Preliminary Economic Assessment for the La Blache Property, Quebec, Canada

Technical Report for NI 43-101

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1. SUMMARY

This Technical Report (the "Report) was prepared by ERM Consultants Canada Ltd. (ERM) for Temas Resources Corporation ("Temas" or "Company") to disclose a Mineral Resource Estimate (MRE) and a Preliminary Economic Analysis (PEA) for the La Blache Property ("La Blache" or the "Property"). The MRE and PEA in this report follow CIM Definition Standards for Mineral Resources and Mineral Reserves (CIM 2014), CIM Best Practice Guidelines, and National Instrument 43-101 (NI 43-101) standards and are based upon exploration drilling up until the fall of 2022. The results of this Report have been disclosed in the Company's February 7, 2024 news release.

Report author, Mr. Pierre-Luc Richard P.Geo. (QP), visited the Property on October 21, 2022 for a review of exploration methodology, sampling procedures, quality assurance and control (QAQC) procedures and to conduct an independent check sampling of mineralized drill core intervals selected from drill holes. Mr. Richard also visited Magnor's warehouse in La Baie on November 25, 2022.

As of March 27, 2024, the property comprises 171 non-contiguous, map-designated mining claims covering a total area of 9,414 hectares. The main Iron-Titanium-Vanadium oxides mineralization reported here is the Farrell-Taylor deposit.

The PEA described herein is preliminary in nature and is partly based on Inferred Mineral Resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves, and there is no certainty that the preliminary assessment based on these mineral resources will be realized. However, it is the Authors' opinion that continued work on the Property is merited.

Additional drilling to improve resource delineation and increase the confidence level of the deposit to Indicated Mineral Resource classification should be performed.

Ongoing metallurgical characterization and testing as well as market studies are also warranted in order to better define potential buyers of the concentrate products produced by La Blache mining and milling operations. Better definition of the best and most likely potential clients for those concentrate products would appear to be required knowledge for advancing this project to the Pre-Feasibility Study (PFS) level.

The size of the currently delineated La Blache mineral resource may potentially support a much larger mining project and production rate than assumed in this PEA. However, the capability of the local and/or global market to absorb the amount of concentrates that might be produced at La Blache must be fully assessed through market studies and analysis to obtain sufficient confidence regarding the selling price of the concentrate products at a later stage of study. Otherwise, the Property can be scaled down to suit market capacity.

1.1 PROPERTY DESCRIPTION AND LOCATION

The Property lies in the Côte Nord (North Shore) region of Quebec, approximately 130 km northwest of the community of Baie-Comeau or 220 km northeast of the community of Saguenay-. The area surrounding the Property is uninhabited.

The coordinates of the approximate centre of the Property are NAD83 UTM Zone 19U / 459740mN; 5544970mE. It spans over NTS map sheets 22K03, 22K04, and 22F13.

As of March 27, 2024, the Property comprises 171 non-contiguous map-designated mining claims. The issuer, Temas Resources Corp., holds a 100% interest in 127 of these claims and currently is in the process of acquiring the remaining 44 through an option agreement. The total approximate area of the Property is 9,414 hectares.

Provincial highway 138 links Montreal and Natashquan and follows the north shore of the St. Lawrence River. Chem d'Auteuil connects to highway 138 and then links to a main artery used by the forestry industry and passes on the eastern side of the property, within a few kilometers of the property. Alternately, highway 385 goes north from 138 from Forestville to the west of Baie Comeau. Highway 389 links Baie-Comeau to the Labrador border is a third option for possible route to access the property using existing road. Forestry gravel roads run along both the eastern and western sides of the property just outside of the claims. Still, access to the Property is currently by helicopter only.

Forest fires have burned parts of the Property at different times. As a result, the Property lacks the usual logging activities and secondary roads found elsewhere in the region.

Mineral exploration of all types, including drilling, can be conducted year-round on the Property. When the ground and water bodies are frozen in winter, conditions are favourable for moving heavy equipment across lakes and rivers, causing less damage to the land. Adequate water sources are still available in winter.

Although tempered by numerous inland water bodies (e.g., lakes, reservoirs), the climate remains cold with extreme seasonal variations. Precipitation is not abundant, although fog and mist can be common in the autumn.

Over the course of the year, the temperature typically varies from -18°C to 21°C and is rarely below -27°C or above 26°C. The warm season lasts four months, from early June to late September, with an average daily high above 15°C. The hottest month of the year in the area is July, with an average high of 21°C and a low of 13°C. The cold season lasts three months, from early December to early March, with an average daily high below -3°C. The coldest month of the year in the area is January, with an average low of -17°C and a high of -9°C.

In terms of infrastructure and labour force, there is a sufficient labour force in the region as well as numerous geological and mining service firms, primarily in Sept-Iles, Saguenay, Port Cartier, and Labrador City. The city of Baie-Comeau, with 20,000 inhabitants, has the necessary infrastructure and workforce to support mining operations. All major services are available in Baie-Comeau.

Logging companies are active in the area. The region's economic and industrial development is based on mineral, forestry, and hydroelectric resources.

Although the Property is in a relatively isolated region, it benefits from active logging companies for access and lodging options.

1.2 PROPERTY HISTORY

Exploration in the area began in the 1950s with the discovery of iron and titanium mineralization. In 1951, the first titaniferous magnetite outcrops were discovered in the anorthosite of Schmoo Lake (GM02209-A, 1952) by Anglo-Canadian Pulp and Paper Mills, which eventually became Bersimis Mining. From 1951 to 1954, Bersimis Mining conducted aeromagnetic and "dip-needle surveys" geological mapping, surface sampling, assaying and metallurgical test work (GM02209-B and GM02671, 1953). Four mineralized lenses were uncovered over 15 km: Hervieux-West, Hervieux-East, Schmoo Lake and La Blache East (GM064).

In 1954, the Ministry of Natural Resources ("MRNFQ") visited three claim blocks held by Bersimis Mining (GM03107, 1955). The MRNFQ published a report and map jointly with Bersimis Mining that located and described the Hervieux-East and Hervieux-Ouest occurrences (RP374), revealing the presence of medium- to coarse-grained magnetite in anorthosite.

Prospecting Geophysics completed a ground magnetic survey in 1959 (GM08681, 1959). Bersimis Mining drilled 20 holes in 1964, intersecting significant iron and titanium (more than 45% Fe and 15% TiO_2.).

The Lac La Blache area was mapped at a regional scale during the MRNFQ's Grenville Project in 1968- 1969 when the name of La Blache Anorthosite Pluton first appeared on published maps.

In 1976, SOQUEM Inc. undertook a large exploration program, the Manic Project, covering 34,700 km^2, including lake-bottom sediment geochemistry, airborne spectrometry and a geological survey. Following this campaign, SOQUEM outlined 66 areas of interest for base metals and other minerals without retaining the La Blache occurrence.

In 1980, three concession blocks totaling nine claims were staked by Camchib Resources covering the Hervieux-West, Hervieux-East and Schmoo Lake occurrences. Camchib concluded that the titaniferous magnetite occurrences at La Blache represented an important source of titanium and iron and possibly chrome and vanadium.

In 1982, the three claim blocks were explored by Services Exploration, which completed a geological and dip needle survey at Schmoo Lake but failed to discover any massive titaniferous magnetite.

Metallurgical studies of the ilmenite mineralization were performed in 1992 at the Hervieux-West occurrence as part of the claims then owned by Gaspésie Société d'Exploration Pétrolière et Minière ("Gaspésie Société"). The testwork, completed by BHP-UTAH, produced a heavy mineral concentrate of ilmenite containing 46% to 50% TiO_2.

The Lac La Blache area was mapped in 2000 by the MRNFQ (RG2002-01). The La Blache Anorthosite was represented on the new geological map (unit mPbla1) as well as iron and titanium mineralization (mPbla5).

In 2005, the MRNFQ published new geochemical data from lake-bottom and stream sediment surveys covering the project. Digital data from airborne geophysical surveys were available in 2006.

In 2010, Nevado Resources Corporation secured the mining rights and conducted a 3,425 line-km airborne geophysical survey to measure the magnetic and electromagnetic responses over the property.

In 2011, Nevado drilled a total of 12,600 m, also in 2011, Neomet Technologies Inc. ("Neomet") of Dorval (Quebec) completed the first stage of metallurgical testing on samples of Farrell-Taylor massive oxide mineralization (Dupéré, 2012).

In 2012, Nevado completed a historical estimate for the Property (Dupéré, 2012). Further details on the key assumptions, parameters, and methods used to prepare the historical estimate are discussed in Section 6 of this Report. Using a cut-off grade of 5.1% TiO_2Eq, Dupéré (2012) disclosed a historical estimate of 101.7 Mt of inferred resources at 21.75% TiO_2Eq (41.76% Fe, 18% TiO_2, and 0.18% V. No pit shell was used to constrain the historical estimate and all material was declared as inferred resources, likely not meeting the criteria of reasonable prospects for eventual economic extraction. The report author considers this historical estimate as relevant to the Property but does not consider it reliable due to no pit shell being used to constrain the historical estimate. A QP has not done sufficient work to classify the historical estimate as current mineral resources and Temas is not treating the historical estimate as current mineral resources. The historical estimate should only be considered as indicative of the mineral potential of the La Blache Property, and has been superseded by the current mineral resource estimate for the Property disclosed in Section 14 of this Report.

1.3 GEOLOGY AND MINERALIZATION

The Property is located in the Cote-Nord region of Quebec, part of the geological Grenville Province. The Grenville extends for more than 2,000 km in length and skirts the North Shore of the St. Lawrence River. Varying in width from 300 km to 600 km, it forms the southeast segment of the Canadian Shield. The Grenville Province is separated from the Archean rocks of the Superior Province and the Proterozoic rocks of the Otish Basin by the Grenville Front. The tectonic fabric of the Grenville predominantly trends northwest to southwest.

The lithologies are divided into three major units: gneissic and intrusive rocks of varied composition belonging to the Hulot Complex, intrusive rocks that include the east-west trending La Blache Anorthosite Complex, and late cross-cutting gabbronorites, gabbros, diabase, mangerites, granites and pegmatites. The La Blache Anorthosite Complex is an almost circular batholith of 35 km by 20 km within intrusive rocks that extend for 100 km by up to 20 km. The anorthosites are cut by granites and pegmatites varying from a few centimetres to several metres, with multiple orientations.

Four major lenses of titaniferous magnetite (Hervieux-West, Hervieux-East, Schmoo Lake and Farrell-Taylor) are present as tabular bodies aligned over a 17 km long arc in the centre of the anorthosites. The lenses are almost parallel to the axis of the large antiform defined by the anorthosites that is slightly discordant with the lithologies. The geology is taken from descriptions contained in company and government reports. The lithologies are all of igneous origin, divided into anorthosites, garnet anorthosites, pegmatites, gabbroic anorthosite and titaniferous magnetites of the La Blache Anorthosite Complex.

The Property has been divided into four main mineralized areas. The Farrell-Taylor showing is the most advanced showing on the Property. Surface mineralization in outcrop is located roughly at the eastern extent of an east-west 3.5 km long by 1 km wide dual geophysical anomaly with a magnetic low, conductive western portion and a magnetic high, non-conductive in this eastern portion. The Hervieux-East Extension is the second most developed showing on the Property, defined as having good exposure and a strike of 200 m and a minimum width of 35 m. The mineralization is massive, medium- to coarse-grained magnetite and ilmenite in rounded outcrops. Located approximately 1 km north of the Hervieux-East Extension, the Hervieux-North Extension is a 30 m cliff of magnetite-ilmenite-bearing anorthosite. This prospect was discovered during the 2010 exploration campaign and has not received additional work since then. A sample taken in 2010 assayed 61.9% Fe_2O_3, 16.7% TiO_2 and 0.17% V_2O_5. The La Blache Lake West showing is a series of outcrops along a rounded knob, oriented NW-SE along the southern shore of Lac La Blache, approximately 4 km east-southeast of the Farrell-Taylor showing. It is described as 5 to 25% mixed disseminated and vein-type magnetite and ilmenite, in anorthosite covering a fairly large area southwest of the shore of Lac La Blache.

1.4 EXPLORATION

Temas has conducted limited exploration work on the Property, consisting only of drilling. Ground prospecting, geophysics, and drilling has been conducted by previous owners.

1.5 DATA VERIFICATION, SAMPLING PREPARATION, ANALYSIS, AND SECURITY

Pierre-Luc Richard, P.Geo., (QP) visited the Property site on October 21, 2022. Mr. Richard also visited Magnor's warehouse in La Baie on November 25, 2022, where core sampling took place and the core was being stored. The site visit included a visual inspection of the historical core, a visit to an operating drill rig, field tours, collar validation, resampling and discussions with Magnor geologists. The site visit also included a review of sampling and assay procedures, the QAQC program, downhole survey methodologies, and the descriptions of lithologies, alteration and structures.

The QP reviewed several sections of mineralized core while visiting the Property. With some rare exceptions, all core boxes were labelled and properly stored inside or outside. Sample tags were present in the boxes, and it was possible to validate sample numbers and confirm the presence of mineralization in witness half-core samples from the mineralized zones.

Drilling was underway during the QP's site visit, allowing Magnor personnel to explain the entire path of the drill core to the QP, from the drill rig to the logging and sampling facility and finally to the laboratory. All observations and explanations confirmed that the drilling program has been following best practices.

During the course of preparing this Report, a statistical analysis comparing recent and historical holes was conducted. The exercise consisted in comparing grade distribution between two holes (one from each population) in close vicinity. Overall results show reasonable grade comparison between the 2022 drill program and previous owner's drill programs.

The QP is of the opinion that the drilling protocols in place are adequate. The database for the La Blache Project is of good overall quality. Minor variations have been noted during the validation process but have no material impact on the current MRE. In the QP's opinion, the La Blache database is appropriate to be used for the estimation of Mineral Resources.

1.6 MINERAL PROCESSING AND METALLURGICAL TESTING

A two-phase test program was implemented to process approximately 830 kg of La Blache ilmenite material to recover high purity TiO_2 product at Process Research ORTECH's (PRO) facility in Mississauga, ON Canada. This program was conducted from September 2021 to June 2022.

PRO has worked on the development of ORF's innovative process for the production of high purity TiO_2 directly from ilmenite material. The ORF process is protected by several patents in North America and abroad. The process consists of atmospheric chloride leach followed by solvent extraction of Fe and Ti successively. A high purity Ti bearing strip solution is produced and can be used to produce Ti products dependent on the end market use such as high purity TiO_2 for pigments, pharmaceutical and food industries. Other products that can be obtained from the process are Fe_2O_3 which is of high purity and can be used for pigment or iron production.

A test program between Temas and PRO was established to produce a quantity of TiO_2 product from pilot operation for market evaluation. The program was conducted on a composite sample of the massive oxide material. The semi-massive oxide material was not part of this particular program. The program was divided into 2 phases:

- Phase 1 – Bench & Mini-Pilot Operation: Phase 1 of the Temas La Blache program involved a bench scale and mini-pilot test program to first evaluate the material available at the La Blache Property and its amenability to recovery using ORF's chloride process.
- Phase 2 – Pilot Operation: Phase 2 of the program involved pilot processing of the material using the process design criteria established in the Phase 1 - Bench & Mini-pilot operation. The main work elements in this pilot phase of the program included producing a quantity of TiO_2 product from pilot operation for market evaluation while monitoring impurity build up and assessing impact on pregnant strip solutions of Fe and Ti.

1.7 MINERAL RESOURCE ESTIMATES

A current Mineral Resource Estimate has been completed for the La Blache deposit using diamond drilling (DD) and assay data. A total of 53 diamond drillholes, with 45 drilled in 2010 and 2011, and 8 drilled in 2022, were used in the MRE disclosed in this Report. The assay results from 8,753 core samples taken from these drill holes were used to build the mineral resource database.

The geological model of La Blache was constructed using the implicit modeling technique and refined through manual adjustments. The geological model was guided by lithogeochemical data analysis, generating four main lithogeochemical units: (1) Anorthosite Unit, (2) Massive Oxide Unit (MO), (3) Semi-Massive Oxide Unit (SMO), and (4) Aplite. The Anorthosite unit was divided into two subunits for modeling: Anorthosite_Top and Anorthosite_Bottom. The Aplite Unit was not modeled due to its small size relative to the estimation block size of 10m x 10m x 10m.

Variography analysis was conducted for each of the main oxides (Fe_2O_3, TiO_2, and V_2O_5) in each estimation domain. A multi-pass estimation approach was employed to interpolate oxide grades using Ordinary Kriging. The estimation search was guided by correlograms. Dynamic anisotropy was used to generate estimates that follow the shape of the wireframes. The estimation results were globally validated by comparing the Ordinary Kriging estimate mean in each domain against the declustered mean, represented by the Nearest Neighbour interpolation mean, showing acceptable comparison results. The estimate was also locally validated using swath plots, demonstrating good local production of the oxide means when comparing Ordinary Kriging estimates against Inverse Distance and Nearest Neighbour estimates. Visual validation was also carried out to compare composites against Ordinary Kriging estimates and it showed acceptable comparison results.

Due to the sparse drilling relative to correlogram ranges, the MRE is assigned an Inferred Mineral Resource classification. The Inferred Resources were constrained by a pit shell that considered economic, geotechnical, and metallurgical parameters to prove reasonable prospects for eventual economic extraction.

The current Mineral Resource Estimate for the La Blache deposit as of 7 February 2024 is presented in Table 1-1. The resources are intended to be extracted through an open pit method, utilizing distinct cutoff grades for the MO and SMO domains.

TABLE 1-1 MINERAL RESOURCES STATEMENT BY ESTIMATION DOMAINS

Cut Off Grade (%)	Rock Type	Resource Category	Tonnage (Mt)	TiO_2 (%)	Fe_2O_3 (%)	V_2O_5 (%)	TiO_2 Eq. (%)
TiO_2 Eq. Cut-off 4.8%	SMO	Inferred	99.7	6.26%	21.98%	0.07%	8.34%
TiO_2 Eq. Cut-off 4.4%	MO	Inferred	108.8	17.83%	59.40%	0.32%	24.30%
Total			**208.5**	**12.29%**	**41.50%**	**0.20%**	**16.67%**

Notes:
1. The effective date of the Mineral Resource Estimate is 07 February 2024.
2. The Mineral Resource Estimate is reported at a cut-off grade of 4.4% of TiO_2 equivalent for the massive oxide domain and a cut-off grade of 4.8% of TiO_2 equivalent for the semi-massive oxide domain assuming the following prices and costs as supplied by TEMAS: TiO_2 price of US$2,200 per tonne, mining cost of US$5 per tonne mined, G&A cost of US$5 per tonne milled, shipping cost of US$35 per tonne milled, processing cost of US$25 per tonne milled, process recovery of TiO_2 of 71.8% for the massive oxide material and 65% for the semi-massive oxide material. Recovery of V_2O_5 was included in the TiO_2 Eq calculation of the Resource estimate in order to assess the full potential of the mineralization although not included in the economic analysis of the project.

$$TiO2\ Eq\% = TiO2\% + \frac{Fe2O3\% \times PriceFe2O3 \times RecFe2O3 + V2O5\% \times PriceV2O5 \times RecV2O5}{Price\ TiO2 \times RecTiO2}$$

3. Figures have been rounded to the appropriate level of precision for the reporting of the MRE.
4. Due to rounding, some columns or rows may not compute exactly as shown.
5. The MRE is stated as in situ dry tonnes. The density used is 4.42 t/m^3 for the massive oxide material and 3.28 t/m^3 for the semi-massive oxide material. All figures are in metric tonnes.
6. The MRE has been classified under the guidelines of the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Standards on Mineral Resources and Reserves, Definitions and Guidelines prepared by the CIM Standing Committee on Reserve Definitions and adopted by CIM Council (2014) and procedures for classifying the reported Mineral Resources were undertaken within the context of the Canadian Securities Administrators National Instrument 43-101 (NI 43-101).

7. Mineral resources that are not mineral reserves do not have demonstrated economic viability. The estimate of Mineral Resources may be materially affected by environmental, permitting, legal, title, taxation, socio-political, marketing, or other relevant issues.

1.8 MINING METHODS

The proposed mining method for the La Blache Property is traditional hard rock open pit mining.

The conceptual LoM mine plan for this PEA study targets a projected plant feed production rate of 7.8 million metric tonnes per year.

The mining strategy involves traditional load and haul techniques, employing hydraulic excavators, front shovels, and/or wheel loaders based on the topography and the primary production equipment available for the Property. Material transportation will involve hauling from the bench to the crusher, ROM stockpiles, or waste dump, depending on the nature of the material. Additionally, auxiliary equipment such as bulldozers, graders, and various vehicles is deployed for tasks related to maintenance, support, services, and utilities.

This mining approach envisions extracting a total of 486.1 million metric tonnes of material throughout the mine's lifespan, consisting of 107.7 million metric tonnes of mill feed and 378.4 million metric tonnes of waste, with an average strip ratio of 3.51.

1.9 RECOVERY METHODS

Process Research Ortech Inc. worked on the development of ORF's innovative process to produce high purity TiO_2 directly from ilmenite material. Temas owns the ORF patented chloride process for the treatment of the ilmenite material to final titanium dioxide product. The ORF process is protected by several patents in North America and abroad (US Patent No. 7,803,336 B2, Canadian Patent No. 2,513,309 and Australian Patent No. 2004291568).

1.9.1 PROCESS DESIGN CRITERIA

The process plant is designed to process 7.8 Mtpy of ilmenite material to produce 3.8 Mtpy Iron Oxide (Fe_2O_3) and 0.86 Mtpy Titanium Dioxide (TiO_2) and 3.51 Mtpy tailings residues. The ROM is calculated based on a combined 66.64% plant weight recovery Including 54.34% weight as Iron Oxide Concentrate and 12.30% weight Titanium Dioxide Concentrate and 33.36% weight as tailings residues.

A design factor of 10% is applied on nominal requirements to ensure that the process equipment has enough capacity to take care of the expected feed variation. This means the plant design has potential to increase production to 10% more than the nameplate nominal capacity 1,000 metric tonnes per hour, thereby meaning that the equipment design criteria was assumed to be 1,100 metric tonnes per hour of material throughput.

The process plant design is based on test work performed to date (Section 13) and from prior knowledge acquired in the processing of ilmenite material.

Both the dry portion of the plant (comminution) and the wet portion (concentrator) are designed at 80% utilization to allow for maintenance downtime.

The Iron content in the plant feed is 41.06%, while the Titanium content is 10.61%. In addition, there is 0.18% of Vanadium content, which might be extracted as a separate concentrate but for the purposes of this study the testwork performed focused on Iron and Titanium products only, presenting the Vanadium only as a payable contributor.

The final products grades were 99.5% for the Fe_2O_3 and 99.8% for the TiO_2.

1.9.2 PROCESS DESCRIPTION

The process consists of an atmospheric chloride leach followed by successive solvent extraction of Fe and Ti. A high purity Ti bearing strip solution is produced which can be used to produce Ti products dependent on the end market use such as: TiO_2 for pigments, pharmaceutical and food industries. Other products that can be obtained from the process are high purity Fe_2O_3, which can be used for pigment, or iron production. The ORF process employs commercially proven unit operations. The ORF process is a flexible process as it can be applied to a wide range of feed stocks especially those with Mg, V and Cr not treatable by current methods. It is also economically attractive as the ORF process requires lower capital and operating costs and offers an opportunity for early start up. In addition, the process is environmentally friendly as the reagents are recycled and the process residue is inert. The inert residue may be used for road fill. There is no need to handle chlorine and carbon containing chemicals at high temperature like in the existing plants in USA. Entire processing to end products can be done in one location to produce Ti materials with physical properties to match end user specifications.

1.10 PROJECT INFRASTRUCTURE

The focus of La Blache infrastructure will be to minimize both the timeline and the amount of pre-production capital required.

The Property will utilize the workforce primarily from Baie Comeau, which is the nearest city to the site location in addition to Port Cartier, and Sept-Iles. The city of Baie-Comeau has the necessary infrastructure and workforce to support mining operations. The city has all the major services. and the local terrain and climate for employing a local workforce is advantageous as it necessitates less accommodation, transport, and logistics compared to sourcing skilled labor and hiring more professionals from other parts of Quebec.

The Property offers multiple suitable locations for processing facilities, mine security, offices, storage warehouses, and equipment maintenance facilities. However, the surrounding lakes and water bodies will be a consideration when designing the location of these facilities that will require dewatering and other engineering solutions to minimize impacts to the local environment.

Due to the size of the Property, significant engineering work will be required for the various pieces of infrastructure that will be required for this project.

Outlines of the major infrastructure components are outlined in Section 18 of this Report.
Apart from the processing facilities, significant cost and effort will be required for access roads and haul roads, the tailing storage facilities (TSF), the waste dump pad, water management infrastructure, power supply connection and fuel supply infrastructure, mobile equipment

maintenance, communications infrastructure, mine cap infrastructure and facilities required to load out and transport the concentrate products to market.

1.10.1 PORT FACILITIES

There are well established port facilities at Baie Comeau if the concentrate purchaser would be most conveniently served by ship rather than truck or rail. There is also a port at Sept Iles.

1.11 MARKET STUDIES AND CONTRACTS

There are currently no sales contracts in place as this study is a PEA and preliminary in nature.

Potential off-take clients may be engaged for initial assessment of demand, duration and better definition of what prices might be prudently used for long-term offtake agreements at the PFS level of study.

The process flowsheets for the La Blache Property show the production of a high grade Fe_2O_3 product and a high grade TiO_2 product. It was assumed that Vanadium products will not be produced and sold at this stage of study; however, Vanadium has the potential to become a saleable product in future technical studies after appropriate plant test work has been conducted.

The prices used for the optimization and cashflow models are presented in Table 1-2.

TABLE 1-2 METAL PRICE ASSUMPTIONS

Parameters	Value	Unit
Sales Revenue		
Price Fe_2O_3	125	USD/t
Price TiO_2	2200	USD/t

The Iron content in the plant feed is 41.06%, while the Titanium content is 10.61%. In addition, there is 0.18% of Vanadium content, which might be extracted as a separate concentrate but for the purposes of this study the test work performed focused on Iron and Titanium products only, presenting the Vanadium only as a payable contributor if applicable.

The final products grades were 99.5% for the Fe_2O_3 and 99.8% for the TiO_2.

Both North American and Global ferric oxide markets are robust.

Ferric oxide (Fe_2O_3) is used in the iron industry in the manufacturing of alloys and steel.

The growing adoption of ferric oxide use in steel production is the primary driver of its global (ferric oxide) market. Key end-use industries for ferric oxide include construction, energy, packaging, transportation, and consumer appliances. Steel finds usage in the manufacturing of a multitude of parts for consumer products in addition to domestic, commercial and civil structures.

Similarly, for TiO_2, Both North American and global markets are robust.

1.12 ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACT

The Property has only seen exploration and drilling scale work, and reclaimed exploration drill pads are the largest known impact. As such, no environmental studies have been conducted to date on the Property. As exploration and mineral resource definition advances, a progressive program of environmental baseline studies will be defined and implemented to support advancement of the Property.

At present there are no known environmental liabilities or issues that could materially impact the Company's ability to continue to advance project exploration or evaluation, or extract the mineral resources.

The Property is located within the Territory of the Innu Nation. Consultation with First Nations is required to ensure Indigenous community interests are considered and efforts are made to address and/or accommodate First Nations issues and concerns. Documentation of engagement activities is an important component of the Property consultation record.

1.13 CAPITAL AND OPERATING COSTS

1.13.1 CAPITAL COSTS

The capital and operating costs in this report are based on the design criteria and engineering work performed by the individual QPs under their areas of responsibility and expertise.

Sources used for the estimates include vendor quotations historical data, benchmark costs at similar operations, databases, empirical factors and first principal calculations where and as appropriate and are all considered at a PEA level of accuracy.

Total pre-production capital costs will be CAD$ 1,078 million (inclusive of contingency) as shown in Table 1-3, which include capitalized operating costs incurred before the open pit mine moves into the production phase.

TABLE 1-3 PRE-PRODUCTION CAPITAL COSTS

Cost Centre	Description	Cost (CAD M$)
Direct CAPEX Costs		
1000	Open Pit Mining	466.2
3000	Mineral Processing	95
4000	Power, Electrical and Instrumentation	69
5000	Site Infrastructure and Support Services	103.1
6000	Water Management Systems	34.2
7000	Tailings and Mine Waste Management Facilities	20.9
Total Direct CAPEX Costs		*788.5*

Cost Centre	Description	Cost (CAD M$)
8000	Mine Closure Bond	30.0
9000	Indirect and Owner Costs	150.5
Total Indirect CAPEX Costs		*180.5*
9600	73.5	108.7
Total Pre-Production CAPEX Costs		**1,078**

Total sustaining capital costs incurred over the production phase of the mine will be CAD$544.5 million (inclusive of contingency) as shown in Table 1-4.

TABLE 1-4 SUSTAINING CAPITAL COSTS

Cost Centre	Description	Cost (CAD$ M)
Direct SUSEX Costs		
1000	Open Pit Mining	249.3
3000	Mineral Processing	66.5
4000	Power, Electrical and Instrumentation	17.1
5000	Site Infrastructure and Support Services	40.5
6000	Water Management Systems	10.0
7000	Tailings and Mine Waste Management Facilities	7.0
Total Direct SUSEX Costs		*390.4*
Owner and Indirect SUSEX Cost Summary		
9000	Indirect Costs	20.3
	Owner Costs	7.0
Total Indirect Costs		*27.4*
9600	Contingency	126.8
Total SUSEX		***544.5***

1.13.2 OPERATING COSTS

Total operating costs will primarily be for mining and processing.

The total LoM operating cost is estimated to be CAD$ 7.0 billion (CAD$ 12.5 billion including concentrate transport).

The unit costs per tonne of mining, processing, G&A, and concentrate transport per tonne, and the total LoM operating costs for the project are summarized in Table 1-5.

TABLE 1-5 UNIT OPERATING COSTS

Parameter	Value (CAD)	Unit
Unit Operating Costs		
Mining	$4.91	t mined
Mining (S.R. 3.51)	$20.14	/t mill feed
Milling	$40.08	/t mill feed
G & A	$4.94	/t mill feed
Concentrate Transportation	$50.63	/t mill feed
Total	*$115.79*	*/t mill feed*
Overall Project Costs		
Operating Costs		
Total Mining Costs	2.2	CAD$B
Total Milling Costs	4.3	CAD$B
Total G&A Costs	0.5	CAD$B
Total Operating Costs	7.0	CAD$B
Total Concentrate Transport Costs	5.5	CAD$B
Total Operating and Transportation Costs	12.5	CAD$B
Capital Costs		
Total Pre-Production Capital Costs	1.1	CAD$B
Total Sustaining Capital Costs	0.7	CAD$B
Total Capital Costs	*1.8*	*CAD$B*
Total Operating and Capital Costs	***14.2***	***CAD$B***
Working Capital	0.1	CAD$B
Pre-Production Capital Requirements	**1.2**	**CAD$B**

1.14 ECONOMIC ANALYSIS

The economics analysis of the Property involved the creation of a DCF model based on the LoM mine plan which was in turn based upon the optimised pit.

The capital costs were benchmarked off other large projects in the region and are +/- 50% at this stage.

The operating costs are also based on actuals at current open pit mining operations in northern Ontario and Quebec.

The pre-tax economic indicators of the project include a total cash flow CAD$20.2 billion, a pretax net present value (NPV) of CAD$9.0 billion with an assumed discounting rate of 8% and an internal rate of return (IRR) of 70.8%.

The post-tax economic indicators of the project include a total cash flow CAD$14.9 billion, a post-tax net present value (NPV) of CAD$6.6 billion with an assumed discounting rate of 8% and an internal rate of return (IRR) of 60.8%.

Payback occurs less than 4 years after construction begins, which equates to a payback period of under two (2) years from the start of production.

1.15 CONCLUSIONS

At a PEA level of study, the La Blache Property shows the possibility of becoming a large mining operation.

The Economical Analysis supports further investigation into more accurate costing of a project this size as well as further investigation into all modifying factors, in particular those that are more intricate when dealing with what is potentially a very large mining operation (for example social license to operate, availability of personnel, logistics, etc.).

The preliminary economic assessment of the Property based on a conceptual mine plan produced the pre-tax and post-tax economic indicators as shown in Table 1-6.

TABLE 1-6 SUMMARY OF PRE- AND POST-TAX ECONOMIC ANALYSIS RESULTS

Parameter	Value	Unit
Economic Analysis Results		
Discount Rate	8.0	%
Pre-Tax Cashflow	20.2	CAD$B
Pre-Tax NPV	9.0	CAD$B
Pre-Tax IRR	70.8	%
Post-Tax Cashflow	14.9	CAD$B
Post-Tax NPV	6.6	CAD$B
Post-Tax IRR	60.8	%

The overall cash flow analysis is shown in Table 22-5.

1.16 RECOMMENDATIONS

The report authors recommend the following tasks with regards to the La Blache Property.

Geology:

The report authors recommend Temas to conduct a LiDAR survey to generate an accurate topography map and ensure that the drill hole collar elevations match the topographic surface used in the 3D geological model.

The report authors recommend that a minimum 30,000 m infill-diamond drilling program be carried out with the objective of upgrading the Mineral Resource classification from the Inferred to Indicated Mineral Resource category. Estimated costs: Phase 1; 8-9 M$ Phase; 2 6M$.

The infill drilling program should include:

- Multi-element assay analysis that can be used to generate mineral proxies, comminution and recovery performance indicators and identify any anticipated deleterious elements.
- Geotechnical logging of the drill holes for open pit design considerations.
- Waste rock characterization for environmental considerations.
- Identifying the source of samples with low Vanadium grade values in the massive oxide domain and rectify the data. Drilling a number of twinned holes (approximately 4 holes) to validate the 2010 and 2011 drill holes, especially the deeper holes to the east of the deposit.
- Continue measuring density for all samples collected in future drilling campaigns.

Processing:

The report authors recommend more detailed testing on variability samples to advance to the next stage of the project development (assuming PFS) and additional tasks:

- Characterisation testing on the environmental tailing residue aspects including settling and hydraulic conductivity and confirm the tailings residue inertness to metals leaching. Characterise the recycle water quality and potential for impurity buildups in tailings residue recycle water.
- Recycling testing of reagents has not yet been evaluated in the mini pilot plant. Meaning it is recommended to also test the effect of recycling HCL and $MgCl_2$ in the leaching testing.
- Vanadium testing continues, and the results are finalised with Process Ortech.
- Detailed test program designed and executed for testing the titanium pigment production, recoveries and grades to properly design the pigment production plant and its expected performance parameters.
- Studying the impact of the particle size and morphology of the final TiO_2 product using laser size analysis. Work in partnership with end users (offtakers) to generate samples for end user evaluation and to develop market acceptance.
- The report authors suggest use of computer models, such as METSIM or ASPEN, to assist in further process pilot plant equipment testing and flowsheet optimization.
- The report authors recommend testing the designed process plant flowsheet at a more detailed level prior to and during the PFS level of study.

Mining:

The report author recommends investigation of various open pit mine sizes to determine what can be mined with minimal water body disturbance from the pit, but also from the corresponding sizes of waste dumps and tailings ponds.

Investigation into maximum usage of electrically powered shovels, haul trucks and/or conveyors is also recommended at a pre-PFS trade-off study.

The report author recommends some geotechnical work to de-risk pit slope angles for future pit designs, which would include:

- Drilling geotechnical holes in areas where pit walls are likely to be.

- Install wire piezometers to verify pore pressure buildup.
- Carrying out uniaxial compressive strength tests on samples from geotechnical holes for all geological units.
- Carrying out direct shear tests along any bedding planes, faults, or areas of significant jointing.
- Gather structural data and review potential kinematic failures on the hanging walls and end walls.
- The report author recommends a study to understand the availability of local labour and professionals.

Infrastructure:

The report author recommends hydrology and hydrogeological investigations to help determine effects of water on:

- Establishing potential locations for the waste dump/s and the tailings dam
- Need to dam or divert any lakes or rivers on the property
- Rate of Inflow of water into the pit

Marketing of the products:

The report author recommends that marketing of products is considered carefully as markets and prices evolve, recognizing that the Inferred Mineral Resource is eventually upgraded to Measured and Indicated Mineral Resources, followed by Mineral Reserve, the quantity of product could exceed offtaker demand.

As assumed in this PEA study, the potential output of the Property could potentially produce up to 10% of the global market in theory. Adjusting the output to suit market demand with minimum impact on price will be important to study and understand.

Whereas the scale of the Property will depend greatly on the size of the TiO_2 market, the report author recommends investing in an in-depth market study and approaching potential offtakes to determine contract terms available in the near term and future potential.

Cost Estimation:

The report author recommends determining detailed power costs with Hydro Quebec. Electrical power from the hydro powered grid in this region is a strong economic advantage to any project.

The report author also recommends investigating the current labour and other large cost items from other major projects in Quebec such as:

- Windfall, Urban Barry and Quevillon (All owned by Osisko)
- Nemaska
- Sayona
- Bloom Lake

The report author also recommends engaging various equipment suppliers to understand price options for Caterpillar, Komatsu, Volvo, Liebherr, Scania, Sandvik, Atlas Copco and other auxiliary mining equipment providers; in addition to investigating options to lease or rent equipment directly from OEMs and/or resellers and/or capital leasing companies.

The report author recommends the possibility of engaging contract mining for some or all parts of the mining operation.

The report author recommends a drilling and blasting study in conjunction with a comminution study in order to understand the full energy required to reduce the mineral size down to required processing dimensions.

Environment, Social, Permitting and Governance:

The report author recommends a study to understand the availability of local labour, contractors and suppliers, and professionals as well as partnering opportunities with local First Nations.

The report author recommends undertaking a strategic review of potential key environmental constraints with the objective of identifying long-lead environmental baseline study needs to be progressively commenced in conjunction with advanced stages of project development.

The report author recommends continuation of consultation activities and instituting formal documentation of First Nations' and community engagement.

Economics and Sensitivity:

The report author recommends revisiting the economics and sensitivity of the project regularly as:

- the metal prices change;
- further metallurgical testing produces greater certainty regarding titanium and vanadium recoveries; and
- as certainty on costs improves through receipt of budget pricing on equipment and services with relatively large costs.

2. INTRODUCTION

ERM has prepared this Report on the Property at the request of Temas.

The purpose is to provide a Report of a PEA in accordance with the disclosure and reporting requirements outlined in NI 43-101 for Temas on the La Blache Property.

2.1 ISSUER

Temas Resources Corp. (CSE: TMAS) (OTCQB: TMASF) was incorporated in 2018 and is headquartered in Vancouver, British Columbia, Canada. The Company primarily explores for iron, titanium, and vanadium deposits. Temas is focused on the advanced La Blache and Lac Brule Iron-Titanium-Vanadium projects in Quebec. Its flagship property La Blache, is 100% owned, and covers 9,414 hectares located in Quebec, Canada. Additionally, the Company invests in and works to apply its green mineral recovery technologies across its mining portfolio to reduce the environmental impact and carbon footprint of metal extraction through advanced processing and patented leaching technologies.

2.2 TERMS OF REFERENCE

Dated March 28, 2024, this Report takes precedence over all previous technical reports related to the project. The contents of this Report are summarized as follows:

- Details about land ownership, exploration history, and drilling activities.
- MRE for the La Blache deposit.
- A conceptual mine plan, developed to support the PEA.
- A discounted cashflow model derived from the conceptual mine plan.

2.2.1 INDEPENDENCE

This Report has been prepared by independent geologist and engineers who are considered Qualified Persons (QP) under NI 43-101. They have prepared the report in accordance with the standards and guidelines in NI 43-101, Form 43-101F1, and Companion Policy 43-101CP. Within the limitations specified here, the independent consultants have confidence in the qualifications, assumptions, and information they have utilized, and reasonable efforts have been made to validate their reliability.

Certain sections of reports authored by other consultants have been directly quoted or summarized in this Report and are appropriately credited. Nevertheless, the QPs have made reasonable attempts to authenticate such data and do not disclaim any responsibility for its utilization.

The authors of this report have exercised their professional judgment to meticulously verify and confirm the accuracy of the information contained herein. Excluding the matters outlined in Section 3, they do not disclaim any responsibility for the scientific and technical information contained in this Report.

2.3 QUALIFIED PERSON SECTION RESPONSIBILITY

The QP authors preparing this Report possess expertise in various fields such as geology, exploration, mineral resource assessment, open pit mining, geotechnical analysis, environmental considerations, permitting, metallurgical testing, mineral processing, process design, civil and mechanical engineering, electrical systems, and cost estimation. None of them or their associates hold any vested interest in Temas. These report authors have no associate, or affiliate status with the Company, and their report findings are unbiased, devoid of prior agreements, or undisclosed future business arrangements. Their compensation adheres to standard professional consulting practices.

The report authors listed here, by virtue of their education, practical expertise, and affiliation with relevant professional organizations, are recognized as QPs in accordance with NI 43-101. Furthermore, they maintain active memberships in the appropriate professional associations.

The preceding Qualified Persons contributed to the writing of this Report and the responsibilities for each section are indicated in Table 2-1.

TABLE 2-1 QUALIFIED PERSONS

Section and Title	QP	Company
1: Summary	Garth Liukko	ERM
2: Introduction	Garth Liukko	ERM
3: Reliance on Other Experts	Garth Liukko	ERM
4: Property Description and Location	Pierre-Luc Richard	PLR
5: Accessibility, Climate, Local Resources, Infrastructure, and Physiography	Pierre-Luc Richard	PLR
6: History	Pierre-Luc Richard	PLR
7: Geological Setting and Mineralization	Pierre-Luc Richard	PLR
8: Deposit Types	Pierre-Luc Richard	PLR
9: Exploration	Pierre-Luc Richard	PLR
10: Drilling	Pierre-Luc Richard	PLR
11: Sample Preparation, Analyses, and Security	Pierre-Luc Richard	PLR
12: Data Verification	Pierre-Luc Richard	PLR
13: Mineral Processing and Metallurgical Testing	Georgi Doundarov	Magemi
14: Mineral Resource Estimate	Jacques Dumouchel	Independent
15: Mineral Reserve Estimate	NA	NA
16: Mining Methods	Garth Liukko	ERM
17: Recovery Methods	Georgi Doundarov	Magemi
18: Project Infrastructure	Garth Liukko	ERM
19: Market Studies and Contracts	Garth Liukko	ERM

Section and Title	QP	Company
20: Environmental Studies, Permitting, and Social, or Community Impact	Rolf Schmitt	ERM
21: Capital and Operating Costs	Garth Liukko	ERM
22: Economic Analysis	Garth Liukko	ERM
23: Adjacent Properties	Garth Liukko	ERM
24: Other Relevant Data and Information	Garth Liukko	ERM
25: Interpretation and Conclusions	Garth Liukko	ERM
26: Recommendations	Garth Liukko	ERM
27: References	Garth Liukko	ERM
28: Glossary	Garth Liukko	ERM

2.4 QUALIFIED PERSON SITE VISIT

The following section describes information about the QP site visits for personal inspection requirements under NI 43-101.

Report author Pierre Luc Richard, P.Geo., from PLR, visited the Property on October 21, 2022. Mr. Richard also visited Magnor's warehouse in La Baie on November 25, 2022, where core sampling took place, and core was being stored. The site visit included a visual inspection of the historical core, a visit to an operating drill rig, field tours, collar validation, resampling and discussions with Magnor geologists. The site visit also included a review of sampling and assay procedures, the QAQC program, downhole survey methodologies, and the descriptions of lithologies, alteration and structures.

2.5 EFFECTIVE DATE

The effective date of this Report is March 28, 2024.

As of this Report's effective date, the authors have no knowledge of any significant information or changes related to the subject matter of this Report that have not been included herein, and the omission of which could result in this report being misleading.

3. RELIANCE ON OTHER EXPERTS

The QP authors have meticulously examined data and reports supplied by Temas, along with publicly accessible information, and have drawn their conclusions, augmented by direct on-site inspections.

Specific reliance on other experts include the following legal, surface title, and environmental/permitting items within each pertinent section of the Report.

3.1 MINERAL TENURE, SURFACE RIGHTS, PROPERTY AGREEMENTS, AND ROYALTIES

In Section 4 the report author consulted GESTIM, the Government of Quebec's online claim management system, for the latest status regarding ownership of the mining titles.

Independent verification of land title and tenure reported in Section 4 was not performed by the QP author as it is beyond the scope of their expertise.

The report author did not verify the legality of any underlying agreement(s) that may exist concerning the licenses or other agreement(s) between third parties but has instead relied upon the Company to have conducted the proper legal due diligence.

Information for Section 4 regarding Mineral Tenure, Surface Rights, Property Agreements, and Royalties was reviewed by Pierre Luc Richard.

3.2 ENVIRONMENTAL, PERMITTING, AND LIABILITY ISSUES

The report author has relied upon the Company via written statement via electronic mail provided on April 10th, 2022, and subsequent communications concerning the Property's environmental, socio-economic, and permitting matters relevant to the Report.

The QP author has relied upon publicly available information on biophysical resources, Quebec and Canadian permitting requirement information on government websites, and Temas for summaries of Indigenous engagement activities, and statement on known site environmental liabilities.

3.3 OPTION AGREEMENTS

In Section 4, the report author has relied entirely upon information provided by Temas concerning the terms of their option agreement with the vendors, the terms of the underlying option agreement and the extent of any underlying interests and royalties.

4. PROPERTY DESCRIPTION AND LOCATION

4.1 LOCATION OF PROPERTY

The Property lies in the Côte Nord (North Shore) region of Quebec, approximately 130 km northwest of the community of Baie-Comeau or 220 km northeast of the community of Saguenay (Figure 4-1). The coordinates of the approximate centre of the Property are NAD83 UTM Zone 19U / 459740mN; 5544970mE. It spans over NTS map sheets 22K03, 22K04, and 22F13. Location and mining title maps are shown in Figures 4-1 and 4-2.

FIGURE 4-1 PROPERTY LOCATION

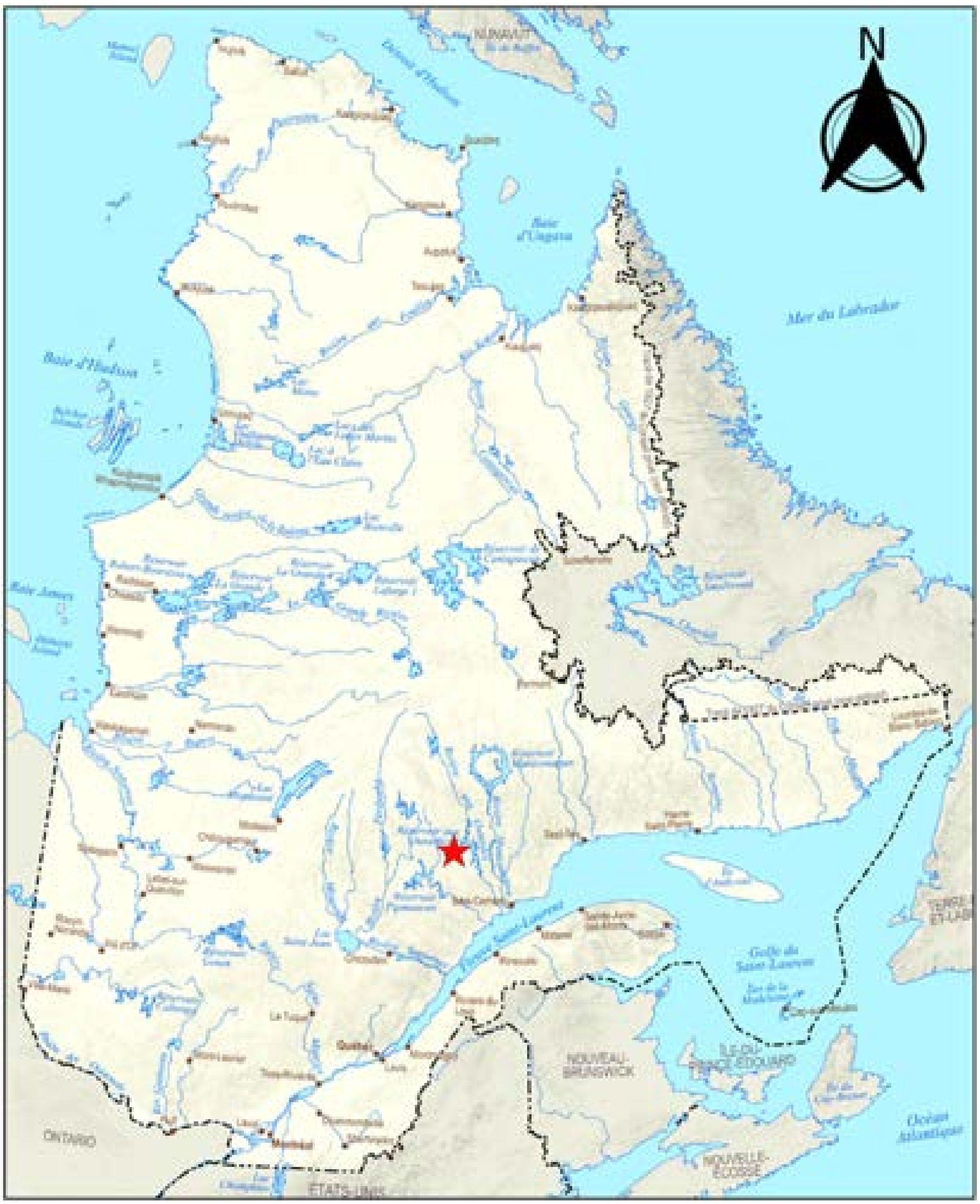
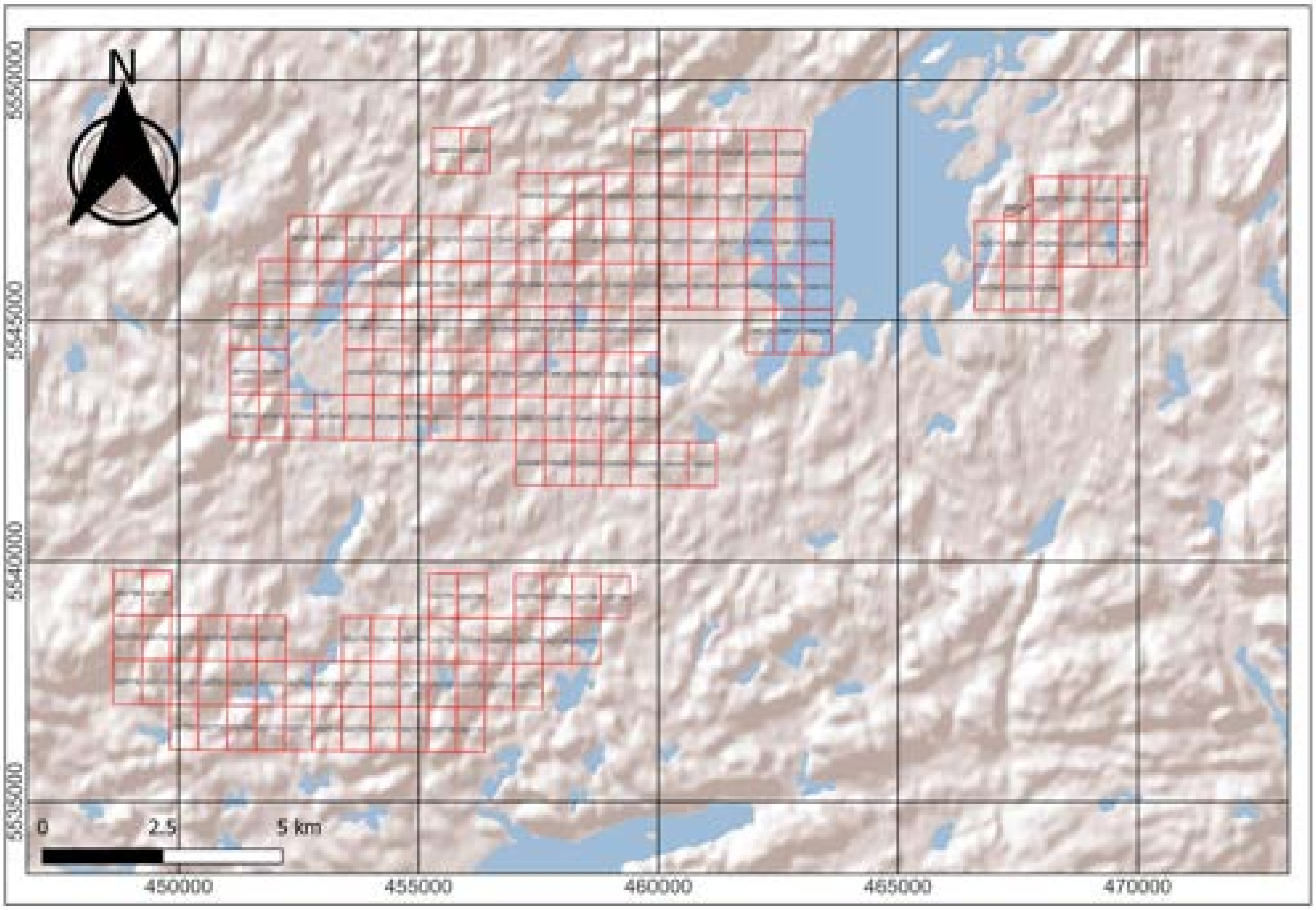


FIGURE 4-2 LOCATION OF THE MINING TITLES FORMING THE LA BLACHE PROPERTY



4.2 MINERAL TENURE

In Quebec, the *Mining Act* governs the management of mineral resources and the granting of exploration rights for mineral substances during the exploration phase and the use of these substances during the mining phase. The Act also establishes the rights and obligations of mining title holders to promote the development of Quebec's mineral resources.

The report author verified the status of the mineral claims using GESTIM, the Government of Quebec's online claim management tool. As of March 27, 2024, the Property comprises 171 -non-contiguous map-designated mining claims. The issuer, Temas Resources Corp., holds a 100% interest in 127 of these claims and currently is in the process of acquiring the remaining 44 through an option agreement. The total approximate area of the Property is 9,414 hectares.

A detailed list of the Property's mineral claims is shown in Table 4-1.

TABLE 4-1 DETAILED LIST OF THE LA BLACHE PROPERTY MINERAL CLAIMS (VERIFIED ON MARCH 22, 2024)

Claim#	SNRC Sheet	Claim Status	Area (Ha)	Anniversary Date	NSR
2172469	SNRC 22K04	Active	55.28	10/5/2025	2%*1
2172470	SNRC 22K04	Active	55.28	10/5/2025	2%*1
2172471	SNRC 22K04	Active	55.28	10/5/2025	2%*1
2172473	SNRC 22K04	Active	55.27	10/5/2025	2%*1
2172474	SNRC 22K04	Active	55.27	10/5/2025	2%*1
2172475	SNRC 22K04	Active	55.27	10/5/2025	2%*1
2172476	SNRC 22K04	Active	55.27	10/5/2025	2%*1
2172477	SNRC 22K04	Active	55.27	10/5/2025	2%*1
2172478	SNRC 22K04	Active	55.26	10/5/2025	2%*1
2172479	SNRC 22K04	Active	55.26	10/5/2025	2%*1
2172480	SNRC 22K04	Active	55.26	10/5/2025	2%*1
2172481	SNRC 22K04	Active	55.26	10/5/2025	2%*1
2172482	SNRC 22K04	Active	55.26	10/5/2025	2%*1
2172483	SNRC 22K04	Active	55.26	10/5/2025	2%*1
2172484	SNRC 22K04	Active	55.26	10/5/2025	2%*1
2172485	SNRC 22K04	Active	55.26	10/5/2025	2%*1
2366034	SNRC 22K04	Active	55.24	10/8/2025	2%*1
2366035	SNRC 22K04	Active	55.24	10/8/2025	2%*1
2366091	SNRC 22K04	Active	55.3	10/8/2025	2%*1
2366092	SNRC 22K04	Active	55.3	10/8/2025	2%*1
2366093	SNRC 22K04	Active	55.3	10/8/2025	2%*1
2366094	SNRC 22K04	Active	55.3	10/8/2025	2%*1
2366095	SNRC 22K04	Active	55.3	10/8/2025	2%*1
2366096	SNRC 22K04	Active	55.3	10/8/2025	2%*1
2366097	SNRC 22K04	Active	55.3	10/8/2025	2%*1
2366108	SNRC 22K04	Active	55.3	10/8/2025	2%*1
2366109	SNRC 22K04	Active	55.3	10/8/2025	2%*1
2366110	SNRC 22K04	Active	55.3	10/8/2025	2%*1
2366111	SNRC 22K04	Active	55.29	10/8/2025	2%*1
2366112	SNRC 22K04	Active	55.29	10/8/2025	2%*1
2366113	SNRC 22K04	Active	55.29	10/8/2025	2%*1

Claim#	SNRC Sheet	Claim Status	Area (Ha)	Anniversary Date	NSR
2366114	SNRC 22K04	Active	55.29	10/8/2025	2%*1
2366119	SNRC 22K04	Active	55.29	10/8/2025	2%*1
2366120	SNRC 22K04	Active	55.29	10/8/2025	2%*1
2366121	SNRC 22K04	Active	55.29	10/8/2025	2%*1
2366122	SNRC 22K04	Active	55.29	10/8/2025	2%*1
2366123	SNRC 22K04	Active	55.29	10/8/2025	2%*1
2366126	SNRC 22K04	Active	55.28	10/8/2025	2%*1
2366127	SNRC 22K04	Active	55.28	10/8/2025	2%*1
2366128	SNRC 22K04	Active	55.28	10/8/2025	2%*1
2366130	SNRC 22K04	Active	55.27	10/8/2025	2%*1
2366131	SNRC 22K04	Active	55. 27	10/8/2025	2%*1
2366132	SNRC 22K04	Active	55.27	10/8/2025	2%*1
2366134	SNRC 22K04	Active	55.26	10/8/2025	2%*1
2366135	SNRC 22K04	Active	55.26	10/8/2025	2%*1
2366136	SNRC 22K04	Active	55.26	10/8/2025	2%*1
2366137	SNRC 22K04	Active	55.25	10/8/2025	2%*1
2366138	SNRC 22K04	Active	55.25	10/8/2025	2%*1
2527707	SNRC 22F13	Active	55.36	11/14/2024	2%*2
2527708	SNRC 22F13	Active	55.36	11/14/2024	2%*2
2527709	SNRC 22F13	Active	55.36	11/14/2024	2%*2
2527710	SNRC 22F13	Active	55.36	11/14/2024	2%*2
2527711	SNRC 22F13	Active	55.36	11/14/2024	2%*2
2527712	SNRC 22F13	Active	55.36	11/14/2024	2%*2
2527713	SNRC 22F13	Active	55.36	11/14/2024	2%*2
2527714	SNRC 22F13	Active	55.36	11/14/2024	2%*2
2527715	SNRC 22F13	Active	55.36	11/14/2024	2%*2
2527716	SNRC 22F13	Active	55.36	11/14/2024	2%*2
2527717	SNRC 22F13	Active	55.36	11/14/2024	2%*2
2527718	SNRC 22F13	Active	55.35	11/14/2024	2%*2
2527719	SNRC 22F13	Active	55.35	11/14/2024	2%*2
2527720	SNRC 22F13	Active	55.35	11/14/2024	2%*2
2527721	SNRC 22F13	Active	55.35	11/14/2024	2%*2
2527722	SNRC 22F13	Active	55.35	11/14/2024	2%*2

Claim#	SNRC Sheet	Claim Status	Area (Ha)	Anniversary Date	NSR
2527723	SNRC 22F13	Active	55.35	11/14/2024	2%*[2]
2527724	SNRC 22F13	Active	55.35	11/14/2024	2%*[2]
2527725	SNRC 22F13	Active	55.35	11/14/2024	2%*[2]
2527726	SNRC 22F13	Active	55.35	11/14/2024	2%*[2]
2527727	SNRC 22F13	Active	55.35	11/14/2024	2%*[2]
2527728	SNRC 22F13	Active	55.35	11/14/2024	2%*[2]
2527729	SNRC 22F13	Active	55.35	11/14/2024	2%*[2]
2527730	SNRC 22F13	Active	55.35	11/14/2024	2%*[2]
2527731	SNRC 22F13	Active	55.35	11/14/2024	2%*[2]
2527732	SNRC 22F13	Active	55.35	11/14/2024	2%*[2]
2527733	SNRC 22F13	Active	55.34	11/14/2024	2%*[2]
2527734	SNRC 22F13	Active	55.34	11/14/2024	2%*[2]
2527735	SNRC 22F13	Active	55.34	11/14/2024	2%*[2]
2527736	SNRC 22F13	Active	55.34	11/14/2024	2%*[2]
2527737	SNRC 22F13	Active	55.34	11/14/2024	2%*[2]
2527738	SNRC 22F13	Active	55.34	11/14/2024	2%*[2]
2527739	SNRC 22F13	Active	55.34	11/14/2024	2%*[2]
2527740	SNRC 22F13	Active	55.34	11/14/2024	2%*[2]
2527741	SNRC 22F13	Active	55.34	11/14/2024	2%*[2]
2527742	SNRC 22F13	Active	55.34	11/14/2024	2%*[2]
2527743	SNRC 22F13	Active	55.34	11/14/2024	2%*[2]
2527744	SNRC 22F13	Active	55.34	11/14/2024	2%*[2]
2527745	SNRC 22F13	Active	55.34	11/14/2024	2%*[2]
2527746	SNRC 22F13	Active	55.34	11/14/2024	2%*[2]
2527747	SNRC 22F13	Active	55.34	11/14/2024	2%*[2]
2527767	SNRC 22K03	Active	55.27	11/14/2025	2%*[2]
2527768	SNRC 22K03	Active	55.27	11/14/2025	2%*[2]
2527775	SNRC 22K03	Active	55.26	11/14/2025	2%*[2]
2527776	SNRC 22K03	Active	55.26	11/14/2025	2%*[2]
2527779	SNRC 22K03	Active	55.25	11/14/2025	2%*[2]
2527780	SNRC 22K03	Active	55.25	11/14/2025	2%*[2]
2527781	SNRC 22K03	Active	55.25	11/14/2025	2%*[2]
2527789	SNRC 22K04	Active	55.33	11/14/2024	2%*[2]

Claim#	SNRC Sheet	Claim Status	Area (Ha)	Anniversary Date	NSR
2527790	SNRC 22K04	Active	55.33	11/14/2024	2%*[2]
2527791	SNRC 22K04	Active	55.33	11/14/2024	2%*[2]
2527792	SNRC 22K04	Active	55.33	11/14/2024	2%*[2]
2527793	SNRC 22K04	Active	55.33	11/14/2024	2%*[2]
2527794	SNRC 22K04	Active	55.33	11/14/2024	2%*[2]
2527795	SNRC 22K04	Active	55.33	11/14/2024	2%*[2]
2527796	SNRC 22K04	Active	55.33	11/14/2024	2%*[2]
2532347	SNRC 22K03	Active	13.8	2/26/2026~~4~~	2%*[2]
2536270	SNRC 22K03	Active	55.27	4/14/2024	2%*[2]
2536271	SNRC 22K03	Active	55.26	4/14/2024	2%*[2]
2552490	SNRC 22K03	Active	55.26	1/23/2025	2%*[2]
2552491	SNRC 22K03	Active	55.26	1/23/2025	2%*[2]
2552492	SNRC 22K03	Active	55.26	1/23/2025	2%*[2]
2552493	SNRC 22K03	Active	55.25	1/23/2025	2%*[2]
2822368	SNRC 22K04	Active	55.27	3/13/2027	
2822369	SNRC 22K04	Active	55.27	3/13/2027	
2822370	SNRC 22K04	Active	55.27	3/13/2027	
2822371	SNRC 22K04	Active	55.26	3/13/2027	
2822372	SNRC 22K04	Active	55.26	3/13/2027	
2822373	SNRC 22K04	Active	55.26	3/13/2027	
2822374	SNRC 22K04	Active	55.25	3/13/2027	
2822375	SNRC 22K04	Active	55.25	3/13/2027	
2822376	SNRC 22K04	Active	55.25	3/13/2027	
2822377	SNRC 22K04	Active	55.25	3/13/2027	
2822378	SNRC 22K04	Active	55.24	3/13/2027	
2822379	SNRC 22K04	Active	55.24	3/13/2027	
2822380	SNRC 22K04	Active	55.24	3/13/2027	
2822381	SNRC 22K04	Active	55.24	3/13/2027	
2822382	SNRC 22K04	Active	55.24	3/13/2027	
2822383	SNRC 22K04	Active	55.24	3/13/2027	
2615878	SNRC 22K04	Active	55.3	8/04/2024	2%*[3]
2615879	SNRC 22K04	Active	55.3	8/04/2024	2%*[3]
2615880	SNRC 22K04	Active	55.29	8/04/2024	2%*[3]

Claim#	SNRC Sheet	Claim Status	Area (Ha)	Anniversary Date	NSR
2615881	SNRC 22K04	Active	55.29	8/04/2024	2%*3
2615882	SNRC 22K04	Active	55.28	8/04/2024	2%*3
2615883	SNRC 22K04	Active	55.28	8/04/2024	2%*3
2615884	SNRC 22K04	Active	55.27	8/04/2024	2%*3
2615885	SNRC 22K04	Active	55.27	8/04/2024	2%*3
2615886	SNRC 22K04	Active	55.27	8/04/2024	2%*3
2615887	SNRC 22K04	Active	55.27	8/04/2024	2%*3
2615888	SNRC 22K04	Active	55.27	8/04/2024	2%*3
2615889	SNRC 22K04	Active	55.27	8/04/2024	2%*3
2672492	SNRC 22K04	Active	55.3	9/26/2025	2%*3
2672493	SNRC 22K04	Active	55.3	9/26/2025	2%*3
2672494	SNRC 22K04	Active	55.3	9/26/2025	2%*3
2672495	SNRC 22K04	Active	55.3	9/26/2025	2%*3
2672496	SNRC 22K04	Active	55.3	9/26/2025	2%*3
2672497	SNRC 22K04	Active	55.3	9/26/2025	2%*3
2672498	SNRC 22K04	Active	55.29	9/26/2025	2%*3
2672499	SNRC 22K04	Active	55.29	9/26/2025	2%*3
2672500	SNRC 22K04	Active	55.29	9/26/2025	2%*3
2672501	SNRC 22K04	Active	55.29	9/26/2025	2%*3
2672502	SNRC 22K04	Active	55.29	9/26/2025	2%*3
2672503	SNRC 22K04	Active	55.29	9/26/2025	2%*3
2672504	SNRC 22K04	Active	55.28	9/26/2025	2%*3
2672505	SNRC 22K04	Active	55.28	9/26/2025	2%*3
2672506	SNRC 22K04	Active	55.28	9/26/2025	2%*3
2672507	SNRC 22K04	Active	55.28	9/26/2025	2%*3
2672508	SNRC 22K04	Active	55.28	9/26/2025	2%*3
2672509	SNRC 22K04	Active	55.27	9/26/2025	2%*3
2672510	SNRC 22K04	Active	55.27	9/26/2025	2%*3
2672511	SNRC 22K04	Active	55.27	9/26/2025	2%*3
2672512	SNRC 22K04	Active	55.26	9/26/2025	2%*3
2672513	SNRC 22K04	Active	55.26	9/26/2025	2%*3
2672514	SNRC 22K04	Active	55.26	9/26/2025	2%*3
2672515	SNRC 22K04	Active	55.26	9/26/2025	2%*3

Claim#	SNRC Sheet	Claim Status	Area (Ha)	Anniversary Date	NSR
2672516	SNRC 22K04	Active	55.26	9/26/2025	2%*3
2822489	SNRC 22K04	Active	55.28	3/17/2027	2%*3
2822490	SNRC 22K04	Active	55.28	3/17/2027	2%*3
2822491	SNRC 22K04	Active	55.28	3/17/2027	2%*3
2822492	SNRC 22K04	Active	55.25	3/17/2027	2%*3
2822493	SNRC 22K04	Active	55.25	3/17/2027	2%*3
2822494	SNRC 22K04	Active	55.25	3/17/2027	2%*3
2822495	SNRC 22K04	Active	55.25	3/17/2027	2%*3

*1 Temas has the option to buy-back 1% NSR for 2,500,000$.
*2 Temas has the option to buy-back 1% NSR for 1,500,000$.
*3 Temas has the option to buy-back 1% NSR for 1,500,000$.

