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# Gold Potential Assessment Fourbay Project, Ontario

Report prepared for

Aur Lake Exploration Inc.

Date: December 2, 2019

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## Gold Potential Assessment, Fourbay Project, Ontario

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## EXECUTIVE SUMMARY

The Fourbay project lies in the Thunder Bay district, in northwestern Ontario, approximately 200 km northwest of Thunder Bay and 80 km northeast of Ignace. The area of interest covers 20 km<sup>2</sup>, including 65 single cell mining claims (formerly numbers 4242887, 4251895, 4251896 and 4251897 of the Fourbay property) currently owned 100% by Aur Lake Exploration Ltd, along with an unstaked ground to the east of these claims.

Effigis Geo-Solutions was mandated by Aur Lake Exploration to conduct a gold potential assessment and targeting over the Fourbay project. The main objective of the study was to analyze the possible extension of the Armstrong-Best gold deposit geological conditions, located east of the covered area, into the Fourbay property, and eventually to identify new prospective zones. As part of this assignment, Effigis Geo-Solutions conducted firstly a remote sensing analysis, using satellite imagery, aeromagnetic data and topographic information, then followed by a reprocessing of existing field data and a predictive modelling to generate gold targets. The analysis covered: 1) the interpretation of the structural architecture and the relative timing relationships between faults, 2) the recognition of lithology, marker horizon and alteration zone, 3) the evaluation of the potential for gold mineralization, and 4) the gold predictive targeting. The mandate was achieved using existing geoscientific information exclusively, without further field investigation.

High- and moderate-resolution multispectral satellite images (Pleiades, Planet), regional aeromagnetic data (total magnetic field, derivatives) and regional bottom lake sediment data sets from the Ontario Geological Survey were integrated for the analysis. This was completed by the compilation and recovery of historical geological surveys within and surrounding the Fourbay property, including outcrops and drill core observations, ground geophysical surveys, soil geochemical surveys and grab sample assays.

### <u>Geology</u>

The resulting geological study shows that the geological setting occurring at the King's Bay area (Armstrong-Best prospects), including the ENE-trending shear/fault zone-associated volcaniclastic strata marker horizon and the occurrence of Quartz-Feldspar-Porphyry (QFP) dike-type intrusions, is extending toward the WSW throughout the Fourbay project, up to west of the McKinnon vein gold prospect. A similar ENE-trending lithostructural corridor, located south and parallel to the former one, is interpreted throughout the Fourbay property from northwest of Six Mile Lake to the Pistol Lake area and further east. The two interpreted corridors are likely to mark the boundaries between volcanic packages, including the lower/middle Handy Lake and the middle/upper Handy Lake assemblage. These two lithostructural corridors seem to control the distribution of gold occurrences and QFP intrusions.



The two ENE corridors are interpreted as sub-vertical and sinistral ductile-brittle shear/fault zones. The interpretation also suggests that dextral NW-trending brittle faults, crosscutting the ENE-trending shear/fault zones, could be originally synvolcanic faults which were reactivated during late- to post-tectonic events, and may have controlled the distribution of sulfide occurrences. Their late footprint suggests that they likely have displaced QFP intrusions already in place and may locally have remobilized gold mineralization.

#### Gold potential assessment and targeting

The high-grade auriferous grey-blue quartz veins and stringers occurring at King's Bay prospects, along with the low-grade gold mineralization recognized at the Armstrong-Best deposit, the Pointer Lake prospect and the Pistol Lake zone, are likely to be found at the Fourbay project. The northern ENE-trending corridor, which hosts several prospects, could potentially define a vast area of minable low-grade gold mineralization. However, further field investigation is required to confirm long widths of stringer and/or disseminated gold mineralisation, along with potassic and/or sodic alteration. Comparing the geological features of the Fourbay area with various gold deposit models (e.g. VMS-gold, Orogenic Gold, Intrusion-related Gold) and existing major deposits in the Abitibi and Wabigoon greenstone belts in Canada (e.g. Rainy River, Côté Lake, Hammond Reef, Canadian Malartic), it is proposed that the style of mineralization is more likely a hybrid synvolcanic gold plus base metals model (e.g. Rainy River or Côté Lake deposits).

Within Aur Lake Exploration's claims, top ranked gold exploration targets were identified on and around the McKinnon Lake area. In addition, several second and third order targets were identified mainly along the two interpreted ENE-trending corridors near QFP intrusion and NW-trending fault intersection. They represent less than 8.5% of the original study area.

#### Conclusions and Recommendations

Recommended exploration activities include:

- Pursue prospecting activities around the McKinnon vein for high-grade and lowgrade gold mineralization. Stripping, trenching, shallow drilling to be considered;
- Conduct a high resolution heliborne magnetic survey over the Fourbay area, with narrow line spacing along the corridor extending from west of McKinnon Lake to east of the Armstrong-Best deposit;
- Conduct a geochemical soil survey (As content in C horizon) over the anomalous geophysical zones;
- Conduct a field prospecting survey over the western part of the southern ENEtrending prospective corridor, in the northwest sector of Six Mile Lake.

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## **1. INTRODUCTION**

Aur Lake Exploration commissioned Effigis Geo-Solutions (Effigis) to assess the gold potential at the Fourbay project. The Fourbay property, owned 100% by Aur Lake Exploration Ltd., lies in northwestern Ontario, approximately 200 km northwest of Thunder Bay. The region has long been prospected since the late 19<sup>th</sup> century. First production of gold started in 1901 from the Jack Mines, which in 1905 became the St. Anthony Mine, sporadically producing over 63 000 ounces of gold between 1905 and 1941. Since then, several high-grade gold vein occurrences were drilled, including the Armstrong-Best deposit in the King's Bay area, however past exploration programs failed to meet the needed size of deposit to become a producer.

Limited work was done by Aur Lake since initial land staking in 2008 other than on and around the McKinnon vein. Past exploration programs have demonstrated that the gold mineralization at the King's Bay prospects, located east of the covered area, is hosted in shear zones and spatially associated quartz-feldspar porphyry intrusions, and that the shear zone may continue to the west into the Aur Lake property. The possible extension of a gold-bearing structure over several kilometers and the spatial association with porphyry intrusion opens up a potential for a bulk tonnage low-grade gold deposit, such as the Côté Lake-type or the Canadian Malartic-type.

Effigis conducted an integrated study over the Fourbay area in order to assess the gold potential. The main objective was to analyze the possible extension of the Armstrong-Best gold deposit geological conditions into the Fourbay property, and to identify new prospective zones. The study was undertaken using both satellite (Pleiades, PlanetScope, ASTER) and geophysical (regional airborne aeromagnetic and electromagnetic survey, local IP-Mag-VLF-EM ground survey) data, along with topographical data (DNEC), field observations (outcrop, drill hole) and geochemical (local SGH soil survey, grab sample Au assays, regional bottom lake sediment survey) data. The mandate was achieved using all this compiled information exclusively without any further ground visit. The cartographic coordinate system used for the work is WGS84 UTM Zone 15.

The study was conducted by Mr. Ludovic Bigot, P.Geo, assisted by Mr. Ludovic Legros, G.I.T., from April to August 2019. The study was peer reviewed by Mr. Michel Rheault, P.Geo.

This report first outlines the property location and accessibility, followed by the history of the area, the geological setting description of the project area, and then by the data acquired for the mandate. Thereafter, the report presents the interpretation of the geological framework, including the structural interpretation followed by the lithostratigraphic and intrusion interpretation and finally by the updated geological framework. Subsequently, the report discuss the gold potential and the targeting at the Fourbay project, and finally salient conclusions and recommendations.

## 2. PROPERTY LOCATION, DESCRIPTION AND ACCESSIBILITY

The Fourbay project lies in northwestern Ontario, Canada, approximately 200 km northwest of Thunder Bay and 80 km northeast of Ignace (Figure 1). The entire Fourbay property lies in Thunder Bay District and consists of 65 single cells mining claims (formerly claims number 4251895, 4251896, 4251897 and 4242887) covering approximately 1,865 ha. It is currently owned 100% by Aur Lake Exploration Ltd.

The study presented in this report refers to the Fourbay area, which include the Fourbay property in addition to an unstaked ground to the east of these claims (Figure 2). The region is characterized by relatively flat- to low-relief terrain and northern temperate climatic conditions with a strong canopy of conifers and deciduous trees. Rock outcrops are very much in the minority.

The Fourbay property can be accessed via roads to Ignace (via Highways 11 and 17) and then by Highway 599 to the north. Bush roads can be used to reach various areas of the property from Highway 599; alternatively, the property can be reached by boat from Sturgeon Lake. ATV's can be used to access several parts of the property including McKinnon Lake.

The Canadian National Railway line passes within 25 km of the Fourbay property to the north. Most local towns are accustomed to mining exploration and so labour and equipment are readily available for exploration purposes. Several hunting and fishing lodges operate in the area and can be used for accommodation during work programs.



Figure 1: Location map (map from geology.com - Ontario Map).





**Figure 2**: Location of the Fourbay area (black outline) with Fourbay mining claims owned by Aur Lake (blue outline). Landsat-7 image in the background.

## 3. EXPLORATION HISTORY

The exploration and production history of the overall Sturgeon Lake area dates back to the late 1800's. Gold production starts with the Jacks Mine in 1901, which soon became the St. Anthony mine which produced over 63 000 ounces of gold between 1905-1941. First prospecting activities in the area of study occurred at the King's Bay zone where a small mill was operated in the 1930's. Porphyritic boulders containing free gold in blue quartz veins were reported (Bragg, 1984).

