides has never been investigated and comprises the secondary exploration objective over the Property, although to date DNI has not yet commenced field work to explore the foregoing potential.

Prior Work History

The only prior exploration of the Property for metals is extensive work carried out by Tintina Mines Limited during 1993-1999, augmented by concurrent work by the Alberta Geological Survey and the Geological Survey of Canada, partly in collaboration with Tintina. Some of the foregoing work was carried out by, or under the supervision or direction, of S.F.Sabag PGeo the author of this report and DNI's QP for the project and its current president, while he was affiliated with Tintina in charge of its exploration programs. There has since been no metals exploration work on the Property.

Tintina discovered the polymetallic black shales by accident in 1995 while searching for metal bearing permeability traps in redox fronts across northeast Alberta. The shales were initially explored as prospective redox fronts which could accumulate metals at their base, although 1997 verification drilling intended to probe beneath them discovered metal enrichment hosted in the black shales instead. What started out in 1993 as a search for gold-copper bearing redox systems ultimately led over a four year period to the discovery of previously unrecognized extensive metalliferous black shale assemblages at the Lower-Upper Cretaceous unconformity, associated also with considerable subaerial venting and previously unknown extinction markers.

The databases available from the historic work provide baseline geological information from the Property. They include databases from systematic reconnaissance level and in-fill surface geochemical, lithogeochemical and mineral sampling, in addition to geophysical and, more localized, drilling information, all of which augmented also with subsurface information from prior oil-gas drilling over the Property.

Though the polymetallic black shales underlying the Property were discovered in 1995, they could not be exploited by then available metals recovery technologies. Advances over the past decade in the application of bioleaching to economic extraction of metals from has significantly enhanced merits of polymetallic black shales worldwide as a long term future source to metals, and has similarly transformed the Alberta polymetallic shales from geological curiosities into prospective mineral opportunities.

Physiography, Access and Surrounding Oil Sands Mines

The general region is of low, often swampy, relief punctuated by a handful of features protruding above the otherwise flat terrain. The Birch Mountains, located to the west of the Athabasca River, is the most conspicuous topographic feature in the region, protruding 500m-600m above the surrounding areas, with a distinct sharp erosional edge. The Birch Mountains provide excellent vertical exposures, especially in river valleys, across relatively long sections of the flat-lying Cretaceous stratigraphy of northeast Alberta, which are otherwise buried to the west and eroded to the south and east. DNI's exploration targets are nearer the surface of the Birch Mountains and are, accordingly, not exposed elsewhere in the region, except to the west of the Property where they are buried under successively deeper cover westward.

Access throughout the region is in a state of rapid development, providing road access to many pending oil sands projects skirting the Birch Mountains surrounding the Property to the east and south. There is good access to the Property's east and south boundaries by roads along the west shore of the Athabasca River. There is access by barge/boat via the Athabasca River, and also good access by rotary as well as fixed-wing aircraft relying on many private and public airstrips around the Property, one of which is on its eastern part. Access within the Property is best by rotary aircraft, although many old trails and seismic lines offer adequate, albeit selective, access especially during winter months.

Property Geology

The Property is situated in the sedimentary sequences of the Western Canada Sedimentary Basin dominating Alberta geology. The sedimentary sequences unconformably overlie a relatively stable Precambrian platform with localized zones of reactivation, and comprise a wedge shaped sedimentary pile bounded by the Rocky Mountains to the west the Canadian Shield to the east.

The sedimentary pile is substantially a flat-lying "layer cake" consisting of Devonian sequences at its base (carbonates, evaporite and basal red beds), which are unconformably overlain by Cretaceous clastic sedimentary Formations, the lowermost of which (McMurray Formation) hosts the oil sands deposits. The Lower Cretaceous sequences transition up-stratigraphy through a series of unconformities and disconformities to Upper Cretaceous clastic sequences separated from same by a principal extinction marker (the Fish Scales Marker Bed, Shaftesbury Formation) and a lesser known extinction horizon, the Second White Specks Formation.

A number of "hot-spots" have been recognized in the region, believed to reflect heat generation by the decay of radioactive elements at the top of the Precambrian basement beneath the Western Canada Sedimentary Basin. The Birch Mountains, and the Property, lie over one of the most significant hot-spots recognized, and Cretaceous Formations therein exhibit unique characteristics which are different than exposures of the same Formations elsewhere in northern Alberta away from the Birch Mountains.

Bedrock exposures throughout the Property are scarce (<2%) and, given the flat-lying stratigraphy, they are restricted to valley walls of the many creeks and rivers which define incisions confined to the eastern and southeastern erosional edge of the Birch Mountains, forming a narrow 5-10km arcuate lobe. The available exposures enable intermittent observation and sampling across 300m-350m of Cretaceous stratigraphy, extending upward from the top of the Manville to well into the Colorado Group, straddling the Albian-Cenomanian boundary, exposing five Formations: the Clearwater/Grand Rapids, the Viking/Pelican, the Westgate, the Fish Scales, and the Second White Speckled Shale Formations. Many of these Formations are eroded to the east of the Birch Mountains and to its south.

Near surface geology over the Property consists entirely of Lower-Upper Cretaceous sequences, and mostly straddles the Second White Speckled Shale and the Shaftesbury (Belle Fourche) Shale Formations. These shales are typical black shales with average 1.8% and 6.2% organic Carbon, respectively. The Second White Speckled Shale is enriched in Mo-Ni-V-U-Zn-Cu-Co-Ag-Au and rare metals (including Li) compared to its enveloping Formations, and is furthermore, a typical metal enriched black shale compatible with the Rift-Volcanic type of metal enrichment style recognized from black shales worldwide.

The Rift-Volcanic type of metal enrichment in black shales is associated with intracontinental rifting and basic volcanism in the oceanic crust. Metal accumulations of this type comprise alternating layers of metalliferous black shale and tuffaceous material, are known to occur around volcanic centers, and are believed to have been controlled by hydrothermal-volcanogenic events (submarine exhalations) in the presence of organic matter. The metal accumulations are further characterized by modest-low grading deposits of immense size (300MM-1,000MM+ tonne range) contained in tabular geometries, with thicknesses ranging 20m-100m extending over tens of square kilometers.

The overall region surrounding the Property is better known for its oil sands operations than for its mineral potential, although co-product metals (V, Ti) in oil sands deposits have attracted intermittent attention. Polymetallic mineral aggregations in the Cretaceous carbonaceous shales being targeted by DNI were unknown, and not recognized, until their discovery in 1995 and confirmation by drill testing in 1997.

Economic Geology and Metal Zones

Metals enrichment of interest on the Property consists of Mo-Ni-V-U-Zn-Cu-Co-Ag-Au and rare metals enrichment (including Li) hosted in, and confined within the contacts of, the Second White Speckled Shale Formation. This Formation is typically a 20m-40m thick flat-lying "blanket" of poorly consolidated black shale, gently block-faulted in several places. Based on historic drilling, the Formation is 18.4m-26.2m thick at the Buckton Zone, and approximately 11m thick over the portion drilled at the Asphalt Zone.

The Second White Speckled Shale demonstrates good lateral geological and metal grade continuity between widely spaced historic holes drilled across an 8km cross-section over the Buckton Zone and also between the two historic holes drilled 900m apart over the Asphalt Zone. Average metal grades reported by the historic drilling also demonstrate remarkable consistency between averages from the Buckton Zone and those from the Asphalt Zone located 30km away to its south, reinforcing the typically good grade consistencies documented by historic surface sampling of the Shale's exposures across the entire 50km length of the Property. This is typical of the good lateral continuity characterizing black shales worldwide.

Vertical metal grade variations in the Second White Speckled Shale depict zonation for many of the base metals, with (overall) better concentration of Mo-Ni-U-(Zn) nearer the Formation's upper contact, dominated by intermixture of considerable bentonitic seams into the shale, and overall better concentration of V, Cu throughout its midsection. Metals enrichment in the upper sections of the Formation is also accompanied by Ba, S, Na and Corg enrichment, and by higher pyritic contents ranging upward to 20% by volume. Vertical grade zonation is typical of metalliferous black shales worldwide.

The Second White Speckled Shale contains fine and coarser sulfides which are dominated by many varieties of Fe-S species. The higher metal grades are contained in the more bentonitic upper sections of Shale. Cu-sulfides, Ni-sulfides as well as native gold have been documented in mineral concentrates recovered from the Shale, though no systematic mineralogical work exists characterizing its overall mineral make-up. Metals in the Second White Speckled Shale are likely hosted in multiple carrier minerals some of which are inorganic (sulfides, oxides) and others are likely organic (or clay) forms, with a suggested grouping of the various metals into one group (Mo, Ni, Zn, Mo, +U) characterized by affinity for enrichment predominantly in, or as, inorganic minerals and another group (V, Cu) exhibiting affinities for enrichment in organic (or clay) species, some subpopulation overlaps, notwithstanding. Recent mineral liberation (MLA) work completed by DNI suggests that at least some of the metallic mineralogy may be in the form of readily liberated charged metal ions adsorbed on clays, which suggestion is consistent with results from DNI's 2009-2010 sulfuric acid leaching and bioleaching R&D testwork.

The collective historic work from the Property and vicinity indicate that while none of the metals is present in the Second White Speckled Shale in sufficiently high concentrations to be of economic merit by itself, the "pay" metals Mo, Ni, U, V, Zn, Cu, Co (and to some extent also Ag) collectively represent sufficient in-situ value on a combined basis to place the Shale within reach of economic viability provided the metals can be efficiently recovered on a combined basis. DNI's 2009-2010 metals leaching and bioleaching R&D testwork demonstrated viability of collective recovery of the metals, many of which with high recoveries. The historic information is superceded by extensive metals recovery testwork being conducted by DNI.

DNI's recent metals leaching R&D testwork corroborates, and expands on, historic metals recovery information which were encouraging, though fragmented and orientative, demonstrating that collective metals can be recovered from the Shale. The historic work also suggests that: (i) the metals are mostly contained in non-organic forms; (ii) a metal concentrate might be successfully prepared once the Shale's clay matrix is disaggregated (deflocculated); (iii) that gold can be recovered from the shale by conventional carbon-in-leach cyanidation once the clay matrix is deflocculated; and (iv) that gold content of the Shale may be higher than that suggested by routine analysis of small, typically 30gm, samples by fire assay or INA, due to nugget effect.

The collective historic work from the Property and vicinity indicate that the Second White Speckled Shale Formation holds potential for hosting laterally extensive metal enrichment zones with potential for delivering immense volumes of metals from tonnages which are partly exposed at, or are near, surface. The work also suggests that, provided metals can be effectively recovered on a combined basis from the Shale, the most attractive features of metal deposits identified therein would be (i) their potentially immense projected size, hence the potential as a long term source of metals;(ii) their proximity to surface and unconsolidated nature, hence likely amenability to extraction by low cost large scale bulk mining; and (iii) the remarkable uniformity of geology and metal grades as demonstrated by the drilling and other sampling over the large areas over the Property and it vicinity.

Overall conclusions from all historic work over the Birch Mountains Middle-Upper Cretaceous stratigraphic package over the Property, overwhelmingly propose a nearby volcanogenic source(s) to the metals discovered. The work further suggests that metallic mineralization in the area is congregated around volcanic centers characterized by considerable exhalative activity, and supports speculation of the existence in the area of yet undiscovered sedimentary exhalative - SEDEX style - sulfides.

In addition to its demonstrable geological merits, the Property's location in a mature mining district, within a well organized regulatory, jurisdictional and land use permitting framework tailored to the development of laterally extensive deposits, provide considerable logistical and infrastructural advantages. The local availability of sulfur as a waste product of surrounding oil sands operations, is an added benefit to any leaching methods which might ultimately be formulated for the recovery of metals from the shale, and would be a welcome sulfur waste mitigation activity in the region.

Anomalies, Target Areas, Zones & Potential Mineral Deposits

DNI's NI-43-101 technical report for the Property (2008) recognized and identified six large mineralized systems on the Property, comprising six large contiguous areas centered over circular, or closed, surface or subsurface features associated with metals enrichment in one form or another either over them or on their flanks. The six areas are designated as six distinct sub-properties which are at different stages of development, ranging from areas with reconnaissance level anomalies which have not previously been explored, through drill-ready target areas with considerable historic work, to two Potential Mineral Deposits at two of the sub-properties both of which are ready to advance toward the resource classification stage, and both hold good potential for considerable expansion.

The six sub-properties range in size 100-300 sq km each and their size is appropriate for the principal type of polymetallic mineralization being sought by DNI, namely, nominal 5kmx5km or larger zones of polymetallic enrichment in flat-lying near-surface "blankets" of polymetallic black shale. The sub-properties share many similar characteristics, and provide two different, apparently related, types of prospective exploration and development targets, namely; (i) metal enriched polymetallic black shales; and (ii) possible source(s) to metals therein, proposed herein to be nearby exhalative vents with untested potential to host sedimentary exhalative - SEDEX style - sulfides. The six sub-properties consist of the following, ordered from the most developed to the least explored:

The Buckton polymetallic Zone and Potential Mineral Deposit represents a near-surface polymetallic enrichment zone in the Second White Speckled Shale which is partly exposed in nearby river valleys and has been confirmed by six widely spaced drill holes. The Zone was discovered by six 3-inch diameter vertical historic holes which were drilled to verify suspected metallic mineralization buried beneath composite surface anomalies over a 5kmx8km area. The drill holes are arranged along an 8km cross section generally paralleling intermittent exposures of the Zone along the adjacent valley walls of Gos Creek approximately 1km-2km to its southeast. The drilling demonstrated good lateral consistency of metal grades among the holes, and a vertical zoned pattern characterized by progressive Mo-Ni-U-(Zn)-(Ag) enrichment up-hole and better concentration of V-Cu-(Zn) in their midsection.

Relying on the historic drilling results, reinforced also by results from exposures of the Second White Speckled Shale Formation in valley walls near the drill-section and near the holes, and further reinforced by surface geochemical data and the remarkable lateral continuity in geology and orderly grades exhibited by the historic drilling, DNI's NI-43-101 report for the Property proposed that the Buckton Zone contains a Potential Mineral Deposit as understood under NI-43-101. The Buckton Potential Mineral Deposit extends over an approximate 26 square kilometers, with an estimated thickness varying, on average, 20.5m to 21.9m, representing an aggregate of approximately 1.2-1.3 billion short tons of mineralized material (1.1 to 1.2 billion tonnes) hosted in the Second White Speckled Shale Formation. The polymetallic mineralization consist of Mo-Ni-U-V-Zn-Cu-Co-Ag in addition to gold whose average grade has not yet been definitively established over the Zone and is treated as nil in this report. DNI's 2009-2010 verification analytical work reported Specific Gravity measurments which are higher than that on which the foregoing tonnages are based, suggesting that the Deposit may be larger than previously estimated.

The proposed Buckton Potential Mineral Deposit is conceptual in nature, and is intended solely to provide an indication of the overall potential of the Buckton Zone. In addition, there has been insufficient drilling conducted over the Zone to define a mineral resource, and it is uncertain whether further drilling will define a mineral resource over the Zone.

Grade Averages and Gross Metals Content: Potential Mineral Deposit - Buckton Zone

	Grade Range (ppm)	Grade Range (lb/st)(opt)	Gross Metal/Oxide Content (lb) (oz) Low Estimate	High Estimate
Mo	62ppm-86ppm	0.12lb/st-0.17lb/st	150,000,000	225,000,000
[MoO3]		0.19lb/st-0.26lb/st	225,000,000	338,000,000
Ni	121ppm-160ppm	0.24lb/st-0.32lb/st	293,000,000	419,000,000
U	25ppm-37ppm	0.05lb/st-0.07lb/st	61,000,000	96,000,000
[U3O8]		0.06lb/st-0.09lb/st	72,000,000	113,000,000
V	623ppm-776ppm	1.25lb/st-1.55lb/st	1,511,000,000	2,027,000,000
[V2O5]		2.24lb/st-2.79lb/st	2,719,000,000	3,649,000,000
Zn	282ppm-360ppm	0.56lb/st-0.72lb/st	683,000,000	940,000,000
Cu	70ppm-83ppm	0.14lb/st-0.17lb/st	169,000,000	217,000,000
Co	19ppm-24ppm	0.04lb/st-0.05lb/st	46,000,000	63,000,000
Ag	0.3ppm-0.8ppm	0.01opt-0.026opt	12,000,000	34,000,000
Au	assumed nil	assumed nil	assumed nil	assumed nil

lb/st=lbs per short ton; opt=ounces per ton Gross metal contents are rounded to nearest million units *

The Buckton Potential Mineral Deposit demonstrates good lateral continuity and is vertically zoned, containing generally better grading material over its upper half, and progressively better grades northward in the upper parts of the drill holes accompanied by progressive northward thickening of the better grading sections. Subzones can be blocked out within the Potential Mineral Deposit which are either of better grade than the entire volume (e.g 15%-30% better grades over upper half of the volume being the uppermost 10m), or which are dominated by different groupings of metals, especially over its northern portion where its uppermost sections are progressively better mineralized with Mo-Ni-U-Zn-Co. The upper subsidiary northern subzone, occupies the northern half of the uppermost 10m of the Potential Mineral Deposit and represents approximately 20%-30% of its volume. Mo-Ni-U-Zn-Co within this subsidiary subzone represent sufficient combined value to prioritize exploration of the subzone as a stand-alone mineralized volume.

The Buckton Potential Mineral Deposit is open to the south, the west and the north. Its projected northerly extension holds the best potential for providing considerable additional mineralized volumes over an additional 5km-10km under sufficiently thin overburden cover to have realistic potential for access by open pit. The Potential Deposit might extend to the south for an additional 6km, although the southerly projected extension may be an altogether separate mineralized Zone, designated herein as the Buckton South Target Area, which has not yet been drill tested.

The northerly trend of better drill grades in the upper portions of the Buckton Zone, the general trend of northward thickening of the better grading drill sections, together with observations of northerly increasing thickness, frequency and distribution of bentonites in the Buckton drill holes, suggest a northerly nearby source to volcanic debris (and metallic mineralization) incorporated into the Second White Speckled Shale at the Buckton Zone. The trends suggest the presence of exhalative venting to the north of the Zone with potential for hosting sedimentary exhalative sulfides. Several possible targets are identified herein for future follow-up.

The Asphalt polymetallic Zone and Potential Mineral Deposit represents near-surface polymetallic enrichment in the Second White Speckled Shale, which is partly exposed in nearby river valleys and has been confirmed with two historic drilled holes. The Zone was discovered by two 3-inch diameter historic vertical holes, drilled to verify suspected metallic mineralization buried beneath composite surface anomalies which, together with enforcing stream sediment geochemical anomalies in adjacent Pierre River and Mid Creek, and partial exposures of the shale in drainages in their vicinity, collectively represent a 3kmx10km anomalous area.

The Asphalt holes exhibit consistency of averaged metal grades between the two holes and are also consistent with the average grade of the historic drilling completed over the Buckton Zone located approximately 30km to the north of the Asphalt Zone. Lateral consistency is also exhibited in metals grades between the two holes, although metal grades exhibit vertical zoning trends generally similar to those observed at the Buckton Zone, namely, a progressive enrichment of Mo-Ni-U-(Ag) upstratigraphy, consistent with progressively more bentonitic sections seen in the drill core which carry more abundant sulfides. V-Zn-Cu-Co, exhibit less ordered mixed trends.

Relying on the historic drill holes, together with reinforcing surface geochemical results and exposures of the Shale in nearby river valley walls, DNI's NI-43-101 report for the Property proposed that the Asphalt Zone contains a Potential Mineral Deposit as understood under NI-43-101. The Asphalt Potential Mineral Deposit extends over an approximate 1km x 4.5km area comprising approximately 4.5 square kilometers, with a thickness ranging 7.2m to 11.6m, and represents an aggregate of approximately 109-132 million short tons of mineralized material (99-120 million tonnes). DNI's 2009-2010 verification analytical work reported Specific Gravity measurments which are higher than that on which the foregoing tonnages are based, suggesting that the Deposit may be larger than previously estimated.

The proposed Asphalt Potential Mineral Deposit is conceptual in nature, and is intended to demonstrate the potential of identifying mineralized material at the Asphalt Zone subject to additional future drilling. In addition, there has been insufficient drilling conducted over the Zone to define a mineral resource, and it is uncertain whether further drilling will define a mineral resource over the Zone.

Grade Averages and Gross Metals Content: Potential Mineral Deposit - Asphalt Zone

	Grade Range (ppm)	Grade Range (lb/st)(opt)	Gross Metal/Oxide Content (lb) (oz) Low Estimate	High Estimate
Mo	63ppm-73ppm	0.13lb/st-0.15lb/st	14,000,000	19,000,000
[MoO3]		0.19lb/st-0.22lb/st	20,000,000	29,000,000
Ni	122ppm-144ppm	0.24lb/st-0.29lb/st	27,000,000	38,000,000
U	31ppm-47ppm	0.06lb/st-0.09lb/st	7,000,000	12,000,000
[U3O8]		0.07lb/st-0.11lb/st	8,000,000	15,000,000
V	664ppm-690ppm	1.33lb/st-1.38lb/st	145,000,000	182,000,000
[V2O5]		2.39lb/st-2.48lb/st	261,000,000	328,000,000
Zn	282ppm-376ppm	0.56lb/st-0.75lb/st	62,000,000	99,000,000
Cu	89ppm-89ppm	0.18lb/st-0.18lb/st	19,000,000	24,000,000
Co	20ppm-20ppm	0.04lb/st-0.04lb/st	4,000,000	5,000,000
Ag	0.3ppm-0.3ppm	0.01opt-0.01opt	1,000,000	1,000,000
Au	assumed nil	assumed nil	assumed nil	assumed nil

lb/st=lbs per short ton; opt=ounces per ton Gross metal contents are rounded to nearest million units *

The Asphalt Potential Mineral Deposit is open toward the north and the northwest. It holds potential to deliver additional mineralized material from areas immediately to its northwest over an additional distance of 5km-6km, and similarly also for an additional 6km distance to its northeast. Rare metals, including Lithium, were also discovered and recovered during DNI's 2009-2010 metals leaching testwork in surface samples from the Asphalt Zone, although same has not yet been incorporated into estimates of the Asphalt Potential Mineral Deposits on the Property.

A nearby source is suggested by the historic work for the volcanogenic debris and bentonites noted in the Asphalt drill holes, suggesting also that the general vicinity of the Asphalt Zone holds potential for hosting exhalative metalliferous venting possibly associated with SEDEX style sulfide mineralization hosted in the Cretaceous stratigraphy. Several potential targets are suggested by the historic work.

The Buckton South Target Area and **The Eaglenest Target Area** comprise large 100-300 square kilometer areas each which have undergone considerable prior historic surface work which has identified prospective targets to be tested by future drilling to probe for suspected buried mineralized shale beneath the surface of each Target Area. Portions of both Areas also present reconnaissance level potential for presence of nearby exhalative vents. The Buckton South Target Area has potential for hosting southerly extension of the Buckton polymetallic Potential Mineral Deposit over a 6km distance, or an altogether separate polymetallic zone of similar dimensions.

The McIvor West Anomaly and **The North Lily Anomaly** comprise two 50-100 square kilometer anomalies which have been designated based on broad interpretations of general information, and have not previously been investigated in the field to determine if they hold realistic potential for hosting buried polymetallic mineralization. They are in the reconnaissance stages and present areas which might hold potential for hosting mineralized shale buried beneath their surface.

DNI Exploration and Development Programs and Work Progress

Conclusions and interpretations of DNI's NI-43-101 technical report for the Property form the basis of its exploration work on the Property, and the report's recommendations define DNI's critical path to advance and develop the six sub-properties over a four to five year period via series of multi-phased integrated programs, with an aggregate $5.3 million budget, addressing the different requisites of each sub-property.

The six sub-properties are at different stages of development, ranging from two reconnaissance level anomalies (McIvor West Property and North Lily Property), through two drill-ready target areas with considerable historic work (Eaglenest Property and Buckton South Property), to two partly drill tested proposed Potential Mineral Deposits, which are open and ready to advance through in-fill drilling to classified resources (Buckton Property and Asphalt Property). DNI regards the six sub-properties as distinct properties in their own right, requiring different exploration/ and development programs to advance their development.

DNI's work programs address the two prospective target types on the Property, namely; (i) exploration and development of known and suspected Shale hosted polymetallic mineralization; and (ii) reconnaissance level exploration for SEDEX style sulfide mineralization as the suspected source to the metals and exhalative debris hosted in the shales.

To the extent that the potential of any polymetallic shale hosted deposits which might exist on the Property is ultimately dependant on whether metals can be effectively and collectively recovered from the shales, DNI has thus far held all work intended to identify additional volumes of shale hosted polymetallic mineralization over the Property, or intended to expand the proposed Asphalt and Buckton Potential Mineral Deposits, in abeyance until such time as metal recoveries are definitively established. DNI has, accordingly, focused its efforts on metals leaching R&D testwork to determine recovery of the metals from the shale relying on surface samples from the Asphalt and Buckton Zones.

DNI is currently partway through a two phased program to evaluate the polymetallic potential of the Second White Speckled Shale as follows: **Phase-1**: comprises substantially only metallurgical testwork to determine recovery of the metals from the shale relying on samples from the Asphalt and Buckton Zones; and **Phase-2**: contingent upon obtaining encouraging results from the metallurgical testwork, to consist of additional drilling and related work over the Asphalt and Buckton Potential Mineral Deposits to classify portions thereof to a resource and to expand the two Deposits by testing their projected extensions. As at the date hereof, DNI has substantially completed Phase-1 of the work during 2008-2010, and results therefrom are consolidated in this Report.

DNI Current Programs 2007-2010 and Summary of Conclusions

DNI commenced its exploration work on the Property prior to commencing its land assembly in September 2007, and has since actively continued its work to advance development of the Property. While DNI's earlier work mainly entailed data consolidation and review, DNI quickly progressed into extensive laboratory based activities focusing almost entirely on investigating metal extraction and recovery testwork studies to formulate an economically viable flowsheet for extraction of collective base metals from the mineralized shales. This work entailed completion of bioleaching as well as conventional inorganic leaching testwork. Much of this testwork is ongoing and is expected to continue through the balance of

2010 to scale up of what is currently benchtesting through column leaching tests toward pilot heap leaching tests slated for 2011. DNI is in the process of planning its 2010-2011 winter drilling

DNI's work programs completed during the period 2007-2010 included the following: (i) Regional and Property scale geological data synthesis and compilation, including synthesis of information from the Western Canada Sedimentary Basin with specific focus on northeast Alberta the Birch Mountains (2007-2008); (ii) Consolidation of the information from geological data synthesis and compilation into databases as well as preparation of a NI-43-101 compliant Technical Report for the Property (2008); (iii) review, inventory and verification analysis of historic third-party drill core archived at the MCRF from the Property (2008-2009); (iv) Expansion of subsurface geological database, related synthesis and subsurface stratigraphic modeling (2008-2010); (v) Strategic field sampling program and related analytical work (2009 and 2010); (vi) A number of leaching and mineral studies as follows: Initial cyanidation testwork (2009); Micro scaled mineral (MLA) study (2009-2010); Bio-Organism cultivation, culture adaptation and BioLeaching studies (BRGM and ARC, 2009-2010), sulfuric acid leaching testwork (2010); and (vii) CO_2 Sequestration study – ARC (2009-2010.

DNI incurred an aggregate of $958,362 (including 10% administrative overheads) toward completing the above work programs and is applying the foregoing expenditures toward assessment requirements of 13 of the 29 permits comprising the Property. Additional work is in progress including expanded leaching testwork and a planned 2010-2011 winter drilling program and related reserve estimation study.

The above work concluded as follows: (i) downhole geology and grades reported from historic drill core relied upon for estimation of Potential Mineral Deposits were successfully verified; (ii) bioculturing and adaptation testwork demonstrated that microorganisms capable of growing under bioleaching conditions naturally exist in the Second White Speckled Shale and that enrichment cultures can be obtained from the Shale whose adaptation to the Shale is immediate, and that there is no "poisoning" by the shale's geochemistry nor does the shales chemistry inhibit start-up of bacterial growth; (iii) leaching and bioleaching tests of fresh surface samples from the Asphalt and Buckton Zones concluded that the Shale is amenable to bioleaching and to abiotic leaching in sulfuric acid; (iv) batch amenability bioleaching tests demonstrated that collective group of metals can be extracted (recovered) from the Shale and that non-optimized nominal high recoveries typically ranging 80%-95% can be achieved for Ni-U-Zn-Cd-Co, that middling recoveries typically ranging 40%-55% can be achieved for Cu-Li; and that the typically poor recoveries documented for Mo-V, ranging 2%-50% for Mo and 2%-30% for V, might be partly due to re-precipitation of Mo and V from solution associated with re-precipitation of Fe and such might be enhanced; (v) leaching and bioleaching tests of Asphalt Zone samples reported incidental solubilization of previously overlooked rare metals, including Lithium, as a co-product of the base metals of interest hence representing previously unrecognized additional value to the Shale. DNI's work also reached a number of other geological conclusions which are incorporated in the above sections; (vi) CO_2 sparging tests conducted to test the Speckled Shale's capacity for sequestering CO_2 also reported dissolved metals due to the moderate acidity created by the CO_2 (carbonic acid), offering possibilities for using CO_2 as the principal leaching reagent (instead of other acids or bioleaching) to dissolve metals from the shale. The foregoing is a novel avenue which merits concerted evaluation.

DNI is partway through work programs per recommendations of its NI-43-101 technical report for the Property. As such, no additional recommendations are made herein since they are already outlined in considerable detail in the foregoing report. DNI has substantially completed Phase-1 of the exploration work recommended by the technical report, and has reached a milestone natural break in the programs. None of exploration results collected from the above work equivocate any of the recommendations made in the technical report, although minor recommendations are inserted in this Report as topics which require future expansion, many of which relate to metals leaching R&D testwork.

2. INTRODUCTION AND SCOPE

2.1 INTRODUCTION

This report (the "Report") documents exploration and R&D testwork carried out by DNI Metals Inc. (formerly Dumont Nickel Inc.) on its SBH Property (the "Property") during the period 2007-2010. **Dumont Nickel Inc. concluded corporate reorganization on May 11, 2010, and changed its name to DNI Metals Inc. Considering that much of the work reported herein was carried out prior to corporate reorganization under the company's old name of Dumont Nickel Inc. the names "DNI" and "Dumont" are used interchangeably throughout this Report.**

This Report was is intended for filing toward assessment work requirements of some of the Metallic and Industrial Mineral Permits comprising the Property as better outlined in Section 4. This Report also represents a natural milestone reached in exploration of the Property, and future work to follow or work that is in progress, represent in most parts expansions of DNI's programs reported herein, or are implementation of recommendations which flow therefrom.

This Report was prepared by Mr.S.F.Sabag PGeo, who is president and CEO of DNI and its QP in connection with work on the Property. The Report, however, also relies upon and incorporates findings from work completed by other duly qualified independent geoscientists or engineers who were retained by DNI to conduct certain work programs on its behalf under Mr.Sabag's direction or supervision. Independent stand-alone reports prepared by the foregoing third-parties are appended herein, and summaries of salient information therefrom are extracted into the main body of this Report.

DNI acquired the Permits relying on geoscientific baseline historic technical information from third-party reports, press releases, documents and mineral assessment reports, which contain historic results gathered by them from areas presently under the Property. Some of the foregoing third-party work comprises results from exploration carried out by Tintina Mines Limited which extensively explored the area during 1993-1999, which work was carried out by, or under the supervision or direction, of the author of this Report while he was vice president of Tintina. Exploration results from the foregoing work are summarized in a series of public mineral assessment reports prepared by the author of this Report.

Although this Report conforms to Canadian mineral exploration best practices guidelines it is not formatted to comply with National Instrument 43-101 ("NI-43-101") nor is it intended as a NI-43-101 Technical Report for the Property. A NI-43-101 compliant Technical Report (dated Oct28/2008) for the Property is, however, appended herein (as Appendix B1) which Technical Report predates all field and analytical work conducted by DNI but provides, nonetheless, a solid geological foundation which consolidates all prior historic work conducted by others on the Property and DNI's reinterpretations of same.

To the extent that DNI's NI-43-101 Technical Report for the Property comprises a portion of work it has conducted on the Property, extensive sections from it have been extracted and incorporated into the body of this Report.

2.2 ABBREVIATIONS & UNITS STANDARDS

Geographic locations in this Report, and in all related historic work, are expressed in Universal Transverse Mercator (UTM) grid coordinates, **using the 1927 North American Datum (NAD27[1]), Zone 12.**

Measurements in this Report are in metric units.

Permit descriptions in this Report are defined per the Dominion Land Survey system, West of the 4th Meridian, based on Townships, Ranges, Sections and subdivisions thereof.

Formational name Speckled Shale, Second White Specks and 2ws are used interchangeably in the Report to refer to the Second White Speckled Shale Formation. Formational name Belle Fourche and Shaftesbury Formation are also used interchangeably in this report.

[1] Nearly all databases in Alberta, though in NAD27 in the 1990's and early 2000's, are currently in NAD83.

More detailed tabulation of units and abbreviations used in this Report are shown in Section 2.2 of DNI's NI-43-101 report for the Property which is appended herein as Appendix B1.

2.3 RELIANCE ON OTHER EXPERTS

The historical work reported in this technical report is summarized or extracted from numerous publicly available third-party reports all of which are referenced throughout this Report. Although the author has critically reviewed the foregoing information during preparation of this Report and has no reason to believe that the information is false or intentionally misleading, he has relied on the accuracy and integrity of the foregoing during preparation of this Report.

The author has also relied on the truth and accuracy of geoscientific information presented in the sources listed in the Reference section of this report, including stand-alone third-party consulting reports appended in Alberta Mineral Assessment Reports referenced.

Substantially all of DNI's analytical work is carried out by Actlabs, Ancaster, Ontario, which is an ISO certified analytical facility and an acceptable Certified Canadian Laboratory as understood under Canadian securities regulations and stock exchange rules. Laboratory analytical certificates from Actlabs' work are included herein in respective appendices along with summaries for convenience. Analytical procedures and procedural Codes related to Actlabs' work are included in Appendix B4.

Some of DNI's metals leaching and other similar R&D testwork reported upon herein was carried out by recognized research institutions such as the Bureau de Recherches Géologiques et Minières (BRGM), France, and the Alberta Research Council[2] (ARC), Alberta, which are not certified facilities which strictly conform to the foregoing rules. Whereas the BRGM, France's leading Earth Sciences public institution recognized worldwide for its expertise in biohydrometallurgy, warranties its research, the ARC, an equally well recognized research facility, withholds such warranty as a pre-condition to its terms of service. While the ARC's reluctance to warranty its work is by no means a reflection of the caliber and veracity of its research, the lack of warranty may equivocate incorporation of its research results into public records for a Canadian publicly listed company may not comply with Canadian disclosure rules.

Information as to title of DNI's Permits has been collected from the Alberta Department of Energy records and is believed to be accurate. The author has reviewed DNI's Alberta registration and confirms that DNI is duly registered to do business in the Province of Alberta and, as such, is entitled to hold mineral Property in Alberta.

[2] The Alberta Research Council (ARC) changed its name to Alberta Innovates Technology futures (AITF) in 2010.

3. Property Description, Location, Rights and Maintenance

3.1 Property Description, Rights and Maintenance

DNI's Alberta SBH Property (the "Property") consists of twenty-nine (29) contiguous Alberta Metallic and Industrial Mineral Permits (the "Permits") comprising an aggregate of 2,536 contiguous square kilometers (253,600 ha). The Permits extend over a 50kmx60km quadrant defined by R12-R17 and T97-T103, W4 Meridian.

The general area of interest is shown in Figure 1. A regional Property location sketch is presented as Figure 2, and a detailed Property sketch showing the Permits is presented as Figure 3. Permit descriptions and related details are summarized in Table 1.

The Property is located over the Birch Mountains approximately 120 kilometers to the north of Fort McMurray, Alberta, and is held 100% by DNI.

The Permits[3] were initially acquired/assembled by DNI in stages from Sep/2007 to Jan/2010. Permits comprising the western two-thirds of the Property were originally acquired during Sep/2007 and Oct/2007, but later forfeited in Dec/2009 and Jan/2010, but their geographic location was later re-acquired by DNI in 2010. In addition, DNI made application in June 2010 for three additional permits (T97/R14R15. T98/R13) adjoining the south end of the Property which permits have not yet been issued and the same are not shown on sketches in this report.

Figure 1: General area of interest showing the Birch Mountains and SBH Property outline.

The Permits grant DNI the exclusive right to explore for metallic and industrial minerals for seven consecutive two-year terms subject to traditional assessment work performance biannually. Work requirements for maintenance of the permits in good standing are $5/ha for the first term, $10/ha for each of the second and third terms, and $15/ha for each the fourth, fifth, sixth and seventh terms. **This Report concerns assessment work expenditures being filed toward the assessment work requirements of only some of the permits as better detailed in Section 4 of this Report.**

The Permits are held 100% by DNI, subject to a traditional royalty retained by the Province of Alberta against production revenues therefrom as better outlined in the Metallic And Industrial Minerals Royalty Regulation. The reader is referred to Section 4.2 of DNI's NI-43-101 report for the property, appended herein as Appendix B1 for a description of the royalty, and to the Alberta Metallic And Industrial Minerals Royalty Regulation for greater details.

The Permits grant DNI use of the surface for the purposes of conducting mineral exploration work, subject to obtaining the necessary land use permits from Alberta Environment. Surface restrictions consist of minor activity restrictions which are discussed in greater detail in Section 3.4. Alberta is in the process of formulating land use plans for its various regions, and stakeholder consultations for the land use plan for the Lower Athabasca region surrounding the Property is advancing to stage-2.

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[3] Alberta Metallic and Industrial Mineral Permits are acquired by application to the Alberta Department of Energy, and the same are granted under the Alberta Mines & Minerals Act Chapter-17, and related Metallic and Industrial Mineral Tenure Regulation. Geographic locations of the Permits are defined per the Dominion Land Survey system based on Townships, Ranges, Sections and subdivisions thereof.

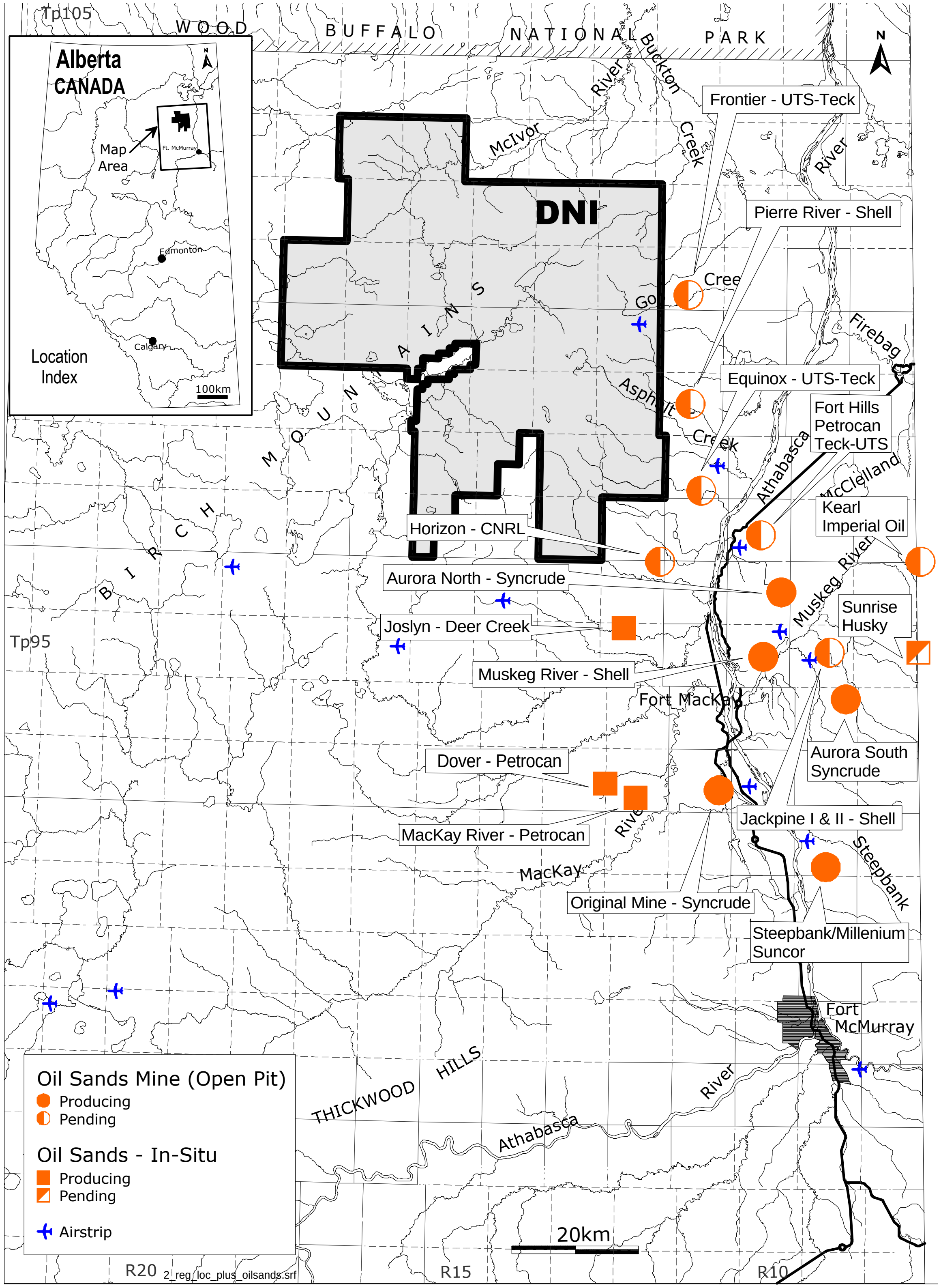


Figure 2: Regional location sketch showing DNI's SBH Property, showing also nearby oil sands operations and airstrips.

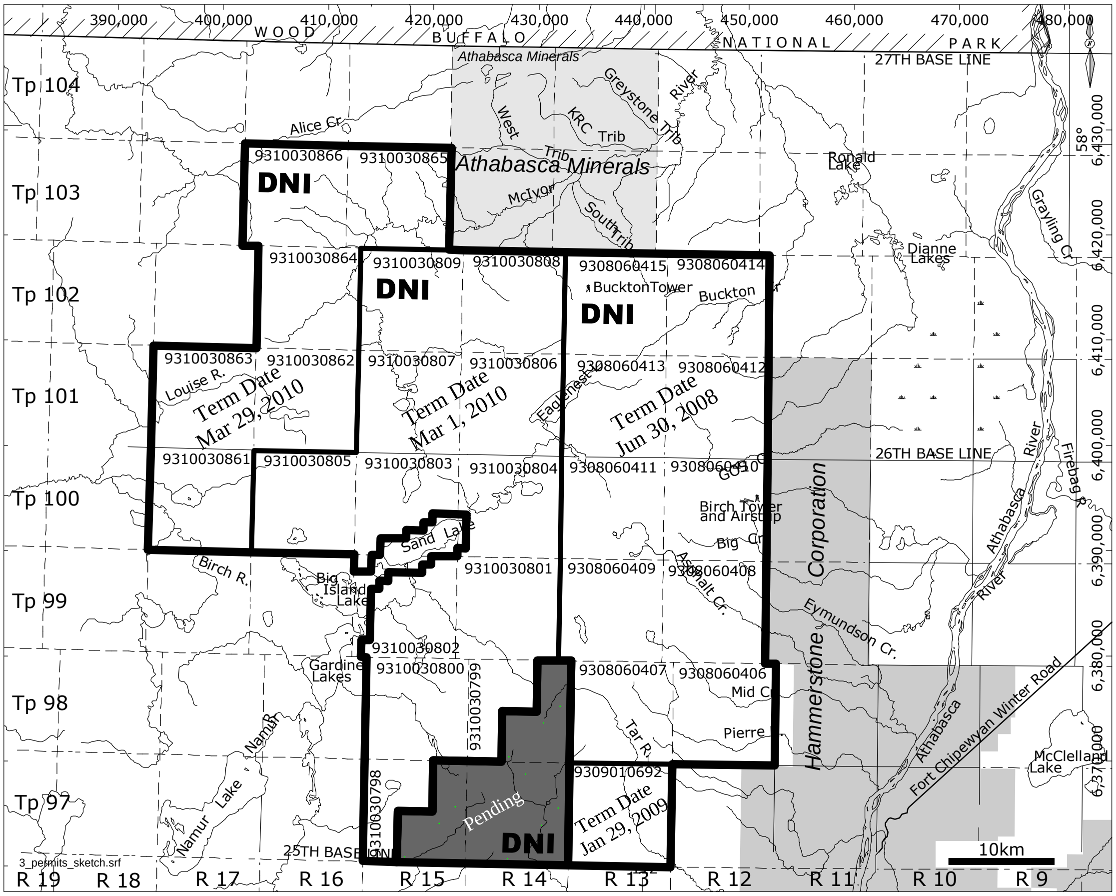


Figure 3: Sketch of Metallic and Industrial Mineral Permits, DNI's SBH Property. Showing also adjacent mineral properties.

Permit#	Application Date	Commencement Date	Area (ha)	Land/ Zone Description Metallic & Industrial Minerals Permit	Special Restrictions
9310030798	31-Dec-09	1-Mar-10	4608	4-15-097: 5-8;17-22;27-34	none
9310030799	31-Dec-09	1-Mar-10	4608	4-14-098: 5-8;17-22;27-34	none
9310030800	31-Dec-09	1-Mar-10	9216	4-15-098: 1-36	none
9310030801	31-Dec-09	1-Mar-10	9216	4-14-099: 1-36	none
9310030802	31-Dec-09	1-Mar-10	6784	4-15-099: 1-5;6E;8-17;20-	none
9310030803	31-Dec-09	1-Mar-10	7488	4-15-099: 31; 4-15-100: 5W;6-9;10N;13N;14N,SW;15-36	none
9310030804	31-Dec-09	1-Mar-10	8960	4-14-100: 1-5;6S,NE;7E;8-	none
9310030805	31-Dec-09	1-Mar-10	9216	4-16-100: 1-36	18NW; 19; 20N,SW; 27NW; 28N,SW; 2934; 35N,SW CRG 001 26 are in a Caribou range
9310030806	31-Dec-09	1-Mar-10	9184	4-14-101: 1-11;12N,SW,L1,L8;13-36	12N,SW,L1,L8 are in an Historical Resources Management
9310030807	31-Dec-09	1-Mar-10	9216	4-15-101: 1-36	6NW; 7; 8N; 16N,SW; 17-21; 22W; 27-34; 35NW CRG 001 25 are in a Caribou range
9310030808	31-Dec-09	1-Mar-10	9216	4-14-102: 1-36	30N, SW; 31; 32W CRG 001 24 are in Caribou range
9310030809	31-Dec-09	1-Mar-10	9216	4-15-102: 1-36	2N,SW; 3-11; 12NW; 13N,SW; 14-36 CRG 001 25 are in a Caribou range
9310030861	22-Jan-10	29-Mar-10	9216	4-17-100: 1-36	2NW; 3-11; 12NW; 13-36 are in a Caribou range
9310030862	22-Jan-10	29-Mar-10	9216	4-16-101: 1-36	1N,SW; 2-36 are in a Caribou range
9310030863	22-Jan-10	29-Mar-10	9216	4-17-101: 1-36	This permit is in a Caribou range
9310030864	22-Jan-10	29-Mar-10	9216	4-16-102: 1-36	This permit is in a Caribou range
9310030865	22-Jan-10	29-Mar-10	9216	4-15-103: 1-36	1S,NW,NEP; 2-10; 11S,NW,NEP; 12SWP,NEP; 13NP,SEP; 14EP,W; 15-36 are in a Caribou range
9310030866	22-Jan-10	29-Mar-10	9216	4-16-103: 1-36	This permit is in a Caribou range
9308060406	11-Apr-08	30-Jun-08	9216	4-12-098: 1-36	none
9308060407	11-Apr-08	30-Jun-08	9216	4-13-098: 1-36	none
9308060408	11-Apr-08	30-Jun-08	9216	4-12-099: 1-36	none
9308060409	11-Apr-08	30-Jun-08	9216	4-13-099: 1-36	none
9308060410	11-Apr-08	30-Jun-08	9216	4-12-100: 1-36	none
9308060411	11-Apr-08	30-Jun-08	9216	4-13-100: 1-36	31; 32 are in an Historical Resources Management Area
9308060412	11-Apr-08	30-Jun-08	9216	4-12-101: 1-36	none
9308060413	11-Apr-08	30-Jun-08	9216	4-13-101: 1-36	5; 6 are in an Historical Resources Management Area
9308060414	11-Apr-08	30-Jun-08	9216	4-12-102: 1-36	none
9308060415	11-Apr-08	30-Jun-08	9216	4-13-102: 1-36	none
9309010692	6-Nov-08	29-Jan-09	9216	4-13-097: 1-36	none
Caribou Range = Surface access subject to specific restrictions					
Historical Resources Management Area = Historical resources impact assessment may be required prior to conducting surface disturbance					

Table 1: Summary of Metallic and Industrial Minerals Permits comprising DNI's SBH Property.

3.2 COEXISTING OIL-GAS AND OIL SANDS RIGHTS

Rights to metallic and industrial minerals, to bitumen (oil sands), to coal and to oil/gas within the region are regulated under separate statutes, which collectively make it possible for several different "rights" to coexist and be held by different grantees over the same geographic location. Coexistence of rights is an artifact of the flat-lying configuration of subsurface geological formations within the region, and the potential of different formations for hosting different resources including oil, gas, coal and minerals.

Oil/gas leases, coal leases, oil sands leases and metallic mineral permits coexist in the Birch Mountains in the vicinity of, and under, DNI's Property. Rights to oil/gas under much of the Birch Mountains are held by third parties, including several producing gas wells and distribution pipelines over a small area in the southwestern parts of DNI's Property (Section 3.6).

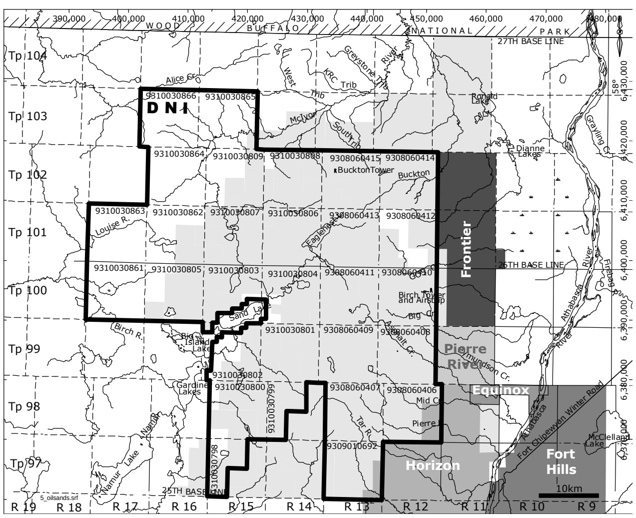


Figure 4: Summary sketch of coexisting third-party oil sands leases (shaded) under the Property. The Fort Hills, Equinox, Pierre River, Horizon and Frontier pending oils sands mines properties are highlighted. (Oil Sands permits from Alberta Energy as at July/2010).

Existing oil sands permits in the vicinity of, and under, DNI's Property, are shown in Figure 4, showing also active projects consisting of: the Fort Hills oil sands mine (construction stage), the Equinox oil sands mine (planning stage), the Pierre River oil sands mine (planning stage), the Frontier oil sands (permitting stage) and the Horizon oil sands mine (in production). Rights to oil sands in the area are confined to the McMurray Formation (approximately 400m beneath DNI's shale targets), and include rights to metals accompanying the oil sands.

Gas leases and oil sands permits over the Birch Mountains, under DNI's Property, relate to stratigraphic formations well below the metal bearing black shale formations targeted by DNI.

3.3 PRIOR OWNERSHIP

DNI acquired the Property directly, by application to Alberta Energy, and holds a 100% interest therein under metallic and industrial mineral agreements with Alberta Department of Energy.

There are no historic mineral mines or similar operations, in the area nor on the Property. All prior, historic, activities in the area consist entirely of exploration work.

DNI's Property contains several historic properties previously held and explored for metals by others, notably by Tintina Mines Limited which explored them extensively in the 1990's. A detailed outline of historic work and results have been presented in Section 6 of DNI's NI-43-101 report for the Property (Appendix B1), a summary of the foregoing is presented in Sections 6 and 8.3-8.11 of this Report. To maintain continuity with historic work, during preparation of DNI's NI-43-101 technical report for the Property, DNI elected to retain historic location names to facilitate referencing of prior year results by referring to the Buckton, Asphalt and Eaglenest historic properties previously named and explored by Tintina. This convention is retained throughout this report.

3.4 LAND USE AND ENVIRONMENTAL MATTERS

Land use in the area is regulated by the Alberta Department of Environmental Protection, which regulates issuance of land use permits for surface disturbances, with participation from a structured process of local community consultation. Due permitting (and subsequent site reclamation) is necessary for all "invasive" and mechanized work which might disturb the surface (e.g. drilling, road building).

Despite the coexistence of metallic and hydrocarbon mineral tenure in the region, conflicts in precedence of land use are minimal and are as yet untested due to the scarcity of previous exploration for non-hydrocarbon minerals.

Minor sensitivities exist in the region which affect exploration activities and land use to an extent comparable to elsewhere in Canada. These include due attention to wolf migration, moose and caribou calving seasons, traditional land use and miscellaneous trapping rights. Wood Buffalo National Park is located 10km to the north of the northernmost boundary of DNI's Property. There are no aboriginal claims pending in the region, although due consultation with five first nations groups, notably the Fort McKay community which is the nearest to the Property, is a pre-requisite to land use permitting.

Surface restrictions consist of minor activity restrictions over portions of the Property, as follows: (i) the surface over the western one third of DNI's Property (Figure 5) is subject to seasonal activity restrictions in connection with caribou calving and migration routes requiring the annual recess of field activities during the four month period March 1 through July 1; (ii) a small acreage on Permit# 9310030806 is set aside as a historic site over a portage to the south of Eaglenest Lake; and (iii) a small area on Permits# 9308060411 & 9308060413 is set aside under historic management.

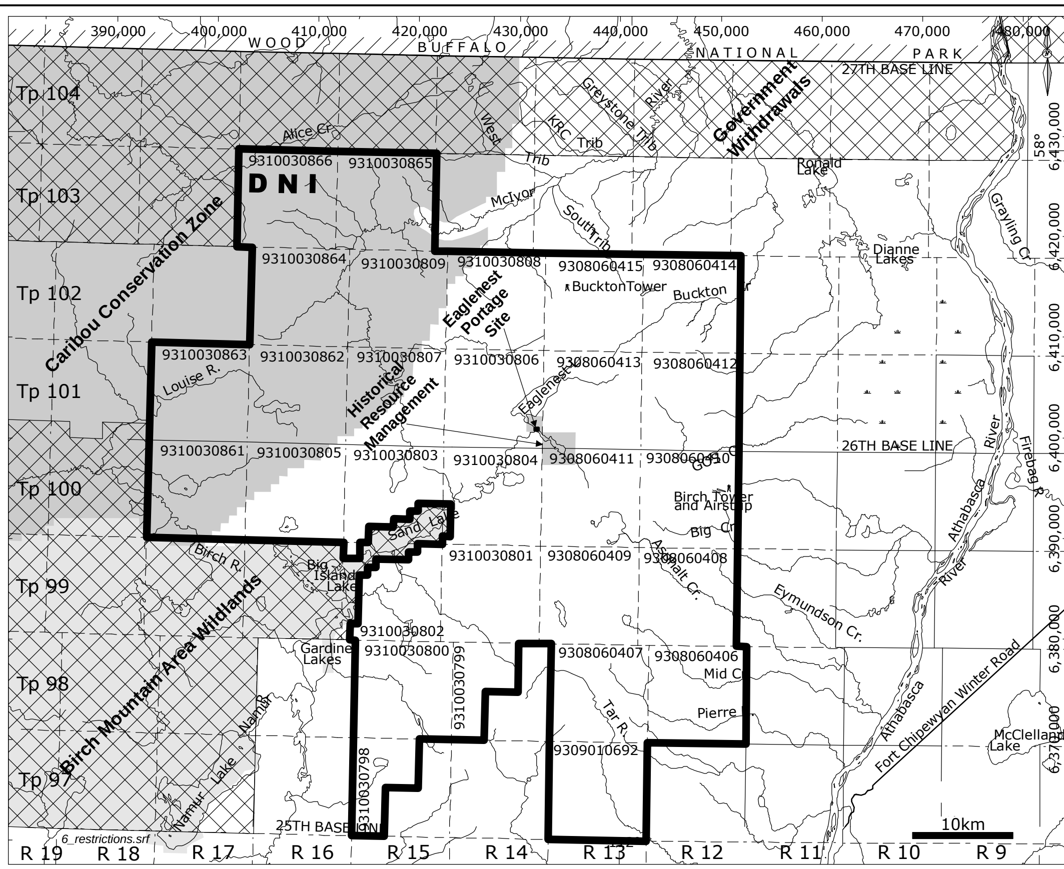


Figure 5: Summary sketch of activity restrictions on the SBH Property. Adjacent areas withdrawn in 2010 from disposition are cross-hatched.

There exist known gas accumulations in the region, especially in areas surrounding Fort McMurray. Low pressure gas has been documented from the Viking Formation known to occur at depths of 100m-200m beneath surface in the Birch Mountains under portions of the Property. This Formation is lower (deeper) in the stratigraphy than DNI's targeted shales and has not previously been a hindrance to exploration. Higher pressure gas has been documented from deeper in the stratigraphy, from the McMurray Formation (host to Oil Sands), approximately 500m-600m below the surface of the Birch Mountains. Scattered gas pockets are common throughout region, hence taking due precaution during drilling is common practice.

Timber rights for a considerable portion of the region, including the Birch Mountains, are held by various groups under Provincial Forest Management Agreements. Rights in the Birch Mountains Area are held mainly by Alberta Pacific, necessitating compensation payable by way of timber damage assessment (TDA) in the event any clearing is made during preparation of drill pads and access.

As part of its efforts to formulate regional land use plans across Alberta, the Province of Alberta has recently (May/2010) withdrawn large tracts of land from future mineral dispositions pending finalization of regional plans. The withdrawals do not impact the Property, although lands immediately to the west of the Property, and a 10km corridor to its north, adjacent to the southern boundary of Wood Buffalo Park, have been withdrawn (Figure 5). For the purposes of pending regional plans, the Property is located in the Lower Athabasca Region.

3.5 ADJACENT METAL EXPLORATION PROPERTIES

Historic exploration work conducted by Tintina in the Birch Mountains substantially represent the only exploration efforts in search for metals in the area. Together with work conducted by the Alberta Geological Survey and the Geological Survey of Canada, it forms the only baseline geoscience available from the area.

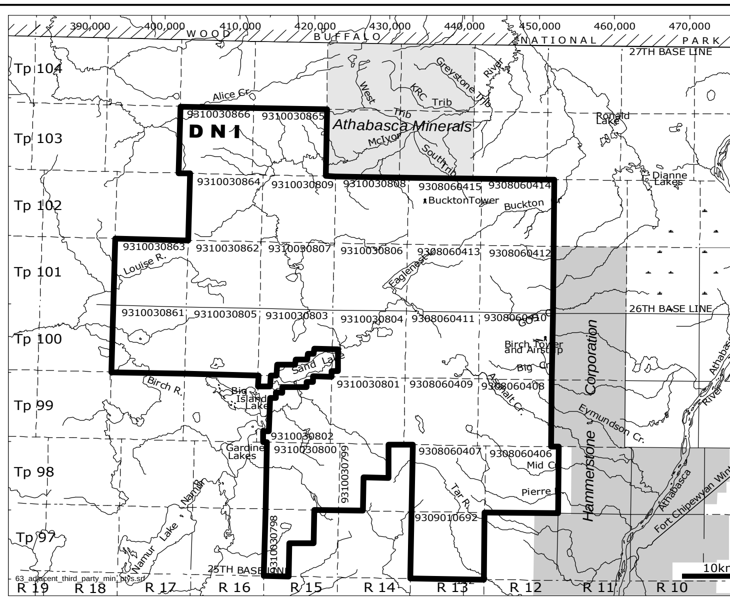


Figure 6: Sketch of third-party mineral properties adjacent to the Property.

There is currently only a single active metal exploration property (Figure 6) adjacent to the Property. Athabasca Minerals Inc. holds metallic and industrial mineral permits adjacent to the north boundary of DNI's Property. Athabasca's corporate filing documents indicate that it has been actively pursuing diamond potential of its property over the McIvor River and related tributaries through reconnaissance field work and airborne geophysics. Status of current exploration on other third-party permits adjoining the eastern boundary of the Property is unknown.

3.6 ADJACENT OIL/GAS AND OIL SANDS EXPLORATION AND DEVELOPMENT PROPERTIES

Unlike metals exploration, there has been considerable oil/gas exploration activity in and, especially, around the Birch Mountains during the past decade, in addition to oil sands exploration and development activities as many new oil sands extraction operations advance toward production. A series of gas production wells are currently in operation over the southwestern quarter of DNI's Property, serviced by a network of pipelines (Figure 7).

A number of pending, proposed and construction stage oil sands mines surround the eastern and southern erosional edge of the Birch Mountains (Figure 7), and are adjacent to the east and south boundaries of DNI's Property as follows:

- UTS Energy Corporation holds a number of Oil Sand Leases over, and adjacent to, the northern and northeastern portions of DNI's Property, adjacent to their Frontier Project. UTS corporate documents indicate that the Leases are under active exploration in drilling stages.

- The Frontier Project, a joint venture between UTS Energy Corporation and Teck-Cominco, roughly comprises a three township long property abutting the northern two-thirds of the east boundary of DNI's Property. This Project is the site of the proposed Frontier Oil Sands Mine which is on the threshold of permitting, with estimated resources of 1,051 million barrels of Discovered Petroleum Initially-In-Place of bitumen (Best Estimate). Plans are to construct a mine as well as bitumen extraction and processing facilities. Production is projected to start in 2015-2017 at a daily rate of 100,000bbl-160,000bbl. The Frontier project is adjacent to, and immediately downhill from, DNI's Buckton Zone.

- The proposed Pierre River Mine property comprises oil sands leases held by Shell Canada Limited over a single township abutting against southern portion of DNI's eastern property boundary. Proposed construction is scheduled to begin in 2010 toward planned production in 2018 at a projected daily rate of 200,000 bbl bitumen. Shell Canada plans to construct a bridge across the Athabasca River to provide access to the Pierre River oil sands mine. This will significantly enhance access to DNI's Property, and the Asphalt Zone.

- The proposed Equinox Oil Sands Mine property is near the southern end of DNI's eastern boundary. The property is under development as a joint venture between UTS Energy Corporation and Teck Cominco, with estimated resources of 350 million barrels of Discovered Petroleum Initially-In-Place of bitumen (Best Estimate; Low Estimate of 270 million barrels, High Estimate of 400 million barrels). The property is under active exploratory drilling to advance toward an operation with anticipated production rate of 50,000 bbl per day.

- The Horizon Oil Sands Mine, held by Canadian Natural Resources Ltd. is located approximately 10km to the south of DNI's Property. Leases and properties comprising the mine abut DNI's south boundary. The $10 billion Horizon Project commenced production in late 2008 at 100,000bbl per day, and is currently nearing phase-2 in its advance toward a 232,000bbl per day peak production by 2012.

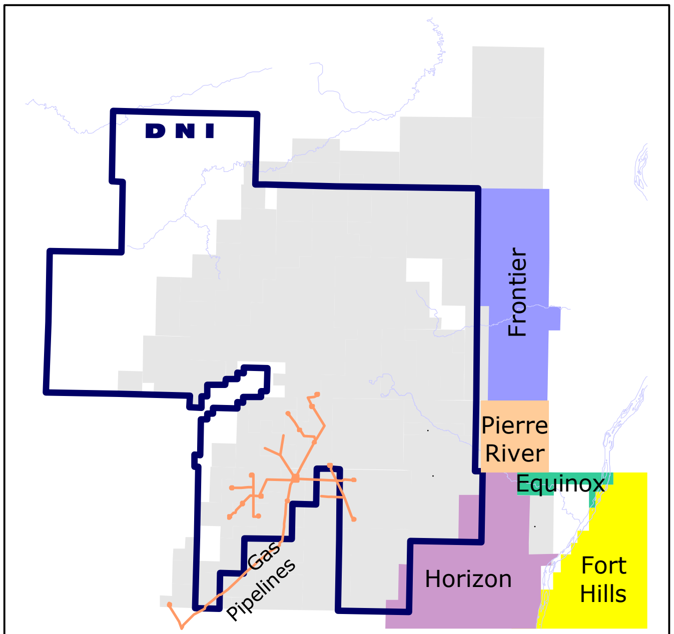


Figure 7: Sketch of third-party oil sands mines under construction, pending or planned adjacent to the Property.

- The Fort Hills Oil Sands Mine is under intermittent construction as a joint venture among UTS Energy Corporation, Teck Cominco and Petro-Can (currently Suncor), and is located approximately 10km to the east of DNI's Property. The $15 billion Mine (more recent estimate: $23 billion) represents the largest oil sands operation to date with an estimated 4 billion barrel resource, projected to come on stream in phases expanding output from 140,000 bbl per day to 300,000 bbl per day by 2012-2014. Development of this mine is currently delayed.

The collective of oil sands mines under construction adjacent to the Property, and those which are operating nearby, provide useful comparative operational and cost benchmarks to DNI's planning. In addition, ongoing, planned and pending enhancements to road access and local infrastructure related to the above projects considerably enhance access to the Property.

4. DNI ASSESSMENT WORK EXPENDITURES 2007-2010

DNI commenced its exploration work on the Property prior to commencing its land assembly in September 2007, and has since actively continued its work to advance development of the Property. To the foregoing extent, some of assessment work expenditures reported herein relate to expenditures incurred in the twelve months preceding the commencement date of some of the permits.

Exploration work completed during the period 2007-2010 consisted of a variety of efforts ranging from reconnaissance level synthesis and compilation of all available third party information (2007-2008) and its consolidation into an NI-43-101 compliant technical report (2008), to considerably more detailed localized study (2008-2009) and analytical work (2009-2010) intended to assess metal recoveries from the shale while relying on surface sample material collected by DNI from the Property during the 2009 field season and on archived samples in storage at the MCRF. The technical work completed by DNI follows recommendations of its NI-43-101 Technical Report for the Property, and the said work is ongoing.

While DNI's earlier work mainly entailed data consolidation and review, DNI quickly progressed into laboratory based activities focusing almost entirely on investigating metal extraction and recovery testwork studies to formulate an economically viable flowsheet for extraction of collective base metals from the mineralized shales. This work entailed completion of bioleaching as well as conventional inorganic leaching testwork. Much of this testwork is ongoing and is expected to continue through the balance of 2010 toward scaling up of what is currently benchtesting through column leaching tests toward pilot heap leaching tests slated for 2011. DNI is in the process of planning its 2010-2011 winter drilling programs and has commenced community consultation in advance of permitting for the winter drill programs.

DNI's exploration work which was completed during the period 2007-2010 included the following:

(i) Regional and Property scale geological data synthesis and compilation, including synthesis of information from the Western Canada Sedimentary Basin with specific focus on northeast Alberta the Birch Mountains (2007-2008);

(ii) Consolidation of the information from geological data synthesis and compilation into databases as well as preparation of a NI-43-101 compliant Technical Report for the Property (2008);

(iii) Preliminary review and inventory of historic third-party drill core archived at the MCRF from the Property (2008);

(iv) Review, cataloguing and resampling of historic third-party drill core archived at the MCRF from the Property (2008-2009);

(v) Verification analytical work of historic third-party drill core archived at the MCRF from the Property (2009);

(vi) Expansion of subsurface geological database, related synthesis and subsurface stratigraphic modeling (2008-2010);

(vii) Strategic field sampling program and related analytical work (2009);

(viii) A number of leaching and mineral testwork as follows: Initial cyanidation testwork (2009); Micro scaled mineral (MLA) study of samples from the Property (2009-2010); Bio-Organism cultivation, culture adaptation and BioLeaching study – ARC (2009-2010); CO_2 Sequestration study – ARC (2009-2010); BioLeaching testwork – BRGM (2009-2010); and Sulfuric acid leaching testwork (2010);

(ix) Strategic field sampling program and related analytical work (2010).

Work which is in progress or in planning stages to commence shortly includes a project life cycle audit study to be conducted in collaboration with the Pembina Institute, analytical work related to the June 2010 field sampling program, expanded leaching testwork and a planned 2010-2011 winter drilling program and related reserve estimation studies.

An aggregate of $958,362 was spent on the above permits during the period Sept/2007-Jun/2010 (including a 10% administrative overheads provision). Of this amount, $119,976 represents expenditures incurred during the twelve months preceding acquisition of the permits with the earliest commencement date (Jun30/2008), said amount being related to research and data compilation activities relied upon to identify areas of interest which were acquired. Details of the expenditures are presented in Part-A of this assessment Report as a stand alone document which is not included herein.

The expenditures, as related to work programs (work category) are summarized in Table 2, which also shows the expenditures as re-stated according to Alberta Department of Energy cost categories. A good deal of DNI's work has consisted of laboratory based testwork which includes considerable analytical work the cost of which is integral to the laboratory testwork, and represents costs that are over and above general analytical/assaying category shown in the attached summary.

Work Categories per DNI (below)		1. Prospecting	2. Geological Mapping & Petrography	3. Geophysical Surveys	4. Geochemical Surveys	5. Trenching and Stripping	6. Drilling	7. Assaying & whole rock analysis	8. Other Work:
Data Compilation & Review	$ 181,993		90,996		90,996				
Reporting	$ 125,979		125,979						
DDH Inventory and Resampling	$ 56,903						56,903		
General Analytical & Assaying	$ 12,123							12,123	
Special Studies - Subsurface Modeling	$ 164,231		164,231						
Special Studies - Mineral MLA	$ 11,250							11,250	
Special Studies - Sulfuric Acid Leaching	$ 13,351							13,351	
Special Studies - BioLeaching	$ 137,857							137,857	
Special Studies - CO2 Sequestration Study	$ 47,905								47,905
Field Sampling 2009	$ 36,166				36,166				
Field Program 2010	$ 78,806				78,806				
Winter Drilling Program 2010-2011	$ 4,676						4,676		
Subtotals	**$ 871,238**	**-**	**381,206**	**-**	**205,968**	**-**	**61,579**	**174,581**	**47,905**
Administrative Overhead Allowance 10%	$ 87,124	-	38,121	-	20,597	-	6,158	17,458	4,790
Total Expenditures Filed	**$ 958,362**	**-**	**419,326**	**-**	**226,565**	**-**	**67,737**	**192,039**	**52,695**

Table 2: Expenditures work category distribution summary Sept/2007 - Jun/2010, showing also Alberta Energy Summary format.

DNI's SBH Property currently consists of 29 Metallic and Industrial Minerals Permits with commencement dates of Jun30/2008, Jan29/2009 and Mar1/2010. The permits were previously registered to Dumont Nickel Inc. which changed its name to DNI Metals Inc. on May 11, 2010.

The permits comprising the Property are contiguous and are grouped for assessment filing purposes, although the expenditures described herein are being applied against only some of permits. There are no prior year excess expenditures previously "banked" for use against renewals.

DNI filed a Notice of Intent to File Assessment Work Report on June 10, 2010, in respect of assessment work reported upon herein. DNI is applying its accumulated assessment expenditures reported herein against 13 of its 29 permits, to renew only portions thereof as shown in Table 3, namely: Metallic and Industrial Minerals Permits#: 9308060406, 9308060407, 9308060408, 9308060409, 9308060410, 9308060411, 9308060412, 9308060413, 9308060414, 9308060415, 9309010692, 9310030804 and 9310030806. These are shown in Figure 8.

Permit#	Application Date	Commencement Date	Description	Area (ha)	Portion Forfeited (Returned to Landbank)		Portion Being Renewed/Retained (This Filing)	
					Description	Area(ha)	Description	Area (ha)
9308060406	11-Apr-08	30-Jun-08	4-12-098: 1-36	9,216	4-12-098: 1-5; 8-16; 22-27; 34-36	5,888	4-12-098: 6-7; 17-21; 28-33	3,328
9308060407	11-Apr-08	30-Jun-08	4-13-098: 1-36	9,216	na	-	4-13-098: 1-36	9,216
9308060408	11-Apr-08	30-Jun-08	4-12-099: 1-36	9,216	4-12-099: 1-2; 11-14; 23-24	2,048	4-12-099: 3-10; 15-22; 25-36	7,168
9308060409	11-Apr-08	30-Jun-08	4-13-099: 1-36	9,216	4-13-099: 18-20; 29-32	1,792	4-13-099: 1-17; 21-28; 33-36	7,424
9308060410	11-Apr-08	30-Jun-08	4-12-100: 1-36	9,216	na	-	4-12-100: 1-36	9,216
9308060411	11-Apr-08	30-Jun-08	4-13-100: 1-36	9,216	na	-	4-13-100: 1-36	9,216
9308060412	11-Apr-08	30-Jun-08	4-12-101: 1-36	9,216	4-12-101: 25; 36	512	4-12-101: 1-24; 26-35	8,704
9308060413	11-Apr-08	30-Jun-08	4-13-101: 1-36	9,216	na	-	4-13-101: 1-36	9,216
9308060414	11-Apr-08	30-Jun-08	4-12-102: 1-36	9,216	4-12-102: 1; 12-13; 23-26; 35-36	2,304	4-12-102: 2-11; 14-22; 27-34	6,912
9308060415	11-Apr-08	30-Jun-08	4-13-102: 1-36	9,216	na	-	4-13-102: 1-36	9,216
9309010692	6-Nov-08	29-Jan-09	4-13-097: 1-36	9,216	4-13-097: 1-4; 9-15; 22-24	3,584	4-13-097: 4-9; 16-21; 25-36	5,632
9310030804	31-Dec-09	1-Mar-10	4-14-100: 1-5; 6S,NE; 7E; 8-17; 18N,SE; 19-36	8,960	na	-	4-14-100: 1-5; 6S,NE; 7E; 8-17; 18N,SE; 19-36	8,960
9310030806	31-Dec-09	1-Mar-10	4-14-101: 1-11; 12N,SW,L1,L8; 13-36	9,184	na	-	4-14-101: 1-11; 12N,SW,L1,L8;	3,040
			Totals	119,520		12,544		97,248

Table 3: Summary of SBH Property permits, showing portions against which assessment expenditures are being applied.

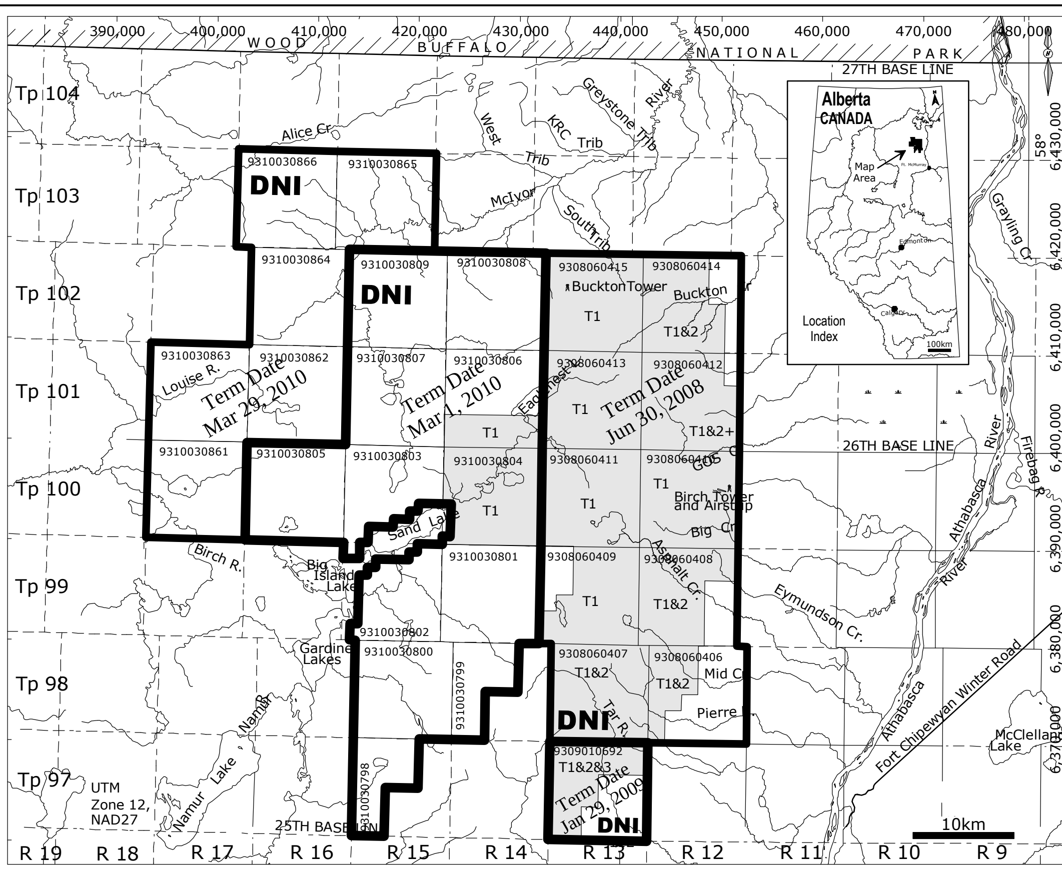


Figure 8: Property permits sketch showing portions against which assessment expenditures are being applied (shaded). Renewals as follows: T1=Term1; T1&2=Terms1+2; T1&2&3=Term1+2+3; T1&2+=Excess Expenditures Filed.

5. Access, Climate, Physiography, Local Infrastructure

5.1 Access and Logistics

Fort McMurray is nearly at the center of the region and is accessible by highway from Edmonton (350km away) and by regular daily commercial flights from Edmonton, Calgary and Toronto. Principal access is by road, although discussions emerge from time to time to re-commission the historic CN rail service.

Fort McMurray is well supplied and offers all necessary support services to exploration work in the area, inclusive of expediting, fixed and rotary air support, communications, medical and equipment supplies. Radio as well as telephone communications are also excellent throughout the region. Cellular telephone coverage is good throughout the region, with good reception to localities as far away as the Birch Mountains air strip and fire tower (especially via Telus carrier).

The Athabasca and the Clearwater rivers represent the two principle waterways in the region with countless other streams and smaller rivers draining into them, the majority of which are characterized by jagged shapes consisting of many relatively straight water courses, reflecting in most part underlying faults and joint systems. The Athabasca River bisects the region and provides relatively good water access across most of the region and also a barge service over its northern portions to the north of Fort McMurray. The Athabasca River flows north into Lake Athabasca.

Access throughout the region is relatively good, facilitated by a network of highways, secondary roads and old seismic lines which serve well as winter roads and bush roads, and in some cases are also accessible by all-terrain vehicles. Past exploration activities have occasionally gained access to the west shore of the Athabasca River by ice-bridge constructed from a locality near Bitumont, as a joint effort between forestry harvesting and mineral exploration. Future programs will, however, benefit from considerable road construction in progress to support several dozen pending oil sand operations which are in various stages of development.

Access throughout the east and west flanks of the Athabasca River are in a state of rapid development, providing road access to several pending oil sand projects skirting the Birch Mountains over localities adjacent to the south and east boundaries of DNI's Property, to as far north as its northeast corner (the Property is surrounded on its east and south by four oils sands mines under development). Significant pending developments include Shell Canada's planned construction of a bridge across the Athabasca River to access its Pierre River oil sands mine (permitting stage), adjacent to the east boundary of DNI's Property. This will significantly enhance access to the Property, since the planned Pierre River Mine is downslope from the Asphalt and Buckton metal bearing Zones (see also Section 3.6).

The Birch Mountains have traditionally been accessed in the summer months by barge/boat via the Athabasca River, although the principal mode of access has been by rotary aircraft or by fixed wing aircraft landing on the half mile long Birch Mountain Airstrip which also houses a seasonally manned Fire Tower and telecommunications relay station. There are other private airstrips throughout the region, the nearest being Shell Canada's at its Pierre River Project, and Canadian Natural Resources Horizon oil sands project to the south of the Property. Winter access is via the Birch Mountain Winter Road which passes northerly from the village of Fort MacKay and provides a sinuous path which, over its northern parts, is better negotiable after freeze-up as it crosses several streams and over wet muskeg.

Access throughout (within) the Birch Mountains is best by rotary aircraft, although countless old seismic lines offer adequate, albeit selective, access throughout much of the area. Past drilling has typically confined itself to the winter months when old trails and seismic lines could be cleared of snow and graded, with minimal surface disturbance, to gain access to localities within the Birch Mountains Area for the mobilization of crews and equipment.

5.2 PHYSIOGRAPHY, VEGETATION AND CLIMATE

Physiography over the general region around Fort McMurray, is variable and is characterized by low, often swampy, relief punctuated by a handful of features protruding above the otherwise flat terrain. The Birch Mountains are the most conspicuous topographic features in the region and are located in the north of the region, to the south of Wood Buffalo National Park. DNI's Properties cover most of the Birch Mountains.

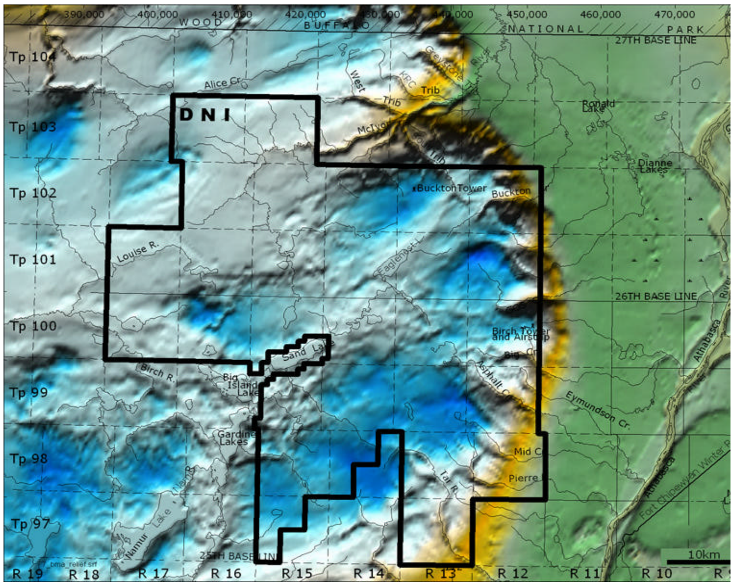


Figure 9: Topographic relief image and sketch of the Property and surrounding Birch Mountains. NAD27-Zone12.

By far the greatest topographic relief in the region are the Birch Mountains (elev 750m-820m asl) which protrude conspicuously some 500m-600m above the surrounding areas (250m asl), with a distinct sharp erosional edge. The Birch Mountains are characterized by many river and creek incisions in poorly consolidated stratigraphy susceptible to active landslides and slumps. River valley incisions in the area are progressively deeper as they near the erosional edges of the Birch Mountains and the drainage in the area defines an approximate radial pattern outward from the Birch Mountains. Localized radial drainages are also present within the Birch Mountains area, characterized by creeks flowing outward from what appear to be 1km-2km diameter circular domes (Figure 9).

Given the relatively flat-lying stratigraphy in the region, the Birch Mountains provide excellent vertical exposures, especially in river valleys, across relatively long sections of nearly flat-lying stratigraphy which are otherwise buried to the west and eroded to the south and east.

The McIvor River Valley is the most formidable topographic feature in the Birch Mountains, representing a 20km long east-northeasterly trending valley which opens to a width of some 10km at its eastern extremity. Unlike other sharply incised valleys in the Birch Mountains area, it is a relatively flat-bottomed feature dominated by the McIvor River with its many braided meanders and countless tributaries. The valley is surrounded by zones of active slumpage representing broad zones of continual sediment recharge such that the active flow channel of the McIvor River is in a continual state of flux within the central section of the river valley, shifting back and forth within several hundred meters of valley bottom. The McIvor River flows north into Lake Claire. Only the headwaters of this river are on DNI's Property.

Glacial history of the region is complex and not clearly understood. Principal ice direction throughout the northeastern portion of the region is southwesterly, although ice flow is believed to have splayed around (and over) the Birch Mountains such that throughout the balance of the region crosscutting composite directions are common, manifested as multiple tills. Considerable work has been completed in the area by the Alberta Geological Survey toward investigation of quaternary geology.

Northeast Alberta weather is somewhat cooler than Canadian central provinces. Winter temperatures are cold, averaging -20 degrees C (min -40 degrees), and summers are warm averaging 17 degrees C (max 30 degrees C) and are typically short (Jun-Aug), much like northern Canada. Average annual precipitation for Fort McMurray is approximately 460mm. The Birch Mountains, by virtue of elevation, are somewhat cooler than rest of the region, and are susceptible to fog during long periods of wet weather.

6. PRIOR EXPLORATION HISTORY

6.1 PRIOR OWNERSHIP HISTORY - HISTORIC PROPERTIES

DNI acquired the Property directly, by application to Alberta Energy, and holds a 100% interest therein under metallic and industrial mineral agreements with Alberta Energy.

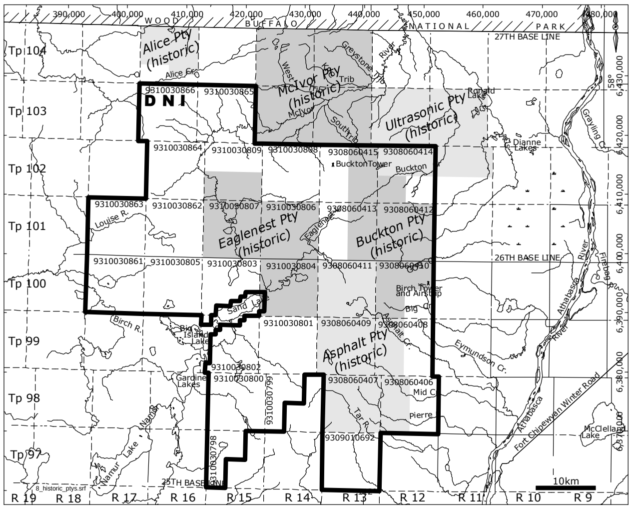


Figure 10: Property location sketch showing historic properties previously held by third parties under DNI's SBH Property Permits.

The Property contains the historic Buckton, Asphalt and Eaglenest Properties, which were previously held by Tintina Mines Limited, and extensively explored by Tintina during the 1990's. The Property also contains a single township permit (T97/R13) previously held by Ells River Resources, and the southern parts of an early-stage property previously held by Ultrasonic Industries. These are shown in Figure 10 and additional details of the third party tenure are summarized in DNI's NI-43-101 report append herein as Appendix B1.

Geological databases from historic work conducted over the above properties, and their vicinities, together with work conducted by the AGS and GSC, are the only geological information available from the area toward the exploration for metals. They are incorporated in sections below on geology of the Property and vicinity. To maintain continuity with historic work, DNI has elected to retain historic location names to facilitate referencing of prior year results by referring to the Buckton, Asphalt and Eaglenest historic properties.

6.2 PREVIOUS WORK HISTORY – METAL EXPLORATION

The area under DNI's Permits and the broader Birch Mountains Area, were aggressively explored during the period 1993-1999 by Tintina Mines Limited as part of its exploration programs over a much larger (3 million acre) land position it then held across northeast Alberta covering approximately 135 townships. Tintina's exploration programs were active until late 1999 and comprised multi-phased multifaceted campaigns straddling several years. Tintina collected several thousand multimedia samples in addition to conducting drilling and consolidating considerable other information from various studies, surveys and other testwork completed on its behalf by various professional geoscientists and consulting groups.

Tintina discovered the metal bearing black shales (DNI's targets) by accident in 1995 while searching for metal bearing permeability traps in redox fronts across northeast Alberta. Tintina started its regional work in 1993, focusing on the Cretaceous-Devonian unconformity, but discoveries it made in the Birch Mountains in 1995 in extensive carbonaceous shales shifted focus of its subsequent work to exploration of the black shales as prospective redox fronts which could accumulate considerable metals at their base. Intrinsic potential of the shales as hosts to metals was not recognized until after 1997 drilling designed to probe beneath the lower contact of the shales, but which discovered metal enrichment within the black shales instead. What started out in 1993 as a search for carbonate hosted gold-copper bearing redox systems similar to roll-front Uranium deposits, ultimately led over a four year period to the discovery of a formidable metalliferous black shale assemblage at the Lower-Upper Cretaceous unconformity associated with considerable subaerial venting and previously unknown extinction markers.

Tintina's work spanned the full spectrum of exploration activities ranging from grass roots reconnaissance and systematic regional sampling (1994-1995), through in-fill sampling, anomaly identification and follow-up (1995-1997), to confirmation drilling (1996-1997) and preliminary metallurgical testwork, leaching and benchtests (1997-1999). Diamond indicator investigations and extensive check assaying work (1997-1999) were also completed. Results from all of these work programs are collated in a series of Alberta Mineral Assessment Reports all of which are publicly available[4]. Ells River Resources conducted minimal sampling in 1996 over its single permit property (T97/R13).[5]

Historic exploration work conducted by Tintina over DNI's Property and the broader Birch Mountains, comprise the following: (i) LANDSAT remote imagery analysis (1994); (ii) Airphoto imagery analysis (1995); (iii) Lake sediment/water geochemical sampling (1994); (iv) Stream sediment geochemical sampling (1994); (v) Stream sediment heavy mineral concentrate sampling (1994), and follow-up heavy mineral concentration testwork (1994-1995); (vi) Lake Sediment/Water geochemical infill sampling (1995); (vii) Stream sediment geochemical infill sampling (1995); (viii) Stream sediment infill heavy mineral concentrate sampling (1995); (ix) Lithogeochemical reconnaissance sampling (1994) and follow-up heavy mineral concentration; (x) Lithogeochemical reconnaissance sampling (1995); (xi) Stratigraphic compilation and modeling (1995); (xii) Soil geochemical sampling (1995); (xiii) Follow-up Soil geochemical sampling (1996); (xiv) Winter drilling (1996-1997); (xv) High resolution aeromagnetic survey (1997); (xvi) Preliminary flotation, leaching, and sequential/selective leaching tests (1997-1998); (xvii) Diamond indicator resampling and analytical work (1998); (xviii) Check assaying program (1998-1999).

Concurrently with Tintina's efforts, the Alberta Geological Survey (AGS) and the Geological Survey of Canada (GSC) also completed sampling and mapping programs over the Birch Mountains, and elsewhere over northeastern Alberta, to characterize bedrock and till. Some of the work by the AGS focused on expanding upon Tintina's discoveries of metal enriched Cretaceous shales as it might apply to Cretaceous shales elsewhere in Alberta. Some of this work was conducted under the 1992-1995 Canada-Alberta Agreement on Mineral Development, initially a federal project with provincial participation, though studies therefrom were completed and results ultimately released in reports by the Alberta Geological Survey.

Many of the samples collected by AGS over the Birch Mountains and the Property duplicated samples from exposures also sampled by Tintina and, as such, provide good corroboration for results documented in Tintina databases and reports. The concurrent work included review and sampling of Tintina drill core as well as a joint Tintina-GSC program focusing on characterizing composition and morphology of alluvial gold and related native metals and minerals discovered by Tintina in the Birch Mountains drainages. Results from all of these studies are publicly available as traditional Geological Reports, as geological articles technical journals, and as posters/abstracts contributions to various geological conferences.

Geological databases from historic work conducted by Tintina over its properties and vicinity, together with work conducted by the AGS and GSC, form the substance of the only geological information available from the Birch Mountains and the Property toward the exploration for metals. The foregoing data were consolidated by DNI into its NI-43-101 report for the Property, and represent the foundation of DNI's work on the Property. The historical work results straddle exploration work programs completed during six years over different geographic locations (see NI-43-101 report in Appendix B1 hereto). Salient portions of the historic work are reiterated herein in sections of this Report describing geology and re-interpretations thereof by DNI in 2008.

6.3 Previous Work History – Diamond Exploration

Kimberlite indicator minerals were incidentally reported in, and documented from, stream sediment heavy mineral concentrates from the Birch Mountains and the Property from Tintina's stream sediment heavy mineral sampling programs, though not followed up by additional field work. Tintina, however, set aside duplicate samples from many of its stream sediment sampling surveys for future use.

Discovery by third parties of kimberlites and diamonds to the southwest of the Birch Mountains (Legend Kimberlite Pipes; Buffalo Head Hills Kimberlites), and similar contemporaneous Cretaceous shales in

[4] Alberta Mineral Assessment Reports: MIN9611, MIN9612, MIN9613, MIN9802 and MIN9928.
[5] Alberta Mineral Assessment Report: MIN9605.

Saskatchewan (Fort a la Corne), prompted Tintina Mines to take a closer look at the diamond potential of the Birch Mountains in the 1990's, especially given the availability of sample material it had previously collected therefrom.

DNI's focus is the development of precious metals, base metals, rare metals and uranium hosted in the black shales identified on its Property. Diamond exploration is, accordingly, beyond the scope of its objectives. Historical exploration work for diamonds has been outlined in DNI's NI-43-101 report for the Property appended herein as Appendix B1. The reader is also referred to Dufresne et al 1994 for additional details.

6.4 SAMPLE ARCHIVES FROM HISTORIC METALS EXPLORATION WORK

Considerable sample material is currently archived in storage at the Mineral and Core Research Facility (MCRF), Edmonton, from sampling programs conducted by Tintina in the 1990's. The samples collectively provide a broad variety of duplicate sample material all of which are available for reference, verification and for future testwork. The archives include split drill core from Tintina's 1997 drilling in addition to material from thematic sampling suites, ranging from regional reconnaissance work to follow-up and in-fill sampling, in addition to mineral concentrates from various heavy mineral sampling surveys.

Split half of the entire drill core footage from Tintina's 1997 drill programs over the Asphalt and Buckton Zones were donated to the MCRF facility by Tintina in late 1997. Small portions of the footage, confined mainly to Second White Specks intersections, were recalled by Tintina in 1999 during its check assaying work (holes BK04, BK06, BK02 and AS02).

DNI completed an inventory of core footages archived at the MCRF in July 2008 to identify sample material which might be available for future testwork. All available footages archived were photographed, catalogued and downhole lithology was cross-checked against drill logs by DNI's senior structural geologist, Dr.J.P.Robinson PGeo. The split core was found to be in good condition, and their inventory is consistent with the MCRF records. Drill holes with sections of Second White Speckled Shale intact are AS01, BK01, BK03 and BK05; holes lacking Second White Speckled Shale sections are AS02, BK02, BK04 and BK06. The inventory noted no significant discrepancy between downhole lithology as documented in original drill logs and that noted in core boxes archived. The inventory noted no evidence of disruption which might be expected to compromise core sample integrity. The MCRF retains no formal record of past review of the core by others. Available drill sections were subsequently sampled by DNI. The foregoing work is better described in Section 11.4 of this Report.

6.5 PREVIOUS WORK HISTORY – OIL AND GAS EXPLORATION

A suite of samples were collected by Mr.Leckie of the Geological Survey of Canada (Calgary) in 1997 from historic Tintina drill holes 7BK01 and 7BK02 for initial Rock-Eval analyses and for a preliminary micropaleontological study. Results from Mr.Leckie's study are included as a stand-alone report in Alberta Mineral Assessment report MIN9802 (Sabag 1998), and summarized in Section 6.4 of DNI's NI-43-101 report for the Property appended herein as Appendix B1. The data is preliminary and is beyond the scope of this Report and DNI's focus which is the search for metals, rather than oil and gas in the area.

It is, however, significant to note that the preliminary micropaleontological study revealed an unexpected 4-6 million year gap between the top of the Second White Specks Formation and the base of the overlying LaBiche Formation suggesting a period of significant uplift and erosion, and suggesting that the Formation overlying the Speckled Shale in the area is the Lea Park Formation.

Mr.Leckie had considerable input into the identification of diagnostic criteria particular to the Second White Specks and Fish Scales Formations, all of which were instrumental during logging of often similar looking and apparently featureless material.

There has been other exploration in the area for gas in Formations beneath the black shales which are DNI's targets. There are existing active gas operations over the southwestern corner of DNI's Property and to its south.

7. Regional Geological Setting

7.1 General Geological and Tectonic Setting

Alberta geology is dominated by sedimentary sequences of the Western Canada Sedimentary Basin which unconformably overlie a relatively stable Precambrian platform with localized zones of reactivation. The sedimentary pile is bounded by the Canadian Shield in the east and the thrust-fold foothills and the Rocky Mountains in the west. The Sedimentary Basin extends southward into the US Great Plains Basin, and many Albertan stratigraphies have US counterparts (Figure 11).

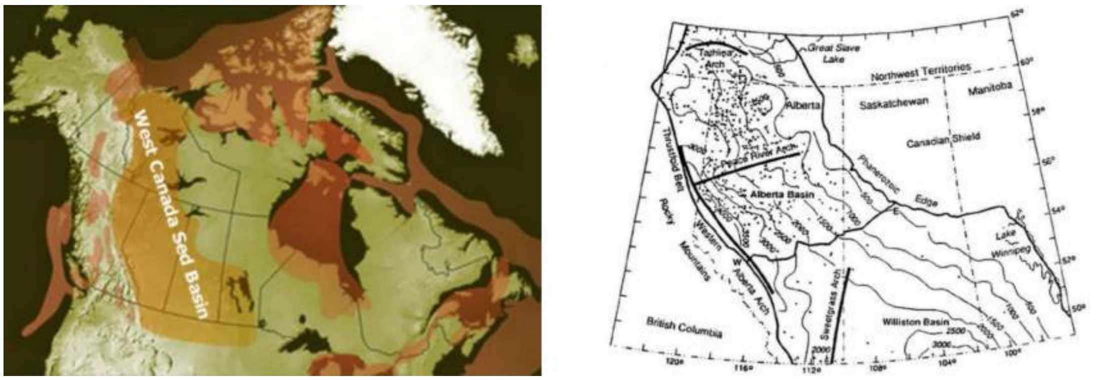


Figure 11: Generalized sketch of the Western Canada Sedimentary Basin (WCSB) across Alberta and Saskatchewan (left). General sketch of WCSB sub-basins after Bachu 1992, showing also Alberta sub-basin (right).

The Western Canada Sedimentary Basin consists of smaller sub-basins separated by a network of arches. One of the sub-basins is the Alberta sub-basin which dominates geology across northeast Alberta, consisting of a wedge of sediments, thickening from 200m in the east to over 6,000m in the west (Figure 12). Gross stratigraphy of the sedimentary pile comprises sediments unconformably overlying the Precambrian shield which is exposed approximately 150km to the northeast of Fort McMurray, and which is buried by progressively thicker sedimentary formations southward and southwestward.

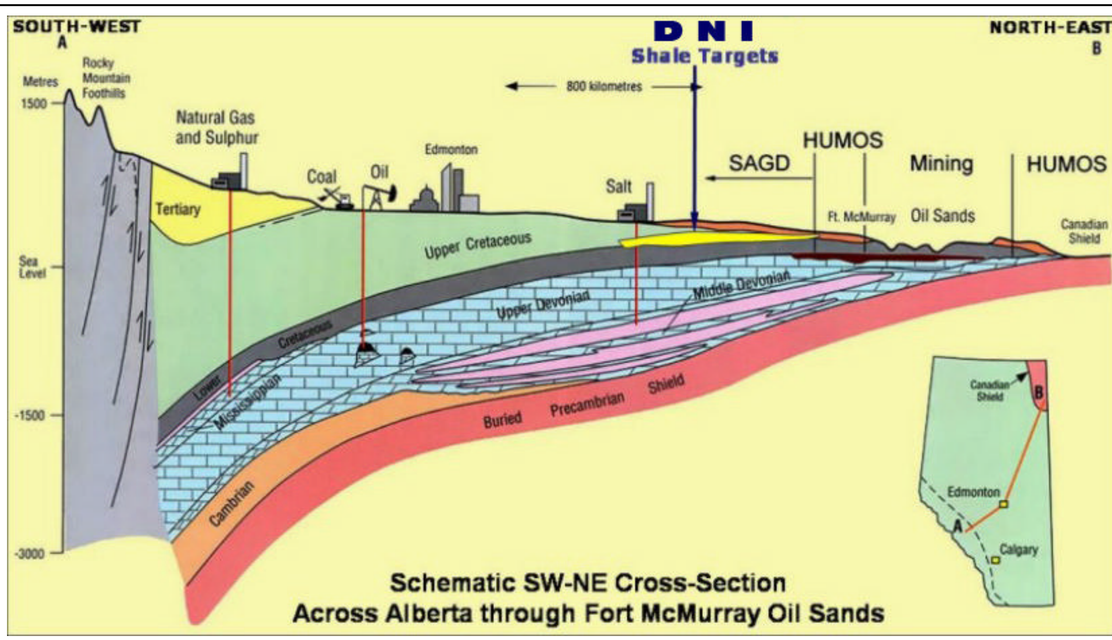


Figure 12: Generalized SW-NE cross-section sketch across Alberta (looking northwesterly). Sabag 2008

The Western Canada Sedimentary Basin across Alberta is a prolific source of minerals though it is best known for its hydrocarbon potential, notably for hosting the Alberta Oil Sands Deposits.

Tectonic setting for northeast Alberta is shown in Figure 13. Recognized basement hot-spots are shown in Figure 14. Generalized geology of northeast Alberta and regional cross section are shown in Figure 15.

In broad terms, regional geology of northeastern Alberta is represented by a sequence of substantially flat-lying Devonian carbonates overlain by equally flat-lying predominantly clastic Cretaceous and younger sediments. The Devonian sequences unconformably overlie the Precambrian Shield which is sporadically exposed only in the northeasternmost part of the region near the Saskatchewan border, from whence southwestwards the Precambrian is buried by progressively thicker sedimentary formations of the Western Canada Sedimentary Basin.

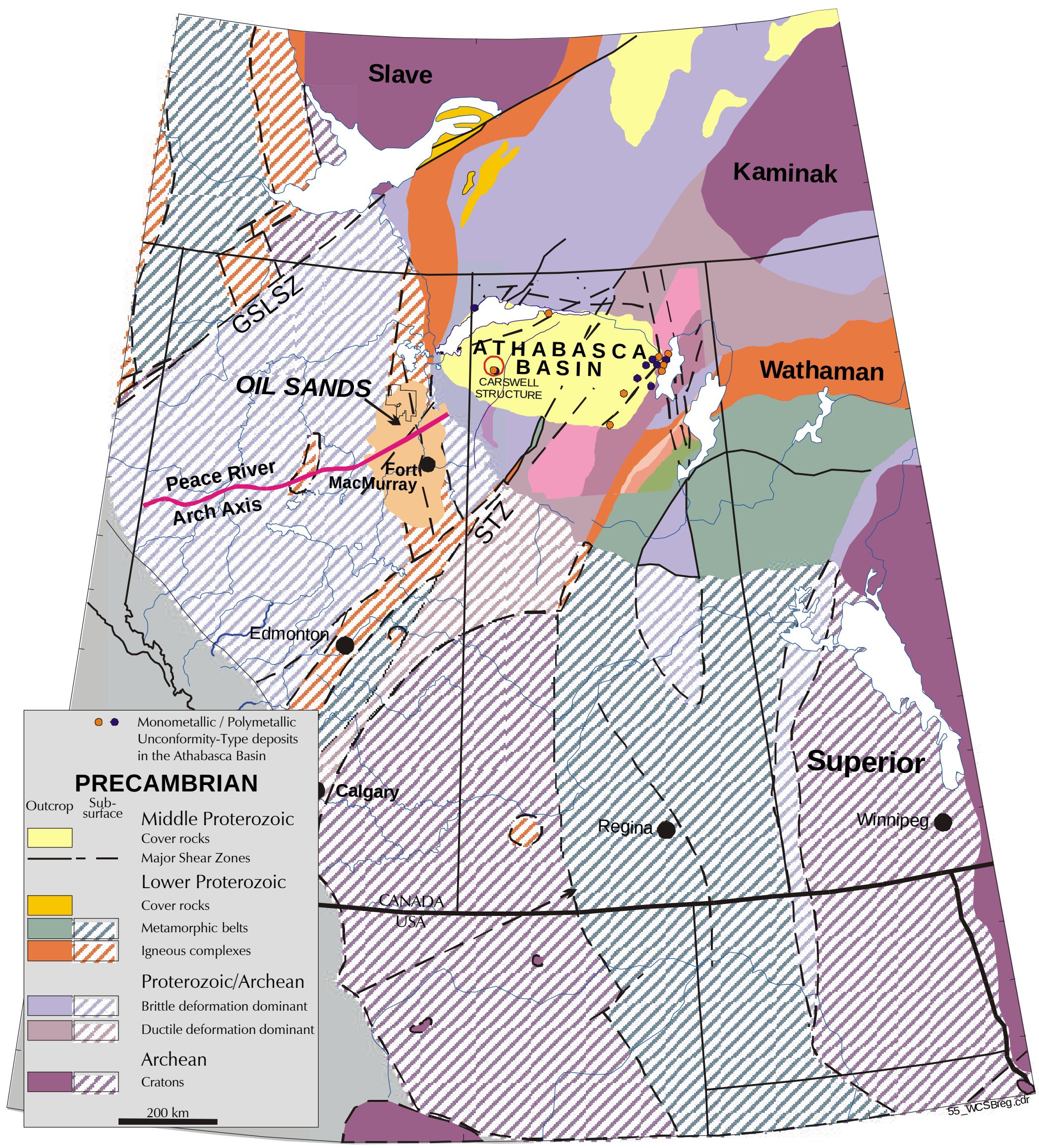
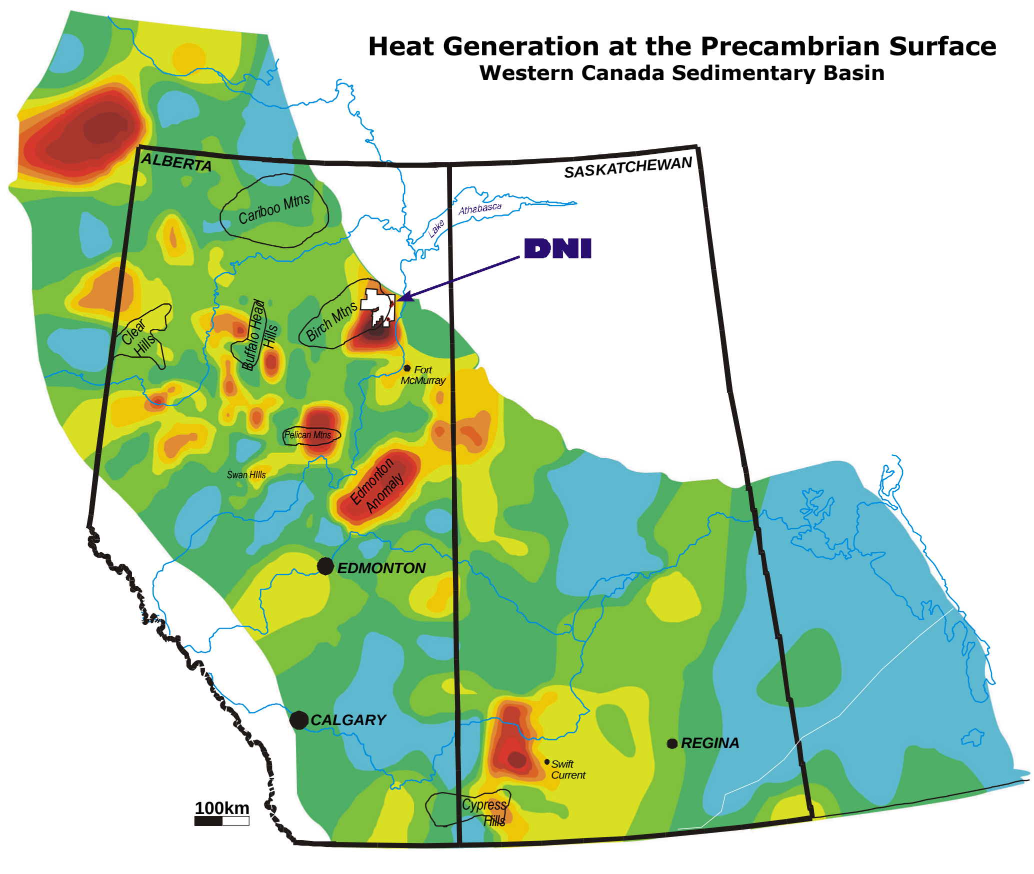


Figure 13: Generalized tectonic setting of the West Canada Sedimentary Basin, Litho-structural units of the exposed Shield, and inferred crystalline basement beneath the Western Canada Sedimentary Basin. STZ=Snowbird Tectonic Zone; GSLSZ=Great Slave Lake Shear Zone. Sabag 2008.

The sedimentary pile consists of Devonian sequences (carbonates, evaporite and red beds), which are unconformably overlain by Cretaceous clastic sediments, the lowermost of which (McMurray Formation) host to the oil sands deposits. The Lower Cretaceous sequences transition upward through a series of unconformities and disconformities to Upper Cretaceous clastic sequences separated from same by a principal extinction marker (the Fish Scales Marker Bed, Shaftesbury Formation) and a lesser known extinction horizon, the Second White Specks Formation.

Precambrian rocks underlying the region belong to the Talston Magmatic Arc (TMA) and the Rae Province. The TMA is a major crustal suture zone marking the boundary between the Archean Rae Province to the east and the Proterozoic Buffalo Head Terrain to the west (Ross and Bowring, 1991), and it is characterized by a sinuous aeromagnetic fabric consistent with the geology of its exposed portions in the northeast of the region where large anastomosing mylonitic shear zones cut through large (up to 50km diameter) granitic batholiths intruding 2.0-1.8Ga old ortho and paragneisses. The TMA can be traced north for several hundred kilometers from the Snowbird Tectonic Zone (~100km southeast of Fort McMurray) to the Great Slave Lake Shear Zone where it is displaced to the northeast and continues as the Thelon Magmatic Zone.

A number of "hot-spots" have been recognized in the Precambrian, believed to reflect heat generation by the decay of radioactive elements at the top of the Precambrian basement beneath the Western Canada Sedimentary Basin Property (Mossop and Shetsen, 1994). The Birch Mountains, and the Property, lie over one of the more significant hot-spots recognized.



After Figure 30.2, Geological atlas of the Western Canada Sedimentary Basin, 1994

Figure 14: Distribution of heat generation by the decay of radioactive elements at the top of the Precambrian basement beneath the Western Canada Sedimentary Basin. After Figure 30.2, Geological atlas of the Western Canada Sedimentary Basin; the Canadian Society of Petroleum Geologists and the Alberta Research Council, ARC-AGS 1994. Mossop and Shetsen 1994. Showing also DNI's Alberta Property.

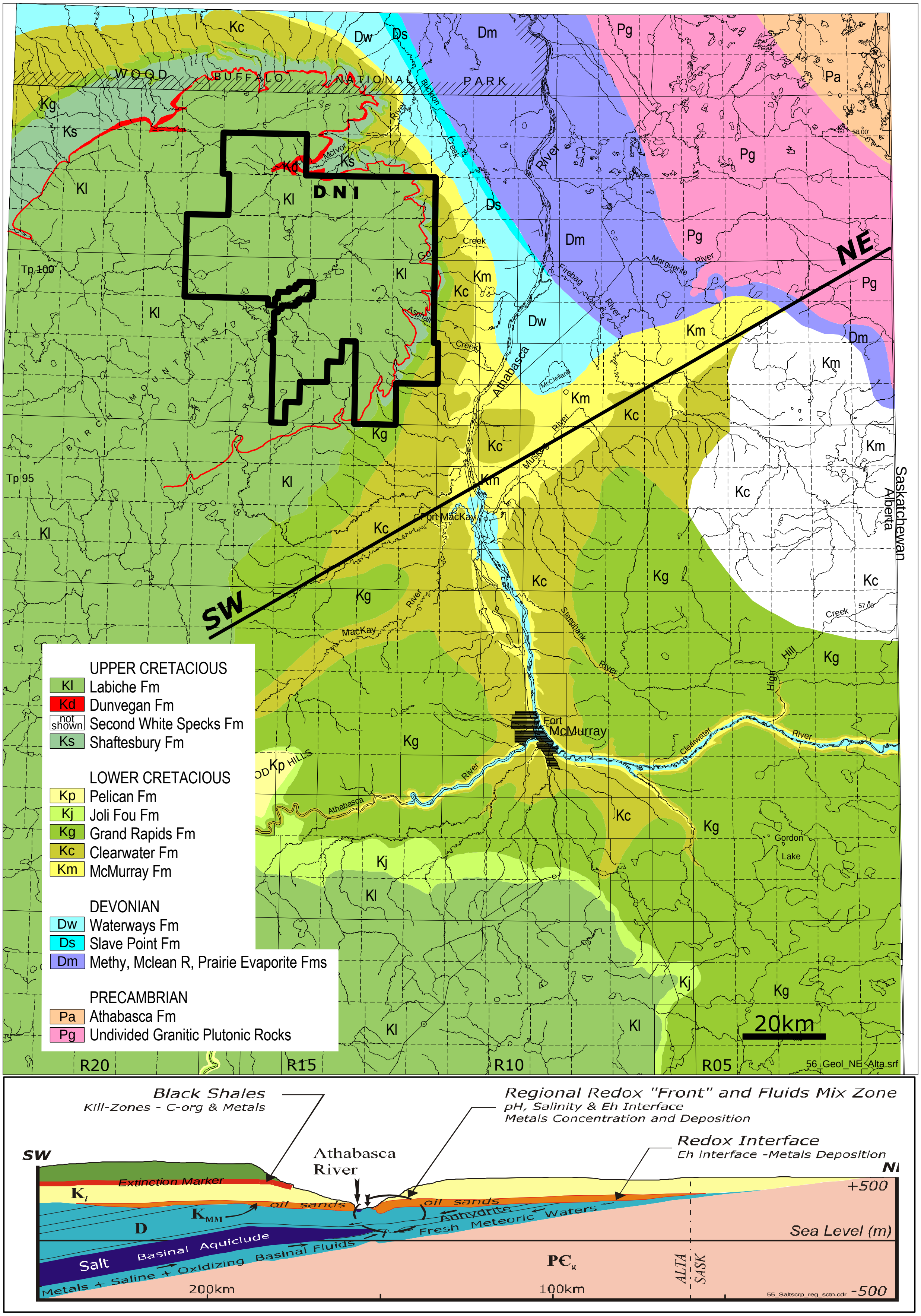


Figure 15: Generalized geological sketch of northeast Alberta, and schematic SW-NE cross-section (Bachu and Underschultz 1993). Geology after Alberta Mineral Assessment Report MIN9611, Sabag 1996a. Second White Speckled Shale is not shown but its trace is proxied by trace of the Dunvegan Formation.

Studies of Basement Heat Flow in the Western Canada Sedimentary Basin (Bachu 1992) suggest the TMA in northeast Alberta to be a relatively young (2.0-1.8Ga) magmatic arc, characterized by high geothermal gradients suggestive of an upper layer of thermal activity in the crust. The studies also show a trend of progressive increase in calculated basement heat flows north-northeastward to a maximum in northeast and northern Alberta. Anomalously high geothermal gradient characterizes the area around Fort MacKay, the outline of which approximates extents of the oil sands region. Similar geothermal anomalies characterize the area over the Great Slave Tectonic Zone underlying the Pine Point deposits.

The overall region is better known for its oil sands operations than for its mineral potential, although co-product metals (V, Ti) in oil sands deposits (and tailings)[6] have from time to time attracted passing attention.

7.2 FORMATIONAL FLUIDS AND BRINES

The Western Canada Sedimentary Basin contains approximately 1.75 trillion barrels of crude oil and is one of the most prolific hydrocarbon domains in the world. Northeast Alberta is within one of a number of its sub-basins, and is located over the northeasternmost "feather" edge of the Basin.

The Athabasca oil sands deposits are, in general terms, believed to have been concentrated by fluids flowing up-dip from the west-southwest which were trapped into local reservoirs, and were subsequently biodegraded and washed by meteoric waters introduced from local flow systems (Bachu and Underschultz 1993, Hackbarth and Nastasa 1979). Regional geological discussions of northeast Alberta are, accordingly, meaningless in isolation from discussions of formational waters and related processes.

The Devonian Prairie Evaporite Formation, occupying a substantial portion at the mid-section of the stratigraphy in northeast Alberta. It is the most prominent major hydrogeological feature throughout the region, and is a regionally extensive aquiclude which impedes hydraulic communication between surface and near surface (shallow) waters and those flowing beneath it trapped above the underlying impermeable Precambrian basement. Post-Prairie Devonian aquifers and pre-Prairie aquifers are recognized in the region, the latter characterized by northeasterly up-dip flows (southwest to northeast) and the former by flows mostly in response to local physiography. Pre- and post- Prairie fluids have markedly different chemistries. Pre-Prairie flows at the base of the stratigraphy are saline brines and flow within, and through, sedimentary sequences dominated by shales and red-bed sequences, whereas post-Prairie flows are primarily within carbonates (Figure 15). Pre-Prairie fluids are, furthermore, oxidizing fluids which are anomalously enriched in metals - Ni, V, Cu, Zn, Co, U, Ti, Fe, Mn, Au, Ag and PGE (Bachu 1994)[7].

Over portions of the region (e.g. to the north of Fort McMurray), Salt dissolution within the Prairie Evaporite is advanced, and salt removal from the unit is nearly complete to the east of the Athabasca River. The dissolution creates considerable collapse breccias, and the dissolution front (subsurface scarp) represents a major break in the aquiclude allowing the mixing of pre-Prairie formational waters with those above the formation, thereby bringing into contact waters of markedly different salinities, acidity, Eh and elemental compositions.

Transport and deposition of metals is known to be a function of Eh/pH, and their transport is dependent upon the availability of complexing agents such as halides, bisulfate or other organic species. Transporting complexes are highly dependent on, and sensitive to, variations in Eh/pH, and characteristic complexes gain prominence under different chemical conditions. Abrupt changes in ambient chemistry, therefore, present chemical “fronts” which can cause precipitation of metals via redox reactions.

The Prairie Evaporite dissolution front, as well as major structures within, and across it, represents a significant permeability breach allowing hydraulic communication between pre-Prairie metalliferous

[6] eg: Titanium Corporation

[7] Distribution of Transitional Elements In Formation Waters in Northeastern Alberta: by S.Bachu, Alberta Geological Survey, Alberta Research Council; July 1994. Special Study Commissioned by Tintina Mines, included in Appendix A in Alberta Mineral Assessment report MIN9611, Sabag 1996a.

oxidizing fluids with post-Prairie "shallow" fluids, and can be regarded as a chemical environment conducive to the accumulation (precipitation) of metals where: (i) basinal fluids first mix with the shallow waters of markedly different chemistry; or (ii) the basinal fluids first come into contact with (are discharged against) surfaces of contrasting chemistry, especially surfaces of reducing strata such as carbonaceous material (e.g. the oil sands or the black shales). Historic work programs by Tintina focused on exploration of the projection of the dissolution front across the region in search for metal deposits along redox fronts.

7.3 STRUCTURAL GEOLOGY

Structural elements in northeast Alberta are represented by a broad variety of regional and localized features, many of which are within the Precambrian but others are confined to the overlying stratigraphic sequence in general, or the Devonian in particular. Many major structures extend into Alberta from neighboring Saskatchewan (Figure 13). Broad structural highlights are as follows:

- The boundary between the Archean Rae Province (approx. 4Ga) and the much younger Talston Magmatic Arc (approx. 2Ga) is the principal tectonic feature in the region, passing through its northeastern portion. This boundary is known to have undergone some readjustments. Other major Precambrian structures in the area comprise a series of north-northwesterly features, currently only viewed as lineaments, two of which are known downdropped faults and have been correlated from measured offsets in deep oil well data.

- In broad terms, at least three different principal orientations of faulting are recognized in the basement underlying northeast Alberta as follows: (i) northerly trending sinuous shear zones of the TMA (inferred from the aeromagnetic signatures of the area) characterized by mylonites of varying stages of deformation ranging from early, broad, Granulite facies to more brittle, late stage, greenschist facies, many of which structures are suspected reactivations of brittle structures; (ii) northeasterly extension of the Peace River Arch passing through the region, broadly through the Birch Mountains, possibly also with a splay trending through the Fort MacKay area, and seen in northeast trending offsets in aeromagnetic contours as well as in vertical offsets documented from scant drilling; (iii) northwesterly, potentially fluid bearing, faults inferred from faults observed in the Andrew Lake region of northeastern Alberta wherefrom several late stage (cross-cutting) faults with extensive silicification and hematization of crushed country rock have been documented (Langenberg, 1993).

- Studies of jointing patterns within the sediments in the area conclude that several of the patterns are conformable with structures in the underlying Precambrian basement, reflecting also several readjustments in the Precambrian which have been generally recognized (see Babcock 1975, Babcock and Sheldon 1976).

- Younger structures in the area, apparently restricted to the sedimentary sequence, are dominated by a series of regional northeasterly trending faults, several of which pass through the Fort MacKay area and vicinity. The principal member of this family of faults is a dextral strike-slip fault (Martin and Jamin 1963, see also Figure 16) whose location and trend are based on interpretations from stratigraphic correlation of oil/gas well data. Other members of the northeasterly group of linear trends are interpreted per broad surficial features and per major offsets in regional aeromagnetic data, and have not been corroborated by stratigraphic correlations, although it is of note that all metallic occurrences reported to date from the region are from locations which are at, or in the immediate vicinity of, northeasterly features, particularly where these features cross certain other Precambrian trends, or where they intersect the Prairie Evaporite Dissolution front (scarp).

- The limited drilling penetrating the Precambrian suggests that at least some of the northeasterly structures noted in the sediments reflect Precambrian features, and that offsets along the structures also include a substantive vertical component defining a complex horst/graben framework.

- By far the largest zone of disturbance in the region is the **Peace River Arch**, which is a major regional tectonic zone extending east-northeasterly from the Front Ranges in northeastern British Columbia over approximately 750 kilometers across north-central Alberta to the Saskatchewan border. It comprises a 140km wide zone of structural disturbances which were active from as early as the Late Paleozoic to the Late Cretaceous, with no readily discernible aeromagnetic or gravity expression, although a subtle crustal uplift at the Moho, partially coincident with its axis, is suggested by seismic studies. All inidications are that the Arch is not the result of a discrete Precambrian structure but is rather the end product of the confluence of a variety of complex and episodically active structures. The origin(s) of the Arch are poorly understood and mechanisms suggested as to its development range from thermal to entirely flexural (non-thermal) hypotheses. It suffices to say that it represents a deep structural feature with a complex tectonic history characterized by periodic reactivation and episodic crustal extension.

  The Peace River Arch trends across northeastern Alberta within a wide zone passing to the north of Fort MacKay, across the southern parts of the Birch Mountains. Although the sedimentary record in the area suggests that it was an emergent feature during the late Devonian and principally a zone of subsidence during the Cretaceous, work completed by Tintina and the AGS in the 1990's in the Birch Mountains suggest many localized variations, suggesting also that at least portions of the north flank of the Arch were the locus of considerable uplift during the Early-Late Cretaceous transition, coincident with the development of extinction marker horizons and abundant bentonites in the area.

- Other young structures within the region comprise a variety of localized faulting and jointing patterns reflected in surface (and paleo) topography, some of which as linear trends, and others as circular features attributed to salt dissolution sinkholes. A number of the larger (20km-30km diameter) circular features are evident in LANDSAT remote sensing imagery from the region although their nature remains unresolved (eg: Figure 26).

More specific structural features, as they relate to metallic exploration in the region, were compiled by Tintina through a variety of studies including remote sensing imagery analysis and subsurface stratigraphic modeling. Principal features identified by the foregoing are summarized in Figure 16.

Some of the structural features across the region, and those the crossing the Property, cannot be discussed in isolation from subsurface stratigraphy which is presented in greater detail in Section 7.6 of this Report. The most significant of these features is the subsurface salt scarp created by salt bed dissolution within the Devonian Prairie Evaporite, and it attracted considerable prior exploration attention. The Prairie Evaporite (Prairie Lake Fm, Middle Devonian Elk Point Group) dominates the mid-section of the Devonian sequence in northeast Alberta, and it is characterized by salt beds, anhydride and gypsum.

The Prairie salt beds are a substantive regional feature, known to extend southward into North Dakota. Parts of the salt beds have been dissolved and are responsible for the creation of collapse breccias up-stratigraphy, and dissolution within the beds defines a northwesterly linear regional band across northeast Alberta and is regarded as a dissolution front, or subterranean scarp, to the east of which salt members of the evaporite have been removed. Fort MacKay is located above the foot of the dissolution scarp, east of which salt removal is nearly complete, and it is believed that some 75m of salt were removed from the Prairie Evaporite by dissolution.

The Prairie Evaporite represents a major basinal hydrogeological feature, acting as a regional aquiclude, below which saline and metal enriched oxidizing basinal fluids flow updip northeasterly into the region until they are discharged along the dissolution scarp representing the main breach in the hydrological system (Figure 15). Leakage of fluids along faults crosscutting the Prairie Evaporite also provide localized communication between metal enriched oxidizing basinal fluids with meteoric "shallow" waters. The Prairie Evaporite Salt Dissolution scarp is, accordingly, the most significant redox front in the region as the locus of "first-contact" between ascending metal bearing oxidizing formational waters and descending meteoric or subformational flows, and also the point of contact of oxidizing metalliferous basinal fluids with any overlying organic rich stratigraphy.

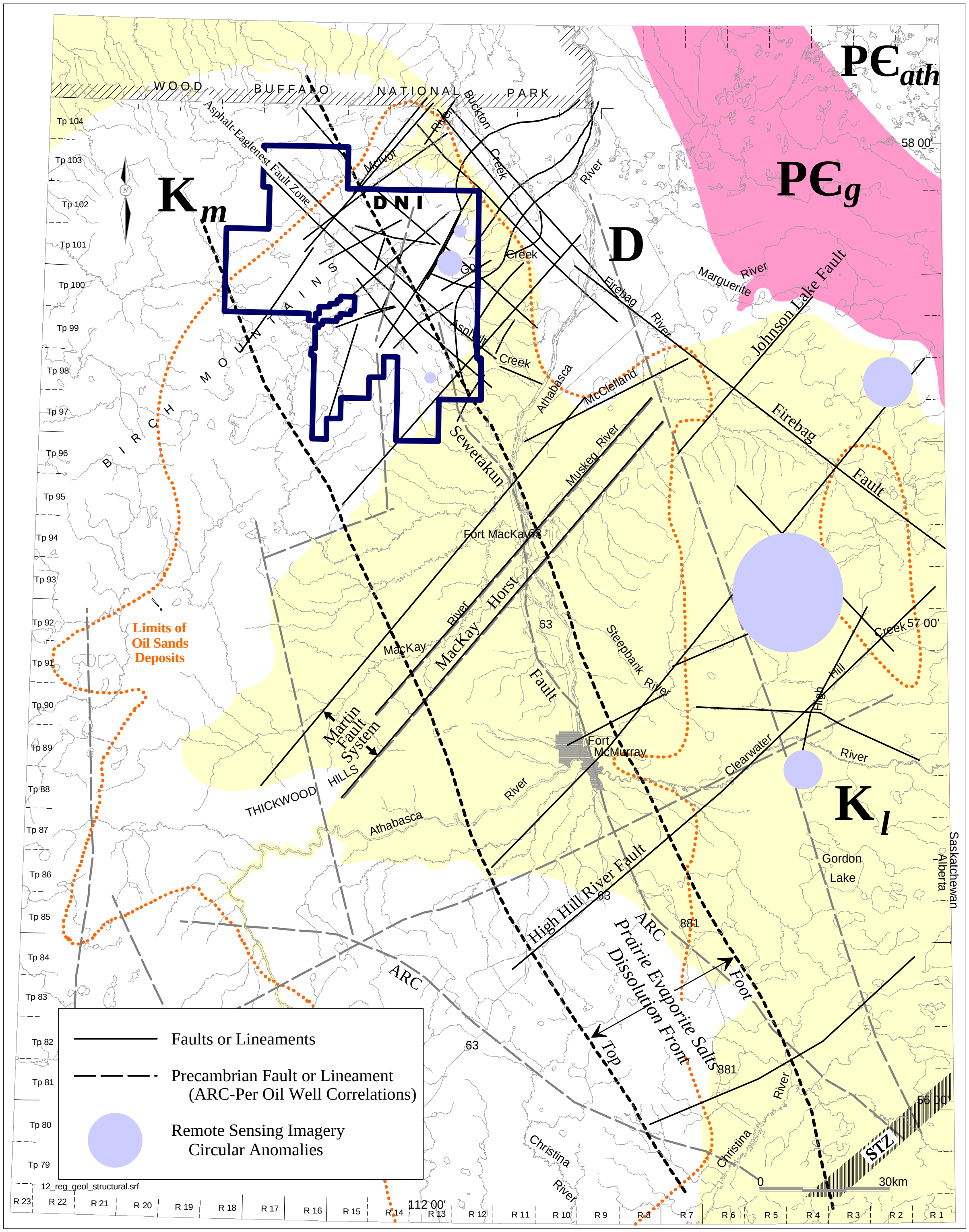


Figure 16: Summary sketch of regional structural trends and the projected trace of the Prairie Evaporite Salt Dissolution front indicating the top and foot of the projected subsurface scarp face, showing also other structural features compiled and interpreted for northeast Alberta by Tintina, including: Athabasca basin sandstone (PCath), Precambrian (PCg), Middle Devonian (D), Lower Cretaceous (Kl), and Middle Cretaceous (Km), the distribution of the oil sands deposits, principal structural elements and the Snowbird Tectonic Zone (STZ). Select circular anomalies also shown from remote sensing imagery studies. After Figure 6, Alberta Mineral Assessment report MIN9802, Sabag 1998.

Prior work across the region by Tintina Mines (1993-1995) focused on the search for gold and copper accumulations controlled by redox processes. It, accordingly, targeted junctures of the Prairie salt scarp with crosscutting features, given the potential of such localities for hosting metal accumulations deposited via redox reactions in stratigraphic and structural traps. Localities were targeted relying on extensive stratigraphic subsurface modeling of information from regional oil/gas prior driling databases. Based on this work, the Prairie Evaporite Salt Dissolution scarp, as projected to surface, defines a surface trend which extends southeasterly across the region, southeast from Wood Buffalo National Park, across the Birch Mountains, to approximately Township 65 at the Saskatchewan border. The Birch Mountains, and surrounding areas including the areas currently under the Property, overlie junctions of the Prairie Evaporite Salt Dissolution front with other northeasterly faulting as interpreted from regional aeromagnetics. The area also generally overlies projected extensions of the Peace River Arch.

Details of the structural setting of the Birch Mountains area and the Property are discussed in Section 8.4 of this Report, and include details related to subsurface stratigraphic modeling across the Property.

7.4 Glacial Setting

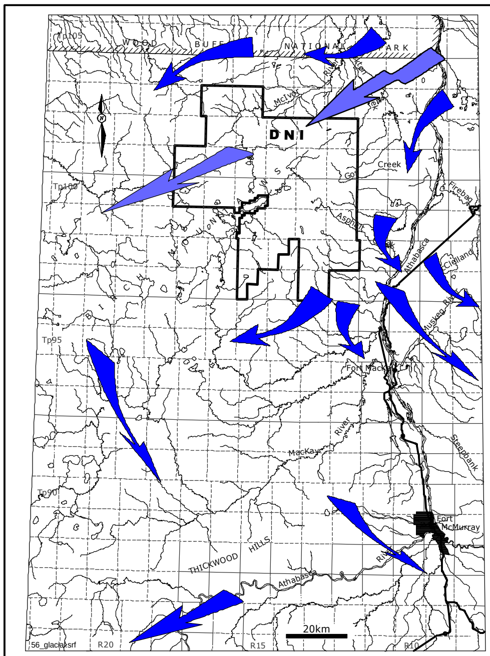


Figure 17: Summary of principal ice directions, Northeast Alberta (Dufresne et al 1994).

Glacial history of northeast Alberta is complex. In gross terms, multiple glacial advances from the east/northeast/north (Laurentide source) and the west (Cordilleran or Rocky Mountain source) have been recognized, as have been also considerable interactions between the two principal ice directions (Dufresne et al 1994).

Transverse advances in glacial directions in response to localized topography have been documented and work suggests that the Birch Mountains have had a significant affect on local ice directions in the area. Generalized principal ice directions are shown in Figure 17.

Principal ice direction throughout the Birch Mountains Area is southwesterly and can be seen in large scale glacial scouring across the area (Figure 18), although ice flow is believed to have splayed around, and over, the Birch Mountains such that crosscutting composite directions are common to its south, manifested as multiple tills.

The reader is referred to various work reports by the AGS toward resolution of Quaternary geology over the region.

7.5 Regional Geophysical Overview

Regional aeromagnetics of northeastern Alberta are characterized by a series of northerly and northwesterly features, offset along several conspicuous northeasterly trends. Many of these trends extend well into neighboring Saskatchewan.

On a sub-regional scale, aeromagnetics typically define elongate northerly trends of relatively gentle magnetic relief, locally disrupted by abrupt offsets in magnetic contours, by flexures and by dilative features. Many of these features can be correlated with other surficial as well as remote sensing imagery information and are commonly regarded to be manifestations of reactivated structures deeper within the precambrian, many with lateral offsets of 10-30km. Some of the interpreted structures are also suspected to be associated also with considerable vertical movement ranging 50m to 100m.

Preliminary reviews of digital regional aeromagnetic data were conducted by Tintina during its 1994-1995 regional exploration activities to better resolve discontinuities and lineaments (faulting) over the region and across the Birch Mountains, relying on first and second derivative manipulations of the available digital regional data. Discussion of the foregoing magnetic trends over the Birch Mountains and the Property are discussed in Section 8.6 of this Report in conjunction with subsurface stratigraphic and other related surface anomalies over the Property.

Gravity Bouguer Anomalies in the region define many trends corroborated by supporting aeromagnetics, and in general depict Bouguer configurations compatible with horst-graben subsurface geometry suggesting block movements, especially in the general vicinity of, and to the north of, Fort McMurray.

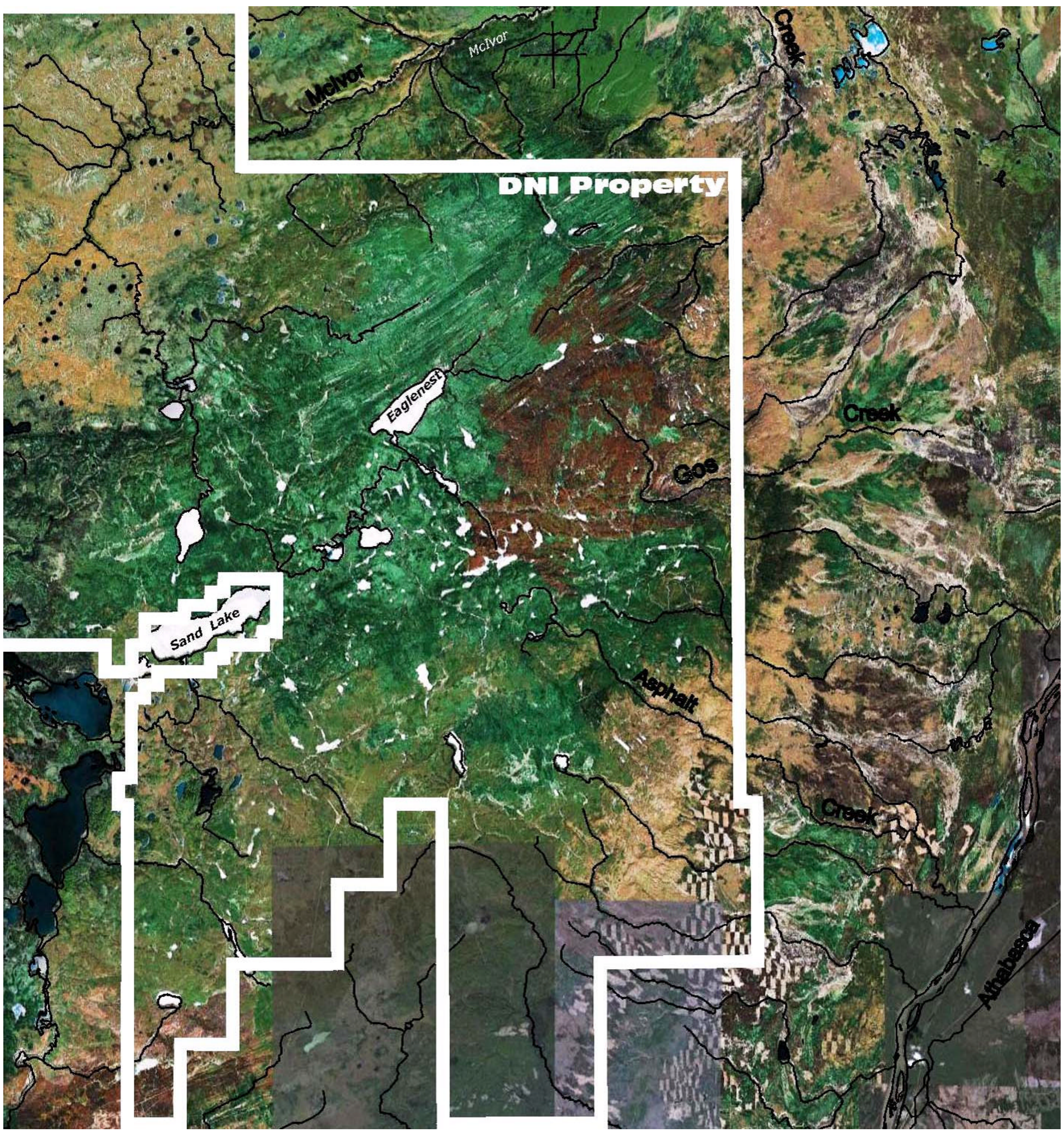


Figure 18: Remote image of the Birch Mountains showing glacial scouring. From Google Earth image bank.