4.3 ROYALTIES, AGREEMENT AND ENCUMBRANCES

Forty-eight (48) claims were initially owned by Ridge Royalty Corp., a private company that merged with Cloudbreak Discovery Corp. through a wholly owned subsidiary, 1237611 BC Ltd. Temas acquired these claims on June 18, 2020, in exchange for 10,000,000 shares of Temas and a 2% NSR royalty (half of which can be bought back by Temas for $2,500,000).

An additional 64 claims were acquired by Temas acquired on January 15, 2021, in exchange for 10,000,000 shares of Temas, payment of $75,000, and a 2% NSR royalty (half of which can be bought back by Temas for $1,500,000).

Temas entered into an option agreement on 44 claims on March 26, 2024. In order to acquire 100% interest from Canadian Mining House, Temas will need to issue an aggregate of $275,000 (CAD) in common shares and pay an aggregate of $350,000 (CAD) in cash over a 48 month period consisting of the following payment schedule.

- $50,000 cash, $75,000 in common shares upon receipt of exchange acceptance of the deal.
- $75,000 cash, $50,000 in common shares on the 12 month anniversary of the approval date.
- $75,000 cash, $50,000 in common shares on the 24 month anniversary of the approval date.
- $75,000 cash, $50,000 in common shares on the 36 month anniversary of the approval date.
- $75,000 cash, $50,000 in common shares on the 48 month anniversary of the approval date.

The claims will carry with it a 2% NSR. 50% of the NSR can be purchased for $1,500,000 CAD at the election of Temas.

For the remaining 16 claims, they were map staked by Temas on March 13, 2024 and are therefore free of encumbrances.

4.4 ENVIRONMENTAL LIABILITIES

The report author is not aware of any environmental liabilities affecting the Property.

4.5 PERMITTING

A “forest intervention permit” is required for any activity involving deforestation, including tree cutting and brush clearing for roads, camps and drill pads. The supporting documentation for such a permit must be filed with the Ministry of Energy and Natural Resources and Parks of Quebec (Ministère de l’Énergie et des Ressources Naturelles et Forêts; “MERNF”). A small logging royalty is payable to the MERNF. The installation of a temporary or permanent camp also requires a permit. The camp must comply with municipal regulations and those of the Ministry of the Environment and the Fight against Climate Change (Ministère de l’Environnement et Lutte Contre les Changements Climatiques; “MELCC”), especially concerning wastewater management. Temas does not have a camp on the Property at the time of writing.

No specific permit is required to conduct geophysical surveys, line cutting or other activities that do not involve significant tree cutting.

4.6 INDIGENOUS COMMUNITY CONSIDERATIONS

The Lac La Blache area is subject to ancestral rights claims of the Innu of Pessamit, as it is part of the Nitassinan Ancestral Territory of Pessamit. Based on discussions with Temas representatives, as the Property is still early stage, the Innu of Pessamit have only requested to be updated on the Property’s development.

4.7 OTHER SIGNIFICANT FACTORS AND RISKS

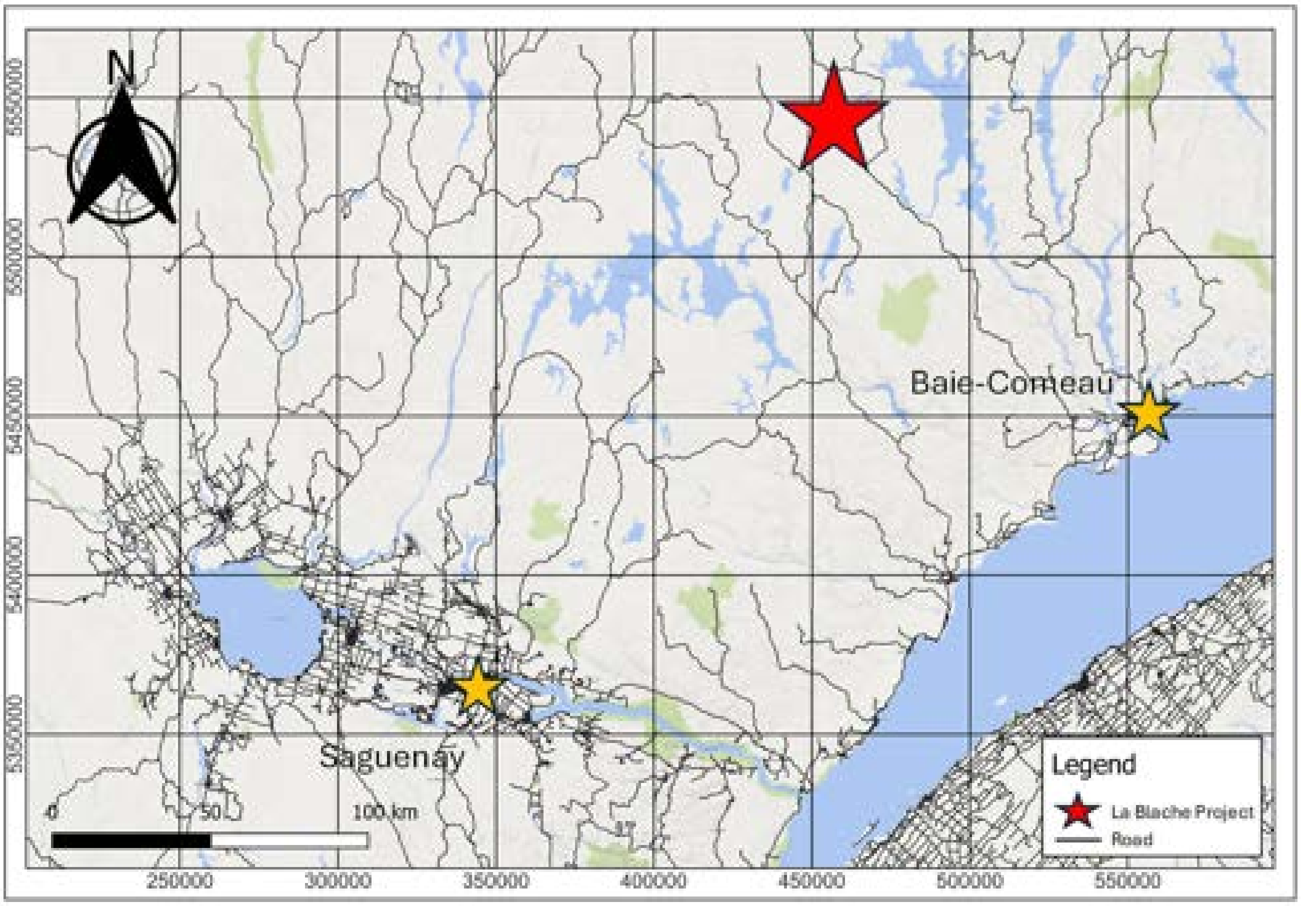
The report author is not aware of any significant factors and risks that may affect access, title or the right or ability to perform work on the Property.

5. ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE, AND PHYSIOGRAPHY

5.1 ACCESSIBILITY

The Property is located 130 km northwest of the community of Baie-Comeau (Figure 5-1). The area surrounding the Property is uninhabited.

FIGURE 5-1 ACCESSIBILITY TO LA BLACHE PROPERTY



Provincial Highway 138 links Montreal and Natashquan and follows the north shore of the St. Lawrence River. Chem d'Auteuil connects to highway 138 and then links to a main artery used by the forestry industry and passes on the eastern side of the property, within a few kilometers of the property. Alternately, highway 385 goes north from 138 from Forestville to the west of Baie Comeau. Highway 389 links Baie-Comeau to the Labrador border is a third option for possible route to access the property using existing roads. Forestry gravel roads run along both the eastern and western sides of the property just outside of the claims. Still, access to the Property is currently by helicopter or canoe.

Forest fires have burned parts of the Property at different times. As a result, the Property lacks the usual logging activities and secondary roads found elsewhere in the region.

Mineral exploration of all types, including drilling, can be conducted year-round on the Property. When the ground and water bodies are frozen in winter, conditions are favourable for moving heavy equipment across lakes and rivers, causing less damage to the land. Adequate water sources are still available in winter.

5.2 CLIMATE AND VEGETATION

Although tempered by numerous inland water bodies (e.g., lakes, reservoirs), the climate remains cold with extreme seasonal variations. Precipitation is not abundant, although fog and mist can be common in the autumn.

Annual temperature typically varies from -18°C to 21°C and is rarely below -27°C or above 26°C. The warm season lasts four months, from early June to late September, with an average daily high above 15°C. The hottest month of the year in the area is July with an average high of 21°C and a low of 13°C. The cold season lasts three months, from early December to early March, with an average daily high below -3°C. The coldest month of the year in the area is January with an average low of -17°C and a high of -9°C.

Vegetation in the region is characterized as a typical boreal forest dominated by sparse spruce and pines and, to a lesser extent, with poplars and aspens. Other tree species include balsam fir and larch, as well as clumps of broadleaved birch, willow, alder and mountain ash.

The local forest is home to about forty species of mammals, including wolves, bobcats, foxes, bears and moose. Ducks, Canada geese, snow geese, snowy owls, eagles, falcons, ptarmigans, and loons are among the birds found in the region. The aquatic fauna are predominantly lake trout, walleye, brook trout and pike.

5.3 LOCAL RESOURCES AND INFRASTRUCTURE

There is a sufficient labour force in the region as well as numerous geological and mining service firms, primarily in Baie-Comeau, Sept-Iles, Saguenay, and Port Cartier. The city of Baie-Comeau, with 20,000 inhabitants, has the necessary infrastructure and workforce to support mining operations. All major services are available in Baie-Comeau.

Logging companies are active in the area. The region's economic and industrial development is based on mineral, forestry, and hydroelectric resources.

5.4 PHYSIOGRAPHY

The area's topography is generally moderate to strongly mountainous, with a regional southward drainage flow.

Elevation in the area averages 525 m above sea level. The overburden consists of glacial-fluvial till and lacustrine deposits. It typically has a thickness of up to 15 m, averaging 3 m. Outcrops are common throughout the Property.

5.5 INFRASTRUCTURE

Although the Property is in a relatively isolated region, it benefits from active logging companies for access and lodging options.

Adequate surface water sources are present on the Property to meet exploration and mining needs.

Railroads, a seaport and an airport are available in Baie-Comeau which is located about 130 km southeast of the Property.

6. HISTORY

The information in this section is largely referenced from (Kutluoglu, 2022), however, the report author has reviewed and validated the information disclosed.

Exploration in the area began in the 1950s with the discovery of iron and titanium mineralization. In 1951, the first titaniferous magnetite outcrops were discovered in the anorthosite of Schmoo Lake (GM02209-A, 1952) by Anglo-Canadian Pulp and Paper Mills, which eventually became Bersimis Mining. From 1951 to 1954, Bersimis Mining conducted aeromagnetic and "dip-needle surveys" geological mapping, surface sampling, assaying, and metallurgical test work (GM02209-B and GM02671, 1953). Four mineralized lenses were uncovered over 15 km: Hervieux-West, Hervieux-East, Schmoo Lake and La Blache East (GM064).

In 1954, the Ministry of Natural Resources ("MRNFQ") visited three claim blocks held by Bersimis Mining (GM03107, 1955). The MRNFQ published a report and map jointly with Bersimis Mining that located and described the Hervieux-East and Hervieux-Ouest occurrences (RP374), revealing the presence of medium- to coarse-grained magnetite in anorthosite.

Prospecting Geophysics completed a ground magnetic survey in 1959 (GM08681, 1959). Bersimis Mining drilled 20 holes in 1964 (GM15462, GM15667 and GM15992, 1964), intersecting significant iron and titanium (more than 45% Fe and 15% TiO_2.). The MRNFQ examined approximately 300 m of drill core sampling (holes 4, 7, 8, 10, 11, 13 and 17) and two outcrops for petrographic and chemical analysis. Three lenses were identified, apparently aligned over 6 km. The lenses ranged from 100 m to 1,130 m long and 45 m to 215 m wide (RG2002-01 and GM37408). Geochemical analyses tend to be consistent from one lens to another (GM37408), averaging 50.4% Fe, 20.1% TiO_2, 0.36% V_2O_5, 0.70% SiO_2, 7.41% Al_2O_3, 1.26% CaO, 4.05% MgO, 0.19% Cr, 0.03% P, and 0.02% S.

An aeromagnetic map (2083G) covering the Property area was published in 1968 by the Geological Survey of Canada.

The Lac La Blache area was mapped at a regional scale during the MRNFQ's Grenville Project in 1968- 1969 (DP127 and RG162) when the name of La Blache Anorthosite Pluton first appeared on published maps. A geotechnical site investigation was completed in 1969 by L. Kish, who collected several mineralized samples (GM26833, 1971), (DP127 and RG162) with the following results (RG162): 0.53% SiO_2, 50.12% Fe, 20.84% TiO_2 and 0.20% V at Hervieux-West; 0.91% SiO_2, 49.74% Fe, 19.35% TiO_2 and 0.20% V at Schmoo Lake and 0.66% SiO_2, 51.34% Fe, 20.09% TiO_2 and 0.21% V at Hervieux East.

In 1976, SOQUEM Inc. undertook a large exploration program, the Manic Project, covering 34,700 km^2 (GM49156, GM49162 and GM49164 1976) and (GM49165, 1977), including lake-bottom sediment geochemistry, airborne spectrometry, and a geological survey. Following this campaign, SOQUEM outlined 66 areas of interest for base metals and other minerals without retaining the La Blache occurrence (DP86-18, MB86-58 and MB89-58).

In 1980, three concession blocks totalling nine claims were staked by Camchib Resources (GM37408, 1981), covering the Hervieux-West, Hervieux-East and Schmoo Lake occurrences. Camchib concluded that the titaniferous magnetite occurrences at La Blache represented an important source of titanium and iron and possibly chrome and vanadium.

In 1982, the three claim blocks were explored by Services Exploration (GM39253, GM39254, GM39255 and GM39256, 1982), which completed a geological and dip needle survey at Schmoo Lake but failed to discover any massive titaniferous magnetite. At Hervieux-East, a geological survey uncovered 25 m to 30 m of massive magnetite. At Hervieux-West, 10 samples of titaniferous magnetite contained between 49.20% and 50.58% Fe and between 18.40% and 21.86% TiO_2.

Metallurgical studies of the ilmenite mineralization were performed in 1992 (GM51848, 1992) at the Hervieux-West occurrence as part of the claims then owned by Gaspésie Société d'Exploration Pétrolière et Minière ("Gaspésie Société"). The test work, completed by BHP-UTAH, produced a heavy mineral concentrate of ilmenite containing 46% to 50% TiO_2. In 1993, Gaspésie Société prospected the Hervieux-East and Hervieux-West occurrences, finding they contained 5% to 10% ilmenite, but both were deemed uneconomic at the time and no further work was recommended.

The Lac La Blache area was mapped in 2000 by the MRNFQ (RG2002-01). The La Blache Anorthosite was represented on the new geological map (unit mPbla1) as well as iron and titanium mineralization (mPbla5).

A geological field trip guidebook on the La Blache mineralization was published in 2003 (MB2003-03).

In 2005, the MRNFQ (PRO2003-03) published new geochemical data from lake-bottom and stream sediment surveys covering the project. Digital data from airborne geophysical surveys were available in 2006 (DP2006-06).

In 2006, Fancamp Exploration Ltd performed metallurgical tests (GM62464, 2006) on two samples of titaniferous magnetite from the Hervieux-East occurrence (GM62465, 2006). The samples, analyzed by COREM, contained more than 22% TiO_2 and 67% Fe_2O_3.

In 2010, Nevado Resources Corporation secured the mining rights and conducted a 3,425 line-km airborne geophysical survey to measure the magnetic and electromagnetic responses over the property. Argex Silver Capital Inc. also conducted a 418 line-km airborne magnetic gradiometer and VLF survey that overlaps parts of the Property. Also in 2010, Nevado Resources Corporation carried out 9,700 m of exploration diamond drilling in 32 holes targeting Farrell-Taylor magnetite-ilmenite deposit.

In 2011, Nevado drilled a total of 12,600 m, covering the following areas: Farrell-Taylor (6,850 m), Leduc-Farrell (1,800 m), Hervieux East Extension (741 m), E. Girard Showing (234 m) and elsewhere (2,973 m). Also in 2011, Neomet Technologies Inc. ("Neomet") of Dorval (Quebec) completed the first stage of metallurgical testing on samples of Farrell-Taylor massive oxide mineralization (Dupéré, 2012). Neomet adapted its proprietary process for extracting valuable metals from massive oxide mineralization. Neomet's preliminary metallurgical testing of the oxide samples indicated a 90% recovery of iron and a 95% recovery of vanadium into a final high-purity product (Dupéré, 2012). Neomet demonstrated a 100% recovery of titanium from the leach solution into a TiO_2 (titanium dioxide) product suitable for further processing to pigment-grade TiO_2. Ammonium metavanadate (AMV), the precursor to V_2O_5 (vanadium pentoxide), was recovered from the leach solution at a purity of 99.9% (Dupéré, 2012).

Argex Titanium Inc. published a Preliminary Economic Assessment in 2011 on the Hervieux East and Hervieux West mineralized occurrences. They published a mineral resource estimate statement on both Hervieux-Est (Table 6-1) and Hervieux-Ouest (Table 6-2). The block model was interpolated using a 5 m composite constrained within a 3D wireframe envelope of the mineralized massive iron oxides defined by drill holes. The mineral resource model was defined by a block size of 10 m (east-west) by 10 m (north-south) by 10 m (elevation) in size. The mineralized zones were defined to a depth of about 250m. The inverse squared distance method was used. The estimate was based on 137 drill holes. No capping was applied. A specific gravity of 4.57 g/cm^3 was used to estimate tonnage in mineralized zones. (based on 183 drill core measurements) was used to estimate tonnage. A specific gravity of 3.03 g/cm^3 was used to estimate tonnage in country rock. Measured, Indicated, and Inferred resources were reported. Classification was based on ellipsoid sizes and number of composites used. Economic parameters used are not clearly stated in the report. The cut-off grade used was 11% Ti. The report author considers this historical estimate as relevant to the Property but does not consider it current nor reliable, no pitshell was used to constrain the mineral resource estimate. The PEA results are not reported here. A QP has not done sufficient work to classify the historical estimate as current mineral resources and Temas is not treating the historical estimate as current mineral resources. The historical estimate should only be considered as indicative of the mineral potential of the La Blache Property

TABLE 6-1 HISTORICAL RESOURCE ESTIMATION SUMMARY FOR HERVIEUX-EST (BURO ET AL, 2011)

Resource Categories	Volume	Tonnes	TI%	V%	FE%
Measured	538,000	2,458,000	11.10	0.24	44.18
Indicated	2,265,000	10,343,000	11.07	0.24	43.99
Measured + Indicated	2,803,000	12,801,000	11.08	0.24	44.02
Inferred	2,189,000	9,883,000	10.93	0.23	43.41

TABLE 6-2 HISTORICAL RESOURCE ESTIMATION SUMMARY FOR HERVIEUX-OUEST (BURO ET AL, 2011)

Resource Categories	Volume	Tonnes	TI%	V%	FE%
Measured	1,275,000	5,822,000	11.28	0.25	43.97
Indicated	3,003,000	13,648,000	11.26	0.26	43.98
Measured + Indicated	4,278,000	19,470,000	11.27	0.26	43.98
Inferred	1,034,000	4,700,000	11.17	0.27	43.36

In 2012, Nevado published a technical report titled "NI 43-101 Technical Report: Resource Estimation of the La Blache Project Cote-Nord, Quebec, Canada for Nevado Resources Corporation" (Dupéré, 2012). A historical estimate was produced as part of this report. The block model was interpolated using a 1.5 m composite constrained within a 3D wireframe envelope of the mineralized massive iron oxides defined by drill holes. The mineral resource model was defined by a block size of 10 m (east-west) by 10 m (north-south) by 10 m (elevation) in size, located below the bedrock/overburden interface. The deposit covered over 1,150 m in the ENE direction with an average width of 470 m. The deposit widened at depth from 200 m in the WSW to approximately 715 m in the ENE. The deposit was described as slowly dipping at 20° towards the ENE and reaching a maximal depth of 600 m below surface. The average thickness of the mineralized zone was 50 m, with a minimum of 15 m and a maximum of 85 m in the deeper portion of the deposit. The inverse squared distance method was used in multiple passes using anisotropic search ellipsoids increasing in size from one pass to another. The estimate was based on 45 drill holes. No capping was applied. An average specific gravity of 4.6 g/cm^3 (based on 183 drill core measurements) was used to estimate tonnage. All interpolated blocks were classified as historical inferred resources.

Using a cut-off grade of 5.1% TiO_2Eq, Dupéré (2012) disclosed a historical estimate of 101.7 Mt of inferred resources at 21.75% TiO_2Eq (41.76% Fe, 18% TiO_2, and 0.18% V. No pit shell was used to constrain the historical estimate and all material was declared as inferred resources, likely not meeting the criteria of reasonable prospects for eventual economic extraction. The report author considers this historical estimate as relevant to the Property but does not consider it reliable due to no pit shell being used to constrain the historical estimate. A QP has not done sufficient work to classify the historical estimate as current mineral resources and Temas is not treating the historical estimate as current mineral resources. The historical estimate should only be considered as indicative of the mineral potential of the La Blache Property, and has been superseded by the current mineral resource estimate for the Property disclosed in Section 14 of this Report.

In 2020, Temas published an NI 43-101 technical report titled "2020 Technical (N.I. 43-101) Report on La Blache Property". The 2012 MRE was not carried over. No additional work was presented in this technical report.

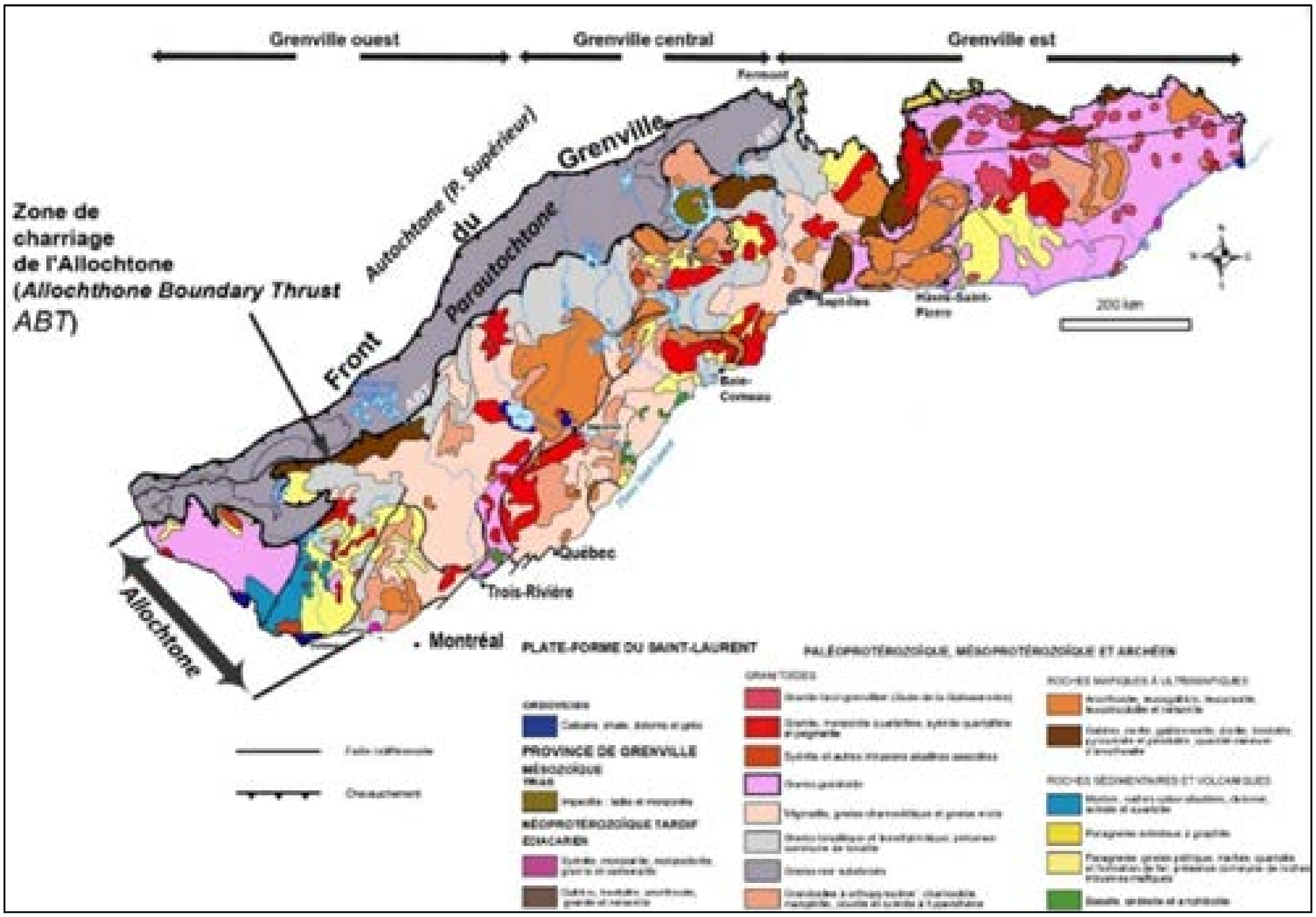
7. GEOLOGICAL SETTING AND MINERALIZATION

7.1 REGIONAL GEOLOGY

The Property is located in the Cote-Nord region of Quebec, part of the geological Grenville Province (Figure 7-1). The Grenville extends for more than 2,000 km in length and skirts the North Shore of the St. Lawrence River. Varying in width from 300 km to 600 km, it forms the southeast segment of the Canadian Shield. The Grenville Province is separated from the Archean rocks of the Superior Province and the Proterozoic rocks of the Otish Basin by the Grenville Front. The tectonic fabric of the Grenville predominantly trends northwest-southwest. Figure 7-2 shows the geology of the Grenville Province.

FIGURE 7-1 LOCATION OF THE GRENVILLE PROVINCE. MODIFIED FROM (CARD, 1998)

FIGURE 7-2 GEOLOGICAL MAP OF THE GRENVILLE PROVINCE. MODIFIED FROM (BANDYAYERA, 2017)



7.1.1 GRENVILLE PROVINCE

The Grenville Province is a geological division of the Canadian Shield. It extends more than 2,000 km with an average width of 350 km. It corresponds to the world's longest continuous segment of a late Mesoproterozoic belt (Wynne-Edwards, 1972; Davidson, 1995).

It takes its name from the village of Grenville on the north shore of the Ottawa River in the Province of Quebec. It corresponds to the Laurentian territory of Quebec. The first use of the term Grenville was in Logan's work in 1863, when he introduced the "Grenville Series" geological unit. The Grenville series refers to a succession of marbles and other metasedimentary rocks mapped during his reconnaissance work along the Ottawa River. The Grenville series replaced the name "Laurentian System" given by Logan and Hunt (1855) to these same rocks. Later, its use was extended to include all similar rocks north of the St. Lawrence River. Since then, the name "Grenville Series" has been changed to "Grenville Supergroup", which refers to rocks of the central metasedimentary belt in Ontario, northern New York and southwestern Quebec (Wynne-Edwards, 1972).

The concept of subprovince was used by Wilson (1925) to separate Archean terrains (Timiskaming Subprovince) from Proterozoic terrains (Grenville Subprovince) of the Saint-Laurent Province. As soon as K/Ar and Rb/Sr dating techniques established absolute ages (minimum ages in these cases), the concept of the tectonic province took precedence over the old names that became obsolete (Stockwell, 1962, 1969, 1982). The tectonic discontinuity marking the northwest boundary of the Grenville Province was studied in western Quebec by Faribault et al. (1912) and in central Ontario by Collins (1925). This discontinuity was later named the "Huron-Mistassini Fault Zone" by Wilson (1949) and then the "Grenville Front" by Derry (1950).

The first subdivision of the internal nature of the Grenville Province was developed by Stockwell (1964) based on the identification of segments that yielded different pre-Grenvillian ages. Wynne-Edwards (1972) then divided the province into seven main domains, highlighting a narrow corridor parallel to the Grenville Front, the "Grenville Front Tectonic Zone". Although it dates back more than 30 years, several elements of Wynne-Edwards' (1972) terminology are still used in the current literature. Later, Rivers et al. (1989) subdivided the Grenville Province into three domains based on tectonic, magmatic and metamorphic criteria: Parautochton, polycyclic Allochton and monocyclic Allochton. The terms "monocyclic" and "polycyclic" are based on the presence or absence of pre-Grenvillian fabric. Specifically, the polycyclic Allochton consists of rocks that have undergone the different Pregrenvillian orogeneses, whereas the monocyclic Allochton is thought to correspond instead to supracrustal rocks that have undergone only one orogenic phase (the Grenvillian Orogenesis). It is now recognized that Grenvillian metamorphism is highly variable in intensity and age along the Grenville Province (Rivers et al., 2012), so the terms monocyclic and polycyclic are no longer used.

Gower and Krog (2002) proposed a classification of geological periods based on orogenesis (with dominant compression) and anorogenic events (with dominant extension), applicable to eastern Grenville. This part of the Grenville evolved over several million years, from pre-Labradorian to Grenvillian. Another classification based on geological eons involving a geological time scale (Hofmann, 1990) is used in establishing tectonic environments in the Grenville (e.g., Rivers, 1997; Indares and Moukhsil, 2013).

The Grenville Province represents the footprint of the last tectonic event (orogenesis) to shape the Canadian Shield. The Grenville was built step by step along the eastern margin of the Laurentia continent (the continental core of North America). It is the root of an ancient mountain range comparable to the present Himalayas (Windley, 1986). This mountain range would have resulted from a continental-continental collision between Laurentia and Amazonia (1090-980 Ma; e.g., Rivers et al., 1989, 2012).

In Quebec, the Grenville Province occupies a vast territory of nearly 495,000 km^2. It is restricted to the north by the Superior and Churchill provinces and to the south by sedimentary rocks of the St. Lawrence Platform and the Appalachian Province. The Grenville Front, clearly visible on aeromagnetic maps, separates the Grenville Province from the Superior Province. The Grenville Province is divided into two parts, the Parautochton and the Allochton, separated by a major thrust structure called the Allochton Boundary Thrust ("ABT") (Rivers et al., 1989). The Parautochton is composed of mostly Archean rocks in contact with rocks of the Superior Province and limited to the northwest by the Grenville Front located near the Grenvillian Range. The Allochton is composed of Paleoproterozoic to Mesoproterozoic rocks. The Grenville Province largely lies on gneiss complexes of high-grade metamorphic rocks with polyphase ductile deformation and significant partial melting. It also contains the world's largest quantity (75%) and biggest anorthositic intrusions (Ashwal and Wooden, 1983).

The Grenville Front is a major discontinuity of the North American continent resulting from the collision of the Allochton with the existing rocks (Autochton) in southeastern Superior Province. It is generally accepted that the Grenville Front is the first major manifestation of Archean rock deep crustal horizon uplift (Rivers et al., 1989; Indares and Martignole, 1989). The Grenville Front is a fracturation and mylonitization zone along heavily to moderately inclined surfaces to the southeast and south. This zone indicates a shift from brittle deformation to ductile deformation towards the orogen (Davidson, 1998). The Grenville Front is not a single fault or a well-defined mylonitization zone along its entire length, although this may be the case in some areas. In the Lagacé Lake area (NTS sheet 32B14), the Grenville Front is marked by the Buteux Fault. Archean planar and linear elements of the Parautochton are gradually reoriented from north to south, from an early E-W attitude marking the effects of the Kenyan Orogenesis to a final NE-SW attitude reflecting the effects of the Grenvillian Orogenesis (Bandyayera et al*.,* 2004). Further east, in the Vallard Lake area, the transition between rocks of the Parautochton and those of the Superior Province is characterized by a narrow mylonitization corridor (Lamothe *et al*., 1998).

7.2 LOCAL GEOLOGY

The description below of the lithologies on the Property is slightly modified from Kutluoglu (2020) and has been verified by the author

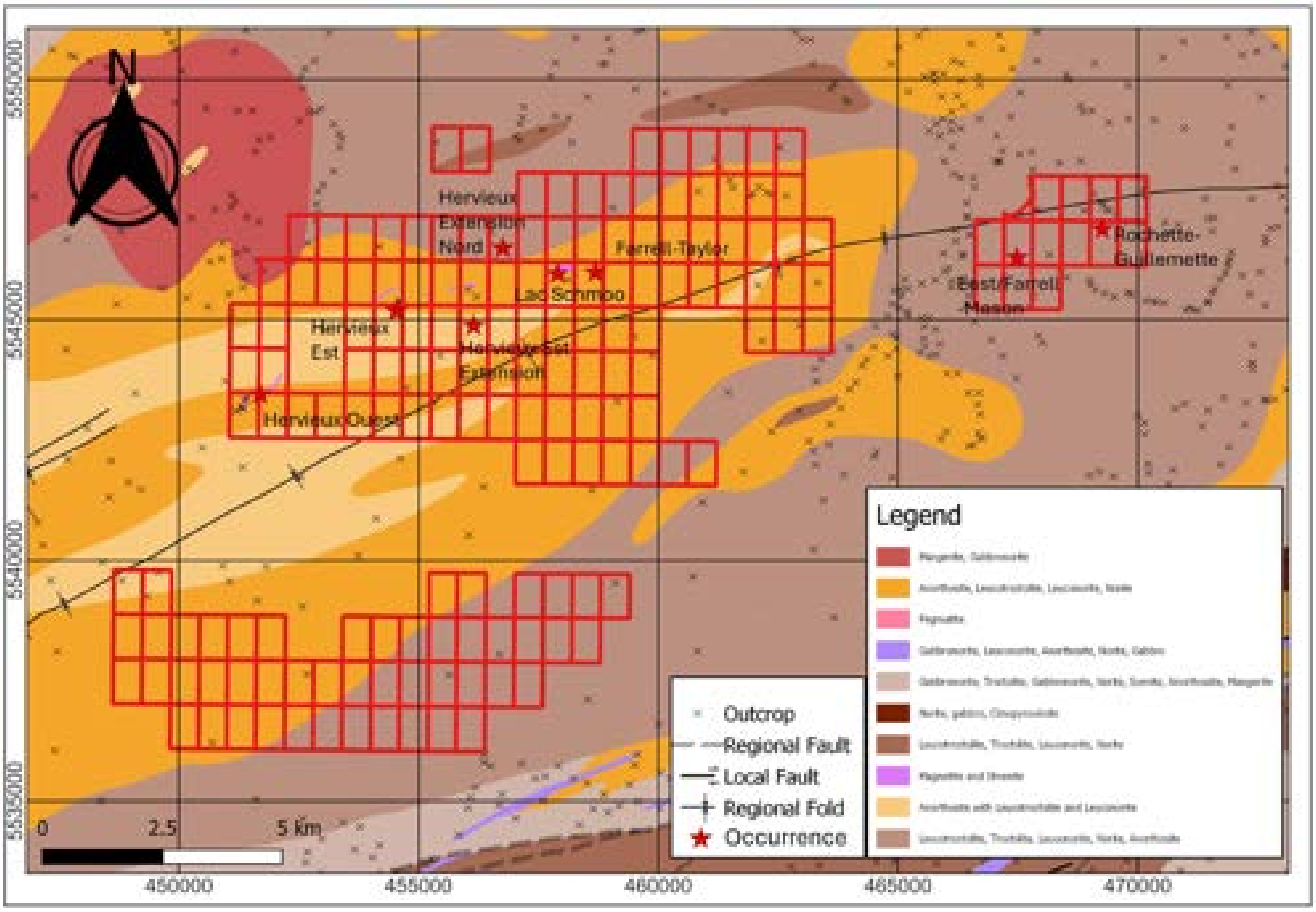
The lithologies are divided into three major units: gneissic and intrusive rocks of varied composition belonging to the Hulot Complex, intrusive rocks that include the east-west trending La Blache Anorthosite Complex, and late cross-cutting gabbronorites, gabbros, diabase, mangerites, granites and pegmatites (RG2002-02). The La Blache Anorthosite Complex is an almost circular batholith of 35 km by 20 km (GM52690, 1994) within intrusive rocks that extend for 100 km by up to 20 km. The anorthosites are cut by granites and pegmatites varying from a few centimetres to several metres, with multiple orientations.

Four major lenses of titaniferous magnetite (Hervieux-West, Hervieux-East, Schmoo Lake and Farrell-Taylor) are present as tabular bodies aligned over a 17 km long arc (RG2002-01) in the centre of the anorthosites. The lenses are almost parallel to the axis of the large antiform defined by the anorthosites that is slightly discordant with the lithologies. The geology is taken from descriptions contained in company and government reports (GM02671, 1953), (GM52690, 1994), (RG162 and RG2002-01). The lithologies are all of igneous origin, divided into anorthosites, garnet anorthosites, pegmatites, gabbroic anorthosite and titaniferous magnetites of the La Blache Anorthosite Complex (Figure 7-3).

7.2.1 ANORTHOSITE

The anorthosites at the core of the La Blache Anorthosite Complex are composed of at least 90% andesine to labradorite plagioclase megacrysts with minor pyroxenes, titaniferous magnetite, ilmenite, garnet, biotite, olivine, pyrrhotite and chlorite. They occupy 75% of the Property's total surface. Anorthosite on the Property is massive, medium- to coarse-grained, equigranular and automorphic. It is also weakly deformed, unaltered, non-foliated, but occasionally cataclastic. The anorthosite is grey on fresh surfaces, and the labradorite is recognizable by its bluish tinge. The anorthosite is slightly magnetic.

FIGURE 7-3 GEOLOGY MAP OF THE LA BLACHE PROPERTY



7.2.2 GARNETIFEROUS ANORTHOSITE

Garnetiferous anorthosite is similar to typical anorthosite but contains between 5% and 15% garnet. The garnets are agglomerated masses 5 to 15 cm across, associated with magnetite and ilmenite. The unit is in direct contact with iron oxide units and is up to 25 m wide.

7.2.3 PEGMATITE

Dykes and veins of pink pegmatites cut all other units. They are composed of quartz and potassium feldspar with minor biotite and magnetite.

7.2.4 GABBROIC ANORTHOSITE

Gabbroic anorthosite is distinguished from anorthosite by its content of 5% to 25% of mafic minerals. Contacts are gradual between the two units.

7.2.5 TITANIFEROUS MAGNETITE

Titaniferous magnetite is a deep black colour with a bluish reflection, in contrast to the much lighter grey anorthosite, even in weathered outcrops. It is massive and in contact with anorthosite, which also occurs as enclaves in the oxides. The typical composition is 80% titaniferous magnetite, 10% spinel, 5% to 10% ilmenite and 5% pyroxene and/or plagioclase.

The dominant structure on the Property has a northwest orientation as per the general alignment of the La Blache Anorthosite Complex.

7.3 PROPERTY MINERALIZATION

The Property has many areas where mineralization has been defined using anywhere from a single grab sample to multiple drill holes.

7.3.1 FARRELL-TAYLOR

The Farrell-Taylor showing is the most advanced mineral showing on the Property. Surface mineralization in outcrop is located roughly at the western extent of an east-west 3.5 km long by 1 km wide dual geophysical anomaly with a magnetic low, conductive western portion and a magnetic high, non-conductive in this eastern portion. Drilling confirmed the geophysical modelling, and mineralization dips shallowly (10° to 20°) to the east. The magnetic lens, 25 m to 200 m thick, is composed of massive magnetite-ilmenite, transitioning to semi-massive and then disseminated mineralization. The average true thickness of the mineralized intercepts from drill core is 85% to 95% of the reported length along the core. This showing is defined by multiple mineralized outcrops at the western end, a magnetic anomaly and 45 recent drill holes (2010-2011). The mineralization at Farrell-Taylor only surfaces at the western end of the showing. It has displayed a shallow plunge noted in all drill holes to date.

7.3.2 SCHMOO LAKE

Mineralized outcrop discovered in 1951 following geophysical prospecting. The center of the Lac Schmoo mineralized zone locates the site, approximately 7 km west of the center of Lac La Blache. Mineralization occurs as tabular masses of magnetitite. Salamis (1981) reported that the mineralized zones consist of medium- to coarse-grained magnetite, with exsolution lamellae of ilmenite and very fine inclusions of ulvöspinel ($Fe2TiO4$) within the magnetite. Mean values for grab samples from the Lac Schmoo zone are 48.05% Fe, 21.21% $TiO2$ and 0.23% V. The showing received 2 shallow drill holes in 1964 which noted massive titaniferous magnetite in the top 40m of both holes (GM 15462). The relationship between the Schmoo Lake showing and the Farrell-Taylor lens is unclear, but Schmoo Lake may represents an extension of the Farrell-Taylor mineralization, or is an additional, smaller and undefined lens.

7.3.3 HERVIEUX WEST

The center of the Hervieux-Ouest mineralized zone locates the mineralized zone 14 km WSW of the center of Lac La Blache. The Hervieux-Ouest zone is an oval-shaped lens approximately 1,130 m long and 40 to 105 m wide. This mineralized zone is cut by a 350° trending fault with a horizontal displacement of 160 m.

7.3.4 HERVIEUX EAST

Located approximately 5km WSW of Farrell-Taylor, Hervieux-East is an elongate shaped lens with mineralization defined down to 250m below surface. The Hervieux-Est mineralized zone comprises eight outcrop zones spread over a distance of 2,440 m and up to 80 m wide.

7.3.5 HERVIEUX-EAST EXTENSION

The Hervieux-East Extension is the second most developed showing on the property, defined as having good exposure and a strike of 200 m and a minimum width of 35 m. The mineralization is massive, medium- to coarse-grained magnetite and ilmenite in rounded outcrops. Four (4) holes were drilled in 2011 to test the mineralization using two different drill pads, intersecting narrow mineralization starting from the surface.

7.3.6 HERVIEUX NORTH EXTENSION

Located approximately 1 km north of the Hervieux-East Extension, the Hervieux-North Extension is a 30-m cliff of magnetite-ilmenite-bearing anorthosite. This prospect was discovered during the 2010 exploration campaign and has not received additional work since then. A sample taken in 2010 assayed 61.9% Fe_2O_3, 16.7% TiO_2 and 0.17% V_2O_5.

7.3.7 LA BLACHE LAKE WEST

The La Blache Lake West showing is a series of outcrops along a rounded knob, oriented NW-SE along the southern shore of Lac La Blache, approximately 4 km east-southeast of the Farrell--Taylor showing. It is described as 5 to 25% mixed disseminated and vein-type magnetite and ilmenite, in anorthosite covering a fairly large area southwest of the shore of Lac La Blache. The average result for all selected grab samples in this area was 13.5% Fe_2O_3, 3.6% TiO_2 and 0.08% V_2O_5, with the best result of 36.5% Fe_2O_3, 11.9% TiO_2 and 0.25% V_2O_5 obtained from a 2012 select grab sample.

8. DEPOSIT TYPES

The oxide mineralization on the Property is part of a widely distributed deposit type typically associated in space and time with major igneous events. Massive ferrian ilmenite deposits (titaniferous magnetite, magnetite-ilmenite-apatite) have been known in the Grenville Province since the mid-1850s, the most famous being the massive ilmenite Lac Tio deposit in the Havre-Saint-Pierre region (Corriveau *et al*., 2007).

The mineralization of the Lac Tio deposit is associated with andesine anorthosite (Birkett et al., 2009), whereas the mineralization of the La Blache deposit is associated with labradorite-bearing anorthosite.

The geological setting for these deposit types is generally in intrusive complexes that have been emplaced at deeper crust levels, allowing for the progressive differentiation of residual liquids from anorthosite-norite magmas and late Fe-Ti-enrichment. Deposits form in situ via the accumulation of crystal layers at the base of magma chambers by gravitational settling. The origin of discordant deposits is not well understood. Two genetic models have been suggested:

- Remobilization of the crystal cumulates into cracks or fractures;
- Emplacement as a Fe-Ti-oxide-rich immiscible melt with little silica.

Deposits can be lensoid, dyke-like or sill-like bodies of massive mineralization, but they can also be disseminated in mafic host rocks, with exsolution intergrowths of either ilmenite and hemo-ilmenite, or titanomagnetite, titaniferous magnetite or ilmenite in magnetite. Some mineralization can also be disseminated as layers in layered intrusions. Mineralization can form lenses tens to hundreds of metres wide and several hundred metres long (Armstrong *et al*., 2012).

Massive deposits are hosted by massive, layered or zoned intrusive complexes (anorthosite, norite, gabbro, diorite, diabase, quartz monzonite and hornblende pyroxenite). They can have sharp, cross-cutting contacts with their anorthositic hosts. Ilmenite deposits typically formed in the Mesoproterozoic (1.65 to 0.90 Ga), whereas Fe-Ti deposits with titaniferous magnetite do not appear to be restricted in time (Gross et al., 1997).

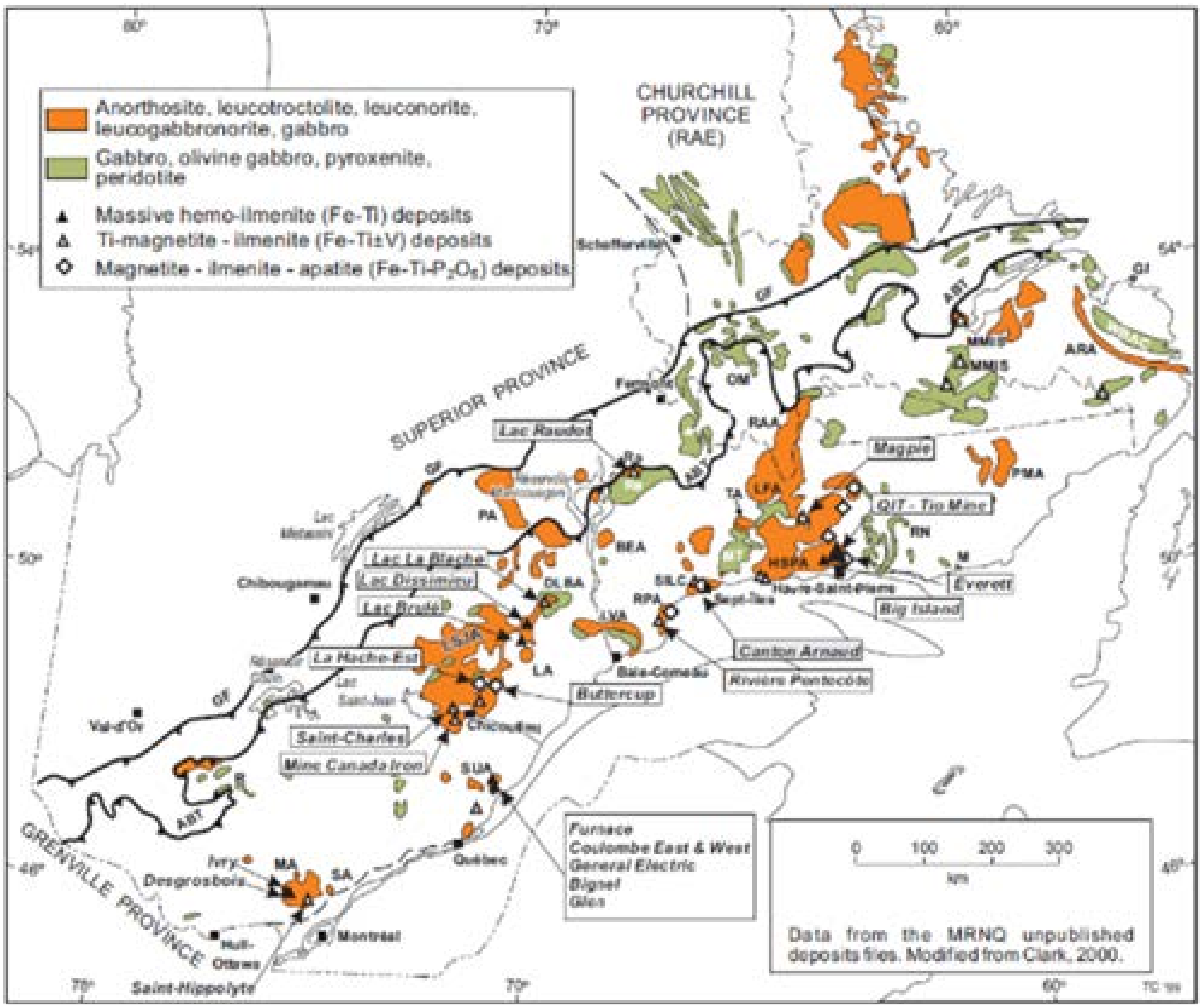
Magmatic Fe-Ti-(P-V) deposits associated with anorthositic suites and mafic intrusions have been divided into five distinct mineralization styles (Corriveau et al., 2007):

- Magmatic disseminated Fe-Ti oxides (titaniferous magnetite+ilmenite) in the host anorthosite or mafic intrusions (e.g., Raudot Complex; Figure 8-1).
- Massive ferrian ilmenite or massive titaniferous magnetite layers, dykes, tabular or irregular bodies locally associated with oxide-rich norite, jotunite or oxide-apatite gabbronorite and in sharp or diffuse contacts with the host anorthosite. In two cases (the St-Urbain and Havre-Saint-Pierre anorthositic suites), rutile is present in significant amounts in the ferrian ilmenite mineralization. Massive titaniferous ores are usually associated with labradorite-bearing anorthosite, and massive ferrian ilmenite ores with andesine-bearing anorthosite. According to the available data, ferrian ilmenite mineralization occurs only in anorthositic plutons younger than 1160 Ma in the Grenville Province.

- Layers and lenses of nelsonite (magnetite-ilmenite-apatite rich rock), interlayered with magnetitite in layered mafic complexes (e.g., Eocambrian Sept-Iles Layered Complex; Figure 8-1) or with oxide-apatite gabbronorite, oxide-rich norite (jotunite) or ilmenitite in anorthositic complexes.
- Late injections of magnetitite, ilmenitite, or oxide-rich norite in an already cooled and solidified anorthosite.
- Magnetite concentration in late monzonite or mangerite dykes cutting anorthosite. Due to their small size, this type has no economic potential.

The distribution of anorthosite massifs and major mafic intrusions of the Grenville Province is shown in Figure 8-1, along with their associated Fe-Ti deposits.

FIGURE 8-1 DISTRIBUTION OF ANORTHOSITE MASSIFS AND MAJOR MAFIC INTRUSIONS AND THEIR FE-TI DEPOSITS IN THE QUEBEC AND LABRADOR SEGMENTS OF THE GRENVILLE GEOLOGICAL PROVINCE (FROM CORRIVEAU ET AL. 2007)



Deposits of titanomagnetite can also be divided into phosphorus-rich and phosphorus-poor types. La Blache is a member of the latter. Additionally, La Blache shows high concentrations of chrome, the presence of spinel which reflects the high Al_2O_3 contents of the rocks, and relatively low vanadium (from trace to 0.40% V_2O_5).

Opinions vary on the geological origins of mineralization like La Blache, and there is little consensus on this matter. One theory supports an origin by the accumulation of dense crystals in a magma chamber through settling under the force of gravity (Pang et al. 2008), while a second favours crystallization from an immiscible oxide-rich magma within the silicate magma intrusive sequence (Zhou et al., 2005).

9. EXPLORATION

Temas has not conducted any exploration work on the Property, except for drilling. Drilling is discussed in Section 10 (Drilling).

Some exploration work (ground prospecting and geophysics) has been conducted by previous operators and discussed in Section 6 (History).

10. DRILLING

In 2022, Temas completed eight (8) diamond drill holes totaling 2,326 m. The target was the two main zones (Mixed Zone and Massive Zone), which represent the best potential for an open pit mineral resource not exceeding 300 m deep.

There are no drilling, sampling or recovery factors that could materially impact the accuracy and reliability of the results.

All holes intersected mineralization. Table 10-1 shows the collar parameters, and the map in Figure 10-1 shows the hole locations.

TABLE 10-1 2022 DIAMOND DRILLING PROGRAM ON THE LA BLACHE DEPOSIT

Hole ID	Easting	Northing	Elevation	Dip	Azimuth	Depth
LB-22-01	458892	5546063	495	-90	0	351
LB-22-03	458538	5546127	495	-90	0	276
LB-22-04	458488	5546089	491	-90	0	234
LB-22-05	458442	5545996	504	-90	0	291
LB-22-06	458505	5545952	511	-90	0	265
LB-22-07	458428	5545903	525	-90	0	282
LB-22-08	458516	5545900	508	-90	0	252
LB-22-09	458841	5545923	516	-90	0	375

10.1 DRILL HOLE SELECTION

Selecting drill hole locations for the 2022 drill program was a collaborative effort between Temas, and Magnor Exploration. Drill holes targeted previously drilled zones across the Property.

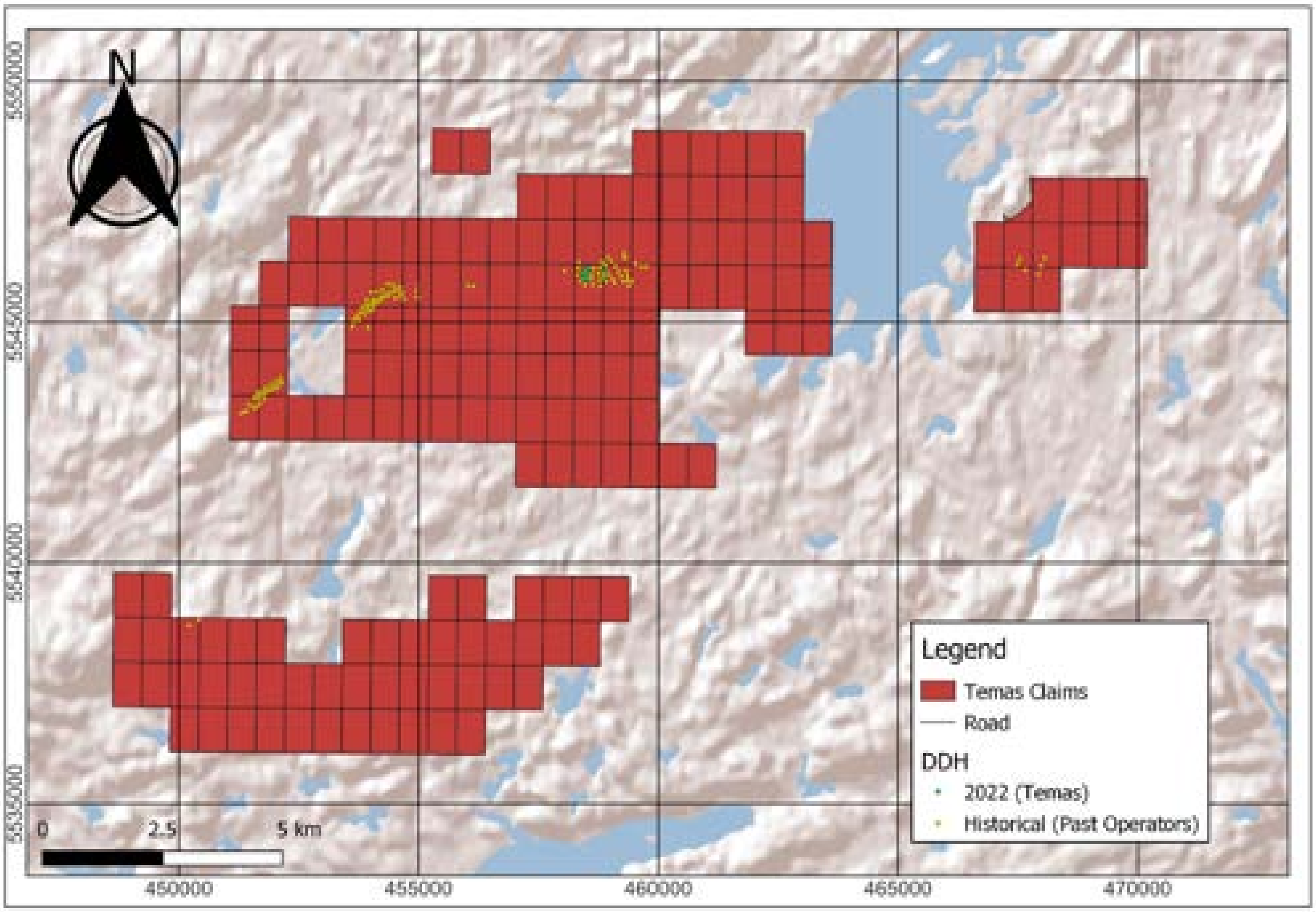
Magnor was in charge of the drilling program carried out by RJLL Drilling.

10.2 DRILL HOLE LOCATION / SET-UP

The coordinate system in use is UTM NAD83 Zone 19.

On the Property, drill collar locations are pre-surveyed using a handheld GPS. A wooden stake or picket is hammered into the ground to mark the collar location. The stake is then inscribed with the predetermined drill hole identification, intended azimuth, and anticipated depth of the hole. The drill site is then prepared to allow the rig and other equipment easy access. In many instances, this involves brush clearing and some tree removal. In all cases, care is taken to ensure that the drill platform and operating footprint are as small as possible to limit environmental disturbances.

FIGURE 10-1 DRILL HOLE LOCATIONS FROM THE 2022 DRILLING PROGRAM



10.3 DRILL HOLE ORIENTATION AT START-UP

Since all drill holes were vertically drilled, the alignment and set inclination of the drill rig were less of a concern. The necessary validations were done to ensure the drill rig faced north and that the dip was -90 at start-up.

10.4 DRILL HOLE ORIENTATION DURING OPERATION

Once drilling commenced, a Magnor geologist visited the drill site daily to perform regular checks on the drilling progress, inspect the drill site for environmental or safety issues, and monitor the downhole survey readings. The hole's orientation was checked and monitored using a downhole surveying device (Gyro Reflex) as follows:

- First reading approximately 30 m past the end of the casing;
- Second reading approximately 150 m down the hole;
- Final reading at the end of the hole.

The drill crew took readings during operations and recorded the results on special forms provided by the downhole survey instrument manufacturer.

The lithologies and mineralization at La Blache contain a significant amount of magnetic minerals, making it difficult to obtain magnetic readings. All azimuths were set to 0 at start-up.

Data sheets were collected from the drillers at the end of each drill hole. The downhole survey data were added to the geological logging sheet in due course by the logging geologists.

10.5 DRILL HOLE NUMBERING

Drill hole numbers, generally sequential, are assigned by a geologist. The information is confirmed with the driller or drill supervisor before drilling commences. Drill hole identification consists of an abbreviation for the Project being drilled (LB), the year (last two digits) and the hole number, according to the convention:

Project(##)-Year(YY)-Hole(##). For example, drill hole "LB-22-01" is the first hole drilled by Temas on the La Blache deposit in 2022.

10.6 DRILL HOLE CORING

The drilling contractor produced NQ (46 mm) diameter core. The core is collected in a standard drilling tube. The drillers carefully place the core into wooden core boxes specially manufactured for this process and which Magnor supplies to the drilling contractor.

Magnor's site geologist terminated drill holes once the targeted depth was reached. The core was reviewed at the drill site for target lithologies and mineralization.

Once a drill hole was terminated and the final downhole survey reading was collected, the drill crew pulled the rods for mobilization to the next drill site.

10.7 CORE HANDLING AT THE DRILL RIG

Diamond drill core is collected in up to 3-m lengths or runs in an NQ core barrel. The NQ core trays hold a nominal 4.5 m of cohesive core in three rows of 1.5 m each. Under the supervision of the driller, the driller's helper places the core into the wooden core trays at the drill rig after the completion of each drill run. The driller's helper numbers the core trays with a permanent marker, indicating the hole number and the sequential box number, beginning with box 1 after collaring the casing into bedrock. Drill hole numbers and box numbers are also inscribed on the end piece of the core tray next to the first core placed in the row.

The driller's helper inserts a meterage tag (wooden block) at the downhole end of the last piece of core taken from the core tube. The block identifies the exact depth at the end of each drill run, measured from the collar or standpipe of the drill. Although the core barrel is designed to take a 3-m run, rock conditions or mechanical failures often dictate the run length.

The wooden depth markers are marked in metres in neat and legible writing.
Additional information can be provided on additional wooden blocks about core loss due to bad ground, cavities in the bedrock, or changing groundwater conditions. Once the core tray is filled, it is secured shut using a lid. It is then carefully stacked for transport by helicopter.

10.8 RECEIVING CORE AT THE CORE LOGGING FACILITY

Securely boxed drill cores were transported daily to the core logging facility at the nearby Fleury Camp (rented by Temas). Care was exercised to ensure the lids are securely attached to minimize core disturbance, breakage, and loss during transport from the drill site.

All core trays were verified in the logging facility, checking the wooden marker blocks before logging was initiated. If blocks do not correspond with the observed core, the shift driller and/or drill supervisor was consulted at the first available opportunity.

10.9 GEOLOGICAL LOGGING PROCEDURE

The core logging is detailed and has several components: geological logging (lithology, structures, alteration, and mineralization), sampling and photography.

Logging data is recorded in a core logging software named Geotic Log. In this program, tabs are completed by the logging geologist. The recording intervals of lithology, alteration, assays, and header tabs are completed and saved. The program uses Microsoft Access to compile data in spreadsheet format for later export to other geological software.

- The survey information section collects relevant data on the drill hole, including hole number, orientation, total length, coordinates and elevation, drilling start and end dates, logging geologist, logging date, core size, and storage location. The survey information section also contains the downhole survey data collected by the drillers.
- The description section is the main logging part where geological information is entered and collected. All geological characteristics are noted, including lithologies, structures, alteration, sulphide mineralization, assay sample numbers and intervals, density sample numbers and intervals, etc. The main geological observations are described within these subsections.

10.10 ASSAY SAMPLE SELECTION

Assay samples are broken at major lithological contacts to represent homogeneous units. The minimum assay sample interval in the holes was not less than 50 cm except in unique circumstances (e.g., mineralized lithological units less than 50 cm long). The maximum sample interval did not exceed 2 m. No sample crossed a major rock, alteration, or mineralization boundary.

The geologist determined sampling intervals during logging and marked them on the core using coloured lumber pencils with a line drawn at right angles to the core axis. Samples were numbered in consecutive order using two-way sample tag books provided by the ALS Geochemistry laboratory. The sample sequence included QAQC samples (blank samples and standards consisting of certified reference materials or "CRMs") inserted into the sample stream using sample numbers in sequence with the core samples.

Sample intervals, sample numbers, and QAQC samples are noted in the Assay tab of the Descriptions section in the Geotic Log software. Sample intervals and QAQC sample information (sample type and CRM identification) are also manually recorded in the sample tag books provided by the ALS Geochemistry laboratory, all of which were archived for future reference.

10.11 CORE SAMPLING (CORE SAW SPLITTING)

A geotechnician trained in core cutting procedures sawed the core at the Magnor warehouse in La Baie.

The core is sawn with a diamond saw, with one-half of the sample placed in a sample bag and the remaining half returned to the core box. The cut core will be returned to the core box in the same position as it was removed so as not to rotate the core or reverse the downhole direction of the core. The geotechnician staples a tag containing the sample number and interval onto the wooden core tray. This permanent sample reference remains in the box. The geotechnician also places a tag inside the plastic bag with the sample. The bag is then closed using a zip tie and stored in sequence before sample dispatch preparation.

The trained core sampler adds a standard consisting of material of known metal content and internationally recognized and verified (Certified Reference Material or "CRM") to the sample sequence as part of the QAQC process.

