Ontario

Ontario Geological Survey
Open File Report 6326

Report of Activities, 2016
Resident Geologist Program

Thunder Bay South Regional Resident Geologist Report: Thunder Bay South District

2017

Number	Area, Property or Occurrence	Commodity
49	Wedge occurrence	Gold
50	Goldie property, Trench 7 occurrence	Gold
51	Highway 61 mafic intrusions field trip	
52	Thunder Bay North property	Nickel, copper PGE
53	Larose property, Northwest View occurrence	Gold, silver, zinc, lead
54	Buck Lake property	Copper, nickel, PGE
55	Coldwell Complex field trip	
56	Marathon PGM property	Copper, PGE
57	Hemlo – Heron Bay area field trip	
58	Copper Bar occurrence	Copper, nickel
59	Stuart Location occurrence	Copper, nickel, PGE

PROPERTY EXAMINATIONS

Larose Property

The Larose property was visited by Resident Geologist Program personnel on 4 occasions during the 2016 field season. The property consists of 24 claims consisting of 299 units (*see* Figure 14) and is currently being explored for gold by Tashota Resources Inc.

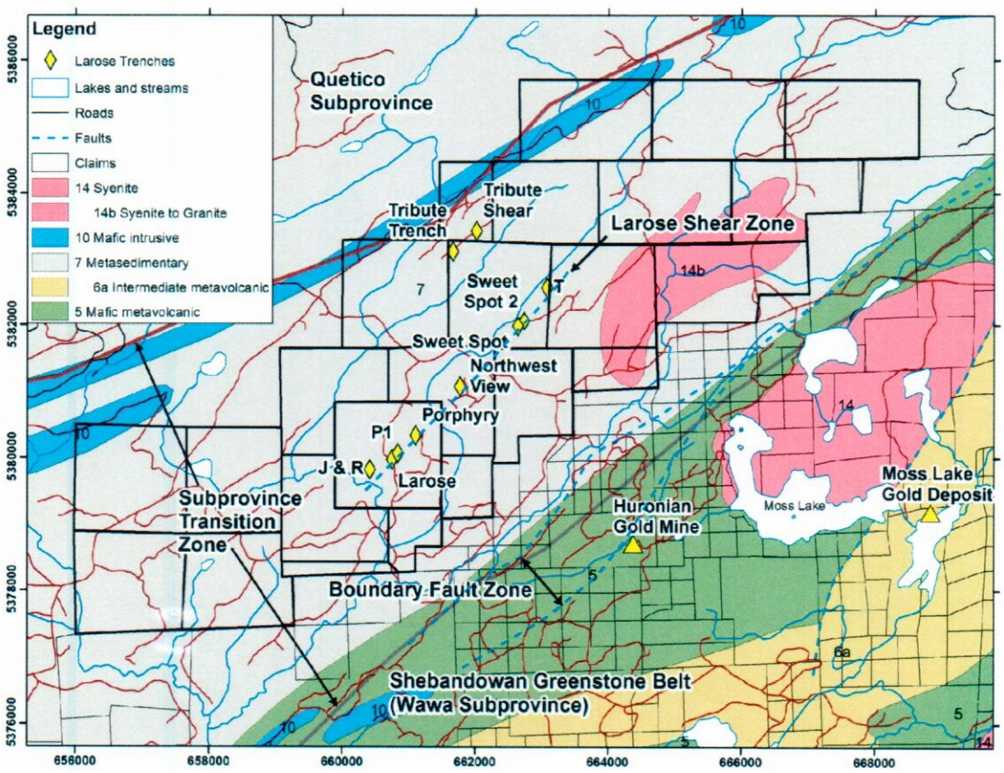

Figure 14. Geological map of the Larose gold property area (geology *from* Ontario Geological Survey 2011). The property claims are highlighted along with the locations of gold showings (yellow diamonds) that were visited during 2016. This map also indicates the locations of significant fault and shear structures, tectonic boundaries and nearby, known gold deposits (yellow triangles). Map grid is provided in UTM NAD83, Zone 15 co-ordinates.

LOCATION AND ACCESS

The Larose property is located in Moss Township, approximately 120 km west of Thunder Bay. The property is accessed by travelling along Highway 11 for 15.6 km west of Kashabowie to Swamp Road. The northern property boundary is reached after travelling approximately 10 km southwest along Swamp Road. Most of the showings on the property are accessible using a four-wheel-drive vehicle via the extensive network of logging roads and trails that crosscut the property (*see* Figure 14).