Prospecting activities also occurred at the Jessie Lake showing (formerly claim number 4242888), to the west of the study area (cf. Figure 2) in the late 1940's (Johnson et al., 1989). Subsequent exploration took place within and around the Fourbay area and reached a climax in the 1980's and early 1990's. Intense prospecting and drilling activities occurred in the King's Bay area, in particular in the Armstrong-Best area, and moderately near Pointer Lake and Pistol Lake. Several investigations were conducted by Chester Kuryliw (1992; 1993a; 1993b; 1994) who proposed a gold deposit model for the whole Fourbay area.

In the late 2000's and early 2010's, Aur Lake Exploration sampled and assayed findings on the most western claim 4242886 (referred to as the Jessie claim). The area located east of Jessie Lake was also prospected but outcrop was not generally visible for sampling. Within claim 4242887, Aur Lake Exploration did intense prospecting along the McKinnon gold vein showing, exposed at surface along 190 meter in length and disappearing into the lake. Work included rock geochemical studies (Internal reports Aur Lake Exploration; Wellstead and Newton, 2014; Newton and Newton, 2016), four soil geochemical surveys including one MMI (Fedikow, 2009) and three SGH programs (Sutherland and Hoffman, 2010), and an IP-Resistivity-VLF-EM and magnetic ground geophysical survey (Mihelcic, 2010; Reed, 2010). These activities resulted in the interpretation of high priority targets for further investigation, and the existence of a large high chargeability area to the immediate west of the vein which still needs to be explained. Elsewhere on the property, some outcrops were found, sampled and assayed with mineralization present, but not nearly enough to determine its importance.

A compilation of known historical work that occurred wholly or partly on the Fourbay area as of the 1970's is provided in Appendix I. Due to the extensive and complex history of the area, activities other than those mentioned may have also occurred.

## 4. GEOLOGICAL SETTING

### 4.1. Regional Geology

The Fourbay area is situated primarily within the western Wabigoon Subprovince of the Canadian Shield, a region dominated by granitic rocks intruding Archean metavolcanic greenstone belts (Figure 3), and more specifically within the Savant-Sturgeon Greenstone Belt ("SSGB"). The SSGB is a 120 by 100 km northeast striking corridor, steeply dipping sequence of Neoarchean bimodal island-arc volcanic and intrusive rocks with lesser sedimentary sequences that form the eastern part of the western Wabigoon Subprovince. The rocks represent a protracted episode of island-arc volcanism, related oceanic and continental shelf sedimentation, arc-continent collision and related orogeny between 2.72 to 2.68 Ga (Sanborn-Barrie and Skulski, 2006).

The volcanic and sedimentary rocks of the SSGB unconformably overlie the granitoid rocks of the Mesoarchean Winnipeg River Subprovince basement. The contact between the two is marked by the Jutten Assemblage, a Mesoarchean quartzite and conglomerate sequence (ca. >2750 to <2880 Ma) in part defining an angular unconformity at the base of the SSGB. The volcanic rocks of the SSGB are interpreted to have developed in an oceanic to transitional-arc setting adjacent to the Winnipeg River micro-craton. Turbidite marine sediments of the Warclub Assemblage (2698-2704 Ma) mark a sequence that deposited atop the continental rocks of the Winnipeg River Subprovince and the volcanic-arc sequences of the SSGB. Initial deposition of the Warclub Assemblage occurred before the tectonism producing the SSGB, and continued until the thrusting of the basin over the Winnipeg River Subprovince.

The SSGB is bounded to the north and to the west by the Lewis Lake Batholith, a granitic intrusive suite that is synvolcanic with the SSGB volcanic rocks. The volcanic and sedimentary strata of the SSGB are subdivided in a series of assemblages which, from oldest to youngest, include the Fourbay Lake Assemblage (ca. 2775 Ma), the Handy Lake Assemblage (ca. 2745 Ma), the South Sturgeon Assemblage (ca. 2735 Ma), the Quest Lake assemblage (ca. 2720-2735 Ma) and the Central Sturgeon assemblage (ca. 2720 Ma).





Figure 3: Major tectonostratigraphic assemblages (from Sanborn-Barrie et al., 2004). Location of the study area in black outline.

### 4.2. Local Geology

The geology in the study area consists of a series of metamorphosed mafic volcanic sequences, primarily pillow lava flows, of the Handy Lake assemblage (Figure 4). The northern volcanic sequence is the lower Handy Lake assemblage, mainly basalt, and the southern volcanic sequence is middle Handy Lake assemblage which contains a bimodal sequence of massive to pillow lava flows intercalated with sedimentary rocks and minor felsic to intermediate tuff (Bragg, 1984). Variable alteration are documented, including carbonatization, silicification, sericitization, and chloritization.

The contact between the lower and middle Handy Lake assemblage is demarcated by a semi-continuous magnetic and electromagnetic anomaly striking ENE. This anomaly, known as a GIF (geophysical interpreted iron formation), is a metasedimentary marker horizon composed of sulfide-rich felsic tuff, greywacke, graphitic argilite, chert and sulfide facies iron formation of various proportion. It has been metamorphosed under upper greenschist to amphibolite facies conditions (Trowel, 1983). This horizon is considered prospective for gold mineralization (Sanborn-Barrie and Skulski, 2005).

The metamorphosed volcano-sedimentary sequence has been intruded by felsic porphyry and gabbro. Felsic intrusions are Quartz Feldspar Porphyries (QFP) or porphyritic granodiorite - trondhjemite. These intrusions are shown concordant and cross-cutting other units as narrow irregular dikes, mainly distributed along the GIF (Bragg, 1984). Disseminated sulfide content ranges from 1 to 5%, being pyrite, chalcopyrite, arsenopyrite and pyrrhotite. Alteration within and around the porphyries includes, in variable intensity, primarily sericite and secondary chlorite, carbonate and a bleaching effect (Bragg, 1984). They occur as a complex of dikes and dikelets that form a broad stockwork that cut across all mafic units (Kuryliw, 1993).

All units strike generally in an east-west direction with tops facing southward (overturned) and steep dipping to the north (Figure 4). Foliation is primarily EW-trending, subparallel to primary bedding and flow structures. The area has been subjected to complex folding and faulting (Trowell, 1993). To the east of the area, evidences of dragging fold occur along the main Sturgeon Lake NE-trending shear zone.





**Figure 4**: Geology of central portion of the Sturgeon Lake area, at 1:100,000 scale. Study area in black outline. From Sanborn-Barrie and Skulski, 2005.

### 4.3. Fourbay area mineralization types

In the Fourbay area and the King's Bay zone, the gold mineralization occurs in four modes: (1) gold bearing quartz vein and stringer within metavolcanic and metasedimentary rocks, (2) gold bearing quartz vein and carbonate and chlorite within metavolcanic and metasedimentary rocks, (3) gold bearing quartz vein associated with sulfide iron formation and graphitic horizon, and (4) gold bearing vein/stringer and disseminated gold bearing sulfide within and/or at contact with quartz feldspar porphyry intrusions (Kuryliw, 1994; Jobin-Bevans, 1996). The most common association is with metavolcanic rocks. Gold content is generally proportional to the sulfide content, mostly pyrite and pyrrhotite along with minor arsenopyrite, chalcopyrite and sphalerite. The gold prospects are distributed along an E-W trend over 6 miles.



All known gold occurrences, whether they occur in basalt or guartz feldspar porphyry as the host rock, have the common characteristic of a distinctive dark-grey-blue to blackish quart silicification (Kurvliw, 1994). Historic exploration activities highlighted high-grade mineralization. At the Armstrong-Best deposit, which is the most advanced prospect in the area, best drill hole interceptions returned 3.85 oz/ton Au over 10 ft (Jobin-Bevans, 1996). 36.9 g/t Au over 1.31 m and 313.3 g/t Au over 0.55m (cf., Mineral Deposit Inventory for Ontario, deposit: MDI52J02SW00027). Grab samples within the McKinnon vein reached 42.7 g/t Au (Aur Lake Exploration internal report). At the TY/Berry zones and Pointer Lake area, mineralization respectively returned 1 oz/t Au and 0.139 oz/t Au over 5 feet (Riverton Resources, 1985). In addition, low-grade disseminated gold mineralization have also been intercepted, in particular at Pointer Lake (0.006 oz/ton Au over 1.2 ft, 0.002 oz/ton Au over 4 ft; Jobin-Evans, 1996), at Armstrong-Best (0,12 oz/ton over 3 ft; Bragg, 1984) and at Pistol Lake (0.022 oz/ton over 1 ft and 0.005 oz/ton over 3 ft; Kuryliw, 1993), but was mostly ignored as the low-grade ore was not economic at the time. The relatively unique and distinct blue-quartz alteration led Kuryliw (1994) to the conclusion that known gold occurrences share a common genetic source and a common age of mineralization.

## 5. DATA ACQUISITION

Multisource data sets were integrated into a spatial database in order to conduct the mandate (Table 1). The cartographic projection system used for the study is UTM WGS84 Zone 15N.

The regional topographical data (DNEC) were integrated into the database and enhanced as shaded relief products using the EASI modelling function of the Geomatica software (PCI Geomatics Enterprise ®) and the ArcGIS version 10.3.1. (ESRI ®)). Different directions of illumination, east, northeast, north and northwest, were used to enhance the structural geology.

The Pleiades, PlanetScope (Figure 5), and ASTER images, previously orthorectified, were integrated into a mosaic and then incorporated into the database. The processing was achieved using the OrthoEngine Module, a rational function of math modelling method, and a cubic resampling of the Geomatica software (PCI Geomatics Entreprise ®). Different color composites were generated, highlighting the lithostructural context.