7.6 Regional Sedimentary Stratigraphy

Overall stratigraphy within the region has been documented in most part from subsurface data collected from oil well formational picks due to the scarcity of exposures of the typically flat-lying stratigraphy which can be observed only in river valley walls. A stratigraphic column for the region is summarized in

Figure 19, and a regional north-south cross-section is presented in Figure 20 which extends southerly from the McIvor River, across the Property, to as far south as Fort MacKay. A southeasterly section across the Birch Mountains and the Property is presented in Figure 21.

An overview of the sedimentary pile is described below, extending upward from the Devonian sequences at its base, to the Cretaceous Formations which dominate the Birch Mountains and the area under and around the Property.

Devonian Carbonates

Devonian units immediately overlie the Precambrian across the region, and consist primarily of near flat-lying (dipping ~4° west) Middle and Upper Devonian strata, unconformably overlain by Lower Cretaceous sequences. In the center of the region, in the vicinity of Fort MacKay, the Devonian is a 300m thick sedimentary sequence dominated by siliceous carbonates near the surface giving way, through evaporite and dolomitic rocks, to progressively more clastic units and shales or red-beds at depth, all of which are separated from the Precambrian basement by a thin regolith unit. The Precambrian paleosurface dips gently (~ 5°-7°) to the southwest, such that the Devonian sequence is thinner in the northeast portion of the region where it has an estimated thickness ranging 50m-100m in the Firebag River area.

The Devonian sequence is divided into the **Lower to Middle Devonian Elk Point**, **Middle to Late Devonian Beaverhill Lake** and **the Late Devonian Woodbend Groups**. The Elk Point Group consists of a lower succession of shales, red beds and salts and an upper section of platform carbonates and evaporites. The Beaverhill Lake Group and the Woodbend Group are composed of alternating calcareous shales and argillaceous limestones.

Of particular interest within the Elk Point Group are the **Keg River Formation** and overlying Prairie Evaporite Formation. In the Fort McMurray area, the Keg River Formation has been pervasively altered to sparry tan dolostone and dolomitic limestone, and can be seen in outcrops along the Firebag River just east of the Athabasca River. The Keg River Formation hosts the Pine Point Pb-Zn deposits located adjacent to Alberta's northwest corner.

The Keg River Formation is conformably overlain by an evaporitic succession, the **Prairie Evaporite Formation**, consisting primarily of extensive thicknesses of salt and lesser interbedded anhydrite/gypsum, which thicken to the northwest from 160m to 275m. Thinner intervals along this trend are the result of reef build-ups in the underlying Keg River Formation.

Portions of the salt beds within the Evaporite horizon, have been dissolved and are responsible for the creation of collapse breccias up-stratigraphy. The Prairie salts are a substantive regional feature, known to extend southward into North Dakota, and dissolution within the salts defines a north-northwesterly trending regional linear domain regarded as a dissolution front, or subterranean scarp, to the east of which salt members of the evaporite have been removed (e.g. Fort MacKay is located over the foot of the dissolution scarp, east of which salt removal is nearly complete, and it is believed that some 75m of salt have been removed from the Prairie Evaporite by dissolution).

The eastern lateral boundary of the Prairie Evaporite Formation is the salt dissolution scarp which comprises a 20km-25km wide band extending north-northwesterly across the region (see Figure 12). The scarp defines an abrupt facies change from anhydrite to salt and has been progressing basinward since the end of Middle Devonian time. Salt dissolution within the Prairie Evaporite Formation has traditionally been credited for the bulk of karsting and brecciation in overlying Formations throughout the region, often to the detriment of the resolution of other structures of purely tectonic affinities.

The Prairie Evaporite represents a principal basinal hydrogeological feature acting as a regional aquiclude below which saline and metal enriched oxidizing fluids flow updip northeasterly into the region until they are discharged along the dissolution scarp representing the main breach in the hydrological system. Leakages of fluids along faulting crosscutting the Prairie Evaporite also provide localized communication between "shallow" waters with deeper formational fluids flowing beneath the sedimentary pile.

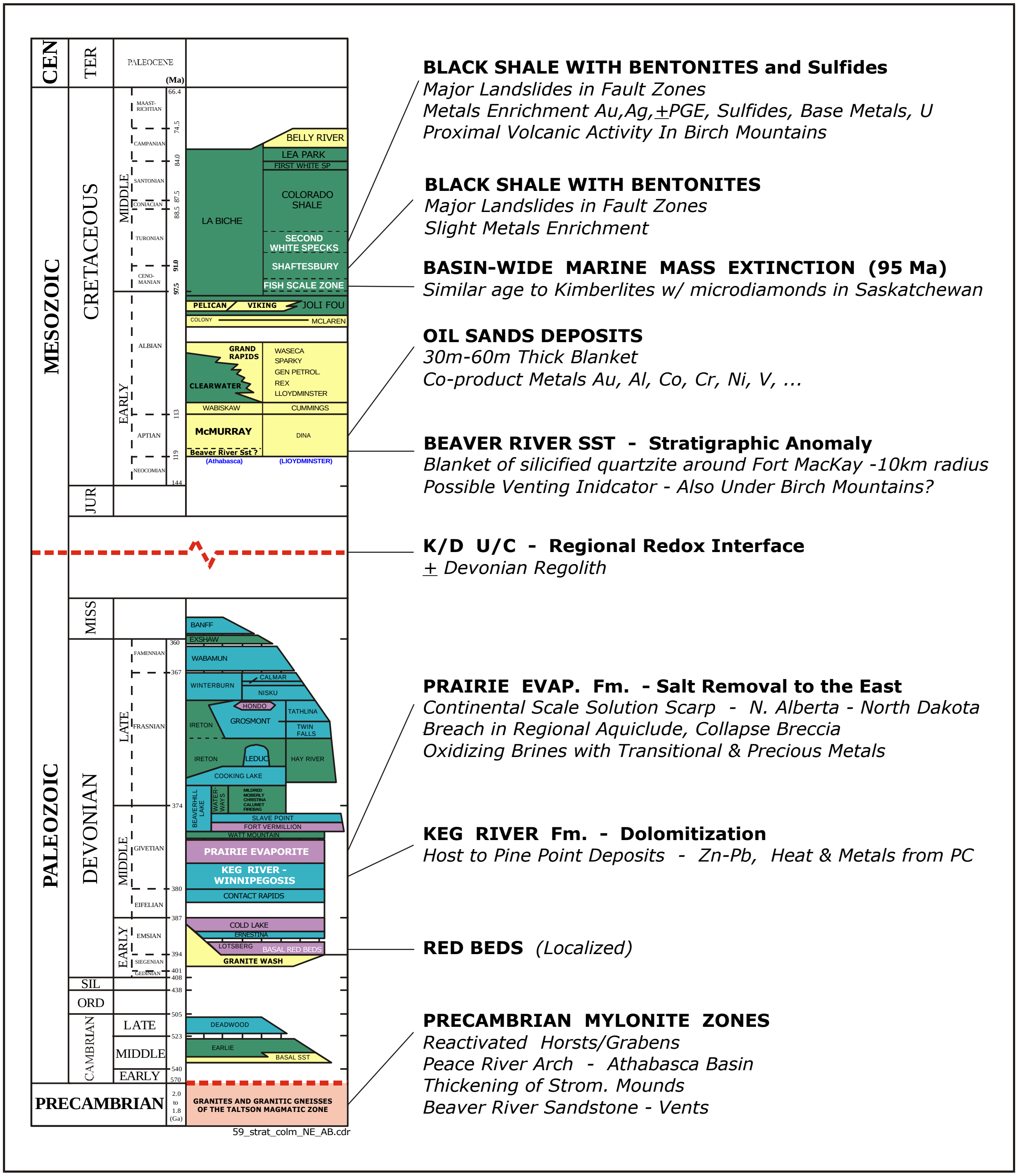


Figure 19: Stratigraphic column - Northeast Alberta. After Figure 59, Sabag 2008; and Figure 14, Alberta Mineral Assessment Report MIN9802, Sabag 1998

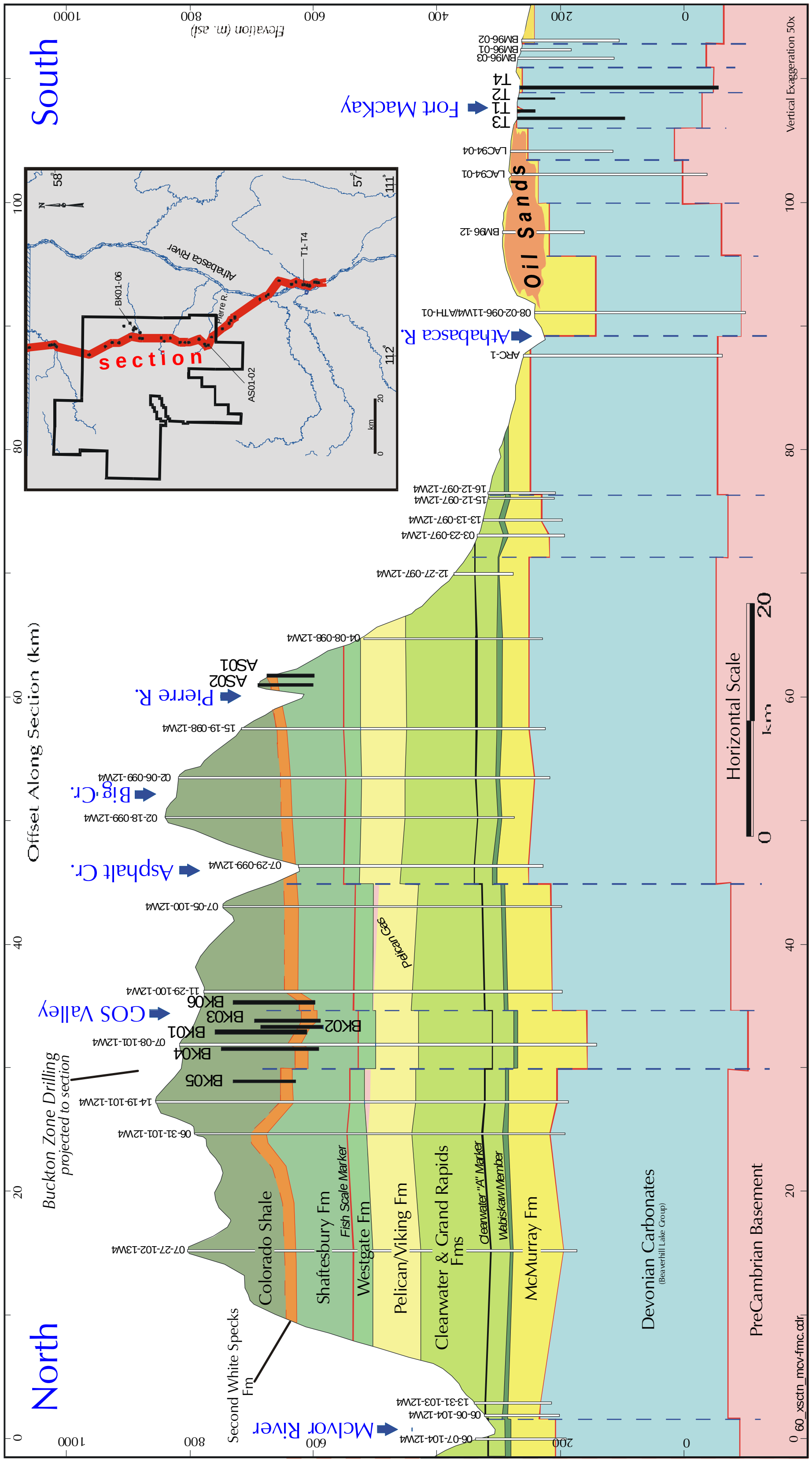


Figure 20: Regional North-South geological cross-section across the Birch Mountains and the Property, McIvor River to Fort MacKay. After Figure 60, Sabag 2008; and Figure 13, Alberta Mineral Assessment Report MIN9802, Sabag 1998.

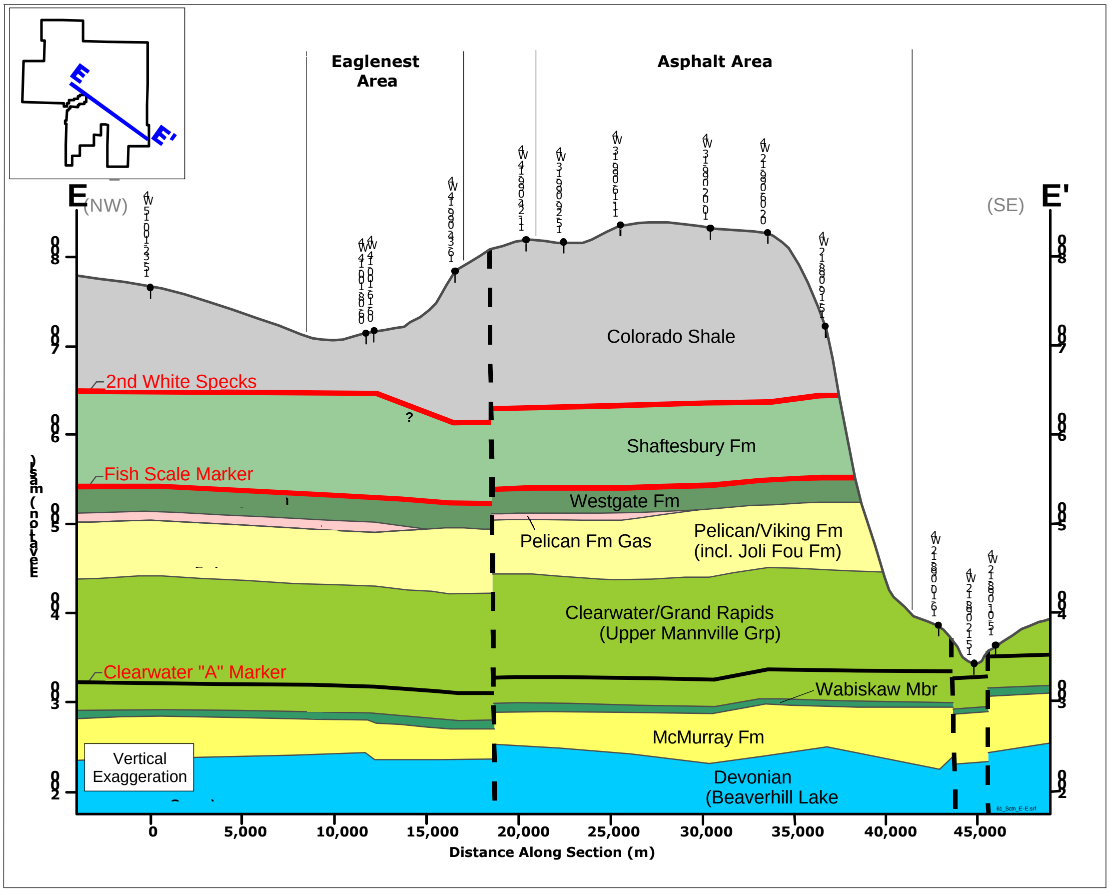


Figure 21: Cross section E-E', southeasterly across the Property. After Figure 61, Sabag 2008; and Drawing D4.3, Alberta Mineral Assessment Report MIN9613, Sabag 1996b.

Cretaceous Clastics

The **Mannville Group** and the **Colorado (or Alberta) Group** dominate the Cretaceous sequences of northeast Alberta. The two Groups are described below.

The **Mannville Group** represents the first major depositional sequence of the Cretaceous throughout Alberta, following a long period of uplift and erosion of older strata. This Group consists in ascending order of the **McMurray Formation**, the **Wabiskaw** member, the **Clearwater Formation**, and the **Grand Rapids Formation**.

The **McMurray Formation** is the most well known of these units. It is a basal deltaic, quartzitic sandstone deposit which unconformably overlies the Devonian Carbonates. The McMurray Formation hosts the Athabasca Oil Sands deposits, centered around Fort McMurray, representing the largest accumulation of hydrocarbons worldwide. It attains a maximum thickness of approximately 50m north of Fort McMurray, but thins slightly and undergoes a facies transition to a more terrestrial sequence of shales and coal in the area of the Firebag River. Accumulations of near-economic are known to occur in the Formation.

The base of the McMurray Formation marks the Cretaceous-Devonian unconformity representing a principal temporal marker within the region, though one that is poorly understood and complicated by the localized presence of horizons and rocktypes which represent stratigraphic or temporal anomalies of unknown age and provenance. This unconformity is well-exposed near Fort MacKay, and is occupied by the Beaver River Sandstone, a silicified 1m-3m thick "blanket" of crystalline quartz sandstone of assumed Jurassic or Lower Cretaceous age. This unit, though previously assumed to be confined to the Fort MacKay area, has also been noted by Tintina in oil/gas well drill cuttings at the base of the McMurray Formation from areas of active structural and geochemical disturbances within the Birch Mountains, and interpreted to represent a decalcification marker in areas overlying venting or hot springs activity.

The Wabiskaw member is a transgressive siltstone to sandstone which overlies the McMurray Formation and is part of the transitional sedimentation into the overlying Clearwater Formation.

The Clearwater Formation is a collection of fine grained marine clastic sediments which developed as a result of a transgressive event which saw the end of the development of the McMurray delta. The Formation also contains several shale units used as stratigraphic markers, these include in ascending order (above the Wabiskaw member) the **Clearwater "A" marker** and the **"Regional Marine Shale"**.

The Clearwater Formation grades laterally and vertically into the Grand Rapids Formation which represents the contemporaneous development of a prograding barrier bar complex which thins to the northwest. The Grand Rapids Formation sandstones are easily distinguished from those of the underlying Clearwater Formation due to the usually considerable amount of glauconite and shaley interbeds in the latter.

The Lower to Middle Cretaceous (Albian-Santonian) **Colorado Group** represents the second major clastic depositional sequence throughout the Alberta Sedimentary basin. It consists of a lower section comprising the **Joli Fou Formation**, which envelops the **Pelican** or **Viking Formation**, and an upper section which is dominated by the **LaBiche Formation**. The LaBiche Formation has been subdivided into the **Westgate, Fish Scale, Belle Fourche, Second White Specks**, and **Colorado Formations**. All outcrops mapped and sampled in the historic work in the Birch Mountains, and on the Property, are exposures of the foregoing Cretaceous units.

The various members of the Colorado Group represent depositional events which extended over much of North America over a period of approximately 25-30 million years during a time when sea levels were high and the North American craton was experiencing a regional down warping (Leckie et al, 1992). As a result, the Colorado Group is dominated by marine shales which are occasionally punctuated by coarser sediments deposited during brief high-stands.

The Colorado Group reaches a maximum thickness of approximately 1500m in northwest Alberta and is generally thickest nearer the Cordillera. The erosional edge of the Colorado Group in northeast Alberta is represented by a shale dominated package of strata which reaches a maximum thickness of approximately 450m-500m in the Birch Mountains (the Colorado Group underlies all of DNI's Properties in the Birch Mountains, and dominates near surface exposures).

The stratigraphy of the Colorado Group is complicated by: (i) different terminologies often used in different areas; (ii) the shale dominated sequence can only be sub-divided by micropaleontological work rather than gross lithologic features, and (iii) the sequence is not well exposed and thus not well understood lithologically, particularly in northeast Alberta. The Colorado group of northeast Alberta is best described, in ascending order, in terms of the **Joli Fou, Viking (or Pelican), Westgate, Fish Scale, Belle Fourche, and Second White Specks Formations** (Bloch et al, 1993).

The Upper Albian **Joli Fou Formation** in northeast Alberta unconformably overlies the Clearwater-Grand Rapids Formations of the Mannville Group, and is composed of gray, non calcareous, marine shale with minor fine to medium-grained sandstone. The Joli Fou Formation is not well exposed in the region.

Sandstones of the **Viking Formation** overlie the Joli Fou Formation and they are more commonly known as the Pelican Formation in northeast Alberta. The Formation represents an eastward thinning wedge of coarse clastic detritus which extends from British Columbia to Saskatchewan. In central Alberta the thickness of the Viking Formation ranges 15m-30m and is known to thicken southward to more than 75m. Within the region, the Pelican Formation represents somewhat of a stratigraphic anomaly as exposures of medium to coarse-grained, clean, quartzitic sandstones, and minor interbedded shales and mudstones, with a thickness of up to 80m have been mapped and sampled in the Birch Mountains (T104/R13/W4M).

The uppermost 5-10m of the Formation are known to locally (e.g. Birch Mountains) carry accumulations of low-pressure gas which are generally uneconomic.

The remainder of the Colorado Group consists almost entirely of shale and mudstone and has been subdivided based on two distinctive basin-wide stratigraphic markers, the **Fish Scales Zone** and the **Second White Specks Zone**. The shales that conformably overlie the sandstones of the Viking Formation, but lie beneath the Fish Scale Zone, belong to the **Westgate Formation** which is described primarily from outcrops in the Peace River area, as a laminated to bioturbated mudstone to siltstone with a thickness of approximately 20m-25m. (Bloch et al, 1993). Above the Westgate Formation are the Fish Scale bearing shales of the **Shaftesbury Formation**, which represents the stratigraphic interval between the Fish Scales Zone and the Second White Specks Formation, and comprises the **Fish Scale Formation**, near its base, and the overlying **Belle Fourche Formation**.

The **Fish Scales Formation** consists of a concentration of fish debris, such as bones, teeth and scales, within shales (and lesser amounts of sandstone) with relatively high total organic Carbon values of 5-10%. It is generally less than 20m thick. The Formation can contain >75% fish debris, and may represent either an anoxic event at the Albian-Cenomanian boundary which prevented the normal decay of the bioclastic material or as a transgressive lag deposit. It is ill understood and poorly delineated.

The **Belle Fourche Formation** overlies the Fish Scale Formation, and it consists of massive shales and mudstones characterized by low amounts of total organic Carbon. A distinctive foraminiferal assemblage, and a lack of bioclastic material set it apart from the underlying Fish Scale Zone and the overlying Second White Speckled Shale (Bloch et al, 1993). The **Belle Fourche Formation**, occasionally also referred to as the Upper Shaftesbury Formation, is not well exposed in the region with the exception of many slump zones throughout the Birch Mountains which contain masses of gray shales and mudstones. Although little detailed lithological information can be extracted from mapping/sampling of the slumps, it is noteworthy that the upper portions of the Shaftesbury Formation are locally characterized by the occurrence of numerous large (0.5m-2m) rounded, calcareous concretions containing abundant sulfides (predominantly FeS) as disseminations and as nodules. Both the shales and the concretions of the Shaftesbury Formation locally contain abundant pyrite nodules which range 0.5cm-5cm and are generally rounded agglomerations of individual crystalline grains.

The **Second White Speckled Shale** (or **Second White Specks Formation**) is another basin-wide subsurface stratigraphic marker within its shales given its radioactivity which can be easily detected in down-hole drill logs. The Second White Specks is so named for the common occurrence of coccoliths. This unit, and its surrounding shales, commonly form large slumping outcrops toward the top of many of the creeks draining the Birch Mountains. It is characterized by a distinctive coarse grained (occasionally conglomeratic), sub-rounded, chert and quartz sandstone which usually contains abundant fish debris similar to that of the Fish Scale Zone. The cherty bioclastic sandstone, referred to as the Siliciclastic Bone Bed or SBB (thus differentiating it from the Fish Scales Marker bone bed - FSMB), ranges in thickness from a few centimeters up to 1.2m, and is normally calcite cemented. Just above the SBB there is usually a thin (approx. 10cm) limestone or carbonate cemented siltstone layer followed by a 5m to 10m interval marked by numerous thin (1cm-20cm) bentonite seams. The shales in this interval are characterized by elevated total organic Carbon contents exceeding 10% by weight. The shales of the Fish Scales-Second White Specks section are also characterized by the large (0.5m-2m) rounded, calcareous concretions.

The LaBiche Formation, overlying the Second White Speckled Shale is poorly studied given lack of exposures in the area and in the Birch Mountains. Two small and badly slumping outcrops of massive gray Colorado or LaBiche Formation shale previously observed well above those of the Second White Specks Formation have been assumed to represent LaBiche Shales and the youngest Cretaceous strata preserved in the Birch Mountains area of northeast Alberta. Locally, the LaBiche shales have been eroded due to periods of uplift (eg: micropaleontological examination of LaBiche Formation from Birch Mountains drilling at the Buckton Zone suggests an unexpected 4-6 million year gap between the top of the Second White Specks Formation and the base of the LaBiche Formation, and indicates that shales previously logged/mapped as LaBiche are likely part of the Upper Cretaceous Lea Park Formation).

8. Property Geology

8.1 Introduction

The Property is large (2,536 sq km) and covers the eastern half of the Birch Mountains, including its eastern and southern erosional edges. Geology of the Property is, therefore, also the geology of the Birch Mountains.

To the extent that the historic work completed by Tintina in the 1990's, combined with work by the AGS of the same vintage, comprise the substance of descriptive geological knowledge from the Birch Mountains, discussions of descriptive stratigraphy over the Mountains and under DNI's Property are extracted from reports by the foregoing groups. General geology of the area was previously presented in Figure 15. Available exposures and "named" stratigraphic lithosections previously mapped in detail and sampled shown in Figure 36, Section 8.7. A stratigraphic column for the Birch Mountains Area juxtaposed with lithogeochemical profiles for select elements is presented in Figure 37, Section 8.7.

8.2 Stratigraphy

Bedrock exposures throughout the Birch Mountains are scarce (<2%) and, given the flat-lying stratigraphy, they are restricted to valley walls of the many creeks and rivers which define incisions confined to the eastern and southeastern erosional edge of the Birch Mountains, over a 5-10km wide arcuate band defining a 70km long arcuate lobe of the Mountains. The available exposures throughout the area, nonetheless, enable intermittent observation and sampling across 300m-350m of Cretaceous stratigraphy, extending upward from the top of the Manville to well into the Colorado Group, straddling the Albian-Cenomanian boundary, providing exposures of five Formations: the Clearwater/Grand Rapids Formation, the Viking/Pelican Formation, the Westgate Formation, the Fish Scales Formation, and the Second White Specks Formation. Many of these Formations are eroded to the east of the Birch Mountains and to its south, and their exposures can be seen in cliffs and escarpments along the eastern and southern erosional edges of the Birch Mountains, and in valley walls of rivers and streams draining the Mountains.

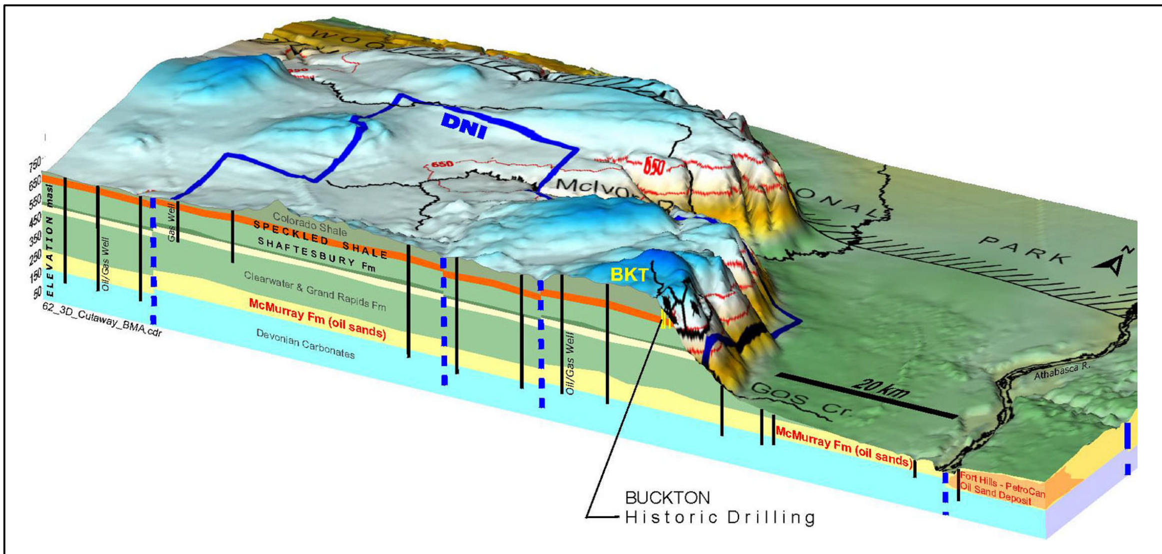


Figure 22: East-West 3-Dimensional cutaway block diagram across the Birch Mountains and the Property, showing generalized stratigraphy and Buckton Zone historic drilling. After Figure 62, Sabag 2008.

The five Formations which have been mapped and sampled in historic work over the Birch Mountains are described below, capturing information from a large area extending north from the vicinity of Pierre River, through Asphalt Creek, across the Buckton Creek area to the McIvor River and its tributaries located immediately to the north of the Property.

The Clearwater/Grand Rapids Formation can be seen throughout the Birch Mountains area in exposures at the lowest elevations (e.g. KRC-A exposure, to the north of the McIvor River on KRC Tributary, the McIvor-A exposure and the South Tributary, Figure 36). The Formation is generally characterized by thinly interbedded, dirty glauconitic sandstones, silty shales and mudstones with occasional interbedded channel sandstones which range in thickness from 5-50cm and are massive in appearance with occasional cross bedding and contain lags of very coarse grained sand with coal, occasional bivalve coquina, and locally abundant ammonites (e.g.McIvor-A, Figure 36). The interbedded sandstones and shales are locally cut by channel-filled sands which are often carbonate cemented and appear as prominent iron stained pods between 10-50cm in thickness and 1-5m in width. Minor disseminated pyrite has been observed in samples from this unit.

The Viking/Pelican Formation is shown in the regional geology map of northeast Alberta (Green et al, 1970) to be part of the Grand Rapids Formation which is clearly not the case. This Formation has been mapped and sampled in the Birch Mountains at ten lithosections located along Pierre River, Mid Creek, Asphalt Creek, Buckton Creek and Greystone Creek. By far the best lithosections are located in the Asphalt and Greystone Creek valleys. These exposures are characterized by sections of a clean, unconsolidated, medium to coarse grained, well rounded, massive, quartzitic sandstones with minor interbedded shales. The predominance of quartz and its massive appearance are distinctive features which differentiate this Formation from the glauconitic sands of the underlying Clearwater Formation. Based on outcrop and subsurface measurements, the Formation has a relatively consistent thickness in the area varying 40-45m.

The contact between the Pelican Formation and the overlying Westgate Formation shales can be seen in lithosections Mid Creek-B, Asphalt-A to -E, and Greystone-B (Figure 36), and is characterized by a 5m of interbedded quartzite and mudstone with abundant iron staining which is progressively more pervasive nearer the contact. Minor silicification has been observed at the top of the Formation at Greystone-B, and pervasive iron staining along with massive "manganese wad" development has been noted at Mid Creek-B. While no significant geochemical anomalies have been identified in the Pelican Formation, highlights from historic work include 2 samples from a 1m(±) thick shale bed exposed near the top of the Greystone-B lithosection, with 18.7% and 22.7% organic Carbon. Other highlights include up to 10ppb Au at Asphalt-E, 53ppm Cu and 43ppm Co on Asphalt Creek, 153ppm V at Greystone-B, and 227ppm Zn at Asphalt-A.

The Westgate Formation in the area is represented by a handful of poor exposures of badly slumping shales and mudstones which apparently overly the Pelican Formation and which are devoid of fish debris and can hence be assumed to underlie the Fish Scales (or Shaftesbury) Formation. The Westgate Formation has been characterized (Bloch et al 1993) as a laminated-to-bioturbated, heterolithic mudstone to siltstone that typically contains less than 2% organic Carbon and underlies the Fish Scales Zone (or Formation). Identification of the Westgate Formation from field relationships alone has to date proven difficult due to the lack of a diagnostic lithological break between it and the overlying Shaftesbury Formation, and due to its unconsolidated nature.

The full extent of the Formation is exposed in the Greystone-B section, north of McIvor River (Figure 36), as a massive (20m) poorly consolidated dark gray mudstone overlying the Pelican Formation. The mudstones are interbedded with thin (<1cm) discontinuous (10-20cm long) fine-grained sandstone and siltstone lenses within their uppermost 5m, and the top of the Formation is marked only by the sudden appearance of fish scales. Westgate mudstones are frequently iron and sulfur stained, and yellowish sulfates (jarosites?) can be seen near its base at the Greystone-B lithosection in abundant irregular 2m-4m long and 1cm-3cm wide fractures.

The Westgate Formation is characterized by relatively subdued geochemical variations: Vanadium contents range 50ppm-150ppm and average 115ppm; Zinc contents vary 2ppm-366ppm and average 89ppm; Ni contents range 2ppm-186ppm and average 27ppm; Au and PGE contents are sporadic; and indicator elements such as Cu, Mo, As and Sb are marginally anomalous.

The Fish Scales (or Shaftesbury) Formation is normally characterized as a fish scales bearing mudstone or claystone, with minor associated sandstones and conglomerates, with up to 8% organic Carbon (Bloch et al 1993). The Formation is defined as the stratigraphic interval from the base of the Fish Scales bearing section to the base of the Second White Specks section, and is also referred to as the Shaftesbury Formation, which includes the Fish Scale and Belle Fourche Formations of Bloch et al (1993).

The Fish Scale bearing section is marked by the sudden appearance of fish scales and other skeletal debris in an otherwise massive unit of silty shales and mudstones, representing a conspicuous marker bed - the Fishscales Marker Bed (FSMB). The FSMB, described in sections from the Peace River area as a coarse grained sandstone with large concentrations of fish debris surrounded by organic Carbon-rich shales, is noticeably absent in the Birch Mountains where it is proxied for by fish scales bearing black shales.

Exposures of the FSMB are rare in the area and have been positively identified only at Greystone-B, although other occurrences have also been noted in badly slumped exposures along Asphalt Creek. At Asphalt-F (Figure 36), a section of the Creek is characterized by the presence of an unusual abundance of friable float slabs and blocks up to 5cm thick, composed of a concentrated bed of fish scales (>80% by volume) (e.g. samples F067AT222 and F067AT257, Sabag 1996a), at an elevation of approximately 530m, consistent with projected FSMB exposure per oil well picks compiled in the subsurface stratigraphic database. The exposure is located well away from exposures of the overlying Second White Specks Formation. Samples of this material are characterized by up to 5% P; 16% Fe; by slightly elevated base metal concentrations; by elevated Pt, Pd, Mo, As and Sb; and 20ppb and 17ppb Au.

Lithogeochemistry of the FSMB, to the extent represented by the scant surface sampling collected throughout the Birch Mountains, show it to be a potential trap of metals with an apparent correlation between the better metal contents with the higher C-org content of samples. While the samples indicate that the Formation is enriched in metals relative to underlying units, U and Th concentrations are surprisingly low and insufficient to produce the typical radioactive anomaly characterizing the FSMB picks in oil well down-hole geophysical logs. U and Th concentrations average only 10.2ppm and 9.9ppm, respectively, and only 3 of 57 historic samples collected report U exceeding 50ppm. It is likely, therefore, that the FSMB as "picked" from well logs is not fully exposed in the Birch Mountains area, or that same has not yet been definitively located.

Geochemically significant anomalies from the FSMB have been identified at the Greystone-C exposure, reporting upward to 10.5% C-org, 117ppm Cu, 228ppm Ni, 942ppm V, 761ppm Zn, and 12ppb Au. While very anomalous relative to other samples from the FSMB within the region and those from all other Formations, the exposure may be material slumped from the overlying Second White Specks Formation.

Of particular significance is the presence throughout select localities in the Birch Mountains area of spherical and quasi-spherical carbonate concretions ranging in size upward to 2m spatially associated with the FSMB. The concretions consist predominantly of black calcite and carry considerable sulfide mineralogy as disseminations of predominantly FeS and as pyrite nodules ranging in size upward to 5cm, consisiting of aggregations of crystalline grains. In addition, presence of concretions typically characterize all exposures located by tracing sulfide-rich alluvial material upstream, especially those carrying also alluvial gold. By far the best location to observe the carbonate concretions is KRC-B wherein gravel bars along the KRC tributary to the McIvor River host countless carbonate concretions surrounded by alluvial material consisting of upward to 50% sulfides. Carbonate concretions can also be seen at the Greystone-B lithosection, strewn about in slumped shales and muds carrying also considerable pyrite nodules.

The Second White Specks Formation is described by Bloch et al (1993) from outcrops in the Peace River area of northwest Alberta and from sub-surface data from around the Alberta Basin as consisting of a calcareous shale or siltstone with organic carbon rich shales commonly associated with a bentonite up to 20cm thick, in turn associated with a carbonate concretionary layer. With the possible exception of an abundance of carbonate matrix, the Second White Specks Formation has been identified at many exposures throughout the Birch Mountains, and it is relatively well exposed in the creeks and rivers. The

Formation has been mapped and sampled at exposures between the 600m and 650m elevations (asl) along Mid, Asphalt, Gos, Greystone, and Current Creeks.

Asphalt-H, located toward the headwaters of Asphalt Creek, represents a typical section of the Second White Specks Formation in the area, consisting of a succession of lithologies commencing at the bottom with a Siliciclastic Bone Bed (SBB) characterized by a coarse grained, sub-rounded, poorly sorted, carbonate cemented, black chert and glassy quartz sandstone, which often contains large concentrations of fish debris. A thin, 10cm-20cm thick, carbonate concretionary unit overlies the SBB (normally within ±1m), and is itself overlain by bentonite or a zone of bentonitic shale.

At Asphalt-H (Figure 36), a distinct zone of bentonites are evident immediately above the SBB, continuing for 3m-5m up-section, in which the thicker bentonite seams are, upon close inspection, seen to be composed of countless thin bentonites in a 15cm-20cm zone. The bentonites are hosted in a shale matrix with variable C-org content ranging from trace upward to 29% (avg 3%). Calcareous shales are patchy at Asphalt-H, although several sections were found to contain white specks or coccoliths and fossils such as fish debris including teeth (shark?), bivalve coquina, and Inoceramus imprints. (Asphalt-H was resampled by DNI in 2009 and samples were tested during 2009-2010 leaching R&D testwork - Section 11.6).

Whereas the SBB in the area typically varies in thickness 10cm-20cm, it attains a thickness exceeding 1m at the Gos-C lithosection exposure, near the Buckton Zone, wherein it is also associated with metals enrichment in surrounding shales (Gos-C is at the eastern flank of a principal stratigraphic disturbance in the area). It is of note that SBB has been documented in the area from several elevations varying 600m-640m (asl), and that the variations are probably the result of multiple slumping. Repetitive sedimentary/extinction events cannot, however, be entirely ruled out.

Samples of the Second White Speckled Shale Formation have to date reported by far the most anomalous concentrations of base as well as precious metals from the Birch Mountains, in addition to yielding native gold grains from certain localities (e.g.GOS1 gossan, Gos Creek-C and Current Creek, Figure 36). Geochemical anomalies identified from the Formation define relatively systematic base metal enrichment zones, dominated by Ni-Cu-Mo-V-Zn (±U-Co-Cd-Ag-Au), spatially associated vertically with the more carbonaceous sections immediately overlying the SBB, and a suggested lateral association with proximity to certain faults in the Birch Mountains. Considerable intraformational geochemical inhomogeneities notwithstanding, Asphalt-H, GOS1 and Gos-C present by far the best metal enrichment localities documented from the Second White Specks Formation in the area.

8.3 SUBSURFACE STRATIGRAPHIC DATABASE AND MODEL - 1995

A study of drilling records of all historic oil/gas wells from the Birch Mountains (currently areas under the Property) was completed by M.Attala PGeol, Attala Soft Rox[8], in 1995 for Tintina Mines to build a three dimensional stratigraphic model and database for the area, to aid identification of stratigraphic disturbances toward resolution of faulting and doming patterns identified by remote sensing and air-photo studies. Drilling and downhole logging records of approximately 1850 wells were critically reviewed.

Of the wells reviewed, only 207 were selected to form the basis of the database and model. Wells which were eliminated from the database and model were: (i) wells which lacked sufficient geological subsurface information to be of use, or (ii) wells whose drill records lacked sufficient quality, or (iii) wells which were drilled mainly for oil sands exploration over the flanks of the Birch Mountains and were, accordingly, collared at elevations below the Upper-Middle Cretaceous Formations being investigated. Lithologic picks, downhole geochemistry and geophysical logs were recorded and compiled by Attalla into an extensive database. Attalla's mandate was to identify principal structural breaks above Prairie Evaporite Salt Scarp, and particular attention was also paid to picking base of the Fishscales (Shaftesbury). The data was also contoured and rendered in a series of structural and isopach maps for the Birch Mountains, for select Formations extending downward from the Upper Cretaceous to the Precambrian basement.

Stratigraphic surface selection was based primarily on delineating major depositional breaks within the stratigraphic column which are identifiable on well logs as follows:

- Base of drift
- Base Second White Specks
- Base Fish Scales Zone
- Top Viking Formation
- Base Viking Formation
- Base Clearwater A Marker
- Top Wabiskaw Member
- Base Regional Marine Shale
- Top Sub-Cretaceous Unconformity
- Top Woodbend Group
- Top Beaverhill Lake Group
- Top Calumet Member
- Top Elk Point Group
- Top Precambrian

Of particular interest to DNI's work are structural and isopach maps characterizing the Second White Speckled and the Shaftesbury Formations. The study paid special attention to identification of the top and bottom of the Shaftesbury Formation, which was suspected at the time (1995) to be the source of abundant sulfides and alluvial gold identified by Tintina from its sampling programs over the Birch Mountains. The top (upper contact) of the Speckled Shale was not specifically mapped (picked) in the study, partly since it was not of central interest and partly since the upper contact is often an impossible feature to readily pick from oil well downhole logs. Subsequent work completed by Tintina in 1996-1997, however, indicated that the principal source of the metals is in fact the Second White Speckled Shale whose lower contact marks the upper contact of the Shaftesbury Formation.

The subsurface database and subsurface stratigraphic model are outlined in greater detail in Attalla's stand-alone report appended to Alberta Mineral Assessment report MIN9611 (Sabag 1996a). Structural contour maps for the base of the Second White Speckled and the sub-Cretaceous Unconformity are shown in Figure 23. Isopach maps of the Shaftesbury Formation and of the Base of Second White Speckled Shale to the Sub-Cretaceous Unconformity are shown below in Figure 24. An isopach map of depth from surface to the base of the Second White Speckled Shale Formation is shown as Figure 25. Two cross sections across the Birch Mountains are shown in Figures 20 and 21 in Section 7.6 of this Report.

The Attalla study was successful in identifying a number of structural disturbances in the Birch Mountains and over the Property, in addition to several large structural corridors portions of which were demonstrated by subsequent surface soils sampling by Tintina to be zones of metal diffusion (see Section 6.2.9 of DNI's NI-43-101 report for the property appended herein as Appendix B1). The study also identified large areas of abnormal thickening in the Cretaceous sedimentary pile. Several of the isopach anomalies coincide with topographic domed features with radial drainage patterns reporting polymetallic geochemical anomalies in Tintina sampling, accompanied also by native gold and abundant sulfides in stream sediments and in stream sediment heavy mineral concentrates downstream from the domes.

All of the features identified by the Attalla study are material to metal exploration in the area, since many of them correlate well with metal enrichment zones identified by results of surface geochemical and lithogeochemical sampling conducted by Tintina over the area. Specific anomalies and anomalous areas are presented in Section 8.8, and Figure 38, in conjunction with all surface anomalies identified by Tintina in the Birch Mountains under DNI's Property.

Although there has been additional drilling for oil/gas in the Birch Mountains since the Attalla study, (especially over its eastern lobe and southern portions) the historic database continues to offer a reliable and relevant guide to subsurface structural disturbances at the Property.

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[8] Stratigraphic Compilation and Modeling, Subsurface Database Report, Northwest Sector: by Attalla Soft Rox; 1995. In Appendix D, MIN9611, Sabag 1996a.

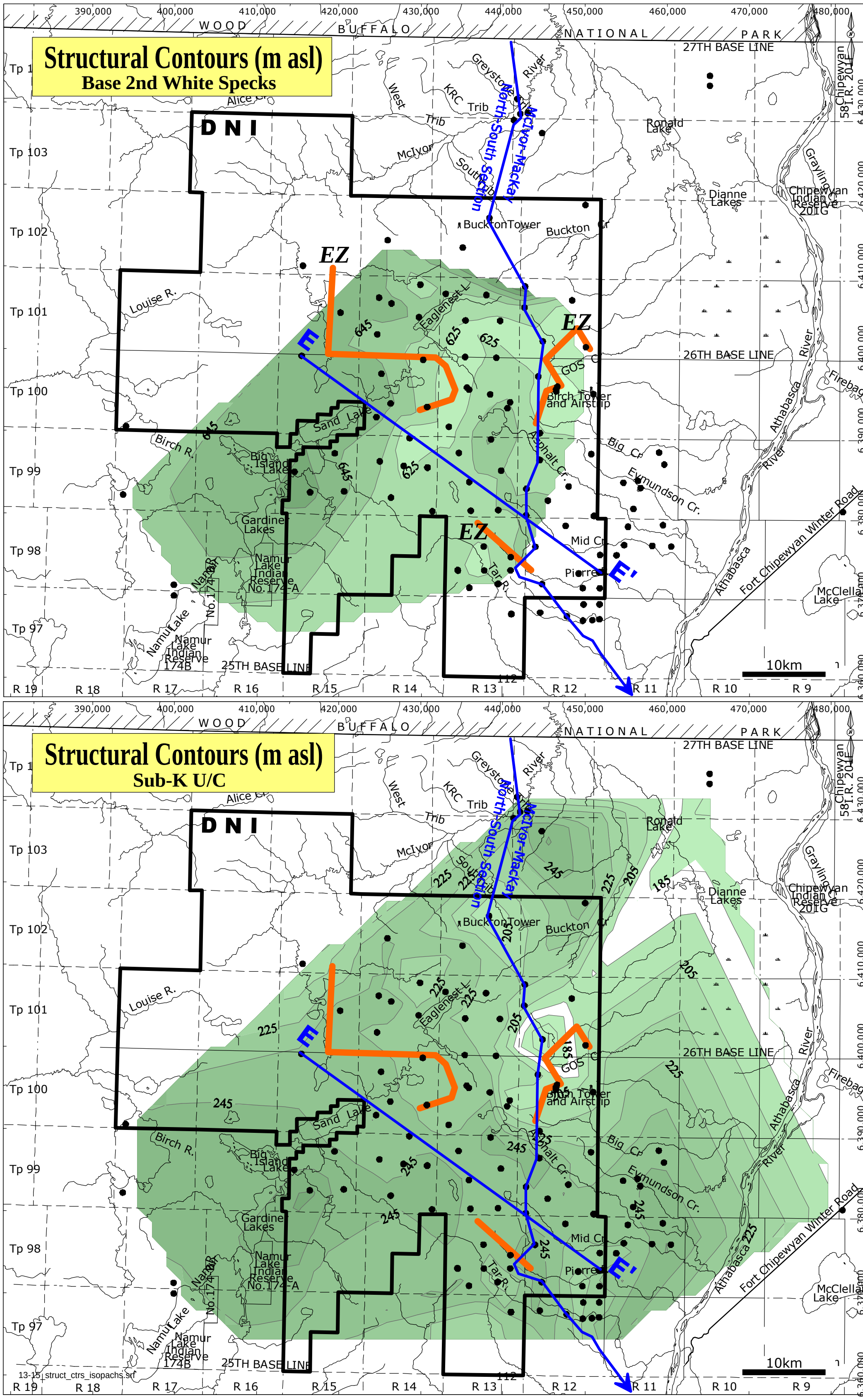


Figure 23: Structural maps of Base of Second White Speckled Shale (above) and the Sub-Cretaceous Unconformity (below), showing also oil-gas well locations, regional cross-sections and soil sampling transects(EZ). After Figure 13, Sabag 2008; and Attala 1995, Alberta Mineral Assessment report MIN9611, Sabag 1996a. Regional cross section shown in Figure 21.

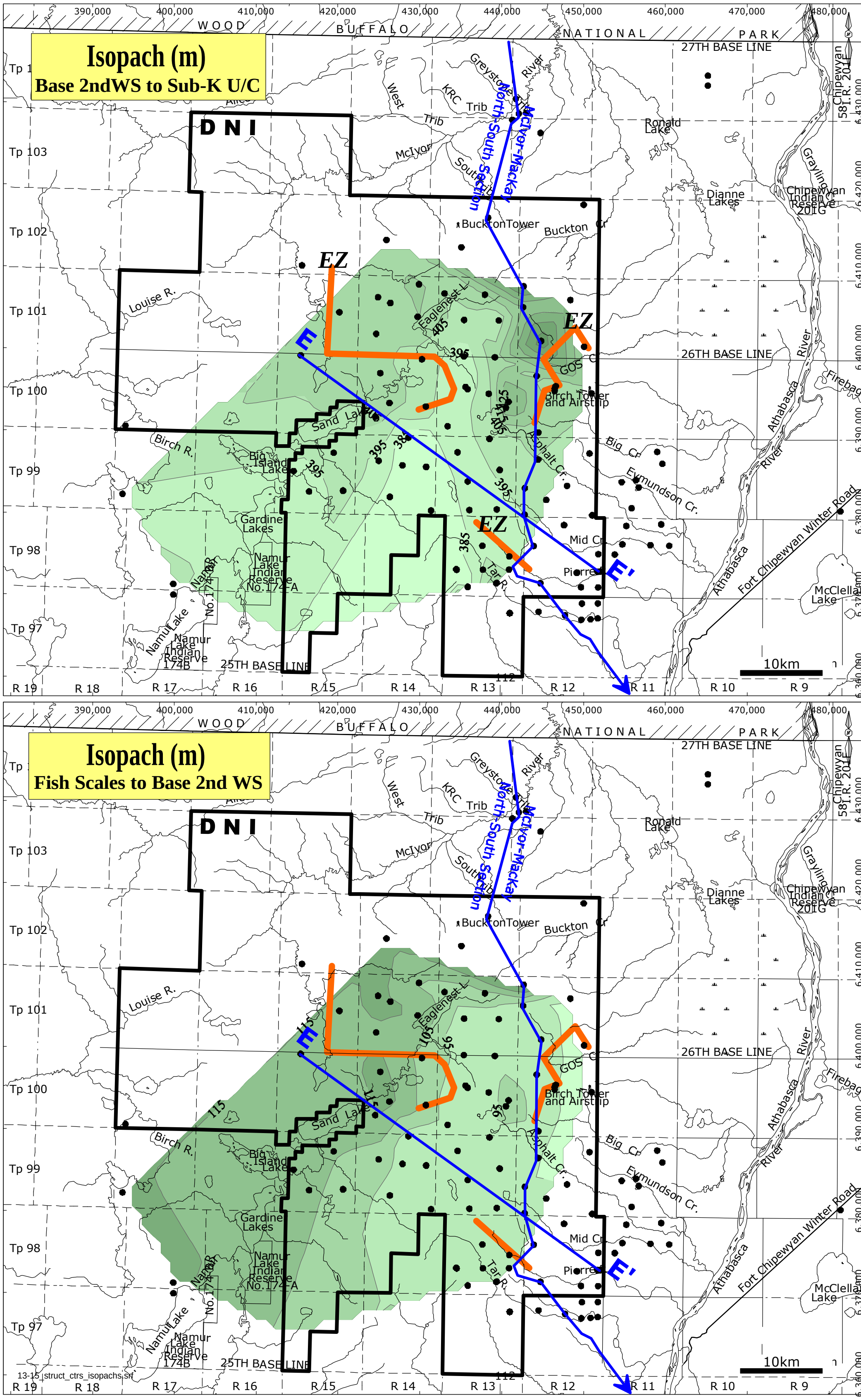


Figure 24: Isopach maps the Shaftesbury Formation (below) and base of the Second White Specks to Sub/K Unconformity Interval, showing also oil-gas well locations, regional cross-sections and soil sampling transects(EZ). After Figure 14, Sabag 2008; and Attala 1995, Alberta Mineral Assessment report MIN9611, Sabag 1996a. Regional cross section shown in Figure 21.

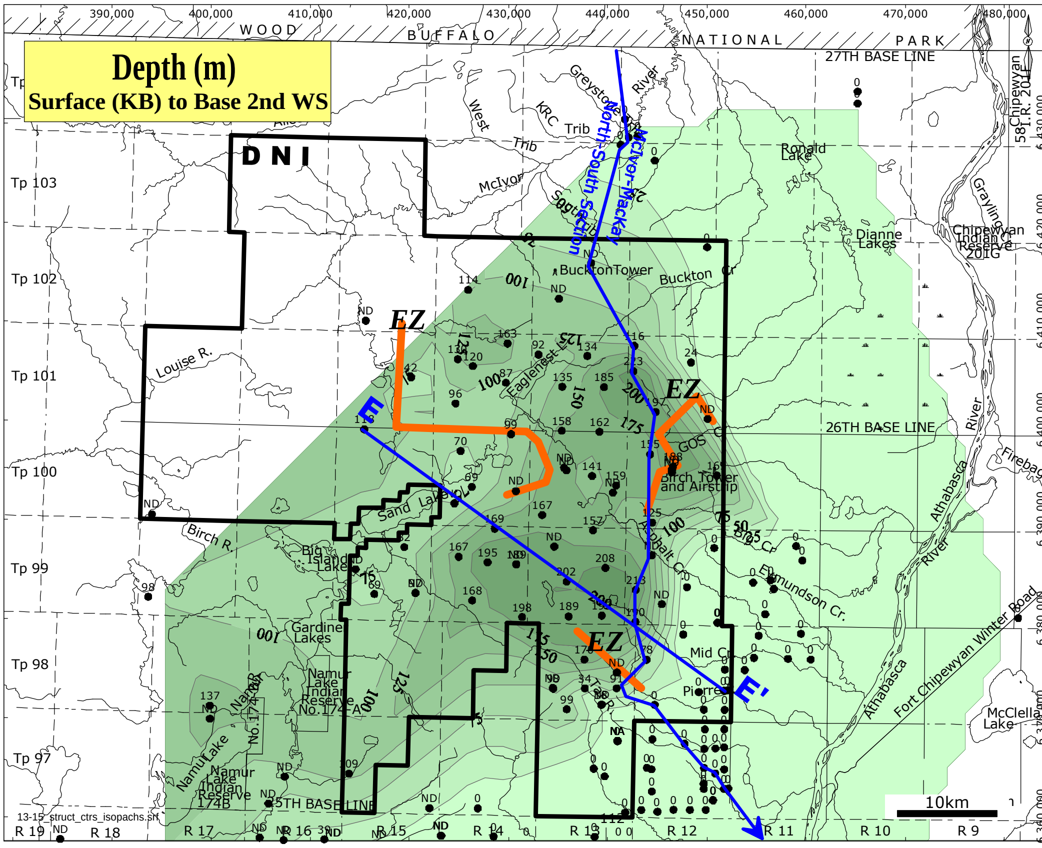


Figure 25: Isopach map of depth to base of Second White Speckled Shale Formation, showing also oil-gas well locations, regional cross-sections, and soil sampling transect locations(EZ). After Figure 15, Sabag 2008; and Attala 1995, Alberta Mineral Assessment report MIN9611, Sabag 1996a. Regional cross section shown in Figure 21.

Additional work was conducted by DNI in 2009-2010 toward refining the subsurface stratigraphic model by expanding the subsurface stratigraphic database to include all additional oil/gas wells which were drilled subsequent to Attala's work (1995). The foregoing is discussed in Section 11.8 of this Report.

8.4 Structural and Stratigraphic Disturbances and Anomalies

A number of large stratigraphic anomalies were identified by Tintina's stratigraphic model and subsurface database over the Birch Mountains based on interpretations from drill logs from historic oil-gas drilling augmented by broad geophysical trends and by remote sensing imagery analysis. They fall broadly into three categories as follows:

- isopach anomalies representing abnormal thickening of the Cretaceous stratigraphic pile, or its uppermost portions, only locally associated with karsting in the Devonian, but more often associated with interpreted readjustments in Precambrian faulting and suspected arching active well into the mid-Cretaceous. These anomalies would also be compatible with existence of very localized venting by way of hot springs, volcanic vents or pipes;

- linear, predominantly northeasterly, trends reflected as sharp lateral discontinuities in structural contours of lower as well as middle Cretaceous well picks, interpreted to represent rotational faulting with possible considerable strike-slip component;

- localized closures in structural contours particularly in the top of the Devonian, all of which interpreted to represent advanced karsting.

Structural and stratigraphic anomalies identified in historic work on the Property are incorporated into summary sketches in Sections 8 and 9 of this report, for principal anomalous target areas which can be identified based on all available work across the Property. Structural elements are presented, either as interpreted faults zones, fault block boundaries or as "closed" features contoured based on the data from the subsurface stratigraphic database. The "closed" shape of some of the anomalies may be an artifact of contour noding and it is possible that they reflect faulted blocks, although the closed shapes have support from coincident roughly circular domed topographic relief features.

Of particular interest in the above context are findings of a LANDSAT remote imagery analysis study conducted by Demofrac Geo-System International, across northeast Alberta, in 1994[9], which identified many gross regional structures across the region and over the Property. More localized structural zones and a variety of circular structural features were also identified by the study. Demofrac's findings are outlined in its stand-alone report included as Appendix B in Alberta Mineral Assessment report MIN9611 (Sabag 1996a). Summary interpretations therefrom, over the Property, are excerpted in Figure 26.

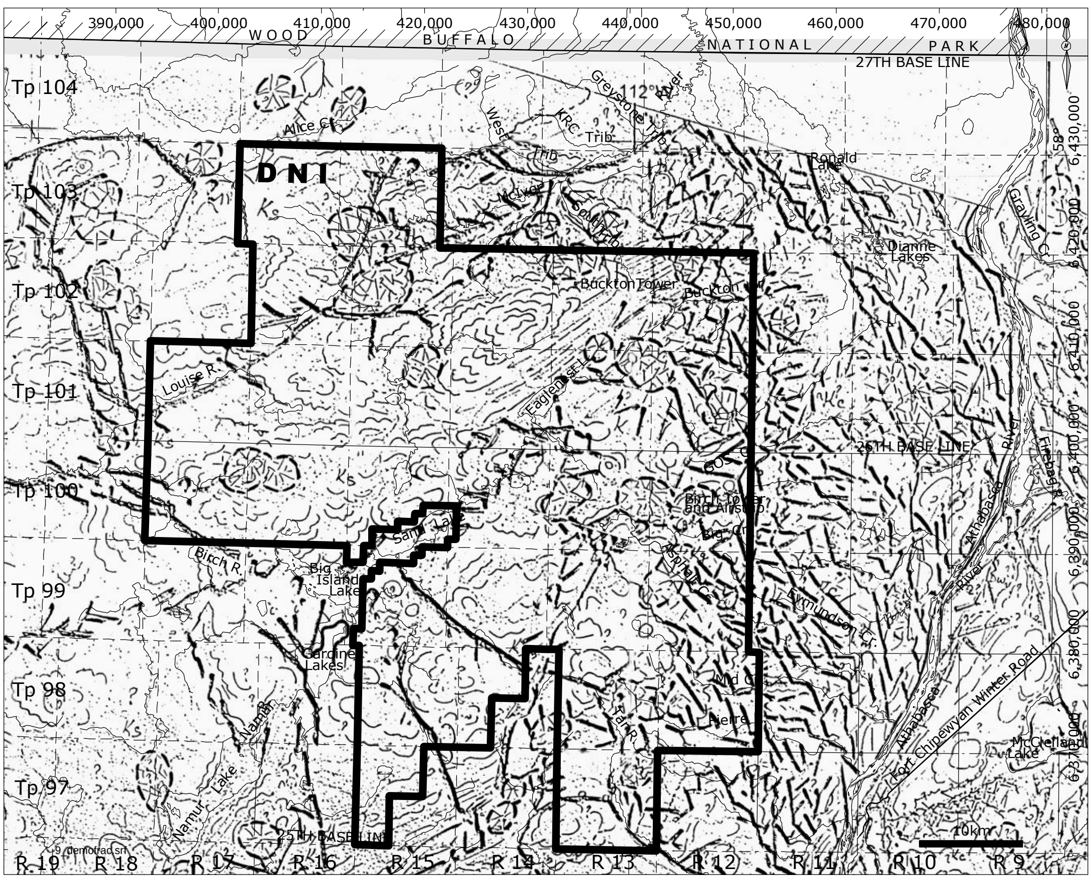


Figure 26: LANDSAT remote imagery analysis, of the Property and surrounding Birch Mountains. After Figure 26, Sabag 2008; and Demofrac 1994, in Alberta Mineral Assessment report MIN9611, Sabag 1996a.

A follow-up study completed in 1995 by J.D.Mollard and Associates[10] focused on the Birch Mountains, and entailed detailed interpretation of air-photographs for the area integrating also findings of reconnaissance work from the area. This study reinforced structural zones previously identified by Demofrac, and was successful in highlighting certain structures and composite structural corridors for ground follow-up.

[9] Report: Geologic Structural Interpretation of Satellite Imagery For Mineral Exploring Using Demofrac System, Athabasca Region, Northeast Alberta. Demofrac Geo-System International, 1994. In Appendix B, MIN9611, Sabag 1996a.

[10] Report: Remote Sensing and Geoscience Data Integration Study. J.D.Mollard and Associates Limited, 1995. In Appendix B, MIN9611, Sabag 1996a.

The Mollard study was carried out with the benefit of results from surface geochemical sampling conducted by Tintina over the Birch Mountains, and a detailed stratigraphic model and subsurface database developed for the area based on a review of drilling records of all oil/gas wells in the area. The study identified a variety of lineaments and other circular features in the area, some of which are spatially associated with stratigraphic and surface geochemical features. The Mollard findings are outlined in its stand-alone report included as Appendix B2.1 in Alberta Mineral Assessment report MIN9611 (Sabag 1996a). Summary is excerpted in Figure 27.

Many of the circular features identified by Mollard and Demofrac are consistent with a Digital Elevation Model (NAD27-Zone12[11]) for the Birch Mountains (Figure 9, Section 5.2 of this Report) which readily shows a series of 5-10km diameter circular domed features which comprise the most conspicuous topographic relief anomalous areas in the area.

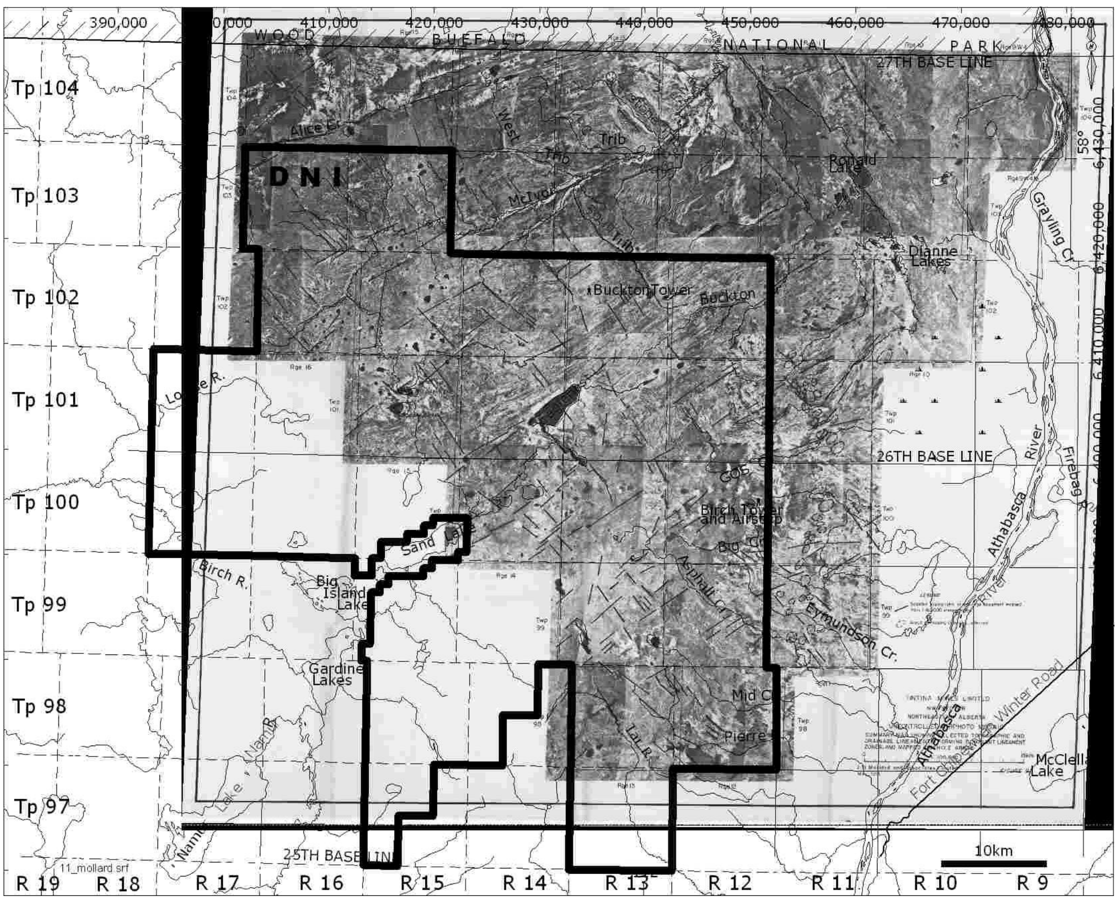


Figure 27: Summary of Remote Sensing and Geoscience Data Integration Study over the Property. After Figure 11, Sabag 2008; and Mollard 1995, in Alberta Mineral Assessment report MIN9611, Sabag 1996a.

It is of special note that nearly all of the historic surface geochemical and mineral anomalies discovered on the Property are in structural zones which are interpreted based on stratigraphic disturbances (e.g. Asphalt-Eaglenest Fault Zone), or are on the flanks of circular (domed?) stratigraphic disturbances (e.g. Buckton and Asphalt polymetallic Zones). These are discussed in Section 8 of this Report. Should the "closed" shaped stratigraphic anomalies ultimately be demonstrated to represent faulted blocks rather than domes, considerable significance would be placed on fault junctions, and junctions among fault swarms, as prospective and likely conduits for any volcanic exhalative venting in the Birch Mountains and on the Property. The many fault junctions on the Property, accordingly, present high priority future exploration targets for volcanic vent related exhalative mineralization on the Property.

[11] Alberta digital information has since migrated to NAD83.

8.5 SURFACE GEOCHEMICAL TRENDS AND ANOMALIES - LAKES, STREAMS AND SOIL

Surface geochemical information for the Property consist entirely of lake sediment, lake water, stream sediment, and stream heavy mineral sampling surveys completed by Tintina Mines during the 1990's. Details of the surveys are presented in Section 6.2.6, 6.2.7 and 6.2.8 of DNI's NI-43-101 technical report for the Property appended herein as Appendix B1[12], figures from which are reiterated herein with revisions to Property outlines. All available lakes and drainages were sampled by the foregoing surveys and many databases therefrom offer a solid surface geochemical baseline geochemical framework. Similar sampling was also conducted by Ells River Resources in 1996 over T97/R13 currently under a permit at the southeast corner of the Property. Sample coverage of the various historic surveys are shown in Figure 28. Salient findings and anomalies identified by this work are summarized below and related anomalies are shown in Figures 29 and 30 for lakes and streams sampling surveys, respectively.

- The Birch Mountains are characterized by major zones of landslides and widespread slumps from poorly consolidated Cretaceous muddy clastic sequences. As a result, interpretation of lake geochemical anomalies is complicated by the intermixing of diffusion and hydromorphic phenomena, to the extent that lake geochemical data (to a lesser extent stream geochemical data) cannot be interpreted in isolation and must be reviewed in conjunction with geochemical and mineral information from sampling of surrounding streams, soils and bedrock exposures. In addition, many lakes are likely only poorly drained muddy depressions directly overlying equally muddy bedrock, and there is considerable seasonal compositional variation in stream as well as lake sediments due to the continual recharge of streams in the area by fresh sediments from slumps at all exposures.
- Lakes from the Birch Mountains report by far the strongest and most consistent anomalies documented from the region, characterized by elevated concentrations in most of the base and precious metals (notably Ni,Co,V,Cr,Cu,Zn,Au,Ag), generally defining trends associated with a number of structures, and locally from lakes with high natural acidity (pH 3-4) attributed to abundant sulfides therein. Contoured results from sampling of Birch Mountains lakes are presented in Figure 29 for select elements.
- Overall, lakes geochemical sampling surveys define a principal northwesterly trend of metals diffusion anomalies along the Asphalt-Eaglenest corridor, associated also with Hg. Two lesser crosscutting trends were also identified, one of which extends northeast from the Pierre River headwaters across Asphalt Creek, and another along the Sand-Eaglenest Lakes trend (at the centre of the Property) extending northeast to the vicinity of Buckton Creek. The anomalies are characterized mainly by elevated Zn, Ni, Hg and to a lesser extent by Ag, Au and Cu. There are virtually no outcrops in the vicinity of the anomalies, although several subsurface stratigraphic disturbances (fault swarms) can readily be interpreted from the subsurface stratigraphic model for the area. Association of the anomalies with local structures is also corroborated by results of soil sampling completed in the vicinity of Eaglenest Lake, at Gos Creek and at Pierre River. These are discussed in Section 8.5 of this report.
- Other lakes geochemical anomalies identified include a series of lakes with elevated Ag (upward to 3ppm) to the southwest of Eaglenest Lake, Zn enrichment at the headwaters of the Tar River and numerous multielement anomalies over the area between the Pierre River and Mid Creek.
- The Birch Mountains area is characterized by major zones of landslides and widespread slumps from poorly consolidated Cretaceous muddy clastic sequences. Due to the continual recharge of streams in the area by fresh sediments from slumps, stream sediments sampling provides a particularly useful "real time" mapping "tool" to quickly characterize entire drainages.
- Nearly all previously identified stream sediment geochemical and mineral anomalies in the Birch Mountains are downstream from exposures of the Second White Speckled Shale and the Shaftesbury Shale Formations which are exposed within a range of elevations varying approximately 520m-650m asl.

[12] For complete details on the lake geochemical sampling surveys, the reader is referred to a stand alone report on Tintina's sampling programs comprising Appendix C in Alberta Mineral Assessment Report MIN9611 (Sabag 1996a).

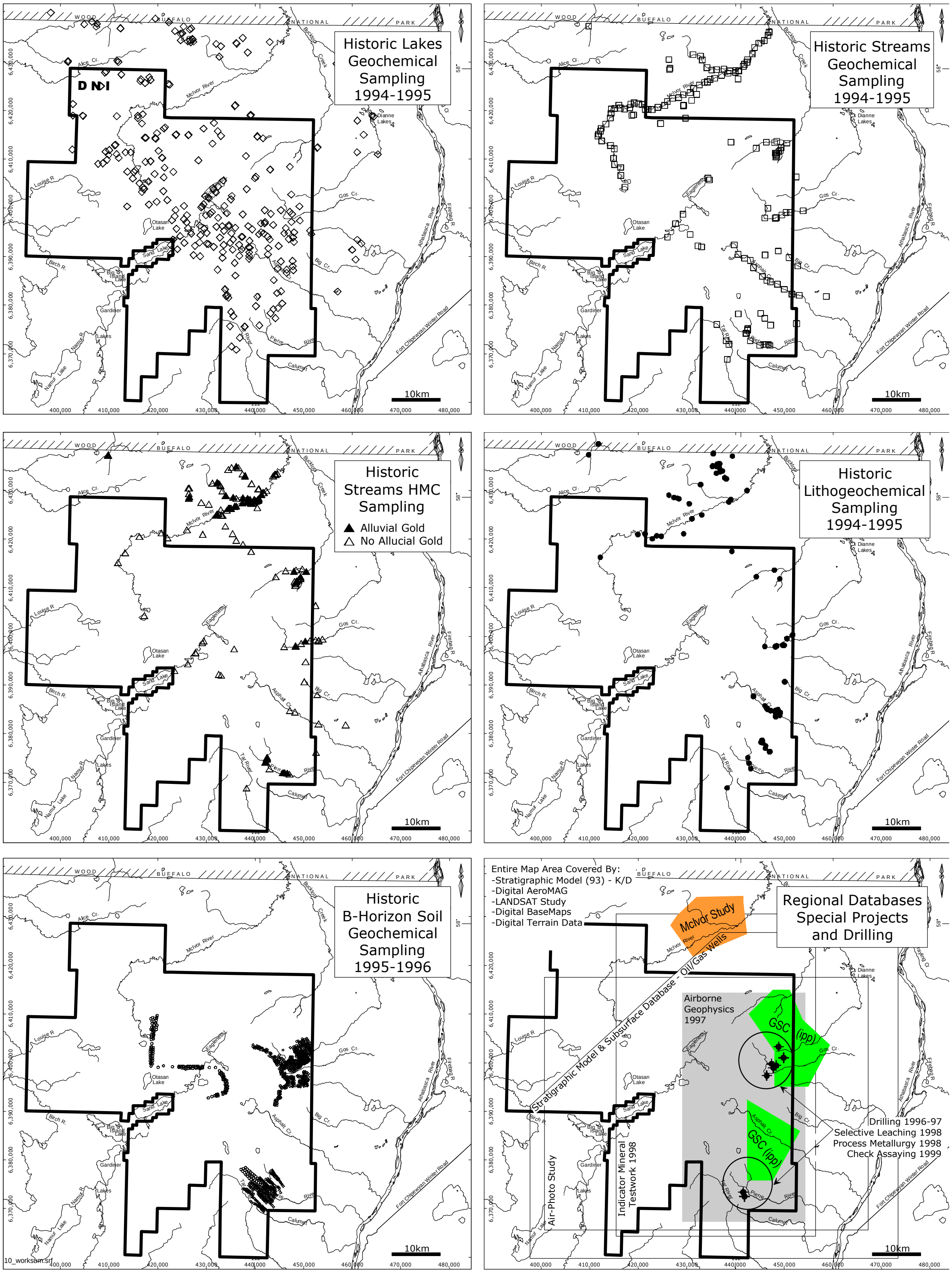


Figure 28: Summary of historic work databases available over the Property. After Figure 10, Sabag 2008; and Alberta Mineral Assessment Reports MIN9611, MIN9613, MIN9612, MIN9610, MIN9609, MIN9802 MIN9928, Sabag 1996a, 1996b, 1996c, 1996d, 1996e, 1998 and 1999, respectively, AGS 2001 and Ells river MIN9605.

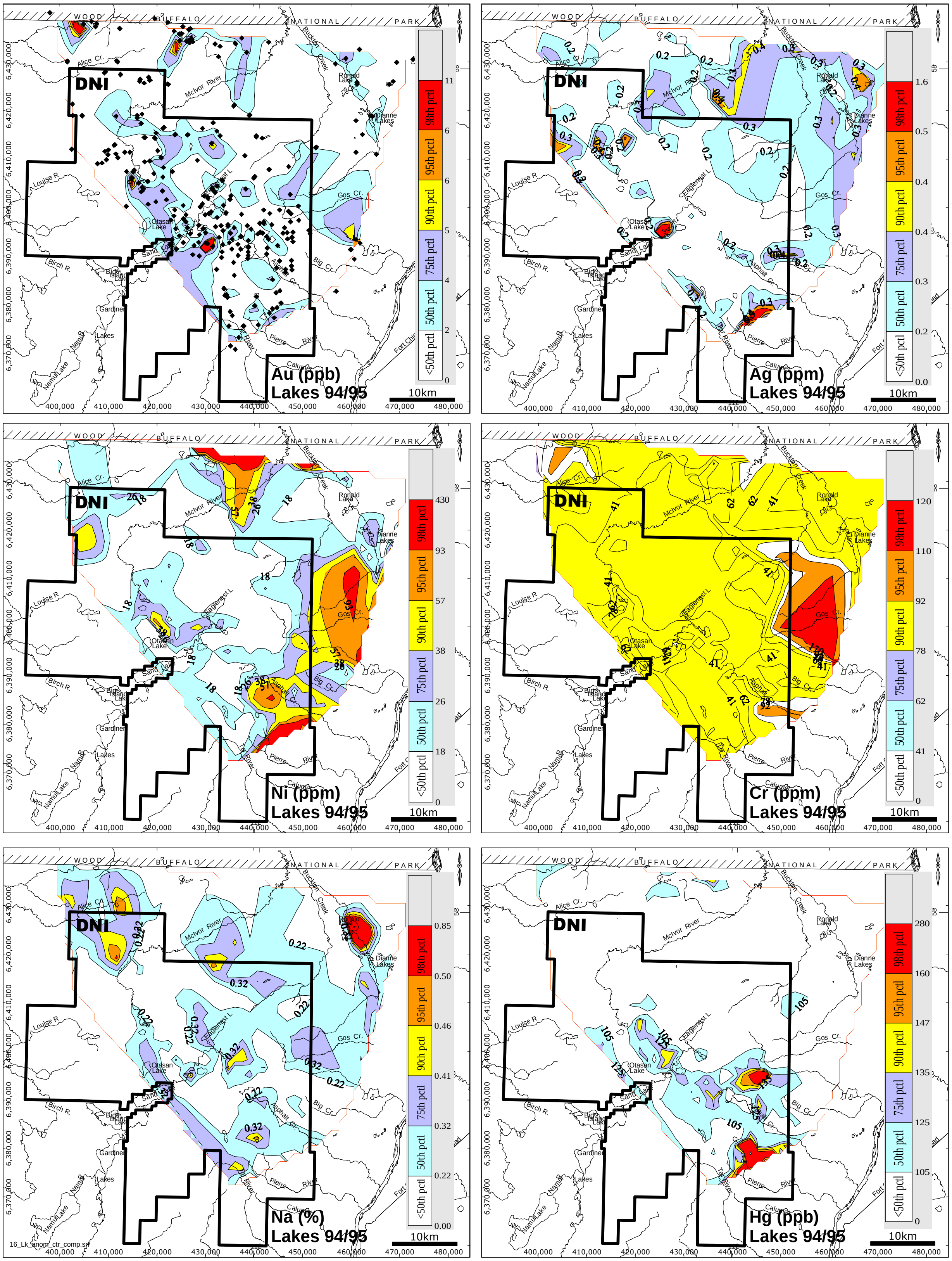
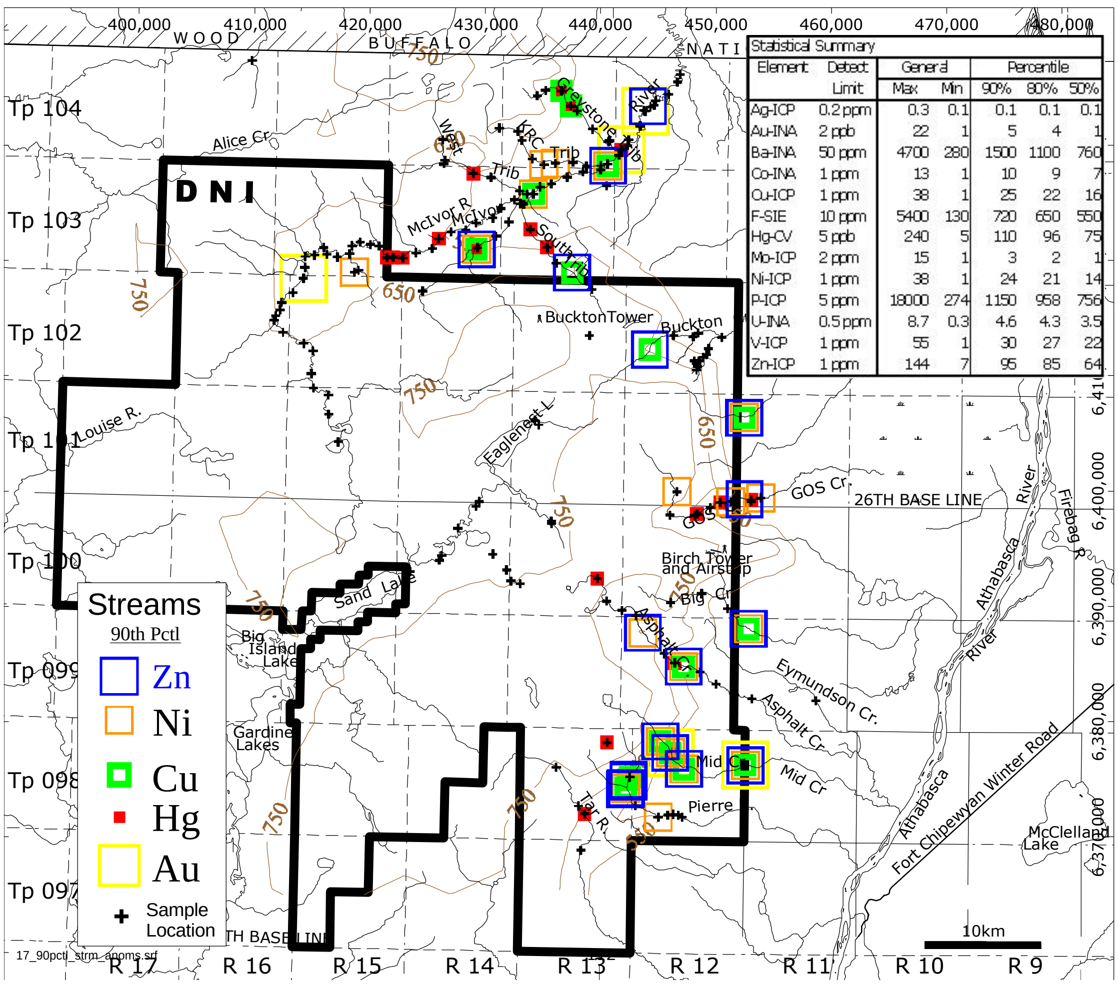


Figure 29: Lake sediment geochemical anomalies for select elements, historic sampling, Birch Mountains, After Figure 16, Sabag 2008; and Alberta Mineral Assessment report MIN9611, Sabag 1996a.

- Nearly all metal geochemical anomalies over the Birch Mountains are congregated over its erosional edges, in sections of the rivers/streams which are at, or below, approximately the 520m-650m elevations, in streams draining the Speckled Shale and Shaftesbury Formations.
- The most consistently anomalous waterways identified in the area are the Pierre River, Mid Creek and Asphalt Creek, characterized by coincident multimetal anomalies in addition to gold. Pierre River, Tar River and Mid Creek broadly radiate from an area at the headwaters of Pierre River which is also characterized by strong geochemical Zn-Cu-Ni diffusion anomalies in soils. These localities are also mineralogically anomalous even in the context of the Birch Mountains reporting a variety of base metal sulfides, gold and, locally, cinnabar, from stream sediment heavy mineral concentrates (See Section 6.2.8 and 6.2.9, DNI's NI-43-101 report for the property appended herein as Appendix B1).
- While the majority of stream geochemical anomalies in the area are polymetallic, anomalies in Gos Creek, adjacent to the Buckton Zone, are mainly characterized by elevated Ni which can be attributed to Ni-enriched exposures of Cretaceous shales upstream, which also carry native gold. Native gold grains have been also recovered from Gos Creek by Tintina and others.



Statistical Summary

Element	Detect Limit	General Max	General Min	Percentile 90%	Percentile 80%	Percentile 50%
Ag-ICP	0.2 ppm	0.3	0.1	0.1	0.1	0.1
Au-INA	2 ppb	22	1	5	4	1
Ba-INA	50 ppm	4700	280	1500	1100	760
Co-INA	1 ppm	13	1	10	9	7
Cu-ICP	1 ppm	38	1	25	22	16
F-SIE	10 ppm	5400	130	720	650	550
Hg-CV	5 ppb	240	5	110	96	75
Mo-ICP	2 ppm	15	1	3	2	1
Ni-ICP	1 ppm	38	1	24	21	14
P-ICP	5 ppm	18000	274	1150	958	756
U-INA	0.5 ppm	8.7	0.3	4.6	4.3	3.5
V-ICP	1 ppm	55	1	30	27	22
Zn-ICP	1 ppm	144	7	95	85	64

Figure 30: Streams sediment geochemical >90th percentile anomalies, historic sampling, Birch Mountains. After Figure 17, Sabag 2008; and Figure C34, Alberta Mineral Assessment Report MIN9611, Sabag 1996a. The 650m asl contour demarcates general trace of the Second White Speckled Shale exposures.

- Inter-elemental variograms included in Tintina reports (Sabag 1996a) show good correlation among most of the metal species in addition to relatively good correlation between Au and other base metals. Au is also correlated with Ba, and good correlation exists between the base metals (especially V) with Al and LOI (attributed to fine clay in stream sediments from muddy exposures predominating the area).
- For many of the elements, concentrations within the coarse and fine stream sediment fractions (>80mesh and <80mesh) are nearly identical within limits of analytical/sample precision normal to stream sediments (±20%). By contrast, Al, Zn, V, Zr and Ni demonstrate affinity for the finer fraction, and were attributed by Tintina to fine clay in stream sediments from muddy exposures predominating the area. The affinity of Zr for the finer fraction is consistent with the presence of abundant very fine Zircon grains in outcrops and river sediment in the general area (Sabag 1996a, AGS 2001).
- Au and Cd demonstrate affinity for the coarser stream sediment fraction, supported by recovery of alluvial gold grains measuring upward to 1mm (well above 80mesh) from heavy mineral concentrates from the area, especially from the McIvor River immediately to the north of the Property. This general trend is reiterated by the scarcity of Au geochemical anomalies (<80mesh fraction analyzed) from sites throughout the McIvor River and some of its tributaries, many of which carry abundant alluvial Au grains recovered from heavy mineral samples.
- Nearly all heavy mineral concentrates collected from streams mineralogically "mimic" corresponding results from the stream sediment geochemical sampling, and mineral anomalies discovered also corroborate corresponding geochemical anomalies identified by the stream sediment geochemical sampling results.
- The most productive stream sediment sampling sites, reporting high contents of metals from Tintina's stream HMC sampling programs across most of northeast Alberta, are those from drainages in the Birch Mountains, yielding high proportions of good heavy mineral concentrates often characterized by abundant sulfides (upward to 80% of the HMC by volume) giving way downstream to concentrates with abundant magnetite/Ilmenite often accompanied also by alluvial gold grains.
- Nearly all stream sediment heavy mineral anomalies in the Birch Mountains and over the Property, especially those with abundant sulfides, are downstream from exposures of the Second White Speckled Shales and the Shaftesbury Formations which are exposed within a range of elevations varying 520m-650m asl.
- The most consistently anomalous waterways at the Property are the Pierre River, Mid Creek and Asphalt Creek, which are also mineralogically anomalous even in the context of the Birch Mountains, returning a broad variety of base metal sulfides from HMCs in addition to cinnabar and gold. (Soil geochemical sampling surveys indicate that Pierre River, Tar River and Mid Creek broadly radiate from an area at the headwaters of Pierre River which is also characterized by soil geochemical Zn/Cu/Ni diffusion anomalies, which are presently regarded to reflect shallow buried portions of the Asphalt Zone).

In addition to anomalies identified via lake and stream geochemical sampling, a number of anomalous areas were also identified relying on soil geochemical sampling programs, two of which areas were drill tested by Tintina in 1997 and demonstrated to host near surface metallic mineralization in large volumes surrounding the Asphalt and Buckton Zones (the two Zones are believed to host two Potential Mineral Deposits as proposed by DNI's NI-43-101 technical report for the Property. See also Section 9.8 of this Report). A number of other anomalies identified by Tintina have not yet been drill tested. Details of the soil sampling work are outlined in Section 6.2.9 of DNI's NI-43-101 report appended herein as Appendix B1.

8.6 Geophysical Anomalies

The only aeromagnetic information available from the Birch Mountains, and the Property, is coarse scaled national airborne geophysical data series and related maps. Preliminary reviews of the foregoing data relying on first and second derivative manipulations to resolve discontinuities and lineaments are shown in

Figures 39 and 40 in Section 8.8 of this Report, showing also general anomalous target areas previously identified by the historic work.

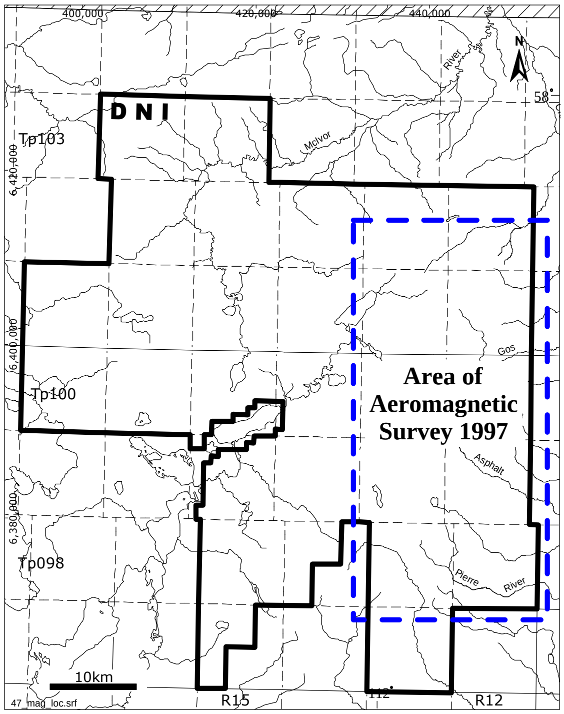


Figure 31: Historic aeromagnetic survey location sketch, Asphalt and Buckton areas, Alberta Mineral Assessment Report MIN9802, Sabag 1998.

The only detailed airborne geophysical information from the Property comprises a high resolution aeromagnetic survey commissioned by Tintina in 1997 over the eastern one third of the Property, over the Asphalt and Buckton Zones, to better resolve the many structural trends in the area, and to investigate the suspected presence of vents which might be related to diamond indicator minerals discovered in the two areas.

The surveyed area consists of an eight township quadrant bounded by UTM coordinates: 451381E-6369640N; 431620E-6369920N; 432331E-6413610N; 451889E-6413460N (Figure 31). For greater details the reader is referred to the Section 6.3.2 of DNI's NI-43-101 technical report for the Property appended herein as Appendix B1.

Results from the 1997 airborne work are summarized as follows:

(i) contoured Total Magnetic Intensity (TMI) results from the survey are shown in Figure 32, showing also locations of all previous historic sampling and drilling conducted in the area; and

(ii) Total Magnetic Intensity (TMI) for the Shallow Pseudo Depth Slice 1 (PDS1), is shown in Figure 33, as a representation of nearest surface variations in magnetic susceptibility which also offer a level of magnetic detail otherwise obscured in TMI contours.

In general terms, the area is characterized by a number of broad (5-10km wide) bands of contrasting magnetic relief trending north-northwesterly across the Asphalt Zone in the southern parts of the area, and northeasterly across the Buckton Zone in its northern half. The trends were interpreted to reflect features in the precambrian basement some 1000m below surface.

TMI results in Figure 32 exhibit a number of small near-circular or "closed" magnetic features over mineralized or geochemically anomalous portions of the Asphalt and Buckton polymetallic Zones at the historic Asphalt and Buckton Properties. The most conspicuous of these features are an easterly oblong anomaly at the top of the Pierre River valley over the Asphalt Zone, and a circular anomaly immediately to the north of GOS-1 gossan over the Buckton Zone.

Other magnetic features of interest are:

(i) an area of acute high magnetic susceptibility at the southeastern corner of the survey area located to the east of the Asphalt Zone;

(ii) a northwesterly broad band of magnetic disruptions paralleling the Asphalt Creek valley and coinciding with the Asphalt-Eaglenest Fault Corridor; and

(iii) a series of northeasterly trends which appear to disrupt or offset magnetic contours.

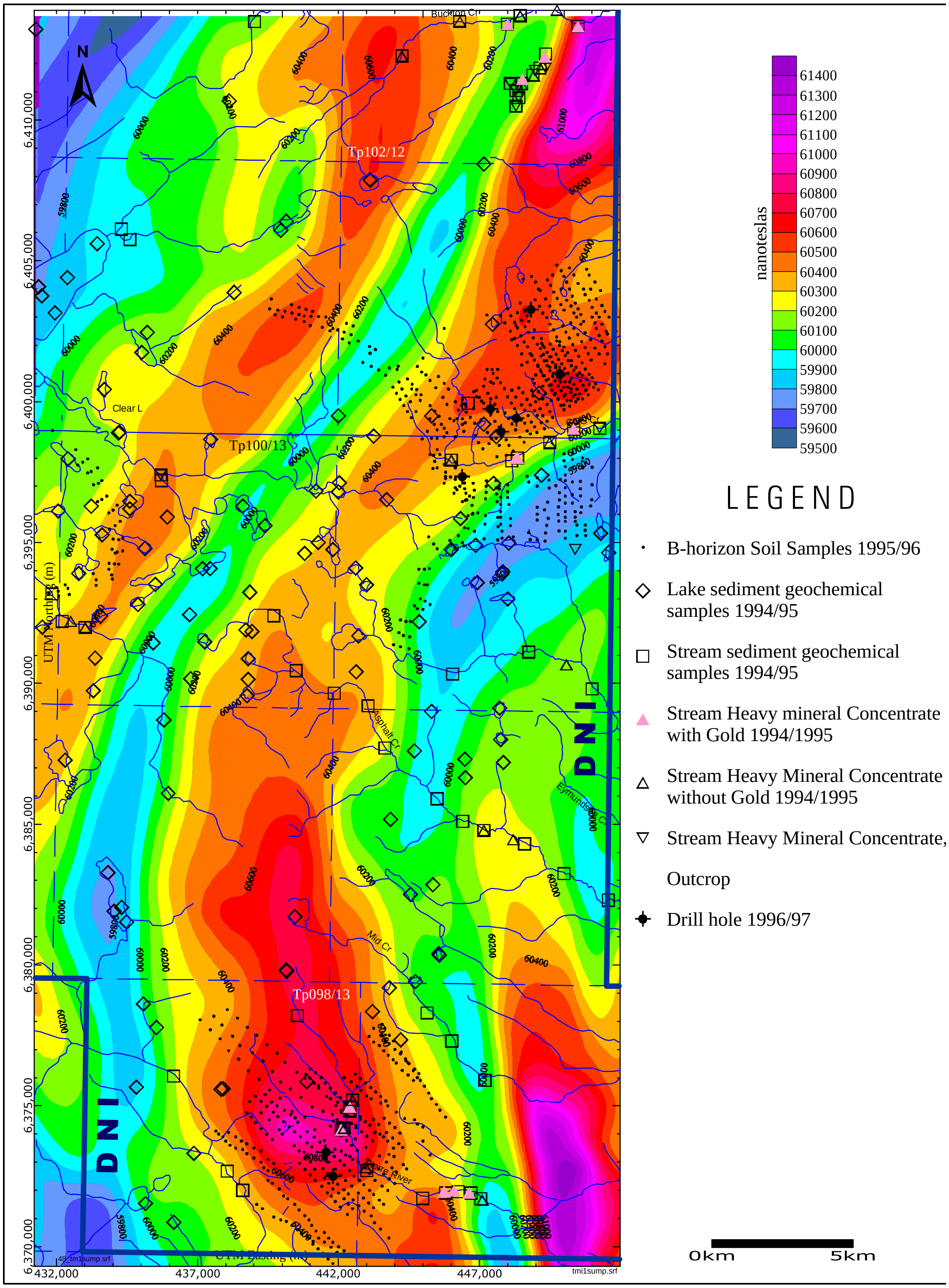


Figure 32: Summary of aeromagnetic total magnetic intensity (TMI) anomalies, historic aeromagnetic survey 1997, Asphalt and Buckton areas. After Figure 48, Sabag 2008. Showing also location of all prior historic sampling in the area, after Figure 59, Alberta Mineral Assessment Report MIN9802, Sabag 1998.

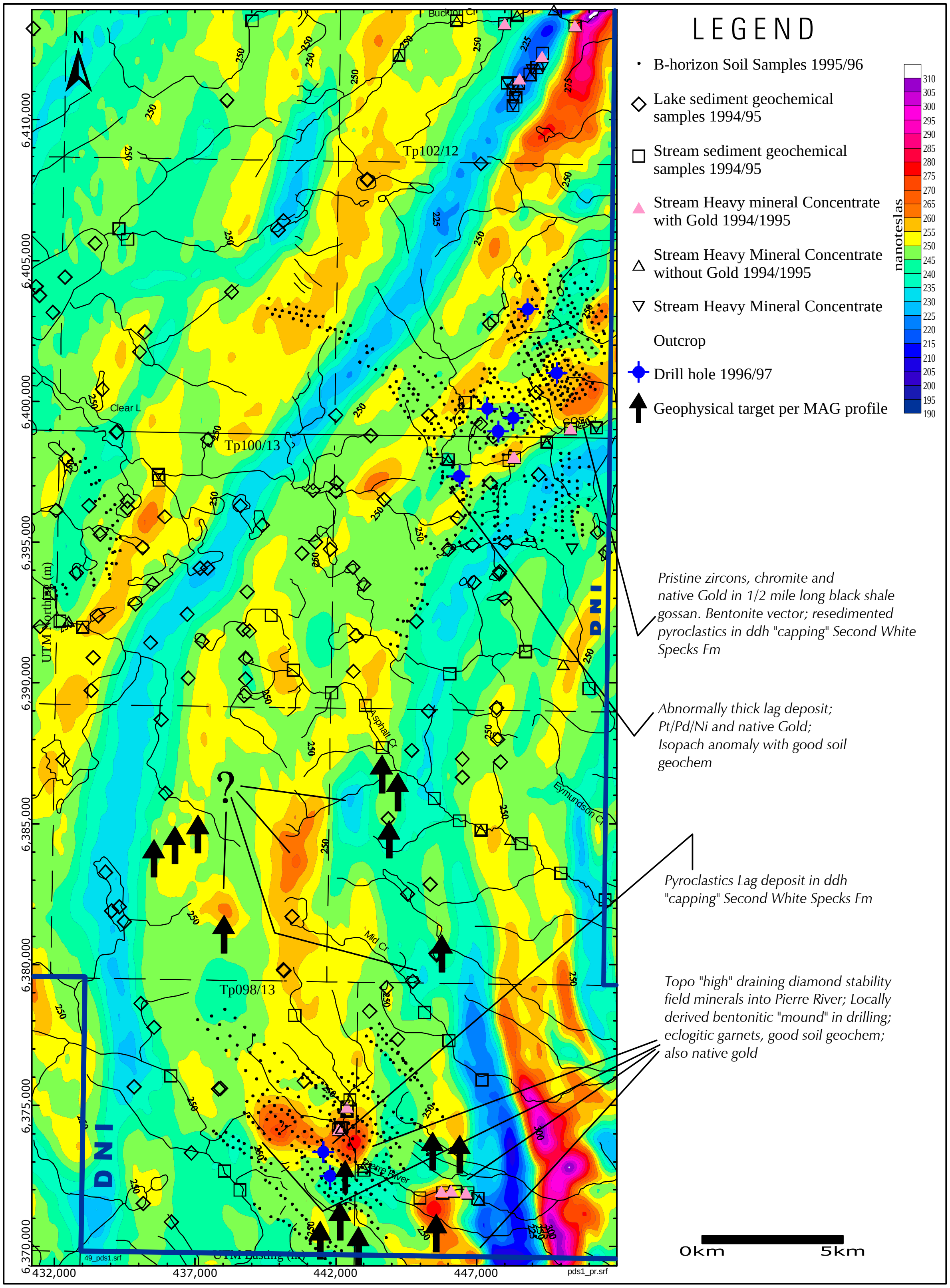


Figure 33: Summary of aeromagnetic shallow pseudo-depth slice anomalies. Historic aeromagnetic survey 1997, Asphalt and Buckton areas. After Figure 49, Sabag 2008. Showing also location of all prior historic sampling in the area, after Figure 60, Alberta Mineral Assessment Report MIN9802, Sabag 1998.

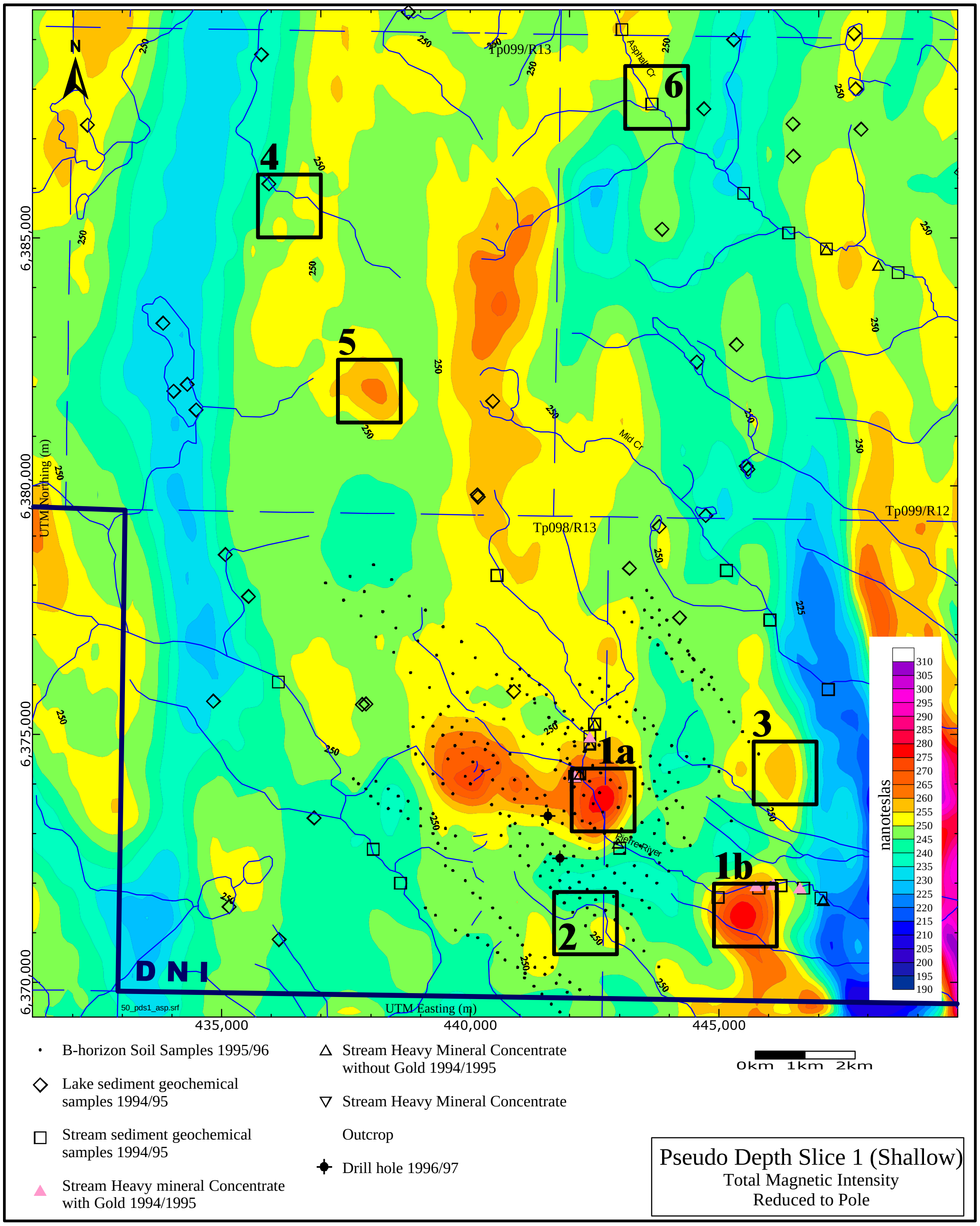


Figure 34: Summary of aeromagnetic shallow pseudo-depth slice anomalies and localities selected for additional field inspection (Oct/97 for kimberlite mineral indicator sampling, Asphalt Zone area). Historic aeromagnetic survey 1997. After Figure 50, Sabag 2008. Showing also location of all prior historic sampling in the area, after Figure 61, Alberta Mineral Assessment Report MIN9802, Sabag 1998.

Subsequent detailed reviews of the geophysical data were conducted in the context of exploring for diamonds in the area. Review of the geophysical data together with other physical information from the area concluded as follows:

- that diamond stability field minerals were indeed recovered from surface sampling in the area, that same are probably locally derived, and that they are derived from surface exposures of ejecta from diatremes introduced during Cretaceous sedimentation;
- that the diatremes would be reflected in the geophysical data as "blind" intrusives;
- that several small magnetic anomalies can be discerned in the geophysical data indicative of circular intrusives at the precambrian surface, and that two of these anomalies which measure approximately 1500m in diameter are indicative of zoned intrusives at the precambrian surface beneath the Asphalt and Buckton Zones;
- that a number of anomalies can be discerned to be investigated by field visits, including anomalies in the Pierre River area associated with several conspicuous circular topographic features, and associated also with alluvial gold discovered at several sites immediately downstream in the Pierre River during 1995 stream sediment sampling work (Sabag 1996a);
- that reviewing the data in line profiles rather than contours reveals additional anomalies which could reflect discreet shallow sourced magnetic bodies such as kimberlitic intrusions or related proximal volcanics. The foregoing review identified seven general areas over the southern part of the aeromagnetic survey (Asphalt Zone and northern vicinity) that several of the magnetic anomalies selected could well be indicative of near-surface intrusions or related volcanic vents. These localities are shown in Figure 34.

Additional details for the above reviews and re-interpretations of the geophysical data are outlined in Section 6.3.2 of DNI's NI-43-101 technical report for the Property appended herein as Appendix B1. Though the above work was carried out focusing on exploration for diamonds or related exhalative venting on the Property, the contemplated venting would be equally relevant to location of possible vents associated with SEDEX style massive sulfide mineralization on the Property, and is as such relevant to DNI's exploration objectives of searching for metallic mineralization on the Property.

8.7 Lithogeochemical Sampling and Mapping

Current understanding of geology and lithogeochemistry of the Property, and the Birch Mountains in general, relies on geological mapping and lithogeochemical sampling programs conducted by Tintina Mines together with similar concurrent work by the AGS-GSC in the mid-late 1990's, which collectively provide an exhaustive database of all that is exposed and available to sampling across the Property. Mapping and sampling completed by the AGS-GSC expands beyond the former work programs' scopes to also investigating the Second White Speckled Shale as well as the Shaftesbury and related Cretaceous Formations westward from the Birch Mountains and the Property to west-central Alberta (Figure 35).

The above historic prior work included reconnaissance sampling programs as well as detailed sampling and mapping of individual exposures with special focus on systematic mapping and sampling of measured stratigraphic lithosections (Figure 36) exposed as cliff-faces, confined mostly to the erosional edge of the Birch Mountains, within a 5km wide arc over the eastern lobe of the Mountains.

The above mapping and sampling surveys comprise the only mapping and lithogeochemical sampling conducted over the Property toward exploration for metals, and results therefrom form the only lithogeochemical databases available from the Property.

Bedrock exposures throughout the Property are scarce (<2%), and are restricted to creek/river valleys which define incisions confined to the erosional edge of the Birch Mountains, forming a narrow 5-10km wide arcuate band over the eastern lobe of the Mountains. The Cretaceous strata exposed in the area are dominated by poorly consolidated recessive sequences of shales and mudstones, exposed in terraces

(Plates 1 and 2) partly obscured by considerable slumped material or mud-flows (especially at their base), all of which are highly susceptible to landslides and slumping.

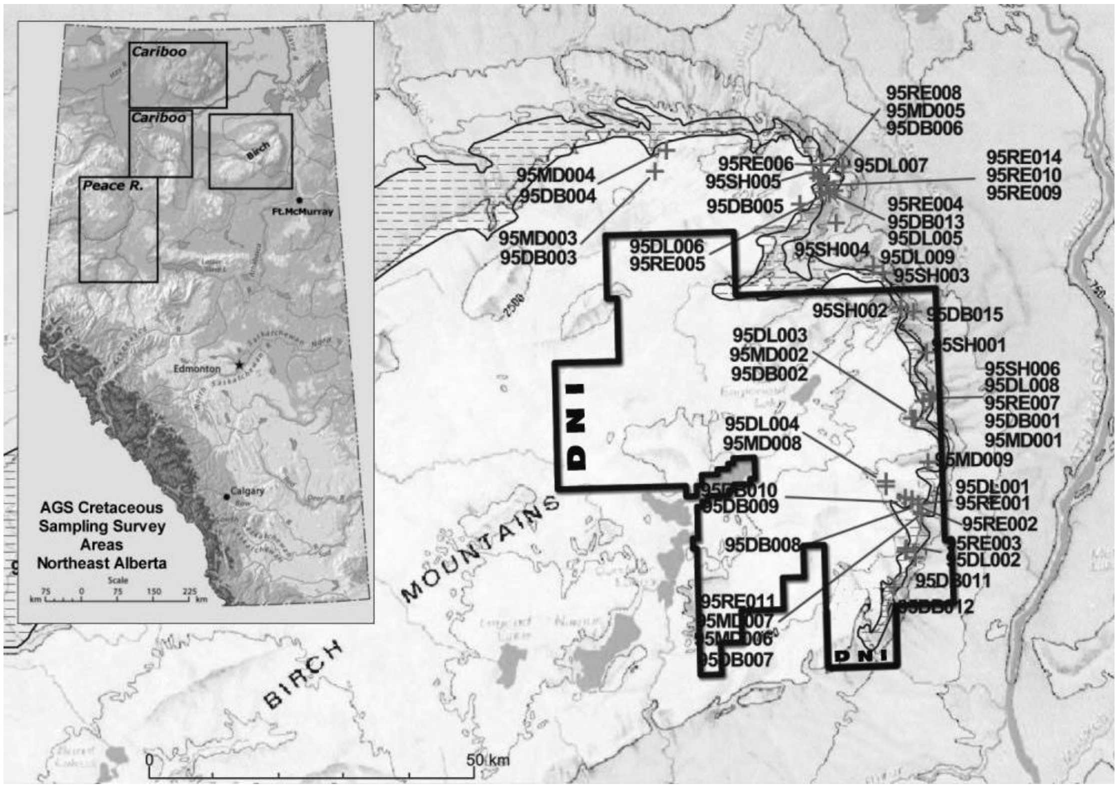


Figure 35: Mapping and lithogeochemical sample coverage, northeast Alberta and the Birch Mountains, AGS-GSC programs, After Figure 27, Sabag 2008; and AGS 2001. Stratigraphic lithosections 95DL003 and 95DL004 were sampled by DNI in 2009 and 2010.

Nearly all bedrock exposures in the Birch Mountains are in various stages of active mass wasting, and are transformed during prolonged wet weather periods into mudflows requiring the frequent rescue of sinking crew-members from slimy sinkholes (Plate 3).

Plate 1: Typical terraced exposures of recessive sequences, Cretaceous Formations, Northeast Alberta. Asphalt Creek Valley, Birch Mountains (Right). Images from Sabag 1994-1999.

In many cases slumpage is sufficiently advanced to introduce uncertainties to the definitive determination of stratigraphic position of often similar looking exposed units, especially for shales.

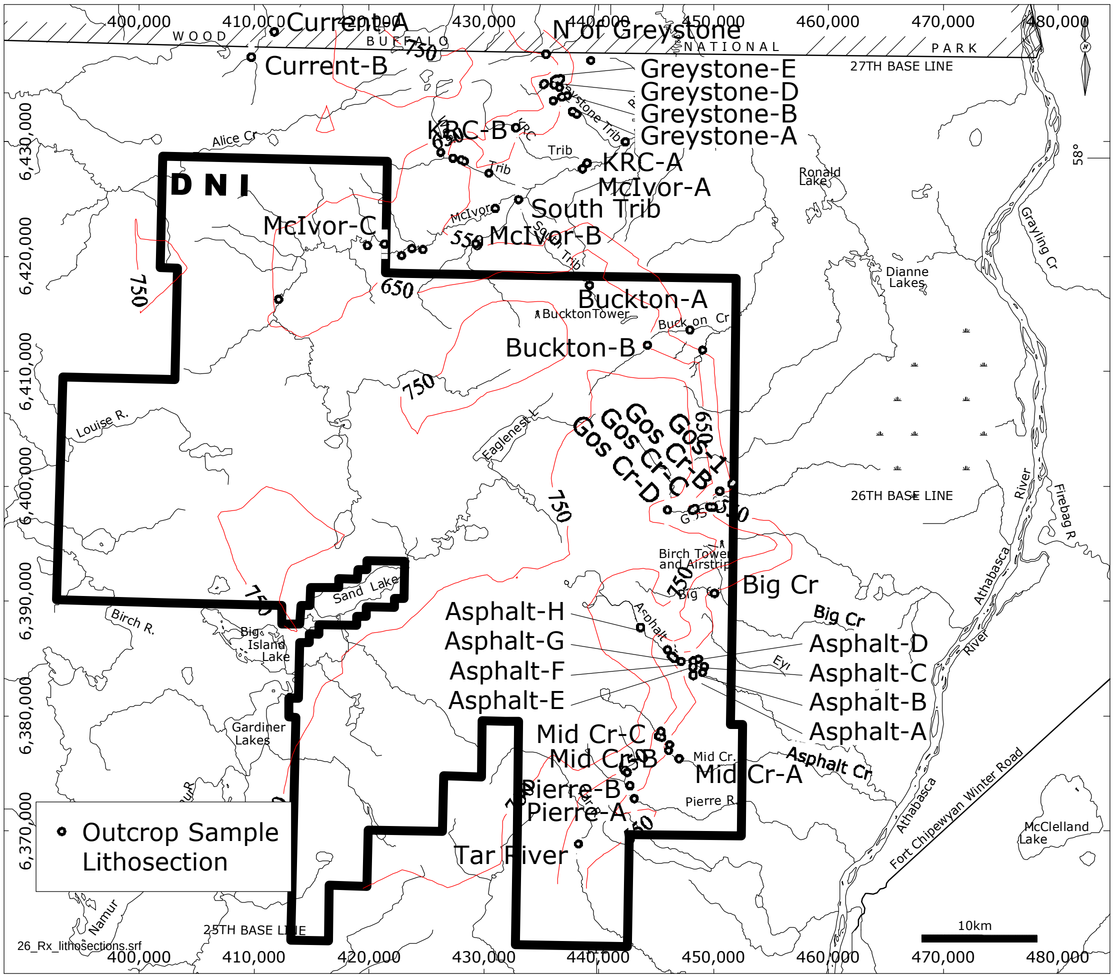


Figure 36: Historic mapping and lithogeochemical sample coverage, outcrops and stratigraphic lithosections, Tintina 1994-1995 programs, Birch Mountains, showing "named" stratigraphic sections. After Figure 25, Alberta Mineral Assessment Report MIN9611, Sabag 1996a. Stratigraphic lithosections Asphalt-H and GOS-Cr.-C were sampled by DNI in 2009 and 2010.

Exposures available throughout the Birch Mountains enable observation and sampling of approximately 300-350 vertical metres across the Cretaceous stratigraphy, extending upward from the top of the Manville to well into the Colorado Group. This section straddles the Albian-Cenomanian boundary, and provides exposures of five Formations: the Clearwater/Grand Rapids Formation, the Viking/Pelican Formation, the Westgate Formation, the Shaftesbury Formation, and the Second White Speckled Shale Formation. All available lithosections and "un-named" lithosections previously mapped and sampled are shown in Figure 36 (DNI has retained historic location names for continuity).

Significant highlights from historic work from areas under the Property include:

- The discovery of large flat Fe-phosphate and Fe-sulfide rich float slabs in Asphalt Creek, immediately below slump zones of suspected Shaftesbury Formation (e.g. sample site 1039). Many of the slabs containing upward to 75% Fe-sulfides by volume, reporting also several hundred ppm of Ni, Zn and lesser amounts of Cu and Ag. Microanalytical investigation of some subsamples by the GSC reported native Ni as overgrowths on some FeS grains[13] (GSC, S.B.Ballantyne). FeS±Ni mineralization was also discovered in fractured carbonate float in Asphalt Creek and McIvor River, similarly also reporting Ni as overgrowths on some FeS grains from microanalytical inspection.

[13] Miscellaneous poster sessions, S.B. Ballantyne 1994-1995, GSC.

Plate 2: Typical stratigraphic section and related slump, Cretaceous Shales, Birch Mountains, Alberta. (Repel mapping by the author)

- The discovery of highly angular sulfide bearing siliciclastic float, with upward to 90% Fe-sulfides by volume, locally also with fish remains in several drainages, representing the siliciclastic bonebed basal member of the Second White Speckled Shales Formation.

- The discovery of the GOS1 gossan, a large reddish gossan, at the headwaters of GOS Creek, (southeast portion of T101/R12) and the discovery of native pristine gold grains with encrustations and inclusions of Fe-Cu-Sulfides from some samples of the gossan (Sample E5100, E5100B, GOS1 Gossan, Second White Specks Formation).

- The GOS1 gossan, subsequently recognized to be part of the Buckton Zone, comprises Ni/V/Zn-enriched carbonaceous and muddy shales, which have also reported abundant euhedral zircons, chromite and Mn-wads accompanying a variety of FeS morphologies including crystals, specular composites and spheres, many of the latter studded also by 1µm-5µm granules of native Ni. Orientation XRD from Tintina's work for sample E5100 reported a predominance of illite clay, accompanied by smectite and locally glauconite in the shale (Alberta Mineral Assessment Report MIN9611, Sabag 1996a);

Plate 3: Typical mudflows (left) and crew rescue, GOS1 Gossan (right), Second White Speckled Shale, Birch Mountains.. Images from Sabag 1994-1999.

The GOS1 gossan, over the Buckton Zone, represents the largest and most continuous exposure of the Second White Speckled Shale Formation in the Birch Mountains and on DNI's Property. It comprises a 1km long intermittent exposure of conspicuous brick red carbonaceous shales over a ledge, and related slumps, between the 600m-630m (asl) elevations along the northern slopes of the Gos Creek valley. The Formation is also exposed at Gos Creek-B exposure, also on the north flank of the GOS valley, and at the Gos Creek-C exposure which is located at its closure. Due to its distinct coloration and the abundant metallic content, GOS1 was initially regarded as a zone of advanced auto-oxidation, although subsequent work indicated that the coloration is likely due to an old extensive forest fire.

With the exception of the uppermost 5m-10m of the gossan ledge, the bulk of GOS1 comprises slumped material consisting of slimy muds or dislocated pieces of hillside in various states of disaggregation. Bedrock exposed along the uppermost ledge is characterized by carbonaceous shales, with bentonite seams and other seams of sulfur and sulfates. The gossan is over an area characterized by junctions of several faults.

Shales at GOS1 contain varying amounts of sulfides (mainly FeS) with a broad range of morphologies ranging from perfectly spherical pyrite/marcasite balls to twin pyramidal and specular aggregations. The FeS is accompanied by abundant euhedral Zircons, chromite and Mn-wads, all of which are hosted in muddy shales predominated by illite clay, accompanied also by smectite and (locally) glauconite. Orientation microanalytical investigation of some subsamples indicate also the presence of 1µm-5µm granules of native Ni as overgrowths on FeS grains (especially those spherical). Native gold grains have been reported in heavy mineral concentrates from the exposure, representing an equivalent grade of nearly 1ppm based on volumetric/gravimetric estimates (by tabling and by panning, Sabag 1996b). The gold grains recovered are characterized by encrustations and inclusions of Fe±Cu-sulfides in various states of oxidation. The gossan has been sampled in great detail by Tintina, and the presence of native gold grains in the shales is corroborated by independent AGS sampling (AGS 2001).

The GOS1 and Gos Creek-C localities expose poorly consolidated shales and mudstones (with variable organic components), a thin bentonite (3-5cm), a thin discontinuous carbonate cemented siltstone/concretion (10-15cm thick), and a Siliciclastic Bone Bed (SBB). The bone bed is interpreted as a transgressive lag deposit and is characterized by a calcite cemented, medium to very coarse grained, black chert and glassy quartz sandstone, containing variable amounts of fish debris. While the bone bed is generally a thin (10cm-20cm) unit in the area, and elsewhere in the sedimentary basin, it comprises as many as three distinct chert and quartz sandstone units at the Gos Creek-C exposure, with an overall thickness exceeding 1m, which are interbedded with sandy organic-rich shales. The sandstones of the bone bed are fairly massive and exhibit few sedimentary structures with the exception of vague cross-bedding and occasional mudstone "rip-ups". (exposures of bonebed at the base of the GOS-Cr-C lithosection were sampled in detail by DNI in 2009. See Section 11.5 of this Report).

The GOS1 gossan and the Gos Creek-C exposures are enriched in Zn/V, locally in Ni, and also by elevated Cd, Co, Cr and Cu (Sabag 1996). Metal enrichment over the eastern portion of GOS1 can be correlated with increasing organic carbon content, although results from its western extremities are characterized by metal enrichment patterns which are independent of C-org supporting metals concentration in forms other than those organic. Lithogeochemical anomalies documented from the gossan by Tintina include 2.8ppm Ag, 36ppb Au, 7ppb Pt, 7ppb Pd, 120ppm Cu, 85ppm Mo, 300ppm Ni, 1051ppm V, and 845ppm Zn. Samples of the Second White Specks Formation have also reported up to 29% organic Carbon, 250ppm U and 33ppm Th. Samples from the Gos Creek-C exposure reported up to 67ppb Au, by fire assay, and 11ppb Pd and 14ppb Pt. Despite recovery of gold grains in heavy minerals from samples of the gossan, routine INA or fire assay analyses have not returned equally high grades (GOS Creek C was resampled by DNI in 2009 and 2010 to collect material for leaching testwork - Section 11.6).

Detailed geochemistry, geological findings and conclusions from historic lithogeochemical sampling programs are discussed in Section 7.7 of DNI's NI-43-101 technical report for the Property appended herein as Appendix B1 in the context of stratigraphy and geology of the Birch Mountains and the Property. A statistical summary of lithogeochemical results from prior work is shown in Table 4, and presented also in Figure 37, juxtaposed against a generalized stratigraphic column for the Birch Mountains. Extensive additional data are available also in AGS 2001.

The reader is referred to Alberta Mineral Assessment Reports MIN9611 and MIN9802, Sabag 1996a and Sabag 1998, respectively; in addition to AGS 2001, for a very detailed and exhaustive review of all lithogeochemical trends identified by the historic work, a presentation of which is well beyond the scope of this report. A summary of findings and conclusions from the collective foregoing historic work by Tintina and the AGS over DNI's Property, and the surrounding Birch Mountains, is as follows:

- Tintina concluded from its sampling that metals enrichment zones in the Birch Mountains are hosted in carbonaceous shales of the Second White Speckled Shale Formation, and to a lesser extent in the Shaftesbury Formation beneath it, associated vertically with marine extinction markers, and laterally associated with certain large structural disturbances (fault zones or doming). Metal enrichment zones are characterized by enrichment Ni/Cu/Zn/V/Ag/Mo/(U) accompanied by Au.

- The Second White Speckled Shale Formation and, to a lesser extent, the Shaftesbury Formation, are carbonaceous shales containing up to 29% and 10% organic carbon, respectively (Table 4). Though there is some correlation between metal enrichment in the Second White Speckled Shale Formation with organic carbon, general consensus is that the metals substantially occur in the shale in sulfide or metallic forms rather than as organometallic compounds. As such, the relationship suggested by bulk chemistry between C-org and metals may be incidental.

- Tintina concluded based on its lithogeochemical work that the Second White Speckled Shale and the Shaftesbury Formations, by virtue of their elevated organic carbon contents, present conditions which are highly conducive to scavenging of metals via redox processes from oxidizing metal rich fluids which might be circulating within the stratigraphic pile. (Source of the fluids being oxidizing metal enriched basinal fluids seeping upstratigraphy through the Prairie Evaporite salt scarp beneath the Birch Mountains). Tintina further concluded that scavenged metal accumulations in these shales can be expected to have tabular geometry, characterized by relatively restricted thicknesses but with potential to have vast lateral dimensions ranging upward to $100km^2$, occupying the near-surface sections of the stratigraphy dominated by Second White Specks and Shaftesbury shales.

- Based on detailed review of interelemental correlations and variograms, Tintina concluded that there exists good overall correlation among most of the metals, and noted possible bimodal distribution of some of the metals. Two modal groups identified comprised a Ni-Co-Zn±(Cu,Cd) group and a group V-Ag±Cu. No further conclusions could be derived from the data regarding more detailed metal partitioning.

- The AGS reported from its sampling of mid-Cretaceous bedrock units sampled in northern Alberta over the Peace River, Buffalo Head Hills, Caribou Mountains and Birch Mountains areas that the Second White Speckled Shale Formation in the Birch Mountains reported the highest concentrations of precious and base metals from amongst the units sampled in these areas across northern Alberta. It further reported that, for the most part, sampling of the Shaftesbury Formation did not report significant concentrations of metals, and yielded no significant difference in precious or base metal concentrations, among samples collected from the Peace River, Buffalo Head Hills, Caribou Mountains and Birch Mountains areas.

- The AGS concluded that the Second White Speckled Shale Formation shale exhibits a different geochemical pattern when compared to the Shaftesbury Formation shale and most other shales in northern Alberta. While the majority of shales in northern Alberta, including the Shaftesbury, exhibit a strong correlation between metals and Al, elevated metal concentrations in the Speckled Shale are better correlated with elevated organic carbon content and with elevated S and Fe. In comparison, only Ag, V, Mo and Br in the Shaftesbury shale display a positive correlation with organic carbon, suggesting that different controls for metal concentrations exist in Second White Specks shale (Birch Mountains area) versus the other shales.

Element	Ag	As	Au	Au	Pd	Pt	Cu	Mo	Sb	Cd	Co	Cr	Ni	V	Zn	Al	Ba	Ca	Mg	Sr	Na	K
Method	ICP	INA	Fa	INA	Fa	Fa	ICP	ICP	INA	ICP	INA	INA	ICP	ICP	ICP	ICP	INA	ICP	ICP	ICP	INA	ICP
Det.Limit	0.2ppm	0.5ppm	1ppb	2ppb	3ppb	5ppb	1ppm	2ppm	0.1ppm	0.5ppm	1ppm	5ppm	1ppm	2ppm	1ppm	0.01%	50ppm	0.01%	0.01%	1ppm	0.01%	0.01%
All Birch Mountains Area Formations (n=634)																						
MIN	0.1	0	1	1	1.5	2.5	2	1	0.1	0.3	1	1	2	2	2	0.01	25	0.01	0.01	5	0.01	0.01
MAX	3.6	1200	138	65	14.0	22.0	181	228	51.0	42.4	100	150	315	1051	845	11.08	29000	44.29	12.72	2804	1.47	3.35
AVERAGE	0.4	35	4	4	2.2	2.8	32	16	3.6	2.3	12	65	44	185	121	5.00	951	6.32	0.74	210	0.29	1.35
95th %'ile	1.5	98	12	12	5.0	5.0	85	72	16.0	11.1	32	120	141	627	358	8.95	1735	31.19	1.57	467	0.61	2.37
90th %'ile	1.0	76	8	9	4.0	2.5	69	49	9.3	6.3	25	110	88	447	267	8.24	1300	23.56	1.19	345	0.53	2.24
75th %'ile	0.5	49	4	5	2.0	2.5	41	14	4.7	2.1	15	96	52	233	147	7.37	898	6.63	0.92	235	0.37	1.93
50th %'ile	0.2	17	2	2	2.0	2.5	24	2	1.3	0.7	10	71	30	118	91	5.57	670	1.22	0.69	168	0.27	1.52
Second White Specks (n=354)																						
MIN	0.2	1	1	1	1.5	2.5	3	1	0.1	0.3	1	1	3	4	5	0.28	25	0.05	0.03	23	0.03	0.11
MAX	3.6	1200	138	65	14.0	22.0	181	228	51.0	42.4	100	150	315	1051	845	11.08	29000	44.00	3.47	1203	0.73	2.65
AVERAGE	0.6	52	6	5	2.5	3.0	43	27	5.8	3.5	15	70	61	263	158	5.19	1232	8.89	0.68	230	0.26	1.40
95th %'ile	1.8	130	15	12	5.0	6.0	93	116	19.4	14.0	39	120	195	692	401	9.18	2810	33.31	1.20	487	0.50	2.36
90th %'ile	1.4	91	10	10	4.0	2.5	80	65	14.7	10.5	29	110	122	581	333	8.51	1400	30.10	1.07	365	0.42	2.26
75th %'ile	0.7	67	6	7	3.0	2.5	57	36	6.6	3.9	19	100	72	344	205	7.43	1000	12.77	0.89	254	0.35	2.02
50th %'ile	0.4	39	3	4	2.0	2.5	35	11	3.8	1.6	11	79	44	216	122	5.67	760	3.33	0.65	190	0.26	1.56
Fish Scales / Shaftesbury (n=57)																						
MIN	0.2	2	1	1	1.5	2.5	6	1	0.1	0.3	1	5	2	6	13	0.28	180	0.08	0.03	55	0.06	0.05
MAX	2.7	170	55	22	11.0	10.0	117	51	16.0	30.8	49	120	228	942	761	9.51	4800	37.50	3.20	1601	0.67	2.51
AVERAGE	0.3	21	6	3	2.4	2.8	26	6	1.5	1.5	9	58	28	115	101	4.77	951	6.72	0.76	302	0.31	1.19
95th %'ile	0.8	74	21	17	6.0	5.0	75	27	6.7	4.6	23	110	79	376	288	8.19	1900	31.71	1.76	916	0.59	2.38
90th %'ile	0.5	57	14	10	3.4	2.5	47	14	2.0	1.4	21	110	53	170	173	7.80	1640	30.05	1.01	442	0.56	2.06
75th %'ile	0.2	16	5	3	2.0	2.5	25	5	0.9	0.8	10	80	28	95	96	7.05	1100	7.52	0.88	289	0.41	1.57
50th %'ile	0.2	10	3	1	2.0	2.5	21	2	0.6	0.3	7	55	17	73	63	5.17	740	1.00	0.78	205	0.28	1.25
Westgate (n=88)																						
MIN	0.2	1	1	1	1.5	2.5	3	1	0.1	0.3	1	2	2	2	2	0.11	61	0.02	0.01	7	0.01	0.03
MAX	1.1	420	15	12	5.0	5.0	59	69	13.0	4.6	40	150	122	200	366	9.06	1900	44.29	4.00	2804	1.11	3.35
AVERAGE	0.2	16	2	3	1.9	2.5	22	3	0.8	0.6	9	78	26	106	83	6.25	639	1.49	0.81	189	0.34	1.68
95th %'ile	0.5	20	5	8	2.6	2.5	45	9	1.4	2.1	16	120	56	177	151	8.62	987	5.13	1.12	310	0.57	2.41
90th %'ile	0.4	17	4	6	2.0	2.5	30	4	1.0	1.1	13	110	41	168	120	8.37	896	0.86	1.02	179	0.53	2.35
75th %'ile	0.2	14	2	4	2.0	2.5	25	2	0.8	0.7	11	94	31	125	103	7.76	760	0.55	0.95	156	0.44	1.88
50th %'ile	0.2	11	1	1	2.0	2.5	21	1	0.6	0.3	8	82	25	110	79	7.10	620	0.43	0.84	137	0.34	1.78
Pelican (Viking) (n=79)																						
MIN	0.2	0	1	1	1.5	2.5	2	1	0.1	0.3	1	1	2	2	2	0.05	25	0.01	0.01	5	0.01	0.01
MAX	2.2	64	7	10	4.0	2.5	53	13	2.0	5.8	43	100	63	153	227	9.49	1100	23.39	1.15	899	0.49	1.96
AVERAGE	0.2	7	2	2	1.8	2.5	11	2	0.3	0.4	7	30	16	45	48	2.58	334	0.83	0.30	83	0.12	0.71
95th %'ile	0.4	21	4	6	2.0	2.5	24	3	0.8	1.0	21	80	45	123	145	7.07	892	1.48	0.90	208	0.36	1.72
90th %'ile	0.2	12	3	4	2.0	2.5	21	3	0.6	0.7	16	75	31	103	104	6.60	676	0.83	0.83	160	0.32	1.66
75th %'ile	0.2	8	2	2	2.0	2.5	17	2	0.5	0.3	10	55	21	76	73	4.91	495	0.34	0.57	105	0.20	1.37
50th %'ile	0.2	4	1	1	1.5	2.5	7	1	0.3	0.3	5	17	12	32	35	1.18	240	0.16	0.14	47	0.05	0.48
Clearwater/Grand Rapids (n=15)																						
MIN	0.2	3	1	1	1.5	2.5	9	1	0.3	0.3	3	23	11	33	21	1.59	430	0.44	0.81	124	0.10	0.40
MAX	0.5	25	4	7	2.0	2.5	32	2	1.1	0.7	15	120	38	128	105	10.42	940	26.86	4.07	361	1.47	2.59
AVERAGE	0.3	11	2	2	1.7	2.5	20	1	0.7	0.3	8	67	25	86	66	5.78	555	5.57	1.56	194	0.57	1.62
95th %'ile	0.5	19	4	6	2.0	2.5	31	2	1.0	0.6	14	101	37	120	104	10.41	772	18.48	2.82	299	1.12	2.56
90th %'ile	0.5	16	4	5	2.0	2.5	29	2	1.0	0.5	13	92	36	114	100	9.94	676	14.33	2.15	252	0.96	2.40
75th %'ile	0.4	13	3	2	2.0	2.5	27	1	0.9	0.3	11	86	33	108	85	7.50	630	7.26	1.73	206	0.68	2.15
50th %'ile	0.2	10	1	1	1.5	2.5	18	1	0.8	0.3	9	76	27	98	80	6.34	510	2.06	1.28	181	0.57	1.93

* Statistics are generated from data wherein values below detection were replaced by a value equal to 50% of the detection limit. Sabag 1996a.

Table 4: Statistical summary of historic lithogeochemical sampling results, Cretaceous Formations, Birch Mountains. After Table 2, Sabag 2008; and Alberta Mineral Assessment Report MIN9611, Sabag 1996a.

Element	U	C-org	P	S	Fe	Mn	La	Ce	Nd	Eu	Yb	Lu
Method	INA	Leco	ICP	Leco	INA	ICP	INA	INA	INA	INA	INA	INA
Det.Limit	0.5ppm	0.001%	0.001%	0.001%	0.01%	1ppm	0.5ppm	3ppm	5ppm	0.2ppm	0.2ppm	0.05ppm
All Birch Mountains Area Formations (n=634)												
MIN	0.3	0.00	0.00	0.0	0.1	7	0	2	3	0.1	0.1	0.0
MAX	250.0	29.10	7.22	30.1	36.3	>det	470	720	490	28.8	63.6	8.4
AVERAGE	15.4	2.30	0.34	2.9	4.9	667	45	78	36	2.0	3.7	0.6
95th %'ile	59.4	9.81	1.43	10.3	15.6	1646	110	164	90	5.4	8.9	1.4
90th %'ile	39.0	7.16	0.65	6.2	10.0	1018	78	120	65	3.9	6.6	1.0
75th %'ile	16.0	2.17	0.23	3.8	5.1	434	48	88	38	2.0	3.9	0.6
50th %'ile	5.2	1.12	0.10	1.5	3.5	190	37	72	28	1.4	3.0	0.5
Second White Specks (n=354)												
MIN	0.3	0.00	0.00	0.0	0.5	29	2	4	3	0.1	0.1	0.0
MAX	250.0	29.10	7.22	30.1	35.7	5112	470	720	490	28.8	37.9	5.7
AVERAGE	23.9	3.04	0.44	4.2	5.4	424	54	90	45	2.5	4.5	0.7
95th %'ile	72.4	11.24	1.75	13.6	15.3	1440	120	170	100	6.2	10.8	1.7
90th %'ile	54.7	9.14	0.91	8.7	10.5	974	92	140	84	4.9	7.8	1.2
75th %'ile	31.0	4.43	0.34	4.9	5.6	497	59	99	50	2.9	5.2	0.8
50th %'ile	12.0	1.23	0.15	3.1	4.0	235	42	78	32	1.6	3.4	0.6
Fish Scales / Shaftesbury (n=57)												
MIN	0.5	0.05	0.02	0.1	0.6	34	8	16	6	0.3	0.6	0.1
MAX	100.0	10.50	6.42	26.3	33.4	4956	400	690	320	22.0	63.6	8.4
AVERAGE	10.2	1.95	0.58	2.9	5.4	442	44	79	33	1.8	4.2	0.6
95th %'ile	39.0	6.92	4.80	16.0	22.3	1280	99	124	70	3.8	7.8	1.1
90th %'ile	25.2	3.67	0.78	5.1	13.8	999	58	108	47	2.5	5.8	0.9
75th %'ile	7.3	2.17	0.23	2.3	3.9	392	43	85	35	1.7	3.9	0.6
50th %'ile	4.9	1.49	0.09	1.3	3.2	181	35	64	25	1.2	2.6	0.4
Westgate (n=88)												
MIN	0.3	0.02	0.02	0.0	0.1	9	2	5	3	0.1	0.2	0.0
MAX	65.0	6.78	3.40	7.9	36.3	2407	190	260	150	7.4	16.4	2.4
AVERAGE	4.7	1.55	0.12	1.4	3.8	186	39	74	30	1.4	3.0	0.5
95th %'ile	9.5	2.44	0.19	3.6	6.7	287	46	94	38	1.8	3.9	0.6
90th %'ile	5.3	2.31	0.11	2.2	4.1	227	45	92	37	1.7	3.7	0.6
75th %'ile	4.4	1.74	0.09	1.5	3.4	168	42	82	33	1.5	3.4	0.5
50th %'ile	3.7	1.46	0.07	1.0	3.1	135	39	74	29	1.3	3.0	0.5
Pelican (Viking) (n=79)												
MIN	0.3	0.01	0.00	0.0	0.1	7	2	2	3	0.1	0.1	0.0
MAX	28.0	22.70	6.22	1.8	12.9	23086	140	210	120	7.6	12.9	2.0
AVERAGE	2.6	1.09	0.17	0.4	2.5	1219	22	43	19	0.9	2.0	0.3
95th %'ile	5.9	2.62	0.39	1.5	8.8	4752	54	111	48	2.3	4.9	0.7
90th %'ile	5.2	1.51	0.20	1.0	5.6	1887	44	90	36	1.7	3.5	0.6
75th %'ile	3.9	0.89	0.09	0.5	3.3	358	34	64	27	1.3	2.9	0.4
50th %'ile	1.7	0.42	0.05	0.2	2.0	133	15	30	15	0.7	1.6	0.2
Clearwater/Grand Rapids (n=15)												
MIN	0.3	0.22	0.04	0.0	2.3	183	11	17	6	0.4	0.8	0.1
MAX	4.1	8.75	0.30	1.9	22.5	2992	48	100	34	1.9	3.3	0.6
AVERAGE	2.2	1.95	0.09	0.4	7.0	700	26	52	21	1.1	2.4	0.4
95th %'ile	3.5	6.87	0.19	0.9	21.3	2041	42	80	31	1.7	3.2	0.5
90th %'ile	3.1	4.80	0.12	0.5	17.3	1559	37	71	30	1.5	3.2	0.5
75th %'ile	2.9	1.50	0.09	0.4	7.8	920	29	60	28	1.4	2.9	0.5
50th %'ile	2.5	1.10	0.08	0.3	4.0	292	27	57	24	1.2	2.5	0.4

Note: Statistics are generated from data wherein values below detection have been replaced by a value equal to 50% of the detection limit. Sabag 1996a.

