

**NI 43-101 TECHNICAL REPORT  
ON THE  
SANTA MARIA PROPERTY  
KENORA MINING DIVISION  
ONTARIO, CANADA**

**For  
BLACK WIDOW RESOURCES  
Suite 304-65 Front St. East  
Toronto, ON Canada M5E 1B5**

**Prepared by:**

**Brian H. Newton, P.Geo.**

**Fortunato Milanes, P.Geo.**

**Mark Wellstead**

**Billiken Management Services Inc.**

**304-65 Front St. East Toronto ON M5E 1B5**

**Effective Date: 11 October-2012**

## TABLE OF CONTENTS

SUMMARY .....	1
1.0 INTRODUCTION .....	4
2.0 RELIANCE ON OTHER EXPERTS.....	5
3.0 PROPERTY DESCRIPTION AND LOCATION .....	5
4.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE & PHYSIOGRAPHY .....	8
5.0 HISTORY .....	9
6.0 GEOLOGICAL SETTING .....	12
Regional Geology.....	12
Local Geology.....	14
Property Geology .....	15
7.0 DEPOSIT TYPES .....	16
8.0 MINERALIZATION.....	17
9.0 EXPLORATION .....	19
2012 Airborne Geophysics .....	19
2012 Site Visit .....	25
10.0 DRILLING.....	28
11.0 SAMPLE PREPARATION, ANALYSES AND SECURITY.....	29
12.0 DATA VERIFICATION .....	29
13.0 ADJACENT PROPERTIES.....	29
14.0 MINERAL PROCESSING AND METALLURGICAL TESTING .....	31
15.0 MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES .....	31
16.0 OTHER RELEVANT DATA AND INFORMATION .....	31
17.0 INTERPRETATIONS AND CONCLUSIONS.....	31

18.0	RECOMMENDATIONS .....	32
19.0	REFERENCES .....	33
20.0	DATE AND SIGNATURE PAGE .....	35
	Appendix A .....	37

#### List of Figures:

Figure 1: Regional Location of Santa Maria Property .....	7
Figure 2: Santa Maria Property Claim Map .....	8
Figure 3: Location of the Wabigoon Subprovince in the Superior Geological Province .....	13
Figure 4: Regional Geology of Eagle-Wabigoon-Manitou Lakes Greenstone Belt (from OGS, 2006) .....	14
Figure 5: Property Geology Map (after Sears, 2009) .....	16
Figure 6: Total Magnetic Field (Scott Hogg and Associates, 2012) .....	21
Figure 7: Calculated Vertical Derivative (Scott Hogg and Associates, 2012) .....	22
Figure 8: dB/dt Profile (Scott Hogg and Associates, 2012) .....	24
Figure 9: Decay Constant (Tau) (Scott Hogg and Associates, 2012) .....	25
Figure 10: 2012 Site Visit Sample Locations .....	28

#### List of Tables:

Table 1: Details of Claims .....	6
Table 2: 2009 Site Visit Sample Descriptions and Assay Results .....	12
Table 3: 2012 Site Visit Sample Descriptions and Assay Results .....	27
Table 4: Gold Deposits in the Western Part of the Wabigoon Subprovince .....	30

## **SUMMARY**

The Santa Maria Property is located approximately 260 km aerial distance northwest of Thunder Bay, Ontario between the towns of Dryden (40 km to the northwest) and Ignace (56 km to the east). The property is located approximately 10 km south of the Trans Canada Highway #17, which is the main access road from Thunder Bay. The property is centered at 543986E and 5483646N (UTM Grid NAD 83, Zone 15).

The Santa Maria property consists of 25 contiguous claims (146 claim units) encompassing some 2,336 hectares. Of the 25 claims, nineteen were optioned from United Reef Limited. Black Widow, by virtue of having completed a required work program as of May 1, 2012, has earned a 70% interest in the property. United Reef Limited retains a 30% participating interest. In March 2012, Black Widow Resources staked 6 claims adjacent to the east of the property, which subsequently included in the JV increasing the size of the property from 19 to 25 claims.

Active prospecting for gold in the Kawashegamuk Lake area occurred between 1897 and 1902 where several gold deposits were found. The area became known as the “New Klondike” (Kresz, D.U., 1987) after the 1896-1899 gold rush in Klondike, Yukon. The more notable gold prospects in the area include Tabor Lake, Sakoose and New Klondike all to the north and northeast of the Santa Maria property.

The Santa Maria property lies within the Eagle-Wabigoon-Manitou Lakes Greenstone Belt (EWMGB) which forms part of the Wabigoon Subprovince in Northwestern Ontario. The belt is peppered with granitic batholiths which are thought to be derived from the same magmas as the belt volcanics. The largest batholith in the property area is the Revell Lake Granite batholith which lies roughly 5 km to the east of the Santa Maria Property.

The greenstone belts are primarily volcanic (ultramafic to felsic) with minor clastic and chemical sediments. All units have been metamorphosed, deformed and intruded locally by syntectonic and post tectonic plutons and intrusions of ultramafic to felsic geochemistry.

Most of the Santa Maria Property is underlain by calc-alkaline metavolcanics of the Archean aged Kawashegamuk Lake Group which form a lower mafic sequence and an upper intermediate-felsic sequence. These units have been intruded by dykes and small bodies of hypabyssal felsic rocks. The volcanics and the intrusives have been elongated and folded along an east-west axis (the Tabor Lake anticline).

There were at least six known gold showings reported to be on the property as it stood prior to the additional 2012 staking. The six known showings include the Santa Maria Shaft Zone, Lee Lake South Occurrence, Lee Lake North Shore Occurrence, Lee Lake Southeast Occurrence, Long Lake Gold – Quartz Vein and Superstition Gold Occurrence.

In January 2012, Geotech Ltd was contracted by Billiken Management on behalf of Black Widow Resources to conduct an airborne EM and magnetic survey over the Santa Maria claims. Scott Hogg & Associates Ltd analysed the data and identified three distinct EM anomalies. Each anomaly is suggestive of bedrock conductivity in an area where very little historical exploration work has been reported. These anomalies all occur along the northeast extent of the airborne survey and fall within the area of the five new claims. They should all be considered high priority areas for follow-up exploration work.

It is Billiken Management's opinion that the Santa Maria property has the potential for hosting economic gold mineralization. There are at least six known gold occurrences within the property as described in the Mineralization section of this report. None of the six occurrences have been systematically sampled or drilled. Furthermore, the surrounding area which has similar geology to the property is host to several gold prospects.

A two-phase exploration program is recommended to advance the property's gold potential.

Phase I will include stripping, mapping and sampling of the six gold occurrences, follow up ground verification of the magnetic anomaly northwest of Shafts 1 and 2, and line-cutting on anomalies SM-1, SM-2 and SM-3 followed by ground EM survey. The estimated cost for Phase I exploration is \$150,000.00.

Phase II will be contingent on the results of Phase I and will include surface drilling of identified targets from Phase I activity. The estimated cost for Phase II exploration is \$500,000.00.

## **1.0 INTRODUCTION**

Black Widow Resources (Black Widow), is a privately-held exploration and development company focused on identifying and exploring precious and base metal properties.

Through its President and CEO, Mr. Neil Novak, Black Widow engaged Billiken Management Services Inc. (Billiken Management) of Toronto to prepare an independent report on a group of mining claims referred to as the Santa Maria Property. The Santa Maria Property is situated in Kawashegamuk Township approximately 40 km ESE of Dryden, Ontario and about 10 km south of Trans-Canada Highway #17.

This report is designed to summarize the geological setting of gold mineralization on the property, discuss the most recent exploration work done on the property, assess the economic potential of the property and make recommendations for further exploration works to advance the economic viability of the deposit. Billiken Management is aware that Black Widow Resources may use this report to support corporate development activities. This technical report is in accordance with guidelines of disclosure prescribed by National Instrument 43-101 (NI-43-101).

This report was prepared based on data and information presently available to the authors at the time of writing, sourced both from public and private files in the form of digital and hard copies. All sources of data and information are listed in the References section of this report.

Brian H. Newton, the principal author, visited the property in his capacity as the company's Qualified Person as defined by National Instrument 43-101. The site visit was undertaken on August 10, 2012.

Location coordinates are expressed in Universal Transverse Mercator (UTM) grid coordinates, using the 1983 North American Datum (NAD83), Zone 15N.

## **2.0 RELIANCE ON OTHER EXPERTS**

In the preparation of this report, the authors relied on the data and information presented in each of the reports consulted as listed in the References section. The authors assume that all data and information described and presented in the referenced reports are accurate and complete.

All conclusions, opinions and recommendations concerning the Santa Maria Property are based upon the information available at the time of this report.

## **3.0 PROPERTY DESCRIPTION AND LOCATION**

The Santa Maria Property is located approximately 40 km southeast of the town of Dryden, Ontario and about 10 km south of Trans-Canada Highway #17 (Figure 1). The property is centered at 543986E and 5483646N (NAD 83, Zone 15).

The Santa Maria property consists of 25 contiguous claims (146 claim units) encompassing some 2,336 hectares (Figure 2). Of the 25 claims, nineteen were optioned from United Reef Limited. Black Widow, by virtue of having completed a required work program as of May 1, 2012, has earned a 70% interest in the property. United Reef Limited retains a 30% participating interest.

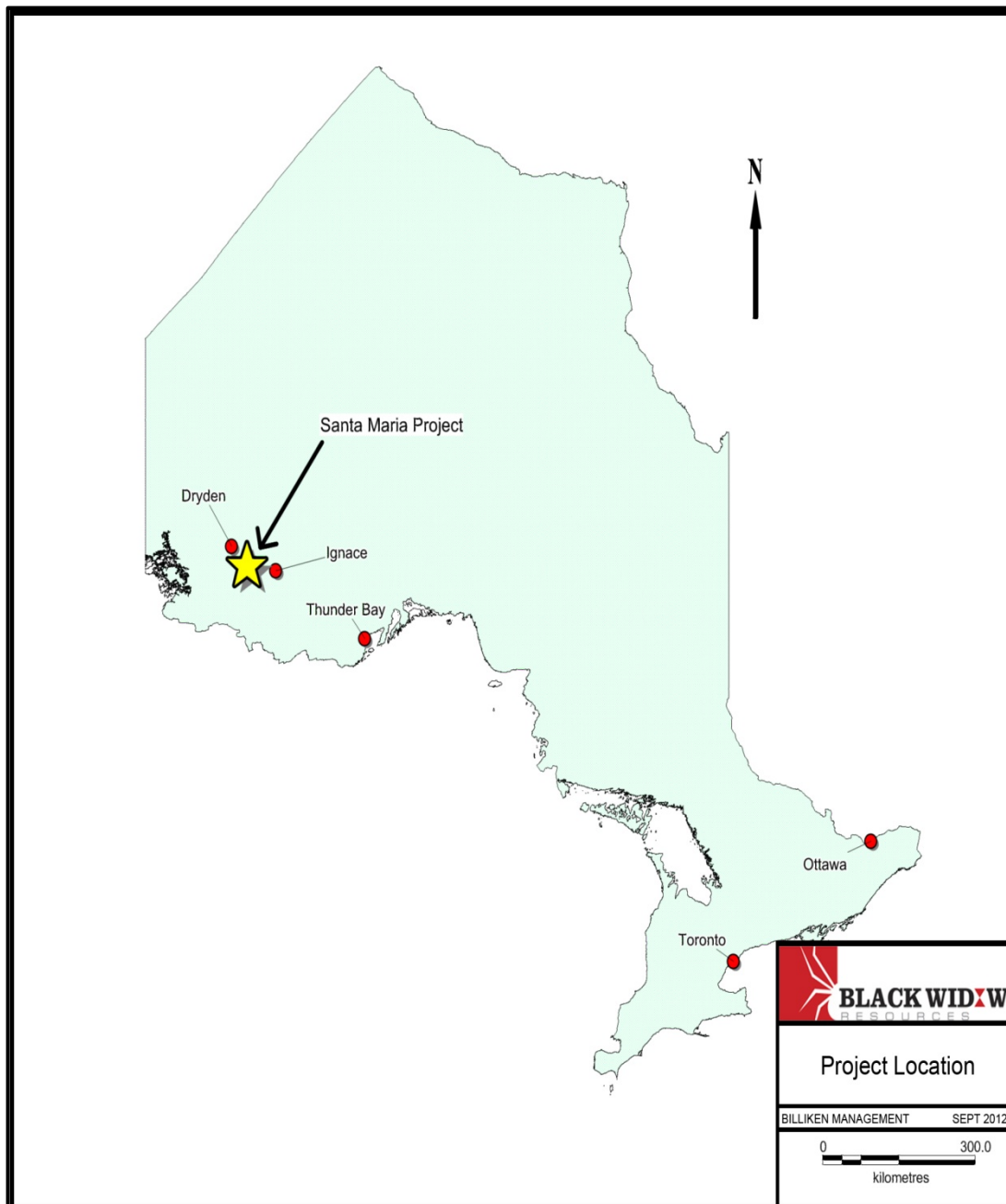
The 19 claims acquired from United Reef Limited are subject to an NSR royalty, payable to the original claim vendor, at the rate of 2% on the original 5 claims and 1% on the remaining 14 claims. In late May, 2012, the 6 new “additional claims” were added to the Joint Venture and are also subject to a 1% NSR to the favor of the original vendor.