EXPLORATION HISTORY AND GOVERNMENT SURVEYS

Portions of the existing Larose property have been explored sporadically since 1965, with the bulk of this work having been carried out since the discovery of the Larose gold occurrence in 2003. A summary of historic exploration activities that are documented in the Thunder Bay South District Assessment Files is provided below.

1965: Airborne magnetic and electromagnetic survey by Consolidated Mining & Smelting Co. Ltd.

1968: Diamond drilling (2 holes for 285 feet) by Canadian Nickel Co. Limited

1988: Airborne magnetic and electromagnetic survey by Jet Mining Exploration Inc.

1991: Airborne magnetic and electromagnetic survey by Noranda Exploration Company Limited

1999: Till sampling and trenching By Noranda Exploration Company Limited.

2003: Prospecting by R. Kwiatkowski.

2003-05: Prospecting, trenching, geophysical, geological and geochemical surveys, diamond drilling (30 holes for 2742 m) by Freewest Resources Canada Inc.

2011-12: Prospecting, ground magnetic survey and a study of structural geology by Golden Share Mining Corporation and Viking Gold Exploration Inc.

2016: Airborne geophysical survey, trenching and diamond drilling by Tashota Resources Inc.

A number of government geological, geochemical and geophysical surveys have been carried out over the area since the 1920s, with published reports and maps listed below in Table 16.

Table 16. A summary of government-led geoscience surveys for the Larose property area.

Year	Author	Agency/Publication	Reference
1928	R.J. Watson	Ontario Department of Mines Huronian gold mine, Moss Township, District of Thunder Bay	Annual Report, v.37, pt.4, p.109-127
1938	T.L. Tanton	Geological Survey of Canada Quetico sheet (east half), Thunder Bay and Rainy River districts	Map 432A
1970	F.R. Harris	Ontario Department of Mines and Northern Affairs Geology of the Moss Lake area	GR 85 Maps 2203, 2204
1987	L. Chorlton	Ontario Geological Survey Geological setting of gold mineralization in the western part of the Shebandowan greenstone belt, District of Thunder Bay, northwestern Ontario	OFR 5636
1990	P.W.B. Friske, E.H.W. Hornbrook, J.J. Lynch, M.W. McCurdy, H. Gross, A.C., Galetta and C.C. Durham	Geological Survey of Canada Regional lake sediment and water geochemical reconnaissance data, northwestern Ontario	Open File 2180

Year	Author	Agency/Publication	Reference
1997	I.A. Osmani	Ontario Geological Survey Geology and mineral potential Greenwater Lake area, west-central Shebandowan greenstone belt	GR 296 Maps 2622, 2623, 2624, 2625, 2626
2001	A.J. Bajc and D.C. Crabtree	Ontario Geological Survey Results of regional till sampling for kimberlite and base metal indicator minerals, Shebandowan greenstone belt, northwestern Ontario	OFR 6046
2001	J.E. Jackson	Ontario Geological Survey Shebandowan area high-density regional lake sediment and water geochemical survey, northwestern Ontario	OFR 6057
2003	Ontario Geological Survey	Ontario Geological Survey Ontario airborne geophysical surveys, magnetic data, Shebandowan area	GDS 1021—Revised

GEOLOGY

Regional Geology

The Larose property is located in the boundary zone between the metavolcanic rock-dominated Shebandowan greenstone belt of the Wawa Subprovince, and the metasedimentary rock-dominated Quetico Subprovince. The Shebandowan greenstone belt and the Quetico Subprovince are both Neoarchean in age, and the subprovince boundary zone is marked by isoclinal folding, numerous stratigraphic facing reversals, and a series of shears and lineaments (Williams et al. 1991; Osmani 1997).

The Larose property area is largely underlain by "Quetico-type" metasedimentary rocks that are dominated by massive and thinly bedded wacke, with minor thinly bedded to finely laminated siltstone and mudstone. Many narrow remnants of metavolcanic rocks are interleaved with these metasedimentary rocks, suggesting the probable presence of a series of thrust faults along the subprovince boundary zone (Osmani 1997). The supracrustal rocks of this area are intruded by numerous small (i.e., widths ranging from a few centimetres to several metres) dike-like intrusions. These intrusions have a wide range of compositions, and include quartz-feldspar and feldspar porphyry, monzonite, diorite, lamprophyre and diabase (MacLean 2005a). A much larger intrusion, known as the Obadinaw stock (*see* Figure 14, unit 14b), occurs in the northeastern portion of the Larose property. This intrusion forms a prominent aeromagnetic "high", and ranges in composition from feldspar-porphyritic syenite to hornblende-porphyritic mafic syenite (Osmani 1997).