Table 4 (continued): Statistical summary of historic lithogeochemical sampling results, Cretaceous Formations, Birch Mountains. After Table 2, Sabag 2008; and Alberta Mineral Assessment Report MIN9611, Sabag 1996a.

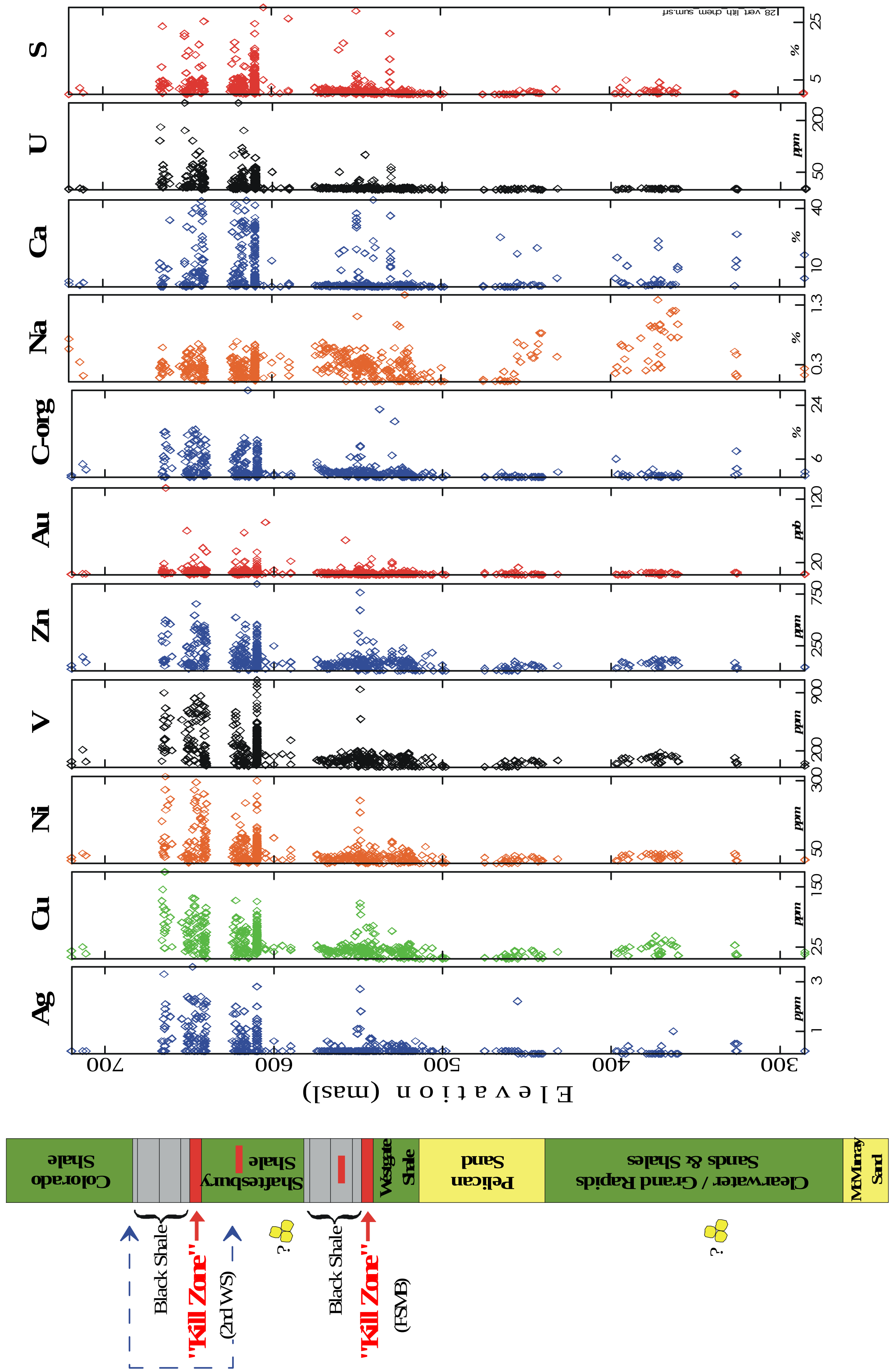


Figure 37: Summary of surface lithogeochemical vertical trends, historic sampling, Birch Mountains. After Figure 28, Sabag 2008; and Figures 36 and 37, Alberta Mineral Assessment Report MIN9611, Tintina Mines, Sabag 1996a. 2ndWS=Second White Speckled Shale Formation, FSMB=Fish Scales Marker Bed (Shaftesbury Formation).

- The AGS concluded that samples, from the Birch Mountains, regardless of lithology, contain a significantly different shale-normalized REE profile when compared to samples from over the Peace River, Buffalo Head Hills, Caribou Mountains. Most samples from the Birch Mountains, particularly those from the Second White Specks Formation, display a slightly negative Ce anomaly and a distinctly positive Eu anomaly, in conjunction with elevated to highly anomalous concentrations of Ba (shale samples reported Ba contents ranging from an average of 1,568ppm to a maximum of 31,000ppm). The AGS concluded that the REE patterns, the highly anomalous Ba and other metals enrichment patterns displayed by many samples from the Birch Mountains suggest a strong influence of low temperature hydrothermal precipitates in the Birch Mountains.

- Tintina concluded from its sampling that metals grades documented from lithogeochemical reconnaissance in the Birch Mountains are relatively low for individual metals when reviewed in the context of conventional mono-metallic base metal deposits. It proposed, however, that the grades are significant when considered on a combined basis, as a polymetallic assemblage of Mo+Ni+Co+Cu+Zn+V+U±Ag±Au, from the perspective of large bulk mining operations, especially those for poorly consolidated deposits which might be developed in most part by low cost earth-moving bulk-mining methods.

- Tintina and the AGS concluded that the metallic budget in the area might be associated with suspected proximal exhalative venting activity in the Birch Mountains, possibly also related to multiple vents. They further concluded that the Second White Speckled Shale and the Shaftesbury Formations, straddling the Albian-Cenomanian transition may have affinities to resedimented kimberlitic material. Tintina further suggested that the possible association of metals enrichment zones throughout the Birch Mountains with interpreted hot springs activity and marine extinction markers is compatible with proximal submarine subaerial venting.

There is general consensus among all who sampled and mapped the Birch Mountains and the Property, that there is excellent potential for discovery of metal deposits in the Second White Speckled Shale Formation in the Birch Mountains, but to a lesser extent in the underlying Shaftesbury Formation.

8.8 Composite Anomalies and Historic Metal Accumulation Model 1996

A number of anomalous localities were identified in the Birch Mountains by Tintina from the collective of its 1994-1995 exploration programs (Figure 38), comprising areas extending over 20-40 sq km each, which were defined based on results from multimedia sampling and other geological work, They are areas characterized by multiple and coincident, or spatially proximal, surface geochemical and mineral anomalies, typically located over structural or subsurface stratigraphic disturbances. The majority of the localities are located over fault zones or are on their flanks, or are associated with zones of stratigraphic disruption or thickening. Many of the anomalous localities are also adjacent to, or occupy, a topographic "high", and some are associated with magnetic anomalies (Figures 32, 33 and 34). Lithogeochemical metal enrichment trends over the anomalous localities were interpreted to reflect enrichment vectors suggesting an intimate association between structural disruptions and metals enrichment in the Birch Mountains.

Repeated references are made in this Section to various anomalies based on which the areas were designated by Tintina. The anomalies are summarized herein, though considerable details are presented in DNI's NI-43-101 for the property appended herein as Appendix B1. The reader is referred to the foregoing report for details, namely; to the following respective Sections as follows: Subsurface stratigraphic model and anomalies - Section 6.2.5; Lake sediment anomalies - Section 6.2.6; Stream sediment geochemical and mineral anomalies - Sections 6.2.8 and 6.2.9, respectively; Soil geochemical anomalies - Section 6.2.9; Lithogeochemical anomalies - Section 6.2.10. The composite anomalous areas are described in Tintina reports referenced by Tintina's (then) property names, and comprise the principal anomalies identified to date on DNI's Property by the historic work. Historic results are consolidated into a 1:100,000 Property general compilation Drawing# B3 appended herein in Appendix B3. The anomalous areas are "named" in this Report for easy reference and are described in pages following.

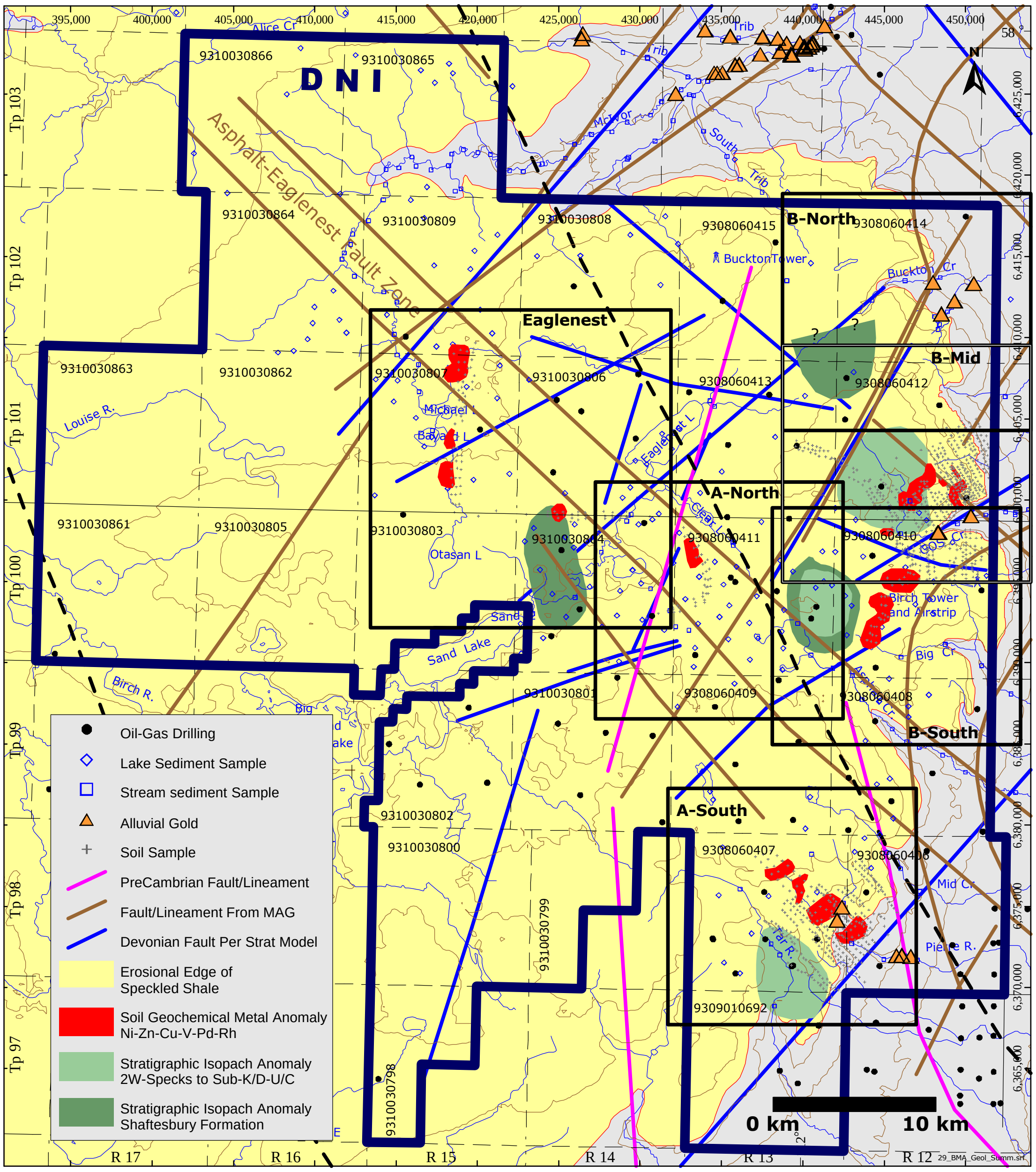


Figure 38: Summary of historic composite anomalous areas ranked by Tintina, Birch Mountains. After Figure 29, Sabag 2008; and Drawing 97-B3, Alberta Mineral Assessment Report MIN9802, Sabag 1998.

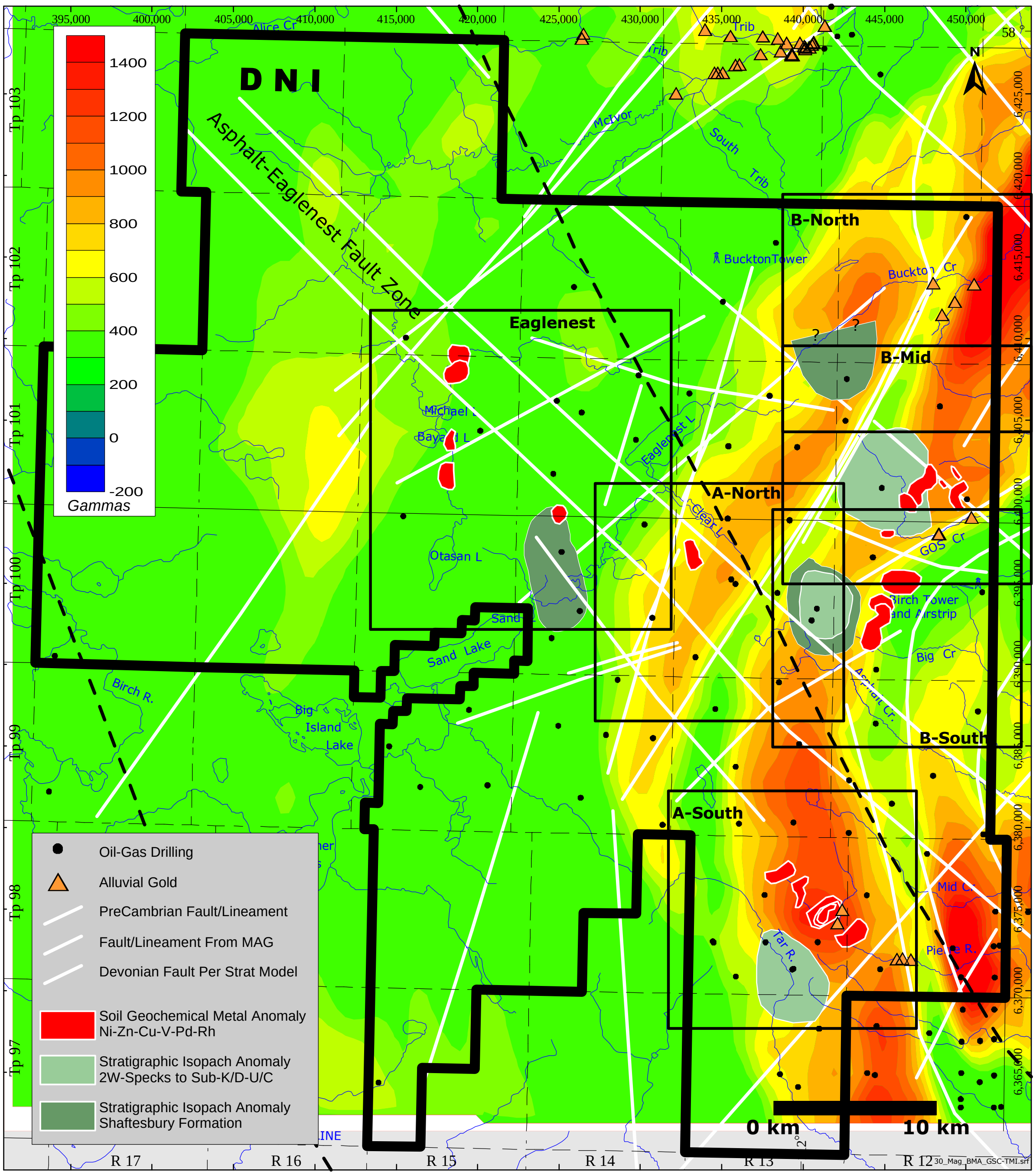


Figure 39: Total Residual Total Field Aeromagnetic trends, showing Tintina composite anomalous areas and major interpreted structures and anomalies, Birch Mountains. After Figure 30, Sabag 2008. Aeromagnetics after GSC Magnetic Anomaly Map, No.12-AM. Other sampling and features after Alberta Mineral Assessment Report MIN9802, Sabag 1998.

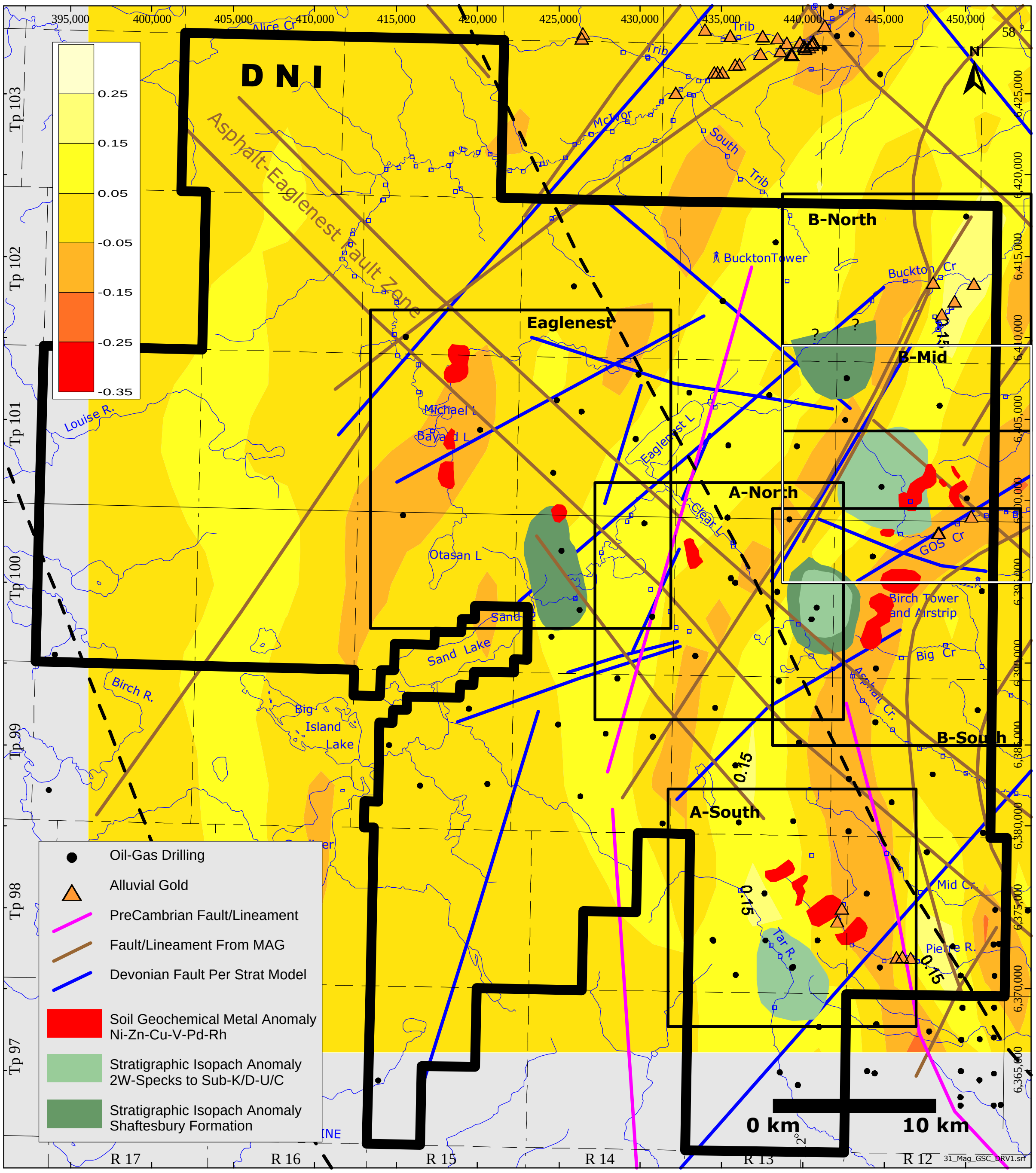


Figure 40: First Derivative of Total Residual Total Field Aeromagnetic trends, showing Tintina composite anomalous areas and major interpreted structures and anomalies, Birch Mountains. After Figure 31, Sabag 2008. Derivatives based on data digitized from GSC Magnetic Anomaly Map, No.12-AM. Other sampling and features after Alberta Mineral Assessment Report MIN9802, Sabag 1998.

B-NORTH Composite Anomalous Area: The northern portion of the historic Buckton property is dominated by an aeromagnetic "high" (Figures 39 and 40), flanked on its side by a series of 1km-2km diameter circular topographic features, separated by miscellaneous creeks flowing into, and comprising the headwaters of, Buckton Creek. The area overlies a stratigraphic isopach anomaly reflecting a 60m abnormal thickening in the Shaftesbury Formation (Figure 41).

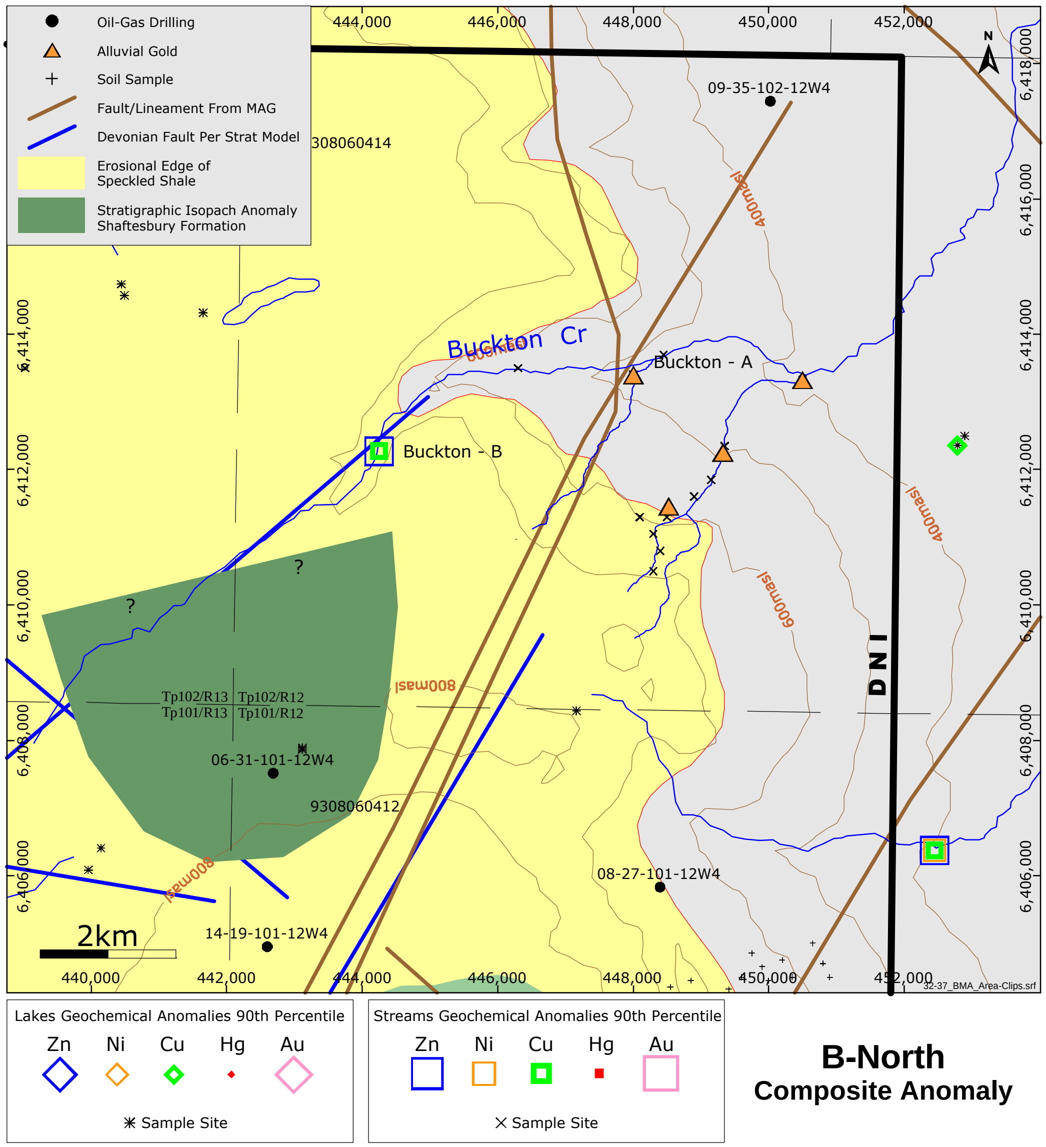


Figure 41: Summary of historic anomalies, Tintina composite anomalous area B-North, Birch Mountains. After Figure 32, Sabag 2008; and Drawing 97-B3, Alberta Mineral Assessment Report MIN9611, Sabag 1996a.

Although there is scarce geochemical information from the area due to scarcity of lakes, gold grains have been reported in HMC samples from several localities in Buckton Creek and its tributaries many of which drain slumped shale exposures in the area. Anomalies over this area are summarized in Figure 41.

B-SOUTH Composite Anomalous Area: The southern portion of the historic Buckton property is broadly characterized by lake sediment geochemical anomalies comprising elevated (>90th pctl) Zn±Ni±Cu±Ag±Hg surrounding an interpreted fault swarm with related Zn diffusion anomalies in soil, associated also with localized zones of Te enrichment. The faulting is associated with stratigraphic isopach anomalies comprising abnormal thickening in the stratigraphic pile above the sub-Cretaceous

Unconformity (to base of Second White Specks) coincident with a similar thickening in the Shaftesbury Formation reflected by the Fishscales-Second White Specks isopach. This area is summarized in Figure 42.

The stratigraphic isopach anomaly straddles the boundary between the historic Buckton and Asphalt properties, and while the closure in contouring may be an artifact of noding, the stratigraphic disturbances can be readily seen in cross sections from the area depicting a complex configuration of uplift and subsidence. The coincident isopachs lie within the Asphalt-Eaglenest corridor which has been interpreted as a zone of substantive faulting across the Birch Mountains.

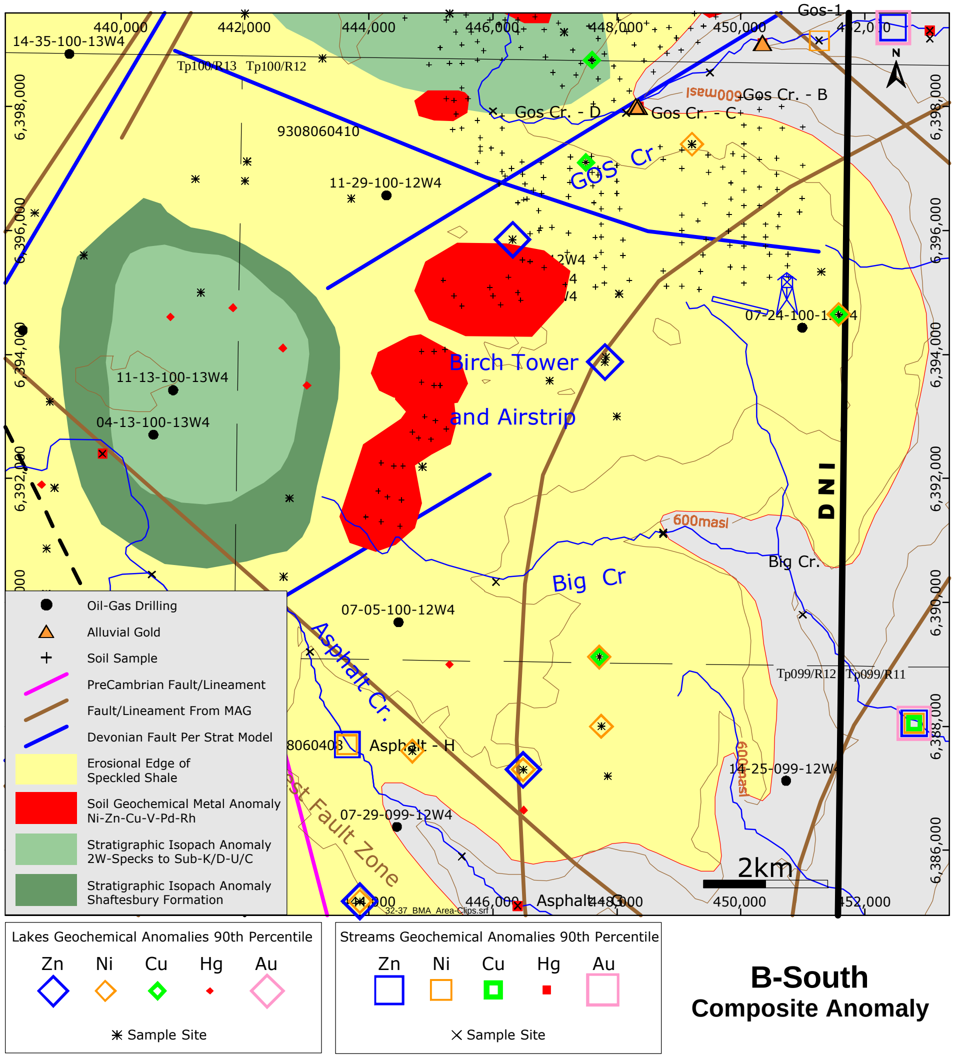


Figure 42: Summary of historic anomalies, Tintina composite anomalous area B-South, Birch Mountains. After Figure 32, Sabag 2008; and Drawing 97-B3, Alberta Mineral Assessment Report MIN9611, Sabag 1996a.

B-MID Composite Anomalous Area: The B-Mid area is located over the central portion of the historic Buckton Property and GOS1 area, and was subsequently recognized by 1997 drilling to host the Buckton Zone (Figure 43). It is dominated by a stratigraphic isopach anomaly comprising abnormal thickening in the stratigraphic pile above the sub-Cretaceous Unconformity (to base of Second White Specks) associated with faulting. A series of cross-sections across the anomaly indicate great structural complexity characterized by the junction of a multitude of faults converging toward the general southern portions of the isopach anomaly, defining a partial radial pattern. The GOS1 gossan lies to the east of this feature, and Gos Creek is characterized by geochemical anomalies (>90th pctl) in Ni±Zn±Hg, accompanied by alluvial gold in stream sediments. Native gold has also been repeatedly recovered from the GOS1 gossan and from Gos-C, both of which are immediately uphill from stream samples reporting also native gold.

Lithogeochemical sampling of available exposures from the vicinity of the isopach anomaly indicate metallic enrichment (Ni-Cu-Zn-V-Co-Ag±Au±Pt±Pd) in sulfide bearing Second White Specks Formation carbonaceous shales, especially nearest its base defined by a siliciclastic bone bed marine extinction marker. This marker is abnormally thickened upward to 1m nearer the isopach anomaly. Metal enrichment patterns in exposures sampled along the Gos Creek valley suggest progressive enrichment nearer the isopach, as do a series of soil geochemical anomalies overlying same which are characterized by acute Ni/Cu diffusion accompanied by Te enrichment over areas straddling the outer boundaries of the isopach (see Section 6.2.9, DNI's NI-43-101 report for the property appended herein as Appendix B1, for additional details).

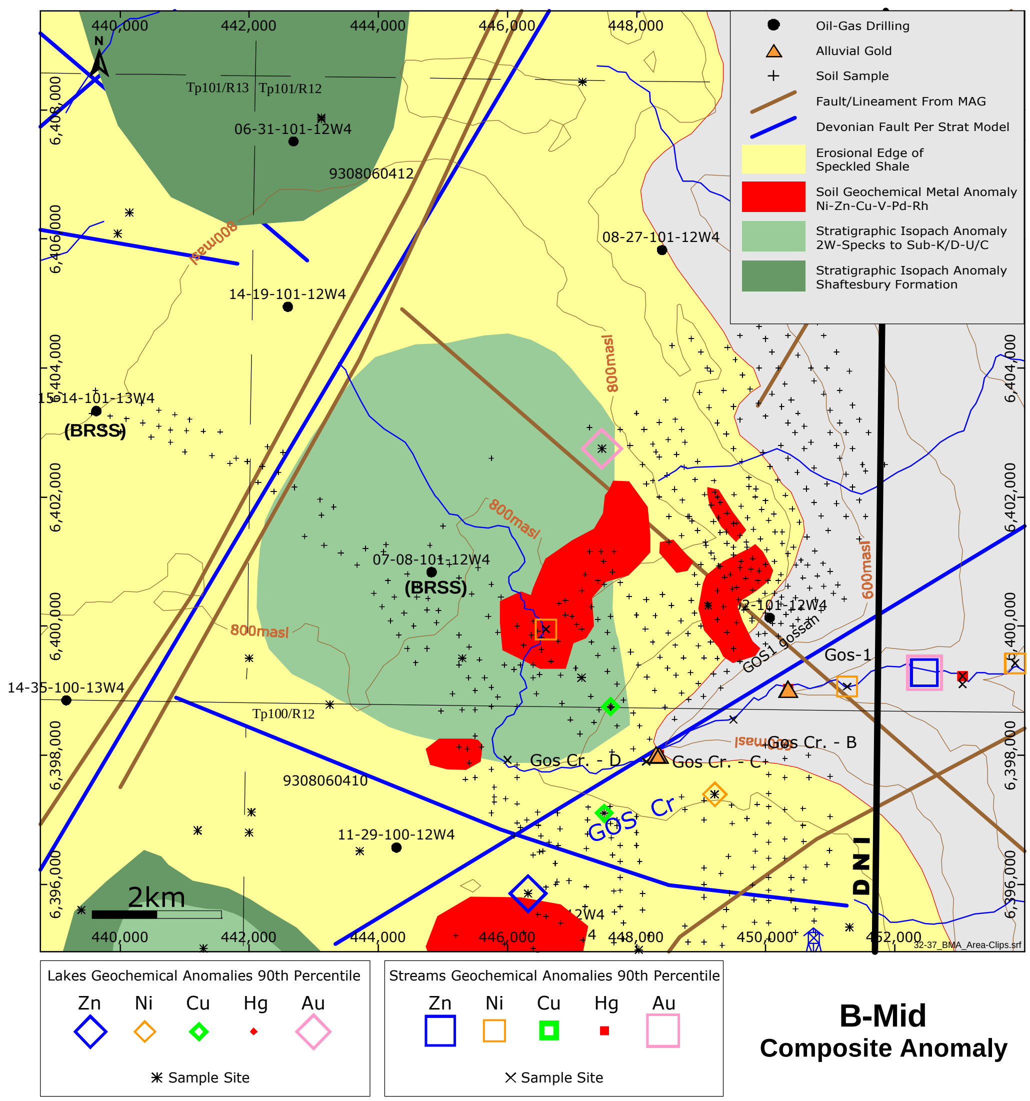


Figure 43: Summary of historic anomalies, Tintina composite anomalous area B-Mid, Birch Mountains. After Figure 33, Sabag 2008; and Drawing 97-B3, Alberta Mineral Assessment Report MIN9611, Sabag 1996a. BRSS=Beaver River Sandstone.

Tintina's examination of available archived drill cuttings from two wells in the area (07-08-101-12W4 and 15-14-101-13W4) reported the presence of abundant sulfides within some Cretaceous sections and the presence of Beaver River Sandstone immediately above the sub-Cretaceous unconformity. The sandstone is enveloped in altered shale with up to 50% (by volume) sulfides immediately adjacent to its contacts. This highly silicified sandstone also outcrops in the Fort MacKay area, approximately 40km to the south of the Birch Mountains, where it is generally regarded as a hot springs alteration marker carrying ZrO in addition to gold and base metals, sulfides and iodides (Fenton and Ives 1982, 1984, 1990). Its presence in the Birch Mountains spatially associated with stratigraphic thickening and with metal enrichment zones was considered by Tintina to be diagnostic and suggestive of the localized presence in the area of broad alteration zones overlying centers of hot springs or other metal bearing fluid activity (fumeroles?).

The GOS1 gossan, comprising a nearly 1km ledge exposure of metals enriched Second White Specks Formation, lies over the eastern flank of this isopach feature, and Gos Creek is characterized by geochemical anomalies (>90th pctl) in Ni±Zn±Hg, accompanied by alluvial gold in stream sediment HMCs. Native gold has been repeatedly recovered from the GOS1 gossan as well as from the Gos-C exposure, both of which are uphill from stream samples reporting also native gold. Metal enrichment over the western extremities of the GOS1 gossan are supported by geochemical diffusion anomalies in overlying soils characterized by elevated Ni/Cu/Pd and halogens (Br/I). The gossan is related to broader metal accumulation in the Buckton Zone and is a likely exposure thereof.

A-NORTH Composite Anomalous Area: The A-North composite anomaly is located over the northern portion of the historic Asphalt Property. It overlaps the western parts of the B-South anomalous area, and lies on the western flank of the isopach anomaly.

Area A-North is broadly characterized by lake sediment geochemical anomalies comprising elevated (>90th pctl) Zn±Ni±Cu±Ag±Hg surrounding an interpreted fault swarm associated with coincident stratigraphic isopach anomalies. The isopachs reflect abnormal thickening in the stratigraphic pile above the sub-Cretaceous Unconformity to base of Second White Specks, and similar thickening in the Shaftesbury Formation reflected by the Fishscales-Second White Specks isopach. The coincident isopachs lie in the Asphalt-Eaglenest corridor regarded by Tintina to be a zone of substantive faulting across the Birch Mountains, coincident with numerous geochemical lake sediment metallic anomalies. The coincident stratigraphic isopach anomaly dominates the eastern parts of the area and, while the closure in contouring may be an artifact of noding, the stratigraphic disturbances can be seen in cross sections from the area which depict a complex configuration of uplift and subsidence. This area is summarized in Figure 44.

While stream sediments in Asphalt Creek are characterized by abundant sulfides, the relationship of metallic enrichment documented from lithogeochemical sampling of exposures therein (especially from lithosection Asphalt-H) with faulting in the area and the isopach anomaly is unclear due to the lack of more detailed subsurface information. It is noteworthy that dacitic debris of likely local provenance has been incidentally identified in the vicinity of Clear Lake.

A-SOUTH Composite Anomalous Area: The A-South composite anomaly is located over the southern portion of the historic Asphalt Property, and was subsequently recognized by 1997 drilling to host the Asphalt Zone. It is characterized by countless stream sediment polymetallic geochemical anomalies dominated by Zn/Ni/Cu, especially from Pierre River and Mid Creek, associated also with alluvial gold in HMCs from Pierre Creek accompanied by cinnabar and base metal sulfides. Pierre Creek flows southeasterly from an area characterized by several lake sediment geochemical Zn anomalies in a small lake which has been offset along a northeasterly trend. Northwesterly trending major structures also cross the area. This area is summarized in Figure 45.

Samples from Pierre River and its immediate vicinity have reported by far the most anomalous geochemistry and mineralogy from the Birch Mountains, all of which supported also by equally anomalous geochemical anomalies in soils dominated by Zn/Cu±Ni±V accompanied by Te enrichment overlying a magnetic "high" (Figures 39 and 40). Geochemical and mineral anomalies in the area are located mostly on the northeast flank of an isopach anomaly over Tar River straddling the southern boundary of the Property. The isopach anomaly reflects abnormal thickening in the stratigraphic pile overlying the sub-Cretaceous unconformity.

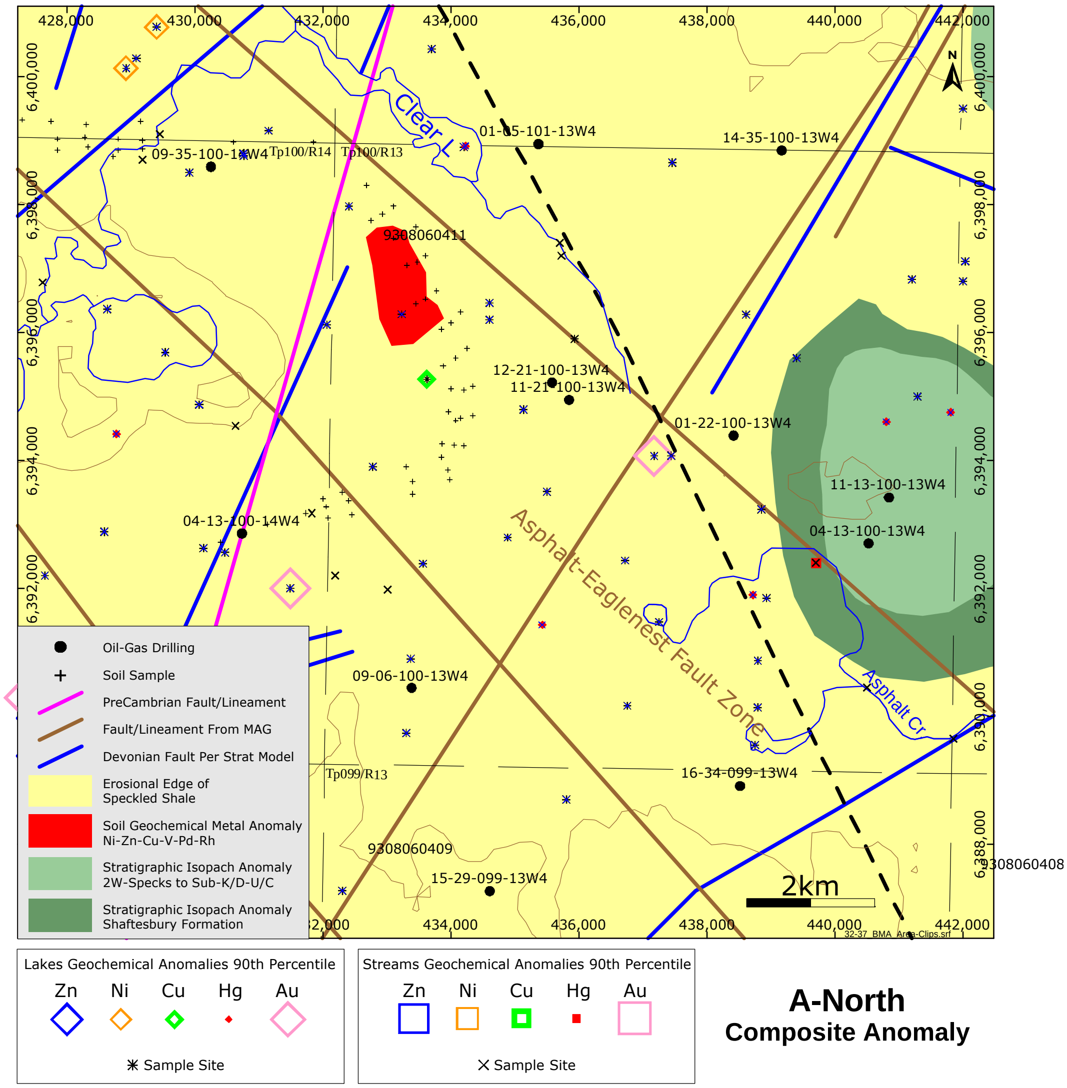


Figure 44: Summary of historic anomalies, Tintina composite anomalous area A-North, Birch Mountains. After Figure 35, Sabag 2008; and Drawing 97-B3, Alberta Mineral Assessment Report MIN9611, Sabag 1996a.

Tintina's examination of available drill core and cuttings from two oil-gas wells in the area (16-21-098-13W4 and 04-08-098-12W4) noted the presence of a 1ft thick pink band of very hard silicified sandstone within McMurray Formation immediately above the sub-Cretaceous unconformity in well 16-21-098-13W4. This sandstone, noted also in oil well core/cuttings from target area B-MID, is identical to the Beaver River Sandstone which is generally regarded as a hot springs alteration marker. Its presence in the Birch Mountains spatially associated also with stratigraphic thickening and with metal enrichment zones is considered diagnostic and suggestive of the localized presence of broad alteration zones overlying possible hot springs or other metal bearing fluid activity (fumeroles?).

EAGLENEST Composite Anomalous Area: The Eaglenest anomaly is located over Tintina's historic Eaglenest property. Principal anomalies over this area comprise geochemical anomalies which are coincident with, or proximal to, structural features in the area or the stratigraphic isopach anomaly located over its southern part. The stratigraphic subsurface model for the area indicates that it is underlain mainly by the Second White Specks Formation. This area is summarized in Figure 46.

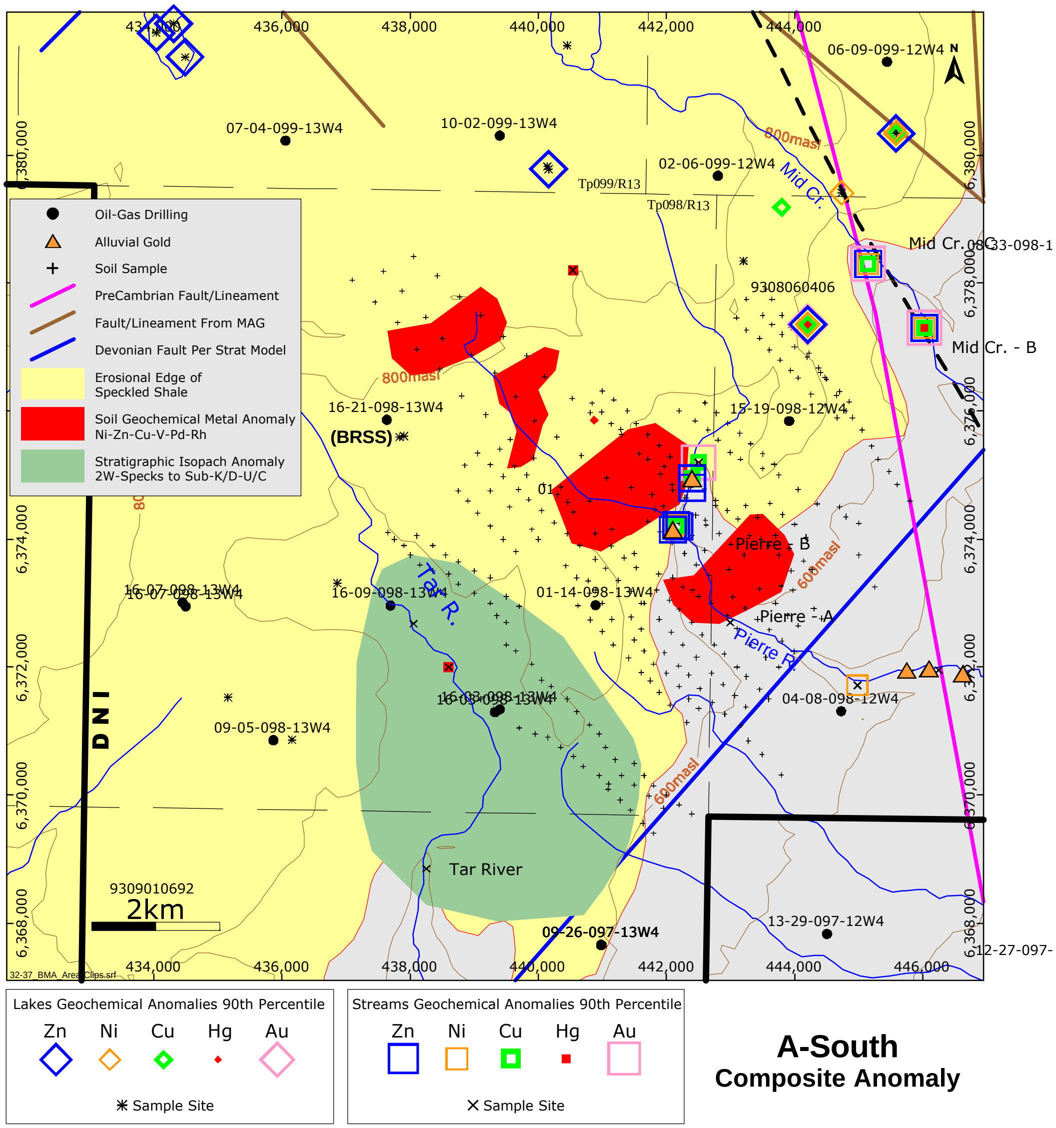


Figure 45: Summary of historic anomalies, Tintina composite anomalous area A-South, Birch Mountains. After Figure 36, Sabag 2008; and Drawing 97-B3, Alberta Mineral Assessment Report MIN9611, Sabag 1996a. BRSS=Beaver River Sandstone.

The Asphalt-Eaglenest fault zone crossing the Eaglenest area is characterized by many vertical offsets based on the stratigraphic model for the area, and is crossed by the northeasterly trending Eaglenest-Sand Lake fault zone, representing a 3km-5km wide zone of considerable subsurface disturbance. This is a significant fault junction adjacent to abnormal thickening of the Shaftesbury Formation reflected by the isopach for the base of Fishscales – base of Second White Specks. It is noteworthy that dacitic debris of likely local provenance has been incidentally identified in the vicinity of Clear Lake located to the southeast of Eaglenest Lake, immediately to the east of the area.

Definitive resolution of individual faults within the two fault zones has not been possible due to the many offsets noted in cross-sections from the area, though many of the interpreted vertical offsets correlate well with lake sediment geochemical anomalies dominated by Zn/Ni/Ag±Au, the majority of which are located on the flank of, or within, the Asphalt-Eaglenest fault zone.

Soil geochemical anomalies identified from localities overlying interpreted faults in T101/R15 (near Bayard Lake) are characterized by strong Zn diffusion anomalies, all of which are also accompanied by anomalous Pd/Rh, by subordinate Ni±Cu and by zones of Te enrichment. In contrast to the general predominance of Zn anomalies over the central and the southern portions of the area, its northernmost parts, near Michael Lake, are better characterized by anomalous Cu/Ni diffusion in soils overlying faulting, accompanied by subordinate Zn/Pd/Rh.

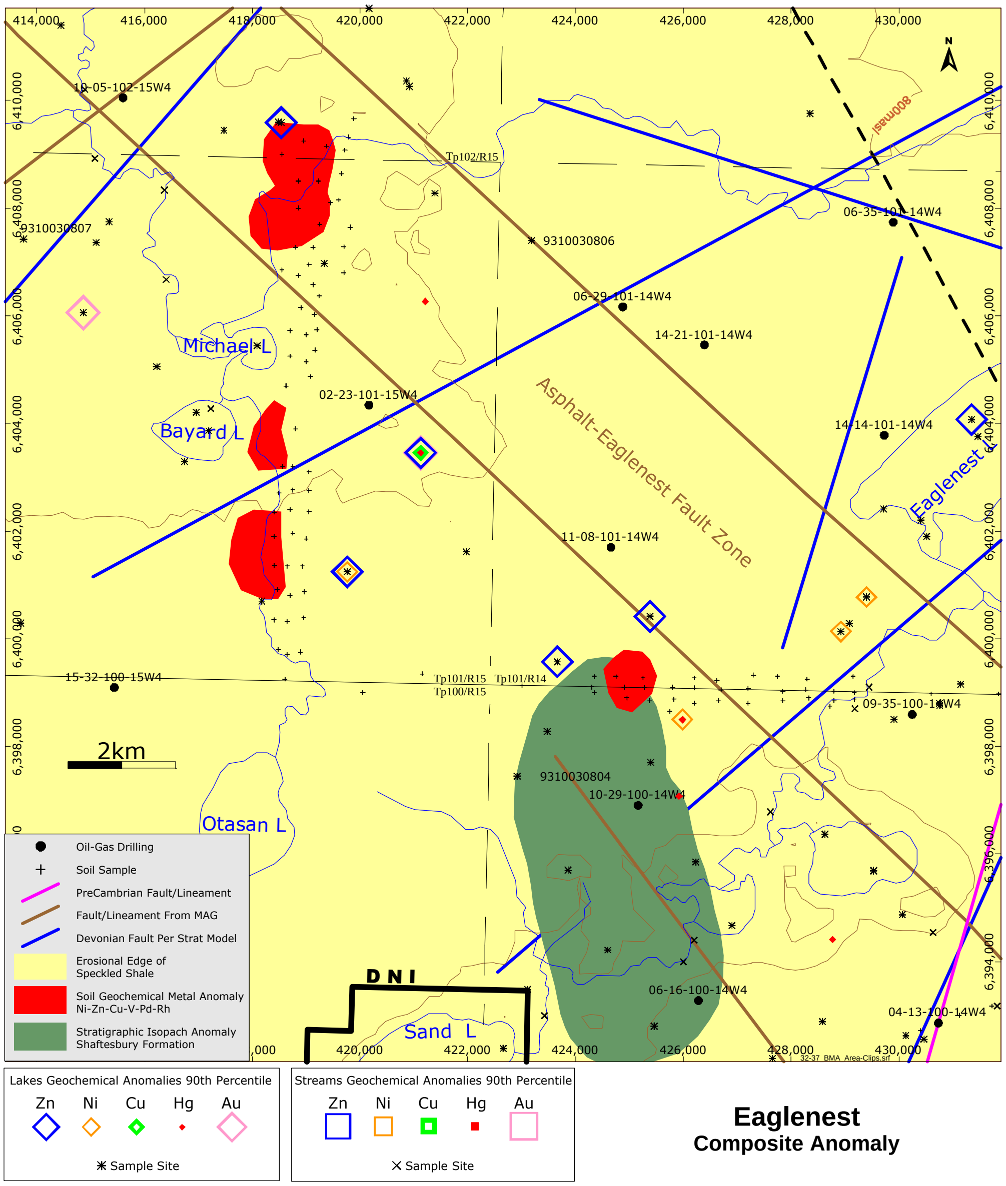


Figure 46: Summary of historic anomalies, Tintina Eaglenest composite anomalous area, Birch Mountains. After Figure 37, Sabag 2008; and Alberta Mineral Assessment Reports MIN9611 and MIN9612, Sabag 1996a and 1996c.

Composite Anomalous Area Ranking: Tintina ranked the above anomalies and prioritized the B-Mid and B-South targets, located over the central and southern portions of its historic Buckton Property, as the most prospective near-term drilling targets, characterized by a predominance of Ni/Cu enrichment over the former and of Zn over the latter. The ranking also similarly prioritized A-South, over the southern portion historic Asphalt Property, as a highly prospective target characterized predominantly by Zn enrichment accompanying native gold. The Eaglenest anomaly was not explored beyond the reconnaissance stage despite the many favourable anomalies identified.

The B-Mid and A-South target areas were subsequently drill tested in 1997, hence defining the Buckton and Asphalt Zones, both of which are discussed in greater detail in Section 8.9 of this Report.

Geological Working Model 1996: A geological working model was formulated for the Birch Mountains by Tintina in 1996[14], based on its surface work programs and composite anomalies identified, as a guideline for ongoing exploration of Cretaceous horizons in the area (Figure 47).

The working model was based on the following premises:

(i) that deep sourced pre-Prairie oxidizing metalliferous basinal fluids could leak into the Birch Mountains through the countless cross-structures intersecting the Prairie Evaporite salt scarp which is projected to cross the Mountains and underlie it;

(ii) that carbonaceous shales across the Birch Mountains, provide good redox interfaces as collectors of metals via redox processes from the oxidizing fluids seeping up from a source beneath the shales; and

(iii) that metal concentration in the Birch Mountains can be envisaged to be is controlled primarily by redox processes acting on metal bearing oxidizing fluids circulating through fault zones or fault junctions.

Possible (suspected) hot-springs or volcanogenic activity in the area was not incorporated into the model due to the scarcity of reliable spatially resolved information.

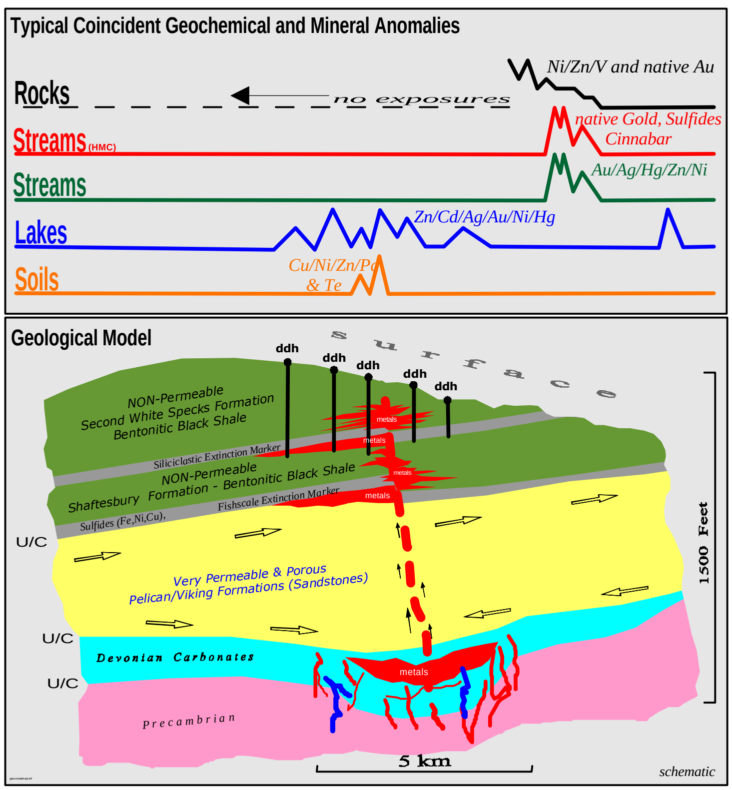


Figure 47: Geological model for metals enrichment, Birch Mountains. Showing typical geochemical and mineral anomaly profiles from historic multimedia surface sampling programs from areas over and near shale hosted metals enrichment zones. From Figure 23, MIN9802, Sabag 1998.

For the purposes of the Birch Mountains Model, stratigraphy of the area was regarded as a sedimentary package consisting of alternating permeable sequences (sandy – eg: Pelican sands) enveloped within impermeable horizons (carbonaceous – Speckled and Shaftesbury Shales).

The Model anticipated that metal bearing fluids would circulate upward within the permeable units and would precipitate their metal content against overlying carbonaceous contacts and in permeability traps created by a number of faults and domed locations identified in the course of stratigraphic correlations for the area.

Basinal dewatering was regarded as the source of metal rich fluids which would travel up-stratigraphy through the permeability breach created by dissolution of the Prairie Evaporite salt beds.

[14] Alberta Mineral Assessment Report MIN9611, Sabag 1996a.

Extrapolations from the model suggested that the lower contacts of the Second White Speckled Shales and Shaftesbury Shale Formations, the principal carbonaceous units in the area, present equally good redox interfaces for the accumulation of metals beneath their lower contacts and, accordingly, offer equally prospective exploration targets.

Tintina tested the proposed model by the drilling of a series of holes positioned to cross an anomalous locality and related faulting over each of the B-Mid (Buckton) and A-South (Asphalt) targets, to test beneath the base of the Second White Speckled Formation. This Formation is nearer the surface, and was regarded as an adequate proxy for any redox processes which might be active in the area and which would be expected to affect both Formations.

The drilling confirmed that the surface composite anomalies A-South and B-Mid indeed reflect buried metal mineralization in shales beneath the surface, over a 8km cross-section across the Buckton Zone at B-Mid and over a 900m cross-section across the Asphalt Zone at A-South. The drilling confirmed the presence of metal enrichment in the Second White Speckled Shale, but indicated that sections beneath its bottom contact are relatively unmineralized, contrary to the proposal of the geological working model formulated for the area.

The drilling, accordingly, disproved the model and demonstrated that the Second White Speckled Shale, and to a much lesser extent also the Shaftesbury Formation beneath it, is ***itself*** the primary host to the metals and related anomalies documented from both areas. The drilling and related downhole geology/geochemistry of the Asphalt and Buckton Zones are discussed in the next Section.

8.9 DOWNHOLE GEOLOGY & GEOCHEMISTRY - ASPHALT AND BUCKTON ZONES

The most definitive subsurface information from the Property is that documented from diamond drilling and coring completed by Tintina Mines in 1996-1997 to test the Asphalt and Buckton Zones. Drill core from the drilling program provides a reliable record of down-stratigraphic lithological, textural and geochemical variations across the Second White Speckled Shale Formation, and over limited sections of the overlying LaBiche Shale and underlying Shaftesbury Formation.

The geologic records provided by the drilling are an infinite improvement over the challenges faced during surface work due to extensive slumping at most exposures which, additionally, are often incomplete and rarely offer a complete lithosection across the Speckled Shale.

Dill core archived from the foregoing drilling archived at the MCRF, Edmonton, was reviewed and resampled by DNI in 2009-2010 as part of its historic sample verification program

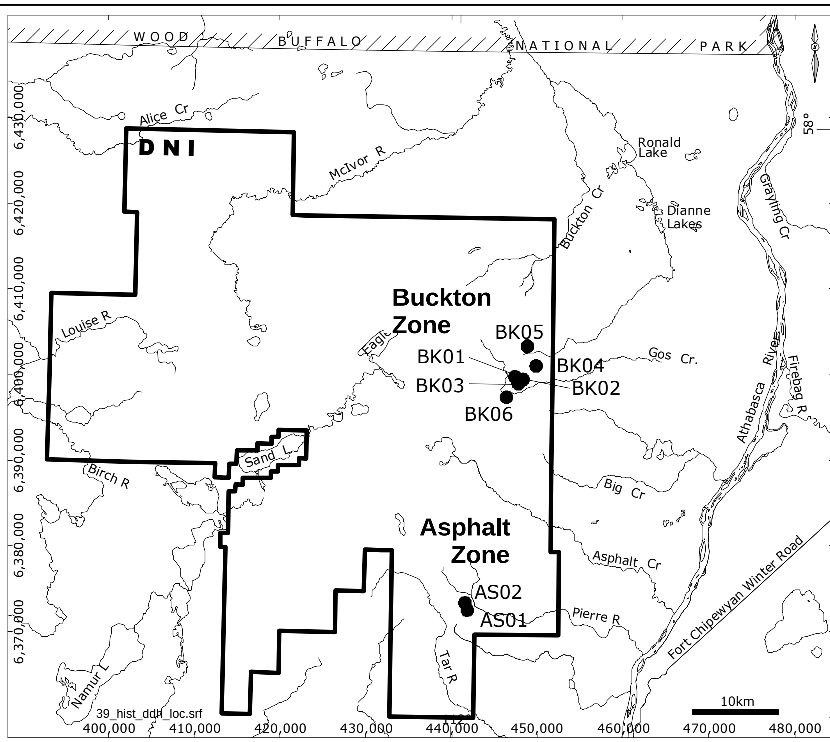


Figure 48: Historic Asphalt and Buckton drill programs location sketch, Alberta Mineral Assessment Report MIN9802, Sabag 1998.

(Section 11.4 of this Report).

Tintina carried out a 915.73m diamond drill program to test beneath the A-South and B-Mid composite anomalous areas, (Figure 48, see also Figure 38) to test what subsequently were recognized as the Asphalt and Buckton Zones, respectively.

Eight 3-inch diameter vertical holes were cored during Jan-Feb/97, to test suspected buried metal enrichment beneath the anomalies, based on Tintina's general geological working model.

The drilling confirmed the presence of metal enrichment in the Second White Speckled Shale and demonstrated that the Formation is ***itself*** the primary host to the metals and related anomalies documented from both areas, as sections beneath its bottom contact were found to be relatively unmineralized, contrary to the proposal of the geological working model formulated for the area.

Drill Hole Name	UTM East	UTM North	Collar Elev (masl)	Depth (m)	Elev Top 2WS (masl)	Elev Bottom 2WS (masl)	Thickness 2WS (m)	Section/Range Location
7BK01	447390	6399740	760	149.1	627.0	not int.	est 21.3	11-03-101-12W4
7BK02	448310	6399410	685	101.5	624.2	605.9	18.4	08-03-101-12W4
7BK03	447770	6398930	695	106.9	620.0	593.8	26.2	02-03-101-12W4
7BK04	449850	6401000	750	158.2	629.4	608.3	21.1	08-11-101-12W4
7BK05	448825	6403270	730	101.2	653.2	634.8	18.4	13-14-101-12W4
7BK06	446390	6397340	730	132.7	622.4	599.8	22.6	02-33-100-12W4
7AS01	441800	6372500	675	76.3	not int.	656.5	est 11.4	06-12-098-13W4
7AS02	441560	6373350	690	89.8	668.4	657.0	11.4	11-13-098-13W4

Table 5: Summary of historic drill holes, Asphalt and Buckton Properties 1997 drilling. Showing elevation and thickness of the Second White Specks Formation (2WS). Buckton hole BK01 did not reach bottom contact of the Formation, a total thickness is estimated to be 21.3m based on projections from adjacent holes. Asphalt hole AS01 collared in Speckled Shale, total thickness estimated to be 11.4 based on projections from adjacent hole. After Table 3, Sabag 2008; and Alberta Mineral Assessment Report MIN9802, Sabag 1998.

Drill holes were positioned to collect complete sections of the Second White Specks Formation from its upper contact to its base, to also core sufficient sections beneath the base to test for proposed metal accumulations.

Drilling was partly constrained by access, topography, and scheduling, and by the permitting limitations of a maximum hole depth of 150m below which full blow-out prevention equipment would have been required per regulations. Accordingly, only 8 of 17 planned holes were completed, the balance being omitted due to demanding access (portions of the Buckton Zone) or due to inappropriate elevation (Asphalt - Speckled Shale target encountered nearer surface than anticipated). Details of the drill program are presented in Section 6.2.12 of DNI's NI-43-101 report appended herein as Appendix B1.

The program was completed during Feb/1997, its implementation and core logging/sampling subcontracted to Apex Geoscience. Core logging and sampling were completed by Mr.M.Dufresne. The entire footage drilled was sampled and one half-split of the core was analyzed and the other half archived[15].

Core recoveries ranged to above 90%, and the core was typically sampled in 1.5m intervals though mostly under geological control with certain intervals measuring considerably smaller to enable characterization of specific thin section (eg: bentonites). In addition to above routine analyses, various suites of samples were combined into thematic composites for specific work. Drill hole details are summarized in Table 5, showing also intercepts of the Second White Speckled Shale Formation footages.

A summary of the drilling particulars are as follows:

> **Buckton Zone**: a total of 749.63m in six vertical holes were cored (of 10 planned) across the Buckton Zone, collared along an 8km long fence as a cross-section across the southeast flank of

the 5kmx8km B-Mid composite anomaly, to test beneath its eastern one third (Figure 49). Four of the holes (BK06, BK01, BK04 and BK05) were spaced approximately 2km-2.4km apart, whereas the remaining two holes (BK02 and BK03) were collared within approximately 700m radius of hole BK01 to assess local variations.

The drill fence consists of two separate parallel 4km to 5km long "staggered" cross-sections 1km-2km apart, which also radially parallel Gos Creek and its valley walls 1km-2km to the southeast. The fence is regarded as a cross-section for the purposes of this Report. Drill hole cross section is presented in Figure 51, in addition to a summary downhole stratigraphy of the principal sub-Formational units. Combined downhole lithogeochemistry for all of the holes combined is presented in Figure 52 juxtaposed against downhole stratigraphy.

Hole depths varied 75m-100m to probe from surface (~700m-750m asl) down to the base of the Second White Specks Formation (~600m-630m asl). All holes reached their targets, except hole BK01 which was collared too high to reach the bottom contact of the Second White Speckled Shale (The Formation in Drill hole BK01 is 16.12m thick but is estimated to be 21.3m thick based on projections from adjacent holes.

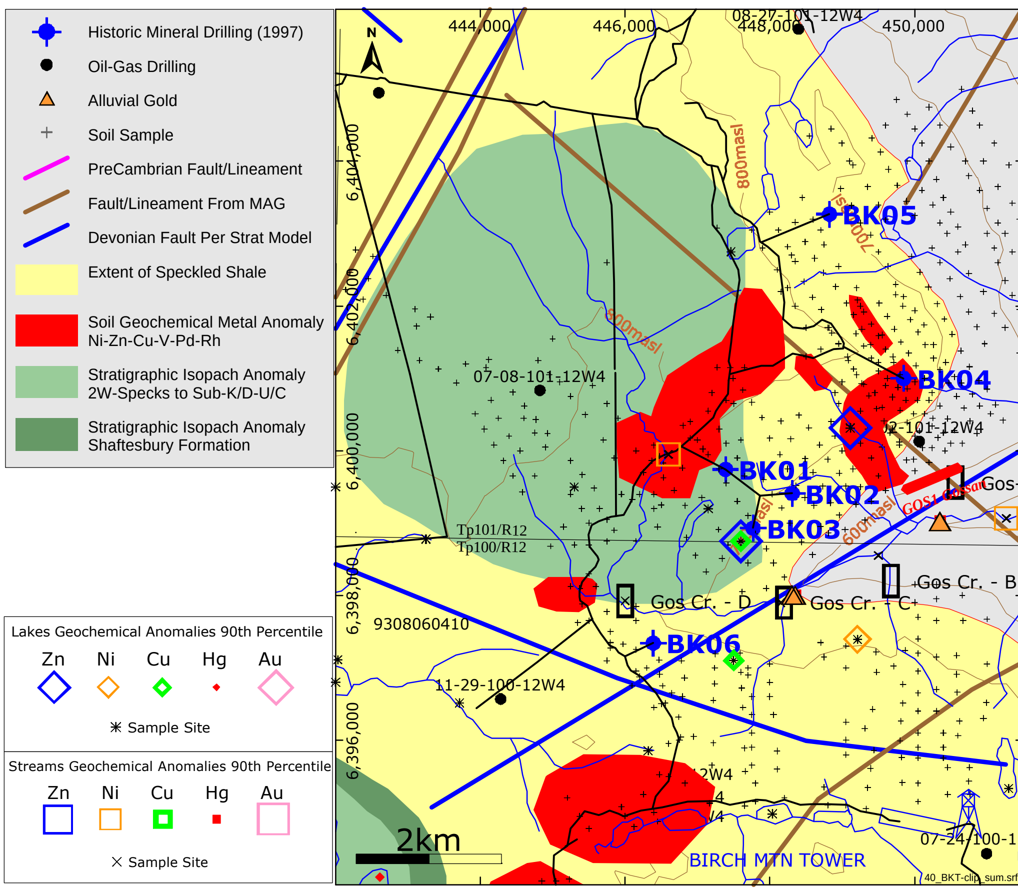


Figure 49: Historic drilling drill hole location sketch, Buckton Zone (Composite Anomaly B-Mid), Tintina Drill Program 1997. After Figure 40, Sabag 2008; and Alberta Mineral Assessment Report MIN9802, Sabag 1998.

Asphalt Zone: A total of 166.10m were drilled in two vertical holes (of 7 planned) over the Asphalt Zone, over the eastern part of the A-South composite anomaly (Figure 50). The two

[15] Subsequently delivered to the Alberta Mineral and Core Research Facility for archiving.

holes were spaced 900m apart and both holes reached their targets. The drill holes cross section is presented in Figure 51, in addition to a summary downhole stratigraphy of the principal sub-Formational units.

The Second White Speckled Shale Formation was encountered approximately 40m-50m higher than expected based on interpretations from the subsurface stratigraphic database for the area. As a result, drill hole AS01 collared directly in the upper contact of the Formation and cored its lower sections. The upper contact of the Formation in hole AS01 is in casing and only 7.2m were cored compared to 11.4m cored in hole AS02 (Second White Speckled Shale Formation in AS01 is estimated to be 11.4m thick based on the adjacent hole AS02).

In addition, material similar to the Second White Speckled Shale and related bentonites, were noted 5m-10m below its base in the Belle Fourche (Shaftesbury) Formation beneath it. This repetition was attributed to block movement in the area or equally likely galcio-tectonic thrusting. The holes are located at, or very near, the erosional edge of the Birch Mountains in a complex zone of faults and valley slumps.

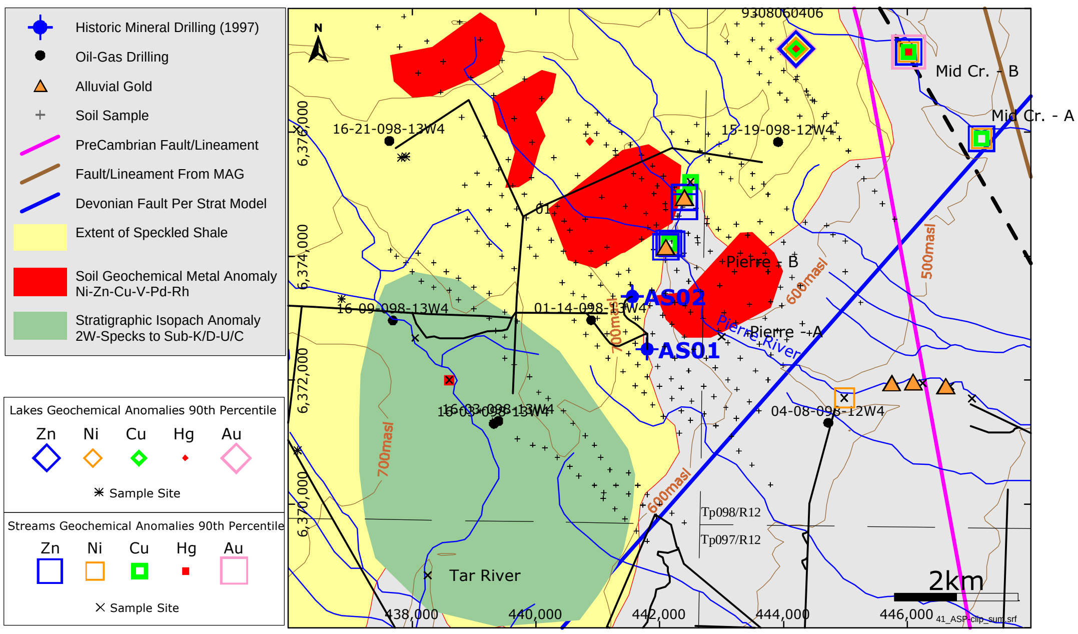


Figure 50: Historic drill hole location sketch, Asphalt Zone (historic Composite Anomaly A-South), Tintina drill program 1997. After Figure 41, Sabag 2008; and Alberta Mineral Assessment Report MIN9802, Sabag 1998.

Analytical data for select metals and elements for all drill core intercepts of the Second White Speckled Shale Formation are summarized in Table 6, which also shows comparative data from other black shales from elsewhere in the world. Of note, are data from Talvivaara black schists, Finland, which host polymetallic deposits one of which commenced production in 2008 and represents the first ever black shale hosted polymetallic deposit reaching production relying on bulk mining and bulk bio-heapleaching. The Talvivaara schist, a metamorphosed black shale, provides a good analogue to the Alberta black shales, and its mining operations offer a realistic template for what might be achieved in Alberta. This is presented in greater detail in Section 9.4.1 of this Report.

Averages for formational lithogeochemistry are summarized in Table 7 for the LaBiche Formation, Second White Speckled Shale Formation and the Shaftesbury Formation.

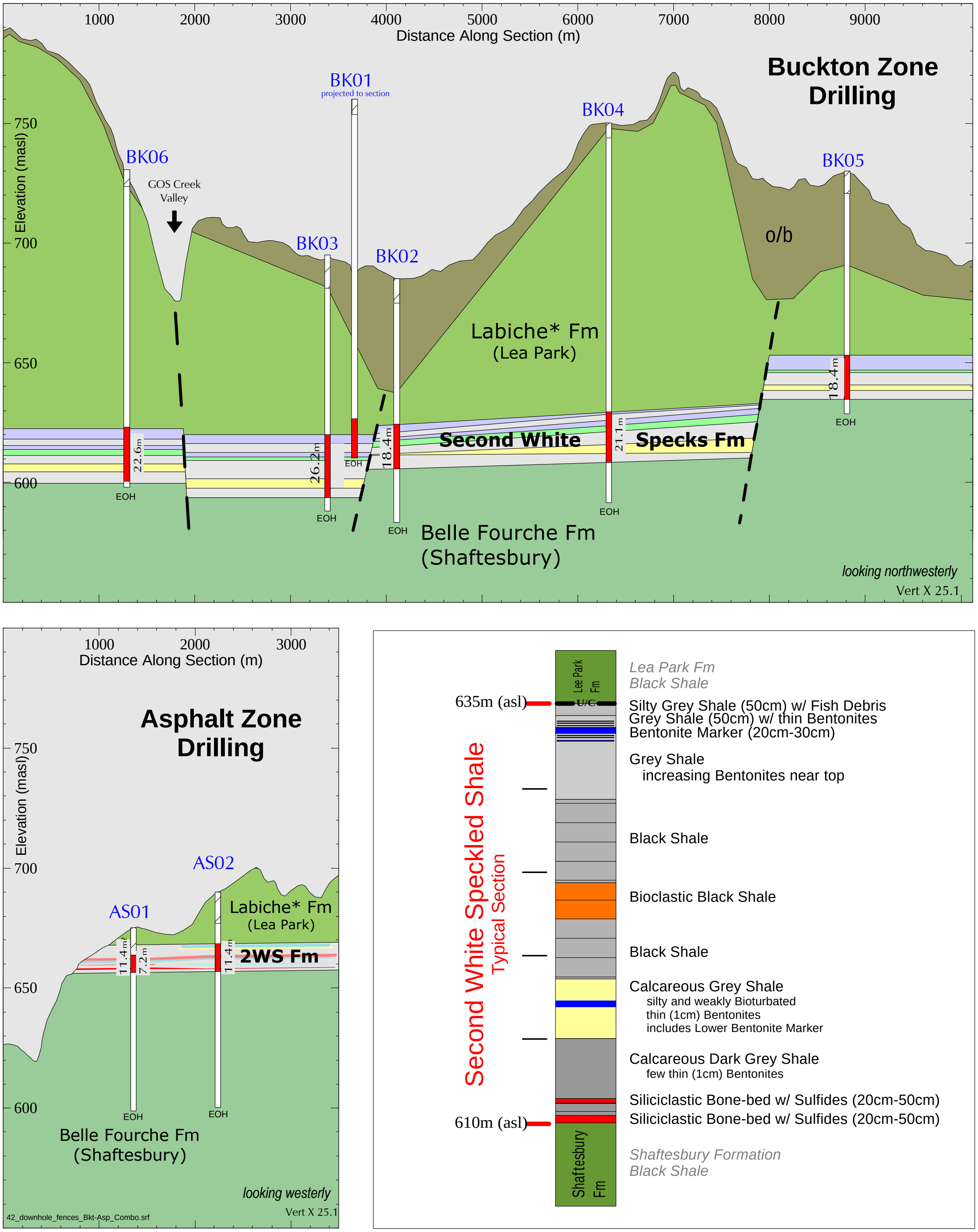


Figure 51: Drill cross-sections, historic drilling Asphalt and Buckton Zones. After Figure 42, Sabag 2008; and Figures 16a and 16b, Alberta Mineral Assessment Report MIN9928, Sabag 1998. Type stratigraphic column for the Second White Speckled Shale also shown.

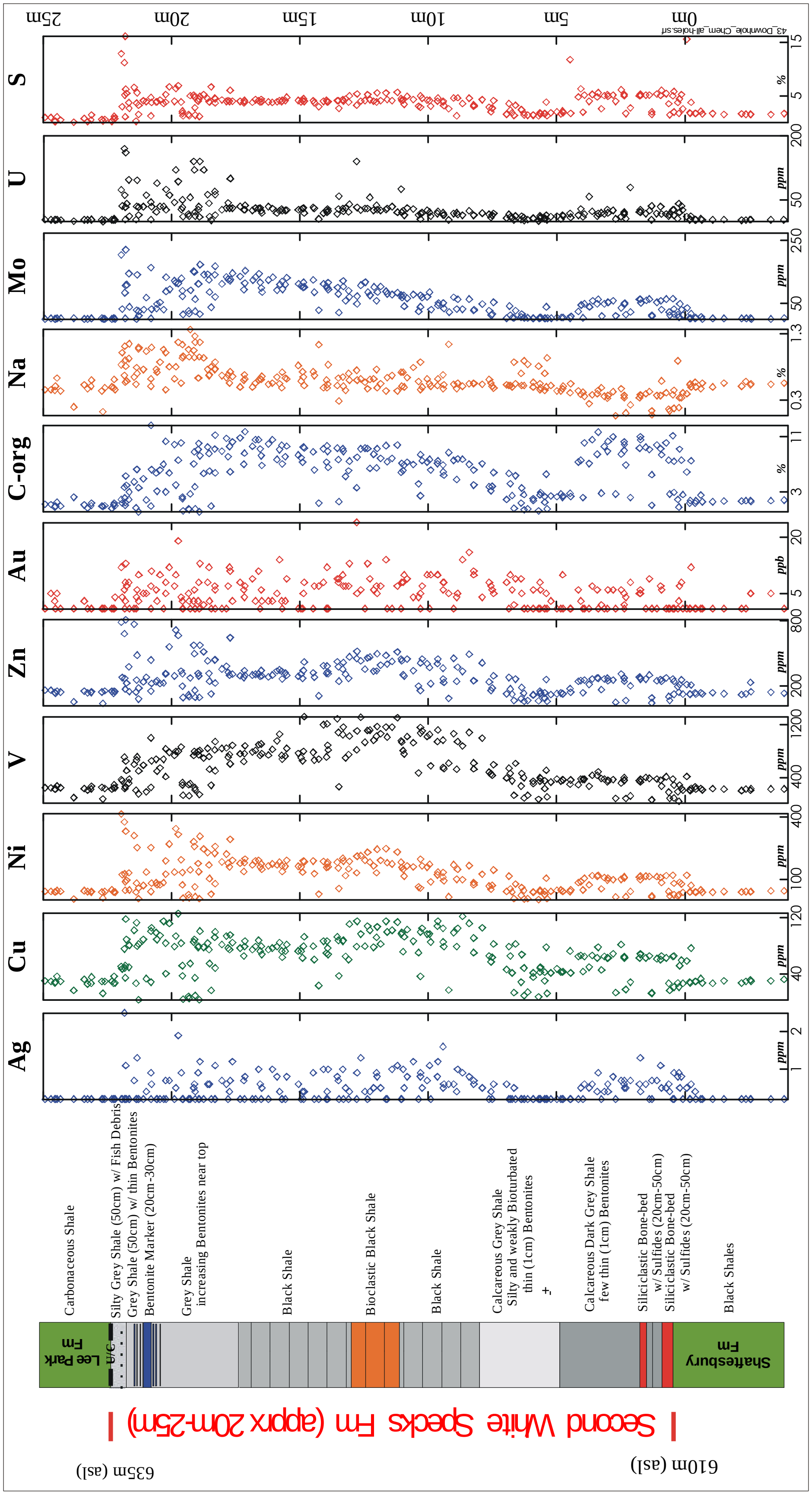


Figure 52: Composite downhole lithogeochemistry, all historic drilling, Asphalt and Buckton Zones. After Figure 43, Sabag 2008; and data from Alberta Mineral Assessment Report MIN9802, Sabag 1998. Data normalized to constant formational thickness for plotting purposes.

Sample No.	From (m)	To (m)	Length (m)	Rock Type	Ag ICP ppm	Au FA ppb	Au INA ppb	Ba INA ppm	C-org Leco %	Ca ICP %	Cd ICP ppm	Co INA ppm	Cu ICP ppm	Fe INA %	Mo ICP ppm	Na INA %	Ni ICP ppm	S Leco %	U INA ppm	V ICP ppm	Zn ICP ppm
7BK0113298	627.02	626.84	0.18	2shgsu	0.2	11	3	7800	3.1	5.1	6.0	25	89	3.8	48	0.72	75	4.0	89	495	249
7BK0113316	626.84	626.79	0.05	2shgsu	0.2	10	10	8100	6.1	2.0	5.6	20	95	4.8	53	0.87	75	4.3	36	543	221
lc	626.79	626.10	0.69																		
7BK0113390	626.10	625.83	0.27	2shrbnsu	0.2	6	1	9600	2.0	3.3	3.5	10	38	4.4	73	1.13	75	1.8	33	286	197
7BK0113417	625.83	625.65	0.18	2bnlsu	0.2	3	5	710	0.5	1.3	1.2	3	9	1.6	26	1.06	30	1.6	18	291	113
7BK0113435	625.65	625.44	0.21	2shrbnsu	0.5	9	3	5000	7.0	5.0	14.9	35	86	5.4	152	1.05	281	5.2	140	729	574
7BK0113456	625.44	624.60	0.84	2shrbnsu	0.6	6	8	2600	9.5	5.5	12.2	25	84	4.1	143	0.76	229	4.6	63	835	429
7BK0113540	624.60	623.72	0.88	2shrbnsu	0.7	6	11	7200	5.9	6.5	15.7	38	96	5.9	126	0.73	293	6.1	100	606	642
7BK0113628	623.72	622.72	1.00	2shrca	0.2	9	3	1200	10.5	7.9	8.9	20	79	3.5	133	0.56	190	4.3	32	809	303
7BK0113728	622.72	621.72	1.00	2shrcabn	0.2	5	3	1000	9.7	10.2	9.7	18	73	3.5	120	0.49	169	4.0	30	730	333
7BK0113828	621.72	621.07	0.65	2shrcabn	0.2	5	5	1500	9.5	5.5	10.6	21	80	4.1	117	0.65	191	4.5	32	797	341
7BK0113893	621.07	619.98	1.09	2shrbnlfd	0.2	6	1	930	7.3	5.0	9.0	17	70	3.7	105	0.60	159	4.2	26	711	316
7BK0114002	619.98	619.40	0.58	2shrbnfd	0.2	2	7	1100	6.0	5.0	8.1	16	61	3.5	90	0.70	152	3.9	23	746	268
7BK0114060	619.40	618.75	0.65	2shrbc	0.4	6	1	1300	9.3	6.9	12.1	21	80	4.0	118	0.57	194	4.2	31	929	351
7BK0114125	618.75	618.22	0.53	2shrbc	0.5	5	7	960	7.8	8.4	13.8	22	83	4.0	104	0.55	192	4.2	26	1063	390
7BK0114178	618.22	617.22	1.00	2shrcabn	0.2	7	1	3100	5.8	6.3	15.0	22	97	4.3	77	0.72	184	4.6	76	955	448
7BK0114278	617.22	616.22	1.00	2shrcabnfd	0.7	6	10	950	7.3	5.5	14.7	23	97	3.9	72	0.62	160	4.3	26	1020	404
7BK0114378	616.22	615.22	1.00	2shrcabn	0.6	6	1	590	7.5	3.9	16.5	22	99	4.3	70	0.54	172	4.7	19	1065	454
7BK0114478	615.22	614.10	1.12	2shrcabn	0.5	7	4	610	7.1	2.9	15.3	19	106	4.2	48	0.54	126	4.3	20	995	412
7BK0114590	614.10	612.70	1.40	2shrszbnfdgl	0.2	7	9	780	5.3	2.4	6.9	15	83	3.4	27	0.55	79	3.3	14	612	262
7BK0114824	612.70	611.76	0.94	2shrszbnfdgl	0.2	6	5	720	5.5	3.0	5.2	20	78	3.7	39	0.50	107	3.9	15	509	258
7BK0206078	624.22	623.87	0.35	2shb	1.1	10	13	13000	5.3	6.5	23.5	55	118	8.0	108	0.81	331	6.3	160	648	810
7BK0206113	623.87	623.54	0.33	2shb	0.2	2	1	1600	0.6	0.5	0.3	15	27	3.8	1	0.54	41	0.3	5	205	143
7BK0206146	623.54	623.22	0.32	2shbbnsu	0.4	2	5	22000	1.8	8.3	5.2	22	34	4.4	69	1.03	137	4.0	62	181	279
7BK0206178	623.22	622.26	0.96	2shbbnsu	0.2	4	8	12000	3.0	2.8	6.3	20	41	5.9	88	1.01	127	5.3	75	412	307
7BK0206274	622.26	622.10	0.16	2shbbnsu	0.2	1	1	840	0.2	1.4	0.8	3	5	1.6	15	0.96	12	1.3	12	132	92
7BK0206290	622.10	621.52	0.58	2shbbn	0.6	6	6	4800	8.8	4.0	14.5	37	89	5.5	150	0.94	258	4.8	120	792	497
7BK0206348	621.52	621.15	0.37	2shbbnsu	0.6	9	12	1900	8.5	5.8	9.3	21	75	4.1	125	0.67	170	4.0	43	714	315
7BK0206385	621.15	620.17	0.98	2shbbnfd	0.4	5	12	1100	9.5	8.4	8.9	21	75	4.3	121	0.56	161	4.0	32	749	297
7BK0206483	620.17	619.17	1.00	2shbbnfd	0.6	4	1	1700	9.2	9.1	8.7	22	73	4.1	117	0.62	160	4.0	32	730	285
7BK0206583	619.17	618.73	0.44	2shbcabn	0.2	6	1	1200	7.0	4.5	7.4	17	64	4.4	95	0.72	139	4.2	25	678	264
7BK0206627	618.73	617.82	0.91	2shbca	0.4	3	1	1300	7.2	5.9	7.3	18	63	4.2	101	0.73	136	4.1	31	649	268
7BK0206718	617.82	617.70	0.12	2shbcabn	0.2	2	7	590	1.3	1.4	2.9	7	24	3.5	29	1.13	31	3.0	7	678	105
7BK0206730	617.70	616.55	1.15	2shbcacc	0.7		8	900	7.6	5.7	15.2	20	88	4.3	80	0.63	156	4.2	30	1083	375
7BK0206845	616.55	615.39	1.16	2shbcabn	0.5	3	6	1100	8.4	6.1	12.0	23	78	4.7	103	0.62	166	4.1	26	964	333
7BK0206961	615.39	614.38	1.01	2shbcafd	0.8	6	9	1100	7.3	3.9	16.0	27	103	5.5	66	0.64	166	5.0	32	1019	447
7BK0207062	614.38	613.37	1.01	2shbcafd	1.2	7	10	780	7.5	3.4	16.5	25	115	5.2	52	0.62	137	4.7	24	1119	445
7BK0207163	613.37	612.37	1.00	2shbcafd	0.8	5	16	680	7.0	4.5	16.3	28	112	5.5	64	0.55	167	4.6	25	1081	490
7BK0207263	612.37	612.07	0.30	2shbcafdbn	0.2	4	8	880	3.7	4.9	5.2	15	66	3.8	27	0.61	69	3.0	17	481	235
7BK0207293	612.07	611.06	1.01	2shbszbn	0.2	6	1	770	5.6	3.7	5.2	23	79	4.6	42	0.52	116	3.6	17	541	276
7BK0207394	611.06	610.06	1.00	2shbsz	0.2	4	8	1100	2.5	1.2	1.0	13	49	3.5	6	0.55	49	1.9	14	395	151
7BK0207494	610.06	609.06	1.00	2shbsz	0.2	6	1	1000	2.3	1.2	0.7	12	42	3.1	9	0.55	51	1.8	10	364	140
7BK0207594	609.06	608.06	1.00	2shbsz	0.2	2	2	1300	2.8	2.8	0.3	20	46	3.7	10	0.49	57	2.7	21	382	164
7BK0207694	608.06	607.78	0.28	2sbb	0.7	4	6	710	8.4	1.8	3.4	30	82	7.9	36	0.47	102	6.2	12	317	308
7BK0207722	607.78	607.45	0.33	2sbbsh	0.7	4	8	1000	2.2	13.9	2.7	9	29	2.9	23	0.23	44	2.8	80	117	200
7BK0207755	607.45	606.56	0.89	2shbcafd	0.2	2	9	680	9.1	4.5	3.3	26	66	5.9	64	0.43	115	5.2	25	386	299
7BK0207844	606.56	605.85	0.71	2sbb	0.2	2	1	530	2.9	28.1	1.8	8	22	2.1	16	0.18	29	2.0	28	89	120

Table 6: Select analytical data, Buckton and Asphalt Zones historic drilling. After Alberta Mineral Assessment Report MIN9802, Sabag 1998. (Continued next page) Comparative data from select other black shales also shown (at end of table). After Table 4, Sabag 2008.

Sample No.	From (m)	To (m)	Length (m)	Rock Type	Ag ICP ppm	Au FA ppb	Au INA ppb	Ba INA ppm	C-org Leco %	Ca ICP %	Cd ICP ppm	Co INA ppm	Cu ICP ppm	Fe INA %	Mo ICP ppm	Na INA %	Ni ICP ppm	S Leco %	U INA ppm	V ICP ppm	Zn ICP ppm
7BK0307503	619.97	619.38	0.59	2shbsssu	0.2	5	7	4000	3.9	2.3	3.1	28	89	6.1	109	0.59	97	5.5	42	505	223
7BK0307562	619.38	619.04	0.34	2shbsufd	0.2	8	4	7600	6.2	2.1	5.6	20	113	4.6	29	0.79	83	3.7	36	666	252
7BK0307596	619.04	618.75	0.29	2shsu	0.2	7	5	7700	4.9	3.3	5.4	17	89	4.2	31	0.76	73	4.1	35	588	236
7BK0307625	618.75	617.84	0.91	2shbbnfd	0.2	9	6	6800	5.7	1.6	5.4	18	99	4.5	34	0.76	85	3.9	23	676	236
7BK0307716	617.84	617.53	0.31	2shbbnfd	0.7	9	12	14000	5.7	2.9	18.7	38	112	6.3	95	0.80	270	6.7	62	781	558
7BK0307747	617.53	617.26	0.27	2shrbnsu	0.5	8	10	9200	4.0	4.1	18.7	47	94	7.8	116	0.80	344	6.5	120	793	713
7BK0307774	617.26	616.90	0.36	2shbbnsufd	0.2	6	3	12000	2.2	4.7	5.7	19	52	5.0	90	0.93	134	2.2	51	322	312
7BK0307810	616.90	616.65	0.25	2shbbnfd	0.2	1	3	470	0.4	1.3	0.6	2	6	1.4	18	0.95	14	1.4	14	123	96
7BK0307835	616.65	616.37	0.28	2shbbnfd	0.2	1	1	7300	3.7	4.8	3.8	10	35	3.0	64	1.26	66	2.9	23	246	157
7BK0307863	616.37	616.23	0.14	2shbbnfd	0.2	1	1	410	0.1	1.1	0.3	1	4	1.3	16	0.95	9	1.2	11	145	93
7BK0307877	616.23	615.95	0.28	2shgszbnsu	0.2	5	2	5200	5.6	4.3	13.0	29	78	5.6	142	0.93	246	5.3	120	691	514
7BK0307905	615.95	615.24	0.71	2shgsu	0.2	6	7	3600	9.2	4.6	12.2	30	92	4.8	141	0.76	226	4.7	70	818	438
7BK0307976	615.24	614.69	0.55	2shgsu	0.2	7	7	2200	8.1	6.0	9.4	21	77	4.0	127	0.68	178	4.2	44	712	322
7BK0308031	614.69	614.14	0.55	2shgsu	0.2	4	8	1400	10.8	8.5	8.4	21	77	3.7	136	0.50	178	4.1	36	760	291
7BK0308086	614.14	613.50	0.64	2shgcasu	0.2	6	9	830	9.6	8.0	8.4	18	75	3.6	124	0.50	170	3.8	26	785	297
7BK0308150	613.50	612.70	0.80	2shgcasu	0.2	4	3	1400	9.9	9.2	7.7	21	75	4.2	124	0.54	166	3.9	35	737	282
7BK0308230	612.70	611.94	0.76	2shgcabnsu	0.2	1	3	1200	8.1	4.6	9.2	19	73	4.2	110	0.63	163	4.2	26	724	320
7BK0308306	611.94	611.23	0.71	2shgcabnsu	0.2	4	1	1300	7.9	4.7	8.5	20	73	4.1	106	0.59	160	3.9	28	701	306
7BK0308377	611.23	610.69	0.54	2shgcabnsu	0.2	4	7	1200	6.1	5.5	8.4	18	61	4.2	85	0.67	129	3.7	31	664	279
7BK0308431	610.69	610.00	0.69	2shbbcsu	0.2	3	1	1200	8.9	6.8	10.6	21	77	4.3	116	0.54	182	4.0	30	887	328
7BK0308500	610.00	609.24	0.76	2shbbcsu	0.2	6	7	860	8.9	5.5	15.4	22	88	4.3	104	0.51	190	4.1	24	1162	415
7BK0308576	609.24	608.75	0.49	2shbbcsu	0.2	4	24	1900	3.6	9.3	16.6	20	79	3.3	49	0.75	133	3.3	140	816	452
7BK0308625	608.75	608.00	0.75	2shbbcsu	0.4	4	9	1500	6.4	5.9	16.8	23	102	4.3	76	0.61	184	4.3	56	1117	465
7BK0308700	608.00	607.17	0.83	2shbbcsu	0.2	4	1	1500	7.3	5.2	13.0	27	100	5.1	81	0.64	180	4.4	31	1013	399
7BK0308783	607.17	606.64	0.53	2shbbcsu	0.2	5	8	740	7.1	5.4	16.2	22	99	4.4	69	0.51	159	4.2	22	932	428
7BK0308868	606.32	605.61	0.71	2shbbcsu	0.5	6	7	750	7.5	4.1	17.4	24	105	4.6	69	0.50	166	4.6	21	1104	449
7BK0308939	605.61	604.88	0.73	2shbbcsu	0.8	5	10	920	7.1	2.8	14.6	20	108	4.5	44	0.52	124	4.1	19	945	404
lc	604.88	604.19	0.69																		
7BK0309081	604.19	603.97	0.22	2shbbcsu	0.9	7	14	790	7.7	1.8	9.6	17	122	4.1	32	0.51	100	3.6	15	877	332
7BK0309103	603.97	603.15	0.82	2shbbcsu	0.6	4	10	840	4.0	3.5	5.7	17	71	3.9	31	0.55	85	3.4	15	528	247
lc	603.15	601.64	1.51																		
7BK0309336	601.64	601.03	0.61	2shsz	0.2	4	5	1700	3.5	1.6	2.7	13	68	3.4	16	0.52	63	2.5	13	462	185
7BK0309397	601.03	600.57	0.46	2shsz	0.2	1	6	870	1.7	0.8	0.7	12	36	2.9	3	0.57	39	1.6	8	306	116
7BK0309443	600.57	600.53	0.04	2shszbn	0.2	1	1	360	0.2	1.1	0.3	2	8	1.4	3	0.81	5	1.3	2	69	60
7BK0309447	600.53	600.00	0.53	2shgsz	0.2	1	1	1100	2.3	0.8	0.3	11	43	2.8	2	0.45	45	1.7	9	350	134
7BK0309500	600.00	599.00	1.00	2shgsz	0.2	1	1	860	2.7	1.0	0.5	11	43	2.7	6	0.44	50	1.7	7	347	134
7BK0309600	599.00	598.00	1.00	2shgsz	0.2	2	1	1100	2.2	1.4	0.3	13	44	3.0	4	0.42	50	2.0	11	372	136
7BK0309700	598.00	597.65	0.35	2shgsz	0.4	2	6	680	8.4	1.3	3.2	19	63	4.5	49	0.40	116	4.8	13	431	272
7BK0309735	597.65	597.03	0.62	2shb	0.6	1	1	650	8.8	6.8	3.6	20	63	5.1	54	0.33	99	5.3	29	331	270
7BK0309797	597.03	596.91	0.12	2sbb	0.2	10	1	140	2.6	35.5	0.7	5	14	3.9	11	0.07	17	4.0	7	81	47
7BK0309809	596.91	596.22	0.69	2shb	0.7	4	2	640	9.0	6.7	3.4	22	64	5.1	51	0.34	109	5.0	23	354	272
7BK0309878	596.22	595.52	0.70	2shb	0.6	5	5	680	9.3	4.6	3.1	24	63	5.3	63	0.34	114	5.1	23	349	280
7BK0309948	595.52	595.07	0.45	2sbb	0.7	4	1	710	1.1	25.4	1.1	5	14	1.6	10	0.14	21	1.7	37	64	87
7BK0309993	595.07	594.62	0.45	2shbfd	0.5	6	6	790	8.3	1.4	3.2	27	66	7.9	31	0.59	86	6.1	18	271	240
7BK0310038	594.62	594.32	0.30	2sbb	0.4	1	1	240	2.6	33.7	1.1	6	17	1.6	12	0.14	22	1.6	17	80	62
7BK0310068	594.32	593.77	0.55	2sbb	0.9	7	3	840	0.7	12.8	2.6	7	22	2.1	7	0.19	29	1.8	42	41	139
7BK0412060	629.40	629.33	0.07	2shbsuszglbn	0.2	4	12	31000	1.9	2.4	23.7	180	51	11.4	205	0.83	414	12.9	74	370	787
7BK0412067	629.33	629.14	0.19	2shbszsubn	0.2	4	1	27000	2.1	1.6	6.2	22	49	5.7	84	1.11	128	5.2	62	230	268
7BK0412086	629.14	629.01	0.13	2shbbn	0.2	2	8	20000	1.9	2.7	8.0	20	50	6.2	145	0.92	133	3.7	97	316	377
7BK0412099	629.01	628.76	0.25	2shb	0.7	9	1	6700	4.4	11.9	24.3	42	102	8.5	316	0.65	310	6.6	260	599	767
7BK0412124	628.76	628.67	0.09	2bnlsu	0.2	1	3	1300	0.1	1.2	0.5	1	4	1.8	11	1.07	9	1.6	16	154	78
7BK0412216	627.84	626.93	0.91	2shbcasugl	0.2	2	7	1400	9.8	7.9	10.3	24	79	4.7	122	0.62	137	4.1	45	734	289
7BK0412307	626.93	626.02	0.91	2shbcasubngl	0.2	4	8	2100	10.0	6.1	10.5	25	80	4.9	112	0.63	138	4.5	35	740	289
7BK0412398	626.02	625.72	0.30	2shgbnlsu	0.2	1	1	1000	5.7	3.0	7.4	15	49	4.1	72	0.77	81	3.7	16	502	223
7BK0412428	625.72	625.16	0.56	2shgbnl	0.6	2	1	2000	10.7	5.7	12.6	27	94	4.7	135	0.64	223	4.0	32	845	381
7BK0412484	625.16	624.38	0.78	2shgbnlsu	0.2	3	4	1500	8.6	4.8	11.2	22	79	4.5	115	0.68	180	4.2	28	763	338
7BK0412562	624.38	623.92	0.46	2shgbnl	0.2	5	6	1300	8.2	6.0	13.4	23	80	4.9	99	0.61	176	4.4	25	906	339
7BK0412608	623.92	623.00	0.92	2shbcabcsu	0.4	5	14	880	9.1	6.2	14.3	22	85	4.6	111	0.55	183	4.2	25	1055	347
7BK0412700	623.00	622.08	0.92	2shbcabcsu	0.4	6	8	890	9.3	5.9	19.3	23	93	4.4	103	0.52	187	4.0	21	1322	419
7BK0412792	622.08	621.30	0.78	2shbcabcsu	0.4	8	12	800	9.6	7.2	18.2	22	87	4.2	99	0.49	175	4.0	22	1212	383
7BK0412870	621.30	621.19	0.11	2shbcabcsugl	0.2	3	9	1200	1.6	33.4	9.2	10	38	2.7	21	0.29	59	2.8	59	263	241
7BK0412881	621.19	620.51	0.68	2shgszsu	0.4	4	13	1100	7.4	5.5	17.5	32	111	6.1	71	0.60	188	5.1	41	1025	467
7BK0412949	620.51	619.83	0.68	2shgszsu	0.2	4	13	920	9.3	6.0	16.5	36	108	6.5	85	0.47	231	5.3	31	1112	457
7BK0413017	619.83	619.15	0.68	2shgszsu	0.2	6	14	830	9.7	5.9	17.1	34	115	6.3	88	0.44	248	5.6	29	1162	478
7BK0413085	619.15	618.47	0.68	2shgszsu	0.5	6	10	790	6.9	2.6	8.2	20	93	4.1	41	0.50	116	3.5	15	759	289
7BK0413153	618.47	618.09	0.38	2shgszglbcsu	0.2	7	4	1000	4.1	3.4	4.9	15	71	4.0	25	0.58	65	3.1	16	468	197
7BK0413191	618.09	617.54	0.55	2shgszsu	0.2	4	10	940	6.1	2.2	4.2	19	86	4.0	31	0.51	90	3.1	13	575	218
7BK0413246	617.54	617.15	0.39	2shgszsu	0.5	1	6	910	5.9	3.0	6.0	26	86	5.0	51	0.47	134	4.1	21	554	262
7BK0413285	617.15	616.55	0.60	2shgszsu	0.4	6	4	900	4.7	3.4	4.8	22	79	4.5	33	0.47	102	1.4	21	524	238
7BK0413410	615.90	615.15	0.75	2shgszglsu	0.2	4	6	940	3.7	1.5	2.1	18	64	4.1	16	0.51	74	2.8	15	435	179
7BK0413485	615.15	614.40	0.75	2shgszglsu	0.2	3	6	1100	2.4	0.9	0.3	13	42	3.0	5	0.50	42	1.9	9	351	122
7BK0413560	614.40	613.60	0.80	2shgszglsu	0.2	1	1	1100	2.0	0.9	0.3	13	42	3.0	2	0.50	42	1.5	8	343	114
7BK0413640	613.60	613.51	0.09	2bngshsu	0.2	1	1	830	1.5	0.8	0.3	11	31	2.7	3	0.70	28	1.8	6	230	86
7BK0413649	613.51	613.43	0.08	2bngsu	0.2	1	1	570	0.5	1.0	0.3	4	13	1.8	3	0.93	10	1.4	5	104	58
7BK0413657	613.43	613.22	0.21	2shgsz	0.2	1	3	1100	2.4	0.9	0.3	14	42	3.3	3	0.52	45	1.9	12	328	117
7BK0413678	613.22	612.54	0.68	2shgsz	0.2	1	1	1300	2.4	1.7	0.3	14	44	3.3	5	0.51	45	2.0	13	364	125
7BK0413746	612.54	612.09	0.45	2shgsz	0.2	3	6	1000	7.3	0.8	2.4	22	65	5.9	24	0.44	86	4.8	15	291	239
7BK0413791	612.09	611.49	0.60	2shbogszgl	0.6	5	7	770	10.5	5.8	3.9	23	67	5.8	58	0.38	120	5.3	24	431	263
7BK0413851	611.49	610.89	0.60	2shbogszgl	0.4	1	6	800	10.3	7.4	3.3	25	63	5.2	53	0.37	108	5.0	21	357	243
7BK0413911	610.89	610.29	0.60	2shbogszgl	0.5	1	1	720	9.8	6.1	3.3	26	63	5.6	48	0.37	109	5.3	21	362	242
7BK0413971	610.29	609.69	0.60	2shbogszgl	0.4	1	5	880	10.5	6.8	3.5	26	68	5.9	52	0.37	117	5.1	22	372	262
7BK0414031	609.69	609.09	0.60	2shbogszgl	0.7	1	1	730	9.8	3.8	3.2	24	62	6.0	54	0.37	114	5.4	19	379	244
7BK0414091	609.09	608.49	0.60	2shbogszgl	0.2	1	1	670	11.1	5.4	3.4	25	65	5.9	65	0.38	122	5.0	28	374	263
7BK0414151	608.49	608.34	0.15	2shbogssgl	0.2	1	1	890	2.6	2.2	0.5	9	27	3.6	13	0.41	39	2.6	27	206	121

Table 6 (Continued): Select analytical data, Buckton and Asphalt Zones historic drilling. After Alberta Mineral Assessment Report MIN9802, Sabag 1998. (Continued next page). Comparative data from select other black shales also shown (at end of table). After Table 4, Sabag 2008.

Sample No.	From (m)	To (m)	Length (m)	Rock Type	Ag ICP ppm	Au FA ppb	Au INA ppb	Ba INA ppm	C-org Leco %	Ca ICP %	Cd ICP ppm	Co INA ppm	Cu ICP ppm	Fe INA %	Mo ICP ppm	Na INA %	Ni ICP ppm	S Leco %	U INA ppm	V ICP ppm	Zn ICP ppm
7BK0507680	653.20	652.93	0.27	2shbbnlsu	2.5	2	6	3900	3.6	6.6	19.9	66	76	9.4	365	0.67	375	11.2	170	707	681
7BK0507707	652.93	652.39	0.54	2shbbnlsu	1.3	2	6	13000	6.2	7.0	13.2	30	80	7.3	141	0.70	254	5.6	96	712	481
7BK0507761	652.39	652.01	0.38	2shbbnlsu	0.9	1	7	1700	12.6	1.3	14.7	29	101	5.1	164	0.62	254	4.8	46	999	438
7BK0507799	652.01	651.41	0.60	2shbbnlsu	0.7	1	5	1100	10.3	10.1	10.1	21	84	4.0	133	0.46	191	3.9	28	834	316
7BK0507859	651.41	651.01	0.40	2shbbnlsu	0.9	6	4	1400	10.1	9.1	11.4	21	84	4.2	129	0.56	195	3.9	29	864	336
7BK0507899	651.01	650.32	0.69	2shbbnl	0.9	3	3	1500	9.1	5.5	9.9	23	78	4.4	112	0.63	177	4.1	28	794	316
7BK0507968	650.32	650.27	0.05	2shbbnl	0.6	2	3	580	6.0	3.0	6.3	14	55	3.7	86	0.68	106	3.9	12	522	241
7BK0507973	650.27	650.21	0.06	2bnlsu	0.2	3	1	430	0.9	1.3	0.7	4	17	7.1	38	0.80	31	6.7	4	281	124
7BK0507979	650.21	649.57	0.64	2shbbnsu	0.7	9	1	1900	8.9	4.8	11.8	23	82	4.7	112	0.67	185	4.3	28	835	354
7BK0508043	649.57	648.78	0.79	2shbbnsu	0.7	1	6	1300	7.0	9.7	8.3	20	66	4.2	94	0.60	139	3.7	28	637	275
7BK0508122	648.78	648.39	0.39	2shbbnsu	0.5	4	3	1400	6.8	4.9	9.8	20	68	4.4	86	0.66	149	4.0	21	764	291
7BK0508161	648.39	647.80	0.59	2shbbnsu	0.8	2	5	1300	7.7	6.1	12.5	21	79	4.5	93	0.65	171	4.0	21	956	336
lc	647.80	646.80	1.00																		
7BK0508320	646.80	646.35	0.45	2shbbccasu	1.0	2	8	960	9.2	6.2	16.6	20	87	4.4	112	0.49	188	4.0	20	1198	385
7BK0508365	646.35	645.90	0.45	2shbbccasu	0.8	6	9	940	9.3	6.1	18.6	23	93	4.4	101	0.52	183	4.2	18	1289	421
7BK0508410	645.90	645.83	0.07	2shbbccasu	0.5	18	7	1300	5.2	18.3	11.2	18	65	4.3	58	0.45	120	4.5	32	696	306
7BK0508417	645.83	645.13	0.70	2shbsugl	0.9	4	5	1400	8.0	6.2	17.8	34	115	6.2	74	0.60	211	5.4	33	1102	516
7BK0508487	645.13	644.52	0.61	2shbsugl	0.8	1	5	940	9.2	6.3	15.5	39	107	6.7	86	0.49	245	5.6	28	1173	493
7BK0508548	644.52	643.82	0.70	2shbsugl	1.1	8	7	740	9.8	5.5	18.7	35	114	6.3	84	0.44	232	5.7	22	1306	512
7BK0508618	643.82	643.00	0.82	2shbsugl	0.9	5	1	780	8.4	5.9	13.8	29	100	5.5	76	0.46	198	5.1	19	1071	412
7BK0508700	643.00	642.30	0.70	2shbsuglsz	0.6	6	8	850	5.4	3.8	4.9	19	79	4.0	35	0.53	96	3.2	16	530	231
lc	642.30	641.30	1.00																		
7BK0508870	641.30	640.77	0.53	2shbsugl	0.6	6	5	790	5.7	4.4	6.0	29	83	5.3	54	0.48	146	4.2	19	592	291
7BK0508923	640.77	640.20	0.57	2shgszglsu	0.2	4	10	1100	4.2	1.4	2.0	14	66	3.7	13	0.52	57	2.4	11	462	170
7BK0508980	640.20	640.07	0.13	2shgszglsu	0.2	1	9	880	1.4	0.7	0.3	11	29	3.4	8	0.70	26	2.5	5	270	81
7BK0508993	640.07	639.99	0.08	2bngsh	0.2	3	1	550	0.4	0.9	0.3	3	10	1.8	4	0.89	7	1.5	3	90	58
7BK0509001	639.99	639.86	0.13	2bngsh	0.2	1	1	640	0.5	1.0	0.3	4	15	1.9	4	0.84	10	1.5	6	125	66
7BK0509014	639.86	639.16	0.70	2shgszglsu	0.2	1	1	1100	2.6	1.0	0.3	13	43	3.0	4	0.46	45	1.8	8	347	127
7BK0509084	639.16	638.40	0.76	2shgszglsu	0.2	2	10	1200	2.2	1.9	0.3	16	43	3.4	5	0.47	45	2.2	15	368	127
7BK0509160	638.40	637.75	0.65	2shbca	0.6	2	1	710	10.1	6.2	3.1	26	65	5.7	49	0.36	107	5.2	18	372	253
7BK0509225	637.75	637.10	0.65	2shbca	0.4	1	1	760	9.5	7.2	3.2	23	65	5.4	49	0.36	110	5.1	18	378	263
7BK0509290	637.10	636.45	0.65	2shbca	0.6	3	5	710	10.2	5.5	3.0	23	65	5.4	48	0.37	113	5.3	17	400	269
7BK0509355	636.45	635.70	0.75	2shbca	0.6	4	1	840	9.4	4.5	2.9	25	63	6.3	60	0.40	116	5.2	19	402	262
7BK0509430	635.70	635.13	0.57	2shbca	0.5	2	1	790	10.1	3.9	3.3	24	63	6.2	64	0.41	119	5.5	18	410	272
7BK0509487	635.13	634.81	0.32	2sbb	0.5	1	7	690	9.1	10.8	2.6	20	52	5.1	49	0.34	89	4.5	22	283	210
7BK0610765	622.35	622.21	0.14	2shbbnlglsufd	0.2	4	4	27000	1.3	1.6	4.5	57	48	4.0	33	1.01	125	3.0	37	351	274
7BK0610779	622.21	622.09	0.12	2ss_bnlsu	0.2	3	3	11000	1.4	1.5	1.5	36	52	13.4	221	0.90	91	16.1	34	263	167
7BK0610791	622.09	621.89	0.20	2shgbnsu	0.2	1	1	11000	3.0	1.1	0.3	15	81	3.7	39	1.15	50	2.7	13	374	146
7BK0610811	621.89	621.33	0.56	2shbbnsu	0.2	8	10	6400	3.6	2.2	3.1	18	83	4.0	25	1.09	60	3.3	34	500	177
7BK0610867	621.33	620.87	0.46	2shgbnsu	0.6	8	11	5000	6.2	2.1	6.3	22	106	4.6	32	1.09	83	3.8	35	653	222
7BK0610913	620.87	620.38	0.49	2shbbnsu	0.2	5	1	4600	7.0	1.8	5.2	22	115	4.8	31	1.06	85	3.7	36	675	223
7BK0610962	620.38	619.70	0.68	2shgbnsu	1.9	8	19	6800	7.5	2.6	22.7	52	126	8.9	114	1.17	316	6.9	93	796	664
7BK0611030	619.70	619.42	0.28	2shgbnsu	0.2	4	1	9000	2.7	3.1	5.8	24	55	5.5	92	1.36	147	5.1	56	303	271
7BK0611058	619.42	619.29	0.13	2bnl	0.4	1	1	1500	0.5	1.1	1.0	2	10	1.7	25	1.17	18	1.5	14	209	95
7BK0611071	619.29	619.05	0.24	2shbszsu	1.2	5	13	4800	8.2	4.1	16.3	37	101	5.3	173	1.17	307	4.9	140	811	574
7BK0611095	619.05	618.08	0.97	2shbbnlszsugl	1.1	8	6	2400	11.2	6.7	13.7	29	100	4.7	168	0.87	259	4.5	63	939	441
7BK0611192	618.08	617.64	0.44	2shbbnsu	1.2	5	3	1200	10.2	8.4	9.2	20	85	4.0	146	0.66	193	4.1	32	888	307
7BK0611236	617.64	617.09	0.55	2shgbn	0.8	5	7	1300	11.7	10.0	9.2	20	87	3.8	153	0.62	199	3.9	38	880	296
7BK0611291	617.09	616.54	0.55	2shbbnsu	1.0	4	11	950	10.5	8.8	9.8	21	88	4.3	144	0.60	193	4.2	31	892	313
7BK0611346	616.54	615.99	0.55	2shb	1.0	10	3	1100	10.5	11.5	8.7	16	77	3.5	133	0.56	175	3.8	31	824	297
7BK0611401	615.99	615.42	0.57	2shbsuog	0.8	3	9	1200	9.6	7.7	9.0	20	82	4.9	131	0.62	193	4.8	27	835	295
7BK0611458	615.42	615.04	0.38	2shbbnlsuog	0.6	5	1	1500	8.3	4.6	8.4	19	73	4.2	113	0.82	164	4.2	28	765	287
7BK0611496	615.04	614.26	0.78	2shbbn	0.9	3	1	1600	8.8	6.2	9.4	23	80	4.2	125	0.73	190	4.1	33	780	321
7BK0611574	614.26	613.84	0.42	2shbbng	1.0	3	1	1500	6.5	5.2	10.4	19	68	4.0	94	0.83	161	4.0	25	820	310
7BK0611616	613.84	613.06	0.78	2shbsubc	1.0	3	10	1200	9.2	8.0	12.7	21	87	4.6	121	0.65	203	4.3	31	1046	351
7BK0611694	613.06	612.43	0.63	2shbsubng	1.3	1	6	890	9.2	7.1	17.7	21	97	4.8	108	0.62	214	4.1	27	1313	428
7BK0611757	612.43	611.80	0.63	2shbsubngbc	0.9	6	7	1400	6.5	6.2	13.5	18	92	4.1	58	0.76	133	3.9	38	1022	336
7BK0611820	611.80	611.18	0.62	2shbsubn	1.0	5	1	1300	7.8	5.9	19.3	22	102	4.3	78	0.67	175	4.2	35	1163	422
7BK0611882	611.18	610.91	0.27	2shbsubng	1.0	6	8	910	6.0	5.8	11.0	20	72	4.3	76	0.72	148	4.3	25	808	301
7BK0611909	610.91	610.39	0.52	2shbbnlsu	1.2	9	4	1700	6.9	4.7	13.1	23	87	4.7	78	0.79	162	4.4	30	923	338
7BK0611961	610.39	610.34	0.05	2bngsh	0.8	4	5	390	2.4	2.2	5.7	9	37	2.9	40	0.87	60	3.0	7	1159	156
7BK0611966	610.34	609.65	0.69	2shbbnlsu	1.1	3	1	700	7.6	6.7	14.5	23	97	4.4	85	0.55	174	4.2	22	1047	366
7BK0612035	609.65	609.25	0.40	2shbbnlsu	1.6	4	8	890	6.9	2.6	17.1	19	105	4.3	51	0.68	112	3.8	16	968	360
7BK0612075	609.25	609.20	0.05	2bngsh	0.6	2	5	430	8.6	1.2	2.9	5	18	2.8	22	1.14	18	2.7	4	616	82
7BK0612080	609.20	608.55	0.65	2shbbnlsu	1.0	6	5	850	7.7	3.5	12.9	25	105	5.1	63	0.56	150	4.7	17	940	371
7BK0612145	608.55	607.90	0.65	2shbbnlsu	0.7	6	11	880	6.1	3.6	6.0	15	91	3.7	28	0.56	77	3.1	15	618	243
7BK0612210	607.90	607.17	0.73	2shgszsuglbn	0.4	3	7	930	3.1	1.0	1.7	13	58	3.1	12	0.56	54	2.1	9	457	154
7BK0612283	607.17	606.67	0.50	2shgszsugl	0.6	3	8	970	1.8	0.7	0.3	11	47	2.8	3	0.53	44	1.7	9	393	124
7BK0612333	606.67	606.55	0.12	2bnlsh	0.5	4	2	490	0.6	0.9	0.3	4	14	1.7	4	0.87	10	1.5	4	125	64
7BK0612345	606.55	605.89	0.66	2shgsz	0.2	1	1	940	2.6	0.8	0.3	13	49	3.1	5	0.52	49	1.9	10	398	132
7BK0612411	605.89	605.23	0.66	2shgsz	0.2	1	6	980	2.9	0.9	0.5	12	50	3.0	6	0.49	48	1.7	9	384	134
7BK0612477	605.23	604.58	0.65	2shgsz	0.2	2	1	1000	2.3	1.1	0.3	12	48	2.9	5	0.44	49	2.1	13	379	128
7BK0612542	604.58	604.19	0.39	2shgsu	0.2	4	1	870	2.7	1.1	0.3	19	73	8.6	3	0.41	43	11.8	19	299	172
7BK0612581	604.19	603.70	0.49	2shg	0.5	1	3	950	7.5	1.0	2.4	20	67	7.7	45	0.39	92	6.4	30	375	247
7BK0612630	603.70	603.52	0.18	2sh_fdgl	0.5	1	1	590	7.1	19.8	2.6	14	50	3.8	40	0.25	75	4.1	58	268	212
7BK0612648	603.52	602.98	0.54	2shgsu	0.9	6	1	660	11.6	0.8	3.6	22	78	5.1	63	0.45	121	5.6	19	484	269
7BK0612702	602.98	602.36	0.62	2shgogszsuglbn	0.8	4	6	630	11.0	6.9	3.5	25	69	5.7	58	0.43	100	5.2	26	369	254
7BK0612764	602.36	601.94	0.42	2ss_casu	0.5	1	4	210	6.8	37.4	0.7	7	19	1.9	14	0.11	19	1.8	8	79	63
7BK0612806	601.94	601.21	0.73	2sh_casu	1.3	2	6	630	11.0	5.6	3.0	25	69	5.7	63	0.38	100	5.4	28	331	269
7BK0612879	601.21	601.01	0.20	2ss_casu	0.2	1	1	230	5.5	44.9	0.3	4	13	1.9	12	0.08	17	2.1	5	59	42
7BK0612899	601.01	600.50	0.51	2shbcasu	1.1	2	7	800	9.2	6.4	2.7	23	61	5.8	58	0.37	111	5.1	35	359	258
7BK0612950	600.50	600.37	0.13	2bbgsuog	0.6	3	1	330	7.6	29.6	1.2	10	27	3.8	23	0.17	43	3.6	14	177	101
7BK0612963	600.37	600.10	0.27	2shgsu	0.9	4	1	650	7.4	5.0	2.8	21	66	6.5	33	0.45	82	5.8	15	283	239
7BK0612990	600.10	600.05	0.05	2bng	0.8	1	1	430	1.8	2.9	1.0	7	28	3.9	14	0.89	22	3.8	7	182	190
7BK0612995	600.05	599.80	0.25	2shgsuog	0.8	1	8	730	7.5	8.7	3.0	22	60	7.0	31	0.34	80	5.3	37	232	256

Table 6 (Continued): Select analytical data, Buckton and Asphalt Zones historic drilling. After Alberta Mineral Assessment Report MIN9802, Sabag 1998. (Continued next page). Comparative data from select other black shales also shown (at end of table). After Table 4, Sabag 2008.

Sample No.	From (m)	To (m)	Length (m)	Rock Type	Ag ICP ppm	Au FA ppb	Au INA ppb	Ba INA ppm	C-org Leco %	Ca ICP %	Cd ICP ppm	Co INA ppm	Cu ICP ppm	Fe INA %	Mo ICP ppm	Na INA %	Ni ICP ppm	S Leco %	U INA ppm	V ICP ppm	Zn ICP ppm
7AS0101127	663.73	663.23	0.50	2shbbnlsu	0.2	5	12	1000	13.3	8.8	10.2	23	89	3.8	157	0.28	196	4.1	45	807	319
7AS0101177	663.23	662.73	0.50	2shbbnlsu	0.2	2	11	470	7.5	7.6	7.2	14	63	3.4	114	0.22	122	3.7	24	673	225
7AS0101227	662.73	662.21	0.52	2shbbnlsu	0.2	1	10	710	9.9	10.0	9.8	20	80	4.1	131	0.26	184	4.2	35	846	280
7AS0101279	662.21	661.71	0.50	2shgbnlsu	0.2	6	10	930	4.9	6.2	13.1	20	86	4.0	79	0.43	170	4.2	57	752	375
7AS0101329	661.71	661.21	0.50	2shgbnlsu	0.2	5	9	660	6.4	6.9	7.8	20	74	4.1	73	0.32	151	4.1	21	745	266
7AS0101379	661.21	660.70	0.51	2shgbnlsu	0.2	4	5	1000	5.1	5.2	13.0	22	87	4.3	46	0.48	145	4.2	38	732	365
7AS0101430	660.70	660.50	0.20	2shgbnlsu	0.5	6	12	800	6.0	4.6	12.9	17	93	3.9	42	0.41	120	3.9	26	882	323
lc	660.50	659.81	0.69																		
7AS0101519	659.81	659.72	0.09	2sbbfdsucagl	0.2	4	1	1700	1.4	18.1	11.7	13	62	2.8	20	0.37	55	2.8	100	254	315
lc	659.72	659.39	0.33																		
7AS0101561	659.39	658.89	0.50	2shg	0.2	3	8	1200	4.6	7.2	14.3	16	96	3.9	36	0.43	117	3.8	40	741	361
7AS0101611	658.89	658.39	0.50	2shg	0.9	11	6	880	6.8	4.3	12.7	17	117	4.1	33	0.37	107	3.9	23	884	319
7AS0101661	658.39	658.08	0.31	2shg	0.7	6	6	1400	6.5	4.6	11.5	16	117	3.5	29	0.35	111	3.4	33	777	342
7AS0101692	658.08	657.71	0.37	2sbbfdsucagl	0.2	5	1	1500	2.4	15.4	19.4	29	94	5.2	32	0.54	183	4.0	100	439	612
lc	657.71	656.61	1.10																		
7AS0101839	656.61	656.52	0.09	2shgbnlsu	0.7	7	13	740	6.6	1.2	10.9	30	106	8.6	170	0.37	179	6.7	24	716	556
7AS0202161	668.39	668.27	0.12	2bng	0.2	9	9	850	4.4	1.0	5.2	12	61	3.3	31	0.78	66	2.6	17	496	206
7AS0202173	668.27	667.75	0.52	2shbbnsugl	0.4	12	10	3700	7.6	0.8	3.4	14	97	4.2	19	0.75	69	2.8	17	503	206
7AS0202225	667.75	667.01	0.74	2shbbnsugl	0.2	10	3	3300	6.9	0.7	6.1	16	111	4.2	21	0.75	83	2.6	15	636	251
7AS0202299	667.01	666.54	0.47	2shgszbn	0.2	7	10	5100	2.8	0.8	1.7	16	58	4.3	16	0.96	62	1.7	16	364	182
7AS0202346	666.54	666.21	0.33	2shgszbntt	0.2	8	10	6700	3.1	0.6	2.0	13	60	4.4	14	0.89	63	2.1	14	377	178
7AS0202379	666.21	665.79	0.42	2shbsuglbn	0.4	13	1	1400	9.2	0.9	14.3	24	99	5.0	80	0.64	150	4.2	24	930	371
7AS0202421	665.79	665.15	0.64	2shbsuglbn	0.2	12	14	3700	5.6	1.0	2.1	20	111	4.7	15	0.89	76	2.8	16	542	199
7AS0202485	665.15	664.51	0.64	2shbsuglbn	0.2	8	1	6200	6.5	1.4	3.9	18	115	4.8	33	0.87	87	3.6	25	618	227
7AS0202549	664.51	663.88	0.63	2shbsuglbn	0.2	5	10	6100	5.3	0.8	0.3	14	103	3.7	6	0.74	71	2.3	11	421	184
7AS0202612	663.88	663.62	0.26	2shbsuglbn	0.2	7	11	6500	5.8	0.9	1.4	16	116	4.1	11	0.76	74	2.6	14	473	198
7AS0202638	663.62	663.05	0.57	2shbbcbnsugl	0.5	4	8	2300	13.1	8.3	10.0	27	87	4.5	160	0.66	209	4.4	44	965	358
7AS0202695	663.05	662.35	0.70	2shbbcbnsugl	0.5	2	1	1100	11.7	9.1	8.6	20	78	3.5	147	0.56	169	3.8	41	827	298
7AS0202765	662.35	662.18	0.17	2shbbnsu	0.2	5	1	18000	5.3	1.6	5.5	21	55	5.4	112	1.06	169	5.4	49	394	274
7AS0202782	662.18	662.08	0.10	2bnlshsu	0.2	2	1	2900	3.5	1.1	3.2	14	57	7.5	86	1.01	80	6.9	22	547	212
7AS0202792	662.08	661.92	0.16	2bnlshsu	0.2	1	1	1600	1.4	1.2	1.8	6	16	2.2	36	1.08	40	1.9	18	296	129
7AS0202808	661.92	661.23	0.69	2shbbn	0.4	7	10	3600	11.9	5.7	10.7	28	95	4.8	167	0.76	226	4.6	62	840	385
7AS0202877	661.23	660.54	0.69	2shbbn	0.2	3	6	1000	10.2	10.9	9.3	21	77	4.1	133	0.51	173	3.7	34	774	293
7AS0202946	660.54	659.85	0.69	2shbbn	0.2	9	9	1100	6.5	7.2	9.1	25	79	5.2	81	0.68	169	4.4	45	789	326
7AS0203015	659.85	659.36	0.49	2shbbn	0.2	9	7	970	5.8	4.6	10.4	25	86	5.4	54	0.71	146	4.5	34	810	323
7AS0203064	659.36	659.28	0.08	2bnlshgsu	0.2	4	7	4200	2.1	4.8	4.3	21	90	6.2	92	0.95	96	5.5	29	854	244
7AS0203072	659.28	659.05	0.23	2shgsugl	0.6	6	8	910	6.6	2.7	11.9	22	88	4.8	50	0.73	122	4.3	26	777	357
7AS0203095	659.05	658.97	0.08	2bnlsu	0.2	2	7	630	4.4	1.6	6.3	7	46	3.3	17	0.92	33	3.0	5	460	191
7AS0203103	658.97	658.47	0.50	2shgsugl	0.2	10	11	1100	5.7	4.8	11.5	19	101	4.4	32	0.61	110	3.9	42	789	347
7AS0203153	658.47	657.96	0.51	2shgsugl	0.5	10	10	940	7.3	3.0	10.4	20	116	4.4	29	0.52	100	3.7	23	840	318
7AS0203204	657.96	657.72	0.24	2shgszcasu	0.2	8	10	1200	5.1	7.0	16.4	32	107	5.9	47	0.57	182	4.8	52	822	476
7AS0203228	657.72	657.58	0.14	2shgszcasu	0.2	8	2	1900	2.9	12.2	17.3	41	103	5.9	40	0.46	232	4.6	110	493	660
7AS0203242	657.58	657.42	0.16	2sbbszcasuog	0.2	6	10	2500	2.1	15.2	12.6	20	78	3.6	29	0.44	110	3.1	100	371	439
7AS0203258	657.42	657.08	0.34	2shbsu	0.2	1	3	1200	3.2	1.7	2.1	16	56	4.0	32	0.49	74	2.8	16	446	187
7AS0203292	657.08	656.98	0.10	2shbbnsu	0.2	5	7	980	1.8	0.7	0.7	11	33	3.2	9	0.61	39	2.0	5	347	123

Rocktype Legend

[Rock Type]	[color]	[descriptive]	[other]
[2 digits]	[1 digit]	[2 digits]	[2 digits]
sh - shale	b - black	sz - silty	su - >1% sulfides
bn - bentonite	r - brown	ca - calcareous	gl - glauconitic
bb - bone bed	g - grey	bc - bioclastic	og - high organic content
sbb - siliciclastic bone bed	w - white	bn - bentonitic	fd - shell fragments or fish debris
cc - concretion	l - steely blue	tt - tuffaceous	
sz - siltstone	y - yellow		
ss - sandstone		***Example:*** 2shgcabn = grey bentonitic calcareous shale of the Second White Specks Formation	

Comparative Data From Other Black Shales Worldwide

Black Shale Location Name	Ag ppm	Au ppb	Au ppb	Ba ppm	C-org %	Ca %	Cd ppm	Co ppm	Cu ppm	Fe %	Mo ppm	Na %	Ni ppm	S %	U ppm	V ppm	Zn ppm
Chuniespoort Mean (1)	na	na	na	726	1.2	1.8	na	17	61	2.2	3	0.04	125	0.7	2	105	36
Dushantuo: V-rich, black Illite shale (2)	na	na	na	1548	4.2	0.2	na	20	236	2.1	na	5.28	99	na	na	4350	na
Dushantuo: Ag-V-rich, black Illite shale (2)	na	na	na	4014	3.3	0.4	na	24	406	2.4	na	4.72	90	na	na	6225	na
USGS Standard SDO-1 (3)	0.1	na	na	397	10.0	na	na	47	60	na	134	na	100	na	49	160	64
Nick Deposit: NICK-2 (4)	6.0	103	na	3800	2.2	na	na	350	390	na	2467	na	78000	na	61	590	8700
Bohemian Massif: Normal black shale (5)	na	4	na	na	0.7	na	na	12	93	4.2	33	na	88	na	na	570	383
Bohemian Massif: Metal-rich black shale (5)	na	62	na	na	3.5	na	na	21	590	8.3	153	na	600	na	na	1109	243
Talvivaara: Black Schist 1 (6)	na	na	na	na	7.5	na	na	na	600	8.8	na	na	500	7.4	na	600	2600
Talvivaara: Black Schist 2 (6)	na	na	na	na	7.7	na	na	na	1300	10.4	na	na	2600	8.2	na	600	5200
U-rich Black Shale Southern Storsjon Jamtland (7)	na	na	na	na	14.2	2.3	na	na	138	3.4	460	0.06	440	4.4	245	1600	270
U-rich Alum Shale, Ranstad, Vastergotland (8)	na	na	na	500	15.5	0.7	na	25	110	6.0	340	0.21	200	7.0	300	750	130
Av Alum Shale, Upper Mbr, Billingen (9)	1.4	na	na	500	13.7	0.7	na	50	190	7.1	270	0.17	160	6.7	206	680	150
Av Alum Shale, Middle and Lower Mbrs, Billingen (9)	na	na	na	500	6.1	0.5	na	na	180	6.8	70	0.12	90	4.5	10	450	na
Av Black shale (10)	<1	na	na	300	3.2	1.5	na	10	70	2.0	10	0.70	50	na	8	150	<30

(1) Meyer & Robb, 1996; (2) Delian & Tiebing, 1992; (3) Bloomstein & Clark, 1990; (4) Hulbert et al, 1992; (5) Pasava et al, 1996;
(6) Loukola-Ruskeeniemi & Heino, 1996; (7) Gee & Snall, 1981; (8) Andersson et al, 1983; (9) Armands, 1972; (10) Vine & Tourtelot, 1970

Table 6 (Continued): Select analytical data, Buckton and Asphalt Zones historic drilling. After Alberta Mineral Assessment Report MIN9802, Sabag 1998. Comparative data from select other black shales also shown. After Table 4, Sabag 2008.