Details of the claims are shown in Table 1 and the location of the claims is depicted in Figures 1 and 2.

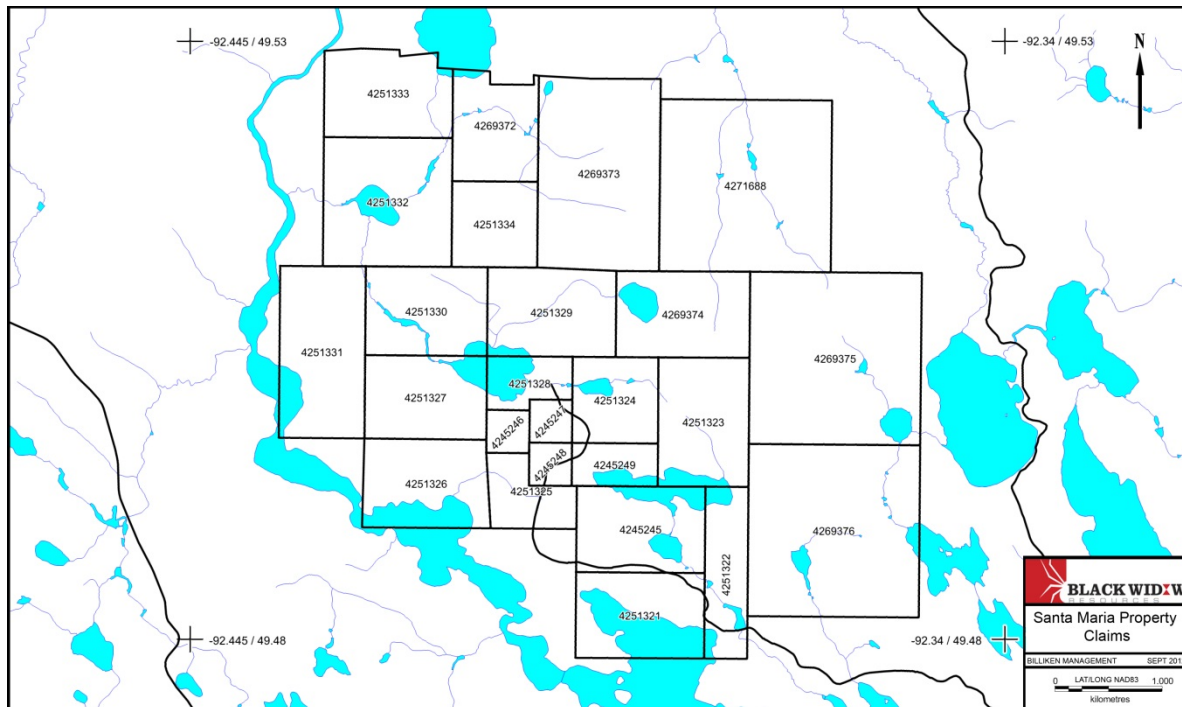


**Table 1: Details of Claims**

<b>Claim No.</b>	<b>Township/Area</b>	<b>No. of Units</b>	<b>Recording Date</b>	<b>Due Date</b>	<b>Work Required</b>
4251321	Kawashegamuk Lake	6	Nov 2, 2009	Nov 2, 2013	\$2,400
4251322	Kawashegamuk Lake	4	Nov 2, 2009	Nov 2, 2013	\$1,600
4251323	Kawashegamuk Lake	6	Nov 2, 2009	Nov 2, 2013	\$2,400
4251324	Tabor Lake	4	Nov 2, 2009	Nov 2, 2013	\$1,600
4251325	Kawashegamuk Lake	3	Nov 2, 2009	Nov 2, 2013	\$1,200
4251326	Kawashegamuk Lake	6	Nov 2, 2009	Nov 2, 2013	\$2,400
4251327	Tabor Lake	6	Nov 2, 2009	Nov 2, 2013	\$2,400
4251328	Tabor Lake	2	Nov 2, 2009	Nov 2, 2013	\$ 800
4251329	Tabor Lake	6	Nov 2, 2009	Nov 2, 2013	\$2,400
4251330	Tabor Lake	6	Nov 2, 2009	Nov 2, 2013	\$2,400
4251331	Tabor Lake	8	Nov 2, 2009	Nov 2, 2013	\$3,200
4251332	Tabor lake	9	Nov 2, 2009	Nov 2, 2013	\$3,600
4251333	Tabor lake	6	Nov 2, 2009	Nov 2, 2013	\$2,400
4251334	Tabor Lake	4	Nov 2, 2009	Nov 2, 2013	\$1,600
4245245	Kawashegamuk Lake	6	May 25, 2009	May 25, 2014	\$2,400
4245246	Kawashegamuk Lake	1	May 13, 2009	May 13, 2014	\$ 386
4245247	Kawashegamuk Lake	1	May 13, 2009	May 13, 2015	\$ 400
4245248	Kawashegamuk Lake	1	May 4, 2009	May 4, 2015	\$ 400
4245249	Kawashegamuk Lake	2	May 11, 2009	May 11, 2014	\$ 800
4269372	Tabor Lake	5	Mar 20, 2012	Mar 20, 2014	\$2,000
4269373	Tabor Lake	14	Mar 20, 2012	Mar 20, 2014	\$5,600
4269374	Tabor Lake	6	Mar 20, 2012	Mar 20, 2014	\$2,400
4269375	Tabor Lake	16	Mar 20, 2012	Mar 20, 2014	\$6,400
4269376	Kawashegamuk Lake	16	Mar 20, 2012	Mar 20, 2014	\$6,400
4271688	Tabor Lake	16	Aug 3, 2012	Aug 3, 2012	\$6,400



**Figure 1: Regional Location of Santa Maria Property**



**Figure 2: Santa Maria Property Claim Map**

#### **4.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE & PHYSIOGRAPHY**

The Santa Maria property is located approximately 260 km aerial distance northwest of Thunder Bay, Ontario. It is 40 km southeast of the town of Dryden and 56 km west of Ignace. Dryden and Ignace can be accessed from Thunder Bay by land via Trans-Canada Highway (Highway # 17) that leads northwest.

The property can be accessed by heading south on Sandy Point Road at Highway 17 near Borups Corner southeast of Dryden. This road passes the eastern outskirts of the property leading to the northern shores of Kawashegamuk Lake at Sandy Point Camp, a group of fishing/hunting lodges. At km 15.3 on the Sandy Point Road, an old access road runs in a northwesterly direction and leads directly to the property. An ATV or tracked Argo is required to access the property.

The climate is typical of Northern Ontario with average temperatures ranging from 2.6° to -18.2°C in winter and from 4.4° to 18.5°C in summer. Average yearly rain fall is 535 mm and snowfall is 170 cm. Work can be carried out year round with very few exceptions, such as extreme cold temperatures and winter storms.

The property is close to Dryden, the second-largest city in the Kenora District of Northwestern Ontario. Dryden offers a strong economic base, with a large retail and service sector to serve residents and visitors. Situated midway between Winnipeg and Thunder Bay, Dryden is well connected to other cities, towns, and communities by the Trans-Canada Highway, CP Rail and the Dryden Regional Airport.

The Santa Maria Property lies within the boreal forest of Northern Ontario. The forest is managed by the Wabigoon Forest Unit (Dryden) and the timber rights are currently licensed to Domtar.

The terrain is typical of Northwestern Ontario, with relatively low, rounded ridges and minor ledges (2–30 m) separated by swampy valleys and small creeks. The overburden covered areas are a mixture of recent sand and gravel deposits and lacustrine clays. The elevation ranges from 375 m to 435 m averaging around 400 m above mean sea level.

The drainage system is generally mature with most small creeks and swamps draining southwards and westwards into the Kawashegamuk Lake and River system. There are many beaver dams in the area, resulting in flooding in parts of the Property. The Kawashegamuk River drains into the Wabigoon River which ultimately flows into the Winnipeg River System, Lake Winnipeg and onwards to the Arctic Ocean.

## **5.0 HISTORY**

United Reef Limited's Santa Maria property is composed of 19 claims with five of those claims covering the Santa Maria Shaft Prospect (claims 4245245 to 4245249) originally staked in the spring of 2009 by Robert J. Fairservice, a Thunder Bay based prospector and businessman. The five claims were subsequently transferred to United Reef Limited in

November 2011. The 19 claims were the subject of a JV Agreement between United Reef Limited and Black Widow Resources.

In March 2012, Black Widow Resources staked 5 claims adjacent to the eastern portion of the property and were subsequently included in the JV increasing the size of the property from 19 to 24 claims.

Active prospecting for gold in the Kawashegamuk Lake area occurred between 1897 and 1902. During this time several gold deposits were found which led to the area being known as the “New Klondike” (Kresz, D.U., 1987) after the 1896-1899 gold rush in Klondike, Yukon. The more notable gold prospects in the area include Tabor Lake, Sakoose and New Klondike all to the north and northeast of the Santa Maria property.

Various individuals and companies have acquired or examined portions of the claim group commencing around 1900. The following is a summary of the exploration activity on the area covered by the current Santa Maria Claim Group, after Sears (2009, pg. 8).

#### 1900–1901

Long Lake Gold Mining Company completed 2 shafts, 28 feet (8.5 m) and 20 feet (6.1 m) and planned a test stamp mill on the zone referred to as the Santa Maria Shaft Zone.

#### 1939

Sylvanite Gold Mines Limited completed a brief assessment of the property; one sample collected from Santa Maria Shaft area assayed 6.1 g/t Au.

#### 1964

Resident Geologists Report of a “high grade” quartz vein found by N. McKinnon in the early 1900s. This occurrence is referred to as the Lee Lake occurrence although it is on Long Lake (Kawashegamuk Lake).

