# TECHNICAL REPORT 

## FOR THE

WAWA DIAMOND PROJECT<br>LALIBERT AND MENZIES TOWNSHIPS<br>NORTH CENTRAL ONTARIO


#### Abstract

OF

KWG RESOURCES INC. \& SPIDER RESOURCES INC.

FOR


KWG RESOURCES INC. \& SPIDER RESOURCES INC.

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TABLE OF CONTENTS
Table of Contents ..... - i-
Table of Illustrations ..... - ii-
Summary ..... -iii-
INTRODUCTION AND TERMS OF REFERENCE
Background, Authorization and Purpose ..... 1
Scope and Limitations ..... 2
Sources of Information ..... 2
Plan of Presentation ..... 3
DISCLAIMER ..... 3
PROPERTY DESCRIPTION \& LOCATION ..... 4
ACCESS, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE \& PHYSIOGRAPHY ..... 7
EXPLORATION HISTORY
General ..... 8
Company/Individual Reports ..... 9
Government Reports and Other Data ..... 11
GEOLOGICAL SETTING
Regional ..... 15
Local ..... 17
Property ..... 18
DEPOSIT TYPES ..... 20
MINERALIZATION ..... 23
EXPLORATION ..... 26
DRILLING ..... 29
SAMPLING METHOD AND APPROACH
Prospecting Samples ..... 29
Bulk Samples ..... 30
SAMPLE PREPARATION, ANALYSIS AND SECURITY
Prospecting Samples ..... 31
Bulk Samples ..... 32
DATA VERIFICATION
Prospecting Samples ..... 36
Bulk Samples ..... 38
ADJACENT PROPERTIES ..... 38
MINERAL PROCESSING AND METALLURGICAL TESTING ..... 38
OTHER RELEVANT DATA AND INFORMATION ..... 38
INTERPRETATION AND CONCLUSIONS ..... 39
RECOMMENDATIONS ..... 40
REFERENCES ..... 43
CERTIFICATE ..... 45

## TABLE OF ILLUSTRATIONS APPENDICES

| APPENDIX |  | Page |
| :---: | :---: | :---: |
|  | Letter of Authorization | 46 |
|  | LIST OF TABLES |  |
| TABLE 1 | Anomalous Values in Till Samples ....................................................... | 13 |
| TABLE 2 | Summary of Diamonds Recovered from Prospecting Samples 1995-2004.. | After Page |
| TABLE 3 A | Summary of Diamonds Recovered From 2001 Mini Bulk Samples........... | 26 |
| TABLE 3 B | Mini Bulk Samples Comparative Results : Lakefield 50 Kg Representative Samples vs Prospecting Samples. | 26 |
| TABLE 3 C | 2002 Mini Bulk Samples Results : Magnetic Seperation Test Results........ | 26 |
| TABLE 3 D | SPQ-BK-4 : Attrition Milling Results.................................................... | 26 |
| TABLE 4 | Comparison of Diamond Counts - Prospecting Samples vs Larger Duplicate Samples $\qquad$ | 37 |
| TABLE 5 | 2001 Samples - Comparison of Results Between the First and Second Analysis $\qquad$ | 37 |
| TABLE 6 | Proposed Exploration Budget .............................................................. | $\begin{gathered} \text { Page } \end{gathered}$ |

## LIST OF FIGURES

FIGURE 1 General Location Map : 1:8,000
After Page

FIGURE 2 Property Outline : 1: 50,000
FIGURE 3 Location of Various Company Properties : 1:100,000
FIGURE 4 Assessment Compilation : 1:50,000 ................................................ 42
FIGURE 5 Subdivision of the Superior Province into Subprovinces .................... 42
FIGURE 6 Michipicoten Greenstone Belt : 1:1,000,000 ..................................... 42
FIGURE $7 \quad \begin{aligned} & \text { Geological map showing the distribution of major rock types and the } \\ & \text { tectonic assemblages of the Michipicoten greenstone belt ................ }\end{aligned}$
FIGURE $8 \quad \begin{aligned} & \text { Composite structural cross section through the central part of the } \\ & \text { Michipicoten greenstone belt ..................................................... } 42\end{aligned}$
FIGURE 9 General Geology : 1:50,000 ............................................................. 42
FIGURE 10 Location of Rock Samples : 1:20,000
FIGURE 11 Schematic Showing Relationship of Various Facies in a Diamond Bearing Volcanic Complex42

FIGURE 12 Diamond Source Locations .............................................................. 42
FIGURE 13 Histogram - Diamond Counts per Sample $\qquad$
FIGURE 14 Stripped Area 2004-07

## SUMMARY

KWG Resources Inc. (KWG) and Spider Resources Inc. (Spider) hold, under a licence / lease agreement with Michipicoten Forest Resources and Cedar Falls Resources, an option on a $100 \%$ interest in the mineral rights to a $45 \mathrm{~km}^{2}$ property in Lalibert and Menzies Townships, north central Ontario. Current approximate respective ownership to the mineral rights are $50.7 \% \mathrm{KWG}$ and $49.3 \%$ Spider. The property is also subject to an agreement between KWG / Spider and Saminex, a private company owned by the two prospectors who made the initial diamond discovery on the property.

Highway 17, part of the Trans Canada highway network, bisects the property in a NW / SE direction. Access is also provided by secondary / tertiary logging roads, as well as numerous lakes, rivers, and creeks. Wawa, a mining community of 4100 , lies 30 km to the south.

The property is situated within the Michipicoten greenstone belt which constitutes a part of the Wawa subprovince of the Superior province of the Canadian Shield, and is underlain primarily by mafic and felsic volcanic rocks of the Catfish assemblage, plus associated sedimentary rocks. A cluster of diamond bearing dykes and volcanic complexes, that are unrelated to the regional volcanic rocks which form the greenstone belt, were intruded into a regional volcanic pile at or near the contact between the older mafic rocks and younger felsic rocks of the Catfish assemblage. The volcanic complexes are composed of a) a hypabyssal facies represented by lamprophyre dykes containing ultramafic and crustal xenoliths of varying proportions, sizes and textures, b) a subvolcanic facies in which the dykes contain abundant fragments of the country rock and, c) a volcanic facies which includes breccia, lapilli tuff and ash units.

The Michipicoten greenstone belt underwent a complex structural history whereby it was first folded about east - west axes into recumbent folds and later re-folded into upright folds about northwest trending axes. High angle reverse thrust faults parallel to the NW axes created repetitions in the volcanic stratigraphy. As a result, the volcanic complexes are now aligned into NW trending corridors.

Seven centres of volcanic facies rocks plus numerous lamprophyre dykes of the hypabyssal facies have been located on the property during past phases of exploration. All facies may contain diamonds. To date 3422 diamonds ( 2842 micro, 546 macro and 34 commercial) have been recovered from 103 individual prospecting samples from 37 locales on the property. A total of 17 commercial size diamonds, those with one dimension $>1 \mathrm{~mm}$, were recovered from 4 of 7 mini bulk samples. One area, a dyke that has been exposed by extensive stripping, is an immediate drill target.

Although exploration on the property is at an early stage, the geological environment underlying the property is believed to be highly prospective to host one or more diamond deposits. Prospecting and the treatment of 10 to 15 kg samples by caustic fusion have proven to be the most efficient, cost effective means to locate these diamond bearing rock units. A two phased, multi disciplined exploration program to cost $\$ 929,000$ and to consist of prospecting, sampling, geological mapping, core drilling and bulk sampling is recommended to advance the property to a point at which its economic potential may be more confidently assessed.

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## OF

KWG RESOURCES INC. \& SPIDER RESOURCES INC.

## INTRODUCTION AND TERMS OF REFERENCE

## Background, Authorization and Purpose

KWG Resources Inc. (KWG) and Spider Resources Inc. (Spider) hold, under a licence / lease agreement, an option on a $100 \%$ interest in the mineral rights to a $45 \mathrm{~km}^{2}$ property near Wawa in Lalibert and Menzies Townships, north central Ontario (Figures 1 \& 2). The respective ownership to the rights by KWG \& Spider varies depending upon who funds a particular work program and the costs involved. Current ownership is approximately $50.7 \%$ KWG and 49.3\% Spider (Neil Novak, pers comm.). Spider is the project operator. As a result of recent exploration efforts several diamond occurrences are known on the property. The geological environment underlying the property is considered to be highly prospective for one or more diamond deposits.

The Wawa region has an extensive geological and mining history. From 1900 to 1998 $92,758,846$ tonnes of iron ore were produced from 11 deposits. In addition, $68,094 \mathrm{~kg}$ ( $2,189,285 \mathrm{oz}$ ) of gold were produced from 9,371,324 tonnes milled from 20 mines in the period 1902 to 2004 (A. Wilson, pers. comm.). Only the Eagle River gold mine, located 50 km west of Wawa, is currently in production. Depending upon commodity prices, advances in exploration technology, new discoveries, etc. the area has seen periodic bursts of exploration for gold, iron, base metals and more recently diamonds. The Sandor diamond occurrence, the discovery site of diamonds in bedrock in the Wawa region, is located on the KWG / Spider property.

The level of exploration has increased significantly in the past two years. Other companies active in the area (Figure 3) include Pele Mountain Resources Inc. (Pele), Band-Ore Resources Ltd. (Band-Ore) and Oasis Diamond Exploration Inc. (Oasis).

By letters dated September 12, 2005 Mr Neil Novak, President and Chief Executive Officer of Spider and Mr. Frank Smeenk, CEO of KWG requested the preparation of an updated technical report for the Wawa diamond property. The report is to be filed by Spider and KWG with the appropriate regulatory body (bodies) and may also be used to satisfy other regulatory requirements or financings. Copies of the Letters of Authorization are included herein as Appendix I.

## Scope and Limitations

This report evaluates the mineral potential of KWG's Wawa diamond property. Research of historic exploration activities was limited to the property and immediate surrounding area. Data examined to determine the geological setting for the region were sourced for a larger area within the district. The unit prices for various contractors, laboratory charges, professional fees, etc. have been researched and are the going rates for northeastern Ontario based companies and individuals at the present time. For this report, imperial units have been converted to metric. Currency is expressed in Canadian dollars. The terms micro diamonds, macro diamonds and commercial diamonds are used in this report as follows. Micro diamond refer to diamonds for which all dimensions are less than 0.5 mm , macro diamonds have at least one dimension greater than 0.5 mm , and commercial diamonds have at least one dimension greater than 1.00 mm .

## Sources of Information

Sources of information are detailed below, and include those in the public domain as well as personally acquired data.

- Research of the assessment files in the office of the Resident Geologist in Timmins on June 24 \& 27, 2002 and July 20, 2005;
- Review of various geological reports and maps produced by the Ontario Geological Survey or its predecessors, and by the Geological Survey of Canada;
- Discussions with persons knowledgeable of the property and/or area; and
- Personal knowledge of the property. The Author, as an independent contractor / consultant to Billiken Management Services Inc. (Billiken) who have the management contract with KWG and Spider for exploration on the property, supervised the 2001, 2002 and 2004 exploration programs on the property, and is thus familiar with the property and the project.

In addition to the time spent reviewing the assessment files a total of 8 days were spent writing the report, preparing figures, etc.

## Plan of Presentation

KWG's / Spider's Wawa diamond property is presented, described and evaluated in accordance with the guidelines specified in National Instrument 43-101. Recommendations for a staged, multi discipline work program with cost estimates that are necessary and warranted to effectively advance the property towards a better understanding of its economic potential are put forward. Maps that accurately display property location, exploration history, geology and exploration potential are also included.

## DISCLAIMER

The Author was supplied with the following legal documents relating to the property. These were reviewed in order to detail the points of agreement listed in the following section. A legal opinion re the property status was not obtained.

1. Mineral Licence agreement with Algoma Central dated July 1, 1996.
2. January 21, 1997 letter sent to Saminex from Algoma Central.
3. Letter dated June 22, 1998 sent by Wagner Forest confirming the request for a reduction in the property size.
4. June 1999 Amending Agreement.
5. Draft of JV agreement between KWG and Spider.

## PROPERTY DESCRIPTION \& LOCATION

The $45 \mathrm{~km}^{2}$ Wawa diamond property is located in Lalibert and Menzies Townships, north
central Ontario, approximately 190 km north northwest from the city of Sault Ste. Marie (Figure 1). Wawa ( 30 km to the south), White River ( 60 km northwest) and Dubreuilville ( 27 km NE) are the closest towns. Wawa and White River, as well as the property, are situated along Hwy 17 (part of the Trans Canada Highway network). The property boundary is defined by UTM coordinates and is not surveyed. Geographical coordinates for the southeast property corner are $84^{\circ} 48.5^{\prime}$ west longitude by $48^{\circ} 08.9^{\prime}$ north latitude (Figure 2). The NTS designation is $42 \mathrm{C} / 2 \&$ 7.

Mineral, timber and surface rights to the property were originally granted by the Canadian government to the Algoma Central and Hudson Bay Railway. Administration of these rights was conducted by the Algoma Central Corporation (ACC). The lands are generally referred to as the ACC lands. Subsequently, the rights were sold to Wagner Ontario Forest Management Ltd. (Wagner). The lands on which KWG / Spider hold an option were in turn sold to Michipicoten Forest Resources (MFR) and Cedar Falls Resources (CFR). The MFR \& CFR lands are administered by Sustainable Forest Technologies (SFT). KWG / Spider acquired the mineral rights to the Wawa diamond project property for a 5 year term (which is renewable for a second 5 year term) under a Licence / Lease Agreement between ACC and Spider dated July 1, 1996. The licence pertains to exploration activities and the lease to any mining operation. Originally, the property included $222 \mathrm{~km}^{2}$, but was reduced in 1998 to its present $45 \mathrm{~km}^{2}$. A general summary of the main terms of the agreement follows, and are stated to reflect the facts that SFT have assumed all covenants and obligations from ACC, and that KWG and Spider are joint venture partners.

- SFT agrees to maintain the lands in good standing with respect to filings, fees, taxes, assessments, work commitments and other matters.
- SFT warrants that there is no adverse claim or challenge against the ACC lands.
- SFT warrants that there are no outstanding agreements with respect to the mining rights associated with the ACC lands except for a debenture with the Bank of Nova Scotia.
- $\quad \mathrm{KWG} /$ Spider must pay an annual licence fee of $\$ 500 / \mathrm{km}^{2}(\$ 22,500$ total).
- KWG / Spider must incur annual exploration expenditures of $\$ 2,000 / \mathrm{km}^{2}(\$ 90,000$ total) during the first term and $\$ 2,500 / \mathrm{km}^{2}(\$ 112,500$ total) in the second term. (The
agreement is in the second term.) Any deficiencies may be made up by paying SFT onehalf of the deficiency.
- KWG / Spider must pay SFT a 3\% royalty on any production from the property.
- During exploration KWG /Spider must adhere to normal government regulations.
- KWG / Spider may assign all or parts of the property to a third party.
- KWG / Spider may reduce the amount of land under the agreement or request that additional lands be added thereto.
- KWG / Spider must provide SFT with an annual report of work, a work proposal for the coming year, 2 copies of all geological or other exploration reports and a certified copy of all expenses.
- KWG / Spider may acquire a 5 year term renewable lease provided that a minimum of $\$ 2,000,000$ has been expended in exploration work on the ACC lands, and that the lease include a minimum of 16.19 ha ( 40 acres).
- KWG / Spider must pay an annual rent of $\$ 100$ per 0.405 ha (1 acre) during the first term of the lease and $\$ 125$ per 0.405 ha in any subsequent term.
- KWG / Spider must incur annual expenses on the lease of a minimum $\$ 1,000$ per 0.405 ha in the first term and $\$ 1,250$ per 0.405 ha in any renewal term.
- Once a lease has been granted, KWG / Spider may elect to reduce the royalty to be paid to SFT to a maximum $1.5 \%$ by paying SFT $\$ 2,000,000$ during the first term or $\$ 2,500,000$ in any subsequent term for each one-half ( $0.5 \%$ ) percent reduction.
- $\quad$ Should SFT sell their rights to the lands the purchaser is required to assume the covenants and obligations of SFT as specified in the agreement.

KWG / Spider have also entered into an agreement with Saminex, a private company owned by Sandor Surmacz and Marcelle Hauseux. These two prospectors made the initial diamond discovery on the property in 1995. A summary of the terms of that agreement, supplied by Neil Novak, are as follows.