	Detection	Buckton Zone Drill Holes																					Asphalt Zone Drill Holes						
		BK1	BK1	BK2	BK2	BK2	BK3	BK3	BK3	BK4	BK4	BK4	BK5	BK5	BK5	BK6	BK6	BK6	Avg	Avg	Avg	AS1	AS1	AS2	AS2	AS2	Avg	Avg
Unit		Lab	2WS	Lab	2WS	BF	Lab	2WS	BF	Lab	2WS	BF	Lab	2WS	BF	Lab	2WS	BF	Lab	2WS	BF	2WS	BF	Lab	2WS	BF	Lab	2WS
UnitThick		9.77	15.26	9.42	18.37	9.49	10.05	26.20	4.46	10.31	21.06	10.65	10.20	18.39	6.01	10.69	22.55	2.45	10.07	20.31	6.61	7.21	10.30	6.75	11.41	10.04	6.98	10.86
Ag -ICP	0.4 ppm	0.2	0.4	0.2	0.5	0.2	0.2	0.4	0.2	0.2	0.3	0.2	0.2	0.7	0.2	0.2	0.8	0.3	0.2	0.5	0.2	0.3	0.2	0.2	0.3	0.2	0.3	0.2
Ag-INA	5 ppm	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3	3
Al -ICP	0.01%	7.8	6.6	6.8	6.5	7.5	8.3	6.4	8.5	7.9	6.8	7.1	8.3	6.8	7.8	8.1	7.0	7.9	7.9	6.7	7.8	5.4	7.9	8.6	7.3	8.0	7.0	7.6
As-INA	0.5 ppm	19.6	57.2	13.8	56.4	15.2	22.9	58.8	15.2	24.1	62.6	18.4	20.7	65.4	16.7	19.5	54.9	28.2	20.1	59.2	18.7	76.6	21.9	20.3	51.4	30.0	48.4	36.6
Au-FA	1 ppb		6.30		4.33			4.36			3.48			3.44			4.20			4.35		4.95	1.00		7.28			4.14
Au-INA	2 ppb	2	5	2	6	6	6	6	3	2	6	2	2	5	3	2	5	1	2	6	3	8	3	1	7	5	4	5
Ba-INA	50 ppm	962	2194	1070	2322	1017	1324	2047	1025	1200	1580	938	1094	1440	845	1200	1965	940	1142	1924	953	1025	996	1961	3042	1364	1493	2019
Be -ICP	2 ppm	2	1	2	1	2	2	1	2	2	2	2	1	1	1	1	1	1	2	1	1	2	2	1	1	1	1	1
Bi -ICP	5 ppm	3	3	3	3	3	3	3	3	8	5	7	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Br-INA	0.5 ppm	2.3	12.3	2.0	12.8	4.1	2.4	12.4	3.8	2.1	14.0	3.0	2.7	14.7	4.1	3.6	13.2	4.4	2.5	13.2	3.9	9.7	6.6	7.9	17.7	8.0	8.8	12.1
C-org-Leco	0.003%	1.07	7.07	0.81	5.99	1.75	1.07	5.99	1.64	0.96	7.18	1.46	1.05	7.61	1.52	1.14	7.20	1.84	1.02	6.84	1.64	5.92	2.19	1.67	7.00	2.49	3.80	4.59
Ca -ICP	0.01%	0.71	5.21	1.24	5.56	0.90	0.60	5.15	0.37	0.54	4.64	0.72	0.46	5.40	0.38	0.67	5.86	0.39	0.70	5.31	0.55	8.22	0.67	0.65	4.04	1.03	4.43	2.36
Cd -ICP	0.5 ppm	0.3	10.9	0.3	8.2	0.3	0.3	7.6	0.4	0.3	8.1	0.3	0.3	8.9	0.3	0.3	7.8	0.3	0.3	8.6	0.3	12.4	0.3	0.3	7.1	0.9	6.3	3.7
Ce-INA	3 ppm	66	86	68	106	95	82	85	76	69	84	76	65	82	76	86	93	91	73	89	83	224	67	76	111	86	150	89
Co-INA	1 ppm	13	21	13	21	11	16	19	11	15	23	11	14	24	11	14	21	14	14	21	12	20	11	14	20	13	17	15
Cr-INA	5 ppm	104	82	102	95	147	132	86	134	104	95	110	97	91	122	120	98	143	110	91	131	80	104	129	110	116	104	107
Cs-INA	1 ppm	8	4	7	5	9	10	5	9	8	5	7	8	5	7	10	5	10	9	5	8	3	8	9	5	8	6	6
Cu -ICP	1 ppm	30	83	26	70	30	32	73	30	28	73	27	31	77	29	34	78	33	30	76	30	89	42	40	89	45	64	66
Eu-INA	0.2 ppm	1.3	2.3	1.4	2.7	1.8	1.5	2.4	1.5	1.5	2.3	1.8	1.4	2.3	1.7	1.7	2.2	1.6	1.5	2.4	1.7	8.8	1.3	1.6	3.4	1.8	5.2	2.3
Fe-INA	0.01%	6.42	4.00	3.72	4.53	3.74	4.42	4.12	3.24	4.18	4.70	3.52	3.43	4.96	3.55	3.81	4.58	4.31	4.33	4.48	3.67	4.39	2.94	3.92	4.46	3.77	4.15	3.70
Hf-INA	1 ppm	5	5	6	6	8	6	4	5	5	5	6	5	4	6	6	5	6	5	5	6	4	5	5	5	6	4	5
Hg-INA	1 ppm	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Ir-INA	5 ppb	3	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3	3	2	3	3	3	3	3	3	3	3
K -ICP	0.01%	1.9	1.4	1.8	1.5	2.1	2.1	1.5	2.2	2.3	1.9	2.4	2.3	1.8	2.4	2.2	1.8	2.5	2.1	1.7	2.3	1.3	2.3	2.4	1.8	2.4	1.9	2.0
La-INA	0.5 ppm	37.2	58.3	37.4	64.4	49.1	46.5	64.5	48.5	40.5	53.8	43.8	36.9	54.1	44.0	45.3	54.1	45.2	40.6	58.2	46.1	189.2	44.9	48.9	82.5	56.5	119.0	63.7
Lu-INA	0.05 ppm	0.45	0.75	0.52	0.92	0.69	0.67	0.85	0.60	0.53	0.72	0.53	0.51	0.71	0.56	0.70	0.82	0.63	0.56	0.80	0.60	2.09	0.59	0.65	1.06	0.71	1.37	0.83
Mass	0 g	28.5	25.7	22.3	25.1	24.3	22.3	24.8	23.8	20.9	18.3	19.2	21.6	18.6	17.6	20.5	18.8	18.9	22.7	21.9	20.8	29.6	28.3	24.5	21.4	20.0	27.1	24.9
Mg -ICP	0.01%	1.1	0.9	1.0	0.9	0.8	1.0	0.9	0.9	0.9	0.9	0.8	0.9	0.8	0.8	1.0	0.9	0.9	1.0	0.9	0.8	0.8	1.0	1.1	1.0	1.0	1.0	1.0
Mn -ICP	1 ppm	1464	201	372	194	129	501	205	129	1173	196	135	570	216	113	421	201	155	750	202	132	317	139	196	211	155	256	175
Mo -ICP	2 ppm	1	86	1	66	2	1	62	2	2	67	3	2	77	2	2	72	4	2	72	3	73	3	3	63	7	38	33
Na-INA	0.01%	0.47	0.64	0.41	0.61	0.64	0.57	0.55	0.54	0.50	0.53	0.54	0.44	0.52	0.58	0.56	0.65	0.55	0.49	0.59	0.57	0.38	0.39	0.63	0.71	0.53	0.51	0.55
Nd-INA	5 ppm	28	42	27	57	38	35	39	32	31	43	35	28	46	33	39	49	37	32	46	35	155	25	27	59	35	91	42
Ni -ICP	1 ppm	43	160	40	126	39	45	121	42	40	129	38	44	152	41	43	133	48	42	137	42	144	46	48	122	50	96	84
P -ICP	0.001%	0.106	0.239	0.095	0.235	0.088	0.098	0.243	0.085	0.099	0.228	0.134	0.094	0.236	0.095	0.148	0.208	0.087	0.107	0.232	0.098	0.976	0.124	0.124	0.310	0.152	0.550	0.217
Pb -ICP	4 ppm	19	23	20	19	17	21	22	25	21	22	24	19	16	17	19	20	22	20	20	21	24	24	20	20	24	22	22
Pd-FA	3 ppb		2.61		2.23			2.61			2.38			2.06			2.20			2.35		2.88	2.00		2.51			2.26
Pt-FA	5 ppb		3.68		2.60			2.79			2.85			2.77			3.88			3.10		3.89	2.50		2.97			2.73
Rb-INA	15 ppm	115	61	114	85	148	148	82	149	134	94	115	128	88	130	143	85	132	130	83	135	62	120	148	91	130	105	105
S-Leco	0.003%	0.87	4.17	0.53	3.84	1.73	0.78	3.71	1.66	0.41	3.86	1.83	0.70	4.34	1.68	0.74	4.17	2.57	0.67	4.02	1.89	4.11	1.61	1.13	3.52	2.11	2.62	2.56
Sb-INA	0.1 ppm	1.4	14.9	1.1	13.6	2.5	1.8	11.1	4.4	1.5	11.5	1.1	1.3	11.4	1.1	1.7	11.8	1.5	1.5	12.4	2.1	11.7	2.0	2.3	11.8	2.7	7.0	6.9
Sc-INA	0.1 ppm	15.2	10.9	14.1	13.7	19.2	19.1	11.1	15.7	14.7	11.5	13.7	13.9	11.3	14.9	18.3	12.9	18.1	15.9	11.9	16.3	14.2	13.6	17.1	14.0	15.1	15.7	13.8
Se-INA	3 ppm	2	34	2	27	2	2	21	2	2	25	2	2	30	3	2	21	2	2	26	2	35	2	2	25	4	19	14
Sm-INA	0.1 ppm	5.0	8.2	5.4	10.8	7.3	6.9	8.6	6.0	5.6	8.5	6.3	5.1	8.1	5.8	7.0	9.1	6.8	5.8	8.9	6.4	34.4	5.4	6.3	13.0	7.5	20.3	9.2
Sn-INA	0.01%	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.01	0.01
Sr -ICP	1 ppm	171	305	145	271	153	179	273	161	171	230	161	184	242	160	201	314	158	175	273	159	346	177	258	354	206	302	266
Sr-INA	0.05%	0.03	0.05	0.03	0.03	0.03	0.03	0.05	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.07	0.03	0.04	0.03	0.04	0.05	0.06	0.04	0.03	0.05	0.04
Ta-INA	0.5 ppm	0.7	0.4	0.5	0.9	1.0	1.2	0.6	0.9	0.6	0.5	0.7	1.1	0.8	1.4	0.4	0.6	0.7	0.8	0.6	0.9	0.8	0.9	1.3	0.8	1.0	1.1	0.8
Tb-INA	0.5 ppm	0.8	1.5	0.8	1.7	0.7	0.6	1.5	0.7	0.6	1.3	0.9	0.6	1.3	0.9	0.5	1.3	1.0	0.7	1.5	0.8	6.1	0.8	0.9	2.2	1.0	3.5	1.5
Th-INA	0.2 ppm	11.8	11.9	11.2	12.8	14.1	13.2	11.6	13.6	12.1	12.1	12.4	11.0	11.3	12.5	12.8	11.9	14.0	12.0	11.9	13.3	16.5	12.1	12.8	13.6	14.6	14.6	12.9
Ti -ICP	0.01%	0.3	0.2	0.3	0.2	0.4	0.4	0.2	0.4	0.4	0.3	0.4	0.4	0.2	0.4	0.4	0.3	0.4	0.4	0.2	0.4	0.2	0.4	0.4	0.3	0.4	0.3	0.3
U-INA	0.5 ppm	4.4	36.7	4.2	34.1	6.1	5.6	30.2	5.2	4.3	26.9	4.8	4.5	25.3	4.4	4.6	29.9	5.8	4.6	30.5	5.3	47.3	5.6	6.1	31.0	9.0	26.7	18.3
V -ICP	2 ppm	223	776	211	648	199	241	623	210	222	645	184	245	722	211	265	668	241	234	680	209	690	361	303	664	350	496	513
Y -ICP	2 ppm	21	60	23	58	24	22	55	24	25	52	30	25	58	27	31	53	25	25	56	26	238	27	30	84	40	134	55
Yb-INA	0.2 ppm	2.9	4.6	3.4	5.9	4.2	3.9	4.7	3.3	3.3	4.5	3.6	3.1	4.6	3.5	4.4	5.1	4.1	3.5	4.9	3.7	13.5	3.2	3.9	6.5	4.3	8.7	4.9
Zn -ICP	1 ppm	145	360	135	305	127	158	289	167	130	282	110	142	318	120	144	282	135	143	306	132	376	121	164	282	143	270	201
Zn-INA	50 ppm	149	360	158	377	192	226	304	173	189	321	146	150	336	157	200	320	186	179	336	171	406	141	210	341	171	308	241

Table 7: Summary of Average Formational lithogeochemistry for the LaBiche (Lab), Second White Speckled Shale (2ws) and Belle Fourche (BF, ie: Shaftesbury) Formations, historic drilling, Asphalt and Buckton Zones, Tintina drilling 1997, Alberta Mineral Assessment Report MIN9802, Sabag 1998. After Table 5, Sabag 2008.

Downhole Stratigraphy: Although the drill holes from the Asphalt and Buckton Zones exhibit many lithological, textural and geochemical contrasts, the holes intersected the same principal units and a collective discussion of same on a combined basis serves to characterize gross near-surface stratigraphy of the Second White Specks and enveloping Formations at the two Zones, and probably the Birch Mountains in general. Considering that only two short holes were drilled at the Asphalt Zone one of which collared partway into the Second White Specks Formation, the stratigraphic descriptions below necessarily rely in most part on observations made from the Buckton Zone drilling.

The Second White Specks Formation at the two Zones comprises a sequence of carbonaceous and bentonitic shales enveloped between the overlying LaBiche Formation shales and underlying Belle Fourche Formation (Shaftesbury). With the exception of drilling at the Asphalt Property, overburden was encountered in all of the holes, ranging 6m to 47m of intermixed till, clay and shale, and is most probably locally derived incorporating considerable material from the underlying LaBiche Formation. Downhole stratigraphy is summarized below.

Considerable footages of the upper portions of the drill holes cored shales of the **LaBiche Formation,** consisting predominantly of battleship gray muddy shale which, with the exception of the occasional isolated carbonate concretion or (rarer) bentonite seam, is a monotonous sequence devoid of lithological and geochemical variations.

Preliminary micropaleontological examination conducted by the GSC (Leckie 1997) on LaBiche Formation drill core samples taken by Mr.D.Leckie from the Buckton Property suggest an unexpected 4-6 million year gap between the top of the Second White Specks Formation and the base of LaBiche, indicating that shales logged/mapped at the Buckton Zone as LaBiche are likely part of the Upper Cretaceous Lea Park Formation.

The **Second White Specks Formation** was intersected in all of the holes and was cored in its entirety with the exception of holes AS01 and BK01. AS01 was collared partway into the Formation and cored only its lower parts, and BK01 was collared too high and did not reach the bottom contact. Stratigraphic and textural observations suggest that the Formation has been disturbed by faulting or a glacial thrust at the Asphalt Zone.

The Second White Specks Formation varies in thickness from 18m to 26m at the Buckton Property and is thinner at the Asphalt Property averaging approximately 11m. It is broadly characterized by three principal horizons: (i) silty shales nearer the lower sections, (ii) a bioclastic black shale midsection, and (iii) bentonitic gray shales nearer its top. The Formation's upper and lower contacts are well marked by the development of bentonites near its top and bone beds (often siliciclastic) defining its base.

The basal 3m-5m of the Formation is typically characterized by one or more pebbly lag deposits intercalated with lenses of calcareous (coccolithic) non-bioturbated organic rich shale with "poker chip" appearance. The lag deposits are generally carbonate cemented and contain abundant fish debris, quartz, clear-white and black chert, glauconite and sulfides (pyritic and marcassitic). The bone-bed horizons are often well lithified and contain some silica cement – hence are generally termed siliciclastic bone beds. In many instances, the bone beds contain angular shardy clear quartz which exhibits no evidence of transport and has been interpreted to be of likely volcanic provenance as it resembles similar quartz observed in bentonites, suggesting proximal availability of ash/pyroclastic material at the onset of Second White Specks deposition.

The bone-bed/poker-chip shale assemblage is overlain by 3m-5m of poorly calcareous to non-calcareous and non-bioturbated **silty shales** which contain minor amounts of clastic material (quartz, biotite) and a bentonite ranging in thickness upward from a few centimeters to 20cm. This bentonite (**Lower Bentonite Marker**) is a good marker unit noted in all of the drill holes and contains subangular to subrounded clasts of other bentonites and shale.

The silty shales are succeeded upward by a 4-6m thick calcareous non-bioturbated black shale which locally contains carbonate cemented silt lenses and a few bentonites with thicknesses ranging upward to

5cm. These shales are overlain by a 1m-3m thick very calcareous black shale characterized by the presence of horizons of shell material (particularly Inoceramus) and is devoid of bentonites. Due to its pitch-black colour and the presence of shells, this **bioclastic shale** presents a good correlative marker between holes.

The bioclastic shale is succeeded upward by 3-5m of calcareous black shale with varying amounts of bentonite which are most abundant in the lower 2m-3m of the sequence (upward to 14 separate thin beds) and throughout its top which is marked by the **Upper Bentonite Marker**. Midsection, these shales are only moderately calcareous and nearly devoid of bentonites.

The **Upper Bentonite Marker**, observed in all of the drill holes, is a 10-25cm thick steely gray to blue distinct marker which contains trace amounts of pyrite/marcassite and mica. It is succeeded upward by a 1m-3m thick poorly calcareous gray-brown **bentonitic shale** which contains upward to 20 separate thin bentonite seams (typically 2mm-1cm) at various angles to core. The unit typically contains abundant pyrite/marcassite (10-20% volume) as well as white powdery layers which are likely ash or sulfates, or an admixture thereof. The Marker is tightly folded in drill hole BK03 (Plate 4) at the Buckton Property and is accompanied by a thickening of the Second White Specks Formation in its uppermost 4m (the result likely massive slumping within the GOS Creek valley).

The bentonitic shale is capped by a 10cm-50cm thick sulfidic shale (10-30% sulfides volume) containing clasts of bentonite and other shale, as well as matrix quartz and chert similar to the basal lag deposits. The unit also occasionally contains a green clay-like material (altered ash, pyroclastic or galuconite?) as clasts and as matrix. Although this unit may be a basal lag deposit to the overlying LaBiche Formation, the shardy volcanic quartz and bentonite clasts suggest that it belongs to the Second White Speckled Shale and has significant pyroclastic affinity.

Plate 4: Tight fold in Upper Bentonite Marker, surrounded by thin bentonite seams, Drill hole BK03 Buckton Zone. Tintina Mines drilling 1997. Image from author's collection of lecture photographs, Sabag 1994-1999.

The **Belle Fourche Member** of the Upper Shaftesbury Formation was intersected in all of the holes which penetrated below the base of the Second White Specks Formation. Belle Fourche in the area is dominated by light gray bioturbated silty shales with occasional silty/sandy seams.

Salient observations and deductions from the drilling are as follows:

- The drilling confirmed that the surface composite anomalies A-South and B-Mid indeed reflect buried metal mineralization in shales beneath the surface, over a 8km cross-section across the Buckton Zone at B-Mid and over a 900m cross-section across the Asphalt Zone at A-South;

- The drilling confirmed the presence of metal enrichment in the Second White Speckled Shale, but indicated that sections beneath its bottom contact are relatively unmineralized, contrary to the proposal of the geological working model formulated for the area. The drilling, accordingly, disproved the model and demonstrated that the Second White Speckled Shale, and to a much lesser extent also the Shaftesbury Formation beneath it, is ***itself*** the primary host to the metals;

- All of the holes reported metal enrichment from the entire width (thickness) of the Second White Speckled Shale intersected which, over the Buckton Zone, is a 18.4m-26.2m thick flat-lying "blanket" of poorly consolidated black shale, gently block-faulted in several places. Over the Asphalt Zone the Shale is estimated to be 11.4m thick. The drilling confirmed enrichment of Mo, Ni, U, V, Zn, Cu, Cd, Co, Ag and Au in the Shale;

- The holes demonstrated good continuity of geology and grades between the widely spaced holes across the Buckton Zone, and the closer spaced holes similarly reported minimal variability well within limits documented from sampling of large outcrops in the area. Grade variations documented from the drilling are, overall, compatible with those documented from sampling of the larger valleys in the area, and from sampling of intermittent exposures of the mineralized Speckled Shale along the valley walls of GOS Creek valley which parallels the 8km long drilled section approximately 1km away to its southeast;

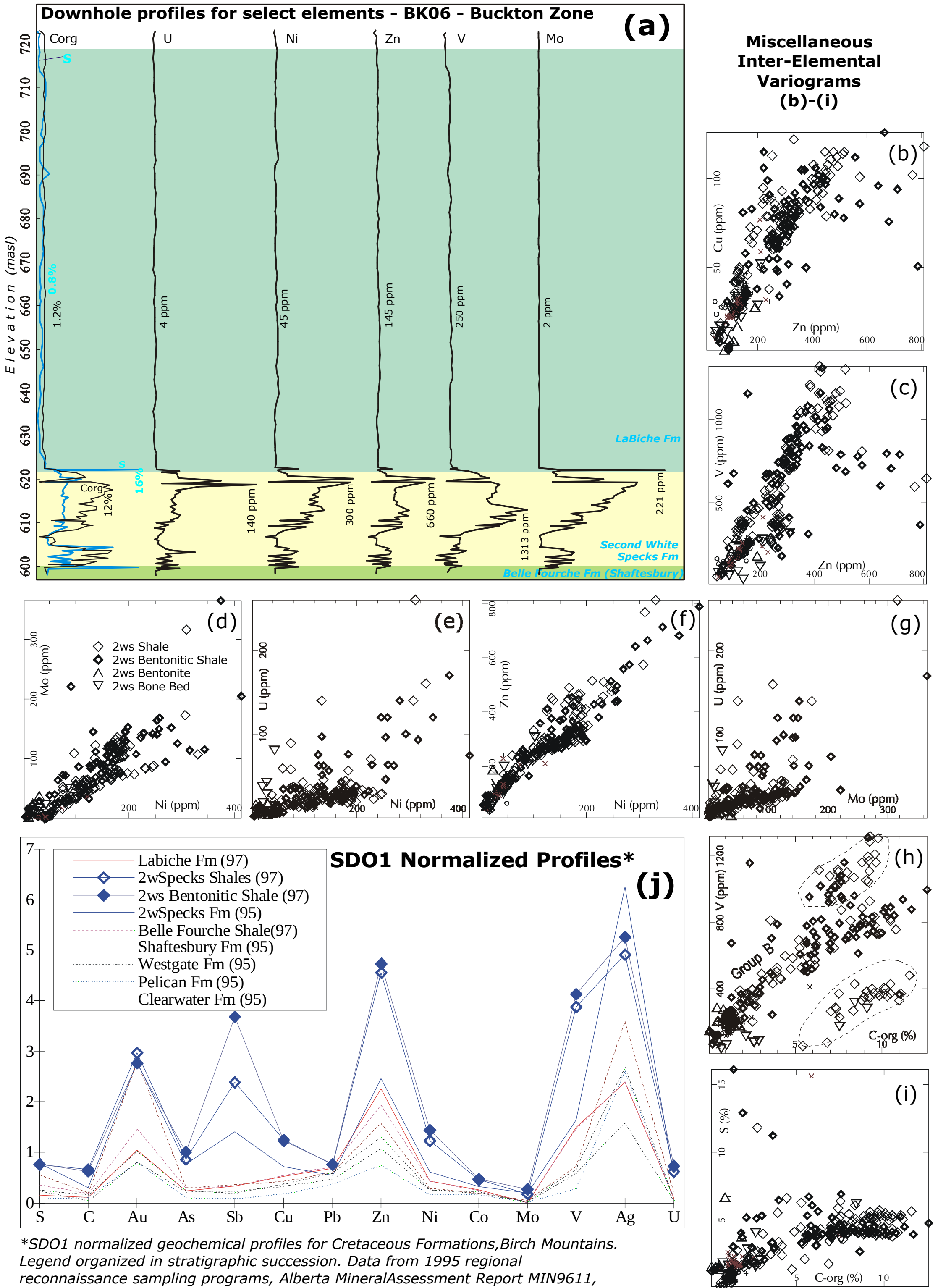
- Downhole lithogeochemistry demonstrated that the Second White Specks Formation is characterized by the most conspicuous geochemical relief in the area, providing the only geochemical variations within an otherwise featureless and monotonous stratigraphic package. Samples from the LaBiche Formation reported by far the most monotonous geochemistry, and geochemical similarities of overburden material to the underlying LaBiche shales indicated a predominance of locally derived overburden in the area;

- The drilling demonstrated that metals enrichment within the mid-Cretaceous stratigraphic package is conspicuously confined to the Second White Specks Formation, characterized by metal contents varying x2 to x10 of its enveloping Formations. While concentrations of many of the base metals (e.g. Ni, Mo, Zn) were noted to be better concentrated nearer the Formation's upper contact, dominated by intermixture of considerable bentonitic seams into the shale, other metals (e.g. V, Cu) are better concentrated throughout its midsection. Metals enrichment within the upper sections of the Formation is also accompanied by Ba, S, Na and Corg enrichment, and by higher pyritic sulfide contents ranging upward to 20% by volume;

- LaBiche, Belle Fourche and Second White Specks Formation shales meet the textural and compositional criteria to be classed as bona fide "black shales" in the strictest of sense, and the Second White Specks Formation shales are "metal enriched black shales" in respect of Au, Sb, Zn, V, Ag, Sr, Ba, Ca, P and Se;

- Despite good apparent relationship between metals enrichment and Corg, Tintina's interpretations of interelemental variations, and of metal-Corg and metal-S relationships, suggested that the metals are hosted in multiple carrier minerals some of which are sulfides and others are likely organic forms, with a suggested grouping of the various metals into one group (Ni, Zn, Mo) characterized by affinities for enrichment predominantly in, or as, inorganic minerals and another group (V, Cu) exhibiting affinities for enrichment in, or as, organic species, some subpopulation portioning, notwithstanding.

A detailed presentation of lithogeochemical trends and interelemental relationships documented by Tintina in its reports is well beyond the scope of this Report. The reader is referred to Alberta Mineral Assessment Report MIN9802 (Sabag 1998) and to AGS 2001 for an indepth review. Downhole elemental profiles for select metals from drill hole BK06 are presented in Figure 53 along with select variograms and SDO1 normalized profiles.



**SDO1 normalized geochemical profiles for Cretaceous Formations,Birch Mountains. Legend organized in stratigraphic succession. Data from 1995 regional reconnaissance sampling programs, Alberta MineralAssessment Report MIN9611, Sabag 1996b; and from Asphalt and Buckton Properties drilling 1996-97, Alberta Mineral Assessment Report MIN9802, Sabag 1998.*

Figure 53: After Figure 44, Sabag 2008. (a) Select downhole metals profiles hole BK06, Buckton Zone, historic drilling. After Alberta Mineral Assessment Report MIN9802, Sabag 1998; (b)-(i) Miscellaneous inter-elemental variograms, historic drilling, Asphalt and Buckton Zones.After figures from Alberta Mineral Assessment Report MIN9802, Sabag 1998; (j) SDO1 normalized geochemical profiles, Cretaceous Formations, historic surface sampling 1995-1997 and 1997 drilling, Birch Mountains. After Figure 36, Alberta Mineral Assessment Report MIN9802, Sabag 1998.

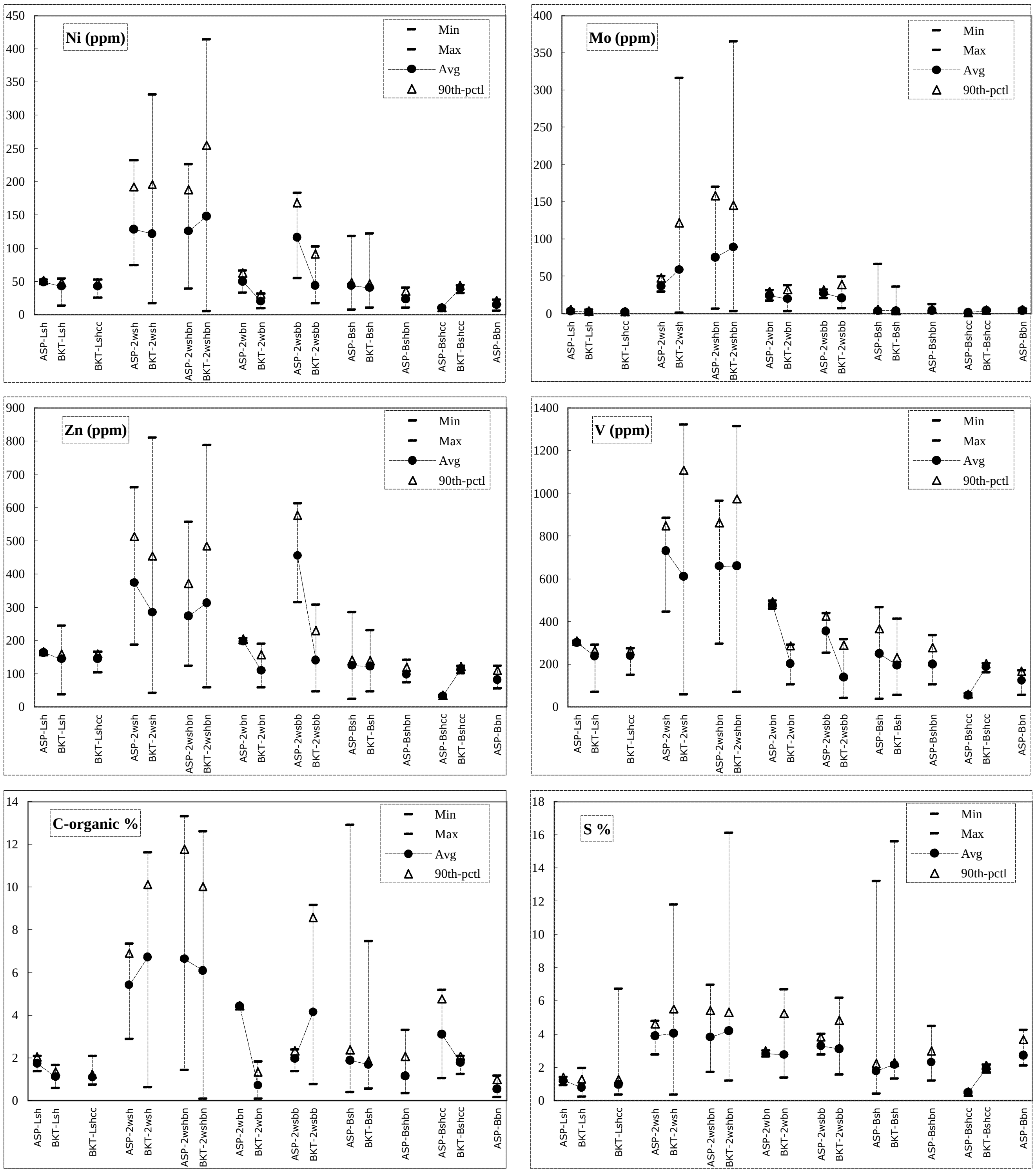


Figure 54: Summary of C-org, S, Ni, Mo, Zn and V variations for sub-formational units of LaBiche (L), Second White Specks (2w) and Belle Fourche (B) Shales, historic drilling Asphalt (ASP) and Buckton (BKT) Zones. (sh=unmixed shale; shbn=bentonitic shale; shcc=concretionary shale; bn=bentonite; sbb=siliciclastic bonebed). After Figure 45, Sabag 2008; and Figures 56 and 57, Alberta Mineral Assessment Report MIN9802, Sabag 1998.

Figure 53 is self explanatory, showing good correlation among metals (in 53b-53g), and equally good correspondence among them downhole (53a) with progressively better concentration of most of the metals over the upper sections of the Second White Speckled Shale Formation, but with a secondary subzone dominated by preferential concentration of V midsection in the hole accompanied by lesser similar enrichment in other metals. Figure 53 also shows likely multiple populations for V and to a lesser extent also for Cu and U (53h, 53b and 53c). Content of select metals as well as C-org and S for various sub-components of the Shale are shown in Figure 54, which is also self-explanatory.

The various shales were classified based on the black shale classification scheme of the general IGCP Project 254 guidelines, and Huyck, 1988, according to which:

- a "**black shale**" is a dark (gray or black), fine grained (silt or finer), laminated sedimentary rock that is generally argillaceous and contains appreciable organic carbon (>0.5 wt%); and
- a "**metalliferous black shale**" is a black shale which is enriched in any given metal by a factor of x2 (except Be, Co, Mo, U for which x1 is sufficient) relative to USGS standard SDO-1.

C-org, S, Ba, Na and Ca contents for the LaBiche, Second White Specks and the Belle Fourche (Shaftesbury) Formations are summarized in Table 8. Averages for organic Carbon (C-org) contents range 1.1% to 6.7% and shales from all three Formations meet the textural and compositional criteria to be classed as "black shales". Shales from the Second White Specks Formation report by far the highest C-org contents, are more calcic and are characterized by elevated Fe and S. In addition, bentonitic shales, being shales intermixed with many fine layers and seams of bentonitic material, reflect their composite nature reporting the higher average Na and Ba levels, especially for the Second White Specks Formation.

	Property	C-org %	S %	S/C	Ca %	Fe %	Ba ppm	Na %	Ni/Cu
Labiche Shale	Asphalt	1.7	1.2	0.7	0.6	3.9	2240	0.66	1.2
Labiche Shale	Buckton	1.1	0.8	0.7	0.8	3.9	1175	0.43	1.3
Second White Specks Shale	Asphalt	5.4	3.9	0.8	5.3	4.5	1192	0.50	1.3
Second White Specks Shale	Buckton	6.7	4.0	0.7	5.6	4.6	1484	0.51	1.6
Second White Specks Bentonitic Shale	Asphalt	6.6	3.8	0.7	4.1	4.5	3099	0.66	1.6
Second White Specks Bentonitic Shale	Buckton	6.1	4.2	1.4	4.5	4.5	4097	0.77	2.1
Bell Fourche Shale	Asphalt	1.9	1.8	1.0	1.2	3.4	953	0.49	1.3
Bell Fourche Shale	Buckton	1.7	2.2	1.3	1.4	3.9	944	0.58	1.4
Bell Fourche Bentonitic Shale	Asphalt	1.1	2.3	3.1	1.0	3.1	702	0.56	0.8

Table 8: Summary of C-org, S, S/C, Ca, Fe, Ba, Na, Ni/Cu averages for shales, Asphalt and Buckton Zones drilling, Alberta Mineral Assessment Report MIN9802, Sabag 1998. After Table 6, Sabag 2008.

SDO1 normalized geochemical profiles for the various Formations (Figure 53j) demonstrate that the Second White Specks Formation shales are "metalliferous" (metal enriched shales) in respect of most of the metals, as they are present in quantities greater than twice those of SDO1. Second White Specks shales in the Asphalt Zone drill holes are, overall, also enriched in REE compared to SDO1 even though the bentonitic component of the shales report REE contents equivalent to SDO1 as do shales from the LaBiche and Belle Fourche Formations. In marked contrast to the Asphalt Zone, none of the Formations sampled at the Buckton Property are REE enriched relative to SDO1.

Additional salient observations, and trends noted or inferred by Tintina from its drilling programs, as applicable also to exploration work elsewhere in the Birch Mountains, are summarized below, extracted from its reports. Majority of the conclusions reached are consistent with conclusions and proposals also offered by the AGS from its mapping and sampling (AGS 2001) of Cretaceous Formations across northeast Alberta and the Birch Mountains:

- Comparative geochemical profiles from the drilling (similarly from sampling of Cretaceous Formations in the Birch Mountains) exhibit an overall gross trend of progressively better metals enrichment upstratigraphy, peaking at the top of the Second White Specks Formation. The enrichment trend is reversed in the overlying LaBiche Formation, averages from which exhibit relative depletions. The trend is best seen in relative Au, Zn, Ni, V and Ag enrichment, and is accompanied by similar trends for Ba and REE;

- Culmination of the Second White Speckled Shale Formation depositional cycle likely coincided with a significant increase in volcanism as evidenced by the great volume and number of bentonites marking its upper contact and their general association with Ba enrichment. The suggested volcanism is supported by the presence of pyroclastic material in a lag deposit often capping the Formation, suggesting that at least some of the volcanism is localized in the Birch Mountains;
- A close link between metal enrichment in the Second White Specks Formation shale with volcanic processes is reinforced by the shale's overall elevated S/C ratio averaging 1-1.2, well above an overall ratio of 0.32 common to normal shales. Since elevated S/C ratios exceeding 0.32 are commonly regarded to be the result of input from volcanogenic-hydrothermal processes, a similar history can be proposed for the Second White Specks Formation shales and, to a lesser extent, also for the enveloping LaBiche and Bell Fourche Formations;
- A volcanogenic provenance for the Second White Specks Formation Shale is supported by its higher than typical contents of Corg ranging 5.8-7% and S 4-4.2%, both of which are well above published data from normal black shales (avg C-org 0.5-0.7%, avg S 1.5-2%), and are comparable with data from many other metal enriched black shales from elsewhere in the world which are believed to have formed via volcanogenic and hydrothermal input (e.g. metal enriched shales from Bohemian Massif, Czech Republic, Pasava et al 1996; the Talvivaara deposit, Loukola-Ruskeeniemi and Heino 1996; gold bearing Russian black shales, Buryak 1976);
- The 4-6 million year gap identified between the top of the Second White Specks Formation and the base of LaBiche Formation by preliminary micropaleontological examination points to a period of significant uplift and erosion, and is compatible with syn-sedimentary tectonic activity related to increase in volcanism toward the end of the Second White Specks depositional cycle;
- Bentonites exhibit by far the most conspicuous stratigraphic trends and contrasts between the drill holes from the Asphalt Zone compared to those from the Buckton Zone. Distribution, thickness and frequency of bentonites noted in the drill holes at the Asphalt Zone suggest a local proximal source for bentonites, whereas a nearby source to the northeast is suggested by bentonites noted in the Buckton Zone drill core;
- While bentonitic shales, or shale intercepts near bentonites, in the Second White Specks Formation generally report the higher metal and sulfide contents from both properties, a similar, though weaker, trend can also be discernible in shale intercepts near bentonites in the underlying Belle Fourche Formation (Shaftesbury Fm) in the Asphalt Zone drill holes, reiterating a more general association between bentonites (i.e. volcanism) and metal concentration in the area;
- The discovery of abundant garnets and possible eclogitic garnets in heavy mineral concentrates from drill core support speculations regarding the presence of kimberlitic material, or similar venting, in the area. This is also supported by the presence of diamond stability field mineralogy in stream sediment heavy mineral concentrates from the vicinity of the two Zones;
- Tintina noted that the proposed existence of previously unrecognized volcanogenic material (and activity) in northeast Alberta is novel and represents a departure from the general geoscientific dogma for the region which has traditionally invoked a singularly brinally controlled metallogenic setting to the exclusion of other processes (eg: Feng and Abercrombie 1994). Others have also recognized a similar non-brinal metallogenic potential (Olson 1994a and 1994b, AGS 2001);
- Tintina also noted that discoveries and conclusions from its exploration work in the Upper Cretaceous stratigraphic package overwhelmingly suggest a local source(s) to the metals discovered, with a strong volcanogenic association. Tintina also proposed that metallic mineralization documented in the Birch Mountains are congregated around distinct volcanic centers characterized by considerable exhalative activity as evidenced by the abundance of bentonites and ejecta material of probable localized provenance. Cryptovolcanic activity or venting via kimberlitic pipes were also considered to present equally likely sources to the abundant ejecta material incorporated into the Second White Specks Formation.

Tintina ultimately concluded that while none of the metals are present in the shales in sufficiently high concentrations to be of economic merit by itself, the "pay" metals Mo, Ni, V, Zn, and Cu (and to some extent also Ag and U) collectively represent sufficient gross in-situ value on a combined basis to place the Second White Specks Formation shales within reach of economic viability, provided the metals can be recovered on a combined basis, especially when reviewed in the context of the low operating costs afforded to bulk mining and treatment operations of similar unconsolidated material in the region and elsewhere in the world. Weighted averages of metal grades for intersections of the Second White Speckled Shale in the drill holes are summarized in Table 9, showing also grades as converted to, and restated as, equivalent metal pounds per short ton (Ag reported in g/t).

Hole No.	Interval Thickness (m)	Mo -ICP (ppm)	Ni -ICP (ppm)	U-INA (ppm)	V -ICP (ppm)	Zn -ICP (ppm)	Cu -ICP (ppm)	Co-INA (ppm)	Ag -ICP (ppm)
BK1	15.26*	86	160	37	776	360	83	21	0.4
BK2	18.4	66	126	34	648	305	70	21	0.5
BK3	26.2	62	121	30	623	289	73	19	0.4
BK4	21.1	67	129	27	645	282	73	23	0.3
BK5	18.4	77	152	25	722	318	77	24	0.7
BK6	22.6	72	133	30	668	282	78	21	0.8
AS1	7.21**	73	144	47	690	376	89	20	0.3
AS2	11.4	63	122	31	664	282	89	20	0.3
Metal Prices 1997	USD$	$4.4/lb	$3.1/lb	$9/lb	$4.1/lb	$0.78/lb	$0.9/lb	$24.3/lb	$5.2/oz

Metal Prices as at October 6, 1997; USD$ x 1.4 = CDN$

*Hole BK1 did not reach bottom contact of the Formation. Total thickness is estimated to be 21.3m per projections from adjacent holes

** Asphalt hole AS1 collared in Speckled Shale. Total thickness estimated to be 11.4 based on projections from adjacent hole

Hole No.	Interval Thickness (m)	Mo -ICP (lb/st)	Ni -ICP (lb/st)	U-INA (lb/st)	V -ICP (lb/st)	Zn -ICP (lb/st)	Cu -ICP (lb/st)	Co-INA (lb/st)	Ag -ICP (g/t)
BK1	15.3	0.17	0.32	0.07	1.55	0.72	0.17	0.04	0.01
BK2	18.4	0.13	0.25	0.07	1.30	0.61	0.14	0.04	0.02
BK3	26.2	0.12	0.24	0.06	1.25	0.58	0.15	0.04	0.01
BK4	21.1	0.13	0.26	0.05	1.29	0.56	0.15	0.05	0.01
BK5	18.4	0.15	0.30	0.05	1.44	0.64	0.15	0.05	0.02
BK6	22.6	0.14	0.27	0.06	1.34	0.56	0.16	0.04	0.03
AS1	7.2	0.15	0.29	0.09	1.38	0.75	0.18	0.04	0.01
AS2	11.4	0.13	0.24	0.06	1.33	0.56	0.18	0.04	0.01

Table 9: Summary of weighted average grades for select metals, Second White Speckled Shale intersections, Asphalt and Buckton Zones historic drilling. After Alberta Mineral Assessment Report MIN9802, Sabag 1998. After Table 7, Sabag 2008.

Tintina prepared estimates of grades of the various sub-formational components of the Shale and its enveloping shales (Table 10), and calculated their respective gross in-situ value to identify the better collective grading sections for additional future follow-up. The calculations were based on Oct/1997 metal prices, and reflected aggregate value of the contained Mo+Ni+U+V+Zn+Cu+Co+Ag, as analyzed, in-situ in the shale, assuming 100% recovery. Details of Tintina's calculations are discussed in DNI's NI-43-101 report appended herein as Appendix B1. The reader is, however, cautioned that the foregoing figures are guidelines only which provide a relative yardstick to guide future exploration, as they are conceptual in nature, are based on broad assumptions and generalizations, and do not represent economic worth of the Shale, but rather reflect the aggregate gross value of metals contained in the shale based on exploration analyses, as at October 1997 metal prices, assuming 100% recovery, assuming also that the metals can or might be recoverable from the shale on a combined basis to extract the aggregate values estimated.

Summary of Grades (ppm)

PTY/Fm	Cu (ppm)			Mo (ppm)			Ni (ppm)			Co (ppm)			V (ppm)			Zn (ppm)			U (ppm)		
Rocktype	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg	Min	Max	Avg
ASP-Lsh	35	47	40	1	5	3	46	52	49	13	16	14	297	310	302	160	168	164	4	8	7
BKT-Lsh	12	47	32	1	5	2	13	54	43	3	21	12	71	290	238	37	244	145	0	7	4
ASP-2wsh	56	117	100	29	50	36	74	232	128	16	41	22	446	884	730	187	660	374	16	110	41
BKT-2wsh	13	122	73	1	316	59	17	331	121	4	55	21	59	1322	611	42	810	285	5	260	30
ASP-2wshbn	16	116	82	6	170	75	39	226	126	6	30	19	296	965	659	123	556	274	5	62	29
BKT-2wshbn	4	126	71	3	365	89	5	414	148	1	180	23	69	1313	660	58	787	313	2	170	38
ASP-2wbn	46	61	54	17	31	24	33	66	50	7	12	10	460	496	478	191	206	199	5	17	11
BKT-2wbn	4	28	14	3	38	20	9	31	20	1	7	4	104	291	204	58	190	110	4	18	11
ASP-2wsbb	62	94	78	20	32	27	55	183	116	13	29	21	254	439	355	315	612	455	100	100	100
BKT-2wsbb	14	82	31	7	49	21	17	102	44	5	30	11	41	317	139	47	308	142	7	80	29
ASP-Bsh	7	75	34	1	66	3	7	118	44	2	26	11	37	467	251	24	285	125	1	36	6
BKT-Bsh	10	77	29	1	36	4	10	122	40	5	56	12	55	413	196	47	230	123	3	13	6
ASP-Bshbn	20	42	31	1	12	4	10	40	23	5	9	7	104	336	200	73	141	98	2	8	4
ASP-Bshcc	8	11	10	1	1	1	9	11	10	3	4	4	49	62	56	30	36	33	2	2	2
BKT-Bshcc	20	31	26	3	5	4	32	44	39	10	11	10	161	203	188	101	124	114	4	4	4
ASP-Bbn	13	27	21	3	6	4	6	22	15	5	8	6	57	172	125	56	124	82	2	7	5

Formation / Rocktype Legend

Lsh = Labiche Shale	2wsh = Second White Specks Shale	Bsh = Belle Fourche Shale
	2wsb = Second White Specks Bentonitic Shale	Bshbn = Belle Fourche Bentonitic Shale
	2wbn = Second White Specks Bentonite	Bshcc = Belle Fourche Concretionary Shale
	2wsb = Second White Specks Siliciclastic Bone Bed	Bbn = Belle Fourche Bentonite

Table 10: Summary of grades of select metals from the LaBiche, Second White Specks and Belle Fourche Formations, Asphalt (ASP) and Buckton (BKT) Zones drilling 1997. After Table 8, Sabag 2008; and from Table 15, Alberta Mineral Assessment Report MIN9802, Sabag 1998.

Further discussions of in-situ values are better suited to an economic evaluation or scoping study relying on a future resource study. Challenges of exploring polymetallic deposits are discussed in greater detail later in this Report in Section 9.7.

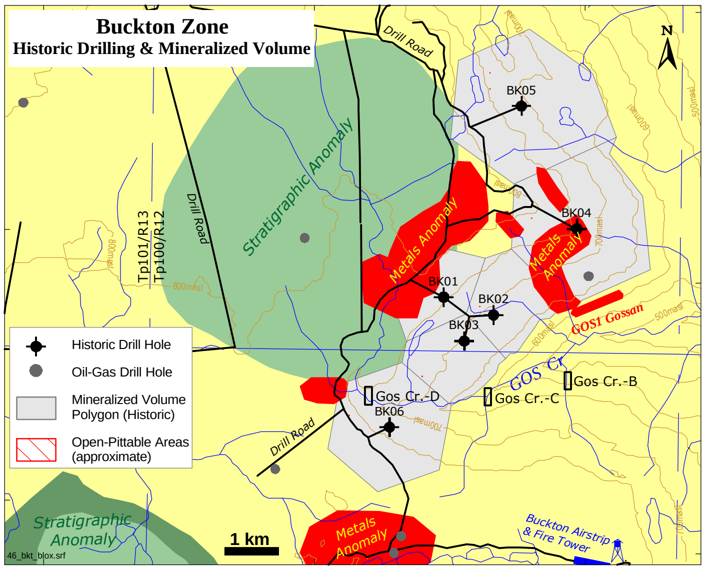


Figure 55: Buckton Zone mineralized volume, per Tintina drilling 1997. All features except polygons after Alberta Mineral Assessment Report MIN9802, Sabag 1998. Mineralized polygons from miscellaneous other Tintina communications documents. See also Figure 33.

As a guide to its future exploration work, based on very broad extrapolations reinforced by the drilling results, Tintina proposed that should surface and subsurface metallic anomalies identified at the Asphalt and Buckton Zones, and over the other composite target areas identified, indeed reflect the true size of underlying mineralization, metals concentration zones in the Speckled Shale Formation can be conjectured to extend over areas generally measuring upward to approximately 5km x 5km (reinforced by the approximate 8km long cross-section drilled across the Buckton Zone). In addition, based on an extrapolated average thickness of some 30m for the Formation, and an average specific gravity of 2.1[16], the shale can potentially host metal concentrations of approximately 60 million tonnes per 1km^2 of lateral extent, representing approximately 1,500 million tonnes per any deposit extending over a 5kmx5km area.

To support the above conjecture, and as a guide to its future in-fill grid drilling, Tintina prepared an estimate, in December 1998[17], of the volume of mineralized material implied by the drilling at the Buckton Zone, to be approximately 430 million cubic metres, representing the aggregate of all Second White Speckled Shale intercepts logged in the drilling, without grade nor thickness optimization. It also estimated that this volume extends over an approximate 2.5kmx8km area with a thickness ranging 18.4m to 26.2m, and represents approximately 904 million tonnes of mineralized material, averaging approximately 72ppm Mo, 137ppm Ni, 30ppm U, 680ppm V, 306ppm Zn, 76ppm Cu, 21ppm Co, 1ppm Ag and traces of gold. This mineralized volume is "open" in all directions, except to the east which marks the erosional edge of the Birch Mountains where the Shale Formation has been eroded away. The outline of the mineralized volume is shown in Figure 55.

For preparation of its estimate, Tintina relied on volumetric calculations relying on simple polygons centered on Speckled Shale drill intercepts extending outward from each drill hole midway to the next adjacent hole. Tonnages were calculated at a specific gravity of 2.1 as calculated from drill sample weight records. Some of the polygons are reinforced by similarly mineralized outcrops sampled along river valley walls in the area and, along the GOS Creek valley walls which parallel the 8km drilled section 1km to its southeast. The GOS Creek valley walls contain intermittent exposures of mineralized Second White Speckled Shale, including a 120m long mineralized exposure at the GOS1 Gossan which has been extensively sampled by Tintina as well as the AGS, and has occasionally also yielded free gold grains in heavy mineral concentrates.

[16] DNI's verification sampling reported measured SG values ranging 2.2-2.5

[17] Included in miscellaneous Tintina communication documents 1998-1999, and in regulatory discussions Feb/1999.

The reader is CAUTIONED that the above estimate is not a mineral resource, that it pre-dates NI-43-101 and does not conform to it, and that it should not be considered to be a definitive indication of mineralization which could, or might, exist at the Buckton Zone, but that it is a relevant and significant indication of the overall potential of the Zone, and of the magnitude of mineral aggregations which it might host subject to confirmation by future in-fill grid drilling.

The above mineralized volume is superceded by DNI's review of Tintina's work, and DNI's delineation of a Potential Mineral Deposit proposed to exist at the Buckton Zone, as discussed in greater detail in Section 9.8.1 of this Report.

There are, to the author's knowledge, no additional positive or negative data or information, nor any subsequent exploration work, which would change or equivocate the historic figures. There has been no subsequent drilling on the Property in search for metals.

Tintina overall concluded that the most attractive features of the Second White Speckled Shale Formation shales from an economic perspective are (i) their proximity to surface and their unconsolidated nature hence amenability to extraction by low cost large scale bulk mining; and (ii) the potentially immense lateral extent of metal enriched portions therein estimated to occupy tens of square kilometers as extrapolated from surface and subsurface exploration results. Tintina subsequently focused its attentions on metallurgical testwork intended to determine recoverability of the metals from the shale and to establish economic parameters.

8.10 Historic Metals Recovery Tests – Asphalt and Buckton Zones

Tintina undertook a series of studies and related testwork in 1998-1999 as an initial and preliminary assessment of the viability of recovering metals from the shale on a combined basis. Particulars of the tests are described in Section 6.2.13 of DNI's NI-43-101 report appended herein as Appendix B1.

The testwork consisted of the following:

Sequential Leaching Tests 1998: served to conclude that a that the metals enriched in the shale are in most part hosted in non-organic compounds and in recoverable forms (e.g. sulfides, native or oxides).

Ortech Flotation Tests 1998: concluded that the metals enriched in the shale cannot be concentrated by conventional flotation and tend to form slimes.

Ortech Sulfuric Acid Leaching Tests 1998: achieved extracted recoveries of 97.2% Nickel, 100% Zinc and 33.6% Vanadium by 6-hour long leaching in sulfuric acid at 75C and ambient pressure. The leaching tests did not record data for Molybdenum, Uranium and Copper, nor for any of the other metals known to be enriched in the shale sample tested.

Deflocculation Tests 1998: proved inconclusive as to concentration of metals, but succeeded in collecting particulate gold from some samples.

Cyanidation Tests 1999: confirmed preg-robbing gold losses from carbon-in-pulp bottle roll cyanidation tests, and overall reported higher grades from samples which had been de-slimed. The test results were, however, nuggetty.

Gold Check Assaying 1999: extensive check assaying reported very erratic results ultimately concluding that the standard 30gm sample size routinely used during fire assaying is non-representative for analysis of the shales for gold, and that historic gold grades relying entirely on assays from small samples may have been understated.

Heavy Mineral Concentration 1999: demonstrated that deflocculants are an effective pre-treatment for concentration of minerals and metals from the shale's otherwise muddy matrix, and that gold and base metals were successfully, though incidentally, concentrated in the heavy minerals, confirming the presence of native gold in the shale. The heavy oil concentrates achieved concentration ratios ranging x25-476 for Au, x6-15 for Zn, x2-20 for Co, x2-11 for Ni, and x1-2 for U.

The above historic testwork has provided baseline guidelines to DNI's metals recovery testwork in the past two years which are described and discussed in Section 11.6 of this Report.

8.11 Concluding Remarks On Historical Work

To the extent that DNI's Property is large (2,536 sq km) and includes several large historic properties of differing vintages, the known prospective metallic targets on the Property span the full spectrum of exploration and development status, ranging from a early-stage targets, through drill ready targets, to two drill confirmed metallic Zones (Asphalt and Buckton Zones) which have advanced to the resources definition grid drilling stage to upgrade Potential Mineral Deposits to exist therein, as proposed by DNI's 2008 NI-43-101 technical report for the Property (Appendix B1), to classified resources. Considerable information has, accordingly, been incorporated into this Report from all historic exploration work over the Property to capture all results which would be relevant to the exploration for polymetallic black shale hosted zones over various parts of the Property, and as such the Report includes extensive detailed reconnaissance exploration information in addition to results from advanced work in the metallurgical benchtesting stage. All of the foregoing information were initially consolidated in 2008 in DNI's technical report for the Property.

The Property's large size is appropriate to the type and size of metal targets being sought by DNI, comprising in most part laterally extensive tabular near-surface polymetallic zones (50-100 sq km each), occurring as near-surface open-pittable flat "blankets" hosted in the relatively flat stratigraphy. Six such target areas were identified by the historic work which were reinterpreted by DNI and consolidated into four target areas. Two additional, early stage, target areas were also recognized and proposed by the 2008 technical report after review of the historic work in the context of geoscientific developments from elsewhere related to black shale hosted metallic mineralization.

The only geological information available from the Birch Mountains, and from DNI's Property, toward the exploration for metals consist substantially of results from historic work conducted by Tintina Mines Limited together with work conducted by the Alberta Geological Survey and the Geological Survey of Canada. The combined historic work provides detailed data coverage over the eastern two-thirds of DNI's Property, whereas the western one third of the Property is unexplored.

The following salient conclusions can be made based on, and collated from, the collective information from all historic work:

- Metals enrichment on the Property is hosted in the Middle-Upper Cretaceous Second White Speckled Shale Formation, which is typically a 20m-40m thick flat-lying "blanket" of poorly consolidated black shale, gently block-faulted in several places. The Formation demonstrates the most conspicuous geochemical relief in the Birch Mountains, providing the only geochemical variations within an otherwise featureless and monotonous stratigraphic package. The Formation is 18.4m-26.2m thick at the Buckton Zone as demonstrated by historic drilling, and approximately 11m thick over the portion drilled at the Asphalt Zone;
- The Second White Speckled Shale, the overlying LaBiche and the underlying Belle Fourche (Shaftesbury) Shales, are bona fide "black shales". The Speckled Shale, furthermore, meets textural and compositional criteria to be classed a "metal enriched black shale". Metal enrichment in the Second White Speckled Shale is characterized by enrichment of Mo, Ni, U, V, Zn, Cu, Co, Cd, Ag and Au, and its metal contents typically vary x2 to x10 of its enveloping Formations;
- Metal enrichment and lithological patterns in the Speckled Shale are compatible with the Rift-Volcanic Type of metal enrichment style recognized from black shales worldwide, characterized by metal accumulation believed to have been controlled by hydrothermal-volcanogenic events (submarine exhalations) in the presence of organic matter. The Rift-Volcanic Type of deposits typically have modest polymetallic grade, are immense (300MM-1,000MM+ tonne range), are 20m-100m thick tabular "blankets" which extend over tens of square kilometers;
- The Second White Speckled Formation Shale exhibits different geochemical patterns when compared with most other shales in northern Alberta, including the underlying Shaftesbury Formation shale,

suggesting different controls for metal concentration in the Speckled shale, than for other northern Alberta shales, especially over the Birch Mountains and the Property. The Speckled Shale is also more enriched in metals over the Birch Mountains and the Property than elsewhere in northern Alberta;

- Samples of Cretaceous Formations from the Birch Mountains, independent of lithology, contain a significantly different shale-normalized REE profile when compared to samples elsewhere in northern Alberta. Most samples from the Birch Mountains, particularly those from the Second White Speckled Shale Formation, when reviewed in conjunction with their Ba enrichment, display trends suggesting influence of low temperature hydrothermal precipitates in the Birch Mountains;
- Overall conclusions from all historic work over the Birch Mountains Middle-Upper Cretaceous stratigraphic package, over DNI's Property, overwhelmingly propose a nearby volcanogenic local source(s) to the metals discovered. The work suggests that metallic mineralization in the Birch Mountains are congregated around volcanic centers characterized by considerable exhalative activity, and supports speculation of the existence in the area of yet undiscovered sedimentary exhalative - SEDEX style - sulfides. A localized heat "budget" over the Birch Mountains is consistent with the recognized presence of considerable heat generation at the surface of the precambrian beneath it;
- Culmination of the Second White Speckled Shale Formation depositional cycle likely coincided with a significant increase in volcanism as evidenced by (i) the great volume and number of bentonites marking its upper contact and their general association with Ba enrichment (10,000ppm-30,000ppm); (ii) the presence of pristine pyroclastic material in a lag deposit often capping the Formation, suggesting also that at least some of the volcanism is localized in the Birch Mountains supported further by presence of thicker bentonite sections ranging 10cm-35cm near the top of the Formation, (iii) various lithogeochemical trends and the shale's trace elemental geochemistry. A close link between metal enrichment in the Shale with volcanic processes is also suggested by interelemental patterns;
- Bentonites within the Second White Speckled Shale exhibit conspicuous stratigraphic trends and may be diagnostic to identification of volcanic vents in the Birch Mountains. Contrasts between distribution, thickness and frequency of bentonites noted in historic drill holes from the Buckton and Asphalt Zones suggest a local proximal source for bentonites from the Asphalt Zone drilling, and a nearby northerly source for bentonites noted in the Buckton Zone drill core. The vicinities of the two Zones, accordingly, offer good candidate areas with demonstrable potential for hosting primary metal mineralization in vents or as SEDEX accumulations;
- The Second White Speckled Shale demonstrates good lateral geological and metal grade continuity between widely spaced historic holes drilled across an 8km cross-section of the Buckton Zone, with equally good lateral grade continuity compatible with variations documented from sampling of large outcrops in the area. In addition, remarkable grade similarity is demonstrated between drill results from the Buckton Zone and those from the Asphalt Zone located 30km away. Speculation that similarly good continuity can be expected from the Shale throughout the Birch Mountains would be reasonable and would be supported by the typically good lateral continuity demonstrated by historic mapping and sampling results across the Birch Mountains, and by comparable excellent lateral continuity typical of black shales worldwide;
- Vertical grade variations in the Second White Speckled Shale depict a well defined metal zonation for many of the base metals, with (overall) better concentration of Mo-Ni-U-(Zn) nearer the Formation's upper contact (dominated by intermixture of considerable bentonitic seams into the shale), and overall better concentration of V, Cu throughout its midsection. Metals enrichment within the upper sections of the Formation is also accompanied by Ba, S, Na and Corg enrichment, and by higher pyritic sulfide contents ranging upward to 20% by volume. Vertical grade zonation, or an ordered trend, is typical of back shales throughout the world. Metals accumulation in black shales is a virtually continuous process and is best regarded as a sedimentary record captured in vertical sedimentary section, extending from the onset of sedimentation through the entire history of any given deposit, to the end of sedimentation, reflecting changes in sedimentation processes, in weathering and hydrological history of the area and those of the sources to the shale. Whether the zonation patterns

observed at the Buckton and Asphalt Zones are typical of what might be expected from other Zones which might be discovered on the Property is unknown, though is suspected;

- The Second White Speckled Shale contains fine and coarser sulfides which are dominated by many varieties of Fe-S species, and the higher metal grades therein are contained in its more bentonitic sections. Cu-sulfides, Ni-sulfides as well as native gold have been documented in mineral concentrates recovered from the Shale, though no systematic mineralogical work exists characterizing overall mineral make-up of the Shale.;
- Metals in the Second White Speckled Shale are likely hosted in multiple carrier minerals some of which are sulfides and others are likely organic (or clay) forms, with a suggested grouping of the various metals into one group (Mo, Ni, Zn, Mo, $\pm$U) characterized by affinities for enrichment predominantly in, or as, inorganic minerals and another group (V, Cu) exhibiting affinities for enrichment in organic (or clay) species, some subpopulation overlaps, notwithstanding;
- Orientation historic leaching testwork demonstrates that at least Ni, Zn and V can be recovered from the Second White Speckled Shale on a combined basis by conventional sulfuric acid leaching with recoveries of 97%, 100% and 33%, respectively. There is no data in the historic records for leaching of other base metals. The historic testwork provides a favourable basis on which to expand with broader future work, with the additional benefit of metals recovery successes reported by others from their exploration of black shales from elsewhere (e.g. Uranium from Alum Shale; combined Ni-Co-Zn-Cu-(Mn) from Talvivaara deposit. See Sections 18.3 and 18.4);
- Preliminary historic bottle roll cyanidation tests demonstrate that gold can be leached from samples of Second White Speckled Shale by conventional carbon-in-leach cyanidation once the clay matrix is disaggregated by deflocculation, and that gold content of the Shale may be an order of magnitude higher than that documented from routine analysis of small, typically 30gm, samples by fire assay or INA. The discrepancy is attributed to nugget effect. Ultimate gold content of the Shale is, accordingly, currently unknown though expectations of subgram gold grades in the 0.1-0.4g/t range hosted in portions of the shale would not be unrealistic. The historic testwork provides a favourable basis on which to expand with broader and more rigorous future work. It is noteworthy that even modest grades of 0.1g/t gold can add considerable value to the Shale given the immense size of projected mineralized Zones, especially considering expectations that much of the gold occurs in particulate form rather than as dissolutions in other minerals (hence potentially amenable to gravity separation);
- Orientation heavy mineral concentration historic tests successfully collected native gold as well as sulfides by heavy liquids separation after disaggregating clay fraction of the Shale by deflocculation. The tests serve to demonstrate that metals can be concentrated from the Shale provided its clay content is disaggregated. This is consistent with considerable metal separation testwork conducted under the author's direct supervision on muddy alluvial sediments and freshly slumped outcrop detritus samples from the McIvor River, relying on deflocculation as a clay disaggregation pre-treatment followed by gravity concentration by Falcon concentrator (Sabag 2002);
- Historic orientation simple flotation tests failed to concentrate any minerals from the Shale, and the testwork was challenged by production of considerable slimes. It is puzzling that the historic testwork did not pre-treat the Shale samples nor attempt to disaggregate their clay fraction, given that sliming is known to be one of the major metallurgical challenges to effective treatment of black shales worldwide (sliming has been successfully addressed by others in their treatment of black shales from elsewhere either by clay disaggregation pre-treatment or by bioleaching).;
- Based on the stratigraphic subsurface database for the Property, confirmed locally in outcrops and in the historic drilling at the Buckton and Asphalt Zones, the Second White Speckled Shale Formation is known to underlie all of DNI's Property. The Shale is exposed along the eastern and southern erosional edge of the Birch Mountains (e.g Buckton and Asphalt Zones) and is elsewhere under typically 100m-150m of sedimentary and overburden cover (max 200m).;
- Given proximity of the Speckled Shale Formation to the surface and its unconsolidated nature, it can be expected to be amenable to extraction by large scale bulk mining;

- The Second White Speckled Shale is poorly consolidated, its exposures, when wet, readily turn to fluid mudflows due to its high clay content. This physical characteristic suggests that the Shale might be amenable to slurrying and would certainly be amenable to mining by simple "ripping", much as oil sands or the Paracatu deposit are mined, hence requiring no drilling nor blasting during any contemplated open pit mining operation;

- Based on drilling results from the Buckton and Asphalt Zones, it can be concluded that while none of the metals is present in the Second White Speckled Shale at the two Zones in sufficiently high concentrations to be of economic merit by itself, the "pay" metals Mo, Ni, U, V, Zn, Cu, Co (and to some extent also Ag) collectively represent sufficient in-situ value on a combined basis to place the Second White Specks Formation shales within reach of economic viability provided the metals can be efficiently recovered on a combined basis. This is reinforced and supported by the low operating costs afforded to bulk mining and processing operations of similar unconsolidated material in the region surrounding the Property, and elsewhere in the world;

- To guide future work, based on broad extrapolations reinforced by its drilling results, Tintina proposed that should the surface and subsurface metallic anomalies identified at the Asphalt and Buckton Zones, and over the other large composite target areas identified, indeed reflect the true size of underlying mineralization, metals concentration zones in the Speckled Shale Formation can be projected to extend over areas measuring upward to approximately 5kmx5km each. In addition, based on an extrapolated average thickness of approximately 30m for the Formation, and an average specific gravity of 2.1, Tintina proposed that metal concentration zones can potentially represent approximately an estimated 60 million tonnes per $1km^2$ of lateral extent, representing approximately 1,500 million tonnes per zone. Tintina's proposal is supported, at least at the Buckton Zone, by the drilling of a 8km long cross-section across the Zone, albeit at relatively wide spacing. The author agrees with Tintina's proposal and regards it to be a useful conceptual model to guide future exploration work. The author also regards the drill spacing to be adequate and appropriate for an initial "blocking out" of an area of interest in black shale hosted mineralization for additional in-fill drilling;

- Historic exploration work programs collectively demonstrate that stream geochemical and mineral sampling, and to a lesser extent lakes geochemical sampling surveys, are very effective exploration methods to identify general areas over or near metallic mineralization on the Property. The extensive databases from the work programs demonstrate that stream sediments directly reflect chemical and mineral composition of exposures immediately upslope from sample locations, lacking the broad dispersion trends commonly associated with stream sediment sampling, and as such provide excellent prospecting methods for locating mineralized exposures;

- The historic work programs demonstrate that soil geochemical surveys utilizing enzyme leaching analytical methods are particularly effective exploration methods to localize buried mineralization on the Property, to identify drill targets and to localize drill holes.

Based on all of the above, Second White Speckled Shale hosted metal zones which have been identified (Buckton and Asphalt Zones), or proposed to exist elsewhere under the Property are envisaged to be black shale hosted metal aggregations which can in general terms be expected to be large and laterally extensive, from which a metal concentrate can likely be prepared provided the Shale's clay content is disaggregated, from which at least Ni-Zn-V can be leached on a combined basis with good recoveries, which carry recoverable native gold, which might be amenable to slurry transport, portions of which would be accessible by open pit, and which would be amenable to extraction by bulk mining techniques by "ripping".

Economic geology and DNI's exploration and development targets are presented and discussed in detail in the next Section of this Report.

9. ECONOMIC GEOLOGY, DEPOSIT TYPE AND POTENTIAL MINERAL DEPOSITS

As part of its synthesis of historic work results and databases from the Property and vicinity, DNI devoted considerable efforts to extracting baseline information from prior work which might be relevant to the search for metal enriched zones across the Property. To the extent that the foregoing information is distributed among many third-party reports straddling incremental work programs carried out over several years, the foregoing information was critically reviewed by DNI, synthesized, re-interpreted and consolidated into a logical framework as the foundation to its future exploration on the Property. The historic information was also re-assessed in the context of more recent black shales related geoscience and metals processing technologies which were not available at the time that much of the historic databases were being collected by others.

This Section of this Report, accordingly, outlines conclusions reached by DNI as a result of its data consolidation and synthesis efforts, all of which were included in its 2008 NI-43-101 technical report for the Property appended herein as Appendix B1. While geoscientific information from the foregoing work is outlined below, recommendations of the technical report are incorporated in Section 10 of this Report since they represent recommendations as at 2008, many of which have been partly implemented. The recommendation may require some revision in light of new information and data since collected by DNI from its work programs post-dating preparation of the 2008 technical report.

9.1 SHALE CLASSIFICATION

The metal enriched Second White Speckled Shale Formation and the Shaftesbury Shale Formation meet all textural and compositional criteria to be classed as bona fide "black shales" in the strictest of sense, and the Second White Speckled Shale Formation meets test criteria for classification as a "metal enriched black shale".

Metal enrichment in the Alberta metalliferous black shales is, furthermore, compatible with the Rift-Volcanic Type of metal enrichment style recognized from black shales worldwide and is, accordingly, so classed. The classification is supported by (i) relatively thick tabular geometry of the metalliferous black shale layers alternating with layers of ejecta material (bentonites and pyroclastic material); (ii) diagnostic characteristic Ni/Cu ratios; (iii) spatial association of metal enrichment zones with suspected venting (volcanic centers); (iv) predominance of V-Zn-Cu mineralization over Ni-Mo-PGE (based on relative grades). Black shale classification is discussed in detail in Section 9.3 of this Report.

9.2 MINERALIZATION TYPE

The principal known metallic mineralization on the Property is hosted in black shales, as polymetallic Zones bounded by stratigraphic contacts. The principal metals of interest in the Zones are Mo, Ni, U, V, Zn, Cu, Co, Ag, and Au, although DNI's recent leaching testwork also reported rare metals (including Li) as an incidental valuable co-product recoverable from the shale. Though none of the metals is present in sufficient quantity in the shales to be considered the "pay" metal leading the anticipated value of any deposit identified. Intrinsic economic value of the metal zones will, accordingly, be based on effective recovery of the metals from the host rock on a combined basis.

Most of the metals, are believed to occur principally in the fine and coarser sulfides distributed throughout the shale, which can constitute as much as 20% of the shale matrix by volume, but typically range 5%-20%. Some of metals, notably V and Cu, are likely bi-popular and may be fractionated between clays, sulfides and organic components of the shale. Gold is believed to occur principally as high fineness gold in native form, which is possibly better concentrated in the upper and lower contacts of the shale, though its grade has not been definitively established due to nugget effect. DNI's recent detailed mineral (MLA) study suggested that at least a portion of the metals occur in readily soluble ionic form rather than as discrete minerals.

Only minimal orientation historic metallurgical and leaching testwork exist addressing metals recovery, though the available testwork indicates that at least Ni, Zn, and V can be collectively recovered by sulfuric acid leaching, that Au can be recovered by conventional carbon in leach cyanidation, and that heavy minerals and metals can be concentrated from the shale by gravity methods which also capture gold and some base metals. There is no information from the Property suggesting that the other metals of interest cannot also be similarly recovered. All prior work indicate that disaggregation of the shale's clay matrix will be crucial to enable recovery of metals from the shale. DNI's recent leaching and bioleaching testwork demonstrated that metals can collectively be recovered from the shale.

There is no prior mineral characterization work establishing mineral and metal make-up of the shale. Given its very fine grain size this work will necessarily rely on electron microscopy as did DNI's recent MLA mineral study (Section 11.7). Prior exploration, and inferences therefrom, are based entirely on geochemical data supported by heavy mineral concentration and related topical mineral studies.

The 20m-40m thick, flat-lying, Second White Speckled Shale Formation represents the primary polymetallic host targeted at the Property. It is the most metal enriched of the shales, is nearer the surface, and is locally exposed in valley walls throughout the eastern one third of the Property. The thicker Shaftesbury Shale Formation, beneath the Speckled Shale Formation, is less well mineralized and metals distribution within it is less well known due to a lack of exposures.

Several suspected large buried metal enrichment targets have been identified by the historic work and by DNI's more recent synthesis thereof, from extensive surface sampling, supported also by other coincident or associated stratigraphic and physical anomalies. Buried polymetallic enriched zones have been confirmed under two of the targets identified. The confirmed zones are open in three directions, and are envisaged to be tabular concentrations of metals hosted entirely in the flat-lying Second White Speckled Shale Formation constrained by the Shale's upper and lower contacts. The two Zones are extrapolated to extend over large areas measuring tens of square kilometers each based on historic drilling and on supporting information from adjacent surface and outcrops. DNI's detailed review of the historic data recognized and identified two large Potential Mineral Deposits under the two targets drilled (discussed in Section 9 of this Report).

Other metal mineralization proposed to exist on the Property is sedimentary exhalative - SEDEX style - sulfide mineralization associated with suspected (yet undiscovered) exhalative venting centers, which are also proposed to be the source to the metal enriched sediments and volcanic debris captured in the black shales hosting the polymetallic Zones. Should the foregoing proposal be proven by future drilling, coalescence among some of the envisaged shale hosted polymetallic zones buried beneath the anomalous areas identified would be a realistic expectation, manifested as vertical zonation cycles.

Polymetallic anomalous areas, polymetallic Zones and the proposed Potential Mineral Deposits contained in the Buckton and Asphalt Zones are discussed later in this section; and the status of DNI's work programs thereupon is presented in Sections 10 and 11 of this report.

9.3 Black Shales, Mineralization Types and Alberta Analogues

Black shales series worldwide represent important hosts for the concentration of immense metallic mineral resources, especially for precious metals (Au, Ag, PGE), transitional metals (Mo, Cu, Ni, Cr, V and Zn) and Uranium. They also provide extensive sources of hydrocarbons and have attracted intermittent interest over the years, especially during the past two decades, as a long term source of metals.

Black shales are generally regarded to have been deposited within anoxic deep water depositional environments, although they can be formed in a broad variety of depositional environments ranging from fresh to estuarine to marine waters with conditions ranging from anoxic to oxic (Quinby-Hunt and Wilde, 1996). All black shales are not metal enriched, and metal enrichment in black shales throughout world has been demonstrably linked to nearby metal deposits (Coveney et al 1992b). Among these are black shales hosting major gold deposits of the Getchel Trend, Nevada; the Pilot shales hosting the Alligator Ridge deposits, Nevada; Bendigo, Australia, (Bloomstein and Clark, 1990); Sabie-Pilgrim's Rest goldfield, S.Africa, and numerous deposits in the former USSR (Buryak, various publications). Other notable black shale hosted metal deposits include, a number of Ni-Mo and Mo deposits, south China (Coveney and Chen, 1991); high Ni-Zn-PGE accumulations at the Nick deposit, Yukon, Canada (Hulbert et al 1992); Ag-V deposits in Upper Sinian Doushantuo Formation, Western Hubei, China (Delian et al, 1992), and the Zechstein district in the Polish Kupferschiefer (Kucha 1982, 1983).

Mineralogy of any given black shale Formation and metals contained therein reflect their source, and hence the shale's provenance. Metals accumulation in black shales must, accordingly, be viewed as a dynamic and virtually continuous process extending from the onset of sedimentation throughout diagenesis, and over the entire history of any given deposit as suggested by Vine and Tourtelot (1970). Black shales typically exhibit relatively uniform mineralogy and chemistry over large lateral distances, though they can vary considerably in vertical section reflecting changes in sedimentation processes, in weathering and hydrological history of the depositional basin area and those of the sources to the shale.

Black shales are not all necessarily metalliferous, nor do all metal bearing black shales contain the same suite of metals or kerogens. The role of organics notwithstanding, as metal scavengers often cited for black shale enrichment, processes commonly cited (for example Goodfellow 1990, Krauskopf 1955 & 1956) as being responsible for metal enrichment in black shales include: (i) preservation of metalliferous ejecta from meteoritic impact; (ii) episodic venting of metalliferous hydrothermal fluids; (iii) organically scavenged metal concentration during rapid sedimentation; (iv) redox fronts within the water column; (v) metal trapping by diagenetic H_2S generated in organic rich units.

Given a suitable source of metals, black shale depositional settings are capable of aggregating and hosting immense metalliferous deposits whose concentration is nearly always bacterially mitigated, although source of the metals and their carrier mineralogy straddle organic and inorganic geochemical processes.

Black shale ores are typically polymetallic with a variable proportion of sulfidic component. Their exploitation on large scale has principally been hampered by: (i) the inefficiency of conventional metallurgical processing (smelting) for recovery of valuable contained metals, (ii) the environmental impact and energy costs of the application of the conventional techniques, and (iii) practical constraints of assembly of vast land positions given the large aerial extent of the metal deposits which often extend over hundreds of square kilometers (e.g. the Kupferschiefer is a lithological formation that extends over 600,000 sq km from England to Poland, but exploitable Cu reserves therein are mostly concentrated at the southern edge of the Zechstein Basin and represent only 0.2% of the total area).

From a mineral processing perspective, by far the biggest challenge to extraction of metals from black shales has been morphology of the metal-bearing compounds which are typically dispersed throughout the shale as very fine particles, and are often trapped in the organic and fine clay fractions or in slimes. Traditional black shale mining operations have been topical and notoriously inefficient, producing also considerable fine grained, often slimy, metal bearing waste material (e.g more than two million tons of copper have been produced from the Kupferschiefer formation to date, along with noble and rare metals, all of which from mining operations wherein they were being extracted as by-products with a poor recovery). Recent break-through advances of applied bioleaching are, however, mitigating many of the foregoing challenges, enabling the exploitation of one of the world biggest deposit types of metals.

From the explorationist's perspective, black shale metal deposits are best discovered in areas wherein (i) large land positions ranging in 100's sq km can be assembled quickly and inexpensively, (ii) adequate access and infrastructure exists to enable efficient exploration of the land position, (iii) exploration, development and mining activities can take place without the complications of competing land use, (iv) open pitting of large areas is accommodated by the local industrial, logistical and regulatory fabric, and (v) the metal enriched zones are near enough to the surface to be available to bulk mining methods. Black shale deposits discovered in areas other than the foregoing cannot realistically be expected to hold promise for development and are, as such, only of academic interest.

Few black shale ores have been commercially exploited on a large scale, though many have been sporadically mined on a local scale and are associated with other deposits or mining camps often with an affinity to large metal-bearing geological systems. Analogues from elsewhere in the world which have similar geological setting to northeast Alberta, namely the juxtaposition of carbonaceous environments in brinally active domains include: the Zechstein district in the Polish Kupferscheifer, evaporites of southwest Shaba, Zaire, black shales of south China, the Nick deposit, Yukon. The Uraniferous Alum Shales, Sweden, and the polymetallic Talvivaara black shale hosted deposit, Finland, provide examples of currently active black shale exploration and development operations, the latter of which commenced production in October 2008 (both are discussed in Section 9.4.3 and 9.4.1 of this Report, respectively).

Two types of metal enrichment styles have been recognized from black shales, contrasted by their mineral assemblage, trace element geochemistry, geometry and extent of mineralized horizons, and the geochemistry and temperature of ore-bearing fluids (Pasava 1993). The two distinct types also correspond to two different geotectonic settings, and are as follows:

Rift Type: documented from black shales in association with intracontinental rifting without any intrusive rocks. Metal accumulations of the Rift Type typically represent very high grade but thin (varying millimeters to several tens of centimeters) and often laterally extensive (to 100’s of km2) metal concentration zones associated with phosphatic layers, carbonate, REE-phosphates and U. Metal grades documented from this Type often range 10’s to 100’s ppm precious metals (Au or PGE), and 5% to 25% in base metals. Examples of this Type include Ni-Zn-PGE at the Nick Deposit, Selwyn Basin, Canada (Hulbert et al 1992); Mo concentrations at several deposits in the Guizhou Province, China (Coveney et al 1992a).

Rift-Volcanic Type: documented from black shales associated with intracontinental rifting and basic volcanism in the oceanic crust. Metal accumulations documented from this group of black shales are known to occur only around basic volcanic centers and typically comprise alternating layers of metalliferous black shale and tuffaceous material. The metal accumulations are characterized by (i) ore layers ranging in thickness from a few meters to several tens of meters (considerably thicker than those of the Rift Type), (ii) by metal grades lower than those typifying the Rift Type, (ii) by generally low minor element contents (except Cu, Cr), and (iii) by Ni/Cu ratios and other elemental patterns similar to conventional mafic-ultramfic deposits of PGE (e.g. Ni/Cu Sudbury-1.18; Platreef-1.5; Merensky Reef-1.6. Compared to Ni/Cu ratios for typical Rift Type deposits such as the Nick Ni/PGE deposit-173.6; Chinese Mo deposits-34.4; Pasava, 1993).

Metal accumulation within Rift-Volcanic Type of black shales is believed to have been controlled by hydrothermal-volcanogenic events (submarine exhalations) in the presence of organic matter. Examples of this Type include PGE deposits in the Barrandian of the Czech Republic, and the Talvivaara Nickel (Ni-Cu-Zn) deposit, Finland, among others.

While there are many overall similarities between mineral assemblages of ore horizons from the two Types of environments, there is a predominance of Ni-Mo-PGE as the principal metals of interest associated with the Rift Type, in contrast to Fe-Zn-Cu-V for those of the Rift-Volcanic Type. The Rift-Volcanic Type are further characterized by modest-low grading tabular deposits of immense size (300-1,000+ million tonne range) extending over tens of square kilometers, with thicknesses ranging 20m-100m.

The Alberta metalliferous black shales documented from the Birch Mountains, and from DNI’s Property, are compatible with the Rift-Volcanic Type and have, accordingly, been so classed. The classification is supported by (i) relatively thick tabular geometry of the metalliferous black shale layers alternating with layers of ejecta material (bentonites and pyroclastic material); (ii) Ni/Cu ratios ranging 0.8 to 2.1 (typically 1.3-1.6); (iii) spatial association of metal enrichment zones with suspected venting (volcanic centers); and (iv) predominance of V-Zn-Cu mineralization over Ni-Mo-PGE.

Discussions of episodic venting scenarios for the Albertan black shales can benefit from an overview of the spatial and temporal constraints presented by volcanic arcs. The Skellefte Mining District, Sweden, provides guidelines for the facies architecture and events characterizing the development of a 1.9 Ga submarine volcanic arc (Allen et al 1997). The volacanotectonic cycle is believed to have occurred within a 10-15 million year period characterized by episodic and localized intense marine volcanism accompanied by periods of localized differential uplift and subsidence creating horst and graben paleogeography.

The Skellefte District represents an area of 120kmx30 km containing over eighty-five pyritic Zn-Cu-Au-Ag massive sulfide deposits (and a few vein Au deposits) majority of which are associated with a felsic-dominant volcanic unit. Massive sulfide deposits in the district are associated with subaqueous rhyolite cryptodome-tuff volcanoes which are relatively small features measuring 2km-10km in diameter with thicknesses ranging 250m-1200m at the center. The cryptodome-tuff volcanoes represent only one of the seven main volcano types identified, and the ores occur in near-vent and volcaniclastic facies. All indications from the district are that spatial proximity to vents is more critical to the formation of deposits than their stratigraphic position. These associations are reminiscent of interpretations from the Alberta middle Cretaceous shales (see AGS 2001, Sabag 1998, Ballantyne 1994, among others). The confinement of metal enrichment in the Albertan black shales to localities over, and flanking, the Peace River Arch (eg: the Birch Mountains) lends further support to suggestions of volcanogenic affinity, especially considering discoveries of considerable venting in the form of kimberlitic material and associated ejecta aprons from areas overlying the Arch in central Alberta.

9.4 OTHER CURRENT POLYMETALLIC BLACK SHALE PROJECTS

Black shale polymetallic deposits have attracted special recent attention due mainly to break-through advances in the industrial application of bioleaching technology processes on a large scale (eg: bulk heap leaching) to extraction of metals with considerably enhanced economics when compared to traditional methods, and with lesser energy dependence and lesser environmental footprint. The foregoing milestone advances have transformed polymetallic black shales from geological curiosities to a potential prospective long term source to countless metals.

Despite scientific breakthroughs, contemplation of metal production from the Alberta polymetallic black shales, or black shales in general for that matter, is a novel proposal and is, as such, challenged more by perceptual barriers than by technological hurdles. The challenges are in the form of considerable entrenched skepticism as to: (i) whether metals can indeed be produced from black shales in general, (ii) whether collective metals can be produced on a combined basis, and (iii) whether the overall low grades presented by the Alberta shales can be economically exploited. The dogmatic skepticism would benefit from a review of the Alberta shales in the context of a fast growing handful of other black shale exploration and development projects worldwide, of which the Talvivaara polymetallic black shale mine has been the first to quickly advance to production. The handful of projects elsewhere in the world currently investigating the viability of developing polymetallic black shale deposits are presented below.

9.4.1 Talvivaara Polymetallic Black Shale Deposit and Mine - Finland

The Talvivaara Ni-Co-Zn-Cu-Mn deposit, located in eastern Finland, is one of the largest known nickel sulfide deposits in Europe. It provides a good analogue as an open pit mining and heap leach operation recovering combined metals from a large black shale (schist) hosted sulfide deposit by bioheapleaching in subarctic conditions. The Talvivaara mine represents a significant milestone and a breakthrough in the mining of polymetallic black shales and has had full support of European financial markets. The mine commenced production in October 2008 and has since been scaling up to full production.

The deposit was originally held by Outokumpu, which carried out considerable exploration in the late 1980's and early 1990's. The resource was found to be large but of too low grade to be economically viable using traditional metal extraction techniques, and it was accordingly “shelved”. Outokumpu sold exploration rights to the nickel deposits to Talvivaara Mining Company in 2004. The deposit quickly advanced during the four years 2004-2008 from the exploration stage to production.

Talvivaara Mining Company (LSE:Talvivaara) is currently producing Ni-Co-Zn-Cu from its Talvivaara Mine, hosted in carbonaceous schists (black schists). The Talvivaara open pit mine commenced production in October 2008, to produce Ni-Zn-Cu-Co on a combined basis from a 336 million tonne resource hosted in black schists, relying on bio-heapleaching for recovery of the metals on a combined basis.
Combined JORC Code classified mineral resources for the deposit as at 2006 Feasibility Study stood at 337 million tonnes at 0.26% Ni, 0.14% Cu, 0.02% Co and 0.55% Zn (in measured, indicated and inferred

resource category, quoted at a 0% Ni cut off within a 0.15% Ni wire-frame model)[18]. Resources have since quickly expanded to nearly 1.2 billion tonnes at lower grades. On average, bioleaching recoveries are projected to be as follows: Ni-85%, Zn-80%, Cu-50%, Co-50%. Talvivaara estimates that its metal recovery plant will recover approximately 98% of the metal contained in the pregnant leach solution.

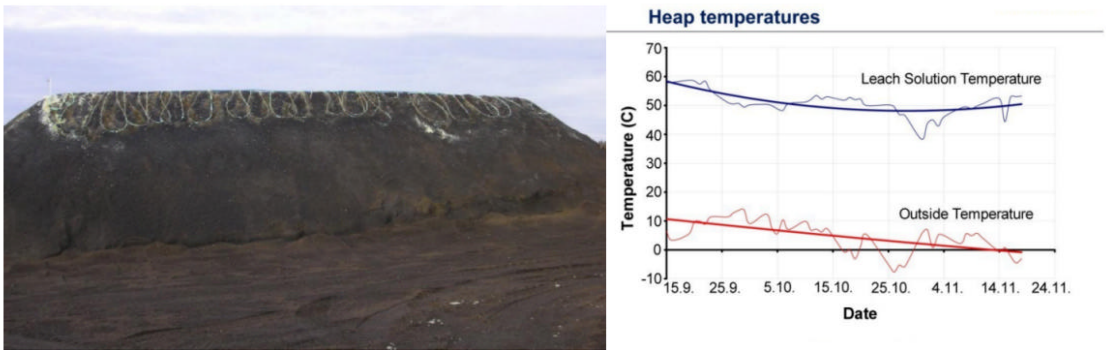


Plate 5: Talvivaara bioheapleach and heap temperatures profile. From Talvivaara 2005.

Talvivaara demonstrated the viability of using bioheapleaching technology for the extraction of metals in pilot trials in 2005-2006 as part of the EU-sponsored Bioshale project, launched in 2004 to study processing and metals recovery from black schist ores. This trial run was started in subzero conditions at -20°C and successfully demonstrated the applicability of bioleaching under sub-arctic conditions (Plate 5).

The Talvivaara Nickel deposit is located in the Kainuu black schist zone in the southern part of the Kainuu belt. The deposit consists of two different polymetallic ore bodies; the Kuusilampi and the Kolmisoppi, which are polymetallic sulfide orebodies, dominated by low grade nickel, hosted in variably recrystallized carbon and sulfide rich "black" metasediments - black schists – which range in thickness from tens of metres to 100m. The Formation has been tectonically thickened in the Talvivaara area.

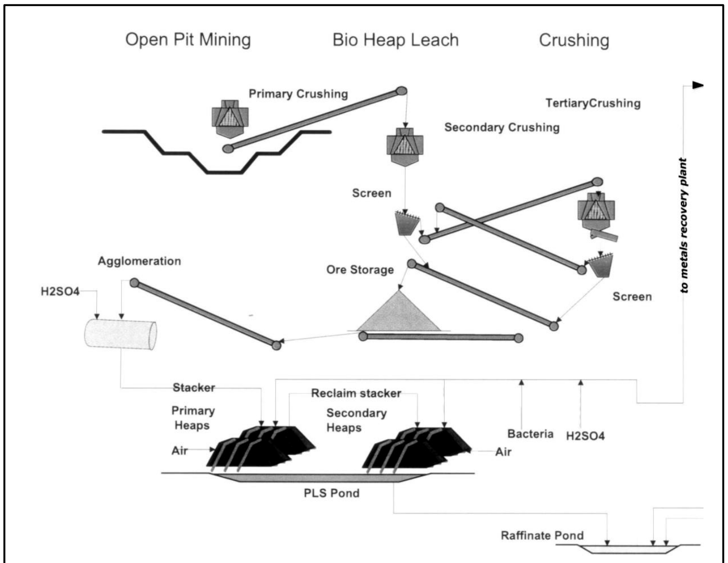


Figure 56: Talvivaara mine, mining flowsheet. From Talvivaara 2010.

Soon after commencing production, Talvivaara announced plans to also recover Mn via electrowinning[19] from the collective of metals leached during its heap leaching process, and in early 2010 it announced plans to add a solvent extraction based circuit to recover approximately 350 tonnes of Uranium annually from its ore which contains an average of 15ppm U. The advantages of polymetallic collective bulk leaching extraction are self-evident, and it would be realistic to expect that, as its production ramps up beyond the start-up stage, the mine will add additional metals to its list of metal products. The Talvivaara deposit and mining operation are discussed in greater detail in Section 18.4 of DNI's NI-43-101 report appended herein as Appendix B1.

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[18] Bankable Feasibility Report, Mineral Experts Report On The Talvivaara Nickel Project In Finland: Report Compiled by: Dr.D.Pattinson, Reviewed by: Dr.M.Armitage, SRK Consulting, Cardiff, UK; 2006. SRK Project Number U2993. Included in IPO June, 2007, London Stock Exchange listing.

[19] Press Release – June 23, 2008, Talvivaara Mining Company.

The deposits have a thin overburden, and are planned to be mined at a 1.5:1 strip ratio by open pit. Annual nickel output is estimated to be approximately 33,000 tonnes, in addition to zinc 60,000tpa, copper 10,000tpa and cobalt 1,200tpa as co-products. At peak production (late 2010) Talvivaara has the potential to provide 2.3% of the world's current annual production of primary nickel. The mine is anticipated to produce metals for a minimum of 24 years (based on 336 million tonnes of resources) at an approximate mining rate of 15 million tonnes per annum. Projected mine life extrapolated over its current resources of some 1.2 billion tonnes, however, would be approximately 100 years at current production rate.

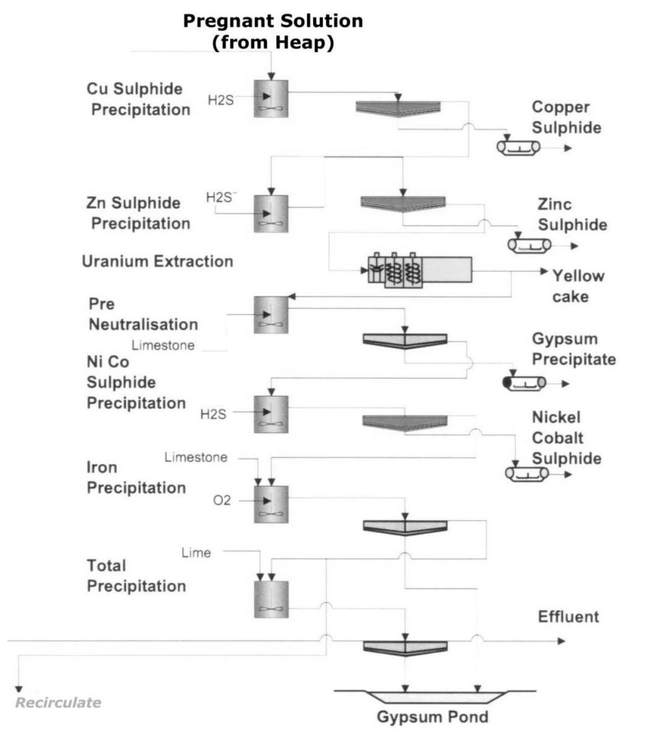

Figure 57: Talvivaara mine, summary metals recoveries flowsheet. From Talvivaara 2010.

Talvivaara ore is crushed in three stages, followed by agglomeration with sulfuric acid to consolidate fines with coarser ore particles. Sulfuric acid consumption is estimated to be 269,582 tonnes annually, and 5,798,374 tonnes over life of the mine (16 kg/t - primary heap; 2 kg/t - secondary heap). The material is heap leached per conventional heap leaching procedures over 12-18 month and 24-48 month primary and secondary heaps, respectively. Mining flow sheet is shown in Figure 56, and metals recovery plant flowsheet is shown in Figure 57.

Talvivaara expects to have lower relative capital and operational cost than many other nickel mines. Costs are also expected to be considerably lower than traditional mines given reliance on bioheapleaching to extract the metals, since bioheapleaching has considerably more favourable capital and operational cost profiles, and cleaner favourable environmental profile compared to smelting. Operating cut-off cost is estimated to be approximately EUR7.1/t, three-quarters of which represents cost of ore processing.

In early 2010, Western Areas NL (WSA:TSX-ASX) and joint venture partner Magnus Minerals Ltd. assembled a series of properties in the Kainuu Schist Belt which hosts the Talvivaara deposit. The joint venture is commencing its exploration for polymetallic black schist hosted deposits similar to Talvivaara.

9.4.2 Bioshale and Biomine Initiatives - EU

The EU's Bioshale initiative is a well organized and focused recent initiative to advance processing of polymetallic black shale ores is the EU Bioshale Project which was launched in 2004 as a three year initiative by a multidisciplinary partnership among eight countries and seven universities[20]. Funded by the European Commission 6th Framework Program With an initial budget of EUR3.4MM, the Project has successfully deployed considerable combined geoscientific and mining expertise from the fields of Geology, Biotechnology and Mineral processing, toward its principal goal of evaluating biotechnologies for the safe, clean and viable beneficiation of black shale ores and at identifying and designing innovative mining and

[20] BRGM-Project Leader (France), KGHM Cuprum Ltd. CBR (Poland), Wroclaw University of Technology (Poland), University of Opole (Poland), University of Warsaw (Poland), Faculty of Biology (Poland), Geological Survey of Finland (Finland), Helsinki University of Technology (Finland), Tecnicas Reunidas (Spain), University of Wales, Bangor (UK), Warwick University, Biological Science (UK), G.E.O.S. Freiberg, Ingenieurgesellschaft (Germany), University of Mining and Geology Saint Ivan, Riski (Bulgaria), Czech Geological Survey (Czech Republic), with collaboration from KGHM Polska Mied Ÿ S.A. (Poland) and Talvivaara Company (Finland).

processing methodology for the industrial exploitation of black shale ores. The Bioshale Project was succeeded by the EUR17MM budget EU Biomine Project representing a consortium of 37 partners including 13 industry partners consisting of some of the largest international mining companies.

The Bioshale Project was organized in recognition that European deposits of black shale ores contain immense quantities of base as well as valuable rare and precious metals (Cu, Ni, Zn, Pb, Ag, Zn, Co, Mo, Re, V, Se, Sn, Bi, Au, Pt, Pd, etc.) the long term supply of which is of strategic importance to the EU. The practical socio-economic benefits of the Project to Europe are considered to be (i) to extend mine life of many European mining sites, like the Lubin mine, Poland, and others in eastern European countries, (ii) to enable exploitation of vast new resources, such as the Talvivaara Ni deposit, Finland, and (iii) to formulate methodology for the treatment and remediation of vast volumes of black shale mine waste from prior mining operations across eastern Europe.

Three European black shale deposits were chosen by the Bioshale Project for study and research, including pilot demonstration activities as follows: (i) a deposit which has been discovered but whose development has previously met processing or economic challenges (Talvivaara Ni deposit, Finland), (ii) an existing mining operation which can benefit from recovery enhancements and eco-efficiency (Lubin Mine deposit, Poland), and (iii) an area with large amounts of black shale ore residues and mine waste from past production activities requiring remediation (Mansfeld, Germany).

R&D from the Bioshale Project achieved significant milestone technological breakthroughs, and has been instrumental in supporting fast-tracked advancement of the Talvivaara nickel deposit, Finland, from the advanced exploration stages to production within four years. For additional information from the Bioshale Project, the reader is referred to DNI's NI-43-101 report appended herein as Appendix B1.

9.4.3 Alum Shale - Sweden

Continental Precious Minerals Inc. (TSX:V-CZQ) has been actively exploring its MyrViken Project, Sweden, since 2006. The Project is currently in metallurgical testing stages advancing toward development. The Property contains immense Uranium resources hosted in the well known carbonaceous Alum shale which extends across much of Fennoscandia, considered a strategic resource of fossil fuel and Uranium by Sweden. Exploitation of the shales dates back to the 17th century, but has been sporadic, focusing initially on alum, then on oil and, since the 1960's, on Uranium. The shales also contain vanadium, molybdenum and nickel. There are no known commercial large scale operations recovering co-metals from the shale. Continental's efforts represent the first ever efforts to recover uranium and metals, on a combined basis, from the Alum shale.

The MyrViken property is underlain by Middle and Upper Cambrian age black shales of the Alum Shale Formation which occur as in-situ, and as fault detached, blocks. The Formation is typically a 20m-30m thick unit, whose uppermost 8m-10m sections carry the highest Uranium grades. On the MyrViken property the shale section is thickened up to 200m due to multiple tectonic over-thrusting. The Shale is metamorphosed and partly converted into anthracitic "coal".

The MyrViken property mineralized zone is 1,000m wide, nearly 200m deep, and has been recognized over 3.2km, with the better grades aggregated within a 200m wide corridor in the zone. The property is reported to contain immense resources of U, Mo, V and Ni, hosted in an approximate 1.3 billion tonne zone[21] (resource modeling relied on a drill hole spacing ranging 30m-380m, averaging 300m, and concluded that a 100mx100m grid drilling would be required to upgrade the resources). Reported Indicated Resource are 13,708,000 tonnes, grading 0.019% U3O8 (0.38 lbs/st), 0.305% V2O5 (6.10 lbs/st), 0.040% MoO3 (0.80 lbs/st) 0.030% Ni (0.59 lbs/st). Inferred Resource 1,166,135,000 tonnes grade 0.017% U_3O_8 (0.33 lbs/st), 0.278% V_2O_5 (5.57 lbs/st), 0.035% MoO_3 (0.71 lbs/st), and 0.031% Ni (0.62 lbs/st). The foregoing figures represent an aggregate of 442,788,000 lbs U_3O_8, 7,239,167,000 lbs V_2O_5, 911,889,000 lbs MoO_3, 806,033,000 lbs Ni as gross in-situ metals contained in the zone (Harron 2008). Continental's plans are to consider mining by conventional open pit.

Continental has reported results from initial leaching tests, reporting 95% Uranium extraction from simple 12 hour leaching in moderately acidic sulfuric acid solution at ambient temperature[22]. Sulfuric acid consumption was 40kg/t with addition of 2kg/t $NaClO_3$ as an oxidant. It also reported a recovery of 60% Uranium after 20 days from initial simulated heap leach tests which it believes can be improved. Continental launched bioleaching R&D testwork in early 2010 but has not yet reported any results.

Aura Energy Ltd. (ASX:AEE) holds a number of licenses in the MyrViken area, Sweden, underlain by Alum Shale Formation, adjacent to, and near, Continental Precious Metals's MyrViken Property. Aura is targeting U-Mo-V in alum shale in similar geology to its neighbour, although its projects are in earlier stages of exploration. It is noteworthy that Aura announced[23] an AUS$460 million funding and sale option agreement with Sino King Enterprise Investment Limited in Oct/2008 to advance its Storsjon project forward toward resource definition, subject to Aura blocking out a minimum inferred resource of a 1 billion tonne averaging 135ppm U. The option dissolved in early 2009 amidst the 2008-2009 financial crisis.

9.5 Sedimentary Exhalative Sulfides and Black Shale Basins

Suggested volcanogenic processes associated with the Albertan black shales the Birch Mountains and the Property are presented in previous (and later) Sections of this report. There exists overwhelming evidence from all historic work over the Birch Mountains and the Property suggesting the local presence of exhalative venting as a likely source to the volcanogenic debris and bentonites in the Second White Speckled Shale. The foregoing also suggest that the exhalative venting to also be the source to the metals enriched in the Second White Speckled Shale, and that the Birch Mountains and the Property hold potential for hosting sedimentary exhalative - SEDEX style - sulfide mineralization.

In general terms, sedimentary exhalative - SEDEX style - sulfide deposits are known to accumulate in restricted basins or half grabens bounded by synsedimentary growth faults, with exhalative centers located along the faults or their junctions. The deposits are stratabound, tabular or lens shaped accumulations consisting of beds of sulfides and often barite, ranging from centimeters to tens of meters thick, which are stacked and have considerably greater lateral extent than vertical, often extending over tens of kilometers. Depositional environments vary from deep "starved" marine to shallow water restricted shelf settings, although the more common host rocks are those found in euxinic environments, namely black (carbonaceous) shales. (Briskey 1986, Large 1981)

SEDEX deposits are typically dominated by Zn-Pb-Ag-(Cu) and range in size worldwide from 15-150 million tonnes, typically grading 5-6% Zn, 2-3% Pb, 5-30g/t Ag, with subordinate Cu. By virtue of large size and extensive lateral dimensions, deposits near the surface are amenable to open pitting. The deposits have electromagnetic and magnetic signatures and might be so detectable when steeply dipping, though they are difficult to detect if flat-lying, or if the sulfide layers are fine and distributed over a thick stratigraphic column.

Geological, stratigraphic, lithogeochemical and metal distribution trends documented from the Property are characteristic of settings which would be conducive to hosting sedimentary exhalative - SEDEX style - sulfide mineralization within the black shales, providing a collateral deposit type as a secondary target for future exploration of the Property.

9.6 Proposed Geological Working Model 2008

A general geological working model is overwhelmingly suggested by the collective historic work for the Birch Mountains, and the Property, attributing a central role to local Middle Cretaceous volcanism or exhalative venting as the source to sedimentary debris as well as metallic mineralization (enrichment) captured in Second White Speckled Shale Formation discovered in the area. The historic work also demonstrates that the Birch Mountains are unique in the foregoing regard when compared to elsewhere in northeast Alberta, which is supported by its location above a basement "hot spot" (Figure 14).

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[21] Press Release - April 11, 2008, Second Update Of Inferred And Indicated Resource Estimates On Viken Mms License Continental Precious Minerals Inc.
[22] Press Release - October, 30, 2007, Metallurgical Report, Continental Precious Minerals Inc.
[23] Press Release - October 17, 2008, Aura Energy. All figures in Australian dollars.

As a general geological working model, it is proposed that the Birch Mountains, and the Property, overlie considerable exhalative venting, that the Middle-Upper Cretaceous formations incorporate considerable material from nearby venting events into their sedimentary record, and that culmination of the Second White Speckled Shale Formation depositional cycle coincided with a significant increase in venting, also marking the inset of a hiatus of volcanic activity in the area.

It is also proposed that metallic mineralization in the Birch Mountains, and the Property, is congregated around several vents yet to be localized, which are characterized by considerable exhalative activity venting through select block-faults or their junctions, and that the Second White Speckled Shale Formation, at least at the Buckton and Asphalt Zones, incorporates exhalative debris and metals from nearby venting. Under this scheme, the Asphalt and Buckton Zones can be envisaged to represent "aprons" of their respective nearby vents, and both Zones support speculation of the nearby existence in the area of yet undiscovered sedimentary exhalative - SEDEX style – sulfide mineralization.

All of the available historic data support the above proposal, and there exist no data, to the author's knowledge, that constrain the model or refute the proposal. There has been no prior exploration for sulfide deposits in the Birch Mountains and on the Property, since the bulk of the historic work has focused on a formational fluid dependant redox model for the area which was disproved by the 1997 drilling. All work subsequent to the historic drilling focused entirely on evaluating metallic potential of the black shales themselves without any attention to their provenance.

9.7 OVERVIEW OF POLYMETALLIC GRADES AND GROSS IN-SITU VALUES

Discussions of polymetallic grades are always complicated by the challenges of describing juxtaposed trends among grades of the multiple metals in a simple communicable format. Description of lateral or vertical variations in polymetallic grades within any given deposit, or mineralized system, are especially complicated by the fact that the various metals are rarely simultaneously equally enriched in any part of the deposit, and enrichment in one metal can be accompanied by depletion in another, even though "on balance" the overall bulk average remains constant over large volumes. The multivariate metal enrichment/depletion trends, often also exhibiting multi-directional divergent enrichment vectors, can introduce considerable challenges to any explorationist attempting to delimit the deposit or is working toward identifying its more prospective and more valuable portions for additional exploratory follow-up drilling and additional exploratory investment.

Discussions of polymetallic grades are particularly complicated for deposits which lack a single "pay" metal representing the bulk of intrinsic value, and whose economic worth can only be represented by the combined value of a number of the contained metals which can be recovered from the deposit. As such, demonstrating the merits and relevance of simultaneous grade variations among multiple metals with differing values and different enrichment trends is difficult to convey without simplifying the multiple variables on some consolidated basis relying on a common currency among the metals to interrelate equivalence (e.g. metal equivalents or gross in-situ values).

Restatement of combined metals grades as a single metal equivalent grade is a popular simplification, though the procedure imports mineral processing and recovery implications which can be misleading in the absence of knowledge that all of the metals can indeed be recovered along with the metal which is selected as their common basis (often the dominant metal). Until a recovery method is identified for any given polymetallic "mix", restatement of grades as a grade-equivalent is, accordingly, meaningless and unjustified. Restatement of multiple grades on a combined basis as a gross in-situ value, based on a set of metal prices, has also been a simplification in use with considerable historic precedent mining practice although it too can be misleading and easily confused with "actual" value which it clearly is not, as it too is entirely dependant of metal recoverability and mining costs. Restatement of grades as gross in-situ values is, furthermore, prohibited by TSX Venture Exchange's Mining Standards Guidelines and by NI-43-101.

In the absence of optimum method(s) yet to be identified for recovery of metals from the Speckled Shales, discussion of polymetallic grades variations therein cannot rely on a common basis to re-state them in any grade-equivalent format. The only alternative available, as a common currency which enables discussion of collective grade variations to guide exploration toward expanding the more worthy portions of the polymetallic Zones, is their relative respective in-situ value. Some of the discussions of metal enrichment trends in Sections following, accordingly, rely on converting metal grades to in-situ values and re-stating them as a multiple of the similarly calculated average in-situ value of all relevant data as a relative yardstick. The calculations are extracted from DNI's NI-43-101 technical report for the Property, relying on metal prices used by DNI for its internal planning purposes (Mo $32/lb, Ni $12/lb, U $75/lb, V_2O_5 $5/lb, Zn $1.4/lb, Cu $3/lb, Co $40/lb, Ag $15/oz, USD$=CDN$), which substantially reflect, but are slightly lower than, average metal prices over the twelve month period preceding the technical report Sept/2007-Aug/2008[24]. The figures attribute only partial value to V (approximately 40%) given lower anticipated recoveries, but assume 100% recovery for other metals (historic recoveries report Ni 97%, Zn 100%, V 33%). The figures attribute nil value to gold since its grade has not been definitively established.

Relative metals recoveries assumed in DNI's 2008 technical report are consistent with leaching tests completed by DNI in 2009-2010, all of which are presented and discussed in Section 11.6 of this Report. Although current metal prices are lower than those above, no further attempt is made herein to recalculate relative gross in-situ values presented in the technical report to update them to recent metal prices, since their relative variations remain "on balance" substantially as stated in the technical report to guide exploration. A preliminary discussion is, however, presented in the final Section of this Report as an initial step toward incorporating metals recovery results into the gross in-situ value comparatives, relying on the five year average metals prices for the period 2005-2010 as a general guide.

For the purposes of this Report and in the absence of an economic or scoping study for the Property, the relative metal prices provide an interim qualitative approximation of their respective relative exploration significance based on grade variations thereof, for the purposes of establishing trends to guide future work. The reader is reminded that given fluctuations in metal prices, their incorporation into interpretations can bias exploration activities toward the preferential search for the higher priced metals Mo-Ni-U-V. This is, however, a natural characteristic of polymetallic deposits in general whose value is represented by different metals at different stages during the mining lifetime of any given deposit. The reader is cautioned that there is no certainty, in the absence of advanced stage metallurgical tests, that the metals will be commercially recoverable from the shales on the Property, individually or on a combined basis, nor that they can be efficiently or economically recovered, nor that, if recoverable, metal prices at time of recovery will be as they are estimated herein.

9.8 DNI'S TARGET AREAS – "SUB-PROPERTIES"

The Property has considerable potential for hosting metals, and contains a number of targets which have excellent potential for hosting immense quantities of metals in near-surface black shale hosted zones. The Property also contains areas with potential for hosting metals in yet undiscovered, though suspected, sediment hosted exhalative - SEDEX style - sulfides. As such, advancement of the exploration and development of the potentials of the Property entail combined efforts to explore and develop the various shale-hosted targets and to advance them toward their ultimate potential, while concurrently also conducting early stage work to evaluate the potential of SEDEX style sulfide mineralization over several parts of the Property.

Based on review and re-assessment of all historic information from the Property, DNI re-interpreted anomalous target areas previously defined by Tintina to formulate a basis for its own future work on the Property. Based on the foregoing work, DNI regards the Property to consist of six contiguous sub-properties with similar characteristics, but which provide two different, though apparently related, types of prospective exploration and development targets, namely; (i) metal enriched polymetallic black shales and (ii) possible source(s) to metals therein, proposed herein to be nearby exhalative vents with potential to host sediment hosted exhalative volcanogenic sulfides.

[24] Per the Canadian Northern Miner, Sept/2007-Aug/2008: Mo $33.2/lb, Ni $12.2/lb, U $76.7/lb, V2O5 $11.8/lb, Zn $1.1/lb, Cu $3.5/lb, Co $40.8/lb, Ag $16.1/lb, all figures in USD$.

The six proposed sub-properties with potential for hosting polymetallic black shales are in different stages of development, ranging from areas which have reconnaissance level anomalies which have not been explored, through drill-ready target areas, to Potential Mineral Deposits proposed herein to exist at two of the sub-properties. The sub-properties range in size 100-300 sq km each and their size is appropriate for the principal type of polymetallic mineralization being sought by DNI; namely, nominal 5kmx5km or larger zones of polymetallic enrichment in flat-lying near-surface "blankets" of polymetallic black shale. The additional potential of the overall Property to host yet undiscovered exhalative sediment hosted sulfides has never been evaluated.

The combined historic work provides data coverage over only the eastern two-thirds of the Property, and had by 1996 defined six target areas over composite surface and subsurface anomalies (see Section 8.8). The historic target areas were consolidated by DNI into four principal areas based on its reinterpretation of historic results with the benefit of other historic work postdating their initial designation in 1996.

Unlike the eastern parts of the Property, the northwestern one third of the Property is unexplored and lacks sufficient prior oil-gas drilling to provide any subsurface stratigraphic information. Historic LANDSAT imagery interpretation, however (Figure 26) identified conspicuous features over this area, two of which merit field follow-up since similar features similarly identified over the eastern two-thirds of the Property were demonstrated by historic field work to host metal enrichment or near-surface polymetallic zones.

The six sub-properties identified by DNI are the focus of its exploration work programs and are as follows:

- Two of the sub-properties, designated herein as the **McIvor West** and **North Lily Anomalies**, comprise large 50-100 sq km anomalies selected based on interpretations of general information, and have not been investigated in the field in any measure of detail to determine if they host mineralization. They are in the reconnaissance stages.
- Two of the sub-properties, designated herein as the **Buckton South** and the **Eaglenest Target Areas**, comprise large areas which have undergone considerable prior historic surface work which has identified prospective targets to be tested by future drilling to probe for suspected buried polymetallic mineralized shale beneath the surface of each Target Area. Additional field work will not substantially, nor materially, alter conclusions which have already been reached by the historic work suggesting considerable potential for both. Portions of both Target Areas also present reconnaissance level potential to prospect for the presence of exhalative vents. The Buckton South Target Area presents the additional potential of hosting southerly extension of the Buckton polymetallic Potential Mineral Deposit over a 6km distance, or an altogether separate polymetallic mineralized Zone.
- Two of the sub-properties, designated herein as the **Asphalt** and **Buckton Zones**, and respective Asphalt and Buckton Potential Mineral Deposits, represent near-surface (partly exposed) polymetallic zones which have been confirmed by widely spaced historic drilling and which are proposed herein to contain significant Potential Mineral Deposits to be upgraded to classified resources by in-fill drilling. Both Zones present additional targets with potential for locating suspected sources to their respective metallic mineralization, believed to be nearby exhalative venting, and historic work results from the Buckton Zone further provide metal enrichment vectors directing the search for exhalative venting to its north.

Based on the above, DNI's six sub-properties require work to investigate physical and geochemical surface anomalies interpreted/identified from reconnaissance field work, or to localize the source of surface metal anomalies discovered, or to confirm suspected buried metal enrichment beneath surface geochemical anomalies identified, or to advance mineralized Zones previously identified to a classified resource. The target areas typically measure 100-300sqkm each and are centered around circular, or closed, physical or stratigraphic features associated with metals enrichment in one form or another either over them or on their flanks. DNI regards the six areas as distinct properties in their own right. The target areas are presented in Figure 58, and are discussed in order of decreasing level of development from the most advanced to the least explored.

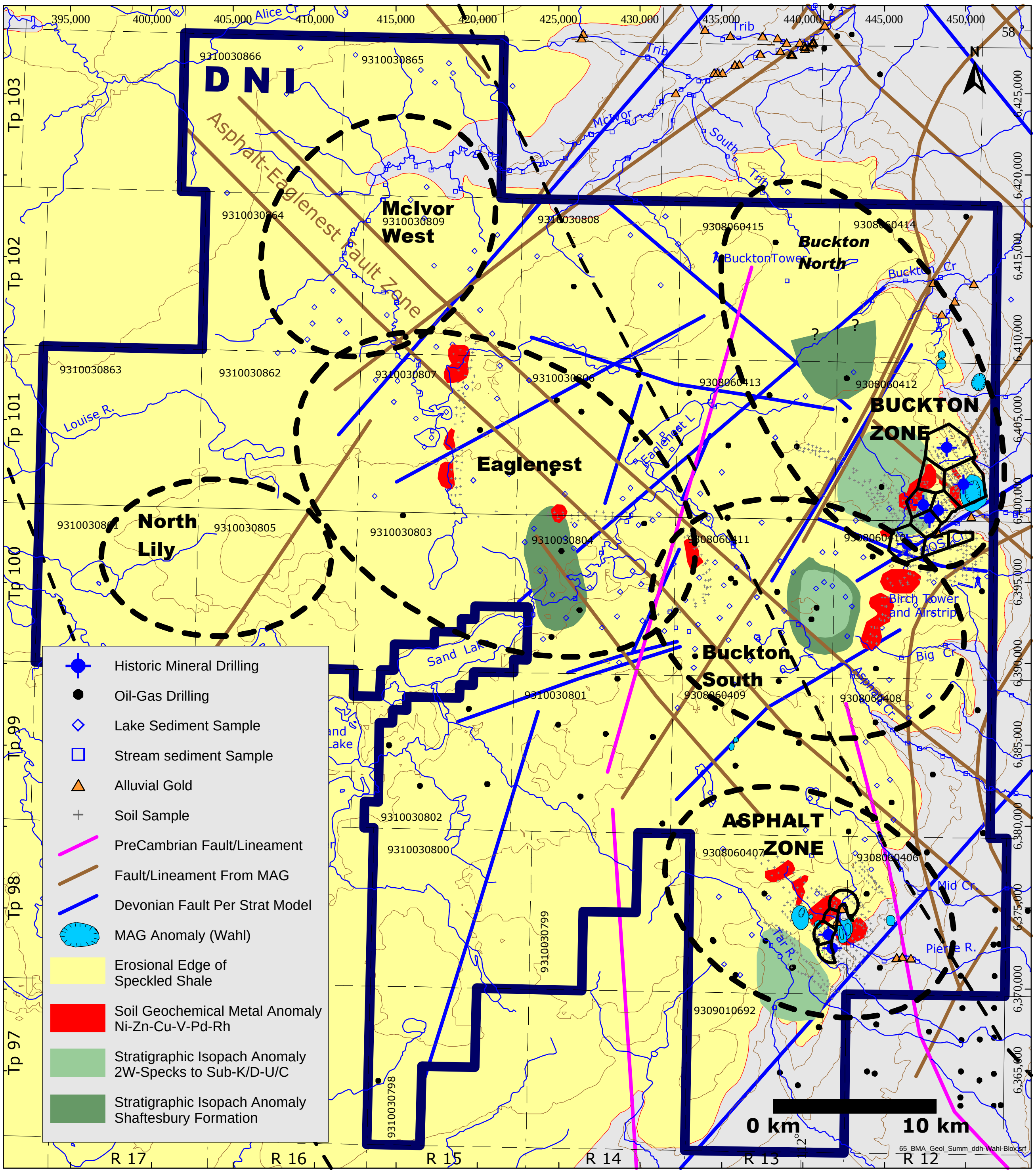


Figure 58: Summary compilation of all historic anomalies over the Property, showing also the composite target areas - "sub-properties" - comprising the principal exploration targets on the Property. The Buckton and Asphalt Potential Mineral Deposits are also shown. See also Figures 32-34 and 39-40 for aeromagnetic geophysical anomalies over the Property. After Figure 65, Sabag 2008.

9.8.1 Buckton Zone, Projected Extensions and Potential Mineral Deposit

The Buckton polymetallic Zone was discovered by Tintina Mines in 1997 by drilling which was conducted to verify suspected metallic mineralization buried beneath a composite set of anomalies identified by extensive prior surface sampling over an approximate 50 sq km area (Figure 59). The Zone and its vicinity were previously designated as Composite Anomaly Area B-Mid by the historic work, and it is located in S½ T101/R12 (see Section 8.8).

The Buckton Zone represents polymetallic enrichment in Mo-Ni-U-V-Zn-Cu-Co-Ag-Au, hosted in, and confined to, the Second White Speckled Shale Formation which is a substantially flat unit ranging 18m-26m in true thickness as intersected in the drilling. The Zone's thickness based on drilling is consistent with its exposures adjacent to the drilling along the north and south valley walls of Gos Creek at elevations ranging from 600m to 624m asl, although the exact position of the Formation is difficult to discern from the valley wall exposures alone due to considerable slumping locally "telescoping" its actual thickness to an apparent thickness exceeding 40m.

Based on the historic drilling, the Zone is at least approximately 8km-9km long and 2km-3km wide. It is open beyond the portion drilled to the north, to the west and to the south, but is eroded away to the east as it sits on the erosional edge of the Birch Mountains. Metal enriched exposures of the Second White Speckled Shale along valley walls as far away as 4km to the east of the Zone's southern extremity suggest it may be 2-3 times wider over its southern parts than demonstrated by the drilling. Other surface anomalies to its north and, especially the south, support speculations that it may be 2-3 three times longer than demonstrated by the drilling, although the areas to its south, previously designated as Composite Anomaly Area B-South by the historic work (see previous Figure 42), may represent an altogether separate buried mineralized zone which has not yet been verified by drilling. Potential extensions are discussed later in this Section.

The Buckton Zone is located on the eastern flank of a 5km diameter subsurface stratigraphic isopach anomaly representing abnormal thickening in the stratigraphic pile above the sub-Cretaceous Unconformity (to base of Second White Specks) associated with faulting. Cross-sections across the anomaly indicate considerable structural complexity characterized by the junction of a multitude of faults converging toward the general southern portions of the isopach anomaly, defining an overall partial radial pattern. The isopach has been interpreted as a "closed" feature based on contouring of subsurface stratigraphic information from oil-gas well picks, although its interpreted shape may be an artifact of data noding, and it may well instead be a large fault block rather than a domed feature. Metal enrichment patterns in exposures sampled along the Gos Creek valley by the historic work suggest progressive enrichment nearer the isopach, as do a series of soil geochemical anomalies characterized by acute Ni-Cu diffusion accompanied by Te enrichment over areas straddling the flanks of the isopach.

The Zone is intermittently exposed along the north and south valley walls of Gos Creek. The GOS1 gossan, located in the north valley wall, represents by far the most continuous exposure of the Zone. The gossan comprises a nearly 1km ledge exposure of metals enriched Second White Specks Formation, lying over the eastern flank of this isopach feature. Mudflow sediments from the gossan drain directly into Gos Creek which is characterized by >90th pctl stream sediment geochemical anomalies in Ni±Zn±Hg, accompanied by alluvial gold in stream sediment HMCs. Native gold has been repeatedly recovered from the GOS1 gossan and from the Gos-C lithosection (in the south valleywall), both of which locations are uphill from stream samples reporting also native gold in Gos Creek. Metal enrichment over the western extremities of the GOS1 gossan are supported by Ni/Cu/Pd and halogens (Br/I) diffusion anomalies in overlying soils. The gossan can be regarded as a geochemical halo, related to broader metal accumulation nearby.

Outcrop exposures of sulfide bearing Speckled Shale adjacent to the Buckton Zone and the adjacent isopach anomaly are enriched in Mo-Ni-Cu-Zn-V-Co-Ag±Au±Pt±Pd, especially over its upper portions and near its lower contact defined by the siliciclastic bone bed representing a marine extinction marker horizon. The siliciclastic bone bed is typically a few centimeters thick but is abnormally thickened upward to 1m nearer the isopach anomaly.

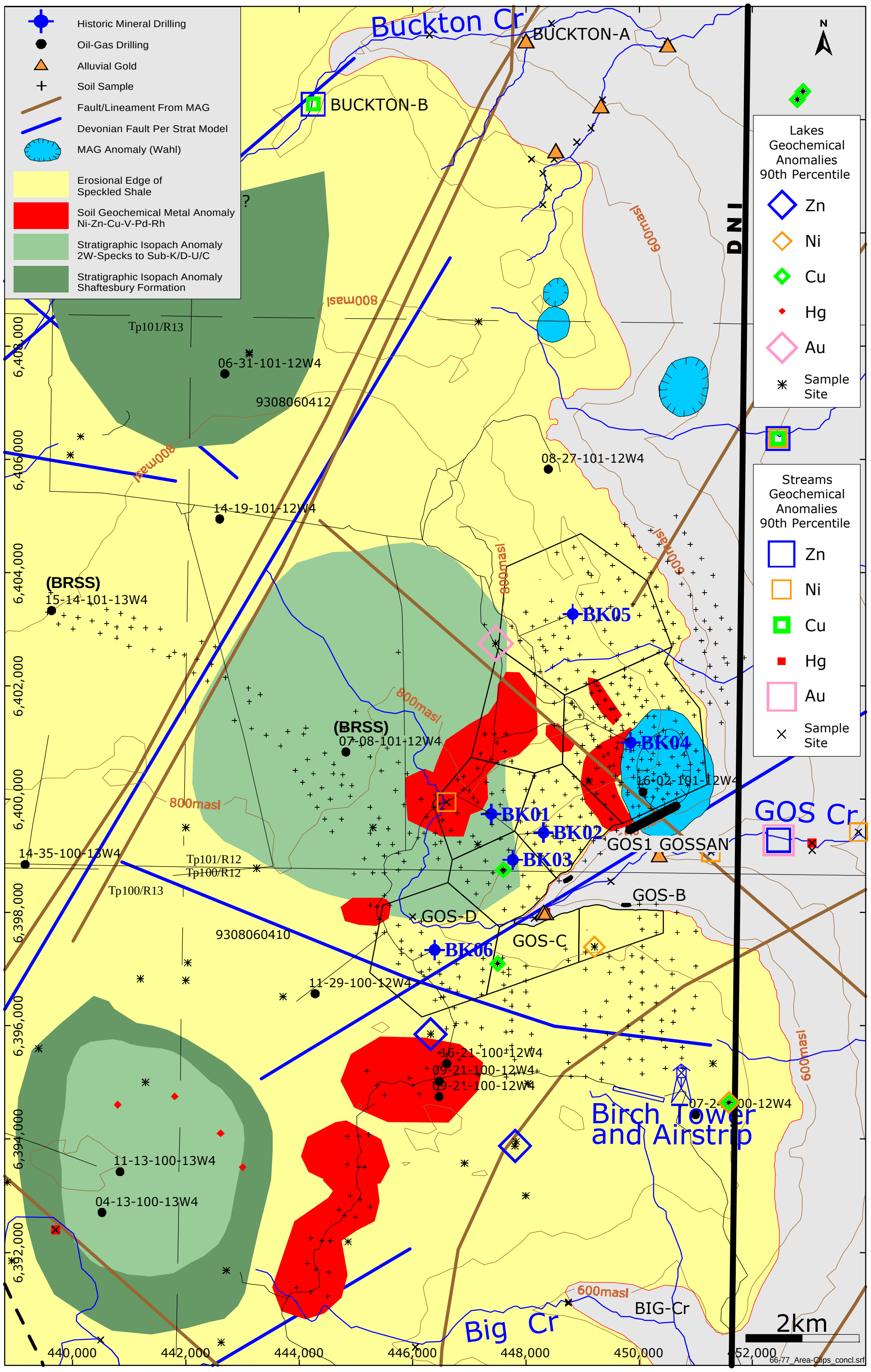


Figure 59: Summary of the Buckton Zone and vicinity, showing also historic anomalies and the Buckton Potential Mineral Deposit (polygons). After Figure 56, Sabag 2008. See also Figures 32-34 and 39-40 for aeromagnetic anomalies over the Property. BRSS=Beaver River Sandstone.

Tintina's examination of available archived drill core and cuttings from two oil/gas wells in the area (07-08-101-12W4 and 15-14-101-13W4) reported the presence of abundant sulfides in some Cretaceous sections. The historic work also noted presence of Beaver River Sandstone immediately above the sub-Cretaceous unconformity, enveloped in altered shale with up 50% sulfides by volume immediately adjacent to its contacts (shown in Figure 59 as BRSS). This highly silicified sandstone also outcrops elsewhere in the region and is generally regarded as a hot springs alteration marker carrying ZrO in addition to gold, base metals, sulfides and iodides (Fenton and Ives 1982, 1984, 1990). Its presence in the Birch Mountains spatially associated with stratigraphic thickening and with metal enrichment zones can be considered to be diagnostic and suggestive of the localized presence in the area of broad alteration zones overlying nearby centers of hot springs or other metal bearing fluid venting activity (fumeroles?).

The Buckton Zone was discovered by six 3-inch diameter vertical holes (a total of 749.63m) drilled by Tintina in 1997 to verify suspected metallic mineralization buried beneath the anomalies described above which collectively represent a 5kmx8km composite anomalous target area (Area B-Mid). The holes were collared along an approximate 8km long fence as a cross-section over the southeast flank of the isopach anomaly. This fence can, alternatively, be regarded to comprise two separate parallel 4km to 5km long "staggered" cross-sections 1km-2km apart, which also radially parallel Gos Creek and its valley walls 1km-2km to the southeast. The fence is regarded as a cross-section for the purposes of this Report.

Drill hole spacing ranged 700m to 2400m. Four of the holes (BK06, BK02, BK04 and BK05) were spaced approximately 2km-2.4km apart, whereas the remaining two holes (BK01 and BK03) were collared within an approximate 700m radius of hole BK02 to assess local "on-section" and "off-section" variations. Hole depths varied 75m-150m to probe from surface (approximate elevation of 700m-750m asl) down to the base of the Second White Specks Formation (approximate elevation of 600m-630m asl). All holes reached their targets, with the exception of hole BK01 which was collared too high to reach the bottom contact of the Second White Speckled Shale. Drill core was sampled under geological control and sample intervals varied 4cm to 1.51m averaging 0.53cm. Details of the drilling are described in Section 6.2.12 of DNI's NI-43-101 report for the property appended herein as Appendix B1.

Weighted average grades of select metals and elements across the entire thickness of the Second White Speckled Shale Formation are summarized in Table 11, arranged in sequence from southwest (BK06) to northeast (BK05) in the same order as they are positioned along the drilled fence. Results for individual drill intercepts were previously summarized in Table 6 (Section 8.9).

Hole No.	From (m)	To (m)	Interval Thickness (m)	Mo-ICP (ppm)	Ni-ICP (ppm)	U-INA (ppm)	V-ICP (ppm)	Zn-ICP (ppm)	Cu -ICP (ppm)	Co-INA (ppm)	Ag-ICP (ppm)	Corg-Leco (%)	Fe-INA (%)	S-Lec (%)
BK06	107.6	130.2	22.6	72	133	30	668	282	78	21	0.8	7.2	4.6	4
BK03	75.0	101.2	26.2	62	121	30	623	289	73	19	0.4	6.0	4.1	3
BK01*	133.0	154.3	21.3	86	160	37	776	360	83	21	0.4	7.1	4.0	4
BK02	60.8	79.2	18.4	66	126	34	648	305	70	21	0.5	6.0	4.5	3
BK04	120.6	141.7	21.1	67	129	27	645	282	73	23	0.3	7.2	4.7	3
BK05	76.8	95.2	18.4	77	152	25	722	318	77	24	0.7	7.6	5.0	4
Weighted Average			21.3	71	135	30	673	302	75	21	0.5	6.8	4.5	4

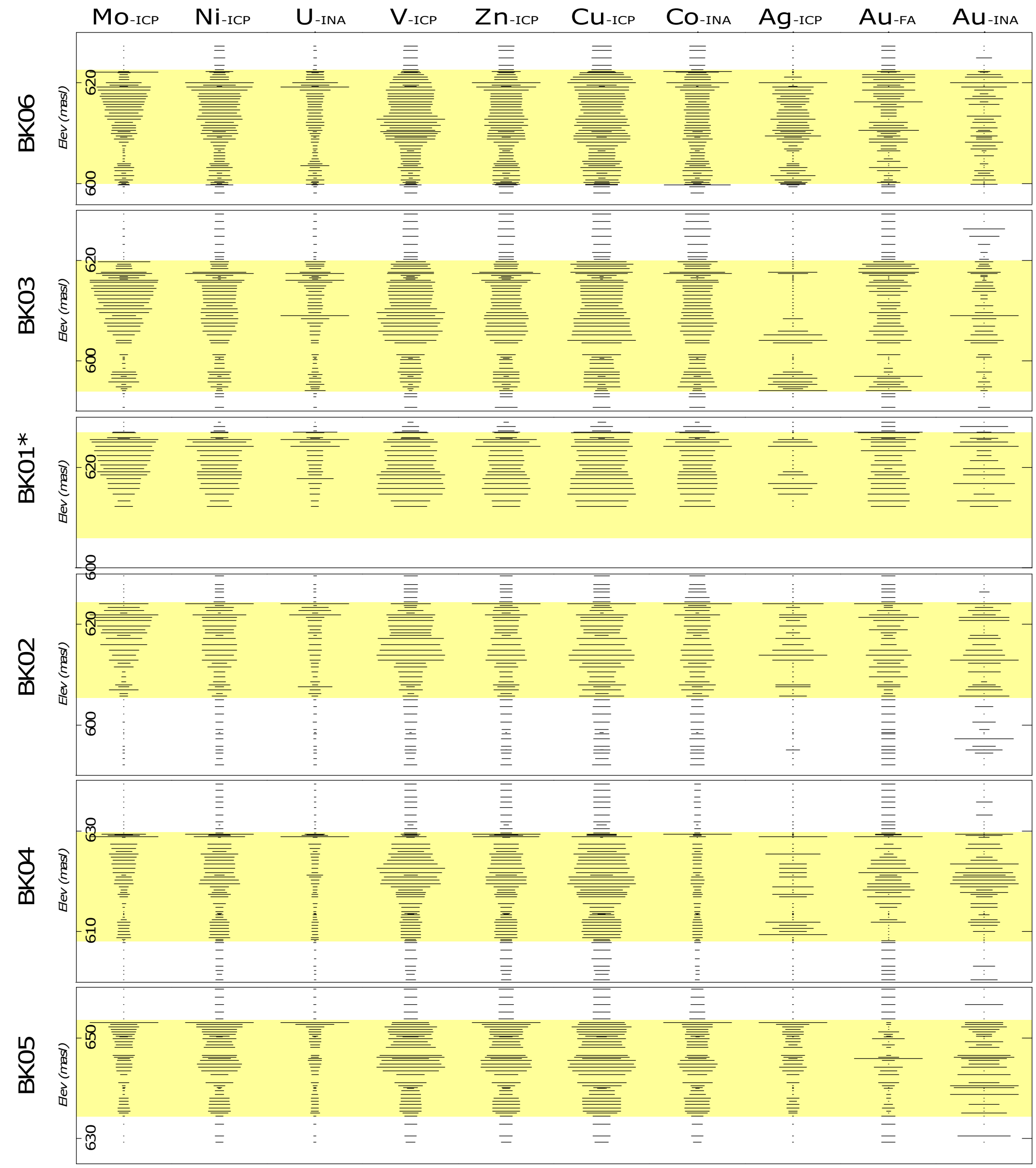
*Hole BK01 did not reach bottom of the Formation, EOH at 149.1m. Its thickness estimated to be 21.3m projected from adjacent holes

Hole No.	From (m)	To (m)	Interval Thickness (m)	Mo-ICP (lb/st)	Ni-ICP (lb/st)	U-INA (lb/st)	V-ICP (lb/st)	Zn-ICP (lb/st)	Cu -ICP (lb/st)	Co-INA (lb/st)	Ag-ICP (g/t)
BK06	107.6	130.2	22.6	0.14	0.27	0.06	1.34	0.56	0.16	0.04	0.8
BK03	75.0	101.2	26.2	0.12	0.24	0.06	1.25	0.58	0.15	0.04	0.4
BK01*	133.0	154.3	21.3	0.17	0.32	0.07	1.55	0.72	0.17	0.04	0.4
BK02	60.8	79.2	18.4	0.13	0.25	0.07	1.30	0.61	0.14	0.04	0.5
BK04	120.6	141.7	21.1	0.13	0.26	0.05	1.29	0.56	0.15	0.05	0.3
BK05	76.8	95.2	18.4	0.15	0.30	0.05	1.44	0.64	0.15	0.05	0.7
Weighted Average			21.3	0.14	0.27	0.06	1.35	0.60	0.15	0.04	0.50

Table 11: Weighted average grades of select metals and elements across the entire thickness of the Second White Speckled Shale Formation, historic drilling, Buckton Zone. After Table 15, Sabag 2008; and Alberta Mineral Assessment Report MIN9802, Sabag 1998. For additional details see also Table 4, Section 6.2.12 of this Report.

There is good consistency in the average grades among the drill holes, especially when considering their wide spacing. This is typical of the lateral consistency displayed by black shales worldwide. There is, however, variability in grades vertically within the Shale as expected, depicting orderly trends, and such is also typical of black shales worldwide. The vertical trends are material to helping identify better grading portions within the Buckton Zone to guide future drilling toward identifying similar material.

Downhole metal grades are shown in Figure 60 for each of the holes for a qualitative review (see Table 6, Section 8.9 for detailed data). Holes are sequenced in the Figure from the southwest (BK06) to the northeast (BK05) in the same order in which they are located in the drilled cross section. Metal grades are shown sequenced downhole for the drill intercepts from the top of the upper contact of the Shale Formation downward to its base.