Just to the southeast of the Larose property, Osmani (1997) identified a broad deformation zone known as the Boundary Fault Zone (BFZ). It is a major deformation zone that is several hundred metres wide, consists of several northeast-trending (030° to 050°) shear zones, and approximately coincides with the Wawa–Quetico subprovince boundary. Rocks within the BFZ are at least moderately schistose and display variable alteration, including chloritization, silicification and sulphidization. Some of the discrete faults and shear splays that occur within the BFZ corridor host gold mineralization. These gold occurrences include the past-producing Huronian Mine (also known as Ardeen and Kerry) and the McKellar, Minoletti and Beaver showings. Numerous, approximately parallel, shear zones occur in the metasedimentary rock-dominated assemblage to the northwest of the BFZ. The most notable of these is the Larose Shear Zone, which hosts numerous high-grade occurrences and has been the focal point for exploration on the Larose property since 2003 (Resident Geologist's Files, Thunder Bay South District, Thunder Bay).

Property Geology

The Larose property is largely underlain by a sequence of clastic metasedimentary rocks that include sandstone, wacke, siltstone and mudstone. Sandstone is the dominant rock type and is fine- to coarse-grained and medium- to dark-grey in colour. Beds are of variable thickness and often display graded bedding, providing "tops" indicators. Although mudstone is a minor component of the sedimentary sequence, a narrow graphitic mudstone unit is an important marker horizon that has a close spatial association with many of the gold-mineralized zones on the property (MacLean 2005a).

One significant band of mafic to intermediate metavolcanic rocks occurs near the northwestern property boundary. This unit is up to 200 m thick and has been strongly amphibolitized. Metamorphism has resulted in a medium- to coarse-grained texture, making this horizon easily mistaken for an intrusive rock. However, pillowed volcanic flows have been identified in at least 2 locations in this unit (MacLean 2005a). A number of narrower, coarse-grained mafic horizons that have been provisionally identified as gabbro and diorite may alternatively represent "slivers" of mafic metavolcanic rocks.

The metasedimentary rocks on the Larose property are intruded by numerous dike-like quartz-, quartz-feldspar- and feldspar-phyric intrusions. These porphyritic intrusions range in width from a few centimetres to at least 10 m and are generally parallel to the stratigraphy, although the intrusive contacts sometimes crosscut bedding and foliation at a low angle (e.g., at the Porphyry trench). The feldspar porphyry intrusions are typically not altered nor mineralized and are younger than the quartz- and quartz-feldspar porphyry intrusions (MacLean 2005a). The quartz- and quartz-feldspar porphyry intrusions commonly display strong deformation and appear to play a role in the localization of gold mineralization.

Lamprophyre dikes, up to one metre in width, occur in proximity to a number of the gold occurrences on the property, most notably at the Sweet Spot and Northwest View trenches.

Exposures of the Obadinaw stock mapped near the northeastern corner of the property reveal medium- to coarse-grained syenite, syenite pegmatite, and a mafic to ultramafic phase containing 90% biotite + hornblende with 10% feldspar. Peripheral syenite dikes also occur near the margins of the stock (Maclean 2005a).

Structure and Mineralization

The metasedimentary rocks on the Larose property have been isoclinally folded into a nearly vertically dipping sequence that strikes northeast. Foliation is generally parallel to the bedding, and younging indicators (e.g., graded bedding) indicate numerous fold closures (MacLean 2005a). A prominent, northeast-striking deformation zone, known as the Larose shear zone, has been traced on the property over a strike length of 4.5 km (*see* Figure 14). This shear zone is characterized by numerous discrete shears. Many of these structures display strong alteration and often host gold mineralization (Bowdidge 2016). The sense of motion along the shear zone has previously been interpreted as having been primarily sinistral (MacLean 2005a; Ravenelle and Siddorn 2012). The relative orientation of porphyry intrusions (rotated counter-clockwise) relative to foliation supports this interpretation for the early portions of shear zone development. However, observations made in the field by the authors (e.g., quartz-filled tension fractures at the Sweet Spot trench) indicate that there was also a late phase of dextral motion along the Larose shear zone. This is consistent with observations made by Chorlton (1987) nearby, along the Boundary fault zone on the Huronian Mine property, that suggest a complex deformation history, including some late-phase dextral displacement.