- $\quad \mathrm{KWG} /$ Spider must make staged annual payments totalling $\$ 500,000$.
- Payments may be a combination of $50 \%$ cash and $50 \%$ shares.
- Any lands acquired within a 50 km radius of the property by either party are subject to the terms of the agreement.
- Saminex retains a $20 \%$ net sales interest on proceeds from sale of production from the property.
- One half of the sales interest may be bought back by KWG/ Spider for $\$ 2,000,000$ up until the $5^{\text {th }}$ anniversary of the agreement.
- Within the subsequent 5 years the remaining interest may be purchased by KWG / Spider for $\$ 4,000,000$.
- KWG / Spider must keep the property in good standing, must fund all exploration, must assume all liability and must provide Saminex with copies of all reports.
Since KWG / Spider were in default of the agreement with Saminex, by failure to make the fifth anniversary payment of $\$ 130,000$ due February 02 , 2001, the agreement between the parties was amended in a letter agreement dated October 22, 2002. Salient points re the amended agreement are as follows:
! The $\$ 130,000$ amount owed was increased to $\$ 150,000$ to be payed in staged installments ending June 01, 2004. KWG / Spider are liable for the full $\$ 150,000$ even if they opt out of the agreement with Saminex. (All payments have been met (N. Novak - pers. comm.))
! One half $(10 \%)$ of the $20 \%$ net sales interest on proceeds from the sale of production retained by Saminex may be purchased by KWG / Spider for $\$ 2,00,000$ on or before June 01, 2005. (The purchase was not exercised.)
! The remaining interest ( $10 \%$ ) may be purchased by KWG / Spider for $\$ 4,000,000$ prior to June 01, 2010.
! If KWG / Spider opt out of or breach the agreement with Saminex, then $100 \%$ of the property reverts to Saminex and must be in good standing vis a vis the agreement with SFT for a minimum of one year. Should the agreement with SFT be terminated, then any claims held within the area of influence that do not revert to SFT are to be transferred to Saminex and be in good standing for a minimum of one year.
KWG / Spider are up to date with respect to the terms of the agreements with SFT and Saminex (Neil Novak, President of Spider and project manager (pers. comm.)).

The KWG / Spider optioned property is private land with no history of development. At the time the agreement between ACC and Spider was signed, ACC warranted that it was in compliance with all environmental laws. An environmental audit of the ACC lands was
conducted when Wagner purchased the lands from ACC, and no environmental liabilities attached to the property were identified (John Walmsley consultant to Wagner, (pers. comm.)).

Obatanga Provincial Park lies 12 km NNW from the north boundary. As a consequence of Ontario's "Living Legacy" land use strategy a new provincial park named the University River Provincial Park (located 20 km SW from the property's west boundary) and a new Conservation Reserve named the Magpie River Terraces (located 8 km SE from the property's south boundary) were proposed for the area (MNR, 1999), and are currently in the process of being regulated. The existence of the parks and conservation reserve should not have an impact on exploration activities on the property, but will need to be considered for future mining operations.

The property is at the initial exploration stage. No work permits are required.

## ACCESS, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE \& PHYSIOGRAPHY

Highway 17 conveniently bisects the property in a NW/SE direction. Access to more remote portions of the property is provided by the Old Magpie Mine Road, secondary / tertiary logging roads that may or may not be maintained, and numerous lakes, rivers and creeks (Figure 2).

The area experiences a temperate climate with moderate to long cold winters and short hot summers. Total precipitation is about 1000 mm including some 3-4 m as snowfall. "Lake effects", such as local snow squalls in winter or fog during any season, may occur due to the property's proximity to Lake Superior ( 100 km to the west or 40 km to the SW ). Break-up or freeze-up conditions may impinge upon exploration activities, but normally exploration and mining (both open pit and underground) may be conducted year round.

Supplies and services required for both exploration and mining may be acquired in Sault Ste. Marie ( 220 road km south), Thunder Bay ( 490 road km WNW) and locally in Wawa. A pool of skilled labour for both exploration and mining activities, and accustomed to work in remote locales, exists in the local communities, principally Wawa, White River and Dubreuilville. Wawa, the nearest town with a population of 4100 and an established mining centre, boasts a hospital, airport, public schools, post office, two banks, several motels and restaurants, two hardware stores, 2 trucking companies, a railway station, helicopter and fixed
wing charter services as well as various other stores and services. On the property there is sufficient space for a mine, on site mill, all ancillary buildings, tailings pond, etc. Several water bodies on the property and in the immediate area could supply an adequate amount of water for milling operations.

Infrastructure on the property, in addition to Hwy 17 and logging roads, includes telephone and fibre optic lines along the Hwy 17 right-of-way, as well as several privately held hunting / fishing cottages on McCormick Lake. There are also a number of motel facilities located along the highway in proximity to the property. High voltage power supply is available at Wawa and Dubreuilville.

Topography on the property and in the general area is modestly rugged with steep rock faces to $\pm 30 \mathrm{~m}$. Elevation ranges from $\sim 340 \mathrm{~m}$ at the southern boundary to $\sim 460 \mathrm{~m}$ just east of McCormick Lake (Figure 2). The area is generally well drained. Most swamps are the result of beaver dams. Logging operations have been conducted in the area at various periods in the past such that the property is now covered by a secondary growth of trees and shrubs of varying maturity. Principal species present include jackpine, white and black spruce, balsam fir, white cedar, balsam poplar and white birch.

## EXPLORATION HISTORY

## General

Previously, several companies have conducted exploration activities on all or parts of the land now held under option by KWG / Spider. Records in the assessment files in the Timmins Resident Geologist's office for exploration work performed on or in the immediate area of the property were reviewed, and are summarized below. Locations for drill holes, mineral occurrences, geophysical anomalies, etc. are compiled on Figure 4. To date, no mineral deposit has been delineated on the property, and consequently there has been no production from the property nor any reserve or resource calculated.

## Company / Individual Reports

## 1910-1911 Algoma Central \& Hudson Bay Railway : (ACHR)

ACHR exposed 3 semi parallel iron formation units in numerous trenches north of Brant Lake in the northwest corner of Lalibert township. Three (3) holes totalling 890 m were
drilled in 1911 to determine the iron content of these units. The best assay reported was $43.13 \%$ Fe over 16.8 m.

## 1950-1953 Jalore Mining Company Ltd.: (Jalore)

During this time interval prospecting parties examined the iron occurrences from Leclaire Township west to Keating Township. No maps or sketches of areas worked accompany the brief reports. Over a 10 day period in 1952 R.D Burns examined the sedimentary rocks in the McCormick Lake area for their iron potential. No map was included with his 6 page report.

## 1953-1966 Seven Islands Mining and Exploration Corporation Ltd.: (Seven Islands)

The Seven Islands' 2 mile by $11 / 2$ mile property was located in north central Lalibert Township, and covered the Brant Lake iron occurrence. A ground magnetic survey was completed over the deposit in 1953, and the deposit was remapped in 1966. In 1954 eighteen (18) short core holes totalling 660 m were drilled to test the extent, continuity and grade of the Brant Lake deposit.

1955

## V.R. Venn : (Venn)

Venn spent 5 days prospecting and mapping along the Old Magpie Mine Road from McCormick Lake to Maguire Lake in order to determine the cause for a magnetic anomaly, and also to check out the sedimentary rocks, presumably for iron formation. He noted what appeared to be mafic volcanic bombs with radiating tremolite.

Algoma Central Railway: (ACHR)
G.M. Cameron mapped the rock outcrops along the Trans Canada Highway at a scale of $1: 15,840\left(1{ }^{1 "}=1 / 4 \mathrm{mile}\right)$. What is now referred to as the Sandor diamond occurrence was mapped as a dyke with serpentinized boulders.

1956-1957 Callahan Algoma Mines Ltd. : (Callahan)
The only information available for Callahan's exploration programs is contained in correspondence from Harold O. Seigal \& Associates Ltd. to Callahan. Base metals appear to have been the target for this work. A combined airborne electromagnetic survey was flown over Lalibert and all or parts of adjacent townships. There are no reports on the type of system used, flight line direction or any other survey parameters. No anomalous electromagnetic responses were detected on the KWG / Spider property. Three anomalies close to the property - two of short strike length northeast of McCormick Lake and a third, some 3000 m long, south and east of McCormick Lake were delineated in close proximity to the KWG / Spider ground. These 3 anomalies were further investigated with ground em and magnetic means. There are no records of additional follow-up work.

Canadian Arrow Mineral Surveys was contracted to fly a combined electromagnetic and magnetic survey over an area that included both Lalibert and Menzies townships. Two conductive zones near Radford Lake and Big Marsh Lake were checked with ground electromagnetic surveys. Four short core holes were drilled to test these conductive zones. Graphite in argillite was found to be the cause for the electrical conductivity.

## 1975 Umex Corporation Ltd.: (Umex)

Umex flew an electromagnetic survey over Lalibert and Menzies Townships in 1974. Details as to the total area covered, contractor, flight line spacing and other parameters are not available in the assessment files. Three (3) conductive zones were reported in Lalibert Township and another 2 in Menzies. Geological \& ground electromagnetic surveys were completed on the 3 Lalibert zones. Each zone was tested with one short ( $100-150 \mathrm{~m}$ ) core hole (holes WA-1, $2 \& 4$ ), and in each case the cause for the anomaly was found to be graphite.

## 1982-1984 International Corona Resources Ltd. : (Corona)

Following the discovery of the Hemlo gold camp, Corona optioned 1312 townships from ACHR, including Lalibert and Menzies, to form "Operation Wawa". A Dighem combined electromagnetic and magnetic survey was flown in 1983. Two anomalies were identified just east of the KWG/ Spider property, one $\sim 1 \mathrm{~km}$ NNE of the northeast corner of McCormick Lake, and another 3 km NNE of McCormick Lake and west of Radford Lake. Follow-up work on Dighem anomalies included geological mapping, VLF electromagnetic surveys \& geochemical soil sampling. The existence of the airborne electromagnetic anomalies was confirmed.

## 1984-1987 Mascot Gold Mines Limited : (Mascot)

Mascot continued with Corona's "Operation Wawa" project. Only a compilation of past exploration was completed for Lalibert and Menzies Townships.

## 1991-1992 Hemlo Gold Mines Inc. : (Hemlo)

Hemlo continued "Operation Wawa", but the area was reduced to 7 full townships and parts of 5 others. Lalibert \& the north half of Menzies were still included. Eighty-three (83) large $\sim 25 \mathrm{~kg}$ till samples were collected at $\sim 250 \mathrm{~m}$ intervals along the Magpie Road from the west boundary of Lalibert through to northeastern Musquash Township. Gold results were uniformly low, and no further work was recommended.

## 1995

## Marcelle Hauseux and Sandor Surmacz: (Hauseux \& Surmacz)

In 1995, as part of an OPAP program, Marcelle Hauseux and Sandor Surmacz collected and submitted for caustic fusion treatment 2 samples of "diatreme-like, xenolithic ultramafic rock" (Hauseux \& Surmacz, 1996) from two separate dykes located in Lalibert Township. Sample number $95-\mathrm{HM}-101$ produced 6 gem quality diamonds including one macro diamond, while sample number 95-HM-102 contained 1 micro diamond (which
may have been, according to the laboratory report, the result of laboratory contamination). The site from which sample $95-\mathrm{HM}-101$ was taken is now referred to as the Sandor occurrence. It is the discovery location for diamonds in bedrock for the Wawa area.

## 1996-2002 Spider Resources Inc. and KWG Resources Inc. : (Spider / KWG)

Hauseux and Surmacz brought the discovery to the attention of KWG / Spider in early 1996. Later that year the companies acquired a licence / lease agreement from Algoma on a $122 \mathrm{~km}^{2}$ property in Lalibert, Knicely, Leclaire and Menzies Townships. Subsequently, exploration programs were conducted in 1996, 1997, 2001, 2002 and 2004. A summary of this work is presented in the section titled "EXPLORATION" later in this report.

## Government Reports and Other Data

A synopsis of government maps and reports pertinent to the area in general and the property in particular are listed below.

## 1926 Geological Survey of Canada: (GSC)

Between 1918 \& 1920 W.H. Collins and T.T. Quirk mapped a $40 \mathrm{~km} \times 32 \mathrm{~km}$ area of the Michipicoten region that included Lalibert and Menzies Townships. Coloured map 1972 at a scale of $1: 63,360$ was published in 1923 and Memoir 147 in 1926. Both townships are shown to be underlain principally by volcanic flows and tuff.

## 1962-1965 Geological Survey of Canada: (GSC) \& Ontario Department of Mines : (ODM)

During 1962 \& 1963 Spartan Air Service flew, under contract to the GSC \& ODM, a regional airborne magnetic survey that included all of Lalibert and Menzies Townships. Flight lines were oriented N/S at a nominal 800 m spacing. Maps 2192 G for NTS sheet 42C/2 \& 2193G for sheet $42 \mathrm{C} / 7$ which fully cover both townships were published in 1963 at a scale of $1: 63,360$. A compilation of the magnetic data for NTS 42C was subsequently issued in 1965. Prominent magnetic anomalies within the two townships correlate with the Dickenson Lake stock and another small stock centred upon McCormick Lake, and with a northeast trending diabase dyke.

## 1963 Ontario Department of Mines : (ODM)

A.M Goodwin compiled the geology and mineral occurrences for the Michipicoten area. Map P. 184 was released in 1963 at a scale of 1:31,680. No mineral occurrences are shown on the KWG / Spider property.

## 1966-1970 Ontario Department of Mines: (ODM)

E.J. Leahy et al. compiled the geology for the Wawa Sheet which comprise NTS sheets 41 N/9, 10, 11, 14, $15 \& 16$ and $42 \mathrm{C} / 1,2,3,6,7 \& 8$. Map P. 640 was issued in 1971 at
a scale of $1: 126,720$.

## 1972

Ontario Department of Mines : (ODM)
The work of Leahy et al. was incorporated into coloured compilation Map 2220, the Manitouwadge - Wawa Sheet, which was released in 1972 at a scale of 1:253,440.

## 1988

Ontario Geological Survey: (OGS)
In 1987 Dighem Surveys and Processing Inc., under contract to the OGS, flew a combined airborne electromagnetic and magnetic survey over the entire Michipicoten greenstone belt. Results were released in 1988. Flight lines in the Lalibert / Menzies region were oriented NE/SW and spaced 200 m apart. Map sheets 81005,81015 \& 81016 cover the property. Only a few anomalies were detected within the property limits. Some half dozen or so single line anomalies occur coincident with Highway 17, and are most probably due to cultural sources such as metal culverts. A 500 m long anomaly lies just south of and parallel to the north boundary. Its source is unknown.

## 1992

Ontario Geological Survey : (OGS)
E.D. Frey \& R.C. Stewart compiled the Wawa area mineral deposit data base which was subsequently published in 1992 as Open File Report 5775. Two unnamed sulphide occurrences are reported to the east of the property in Lalibert Township. The Dore River iron occurrence lies to the west of the property in Menzies Township.

Between 1979 and 1988 R. Sage mapped 15+ townships of the Michipicoten greenstone belt at a scale of $1: 15,840$ including Lalibert (but not Menzies). Open File Report 5589 for Killins, Knicely and Lalibert Townships was produced in 1993. Open File Map 221 for Lalibert Township is included in that report. A synoptic report for the entire area mapped was published in 1994 as Open File Report 5888. The bedrock geology underlying the property is shown to consist of mafic volcanic flows and pillow flows on the east and felsic volcanic tuff and lapilli tuff to the west. Younger diabase dykes oriented NNW/SSE and NE/SW cut the volcanic sequence.

## 1994

## Ontario Geological Survey : (OGS)

T. Morris in 1994 undertook for the OGS a regional modern alluvium (stream sediment) sampling program over a large portion of the Michipicoten greenstone belt to determine the distribution of kimberlite heavy minerals (KIM's) in the area. Results were published in 1994 as Open File Report 5908. Some 7 sample sites are located on or near the property. Sample Wad49S94 (\#49), from a site at Maguire Lake east of the property, contained 9 chromite grains, while sample Wad51S94 (\#51) produced 8 grains. The Cr content of individual grains ranged from 30.00 to $38.80 \%$ for sample \#49, and from 23.53 to $42.50 \%$ for sample $\# 51$. All values are well below the $61 \% \mathrm{Cr}$ level indicative of a potential diamond bearing kimberlite source.