The aeromagnetic data sets of the Sturgeon Lake – Savant Lake areas, recovered from the Ontario Geological Survey, include the total magnetic intensity, the second vertical derivative and the apparent resistivity (Figure 6). Enhancement was achieved using Oasis Montaj Viewer version 9.3.3 (Geosoft Inc®). Additional geophysical products, including the IP-Resistivity-Mag-VLF-EM ground geophysical surveys, were used to support the lithostructural interpretation.



#### Table 1 : Input data characteristics

Data Type	Characteristics	Acquisition dates
Pleiades	<ul> <li>✓ 4 multispectral bands (VNIR)</li> <li>✓ 50 cm (PAN), 2 m-resolution (VNIR) Source: Airbus</li> </ul>	2015-09-11
PlanetScope	<ul> <li>✓ 4 multispectral bands (VNIR)</li> <li>✓ 3 m-resolution (VNIR) Source: Planet</li> </ul>	2018-09-08
ASTER	<ul> <li>✓ 14 multispectral bands (VNIR, SWIR, TIR)</li> <li>✓ 30 to 90 m-resolutions Source: USGS</li> </ul>	2001-05-18
Topography	<ul> <li>✓ DNEC data</li> <li>✓ 1 arcsec resolution Source: NASA</li> </ul>	1999-02
Geophysics	<ul> <li>✓ High resolution airborne aeromagnetic and electromagnetic data Source: Ontario Geological Survey</li> </ul>	2003
Ceophysics	<ul> <li>✓ IP-Resistivity, Mag, VLF-EM ground geophysics Source: ClearView Geophysics, Reed Consulting</li> </ul>	2010
	<ul> <li>✓ Au plus 33 elements ICP-MS analysis on grab sample over the Fourbay property (mainly on and around McKinnon vein) Source: Aur Lake Exploration</li> </ul>	
Geochemistry	<ul> <li>MMI on and around McKinnon vein – one survey Source: Mount Morgan Resources</li> </ul>	2002-2016
	<ul> <li>✓ Soil Gas Hydrocarbons (SGH-Actlab) on and around McKinnon vein – three surveys Source: ActLab</li> </ul>	
	<ul> <li>Regional bottom Lake sediment data : Source: Ontario Geological Survey</li> </ul>	
Geology	<ul> <li>✓ Geological maps (regional) Source: Ontario Geological Survey, historical data</li> <li>✓ Outcrop descriptions, assays Source: Aur Lake Exploration, historical data</li> </ul>	Variable

The ICP-MS analysis on rock samples, collected by Aur Lake Exploration, along with bottom lake sediment data (Figure 7), provided by the Ontario Geological Survey were reprocessed using XLSTAT 2019 (Addinsoft ®) and maps were generated using ArcGIS version 10.3.1 (ESRI ®), in order to enhance specific geological features.

All additional geoscientific data of Aur Lake Exploration and historical work from the 1970's to 2016, including ground and drill hole observations of lithology, alteration, and mineralization, along with ground electromagnetic measurements and soil geochemical surveys were considered for the lithostructural interpretation.



Figure 5: Colour infrared PlanetScope imagery. Study area in black outline.





**Figure 6**: Aeromagnetic data (total field in color fused with shaded second vertical derivative). Study area in black outline.





**Figure 7**: Field data, including outcrop description and Au-assay (green dot) from Aur Lake Exploration, and bottom lake sediment geochemical data (red square) from Russel and Jackson (2002; OGS).

## 6. GEOLOGICAL FRAMEWORK

### 6.1. Structural interpretation

### 6.1.1. Data sets and methodology

The structural analysis was undertaken using aeromagnetic data, along with satellite images and topographical data. Satellite imagery and topography provide surface information, whereas aeromagnetic data indicate sub-surface features. Structural elements are usually pointed out by contrasts or discontinuities of aeromagnetic and satellite spectral signatures, as well as specific topographic patterns.

The first interpretation stage included lineaments recognition at scales ranging from 1: 50,000 to 1:20,000. At the Fourbay project, the regional total magnetic intensity and the vertical derivative were used along with Pleiades and PlanetScope satellite imagery. However, the interpretation of the latter was complex due to abundant vegetation and widespread glacial striations.



A second stage of interpretation included form lines drawing at scales ranging from 1:20,000 to 1:8,000. These form lines trace the geometry of stratigraphy within metavolcanic and metasedimentary rocks or the foliation within granitoid and gneissic rocks. Discontinuities between form lines highlight structures (faults, folds), unconformities, or intrusive contacts. The magnetic second vertical derivative was used for this interpretation.

A third stage of interpretation defined the structural pattern, representing faults, shear zones or folds. Then, a final stage of interpretation defined style and kinematics of structures, along with age relationships and crosscutting relationships between different families of structures. Ground observations and evidences of hydrothermalism (e.g. alteration, sulfide occurrence, veining), from Aur Lake Exploration and other historical sources, were highly considered to carry out the structural interpretation.

### 6.1.2. Lineament and form line mapping

#### Lineament mapping

Lineaments were interpreted over the Fourbay area, outlining the lithological contacts and/or structural breaks within the volcano-sedimentary assemblage. Lineaments were interpreted using the total magnetic intensity and the magnetic second vertical derivative, the PlanetScope 3m-resolution satellite imagery and the digital elevation model. Lineaments azimuth was calculated using the Polar Plots ArcGIS extension (Jenness, 2014). The calculated azimuths represent the orientation of the lineaments relative to true north at their mid-point.

Two major lineaments orientations were recognized in the Fourbay area (Figure 8): eastnortheast (ENE) and southeast (SE). ENE-trending lineaments are widespread and continuous throughout the zone. They are the most abundant lineaments in the Fourbay area. They have clear footprints on both aeromagnetic and satellite data. These ENEtrending lineaments are offset by other lineaments, suggesting an early origin.

SE-trending lineaments are abundant, however less than the ENE-trending ones. SE-trending lineaments are continuous and have moderate footprint. They crosscut ENE-trending lineaments and are locally offset by minor NNE-trending lineaments.

#### Form line mapping

Form lines were interpreted from the magnetic second vertical derivative, along with the Planet 3m-resolution satellite imagery. They have orientations ranging from east-northeast (ENE) to east-west (EW) to east-southeast (ESE). Two specific domains are recognized, separated by an ENE-trending boundary in the area of Jumping Lake. To the north of the latter, form lines show a dominant ESE-trending orientation, which deflects toward the east in the area of Jumping Lake. To the south of Jumping Lake, form lines

trend ENE. In the southern domain, form lines are overall parallel but locally pinch and swell. The change in the orientation of form lines, ESE- vs ENE-trending, coincides with the lithological contact between the lower and the middle Handy Lake assemblage (cf. Sanborn-Barrie and Skulski, 2005).

In the Fourbay area, ENE-trending form lines are prevalent. They are locally disrupted by SE-trending form lines, which may reflect the influence of crosscutting structures. In addition, some domains are devoid of form lines, which may reflect heterogeneous rheology and different lithology, such as various intrusions within a volcanogenic package. It is interpreted to the south of Pistol Lake and within a corridor that runs from west of McKinnon Lake to the northern part of King's Bay area.



**Figure 8**: Interpreted lineaments (black lines) on the Fourbay area. The study area is shown in blue dashed outline. Rose diagram of lineaments is overlaid (N=44). Planet image in the background.

### 6.1.3. Structural architecture

The structural architecture was interpreted from lineament and foliation (form lines) relationships, supported by outcrops observation and drill core from historical data. Evidence for faults comes from specific patterns on magnetic and satellite data, including discontinuities or obliquity between form lines, offset of magnetic and spectral units,

anomalies configuration on magnetic or resistivity data, along with observation of shearing and alteration in outcrops and drill core samples.

The interpreted structural architecture is presented on Figure 9. It is subdivided in terms of age of deformation (generation) and structure order (rank). The kinematics is also presented for the major structures. Three generations of structures were interpreted: (1) syntectonic structures expressed by ENE-trending ductile-brittle shear/fault zones, (2) late- to post-tectonic structures represented by NW-trending brittle dextral to normal faults, and (3) post-tectonic structures depicted by minor NE-trending brittle faults.



**Figure 9**: Structural sketch map at the Fourbay project. The study area is shown in blue dashed outline. Planet image in the background.

#### Syntectonic faults

The structure and foliation in the Fourbay area are affected by the high strain brittle-ductile Sturgeon Lake corridor that extends regionally along a NE trend from Sturgeon Narrows to Northeast Arm of Sturgeon Lake. In the area of King's Bay and further east, structure and foliation are dragged to the NE along the major Sturgeon Lake break (cf. Sanborn-Barrie and Skulski, 2005), suggesting a sinistral displacement. It is also shown on the

aeromagnetic data where E-trending lineaments inflect to the NE as they approach the Sturgeon Lake break.

Syntectonic structures are ENE-trending (Figure 10, 11). Two main structures with high magnetic footprints are interpreted in the Fourbay area: one which runs from west of McKinnon Lake to the north shore of King's Bay, and a second one which extends from northwest of Six Miles Lake to the Porphyry body in the Pistol Lake area. The former has the highest magnetic footprint of the Fourbay area. These structures are interpreted as ductile-brittle shear/fault zones. Although not belt-scale structures, these two structures commonly developed along lithological boundaries. They coincide with the contacts between volcanic members of the Handy Lake assemblage. Probable subsidiary ductile-brittle faults are associated with the principal shear/fault zones. All together they are somehow imbricated as part of a common shear system.

The northern shear/fault zone defines, with associated secondary faults, a corridor of over 15 km long characterized by irregular magnetic patterns and apparent low resistivity, suggesting a heterogeneous lithological assemblage. These variable signatures commonly have an ENE-trending elongated shape indicating intense deformation within the interpreted corridor. In addition, along the northern border of this corridor, SE-trending foliation is deflected toward the east suggesting apparent sinistral movements. Elsewhere, foliation is highly strain, commonly parallel to the interpreted shear/fault zones.