#### 1964

W. L. Olsen is reported to have held claims but no relevant assessment work has been located.

1980

Sulpetro completed a geological mapping program on the adjacent Tabor Lake Mine Property. The southern part of this property now lies within the United Reef Santa Maria Claim Group.

1981

Falconbridge Copper Limited completed magnetometer and VLF-EM surveys over the western part of the Santa Maria Property.

1984

Labrador Exploration Limited completed a ground magnetometer (Fluxgate) survey over a 33 claim property that included the Santa Maria Shaft Zone; they are also reported to have completed 1 diamond drill hole in the area of Shaft #1 of the Santa Maria Zone, but neither drill logs nor assays were located.

1988-1989

A. Glatz completed prospecting and sampling as well as bulldozer stripping in the winter in the area of the Santa Maria Shafts Zone.

1990

A. Kozowy completed blasting and sampling on the Lee Lake (Matson) occurrence, grab samples ranged from 2.06 - 26.7 g/t Au.

2009

As part of data verification in the preparation of a NI 43-101 Technical Report for United Reef Limited, Seymour Sears of Sears, Barry and Associates Ltd visited the property for the purpose of confirming the presence of gold mineralization and to determine the potential for hosting economic gold mineralization. Six rock samples were collected within the vicinity of the Santa Maria Shaft Zone with sample descriptions and assay results shown in Table 2.

**Table 2: 2009 Site Visit Sample Descriptions and Assay Results**

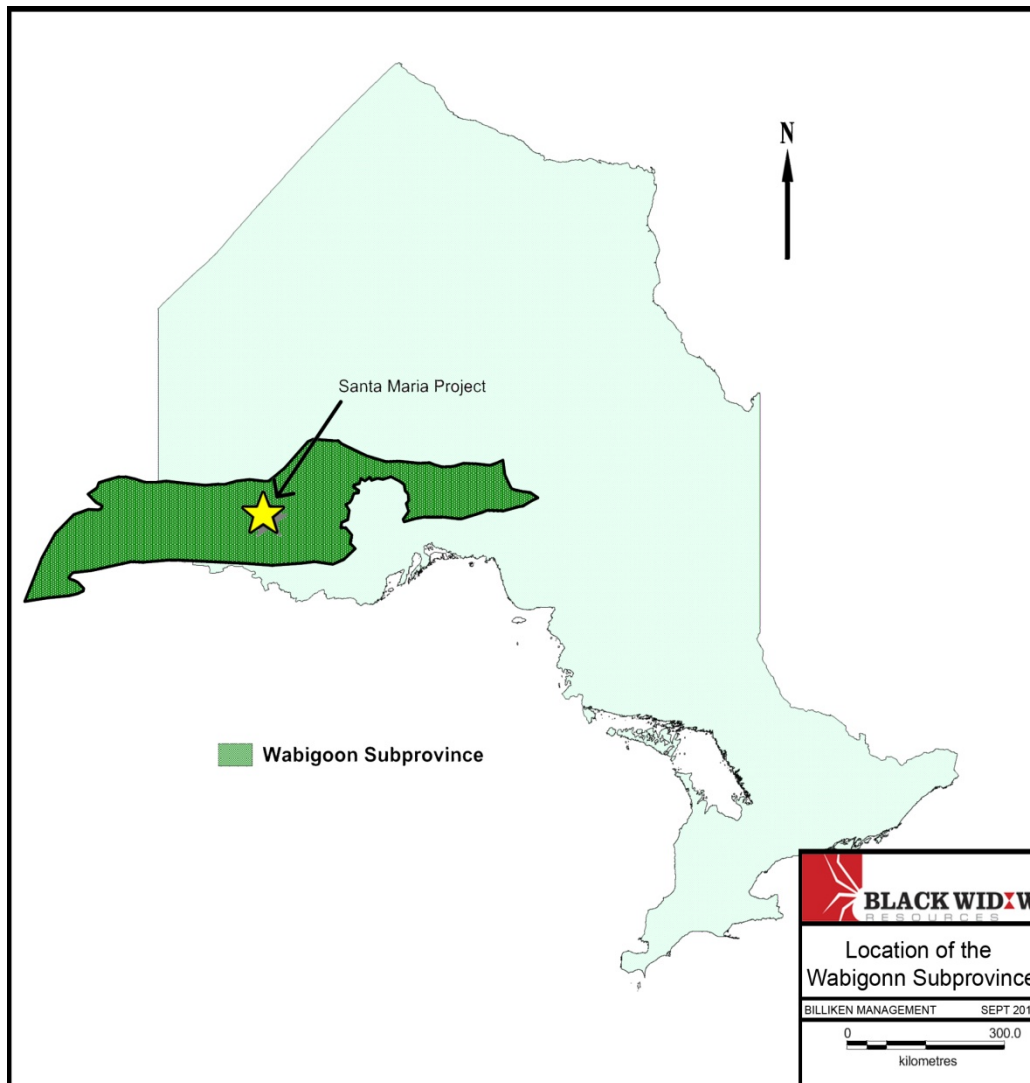
<b>Sample Number</b>	<b>UTM East</b>	<b>UTM North</b>	<b>Type/ Width</b>	<b>Description</b>	<b>Au(ppb)</b>
M752001	543554	5482637	Chip /0.6m shaft wall	95% quartz, 2% sulphides (pyrite, galena, chalcopyrite), 3% carbonate	3410
M752002	543554	5482638	Chip /0.6m shaft wall	48% quartz, 50% carbonate, 2% pyrite, trace chalcopyrite	1120
M752003	543554	5482649	Chip /0.6m shaft wall	80% feldspar/qtz porphyry, 15% carbonate, 3% quartz, 2% pyrite	12
M752004	543403	5482674	Chip /0.8m old channel	20% quartz, 75% carbonate, 3% sericite, 2% sulphides (pyrite, chalcopyrite)	351
M752005	543405	5482668	Composite waste pile	95% quartz, 2% sulphides (pyrite, galena, chalcopyrite), 3% carbonate	1860
M752006	543541	5482580	Composite 2 x 2 metres	95% carbonate, 4% quartz, 1% sulphides (pyrite, chalcopyrite)	80

## 6.0 GEOLOGICAL SETTING

### Regional Geology

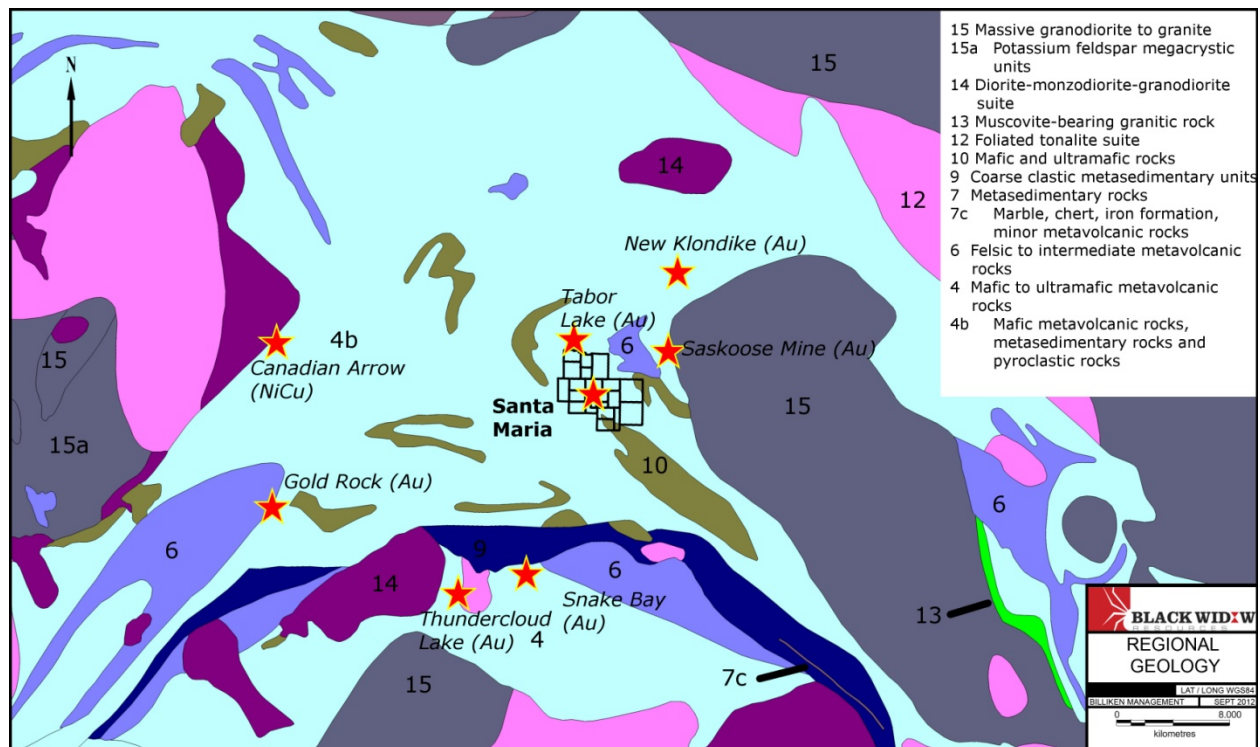
The Santa Maria property lies within the Eagle-Wabigoon-Manitou Lakes Greenstone Belt (EWMGB) which forms part of the Wabigoon Subprovince in Northwestern Ontario (Figures 3 and 4). The belt is peppered with granitic batholiths which are thought to be derived from the same magmas as the belt volcanics. The largest batholith in the property area is the Revell Lake Granite batholith which lies roughly 5 km to the east of the Santa Maria Property.

The greenstone belts are primarily volcanic (ultramafic to felsic) with minor clastic and chemical sediment. All units have been metamorphosed, deformed and intruded locally by syntectonic and post tectonic plutons and intrusions of ultramafic to felsic geochemistry.



**Figure 3: Location of the Wabigoon Subprovince in the Superior Geological Province**





**Figure 4: Regional Geology of Eagle-Wabigoon-Manitou Lakes Greenstone Belt (from OGS, 2006)**

## Local Geology

Much of the information for this section was taken from Sears (2009, pg. 9).

The Eagle-Wabigoon-Manitou Greenstone Belt (EWMGB) is aligned roughly north-south, and is approximately 80km long and 40km wide. It is bounded by the Atikwa Batholith on the west, the Basket Lake and Revel Batholiths on the east and the Irene-Eltrut Lakes Batholith on the south. The northern boundary contacts the Winnipeg River Subprovince.

The EWMGB is made from several lower sequences of tholeiitic to calc-alkaline ultramafic, mafic and felsic volcanic rocks which form the Lower Wabigoon, Pincher Lake and Kawashegamuk Lake Groups, and overlying sequences of mainly tholeiitic mafic volcanic rocks referred to as upper Wabigoon, Eagle Lake and Boyer Lake Groups. The mainly mafic Wapageisi Group occupies the southern part of the greenstone belt separated from the

remainder by the east-west trending Stormy Lake/Manitou Lakes Group of sedimentary and calc-alkaline felsic to intermediate volcanic rocks.