As part of his bedrock mapping program Sage noted and mapped alteration assemblages normally associated with metallic mineral deposits, viz. chloritoid bearing areas, tourmaline bearing areas and calcium-potassium metasomatized areas. A map of the Michipicoten greenstone belt on which are plotted regional zones of alteration was published in 1995 as Preliminary Map P. 3322 at a scale of $1: 50,000$. No such areas of alteration occur on or in the general region of the property.

Ontario Geological Survey : (OGS)
From 1990 to 1996 T. Morris collected till and humus samples as part of a regional overburden materials mapping and sampling program of the Michipicoten greenstone belt. Results were published in 1999 as Open File Report 5981. Anomalous values for gold and base metals were reported for several sites on or near the property. These are listed below in Table 1.

TABLE 1
Anomalous Values in Till Samples

| Sample \# | Au ppb | As ppm | Co ppm | Cu ppm | $\mathbf{N i}$ <br> $\mathbf{p p m}$ | $\mathbf{p b}$ <br> $\mathbf{p p m}$ | Zn ppm |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| HJ95 (B) | 17 |  |  |  |  |  |  |
| 91HJ112 (H) | 3 | 37 |  |  |  |  |  |
| 91HJ463 (B) |  |  | 22 |  |  | 74 |  |
| 91HJ66 (B) |  |  | 22 | 75 | 64 |  | 80 |
| 91HJ110 (B) |  |  |  |  | 54 |  | 88 |
| HJ80 (B) |  |  | 34 |  | 280 |  |  |

Note: $\mathrm{H}=$ humus sample $\& \mathrm{~B}=$ " $\mathrm{B} "$ horizon till sample.

## 2000 Ontario Geological Survey

In 1996 R. Sage initiated a preliminary study on the Sandor diamond occurrence. The composition of the dyke meets the definition of a spessartite. A sample from the Sandor occurrence produced an age date of $2.703 \pm 42 \mathrm{Ga}$. Since the felsic volcanic rocks of the Catfish assemblage are dated at 2.70 Ga , Sage concluded that the dykes were emplaced into the volcanic stratigraphy near the conclusion of the deposition of the lower / older mafic volcanic units of the Catfish assemblage.

## 2001 Ontario Geological Survey : (OGS)

T. Morris conducted surficial mapping in the Michipicoten area between 1990 and 1996. Open File Map 192 for NTS sheet 42 C was released in 1992. Open File Report 6055, accompanied by coloured map $2573 \& 2574$, was subsequently published in 2001. A thin discontinuous layer of sandy till with patches of unmappable till $>1 \mathrm{~m}$ thick is the
main soil cover on the property. Minor pockets of glaciofluvial outwash sand and gravel or of swamp and organic deposits constitute the subordinate soil types. Glacial striae noted on and in the vicinity of the property indicate that the ice advance was from the NE to NNE.

## Ontario Geological Survey : (OGS)

G.M. Stott et al. visited several diamond occurrences in the area and reported upon their observations and conclusions in OFR 6100 p.9-1 to $9-10$. They suggest that the diamond bearing dykes and heterolithic breccias are related to a late orogenic suite of intrusions that were emplaced approximately 2673 million years ago.

Ontario Geological Survey : (OGS)
In 2003 C. Vaillancourt commenced $1: 20,000$ scale mapping of Menzies Township. A brief description of lithological and structure observations as well as company exploration updates were published in OFR 6120 p.9-1 to 9-11.

Ontario Geological Survey: (OGS)
Age dates determined by $\mathrm{U} / \mathrm{Pb}$ geochronology for three samples from Lalibert Township were published in OFR 6120 p.10-1 to 10-9. Data suggests an age of emplacement of the dykes at $\sim 2685 \mathrm{Ma}$.

Ontario Geological Survey : (OGS)
D. Stone and L. Semenyna undertook a petrography, chemistry and diamond characteristics study on the heterolithic breccias and lamprophyres of the Wawa area. Results were published in OFR 6134.

2004
Ontario Geological Survey : (OGS)

In 2004 C. Vaillancourt continued the $1: 20,000$ scale mapping project of Menzies Township. A brief description of lithological and structure observations were published in OFR 6145 p.6-1 to 6-9.

2005
Ontario Geological Survey: (OGS)
Summaries of work undertaken by companies active in the Wawa area in 2004 were published in OFR 6149.
C. Vaillancourt's map for Menzies Township was released as Map P.3366.

## Other

Fiona Williams: (Williams)
Williams' University of Sydney B.Sc thesis topic was concerned with the diamond bearing lamprophyre dykes and heterolithic breccias in the Wawa area. The bulk of the work undertaken for her studies was petrography and chemistry. Among her conclusions were the following;
! the geochemistry of the Late Archean diamond bearing dykes and breccias is considerably different to that of diamond bearing kimberlites and lamproites, but similar to post Archean calc-alkaline lamprophyres;
! the absence of diamond indicator mineral or xenocrysts from typical diamond bearing rocks and the shallow lamprophyre source depth supports an unconventional diamond origin; and
! diamond formation was associated with multiple accretionary episodes that occurred during the assembly of the Superior Structural Province at 2.7 Ga , with reactivation of reverse thrust faults possibly transporting the diamond bearing sequences into the path of an ascending lamprophyric magma.

The guidebook for the northern Ontario field trip contains descriptions for several of the diamond bearing lamprophyre and heterolithic breccia occurrences in the Wawa area.

## GEOLOGICAL SETTING

Regional (Summarized from Williams, et al., 1991)
The property lies within the Michipicoten greenstone belt, one of eight Archean aged, elongate bands of supracrustal volcanic and sedimentary rocks separated by granitoid rocks that constitute the Wawa subprovince of the Superior province of the Canadian Shield (Figures 5 \& 6). This belt is essentially $Y$ shaped, and has maximum dimensions of $140 \mathrm{~km} E / \mathrm{W}$ by 45 km N/S. It is bounded to the north by the Pukaskwa batholith and the Dubreuilville pluton, and to the south by the Whitefish Lake batholith (Figure 7).

Three discrete cycles of volcanism termed assemblages are recognized within the Michipicoten greenstone belt. These are the 2.89 Ga (billion year old) Hawk assemblage, which
is overlain by the 2.75 Ga Wawa assemblage, which in turn is overlain by the 2.70 Ga Catfish assemblage. Contact relationships between the assemblages are normally obscured by younger faults and shears, but are unconformable where observed.

The Hawk assemblage has a limited $5 \mathrm{~km} \times 25 \mathrm{~km}$ exposure along the southern margin of the belt. It consists of lower / older pillowed and massive basalt flows and peridotitic komatiite flows, overlain by upper / younger calc-alkalic tuff, quartz-feldspar crystal tuff, lapilli tuff and breccia. The Hawk granite pluton, which is intruded into the lower mafic volcanic rocks, is of the same age as, and is thus probably co-magmatic with the younger felsic volcanic rocks. A thin, chert-magnetic iron formation caps the volcanic rocks.

Units in the lower portion of the Wawa assemblage include massive and pillowed magnesium- and iron-rich tholeiitic mafic volcanic rocks, and locally, polymictic breccia and epiclastic breccia of intermediate to mafic composition. The upper portion varies in thickness from 2 km near Wawa to 300 m some 10 km to the east, and comprises felsic tuff, quartzfeldspar crystal tuff, lapilli tuff, oligomictic and polymictic breccia and rare spherulitic flows. The Jubilee stock, located at the base of the felsic units, is of the same relative age, and thus considered to be the subvolcanic equivalent to the felsic volcanic units. A 100-150 m thick iron formation with a strike length in excess of 100 km caps the assemblage. This formation, which was the source of the iron ore mined in the area, consists of 5 recognizable facies. From base to top these are massive siderite, massive pyrite and pyrrhotite, bedded chert-magnetite, chertwacke and siliceous, graphitic pyritic argillite.

The lower part of the Catfish assemblage is composed of massive and pillowed magnesiumand iron-rich tholeiitic flows. These rock units are indistinguishable from those in the lower portion of the Wawa assemblage, and can only be differentiated by structural relationships and age dating. Stratigraphically overlying the lower portion are felsic volcanic tuff, lapilli tuff, coarse to very coarse breccia and quartz-feldspar crystal tuff plus interbedded sedimentary units derived from these felsic units.

Numerous stocks of trondhjemite to nepheline-cancrinite syenite composition intrude the Michipicoten greenstone belt along its north margin. Most of these intrusive bodies exhibit massive, equigranular to porphyritic textures. Many are clearly younger than the volcanic and sedimentary rocks they intrude as well as the period(s) of structural deformation.

The Michipicoten greenstone belt underwent a complex structural history. First, it was folded about E/W axes into recumbent folds. This event was accompanied by dip-slip and strike- slip thrusting along or parallel to lithological boundaries. A second folding episode produced upright folds about NW axes. High angle reverse thrust faults parallel to NW axes created repetitions in stratigraphy (Figure 8). Many of the NW axes are diabase filled. The final fold phase resulted from granitic emplacement.

## Local

The most recent geological data for Lalibert and Menzies Townships are the result of geological mapping by Sage (1993) for Lalibert and by Vaillancourt (2005) for Menzies. Both townships are underlain principally by the supracrustal volcanic rocks of the Wawa and Catfish assemblages plus the sedimentary rocks associated therewith (Figure $7 \boldsymbol{\&}$ 9). These are centred about the McCormick Lake synclinal axis which crosses the townships from NW to SE. Rocks of the Catfish assemblage are in the centre of the syncline, and are flanked by those of the Wawa assemblage.

Several stocks and dykes from felsic to mafic composition are intruded into these volcanic and sedimentary rocks. An elongate, $1 \mathrm{~km} \times 10 \mathrm{~km}$ gabbro intrusion lies along the eastern contact between the lower and upper portions of the Catfish assemblage. In Lalibert Township two syenite stocks, the Dickenson Lake stock and a small body possibly coeval with the Dickenson Lake stock and centred upon McCormick Lake, intrude the felsic rocks of the Catfish assemblage. A small portion of a granodiorite intrusion that borders the Michipicoten greenstone belt occurs in the southwest corner of Menzies Township. Diabase dykes oriented NE/SW and NW/SE crisscross the townships, and are considered to be a conjugate set. A highly magnetic, younger NE trending dyke of the Abitibi dyke swarm crosses through the central part of Lalibert Township. Numerous mafic dykes mapped as xenolith bearing lamprophyres occur throughout the area. Dykes are normally thin (less than 5 m thick), and are characterized by round to elliptical inclusions of actinolite or actinolite plus talc. The original discovery of diamonds in bedrock, the Sandor occurrence, was from one such dyke located along Highway 17 $\sim 2.4 \mathrm{~km}$ north of the Lalibert / Menzies boundary.

## Property

Rocks of the Catfish assemblage dominate the bedrock geology of the property. The property centre line more or less follows the east contact between the lower and upper units of the assemblage for $\sim 15 \mathrm{~km}$ in a NW/SE direction (Figures 7 \& 9). Thin, discontinuous felsic volcanic lenses occur near the top of the lower portion of the assemblage. West of McCormick Lake, only an approximate 3 km length of the western contact lies within the property limits.

Numerous xenolith bearing spessartite lamprophyre dykes (Sage, 2000) occur on the property. Of the 260 samples collected and subjected to caustic fusion digestion for diamond recovery, the majority have been from dykes of this nature. As displayed in Figure 10, the dykes are widespread across the property. Many others have been noted but not as yet sampled. The dykes are extremely variable. Widths may exceed 30 m , (Burns, 2002b) but normally are $<5$ m. Strike directions, where mappable, are random although Thomas (1998) noted a northwest bias. The matrix may be either actinolite or biotite rich ( 60 to $85 \%$ actinolite / 15 to $40 \%$ biotite for actinolite rich dykes and $25 \%$ each of quartz, albite, plagioclase \& biotite for biotite rich dykes). Inclusions that may be present in the dykes include ultramafic actinolite $\pm$ talc xenoliths of possible mantle derivation, xenoliths of gneiss from a crustal origin and fragments from a near surface or country rock source. The actinolite $\pm$ talc xenoliths are normally round to elliptical, vary to 1 m diameter although most are generally less than 30 cm , may display randomly oriented or inward radiating actinolite crystal, and may or may not have biotite rinds up to 5 cm thick. Most crustal xenoliths are sub angular to sub rounded, less than 30 cm maximum dimension, but may be as large as 1 m , possess millimetre thin rinds or no rinds at all. Most country rock fragments are angular to sub angular, less than 7 cm in size, and most commonly of felsic volcanic rock.

An age date for a sample from the Sandor occurrence collected by the OGS yielded an age of $2,703 \pm 42 \mathrm{Ma}$ (Sage, 2000). More recent dates obtained by Ayer et al. (2003) give ages for diamondiferous lamprophyre dykes of $\sim 2685$. Since the age date of $2,701+/-2.1$ Ma has been obtained for a sample of dacite from the upper portion of the Catfish assemblage, then the dykes were probably intruded at or near the contact between the upper and lower portions of the assemblage.

The xenolith bearing dykes are intimately associated with heterolithic volcanic breccia,
lapilli tuff and ash tuff units that occur as discrete 100 mx 500 m volcanic complexes (hereinafter referred to as "sandorite volcanic complexes". Three facies are recognized comprising the complexes - 1) hypabyssal facies, 2) sub-volcanic breccia facies and 3) heterolithic breccia volcanic facies. The relationship of the facies to one another and to the regional volcanic stratigraphy are shown schematically in Figure 11. The sandorite dykes, as previously described, constitute the hypabyssal facies.

Units of the sub-volcanic intrusive breccia facies tend to be narrow with their orientations controlled by fractures in the country rock. They have an actinolite matrix with variable proportions of mica micro-phenocrysts and albite and absent to minor parkasite amphibole needles. Set within the matrix are a mixture of country rock fragments plus mantle and crustal xenoliths, and all may have rinds of variable thicknesses. Xenoliths and fragments may be entirely matrix supported to almost totally clast supported.

The matrix to the volcanic facies is massive actinolite with mica phenocrysts which are sometimes chloritized. Significant and variable proportions and types of metamorphic pseudomorphs (round to angular aggregates of amphibole and mica) may also be present. This facies has the highest proportion of country rock fragments including rhyolite fragments which typically are only present in this facies. Fragments are typically matrix supported, and may be angular to rounded. Shape implies distance of transport (rounder = further). Mica rich rinds to the fragments are rare. Layering is common with coarse, possibly clast supported breccia at the base and grading to lapilli tuff units and then to ash tuff units at the top. Crustal and ultramafic xenoliths are rare to minor.

Stratigraphic relationships between the volcanic complex units and the enclosing regional volcanic rock sequence, as well as a limited amount of age dating, indicate that these sandorite volcanic complexes were emplaced contemporaneously with the regional volcanic rocks which they cross cut. However, the complexes have a deep source and are not associated with nor a part of the regional volcanic rocks which have a crustal, shallower source. Most of the complexes so far identified occur at or near the contact between the lower predominately mafic portion, and the upper predominately felsic units of the regional volcanic stratigraphy. In contrast, the dykes are found cutting all levels of the regional volcanic stratigraphy.

## DEPOSIT TYPES

Past exploration efforts by others for gold, iron and base metals either on the property or in the immediate area have been futile. Accordingly, diamonds are the only commodity of interest to KWG / Spider on their Wawa property.

Most bedrock diamond deposits (placer deposits are not considered herein) occur as pipe or carrot like intrusions in kimberlite, lamproite or related ultramafic rock types. Of primary importance in understanding such deposits is the recognition that although these rocks are the primary source rocks for diamonds, diamonds do not originate in these rocks. Rather they are the transportation medium by which diamonds are brought to surface (Helmsteadt \& Gurney, 1995). In addition, various and extensive research on diamonds and their host rocks reveal the following (summarized from Kirkley, Gurney \& Levinson, 1992).