Similarly, a "blank" is also included in the sequence. Blank material is technically devoid of any metals. The sample bags, tags and dispatch documentation for the assay laboratory do not display any information that would indicate the presence of control samples.

10.12 SAMPLE SHIPMENT PREPARATION

Assay sample bags are packed in large "rice" bags.

For shipping purposes, the rice bags are piled onto a wooden pallet for transport and wrapped in pallet wrap to prevent the bags from moving during transport. A waterproof bag containing the Laboratory Sample Submission Form and a hard copy of the sample dispatch sheet are included with the sample shipment.

The palletized rice bags are stored in the warehouse at the Magnor facility until shipped to the laboratory. The lab is notified by email that the samples are enroute. A digital copy of the sample submission form and the sample dispatch list are emailed to the laboratory manager once the samples have left the warehouse.

10.13 CORE STORAGE

Following sampling, the fronts of the core trays are labelled using a durable, inscribed metal tag that will survive weathering far longer than a permanent marker. The core tray metal tags are marked with the hole number, the tray number, and the "from-to" meterage.

The core trays were stored on pallets outside Magnor's warehouse.

11. SAMPLE PREPARATION, ANALYSES, AND SECURITY

The following paragraphs describe the Temas' sample preparation, analysis, and security procedures for the 2022 diamond drilling program.

The report author reviewed the QAQC procedures and analytical results for the 2022 drilling program.

11.1 CORE HANDLING, SAMPLING, AND SECURITY

Core boxes were received daily at the core shack on the Property. Drill core is logged and marked for sampling by geologists. Samples usually range from 0.5 m to 2.0 m in length and, whenever possible, sample intervals respect lithological contacts, and the appearance of mineralization.

Core cutting is carried out at Magnor's warehouse in La Baie by a technician who follows the geologist's markings using a core saw. One half of the core is placed in a plastic bag with the matching sample tag while the other half is replaced in the core box and stored for future reference. Individual sample bags are placed in rice bags along with the list of samples. Samples are then stored at Magnor's warehouse until being shipped to the laboratory.

11.2 LABORATORIES ACCREDITATION AND CERTIFICATION

The International Organization for Standardization ("ISO") and the International Electrotechnical Commission ("IEC") form the specialized system for worldwide standardization. ISO/IEC 17025 General Requirements for the Competence of Testing and Calibration Laboratories sets out the criteria for laboratories wishing to demonstrate that they are technically competent, operating an effective quality system, and able to generate technically valid calibration and test results. The standard forms the basis for the accreditation of competence of laboratories by accreditation bodies. ISO 9001 applies to management support, procedures, internal audits and corrective actions. It provides a framework for existing quality functions and procedures.

For the 2022 drilling program, Temas used ALS Global (ALS), an independent commercial laboratory for both the sample preparation and assaying. ALS is a commercial laboratory and independent of Temas. ALS received ISO/IEC 17025 accreditation through the Standards Council of Canada ("SCC"). More information about ALS Global can be found at their website: (https://www.alsglobal.com/en/geochemistry).

11.3 LABORATORY PREPARATION AND ASSAYS

All samples are prepared by ALS Global following the below described procedure:

- Sample is received with tracking system and a bar code label attached (ALS Code#: LOG-21)
- Fine crushing of rock chip and drill samples to better than 70% of the sample passing 2 mm screen (ALS Code #: CRU-31)
- The sample is being split using riffle splitter (ALS Code #: SPL-21)
- A sample split of up to 250 g is pulverized to better than 85% of the sample passing 75 microns screen (ALS Code #: PUL-31)

Core samples are analyzed using:

- ME-MS61 (48 element Suite; Four Acid Digestion)
- ME-ICP06 (Whole rock ICP-AES)
- OA-GRA05 (Loss by calcination; WST-SEQ)
- TOT-ICP06

Assay results were provided as Excel and PDF spreadsheets.

11.4 QUALITY ASSURANCE AND QUALITY CONTROL (QAQC)

ALS Global has their own internal QAQC program, and results are internally validated and the certificates are signed prior to becoming available. Temas also had a QAQC program for drill core that includes the insertion of blind blanks and standards (certified reference material).

The discussion below details the results of the blind blanks, standards, and duplicates inserted as part of the Company's QAQC program only.

11.4.1 BLANK SAMPLES

The blank samples sent to the laboratory are commercial bags of rock believed to be sterile or very low grade. Each sample of the blank material was placed into a plastic sample bag and given a sample identification number.

A total of 47 blank samples were inserted during the 2022 drilling program (roughly one for every 25 samples). These 47 samples returned values ranging from 0.01% to 0.16% Ti, 0.33% to 1.38% Fe, and 2 to 27 ppm V. Although these values are not Nil, they are sufficiently low to pass QAQC.

No outliers were detected.

11.4.2 STANDARDS

Analysis accuracy was monitored by inserting standards. One multi-element certified reference materials (CRMs) used as standards was sent to ALS Global. The standards used were OREAS-404, OREAS-462, and OREAS-465.

The definition of a quality control failure is when assays for a standard are outside three standard deviations (+/- 3SD).

A total of 63 standards were inserted within the 2022 drilling campaign. The only "failures" observed are related to mismatches between Blank and Standard tags.

11.4.3 DUPLICATES

No field duplicates were inserted during the drill program.

11.4.4 CONCLUSIONS ON THE QAQC FOR THE 2022 DRILLING PROGRAM

The sample preparation, analytical procedures, and security of the samples during these procedures followed industry best practices. All efforts were made to identify items out of specification.

The QAQC data indicates that the overall assay results of the 2022 drill program are valid and can be relied upon for the purpose of this Report.

It is the Author's opinion that the sample preparation, security, and analytical procedures are adequate and follow Best Practices.

12. DATA VERIFICATION

The Property has seen drilling since 2010. The database contains 76 surface diamond drill holes for 24,658 m. Historical holes have been subjected to data validation by prior QPs, (Dupéré, 2012) and (Kutluoglu, 2020). This section only pertains to the most recent 2022 drilling program conducted by Temas, even though the report author performed a basic validation of the entire database.

Magnor Exploration, on behalf of Temas, provided all the data.

12.1 SITE VISIT

Pierre-Luc Richard, P.Geo., visited the Property site on October 21, 2022. Mr. Richard also visited Magnor's warehouse in La Baie on November 25, 2022, where core sampling took place (Figure 12-1) and the core was being stored. The site visit included a visual inspection of the historical core (Figure 12-2), a visit to an operating drill rig (Figure 12-3), field tours (Figure 12-4), collar validation (Figure 12-5), resampling (Figure 12-6) and discussions with Magnor geologists. The site visit also included a review of sampling and assay procedures, the QAQC program, downhole survey methodologies, and the descriptions of lithologies, alteration and structures (Figure 12-7).

FIGURE 12-1 PHOTOGRAPHS OF CORE SAMPLING UNDERWAY AT MANOR'S FACILITY IN LA BAIE, SHOWING BLANKS (MIDDLE) AND CMRS (RIGHT) USED DURING THE 2022 DRILL PROGRAM

FIGURE 12-2 VISUAL INSPECTION OF HISTORICAL CORE BROUGHT TO MAGNOR EXPLORATION'S WAREHOUSE AT THE REQUEST OF THE QP

FIGURE 12-3 CORE DRILLING IN PROGRESS ON THE PROPERTY DURING THE FIELD TOUR OF THE PROPERTY

FIGURE 12-4 PHOTOGRAPHS OF THE PROPERTY (SHOWING LAC LA BLACHE) TAKEN DURING THE FIELD TOUR OF THE PROPERTY

FIGURE 12-5 PHOTOGRAPHS OF COLLAR VALIDATION PERFORMED ON THE PROPERTY DURING THE QP'S SITE VISIT

FIGURE 12-6 RESAMPLING BY THE QP DURING HIS SITE VISIT

FIGURE 12-7 REVIEW OF THE 2022 DRILL CORE AND SAMPLING PROCEDURES

12.2 DRILLING AND SAMPLING PROCEDURES

Temas' procedures are described in Sections 10 and 11 of this technical report. Discussions held with on-site geologists confirmed that the procedures were adequately applied.

The QP author reviewed several sections of mineralized core while visiting the Property. With some rare exceptions, all core boxes were labelled and properly stored inside or outside. Sample tags were present in the boxes, and it was possible to validate sample numbers and confirm the presence of mineralization in witness half-core samples from the mineralized zones (Figure 12-2).

Drilling was underway during the QP's site visit, allowing Magnor personnel to explain the entire path of the drill core to the QP, from the drill rig to the logging and sampling facility and finally to the laboratory. All observations and explanations confirmed that the drilling program has been following best practices.

12.3 DRILL CORE STORAGE

Temas had two storage facilities when the QP visited the Property. The historical core was racked at a Government-owned sand pit close to the La Blache deposit (Figure 12-8). The 2022 drill core was palleted at Magnor's warehouse in La Baie (Figure 12-9). Although the historical core is racked properly, Temas never obtained permission from the Government to store its drill core at that location. This historical core must be kept for future reference Temas has since engaged the Magnor team to move the core to their facility in La Baie and is now secured with the 2022 core.

FIGURE 12-8 HISTORICAL CORE BEING STORED ON PUBLIC LAND CLOSE TO THE LA BLACHE DEPOSIT

FIGURE 12-9 DRILL CORE FROM THE 2022 DRILL PROGRAM BEING STORED AT MAGNOR'S WAREHOUSE IN LA BAIE

12.4 DRILL HOLE DATABASE

12.4.1 ASSAYS

The QP was granted access to the assay certificates for all holes drilled by Temas in 2022. Assays for Titanium (Ti), Iron (Fe), and Vanadium (V) were verified for all holes. The assays recorded in the database were compared to the original certificates from the laboratory. No significant discrepancies were detected.

12.4.2 DRILL HOLE LOCATIONS

For drilling conducted in 2022, all drill collars were surveyed using differential GPS equipment. Random field checks with a handheld GPS unit confirmed that the holes were drilled at the planned locations.

12.4.3 DOWNHOLE SURVEYS

For the 2022 drilling program, downhole dips are taken approximately 150 m down the hole and at the bottom of the hole using a Reflex downhole survey instrument. Azimuth measures are not taken since the mineralization is highly magnetic. It is common practice to take measurements every 30 m down the hole and every 3 m when pulling out at the end of the hole. Although measurements are sparse, the QP does not believe this to be a material issue.

12.4.4 QP RESAMPLING PROGRAM

The QP author resampled 8 drill core intervals from two drill holes during the second site visit. The samples were selected by the QP and sent to ALS Minerals in Val-d'Or. ALS Minerals is independent of Temas and the QP Table 12-1 shows the results of this program. The reader should note that the point of the resampling exercise was to validate the order of magnitude of the original database and confirm the presence of mineralization, not attempt to replicate the exact grade historically obtained. It must be noted that Vanadium grades from the resampling program yielded significantly higher values (487% higher values on average) than what was historically assayed in hole FT-10-01. Hole FT-10-04 showed no significant difference with 0.13% higher values (2023 samples) on average. Overall, the resampling program confirmed Ti grades (0.60% difference on average), and potentially identified an upside for V grades (+244% difference on average).

TABLE 12-1 RESAMPLING PROGRAM RESULTS

Hole ID	From (m)	To (m)	Length (m)	Historical Sampling		Resampling	
				TiO_2 (%)	V_2O_5 (%)	TiO_2 (%)	V_2O_5 (%)
FT-10-01	136.5	137.5	1	8.75	0.06	10.46	0.07
FT-10-01	149	150.2	1.2	21.8	0.03	16.93	0.34
FT-10-01	157	158	1	21.6	0.08	20.1	0.41
FT-10-01	170.1	171.2	1.1	20.1	0.07	20.93	0.41
FT-10-04	177	178	1	9.59	0.08	8.82	0.07
FT-10-04	190	191	1	19.55	0.39	19.68	0.41
FT-10-04	228	229	1	19.05	0.38	20.35	0.41
FT-10-04	248	249	1	18.85	0.39	19.1	0.39

12.4.5 QAQC REVIEW

The QP reviewed the QAQC reports but found no significant issues. More details are available in Item 11 of this report.

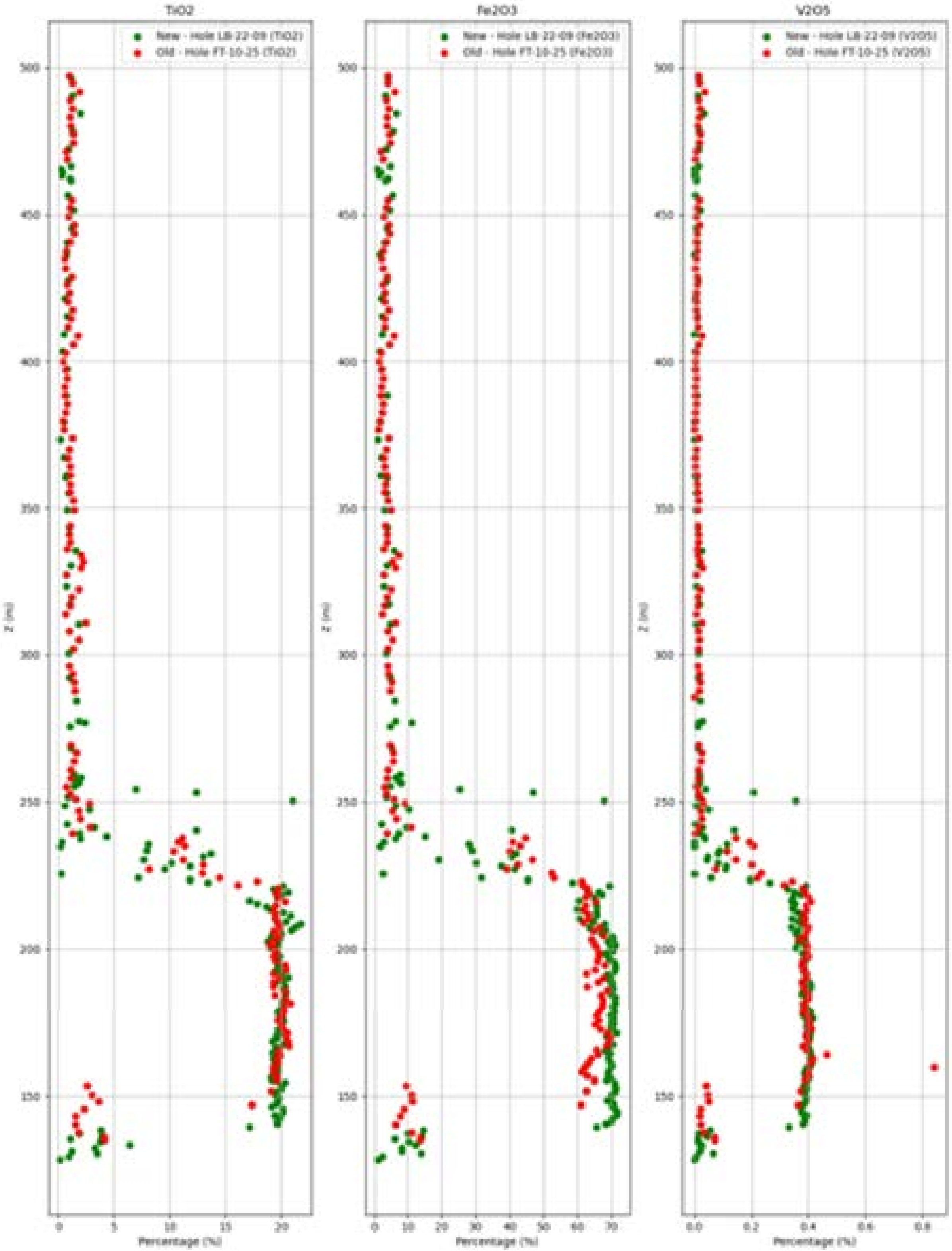
During the course of this Report being prepared, an ERM geologist authors conducted a statistical analysis comparing recent and historical holes. The exercise consisted in comparing grade distribution between two holes (one from each population) in close vicinity. Figure 12-10 show examples of such comparison. The report authors reviewed the statistical analysis. Overall results show reasonable grade comparison between the 2022 drill program and previous owner's drill programs.

12.5 CONCLUSION

The QP author is of the opinion that the drilling protocols in place are adequate. The database for the La Blache Property is of good overall quality. Minor variations have been noted during the validation process but have no material impact on the current MRE.

In the QP's opinion, the La Blache database is appropriate to be used for the estimation of Mineral Resources.

FIGURE 12-10 HISTORICAL HOLES VALIDATION USING THE 2022 DRILL PROGRAM. GREEN = 2022 HOLE; RED = 2010 HOLE



13. MINERAL PROCESSING AND METALLURGICAL TESTING

13.1 INTRODUCTION

A two-phase test program was implemented to process ≈ 830 kg of La Blache ilmenite material to recover high purity TiO_2 product at Process Research ORTECH's (PRO) facility in Mississauga, ON Canada. This program was conducted from September 2021 to June 2022.

PRO has worked on the development of ORF's innovative process for the production of high purity TiO_2 directly from ilmenite material. The ORF process is protected by several patents in North America and abroad (US Patent No. 7,803,336 B2, Canadian Patent No. 2,513,309 and Australian Patent No. 2004291568). The process consists of atmospheric chloride leach followed by solvent extraction of Fe and Ti successively. A high purity Ti bearing strip solution is produced and can be used to produce Ti products dependent on the end market use such as high purity TiO_2 for pigments, pharmaceutical and food industries. Other products that can be obtained from the process are Fe_2O_3 which is of high purity and can be used for pigment or iron production.

A test program between Temas Resources Corporation and PRO was established to produce a quantity of TiO_2 product from pilot operation for market evaluation. The program was divided into 2 phases:

1. Phase 1 – Bench & Mini-Pilot Operation: Phase 1 of the Temas La Blache program involved a bench scale and mini-pilot test program to first evaluate the material available at the La Blache Property and its amenability to recovery using ORF's chloride process. The following work elements were performed in this phase:

Preparation of a representative sample from a material stockpile at PRO's facility and confirmation of the grades of the sample.

Determination of mineral composition, mineralogy, and liberation size of value minerals specifically ilmenite.

Suite of PRO chloride leach tests to determine leach conditions for Ti extraction and solution quality for subsequent solvent extraction (SX) separation steps.

Preliminary SX separations for Fe and Ti to construct McCabe-Thiele isotherms to establish operation conditions for mini-pilot operation.

Operation of a mini-pilot circuit to confirm the SX design criteria for Fe and Ti established in the bench scale work.

Phase 2 – Pilot Operation: Phase 2 of the program involved pilot processing of the material using the process design criteria established in the Phase 1 - Bench & Mini-pilot operation. The main work elements in this pilot phase of the program consisted of the following work elements:

Commissioning and operation of the pilot circuit for processing La Blache ilmenite at a throughput of ≈ 15L/hr PLS.

Processing of ≈ 830 kg of material through the pilot circuit (Small and Large pilot combined).

Monitoring impurity build up and assessing impact on pregnant strip solutions of Fe and Ti.

Producing a quantity of TiO_2 product from pilot operation (est. ≈ 90 kg) for market evaluation.

13.2 SAMPLE PREPARATION AND CHARACTERISATION

A composite sample for detailed bench and pilot plant tests to optimize process parameters and to produce TiO_2 product for market evaluation was prepared from samples selected from crates at PRO's facility in Mississauga and consisted of 11 individual samples. A composite weighing ~830 kg was generated by combining these samples and homogenized by the cone and quarter method and split into representative test charges.

13.2.1 CHEMICAL ANALYSIS

Chemical analysis of the composite head sample was performed and is shown in Table 13-1.

TABLE 13-1 ELEMENTAL ANALYSIS OF COMPOSITE ILMENITE HEAD SAMPLE

Sample Description	C	Al	As	Ca	Cd	Co	Cr	Cu	Fe	Ga	K	Li
	%											
La Blache Composite HEAD SAMPLE	0.33	2.59	<5	0.18	<5	<5	0.11	<5	41.06	_	<5	<5

Sample Description	Mg	Mn	Mo	Na	Ni	Pb	S	Sb	Si	Ti	V	Zn
	%											
La Blache Composite HEAD SAMPLE	2.22	0.20	<5	-	<5	<5	<5	<5	1.16	10.61	0.18	<5

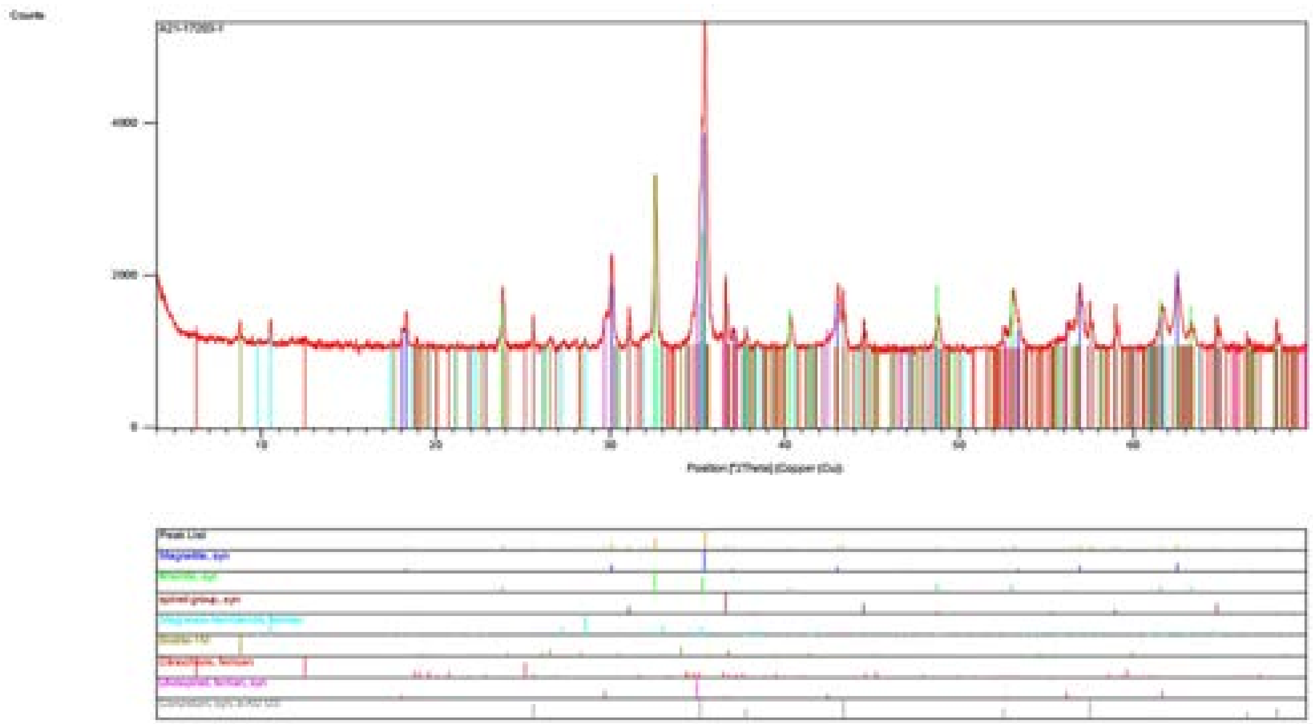
13.2.2 MINERALOGICAL ANALYSIS

Representative samples of the material were pulverized and sent for X-ray diffraction (XRD) analysis to an accredited laboratory of Activation Laboratories Ltd. in Ancaster, ON. Figure 13-1 shows the X-ray diffraction pattern of the ilmenite material, whereas Table 13-2 highlights the mineral abundances (wt%) in the material. It is determined that the majority phases are magnetite and ilmenite. It should be noted that compounds with <5% composition may not be shown in the XRD pattern.

TABLE 13-2 MINERAL ABUNDANCES (WT%) IN LA BLACHE ILMENITE MATERIAL

Mineral	wt%
Magnetite	23.0
Ilmenite	11.9
Spinel	6.0
Ulvospinel	3.4
Amphibole	3.0
Biotite	1.4
Chlorite	0.7
Amorphous	50.6

FIGURE 13-1 XRD PATTERN OF THE LA BLACHE ILMENITE MATERIAL



13.3 PHASE 1 - LABORATORY SCALE TESTWORK

Laboratory scale testwork was initially performed to confirm the process conditions to be used in the mini pilot and pilot programs. This included leaching and solvent extraction test work.

The overall process flowsheet for the processing of La Blache ilmenite to produce market grade TiO_2 is shown in Figure 13-2.

13.3.1 LEACH TESTING

Leach testing was first conducted on the bench, and it was found that a single stage of leaching was not sufficient for the extraction of Ti with an extraction of approximately 60-65% of the contained Ti. A 2-stage leach process was adopted to attain an overall Ti recovery of ≈ 80%.

The first stage of leaching yielded between 60-65% recovery of Ti and 90% recovery of Fe.

The residue after solid-liquid separation of the first stage was then re-leached in the second stage of leaching, which provided an additional 45-55% recovery of Ti and Fe. Thus, the overall Ti and Fe recovery was between 80-85% and 95%, respectively. The respective leaching parameters from both stages are presented in Table 13-3 and were used in subsequent pilot operation.

FIGURE 13-2 PILOT FLOWSHEET FOR THE PROCESSING OF LA BLACHE ILMENITE

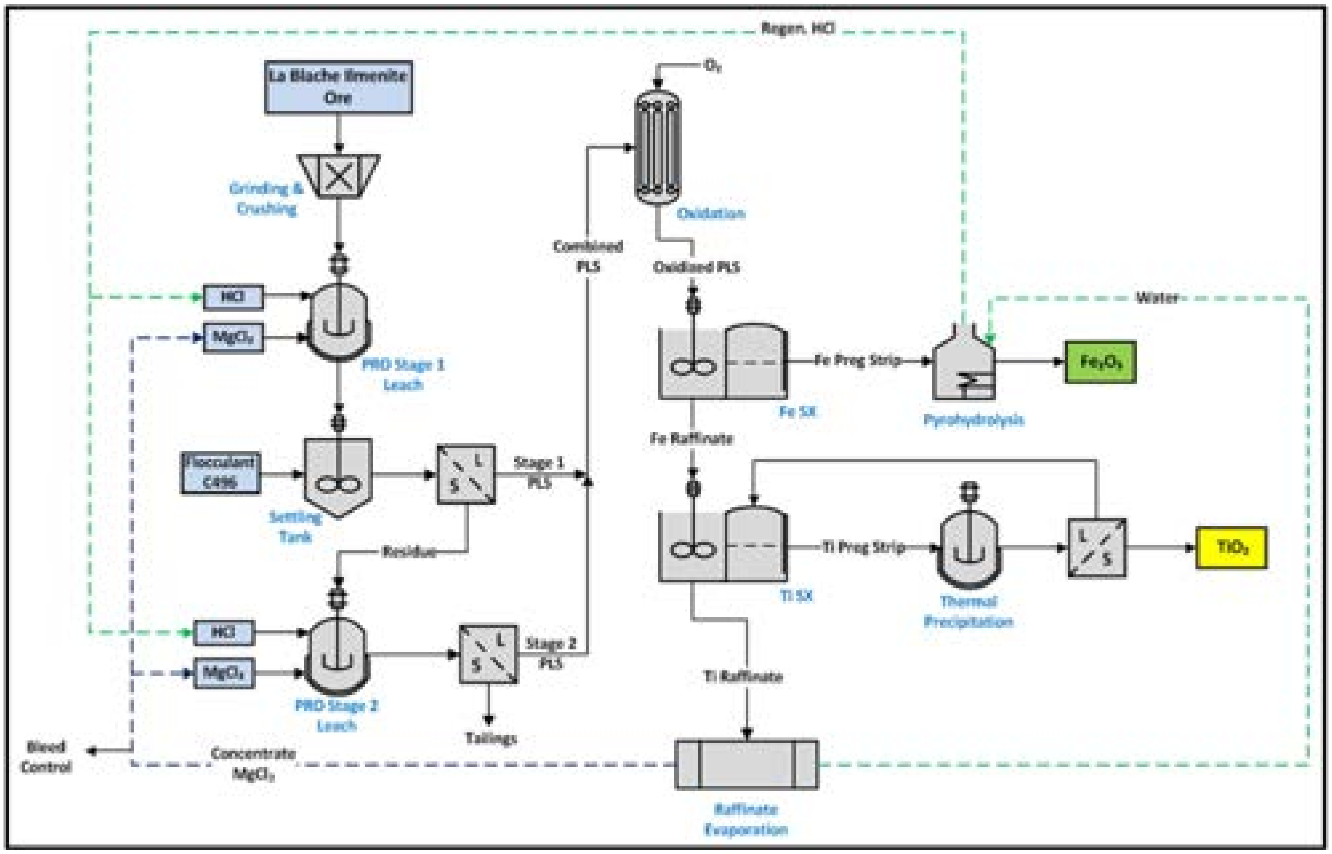


TABLE 13-3 TWO-STAGE LEACHING PARAMETERS

Leaching Stage	Particle Size (Solid Feed)	Pulp Density	HCl Concentration	$MgCl_2$ Concentration	Temperature	Duration
Stage 1	- 65 Mesh (90% Passing)	10%	5.8N	220 g/L	70°C	2h
Stage 2	Residue from Stage 1	0.15	5.8N	220 g/L	70°C	3h

13.3.2 PLS FLOCCULATION AND FILTRATION

During the bench scale studies, there were issues with solid-liquid separation of the slurry after stage 1 leaching. The filtration of these bench scale tests by a Buchner funnel took several hours for <1L of slurry. Hence, extensive flocculant testing was performed. It was found that improved settling and filtration of the flocculated supernatant and settled solids was achieved using Kemira Superfloc C496, a cationic flocculant. Various dosages were tested and an optimal addition of 600 ppm C496 per litre of slurry was established.

13.3.3 IRON SOLVENT EXTRACTION

Preliminary bench scale solvent extraction tests were first performed to determine the organic composition which selectively extracted iron from the PLS and the composition ultimately used for the mini-pilot is shown in Table 13-4. The respective Fe extraction and stripping isotherms (McCabe-Thiele diagrams) were also constructed to determine the number of stages required with the estimated number of stages presented in Table 13-5.

TABLE 13-4 FE SOLVENT EXTRACTION ORGANIC COMPOSITION

Component	Volume Fraction
2-Tridecaone (2TDN)	0.2
2-Octanol	0.2
Exxal-13	0.2
Cansol D80	0.4

TABLE 13-5 FE CIRCUIT STAGES FOR PHASE 1

Circuit Section	Initial # of Stages	Final # of Stages
Extraction	5	8
Scrubbing	1	2
Stripping	8	8

13.3.4 TITANIUM SOLVENT EXTRACTION

Bench-scale solvent extraction tests were first performed to determine the organic composition which extracted and subsequently stripped titanium. The organic composition for extracting titanium is shown in Tables 13-6 and 13-7. The respective Ti extraction and stripping isotherms (McCabe-Thiele diagrams) were also constructed. Based on the isotherms, around 5 extraction and 7 stripping stages are estimated. The bench-scale test work also recommended the use of temperature (30-35°C) to help improve the phase separation during the operation of the mini-pilot.

TABLE 13-6 TI SOLVENT EXTRACTION ORGANIC COMPOSITION

Component	Volume Fraction
Cyanex 923	0.2
Exxal-13	0.2
Cansol D80	0.6

TABLE 13-7 TI CIRCUIT STAGES FOR PHASE 1

Circuit Section	Initial # of Stages	# of Stages
Extraction	5	5
Scrubbing	0	2
Stripping	7	8

13.4 MINI-PILOT SCALE TESTING

Pilot scale testing was conducted using the criteria established from the bench scale and mini-pilot operation.

13.4.1 MINI PILOT LEACHING

As per the conditions established in the bench scale testing, batch mini-pilot scale leaching was conducted in 50L mixing tanks fitted with a water-cooled condenser, scrubbing unit, air powered agitator, and 3kW Teflon coated immersion heater. A total of 12 first stage leaches (600L) and 4 second stage leaches (80L) were conducted for this phase, resulting in ≈ 680 litres of PLS for solvent extraction circuits. Thus, a total of 4 batches of PLS were generated and the metal concentrations from each batch are shown in Table 13-8. The average Ti and Fe concentrations of the combined PLS solution before proceeding to oxidation were ≈ 7 g/L and ≈ 40 g/L, respectively. In addition, the average free acid was 1.5N and 13 g/L Fe^{2+} in the PLS solution.

TABLE 13-8 PHASE 1 LEACHING ANALYSIS

Sample Description	Liquid Analysis (mg/L)								
	Ag	**Al**	**As**	**Ca**	**Cd**	**Co**	**Cr**	**Cu**	**Fe**
Batch 1 PLS	< 5	672	< 5	3012	< 5	< 5	87.5	7.5	**38540**
Batch 2 PLS	< 5	1024	< 5	3090	< 5	< 5	87.0	< 5	**43840**
Batch 3 PLS	< 5	760	< 5	3054	< 5	< 5	85.0	< 5	**36620**
Batch 4 PLS	< 5	977	< 5	2944	< 5	< 5	85.9	< 5	**36220**
	Ga	**Ge**	**K**	**Li**	**Mg**	**Mn**	**Mo**	**Na**	**Ni**
Batch 1 PLS	< 5	< 5	823.0	< 5	48340	169.6	< 5	1042.6	33.8
Batch 2 PLS	< 5	< 5	761.2	< 5	53360	172.8	< 5	1018.6	23.4
Batch 3 PLS	< 5	< 5	876.2	< 5	43440	174.9	< 5	970.6	21.8
Batch 4 PLS	< 5	< 5	699.4	5.8	44920	175.1	< 5	911.4	21.5
	Pb	**S**	**Sb**	**Si**	**Ti**	**U**	**V**	**Zn**	
Batch 1 PLS	30.9	109.8	< 5	7.7	**6472**	< 5	187.5	64.5	
Batch 2 PLS	13.0	75.9	< 5	< 5	**7186**	< 5	176.4	17.6	
Batch 3 PLS	8.4	75.6	< 5	< 5	**7032**	< 5	180.4	22.0	
Batch 4 PLS	< 5	92.9	7.7	< 5	**6744**	< 5	188.9	25.6	

13.4.2 MINI PILOT PLS OXIDATION

Pregnant leach solution (PLS) generated was oxidized in a mini-pilot column setup (45L total volume per column) which sparged O_2 for the conversion of Fe^{2+} to Fe^{3+}. The O_2 gas flowrate was set at 4L/min with samples taken at regular intervals to determine the extent of oxidation. Based on the results it required ≈ 34 hours for complete oxidation to take place. Following the oxidation step, the solution was pumped out of the columns and through a polishing filter with a 1µm cartridge filter to remove any fine particulates in preparation for the solvent extraction stage.

13.4.3 MINI PILOT IRON SOLVENT EXTRACTION

The mini-pilot solvent extraction for iron was setup according to the staging requirements identified in the bench scale isotherms with final actual staging after operation of the circuit shown (Table 13-5) where an additional 3 stages of extraction were added to ensure that the concentration of iron in the Fe raffinate solution was as low as possible (<5ppm Fe) before moving to the subsequent Ti circuit. The circuit was operated for 162 hours using PLS produced from the two-stage leaching process. A synthetic scrub solution was first used with a concentration of ≈ 80 g/L Fe, ≈ 100 g/L $MgCl_2$ and a free acid of 0.5N HCl until pregnant strip solution was produced from the circuit. An additional scrub stage was added to help with phase separation as aqueous entrainment was observed. Dilute HCl at 0.05N was employed as the stripping agent. The operating conditions for the Fe circuit are highlighted in Table 13-9.

TABLE 13-9 FE CIRCUIT OPERATING CONDITIONS FOR PHASE 1

Stream	Flow-rate (mL/min)	Organic: Aqueous (O:A) Ratio
Organic	40	-
PLS Feed	32	0.000704
Scrub Feed	3.6	0.459028
Strip Feed	11.5	3.5 : 1

The average operational profiles of the solutions in the Fe SX circuit for Phase 1 are presented in Table 13-10. Fe was selectively extracted from the PLS with an average of ≈ 64 ppm in the raffinate solution. A pregnant strip solution with an average composition of 75,164 mg/L Fe ≈ 75 g/L Fe was also produced.

TABLE 13-10 FE SX SOLUTIONS – PHASE 1 AVERAGE ELEMENTAL ANALYSIS

Sample Description	Liquid Analysis (mg/L)								
	Ag	Al	As	Ca	Cd	Co	Cr	Cu	Fe
Fe Feed PLS	< 5	966	< 5	2851	< 5	< 5	83.6	6.5	**34948**
Fe Raffinate	< 5	962	< 5	2919	< 5	< 5	86.9	10.1	**64.2**
Fe Preg. Strip	< 5	54.1	< 5	13.4	< 5	< 5	< 5	< 5	**75164**

Sample Description	Liquid Analysis (mg/L)								
	Ga	Ge	K	Li	Mg	Mn	Mo	Na	Ni
Fe Feed PLS	< 5	< 5	757.8	< 5	43154	163.1	< 5	1021.6	31.9
Fe Raffinate	< 5	< 5	775.3	< 5	43864	168.8	< 5	1048.2	34.1
Fe Preg. Strip	< 5	< 5	< 5	< 5	190.5	< 5	< 5	5.6	< 5
	Pb	S	Sb	Si	Ti	U	V	Zn	
Fe Feed PLS	26.0	124.3	< 5	< 5	**6261**	< 5	176.4	54.4	
Fe Raffinate	27.8	137.6	< 5	30.2	**6369**	< 5	182.4	65.0	
Fe Preg. Strip	< 5	< 5	8.0	< 5	**< 5**	< 5	< 5	6.9	

13.4.4 MINI PILOT TITANIUM SOLVENT EXTRACTION

The Fe raffinate solution from the Fe circuit proceeded to the Ti SX circuit. The Ti circuit was operated for 105 hours. The Ti circuit staging for the mini-plant is presented in Table 13-12. Heaters in the vicinity of the Ti circuit were installed to ensure that the temperature was around 30-35°C to ensure adequate phase separation in the SX cells. Titanium rich solution was produced using 2N HCl. The operating conditions for the circuit are highlighted in Table 13-12.

TABLE 13-11 TI CIRCUIT STAGES FOR PHASE 1

Circuit Section	# of Stages
Extraction	5
Scrubbing	2
Stripping	8

TABLE 13-12 TI CIRCUIT OPERATING CONDITIONS FOR PHASE 1

Stream	Flow-rate (mL/min)	Organic: Aqueous (O:A) Ratio
Organic	30	-
PLS Feed	30	0.042361
Scrub Feed	3	0.417361
Strip Feed	7.5	0.167361

The average operational profiles of the solutions in the Ti SX circuit for Phase 1 are presented in Table 13-13. Ti was extracted with an average of ≈ 102 ppm in the raffinate solution. A pregnant strip solution with an average composition of 32,503 mg/L Ti ≈ 33 g/L Ti was also produced and used for the production of TiO_2.

TABLE 13-13 TI SX SOLUTIONS – PHASE 1 AVERAGE ELEMENTAL ANALYSIS

Sample Description	Liquid Analysis (mg/L)								
	Ag	**Al**	**As**	**Ca**	**Cd**	**Co**	**Cr**	**Cu**	**Fe**
Ti Feed	< 5	1022	< 5	3105	< 5	< 5	92.9	11.4	23.8
Ti Raffinate	< 5	1037	< 5	2975	< 5	< 5	93.2	< 5	< 5
Ti Preg. Strip	< 5	30.7	< 5	570	< 5	< 5	< 5	6.3	16.8
	Ga	**Ge**	**K**	**Li**	**Mg**	**Mn**	**Mo**	**Na**	**Ni**
Ti Feed	< 5	< 5	827	< 5	46636	182.2	< 5	1113	39.1
Ti Raffinate	< 5	< 5	1116	< 5	46801	175.6	< 5	1160	39.9
Ti Preg. Strip	< 5	< 5	593	< 5	9065	32.3	< 5	244	< 5
	Pb	**S**	**Sb**	**Si**	**Ti**	**U**	**V**	**Zn**	
Ti Feed	31.6	150.0	< 5	12.8	**6580**	< 5	197.0	57.1	
Ti Raffinate	28.6	135.6	< 5	< 5	**102.3**	< 5	175.8	< 5	
Ti Preg. Strip	< 5	25.3	17.2	< 5	**32503.33**	< 5	44.6	< 5	

13.5 PHASE 2 – LARGER SCALE PILOT PROCESSING

Phase 2 of the metallurgical program involved additional larger scale pilot processing compared to the mini-pilot operation to further confirm process design criteria and generate a quantity of TiO_2 product.

13.5.1 PILOT LEACHING

Leaching for the larger pilot plant was conducted in 350L mixing tanks which were fitted with a water-cooled condenser, scrubbing unit, air powered agitator and 3kW Teflon coated immersion heater. Operating conditions for the two-stage leaching process were the same as in Phase 1 of the mini-pilot, highlighted in Table 13-3. A total of 17 first stage leaches were performed producing ≈ 5310 litres of PLS. The average recovery of Ti and Fe after the first stage of leaching was ≈ 60% and ≈ 88%, respectively. The cationic flocculant, Kemira Superfloc C496, was added during the solid-liquid separation of the first stage leach to improve filtration. The residues from the first stage were then subsequently re-leached in the second stage. The second stage leaches produced ≈ 825 litres of PLS with a total generation of combined PLS from Phase 2 of ≈ 6,135 litres. The overall average leach recoveries were ≈ 75% Ti, ≈ 93% Fe and ≈ 99% V. This was slightly lower than the recoveries achieved in the mini-pilot of Phase 1 which had ≈ 80-85% Ti, ≈ 95% Fe and 100% V. This was mainly due to lower observed leach extraction in the re-leach stage and was attributed to increases in the pulp density used during some of the batches while being deficient in the required acid. The average Ti and Fe concentrations of the combined PLS solution before proceeding to oxidation were ≈ 7.2 g/L and ≈ 38 g/L, respectively. In addition, the average free acid was 1.4N and 20 g/L Fe^{2+} in the PLS solution.

13.5.2 PILOT OXIDATION

Oxidation of the PLS in Phase 2 was performed in 4 pilot oxidation columns with each having a capacity of ≈ 50 L. Complete conversion of Fe^{2+} to Fe^{3+} took between 48-72 hrs for each batch with the longer processing time associated with a leak in one of the columns resulting in lower oxidation efficiency and was rectified.

13.5.3 PILOT IRON SOLVENT EXTRACTION

Large-scale custom polypropylene solvent extraction cells were fabricated for the Phase 2 pilot iron solvent extraction, as a larger throughput of solutions was desired through the SX circuits. Each solvent extraction cell includes a mixer box and settler stage, and two sizes were used for the circuit, as highlighted in Table 13-14. Apart from the Fe stripping circuit, the SX cells had a settler volume of 22.5L and mixer box volume of 9.26L.

TABLE 13-14 MIXER SETTLER DESIGN FOR PHASE 2

Circuit	Square Mixer Box Length (in)	Square Mixer Box Width (in)	Mixer Box Volume (L)	Settler Length (in)	Settler Width (in)	Settler Surface Area (in^2)	Settler Volume (L)
Fe Extraction	8.0	8.0	9.3	20.0	8.0	160.0	22.5
Fe Stripping	5.0	5.0	2.2	16.0	5.0	80.0	6.9
Ti Extraction and Scrubbing	8.0	8.0	9.3	20.0	8.0	160.0	22.5
Ti Stripping	8.0	8.0	9.3	20.0	8.0	160.0	22.5

In Phase 2, the solvent extraction (SX) iron circuit was in operation for a cumulative total of ≈ 654 hours. The primary operational conditions including the extractant organic composition to selectively extract Fe and the stripping agent, were not changed from those used in Phase 1. The circuit staging for the large pilot operation is presented in Table 13-15 and the initial operating conditions are presented in Table 13-16. In contrast to the mini-pilot operation, the scrubbing stage was removed from the Fe SX, as the main objective was to produce quality Fe Raffinate solution (i.e., <5 ppm Fe) which would be processed in the Ti circuit. Fe strip solution quality was not a priority in the operation.

The average operational profiles of the solutions in the Fe SX circuit for Phase 2 are presented in Table 13-17. Fe was selectively extracted from the PLS with an average of ≈ 85 ppm in the raffinate solution. For the majority of the circuit operation, Fe was readily being extracted from the PLS and producing raffinate containing <5 ppm Fe. Initial operation of the circuit with high levels of Fe in the raffinate (as high as 4 g/l Fe) skewed the average raffinate composition to the higher value.

TABLE 13-15 FE CIRCUIT STAGES FOR PHASE 2

Circuit Section	# of Stages
Extraction	7
Stripping	8

TABLE 13-16 FE CIRCUIT OPERATING CONDITIONS FOR PHASE 2

Stream	Flowrate (mL/min)	Organic : Aqueous (O:A) Ratio
Organic	500	-
PLS Feed	250	0.084028
Strip Feed	150	3.3 : 1

TABLE 13-17 FE SX SOLUTIONS – PHASE 2 AVERAGE ELEMENTAL ANALYSIS

Sample Description	Liquid Analysis (mg/L)								
	Ag	Al	As	Ca	Cd	Co	Cr	Cu	Fe
Fe Feed PLS	< 5	964.3	< 5	2916	< 5	< 5	85.3	< 5	**34476**
Fe Raffinate	< 5	1017	< 5	3145	< 5	< 5	94.5	< 5	**85.4**
Fe Preg. Strip	< 5	8.3	< 5	88.9	< 5	< 5	< 5	< 5	**57162**
	Ga	Ge	K	Li	Mg	Mn	Mo	Na	Ni
Fe Feed PLS	< 5	< 5	492.1	< 5	44028	162.8	< 5	738.6	21.1
Fe Raffinate	< 5	< 5	558.5	< 5	47183	177.3	< 5	828.7	23.2
Fe Preg. Strip	< 5	< 5	7.5	< 5	119.2	< 5	< 5	24.8	< 5
	Pb	S	Sb	Si	Ti	U	V	Zn	
Fe Feed PLS	< 5	135.3	6.2	< 5	**6874**	< 5	175.9	24.9	
Fe Raffinate	< 5	148.7	6.2	< 5	**7399**	< 5	194.4	25.4	
Fe Preg. Strip	< 5	20.2	< 5	< 5	**56.9**	< 5	< 5	< 5	

13.5.4 PILOT TITANIUM SOLVENT EXTRACTION

The Pilot Titanium Solvent Extraction circuit was in operation for a cumulative total of ≈ 581 hours for Phase 2 of the program. Similar to the Fe SX, the primary operational conditions including the organic composition to extract Ti and the stripping agent were not changed from those used in the Phase 1 Mini pilot. The Ti circuit stages for the Phase 2 pilot operation is presented in Table 13-18 and the initial operating conditions are presented in Table 13-19.

TABLE 13-18 TI CIRCUIT STAGES FOR PHASE 2

Circuit Section	# of Stages
Extraction	5
Scrubbing	2
Stripping	7

TABLE 13-19 TI CIRCUIT OPERATING CONDITIONS FOR PHASE 2

Stream	Flowrate (mL/min)	Organic : Aqueous (O:A) Ratio
Organic	225	-
PLS Feed	225	0.042361
Scrub Feed	22.5	0.417361
Strip Feed	60	3.75: 1

The average operational profiles of the solutions in the Ti SX circuit for Phase 2 are presented in Table 13-20. Ti was extracted from the PLS with an average of ≈ 463 ppm in the raffinate solution. A Ti pregnant strip solution with an average composition of 30,423 mg/L Ti ≈ 30.5 g/L Ti was also produced.

TABLE 13-20 TI SX SOLUTIONS – PHASE 2 AVERAGE ELEMENTAL ANALYSIS

Sample Description	Liquid Analysis (mg/L)								
	Ag	Al	As	Ca	Cd	Co	Cr	Cu	Fe
Ti Feed	< 5	1025	< 5	3143	< 5	< 5	94.7	< 5	19.5
Ti Raffinate	< 5	1027	< 5	3187	< 5	< 5	96.1	< 5	< 5
Ti Preg. Strip	< 5	7.0	< 5	808.2	< 5	< 5	< 5	10.3	< 5
	Ga	Ge	K	Li	Mg	Mn	Mo	Na	Ni
Ti Feed	< 5	< 5	512.1	< 5	47538	178.3	< 5	786.0	23.4
Ti Raffinate	< 5	< 5	547.6	< 5	47994	173.5	< 5	828.5	27.1
Ti Preg. Strip	< 5	< 5	162.7	< 5	12118	31.0	< 5	220.6	15.1
	Pb	S	Sb	Si	Ti	U	V	Zn	
Ti Feed	< 5	149.8	6.1	< 5	**7470**	< 5	194.6	22.7	
Ti Raffinate	< 5	169.2	< 5	< 5	**463.2**	< 5	185.4	< 5	
Ti Preg. Strip	< 5	42.6	21.5	< 5	**30423.13**	< 5	45.8	< 5	

13.6 TIO_2 PRODUCT PRECIPITATION

Titanium present in the pregnant strip liquor from the Titanium SX circuit underwent thermal precipitation to produce the desired product of TiO_2.The process can be represented by the following reaction:

$$TiOCl_2\ (aq) + 2H_2O\ (l) \rightarrow TiO(OH)_2\ (s) + 2HCl\ (aq)$$

After repetitive filtering and washing, the product was oven dried and then calcined at 800°C, in order to transform the $TiO(OH)_2$ into TiO_2, as shown by the following reaction:

$$TiO(OH)_2\ (s) \rightarrow TiO_2\ (s) + H_2O\ (l)$$

Initial pretreatment of the Ti rich pregnant strip solution was performed to remove any entrained organic. The aqueous was allowed to settle in a separatory vessel and additionally was filtered through a carbon filter.

Bench scale tests highlighted that a duration of 7 hours was required for the thermal precipitation to reach a reasonable level of < 1 gpl Ti in the filtrate.

Washing of the Ti precipitate was performed in two stages with the first stage consisting of an HCl wash and the second stage involving a water wash to remove any free chlorides. The resulting solids were first dried and then charged into a tube furnace for calcination at 800°C and a residence time of 2 hours.

A total of 14 precipitation batches were performed and most of these batches processed 144 litres of Ti pregnant strip, totaling 1798 litres for the overall process. The total amount of calcined product generated in the pilot was 88 kg.

13.6.1 TIO_2 PRODUCT CHARACTERIZATION

The precipitate before and after calcining was sent for X-ray diffraction (XRD) analysis to Activation Laboratories, an accredited analytical lab located in Ancaster Ontario. Table 13-21 identifies the mineral abundances as wt.% fractions in the TiO_2 product before and after calcination.

Table 13-22 shows the composition of the final TiO_2 product after calcination. The Ti concentration is provided as a percentage (%), whereas the other elemental analysis is provided as mg/L. The overall impurities present in the final product, expressed as oxides range between 0.08% and 0.26%.

TABLE 13-21 MINERAL ABUNDANCES (WT%)

Fraction	Before Calcining	Calcined Product
Anatase	23.4	38.2
Rutile	16.5	30.9
Brookite	12.3	Not detected
Amorphous	47.8	30.9

TABLE 13-22 TIO_2 FINAL PRODUCT ANALYSIS

Precipitation Batch	Ti	V	Al	Ca	Cu	Fe	K	Mg	Mn	Na	S	Cr	Sb	Zn
	mg/L													
Batch 1	65.3	612.5	0.0	0.0	0.0	0.0	0.0	478.7	0.0	0.0	0.0	0.0	266.3	0.0
Batch 2	54.5	423.6	0.0	41.6	0.0	0.0	124.8	116.5	0.0	0.0	0.0	49.9	292.9	0.0
Batch 3	56.9	283.0	0.0	0.0	0.0	0.0	0.0	145.8	0.0	0.0	0.0	0.0	131.2	0.0
Batch 4	54.9	289.5	0.0	0.0	0.0	0.0	0.0	375.2	0.0	0.0	0.0	0.0	126.5	0.0
Batch 5	52.1	288.3	0.0	0.0	0.0	0.0	0.0	271.7	0.0	0.0	0.0	0.0	539.9	0.0
Batch 6	55.2	282.8	0.0	0.0	0.0	0.0	0.0	291.0	0.0	0.0	0.0	0.0	542.4	0.0
Batch 7	53.6	298.3	0.0	0.0	0.0	0.0	0.0	345.1	0.0	0.0	66.8	0.0	523.2	0.0
Batch 8	57.3	560.0	0.0	0.0	0.0	0.0	0.0	481.7	0.0	0.0	0.0	0.0	452.8	0.0
Batch 9	55.2	340.7	0.0	56.4	0.0	0.0	0.0	338.4	0.0	0.0	112.8	0.0	399.4	0.0
Batch 10	58.3	356.5	0.0	105.6	0.0	0.0	0.0	281.7	0.0	0.0	176.1	0.0	412.9	0.0
Batch 11	54.2	341.9	0.0	32.3	0.0	0.0	0.0	371.0	0.0	0.0	161.3	0.0	406.5	0.0
Batch 12	43.1	407.4	0.0	0.0	0.0	0.0	0.0	49.4	0.0	0.0	0.0	0.0	175.0	0.0
Batch 13	52.3	304.3	0.0	0.0	0.0	0.0	0.0	521.3	0.0	0.0	254.6	0.0	488.6	0.0
Batch 14	57.3	503.3	0.0	0.0	0.0	0.0	0.0	256.8	0.0	0.0	0.0	0.0	228.0	0.0
Min	**43.1**	**282.8**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**49.4**	**0.0**	**0.0**	**0.0**	**0.0**	**126.5**	**0.0**
Max	**65.3**	**612.5**	**0.0**	**105.6**	**0.0**	**0.0**	**124.8**	**521.3**	**0.0**	**0.0**	**254.6**	**49.9**	**542.4**	**0.0**
Average	**55.0**	**378.0**	**0.0**	**16.9**	**0.0**	**0.0**	**8.9**	**308.9**	**0.0**	**0.0**	**55.1**	**3.6**	**356.1**	**0.0**

13.7 METALLURGICAL TESTING SUMMARY

Bench and pilot testing was conducted for the development of a process flowsheet for the extraction and recovery of titanium in the form of TiO_2 from the La Blache ilmenite material

After extensive test work, a flowsheet was developed using ORF's chloride process. The flowsheet consists of crushing, grinding, two-stage leaching in mixed chloride lixiviant, solvent extraction, followed by precipitation and calcination to obtain high purity TiO_2 product. The two-phase test program processed ≈ 830 kg of ilmenite material with ≈ 6815 litres of PLS produced for the solvent extraction circuits. In Phase 1, the Fe and Ti circuits were operated for ≈ 162 hours and ≈ 105 hours, respectively. Whereas, in the larger pilot operation of Phase 2, the Fe circuit was run for ≈ 654 hours (completing 120 organic turnovers) and the Ti circuit was run for ≈ 581 hours (completing 30 organic turnovers). Stability of the organic extractants used for the Fe and Ti circuits was demonstrated over the course of the pilot operation. The Ti-rich pregnant strip liquor underwent thermal precipitation; thorough washing stages to remove the presence of impurities and the final step of calcination at 800°C. A total quantity of 88 kg of TiO_2 was produced with an average composition of over 99.8% purity in the two-phase test program.

14. MINERAL RESOURCE ESTIMATES

14.1 INTRODUCTION

A Mineral Resource Estimation has been completed for La Blache deposit using both historical and current diamond drilling (DD), assay data. The mineral resource estimation was completed in accordance with CIM definition standards and CIM Best Practice Guidelines for Mineral Resource and Mineral Reserve Estimation fourteen stages as follows:

- Database checking, formatting, and validation.
- Lithogeochemical analysis to guide geological modeling.
- Determination and modeling of estimation domains.
- Domain boundary analysis.
- Grade capping and compositing.
- Exploratory data analysis within estimation domains.
- Variography.
- Definition of resource parameters and block model.
- Grade estimation and validation.
- Mineral resource classification.
- Application of reasonable prospect for eventual economic extraction.
- Mineral resource statement.
- Grade sensitivity analysis.
- Risk assessment.

A detailed description of these stages is provided in the following sections.

14.2 INFORMING DATA

The foundation of a robust mineral resource estimation lies in the quality and comprehensiveness of the available data. In this section, we examine the data sources and datasets provided by Temas that served as the basis for the intricate analyses and models employed in delineating the mineral potential of the La Blache deposit.

The dataset furnished by Temas encompasses a diverse range of crucial elements, forming the basis for the subsequent intricate analyses and modelling processes.

The primary constituents of this dataset are as follows:

- Drillhole database: Structured into distinct tables - Collar, Survey, Assay, Specific Gravity and Lithology - the drillhole database constitutes a cornerstone of the mineral resource estimation work. This comprehensive repository not only encompasses multielement assay analyses but also houses pivotal data necessary for the delineation of lithogeochemical domains, which in turn guide the process of constructing the grade shell model.
- Topography surface: Essential for delineating La Blache resources, the dataset features a topography file with limited details.

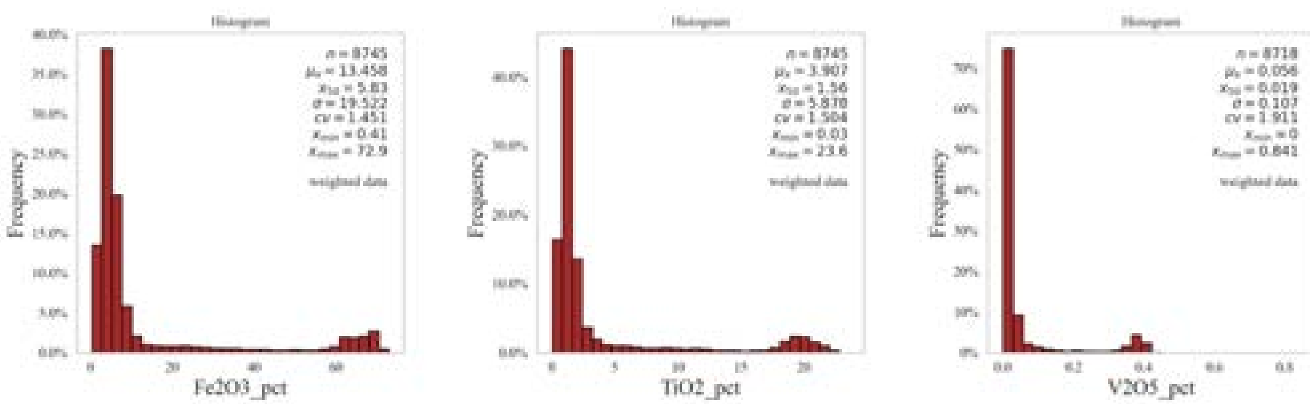
These datasets form the core of the information pool utilized in the estimation process. The study is primarily focused on the three key oxides of interest at La Blache: Fe_2O_3, TiO_2, and V_2O_5. The oxide assay dataset consists of 8753 assays intervals extracted from 53 diamond drillholes with at least one concentration measured for one of the three oxides. Over the 53 diamond drillholes, 45 were drilled in 2010 and 2011, and 8 were drilled in 2022.

The subsequent sections of this report delve into the methodologies employed to validate this dataset for the delineation and quantification of the mineral resources within the La Blache deposit.

14.3 DATA PREPARATION AND GLOBAL STATISTICS

Prior to starting the mineral resource estimate, the database is meticulously prepared and subjected to a global statistical analysis. Figure 14-1 illustrates the overall (log)-histograms and relevant statistics for each oxide concentration. Oxide grades are represented as mass percentages, with the statistics adjusted based on core intervals length to minimize volumetric bias. Most core intervals exhibit concentrations for all three oxides of interest. Only a small percentage, approximately 0.09% (8 core intervals), lack values for both Fe_2O_3 and TiO_2, while roughly 0.4% (35 core intervals) are missing V_2O_5 values. The limited number of missing values is considered statistically insignificant, rendering imputation unnecessary. The range of percentage values is confirmed to be valid, as no negative grade values are present, negating the need for adjusting the minimum assay values. Analyzing the histograms reveals the presence of two distinct populations: one corresponds to the host rock, anorthosite with low oxides grades, and the other corresponds to semi massive and massive oxide lenses with noticeably higher oxides concentrations.

FIGURE 14-1 GLOBAL (LOG)-HISTOGRAMS AND RELEVANT STATISTICS FOR EACH OXIDE CONCENTRATION



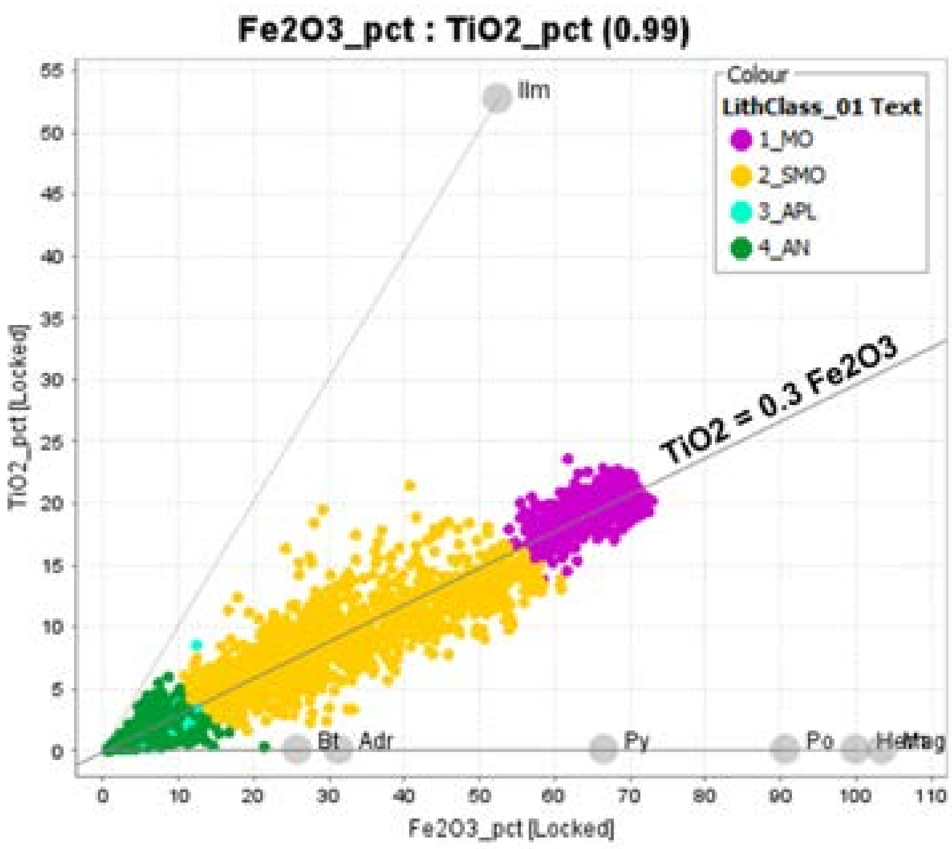
The survey, specific gravity, and lithology dataset show no noticeable outliers and are maintained in their raw form. In the collar dataset, most collar elevations align with the existing topographical data, and collars that do not align have been adjusted accordingly. It is worth emphasizing that the collar elevations were collected using a handheld global positioning system (GPS) device.

14.4 LITHOGEOCHEMICAL DATA ANALYSIS

The La Blache drillhole database was reviewed for the potential use in lithogeochemical domaining. The four main oxides, TiO_2, Fe_2O_3, P_2O_5, and V_2O_5, were reported for 8,630 collocated intervals, of which 1,191 had multi-element data by 4-acid ICP-ES analysis, limited to just the eight holes drilled by Temas in 2022. Data distributions indicate adequate precision for multivariate analysis, although detailed quality-control review was beyond the scope of this high-level study.

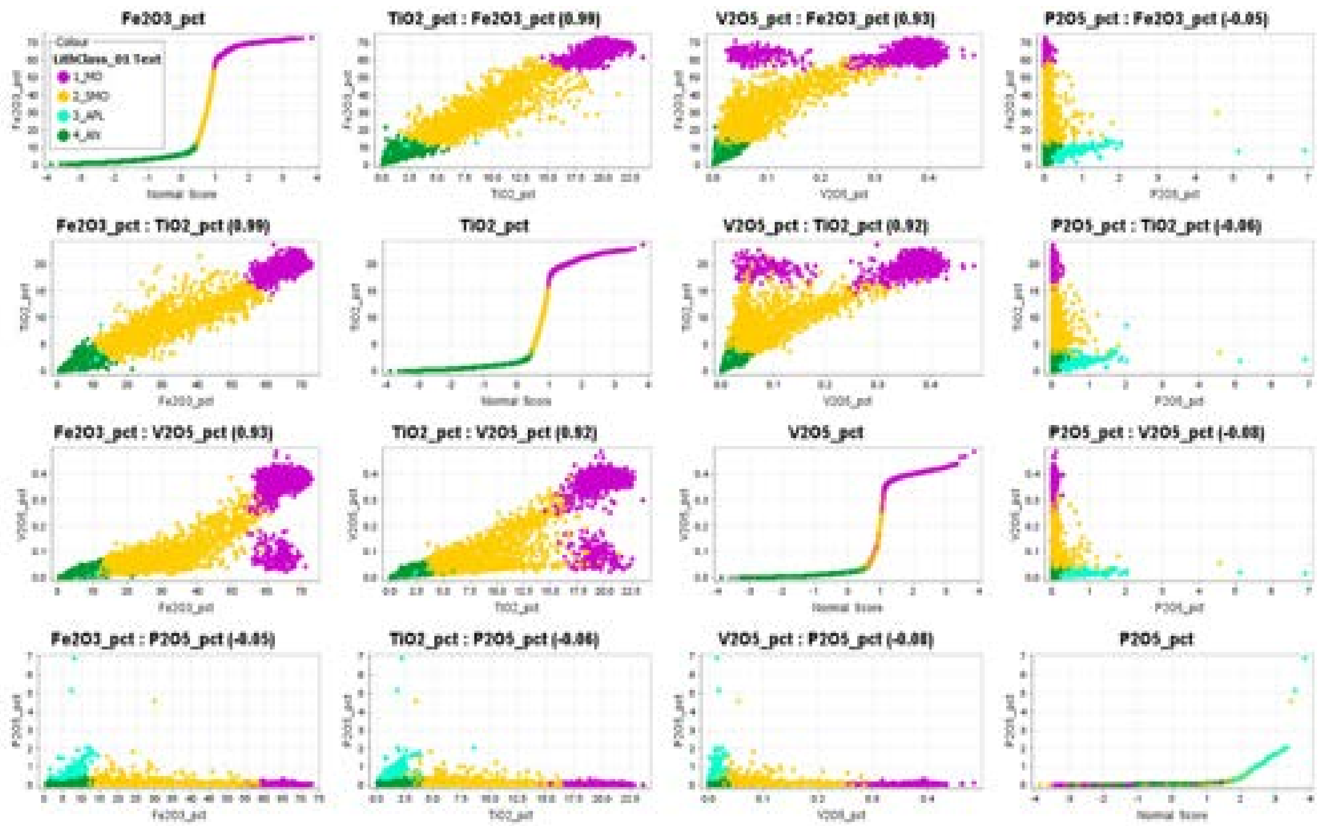
The Ti-Fe relationship is mostly linear, at a TiO_2: Fe_2O_3 ratio of 0.3 as illustrated with Figure 14-2, indicating relatively homogenous material compositions. Massive material stands out as a separate cluster of titaniferous iron oxides, along trend with low-grade disseminated material and barren anorthosite. Scatterplots of the major-oxide data highlight a distinct phosphorus trend in Figure 14-3, reflecting aplitic materials within the host anorthosite, while high-grade ores are unaffected by this potentially deleterious element. Vanadium data shows two distinct clusters within the massive material group, but their spatial distribution suggests analytical issues as the low-V, high-Ti+Fe group is mostly contained within four discrete holes.