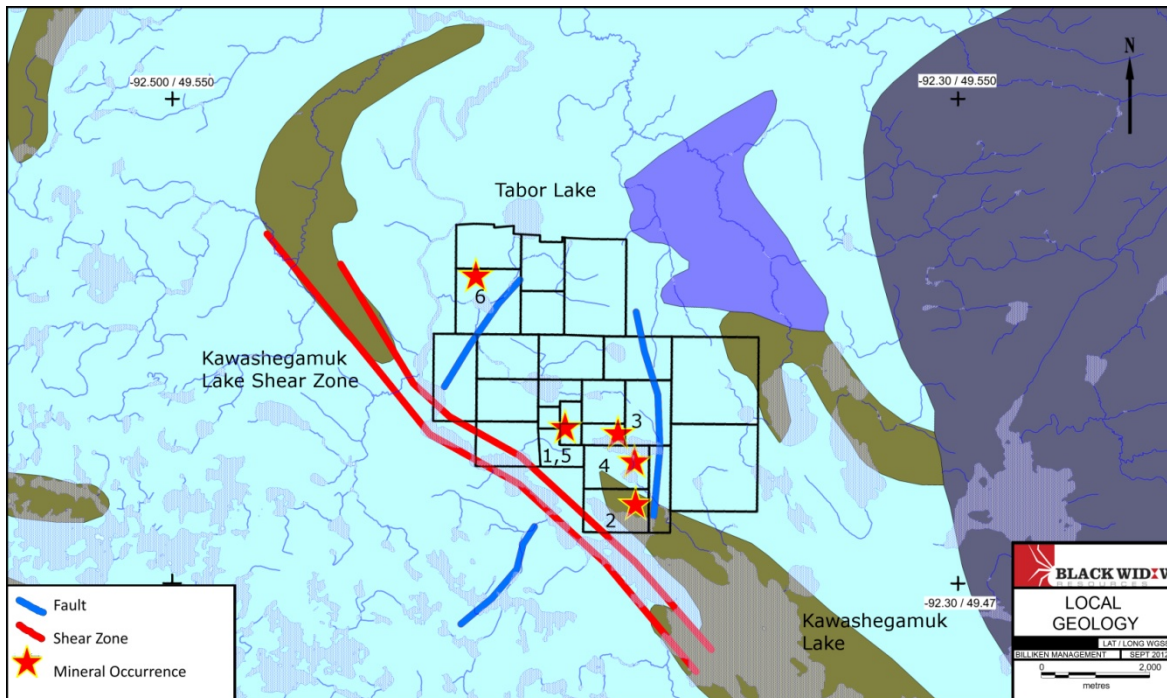
Several large regional faults cut the belt including the northeast trending Manitou Straits Fault Zone, the east-west trending Mosher Bay-Washeibemaga Lake Fault Zone, the east-west trending Wabigoon Fault and the northwest trending Kawashegamuk Lake Fault Zone. The latter passes along the edge of the Santa Maria Property.

The Revell Batholith, which forms the eastern boundary of the Kawashegamuk group volcanic rocks in this area, is located approximately 5 km east of the Santa Maria Property.

### **Property Geology**

Most of the Santa Maria Property is underlain by calc-alkaline metavolcanics of the Archean aged Kawashegamuk Lake Group (Figures 4 and 5) which form a lower mafic sequence and an upper intermediate-felsic sequence. These units have been intruded by dykes and small bodies of hypabyssal felsic rocks. The volcanics and the intrusives have been elongated and folded along an east-west axis (the Tabor Lake anticline).

A very strong northwest trending fault/shear structure passes along the southwest boundary of the claim group. The axis of this structure follows Kawashegamuk Lake (also referred to as Long Lake) several gabbroic intrusive bodies are located along or proximal to the Kawashegamuk Lake structure. This shear hosts a zone of intense carbonate alteration that affects the mafic intrusive and volcanic rocks as well as the younger quartz and quartz-feldspar porphyry bodies in the area. Outcrops of porphyry exist along the strike of this zone (off the claims) as well as in a wide swath in the northeast corner of the property area.



**Figure 5: Property Geology Map (after Sears, 2009)**

## 7.0 DEPOSIT TYPES

The Santa Maria Property hosts structurally-controlled lode gold deposits of Archean age (Hodgson, C.J., 1993). The most impressive examples of lode gold deposits are those of the Timmins, Kirkland Lake and Red Lake mining camps.

The main prerequisites for this kind of deposit are:

- A regional-scale fault/shear structure (e.g. the Porcupine-Destor Fault in the Timmins area or the Kirkland Lake- Larder Lake Break in the Kirkland Lake Area)
- Nearby young intrusive bodies, especially quartz porphyries
- Intense alteration of host lithologies

Ultramafic intrusives are also sometimes involved. Veining stockworks associated with quartz porphyry intrusions can also host economic gold.

The exact type of gold mineralization at the Santa Maria property is still not fully known because of insufficient geological data. There is practically no sub-surface data that can be correlated with surface geological data to come up with a more accurate interpretation of the type of deposit.

## **8.0 MINERALIZATION**

There were at least six known gold showings reported to be located on the property as it stood prior to the additional 2012 staking (Sears, 2009). Four of these are known to the Ontario Geological Survey or were known to the earlier Ontario Mines Division. The others are described in data filed for assessment work by private companies or prospectors and on file in the Assessment Files of the Ontario Mining Lands Division. Further mention of gold-bearing finds and showings exist but these are difficult to verify or locate accurately. The six known showings are described below, based on earlier filed accounts and United Reef fieldwork:

### **1: Santa Maria Shaft Zone**

The Santa Maria Shaft Zone, sometimes referred to in the literature as the Long Lake-McCracken Occurrence, consists of quartz veining and quartz stockwork veining that occurs along the contact between felsic dykes and intensely carbonated mafic volcanics. The prospect was discovered and two shallow (8.5m and 6.1m) shafts sunk around 1900 or 1901 by the Long Lake Mining Company. The shafts were located and examined during a recent property visit. They are separated by approximately 150 metres of low lying bush with no outcrop between. It appears from geological observations and accurate locations that the zones are either not connected or there is an intervening offset located in the low area between the two.

At shaft #1, the quartz vein zone ranges from 30 cm to 1.2 metres wide, strikes at approximately 205° and dips 75° towards the north. In the area of shaft #2, the vein material is narrower ranging 10 – 30 cm, but the degree of carbonate alteration of the wall rocks is much more intense. These wall rocks, assumed to have originally been mafic volcanic or possibly a gabbroic dyke, are almost totally carbonate (dolomite and ankerite)

with virtually no textures or other features with which to identify the original rock. Narrow, widely spaced quartz stringers extend at right angles for several metres from the vein into the carbonate on the south side. The carbonate often has intense green streaks and patches and contains disseminated patches of pyrite and chalcopyrite. The quartz veins and the carbonate locally contain galena, pyrite and trace chalcopyrite. In 1902, Long Lake Gold Mining reported visible gold in quartz veining at the #1 Shaft. There is no record of systematic sampling having been carried out at the Santa Maria Prospect. Numerous individuals and companies have collected “grab” samples from the prospect. Some of the reported results include:

- Long Lake Gold Mines Limited (1902) – 9.26 g/t Au (grab)
- Parker (OGS Mls. Paper 142, 1988) – 25.7 g/t Au (grab)
- Fairservice, R.J., Prospecting Report (2009) – 16.8 g/t Au (grab)

## **2: Lee Lake South Occurrence**

This Lee Lake South Occurrence, also referred to as the Matson Occurrence, is located south of Santa Maria near the shore of Kawashegamuk Lake (claim # 4251321). This occurrence is described by Delisle (1990) as being two intersecting ribbon-textured quartz veins (4 cm and 56 cm wide) that are exposed in an open cut. The veins are hosted within a sheared and carbonatized quartz-feldspar porphyry dyke which intrudes mafic volcanic rocks. They strike between 140 and 160 degrees and dip steeply towards the northeast; six samples were collected with assays ranging from 0.09 g/t to 11.66 g/t gold with visible gold observed (Delisle, 1990).

## **3: Lee Lake North Shore (Glatz) Occurrence**

The Lee Lake North Shore (Glatz) Occurrence is reported to be an east-west trending carbonatized and silicified felsic dyke, several metres wide, containing disseminated pyrite, galena and chalcopyrite. Parker (1989) traced the dyke for “several hundred metres” and collected two grab samples which assayed 710 ppb and 1210 ppb (0.71 g/t and 1.21 g/t) Au.

#### **4: Lee Lake Southeast Occurrence**

The Lee Lake Southeast Occurrence is located on the southeast side of Lee Lake. The mineralized zone is exposed in old trenches and is hosted by an altered felsic dyke containing pyrite and galena. A grab sample by Kresz (1987) is reported to assay 0.04 oz/ton (1.37 g/t) Au.

#### **5: Long Lake Gold – Quartz Vein**

The Long Lake Gold-Quartz Vein was discovered by the Long Lake Gold Mining Company, approximately 90 metres north of the Santa Maria Shaft Zone. This vein was reported by Long Lake Gold Mining Company as being “very wide and returned gold values”, (Kresz, 1984). This may be the same vein that is reported upon in OGS Mineral Deposit Circular (Beard and Garratt, 1984) as the Long Lake-McCracken occurrence as being a ‘quartz vein system’ of 70% quartz, traced for 190 feet, 4 feet wide in strongly sheared sediments. Trench samples were reported to range from trace to 0.24 oz/ton (trace to 8.23 g/t) Au.

#### **6: Superstition Gold Occurrence**

This is located southwest of Tabor Lake in the Northern part of the Santa Maria claim group is described as being in a “silicified rhyolite intruded by blue quartz porphyry dikes and quartz veins” (Kresz, 1984). The zone is reportedly exposed in old trenches from which a grab sample assayed 0.82 oz/ton (28g/t) Au.