- Diamonds are old and have been forming throughout most of the earth's history.
- Diamonds may be stored deep within the earth for extended periods of time.
- Within their host rocks diamonds are associated with two types of xenoliths - eclogite and peridotite. (Xenoliths are wall rock fragments that were incorporated into the host rock during its rise to surface.)
- Eclogite and peridotite are both formed deep within the earth. Diamonds associated with these two rock types are referred to as E-type and P-type respectively.
- P-type diamonds formed and remained stable at temperatures of $900^{\circ} \mathrm{C}$ to $1300^{\circ} \mathrm{C}$ and at depths of 150 to 200 km .
- E-type diamonds formed and remained stable at depths $>300 \mathrm{~km}$.
- Although kimberlites are scattered throughout the world, economic diamond bearing kimberlites are restricted to ancient cratons ie. extensive, stable continental areas such as the Canadian Shield.
- Diamond bearing lamproites may be found on the margins of cratons in so called "mobile Belts".
- Kimberlites and related ultramafic rocks have been emplaced over a very long (at least $2.60 \mathrm{Ga})$ time period.
- A suite of indicator minerals (pyrope garnets, chrome diopside, chromite, ilmenite) is
normally associated with kimberlite and related ultramafic rocks. Moreover, the chemistry of the individual minerals can be indicative of whether or not such an intrusion is diamondiferous.
- Kimberlite and related ultra mafic rocks generally occur in clusters.

As shown in Figure 12, a diamond bearing body will have originated deep in the earth beneath an ancient craton and passed through a region in the root of the craton where diamonds are stable. Depending upon the exact locale where the body originated it may sample and bring to surface P-type or E-type diamonds. In addition, the rate of ascent to surface of the body must be rapid to prevent the diamonds from reverting to graphite or dissolving in the host magma. Realistic emplacements rates are, based on various assumptions, 10 to $30 \mathrm{~km} / \mathrm{hr}$ from depth of origin to within 2 to 3 km of surface where the rate increases dramatically to probably several $100 \mathrm{~km} / \mathrm{hr}$ due to a much reduced retaining load and increased fracture density.

The diamond occurrences at Wawa do not fit any commonly accepted geological model. Dissimilarities include the following.
a) The diamond bearing host rocks are Archean in age. As such these diamond occurrences are amongst the oldest known.
b) The host rocks are intruded into an area of active volcanism. Such regions are not found on stable cratons, but rather on the flanks thereto.
c) The volcanic complexes so far identified in the Wawa area occur in 4 parallel corridors.
d) Rocks similar to those of the sandorite volcanic complexes had not been known previously to be diamond bearing.
e) None of the facies that comprise the complexes contain indicator minerals commonly associated with other rock types that are diamond bearing.

An early proposed model (Figure 11) for the diamondiferous complexes in the Wawa area and to their present geometry is as follows.

- The sandorite dykes originated in the mantle of the earth and early in their rise to surface passed through the diamond stability field below an ancient craton at which time diamonds were incorporated into the dyke forming magma.
- To reach surface the dykes followed a "plumbing system" of interconnected fractures into the off craton mobile belt similar to that shown for the lamproite in Figure 12.
- Each dyke erupted to form a maar type volcano. Such volcanos are believed to have resulted from a single violent explosion as the rising magma encountered the water table.

Maar craters are normally flat floored and relatively shallow. Craters walls are largely composed of broken country rock and only partially of magmatic ejecta. A crater of this type is consistent with the observed textures for the volcanic facies and subvolcanic facies units as well as lamproites.

- During the rise to surface crustal xenoliths and country rock fragments from the walls of the fractures being followed were incorporated into the dykes. Age date evidence infer that the sandorite volcanic complexes were emplaced at or near the top of the lower mafic volcanic units of the Catfish assemblage. The presence of numerous felsic country rock fragments in the hypabyssal facies is explained by the occurrence of felsic lenses near the top of the mafic portion of the assemblage.
- The Michipicoten greenstone belt was folded about east / west axes into recumbent folds. As a result of this folding (and of course erosion) the volcanic complexes were rotated through $\pm 90^{\circ}$, and are now exposed at surface. East of the McCormick Lake synclinal axis the volcanic facies rocks face west, and are underlain by the subvolcanic and hypabyssal facies to the east.
- Thrust faults associated with an upright folding event sliced the belt to create repetitions in the stratigraphy. This structural feature explains the alignment of the known volcanic complexes into "corridors".

Recent research by Williams (2002) and others has revealed that:
The lamprophyres in the Wawa area originated at a depth of less than 80 km .
! The diamondiferous lamprophyres have been contaminated probably by an ultramafic komatiite.
! The chemistry of the diamondiferous lamprophyres indicate that they did not pass through the mantle diamond stability field.
! Diamonds can form metastably at shallow depths under a very high rate of strain and an anisotropic stress regime.

Based upon the above, Williams proposed a model whereby the diamonds formed metastably in a komatiite or other host that was down faulted to a suitable depth of combined pressure and temperature. These diamond bearing rocks were then brought closer to surface along reactivated reverse thrust faults. Ascending lamprophyric magma then passed through and
was contaminated by the diamondiferous komatiite.
For both the original model and the Williams' model the magma must rise quickly to preserve the diamonds, that is to prevent the diamonds from reacting with the magma. For both models, once the magma approached surface and encountered the water table the reaction would be a violent volcanic like eruption. Breccia facies rocks would be produced from the force of the eruption. Magma that flowed into or injected into fractures opened by the force of the explosion would produce dykes.

## MINERALIZATION

Each facie of a sandorite volcanic complex may be diamond bearing. Since 1995 a total of 260 prospecting samples, the majority weighing on average 25 to 35 kg , have been collected on or in the vicinity of the current property and subjected to caustic soda dissolution for diamond recovery (Thomas, 1998 and Burns 2001, 2002a \& 2002b 2004 and 2005). Sample locations for both diamond bearing and non diamond bearing samples are shown on Figure 10. From these prospecting samples a total of 3422 diamonds, ( 2842 micros, 546 macros \& 34 commercial), have been recovered (Table 2). At least one diamond was recovered from 103 individual samples ( 78 samples produced more than 1 diamond) from 37 distinct locations on the property. Commercial size diamonds were recovered from the $\sim 1.5$ to 2.7 tonne mini bulk samples collected and processed in 2001 and 2002 (Table 3A \& C).

Diamond bearing sample sites are scattered about the property, but three distinct districts -
TABLE 2
Summary of Diamonds Recovered from Prospecting Samples 1995-2004

Summary of Diamonds Recovered from Prospecting Samples 1995-2004

| Sample Site Location | Sample \# | Sample Site \# | Weight processed | Microdiamonds | Macrodiamonds | Commercial | Total Dia. | $\begin{gathered} \hline \text { Dia. Per } \\ 15 \text { kg }^{*} \end{gathered}$ | Easting** | Northing** |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| " | 2002-LAL-136 | 136 | 15.0 | 2 | 2 | 0 |  | 4 | 658093 | 5344396 |
| " | 2002-LAL-157 | 157 | 15.0 | 40 | 3 | 1 |  | 44 | 658056 | 5344438 |
| " | 2002-LAL-158 | 158 | 15.0 | 47 | 1 | 0 |  | 48 | 657901 | 5344432 |
|  |  |  | 72.0 | 117 | 7 | 2 | 126 | 26 |  |  |
| 2.5 km WSW of SO | LAL-14-2001 | 114 | 15.0 | 1 | 0 | 0 | 1 | 1 | 657384 | 5341263 |
| 1.1 km E of SO | LAL-16-2001 | 116 | 15.0 | 1 | 0 | 0 | 1 | 1 | 661009 | 5341984 |
| 75 mE of SO | LAL-17-2001 | 117 | 20.5 | 10 | 2 | 0 |  | 9 | 659935 | 5341811 |
| " | LAL-18-2001 | 118 | 43.3 | 9 | 4 | 0 |  | 0 | " | " |
| " | LAL-19-2001 | 119 | 35.8 | 13 | 2 | 0 |  | 6 | 659960 | 5341819 |
|  |  |  | 99.6 | 32 | 8 | 0 | 40 | 6 |  |  |
| 0.5 km E of SO | LAL-21-2001 | 121 | 27.5 | 17 | 3 | 0 |  | 11 | 660329 | 5342075 |
| " | LAL-22-2001 | 122 | 28.4 | 7 | 1 | 0 |  | 4 | 660294 | 5342119 |
| " | LAL-23-2001 | 123 | 15.0 | 3 | 0 | 0 |  | 3 | 660331 | 5342110 |
| " | 2002-LAL-145 | 145 | 15.0 | 1 | 0 | 0 |  | 1 | 660344 | 5342068 |
| ${ }^{\prime \prime}$ | 2002-LAL-146 | 146 | 15.0 | 28 | 6 | 1 |  | 35 | 660348 | 5342092 |
|  |  |  | 100.9 | 56 | 10 | 1 | 67 | 10 |  |  |
| 150 m N of SO | LAL-24-2001 | 124 | 15.0 | 1 | 0 | 0 |  | 1 | 659845 | 5341914 |
| " | LAL-25-2001 | 125 | 15.0 | 1 | 0 | 0 |  | 1 |  |  |
|  |  |  | 30.0 | 2 | 0 | 0 | 2 | 1 |  |  |
| 4.0 km SSE of SO (Menzies $\mathrm{N}-1$ ) | MEN-7-2001 | 132 | 15.0 | 13 | 0 | 0 | 13 | 13 | 660990 | 5338477 |
| 0.5 km E of Menzies N | MEN-8-2001 | 133 | 14.7 | 1 | 0 | 0 |  | 1 | 661386 | 5338407 |
| " | 2002-MEN-166 | 166 | 15.0 | 3 | 2 | 0 |  | 5 | 661434 | 5338353 |
| " | 2002-MEN-167 | 167 | 15.0 | 37 | 22 | 0 |  | 59 | 661394 | 5338436 |
| " | 2004-MEN-211 | 211 | 10.0 | 0 | 0 | 0 |  | 0 | 661347 | 5338460 |
| " | 2004-MEN-212 | 212 | 10.0 | 2 | 0 | 0 |  | 3 | 661357 | 5338462 |
| " | 2004-MEN-213 | 213 | 10.0 | 0 | 0 | 0 |  | 0 | 661355 | 5338455 |
| " | 2004-MEN-214 | 214 | 10.0 | 0 | 0 | 0 |  | 0 | 6612362 | 5338441 |
| " | 2004-MEN-215 | 215 | 10.0 | 3 | 1 | 0 |  | 6 | 661365 | 5338444 |
| $"$ | 2004-MEN-216 | 216 | 10.0 | 0 | 0 | 0 |  | 0 | 661396 | 5338438 |
| " | 2004-MEN-217 | 217 | 10.0 | 1 | 0 | 0 |  | 2 | 661389 | 5338429 |
| " | 2004-MEN-218 | 218 | 10.0 | 0 | 0 | 0 |  | 0 | 661398 | 5338425 |
| $"$ | 2004-MEN-219 | 219 | 10.0 | 0 | 0 | 0 |  | 0 | 661416 | 5338453 |
| " | 2004-MEN-220 | 220 | 10.0 | 0 | 0 | 0 |  | 0 | 661394 | 5338406 |
| " | 2004-MEN-239 | 239 | 10.0 | 0 | 0 | 0 |  | 0 |  |  |
| " | 2004-MEN-240 | 240 | 10.0 | 0 | 0 | 0 |  | 0 |  |  |
| " | 2004-MEN-241 | 241 | 10.0 | 0 | 0 | 0 |  | 0 |  |  |
| " | 2004-MEN-242 | 242 | 10.0 | 0 | 0 | 0 |  | 0 |  |  |
| " | 2004-MEN-243 | 243 | 10.0 | 0 | 0 | 0 |  | 0 |  |  |
| ' | 2004-MEN-244 | 244 | 10.0 | 0 | 0 | 0 |  | 0 |  |  |

Summary of Diamonds Recovered from Prospecting Samples 1995－2004

|  |  | $0 \varepsilon$ |  | 0 | $\varepsilon$ | $\angle 1$ | $0 \cdot 01$ | ¢zz | szz－7ヤフ－ヤ00z |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | 9 |  | 0 | 1 | $\varepsilon$ | $0 \cdot 01$ | †てて | ちてて－7ヤ7－ヤ00て |  |
|  |  | 99 |  | $\tau$ | 8 | $\angle 2$ | $0 \cdot 01$ | £ટ乙 |  |  |
|  |  | 92 |  | 0 | $\varepsilon$ | カレ | $0 \cdot 01$ | てž | ててて－7ヤフ－ヤ00て |  |
|  |  | 乙є |  | $\downarrow$ | $\varepsilon$ | $\angle 1$ | $0 \cdot 01$ | 1 LZ | เてて－7V7－ヤ00Z |  |
| StE\＆tを¢ | LSG699 | 0 |  | 0 | 0 | 0 | $0 \cdot 01$ | 961 | 96L－7V7－ヤ00Z |  |
| OZセ\＆セをG | 909699 | Gl乙 |  | 0 | G | 012 | 0 SL | 9SL | 9SL－7V7－Z00Z | OS to MNN wy 9＇t |
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| ¢†L8\＆\＆G | 1616199 | sı | st | 0 | $\downarrow$ | $\downarrow$ | 0 S | 291 | Z91－NヨW－Z00Z | LOL－NヨW ！ 0 gn wy l |
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| sl9etes | L9t9g9 | ， |  | 0 | 0 | 1 | 0 Sl | LLL | LLL－ךヤフ－Z00Z |  |
| L9¢\＆t¢¢ | 1くt999 | $\downarrow$ |  | 0 | 0 | $\downarrow$ | 0 ¢ ${ }^{\text {c }}$ | $9<1$ | 9くL－7ヤ7－Z00Z |  |
|  |  | 01 | 62 | 0 | 0 | 62 | 0＇St |  |  |  |
| 609 LセをS | $8 \mathrm{C9099}$ | $\angle 1$ |  | 0 | 0 | 41 | 0 Sl | $\downarrow$ ¢ | ヤくL－7ヤ7－Z00Z |  |
| L8¢レセをS | ¢09099 | 6 |  | 0 | 0 | 6 | 0 ¢ ${ }^{\text {c }}$ | $\varepsilon \angle \downarrow$ | \＆LL－7ヤフ－Z00Z |  |
| LLGLセES | ¢09099 | $\varepsilon$ |  | 0 | 0 | $\varepsilon$ | 0 SL | ZLレ | てLレ－7ヤフ－Z00Z |  |
|  |  | 01 | 02 | 0 | 0 | Oz | $00 \varepsilon$ |  |  |  |
| 16L1ヵをG | †てL899 | 1 |  | 0 | 0 | 1 | 0 ＇sı | 891 | 891－7ヤフ－Z00Z |  |
| 乙891ヵ¢¢ | 9عL899 | 61 |  | 0 | 0 | 61 | 0 ¢ ${ }^{\text {¢ }}$ | \＆¢Ь | \＆¢L－7ヤフ－Z00Z | OS to M wy L＇t |
| عと¢tt¢s | ¢Z1899 | $\downarrow$ | 1 | 0 | 1 | O1 | 0 ¢ 1 | 8 tl | 8ヤレ－7ヤ7－z00z | OS ¢0 MN m ¢ $0 \cdot \varepsilon$ |
|  |  | ヵて | ¢9 | 0 | $\dagger$ | 19 | 006 |  |  |  |
| G6\＆てヤ¢G | £GZ099 | $\varepsilon$ |  | 0 | $\downarrow$ | て1 | 0＇SL | 161 | 16L－7V7－Z00Z |  |
| 968 ¢ヤをS | \＆とZ099 | 1 |  | 0 | 0 | － | 0 Sl | 061 | 06L－7ヤフ－Z00Z |  |
| 06\＆てヤを¢ | $\angle 9 Z 099$ | $6 \varepsilon$ |  | 0 | $\tau$ | $\angle \varepsilon$ | 0 ¢ ${ }^{\text {c }}$ | カャレ | カセレ－7ヤフ－Z00Z |  |
| 168てヤを¢ | ¢عZ099 | 1 |  | 0 | 0 | 1 | 0 OL | でし | てヤレ－7ヤフ－Z00Z |  |
| ¢८zてヤ¢¢ | ¢¢z099 | z |  | 0 | $\downarrow$ | 1 | 0 ¢ ${ }^{\text {¢ }}$ | 0ヶt | 0ャレ－7ヤフ－Z00Z |  |
| て0とてよ¢ | 9 CO 099 | 6 |  | 0 | 0 | 6 | 0 OL | 681 | 6とレ－7ヤ7－z00Z | OS to ヨN mu02 |
| 0乙\＆8ะ\＆¢ | L00199 | 8 | 8 | 0 | 乙 | 9 | 0 S | L\＆ | LEL－NヨW－Z00Z | N selzuew to $\mathrm{m}_{\text {m } 00 \mathrm{~L}}$ |
|  |  | $\downarrow$ | ZL | 0 | sz | $\angle \circ$ | L＇t9z |  |  |  |
|  |  | 0 |  | 0 | 0 | 0 | $0 \cdot 01$ | 092 | 09Z－NヨW－b00Z |  |
|  |  | 0 |  | 0 | 0 | 0 | 001 | $6 \downarrow 2$ | 6 6て－NヨW－b00Z |  |
|  |  | 0 |  | 0 | 0 | 0 | $0 \cdot 01$ | 8 5 亿 | $8\llcorner Z-N \exists W-\downarrow 00 Z$ |  |
|  |  | 0 |  | 0 | 0 | 0 | 001 | くヵて | LセZ－NヨW－ヤ00Z |  |
|  |  | 0 |  | 0 | 0 | 0 | $0 \cdot 01$ | $9 \downarrow$ ¢ | $9 \vdash \mathrm{C}$－NヨW－b00Z |  |
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| ＊＊6u！${ }^{\text {¢ }}$ |  | Jəd＇e！ | 1セło」 | －mos | －0ıכeW | －0גכוֹ | ұЧб！əМ | әdures | \＃әidues | uo！peoon әl！S ədmes |

