

Satori Resources Tartan Lake Project Technical Report Manitoba, Canada April 2017

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Flin Flon area, Manitoba, Canada

Mine infrastructure

Tailings pipe



Access road

Path to tailings

Tailings

For:

Satori Resources Inc.

401 Bay Street, Suite 2702 P.O. Box 86 Toronto, Ontario M5H 2Y4

By:

Sean Butler, P.Geo. Allan Armitage, P.Geol. Peter Karelse, P.Geo. Aleksandar Petrovic, P.Eng.

> Dated: April 5, 2017

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Photo 0-1 Cover page: Aerial view of the Tartan Lake mine (Source Satori, 2017)

CERTIFICATES

Certificate of Author – Sean Butler P.Geo.

I Sean P. Butler, P.Geo., do hereby certify that:

- I am currently employed as Senior Geology Consultant by Mining Plus Canada Consulting Ltd., Suite 440 - 580 Hornby St., Vancouver, BC, V6C 3B6
- 2. I am a graduate with a Bachelor of Science, in Geology from the University of British Columbia in 1982
- 3. My professional affiliation is member of the Association of Professional Engineers and Geoscientists of British Columbia, Canada, Member # 19,233, Professional Geoscientist
- 4. I have not visited the Tartan Lake property
- 5. I have no prior involvement with the property that is the subject of this technical report. I have no controlling or monetary interest involving Satori Resources Inc. or the Tartan Lake property
- 6. I have been professionally active in the mining industry for over 25 years since graduation from university. I have worked extensively exploring for both base and precious metals from early stage programs up to advanced underground exploration and mining
- 7. I have read the definition of "qualified person" set out in National Instrument 43-101 and certify that by reason of my education, affiliation with a professional association and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101
- 8. I am responsible for Sections 3 to 10, 15 to 24 and 27 and share responsibility for sections 1, 2, 25 and 26 of the report titled "Satori Resources, Tartan Lake Project Technical Report, Manitoba, Canada, April 2017" dated April 5, 2017 (the "Technical Report")
- 9. That as of the effective date of the Technical Report, to the best of the my knowledge, information and belief, this technical report contains all scientific and technical information that is required to be disclosed to make the technical report not misleading
- 10. I am independent of Satori Resources Inc., applying all of the tests in section 1.5 of NI 43-101
- 11. I have read NI 43-101 and Form 43-101F1, and the Technical Report has been prepared in compliance with that instrument and form
- 12. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report

Dated this 5th day of April, 2017

"Signed and Sealed"

Signature of Qualified Person Sean Butler

Innovative and practical mining consultants

Certificate of Author - Allan Armitage, P.Geol.

To Accompany the Report titled "Satori Resources, Tartan Lake Project Technical Report, Manitoba, Canada", April 05, 2017 (the "Technical Report")

I, Allan E. Armitage, Ph. D., P. Geol. of 62 River Front Way, Fredericton, New Brunswick, hereby certify that:

- 1. I am a consulting geologist with GeoVector Management Inc., 10 Green Street Suite 312 Ottawa, Ontario, Canada K2J 3Z6.
- 2. I am a graduate of Acadia University having obtained the degree of Bachelor of Science Honours in Geology in 1989, a graduate of Laurentian University having obtained the degree of Masters of Science in Geology in 1992 and a graduate of the University of Western Ontario having obtained a Doctor of Philosophy in Geology in 1998.
- 3. I have been employed as a geologist for every field season (May October) from 1987 to 1996. I have been continuously employed as a geologist since March of 1997.
- 4. I have been involved in mineral exploration and resource modeling for gold, silver, copper, lead, zinc, nickel, and uranium in Canada, Mexico, Honduras, Bolivia, Chile, Cuba and the Philippines at the grass roots to advanced exploration stage since 1991, including resource estimation since 2006.
- 5. I am a member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta and use the title of Professional Geologist (P.Geol.) (License No. 64456; 1999), and I am a member of the Association of Professional Engineers and Geoscientists of British Columbia and use the designation (P.Geo.) (Licence No. 38144; 2012).
- 6. 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 of my professional association and past relevant work experience, I fulfill the requirements to be a "Qualified Person".
- 7. I am responsible for Section 14 "Mineral Resource Estimate" of the Technical Report. As well I am responsible for parts of sections 1, 25 and 26, as they pertain to the mineral resource estimate.
- 8. I have not personally inspected the Property and drill core in the field.
- 9. I have had no prior involvement in the Tartan Lake Gold Mine Project.
- 10. I am independent of Satori Resources Inc. as defined by Section 1.5 of NI 43-101.
- 11. As of the date of this certificate, to the best of my knowledge, information and belief, the Technical Report contains all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.
- 12. I have read NI 43-101 and Form 43-101F1 (the "Form"), and the Technical Report has been prepared in compliance with NI 43-101 and the Form.

Signed and dated this 5th day of April, 2017 at Fredericton, New Brunswick.

"signed and sealed"

Allan Armitage, Ph. D., P. Geol. GeoVector Management Inc.

Certificate of Author - Peter Karelse, PGeo.

I, Peter Karelse, P.Geo. residing at 269 Shuswap Road, Monetville, Ontario, POM 2K0 do hereby certify that:

- I. I am an independent geological consultant contracted by Satori Resources Inc.;
- 2. I am a graduate from Cambrian College, Sudbury, Ontario with a Diploma of Geology Engineering Technology (1975), and I have practiced my profession continuously since that time;
- 3. I am a member in good standing of the Association of Professional Geoscientists of Ontario (Membership Number 1148);
- 4. I have worked as a geologist for a total of 42 years since obtaining my Diploma of Geology Engineering Technology;
- I am responsible, for the resource model and data verification of the technical report titled "Satori Resources, Tartan Lake Project Technical Report, Manitoba, Canada, April 2017" and dated April 5, 2017;
- 6. I visited the Tartan Lake gold property more or less continuously from September to November 2016;
- 7. I have not had prior involvement with the Tartan Lake property that is the subject of this Technical Report;
- 8. As of the date of this certificate, I am not aware of any material fact or material change with respect to the subject matter of the Report, which is not reflected in the Report, and of which omission to disclose that would make this report misleading;
- 9. 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 and past relevant work experience, I fulfill the requirements to be a "Qualified Person" for the purposes of NI 43-101. I have experience with regard to a variety of mineral deposits and have knowledge of Mineral Reserve and Mineral Resource estimation parameters and procedures and those involved in the preparation of technical studies. This report is based on my personal review of information provided by the Issuer and on discussions with the Issuer's representatives;
- 10. I am independent of the issuer applying the test in Section 1.4 of NI 43-101;
- 11. I have read NI 43-101 and Form 43-101F1 and the Report has been prepared in compliance therewith;

DATED this 05th Day of April, 2017.

{SIGNED AND SEALED}

Peter Karelse

Peter Karelse P.Geo.

Certificate of Author - Aleksandar Petrovic, P.Eng.

Sedgman Canada Limited 2670 – 650 West Georgia Street Vancouver, BC, Canada, V6B 4N9 T: +1 604 428 8200 Email: aleksandar.petrovic@sedgman.com

I, Aleksandar Petrovic of Vancouver, BC, Canada, do hereby certify:

- 1. That I am currently working as a Senior Process Engineer with Sedgman Canada Limited, Vancouver, BC, Canada
- 2. That I am a member of Association of Professional Engineers and Geoscientists of British Columbia (APEGBC) since 2007.
- 3. That I graduated with a Diploma in Mineral Processing and earned a professional title of Graduate Engineer of Mining, Belgrade University, Department of Mining and Geology in Belgrade, Serbia in October of 1991. In accordance with the Law on Higher Education the Graduate Engineer of Mining title is equal to the Master of Science in Mineral Processing. I have worked as a Metallurgist/Process Engineer for over 26 years since graduation.
- 4. 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 fulfil the requirements to be a "qualified person" for the purposes of NI 43- 101.
- This certificate applies to the Technical Report titled "Satori Resources, Tartan Lake Project Technical Report, Manitoba, Canada, April 2017" with effective date the 5th of April, 2017 (the "Technical Report").
- 6. I have contributed to the process/metallurgy related portions of the Executive Summary and sections 25 and 26 of the report, and am responsible for the section 13.
- 7. That I have no previous involvement with Satori Resources Inc. on the property that is the subject of this Technical Report and I have not visited the Tartan Lake Project of Satori Resources Inc.
- 8. I am independent of Satori Resources Inc. as described in Section 1.5 of NI 43-101.
- 9. I have had no prior involvement with the property.
- 10. I have read NI 43-101 and Form 43-101F1 and the parts of the Technical Report for which I am responsible for and they have been prepared in compliance with that instrument.
- 11. That as of the effective date of the Technical Report, to the best of my knowledge, information and belief, the parts of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make the Technical Report not misleading.
- 12. I consent to the filing of the Technical Report with any stock exchange and other regulatory authority and any publication by them for regulatory purposes, including electronic publication in the public company files on their websites accessible by the public, of the Technical Report.

Dated this 5th day of April, 2017 at Vancouver, British Columbia, Canada.

"signed and sealed"

Aleksandar Petrovic, P.Eng

EXECUTIVE SUMMARY

The management of Satori Resources Inc. (Satori) contracted Mining Plus Canada Consulting Ltd. (MP) to prepare a National Instrument 43-101 report on the Tartan Lake project. This study summarizes the mineral resource estimate. The Tartan Lake project is located in Manitoba, Canada near the town of Flin Flon. The property lies within the Canadian NTS map sheet 63K/13 and the coordinates of the approximate centre of the property are 101° 40' 00" West and 54° 51' 00" North.

The Tartan Lake mine site was visited on August 25, 2016 by Peter Karelse, QP accompanied by Bruce Reid of Satori Resources. Mr. Karelse visited further times after this initial trip for site exploration drilling.

Access to Tartan Lake is by a 29 km (18 mi), all weather gravel mine road from the government all season gravel road leaving the paved Highway 10 that leads from Flin Flon a modern mining town to the Trout Lake mine. Flin Flon has all the services to support mineral exploration and mining. Flin Flon is accessed by highway, railroad and scheduled air service to the nearby airport. Grid electricity is connected out as far as the Tartan Lake mine.

The property is approximately 2,670 hectares in area and consists of 20 mineral claims. The claims are recorded under the ownership name of Satori Resources Inc. A search of the Manitoba, Department of Growth, Enterprise and Trade website under the Mineral Resources Division indicates that all the claims in the Tartan Lake project are valid until 2023 except one valid until 2022.

All mineral claims are 100% owned by Satori Resources Ltd. There is a royalty of 2% of net smelter return payable to Claude Resources and successor corporations with the option for Satori to buy-out each 1% for one million dollars.

The climate in Flin Flon is cold and temperate, with Tartan Lake very similar. There is significant precipitation throughout the year in Flin Flon. Even the driest month still has a lot of precipitation. The climate here is classified as Dfc by the Köppen-Geiger system. The average annual temperature in Flin Flon is -0.2 °C. The average annual precipitation is 478 mm. It is possible to conduct seasonally adjusted mineral exploration and operate a mine year round.

The project area is low relief with hills of less than 20 meters higher than the lake levels. The area is very gentle with a number of low rounded rocky outcrops. Between the outcrops and overburden covered hummocks are mossy and muskeggy swamps.

Elevations on the Property vary from approximately 1,100 feet asl at Tartan Lake to approximately 1,160 feet on hills south of Tartan Lake. The topography is related to the underlying bedrock units. The softer gneisses, schists and structural zones are generally streams and lakes. The more resistant volcanic and intrusive rocks are generally the higher ground areas. The regional trend of the rock units is generally reflected in parallel striking hummocks and depressions.

The Tartan Lake site has a long history of exploration and mining. Exploration work within the property area dates back to the 1920's. There have been many campaigns of exploration and several eras of fractured ownership of the present Tartan Lake project claims. The Tartan Lake mine was operated by Granges from 1987 to 1989 with a total of about 47,000 ounces of gold mined and 36, 000 ounces of gold recovered by the mill.

The Tartan Lake project is located within the Flin Flon greenstone belt (FFGB). The FFGB belt is a collection of tectonic assemblages that was assembled early in the evolution of the Paleoproterozoic Trans-Hudson Orogen. The portions of the belt exposed on or near surface are approximately 250 easterly by 75 northerly kilometres. The Kisseynew domain tectonically overthrusts the FFGB to the north and east. The Kisseynew domain is a younger gneissic metasedimentary, metavolcanic and plutonic rocks. The Hanson Lake block bounds the Flin Flon domain on the west. To the south the FFGB is covered by the east-trending edge of the Phanerozoic platformal cover rocks. The FFGB on the south side is covered by a thin layer of Phanerozoic rocks to the south and can be traced hundreds of kilometres by its geophysical signature.

The supracrustal rocks of the FFGB are divided into two major groups:

- 1. Flin Flon arc assemblage (formerly known as the Amisk group) of metavolcanic and metasedimentary rocks
- 2. Missi Formation of metaconglomerate, metasandstones, and greywackes which unconformably overlies the Flin Flon arc assemblage

The FFGB has undergone four major phases of deformation. These have contributed to the development of the major structures that host the gold mineralization at Tartan Lake. Sub Greenschist facies metamorphism is present in the south with it increasing to amphibolite in the north near the Kisseynew domain.

The Tartan Lake shear zone complex is a strong east-west trending zone, which contains the Tartan Lake gold deposits. Near the mine the main shear zone forms the contact between the footwall gabbro/diorite intrusive to the south and the hanging wall Amisk Group rocks to the north. The shear zone is 30 to 50 metres wide, steeply dips to the north and trends to the west. The Tartan Lake mine is composed of multiple sub-parallel and anastomosing veins that were accessed by a 2,100 m long 4.3m high by 4.5m wide decline to a depth of about 315 metres below surface.

The veins that were mined were quartz carbonate mesothermal veins with free gold and various associated sulphide minerals. The best gold grades were in areas with pyrite and chalcopyrite. The gold mineralization is hosted by steeply dipping east-west shear zones with a trend and plunge about 70° to the northwest. Much of the gold reports as gravity recoverable and the rest is captured in the cyanide leach process.

The gold deposits at Tartan Lake are greenstone-hosted quartz-carbonate vein deposits. Greenstone-hosted quartz-carbonate vein (GQCV) deposits are a sub-type of lode gold deposits. They are also known as mesothermal, orogenic lode gold, shear-zone-related quartz-carbonate or gold-only deposits. Basically the deposits are quartz and carbonate veins with valuable amounts of gold and silver deposited at several kilometres depth.

Satori Resources had done no exploration at Tartan Lake since acquiring the project in 2011 from St. Eugene until 2016. Satori completed a diamond drill program in late 2016 of six holes totalling 1,568 meters.

The Tartan Lake process plant was initially designed and constructed as a 250t/d concentrator to process gold bearing ore with a head grade of 12g/t. The Mill entered commercial production in 1987, with throughput increased to 450t/d in 1988 to compensate for lower mined average head grades of 4 to 7 g/t (Hannon, P., et. al., 2012). During 1989, a re-grind mill was added to the circuit. Later that same year, the Mill ceased production due to low gold prices and a significant mechanical failure and was placed into care and maintenance.

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The plant was designed for a 90% gold recovery which allowed for solution losses in the Merrill Crowe circuit and achieved this during the months of May and August of 1989, resulting in an 85 % average gold recovery in that same year.

Alternative and more current processing methods/technologies could potentially deliver additional improvement in gold recovery and related project economics.

The updated resource estimate for the Tartan Lake deposit was released by Satori on February 23, 2017. The updated resource is reported at a COG of 3.0 g/t gold. Using a 3.0 g/t gold COG the Tartan Lake deposit contains an Indicated resource of 1,180,000 tonnes containing 240,000 ounces gold at 6.32 g/t and an Inferred resource of 240,000 tonnes containing 37,000 ounces gold at 4.89 g/t. The current resource does not include that material that has been mined.

Cut-off		Go	ld	
Grade (Au g/t)	Tonnes	Grade (g/t)	Troy Ounces	
Indicated				
3.0 g/t	1,180,000	6.32	240,000	
Inferred				
3.0 g/t	240,000	4.89	37,000	

Table 0-1 2017 Resource estimate for the Tartan Lake Deposit, February 20th, 2017

Note: Mineral resources that are not mineral reserves do not have demonstrated economic viability. All figures are rounded to reflect the relative accuracy of the estimate and numbers may not add up due to rounding. The updated resource does not include material that has been mined.

In order to complete an evaluation of the Tartan Lake resource, a GEOVIA GEMS 6.7.3 database was provided by Karelse and included a drill hole database with collar locations in "Metric Mine Grid" space, down hole survey data, assay data, lithology data and specific gravity data for 501 surface and underground drill holes representing 79,600 m. This includes drill holes from the 2016 exploration program which consisted of 6 diamond drill holes totalling ~1,600 metres. The limited 2016 drill program was designed to verify the historic drill results, and test the extension of known gold mineralization.

For the 2017 resource estimate, a total of 15 three-dimensional (3D) wireframe grade control models were constructed and provided by Karelse. The 3D grade control models were built which involved visually interpreting mineralized zones from cross sections using histograms of gold values. Polygons of mineral intersections (snapped to drill holes) were made on each cross section and these were wireframed together to create contiguous resource models in GEOVIA GEMS 6.7.3 software.

The polygons of mineral intersections were constructed on 10 m spaced sections (looking east) with a 5 m sectional influence. The sections were created perpendicular to the general strike of the drilling. The grade control models were drawn using an approximate 0.6 g/t cut-off grade based on 1.5 m composited samples and a minimum mining width of 1.5 m. For those intersections that did not meet the 1.5 m requirement, the solid outline was drawn to take in waste from either side of intersections. The models were extended 40 m beyond the last known intersection along strike and down dip, or half way to a hole with no assay values, excepting in those areas where continuity of the solid outline was determined to be valid.