### **9.0 EXPLORATION**

#### **2012 Airborne Geophysics**

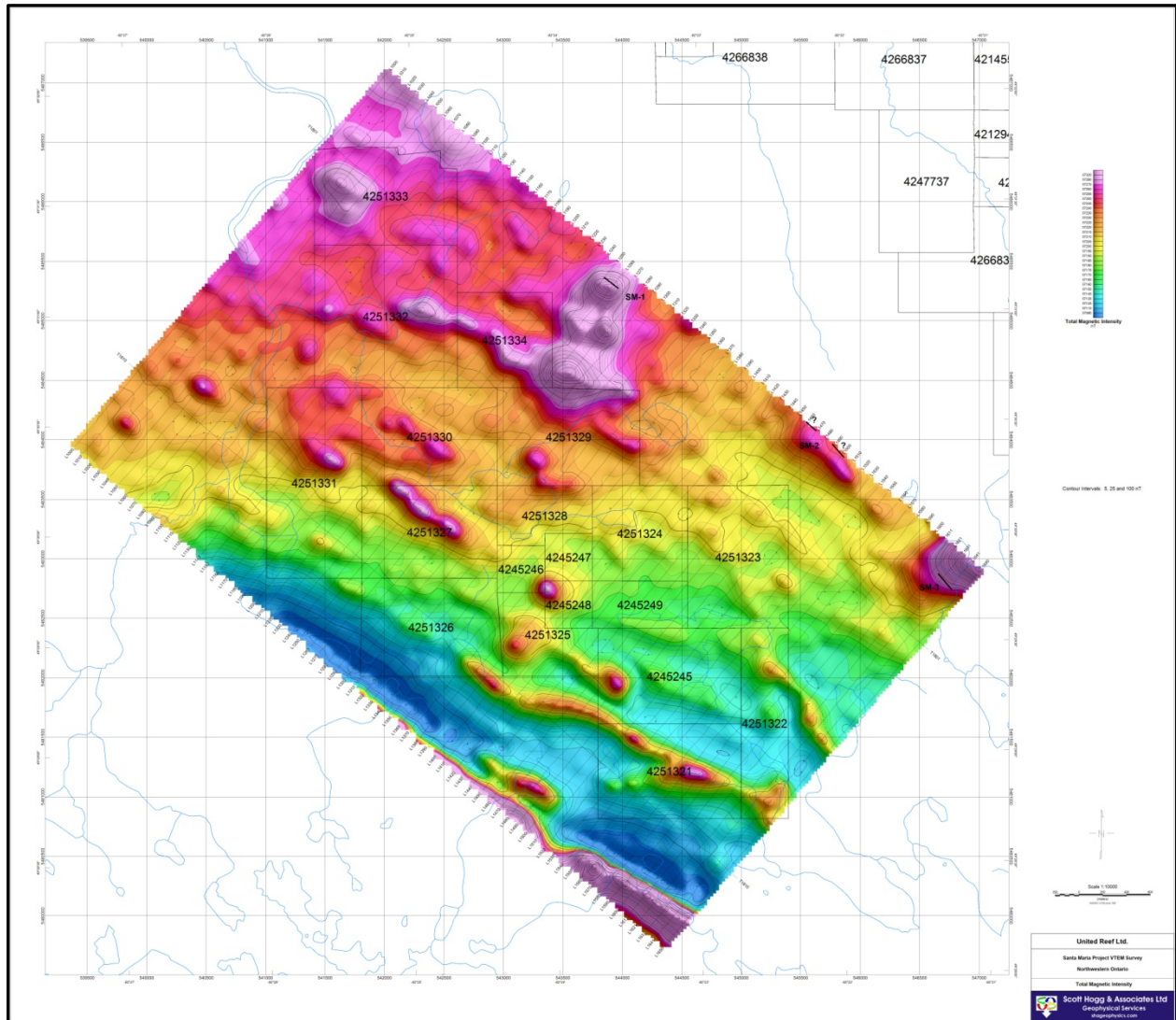
In January 2012, Geotech Ltd was contracted by Billiken Management on behalf of Black Widow Resources to conduct an airborne EM and magnetic survey over the Santa Maria claims. The survey was undertaken during the period of January 6-17<sup>th</sup> wherein 284 line km were covered using a helicopter and VTEM Plus instrumentation, with mean EM instrument ground clearance of 42m and magnetics clearance of 64m. GPS instrumentation and radar altimetry were used to track the flight path. Base station magnetometry data

were taken at the Dryden airport so that background effects could be removed from the field dataset.

Scott Hogg & Associates Ltd analysed the data, and their methodology is explained in detail in their April 2012 report “Interpretation Report for a VTEM and Magnetic Helicopter Geophysical Survey of the Santa Maria Block, Dryden Ontario”.

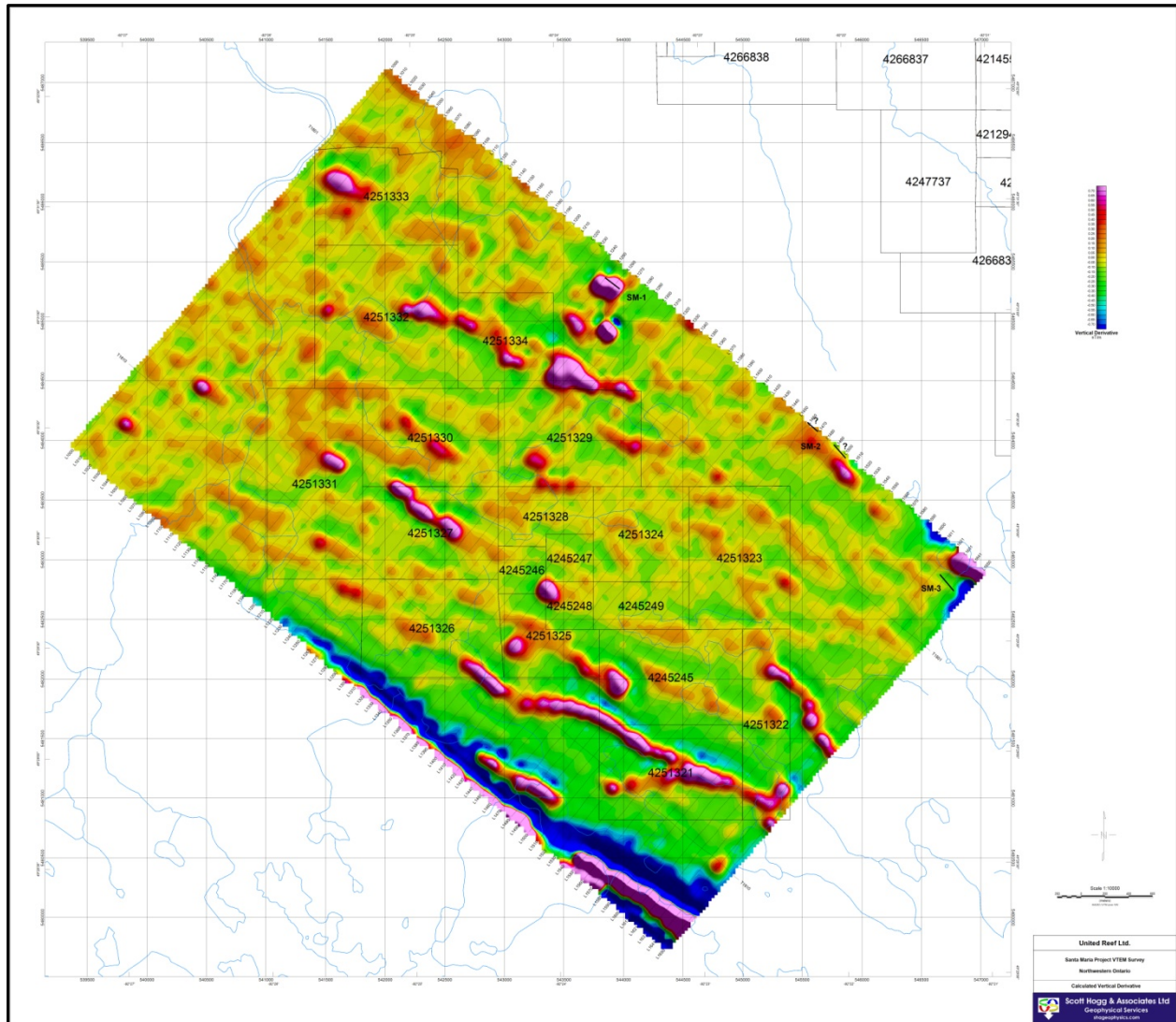
The magnetic data show strong NW-trending striations, corresponding to the subvertical metavolcano-sedimentary units of the Eagle-Wabigoon-Manitou belt. The Kawashegamuk shear zone and the Boyer Lake volcanics have a noticeably different magnetic footprint.

An outstanding high in the magnetic derivative data is located in the vicinity of the two Santa Maria shafts (Figures 6 and 7), within approximately 100m to the NW of Shaft #2. Steve Munro, of Scott Hogg & Associates, expressed doubts over the exact relationship between the anomaly and the shafts, citing discrepancies that may exist in the GPS data – a claim post found near the shafts and surveyed by Seymour Sears in 2009 was 225m SSE of its supposed location according to the Ministry of Northern Development and Mines (MNDM). The exact cause of the anomaly is not known. Several similar responses can be seen in the magnetic derivative data, aligned with local stratigraphy, which may be worthy of further investigation. Other features exist along strike of the Santa Maria shafts, including one minor high roughly 1km NW of the shafts area, which is highly recommended for follow-up.



**Figure 6: Total Magnetic Field (Scott Hogg and Associates, 2012)**





**Figure 7: Calculated Vertical Derivative (Scott Hogg and Associates, 2012)**

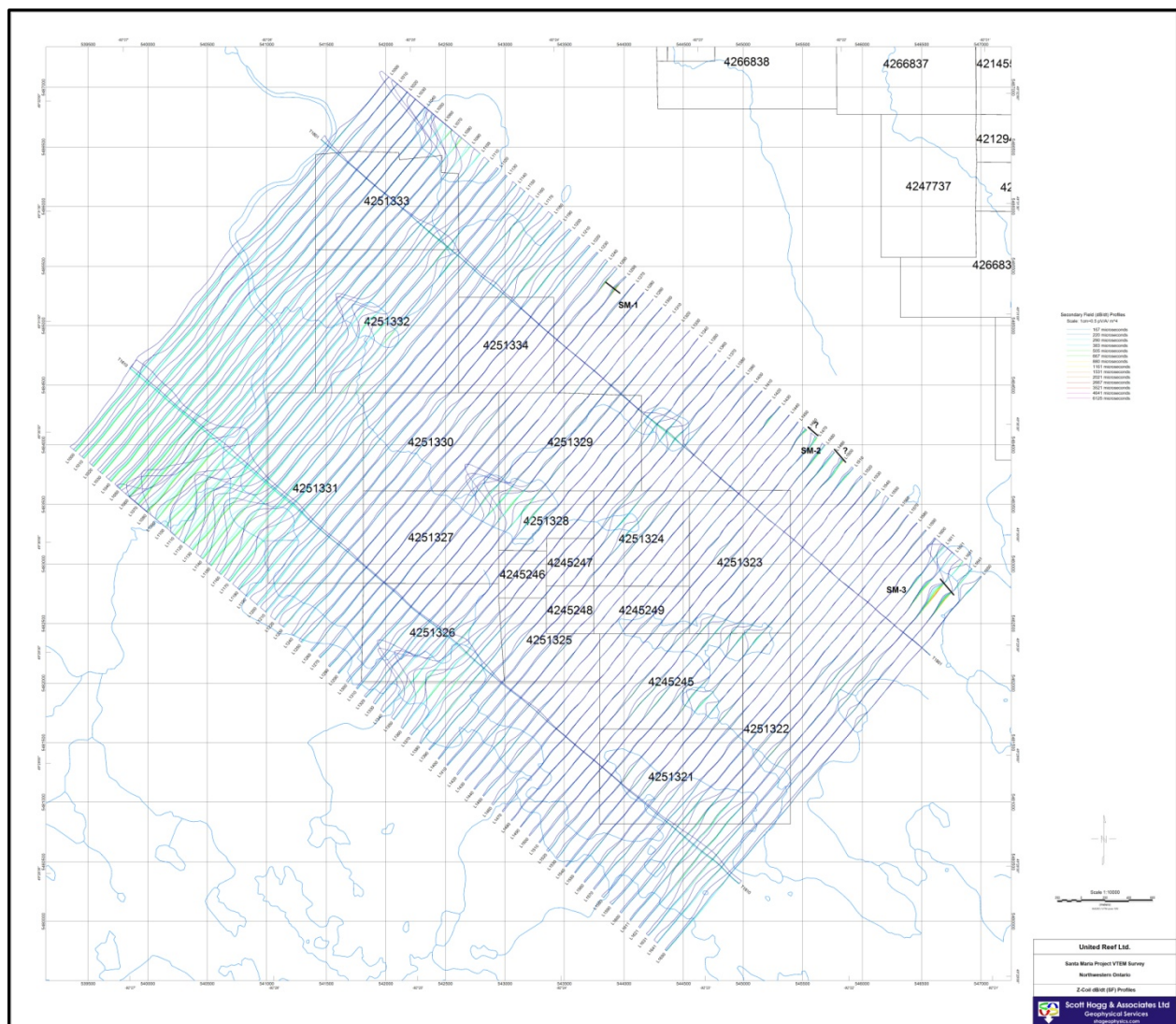
Most of the EM responses are fast-decaying and can be easily attributed to lake sediment. The most prominent bedrock conductors were all off the claim areas as they stood at the time, on the northeast edge of the survey area (Figures 8 and 9). All are approximately along strike of each other. Three responses were picked by Steve Munro of Scott Hogg & Associates Ltd:

“**SM-1**” – aligns with a magnetic anomaly on lines 1250 and 1260 and is probably caused by sulphide mineralization.