**Figure 10**: Syntectonic faults, interpreted from aeromagnetic data (total magnetic intensity and second vertical derivative), spectral data (Planet) and topographical data. The study area is shown in blue dashed outline. Aeromagnetic data in the background.





In the Fourbay area, ground evidences of shearing have been poorly reported from outcrop descriptions. Robinson and MacLean (1992) and Kuryliw (1993) reported only one observation of shearing along the southern interpreted ENE-trending shear/fault zone. However, they reported several observations of quartz vein and carbonate alteration along the linear aeromagnetic and spectral features interpreted as syntectonic shear/fault zones. in particular in the McKinnon Lake zone and the Pistol Lake zone. Shearing at the McKinnon vein is oriented N070 and dips 70 degrees to the north (Newton and Newton, 2016), which is consistent with the structural interpretation on both aeromagnetic and spectral data, and with the foliation measurements in the geological map of Sanborn-Barrie and Skulski (2005). Drill holes at the Armstrong-Best deposit (Bragg, 1984), at Pistol Lake (Kuryliw, 1994) and at Pointer Lake (Jobin-Bevans, 1996) intercepted several strong shearing features and/or intense carbonate and guartz alteration within mafic flows and QFP intrusions. At Pistol Lake, two parallel E-trending shear zones were interpreted, highly dipping to the north. At the McKinnon Lake, mineralized veins and stringers are strongly boudinaged and folded (Wellstead and Newton, 2014), highlighting an intense deformation.

Following several prospecting campaigns in the Fourbay area, Kuryliw (1993) interpreted an ENE-trending corridor and noted that within this corridor there is a gradational change in the gold-bearing sulfides, from "stubby" arsenopyrite and pyrite along the southern margin, through bladed arsenopyrite, to pyrrhotite-pyrite along the northern margin. The southern margin of Kuryliw's corridor occurs around Pistol Lake whereas the northern margin is located about 600 m to the north. In the Armstrong-Best deposit, arsenopyrite has not been reported and pyrrhotite is more abundant than at Pistol Lake (cf. Bragg, 1984). This temperature gradient may represent the transition from greenschist facies to upper greenschist or lower amphibolite facies. This transition is commonly observed near important structures, such as the Cadillac Larder-Lake break within the Abitibi greenstone belt (Faure, 2015), and is considered as an optimal metamorphic window for the deposition of orogenic gold mineralization (Phillips and Powell, 2010; Large et al., 2011).

#### Late-tectonic faults

ENE-trending syntectonic faults are offset by later brittle NW-trending structures (Figure 12, 13). Apparent dextral offsets are clearly visible on both aeromagnetic data and satellite imagery. In addition, the magnetic intensity commonly varies on both sides of the NW-trending structures, suggesting vertical displacements may have been involved as well.

These NW-trending faults crosscut the ENE-trending syntectonic faults. However, some of these faults might be originally synvolcanic faults that would have been reactivated, partially or in totality, during late phases or after the main orogenic event. Several key features of synvolcanic faults signature (cf. Gibson et al., 1997; Faure, 2008), including anisotropy of the bedding near fault, occurrence of mafic feeder dikes, occurrence of massive sulfide and typical volcanogenic alteration are observed and/or interpreted in the Fourbay area. Of the nine interpreted late-tectonic faults, five coincide with gabbroic dikes



which were observed by Robinson and MacLean (1992) and show relative positive aeromagnetic signatures. These dikes are believed to be possible feeder dikes for flows higher in the volcanic pile (Bragg, 1984). The azimuths of the bedding measured by Robinson and MacLean (1992) are broadly E-W-trending, however, one can note a slight change of orientation on both sides of some NW-trending faults. This anisotropy occurs in particular to the west of McKinnon Lake and to the southwest of King's Bay. In addition, although the extension of some NW-trending faults reaches several kilometers long, the principal offsets are limited to some hundred meters, suggesting that possible early (synvolcanic) offsets were limited to certain volcanic sequences, in particular near the contact between the lower and middle Handy Lake assemblage. Furthermore, two zinc-copper massive sulfide occurrences, Thunder Grid SE and NW, are reported along the NW-trending fault to the west of McKinnon Lake.

Finally, the integration and reprocessing of bottom lake sediment data, from Russel and Jackson (2002), has enabled to identify major zinc and potassium anomalies along the NW-trending fault, to the west of McKinnon Lake. Although the visible footprint indicate a late displacement, several evidences suggest some of the NW-trending faults were originally synvolcanic fault, in particular the one to the west of McKinnon Lake.

#### Post-tectonic faults

Post-tectonic structures are NNE-trending brittle faults that offset all pre-existing faults. They are minor and the offsets are limited. These faults occur very locally within the Fourbay area.





**Figure 12**: Late-tectonic faults interpreted from aeromagnetic data (total magnetic intensity and second vertical derivative), spectral data (Planet) and topographical data. The study area is shown in blue dashed outline. Aeromagnetic data in the background.



Figure 13: Rose diagram of late-tectonic faults. Fault orientation weighted by fault length. N=12.



### 6.2. Lithostratigraphy and intrusion interpretation

The extent of lithostratigraphic domains were interpreted, including volcano-sedimentary assemblages, specific marker horizons and intrusive rocks, based on the distribution of supracrustal rocks from the historical data (outcrop and drill core), the total magnetic intensity, the apparent resistivity, electromagnetic and VLF-IP-resistivity data and the satellite imagery.

#### 6.2.1. Marker horizon

Very Low Frequency (VLF) surveys in the Fourbay area (Mattagami Lake Mines, 1970; Kuryliw, 1992; Mowat, 2008), along with regional airborne magnetic and electromagnetic surveys (Ontario Geological Survey, 2003), show four parallel easterly trending formational conductors, including three within the Fourbay perimeter (Figure 14). Two parallel and close trends occur from west of McKinnon Lake to the Armstrong-Best zone. At the scale of the study, it is unclear whether there are several parallel horizons or a single folded horizon. Although the Fourbay area was not homogeneously surveyed, this zone boasts the most abundant and strongest electromagnetic and VLF anomalies of the whole area. These two interpreted marker horizons coincide with the GIF horizon (cf. Sanborn-Barrie and Skulski, 2005) and with the interpreted main syntectonic shear/fault zones. This main ENE-trending zone is likely to point out the lithological boundary between the lower and the middle Handy Lake volcanic assemblage.

Other formational conductors occur to the south, including one within the Fourbay perimeter, from northwest of Six Mile Lake to Pistol Lake. However, electromagnetic anomalies are less abundant and discontinuous. This marker horizon is believed to point out the probable lithological boundary between the middle and the upper Handy Lake volcanic assemblage.

These aeromagnetic/electromagnetic/VLF/spectral signatures may indicate the occurrence of sulfide- or graphite-rich interflow sediments within the volcanogenic sequence (it may also be a bias due to swamp overburden effect). Drill holes at King's Bay intersected 3 to 4 meters of this marker horizon that contains, in variable proportions, sulfide-rich felsic tuff, greywacke, graphitic argilite, chert and pyrrhotite-pyrite facies iron formation (Bragg, 1984). The volcanic setting indicates it is an Algoma-type iron formation, which is commonly a prospective horizon for gold mineralization when it undergone upper greenschist/lower amphibolite facies (Dubé and Mercier-Langevin, 2015; Bigot, 2016).

These volcaniclastic strata, within tholeiitic to calc-alkaline mafic to intermediate flows, suggest several local hiatuses in volcanism and volcanogenic exhalative activity.





**Figure 14**: Marker horizons interpreted from VLF survey, airborne electromagnetic surveys, and aeromagnetic data (total magnetic intensity and second vertical derivative), along with field observation in outcrop and drill core. The study area is shown in blue dashed outline. Aeromagnetic data in the background.

#### 6.2.2. Intrusion

At the Armstrong-Best deposit and Pistol Lake occurrence, gold mineralization is spatially associated with shear zones and with QFP dikes. It is unclear whether gold is genetically linked to the QFP intrusion, or if the latter acts as a rheological trap for mineralized fluid, or if it is an accidental spatial relationship. The limited amount of geological information and the actual understanding of the geology at the Fourbay project does not allow to answer this question. However QFP intrusions seem, empirically, prospective for gold. For this reason, a systematic interpretation of probable felsic to intermediate QFP intrusion was undertaken using historical data (outcrop and drill core) along with aeromagnetic and electromagnetic data.

#### Compilation of historical data

In the Fourbay area, the most exhaustive mapping work was achieved by Robinson and MacLean (1992) and by Kuryliw (1993, 1994). It consists of outcrop descriptions from traverses and lakesides mapping including the lithology, the alteration and structural



measurements. Additional information was compiled from drill core, but limited to the Armstrong-Best area, the Berry zone, the Pointer Lake zone, the Pistol Lake zone and nearby to the west. Only two holes were drilled within the Fourbay perimeter (i.e. the four claims plus the open ground).

Intermediate to felsic intrusive rocks were recognized by previous geologists in the Fourbay area. They include unsubdivided porphyritic intrusion, quartz-porphyry (QP) intrusion, quartz-feldspar porphyry (QFP) intrusion, feldspar porphyry (FP) intrusion and porphyritic granodiorite-trondhjemite. Unlike alkalic complexes occurring east of the Sturgeon Narrow break, such as the Sturgeon Narrow Alkalic complex and the Vista Lake complex, where they are believed to be syn- to late-tectonic intrusions, in the Fourbay area no timing of emplacement was interpreted for the porphyritic intrusions.