The modelling exercise provided broad controls of the dominant mineralizing direction. The Tartan Lake grade control models define east-west trending, steep north dipping $(75^{\circ} - 85^{\circ})$ to steep south dipping gold zones. The gold zones extend for approximately 625 m along strike and to depths of up to 575 m.

Wireframe 3D models of the five historic stopes were created by Karelse and provided to the Author. These 3D wireframe models of the five stopes were used to extract those portions of the deposit that have been mined out from the total resource.

A statistical analysis of the composite database within the Tartan Lake 3D grade control models (the "resource" population) was conducted to investigate the presence of high grade outliers which can have a disproportionately large influence on the average grade of a mineral deposit. High grade outliers in the composite data were investigated using a histogram plot and a cumulative probability plot of the data. Examination of the plots indicates there is only one sample population present. After review it is the Author's opinion that capping of high grade composites to 55 g/t gold (99.3 percentile) to limit their influence during the grade estimation is necessary. A total of 31 composite samples ranging in grade from 55.8 g/t to 199.5 g/t gold were capped to 55 g/t.

Due to the relative sparseness of specific gravity ("SG") data, an average value was used for the resource estimation. An SG value of 2.85 was used for the current resource estimate.

The Tartan Lake grade shells were used to constrain composite values chosen for interpolation, and the mineral blocks reported in the estimate of the mineral resource. A block model in Metric Mine Grid space (origin: x - 1775, y - 4725, z - 2025, no rotation) with block dimensions of $5 \times 1.5 \times 5$ metres in the x (east), y (north) and z (level) directions was placed over the grade shells with only that proportion of each block inside the shell recorded as part of the resource estimate (% Block Model). Block model size was designed to reflect the spatial distribution of the raw data (i.e., the drill hole spacing within each mineralized zone). A block size of $5 \text{ m} \times 1.5 \text{ m} \times 5 \text{ m}$ was selected to accommodate the more closely spaced drilling and the underground mining method. At this scale of the deposit, this still provides a reasonable block size for discerning grade distribution while still being large enough not to mislead when looking at higher cut-off grade distribution within the model.

Grades for Au (g/t) were interpolated into blocks by the inverse distance squared (ID2) method. Three passes were used to interpolate grade into all of the blocks in the grade shells. For Pass I the search ellipse size was set at $20 \times 20 \times 6$ in the X, Y, Z direction (approximate range based on variography); for Pass 2 the search ellipse size was set at $40 \times 40 \times 12$ and for Pass 3 the search ellipse size was set at $80 \times 80 \times 12$. Blocks were classified as Indicated if they were populated with grade during Pass I and 2 of the interpolation procedure. Pass 3 search ellipse size was set to assure all remaining blocks within the grade shell are assigned a grade. These blocks were classified as Inferred.

Grades were interpolated into blocks using a minimum of 8 and maximum of 12 composites to generate block grades during Pass 1 and Pass 2 (maximum of 4 samples per drill hole), and a minimum of 4 and maximum of 12 composites to generate block grades during pass 3.

There have been no recent environmental studies.

The property contains a significant gold deposit as summarized in the resource estimate. It is open for extension on strike and down dip with further drilling. Further metallurgical study is recommended. The

recommended drilling will likely add to the deposit outside the resource area and increase the classification quality inside the resource area.

NNOVATIVE AND PRACTICAL MINING CONSULTANTS

CONTENTS

Table of Contents

CERTI	FICATES
EXECU	JTIVE SUMMARY8
2 IN 2.1	TRODUCTION
2.2	Site Visit20
2.3	Units used21
2.4	Qualified Persons21
2.5	List of Abbreviations Used22
3 RE	LIANCE ON OTHER EXPERTS
4 PR	OPERTY DESCRIPTION AND LOCATION 24
4.1	Location
4.2	Mineral Tenure and the Issuers Interest in the Project
4.3	Costs to Maintain Mineral Titles27
4.3	.I Mining Claims
4.3	.2 Mineral Lease
4.4	Royalties27
4.5	Permits27
4.6	Environmental Liabilities and Risks to Continued Operation
5 AC	CESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND
5.1	Access
5.2	Climate
5.3	Local Resources
5.4	Physiography

	5.5	Infrastructure	31
6	ыс	STORY	37
Ŭ	6.1	Historic Ownership	
	••••		
	6.2	Historic Gold Production	
	6.3	Historical Mineral Resources/Reserves	
	6.4	Previous Exploration	35
7	CE	OLOCICAL SETTING AND MINERALISATION	42
1		Begional Geology	
	1.1	Regional Geology	······································
	7.2	Local Geology	43
	7.3	Deposit Geology	
	7.4	Mineralization at Tartan Lake	48
	74	I Main Zone	40
	7.4	2 South Zone	رب 40
	7.4	3 Southeast Zone	49
	7.4.4	4 West Zone	49
	7.4.5	5 Tailings Zone	
	7.5	Other Zones	
8	DEI	POSIT TYPES	50
9	EXI	PLORATION	51
10) DRI	ILLING	52
		ADIE DEEDADATIONI ANIALVOES AND SECUDITY	F 4
		MPLE PREPARATION, ANALYSES AND SECURITY	54 5 <i>4</i>
	11.1		
	11.2	Sample Preparation	54
	11.3	Analytical Procedure	55
	11.4	Quality Control at TSL	55
			- /
	12.1	Satori QC Program	
	12.2	Performance of Blank Material	

I	2.3	Performance of Certified Reference Materials	56
13	MIN	NERAL PROCESSING AND METALLURGICAL TESTING	
	13.1	Mill History	57
I	3.2	Metallurgical Testwork	57
	13.2	2 Comminution	57
	13.2	.2.2 Gravity Circuit	
	13.2	.2.3 Flotation	
	13.2	.2.4 Leaching	58
	13.2	.2.5 Merrill Crowe Circuit	59
	13.2	.2.6 Detoxification Circuit	
	13.2	.2.7 Ore Variability	61
I	3.3	Production and Mill Au recoveries	61
I	3.4	Potential Optimisations and Future Testwork	61
			(2)
14			02
I	14.1	Drin File Freparation	02
I	4.2	Resource Modelling and Wireframing	64
I	4.3	Composites	71
I	4.4	Grade Capping	73
I	4.5	Specific Gravity	75
I	4.6	Block Modelling and Grade Estimation	76
I	4.7	Resource Classification	78
	147	7 L Informed Mineral Resource	70
	14.7	7.2 Indicated Mineral Resource	70 79
	ידי. 1 4 פ	Mineral Resource Statement	
	14.0	Filleral Resource Statement	7
I	4.9	Model Validation	80
I	4.10	0 Comparison of 2017 and 2012 Mineral Resource Estimates	85
I	4.	I Disclosure	
15	MIN		87
16	MIN	NING METHODS	

INNOVATIVE AND PRACTICAL MINING CONSULTANTS

17	REC	COVERY METHODS	8 9
18	PRO	OJECT INFRASTRUCTURE	90
19	MA	RKET STUDIES AND CONTRACTS	91
20	EN 92	VIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMP/	ACT
21	CA	PITAL AND OPERATING COSTS	93
22	EC	ONOMIC ANALYSIS	94
23	AD	JACENT PROPERTIES	95
24	от	HER RELEVANT DATA AND INFORMATION	96
25 2	ואז 25.1	General Conclusions	97 97
2	25.2	Mineral Resource Estimate	97
2	25.3	Metallurgy	97
26 2	REC 26.1	COMMENDATIONS	99 99
2	26.2	Resource Estimation	99
2	26.3	Metallurgical Testing	99
2	26.4	BudgetI(00
27	REF	FERENCESI(01

FIGURES, TABLES AND PHOTOS

Table of Figures

Figure 4-1 Location Map
Figure 4-2 Claim Map
Figure 5-1 Flin Flon Climate by Month (http://climate.weather.gc.ca/climate_normals)
Figure 5-2 Physiographic Map (revised from 2008 report)31
Figure 7-1 Regional Geology Including the Flin Flon Greenstone Belt
Figure 7-2 Local Geology
Figure 7-3 Surface trace of zones in mine area (revised from Trinder, et. al., 2008)46
Figure 7-4 Major Shears on the Tartan Lake Property (revised from Trinder, et. al., 2008)
Figure 8-1 Shear Hosted Gold Deposit Type (Source: Poulsen, et. al., 2000)50
Figure 14-1 Isometric view looking northwest showing the drill hole distribution in the Tartan Lake deposit area
Figure 14-2 Plan view (Metric Mine Grid space) showing the Tartan Lake 3D grade control models and drill hole locations
Figure 14-3 Isometric view looking west showing the Tartan Lake 3D grade control models and drill hole locations. The top of each grade control model was truncated by the base of overburden
Figure 14-4 Vertical section 2000E (looking east) showing drill traces with histogram of gold, topography, overburden and 3D grade control models
Figure 14-5 Vertical section 2050E (looking east) showing drill traces with histogram of gold, topography, overburden and 3D grade control models
Figure 14-6 Vertical section 2100E (looking east) showing drill traces with histogram of gold, topography, overburden and 3D grade control models
Figure 14-7 Underground workings in the Tartan Lake Deposit70
Figure 14-8 Underground workings in the Tartan Lake Deposit Main Zone with respect to the resource models, looking south
Figure 14-9 Underground workings in the Tartan Lake Deposit Main Zone with respect to the resource models, looking north
Figure 14-10 Sample length histogram for assay samples from the Tartan Lake drilling
Figure 14-11 Assay sample length vs assay sample grade72
Figure 14-12 Composite sample grade histogram plot for gold from within the Tartan Lake 3D grade control models; selected capping value as illustrated74
Figure 14-13 Cumulative frequency plot for gold from within the Tartan Lake 3D grade control models; selected capping value as illustrated
Figure 14-14 Specific gravity versus gold grade (g/t) for samples collected during the 2011 drill program76

gure 14-15 Isometric view looking south (A) and west (B) showing the resource block model, search e nferred) and the Tartan Lake 3D grade control models	llipse 78
gure 14-16 Vertical section 2000E (looking east) showing drill traces with histogram of gold, topograver verburden, 3D grade control models and resource blocks	aphy, 82
gure 14-17 Vertical section 2050E (looking east) showing drill traces with histogram of gold, topograver verburden, 3D grade control models and resource blocks	aphy, 83
gure 14-18 Vertical section 2100E (looking east) showing drill traces with histogram of gold, topograver verburden, 3D grade control models and resource blocks	aphy, 84
gure 14-19 Comparison of Inverse Distance Squared ("ID2"), Inverse Distance Cubed ("ID3") & New leighbour ("NN") Models	arest 85
gure 23-1 Claim Map including surrounding claims (source: Satori, 2017)	95

Table of Tables

Table 0-1 2017 Resource estimate for the Tartan Lake Deposit, February 20th, 2017	10
Table 2-1 Qualified Person Responsibilities	21
Table 4-1 List of Claims at Tartan Lake	24
Table 4-2 Permits in Place at Tartan Lake	27
Table 6-1 Ownership History	32
Table 6-2 Historic Gold Recovered in Mill (Source Hannon P., et. al., 2012)	33
Table 6-3 Historic (Non NI 43-101) Resources/Reserves	34
Table 6-4 Historic (NI 43-101) 2012 Resource Estimate (Hannon, et al., 2012)	34
Table 7-1 Vein Type Characterization	48
Table 10-1 2016 Drilling Assay Intercepts (December 7, 2016 news release)	52
Table 10-2 Collar Locations and hole directions (December 7, 2016 news release)	53
Table 13-1: COF and FC Cyanidation Testwork (Bacon, Donaldson & Associates Ltd., 1989)	58
Table 13-2 Plant Sample Au and Ag Head Assay Data (Bacon, Donaldson & Associates Ltd., 1989)	59
Table 13-3 Cyanide Treatment Test Conditions (Melis Engineering Ltd., 1988)	60
Table 13-4: Tartan Lake Production History and Au Recoveries (Hannon, P., et. al., 2012)	61
Table 14-1 Summary of the drill hole data used in the Tartan Lake resource modelling	63
Table 14-2 Summary of all drill hole assay data from the Tartan Lake drilling	63
Table 14-3 Summary of all drill hole assay and composite data from within the Tartan Lake 3D grade co models	ontrol 73
Table 14-4 Summary of capped composites from within the Tartan Lake 3D grade control models.	75
Table 14-5 Tartan Lake block model geometry.	77
Table 14-6 interpolation parameters.	77

INNOVATIVE AND PRACTICAL MINING CONSULTANTS

Table of Photos

Photo 0-1 Cover page: Aerial view of the Tartan Lake mine (Source Satori, 2017)	3
Photo 2-1 Mill building	20
Photo 2-2 Mine portal	21
Photo 18-1 Crusher building (Source Satori, 2017)	90

2 INTRODUCTION

Mining Plus Canada Consulting (MP) was contracted by Satori Resources Inc. (Satori) to complete a mineral resource estimate on the Tartan Lake project. This report is prepared to meet the NI 43-101 format and reporting standards. The purpose of the report is for Satori Resources to report the revised mineral resource estimate at the Tartan Lake mine.

2.1 Sources of Data

Much of the data used in the development of this report was provided to MP and the other QPs by Satori Resources. Some has been sourced in the previous technical reports particularly from February 2012 by Minetech (Hannon, P., et. al., 2012) and more in the October, 2008 report by A.C.A. Howe for St. Eugene Mining Corporation Ltd (St. Eugene).

2.2 Site Visit

Mr. Peter Karelse, P.Geo, of PK Geologic Services Ltd., a qualified person under the terms of the NI 43-101, who has provided specific input to this Report, has carried out site visits to the Property, on August 25, 2016, Sept 29, 2016 to Oct 06, 2016, and Oct 26, 2016 to Nov 23, 2016. Bruce Reid of Satori Resources and others accompanied him on August 25.



Photo 2-1 Mill building

NNOVATIVE AND PRACTICAL MINING CONSULTANTS



Photo 2-2 Mine portal

2.3 Units used

All units are metric unless otherwise noted. The currency is Canadian dollars unless otherwise noted.

2.4 Qualified Persons

ltem	Section	Qualified Person(s)
I	Executive Summary	SB, AA, PK, AP
2	Introduction	SB, PK (site visit only)
3	Reliance on other experts	SB
4	Property description and location	SB
5	Accessibility, climate, local resources, infrastructure and physiography	SB
6	History	SB
7	Geological setting and mineralisation	SB
8	Deposit types	SB
9	Exploration	SB
10	Drilling	SB
11	Sample preparation, analysis and security	РК
12	Data verification	PK
13	Mineral processing and metallurgy testing	AP
14	Mineral resource estimates	AA
15	Mineral reserve estimates	SB
16	Mining methods	SB

NNOVATIVE AND PRACTICAL MINING CONSULTANTS

17	Recovery methods	SB
18	Project infrastructure	SB
19	Market studies and contracts	SB
20	Environmental studies, permitting and social or community impact	SB
21	Capital and operating costs	SB
22	Economic analysis	SB
23	Adjacent properties	SB
24	Other relevant data and information	SB
25	Interpretation and conclusions	SB, AA, PK, AP
26	Recommendations	SB, AA, PK, AP
27	References	SB, AA, PK, AP

Sean Butler=SB, Allan Armitage=AA, Peter Karelse=PK, Aleksandar Petrovic=AP, multiple QPs=relevant parts of these report sections

2.5 List of Abbreviations Used

Abbreviations			
°C – temperature degrees centigrade	Hz - hertz		
% - percent	ID2 – inverse distance squared		
3D -three dimensions	ID3 – inverse distance cubed		
Ag - silver	Karelse - Peter Karelse, QP		
Armitage - Allan Armitage, QP	km - kilometre		
asl – above sea level	m – metre		
Au – gold	MB - Manitoba		
CIL - Carbon in Leach	mi - mile		
CIM – Canadian Institute of Mining, Metallurgy and Petroleum	mm - millimetre		
CIP - Carbon in Pulp	MP – Mining Plus Canada Consulting		
COG – cut-of grade	NI 43-101 – National Instrument 43-101		
EM - electromagnetic	NN – nearest neighbour interpolation		
FFGB - Flin Flon greenstone belt	NTS - National Topographic System		
ft - foot	oz - ounce		
Geovia GEMS – mining software from Geovia	PK Geological - Peter Karelse's professional services company		
GQCV - Greenstone-hosted quartz-carbonate vein	Satori - Satori Resource Inc.		
GSC - Geological Survey of Canada	SD -standard deviation		
g/t – grams per tonne	SG – specific gravity		
HLEM - horizontal loop EM	St. Eugene - St. Eugene Mining Corporation Ltd.		
	t - tonne		

3 RELIANCE ON OTHER EXPERTS

MP has depended on Satori Resources to provide the information on claim ownership and the underlying agreements. Although efforts were made to confirm these MP is not capable of providing a legal opinion on the ownership of the claims. An audit style review of the mineral titles was completed by MP on September 1, 2016 at the Manitoba government website <u>http://web33.gov.mb.ca/mapgallery/mgg-gmm.html</u>. The information in Section 4 was confirmed in this review. Possible unregistered underlying agreements are not noted in the data seen on the Manitoba web site.

4 **PROPERTY, DESCRIPTION AND LOCATION**

4.1 Location

The latitude and longitude of 54.857128 N and 101.729627W in the WGS84 Zone 14N datum are the location of the mine portal. The property lies within the Canadian NTS map sheet 63K/13 and the coordinates of the approximate centre of the property are $101^{\circ} 40' 00''$ West and $54^{\circ} 51' 00''$ North.