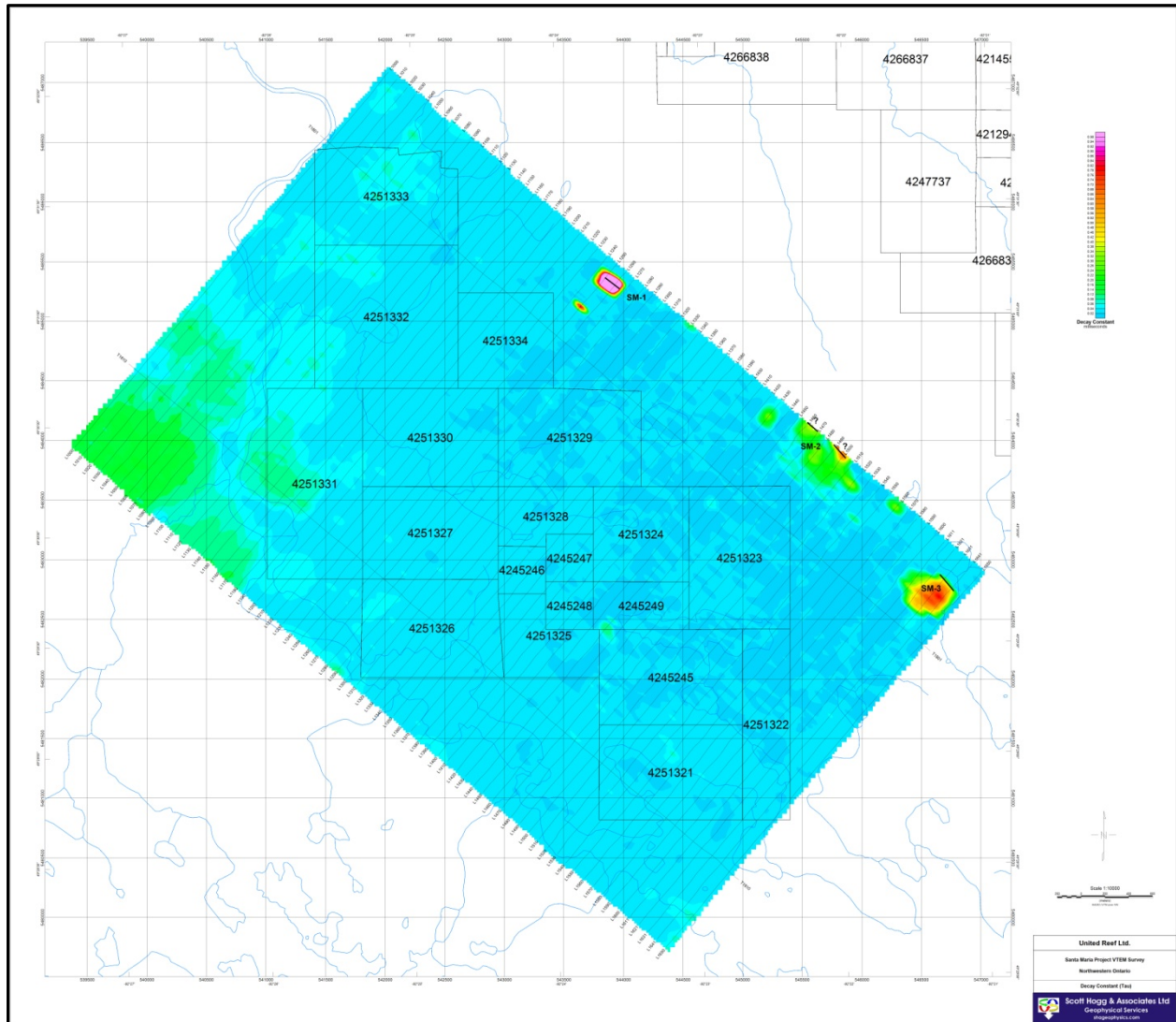
**“SM-2”** – also aligns with a magnetic anomaly on lines 1460 to 1500. It lies on the very edge of the survey area and so is insufficiently characterised by this dataset. This area should be visited on the ground and/or resurveyed in its entirety.

**“SM-3”** – this is on lines 1611 to 1641 in the SE corner of the survey area – it shows a narrow southwest-dipping conductor, possibly indicating a contact-controlled mineralized lens.

Five claims were staked by Mike Peplinski for Black Widow in February 2012 to cover the three anomalies above and their wider surroundings.



**Figure 8: dB/dt Profile (Scott Hogg and Associates, 2012)**



**Figure 9: Decay Constant (Tau) (Scott Hogg and Associates, 2012)**

## 2012 Site Visit

On August 10, 2012, Brian Newton of Billiken Management visited the Santa Maria property with Mike Peplinski of Greenstone Explorations. The Santa Maria shaft area was accessed from the Sandy Point Camp by Argo and ATV, using an overgrown trail. Eight samples were taken from both shaft areas plus an old trench that lies close to shaft #2 (Figure 10) with descriptions as follows:

Shaft #1 is located at UTM coordinates: 5482637N / 0543554E

**Sample #: 655801**

This sample was taken from the SE side of the shaft collar in a chlorite-sericite schist that is rusty, mineralized with finely disseminated pyrite and very fissile. The schist unit appears to be at least 3 meters wide, is vertically dipping and hosts at least two .5 m wide quartz veins with numerous narrow quartz veinlet's that parallel foliation and dip throughout. An old sample tag was noted with only the last three sample digits – 101 – identifiable.

**Sample #: 655802**

This sample was taken from a .2 m wide quartz vein within the schist approximately 1m to the north of the previous sample also along the shaft collar. The quartz is rusty, sugary texture with minor finely disseminated py along the schist contacts.

**Sample #: 655803**

This sample was also taken from along the shaft collar at the opposite corner to the first sample, also within the strong sericite chlorite schist in an area with several narrow quartz veinlets that form part of the grab itself.

Several samples were taken along the shaft #2 collar located at UTM coordinates: 5482672N / 543397E in a less fissile chlorite sericite schist also hosting quartz veins and veinlet's. The rock in this area appears somewhat more competent as such the shaft collar is in much better shape and the shaft is filled with water to approximately 3 m of surface outcrop level. Chlorite schist, rusty, more competent than the similar unit at Shaft #1, 1-2% finely disseminated py throughout.

**Sample #: 655805**

Chlorite schist, rusty, strongly foliated at 020, dip -90, approximately .5 m to the south of the main quartz vein with disseminated py throughout.



**Sample #: 655806**

Quartz Vein, .5m wide, milky white, rust stained, fine py cubes within the quartz. The vein parallels the dip and foliation of the host chlorite schist.

**Sample #: 655807**

Chlorite schist located on the other side of the quartz vein sampled above. Rusty, felsic, sericitic, finely disseminated pyrite throughout.

**Sample #: 6558008:**

A small trench located 10 meters to the north of shaft #2 was investigated briefly and one sample was taken from it. The trench is located at UTM coordinates: 5482679N / 543375E.

This was taken from a vertically dipping chlorite sericite schist, striking at 120 degrees. Narrow quartz veinlet's parallel to strike and dip throughout. There is 1-2% finely disseminated py throughout.

All samples were tested by Actlabs in Thunder Bay using the 1F2 and 1A2 assay packages (with 1A3 fire assay for Au overlimits). Seven standards, two duplicates and three blanks were tested as part of lab quality control. Table 3 summarizes the sample details.

**Table 3: 2012 Site Visit Sample Descriptions and Assay Results**

Sample	UTM E	UTM N	Description	Au ppb
655801	543554	5482637	Shaft #1: chl-ser sch + fine diss py	43
655802	543554	5482637	Shaft #1: 20cm qz vein in schist, fine py on contacts	283
655803	543554	5482637	Shaft #1: chl-ser sch + qz veinlets	21
655804	543397	5482672	Shaft #2: chl sch + fine diss py	46
655805	543397	5482672	Shaft #2: chl sch + fine diss py	< 5
655806	543397	5482672	Shaft #2: 50cm qz vein conc with sch, + fine py	112
655807	543397	5482672	Shaft #2: chl-ser sch + fine diss py	38
655808	543375	5482679	Trench: chl-ser sch + qz veinlets, fine diss py	199

Some of these samples clearly have elevated Au values as would be expected from proximity to a gold-bearing system.



**Figure 10: 2012 Site Visit Sample Locations**

## 10.0 DRILLING

Black Widow Resources has not undertaken any drilling program on the Santa Maria property.

## **11.0 SAMPLE PREPARATION, ANALYSES AND SECURITY**

During the August 2012 site visit, eight field grab samples were taken by Billiken Management for Black Widow. These samples were taken based on their suitability for hosting gold mineralization.

In the field, the samples were placed in plastic sample bags with a sample tag, and the bags were sealed with a plastic zip tie. They were stored securely and were delivered to Actlabs in Thunder Bay by a Billiken Management employee. The samples were prepared using Actlabs' prep code RX1 and assayed by 1F2 Total Digestion and 1A2 fire assay, with 1A3 fire assay for any Au overlimits.

## **12.0 DATA VERIFICATION**

The purpose of the August 2012 site visit was primarily to confirm the presence of gold occurrences within the property as stated in previous reports and determine the potential of hosting economic gold mineralization. B. Newton was able to locate Shafts 1 and 2 and collect eight rock samples during the site visit. These were assayed at Actlabs as part of work order A12-08795.

Actlabs for its part undertook in-house QA/QC protocol during the analysis of the samples wherein standards and blanks were tested along with the sample materials (see Appendix A Certificate of Analysis). The authors found that all variations were within acceptable limits.

## **13.0 ADJACENT PROPERTIES**

The greenstone belts of the Wabigoon Subprovince host lode gold deposits throughout their ranges, and many deposits and showings are known in the wider area around the Santa Maria property.



**Table 4: Gold Deposits in the Western Part of the Wabigoon Subprovince**

<b>Deposit Name</b>	<b>Owner</b>	<b>Info Source</b>	<b>Resource Estimate Author</b>	<b>Category</b>	<b>Oz. Au</b>
<b>Rainy River</b>	Rainy River Resources	company website	SRK Consulting 2009	measured and indicated combined	5663000
<b>Cameron Lake</b>	Coventry Resources	company website	n/a	Indicated and inferred	19.4Mt at 2.24 g/t Au for 1,397,000 oz Au (JORC compliant)
<b>Shoal Lake Gold Project</b>	Everton Resources	company website	2006	inferred and indicated	282,000 oz/416,000 oz
<b>Thunder Lake (Goliath Gold project)</b>	Treasury Metals	company website	ACA Howe & Associates 2011	inferred and indicated	900,000 oz Au+Ag/810,000 oz Au+Ag

The Rainy River Gold Project is defining an emerging Canadian Gold District, hosting NI 43-101 compliant gold resources of 0.97 Moz in the Measured category, 4.69 Moz in the Indicated category and 2.22 Moz in the Inferred category as of February 24, 2012.