TABLE 2
Summary of Diamonds Recovered from Prospecting Samples 1995-2004

| Sample Site Location | Sample \# | $\begin{gathered} \text { Sample } \\ \text { Site \# } \\ \hline \end{gathered}$ | Weight processed | $\begin{gathered} \text { Micro- } \\ \text { diamonds } \\ \hline \end{gathered}$ | $\begin{gathered} \text { Macro- } \\ \text { diamonds } \\ \hline \end{gathered}$ | Commercial | Total | $\begin{aligned} & \hline \text { Dia. Per } \\ & 15 \mathrm{~kg}^{*} \\ & \hline \end{aligned}$ | Easting** | Northing** |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| " | 2004-LAL-226 | 226 | 10.0 | 12 | 4 | 0 |  | 24 |  |  |
| " | 2004-LAL-227 | 227 | 10.0 | 11 | 5 | 0 |  | 24 |  |  |
| " | 2004-LAL-228 | 228 | 10.0 | 9 | 3 | 0 |  | 18 |  |  |
| " | 2004-LAL-229 | 229 | 10.0 | 0 | 3 | 0 |  | 5 |  |  |
| " | 2004-LAL-230 | 230 | 10.0 | 4 | 1 | 0 |  | 8 |  |  |
| " | 2004-LAL-231 | 231 | 21.6 | 0 | 0 | 0 |  | 0 |  |  |
| " | 2004-LAL-232 | 232 | 19.8 | 53 | 55 | 9 |  | 89 |  |  |
| " | 2004-LAL-233 | 233 | 22.8 | 16 | 5 | 0 |  | 14 |  |  |
| " | 2004-LAL-234 | 234 | 30.1 | 1351 | 267 | 14 |  | 813 |  |  |
| " | 2004-LAL-235 | 235 | 22.6 | 32 | 11 | 1 |  | 29 |  |  |
| " | 2004-LAL-236 | 236 | 10.0 | 166 | 10 | 0 |  | 264 |  |  |
| " | 2004-LAL-237 | 237 | 10.0 | 17 | 1 | 0 |  | 27 |  |  |
| " | 2004-LAL-238 | 238 | 10.0 | 9 | 4 | 0 |  | 20 |  |  |
|  | 2004-LAL-250 | 250 | 10.0 | 30 | 11 | 2 |  | 65 |  |  |
| " | 2004-LAL-251 | 251 | 10.0 | 3 | 2 | 0 |  | 8 |  |  |
| " | 2004-LAL-252 | 252 | 10.0 | 7 | 4 | 0 |  | 17 |  |  |
|  | 2004-LAL-253 | 253 | 10.0 | 14 | 5 | 0 |  | 29 |  |  |
| " | 2004-LAL-254 | 254 | 10.0 | 9 | 1 | 0 |  | 25 |  |  |
| " | 2004-LAL-255 | 255 | 10.0 | 1 | 0 | 0 |  | 2 |  |  |
| " | 2004-LAL-256 | 256 | 10.0 | 0 | 1 | 0 |  | 2 |  |  |
| " | 2004-LAL-257 | 257 | 10.0 | 25 | 9 | 1 |  | 53 |  |  |
| " | 2004-LAL-258 | 258 | 10.0 | 28 | 2 | 0 |  | 45 |  |  |
| " | 2004-LAL-259 | 259 | 10.0 | 6 | 0 | 0 |  | 9 |  |  |
|  |  |  | 372.0 | 2091 | 427 | 30 | 2920 | 118 |  |  |
| 350 m NW of MEN-107 | 2002-MEN-150 | 150 | 15.0 | 1 | 0 | 0 |  | 1 | 660874 | 5338640 |
|  | 2002-MEN-151 | 151 | 15.0 | 0 | 1 | 0 |  | 1 | 660843 | 5338577 |
|  |  |  | 30.0 | 1 | 1 | 0 | 2 | 1 |  |  |
| 700 m NE of MEN-107 | 2002-MEN-161 | 161 | 15.9 | 0 | 1 | 0 | 1 | 1 | 661612 | 5338660 |
| 2.75 km NW of SO | 2002-LAL-185 | 185 | 15.0 | 63 | 1 | 0 |  | 64 | 658500 | 5344216 |
|  | 2002-LAL-186 | 186 | 15.0 | 0 | 0 | 0 |  | 0 | 658468 | 5344134 |
|  | 2004-LAL-208 | 208 | 10.0 | 1 | 0 | 0 |  | 2 | 658401 | 5344087 |
|  |  |  |  | 64 | 1 | 0 | 65 | 24 |  |  |
| 4.3 km NW of SO | 2004-LAL-200 | 200 | 10.0 | 3 | 0 | 0 |  | 5 | 657566 | 5345633 |
|  | 2004-LAL-201 | 201 | 10.0 | 2 | 0 | 0 |  |  | 6575540 | 5345608 |
|  |  |  | 20.0 | 5 | 0 | 0 | 5 | 4 |  |  |
| 3.9 km NW of SO | 2004-LAL-202 | 202 | 10.0 | 0 | 0 | 0 | 0 | 0 | 657904 | 5345162 |
|  | 2004-LAL-203 | 203 | 10.0 |  | 0 | 0 | 0 | 0 |  |  |
| "' | 2004-LAL-204 | 204 | 10.0 | 3 |  | 0 |  | 9 | 657989 | 5345236 |
|  | 2004-LAL-205 | 205 | 10.0 |  | 3 | 0 |  | 15 |  |  |
| "" | ${ }^{\text {2004-LAL-206 }}$ | 206 207 | 10.0 10.0 | 4 | 4 0 | 0 |  | 12 2 | " | " |

TABLE 2
Summary of Diamonds Recovered from Prospecting Samples 1995-2004

| Sample Site Location | Sample \# | Sample Site \# | Weight processed | Microdiamonds | Macrodiamonds | Commercial | Total Dia. | Dia. Per $15 \mathrm{~kg} \text { * }$ | Easting** | Northing** |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | 60.0 | 15 | 10 | 0 | 25 | 6 |  |  |
| 2.2 km NW of SO | 2004-LAL-197 | 197 | 10.0 | 16 | 4 | 0 |  | 30 | 658851 | 5343814 |
| " | 2004-LAL-198 | 198 | 10.0 | 4 | 0 | 0 |  | 6 | " |  |
| " | 2004-LAL-209 | 209 | 10.0 | 7 | 2 | 0 |  | 14 | 659016 | 5343938 |
|  |  |  | 30.0 | 27 | 6 | 0 | 33 | 17 |  |  |
| 1.0 km NNW of SO | 2004-LAL-199 | 199 | 10.0 | 0 | 1 | 0 | 1 | 2 | 659545 | 5342892 |
|  | Totals |  |  | 2842 | 546 | 34 | 3422 |  |  |  |

* Total number of diamonds recovered (averaged for multiple samples from the same area) normalized to 15 kg .
in an NW / SE trend from the Sandor occurrence, in north Menzies Township and near McCormick Lake - are recognized. The first district is coincident with the line of sandorite volcanic complexes or potential complexes immediately NE of and parallel to Highway 17
(Figure 10). Diamond counts for sample sites with multiple samples may be extremely variable. At the Sandor occurrence, for example, results average 5 diamonds per 15 kg , but vary from 0 to 23 diamonds per 15 kg for individual samples (Table 2). These results serve to emphasize the erratic distribution of diamonds within the host body (also termed the "nugget effect"). Based upon a histogram plot for the first 195 samples collected of diamonds recovered per sample, (all samples normalized to 15 kg (Figure 13)), a sample containing greater than 10 diamonds / 15 kg sample is considered to be anomalous.

Seven volcanic complexes have been identified on the property (Figure 10). The first is located 650 m NE from the Sandor occurrence, and is hosted by mafic volcanic flows and pillowed lava. It has been sampled over an area $100 \mathrm{~m} \mathrm{E} / \mathrm{W}$ by $300 \mathrm{~m} \mathrm{~N} / \mathrm{S}$, but its limits are undefined. Volcanic facies coarse basal breccias, lapilli tuff and ash tuff, as well as hypabyssal dykes and subvolcanic breccia dykes were exposed by stripping and trenching in an area 80 m E/W x 100 m N/S. A diamond count of 39 stones (including 2 macros) was obtained from a 15 kg sample (2002-LAL-144) of volcanic facies lapilli tuff. The various volcanic facies are conformable with and grade into each other.

The second volcanic complex lies $\sim 750 \mathrm{~m}$ ESE from the Sandor occurrence. This zone has not been thoroughly prospected, but volcanic facies coarse clast supported breccia, matrix supported breccia and lapilli tuff have been found within a 100 m diameter area as a result of initial cursory prospecting efforts.

The third complex lies 2.2 km NNW of the Sandor occurrence. Three samples were collected within 150 m of one another. Sample 2004-LAL-197 of a dyke with sparse xenoliths produced 20 diamonds, 2004-LAL-198 of a heterolithic breccia produced 4 and 2004-LAL-209 of heterolithic breccia boulders produced 9 . The processed weight for all samples was 10 kg . This area has received only cursory prospecting, and has not been trenched or stripped.

The forth complex, represented by sample sites $185,186 \& 208$, is situated approximately 2.75 km NE from the Sandor occurrence. Fifteen (15) kg splits for samples 2002-LAL-185 \&

186 (of sandorite dyke) produced 64 and 0 diamonds respectively, while one diamond was recovered from a 10 kg split from sample 2004-LAL-208 (of heterolithic breccia). No trenching nor stripping have been conducted in this area.

The fifth complex is located 3.9 km NE of the Sandor occurrence. There, 10 kg splits of samples 2004-LAL-202 and 207 of heterolithic breccia produced 0 and 1 diamonds respectively whereas samples 2004-LAL-203, 204, $205 \& 206$ produced $0,6,10 \& 8$ diamonds from dyke material. This area has received only cursory prospecting, and has not been trenched or stripped.

Only two samples have been collected from the sixth area situated 4.3 km NW of the Sandor occurrence. Sample 2004-LAL-200 of heterolithic breccia and 201 of dyke produced 3 \& 2 diamonds respectively from 10 kg splits. No trenching nor stripping have been conducted in this area.

A seventh area with volcanic facies rock units was found as a result of preliminary prospecting efforts $\sim 500 \mathrm{~m}$ northwest of the northwest arm of McCormick Lake. Similar rocks, mapped by Sage as biotite intrusive rocks, outcrop over a 400 m to 500 m diameter area. This area is in a region of felsic volcanic rocks of the upper portion of the Catfish assemblage, thereby indicating that this volcanic complex is slightly younger than the others.

Some 1.6 km NNW of the Sandor occurrence an ultramafic xenolithic bearing dyke has been exposed by stripping and trenching over a 240 m strike length (Figure 14). It strikes between $285^{\circ}$ at the SE end to $320^{\circ}$ at the NW, and dips from $35^{\circ}$ to $55^{\circ}$ northeasterly. It pinches and swells with a minimum horizontal thickness of 7 m and a maximum of 25 m . The estimated average thickness is 13 m ( 10 m true thickness). The proportion of ultramafic xenoliths within the dyke varies from $15 \%$ to $30 \%$, and averages an estimated $20 \%$. Of the 30 samples collected at this site 28 contained at least 1 diamond, 27 contained macro diamonds and 7 contained commercial diamonds. At this locale 3 sets of duplicate pairs, 2004-LAL-232 \& 233, 234 \& 235 and 236 \& 237 - the first of xenoliths only and the second of matrix material - were collected and analysed for micro diamonds. In all 3 cases the majority of the diamonds were found in the xenolith samples (Table 2). This fact suggests, at least for this dyke, that the xenoliths are the primary source of diamonds within the dyke. The presence of diamonds in the matrix may be due to a) the matrix itself being diamond bearing, b) disintegration of xenoliths
into the matrix, or c) a combination of the above.
Complexes 1 through 6 plus the stripped / trenched area described above are aligned in a NW fashion generally parallel to stratigraphy and to the Princess Lake fault. The same trend continues southwestward towards the Moet, Mumm and Genesis complexes on the Pele Mountain property.

Commercial size diamonds were recovered from the $\sim 1.5$ to 2.7 tonne mini bulk samples SPQ-BK-2 and 3 collected in 2001 and SPQ-BK- 4 and 6 taken in 2002 (Table 3A \& C). The largest stone recovered to date measured $1.92 \times 1.76 \times 1.44 \mathrm{~mm}$ and weighed 0.0325 ct .

## EXPLORATION

Since acquiring the property in 1996, five phases of exploration work have been conducted by KWG / Spider. Work was carried out under the auspices of Billiken Management Services Inc. who have a management contract with KWG / Spider to conduct exploration on the property. During 1996, 39 large rock samples each weighing on average 25 to 30 kg were collected on the property from outcrops mapped as xenolith bearing lamprophyre dykes (field term sandorite - the host rock of the original discovery), and were submitted for diamond analysis by caustic fusion. Eight (8) samples contained at least one diamond and five (5) produced one or more macro diamonds. Thirty (30) smaller (300 g) samples collected simultaneously with the large samples were analysed for 48 elements by ICP and INAA methods. The dykes were found to be anomalous in $\mathrm{Ni} \& \mathrm{Cr}$ and enriched in $\mathrm{Ba}, \mathrm{Co}, \mathrm{V}, \mathrm{Ca} \&$ Mg , vis a vis similar lamprophyre rocks, but no geochemical difference could be determined between those samples that produced diamonds and those that didn't. A $150-200 \mathrm{~kg}$ sample from the Sandor occurrence was processed for diamonds by auto-attrition and heavy mineral separation using a Wifly Table. No diamonds were recovered..