CLAIM	CLAIM	HOLDER	STAKED	RECORDED	EXPIRES	HECTARES
NAME	NUMBER					
	CB10112	Satori Resources Inc.	11/10/1978	13/11/1978	12/01/2023	79
KIX 6 Fr.	W48774	Satori Resources Inc.	19/07/1984	07/08/1984	06/10/2023	13
TORT 200	P5179E	Satori Resources Inc.	12/01/1985	04/02/1985	05/04/2023	165
TORT 21	W48670	Satori Resources Inc.	04/11/1984	27/11/1984	26/01/2023	256
TORT 23	W48674	Satori Resources Inc.	03/11/1984	27/11/1984	26/01/2023	112
TORT 12	W48630	Satori Resources Inc.	14/04/1984	04/05/1984	03/07/2023	168
TORT 22	W48673	Satori Resources Inc.	03/11/1984	27/11/1984	26/01/2023	224
SHIRT 3	W47273	Satori Resources Inc.	11/09/1982	21/09/1982	20/11/2023	208
SHIRT 2	W47272	Satori Resources Inc.	10/09/1982	21/09/1982	20/11/2022	192
TORT 30	P5110E	Satori Resources Inc.	16/02/1985	21/02/1985	22/04/2023	75
OLD 6	W47124	Satori Resources Inc.	22/10/1981	27/10/1981	26/12/2023	32
VEB	W45358	Satori Resources Inc.	15/10/1979	19/11/1979	18/01/2023	15
NUP #1	CB10190	Satori Resources Inc.	15/10/1979	21/11/1979	20/01/2023	81
TORT 25	W48668	Satori Resources Inc.	02/11/1984	27/11/1984	26/01/2023	52
TORT	CB12297	Satori Resources Inc.	06/09/1981	09/09/1981	08/11/2023	72
TORT 9	W45227	Satori Resources Inc.	06/04/1984	03/05/1984	02/07/2023	130
TORT 26	W48671	Satori Resources Inc.	03/11/1984	27/11/1984	26/01/2023	155
TORT 3	W47191	Satori Resources Inc.	05/04/1984	03/05/1984	02/07/2023	236
TORT 24	W48666	Satori Resources Inc.	02/11/1984	27/11/1984	26/01/2023	210
SHIRT 1	W47271	Satori Resources Inc.	08/09/1982	21/09/1982	20/11/2023	195
Total Area (Ha)						2,670

Table 4-1 List of Claims at Tartan Lake



Figure 4-1 Location Map



Figure 4-2 Claim Map

4.2 Mineral Tenure and the Issuers Interest in the Project

The property is approximately 2,670 hectares in area and consists of 20 mineral claims as seen in Table 4-1 and Figure 4-2. The claims are recorded under the 100% ownership name of Satori Resources Inc. A search of the Manitoba, Department of Growth, Enterprise and Trade website under the Mineral Resources Division indicates that all are valid until 2023 except one until 2022. The claims were physically staked on unsurveyed crown land.

On September 1, 2016 MP completed an audit style review of the claims in the group on the Manitoba website <u>http://web33.gov.mb.ca/mapgallery/mgg-gmm.html</u> was compiled from this review. The claims may be eligible for extension in expiry date following the drill program.

Ten mineral occurrences are located within the property as shown in red on Figure 4-2. The former Tartan Lake Mine was operated from 1986 to 1989 by Granges Inc. It produced about 47,000 ounces of gold from part of the Main Zone and the South Zone before production was suspended in 1989. The property includes the 450 tonne per day process mill.

4.3 Costs to Maintain Mineral Titles

The mineral titles at Tartan Lake are on crown land of the Province of Manitoba and the regulations of Manitoba apply. The costs to maintain mineral titles are summarized in <u>http://web2.gov.mb.ca/laws/regs/current/_pdf-regs.php?reg=64/92</u> (as of March 16/17) and outlined below:

4.3.1 Mining Claims

Minimum expenditures for required work on a claim is \$12.50 per hectare or part thereof for each of the second to the 10th years; and \$25 per hectare or part thereof for the 11th year and for each year thereafter. Reports are required to document the work completed, the claims can be grouped to allow focused work on one claim to be applied to nearby claims and expenditures in excess of the present years requirements can be applied to future years within defined limits.

4.3.2 Mineral Lease

Rental for a first term mineral lease is: \$8.00 per hectare or fraction thereof per year, but not less than \$150.00. Rental for the renewal of a mineral lease not in production is \$12.00 per hectare or fraction thereof per year, but not less than \$200.00.

4.4 Royalties

All mineral claims are 100% owned by Satori Resources Ltd. There is a royalty of 2% of net smelter return payable to Claude Resources and successor corporations with the option for Satori to buy-out each 1% for one million dollars.

4.5 Permits

The following permits, issued by Crown Lands and property Agency of Manitoba are currently held by Satori Resources Ltd. as outlined in Table 4-2.

Permit Number	Specified Use	Authorised use	
GP 002950	Road – All Weather	To maintain and/or operate Road – All	
		weather	
GP 003437	Mine Site	To maintain and/or operate a Commercial	
		Lot – Mine Site Permit	
GP 006884	Road Access –	To maintain and/or operate a road – All	
	Private/Commercial	Weather Access Road	

Table 4-2 Permits in Place at Tartan Lake

A recent work permit (2016–02–23-017) was in place for the purpose of land based drilling until its expiry March 31, 2017. This permit may be extended for an additional year with application through Manitoba Conservation, located in Flin Flon, Manitoba.

4.6 Environmental Liabilities and Risks to Continued Operation

MP is not aware of any environmental liabilities at the Tartan Lake site. The project is isolated, there is surface disturbance due to former exploration and mining and the environmental impact of an exploration program will be minimal. The environmental impacts of mining can be managed with best practises and diligence.

The site contains tailings plus buildings and underground mine workings related to the former mining operation. These will need to be remediated before final closing of the site.

The cost of reclamation in 2010 was estimated to be \$550,000 as noted in Hannon, P., et. al., 2012 quoting a 2010 reclamation report.

5 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.I Access

Access to Tartan Lake is by a 29 km (18 mi), all weather gravel mine road from the government all season gravel road leaving the paved Highway 10 that leads from Flin Flon to the Trout Lake mine. This road leads from Flin Flon, a modern mining town. Flin Flon has all the services to support mineral exploration and mining. Flin Flon is accessed by highway, railroad and scheduled air service to the nearby airport. Grid electricity is connected out as far as the Tartan Lake mine.

5.2 Climate

The climate in Flin Flon is cold and temperate and Tartan Lake is very similar. There is significant precipitation throughout the year in Flin Flon. Even the driest month still have a lot of precipitation. The climate here is classified as Dfc by the Köppen-Geiger system. The average annual temperature in Flin Flon is -0.2 °C. The average annual precipitation is 478 mm. <u>http://en.climate-data.org/location/12545/</u>

The project is in the Churchill River Upland eco-region of the Boreal Shield ecozone. The climate is continental with long cold winters and cool summers. Permafrost occurs throughout the ecoregion, but is only widespread in organic deposits.



Figure 5-1 Flin Flon Climate by Month (http://climate.weather.gc.ca/climate_normals)

Seasonally specific mineral exploration activities may be conducted year-round. Mining can occur year round in the area.

5.3 Local Resources

The city of Flin Flon is located about 12 kilometres southwest of the Tartan Lake mine. The City of Flin Flon is situated along the Manitoba – Saskatchewan border in close proximity to Creighton, SK. Flin Flon has a population of about 5,600 people. Flin Flon is a well-established mining community developed around the deposits of zinc, copper, silver, and gold found in the region. The community has a skilled mining workforce. It is home to HudBay Minerals Inc., which locally operates several zinc and copper mines and a zinc pressure leach facility. Other industries include forestry and agriculture. A light manufacturing and retail sector support the resource-based industries.

The needs for both mineral exploration and mining are readily available in Flin Flon or can be shipped into Flin Flon on established infrastructure from wherever they originate.

5.4 Physiography

The Tartan Lake project lies within the Kazan physiographic region of the Canadian Shield. This is a knobby, rolling surface, with lakes, swamps, or muskegs occupying the valleys and depressions. There are low hills and ridges locally. This is the result of long term erosion especially most recently several periods of glaciation. Within the project lakes comprise about 20% of the surface area. These lakes drain into the Saskatchewan River which ultimately is part of the Nelson River drainage in Hudson's Bay.

The project area is low relief with hills of less than 20 meters higher than the lake levels. The area is very gentle with a number of low rounded outcrops. Between the low outcrops and overburden covered hummocks are mossy and muskeggy swamps.

Elevations on the Property vary from approximately 335 metres asl at Tartan Lake to approximately 1,160 feet on hills south of Tartan Lake. The topography is related to the underlying bedrock units. The softer gneisses, schists and structural zones are generally streams and lakes. The more resistant volcanic and intrusive rocks are generally the higher ground areas. The regional trend of the rock units is generally reflected in parallel striking groups of hummocks and depressions.

Bedrock is exposed throughout the region on ridges. Extensive thin lacustrine deposits, and locally prominent, sandy fluvioglacial uplands, are common. The region is thinly covered by glacial and fluvial cover with local areas of peat muskeg. The area is characterized by coniferous boreal forest consisting of stands of black spruce and jack pine. Bedrock exposures have fewer trees and are covered with lichen. Muskeg areas are generally stunted black spruce and sphagnum moss in poorly drained depressions.

The large animals in the region include barren-ground caribou, moose, black bear, lynx, wolf, beaver, and muskrat. Birds include raven, common loon, spruce grouse, bald eagle, gray jay, hawk owl, and waterfowl, including ducks and geese.

Forestry, mining, trapping, hunting, fishing, and tourism are the dominant uses of land in the Tartan Lake area.



Figure 5-2 Physiographic Map (revised from 2008 report)

5.5 Infrastructure

Vehicle access to Flin Flon is along paved Highway 10 from the Manitoba side and Highway 106 from the Saskatchewan side. Calm Air provides scheduled turboprop air service from the paved airstrip at Flin Flon to the international airport at Winnipeg, Manitoba. Local firms provide trucking services in and around Flin Flon. There is also daily service to and from the city via courier services. Flin Flon also has freight-only rail service.

Hydro electric grid electricity and full municipal infrastructure is available in Flin Flon. A developed community with schools, recreation facilities and medical/dental facilities makes Flin Flon a regional hub. Retail and most services to support underground mining and mineral exploration are available from providers in Flin Flon.

6 **HISTORY**

The Tartan Lake site has a long history of exploration and mining. Exploration work within the property area dates back to the 1920's. The history of the Property area prior to the 1980's has been extracted primarily from Manitoba Mineral Inventory File No. 0681 (MINFILE) and previous NI 43-101 reports and is described below in chronological order.

6.1 Historic Ownership

The ownership history is documented in Table 6-1 as found in the 2008 report and modified.

Year	Ownership Description
1931	Two claims staked on the east side of the narrows south of the T-junction in Tartan Lake. Killarney claim (P87) staked by Thomas Creighton Monica 2 claim (P214) staked by Ed Tahey
1932	Monica 2 claim optioned to Consolidated Mining and Smelting Co. of Canada
1939	Thomas Creighton and Ed Patton issued lease for Killarney claim (M-1070)
1945-47	Killarney claim optioned to Nesnah Mining and Exploration Co. Ltd.
1960	Killarney claim cancelled
1961	Area of Killarney claim restaked as the Lin claim by J. Murray
1971	Monica 2 claim cancelled
1972	Area of Monica 2 claim restaked as C.B. 4885 by A. Jacobson
1974	C.B. 4885 cancelled
1976	Lin claim cancelled
1978	C.B. 10112 staked west of the narrows by Granges Exploration Aktiebolag
1979	Veb and Nup1 claims staked on the east side of the Narrows (Killarney and Monica 2 areas) by Granges Exploration Aktiebolag
1981	Old 6 and Tort staked by Granges Exploration Aktiebolag Granges, in joint venture with Scandinavian Minerals Syndicate (SMS) and Aberford Resources
1982	Shirt 1, 2 & 3 staked by Granges Exploration Aktiebolag
1983	Granges Exploration Ltd. incorporated under the Company Act (British Columbia) and acquired all the mining interests of Granges AB in Canada
1984	Tort 3, 9, 12, 21, 22, 23, 24, 25, 26 and Kix 6 Fr. staked by Granges Exploration Ltd.
1985	Tort 30 and 200 staked by Granges Exploration Ltd. Granges Exploration Ltd. and Pecos Resources Ltd. amalgamated under the name Granges Exploration Ltd.
1988	Abermin (formerly Aberford Resources) asked to pay its share of outstanding joint venture costs. Abermin failed to meet that payment, and under terms of the joint venture agreement the interests in the Tartan Lake mine shifted to 60% Granges and 40% Abermin. In late 1988, Abermin rescinded from its joint venture agreement with Granges and totally dissociated itself from the property (Northern Miner, November 28, 1988). Shortly after, Abermin filed a lawsuit stating that the company was led to believe the grades and forecasts were higher than they actually were and was seeking the \$17 million that they invested in the project and/or damages (Northern Miner, September 5, 1988).
1989	1989 Granges Exploration Ltd. changed its name to Granges Inc.
1990	In 1990, the British Columbia Supreme Court ruled in Granges' favour, awarding the company 100% interest in the property, as well as a \$5 million settlement. Abermin had declared bankruptcy during the lawsuit (Canadian Mines Handbook, 1991-1992).

Table 6-1 Ownership History

1995	Granges and Hycroft Resources & Development Corporation were amalgamated under the name Granges Inc.
1996	Granges Inc. and Da Capo Resources Ltd. amalgamated under the name Vista Gold Corp. ("Vista").
1998	Claude acquired the Tartan Lake Property and Tartan Mine infrastructure from Vista
2008	St.Eugene enters into an agreement on Sept. 22, 2008 to acquire the Tartan Lake Property and Tartan Mine infrastructure from Claude subject to a 60 day due diligence period
2011	The St. Eugene buyout agreement gives Claude the 100% ownership of St. Eugene.
2012	Satori Resources Inc. ("Satori") was formed as the spin-off company resulting from the closing of the acquisition of St. Eugene Mining Corporation Limited by Claude Resources Inc. At closing, Satori acquired St. Eugene's 100% interest in the Tartan Lake Mine Project ("Tartan Lake") in Flin Flon, Manitoba.

6.2 Historic Gold Production

The historic gold produced in ounces as reported in earlier reports is noted in Table 6-2.

Year	Gold in Feed	Mill	Mill
	(troy ounces)	Recovery	Recovered
		(%)	Ounces
1987	7,310	69.0%	5,042
1988	19,221	70.0%	13,454
1989	20,375	85.0%	17,318
Total	46,905	76.4%	35,814

Table 6-2 Historic Gold Recovered in Mill (Source Hannon P., et. al., 2012)

6.3 Historical Mineral Resources/Reserves

All resources and estimates stated here are historical in nature and were calculated prior to the implementation of National Instrument 43-101. MP and Satori are not treating the historic mineral resource estimates as defined resources verified by a qualified person. The historical estimates should not be relied upon. In 1988 Strathcona compiled a table of historic ore reserve estimates that were completed for the Main Zone prior to March 31, 1988 (Table 6-3).

The resource/reserve estimates were not all for the same parts of the mine and ongoing drilling and similar activities would update the datasets used, therefore direct comparisons are not possible. Mined tonnage (if any) was added back into the estimates. Cut-off grades ranged from 3.0 to 3.6 g/t Au. Baile/Reid, DeVeaux, Asbury, Kilborn and Bailes were manually calculated reserves. The others were computer generated using Mintec's MEDSYSTEM software that was installed at the Tartan Lake minesite.

Author(s)	Date	Tonnes	g/t Au	Remarks
Bailes/Reid	Jan-86	657,000	9.1	Undiluted, uncut
DeVeaux	Feb-86	466,000	11.96	Undiluted, uncut
Mintec	Nov-86	477,950	11.69	Undiluted, uncut
Asbury	Dec-86	690,300	10.05	Diluted, uncut
Kilborn	Mar-87	529,000	10.52	Undiluted, uncut?
		623,000	8.51	Diluted, uncut?
Lacroix/Hanson	May-87	527,260	8.22	Diluted, cut (62 g/t Au)
Bailes	Jun-87	607,922	9.59	Undiluted, uncut
Lacroix/Hanson	Aug-87	510,570	8.39	Diluted, cut (62 g/t Au)
Lacroix/Hanson	Nov-87	408,410	8.44	Diluted, cut (62 g/t Au)
Lacroix	Mar-88	455,500	6.68	Diluted, cut (30 g/t Au)

Table 6-3 Historic (Non NI 43-101) Resources/Reserves

In 2012 a resource estimate was reported by Minetech International (Hannon, et. al., 2012) using CIM standards and reported to NI 43-101 format as seen in Table 6-4. This same resource estimate was previously reported in 2010 and 2011 by Minetech with many of the same authors reporting in both reports.

Class / Zone	Tonnes	Grade Au g/t	Ounces	
Indicated				
Main Zone	830,000	4.1	110,000	
South Zone	200,000	3.7	24,000	
Total *	1,000,000	4.0	130,000	
Inferred				
Main Zone	700,000	4.6	100,000	
West Zone	240,000	3.2	25,000	
South-HW Zone	70,000	4.7	11,000	
South Zone	820,000	3.6	95,000	
South-FW Zone	60,000	4.1	8,000	
Total *	1,900,000	3.9	240,000	
* rounded values				

Table 6-4 Historic (NI 43-101) 2012 Resource Estimate (Hannon, et al., 2012)

Notes on the 2012 resource estimate include:

- Cut-off for interpretation I g/t Au
- Block Cut off 2 g/t Au
- Top cut 30.9 g/t Au (determined by mean plus 2 SD)

- Assumed gold price US\$ 850 per troy ounce
- Zones down 50 meters below last intercept and half to next section laterally
- Minimum width 1.5 metres
- Undiluted
- Specific gravity used was 2.8
- Inverse Distance squared method
- Indicated was a spacing of 20 to 25 meters or less

6.4 **Previous Exploration**

The following notes are largely sourced from the report by Trinder, 2008, which referenced Manitoba Minfile 0681.