The Cameron Gold Project has a JORC-Code compliant indicated and inferred mineral resource estimate of 19.4 Mt at 2.24 g/t gold for 1,397,200 ounces of gold (1.0 g/t Gold cut off), of which 41% is in the measured and indicated categories. More than 3,000 metres of underground development completed by previous owners, with three exploration drives and decline access to 243 metres vertical.

The current Goliath Gold deposit has a NI 43-101 compliant resource containing 1.7 million ounces of gold in the Inferred and Indicated categories combined (810,000 Indicated and 900,000 Inferred). The Goliath Gold Project has successfully advanced to the Preliminary Economic Assessment (PEA) stage of mine development.

Up to twenty small mines have operated in the Eagle-Wabigoon-Manitou belt in the past (Blackburn et al 1988), from which at least 19,471oz of gold were extracted from 69,666tons (63200t) of ore.

Two other sites not included in the above figures were exploited in the past. These include the Sakoose Mine, 5.0 km to the northeast, which produced 3,669oz of gold from three shafts and 884ft of drifts, intermittently from 1899 to 1947; and the Tabor Lake Mine immediately to the north of Santa Maria, which produced 36oz Au from one shaft in 1935 (Sears,2009).

#### **14.0 MINERAL PROCESSING AND METALLURGICAL TESTING**

Black Widow Resources has not reached the stage of mineral processing or metallurgical testing.

#### **15.0 MINERAL RESOURCE AND MINERAL RESERVE ESTIMATES**

Black Widow Resources has not reached the stage of mineral resource and mineral reserve estimation.

#### **16.0 OTHER RELEVANT DATA AND INFORMATION**

All relevant data and information available to the authors from previous technical reports by mineral exploration companies and government surveys are presented in this report.

#### **17.0 INTERPRETATIONS AND CONCLUSIONS**

It is Billiken Management's opinion that the Santa Maria property has the potential for hosting economic gold mineralization. There are at least six known gold occurrences within the property as described in the Mineralization section of this report, though none of the six occurrences have been systematically sampled, and none have been drilled. Furthermore, the surrounding area which has similar geology to the property is host to several gold prospects.

Three distinct EM anomalies were identified in the Geotech VTEM survey; each is suggestive of bedrock conductivity in an area where very little historical exploration work has been reported. These anomalies all occur along the northeast extent of the airborne survey and are now covered by the 5 new claims and are considered to have high priority for follow-up exploration work.

## **18.0 RECOMMENDATIONS**

Prior to Black Widow's Joint Venture Agreement with United Reef, no exploration work had been done on the property for the last twenty years. With the delineation of several geophysical anomalies during the 2012 airborne VTEM and Magnetic surveys of the property, a more comprehensive ground follow-up survey is recommended to check these anomalies, including the gold occurrences in relation to gold mineralization in the property.

A two-phase exploration program is recommended to advance the property's gold potential.

Phase I will include stripping, mapping and sampling of the six gold occurrences, follow up ground verification of the magnetic anomaly northwest of Shafts 1 and 2, line-cutting on anomalies SM-1, SM-2 and SM-3 followed by ground EM survey. The estimated cost for Phase I exploration is \$150,000.00.

Contingent upon the results of Phase I, Phase II will include surface drilling of identified targets from Phase I activity. The estimated cost for Phase II exploration is \$500,000.00.

## 19.0 REFERENCES

Beard, R. C. and Garratt, G.L., 1984: Gold Deposits of the Kenora – Fort Francis Area; Districts of Kenora and Rainy River; OGS Mineral Deposits Circular 16.

Blackburn, C.E., Hailstone, M.R., Parker, J.R. and Storey, C.C. 1988: Kenora Resident Geologist's area – 1987; in Report of Activities 1987, Resident Geologists, Ontario Geological Survey, Miscellaneous Paper 138, p.3-46.

Burden, L., 1985: Magnetic, VLF-EM and Geological Surveys of the New Klondike Property, Melgund Township District of Kenora for Silver Lake Resources Inc., OGS File 52F09NW0008.

Delisle, P.C., 1990: Property Visit – Matson Occurrence (Lee Lake Prospect), from OGS Open File 5731, p. 93-94.

Doherty, W., 1991: Description of Mineralization and Work Performed on Claim 1133426, OGS File 52F08NW0002 Kawashegamuk Lake.

Geotech Ltd., 2012: Report on a Helicopter-Borne Versatile Time Domain Electromagnetic (VTEM Plus) and Horizontal Magnetic Gradiometer Geophysical Survey, Santa Maria Property, Dryden Ontario, for Billiken Management.

Glatz, A., 1989: Prospecting Report on Lee Lake Project; Ontario Prospectors Assistance Plan (OPAP) Grant # OP-27-02.

Hodgson, C.J., 1993: Mesothermal lode-gold deposits, in Kirkham, R.V., Sinclair, W.D., Thorpe, R.I. and Duke, J.M., eds., Mineral Deposit Modeling: Geological Association of Canada, Special Paper 40, p. 635-678.

Kozowy, A., 1990: Kawashegamuk Lake Area – Gold, N.W. Ontario (Lee Lake Prospect); and OPAP Grant report; Grant # OP-90-273.

Kresz, D.U., 1987: Geology of the Kawashegamuk Lake Area, District of Kenora, Ontario Geological Survey, Open File Report 5659, 201p.

Ministry of Northern Development and Mines, Mining Lands Section, 2009: Ontario Mining Land Tenure Spatial Data [computer file].

Newton, B.H., 2012: Memo on Site Visit at Santa Maria Property – August 10, 2012. Billiken Management Services Inc.

Ontario Geological Survey, 1980: Airborne Electromagnetic and Total Intensity Magnetic Survey, Manitou-Stormy Lakes Area, District of Kenora.

Park, I.G., 1981: Report on VLF EM-16 and Magnetic Surveys Kawashegamuk Property, N.W. Ontario, OGS File 52F10SE0003.

Parker, J.R., 1989: Geology, Gold Mineralization and Property Visits in the area investigated by the Dryden-Ignace Economic Geologist, 1984-1987; OGS Open File Report 5723, 206p.

Penno, W. L., 1984: Report on the 1984 Exploration Program on the New Klondike Property in the Tabor Lake-Kawashegamuk Lake Area, OGS File 52F09SW0021.

Redden, J.W., 1990: Report on 1990 Exploration Programme Match Capital Resources Corporation Sakoose Property Tabor Lake Area Kenora Mining Division Ontario, OGS File 52F09SW0012.

Ryan, T.P., 1984: Report on Magnetometer Survey on Claims Held in the Kawashegamuk Lake Area, OGS File 52F10NW0025.

Scott Hogg & Associates Ltd., 2012: Interpretation Report for a VTEM and Magnetic Helicopter Gephysical Survey of the Santa Maria Block, Dryden Ontario, on behalf of United Reef Ltd.

Sears, S.M., 2009: NI 43-101 Technical Report on the Santa Maria Property, Kenora Mining Division, Ontario, Canada for United Reef Limited.

## **20.0 DATE AND SIGNATURE PAGE**

### **Certificate of Qualified Person:**

I, Brian Newton, certify that;

1. I reside at 1518 Jasmine Crescent, Oakville Ontario L6H 3H3 and I am a geologist practitioner for Billiken Management Services Inc. ,office address 304-65 Front St. East, Toronto, Ontario M5E 1B5.

2. This certificate applies to the technical report entitled “NI 43-101 Technical Report On The Santa Maria Property Kenora Mining Division Ontario, Canada for Black Widow Resources.” dated September --, 2012.

3. I am a graduate of McMaster University, Bachelor of Science in Geology (1984) and have practiced my profession continuously.

4. I am a member of the Association of Professional Geoscientists of Ontario (APGO) Registration No. 1330.

5. I am a qualified person for the purposes of National Instrument 43-101- Standards of Disclosure for Mineral Projects (NI 43-101).

6. I prepared sections 1.0 to 6.0 of this Technical Report.

7. I am independent, as described in Section 1.4 of NI 43-101, of Black Widow Resources.

8. I have had no prior involvement with the property that is the subject of this Technical Report.

9. I have read National Instrument 43-101 and this Technical Report has been prepared in compliance with NI 43-101.

10. As of the date of this certificate, to the best of my knowledge, information and belief, this Technical Report contains all scientific and technical information that is required to be disclosed to make this Technical Report not misleading.

Effective Date: September -- 2012

Signed in Toronto, Ontario this \_\_ of September 2012

Brian Newton

**Certificate of Qualified Person:**

I, Fortunato Milanes, certify that;

1. I reside at 48-1310 Fieldlight Blvd, Pickering, Ontario L1V 2Y8 and I am a geologist practitioner for Billiken Management Services Inc. ,office address 304-65 Front St. East, Toronto, Ontario M5E 1B5.
2. This certificate applies to the technical report entitled “NI 43-101 Technical Report On The Santa Maria Property Kenora Mining Division Ontario, Canada for Black Widow Resources.” dated September 27, 2012.
3. I am a graduate of University of the Philippines, Bachelor of Science in Geology (1977) and have been practicing continuously my profession.
4. I am a member of the Association of Professional Geoscientists of Ontario (APGO) Registration No. 1959.
5. I am a qualified person for the purposes of National Instrument 43-101- Standards of Disclosure for Mineral Projects (NI 43-101).
6. I prepared sections 1.0 to 6.0 of this Technical Report.
7. I am independent, as described in Section 1.4 of NI 43-101, of Black Widow Resources.
8. I have had no prior involvement with the property that is the subject of this Technical Report.
9. I have read National Instrument 43-101 and this Technical Report has been prepared in compliance with NI 43-101.
10. As of the date of this certificate, to the best of my knowledge, information and belief, this Technical Report contains all scientific and technical information that is required to be disclosed to make this Technical Report not misleading.

Effective Date: September -- 2012

Signed in Toronto, Ontario this \_\_ of September 2012

Fortunato Milanes

## **Appendix A**

### **Certificates of Analysis**





Date Submitted: 15-Aug-12  
Invoice No.: A12-08795  
Invoice Date: 22-Aug-12  
Your Reference: BW - Santa Maria

MINROC MANAGEMENT  
65 FRONT STR.  
TORONTO ONT M5E 1B5  
Canada

ATTN: Brian Newton

## CERTIFICATE OF ANALYSIS

9 Rock samples were submitted for analysis.

The following analytical packages were requested: Code 1A2-Tbay Au - Fire Assay AA (QOP Fire Assay Tbay)  
Code 1F2-Tbay Total Digestion ICP(TOTAL)

REPORT A12-08795

This report may be reproduced without our consent. If only selected portions of the report are reproduced, permission must be obtained. If no instructions were given at time of sample submittal regarding excess material, it will be discarded within 90 days of this report. Our liability is limited solely to the analytical cost of these analyses. Test results are representative only of material submitted for analysis.

### Notes:

If value exceeds upper limit we recommend reassay by fire assay gravimetric-Code 1A3  
Values which exceed the upper limit should be assayed for accurate numbers.

CERTIFIED BY :

A handwritten signature in black ink, appearing to read "Emmanuel Esemé", written over a horizontal line.