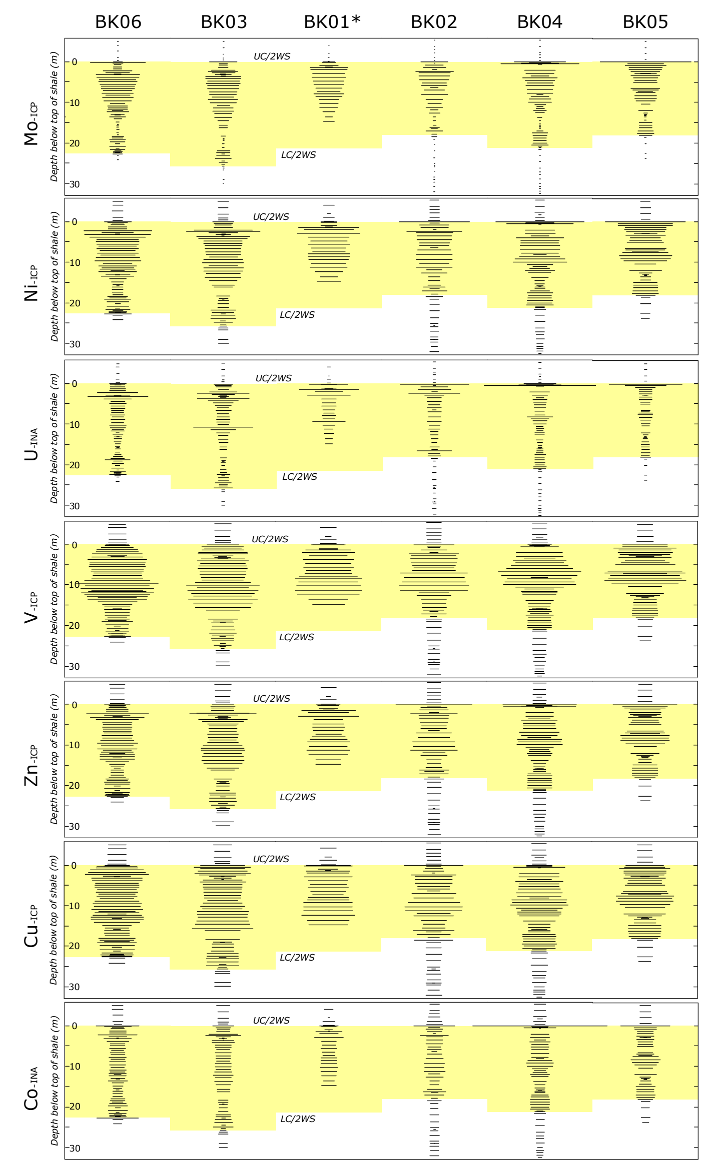


*Drill hole BK01 did not reach bottom of Second White Specks Fm (estimated 21.3m per nearby holes)

Figure 60: Downhole grades for select metals across the thickness of the Second White Speckled Shale Formation (shaded), Buckton Zone historic drilling. After Figure 67, Sabag 2008. Data from Alberta Mineral Assessment Report MIN9802, Sabag 1998.

The relative grade for each metal, ranging between its maximum and minimum, is represented by the size of the bar in the Figure. The progressive enrichment of Mo-Ni-U-(Ag) upstratigraphy is well defined in the Figure and is consistent with progressively more bentonitic sections seen in the drill core which carry more abundant sulfides. V-Zn-Cu-Co, however, exhibit mixed trends one of which is enrichment upstratigraphy and the other is enrichment midsection in the Formation, which is pronounced for V which is concentrated mostly in the midsection. There is no discernible trend in Au grades, and no correlation between analyses from fire assay as compared to those by INA.

Downhole grades for single metals over the drilled cross-section, compared among the holes, are presented in Figure 61. Holes are sequenced in the Figure from the southwest (BK06) to the northeast (BK05) in the same order in which they are located in the cross section. Metal grades are shown sequenced downhole from the top of the upper contact of the Shale Formation downward to its base. The bars depicting grades for any given metal are sized in the Figure to a common scale for all of the holes to enable relative comparisons from one hole to the next and over the cross-section.



*Drill hole BK01 did not reach bottom of Second White Specks Fm (estimated 21.3m per nearby holes)

Figure 61: Downhole grades for select metals across the thickness of the Second White Speckled Shale Formation (shaded), Buckton Zone historic drilling. After Figure 68, Sabag 2008. Data from Alberta Mineral Assessment Report MIN9802, Sabag 1998.

Figure 61 shows consistency among downhole grades from one hole to the next over the length of the cross-section with a subtle progressive increase in U-Mo-Ni grade to the northeast in the uppermost sections of the holes in BK04 and BK05.

The above trends are very general and serve only to characterize bulk patterns within the Shale and across the Zone. The trends depict the data on an absolute basis taking no consideration of sample widths and drill interval weighting.

Downhole grades for the metals are shown for hole BK02 in Figure 62, weighted to drill sample interval (gradexthickness) and presented in the order of samples extending from the top of the Formation down to its base. While the profile in Figure 62(a) characterizes the polymetallic mineralization in the Shale as substantially a V-Zn system with lesser Mo-Ni, normalization of the gradexthickness profiles to relative metal prices[25] by multiplying the gradexthickness by the respective metal price as shown in Figure 62(b) bears out the true nature of mineralization at the Zone and characterizes it as a Mo-Ni-U-V polymetallic Zone with subordinate Zn-Cu-Co.

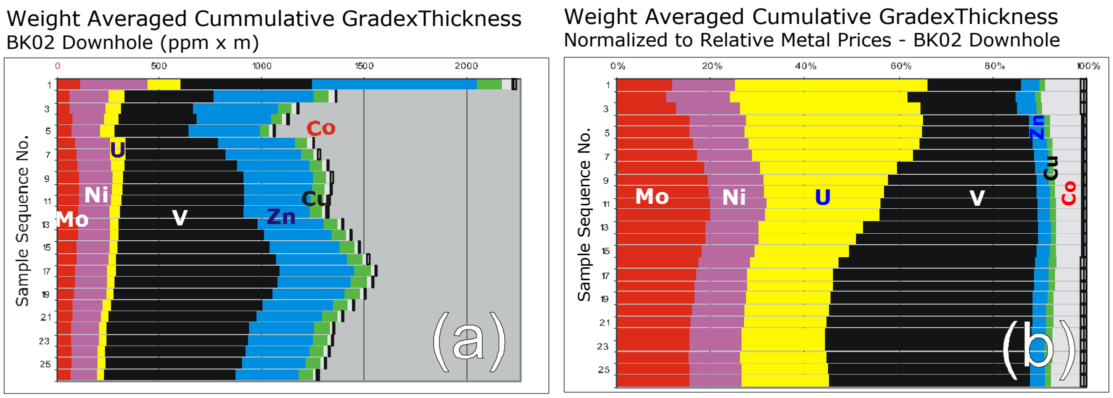


Figure 62: Downhole weighted cumulative average grade x thickness profiles (above) for select metals, and downhole weighted cumulative average grade x thickness normalized to relative metal prices (below), drill hole BK02, Buckton Zone historic drilling, After Figure 69, Sabag 2008; and Alberta Mineral Assessment Report MIN9802, Sabag 1998.

Overall metal grade weighted averages for the drill holes, normalized to metal prices, are summarized in pie charts of Figure 63, showing the relative in-situ value represented by each metal as a % of the total in-situ value of the combined metals. The Figure reiterates that the Buckton Zone is principally a Mo-Ni-U-V dominated polymetallic Zone with subordinate Zn-Cu-Co-Ag, and that it is characterized by remarkable consistency of proportionate grades among the various metals across the entire 8 km cross-section drilled.

Lateral and vertical metal grade variations are best captured in downhole trends of metal grades restated as a multiple of the overall average of all of the holes. This is presented in Figure 64 showing the average downhole grade of various metals over progressive thicknesses of material beneath the upper contact of the Shale. Holes are sequenced in the Figure from the southwest (BK06) to the northeast (BK05) in the same order in which they are located in the cross section.

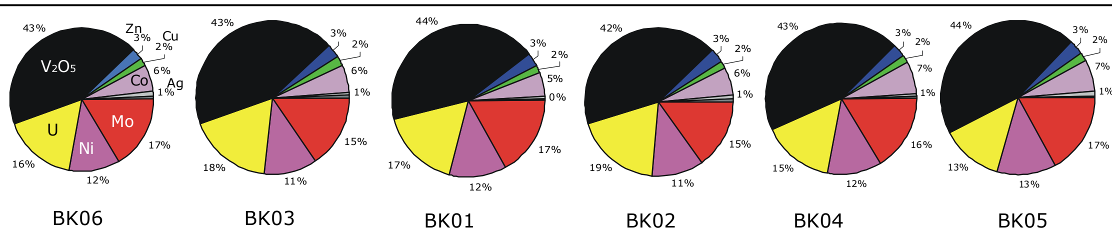


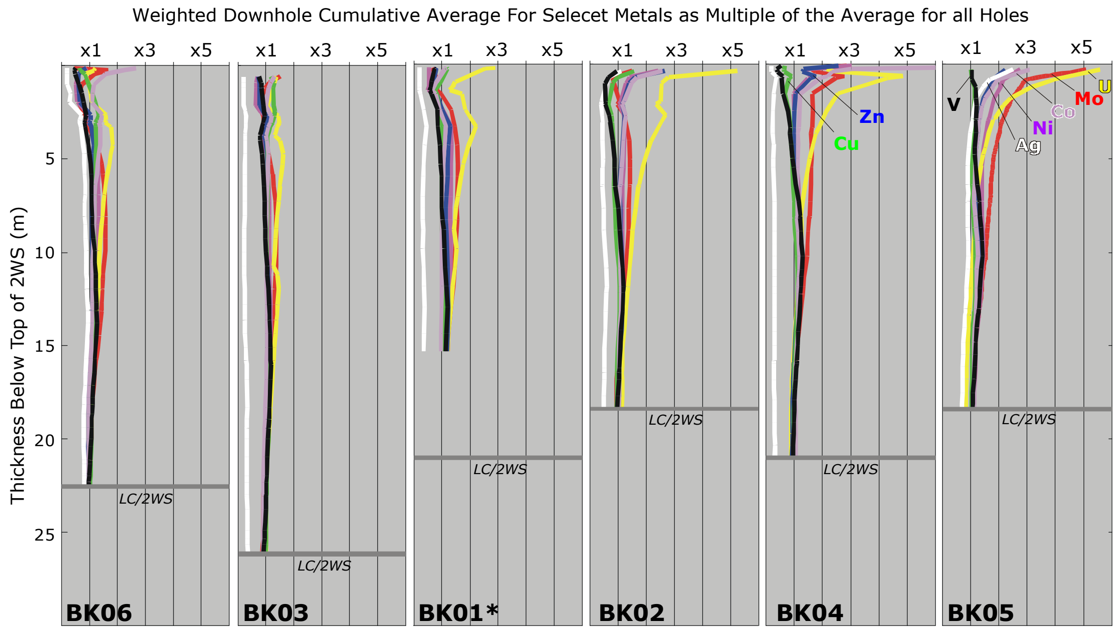
Figure 63: Pie Charts of relative in-situ value represented by select metals, Buckton Zone historic drilling, After Figure 70, Sabag 2008; and Alberta Mineral Assessment Report MIN9802, Sabag 1998.

Figure 64 shows better overall grades over the upper portions of the holes, typically representing x2 the average of all of the holes, progressively trending toward the average further downhole. Over the northeast portions of the drilled cross-section (BK02, BK04, BK05), however, the trends exhibit progressively better northeasterly increase in grades in the upper parts of the holes, accompanied also by progressive thickening of the better grading upper portions. This trend is clearly seen for U in BK01 which is nearly x3 the average in upper parts of the hole, but reaches x6 the average in BK05 where the enrichment is also accompanied by Mo (x5), Ni (x3), Co (x3) and Zn (x2). Interestingly, V contents are relatively constant throughout the downhole profiles showing no lateral (along-section) enrichment and reiterate that V enrichment is subdued and is substantially confined to the midsection in the holes as seen in previous figures.

---

[25] Average metal prices for the year Sep/07-Aug/08; Mo ($35/lb), Ni ($12/lb), U ($75/lb), V_2O_5 ($5/lb), Zn ($1.4/lb), Cu ($3/lb), Co ($40/lb), Ag ($15/oz). V discounted to approximately 40%.

The metal enrichment trends in Figure 64 provide lateral enrichment vectors suggesting that future work should focus on the area to the north of the drilled cross-section for identification of better grading material which may also comprise thicker sections in the Formation northwards dominated by metals other than V. The trends are accompanied by Ba enrichment over the top of the Formation, and are also consistent with the progressive increase in frequency and size of bentonites in the upper sections of the drill core nearer the upper contact of the Second White Speckled Shale Formation, and also better development of thicker bentonite seams toward the northeast suggesting a nearby source to the northeast (discussed further later in this Section).



*Drill hole BK01 did not reach bottom of Second White Specks Fm (estimated 21m)

Figure 64: Weighted cownhole cumulative average metal grades, normalized to relative metal prices, as a multiple of the average for all holes, for progressive thicknesses of material below the upper contact of the Second White Speckled Shale Formation, Buckton Zone historic drilling. After Figure 71, Sabag 2008. Data from Alberta Mineral Assessment Report MIN9802, Sabag 1998.

Should the above trends prove to be typical for the overall Property, they would serve to further characterize the true nature of metal mineralization in the Second White Speckled Shale and perhaps also the enveloping black shales across the Property as consisting of two separate juxtaposed trends: one which is predominantly a general basinal trend related to the shales' anoxic provenance and dominated by V-Cu(Zn), and another trend superimposed upon it which is dominated by Mo-Ni-U-Zn-Co enrichment, accompanied by bentonite development , related to localized volcanism and exhalative venting.

The above proposed scheme would be consistent with the overall V and Zn enrichment common to all of the black shales on the Property (LaBiche avg 243ppm V; 143ppm Zn), Belle Fourche avg 209ppm V; 132ppm Zn), even though the concentrations are notably higher in the Second White Speckled Shale (avg 680ppm V; 306ppm Zn). By contrast, the Speckled shale is considerably better enriched in Mo-Ni-U (avg 72ppm Mo, 137ppm Ni, 31ppm U) than its enveloping black shale Formations (LaBiche avg 2ppm Mo, 42ppm Ni, 5ppm U)(Belle Fourche avg 3ppm Mo, 42ppm Ni, 5ppm U).

In addition to the above, the trends in Figure 64 might also provide a general indication of the carrier mineralogy of the various metals, suggesting that Mo-Ni-U-Zn-Co are likely contained in forms or minerals (sulfides/oxides?) other than those which host the V-Cu(Zn) (likely organics and clays).

The downhole aggregate combined in-situ value of the metals is shown in Figure 65 as a multiple of the average combined in-situ value of all of the holes, for progressive thicknesses beneath the top of the Second White Speckled Shale.

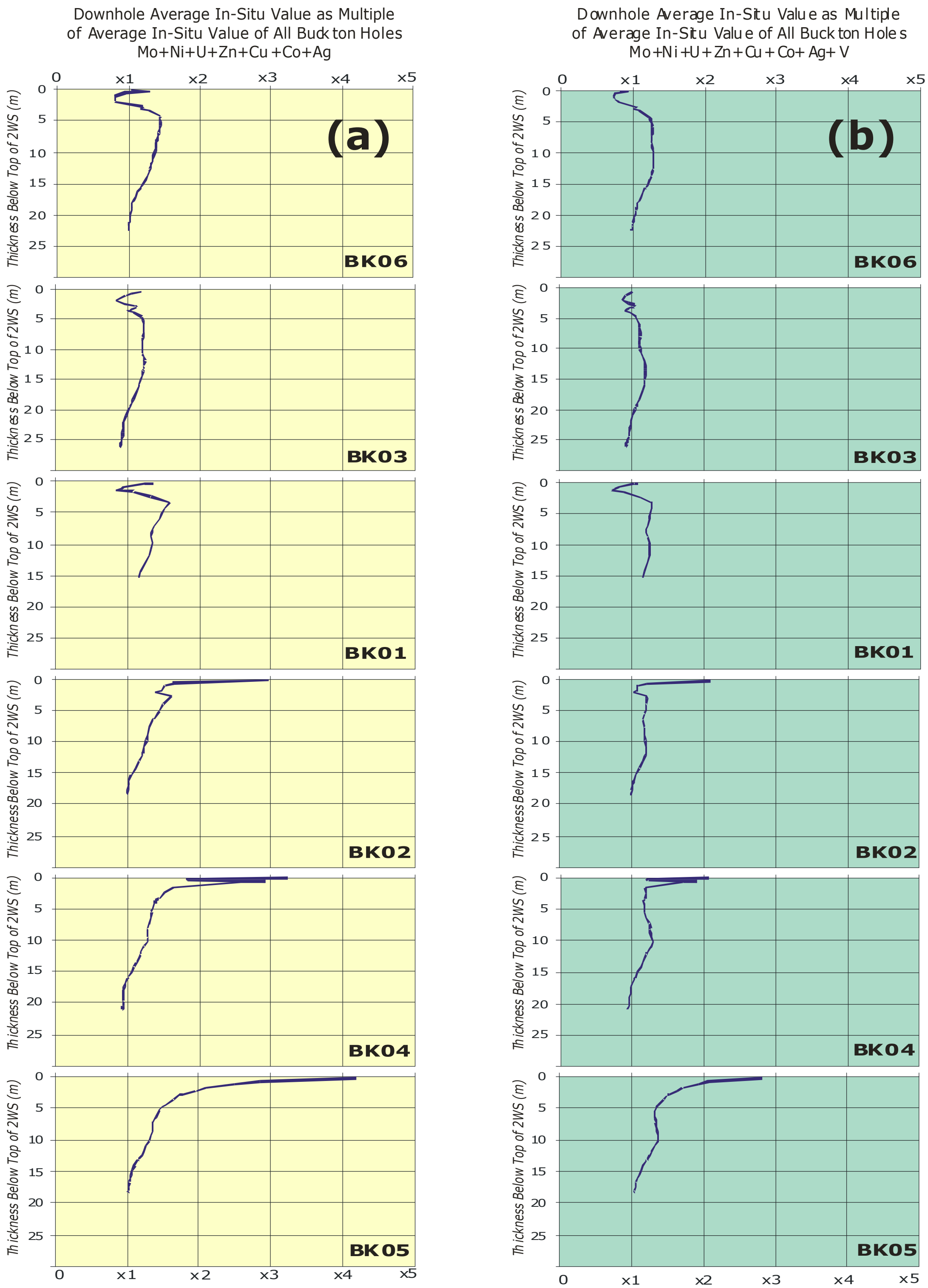


Figure 65: Downhole weighted average in-situ value of combined metals as a multiple of the average combined in-situ value of the metals for all of the Buckton holes, for progressive thicknesses of material below the upper contact of the Second White Speckled Shale Formation, Buckton Zone historic drilling. Graphs for suite of metals excluding-V (left) and including-V (right) shown for comparison. After Figure 72, Sabag 2008. Data from Alberta Mineral Assessment Report MIN9802, Sabag 1998.

Figure 65 shows trends for two groupings of metals, one including V and the other excluding it. The Figure reiterates the northerly thickening trend of the better grading material in the upper parts of the holes, but also reiterates the similar trend for the Mo-Ni-U-Zn-Cu-Co-Ag group which excludes V. This trend is relevant to future exploration toward expansion of the Buckton Zone, and also relevant to exploring the suggested potential of locating the source to metals in the shales (discussed further on this Section under Buckton North extension). The trends would also be relevant during any future resource study which will undoubtedly have to address blocking of volumes of mineralized material guided by economic parameters, but which will equally have to rely on a determination of which group of metals to block out for the purposes of the study.

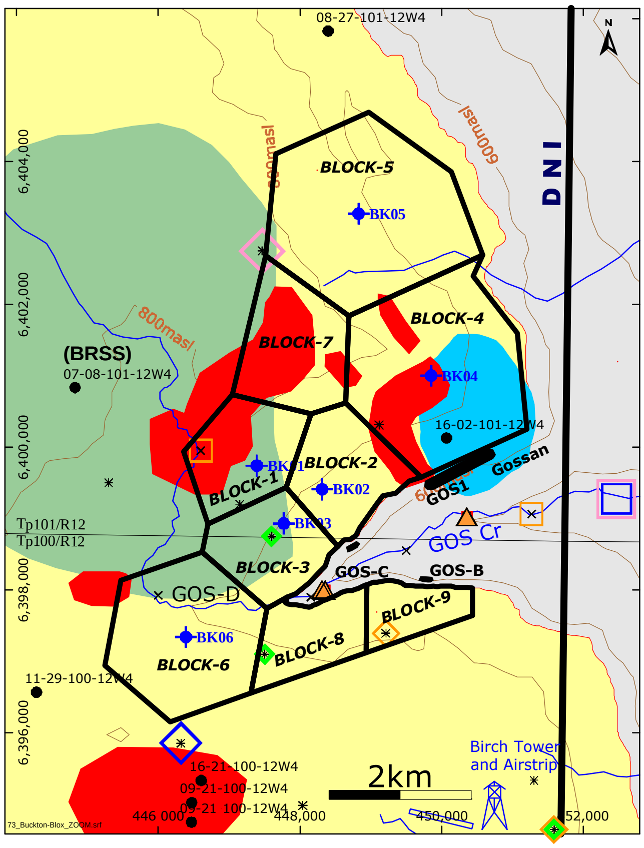


Figure 66: Buckton Potential Mineral Deposit area sketch, showing estimated mineralized blocks. Buckton Zone. See Figure 59 for legends. After Figure 73, Sabag 2008.

Relying on the historic drilling results, reinforced also by results from a multitude of exposures of the Second White Speckled Shale Formation in valley walls near the drill-section and near the holes, and further reinforced by surface geochemical data and the remarkable lateral continuity in geology and orderly grades exhibited by the historic drilling, the author proposes that the Buckton Zone contains a Potential Mineral Deposit as understood under NI-43-101. The proposed Potential Mineral Deposit is conceptual in nature, and is intended solely to provide an indication of the overall potential of the Buckton Zone, and of the magnitude of mineral aggregations which the Zone might ultimately yield subject to confirmation by future in-fill grid drilling.

The reader is reminded that there has been insufficient drilling conducted over the Zone to define a mineral resource, and that it is uncertain if further drilling will define a mineral resource over the Zone. DNI plans to conduct the necessary drilling to test the resource potential of the Zone.

The proposed Potential Mineral Deposit comprises a volume of polymetallic material contained in nine polygonal blocks (Figure 66) whose size and distribution has been estimated predicated on the following:

- Considerable weight has been attributed to the historic drill data during preparation of the estimates, relying on results from surrounding areas to reinforce extrapolation of the polygons. The author considers the spacing of the historic drilling to be adequate for the blocking out of an area of interest in black shale hosted mineralization, as an area which is to be the subject of future in-fill drilling.

  In the above regard, during pre-development stages of the Fort Hills oil sands deposit near DNI's Property, drill data based on 400m spacing (plus localized 200m tests) was considered to provide adequate confidence in a calculated resource to support decisions whether to proceed toward the

$15 billion capital project. A 200m spacing was subsequently considered adequate to support preliminary feasibility study and preliminary mine planning (Burns et al 2001). Similarly, inferred resource modeling for the MyrViken Uraniferous Alum black shale deposit (Continental Precious Minerals) relied on a drill hole spacing ranging 30m-380m averaging 300m (Harron 2008), and minimum drill hole spacing necessary to support a Measured and Indicated Resource classification at the Paracatu gold deposit (Kinross 2006) is a 200mx200m "five spot" pattern, resulting in an average nominal drill hole spacing of 140m (see Section 9.9.2). It is the author's opinion, based on his six years of mapping and sampling experience of the Second White Speckled Shale across the Birch Mountains, and over the Property, that the Shale exhibits sufficient lateral continuity of bulk grade and geology that a 400m-500m nominal drill spacing (with localized 200m tests) would be adequate to support estimation of inferred resources for the Buckton Zone, though 200m-400m would be preferable and may enable partial upgrading of the classification (the foregoing also meets concurrence from Mr.M.Dufresne based on his similar extensive experience of mapping the Shale across the Property - Dufresne 2010, personal communication);

- Blocks 1 through 6 are centered around the historic drilling and are numbered per their respective drill holes. The blocks comprise simple polygons centered on Speckled Shale drill intercepts extending outward from each drill hole midway to the next adjacent hole. Blocks 4 and 5 were extended eastward to the 620m asl elevation contour which is the approximate elevation at which the Shale Formation is observed in exposures along the erosional edge of the Birch Mountains and at the GOS1 gossan. Volumes were estimated by multiplying the polygonal area by the thickness of the Formation as a range varying between the true thickness as measured in the drill hole at the centre of each block and the overall average of all of the holes. For some holes the average is lower than the true thickness of the Formation and for others it is higher;

- Block-1 is centered around drill hole BK01 which did not reach the bottom of the Second White Speckled Shale Formation. Thickness of the Formation is estimated to be 21.3m based on projections from adjacent holes (only 15.3m of Shale was cored in this hole);

- Blocks 2, 3 and 4 are adjacent to the north valley wall of the GOS Creek, and were extended southeast to the valley break marking the erosional edge of the Second White Speckled Shale Formation. These Blocks are reinforced by exposures of similarly mineralized intermittent exposures of the White Speckled Shale Formation sampled in the historic work along the 4km long valley walls, including extensive sampling of the 120m long mineralized exposure at the GOS1 Gossan which has occasionally also yielded free gold grains in heavy mineral concentrates. The GOS1 gossan and other exposures along the north wall are regarded as exposures of the Zone in the third dimension, and provide good corroboration of averaged grades though averaging of results from the exposures is complicated by considerable slumping the area;

- Block-7 overlies a large soil geochemical anomaly in an embayment surrounded by drill based Blocks 1, 2, 4 and 5. Similar soil anomalies overlie Blocks 1-6, and were demonstrated to reflect buried mineralized material, and Block-7 is proposed to similarly reflect buried mineralization. The average thickness per drill holes 1, 2, 4 and 5, was assigned as the thickness of Block-7, and its volume estimated based on the range of thickness varying between the estimated thickness and the overall average of all of the holes. Grade was estimated to be the range defined by the average grades from the drill holes;

- Blocks 7 and 8 were added to give effect to polymetallic outcrop exposures of the Second White Speckled Shale throughout the southern valley wall of the GOS Creek Valley which have been mapped and sampled in detail by the historic work in stratigraphic sections. These are regarded as exposures of the Zone in the third dimension, and comprise the GOS-C and GOS-B stratigraphic sections which have reported similar polymetallic grades as those from the drilling, although averaging of grades therefrom is complicated by uncertainties due to considerable slumping in the valley. GOS-C section has returned some of the highest gold assays ranging

20ppb-67ppb from routine fire assaying of exploration samples over the area. The average Formational thickness was assigned as the thickness of these blocks, and its grade is estimated to be the range defined by the average grades from the drill holes. The Blocks are extended to the valley break marking the erosional edge of the Shale;

- Tonnages were calculated at a specific gravity of 2.1 as calculated from drill sample weight records reported in the historic work (DNI's subsequent verification sampling of the historic drill core reported measured values for Specific Gravity ranging 2.22 to 2.49 for the Second White Speckled Shale suggesting that tonnages might in fact be larger than those estimated);

- Grades for the various metals are based on the overall drill hole weighted average grades restated as a range varying between the lowest and the highest grade reported from the holes for any given metal as averaged over the entire thickness of the Second White Speckled Shale Formation intersected in the hole. No attempt has been made to exclude lower grading material from near the bottom of the Formation. Gold content has been assumed to be nil given discrepancies of an order of magnitude or more between grades reported by historic bottle roll cyanidation tests of 500gm samples (broadly ranging 0.1-0.4g/t grades) compared with mostly single digit ppb range grades reported from routine fire assays and INA analyses of approximately 30gm samples.

Based on the above scheme, the Potential Mineral Deposit which is proposed to be contained in the Buckton Zone extends over an approximate 3km x 8km area comprising approximately 26 square kilometers, with a thickness varying, on average, 20.5m to 21.9m, and represents an aggregate of approximately 1.2-1.3 billion short tons of mineralized material (1.1 to 1.2 billion tonnes). Block volume and tonnage estimates are summarized as ranges in Table 12. Estimated grades and gross contained metals are summarized as ranges in Table 13 rounded to the nearest million unit.

The reader is reminded again that the estimated Potential Mineral Deposit is conceptual in nature, that there has been insufficient drilling conducted over the Zone to define a mineral resource, and that it is uncertain if further drilling will define a mineral resource over the Zone. The estimates are intended solely as an indication of the overall potential of the Buckton Zone, and of the magnitude of mineral aggregations which the Zone might ultimately yield subject to future in-fill grid drilling. DNI plans to conduct the necessary drilling to test the resource potential of the Zone.

Block Volumes and Tonnage Estimates: Potential Mineral Deposit - Buckton Zone

	Area	Basic*	Thickness Estimate (m)		Volume Estimate (cu m)		Tonnage Estimates (tonnes)	
Block Name	(sq m)	Thickness	Low	High	Low	High	Low	High
Block-6	3,802,105	22.6	21.3	22.6	80,984,837	85,737,468	170,068,157	180,048,682
Block-3	1,897,788	26.2	21.3	26.2	40,422,884	49,722,046	84,888,057	104,416,296
Block-1	2,017,981	21.3	21.3	21.3	42,982,995	42,982,995	90,264,290	90,264,290
Block-2	2,061,096	18.4	18.4	21.3	37,862,334	43,901,345	79,510,900	92,192,824
Block-4	5,382,608	21.1	21.1	21.3	113,357,724	114,649,550	238,051,221	240,764,056
Block-5	5,749,675	18.4	18.4	21.3	105,736,523	122,468,078	222,046,699	257,182,963
Block-7	2,461,878	19.8	19.8	21.3	48,745,184	52,438,001	102,364,887	110,119,803
Block-8	1,526,739	21.3	21.3	21.0	32,519,541	32,061,519	68,291,035	67,329,190
Block-9	1,027,475	21.3	21.3	21.0	21,885,218	21,576,975	45,958,957	45,311,648
Totals	25,927,345				524,497,240	565,537,977	1,101,444,204	1,187,629,751
Averages		21.1	20.5	21.9				

* Thickness(m) as measured in drill hole, or as assigned or estimated for block. See report text

Table 12: Summary of estimated volumes and tonnages, Potential Mineral Deposit, Buckton Zone. After Table 16, Sabag 2008.

The reader is also reminded that while estimated Potential Mineral Deposits can be misleading if regarded as resources, which they clearly are not, they can - conversely - also fail to capture the ultimate potential of any mineral zone given that the estimates are derived from bulk averaging of figures based on a broad range of grades, thickness and assumptions. In the latter respect, it is possible that estimation of a Potential Mineral Deposit which may exist over any given mineralized zone may understate the ultimate potential of the zone it attempts to characterize.

Grade Averages and Gross Metals Content: Potential Mineral Deposit - Buckton Zone				
	Grade Range (ppm)	Grade Range (lb/st)(opt)	Gross Metal/Oxide Content (lb) (oz) Low Estimate	High Estimate
Mo	62ppm-86ppm	0.12lb/st-0.17lb/st	150,000,000	225,000,000
[MoO3]		0.19lb/st-0.26lb/st	225,000,000	338,000,000
Ni	121ppm-160ppm	0.24lb/st-0.32lb/st	293,000,000	419,000,000
U	25ppm-37ppm	0.05lb/st-0.07lb/st	61,000,000	96,000,000
[U3O8]		0.06lb/st-0.09lb/st	72,000,000	113,000,000
V	623ppm-776ppm	1.25lb/st-1.55lb/st	1,511,000,000	2,027,000,000
[V2O5]		2.24lb/st-2.79lb/st	2,719,000,000	3,649,000,000
Zn	282ppm-360ppm	0.56lb/st-0.72lb/st	683,000,000	940,000,000
Cu	70ppm-83ppm	0.14lb/st-0.17lb/st	169,000,000	217,000,000
Co	19ppm-24ppm	0.04lb/st-0.05lb/st	46,000,000	63,000,000
Ag	0.3ppm-0.8ppm	0.01opt-0.026opt	12,000,000	34,000,000
Au	assumed nil	assumed nil	assumed nil	assumed nil

lb/st=lbs per short ton; opt=ounces per ton Gross metal contents are rounded to nearest million units *

Table 13: Summary of grades and gross metal content estimates, Potential Mineral Deposit, Buckton Zone. All metals grades expressed in ppm and restated as lb/s.t. except Ag which is expressed also as opt; all gross metals contents are expressed in lbs except Ag which is expressed in oz. Mo, U and V are also re-stated in oxide equivalents. After Table 17, Sabag 2008.

In the above regard, the estimates presented herein do not selectively highlight the higher grading material (subzones) in the upper sections of the Potential Mineral Deposit, other than by bulk averaging them along with much lesser mineralized material over the entire volume. For example, based on the estimation procedures and assumptions presented above, a smaller volume of material with 15%-30% better overall average grade can be blocked out as a sub-zone confined to the uppermost 10m thickness of the Buckton Potential Mineral Deposit, equivalent to approximately 40%-50% of the overall tonnages estimated for the overall Potential Deposit (see Figure 65). Similarly, by focusing only on the northern portion of the drilling, an even smaller tonnage can be blocked out within the uppermost 10m of the Zone as yet another sub-zone, likely representing approximately 20%-30% of the Buckton Potential Mineral Deposit, wherein Mo-Ni-U-Zn-Co represent sufficient combined value to be of interest as a stand-alone mineralized volume. In the absence of metal recovery information, several iterations of a variety of subzones can be blocked out over different portions of the Buckton Zone, each one dominated by a different metals profile. This is typical for polymetallic deposits, and is an exercise best relegated to the rigors of a future resource study guided by definitive metals recovery information.

The proposed Buckton Potential Mineral Deposit is open in three directions - to the north, the south and the west - but it is eroded away to the east as it sits on the erosional edge of the Birch Mountains. Projected extensions are as follows:

> **Southern Extension (Buckton South)**: Based on historic results from surface sampling, the Potential Mineral Deposit could realistically be extended for an additional 6km to its south over a series of soil geochemical metal diffusion anomalies collectively occupying a 2km x 6km area. The soil geochemical anomalies are reinforced by other surface, subsurface stratigraphic and structural features, and by >90th pctl lake sediment geochemical anomalies comprising elevated Zn±Ni±Cu±Ag±Hg surrounding an interpreted fault swarm related to Zn diffusion anomalies in soils, associated also with localized zones of Te enrichment. The faulting is associated with a stratigraphic isopach anomaly (in T100/R13) comprising abnormal thickening in the stratigraphic pile above the sub-Cretaceous Unconformity (to base of Second White Specks) coincident with a similar thickening exhibited by the Fishscales-Second White Specks (Shaftesbury) isopach. The combined anomalies were previously designated by historic work as Composite Anomaly Area B-South (Figure 42) which is re-named herein the Buckton South Target Area.
>
> This area occupies the headwaters of Asphalt and Big Creeks, radially flowing downhill from it. Both Creeks have reported exceptionally good geochemical and heavy mineral anomalies in stream sediment samples from the historic work. The headwaters of the Creeks, and the vicinity

of the soil anomalies, have also reported good >80th percentile lake and stream geochemical anomalies. Asphalt Creek, additionally, represents one of the most sulfide rich drainages in the Birch Mountains, reflecting mineralogy and geochemistry from fresh sediments which can be seen slumping into the Creek from the adjacent steeply incisioned valley walls. A nearly complete section of the Second White Speckled Shale Formation is exposed in the lithosection at Asphalt-H, at the headwaters of Asphalt Creek, comprising a 10m vertical section with 67ppm Mo, 110ppm Ni, 35ppm U, 461ppm V, 254ppm Zn, 62ppm Cu, 19ppm Co and 1.1g/t Ag averaged over the lithosection as reported from historic sampling. To the extent that lithosections sampled in the historic work are "measured" true stratigraphic sections which were systematically, and substantially continuously, sampled, the lithosections reliably "proxy" as drill holes with better reliability than that represented by conventional reverse circulation holes.

Though the combined anomalies comprising the Buckton South Target Area are similar in characteristics to those over the Buckton Zone to its north (verified by drilling to reflect buried metal mineralization) it is uncertain whether the soil, and associated lakes and stream geochemical, anomalies reflect a southerly extension of the Buckton Zone, or whether they reflect an altogether separate Zone buried beneath them better associated with the coincident stratigraphic isopach anomaly nearby to their west. Should the exhalative venting geological working model proposed for the area be demonstrated to be valid, overlap or coalescence between volcanic debris from adjacent vents would be a realistic expectation, as would be contrasts in geochemistry (and any metal content) of their respective ejecta material. Arbitrary extrapolation of the Buckton Zone to the south might, therefore, inadvertently mix different metal profiles from two different zones. No attempt is, accordingly, made to extrapolate the Buckton Zone to extend south over the Buckton South Target. Recommendations are made in a later section of the Report that drill testing of Buckton South be prioritized. This target is also discussed separately further in this Section.

Northern Extension (Buckton North): The Buckton Potential Mineral Deposit is open to the north for 5km-10km toward an isopach anomaly previously designated as the B-North Target Area by historic work, located in NW¼ T101/R12. This Area is dominated by an aeromagnetic "high" (see Figure 41) flanked on its side by a series of 1km-2km diameter circular topographic features, separated by many creeks flowing into, and comprising the headwaters of, Buckton Creek. Other than native gold reported from Buckton Creek and its tributary from historic streams sediment sampling, and a coincident Zn-Cu >90th percentile stream geochemical anomaly at the headwaters of Buckton Creek, little is known about the Area other than the acute isopach anomaly which is one of the most conspicuous subsurface stratigraphic anomalies identified in the Birch Mountains by the historic work, comprising a 60m abnormal thickening in the Shaftesbury Formation beneath the Second White Speckled Shale Formation. Whether this isopach anomaly is also related to thickening in the Second White Speckled Shale Formation is unknown, although the creeks flowing eastward from it define a radial pattern and drain slumped shale exposures in the area.

A northerly trend of better drill grades in the upper portions of the Shale was discussed earlier in this Section, along with a general trend of northward thickening of the better grading drill sections. These trends present obvious guidelines suggesting that the Zone likely extends to the north and should be tested by additional drilling. In addition, these trends, when combined with observations of northerly increasing thickness, frequency and distribution of bentonites in the drill core, make strong arguments supporting the presence of a nearby source to the volcanic debris (and metallic mineralization) incorporated into the Buckton Zone Second White Speckled Shale. Relying on the proposed volcanogenic geological working model, it is proposed that the area to the north of the Buckton Zone also holds potential for hosting exhalative metalliferous venting possibly associated with SEDEX style (massive?) sulfide mineralization hosted within the Cretaceous stratigraphy.

Nearly all of the historic surface geochemical and mineral anomalies discovered to date on the Property are in structural zones interpreted based on stratigraphic disturbances (e.g. Asphalt-Eaglenest Fault Zone), or are on the flanks of circular, or "closed", stratigraphic disturbances (e.g. Buckton and Asphalt polymetallic Zones). The "closed" shape of some of the stratigraphic, often isopach, anomalies may be an artifact of contour noding and it is possible that they reflect faulted blocks, even though the closed shapes have support from coincident roughly circular domed topographic relief features. Should the "closed" shaped stratigraphic anomalies ultimately be demonstrated to be faulted blocks (bounded by synsedimentary faults) rather than domes, considerable significance would be placed on fault junctions, and junctions among fault swarms, as potential conduits for any volcanic exhalative venting in the Birch Mountains and on the Property. Fault junctions, accordingly, present high priority future exploration targets for volcanic vent related exhalative mineralization which might exists on the Property, and to the north of the Buckton Zone. Several such targets are suggested and are shown in Figure 79 in a later Section of this Report.

Western Extension (Buckton West):

The Buckton Zone is open to the west toward, and across, the stratigraphic isopach anomaly on its western flank. There are no exposures to the west of the Zone, nor any information from the area other than a handful of lake and stream sediment geochemical anomalies. This area corresponds to area A-North designated by the historic work, and its southern parts overlap on the Buckton South Target Area discussed later in this Section.

There is no information from historic work to support or refute extension of the Buckton Zone to its west, and no information to provide any guidelines to how far the Zone might be expected to so extend. It is of note that any westward extension to the Zone would be under overburden cover, or under other overlying strata, ranging 150m-200m in thickness per the subsurface stratigraphic model for the Birch Mountains (see Figure 25). To the extent that the Buckton Zone is being explored by DNI as a potential bulk mineable target accessible by open pit, extensions of the Zone to the west beneath excessive cover may be moot.

It is evident from the above that the Buckton Zone, and the Potential Mineral Deposit proposed to exist therein, host metal mineralization with potential for delivering large quantities of metals from immense volumes which are partly exposed at, or are near, surface. The most attractive features of the Zone, and the Potential Mineral Deposit proposed to exist therein, are (i) the potentially immense size hence the potential as a long term source of metals, (ii) proximity to surface and unconsolidated nature hence likely amenability to extraction by low cost large scale bulk mining, and (iii) remarkable uniformity of metal grades as demonstrated by the drilling and other sampling over the large area represented by the Zone.

A simple discussion of potential overall grade for the Zone is complicated by the multiplicity of metals which will only collectively comprise the ultimate value represented by the mineralized material in the Zone. A discussion of in-situ value represented by the collective metals in the Zone is, however, beyond the scope of this Report and would be more appropriate in the context of a future economic evaluation or scoping study of the Zone in conjunction with a resource classification study. Suffices to say at this juncture that concentrations of Mo, Ni, U, V, Zn, Cu, Co (and to some extent also Ag) collectively represent sufficient in-situ value on a combined basis to place the Zone within economic reach provided the metals can be recovered on a combined basis, and provided high enough recoveries can be achieved. Effective recovery of the metals is, accordingly, the most significant question which needs to be addressed to advance further development of the Zone, hence the need to establish metals recoveries parameters cannot be overstated.

The historic information addressing metals recovery is encouraging, though fragmented, preliminary and orientative (Section 6.2.13 of DNI's NI-43-101 Report appended herein as B1). The historic testwork results suggest that at least some of the metals can be recovered on a combined basis, that recoveries for same is acceptably high and is sufficiently high enough to merit further expanded testing. DNI's recent leaching testwork corroborates the historic test results. The available historic information provides some orientative guidelines for future work and is as follows:

- Historic selective sequential leaching tests of ten select drill core samples from the historic Buckton Zone drilling suggested that many of the metals are likely contained in non-organic (sulfide and oxide) minerals rather than in organic (or clay) species;

- Good quality clean heavy minerals were collected by heavy oil separation in heavy mineral concentrates prepared for mineralogical examination. The concentrates successfully captured also metals and gold after disaggregation of the sample clay matrix by deflocculation, suggesting that a metal concentrate might be obtainable from the shale provided its clay fraction is properly disaggregated. The concentration tests were conducted simply to obtain heavy minerals for examination, hence information therefrom lacks sufficient quantitative data to support quantitative extrapolations. The tests serve, nonetheless, to demonstrate that metals can effectively be concentrated from the shale with minimal pre-treatment, and that definitive concentration parameters might be obtained by expanded and focused future testwork;

- Orientation leaching tests on a weighted composite sample of drill core samples of the Zone as intersected in holes BK02, BK04 and BK05, achieved extracted recoveries of 97% Nickel, 100% Zinc and 33% Vanadium by 6-hour long simple leaching in sulfuric acid. Though acid consumption was high during the tests, test conditions were not optimized and the potential exists that reagent consumption might be minimized during future, more thorough, tests, especially if clay content of the samples is disaggregated;

- Conventional bottle roll cyanidation tests on 500gm charges reported gold grades ranging 0.07g/t to 0.47g/t from deflocculated (de-slimed) carbon-in-leach tests. The cyanidation tests confirmed preg-robbing gold losses from carbon-in-pulp tests, and, overall, reported higher grades from samples which had been de-slimed. In addition, multiple duplicate fire assays from several samples reported a wide range of gold grades ranging nil to 1.17g/t, suggesting nugget effect;

- Though the presence of native gold in the Shale has been repeatedly confirmed by heavy mineral concentration, its overall grade remains unknown and has been a source of considerable frustration to date. Extensive historic check assaying concluded that gold distribution in the shale is nuggetted, that the standard 30gm sample size used during fire assaying and INA analyses is non-representative of the shale, and that gold content of the shales has likely been understated by the routine exploration results. Though many fire assay and cyanidation grades from the historic work range upward to several g/t suggesting that some sections of the Speckled Shale likely contain gold exceeding 1g/t, these grades are not reflected in routine fire assays and INA analyses, and averages over the entire thickness in the Zone can be expected to be considerably lower. Given the immense size of a potential mineral deposit proposed to exist in the Zone, the envisaged low grades can, nonetheless, represent significant value (assumed nil in this report), especially since at least some of the gold is likely in particulate form and might be incidentally recovered in a gravity circuit or in leaching.

In addition to the above encouraging results from testing of samples from the Zone, there is considerable other work by third parties from their exploration and development of black shale polymetallic deposits, and from DNI's recent leaching R&D testwork, supporting realistic expectations that metals can be recovered from the shales on a combined basis by traditional leaching (e.g. U and Mo extracted from Alum shale by sulfuric acid, Section 9.4.3) or by bulk-rock bioleaching (e.g combined Ni-Co-Zn-Cu-Mn extracted by bioheapleaching, Talvivaara deposit, Section 9.4.1, see also Minting et al 2010).

9.8.2 Buckton South Polymetallic Target

The Buckton South polymetallic target represents an approximate 300 square kilometer area located to the south of the Buckton Zone. It incorporates historic composite anomalous areas previously designated by the historic work as B-South and A-North (Figures 42 and 44). This target area hosts a multitude of surface geochemical, lithogeochemical and mineral anomalies which are spatially associated with a composite stratigraphic isopach anomaly. Although the eastern half of the Buckton South target might host the southward extension of the Buckton Potential Mineral Deposit, it more likely hosts a buried mineral zone altogether separate from the Buckton Zone. This area is summarized in Figure 67.

The Buckton South target area is substantially centered over a stratigraphic isopach anomaly comprising abnormal thickening in the stratigraphic pile above the sub-Cretaceous Unconformity (to base of Second White Specks) coincident with a similar thickening exhibited by the Fishscales-Second White Specks (Shaftesbury) isopach. A series of strong soil geochemical anomalies lie on the east flank of the isopach over a 2km x 6km area, dominated by Zn diffusion anomalies in soils associated also with localized zones of Te enrichment. The soil anomalies are reinforced by lake sediment geochemical anomalies comprising elevated (>80th pctl) Zn±Ni±Cu±Ag±Hg, and by stream geochemical and mineral anomalies in streams draining the area to the east and the south.

The isopach anomaly occupies the headwaters of Asphalt and Big Creeks, radially flowing downhill from it. Both Creeks have reported good geochemical and heavy mineral anomalies in stream sediment samples from the historic work. The headwaters of the two Creeks, and the vicinity of the soil anomalies, have also reported good >80th percentile lake and stream geochemical anomalies. Asphalt Creek, additionally, represents one of the most sulfide rich drainages in the Birch Mountains, and on the Property, reflecting mineralogy and geochemistry from fresh sediments which can be seen slumping from the adjacent steeply incisioned valley walls. Exposures of various sections of the stratigraphy in the area are confined to the Asphalt and Big Creek valleys, and mostly comprise slump and mudflow slopes. The Asphalt and Big Creek valleys were extensively mapped and prospected by the author during the mid 1990's.

A nearly complete section of the Second White Speckled Shale Formation is exposed in the lithosection at Asphalt-H, a 10m vertical section at the headwaters of Asphalt Creek, with 67ppm Mo, 110ppm Ni, 35ppm U, 461ppm V, 254ppm Zn, 62ppm Cu, 19ppm Co and 1.1g/t Ag averaged over the lithosection as reported from historic sampling. To the extent that lithosections sampled in the historic work are "measured" true stratigraphic sections which were systematically, and substantially continuously, sampled, the lithosections reliably "proxy" as drill holes with better reliability than would be represented by conventional reverse circulation drill holes. (Asphalt-H may be an distal part of the Asphalt Zone).

The anomalies over the Buckton South target area have similar characteristics as those over the Buckton Zone to its north which were verified by drilling to reflect polymetallic mineralization buried beneath them in the Speckled Shale. It is, accordingly, proposed that the east flank of the Buckton South isopach anomaly, especially portions with geochemically anomalous soils, also hosts yet undiscovered buried metallic mineralization hosted in Second White Speckled Shale Formation. Recommendations are made in a later section of the Report that drill testing of the eastern half of the Buckton South target be prioritized.

The west half of the Buckton South target area lies on the west flank of the subsurface stratigraphic isopach anomaly, and is in the Asphalt-Eaglenest fault corridor, a major structural feature across the Property which is coincident with many geochemical lake sediment anomalies throughout the area. There is no prior drilling in the area other than historic oil-gas exploratory wells. There are no exposures in the area and all information, and interpretations, therefrom are based on surface sampling of soil, lake and stream sediments, combined with subsurface information from the oil-gas wells. This part of the Buckton South target area was previously designated by historic work as the A-North Composite Anomaly.

The west half of the Buckton South target area is broadly characterized by lake sediment geochemical anomalies comprising elevated (>80th pctl) Zn±Ni±Cu±Ag±Hg surrounding an interpreted fault swarm associated with the coincident isopach anomalies. Notable features of the area include abundant sulfides documented from stream sediments in the headwaters of Asphalt Creek, on the west flank of the isopach anomaly, and a series of soil geochemical anomalies located in the NW$^1/_4$ T100/R13 characterized by strong Zn diffusion accompanied by elevated Pd-Rh(Ni). Spatial association of these features with faulting and the isopach anomaly has not been sufficiently resolved to enable targeting of drill holes to test the subsurface, and future initial drilling will necessarily test extrapolated, though justifiable, blind targets.

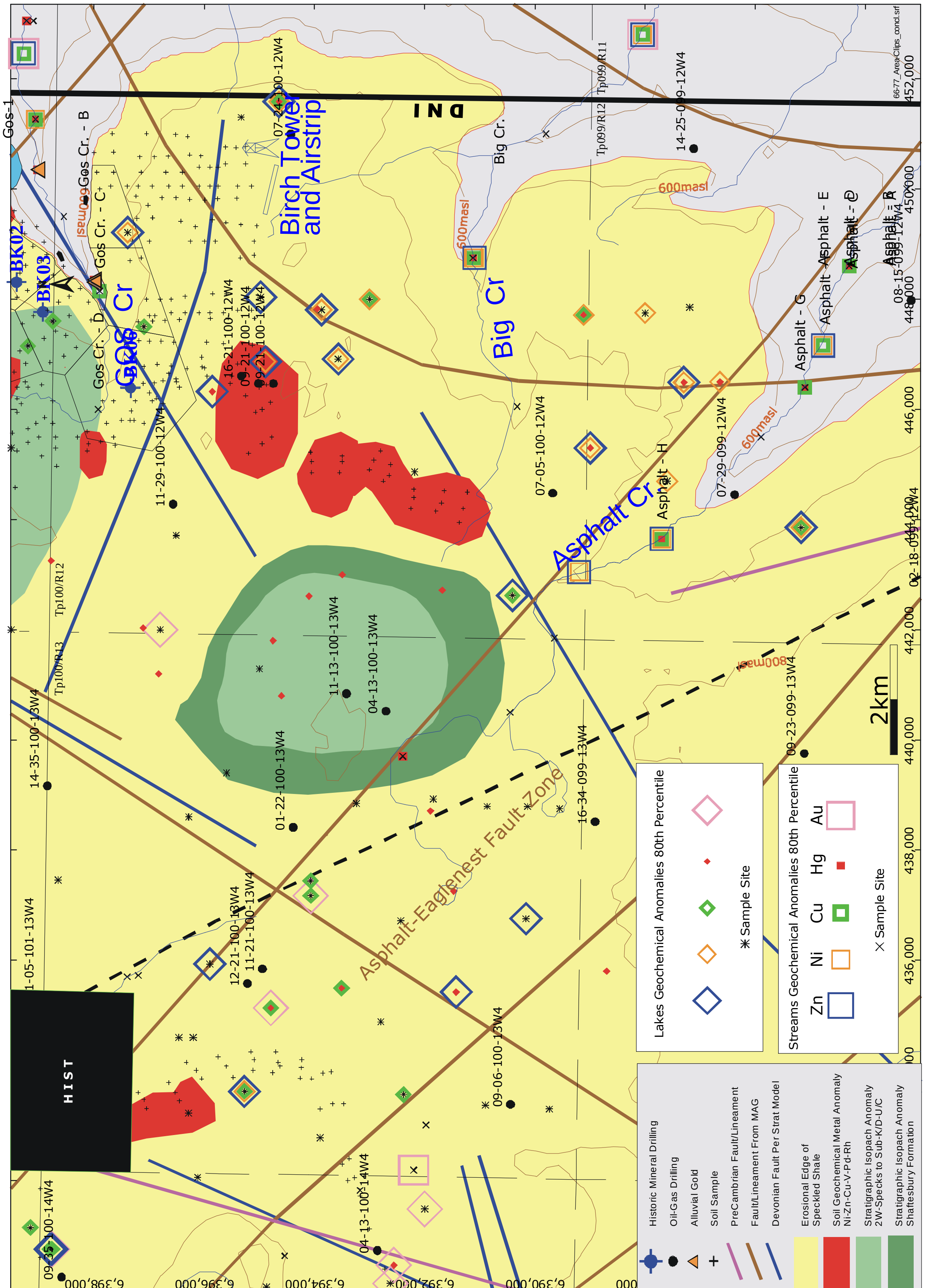


Figure 67: Buckton South Target Area, showing all historic anomalies. After Figure 74, Sabag 2008.

9.8.3 Asphalt Zone, Projected Extensions and Potential Mineral Deposit

The Asphalt polymetallic Zone was discovered by Tintina Mines in 1997 by drilling which was conducted to verify suspected metallic mineralization buried beneath a composite set of anomalies identified by extensive prior surface sampling over an approximate 30 sq km area centered on the headwaters of Pierre River (Figure 68). The Zone and its vicinity were previously designated by the historic work as Composite Anomaly Area A-South located mostly in E½ T98/R13 straddling the boundary into T98/R12 (Figure 45).

The Asphalt Zone represents polymetallic enrichment in Mo-Ni-U-V-Zn-Cu-Co-Ag-Au, hosted in, and confined to, the Second White Speckled Shale Formation which is a substantially flat unit approximately 11m thick as intersected in the drilling. The Zone is located on the eastern flank of a 4km diameter subsurface stratigraphic isopach anomaly representing abnormal thickening in the stratigraphic pile above the sub-Cretaceous Unconformity (to base of Second White Specks) associated with faulting. Northeasterly and northwesterly faults cross the area, and it is possible that the isopach anomaly closure is an artifact of noding during contouring of the subsurface stratigraphic model, and that the it in part reflects block faulting (bounded by synsedimentary faults) rather than doming.

The vicinity of the Asphalt Zone is characterized by stream sediment polymetallic geochemical anomalies dominated by Zn-Ni-Cu, especially from Pierre River and Mid Creek, associated also with alluvial gold in HMCs from Pierre River accompanied by cinnabar and base metal sulfides. Historic sampling from Pierre River and immediate vicinity has reported highly anomalous geochemistry and mineralogy which are supported also by equally anomalous geochemical anomalies in soils over the area dominated by Zn-Cu±Ni±V accompanied by Te enrichment overlying a pair of conspicuously circular aeromagnetic "highs" (see Figures 32 and 33).

Tintina's examination of available drill core and cuttings from two oil/gas wells in the area (16-21-098-13W4 and 04-08-098-12W4) noted the presence of a pink band of silicified sandstone in McMurray Formation immediately above the sub-Cretaceous unconformity (1ft thick in well 16-21-098-13W4). This sandstone, noted also in oil/gas well cuttings to the south of the Buckton Zone (at Buckton South), is identical to the Beaver River Sandstone generally regarded as a hot springs alteration marker. Its presence in the Birch Mountains spatially associated also with stratigraphic thickening as well as with metal enrichment zones is considered diagnostic and suggestive of the localized presence in the area of broad alteration zones overlying possible hot springs, or other metal bearing fluid, activity (fumeroles?).

The Asphalt Zone was discovered by two 3-inch diameter vertical holes (a total of 166.10m) drilled to verify suspected metallic mineralization buried beneath the above soil anomalies which, together with enforcing stream sediment geochemical anomalies in adjacent Pierre River and Mid Creek, collectively represent a 3kmx10km composite anomalous target area designated by the historic work as Area A-South. The holes are collared 900m apart and were to be part of a longer, 6km, cross-section extending eastward from the isopach anomaly, across the soil anomalies and Pierre River to Mid Creek. The drilling was, however, curtailed by logistical criteria.

Both Asphalt drill holes reached their targets, although hole AS01 was collared in the upper contact of the Second White Speckled Shale Formation which was unexpectedly encountered higher in the sequence than projected by the subsurface stratigraphic database and model. AS01 cored only lower sections of the Formation. The upper contact of the Formation in AS01 is in casing and only 7.22m were cored compared to 11.4m cored in AS02 (total thickness of the Formation estimated from drill logs to be 11.6m). Considering that only two holes were drilled, and one of the holes only partly cored the Formation, discussions of downhole geology for the Asphalt Zone relies heavily on observations made in hole AS02. Details of the drilling are described in Section 6.2.12 of DNI's NI-43-101 report on the property appended herein as Appendix B1.

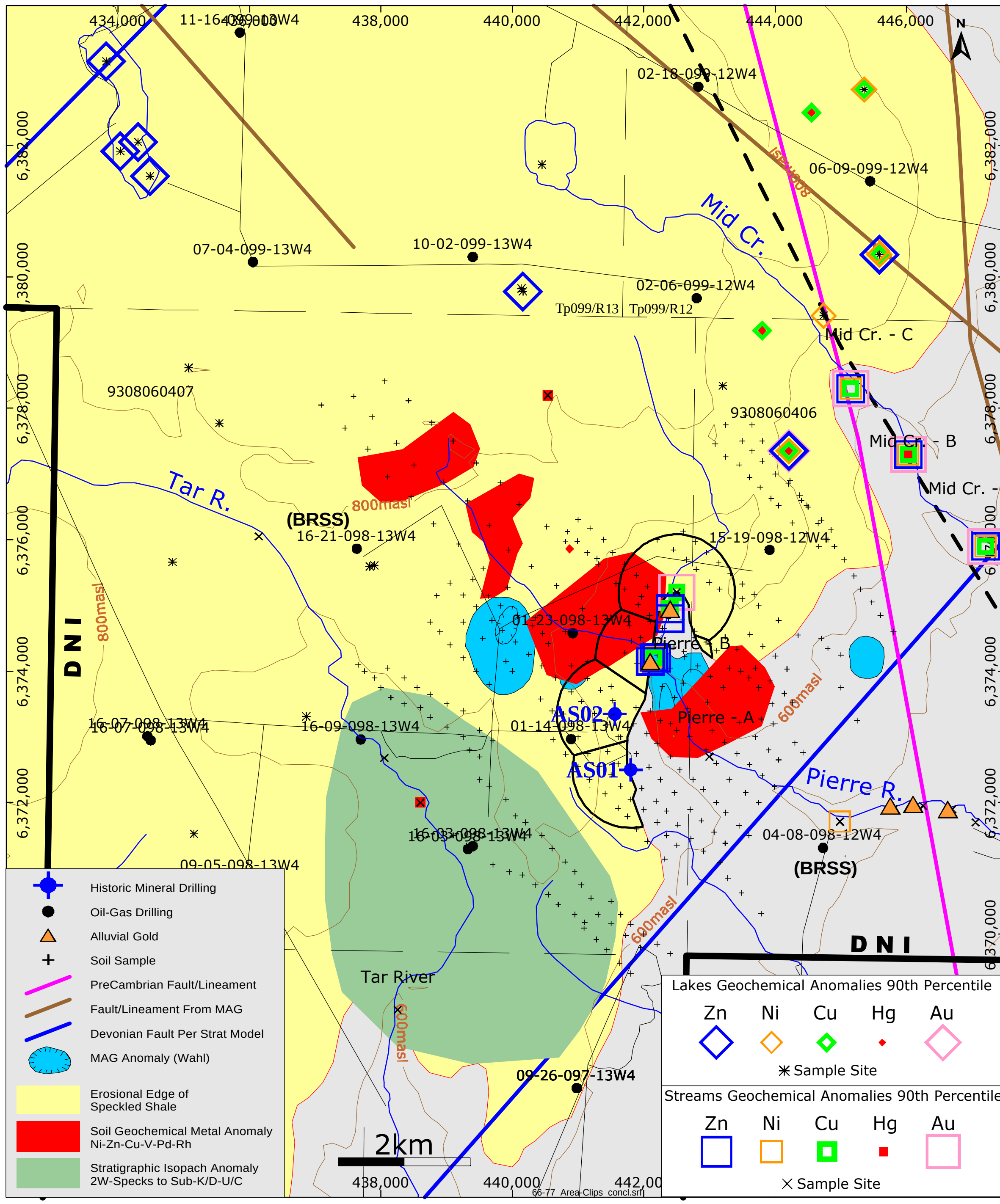


Figure 68: Summary of the Asphalt Zone and its vicinity, showing also all historic anomalies and the Asphalt Potential Mineral Deposit. After Figure 75, Sabag 2008. See also Figures 32-34 and 39-40 for aeromagnetic geophysical anomalies over the Property.

The drilling intersected a condensed stratigraphic section of Second White Speckled Shale Formation with gross similarities, but with some subtle contrasts, to that intersected at the Buckton Zone, although the shale is overall less sulfidic at Asphalt. The lower contact of the Formation at the Asphalt Zone is, however, complicated by various structures since sections of similar black shale with three bentonitic sections were noted approximately 5m-10m below the Formation's lower contact in the underlying Shaftesbury Formation. The structural complications were attributed by historic work to block movement in the area, or glacio-tectonic thrusting. Whether these features are responsible for apparent thinning of the Formation at the erosional edges of the Birch Mountains or whether the Formation is indeed thinner at Asphalt (than at Buckton) is unknown. For the purposes of this Report, the Second White Speckled Shale Formation is assumed to be 11.6m thick at the Asphalt Zone, of which 11.4m were cored and sampled in hole AS02.

Weighted average grades of select metals across the entire thickness of the Second White Speckled Shale Formation are summarized in Table 14. Results for individual drill intercepts were previously summarized in Table 5 and 6.

Hole No.	From (m)	To (m)	Interval Thickness (m)	Mo-ICP (ppm)	Ni-ICP (ppm)	U-INA (ppm)	V-ICP (ppm)	Zn-ICP (ppm)	Cu -ICP (ppm)	Co-INA (ppm)	Ag-ICP (ppm)	Corg-Leco (%)	Fe-INA (%)	S-Leco (%)
AS01*	11.3	18.5	11.4*	73	144	47	690	376	89	20	0.3	5.9	4.4	4.1
AS02**	21.6	33.2	11.4**	63	122	31	664	282	89	20	0.3	7.0	4.5	3.5
Weighted Average Asphalt Holes				67	131	37	674	318	89	20	0.3	6.6	4.4	3.7
Weighted Average Buckton Zone				71	135	30	673	302	75	21	0.5	6.8	4.5	4.0

*Hole AS01 collared in Speckled Shale Formation, only 7.22m cored. Actual estimated to be 11.4 per projections from adjacent AS02

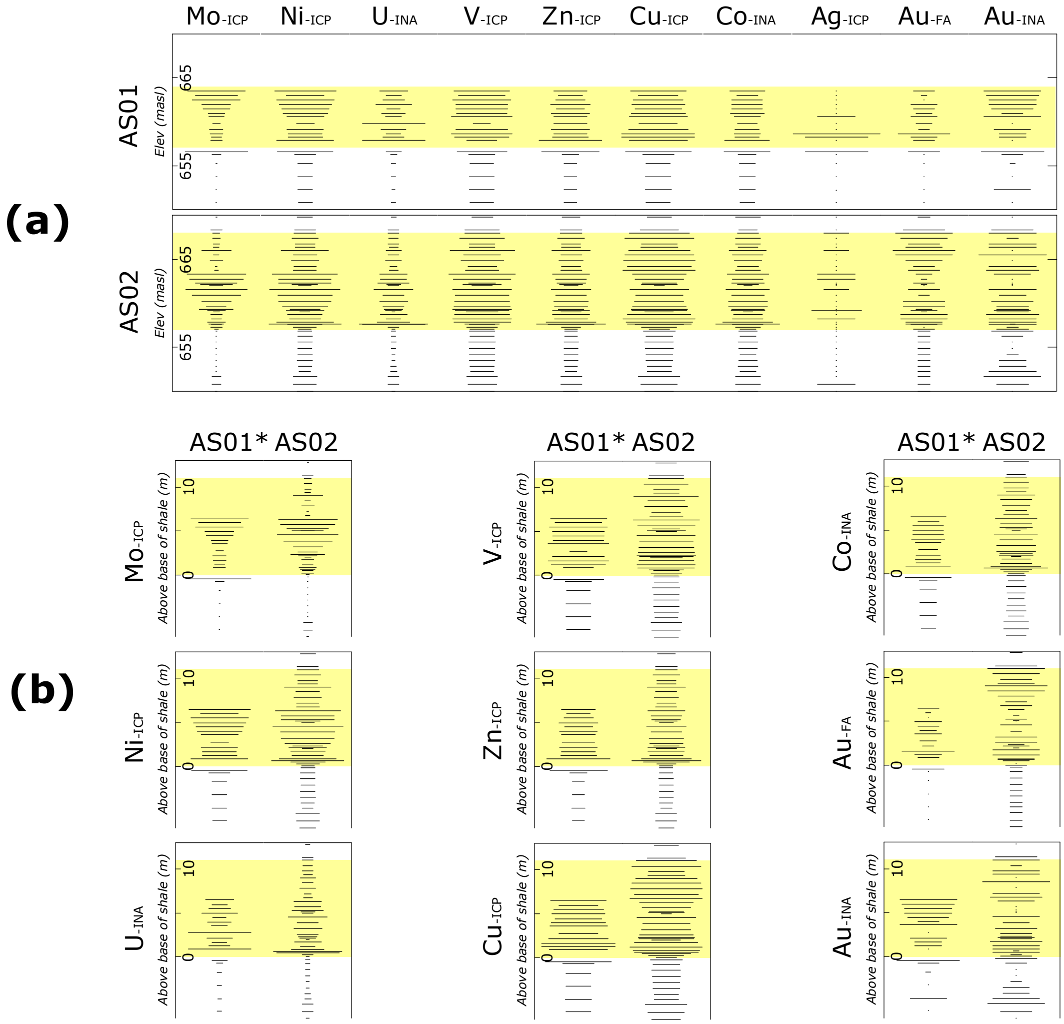
**Interval thickness is core interval recovered

Hole No.	From (m)	To (m)	Interval Thickness (m)	Mo-ICP (lb/st)	Ni-ICP (lb/st)	U-INA (lb/st)	V-ICP (lb/st)	Zn-ICP (lb/st)	Cu -ICP (lb/st)	Co-INA (lb/st)	Ag-ICP (g/t)
AS01*	11.3	18.5	11.4*	0.15	0.29	0.09	1.38	0.75	0.18	0.04	0.3
AS02	21.6	33.2	11.4	0.13	0.24	0.06	1.33	0.56	0.18	0.04	0.3
Weighted Average Asphalt Holes			11.4	0.13	0.26	0.07	1.35	0.64	0.18	0.04	0.30
Weighted Average Buckton Zone			20.3	0	0	0	1	1	0	0	0.5

Table 14: Weighted average grades of select metals and elements across the entire thickness of the Second White Speckled Shale Formation, historic drilling, Asphalt Zone. After Table 18, Sabag 2008; and Alberta Mineral Assessment Report MIN9802, Sabag 1998.

Even though only two holes were drilled at the Asphalt Zone, they nonetheless serve to broadly characterize the Second White Speckled Shale in the area. As noted in the Buckton Zone, the Asphalt holes also exhibit good consistency in the average grades between the holes, especially when considering their wide spacing. In addition, the average grades of the Asphalt holes are also consistent with the average grade of all historic drilling completed over the Buckton Zone located approximately 30km to the north of the Asphalt Zone. The consistency of grade is typical of the lateral consistency displayed by black shales worldwide. There is some variability in grades vertically within the Shale, as expected, although it is uncertain whether this is an inherent characteristic of the Asphalt Zone, or is an artifact of the short length of the holes, or any missing sections from the Formation due to faulting.

Comparative relative downhole metal grades for the two holes are shown in Figure 69(a) (see Table 6 for detailed data). Metal grades are shown sequenced downhole for the drill intercepts from the top of the upper contact of the Shale Formation downward to its base. The relative grade for each metal, ranging between its maximum and minimum, is represented by the size of the bar in the Figure. General metal enrichment trends are partly similar to those observed at the Buckton Zone, namely, a progressive enrichment of Mo-Ni-U-(Ag) upstratigraphy, consistent with progressively more bentonitic sections seen in the drill core which carry more abundant sulfides. The abrupt truncation of the Mo-Ni enrichment trend up-hole, midway in AS02, is conspicuous and supports suggested faulting in the area. V-Zn-Cu-Co, exhibit mixed trends. There is no discernible trend in Au grades, and no correlation between by fire assays compared to analyses by INA.



*Note, drill hole AS01 was collared below the top of the 2WS

Figure 69: Downhole grades for select metals across the thickness of the Second White Speckled Shale Formation (shaded), Buckton Zone historic drilling. After Figure 76, Sabag 2008; and data from Alberta Mineral Assessment Report MIN9802, Sabag 1998.

Relative downhole grades for single metals, compared between the holes, are presented in Figure 69(b). Metal grades are shown sequenced downhole from the top of the upper contact of the Shale Formation downward to its base. The bars depicting grades for any given metal are sized in the Figure to a common scale for both holes to enable relative comparisons from one hole to the next. The Figure exhibits correspondence among downhole grades between the holes.

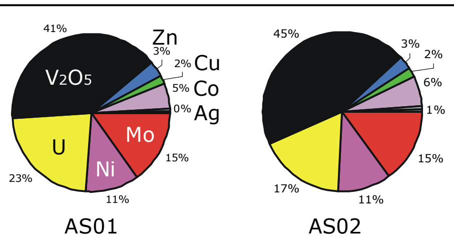


Figure 70: Pie Charts of relative in-situ value represented by select metals, Asphalt historic drilling. After Figure 77, Sabag 2008; and Alberta Mineral Assessment Report MIN9802, Sabag 1998.

Weight averaged metal grades for the holes, normalized to metal prices, are summarized in pie charts of Figure 70, showing the relative in-situ value represented by each metal as a % of the total in-situ value of the combined metals. The Figure shows that the Asphalt Zone is principally a Mo-Ni-U-V dominated polymetallic Zone with subordinate Zn-Cu-Co-Ag, with consistency of proportionate grades between the holes. The charts also show good consistency of the Asphalt holes with the relative metal values from the Buckton Zone drilling 30km

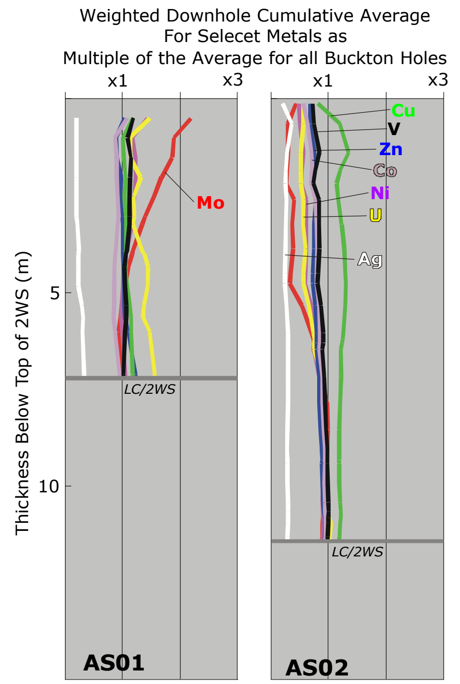


Figure 71: Weighted downhole cumulative average metal grades, normalized to relative metal prices, relative to the average of all Buckton holes, for progressive thicknesses of material below the upper contact of the Second White Speckled Shale Formation, Asphalt Zone, historic drilling. After Figure 78, Sabag 2008; data from Alberta Mineral Assessment Report MIN9802, Sabag 1998.

to the north, although U represents a greater relative value for the Asphalt holes (17%-23%) than it does in the holes from the Buckton drilling (13%-15%) (see previous Figure 63). (Rare metals including Li recovered during DNI's recent leaching tests have not been incorporated into the above).

Vertical metal grade variations are minimal, and are shown in Figure 71 as downhole trends of metal grades, restated as a multiple of the overall average of all of the holes from the Buckton Zone drilling. Data are presented downhole over progressive thicknesses of material beneath the upper contact of the Shale. Overall, metal grades for nearly all of the metals is similar to, or lower than, the average of Buckton drill holes with no significant downhole variations. Given that only two short holes were drilled at Asphalt, no additional trends can be discerned.

Relying on the historic drilling results, reinforced also by results from by surface geochemical data and the lateral continuity in geology and grades exhibited by the historic drilling, the author proposes that the Asphalt Zone represents a Potential Mineral Deposit as understood under NI-43-101. The reader is reminded that the proposed Potential Mineral Deposit is conceptual in nature, and is intended solely to demonstrate the potential of identifying mineralized material at the Asphalt Zone subject to future in-fill grid drilling. The reader is further reminded that there has been insufficient drilling conducted over the Asphalt Zone to define a mineral resource, and that it is uncertain if further drilling will define a mineral resource over the Zone. DNI plans to conduct the necessary drilling to test the resource potential of the Zone.

The Asphalt proposed Potential Mineral Deposit comprises a volume of polymetallic material contained in five blocks (Figure 72) whose size and distribution has been estimated predicated on the following:

- Considerable weight has been attributed to the historic drill data during preparation of the estimates, relying on results from surrounding areas to reinforce extrapolation of mineralization away from the holes. The author considers the spacing of the historic drilling to be adequate for the blocking out of an area of interest in black shale hosted mineralization, as an area which is to be the subject of future in-fill drilling;

- Considerable weight has also been attributed to downstream geochemistry of stream sediments and heavy minerals documented from the Pierre River, adjacent to the drill holes, and their overall configuration of sulfides upstream followed further downstream by samples reporting alluvial gold. The Pierre River has been mapped and prospected by the author in considerable detail in the mid-late 1990's, and can be regarded to be an active sediment recharge zone directly reflecting metal bearing slumped Speckled Shale exposures along its valley walls. The downstream heavy mineral pattern is considered diagnostic by the author for locating exposures of Second White Speckled Shale throughout the Property and the Birch Mountains in general;

- Supporting weight has also been attributed to stream sediment geochemistry and heavy mineral mineralogy documented from historic work from Mid Creek, located approximately 7km to the northeast of the drill holes. Similar supporting weight also attributed to a partial exposure of the Second White Speckled Shale in lithosection Mid-C, reporting Ni-U-V-Zn-Co-(Mo) enrichment;

- Blocks 1 and 2 are centered around the historic drill holes AS01 and AS02, respectively, and their area was estimated based on intersecting circles with 900m diameter supported by the 900m distance between the holes and continuity of grade and geology between them. The two blocks extend to the valley break of the Pierre River west valley-wall which also demarcates the eastern contact of the Second White Speckled Shale Formation. Thickness of the Zone over Block 1 has been estimated to range between the thicknesses logged in the two holes, being 11.6m for AS02 and 7.2m for AS01. Thickness of Block 2 is estimated to be the thickness of AS02;

- Blocks 3 and 4 are extrapolations based on many slumped shale exposures in the valley-wall of Pierre River, sediments from which can be sampled immediately downslope in the steam-bed. Proposed buried mineralization under these Blocks is reinforced by soil geochemical anomalies over the blocks which are similar to anomalies verified to reflect buried polymetallic mineralization at the Buckton Zone. An estimated 900m diameter has been utilized to project area size for Blocks 3 and 4, and Block 5 is a continuation of Block 3 on the east valley wall of Pierre River. Blocks 3 and 4 extend to the valley break of the Pierre River west valley-wall which also demarcates the eastern contact of the Second White Speckled Shale Formation. Block 5 extends westward to the valley break of the Pierre River east valley-wall which demarcates the western contact of the Second White Speckled Shale Formation. Thickness of the Zone assigned to Blocks 3, 4 and 5 is estimated to range between the maximum of 11.6m as logged in hole AS02 and the average thickness as logged in holes AS01 and AS02, being 9.4m;

- Tonnages were calculated by at a specific gravity of 2.1 as calculated from drill sample weight records reported in the historic work (DNI's subsequent verification sampling of the historic drill core reported measured values for Specific Gravity ranging 2.22 to 2.49 for the Second White Speckled Shale suggesting that tonnages might in fact be larger than those estimated);

- Grades for the various metals are based on the overall drill hole weighted average grades restated as a range varying between the lowest and the highest grade for any given metal as averaged over the entire thickness of the Second White Speckled Shale Formation intersected in the two holes. Gold content has been assumed to be nil given discrepancies of an order of magnitude or more between grades reported by historic bottle roll cyanidation tests of 500gm samples (broadly ranging 0.1-0.4g/t grades) compared with mostly single digit ppb range grades reported from routine fire assays and INA analyses of 30gm samples.

Based on the above scheme, it is proposed that the Asphalt Zone contains a Potential Mineral Deposit as understood under NI-43-101. The Asphalt Potential Mineral Deposit is proposed to extend over an approximate 1km x 4.5km area comprising approximately 4.5 square kilometers, with a thickness ranging 7.2m to 11.6m, and is estimated to represent an aggregate of approximately 109-132 million short tons of mineralized material (99-120 million tonnes). Block volume and tonnage estimates are summarized as ranges in Table 15. Grades and estimated gross contained metals are summarized as ranges in Table 16 rounded to the nearest million unit.

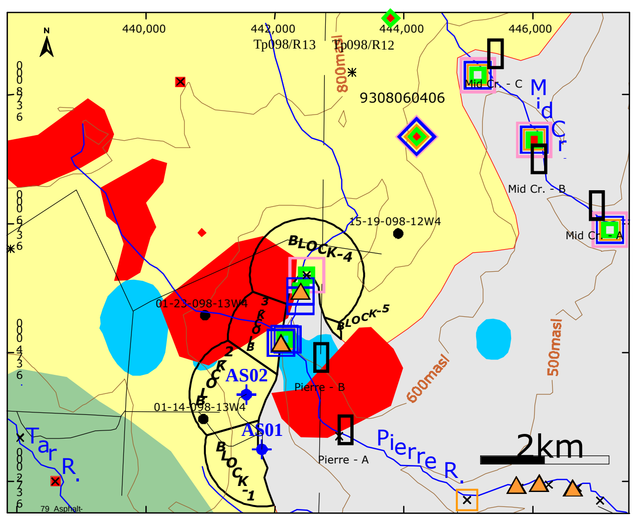


Figure 72: Asphalt Potential Mineral Deposit, showing estimated blocks and surrounding area. See Figure 68 for legends. After Figure 79, Sabag 2008.

Block Volumes and Tonnage Estimates: Potential Mineral Deposit - Asphalt Zone								
	Area	Basic*	Thickness Estimate (m)		Volume Estimate (cu m)		Tonnage Estimates (tonnes)	
Block Name	(sq m)	Thickness	Low	High	Low	High	Low	High
Block-1	945,516	7.2	7.2	11.6	6,826,626	10,958,530	14,335,914	23,012,914
Block-2	1,337,681	11.6	11.6	11.6	15,503,723	15,503,723	32,557,818	32,557,818
Block-3	752,916	9.4	9.4	11.6	7,081,175	8,726,296	14,870,467	18,325,223
Block-4	1,859,037	9.4	9.4	11.6	17,484,243	21,546,239	36,716,910	45,247,102
Block-5	40,259	9.4	9.4	11.6	378,636	466,602	795,135	979,864
Totals	4,935,409				47,274,402	57,201,390	99,276,245	120,122,920
Averages		21.1	9.4	11.6				

* Thickness(m) as measured in drill hole, or as assigned or estimated for block. See report text

Table 15: Estimated volumes and tonnages, Asphalt Potential Mineral Deposit. After Table 19, Sabag 2008.

The reader is reminded that the estimated Potential Mineral Deposit is conceptual in nature, that there has been insufficient drilling conducted over the Zone to define a mineral resource, and that it is uncertain if further drilling will define a mineral resource over the Zone, and that it is intended solely to demonstrate the potential of identifying mineralized material at the Asphalt Zone subject to future in-fill grid drilling. DNI plans to conduct the necessary drilling to test the resource potential of the Zone.

Grade Averages and Gross Metals Content: Potential Mineral Deposit - Asphalt Zone				
	Grade Range	Grade Range	Gross Metal/Oxide Content (lb) (oz)	
	(ppm)	(lb/st)(opt)	Low Estimate	High Estimate
Mo	63ppm-73ppm	0.13lb/st-0.15lb/st	14,000,000	19,000,000
[MoO3]		0.19lb/st-0.22lb/st	20,000,000	29,000,000
Ni	122ppm-144ppm	0.24lb/st-0.29lb/st	27,000,000	38,000,000
U	31ppm-47ppm	0.06lb/st-0.09lb/st	7,000,000	12,000,000
[U3O8]		0.07lb/st-0.11lb/st	8,000,000	15,000,000
V	664ppm-690ppm	1.33lb/st-1.38lb/st	145,000,000	182,000,000
[V2O5]		2.39lb/st-2.48lb/st	261,000,000	328,000,000
Zn	282ppm-376ppm	0.56lb/st-0.75lb/st	62,000,000	99,000,000
Cu	89ppm-89ppm	0.18lb/st-0.18lb/st	19,000,000	24,000,000
Co	20ppm-20ppm	0.04lb/st-0.04lb/st	4,000,000	5,000,000
Ag	0.3ppm-0.3ppm	0.01opt-0.01opt	1,000,000	1,000,000
Au	assumed nil	assumed nil	assumed nil	assumed nil

lb/st=lbs per short ton; opt=ounces per ton Gross metal contents are rounded to nearest million units *

Table 16: Average grades and gross contained metal estimates, Asphalt Potential Mineral Deposit. After Table 20, Sabag 2008.

The Asphalt Zone holds potential to deliver additional mineralized material from areas immediately to the northwest of the Potential Mineral Deposit over an additional distance of 5km-6km as reflected by soil geochemical diffusion anomalies identified by the historic work. The Zone also holds potential for expansion for an additional 6km northeasterly toward Mid Creek and closure of its valley at the 620m-650m elevation asl. The potential for a projected extension southward, toward and over the stratigraphic isopach anomaly located immediately to the southwest of the Potential Mineral Deposit, is unknown. There is, furthermore, no information to guide speculation of what the ultimate thickness of the Speckled Shale Formation might be over the proposed projected extensions of the Asphalt Potential Mineral Deposit. It would be reasonable to propose that thickness of the Formation might be at least the same as, or thicker than, that drilled at some distance away from the erosional edges of the Birch Mountains and away from active slump zones. There is no additional information which might support or refute the proposals made.

Incorporation of volcanogenic debris in the Second White Speckled Shale is suggested by considerable bentonitic material noted in the historic drilling. Though the thinner bentonite "seams" are attributed to distal sources within the overall sedimentary basin, the thicker bentonites measuring 8cm-10cm or more suggest nearby sources (similar to the Buckton drill holes). The historic work has concluded that there exists a nearby source(s) to the bentonites noted in the Asphalt drilling, although there is insufficient information from the work to resolve a directional vector to guide the search for the source. The author concurs with the historic conclusions and further suggests, relying on the proposed volcanogenic geological working model, that the immediate vicinity of the Asphalt Zone holds potential for hosting exhalative metalliferous venting possibly associated with SEDEX style sulfides hosted within the Cretaceous stratigraphy.

In the above regard, it is noteworthy that nearly all of the historic surface geochemical and mineral anomalies discovered to date on the Property are in structural zones interpreted based on stratigraphic disturbances (e.g. Asphalt-Eaglenest Fault Zone), or are on the flanks of circular (domed?) stratigraphic disturbances (e.g. Buckton and Asphalt polymetallic Zones). The "closed" shape of some of the stratigraphic, often isopach, anomalies may be an artifact of contour noding and it is possible that they reflect faulted blocks instead, bounded by synsedimentary faults, even though the shapes have support from coincident roughly circular domed topographic relief features. Should the "closed" shaped anomalies indeed be faulted blocks rather than domes, considerable significance would be placed on fault junctions, and junctions of fault swarms, as potential conduits for any volcanic exhalative venting in the Birch Mountains and on the Property. Fault junctions, accordingly, present high priority future exploration targets for volcanic vent related exhalative mineralization which might exists in the area. Several such possible targets are suggested as shown in Figure 79 in a later Section of this report.

A series of exposures on the valley walls of the Asphalt Creek also merit more detailed inspection, as they include bedded sulfides (FeS+?) and Fe-phosphates in slumping shale cliff exposures, which can also be seen in the Asphalt Creek valley floor as 1-2 inch thick sulfide rich (FeS±Ni) table-top sized slabs containing up to 75% sulfides by volume (Plate 6). Historic work reports Mo-Ni-Cu enrichment, in addition to 0.02-0.1g/t Au from samples of the "slabs" (Alberta Mineral Assessment Report MIN9613, Sabag 1996b).

Plate 6: Exposures of bedded sulfides and Fe-phosphate in shale and sulfide rich valley float, Asphalt Creek valley. Images from Sabag 1994-1999.

9.8.4 Eaglenest Target Area

The Eaglenest Target Area comprises an approximate 300 sq km area extending west from Eaglenest Lake west to Michael Lake and south to Otasan Lake (T101-100/R14-15). Access to the area is best by helicopter, though it can also be effectively accessed for sampling by ATV during the summer months and by winter roads and trails. This area is summarized in Figure 73.

The area corresponds to the historic composite target area of the same name, which was designated by the historic work on the basis of coincident stratigraphic, remote sensing, lake sediment geochemical, stream sediment geochemical, soil geochemical, subsurface stratigraphic and interpreted structural anomalies (see Section 8.8). Principal anomalies over the Eaglenest Target Area comprise geochemical anomalies which are coincident with, or proximal to, the isopach stratigraphic anomaly over the southern part of the area, or with large interpreted structural features. The stratigraphic subsurface model for the area indicates that it is underlain by the Second White Specks Formation, and historic soil sampling results suggest that metal enrichment is buried beneath the surface. There has been no work over the area since the mid 1990's (Alberta Mineral Assessment Report MIN9612, Sabag 1996c).

The principal structure in the Eaglenest Target Area is the southeasterly Asphalt-Eaglenest Fault Zone across it. The Fault Zone is characterized by many vertical offsets based on the stratigraphic model for the area, and is also crossed by the northeasterly trending Sand-Eaglenest Lakes Fault Zone in T100/R14, representing a 3km-5km wide zone of considerable subsurface disturbance. This is a significant fault junction characterized by abnormal thickening of the Shaftesbury Formation reflected in the isopach for the base of Fishscales to base of Second White Specks (see also Figure 24). Definitive resolution of individual faults within the two fault zones has not been possible due to the great number of offsets which can be seen in cross-sections from the area, though many of the vertical offsets interpreted in cross section correlate well with overlying or nearby lake sediment geochemical anomalies dominated by Zn-Ni-Ag±Au, the majority of which are located along the Asphalt-Eaglenest Fault Zone or over its southwest flank.

Soil anomalies identified by the historic work over the Eaglenest Target Area are similar to those identified over the Buckton and Asphalt Zones, though they are better dominated by Zn. Soil geochemical anomalies identified from localities overlying interpreted faults in T101/R15 (south of Bayard Lake) are characterized by strong Zn diffusion anomalies, all of which accompanied also by anomalous Pd-Rh, by subordinate Ni±Cu, and by zones of Te enrichment. In contrast to the predominance of soil geochemical Zn anomalies over the central and the southern portions of the Eaglenest Target Area, its northernmost parts, near Michael Lake, are better characterized by anomalous Cu-Ni diffusion in soils overlying faulting, accompanied by subordinate Zn-Pd-Rh.

The area is devoid of outcrops and has limited topographic relief, although a well defined circular topographic feature can be seen centered on Otasan Lake (Figure 9). Dacitic debris of likely local provenance was incidentally reported by historic prospecting in the vicinity of Clear Lake over the southwest corner of T101/R13 and northwest corner T1001/R13 (southeast of Eaglenest Lake - Figure 46). Stratigraphic subsurface data and model indicate that the Second White Speckled Shale is under 75m-100m of overburden cover throughout the area.

Future drill hole targeting over the Eaglenest Target Area will necessarily rely entirely on soil geochemistry to localize blind targets for the initial drilling phase.

Two small parts of this target area have access restrictions. They comprise (i) a portage over a stream flowing southeast from Eaglenest Lake and (ii) a site under historic management located immediately to its east, in the western parts of the Buckton South Target Area. Both areas are small and are not expected to interfere with any contemplated future exploration activity. The northwest one third of the Eaglenest Target Area is in a Caribou management zone and is subject to seasonal surface access restriction during the Spring calving months.

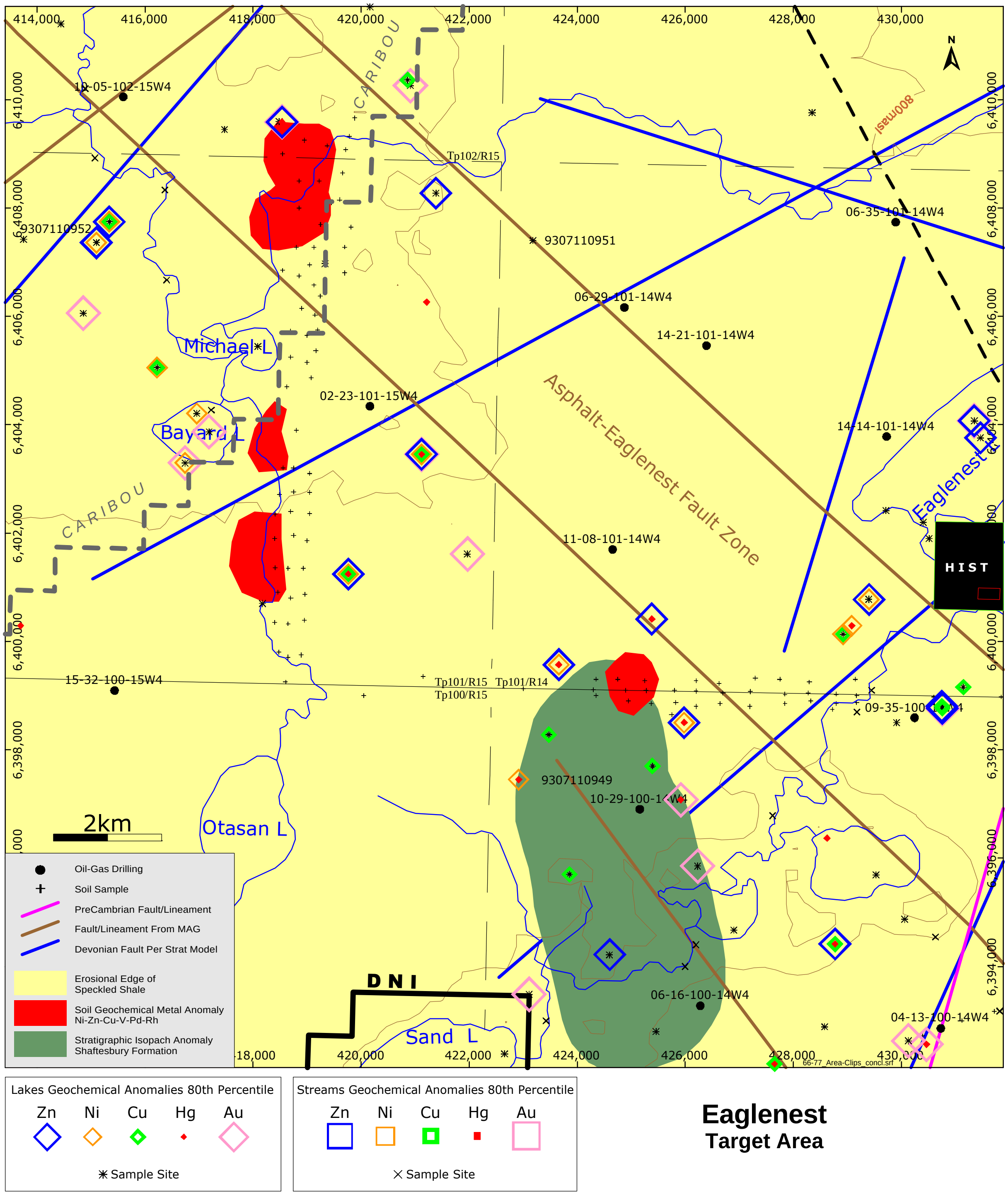


Figure 73: Summary of anomalies and targets over the Eaglenest Target Area. After Figure 80, Sabag 2008. Showing also Caribou management area, and land use restricted area under historic management (HIST).

9.8.5 McIvor-West and North-Lily Anomalies

The McIvor-West and North-Lily Anomalies comprise two early stage reconnaissance stage targets located over the west parts of the Property in T102/R15 and T100/R16. The two areas can be discerned in structural interpretations of LANDSAT remote imagery from historic work (see Figure 26) which identified several conspicuous circular features which merit future field follow-up, since many similar features similarly identified over the eastern two-thirds of the Property were subsequently demonstrated by historic surface sampling, and locally by drilling, to host metal enrichment or buried near-surface polymetallic zones. The foregoing interpreted features are shown in Figure 74, along with available information from their vicinity. The two areas are shown in the context of all other anomalies identified by historic work over the Property in Figure 75.

The McIvor-West and North-Lily Anomalies are in their early reconnaissance grass roots exploration stages, and represent localities which have potential for hosting near-surface buried polymetallic mineralization in shales. They are as follows:

- **The McIvor-West Anomaly** consists of two 5km diameter, coalesced, circular features located at headwaters of the McIvor River, in T102-103/R15, which are dextrally offset along a 50km-70km long northeasterly structure (the McIvor Fault) which also demarcates the McIvor River valley. The McIvor-West Anomaly lies over the junction of the McIvor Fault with the northwesterly Asphalt-Eaglenest Fault Zone (see Figures 16 and 26).

  Presence of Second White Speckled Shale under the Anomaly is suggested by (i) intermittent, though scarce, exposures of slumped shale along the south valley walls of the McIvor River to the north of the Anomaly, (ii) nearby historic oil-gas wells located 5km-10km to the southeast of the Anomaly, and (iii) surface geochemical anomalies over the Eaglenest Target Area immediately to the south of the Anomaly.

  A number of >80th percentile ranked historic lakes and stream geochemical anomalies flank this area, notably Ni, Au and Zn, and its southeastern flank adjoins the northwest parts of the Eaglenest Target Area. Gold geochemical anomalies have been identified in lake and stream sediments over the centre of the Anomaly at two locations near the closure of the Second White Speckled Shale erosional edge in the headwaters of the McIvor Valley (Alberta Mineral Assessment Report MIN9611, Sabag 1996a). Historic work conducted by Tintina during 1994-1996 on its historic McIvor Property (subsequently also explored by Ateba Mines in 2001) is relevant to future exploration of the McIvor-West Anomaly, since material from it drain into the McIvor River to its north. (Sabag 1996d and 2002).

  The circular LANDSAT features which dominate the McIvor-West Anomaly have aeromagnetic expression (Figure 76) although they are in an area generally lacking any topographic relief.

  The McIvor West Anomaly is within a Caribou management zone subject to seasonal restricted surface access during the Spring calving season.

- **The North-Lily Anomaly** comprises a composite pair of 3km diameter, coalesced, isolated circular features located in T100/R16-17, to the west of the Eaglenest Target area. The North-Lily Anomaly is not located on ground previously held by Tintina and, as such, has never been explored for metals.

  Similarly to the McIvor West Anomaly, the circular LANDSAT features comprising the North-Lily Anomaly have some aeromagnetic expression though their significance in the absence of any surface work is unknown.

  The area is mostly within a Caribou management zone subject to surface access seasonal restrictions during the Spring calving season.

The merits of the McIvor-West and North-Lily Anomalies can easily be evaluated by a set of soil sampling transects across both areas, relying on analysis by enzyme leaching to identify any metals diffusion which might be associated with both anomalies.

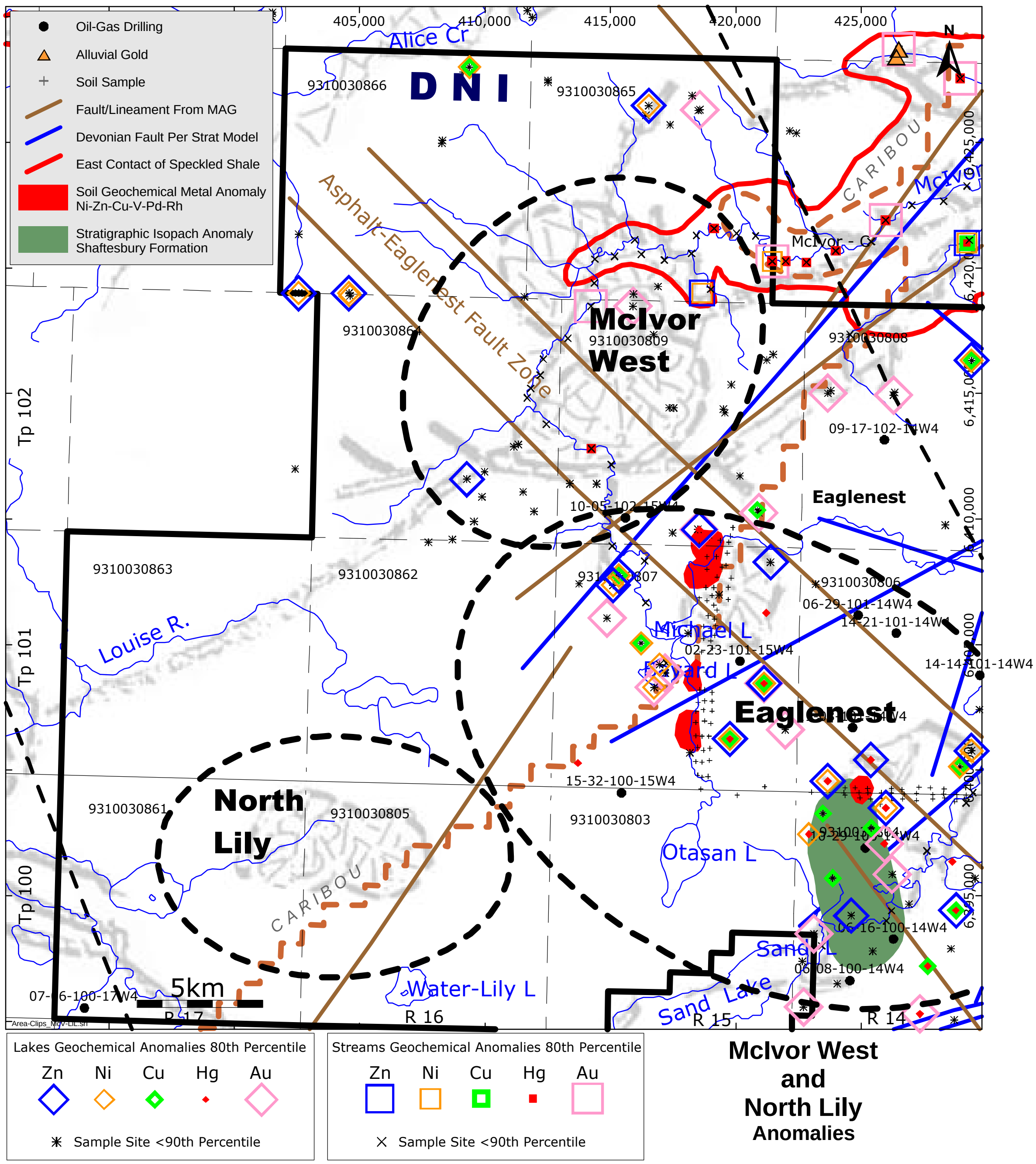


Figure 74: Summary of anomalies and features over the McIvor West and North-Lily Anomalies. After Figure 81, Sabag 2008. Showing also extents of Caribou management area.

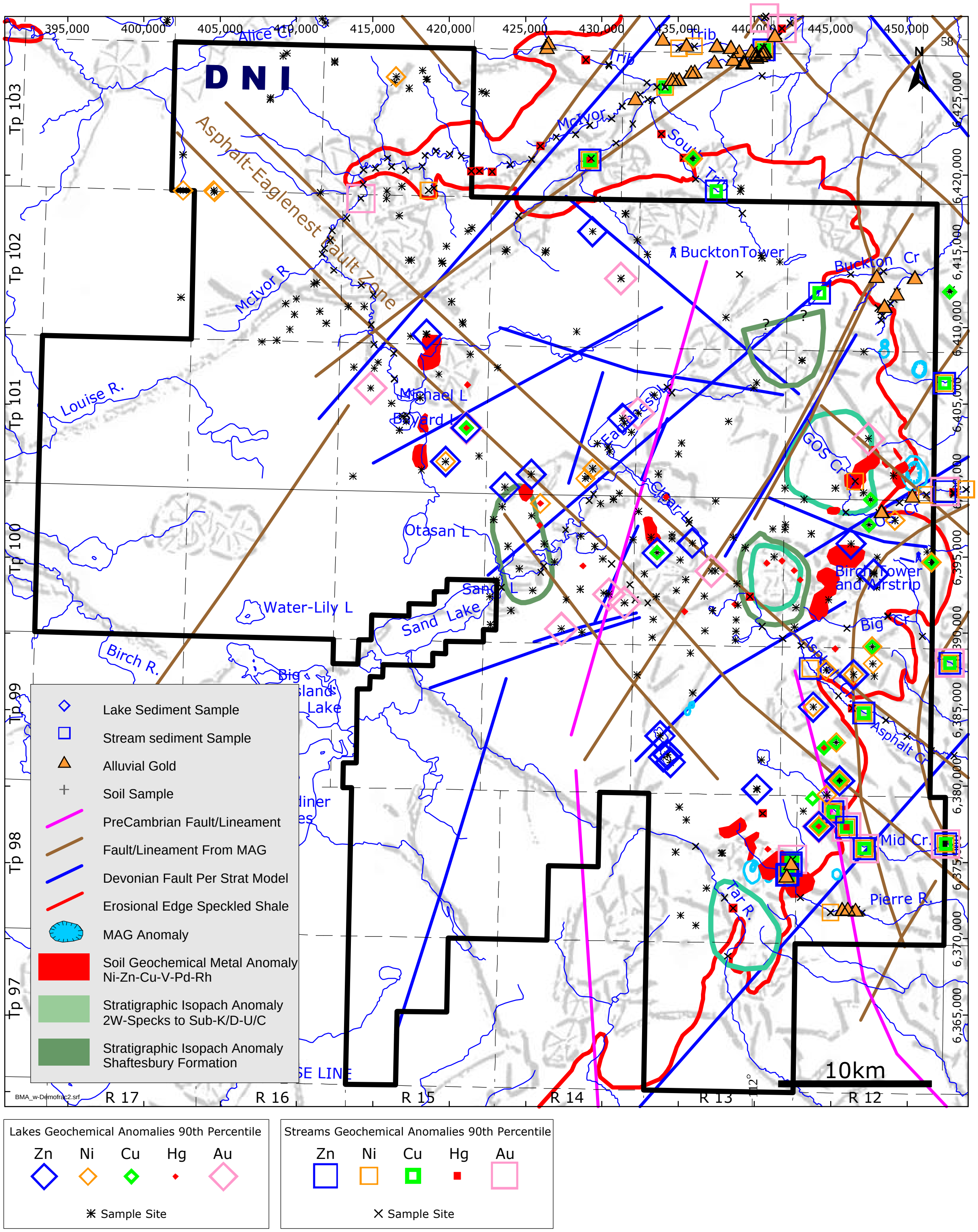


Figure 75: Remote sensing LANDSAT imagery anomalies over the Property, showing also all known metal anomalies and Zones on the Property. (See text for data sources and also Figure 26). After Figure 82, Sabag 2008.

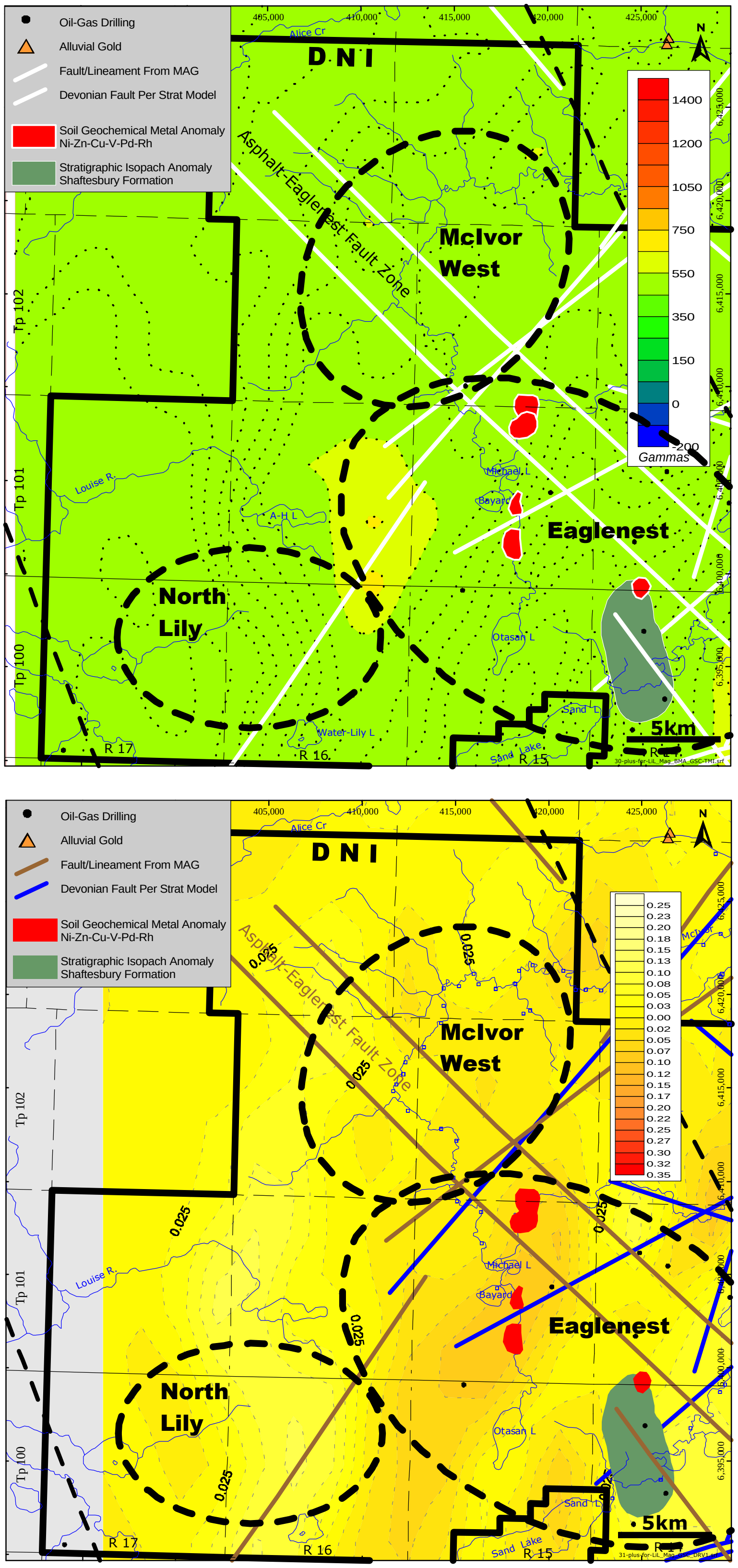


Figure 76: Total residual field (above) and First derivate (below) of total residual field aeromagnetic anomalies over and around the McIvor West and North-Lily Anomalies (See also Figures 39 and 40). After Figure 83, Sabag 2008.

9.9 Other Relevant Information

Based on all of the geological information presented in the preceding Sections of this Report, it is clear that the Property has considerable exploration and development potential for hosting metals, and that in addition to polymetallic Potential Mineral Deposits proposed to exist over two of the target areas, it contains a number of targets which have excellent potential for hosting additional quantities of metals in immense near-surface black shale hosted zones. The Property also contains areas with potential for hosting metals in yet undiscovered, though suspected, sediment hosted exhalative - SEDEX style - sulfides.

Discussion of geological merits of the Property, or those of any other property for that matter, in isolation from related logistical criteria would, however, materially detract from a meaningful evaluation of the Property's merits, since logistical criteria play as significant a role in enabling the development of mineral deposits as do those geological, and that many formidable mineral deposits exist worldwide which cannot be commercially exploited due to impediments such poor location, inaccessibility, remoteness, or other similar circumstances which are often difficult to quantify but are all too often underrated. This holds especially true for low grading deposits whose economics require large tonnages which are accessible and are available to bulk mining, and holds particularly true for deposits with long term mine life which require higher than conventional level of political stability, environmental sustainability, and better overall synergy with their surrounding areas.

The Second White Speckled Shale hosted polymetallic zones at the Property are ideally located and can benefit from many intangibles which are not available to other similarly mineralized shales in Alberta, or elsewhere, which are either too deeply buried, or are inaccessible, or lack access to reagents or water, or face competition from other anthropogenic surface land use (eg: agriculture).

Other information is presented below which are materially relevant to any discussion of the merits of the polymetallic shales on the Property. The information, gathered from other projects elsewhere, offer some operational and cost benchmarks, and serve also to highlight advantages which the Property's location offers to any contemplated future development.

9.9.1 Recent Bioleaching Developments

Biohydrometallurgy has quickly progressed during the past decade from laboratory investigations of applying biotechnology to metal recovery or pilot scale demonstrations to an industrial reality which is being applied on a large scale for the recovery of a variety of metals from sulfidic deposits (copper, gold, cobalt, nickel, zinc, manganese). This includes also recovery of metals from refractory ores (e.g Nevada) which were previously unrecoverable and lost to tailings.

In simple terms, metals are dissolved from the ore by iron/sulfur consuming bacteria (e.g. thiobascilli), effluents are subsequently treated with a variety of conventional chemical and electrochemical methods for sequential selective recovery (re-precipitation) of each of the metals. Tailings material is transformed into a substantially inert waste during the process and leaching fluids are circulated or reused once they are stripped of their metal content. The reader is referred to C.Brierly (2008) or other publicly available literature for a detailed discussion of bioleaching[26].

Whereas traditional processing of many ores relies on smelting of concentrated material to recover the metals, many operations have opted for bioleaching as an alternative. The success of bioleaching lies in the efficiency of the process, its ability to extract much lower grades than otherwise extractable by traditional smelting, its low reagent consumption, its (considerably) lower energy and water requirements, and reduced environmental impact when compared to traditional methods.

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[26] Additional information can be obtained from Japan Oil Gas & Mining Company, Mintek Laboratories, Ouototec, Newmont Mining, among others.

Adapted to be applied in a bulk heap leaching configuration, bioleaching has paved the way to exploitation of large low grade metal deposits worldwide, including those hosted in black shales, transforming them from geological curiosities to realistically prospective targets for exploration and development.

The majority of current bioleaching operations comprise vat leaching of concentrates in stirred tanks (bioreactors). The Talvivaara mine, which commenced production in October 2008, is the first large scale commercial bio-heapleaching operation designed to recover a suite metals on a combined basis. The Talvivaara mine is applying bioleaching in conventional heap leach methods similar to cyanidation of heaps normally associated with some large gold mines (e.g Nevada). The Quebrada Blanca copper mine operated by Teck-Cominco, Chile, completed its pilot bio-heap-leaching tests in 2009[27] with a view to converting the operations to enhance recovery of low grade copper from its ore.

Advances over the past decade in bioleaching applications provide renewed interest in metalliferous black shales as a long term source to metals.

9.9.2 Select Relevant Bulk Mining Examples as Operational Benchmarks

Polymetallic black shale deposits of the rift-volcanic class are typically immense low grade base metal (polymetallic) deposits which hold realistic promise of advancing toward production if, and only if, they can be bulk mined at high rates, can be beneficiated inexpensively in bulk, can take advantage of economies of scale, have access to nearby infrastructure and local supply of reagents, and are located in a stable regulatory and political fabric conducive to very long term planning over a typical mine life spanning many decades. In the foregoing regard, the deposits are base metal operational equivalents of sub-gram bulk mineable heap leach gold deposits or oil sand deposits.

A discussion of the merits of the Alberta polymetallic black shales would benefit from a review of bulk mining operations worldwide as context, but would benefit more specifically from a review of select deposits or operations whose metrics share similarities with mining operations for the Alberta shales. Three examples are summarized below which have relevance to various aspects of the Alberta shales.

The discussions below are not presented as an economic, nor a scoping, analysis for the Alberta shales, but are rather intended solely as a conceptual framework and context to enable their discussion. The three examples share the commonality of representing deposits, and related mining operations, whose merits are rooted as much in their large size as their grade, or rooted in uniformity of their grade and their amenability to low cost bulk mining:

- The Talvivaara Ni-Co-Zn-Cu-(Mn) deposit, Finland, which commenced production in October 2008, provides a good analogue as a black shale multi-metal extraction operation, with the added benefit of providing an analogue of a heap bioleaching (bioheapleaching) operation in a sub-arctic environment.
- Alberta Oil Sands mining operations adjacent to DNI's Property provide by far the best analogue for bulk mining - bulk earth moving - operations from the area. Though processing methods from these operations are different than those which would realistically be expected to be relevant to extraction of metals from black shales, mining methods by "ripping" of flat thin blanket of mineralized material are directly relevant to any future contemplated open pitting of the Alberta shales.
- The Paracatu Gold deposit, Brazil, provides a good analogue for bulk mining by "ripping" of poorly consolidated low grade ore, from a deposit characterized by remarkable continuity in grade and geology.

Talvivaara Black Shale Polymetallic Deposit, Finland

The Talvivaara Ni-Co-Zn-Cu-Mn deposit, Finland, provides by far the best analogue as an open pit mining operation recovering combined metals from a large black shale hosted deposit by bioheapleaching in

[27] Kelly et al 2010, Hydroporcess Symposium 2010.

subarctic conditions. The Talvivaara mine is the first mine to exploit polymetallic black shales in bulk and represents a significant milestone and a breakthrough in the mining of polymetallic black shales. Metrics related to this deposit were presented in an earlier Section of this Report (Section 9.4.1).

Alberta Oil Sands Deposits, Alberta

Alberta Oil Sands Mining operations provide by far the best analogue for bulk mining operations in areas adjacent to DNI's Property. There are currently five oil sands mines in various planning or construction stages adjacent to, or near, the Property, and many others within the immediate region (see also Section 3.6). These mines provide good examples of operations which reflect local logistical criteria, and infrastructure required for the successful implementation in the region of large earth-moving operations to mine thin extensive flat-lying ore zones, combined with some form of ore beneficiation, extraction and ultimate land reclamation.

Oil Sands mining has been active in Alberta since the 1970's. There were two mines in operation in the mid 1990's, over forty (mining and in-situ) operations are in planning or construction stages, and over 80 operations are anticipated within a few years. Many of these will be traditional open pit mining operations.

Oil Sands deposits are hosted in the Lower Cretaceous McMurray Formation which is locally exposed throughout the Athabasca region as a typically 40m-60m thick substantially flat blankets. Individual deposits extend over areas upward to 100 sq km or more. This geometry reflects the flat-lying layer-cake arrangement of Alberta sedimentary formations. The deposits can be mined by "ripping" at high throughput as they are poorly consolidated or relatively soft.

As a general guideline in the region, where buried under less than 75m of overburden cover, oil sand deposits are mined by traditional open pit by "ripping" with very large equipment. Mining strip ratios typically range 1.6:1 to 1.8:1, and two tonnes of ore are mined to produce one barrel of synthetic crude oil. Oil sands buried deeper than 75m are extracted by a variety of in-situ processes.

Oil is first mined from the oil sands ore zones in the form of bitumen, which contains sand, other minerals and water, and is upgraded to synthetic crude oil by heating to 500C and washing in upgarder plants. Upgrading is very energy intensive. Mining recoveries range 90%-95% for bitumen recovered, and approximately 0.8 bbl synthetic crude oil is recovered from each barrel of bitumen mined. These recoveries collectively translate into an overall recovery of 70%-75% for recovered crude oil from mining operations.

Total supply cost per barrel of synthetic crude oil produced in the region ranges $22-$28 per barrel[28], representing the aggregate production cost, capital costs and a nominal rate of return for investors. Costs (excluding capital costs) range $12-$18 per barrel of synthetic crude for a typical integrated mining and upgrading operation, the difference reflecting the high capital costs associated with oil sands mining projects typically ranging $4-$8 billion ($15 billion for Fort Hills) substantive portion of which is attributed to upgarder construction costs. Total foregoing supply cost represents an operating cost ranging $11-$14 per tonne of ore mined and beneficiated ($6-$9 per tonne excluding capital costs).

Though there is variability in operational capacities from one mine to the next (range 50,000 bbl/day to 300,000 bbl/day), a 100,000-150,000 bbl/day operation can be regarded as a realistic representative average for a midrange operation, exploiting a typically 0.5-1 billion barrel resource (equivalent to 1-2 billion tonnes). At an average grade of 1bbl per 2 tonnes this is the equivalent of a 70-100 million tonne per year mining operation.

Based on the above figures, in the simplest of terms, an average Alberta oil sands mining operation located in the Athabasca region can, on average, be envisaged as a 70-100 million tonne per year open pit mining operation with a 14-30 year mine life, focusing on the exploitation of a mineral resource grading ½ barrel synthetic crude oil per tonne, at a nominal 1.6-1.8 strip ratio.

[28] An Introduction to Development in Alberta's Oil Sands: by R.Engelhardt and M.Todirescu, University of Alberta School of Business; February 2005. Canadian Oil Sands Trust (TSX-COS.UN) estimates $26/bbl for its 2008 budget.

Paracatu Gold Deposit, Brazil

The Paracatu gold deposit, in production since 1988, is likely the world's lowest grade gold deposit with a historic grade ranging 0.4-0.5g/t gold. The deposit provides a good analogue as a bulk mineable operation which is afforded considerable economic latitude due to its enormity, the uniformity of its grade and the relative "softness" of the mineralized host rocks requiring no drilling nor blasting during open pitting.

Mining operations at Paracatu have successfully weathered several commodity cycles during the past twenty years. The deposit is currently owned by Kinross Gold Corporation[29]. The Paracatu deposit has in the past also been referred to as the Brasilia deposit or the Morro do Ouro mine. The deposit is being operated by Kinross, which recently upgraded and expanded production from 18 million tpa to 60 million tpa.

Paracatu is a large and consistent orebody with a projected mine life to 2040. This represents an approximate mine life of 60 years retroactive to its beginnings in 1988. Proven & Probable reserves are estimated to be approximately 1.42 billion tonnes grading 0.39g/t gold, representing approximately 18 million ounces of gold; in addition to 267 million tonnes of measured and indicated resources averaging 0.32g/t representing 2.8 million ounces of gold[30]. Overall, the deposit represents nearly 21 million ounces of gold hosted in 1.7 billion tonnes of mineralized material representing an average grade of 0.38g/t.

At its expanded capacity the mine is expected to produce at an average cost of approximately $390-$400 per ounce (equivalent to approximately $4.8 per tonne) and at a cash cost ranging $163-$175/oz (equivalent to approximately $2 per tonne: at average $169/oz cash cost). Recovery is approximately 76% by a combination of flotation and gravity methods.

The Paracatu deposit is a metamorphic gold system with finely disseminated gold mineralization hosted in the Morro do Ouro sequence, a series of phyllites that have been thrust and deformed. Anomalous gold and sulfides are hosted in a 120-140m thick zone which dips gently (20 degrees), is over 3km wide, and is traceable for over 6km.

Paracatu is a unique deposit with extraordinary lateral continuity, predictable grade distribution and recovery characteristics. Minimum drill hole spacing necessary to support a Measured and Indicated Resource classification at Paracatu has been established at a 200mx200m "five spot" pattern, resulting in an average nominal drill hole spacing of 140m. Grade variations within the deposit can be visually identified based on readily observable geologic features. Gold is closely associated with arsenopyrite and pyrite, predominantly as fine-grained free gold. Thin-section studies indicate 92% of the gold is free and grains typically range 50-150 microns in size.

Ore hardness - or rather its softness - has historically been recognized as key to the favourable economics of the Paracatu deposit. Though the deposit is mined by open pit, mining has not required drilling or blasting prior to excavation. Ore is ripped using by bulldozers, pushed to front-end loaders and loaded to a fleet of haul trucks for transport to the crusher (blasting harder portions of the deposit exposed in certain areas of the mine started in 2004). It is noteworthy that during the mid-late 1990's TVX Gold (then Operator of the mine) adopted Alberta oil sands mining and haulage methods from Suncor to expand output and enhance operating efficiencies at the deposit.

9.9.3 Other Intangibles

Significant intangibles which are difficult to quantify but are, nonetheless, material advantages which can only be expected to enhance the timely development of any deposit which might be discovered at the Property are as follows:

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[29] Previously a TVX Gold - RTZ joint venture. Kinross purchased the remaining 51% interest in the deposit from Rio Tinto for $261 million in 2004. TVX merged with Kinross in 2003.

[30] Kinross corporate documents. Also see: Paracatu Mine Technical Report, Paracatu, Minas Gerais State, Brazil: by R.D.Henderson, PEng, Acting Vice President, Technical Services, Kinross Gold Corporation; July 31, 2006.

Location in Mining District

The Property's location in a mature mining district, in a stable political environment, within a well organized regulatory, jurisdictional and land use permitting framework tailored to the development of laterally extensive deposits, provides considerable logistical and infrastructural advantages rarely available to mining operations. These are significant intangibles which are difficult to quantify but are, nonetheless, material advantages which can only be expected to enhance the timely development of any deposit which might be discovered at the Property and its subsequent operation over a long mine-life.

Local Sulfur and Other Reagent Supplies - Athabasca Region

Leaching processes which can be realistically expected to be applicable to recovery of metals from black shales will consume sulfur and, given the immense projected size of the metal zones, would do so over a long mine life.

For example, reagent consumption for the Talvivaara bioheapleaching operations includes consumption of an estimated 18kg sulfuric acid[31] per tonne of ore processed, representing an estimated 270,000 tonnes consumed annually (See Section 9.4.1). Sulfuric acid consumption of 40kg per tonne of material treated is reported by Continental Precious Minerals (See Section 9.4.3) from leaching and extraction testwork to leach Uranium from samples of uraniferous black shale from its Viken Property in Sweden[32]. Other bioleaching operations consume upward to 100kg of acid per tonne of ore processed, and more traditional inorganic leaching processes might be expected to consume more. (DNI's recent bioleaching testwork reported sulfuric acid consumption ranging 7.4kg-102kg from leaching of the Second White Speckled Shale - Section 11.6.4).

The local availability of sulfur as a waste product of surrounding oil sands operations, is a benefit to any leaching methods which might ultimately be identified for the recovery of metals from the Second White Speckled Shale, and any such recovery operation should be regarded as a welcome sulfur waste mitigation activity in the region. The foregoing represent significant synergies within the region by offering opportunities which have not previously been explored, to achieve steady-state balance between sulfur waste production and its consumption in the normal course of an industrial activity.

Considerable tonnages of sulfur are produced annually within the region surrounding the Property from oil sands operations, mainly from the upgrading of bitumen. Oil is extracted from oil sands in the form of bitumen which contains up to 20% sand, clay, water and other minerals. The bitumen is upgraded by heating to 500 degrees C to recover synthetic crude oil which typically makes up approximately 80% of the bitumen. Upgraders remove most of the sulfur from bitumen by converting it to elemental sulfur, and since sulfur may represent more than five percent of the bitumen, large volumes of by-product sulfur are produced from upgrading operations. Bitumen from oil sands operations in the region is either upgraded on site at an upgarder plant, or shipped by pipeline to upgraders located to the north of Edmonton.

Although sulfur can be used in the manufacture of fertilizers, pharmaceuticals, and other products, much of the sulfur produced from oil sands operations is unsold and sulfur produced from many local upgraders is stockpiled at the upgarder at mine site in blocks which are stacked on surface as pyramids (Plate 7). Despite recent surges in price of sulfur, its export to sulfur markets is problematic since Fort McMurray is substantially landlocked and shipping logistics to ultimate sulfur markets are difficult and costly as they entail transport first by truck from Fort McMurray to Lynton (Edmonton, 550km away) and then by rail to port.

Sulfur blocks stored on surface are a serious and fast growing environmental concern within the region as the sulfur crumbling from the blocks due to the severe local climatic conditions produces considerable acid-drainage due to melt-water and rain seepage through cracks.

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[31] Sulfuric acid can be produced from sulfur by bioleaching. Various species of thiobacilli metabolize sulfur to produce Sulphur dioxide and hydrogen sulfide, both of which react with water to form sulfuric acid.

[32] Press Release - October 30, 2007, Metallurgical Report, Continental Precious Minerals Inc.

Plate 7: Typical sulfur stockpiles and blocks from oil sands mining operations, Athabasca Region.

There are currently an estimated 10 million tonnes of sulfur stockpiled in the region (Syncrude held 5.2 million tonnes of this as at 2005). Based on an estimated 1 tonne sulfur produced per 100 bbl of oil[33], an estimated 2 million tonnes of additional sulfur are projected to be produced annually from the oil sands operations. There is no sulfur mitigation plan for the region despite concerted efforts by some oil sands producers to explore novel and creative solutions to either store, bury or consume their waste sulfur. As it stands, waste sulfur burial seems to command consensus despite the many risks of its leakage into local and regional groundwater aquifers.

Other reagents which can be expected to be consumed during any enviseaged metal leaching operation are lime, calcite and hydrogen sulfide. For example, reagent consumption for the Talvivaara bioheapleaching operations includes annual consumption of an estimated 1 million tonnes of calcite, 100,000 tonnes of lime, and 72,000 tonnes H_2S, all of which are reagents which are locally available within the Athabasca region surrounding the Property.

Hydro Power Generation Opportunities

The Property's east boundary, atop the erosional edge of the Birch Mountains, provides a nearly 500m substantially vertical relief with potential to be harnessed for generating local run-of-river hydro from nearly a dozen small streams flowing outward from the Mountains all of which are devoid of fish. The foregoing offer collateral benefits which might be monetized, in connection with additionally minimizing carbon footprint of any future operations.

[33] "Upgrader Alley, Oil Sands Fever Strikes Edmonton": by M.Griffiths and S.Dyer, The Pembina Institute; June 2008.

10. DNI EXPLORATION PROGRAMS 2008-2012 - DESCRIPTION & OBJECTIVES

10.1 DNI EXPLORATION PROGRAMS DESCRIPTION

DNI's exploration programs are predicated on its re-interpretation of historic data from the Property and its recognition of six mineralized systems thereupon defining six sub-properties. The foregoing were described previously in this Report as consolidated from its NI-43-101 technical report prepared in 2008 for the Property (appended herein as Appendix B1). As such, conclusions and interpretations of the technical report form the basis of DNI's current and future exploration work on the Property, and the report's recommendations define the critical path to advance and develop the six sub-properties over a four-five year period via series of multi-phased integrated programs, with an aggregate $5.3 million budget, addressing the different requisites of each sub-property. Although some of the recommendations of the foregoing report are based on information that may have since been superceded by results from work since completed by DNI, the recommendations nonetheless, overall, stand as outlined in the report.

The exploration programs recommended by the technical report address the two prospective opportunities and target types presented by the Property, namely; (i) exploration and development of known and suspected Shale hosted polymetallic deposits; and (ii) reconnaissance level exploration for SEDEX type sulfide mineralization as the suspected source to the metals and exhalative debris hosted in the shales. To the extent that the potential of any polymetallic shale hosted deposits which might exist on the Property is ultimately dependant on whether metals can be effectively and collectively recovered from the shales, DNI has thus far held all work intended to identify additional volumes of shale hosted polymetallic mineralization over the Property, or intended to expand the two proposed Potential Mineral Deposits identified thereupon, in abeyance until such time as metal recoveries are definitively established. DNI has, accordingly, focused its efforts on metals leaching R&D testwork to determine recovery of the metals from the shale relying on samples from the Asphalt and Buckton Zones.

DNI is currently partway through a two phased program to evaluate the polymetallic potential of the Second White Speckled Shale as follows: **Phase-1**: comprises substantially only metallurgical testwork to determine recovery of the metals from the shale relying on samples from the Asphalt and Buckton Zones; and **Phase-2**: contingent upon obtaining encouraging results from the metallurgical testwork, to consist of additional drilling and related work over the Asphalt and Buckton Potential Mineral Deposits to classify portions thereof to a resource and to expand the two Deposits by testing their projected extensions. DNI has substantially successfully completed Phase-1 of the work during 2008-2010, and results therefrom are consolidated in this Report. Plans to advance to Phase-2 are underway.

The six sub-properties identified by DNI are the following:

- Two of the sub-properties, designated herein as the **McIvor West** and **North Lily Anomalies**, comprise large 50-100 sq km anomalies selected based on interpretations of general information, and have not been investigated in the field in any measure of detail to determine if they host mineralization. They are in the reconnaissance stages.
- Two of the sub-properties, designated herein as the **Buckton South** and the **Eaglenest Target** Areas, comprise large areas which have undergone considerable prior historic surface work which has identified prospective targets to be tested by future drilling to probe for suspected buried polymetallic mineralized shale beneath the surface of each Target Area. Portions of both Target Areas also present reconnaissance level potential to prospect for the presence of exhalative vents. The Buckton South Target Area presents the additional potential of hosting southerly extension of the Buckton polymetallic Potential Mineral Deposit over a 6km distance, or an altogether separate polymetallic mineralized Zone.
- Two of the sub-properties, designated herein as the **Asphalt** and **Buckton Zones**, and respective **Asphalt and Buckton Potential Mineral Deposits**, represent near-surface (partly exposed) polymetallic zones which have been confirmed by widely spaced historic drilling and which are proposed herein to contain significant Potential Mineral Deposits to be upgraded to classified resources by in-fill drilling. Both Zones present additional targets with potential for

locating suspected sources to their respective metallic mineralization, believed to be nearby exhalative venting, and historic work results from the Buckton Zone further provide metal enrichment vectors directing the search for exhalative venting to its north.

The six sub-properties are at different stages of development, ranging from two reconnaissance level anomalies (McIvor West Property and North Lily Property), through two drill-ready target areas with considerable historic work (Eaglenest Property and Buckton South Property), to two proposed Potential Mineral Deposits which are partly drill tested, are open and ready to advance through in-fill drilling to classify resources (Buckton Property and Asphalt Property). DNI regards the six sub-properties as distinct properties in their own right, requiring different exploration and development programs to advance their development.

An outline of DNI's work programs over the six sub-properties is presented in Section 10.3, with reference to Figure 58, outlining short and long term planned work programs to advance the six sub-properties. Target prioritization criteria are presented in Section 10.2 below.

10.2 Target Prioritization Criteria

Considering the large size of the six sub-properties comprising the Property (Figure 58), and the laterally extensive flat-lying metal enriched targets being sought by DNI, some guidelines are needed, in conjunction with those geological, to prioritize targets, or portions thereof, for efficient and focused future follow-up exploration and drilling. While logistical criteria provide natural constraining guidelines, equally natural guidelines are presented by limitations imposed by overburden cover over the targets which are being sought by DNI for their envisaged exploitation by open pit.

Depth of overburden cover above the base of the Second White Speckled Shale Formation, per the historic subsurface stratigraphic database, is presented in Figure 79(a), showing the depth of material above the base of the Formation. The erosional edge of the Second White Speckled Shale Formation marking the trace of its exposed portions is also shown. Relying on the accepted 75m average depth limiting open pitting in the adjacent region as a general guide, DNI has prioritized areas bounded by the erosional edge of the Formation and the 125m depth contour for identification of additional mineralized volumes, or for expansion of zones which are partly exposed. Assuming an overall average nominal thickness of 25m for the Formation, the 125m depth contour represents, on average, an approximate 50m nominal thickness of cover which would be the average of a thickness of cover varying 0m to 100m. The foregoing is intended as a general guideline to direct future drilling away from areas with deeper cover which cannot realistically be expected to be open-pittable. The reader is cautioned that the foregoing proposal is conceptual since the exact limiting depth of overburden viable for mining of the shales is presently unknown in the absence of an economic or feasibility study for the two Potential Mineral Deposits proposed herein. In addition, the depth contours per the subsurface stratigraphic database are based on relatively widely spaced oil-gas wells which are locally up to 10km apart and collectively provide only a generalized insight into the subsurface.

Based on the above general scheme, considerable areas to the north and south of the Asphalt and Buckton Potential Mineral Deposits, and the Buckton South Target Area, offer prospective areas under lesser overburden cover worthy of attention, especially nearer the Formation's erosional edge. By contrast, the western parts of the Buckton South Target Area, and many parts of the Eaglenest Target Area can be classed as lower priority suggesting deferral of additional work thereupon until suitability of an in-situ mining method is tested[34] to exploit material which might be discovered under excessive cover.

Over areas away from the erosional edge of the Second White Speckled Shale Formation, in the interior of the Property, the 75m depth contour, to the base of the Formation, is proposed as a limiting guideline, representing on average a 50m thickness of cover above an assumed 25m nominal Formational thickness.

[34] For example, borehole in-situ slurry mining, OGS 1983; Knoke et al 1980, 1982.

Based on logistical criteria, the east half of the Buckton South Target Area, the Buckton and the Asphalt Zones, all of which are located over the east part of the Property, present high priority locations which can be relatively easily explored given good access to the area, and equally good access throughout them via a series of old seismic lines and trails, especially in winter months. The foregoing include accessways previously identified, or utilized, during historic work over the area, including a network of winter roads built during 1997 historic drilling at the Buckton and Asphalt Zones in addition to considerable other accessways constructed by more recent drilling related to exploration for gas and oil sands deep beneath the Birch Mountains. The Birch Mountain airstrip provides additional logistical enhancements, as do nearby sources of water which have been previously identified and documented in historic records to support any future drilling at the Asphalt and Buckton Zones.

10.3 DNI Work Programs For Its Six Sub-properties

An outline of DNI's work programs over the six sub-properties is presented below with reference to Figure 58, outlining short and long term planned work programs to advance the six sub-properties. The summary is organized by sub-property and is ordered from the least explored to the most.

10.3.1 McIvor West and North Lily Anomalies

Both of these Anomalies are early stage anomalies requiring reconnaissance investigation and can be effectively evaluated by surface (soil) geochemical sampling intended to determine the presence or the absence of diffusion anomalies over them, or on their flanks, which might suggest buried mineralized shales beneath their surface.

Both Anomalies are relatively remote and work thereupon will necessarily be helicopter supported. Work over the North Lily Anomaly will be subject to seasonal surface use restrictions during Caribou calving season.

Though both targets hold realistic potential for hosting buried polymetallic shale, other than review and consolidation of historic work therefrom and vicinity, and efforts to better resolve subsurface stratigraphy relying on oil/gas well drilling in the area, DNI has no short term plans for active field work and has deferred further work until such time as metal recovery parameters from the polymetallic shale are better established based on results from R&D testwork in progress on samples of metalliferous shales from the Asphalt and Buckton Zones.

10.3.2 Eaglenest Target Area

The Eaglenest Target Area represents a prospective target with coincident composite surface geochemical, stratigraphic, and other interpreted anomalies which collectively are similar to surface anomalies over the Buckton and Asphalt Zones, and likely represent similar shale hosted metal zones buried beneath the surface. The Target Area is in the interior of the Birch Mountains, at the centre of the Property, and lacks any outcrop exposures, although the Second White Speckled Shale is known to exist under all of its surface and is projected to be under 75m-100m cover per the subsurface stratigraphic database. The Area's demonstrable exploration potential lies in its potential to contain suspected polymetallic black shale hosted mineralization similar to that discovered at the Buckton and Asphalt Zones, although the significance of such mineralization under 75m-100m of cover is presently unknown given the absence of any economic guidelines from similar mineralization at the Buckton and Asphalt Zones which are also partly exposed.

There is no information from prior work to guide speculations of whether grades which might be encountered in any buried polymetallic mineralized system beneath the Area will be higher or lower than those from the Buckton and the Asphalt Zones, although the available database from the Birch Mountains supports anticipations that grades will, on balance, likely be similar to those from the Asphalt and Buckton Zones, given the remarkable consistency of grade documented across the Birch Mountains and the Property from surface exposures of the Second White Speckled Shale over distances of up to at least 60km, and the consistency of grades between the Asphalt and Buckton Zones historic drill holes which present data from two Zones located some 30km apart.

Though the Eaglenest Target Area holds geological promise of hosting polymetallic black shales beneath its surface, other than review and consolidation of historic work therefrom and vicinity, and efforts to better resolve subsurface stratigraphy relying on oil/gas well drilling in the area, DNI has no short term plans for active field work thereupon and has deferred further work until such time as metal recovery parameters from the polymetallic shale are better established based on results from R&D testwork in progress on samples of metalliferous shales from the Asphalt and Buckton Zones.

The Target Area does, however, offer several well defined metal diffusion anomalies in soils which provide realistic targets which can be tested by drilling intended to solely to determine the presence or absence of the suspected buried metal mineralized system of appropriate dimensions (50-100 sq km). Drilling of a handful of holes located on anomalies across the Area's western flank, subject to encouraging metal recovery R&D testwork results from Asphalt and Buckton, is under consideration by DNI to confirm or refute presence of a buried mineralized system of the dimensions being sought on the Property.

Of collateral interest in the Eaglenest Target Area is the incidental discovery of relatively "fresh" dacite float during historic reconnaissance field work (1994-1995) in the vicinity of Clear Lake, located to the south of Eaglenest Lake, in the eastern extremity of the Target Area where it overlaps the western extremity of the Buckton South Target Area. DNI plans to re-visit this locality and its vicinity during the 2010-2011 field programs by way of reconnaissance with a view to launching subsequent exploration work intended to search for possible exhalative venting and SEDEX style mineralization, with the benefit of results and conclusions from considerable work post-dating discovery of dacitic material in the area.

10.3.3 Buckton South Target Area

The Buckton South Target Area represents a prospective target with many well defined coincident composite geochemical, stratigraphic, and other interpreted anomalies which collectively are similar to surface anomalies over the Buckton and Asphalt Zones, and likely represent buried metal zones beneath their surface, as has been demonstrated under similar anomalies over the Buckton and Asphalt Zones. The eastern parts of the Buckton South Target Area are accessible by a variety of winter roads, by seismic lines via ATV and also by air utilizing the Birch Mountain Airstrip.