FIGURE 14-2 SCATTERPLOT OF TIO_2 AGAINST FE_2O_3, COLOURED BY COMPOSITIONAL CLUSTERS (LITHOGEOCHEMICAL CLASSES), SHOWING A RELATIVELY LINEAR RELATIONSHIP FROM BARREN ANORTHOSITE TO HIGH GRADE TITANIFEROUS IRON MATERIAL, WITH A SLOPE OF ABOUT 0.3



Note: mineral nodes for reference: ilmenite (ilm), biotite, andradite, pyrite, pyrrhotite, hematite, and magnetite.

FIGURE 14-3 SCATTERPLOT MATRIX OF FE_2O_3, TIO_2, V_2O_5, AND P_2O_5, COLOURED BY COMPOSITIONAL CLUSTERS, HIGHLIGHTING APPARENT VANADIUM CLUSTERING IN THE HIGH-GRADE MATERIALS AND A DISTINCT PHOSPHORUS TREND INDICATING APLITE COMPOSITIONS

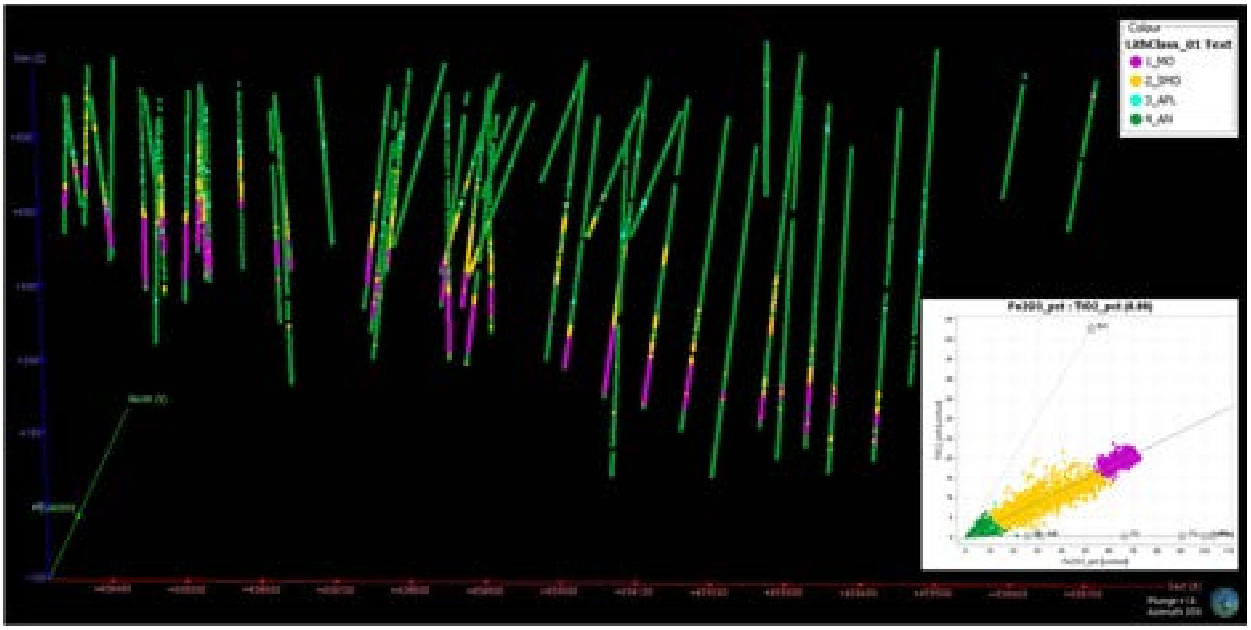


The spatial distribution shows a continuous massive material zone with a discrete footwall contact, whereas the hanging wall contact is more gradual in terms of grade distribution, with semi-massive to disseminated lower-grade material extending into the anorthosite host rock, as displayed in Figure 14-4. The phosphorus-bearing aplite appears at shallower levels within the anorthosite, well away from the material zone.

Limited spatial coverage of the multi-element data precluded it from further review or multivariate cluster analysis at this point. However, the major-oxide relationships appear to adequately identify the main units of concern, and the multi-element data could be revisited if any future metallurgical testwork dictates more detailed material characterization as the project progresses.

The main deposit is distinct and continuous across the area, with a discrete footwall contact and disseminating into the anorthosite hanging wall, while most phosphorus-bearing aplite (turquoise) occurs at shallower levels.

FIGURE 14-4 OBLIQUE VIEW, LOOKING NORTH, ONTO THE DRILLHOLE DISTRIBUTION, COLOURED BY COMPOSITIONAL CLUSTERING



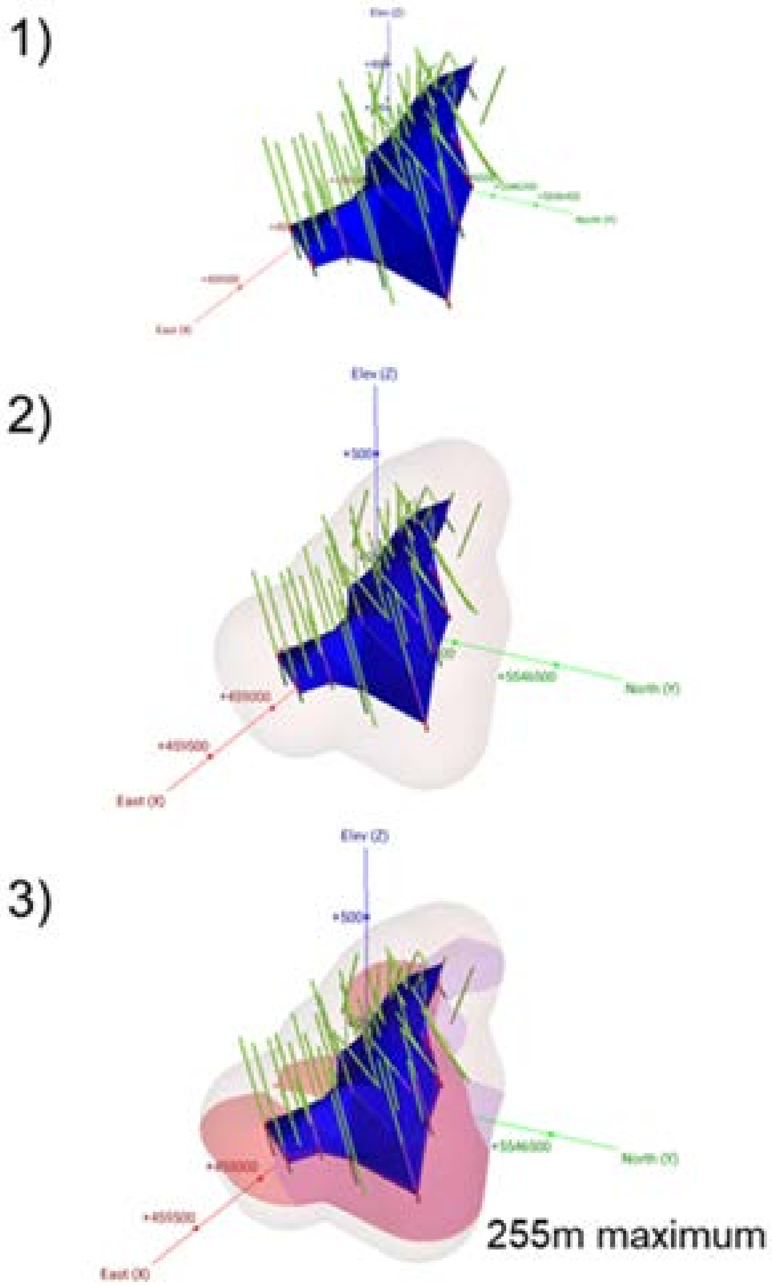
14.5 GEOLOGICAL MODELLING

Geological modeling for La Blache was developed using the Leapfrog implicit modelling technique, based on the lithogeochemical groups discussed in the preceding section that reflect the main lithologies in the deposit. The modelled mineral deposit is dipping at an angle of 20 degrees toward the ENE, with an average width of approximately 500m in the WSW and a total length of 1.1km in the ENE, reaching a maximum depth of about 600m below surface. The deposit widens at depth starting at approximately 300m to 700m in the WSW direction.

The deposit consists of two distinct layered domains: a Massive Oxide layer (MO) and a Semi-Massive Oxide layer (SMO) positioned above it. The SMO layer has an approximate average thickness of 100 m, while the MO layer is approximately 50m thick on average.

The Anorthosite Group was divided into two units: (1) Anorthosite Top (AN_TOP), and (2) Anorthosite Bottom (AN_BOTTOM) segments, serving the purpose of constructing 3D models and generating wireframes. The SMO unit was modelled on top of the MO unit with a direct contact. The model derived from implicit modeling underwent adjustments to confine its scope, with the primary goal of preventing extrapolation beyond the estimation domain. To enhance objectivity in this process, a novel in-house methodology and code were implemented.
This involved several steps: initiating the formation of a concave hull encompassing composite samples in the MO and SMO groups, determining the offset value as 1.5 times the range of the longest oxide variogram ranges (resulting in 255 metres), and finally, intersecting the implicit model generated by Leapfrog with the constructed envelope to produce the final model, as illustrated in Figure 14-5. The 1.5 factor is chosen because it typically corresponds to the inferred resource boundary relative to the closest drillhole. Extrapolating grade values beyond this threshold is considered unnecessary.

FIGURE 14-5 IMPLICIT MODEL WIREFRAME TRIMMING USING A BUFFERED COMPOSITE ENVELOPE



The Aplite (APL) group was not modeled, and its samples were merged into the other groups (MO/SMO/AN). This choice was due to its small size, including veins less than 10 metres thick, which fall below the block model resolution (10 m x 10 m x 10 m). The overburden was not modelled due to insufficient availability of detailed topographical and related information.

Figure 14-6 presents a 3D perspective of the modelled wireframes. A cross section illustrating the main units modelled at La Blache is presented in Figure 14-7.

FIGURE 14-6 3D PERSPECTIVE OF THE MODELLED WIREFRAMES AT LA BLACHE BASED ON LITHOGEOCHEMICAL GROUPING

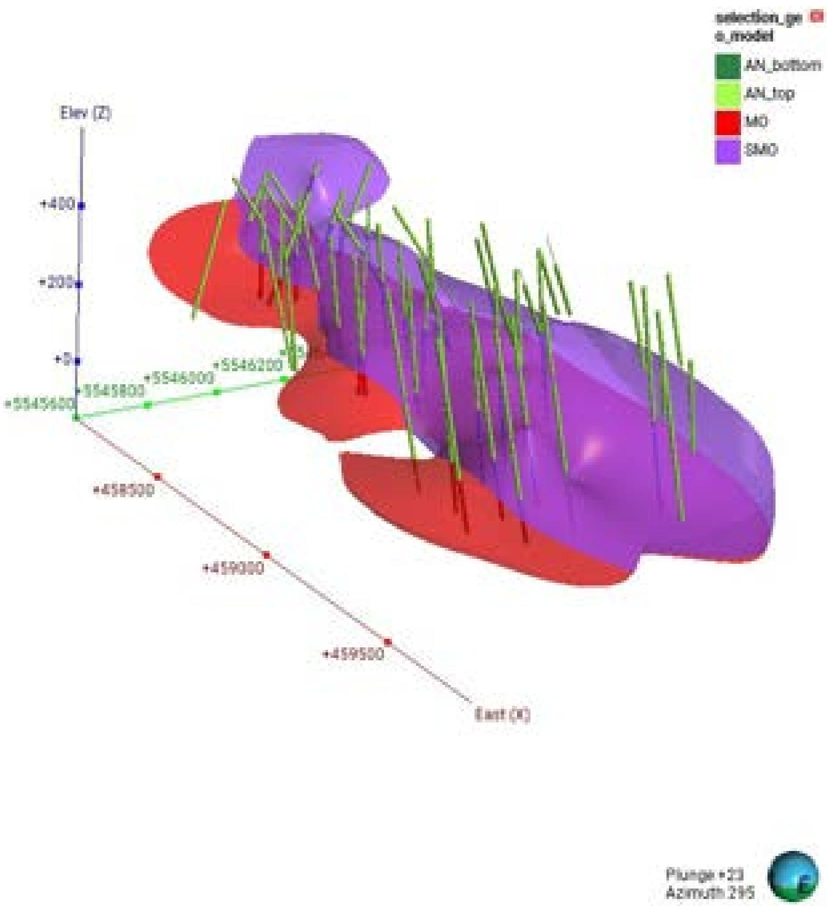
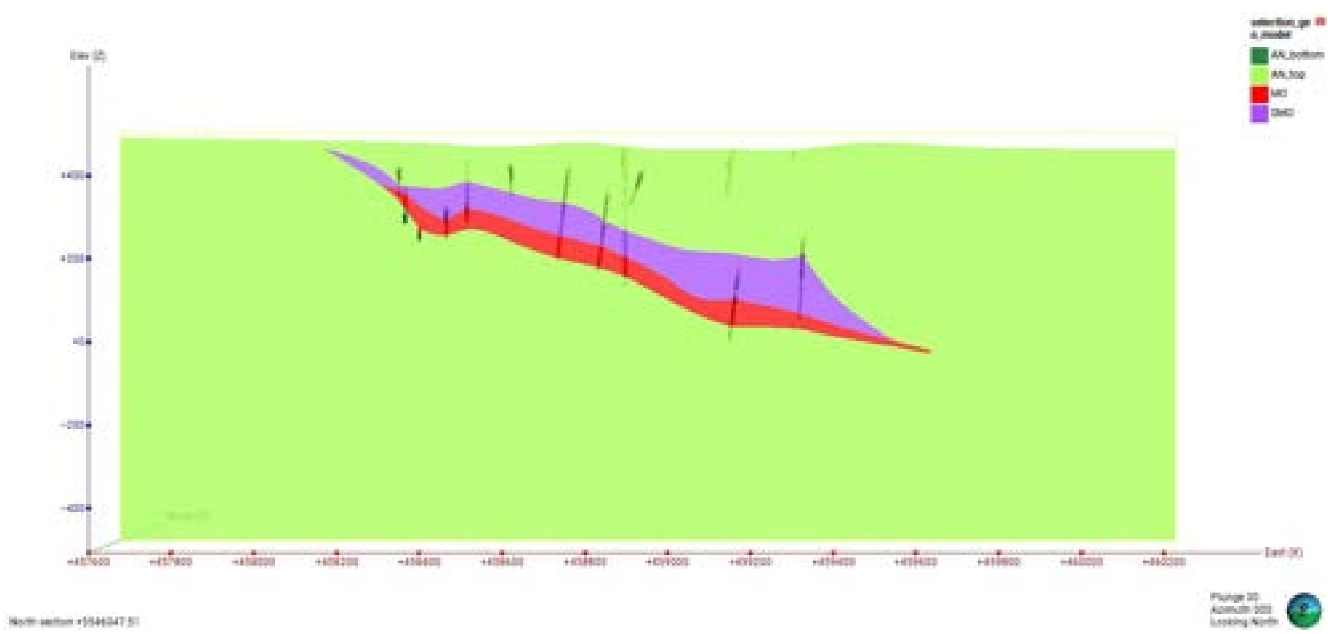


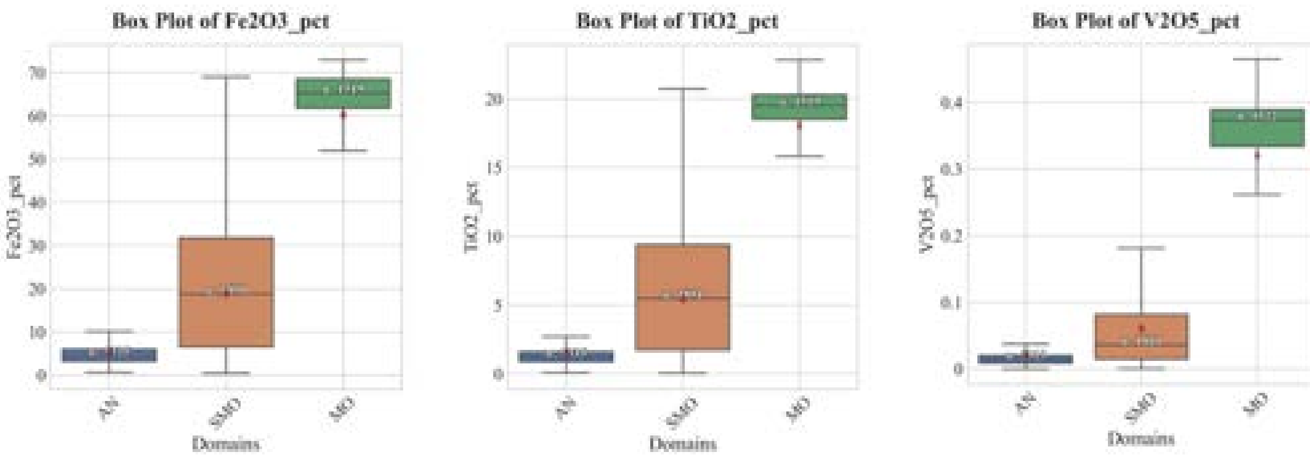
FIGURE 14-7 CROSS-SECTION OF LA BLACHE GRADE SHELL MODELS



14.6 EXPLORATORY DATA ANALYSIS PER ESTIMATION DOMAIN

The determination of estimation domains within La Blache was guided by the outcomes or the lithogeochemical groupings and the statistics of the various oxides at all lithogeochemical units. Three domains, Anorthosite (AN), Semi-Massive Oxides (SMO), and Massive Oxides (MO), were identified as adequate for conducting local estimation. Figure 14-8 shows box plots of three oxides grade within the three lithogeochemical domains.

FIGURE 14-8 BOX PLOTS OF THE THREE OXIDES GRADE IN EACH ESTIMATION DOMAINS



The box plot results clearly indicate distinct disparities in oxides statistics across all domains. To mitigate the influence of dilution from lower grades and to prevent the utilization of high-grade data for interpolating low-grade domains, hard boundaries were implemented for all domains as explained in 14.7.

The main statistics for the three oxides inside each domain using the raw assay data are summarized in Table 14-1

TABLE 14-1 EXPLORATORY DATA ANALYSIS PER DOMAIN WITH THE RAW ASSAY DATASET

Zone	Variable	Count	Mean	Median	Stdev	Min	Max	CV
MO	Fe_2O_3	1519	60.27	65.3	16.37	1.52	72.9	0.27
SMO	Fe_2O_3	1891	19.01	18.75	15.66	0.41	69.01	0.82
AN	Fe_2O_3	5335	5.07	4.44	4.18	0.58	68.8	0.83
MO	TiO_2	1519	18.04	19.5	5.09	0.26	23.6	0.28
SMO	TiO_2	1891	5.45	5.46	4.6	0.03	22.38	0.84
AN	TiO_2	5335	1.4	1.2	1.28	0.06	22.3	0.91
MO	V_2O_5	1522	0.32	0.37	0.13	0	0.84	0.4
SMO	V_2O_5	1881	0.06	0.04	0.07	0	0.37	1.17
AN	V_2O_5	5315	0.02	0.01	0.02	0	0.43	1.19

A correlation study using Spearman and Pearson correlation coefficients and pair plots was generated for the three oxides in each domain to identify correlations between the variables. Figure 14-9 show the outcomes of the correlation analysis per estimation domain.

FIGURE 14-9 PAIR PLOTS AND CORRELATION BETWEEN THE THREE OXIDES IN EACH ESTIMATION DOMAIN

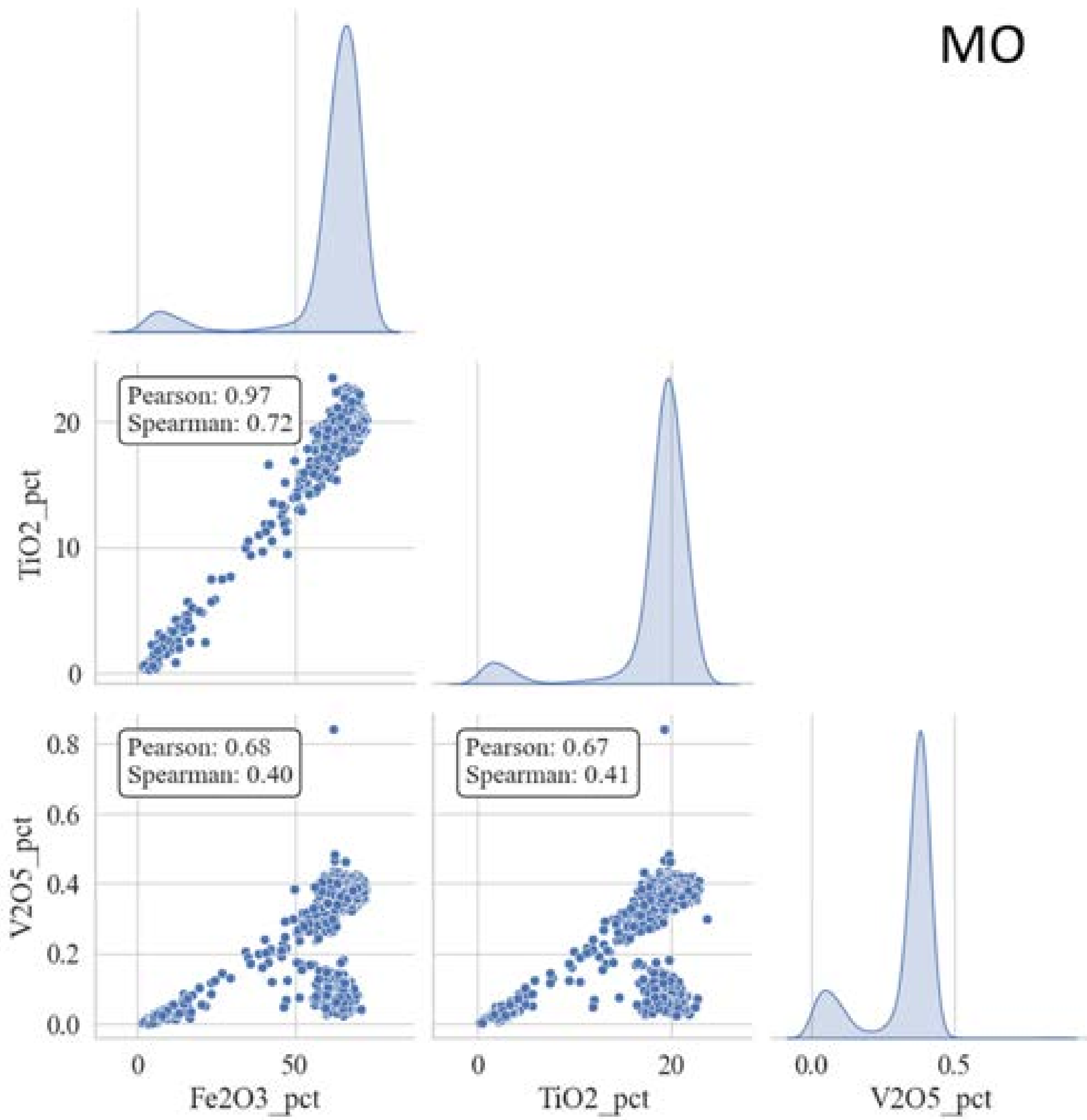


FIGURE 14-9 PAIR PLOTS AND CORRELATION BETWEEN THE THREE OXIDES IN EACH ESTIMATION DOMAIN (CONTINUED)

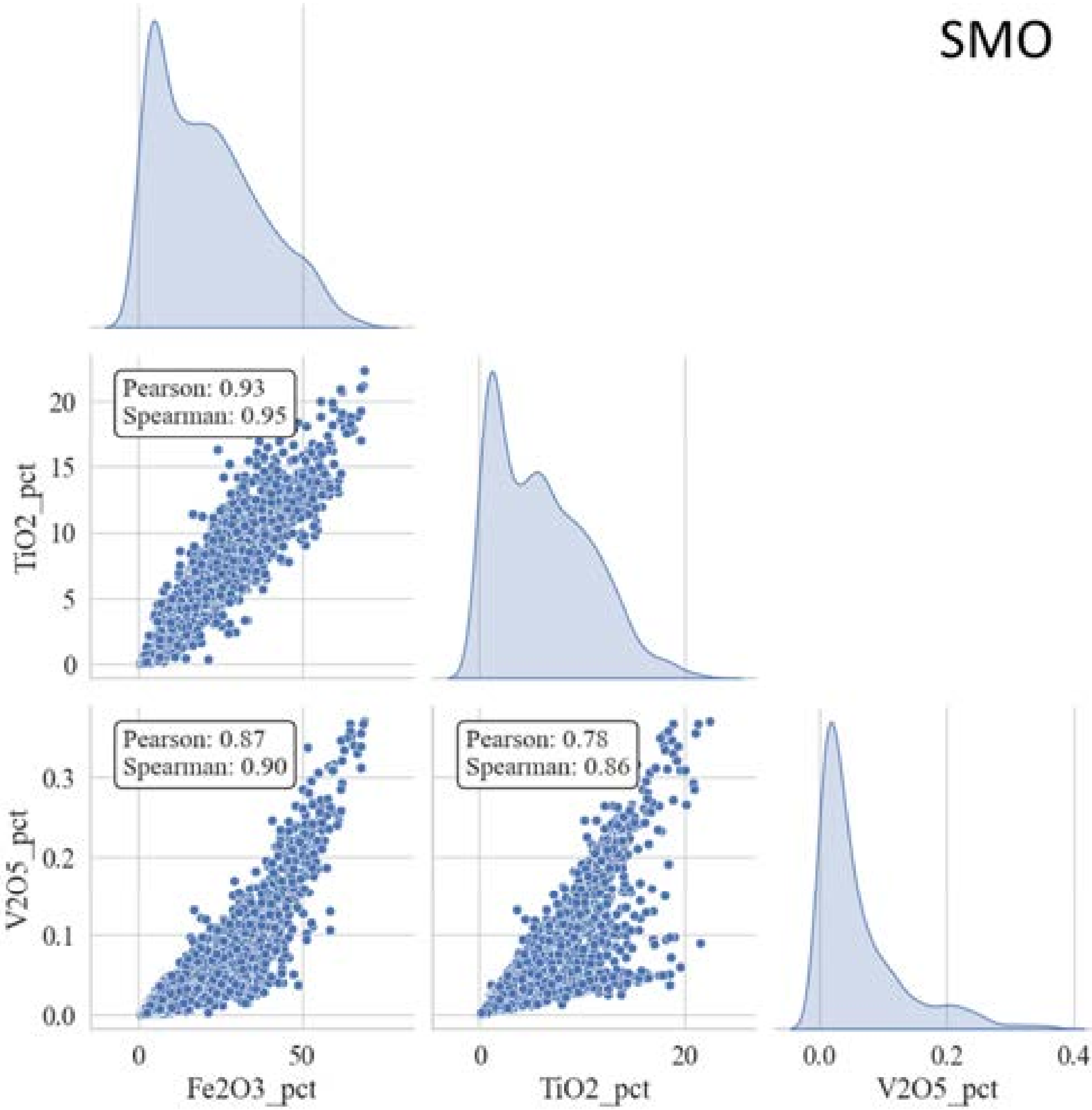
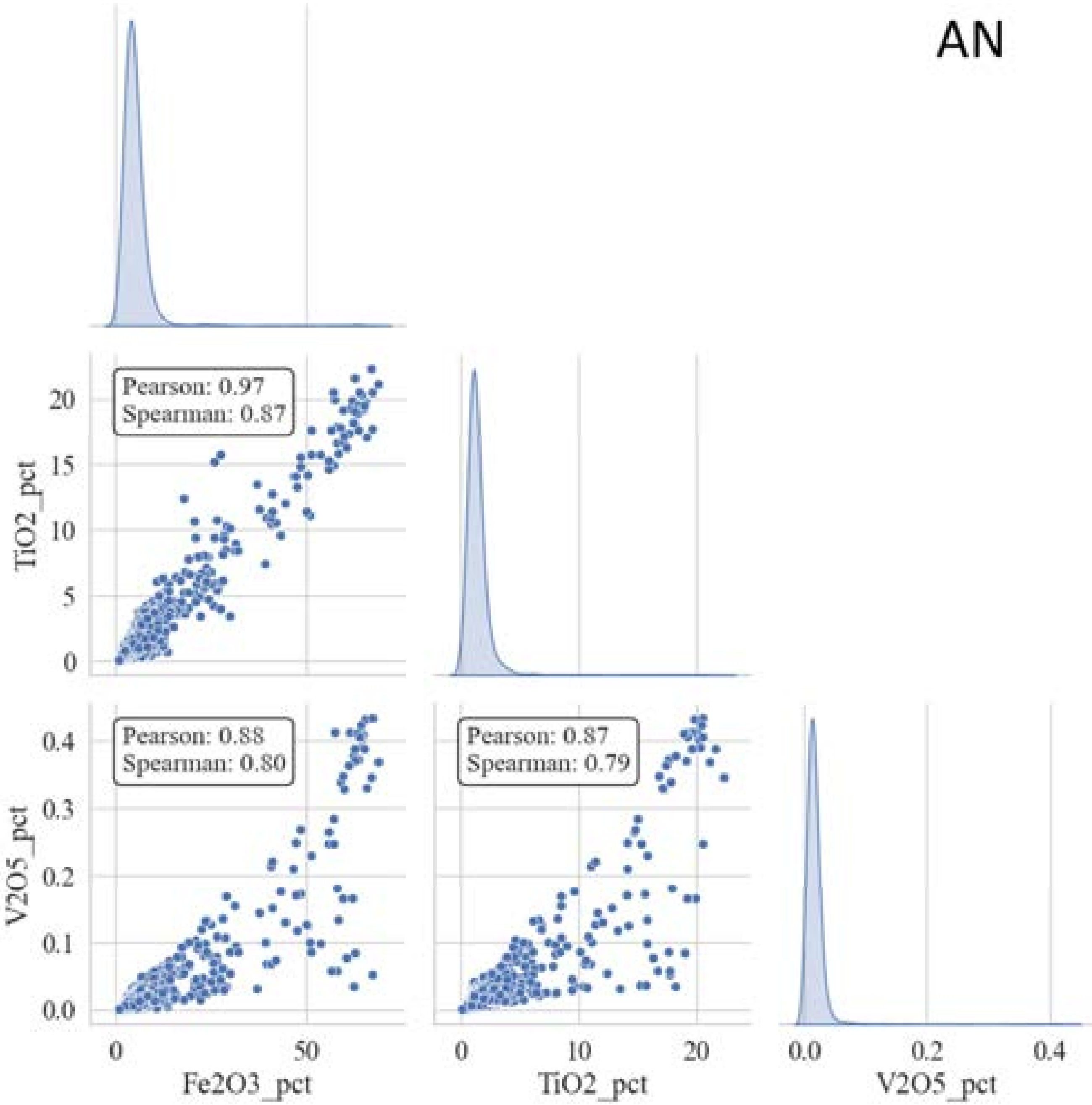


FIGURE 14-9 PAIR PLOTS AND CORRELATION BETWEEN THE THREE OXIDES IN EACH ESTIMATION DOMAIN (CONTINUED)



Strong multivariate relationships especially among TiO_2 and Fe_2O_3 and have been identified from the correlation coefficients in the MO and SMO Domains. The low vanadium grade population observed within the MO domain was left unadjusted during estimation which is a conservative approach.

14.7 DOMAIN BOUNDARY ANALYSIS

A domain boundary analysis was conducted to analyse oxides grades transitions between the modeled domains and make decision regarding whether to employ hard or soft boundaries in between the various estimation domains. The results are summarized in Figure 14-10 for the MO Domain, Figure 14-11 for the SMO Domain, and Figure 14-12 for the AN Domain. It can be observed that the AN Domain is clearly separated from both SMO and MO Domains by a distinct and sharp grade transition, indicating the need for hard boundaries between the AN Domain and the two oxide domains, the MO and SMO Domains. The grade transition between the SMO and the MO, is not as sharp, but shows a significantly clear change in grade, indicating the need for a hard boundary in between the MO and SMO Domains. It can be noticed that the change in grade is more pronounced for V_2O_5 than for the other oxides.

FIGURE 14-10 GRAPH ILLUSTRATING THE TRANSITION IN GRADE AT THE BOUNDARY BETWEEN THE MO AND SMO DOMAINS

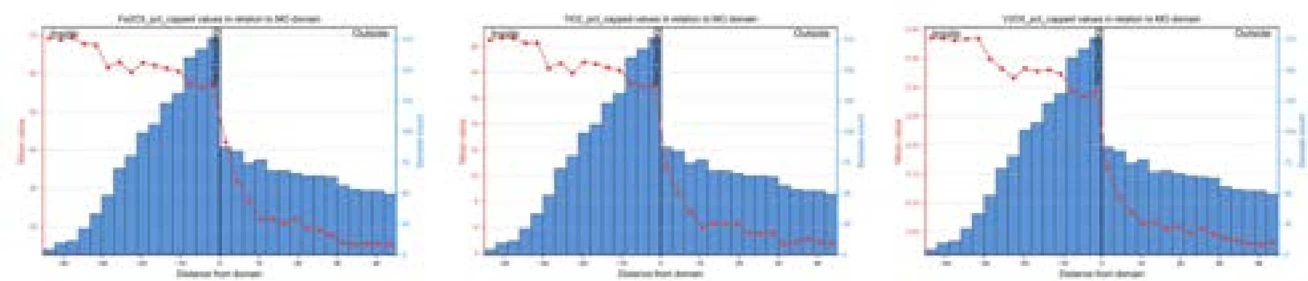


FIGURE 14-11 GRAPH ILLUSTRATING THE TRANSITION IN GRADE AT THE BOUNDARY BETWEEN THE MO AND AN DOMAINS

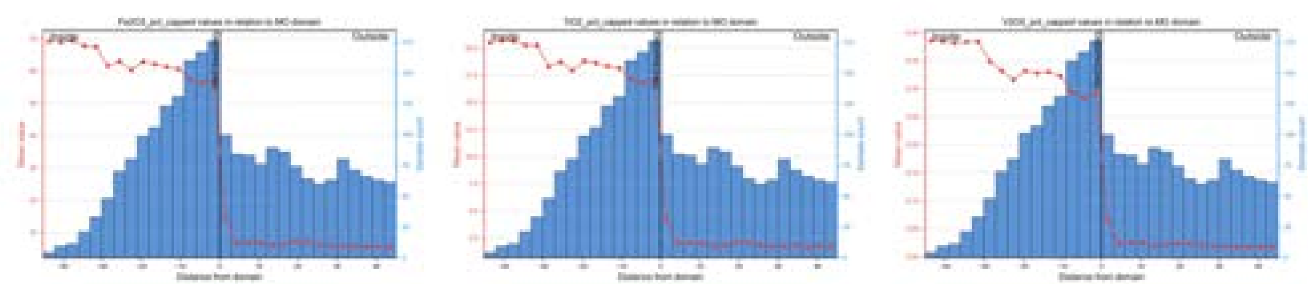
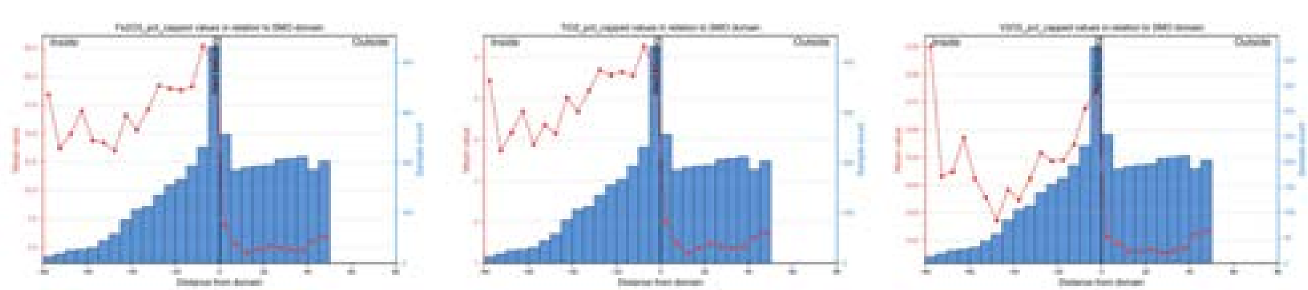


FIGURE 14-12 GRAPH ILLUSTRATING THE TRANSITION IN GRADE AT THE BOUNDARY BETWEEN THE SMO AND AN DOMAINS



14.8 GRADE CAPPING

Several statistical plots were generated to investigate the presence of statistical outliers that might lead to over-estimation. Histograms, probability and log probability plots, deciles and percentiles plots, metal at risk plots and capping sensitivity plots were created to guide the selection of capping values for all elements globally within La Blache. Grade capping plots for the three oxides are presented in Figures 14-13 to 14-21. The summary of capping statistics for all elements at La Blache is provided in Table 14-2.

The results of grade capping indicate that a limited number of samples were globally capped for all elements to mitigate potential overestimation. The influence of capping on the overall mean and the percentage of lost material is negligible.

FIGURE 14-13 GRADE CAPPING SUPPORTING PLOTS FOR FE_2O_3 IN MO (NO CAPPING WAS APPLIED)

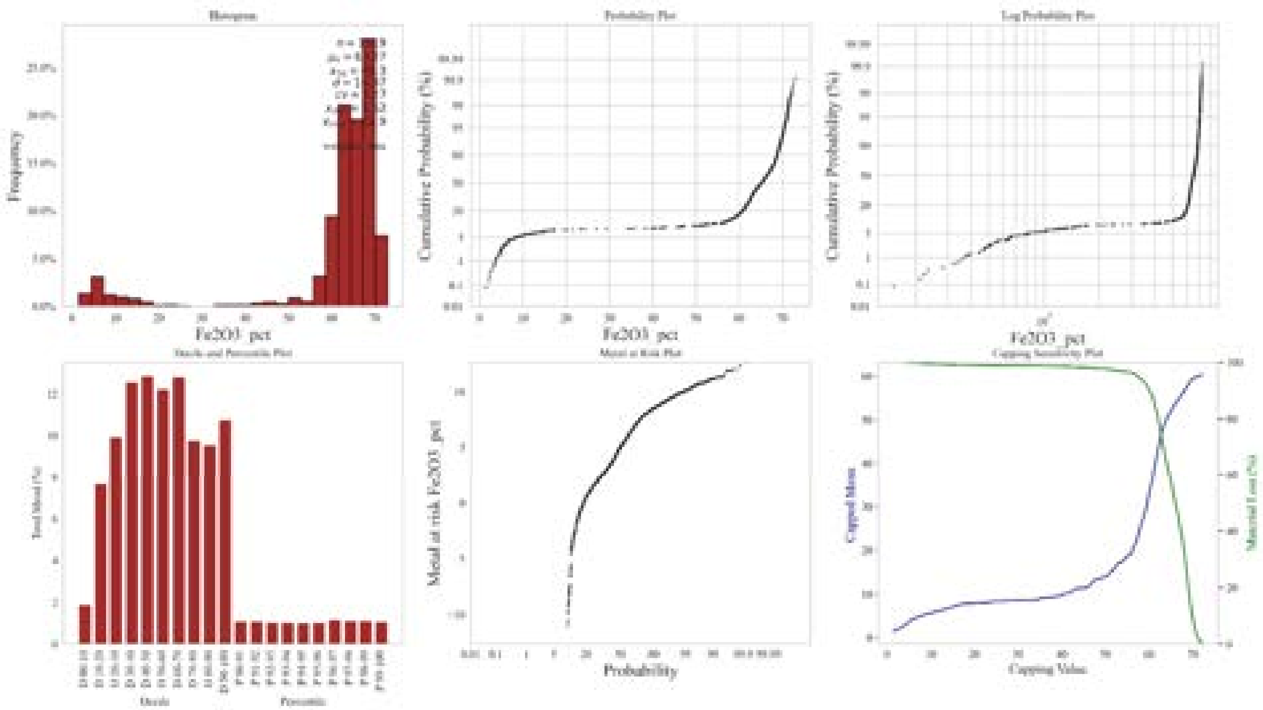


FIGURE 14-14 GRADE CAPPING SUPPORTING PLOTS FOR FE_2O_3 IN SMO (CAPPING WAS APPLIED AT 67.5% FE_2O_3)

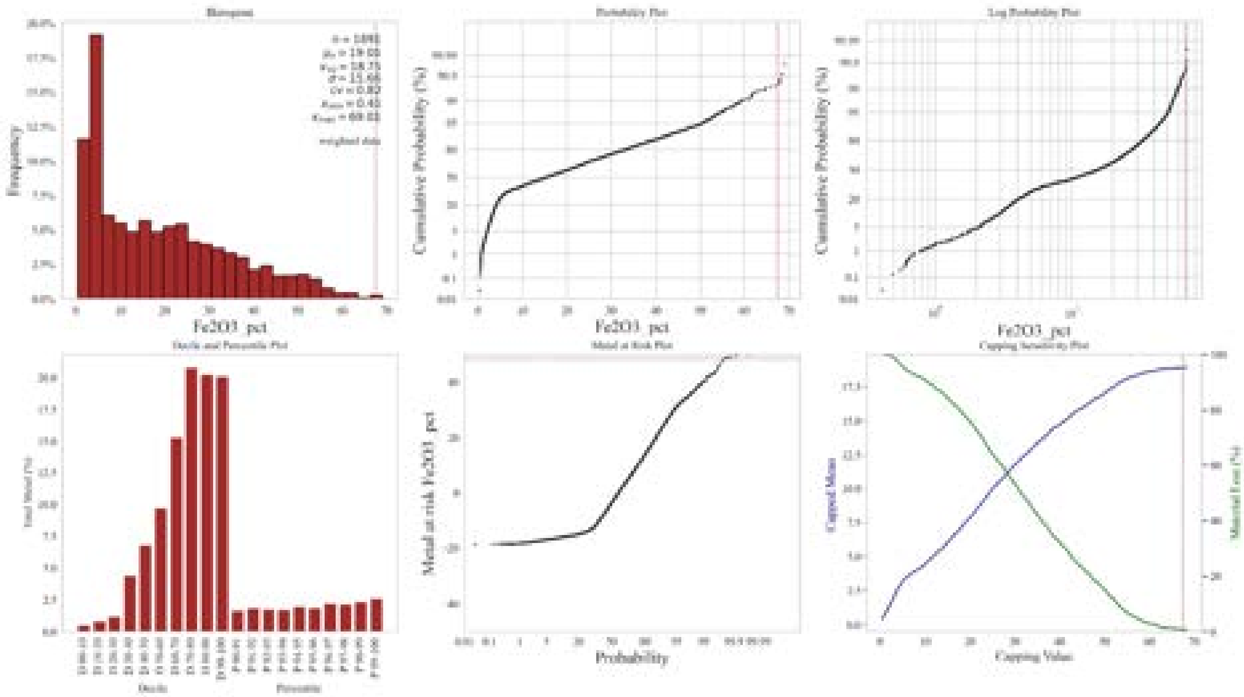


FIGURE 14-15 GRADE CAPPING SUPPORTING PLOTS FOR FE_2O_3IN AN (CAPPING WAS APPLIED AT 66.5% FE_2O_3)

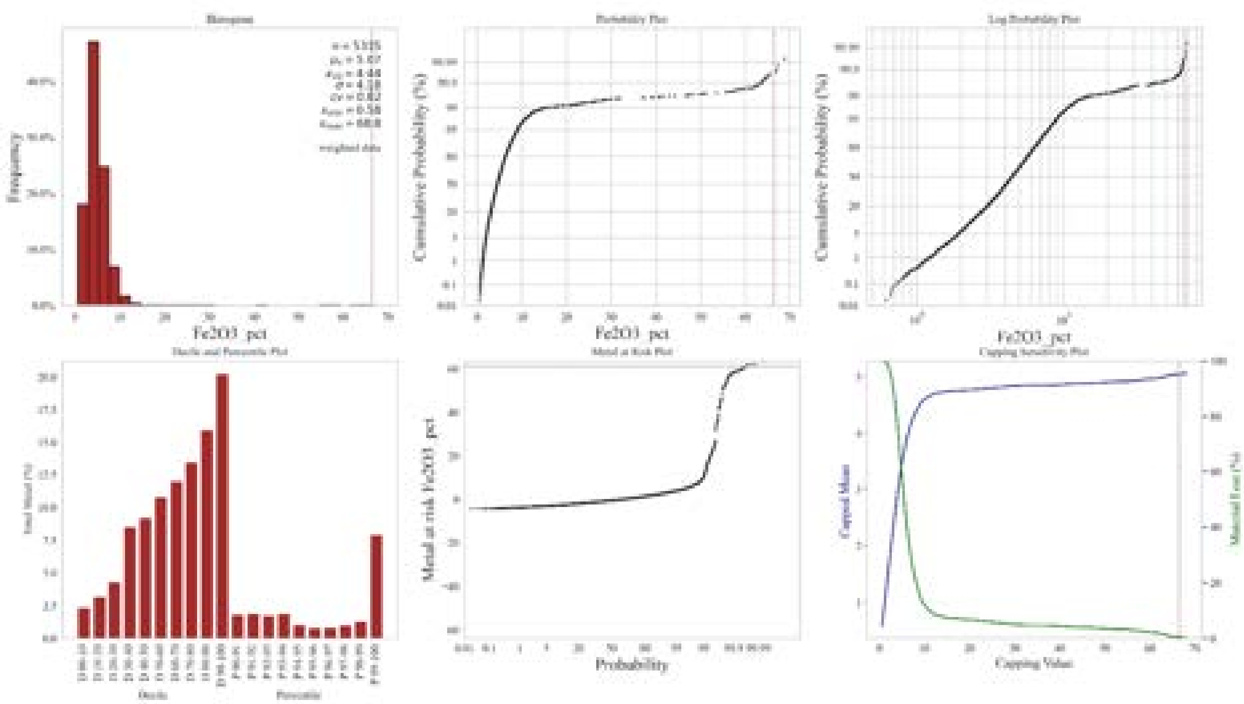


FIGURE 14-16 GRADE CAPPING SUPPORTING PLOTS FOR TIO_2 IN MO (CAPPING WAS APPLIED AT 23% TIO_2)

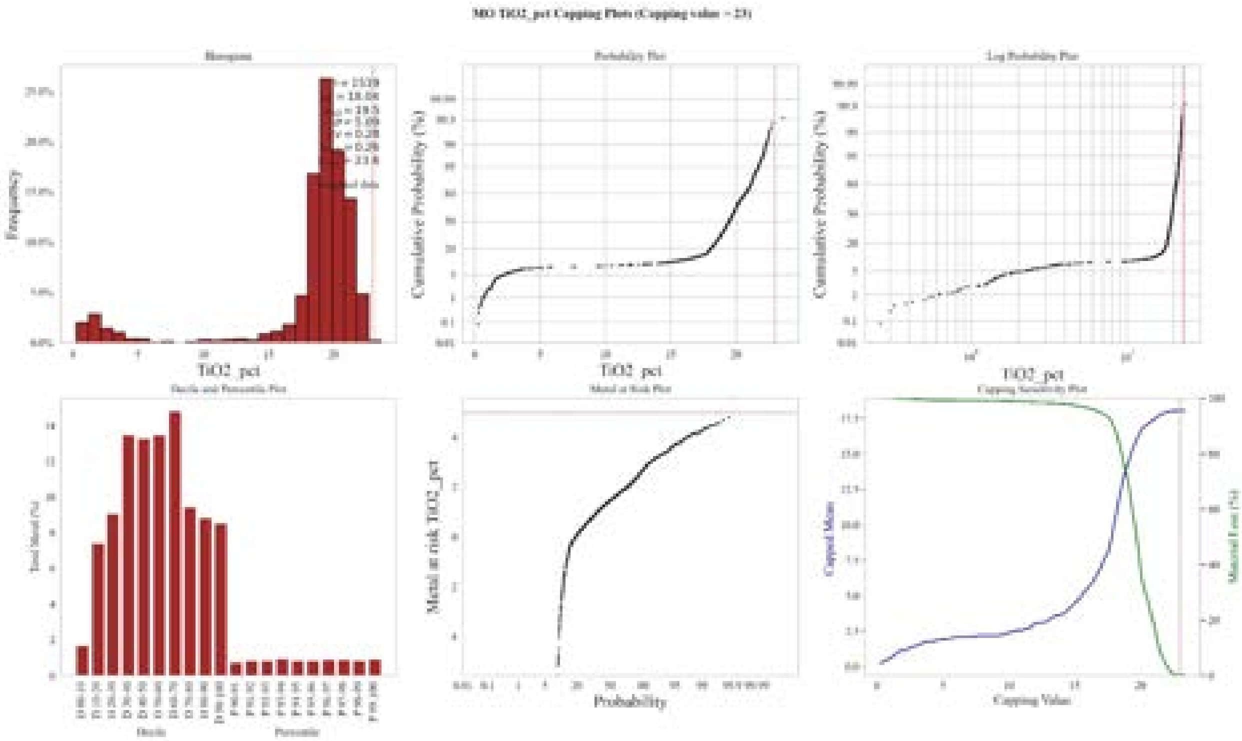


FIGURE 14-17 GRADE CAPPING SUPPORTING PLOTS FOR TIO_2IN SMO (CAPPING WAS APPLIED AT 20.5% TIO_2)

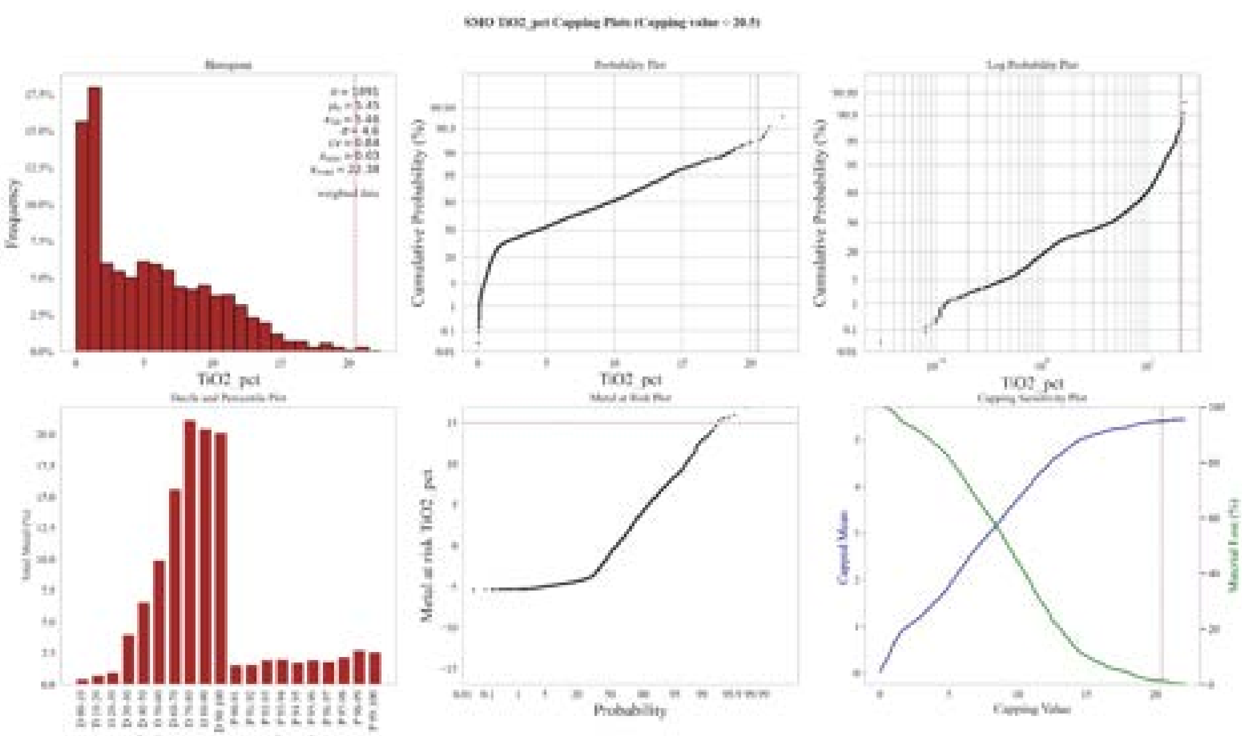


FIGURE 14-18 GRADE CAPPING SUPPORTING PLOTS FOR TIO_2 IN AN (CAPPING WAS APPLIED AT 21% TIO_2)

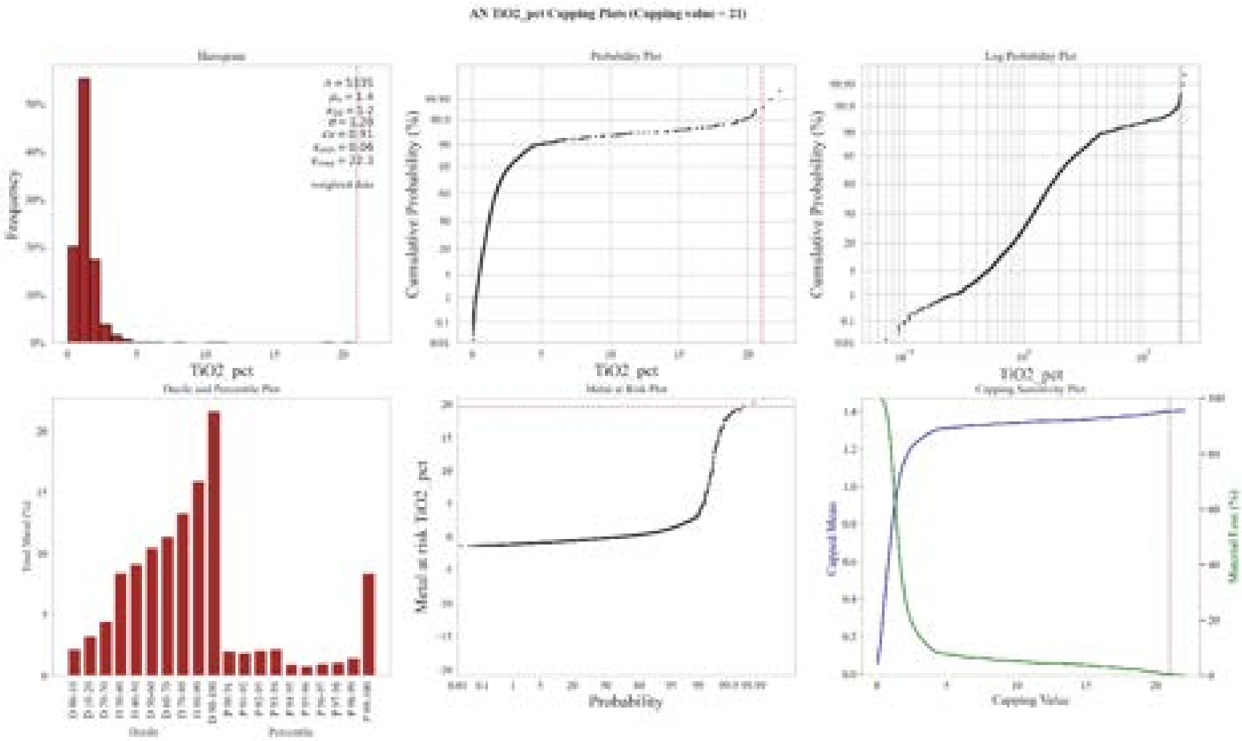


FIGURE 14-19 GRADE CAPPING SUPPORTING PLOTS FOR V_2O_5 IN MO (CAPPING WAS APPLIED AT 0.45% V_2O_5)

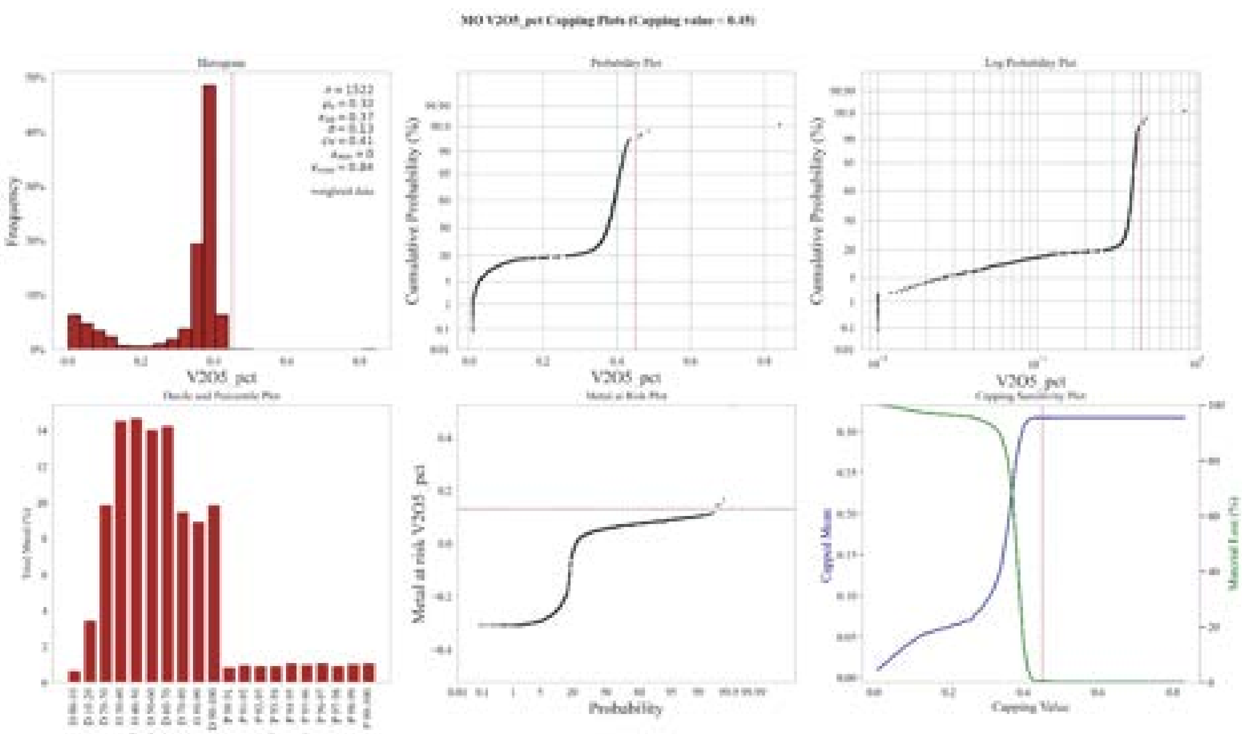


FIGURE 14-20 GRADE CAPPING SUPPORTING PLOTS FOR V_2O_5 IN SMO (CAPPING WAS APPLIED AT 0.365% V_2O_5)

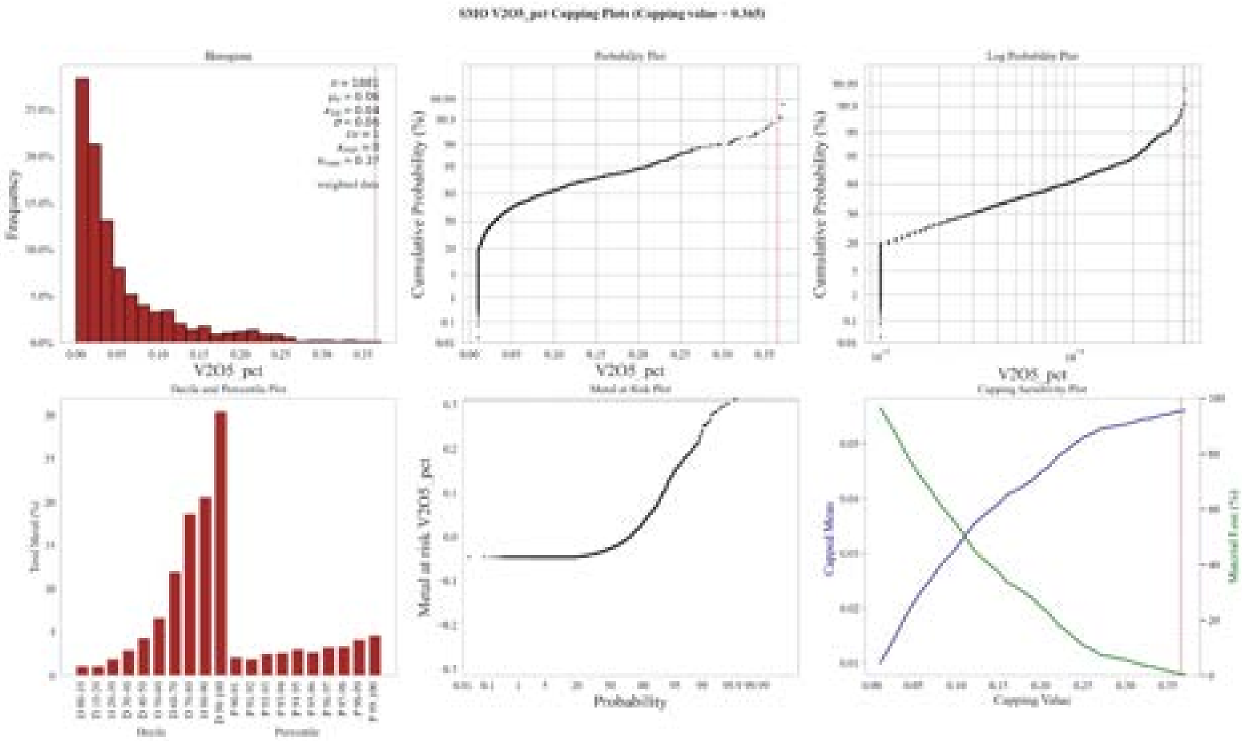


FIGURE 14-21 GRADE CAPPING SUPPORTING PLOTS FOR V_2O_5 IN AN (CAPPING WAS APPLIED AT 0.395% V_2O_5).