1920's

Several low-grade gold occurrences were discovered on the Tartan Lake property in the 1920's. A small tonnage of low grade gold ore was mined on the Property area from 1928 to 1929.

1931

Gold was found on two adjacent claims on the east side of the narrows, at the bend in Tartan Lake; Killarney (P87) and Monica 2 (P214) were staked in 1931 by T. Creighton and E. Tahey, respectively.

1932-1933

In 1932, Consolidated Mining and Smelting Company of Canada Limited did surface work on the west side of Killarney and optioned the Monica 2 claim. Assays from Killarney yielded \$1.80 Au over 15 ft. and up to \$100.20 Au across 1 ft. (3.09 g/t over 4.58 metres to 171.78 g/t over 0.31 metres. Hudson Bay Mining and Smelting Company Limited sampled Monica 2 and found from \$2.20 Au over 3 ft. to \$2.80 Au over 7 ft. 14 pits and trenches had been put down on the two claims by the end of 1933. Some of this work may have been done by Ventures Limited, which located a zone assaying up to 102 grams/tonne (g/t) (3 oz Au/ton) over narrow widths.

1945-1947

Nesnah Mining and Exploration Company Limited took an option on Killarney in 1945. Nesnah traced a mineralized shear across three claims. In the autumn of 1945, the company began X-ray diamond drilling on Monica 2. One 3 m (9.7 ft.) core section averaged 23.62 g/t (0.689 oz/ton) Au. At least 37 holes were drilled by the time drilling ceased in 1946. Most of this was done in exploration of the extent of the high-grade intersection, found the previous year. Reserve estimates, based on 1,100 m (3,600 ft) of diamond drilling, were 64 tonnes (70 tons) per vertical 0.3 m (1 ft), averaging 19 g/t (0.56 oz/ton) Au or 90 tonnes (100 tons) per vertical 0.3 m (1 ft) grading 14 g/t (0.416 oz/ton) Au. The best section returned 260 g/tonne (7.58 oz/ton) Au across 0.3 m (1 ft) in a 3 m (9 ft) section, which averaged 29 g/tonne (0.847 oz/ton) Au. The work was completed on what are now referred to as the South, West Baseline, East Baseline and Ruby Lake zones/showings, which had been discovered by this time.

1962-1974

Surface work completed on the Lin and Monica 2 claims was reported but the data and results of this work are not known.

1980-1983

Initial work by Granges consisted of cleaning, mapping and re-sampling of historic trenches. Geological mapping delineated several west trending sub-parallel shear structures. Several of the historic trenches were associated with these structures. Initial drilling by Granges tested the subsurface below the historic surface trenches but failed to intersect any continuous gold bearing structures. Subsequently, geochemical soil surveys and VLF-EM and ground magnetic geophysical surveys were conducted over the remainder of the Property. The VLF-EM surveys delineated west trending structures approximately parallel to the mapped shear structures. The ground magnetic survey also delineated a west trending magnetic low on the property.

1980

Granges drilled one core hole (NAP-7) totalling 200ft at the northeast end of Ruby Lake on claim CB10112 at the west end of the Tartan Lake property. The drilling was carried out by Amisk Drilling of Flin Flon and was completed between February 4 and 6, 1980. The core hole tested a known gold showing and intersected a quartz-carbonate breccia zone containing 5.51 g/t Au over 0.91m.

1983

Granges collected 413 "A-horizon" soil samples on 30m x 30m (100ft x 100ft) centres from grid N-10 covering portions of Tort (CB12297) and Nup I (CB10190) claims. If the A horizon soil material was unavailable or not present, then B-horizon or muskeg material was sampled and noted. Samples were collected with an auger, placed in kraft soil bags and sent to Acme Analytical Labs in Vancouver B.C ("Acme"). Upon receipt of the samples at Acme, the samples were dried at 75°C for 16 hours and then sieved to -80 mesh. A 0.5g sample was then digested in diluted Aqua Regia in a hot water bath for I hour then diluted with demineralized water. Copper, lead, zinc, gold, silver, arsenic and molybdenum quantities were determined from the solution by Atomic Adsorption ("AA"). Silver and gold were determined using a background correction. Many single point anomalies were outlined for follow-up including a 2,000ppb gold value in the area of the South Zone.

1984-1987

From May 1984 to May 1987, Granges and joint venture partner Abermin Corporation (formerly Aberford Resources), carried out an extensive diamond drilling ore delineation program. The program outlined a historical (non NI 43-101 compliant) mineral reserves of 465 000 t (513 000 tons) at a grade of 12 g/t (0.349 oz/ton) Au.

1984

Granges drilled 41 surface diamond drill holes totalling 4,512.84m (NAP 35 to NAP 75 inclusive) on grids N-10 and N-11A covering portions of Tort (CB12297), Nup I (CB10190), VEB (W45358), Shirt 2 (W47272) and CB10112 claim. The drilling was contracted to Amisk Drilling of Flin Flon and was completed between March and August 1984. The highlight of the drill program was the discovery of the overburden covered
Main Zone structure in hole NAP-043 during the drilling of a VLF conductor. NAP-043 intersected a 16.84 metre core length grading 20.78g/t Au uncut.

1985

Granges drilled 66 surface diamond drill holes and 20 wedge diamond drill holes (NAP 76 to NAP 141 inclusive) totalling 18,757.41m on grids N-10 and N-11 covering portions of Tort (CB12297), Nup I (CB10190), VEB (W45358), Shirt I (W47271), Shirt 2 (W47272) and CB 10112 claims. The drilling was contracted to Amisk Drilling of Flin Flon and was completed between January 6 and April 10 and between June 9 and November 24, 1985.

1986

In early 1986, the Granges-Abermin joint venture commenced work on the first phase of their property development plan with the construction of a 29 km (18 mi.), all weather road. Work on the underground program began when the Tartan Lake mine decline was collared in April 1986 in the hangingwall of the Main Zone at an elevation of 2000.4 metres. The second phase of development included assembly of a 454 t (500 ton) per day mill, the extension of the decline to the 244 m (800 ft.) Level and the extraction of a 908 t (1000 ton) bulk sample from the "Main Zone".

1987

The Tartan Lake mine commenced production in May 1987. The decline measures 4.3m high by 4.54m wide with a slope of 15.4 percent. The decline passes through a barren area of the Main Zone near the surface and then remains in the footwall of the Main Zone. A 3.0m by 3.5m downcast ventilation raise was driven from crosscuts off the decline. The raise serves as the main air inlet to the mine and is fitted with ladders and landings to serve as a manway. The surface breakthrough of the raise is grouted and fitted with a concrete collar and steel hatch. The mining methods utilized by Granges at Tartan Lake were both mechanized cut and fill and undercut and fill methods. Ore was trucked up to surface from the decline and stockpiled for processing. The Tartan Lake mill commenced operations on September 1, 1987 with an original designed processing rate of 250 ton per day.

1988

After a short shut down, the mill capacity was increased to 500 tons per day in early 1988. The mill rate was increased to compensate for lower than expected head grade. The 500 tons per day mill rate was never achieved for a sustained period. From April to August 1988 the achieved mill rate was approximately 300 tonnes per day. The mill circuit consists of a jaw crusher, a cone crusher, two SALA SRR ball mills, a regrind mill between the flotation and leaching circuits, a gravity circuit comprising jigs, spirals and a shaking table, a flotation circuit, a Merrill Crow cyanidation circuit, cyanide destruction using H2O2 and a tailings disposal backfill plant. Granges contracted Rise'n Shine Exploration of Cranberry Portage for 69.67 miles of linecutting on grids N-10, N-10 Cross and N-14 during March-April 1988. The grids cover portions of Tort 3, 12, 21, 22, 23, 24, 200 and Shirt 1 and 3 claims. Contractor J.J. Studer of Flin Flon completed a 60.96 line mile HLEM survey over these grids in April 1988. The grid was surveyed at 100ft stations on lines 300ft apart with readings of both 888 and 1777 Hz frequencies.

Strathcona Mineral Services Limited ("Strathcona") was contracted by Granges to carry out a technical review of the Tartan Lake Project in July 1988. Strathcona noted that the grade of material mined to the end of March 1988 was between 4.0 and 4.3 g/t Au, far below the expected grade of initial ore reserve estimates. The gold grade distribution in the mineralized zones at the Tartan Lake Mine has a strong nugget effect and Strathcona noted that the relative influence of high grade samples should be reduced (cut) when determining ore reserves for gold projects where a small proportion of the samples represent a large proportion of the indicated gold in the deposit. This was not done at Tartan Lake. Stathcona recommended that high grade samples at Tartan Lake should be cut to 30 g/t Au. Despite the Tartan Lake ore being not technically difficult to process, Strathcona noted that gold recovery had only averaged 70 to 75% and the monthly tonnage processed was less than planned. Reasons for the shortcomings included: deficiencies in the original process flowsheet design and plant layout, poor mechanical availability in some key equipment units, changes in supervision and a lack of strong qualified direction for the processing facilities. As part of their technical review of the project, Strathcona also calculated a mineable reserve as of March 31, 1988 and cash flow projections.

1989

Granges drilled 10 surface diamond drill holes (NAP 305 to NAP 312 inclusive) totalling 600.5m on grids N-10 and N-14 to follow-up on conductors delineated in the 1988 HLEM survey. The drilling was contracted to Midwest Drilling of Winnipeg and was completed between February 10 and 24, 1989. Production at the Tartan Mine was suspended in November 1989 due to a significant mechanical failure and decline in the gold price. As a result of the shutdown, the plant and equipment was stored, all personnel laid-off and the mine was kept under care and maintenance (i.e. dewatered and ventilated). At the time of suspension, the decline, located between the Main and South zones, bottomed at the 315m Level and provided access to both zones. The undeveloped Southeast Zone was to be accessed from the South Zone workings. A drift was developed to within 75m of the Southeast Zone at the suspension of mining. Stopes in the Main Zone are established every 60m at the 90m (nearly mined out), 154m, 210m and 270m Levels. A fifth stope was started on the 304m Level. All stopes are unfilled except for the 210m where the next lift was ready to be mined at the time.

1990

In June/July 1990 the Tartan Lake mine and mill buildings and equipment were cleaned and placed on care and maintenance. Granges conducted a systematic drilling and sampling program of the Tartan Lake tailings in October and December 1990. A total of 161 drill holes approximately 15cm in diameter were pushed to bedrock and varied in length from 1.3 to 4.0 metres. A majority of the holes were drilled along and in close proximity to the tailings line and additional holes were drilled along section lines out toward the lake to delineate the gold content in the dispersion fan from the tailings discharge point. Samples were collected every metre down hole where possible, placed into plastic bags and forwarded to Canadian Gravity Recovery in Delta, B.C. for sample preparation. Samples were dried weighed and split and representative splits of each hole were forwarded to Acme Analytical Labs of Vancouver, B.C. for fire assay. Subsequently, cyanide leach tests were conducted on samples from six selected holes and gravity extraction recovery tests were conducted an average recovery of 78% and the gravity an average recovery of 71%. It was recommended that gravity recovery methods be used due to the lower processing costs. As a result of the tailings work program, a resource estimation of the tailings was recommended. Granges initiated an in-house

feasibility study to review options available if the Tartan Lake Mine were to be put back into production. Problems identified in the previous operation were to be addressed and remedial actions and costs determined. It is not known whether Granges completed this in-house feasibility study.

1992

A. Ismay Associates ("AIA") of Vancouver, B.C. reported on their metallurgical evaluation of the Tartan Lake Mine in April 1992. AIA was commissioned to conduct a metallurgical evaluation of the Tartan Lake ore with the objective of identifying a process which could be implemented at a low cost to the mill and I) eliminate or reduce the requirement of cyanidation, 2) increase the throughput of the mill, and 3) reduce the cut-off grade of mineable ore and possibly result in greater reserves. Based on their testwork, AIA designed several potential flowsheets. With the simplest flowsheet AIA determined that by crushing the mine product to 1.5 to 2.0mm and rejecting the oversize, 61% of the mill feed could be discarded with only a 5% loss in gold. The pre-concentrated feed would then be ground to 80% passing 0.212mm and passed through a gravity circuit. The gravity concentrate could be upgraded to direct smelter concentration and the gravity tails treated by flotation. Flotation tailings would be rejected as final tailings and the flotation concentrate would be cyanide leached in a Merrill Crowe circuit. Overall recovery of the circuit was estimated at 90.2%. The preconcentration of the mine product would permit mine production of approximately 560 tonnes per day with a mill throughput of only approximately 220 tonnes per day following pre-concentration. Granges drilled surface 2 diamond drill holes (NAP 313 and NAP 314) totalling 634.0m to test for a potential shallowing of the plunge of the western extension of the Main Zone. The drilling was contracted to Amisk Drilling of Flin Flon and was completed between April 25 and May 9, 1992. Hole NAP 313 was abandoned at 32.9 m because of excessive hole deviation. Hole NAP 314 intersected the Main Zone over a core length of 24.3m however the best intersection only graded 1.61 g/t Au over 1.3m. Granges interpreted that the hole intersected the Main Zone structure well above the plunge of the significant mineralized zone.

1993

To reduce maintenance costs, the Tartan Lake mine was allowed to flood. All underground services such as ventilation, electrical and pumping systems were removed prior to flooding. The Tartan Lake mine was flooded to 80m Level as of October 1995.

1994-1995

During 1994 to 1995, Granges drilled 18 holes of 35 holes between 100W and 300W. Several holes discovered the West Zone lens 3a, 100-200m southwest of the Main Zone at 150±15m south of the baseline. Several other holes intersected another zone of mineralization 190±15m south of the baseline, or about 40 to 50 metres south of the above West Zone. This zone was named as West Zone lens #3b. Claude interprets that this mineralization may be the west extension of the South Zone. The western-most diamond drill hole (NAP341) did not encounter obvious mineralization or shear structures at its projected intersection with the West Zone, but did not extend far enough to intersect the possible extension of the South Zone.

Despite significant drilling between 1984 and 1995 by previous operator, Granges Inc., all the mineralization zones, including the Main Zone, West Zone, and South Zone are apparently open. The West Zone and South Zone may plunge steeply to the west, similar to the Main Zone at the Tartan Lake mine.

1994

Granges contracted D. Dubray of Cranberry Portage Manitoba to linecut and chain two metric grids (Mine Grid and Mine Grid – Tailings Lake) totalling 59.65 km over all or portions of claims CB10112, Nup 1 (CB10190), Old 6 (W47124), Shirt I (W47271), Tort (CB12297), Tort 3 (W47191), Tort 9 (W45227) and VEB (W45358). Work was completed between April 20 and 26, 1994. M. Chorney and Associates Ltd. of Flin Flon, Manitoba was then contracted to complete 52.4 km of ground VLF-EM and total field magnetic surveys over the grids between April 26 and 28, 1994. The ground geophysical surveys delineated numerous VLF-EM & magnetic responses. Field checking of the VLF-EM anomalies was recommended along with some follow-up HLEM surveying to filter out surficial and/or cultural VLF-EM conductors. (Chorney, 1994) Granges contracted D. Dubray of Cranberry Portage Manitoba to refurbish and re-chain a portion of the mine grid over the Tartan Lake Mine totalling 14.6 km over all or portions of claims Nup I (CB10190), Tort (CB12297), Tort 9 (W45227) and VEB (W45358). Work was completed between July 25 and August 10, 1994. M. Chorney and Associates Ltd. of Flin Flon, Manitoba was then contracted to complete 3.8 km of VLF-EM, 14.6 km of continuous magnetic surveying and 9.55 km of radiometric surveying on the grid between August 15 and 20, 1994. The radiometric survey was not successful in its attempt to delineate small areas of felsic rock beneath shallow overburden. The continuous magnetic survey did not show any significant responses other than those already outlined by previous conventional total magnetic surveys. Three strong VLF-EM conductors were interpreted to be topographic or overburden effects but ground truthing was recommended. A short coil separation, high frequency HLEM survey was recommended to search for shallow conductive zones such as mineralized contacts, fault zones and alteration zones.

Granges contracted Patterson Mining Geophysics Ltd. of La Ronge, Saskatchewan to conduct 12.95 km of induced polarization-resistivity surveying over the Tartan Lake minesite using a gradient array dipole configuration. Work was completed between September 7-8 and 15-22, 1994. The objective of the survey was to outline areas of increased sulphide mineralization, clay alteration, and/or resistivity contrast to assist in the delineation of targets for shear-hosted gold mineralization. Although the survey was completed, Patterson Mining Geophysics Ltd. did not interpret the results of the survey. Granges contracted Frontier Geosciences Inc. to conduct 5.8 km of acoustic profiling and 2.6 km of seismic refraction surveying over portions of Tartan Lake east and west of the Tartan Lake Mine within portions of claims CB10112, Nup I (CB10190), Old 6 (W47124), Tort (CB12297), Tort 9 (W45227) and VEB (W45358). Work was completed on October 19 and 20, 1994. The purpose of the program was to determine bedrock topography underlying sediments and glacial tills to better assess gravity and TDEM survey results and to assist in mapping structure and alteration zones beneath the lakes. The acoustic profiling outlined bedrock linear depressions, but seismic data was too noisy to reliably outline structure; shallow water depths resulted in numerous multiples in the seismic record.

1995

In 1995, Granges drilled 22 surface core holes (NAP-328 to NAP-349) on the Property. Due to nondisclosed reasons, Granges made the decision to divest itself of its Flin Flon properties including the Tartan Lake property.

2003

Claude Resources Inc. took over the Property in 1997 from Granges. Mapping was completed in the summer of 2003 and 13 holes metres were drilled. Gold was found in many of these holes.

2005-2006

In the winter of 2005-2006 a further eight holes were completed by Claude.