The east half of the Target Area hosts a series of soil and other surface anomalies on trend from the Buckton Potential Mineral Deposit located immediately to its north. These anomalies, lying on the east flank of the isopach stratigraphic anomaly, are reinforced by exposures of mineralized shale along the Asphalt Creek valley to the east, and most likely represent buried mineralized shale either as the southerly extension of the Buckton Potential Mineral Deposit for an additional distance of 6km, or as an altogether separate mineralized system.

A portion of the east half of the Buckton South Target Area, equivalent to nearly double the surface area of the Buckton Potential Mineral Deposit, is within an acceptable thickness of overburden cover based on the subsurface stratigraphic database. This portion is bounded by the erosional edge of the Second White Speckled Shale Formation to its east and the 125m depth contour to the base of the Formation to its west. The anomalies over the east half of the Buckton South Target Area, accordingly, represent high priority targets for the delineation of a shale hosted polymetallic Zone under the area of similar size as the Buckton Potential Mineral Deposit, or an extension to the Buckton Potential Mineral Deposit.

The western half of the Buckton South Target Area presents prospective metal diffusion anomalies in soil which support speculation of presence of buried mineralization beneath the surface. The Second White Speckled Shale in the area is, however, under cover exceeding 125m thickness and any mineralized volumes which might be discovered therein cannot realistically be considered prospective for bulk exploitation by open pit. DNI plans to hold all work over the western half of the Buckton South Target Area in abeyance until an in-situ mining method has been identified.

DNI is, however, currently giving consideration to test the east half of the Buckton South Target Area with initial drilling during its planned 2010-2011 winter drill program with a view to delineating a Potential Mineral Deposit over portions of the area with thin overburden cover.

10.3.4 Buckton Zone and Potential Mineral Deposit

The Buckton polymetallic Zone hosts the Buckton Potential Mineral Deposit which extends over an approximate 3km x 8km area comprising approximately 26 square kilometers. The Deposit has an estimated thickness varying, on average, 20.5m to 21.9m, and represents an aggregate of approximately 1.2-1.3 billion short tons of mineralized material (1.1 to 1.2 billion tonnes) hosted in the Second White Speckled Shale Formation. The polymetallic mineralization consists of Mo-Ni-U-V-Zn-Cu-Co-Ag in addition to gold whose average grade has not yet been definitively established over the Zone and is treated as nil in this Report.

The Buckton Potential Mineral Deposit has good lateral continuity and is vertically zoned, containing generally better grading material within its uppermost 10m, and progressively better grades northward in the upper parts of the drill holes, accompanied also by progressive thickening of the better grading sections. Subzones can be blocked within the Potential Mineral Deposit which are either of better grade than the entire volume (e.g 15%-30% better grades over upper half of the volume being the uppermost 10m), or which are dominated by different groupings of metals, especially over its northern portion where its uppermost sections are progressively better mineralized with Mo-Ni-U-Zn-Co. This upper subsidiary northern subzone, occupying the northern half of the uppermost 10m of the Potential Mineral Deposit and representing approximately 20%-30% of the Buckton Potential Mineral Deposit, is better enriched in Mo-Ni-U-Zn-Co which collectively represent sufficient combined value to be of interest as a metal group. The foregoing northerly enrichment trend serves to prioritize exploration of the subsidiary northern subzone as a stand-alone mineralized volume.

The Buckton Potential Mineral Deposit is open in three directions: to the south, the west and to the north. To the west it is open across the isopach anomaly, though any westward extensions it might have would be under overburden cover exceeding the suggested 125m depth limiting parameter. The Zone's southern tip is under an estimated 150m-175m of cover per the subsurface stratigraphic model, although drill holes over that part indicate depths to the base of the Second White Speckled Shale Formation ranging 130m-150m (ie:110m-130m to the top of the Formation). Potential extensions of the Zone eastward and to the southeast are projected to be under lesser overburden nearer its erosional edge where the shale is also exposed at surface and in valley walls.

Unlike its southern and western projected extensions, the Buckton Potential Mineral Deposit is open to the north over large areas generally characterized by lesser overburden cover. Combined with a trend of better grades northward in the upper parts of the Deposit, accompanied also by progressive thickening of the better grading sections, expansion of the Zone northward by future drilling is a clear priority, as opposed to expanding it to the south or the west.

Considerable information is available from the historic work supporting anticipations that the Buckton Potential Mineral Deposit can be expanded by additional drilling. In addition, DNI's subsequent verification sampling of the historic drill core reported measured values for Specific Gravity ranging 2.22 to 2.49 for the Second White Speckled Shale suggesting that tonnages might in fact be larger than those estimated.

DNI's work programs over the Buckton Zone have included considerable detailed review and consolidation of historic work therefrom and vicinity, in addition to verification sampling of historic drill core from the Zone, and collateral efforts to better resolve subsurface stratigraphy relying on oil/gas well drilling in the area. DNI's more recent work programs consist entirely of extensive R&D testwork to evaluate recoverability of the metals and their recovery on a combined basis via conventional leaching as well as bioleaching, relying on surface material recently collected from the Zone. Testwork to evaluate recovery via physical (concentration) processes are also under consideration. Overall plans are to scale up of recently completed leaching bench scale tests through column tests toward a small pilot heap by late 2011 or 2012. DNI's work which has been completed to date is presented Section 11 of this Report.

Encouraged by initial metals leaching testwork results from work completed in 2009-2010, DNI's current plans include completion of a 4,500m diamond drilling program over the central and northern portions of the Buckton Potential Mineral Deposit to upgrade and classify a portion of it to a NI-43-101 compliant resource, and to collect additional material for expanded leaching testwork. The program entails drilling of approximately 30 vertical holes averaging 100m deep, spaced approximately 400m apart, with local tests at 200m spacing. Completion of an additional 15 similar, though wider spaced holes (800m-1000m), are also under consideration, to test the northern projected extension of the Buckton Potential Mineral Deposit, and over select portions to its south and east. The foregoing work is intended to enable initiating a preliminary economic analysis by 2012 to establish general guideline criteria which might also be applicable to other potential shale hosted polymetallic mineralization elsewhere on the Property.

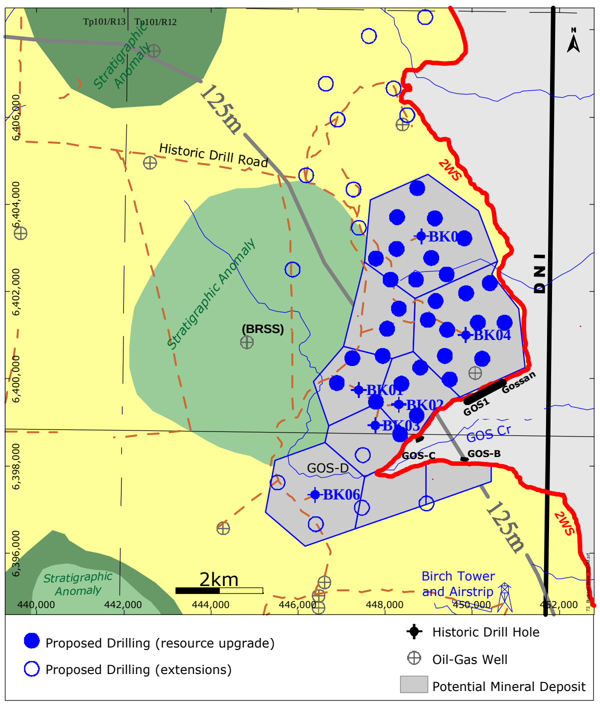

Figure 77: Recommended drilling, Buckton Potential Mineral Deposit. Trace of the 125m depth contour to the base of the Second White Speckled Shale and its erosional edge (2WS) also shown. See Figure 59 for legend. After Figure 85, Sabag 2008.

A preliminary schematic drill pattern is shown in Figure 77 which will undoubtedly be modified based on logistical criteria. The Figure also shows the erosional edge of the Second White Speckled Shale Formation, and the approximate trace of the 125m depth contour to its base.

Of collateral interest in the vicinity of the Buckton Zone is the potential for discovery of SEDEX style sulfides, given the discovery of considerable bentonitic material and volcanic debris in the Second White Speckled Shale Formation intercepts in historic drill core from the Buckton Zone. A local provenance for the bentonites and debris are suggested by the northwardly better metals grades and progressive thickening of the better grading sections noted in the historic drilling, combined with observations of northerly increasing thickness, frequency and distribution of bentonites in the drill core. The foregoing collectively support the presence of as yet undiscovered nearby source to the debris and bentonites which are incorporated into the Buckton Zone Second White Speckled Shale, further suggesting that locating such a source within approximately 2km-5km of the northernmost Buckton drill holes would be realistic. DNI's work programs include field efforts directed at evaluating the potential of this area for hosting SEDEX style sulfides.

10.3.5 Asphalt Zone and Potential Mineral Deposit

The Asphalt polymetallic Zone hosts the Asphalt Potential Mineral Deposit which extends over an approximate 1km x 4.5km area comprising approximately 4.5 square kilometers, with an estimated thickness ranging 7.2m to 11.6m, and represents an aggregate of approximately 109-132 million short tons of mineralized material (99-120 million tonnes). DNI's verification sampling of the historic drill core reported measured values for Specific Gravity ranging 2.22 to 2.49 for the Second White Speckled Shale suggesting that tonnages might in fact be larger than those estimated.

Prior drilling over the Asphalt Zone consists of only two holes, 900m apart, which exhibit good consistency of grade and geology between them. Of special note is the consistency of grade between the average metal grades of the Asphalt holes with the average grades of the all historic drilling completed over the Buckton Zone located approximately 30km to the north of the Asphalt Zone.

The Asphalt Potential Mineral Deposit is open to the northwest over an additional distance of 5km-6km as reflected by soil geochemical diffusion anomalies identified by the historic work, and to the northeast for a distance of an additional 6km toward Mid Creek and closure of its valley. Whereas projected northwesterly extension of the Potential Mineral Deposit would be partly under overburden cover exceeding 125m based on the subsurface stratigraphic database, its northeasterly projected extension is under thinner cover and is, accordingly, prioritized. The potential of a projected extension southward over the stratigraphic isopach anomaly immediately to the south of the Potential Mineral Deposit is unknown. There is no information to guide speculation of what the ultimate thickness of the Second White Speckled Shale Formation might be over the areas proposed as extensions to the Asphalt Potential Mineral Deposit. It would be reasonable to propose that thickness of the Formation might be at least the same or thicker than that seen in the drilling at a distance away from the erosional edges of the Birch Mountains and away from active slump zones. The historic work results support anticipations that the Asphalt Potential Mineral Deposit can be expanded by additional drilling.

DNI's work programs over the Asphalt Zone have included considerable detailed review and consolidation of historic work therefrom and vicinity, in addition to verification sampling of historic drill core from the Zone, and collateral efforts to better resolve subsurface stratigraphy relying on oil/gas well drilling in the area. DNI's more recent work programs consist entirely of extensive R&D testwork to evaluate recoverability of the metals and their recovery on a combined basis via conventional leaching as well as bioleaching, relying on surface material recently collected from the Zone. Testwork to evaluate recovery via physical (concentration) processes are also under consideration. Overall plans are to scale up the recent leaching bench scale tests through column tests toward a small pilot heap by late 2011 or 2012. DNI's work which has been completed to date is presented in a later Section of this Report (Section 11).

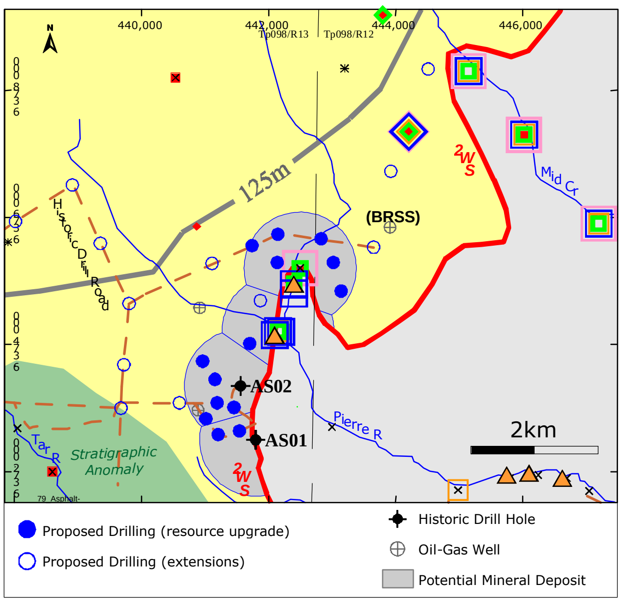

Figure 78: Recommended drilling, Asphalt Potential Mineral Deposit, Trace of the 125m depth contour to the base of the Second White Speckled Shale and its erosional edge(2WS) also shown. See Figure 68 for legend, and also Figure 72. After Figure 78, Sabag 2008.

Rare metals, including Li, incidentally recovered during recent leaching tests completed by DNI represent additional value in the Shale which has not previously been recognized and will receive closer attention.

Encouraged by initial metals leaching testwork results from work completed in 2009-2010, DNI's current plans include completion of a 2600m diamond drilling program over the Asphalt Potential Mineral Deposit, and over its projected northeastern and western extension, partly as a first step toward classifying a resource therein, but also to probe for extensions of the Zone away from its erosional edge.

The planned program entails drilling of 26 vertical holes averaging 100m deep, spaced approximately 400m apart, with local tests at 200m spacing, to upgrade a portion of the Potential Mineral Deposit to a classified resource. The drilling is intended to enable initiating a preliminary economic analysis by 2012 to establish general guideline criteria which might also be applicable to other potential shale hosted polymetallic mineralization elsewhere on the Property.

A preliminary schematic drill pattern is shown in Figure 78 which will undoubtedly be modified based on logistical criteria. The Figure also shows the erosional edge of the Second White Speckled Shale Formation and the approximate trace of the 125m depth contour to its base.

Of collateral interest in the vicinity of the Buckton Zone is the potential for discovery of SEDEX style sulfides, given the discovery of considerable bentonitic material and volcanic debris in the Second White Speckled Shale Formation intercepts in historic drill core from the Zone. Historic work has suggested a nearby source to bentonites and volcanogenic debris noted in the Asphalt drill core, although unlike the Buckton drill holes, no directional vectors can be concluded from the limited Asphalt drilling to guide future work in the search for suggested potential sources.

The historic work suggested that anticipation of locating such sources within 2km-5km of the Asphalt drill holes would be realistic, and proposed a number of locations with potential for hosting venting were also identified by historic work in the course of exploring for potential kimberlites in the vicinity of the Asphalt Zone all of which summarized in Figure 79(c), juxtaposed on magnetic anomalies some of which are too conspicuous to ignore (e.g. Pierre River, downslope from the Asphalt Potential Mineral Deposit). Bedded sulfides ($FeS \pm Ni$), interlayered with Fe-phosphate, discovered in shales in the Asphalt Creek valley walls and as float therefrom in the Creek, offer additional targets worthy of more detailed examination. DNI's work programs include field efforts directed at re-examining the foregoing localities and broader efforts toward evaluating the potential of this area for hosting SEDEX style sulfides.

10.4 SEDEX STYLE SULFIDE TARGETS

In general terms, sedimentary exhalative sulfide deposits are known to accumulate in restricted basins or half grabens bounded by synsedimentary growth faults, with exhalative centers located along the faults or their junctions. Depositional environments vary from deep "starved" marine to shallow water restricted shelf settings, although the more common host rocks are those found in euxinic environments, namely black (carbonaceous) shales. The deposits have electromagnetic and magnetic signatures and might be detected when steeply dipping though are difficult to detect if flat-lying, or if the sulfide layers are fine and distributed over a thick stratigraphic column.

Geological, stratigraphic, lithogeochemical and metal distribution trends documented from the Property are characteristic of settings which would be highly conducive to hosting sedimentary exhalative - SEDEX style - sulfide mineralization within the black shales, providing a collateral deposit type with potential to exist on the Property. It is recommended that a consolidated effort be made to explore for sedimentary exhalative sulfides on the Property.

Several localities have been identified on four of the six sub-properties, as areas which have potential for hosting exhalative venting with potential also for related sedimentary exhalative sulfides. The foregoing areas present natural targets for additional investigation in the field, as part of a broader evaluation of the Property for hosting sedimentary exhalative - SEDEX style - sulfides. The targets were selected: based on (i) their location on conspicuous large faults across the Property, or on their junctions, (ii) their spatial association with conspicuous "closed" magnetic anomalies associated also with nearby kimberlite indicator minerals, (iii) bentonite development and metal enrichment vectors interpreted from drill core and surface exposures, and (iv) bedded sulfides documented from lithosections. The targets are:

- Buckton north - selected based on bentonite development and metal enrichment vectors interpreted from the Buckton drill holes;
- the westernmost parts of the Buckton South Target Area and the overlapping the easternmost parts of the Eaglenest Anomaly, in the vicinity of Clear Lake - selected based on discovery of dacite float in the area within the Asphalt-Eaglenest Fault Corridor, and the many surface geochemical anomalies nearby;
- the immediate area surrounding the Asphalt Potential Mineral Deposit, over conspicuous circular magnetic features, as well as over several locations identified in the course of exploration for kimberlitic venting on the Property;
- bedded sulfides (FeS) and Fe-phosphates documented from historic prospecting along the Asphalt Creek, and possibly also elsewhere whose significance was not recognized at the time.

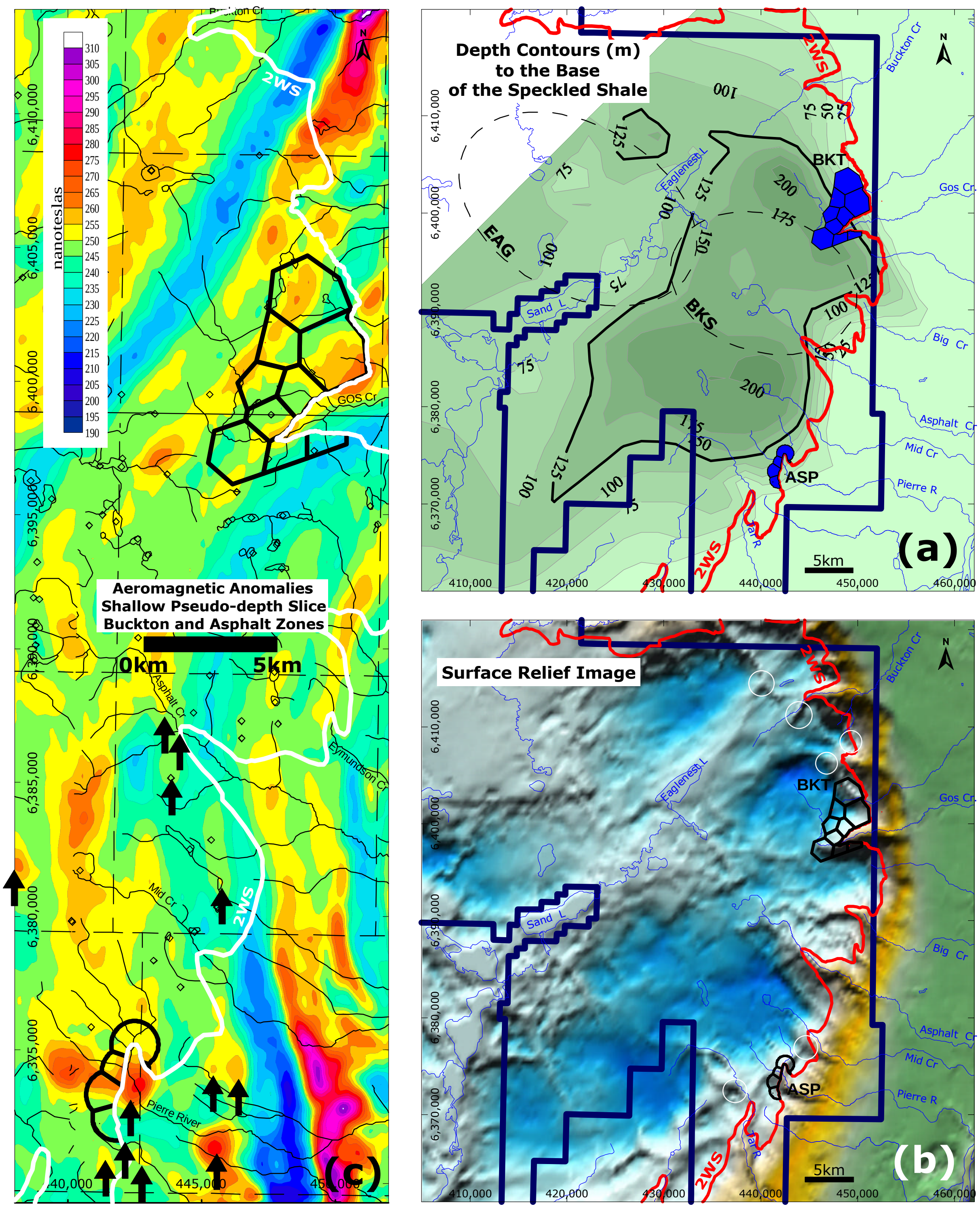

Figure 79: Summary of suggested prioritization criteria for future work. After Figure 84, Sabag 2008. Figure 79(a): Depth to the base of the Second White Speckled Shale Formation across the east half of the Property, showing the Buckton (BKT) and Asphalt (ASP) Potential Mineral Deposits. The Buckton South (BKS) and Eaglenest (EAG) Target Areas, and the erosional edge of the Second White Speckled Shale Formation (2WS) also shown. (after previous Figure 25). Figure 79(b): Topographic relief over the eastern part of the Property showing the Buckton (BKT) and Asphalt (ASP) Potential Mineral Deposits, in relation to adjacent circular topographic features, lineaments and possible exhalative vent targets (circles). (after previous Figure 29). Figure 79(c): Aeromagnetic pseudo-depth slice anomalies over the Asphalt and Buckton Potential Mineral Deposits, and the Buckton South Target Area (after previous Figure 33), showing additional possible exhalative vent targets (arrows).

DNI's work programs include field efforts directed at re-examining the foregoing localities and broader efforts toward evaluating the potential of this area for hosting SEDEX style sulfides. Intentions are to conduct exploration for sedimentary exhalative sulfides on the Property on a consolidated basis over the entire Property as a single exploration campaign rather than on an area-by-area basis, since the endeavor will in most part initially be at a reconnaissance level and findings from one area will likely be applicable and useful to exploration of another. The foregoing work will include field examination of the target areas and detailed re-examination of historic heavy mineral and geophysical databases from the Property Several initial possible targets are also suggested in Figure 79.

Incremental progress made to date includes expansions of the subsurface stratigraphic database and its detailed synthesis and modeling with the objective of identifying synsedimentary structures across the Property (see Section 11.8 of this Report). Other planned work, including geophysical surveying, are in the planning stages.

11. DNI WORK PROGRAMS 2007-2010

11.1 OVERVIEW SUMMARY OF DNI WORK PROGRAMS

DNI commenced its exploration work on the Property prior to commencing its land assembly in September 2007, and has since actively continued its work to advance development of the Property. To the foregoing extent, some of assessment work expenditures reported herein relate to expenditures incurred in the twelve months preceding the commencement date of some of the permits.

Exploration work completed during the period 2007-2010 consisted of a variety of efforts ranging from reconnaissance level synthesis and compilation of all available third party information (2007-2008) and its consolidation into an NI-43-101 compliant technical report (2008), to considerably more detailed localized studies (2008-2009) and analytical work (2009-2010) intended to assess metal recoveries from the shale while relying on sample material collected by DNI from the Property during the 2009 field season and on archived samples in storage at the MCRF. The technical work completed by DNI follows recommendations of its NI-43-101 Technical Report for the Property, and the said work is ongoing.

While DNI's earlier work mainly entailed data consolidation and review, DNI quickly progressed into laboratory based activities focusing almost entirely on investigating metal extraction and recovery testwork studies to formulate an economically viable flowsheet for extraction of collective base metals from the mineralized shales. This work entailed completion of BioLeaching as well as conventional inorganic leaching testwork. Much of this testwork is ongoing and is expected to continue through the balance of 2010 toward scaling up of what is currently benchtesting through column leaching tests toward pilot heap leaching tests slated for late 2011 or 2012. DNI is in the process of planning its 2010-2011 winter drilling programs and has commenced community consultation in advance of permitting for winter drill programs.

DNI's exploration work which was completed during the period 2007-2010 included the following:

(i) Regional and Property scale geological data synthesis and compilation, including synthesis of information from the Western Canada Sedimentary Basin with specific focus on northeast Alberta the Birch Mountains (2007-2008);

(ii) Consolidation of the information from geological data synthesis and compilation into databases as well as preparation of a NI-43-101 compliant Technical Report for the Property (2008);

(iii) Preliminary review and inventory of historic third-party drill core archived at the MCRF from the Property (2008);

(iv) Review, cataloguing and resampling of historic third-party drill core archived at the MCRF from the Property (2008-2009);

(v) Verification analytical work of historic third-party drill core archived at the MCRF from the Property (2009);

(vi) Expansion of subsurface geological database, related synthesis and subsurface stratigraphic modeling (2008-2010);

(vii) Strategic field sampling program and related analytical work (2009);

(viii) A number of leaching and mineral testwork as follows: Initial cyanidation testwork (2009); Micro scaled mineral (MLA) study of samples from the Property (2009-2010); Bio-Organism cultivation, culture adaptation and BioLeaching study – ARC (2009-2010); CO_2 Sequestration study – ARC (2009-2010); BioLeaching testwork – BRGM (2009-2010); and Sulfuric acid leaching testwork (2010);

(ix) Strategic field sampling program and related analytical work (2010).

Work which is in progress or in planning stages to commence shortly includes a project life cycle audit study to be conducted in collaboration with the Pembina Institute, analytical work related to June 2010 field sampling program, expanded leaching testwork and a planned 2010-2011 winter drilling program and related reserve estimation study. Expenditures in connection with the above work programs were presented in Section 4 of this Report. The respective programs are described in Sections following.

11.2 Regional and Property Scale Data Compilation & Synthesis – 2007-2008

DNI carried out a synthesis and compilation of available regional geological information as well as of information specific to the Birch Mountains and the Property to support its land assembly and, subsequently, to consolidate baseline geological framework in preparation of its planned exploration. This work included extraction of considerable geological, geochemical and mineralogical databases from mineral assessment reports and their digitization. The work also included preparation of digital basemaps for the Birch Mountains and vicinity, and the organization of related digital elevation model. Much of the foregoing work was subcontracted to Demin Management Corporation and carried out by, or under the direction of, S.Sabag PGeo assisted by J.Gillett.

Regional data reviewed and collected included considerable information from the Western Canada Sedimentary Basin in general, and neighbouring Saskatchewan, to the extent the information collected might relate to identification of suspected buried mineralization similar elsewhere over the Property and the surrounding broader Birch Mountains.

Findings from the above work were consolidated and incorporated into DNI's NI-43-101 technical report for the Property (described below), and summaries therefrom have been incorporated into Sections 6, 7, 8, 9 and 10 of this Report which relate to regional geology, property geology, economic geology, previous work, historic exploration targets, previous discoveries and DNI's exploration targets.

11.3 NI-43-101 Technical Report 2008 & Interim Recommendations

All available historic information from the Property was consolidated during 2008 into a technical report for the Property by S.Sabag PGeo, DNI's president/CEO and QP for the projects, assisted by J.Gillett. The report, dated October 28, 2008, conforms to NI-43-101 standards and was filed by DNI as a public document on SEDAR in November 2008. The foregoing report was critically reviewed in 2009 by M.Dufresne PGeol of APEX Geoscience Ltd. of Edmonton, toward a Confirmatory Letter dated May 26, 2009. A copy of the foregoing technical report and letter are appended herein as Appendix B1 and B2, respectively. Substantive sections from the technical report have been incorporated into all Sections of this Report which relate to regional geology, property geology, economic geology, previous work, historic exploration targets, previous discoveries and DNI's exploration targets.

Historic work results, sample locations and salient interpretations are summarized in a 1:100,000 scaled general Property compilation drawing as Drawing#B3 appended herein in Appendix B3.

DNI's technical report contained information as at October 2008, some of which information is superceded by more recent results from DNI's work programs or by external circumstances independent of DNI's work. Material changes, which DNI plans to incorporate into an update of the technical report, are:

- DNI has since acquired a permit over T97/R13, and anticipates to acquire additional adjacent permits. Figures included in this Report which have been reiterated from earlier versions included in the technical report have been revised to reflect the additional permit;
- Metal Prices and period averages thereof are currently different than those quoted in the technical report (addressed in Section 9.7 of this Report);
- The Talvivaara Polymetallic Black Shale Mine, Finland, is well in production and has announced plans to add a metals recovery circuit to recover co-product Uranium from its bulk leaching operations, in addition to its to its multi-metal production;
- DNI has recently successfully demonstrated amenability of the Second White Speckled Shale to bioleaching and other leaching methods for the collective recovery of metals;
- The subsurface stratigraphic database for the Property and the greater Birch Mountains was recently materially expanded, though it has not yet been incorporated into all Figures in this Report (incorporated only into Figure 105).

DNI's work programs since preparation of the tech report have followed recommendations of its NI-43-101 technical report as their central guideline. Although a number of the foregoing recommendations were based on information that may have since been superceded by results from work since completed by DNI, the recommendations nonetheless, overall, stand as outlined in the report as a critical path to advancement and development of the Property. A more detailed description of DNI's long and short term work programs and objectives was presented in Section 10 of this Report.

11.4 HISTORIC ARCHIVED DRILL CORE INVENTORY AND VERIFICATION SAMPLING 2009

Considerable sample material had previously been archived in storage at the Mineral and Core Research Facility (MCRF), Edmonton, from historic sampling programs over areas currently under DNI's SBH Property. Notably, split drill core archived by Tintina Mines from all of its 1997 drilling over the Asphalt and Buckton Zones, comprising core from eight holes including complete Second White Speckled Shale intercepts from four (i.e from AS01, BK01, BK03, BK05) of the eight holes drilled.

DNI completed an inventory (in July 2008) of core footages archived at the MCRF which might be available for its analytical testwork. All available footages archived were photographed, catalogued and downhole lithology was cross-checked against drill logs by DNI's senior structural geologist, Dr.J.P.Robinson, PGeo. The split core was found to be in good condition and the inventory noted no significant discrepancy between downhole lithology as documented in original drill logs and that noted in core boxes archived. Second White Speckled Shale intercepts were found to be intact in holes AS01, BK01, BK03 and BK05. A summary of drill intercepts of the Second White Speckled Shale as inventoried is listed in Table 17.

The drill core was reviewed in greater detail during July 2009 by J.P.Robinson and S.F.Sabag, and the entire footage was photographed and catalogued. Photographs are appended herein as Appendix C2.

Hole	Interval (m)	Intercept Remaining in Boxes (m)	Condition
7AS01	11.27-18.47	11.27-18.47	Mostly rubble
7AS02	21.61-33.02	None	n/a
7BK01	132.98-148.24	132.98-148.24	Mostly intact
7BK02	60.78-79.15	None	n/a
7BK03	75.03-101.23	75.03-101.23	Mostly intact
7BK04	120.60-141.66	None	n/a
7BK05	76.80-95.19	76.80-95.19 (missing 80.8-81.7)	Mostly intact
7BK06	107.20-130.20	None	n/a

Table 17: Inventory of available Second White Speckled Shale historic drill core intercepts archived at MCRF.

Arrangements were made with the MCRF to allow DNI to collect samples from the archived drill core and all available Second White Speckled Shale footages were collected as samples in July 2009. The re-sampling relied on depth footage driller's wooden blocks in core boxes as the only reliable "markers" to determine sample intercepts. To the extent that the core had originally been sampled under geological control, the interval between marker blocks often straddles several historic samples. The 2009 re-sampling, accordingly, often straddles several historic sample intervals, although care was taken to ensure that the re-sampled intervals nonetheless started or ended at the beginning or the end of prior sample intervals to enable comparisons between analyses of the 2009 samples with weighted averages of the historic samples included therein. Particulars of samples collected are listed in Table 18.

A select handful of samples from the Shaftesbury Formation beneath the Second White Speckled Shale Formation were also collected, as was also a sample over a long intercept of LaBiche shale (in hole BK04) overlying the Second White Speckled Shale. The LaBiche Shale is substantially barren of metals as demonstrated by historic work, and the large sample collected by DNI to prepare a nearly matrix matched "blank" to be used during subsequent analytical testwork.

Examination of the drill core, intended to make a determination of mineralogical integrity, noted that some of the footages had weathered (auto-oxidized) during the 12 years of storage, and that sulfate crystals had grown over other footages suggesting that the historic core might not be as suitable as hoped to bioleaching testwork but would nonetheless be useful for other analytical work.

Sample Nos.	Hole#	Weight (gm)		UTM (Nad27-Zone12)		Elevation		Depth			
(2009)		DNI	ActLabs	Easting	Northing	From(m)	To(m)	From (m)	To (m)	Length (m)	Formation
RA0101127	AS1	2,900	2,700	441800	6372500	663.7	662.2	11.3	12.8	1.5	2WS
RA0101279	AS1	5,700	5,200	441800	6372500	662.2	660.5	12.8	14.5	1.7	2WS
RA0101519	AS1	5,300	5,000	441800	6372500	659.8	656.5	15.2	17.3	2.1	2WS
RA0101848	AS1	19,900	19,200	441800	6372500	656.5	651.5	18.5	23.5	5.0	Shaftesbury
RA0203342	AS2	17,800	17,200	441560	6373350	656.6	652.1	33.4	38.0	4.5	Shaftesbury
RA0203795	AS2	12,800	12,300	441560	6373350	652.1	647.8	38.0	42.2	4.3	Shaftesbury
RB0113298	BK1	7,600	7,100	447390	6399740	627.0	623.7	133.0	136.3	3.3	2WS
RB0113628	BK1	14,500	13,900	447390	6399740	623.7	619.4	136.3	140.6	4.3	2WS
RB0114060	BK1	11,900	11,200	447390	6399740	619.4	616.2	140.6	143.8	3.2	2WS
RB0114378	BK1	15,700	15,000	447390	6399740	616.2	611.8	143.8	148.2	4.5	2WS
RB0208056	BK2	24,700	23,600	448310	6399410	604.4	599.6	80.6	85.4	4.9	Shaftesbury
RB0307503	BK3	6,300	5,700	447770	6398930	620.0	617.8	75.0	77.2	2.1	2WS
RB0307716	BK3	8,500	8,100	447770	6398930	617.8	614.7	77.2	80.3	3.2	2WS
RB0308031	BK3	13,000	12,500	447770	6398930	614.7	610.0	80.3	85.0	4.7	2WS
RB0308500	BK3	14,500	13,600	447770	6398930	610.0	604.9	85.0	90.1	5.1	2WS
RB0309081	BK3	16,500	15,900	447770	6398930	604.2	598.0	90.8	97.0	6.2	2WS
RB0309700	BK3	16,000	15,000	447770	6398930	598.0	593.8	97.0	101.2	4.2	2WS
RB0310172	BK3	10,700	10,000	447770	6398930	593.3	589.3	101.7	105.7	4.0	Shaftesbury
RB0407691	BK4	10,700	8,730	449850	6401000	670.4	667.4	79.6	82.6	3.0	Shaftesbury
RB0414294	BK4	17,500	17,000	449850	6401000	607.1	602.4	142.9	147.6	4.7	Shaftesbury
RB0507680	BK5	9,300	7,800	448825	6403270	653.2	649.6	76.8	80.4	3.6	2WS
RB0508161	BK5	10,400	9,900	448825	6403270	648.4	643.8	81.6	86.2	4.6	2WS
RB0508618	BK5	13,800	13,300	448825	6403270	643.8	638.4	86.2	91.6	5.4	2WS
RB0509160	BK5	11,000	10,400	448825	6403270	638.4	634.8	91.6	95.2	3.6	2WS
RB0509519	BK5	16,600	15,800	448825	6403270	634.8	628.8	95.2	101.2	6.0	Shaftesbury
RB0407691	BK4	10,700	8,730	449850	6401000	670.4	667.4	79.6	82.6	3.02	LaBiche

Table 18: List of samples, historic drill core resampling and verification program 2009. Resampling by DNI, drill hole information per Tintina Mines drilling 1997, Alberta Mineral Assessment Report MIN9802, Sabag 1998.

The samples collected were submitted to Actlabs for analysis. Samples were weighed, crushed, pulverized and split into four subsamples each comprising four complete sample suites. One set was retained by Actlabs for analytical work, and the remaining three sets returned to DNI[35]. The analytical work completed by Actlabs[36], comprising DNI's verification analytical program, consisted of analysis of duplicate sub-samples from each sample by INA, by ICP following an Aqua Regia sample digestion, by ICP following a total digestion in four acids, and analysis for Carbon and Sulphur species by Leco and IR. Specific Gravity measurements were also made on one of the duplicate set of subsamples. Results from the foregoing work are shown in Table 19, which also incorporates comparative historic analyses for the respective drill intercepts (historic data from Sabag 1998, also shown in Table 6 in a prior Section of this report). Analytical certificates are appended in Appendix C3.

The verification analyses compare acceptably well with historic results from the holes with a few exceptions:

- C-org is lower in the 2009 data (consistent with observations during subsequent bioleaching testwork suggesting demise of organic species in the historic drill core samples - see Section 11.6.4);
- Br is consistently higher in the 2009 analyses than those documented in 1997;
- 2009 measurements of Specific Gravity reported SG ranging 2.22-2.49 from the Second White Speckled Shale samples from the (Avg 2.37); and SG ranging 2.50-3.17 for the Shaftesbury Formation (Avg 2.65). These figures are 6%-19% higher than the 2.1 SG estimated in historic work. Should the recent SG measurements as analyzed be typical of the Second White Speckled Shale across the area, tonnages calculated for the two Potential Mineral Deposits proposed to exist at the Asphalt and Buckton Zones would be 6%-19% higher than estimated, especially since the recent analyses of SG were by performed on substantially desiccated historic drill core samples. The Potential Mineral Deposits were discussed in greater detail in Section 9.8 of this Report.

[35] DNI retained one complete set as a "witness sample" archive which is currently in warehouse storage, and subsequently forwarded one set to the Alberta Research Council for use in relation with bioleaching and CO_2 sequestration testwork launched in 2009. One set remains un-allocated to any testwork as yet and is in warehouse storage.
[36] Actlabs Rpt#A09-3251.

	Analyte	Units	Detection Limit	Analysis Method	RA0101127	RA0101279	RA0101519	RA0101848	RA0203342	RA0203795	RB0113298	RB0113628	RB0114060	RB0114378	RB0208056	RB0307503
				Hole#	AS1	AS1	AS1	AS1	AS2	AS2	BK1	BK1	BK1	BK1	BK2	BK3
				Formation	2WS	2WS	2WS	Shaft	Shaft	Shaft	2WS	2WS	2WS	2WS	Shaft	2WS
			Elevation	From(m)	663.7	662.2	659.8	656.5	656.6	652.1	627.0	623.7	619.4	616.2	604.4	620.0
				To(m)	662.2	660.5	656.5	651.5	652.1	647.8	623.7	619.4	616.2	611.8	599.6	617.8
			Depth	From (m)	11.3	12.8	15.2	18.5	33.4	38.0	133.0	136.3	140.6	143.8	80.6	75.0
				To (m)	12.8	14.5	17.3	23.5	38.0	42.2	136.3	140.6	143.8	148.2	85.4	77.2
			Length	(m)	1.5	1.7	2.1	5.0	4.5	4.3	3.3	4.3	3.2	4.5	4.9	2.1
2009	Spec Grav	SG	0.01	GRAV	2.22	2.42	2.49	3.17	2.51	2.50	2.37	2.32	2.35	2.41	2.61	2.44
2009	C-Graph	%	0.05	IR	< 0.05	0.06	< 0.05	0.65	0.06	0.16	< 0.05	0.08	0.35	< 0.05	0.09	0.33
2009B	C-Graph	%	0.05	IR	0.09	0.09	< 0.05	1.34	0.06	0.06	0.08	< 0.05	< 0.05	0.05	0.12	0.11
2009	CO2	%	0.01	COUL	7.24	4.68	4.44	0.84	0.80	1.61	3.85	6.22	5.79	2.80	0.89	1.53
2009B	CO2	%	0.01	COUL	7.45	4.53	4.56	0.87	5.52	1.47	3.69	6.26	5.77	2.79	0.77	1.33
1997	C-org	%	0.003	Leco	10.22	5.51	4.91	2.35	2.17	3.16	6.16	8.74	7.32	6.27	1.57	5.16
2009	C-org	%	0.05	IR	8.62	4.66	4.13	1.42	1.86	2.23	4.99	7.57	6.10	5.26	1.40	5.92
2009B	C-org	%	0.05	IR	8.60	4.90	4.16	0.66	0.54	2.34	3.52	7.59	6.49	5.34	1.36	4.20
2009	C-Total	%	0.01	IR	10.60	6.00	5.39	2.30	2.14	2.83	6.09	9.35	8.02	6.07	1.74	6.68
2009B	C-Total	%	0.01	IR	10.70	6.22	5.43	2.23	2.11	2.80	6.10	9.32	8.11	6.15	1.68	4.65
1997	S	%	0.003	Leco	4.01	4.15	3.75	1.53	1.50	2.58	4.58	4.19	4.34	3.98	1.64	4.35
2009	S	%	0.001	ICPar	3.28	3.86	2.60	1.54	1.43	2.36	4.28	2.62	3.75	3.66	1.78	3.79
2009	S	%	0.01	ICPtd	4.20	3.93	3.77	1.36	1.34	2.15	4.74	3.81	4.48	4.46	1.52	3.84
2009B	S	%	0.001	ICPar	2.30	3.39	2.84	1.51	1.47	2.36	4.31	2.62	3.34	3.49	1.69	3.60
2009B	S	%	0.01	ICPtd	4.29	4.65	3.96	1.38	1.43	2.46	5.15	4.25	4.39	3.91	1.61	4.08
2009	Total S	%	0.01	IR	4.41	4.26	3.63	1.36	1.27	2.22	5.22		4.28	3.81	1.52	4.34
2009B	Total S	%	0.01	IR	4.30	4.46	2.96	1.47	1.36	2.24	5.23	3.90	2.90	4.01	1.57	4.29
2009B	SO4	%	0.3	IR	3.40	4.10	4.70	1.60	1.60	2.30	3.60	3.50	5.00	2.40	1.20	2.10
2009	SO4	%	0.3	IR	3.60	4.40	1.10	1.70	2.00	2.50	4.10	2.60	3.90	2.60	1.40	2.50
1997	Al	%	0.01	ICP	5.61	6.11	5.41	7.72	8.20	7.91	7.15	6.05	6.27	6.79	7.91	8.55
2009	Al	%	0.01	ICPar	2.83	2.90	2.38	2.95	3.33	2.99	3.74	2.49	2.37	2.33	1.95	4.00
2009	Al	%	0.01	ICPtd	5.25	4.85	4.66	7.42	7.73	7.72	5.36	4.56	6.16	7.66	6.26	8.28
2009B	Al	%	0.01	ICPar	3.03	2.78	2.56	2.87	3.30	3.06	3.73	2.49	2.49	2.50	2.04	3.93
2009B	Al	%	0.01	ICPtd	5.71	6.17	5.16	7.58	8.25	8.19	6.99	5.88	6.00	6.60	7.76	8.01
1997	Ca	%	0.01	ICP	8.81	5.91	8.18	0.65	0.68	1.57	5.18	6.95	6.54	3.00	0.31	2.09
1997	Ca	%	1	INA	8.33	4.58	6.96	0.50	0.58	1.37	4.14	5.79	5.54	1.94	0.50	1.75
2009	Ca	%	0.01	ICPar	7.15	5.08	5.58	0.76	0.64	1.46	3.86	4.69	5.91	2.59	0.70	1.59
2009	Ca	%	0.01	ICPtd	8.04	5.52	7.21	0.65	0.60	1.46	4.54	6.20	6.95	3.17	0.54	1.99
2009B	Ca	%	0.01	ICPar	5.90	4.41	5.97	0.73	0.65	1.46	3.88	4.70	5.44	2.33	0.67	1.39
2009B	Ca	%	0.01	ICPtd	8.05	6.00	7.47	0.68	0.61	1.51	4.68	6.49	6.56	2.74	0.65	1.99
1997	K	%	0.01	ICP	1.13	1.40	1.51	2.31	2.55	2.18	1.17	1.31	1.52	1.70	2.21	1.74
2009	K	%	0.01	ICPar	0.35	0.41	0.44	0.68	0.76	0.57	0.42	0.39	0.43	0.44	0.47	0.62
2009	K	%	0.01	ICPtd	1.29	1.43	1.51	2.60	2.67	2.21	1.28	1.38	1.77	2.36	2.42	1.93
2009B	K	%	0.01	ICPar	0.36	0.38	0.46	0.64	0.74	0.55	0.41	0.39	0.43	0.44	0.50	0.60
2009B	K	%	0.01	ICPtd	1.29	1.57	1.57	2.55	2.37	2.28	1.37	1.50	1.65	2.00	2.62	1.91
1997	Na	%	0.01	INA	0.25	0.41	0.42	0.38	0.48	0.60	0.83	0.59	0.63	0.53	0.63	0.72
2009	Na	%	0.001	ICPar	0.08	0.11	0.14	0.16	0.22	0.28	0.52	0.31	0.30	0.23	0.18	0.42
2009	Na	%	0.01	INAA	0.28	0.47	0.36	0.42	0.49	0.56	0.78	0.62	0.63	0.52	0.54	0.83
2009B	Na	%	0.001	ICPar	0.08	0.11	0.15	0.16	0.23	0.29	0.52	0.32	0.31	0.24	0.18	0.42
2009B	Na	%	0.01	INAA	0.28	0.44	0.37	0.42	0.48	0.57	0.76	0.58	0.60	0.58	0.53	0.81
1997	Fe	%	0.01	INA	3.76	4.08	4.10	2.85	3.17	4.21	4.65	3.62	4.07	3.86	3.75	4.90
2009	Fe	%	0.01	ICPar	3.63	4.51	3.90	2.93	2.90	3.51	4.70	3.86	4.13	4.09	2.95	4.68
2009	Fe	%	0.01	INAA	3.92	4.34	3.79	3.19	3.36	3.89	4.79	4.27	4.50	4.06	3.48	4.93
2009B	Fe	%	0.01	ICPar	3.57	4.40	4.06	2.82	2.93	3.49	4.71	3.89	4.10	4.09	2.84	4.59
2009B	Fe	%	0.01	INAA	4.19	4.78	3.89	3.36	3.35	3.86	4.68	4.03	4.29	4.39	3.61	4.70
1997	Mg	%	0.01	ICP	1.04	0.98	0.70	0.94	0.93	1.09	1.05	0.93	0.83	0.95	0.82	0.88
2009	Mg	%	0.01	ICPar	0.98	0.93	0.57	0.73	0.72	0.83	0.97	0.78	0.68	0.70	0.58	0.85
2009	Mg	%	0.01	ICPtd	1.14	0.96	0.69	0.93	0.94	1.10	1.10	0.87	0.93	1.07	0.82	1.00
2009B	Mg	%	0.01	ICPar	0.98	0.91	0.60	0.71	0.72	0.82	0.96	0.78	0.69	0.71	0.57	0.83
2009B	Mg	%	0.01	ICPtd	1.17	1.12	0.73	0.93	0.94	1.13	1.22	0.99	0.88	0.91	0.90	0.99
1997	Mn	ppm	1	ICP	290	207	333	128	124	193	289	200	171	155	125	249
2009	Mn	ppm	1	ICPar	254	214	318	132	130	197	282	196	177	146	148	263
2009	Mn	ppm	1	ICPtd	269	218	345	134	134	213	302	207	204	179	152	254
2009B	Mn	ppm	1	ICPar	252	210	330	130	134	196	277	195	181	148	140	256
2009B	Mn	ppm	1	ICPtd	254	232	341	147	143	217	296	201	192	160	155	266
1997	P	%	0.001	ICP	0.10	0.50	1.31	0.12	0.16	0.16	0.49	0.10	0.34	0.15	0.09	0.43
2009	P	%	0.001	ICPar	0.10	0.53	1.18	0.12	0.12	0.14	0.50	0.10	0.29	0.18	0.08	0.44
2009	P	%	0.001	ICPtd	0.10	0.42	1.10	0.11	0.12	0.13	0.46	0.09	0.28	0.19	0.08	0.42
2009B	P	%	0.001	ICPar	0.10	0.51	1.23	0.12	0.13	0.14	0.50	0.10	0.29	0.18	0.08	0.45
2009B	P	%	0.001	ICPtd	0.10	0.53	1.20	0.11	0.13	0.15	0.53	0.10	0.28	0.17	0.08	0.45
1997	Ba	ppm	50	INA	726	857	1233	1070	1146	1706	5402	1117	1699	682	1057	6275
2009	Ba	ppm	1	ICPar	31	20	47	30	28	18	9	42	20	25	20	11
2009	Ba	ppm	50	INAA	690	810	1400	950	1200	1500	4800	1400	2700	820	960	6600
2009B	Ba	ppm	1	ICPar	52	25	28	28	30	16	11	38	20	28	23	9
2009B	Ba	ppm	50	INAA	780	930	1200	1100	970	980	4800	1250	2100	960	810	6200

Table 19: Comparative analyses, Asphalt and Buckton Zones historic drill core samples, Verification Sampling Program 2009.

Year	Analyte	Units	Detection Limit	Analysis Method	RB0307716	RB0308031	RB0308500	RB0309081	RB0309700	RB0310172	RB0414294	RB0507680	RB0508161	RB0508618	RB0509160	RB0509519
				Hole#	BK3	BK3	BK3	BK3	BK3	BK3	BK4	BK5	BK5	BK5	BK5	BK5
				Formation	2WS	2WS	2WS	2WS	2WS	Shaft	Shaft	2WS	2WS	2WS	2WS	Shaft
			Elevation	From(m)	617.8	614.7	610.0	604.2	598.0	593.3	607.1	653.2	648.4	643.8	638.4	634.8
				To(m)	614.7	610.0	604.9	598.0	593.8	589.3	602.4	649.6	643.8	638.4	634.8	628.8
			Depth	From (m)	77.2	80.3	85.0	90.8	97.0	101.7	142.9	76.8	81.6	86.2	91.6	95.2
				To (m)	80.3	85.0	90.1	97.0	101.2	105.7	147.6	80.4	86.2	91.6	95.2	101.2
			Length	(m)	3.2	4.7	5.1	6.2	4.2	4.0	4.7	3.6	4.6	5.4	3.6	6.0
2009	Spec Grav	SG	0.01	GRAV	2.32	2.28	2.35	2.47	2.44	2.57	2.58	2.31	2.37	2.43	2.34	2.63
2009	C-Graph	%	0.05	IR	< 0.05	0.05	0.08	0.20	0.06	0.10	0.35	< 0.05	0.07	0.05	0.06	0.06
2009B	C-Graph	%	0.05	IR	0.07	0.10	< 0.05	0.08	0.06	0.07	0.06	0.10	0.06	0.05	0.14	0.06
2009	CO2	%	0.01	COUL	3.96	6.29	4.32	1.48	9.36	0.49	0.61	5.54	5.39	2.40	7.02	0.64
2009B	CO2	%	0.01	COUL	3.90	6.42	4.20	1.20	9.68	0.45	0.51	5.27	5.40	2.47	6.97	0.53
1997	C-org	%	0.003	Leco	5.49	8.78	7.00	2.96	6.35	1.65	1.61	8.72	8.76	4.47	9.79	1.48
2009	C-org	%	0.05	IR	4.86	8.16	6.10	2.64	5.00	1.31	1.01	7.15	7.30	3.92	12.10	1.25
2009B	C-org	%	0.05	IR	4.90	8.10	6.19	2.84	4.90	1.39	1.34	7.15	7.42	3.85	7.42	1.26
2009	C-Total	%	0.01	IR	5.98	9.93	7.36	3.24	7.61	1.55	1.53	8.70	8.84	4.63	14.10	1.49
2009B	C-Total	%	0.01	IR	6.05	9.95	7.39	3.25	7.62	1.59	1.54	8.69	8.95	4.57	9.46	1.47
1997	S	%	0.003	Leco	4.14	3.95	4.19	2.23	4.11	1.62	1.71	4.94	4.92	3.07	5.19	1.68
2009	S	%	0.001	ICPar	4.54	3.58	3.61	2.41	2.76	1.58	1.73	3.85	5.00	3.04	4.92	1.59
2009	S	%	0.01	ICPtd	4.93	3.98	4.91	2.50	4.04	1.49	1.61	4.69	5.96	2.88	5.47	1.52
2009B	S	%	0.001	ICPar	3.99	2.75	3.55	2.37	2.64	1.61	1.62	3.53	4.42	2.96	4.70	1.71
2009B	S	%	0.01	ICPtd	5.01	4.29	4.57	2.47	3.96	1.64	1.73	4.74	5.59	3.47	5.73	1.64
2009	Total S	%	0.01	IR	5.15	4.61	4.37	2.20	3.95		1.51	4.83	5.76	3.06	6.51	1.61
2009B	Total S	%	0.01	IR	5.29	4.38	4.72	2.11	3.32	1.29	1.42	4.84	5.80	2.94	6.30	1.69
2009B	SO4	%	0.3	IR	4.00	4.30	3.70	1.90	7.80	1.20	1.60	3.50	4.20	3.00	4.40	1.50
2009	SO4	%	0.3	IR	4.60	< 0.3	3.60	1.70	7.80	1.10	1.50	3.80	4.30	2.80	4.80	1.60
1997	Al	%	0.01	ICP	7.00	5.50	6.04	7.73	4.75	8.58	8.19	6.72	6.34	7.56	6.64	7.68
2009	Al	%	0.01	ICPar	3.73	2.40	2.45	2.63	1.63	2.53	2.53	2.59	2.14	2.72	1.97	2.23
2009	Al	%	0.01	ICPtd	6.32	4.59	6.46	7.74	4.80	2.48	7.32	5.61	5.88	6.00	5.38	2.93
2009B	Al	%	0.01	ICPar	3.98	2.57	2.51	2.69	1.65	2.55	2.54	2.57	2.25	2.76	1.90	2.39
2009B	Al	%	0.01	ICPtd	6.47	5.86	5.99	7.56	4.62	8.04	7.87	5.75	4.37	7.06	5.61	7.19
1997	Ca	%	0.01	ICP	4.21	6.75	5.26	1.59	10.87	0.35	0.36	6.29	6.29	2.94	5.93	0.39
1997	Ca	%	1	INA	3.77	6.86	4.38	1.19	10.15	0.50	0.50	5.44	5.20	2.19	5.31	0.50
2009	Ca	%	0.01	ICPar	3.97	6.31	4.36	1.65	8.07	0.29	0.32	5.21	4.91	2.55	5.15	0.34
2009	Ca	%	0.01	ICPtd	4.32	6.77	5.70	1.73	9.90	0.15	0.31	6.34	5.71	2.72	6.15	0.16
2009B	Ca	%	0.01	ICPar	3.10	5.20	4.23	1.63	8.08	0.29	0.30	4.78	4.06	2.39	4.93	0.37
2009B	Ca	%	0.01	ICPtd	4.28	7.05	5.30	1.69	9.47	0.31	0.33	6.28	5.25	2.79	6.22	0.38
1997	K	%	0.01	ICP	1.13	1.32	1.57	1.96	1.29	2.22	2.57	1.48	1.69	2.06	1.97	2.36
2009	K	%	0.01	ICPar	0.48	0.42	0.44	0.56	0.34	0.62	0.65	0.38	0.41	0.51	0.47	0.59
2009	K	%	0.01	ICPtd	1.39	1.54	1.92	2.43	1.56	2.20	2.52	1.55	1.79	2.08	1.94	2.12
2009B	K	%	0.01	ICPar	0.51	0.46	0.45	0.56	0.34	0.62	0.63	0.37	0.42	0.51	0.46	0.61
2009B	K	%	0.01	ICPtd	1.42	1.61	1.74	2.34	1.47	2.65	2.55	1.54	1.56	2.14	1.98	2.49
1997	Na	%	0.01	INA	0.86	0.57	0.57	0.49	0.31	0.54	0.56	0.62	0.53	0.51	0.38	0.58
2009	Na	%	0.001	ICPar	0.54	0.28	0.26	0.21	0.17	0.20	0.17	0.33	0.25	0.23	0.19	0.15
2009	Na	%	0.01	INAA	0.82	0.55	0.58	0.48	0.34	0.54	0.50	0.63	0.52	0.53	0.33	0.55
2009B	Na	%	0.001	ICPar	0.57	0.28	0.26	0.21	0.17	0.20	0.17	0.33	0.26	0.24	0.18	0.16
2009B	Na	%	0.01	INAA	0.90	0.58	0.58	0.51	0.31	0.55	0.55	0.58	0.51	0.49	0.38	0.57
1997	Fe	%	0.01	INA	4.56	4.03	4.41	3.15	4.36	3.22	3.60	5.28	5.52	4.01	5.73	3.52
2009	Fe	%	0.01	ICPar	4.69	3.73	4.25	3.19	3.87	2.78	3.04	4.81	5.33	3.77	5.35	2.83
2009	Fe	%	0.01	INAA	4.66	3.92	4.47	3.22	4.55	3.34	3.29	5.15	5.50	4.52	5.44	3.39
2009B	Fe	%	0.01	ICPar	4.92	3.70	4.31	3.14	3.96	2.80	2.86	4.67	5.45	3.85	5.15	3.02
2009B	Fe	%	0.01	INAA	5.05	4.31	4.41	3.55	4.00	3.35	3.64	4.78	5.55	3.99	5.88	3.52
1997	Mg	%	0.01	ICP	1.16	0.82	0.82	0.92	0.77	0.86	0.89	0.88	0.77	0.90	0.78	0.81
2009	Mg	%	0.01	ICPar	0.92	0.72	0.71	0.68	0.61	0.58	0.60	0.78	0.66	0.68	0.63	0.57
2009	Mg	%	0.01	ICPtd	1.09	0.87	0.96	0.96	0.82	0.44	0.86	0.99	0.90	0.86	0.83	0.58
2009B	Mg	%	0.01	ICPar	0.97	0.74	0.72	0.68	0.62	0.59	0.57	0.76	0.69	0.69	0.60	0.59
2009B	Mg	%	0.01	ICPtd	1.10	0.96	0.88	0.93	0.78	0.90	0.88	0.99	0.76	0.92	0.85	0.86
1997	Mn	ppm	1	ICP	296	175	157	142	307	129	136	360	164	160	191	112
2009	Mn	ppm	1	ICPar	280	182	159	150	326	132	134	413	161	155	199	125
2009	Mn	ppm	1	ICPtd	293	193	185	168	341	102	141	419	187	168	209	102
2009B	Mn	ppm	1	ICPar	295	183	162	147	335	136	127	399	168	155	194	134
2009B	Mn	ppm	1	ICPtd	314	191	177	168	330	152	159	434	181	169	210	140
1997	P	%	0.001	ICP	0.32	0.09	0.38	0.20	0.19	0.08	0.10	0.41	0.19	0.28	0.11	0.10
2009	P	%	0.001	ICPar	0.38	0.10	0.51	0.25	0.20	0.07	0.08	0.48	0.17	0.29	0.12	0.08
2009	P	%	0.001	ICPtd	0.37	0.09	0.52	0.24	0.19	0.08	0.08	0.43	0.17	0.23	0.10	0.08
2009B	P	%	0.001	ICPar	0.40	0.10	0.52	0.25	0.21	0.07	0.08	0.46	0.18	0.30	0.11	0.09
2009B	P	%	0.001	ICPtd	0.37	0.10	0.49	0.24	0.19	0.09	0.09	0.44	0.17	0.30	0.10	0.09
1997	Ba	ppm	50	INA	5900	1222	1156	1038	658	1025	974	3373	1060	951	757	871
2009	Ba	ppm	1	ICPar	10	27	29	32	37	22	22	13	18	28	25	29
2009	Ba	ppm	50	INAA	5300	1100	1100	1100	650	910	1100	3000	1100	1100	700	810
2009B	Ba	ppm	1	ICPar	16	56	36	23	35	20	26	15	24	32	29	22
2009B	Ba	ppm	50	INAA	5800	980	900	900	660	860	810	3100	1100	1150	630	960

Table 19 (Ctn'd): Comparative analyses, Asphalt and Buckton Zones historic drill core samples, Verification Sampling Program 2009.

Year	Analyte	Units	Detection Limit	Analysis Method	RA0101127	RA0101279	RA0101519	RA0101848	RA0203342	RA0203795	RB0113298	RB0113628	RB0114060	RB0114378	RB0208056	RB0307503
				Hole#	AS1	AS1	AS1	AS1	AS2	AS2	BK1	BK1	BK1	BK1	BK2	BK3
				Formation	2WS	2WS	2WS	Shaft	Shaft	Shaft	2WS	2WS	2WS	2WS	Shaft	2WS
			Elevation	From(m)	663.7	662.2	659.8	656.5	656.6	652.1	627.0	623.7	619.4	616.2	604.4	620.0
				To(m)	662.2	660.5	656.5	651.5	652.1	647.8	623.7	619.4	616.2	611.8	599.6	617.8
			Depth	From (m)	11.3	12.8	15.2	18.5	33.4	38.0	133.0	136.3	140.6	143.8	80.6	75.0
				To (m)	12.8	14.5	17.3	23.5	38.0	42.2	136.3	140.6	143.8	148.2	85.4	77.2
			Length	(m)	1.5	1.7	2.1	5.0	4.5	4.3	3.3	4.3	3.2	4.5	4.9	2.1
1997	Ag	ppm	0.4	ICP	0.2	0.2	0.5	0.2	0.2	0.3	0.5	0.2	0.4	0.4	0.2	0.2
1997	Ag	ppm	5	INA	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
2009	Ag	ppm	0.2	ICPar	0.7	0.8	0.7	< 0.2	< 0.2	0.2	0.8	0.7	0.8	0.9	< 0.2	0.5
2009	Ag	ppm	0.3	INAA / ICPtd	0.8	0.7	0.7	< 0.3	0.4	0.5	0.8	0.8	1.1	1.2	0.3	0.6
2009B	Ag	ppm	0.2	ICPar	0.7	0.8	0.8	< 0.2	< 0.2	0.2	0.8	0.7	0.8	0.9	< 0.2	0.5
2009B	Ag	ppm	0.3	INAA / ICPtd	1.0	0.9	0.7	0.3	0.4	0.4	0.9	0.8	1.1	1.0	< 0.3	0.6
1997	Au	ppb	1	FA	3	5	6	1	na	na	6	6	6	7	na	7
1997	Au	ppb	2	INA	11	8	5	4	4	6	7	3	5	5	4	6
2009B	Au	ppb	2	INAA	< 2	9	< 2	< 2	< 2	< 2	8	< 2	8	< 2	< 2	< 2
1997	As	ppm	0.5	INA	49.4	64.8	56.6	21.7	22.7	38.2	78.8	48.0	59.6	48.8	14.1	92.2
2009	As	ppm	3	ICPar	38	62	50	19	21	31	74	47	55	42	12	70
2009	As	ppm	0.5	INAA	58	75	57	31	29	39	89	62	72	55	21	90
2009B	As	ppm	3	ICPar	38	61	47	20	19	29	76	43	54	45	9	74
2009B	As	ppm	0.5	INAA	60	80	59	30	30	44	88	57	71	61	20	88
2009	B	ppm	5	ICPar	56	60	71	47	50	51	69	52	53	45	25	79
2009B	B	ppm	5	ICPar	59	55	71	45	47	47	68	50	51	46	30	75
1997	Br	ppm	0.5	INA	17.0	8.6	8.0	6.9	7.3	10.1	8.1	14.2	12.5	13.0	3.9	14.8
2009	Br	ppm	0.5	INAA	22.1	11.5	10.5	8.2	8.5	10.4	10.2	20.2	17.6	15.9	4.3	16.9
2009B	Br	ppm	0.5	INAA	22.4	13.4	8.0	10.4	8.4	10.5	10.9	19.0	15.4	17.7	4.4	16.3
1997	Mo	ppm	2	ICP	134	63	32	5	1	15	114	115	88	44	2	54
1997	Mo	ppm	1	INA	117	43	6	2	5	25	151	142	119	57	5	48
2009	Mo	ppm	2	ICPar	128	61	29	4	< 2	13	104	113	79	42	< 2	35
2009	Mo	ppm	1	ICPtd	131	54	29	4	2	12	104	106	83	47	2	33
2009B	Mo	ppm	2	ICPar	129	61	30	4	< 2	13	104	113	80	42	< 2	33
2009B	Mo	ppm	1	ICPtd	133	64	30	4	2	13	112	109	81	41	3	35
1997	Ni	ppm	1	ICP	168	151	124	48	45	60	212	172	180	118	40	86
1997	Ni	ppm	20	INA	144	38	64	31	10	37	271	154	168	64	91	112
2009	Ni	ppm	1	ICPar	182	153	105	43	43	53	201	184	168	115	37	75
2009	Ni	ppm	1	INAA / ICPtd	169	135	104	49	50	59	196	163	164	127	41	73
2009B	Ni	ppm	1	ICPar	174	152	108	42	43	53	200	184	170	113	37	74
2009B	Ni	ppm	1	INAA / ICPtd	169	148	108	49	49	58	199	168	157	108	44	76
1997	U	ppm	0.5	INA	34.7	37.2	49.6	6.2	6.8	12.3	76.7	28.8	42.7	16.8	6.7	32.0
2009	U	ppm	0.5	INAA	39.5	38.5	46.8	8.8	5.6	9.2	74.0	26.4	33.7	13.8	5.2	33.8
2009B	U	ppm	0.5	INAA	33.7	39.4	47.4	7.6	6.7	10.2	64.9	28.6	36.2	16.4	4.5	30.9
1997	V	ppm	2	ICP	776	759	700	360	367	365	626	756	988	788	211	615
2009	V	ppm	1	ICPar	646	639	540	242	261	233	486	595	711	576	78	478
2009	V	ppm	2	ICPtd	746	668	612	368	403	362	594	705	933	842	211	573
2009B	V	ppm	1	ICPar	651	623	561	237	258	231	488	595	722	573	83	470
2009B	V	ppm	2	ICPtd	810	801	660	374	404	395	638	768	926	749	225	608
1997	Zn	ppm	1	ICP	275	334	396	124	129	168	450	314	405	342	131	235
1997	Zn	ppm	50	INA	315	351	418	158	149	209	453	312	415	334	209	227
2009	Zn	ppm	1	ICPar	286	325	338	140	136	159	371	282	336	301	131	214
2009	Zn	ppm	1	INAA / ICPtd	260	288	331	129	133	155	360	249	337	313	117	192
2009B	Zn	ppm	1	ICPar	279	322	347	140	136	160	367	282	341	300	126	214
2009B	Zn	ppm	1	INAA / ICPtd	264	316	347	136	129	159	360	269	324	272	125	199
1997	Cu	ppm	1	ICP	77	84	103	42	43	52	79	73	91	91	30	97
2009	Cu	ppm	1	ICPar	76	83	91	43	42	48	77	75	88	91	29	92
2009	Cu	ppm	1	ICPtd	79	78	94	43	55	49	79	72	93	104	27	91
2009B	Cu	ppm	1	ICPar	80	85	95	44	44	50	78	77	89	95	28	92
2009B	Cu	ppm	1	ICPtd	78	89	97	42	42	50	86	73	87	89	28	93
1997	Co	ppm	1	INA	19	20	19	11	12	15	27	18	22	19	11	21
2009	Co	ppm	1	ICPar	19	22	18	13	13	14	27	21	21	21	11	22
2009	Co	ppm	1	INAA	23	23	20	14	14	16	29	23	25	21	13	22
2009B	Co	ppm	1	ICPar	19	23	19	13	13	14	27	20	22	21	10	22
2009B	Co	ppm	1	INAA	20	23	22	15	14	16	25	25	23	22	10	20
1997	Cd	ppm	0.5	ICP	9.1	11.5	14.3	0.4	0.3	1.8	11.4	9.3	14.1	10.8	0.3	4.8
2009	Cd	ppm	0.2	ICPar	10.3	12.1	13.1	0.4	0.3	1.7	11.7	10.2	15.2	11.1	0.3	5.2
2009	Cd	ppm	0.3	ICPtd	10.4	11.1	13.8	0.3	< 0.3	1.7	12.1	9.7	15.7	12.1	< 0.3	5.1
2009B	Cd	ppm	0.2	ICPar	10.2	12.3	13.6	0.4	0.2	1.7	11.9	10.2	15.0	11.0	0.3	5.1
2009B	Cd	ppm	0.3	ICPtd	10.5	12.7	14.2	0.4	< 0.3	1.6	12.4	10.4	15.1	10.5	< 0.3	5.2
2009	Li	ppm	0.5	MStd	62.5	55.1	53.2	90.8	94.0	77.6	57	48	49	65	75	65
2009B	Li	ppm	0.5	MStd	71.1	61.3	57.1	92.4	100.0	79.8	59	48	50	60	85	64

Notes: (1) 2009a and 2009b are duplicates; 2009 analyses by Actlabs, Rpt#A09-325;
(2) 2007 analyses from Tintina Mines Limited MIN9802, Sabag 1998; (3) Sample RB0407691 missing

Table 19 (Ctn'd): Comparative analyses, Asphalt and Buckton Zones historic drill core samples, Verification Sampling Program 2009.

	Analyte	Units	Detection Limit	Analysis Method	RB0307716	RB0308031	RB0308500	RB0309081	RB0309700	RB0310172	RB0414294	RB0507680	RB0508161	RB0508618	RB0509160	RB0509519
				Hole#	BK3	BK3	BK3	BK3	BK3	BK3	BK4	BK5	BK5	BK5	BK5	BK5
				Formation	2WS	2WS	2WS	2WS	2WS	Shaft	Shaft	2WS	2WS	2WS	2WS	Shaft
			Elevation	From(m)	617.8	614.7	610.0	604.2	598.0	593.3	607.1	653.2	648.4	643.8	638.4	634.8
				To(m)	614.7	610.0	604.9	598.0	593.8	589.3	602.4	649.6	643.8	638.4	634.8	628.8
			Depth	From (m)	77.2	80.3	85.0	90.8	97.0	101.7	142.9	76.8	81.6	86.2	91.6	95.2
				To (m)	80.3	85.0	90.1	97.0	101.2	105.7	147.6	80.4	86.2	91.6	95.2	101.2
			Length	(m)	3.2	4.7	5.1	6.2	4.2	4.0	4.7	3.6	4.6	5.4	3.6	6.0
1997	Ag	ppm	0.4	ICP	0.3	0.2	0.4	0.3	0.6	0.2	0.2	1.0	0.9	0.4	0.5	0.2
1997	Ag	ppm	5	INA	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
2009	Ag	ppm	0.2	ICPar	0.9	0.7	0.9	0.3	0.4	< 0.2	< 0.2	0.8	1.0	0.5	0.6	< 0.2
2009	Ag	ppm	0.3	INAA / ICPtd	0.7	0.8	0.9	0.4	0.5	0.3	< 0.3	0.9	1.2	0.6	0.7	0.3
2009B	Ag	ppm	0.2	ICPar	0.9	0.7	0.9	0.3	0.5	< 0.2	< 0.2	0.8	1.0	0.4	0.5	< 0.2
2009B	Ag	ppm	0.3	INAA / ICPtd	1.0	0.8	0.8	< 0.3	0.5	0.3	0.3	0.9	1.1	0.5	0.8	0.5
1997	Au	ppb	1	FA	5	4	5	2	4	na	na	4	4	4	2	na
1997	Au	ppb	2	INA	6	4	9	4	3	4	2	4	6	6	2	4
2009B	Au	ppb	2	INAA	< 2	< 2	< 2	< 2	< 2	4	< 2	10	< 2	< 2	< 2	< 2
1997	As	ppm	0.5	INA	82.1	55.0	67.9	32.5	53.9	13.9	16.5	83.4	79.5	50.1	58.8	16.7
2009	As	ppm	3	ICPar	74	40	55	31	38	10	7	57	74	42	51	8
2009	As	ppm	0.5	INAA	92	61	70	37	54	18	20	75	85	54	59	19
2009B	As	ppm	3	ICPar	80	48	57	31	40	7	10	59	75	43	48	11
2009B	As	ppm	0.5	INAA	95	65	75	43	52	21	22	72	90	57	70	19
2009	B	ppm	5	ICPar	70	50	55	45	35	36	36	55	48	57	45	40
2009B	B	ppm	5	ICPar	77	57	59	50	34	36	40	54	52	55	45	36
1997	Br	ppm	0.5	INA	8.3	17.0	13.9	8.7	10.9	4.1	3.7	15.3	17.1	11.2	16.0	3.8
2009	Br	ppm	0.5	INAA	10.2	18.6	15.4	9.4	13.4	4.0	4.2	18.2	20.8	16.1	19.6	3.7
2009B	Br	ppm	0.5	INAA	10.3	20.5	14.8	11.4	11.4	5.4	4.0	18.1	21.9	14.4	20.6	4.8
1997	Mo	ppm	2	ICP	104	115	72	12	37	2	2	144	89	30	53	2
1997	Mo	ppm	1	INA	100	111	72	11	36	1	7	150	92	35	66	4
2009	Mo	ppm	2	ICPar	100	115	68	13	31	< 2	< 2	125	87	28	54	2
2009	Mo	ppm	1	ICPtd	106	112	73	13	31	2	2	122	91	26	51	5
2009B	Mo	ppm	2	ICPar	106	116	69	13	32	< 2	< 2	123	90	28	52	3
2009B	Mo	ppm	1	ICPtd	106	119	68	13	31	2	2	123	85	29	51	3
1997	Ni	ppm	1	ICP	183	165	165	58	78	43	42	214	206	93	111	40
1997	Ni	ppm	20	INA	179	143	157	57	72	37	23	185	165	92	79	11
2009	Ni	ppm	1	ICPar	204	188	165	57	65	36	35	223	223	88	113	31
2009	Ni	ppm	1	INAA / ICPtd	201	174	167	61	65	44	43	212	215	94	109	39
2009B	Ni	ppm	1	ICPar	214	182	165	56	66	35	33	218	230	93	106	34
2009B	Ni	ppm	1	INAA / ICPtd	202	182	157	60	62	45	44	206	204	96	110	42
1997	U	ppm	0.5	INA	60.0	30.2	40.6	10.6	25.6	5.0	4.7	50.1	24.5	14.0	18.4	4.4
2009	U	ppm	0.5	INAA	66.3	32.7	45.1	12.3	24.2	5.4	5.4	65.7	23.8	15.6	23.4	5.2
2009B	U	ppm	0.5	INAA	66.4	29.5	47.5	12.3	25.2	< 0.5	5.5	53.7	25.4	17.5	20.5	4.9
1997	V	ppm	2	ICP	590	752	1027	418	249	213	208	806	1158	545	383	207
2009	V	ppm	1	ICPar	464	592	844	293	143	95	101	626	937	430	256	96
2009	V	ppm	2	ICPtd	592	727	1130	443	225	214	219	768	1180	506	338	195
2009B	V	ppm	1	ICPar	506	637	862	291	146	95	99	628	979	431	247	97
2009B	V	ppm	2	ICPtd	601	806	1040	443	221	235	228	791	1130	584	344	215
1997	Zn	ppm	1	ICP	378	301	429	168	211	170	122	385	449	217	259	118
1997	Zn	ppm	50	INA	390	340	454	174	215	178	170	391	455	242	285	156
2009	Zn	ppm	1	ICPar	379	283	379	159	159	130	130	370	427	213	242	117
2009	Zn	ppm	1	INAA / ICPtd	371	262	385	158	160	118	123	345	409	208	229	108
2009B	Zn	ppm	1	ICPar	399	276	388	158	166	133	121	359	452	218	235	123
2009B	Zn	ppm	1	INAA / ICPtd	362	269	356	157	152	129	126	338	386	214	230	122
1997	Cu	ppm	1	ICP	70	73	98	54	48	31	29	82	100	65	63	28
2009	Cu	ppm	1	ICPar	73	76	93	53	42	29	26	80	98	66	60	25
2009	Cu	ppm	1	ICPtd	77	76	102	55	44	28	26	83	108	66	61	25
2009B	Cu	ppm	1	ICPar	79	75	98	53	43	28	26	79	103	68	58	28
2009B	Cu	ppm	1	ICPtd	80	79	95	53	41	28	27	81	96	67	61	27
1997	Co	ppm	1	INA	24	20	23	13	17	11	11	27	29	19	24	11
2009	Co	ppm	1	ICPar	27	20	23	15	15	10	11	25	30	19	23	10
2009	Co	ppm	1	INAA	28	23	25	16	16	12	12	28	33	21	26	11
2009B	Co	ppm	1	ICPar	28	20	23	15	15	10	10	24	31	19	22	11
2009B	Co	ppm	1	INAA	27	22	25	16	20	12	13	23	33	24	23	13
1997	Cd	ppm	0.5	ICP	10.0	8.7	15.6	2.1	2.8	0.4	0.3	12.0	16.5	4.4	3.0	0.3
2009	Cd	ppm	0.2	ICPar	12.4	10.6	17.1	2.6	2.6	0.3	0.4	13.0	17.7	5.4	3.9	0.3
2009	Cd	ppm	0.3	ICPtd	12.8	10.3	18.5	2.7	2.4	< 0.3	0.3	13.0	18.6	5.5	3.6	0.3
2009B	Cd	ppm	0.2	ICPar	12.8	10.4	17.6	2.5	2.7	0.2	0.3	12.4	18.2	5.5	3.6	0.4
2009B	Cd	ppm	0.3	ICPtd	12.3	10.8	16.9	2.7	2.4	0.4	< 0.3	12.6	17.0	5.4	3.5	< 0.3
2009	Li	ppm	0.5	MStd	50	49	56	80	42	67	73	57	51	74	44	63
2009B	Li	ppm	0.5	MStd	54	48	50	72	39	81	77	52	46	68	51	73

Notes: (1) 2009a and 2009b are duplicates; 2009 analyses by Actlabs, Rpt#A09-325;
(2) 2007 analyses from Tintina Mines Limited MIN9802, Sabag 1998; (3) Sample RB0407691 missing

Table 19 (Ctn'd): Comparative analyses, Asphalt and Buckton Zones historic drill core samples, Verification Sampling Program 2009.

11.5 Field Sampling Program 2009

Detailed inspection of the historic drill core during its re-sampling noted growth of sulphates over some of the Second White Speckled Shale footages as well as some measure of auto-oxidation, indicating that portions of the available core might not be suited to metals leaching and bioleaching testwork planned by DNI since some of the sulfide mineralogy may well have altered to insoluble sulphates. Given this uncertainty, a decision was made by DNI to also conduct leaching testwork on "fresh" samples representative of its polymetallic black shale zones.

A field sampling program was, accordingly, conducted over select portions of the Property during August 5-7, 2009, to collect fresh representative black shale sample material for the analytical and metallurgical programs to follow. The field work was conducted by S.Sabag of DNI and M.Dufresne of APEX Geoscience Ltd. Edmonton, assisted by two geologists from APEX. Access was gained to the sampling sites via A-Star helicopter on charter from Highland Helicopters Ltd. Fort McMurray. The field work also included reconnaissance field inspection of access and other similar logistical features to aid in planning of field work to follow in 2010.

Locations to be sampled were selected by S.Sabag and M.Dufresne based on historic work previously completed over portions of the Property by Tintina Mines and the AGS in the 1990's[37]. Of several candidate stratigraphic sections identified, three sections were selected based on their location, facility of access, integrity of outcrop exposure, availability of as complete a Second White Speckled Shale stratigraphic section as possible and availability of prior analytical and geological data therefrom. Two of the sites sampled are over the Buckton Zone, presumably being valley wall exposures of the Buckton Potential Mineral Deposit, whereas the third is located over the Asphalt Zone and would similarly represent an exposure of the Asphalt Zone.

The three stratigraphic sections sampled had previously been mapped and sampled in detail by the AGS and Tintina Mines in the 1990's and are identified as shown in Table 20, and their general location is shown in Figure 80.

Stratigraphic Section ID (per Tintina)	Stratigraphic Section ID (per AGS)	UTM(E) NAD27 Zone12	UTM(N) NAD27 Zone12	Number of Samples Taken	Comments - Description
GOS1	95DL08	450,561	6,399,561	3	Exposure heavily slumped
GOS-Cr.-C	95DL03	448,201	6,397,896	10	Exposure in good condition
GOS-Cr.-C Bonebed Suite	95DL03	448,170 to 448,270	6,397,892 to 6,397,905	10	Siliciclastic bonebed exposed along river bed
Asphalt-H	95DL04	443,641	6,387,678	6	Exposure in good condition

Table 20: Sampling sites, Field Sampling Program 2009. Tintina site ID per MIN9802, AGS site ID per AGS 2001.

The stratigraphic lithosections sampled in most part comprise steep valley walls (two of the locations resampled in 2010, see Plates 9 and 10, Section 11.11). A total of fifteen 1kg-2kg samples of Second White Speckled Shale were collected with pick/shovel over typically 1m-2m sample lengths down-section. A larger (2kg-5kg) was also taken from each site, for CO_2 sequestration testwork to follow, as an adhoc composite of the black shale.

While two of the sections were found in relatively good condition, GOS1 was found to have heavily slumped and all geological contacts obliterated. Most of the sampling pre-planned over GOS1 was, accordingly, cancelled.

In addition to the above, exposures of siliciclastic bone bed, exposed over approximately 200m of river bank at the base of stratigraphic section GOS-Cr.-C were also sampled for bulk cyanidation testwork given that gold grades upward to 69ppb had previously been documented from that location by others, and historic work had also suggested the bone bed to be the clastic source of particulate gold discovered over the area. A total of 10 bonebed samples were collected.

[37] Alberta Mineral Assessment Report MIN9611, and AGS 2001.

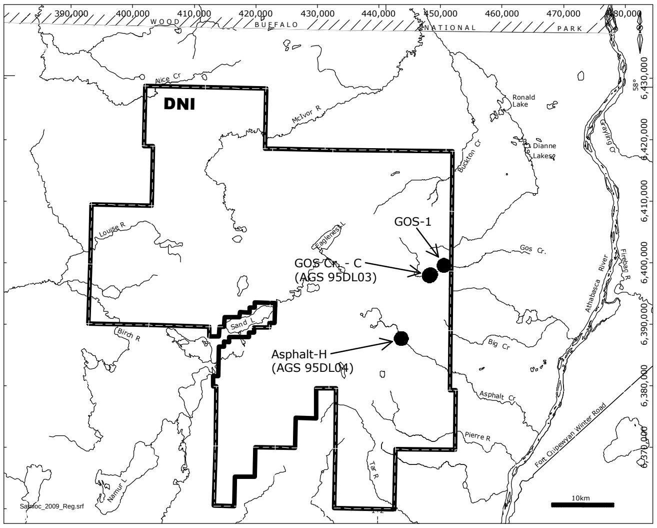

Figure 80: Sampling location sketch, Field Sampling Program 2009.

Locations of the samples taken at the Asphalt-H and GOS-Cr.-C lithosections are shown in Figures 81 and 82, respectively. Locations of siliciclastic bone bed samples are also shown in Figure 82. List of samples is summarized in Table 21.

Geology, historic anomalies and prior sampling in the vicinity of stratigraphic sections Asphalt-H and GOS-Cr.-C are shown in Figure 83 and Figure 84, respectively.

Down-section lithogeochemical profiles per previous mapping and sampling by the AGS (AGS 2001) are shown in Figures 85-88.

The samples, made up of fine rubble, were homogenized by DNI by hand-mixing and subsequently split into several fractions by cone and quartering or by rolling/quartering. One fraction was submitted to Actlabs, Ancaster, for multielement analysis by ICP and INA, in addition to analysis for C and S species. The remainder of the samples was set aside for leaching testwork planned for 2009 and 2010. Analytical results[38] are summarized in Table 22, laboratory certificates appended (Appendix D1).

Even though stratigraphic sections GOS-Cr.-C and Asphalt-H provided good exposure across the Second White Speckled Shale Formation (8m and 9.5m, respectively), neither section offers a complete stratigraphic section for sampling from the bottom of the Formation to its top. The base of the Formation at both locations were mostly under slumped rubble[39], and tops could not be determined with confidence even though the uppermost samples are from portions with bentonitic material suggesting proximity to the top of the Formation.

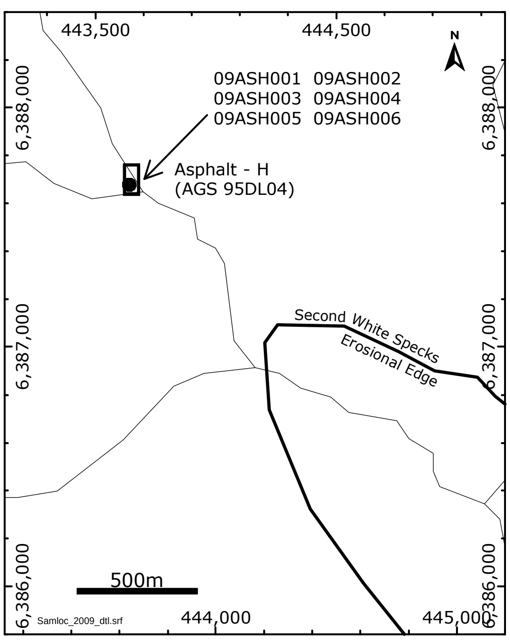

Figure 81: Sample Locations, Stratigraphic Section Asphalt-H, Field Sampling Program 2009.

Analytical results from the 2009 sampling are generally consistent with prior sampling of the lithosections by the AGS (AGS 2001) and by Tintina Mines (Sabag 1998).

Geochemical profile down-section reflects the many components of the Second White Speckled Shale, and the profiles at Asphalt-H are especially typical of the Asphalt area characterized by metals enrichment mid-section - a trend also seen in historic drilling at the Asphalt Zone (see Figure 88). This is contrasted by trends at the Buckton Zone where metal enrichment predominates the upper parts of the Formation.

[38] Actlabs Rpt#A09-4934.

[39] Additional samples of the base of the Formation at Asphalt-H were collected during the 2010 field sampling program, from what appears to be a continuation of the exposure around the bend of the Asphalt Creek.

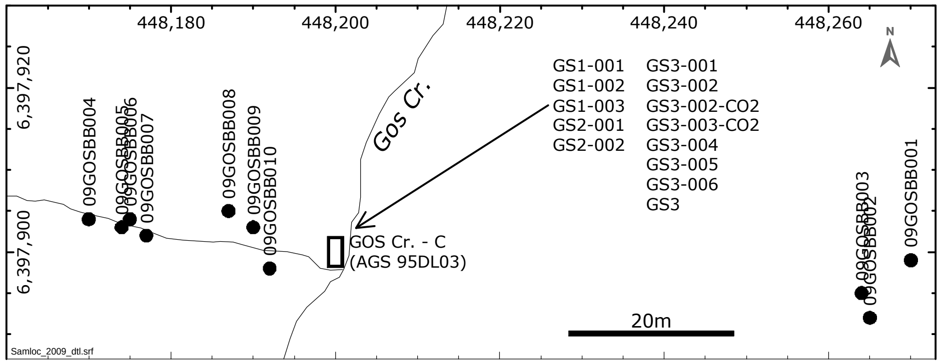

Figure 82: Sample locations, Stratigraphic Section GOS-Cr.-C, Field Sampling Program 2009. Showing also locations of Siliciclastic Bonebed samples.

Location	Sample#	UTM-E (NAD27)	UTM-N (NAD27)	Lithology	Comment
Asphalt - H	09ASH001S	443,641	6,387,678	Shale	~1.5m chip sample of rusty, blocky, non-calcareous shale at top of outcrop at "Ashvault" showing (bottom ~650m elevation); Shale
Asphalt - H	09ASH002S	443,641	6,387,678	Shale	~2.0m chip sample of non-calcareous black shale, not blocky as section above (Top ~650m elevation, bottom ~648m elevation); Shale
Asphalt - H	09ASH003S	443,641	6,387,678	Shale/ Bentonite	~2.0m chip sample of highly sulfidic (bright yellow, powdery) bentonite and black shale layer, very soft, damp (Top ~648m elevation, bottom ~646m elevation); Shale/ Bentonite
Asphalt - H	09ASH004S	443,641	6,387,678	Shale	~2.0m chip sample of rusty, blocky, non-calcareous shale (Top ~646m elevation, bottom ~644m elevation); Shale
Asphalt - H	09ASH005S	443,641	6,387,678	Shale	~1.0m chip sample of black, blocky, calcareous shale, very soft and damp (Top ~644m elevation, bottom ~643m elevation); Shale
Asphalt - H	09ASH006S	443,641	6,387,678	Shale	~1.0m chip sample of non-calcareous black shale (Top ~643m, bottom elevation unknown as burried with talus); Shale
GOS Cr. - C	G3S-001S	448,400	6,398,050	Shale	GOS Cr.-C; 2WS
GOS Cr. - C	GS3-002S	448,400	6,398,050	Shale	GOS Cr.-C; 2WS
GOS Cr. - C	GS3-003S	448,400	6,398,050	Shale	GOS Cr.-C; 2WS
GOS Cr. - C	GS3-004S	448,400	6,398,050	Shale	GOS Cr.-C; 2WS
GOS Cr. - C	GS3-005S	448,400	6,398,050	Shale	GOS Cr.-C; 2WS
GOS Cr. - C	GS3-006S	448,400	6,398,050	Shale	GOS Cr.-C; 2WS
GOS-1	GS1-001S	450,561	6,399,561	Shale	GOS-1, sctn C; 2WS
GOS-1	GS1-003S	450,561	6,399,561	Shale	GOS-1, sctn C; 2WS
GOS-1	GS2-001S	450,561	6,399,561	Shale	GOS-1, sctn C; 2WS
GOS Cr.	09GOSBB001S	448,270	6,397,899	Sand Stone (Bone Bed)	Historic Location GOSCRKBB, outcrop along southern bank of southern tributary, f-m grained, salt and pepper coloured sandstone (Bone Bed), Highly effervesses in ~15% HCL; GOS Cr.-C
GOS Cr.	09GOSBB002S	448,265	6,397,892	Sand Stone (Bone Bed)	Outcrop ~2m SW of 09GOSBB001, some rusty staining; GOS Cr.-C
GOS Cr.	09GOSBB003S	448,264	6,397,895	Sand Stone (Bone Bed)	Outcrop ~1.5m SW of 09GOSBB002,less competent, abundent sloghing so may not be in situ, but would not have moved far; GOS Cr.-C
GOS Cr.	09GOSBB004S	448,170	6,397,904	Sand Stone (Bone Bed)	Outcrop on south bank of northern tributary, as far west as outcrop can be seen before covered with slumping material and brush; GOS Cr.-C
GOS Cr.	09GOSBB005S	448,174	6,397,903	Sand Stone (Bone Bed)	Outcrop ~2m east from 09GOSBB004 (just below sample 09GOSBB006); GOS Cr.-C
GOS Cr.	09GOSBB006S	448,175	6,397,904	Sand Stone (Bone Bed)	Outcrop ~2m east from 09GOSBB004 (just above sample 09GOSBB005), this sample very rusty coloured, contact with shale above?; GOS Cr.-C
GOS Cr.	09GOSBB007S	448,177	6,397,902	Sand Stone (Bone Bed)	Angular boulder ~1m east from 09GOSBB005 and 09GOSBB006; GOS Cr.-C
GOS Cr.	09GOSBB008S	448,187	6,397,905	Sand Stone (Bone Bed)	Outcrop ~2m east from 09GOSBB007; GOS Cr.-C
GOS Cr.	09GOSBB009S	448,190	6,397,903	Sand Stone (Bone Bed)	Outcrop ~1m east from 09GOSBB008, just as outcrop dissapears beneath sloghing material to the east; GOS Cr.-C
GOS Cr.	09GOSBB010S	448,192	6,397,898	Sand Stone (Bone Bed)	Angular boulder ~1m east from 09GOSBB008, just below 09GOSBB009; GOS Cr.-C

Table 21: Sample list, Surface Sampling Program 2009.

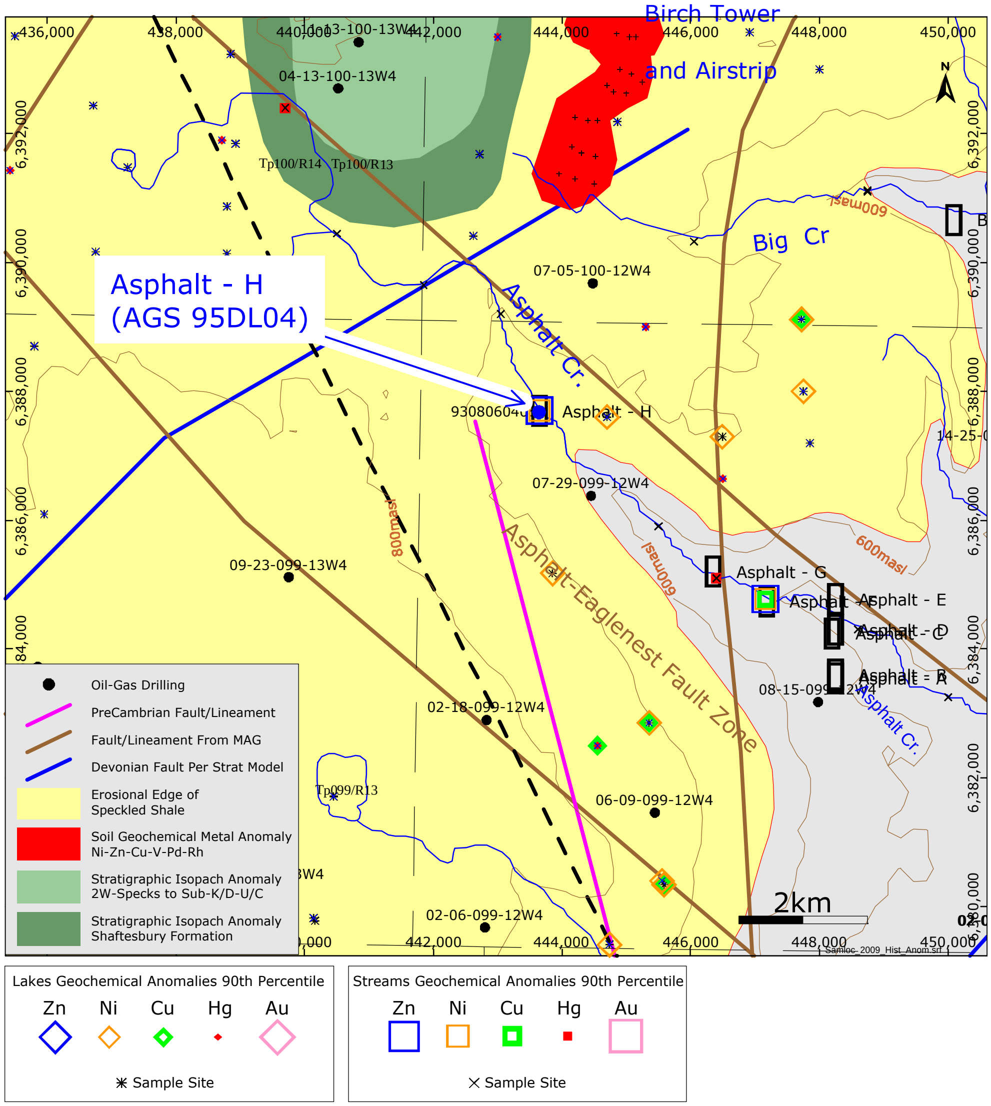

Figure 83: Sampling location stratigraphic section Asphalt-H and surrounding anomalies, Surface Sampling Program 2009. Anomalies after Figure 67.

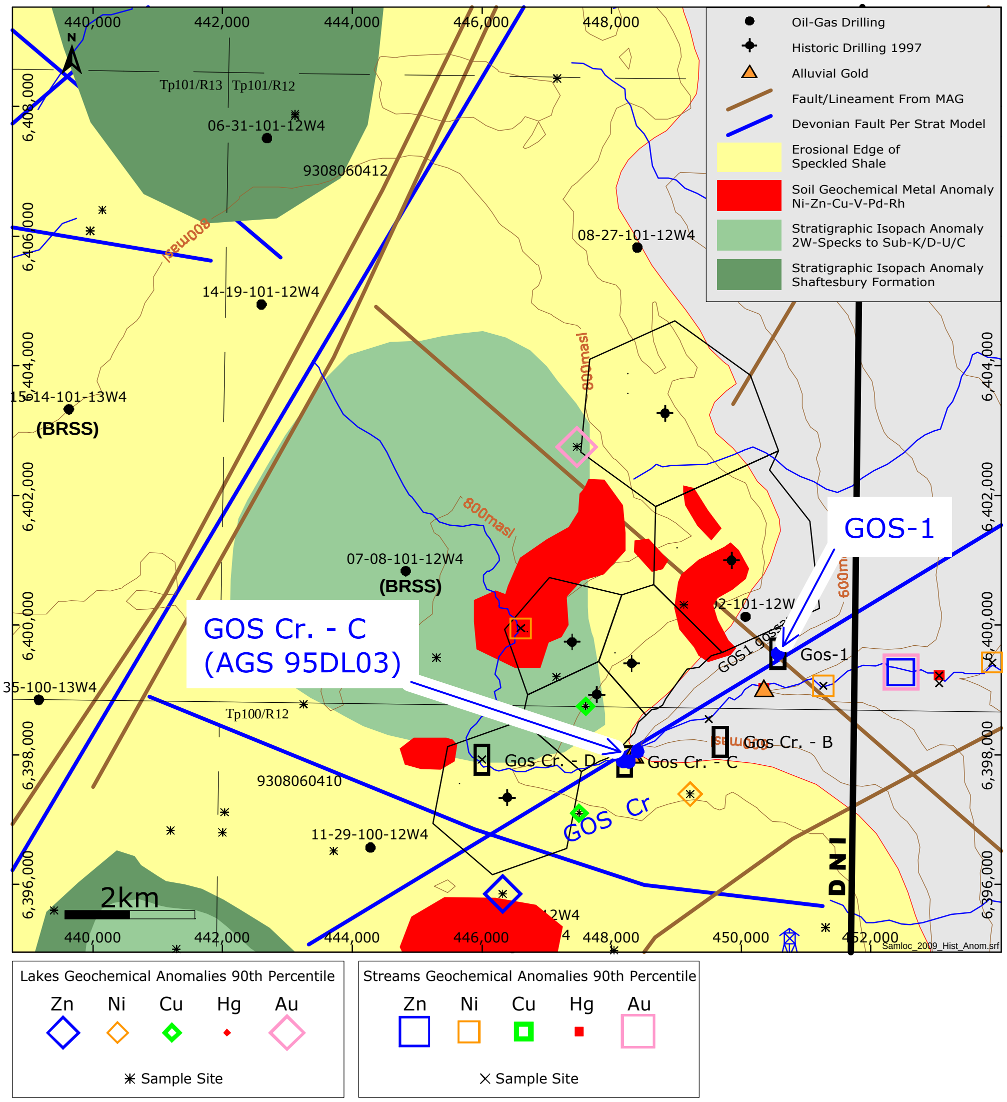

Figure 84: Stratigraphic section GOS-Cr.-C and surrounding anomalies, Surface Sampling Program 2009 Anomalies after Figure 59.

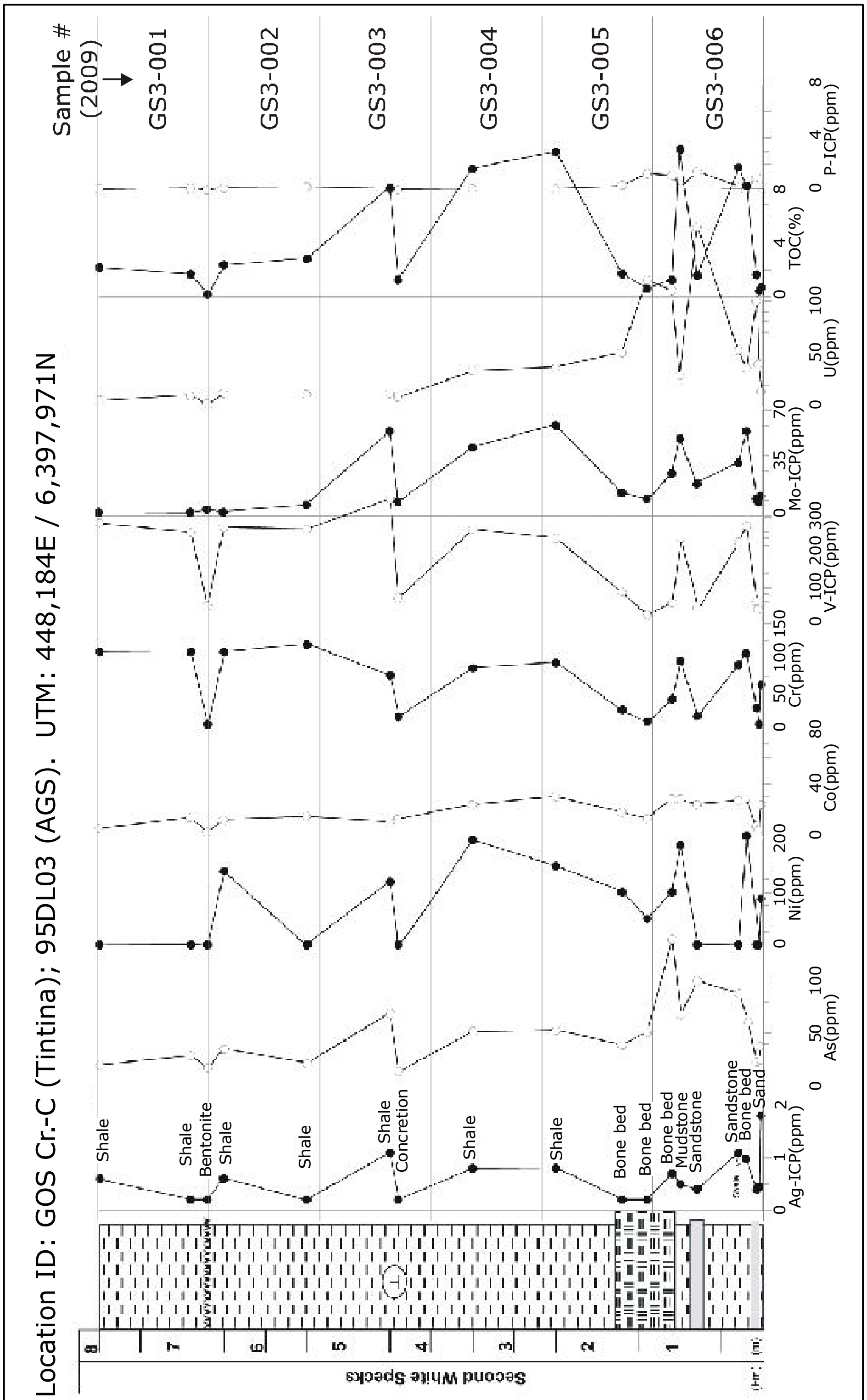

Figure 85: Sample locations and down-section lithogeochemistry, stratigraphic section GOS-Cr.-C, Surface Sampling Program 2009. Lithosection geology and geochemical profiles after AGS 2001.

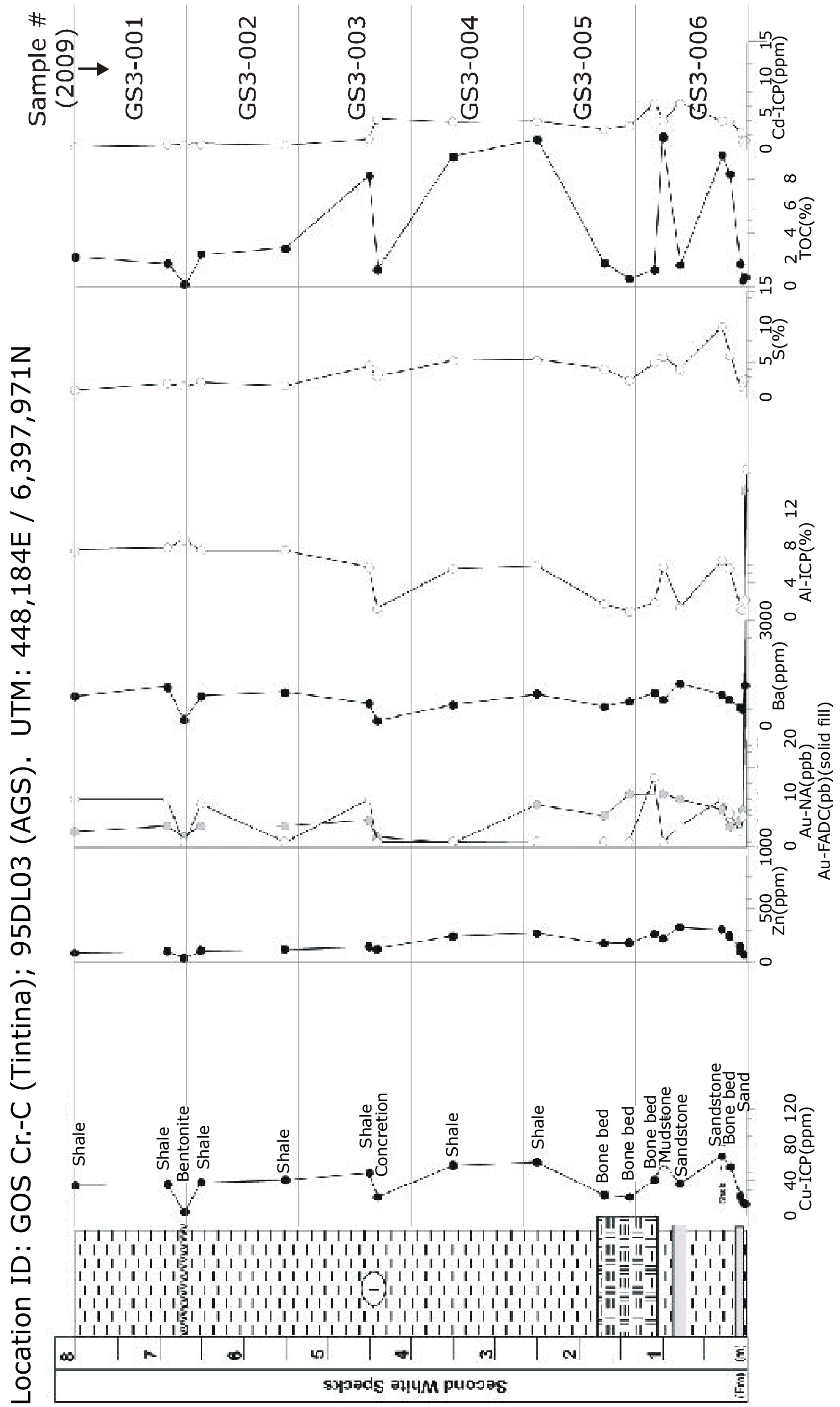

Figure 86: Sample locations and down-section lithogeochemistry, stratigraphic section GOS-Cr.-C, Surface Sampling Program 2009. Lithosection geology and geochemical profiles after AGS 2001.

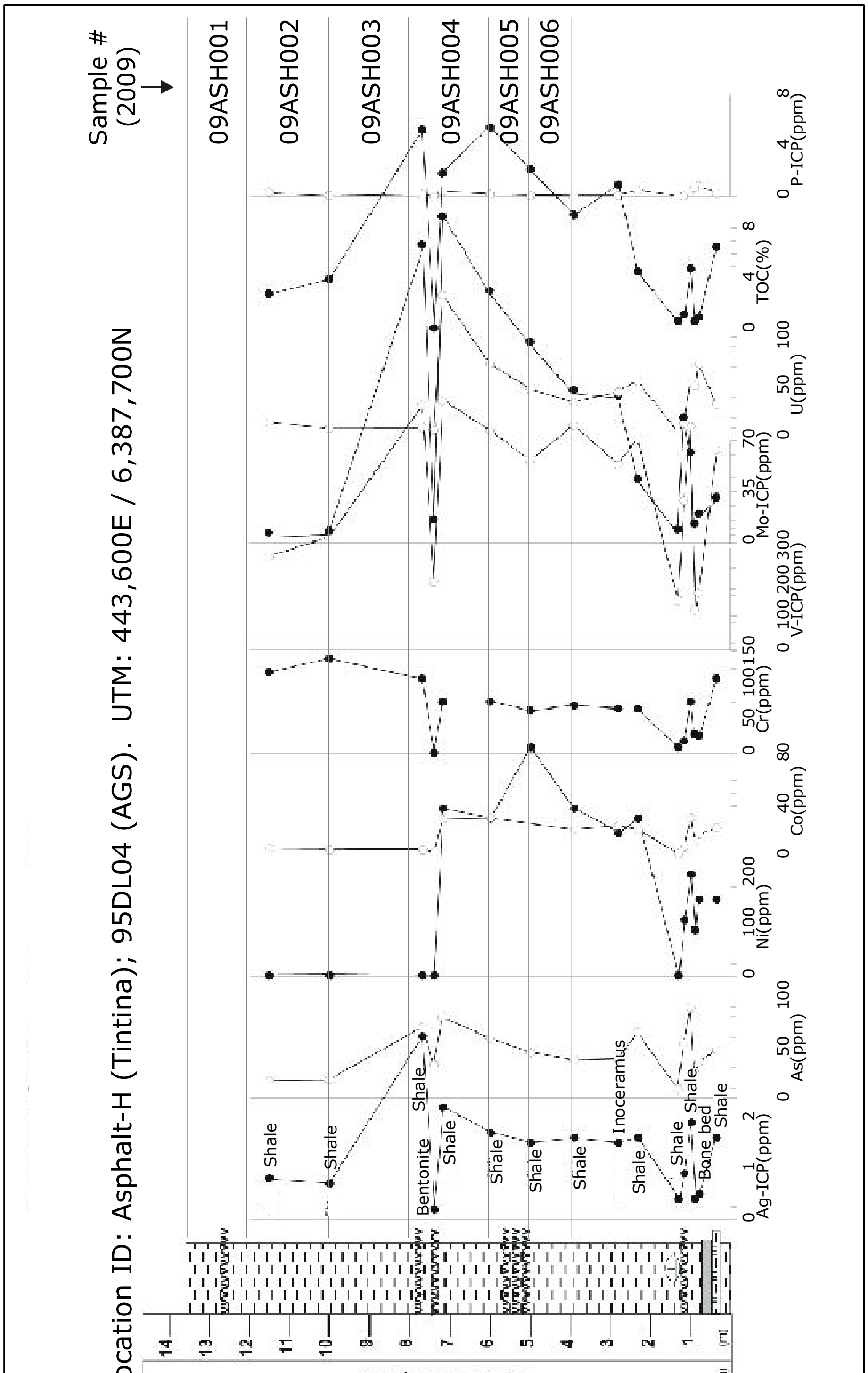

Figure 87: Sample locations and down-section lithogeochemistry, stratigraphic section Asphalt-H, Surface Sampling Program 2009. Lithosection geology and geochemical profiles after AGS 2001.

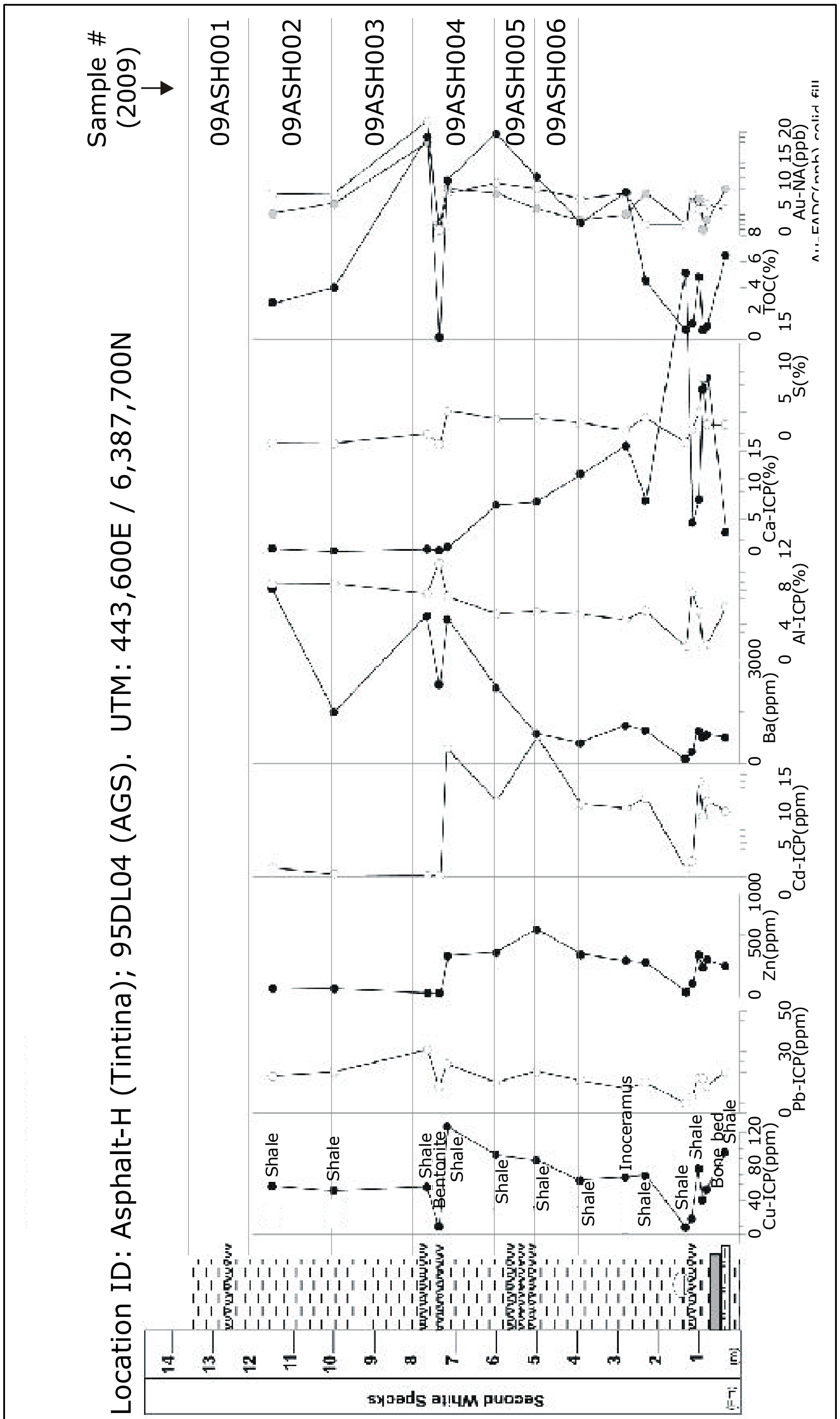

Figure 88: Sample locations and down-section lithogeochemistry, stratigraphic section Asphalt-H, Surface Sampling Program 2009. Lithosection geology and geochemical profiles after AGS 2001.

		Location Name	Asphalt-H						GosCr.-C								GOS1
		Sample#	09ASH001S	09ASH002S	09ASH003S	09ASH004S	09ASH005S	09ASH006S	G3S-001S	GS3-002S	GS3-003S	GS3-004S	GS3-005S	GS3-006S	GS1-001S	GS1-003S	GS2-001S
Analyte (Unit)	Detection	Method															
C-Total (%)	0.01	IR	2.26	2.79	5.63	10.80	10.70	4.93	1.89	2.58	4.89	8.83	7.38	7.30	2.37	0.65	2.92
C-Graph (%)	0.05	IR	0.11	0.1	0.11	0.1	0.15	0.08	0.11	0.13	0.12	0.17	0.11	0.16	0.12	0.08	0.14
C-Organ (%)	0.05	IR	1.93	2.48	4.94	9.12	8.51	2.38	1.56	2.09	4.17	6.79	5.93	6.29	1.06	0.14	0.58
CO2 (%)	0.01	COUL	0.8	0.8	2.1	5.7	7.4	9.0	0.8	1.3	2.2	6.8	4.9	3.1	4.3	1.6	8.0
SO4 (%)	0.3	IR	0.5	0.7	2.5	4.2	7	11.2	1.6	2.2	3.7	7.7	6.8	4.1	8.8	5.2	13.4
Total S (%)	0.01	IR	0.36	0.61	2.25	5.05	3.97	5.48	0.92	1.11	2.35	5.30	4.28	4.31	10.10	2.64	5.65
S (%)	0.01	TD-ICP	0.33	0.64	2.15	5.24	3.91	5.76	0.76	1.05	2.43	5.18	3.91	4.38	10.9	2.88	5.65
Ag (ppm)	0.3	INA/TD-ICP	0.6	0.6	1.3	0.9	0.6	0.9	0.4	0.5	0.6	0.7	0.7	0.8	< 0.3	< 0.3	1.2
Al (%)	0.01	TD-ICP	5.19	10.00	6.66	5.42	4.58	4.71	5.33	5.71	5.35	4.79	5.32	5.91	4.31	6.24	5.20
As (ppm)	0.5	INAA	28.1	25.4	54.9	59.8	56.3	85.2	21.7	23.1	48.5	73.2	61.7	82.2	25.5	31	76.1
Au (ppb)	2	INAA	< 2	< 2	< 2	< 2	< 2	3	< 2	< 2	8	< 2	9	< 2	< 2	< 2	< 2
Ba (ppm)	50	INAA	3400	1300	7900	600	480	1000	740	700	800	530	440	750	1550	1340	770
Bi (ppm)	0.1	TD-MS	0.4	0.4	0.5	0.4	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.5	0.3	0.3	0.5
Br (ppm)	0.5	INAA	13	14	11	21	20	7	7	9	14	20	16	20	12	18	14
Ca (%)	0.01	TD-ICP	0.43	0.34	1.03	5.68	9.33	6.41	0.59	0.72	1.49	4.47	3.29	2.03	3.48	0.55	5.15
Cd (ppm)	0.3	TD-ICP	0.7	1.4	1.2	44.1	12.6	6.4	0.4	< 0.3	0.4	2.5	2.1	0.6	< 0.3	0.3	1.6
Ce (ppm)	3	INAA	57	79	76	185	65	235	59	68	74	88	84	81	66	63	129
Co (ppm)	1	INAA	10	11	7	70	29	18	6	7	8	30	23	10	4	4	4
Cr (ppm)	2	INAA	126	145	71	73	83	96	98	123	108	104	86	130	67	125	104
Cu (ppm)	1	TD-ICP	92	65	52	117	76	130	34	50	46	66	54	39	19	25	88
Fe (%)	0.01	INAA	3.61	3.55	3.19	3.78	3.93	5.26	2.11	2.45	3.03	4.86	4.54	4.83	0.74	3.06	4.13
K (%)	0.01	TD-ICP	2.64	2.89	1.92	1.59	1.43	1.59	2.34	2.60	2.42	1.97	2.14	2.07	1.51	2.76	1.94
La (ppm)	0.5	INAA	35.7	45.4	59.7	111.0	37.7	161.0	36.2	43.2	44.8	52.0	46.4	48.8	39.4	38.9	97.6
Li (ppm)	0.5	TD-MS	63	78	49	73	49	29	75	74	62	45	53	58	13	22	29
Lu (ppm)	0.05	INAA	0.55	0.83	0.39	2.73	0.62	2.51	0.48	0.28	0.6	0.68	0.73	0.57	0.41	0.47	0.68
Mg (%)	0.01	TD-ICP	0.71	0.98	0.65	0.82	0.69	0.50	0.84	0.67	0.71	0.70	0.63	0.85	0.25	0.39	0.52
Mn (ppm)	1	TD-ICP	116	137	53	474	222	96	93	70	55	256	171	85	24	19	28
Mo (ppm)	1	TD-ICP	9	7	139	141	121	59	3	6	24	49	48	33	1	2	59
Na (%)	0.01	INAA	0.50	0.42	0.44	0.23	0.23	0.38	0.25	0.28	0.27	0.27	0.25	0.36	0.23	0.40	0.45
Ni (ppm)	1	INA/TD-ICP	29	34	30	704	253	161	23	27	32	99	93	36	6	12	21
P (%)	0.001	TD-ICP	0.23	0.10	0.11	0.16	0.07	0.84	0.10	0.10	0.28	0.16	0.10	0.12	0.02	0.05	0.25
Pb (ppm)	3	TD-ICP	20	19	14	16	12	16	20	17	19	12	12	21	14	15	15
Rb (ppm)	15	INAA	107	129	31	71	74	56	129	126	91	121	97	138	118	169	102
Sb (ppm)	0.1	INAA	4.2	5.3	23.6	16.1	16.1	15.2	2.2	2.0	3.8	5.7	5.4	6.9	1.9	1.8	23.7
Se (ppm)	0.1	INA/TD-ICP	< 0.1	12	57	27	34	53	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	58	19	74
Sm (ppm)	0.1	INAA	4.8	4.4	4.3	22.2	5.3	29.8	3.7	4.3	4.5	5.2	5.3	4.3	4.1	2.6	10.9
Sr (ppm)	1	TD-ICP	359	255	188	194	163	304	138	150	193	151	152	257	203	140	243
Th (ppm)	0.2	INAA	10	9	8	8	7	23	9	11	12	8	7	10	7	7	10
Ti (%)	0.01	TD-ICP	0.46	0.46	0.30	0.25	0.23	0.21	0.45	0.47	0.40	0.28	0.28	0.32	0.48	0.56	0.34
Tl (ppm)	0.1	TD-MS	1.2	1.2	8.3	8.3	6.9	15.1	0.9	1.1	1.7	2.7	3	2.9	0.5	1	13.6
U (ppm)	0.5	INAA	41	25	24	92	49	125	11	11	16	28	23	19	9	6	15
V (ppm)	2	TD-ICP	382	401	636	796	752	800	328	355	396	313	319	281	122	236	1020
Y (ppm)	1	TD-ICP	14	47	24	265	43	275	12	16	26	45	51	32	20	16	43
Yb (ppm)	0.2	INAA	3	4	2.3	17.9	4.1	17	2.3	2.3	2.7	3.6	4.2	2.5	2.1	2	3.4
Zn (ppm)	1	INA/TD-ICP	76	117	68	964	336	234	50	67	89	202	197	64	10	32	47
SiO2 (%)	0.01	FUS-XRF	56.5	56.6	46.6	36.9	34.7	38.5	60.4	61.0	54.0	38.1	43.1	43.5	59.4	63.0	44.7
Al2O3 (%)	0.01	FUS-XRF	16.5	17.1	16.0	11.6	9.5	9.1	15.2	15.3	13.1	11.2	12.3	12.5	8.0	13.5	11.1
Fe2O3(T) (%)	0.01	FUS-XRF	5.2	4.9	4.4	5.8	5.3	8.2	3.1	3.6	4.0	6.9	6.5	6.2	1.0	3.9	5.7
MnO (%)	0.001	FUS-XRF	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
MgO (%)	0.01	FUS-XRF	1.4	1.6	1.1	1.4	1.2	0.8	1.7	1.3	1.2	1.3	1.2	1.4	0.4	0.7	0.9
CaO (%)	0.01	FUS-XRF	0.7	0.4	1.6	6.9	12.4	7.7	1.0	1.1	2.1	5.8	4.3	2.5	4.2	0.7	6.4
Na2O (%)	0.01	FUS-XRF	0.7	0.6	0.7	0.4	0.3	0.6	0.4	0.4	0.4	0.4	0.4	0.5	0.3	0.5	0.6
K2O (%)	0.01	FUS-XRF	3.0	3.0	2.1	1.7	1.6	1.7	2.6	2.9	2.5	2.2	2.4	2.1	1.6	2.7	2.2
TiO2 (%)	0.01	FUS-XRF	0.7	0.7	0.5	0.4	0.4	0.4	0.7	0.7	0.6	0.5	0.5	0.5	0.7	0.8	0.5
P2O5 (%)	0.01	FUS-XRF	0.5	0.2	0.2	0.4	0.2	1.8	0.2	0.3	0.6	0.4	0.3	0.3	0.1	0.1	0.6
Cr2O3 (%)	0.01	FUS-XRF	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LOI (%)	0.1	FUS-XRF	13.4	14.5	25.5	32.6	30.3	28.3	12.6	13.0	19.0	30.8	26.4	27.3	22.6	13.0	22.9
Total (%)	0.01	FUS-XRF	98.6	99.5	98.8	98.2	96.0	97.0	97.8	99.7	97.4	97.4	97.3	96.7	98.2	98.9	95.7

All samples are of Second White Speckled Shale. Data from Actlabs Rpt#A09-4934

Table 22: Summary of analyses, Second White Speckled Shale samples, Sampling Program 2009.

11.6 Leaching and BioLeaching Testwork 2009-2010

DNI's principal focus during 2009-2010 was on investigation of metals recoveries via a series of tests many of which were concurrently carried out at several different facilities. While this work primarily consisted of extensive initial leaching and bioleaching testwork intended to determine recovery of polymetals on a combined basis from the shale, a small suite of samples were also tested by conventional bottle roll cyanidation to investigate gold content of the siliciclastic bone bed at the base of the Second White Speckled Shale Formation at one of localities sampled during the 2009 Field Sampling Program.

While some of the leaching testwork was carried out under DNI's direction at Actlabs, under the supervision of S.F.Sabag PGeo, DNI's QP for the projects and its President, the bioleaching testwork was carried out at the Alberta Research Council[40] (ARC) and the Bureau de Recherches Géologiques et Minières (BRGM), France's leading Earth Sciences public institution recognized worldwide for its expertise in biohydrometallurgy, with considerable direction and input from Dr.C.L.Brierley, a well recognized bioleaching expert, who was retained by DNI to oversee and direct its bioleaching R&D programs.

DNI's various leaching testwork programs consisted of the following:

- initial bottle roll cyanidation tests conducted at Actlabs by DNI on siliciclastic bone bed samples from 2009 field sampling;
- sulfuric acid leaching tests conducted at Actlabs by DNI on select samples of Second White Speckled Shale from lithosection Asphalt-H, from 2009 field sampling;
- bioleaching testwork conducted by BRGM on select samples of Second White Speckled Shale from Litho-Section Asphalt-H, from 2009 field sampling;
- bioorganic culturing, adaptation and leaching testwork conducted by the ARC on select samples of Second White Speckled Shale from Litho-Section Asphalt-H, from 2009 field sampling.

The programs and results therefrom are presented in sections below.

11.6.1 Initial Cyanide Leaching Testwork - Siliciclastic Bone Bed Suite

A suite of ten samples of siliciclastic bone bed, exposed over approximately 100m of river bank at the base of historic stratigraphic section Gos-Cr.-C (AGS site 95DL03) sampled during the 2009 Field Sampling Program, were submitted to Actlabs for conventional bottle roll cyanidation tests.

Gold had previously been reported from this location in historic work conducted by the AGS and by Tintina Mines, reporting grades ranging upward to 67ppb by fire assay or by INA. Gold was presumed to be hosted in the siliciclastic bone-bed at the base of the Second White Speckled Shale Formation. Sample locations were previously shown in Figure 82 (Section 11.5).

A 1kg subsample from each sample was ashed at low temperature and subsequently cyanidated to determine concentration of any gold which might be in the samples. The samples were also analyzed by ICP-MS (total digestion) and by INA for overall elemental lithogeochemistry, and C and S speciation was measured by IR. Analytical certificates[41] are appended (Appendix E1.1).

The bottle roll cyanidation analyses reported gold grades ranging 2.0ppb to 4.7ppb, and gold analyses by INA reported grades ranging from below detection of 2ppb to 14ppb. The results failed to reflect prior historic gold results. The analytical work reported less than detection levels (<0.05%) C-org, 2.81%-5.07% C-total, 0.29%-1% P, 2.0%-3.48% S-total (ICP) and 1.9%-3.25% S-total (IR).

No further tests were carried out, and none are contemplated.

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[40] Although the Alberta Research Council (ARC) changed its name to Alberta Innovates Technology Futures (AITF) in 2010, this Report continues to refer to it as the ARC for continuity with parts of the work which commenced prior to its name change.
[41] Actlabs Rpt#A09-4937.

11.6.2 Sulfuric Acid Testwork 2010

A series of leaching tests were carried out during January-February 2010 to investigate the extent and dynamics to which metals can be liberated and extracted from the black shale by sulphuric acid. This work was conducted by Actlabs, under the direction of S.Sabag of DNI, pursuant to a scope of work and procedures which were formulated through discussions during December 2009. The testwork was launched to partly simulate bio-leaching geochemical conditions, given that the principal solvent produced during bioleaching is a sulphuric acid solution.

The testwork was intended as a first step toward formulating optimum leaching parameters for additional subsequent labwork to enhance recoveries. Two stages of tests were conducted, the second of which attempted to vary leaching parameters (T and time) with limited success.

Three representative samples of Second White Speckled Formation black shale, collected during the 2009 Field Sampling Program (Samples 09ASH004S , 09ASH005S and 09ASH006S) from an exposure of the Asphalt Zone near the Asphalt Potential Mineral Deposit were tested (leached) without any pre-treatment.

For Stage-1 tests, a 10gm aliquot from each sample was leached in 30ml of a 1% sulphuric acid solution over a 36 hour period at 30^{o}C, and a duplicate set was leached over a 24 hour period at 50^{o}C. Solvent composition was monitored at select intervals throughout the testwork (at 2, 4, 8, 12, 18, 24 and 36 hours) to assess progress during the leaching progress. Attempt was made to substantially maintain a constant pH near 2 during leaching by periodically re-acidifying the solvent although pH ultimately ranged 1.2-2 (avg 1.7).

Analyses were completed of tails (residues) as well as a head sample to calculate overall metal recoveries as the difference between metals remaining in the tails as a percentage of the feed head grade. Recoveries calculated did not include metal content of material removed from the solution periodically for analysis to monitor metal solubilization.

Duplicate analyses were completed of the head and tails by multiple methods for convergence testing. Analyses were made by ICP and INA (Actlabs Code 2F2) and MS (Actlabs Code UT4) after total sample dissolution, and by Na-peroxide Fusion (Actlabs Code 8)[42]. Given the preliminary nature of the tests, an analytical "control" blank sample was not included in suite of samples tested, and instead several laboratory internal analytical control standards and blanks were relied upon. All analytical certificates are appended herein (Appendix E2.1) and a summary thereof (Appendix E2.2).

While the tails (residues) collected from tests conducted at 30^{o}C represent residues after 36 hours of leaching, the tails collected from tests conducted at 50^{o}C represent residues after only 24 hours of leaching, since by then all of the solvent had evaporated and the tests could not be continued to the 36 hour gestation period as initially planned. Residues from the tests conducted at 50^{o}C, accordingly, only reflect partial extractions due to shorter leaching period. As such, comparison of compositions of the two sets of residues is not too informative as to effects of higher temperature on metals extraction and recovery.

Leaching progress showing evolution of metal solubilization is summarized in Table 23 for the metals of interest and for select major rockforming elements. The table also reports leaching residue (tails) weights as at the end of the 36 hour long tests at 30^{o}C and the 24 hour tests at 50^{o}C.

Head grades of the feed material and samples descriptions were presented in a previous Section of this Report (Section 11.5), portions of which are summarized herein where relevant. The evolution of solubilization of select elements and metals in the leaching solvent, along with evolution of pH, are shown in Figure 89 for samples 09ASH004 and 09ASH006. Adequate periodic subsamples could not be always taken during the tests from sample 09ASH005 due to solvent evaporation hence the many missing data-points characterizing progression of its leaching (see analytical certificates appended).

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[42] Actlabs Rpt#A09-4934.

	Test Parameters							Al (%) TD-MS Det 0.01		Na (%) TD-MS Det 0.001		K (%) TD-MS Det 0.01	
	Leach Time	Residue Weight (gm)		pH		Acid Added (ml)							
Sample ID:	(hrs)	30C	50C	30C	50C	30C	50C	30C	50C	30C	50C	30C	50C
09ASH004S	2			5.4	5.6	1.0	1.3	0.07	0.10	0.01	0.01	0.02	0.02
09ASH004S	4			3.4	2.3	0.5	1.0	0.14	0.71	0.02	0.04	0.02	0.03
09ASH004S	8			2.0	1.4	-	-	0.54	0.78	0.03	0.03	0.02	0.08
09ASH004S	12			2.2	1.4	1.0	-	0.59	na	0.03	na	0.08	na
09ASH004S	18			1.4	1.1	-	-	0.48	1.10	0.02	0.04	0.03	0.06
09ASH004S	24		5.18	1.3	1.0	-	-	0.45	0.69	0.02	0.03	0.03	0.06
09ASH004S	36	6.92		1.3		-		0.66		0.02		0.04	
09ASH005S	2			5.3	5.9	2.0	2.3	-0.01	-0.01	0.00	0.00	-0.01	0.01
09ASH005S	4			4.4	3.0	1.5	0.8	0.08	0.07	0.01	0.01	0.03	0.02
09ASH005S	8			2.5	2.6	0.5	0.3	na	na	na	na	na	na
09ASH005S	12			1.5	1.8	-	-	na	0.02	na	0.00	na	-0.01
09ASH005S	18			1.5	1.3	-	-	0.09	0.13	0.01	0.01	0.02	0.03
09ASH005S	24		7.40	1.3	1.3	-	-	0.10	0.16	0.01	0.02	0.02	0.03
09ASH005S	36	7.22		1.5		-		0.18		0.01		0.04	
09ASH006S	2			1.8	1.4	-	-	0.03	0.07	0.00	0.01	-0.01	0.02
09ASH006S	4			1.4	1.7	-	-	0.05	0.12	0.01	0.01	0.01	0.03
09ASH006S	8			1.7	1.5	-	-	0.09	0.23	0.01	0.02	0.02	0.04
09ASH006S	12			1.6	1.7	-	-	0.12	na	0.01	na	0.02	na
09ASH006S	18			1.7	1.2	-	-	0.21	0.19	0.02	0.01	0.03	0.03
09ASH006S	24		7.67	1.8	1.2	-	-	0.24	na	0.02	na	0.03	na
09ASH006S	36	7.67		1.8		-		0.39		0.02		0.07	

	Ca (%) TD-MS Det 0.01		Fe (%) TD-MS Det 0.01		Mg (%) TD-MS Det 0.01		Mn (ppm) TD-MS Det 1		Mo (ppm) TD-MS Det 0.1		Ni (ppm) TD-MS Det 0.5		V (ppm) TD-MS Det 1	
Sample ID:	30C	50C	30C	50C	30C	50C	30C	50C	30C	50C	30C	50C	30C	50C
09ASH004S	0.20	0.18	0.05	0.09	0.04	0.05	72	103	0.8	0.6	68	113	19	20
09ASH004S	0.15	0.15	0.02	0.40	0.10	0.24	216	634	0.0	0.4	187	773	17	43
09ASH004S	0.28	5.02	0.22	1.53	0.18	0.23	466	478	0.7	16.9	546	597	36	59
09ASH004S	4.98	na	0.46	na	0.17	na	445	na	10.3	na	538	na	39	na
09ASH004S	0.15	0.85	1.02	2.14	0.15	0.33	282	640	4.0	11.1	374	856	43	73
09ASH004S	0.17	2.70	0.92	1.34	0.14	0.22	277	378	4.5	11.4	374	484	43	54
09ASH004S	0.33		1.36		0.20		376		6.3		476		52	
09ASH005S	0.15	0.17	0.02	-0.01	0.02	0.02	16	11	0.1	1.1	13	2	18	16
09ASH005S	0.37	0.39	0.14	0.07	0.06	0.06	94	100	1.5	1.3	81	81	32	20
09ASH005S	na	na	na	na	na	na	na	na	na	na	na	na	na	na
09ASH005S	na	0.15	na	0.08	na	0.02	na	28	na	0.0	na	28		20
09ASH005S	0.15	0.17	0.53	0.71	0.06	0.10	62	144	1.7	3.6	74	157	na	47
09ASH005S	0.16	0.16	0.56	0.89	0.06	0.12	66	171	1.9	4.0	78	182	36	52
09ASH005S	5.34		0.74		0.08		84		9.3		101		43	
09ASH006S	0.20	0.19	0.15	0.34	-0.01	0.01	12	28	0.5	0.9	11	28	18	19
09ASH006S	0.19	0.19	0.24	0.53	-0.01	0.02	21	43	0.6	1.0	20	44	19	22
09ASH006S	0.18	0.17	0.38	0.97	0.02	0.04	35	81	0.8	1.6	33	75	20	27
09ASH006S	0.19	na	0.54	na	0.02	na	45	na	0.9	na	44	na	21	na
09ASH006S	0.20	0.19	0.81	1.28	0.04	0.04	75	60	1.0	2.1	72	59	26	26
09ASH006S	0.14	na	0.99	na	0.04	na	83	na	0.7	na	81	na	28	
09ASH006S	5.87		2.14		0.06		107		5.9		103		41	

	U (ppm) TD-MS Det 0.1		Zn (ppm) TD-MS Det 0.2		Cu (ppm) TD-MS Det 0.2		Co (ppm) TD-MS Det 0.1		Cd (ppm) TD-MS Det 0.1		Li (ppm) TD-MS Det 0.5	
Sample ID:	30C	50C	30C	50C	30C	50C	30C	50C	30C	50C	30C	50C
09ASH004S	8	13	123	198	6	9	8	13	6	10	3	5
09ASH004S	6	67	329	1220	4	37	24	84	18	52	7	29
09ASH004S	42	80	919	890	28	55	59	62	38	38	20	26
09ASH004S	53	na	809	na	45		55	na	37	na	19	na
09ASH004S	49	110	603	1350	35	67	38	88	22	52	16	37
09ASH004S	47	62	629	800	37	47	37	49	23	31	15	24
09ASH004S	66		818		46		48		29		20	
09ASH005S	2	1	19	0	1	0	1	0	1	0	-1	1
09ASH005S	15	3	118	132	9	3	10	10	6	6	3	3
09ASH005S	na	na	na	na	na	na	na	na	na	na	na	na
09ASH005S	na	4	na	45	na	2	na	3	na	2	na	1
09ASH005S	11	26	na	277	13	19	7	15	4	10	3	6
09ASH005S	11	33	148	303	14	21	7	18	4	11	4	7
09ASH005S	16		159		20		9		5		5	
09ASH006S	12	35	18	48	11	27	2	4	1	2	1	2
09ASH006S	21	57	32	75	18	41	3	7	2	4	1	3
09ASH006S	35	104	53	137	29	70	5	11	3	6	2	5
09ASH006S	53	na	72	na	38	na	7		3	na	2	na
09ASH006S	87	88	129	117	66	57	11	9	6	5	4	4
09ASH006S	105	na	139	na	69	na	12	na	6	na	5	na
09ASH006S	148		172		95		16		9		7	

Actlabs Rpt#A09-4934; 30C leaching over 36 hours; 50C leaching over 24 hours; Det = Detection

Table 23: Compositional evolution of select elements and metals, Sulfuric Acid Leaching Testwork 2010.(sample 006 acidified at the outset of tests).