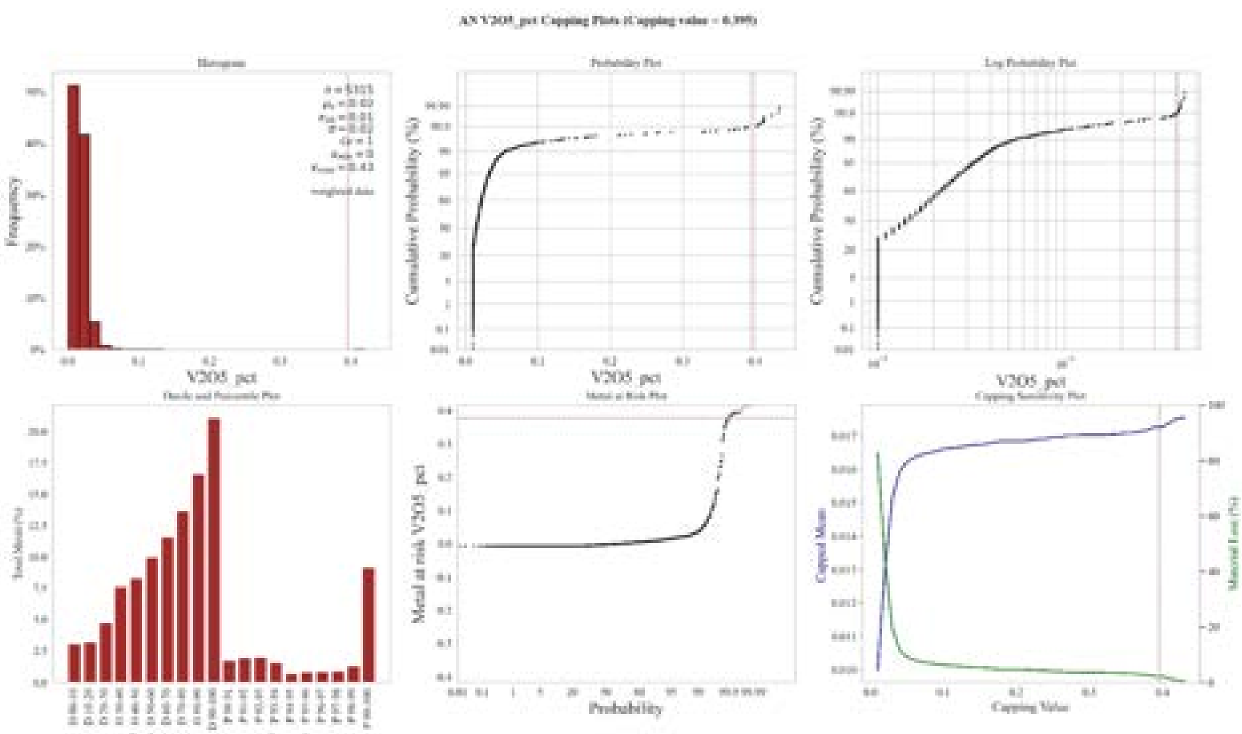


TABLE 14-2 SUMMARY OF CAPPING STATISTICS

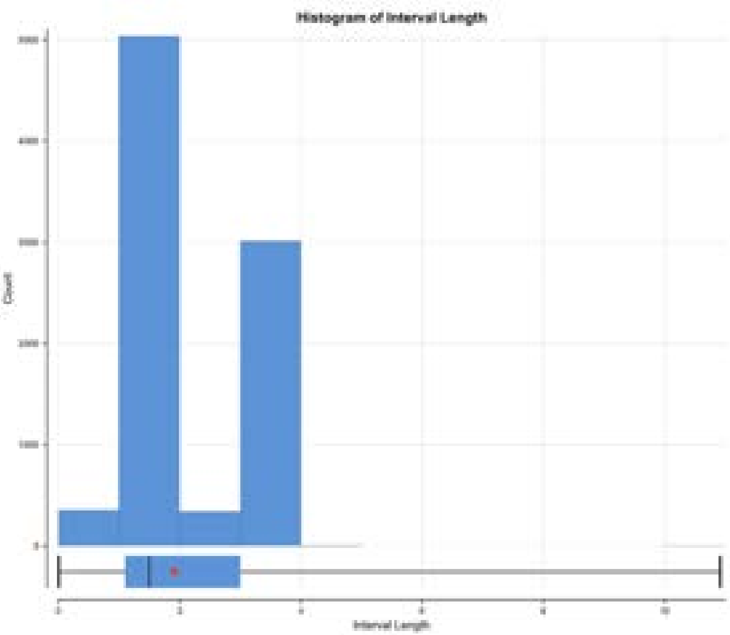
Zone	Variable	Count	Original Mean	Original Standard Deviation	Original Min	Original Max	Original CV	Capping Value	Capped Mean	Capped Standard Deviation	Capped Min	Capped Max	Capped CV	# of Samples Capped	% of Capped Samples	% of Material Lost
MO	Fe_2O_3	1519	60.27	16.37	1.52	72.90	0.27	-	60.27	16.37	1.52	72.90	0.27	0	0	0
MO	TiO_2	1519	18.04	5.09	0.26	23.60	0.28	23	18.04	5.09	0.26	23.00	0.28	1	0.066	0.002
MO	V_2O_5	1522	0.32	0.13	0.00	0.84	0.40	0.45	0.32	0.13	0.00	0.45	0.40	4	0.263	0.111
SMO	Fe_2O_3	1891	19.01	15.66	0.41	69.01	0.82	67.5	19.01	15.66	0.41	67.50	0.82	5	0.264	0.01
SMO	TiO_2	1891	5.45	4.60	0.03	22.38	0.84	20.5	5.45	4.59	0.03	20.50	0.84	6	0.317	0.046
SMO	V_2O_5	1881	0.06	0.07	0.00	0.37	1.17	0.365	0.06	0.07	0.00	0.37	1.17	3	0.159	0.01
AN	Fe_2O_3	5335	5.07	4.18	0.58	68.80	0.83	66.5	5.07	4.18	0.58	66.50	0.82	4	0.075	0.007
AN	TiO_2	5335	1.40	1.28	0.06	22.30	0.91	21	1.40	1.27	0.06	21.00	0.91	3	0.056	0.014
AN	V_2O_5	5315	0.02	0.02	0.00	0.43	1.19	0.395	0.02	0.02	0.00	0.40	1.18	11	0.207	0.104

14.9 COMPOSITING

The report author analysed the lengths of samples and selected a composite length of 1.5 m. The selection of compositing length was based on the mode of sample lengths. Figure 14-22 shows a histogram and summary statistics of sample lengths of raw data at La Blache.

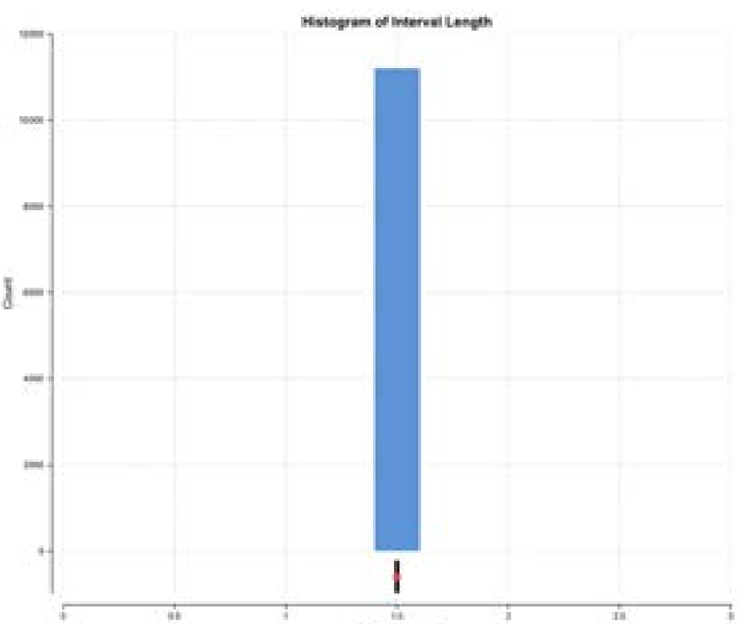
A technique known as length adjusted composting was employed to ensure that the entire length of each drill intersection within a domain was utilized. The results of composited sample lengths are presented in Figure 14-23.

FIGURE 14-22 HISTOGRAM AND SUMMARY STATISTICS OF SAMPLE LENGTHS OF RAW DATA



	Value
Count	8,753
Mean	1.91506
SD	0.865016
CV	0.451692
Variance	0.748253
Minimum	0.01
Q1	1.1
Q2	1.5
Q3	3
Maximum	10.92

FIGURE 14-23 HISTOGRAM AND SUMMARY STATISTICS OF SAMPLE LENGTHS OF COMPOSITES



	Value
Count	11,197
Mean	1.50051
SD	0.00176597
CV	0.00117692
Variance	3.11865e-06
Minimum	1.49618
Q1	1.49947
Q2	1.50044
Q3	1.50179
Maximum	1.50473

Figure 14-24 shows box plots of three oxides grade within the three lithogeochemical domains after the compositing. The main statistics for the three oxides inside each domain using the composited data are summarized in Table 14-3.

FIGURE 14-24 BOX PLOTS OF THE THREE OXIDES GRADE IN EACH ESTIMATION DOMAINS AFTER COMPOSITING

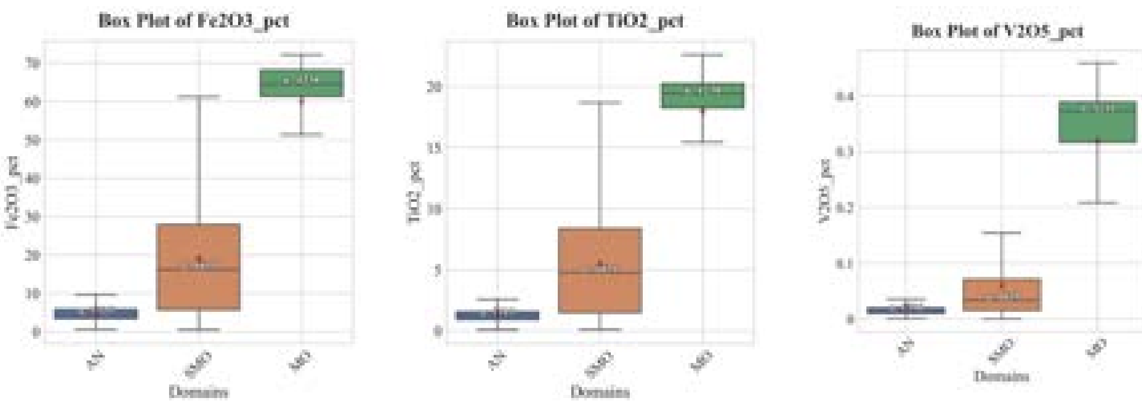


TABLE 14-3 EXPLORATORY DATA ANALYSIS PER DOMAIN WITH THE COMPOSITED DATASET

Zone	Variable	Count	Mean	Median	Stdev	Min	Max	CV
MO	Fe_2O_3	1238	60.08	64.58	15.27	1.52	72.15	0.25
SMO	Fe_2O_3	1835	19.01	16.27	14.62	0.49	65.77	0.77
AN	Fe_2O_3	8115	5.07	4.48	3.69	0.61	65.87	0.73
MO	TiO_2	1238	17.98	19.42	4.72	0.26	22.59	0.26
SMO	TiO_2	1835	5.45	4.77	4.17	0.1	20.92	0.77
AN	TiO_2	8115	1.41	1.22	1.12	0.09	21.06	0.79
MO	V_2O_5	1241	0.32	0.37	0.12	0	0.81	0.38
SMO	V_2O_5	1829	0.06	0.03	0.06	0	0.35	1.09
AN	V_2O_5	8096	0.02	0.01	0.02	0	0.43	1.06

14.10 VARIOGRAPHY

Precision in spatial analysis/variography is directly proportional to the quality of the sampling pattern and ability to constrain domains with grade shell wireframes. Experimental variograms of the three oxides in the three estimation domains were calculated and fitted with their appropriate variogram models. The experimental variograms are computed in a plane dipping at 20 degrees with a dip azimuth of 90 degree in the same direction as the wireframes for the MO and SMO estimation domains. Correlograms are used for calculating the variograms to improve the clarity of the modelled variogram structures. A normalized nugget value of 0.1 was selected through the utilization of downhole variograms. The second structure within the AN Domain exhibits an omnidirectional continuity without clear preferential anisotropy for all variables.

All modelled correlograms are shown in Figures 14-25, 14-26 and 14-27. Fitted correlogram models for each oxide per domain are summarized in Table 14-4.

FIGURE 14-25 CORRELOGRAM FOR EACH OXIDE IN THE MO DOMAIN

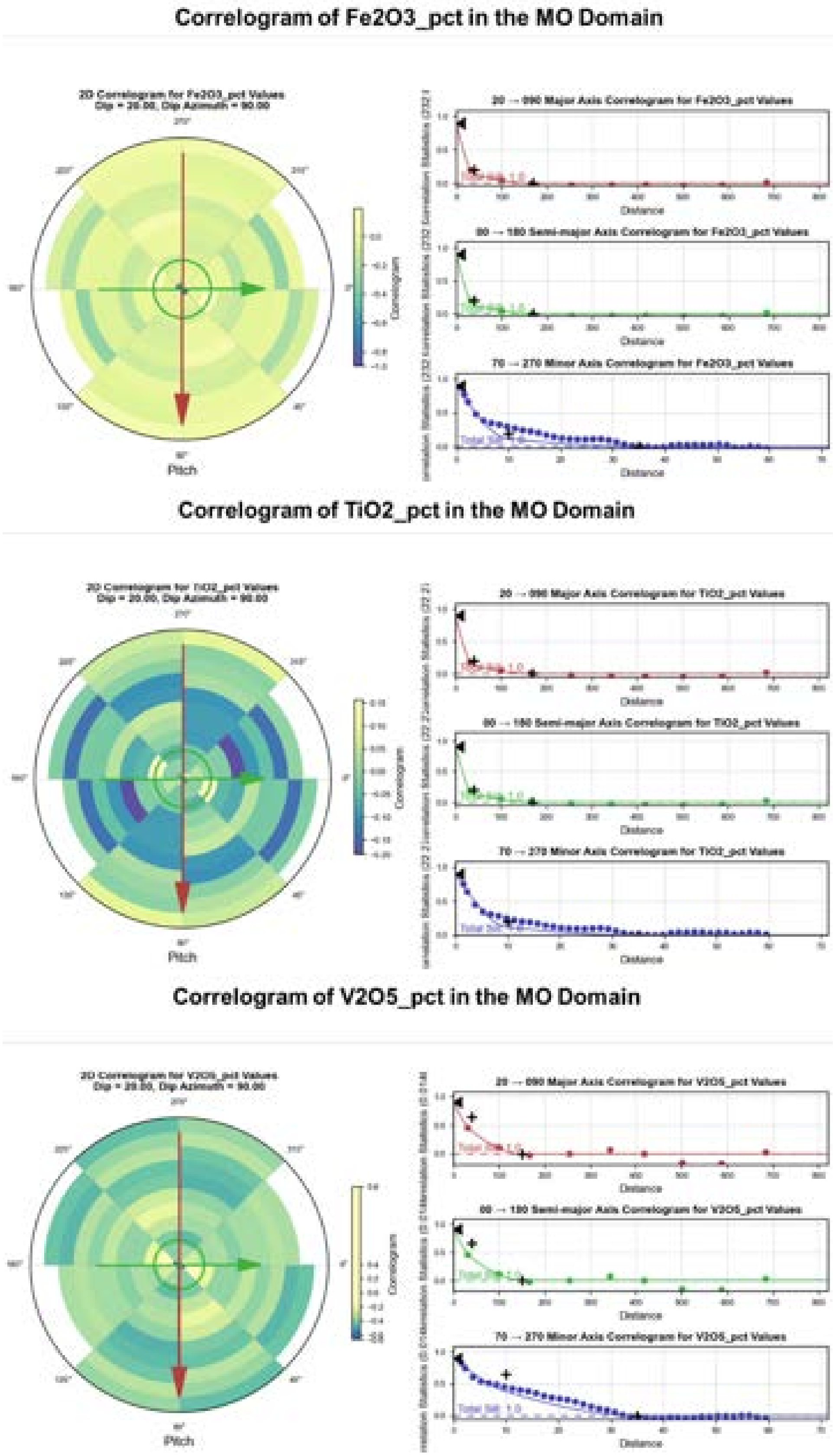
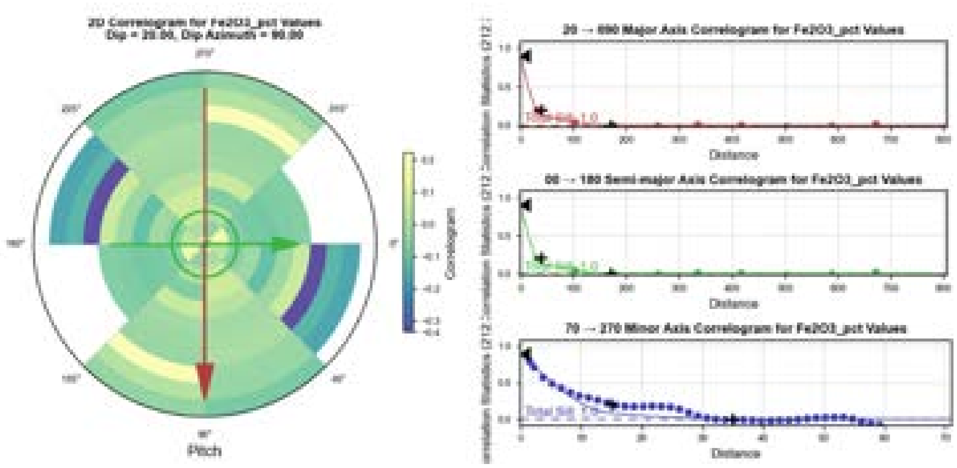
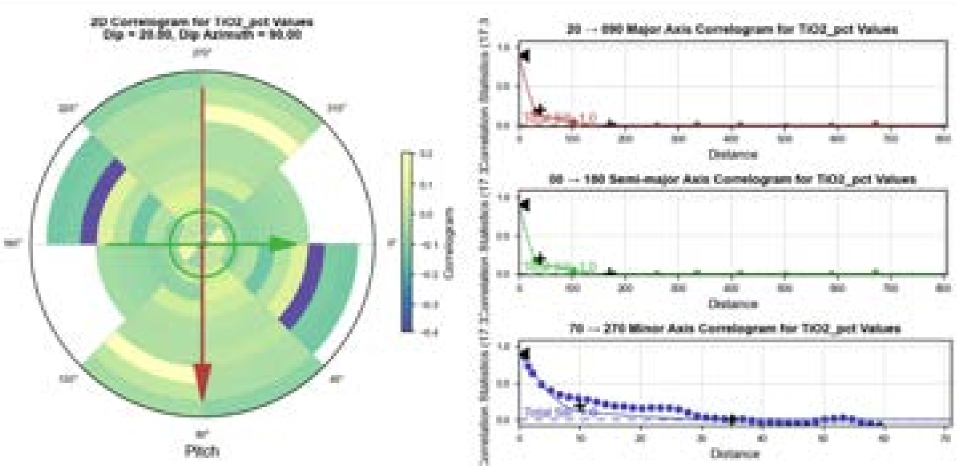


FIGURE 14-26 CORRELOGRAM FOR EACH OXIDE IN THE SMO DOMAIN

Correlogram of Fe2O3_pct in the SMO Domain



Correlogram of TiO2_pct in the SMO Domain



Correlogram of V2O5_pct in the SMO Domain

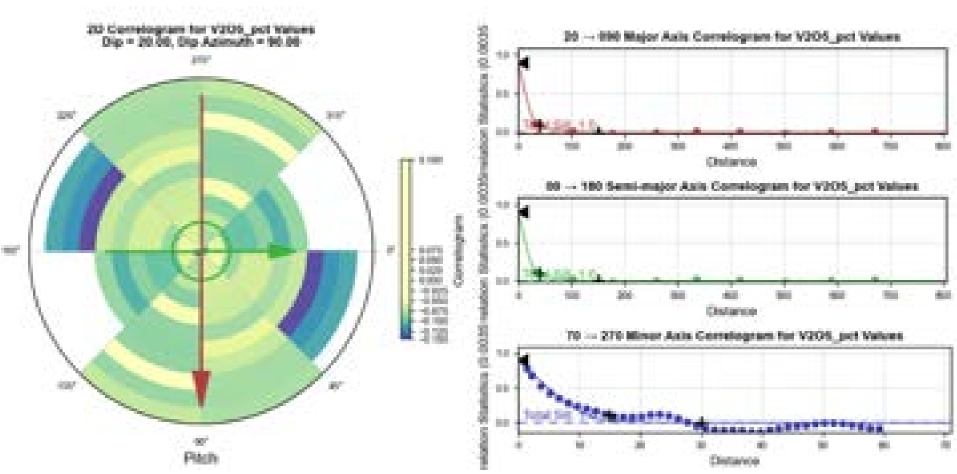


FIGURE 14-27 CORRELOGRAM FOR EACH OXIDE IN THE AN DOMAIN

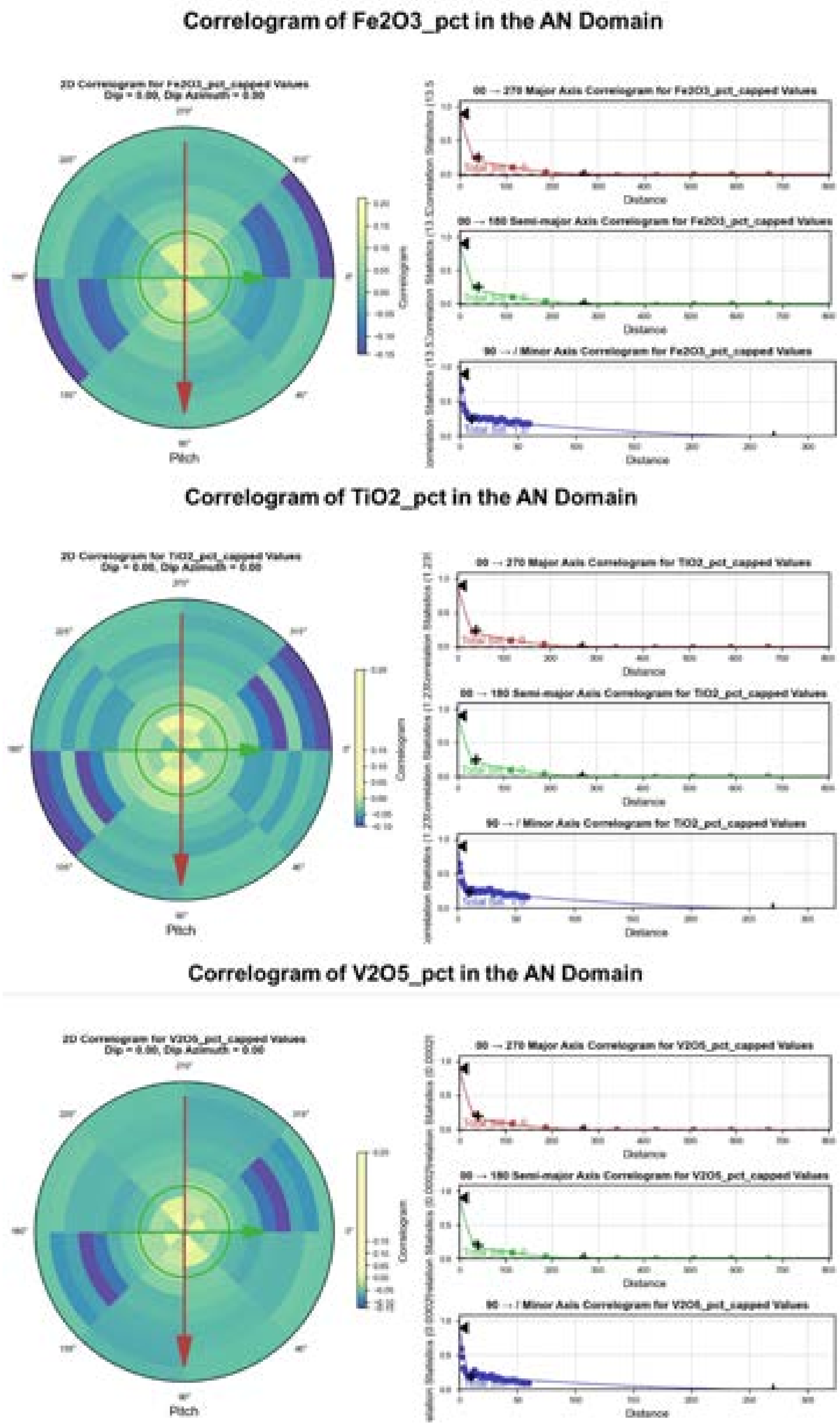


TABLE 14-4 SUMMARY OF THE FITTED CORRELOGRAM MODELS

Dmain	Dip	Dip Azi.	Pitch	Variable	Variance	Nugget	Norm. Nug	Structure 1					Structure 2				
								Norm.Sill	Structure	Major	Semi-major	Minor	Norm.Sill	Structure	Major	Semi-major	Minor
MO	20	90	90	Fe_2O_3	232.7	23.3	0.1	0.7	Spherical	40	40	10	0.2	Spherical	170	170	35
MO	20	90	90	TiO_2	22.3	2.2	0.1	0.7	Spherical	40	40	10	0.2	Spherical	170	170	35
MO	20	90	90	V_2O_5	0	0	0.1	0.25	Spherical	40	40	10	0.65	Spherical	150	150	35
SMO	20	90	90	Fe_2O_3	212.4	21.2	0.1	0.7	Spherical	40	40	15	0.2	Spherical	170	170	35
SMO	20	90	90	TiO_2	17.3	1.7	0.1	0.7	Spherical	40	40	10	0.2	Spherical	170	170	35
SMO	20	90	90	V_2O_5	0	0	0.1	0.8	Spherical	40	40	15	0.1	Spherical	150	150	30
AN	0	90	90	Fe_2O_3	13.9	1.4	0.1	0.65	Spherical	40	40	10	0.25	Spherical	270	270	270
AN	0	90	90	TiO_2	1.3	0.1	0.1	0.65	Spherical	40	40	10	0.25	Spherical	270	270	270
AN	0	90	90	V_2O_5	0	0	0.1	0.7	Spherical	40	40	10	0.2	Spherical	270	270	270

14.11 DEFINITION OF RESOURCE PARAMETERS AND BLOCK MODEL

14.11.1 BLOCK SIZE DETERMINATION

The report authors used a block size of 10m x 10m x 10m for the block model. The 10 m in the X, Y and Z directions is considered reasonable when taking into consideration the average drill hole spacing and the range of the three oxides correlogram. No sub-blocking was applied to the blocks in the estimation block model.

14.11.2 RESOURCE BLOCK MODEL DEFINITION

The block model definition is presented in Table 14-5. The upper limit representing surface topography is based on the topography surface provided. No rotation was applied on the block model due to the shape of the deposit that does not show any preferential direction of continuity that is off the north-south and east-west directions.

TABLE 14-5 LA BLACHE BLOCK MODEL DEFINITION

Item	X	Y	Z
Block size	10	10	10
Size in blocks	239	172	133
Base point	457,790	5,545,300	890
Boundary size	2,390	1,720	1,330
Azimuth	0		
Dip	0		
Pitch	0		

14.11.3 SEARCH PARAMETERS

The search ellipse configurations for the three oxides within the three domains are determined based on the ranges of their respective correlogram models. A multi-pass estimation approach is implemented for all estimated oxides across all estimation domains. Throughout these multiple passes, the maximum number of samples per drill hole is specified to effectively manage the count of drill holes in the interpolation process. A comprehensive summary of the search parameters employed for grade interpolation can be found in Table 14-6. The final estimation search pass focuses on populating all blocks within the wireframes with grade values.

TABLE 14-6 SUMMARY OF ESTIMATION SEARCH PASSES CONFIGURATIONS

Domain	Search Pass	Ellipse Radius Ratio to Correlogram Range	Min No. Samples	Max No. Sample	Max per DH
MO	1	0.5	18	18	6
	2	1	12	18	6
	3	1.5	6	18	6
	4	Large to populate all blocks	6	18	6

Domain	Search Pass	Ellipse Radius Ratio to Correlogram Range	Min No. Samples	Max No. Sample	Max per DH
SMO	1	0.5	18	18	6
	2	1	12	18	6
	3	1.5	6	18	6
	4	Large to populate all blocks	6	18	6
AN	1	0.5	18	18	6
	2	1	12	18	6
	3	1.5	6	18	6
	4	Large to populate all blocks	6	18	6

14.11.4 DENSITY

To determine the bulk density within each estimation domain for converting grade to tonnage, the provided density dataset was used. This database includes 1373m core samples with density measurements. Mean values were assigned to each domain. This approach is acceptable as the coefficient of variation inside each domain is small enough. The statistics for density within each domain are summarized in Table 14-7, and Figure 14-28 displays the results of density assignment to the block model in each estimation domain.

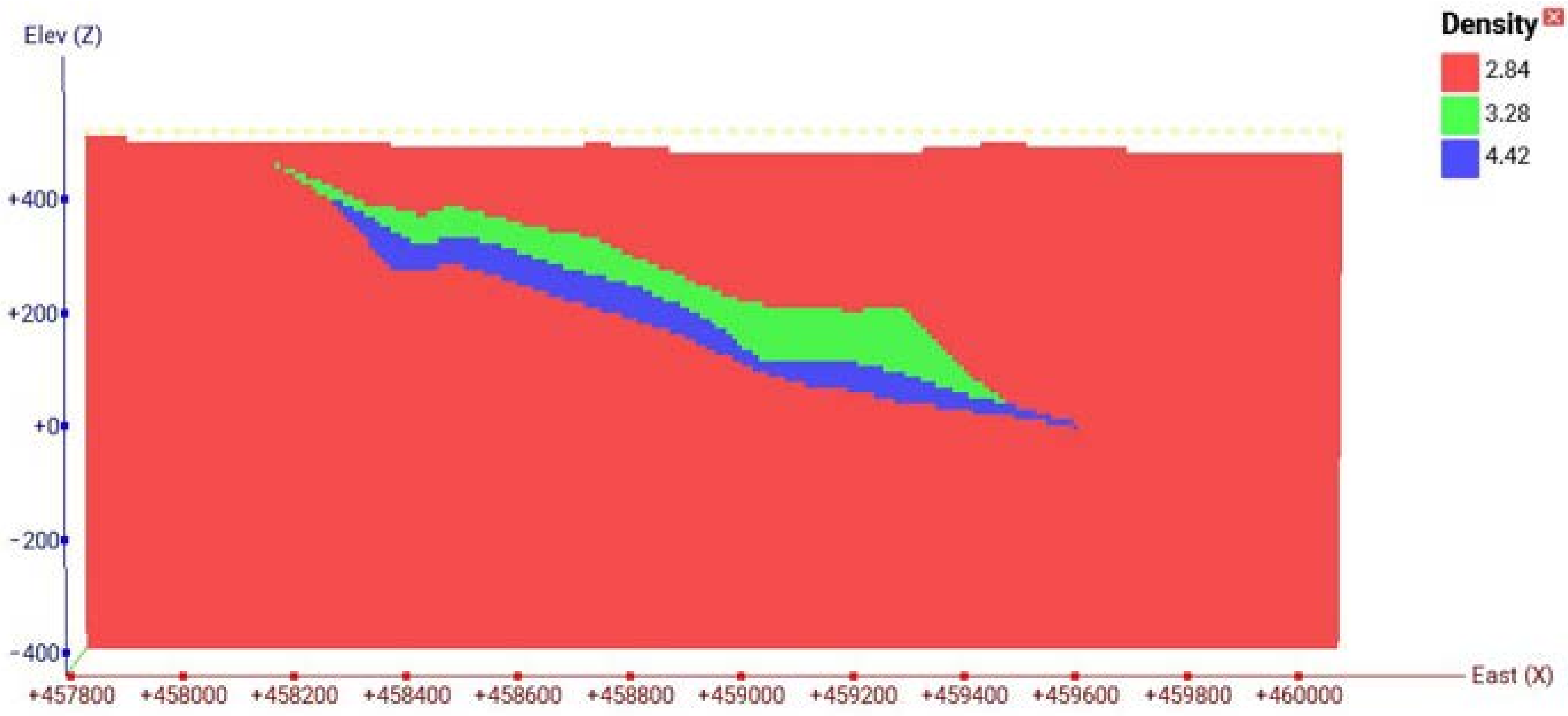
TABLE 14-7 SUMMARY STATISTICS OF THE DENSITY MEASUREMENTS

	Count	Length (m)	Mean (t/m^3)	Standard Deviation (t/m^3)	Coefficient of Variation	Minimum (t/m^3)	Median (t/m^3)	Maximum (t/m^3)
Global	1361	1373	3.56	0.82	0.23	2.35	3.25	5.21
MO	491	498	4.42	0.56	0.13	2.69	4.56	5.21
SMO	457	463	3.28	0.46	0.14	2.6	3.23	4.82
AN	413	412	2.84	0.34	0.12	2.35	2.78	4.98

14.12 GRADE ESTIMATION

The Ordinary kriging (OK) method is selected to estimate the three oxides at the La Blache deposit using the search parameters shown in Table 14-6. Dynamic anisotropy was used to generate estimates that follows the shape of the wireframes. A parallel estimate using Nearest neighbour (NN) method with 10 m composites (block height) was conducted to validate the OK estimates. Another parallel estimate using Inverse Distance (ID) with a degree of 2 was also performed.

FIGURE 14-28 CROSS SECTION OF THE BLOCK MODEL DISPLAYING THE DENSITY VALUES IN T/M³ ASSIGNED TO EACH DOMAIN



14.13 ESTIMATION VALIDATION

Several validation methods were applied after estimating all elements within each domain to check the quality of the final estimate. These methods are:

- Global bias checking: comparing NN mean which reflects the declustered mean of the composites vs OK estimated block means in the domains.
- Local bias checking: comparing the NN and ID mean at every swath in the swath plot against OK mean.
- Visual validation: comparing composites visually against estimated blocks.

14.13.1 GLOBAL BIAS CHECK

A global bias check was applied to the blocks that have the potential to be classified into Inferred resources.

Table 14-8 summarises the results of the global bias check in which OK block means for each element in every domain is compared to the NN estimate that reflected the declustered mean of the element in the domain.

The results of the global bias check demonstrated that the estimated grades for all three oxides values exhibit negligible bias within the MO and SMO domains with biases at a maximum of 6.3% for the V_2O_5 grade in the MO domain.

TABLE 14-8 SUMMARY OF GLOBAL BIAS CHECKING

Domain	Variable	OK Mean	NN Mean	Difference (%)
MO	Fe_2O_3	59.35	56.25	5.20%
MO	TiO_2	17.81	16.84	5.40%
MO	V_2O_5	0.32	0.30	6.30%
SMO	Fe_2O_3	18.82	19.93	5.90%
SMO	TiO_2	5.36	5.67	5.80%
SMO	V_2O_5	0.06	0.06	0.00%

14.13.2 LOCAL BIAS CHECK

Swath plots comparing OK, ID and NN estimates for the blocks that have the potential to be classified as Inferred resources. Figures 14-29 to 14-31 show swath plots for each oxide within the MO and SMO domains. The swath plots obtained exhibit satisfactory local validation within the two targeted domains, MO and SMO. The OK estimate closely aligns with the ID results. While the trends of the OK and NN curves are generally similar, discrepancies arise in zones where the available data points are sparse due to limited drillhole information. In such instances, the NN method yields sharper transitions than both the OK and ID methods.

FIGURE 14-29 SWATH PLOTS OF FE_2O_3 IN EACH DOMAIN

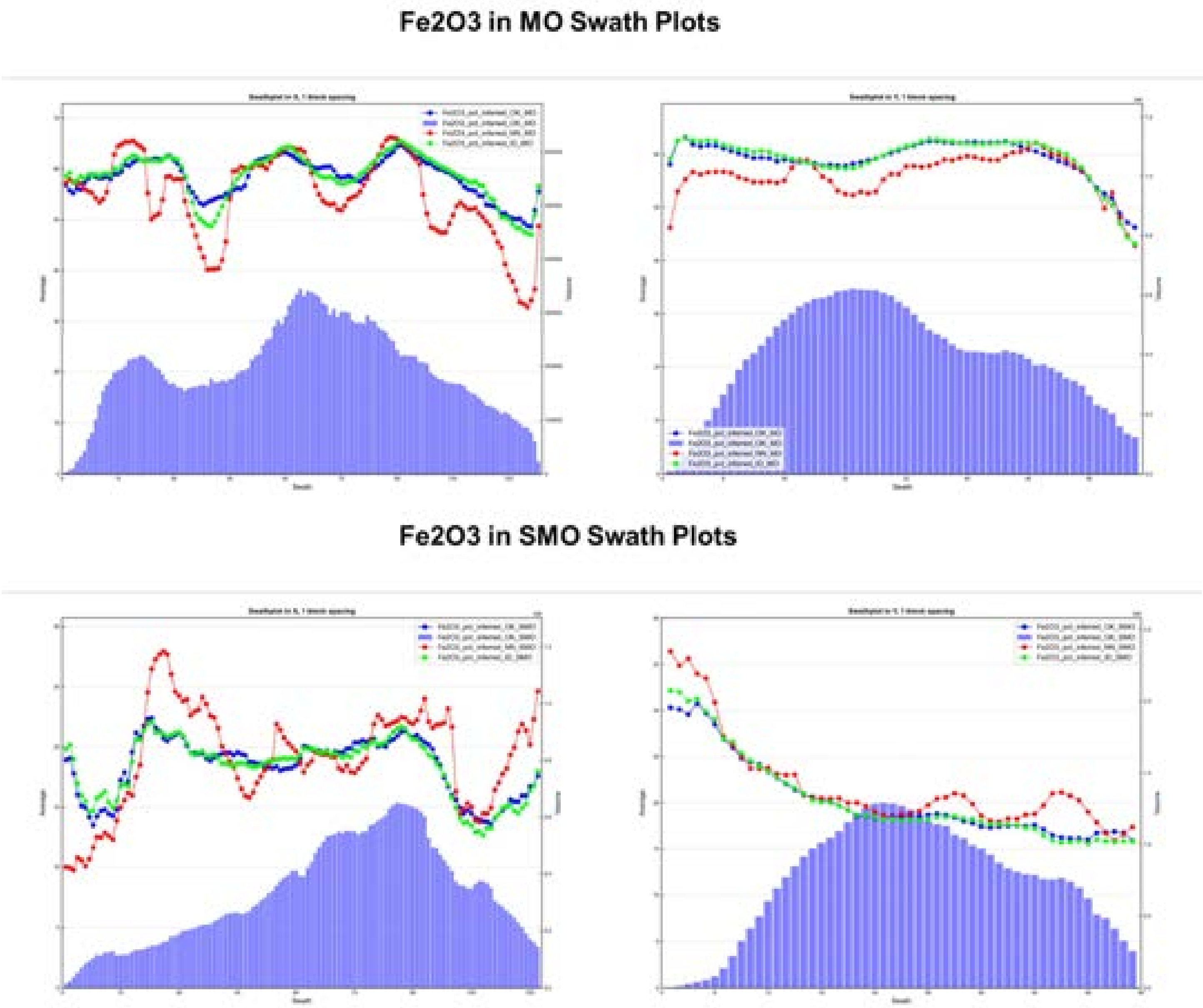
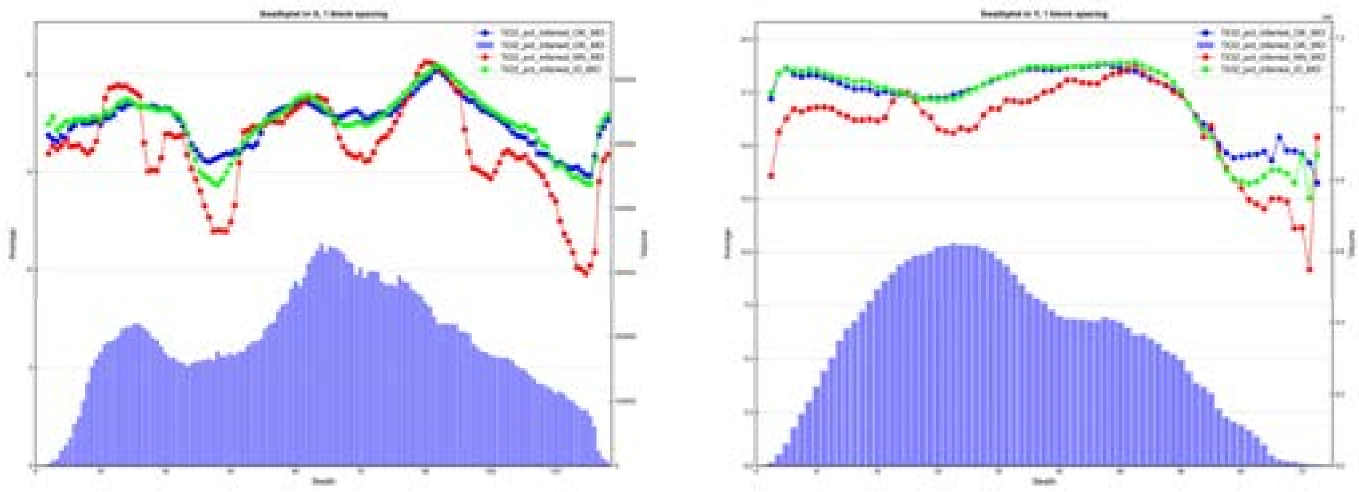


FIGURE 14-30 SWATH PLOTS OF TiO_2 IN EACH DOMAIN

TiO2 in MO Swath Plots



TiO2 in SMO Swath Plots

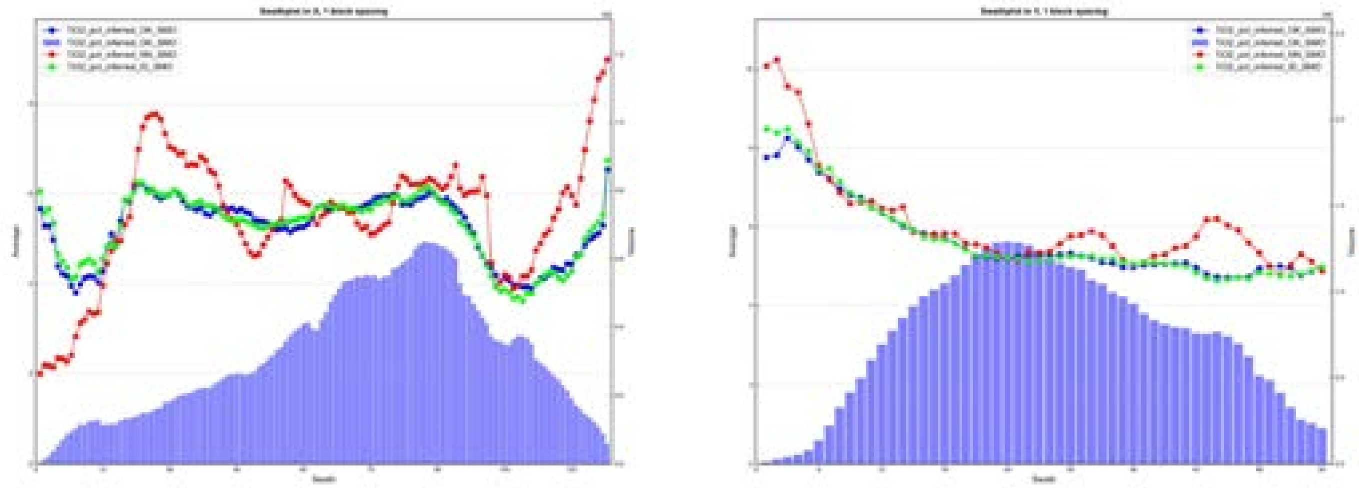
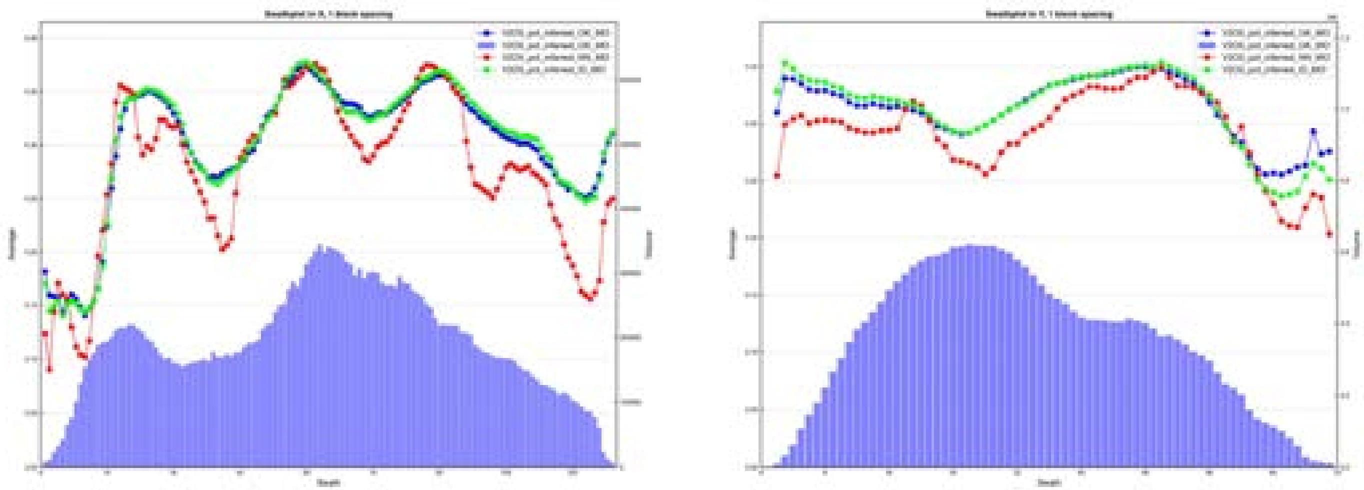
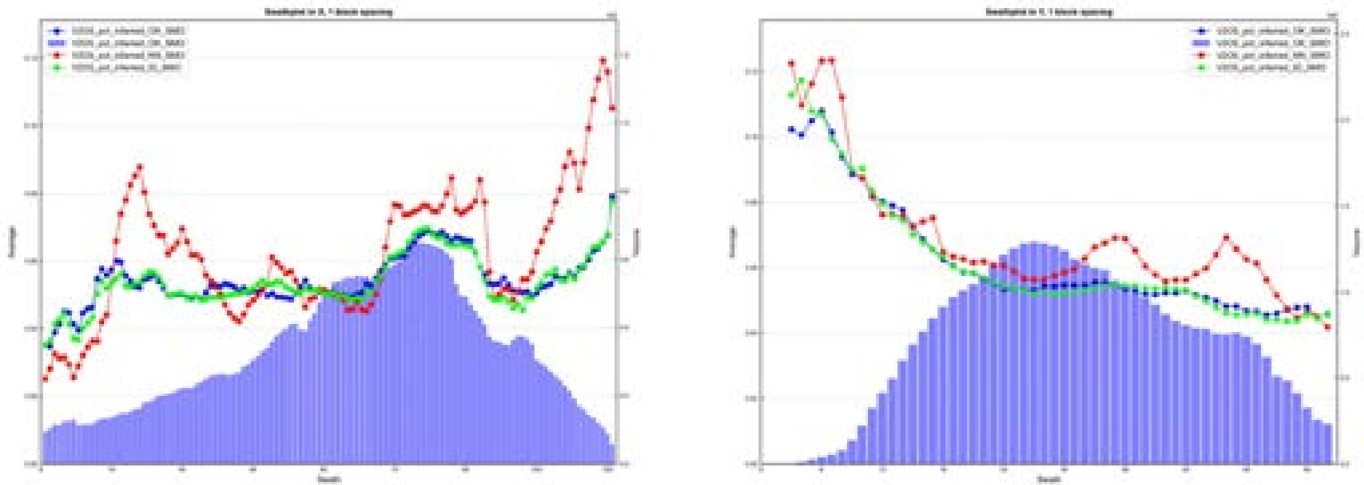


FIGURE 14-31 SWATH PLOTS OF V_2O_5 IN EACH DOMAIN

V2O5 in MO Swath Plots



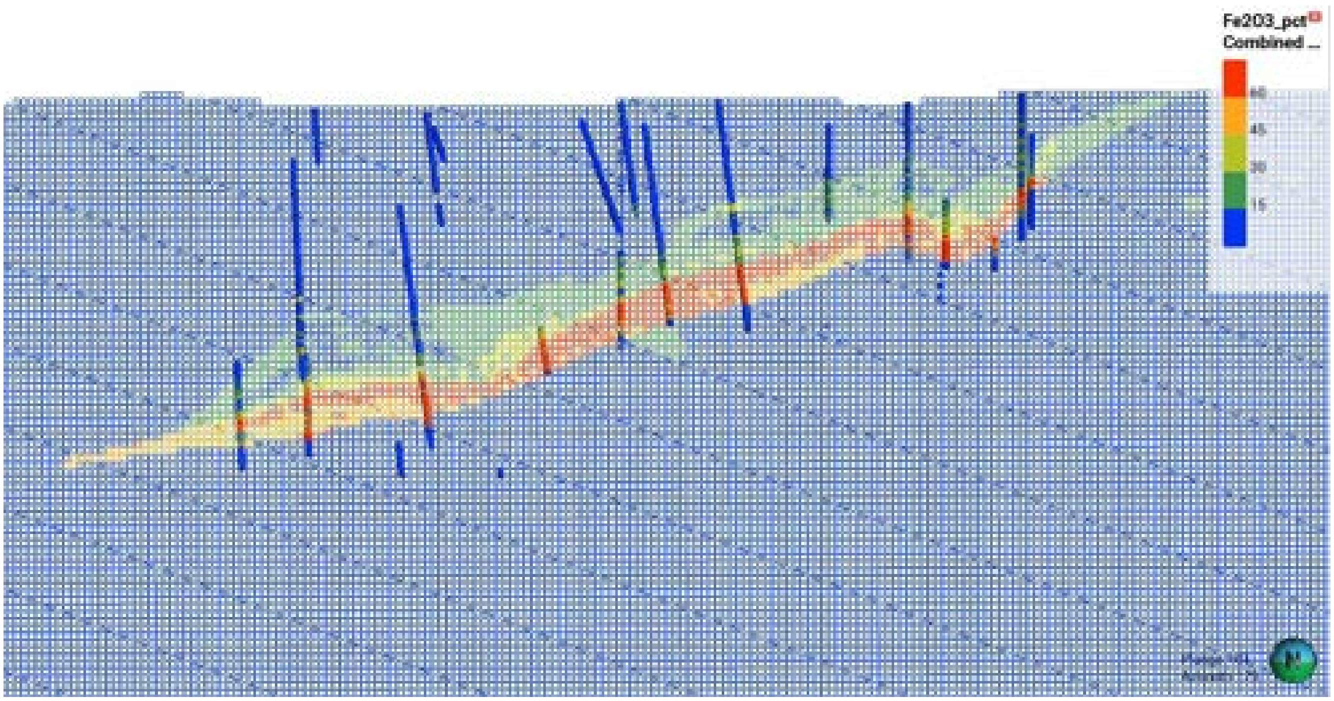
V2O5 in SMO Swath Plots



14.13.3 VISUAL VALIDATION

Visual validation was conducted by comparing composites with the OK estimated blocks visually. Figure 14-32 to 14-34 show cross sections with composites of each oxide compared visually to their estimated blocks. The visual validation, conducted section by section and compared with drillhole data, indicates that the estimated block model is locally validating well. It demonstrates a satisfying reproduction of the grade variations for the three oxide grades within both the SMO and MO domains. Moreover, the incorporation of Local Varying Anisotropy reveals satisfactory grade continuity along the wireframe direction.

FIGURE 14-32 CROSS-SECTION SHOWING DRILLHOLE COMPOSITES OF FE_2O_3 AND THE SURROUNDING ESTIMATED BLOCKS (LOOKING SOUTH)



14.14 MINERAL RESOURCE CLASSIFICATION

The La Blache MRE is classified as Inferred Mineral Resources under the CIM definition standards. The reason behind reporting only Inferred resources for La Blache is the sparse drilling compared to the full correlogram range of TiO_2 (170m), and the lack of twinned holes that cover the entire deposit to increase the confidence in the historical data used in the MRE.

Inferred resources were defined as the blocks with TiO_2 estimated during the first and second passes of the Ordinary Kriging estimation process, as outlined in Table 14-6. The TiO_2 variable was chosen to classify resources because it is the most economic product. This classification criterion combines geometric and statistical considerations; specifically, for a block to be classified as an Inferred resource during both passes, it must be surrounded by a minimum number of neighbour samples from different drillholes within a distance less than the full correlogram range.

FIGURE 14-33 CROSS-SECTION SHOWING DRILLHOLE COMPOSITES OF TiO_2 AND THE SURROUNDING ESTIMATED BLOCKS (LOOKING SOUTH)

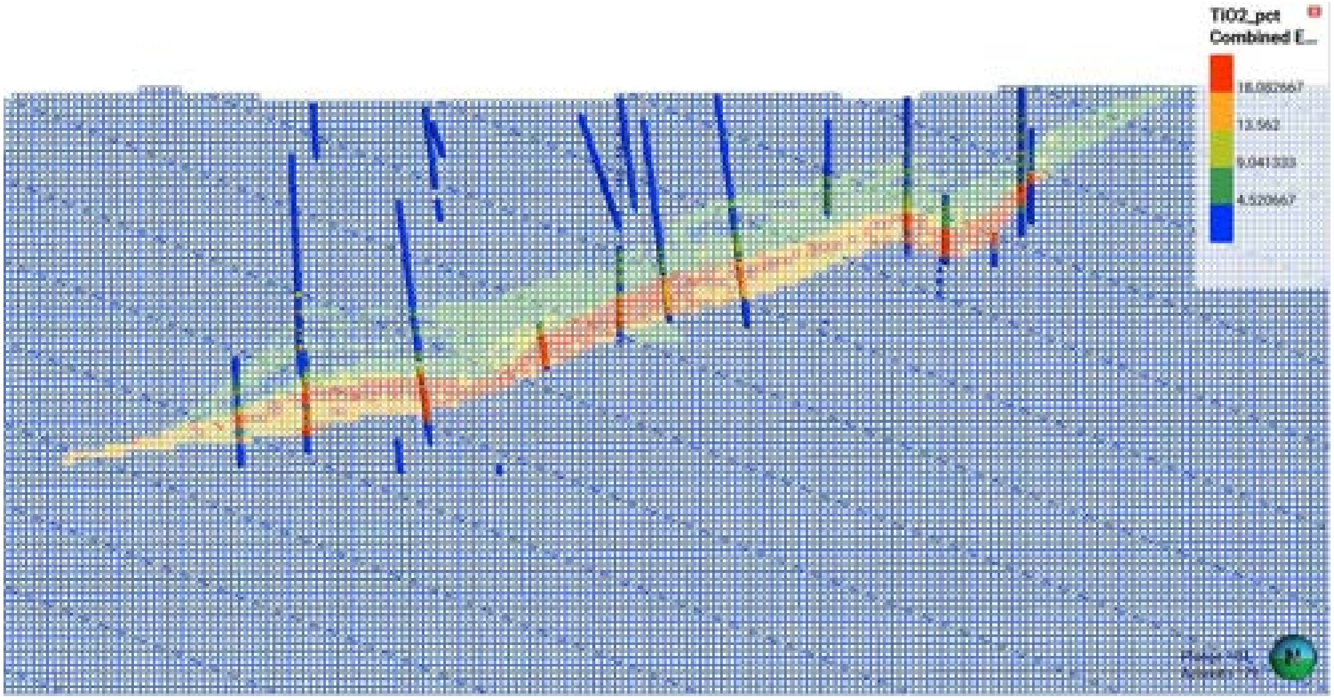
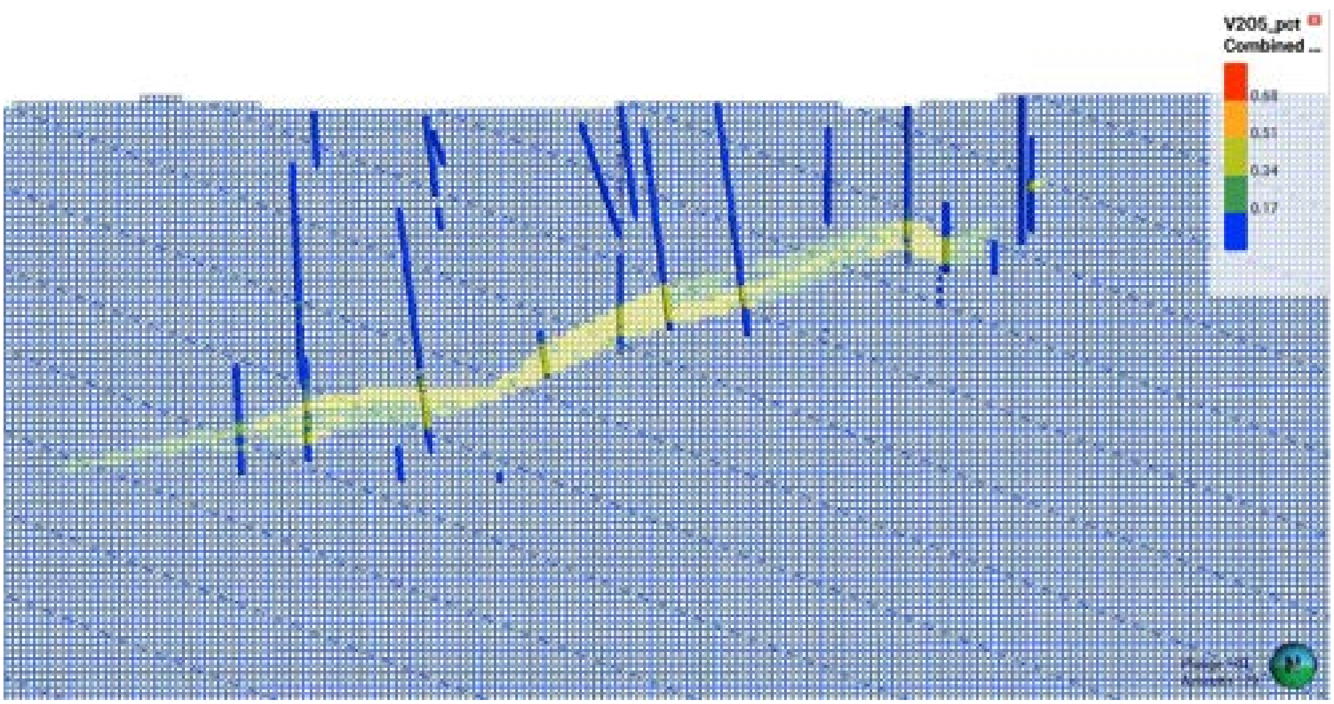
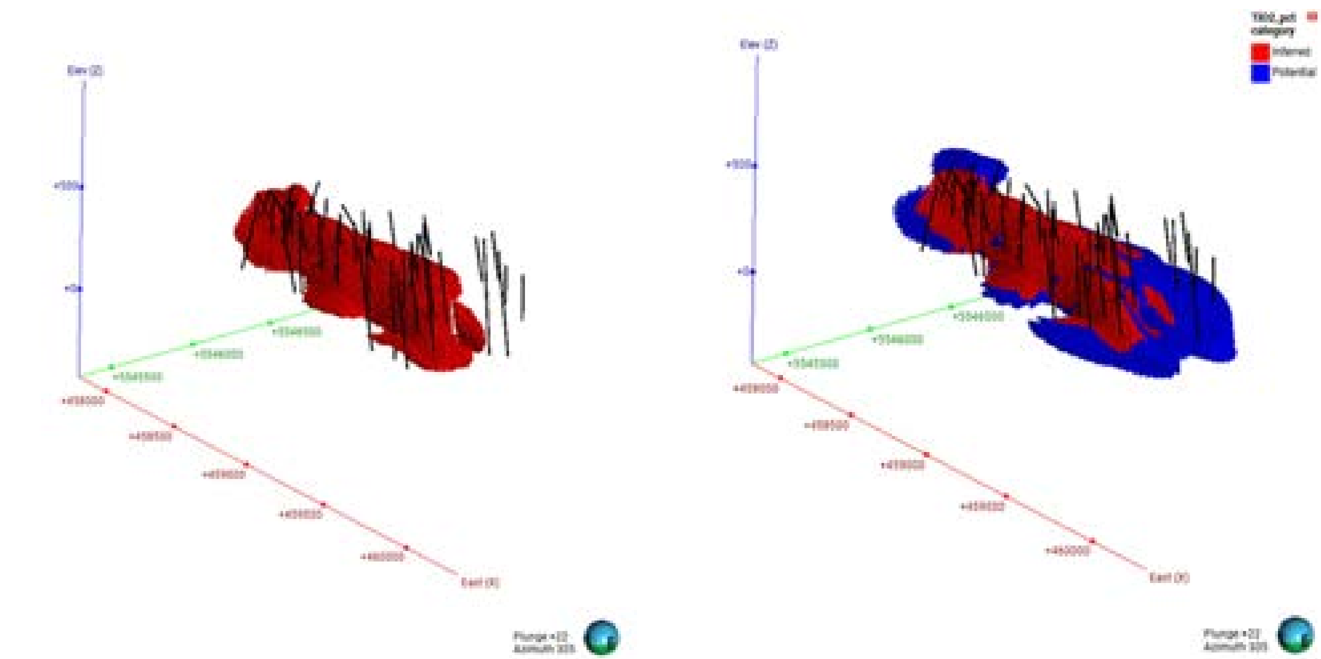


FIGURE 14-34 CROSS-SECTION SHOWING DRILLHOLE COMPOSITES OF V_2O_5 AND THE SURROUNDING ESTIMATED BLOCKS (LOOKING SOUTH)



In Figure 14-35, a 3D representation of resource classification outcomes is depicted. In this visualization, inferred blocks are marked in red, while unclassified blocks are represented in blue within the MO and SMO domains.

FIGURE 14-35 3D REPRESENTATION OF THE RESOURCE CLASSIFICATION OUTCOMES IN THE MO AND SMO DOMAINS, HIGHLIGHTING INFERRED RESOURCE BLOCKS IN RED AND UNCLASSIFIED BLOCKS IN BLUE



14.15 REASONABLE PROSPECTS FOR EVENTUAL ECONOMIC EXTRACTION

CIM Definition Standards for Mineral Resources and Mineral Reserves defines a Mineral Resource as: "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 (RPEEE). 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."

The "reasonable prospects for eventual economic extraction" requirement generally imply that quantity and grade estimates meet certain economic thresholds and that mineral resources are reported at an appropriate cut-off grade that takes into account extraction scenarios and processing recovery.

Due to the deposit's shape, location, and continuity, the report author opted for an open pit mining scenario as the method to assess potential economic extraction. This approach involves the use of traditional load and haul techniques employing hydraulic excavators, front shovels, and/or wheel loaders, depending on the terrain and the primary production equipment chosen for the Property.

The pit constrained mineral resources were determined using the block model estimated previously. Pit optimization was carried out using the Studio NPVS software, employing the parameters detailed in Table 14-9. All the economic factors were provided by Temas and chosen following benchmarking and expert estimates within the industry.

TABLE 14-9 SUMMARY OF THE PARAMETERS USED TO GENERATE THE PIT SHELL AND COMPUTE TIO_2 EQUIVALENT GRADES

Parameters	Value	Unit
Sales Revenue		
Price Fe_2O_3	125	USD/t
Price TiO_2	2200	USD/t
Price V_2O_5	14200	USD/t
Operating Costs		
Mining Cost	5	USD/t
Processing Cost	25	USD/t feed
G&A Cost	5	USD/t feed
Shipping Cost	35.5	USD/t feed
Metallurgy		
Massive Oxide		
Recovery Fe_2O_3	92.1	%
Recovery TiO_2	71.8	%
Recovery V_2O_5	75	%
Semi-Massive Oxide		
Recovery Fe_2O_3	85	%
Recovery TiO_2	65	%
Recovery V_2O_5	70	%
Geotechnical Parameters		
Overall Angle	45	degrees
Material Density		
Mineralized Material		Pulled from the Model
Default Density	2.84	Host Rock

Parameters	Value	Unit
Pit Optimization Parameters		
Dilution	5%	
Mining Recovery	95	%
Mill Throughput Rate	7,850,000	tpy
Annual Discounting	5%	%

In order to give appropriate weight to the value of each product in the calculation of the optimised cut-off, a TiO_2 equivalent grade equation, as used in the SGS Geostat 2012 MRE was applied**.**

Recovery of V_2O_5 was included in the TiO_2 Eq calculation of the Resource estimate in order to assess the full potential of the mineralization although not included in the economic analysis of the project.

Titanium Equivalent Grade Equation:

$$TiO_2Eq\%=TiO_2\%+(Fe_2O_3\% \times PriceFe_2O_3 \times RecFe_2O_3+V_2O_5\% \times Price\ V_2O_5 \times RecV_2O_5/Price\ TiO_2 \times RecTiO_2)$$

It is important to note that no specific geotechnical studies were conducted. However, to ensure safety and stability, a conservative and standard approach was adopted to determine the overall slope angle of the pit, which has been set at 45 degrees. This approach was employed as a prudent measure to maintain stability and adhere to industry standards.

Because of variations in recovery rates between the two primary rock types in the deposit specific mill cut-off grades are established for each rock type. The Massive Oxide rock type maintains a cut-off grade of 4.4%, while the Semi-Massive Oxide rock type has a slightly higher cut-off grade at 4.8%. This differentiation is implemented to optimize resource utilization and processing efficiency. We note that at this cut-off, the average TiO_2 grade of the SMO unit is established at 6.3% and metallurgical performance of this material not tested at this point. The resulting pit shell is displayed in Figures 14-36 and 14-37.

14.16 MINERAL RESOURCE STATEMENT

The Mineral Resource Estimate for La Blache deposit as of 07 February 2024 is presented in Table 14-10. The resources are intended to be extracted using an open pit method, utilizing distinct TiO_2Eq cut-off grades for the MO and SMO domains.

The sole resource category included in the MRE is Inferred Mineral Resources. The resources are constrained by the pit shell built in Section 14.15.