As part of the 1997 program, 59 large rock samples were collected and subjected to caustic fusion for diamond recovery. Sandorite was the usual lithology sampled, but some other rock types were also collected. Most samples averaged $25-30 \mathrm{~kg}$ in weight, but a few larger (155 to 181 kg ) samples were also collected and processed. Diamonds were recovered from 5 samples including 4 with macro diamonds. None of the non sandorite samples produced diamonds.
Summary of Diamonds Recovered From 2001 Mini Bulk Samples

| Sample \# I Weiaht (t) | Stone \# | Phase | Weight mg | Weight ct | Colour | Clarity | Shape | $\begin{gathered} \text { Length } \\ \mathrm{mm} \end{gathered}$ | Width mm | $\begin{gathered} \text { Height } \\ \mathrm{mm} \end{gathered}$ | Surface |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { SPQ-BK-1 } \\ & 2.41 \end{aligned}$ | 1 | II | 0.65 | 0.0033 | White | Included | Octahedron | 0.94 | 0.78 | 0.74 | etched |
|  |  |  |  | $0.0033^{*}$ |  |  |  |  |  |  |  |
| SPQ-BK-2 | 1 | । | 1.12 | 0.0056 | Pink | Cloudy | Octahedron | 1.16 | 1.14 | 0.86 | etched |
| 2.476 | 2 | " | 0.34 | 0.0017 | White | Cloudy | Octahedron | 0.68 | 0.54 | 0.46 | etched |
|  | 3 | 11 | 0.89 | 0.0045 | White | Cloudy | Broken Octahedron | 1.02 | 0.96 | 0.60 | striated |
|  | 4 | 11 | 0.70 | 0.0035 | Colourless | Clear | Octahedron | 0.80 | 0.76 | 0.74 | etched |
|  | 5 | " | 0.65 | 0.0033 | White | Cloudy | Fragment, Twinned Octahedron | 0.94 | 0.74 | 0.66 | etched |
|  | 6 | " | 0.51 | 0.0021 | White | Included | Multi-cryst | 1.16 | 0.90 | 0.40 | rough |
|  | 7 | " | 0.68 | 0.0034 | Green/Black | Opaque | Fragment, TTH ** | 0.84 | 0.70 | 0.56 | pitted |
|  | 8 | 1 | 0.42 | 0.0021 | Pink | Cloudy | Fragment | 0.96 | 0.60 | 0.38 | etched |
|  |  |  |  | $0.0262^{1}$ |  |  |  |  |  |  |  |
| SPQ-BK-3 | 1 | 1 | 6.49 | 0.0325 | White | Cloudy | TTH* | 1.92 | 1.76 | 1.44 | etched |
| 2.724 | 2 | 1 | 0.98 | 0.0049 | White | Included | Fragment | 1.20 | 0.98 | 0.84 | etched |
|  | 3 | 1 | 0.59 | 0.0030 | White | Included | Fragment | 1.40 | 0.66 | 0.56 | etched |
|  | 4 | 1 | 0.54 | 0.0027 | White | Included | Fragment | 1.18 | 0.90 | 0.64 | etched |
|  | 5 | 1 | 0.56 | 0.0028 | White | Included | Fragment | 1.18 | 0.94 | 0.76 | etched |
|  | 6 | " | 0.54 | 0.0027 | Colourless | Clear | Stepped Face Tetrahedra | 0.72 | 0.62 | 0.50 | striated |
|  | 7 | " | 0.45 | 0.0023 | Yellow | Clear | Fragment | 0.90 | 0.70 | 0.48 | striated |
|  | 8 | 11 | 0.71 | 0.0036 | Colourless | Clear | Multi-cryst Aggregate | 1.04 | 0.90 | 0.48 | striated |
|  | 9 | " | 0.49 | 0.0025 | Colourless | Clear | Fragment | 0.84 | 0.72 | 0.60 | smooth |
|  | 10 | II | 1.10 | 0.0055 | Colourless | Clear | Fragment | 1.32 | 1.10 | 0.64 | striated |
|  | 11 | 11 | 0.58 | $\frac{0.0029}{0.0654^{\wedge}}$ | Yellow | Cloudy | Fragment | 1.16 | 0.78 | 0.42 | striated |
|  | $\begin{array}{ll} * & =1 \\ * * & \mathrm{~T} \\ \hat{\wedge} & = \\ \wedge \wedge & = \end{array}$ | $\begin{aligned} & .0014 \mathrm{ct} \\ & -\quad=\text { Trig } \\ & .0106 \mathrm{ct} \\ & .0240 \mathrm{ct} \end{aligned}$ | onal Trisoct | ahedral |  |  |  |  |  |  |  |

Table 3 B



| $\begin{aligned} & \frac{0}{5} \\ & \frac{0}{0} \\ & 0 \\ & 0 \\ & 0 \\ & . \end{aligned}$ |  | N్웅 O <br> © <br> $\underset{\sim}{\aleph}$ $\underset{\sim}{N}$ |
| :---: | :---: | :---: |
|  |  | 0 0 0 0 0 0 0 0 0 0 0 0 |
|  |  | 응 |

Forty-six (46) smaller ( 300 g ) samples collected simultaneously with the large samples were analysed for 48 elements by ICP and INAA methods. As found previously, no geochemical difference could be determined between those samples that contained diamonds and those that didn't. Stripping / trenching \& mapping were conducted at 11 of these sample sites. In addition, 365 large ( $15-25 \mathrm{~kg}$ ) till samples were collected at a density of 1 sample per $\mathrm{km}^{2}$ for heavy mineral analysis, and 365 smaller ( 250 gm ) samples for geochemical analysis. Actinolite concentrations in the heavy mineral fraction of the till samples were found to correlated with areas of sandorite dykes.

In $1998 \mathrm{KWG} /$ Spider reduced the size of the property to its current $45 \mathrm{~km}^{2}$.
The main elements of the 2001 exploration program included a) prospecting for sandorite dykes, and the collection of 35 large rock samples for treatment and diamond recovery by caustic fusion, b) the excavation of 3 mini bulk samples and the processing thereof by gravitational, magnetic and caustic fusion methods and c) the stripping (by hand and/or mechanical methods) and mapping of 2 restricted areas. Of the 35 large ( 25 to 35 kg ) samples collected, 17 contained at least 1 diamond and 11 of those produced more than one, 7 contained one or more macro diamonds and one produced a commercial size stone. Commercial size diamonds were recovered from two of the three mini bulk samples - 3 from sample SPQ-BK-2 and 8 from sample SPQ-BK-3. The largest stone measured $1.92 \mathrm{~mm} \times 1.76 \mathrm{~mm} \times 1.44 \mathrm{~mm}$ and weighed 0.0325 ct . In addition several of the macro diamonds recovered were fragments which implies that the quantity of commercial stones is probably significantly greater. The stripping and mapping exercise successfully traced the extension of 1) the PC occurrence from the Pele property onto the KWG / Spider ground and 2) the Sandor occurrence an additional 75 m east from Highway 17.

The prospecting program was continued in 2002, but this phase was focussed upon locating and sampling volcanic complexes similar to those from which Band-Ore and Pele had reported higher grade results. Three volcanic complexes were identified, and another 3 indicated. Boulders from another complex were noted in a glacial dispersion train near the SE property boundary. A total of 60 samples were collected from these sites and from sandorite dykes, and sent for diamond recovery by caustic fusion. Of these 60 samples, 30 contained at least 1
diamond, 20 produced more than one stone, 17 contained macro diamonds and 2 produced commercial size stones. The 215 diamonds including 5 macro diamonds obtained from a 15 kg split of sample 2002-LAL-156 was the highest diamond count attained to that date (all samples normalized to 15 kg ).

Three, $\sim 1.5$ to 2.7 tonne, mini bulk samples (SPQ-BK-4, $5 \& 6$ ) were excavated from outcrops with known anomalous diamond counts in prospecting samples, whereas the fourth, SPQ-BK-7, was collected in close proximity to and from rock with similar textures and composition to SPQ-BK-6. All four were shipped to Lakefield Research for commercial and macro diamond recovery. Originally, the samples were to be processed in a DMS (dense media separation) plant, but those tests were aborted due to the excessive amount of concentrate produced, and were subsequently treated by magnetic separation. One sample, SPQ-BK-4, was further subjected to attrition milling to assess the effectiveness of the magnetic separation process. Commercial size diamonds were recovered from 2 of the 4 samples (SPQ-BK-4 \& 6).

The 2004 exploration program consisted of a) continuing the prospecting program, b) stripping, washing and sampling two areas of anomalous diamond counts and c) taking 2 bulk samples of approximately 10 tonnes each. The prospecting sampling phase program was again focussed upon locating and sampling volcanic complexes. Heterolithic breccias plus sandorite dykes were identified at four new locales to bring the total recognized complexes on the property to seven (Figure 10). The area about two sample sites \# 156 \& 167 (Figure 10), from which high diamond numbers had been recovered from samples collected in 2002, were extensively mechanically stripped and washed, and then mapped and sampled in detail. The 22 samples collected at site 167 failed to produce diamond counts of the order obtained from the previous sample. No explanation for the failure is apparent. By contrast, sampling results at site 156 were very positive. Of the 29 new samples collected only two, - that of a late stage dyke, and another of sandorite boulders, - contained no diamonds. Of the remaining 27 samples, 25 contained more than one diamond. Two 10 tonne bulk samples were extracted and shipped to SGS Lakefield for commercial diamond recovery in a DMS (dense media separation) pilot plant. A final report from Lakefield has not been received.

Results obtained to date from prospecting samples indicate the wide spread presence of
diamond mineralization on the property, and that diamonds are present in both the heterolithic breccia and sandorite dyke rock phases. The recovery of commercial size diamonds from the mini bulk samples and from 10 or 15 kg splits of prospecting samples suggests that larger stones are present in these rocks. Prospecting has proven to be the most effective method to locate both the heterolithic and sandorite phases.

Recent test work by Spider / KWG indicates that the diamonds are preferentially located in the ultramafic xenoliths as opposed to the matrix. When collecting prospecting samples of sandorite dykes, care is taken to include both xenolith and matrix material, however the extent of the exposure may limit the material available for sampling. If the xenolithic material is under represented in a sample, then the diamond count for that sample may be low.

## DRILLING

None of the diamond occurrences on the property have been drilled. All data collected on and all observations made for the property have been from surface exposures, either outcrops or limited stripped areas.

## SAMPLING METHOD AND APPROACH

## Prospecting Samples

During the 1996 and 1997 programs 98 prospecting grab samples were collected primarily from easily accessible outcrops indicated as xenolith bearing (hypabyssal) dykes on Sage's geological map of Lalibert Township and from road cuts in Menzies Township. Prospecting coverage to remoter parts of the property was extended in 2001, 2002 and 2004 along compassed traverse lines or base lines cut to facilitate access and control. Hypabyssal dykes similar to the host rock at the Sandor occurrence were again the targeted sample medium in 2001, whereas all facies of the sandorite volcanic complexes were the main focus for the 2002 \& 2004 phases of work.

Each sample was placed in an individual woven plastic "rice bag", and assigned a unique number. Sample bags were numbered on both sides, a piece of flagging tape with the sample number was inserted into the bag, and the bags were sealed with either twine or tie wraps. Notes were recorded at the sample site as to the strike, dip and width of the sampled rock unit - if
measurable, the presence, type, shape and quantity of xenoliths, and regional volcanic lithology. UTM coordinates of the site were taken with a hand held GPS (global positioning unit). For the 1996 and the more remote 1997 samples, material collected consisted of easily obtainable pieces broken from outcrops. At the more accessible 1997 sites along the roads, large chunks were broken out using a Pionjar drill and wedges, and then broken into smaller pieces (R. Thomas, pers. comm.). During the 2001, 2002 \& 2004 programs, fist sized fragments of sample material were selected, if possible, from across the width / thickness of the unit being sampled, or from about as much of the exposure as practical. If possible, both matrix and xenolithic material were collected.

Rock units that comprise the various facies of sandorite volcanic complexes are easily distinguishable from the regional volcanic stratigraphy. As a result, prospecting has proven to be a cost effective method to locate and sample outcrops of potentially diamond bearing material. If, however, insufficient xenolithic material is included in the sample, the diamond count for the sample may be low.

## Bulk Samples

Since diamonds are erratically distributed within their host rock the odds of recovering a larger, commercial size stone in a 10 to 15 kg sample are remote. Thus, in order to determine if a population of larger diamonds existed in the sandorite volcanic complex units, 7 mini bulk samples of $\sim 1.5$ to 2.7 tonnes each taken during the $2001 \& 2002$ programs were collected from known diamond bearing outcrops and sent for processing. Samples were excavated using a backhoe to extract broken pieces of rock (no blasting was undertaken), broken to manageable size either by machine or sledge hammers, placed into 4 or 5 heavy duty, $1 \mathrm{~m}^{3}$, woven plastic bags per sample, numbered and secured. Care was taken to select material impartially from the entire width / thickness of the unit being sampled. Samples SPQ-BK-1 to 5 were from outcrops of hypabyssal facies material while samples SPQ-BK-6 \& 7 were of volcanic facies lapilli tuff. Sample locations are shown on Figure 10. Results have been presented earlier in this report. Details re sample processing will be discussed in the section titled Sample Preparation, Analysis and Security that follows.

In October / November 2004, two (2) approximate 10 tonne samples, SPQ-BK-08 and

SPQ-BK-09, were taken from sample sites 2004-LAL-221 and 223 respectively. Sample locations are shown on Figures $\mathbf{1 0} \&$ 14. A 3 mx 3 m area was laid out around each sample site, drilled to a depth of $0.5+\mathrm{m}$, and blasted. The blasted material was then excavated by mechanical shovel, loaded into a Marooka truck, hauled to the access road, transferred onto a trailer, and hauled to Mining Essentials' property in Hawk Junction, Ontario. Security was in place 24 hours per day at the Hawk Junction facility. Each sample was processed through a 6" jaw crusher followed by a rolls crusher to produce a -6 mm product. This -6 mm product was collected in polly weave bags of $1 / 2$ tonne capacity, tied with a security seal, and stored on site in a secure shed prior to shipment.

## SAMPLE PREPARATION, ANALYSIS AND SECURITY

## Prospecting Samples

All samples were securely stored prior to shipment to the laboratory. The 1996 samples were kept in a locked shed at the Manitoulin Transport depot in Wawa. In 1997, samples were stored in a tent behind the motel just south of the property where the sampling crew was staying, and watched over during the day by the owners (R. Thomas, pers. comm.). The large duplicate samples were shipped within a day of collection, and the remainder at the end of the program. All 2001 \& 2002 samples were stored at a rented camp / cottage on Kabenung Lake, and were never left unattended. The 2004 samples were kept locked in the back of the Authors truck. After being palletized, samples were shipped to the laboratory via Manitoulin Transport Inc., a bonded trucking company.

All 98 samples from the 1996 and 1997 programs were processed at the Lakefield Research Ltd. laboratory in Lakefield, Ontario. The entire sample, which weighed from 12.6 to 181.0 kg was first crushed to -6 mm and then subjected to caustic fusion to produce a resistate mineral residue. Diamonds were hand picked from the residue, measured, weighed and described as to colour, clarity and morphology.

The 160 samples collected in 2001, 2002 \& 2004 were submitted to the Kennecott Canada Exploration Inc. mineral processing laboratory in Thunder Bay, Ontario. There, each $\sim 30 \mathrm{~kg}$ sample was crushed to -6 mm , reduced to 15 or 10 kg by an unbiased splitting procedure (note in a few cases the entire sample was used), and digested by caustic fusion to produce a resistate
mineral residue. Diamonds were hand picked from the residue, measured, weighed and described as to fragmentation, morphology, colour, clarity, colour intensity, inclusions/cleavages, resorption and surface features.

Security, sample preparation and analysis procedures followed in the four work programs were appropriate for prospecting samples. The jagged edges of the sample fragments tend to cut the rice bags, thus exposing the sample to potential tampering. As an additional precaution it is recommended that in future samples be shipped in plastic pails.

## Bulk Samples

Immediately upon collection, mini bulk samples SPQ-BK-1 to 5 were transported to camp on Kabenung Lake for temporary, secure storage. Samples were never left unattended. At the end of the field program samples were trucked directly to the Manitoulin Transport Inc. (a bonded carrier) depot in Wawa, palletized and shipped to the laboratory. Samples SPQ-BK-6 \& 7 were trucked directly from the field to the Manitoulin depot, palletized and shipped. The four 2002 samples were security sealed, whereas the 2001 samples were not. The two 10 tonne samples collected in 2004 were kept in secure storage at Mining Essentials facility in Hawk Junction, Ontario prior to shipment by Manitoulin Transport Inc.

The three 2001 mini bulk samples, SPQ-BK-1, 2 \& 3, were processed at the SRC (Saskatchewan Research Council) laboratory in Saskatoon. Samples were first processed following SRC's standard methodology which is designed primarily to recover "commercial" size diamonds, and involves the following steps.

1) The entire sample is crushed to minus 12 mm , trommel washed and wet screened at $\pm 8 \mathrm{~mm}, \pm 4 \mathrm{~mm}, \pm 2 \mathrm{~mm}$ and $\pm 0.8 \mathrm{~mm}$.
2) The +8 mm material is re-crushed to -8 mm and fed back into the circuit.
3) Screen fractions 0.85 to $2 \mathrm{~mm}, 2$ to 4 mm and 4 to 8 mm are fed into separate surge bins that in turn feed into 3 separate jigs (Jigs $1,2 \& 3$ ). Each jig is "tuned" to receive that particular size fraction such that heavy minerals / material with a $\mathrm{SG}>3.2$ are retained. Each tonne of sample is spiked with tracer minerals to ensure recoveries of $90 \%$ or better for all liberated diamonds.
4) The heavy mineral concentrate from each jig is dried and passed over a rare earth belt roll magnet to produce a non-magnetic concentrate.
5) The non-magnetic concentrate from each jig is subjected to caustic fusion.
6) The caustic fusion melt is screened through a 0.600 mm screen.
7) Material remaining on the 0.600 mm screen is treated with concentrated hydrochloric and
hydrofluoric acids to remove all traces of caustic, iron and other non diamond material.
All diamonds recovered are weighed, measured and described.
Recoveries for the 3 samples, as determined with tracer minerals, all exceeded the laboratory's $90 \%$ minimum requirement. The number of diamonds recovered by this standard methodology included nil from SPQ-BK-1, one from SPQ-BK-2 and five from SPQ-BK-3. Weights, measurements and descriptions of all stones recovered in Phase I are summarized in Table 3A. Sample locations are shown in Figure 10.