Emmanuel Esemé, Ph.D.  
Quality Control

ACTIVATION LABORATORIES LTD.  
1308 Sandhill Drive, Ancaster, Ontario Canada L9G 4V5 TELEPHONE +1.905.648.9611 or  
+1.888.228.5227 FAX +1.905.648.9613  
E-MAIL: [Ancaster@actlabs.com](mailto:Ancaster@actlabs.com) ACTLABS GROUP WEBSITE: [www.actlabs.com](http://www.actlabs.com)



Activation Laboratories Ltd. Report: A12-08795

Analyte Symbol	Ag	Al	As	Ba	Be	Bi	Ce	Cd	Co	Cr	Cu	Fe	Ga	Hg	K	Mg	Li	Mn	Mo	Ni	Ni	P	Pb	Sb
Unit Symbol	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	%	%	ppm	ppm	ppm	%	ppm	%	ppm	ppm
Detection Limit	0.3	0.01	3	7	1	2	0.01	0.3	1	1	1	0.01	1	1	0.01	0.01	1	1	1	0.01	1	0.001	3	5
Analysis Method	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP
888000	0.5	2.31	< 3	233	< 1	< 2	2.16	< 0.3	10	802	19	2.13	9	< 1	0.75	0.73	1	421	6	0.11	45	0.018	122	< 5
888001	< 0.3	4.70	< 3	507	2	< 2	3.99	< 0.3	17	335	17	3.78	16	< 1	1.58	1.32	2	771	< 1	0.23	66	0.040	5	< 5
888002	< 0.3	1.10	< 3	85	< 1	< 2	1.98	< 0.3	7	210	10	1.39	5	< 1	0.32	0.15	1	264	1	0.06	21	0.032	< 3	< 5
888003	< 0.3	5.45	< 3	342	< 1	< 2	5.78	< 0.3	25	136	49	5.40	19	< 1	2.02	0.47	7	860	< 1	0.36	74	0.035	< 3	< 5
888004	< 0.3	4.82	9	275	2	< 2	8.79	0.5	23	75	71	5.53	16	< 1	1.39	3.34	2	1170	2	0.52	57	0.034	7	< 5
888005	< 0.3	8.68	< 3	691	3	3	0.44	< 0.3	4	49	9	1.25	29	< 1	3.47	0.17	1	210	< 1	0.47	6	0.035	4	< 5
888006	0.5	1.01	4	46	< 1	< 2	1.10	< 0.3	4	125	85	0.95	4	< 1	0.25	0.45	< 1	161	3	0.14	15	0.015	21	< 5
888007	0.3	4.65	6	189	1	< 2	10.1	< 0.3	23	36	11	5.27	15	< 1	1.07	3.92	2	1340	< 1	1.41	58	0.024	3	< 5
888008	< 0.3	5.03	< 3	231	1	< 2	9.25	0.3	25	49	36	5.15	16	< 1	1.94	3.75	2	1230	< 1	0.22	73	0.013	< 3	< 5

Analyte Symbol	S	Sc	Sr	Ti	Ti	Ti	U	V	W	Y	Zn	Zr	Au
Unit Symbol	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppb
Detection Limit	0.01	4	1	2	0.01	5	10	2	5	1	1	5	5
Analytic Method	TD-HCP	TD-HCP	TD-HCP	TD-HCP	TD-HCP	TD-HCP	TD-HCP	TD-HCP	TD-HCP	TD-HCP	TD-HCP	TD-HCP	FA-AA
655000	0.07	5	61	< 2	0.10	< 5	< 10	50	5	3	25	25	709
655001	0.05	10	109	3	0.15	< 5	< 10	57	< 5	5	42	39	43
655002	0.05	< 4	42	< 2	0.05	< 5	< 10	36	< 5	2	20	12	263
655003	0.05	15	59	< 2	0.24	< 5	< 10	83	< 5	7	80	80	21
655004	0.75	14	220	< 2	0.23	< 5	< 10	122	10	7	72	49	46
655005	0.02	< 4	50	< 2	0.21	< 5	< 10	32	< 5	5	58	175	< 5
655006	0.04	< 4	32	< 2	0.04	< 5	< 10	15	< 5	13	22	30	112
655007	0.54	11	180	< 2	0.20	< 5	< 10	104	9	8	80	45	30
655008	0.15	15	208	< 2	0.23	< 5	< 10	105	9	7	51	52	199

Quality Control																									
Analyte Symbol	Ag	Al	As	Ba	Be	Bi	Ce	Cd	Co	Cr	Cu	Pb	Ga	Hg	K	Mg	Li	Mn	Mo	Na	Ni	P	Pt	Sb	
Unit Symbol	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	%	ppm	ppm	%	%	ppm	ppm	ppm	%	ppm	%	ppm	ppm	
Detection Limit	0.3	0.01	3	7	1	2	0.01	0.3	1	1	1	0.01	1	1	0.01	0.01	1	1	1	0.01	1	0.001	3	5	
Analytic Method	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	TD-ICP	
GXR-1 Meas	31.4	2.16	428	559	1	1390	0.87	3.3	8	11	1160	23.0	8	4	0.04	0.21	8	952	17	0.04	44	0.058	733	70	
GXR-1 Cert	31.0	3.52	427	750	1.22	1380	0.960	3.30	8.20	12.0	1110	23.5	13.8	3.90	0.050	0.217	8.20	852	18.0	0.0520	41.0	0.0650	730	122	
GXR-4 Meas	3.6	7.10	108	225	2	13	1.02	0.5	15	31	5470	2.95	22	< 1	3.99	1.70	10	163	311	0.45	43	0.130	43	< 5	
GXR-4 Cert	4.00	7.20	98.0	1640	1.90	19.0	1.01	0.860	14.6	64.0	6520	3.09	20.0	0.110	4.01	1.86	11.1	155	310	0.564	42.0	0.120	52.0	4.80	
SDC-1 Meas	< 0.3	9.30	3	630	3	< 2	1.14		21	48	34	5.24	31	< 1	2.15	1.14	39	927	1	1.80	41	0.058	21	10	
SDC-1 Cert	0.0410	8.34	0.220	630	3.00	2.60	1.00		18.0	64.00	30.00	4.82	25.00	0.20	2.72	1.02	34.00	880.00	0.250	1.52	38.0	0.0690	25.00	0.54	
SCD-1 Meas	< 0.3	7.67	19	490	2	2	1.80	0.3	12	56	31	3.47	21		1.87	1.80	43	411	1	0.80	29	0.062	23	< 5	
SCD-1 Cert	0.134	7.24	12.00	570	1.80	0.37	1.87	0.140	11.00	66.0	29	3.59	15		2.30	1.64	45	410	1.4	0.670	27	0.0900	31.0	2.50	
GXR-5 Meas	0.6	13.2	324	> 1000	1	3	0.16	0.7	16	91	74	5.78	37	< 1	1.78	0.60	35	1210	1	0.09	31	0.037	90	< 5	
GXR-5 Cert	1.30	17.7	330	1300	1.40	0.290	0.180	1.00	13.8	96.0	66.0	5.58	35.0	0.0890	1.87	0.609	32.0	1010	2.40	0.104	27.0	0.0350	101	3.60	
DNC-1a Meas				88					54	222	96						5				255			< 5	
DNC-1a Cert				118					57.0	270	100.0						5.20				247			0.96	
OREAS 13b (4-Add)	1.2		50						81	9910	2480								12		2230				
Meas																									
OREAS 13b (4-Add)	0.86		57						75	8650	2300.000								9.0		2247				
Cert																									
655804 Orig	0.3	4.59	12	254	2	< 2	8.60	0.4	23	70	70	5.44	16	< 1	1.05	3.29	2	1130	2	0.51	57	0.033	7	< 5	
655804 Dup	< 0.3	5.05	6	285	2	< 2	8.99	0.5	23	82	71	5.61	16	< 1	1.73	3.39	2	1200	2	0.53	58	0.035	7	< 5	
655808 Orig	< 0.3	5.03	< 3	231	1	< 2	9.25	0.3	25	49	36	6.15	16	< 1	1.94	3.78	2	1230	< 1	0.22	73	0.013	< 3	< 5	
655808 Split	< 0.3	4.93	< 3	230	1	< 2	9.25	0.4	25	38	33	6.14	13	< 1	1.85	3.77	2	1210	< 1	0.23	72	0.012	< 3	< 5	
Method Blank	< 0.3	< 0.01	< 3	< 7	< 1	< 2	< 0.01	< 0.3	< 1		1	< 0.01	< 1	< 1	< 0.01	< 0.01	< 1	3	< 1	< 0.01	1	< 0.001	< 3	< 5	
Method Blank	< 0.3	< 0.01	< 3	< 7	< 1	< 2	< 0.01	< 0.3	< 1		< 1	< 0.01	< 1	< 1	< 0.01	< 0.01	< 1		< 1	< 0.01	< 1	< 0.001	< 3	< 5	
Method Blank	< 0.3	< 0.01	< 3	< 7	< 1	< 2	< 0.01	< 0.3	< 1		< 1	< 0.01	< 1	< 1	< 0.01	< 0.01	< 1		< 1	< 0.01	< 1	< 0.001	< 3	< 5	

Quality Control													
Analyte Symbol	S	Sc	Sr	Ta	Ti	Tl	U	V	W	Y	Zn	Zr	Au
Unit Symbol	%	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppb
Detection Limit	0.01	4	1	2	0.01	5	10	2	5	1	1	5	5
Analytic Method	TD-HCP	TD-HCP	TD-HCP	TD-HCP	TD-HCP	TD-HCP	TD-HCP	TD-HCP	TD-HCP	TD-HCP	TD-HCP	TD-HCP	FA-AA
GXR-1 Meas	0.25	< 4	264	13		< 5	30	87	163	28	727	26	
GXR-1 Cert	0.257	1.58	275	13.0		0.390	34.9	80.0	154	32.0	760	38.0	
GXR-4 Meas	1.76	8	216	3		< 5	< 10	88	32	13	72	46	
GXR-4 Cert	1.77	7.70	221	0.970		3.20	6.20	87.0	30.8	14.0	73.0	186	
SDC-1 Meas	0.07	18	162		0.15	< 5	< 10	45	< 5	36	109	37	
SDC-1 Cert	0.0690	17.00	160.00		0.906	0.70	3.10	102.00	0.800	40.0	103.00	290.00	
SDC-1 Meas	0.06	12	161		0.36			135	< 5	19	96	119	
SDC-1 Cert	0.0630	11.0	170		0.380			130	1.4	26	100	180	
GXR-6 Meas	0.02	29	37	< 2		< 5	< 10	167	< 5	13	137	104	
GXR-6 Cert	0.0180	27.6	35.0	0.0180		2.20	1.54	186	1.90	14.0	118	110	
DNC-1a Meas		30	130					144		15	58	38	
DNC-1a Cert		31	144.0					148.0		18.0	70.0	38	
OREAS 13b (4-Acid) Meas	1.20										141		
OREAS 13b (4-Acid) Cert	1.20										133		
885804 Orig	0.73	13	216	< 2	0.23	< 5	< 10	119	10	7	70	48	
885804 Dup	0.76	15	224	< 2	0.24	< 5	< 10	125	10	8	74	50	
885806 Orig	0.15	15	206	< 2	0.23	< 5	< 10	105	9	7	51	52	199
885806 Split	0.15	16	202	3	0.22	< 5	< 10	105	9	7	51	51	167
Method Blank	< 0.01	< 4	< 1	< 2	< 0.01	< 5	< 10	< 2	< 5	< 1	< 1	< 5	
Method Blank	< 0.01	< 4	< 1	< 2	< 0.01	< 5	< 10	< 2	< 5	< 1	< 1	< 5	
Method Blank	< 0.01	< 4	< 1	< 2	< 0.01	< 5	< 10	< 2	< 5	< 1	< 1	< 5	