FIGURE 14-36 3D VISUALIZATION OF THE MODELLED RESOURCES CONSTRAINED BY THE PIT SHELL

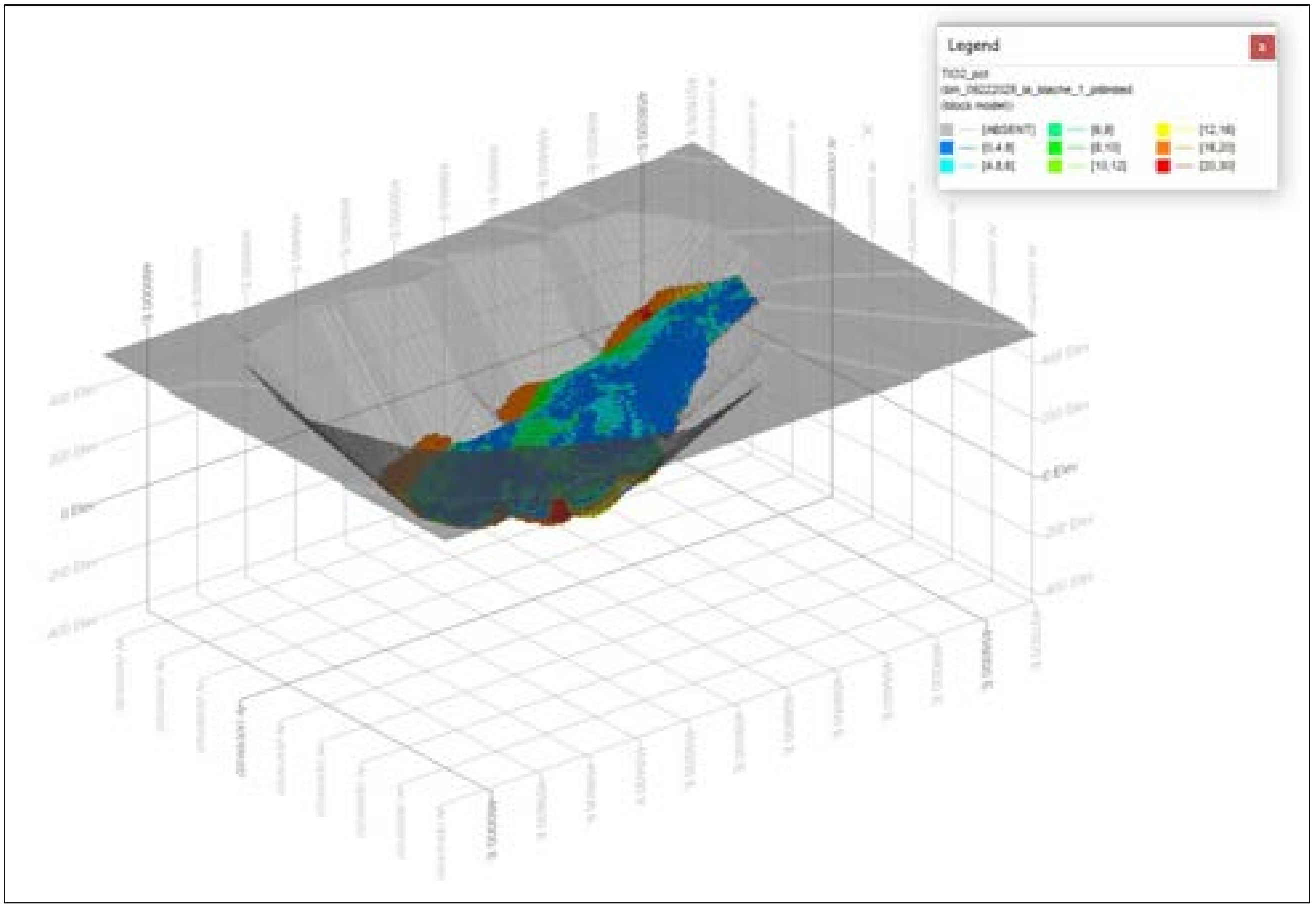


FIGURE 14-37 CROSS SECTION OF THE MODELLED RESOURCES CONSTRAINED BY THE PIT SHELL

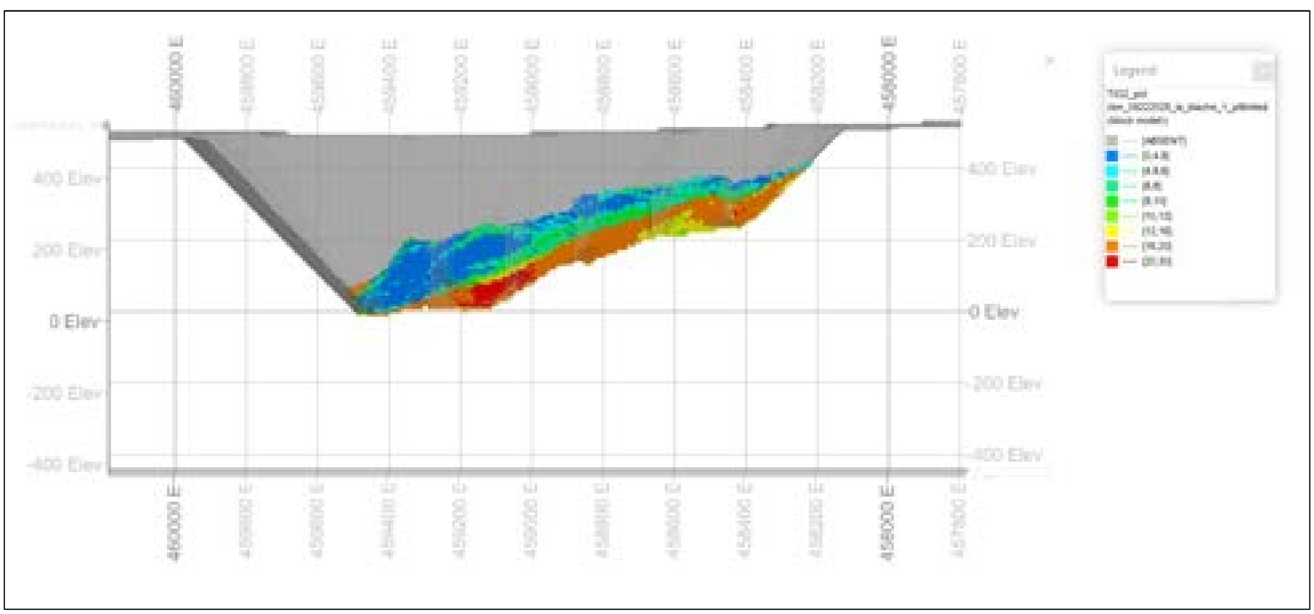


TABLE 14-10 MINERAL RESOURCES STATEMENT FOR THE INFERRED MATERIAL IN THE SMO AND MO DOMAINS

TiO_2 Eq. Cut Off Grade (%)	Rock Type	Resource Category	Tonnage (Mt)	TiO_2 (%)	Fe_2O_3 (%)	V_2O_5 (%)	TiO_2 Eq. (%)
4.8	SMO	Inferred	99.7	6.26%	21.98%	0.07%	8.34%
4.4	MO	Inferred	108.8	17.83%	59.40%	0.32%	24.30%
Total			**208.5**	**12.29%**	**41.50%**	**0.20%**	**16.67%**

Notes:

1. The effective date of the Mineral Resource Estimate is 07 February 2024.
2. The TiO_2 equivalent grade was computed using the following formula: $TiO_2Eq\%=TiO_2\%+(Fe_2O_3\%$ X $PriceFe_2O_3$ X $RecFe_2O_3+V_2O_5\%$ X Price V_2O_5 X $RecV_2O_5$/Price TiO_2 X $RecTiO_2$).
3. The Mineral Resource Estimate is reported at a cut-off grade of 4.4% of TiO_2 equivalent for the massive oxide domain and a cut-off grade of 4.8% of TiO_2 equivalent for the semi-massive oxide domain assuming the following prices and costs as supplied by TEMAS: TiO_2 price of US$2,200 per tonne, mining cost of US$5 per tonne mined, G&A cost of US$5 per tonne milled, shipping cost of US$35 per tonne milled, processing cost of US$25 per tonne milled, process recovery of TiO_2 of 71.8% for the massive oxide material and 65% for the semi-massive oxide material. Recovery of V_2O_5 was included in the TiO_2Eq calculation of the Resource estimate in order to assess the full potential of the mineralization although not included in the economic analysis of the project.
4. Figures have been rounded to the appropriate level of precision for the reporting of the MRE.
5. Due to rounding, some columns or rows may not compute exactly as shown.
6. The MRE is stated as in situ dry tonnes. The density used is 4.42 t/m^3 for the massive oxide material and 3.28 t/m^3 for the semi-massive oxide material. All figures are in metric tonnes.
7. The MRE has been classified under the guidelines of the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Standards on Mineral Resources and Reserves, Definitions and Guidelines prepared by the CIM Standing Committee on Reserve Definitions and adopted by CIM Council (2014) and procedures for classifying the reported Mineral Resources were undertaken within the context of the Canadian Securities Administrators National Instrument 43-101 (NI 43-101).
8. Mineral resources that are not mineral reserves do not have demonstrated economic viability. The estimate of Mineral Resources may be materially affected by environmental, permitting, legal, title, taxation, socio-political, marketing, or other relevant issues.

14.17 GRADE SENSITIVITY ANALYSIS

The next step in the study involves analyzing the resource sensitivity to changes in the cut-off grade around the base case cut off grade of 4.4% of TiO_2 equivalent grade for the MO domain and 4.8% TiO_2 equivalent grade for the SMO domain. To accomplish this, a resource tabulation was performed for the MO and SMO domains, with several increments below and above the original cut-off grade. The results are displayed in Table 14-11 for MO and Table 14-12 for SMO.

It can be observed that in the MO domain, a slight change in the cut-off grade does not affect at all the total tonnage and average grade of the resources for the different oxides. The tonnage starts to decrease when the cut-off grade is higher than 12% in TiO_2 equivalent. However, in the SMO domain, a change in the cut-off grade can lead to slight variations in both quantities and grades. This behavior is also illustrated through the grade-tonnage curves for the TiO_2 equivalent grade, as shown in Figure 14-38 for MO and Figure 14-39 for SMO. The grade-tonnage curves only use the inferred material constrained by the pit shell.

TABLE 14-11 CUT-OFF GRADE SENSITIVITY IN THE MO DOMAIN (HIGHLIGTHED IS BASE CASE MRE CUTOFF OF 4.4% TIO_2 EQ)

Cut Off Grade TiO_2 Eq. (%)	Resource Category	Tonnage (t)	TiO_2 (%)	Fe_2O_3 (%)	V_2O_5 (%)	TiO_2 Eq. (%)
2.0	Inferred	108,811,560	17.83	59.40	0.32	24.30
4.0	Inferred	108,807,140	17.83	59.40	0.32	24.30
4.2	Inferred	108,807,140	17.83	59.40	0.32	24.30
4.4	Inferred	108,807,140	17.83	59.40	0.32	24.30
4.6	Inferred	108,807,140	17.83	59.40	0.32	24.30
4.8	Inferred	108,807,140	17.83	59.40	0.32	24.30
5.0	Inferred	108,798,300	17.83	59.40	0.32	24.30
6.0	Inferred	108,780,620	17.83	59.41	0.32	24.31
8.0	Inferred	108,718,740	17.84	59.43	0.32	24.32
10.0	Inferred	108,617,080	17.85	59.47	0.32	24.33
12.0	Inferred	108,285,580	17.88	59.56	0.32	24.37
14.0	Inferred	107,507,660	17.94	59.76	0.32	24.45
16.0	Inferred	105,748,500	18.05	60.13	0.32	24.61
20.0	Inferred	96,775,900	18.47	61.55	0.33	25.19

TABLE 14-12 CUT-OFF GRADE SENSITIVITY IN THE SMO DOMAIN (HIGHLIGHTED IS BASE CASE MRE OF 4.8% TIO_2 EQ.)

Cut Off Grade TiO_2 Eq.(%)	Resource Category	Tonnage (t)	TiO_2 (%)	Fe_2O_3 (%)	V_2O_5 (%)	TiO_2 Eq. (%)
2.0	Inferred	127,696,959	5.49	19.26	0.06	7.32
4.0	Inferred	110,503,200	5.97	20.97	0.06	7.96
4.2	Inferred	108,118,640	6.04	21.20	0.06	8.05
4.4	Inferred	105,488,080	6.11	21.44	0.06	8.14
4.6	Inferred	102,703,360	6.18	21.70	0.06	8.24
4.8	Inferred	99,731,680	6.26	21.98	0.07	8.34
5.0	Inferred	96,897,760	6.33	22.25	0.07	8.45
6.0	Inferred	80,127,120	6.78	23.87	0.07	9.06
8.0	Inferred	47,753,520	7.82	27.67	0.09	10.48
10.0	Inferred	23,101,040	8.97	32.32	0.11	12.11
12.0	Inferred	8,944,560	10.31	38.00	0.14	14.10

Cut Off Grade TiO_2 Eq.(%)	Resource Category	Tonnage (t)	TiO_2 (%)	Fe_2O_3 (%)	V_2O_5 (%)	TiO_2 Eq. (%)
14.0	Inferred	3,516,160	11.67	43.27	0.17	16.05
16.0	Inferred	1,325,120	13.15	48.39	0.20	18.11
18.0	Inferred	596,960	14.11	52.06	0.22	19.50
20.0	Inferred	196,800	15.04	55.04	0.24	20.79

FIGURE 14-38 GRADE TONNAGE CURVE OF THE TIO_2 EQUIVALENT GRADE IN THE MO DOMAIN (BASE CASE IN RED)

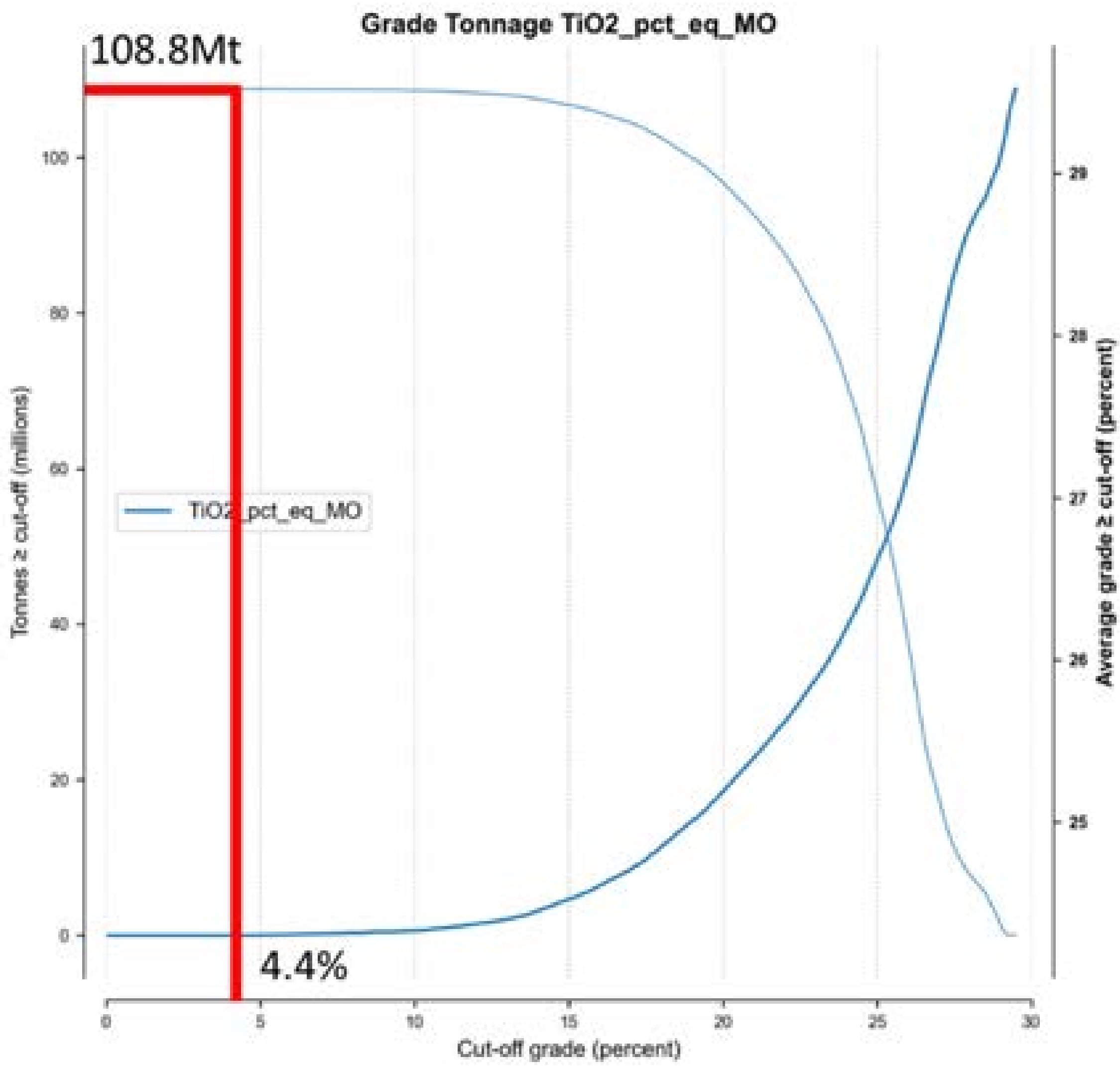
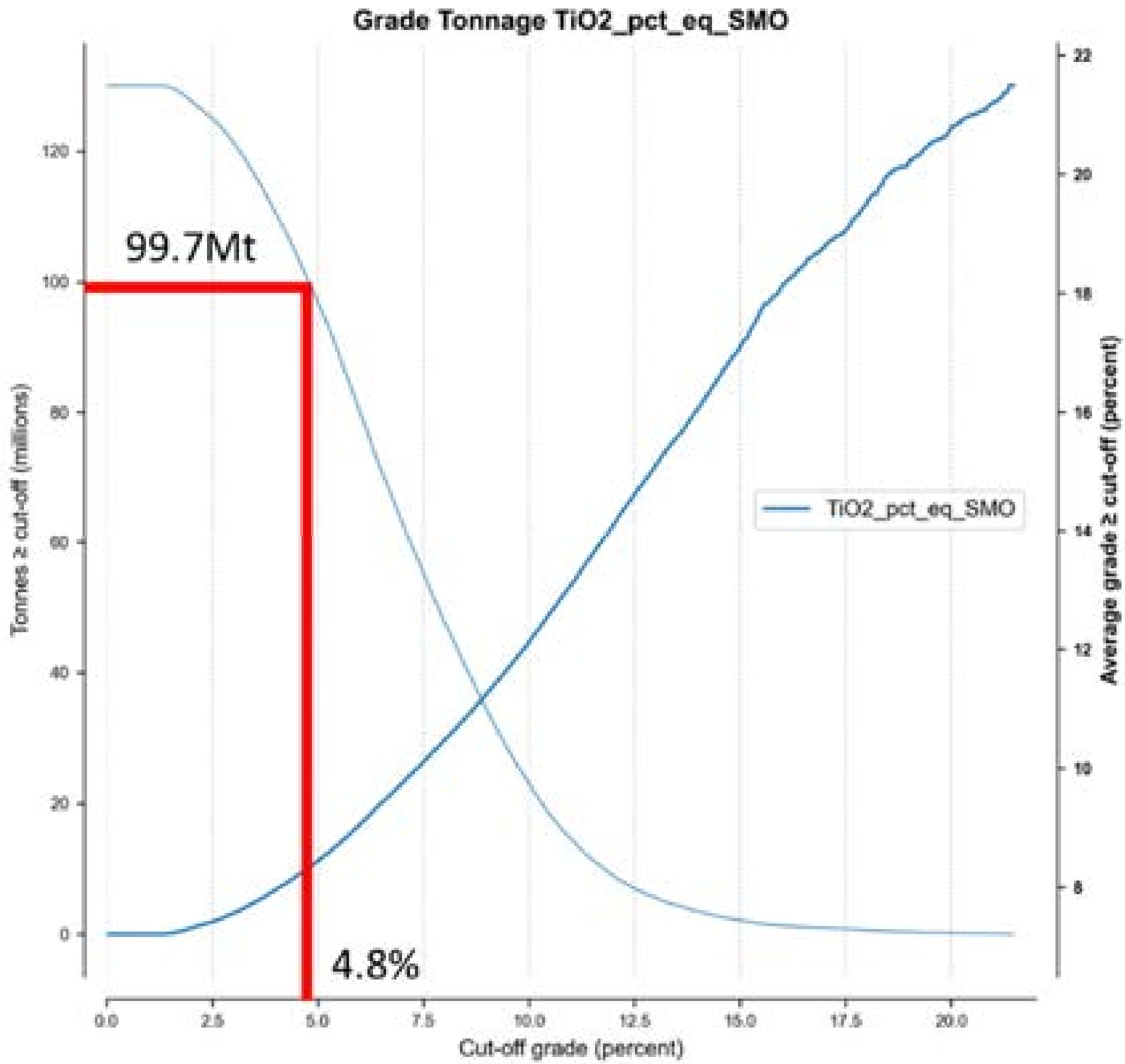


FIGURE 14-39 GRADE TONNAGE CURVE OF THE TIO_2 EQUIVALENT GRADE IN THE SMO DOMAIN (BASE CASE IN RED)



Grade-tonnage curves for each individual oxide, for the inferred material constrained by the pit shell, are also provided in Figures 14-40 and 14-41.

FIGURE 14-40 GRADE TONNAGE CURVE OF THE OXIDES GRADE IN THE MO DOMAIN

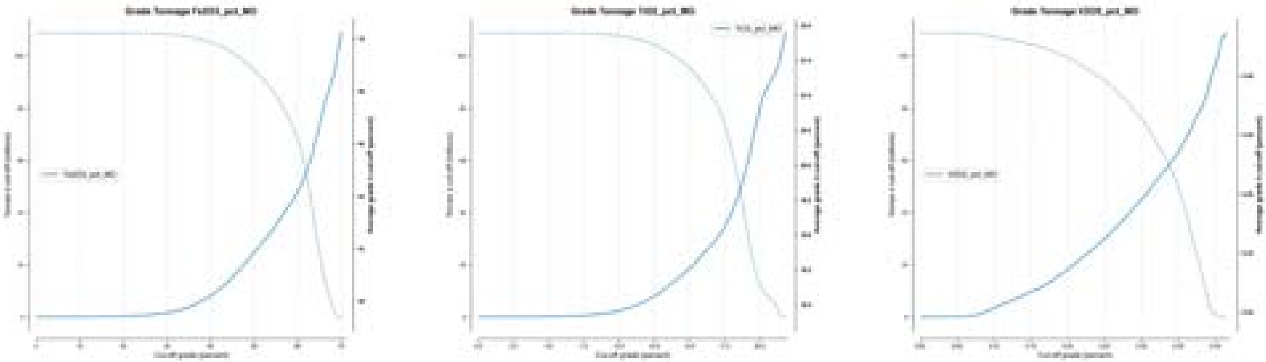
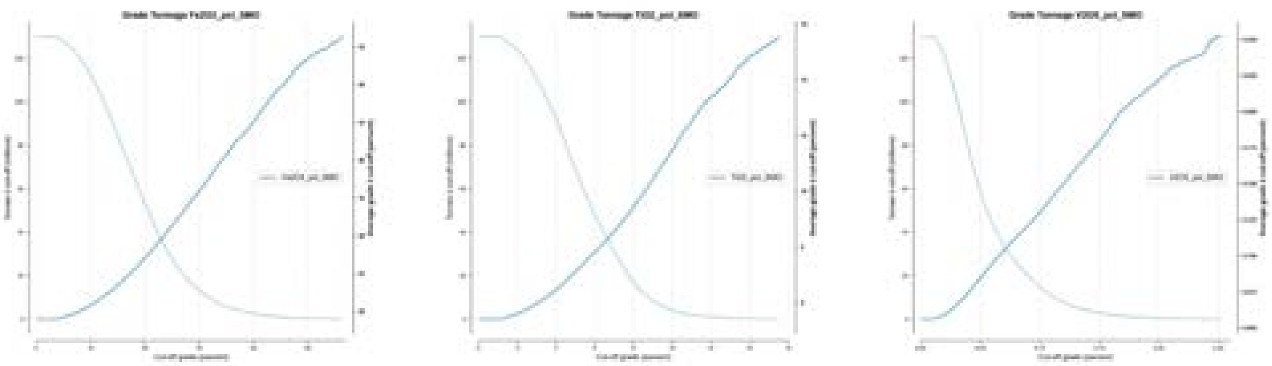


FIGURE 14-41 GRADE TONNAGE CURVE OF THE OXIDES GRADE IN THE SMO DOMAIN



14.18 RISK ASSESSMENT

At present, there are no known environmental, permitting, legal, title, taxation, socioeconomic, marketing, or political issues that would adversely affect the estimated mineral resources mentioned above.

Mineral resources, which are not mineral reserves, do not have demonstrated economic viability. The La Blache property does not currently hold any mineral reserves.

There is no assurance that all the necessary consents, permits, or approvals, whether regulatory or otherwise, will be obtained for the Property. Other potential hindrances include interference with the ability to work on the Property and a lack of efficient infrastructure. There is no guarantee that the Property will proceed to production.

It is noteworthy that no metallurgical testwork was conducted on the SMO Domain to verify its viability for eventual economic extraction. The decision to include the SMO Domain in the resource statement was based on the recommendations of the metallurgist, Georgi Doundarov, who is the QP for chapters 13 and 17 of this Technical Report.

15. MINERAL RESERVE ESTIMATE

This Section does not apply.

16. MINING METHODS

16.1 INTRODUCTION

This section explains the criteria and procedures applied in executing the mine planning work at the PEA level, targeting a projected plant feed production rate of 7.8 million metric tonnes per year.

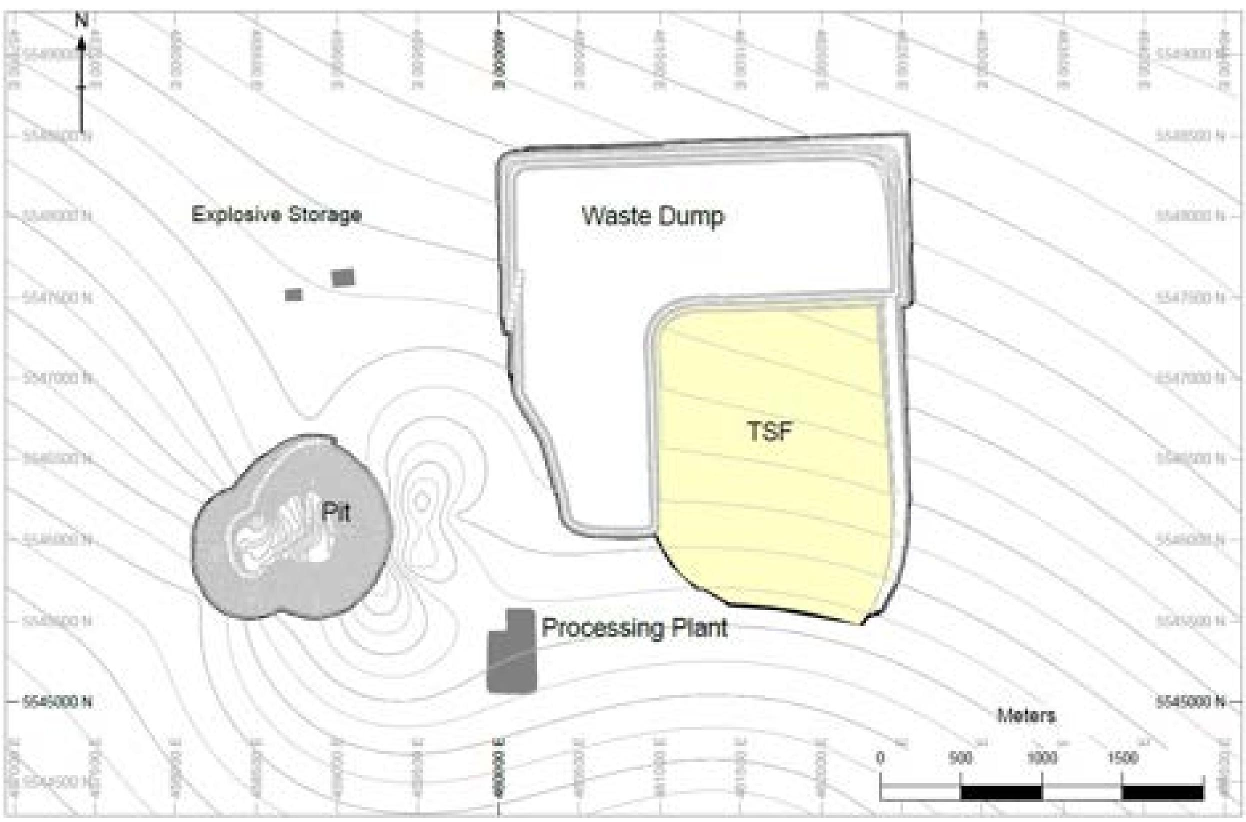
The mining method will be traditional hard rock open pit method which involves conventional load and haul techniques, employing hydraulic excavators, front shovels, and/or wheel loaders based on the topography and the primary production equipment available for the Property.
Material transportation will involve hauling from the benches in the pit to the crusher, ROM stockpiles, or waste dump, depending on the nature of the material. Additionally, auxiliary equipment such as bulldozers, graders, and various vehicles is deployed for tasks related to maintenance, support, services, and utilities.

This mining approach envisions extracting a total of 486.1 million metric tonnes of material throughout the mine's lifespan, consisting of 107.7 million metric tonnes of mill feed and 378.4 million metric tonnes of waste, with an average strip ratio of 3.2.

16.2 GENERAL ARRANGEMENT

The general representation for La Blache site layout is illustrated in Figure 16-1, including the conceptual waste dump and tailings site location.

FIGURE 16-1 GENERAL SITE LAYOUT



The mine design utilized a topographic surface based on a 3D wireframe in DXF format that was exported from a Leapfrog project, which was generated using handheld GPS and the collars elevations which were interpolated to create the topo surface.

The mining method chosen for La Blache is traditional open pit mining using truck and shovel techniques in addition to drilling and blasting. The mine layout comprises medium and deep open pits distributed across the eastern extent of the targeted deposit. Drilling and blasting will be regularly employed to facilitate the loading and hauling of the material by mining equipment. The removal and storage of vegetation cover, topsoil, and overburden will be achieved through drilling and blasting, utilizing 20 metres bench height.

The developed open pit spans approximately 1,260 metres in length and 1,072 metres in width at the surface. The lowest point in the pit reaches a depth of 135 metres above sea level, while the entrance to the pit is situated at 480 metres above sea level, for a maximum pit depth of 345m.

The pit has s a single ramp system that exits the pit on the north side. Figure 16-2 provides a plan and cross-sectional view of the pit design.

16.3 PIT OPTIMIZATION

16.3.1 REVENUE PARAMETERS

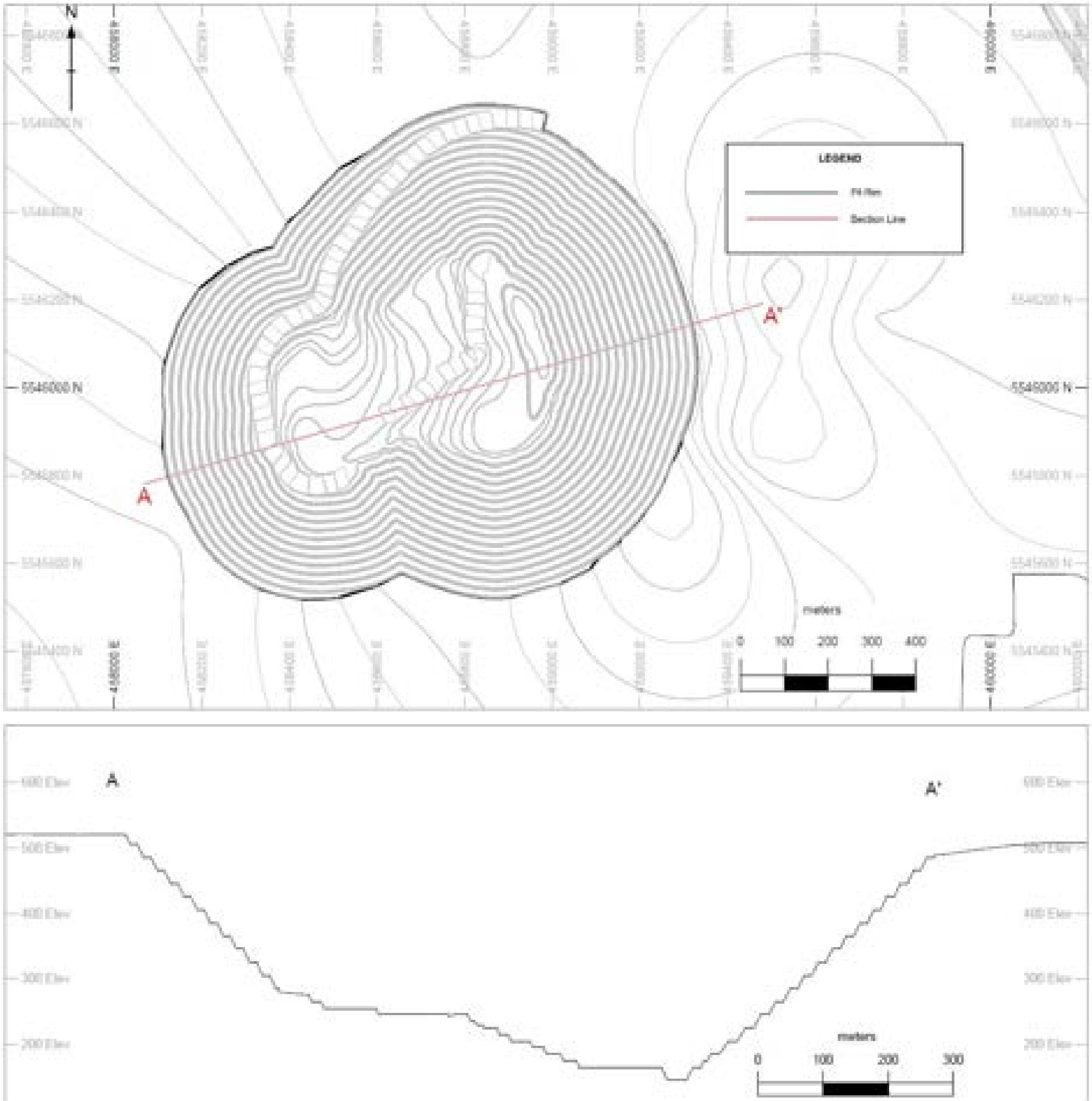
The expected Property income is foreseen to be generated through the sales of Titanium and Iron concentrates. The pricing is estimated based on the long-term forecast aligned with the prevailing market prices. Table 16-1 illustrates the Revenue Parameters employed in this analysis.

TABLE 16-1 LA BLACHE REVENUE PARAMETERS

Parameters	Value	Unit
Price Fe_2O_3	125	USD/t
Price TiO_2	2,200	USD/t

For the pit optimization process in this study Datamine StudioNPV software was used which employs a Lerchs-Grossman based algorithm to generate nested optimized pit shells. The optimization is based on parameters and incremental price factors for a target metal price, in this case $USD125 for Iron Oxide Fe_2O_3 and $USD2,200 for Titanium Oxide TiO_2. The algorithm was run at 1% intervals, ranging from 1% to 100%.

FIGURE 16-2 PIT DESIGN LAYOUT



16.3.2 LERCH GROSSMAN (LG) SHELLS

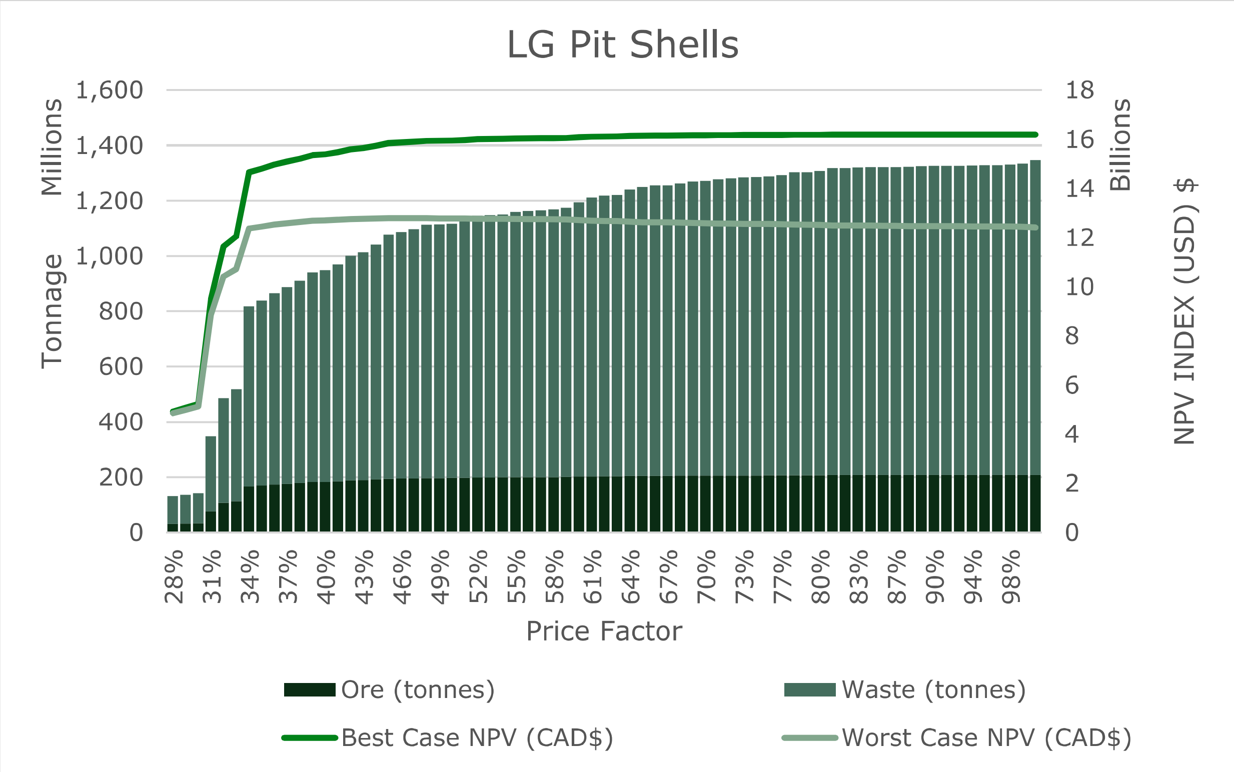
In the mining industry Lerchs Grossman's algorithm is commonly employed to address the pit limit problem and derive an approximate solution for extraction sequencing problems.

Optimization procedure was carried out utilizing Datamine Studio NPVS software, assuming a mill throughput rate of 7.8 Mtpy to calculate a reference Net Present Value (NPV) for each nested pit, where a range of revenue factors ranging from 1% to 100% was applied to create a series of nested pits. These pits form the basis for determining the optimal phase selection. The pit selected for the base case is shown in Figure 16-3 whereas the key parameters for optimization are summarized in Table 16-2.

TABLE 16-2 PIT OPTIMIZATION PARAMETERS

Parameters	ERM Value	Unit
Operating Costs		
Mining Cost	5.0	USD/t
Processing Cost	25.0	USD/t feed
G&A Cost	5.0	USD/t feed
Shipping Cost	35.5	USD/t feed
Metallurgy		
Massive Oxide		
Recovery Fe_2O_3	92.1	%
Recovery TiO_2	71.8	%
Semi-Massive Oxide		
Recovery Fe_2O_3	85	%
Recovery TiO_2	65	%
Geotechnical Parameters		
Overall Pit Slope Angle	45	degrees
Mineralized Material Densities		
MO Massive Oxides		4.42
SMO Semi-Massive Oxides		3.28
Host Rock (Anorthosite)-Default Density		2.84
Pit Optimization Parameters		
Mining Dilution	5%	
Mining Recovery	95%	
Mill Throughput Rate	7,800,000	tpy
Annual Discounting Rate	5%	

FIGURE 16-3 SELECTED PIT AMONG NESTED PITS



16.3.3 PUSHBACK SELECTION

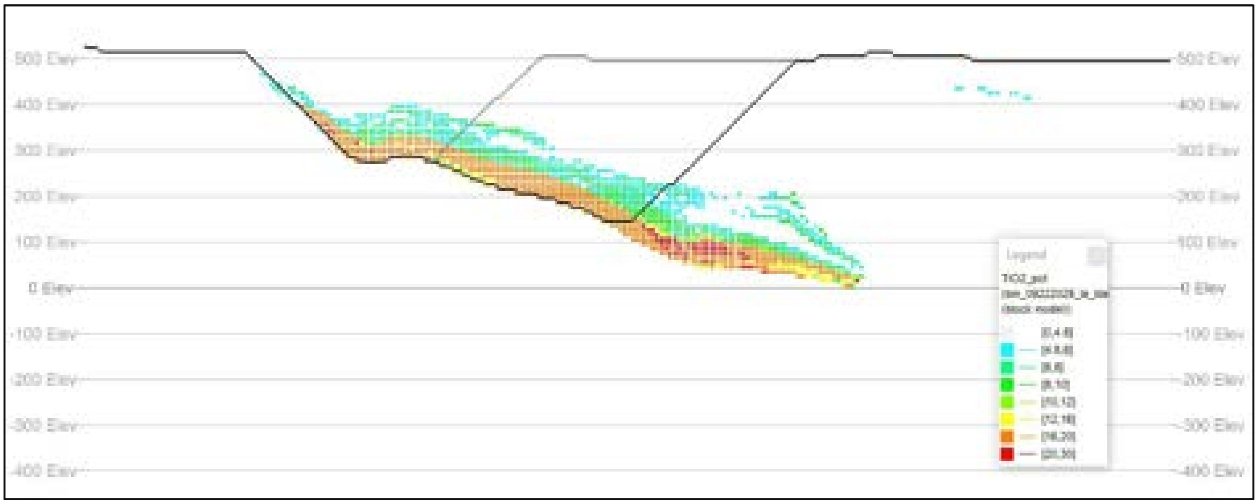
Pushbacks were selected to access the required material for meeting the annual plant throughput targets and to effectively handle the necessary waste removal, preventing any delays in material delivery in the upcoming years as summarised in Table 16-3. The planning of these phases was informed by the smaller revenue factor pit shells that were identified in the optimization process as shown in Figure 16-3. The pit shells selected for phases 1 and 2 were LG Pits 1 and 4. The layout of these phases adheres to the pit wall configurations.

TABLE 16-3 MINERAL RESOURCES BY PUSHBACK SUMMARY

Push Back	LG Pit Shell (Price Factor)	Mill Feed (tonnes)	Waste (tonnes)	TiO_2 Grade (%)	Best Case NPV* (USD$M)
Differential					
1	Pit 1 (+28%)	30,199,960	109,099,480	13.37	4,580
2	Pit 4 (+4%)	77,535,100	269,287,360	11.79	6,245
Cumulative					
1	Pit 1 (28%)	30,199,960	109,099,480	13.37	4,580
2	Pit 4(32%)	107,735,060	378,386,840	12.23	10,826

* NPV Index is for comparison between optimized pit shells only and is not a Property NPV.

FIGURE 16-4 PUSHBACK SECTIONAL VIEW



16.4 OVERBURDEN STOCKPILING

The extracted overburden from the open pit will be deposited in the overburden stockpile and reserved for future closure and reclamation efforts. Subsequent studies will determine the precise amount of overburden to be extracted, enabling the accurate design of an appropriate stockpile.

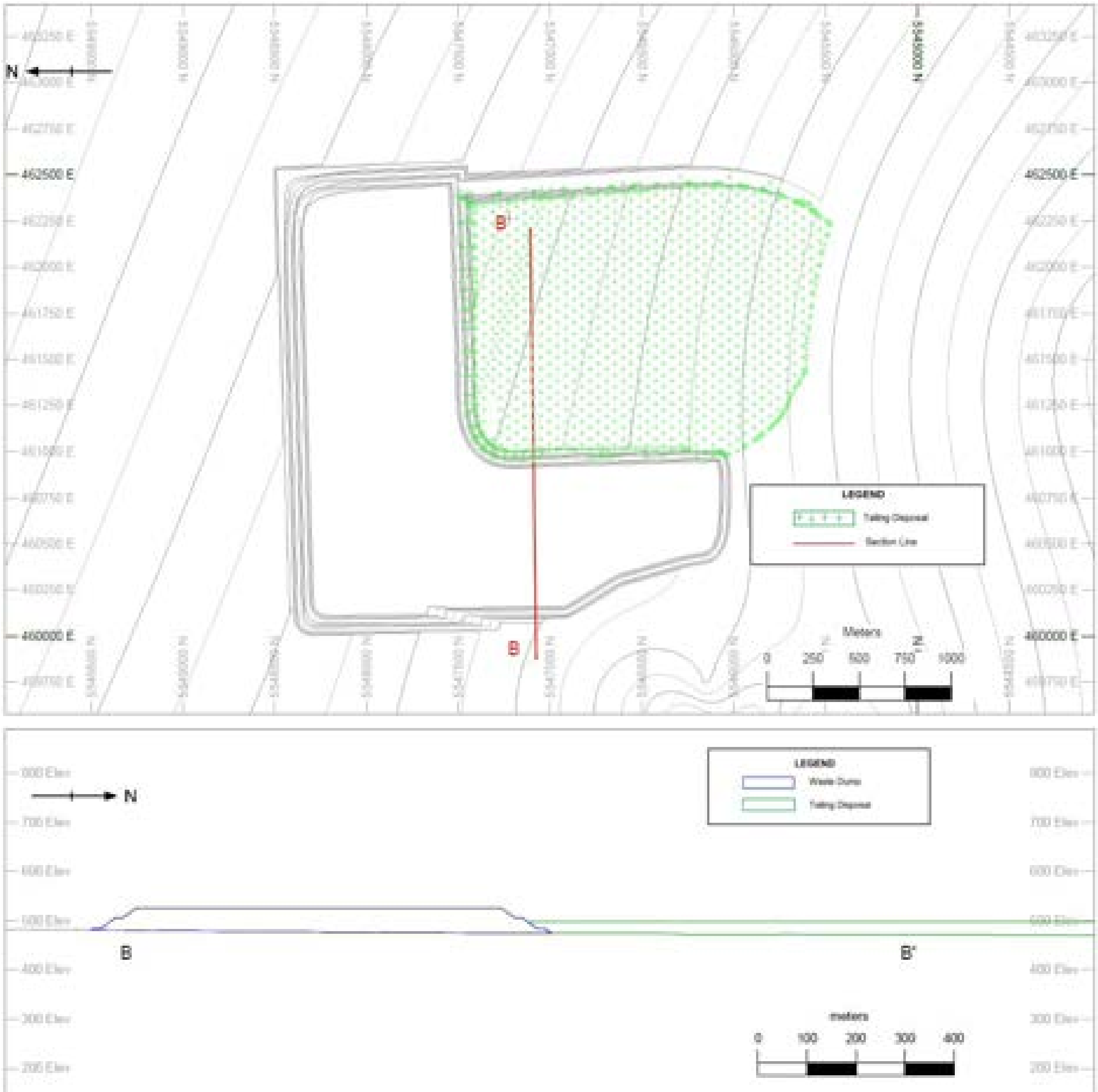
16.5 WASTE ROCK DUMPS

The waste rock extracted from the open pits will be transported and deposited in waste dumps primarily situated to the East of La Blache pit. The design of the rock waste dumps considered the material to be excavated over the life of Mine (LOM). The parameters used for the rock waste dump design are summarized in Table 16-4, and the conceptual waste dump design is shown in Figure 16-5.

TABLE 16-4 WASTE DUMP DESIGN PARAMETERS

	Unit	Dump
Ramp Grade	%	10
Ramp Width	m	35
Bench Width	m	15
Loose Density	t/m^3	2.18
Overall Slope (I.R.A.)	degrees	24.7
Lift Slope (Face Angle)	degrees	35
Lift Height	m	20
Dump Capacity	Mm^3	190.27

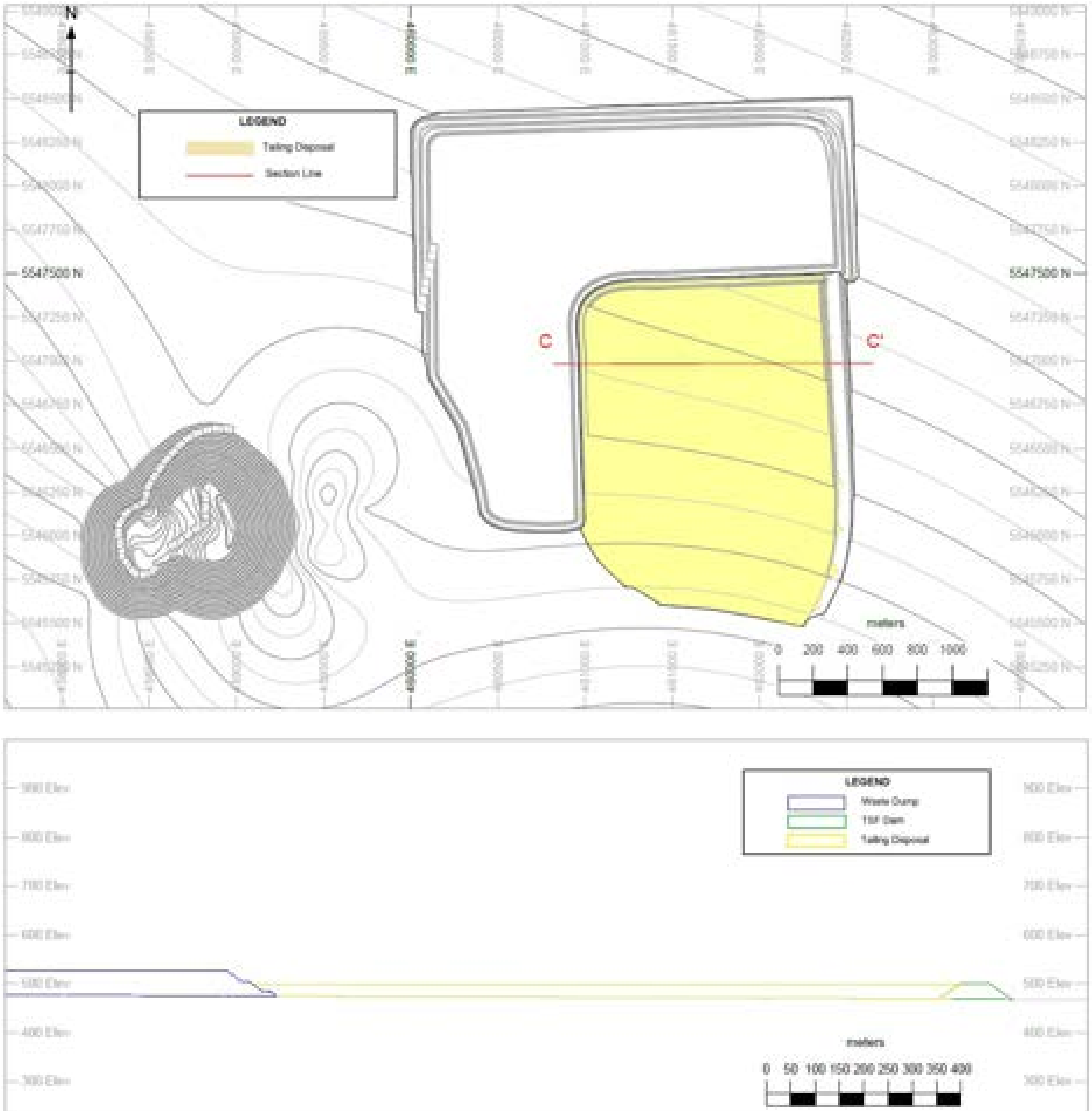
FIGURE 16-5 WASTE DUMP DESIGN



16.6 TAILING STORAGE FACILITY

The tailings generated from the processing plant will be transported and stored in the Tailings Storage Facility (TSF) situated on the east side of the Waste Dump. At this stage, a Conceptual Design of the TSF has been developed, considering the projected volume and characteristics of the tailings over the life of the mine (LOM). This preliminary design, outlined in Figure 16-6, serves as a foundation for further detailed planning. It is important to note that additional studies and analyses will be required to fully ascertain the stability and environmental safety of the TSF before finalizing its design and proceeding with construction.

FIGURE 16-6 TAILING STORAGE FACILITY CONCEPTUAL DESIGN



Due to the flat terrain in the area the Waste Dump is designed to be part of the containment structure for the Tailings Storage Facility (TSF). This design leverages the Waste Dump's location and structure to aid in the containment of the tailings. Details of this arrangement and its implications for the stability and functionality of the TSF are outlined in the conceptual design and will be subject to further study and validation in future project phases.

16.7 GEOTECHNICAL

It is important to note that no specific geotechnical studies were undertaken in this project. However, a conservative and standard methodology was employed to ascertain the overall slope angle of the pit, ensuring safety and stability. The chosen slope angle was set at 45 degrees. This approach was implemented as a preventive measure to ensure stability and comply with industry standards.

16.8 MINE DESIGN

A conceptual pit design for the La Blache Property has been developed with a ramp access to the bottom of the pit. The design involves a double bench sequencing strategy with 10-metre bench heights chosen to align with the requirements of the mining equipment and the block model structure. Due to the absence of detailed geotechnical studies, conservative parameters were utilized for the conceptual design in this study as shown in Table 16-5.

TABLE 16-5 PIT DESIGN PARAMETER

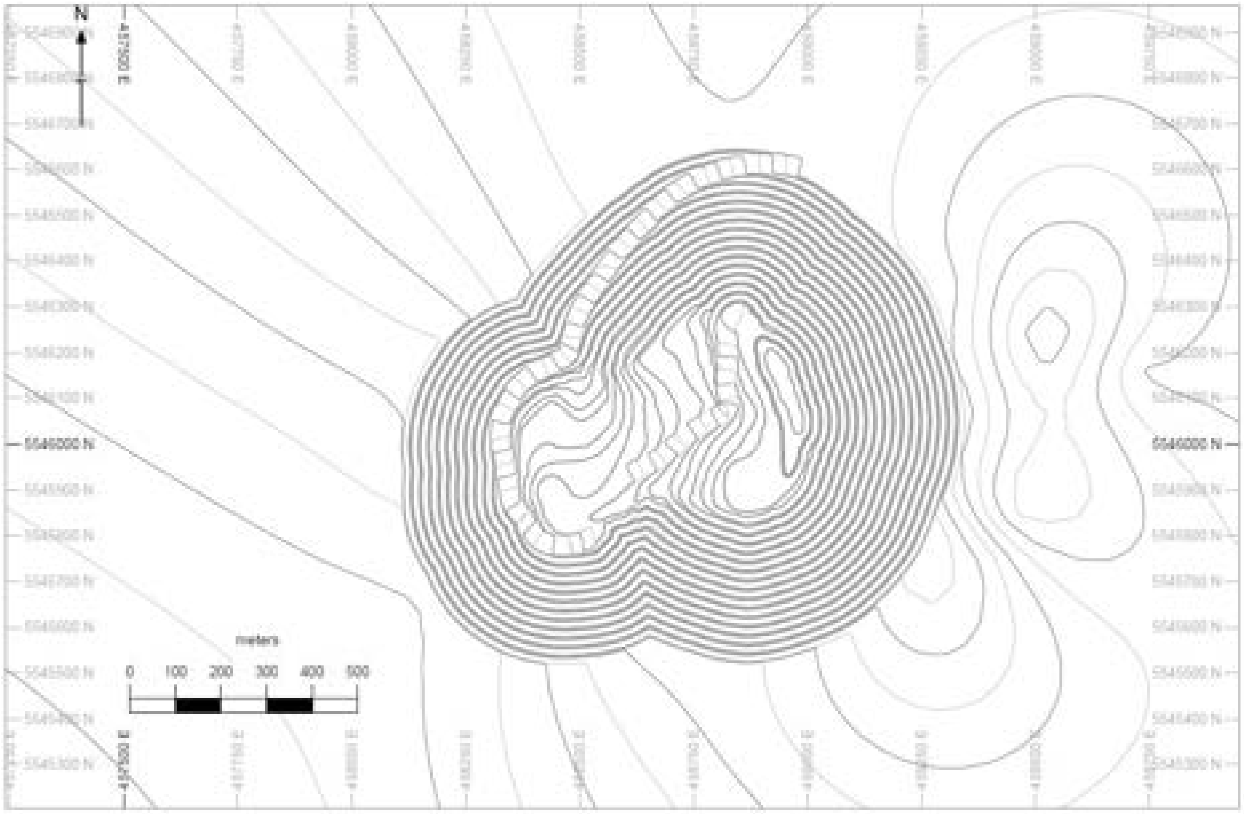
Parameters	Value	Unit
Slope		
Face Angle	65	Degrees
Bench Height (double bench)	20	Metres
Bench Width	10.6	Metres
Ramp		
Ramp Width	35	Metres
Maximum Ramp Gradient	10	%

To maintain an overall pit slop angle of 45 degrees a minimum bench width of 10.6 m with a 65 degrees face angle is recommended where the haulage ramp designs are based on the dimensions of the largest haulage truck and double lane traffic with a buffer space equivalent to half a truck’s width.

For safer navigation all ramp segments have a maximum gradient of 10% on their inner curvatures. A 2-metre-wide ditch is also included to facilitate water drainage and pipe installation.

The final pit design was developed from the optimized pit shell selected for the final pushback as illustrated in Figure 16-6. The mine design process was iterative with the end goal being to transform the ideal pit shell into a practical open pit design. The detailed pit design was created using Studio OP mining software, incorporating haulage ramp access to all resulted benches to increase operational efficiency.

FIGURE 16-7 FINAL PIT DESIGN USED FOR LOM



16.9 CUT-OFF GRADE CALCULATION

The pit optimization process was undertaken following industry best practices to determine potentially economic material and waste cut-off grades. The chosen cut-off value for this procedure is determined through engineering and economic analysis which consider factors and assumptions that can influence the estimation of the mineral reserves. These factors include:

a. Commodity market prices.

b. Operational costs assumptions.

c. Process plant recovery rates.

d. Mining losses and dilution assumptions.

e. Off-site Concentrate Transport Costs

The determination of the mineralized material and waste quantities used in the economic model and the mine plan used a mill cut-off grade, which does not incorporate the cost of mining. It was established through the pit optimization process that the given tonnes would be mined and is only at the pit's edge that the delineation between mineralized material or waste was made where the mining cost would be considered a sunk cost.

The mill cut-off grades utilized to decide what material will be sent to the mil as presented in Table 16-6.

TABLE 16-6 ECONOMIC MILL CUT-OFF GRADE

Pit Optimization for MRE Shell	Unit	Mill CoG
CoG TiO_2 Eq. – Massive Oxide	%	4.35
CoG TiO_2 Eq. – Semi-Massive Oxide	%	4.81
NSR	USD/t	65.5

The economic breakeven Cut-off Grades that were used in the pit optimization were calculated using this formula: *BE CoG = 4.81 x (Mine cost + Process + G&A) / (Process + G&A) the results are shown* in Table 16-7. These values were not used in the Discounted Cash Flow calculations nor the mine schedule calculations.

TABLE 16-7 ECONOMIC BREAK-EVEN CUT-OFF GRADE

Pit Optimization for MRE Shell	Unit	Mill CoG
CoG TiO_2 Eq. – Massive Oxide	%	5.06
CoG TiO_2 Eq. – Semi-Massive Oxide	%	5.61
NSR	USD/t	70.5

16.10 OPEN PIT MINE SCHEDULE

The mine plan was formulated using studio NPVS, and the scheduling was conducted on an annual basis throughout the entire Property duration. The primary objective set for the mine planning optimizer to maximize NPV (Net Present Value).

The gradual reduction in the mining ratio is primarily attributed to the extensive removal of waste material in the initial phases of the operation. Extraction of materials will be initiated in the western portion of the site and progress in an eastward direction. Figure 16-8 shows the summary of mining production through the operation years whereas Table 16-8 shows the mill feed with element grades for the relevant production year.

Table 16-9 presents the mine production schedule. The preproduction phase is confined to the first 2 years, which is known as preproduction years for waste stripping. Mining operations will be conducted using in-house equipment, thereby ensuring full control over the process. The total mining activity is expected to produce 107,735,060 tonnes of mineralised material and generate 378,386,840 tonnes of waste material.

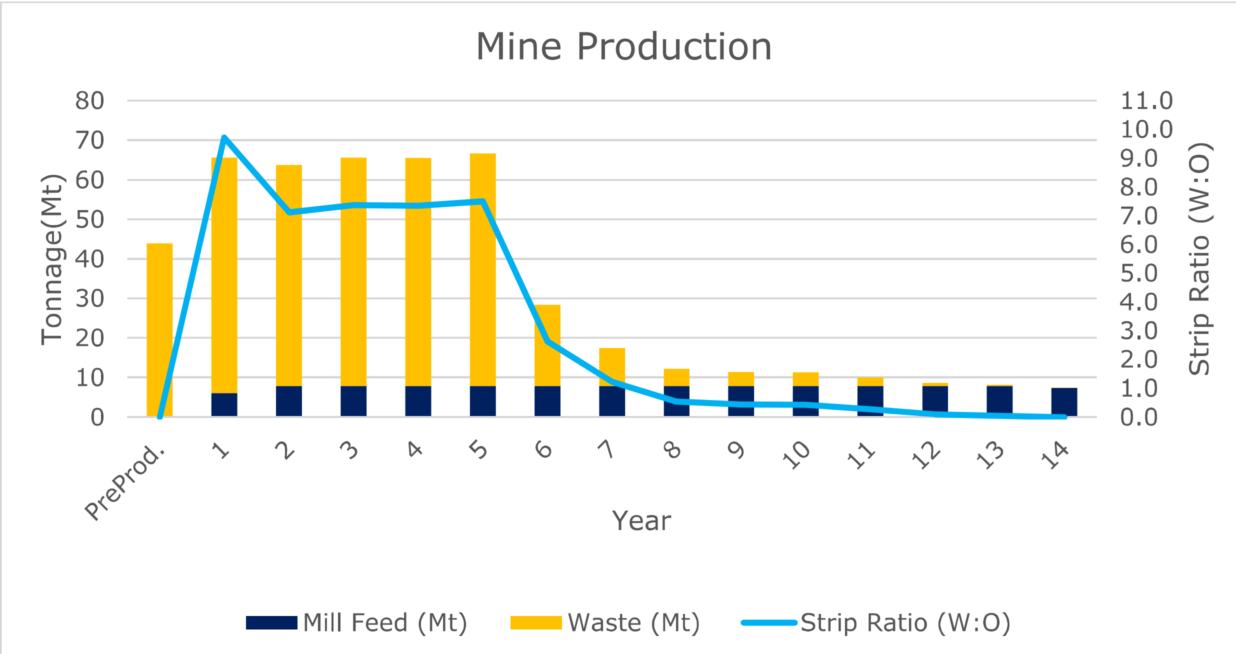
TABLE 16-8 LA BLACHE MILL FEED AND MILL GRADES

Year	Unit	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Mill Feed	Mt	0.0	0.0	6.1	7.9	7.8	7.9	7.8	7.9	7.8	7.9	7.8	7.9	7.8	7.8	7.9	7.4
Waste	Mt	21.6	22.3	59.5	55.9	57.8	57.7	58.9	20.6	9.6	4.3	3.5	3.4	2.1	0.8	0.4	0.01
SMO																	
Grade TiO_2	%	0.0	0.0	5.2	6.5	7.6	4.6	5.4	5.8	5.5	6.3	6.7	6.5	7.1	7.3	7.9	8.9
Grade Fe_2O_3	%	0.0	0.0	18.5	22.2	28.3	19.4	18.8	19.4	18.9	22.0	23.1	22.7	25.2	25.9	28.5	33.6
MO																	
Grade TiO_2	%	0.0	0.0	17.6	17.6	18.4	18.4	17.0	17.8	17.3	16.5	16.0	16.4	17.4	18.3	18.8	18.7
Grade Fe_2O_3	%	0.0	0.0	58.3	58.8	62.3	61.9	56.5	61.5	58.8	56.3	54.9	56.2	59.8	62.5	63.9	63.3

TABLE 16-9 LA BLACHE SCHEDULE

Year	Unit	Y-2	Y-1	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14	Total
Mill Feed	Mt	0	0	6.12	7.85	7.85	7.85	7.85	7.85	7.85	7.85	7.85	7.85	7.85	7.85	7.85	7.41	107.74
SMO	Mt	0.00	0.00	5.10	5.21	1.76	0.12	7.15	6.56	4.91	3.93	4.88	4.14	3.48	2.22	2.05	0.60	52.11
Grade TiO_2	%	0.0	0.0	5.24	6.50	7.63	4.63	5.43	5.75	5.50	6.26	6.65	6.53	7.13	7.31	7.93	8.94	6.53
Grade Fe_2O_3	%	0.0	0.0	18.52	22.19	28.26	19.39	18.77	19.41	18.93	21.97	23.09	22.71	25.22	25.91	28.48	33.56	23.32
MO	Mt	0.00	0.00	1.02	2.64	6.09	7.73	0.70	1.29	2.93	3.92	2.97	3.71	4.37	5.63	5.80	6.81	55.63
Grade TiO_2	%	0.0	0.0	17.55	17.55	18.41	18.43	16.96	17.84	17.31	16.47	16.03	16.41	17.44	18.32	18.75	18.65	17.58
Grade Fe_2O_3	%	0.0	0.0	58.31	58.79	62.26	61.94	56.48	61.51	58.79	56.27	54.87	56.18	59.78	62.54	63.88	63.29	59.64
Waste	Mt	21.57	22.32	59.54	55.91	57.84	57.72	58.89	20.56	9.58	4.28	3.48	3.37	2.11	0.81	0.39	0.01	399.96
NSR																		
Recovered TiO_2	Mt	0.00	0.00	0.30	0.55	0.89	1.03	0.34	0.41	0.54	0.62	0.55	0.61	0.71	0.85	0.89	0.95	0.66
Recovered Fe_2O_3	Mt	0.00	0.00	1.35	2.41	3.92	4.43	1.50	1.81	2.38	2.77	2.46	2.72	3.15	3.73	3.91	4.14	2.91

FIGURE 16-8 LA BLACHE MINE PRODUCTION



16.11 OPEN PIT MINING EQUIPMENT

The following sections address the equipment selection and the necessary fleet requirements for implementing the open pit mining plan in La Blache Property. The operation will utilize company owned equipment as shown in Table 16-10.

TABLE 16-10 MAIN OPEN PIT EQUIPMENT FOR LA BLACHE PROPERTY

Equipment	Model	Units
Excavator	Hitachi EX8000-6	3
Haul Truck	CAT 795F AC	18
Rotary Drills	Sandvik D75KX Rotary Blasthole Drill	5
Bulldozer	D11T Track-Type Tractor	9
Haul Truck (Spare)	CAT 795F AC	3

The open pit operation will follow a schedule of two 12 hours shifts each day operating seven days a week for 50 weeks annually. A provision is included in the fleet calculations for ten days of potential lost mine production due to adverse weather conditions.

The estimations of the Key Performance Indicators (KPIs) for trucks, excavators are detailed in Table 16-11.

TABLE 16-11 OPEN PIT EQUIPMENT KPIS

Description	Trucks	Excavators
Availability	85.0%	90.0%
Machine Utilization	75.0%	85.0%
Operating Efficiency	95.0%	95.0%
Effective Utilization	60.6%	72.7%

16.11.1 DRILLING AND BLASTING

Mineralized material and waste rock production drilling will be performed using diesel powered down the hole (DTH) track drills featuring a hole diameter of 254 mm (10 inches). With a penetration rate of 25 metres per hour each production hole is expected to take approximately 20 to 25 minutes to drill, which accounts for procedures such as managing drill rods and moving between holes. A redrill ratio of 10% was assumed as a contingency.