For samples SPQ-BK-2 and SPQ-BK-3 diamonds were recovered from the caustic fusion residues of the non magnetic concentrate from Jig 1. In order to ensure the integrity of the methodology the magnetic fraction of the heavy mineral concentrates for all 3 sample were also fused. This action was the only digression to the standard SRC methodology during Phase I. No additional diamonds were recovered.

During processing it was noted that the sample material upon crushing tends to break two dimensionally, i.e. with 2 sides of the crushed material of much greater dimension than the third. As a result, a large proportion of the sample ( $>12 \%$ for sample SPQ-BK-3) required re-crushing to -8 mm . However, even after re-crushing to -8 mm , more than $5 \%$ (for samples SPQ-BK-1 and SPQ-BK-2) remained as oversize and thus were not processed. This same problem, 2 dimensional breaking, also resulted in a large portion ( $>20 \%$ ) of sample being fed to Jig 3. Obviously then, the possibility existed that unrecovered diamonds remained in both the +8 mm oversize fraction and the $+4 \mathrm{~mm}-8 \mathrm{~mm}$ Jig 3 material.

KWG / Spider also considered it important to recover macro diamonds from these samples. The +8 mm oversize fraction and the Jig 3 material were two obvious possible sources for these smaller stones. A third possible source was the -0.85 mm undersize fraction which represented $>16 \%$ of the total sample. In total, some $41 \%$ to $56 \%$ of the sample material were not processed for macro diamonds.

In order to recover any diamonds from the oversize fraction and the Jig 3 material plus macro diamonds from the -0.85 mm undersize, a re-processing of residual materials (Phase II) from each of the bulk samples was undertaken. This involved the following:

1) All Jig 3 material ( 4 to 8 mm ) and all oversize material ( $>8 \mathrm{~mm}$ ) were dried and rolls crushed with the rolls gap set at 2 mm .
2) All rolls crushed material from (1) was combined with the 0.85 mm undersize and screened at $\pm 0.85 \mathrm{~mm}$ and $\pm 0.50 \mathrm{~mm}$.
3) The $-0.85+0.50 \mathrm{~mm}$ fraction was dried and passed over a rare earth belt roll magnet to produce a non magnetic concentrate.
4) The non magnetic concentrate from (3) was fused in caustic soda at $555^{\circ} \mathrm{C}$ for 24 hours.
5) The fused caustic melt from (4) was screened at $\pm 0.50 \mathrm{~mm}$.
6) The +0.50 mm caustic residue was examined for diamonds.
7) Diamonds recovered were weighed, measured and described.

Weights, measurements and descriptions of all stones recovered in the Phase II process are summarized in Table 3A.

The four 2002 mini bulk samples (SPQ-BK-4 to 7) shipped to Lakefield Research were processed in the following manner:

## S Preparation

- Upon receipt the samples were checked to ensure that the security seals on the individual shipping bags were intact.
- $\quad$ The samples were weighed.
- Each sample was jaw crushed to - 4", and then cone crushed to -6 mm in a closed circuit until $100 \%$ of the sample passed a -6 mm screen.
- A 50 kg split was taken from each sample for microdiamond analysis. Results are presented in Table 3B, and shown with the results for the corresponding prospecting samples from the same site. Results are variable, but generally of the same order of magnitude as for the prospecting samples.
- The remaining portion of each sample was wet screened at 0.5 and 1 mm . The -0.5 mm material was sent to a tailings pond, the $-1 \mathrm{~mm}+0.5 \mathrm{~mm}$ material was dewatered and dried for later magnetic separation, and the $-6 \mathrm{~mm}+1 \mathrm{~mm}$ material was dewatered and kept for future processing.


## S Dense Media Separation (DMS) Test

- The $-6 \mathrm{~mm}+1 \mathrm{~mm}$ material for sample SPQ-BK-4 was fed into a 1 tonne per hour DMS plant with the cut off density set at $3.1 \mathrm{t} / \mathrm{m}^{3}$. Diamonds, with a density of $3.5 \mathrm{t} / \mathrm{m}^{3}$, would be concentrated in the heavy portion.
- After approximately one third of the sample had been processed the test was aborted as
the amount of concentrate produced ( $\sim 30 \%$ ) was considered excessive. The high proportion of concentrate was due to the high proportion of minerals in the sample with densities equal or greater than $3.1 \mathrm{t} / \mathrm{m}^{3}$.
- The materials were recombined.


## S Magnetic Separation Test

As an alternative to the DMS test, the four mini bulk samples were treated in a high intensity magnetic separator with the speed set to capture diamonds down to 0.5 mm in the non magnetic concentrate fraction.

- For each sample the $-6 \mathrm{~mm}+1 \mathrm{~mm}$ material was dried.
- The dried $-6 \mathrm{~mm}+1 \mathrm{~mm}$ material was magnetically separated using a High Force Rare Earth Magnet Roll Separator.
- The magnetic concentrate was collected and stored.
- The non magnetic concentrate was subjected to caustic fusion and the diamonds picked from the residue, measured and weighed. Results are presented in Table 3C as the +16 mesh non magnetic concentrate fraction. A commercial size stone was recovered from SPQ.-BK-6.
- Similarly, the $-1 \mathrm{~mm}+0.5 \mathrm{~mm}$ material collected from the wet screening set in the sample preparation was magnetically separated. The resulting magnetic concentrate was collected and stored while the non magnetic concentrate was subjected to caustic fusion and the diamonds picked from the residue, measured and weighed. Results are presented in Table 3C as the +35 mesh non magnetic concentrate fraction. Three commercial stones were recovered from SPQ-BK-4 and 2 from SPQ-BK-6.


## S Attrition Milling

Sample SPQ-BK-4 was further subject to an attrition milling test to assess the degree to which diamond recovery could be improved if liberation was improved.

- A 1000 kg split from the +1 mm magnetic concentrate was loaded in 250 kg aliquots into a rubber lined scrubber charged with a light charge of $2.5^{\prime \prime}$ porcelain balls, and gently rolled until the bulk of the material passed through a 1 mm screen.
- The sample was screened at 0.5 mm screen, and the -0.5 mm material discarded.
- The +0.5 mm material was dried, and passed over the magnetic separator.
- The non magnetic concentrate was treated to heavy liquid separation from which diamonds were picked from the sink portion.
- The float portion from the heavy liquid separation plus the magnetic concentrate were submitted for caustic fusion, and diamonds picked from the residue. Results are shown
in Table 3D - No additional commercial diamonds were recovered.
The two, ten tonne samples excavated in 2004 were shipped to the SGS Lakefield Research facility in Lakefield, Ontario for processing in a DMS pilot plant. The final report from Lakefield has not been received.

It is the Author's opinion that number and size of the bulk samples, sample security and sample preparation procedures have been appropriate for the present exploration stage of the property. The most suitable analytical procedure for treating the bulk samples has yet to be determined, but testing using modest size (2 to 10 tonne) samples is the appropriate approach.

## DATA VERIFICATION

## Prospecting Samples

The caustic fusion dissolution, residue preparation and diamond picking process is subject to rigorous internal quality control monitoring schemes at both the Lakefield and Kennecott laboratories. Recovery rates for each laboratory, based upon control samples, is $97 \%$. To eliminate the possibility of cross sample contamination all equipment is thoroughly cleaned between samples.

Formal quality control procedures have not been established for the project. However, data sub sets may be used for data verification. First, as shown on Figure 10 duplicate samples were taken at several sample sites either at the exact same site or nearby. Results are generally comparable. Discrepancies are in some cases attributable to the material sampled. Of the six samples from the Sandor occurrence, diamond counts ranged from 0 to 23 stones per 15 kg
(Table 2). Sample 1996-LAL-5, that produced zero diamonds, was a selected grab sample of matrix material only.

In 1997, eleven (11) larger, duplicate samples of clean fresh material that weighed between 50.6 and 181.0 kg (average 116 kg ) were taken from selected outcrops, but at the same sites as
the prospecting samples, to determine if the sites were contaminated during road construction, activities of previous exploration programs, etc. Table 4 presents a comparison of results for the 11 prospecting samples versus the larger duplicate samples. For samples 96-LAL-1 and 96-MEN-107 that produced significant diamond counts, similar (but not exactly the same) results were obtained from the duplicate samples. The difference can be attributed to the erratic distribution of diamonds (nugget effect) in the host rock. No diamonds were recovered from the duplicate samples for prospecting samples 96-LAL-103, 96-MEN-106 \& 96-LAL-126 from which $3,2 \& 1$ diamonds were obtained. This contrast might be due to site contamination, laboratory contamination, nugget effect or a combination thereof. Since the stones recovered were not reported to be industrial diamonds (as would be used for industrial equipment), then either the nugget effect or laboratory contamination is suspected as the reason for the disagreement of results. For the six prospecting samples that contained no diamonds, results for five of the corresponding duplicates were identical. The sixth duplicate, 97-LAL-216, produced 14 diamonds. This duplicate was a composite sample of fragments of the dyke from all over the stripped exposure, whereas the original sample was taken from a limited exposure. As a consequence, the nugget effect is believed to be the cause for the difference in results.

Thirdly, the remaining sample material for the 7 samples from the 2001 work program that had produced macro diamonds was processed in 2002. Although diamonds were recovered from all 7 samples the ratio of diamonds obtained from the first 15 kg versus the remaining material varied from $-25 \%$ to $+82 \%$. In addition, there is no correlation between the number of macro diamonds and the total number of diamonds recovered per sample (Table 5). The variation is attributable to the erratic distribution of diamonds in the host rock.

Since the Author has been involved with the project for the past three work programs, is familiar with procedures and safeguards associated with sample collection, etc., and knowing that data sub sets could be used for data verification, the Author did not collect any samples for
TABLE 4
Comparison of Diamond Counts - Prospecting Samples vs Larger Duplicate Samples

| Prospecting Samples |  |  |  |  | Duplicate Samples |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :--- | :---: | :---: | :---: | :---: |
| Sample \# | Sample <br> Wt. (kg) | Micro <br> Dia. | Macro <br> Dia. | Com- <br> mercial | Sample \# | Sample <br> Wt. (kg) | Micro <br> Dia. | Macro <br> Dia. | Com- <br> mercial |
| 96-LAL-1 | 31.6 | 8 | 2 | 0 | $97-L A L-200 S$ | 169.9 | 18 | 3 | 0 |
| 96-LAL-102 | 23.0 | 0 | 0 | 0 | $97-L A L-202$ | 155.3 | 0 | 0 | 0 |
| 96-LAL-103 | 30.8 | 3 | 0 | 0 | $97-L A L-203$ | 163.6 | 0 | 0 | 0 |
| 96-MEN-106 | 27.9 | 1 | 1 | 0 | $97-L A L-206^{*}$ | 157.3 | 0 | 0 | 0 |
| 96-MEN-107 | 28.3 | 6 | 2 | 0 | $97-M E N-207$ | 164.7 | 81 | 14 | 0 |
| 96-LAL-116 | 25.3 | 0 | 0 | 0 | $97-L A L-216$ | 50.6 | 14 | 1 | 0 |
| 96-LAL-117 | 27.1 | 0 | 0 | 0 | $97-L A L-217$ | 57.2 | 0 | 0 | 0 |
| 96-LAL-118 | 20.9 | 0 | 0 | 0 | $97-L A L-218$ | 55.6 | 0 | 0 | 0 |
| 96-LAL-120 | 25.8 | 0 | 0 | 0 | $97-L A L-220$ | 56.5 | 0 | 0 | 0 |
| 96-LAL-121 | 30.0 | 0 | 0 | 0 | $97-L A L-221$ | 66.2 | 0 | 0 | 0 |
| 96-LAL126 | 27.3 | 0 | 1 | 0 | $97-L A L-226$ | 181.0 | 0 | 0 | 0 |

* Sample is actually in Menzies Township
TABLE 5

| Sample \# | Total Diamonds per Sample |  |  |  |  |  |  | Number of Diamonds $\mathbf{> 0 . 5 ~ m m}$ |  |  |  | >0.5 / Total Dia |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | First Analysis |  | Second Analysis |  |  |  | Total Dia. | 1st Analysis | Secon | Analysis | Total >0.5 |  |
|  | Wt. - kg | \# Dia. | Wt. - kg | \# Dia. | \# / 15 kg | \% Change |  | \# Dia. | \# Dia. | \# / 15 kg |  |  |
| LAL-12-2001 | 15 | 13 | 12 | 17 | 16.7 | 28.5 | 30 | 2 | 0 | 0.0 | 2 | 0.07 |
| LAL-17-2001 | 15 | 9 | 5.5 | 3 | 8.8 | -0.2 | 12 | 1 | 2 | 5.5 | 3 | 0.25 |
| LAL-18-2001 | 15 | 6 | 28.3 | 7 | 4.5 | -25.0 | 13 | 3 | 1 | 0.5 | 4 | 0.31 |
| LAL-19-2001 | 15 | 7 | 20.8 | 8 | 6.3 | -10.0 | 15 | 2 | 0 | 0.0 | 2 | 0.13 |
| LAL-21-2001 | 15 | 6 | 12.5 | 14 | 10.9 | 81.7 | 20 | 1 | 2 | 2.4 | 3 | 0.15 |
| LAL-22-2001 | 15 | 4 | 13.4 | 4 | 4.2 | 5.0 | 8 | 1 | 0 | 0.0 | 1 | 0.13 |
| MEN-1-2001 | 15 | 9 | 31.7 | 19 | 9.0 | 0.0 | 28 | 3 | 2 | 0.9 | 5 | 0.18 |

independent diamond analysis for data corroboration, but relied solely upon the results for the five work programs. The fact that diamonds have been recovered from samples submitted to two independent ISO certified laboratories verifies the presence of diamonds on the property. Results for duplicate samples from the same sample site may vary, but discrepancies are attributable to the nugget effect, ie. the erratic distribution of diamonds within the host rock.

After reviewing the project procedures the Author hereby recommends that an 8 kg split check sample for every $10^{\text {th }}$ sample be submitted to a second laboratory.

## Bulk Samples

Procedures at both SRC and Lakefield are monitored internally to ensure that recoveries of better than $90 \%$ are attained. The recovery of diamonds from the bulk samples corroborates the presence of diamonds in the prospecting samples.

## ADJACENT PROPERTIES

The recommended work program is based upon results obtained to date from exploration efforts by KWG / Spider on their $45 \mathrm{~km}^{2}$ Wawa property. All references in this report to diamond bearing samples are for samples collected from the property.

## MINERAL PROCESSING AND METALLURGICAL TESTING

Mineral processing and metallurgical testing performed thus far have been the processing of the $\sim 1.5$ to 2.7 tonne mini bulk samples SPQ.-BK-1 to 7 to determine the presence of commercial size diamonds. Descriptions of the tests undertaken on samples as well as results of those tests have been described elsewhere in this report. Two additional bulk samples, SPQ.-BK-8 \& 9 each weighing approximately 10 tonnes, have also been processed. The final report that describes procedures and results has not been received.

## OTHER RELEVANT DATA AND INFORMATION

All relevant data and information obtained from previous exploration work programs is included in this report.

## INTERPRETATION AND CONCLUSIONS

The objectives of KWG's / Spider's exploration programs have been successfully achieved. Diamonds have been recovered from 103 samples collected from 37 sites on the property. The presence of commercial size diamonds has been confirmed. Sandorite volcanic complexes, areas of heterolithic breccia plus sandorite dykes, have been located. Six of these complexes plus a large diamondiferous dyke are aligned in a NW / SE direction to the north of Highway 17 which suggests that this region is possibly more prospective than other areas of the property. Four other potential complexes have been located elsewhere on the property. Prospecting has proven to be an efficient, cost effective method by which to locate volcanic complex facies units.