Most of the gold occurrences that have been found to date on the Larose property occur within the Larose shear zone. Ravenelle and Siddorn (2012) indicated that the "gold mineralization is associated with quartz veins, stockworks, and disseminated sulphide zones hosted within strongly foliated metagreywacke. Hydrothermal alteration is spatially associated with this shear zone and typically consists of sericite, quartz, carbonate, and sulphides including pyrrhotite, pyrite, sphalerite, arsenopyrite, and

galena." Gold mineralization is also hosted by quartz- and quartz-feldspar porphyry intrusions, with the highest grades showing a correlation with pyrrhotite content (MacLean 2005a). These pyrrhotite-rich portions of the intrusions form localized magnetic "highs" and can show up as anomalies in geophysical surveys (e.g., near Sweet Spot trenches). Some of the best historic diamond-drill intersections on the property (e.g., 4.48 g/t Au over 1.93 m in DDH L04-22 and 4.88 g/t Au over 1.5 m in DDH L04-24) have been obtained from porphyry-hosted mineralization near the Sweet Spot trenches (MacLean 2005b).

Field Observations

Resident Geologist Program (RGP) staff visited several gold mineralized zones on the Larose property during the 2016 field season. Descriptions of these occurrences are provided below, and available assay results are provided in Table 17.

The J & R, P1 and Porphyry trenches were previously described as follows by Schnieders et al. (2004).

> At the J&R zone, located approximately 350 m to the southwest [of the Larose occurrence] (UTM Zone 15, 660411E, 5379604N), a large stripped area exposed up to 8 separate shear zones, across a 94 m width. Individual shear zones strike 60° and vary from 15 cm to 4 m in width. Several lamprophyre dikes and an aplite dike were noted. The metasedimentary rocks display evidence of transposition and fault offsets. Extensional quartz veins, oriented obliquely to the shear zone foliation, are also present. A narrow, base metal-rich, shear zone or vein is also present. A grab sample collected by the authors returned 2.5 g/t gold (ibid.).
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> The "P" zone is located approximately 100 m northeast of the Larose occurrence (UTM Zone 15, 660849E, 5379846N) and is made up of multiple, parallel, shear zones in gossanous metasedimentary rocks. One of the shear zones is a base metal-rich shear zone up to 1.5 m wide, likely the extension of the shear zone at the Larose occurrence. Pyrite, galena, sphalerite, arsenopyrite, visible gold and minor chalcopyrite were observed. Selected grab samples of the base metal-rich zone returned up to 228.5 g/t gold, 1.87% lead and 1.19% zinc. A second selected grab sample of the base metal-rich shear zone returned 170.1 g/t gold, 3.12% lead and 3.00% zinc (ibid.). Shear-related, laminated or banded sulphides were noted at several locations, likely structural in nature. Freewest Resources reported up to 371.94 g/t gold (10.85 ounces per ton gold) from the P2 or Main zone (Freewest Resources Company Inc., press release, August 20, 2003). At the Central P zone (P#2 zone) (UTM Zone 15, 660865E, 5379866N), a discrete shear zone in altered metasedimentary rocks displays recrystallized quartz stringers and small pinheads of visible gold. A grab sample collected by the authors assayed 149.6 g/t gold (Resident Geologist's Files, Thunder Bay South District, Thunder Bay).
>
> The Porphyry zone (UTM Zone 15, 661131E, 5380130N) consists of a synvolcanic, likely intrusive quartz-feldspar porphyry, which occurs as boudinaged lenses hosted by wackes and siltstones. Quartz veins or lenses up to 0.6 m wide occur near the contact of the porphyry within the metasedimentary rocks. A chip sample across 1 m of less-altered porphyry, with quartz and feldspar phenocrysts, and containing minor, fine pyrite, returned 208 ppb Au. A grab sample of the quartz vein collected by the authors, returned 4.08 g/t gold (ibid.).

J & R ZONE

Observations made at the J & R Zone trench during 2016 were consistent with those from the 2003 RGP site visit (Schnieders et al. 2004). In addition, it was observed that there are 2 structural fabrics at this location. The first fabric strikes 225° to 230°, dips 82° toward the northwest and approximately parallel to bedding, while the second fabric, which includes the mineralized shear zones described above, strikes 055° to 060° and dips 80° toward the southeast. The late, extensional quartz veins strike 310° to 315° and dip 75° toward the northeast. Some of these veins display sigmoidal geometry consistent with late dextral shearing.