Pre-splitting will be applied for the final pit walls and its use in temporary walls will be at the discretion of the on-site geotechnical engineer if deemed necessary.

Bulk emulsion explosives will be used for blasting whose consumption calculations are based on an explosive density of 1.2 g/cm^3. The explosives supplier will be responsible for providing and storing the explosives and related accessories, in addition to loading the blast holes. Details of the explosive storage facilities are discussed in Section 18 which will adhere to the minimum distance requirements outlines by Natural Resource Canada Explosives Regulatory Division. The parameters used in establishing the drilling and blasting computations are summarized in Table 16-12.

TABLE 16-12 DRILLING AND BLASTING PARAMETERS

Description	Units	Host Rock
Bench Height	m	10
Blasthole Diameter	mm	254
Burden	m	6
Spacing	m	6
Sub-Drilling	m	1.5
Powder Factor	kg/t	0.50
Re-drilling contingency	%	10
Emulsion Stemming	m	2.5
Rock Density	t/m^3	2.8
Rock Volume/hole	m^3	360
Tonnes/hole	t	1008
Emulsion required	kg	547

Description	Units	Host Rock
Emulsion density	t/m^3	1200
Emulsion	kg/m	55
Emulsion depth	m	10
ANFO Stemming	m	2
ANFO required	t	501
ANFO density	t/m^3	1100
ANFO	kg/m	50
ANFO depth	m	10

16.11.2 HAUL TRUCKS

The haul truck model selected for open pit mining at La Blache will be the CAT 795F AC, a rigid frame mining truck with electric drive and nominal payload capacity of 304 tonnes. A fleet of 15 trucks will be required during the first 10 years of operation. In the pre-stripping year, a fleet of 5 trucks will be required to assist removing the waste material and vegetation whereas the haul trucks will transport mineralized material and waste during the production period. The payload has been adjusted with a 2% of carry back.

16.11.3 MINING EXCAVATORS

The primary loading equipment selected for open pit mining assumes three (3) Hitachi EX8000-6 mining excavators equipped with 40 m^3 buckets.

Based on calculations derived from the mine plan presented in the technical report, the initial operations will require four excavators, and one spare excavator will be kept on standby to account for potential equipment failures and maintenance downtime.

16.11.4 ANCILLARY EQUIPMENT

Based on the initial layout of the mine, which called for only main roads to begin stripping operations, and considering the number of people involved in production, the need for ancillary equipment was identified. Following this assessment, the report author was able to determine the required quantity of ancillary equipment. Additionally, the report author recognizes that equipment needs for road maintenance may change throughout the mine's life (LOM), depending on the extent of road use in each mining phase

A summary of the utilization equipment needed to support the La Blache mining Property in shown below in Table 16-13.

TABLE 16-13 ANCILLARY EQUIPMENT UTILIZATION FACTOR

Equipment	Units	Utilization Factor
Grader	2	50%
Wheel Dozer	2	60%
Front End Loader	2	85%
Boom truck	1	50%
Telehandler	1	50%
Mobile Rock Breaker	3	50%
Mechanics Vehicle	2	50%
Electrician Vehicle	2	50%
Personnel Carrier	5	50%
Supervisor Vehicle	4	50%
Geo/Eng Vehicle	4	50%
Ambulance	2	50%
Water/Sand Truck	4	50%

16.11.5 OPEN PIT MINING LABOUR

The labour workforce requirements for open pit mining in La Blache Property will be mainly composed of mobile production equipment operators as detailed in Table 16-14. Additionally, a portion of the personnel will be responsible for performing tasks that support the mining production as detailed in in Table 16-15.

16.11.6 GEOTECHNICAL ASSESSMENT

No previous geotechnical assessment has been conducted for the La Blache Property. Therefore, it is expected that the Property will undertake a proper geotechnical assessment in further studies to support the determination of the pit slope angle and the stability of the pit walls.

16.11.7 HYDROGEOLOGY

Water management will be vital to this Property and will require further testing, investigation and characterization to ensure that surface and ground water movement does not affect the stability of pit walls, mine haul roads, waste dumps and tailing storage facilities. No previous hydrogeological assessment has been conducted for the La Blache Property. All water balances and estimates were therefore based on typical quantities in other similar mining operations.

TABLE 16-14 OPEN PIT MINING HOURLY LABOUR FORCE

Job	Y - 1	Y-2	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14	Y15	Y16
Mining																		
Excavator Operator	4	4	12	12	12	12	12	8	8	8	8	8	8	4	4	4	0	0
Haul Truck Driver	20	20	60	60	60	60	60	40	24	24	24	24	24	24	24	24	0	0
Rotary Drill Operator	8	8	20	20	20	20	20	8	8	4	4	4	4	4	4	4	0	0
Bulldozer Operator	36	36	36	36	36	36	36	36	36	36	32	32	32	32	32	32	0	0
Blaster - Lead	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	0	0
Blaster - Helper	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	0	0
General Support - Helper	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	0	0
All Mining Personnel - Company	108	108	168	168	168	168	168	132	116	112	108	108	108	104	104	104	0	0
Site Support - Company																		
Grader	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	0	0
Wheel Dozer	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	0	0
Front End Loader	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	0	0
Boom truck	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	0	0
Telehandler	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	0	0
Mobile Rock Breaker	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	0	0
Mechanics Vehicle	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	0	0
Electrician Vehicle	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	0	0
Personnel Carrier	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	0	0
Supervisor Vehicle	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	0	0
Geo/Eng Vehicle	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	0	0
Ambulance	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	0	0

Job	Y - 1	Y-2	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14	Y15	Y16
Water/Sand Truck	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	0	0
All Site Support Personnel - Company	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132	0	0
Mill																		
Lead hand Mill (Spare Supervisor)	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
Control Room Operator (L1)	0	0	12	12	12	12	12	12	12	12	12	12	12	12	12	12	0	0
DMS Operator (L2)	0	0	12	12	12	12	12	12	12	12	12	12	12	12	12	12	0	0
Product Handling Operator (L2)	0	0	12	12	12	12	12	12	12	12	12	12	12	12	12	12	0	0
Thickening/Filtration Operator (L3)	0	0	8	8	8	8	8	8	8	8	8	8	8	8	8	8	0	0
Metallurgical Technician (L3)	0	0	12	12	12	12	12	12	12	12	12	12	12	12	12	12	0	0
Utility Operator (L4)	0	0	8	8	8	8	8	8	8	8	8	8	8	8	8	8	0	0
Labourer (L5)	0	0	20	20	20	20	20	20	20	20	20	20	20	20	20	20	0	0
Crusher Operator (L5)	0	0	8	8	8	8	8	8	8	8	8	8	8	8	8	8	0	0
All Mill Personnel - Company	0	0	93	93	93	93	93	93	93	93	93	93	93	93	93	93	0	0
Maintenance																		
Tradesman Lead hand	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	0	0
Electrician Certified	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	0	0
Electrician Apprentice 4th Yr	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	0	0
Electrician Apprentice 2nd Yr	0	0	4	4	4	4	4	4	4	4	4	4	4	4	4	4	0	0
Instrumentation Tech	0	0	4	4	4	4	4	4	4	4	4	4	4	4	4	4	0	0
Mechanic Certified	32	32	32	32	32	32	32	32	32	20	20	20	20	20	20	20	0	0
Mechanic Apprentice 4th Yr	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	0	0
Mechanic Apprentice 2nd Yr	0	0	4	4	4	4	4	4	4	4	4	4	4	4	4	4	0	0
Trades Apprentice 1st Yr	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0

Job	Y - 1	Y-2	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14	Y15	Y16
Millwright Certified	0	0	8	8	8	8	8	8	8	8	8	8	8	8	8	8	0	0
Welders Certified	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	0	0
Drill Doctor	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0
All Maintenance Personnel	68	68	88	88	88	88	88	88	88	76	76	76	76	76	76	76	0	0
Yard and Warehouse																		
Material Controller 1	4	4	8	8	8	8	8	8	8	8	8	8	8	8	8	8	0	0
Material Controller 2	8	8	16	16	16	16	16	16	16	16	16	16	16	16	16	16	0	0
Material Expediter	4	4	8	8	8	8	8	8	8	8	8	8	8	8	8	8	0	0
All Security/First Aid Personnel	16	16	32	32	32	32	32	32	32	32	32	32	32	32	32	32	0	0
Security/First Aid																		
Security/First Aid	8	8	12	12	12	12	12	12	12	12	12	12	12	12	12	12	0	0
Security Officers	8	8	12	12	12	12	12	12	12	12	12	12	12	12	12	12	0	0
All Security/First Aid Personnel	16	16	24	24	24	24	24	24	24	24	24	24	24	24	24	24	0	0
Mining Labour Summary (No Supervision)																		
Primary Production Crew	108	108	168	168	168	168	168	132	116	112	108	108	108	104	104	104	0	0
Site Support	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132	132	0	0
Mill	0	0	93	93	93	93	93	93	93	93	93	93	93	93	93	93	0	0
Maintenance	68	68	88	88	88	88	88	88	88	76	76	76	76	76	76	76	0	0
Yard and Warehouse	16	16	32	32	32	32	32	32	32	32	32	32	32	32	32	32	0	0
Security/ First Aid	16	16	24	24	24	24	24	24	24	24	24	24	24	24	24	24	0	0
All Hourly Personnel	340	340	537	537	537	537	537	501	485	469	465	465	465	461	461	461	0	0

TABLE 16-15 OPEN PIT MINING STAFF LABOUR FORCE

Staff Labour	Y - 1	Y-2	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14	Y15	Y16
General Management																		
General Manager	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
Site Controller	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
Administrative Coordinator	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
Accountant	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0
Payroll	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0
HR Coordinator	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
Purchaser	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0
IT Support	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	0	0
Mine Supervision																		
Mine Superintendent	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
Mine General Foreman	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	0	0
Shift Boss	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	0	0
Road Mant. Supervisor	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	0	0
Mill Supervision / Tech Staff																		
Mill Superintendent	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
Mill General Foreman	0	0	4	4	4	4	4	4	4	4	4	4	4	4	4	4	0	0
Mill Supervisor	0	0	8	8	8	8	8	8	8	8	8	8	8	8	8	8	0	0
Mill Metallurgist	4	4	12	12	12	12	12	12	12	12	12	12	12	12	12	12	0	0
Chief Assayer - Staff	0	0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0
Assayer	0	4	8	8	8	8	8	8	8	8	8	8	8	8	8	8	0	0
Sample Prep	0	8	16	16	16	16	16	16	16	16	16	16	16	16	16	16	0	0

Staff Labour	Y - 1	Y-2	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12	Y13	Y14	Y15	Y16
Maintenance Supervision																		
Maintenance General Foreman	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
Maintenance Supervisor	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	0	0
Electrical Supervisor	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	0	0
Technical Services																		
Manager Technical Services	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
Senior Mine Geologist	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0
Geologist	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	0	0
Core Shack Tech Lead	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0
Core Shack Tech	1	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	0	0
Chief Engineer	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
Senior Engineer	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	0	0
Planning Engineer	2	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	0	0
Mine Technician	4	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	0	0
Surveyor	4	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	0	0
Safety and Training																		
Health, Safety & Security Coordinator	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0
Safety/Training Technician	8	8	8	8	8	8	8	8	8	8	8	8	4	4	4	4	0	0
Safety and Training																		
Environmental Coordinator	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	0	0
Environmental Technician	12	12	12	12	12	12	12	12	12	12	12	12	12	12	16	16	0	0
Total Personnel	86	129	164	164	164	164	164	164	164	164	164	164	160	160	164	164	0	0

16.11.8 DUST CONTROL

Dust control requirements will be minimal during the fall, winter, and spring months.

However, dust control will be required during summer months where there are extended periods without rain.

It is not expected that a dust control system involving sprinklers or other fixed plant will be required.

Dust control system will consist of a water bowser and the application of dust suppressants that can be worked into haul road surfaces with motor grader ripping attachments and compacted with a roller or vibratory roller. Additionally, to prevent dust from rising due to truck traffic, a water tank will regularly moisten the main haul road.

16.11.9 WATER

Water will be recycled within the process plant and returned from the Tailings Storage Facility to the process recycle water tank. The source of make-up water supply will be from the nearby lakes.

16.11.10 ELECTRICAL POWER

Electrical power was assumed to be supplied to site via connection to the provincial power grid during the operational phase of the project whereas diesel generators might be employed during the construction phase. Renewable energy sources might also be used for site building and other minor power requirements but were not considered in this study.

16.11.11 EMERGENCY FACILITIES

Emergency facilities are available around the clock at The General Hospital, located at 635 Boulevard Jolliet in Baie-Comeau, Quebec, which is the nearest city to the Property. Additionally, first aid facilities and emergency equipment are situated on-site, with medical staff present or on call to ensure prompt and efficient response to any medical emergencies.

17. RECOVERY METHODS

Section 13 of this report discussed the various metallurgical test programs, executed for the purposes of the recovery of metals from the La Blache ilmenite material. The section 13 results are the basis for the design of the processing flowsheet to recover and produce high purity titanium and iron as marketable products from the La Blache ilmenite material. Vanadium extraction testing was not performed; however, vanadium products would contribute to project payables. This section presents the design criteria, solids balance, water balance, equipment sizing, the description of the processing plant, which provides input to the capital and operating cost estimates.

17.1 INTRODUCTION

Process Research Ortech Inc. worked on the development of ORF's innovative process to produce high purity TiO_2 directly from ilmenite material. TEMAS owns the ORF patented chloride process for the treatment of the ilmenite material to final titanium dioxide product. The ORF process is protected by several patents in North America and abroad (US Patent No. 7,803,336 B2, Canadian Patent No. 2,513,309 and Australian Patent No. 2004291568).

The process consists of an atmospheric chloride leach followed by successive solvent extraction of Fe and Ti. A high purity Ti bearing strip solution is produced which can be used to produce Ti products dependent on the end market use such as: TiO_2 for pigments, pharmaceutical and food industries. Other products that can be obtained from the process are high purity Fe_2O_3, which can be used for pigment, or iron production. The ORF process employs commercially proven unit operations. The ORF process is a flexible process as it can be applied to a wide range of feed stocks especially those with Mg, V and Cr not treatable by current methods. It is also economically attractive as the ORF process requires lower capital and operating costs and offers an opportunity for early start up. In addition, the process is environmentally friendly as the reagents are recycled and the process residue is inert. The inert residue may be used for road fill. There is no need to handle chlorine and carbon containing chemicals at high temperature like in the existing plants in USA. Entire processing to end products can be done in one location to produce Ti materials with physical properties to match end user specifications.

The ilmenite material available at the La Blache property can be treated by the ORF process to produce high purity Ti bearing liquids which can be used to produce TiO_2 pigment. The equipment process plant design for the purposes of section 17 of this report relies on the ORF technology that was successfully tested on a pilot level test program at Process Research Ortech laboratory, and the test results summarised in section 13.

17.2 PROCESS DESIGN CRITERIA

The process plant is designed to produce a nominal combined 4.67 Mtpy of concentrate including 3.8 Mtpy Iron Oxide (Fe_2O_3) and 0.86 Mtpy Titanium Dioxide (TiO_2). The concentrate production is calculated based on a combined 66.64% plant weight recovery Including 54.34% weight as Iron Oxide Concentrate and 12.30% weight Titanium Dioxide Concentrate.

A design factor of 10% is applied on nominal requirements to ensure that the process equipment has enough capacity to take care of the expected feed variation.

The process plant design is based on test work performed to date (Section 13) and from prior knowledge acquired in the processing of ilmenite material.

Both the dry portion of the plant (comminution) and the wet portion (concentrator) are designed at 80% utilization, to allow for maintenance downtime.

The Iron content in the plant feed is 41.06%, while the Titanium content is 10.61%. In addition, there is 0.18% of Vanadium content, which would be extracted as a separate concentrate but for the purposes of this study the testwork performed focused on Iron and Titanium products only, presenting the Vanadium only as a payable contributor.

The final products grades were 99.5% for the Fe_2O_3 and 99.8% for the TiO_2.

The Table 17-1 below is a summary of the Process Design Criteria:

TABLE 17-1 PROCESS DESIGN CRITERIA SUMMARY TABLE

Parameters	Nominal	Designed	Units
General Plant			
Operating Schedule			
Operating hours per day	24	24	h
Annual operating days	365	365	days/y
Equipment utilization - plant	80%	80%	%
Annual operating time - plant	7008	7008	h/y
Equipment utilization - crushing	80%	80%	%
Annual operating time - crushing	7008	7008	h/y
Material Characteristics			
Plant Feed			
Potentially Economic Material SG	4.63	5	g/cm^3
Iron (Fe) grade	41.06%	41.06%	%
Titanium (Ti) grade	10.61%	10.61%	%
Vanadium (V) grade	0.18%	0.18%	%
Solids %	97%	97%	%
Plant Product			
Concentrate Metal Recovery			
Iron (Fe_2O_3) recovery	92.1%	92.1%	%
Titanium (TiO_2) recovery	71.8%	71.8%	%
Concentrate Grade			
Iron (Fe_2O_3) grade	99.5%	99.5%	%
Titanium (TiO_2) grade	99.8%	99.8%	%

Parameters	Nominal	Designed	Units
Plant Production			
Crushing			
Run of mine (Dry)	8,059,200	8,865,120	tpy
Run of mine (Dry)	1,150	1,265	t/h
Concentrator			
Concentrator solids feed	7,008,000	7,708,800	tpy
Concentrator solids feed rate	1,000	1,100	t/h
Plant Concentrate and Tailings			
Plant solids concentrate production	4,670,131	5,137,144	tpy
Plant solids concentrate production rate	666	733	t/h
Plant weight recovery	66.64%	66.64%	%
Iron (Fe_2O_3) recovery	54.34%	54.34%	%
Titanium (TiO_2) recovery	12.3%	12.3%	%
Plant Tailings Solids Residues	33.36%	33.36%	%
Concentrate Production: tpy			
Iron (Fe_2O_3)	3,808,147	4,188,962	tpy
Titanium (TiO_2)	861,984	948,182	tpy
Plant Tailings Production	2,337,869	2,571,656	tpy
Concentrate Production: t/h			
Iron (Fe_2O_3)	543	598	t/h
Titanium (TiO_2)	123	135	t/h
Plant Tailings Production	334	367	t/h

17.3 PROCESS DESCRIPTION

17.3.1 GENERAL

The mineralized material size reduction processes include three stages of crushing including: primary Jaw, and secondary cone crushing, tertiary cone crushing, several stages of screening, followed by a single stage Ball milling to achieve a passing size of minus 65 mesh.

After size reduction there are stages of chlorine leaches with solid liquid separation and solvent extraction (SX) to produce two end products Fe_2O_3 and TiO_2. As part of the Fe_2O_3 and TiO_2 production processes, the Fe_2O_3 solvent extraction pregnant solution is also treated by the means of Pyrohydrolysis and the TiO_2 solvent extraction pregnant solution – by thermal precipitation process including activated carbon, thermal precipitation, HCl acid wash, Solid/Liquid separation, water wash, calcination.

The general process flow described above is shown in more detail in the simplified process flow diagram presented in Figure 17-1. A more detailed description of the unit operations follows the diagram.

17.3.2 CRUSHING

The Run-of-mine (ROM) is hauled to the primary crushing area, where the trucks discharge directly (or by the means of front-end loader) into a hopper. The hopper discharges to a vibrating feeder, which feeds the primary jaw crusher. The crushed product is transported by conveyor to the secondary crushing area into a vibrating screening system, which operates in a closed loop with a cone crusher. The screen oversize reports back to the cone crusher, while the screen undersize is conveyed to the hopper feeding the tertiary cone crusher.

Tertiary crushing similarly to the secondary crushing includes a cone crusher operating on a closed circuit with a dry vibrating screen system with the screen oversize reporting back to the cone crusher and the screen undersize reporting to the crushed feed stockpile.

Auxiliary equipment like dust collectors, pneumatic rock breakers, overhead cranes and monorails will support the operation and maintenance of crushing and screening circuit related equipment.

17.3.3 GRINDING

The crushed feed stockpile feeds the grinding hopper feeder. The hopper feeder discharges into the ball mill. The ball mill grinds the mineralized material to nominally minus 65 mesh. The ball mill discharges onto a wet vibrating screen, with the screen oversize plus 65 mesh, reporting back to the ball mill for regrinding. The screen undersize (minus 65 mesh) reports to the mixed chloride leaching stage 1.

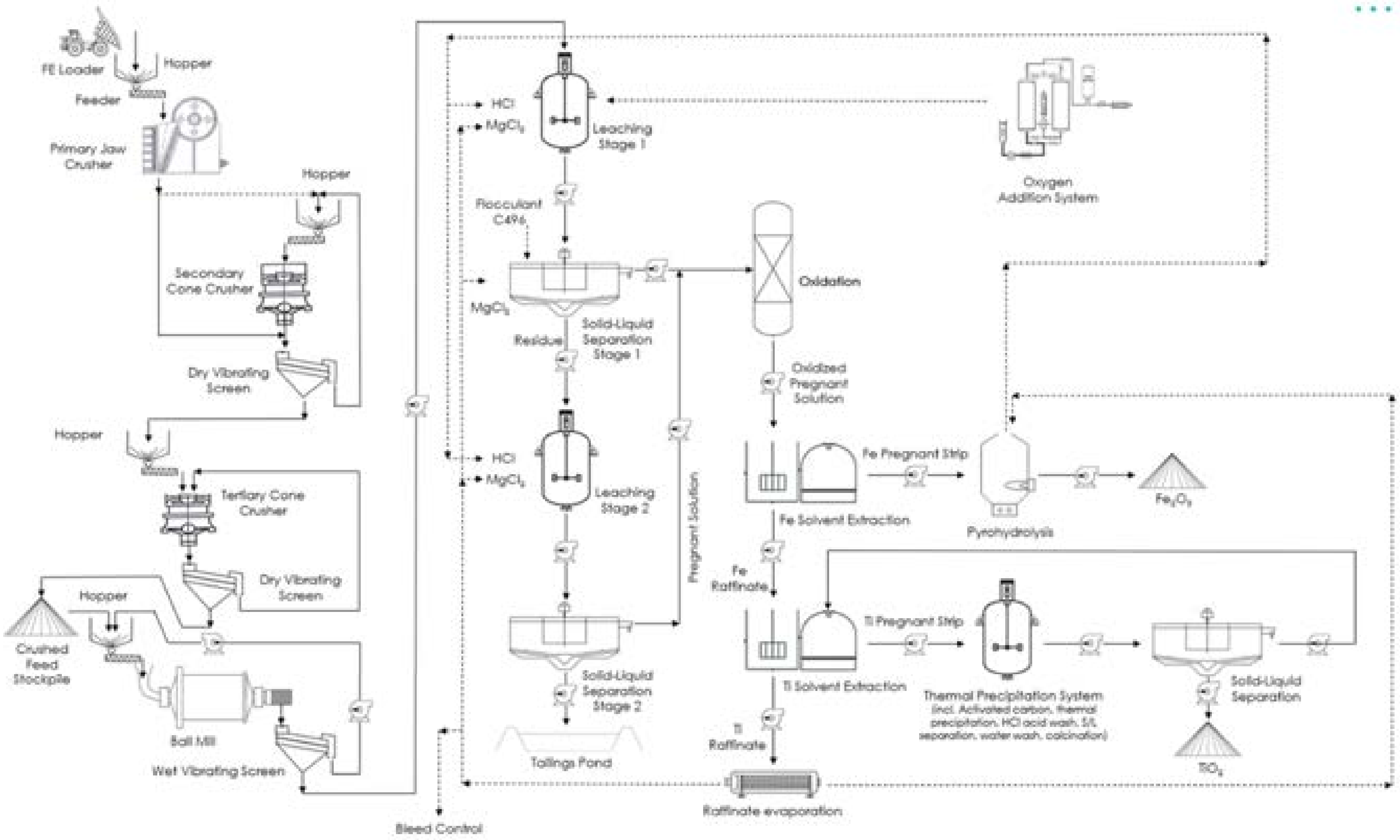
17.3.4 MIXED CHLORIDE LEACHING – TWO STAGES

After the mineralized material has been ground to minus 65 mesh, it is leached in stages 1 and 2 at atmospheric pressure at 70°C in a mixed chloride lixiviant. A two-stage leaching is performed to achieve a target overall Ti recovery of 80 to 85%. After the first stage of leaching, the slurry undergoes solid-liquid separation, with the addition of a flocculant to aid the rate of settling and filtration. The first stage solid residue is added into the second stage of leaching and the pregnant leach solutions (PLS) from both stages are combined. The stage 2 leach residue from the thickener underflow is pumped out to Tailings Storage Facility (TSF) for further settling of solids and recycle of the water from the TSF back to the process water tank.

17.3.5 OXIDATION

Following the filtration and combination of the PLS from the two-stage leaching, the PLS undergoes oxidation for the conversion of ferrous chloride (Fe^{2+}) to ferric chloride (Fe^{3+}). Following oxidation, solvent extraction stages are conducted to selectively extract iron and titanium.

FIGURE 17-1 SIMPLIFIED PROCESS FLOW DIAGRAM



17.3.6 IRON (FE) SOLVENT EXTRACTION

The oxidized PLS is contacted with an organic extractant to selectively extract iron into the organic phase. The loaded organic is scrubbed with a high iron containing solution and then stripped by contacting with a stripping solution to generate iron-rich strip liquor.

17.3.7 TITANIUM (TI) SOLVENT EXTRACTION

The raffinate from iron solvent extraction is contacted with an organic extractant to selectively extract titanium into the organic phase. The loaded organic is scrubbed with a high titanium containing solution and then stripped by contacting with a stripping solution to generate titanium-rich pregnant strip liquor.

17.3.8 TITANIUM DIOXIDE PRECIPITATION

Titanium dioxide is precipitated from titanium-rich pregnant strip liquor by thermal precipitation at 95°C. There is a pre-treatment step prior to thermal precipitation with the Ti pregnant strip contacted with activated carbon to remove any residual organic. After precipitation, there are stages of HCl wash and water wash to remove any impurities. During the water wash, the pH of the slurry is increased using ammonium hydroxide (NH_4OH) to increase the filtration rate. After thickening, settling and filtration this will produce TiO_2 product for the pigment finishing plant.

17.3.9 IRON OXIDE RECOVERY

Although the iron-rich pregnant strip liquor testing was not part of the pilot plant test work, Fe in the iron-rich pregnant strip liquor from Fe SX can be recovered as an Iron oxide (Fe_2O_3) by a process known as pyrohydrolysis. The pyrohydrolysis happens when ferric and ferrous chlorides react with water in a spray roaster to produce HCl gas and Fe_2O_3. The iron oxide is collected as the final iron product from the process, while the HCl gas that is recovered is absorbed into process water to produce a 5.8N HCl solution that returns to the leaching stages. Pyrohydrolysis is a well understood, fully commercialized unit operation. Pyrohydrolysis units are available from commercial vendors and can be designed based on the iron pregnant strip quality and volumetric flow rate. The high purity iron oxide can then be used as precursor for iron making or as a pigment.aqueous Stream Recycle.

Raffinate from the Ti solvent extraction contains MgCl2 that can be recycled to the leach stage. To maintain a water balance, water is evaporated from the solution.

17.3.10 CONCENTRATE STORAGE AND LOADOUT

Concentrates will be stored in a concrete pad in a covered storage area.

17.3.11 TAILINGS THICKENING AND FILTRATION

The solid/liquid separation thickener underflow represents the single final tailings residue which reports into the Tailings Storage Facility (TSF). The treated TSF water is used, then recycled into the process water tank from where it is distributed back to the plant.

17.3.12 REAGENTS – STORAGE, MIXING, AND DISTRIBUTION

The reagents area includes:

- Feed and mixing tanks with the respective metering pumps system for the $MgCl_2$;
- Feed tank with the respective metering pumps system for the HCl; and
- Flocculant mixing and addition system.

17.3.13 GENERAL PLANT UTILITIES AND SERVICES

The plant utilities and services area include:

- Fresh water tank, that is filled with make-up water from the nearby lake system;
- Process water tank, that receives the process streams of water for process re-use;
- Plant air compressor and dryer, instrument air compressor, dryer system for plant air services. Dry compressed air is required for the following purposes:
- Plant air, for general use throughout the overall plant; and
- Concentrate filtration.

The compressed air for use in the plant is supplied via a compressed-air distribution network by three (3) compressors (two (2) operating and one (1) on standby). Two (2) different qualities of air will be supplied to different consumers, plant air and instrument air. The air supply system includes the appropriate number of dryers and filters to supply the required quality of air. Compressed air for the specific operation of the filter presses is provided by seven (7) dedicated compressors.

Oxygen addition system is required and designed to improve the process leaching kinetics.

Fire water system, is a plant-wide pressurized fire-water protection system. This is especially important in the high-risk areas. A fire water pump house is next to the raw water pond. These pumps supply raw water to the main fire loop, which serves the fire hydrant system. This fire-protection system follows compliance with local regulations and insurance requirements, although the details will only be confirmed at the final engineering design stage.

Gland water system. The gland water serves as a coolant and lubricant of the pumps shaft packing. Water from the fire water tank is pumped by two (2) single-stage centrifugal pumps (one (1) operating and one (1) on standby) to the various gland water users.

17.3.14 WATER TREATMENT AND WATER SOURCES

The water management, water treatment and water sources at the site include three areas:

- Mine Area;
- Processing Plant Area; and
- Tailings Storage Area.

The water systems at the mine and plant are designed so that there is no liquid effluent stream flowing outside the mine site perimeter and no process water infiltrating the ground.

The water used in the beneficiation plant in the wet processing area is recycled into the process.

The storm water, drainage run-off and mine dewatering are collected and used in the process.

The additional water requirement for the process is drawn from the nearby natural water sources. This water needs to be treated (settled or filtered) to remove biological debris prior to usage.

The only water losses from the site are due to water evaporation, water trapped in the tailings, and moisture in the concentrate product shipped from the facility.

The process plant's water usages are managed by four (4) main tanks:

- The process water storage tank;
- The fire water tank;
- The potable water tank; and
- The cooling water tank.

17.3.15 PROCESS BUILDINGS

Process plant buildings include:

- Main Crusher Building. The main crusher building accommodates the primary, secondary, and tertiary crushing units and respective screening equipment.
- Main concentrator building. The main concentrator building includes the milling, solid-liquid separation, oxidation, solvent extraction, pyrohydrolysis, thermal separation for the Fe and Ti products.
- Main control room and Motor Control Center (MCC) building. MCC1 supporting the crushing area is in the crusher building. MCC2 supporting the mill area is in the main concentrator building.
- Assay Laboratory. Assay laboratory building is assumed to be a portable building. The assay laboratory is located adjacent to the main concentrator building and supports the rapid analyses of the process mid-products and final products by sampling and testing.
- Plant offices and dry, Minor spares, materials, and consumables storage buildings. For plant offices and dry as well and the spares, materials and consumables storage the use of containerized system is assumed for the design where various metal containers (sea cans type) are placed adjacent to the main concentrator building.

17.3.16 FINISHING PLANT

For the purposes of the current PEA scope a final titanium pigment production finishing plant has been assumed to be constructed and installed on site to ensure the required high grade pigment final product is produced for selling to the market. The respective capital cost associated with this plant has been included in the overall plant capital costs.

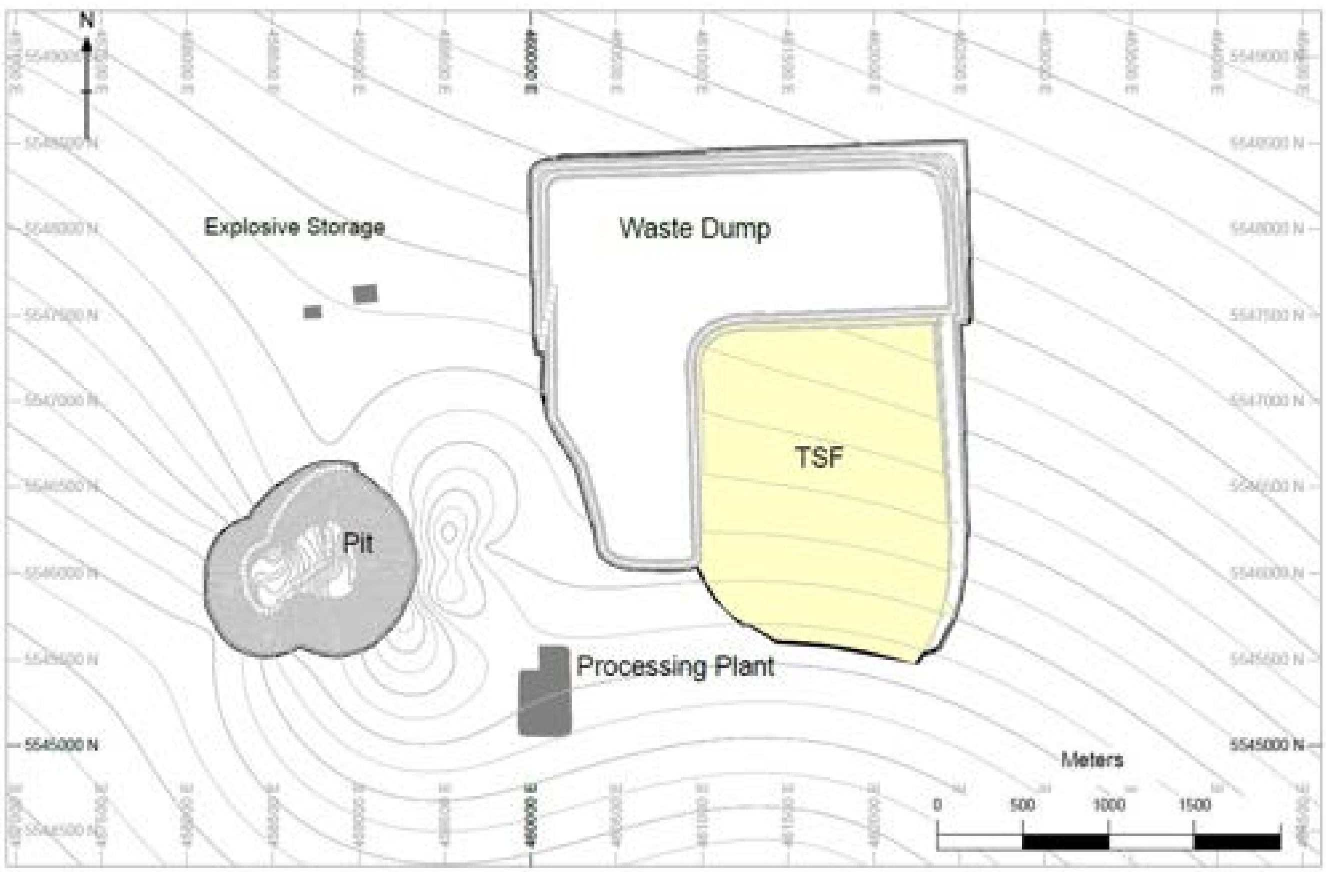
18. PROJECT INFRASTRUCTURE

The purpose of the La Blache Property infrastructure is to minimise the timeline of and the amount of required capital during the preproduction period. The project will utilize the workforce based primarily in Sept-Iles which is the nearest city to the Property site location, which will be in addition to Port Cartier and Labrador cities. The city of Baie-Comeau has the necessary infrastructure and workforce to support mining operations along with all major mining support services, local terrain, and climate.

La Blache property offers multiple suitable locations for processing facilities, mine security, offices, storage warehouses, and equipment maintenance facilities. However, the surrounding lakes and water bodies will pose challenges in designing and locating these facilities which will require dewatering and other engineering solutions that minimize impacts on the environment.

Figure 18-1 presents the comprehensive site development plan, illustrating the key components of the Property and its associated infrastructure. These include the process plant, tailings storage facility, roads, open pit, and waste dump.

FIGURE 18-1 GENERAL SITE INFRASTRUCTURE



18.1 WATER STORAGE FACILITIES

18.1.1 TAILINGS STORAGE FACILITIES

A total of 46.6 million cubic metres (Mm^3) of wet tailings will be produced over the LoM, and the tailings storage facility (TSF) will require enough storage capacity for the planned 14-year life of the mining and processing operations.

The final storage capacity of the TSF is planned to be 46.6 Mm^3 of solids which will be deposited at a rate of 3.1 Mm^3 per year of solids as a 60% by weight thickened tailings. Over the LoM a total of 44.3 Mm^3 of tails will be pumped to the TSF but 19.12 Mm^3 of water mass will be recycled back to the process plant and 0.01 Mm^3 will evaporate.

The TSF will be expanded in yearly increments as the operation progresses to meet the storage needs. However, it is possible that the TSF construction schedule may be adjusted to accommodate the mine scheduling.

The tailings storage facility (TSF) will consist of a cross-valley storage area lined with high-density polyethylene (HDPE). All embankment lifts for the TSF will utilize downstream raise construction methods.

To mitigate water pressure build-up on the HDPE liner, a leakage collection and recovery system (LCRS) will be implemented beneath the composite liner of the basin. This system will collect and recover any solution that may leak. A filter toe drain will be installed along the inner perimeter of the starter embankments. These drains consist of graded granular materials and perforated pipes. Their purpose is to collect any remaining interstitial water present in the tailings and residue. Submersible pumps will be strategically placed in a series of decant towers located in the tailings storage facility (TSF) basin to extract the supernatant water. The recovered solution from the decant system will be pumped back to the plant for reuse within the process circuit. The final residues will have a solids content of 30-35% by weight and will be pumped via HDPE pipe from the processing plant to the tailings storage facility.

18.1.2 WASTE STORAGE FACILITIES

Throughout the Life of Mine, it is projected that approximately 378.4 million tonnes (133.2 million cubic metres) of waste rock will be generated assuming a density of 2.84 t/m^3 for the host rock. The disposal of this waste rock will be managed through various methods, including:

- Utilizing waste rock for construction purposes in cases where suitable materials are required. Whenever feasible, waste rock will be employed in constructing infrastructure foundations, tailings storage facility (TSF) walls, and roads. Additionally, crushed waste rock will be used for ongoing road maintenance, whenever practical.
- Implementing purpose-built waste rock dumps (WRDs) near the pits, but beyond the potential instability zone of long-term pit walls. This method is expected to serve as the primary approach for rock disposal.

18.2 SEDIMENTATION PONDS

The resulting water from the mine operations along with the discharged water from the pit dewatering system will be directed to a large sedimentation pond. The design of this pond will allow for sufficient retention time, enabling the reduction of suspended solids and fine particulate material to the minimum legislated concentrations required before the clear clean water can be released back to the natural surrounding environment.

18.3 WATER STORAGE AND MANAGEMENT FACILITIES

To address the project site water needs, the vicinity of the project is surrounded by multiple lakes which can serve as the main sources of freshwater supply. The estimated water demand for the Property is approximately 53,200 m^3/day.

18.4 WATER TREATMENT PLANT

A water treatment facility will be required to manage and treat water coming from the de-watering of the open pits. It will be responsible for treating the anticipated volume of mine water, which is estimated to be 8.4 million cubic metres (Mm^3).

18.5 POWER GENERATION AND ELECTRICAL DISTRIBUTION

The total power demand of the La Blache project was determined to be approximately 85 MW which includes 49 MW for the processing plant and crushing circuits and 36MW for the remainder of the site. The connected power loads for the processing circuit are shown below, after assessing the connected load, running load and estimated running power (Table 18-1).

TABLE 18-1 POWER DEMAND BY PROCESSING FACILITY

Equipment No.	Installed Power (kW)	Total (kW)
AREA 100 - CRUSHING	2,284	2,504
AREA 200 - GRINDING	20,830	41,726
AREA 300 - LEACHING	675	749
AREA 400 - OXIDATION AND SOLVENT EXTRACTION	2,672	2,832
AREA 500 - REAGENTS	1,166	1,224
AREA 600 - UTILITIES AND SERVICES	550	564
Total	**-**	**49,599**

The cost of the main power substation and electrical infrastructure on the Property site were estimated based on a 132 kV transmission voltage to site and were directly considered in the capital estimate portion of the study.

Regarding providing power from the provincial grid to the Property site the new 735-kV Micoua–Saguenay transmission line was recently commissioned by Hydro Quebec in December 2023, with the terminus being located in the town of Micoua which is located approximately 80 km south-east of the La Blache Property.

Given the many challenges of connecting to the main 735kV power grid in Micoua it will be critically important to consult with Hydro Quebec to determine what viable options might be available in Micoua or possibly elsewhere on the provincial power grid and infrastructure to provide a 132 kV transmission voltage to the project site.

18.6 FUEL SUPPLY

A local contractor will be responsible for supplying all fuels required for the mine. They will offer a continuous refueling service to ensure that the mine's fuel needs are consistently met.

The fuel storage facility will be constructed with a storage capacity of 1 million of litres and will be situated on a lined pad. The facility will consist of the following components:

- 9 double wall diesel fuel tanks with a capacity of 100K litres each.
- 1 double wall gasoline fuel tank with a capacity of 100K litres
- A fully equipped command center contained within a container, housing the transfer pump system and distribution station, along with area lighting.

A typical fuel storage facility is illustrated in Figure 18-2.

FIGURE 18-2 TYPICAL FUEL STORAGE FACILITY

Source: Fuelco.com.au (https://fuelco.com.au/case-study-bulk-fuel-farm-for-mining-industry/)

18.6.1 LNG STORAGE

There is currently no plan for the implementation of a Liquefied Natural Gas (LNG) power system on site. However, it is noted that further investigation into its practicality and cost may be considered at the Preliminary Feasibility Study (PFS) level.

This suggests that the potential use of LNG on the Property site is open for future consideration and evaluation as the Property progresses through different study phases.

18.6.2 DIESEL STORAGE

The diesel fuel required for the proposed mobile mining equipment fleet will be stored in the fuel farm facility constructed in the Property area. The estimated quantity of diesel fuel to be stored in the fuel farm is in the range of 500,000 litres. This storage capacity allows for the necessary fuel to support the operational needs of the mining equipment.

18.6.3 GASOLINE

The gasoline required for light vehicles will be stored in the fuel farm facility constructed on the Property site. The estimated quantity of gasoline to be stored at the fuel farm is in the range of 50,000 litres. This storage capacity is designed to meet the fuel needs of the light vehicles used on the Property site.

18.7 HEAT RECOVERY FOR HVAC

The consideration of a heat recovery system and other energy-saving infrastructure is recommended for investigation at the Preliminary Feasibility Study (PFS) level. While the technical and economic variability would need to be thoroughly assessed during this study, there is a high likelihood that a heat recovery facility could prove to be both technically and economically viable. Such systems can contribute significantly to energy efficiency and sustainability by capturing and utilizing waste heat generated in industrial processes thereby reducing energy consumption and operational costs.

18.8 MINING INFRASTRUCTURE

18.8.1 EQUIPMENT WORKSHOP FACILITIES

The required maintenance facilities will be constructed on site, encompassing various essential components:

- A fully equipped garage dedicated to both preventive maintenance and overhaul/rebuild tasks.
- An electrical shop to address electrical maintenance requirements.
- A warehouse for storage and management of maintenance related inventory.
- A tire change facility to handle tire maintenance and replacement.
- A wash bay for cleaning and maintenance purposes.

The maintenance infrastructure will be provided by the contractor and will initially consist largely from shipping containers.

As construction comes to an end and production begins, the maintenance facilities will transfer to permanent heated and insulated structures.

This approach ensures that a practical and efficient utilization of space, aligning with the logistical need and requirements of the maintenance operations on the Property site.

18.8.2 WAREHOUSE STORAGE FACILITIES

A warehouse will be dedicated to housing all spare parts necessary to maintain the maximum mechanical availability of the mining equipment. The stocking of this warehouse will be managed using predictive maintenance methods and parts management software and technology.
This approach allows for a proactive and data-driven strategy in maintaining and replenishing the necessary components, contributing to the efficient and reliable equipment operation.

To optimize cost efficiency, efforts will be made to secure parts from manufactures on a concession basis. Seeking such agreements aims to reduce the initial capital expenditures on parts, aligning with a cost-effective approach from the beginning of Property.

18.8.3 EXPLOSIVES

Explosives and cap magazines will be constructed on site at a final location yet to be determined. The construction and operation of these magazines will be carried out in strict compliance with all applicable legislation and safety regulations. Ensuring adherence to safety standards and regulatory requirements is crucial to mitigating risks associated with the handling and storage of explosives, and reflects a commitment to maintaining a secure and controlled environment within the Property site. Figure 18-3 shows the proposed location for storing the explosives and blasting materials. This site assures at least 800 m away from the pit and site infrastructure and considers the proximity of surrounding water bodies. No dewatering is required in the proposed site.

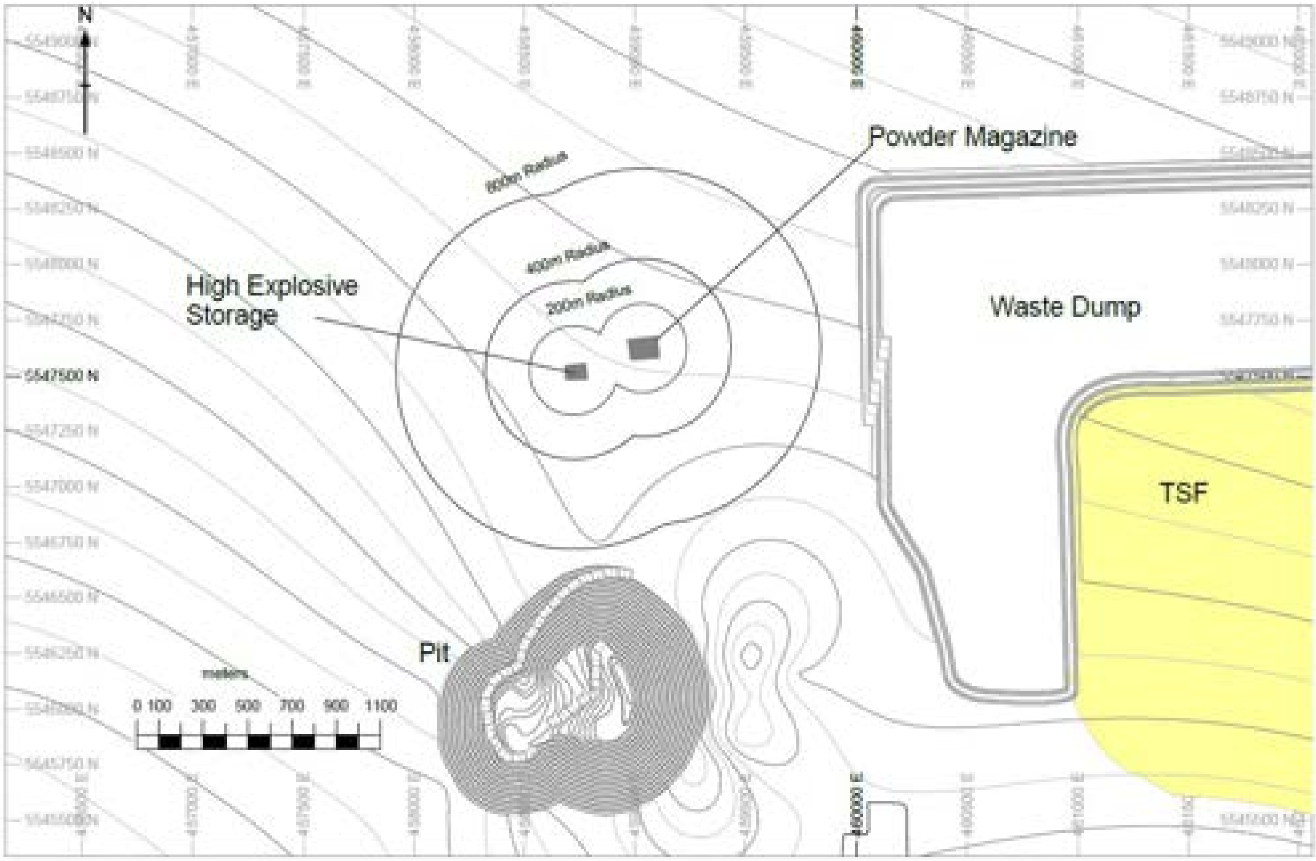
An area that could conceptually be the location for the powder magazine and possibly an explosives production batch plant is identified in Figure 18-3.

A supplier will be contracted to evaluate the set up a batch emulsion plant on site. The plant will be enclosed by a complete fence and equipped with monitored electronic security. Additionally, a separate high explosive magazine will be constructed to store high explosives and detonators. This magazine will have a blast berm, be fully fenced, and situated at a different location.

The responsibility of providing, managing, and operating the on-site explosives storage facility and distribution will rest with the explosives supplier.

Transportation of explosives to the site will be managed by one of the commercial suppliers that operates within Canada.

FIGURE 18-3 EXPLOSIVES MAGAZINE PROPOSED LOCATION



The Distances that must be respected for the location of the powder magazines and the bulk mixing plant will abide by the guidelines of BC Ministry of Energy ,Mines and Low Carbon Innovation and/or Bureau de Normalisation de Quebec (CAN/BNQ 2910-500 "Explosives – Magazines for Industrial Explosives") as shown in Figure 18-4.

> *Using the Quantity-Distance Table for Hazard Divisions 1.1 & 1.5 (Columns D1 to D8)*
>
> *D1 & D3 As these apply primarily to factory operations, they have been deleted here.*
>
> *D2 This is the distance that is required to separate two magazines, provided that there is an effective barricade between them. There is little change from the current requirements.*
>
> *D4 This is the required distance between a magazine and a very lightly-travelled road. (Provincially numbered highways do not qualify as lightly travelled roads.)*
>
> *D5 This is the distance required from a magazine to most roads and highways. Note that there is an overriding minimum distance of 180 m.*
>
> *D6 This is the distance between unbarricaded magazines.*
>
> *D7 This column is called Inhabited Building Distance. It applies to very busy roads (more than 5,000 vehicles in a 24-hour period) and to buildings where people may*

assemble. Note that there are minimum distances (new requirements): 270 m to an isolated inhabited building and 400 m to groups of buildings.

D8 This is the distance (new requirement) from a magazine to a building of vulnerable construction. Vulnerable construction includes high-rises, schools, hospitals, etc. Note that this is twice the normal Inhabited Building Distance found in D7. There is an overriding distance of 400 m.

FIGURE 18-4 SAFETY DISTANCE FOR DIFFERENT QUANTITIES OF EXPLOSIVES

QUANTITY-DISTANCE TABLE FOR HAZARD DIVISIONS 1.1 & 1.5

NEQ	Quantity-Distance (metres)							
kg	D1	D2	D3	D4	D5	D6	D7	D8
50	5	10	18	30	180	45	270	400
60		10	19	32		45		
70		10	20	33		45		
80		11	21	35		48		
90		11	22	36		50		
100		12	23	38		53		
120		12	24	40		55		
140		13	25	42		60		
160		14	27	44		63		
180		14	28	46		65		
200	5	15	29	47		65		
250	6	16	31	51		70		
300	6	17	33	54		75		
350	6	17	34	57		80		
400	6	18	36	59		83		
450	7	19	38	62		88		
500	7	20	39	64		90		
600	7	21	42	68		95		
700	8	22	45	72		100		400
800	8	23	48	75		105		415
900	8	24	50	78		108		430
1000	8	24	53	80		113		445
1200	9	26	58	86		120		475
1400	9	27	63	90		125		500
1600	10	29	68	94		130		520
1800	10	30	73	98		135		540
2000	11	31	78	105	180	140	270	560
2500	11	33	90	110	185	153	275	610
3000	12	35	105	120	205	163	305	640
3500	13	37	115	125	220	170	330	680
4000	13	39	130	130	235	178	350	710
5000	14	42	140	140	255	190	380	760
6000	15	44	150	150	270	203	405	810
7000	16	46	155	155	285	213	425	850
8000	16	48	160	160	300	223	445	890
9000	17	50	170	170	310	235	465	930
10000	18	52	175	175	320	240	480	960
12000	19	55	185	185	340	255	510	1020
14000	20	58	195	195	360	270	540	1080
16000	21	61	205	205	375	280	560	1120
18000	21	63	210	210	390	295	590	1180
20000	22	66	220	220	405	305	610	1220
25000	24	71	235	235	435	325	650	1300
30000	25	75	250	250	460	345	690	1380
35000	27	79	265	265	485	365	730	1460
40000	28	83	275	275	510	380	760	1520
50000	30	89	295	295	550	410	820	1640
60000	32	94	315	315	580	435	870	1740
70000	33	99	330	330	610	460	920	1840
80000	35	105	345	345	640	480	960	1920
90000	36	110	360	360	670	500	1000	2000
100000	38	115	375	375	690	520	1040	2080
120000	40	120	395	395	730	550	1100	2200
140000	42	125	420	420	770	580	1160	2320
160000	44	135	435	435	810	610	1220	2420
180000	46	140	455	455	840	630	1260	2520
200000	47	145	470	470	870	650	1300	2600
250000	51	155	510	510	940	700	1400	2800

Source: Natural Resources Canada, http://www.nrcan.gc.ca/mms/explosif/over/qd_e.html

18.9 COMMUNICATIONS

La Blache Property counts on good telecommunication services due to the presence of multiple operational mines in the vicinity. However, as the mine continues to develop and the long-term demand increases it may be necessary to upgrade the existing communications facilities to meet these requirements.

The communication system within the mine site and facilities will rely on Ethernet links. A single-mode fiber optic backbone will be installed throughout the site and buildings to accommodate both automation and corporate services, with each using separate fiber cables.

The site will be connected to external internet and telephone services via fibre optic cable or satellite which will also include wireless communication through local telecom service providers.

The telecom service will be connected to the central office building which will host the communication interface. The telecommunication system will consist of the following components:

- Process and Security Camera System;
- Fire Detection System;
- Mobile Radio System; and

The mobile radio system will be provided during the construction and operation phases, covering the processing plant, construction site, and unloading area.

18.10 SITE ROADS

There are currently no roads at the site apart from exploration roads to access drill pads and various parts of the camp.

18.10.1 HAUL ROADS

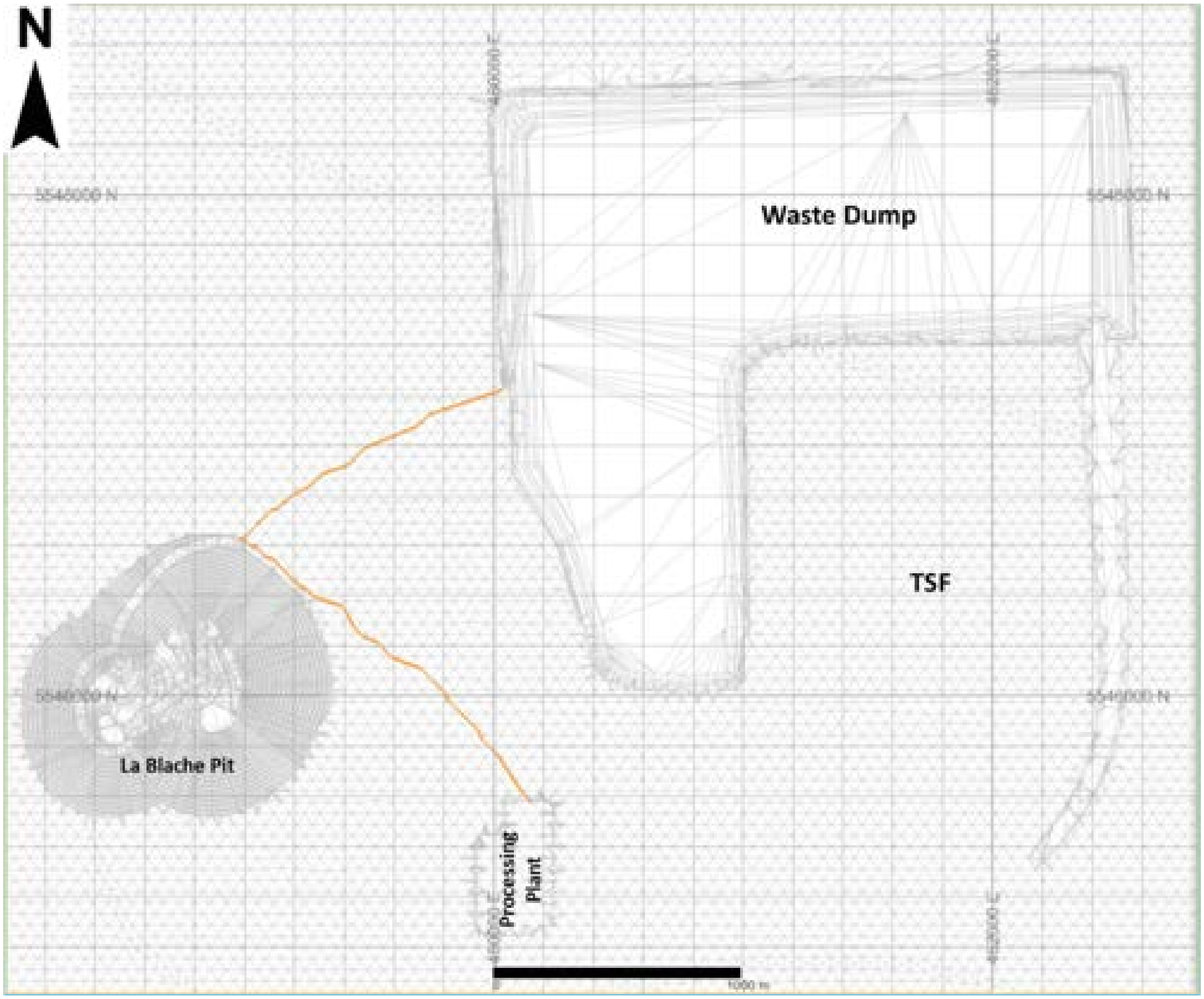
Haulage roads within the project site limits will be constructed starting from the La Blache pit to the waste dump and processing plant.

The haul road dimensions outside the pit will be designed with a running surface of 35m width.

The designed haul roads are based on a flat topo generally with small variation in elevation and gentle slope. However small water bodies are intercepted near the pit and waste dump entrances which will make it necessary to implement a safe and feasible hauling road for larger equipment on these water bodies. The conceptual layout of haul roads is illustrated in Figure 18-5.

The conceptual haul roads were conducted using RoadEng 11 ® software which is used for mine road optimization. The total length of these haul roads is approximately 2.9 km.

FIGURE 18-5 CONCEPTUAL HAUL ROADS



18.11 SITE ACCESS ROAD

The Property site might be accessed by provincial Highway 138 which links Montreal and Natashquan and follows the north shore of the St. Lawrence River, and Highway 389 which links Baie-Comeau to the Labrador border. Forestry gravel roads also run along both the eastern and western sides of the property just outside of the claims. However, current access to the property is by helicopter only.

Creating road access to the site will be a major capital expense, the cost of which might be $50M or more if the connection to the provincial highway system is assumed to be located at or near Micoua.

It has been assumed for the purposes of this study that road access to the La Blache property will be in place through collaboration between the private sector, and provincial and federal governments.

18.12 ACCOMMODATION CAMP

The La Blache Property will require a full-sized camp with sleeping and eating facilities plus all other amenities required to accommodate roughly 700 persons of which approximately 350 to 400 will be on site at any given time during the peak production years.

18.13 AIRSTRIP

There is currently infrastructure for helicopters, with the nearest airstrip being located approximately 130 km away to the southeast of La Blache Property.

18.14 PORT FACILITIES

The nearest port facilities are located at Baie Comeau but they are relatively limited compared to those at Sept-Iles.

Well established port facilities exist at Sept Iles but are further from the Property.

The facilities at either port could potentially allow concentrate to be transported by ship or barge rather than road or rail if so desired by buyers of the La Blache concentrate products.

18.15 CONCENTRATE HAULAGE

The Ti and Fe products will be transported by highway haulage trucks from site to railway transhipment facilities, port transhipment facilities, or possibly even directly to customers.

18.16 SECURITY

Due to the remote location the threat of attack or major threat is minimal and only standard mine site security necessities are anticipated.

Security infrastructure will include a guard house and entry gate, site wide CCTV system and may or may not include a perimeter fence depending on the recommendations of a security/risk review prior to construction.

19. MARKET STUDIES AND CONTRACTS

19.1 INTRODUCTION

The economic for the La Blache Property are mainly driven by titanium dioxide (TiO_2) revenues.

The world market for TiO_2 is currently in the range of $25B globally and expected to climb to over $30B by 2030.

The ability of the global market to absorb the levels of concentrate to be produced by the Property without significantly affecting their selling prices is a primary assumption of this study and will require more detailed studies to better determine what effects might arise.

19.2 MARKET STUDIES AND CONTRACTS

The process flowsheet for the La Blache Property shows the production of high grade Fe_2O_3 product and high grade TiO_2 products. It was assumed that vanadium products will not be produced or directly sold as part of this study,.

The prices used for the optimisation and cashflow models were:

Parameters	**Value**	**Unit**
Sales Revenue		
Price Fe_2O_3	125	USD/t
Price TiO_2	2200	USD/t

19.3 PRODUCT QUALITY

The Iron content in the plant feed is 41.06% while the Titanium content is 10.61%. In addition, there is 0.18% of Vanadium content which might be extracted as a separate concentrate. However, the metallurgical testwork performed for this study focused on Iron and Titanium products only, presenting the Vanadium only as a potentially payable contributor to be examined at the PFS level of study.

The final product grades were 99.5% for the Fe_2O_3 and 99.8% for the TiO_2.

19.4 SALES CONTRACTS

There are currently no sales contracts in place for this study is a PEA and preliminary in nature.

Potential off take customers may be engaged to obtain an initial assessment of demand, duration and definition of what prices might be prudent to model for a long-term offtake agreement at the PFS level of study.

19.5 FE_2O_3 MARKETING AND CONCENTRATE TERMS

Both North American and Global ferric oxide markets are robust.Ferric oxide (Fe_2O_3) is used in the iron industry in the manufacturing of alloys and steel. Naturally occurring ferric oxide is an inorganic compound also known as hematite.

The growing adoption of ferric oxide for use in steel production is the primary driver of its global (ferric oxide) market. Key end-use industries for ferric oxide include construction, energy, packaging, transportation, and consumer appliances. Steel production also finds usage in the manufacturing of a multitude of parts for consumer products as well as in domestic, commercial and civil structures.

Increased acceptance of iron oxide nanoparticles in wastewater treatment is a significant prospect for producers in the market. However, regulations on mining activities may restrain market growth. The Global Ferric Oxide Market is anticipated to record a 5% annual growth rate to attain a value of USD $2,414 billion by the year 2030.

Top producers of ferric oxide include Carajás Mine (Vale) (Brazil), SIMEC (AustraliaShree Minerals Ltd (Australia), Atlas Iron Pty Ltd (Australia), Cleveland-Cliffs Inc (US), Karara Mining Ltd (Australia), Western Australia Iron Ore (BHP) (Australia), Applied Minerals Inc (US), Fortescue Metals Group Ltd (Australia), and Labrador Iron Mines (Canada).

FIGURE 19-1 FE$_2$O$_3$ PRICING FROM 2013 TO 2022

Source: https://tradingeconomics.com/commodity/ironore62

19.6 TIO_2 MARKET AND CONCENTRATE TERMS

The global titanium dioxide market size was valued at USD 18.82 billion in 2022 and is expected to grow at a compound annual growth rate (CAGR) of 6.3% from 2023 to 2030. The market is expected to witness significant growth owing to the excessive consumption of paints and coatings in various end-use industries including automotive, construction, and others. The market growth can be credited to the increasing demand for titanium dioxide (TiO_2) from the end-user industries. Increasing demand from various end-use industries such as paints and coatings, textile, printing inks, plastics, and others are significantly driving the demand for pigments globally (Grandview Research, 2023).