In 2005 a drill program of the tailings facility to determine the economics of mining the tailings for recoverable gold was completed by Claude. A grid was developed and the top was sampled. The estimate was 2 g/t in the near surface half metre of the tailings.

2011

Satori drilled total of 19 holes comprising 4,133 metres during 2011 exploration program.

2012

Satori recovered 80 ounces of gold in a clean-up of the mill building.

7 GEOLOGICAL SETTING AND MINERALISATION

7.1 Regional Geology

The Tartan Lake project is located within the Flin Flon greenstone belt (FFGB). The FFGB belt is a collection of tectonic assemblages that was assembled early in the evolution of the Paleoproterozoic Trans-Hudson Orogen. The portions of the belt exposed on or near surface are approximately 250 easterly by 75 northerly kilometres. The Kisseynew domain tectonically overthrusts the FFGB to the north and east. The Kisseynew domain is a younger gneissic metasedimentary, metavolcanic and plutonic rocks. The Hanson Lake block bounds the Flin Flon domain on the west. To the south the FFGB is covered by the east-trending edge of the Phanerozoic platformal cover rocks. The FFGB on the south side is covered by a thin layer of Phanerozoic rocks to the south and can be traced hundreds of kilometres by its geophysical signature. A map of the major rock units are noted in Figure 7-1.



Figure 7-1 Regional Geology Including the Flin Flon Greenstone Belt

The supracrustal rocks of the FFGB are divided into two major groups:

- 3. Flin Flon arc assemblage (formerly known as the Amisk group) of metavolcanic and metasedimentary rocks
- 4. Missi Formation of metaconglomerate, metasandstones, and greywackes which unconformably overlies the Flin Flon arc assemblage

The Kisseynew domain rocks overlie the Missi Formation. They consist of crystalline gneisses and schists. A variety of intrusive rocks, from synvolcanic to post-Missi crosscut the supracrustal sequence. The volcanic rocks of the Flin Flon assemblage are likely from an island-arc environment. Missi Formation rocks are continental piedmont plain or molasse-type deposits (Fedorowich et al., 1991).

Sub Greenschist facies metamorphism is present in the south with it increasing to amphibolite in the north near the Kisseynew domain.

Fedorowich et al. (1991) proposed five phases of deformation in the Tartan Lake area of the Flin Flon belt:

- 1. Deformation event ("D1") is a pre-Missi Formation isoclinal folding episode. The Amisk Group rocks were folded and the Missi Group sediments overlie the folded Amisk Group rocks with an angular unconformity.
- 2. Deformation event ("D2") is represented by another set of east-west trending isoclinal folds, which only occur within the Missi sediments. There is continuity between Phase I and Phase 2 based on field relations.
- 3. Deformational event ("D3") is represented by isoclinal folds accompanied by axial-planar foliation, lineation, and the initiation of north-south ductile shear zones contemporaneous with peak metamorphism.
- 4. Deformation event ("D4") formed a large-scaled antiform, the Embury Lake fold with a width of 25 km. It rotates the orientation of lithologies and early shear zones from north-south to east-west on its northern limb. The authors suggest that conjugate sets of late ductile to brittle shear zones with predominantly strike-slip displacement found throughout this region were active during this folding event.
- 5. Deformation event ("D5") is characterized by brittle deformation marked by shear zones. The Ross Lake fault, formed during this phase, has been traced for 65 km

7.2 Local Geology

The contact with the Kisseynew gneisses is located 6 km north of Tartan Lake. It is on the east-westtrending northern limb of the Phase 4 Embury Lake fold. Near the contact the structural fabric of the Amisk Group rocks is parallel to the east-west fabric of the Kisseynew gneisses and the volcanics contain a midgreenschist facies metamorphic mineral assemblage. The Tartan Lake deposit is located in a flexure of the Tartan Lake shear zone, a steeply dipping, complex branching structure, with a minimum strike length of 24 km (Fedorowich et al., 1991).

Amisk Group volcanic rocks occur to the north or in the hanging-wall block of the main Tartan Lake shear zone. They comprise mafic to intermediate flows, felsic to intermediate volcaniclastics with bombs up to 15 cm long occurring sporadically and interbedded with argillaceous sedimentary rocks which may be turbidites.

Pillowed flows and the turbiditic character of the sediments point toward a dominantly subaqueous deposition.

A locally layered gabbro-diorite intrusive complex comprises the footwall rocks of the main Tartan Lake shear zone. The rocks in the mine area are intruded by small feldspar porphyry dikes that parallel the dominant tectonic fabric, are variably deformed, and therefore may be emplaced synchronously with Phase 3 deformation ("D3"). The feldspar porphyries vary in age and are frequently found where there is significant gold mineralization.



Figure 7-2 Local Geology

7.3 Deposit Geology

The Tartan Lake shear zone complex is a strong east-west trending zone, which contains the Tartan Lake gold deposits. Near the mine the main shear zone forms the contact between the footwall gabbro/diorite intrusive to the south and the hanging wall Amisk Group rocks to the north. The shear zone is 30 to 50 metres wide, steeply dips to the north and trends to the west.

The Tartan Lake shear zone hosts several subparallel lenses of gold mineralization, which comprise the Main Zone of the tartan Lake deposit. Sinuous anastomosing subsidiary shear zones in the footwall gabbro/diorite intrusive to the south and Amisk Group rocks to the west also form some of the gold veins.

The various deposits share similar structural settings. Significant gold mineralization is located in areas at or near the intersections of anastomosing shear zones that are oriented east-west, northeast-southwest and northwest-southeast relative to the mine grid which is oriented at 337° (see Figure 7-3). The structures of the Main Zone are linked to the structures in the South Zone through this anastomosing network. The South Zone shares the same structure as the Southeast Zone. The South Zone is in part linked with the West Baseline Zone structures which is the extension of the East Baseline Zone. The Main and South Zone structures are associated with the structure containing the West Zone mineralization.

The lithologies that characterize the host shear zones grade from a distant zone of biotite-chlorite-epidote schist to a core of quartz-sericite-(carbonate-fuchsite) schist. Where the mineralized zones are close together the shear zones have up to 45% sericite and often abundant pyrite. Ankerite and ferric dolomite are the most prominent carbonate minerals in the gold mineralized sections of the system. Calcite is the most common carbonate mineral in the non-gold mineralized areas and the margins of the alteration schists surrounding the zones. Throughout the shear zone schists is disseminated pyrite and minor chalcopyrite. Within the quartz veins it increases up to 5% and locally can be up to 20% sulphides.

The emplacement of quartz \pm feldspar dykes prior to shearing is interpreted to increase the silica content in the mineralizing system. The variation in the alteration mineral assemblage is attributed to metasomatic alteration of the rocks on the side of the shears that hosts the mineralized zones.

The cores of the shears host an increase in the fabric complexity along with the increase in alteration. This suggests non-homogeneous deformation and fluid-flow within the core of the shears. The schists developed on the margin of the mineralized shear system were gabbro and quartz \pm feldspar schists before alteration and shearing.

Typical greenschist facies alteration with biotite and amphibole as the peak metamorphic grade minerals are found in the rocks 100 to 500 meters from the shears. This alteration is overprinted locally by the shearing and fluid alteration in the mineralized shear areas. This local alteration includes significant potassic alteration in the hanging wall and footwall rocks near the mineralized shears as noted in whole rock analysis. Narrow bands of fine to coarse grained magnetite are also found in the diorite/ gabbro near the mineralized shears.



Figure 7-3 Surface trace of zones in mine area (revised from Trinder, et. al., 2008)



Figure 7-4 Major Shears on the Tartan Lake Property (revised from Trinder, et. al., 2008)

INNOVATIVE AND PRACTICAL MINING CONSULTANTS

7.4 Mineralization at Tartan Lake

Five principal vein types at Tartan Lake have been identified at Tartan Lake by Fedorowich et al., The first set is feldspar dominant (Vi), the next are tourmaline dominant (Vii), the intermediate veins (Viii and Viv) are quartz-tourmaline-carbonate dominant and the youngest (Vv) are predominantly carbonate (Table 7-1).

Phase	Vein Mineralogy	Orientation and Character
Vi	Albite-quartz-carbonate-muscovite	Segregation veins and strings of feldspar porphyroblasts. Occur
		only within and at the margins of shear zones.
Vii	Massive tourmaline with minor quartz and	Parallel to C foliation, folded in central parts of shear zones with
	dolomite	minor local quartz ladder veinlets perpendicular to vein margins.
		Up to 20m long and 20cm wide and commonly folded.
Viii	Quartz-tourmaline-dolomite-pyritechalcopyrite-	Large laminated central shear veins. Widths of 0.3m to 4.5m, strike
	gold-chlorite-monazitescheelite-Bi, PGE	lengths of up to 30m and dip lengths up to 100m. Complex internal
	tellurides-rutile-sphenetetrahedrite	textures. Gold bearing.
Viv	Quartz-tourmaline-dolomite-pyritechalcopyrite-	En echelon extension vein arrays, some conjugate sets. Highly
	gold-chlorite-monazitescheelite-Bi, PGE	oblique to the shear zone C foliation.
	tellurides-rutile-sphenetetrahedrite	Most are fibrous. Steeply dipping, 0.5 to 2.0m long and less than
		10cm wide. Gold bearing.
Vv	Dolomite-quartz-pyrite-chalcopyritemonazite-	Sub-horizontal veins and partially filled fractures.
	calcite-chlorite-tourmalinehematite	Occurring local to the shear zones, crosscut the shear zones and all
		other vein phases. Can persist discontinuously into the footwall
		and hanging wall rocks.

Table 7-1	Vein Type	e Characterization
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The chalcopyrite and pyrite are associated with the gold bearing sections of both Phase Viii and Viv quartztourmaline-dolomite-sulphide veins. Gold also occurs with the alteration halos of the shears with disseminated sulphides. Gold occurs as inclusions within sulphide minerals or as a rim or fracture fill of a sulphide grain. Free gold is also seen spatially with coarse accumulations of sulphides within the quartz veins. There is a direct relationship between the gold grade and sulphide content. When chalcopyrite is present there are higher grades. Electrum at Tartan Lake is very high in gold with a ratio about 96% Au to 4% Ag. Minerals occurring in trace amounts include monazite, rutile, Bi-tellurides, with minor platinum group elements, scheelite and tetrahedrite.

The intersection of the shear veins, either vertical or horizontal, strongly controls the occurrence of gold. Type Viv veins increase in width at the intersection of shear veins. The plunge of mineralized zones is influenced or referenced by the intersection and crosscutting of Type Viii and Viv veins.

Between 1931 and 1947 the surface exposure of the South, West Baseline, East Baseline and Ruby Lake zones was trenched and drilled. The Main Zone was discovered by Granges under the muskeg by drilling a VLF-EM conductor. The Southeast Zone was found by Granges when drilling to the east of the South Zone on the same structure. The West Zone was found in 1995 by Granges by drilling projected shear zone intercepts.

7.4.1 Main Zone

Twelve individual shears make up the Main Zone. It is located in the gabbroic complex near the contact between the metagabbroic and metavolcanic rocks. The historic gold resource is predominantly in the Main Zone. Two gold-bearing lenses that strike 090°, dip steeply to the north, and plunge steeply (70°) west to northwest make up the Main Zone. The first lens is 60 m long and 90 m high, extending to the 90 m Level of the mine. The second lens is 40 m long near surface and 200 m long at the 200 m Level and 150 m at the 300 Level of the mine. It is 5 to 10 m in the footwall of the first lens. The decline extends to the 315m Level and mineralization is defined down to ~575 m below surface. The average width of stopes in the historic mining was 7.8 metres.

7.4.2 South Zone

A set of veins in the footwall of the Main Zone form the South Zone which are interconnected and subparallel. These shears are entirely in the gabbroic complex. The South Zone consists of three smaller blocks of historic resources. Lens 3b was interpreted by Claude to be a possible extension of the South Zone. Granges intersected it in drill holes in 1995 and 1996 and based on the host rocks, structural setting and mineralization appear to be similar to the Main Zone. The zone is defined to ~275 m depth below surface.

7.4.3 Southeast Zone

The Southeast Zone is to east and is hosted by the same east-west trending shear zone as the South Zone. It is also entirely in the gabbroic complex. Like the South Zone it is also similar to the Main Zone based on the structural setting and mineralization. There is no underground development in the Southeast Zone but a drift was about 75 m away when the mine shut down. The zone is known to \sim 200 m depth.

7.4.4 West Zone

The West Zone appears to be a splay off the Main Zone that was discovered during drilling by Granges in the 1990s. There are several lenses within the zone including one near 150 W (mine grid) and another closer to 190 W. This is located to the west of the South Zone and may be between or an extension of the South Zone at the extreme west. Further work is required to better define this zone.

7.4.5 Tailings Zone

A weak, up to nine metre wide, shear in the mafic volcaniclastics or gabbro with banded light grey quartzpale pink carbonate and cubic pyrite up to 5% is named the Tailing Zone. Drilling encountered low grade gold mineralization such as 1.64 g/t of gold over 3.65m. There were four holes put in the zone in 2006.

7.5 Other Zones

Other zones indicated on the historic maps include One Island Lake Zone, McFadden Zone, Ruby Zone, West Baseline Zone, East Baseline Zone and the N-229 Zone. These were not reviewed.

8 **DEPOSIT TYPES**

The gold deposits at Tartan Lake are greenstone-hosted quartz-carbonate vein deposits. Greenstone-hosted quartz-carbonate vein (GQCV) deposits are a sub-type of lode gold deposits. They are also known as mesothermal, orogenic lode gold, shear-zone-related quartz-carbonate or gold-only deposits. Basically the deposits are quartz and carbonate veins with valuable amounts of gold and silver deposited at several kilometres depth. These are located in a deformed terrain of ancient to recent orogenic greenstone belts in Figure 8-1 indicated by Type 14 Greenstone-Hosted vein, (Poulsen, et. al., 2000). They consist of quartz-carbonate veins in moderately to steeply dipping brittle-ductile shear zones and locally in related shallow-dipping extensional fractures.



Figure 8-1 Shear Hosted Gold Deposit Type (Source: Poulsen, et. al., 2000)

The shears at Tartan Lake are steeply dipping and vary from a few centimetres to 25 metres in width and average about 9 metres.

9 **EXPLORATION**

St. Eugene did some field work in 2010 and reviewed historic data in 2011. In 2011 St. Eugene continued exploration with an airborne geophysical survey of the property. As the result of this survey six zones with gold were discovered to the east of the penisola where much of the historic exploration has taken place. St. Eugene did a file work program to follow-up the geophysics and the data review on the ground.

Satori has done no geochemistry, geophysics or similar exploration work, on the Tartan lake project. In 2016 Satori completed a drill program with the details summarized in Section 10 of this report.

10 DRILLING

There was drilling in 2011 on the property done by St. Eugene. Two of these holes by St. Eugene were confirmation "twinning" holes to parallel previous holes by Granges. These were used to allow the confirmation of the grades with modern QA/QC including standards inserted. This would then allow assays reported by Granges to be used by St. Eugene in a modern NI43-101 resource estimate. The other two St. Eugene holes targeted an airborne EM target.

In 2016 Satori Resources completed six diamond drill holes totalling 1,568 meters. This surface exploration drilling was conducted by BlackHawk Drilling of Smithers, BC under the supervision of Peter Karelse. Analysis was completed at TSL Labs in Saskatoon, SK a fully accredited laboratory for geological analysis.

These holes were targeted to be under or near previous workings and intersected underground workings on a couple of occasions. The results as noted in the Satori news release of December 7, 2016 are noted in Table 10-1 and Table 10-2 below.

Hole-ID	From	То	Interval	Gold Assay	g/t x m	Vertical	Interpreted
	m	m	m	g/t		Depth m	Zone
TL16-01	349.70	362.80	13.10	10.88	142.70	322.00	Main Zone
	incl. 349.7	351.20	1.50	10.12	15.10	317.00	Main Zone
	incl. 353.7	358.70	5.00	24.05	120.20	322.00	Main Zone
	377.10	388.30	11.20	9.99	111.90	344.00	Main Zone
TL16-02	299.00	300.00	1.00	7.06	6.70	266.00	Main Zone
	* Hole stopped	d short of z	one, interse	ected undergro	ound worki	ngs	
TL16-03	193.00	194.20	1.20	3.80	4.60	161.00	Main Zone
	* Hole stopped	d short of z	one, interse	ected undergro	ound worki	ngs	
TL16-04	122.30	127.30	5.10	10.28	51.90	104.00	South Zone
	Incl.125.3	127.30	2.00	24.42	48.90	106.00	South Zone
	136.40	141.50	5.10	4.90	25.00	118.00	South Zone
	166.00	167.00	1.00	4.87	4.90	143.00	South Zone
TL16-05	18.30	19.40	1.10	5.56	6.20	20.00	South Zone
	170.30	173.30	3.00	4.57	13.70	143.00	South Zone
	184.60	185.80	1.20	4.18	5.00	155.00	South Zone
TL16-06	120.50	128.70	8.20	3.56	29.20	102.00	Main Zone
	Incl. 120.5	121.40	0.90	16.05	14.60	110.00	Main Zone

Table 10-1 2016 Drilling Assay Intercepts (December 7, 2016 news release)

HOLE-ID	LOCATION	LOCATION	LOCATION	LENGTH	AZIMUTH	DIP
	X	Y	Z			
TL16-01	2026.76	5101.03	2010.50	411.48	178	-71.91
TL16-02	2037.74	5093.99	2007.30	304.80	180	-67.31
TL16-03	2145.00	5051.84	2016.40	298.70	180	-65
TL16-04	2301.02	4756.71	2016.5	181.00	361	-71.6
TL16-05	2330.52	4730.91	2015	198.12	359	-64.4
TL16-06	2120.22	4994.23	2011.60	173.73	180.5	-65
	Total	Meters	1,567.83			

Table 10-2 Collar Locations and hole directions (December 7, 2016 news release)

II SAMPLE PREPARATION, ANALYSES AND SECURITY

Core logging, sampling and splitting was completed at facilities constructed for this purpose at the Tartan Lake Mine site and was undertaken by qualified contract geologists employed by Satori. The existing Tartan Lake Mine geological legend was used to differentiate and code rock units in the drill core.