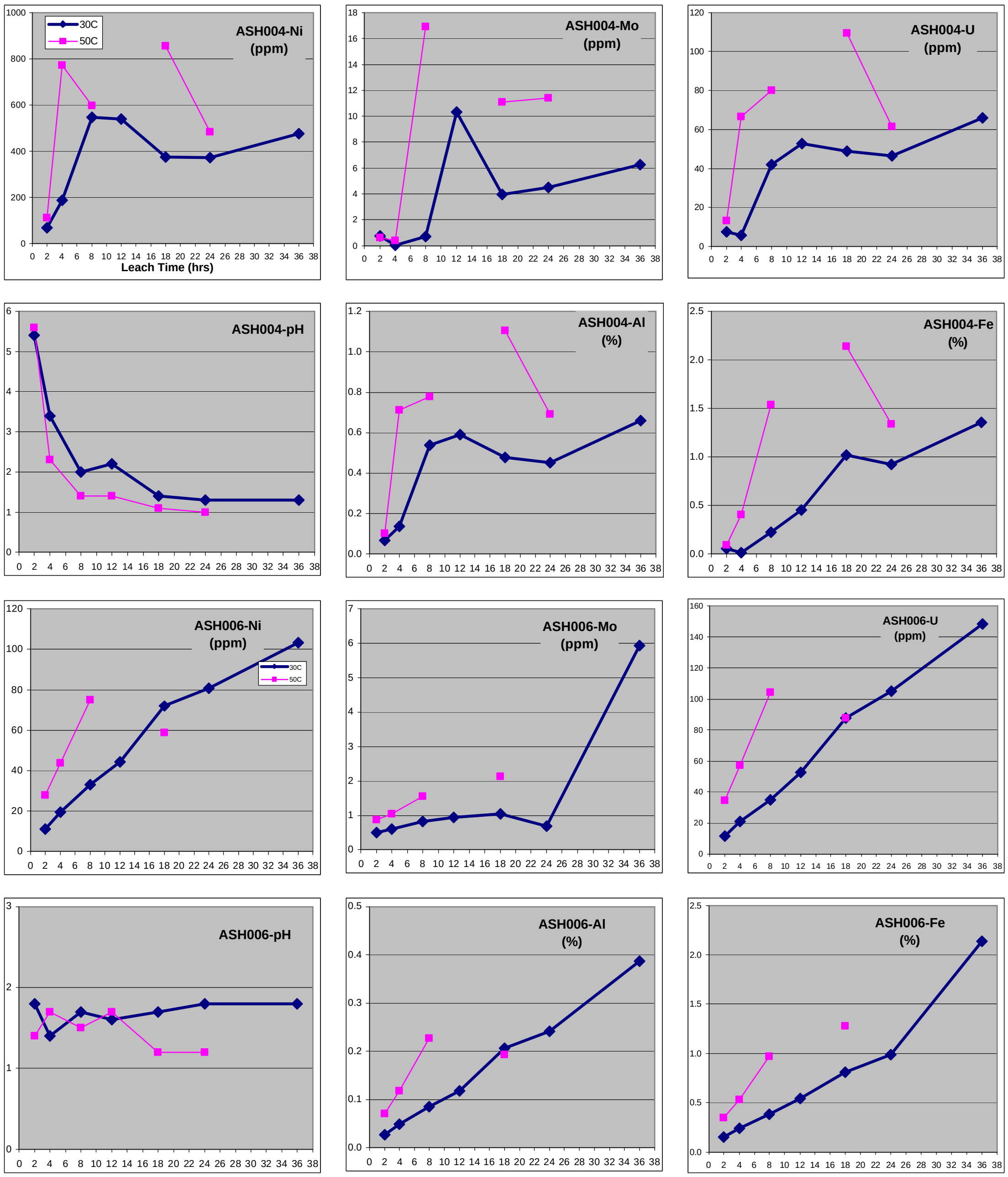

Figure 89: Solvent compositional evolution for select metals and for pH, samples ASH004 and ASH006, Sulfuric Acid Leaching Testwork 2010. For sample ASH006, pH was stabilized prior testwork. Discontinuous data curves for 50C tests are the result missing sample midway through the tests due to evaporation of solvent or to high suspended solid content of the solvent rendering it difficult to analyze. Data presented has not been amortized to constant volume.

As can be seen in Figure 89, rate of metal solubilization for sample 09ASH004 stabilized after 8-10hrs, after which the grade of the solution remained somewhat constant, with the exception of some re-precipitation likely due to changes in pH or due to possible precipitation of sulfates (jarositing?). By contrast, metal solubilization for sample 09ASH006 did not achieve stability since the grade of the solution continued to rise to the end of the tests, and might presumably have continued so for a longer period thereafter as additional metals dissolve given additional leaching time. The tests suggested that sample 09ASH006 achieved only partial extraction during the 36 hours of leaching, and that future tests would benefit from a longer leaching period.

The leaching tests demonstrated that the metals can be collectively leached from the Speckeld Shale in a single solvent and, overall, demonstrated that while some of the metals solubilize faster at the higher temperature (e.g.Mo,V,Cu,Li), others might benefit from longer leach time (e.g.Ni,U,Zn).

At the end of the leaching tests, insoluble residues (tails) were dried, weighed and analyzed by multiple methods[43] along with a new subsample of the feed material (head sample) which had also been previously analyzed in the course of the 2009 Field Sampling Program. Based on differences in metals content of residues as compared to head grade, metals recoveries were calculated.

Comparative compositions of the residues from the tests and head grades of feed material are summarized in Table 24, which also shows calculated metal extractions (leaching recoveries) which were achieved during the tests. The recovery results are graphically presented in Figure 90, for metals of interest Mo-Ni-V-U-Zn-Co-Cd-Li in addition to clay forming elements (Al, Na, K, Ca) and Fe for both sets of leaching tests, showing also the multiple analytical data. Due to the small sample size and even smaller related tails/residues, estimated metal recoveries reported likely vary by ± 5% (relative%).

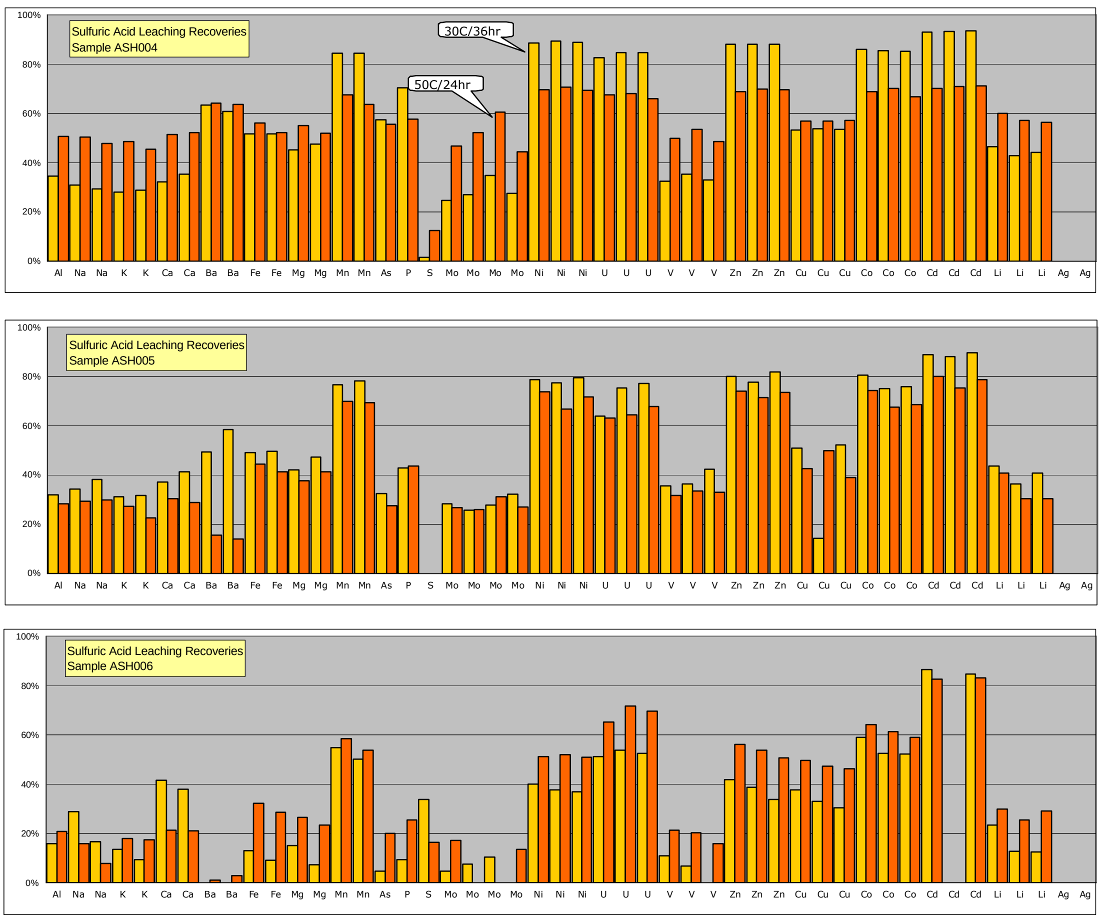

Figure 90: Sulfuric acid leaching recoveries, showing multiple analytical results for sample ASH004, ASH005 and ASH006, Sulfuric Acid Leaching Testwork 2010.

Figure 90 shows good recoveries from the 30C tests for Ni, U, Zn, Co and Cd exceeding 80%, middling recoveries in the 40%-50% range for Cu and Li, and poor recoveries for Mo and V ranging 10%-40%. The Figure shows improvement in recoveries for Mo-V and to a lesser extent for Li-Cu from the higher temperature (50C) tests, with commensurate trend of higher recoveries in the clay forming elements

[43] Actlabs Rpt#A09-4934 as at Dec29/2009, and Rpt#A10-0333.

Al-Na-K-Ca-Ba (Figure 91). This trend is consistent with conclusions from historic work based on lithogeochemical elemental correlations suggesting that some of the metals (V, Mo, Cu) are partly hosted in the clay fractions of the shale (or adsorbed thereupon) which can be expected to dissolve better at the higher temperatures (see also discussion on metal recoveries).

				Sulphuric Acid Leaching Test Results - Heads and Residues Compositions and Calculated Recoveris															
Analyte	Unit	Detection Limit	Analysis Method	**09ASH004S**	09ASH004S-Res-30C	Recovery-004S-30C	09ASH004S-Res-50C	Recovery-004S-50C	**09ASH005S**	09ASH005S-Res-30C	Recovery-005-30C	09ASH005S-Res-50C	Recovery-005S-50C	**09ASH006S**	09ASH006S-Res-30C	Recovery-006S-30C	09ASH006S-Res-50C	Recovery-006-50C
Al	%	0.01	TD-ICP	6.23	5.89	35%	5.93	51%	5.23	4.93	32%	5.08	28%	5.00	5.49	16%	5.17	21%
Na	%	0.01	TD-ICP	0.25	0.25	31%	0.24	50%	0.22	0.2	34%	0.21	29%	0.41	0.38	29%	0.45	16%
Na	%	0.001	TD-MS	0.249	0.254	29%	0.25	48%	0.226	0.19	38%	0.214	30%	0.393	0.427	17%	0.472	8%
K	%	0.01	TD-ICP	1.4	1.46	28%	1.39	49%	1.31	1.25	31%	1.29	27%	1.34	1.51	14%	1.43	18%
K	%	0.01	TD-MS	1.35	1.39	29%	1.42	46%	1.29	1.22	32%	1.35	23%	1.34	1.58	10%	1.44	18%
Ca	%	0.01	TD-ICP	5.32	5.21	32%	4.98	52%	9.28	8.09	37%	8.76	30%	5.9	4.48	42%	6.05	21%
Ca	%	0.01	TD-MS	4.87	4.56	35%	4.51	52%	8.72	7.08	41%	8.39	29%	5.40	4.37	38%	5.55	21%
Ba	ppm	7	TD-ICP	110	58	64%	76	64%	77	54	49%	88	15%	45	172	na	58	1%
Ba	ppm	1	TD-MS	83	47	61%	58	64%	68	39	59%	79	14%	41	146	na	52	3%
Fe	%	0.01	TD-ICP	4.04	2.81	52%	3.43	56%	3.67	2.59	49%	2.76	44%	5.69	6.44	13%	5.03	32%
Fe	%	0.01	TD-MS	3.81	2.66	52%	3.51	52%	3.7	2.59	49%	2.94	41%	5.5	6.51	9%	5.12	29%
Mg	%	0.01	TD-ICP	0.82	0.65	45%	0.71	55%	0.71	0.57	42%	0.6	37%	0.47	0.52	15%	0.45	27%
Mg	%	0.01	TD-MS	0.83	0.63	47%	0.77	52%	0.78	0.57	47%	0.62	41%	0.48	0.58	7%	0.48	23%
Mn	ppm	1	TD-ICP	479	108	84%	301	67%	245	79	77%	100	70%	107	63	55%	58	58%
Mn	ppm	1	TD-MS	438	98	85%	307	64%	244	74	78%	101	69%	100	65	50%	60	54%
As	ppm	3	TD-ICP	57.0	35.0	58%	49.0	55%	47.0	44.0	32%	46.0	28%	91.0	113.0	5%	95.0	20%
P	%	0.001	TD-ICP	0.157	0.067	70%	0.13	58%	0.067	0.05	43%	0.051	44%	0.809	0.954	10%	0.786	25%
S	%	0.01	TD-ICP	5.37	7.65	1%	9.08	12%	4.18	9.51	na	10.5	na	5.82	5.02	34%	6.34	16%
Mo	ppm	1	TD-ICP	143	156	24%	147	47%	130	129	28%	129	27%	62	77	5%	67	17%
Mo	ppm	1	FUS-MS-Na2O2	145	153	27%	134	52%	130	134	26%	130	26%	63	76	7%	251	na
Mo	%	0.005	FUS-Na2O2	0.017	0.016	35%	0.01	60%	0.014	0.01	28%	0.013	31%	0.006	0.007	10%	0.026	na
Mo	ppm	0.1	TD-MS	147	154	27%	158	44%	144	135	32%	142	27%	64	84	na	72	14%
Ni	ppm	1	TD-ICP	689	112	89%	404	70%	261	77	79%	92	74%	156	122	40%	99	51%
Ni	ppm	10	FUS-MS-Na2O2	710	110	89%	400	71%	290	90	78%	130	67%	160	130	38%	100	52%
Ni	ppm	0.5	TD-MS	670	107	89%	396	69%	260	74	79%	99.7	72%	153	126	37%	98	51%
U	ppm	10	TD-ICP	80	20	83%	50	68%	40	20	64%	20	63%	110	70	51%	50	65%
U	ppm	0.1	FUS-MS-Na2O2	91.8	20.3	85%	56.3	68%	43.1	14.7	75%	20.7	64%	134	80.4	54%	49.2	72%
U	ppm	0.1	TD-MS	77.4	17.2	85%	50.6	66%	39.4	12.5	77%	17.1	68%	113	69.9	53%	44.6	70%
V	ppm	2	TD-ICP	808	789	32%	784	50%	821	733	35%	760	32%	817	948	11%	837	21%
V	ppm	5	FUS-MS-Na2O2	846	791	35%	759	54%	859	757	36%	771	34%	849	1030	7%	881	20%
V	ppm	1	TD-MS	770	747	33%	767	48%	834	665	42%	757	33%	764	> 1000		838	16%
Zn	ppm	1	TD-ICP	964	164	88%	579	69%	353	97	80%	124	74%	231	175	42%	132	56%
Zn	ppm	30	FUS-MS-Na2O2	1000	170	88%	580	70%	390	120	78%	150	72%	250	200	39%	150	54%
Zn	ppm	0.2	TD-MS	1020	174	88%	595	70%	387	96.6	82%	139	73%	233	201	34%	150	51%
Cu	ppm	1	TD-ICP	120	81	53%	100	57%	81	55	51%	63	42%	128	104	38%	84	50%
Cu	ppm	2	FUS-MS-Na2O2	124	83	54%	103	57%	118	140	14%	80	50%	134	117	33%	92	47%
Cu	ppm	0.2	TD-MS	123	82.8	53%	102	57%	81.9	54.3	52%	67.5	39%	127	115	31%	88.8	46%
Co	ppm	1	TD-ICP	75.0	15.0	86%	45.0	69%	26.0	7.0	81%	9.0	74%	15.0	8.0	59%	7.0	64%
Co	ppm	0.2	FUS-MS-Na2O2	71.2	14.9	86%	40.9	70%	25.9	8.9	75%	11.4	67%	16.8	10.4	53%	8.5	61%
Co	ppm	0.1	TD-MS	67.3	14.4	85%	43.2	67%	25.4	8.5	76%	10.8	69%	16.1	10.0	52%	8.6	59%
Cd	ppm	0.3	TD-ICP	43.4	4.3	93%	25.0	70%	13.0	2.0	89%	3.5	80%	6.2	1.1	86%	1.4	83%
Cd	ppm	2	FUS-MS-Na2O2	41.0	4.0	93%	23.0	71%	12.0	2.0	88%	4.0	75%	6.0	< 2		< 2	na
Cd	ppm	0.1	TD-MS	37.4	3.5	94%	20.9	71%	11.1	1.6	90%	3.2	79%	5.0	1.0	85%	1.1	83%
Li	ppm	2	FUS-Na2O2	79	61	47%	61	60%	55	43	44%	44	41%	35	35	23%	32	30%
Li	ppm	3	FUS-MS-Na2O2	80	66	43%	66	57%	51	45	36%	48	30%	36	41	13%	35	25%
Li	ppm	0.5	TD-MS	86.7	69.8	44%	73.2	56%	58.2	47.8	41%	54.8	30%	37.5	42.8	12%	34.7	29%
Ag	ppm	0.3	TD-ICP	0.8	1.1	na	1.4	na	0.6	14.0	na	0.9	na	0.8	1.3	na	1.0	na
Ag	ppm	0.05	TD-MS	0.73	0.87	na	1.29	na	0.57	13.2	na	0.74	na	0.95	1.35	na	1.03	na
Weights	gm	0.01		10.00	6.92		5.18		10.00	7.22		7.40		10.00	7.67		7.67	

Table 24: Head Grades, Residue Grades and Recoveries, Sulfuric Acid Leaching Testwork 2010.

Stage-1 calculated metal recoveries are shown in Figure 91, showing the average of recoveries calculated from the multiple analyses, and they are summarized in Table 25.

Considering a suggested improvement of recovery for some of the metals (eg: Mo), and the difficulties encountered in maintaining sufficient solvent for monitoring its composition by periodic sub-sampling, a second set of tests were conducted at 40C for 48hrs and 50C for 36hrs relying on smaller (5gm) feed sample to increase solid/fluid ratio. Instead of progressively acidifying the samples, the tests acidified samples to a pH of approximately 1.3 at the outset.

Despite modifications to procedures, solvent volatilization again proved problematic, leading to many missing data points due to insufficient liquid or liquid with too high a suspended solid content to be adequately analyzed. The smaller sample size also frustrated efforts toward filtering and weighing of sample residues. The results from the Stage-2 tests, are accordingly best regarded semi-quantitatively and as experimental work in progress intended to formulate optimized procedures for future testwork.

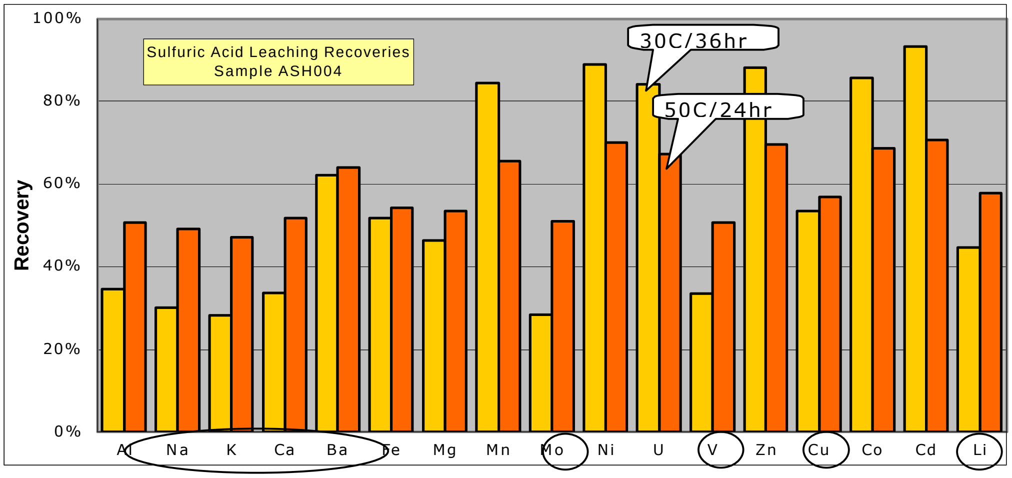

Figure 91: Summary of averaged sulfuric acid recoveries for sample ASH004, highlighting clay forming elements and Mo/V/Cu/Li, Sulfuric Acid Leaching Testwork 2010.

Analytical certificates[44] from the from Stage-2 leaching tests, and a summary, thereof are appended (Appendix E2.3 and E2.4). The data is not reproduced below given many uncertainties, and it is instead presented graphically in Figure 92 for samples ASH004 and ASH005, showing evolution of metal solubilization during the tests. Results from sample ASH006 are not shown considering that, despite increasing fluid/solids ratio, tests for sample were unsuccessful in collecting sufficient periodic subsamples during the tests to be of definitive use given the many missing data points.

Summary AVERAGES

Analyte Symbol	Recovery-004-30C	Recovery-004-50C	Recovery-005-30C	Recovery-005-50C	Recovery-006-30C	Recovery-006-50C
Al	35%	51%	32%	28%	16%	21%
Na	30%	49%	36%	30%	23%	12%
K	28%	47%	31%	25%	12%	18%
Ca	34%	52%	39%	29%	40%	21%
Ba	62%	64%	54%	15%		2%
Fe	52%	54%	49%	43%	11%	30%
Mg	46%	54%	45%	39%	11%	25%
Mn	84%	66%	77%	70%	52%	56%
Mo	28%	51%	28%	28%	8%	15%
Ni	89%	70%	79%	71%	38%	51%
U	84%	67%	72%	65%	53%	69%
V	34%	51%	38%	33%	9%	19%
Zn	88%	70%	80%	73%	38%	54%
Cu	53%	57%	39%	44%	34%	48%
Co	86%	69%	77%	70%	55%	61%
Cd	93%	71%	89%	78%	86%	83%
Li	45%	58%	40%	34%	16%	28%

Table 25: Summary of average recoveries, Sulfuric Acid Leaching Testwork 2010. Data shown is the average of all data from various analytical methods. Tests at 30C for 48hrs, at 50C for 36hrs .

Unlike Stage-1 tests during which pH was gradually lowered, Stage-2 tests adjusted pH at the beginning of the test to 1.2-1.4 and endeavored, with little success, to maintain it in that range. Figure 92 shows solubilization of select metals and major elements, though the grade variations depicted by the results fall short of defining anything which might be deemed a trend other than to note that metal re-precipitation as depicted by the sharp decrease in solution grade for several elements (eg: Ni at 20hrs, or U at 24hrs for ASH004). While metal re-precipitation might be simplistically attributed to pH fluctuations, its true cause requires concerted investigation, especially since precipitation of sulfates remains a likely culprit which requires resolution.

Metal extractions from Stage-2 tests, loosely termed "recoveries" were, nonetheless, calculated based on grade differential of feed and tails and are summarized in Table 26 as a qualitative guide and matter of record. The calculated figures are shown in Figure 93 to summarize what information might be gleaned from the tests which reflect, as did Stage-1 tests, an overall trend of better recoveries for Ni-U-Zn-Co-Cd ranging upward to 80%+, middling recoveries for Cu-Li ranging 20%-40%, and poor recoveries for Mo-V in the 5%-20% range.

[44] Actlabs Rpt#A10-1468.

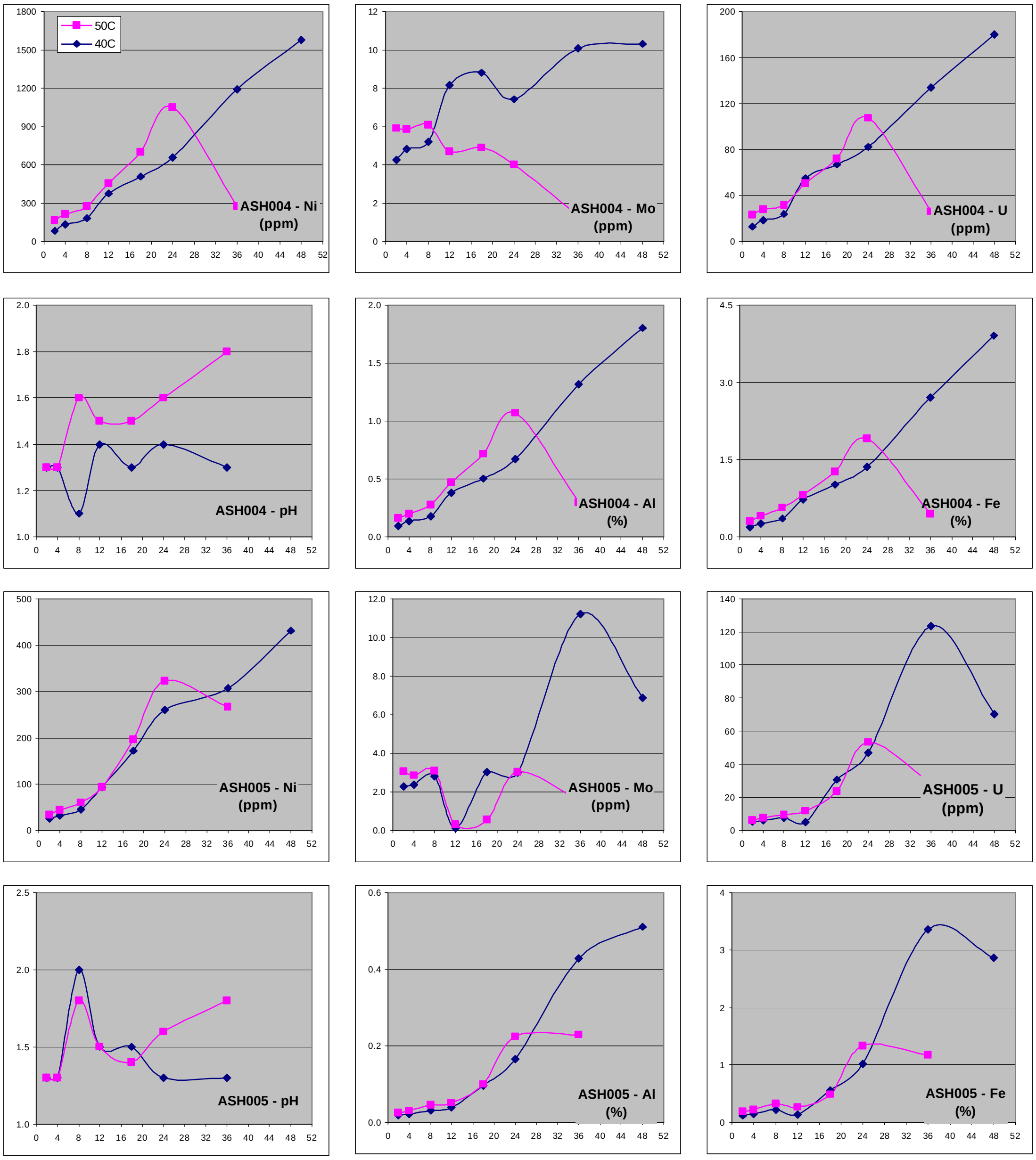

Figure 92: Solvent compositional evolution for select metals and for pH, Stage-2 Sulfuric Acid Leaching Testwork 2010. Data presented has not been amortized to constant volume

No other deductions can, or should, be made from the Stage-2 tests, nor from Stage-1 tests for that matter, other than to underscore the need for completing structured leaching tests with fewer variables to optimize leaching conditions for enhanced recoveries relying also on larger samples.

The sulfuric acid leaching tests achieved their principal objective of investigating whether metals might be collectively extracted from the shale, and successfully demonstrated that: (i) collective group of metals can indeed be extracted from the shale by simple leaching under conditions generally simulating bioleaching; (ii) that high recoveries can be achieved under conditions for Ni-U-Zn-Cd-Co, and middling recoveries for Cu-Li; (iii) that recoveries for Mo-V are poor but can be enhanced by varying leaching parameters; (iv) that rare metals contained in the shale, including Li, also report as co-products during leaching and that they represent previously unrecognized additional value to the shale; and (v) that the Speckled Shale is likely amenable to bioleaching, provided the Shale contains bio-organisms suitable for bioleaching and barring any toxicity presented to bio-cultures by the geochemistry of the shale.

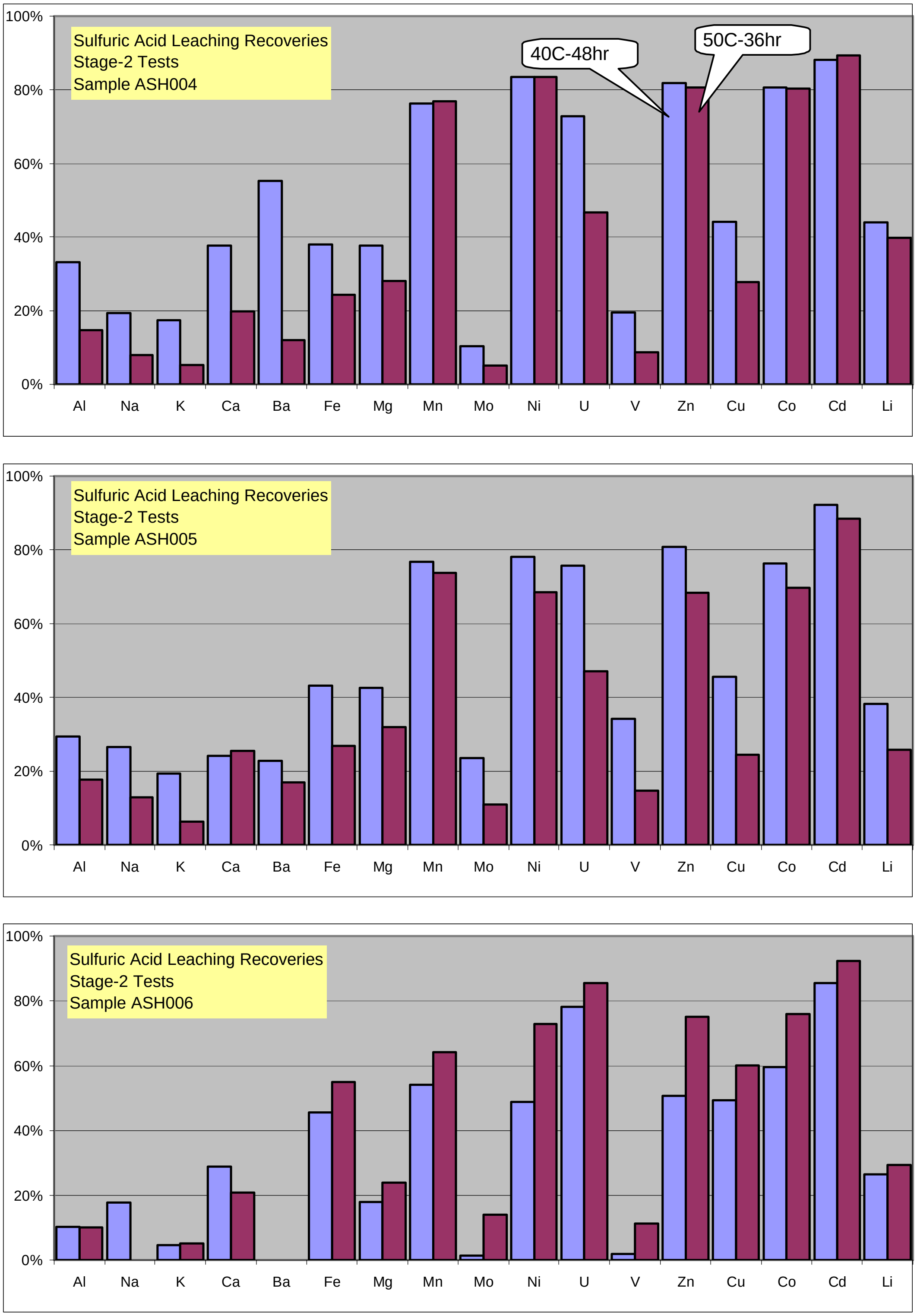

Figure 93: Summary of sulfuric acid leaching recoveries, for sample ASH004, ASH005 and ASH006, Stage-2 Sulfuric Acid Leaching Testwork 2010.

Analyte	Unit	Detection Limit	Analysis Method	09ASH004S-HEAD	09ASH004S – Res-40C	09ASH004S – 40C-Recovery	09ASH004S – Res50C	09ASH004S – 50C-Recovery	09ASH005S-HEAD	09ASH005S – Res40C	09ASH005S – 40C-Recovery	09ASH005S – Res50C	09ASH005S – 50C-Recovery	09ASH006S-HEAD	09ASH006S – Res40C	09ASH006S – 40C-Recovery	09ASH006S – Res50C	09ASH006S – 50C-Recovery
Al	%	0.01	TD-MS	5.79	4.78	33%	5.95	15%	5.28	4.34	29%	5.08	18%	4.74	5.29	10%	5.60	10%
Na	%	0.001	TD-MS	0.25	0.25	19%	0.28	8%	0.23	0.19	27%	0.23	13%	0.39	0.40	18%	0.54	-4%
K	%	0.01	TD-MS	1.35	1.38	17%	1.54	5%	1.29	1.21	19%	1.41	6%	1.34	1.59	5%	1.67	5%
Ca	%	0.01	TD-MS	4.87	3.75	38%	4.70	20%	8.72	7.69	24%	7.59	26%	5.40	4.78	29%	5.62	21%
Ba	ppm	1	TD-MS	83	46	55%	88	12%	68	61	23%	66	17%	41	60	-18%	97	-80%
Fe	%	0.01	TD-MS	3.81	2.92	38%	3.48	24%	3.70	2.45	43%	3.16	27%	5.50	3.73	45%	3.25	55%
Mg	%	0.01	TD-MS	0.83	0.64	38%	0.72	28%	0.78	0.52	43%	0.62	32%	0.48	0.49	18%	0.48	24%
Mn	ppm	1	TD-MS	438	129	76%	122	77%	244	66	77%	75	74%	100	57	54%	47	64%
Mo	ppm	0.1	TD-MS	147	163	10%	168	5%	144	128	24%	150	11%	63.9	78	1%	72	14%
Ni	ppm	0.5	TD-MS	670	137	83%	134	83%	260	66	78%	96	69%	153	98	49%	54	73%
U	ppm	0.1	TD-MS	77.4	26.1	73%	49.7	47%	39.4	11.1	76%	24.4	47%	113	30.7	78%	21.3	86%
V	ppm	1	TD-MS	770	766	20%	847	9%	834	638	34%	832	15%	764	931	2%	892	11%
Zn	ppm	0.2	TD-MS	1020	229	82%	238	81%	387	87	81%	143	68%	233	143	51%	76	75%
Cu	ppm	0.2	TD-MS	123	85	44%	107	28%	81.9	52	46%	72	25%	127	80	49%	67	60%
Co	ppm	0.1	TD-MS	67.3	16	81%	16	80%	25.4	7	76%	9	70%	16.1	8	60%	5	76%
Cd	ppm	0.1	TD-MS	37	6	88%	5	89%	11	1	92%	2	88%	5	1	86%	1	92%
Ag	ppm	0.05	TD-MS	0.73	0.99	-10%	1.04	-18%	0.57	0.68	-3%	0.76	-14%	0.95	1.5	-27%	1.45	-16%
Li	ppm	0.5	TD-MS	86.7	60	44%	63	40%	58.2	42	38%	51	26%	37.5	34	26%	35	29%
Weight	gm	0.01		5.00	4.04		4.15		5.00	4.30		4.28		5.00	4.02		3.80	

Table 26: Head Grades, Residue Grades and Recoveries, Stage-2 Sulfuric Acid Leaching Testwork 2010.

Results from Stage-1 and Stage-2 leaching tests are combined and summarized in Table 27 for reference. Given the many differences in sample size, pH during leaching, leaching time and temperatures, no empirical inferences can, or should, be made based on comparisons of the results. Suffices to say that, regardless of test conditions, Ni-Zn-U-Co-Cd solubilization in all of the tests repeatedly outperformed Cu-Li which in turn outperformed Mo-V.

DNI is currently planning expanded tests relying on observations from the orientative sulfuric acid leaching testwork described above.

Analyte	Stage1	Stage2	Stage1	Stage2	Stage1	Stage2	Stage1	Stage2	Stage1	Stage2	Stage1	Stage2
	Sample#004-30C - 36hrs	Sample#004-40C - 48hrs	Sample#004-50C - 24hrs	Sample#004-50C - 36hrs	Sample#005-30C- 36hrs	Sample#005-40C - 48hrs	Sample#005-50C- 24hrs	Sample#005-50C - 36hrs	Sample#006-30C- 36hrs	Sample#006-40C - 48hrs	Sample#006-50C- 24hrs	Sample#006-50C - 36hrs
Mo	28%	10%	51%	5%	28%	24%	28%	11%	8%	1%	15%	14%
Ni	89%	83%	70%	83%	79%	78%	71%	69%	38%	49%	51%	73%
U	84%	73%	67%	47%	72%	76%	65%	47%	53%	78%	69%	86%
V	34%	20%	51%	9%	38%	34%	33%	15%	9%	2%	19%	11%
Zn	88%	82%	70%	81%	80%	81%	73%	68%	38%	51%	54%	75%
Cu	53%	44%	57%	28%	39%	46%	44%	25%	34%	49%	48%	60%
Co	86%	81%	69%	80%	77%	76%	70%	70%	55%	60%	61%	76%
Cd	93%	88%	71%	89%	89%	92%	78%	88%	86%	86%	83%	92%
Li	45%	44%	58%	40%	40%	38%	34%	26%	16%	26%	28%	29%
Temperature	*30C*	*40C*	*50C*	*50C*	*30C*	*40C*	*50C*	*50C*	*30C*	*40C*	*50C*	*50C*
Leach Duration	*36hrs*	*48hrs*	*24hrs*	*36hrs*	*36hrs*	*48hrs*	*24hrs*	*36hrs*	*36hrs*	*48hrs*	*24hrs*	*36hrs*

Table 27: Summary of recoveries, Stage-1 and Stage-2 Sulfuric Acid Leaching Testwork 2010.

11.6.3 BioLeaching Testwork - BRGM - 2009-2010

Through many discussions with the Bureau de Recherches Géologiques et Minières (BRGM), France, the BRGM was retained in September 2009 to conduct initial bioleaching testwork to determine amenability of the Second White Speckled Shale to bioleaching for the collective recovery of metals. The BRGM is France's leading Earth Sciences public institution, and is recognized worldwide for its expertise in biohydrometallurgy and the development of innovative processes applied to industrial scale bioleaching of metals from sulphides. The Alberta black shales' amenability to bioleaching has never previously been tested, and the BRGM testwork was intended as an initial step toward broader testwork to follow.

	DNI Analyses (Actlabs Rpt#A09-4934)				BRGM
Analyte	Detection	Units	Method	09ASH004	09ASH004
C-Total	0.01	%	IR	10.80	na
C-Organ		%	IR	9.12	11.4
C-Graph		%	IR	0.1	na
C-Mineral				na	0.2
CO2	0.01	%	COUL	5.7	na
Total S	0.01	%	IR	5.05	na
S	0.01	%	TD-ICP	5.24	6.6
SO4		%	IR	4.2	8.5
S-sulfide				na	3.8
Al	0.01	%	TD-ICP	5.42	na
Na	0.01	%	INAA	0.23	na
K	0.01	%	TD-ICP	1.59	na
Ca	0.01	%	TD-ICP	5.68	na
Ba	50	ppm	INAA	600	na
Fe	0.01	%	INAA	3.78	4.7
Mg	0.01	%	TD-ICP	0.82	na
Mn	1	ppm	TD-ICP	474	na
P	0.001	%	TD-ICP	0.16	na
Mo	1	ppm	TD-ICP	141	182
Ni	1	ppm	INAA / TD-ICP	704	388
U	0.5	ppm	INAA	92	67
V	2	ppm	TD-ICP	796	895
Zn	1	ppm	INAA / TD-ICP	964	625
Cu	1	ppm	TD-ICP	117	138
Co	1	ppm	INAA	70	51
Cd	0.3	ppm	TD-ICP	44.1	na
Ag	0.3	ppm	INAA / TD-ICP	0.9	<0.2
Au	2	ppb	INAA	1	na
Li	0.5	ppm	TD-MS	73	na
Pb	3	ppm	TD-ICP	16	na
SiO2	0.01	%	FUS-XRF	36.9	na
Al2O3	0.01	%	FUS-XRF	11.6	na
Fe2O3(T)	0.01	%	FUS-XRF	5.8	na
MnO	0.001	%	FUS-XRF	0.1	na
MgO	0.01	%	FUS-XRF	1.4	na
CaO	0.01	%	FUS-XRF	6.9	na
Na2O	0.01	%	FUS-XRF	0.4	na
K2O	0.01	%	FUS-XRF	1.7	na
TiO2	0.01	%	FUS-XRF	0.4	na
P2O5	0.01	%	FUS-XRF	0.4	na
Cr2O3	0.01	%	FUS-XRF	0.0	na
LOI		%	FUS-XRF	32.6	na
Total	0.01	%	FUS-XRF	98.2	na

Table 28: Geochemical profile sample 09ASH004 as reported by BRGM compared to DNI analytical data (see Section 11.5 for details for the sample).

Testwork parameters were formulated by Dr.C.L.Brierley, bioleaching consultant to DNI, in discussions with Dr.H.Morin of BRGM and S.Sabag of DNI.

Three samples of a polymetallic black shale, collected during the 2009 field sampling program from the Asphalt Zone (Samples 09ASH004, 09ASH005 and 09ASH006 from stratigraphic section Asphalt-H, see Section 11.5 of this Report), were submitted to BRGM in October 2009. The three samples, weighing an aggregate of 3.9kg, collectively provide a 3m-5m continuous sample characterizing the lower part of the stratigraphic section outcrop, and proxy well as a representative type sample of the black shale midsection of the Second White Speckled Shale Formation.

Only sample 09ASH004 was tested, duplicate subsamples from which were also tested by DNI during its sulphuric acid leaching testwork (Section 11.6.2), and other duplicate subsamples also tested in concurrent series of bioleaching and bacterial culturing testwork by the Alberta Research Council (Section 11.6.4).

Multielement composition of the sample tested, as analyzed by BRGM, is shown in Table 28 including also comparative analyses from DNI's analytical work (see also Section 11.5). The differences in analyses are attributed to subsampling inhomogeneities due to splitting of coarse samples.

BRGM conducted bioleaching testwork using duplicate 200gm charges during approx 15 days of leaching at substantially constant pH of 1.8, at 40C and 3% solids. pH was maintained during the testwork by the occasional addition of sulfuric acid. The tests were carried out in shaker flasks and in mechanically-stirred temperature-controlled bioreactors.

A bacterial consortium from BRGM's acidophilic culture bank was used during the tests[45]. Considering that the culture had previously been adapted to grow on a copper concentrate, copper recovery could not be measured during the biotic leaching. Cd and Li were also not monitored during the tests

BRGM also completed a duplicate abiotic parallel test without the addition of bio-organisms, to evaluate effects of biotic intermediation on metals recoveries. Recoveries reported from the bioleaching testwork provide initial results which are to be optimized during future additional expanded testwork.

BRGM's testwork procedures and findings are outlined in their report dated April 12, 2010[46], appended herein as Appendix E3. Salient portions from the report are summarized or extracted herein.

Evolution of pH during the testwork is shown in Figure 94, which shows that pH was stable throughout the testwork suggesting limited sulphur-oxidizing bacterial activity, likely due to the low sulphur content of the sample (3.76%).

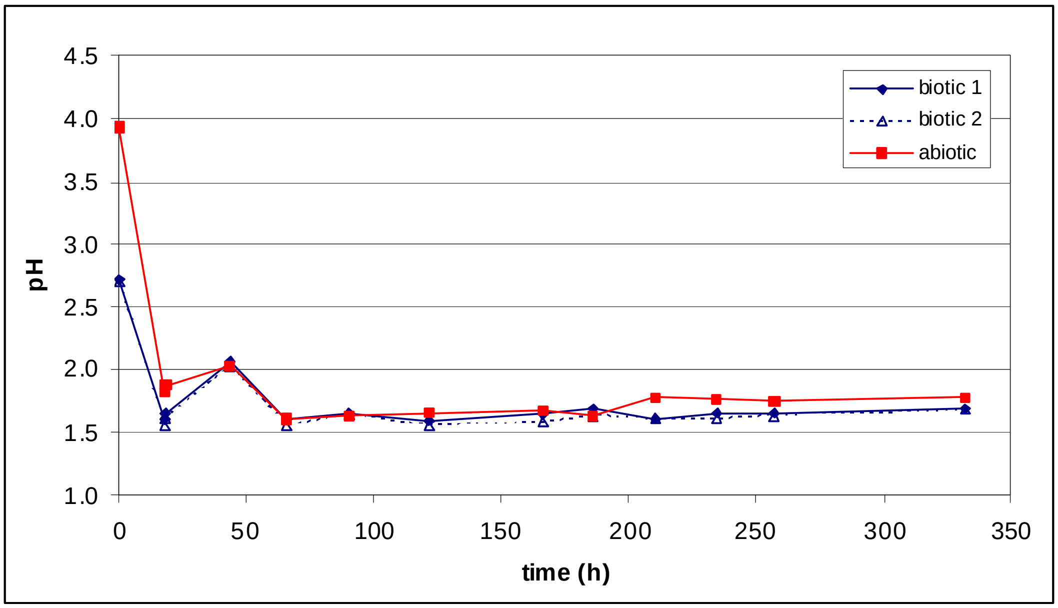

Figure 94: Variation of pH during biotic and abiotic tests, Bioleaching Testwork, BRGM 2010.

Electrochemical potential (Eh) evolution was very different during biotic and abiotic experiments as expected (Figure 95), the high electrochemical potential in the biotic cultures reflecting iron oxidizing bacterial activity. Bacterial concentration increased from 2 cells/mL to 9.1 cells/mL during the testwork.

The evolution of metals solubilization documented during the testwork are shown in Figures 96 and 97, which are extracted from the BRGM report. Based on comparisons between metal concentrations evolution under biotic and abiotic conditions, the testwork concluded that:

- Final Zn, Ni, U, Co concentrations were slightly higher in the biotic condition;
- Final Fe and Mo concentrations were more significantly higher in the biotic condition, but even under those latter conditions molybdenum solubilization levels off at a limited recovery value;
- Final V concentration was lower in biotic condition.

[45] Concurrent bioleaching testwork carried out by the Alberta Research Council in 2009-2010 used bacteria cultured from samples of the Second White Speckled Shale and adapted to the Shale (see Section 11.6.4).

[46] Bioleaching of a Black Shale Ore Sample: Feasibility Study, Technical Note April 12, 2010: by P.Spolaore and D.Morin, BRGM; Project Ref#EPI/ECO 2010-286.

BRGM overall concluded that that the bacterial activity has only limited incremental positive influence on metals dissolution, since the metal solubilization under abiotic conditions were similar to those under biotic conditions, indicating that metals solubilize quickly under acid conditions. BRGM also concluded that the principal benefit of biotic intermediation is improvement in recovered metal yields over time.

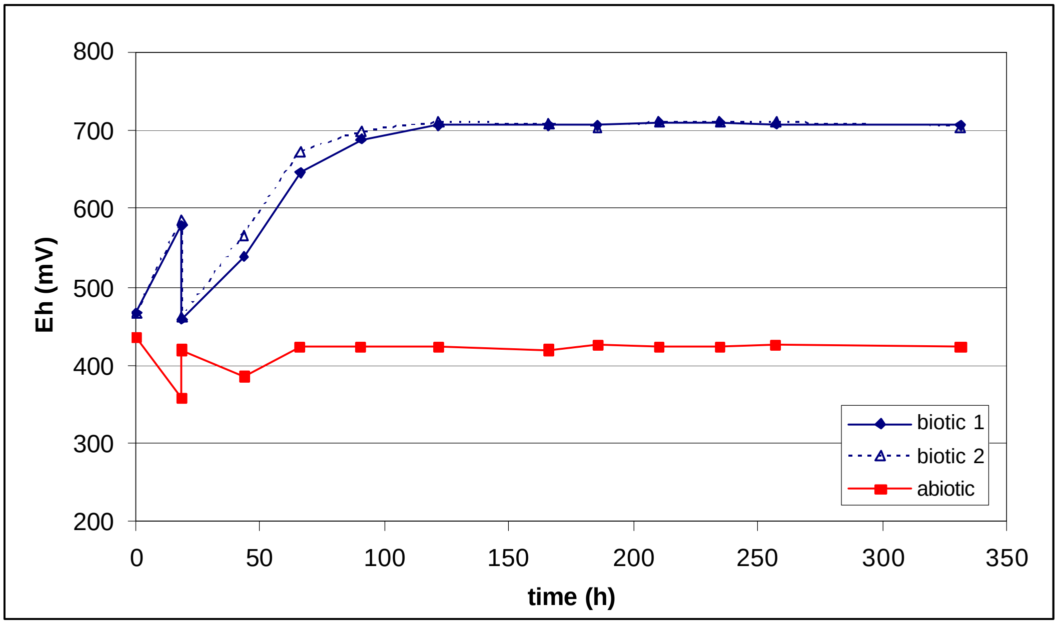

Figure 95: Variation of Eh during biotic and abiotic tests, bioleaching testwork BRGM 2010.

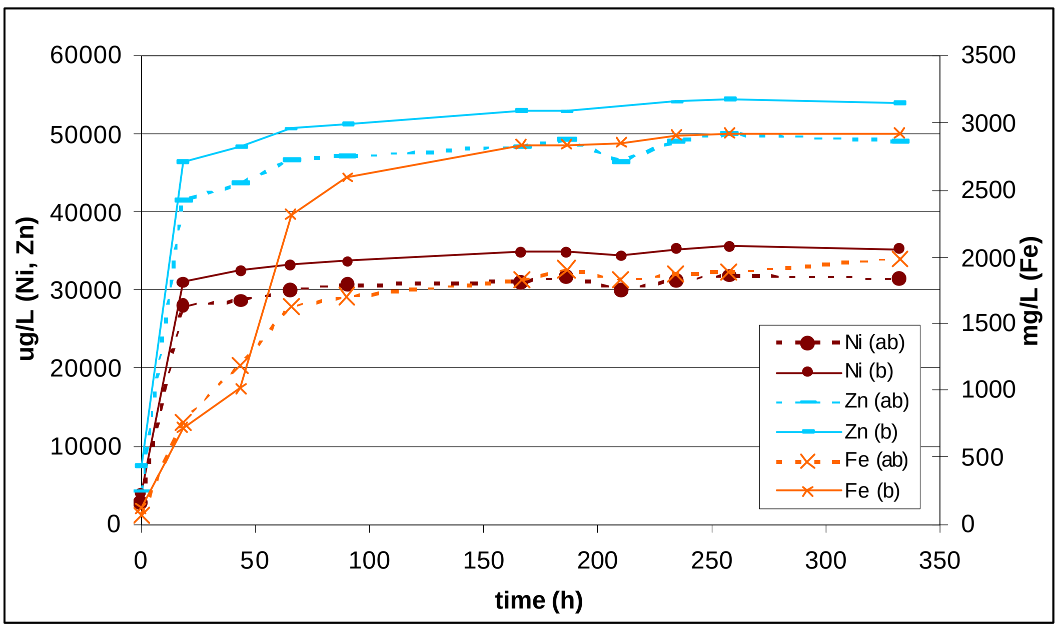

Figure 96: Ni, Zn and Fe solubilization variations during biotic and abiotic tests, bioleaching testwork BRGM 2010.

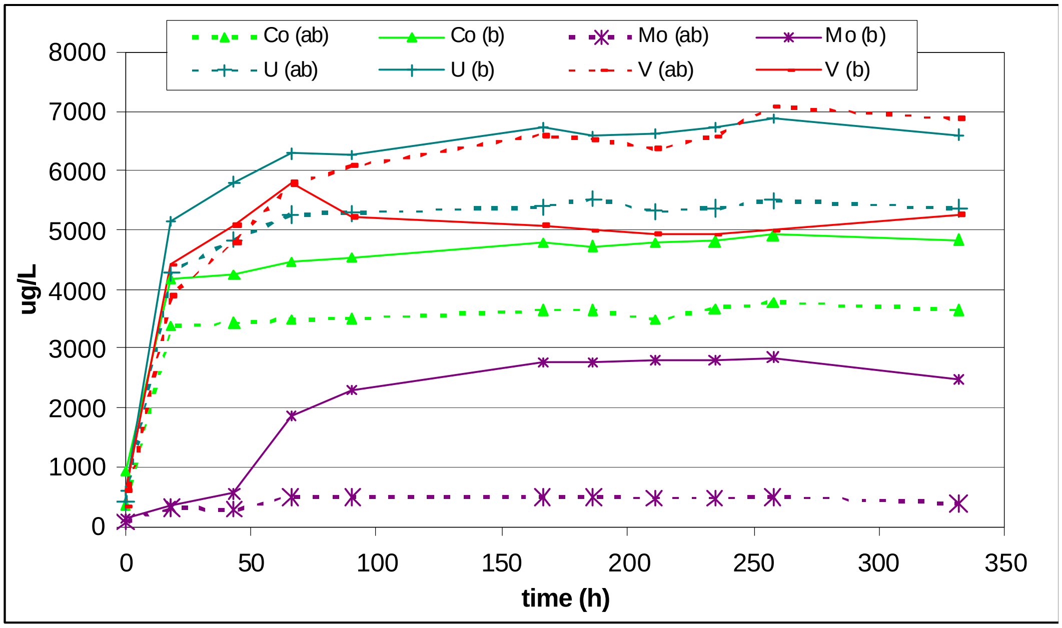

Figure 97: Co, Mo, U and V solubilization variations during biotic and abiotic tests, bioleaching testwork BRGM 2010.

BRGM made the folowing observations and conclusions:

- the existence of a bacterial activity was demonstrated, although sulphur-oxidising activity was less efficient than the iron-oxidising activity;
- the shale tested is quite reactive to bioleaching as there is a very short lag time before micro-organisms start to grow at its contact;
- bacterial adaptation to the shale is immediate and there is no "poisoning" by the shale's geochemistry (eg: As, Ag, etc..), nor does the shales chemistry inhibit start-up of bacterial growth;
- Oxydo-Reduction potential rises very early in the tests as seen in the tank tests, and the ore produces acidity quite soon although the sulfur content of sample tested is too low to produce the requisite sulphuric acid by bioleaching alone, and that the 3%-4% S content of the shale is at the lower limit for triggering and maintaining a bacterial growth based on sulphide oxidation;
- BRGM reported calculated metals recoveries as shown in Table 29, and noted that metal recoveries in biotic conditions were only slightly improved by the presence of bacteria.

BRGM recommended that complementary leaching tests be undertaken using conventional leaching agents to definitively determine any advantages which bioleaching might offer over chemical leaching. They further recommended that future work include tests at higher solids content and tests with recycling of the liquor in order to increase solvent metal grades.

	biotic recovery %	abiotic recovery %
Co	88.1	83.2
Cu	ND	49.4
Mo	15.6	2.5
Ni	88.4	86.6
U	88.0	81.9
V	5.8	8.3
Zn	82.8	83.7

Table 29: Metals recoveries for biotic and abiotic leaching tests, Bioleaching Testwork, BRGM 2010.

The recoveries reported are significant as they demonstrate that metals can be readily extracted from the black shales via bioleaching, and that recoveries are high enough to compel expansion of the testwork to advance toward scaled up benchtests and column leaching.

DNI considers the current bioleaching results to be a significant step forward toward development of the polymetallic black shale projects and a milestone in advancing the Property.

The BRGM test results are consistent with, and serve to corroborate, results from sulfuric acid leaching tests conducted by DNI which are discussed in Section 11.6.2, and serve to reiterate that most of the metals quickly solubilize under acidic conditions.

DNI is currently planning additional bioleaching testwork to expand on the bioleaching results obtained thus far to enhance metal recoveries, especially for Mo and V, by optimizing test parameters.

11.6.4 BioLeaching Testwork - ARC - 2009-2010

The Alberta Research Council[47] (ARC) was retained in September 2009, to carry out a series of tests[48] to investigate bio-organic characteristics of samples from the Second White Speckled black shale, as a precursor to broader tests to follow to test amenability of the shales to metals extraction by bioleaching. Intentions were to substantially duplicate testwork conducted by the BRGM, while relying on a bacterial culture extracted from the Second White Speckled Shale rather than a generic culture as was the case for the BRGM tests.

The ARC testwork consisted of three stages of work which were formulated through discussions with the ARC during June-Aug/2009. The work was carried out under the direction of S.Sabag PGeo and Dr.C.L.Brierley PhD, bioleaching consultant to DNI who undertook to formulate laboratory procedures for the various stages of the work. The ARC reported its findings in three separate reports corresponding to the three stages of work, namely:

- **Stage1** – Bio-culturing testwork focusing on extraction of bio-organisms from the shales and assessing their suitability to be used in bioleaching. Work was conducted during Oct-Nov 2009, and results reported in a report dated November 2, 2009, appended herein as Appendix E4.1;

- **Stage2** – Bio-organism culturing and adaptation testwork focusing on culturing bio-organisms extracted in Stage1 and their adaptation to solids comprising shale sample material. Work conducted during Nov/09-Jan/2010, and results reported in a report dated February 1, 2010, appended herein as Appendix E4.2;

- **Stage3** – Bioleaching testwork focusing on leaching of metals from the shale by conventional bioleaching protocols. This work also included tests to measure sulfuric acid consumption and metal mobility. Work was conducted during Feb-April 2010, and results reported in a report dated June 29, 2010, appended herein as Appendix E4.3.

Sample material tested included fresh surface samples collected by DNI during the 2009 Field Sampling Program (See Section 11.5), in addition to a sample of archived drill core which was collected by DNI from historic drill core archived at the MCRF from 1997 drilling at the Asphalt and Buckton zone (See Section 11.4). Lithogeochemical information from the samples and their particulars were presented in previous Sections of this Report. Select summary information has, nonetheless, been extracted and reiterated in this Section for simplicity.

Different suites of samples were tested in the above three separate stages due to constraints in quantity of available feed material. Additional sample material was collected from the field by DNI in June 2010 to expand the testwork later in the year, and to have sufficient “feed” on hand to keep bio-organism cultures nurtured during the testwork alive in the interim.

Details of the three stages of testwork are presented below.

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[47] The Alberta Research Council changed its name in 2010 to Alberta Innovates Technology Futures (AITF). The acronyms ARC and AITF are used interchangeably in this Report.
[48] ARC project# ARC#CEM13173-201

Stage1: Bio-Culturing Testwork
Objective of the testwork study was to determine whether microorganisms capable of growing under bioleaching conditions (i.e. extreme acidic conditions) could be detected in the Second White Speckled Shale collected from the property.

Four samples were delivered to the ARC for the bio-culturing testwork:

- **09ASH003F**: a sulfur rich sample from Second White Speckled black shale stratigraphic section Asphalt-H (AGS site 95DL04), collected by DNI during the 2009 Field Sampling Program from the Asphalt Zone;
- **09ASH004F**: subsample of mineralized Second White Speckled black shale stratigraphic section Asphalt-H, collected by DNI during the 2009 Field Sampling Program from the Asphalt Zone; (a duplicate subsample of this material was also tested by the BRGM bioleaching, see Section 11.6.3; another subsample studied by MLA, see Section 11.7; and another subsample tested during DNI's Sulfuric Acid testwork, see Section 11.6.2);
- **GS1-002F**: a sulfur rich sample from stratigraphic section GOS Creek C, collected by DNI during the 2009 Field Sampling Program from the Buckton Zone;
- **RB0113298-C**: a subsample of typical mineralized Second White Speckled black shale intercept from archived historic drill in hole 7BK01 (drilled 1997) as re-sampled from MCRF archives. This material was included in the testwork to assess suitability of historic archived drill core samples to bioleaching testwork.
- **A fifth sample** was also tested, consisting of an adhoc mixture of material from samples 09ASH-CO2, GS3-002-003-CO2, GS3-CO2 which had been submitted to the ARC in connection with a separate study concurrently carried out by the ARC to test CO_2 absorption characteristics of the shale (presented in Section 11.9 of this Report). The foregoing samples were collected by DNI during the 2009 Field Sampling Program from the Asphalt (09ASHCO2) and Buckton (GS3-002-003-CO2 and GS3-CO2) Zones.

Sample numbers legend key for the five samples tested is shown in Table 30.

Culture Name	Environmental Sample Used as Inoculum
DN1	09ASH003F; Asphalt-H (collected August 2009)
DN2	GS1-002F; GOS Creek C, Buckton (collected August 2009)
DN3	09ASH004F; mineralized Second White Speckled black shale Asphalt-H (collected August 2009)
DN4	RB0113298-C; mineralized Second White Speckled black shale, drill hole 7BK01 (drilled 1997)
DN5	Mixture of stratigraphic samples: 09ASH CO2, GS3-002-003-CO2, GS3-CO2 (collected August 2009)[a]

[a]53g from each core sample was placed in a single container and mixed thoroughly before addition to the culture flasks.

Table 30: List of samples, bio-organism culturing study, ARC 2009. From Table 1, Budwill 2009.

None of the samples required grinding as the Second White Speckled shale is typically poorly consolidated material consisting of fine powder and friable rubble. Approximately 53gm aliquots from each sample were tested. Medium preparation and culture set-up methods are described in detail in ARC's report of Nov/2009 (Budwill 2009, Appendix E4.1).

The culture fluids were incubated for 23 days. The tests were conducted at pH 1.2-1.8, which was maintained throughout the testwork by the addition of 0.5-1.9 ml of 10N H2SO4. Adjustment of the culture fluid pH by acidification was necessary only during the initial four days of incubation, after which fluids stabilized and pH did not deviate from the 1.2-1.8 pH range. Onset of reactive progress (ie: presence of reactive bio-organisms) could be detected in most of the cultures in the early days of their incubation given change of colour of the culture solutions.

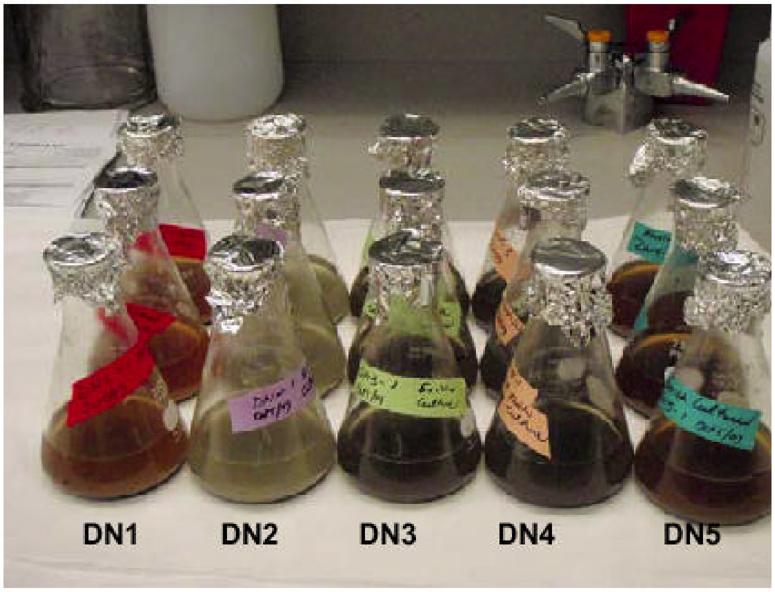

Plate 8: Flasks with culture series DN1 through DN5 on day 14 of incubation, ARC 2009. From Figure 4, Budwill 2009.

Results from the tests are summarized in Figure 98 below, showing changes in redox potential of the five cultures over the 25 day incubation period. An increase in the redox potential is an indication that microorganisms are present that are oxidizing the sulphur contained in the mineral feed.

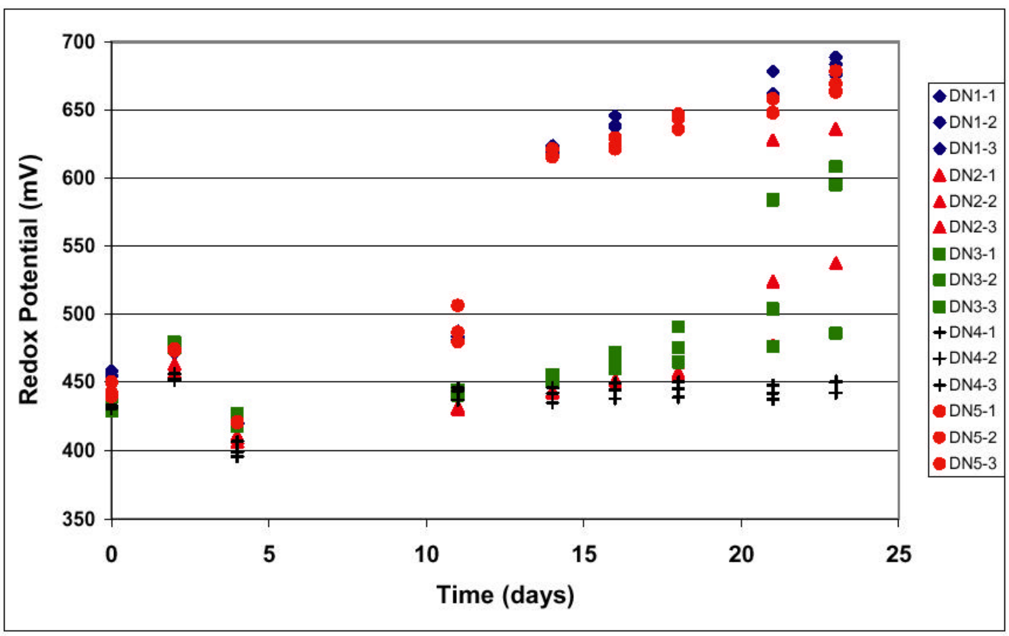

Figure 98: Redox potential trends, bio-organism culturing study, ARC 2009. From Figure 1, Budwill 2009.

- enrichment culture series DN1 and DN5 showed the greatest increase in redox potential, with a significant jump in the redox potential between days 12 and 14.
- culture series DN2 and DN3 did not have any significant increases in their redox potential until after 18 days of incubation.

- culture series DN4, the only culture consisting of a sample from archived drill core (1997 drilling), did not achieve any significant changes in its redox potential over the entire incubation period, indicating that that there were no active bioleaching microorganisms in the sample which was collected 12 years ago (or that if there had been any at one point, none had survived the 12 years of storage).

The study achieved its goals and overall concluded that:

(i) bioleaching enrichment cultures could be obtained from the fresh samples of the Second White Speckled shale, regardless of whether the samples were from the (weathered) surface or from stratigraphic sections;

(ii) the rate at which the cultures established themselves and showed bioleaching activity varied from sample to the next, likely reflecting differences in microbial diversity and their concentration between the different samples; and

(iii) the archived drill core would not be suited to bioleaching testwork.

The study recommended that all of the cultures showing bioleaching activity (DN1, 2, 3 and 5) be adapted to increasing mineral feed, from an initial 2% solids density to 20%, and that the testwork advance to bioleaching batch amenability testing once the cultures are adapted to the high solids density. The adaptation work comprises Stage2 of the ARC testwork.

Stage2: Culture Adaptation testwork

The objective of Stage2 was to adapt two of the bioleaching enrichment cultures obtained during Stage1 (D1 and D5) to increasing shale amounts (up to 20% solids density) and decreasing amounts of external ferrous sulphate. Methodology and procedures are described in ARC's February 1, 2010, report (Budwill 2010a, Appendix E4.2), all of which were formulated with direction and input from Dr.C.L.Brierley.

In general terms, the testwork entailed addition of progressively larger amounts of samples DN1 and DN5 to bio-cultures extracted from each over a two month period Nov18/09-Jan17/10. Tests were conducted at pH range of 1.2-1.8 which was monitored throughout the work, fluids were monitored daily and redox was measured every 2-5 days for each solids density level (2%, 5%, 10%, 15% and 20% solids).

Test results for DN1 and DN5 are shown in Figures 99 and 100, respectively.

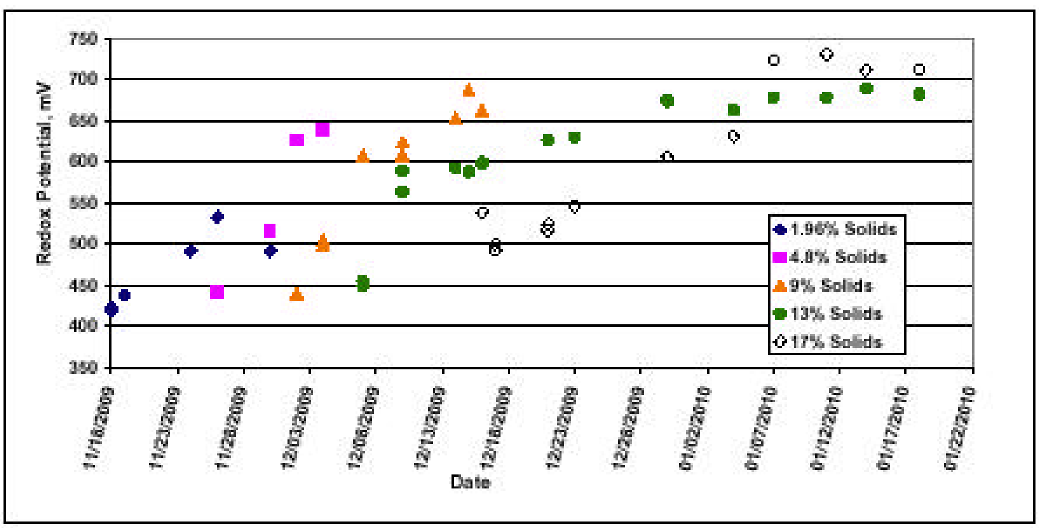

Figure 99: Redox potential trends for sample DN-1, Bio-Culture adaptation testwork, ARC 2010. From Figure 1, Budwill 2010a.

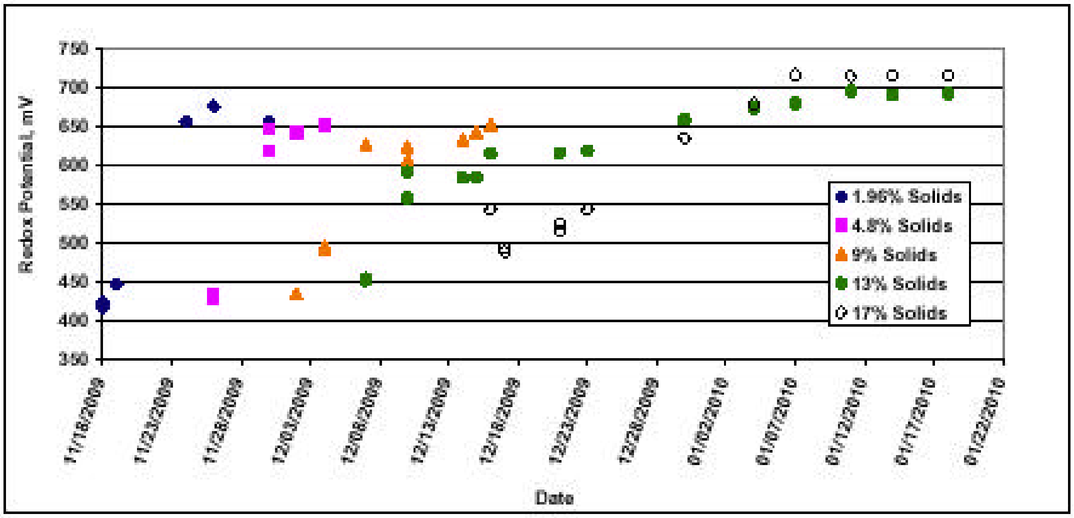

Figure 100: Redox potential trends for DN-5, Bio-Culture adaptation testwork, ARC 2010. From Figure 1, Budwill 2010a.

Results are overall similar for the two samples. For DN1, the culture took approximately 12 to 14 days to reach a stable redox potential value of greater than 600 mV at each solids density level. The redox potential did not exceed beyond 730 mV likely due to organic material in the shale interacting with the bacteria and redox reactions. Notably, the DN1-1 culture adapted to the decreasing amounts of FeSO4 7H2O at each increase in solids density, so that at 17% solids density the culture had stabilized as it was noted to be growing and oxidizing the shale without the benefit of any added ferrous iron. DN5 exhibited similar trends as its culture also soon adapted to growing with 17% shale without added FeSO4 7H2O.

The amount of acid required to maintain the pH of the cultures with 17% solids density between 1.2 and 1.8 was 0.0016 to 0.0023 kg 10N H2SO4 per 0.00002 tonne of shale (equivalent of 8% to 12% of the shale material).

The Stage2 testwork achieved its objective and demonstrated that the cultures could adapt well to the Second White Speckled shale. The study recommended that testwork advance to conducting batch amenability tests, using a combination of DN1-1 and DN5-1 as the bioleaching inoculum, to measure the types and amounts of metals that can be extracted from the Second White Speckled shale by bioleaching. A decision was made to also concurrently complete metal mobility and acid consumption tests.

Stage3: Bioleaching Batch Metals Extraction Testwork – Sulfur Consumption Testwork

The objectives of Stage3 testwork were: (i) to measure sulfuric acid consumption to achieve a pH of 1.8; (ii) to determine which metals would solubilize (metals mobility tests) in sulphuric acid at pH range between 1.2-1.8; and (iii) to conduct a series of batch amenability bioleaching tests to determine the types and amounts of metals that can be extracted from the Second White Speckled shale using bioleaching inoculum cultures previously prepared during Stage2.

Two samples were tested, consisting of material collected by DNI during the 2009 Field Sampling Program as follows:

Sample ARC#003 - sample #09ASH003 a sulfur rich sample from Second White Speckled black shale stratigraphic section Asphalt-H at the Asphalt Zone. The sample (re-named as Sample-003 by the ARC) represents material from the shale with lower metal contents than the samples listed below; and

Sample ARC#456 - a composite sample constructed by combining whatever material remaining on hand of samples# 09ASH004, 09ASH005 and 09ASH006 into a weighted composite (re-named as Sample-456 by the ARC). The foregoing samples are also of the

Speckled Shale exposed at stratigraphic section Asphalt-H at the Asphalt Zone, and collectively represent a continuous 4m long trenched stratigraphic sample over the bottom portions of the stratigraphic section (see Section 11.5 for sampling details).

The Stage3 work was carried out by Dr.K.Budwill (ARC) with input from Dr.C.L.Brierley and S.Sabag (DNI). Bioleaching procedures were formulated by Dr.Brierley and are appended in ARC's report. Details of the testwork procedures and results are outlined in a report by ARC[49] dated June 29, 2010 (Budwill 2010b, Appendix E4.3). Salient observations and conclusions from the testwork are summarized below as extracted from the report.

Lithogeochemical profiles of the two samples tested, per DNI records, are summarized in Table 31 (see Section 11.5 for sampling details). Analytical differences between head grades tabulated and those as reported by the ARC are attributed to inherent inhomogeneities in sub-sampling of coarse material.

Analyte	Detection	Units	Method	09ASH003S	09ASH004S	09ASH005S	09ASH006S	WtdAvg
				Sample 003	combined into composite sample 456			Sample 456
C-Total	0.01	%	IR	5.63	10.80	10.70	4.93	8.41
C-Organ		%	IR	4.94	9.12	8.51	2.38	6.19
C-Graph		%	IR	0.11	0.1	0.15	0.08	0.11
CO2	0.01	%	COUL	2.1	5.7	7.4	9.0	7.7
Total S	0.01	%	IR	2.25	5.05	3.97	5.48	4.81
S	0.01	%	TD-ICP	2.15	5.24	3.91	5.76	4.95
SO4		%	IR	2.5	4.2	7	11.2	8.06
S-sulfide								
Al	0.01	%	TD-ICP	6.66	5.42	4.58	4.71	4.82
Na	0.01	%	INAA	0.44	0.23	0.23	0.38	0.29
K	0.01	%	TD-ICP	1.92	1.59	1.43	1.59	1.53
Ca	0.01	%	TD-ICP	1.03	5.68	9.33	6.41	7.35
Ba	50	ppm	INAA	7900	600	480	1000	715
Fe	0.01	%	INAA	3.19	3.78	3.93	5.26	4.43
Mg	0.01	%	TD-ICP	0.65	0.82	0.69	0.50	0.64
Mn	1	ppm	TD-ICP	53	474	222	96	228
P	0.001	%	TD-ICP	0.11	0.16	0.07	0.84	0.40
Mo	1	ppm	TD-ICP	139	141	121	59	101
Ni	1	ppm	INAA / TD-ICP	30	704	253	161	317
U	0.5	ppm	INAA	24	92	49	125	89
V	2	ppm	TD-ICP	636	796	752	800	781
Zn	1	ppm	INAA / TD-ICP	68	964	336	234	435
Cu	1	ppm	TD-ICP	52	117	76	130	107
Co	1	ppm	INAA	7	70	29	18	34
Cd	0.3	ppm	TD-ICP	1.2	44.1	12.6	6.4	17.1
Ag	0.3	ppm	INAA / TD-ICP	1.3	0.9	0.6	0.9	0.8
Au	2	ppb	INAA	< 2	1	1	3	1.8
Li	0.5	ppm	TD-MS	49	73	49	29	46
Pb	3	ppm	TD-ICP	14	16	12	16	14
SiO2	0.01	%	FUS-XRF	46.6	36.9	34.7	38.5	36.7
Al2O3	0.01	%	FUS-XRF	16.0	11.6	9.5	9.1	9.8
Fe2O3(T)	0.01	%	FUS-XRF	4.4	5.8	5.3	8.2	6.6
MnO	0.001	%	FUS-XRF	0.0	0.1	0.0	0.0	0.0
MgO	0.01	%	FUS-XRF	1.1	1.4	1.2	0.8	1.1
CaO	0.01	%	FUS-XRF	1.6	6.9	12.4	7.7	9.3
Na2O	0.01	%	FUS-XRF	0.7	0.4	0.3	0.6	0.5
K2O	0.01	%	FUS-XRF	2.1	1.7	1.6	1.7	1.6
TiO2	0.01	%	FUS-XRF	0.5	0.4	0.4	0.4	0.4
P2O5	0.01	%	FUS-XRF	0.2	0.4	0.2	1.8	0.9
Cr2O3	0.01	%	FUS-XRF	0.0	0.0	0.0	0.0	0.0
LOI		%	FUS-XRF	25.5	32.6	30.3	28.3	30.0
Total	0.01	%	FUS-XRF	98.8	98.2	96.0	97.0	96.9
Weights (gm)	5	gm		980	145	245	260	650
Multielement Analyses by Actlabs as Dumont Analytical Lot# SB090902 (Actlabs# A09-4934)								
INAA=Neutron Activation; TD-ICP=Total (4-acids) Digestion + ICP; TD-MS=Total (4-acids) Digestion + ICP-MS;								
FUS-XRF=Fusion XRF; COUL=Coulometry;								
Samples are from stratigraphic section Asphalt-H (equiv is site 95DL04 per AGS work)								

Table 31: Sample list and geochemistry, Bioleaching Sample Suite. Summarized from Table 22, Section 11.5.

[49] Enrichment Culturing Of Alberta Polymetallic Black Shale For Bioleaching Bacteria: Batch Amenability Testing, Prepared for: Dumont Nickel Inc. Interim Report #3: by K.Budwill, Alberta Innovates Technology Futures (AITF); June 29, 2010; ARC Ref# CEM 13173-2010. Draft report issued June 18, 2010.

Samples delivered by DNI were splits from field samples without crushing nor pulverizing, they consisted in most part of shale rubble. The samples were ground with mortar and pestle by the ARC and sieved to 25 mesh (<710 micron). Sample weights and weight losses due to grinding/sieving are shown in Table 32.

ARC Sample# (Mineral Feed ID)	DNI - Sample#	Weights (gm) (as delivered)	TTL Weight (gm) (as delivered)	Weight (gm) - Mineral Feed (after grinding & sieving)
003	09ASH003	980	980	833
456	09ASH004	145	650	598
	09ASH005	245		
	09ASH006	260		

Table 32: List of samples and weights, Bioleaching Testwork, ARC 2010. After Table 1, Budwill 2010b.

Acid Consumption and Metals Mobility Tests

The testwork entailed gradual acidification of 100gm aliquots (97.2gm dry weight) from each sample with sulphuric acid to achieve and maintain a pH of 1.8. Acid consumption for mineral feeds 456 and 003 were monitored during the tests as it was also during subsequent Batch Amenability tests (BATs). Acid consumption measured during the tests is summarized in Table 33, showing approximately x8 to x12 more acid consumed by sample 456 than 003 to bring pH down to, and maintain, between 1.2 and 1.8.

Mineral Feed	Total Volume of 10 N H_2SO_4 Added (mL)	Acid Consumption (kg/tonne mineral feed)
456, acid mobility	18.3	89.7
456, BAT, flask 1	39	95.6
456, BAT, flask 2	42	102.9
003, acid mobility	1.5	7.4
003, BAT, flask 1	5	12.3
003, BAT, flask 2	5	12.3

100gm feed for Acid Mobility tests; 200gm feed in BAT tests cariied out in duplicate

Table 33: Acid consumption results, Acid Consumption and Mobility Tests, ARC 2010. After Tables 5 and 12, Budwill 2010b.

Analyses of head sample, tails and the final filtered leaching solution after 48hrs of leaching are shown in Tables 34 and 35 for samples 456 and 003, respectively (analyses by Actlabs, Rpt#AO-1892 appended in the ARC report). The final solution from 003 was not analyzed. Tails from the two tests were not weighed.

Sampe 456

Analyte	Detection	Units	Method	Head Grade	Tails Grade
S_{TOT}	0.01	%	IR	4.4	4.2
S	0.01	%	TD-ICP	4.6	4.3
SO_4	0.3	%	IR	11.5	8.5
Sulfide S	0.01	%	Calc.	0.6	1.4
Al	0.01	%	TD-ICP	4.6	3.1
Na	0.01	%	TD-ICP	0.3	0.2
K	0.01	%	TD-ICP	1.3	0.8
Ca	0.01	%	TD-ICP	6.8	4.1
Ba	7	ppm	TD-ICP	109	103
Fe	0.01	%	TD-ICP	4.1	2.3
Mg	0.01	%	TD-ICP	0.6	0.4
Mn	1	ppm	TD-ICP	179	65
P	0.001	%	TD-ICP	0.386	0.205
Mo	1	ppm	TD-ICP	87	64
Ni	1	ppm	TD-ICP	258	95
U	10	ppm	TD-ICP	70	20
V	2	ppm	TD-ICP	777	500
Zn	1	ppm	TD-ICP	367	145
Cu	1	ppm	TD-ICP	87	43
Co	1	ppm	TD-ICP	27	9
Cd	0.3	ppm	TD-ICP	13	3
Ag	0.3	ppm	TD-ICP	1	1
Li	0.5	ppm	TD-MS	53	32
Weights (gm) (dry weight)				97.3	na

Analyte	Detection	Units	Method	Final Solution (48hr-Filtered) Grade
Al	0.1	mg/L	ICP-OES	215
Na	5	µg/L	ICP-MS	19700
K	30	µg/L	ICP-MS	26100
Ca	700	µg/L	ICP-MS	494000
Ba	0.1	µg/L	ICP-MS	57
Fe	10	µg/L	ICP-MS	768000
Mg	1	µg/L	ICP-MS	168000
Mn	0.1	µg/L	ICP-MS	25800
Mo	0.1	µg/L	ICP-MS	27
Ni	0.3	µg/L	ICP-MS	30600
U	0.001	µg/L	ICP-MS	8410
V	0.1	µg/L	ICP-MS	4570
Zn	5	µg/L	ICP-OES	46700
Cu	0.2	µg/L	ICP-MS	4620
Co	0.005	µg/L	ICP-MS	3550
Cd	0.01	µg/L	ICP-MS	2240
Ag	0.2	µg/L	ICP-MS	<20
Li	1	µg/L	ICP-MS	1620
Volume (ml)				318.3

Table 34: Metals, Fe and S grades, Sample 456, Acid Consumption and Mobility Tests, ARC 2010. Analyses by Actlabs Rpt# A10-1892. After Tables 6 and 7, Budwill 2010b.

Sampe 003

Analyte	Detection	Units	Method	Head Grade	Tails Grade
S_{TOT}	0.01	%	IR	2.3	2.1
S	0.01	%	TD-ICP	2.1	1.6
SO_4	0.3	%	IR	3.0	2.5
Sulfide S	0.01	%	Calc.	1.3	1.3
Al	0.01	%	TD-ICP	7.2	4.1
Na	0.01	%	TD-ICP	0.5	0.5
K	0.01	%	TD-ICP	2.3	2.2
Ca	0.01	%	TD-ICP	1.3	0.7
Ba	7	ppm	TD-ICP	288	310
Fe	0.01	%	TD-ICP	2.9	2.6
Mg	0.01	%	TD-ICP	0.7	0.5
Mn	1	ppm	TD-ICP	82	50
P	0.001	%	TD-ICP	0.102	0.086
Mo	1	ppm	TD-ICP	137	137
Ni	1	ppm	TD-ICP	30	22
U	10	ppm	TD-ICP	7	4
V	2	ppm	TD-ICP	672	610
Zn	1	ppm	TD-ICP	75	60
Cu	1	ppm	TD-ICP	51	47
Co	1	ppm	TD-ICP	6	5
Cd	0.3	ppm	TD-ICP	1	1
Ag	0.3	ppm	TD-ICP	1	1
Li	0.5	ppm	TD-MS	68	59
Weights (gm) (dry weight)				86.3	na

Analyte	Detection	Units	Method	Final Solution (48hr-Filtered) Grade
Al	0.1	mg/L	ICP-OES	na
Na	5	µg/L	ICP-MS	na
K	30	µg/L	ICP-MS	na
Ca	700	µg/L	ICP-MS	na
Ba	0.1	µg/L	ICP-MS	na
Fe	10	µg/L	ICP-MS	na
Mg	1	µg/L	ICP-MS	na
Mn	0.1	µg/L	ICP-MS	na
Mo	0.1	µg/L	ICP-MS	na
Ni	0.3	µg/L	ICP-MS	na
U	0.001	µg/L	ICP-MS	na
V	0.1	µg/L	ICP-MS	na
Zn	5	µg/L	ICP-OES	na
Cu	0.2	µg/L	ICP-MS	na
Co	0.005	µg/L	ICP-MS	na
Cd	0.01	µg/L	ICP-MS	na
Ag	0.2	µg/L	ICP-MS	na
Li	1	µg/L	ICP-MS	na
Volume (ml)				na

Table 35: Metals, Fe and S grades, Sample 003, Acid Consumption and Mobility Tests, ARC 2010. Analyses by Actlabs Rpt# A10-1892. After Table 13, Budwill 2010b.

The ARC calculated metals "extractions" for sample 456 based on the total metals content of the final solution as a percentage of the grade of the feed material. The extraction figures should not, however, be regarded as recoveries, but rather a measure of the amount of metal solubilized during 48 hours of leaching and reflect relative mobility of the respective metals. Given the lack of analyses of the final solution from leaching of sample 003[50], however, ARC did not report extractions for Sample 003.

Analyte	Extraction (%) Sample 456 per ARC
STOT	na
S	na
SO4	na
Sulfide S	na
Al	2%
Na	2%
K	1%
Ca	2%
Ba	0%
Fe	6%
Mg	9%
Mn	47%
Mo	0%
Ni	39%
U	39%
V	2%
Zn	42%
Cu	17%
Co	43%
Cd	56%
Li	10%
Tails Weight Loss	
	Based on Grade Diference Bteween Head Grade and Final Solution

Table 36: Metals and other analyte extractions, Sample 456 Acid Consumption and Mobility Tests, ARC 2010. After Table 8, Budwill 2010b.

Extractions reported for sample 456 are shown in Table 36, showing that Ni, U, Zn and Co are readily soluble at pH of 1.8 over 48 hours, but that Mo, V and Cu demonstrated poor solubility.

ARC's reported extractions shown in Table 36 are equivocated by calculated extractions based on the difference between the head grade (feed sample) and that of the tails (representing material which was not solubilized). The comparative figures are summarized in Table 37, showing extractions for three separate weight loss and one weight gain scenarios (since tails were not weighed).

There are large discrepancies between the extractions reported by the ARC based on the final solution grade and those calculated per differences in grades of head and tail. The extractions reported by the ARC based on solution grade are consistently considerably lower than the comparative figures shown in Table 37 based on grade differential of solids.

[50] Final solution from leaching of sample 003 was inadvertently set aside and not submitted for analysis. The sample has since been located and will shortly be submitted to Actlabs for analysis.

While it can be assumed with confidence that tails can be expected to lose weight during leaching due to sample dissolution (eg: see solubilized Ca,Na,Al for sample 456), it is not certain what such a weight loss might have been during the ARC testwork, even though prior sulfuric acid testwork completed by DNI documented weight losses ranging 14%-48%, averaging approximately 20% (Section 11.6.2 of this Report). If the foregoing is true, then it is clear that the figures reported by the ARC understate metal solubilization for reasons which remain unexplained that might only be attributed to poor documentation of weights/volumes during the testwork.

Analyte	Head Grade (ppm)	Head Total Contained Metals (and analytes) (µg)	Tails Grade (ppm)	Tails Total Contained Metals (and analytes) (µg)	Calculated Extraction % Based on Difference Between Head and Tails Grades For Different Tails Weight Loss or Gain Scenarios: Case-1 0% Loss	Case-2 10% Loss	Case3 20% Loss	Case4 50% GAIN	Final-Solution (48hr) Grade (µg/L)	Final-Solution (48hr) Total Contained Metals (and analytes) (µg)	Extraction % per ARC report Based on Solution Grade as % of Head Grade
STOT	44200	4,300,660	42100	4,096,330	5%	14%	24%	-24%			
S	46300	4,504,990	42800	4,164,440	8%	17%	26%	-20%			
SO4	115000	11,189,500	85000	8,270,500	26%	33%	41%	4%			
Sulfide S	5700	554,610	13600	1,323,280	-139%	-115%	-91%	-210%			
Al	45600	4,436,880	31000	3,016,300	32%	39%	46%	12%	215000	68,370	2%
Na	3000	291,900	1700	165,410	43%	49%	55%	26%	19700	6,265	2%
K	13100	1,274,630	8100	788,130	38%	44%	51%	20%	26100	8,300	1%
Ca	68200	6,635,860	41200	4,008,760	40%	46%	52%	21%	494000	157,092	2%
Ba	109	10,606	103	10,022	6%	15%	24%	-23%	57	18	0%
Fe	41000	3,989,300	23400	2,276,820	43%	49%	54%	26%	768000	244,224	6%
Mg	6000	583,800	3700	360,010	38%	45%	51%	20%	168000	53,424	9%
Mn	179	17,417	65	6,325	64%	67%	71%	53%	25800	8,204	47%
Mo	87	8,465	64	6,227	26%	34%	41%	4%	27	9	0%
Ni	258	25,103	95	9,244	63%	67%	71%	52%	30600	9,731	39%
U	70	6,811	20	1,946	71%	74%	77%	63%	8410	2,674	39%
V	777	75,602	500	48,650	36%	42%	49%	16%	4570	1,453	2%
Zn	367	35,709	145	14,109	60%	64%	68%	49%	46700	14,851	42%
Cu	87	8,465	43	4,184	51%	56%	60%	36%	4620	1,469	17%
Co	27	2,627	9	876	67%	70%	73%	57%	3550	1,129	43%
Cd	13	1,275	3	272	79%	81%	83%	72%	2240	712	56%
Ag	1	68	1	49	29%	36%	43%	7%	10	3	5%
Li	53	5,157	32	3,104	40%	46%	52%	22%	1620	515	10%
Weight (gm)	97.3		na		97.3	87.6	77.8	146.0	Volume = 318 mL		

Table 37: Comparative calculated extractions for various tails weight loss/gain scenarios, Sample 456, Acid Consumption and Mobility Tests. Underlying data from Budwill 2010b.

An alternative which should be considered, however, is weight gain during the leaching. Such gains could depress calculated tails grades closer toward figures reported by the ARC. The latter suggestion is not entirely unrealistic, given possible precipitation of sulfates Fe-sulfates along with some likely re-precipitation of previously solubilized metals. This would also be consistent with re-precipitation of metals noted in some of the sulfuric acid 36hr and 48hr leaching tests completed by DNI (especially Stage-2 tests - Section 11.6.2). This would also be consistent with negative calculated extractions (ie: gains) shown for sulfur species in Table 37 for the 50% weight gain scenario (Case-4).

Though similar calculations and related discussion could be outlined herein for sample 003, it has been omitted considering the many uncertainties related to missing data for tails weights during the acid consumption and mobility testwork.

In the absence of mass balance between solution based calculations and those based on solids grades, the above discrepancy cannot be resolved, and ARC's extraction figures are best regarded in a qualitative context to only depict metal mobility.

Batch Amenability Teats

Batch amenability tests (BATs) were carried out on two 200gm aliquots from each of the two samples to test amenability of the shale samples to leaching by bioleaching. Inoculum for the tests was prepared from DN1-1 and DN5-1 bio-organic cultures previously cultured and adapted during the Stage2 work. The cultures were combined and grown with the mineral feed for 19-22 days before inoculating the batch tests. pH was maintained between 1.2 and 1.8 during the tests and redox was monitored. Evolution of the solution chemistry was monitored by periodic sub-sampling of the solution and its subsequent analysis.

The batch amenability tests were carried out by Dr.K.Budwill of the ARC with considerable input from S.Sabag of DNI, and Dr.C.L.Brierley. The ARC reported the testwork and its findings in its report[51] dated June 29, 2010, which represents an interim report on work that is in progress since several sample fractions are still being leached, or sample fractions previously overlooked are being analyzed. Anticipations are that the foregoing outstanding testwork will be completed by October and results therefrom will be reported in the form of a subsequent memorandum.

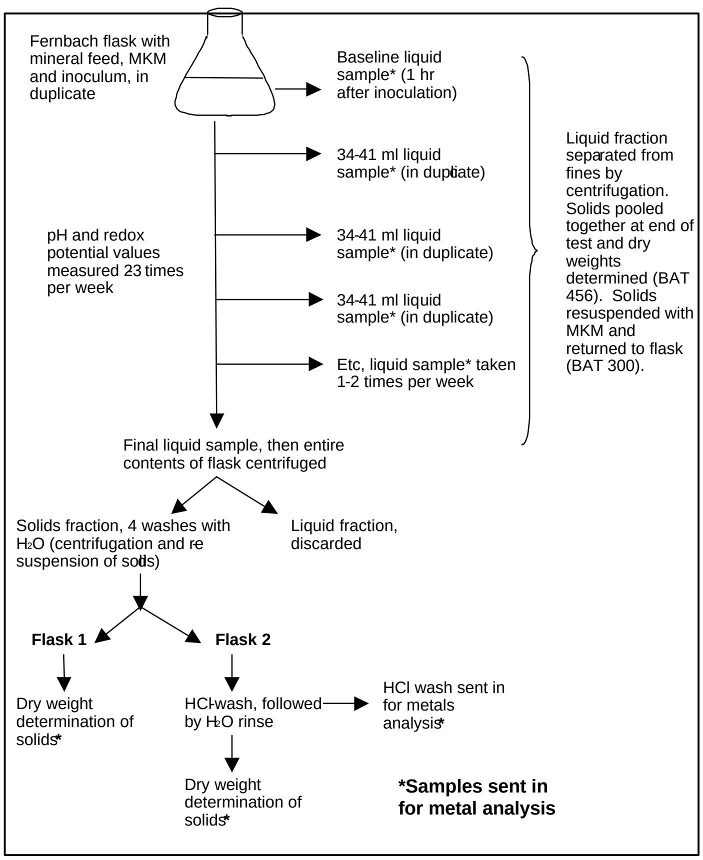

Figure 101: Bioleaching batch testwork general procedural flow-sheet, ARC 2010. Centrifuged residues pooled together at end of test and dry weights determined (BAT 456). Centrifuged residues are being leached as of August, 2010. After Figure 1, Budwill 2010b.

BAT testwork general procedural flow sheet is shown in Figure 101, and the reader is refereed to the ARC report (Budwill 2010b) which is appended herein as Appendix E4.3 for additional details. The report contains all analytical data, and summary of bioleaching procedures as formulated by C.L.Brierley.

The BAT tests entailed leaching during 38 and 27 days of incubation for samples 456 and 003, respectively, during which pH was maintained.

Several approximately 30ml aliquots of solution were periodically removed during the tests to monitor metal solubilization. The sub-samples were centrifuged separating out a liquid fraction for analysis, and a centrifuge residue which was set aside during sample 456 tests, but returned to the main test Flask during tests for sample 003.

The periodic liquid sub-samples taken from the solution throughout the tests, the final solution and final tails (residues) were submitted to Actlabs for analysis. Analytical certificates[52] from the foregoing are appended in ARC's report (Budwill 2010b).

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[51] Enrichment Culturing Of Alberta Polymetallic Black Shale For Bioleaching Bacteria: Batch Amenability Testing, Prepared for: Dumont Nickel Inc. Alberta Innovates Technology Futures (AITF), Interim Report #3, June 29, 2010, ARC Ref# CEM 13173-2010, by K.Budwill.

[52] Actlabs Rpts #A10-1892 and A10-2290.

Centrifuge residues separated from the periodic samples of solution during tests for sample 456 were not leached nor analyzed. The residues will be bioleached during the next month under identical conditions as the BAT tests described herein, and their final solution and tails will be analyzed. Intentions are that the ARC will report results from the foregoing in a memorandum to follow in October, and the results will enable calculation of a mass balance from the testwork for sample 456.

Two duplicate tests were carried out for each sample in separate flasks (Flask1 and Flask2). Final residues (Tails) from Flask2 were washed in HCl at the end of the tests to evaluate Fe or sulfate precipitation (and commensurate metal re-precipitation from solution).

Though intentions were to calculate a mass balance to validate leaching data, analyses or leaching are still pending as at the date hereof for some fractions, hence no balance can be calculated, nor can definitive metals extractions (recoveries) be concluded other than extractions which are partial based on an incomplete dataset.

Analyses of the various fractions, weights, volumes, head and tails are summarized in Table 38, which shows weights for the feed (Head sample) and final tails for both samples, aggregate weight of centrifuge residues for sample 456, and calculated weight losses from sample 456 due to dissolution during leaching. Weight gains as measured for final tails from sample 003 are shown, which remain unexplained and have been attributed by the ARC to inadequate sample drying prior to testwork. As a result, the dataset for sample 003 is constrained by uncertainties and minimally enables calculations toward establishing what might be nominal metals recoveries which might be expected from sample 003.

Sample	Feed Weight (g)	Final Tails (g)	Centrifuge Residues (g)	Weight Loss Due to Bioleaching (g)
BAT 456 Flask1	194.7	124.8	43.2	26.6
BAT 456 Flask2	194.7	103.9	44.5	46.3
BAT 003 Flask1	172.6	179.9		-7.3
BAT 003 Flask2	172.6	199.9		-27.3

*All weights are stated as dry-weights

Table 38: Sample weights, Batch Amenability Tests, ARC 2010. From Table 9 and 14, Budwill 2010b.

Evolution of pH and redox potential for the tests on the two samples are shown in Figure 102.

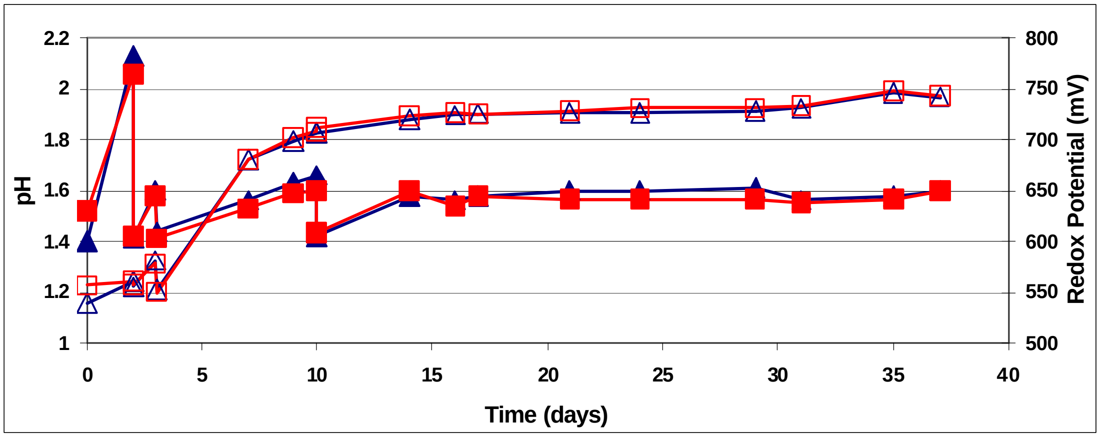
BAT for mineral feed 003 was carried out for a 27-day period using 200g of the mineral feed, 700 ml of MKM and 100 mL of inoculum. To maintain the pH 1.2-1.8 5 mL of acid was added to both Flasks, thus the start total volume of the solution in each flask was 805 mL. No further acid was added during the tests. The abrupt change in pH and redox on Day8 are attributed to addition of solids centrifuged from the subsample taken on the first day to monitor composition to the Flasks.

BAT for mineral feed 456 was carried out for a 38-day period using 200g of the mineral feed, 700 ml of MKM and 100 mL of inoculum. The 456 mineral feed required 4 additions of between 2 and 30 ml of 10N H2SO4 to adjust the pH of the culture fluid to between a pH of 1.2 and 1.8. the pH remained stable at approximately 1.58 after 15 days of incubation for the remainder of the tests likely reflecting that the microorganisms were generating sufficient acid to maintain their environment[53]. The redox potential also seemed to have leveled off after 15 days of incubation. The redox potential was initially at 550 mV during the first few days of the test but increased to above 700 mV within 10 days of incubation indicating the microorganisms were oxidizing S and Fe in the mineral feed. This was also reflected by iron appearing in solution with time.

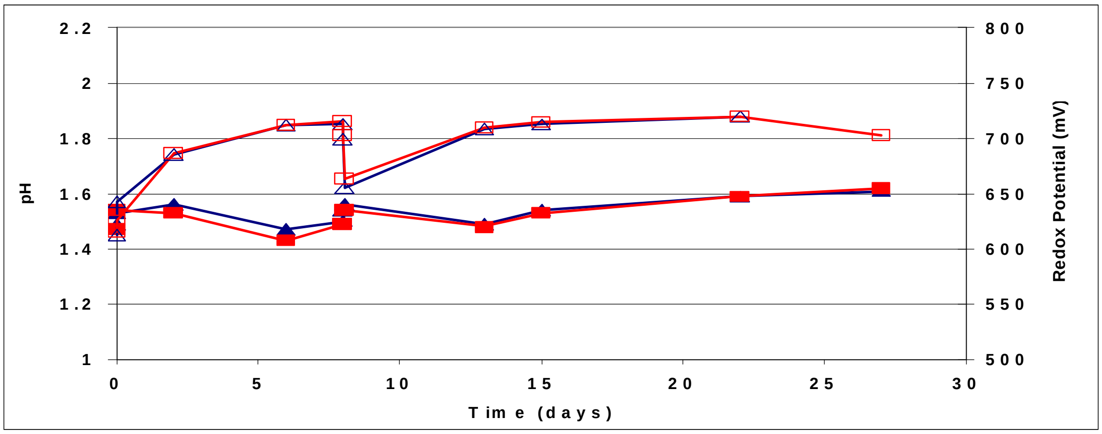
Evolution of metals solubilization during the tests for sample 456 Flask1 and Flask2 reported by the ARC are presented in Figure 103 showing total metal contained in the solution as calculated based on solution

[53] This is a departure from observations by BRGM which noted that the shale tested contained insufficient sulfides to generate the requisite acid on its own during bioleaching (see Section 11.6.3 of this Report).

volume and its chemistry as analyzed in the periodic sub-samples of solution removed for analysis and monitoring.



BAT 456

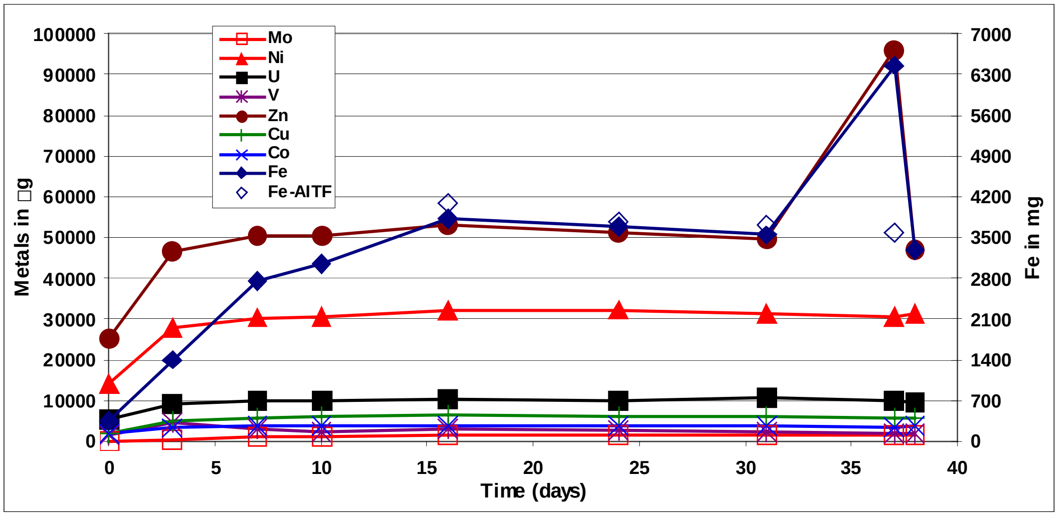


BAT 003

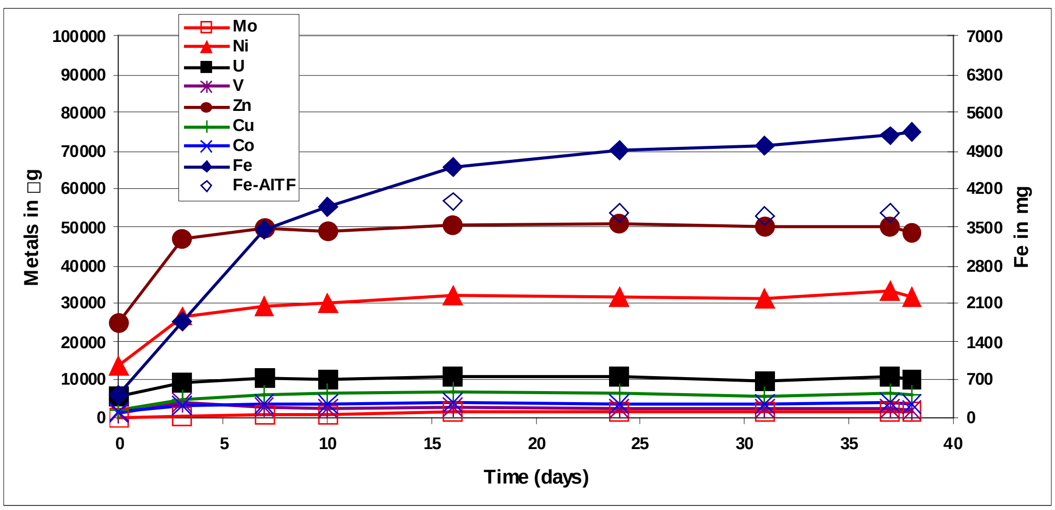
Figure 102. Evolution of pH and redox potential during BAT tests for samples 456 (above) and 003 (below). Flask 1 (triangles) and Flask 2 (squares). After Figures 2 and 9, ARC report, Budwill 2010b.

The results shown in Figure 103 are, however, partial results only since they exclude metals contained in the centrifuge residues from periodic subsamples removed to monitor composition which residues were set aside and not leached. An aggregate of 43.2gm and 44.5gm of residues centrifuged from the periodic subsamples taken during tests for BAT456 for Flask1 and Flask2, respectively, were set aside and not leached. The aggregate weight represents 22% and 23%, respectively, of the initial 194.7gm feed material for each of the two Flasks. Metal content of the aggregate residue is unknown and omission of its contribution to total solubilized metals in solution can be expected to skew the metals solubilization trends depicted in Figure 103 and also skew interpretation of test results (See also Tables 39-42). Centrifuge solids (residues) for sample 003 were returned to the flask and continued to leach.

At the end of the leaching for BAT456 tests, tails from one of the duplicate flasks (Flask2) were also washed in HCl, to evaluate Fe precipitation and its possible effect on re-precipitating metals back out of solution, notably for Mo and V which have a propensity for re-precipitating as ferri-molybdates and ferri-vanadates. While some metals (notably, Zn and Fe day 37) removal from solution is depicted in Figure 103 for Flask1, the chemistry of final residues and HCl wash solution reflects additional removals for Mo-V and other metals suggesting considerable loss of metal from solution due to processes which are presumed to be Fe and sulfate precipitation but in most part remain quantitatively unresolved.



BAT 456 - Flask1



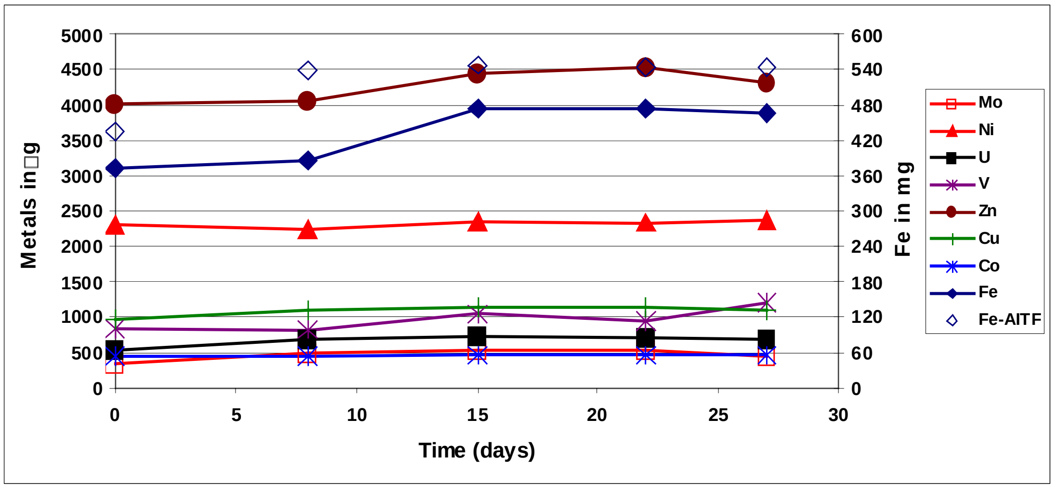
BAT 456 - Flask2

Figure 103. Evolution of metals solubilization (in µg/L) and Fe solubilization (in mg/L) with time for flask 1 and 2 for BAT456, Batch Amenability Tests, ARC 2010. Fe_{TOT} as determined by ARC shown as open diamonds. After Figures 3 and 4, Budwill 2010b.

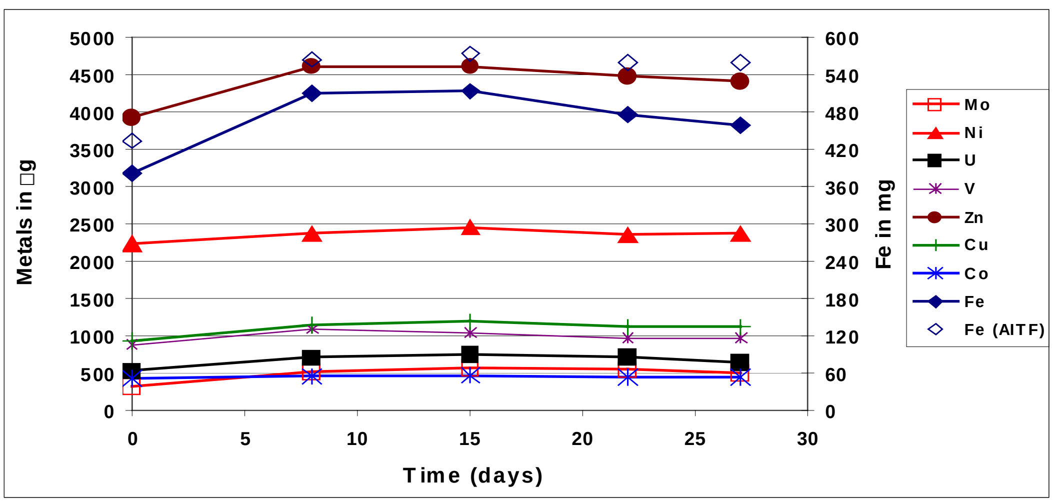
Evolution of metals solubilization during the tests for sample 003 Flask1 and Flask2 reported by the ARC are presented in Figure 104 showing total metal contained in the solution as calculated based on solution volume and its chemistry as analyzed in the periodic subsamples of solution removed for analysis and monitoring. Unlike BAT456 tests, residues centrifuged from the subsamples were returned to the respective Flasks, and an equivalent volume of barren fluid was added to the sample to maintain a constant volume throughout the testwork.

At the end of the leaching BAT003 tests, tails from one of the duplicate flasks (Flask2) were also washed in HCl, as had been done for sample 456, to evaluate Fe precipitation and its possible effect on re-precipitating metals back out of solution, notably for Mo and V which have a propensity for re-precipitating as ferri-molybdates and ferri-vanadates. While some metals (eg: Zn and Fe, day27) removal from solution is depicted in Figure 104 for Flask1. The foregoing is supported by compositions of final residues and associated HCl wash solution which reflect removal of additional Mo-V and other metals by HCl washing, suggesting loss of metals, notably Fe-Mo-Zn-V from solution due to processes which are presumed to be Fe and sulfate precipitation but in most part remain quantitatively unresolved.

Final tails from BAT003 tests reported weights greater than the feed material. The ARC offers no explanations for the gains which might be attributed to weight gains due to chemical reactions or to inadequate sample drying prior to weighing of the final tails.



BAT 003 - Flask1



BAT 003 - Flask2

Figure 104: Evolution of metals solubilization (in µg/L) and Fe solubilization (in mg/L) with time for flask 1 and 2 for BAT003, Batch Amenability Tests, ARC 2010. Fe_{TOT} as determined by ARC shown as open diamonds. After Figures 6 and 7, Budwill 2010b.

Testwork results from the BAT456 and BAT003 tests are consolidated in Tables 39-40 and 41-42, respectively, showing composition of all solids and liquids leaching fractions, weights and volumes. The tables include data for the feed head sample, final tails, final tails following HCl wash (for Flask2 tests), in addition to data for the final leaching solutions and periodic subsamples removed from the Flasks during the tests to monitor compositions. **The results tabulated are interim results since some leaching and analytical work are still in progress.**

BAT 456 - Flask1

Analyet / Sample	Grade (µg/L) Leaching Evolution - Solution Samples, Day # 1	3	7	10	16	24	31	37	38	Grade (µg/L) HCl Wash	Grade (ppm) Leaching Solids: Combined Centrifuge Residue	Final Tails (Day38)	Head Sample
	BA1-456T0	BA1-456-3D	BA1-456-7D	BA1-456-10D	BA1-456-16D	BA1-456-24D	BA1-456-31D	BA1-456-37D	BA1-456-38D-FF (Final Solution)		Data Pending	BA1-456-Solids	456-Initial Solids
Mo	98.9	347	1150	1330	2140	2290	2230	2240	2330	No		95	87
Ni	17200	33600	37700	39200	41800	43800	44000	44700	47500	HCl		60	258
U	6400	11100	12500	12600	13700	13800	14800	14400	14500	Wash		10.5	68
V	1840	5000	3480	2800	3850	3340	3110	3020	3120	for	Data	829	777
Zn	30500	56900	62600	64300	70000	69700	70100	140000	71200	Flask1	Pending	121	367
Cu	2440	5890	7390	7640	8350	8350	8740	8240	8810	Residues		54	87
Co	2260	4020	4760	4880	5140	5290	5360	5350	5730			4	27
Cd	1990	2630	2740	2650	2850	2870	2910	2900	2990			0.5	13.1
Li	967	1660	1960	2120	2460	2830	2810	2990	3050			47	53
Al	125000	294000	372000	405000	470000	495000	515000	1020000	548000			51100	465000
Na	15900	21000	21600	22000	23400	24400	26800	26700	27800			3000	3000
K	22700	29400	31700	32000	32700	33800	33700	31300	32700			14100	13100
Ca	569000	476000	506000	519000	505000	520000	510000	509000	525000			63200	68200
Fe	403000	1710000	3450000	3890000	5010000	5010000	4980000	9420000	5000000			22000	41000
Mg	168000	192000	222000	228000	249000	268000	286000	289000	301000			5500	6000
TTL Subsample Vol (mL)	20.0	30.0	34.0	34.0	41.0	38.0	38.0	38.0					
Sample Weight (gm)													194.7
Liq'd Subsample Removed Vol (mL)	17.5	20.0	20.5	21.5	27.0	25.0	25.0	26.0	659.5				
Centrifuge Residue Vol (mL)	2.5	10.0	13.5	12.5	14.0	13.0	13.0	12.0					
Centrifuge Residue Wt (gm)	1.2	2.4	3.5	3.5	4.2	4.4	4.9	5.1	124.8		43.2	124.8	
Acid Added After Subsampling (mL)	9.0	-	-	3.0	-	-	-	-	-				
TTL Vol Before Subsampe (Start830mL)	830.0	821.5	801.5	781.0	762.5	735.5	710.5	685.5	659.5				
TTL Vol After Subsampe (mL)	821.5	801.5	781.0	762.5	735.5	710.5	685.5	659.5	0.0				

Analyses Actlabs Rpt#A10-1892 (i) rev 2 Rev, 2; Final Tails represent tails after HCl wash for Flask2; Final Solution is Flask solution end of day#38
Centrifuge Residue Total weight re-stated on daily basis amortized per calculated volume

	Contained Metal / Analyte (µg) Leaching Evoltion - Solution Samples - Day# 1	3	7	10	16	24	31	37	38	Total All Sulf Solutions	Metals in HCl wash (µg)
Mo	2	7	24	29	58	57	56	58	1537	1826	
Ni	301	672	773	843	1129	1095	1100	1162	31326	38401	
U	112	222	256	271	370	345	370	374	9563	11883	
V	32	100	71	60	104	84	78	79	2058	2665	
Zn	534	1138	1283	1382	1890	1743	1753	3640	46956	60319	No
Cu	43	118	151	164	225	209	219	214	5810	7153	HCl
Co	40	80	98	105	139	132	134	139	3779	4646	Wash
Cd	35	53	56	57	77	72	73	75	1972	2469	for
Li	17	33	40	46	66	71	70	78	2011	2433	Flask1
Al	2188	5880	7626	8708	12690	12375	12875	26520	361406	450267	Residues
Na	278	420	443	473	632	610	670	694	18334	22554	
K	397	588	650	688	883	845	843	814	21566	27273	
Ca	9958	9520	10373	11159	13635	13000	12750	13234	346238	439866	
Fe	7053	34200	70725	83635	135270	125250	124500	244920	3297500	4123053	
Mg	2940	3840	4551	4902	6723	6700	7150	7514	198510	242830	
Liq'd Subsample Removed Vol (mL)	17.5	20.0	20.5	21.5	27.0	25.0	25.0	26.0	659.5	842.0	
TTL Vol Before Subsample (Start830mL)	830.0	821.5	801.5	784.0	762.5	735.5	710.5	685.5	659.5	842.0	

Analyet / Sample	Contained Metal / Analyte (µg): HCl Wash Solution	All Sulfuric Acid Leaching Solutions	Leaching Solids: Combined Centrifuge Residue	Final Tails (Day38)	Head Sample
			Data Pending	BA1-456-Solids	456-Initial Solids
Mo		1826		11856	16939
Ni		38401		7488	50233
U	No	11883		1310	13240
V	HCl	2665	Data	103459	151282
Zn	Wash	60319	Pending	15101	71455
Cu	for	7153		6739	16939
Co	Flask1	4646		499	5257
Cd	Residues	2469		62	2551
Li		2433		5828	10319
Al		450267		6377280	90535500
Na		22554		374400	584100
K		27273		1759680	2550570
Ca		439866		7887360	13278540
Fe		4123053		2745600	7982700
Mg		242830		686400	1168200
Sample Weight (gm)					194.7
Centrifuge Residue Wt (gm)			43.2	124.8	
TTL Vol (mL)		842.0			

Partial Extractions (%)	Extract per Sol'ns no HCl	Extract per Sol'ns + HCl	Extract - per Solids
Mo	11%		30%
Ni	76%		85%
U	90%	No	90%
V	2%	HCl	32%
Zn	84%	Wash	79%
Cu	42%	for	60%
Co	88%	Flask1	91%
Cd	97%	Residues	98%
Li	24%		44%
Al	5%		28%
Na	4%		36%
K	1%		31%
Ca	3%		41%
Fe	52%		66%
Mg	21%		41%
Excludes Centrifuge Residues Data Pending			

Table 39: Summary of bioleaching test results and sample specifications for BAT456, Flask1, including calculated partial extractions, Batch Amenability Tests, ARC 2010. Data assembled from Budwill 2010b and analytical certificates appended therein.

BAT 456 - Flask2	Grade (µg/L)									Grade (µg/L)	Grade (ppm)		
	Leaching Evolution - Solution Samples									HCl Wash	Leaching Solids		Head Sample
	Day #										Combined Centrifuge Residue	Final Tails (Day38)	
	1	3	7	10	16	24	31	37	38				
Analyet / Sample	BA2-456T0	BA2-456-3D	BA2-456-7D	BA2-456-10D	BA2-456-16D	BA2-456-24D	BA2-456-31D	BA2-456-37D	BA2-456-38D-FF (Final Solution)	BA2-456-HCL	Data Pending	BA2-456-Solids	456-Initial Solids
Mo	106	357	1250	1420	2060	2210	2220	2340	2400	6570		77	87
Ni	16500	32100	36600	38100	41700	42900	43800	48400	48000	7280		39	258
U	6710	11500	12800	13000	13900	14600	13600	15500	15500	1830		5.3	68
V	1780	4960	3740	3030	3760	3200	3120	3280	3100	14800	Data	898	777
Zn	29900	56900	61300	62000	66100	69100	70600	73100	73200	21000	Pending	75	367
Cu	2520	6100	7630	7970	8640	8530	8110	9360	9040	7110		38	87
Co	2140	3880	4470	4710	5140	5080	5130	5660	5510	496		3	27
Cd	1940	2590	2760	2630	2900	2860	2770	3140	3050	95.3		0.3	13.1
Li	917	1630	1900	2100	2460	2670	2790	3100	3050	50		53	53
Al	121000	286000	360000	389000	446000	487000	523000	541000	559000	63900		61800	45600
Na	15100	20200	21100	22000	24200	24900	24900	29600	30000	2480		3300	3000
K	20900	30200	29800	30700	33600	33000	32100	34800	33900	44800		15700	13100
Ca	567000	492000	499000	499000	532000	510000	518000	524000	521000	4300000		39400	68200
Fe	431000	1770000	3460000	3890000	4610000	4930000	4980000	5190000	5260000	2740000		14100	41000
Mg	163000	192000	216000	225000	257000	265000	274000	311000	308000	10600		6100	6000
TTL Subsample Vol (mL)	20.0	30.0	34.0	34.0	41.0	38.0	38.0	38.0					
Sample Weight (gm)													194.7
Liq'd Subsample Removed Vol (mL)	14.5	20.0	21.5	22.0	27.0	25.0	24.7	26.0	663.3				
Centrifuge Residue Vol (mL)	5.5	10.0	12.5	12.0	14.0	13.0	13.3	12.0					
Centrifuge Residue Wt (gm)	2.7	2.5	3.3	3.4	4.3	4.4	5.0	5.1	103.9		44.5	103.9	
Acid Added After Subsampling (mL)	11.0		-	2.0	-	-	-	-	-				
TTL Vol Before Subsampe (Start831mL)	831.0	827.5	807.5	786.0	766.0	739.0	714.0	689.3	663.3	250			
TTL Vol After Subsample (mL)	827.5	807.5	786.0	766.0	739.0	714.0	689.3	663.3	0.0				

Analyses Actlabs Rpt#A10-1892 (i) rev 2 Rev, 2; Final Tails represent tails after HCl wash for Flask2; Final Solution is Flask solution end of day#38
Centrifuge Residue Total weight re-stated on daily basis amortized per calculated volume

	Contained Metal / Analyte (µg)										Metals in HCl wash (µg)
	Leaching Evoltion - Solution Samples - Day#									Total	
	1	3	7	10	16	24	31	37	38	All Solutions	
Mo	2	7	27	31	56	55	55	61	1592	1885	1643
Ni	239	642	787	838	1126	1073	1082	1258	31838	38883	1820
U	97	230	275	286	375	365	336	403	10281	12649	458
V	26	99	80	67	102	80	77	85	2056	2672	3700
Zn	434	1138	1318	1364	1785	1728	1744	1901	48554	59964	5250
Cu	37	122	164	175	233	213	200	243	5996	7384	1778
Co	31	78	96	104	139	127	127	147	3655	4503	124
Cd	28	52	59	58	78	72	68	82	2023	2520	24
Li	13	33	41	46	66	67	69	81	2023	2439	13
Al	1755	5720	7740	8558	12042	12175	12918	14066	370785	445758	15975
Na	219	404	454	484	653	623	615	770	19899	24120	620
K	303	604	641	675	907	825	793	905	22486	28139	11200
Ca	8222	9840	10729	10978	14364	12750	12795	13624	345579	438880	1075000
Fe	6250	35400	74390	85580	124470	123250	123006	134940	3488958	4196244	685000
Mg	2364	3840	4644	4950	6939	6625	6768	8086	204296	248512	2650
Liq'd Subsample Removed Vol (mL)	14.5	20.0	21.5	22.0	27.0	25.0	24.7	26.0	663.3	844.0	
TTL Vol Before Subsample (Start831mL)	831.0	827.5	807.5	786.0	766.0	739.0	714.0	689.3	663.3	844.0	250.0

	Contained Metal / Analyte (µg)				
	HCl Wash Solution	All Sulfuric Acid Leaching Solutions	Leaching Solids		Head Sample
			Combined Centrifuge Residue	Final Tails Tails (Day38)	
Analyet / Sample	BA2-456-HCL		Data Pending	BA2-456-Solids	456-Initial Solids
Mo	1643	1885		8000	16939
Ni	1820	38883		4052	50233
U	458	12649		551	13240
V	3700	2672	Data	93302	151282
Zn	5250	59964	Pending	7793	71455
Cu	1778	7384		3948	16939
Co	124	4503		312	5257
Cd	24	2520		31	2551
Li	13	2439		5548	10319
Al	15975	445758		6421020	8878320
Na	620	24120		342870	584100
K	11200	28139		1631230	2550570
Ca	1075000	438880		4093660	13278540
Fe	685000	4196244		1464990	7982700
Mg	2650	248512		633790	1168200
Sample Weight (gm)					194.7
Centrifuge Residue Wt (gm)			44.5	103.9	
TTL Vol (mL)	250.0	844.0			

Partial Extractions (%)			
	Extract per Sol'ns no HCl	Extract per Sol'ns + HCl	Extract - per Solids
Mo	11%	21%	53%
Ni	77%	81%	92%
U	96%	99%	96%
V	2%	4%	38%
Zn	84%	91%	89%
Cu	44%	54%	77%
Co	86%	88%	94%
Cd	99%	100%	99%
Li	24%	24%	46%
Al	5%	5%	40%
Na	4%	4%	47%
K	1%	2%	43%
Ca	3%	11%	51%
Fe	53%	61%	71%
Mg	21%	21%	51%
Excludes Centrifuge Residues Data Pending			

Table 40: Summary of bioleaching test results and sample specifications for BAT456 Flask2, including calculated partial extractions, Batch Amenability Tests, ARC 2010. Data assembled from Budwill 2010b and analytical certificates appended therein.

Results summarized in Tables 39 and 40 for BAT456 Flask1 and Flask2 tests, respectively, show all leaching and related analytical data consolidated from Actlabs analytical certificates appended in Budwill 2010b, and weights and volumes consolidated from the foregoing report. Calculated metals content (analyte content) is shown in the Table for all fractions analyzed. A summary of extractions achieved during the leaching from various solutions is also tabulated along with comparative figures as reported in Budwill 2010b where available.

Considering that solids centrifuged from periodic subsamples removed to monitor compositional evolution during the tests were not leached nor analyzed, the final leaching figures, for liquid and solid fractions, are partial figures only and, accordingly, calculated metal extractions (recoveries) summarized in the Tables are also similarly partial figures.

To the extent that most of the results and related report were very recently received, the extensive databases therefrom have not yet been entirely critically reviewed by DNI. A number of trends are, however, readily apparent which offer material guidelines to expanded future testwork as follows:

- An aggregate of 182.5mL and 180.7mL of liquid were removed during the BAT tests in nine subsamples from BAT456 Flask1 and Flask2, respectively, to monitor compositional evolution. The samples were removed periodically at different stages of the leaching, and subsequently sent for analysis. Compared to the starting volumes of 830 mL and 831 mL for the Flask1 and Flask2 BAT tests, respectively, the volumes removed represent approximately 22% of the overall initial leaching solution, and metals contained therein account for, on average, approximately 20% of the total of metals leached during the entire leaching tests.
- An aggregate of 43.2gm and 44.5gm of residues centrifuged from the periodic subsamples taken during tests for BAT456 for Flask1 and Flask2, respectively, were set aside and not leached. The aggregate weights represents 22% and 23%, respectively, of the initial 194.7gm feed material for each of the two Flasks. Metal content of the aggregate residues is unknown and their contribution to overall solubilized metals in solution can be expected to skew interpretation of test results. Bioleaching of the foregoing residues, under test conditions identical to the BAT tests, is in progress and is expected to be completed by September. Centrifuge solids (residues) for sample 003 were returned to the flask.
- Considerable quantities of metals were solubilized and extracted by HCl washing of final residues (tails) from leaching tests for Flask2, notably Mo-V-Cu, presumably reflecting amounts re-precipitated from solution toward the later stages of the bioleaching tests after having been solubilized in the sulfuric acid solution. More than half of the total Mo and V extracted from the shale was extracted during HCl washing stage, and approximately 20% of Cu. The foregoing is also correlated with considerable Fe reporting to the HCl solution.
- Despite pending data for centrifuge residues, partial extractions calculated based on proportion of total metals solubilized/extracted into sulfuric acid solution fractions as compared to metals contained in the feed, report excellent extractions for Ni-U-Zn-Co-Cd ranging 77%-99%, middling to low extractions for Cu (44%) and Li (24%), and poor results for Mo (11%) and V (2%). Similar calculations based on results after HCl washing of residues reported improved extractions for all, notably for Mo (11% Flask1; 21% Flask2), V (2% Flask1; 4% Flask2) and Cu (44% Flask1; 54% Flask2).
- Despite pending data for centrifuge residues, partial extractions calculated based on the difference in metals content of the final tails as compared to that of the feed material, report significantly higher results than those based on solubilization alone, notably for Mo (53%), V (38%), Cu (77%) and Li (46%). These figures presumably reflect metals removed (solubilized) from the feed material into solution, although no definitive conclusions can be made in the absence of mass balance closure on the figures which cannot be prepared at this time given missing results from centrifuge residues. It is of note that similar discrepancies were noted in acid mobility test results, which also reported higher extractions (recoveries) calculated on

tails-head grades differentials when compared to those calculated based on solution chemistry alone. This discrepancy is unresolved.

- The overall results, albeit partial and interim at present, are consistent with test results and observations from DNI's sulfuric acid leaching testwork and results reported by BRGM from its bioleaching testwork (discussed in Sections 11.6.2 and 11.6.3 of this Report, respectively).

Results summarized in Tables 41 and 42 for BAT003 Flask1 and Flask2 tests, respectively, show all leaching and related analytical data consolidated from Actlabs analytical certificates appended in Budwill 2010b, and weights and volumes consolidated from the foregoing report. Calculated metals content (analyte content) is shown in the Table for all fractions analyzed. A summary of extractions achieved during the leaching from various solutions is also tabulated along with comparative figures as reported in Budwill 2010b.

Considering that weights recorded for final tails are higher than those of the feed material, no extractions can be reasonably calculated for the metals based on tails-head grade differentials. Calculated extractions are, however, summarized in the Tables based on metals content of the collective solutions as a percentage of those in the feed material.

To the extent that most of the results and related report were very recently received, the extensive databases therefrom have not yet been entirely critically reviewed by DNI. A number of trends are, however, readily apparent which offer material guidelines to expanded future testwork as follows:

- An aggregate of 127.5mL and 127mL of liquid were removed during the BAT tests in five subsamples from BAT003 Flask1 and Flask2, respectively, to monitor compositional evolution. The samples were removed periodically at different stages of the leaching, and subsequently sent for analysis. The volume removed was replaced with barren fluid.
- Unlike BAT456 tests, All centrifuge residues removed were returned to the Flasks and leached.
- As noted for BAT456 tests, considerable quantities of metals were solubilized and extracted by HCl washing of final residues (tails) from the BAT003 bioleaching tests for Flask2, notably Mo-V-Cu, presumably reflecting amounts re-precipitated from solution toward the later stages of the bioleaching tests after having been solubilized in the sulfuric acid solution. More than half of the total Mo, V and Cu solubilized from the shale was extracted during HCl washing stage, correlated with considerable Fe reporting to the HCl solution.
- calculated extractions presented in the Tables are subject to uncertainties due to yet unexplained weight gains reported for tails by the ARC. The extractions are, as such, presented as "partial" and are based on proportion of total metals solubilized/extracted into sulfuric acid solution fractions as compared to metals contained in the feed. BAT003 tests reported lower extractions than did the BAT456 tests, although they show the same relative trend of better results for Ni-U-Zn-Co-Cd, lesser extractions for Cu-Li, and poor results for Mo-V. Results after HCl washing of residues reported improved extractions for all, notably for Mo and Cu. Calculated extractions reported by the ARC are also shown in the Tables, all of which are consistent with calculations prepared herein.
- The only extractions which can be calculated based on the current data are those based on solvent chemistry as compared to the original feed material, given the reported weight gains for tails. The foregoing figures are, however, equivocated, in the absence of mass balance closure, since BAT456 tests as well as acid mobility test results reported significant discrepancies between extractions (recoveries) calculated based on tails-head grades differentials (higher extractions) as compared to those calculated based on solution chemistry alone. This discrepancy is unresolved.
- The overall results, albeit partial and interim at present, are consistent with test results and observations from DNI's sulfuric acid leaching testwork and results reported by BRGM from its bioleaching testwork (discussed in Sections 11.6.2 and 11.6.3 of this Report, respectively).