A compilation of intermediate to felsic porphyritic intrusions is presented at Figure 15. Note that the positioning of these observations may be locally inaccurate at up to 100 m due to imprecision of the original compiled map. Most of QFP and FP intrusions mapped on surface occur out of the Fourbay perimeter, although near the boundaries, in particular in the northwest of the Fourbay perimeter, in the Pistol Lake and south of King's Bay area. Some dikes of QFP were recognized within the Fourbay perimeter, especially west and east of the McKinnon Lake along the interpreted ENE-trending corridor hosting a marker horizon.

#### Aeromagnetic data interpretation

In addition to existing field observations on intrusion, felsic to intermediate porphyritic intrusions were interpreted based on their magnetic signature. In the Fourbay area, felsic to intermediate porphyritic intrusion commonly occurs in low magnetic intensity zone (Figure 15). Porphyritic intrusions drawn by Sanborn-Barrie and Skulski (2005), west of McKinnon Lake and south of Pistol Lake, correlate with relative low magnetic intensity. In addition, most of QFP and FP intrusion observations made by Robinson and MacLean (1992) and Kuryliw (1993, 1994) are pointed out by elongated shapes and lower magnetic intensity than the host rock. In the Fourbay perimeter, most of the interpreted QFP/FP intrusions are distributed within the two interpreted ENE-trending lithostructural corridors, from west of McKinnon Lake to the Armstrong-Best area and from west of Six Mile Lake to the Pistol Lake area.



**Figure 15**: Compilation of felsic to intermediate porphyritic intrusion from Robinson and Maclean (1992) and Kuryliw (1993, 1994) over the aeromagnetic data (TMI). The study area is shown in blue dashed outline.

In addition to low magnetic signatures, QFP and FP intrusion observations made by Robinson and MacLean (1992) and Kuryliw (1993, 1994) seem to be spatially correlated with apparent low resistivity, hence high apparent conductivity. However, this observation should be taken with caution because both sulfide and water have a low resistivity signature. Nevertheless, low apparent resistivity zones not associated with lakes open up interesting outlooks for potential QFP or FP intrusion.

The integration of field observations, magnetic and apparent resistivity signatures allowed to propose the intrusive geological setting at the Fourbay project (Figure 16). This interpretation is based on the relative co-occurrences of those three parameters and takes into account the overall structural architecture. It shows a concentration of probable QFP intrusions along the two ENE-trending interpreted shear zones. However, some of them have a moderate to low confidence of interpretation, due to the limited amount of geological information to confirm such emplacement.





**Figure 16**: Probable intrusions interpreted from a compilation of historical data, the aeromagnetic data and the apparent resistivity data. Interpreted structural architecture is overlaid. The study area is shown in blue dashed outline. Planet image in the background.

#### Timing of emplacement

Using both textural and intensity of magnetism criteria, Faure (2011) distinguish synvolcanic from syntectonic pluton based on an exhaustive review of pluton geophysical signatures in the Abitibi Greenstone Belt. Generally, the geophysical signature of synvolcanic plutons is characterized by a higher average magnetic intensity than the host volcanic rocks and by more or less fuzzy magnetic banding giving a mottled texture. These synvolcanic intrusions are also devoid of magnetic halo in the host volcanic rocks. The presence of such magnetic halos implies a high temperature contrast, conditions generally found during the emplacement of syn- to late-tectonic intrusions. Syn- to late-tectonic plutons in the Abitibi Greenstone belt, such as the Kirkland Lake intrusions, the Young-Davidson intrusion and the Beattie intrusion, have variable magnetic signatures, from annular to positive, however, they share common high magnetic intensity zones, either on the border of the intrusion or in the intrusion itself (Fayol and Jebrak, 2016).



Regionally in the Sturgeon Lake area, synvolcanic to early-tectonic and syn- to latetectonic magnetic signatures as defined by Faure (2011) are clearly recognizable. As an example, the synvolcanic Beidelman Bay pluton shows a higher magnetic intensity than the host volcanic rocks and is also characterized by magnetic banding, giving a mottled texture. On the opposite, the Sturgeon Narrows Alkalic Complex, the Granite Bay pluton, the Saunder Lake pluton and the Ten Mile Lake pluton display clear magnetic halos indicating syn- to late-tectonic signature. Within the Fourbay area, magnetic footprints are more difficult to interpret. Differing from the typical synvolcanic pattern, the intrusions at Fourbay display a lower magnetic signature than host rock and do not have magnetic banding inside. The inside is more or less fuzzy, and unequivocal evidences of magnetic halos are not shown.

The magnetic signatures of the Fourbay's intrusions are neither characteristic of synvolcanic intrusions nor syn- to late-tectonic intrusions. Aeromagnetic data solely cannot enable to conclude on the timing of emplacement of these intrusions. However, they share common geological and aeromagnetic characteristics with some of the early-tectonic intrusions in the Sturgeon lake area (e.g. the Mountain Island Bay pluton), suggesting it might be their timing of emplacement. Two methods would provide unambiguous answers on their timing: (1) plutons dating or (2) geochemistry of plutons and host volcanic rocks. For the first, the U-Pb zircon geochronology would be effective. For the second, the comparison of the geochemical signatures of the plutons with those of the host volcanic rocks enable to evaluate the co-magmatic features of lithological units (Gaboury, 2001).

### 6.3. Updated geological framework

An updated geological map is proposed, including the main volcanic units of the Handy Lake assemblage, the marker horizons, the intrusions and the fault network (Figure 17). The interpreted main ENE-trending shear/fault zones coincide with the marker horizons and main lithological boundaries. The distribution of the QFP intrusions, which are probably early-tectonic, seems to be controlled by the ENE-trending lithostructural corridors. The geological setting at King's Bay is believed to extend throughout the Fourbay area, up to west of McKinnon Lake.





**Figure 17**: Proposed interpretation of the Fourbay geological framework. The study area is shown in blue dashed outline. Planet image in the background.

## 7. GOLD POTENTIAL ASSESSMENT

The past exploration programs over the Fourbay area have demonstrated the occurrence of several high-grade gold mineralization systems along with minor low-grade zones, however none of these programs have succeeded in defining a major gold deposit. Nevertheless, the recent exploration concept of low-grade large tonnage model was never considered at the time because it was not economically viable.

Considering the recent discoveries and start of production of low-grade porphyritic gold deposits in the Abitibi greenstone belt and in the Wabigoon Subprovince, such as the Canadian Malartic deposit and the Hammond Reef deposit (see Agnico Eagle Mines website), the co-occurrence of both high- and low-grade gold mineralization in the Fourbay area spatially associated with felsic porphyritic intrusions within shear zones, the question of the potential for a low-grade large tonnage model of deposit (e.g. Malartic-type) in the Aur Lake property has been addressed.



## 7.1. Criteria of gold fertility and key factors for exploration

World production and reserve for greenstone-hosted gold deposit arrive in second place for world production behind paleoplacer, notably the Witwatersrand paleoplacer deposits in South Africa (Dubé and Gosselin, 2007). In the Superior Province of the Canadian Shield, 86% of gold production and reserves come from greenstone-hosted gold deposit.

### 7.1.1. Regional scale - Greenstone belt-hosted mineralization

Using an exhaustive database of hundreds of greenstone belts and their characteristics, Pearson (2007) documented key criteria for the fertility of greenstone belts using the geometry-morphology (area, shape) and the lithological content of the belts. Overall, the key factor indicative of fertility is the lithological diversity, in particular the occurrence of felsic and ultramafic lithologies along with silico-clastic rocks. The presence of ultramafic rocks and banded iron-formations is indicative of high fertility. The size and shape of the belt do not influence the metal charge.

Dubé and Gosselin (2007) synthetized the characteristics of greenstone-hosted quartzcarbonate vein deposits. They occur in deformed greenstone of all ages, especially those with basalts and ultramafic flows intruded by intermediate to felsic porphyry intrusion. They are distributed along major compressional to transtensional crustal-scale fault zones marking the convergent margins between major lithological boundaries, such as volcanoplutonic and sedimentary domains. The large deposits are commonly spatially associated with fluvio-alluvial conglomerate distributed along major fault zones.

Rafini (2015) gathered key features for regional gold exploration in various setting. It comprises structural geology, metamorphism, lithology, electromagnetic signal, geochemistry, and alteration exploration tools. Using conditional probability on gold deposits in the Abitibi greenstone belt, the key geological features were ranked: (1) presence of ultramafic rock; (2) proximity to a major shear zone and particularly where the structure changes direction; (3) occurrence of syn- to late-tectonic alkaline porphyritic intrusion; (4) occurrence of a transition metamorphic window from greenschist facies to upper greenschist facies to lower amphibolite facies (zone of major fluid devolatilizing); (5) occurrence of conglomerate and iron-formation; (6) occurrence of greywacke/mudstone and sandstone. The listing is not exhaustive, however, it provides very relevant information in regards to the targeting of gold deposit.

### 7.1.2. Local scale - Intrusion-hosted mineralization

For many types of gold deposits, intrusions play an important role in the mineralization process. In many greenstone belts, the role of the intrusions is as follows: 1) thermal engine of the hydrothermal system (e.g. VMS-Au: La Ronde deposit, Dubé et al., 2007; Rainy River deposit, Pelletier, 2016); 2) competent host rock of mineralized veins, prompt

to be fractured by tectonic movements (e.g. orogenic gold: the Hammond Reef deposit, Backeberg, 2015); 3) contribution of fluids and metals (e.g. "intrusion-related gold deposit": Côté Lake deposit, Katz, 2016; "syenite-associated disseminated gold", Robert, 2001, including the Canadian Malartic deposit, De Souza et al., 2015).