II.I Drill Programs

The 2016 drill program produced 231 samples from six NQ-sized diamond drill holes

The drill core was oriented and measured in the tray and cut in half along the long axis of the core using an Husqvarna saw. One-half of the core was placed in plastic sample bags along with the sample tag and sealed with fibre tape; the other half was returned to the core tray for storage and future reference. The saw cutting operation had a continuous flow of clean water to aid in the cutting process and to clean the saw of possible contamination. The saws are cleaned entirely at regular intervals throughout the day while the cutting is taking place.

Mineralized zones containing a significant amount (i.e. 2 % or greater) of sulphide mineralization and / or altered (i.e. sheared, silicified) drill core sections and quartz \pm carbonate veins were sampled and assayed for gold. Weak and / or unmineralized sections adjacent to or between main mineralized zones were also sampled for 2 metres either side of the identified zones. The majority of sampled intervals ranged from 0.3 to 1.0 m.

Samples were stored in a secured location then transported by Gardwine North directly to TSL Laboratories Inc. ("TSL") in Saskatoon, Saskatchewan for standard fire assay / gravimetric finish for gold analysis and geochemical and / or fire assay for silver.

Samples were shipped to TSL in Saskatoon, Saskatchewan, an ISO 9001:2000 and ISO 17025 accredited laboratory, for analysis. TSL protocols include fire assay/ Gravimetric for Au. The minimum and upper detection limits for Au are 0.03 g/t -100% under this protocol. The Ag assay was undertaken using HCL-HNO3 /AA with a lower detection limit of 0.2 and an upper detection limit of 50 ppm. Ag assays that exceeded the upper limit was rerun using HNO3-HF-HClO4-HCL/AA. This assay method has a lower detection limit of 2 g/t and an upper detection limit of 1000g/t.

II.2 Sample Preparation

Samples received by the laboratory undergo sorting and drying prior to preparation. Core and rock samples are crushed using a primary jaw crusher to a minimum 70 % passing -10 mesh. A finer crush is then performed through a roll crusher, obtaining a crushed reject at a minimum 95 % passing -10 mesh. Equipment undergoes cleaning with compressed air and brushes between each sample run. In order to verify compliance with laboratory quality control ("QC") specifications, the laboratory performs a screen test at a minimum of: the start of each batch; a change in operator; a change in machine or environmental conditions; or, if the nature of the sample appears different. All screen data are recorded in a QC book which is open for examination by the client.

A representative split sample is obtained by passing the entire reject sample through a riffle splitter and by alternating catch pans before taking the final split. The pulp size is 250 g. The remaining reject material is stored. The sub-sample thus obtained is pulverized to a minimum 95 % passing -150 mesh. Checks on screens are performed at a minimum of: the start of each batch, a change in operator, a change in machine or environmental conditions, or if the nature of the sample appears different. The client records all screen data in a QC book, which is open for examination. Pulverisers undergo cleaning with silica sand when required, or between each sample if requested.

II.3 Analytical Procedure

Gold is analyzed by fire assay ("FA") with a gravimetric finish ("FA/Grav") on a 30 g aliquot. Samples analyzed by screen metallics get reported on separate certificates (referenced to original certificate on the cover page).

The detection limit for gold using fire assay is 0.03 g/t.

If a request is made for screen metallics due to the presence of visible gold, they are performed on the total sample including the reject material. The sample is screened at 150 mesh, following which the entire sample plus fraction (+150 mesh) is assayed using FA/Grav and the minus fraction (-150 mesh) is assayed using FA/Grav (1 assay tone or 2 assay tone charge) in duplicate. Duplicate minus fractions are averaged before being entered into the calculation. Results are reported for the plus and minus fractions as well as the weighted average for the sample.

For the base metal procedure for silver, a 1 g sample is digested with 3:1 HCl / HNO3 acid then diluted. The solution is analyzed by AA spectrometry. The silver detection limit is 0.2 g/t.

II.4 Quality Control at TSL

TSL uses both certified reference material and certified in-house standards. Standards are inserted approximately every 20 samples, as well as 2 pulp duplicates and I geological blank in every batch with FA/AA work. Three pulp duplicates undergo FA/Gravity work. Results from all internal QC samples, and repeats, get reported to Satori.

PK Geological considers the data satisfactory for use in a resource estimate.

12 DATA VERIFICATION

The Tartan Lake Project was visited most recently by Mr. Peter Karelse P.Geo., a "qualified person" for NI 43-101, in Oct 2016. Prior to that Mr. Karelse visited the Property on Aug 25, 2016, Sept 29 to Oct 06, 2016 and again Oct 26, 2016 to Nov 23, 2016. A tour of the existing infrastructure i.e. stockpiles, ramp portal and drill sites were undertaken during these visits and core handling, core logging and sample protocols were observed. Coordinates for some historic drill hole collars were collected by GPS during the first site visits.

12.1 Satori QC Program

Satori commenced with a QC program with the addition of 3 certified reference materials and a certified pulverized blank to the sample stream. Three reference materials with grades varying from a low of 0.74 g/t Au to a high of 9.5 g/t Au were purchased and inserted I in every 20 samples irrespective of grade. One pulverized blank was inserted into the sample stream every 40 samples.

12.2 Performance of Blank Material

The blank material for the 2016 program was from CDN Resource Labs as pre-packaged pulverized material certified to be free of gold. There were 6 blank samples inserted in the sample stream. The results of the blank material demonstrate that contamination at the analytical level were not an issue.

12.3 Performance of Certified Reference Materials

The reference materials for the 2016 program were purchased from CDN Resource Labs in Langley, BC. Three reference materials with grades varying from a low of 0.362 g/t Au to a high of 7.19 g/t Au were used during 2016 drilling.

For this program, there were slightly over 12 certified reference materials analyzed. The reference materials performed very well, demonstrating accuracy at the analytical level.

PK Geological considers the data satisfactory for use in a resource estimate.

13 MINERAL PROCESSING AND METALLURGICAL TESTING

13.1 Mill History

The Tartan Lake process plant entered commercial production in 1987 and was initially designed and constructed as a 250t/d concentrator to process gold bearing ore with a head grade of 12g/t Au. The metallurgical plant design was performed by Coastech Research Inc., in 1985 and 1986. The Mill throughput was increased to 450t/d in 1988 to compensate for lower mined average head grades ranging from 4 to 7 g/t Au (Hannon, P., et. al., 2012). The Mill ceased production in late 1989, due to a significant mechanical failure and the subsequent decline in gold price and was placed into care and maintenance.

13.2 Metallurgical Testwork

The Tartan Lake metallurgical review consisted of reviewing available plant design metallurgical testwork, monthly production reports and plant metallurgical optimisation reports.

The following plant design metallurgical testwork documentation was reviewed:

- Plant Metallurgy Design Review Report, Kilborn
- The following production and plant metallurgical testwork reports were reviewed:
- Cyanidation of Various Plant and Lab Products from the Tartan Lake Mine, Bacon, Donaldson & Associates Ltd., M89-073, Feb 1989
- Report on Mill Operations at Tartan Lake Mine, J.D Wright P.Eng., Report 582, Oct 1987
- Tartan Lake Mine Metallurgical Testing, Aug 1987
- Tartan Lake August 1989 Monthly Production Report, August 1989
- Cyanide Treatment Assessment, Melis Engineering Ltd., MEL Project No. 171, Dec 1988

This section summarises the metallurgical testwork and data relevant to the Tartan Lake plant.

13.2.1 Comminution

The plant Mill design was based on ore comminution testwork completed by Coastech Research Inc. in 1985 and 1986. Bond Work Index testing completed on crushed drill core returned results ranging from 14 kWh/t to 16.2 kWh/t (Kilborn), which suggests that the ore is hard. A 16.2 kWh/t BBMWi value was adopted for the Mill circuit design.

It is unknown how many core samples were tested during the design phase.

13.2.2 Gravity Circuit

At time of review there was no available metallurgical testwork or data available for the plant gravity circuit.

13.2.3 Flotation

Design

Flotation plant design testwork was completed on the gravity concentrate tailings and indicated high combined gravity and flotation Au concentrate recoveries between 96 to 98%, with the mass pull ranging between 4 and 7% of the original feed (Kilborn).

Five locked cycle flotation/cyanide tests completed for plant design purposes indicated good flotation recoveries with low flotation tailings assays between 0.5 g/t Au and 0.69 g/t Au (Kilborn), which responds to gold recoveries of 95.5 and 93.1 % respectively. Testwork recoveries listed here were based on a sample with a calculated average head grade of 12.20 g/t Au.

Design grind size sensitivity analysis was also performed with results suggesting the flotation recovery was not particularly sensitive to particle grind-size below a P80 of 210 μ m. A mill design P80 grind size of 210 μ m was adopted to ensure efficient flotation plant operation.

Production

Flotation circuit/Mill production data and average yearly gold recoveries are presented in section 13.3 of this report.

13.2.4 Leaching

As outlined in section 13.2.3, five locked cycle flotation/cyanide tests were completed in 1985 and 1986 for plant design purposes. The best and worst performing tests were excluded from the set of five, with the remaining three providing an average Au recovery of 93.7% (Kilborn), with an average cyanidation residue assay of 3.00 g/t Au. This analysis was performed on a sample with a calculated head grade of 12.20 g/t Au.

The plant was designed for a cyanide leaching time of 24 hours.

In late 1988, early 1989, poor cyanidation performance was experienced in the plant with high cyanide residue assays and subsequent low extractions. Both plant cyclone overflow (COF) and flotation concentrate (FC) samples were collected with cyanide Au recoveries independently bench tested for varying leach times. The results of this leaching testwork is summarised in Table 13-1 below.

Test Number	Sample	Reground % -200 Mesh	Gold Extraction %			NaCN Consumption	Cyanidation Residue Assay
		(75µm)	24hrs	48hrs	72hrs	(Kg/C)	(g/t Au)
I	FC	No, 51.5%	83.2	-	-	2.39	51.5
2	COF	No, 46.0%	85.6	-	-	0.80	0.99
3	COF	Yes, 71.9%	86.6	-	-	0.79	0.82
4	n/a	n/a	n/a	n/a	n/a	n/a	n/a
5	FC	No, 51.5%	86.5	90.4	91.3	3.09	26.6
6	FC	Yes, 78.6%	83.8	91.5	92.4	3.76	22.6

Table 13-1: COF and FC Cyanidation Testwork (Bacon, Donaldson & Associates Ltd., 1989)

This testwork suggested that the ore processed at the time of the metallurgical investigation required a longer leaching time than 24 hours. Increasing the leaching time by an additional 24 to 48 hours for both the flotation concentrate samples increased the Au recovery from 86.5/83.8% to 90.4/91.5% and 91.3/92.4% respectively.

The leaching circuit Au recovery as published in the monthly report for August 1989 was 92.5% (Granges Exploration Ltd., 1989). It is unclear whether the leaching time in the plant had been increased past 24 hours or whether the ore processed in Aug 1989 was significantly different than the ore processed when poor cyanidation recovery was experienced.

There has been no testwork cited to determine if the addition of lead nitrate to the flotation concentrate/cyclone overflow would improve the leaching kinetics.

13.2.5 Merrill Crowe Circuit

In the original design, a Merrill Crowe circuit was implemented to recover Au from the pregnant leach liquor.

The original plant design Au recovery was reduced from 93.7% to 90% to account for soluble losses in the Merrill Crowe circuit, however it was reported that soluble losses greater than 0.5-1.0% could be avoided through proper filter washing. Two stages of filter washing were reported to be included within the Tartan Lake plant.

It is unclear as to why a Merrill Crowe circuit was selected over a carbon-in-leach (CIL) or Carbon-in-Pulp (CIP) circuit; however this could be due to the fact that the Merrill Crowe process was used almost exclusively in industry until carbon adsorption technology emerged in the late 1970's and came into prominence in the 1980's.

Merrill Crowe is typically employed when the feed ore has high silver (Ag) content or when there is a high silver to gold ratio in the feed. Plant flotation concentrate head assay data from cyanidation testwork (Bacon, Donaldson & Associates Ltd., 1989) suggests that neither was the case as shown in Table 13-2 below.

Sample	Head Assay g/t Au	Head Assay g/t Ag
Plant Flotation Concentrate	312.42	27.29
Plant Cyclone Overflow	8.09	0.96

Table 13-2 Plant Sample Au and Ag Head Assay Data (Bacon, Donaldson & Associates Ltd., 1989)

13.2.6 Detoxification Circuit

A Hydrogen Peroxide (H_2O_2) detoxification circuit was employed at the Tartan Lake plant to reduce the residual cyanide level in the Merrill Crowe barren solution. Initial plant design testwork indicated that a 3 hour retention time, with a recommended minimum of two stages and a H_2O_2 dosage rate of 2kg/t ore would be required to reduce the residual cyanide level to an acceptable level.

In operation, the plant detoxification circuit treated barren bleed solution only while leached and flotation solids were left untreated.

During production, Melis Engineering Ltd., were engaged by Granges Exploration Ltd., to assess the efficiency and costs of the H_2O_2 and SO_2 /Air destruction process on Tartan Lake mill barren solution and re-pulped leach residue over concerns of high cyanide and copper levels in the tailings pond. H_2O_2 testwork was performed on-site while SO_2 /Air testing was completed off-site on collected plant samples. The collected SO_2 /Air samples had considerably higher CN_T (mg/L) and Cu (mg/L) levels than the H_2O_2 samples which were tested at a different time. A high level summary of the test conditions and results are shown in Table 13-3.

Sample	Barren S Treat	Solution ment	Slurry Treatment		
	SO ₂ /Air	H ₂ O ₂	SO ₂ /Air	H ₂ O ₂	
Feed CN _T (mg/L)	1350	414	1570	468	
Treated Liquid CN _T	0.54	0.9	17	1.8	
(mg/L)	0.54	0.7	1.7	1.0	
Feed Cu (mg/L)	327	157	430	147	
Treated Liquid Cu (mg/L)	1.0	0.9	3.8	I	
kg SO ₂ /kg CN _T	4.0	-	5.0 (3)	-	
kg CaO/kg CN _τ	3.1	-	4.0 (3)	-	
kg H ₂ O ₂ (100%)/kg CN _T	-	5.1	-	23.7 (2)	
kg CuSO₄.5H₂O / m³	-	0.20	-	-	
kg CuSO₄.5H₂O / t pulp	-	-	-	0.20	
kg H₂SO₄ (100%) / m³	-	0.8 (1)	-	-	
kg H₂SO₄ (100%) / t pulp	-	-	-	0.20 (1)	
Air, L/min.L reactor	1.0	-	1.0	-	
рН	9.6	10.5	8.5	10.5	
Time (mins)	180	13	180	2	

Table 13-3 Cyanide Treatment Test Conditions (Melis Engineering Ltd., 1988)

Notes: (1) Only required when pH > 10.5 (2) for 31% slurry make-up (with barren solution) (3) estimated figure

The testwork indicated that a similar treated effluent quality can be obtained with either process. Barren solution treatment could result in Img CN_T/L and Img Cu/L and the re-pulped slurry treatment could result in a treated liquid containing $2mg CN_T/L$ and I - 4 mg Cu/L.

The end-of-pipe tailings water quality with barren solution treatment only was estimated at 0.15mg CN_T/L and 0.75 mg Cu/L. The end-of-pipe tailings water quality with slurry treatment was estimated at 0.03mg CN_T/L and 0.11 mg Cu/L.

The SO₂/Air destruction method was assessed as the preferred treatment option due to significantly lower operating costs and reagent consumptions; however this option wasn't progressed due to the capital expenditure required and the testwork conclusion drawn that only the barren solution needed to be treated to achieve acceptable end-of-pipe tailings quality.

13.2.7 Ore Variability

It is not possible to confirm the variability of the resource, however some variability can be deduced, i.e. some plant feed ores potentially requiring longer leach times, etc. Any future testwork required to confirm the process flowsheet will need to be completed on ore samples representative of the resource and mining plan.

13.3 Production and Mill Au recoveries

Table 13-4 below summarises the Tartan Lake production history from 1987 to 1989 based on the published monthly production reports. During production in 1987 and 1988, low Mill Au recoveries of 69.0% and 70.0% (Hannon, P., et. al., 2012) were experienced, which was attributed to poor flotation concentrate cyanidation recoveries. As observed in the table below, the Mill recoveries improved later on, with a final production year average Au recovery of 85%.

Year	Tonnes of Feed	Gold Assay (g/t)	Ounces in Feed	Mill Recovery (%)	Recovered Ounces (Oz)	Tails Grade (g/t)
1987	56,419	4.03	7,310	69.0%	5,042	1.25
1988	95,912	6.28	19,221	70.0%	13,454	1.88
1989	100,912	6.28	20,375	85.0%	17,318	0.94
Total	252,527	5.78	46,905	76.4%	35,814	1.37

It is also worth noting that on two separate occasions during 1989, gold recoveries exceeded 90 % values – 91% and 90 % for the months of May and August respectively. These two data points along with greatly improved average gold recovery during 1989, can be credited to the significant process change – installation of the re-grind mill and ability to produce leach feed with a particle grind size (p80) of 75 microns.

There are potential alternatives to the flowsheet or processing circuits, i.e. whole of ore leach, substituting the Merrill Crowe circuit with a CIL/CIP, etc., which could potentially improve Mill Au recovery; however further testwork is required to confirm potential gains in order to justify the additional capital expenditure required.

13.4 Potential Optimisations and Future Testwork

Further testwork will be required in any future phase of project development to confirm the flowsheet.