BAT 003 - Flask1	Grade (µg/L)						Grade (µg/L)	Grade (ppm)		
	Leaching Evolution - Solution Samples						HCl Wash	Leaching Solids		Head Sample
	Day #							Combined Centrifuge Residue	Final Tails (Day27)	
	0	8	15	22	27	Day27				
Analyet / Sample#	BA1-003T0	BA1-003T8	BA1-003T15	BA1-003T22	BA1-003T27FF	Final Solution Day27		Centrifuged Residues Returned to Flask and Leached	BA1-003-Solids	003-Initial Solids
Mo	413	619	660	661	555	555	No HCl Wash for Flask1 Residues		147	137
Ni	2850	2780	2930	2900	2940	2940			22	30
U	665	840	906	876	847	847			6	7
V	1050	1030	1290	1170	1490	1490			656	672
Zn	4980	5040	5530	5620	5340	5340			66	75
Cu	1210	1370	1410	1400	1350	1350			48	51
Co	544	540	559	556	561	561			5	6
Cd	184	184	187	181	188	188			1	1
Li	548	730	802	836	832	832			66	68
Al	228000	239000	288000	313000	308000	308000			70000	71600
Na	16800	24100	26500	28000	28700	28700			5300	5000
K	7420	5960	7490	7940	114000	114000			24900	22700
Ca	505000	506000	537000	550000	539000	539000			7400	12900
Fe	463000	480000	587000	588000	580000	580000			30900	29400
Mg	110000	112000	121000	125000	123000	123000			6500	7200
TTL Subsample Vol (mL)	38.0	24.0	21.5	22.0	22.0					
Sample Weight (gm)										172.6
Liq'd Subsample Removed Vol (mL)	38.0	24.0	21.5	22.0	22.0					
Centrifuge Residue Wt (gm)	-	-	-	-	-				179.9	
Acid Added After Subsampling (mL)	-	-	-	-	-					
Barren Liquid Added (mL)	38.0	24.0	21.5	22.0	22.0					
TTL Vol Before Subsampe (Start805mL)	805.0	805.0	805.0	805.0	805.0					
TTL Vol After Subsample (mL)	805.0	805.0	805.0	805.0	805.0	805	250.0			

Analyses Actlabs Rpt#A10-2290; Final Tails represent tails after HCl wash for Flask2; Final Solution is Flask solution end of day#27
Centrifuge Residues Returned to Flask and Leached; Volume of liquid subsample removed for analysis replaced with barren fluid to top up to 805 mL

	Contained Metal / Analyte (µg)							HCl wash Solution (µg)
	Leaching Evoltion - Solution Samples - Day#					Final Solution	Total All	
	0	8	15	22	27	Day27	Sulf Solutions	
Mo	16	15	14	15	12	447	518	No HCl Wash for Flask1 Residues
Ni	108	67	63	64	65	2367	2733	
U	25	20	19	19	19	682	785	
V	40	25	28	26	33	1199	1350	
Zn	189	121	119	124	117	4299	4969	
Cu	46	33	30	31	30	1087	1256	
Co	21	13	12	12	12	452	522	
Cd	7	4	4	4	4	151	175	
Li	21	18	17	18	18	670	762	
Al	8664	5736	6192	6886	6776	247940	282194	
Na	638	578	570	616	631	23104	26137	
K	282	143	161	175	2508	91770	95039	
Ca	19190	12144	11546	12100	11858	433895	500733	
Fe	17594	11520	12621	12936	12760	466900	534331	
Mg	4180	2688	2602	2750	2706	99015	113941	
Liq'd Subsample Removed Vol (mL)	38.0	24.0	21.5	22.0	22.0	-	127.5	
TTL Vol Before Subsample (Start805mL	805.0	805.0	805.0	805.0	805.0	805.0	932.5	

	Contained Metal / Analyte (µg)					Partial Extractions (%)			Reported Extraction (%) ARC
	HCl Wash Solution	All Sulfuric Acid Leaching Solutions	Leaching Solids		Head Sample				
			Combined Centrifuge Residue	Final Tails (Day27)					
Analyet / Sample			Centrifuged Residues Returned to Flask and Leached	BA1-003-Solids	003-Initial Solids	Extract per Sol'ns no HCl	Extract per Sol'ns + HCl	Extract - per Solids	per Sol'ns no HCl
Mo	No HCl Wash for Flask1 Residues	518		Weight Gains Recorded For Tails	23646	2%	No HCl Wash for Flask1 Residues	Weight Gains Recorded For Tails	2%
Ni		2733			5178	53%			52%
U		785			1260	62%			61%
V		1350			115987	1%			1%
Zn		4969			12945	38%			37%
Cu		1256			8803	14%			14%
Co		522			1036	50%			49%
Cd		175			190	92%			90%
Li		762			11771	6%			6%
Al		282194			12358160	2%			2%
Na		26137			863000	3%			3%
K		95039			3918020	2%			2%
Ca		500733			2226540	22%			22%
Fe		534331			5074440	11%			10%
Mg		113941			1242720	9%			9%
Sample Weight (gm)					172.6				
Centrifuge Residue Wt (gm)				179.9					
TTL Vol (mL)		932.5							

Table 41: Summary of bioleaching test results and sample specifications for BAT003, Flask1, including calculated partial extractions, Batch Amenability Tests, ARC 2010. Data assembled from Budwill 2010b and analytical certificates appended therein.

BAT 003 - Flask2	Grade (µg/L)						Grade (µg/L)	Grade (ppm)		
	Leaching Evolution - Solution Samples						HCl Wash	Leaching Solids		Head Sample
	Day #							Combined Centrifuge Residue	Final Tails (Day27)	
	0	8	15	22	27	Day27				
Analyet / Sample#	BA2-003T0	BA2-003T8	BA2-003T15	BA2-003T22	BA2-003T27FF (Final Solution)	Final Solution Day27	BA2-003-HCL	Centrifuged Residues Returned to Flask and Leached	BA2-003-Solids	003-Initial Solids
Mo	399	644	708	671	621	621	9710		137	137
Ni	2780	2950	3050	2930	2940	2940	1150		19	30
U	656	879	928	891	859	859	761		3	7
V	1090	1350	1300	1210	1200	1200	5340		694	672
Zn	4870	5740	5740	5570	5480	5480	12100		35	75
Cu	1150	1420	1480	1390	1390	1390	6800		37	51
Co	524	558	581	552	554	554	259		3	6
Cd	177	186	198	185	180	180	89.5		0.3	1.1
Li	528	752	828	814	808	808	115		63	68
Al	243000	295000	322000	307000	317000	317000	577000		77000	71600
Na	15500	24900	27700	28200	29200	29200	89300		5000	5000
K	6930	7040	8110	8180	8880	8880	229000		23800	22700
Ca	526000	570000	568000	532000	532000	532000	971000		4300	12900
Fe	474000	634000	639000	592000	570000	570000	3480000		25400	29400
Mg	102000	114000	123000	121000	119000	119000	48700		6700	7200
TTL Subsample Vol (mL)	38.0	24.0	21.0	22.0	22.0					
Sample Weight (gm)										
Liq'd Subsample Removed Vol (mL)	38.0	24.0	21.0	22.0	22.0					172.6
Centrifuge Residue Wt (gm)	-	-	-	-	-				199.9	
Acid Added After Subsampling (mL)	-	-	-	-	-					
Barren Liquid Added (mL)	38.0	24.0	21.0	22.0	22.0					
TTL Vol Before Subsampe (Start805mL)	805.0	805.0	805.0	805.0	805.0		250.0			
TTL Vol After Subsample (mL)	805.0	805.0	805.0	805.0	805.0	805				

Analyses Actlabs Rpt#A10-2290; Final Tails represent tails after HCl wash for Flask2; Final Solution is Flask solution end of day#27
Centrifuge Residues Returned to Flask and Leached; Volume of liquid subsample removed for analysis replaced with barren fluid to top up to 805 mL

	Contained Metal / Analyte (µg)							HCl wash Solution (µg)
	Leaching Evoltion - Solution Samples - Day#					Final Solution	Total All	
	0	8	15	22	27	Day27	Sulf Solutions	
Mo	15	15	15	15	14	500	574	2428
Ni	106	71	64	64	65	2367	2736	288
U	25	21	19	20	19	691	796	190
V	41	32	27	27	26	966	1120	1335
Zn	185	138	121	123	121	4411	5098	3025
Cu	44	34	31	31	31	1119	1289	1700
Co	20	13	12	12	12	446	516	65
Cd	7	4	4	4	4	145	168	22
Li	20	18	17	18	18	650	742	29
Al	9234	7080	6762	6754	6974	255185	291989	144250
Na	589	598	582	620	642	23506	26537	22325
K	263	169	170	180	195	7148	8126	57250
Ca	19988	13680	11928	11704	11704	428260	497264	242750
Fe	18012	15216	13419	13024	12540	458850	531061	870000
Mg	3876	2736	2583	2662	2618	95795	110270	12175
Liq'd Subsample Removed Vol (mL)	38.0	24.0	21.0	22.0	22.0	-	127.0	
TTL Vol Before Subsampe (Start805mL	805.0	805.0	805.0	805.0	805.0	805.0	932.0	250

	Contained Metal / Analyte (µg)				
	HCl Wash Solution	All Sulfuric Acid Leaching Solutions	Leaching Solids		Head Sample
			Combined Centrifuge Residue	Final Tails Tails (Day27)	
Analyet / Sample			Centrifuged Residues Returned to Flask and Leached	BA2-003-Solids	003-Initial Solids
Mo	2428	574		Weight Gains Recorded For Tails	23646
Ni	288	2736			5178
U	190	796			1260
V	1335	1120			115987
Zn	3025	5098			12945
Cu	1700	1289			8803
Co	65	516			1036
Cd	22	168			190
Li	29	742			11771
Al	144250	291989			12358160
Na	22325	26537			863000
K	57250	8126			3918020
Ca	242750	497264			2226540
Fe	870000	531061			5074440
Mg	12175	110270			1242720
Sample Weight (gm)					172.6
Centrifuge Residue Wt (gm)				199.9	
TTL Vol (mL)	250	932.0			

	Partial Extractions (%)			Reported Extraction (%) ARC
Analyte	Extract per Sol'ns no HCl	Extract per Sol'ns + HCl	Extract - per Solids	per Sol'ns + HCl
Mo	2%	13%	Weight Gains Recorded For Tails	13%
Ni	53%	58%		57%
U	63%	78%		77%
V	1%	2%		2%
Zn	39%	63%		62%
Cu	15%	34%		34%
Co	50%	56%		55%
Cd	89%	100%		98%
Li	6%	7%		6%
Al	2%	4%		3%
Na	3%	6%		6%
K	0%	2%		2%
Ca	22%	33%		33%
Fe	10%	28%		27%
Mg	9%	10%		10%

Table 42: Summary of bioleaching test results and sample specifications for BAT003 Flask2, including calculated partial extractions, Batch Amenability Tests, ARC 2010. Data assembled from Budwill 2010b and on analytical certificates appended therein.

11.7 MLA MINERAL STUDY - 2009-2010

To aid formulation of leaching testwork, fifteen black shale samples from the Second White Speckled Shale Formation from SBH Property were submitted to Actlabs Geometallurgy Services, a division of Actlabs, Ancaster, Ontario, in October 2009 for a full mineralogical characterization by MLA600F Scanning Electron Microscope. The samples were collected during the 2009 Field Sampling Program, and are listed in Table 43.

Lab Number	Sample#	Colour
A09-4934-1	09ASH001S	Light olive green
A09-4934-2	09ASH002S	Light olive green
A09-4934-3	09ASH003S	Light olive green
A09-4934-4	09ASH004S	Dark brown
A09-4934-5	09ASH005S	Dark brown
A09-4934-6	09ASH006S	Medium brown
A09-4934-7	GS3-001S	Pale brown grey
A09-4934-8	GS3-002S	Pale brown grey
A09-4934-9	GS3-003S	Pale brown grey
A09-4934-10	GS3-004S	Pale brown grey
A09-4934-11	GS3-005S	Pale brown grey
A09-4934-12	GS3-006S	Olive brown-grey
A09-4934-13	GS1-001S	Limonite brown
A09-4934-14	GS1-003S	Tan
A09-4934-15	GS2-001S	Dark olive brown

Table 43: List of samples, MLA Study, Actlabs. Hamilton 2010.

The objective of the study was to provide a detailed account of metallic mineral characteristics in terms of type and mineralogical variance. The MLA (Mineral Liberation Analyser) Study was carried out, and certified, by Chris Hamilton, M.Sc. Manager of Actlabs Geometallurgy Services. The study methodology, observations and conclusions are better outlined in a February 17, 2010, report by C.Hamilton[54] appended herein as Appendix G1. Salient parts of the report are summarized below, and the reader is referred to the report for additional details.

The Study utilized a state-of-the-art, Quanta 600F MLA equipped with a field-emission gun as the electron source providing an order of magnitude smaller electron beam than other equipment, capable of improved detection (down to 0.3 micrometers), superior resolution, as well as significantly improved X-ray identification. Overall, the equipment provides improved quality of results in addition to higher throughput relative to conventional SEM analysis.

In preparation for the MLA Study, multielement geochemical data for all samples were reviewed by Hamilton, and a preliminary study of select samples by X-ray diffraction (XRD) analysis was made to screen samples by MLA. Detailed SEM work was also performed during the determination of a mineral reference list for MLA, to establish significant differences across the sample suite. Systematic analysis of the samples was then performed by automated MLA measurements and point counts, with special attention given to the form and hosts of base metal and associated value elements.

The MLA analyses were carried out on duplicate 30 mm diameter polished sections prepared from the samples. Samples were first dry-screened through a 850 micron screen and riffle-split using a Quantachrome 8-way spinning micro-riffler to prepare duplicate 2gm aliquots for measurement. After some trial-and-error experimentation to prepare acceptable polished sections, MLA aliquots were prepared in polypropylene vials and mixed with Specifix cold mounting resin and vacuum impregnated. After impregnation, the samples were left to cure in a pressure vessel overnight and then removed and heated to final curing in an oven at 40 degrees C. Once fully cured, the mounts were cut vertically and re-mounted in a 30 mm diameter mould cup. The final mounts thus represent trans-vertical faces to the

[54] Characterization of 15 Black Shale Samples: by C.Hamilton, Actlabs MLA & Metallurgical Services; February 17, 2010; Laboratory Reference No.A09-4934.

MLA to account for any density segregation that may occur during preparation. One mount was measured for modal analysis and three were used for trace mineral searches.

The reader is referred to Hamilton 2010 (in Appendix G1) for additional details and photomicrographs. The study overall noted and concluded the following:

- That the samples can be grouped into three broad categories based on geochemical, XRD and MLA data;
- Correlation of SiO_2/LOI and LOI/K_2O indicate that illite and quartz contents inversely correlate with C-content, and that two broad groups of data can be discerned; one with >50% SiO_2 and another with <50% SiO_2 content. Samples GS3-002S and GS1-001S fall between these groups, and Sample GS1-001S is an apparent outlier in binary plots of LOI vs SiO_2 and SiO_2 vs K_2O;
- The progression from low to high LOI content is accompanied by a variation in shaley material texture from compact, earthy soil-like aggregates to organic-rich shaley material as illustrated in Plates included in the MLA Study report (Appendix G1).;
- There is a reasonable correlation between quartz contents as measured by MLA and raw X-ray counts on quartz for selected samples, providing support for confidence in the MLA data;
- XRD Results show a marked variation in the degree of crystallinity of the samples, a feature which together with the organic material, makes XRD quantification extremely difficult;
- SEM-EDS Inspection of the materials indicates a wide variation in textures, with an extreme variation in grain size in phyllosilicate mineralogy in particular. This fine grained texture renders reliable mineral identification and quantification difficult even by SEM, necessitating considerable iterative efforts to optimize the electron beam spot size for best results. A series of BSE photomicrographs are included in the MLA Study report (Appendix G1) showing the extremely fine grained nature of the shaley material.;
- It was ultimately not possible to quantify the organic material reliably for reasons of chemical and BSE-signal variance. Data reported by study was, accordingly, reported normalized to organic C to enable including the organic C content as measured analytically;
- The organic phase in the shale can carry high and variable levels of Ca, Fe and S. Depending on the level of moisture and/or other conditions, these elements otherwise precipitate or crystallize as pyrite framboids or have been oxidized to sulphates (jarosite, Fe-sulphate and/or alunite). In oxidized materials, some Fe-oxides were found to host Cu and Mn;
- Sphalerite was observed in the presence of significant proportions pyrite framboids, particularly within carbonaceous, organic partings;
- In certain cases, it is not possible to provide reliable discrimination between feldspars and zeolites, and to fully discriminate between varieties of montmorillonites (i.e. Ca-bentonite from montmorillonite and other possible swelling clays. However, it appears on the basis of reasonable reconciliation that illite can be distinguished from montmorillonite and 2 broad varieties of mixtures of minerals. One is presumed to be an illite/montmorillonite mixture which may or may not be interlayered (a fine grained ad hoc mixture?) and the other appears to be an amorphous mixture with highly complex mineralogy and/or chemistry;
- Due to the extremely fine grained nature of the samples, the mineralogical data cannot be treated as being definitive, as fine grained sulphates, oxides and other species cannot be unequivocally identified, even though the data do provide a sound basis for comparison and fundamental qualitative characterization.

	09ASH-001S	09ASH-002S	09ASH-003S	09ASH-004S	09ASH-005S	09ASH-006S	GS3-001S	GS3-002S	GS3-003S	GS3-004S	GS3-005S	GS3-006S	GS1-001S	GS1-003S	GS2-001S
Illite	50.1	45.2	15.2	16.2	17.1	9.6	24.7	22.9	21.3	34.5	33.2	24.5	28.5	35.3	19.5
Smectite	10.6	15.1	28.7	20.8	21.9	5.6	14.9	10.3	8.8	7.5	8.8	17.5	3.8	3.3	8.8
Ill/Smect	15	14.2	22.6	17.1	10.5	10.3	11.6	12.4	7.5	7.2	7.2	8.3	3.2	5.4	5.5
Kaolinite	1.8	0.6	2.1	1.6	0.9	1.1	6.6	7.4	6.8	6.1	9.2	7.1	3.6	1.8	3.6
Quartz	6.4	8.7	5.4	7.2	8.8	14.8	25.4	28.8	25.6	5.6	10.2	7.3	34.5	34.2	18.9
Gypsum	0.1	0	1.8	2.2	4.6	12.1	1.6	1.3	2.1	9.5	3.9	4	5.2	2.2	20.9
Calcite	0.1	0.1	1.6	9.4	13.8	12.4	0.6	0.6	1.8	4.9	3.9	1.2	5.9	0.1	1.1
K_Feldspar	4.9	4	5.2	1.8	1.2	3.5	3.5	4.3	1.9	1.9	1.9	1.5	0.8	1.3	1.6
Plagioclase	1.1	0.9	1.1	0.5	0.5	1.3	1.6	1.5	0.3	1.9	1.9	3.1	3.1	1.1	4.5
Pyrite	1.6	0.6	3.6	3.7	3.1	2.5	0.5	0.9	0.9	0.1	0.9	1.3	1.3	0.1	1.2
Jarosite	2.5	2.1	3.1	2.8	3.1	9.9	0.4	1.4	0.9	5.2	4.7	5.6	0.3	0.8	6.2
Alunite	0.1	0.1	0.8	0.5	0.8	7.9	0.1	0.2	0.8	0.8	4.8	4.2	1.3	2.1	1.5
Goethite	0.2			0.5	0.2	0.6	0.7	0.8	2.6	2.6	1.1	1.8	1.8	2	0.5
Chlorite	0.8			0.4	0.3	0.3	0.3	0.2			0.1				
Amorphous	2.8	5.9	3.9	6.2	4.7	5.7	5.9	4.9	14.5	5.4	2.3	6.3	5.6	10.2	5.6
Organic_C	1.93	2.48	4.94	9.12	8.51	2.38	1.56	2.09	4.17	6.79	5.93	6.29	1.06	0.14	0.58
Totals	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Table 44: Mineral Proportions (wt %) as determined by MLA and normalized according to organic C assays. MLA Study, Actlabs. Notes: Ill/Smect denotes mixed spectrum of illite and smectite. Amorphous denotes un-identified and unknowns based on both XRD and MLA results. From Table 2, Hamilton 2010.

Mineralogical modal data are presented in Table 44 as determined by MLA point counting. This method proved to be the most reliable method for determining mineral populations within the fine-grained matrix, except for organic matter given that BSE signal organic matter is too close to the epoxy mounting medium to produce a reliable discrimination. The data presented in the table is, accordingly, normalized to include the organic material as analyzed. It is significant to note that outliers in binary LOI vs SiO2 and SiO2 vs K20 plots show high proportions of amorphous or unidentified material by MLA, whose provenance is unknown and open to interpretation as their composition cannot be attributed to known minerals or mixtures thereof. Other observations made in the course of modal investigation include pyrite framboids are replaced by Fe-sulphate and/or jarosite (as well as alunite).

A combination of manual and automated searches were performed on polished sections by MLA in the search for base metals documented from analytical work. Results were inconclusive and unsatisfactory as the only specie identified by automated searching (relying on brightness) was sphalerite, and the other species hosting Cu, Co and Ni vales were found only by painstaking manual and interactive probing. Other species found by automated searches include barite and monazite occurrences which correlate positively with Ba and Ce values, respectively. Results from the foregoing work are summarized in Table 45.

Mineral Particle	09ASH-001S	09ASH-002S	09ASH-003S	09ASH-004S	09ASH-005S	09ASH-006S	GS3-001S	GS3-002S	GS3-003S	GS3-004S	GS3-005S	GS3-006S	GS1-001S	GS1-003S
Barite	722	227	1258	63	39	55	35	32	66	30	46	99	240	249
Monazite	4	11	8	21	18	42	13	17	16	7	7	10	11	10
Fe/Mn/Ni/Cu_Ox	0	0	4	8	2	1	0	0	1	1	0	0	0	0
Sphalerite	0	0	0	21	11	7	0	0	0	4	2	0	0	0
False_Positives	158	50	325	14	51	7	50	53	30	42	25	93	87	132
Total	**884**	**288**	**1595**	**127**	**121**	**112**	**98**	**102**	**113**	**84**	**80**	**202**	**338**	**391**

Table 45: Trace mineral search statistics (number of particles) for two polished sections per sample. MLA Study, Actlabs. Fe/Mn/Ni/Cu_Ox denotes Mn-oxides with Cu and/or Ni. False positive denote particles returned to in automated mode. From Table 3, Hamilton 2010.

In addition to the above, semi-quantitative EDS analyses of select grains when examined together with corresponding photomicrographs indicate that the base metals are hosted by Fe- and Mn-oxyhydroxides. No specific mention of U or rare metals mineral speciation was made in the MLA Study.

The final conclusions of the MLA Study were as follows:

- The low-silica group of samples has a high organic matter content and is characterized by variable proportions of smectite and illite for the same Si and quartz content. The high silica group of samples shows a positive correlation of illite with increasing quartz content. Outliers GS3-003S and GS1-001S show abnormally high amorphous material contents (>10%), while remaining samples have between 2 and 6 %;

- Sample colour differences can be attributed to variations in organic C (sample GS1-003S has a tan colour unmasked by C), and sulphate minerals (highest in sample 09ASH-006S) impart a brownish- to yellow colouration;
- Zn is largely hosted by sphalerite (which accompanies pyrite framboids), and that Zn is also hosted in Mn-oxides/hydroxides. Detectable sphalerite correlates with high Zn values in particular;
- Detectable Ni, Cu and Co was identified in rare Fe- and Mn-oxyhydroxides;
- Proportions of monazite and barite correlate positively with Ce and Ba content of host samples, highlighting haw rare the base metal minerals are.

In hindsight, the MLA Study fell short of expectations of providing subsequent leaching testwork with definitive quantitative information as to mineral speciation and their abundances. The work did, however, reiterate and confirm what is already generally known about black shale hosted metallic mineralization, namely; that metallic mineralization is typically too fine to afford identification by optical or EDS methods and that the metal-bearing compounds are dispersed throughout the shale as extremely tiny particles (often submicron) trapped in organic matter or in slimes. The Study also suggested that many of the metals might occur in the Second White Speckled Shale samples tested as charged particles within oxides, hydroxides and clays, rather than as discrete mineral phases (personal communication with C.Hamilton, 2010). This, latter, suggestion is supported by the ease with which metals can be leached from the shale as observed during subsequent leaching and bioleaching testwork (presented in Section 11.6 of this Report), and also by historic mineralogical work from the Property noting instability of at least some of the mineralogy in the shale and its susceptibility to decomposition (see Section 6.2.8, Plates 2 and 3, in NI-43-101 Report appended herein as Appendix B1).

11.8 Subsurface Stratigraphic Synthesis Study and Modeling 2009-2010

All historic work from the Property has repeatedly suggested an as yet ill understood association between metal enrichment throughout the Property and various structures or junctions thereof. This work has also suggested potential for the presence of SEDEX style sedimentary exhalative massive sulfide mineralization at the Property, proposed to be associated with synsedimentary structures. Reliable resolution of subsurface structures throughout the Property has, accordingly, been a geological priority throughout past work campaigns over the area, and same continues to be so at the present throughout DNI's work.

A study of drilling records of all historic oil/gas wells from the Birch Mountains had previously been conducted by Tintina Mines in 1995 to build a three dimensional stratigraphic model and database for the area, to aid identification of stratigraphic disturbances toward resolution of faulting and doming patterns identified by remote sensing and air-photo studies. Drilling and downhole logging records of approximately 1850 wells were critically reviewed of which only 207 had sufficiently complete records to be consolidated into a reliable, though widely spaced, subsurface geological database for the area (see Section 8.3).

DNI undertook to expand on the historic work in 2009-2010 to refine the prior synthesis and to also expand the subsurface stratigraphic database to include all additional oil/gas wells which have since been drilled over the area subsequent to Tintina's 1995 work.

DNI's subsurface stratigraphic synthesis study had three objectives: (a) to enhance geological understanding of the subsurface stratigraphy in the area as it might relate to surface anomalies previously identified; (b) to identify structures at the Property which might be syn-sedimentary disturbances and which would provide first order exploration targets for SEDEX style sedimentary exhalative massive sulfide mineralization; and (c) to gain as definitive an understanding as possible of the subsurface geometry of the Second White Speckled Formation to enable reliable localization of drill holes in future drilling.

The DNI study was initially started by S.Sabag in December 2008, relying on the historic database which was first digitized and then reviewed. Historic work had relied entirely on interpretation of the subsurface stratigraphic picks in contoured format and in plan view. Critical examination of this work indicated that many, if not most, of the subtle disturbances characterizing the subsurface in the area are too attenuated during contouring to be discernible or are altogether obliterated by contour averaging. A decision was, accordingly, made to re-examine the data in section view instead. A series of fourty 2km spaced E-W cross sections were constructed by J.Gillett of DNI, under the direction and supervision of S.Sabag, across the entire Property to enable systematic review and re-interpretation of the data in cross-section view. The study progressed intermittently until mid-2009, guided by progress of data consolidation into cross-sections.

A similar review of the data and sections was also initiated by Dr.J.P.Robinson, DNI's senior structural geologist, which progressed intermittently from September 2009 to June 2010.

After considerable painstaking efforts, the study was halted midway in 2009, after concluding that the historic subsurface stratigraphic database is too sparse to afford detailed synthesis and would lend itself equally well to many possible interpretations. A decision was taken in late 2009 to expand the database, and APEX Geoscience, Edmonton, was retained to conduct a protracted study to review all available information from oil/gas drilling over the Property and vicinity postdating the 1995, and to extract subsurface geological information therefrom.

Work completed by DNI in-house and the study completed by APEX are presented below.

11.8.1 Subsurface Database Expansion and Synthesis Study - APEX 2010

APEX Geoscience, Edmonton, was retained in late 2009, to review all available ERCB/EUB oil/gas well records to extract information from drilling postdating the 1995 historic databases. During its work, APEX maintained consistency with picks from the historic work, but also extracted information for downhole stratigraphic picks for the top of the Second White Speckled Formation which had been omitted in 1995 (bottom picked only in 1995) since the principal focus of work at the time had been the Shaftesbury Formation then believed to be the host to the metallic mineralization in the area.

APEX's review of information from all oil/gas wells in the Birch Mountains identified 591 wells which had sufficiently complete downhole geologic records to be of use. Information was extracted from the foregoing wells, 156 of which also contained subsurface picks for the Second White Speckled Shale Formation (of 207 wells comprising the 1995 historic database, only 56 wells contained reliable information on the Second White Speckled Shale Formation).

During its consolidation of well information, APEX noted some flaws in Provincial databases due to the inconsistent reporting of kelly bushing elevations of the wells, at times representing elevation variations ranging between 10 and 15 meters. Though these variations can be material to the correlation of Formations with thicknesses in the 10's of meters, APEX noted that inconsistent kb records are scarce and wells with poor records can be readily identified (an opinion shared by DNI's internal review of the data by J.P.Robinson as discussed in the next Section).

APEX consolidated its findings in its report[55] dated September 30, 2009, which is appended herein as Appendix F1.1. The report consolidated the expanded database in a series of computer-generated isopach and structural contour maps, for most of the Cretaceous formations. Location of oil/gas wells comprising the current subsurface database is shown in Figure 105 showing also locations with subsurface information for the Second White Speckled Shale Formation.

APEX's isopach and structural maps are appended in its report. A global summary of depth to the top of the Second White Speckled Shale and its thickness throughout the Property per the above 2010 database is shown in Figure 106. The figure presents depths to the top of the Formation in generalized triangulated contours which show that the principal localities with the least cover rocks (including overburden) at the Property are: (i) areas to the north-northwest of the Buckton Potential Mineral Deposit, (ii) the Eaglenest area, (iii) Buckton South, and (iv) areas to the southwest of the Asphalt Potential Mineral Deposit. These

[55] Stratigraphic and Structural Evaluation Using Wireline Logs, Birch Mountains Area, Northeast Alberta: by Kyle McMillan and Michael Dufresne, APEX Geoscience Ltd; September 30, 2009.

localities are, accordingly, priority targets wherein any mineralized polymetallic black shale zones beneath the surface might be conducive to extraction by open pit. It is of note that the Formation is thickest over locations with the deeper cover.

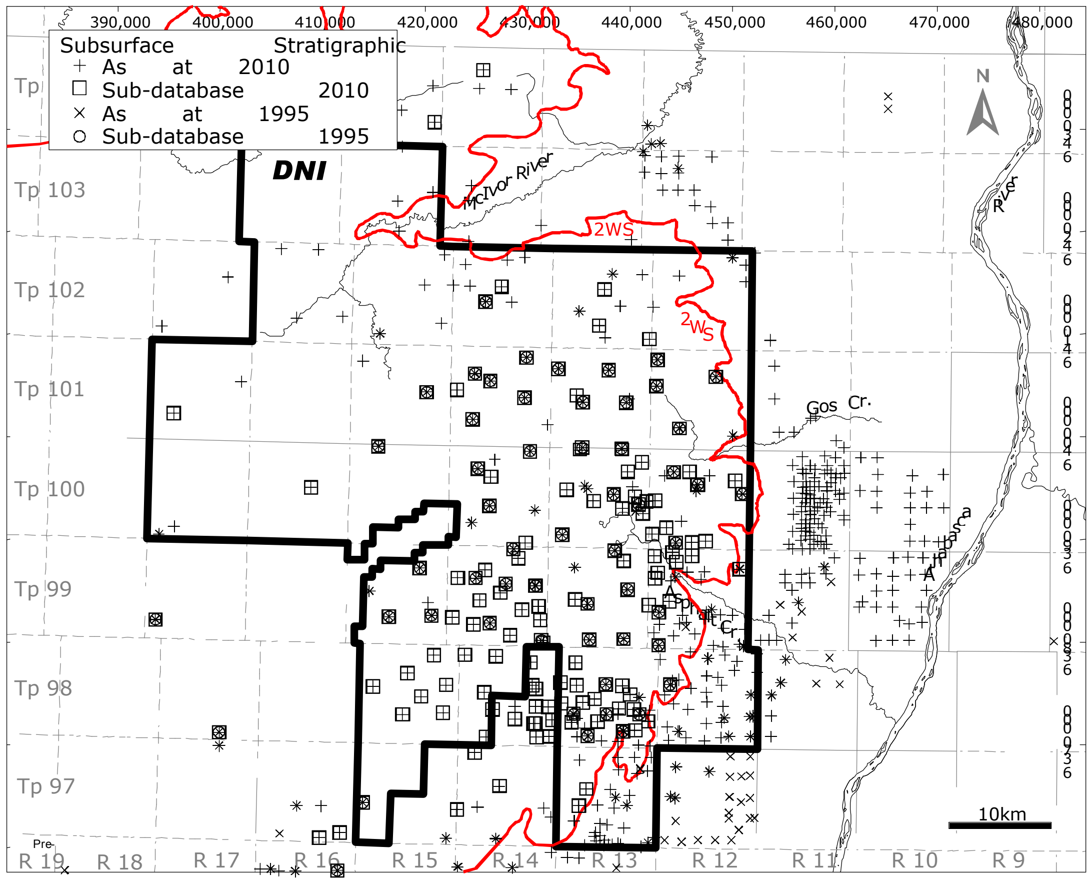


Figure 105: Location sketch showing oil/gas wells comprising the subsurface stratigraphic database as at 2010. The historic (1995) database's well locations also shown for comparison (see also Section 8.3).

APEX made a number of general conclusions based on its review and synthesis of the expanded database, and presented some of its findings in Figure 107 (Figure 31, APEX report) which serves to summarize groups of structural features which can be discerned across the Property. APEX's findings and conclusions are summarized below as extracted directly from their report (Appendix F1.1).

Figure 107 shows a generalized view of consistent structural features that appear in many, but not all formations, especially point-like features **"s1", "s2", "s3"** and **"d"** which are interpreted as follows**:**

- Features **s1** through **s3** are sinkholes. **s2** and **s3** appear in all formation tops; **s1** appears in all surfaces below the top of the Second White Specks Formation, indicating that it was no longer active at that time;
- The dome-like feature **d** is conspicuously missing on the top of the Devonian surface and top of the Joli Fou Formation. Other features are developed much better in certain formations, such as the NW trending ridges **L4**, **H4**, **L5**, **H5**, **L6**, which are weakly discernable from the Wabiskaw to the Second White Specks Formations, but especially clear in the top of the Viking Formation.

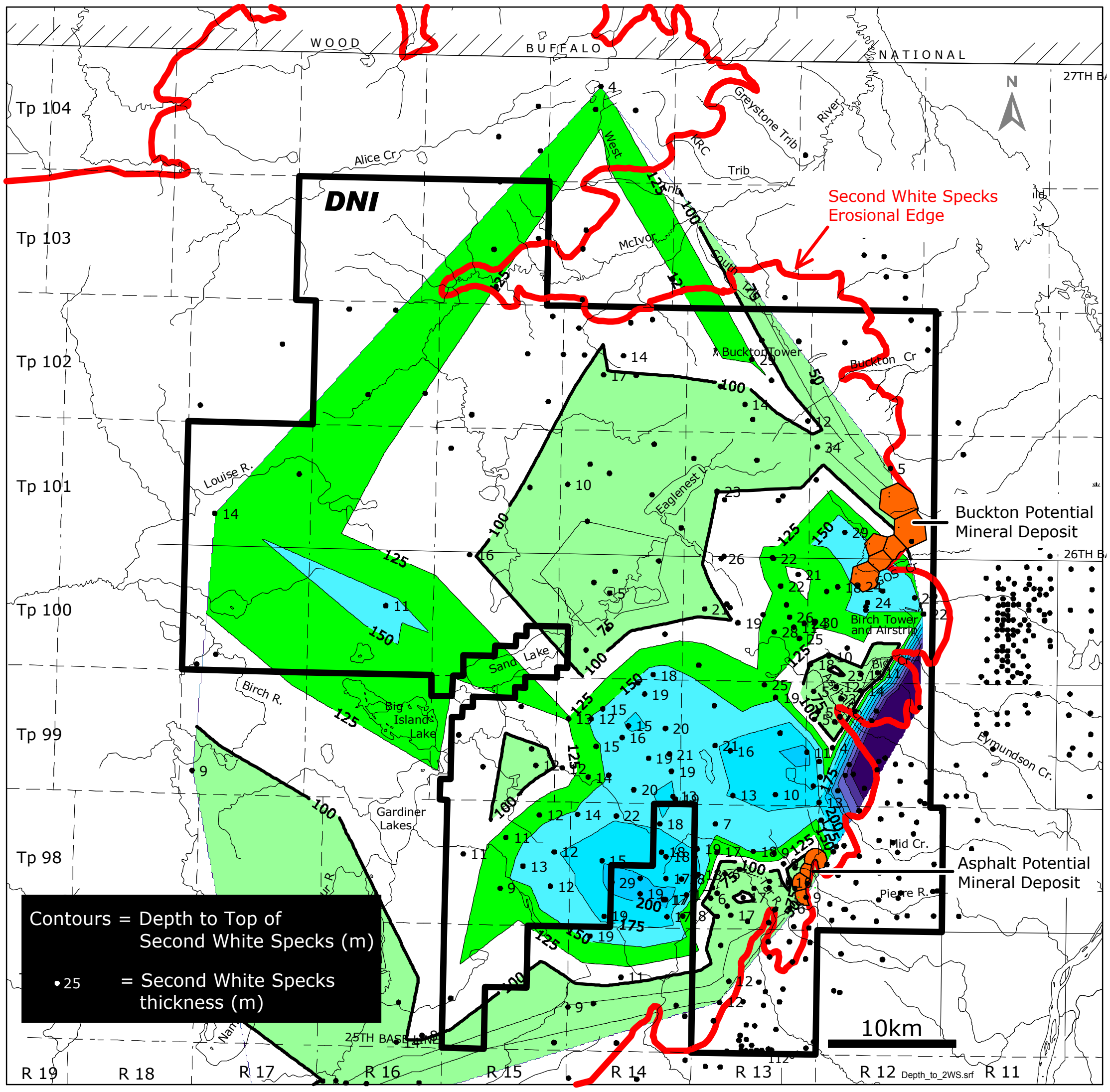


Figure 106: Sketch of the contoured depth to the top of Second White Speckled Shale and spot records of its thickness, showing also oil/gas wells comprising the subsurface stratigraphic data coverage as at May 2010, Subsurface Stratigraphic Synthesis programs 2010.

APEX also noted the following and highlighted related features which are shown in Figure 107:

- A large consistently present ridge (H1) within T198-102 / Rg 15-16W4. This feature shifts from trending NNW on the Devonian top surface to trending NNE on the Second White Specks top, in so shifting the northern end of the ridge laterally shifts about 15 km, whereas the southern end does not shift laterally; the most "rapid" shift occurs between the base of the Fish Scales and the base of the Second White Specks. The ridge is always associated with a parallel trough directly to the east (L2), and usually with a parallel trough directly to the west (L3).
- All mapped surfaces contain both linear features and blotchy point-like features, however, blotchy features are much more prevalent to the east of township 15W4, and in general seem to be bound on the west by ridge H1.

- After NNE to NNW trending linear structures, the next most common structural trend direction is ENE. Prominent ENE trending features include H2, L3, L7, and H6.
- The fact that dissolution does not shift towards the west, and superficially appears to shift towards the east, indicates that although Devonian dissolution was ongoing through the Cretaceous, as indicated by sinkholes that are evident in formation top contour maps and as thick accumulations on isopachs, dissolution does not seem to have progressed strongly westward during the Cretaceous, at least within the DNI property.
- Faulting parallel to the Peace River Arch has been recognized in Paleozoic and Mesozoic strata elsewhere in northern Alberta. It is evident from the structural maps and isopachs that ENE trending structures are prevalent in Cretaceous strata of the property area, which appear to be fault bound grabens and horsts. Given the location and direction of these features, as well as the similarity to features mapped in the Devonian strata just to the southeast of the property, it is considered very possible, if not likely, that these features represent rejuvenated Precambrian fault zones associated with the Peace River Arch.
- Basin subsidence associated with dissolution also appears to have been ongoing through the Cretaceous, likely accompanied by faulting parallel to the edge of dissolution. Most isopachs indicate thicker accumulations east of Ridge H1, with the notable exceptions of the Grand Rapids and Shaftsbury isopachs, which are actually inverted (thicker accumulations associated with the higher ridge, and thinner accumulations associated with the lower trough); these isopachs may represent local scouring of topographically lower areas on the Grand Rapids and Second White Specks Formation tops.

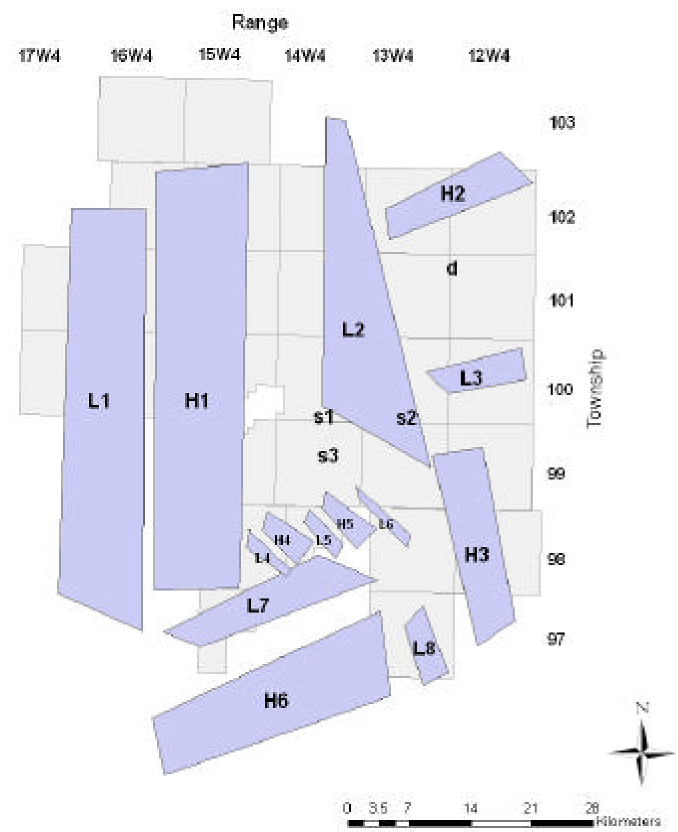


Figure 107: Generalized map of consistently high and low features in Cretaceous Formations at the Property. H refers to high area (polygon), L refers to low area (polygon), s refers to sinkhole (point feature), and d refers to dome (point feature). From Figure 31, APEX 2010.

APEX overall concluded that two main structural trend directions exist within the property area, one set trending NNW to NNE, interpreted to be related to dissolution of the underlying Devonian strata, and another set trending ENE, possbly related to reactivated deep faults associated with the Peace River Arch. APEX suggested that faulting within the area can be expected to be normal and bi-directional, reflecting these two structural trend directions.

In addition to the above, APEX noted that each formation bears some resemblance to formations underlying it, reflecting the same structural evolution, and in some cases possibly morphological inheritance. The Second White Specks Formation shows the most significant changes from the underlying formations, which is difficult to explain without invoking partial erosion of the formation and a shift in the pattern of Devonian dissolution; in any case, the underlying structural controls are interpreted to be the same as in the underlying formations. Comparison of all the formation tops indicates that Devonian dissolution occurred continuously through the Cretaceous, but that the dissolution edge did not significantly shift laterally.

11.8.2 Subsurface Synthesis Study - DNI Internal Work

Following expansion of the subsurface database, DNI resumed its subsurface stratigraphic synthesis study relying on the expanded database prepared by APEX. The objectives of this work, which was carried out by Dr.J.P.Robinson, were to: (i) prepare a systematic set of cross-sections across the entire Property, (ii) attempt to formulate a structural model for the Birch Mountains and the Property to guide future exploration of areas which are under-explored, and (ii) to attempt to identify localities over structures which might represent synsedimentary structures to guide future exploration for SEDEX sedimentary exhalative style sulfides. The study was carried out intermittently during the period September 2009 to June 2010.

Dr.Robinson's study entailed preparation of forty-one E-W striking cross-sections at 2km spacing, in addition to six N-S striking cross-sections at 2km spacing, and three N-S striking cross-sections spaced 8km apart. The E-W and N-S cross-sections are appended herein in Appendix F2, and are named per their respective UTM Northing or and Easting (NAD27, Zone12). Dr.Robinson's work is summarized in memo format report[56] which is appended herein as Appendix F3.

Dr.Robinson's study incorporated input from S.Sabag, and relied on Mr.J.Gillett for preparation of all cross-sections. Given the "layercake" configuration of subsurface stratigraphy characterized by many relatively thin beds with thicknesses ranging 10m-100m, and the need to resolve disturbances over a very large area of some 3000 sq km, the cross-sections are rendered at a vertical exaggeration of 100:1.

The Robinson study attempts to incorporate information from the interpreted sections into a broad working model for the structural geology of the Birch Mountains and the Property, intended as an iterative framework to be refined and expanded as new drilling information is collected from additional oil/gas wells in the area and from DNI's drilling of specific localities. The study concluded the following:

- Variations in the stratigraphic sequence in the study area, structural or depositional, are subtle and must be displayed with a strong vertical exaggeration (100:1) to be discernible. Displacements along the normal faults are interpreted to be between <10 and 50 meters and are mostly on the smaller end of that range. As such, interpretation of structural disturbances are frustrated by inaccuracies inherent in the Provincial records, and the dataset extracted by APEX, due to the inconsistent reporting of kelly bushing elevations at the wellhead. These inconsistencies can vary 10m-15m, although APEX noted in its report that the majority of the well elevations are probably accurate within a few meters, a conclusion which is corroborated by the Robinson detailed study noting that data from questionable wells stood out from patterns defined by other surrounding wells in many areas and can be excluded from the interpretation (can be seen in cross-sections across the Property).
- Many of the variations in bedding orientations and the variable thickness of lower Cretaceous strata, primarily the McMurray Formation, can be explained by two distinct events of high-angle domino-style north- to north-northeast-striking normal faulting. The older faulting event displaces the sub-Cretaceous unconformity surface and appears to be truncated at the base of the Wabiskaw Formation, which overlies the McMurray Formation. A younger faulting event displaces and rotates strata in the entire stratigraphic section.
- the area can be divided into several structural blocks, which are bounded by E-W structures of uncertain geometry as shown on Figure 108. The blocks are envisaged to be domains with internally consistent fault orientations and continuity. Proposed block boundaries are reinforced

by the fact that faults appear to truncate against them or would require an unnatural bend to continue into the next adjacent block.

- structures bounding the blocks could represent near-vertical transfer faults that accommodate different amounts of extension in a developing fault system and would not represent a distinct faulting event. Alternatively, the interpreted bounding structures could be an artifact of gaps in the dataset which might be eliminated with additional data.
- East-striking cross-sections commonly display a series of sub-parallel high-angle normal faults that dip west. This includes two distinct generations of faults, the older set cuts only strata older than the Wabiskaw Formation and the younger set displaces the entire stratigraphic section.
- North-striking cross-sections include the high-angle normal faults that appear in the east-striking sections, as well as near-vertical transfer faults (dotted red lines on Figure 108). In general, the high-angle normal faults display consistent displacements of the contacts along the length of the fault. A thickened section on the down-dropped blocks of these normal faults would be consistent with syn-sedimentary faulting which might have been active during deposition of the strata.
- The younger faults shown in cross-sections were possibly active during deposition of the strata, although formation thicknesses throughout the project area are relatively consistent across the faults. This could reflect a combination of slow deposition rates, subtle fault movement during deposition, and post-depositional faulting.
- Displacements displayed along the near-vertical transfer faults are not consistent along the lengths of the faults. The apparent sense of slip on these faults is strike-slip, although these are not primary structures. Apparent displacements across these faults likely reflect variably dipping beds created by movement along the normal faults and local depositional features.
- The proposed normal fault model, though based on relatively sparse dataset over a large area, is supported by the historic high-resolution aeromagnetic survey results over the eastern part of the Property as shown in Figure 109. The proposed fault pattern displays variable, but locally strong, correlation with the pattern of magnetic anomalies In general, elongate zones of magnetic lows follow proposed normal faults. This correlation is particularly strong in the area between UTM 6,383,000N and 6,409,000N. Structural maps created by contouring the elevations of various stratigraphic horizons do not display patterns that correlate with the aeromagnetic data (due to attenuation of otherwise subtle disturbances during contouring, or due to scarcity of dataset).
- The apparent correlation between proposed normal faults and areas of magnetic lows might have value in targeting future exploration programs, if anomalous metal zones are shown to be spatially associated with either faults or magnetic lows.
- some of the topographic relief within the entire stratigraphic column displayed in the sections can be attributed to block rotation and tilting by normal faults.
- the Second White Speckled Shale Formation’s thickness across the Property commonly ranges between approximately 10m and 40m. Laterally continuous sections with thicknesses that are greater than 25m occur locally and are shown in Figure 108. Cross-section 6,407,000N appears to display the thickest continuous section of the Second White Specks Formation, commonly on the order of 35 meters thick.
- The study suggested that the faults delineated can be relied upon as a first order approximation as potential sites with synsedimentary structures, representing targets to explore for SEDEX style sedimentary exhalative sulfides.

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[56] Preliminary Evaluation of the Structural Geology of the SBH Project Area - Based on the Interpretation of Drill Data on Sections Compiled by Apex Geosciences: by J.P.Robinson; July 5, 2010; DNI internal memo.

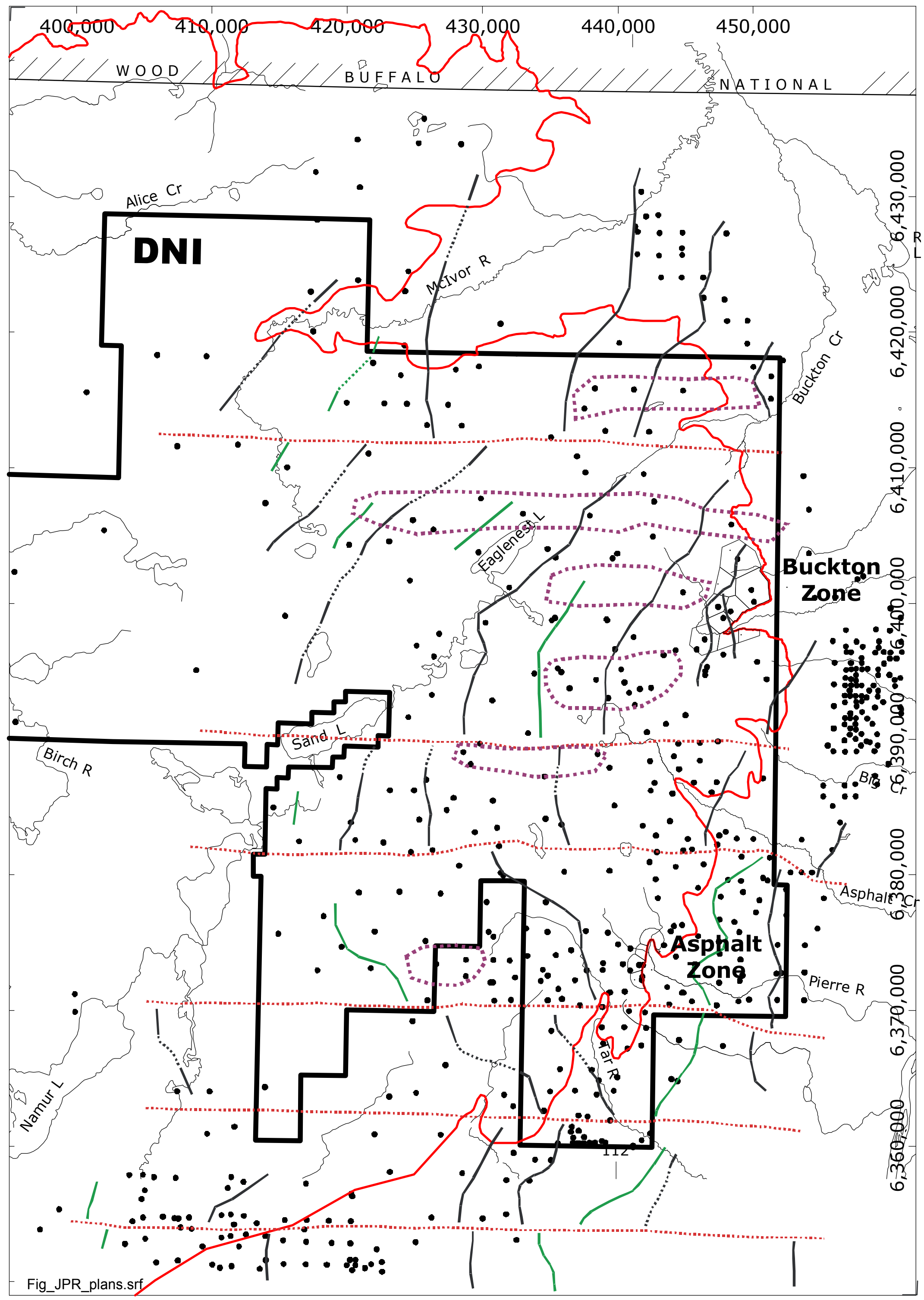

Figure 108: Generalized sketch of interpreted structural blocks and transverse fault traces across the Property, showing also domains of maximum thickening in the Second White Speckled Shale. After Figure 5, Subsurface Stratigraphic Synthesis Study, Robinson 2010.

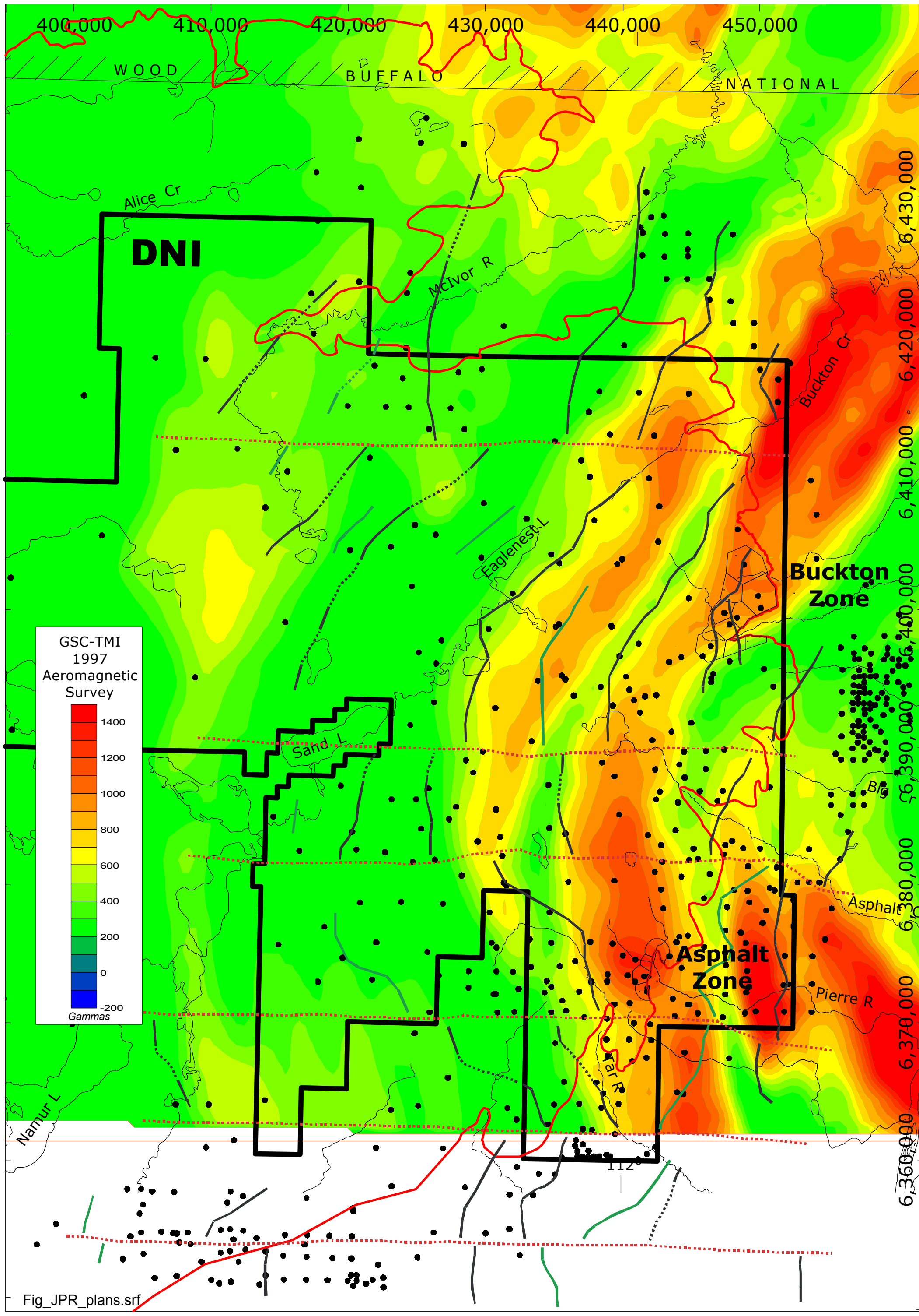

Figure 109: Generalized sketch of interpreted structural blocks, transverse fault traces and aeromagnetic trends across the Property. After Figure 4, Subsurface Stratigraphic Synthesis Stud, Robinson 2010. Aeromagnetic trends per GSC Magnetic Anomaly Map, No.12-AM, see also Figures 32, 33, and 34, Section 8.6.

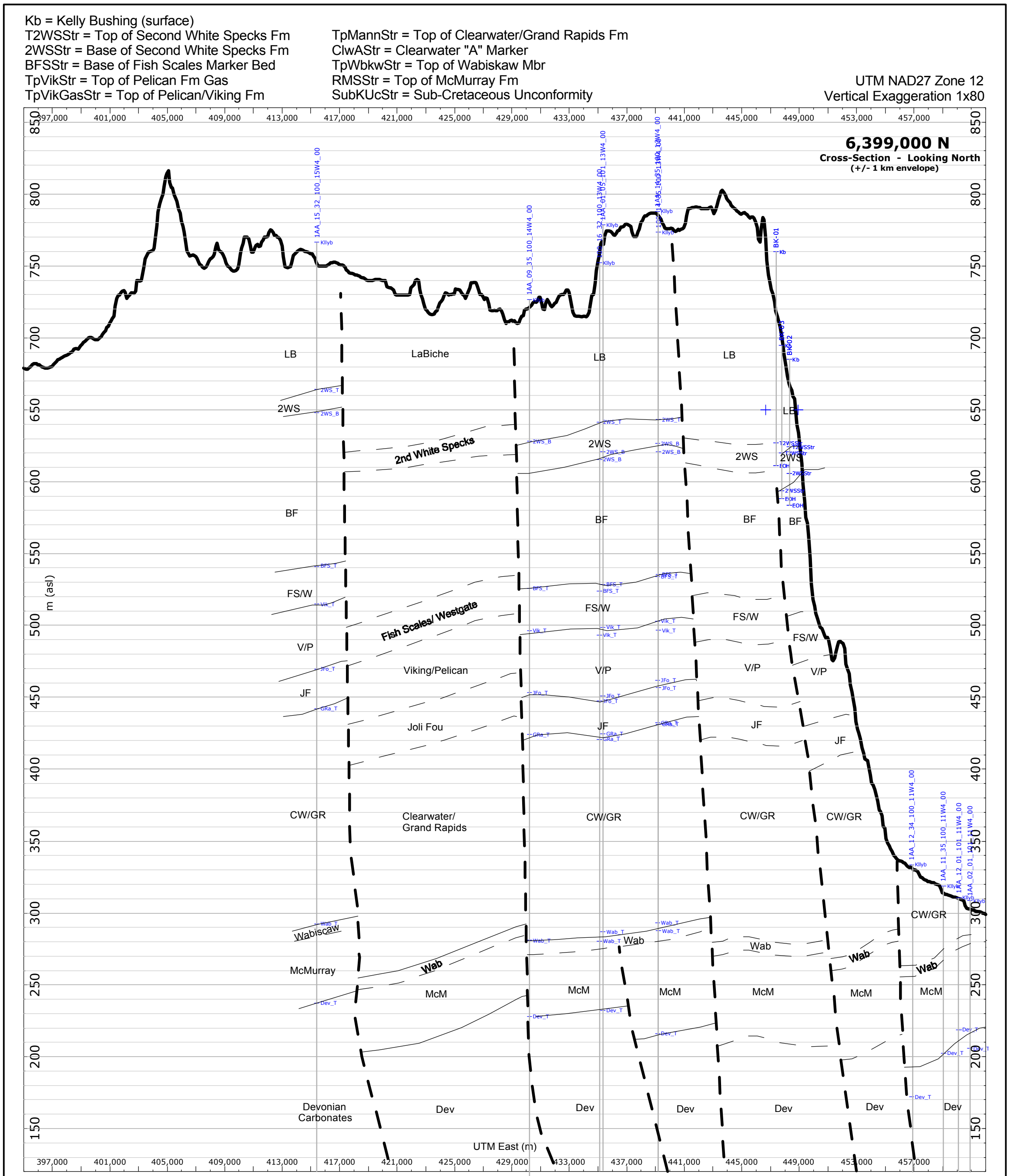

Figure 110: Generalized East-West cross section 6,999,000N across the Property, showing interpreted faulting and stratigraphic contacts per the subsurface stratigraphic database as at May 2010. After Figure 2, Subsurface Stratigraphic Synthesis Study, Robinson 2010.

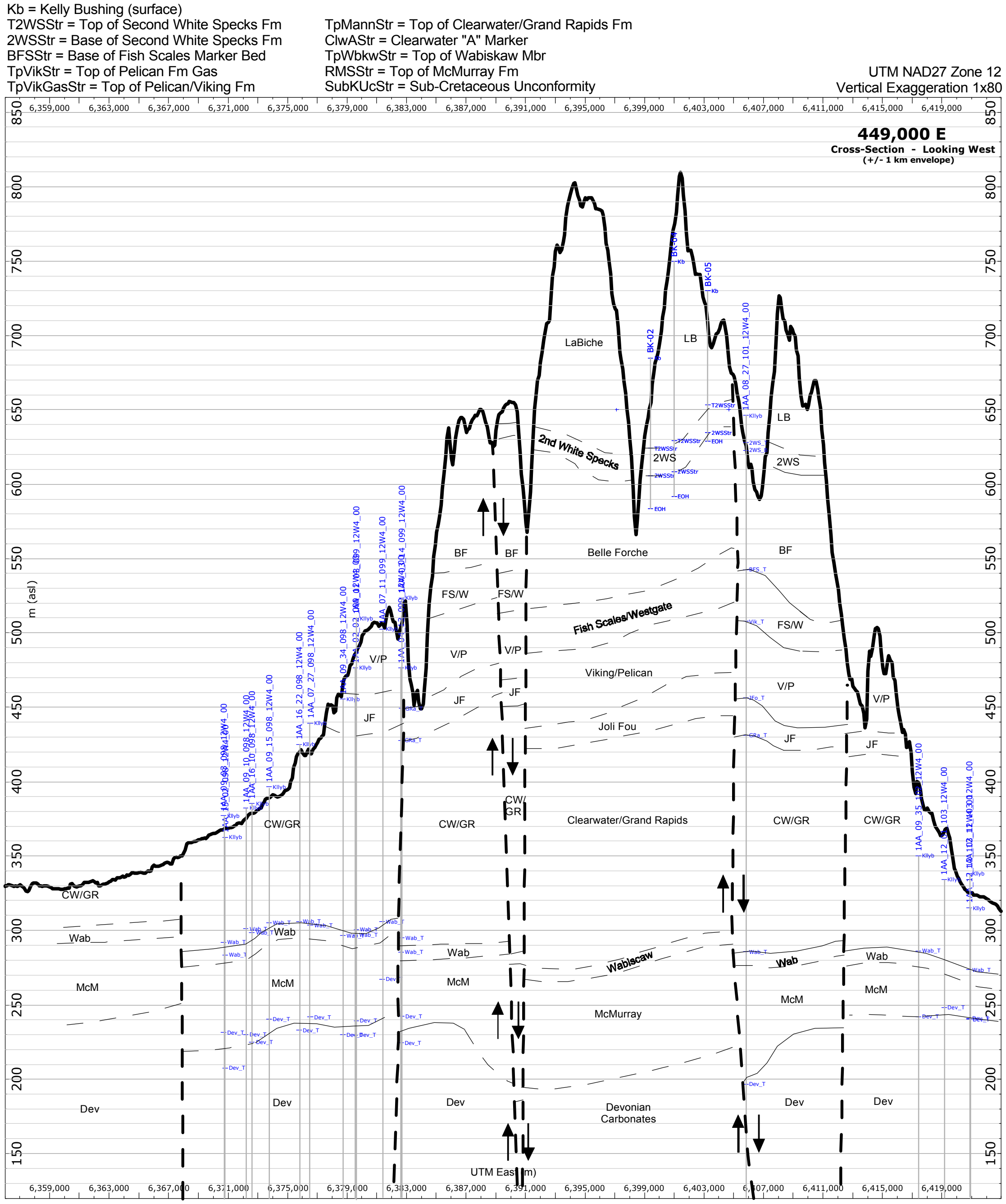

Figure 111: Generalized North-South cross section 449,000E across the Property, showing interpreted faulting and stratigraphic contacts per the subsurface stratigraphic database as at May 2010. After Figure 3, Subsurface Stratigraphic Synthesis Study, Robinson 2010.

11.8.3 Subsurface Stratigraphic Modeling – Closing Remarks

The subsurface database expansion and synthesis studies completed by APEX and by Robinson(DNI) achieved one of the two objectives set out for the programs; namely, of significantly expanding the subsurface database to assist future drilling and to support localization of future drilling to more accurately target the Second White Speckled Formation. The two foregoing synthesis and modeling studies, however, reached markedly different conclusions and interpretations of subsurface geology while relying on the same database, both of which interpretations are different still from that previously formulated in historic work for the area (much of it interpretations by the author of this Report). Salient features of the three interpretations are:

- Historic work (1990's) advocated a structural setting dominated by orthogonal NW-NE structures the junctions of which were proposed to be locations of exploration interest. The historic modeling relied almost entirely on surface lineament analysis combined with various renditions of aeromagnetic trends and the smaller (1995) subsurface stratigraphic database. The historic work reviewed and interpreted data in plan view in contoured mode;

- APEX's 2010 study formulated a multi-block model proposing that the Birch Mountains area can be divided into several irregular shaped uplifted and down-dropped blocks, whose boundaries might reflect synsedimentary structure. APEX's work relied mostly on the expanded (2010) subsurface database which was reviewed and interpreted in plan view in contoured mode, drawing also on considerable prior experience by APEX geoscientists (notably D.Cottirill) and their familiarity with regional stratigraphic setting and other subsurface work in the region;

- J.P.Robinson's 2010 synthesis, based on the expanded (2010) subsurface, relied entirely on methodical interpretations of the data in cross sections to propose a structural block configuration which is bounded by E-W structures, a marked departure from all other work.

It is impossible at this juncture, with the available data, to critically rate the three above models and interpretations, given that the subsurface stratigraphic continues to be sparse (at best a handful of oil/gas wells per township) despite its expansion, and that the database lends itself to different equally plausible interpretations all of which can be supported by one or another set of geo-information. The foregoing models are best regarded as works in progress which will no doubt be refined on an area-by-area basis as additional exploratory drilling information is gathered by DNI focusing on the Second White Speckled Shale Formation and its surrounding stratigraphy.

DNI plans to integrate the APEX and Robinson work into the vast surface geochemical information and databases from the surface over the Property, with the objective of critically identifying information which might support or contest the two separate models. The foregoing may also include geophysical surveys during the 2010-2011 seasons.

Information from the expanded database is currently being incorporated by DNI into its plans for winter 2010-2011 drill programs over the Asphalt and Buckton Zones, to upgrade and expand Potential Mineral Deposits identified over the two Zones by DNI (see NI-430-101 technical report appended herein as Appendix B1), and to collect reliable samples from the Second White Speckled Shale Formation at the two areas for expanded leaching testwork scheduled for 2011 on representative composite samples.

11.9 CO_2 Sequestration Testwork Study - ARC 2009-2010

Black shales and coalbeds worldwide are known to have capacity for sequestering CO_2. As a result, Carbon mitigation technologies include geologic CO_2 sequestration through injection of CO_2 into organic-rich shales which can "absorb" CO_2. The Kentucky Geological Survey's (Nuttall et al 2005) work[57] on Kentucky Devonian black shales provide excellent examples of this capacity along with baseline geoscience to guide future research to test other black shales elsewhere.

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[57] Analysis of the Devonian Black Shale in Kentucky for Potential Carbon Dioxide Sequestration and Enhanced Natural Gas Production: by B.C.Nuttall, J.A.Drahovzal, C.F.Eble, R.M.Bustin. Kentucky Geological Survey; December, 2005; US DOE/NETL DE-FC26-02NT41442.

Kentucky Devonian black shales are both the source and trap for large quantities of natural gas most of which is adsorbed on clay and kerogen surfaces the way methane is stored in coal beds. CO_2 can, through pressurized injection, be caused to be preferentially adsorbed on clay and kerogen surfaces in coals, displacing methane at a 2:1 ratio. Nuttall 2005 demonstrates that Kentucky black shales can similarly desorb methane in the presence of CO_2 and that the Kentucky Devonian black shales hold capacity to sequester approximately 28 billion tons CO_2 (black shales in the Big Sandy gas field alone, covering 5 counties, hold capacity to sequester approximately 6.8 billion tons CO_2). The foregoing research clearly demonstrate that Kentucky black shales provide an excellent CO_2 sink via pressure injection which offers the added benefit of enhancing natural gas production.

In addition to the above, considerable research has been conducted during the past decade by several scientific institutions investigating CO_2 sequestration under ambient (non-pressurized) conditions relying on mineral reactions to convert CO_2 gas into stable inert mineral (carbonate) compounds via mineral carbonation. This includes case studies involving CO_2 reactions with coal ash, ashed oil shale, and other such substances which are sufficiently alkaline (i.e. contain abundant Ca and Mg oxides and hydr-oxides, and low organic carbon content) to allow the addition of CO_2 and precipitation of a carbonate mineral. Though none of the foregoing case studies have yet been commercially applied to sequester CO_2, all hold future promise subject to technical expansion and, ultimately, large scale demonstration.

It is generally accepted that Alberta's oil sands operations annually emit approximately 65 million tonnes of CO_2 which is expected to increase to 125 million tonnes by 2020. Alberta's principal initiative in recent years toward identifying methods to mitigate or offset CO_2 emissions has been the Carbon Capture and Storage Initiative (CCSI). Even though Alberta's $2+ billion CCSI is a significant commitment to advancing CO_2 sequestration, the capacity of Alberta black shales, notably the Second White Speckled Shale and Shaftesbury Formations, has never previously been tested even though they hold potential as immense CO_2 sinks and have lithogeochemistry comparable to other black shales which are known CO_2 sequestration hosts.

Considering the above in the broader context of an ever carbon constrained future for industrial development in Alberta, the Alberta Research Council (ARC) was retained in August 2009, to carry out a multi-stage study to commence collecting baseline information from laboratory testwork on samples from the Second White Speckled Shale collected from DNI's Property. The initial stage of the study, conducted by J.Brydie of the ARC, was completed in April 2010. Details of the Stage-1 testwork procedures and results are outlined in a report by ARC[58] dated May 31, 2010[59], appended herein as Appendix G2, to which the reader is referred for details. Salient findings, observations and conclusions from the testwork are summarized below as extracted from the report.

Stage-1 of the work entailed testing the "fresh", non-leached, shale under various conditions to investigate potential CO_2 sequestration capacity of the shale, with a view to repeating the testwork (as Stage-2) at some future date on shale residues after it had been leached (or after it had been bioleached). Intentions are also to proceed to a third Stage of the research testwork to investigate whether leached shale residues (tails) might offer any opportunities for CO_2 sequestration via mineral carbonation. Stage-2 and Stage-3 are envisaged to be implemented in 2011 relying on drill core samples to be collected during DNI's planned winter 2010-2011 drilling programs.

A suite of three surface samples[60] from the Second White Speckled Shale Formation, collected during the 2009 field sampling program, were delivered to the ARC in Nov/2009 for the above testwork. Only sample GS3-002-003-CO_2, collected from stratigraphic section GOC-Cr-C was tested, and the remaining two samples retained in archived storage for future work.

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[58] The Alberta Research Council (ARC) changed its name to Alberta Innovates Technology Futures (AITF) in early 2010.

[59] A Preliminary Experimental Evaluation of the CO2 Sequestration Potential of a Composite Dumont Nickel Shale Sample: by J.Brydie and E.Perkins, Alberta Innovates Technology Futures (AITF); May 31, 2010; AITF Ref#CEM 13126-2010.

[60] Samples GS3-002-003-CO_2 and GS3-CO_2 from stratigraphic section GOS-Cr.-C; sample 09ASH-CO_2 from stratigraphic section Asphalt-H. See Section 11.5 of this Report for sampling details.

The testwork entailed conducting a series of CO_2 gas flow-through experiments adapted from Thomas (1968) and Uibu and Kuusik (2009). The laboratory testwork was intended to simulate CO_2 interactions which are analogous to natural chemical weathering processes. The laboratory experiments were designed and carried out to determine: (i) the effect of shale-CO2 interaction on the physical and chemical characteristics of the fresh shale and associated solutions; and (ii) whether, based on CO_2 mass balance measurements, the fresh shale would act as a CO_2 source or sink? A procedural flow-sheet is presented in Figure 112.

Twenty 50g subsamples were taken from the test sample. Six of these subsamples were submitted to Actlabs for analysis prior to the testwork, and similarly afterwards for comparison. Five sub-samples were used for the testwork and the remaining nine samples were archived. Actlabs conducted analyses for: Trace element geochemistry (Code 1H2 Au+53); Carbon and Sulfur (Code 5G - C, S); Mineralogy by XRD (Code 9 Mineral Identification); Cation Exchange Capacity (CEC) and pH (analytical certificates are appended in the ARC report).

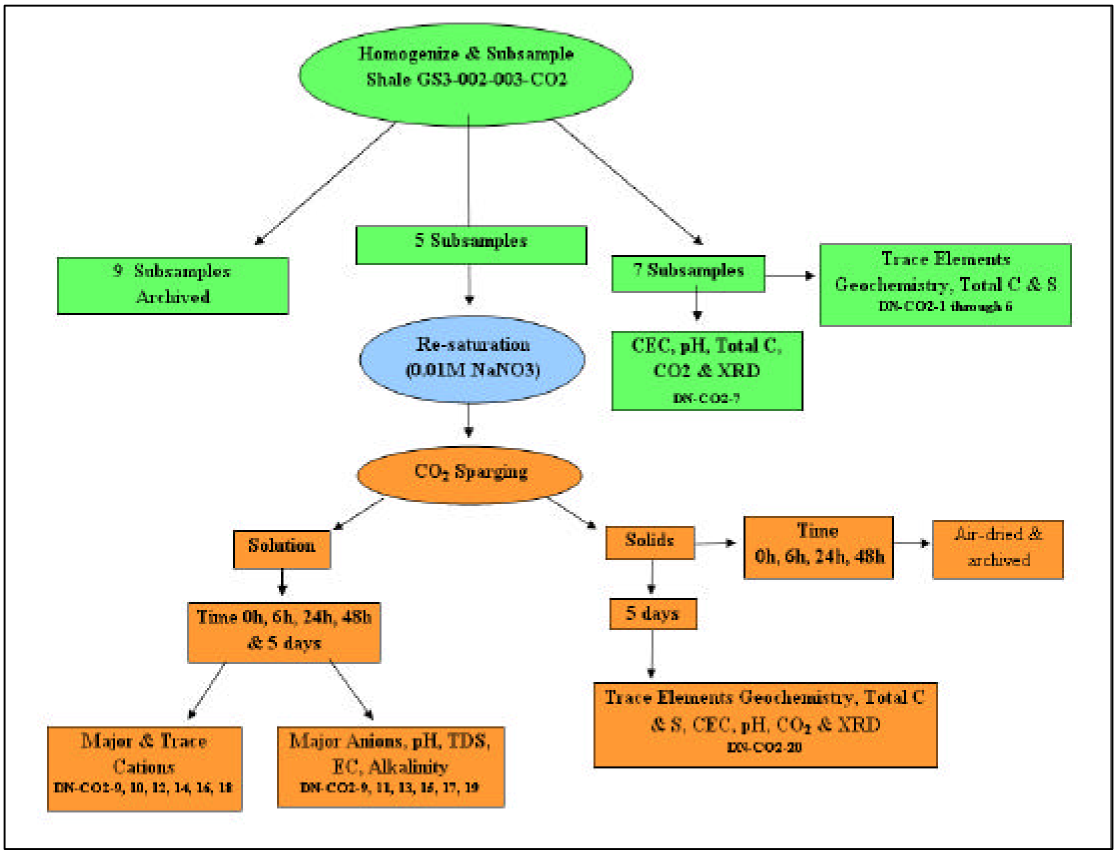

Figure 112: Testwork procedural flowsheet. After Figure 2, CO_2 Sparging tests, ARC 2010. Brydie 2010.

A 0.01M sodium nitrate solution (NaNO3) was used as a dilute supporting electrolyte for all shale-CO_2 experiments, and the test samples were equilibrated with the sodium nitrate solution prior to any CO_2 interaction. Sodium nitrate solution saturated samples were transferred into 1 liter capacity polyvinylchloride experimental columns and were continuously mixed at 300 rpm using mechanical mixers. CO_2 was pumped into each shale in suspension directly from a commercial grade CO_2 gas cylinder. Solution samples were taken after 6, 24, 48 and 120 hours. A procedural blank, consisting of only 0.01M sodium nitrate solution without any shale was also tested by subjecting it to 5 days of CO2 purging.

Solution pH and electrical conductivity were measured at regular intervals during the tests to ascertain solution conditions at the time of sampling, and to allow analytical data correction (if necessary) for the potential degassing of CO_2. At the end of the tests, all solution samples were submitted to Actlabs for following analyses: Major and trace cations (Code 6 ICP-OES over range); Major anions (Code 6B – ion chromatography); pH (Code 6C); Total dissolved solids (Code 6C TDS); Electrical conductivity (Code 6C – conductivity) and Alkalinity (Code 6C – alkalinity).

The following observations were made from saturation of the shale with dilute sodium nitrate solution for 144 hours (6 days):

- solution pH decreased from an initial pH 5.2 to pH 2.1
- solution electrical conductivity increased
- dissolved SO4 and Ca increased
- total dissolved Fe, Al, Si and Fe increased
- concentrations of dissolved lanthanides increased
- solution chemistry overall dominated by dissolved S, Ca, Fe and Al

Comparison of X-ray diffractograms before and after CO_2 treatment suggested little change in bulk mineralogy, to the extent discernible by XRD. Mineralogical examination of the test sample by XRD before the testwork reported a predominantly quartz and aluminosilicate (muscovite and illite) matrix with minor gypsum and feldspar. Samples, examined after the testwork, reported a predominantly quartz, muscovite and illite-rich sedimentary rock with trace amounts of gypsum and feldspar.

Treatment	Conductivity (µS/cm)	pH	Total Dissolved Solids (mg/L)	Alkalinity (mg/L as $CaCO_3$)
5 day blank	1910	5.2	1270	5
0h	8120	2.1	5400	n/a
6h	7750	2.3	5160	n/a
24h	6260	3.3	4170	n/a
48h	6430	3.6	4280	n/a
5 days	7080	3.7	4710	n/a

Table 46: Evolution of Conductivity, pH, Total Dissolved Solids and Alkalinity during CO_2 sparging. CO_2 Sparging tests, ARC 2010. After Table 1, Brydie 2010.

Evolution of conductivity, pH, total dissolved solids and alkalinity during the CO_2 sparging are shown in Table 46, which includes conditions as they existed in equilibrium with shale prior to CO_2 sparging and also for the experimental "blank".

Evolution of pH and Electrical Conductivity during the CO_2 sparging are shown in Figure 113, and evolution of select major elements during CO_2 sparging is shown in Figure 114.

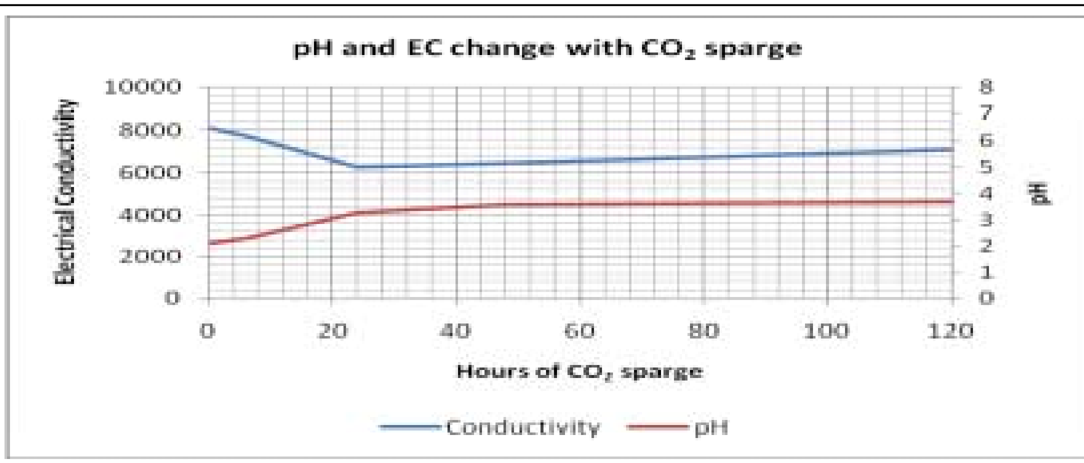

Figure 113: Evolution of pH and Conductivity during CO_2 sparging. CO_2 Sparging tests, ARC 2010. After Figure 6, Brydie 2010.

Evolution of other elements and metals during the CO_2 sparging are summarized in Table 47, showing groupings of elements which are either: (i) progressively dissolved (e.g. Fe & Mn), (ii) are rapidly removed from solution (e.g. As) or, (iii) are initially dissolved and then removed from solution perhaps by sorption and/or precipitation processes (Cu, Cd, Cr, Pb, U & Zn).

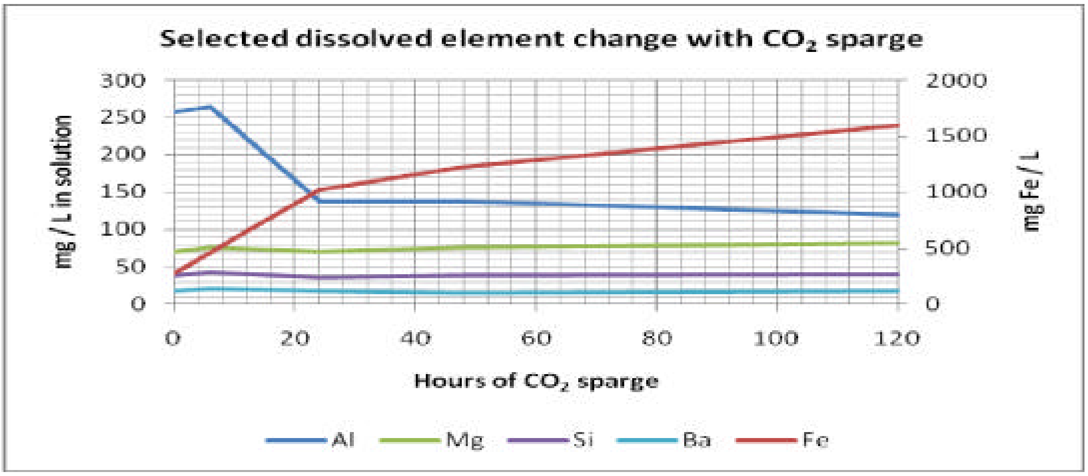

Figure 114: Evolution of select major elements during CO2 sparging. CO_2 Sparging tests, ARC 2010. After Figure 7, Brydie 2010.

The data in Table 47 related to metals are especially interesting and demonstrate that the metals can be liberated (extracted) from the shale under acidic conditions over a broad range of pH exceeding pH2, and that the solution acidity may be the decisive factor rather than the type of acid used in leaching. All prior leaching and bioleaching testwork (Sections 11.6.1, 11.6.3 and 11.6.4 of this Report) had relied on sulfuric acid solutions to achieve metal solubilization relying on the assumption that the metals occur in the shale in most part in sulfide mineral form. The foregoing offers possibilities for using CO_2 (ie: carbonic acid) as the principal leaching reagent to dissolve metals from the shale.

The testwork study overall made the following observations and deductions:

- The measured decrease in solution pH, increase in EC and increase in dissolved S, Fe, Al, Ca and Mg is consistent with the hydrolysis of Al and Fe mineral phases and subsequent acid dissolution of minor sulfur, iron and carbonate phases within the shale matrix. In addition, a 25 % decrease in dissolved Na may suggest ion exchange with clays in the shale matrix, increasing dissolved Ca and Mg concentrations;
- An increase in dissolved Ca, Si and lanthanide series elements is consistent with the protonation, leaching and partial dissolution of feldspars and clay minerals within the shale matrix;
- Solution chemistry after 120 hours of CO_2 sparging suggests the removal of approximately 50% of Al from solution, but no obvious increase in precipitated amorphous Al phases;
- Preliminary solution speciation suggests dissolved Al to be complexed as AlSO4+ and Al(SO4)2-;
- Calculated mineral saturation indices (SI) suggest a thermodynamic drive to precipitate Alunite (KAl3(SO4)2(OH)6) (SI = 1.6) after 24 hours of CO_2 interaction. Other Al-bearing phases (e.g. gibbsite) are undersaturated (SI = -2.36). Solution Fe increased throughout the experiments. Calculated solution speciation and saturation indices suggest, however, that Fe occurs predominantly as Fe2+, that hematite is slightly oversaturated (SI = 0.96), and that Ferrihydrite is undersaturated with a calculated SI of -6.42;
- Little change in dissolved Si, Mg and Ba, as a function of CO_2 sparging, suggest that quartz (and silicate minerals), Mg-bearing phases and barite are not being dissolved over the duration of the experiments. However, A progressive increase in dissolved Fe and S throughout the 120 hour experimental duration suggest continued dissolution of Fe and S from the mineral matrix;

	Al mg/L	Fe mg/L	Cu µg/L	Sr µg/L	V µg/L	Zn µg/L	Li µg/L	Be µg/L	Mg µg/L	Si µg/L	Sc µg/L	Ti µg/L	
5 day control	0.568	4310	16.7	19.6	1.3	395	< 10	< 1	329	< 2000	< 10	1.2	
0h	257	281	651	1990	1260	2400	647	17.1	71300	39600	71	39	
6h	265	465	387	2180	1360	4680	729	19.4	77200	42500	56	31.1	
24h	138	1020	4310	1840	499	117000	680	10.3	71100	36600	15	8.8	
48h	138	1220	1520	1750	243	11900	768	9.7	76400	38400	15	9	
5 days	120	1600	67.1	1960	452	10200	843	7.1	82400	40400	15	9.5	

	Co µg/L	Ni µg/L	Ga µg/L	Ge µg/L	As µg/L	Se µg/L	Br µg/L	Rb µg/L	Y µg/L	Zr µg/L	Nb µg/L	Mo µg/L	Ru µg/L
5 day control	13	348	< 0.1	< 0.1	< 0.3	< 2	< 30	2.06	1.57	< 0.1	< 0.05	2.9	< 0.1
0h	146	574	18.6	1.57	98.3	28.2	115	176	539	1.24	< 0.05	4	< 0.1
6h	215	836	15.6	1.9	75.7	21.7	260	188	591	1.43	< 0.05	3	< 0.1
24h	173	748	3	1.84	16.3	19.6	714	215	491	0.78	< 0.05	< 1	< 0.1
48h	195	782	2.89	1.81	8.58	19.1	226	244	535	0.39	< 0.05	< 1	< 0.1
5 days	222	680	2.2	1.62	15.8	14	340	176	487	0.39	< 0.05	< 1	0.1

	Ag µg/L	Cd µg/L	In µg/L	Sn µg/L	Sb µg/L	Te µg/L	I µg/L	Cs µg/L	Ba µg/L	La µg/L	Ce µg/L	Pr µg/L	Pt µg/L
5 day control	< 2	0.11	< 0.01	< 1	< 0.1	< 1	34	0.069	26.1	0.954	1.96	0.327	< 3
0h	< 2	4.87	0.565	1.4	0.26	< 1	27	3.21	18	241	637	119	< 3
6h	< 2	6.39	0.367	1.7	0.27	< 1	25	2.72	21.4	262	686	128	< 3
24h	< 2	3.18	0.011	< 1	0.21	< 1	14	4.54	17.4	195	461	83.4	< 3
48h	< 2	3.51	0.017	< 1	0.33	< 1	34	4.14	15.8	166	457	84.9	< 3
5 days	< 2	1.27	< 0.01	< 1	0.19	< 1	106	2.39	17.5	161	383	64.4	< 3

	Gd µg/L	Tb µg/L	Dy µg/L	Ho µg/L	Er µg/L	Tm µg/L	Yb µg/L	Lu µg/L	Hf µg/L	Ta µg/L	W µg/L	Re µg/L	Os µg/L
5 day control	0.326	0.042	0.256	0.048	0.151	0.022	0.134	0.02	< 0.01	< 0.01	< 0.2	0.013	< 0.02
0h	112	17.6	95.6	19.1	55.9	7.71	52	8.07	0.75	0.077	0.39	0.973	< 0.02
6h	122	19.2	105	20.6	61.3	8.4	56.5	8.81	0.866	0.086	1.04	0.93	< 0.02
24h	86.7	14	79	16.2	47.7	6.43	43	6.77	0.607	0.068	0.34	1.16	< 0.02
48h	93.7	15.2	85.3	17.8	52.7	7.1	46.3	7.26	0.63	0.077	0.3	1.2	< 0.02
5 days	73	12	71.3	15.2	45.3	6.19	40	6.32	0.56	0.067	0.33	1.28	< 0.02

	Hg µg/L	Tl µg/L	Pb µg/L	Bi µg/L	Th µg/L	U µg/L	Cr µg/L	Mn µg/L	Nd µg/L	Sm µg/L	Eu µg/L	Au µg/L	Pd µg/L
5 day control	< 2	0.019	0.55	< 3	< 0.01	0.113	322	489	1.42	0.329	0.061	< 0.02	< 0.1
0h	< 2	1.59	1.67	< 3	5.86	111	445	2750	553	125	26	< 0.02	< 0.1
6h	< 2	1.52	12.1	< 3	1.31	102	532	3530	590	132	28.3	< 0.02	< 0.1
24h	< 2	1.12	1.5	< 3	0.163	10.5	161	4350	386	83.5	19	< 0.02	0.84
48h	< 2	1.07	0.64	< 3	0.147	10.7	71.3	5000	400	89.4	20	< 0.02	< 0.1
5 days	< 2	0.889	< 0.1	< 3	0.072	4.17	125	5570	292	61.6	14.4	< 0.02	< 0.1

Table 47: Trace elements in solution after each CO_2 treatment, CO_2 Sparging tests, ARC 2010. 5 day blank = CO_2 sparge with no shale.After Table 3, Brydie 2010.

- X-Ray Diffraction characterization of the homogenized shale before and after 120 hours of CO_2 interaction revealed little difference in mineralogy, at least to the extent discernible by XRD, reporting no detectable increase in new mineral phases or apparent significant generation of amorphous or poorly crystalline mineral precipitates greater than 5 wt %;
- Combined interpretation of XRD data, Cation Exchange Capacity (CEC) and solution chemistry together suggest a net loss of sulfur and iron containing minerals, carbonate minerals and gypsum from the shale during the experiments, reporting bulk of mineral dissolution from the initial solution-shale interaction (resulting in a solution pH of 2.1) dissolving carbonate minerals, gypsum and iron-bearing phases such as pyrite, goethite and hematite;
- The addition of a continuous CO_2 stream to a constantly agitated suspension of shale material for periods of 6, 24, 48 and 120 hours reveal most of the major chemical changes to occur between 6 and 24 hrs, reflected by relatively stable solution pH, electrical conductivity and a review of all dissolved major and trace element concentration changes;
- Subsequent addition of CO_2 to the acidic system resulted in the formation of carbonic acid, and an expected increase in solution alkalinity due to acid consuming hydrolysis reactions (reflected by increased pH). The shale-solution system did not achieve a solution pH value higher than pH 3.7; resulting in a system incapable of supporting stable mineral carbonates;
- The addition of CO_2 to the activated shale-solution suspension results in the initial dissolution of some major elements (Fe in particular) along with the inferred precipitation of Al bearing phases;
- The reaction of the shale with dilute sodium nitrate solution results in a pH of 2.1, resulting in the dissolution of selected minerals and trace metals. Subsequent purging of the system with CO_2, and resulting interaction with carbonic acid, then resulted in further trace metal dissolution within the first 24 hours of reaction.

The testwork study achieved its principal objective of collecting initial experimental laboratory based baseline information from fresh shale, and concluded that:

- Shale-CO_2 sequestration case studies from elsewhere, under ambient pressures and temperatures, indicate that it is typically altered shale (e.g. oil shale ash) with sufficiently alkalinity which allows the addition of CO_2 and precipitation of a carbonate mineral. (i.e. shale material containing abundant Ca and Mg (hydr)-oxides and with low organic carbon content). The sample of fresh Second White Speckled tested, however, is reactive to acidic conditions and effectively acts as a CO_2 source upon the addition of an aqueous acidic solution, rather than a sink (or CO_2 sequestration target);
- Effective CO_2 sequestration via mineral carbonation under ambient pressure and temperature conditions, in a shale matrix is typically achieved via carbonate mineral precipitation under alkaline solution conditions, and maintenance of alkalinity to sustain stable mineral carbonate phases such as $CaCO_3$, $MgCO_3$, $FeCO_3$. Although by continuous purging with CO_2 the Second White Speckled shale solution can be buffered to progressively higher pH by the introduction of CO_2, the pH achieved is not high enough to sustain mineral carbonation (max pH achieved is 3.7), and as such the fresh shale cannot be considered to be amenable to long term CO_2 capture and storage under ambient temperature and pressure without chemical mitigation;
- Aside from ashing at high temperatures to remove organic materials and provide reactive CaO, MgO and Fe phases which can readily interact with CO_2 to form mineral carbonates (Pihu et al. 2009), there is no known easy way to physically or chemically mitigate shale matrix to enhance CO_2 uptake by mineral carbonation; and
- it is unclear what the total effect of acid leaching or bioleaching would have upon the shale matrix and mineralogy, and how differently might the altered matrix behave in CO_2 interaction experiments.

The testwork recommended advancing to Stage-2 of the testwork previously planned by DNI, to conduct supplementary experiments on leached shale residues, once they are in hand from DNI's leaching and bioleaching tests, to determine whether or not a pre-leached shale-solution system may be more amenable to CO_2 uptake via Ca, Mg or Fe oxide mineral sorption and/or carbonate mineral precipitation.

11.10 ENVIRONMENTAL LIFE CYCLE AUDIT 2010

Metal mining operations envisaged by DNI which might eventually be launched to extract metals from the Property include many collateral activities which endeavor to ensure long term sustainability of operations and to minimize their overall ecological footprint. In addition to focusing on bioleaching as the principal metal extraction technology given its demonstrated smaller eco footprint than traditional methods and its low water and energy requirements, other components of the envisaged operations include incorporation of run-of-river small hydro and water recirculation best practices into planning. DNI's planning also incorporates reliance on local supplies of leaching reagents (lime, H_2S, calcite) including sulphur which is widely available as a significant waste product from the countless oil sands operations surrounding the Property.

Several discussions were held by the author with the consulting arm of the Pembina Institute, Calgary, during late 2009 and early 2010, to formulate a scope of work to conduct an environmental life-cycle audit of hypothetical mining operations envisaged by DNI to eventually extract metals from the Second White Speckled Shale black shale hosted polymetallic zones identified on the Property.

Although a draft scope of the work was formulated, the contemplated audit was deferred to late 2010, to be launched once sufficient "hard" leaching and related data is in hand from DNI's testwork programs to enable realistic establishment of certain key engineering variables, namely; method of leaching, leaching reagent consumption and water requirements, geochemistry of leaching residues/tails, the capacity of the shales for sequestering CO_2, the capacity of the leaching methods under consideration for releasing CO_2 from the shale, suitability of local drainages for supporting small run-of-river hydro, capacity of leaching methods under consideration for consuming sulphur, and various other variables as they relate directly to projected estimation of land and water usage scenarios.

As at the date hereof, the above contemplated audit has not yet commenced.

11.11 FIELD SAMPLING PROGRAM 2010

A field sampling program was completed during June 2010, to collect material for expanded metal leaching testwork. Samples were also collected during the program as "feed" material to sustain the bio-organic culture which had previously been extracted from Second White Speckled Shale samples from the Property by the Alberta Research Centre during Stage-1 and Stage-2 of its bioleaching testwork (see Section 11.6.4 of this Report). The foregoing culture had been adapted to the shale and would be used in future testwork.

The sampling was conducted by a geological crew of two from APEX Geoscience Ltd. under the direction of M.Dufresne. After considering several candidate sampling sites, a decision was made to re-sample two of the sites sampled during the 2009 field sampling program (see Section 11.5), namely Asphalt-H and Gos-Cr.-C, given availability of good access and thorough geological knowledge therefrom. APEX's field report is appended (Appendix D1).

The sampling was conducted during June 15-17, 2010, using a helicopter from Highland Helicopters, Fort McMurray. Large samples were collected weighing on average 10kg each. Both sites were found to be in good condition and free of additional slump material since 2009 (see Plates 9 and 10, for GOS-Cr.-C and Asphalt-H sites, respectively). Given availability of time and equipment, additional samples were taken from site Asphalt-H from the base of the stratigraphic section by sampling the opposite (southwest face) face of the slope, although suspected exposures of the siliciclastic bone bed marking the base of the Formation was not sampled due to poor access.

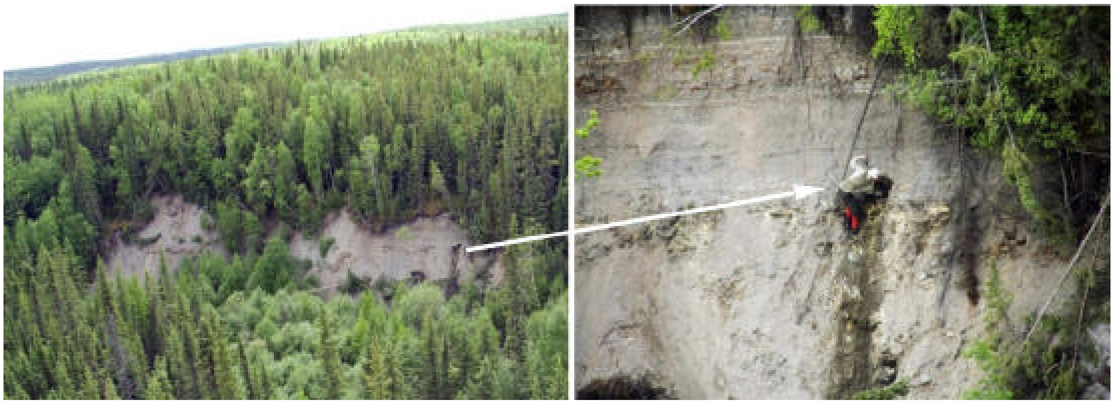

Plate 9: Asphalt-H Litho-Section (looking westerly), Field Sampling Program 2010.

Samples collected as "feed" to sustain the bio-organic culture were delivered to the ARC immediately after the sampling program. The remaining samples are currently in sealed plastic bags in storage at APEX's Edmonton warehouse awaiting their dispatch to respective analytical work.

Plate 10: GOS-Cr-C Litho-Section (looking northwesterly), Field Sampling Program 2010.

Lithosection locations are shown in previous Figure 80 (in Section 11.5 of this Report). Detailed sample location sketches are presented in Figures 115 and 116.

Down-section sample locations are shown in Figure 117 showing also corresponding 2009 sample (see previous Figure 85, 86, 87 and 88 for down-section lithogeochemical profiles for the two sections sampled, and to Table 22 for analytical results from the 2009 sampling).

Sample locations and particulars are summarized in Table 48, showing also the suite of samples collected for pending work at the Alberta Research Centre.

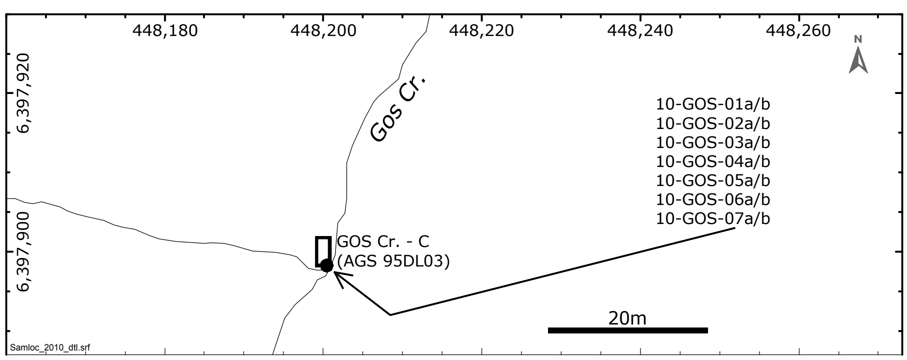

Figure 115: Shale Sampling Location, Stratigraphic Section GOS Creek C, Field Sampling Program 2010.

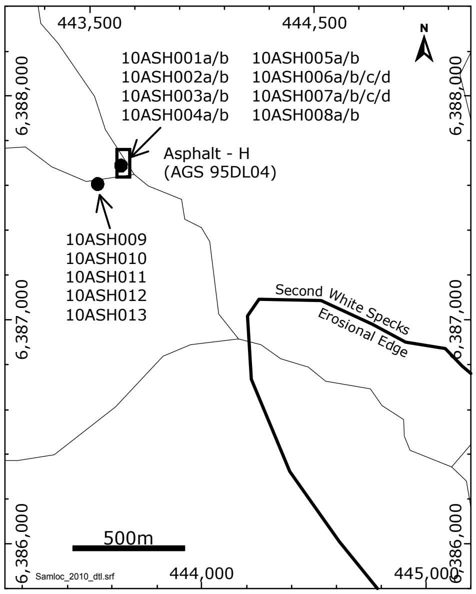

Figure 116: Shale Sampling Locations, Stratigraphic Section Asphalt Creek H, Field Sampling Program 2010.

Sample locations and particulars are summarized in Table 48, and shown in Figures 115 and 116. See Figure 80 in Section 11.5 of this Report for regional locations of the two stratigraphic sections sampled.

DNI plans are to prepare various composite samples from the surface material for leaching testwork slated for later in 2010.

Time was also spent during the program by M.Dufresne and S.Sabag to reconnoiter access and logistics in preparation for DNI's planned winter 2010-2011 drilling programs, as was also spent toward commencing community consultation process in advance of permit applications for the foregoing drilling.

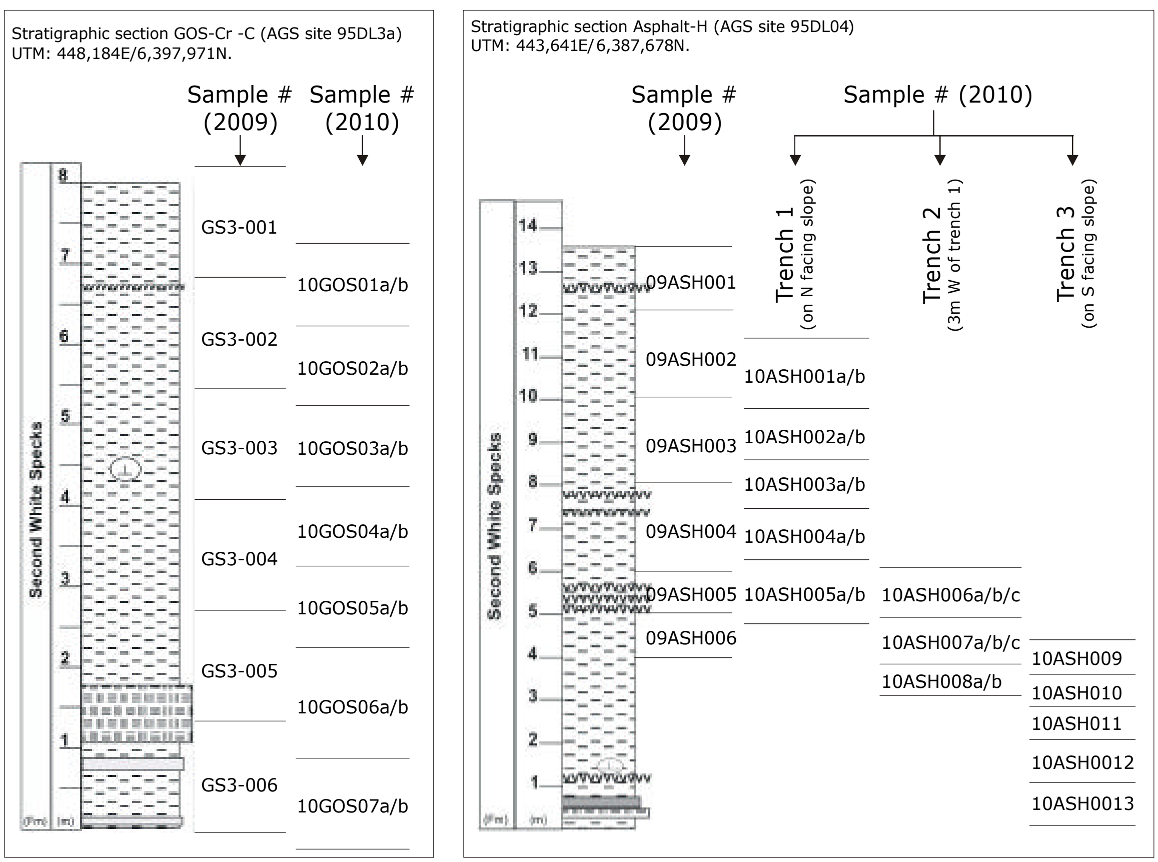

Figure 117: Stratigraphic sections Asphalt-H and GOS-Cr.-C, Field Sampling Program 2010 .

Site Asphalt -H (AGS Site 95DL04).

Sample#	UTM-E NAD27)	UTM-N (NAD27)	From elev asl (m)	To elev asl (m)	Description	Mass sample "a" (kg)	Mass sample "b" (kg)	Mass ARC Sample (kg)
10-ASH-001a/b	443,640	6,387,689	648	649.5	Top grades into overburden, 2 thin bentonite units (1 cm) at 20 cm, 25 cm down, both are Fe stained. S horizons at 20cm, 80 cm.	10.89	9.98	
10-ASH-002a/b	443,640	6,387,689	647	648	Highly Fe stained, joints are visible. S horizon at 80 cm, black shale	8.16	10.89	
10-ASH-003a/b	443,640	6,387,689	646	647	Shale, Top has S layer (1cm width) at 5cm, 25, 70 cm down, more Fe staining. More blocky black shale	7.71	11.34	
10-ASH-004a/b	443,640	6,387,689	645	646	Shale, Mostly black shale, one S/Fe horizon, friable	6.80	10.89	
10-ASH-005a/b**	443,640	6,387,689	644 (±4m)	645	Shale/Bentonite, Top is Fe stained, friable. 20 cm Bentonite/Sulfur layer at 50cm above is mixing zone, below is sharp with black shale, section below Sulfur more cohesive, predominantly black shale. Used as BASELINE on other trench	7.26		7.00
10-ASH-006a/b/c**	443,640	6,387,689	643.5	644.5	Shale, Lateral move 3m left, used S horizon of 10-ASH-001. Bentonite layer 65cm down, bottom is very Fe rich, black shale throughout	6.80	9.07	16.00
10-ASH-007a/b/c**	443,640	6,387,689	642.5	643.5	Shale, Black shale, Fe staining, friable	8.16	9.98	16.00
10-ASH-008a/b**	443,640	6,387,689	641.8	642.5	Shale, Bottom is in talus. Shale unit, some Fe stain horizons	11.79		9.00
10-ASH-009	443,536	6,387,607	641.5	642.5	Shale/Bentonite, Taken on North Face, 2 m below S/Bentonite horizon (10-ASH-001/002). Black shale, 1 cm bentonite layer 30 cm down. Fe staining more prevalent towards bottom	7.71		
10-ASH-010	443,536	6,387,607	640.5	641.5	Shale, Black Shale, small S x - cuttting layers(ve in fill), lots of small crystals	8.62		
10-ASH-011	443,536	6,387,607	639.5	640.5	Shale, Black shale, small lenses of coarser, brown material	7.26		
10-ASH-012	443,536	6,387,607	638.5	639.5	Shale/Bentonite/Concretions, Lateral move 4m left. Concretions @10 cm down, 20 cm thick. Black shale around, Fe/ bentonite horizon at 40 cm	13.61		
10-ASH-013	443,536	6,387,607	637.3	638.5	Shale, Lateral move 3m left. Black shale, Fe staining more prevalent at top, small bentonite lenses. Bottom is stream level. Visible in stream is rusty layers.	11.34		

Bags labeled 10 -ASH-###a/b/c are duplicates to be combined into a single sample
**4 bags sent to ARC, 10 -ASH-005b, 10-ASH-006c, 10-ASH-007c and 10-ASH-008b; equiv to 09 -ASH-005, 09-ASH-006 and a lower section

Site GOS Cr. -C (AGS Site 95DL03).

Sample#	UTM-E NAD27)	UTM-N (NAD27)	From elev asl (m)	To elev asl (m)	Description	Mass sample "a" (kg)	Mass sample "b" (kg)
10-GOS-01a/b	448,201	6,397,896	607	608	Shale/Bentonite, Top S° rich, mixed with white/grey bentonite. Mostly friable black shale, some bentonite layers mixed in	5.44	5.44
10-GOS-02a/b	448,201	6,397,896	606	607	Shale, Black shale, some discreet (<0.5cm) brown coarse sand? Lens around 0.5 m	6.35	5.44
10-GOS-03a/b	448,201	6,397,896	605	606	Shale/Concretions, Friable black shale down 20 cm, becomes more cohesive with Fe/S stains. @40 cm fg concretion (20 cm width), shows hummocky x -strat, bottom/top contacts sharp with shale, jointing visible (most likely to depressurizing)	5.90	6.35
10-GOS-04a/b	448,201	6,397,896	604	605	Shale, Lateral move 3m to right (used concretion bed as horizon). More Black Shale. S layers with sand? fish? Fe staining more prevalent below 50 cm, lowest 20 cm vivid blue highlights on shale faces	8.62	4.99
10-GOS-05a/b	448,201	6,397,896	603	604	Shale, Black shale, some S at top. Fe stained layers through coarser sediments (sediments are crystalline, cleavage). This unit is more cohesive.	6.80	4.99
10-GOS-06a/b	448,201	6,397,896	601.8	603	Shale, Black Shale, some trace S, Fe staining. Bottom contact with concretion zone	5.44	6.80
10-GOS-07a/b	448,201	6,397,896	600.8	601.8	Shale/Concretions, Top concretion is bone layer (bone layer pic), 30 cm width. Highly consolidated. Layer of coarser material (15 cm), then shale (10 cm width). Below is 20 cm layer of rusted, cohesive material, followed by shale into talus.	5.90	5.90

Bags labeled 10 -GOS-###a/b are duplicates to be combined into a single sample

Table 48: List of samples, Field Sampling Program 2010, showing also sample weights and samples forwarded to the ARC.

11.12 PENDING PROGRAMS AND WORK IN PROGRESS 2010-2011

As at the date hereof, planning is well underway by DNI to conduct a winter drilling program over the Buckton, Asphalt, and Buckton South areas to:

(i) upgrade the Buckton and Asphalt Potential Mineral Deposits and classify them into NI-43-101 compliant resources with the drilling of 30-40 core holes;

(ii) drill test the Buckton South mineralization which is partly exposed at surface;

(iii) collect reliable sample material from the Second White Speckled Shale Formation for expanded planned leaching testwork and column-tests from the foregoing two Potential Mineral Deposits; and

(iv) test potential extensions of the foregoing two Potential Mineral Deposits as extrapolated from previous geological work.

Community consultation in advance of permitting the winter drilling has commenced and is being conducted by S.Sabag, DNI's president/CEO and author of this report, and M.Dufresne of Apex Geoscience, Edmonton, which will be implementing the program under contract to DNI.

Other activities which are currently in their planning stages include expansion of leaching testwork relying on samples collected during the 2010 surface sampling program; and an integrated surface sampling program over areas to the south of the Asphalt Potential Mineral Deposit, and to its west over ground for which permits were recently applied for by DNI, to probe for extensions of the Deposit. Incidental surface geophysical surveying work is also under consideration over areas to the north of the Buckton Potential Mineral Deposit and the Eaglenest Lake area to explore for SEDEX type massive sulphide mineralization.

Expenditures in connection with planning and pre-field preparatory work related to the above have been incorporated into aggregate expenditures included in this report.

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12. CONCLUDING SUMMARY – 2007-2010 WORK PROGRAMS

12.1 SUMMARY OF RESULTS AND CONCLUSIONS

DNI commenced its exploration work prior to commencing land assembly in September 2007, and has since actively continued its work on the Property to advance its development. Exploration work completed during the period 2007-2010 consisted of a variety of efforts ranging from reconnaissance level synthesis and compilation of all available third party information during 2007-2008 and its consolidation into an NI-43-101 compliant technical report in 2008, to more detailed localized studies during 2008-2009 augmented by considerable analytical work in 2009-2010 intended to assess metal recoveries from the Second White Speckled Shale. While DNI's earlier work mainly entailed data consolidation and synthesis, DNI quickly progressed into laboratory based activities focusing almost entirely on investigating metals extraction and recovery testwork studies to ultimately formulate an economically viable flowsheet for extraction of collective base metals from the mineralized shale.

A closing summary of work programs completed, observations made and conclusions drawn therefrom, in addition to matters requiring future expansions, are outlined below:

- DNI's consolidation of historic geological and exploration records from northeast Alberta reinforced conclusions from historic work that the region holds considerable potential for hosting immense polymetallic zones, of the rift-volcanic metals enrichment variety, hosted in Middle-Upper Cretaceous black shales, notably the Second White Speckled Shale Formation and the Shaftesbury Formation. Of the two Formations, the Speckled Shale is nearer or exposed at surface in the Birch Mountains and offers the primary target which would be amenable to bulk mining and most likely also to mining by "ripping" (as are neighbouring deposits of oil sands).
- Detailed review and consolidation of extensive historic exploration results re-iterated the proposal overwhelmingly made by the historic work proposing a nearby volcanogenic local source(s) to the metals discovered in the Birch Mountains and on the Property, further proposing that polymetallic mineralized zones are congregated around volcanic centers characterized by considerable exhalative activity. The foregoing proposal supports speculation of the existence in the area of yet undiscovered sedimentary exhalative - SEDEX style - sulfides.
- Based on its detailed review and synthesis of extensive geological information from the region DNI proposed that a localized heat "budget" over the Birch Mountains is consistent with the recognized presence of considerable heat generation at the surface of the precambrian beneath it, and noted that a number of other similar localities can be recognized throughout the Western Canada Sedimentary Basin across Alberta and Saskatchewan many of which characterized by the presence of metallic or other mineralization above them. DNI further noted that culmination of the Second White Speckled Shale Formation depositional cycle likely coincides with a significant increase in volcanism.
- Based on metal enrichment trends observed in historic drilling over the Buckton Zone, DNI proposed that metallic mineralization in the Second White Speckled Shale in the area represents the juxtaposition of two separate trends: one which is predominantly a general basinal trend related to the Shales' anoxic provenance and dominated by V-Cu(Zn), and another trend superimposed upon it which is dominated by Mo-Ni-U-Zn-Co enrichment, accompanied by bentonite development related to localized volcanism and exhalative venting. It further proposed that the basinal (V-Cu) trend might also characterize the LaBiche and Belle Fourche Formation Shales which envelope the Second White Speckled Shale Formation.
- DNI's synthesis of historic geological and exploration records from the Property, as consolidated into its NI-43-101 technical report, recognized and identified six large mineralized systems on the Property, comprising six large areas centered over circular, or closed, surface or subsurface features associated with metals enrichment in one form or another either over them or on their flanks. The six areas are proposed to reflect subsurface black shale hosted polymetallic mineralization, presumably within the near surface Second White Speckled Shale Formation. Two of the foregoing areas were confirmed by historic drilling, and one is intermittently exposed.

- The six sub-properties range in size 100-300 sq km each and their size is appropriate for the principal type of polymetallic mineralization being sought by DNI, namely, nominal 5kmx5km or larger zones of polymetallic enrichment in flat-lying near-surface "blankets" of polymetallic black shale. The sub-properties share many similar characteristics, and provide two different, apparently related, types of prospective exploration and development targets, namely; (i) metal enriched polymetallic black shales; and (ii) possible source(s) to metals therein, proposed to be nearby exhalative vents with untested potential to host sedimentary exhalative - SEDEX style - sulfides.
- DNI regards the six areas as six distinct sub-properties which are at different stages of development, ranging from two areas with reconnaissance level anomalies which have not previously been explored, through two drill-ready target areas with considerable historic work, to two Potential Mineral Deposits at two of the sub-properties both of which are ready to advance toward the resource classification stage, and both hold good potential for considerable expansion. The six sub-properties identified by DNI are the focus of its exploration work programs and are as follows:
  - Two of the sub-properties, designated herein as the **McIvor West** and **North Lily Anomalies**, comprise large 50-100 sq km anomalies selected based on interpretations of general information, and have not been investigated in the field in any measure of detail to determine if they host mineralization. They are in the reconnaissance stages.
  - Two of the sub-properties, designated herein as the **Buckton South** and the **Eaglenest Target Areas**, comprise large areas which have undergone considerable prior historic surface work which has identified prospective targets to be tested by future drilling to probe for suspected buried polymetallic mineralized shale beneath the surface of each Target Area. Additional field work will not substantially, nor materially, alter conclusions which have already been reached by the historic work suggesting considerable potential for both. Portions of both Target Areas also present reconnaissance level potential for the presence of exhalative vents. The Buckton South Target Area presents the additional potential of hosting southerly extension of the Buckton polymetallic Potential Mineral Deposit over a 6km distance, or an altogether separate polymetallic mineralized Zone.
  - Two of the sub-properties, designated herein as the **Asphalt** and **Buckton Zones**, and respective Asphalt and Buckton Potential Mineral Deposits, represent near-surface (partly exposed) polymetallic zones which have been confirmed by widely spaced historic drilling and which are proposed herein to contain significant Potential Mineral Deposits to be upgraded to classified resources by in-fill drilling. The two Potential Deposits are "open" in three directions. Both Zones present additional targets with potential for locating suspected sources to their respective metallic mineralization, believed to be nearby exhalative venting, and historic work results from the Buckton Zone further provide metal enrichment vectors directing the search for exhalative venting to its north.
- DNI's synthesis of historic geological and exploration records from the Property, as consolidated into its NI-43-101 technical report, recognized two polymetallic Potential Mineral Deposits to exist on the Property relying on historic surface sampling and drilling. Of these, the Buckton Potential Mineral Deposit comprises 1.2-1.3 billion short tons extending over 26 sq km over the Buckton Zone; and the Asphalt Potential Mineral Deposit is 109-132 million short tons extending over 4.5 sq km over the Asphalt Zone. Both Potential Mineral Deposits are "open", would be amenable to bulk mining, and their polymetallic mineralization of interest consists of Mo-Ni-U-V-Zn-Cu-Co-Ag-Li enrichment with sufficient in-situ value to compel additional work to advance them toward resources. The foregoing estimates of tonnage are based on Specific Gravity estimates reported in historic work averaging 2.1, although DNI's verification sampling of the historic drill core reported measured values for Specific Gravity ranging 2.22 to 2.49 for the Second White Speckled Shale suggesting that tonnages in the Potential Mineral Deposits might in fact be larger than those estimated.
- Review and verification sampling/analysis by DNI of historic drill core archived at the MCRF, Edmonton, corroborated prior work results reported from the Second White Speckled Shale intercepts at the Buckton and Asphalt Zones. Results from surface sampling completed by DNI also similarly corroborated prior sampling results from the two litho-stratigraphic sections sampled over the Asphalt

and Buckton Zones, some of which samples were collected as feed material for DNI's leaching and bioleaching R&D testwork and similar work intended to evaluate CO_2 sequestration potential of the Second White Speckled Shale.

- The historic subsurface stratigraphic database for the Property as at 1995, relying on oil/gas well downhole records, was expanded by DNI to include information from all subsequent drilling, focusing on stratigraphic and structural information especially for the contacts of the Second White Speckled Shale Formation. Two separate studies which were completed to independently review and synthesize the expanded database, however, were not successful in reaching consensus and served to formulate two markedly different subsurface structural models based on their interpretations of subsurface structural settings for the area. This is attributed to the low density the database which in most relies on a few well per township, hence its accommodation of many possible equally plausible interpretations due to the lack of sufficient constraining data. The expanded subsurface database does, however, provide considerably better framework of information for the depth and thickness of the Second White Speckled Shale targeted by DNI, to support localization of future drilling intended to delineate mineable volumes. Plans are to continue to expand the database as additional information from drilling in the area are made available in public records, from ongoing exploration for oil sands deep beneath the Property.

- DNI completed considerable initial metals leaching and bioleaching testwork to evaluate recoverability of collective metals from the Second White Speckled Shale. Some of this work was completed under DNI's direction concurrently with work completed by the Bureau de Recherches Géologiques et Minières (BRGM), France, and by the Alberta Research Council (ARC). The foregoing represent initial work carried out under test conditions which have not yet been optimized for enhanced recoveries, although they were successful in demonstrating that metals can be collectively recovered from the Second White Speckled Shale by simple leaching in sulfuric acid and by bioleaching, and that excellent recoveries can be achieved for Ni-U-Zn-Cd-Co, middling recoveries for Cu-Li, and lower recoveries for Mo-V. The foregoing tests are the first ever leaching and bioleaching tests completed to evaluate recovery of metals from the Speckled Shale. Salient highlights from the tests and maximum metal recoveries achieved are as follows:

    - Sulfuric acid leaching tests conducted by DNI, on Second White Speckled Shale samples from the Asphalt Zone, comprising Stage1 and Stage2 tests intended to generally simulate bioleaching, relying on 10gm and 5gm samples, respectively, reported recoveries ranging upward to Mo-51%; Ni-89%; U-84%; V-51%; Zn-88%; Cu-57%; Co-86%; Cd-93%; Li-58%. The tests noted that metals solubilized readily and rapidly within the initial 8-10 hours of the tests, and also reported some re-precipitation for some of the metals at the later stages of leaching in many of the tests, especially Stage2 tests which were conducted at higher temperatures. Although Stage2 tests were intended to experiment by trial-error with different temperatures, leach duration and pH, results were inconclusive and, other than providing some general guidelines for future work, do not allow conclusion of definitive trends or recoveries.

    - Bioleaching tests were conducted by the BRGM on a fresh surface sample of the Second White Speckled Shale from the Asphalt Zone to determine amenability of the Second White Speckled Shale to bioleaching for the collective recovery of metals. The Alberta black shales' amenability to bioleaching has never previously been tested, and the BRGM testwork was intended as an initial step toward broader testwork to follow. BRGM conducted bioleaching as well as abiotic leaching tests using duplicate 200gm charges during approx 15 days of leaching at substantially constant pH of 1.8, at 40C and 3% solids. A bacterial consortium from BRGM's acidophilic culture bank was used during the tests. Considering that the culture had previously been adapted to grow on a copper concentrate, copper recovery could not be measured during the biotic leaching. Cd and Li were also not monitored.

      BRGM overall concluded that that the bacterial activity has only limited incremental positive influence on metals dissolution, since the metal solubilization under abiotic conditions were similar to those under biotic conditions, indicating that metals solubilize quickly under acid conditions. BRGM also concluded that the principal benefit of biotic intermediation is improvement in recovered metal yields over time. The tests recommended that complementary leaching tests be undertaken using conventional leaching agents to definitively determine any advantages which bioleaching might offer over chemical leaching. They further recommended that future tests include tests at higher solids content and tests with liquor recycling in order to increase collection of metals into the solvent.

BRGM tests noted that the Shale tested is quite reactive to bioleaching demonstrated by very short lag time before micro-organisms start to grow at its contact. They also noted that bacterial adaptation to the shale is immediate and that there is no "poisoning" by the shale's geochemistry nor does the shales chemistry inhibit start-up of bacterial growth.

BRGM noted that although the ore produces acidity quite soon, sulfur content of the sample tested is too low to produce the requisite sulphuric acid by bioleaching alone, and that the 3%-4% S content of the shale is at the lower limit for triggering and maintaining a bacterial growth based on sulphide oxidation.

BRGM noted that metal recoveries in biotic conditions were only slightly improved by the presence of bacteria compared to recoveries from the abiotic test, and reported the following calculated metals recoveries from bioleaching: Mo-15.6%; Ni-88.4%; U-88%; V-5.8%; Zn-82.8%; Co-88.1%. The BRGM reported the following calculated metals recoveries from abiotic leaching: Mo-2.5%; Ni-86.6%; U-81.9%; V-8.3%; Zn-83.7%; Co-83.2%; Cu-49.4%. BRGM test results are consistent with, and corroborate, results from sulfuric acid leaching tests conducted by DNI which similarly concluded that most of the metals quickly solubilize under acidic conditions and that excellent recoveries can be achieved for many of the metals.

- A set of tests were conducted by the ARC on fresh surface samples of Second White Speckled Shale from the Property to determine whether microorganisms capable of growing under bioleaching conditions (i.e. extreme acidic conditions) could be detected in the Shale. The tests successfully demonstrated that enrichment cultures can be obtained from the fresh samples of the Second White Speckled shale, and extracted cultures for subsequent adaptation and bioleaching tests.

- A bioculture adaptation study was carried out by the ARC by conducting testwork to adapt two of the bioleaching enrichment cultures obtained above from the Second White Speckled Shale to increasing shale amounts (up to 20% solids density) and decreasing amounts of external ferrous sulphate. The study achieved its objective and demonstrated that the cultures could adapt well to the Second White Speckled shale. The study recommended that testwork advance to conducting batch amenability tests, using the cultures extracted from Shale and adapted to it as the bioleaching inoculum, to measure the types and amounts of metals that can be extracted from the Second White Speckled shale by bioleaching.

- Acid consumption testwork conducted by the ARC to measure sulfuric acid required to achieve a pH of 1.8 in samples of Second White Speckled Shale from the Property. The tests reported acid consumption ranging 7.4kg-102kg from two samples of the Second White Speckled Shale from the Property.

- Metal mobility testwork conducted by the ARC to determine which metals would solubilize sulphuric acid at pH range between 1.2-1.8 concluded that Ni-U-Zn-Co are readily soluble at pH of 1.8 over 48 hours, but that Mo-V-Cu demonstrated poor solubility.

- A series of batch amenability bioleaching tests were conducted by the ARC on fresh surface samples of the Second White Speckled Shale from the Asphalt Zone, relying on bacterial inoculum cultures extracted and adapted above, to determine the types and amounts of metals that can be. Duplicate tests, using 200gm charges from two separate samples, were conducted and final tails from one set of duplicates were washed in HCl to assess sulfate and Fe precipitation and what effect it might have on metals solubilization.

  The tests reiterated findings of DNI's sulfuric acid leaching tests and those reported by the BRGM from its bioleaching work, and demonstrated that collective group of metals can be extracted from the shale by bioleaching and that high recoveries typically ranging 80%-95%

can be achieved under non-optimized conditions for Ni-U-Zn-Cd-Co, that middling recoveries typically ranging 40%-55% can be achieved under non-optimized conditions for Cu-Li; and that the poor recoveries documented for Mo-V, typically ranging 10%-30% for Mo and 2%-5% for V, might be partly due to re-precipitation of Mo and V from solution associated with re-precipitation of Fe. No attempt was to mitigate re-precipitation observed nor to optimize test conditions, and some results are pending which might enhance the foregoing extractions.

Test results were received only recently and they provide and extensive leaching database which has not yet been fully reviewed or processed by DNI for analytes other than the principal metals of interest. Portions of the testwork are also still in progress for miscellaneous fractions of solids and liquids, hence a mass balance cannot be prepared for the testwork. Given the foregoing, calculated metals extractions (recoveries) reported or which can be calculated based on the leaching results represent in most part partial recoveries, some of which are subject to uncertainties due to missing weights or analyses for certain important fractions of solids or liquids. The testwork does, nonetheless, offer guidelines for future work.

Collateral observations related to the test results include a significant discrepancy between metal extractions calculated based on solution chemistry (ie: metals solubilized as percentage of feed head grade) when compared to figures calculated based on differential grade between feed material and final tails (ie: insoluble fraction of metals). This discrepancy cannot be clarified in the absence of mass balance figures and remains unexplained, although at least some of it might be attributed to challenges presented to testing of relatively small samples (200gm each) by cumulative errors during documentation of periodic sub-samples removed from the leaching solution to monitor its compositional evolution. The aggregate of foregoing subsamples represents approximately 20% of the total volume of the leach solution, and solids suspended therein represent approximately 20% of the feed material by weight. Calculation of metals extractions are also challenged by weight gains in tails noted in some of the tests the causes of which is unknown.

- The mineralogy of a suite of fifteen samples from the Second White Speckled Shale from the Property was studied by Actlabs Geometallurgy Services during a mineralogical characterization study by MLA600F Scanning Electron Microscope. Due to the extremely fine grained nature of the samples, definitive mineralogical data could not be collected as hoped, although the study concluded that samples can be grouped into broad categories based on geochemical, XRD and MLA information. The study also noted that the organic phase in the shale can carry high and variable levels of Ca, Fe and S which precipitate or crystallize, depending on moisture and other conditions, as pyrite framboids or have been oxidized to sulphates (jarosite, Fe-sulphate and/or alunite), and that some Fe-oxides were found to host Cu and Mn. Mineralogical point-count modal data were gathered, and the samples generally characterized. The study noted that Zn in the samples is largely hosted by sphalerite (which accompanies pyrite framboids), and that Zn is also hosted in Mn-oxides/hydroxides. Detectable Ni, Cu and Co was identified in rare Fe- and Mn-oxyhydroxides.

  The MLA work did not provide as much quantitative mineralogical information as hoped, although it reiterated that black shale hosted metallic mineralization is typically too fine to afford identification by optical or EDS methods and that the metal-bearing compounds are dispersed throughout the shale as extremely tiny particles (often submicron) trapped in organic matter or in slimes. The Study also suggested that many of the metals might occur in the Second White Speckled Shale samples tested as charged particles within oxides, hydroxides and clays, rather than as discrete mineral phases. This, latter, suggestion is supported by the ease with which metals can be leached from the shale as observed during subsequent leaching and bioleaching testwork, and also by historic mineralogical work from the Property noting instability of at least some of the mineralogy in the shale and its susceptibility to decomposition.

- The sulfuric acid leaching tests conducted by DNI, and the bioleaching testwork conducted by the ARC both reported solubilization of rare metals, including Lithium, during the tests as a co-product of the base metals of interest. Though presence of low concentrations of the foregoing metals in the Shale was previously known, they had previously been ignored and their incidental recovery represents previously unrecognized additional value to the shale which has not yet been fully determined relying on the recent leaching databases.

- Given that black shales are known to have capacity for sequestering CO_2 under pressurized conditions, and given that certain "spent" black shales and similar material also have similar capacity, a series of CO_2 sparging tests were carried out by the ARC on samples from the Second White Speckled Shale from the Property to collect baseline laboratory information on the reactive properties of fresh Shale samples when injected with CO_2 under ambient pressure. The tests comprise the initial stage of work, to be continued and repeated on Shale tailings after they have been leached or bioleached.

  The tests collected laboratory based information, and demonstrated that fresh samples of the Second White Speckled Shale are reactive to acidity as can be expected given its carbonate content. The testwork also reported solubilization of metals along with other analytes under moderate acidity conditions reiterating that metals are readily leached from the Shale even at the moderate acidities. The testwork recommended proceeding to the second planned stage of work to similarly test shale residues produced from leaching or bioleaching, to evaluate whether chemistry or mineralogy of such tailings might be mitigated to promote CO_2 sequestration through ex-situ mineral carbonation under ambient conditions.

  The collateral solubilization of metals observed during the above testwork is especially interesting, and demonstrates that the metals can be liberated (extracted) from the shale under acidic conditions over a broad range of pH exceeding pH 2 (less acid than the pH 1.2-1.8 of prior sulfuric acid leaching and bioleaching tests), and that acidity may be the decisive factor to achieve metals extraction rather than the type of acid used in leaching (all prior leaching and bioleaching testwork had relied on sulfuric acid solutions whereas the CO_2 sparging tests did not). The foregoing is consistent with suggestions from the MLA mineralogical study that the metals might in most occur in the Shale as charged particles which can be easily liberated, rather than as discrete minerals such as sulfides.

  The collateral solubilization of metals during the CO_2 sparging tests offers possibilities for using CO_2 (ie: carbonic acid) as the principal leaching reagent (instead of other acids or bioleaching) to dissolve metals from the shale. The foregoing is a novel avenue which merits concerted evaluation.

- Challenges and complexities of discussing polymetallic deposits and the need for simplification of the discussions by relying on gross in-situ vales were presented in Section 9.7 of this Report.

  Characterization of the polymetallic mineralization discovered in the Second White Speckled Shale at the Asphalt and Buckton Zones was also presented (Section 9.8), characterizing the mineralization as principally Zones of V-Zn enrichment with lesser Mo-Ni based on the relative grades of the respective metals, and by contrast describing it as principally Zones of Mo-Ni-U-V enrichment with subordinate Zn-Cu-Co based on the relative gross insitu value represented by the respective metals relying on metals prices for the year preceding the NI-43-101 report for the Property, and assuming 100% recovery for all metals except V for which 40% was assumed.

  In view of lower recent metals prices and given the availability of initial stage recovery results from DNI's recent leaching and bioleaching testwork, the foregoing characterization can be revised to reflect available information, based on five year average metals prices to June 2010, and relying on nominal metals recoveries, albeit un-optimized as yet, of 85% for Ni-Zn, 95% for U-Co-Cd, 50% for Cu, 30% for Mo and 20% for V. The foregoing characterizes the polymetallic mineralization discovered and targeted in the Second White Speckled Shale at the two Zones to represent Ni-U-V-Mo enrichment with subordinate Zn-Cu-Co, and is as such consistent with those previously presented (Ag, Cd, rare metals and Li are provisionally excluded from the foregoing).

Whether the five year average commodity prices to June 2010 are a realistic guide to the future is unknown and, as such, additional iteration of gross in-situ values is best relegated to the rigors of a scoping study or economic analysis in the context of the planned resource studies toward which DNI is advancing for the two Potential Mineral Deposits identified at the Asphalt and Buckton Zones. What is known, however, and can be stated with certainty is that as large accumulations of industrial metals are increasingly more difficult to discover, polymetallic black shale deposits, by virtue of sheer size alone, will gain progressive prominence as immense future source of metals to supply ever expanding industrial growth worldwide.

Based on the above five year average commodity prices, and the above nominal metal recoveries, which may well be enhanced through optimized leaching tests, the polymetallic mineralization discovered in the Second White Speckled Shale is well within reach of economic viability if benchmark operational costs reported by the Talvivaara mine, Oil Sands mining and the Paracatu, collectively averaging approximately $10/t, prove to be applicable to any operations envisaged for exploitation of the Zones discovered in the Second White Speckled Shale on the Property.

12.2 RECOMMENDATIONS

As discussed in Section 10 of this Report, DNI is partway through a two phased series of integrated exploration and development programs pursuant to recommendations of its NI-43-101 technical report for the Property. As such, no additional recommendations are made herein by way of additional work programs since they are already outlined in considerable detail in the foregoing report a copy of which is appended herein as Appendix B1.

During the past two years, DNI has substantially completed Phase-1 of the exploration work recommended by the technical report, and has reached a milestone and natural break in the programs. None of exploration results collected from the foregoing work equivocate any of the recommendations made in the technical report, although minor recommendations are inserted in this Report by way of topics which require future expansion, many of which relate to observations made during metals leaching R&D testwork.

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272 Pages (incl Cover & TOC)
14 Sections
7 Appendices
117 Figures
48 Tables
10 Plates

14. Certification

CERTIFICATE OF THE AUTHOR

I, Shahé F.Sabag, of 134 Albertus Avenue, Toronto, Ontario, Canada, M4R 1J7, hereby certify that I am responsible for the overall preparation of this report entitled "*Assessment Report On Exploration Programs 2007-2010, SBH Property, Birch Mountains, Athabasca Region, Alberta, Canada; prepared for DNI Metals Inc. (formerly Dumont Nickel Inc.)",* dated August 15, 2010 (the "Report"), and that:

- I am a graduate of the University of Toronto with Honours Geology B.Sc degree (1974) and Specialist Geology M.Sc. degree (1979);
- I have actively practiced my profession since 1974 and have been involved in mineral exploration for base and precious metals, industrial minerals and uranium throughout North America (notably Ontario, Quebec, Alberta, Saskatchewan, NWT, Utah, Nevada and Arizona) during which time I have implemented, directed, managed and evaluated regional and local exploration programs, including underground and open-pit exploratory and pre-development work;
- I am a member of the Association of Professional Geoscientists of Ontario (APGO Member #250), the Canadian Institute of Mining and Metallurgy, the Prospectors and Developers Association, the Utah Mining Association and the Alberta Chamber of Resources;
- I have visited, actively mapped and sampled over, the Property, and surrounding areas, on countless occasions during the period 1993-1999 and 2009-2010;
- DNI's 2007-2010 work programs reported upon herein were carried out under my direction or supervision, or by me, as DNI's QP for the project;
- I expect to receive no remuneration from DNI Metals Inc. other than payment of fees and disbursements for services rendered in connection with preparation of this report;
- I am President and CEO, and a director, of DNI Metals Inc. ("DNI"), and that I am, accordingly, not independent of DNI; and that I hold securities of DNI including stock options granted to me under DNI's Stock Option Plan;
- I have read the definition of "Qualified Person" set out in National Instrument 43-101 ("NI-43-101") and certify that by reason of my education, my licensure from a professional association as defined in NI-43-101, and my past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of NI-43-101. That I, furthermore, certify that I am the designated Qualified Person for DNI Metals Inc. in connection with the Property;
- I acknowledge that as of the date of the certificate, and to the best of my knowledge, information and belief, this Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading. This Report is, however, not intended as a NI-43-101 technical report;
- I consent to the filing of the Report with the Alberta Department of Energy, and any publication and reproduction by them of the Report, in whole or in part, including its electronic publication in the public company files or on their websites accessible by the public.

Executed this 15th day of August, 2010, in the City of Toronto, Ontario, Canada.

[Seal]
APGO#250

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Shahé F.Sabag MSc PGeo