At Rainy River, synvolcanic to early-tectonic age granitic dikes and QFP (probably comagmatic with the felsic volcanic rock) occur near gold mineralization zones but do not host the mineralization. These intrusions are not genetically linked to the mineralization and are not prospective. In the cases of the Canadian Malartic gold deposit, the Côté Lake deposit and the Hammond Reef deposit, it is a low-grade bulk tonnage disseminated gold mineralization (<1 g/t Au) hosted by or proximal to felsic intrusions. Côté Lake is hosted in a synvolcanic tonalite-diorite intrusion; Hammond Reef is hosted in an early porphyritic tonalite; Canadian Malartic is hosted in a late-tectonic porphyritic quartz-monzonite to granodiorite and in greywacke. These deposits occur in a fault/breccia bounded stockwork of quartz veins and veinlets oriented parallel to the main fault zone that control the geometry of the deposits. These deposits share characteristics of important potassic (sericite) and/or sodic (albite) alteration. Syn- to late-tectonic gold deposits such as Canadian Malartic and Hammond Reef tend to be monometallic in gold, whereas synvolcanic age gold deposits including Rainy River and Côté Lake are commonly gold plus base metals, either copper, zinc and/or lead.

Because they are commonly prospective for gold, syn- to late-tectonic intrusions have been largely documented. Robert (2001) provided a review of syenite-associated disseminated gold (ex: Canadian Malartic, Beattie, Young-Davidson, Bachelor Lake, Kirkland Lake) at regional scale. Main characteristics include a spatial association with alkaline to calc-alkaline quartz-monzonite to syenite stocks and dikes, commonly porphyritic, the distribution along major fault zones, the association with preserved slivers of alluvial-fluvial (Timiskaming-type) sedimentary rocks, composed of conglomerate and greywacke, a disseminated sulfide replacement zone with variably developed stockworks of quartz-carbonate and K-feldspar veinlets, within zones of carbonate, albite, K-feldspar and sericite alteration. Legault and Lalonde (2009) noted they are small intrusions with an elongated-shape, and Mathieu (2015) concluded that a key feature for fertility is the occurrence of a strong carbonate, potassic or sodic alteration which reflects an efficient hydrothermal system. These intrusions and their related gold deposits share common magnetic signatures, in particular clear high magnetic zones, either on the border of the intrusion or in the intrusion itself, and a size lower than 3 km<sup>2</sup> (Fayol and Jébrak, 2016).



### 7.2. Exploration criteria at the Fourbay project

### 7.2.1. Structural setting

Dubé and Gosselin (2007) and Rafini (2015) concluded that first order fault/shear zone are of primary importance when considering gold exploration, in particular the first kilometers from the major structure. Then, the fertility index decreases rapidly while going away from this first order structure. Second and third order subsidiary faults have a local control on ore bodies.

Along the Sturgeon Narrow fault zone, the densest zones of existing gold occurrence, extracted from the Mineral Deposit Inventory for Ontario, occur within 4 km from the fault (Figure 18). The Fourbay project is located about 5 to 8 km away from the main Sturgeon Narrow fault zone, west of a zone where the fault direction changes from the ENE to the NE-NNE. The interpreted principal ENE-trending fault/shear zones occurring at Fourbay are most likely subsidiary shear faults of the main Sturgeon fault zone. These structures, in particular the one that runs from west of McKinnon Lake to the Armstrong-Best zone (along the GIF horizon) and further east, are spatially associated with gold and gold-copper occurrences. Hence, despite the fact that the distance to the main Sturgeon Narrow fault zone implies a decrease of the fertility index in the Fourbay project relative to the Armstrong-Best area, the continuity of the prospective ENE-trending shear zones into the Aur Lake property brings to positive conclusions regarding gold prospectivity.

The authors suspect that some of the NW-trending crosscutting faults might have been synvolcanic faults which have been reactivated later during brittle tectonic events. Since we don't know the timing of emplacement of gold mineralization, either synvolcanic related to a VMS system, or syn- to late-tectonic related to the main deformation of the greenstone-belt and/or to magmatic influx (the porphyries), the role played by the NW-trending faults in the distribution of gold mineralization is unclear. Their late footprints (post-shear zone) suggest that they likely have displaced QFP intrusions already in place and may locally have remobilized gold mineralization due to fluid circulation. However, if a synvolcanic origin is considered, they would have played a major role in the distribution of massive sulfides (which may host gold?).







**Figure 18**: Density map of gold occurrences along the Sturgeon Narrow fault zone. Kernel Density function of Spatial Analyst in ArcGIS (ESRI®) using Planar distances between the features. The interpreted structural architecture is overlaid. The study area is shown in blue dashed outline. Landsat-7 image in the background.



### 7.2.2. Lithological setting

Pearson (2007) noted that the Sturgeon Lake is a small belt that hosts diverse lithologies, including felsic and ultramafic units and silico-clastic rocks, and then concluded it is a fertile belt in both gold and base metals. Based on the proportion of lithologies, the Sturgeon Lake belt is similar to the La Grande central belt, the Frotet-Evans belt and Hemlo belt.

On the lithological perspective, neither ultramafic rock nor conglomerate (e.g. Timiskaming-type) are documented. On the other hand, occurrences of iron-formations and graphitic argilite, along with felsic tuff, although minor and discontinuous, are reported and coincide with the interpreted marker horizons. In addition, tholeiitic basalts are widespread in the lower and middle Handy Lake assemblage. Finally, the current study suggests that felsic to intermediate porphyritic granitoids are more common than in previous geological studies.

The question of the nature and timing of emplacement of the porphyritic intrusions in Fourbay and King's Bay areas is of main importance to attribute a gold potential to these intrusions. Except for the Côté Lake gold deposit whose timing of gold mineralization and alteration is pre-tectonic in a synvolcanic porphyritic intrusion (gold-porphyry system), all known intrusion related-gold deposits in the Abitibi and Wabigoon Subprovince are synto late-tectonic. At the Fourbay project and King's Bay area, the intrusions are believed to be early-tectonic. However, due to limited field geological information on the intrusions, the interpretation of early-tectonic timing of emplacement remains uncertain and would have to be confirmed by direct analysis. U/Pb dating on zircon or geochemistry on intrusions and host volcanic rocks would be required to validate this preliminary interpretation. The interpreted intrusions at the Fourbay project and King's Bay area have an elongated-shape and are smaller than 3 km<sup>2</sup>. However, these interpreted intrusions lack the positive magnetic footprint, either around (halo) or within the intrusion, characteristic of fertile syn- to late-tectonic intrusions (Fayol and Jebrak, 2016).

An alternative scenario to the intrusion-related gold system is that volcaniclastic products of high primary porosity (e.g. felsic tuff, graphitic sediment) represent favourable traps for mineralized fluids and may have controlled the distribution of gold. Subsequent deformation, associated with ENE-trending shear zones at King's Bay prospects and the Fourbay project, could have been responsible for the current distribution of the gold mineralization along the marker horizon that runs from west of McKinnon Lake to the Armstrong-Best deposit and further east. This theory is analogous to the Rainy River gold deposit model (cf. Pelletier, 2016) where lithological setting is relatively similar. Graphitic clastic strata border the mineralized zones hosted in abundant volcaniclastic horizons (felsic tuff), within tholeiitic mafic flows. Synvolcanic deformed and altered granitic dikes and QFP dacite intrusions are commonly found in the veinlet- to stockwork-style mineralized zones. However, these intrusions are not prospective.

## 7.2.3. Metamorphism

Regarding metamorphism, no specific work has ever been done on this thematic in the Fourbay and King's Bay area. However, the mineralogy documented by Kuryliw (1993, 1994) and Robinson and MacLean (1992) suggests that the Fourbay area would fit within a transition window from the greenschist facies to the upper greenschist facies and possibly to the lower amphibolite facies. The metamorphic isograds are likely to follow the main structures, such as documented in the Abitibi greenstone belt (Faure, 2015). The interpreted northern ENE-trending shear/fault zone (from McKinnon Lake to the Armstrong-Best deposit and further east) would have reached upper greenschist to lower amphibolite facies.

### 7.2.4. Alteration

At Fourbay and King's Bay areas, alteration consists generally in veins and veinlets of quartz and/or carbonate (calcite and ankerite), with very minor sericite and chlorite. These dominant alterations are consistent with quartz-carbonate vein style of mineralization, as documented by Dubé and Gosselin (2007). However, major potassic (sericite, biotite) and/or sodic (albite) alteration, along with moderate carbonate  $\pm$  quartz, characteristic of intrusion-related systems, have not been largely reported yet in the Fourbay and the King's Bay area.

Quartz-carbonate vein, veinlets and stockwork commonly carry gold in intrusion-related gold deposits, and disseminated gold-bearing pyrite is also a distinctive feature of these deposits. In the Fourbay area, veins and stringers are abundantly reported. In addition, several drill holes in past exploration programs intercepted disseminated low-grade gold mineralization over short lengths (e.g. 0.003 to 0.005 oz/ton Au over 1 meter), in particular at Armstrong-Best, Pointer Lake and Pistol Lake.

Figure 19 presents the compilation of hydrothermal evidences from field observations. Several zones show co-occurrences of quartz-carbonate and/or sulfide and/or minor sericite alteration. Zones of relatively more intense hydrothermal activities form clusters of quartz-carbonate and/or sulfide and/or sericite alteration. These zones are distributed along the two interpreted ENE-trending lithostructural corridors and also along the interpreted NW-trending crosscutting faults. Blank zones between anomalous zones along the ENE-trending corridors mainly reflect the absence of outcrop. The hydrothermal footprint is likely to occur along these two interpreted corridors, near intersections with NW-trending faults and proximal to QFP intrusions. These clusters of hydrothermal alteration are indicative of an active hydrothermal plumbing system along the fault zones, highlighting their gold favourability.