No significant gold values were obtained from the grab samples that were collected by RGP on October 3, 2016, from the J & R Zone stripped area (*see* Table 17; Resident Geologist's Files, Thunder Bay South District, Thunder Bay).

P ZONE

Additional outcrop stripping was carried out at the P Zone (P1 trench) by Tashota Resources during 2016 in order to better expose the portion of the showing that is described above as the P2/Main Zone by Schnieders et al. (2004). This work showed that the mineralized shear zone is approximately 2 m wide, is parallel to the stratigraphy and primary foliation, and strikes 030° (*see* Figure 15). The high-grade gold mineralization occurs in 2 narrow zones of silicification and quartz veining, striking 240°, that are oblique to the trend of the shear zone and dip approximately 70° to the northwest. These mineralized zones are approximately parallel to a cleavage that is visible throughout the stripped outcrop area. Mineralization consists of disseminations and seams (approximately 5%) of sphalerite, pyrite, arsenopyrite and galena. Possible visible gold or electrum was also noted in one sample. Grab samples collected by Tashota Resources from the mineralized zone located at UTM Zone 15, 660831E, 5380088N (newly exposed during 2016 trenching), returned assays of up to 77 g/t Au (R. Kwiatkowski, personal communication, November 2016).

Eight out of 9 grab samples collected by RGP staff from the P Zone trenched area on October 3 and November 16, 2016, returned higher than 1 ounce Au per ton (*see* Table 17), with a maximum value of 5.058 ounces Au per ton. All of these samples were collected from the silicified zones described above.

Five diamond-drill holes were advanced by Tashota at the P Zone during the summer of 2016 in order to evaluate mineralization at depth and down-plunge (i.e., fold hinges and lineations typically display shallow plunges toward the southwest) from the P2/Main Zone. Holes drilled directly below the surface expression of the P2/Main Zone were successful, with the best result being obtained from DDH LR16-01, which returned 5.65 g/t Au over 3.0 m between 42 and 45 m down-hole. Holes drilled immediately to the southwest of the surface showing were unable to intersect any significant down-plunge mineralization (Tashota Resources Inc., *news release*, September 30, 2016).

Figure 15. View of the P1 trench, looking southeast. The dip in the bedrock near the centre of the photograph is occupied by the main gold-mineralized shear zone at the P Zone.

PORPHYRY ZONE

This trench exposes an approximately 12 m wide porphyry intrusion. The western contact with the host metasedimentary rocks strikes 020°, crosscutting the 035°-striking bedding and foliation planes. An offshoot from this intrusion that is approximately 1.5 m wide is exposed in the central portion of the trench. This intrusion is the same one that is described above by Schnieders et al. (2004), and it is immediately adjacent to a gold-bearing quartz vein. This vein (*see* Figure 16) is boudinaged, strikes 030° with a near-vertical dip, and eventually pinches out near the northern end of the trench. Once again, 2 foliations are evident in the rocks at this location. These fabrics generally strike 035° and 050°.

Three grab samples were collected for assay from the Porphyry Zone on October 3, 2016. The best result was 0.016 ounce Au per ton from a sample of silicified and iron carbonate-altered felsic intrusive containing minor sphalerite (*see* Table 17; Resident Geologist's Files, Thunder Bay South District, Thunder Bay).

Figure 16. Gold-bearing quartz vein at Porphyry trench. Hammer (50 cm long) for scale.

NORTHWEST VIEW ZONE

The Northwest View trench exposes metasedimentary rocks that are crosscut by a narrow gold-mineralized shear. The bedding and primary foliation are approximately parallel and are oriented at 225° with a dip of 80° toward the northwest. High-grade gold mineralization is hosted by a narrow quartz vein that is exposed in the eastern portion of the trench and occurs within a shear that strikes 240°. The vein pinches out in the central portion of the stripped area and re-emerges near the western end of the trench.

Four grab samples were collected from the Northwest View Zone by RGP staff on November 16, 2016. The best result was 0.1 ounce Au per ton from a sample of sheared biotite schist and sugary quartz with red-brown hematite staining, carbonate alteration and minor pyrite (*see* Table 17; Resident Geologist's Files, Thunder Bay South District, Thunder Bay).