The diamond occurrences on the property are, at $\sim 2.685 \mathrm{Ga}$, the oldest known. They do not fit any current exploration model. The diamond bearing dykes and heterolithic breccia may have originated in the mantle, passed through the diamond stability field, and been emplaced into a region of active volcanism through an intricate network of fractures similar to that proposed for a lamproite intrusive. Another proposed model is that the diamonds were formed metastably at shallower depth under high stress in fault zones from a komatiitic ultramafic rock, and later brought to surface by the lamprophyre dykes. In either case, once the magma encountered the water table the volcanic complex erupted in a maar like explosion onto the mafic volcanic rocks of the lower portion of the Catfish assemblage. The complex was subsequently buried by the felsic units of the assemblage. A regional recumbent folding event has resulted in the volcanic complexes to be turned on edge such that east of the McCormick Lake synclinal axis the volcanic facies face west with the subvolcanic facies and hypabyssal facies lying to the east. Thrust faults associated with a later upright folding event has sliced the stratigraphy and caused repetition of units. As a result, the horizon at which the volcanic complexes were deposited are repeated within the exposed stratigraphy.

Processing of 10 or 15 kg sample weights of crushed, homogenized and unbiasedly split samples has proven effective to identify diamond bearing outcrops. In the heterolithic volcanic facies, the highest quantities of diamonds appear to be associated with the lapilli tuff units. The sandorite may or may not be diamond bearing. Recent work suggests that the diamonds are more prevalent in the ultramafic xenoliths. However, since diamonds are unevenly distributed both in quantity and in size within their host rocks, and since exploration on the property is still
at an early stage, all facies need to be thoroughly tested in order to be able to confidently predict which units have the most economic potential. The presence of commercial size diamonds in both the prospecting and 1.5 to 2.7 mini bulk samples from the property, and which are required for an economic deposit, has been demonstrated.

The geological environment underlying the property is considered to be highly prospective for one or more diamond deposits.

## RECOMMENDATIONS

Results from recent exploration efforts on the KWG / Spider Wawa property are significant and encouraging. Continued exploration is highly recommended. The two phased work program detailed below is designed to advance the knowledge of the property to a point at which its economic potential may be more confidently assessed.

Systematic prospecting of the property is to be completed. Priority is to be given to collecting prospecting samples from the volcanic facies of the complexes and to dykes containing a significant proportion of ultramafic actinolite - talc xenoliths

Control grids are to be established over each volcanic complex. These $1 \mathrm{~km} \times 1 \mathrm{~km}$ grids are to be used for detailed prospecting, mapping and sampling purposes along and between the lines. The various facies of the volcanic complex are to be mapped and sampled in detail in order to determine the size and geometry of the complex and the extent of the diamond mineralization.

Based upon the results for the prospecting samples, the volcanic complexes are to be prioritized. Priority areas are to be stripped and mapped in detail at 1:200. The stripped areas are to be sampled in detail to determine anomalous concentrations of diamonds. From these areas $21 / 2$ tonne mini bulk samples are to be excavated, and then processed in a DMS facility for the recovery of commercial and macro diamonds.

The dyke exposed at site 156 is to be core drilled to determine the continuity of the dyke and the concentrations of diamonds to depth. Twelve NQ size holes spaced at 50 m intervals and designed to cut the dyke at the 50 m and 100 m levels are recommended.

The undertakings described above constitute Phase I of the work program. Phase II will entail, based upon the results for the prospecting samples, the extraction and processing of $\sim 2.5$
and 10 tonne bulk samples. These larger bulk samples are required to better establish the diamond distribution within and grade of a complex or dyke.

Cost estimates, as detailed in the following Table 6, are $\mathbf{\$ 5 0 5 , 0 0 0}$ for Phase I , and $\mathbf{\$ 4 2 4 , 0 0 0}$ for Phase II.

Respectfully submitted,

James G. Burns B.Sc., P.Eng.
September 19, 2005

## TABLE 6

PROPOSED EXPLORATION BUDGET

## PHASE 1

Property prospecting : 2 men @ $\$ 350 /$ d for 15 days
Sample processing : 30 samples @ $\$ 80 / \mathrm{kg}$ x 10 kg
\$ 10,500.
24,000.
Duplicate samples : 3 samples @ $\$ 80 / \mathrm{kg} \times 8 \mathrm{~kg}$
1,920.
Boat and helicopter rental : allow
Line cutting : 10 areas $\times 8 \mathrm{~km} /$ area $\times \$ 350 / \mathrm{km}$
Detailed prospecting : 2 men @ $\$ 350 /$ d for 30 days
5,000.
28,000.
Sample processing : 100 samples @ $\$ 80 / \mathrm{kg}$ x 10 kg
21,000.
Duplicate samples : 10 samples @ $\$ 80 / \mathrm{kg}$ x 8 kg
Stripping : 4 areas x 6 days /area x $\$ 2500 / \mathrm{d}$ 80,000.

Core drilling : 12 holes for $1350 \mathrm{~m} @ \$ 100 / \mathrm{m}$
60,000.
Core sample processing : 36 samples @ $\$ 80 / \mathrm{kg}$ x 10 kg
135,000.
Duplicate samples : 4 samples @ $\$ 80 / \mathrm{kg} \times 8 \mathrm{~kg}$
28,800.
Project supervision, report writing : 60 days @ $\$ 500 / \mathrm{d}$
2,560.
Room and board for 3 men @ $\$ 125 /$ d for 50 days
30,000.

Travel : allow
18,750.
Drafting, etc : allow
2,000.

| Sub Total | $\$ 458,930$. |
| :--- | ---: |
| Contingency $(10.0 \%)$ | $\underline{46,070}$. |

## PHASE 11

Extracting bulk samples : 6 samples @ 2.5 tonne each @ $\$ 7,000 / \mathrm{e}$
$\$ 42,000$.
Extracting bulk samples : 2 samples @ 10 tonne each @ $\$ 20,000 \mathrm{e}$
40,000.
Sample processing : 35 tonnes @ $\$ 8,000 /$ t
280,000.
Supervision, report writing : 30 days @ $\$ 500 / \mathrm{d}$
15,000.
Room \& board : 25 days @ \$125/d
3,125.
Transport : allow
3,000.
Miscellaneous : allow
2,000.
Sub Total
Contingency (10.1\%)
\$385,125.
38,875.
Total
$\underline{424,000}$

## LIST OF FIGURES

FIGURE I General Location Map : 1:8,000
FIGURE 2 Property Outline : 1:50,000
FIGURE 3 Location of Various Company Properties : 1: 100,000
FIGURE 4 Assessment Compilation : 1:50,000
FIGURE 5 Subdivision of the Superior Province into Subprovinces
FIGURE 6 Michipicoten Greenstone Belt ; 1:1,000,000
FIGURE 7 Geological map showing the distribution of major rock types and the tectonic assemblages of the Michipicoten greenstone belt

FIGURE 8 Composite structural cross section through the central part of the Michipicoten greenstone belt

FIGURE 9 General Geology : 1:50,000
FIGURE 10 Location of Rock Samples : 1:20,000
FIGURE 11 Schematic Showing Relationship of Various Facies in a Diamond Bearing Volcanic Complex

FIGURE 12 Diamond Source Locations
FIGURE 13 Histogram - Diamond Counts per Sample
FIGURE $14 \quad$ Stripped Area 2004-07





FIGURE 4
$\qquad$


Subdivision of the Superior Province into subprovinces (modified from Card and Ciesielski 1986).

FIGURE 5




Geological map showing the distribution of major rock types and the tectonic assemblages of the Michipicoten greenstone belt. Note the location of A - $A^{\prime}$ depicted in Figure 8.


Composite structural cross section through the central part of the Michipicoten greenstone belt (modified from Arias and Helmstaedt 1990). Section x-y is an admissible section based on Arias and Helmstaedt (1990). Section y-z is a schematic section based on compilation (Goodwin 1963; Sage 1985). The sketch at lower left explains the present configuration of the belt as a regional scale recumbent fold $\left(\mathrm{F}_{1}\right)$ refolded about upright $\mathrm{F}_{2}$ folds. Imbricate thrusts are considered to be contemporaneous with $\mathrm{F}_{2}$ folding.




Note:
Intrusion occurred into an active regional volcanic system

Figure 11
Schematic Showing Relationship of Various Facies in a Diamond Bearing Volcanic Complex


This model for the genesis of diamond is simplified from Haggerty (1986). The stable craton and subcratonic areas today are as much as 200 km thick (heavy solid line) and are bounded by mobile belts. The isotherms (lines connecting points of equal temperature) in the craton are concave downwards. The diamond stability field (area in which diamond is stable) is convex upward. The K1 kimberlite pipe is likely to have P-type diamonds because it sampled diamonds in the diamond "storage area" (shaded zone) at the keel of the craton, where this type of diamond is presumed to be present. Pipe K2 may have E-type diamonds. Kimberlite pipe K3 will be barren of diamonds. L1 is the possible location for Argyle-type lamproite pipes. See text for additional details.

A kimberlite pipe such as K1 (figure 20), ideally situated over the keel of the craton, would be likely to contain diamonds, primarily of the P-type, provided other factors, such as a rapid ascent rate, are favorable. Pipe K2 would likely sample an eclogitic enclave hosting E-type diamonds, whereas kimberlite diatreme K3, which is "off craton," would probably be barren. The lamproite diatreme L1, as exemplified by the Argyle and Ellendale pipes in Australia, is also "off craton" in that it is intruded into the mobile belt; yet it is diamondiferous with both P-type and E-type diamonds. To account for this, Haggerty (1986) suggests a "complex plumbing system" (a system of interconnecting fractures) that is able to sample appropriate preservation and storage areas.
(From Kirkley et al., 1992)
FIGURE 13
Histogram - Diamond Counts per Sample

$$
\begin{aligned}
& \text { Total number of samples } \\
& \text { Results pending } \\
& \text { \# of samples off property } \\
& \text { \# of samples non complex rocks } \\
& \text { \# of samples at diamond bearing sites } \\
& \text { \# of diamond bearing sites } \\
& \text { \# of diamond bearing sites that average } \\
& 0 \text { diamonds per } 15 \mathrm{~kg} \text { sample } \\
& \text { \# of non diamond bearing duplicates }
\end{aligned}
$$



## REFERENCES

Ayer, J.A., Conceicao, R.V., Ketchum, J.W.F., Sage, R.P., Semenyna, L. and Wyman, D.A. 2003. Project unit 03-012. The timing and petrogenesis of diamondiferous lamprophyres in the Michipicoten and Abitibi greestone belts; in Summary of Field Work and Other Activities 2003, Ontario Geological Survey, Open File Report 6120, p.10-1 to 10-9.

Burns, J.G. 2001. 2001 Exploration report on the Spider Resources Inc. / KWG Resources Inc. Wawa diamond project, Sault Ste. Marie Mining Division; private company report, 11p.

Burns, J.G. 2002a. Addendum to the report titled 2001 Exploration report on the Spider Resources Inc. / KWG Resources Inc. Wawa diamond project, Sault Ste Marie Mining Division; private company report, 17p.

Burns, J.G. 2002b. 2002 Exploration report on the Spider Resources Inc. / KWG Resources Inc. Wawa diamond project, Sault Ste. Marie Mining Division; private company report, 25p.

Burns, J.G. 2004. Preliminary report 2004 exploration program on the Spider Resources Inc. / KWG Resources Inc. Wawa diamond project, Sault Ste. Marie mining division; private company report, 10p.

Burns, J.G. 2005. Update report 2004 exploration program on the Spider Resources Inc. / KWG Resources Inc. Wawa diamond project, Sault Ste. Marie mining division.

Hauseux, M., 1996. Summary technical report for OPAP grants OP 95-15 \& OP 95-16; final OPAP report, January 26, 1996.

Helmsteadt, H.H. and Gurney, J.J. 1995. Geotectonic controls of primary diamond deposits: implications for area selection; Journal of Geochemical Exploration, Volume 53, Nos.13, p.125-144.

Kirkley, M.B., Gurney, J.J. and Levinson, A.A. 1992 Age, origin and emplacement of diamonds: a review of scientific advances in the last decade; Canadian Institute of Mining Bulletin, Volume 84, No. 956, p.48-57.

Leahy, E.J. 1971. Geological compilation series: Wawa Sheet, Districts of Algoma and Sudbury; Ontario Department of Mines and Northern Affairs, Preliminary Map P.640.

Ministry of Natural Resources 1999. Ontario's Living Legacy - Land Use Strategy; Ministry of Natural Resources.

Sage, R.P. 1993. Geology of Killins, Knicely and Lalibert townships, District of Algoma; Ontario Geological Survey, Open File Report 5589, 141p.

Sage, R.P. 2000. The "Sandor" diamond occurrence, Michipicoten greenstone belt, Wawa, Ontario: a preliminary study; Ontario Geological Survey, Open File Report 6016, 49p.

Thomas, R. D., 1998. Report on work completed, July 1, 1996 -July 15, 1997, Wawa project, Spider Resources Inc; private company report prepared by R.D. Thomas and Associates, 3 volumes.

Vaillancourt, C., Dessureau, G.R. and Zubowski, S.M. 2005. Precambrian geology of Menzies Township; Ontario Geological Survey, Preliminary Map P.3366, scale 1:20,000.

Williams, H.R., Stott, G.M., Heather, K.B., Muir, T.L. and Sage, R.P. 1991. Wawa Subprovince; in Geology of Ontario, Special Volume 4, Part 1, p.485-539.

Williams, F. 2002. Diamonds in late Archean calc-alkaline lamprophyres, Ontario, Canada: origins and implications; B.Sc. Thesis, University of Sydney, Australia, 2002, 82p.

## CERTIFICATE

## FOR

JAMES G. BURNS

I, James G. Burns, P.Eng., do hereby certify that:

1. I am currently self employed as a geologist by:
J.G. Burns \& Associates, 190 Graye Crescent,
Timmins, Ontario, Canada.
P4N 8K8
2. I graduated with a B.Sc. Degree in Geological Sciences (Honours) from Queen's University in 1969.
3. I am a member of the Association of Professional Engineers of Ontario.
4. I have worked as a geologist for a total of 35 years since my graduation from university.
5. I have read the definition of "qualified person" set out in National Instrument 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in NI 43-101) and past relevant work experience, I fulfill the requirements to be a "qualified person" for the purpose of NI 43-101.
6. I am responsible for the preparation of this technical report titled "Technical Report for the Wawa Diamond Project, Lalibert and Menzies Townships, North Central Ontario of KWG Resources Inc. and Spider Resources Inc. and dated July 29, 2005 (the Technical Report).
7) I have had prior involvement with the property that is the subject of this Technical Report. I supervised the 2002, $2002 \& 2004$ field programs of prospecting and mini bulk sampling
8) I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission of which makes the Report misleading.
9) I am not independent of the issuer applying all of the tests in Section 1.5 of NI 43-101.
10) I have read NI 43-101 and Form 43-101F, and the Technical Report has been prepared in compliance with that instrument and form.
11) I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and the publication by them, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

## APPENDIX 1

Letters of Authorization

```
Mr James Burns (P.Eng.)
1an Graye Crescent
Timmins, Ontario
P4N 8K8
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Dear Jim:
Spider Resources inc. is currently in the process of preparing an Update for its Wawa diamond project in Northern Ontario as required for continuous disclosure with the regulatory bodies. The Wawa diamond project, of which you are quite familiar as you worked on the project during the summer and fall of 2004, requires updating incorporating the results of the exploration program overseen by you during 2004. The updated report would need to be NI 43-101 compliant covering the 2004-2005 exploration program results.

We hereby ask you to prepare a technical report on the jointly owned Wawa property to include the recent sampling and survey work. This report must satisfy the requirements of National instrument 43101. We also hereby authorize you to use any confidential or public documents and information, concerning this project that you would require to complete this report.

As mentioned, the report will be filed with Sedar and any other regulatory body that is required to support required filings, but it may also be used to satisfy other regulatory requirements for financings.

Sincerely,

Spider Resources Inc.


- moutzard Reno-inevogws at 2830

September 12, 2005

Mr James Burns, P. Eng.
BY FACSIMILE TO: (705) 268-4660 190 Grave Crescent
Timmins, Ontario
PAN 8 KK

## Dear Jim:

We have instructed our project manager Billikan Management Services Inc. to obtain and file on our continuous disclosure record updated technical reports for the three projects in our joint venture with Spider Resources inc. This will confirm our retainer of you to prepare the required report for the Waw Diamond Project.
Kindly insure that your report complies with all requirements of N.I. 43-101. Copied herewith are our counsel's comments on a draft we had been previously provided by Billiken, for your assistance.

## Sincerely,



Frank C. Smeenk
CEO
cc: Spider Resources inc. Attn: Neil Noyak, President