**Figure 19**: Alteration map at the Fourbay project. Red dashed line indicates footprint of hydrothermal cell. The study area is shown in blue dashed outline. Planet image in the background.

### 7.2.5. Geochemical signature

#### Regional Bottom Lake sediment

The footprints of mineral deposit in the secondary environment are wider and more diffuse than the deposits themselves and are therefore easier to detect. Bottom lake sediments are composed of distinct materials, coming from different sources and carried by streams, wind or bank erosion. Work by Rafini (2012) showed that, although less efficient than till and soil to track gold mineralization, bottom lake sediment still provide relevant indications for gold exploration. Gold is inaccurate to trace gold mineralization but arsenic and antimony are the best pathfinders for gold in bottom lake sediments.

A bottom lake sediment survey was conducted in 2002 over the Sturgeon Lake-Lake Saint Joseph area (Russell and Jackson, 2002). Fifty-five elements and the Loss on ignition where analyzed using ICP-MS, ICP-OES and INAA laboratory analysis. Among the 4400 bottom lake sediment data of the survey, background values for arsenic and antimony were interpreted at respectively 2.5 ppm and 0.08 ppm based on the median values. Using these background values, classes of anomalies were modeled and consist of multiple of the background As and Sb values (e.g. 2 times, 5 times the background value). The assessment was conducted over regional data within a 15 km buffer around the Fourbay perimeter, which represents a total of 327 scattered sites. Attention was paid to occurrences of clusters of anomalies (in both elements) and high magnitude.

Four anomalous zones for gold were identified within and around the Fourbay perimeter (Figure 20). However, it should be noted that the small number of data and their heterogeneous distribution within the Fourbay perimeter somehow limit the interpretation. A strong As-Sb zone occurs from King's Bay to Pistol Lake and further south zone. This anomalous zone is believed to be the expression of gold mineralization systems at Armstrong-Best and at Pistol Lake. Another strong Sb-As zone, NW-trending, occurs 2 km west of Jumping Lake. The source of this anomaly might be associated with the Cu-Zn massive sulfide 400 m away to the west (Thunder Grid SE and NW occurrences) which may host some gold. Northwest of Six Mile Lake, there is a cluster of Sb-As anomalies that coincides with no known gold occurrence. However, this zone occurs along the interpreted ENE-trending shear/fault zone and marker horizon which may contain similar volcaniclastic units as the one further north (e.g. felsic tuff, graphitic argillite). Extending this zone further west, still along the interpreted ENE-trending shear zone and marker horizon, another cluster of As-Sb anomalies is found. The Pointer Lake is anomalous, but it is an isolated Sb-As anomaly which does not define a continuous zone. Surprisingly, the McKinnon lake and the associated ENE-trending corridor extending to Armstrong-Best is weakly anomalous. However, the number of bottom lake sediment data is very limited in this zone.





**Figure 20**: As and Sb bottom lake sediment data, reprocessed from Russell and Jackson (2002). Red dashed line indicates footprint of gold anomalous zones. The study area is shown in blue dashed outline. Planet image in the background.

#### The McKinnon Lake area geochemistry

#### Grab sample geochemistry

Intense prospecting on and around the McKinnon vein, from Aur Lake Exploration since 2008, generated numerous gold assays from grab samples. Results indicate the gold values tend to increase to the south when approaching the interpreted shear zone from the north side, up to 42.7 g/t Au (Aur Lake internal report). No significant gold value were recovered on the south side of the interpreted shear zone. Elsewhere on the project, a few



sporadic grab samples returned limited anomalous gold values, except for two samples consisting of smoky-grey quartz veins associated with semi-massive pyrite mineralization, west of Pistol Lake, which returned 11.3 and 18.1 g/t Au (Sparrow and Copeland, 2012).

### Sediment geochemistry

Since the beginning of exploration in the Fourbay area, there were no systematic and narrow-spaced sediments geochemistry surveys all over the area. However, several soil geochemical surveys were conducted on and around the McKinnon vein area. SGH soil geochemical surveys (Sutherland and Hoffman, 2010), conducted in 2009 and 2010, successfully identified one large and two small anomalous gold areas, located a few hundred of meters northwest of the McKinnon vein. In the center of this zone, the survey also revealed the existence of probable massive sulfide (VMS-type) mineralization. This illustrates the possible presence of gold mineralization that surrounds the possible massive sulfide mineralization. A MMI soil geochemical survey (Fedikow, 2009) also revealed the existence of a possible VMS-type mineralization zone in the area. The principal gold and sulfide anomalous zone, northwest of the McKinnon vein, is spatially consistent with the high chargeability zones, and a high resistivity zone (intense silicification?), identified by the Induced Polarization ground survey in 2010 (Mihelcic, 2010; Reed, 2010). The area also coincides with the presence of an interpreted important hydrothermal cell (cf. Figure 20), which highlights a strong gold favourability.

## 7.3. Gold targeting within Aur Lake Exploration's claims

A predictive modelling was achieved in order to flag specific areas that are believed to host gold mineralization, and where further exploration would be required. The modelling took into account relevant exploration criteria, including the faulting patterns, the lithological markers, the QFP intrusions, the alteration, the geochemical signatures and the gold occurrences, which were derived from the geological interpretation of both continuous data (satellite, geophysics, topography) and heterogeneous data (outcrops, drill core, grab samples, sediment samples). Then, weighting factors were applied on each criteria, in accordance to their relative contribution to the metallogenical model.

The resulting gold target map is shown on Figure 21. Within Aur Lake Exploration's claims, thirty targets were interpreted, including two targets of high priority, eleven targets of moderate priority and seventeen targets of low priority. Top ranked targets occur on and around the McKinnon Lake area. One high priority target includes the vein itself and a proximal zone around. Another high priority target, surrounded by larger secondary priority targets, occurs about 700 meters to the northwest of the McKinnon vein. Elsewhere within Aur Lake Exploration's claims, targets are mainly distributed along the two ENE-trending lithostructural corridors.



The interpreted targets are listed in Appendix II, which includes their priority, coordinates, area and comments. Their surface represents 8.5% of the covered area and do not indicate specifically low-grade or high-grade environment. Due to the heterogeneous distribution of some criteria used in the modelling, high priority targets may have been overweighted by such data distribution. A second validation was then achieved using only homogeneous criteria (e.g. structural interpretation, QFP interpretation, marker horizon). Results indicate that 75% of the high and moderate priority targets are still recognized, thus suggesting that proposed targets are reliable despite the heterogeneity of some input criteria.



**Figure 21**: Gold Target Map. The Aur Lake Exploration's claims in white outline. Planet image in the background.

# 8. CONCLUSIONS

Effigis was mandated by Aur Lake Exploration to conduct a gold assessment and targeting over the Fourbay project. To achieve the mandate, a geological interpretation was first performed, followed by the modelling of the all relevant exploration parameters to generate gold targets.

The results of the geological interpretation indicate that the lithostructural setting occurring at the King's Bay area (Armstrong-Best prospects), including the shear/fault zone-associated volcaniclastic strata marker horizon pointing out the contact between the lower and the middle Handy Lake assemblage, and the occurrence of QFP dike-type intrusions, is extending toward the WSW throughout the Fourbay property, up to west of McKinnon Lake. In addition, a similar ENE-trending corridor, parallel to the former one, is interpreted from northwest of Six Mile Lake to the Pistol Lake area and further east. It is likely to mark the boundary between the middle and the upper Handy Lake volcanic assemblage. These two interpreted trends seem to control the distribution of QFP intrusions within the Fourbay and King's Bay areas. The interpreted, and based on their aeromagnetic signature, they were interpreted as early-tectonic intrusion. However, further studies would be required to determine the exact timing of emplacement of these intrusions.

On a structural perspective, the two ENE trends are sub-vertical and sinistral ductile-brittle shear/fault zones. They form distinct lithostructural corridors that run throughout the Fourbay property and reach the prospective North and South King's Bay zones. In addition, the interpretation suggests that dextral NW-trending brittle faults, crosscutting the ENE-trending shear/fault zones, may be originally synvolcanic faults which were reactivated during late- to post-tectonic events, and may have controlled the distribution of massive sulfide (that may host gold?). Their late footprint suggests that they likely have displaced QFP intrusions already in place and may locally have remobilized gold mineralization.

Overall, the two interpreted ENE-trending lithostructural corridors are considered prospective for gold. Several features suggest positive gold potential in the Fourbay project. It includes, 1) the presence of shear zones, subsidiary to the main Sturgeon Narrow shear zone further east, in particular the one running through the northern part of King's Bay, 2) the extension of two prospective ENE-trending corridors that are known to host abundant vein and stringer-style gold and gold-copper mineralization further east, 3) the probable presence of a transitional metamorphic window from greenschist facies to upper greenschist and may be to lower amphibolite facies, 4) the occurrence of two volcaniclastic marker horizons, consisting in various proportion of felsic tuff, sulfidic ironformation and graphitic argillite along the shear zones, 5) the occurrence of QFP dike-type intrusion in association with the marker horizons, although they are not believed to be Malartic-type dikes, 6) the occurrence of clusters of quartz-carbonate  $\pm$  sericite alteration

zones, mainly distributed along the main fault zones in association with the marker horizons, 7) the occurrence of probable synvolcanic faults within the prospective ENE-trending corridors, 8) the occurrence of anomalous As-Sb geochemical zones, pathfinders for gold mineralization, mainly located along or near the interpreted fault zones, and 9) the occurrence of several, although discontinuous, gold hints, both high-grade and low-grade, along the interpreted fault zones, marker horizons, QFP intrusions, hydrothermal alteration zones and geochemical anomalous zones.