SWEET SPOT ZONE

The Sweet Spot and Sweet Spot 2 trenches are located at the contact between metasedimentary rocks and a relatively large (approximately 10 m wide) quartz-feldspar porphyry intrusion. At the Sweet Spot trench, the metasedimentary rocks display graded bedding indicative of northwest younging. Bedding planes strike 035° with near-vertical dip. The fine-grained portions of the graded turbidite beds are fissile and display a crosscutting cleavage that is oriented 222° and dips 75° toward the northwest. Quartz-filled tension fractures in the sandy portions of some turbidite beds strike 065° and their orientations are indicative of dextral shear. The contact between the metasedimentary rocks and the felsic intrusion is not visible, but coincides with a depression, trending approximately 215°, that likely marks a sheared contact. The quartz-feldspar porphyry intrusion, southeast of the contact, displays significant shearing, faulting and fracturing with variable alteration. Shears that parallel the primary foliation display quartz veining and contain disseminated sulphide mineralization. A later, crosscutting shear that strikes 080° and dips 80° toward the south is chloritic and contains a barren quartz vein.

The Sweet Spot 2 trench displays the contact between a quartz-feldspar porphyry intrusion and the metasedimentary rocks. Deformation at this location is not as pervasive as at the Sweet Spot trench. However, the porphyry intrusion contains many quartz-filled and sulphide-mineralized brittle fractures. The fractures are steeply dipping and there appear to be 3 sets that strike 260°, 300° and 340°. The foliation at this location strikes 050°.

Although low assay values were obtained from the grab samples collected during the August 16 RGP site visit (*see* Table 17), as mentioned previously, some of the best historic diamond-drilling results on the Larose property were obtained from this area (Resident Geologist's Files, Thunder Bay South District, Thunder Bay).

T ZONE

The T Zone trench exposes metasedimentary rocks that display variable shearing and mineralization. The structures here are similar to those seen elsewhere on the property and include a primary bedding-parallel foliation that strikes 030° and dips 85° toward the southeast. A secondary fabric strikes 060° and dips 75° toward the southeast. Folded quartz veinlets with axes that plunge approximately 30° toward the southwest were observed in this exposure. This is consistent with the observations of previous workers (e.g., MacLean 2005a Ravenelle and Siddorn 2012), who have also generally documented shallow southwest-plunging fold axes on the property.

High-grade gold assays have previously been obtained at this trench from narrow silicified zones that are mineralized with arsenopyrite, pyrite, sphalerite and galena. A grab sample collected from one of these silicified zones by RGP staff on August 16, 2016, returned 1.786 ounces Au per ton (*see* Table 17). The sampled material contained stringer sulphides consisting of pyrite, arsenopyrite, galena and sphalerite (Resident Geologist's Files, Thunder Bay South District, Thunder Bay).

TRIBUTE SHEAR ZONE OCCURRENCES

The Tribute shear zone is a northeast-striking structure that parallels the Larose shear zone and is located 1.5 km northwest of the T Zone. The rocks exposed in the vicinity of this shear zone are dominated by the typical sequence of sandstone, wacke, siltstone and mudstone that underlies most of the Larose

property. The main historic occurrence on this shear is located at UTM Zone 15, 662022E, 5383435N. The rocks at this location are sheared (foliation strikes 045° with vertical dip) with localized quartz veining and silicification. The veins and silicified zones contain trace to minor pyrite. No significant assay results were obtained from 3 samples collected by RGP staff from the Tribute shear zone on October 3, 2016 (Resident Geologist's Files, Thunder Bay South District, Thunder Bay).

Table 17. Assay data for grab samples collected by RGP staff on the Larose property during 2016 and analysed by OGS Geoscience Laboratories (all locations UTM, NAD83, Zone 15; Resident Geologist's Files, Thunder Bay South District, Thunder Bay).