Alternative processing methods to the comminution/gravity/flotation/leach/Merrill Crowe flowsheet may lead to higher recoveries and improved project economics. These alternatives are outlined in section 26.

14 MINERAL RESOURCE ESTIMATES

This resource estimate for the Tartan Lake Gold Deposit is an update to a resource estimate originally completed by MineTech International Limited ("MineTech") in 2010 for St. Eugene Mining Corporation Ltd. ("St. Eugene") and presented in a NI 43-101 Technical Report (Hannon, P., et. al., 2010). The same resource estimate was presented in an updated NI 43-101 Technical Report for both St. Eugene and Satori Resources Incorporated ("Satori") by MineTech (Hannon, P., et. al., 2012). The 2012 MineTech report was written to reflect the transfer of ownership of the Tartan Lake Property from St. Eugene to Satori, a spin-off company of St. Eugene.

The original resource reported by St. Eugene was estimated to contain an Indicated resource of 1.0 Mt grading 4.0 g/t Au for a total of 130,000 ounces, plus an Inferred resource of 1.9 Mt grading 3.9 g/t Au for a total of 240,000 ounces. The original resource is reported at a cut-off grade ("COG") of 2.0 g/t gold. The original resource is contained within five separate zones including the Main, West, South, South-HW and South-FW Zones and does not include material that was previously mined (Hannon, P., et. al., 2012).

The updated mineral resource presented in this report was estimated by Allan Armitage, Ph.D., P.Geol, ("Armitage" or "Author") of GeoVector Management Inc., independent Qualified Persons as defined by NI 43-101. The reporting of the updated resource estimate complies with all disclosure requirements for mineral resources set out in the NI 43-101 Standards of Disclosure for Mineral Projects (2011). The classification of the updated mineral resource is consistent with CIM Definition Standards - For Mineral Resources and Mineral Reserves (2014). Completion of the updated resource involved the assessment of a drill hole database, updated resource models and available written reports provided by Peter Karelse ("Karelse") P. Geo., an independent geologist and co-author of this report. Armitage has not visited the property. The effective date of the updated resource estimate is February 20th, 2017.

Inverse Distance Squared ("ID2") restricted to mineralized domains were used to estimate gold grades (g/t Au) into the block models. Indicated and Inferred mineral resources are reported in the summary tables in Section 14.8 (Table 14-1).

14.1 Drill File Preparation

In order to complete an evaluation of the Tartan Lake resource, a GEOVIA GEMS 6.7.3 software database was provided by Karelse and included a drill hole database with collar locations in "Metric Mine Grid" space, down hole survey data, assay data, lithology data and specific gravity data for 501 surface and underground drill holes representing 79,600 m (Table 14-1). This includes drill holes from the 2016 exploration program which consisted of 6 diamond drill holes totalling ~1,600 metres. The limited program was designed to verify the historic drill results, and test the extension of known gold mineralization.

The database contained 36,834 assays representing 22,329 m of core. The Tartan Lake Zone has been systematically drilled over a strike length of \sim 815 m and to depths of \sim 575 m below surface in the main zone, and \sim 275 m below surface in the south zone.

The drill hole database was extensively reviewed and validated by Karelse. Karelse reviewed the entire database which was checked for typographical errors in assay values. Verification of supporting information

on source of assay values was completed. Sample overlaps and gapping in intervals were also checked. Verifications were carried out on drill hole locations, down hole surveys, and lithologic information.

Armitage reviewed the database and only minor edits were made to the assay database. Gold assays with values below detection limit (<0.03, <0.01, <0.005 g/t) were given a value of one half the detection limit (0.015, 0.005, 0.0025 g/t). Few assays with a grade of 0.0 were given a value of 0.001. A statistical analysis of the assay database is presented in Figure 14-2.

Table 14-1 Summary of the drill hole data used in the Tartan Lake resource modelling

Number of surface and underground drill holes	501
Total meters of drilling	79,600
Total number of assay samples	36,834
Total number of specific gravity samples	185

Table 14-2 Summary of all drill hole assay data from the Tartan Lake drilling

Variable	Au (g/t)
Meters of core sampled	22,329
Average Sample Length	0.61
Minimum value	0.00
Maximum value	6.44
Mean	0.61
Median	0.52
Variance	0.09
Standard Deviation	0.29
Coefficient of variation	0.48
99 Percentile	1.52

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Figure 14-1 Isometric view looking northwest showing the drill hole distribution in the Tartan Lake deposit area.

14.2 Resource Modelling and Wireframing

Gold mineralization in the Tartan Lake deposit is quartz-vein hosted and associated with multiple sub-parallel steeply dipping and steeply plunging (70° west to northwest), east-west trending shear zones within mafic intrusive rocks (diorite).

For the 2017 resource estimate, a total of 15 three-dimensional (3D) wireframe grade control models were constructed and provided by Karelse. The 3D grade control models were built which involved visually interpreting mineralized zones from cross sections using histograms of gold values. Polygons of mineral intersections (snapped to drill holes) were made on each cross section and these were wireframed together to create contiguous resource models in GEOVIA GEMS 6.7.3 software.

The polygons of mineral intersections were constructed on 10 m spaced sections (looking east) with a 5 m sectional influence. The sections were created perpendicular to the general strike of the deposit. The grade control models were drawn using an approximate 0.6 g/t cut-off grade based on 1.5 m composited samples and a minimum mining width of 1.5 m. For those intersections that did not meet the 1.5 m requirement, the solid outline was drawn to take in waste from either side of intersections. The models were extended 40 m beyond the last known intersection along strike and down dip, or half way to a hole with no assay values, excepting in those areas where continuity of the solid outline was determined to be valid.

The modelling exercise provided broad controls of the dominant mineralizing direction. The Tartan Lake grade control models (Figure 14-2 to Figure 14-6) define east-west trending, steep north dipping ($75^{\circ} - 85^{\circ}$) to steep south dipping gold zones. The gold zones extend for approximately 625 m along strike and to depths of up to ~575 m.

A topographic surface and a surface representing the base of overburden were also provided by Karelse. The top of each grade control model was truncated by the base of the overburden which is defined by the depth of drill hole casing.

The Tartan Lake Mine was in production during the late 1980s, from May 1987 to November 1989 (Hannon, P., et. al., 2012). During that time, the mine produced about 47,000 ounces and recovered 36,000 ounces of gold in the mill from 253,000 tonnes of rock at a head grade of approximately 5.8 g/tonne (mill recovery of 76.4%). Mining losses and gold in the tailings amounted to over 10,000 ounces. There is developed tonnage on the 90, 154, 200, 260 and 304 Levels (metres below surface). These stopes are accessed by a 4.3 m high by 4.54 m wide decline which is approximately 2,100 m long and has a slope of approximately 15%. Stopes were developed from a series of crosscuts off the decline.

Wireframe 3D models of the five stopes were created by Karelse and provided to the Author (Figure 14-7 to Figure 14-9). These 3D wireframe models of the five stopes were used to extract those portions of the deposit that have been mined out from the total resource.



Figure 14-2 Plan view (Metric Mine Grid space) showing the Tartan Lake 3D grade control models and drill hole locations.



Figure 14-3 Isometric view looking west showing the Tartan Lake 3D grade control models and drill hole locations. The top of each grade control model was truncated by the base of overburden.

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Figure 14-4 Vertical section 2000E (looking east) showing drill traces with histogram of gold, topography, overburden and 3D grade control models.



Figure 14-5 Vertical section 2050E (looking east) showing drill traces with histogram of gold, topography, overburden and 3D grade control models.



Figure 14-6 Vertical section 2100E (looking east) showing drill traces with histogram of gold, topography, overburden and 3D grade control models.

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Figure 14-7 Underground workings in the Tartan Lake Deposit.



Figure 14-8 Underground workings in the Tartan Lake Deposit Main Zone with respect to the resource models, looking south



Figure 14-9 Underground workings in the Tartan Lake Deposit Main Zone with respect to the resource models, looking north

14.3 Composites

The assay sample database available for the current resource modelling totalled 36,834 samples representing 22,329 metres of core (Table 14-2). The vast majority of the sample lengths were 1.0 m or less. Average length of the sample intervals is 0.60 meters, within a range of 0.01 meters to 6.44 meters. Of the total assay population ~47 % of the samples are 0.5 m or less (Figure 14-10 and Figure 14-11); 43% of samples are between from 0.5 and 1.0 m in length.

To minimize dilution and over smoothing due to compositing and for geostatistical analysis and variography a composite length of 1.0 m was chosen as an appropriate composite length for the resource estimation. Figure 14-11 shows the relationship between assay length and gold grade. As can be seen higher grade assays are typically shorter in length. For this reason, it was decided to composite the assay data prior to carrying out the capping analysis.

Composites were generated starting from the collar of each hole and totalled 78,339. For the current resource estimate the composites were domained into mineralization and waste based on whether they intersected the individual 3D grade control models. A total of 5,654 composite sample points occur within the grade control models (Table 14-3). These values were used to interpolate grade into their respective resource blocks.



Figure 14-10 Sample length histogram for assay samples from the Tartan Lake drilling.



Figure 14-11 Assay sample length vs assay sample grade
Table 14-3 Summary of all drill hole assay and composite data from within the Tartan Lake 3D grade control models

Variable	Assays Au (g/t)	Composites (Au g/t)
Total # of samples	8,378	5,654
Average Sample Length	0.55	1.00
Minimum value	0.00	0.00
Maximum value	644	200
Mean	4.23	2.92
Median	0.41	0.46
Variance	416	86.9
Standard Deviation	20.4	9.3
Coefficient of variation	4.83	3.20
99 Percentile	58.6	41.2

14.4 Grade Capping

A statistical analysis of the composite database within the Tartan Lake 3D grade control models (the "resource" population) was conducted to investigate the presence of high grade outliers which can have a disproportionately large influence on the average grade of a mineral deposit. High grade outliers in the composite data were investigated using a histogram plot (Figure 14-12) and a cumulative probability plot of the data (Figure 14-13). Examination of the plots indicates there is only one sample population present.

After review it is the Author's opinion that capping of high grade composites to 55 g/t gold (99.3 percentile) to limit their influence during the grade estimation is necessary. A total of 31 samples ranging in grade from 55.8 g/t to 199.5 g/t gold were capped to 55 g/t. A summary of the capped composite data from within the 3D grade control models is presented in Table 14-4.



Figure 14-12 Composite sample grade histogram plot for gold from within the Tartan Lake 3D grade control models; selected capping value as illustrated.



Figure 14-13 Cumulative frequency plot for gold from within the Tartan Lake 3D grade control models; selected capping value as illustrated.

Variable	Composites (Au g/t)
Total # of samples	5,654
Average Sample Length	1.00
Minimum value	0.00
Maximum value	55.0
Mean	2.7
Median	0.46
Variance	46.6
Standard Deviation	6.83
Coefficient of variation	2.53
99.6 Percentile	41.2

 Table 14-4 Summary of capped composites from within the Tartan Lake 3D grade control models.

14.5 Specific Gravity

There is limited specific gravity (SG) data available from the Tartan Lake Zone drill database. A total of 185 samples were collected from drill core during the 2011 drill program. SG values of the 185 samples ranged from 2.66 to 3.21 and averaged 2.89 (Figure 14-14). Of the 185 samples, 6 samples occur within the resource models and averaged 2.86. None of these samples were mineralized. A total of 17 samples were collected from mineralized material (>= 0.5 g/t Au, average of 3.2 g/t Au) from outside of the resource models. The average SG of the 17 samples ranged from 2.77 to 3.02 and averaged 2.88. None of the 17 mineralized samples were collected from within the 12 resource grade control models.

Although the SG database is very limited and may not be representative of the Tartan Lake mineralization it was decided that an SG value of 2.85 be used for the current resource estimate. It is strongly recommended that additional SG samples be collected from core from historic drilling of the Tartan Lake mineralized zones. It should be noted that an average SG of 2.85 was used to estimate resources for deposits at the nearby Seabee gold operation in east central Saskatchewan (Skanderbeg, 2013). Gold mineralization in some deposits of the Seabee gold operation are similarly quartz-vein hosted and associated with shear zones within the mafic meta-volcanic and mafic intrusive rocks (diorite) that make up the host rock for Tartan Lake.

An SG of 2.9 was assigned to the waste model and an SG of 1.7 was assigned to an overburden model (unconsolidated sediments).



Figure 14-14 Specific gravity versus gold grade (g/t) for samples collected during the 2011 drill program.

14.6 Block Modelling and Grade Estimation

The Tartan Lake grade shells were used to constrain composite values chosen for interpolation, and the mineral blocks reported in the estimate of the mineral resource. A block model in Metric Mine Grid space (origin: x - 1775, y - 4725, z - 2025, no rotation) (Figure 14-15) with block dimensions of $5 \times 1.5 \times 5$ metres in the x (east), y (north) and z (level) directions was placed over the grade shells with only that proportion of each block inside the shell recorded as part of the resource estimate (% Block Model) (Table 14-5). Block model size was designed to reflect the spatial distribution of the raw data (i.e., the drill hole spacing within each mineralized zone). A block size of $5 \text{ m} \times 1.5 \text{ m} \times 5 \text{ m}$ was selected to accommodate the more closely spaced drilling and the underground mining method. At this scale of the deposit, this still provides a reasonable block size for discerning grade distribution while still being large enough not to mislead when looking at higher cut-off grade distribution within the model.

A 3D semi-variography analysis of mineralized points was completed for the Tartan Lake mineralized domains. The analysis did not effectively design an acceptable search ellipse of sufficient quality to be used for geostatistical grade estimation. (Ordinary Kriging). However, the analysis did provide useful information regarding the data range and approximate search ellipse orientation. A search ellipse was interpreted based semi-variography analysis as well as on drill hole (Data) spacing, and orientation and size of the resource models.

Grades for Au (g/t) were interpolated into blocks by the inverse distance squared (ID2) method. Three passes were used to interpolate grade into all of the blocks in the grade shells. For Pass I the search ellipse size was set at $20 \times 20 \times 6$ in the X, Y, Z direction (approximate range based on variography); for Pass 2 the search ellipse size was set at $40 \times 40 \times 12$ and for Pass 3 the search ellipse size was set at $80 \times 80 \times 12$ (Table 14-5 and Figure 14-15). Blocks were classified as Indicated if they were populated with grade during

Pass I and 2 of the interpolation procedure. Pass 3 search ellipse size was set to assure all remaining blocks within the grade shell are assigned a grade. These blocks were classified as Inferred.

Grades were interpolated into blocks using a minimum of 8 and maximum of 12 composites to generate block grades during Pass 1 and Pass 2 (maximum of 4 samples per drill hole), and a minimum of 4 and maximum of 12 composites to generate block grades during pass 3 (Table 14-5 and Table 14-6 interpolation parameters.).

Model Name	Tartan Lake Deposit		t
	X (East)	Y (North)	Z (Level)
Metric Mine Grid	1775	4725	2025
Blocks	135	205	128
Block Size	5	1.5	5
Extent	675 m	307.5 m	640 m
Total Blocks	3,542,400		
Rotation	0°		

Table 14-5 Tartan Lake block model geometry.

Table 14-6 interpolation parameters.

	Tartan Lake Deposit		
Parameter	Pass 1	Pass 2	Pass 3
	Indicated		Inferred
Search Type		Ellipsoid	
Principle Azimuth	110°		
Principle Dip (Plunge direction)	70°		
Intermediate Azimuth	90°		
Anisotropy X	20	40	80
Anisotropy Y	20	40	80
Anisotropy Z	6	12	12
Min. Samples	8 8 4		4
Max. Samples	12 12 12		
Max. Samples per Drill Hole	4	4	No Max.



Figure 14-15 Isometric view looking south (A) and west (B) showing the resource block model, search ellipse (Inferred) and the Tartan Lake 3D grade control models.

14.7 Resource Classification

The updated Indicated and Inferred mineral resource estimates presented in this technical report were prepared and disclosed in compliance with all disclosure requirements for mineral resources set out in the NI 43-101 Standards of Disclosure for Mineral Projects (2011). The classification of the updated mineral resource is consistent with CIM Definition Standards - For Mineral Resources and Mineral Reserves (2014), including the critical requirement that all mineral resources "have reasonable prospects for eventual economic extraction".

A Mineral Resource is a concentration or occurrence of solid material of economic interest in or on the Earth's crust in such form, grade or quality and quantity that there are reasonable prospects for eventual economic extraction.

The location, quantity, grade or quality, continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling.

14.7.1 Inferred Mineral Resource

An Inferred Mineral Resource is that part of a Mineral Resource for which quantity and grade or quality are estimated on the basis of limited geological evidence and sampling. Geological evidence is sufficient to imply but not verify geological and grade or quality continuity.

An Inferred Mineral Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and must not be converted to a Mineral Reserve. It is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration.

An Inferred Mineral Resource is based on limited information and sampling gathered through appropriate sampling techniques from locations such as outcrops, trenches, pits, workings and drill holes. Inferred Mineral Resources must not be included in the economic analysis, production schedules, or estimated mine life in publicly disclosed Pre-Feasibility or Feasibility Studies, or in the Life of Mine plans and cash flow models of developed mines. Inferred Mineral Resources can only be used in economic studies as provided under NI 43-101.

There may be circumstances, where appropriate sampling, testing, and other measurements are sufficient to demonstrate data integrity, geological and grade/quality continuity of a Measured or Indicated Mineral Resource, however, quality assurance and quality control, or other information may not meet all industry norms for the disclosure of an Indicated or Measured Mineral Resource. Under these circumstances, it may be reasonable for the Qualified Person to report an Inferred Mineral Resource if the Qualified Person has taken steps to verify the information meets the requirements of an Inferred Mineral Resource.