The results of the gold targeting show that the potential for important gold ore bodies exists and the Fourbay project still deserves exploration activities. The high-grade auriferous grey-blue quartz veins and stringers occurring at King's Bay prospects, along with the lowgrade gold mineralization recognized at the Armstrong-Best deposit, the Pointer Lake prospect and the Pistol Lake zone, are likely to be found at the Fourbay project. The northern ENE-trending corridor, which hosts several prospects, could potentially define a vast area of minable low-grade gold mineralization. However, abundant and continuous stringer and/or disseminated gold mineralization over long widths, along with potassic and/or sodic alteration, have yet to be found to confirm the potential for this type of gold deposit. Comparing the geological features of the Fourbay area with various gold deposit models (e.g. VMS-gold, Orogenic Gold, Intrusion-related Gold) and existing major deposits in the Abitibi and Wabigoon greenstone belts in Canada (e.g. Rainy River, Côté Lake, Hammond Reef, Canadian Malartic), it is proposed that the style of mineralization is more likely a hybrid synvolcanic gold plus base metals model (e.g. Rainy River or Côté Lake deposits).

A total of thirty targets were flagged within Aur Lake Exploration's claims. It includes two targets of high priority, eleven targets of moderate priority and seventeen targets of low priority. Top ranked targets occur on and around the McKinnon Lake area. In addition, several second and third order targets were identified, they are mainly distributed along the two interpreted ENE-trending lithostructural corridors near QFP intrusion and NW-trending fault intersection. The targeting process enabled to reduce significantly the area of investigation. The surface of all the interpreted targets covers only 8.5% (i.e. 1.34 km<sup>2</sup>) of the original study area.



## 9. RECOMMENDATIONS

Following the recognition of several high and secondary priority targets along the trend which extends from west of McKinnon Lake to east of the Armstrong-Best deposit, the following actions are recommended:

- Pursue prospecting activities on and around the McKinnon vein, in particular northwest of the vein where low-grade gold mineralization may occur:
  - Stripping and trenching over the best targets;
  - Using a Beep Mat to target shallow sulfidic zones;
  - Eventually shallow drilling;
  - Outcrop or core sample investigation: structure (geometry of shear zones and veins, timing relationships between the ENE-trending and NW-trending faults and their kinematics), lithology, alteration;
  - Lithogeochemistry on intrusion and volcanic host rock: ICP-MS whole rock and trace.
- Conduct a high resolution heliborne magnetic survey over the property with higher density coverage along the trend which extends from west of McKinnon Lake to east of the Armstrong-Best deposit:
  - o 50 to 100-meters line spacing over the whole property;
  - o 25 to 50-meters line spacing along the ENE structural trend;
  - Method : Magnetometry.
- Conduct a soil geochemical survey over anomalous geophysical zones within the interpreted E-ENE-trending prospective lithostructural corridor :
  - Sampling: C horizon (B horizon alternatively);
  - Method : Aqua Regia ICP.

Following the recognition of several secondary priority targets along the trend which extends from northwest of Six Mile Lake to the Pistol Lake area, the following actions are recommended:

• Conduct a field prospecting survey northwest of the Six Mile Lake to validate the anomalous zones.

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## **APPENDIX I**

# Summary of Historical Work over the Fourbay Property (extracted from Newton and Newton 2016)

Year	Company	Areas Covered	Activity	MNDM Assessment File ID
1970	Mattagami Lake Mines	Jumping Lake, Central Fourbay	Magnetic, resistivity surveys	52J02SW0067
1970	Matta King Mining Corp	NW of Jessie Lake	Two DDH (W-1, W-2); within 200m of property edge	52J02SW9156, 52J01SW0109
1970-72	Granges Exploration / Spooner Mines and Oils	Central Fourbay	Airborne magnetics, resistivity, DDH program (two within property: SPO-17 & 18)	52J02SW8696, 52J02SW7420, 52J02SW7427
1971	Dome Exploration	Central Fourbay, North of Six Mile Lake	Airborne and ground magnetometry	52J02SW0079, 52J02SW0092
1971	Larchmont Mines Ltd	McKinnon Lake, Jessie Lake	Airborne magnetics, resistivity	52J02SW0060, 52J02SW0069
1973	Northex Management	North of Six Mile Lake	VLF Survey	52J02SW0302
1983	Nadex Ore Search	Jessie Lake	Airborne magnetics, resistivity, VLF	52J02SW7426, 52J02SW0066
1983	Dejour Mines, Loydex Mining	Jumping, McKinnon Lake	Magnetometry and VLF surveys, geological and geophysical compilation	52J02SW8635, 52J02SW0042, 52J02SW0049
1983	Steeprock Mines	McKinnon Lake	VLF, magnetometry (part of larger King Bay property)	52J02SW0048
1984	Chester Kuryliw	Central Fourbay	Geologic mapping, magnetics, resistivity surveys (part of larger Pistol Lake property)	52J02SW0031, 52J02SW0043
1984	James Campbell	Central Fourbay	VLF Survey	52J02SW0032
1984	Sault Meadows Energy	Jessie Lake	Airborne magnetics, resistivity	52J02SW8695
1984	Steeprock / Hudex	Jumping, McKinnon Lake	Limited geologic compilation (part of larger King Bay property)	52J02SW0016, 52J02SW0051
1989	007 Precious Metals	East of McKinnon Lake	Airborne magnetics, resistivity, VLF	52J02SE0001
1990	W C Read	Jessie Lake	Sampling	52J02SW0001
1992	Bill Hollingsworth	Central Fourbay	Possible limited trenching in property area (poorly documented)	52J07NE0004
1992-1994	Chester Kuryliw	Central Fourbay Pistol Lake NW Jumping Lake	Geological mapping, VLF surveys, drill hole	52J02SW8758, 52J02SW9200, 52J02SW9201, 52J02SW0002
2008-10	Unitronix, Aur Lake Exploration	Jessie, Jumping Lake	Grid cutting, MMI, SGH, IP, magnetics, sampling, limited geologic mapping, structural study (by Effigis Geo Solutions), interpretation work, due diligence review	20008648, 20007402, 20008941, 20008473, 20008474, 20006552, 20000007073
2011	Paragon Minerals	Jumping Lake	Reconnaissance mapping and sampling on property boundary	20009386
2013-14	Aur Lake Exploration	Jessie, Jumping Lake	Mapping and sampling	unknown
2016	Tasca Resources	Fourbay (McKinnon Lake)	Prospecting	unknown



## **APPENDIX II**

## List of Gold Targets within Aur Lake Exploration's claims at Fourbay

ID	Priority	X UTM Zone 15 N	Y UTM Zone 15 N	Area (m2)	Comment
1	Priority 1	651876	5542883	14147	McKinnon vein area
2	Priority 1	651201	5543266	10139	Northwest of the McKinnon vein
3	Priority 2	649778	5543601	40629	Jessie Lake area
4	Priority 2	651971	5542889	8909	McKinnon vein area
5	Priority 2	652545	5543233	5293	Northeast of McKinnon Lake - within the E-ENE-trending prospective corridor
6	Priority 2	652453	5541682	12011	Northwest of Six Mile Lake - within the E-ENE-trending prospective corridor
7	Priority 2	651286	5541443	22064	Northwest of Six Mile Lake - within the E-ENE-trending prospective corridor
8	Priority 2	649834	5541319	28921	Northwest of Six Mile Lake - within the E-ENE-trending prospective corridor
9	Priority 2	651607	5543384	4101	Northwest of the McKinnon vein
10	Priority 2	650983	5543394	7827	Northwest of the McKinnon vein
11	Priority 2	651124	5543279	8447	Northwest of the McKinnon vein
12	Priority 2	650974	5543154	36161	Northwest of the McKinnon vein
13	Priority 2	650959	5542724	520	Southwest of the McKinnon vein
14	Priority 3	649641	5543621	6208	Jessie Lake area
15	Priority 3	651821	5542927	1581	McKinnon vein area
16	Priority 3	651995	5542849	16769	McKinnon vein area
17	Priority 3	651752	5543063	11792	McKinnon vein area
18	Priority 3	651836	5542945	1581	McKinnon vein area
19	Priority 3	653928	5543674	73132	Northeast of McKinnon Lake - within the E-ENE-trending prospective corridor
20	Priority 3	653302	5543698	31666	Northeast of McKinnon Lake - within the E-ENE-trending prospective corridor
21	Priority 3	653031	5543423	44766	Northeast of McKinnon Lake - within the E-ENE-trending prospective corridor
22	Priority 3	652680	5543172	52411	Northeast of McKinnon Lake - within the E-ENE-trending prospective corridor
23	Priority 3	652314	5543072	15057	Northeast of McKinnon Lake - within the E-ENE-trending prospective corridor
24	Priority 3	652768	5541651	87484	Northwest of Six Mile Lake - within the E-ENE-trending prospective corridor
25	Priority 3	650911	5541411	30119	Northwest of Six Mile Lake - within the E-ENE-trending prospective corridor
26	Priority 3	650254	5541335	43315	Northwest of Six Mile Lake - within the E-ENE-trending prospective corridor
27	Priority 3	651598	5543426	3735	Northwest of the McKinnon vein
28	Priority 3	651345	5543263	73249	Northwest of the McKinnon vein
29	Priority 3	654188	5541960	10952	Southwest of Pistol Lake - within the E-ENE-trending prospective corridor
30	Priority 3	650998	5542649	54076	Southwest of the McKinnon vein