Sample	Au (ppb or *oz/ton*)	Ag (oz/ton)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Host Rock and Mineralization	UTM Easting	UTM Northing	Occurrence Name
MP16WPT1118	10	<0.1	66	<35	69	Felsic intrusive, 5-10% pyrite + sphalerite	662726	5382066	Sweet Spot 2
MP16WPT1119	3	<0.1				Quartz vein, trace pyrite	662729	5382059	Sweet Spot 2
MP16WPT1121	71	<0.1				Quartz vein, pyrite at contact	662647	5381989	Sweet Spot
MP16WPT1122	5					Chlorite schist with quartz vein, none observed	662652	5381984	Sweet Spot
MP16WPT1123	28	<0.1	96	<35	179	Metasedimentary, silicified, disseminated pyrite + sphalerite	663092	5382591	T Trench
MP16WPT1124	***0.217***	<0.1				Quartz vein, weathered sulphides, iron-carbonate	663086	5382588	T Trench
MP16WPT1125	1352	<0.1	24	<35	48	Quartz-sericite schist, stringer sulphides (pyrite, arsenopyrite)	663087	5382589	T Trench
MP16WPT1126	***1.786***	<0.1	69	601	198	Metasedimentary, stringer sulphides (pyrite, arsenopyrite, galena, sphalerite)	663082	5382584	T Trench
MP16WPT1178	***<0.016***	<0.1				Quartz vein, no visible mineralization	660426	5379840	J & R
MP16WPT1179	***<0.016***	<0.1				Sandstone, silicified, trace pyrite	660411	5379824	J & R
MP16WPT1180	***<0.016***	<0.1				Quartz vein, no visible mineralization	660396	5379816	J & R
MP16WPT1185	***1.051***	<0.1	331	5882	4786	Metasedimentary, silicified, 3% sphalerite + pyrite	660827	5380081	P1
PMP16WPT1189	***<0.016***	<0.1	6	40	338	Quartz vein, 2% pyrite + sphalerite	661113	5380354	Porphyry
MP16WPT1190A	***<0.016***	<0.1				Metasedimentary, rusty weathering	661087	5380318	Porphyry
MP16WPT1190B	***0.016***	<0.1	18	53	95	Felsic intrusive, silicified, iron-carbonate, minor sphalerite	661087	5380318	Porphyry
MP16WPT1192	***<0.016***	<0.1				Quartz vein, trace pyrite, rusty-weathering	662018	5383434	Tribute
MP16WPT1193A	***<0.016***	<0.1				Metasedimentary, silicified, rusty-weathering	662022	5383435	Tribute
MP16WPT1193B	***<0.016***	<0.1				Quartz vein, minor pyrite	662022	5383435	Tribute
MP16WPT1232	***0.025***	1.3				Quartz vein, rusty, disseminated arsenopyrite	661771	5381069	NW View
MP16WPT1233	***<0.016***	1.1				Quartz vein, no visible mineralization	661770	5381072	NW View
MP16WPT1234	***<0.016***	<0.1				Metasedimentary, 5% disseminated arsenopyrite	661768	5381070	NW View
MP16WPT1236	***1.535***	<0.1				Quartz vein, 5% disseminations & seams of sphalerite + arsenopyrite + pyrite ± chalcopyrite	660831	5380088	P2 (new trenching 2016)

Sample	Au (ppb or *oz/ton*)	Ag (oz/ton)	Cu (ppm)	Pb (ppm)	Zn (ppm)	Host Rock and Mineralization	UTM Easting	UTM Northing	Occurrence Name
MP16WPT1237	***0.017***	<0.1				Metasedimentary, 1-2% arsenopyrite, silicified	660827	5380085	P2 (new trenching 2016)
16DCLR001	***0.279***	0.9	64	NR	1561	Sericite schist with quartz vein, carbonate alteration, tourmaline, trace pyrite, rusty yellow-brown-weathering	660754	5379995	Larose - Discovery Trench
16DCLR001 Dup	***0.301***	0.7	ND	ND	ND	As above.	660754	5379995	Larose - Discovery Trench
16DCLR002	***0.131***	0.2	49	2197	185	Sericite schist with sugary white quartz, trace pyrite, rusty yellow-brown-weathering	660754	5379995	Larose-Discovery Trench
16DCLR003	***<0.016***	<0.1	39	9	47	Chlorite schist, silicified and carbonate alteration, trace pyrite	662728	5382061	Sweet Spot 2
16DCLR004	***<0.016***	<0.1	18	17	6	Sericite schist with sugary white quartz, carbonate alteration, trace pyrite, rusty yellow-brown-weathering	662728	5382062	Sweet Spot
16DCLR005	***<0.016***	<0.1	<9	3	23	Biotite schist with glassy white quartz	662662	5381961	Sweet Spot
16DCLR006	***<0.016***	<0.1	51	15	27	Quartz-carbonate veining in sheared biotite schist (metasedimentary)	663094	5382597	T- Trench
16DCLR006A	***0.1***	<0.1	280	1211	602	Biotite schist, sheared, sugary quartz with red-brown hematite stain, carbonate alteration, minor pyrite	661778	5381067	NW View
16DCLR007	***1.76***	<0.1	251	2974	874	Sericite schist with smoky grey quartz, pyrite, sphalerite, galena	660826	5380080	P1
16DCLR007 Dup	***1.63***	0.4	ND	ND	ND	As above.	660826	5380080	P1
16DCLR008	***2.36***	0.7	325	NR	NR	Sericite schist with smoky dark grey quartz, pyrite, arsenopyrite	660833	5380086	P2 (new trenching 2016)
16DCLR009	***5.058***	2.6	654	NR	NR	Sericite schist with smoky dark grey-black quartz, galena, pyrite, arsenopyrite	660824	5380072	P1 West
16DCLR009 Dup	***3.216***	2.7	ND	ND	ND	As above	660824	5380072	P1 West