14.7.2 Indicated Mineral Resource

An 'Indicated Mineral Resource' is that part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics can be estimated with a level of confidence sufficient to allow the appropriate application of technical and economic parameters, to support mine planning and evaluation of the economic viability of the deposit. Geological evidence is derived from adequately detailed and reliable exploration, sampling and testing and is sufficient to assume geological and grade or quality continuity between points of observation.

An Indicated Mineral Resource has a lower level of confidence than that applying to a Measured Mineral Resource and may only be converted to a Probable Mineral Reserve.

Mineralization may be classified as an Indicated Mineral Resource by the Qualified Person when the nature, quality, quantity and distribution of data are such as to allow confident interpretation of the geological framework and to reasonably assume the continuity of mineralization. The Qualified Person must recognize the importance of the Indicated Mineral Resource category to the advancement of the feasibility of the project. An Indicated Mineral Resource estimate is of sufficient quality to support a Preliminary Feasibility Study which can serve as the basis for major development decisions.

14.8 Mineral Resource Statement

Armitage has estimated a range of Indicated and Inferred resources at various gold cut-off grades for the Tartan Lake Deposit (Table 14-7) to demonstrate the sensitivity of the resource to COG. The updated resource is reported at a COG of 3.0 g/t gold. Using a 3.0 g/t gold COG the Tartan Lake deposit contains an Indicated resource of 1,180,000 tonnes containing 240,000 ounces gold at 6.32 g/t and an Inferred resource of 240,000 tonnes containing 37,000 ounces gold at 4.89 g/t. The current resource does not include that material that has been mined. Armitage believes that the Tartan Lake deposit as defined in this report has reasonable prospects for eventual economic extraction.

Cut-off Grade (Au g/t)	Tonnes	Au (g/t)	
		Grade	Ozs
	Indicate	d	
0.0 g/t	4,720,000	2.42	367,000
0.1 g/t	4,420,000	2.58	367,000
0.2 g/t	4,250,000	2.68	366,000
0.5 g/t	3,710,000	3.02	360,000
1.0 g/t	2,890,000	3.66	340,000
2.0 g/t	1,820,000	4.97	290,000
3.0 g/t	1,180,000	6.32	240,000
4.0 g/t	830,000	7.55	201,000
5.0 g/t	610,000	8.68	169,000
Inferred			
0.0 g/t	1,210,000	1.92	75,000
0.1 g/t	1,130,000	2.05	75,000
0.2 g/t	1,090,000	2.12	74,000
0.5 g/t	920,000	2.45	72,000
1.0 g/t	740,000	2.86	68,000
2.0 g/t	450,000	3.74	54,000
3.0 g/t	240,000	4.89	37,000
4.0 g/t	140,000	5.93	26,000
5.0 g/t	80,000	6.86	19,000

 Table 14-7 2017 Resource Estimate for the Tartan Lake Deposit, February 20th, 2017

Note: Mineral resources that are not mineral reserves do not have demonstrated economic viability. All figures are rounded to reflect the relative accuracy of the estimate and numbers may not add up due to rounding. The updated resource does not include material that has been mined.

14.9 Model Validation

The total volume and tonnes of the blocks in the Tartan Lake block model, at a 0.0 cut-off grade value compared to the volume and tonnes of the 3D grade control models was essentially identical. The size of the search ellipse and the number of samples used to interpolate grade achieved the desired effect of filling the resource models and very few blocks had zero grade interpolated into them. Visual checks of block grades of gold against the composite data on vertical section (Figure 14-16 to Figure 14-18), plan section and in 3D view showed good correlation between block grades and drill intersections.

A comparison of the average gold composite grade with the mean block grade of the grade control models at a 0.0 COG was completed and is presented in Table 14-8. The composite and block data population distribution differ somewhat likely as a result of smoothing during grade interpolation.

For comparison purposes, additional grade models were generated using the inverse distance cubed weighting (ID3) and nearest neighbour (NN) interpolation methods. The results of these models are compared to the ID2 models at various cut-off grades in a series of grade/tonnage graphs shown in Figure 14-19. In general the ID2 and ID3 models show similar results and both are more conservative and

smoother than the NN model. For models well-constrained by wireframes and well-sampled (close spacing of data), ID2 should yield a very similar results to other interpolation methods such ID3 or Ordinary Kriging.

Based on the current block model, the mined out stopes total 235,000 tonnes grading 5.7 g/t for a total of 43,000 ounces. This indicates that the current block model (composites capped at 55 g/t Au) shows good agreement with the total of the material mined (see above).

Table 14-8 Comparison of Average Composite Grades (capped at 55 g/t Au) with Block Model Grades.

Zone	Variable	Total	AU (g/t)
Tartan Lake	Composites	11,772	2.64
	Blocks	94,641	2.69

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Figure 14-16 Vertical section 2000E (looking east) showing drill traces with histogram of gold, topography, overburden, 3D grade control models and resource blocks.



Figure 14-17 Vertical section 2050E (looking east) showing drill traces with histogram of gold, topography, overburden, 3D grade control models and resource blocks.



Figure 14-18 Vertical section 2100E (looking east) showing drill traces with histogram of gold, topography, overburden, 3D grade control models and resource blocks.



Note: Values do not include material that has been mined Figure 14-19 Comparison of Inverse Distance Squared ("ID2"), Inverse Distance Cubed ("ID3") & Nearest Neighbour ("NN") Models.

14.10 Comparison of 2017 and 2012 Mineral Resource Estimates

A comparison of the current Tartan Lake mineral resource estimate and the 2012 resource estimate (Hannon, P., et. al., 2012) is presented in Table 14-9. The updated resource shows some significant differences in the tonnes, grades and ounces by category. However, it should be noted that the total ounces for the resources are very similar; 344,000 ounces for the 2017 resource vs 370,000 ounces in 2012.

The difference in the 2017 resource estimate and the 2012 resource estimate is the result of several factors including the following:

- Revision of resource models resulting in a tighter control on higher grade mineralization and less internal waste
- Revised average specific gravity value used for the updated resource estimate; 2.85 for the 2017 resource estimate vs 2.80 in 2012
- Difference in capping value; 55 g/t Au for the 2017 resource estimate vs 30.9 g/t gold in 2012
- Indicated resources in the 2017 estimate were identified where sample intercept spacing was 40 metres or less, whereas for the 2012 resource Indicated resources were identified where sample intercept spacing was 20-25 metres or less (based on variography).

Table 14-9 Comparison of the 2012 and 2017 Tartan Lake Resource Estimates (at a 3.0 g/t Au COG)

Cut-off Grade (Au g/t)	Tonnes	Au (g/t)		
		Grade	Ozs		
	Indicated				
2017 Resource	1,180,000	6.32	240,000		
2012 Resource	620,000	5.12	102,000		
% Difference	+90%	+24%	+135%		
Inferred					
2017 Resource	240,000	4.89	38,000		
2012 Resource	1,040,000	5.27	177,000		
% Difference	-77%	-7%	-79%		

Note: All figures are rounded to reflect the relative accuracy of the estimate and numbers may not add due to rounding. Values do not include material that has been mined.

14.11 Disclosure

Armitage does not know of any environmental, permitting, legal, title, taxation, socio-economic, marketing or political issue that could materially affect the Mineral Resource Estimate. In addition Armitage does not know of any mining, metallurgical, infrastructural or other relevant factors that could materially affect the Mineral Resource estimate.

15 MINERAL RESERVE ESTIMATES

This is an early stage project and no mining economics are done on this project. Mineral reserves cannot be defined until a positive economic study is defined at the preliminary feasibility or feasibility level. There are no mineral reserve estimates stated on this project.

16 MINING METHODS

This is not an advanced stage property report and mining methods were not done.

17 RECOVERY METHODS

This is not an advanced stage property report and recovery methods were not done.

18 PROJECT INFRASTRUCTURE

This is a former mining operation and there is some former mining infrastructure including the former mill building, mine portal, flooded underground workings and tailings impoundment. They have not been used in decades and are in poor condition, but can be reconditioned for future use.

The site includes the following:

- 450 tpd mill complex
- 2,100 metres of ramp to about 315 meters below surface plus 6 Levels of trackless mine development
- Developed stoping areas
- Ventilation raise to surface
- Site surface mobile equipment (stored indoors)
- Access road
- Hydroelectric power connection for 450 tpd mill and mine



Photo 18-1 Crusher building (Source Satori, 2017)

Details on the infrastructure required for future mine operation have not been determined.

19 MARKET STUDIES AND CONTRACTS

This is not an advanced stage property report and market studies were not done.

20 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

There have been no environmental studies done by Satori on the Tartan Lake project. There is a historic database of environmental data from before mining in 1987 that can be used to support future sampling. To reopen there will be future environmental sampling and studies plus closure plans and more required.

The permit for the tailings facility will need to be reissued by the Province of Manitoba to operate. There are a number of other permits required prior to operating as a mine.

Prior to re-opening as a mine an environmental consultant will be required to support Satori in its sampling programs and permit applications.

The process of community and social impact communication has not been initiated on the Tartan Lake.

21 CAPITAL AND OPERATING COSTS

This is not an advanced stage property report and costs were not done.

22 ECONOMIC ANALYSIS

This is not an advanced stage property report and economic analysis was not done.

23 ADJACENT PROPERTIES

The project is surrounded by claims of other operators on the west and south and open to the north and east. HUDBAY and Copper Reef Mining Corporation are the owners of the surrounding claim blocks. Generally they have historically targeted the base metal projects regionally. MP is not aware of any significant projects in the adjacent area. See Figure 4-1.

HUDBAY has the property that is to the west and Copper Reef Mining Corporation has the claims to the south and southeast. It is MPs understanding that these properties are generally looking for the base metal deposits and are not gold primary projects.



Figure 23-1 Claim Map including surrounding claims (source: Satori, 2017)

24 OTHER RELEVANT DATA AND INFORMATION

This is no other relevant data that MP is aware of that should be included in this report.

25 INTERPRETATION AND CONCLUSIONS

25.1 General Conclusions

The following conclusions were determined:

The Tartan Lake gold deposit contains a significant underground estimated mineral resource as summarized in Table 25-1. It should be noted that within the context of the entire Satori land holdings in the area, the Tartan Lake deposit occupies only a small portion of this holding. Therefore there remains a significant potential for further expansion of the resource on a regional basis.

Infill drilling targeting the areas defined as Inferred by the current resource model may improve Mineral Resource classification.

Mineralization at the grade levels used in this resource estimate demonstrated acceptable continuity over a strike length of 400 m and to a depth of ~575 m and remains open in all directions. The size and geometry of the underground mineral resources are limited by the current drilling data. Karelse considers that there is strong potential to extend the gold mineralization down dip at depth and along strike with additional delineation drilling.

Satori's current resource for the Tartan Lake gold deposit is of sufficient merit to justify undertaking additional property wide resource identification and additional metallurgical studies aimed at completing the characterization of the context of the gold-rich sulphide mineralization.

25.2 Mineral Resource Estimate

Cut-off		Go	ld	
Grade (Au g/t)	Tonnes	Grade (g/t)	Troy Ounces	
Indicated				
3.0 g/t	1,180,000	6.32	240,000	
Inferred				
3.0 g/t	240,000	4.89	37,000	

 Table 25-1 2017 Resource estimate for the Tartan Lake Deposit, February 20th, 2017

Note: Mineral resources that are not mineral reserves do not have demonstrated economic viability. All figures are rounded to reflect the relative accuracy of the estimate and numbers may not add up due to rounding. The updated resource does not include material that has been mined.

25.3 Metallurgy

Plant design metallurgical testwork and operational report data has been reviewed as part of the metallurgical assessment. While the available data is limited, operational results suggest that with a flowsheet similar to the optimised flowsheet in 1989 (i.e.: with the inclusion of the re-grind mill) an overall gold

recovery ranging from 85 to 90 % could be expected. However, there is a potential to increase gold recovery by evaluating modern processing methods alternatives, such as:

- Replacement of the comminution/gravity/flotation/leach circuit with a comminution/gravity/CIL circuit to minimise potential gold losses in the flotation circuit and thus maximise gold recoveries.
- Replacement of the Merrill Crowe circuit with a CIL/CIP circuit to improve gold recoveries, lower capital and operating expenditure, and simplify the water balance around the plant
- Modify the comminution circuit to produce a primary ball mill product P80 particle grind size of 75um and potentially reduce capital cost, simplify operation and improve flotation recovery

26 RECOMMENDATIONS

Recommendations are presented related to each QPs responsibility.

26.1 General Recommendations

In the opinion of the authors, the results noted in the NI 43-101 technical report indicate that the compliant updated mineral resources at the Tartan Lake site remain open in all directions. A drilling program with the and further defining and updating of the resource base is recommended. In addition it is recommended that a two phase IP program be undertaken to more clearly define the potential of additional mineral occurrence elsewhere on the property. Historically, both limited drilling and surface sampling programs have demonstrated that a potential for additional significant mineral occurrences exists on the property.

- The completion of a two phase IP program commencing on the western extent of the property, covering the known resource and continuing to the east flowing the assumed projection of the major deformation zone that transects the property. The survey will consist of 42 line kilometres, at 100 metre spacing with a nominal line length of 1.5 kilometres.
- Approximately 6,250 m of drilling from surface locations should be allocated for upgrading the existing resource and investigating any resultant IP anomalies from the recommended IP survey above.
- Complete an environmental baseline study and conduct environmental permitting.

26.2 Resource Estimation

With respect to future resource estimates for the Tartan Lake deposit, it is recommended that infill drilling be completed in the remaining areas of inferred resources by reducing the drill spacing in mineralization to less than 30-40 m so that these resources can be upgraded to Indicated. Detailed down-hole surveying should be completed on all future drill holes.

It is strongly recommended that specific gravity measurements of mineralization and waste be completed on core from all future drill holes. Measurements should be completed at 20 m intervals for every hole with additional samples collected in mineralized zones. If possible additional specific gravity data should be collected from historic drill holes.

26.3 Metallurgical Testing

As outlined in section 13, the proposed process flowsheet is based on the limited metallurgical testwork and operational reports reviewed. The reports suggest there were some discrepancies between plant operation and the metallurgical design as the designed gold recovery of 90% was achieved post the regrind mill installation upgrade in 1989, compared to the average yearly plant gold recovery that was 85%.

A metallurgical testwork program should be developed for the next project phase to confirm the gold recoveries mentioned in section 25 of this report as well as explore other process alternatives (also

mentioned in the same section) in order to maximise returns of the Tartan lake deposit. Recommended testwork should include:

- Comminution testwork;
- Gravity, flotation, leaching and carbon adsorption testwork to determine:
 - Grind-size flotation sensitivity;
 - Assess CIL gold recovery;
 - \circ Air vs O₂ sparging and lead nitrate addition on leach kinetics;
 - Assess alternate flowsheet options;
- Ore variability testwork;
- Thickening and filtering testwork;
- Air/SO₂ cyanide destruction testing;
- Pressure oxidation or Albion Process[™] technology testwork on flotation tailings if a high level economic analysis shows these technologies to be viable.

Samples that are obtained and tested need to be representative of the ore body within the proposed updated Tartan Lake mining plan.

26.4 Budget

The suggested budget for the next stage of work is:

Activity	Comments	Cost
Drilling	6250 m at \$150/m (all inclusive)	\$937,500
Assaying	of 2,000 samples at \$30 / sample	\$60,000
IP Survey	42 line kilometres at \$2500/day 20 days	\$150,000
	(includes report)	
Metallurgical	Update the flow sheet and review new	\$200,000
	technologies	
Subtotal		\$1,347,500
Contingency	(~10%)	\$135,000
TOTAL 2017 PROPOSED BUDGET		\$1,482,500

27 REFERENCES

Bacon, Donaldson & Associates Ltd., 1989, Cyanidation of Various Plant and Lab Products from the Tartan Lake Mine; private report, dated Feb 17, 1989, file number M89-073

Coastech Research., 1987, Tartan Lake Mine Metallurgical Testing, dated 31st Aug 1987

Fedorowich, J., Stauffer, M. and Kerrich, R., 1991, Structural Setting and Fluid Characteristics of the Proterozoic Tartan Lake Gold Deposit, Trans-Hudson Orogen, Northern Manitoba. Economic Geology, Vol. 86

Granges Exploration Ltd., 1989, July 1989 Tartan Lake Monthly Production Report, dated 30th Aug 1989

Hannon, P., Roy, D., 2010, Technical Report on the Tartan Lake Gold Mine Project for St. Eugene Mining Corporation Ltd., September 23, 2010, MineTech International Limited, 160 p.

Hannon, P., Roy, D., Butt, S., 2012, Updated Technical Report for St. Eugene Mining Corporation Ltd. and Satori Resources Incorporated on the Tartan Lake Gold Mine Project, January 18, 2012, MineTech International Limited.,

Kilborn, Plant Metallurgy Design Review Report, p. 6471 071 - 6571 082

Melis Engineering Ltd., 1988, Cyanide Treatment Assessment, Dated 7th Dec 1988, MEL Project No. 171

Poulsen, K., Robert, F., and Dube, B., 2000, Geological Classification of Canadian Gold Deposits, GSC, Bulletin 540

Skanderbeg, B., 2013, Mineral Resource and Mineral Reserve Estimate, Seabee Gold Operation Saskatchewan, Canada, 2012 Year End NI 43-101 Technical Report for Claude Resources Ltd, December 23rd, 2013, 75p.

Trinder, I., Leroux, D., 2008, Report on the Tartan Lake Property, Flin Flon Area, Manitoba, Canada for St. Eugene Mining Corp Ltd, October 7, 2008

Wright J.D. P.Eng., 1987, Report on Mill Operations at Tartan Lake Mine, dated Oct 23, 1987, Report 582

Manitoba STEM, 2006, Manitoba Mineral Inventory File No. 0681 http://www.manitoba.ca/iem/min-ed/mbhistory/mininv/681.htm

Climate data: <u>http://en.climate-data.org/location/12545/</u>