Abbreviations: NA = no analysis; ND = not duplicated; NR = not reportable due to interference during analysis.

CONCLUSIONS

The Larose shear zone hosts numerous high-grade gold occurrences that have been exposed along a strike length of approximately 4.5 km. These mineralized zones are generally less than 1 m wide and display strong silicification and/or quartz veining, along with sericite and carbonate alteration. Gold-bearing zones in the metasedimentary rocks are mineralized with sphalerite, arsenopyrite, pyrite and galena, while zones hosted in quartz-feldspar porphyry are typically mineralized with pyrite and pyrrhotite.

The high-grade gold zones have been deformed (e.g., boudinaged, folded) and are commonly oblique to the main shear zone trend (rotated approximately 15 to 20° in a clockwise direction). Later, crosscutting quartz veins are generally not mineralized. These observations indicate that gold was introduced into the Larose shear zone relatively early in the deformation history.

The orientation of the mineralized zones that are oblique to the main structures within the Larose shear zone (i.e., approximately 060° strike versus shear zone trend of 045°) is consistent with deposition in dilatant C′ shear structures. This suggests the possibility that gold may have been introduced during a dextral shear event that postdated the sinistral event that is believed to have occurred during emplacement of the quartz-feldspar porphyry intrusions. Additional evidence for late dextral movement is provided by quartz-filled tension fractures. It is also important to note that gold-bearing veins on the nearby Huronian Mine property have a similar orientation that is oblique to the dominant shear orientations in the host Boundary fault zone (Chorlton 1987).

RECOMMENDATIONS

Some of the key characteristics of the known gold mineralization on the Larose property that need to be considered for exploration targeting are listed below, along with specific follow-up recommendations.

Gold occurs in dilatant zones in metasedimentary rocks, quartz-feldspar porphyry intrusions and at the contact between these rock types. Although gold mineralization occurs in both the metasedimentary and intrusive rocks, the intrusions always have a close spatial association with mineralized zones. Therefore, it is recommended that future exploration efforts on the Larose property focus on the identification of porphyry intrusions within, and in close proximity to, shear zones. The perimeter of the Obadinaw stock should also be carefully explored for gold-mineralized structures.

Gold mineralization in porphyry intrusions is accompanied by strong sericitization and pyrrhotite mineralization. As a result, magnetic and radiometric survey data can be used to identify potential mineralized porphyry targets. Gold-mineralized porphyries should have a stronger magnetic signature than the enclosing metasedimentary rocks, and they may display coincident potassium radiometric and geochemical anomalies.

Gold-mineralized zones and veins on the Larose property appear to have developed relatively early and are often deformed. These zones often strike between 050° and 060°, oblique to the Larose shear zone trend of 030° to 045°. Based on this observation, it appears that larger, east-northeast-striking structures have the potential to host economic quantities of gold. Magnetic survey data and aerial photography should be reviewed to identify any lineaments that might represent such structures. Any such features should be thoroughly prospected. Soil geochemical surveys should also be considered for these targets. Because gold in the metasedimentary rocks is accompanied by arsenopyrite and sphalerite mineralization, arsenic and zinc are considered to be important pathfinder elements for geochemical surveys.

Stuart Location Copper-Nickel-Cobalt-PGE Property

The Stuart Location copper-nickel-cobalt-platinum group element (Cu-Ni-Co-PGE) property consists of 4 claims, covering a total of 29 units. Claims 4275710 and 4275711 are held by Allan Onchulenko (50%) and Peter Gehrels (50%), while claims 4267973 and 4283413 are held by Allan Onchulenko (45%), Peter Gehrels (45%) and Ben Kuzmich (10%). The property hosts the Copper Bar Cu-Ni-Co occurrence and the Stuart Location Cu-Ni-Co-PGE occurrence (*see* Figure 17). The property was visited by RGP staff on November 9, 2016.