FIGURE 19-2 U.S. TITANIUM DIOXIDE MARKET

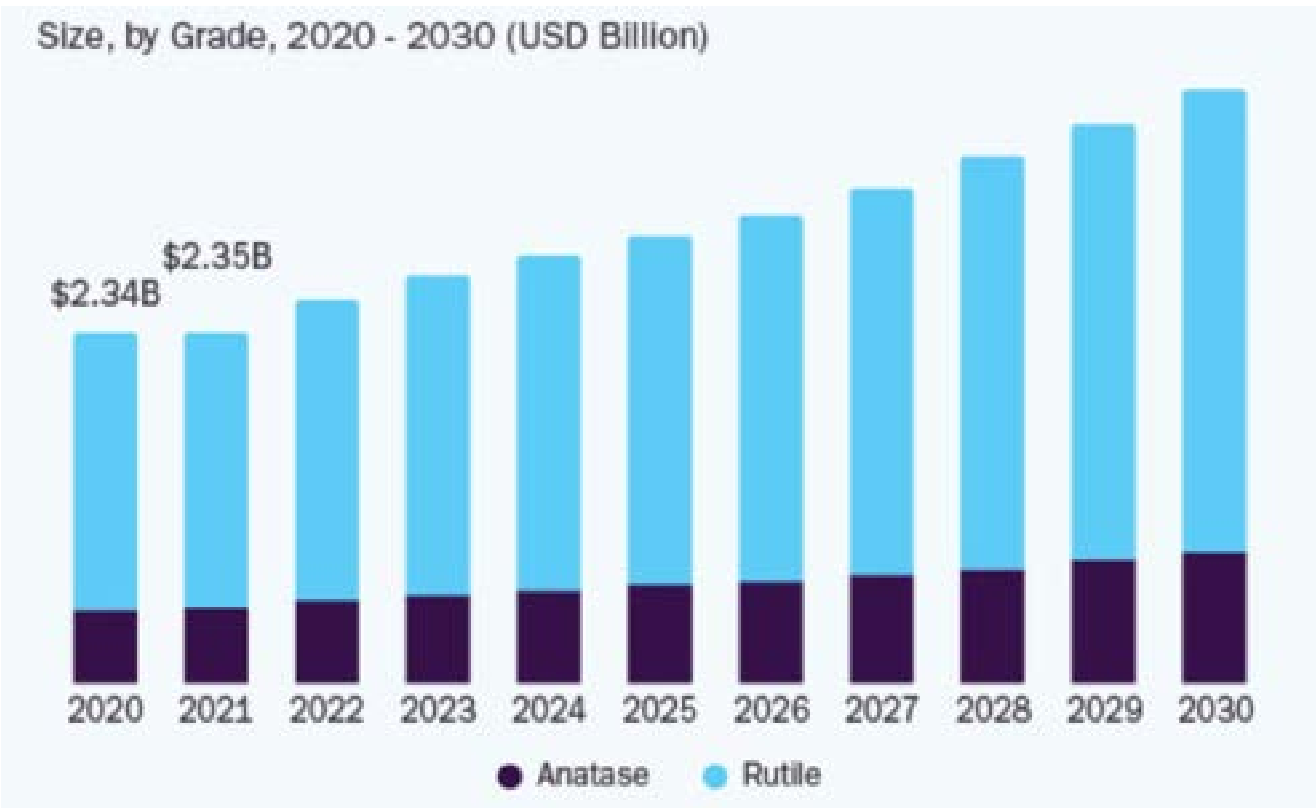
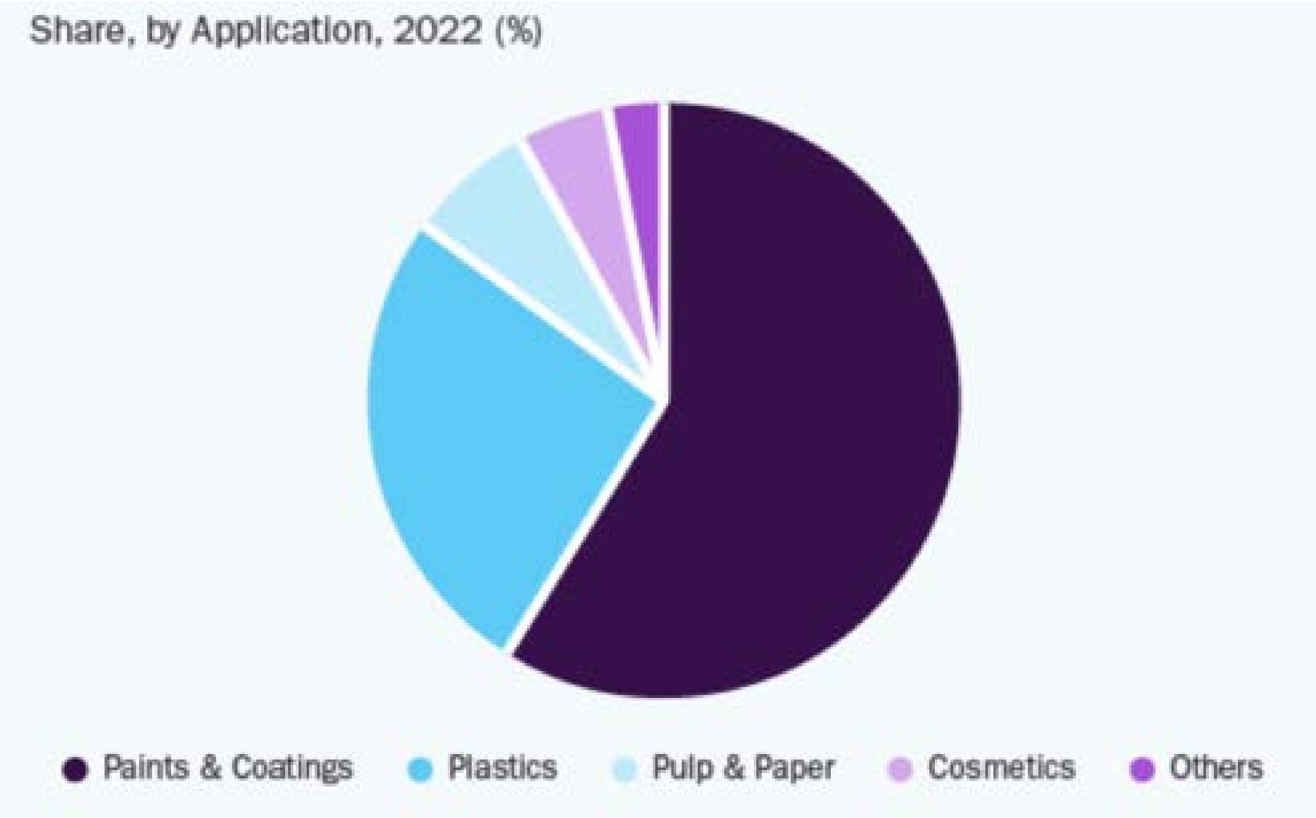


FIGURE 19-3 GLOBAL TITANIUM DIOXIDE MARKET



19.7 VANADIUM CONCENTRATE MARKETING AND CONCENTRATE TERMS

The production and sale of a vanadium concentrate products at La Blache were not considered in the economics of the project. However, there may be additional potential value to the project that might be realized from producing a vanadium concentrate which should be examined at a later stage of study.

19.8 FOREIGN EXCHANGE RATE

The Canadian to US dollar foreign exchange rate used in this study was $1.35 CAD = $1.00 USD.

20. ENVIRONMENTAL STUDIES, PERMITTING, AND SOCIAL OR COMMUNITY IMPACT

20.1 PROJECT STATUS

No environmental studies have been conducted to date as the preliminary economics of the Property needed to be evaluated prior to this next level of expenditure commitment to advance the project. This chapter also provides an overview of the regulatory context applicable to the Property, including the Environmental Impact Assessment (EIA) procedure, applicable laws and regulations and preliminary permitting requirements. This includes those for mine closure. Additionally, this chapter presents the different communities which will need to be consulted with as a key part of the permitting process. At present there are no known environmental liabilities or issues that could materially impact the issuer's ability to extract the mineral resources. The site has only seen exploration scale work, including reclaimed exploration drill pads as the largest known impact.

20.2 REGULATORY APPROVAL PROCESS

20.2.1 OVERVIEW

The La Blache Property would be subject to the Quebec *Environmental Quality Act* and the *Canada Impact Assessment Act* as the project scope is anticipated to exceed the threshold for review under both of these Acts. The Property location is subject to Chapter I provisions of the *Environment Quality Act* (EQA). Environmental assessment process follows a 5-step established process.

The environmental assessment process for the Property has yet to commence as the PEA is the most advanced evaluation of the Property conducted to date. Previous endeavours did not advance beyond mineral resource estimation and preliminary metallurgical studies, so environmental baseline, environmental and human impact assessments, and decisions to advance the Property towards approvals for an operating mine have yet to occur.

It should be specifically noted that the process described in this chapter is a framework, which has not been initiated on the Property and these requirements must still be conducted to secure the appropriate permits and approvals which incorporate detailed designs and requirements in the jurisdiction to construct and operate the mine. In addition to mine site engineering and environmental baseline studies, offsite studies will be necessary to support permitting of offsite infrastructure such as transportation routes, power transmission line, and concentrate load-out.

Throughout all phases of environmental and permitting studies, Temas will need to engage with communities, Indigenous communities and interests, and regulators.

20.2.2 QUEBEC AUTHORIZATIONS, LICENCES, AND PERMITS

The Property will require a ministerial authorization to operate. The authorization is provided under the EQA's section 22. The process to apply for authorization is provided in the Regulation respecting ministerial authorizations and declarations of compliance in environmental matters. This regulation provides the information required according to the units concerned (industrial establishments, water withdrawals, mining facilities such as roads, dikes, waste rock and tailings management facilities, access wells, borrow pits, water management or treatment, wetlands and bodies of water, etc.). The authorization may be the subject of several separate applications and the Property may be divided into units appropriate to facilitate authorizations, from deforestation and site preparation, to operations and industrial depollution declarations. In addition to the ministerial authorization, the following other permits or authorizations must be obtained at the provincial level. The list presented below is non-exhaustive and should be reviewed as the Property becomes better defined:

- Restoration plan (*Mining Act*, s. 232.1);
- Permit for explosives (Regulation under the Act respecting explosives, s.II);
- Permit for the use of high risk petroleum equipment (Safety Code, s.120; Construction Code, Chap. VIII, s.8.01);
- Land lease for mining waste (*Mining Act*, s. 239 and an Act respecting the lands in the domain of the State, s.47) (see 8.7.3);
- Authorization to deposit mining waste in the approved location (*Mining Act*, s. 241);
- Permit for tree clearing (Regulation respecting standards of forest management for forests in the domain of the State); and
- Authorization under section 128.7 of the Act respecting the conservation and development of wildlife.

There may be a need for potential compensation for loss of wetlands displaced by Property infrastructure. If the design of the operation does include elimination of existing wetlands, an appropriate design will need to be created in conjunction with the environmental authorities. This should be conducted so as to apply the Act for conservation of wetlands and bodies of water (Bill 132, 2017, chapter 14). Informed by wetland site studies, opportunities to design site layout to minimize wetland impacts would be investigated.

20.2.3 FEDERAL AUTHORIZATIONS, LICENCES, AND PERMITS

The Project will require a number of federal authorizations, licences and permits to operate. Under the *Impact Assessment Act* (IAA-2019) the project as proposed in this report meets the definition of a designated project, under DORS/2019-285 section 2, 18(c.) "a new metal mine, other than a rare earth element mine, placer mine or uranium mine, with an ore production capacity of 5 000 t/day or more;".

The Property will be subject the Metal and Diamond Mine Effluent Regulations (MDMER) enabled by the *Fisheries Act*. The regulations require the Property to achieve the specified effluent discharge standards, to implement a comprehensive Environmental Effects Monitoring program, and to provide compensation for the harmful alteration, disruption or destruction of fish habitat. Deposition of tailings into fish habitat would require listing under Schedule 2 of the MDMER.

Federal review processes will review the following considerations:

- Health effects of the mine;
- Social effects;
- Economic effects;

- Fish and fish habitat (following *Fisheries Act*);
- Aquatic species (following *Species at Risk Act*);
- Migratory birds (*Migratory Birds Convention Act*);
- Climate-related and greenhouse gas emission effects; and
- Projects that have effects on the health and socioeconomic conditions, physical and cultural heritage and current use of lands and resources for traditional purposes of aboriginal peoples.

20.2.4 COMMUNITY ENGAGEMENT AND CONSULTATION REQUIREMENTS

Temas is committed to community engagement and involvement in the Property. To date the Property has seen limited surface programs and exploration drilling which contributed to this report. As a result of the nature of the work conducted by Temas to date, community engagement has been accordingly limited in scope and scale. The company has had notification meetings with the Pessamit Innu and the Metis.

20.2.5 PERMITTING ELEMENTS

Development and operation of the mine and associated infrastructure will affect a range of aquatic and terrestrial habitat types and wildlife species. Operations may also affect air quality at the mine site and surrounding locations.

A number of considerations evaluated as part of the permitting process, including mitigation measures, will need to be developed for the Property prior to submission of the Environmental Impact Assessment Application. The following types of management plans may need development:

- Fisheries Offsetting Measures Plan;
- Fish and Fish Habitat Management Plan;
- Access Road Management Plan;
- Aquatic Effects Monitoring and Management Plan;
- Waste Rock Management Plan;
- Tailings Management Plan;
- ML/ARD Prediction and Prevention Management Plan;
- Water Management Plan;
- Air Quality Management Plan;
- Noise Management Plan;
- Materials Handling and Management Plan;
- Soil Management Plan;
- Erosion Control and Sediment Control Plan;
- Vegetation Management Plan;
- Wildlife Management Plan;
- Spill Contingency and Emergency Response Plan;
- Waste Management Plan;

- Airport and Aircraft Management Plan;
- Archaeological and Heritage Site Protection Plan; and
- Closure and Reclamation Plan.

20.2.6 CLOSURE, DECOMMISSIONING, AND RECLAMATION

In Quebec, anyone who carries out a mining operation determined by regulation must submit a reclamation and restoration plan, referred to as a "closure plan" in respect of the end land use on which the activities take place for approval by the Ministère de l'Énergie et des Ressources naturelles (MERN) and submit financial guarantee for conducting the reclamation work. Approval is conditional upon a favourable opinion from the Ministère de l'Environnement et de la Lutte contre les changements climatiques (MELCC). MERN and MELCC have prepared "Guidelines for preparing mine closure plans in Quebec".

The Property will be developed, operated and closed with the objective of leaving the property in a condition that will mitigate potential environmental impacts and restore the land to agreed-upon end land use objectives. Progressive reclamation activities will be carried out concurrent with mine operation wherever possible, and final closure and reclamation measures will be implemented at the time of mine closure. The closure plan will be developed with the required level of detail to be filed with the provincial authorities, and demonstrate collaboration with communities and Indigenous interests.

Reclamation planning for the Property will need to address the following key reclamation units:

- Open pit;
- Waste rock storage;
- Tailings Storage Facility;
- Water treatment facility;
- Mine site facilities;
- Landfill;
- Landfarm; and
- Access road.

Each unit will require detailed reclamation prescription. Studies to properly define the below categories will be required:

- Pre-mine land uses and proposed end land use objectives;
- Pre-mine land capability or productivity and proposed post-mine capability or productivity objectives for all significant land uses; this information is required to create the property reclamation program and is used as a measure of reclamation success;
- Plans for characterizing the soils and overburden resource for reclamation purposes;
- Plans for salvaging, stockpiling, and replacing soils and other suitable growth media;
- Consideration of future erosion and mass wasting for long-term physical stability;
- Treatment of structures and equipment;

- Reclamation of water courses;
- Tailings impoundment reclamation;
- Road reclamation;
- Pre- and post-mine trace element concentrations in soils and vegetation;
- The general composition, size, shape, and location of all consolidated and unconsolidated geological units disturbed by the Property;
- Prediction of the geochemical performance of the various geological units and a determination of the potential for deleterious effects from disturbances resulting from operations;
- Determination of disposal and remediation methods, their effectiveness, and quantities by area requirements;
- Determination of monitoring requirements for extraction, waste handling, and disposal operations;
- Programs for prevention, treatment, and control of metal leaching;
- Toxic chemical disposal;
- Environmental monitoring;
- Preliminary characterization of surficial and bedrock materials for geotechnical assessments; and
- Closure and reclamation prescriptions for mine site infrastructure:
- Processing facilities;
- Tailings management facility;
- Pit and underground workings;
- Access roads;
- Water storage facilities; and
- Other significant transportation or utilities infrastructure.

20.2.6.1 RECLAMATION OBJECTIVES

The primary objective of the reclamation plan will be to return, where practical, all areas disturbed by mining operations to their average pre-mining land use and capability. Before exploration began in the Property area, the principal land uses were forestry, and wildlife habitat that supported hunting, and trapping. Involvement of First Nations and community interests in defining the reclamation objectives in the mine closure and reclamation planning is expected to occur. The following goals are implicit in achieving this primary objective:

- The long-term preservation of water quality within and downstream of decommissioned operations;
- The long-term stability of engineered structures;
- The removal and proper disposal of all access roads, structures, and equipment that will not be required after the end of the mine life;
- The long-term stabilization of all exposed erodible materials;
- The natural integration of disturbed areas into the surrounding landscape, and the restoration of a natural appearance to the disturbed areas after mining ceases, to the best practical extent;

- An integrated passive reclamation system to eliminate long term monitoring; and
- The establishment of a self-sustaining cover of vegetation that is consistent with planned forestry and wildlife needs.

20.2.6.2 ACCESS ROAD

Road access to the site may be required during the post-closure monitoring phase, and accordingly would be maintained to the level necessary to support post-closure activities.

20.2.6.3 ESTIMATED CLOSURE COSTS

A mining company whose closure plan has been approved must provide the MERN with a financial guarantee in accordance with the standards set out in the regulation. The amount of the guarantee must cover all the estimated reclamation costs for the entire mining site.
The guarantee must be paid in three instalments, in the two years following the date on which the plan is approved, as follows:

- An initial instalment covering 50% of the total amount of the guarantee, within 90 days of receiving approval for the plan.
- Two subsequent instalments, each covering 25% of the total amount of the guarantee, on the first two anniversaries of the date on which the plan was approved.
- A detailed closure cost estimate has yet to be prepared for the La Blache Property. The closure costs for the PEA-level mine plan are discussed in Section 21.1.13.

20.2.6.4 POST CLOSURE MONITORING

Long-term monitoring requirements will be developed and defined in detail during the operational phase of the mine life. During the active closure and reclamation phase, when the mine is being decommissioned and reclaimed, monitoring will continue at the same level as during the operational phase. Once the major closure and reclamation activities are completed, and the mine moves into the post-closure phase, the monitoring requirements are anticipated to decrease. Post-closure monitoring will likely consist of the following:

- Water quality monitoring of applicable sampling stations, including the effluent treatment plant discharge, retention pond, open pit discharge and downstream flows on yet-to be identified creeks downstream, including groundwater quality at specified locations;
- Environmental effects monitoring including studies on water quality, sediment quality, benthos and fish to assess effects on the aquatic receiving environment;
- Engineering inspections by qualified persons of the retention pond, and all engineered structures including the effluent treatment plant and landfill; and
- Revegetation success for reclaimed and revegetated landscapes.

Water quality will be monitored on a regular basis by the on-site effluent treatment plant staff. It is assumed that daily measurements of the plant inflows and outflows will be required as part of the plant operation.

Monitoring requirements will decrease once water quality meets discharge criteria.

20.3 SOCIO-ECONOMIC CONSIDERATIONS

20.3.1 REGIONAL OVERVIEW

The Cote Nord region of Quebec exhibits a larger dependence on primary resource industries, specifically mining and forestry, than the rest of the province of Quebec. The region is defined by a number of small communities, which are generally scattered along the coast of the St. Lawrence seaway. The larger center closest to the Property is Baie-Comeau, located along the east-west corridor of Highway 138. This community is a hub for the forest industry and there is also an aluminum smelter and port facilities and various supply and service industries.

The region is further characterized by its remoteness. Communities are dispersed along the coastline and are connected by Highway 138. In general, the population of this part of the province has been in decline in recent years, with a population reduction of 4.3% between 2016 and 2021 according to StatsCan census data (https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/prof/details/page.cfm?Lang=E&SearchText=Cote%2DNord&DGUIDlist=2021S05002480&GENDERlist=1,2,3&STATISTIClist=1&HEADERlist=0).

Roughly 16% of the Cote Nord region identify as First Nations. The region is a portion of the traditional lands of the Innu. The nearest band is the Pessimit Innu band, located southwest of Baie Comeau, in the community of Pessimit.

20.3.2 PREVIOUS STUDIES

Baseline socio-economic and cultural studies with a focus on this Property have not been previously conducted over the area.

20.3.3 RECOMMENDED FUTURE STUDIES

If the company elects to advance this Property, Temas will need to conduct the regional socioeconomic baseline evaluation as a component of the EIA and permitting submissions. Statistics Canada has completed an updated census (2021) and updated data will be available through provincial sources and municipal governments which will need to be considered and incorporated.

20.4 FIRST NATIONS

The Property is located within the Territory of the Innu Nation. Consultation with First Nations is required to ensure Indigenous interests are considered and efforts are made to address and/or accommodate First Nations issues and concerns. The Government of Quebec provides guidance to proponents through the Provincial First Nations Consultation Policy (2010). Temas will need to develop a First Nations engagement strategy and plan that meets the current policy and industry best practice for First Nations engagement. As limited work has been conducted to date on site, the previous engagement of Temas with the Innu community has been limited to notification of intention to conduct drilling at site.

20.4.1 INNU OF PESSAMIT NATION

The Traditional Territory of the Innu Nation covers approximately 240,000 km^2. In 2005 the Betsiamites band council was replaced by the Innu Council of Pessamit of the bande des Innus de Pessamit, with the Toponymy commission acknowledging the change of name.

20.4.1.1 CURRENT AND FUTURE ENGAGEMENT

Temas's engagement to date with First Nations has been limited to notifications owing to the early exploration phase of the Property. As the project advances, Temas will increase the scope of engagement, including through mutually agreed communications and engagement protocols, recording these efforts as required by regulation.

20.4.2 MÉTIS COMMUNITY

The Métis population of Quebec is stated by Statscan to be roughly 41,000 members and are a part of the Cote Nord community, including an established association of Métis specific to the Cote Nord Region.

20.4.2.1 CURRENT AND FUTURE ENGAGEMENT

Temas has not been successful in attempts to engage with the Metis community previously, but is committed to continuing to make efforts to engage and involve the community in the process as the Property advances.

20.4.3 TRADITIONAL ECOLOGICAL KNOWLEDGE

Traditional use and traditional ecological knowledge studies have not previously been conducted, these studies will be required in conjunction with the Environmental Assessment process and prior to entering into the permitting process. Temas anticipates an important role for First Nations in undertaking these studies.

21. CAPITAL AND OPERATING COSTS

The capital and operating costs outlined in this report chapter are based on the design criteria and engineering work performed by the individual QPs under their areas of responsibility and expertise.

Sources used for the estimates include vendor quotations historical data, benchmark costs at similar operations, CostMine databases, empirical factors and first principle calculations where and as appropriate.

The La Blache Preliminary Economic Analysis Study (PEA) involves the development of an open pit mine, the construction of on-site processing facilities and all infrastructure required to support those activities.

The main components that form the basis of this study include:

- An open pit mine;
- Mine waste rock storage areas and stockpiles;
- Run of mine (ROM) stockpiles;
- A Titanium dioxide (TiO_2) and Iron oxide (Fe_2O_3) with a feed capacity of 7.8 million tpy and output of 4.7 million tpy concentrate products;
- A waste rock/tailings co-disposal facility;
- Power transmission to site and distribution on site;
- Main highway access and site access roads;
- Site buildings and support infrastructure;
- Water supply and distribution systems;
- Wastewater impoundment and treatment facilities;
- Explosives and cap storage facilities;
- Mine closure and reclamation; and
- Titanium dioxide (TiO_2) and Iron oxide (Fe_2O_3) concentrates will be transported to an offsite location located in Baie Comeau for shipping to the final customer.

The cost estimates for each report chapter have been prepared by the following parties:

- ERM for the open pit capital and operating costs;
- Magemi Mining Inc. for the concentrator plant capital and operating costs;
- Magemi Mining Inc. and ERM for the site infrastructure capital and operating costs;
- ERM for the mine closure capital costs; and
- Magemi Mining Inc. and ERM for the indirect capital costs.

21.1 CAPITAL COSTS

The total capital cost over the 14-year LOM including pre-production and sustaining capital costs is CAD$ 1,632 million dollars.

21.1.1 BASIS OF ESTIMATE

The capital cost estimate for La Blache has been prepared to an accuracy of + 30% / - 20% based on a 10% to 40% engineering completion ratio to conform with the requirements for an American Association of Cost Engineers (AACE) Class 3 Estimate.

All capital cost estimates are based on Q4 2023 Canadian Dollars (CAD$) and an assumed US to Canadian Dollar ratio of $1 USD = $1.35 CAD.

21.1.2 PRE-PRODUCTION PERIOD CAPITAL COST SUMMARY

Total pre-production capital costs will be CAD$ 1,078 million (inclusive of contingency) as shown in Table 21-1, which include capitalized operating costs incurred before the open pit mine moves into the production phase.

TABLE 21-1 PRE-PRODUCTION CAPITAL COSTS

Cost Centre	Description	Cost (CAD$ M)
Direct CAPEX Costs		
1000	Open Pit Mining (Equipment and Waste Stripping)	466.2
3000	Mineral Processing	95.0
4000	Power, Electrical and Instrumentation	69.0
5000	Site Infrastructure and Support Services	103.1
6000	Water Management Systems	34.2
7000	Tailings and Mine Waste Management Facilities	20.9
Total Direct CAPEX Costs		*788.5*
Owner and Indirect CAPEX Cost Summary		
8000/9000	Indirect and Owner Costs	150.5
	Mine Closure Bond	30.0
Total Indirect CAPEX Costs		*180.5*
9600	Contingency	108.7
Total Pre-Production CAPEX Costs		***1,078***

21.1.3 SUSTAINING CAPITAL COST SUMMARY

Total sustaining capital costs incurred over the production phase of the mine will be CAD$ 544.5 million as shown in Table 21-2.

TABLE 21-2 TOTAL SUSTAINING CAPITAL COSTS

Cost Centre	Description	Cost (CAD$ M)
Direct SUSEX Costs		
1000	Open Pit Mining	249.3
3000	Mineral Processing	66.5
4000	Power, Electrical and Instrumentation	17.1
5000	Site Infrastructure and Support Services	40.5
6000	Water Management Systems	10.0
7000	Tailings and Mine Waste Management Facilities	7.0
Total Direct SUSEX Costs		*390.4*
Owner and Indirect SUSEX Cost Summary		
9000	Indirect Costs	20.3
	Owner Costs	7.0
Total Indirect Costs		*27.4*
9600	Contingency	126.8
Total SUSEX		***544.5***

21.1.4 OPEN PIT MINE CAPITAL COSTS

Capital costs for the open pit mine over the pre-production period were estimated to be CAD$ 185.6 million with an additional CAD$249.3 million in sustaining capital costs over Life of Mine (LOM). All costs were estimated by ERM.

The breakdown of open pit mining costs between the pre-production and capital costs are summarized in Table 21-3. Note that the pre-production costs associated with waste stripping are not included.

All mobile equipment (including spares) required to start the pre-stripping and production phase for open pit mining will be purchased in the preproduction period as summarized in Table 21-4.

TABLE 21-3 BREAKDOWN OF OPEN PIT MINING CAPITAL COSTS

Description	Pre-Production	Sustaining	Total
	(CAD$ M)	(CAD$ M)	(CAD$ M)
Mobile Equipment	185.2	87.7	273.0
Explosives Storage	0.3		0.3
Fixed Equipment	0.1	161.6	161.7
Total	**185.6**	**249.3**	**434.9**

TABLE 21-4 MOBILE EQUIPMENT LIST

Description	Quantity
Excavator	5
Haul Truck	24
Rotary Drills	5
Bulldozer	10
Explosives Truck	2
Excavator – Spare	2
Haul Truck - Spare	4

21.1.5 MINERAL PROCESSING CAPITAL COSTS

Capital costs for the on-site mineral processing facilities incurred during the pre-production period were estimated to be CAD$ 95.0 million, sustaining capital costs to be CAD$66.5M. Total costs over the LoM are estimated at CAD$ 161.6 million. All mineral processing costs were estimated by Magemi Mining.

The capital estimates include the costs of purchasing the fixed equipment and construction of the crushing and DMS plants as summarized in Table 21-5.

TABLE 21-5 SUMMARY OF CAPITAL COSTS FOR MINERAL PROCESSING FACILITIES

Description	Pre-Production	Sustaining*	Total
	(CAD$ M)	(CAD$ M)	(CAD$ M)
Equipment	45.7	32.0	77.7
Electrical	9.9	6.9	16.8
Structural Steel	9.2	6.5	15.7
Concrete	9.7	6.8	16.4
Piping and Instrumentation	13.7	9.6	23.2
Mill Building	5.3	3.7	9.1

Description	Pre-Production	Sustaining*	Total
	(CAD$ M)	(CAD$ M)	(CAD$ M)
Concentrate Building	0.7	0.5	1.3
Insulation	0.8	0.6	1.4
Total	**95.0**	**66.5**	**161.6**

*5% annually for 14 years

21.1.6 POWER, ELECTRICAL AND INSTRUMENTATION CAPITAL COSTS

Capital costs for on-site power, electrical and instrumentation incurred during the pre-production period were estimated to be CAD$ 69.0 million and sustaining capital costs were $17.1M for a total of $86.1M over LoM. All costs were estimated by *Magemi Mining and ERM*.

The capital estimate includes the costs of purchasing the equipment and constructing the main power line to site as summarized in Table 21-6.

TABLE 21-6 SUMMARY OF CAPITAL COSTS FOR POWER, ELECTRICAL, AND INSTRUMENTATION

Description	Pre-Production	Sustaining*	Total
	(CAD$ M)	**(CAD$ M)**	**(CAD$ M)**
Main Power to Site	55.8	7.8	63.6
Site Power	13.2	9.3	22.5
Total	**69.0**	**17.1**	**86.1**

21.1.7 SITE INFRASTRUCTURE AND SUPPORT SERVICES CAPITAL COSTS

Capital costs for site infrastructure and support services incurred during the pre-production period were estimated to be CAD$103.1 million. Sustaining capital costs were estimated at CAD$40.5M and total capital costs were CAD$143.5M. All costs were estimated by *Magemi Mining and ERM*.

The capital estimate includes the costs of purchasing mobile and fixed equipment required for site support services, communications equipment as well as constructing site support buildings as summarized in Table 21-7.

TABLE 21-7 SUMMARY OF CAPITAL COSTS FOR SITE INFRASTRUCTURE AND SUPPORT SERVICES

Description	Pre-Production (CAD$ M)	Sustaining (CAD$ M)	Total (CAD$ M)
Mobile Equipment	19.2	13.4	32.6
Fixed Equipment	15.0	10.5	25.5
Site Buildings and Roads	68.6	16.4	85.0
Site Communications	0.3	0.2	0.5
Total	**103.1**	**40.5**	**143.5**

21.1.8 WATER MANAGEMENT SYSTEMS CAPITAL COSTS

Capital costs for site water management systems incurred during the pre-production period were estimated to be CAD$34.2 million and sustaining capital costs of $10M. All costs were estimated by *Magemi Mining and ERM*.

The capital estimate includes the costs of constructing a water treatment plant as summarized in Table 21-8.

TABLE 21-8 SUMMARY OF CAPITAL COSTS FOR SITE WATER INFRASTRUCTURE

Description	Pre-Production (CAD$ M)	Sustaining (CAD$ M)	Total (CAD$ M)
Site Water Infrastructure	34.2	10.0	44.2
Total	**34.2**	**10.0**	**44.2**

21.1.9 TAILINGS AND MINE WASTE MANAGEMENT FACILITIES CAPITAL COSTS

Capital costs for the mine waste and tailings storage facilities incurred during the pre-production period were estimated to be CAD$40.9 million whereas sustaining capital costs will be CAD$7.0 million as summarized in Table 21-9. All costs were estimated by *Magemi Mining and ERM*.

TABLE 21-9 SUMMARY OF CAPITAL COSTS FOR TAILINGS AND MINE WASTE MANAGEMENT FACILITIES

Description	Pre-Production (CAD$ M)	Sustaining (CAD$ M)	Total (CAD$ M)
Tailings Management Facility	20.9	7.0	27.9
Total	**20.9**	**7.0**	**27.9**

21.1.10 OWNER'S COSTS

Owner's costs incurred during the pre-production period consist mainly of general and administration costs but also includes labor, material and consumables costs for work performed during the pre-production period that would otherwise be categorized as operating costs when the Property enters the production phase. Total owner's costs incurred during the pre-production phase were estimated to be CAD$27.8M and sustaining capital cost would be CAD$7.0M.

The owner's costs summarized in Table 21-10 were estimated by ERM.

TABLE 21-10 SUMMARY OF OWNER'S COST

Description	Pre-Production (CAD$ M)	Sustaining (CAD$ M)	Total (CAD$ M)
Pre-Production Phase	27.8	0	27.8
Project Team Costs	0	7.0	7.0
Total	**27.8**	**7.0**	**34.8**

21.1.11 INDIRECT COSTS

Indirect costs were estimated to be CAD$122.8 million during the pre-production period and CAD$20.3 million during the production phase of the Property.

Items covered in this category include external services such as engineering, environmental, procurement and construction management, freight, commissioning/startup and spare parts.

The Property indirect costs were estimated by Magemi Mining and ERM based on first principles or industry standard factors and are summarized in Table 21-11.

TABLE 21-11 SUMMARY OF PROJECT INDIRECT COST

Description	Pre-Production (CAD$ M)	Sustaining (CAD$ M)	Total (CAD$ M)
EPCM	51.3	0	51.3
Construction, Commissioning, Startup	32.5	0	32.5
Freight, Logistics and Insurance	20.5	12.2	32.8
First Fills and Spare Parts	18.4	8.1	26.5
Total	**122.8**	**20.3**	**143.1**

21.1.12 CONTINGENCY COSTS

Contingency costs were factored for capital equipment, structures and goods purchased under each cost centre. A total of CAD $108.7 million of contingency will be required in the pre-production period whereas CAD$ 126.8 million will be required during the production period of the mine.

21.1.13 MINE REHABILITATION BOND AND CLOSURE COSTS

Mine site closure and rehabilitation costs were estimated to be $28.2M by Magemi Mining but were increased to $40M to be conservative in the capital cost estimations.

Provincial environmental regulations in Quebec require that 50% of these costs be paid into a reserve fund prior to the issuance of a mining lease for mining projects. The remaining 50% of the closure must also be paid in installments of 25% each.

Closure bond costs were assumed to be CAD$30M slightly before and during the pre-production phase and CAD$10M in the sustaining capital phase of the project.

21.1.14 WORKING CAPITAL

Working capital required during the pre-production production was assumed to be equivalent to 10% of the total capitalized expenses incurred during the pre-production phase and is estimated to be CAD$ 107.8 million. Financing costs associated with borrowing the working capital were not included in the discounted cash flow analysis.

21.1.15 EXCLUSIONS

Costs associated with the following list of items are not included in the capital cost estimates:

- Federal and provincial sales taxes;
- Force majeure, labor disputes or major strikes;
- Contaminated soil and/or hazardous waste excavation, treatment, disposal or removal;
- Significant variations in assumed hourly rates or skill levels of labor cost inputs;
- Significant changes in assumed foreign currency exchange rates;
- Pre-feasibility, definitive feasibility or value engineering studies; and
- Capitalized interest payments or financing costs.

21.2 OPERATING COSTS

21.2.1 BASIS OF ESTIMATE

The operating cost estimate is based on the total amount of labour, materials and consumables that will be required to fully execute the mining and processing plans as described in the previous sections of this report.

The total operating costs incurred over the life of the Property are based on sufficient mill feed material being available to begin processing plant operations in Year 1 of the overall project schedule.

21.2.2 OPEN PIT MINING

Open pit mine operating costs were calculated based on the types and quantities of equipment, labor, materials and consumables that would be required to meet the proposed mining schedule.

All mine operating costs were built up from first principles, with unit costs for labour, materials and consumables being based on historical data at similar mines in Northern Ontario where available and vendor quotations or industry standards and benchmarks were not.

The main activities included in the cost calculations include drilling and blasting, loading, hauling, mining support services, labor and general site support and maintenance.

The total operating expenditures required to mine the quantities of mineralized material and waste scheduled over the production period of the open pit mine were estimated to be CAD$2,170 million, or a unit cost of CAD$ $4.91 per tonne mined as shown in Table 21-12.

TABLE 21-12 SUMMARY OF OPEN PIT MINING OPERATING COST

Description	Total Cost (CAD$M)	Unit Cost (CAD$/t mined)
Open Pit Mining	$1,461	$3.30
Site Support and Services	$709	$1.60
Total	**$2,170**	**$4.91**

21.2.3 MINERAL PROCESSING

Processing plant operating costs were calculated based on the types and quantities of equipment, labor, materials, and consumables that would be required to meet the proposed crushing and processing schedules.

All crushing and processing plant costs were built up from first principles with unit costs for labour, materials and consumables being based on historical data at other mines where available and vendor quotations or industry standards and benchmarks were not.

The total operating expenditures required to crush and process the quantities of mineralized material scheduled over the production period of the project were estimated to be CAD$146.7 million, or CAD$40.08 per tonne of mineralized material processed into the final TiO_2 and Fe_2O_3 concentrate products as shown in Table 21-13.

TABLE 21-13 SUMMARY OF MINERAL PROCESSING OPERATING COST

Description	Total Cost (CAD$M)	Unit Cost (CAD$/t milled)
All Processing and Crushing Costs	$4,317	$40.08
Total	**$4,317.48**	**$40.08**

21.2.4 GENERAL AND ADMINISTRATION

General and administration or G&A costs consists of costs that are not directly related to the open pit mining or processing activities over the production period of the project life.

Total G&A costs were estimated to be CAD$ $532.2M, or CAD$4.94 per tonne of mineralized material mined as shown in Table 21-14.

TABLE 21-14 SUMMARY OF GENERAL AND ADMINISTRATION OPERATING COST

Description	Total Cost (CAD$M)	Unit Cost (CAD$/t milled)
Labor	$273.2	$2.54
Supplies and Consumables	$3.4	$0.03
External Services	$3.6	$0.03
Camp Costs	$252.0	$2.34
Total	**$532.2**	**$4.94**

21.2.5 ROAD TRANSPORT OF CONCENTRATES

Road transportation costs incurred over the production life of the project assume that the final technical grade concentrate would be transported by truck to Baie Comeau.

A total cost of CAD$108.76 per tonne of concentrate was assumed based on a conservative truck haulage cost of CAD$93.76 per tonne and total loading/unloading costs of CAD$ 15 per tonne of concentrate produced, or CAD$ 50.63 per tonne of mill feed for a total LoM cost of CAD$5,454 million.

21.3 ROYALTIES

As per the terms of the royalty agreement signed with Cloudbreak Discovery Corp. in June 2020 a 2% NSR royalty was applied to the gross revenue obtained from all concentrate products less the cost transporting them to the port where they would be shipped to buyers.

There will also be a 2% NSR royalty payable to Canadian Mining House (CMH) on the NSR value of all material mined and sold from within the claim group contained in the option agreement signed in March, 2024. Approximately 425kt of the potentially economic resource material contained in the open pit design used for the economic analysis of the La Blache Project will be affected by this royalty. Given that the NSR value of this material will be negative or neutral under the metal price, process recovery, operating cost and transportation from site to port cost assumptions used in this study the CMH royalty was not included in the discounted cash flow analysis.

22. ECONOMIC ANALYSIS

22.1 INTRODUCTION

The economic analysis of the La Blache Property is based on cost models prepared for each major component of the overall Property , which includes an open pit mine, crushing and processing plants, supporting surface infrastructure and a waste rock / tailings co-disposal facility.

The assumed technical grade is 41.06% Iron and 10.61% Ti concentrate product and cost calculations are all expressed in Canadian dollars unless otherwise noted, with an exchange rate of 1.35 CAD/USD being used for currency conversions.

The calculated internal rate of return (IRR) of the Property does not include potential external financing costs and assumes that all required funding will be equity based. The net present value (NPV) calculations assumed a discounting rate of 8%.

The discounted cash flow model includes revenues, costs, taxes and other known factors directly related to the Property but excludes indirect factors such as financing costs, sunk costs and corporate obligations.

The pretax economic indicators of the Property include a total cash flow CAD$20.2 billion, a pretax net present value (NPV) of CAD$ 9.0 billion with an assumed discounting rate of 8% and an internal rate of return (IRR) of 70.8%.

The post tax economic indicators of the project include a total cash flow CAD$ 14.9 billion, a post-tax net present value (NPV) of CAD$6.6 billion with an assumed discounting rate of 8% and an internal rate of return (IRR) of 60.8%.

The estimated payback period of the project will be 3 years after construction begins, where the project will begin generating a net positive cashflow in Year 2 of the production phase of the Property.

22.2 CAUTIONARY STATEMENT

The project economic analysis and its results are based on forward looking information whose validity and accuracy may vary significantly in the future from what has been assumed in this study based on all currently available information.

Forward looking statements that might significantly affect the Property economics include but are not limited to the following items:

- Mineral resource and reserve estimates;
- Variances in project construction and mining schedules due to delays induced by financing, environmental assessment processes or other factors;
- The future availability and costs of skilled labor, equipment, materials and consumables, including power and fuel costs;
- Variances in processing methods, rates, and recoveries;
- Changes in provincial and federal legislative and taxation frameworks;
- Variations in future concentrate prices, selling costs and other offsite costs such as transportation, duties, offtakes or royalties;

- General business and economic conditions, both globally and domestically; and
- Currency rate fluctuations.

The study underlying this report assumes that the production is constrained by plant capacity and there will be continuous market demand at the assumed product prices.

If the market is not robust enough to maintain the assumed prices in this study then the production schedule, Property NPV and IRR will change as a result of changes to the life of mine.

22.3 GENERAL ASSUMPTIONS

The assumptions that form the basis of the economic analysis of the La Blache Property are outlined in greater detail in other sections of the report, whereas the general assumptions used for the economic analysis itself are as follows:

- There are no unpredictable extenuating circumstances that would disrupt or delay the development or operation of the Property.
- The assumed costs for labor, equipment, materials and consumables, including power and fuel, are reasonable stable and consistent with the costs used in the analysis.
- The timelines for the completion of time critical tasks such as baseline studies and local stakeholder consultations required for the completion of environmental and impact assessments are reasonably accurate.
- Environmental approvals, permits, licenses and authorizations are obtained from government and local stakeholders are obtained as planned.
- The detailed and typically highly complex taxation structures that will ultimately apply to the Property on an operational basis are represented reasonably well by the simplified assumptions used in the discounted cash flow model.
- All assumptions made regarding the mineral resource estimate and the potential economically viable portions thereof are as accurate as they can reasonably be given the level of the currently available information. This includes but is not limited to geological interpretations, commodity pricing and operating costs, mining, and processing rates, and geotechnical, hydrological and hydrogeology characterizations.
- Year 1 of the overall project schedule in the economic analysis assumes that all critical tasks including but not limited to permitting, detailed engineering, financing and procurement will be completed so that construction of the mine can begin in Year 1 and proceed without delays until the start of the mine production phase in Year 3.
- The realization of revenues from concentrate sales fall within the same year as the assumed levels of mill feed are processed.
- The Canadian to United States dollar exchange rate remains relatively consistent at around $1.35 CAD per USD over the project life.
- The mine rehabilitation and closure costs do not vary significantly in scope due to major changes in the requirements assumed for this study.
- The costs of future exploration activities on the property are excluded.

- There are no payable royalties beyond those listed in the royalties section.
- Any project costs incurred prior to Year 1 of the overall project schedule are fully sunk.

The basic mining, processing, scheduling and economic parameters used for the base case cash flow modelling and project financial analysis are summarized in Table 22-1.

TABLE 22-1 SUMMARY OF BASE CASE CASH FLOW MODELLING AND PROJECT FINANCIAL ANALYSIS

Parameter	Value	Unit
Project Schedule		
Overall project life	16	years
Mine life	14	years
Mining, Processing and Economic Parameters		
Total mill feed	108	Mt
Average mill feed grade	12.2	% TiO_2
Open pit mining rate	7.85	Mtpy
Total concentrate produced - TiO_2	9.2	Mt
Commodity price - TiO_2	$2,200	USD/dmt
Total concentrate produced - Fe_2O_3	40.7	Mt
Commodity price - Fe_2O_3	$125	USD/dmt
Exchange Rate	$1.35	CAD/USD

22.4 TAXATION AND ROYALTIES

22.4.1 BASIC TAXATION FRAMEWORK

The taxation structure that will ultimately be applied to the Property is highly complex, therefore the tax calculations for the economic analysis have been simplified to approximate what taxes might be paid over the entire Property life.

The basic taxation scheme for La Blache, however, is that the Property will be subject to a Canadian federal income tax of 15%, a Quebec provincial income tax of 11.5% and a provincial mining tax rate that varies according to the annual profit margins realized by the Property.

The tax calculations in the discounted cash flow model consider federal and provincial income tax after the application of exemptions and allowances for processing, depreciation and other allowable reductions to the net project revenue used to calculate the payable amounts of federal income taxes.

22.4.2 ROYALTIES

As per the terms of the royalty agreement signed with Cloudbreak Discovery Corp. in June 2020 a 2% NSR royalty was applied to the gross revenue obtained from all concentrate products less the cost transporting them to the port where they would be shipped to buyers.

There will also be a 2% NSR royalty payable to Canadian Mining House (CMH) on the NSR value of all material mined and sold from within the claim group contained in the option agreement signed in March, 2024. Approximately 425kt of the potentially economic resource material contained in the open pit design used for the economic analysis of the La Blache Project will be affected by this royalty. Given that the NSR value of this material will be negative or neutral under the metal price, process recovery, operating cost and transportation from site to port cost assumptions used in this study the CMH royalty was not included in the discounted cash flow analysis.

22.5 ECONOMIC ANALYSIS RESULTS

22.5.1 BASE CASE

Mining operating costs were derived from cost model schedules and averaged $4.91 per tonne of material mined or $20.14 per tonne of mill feed produced over the production phase of the mine life.

G&A costs were also derived from cost model schedules and averaged $4.94 per tonne of mill feed produced by mining operations.

Milling costs were assumed to be constant at $40.08 per tonne of mill feed based on factored estimates.

Concentrate transportation costs were also assumed to be constant at $108.76 per tonne of concentrate shipped or $50.63 per tonne of mill feed.

Overall operating costs in the discounted cash flow model were $7.0B, concentrate transportation costs were $5.5B and total operating and transportation costs were $12.5B.

Total pre-production capital costs which include capitalized operating prior to mine production were $1.1B whereas total sustaining capital cost incurred during the production phase of the project were $0.7B, with the total capital cost over the entire mine life being $1.8B.

Working capital requirements were also $0.1B, which entails that the total pre-production capital requirements of the La Blache project are anticipated to be $1.2B.

A summary of the capital and operating costs used to perform the economic analysis exercise is shown in Table 22-2.

TABLE 22-2 SUMMARY OF BASE CASE CAPITAL AND OPERATING COSTS

Parameter	Value (CAD)	Unit
Unit Operating Costs		
Mining	$4.91	t mined
Mining (S.R. 3.51)	$20.14	/t mill feed
Milling	$40.08	/t mill feed
G & A	$4.94	/t mill feed
Concentrate Transportation	$50.63	/t mill feed
Total	*$115.79*	*/t mill feed*

Parameter	Value (CAD)	Unit
Overall Project Costs		
Operating Costs		
Total Mining Costs	2.2	CAD$B
Total Milling Costs	4.3	CAD$B
Total G&A Costs	0.5	CAD$B
Total Operating Costs	7.0	CAD$B
Total Concentrate Transport Costs	5.5	CAD$B
Total Operating and Transportation Costs	12.5	CAD$B
Capital Costs		
Total Pre-Production Capital Costs	1.1	CAD$B
Total Sustaining Capital Costs	0.7	CAD$B
Total Capital Costs	*1.8*	*CAD$B*
Total Operating and Capital Costs	***14.2***	***CAD$B***
Working Capital	0.1	CAD$B
Pre-Production Capital Requirements	**1.2**	**CAD$B**

Similarly, a summary of the base case revenues used in the economic analysis exercise is shown in Table 22-3.

TABLE 22-3 SUMMARY OF BASE CASE REVENUES

Parameter	Value	Unit
Project Revenue, Profit and Pre/Post Tax Cash Flows		
Concentrate sales revenue	34.3	CAD$B
Concentrate transportation costs	5.5	CAD$B
Net operating revenue	28.9	CAD$B
Operating and sustaining capital costs	7.6	CAD$B
EBITDA	21.3	CAD$B
Payable taxes	5.9	CAD$B
Net profit after taxes (NPAT)	15.4	CAD$B
Total pre-production capital costs	1.2	CAD$B

Finally, a summary of the pre and post tax economic analysis results is shown in Table 22-4.

TABLE 22-4 SUMMARY OF PRE- AND POST-TAX ECONOMIC ANALYSIS RESULTS

Parameter	Value	Unit
Economic Analysis Results		
Discount Rate	8.0	%
Pre-Tax Cashflow	20.2	CAD$B
Pre-Tax NPV	9.0	CAD$B
Pre-Tax IRR	70.8	%
Post-Tax Cashflow	14.9	CAD$B
Post-Tax NPV	6.6	CAD$B
Post-Tax IRR	60.8	%

The overall cash flow analysis is shown in Table 22-5.

22.6 SENSITIVITY ANALYSIS

The pre-tax and post-tax discounted cash flow models were evaluated for sensitivity to the following factors:

- Overall revenue from concentrate sales;
- Overall project operating costs;
- Open pit unit operating costs;
- Processing unit mining costs;
- Concentrate shipping costs;
- Project capital costs; and
- Titanium dioxide (TiO_2) selling price.

22.6.1 PRE-TAX BASIS

The pre-tax Net Present Value (NPV) of the Property was found to be most sensitive to the revenue from concentrate sales and TiO_2 concentrate price, and least sensitive to changes in capital expenditures as shown in Figure 22-1.

Similarly, the pre-tax Internal Rate of Return (IRR) of the project was also found to be most sensitive to revenue from concentrate sales and TiO_2 concentrate price, and least sensitive to changes in capital expenditures as shown in Figure 22-2.

TABLE 22-5 OVERALL CASHFLOW ANALYSIS

Item	Units	Total	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Production Physicals																		
Mineral Resource Tonnes Mined	t	**107,735,060**	0	0	6,124,700	7,850,660	7,848,840	7,851,940	7,848,760	7,850,640	7,848,320	7,853,260	7,847,600	7,852,160	7,848,180	7,848,360	7,850,180	7,411,460
SMO	t		0	0	5,103,680	5,211,920	1,758,080	121,360	7,150,400	6,560,000	4,913,440	3,932,720	4,877,360	4,139,360	3,476,800	2,217,280	2,046,720	600,240
Grade TiO_2	%		0	0	5.24	6.50	7.63	4.63	5.43	5.75	5.50	6.26	6.65	6.53	7.13	7.31	7.93	8.94
Grade Fe_2O_3	%	**345**	0	0	18.52	22.19	28.26	19.39	18.77	19.41	18.93	21.97	23.09	22.71	25.22	25.91	28.48	33.56
MO (tonnes)	t		0	0	1,021,020	2,638,740	6,090,760	7,730,580	698,360	1,290,640	2,934,880	3,920,540	2,970,240	3,712,800	4,371,380	5,631,080	5,803,460	6,811,220
Grade TiO_2	%		0	0	17.55	17.55	18.41	18.43	16.96	17.84	17.31	16.47	16.03	16.41	17.44	18.32	18.75	18.65
Grade Fe_2O_3	%		0	0	58.31	58.79	62.26	61.94	56.48	61.51	58.79	56.27	54.87	56.18	59.78	62.54	63.88	63.29
Mineral Resource TiO_2 Eq.	(%)	**16.82**	0.00	0.00	9.37	13.71	21.84	24.85	8.71	10.53	13.80	15.68	14.02	15.53	17.98	21.24	22.22	24.74
Open Pit Waste Mined	t	**378,386,840**	11,574,520	32,321,760	59,543,060	55,909,420	57,843,320	57,722,500	58,885,860	20,559,280	9,575,460	4,279,060	3,478,040	3,374,460	2,106,160	814,960	391,280	7,700
Total Material Mined	t	**486,121,900**	11,574,520	32,321,760	65,667,760	63,760,080	65,692,160	65,574,440	66,734,620	28,409,920	17,423,780	12,132,320	11,325,640	11,226,620	9,954,340	8,663,320	8,241,460	7,419,160
Strip Ratio		**3.51**	0.00	0.00	9.72	7.12	7.37	7.35	7.50	2.62	1.22	0.54	0.44	0.43	0.27	0.10	0.05	0.00
Processing																		
Processed Tonnage	t	**107,735,060**	0	0	6,124,700	7,850,660	7,848,840	7,851,940	7,848,760	7,850,640	7,848,320	7,853,260	7,847,600	7,852,160	7,848,180	7,848,360	7,850,180	7,411,460
Recovered TiO_2 (t)	t	**9,240,460**	0	0	302,544	552,689	892,470	1,026,385	337,463	410,371	540,468	623,570	552,570	613,158	708,713	846,209	886,823	947,026
Recovered Fe_2O_3 (t)	t	**40,685,122**	0	0	1,351,523	2,411,916	3,915,008	4,430,008	1,504,126	1,813,776	2,379,397	2,766,126	2,458,165	2,720,125	3,151,879	3,732,023	3,909,643	4,141,407
Total Concentrate Tonnage	t	**50,148,548**	0	0	1,661,465	2,977,832	4,828,940	5,480,712	1,849,824	2,234,084	2,932,905	3,404,846	3,024,194	3,348,181	3,877,851	4,598,681	4,817,890	5,111,142
Revenue (M$ CAD)																		
Total Revenue	M$ CAD	**34,310**	0	0	1,127	2,048	3,311	3,796	1,256	1,525	2,007	2,319	2,056	2,280	2,637	3,143	3,294	3,512
TiO_2 Concentrate Revenue	M$ CAD	**27,444**	0	0	899	1,641	2,651	3,048	1,002	1,219	1,605	1,852	1,641	1,821	2,105	2,513	2,634	2,813
Fe_2O_3 Concentrate Revenue	M$ CAD	**6,866**	0	0	228	407	661	748	254	306	402	467	415	459	532	630	660	699
Offsite Concentrate Shipment Costs	M$ CAD	**5,454**	0	0	181	324	525	596	201	243	319	370	329	364	422	500	524	556
Net Revenue (Rev - transport offsite)	M$ CAD	**28,856**	0	0	946	1,725	2,786	3,200	1,055	1,282	1,688	1,948	1,727	1,916	2,215	2,643	2,770	2,956
Unit Net Revenue	$CAD/t proc.	**268**	0	0	154	220	355	408	134	163	215	248	220	244	282	337	353	399
Operating Cost (M$ CAD)																		
Mine Operating Costs	M$ CAD	**2,170**	0	0	239	235	239	239	241	146	122	108	105	105	101	98	98	96
Processing Costs	M$ CAD	**4,317**	0	0	245	315	315	315	315	315	315	315	314	315	315	315	315	297
G&A Costs	M$ CAD	**532**	0	0	39	39	39	39	39	38	38	37	37	37	37	37	37	37
Total Operating Costs	M$ CAD	**7,020**	0	0	524	589	593	593	595	498	474	460	457	457	453	449	450	430
Net Revenue - Operating Costs	M$ CAD	**21,836**	0	0	422	1,136	2,193	2,607	460	783	1,214	1,488	1,270	1,459	1,762	2,194	2,320	2,525

Item	Units	Total	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Capital Costs (M$ CAD)																		
Capital Expenditures (excluding sustaining)	M$ CAD	**1,078**	529	548														
Direct Capital Expenditures	M$ CAD	**789**	379	409														
Processing Plant	M$ CAD	**95**	48	48														
Infrastructure	M$ CAD	**227**	141	86														
Mobile Equipment	M$ CAD	**187**	74	113														
Capitalized Material Movement	M$ CAD	**279**	116	163														
Indirect Cost	M$ CAD	**151**	75	76														
Contingency Pre-Production	M$ CAD	109	55	53														
Closure and Rehabilitation	M$ CAD	**30**	20	10														
Total Sustaining Capital Costs	M$ CAD	**554**	0	0	73	31	31	31	31	105	31	31	31	31	31	31	31	31
Contingency Sustaining CAPEX	**M$ CAD**	**127**			12	8	8	8	8	18	8	8	8	8	8	8	8	8
ALL CAPEX including Sustaining CAPEX	**M$ CAD**	**1,632**	**529**	**548**	**73**	**31**	**31**	**31**	**31**	**105**	**31**	**31**	**31**	**31**	**31**	**31**	**31**	**31**
Working Capital	M$ CAD	**108**	53	55														
Total Opex plus SusEx	M$ CAD	**7,575**	0	0	597	620	624	624	626	603	505	492	488	488	484	481	481	461
TOTAL CASHFLOW	M$ CAD	**20,203**	**-529**	**-548**	**349**	**1,104**	**2,162**	**2,576**	**429**	**678**	**1,182**	**1,457**	**1,239**	**1,428**	**1,731**	**2,162**	**2,289**	**2,495**
Unit Operating Cost	$CAD/t proced.	**70.3**			97	79	80	79	80	77	64	63	62	62	62	61	61	62
Unit Net Rev-Unit Op Costs	$CAD/t proced.	**198**	0	0	57	141	275	328	55	86	151	186	158	182	221	275	292	337
Cashflow Model																		
EBITDA (Operating Profit)	M$ CAD	**21,281**	0	0	349	1,104	2,162	2,576	429	678	1,182	1,457	1,239	1,428	1,731	2,162	2,289	2,495
Profit Margin		**2.94**		0.00	0.59	1.78	3.46	4.13	0.68	1.12	2.34	2.96	2.54	2.93	3.58	4.50	4.76	5.41
Quebec Mining Tax - Payable	M$ CAD	**2,447**	0	0	40	127	249	296	49	78	136	168	142	164	199	249	263	287
Canada Mining Tax - Payable	M$ CAD	**2,893**	0	0	0	0	300	369	56	92	171	214	183	212	258	323	343	374
NSR Royalty	M$ CAD	**2%**	0	0	19	34	56	64	21	26	34	39	35	38	44	53	55	59
Net Profit after Tax (NPAT) & Royalties	M$ CAD	**15,364**	0	0	290	943	1,558	1,847	303	482	842	1,037	879	1,014	1,230	1,537	1,628	1,775
Pre tax Project Cashflow	M$ CAD	**20,203**	-529	-548	349	1,104	2,162	2,576	429	678	1,182	1,457	1,239	1,428	1,731	2,162	2,289	2,495
Cumulative Pre Tax Project Cashflow	M$ CAD	**121,932**	-529	-1,078	-729	376	2,538	5,113	5,542	6,221	7,403	8,860	10,099	11,527	13,258	15,420	17,709	20,203
Post tax Project Cashflow	M$ CAD	**14,863**	-529	-548	309	977	1,614	1,911	324	508	876	1,076	914	1,052	1,274	1,590	1,683	1,834
Cumulative Post Tax Project Cashflow	M$ CAD	**88,871**	-529	-1,078	-769	209	1,822	3,733	4,057	4,565	5,440	6,516	7,430	8,482	9,756	11,346	13,029	14,863

Item	Units	Total	-2	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	14
NPV Calculation																		
Year			0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Discount Factor		**8.0%**	1.00	0.93	0.86	0.79	0.74	0.68	0.63	0.58	0.54	0.50	0.46	0.43	0.40	0.37	0.34	0.32
Pre tax Project Discounted Cashflow	M$ CAD	**9,027**	-529	-508	299	877	1,589	1,753	270	396	639	729	574	612	687	795	779	786
Pre tax Project Cashflow %IRR		**70.8%**																
Post tax Project Discounted Cashflow	M$ CAD	**6,591**	-529	-508	265	776	1,186	1,300	204	296	473	538	423	451	506	585	573	578
Post tax Project Cashflow %IRR		**60.8%**																

FIGURE 22-1 PRE-TAX NPV SENSITIVITY – DISCOUNT RATE 8% A.P.

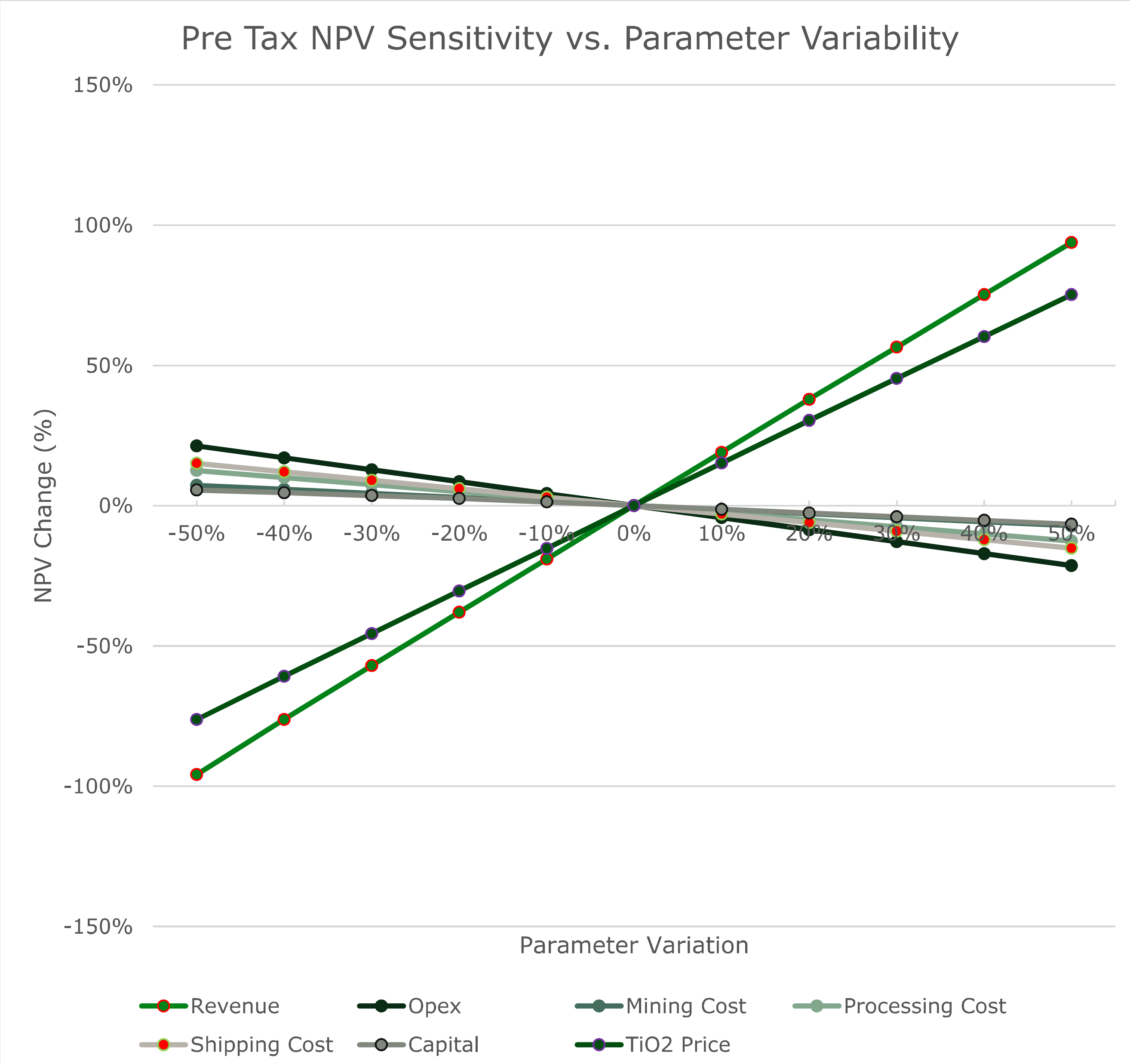
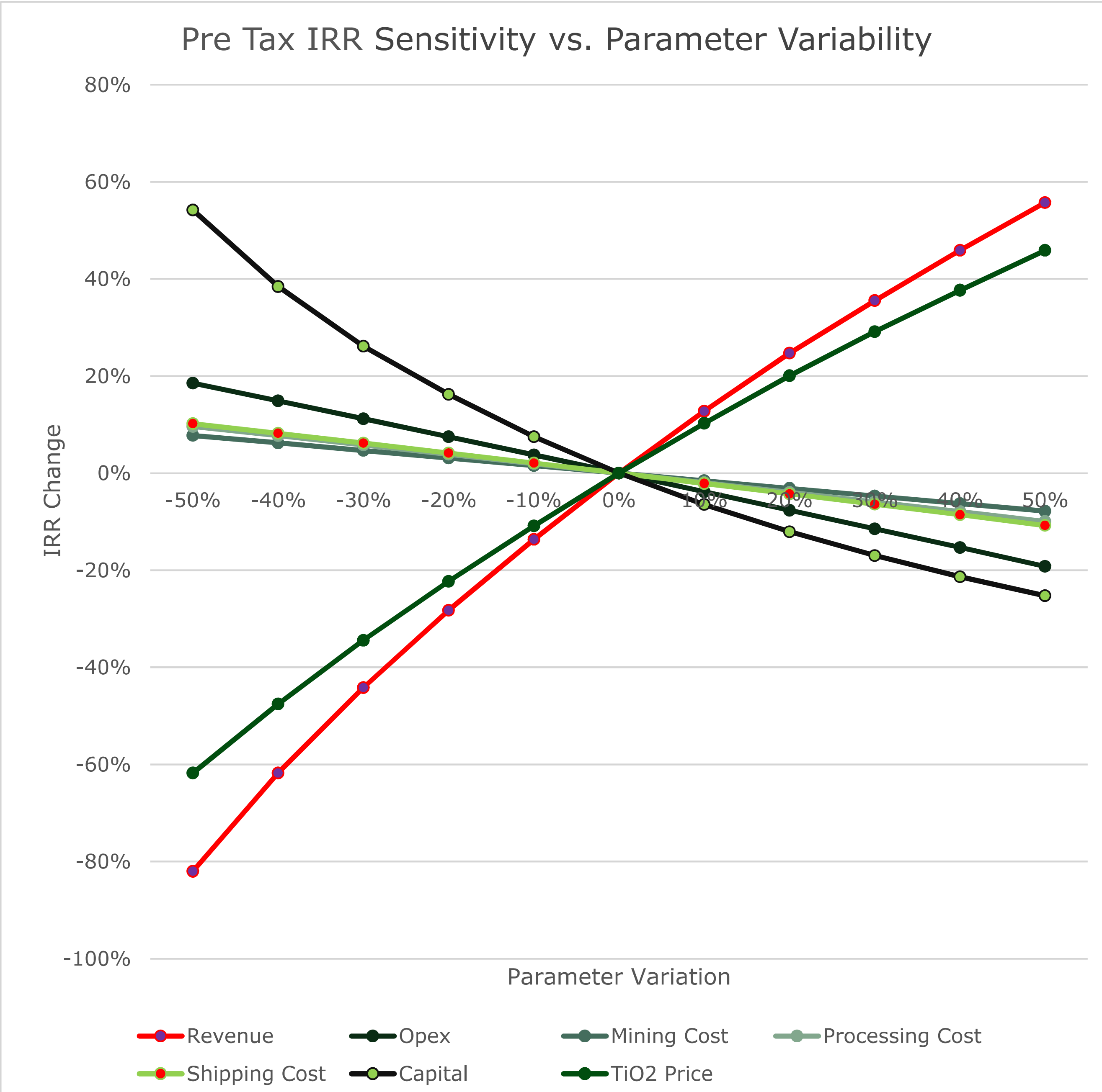


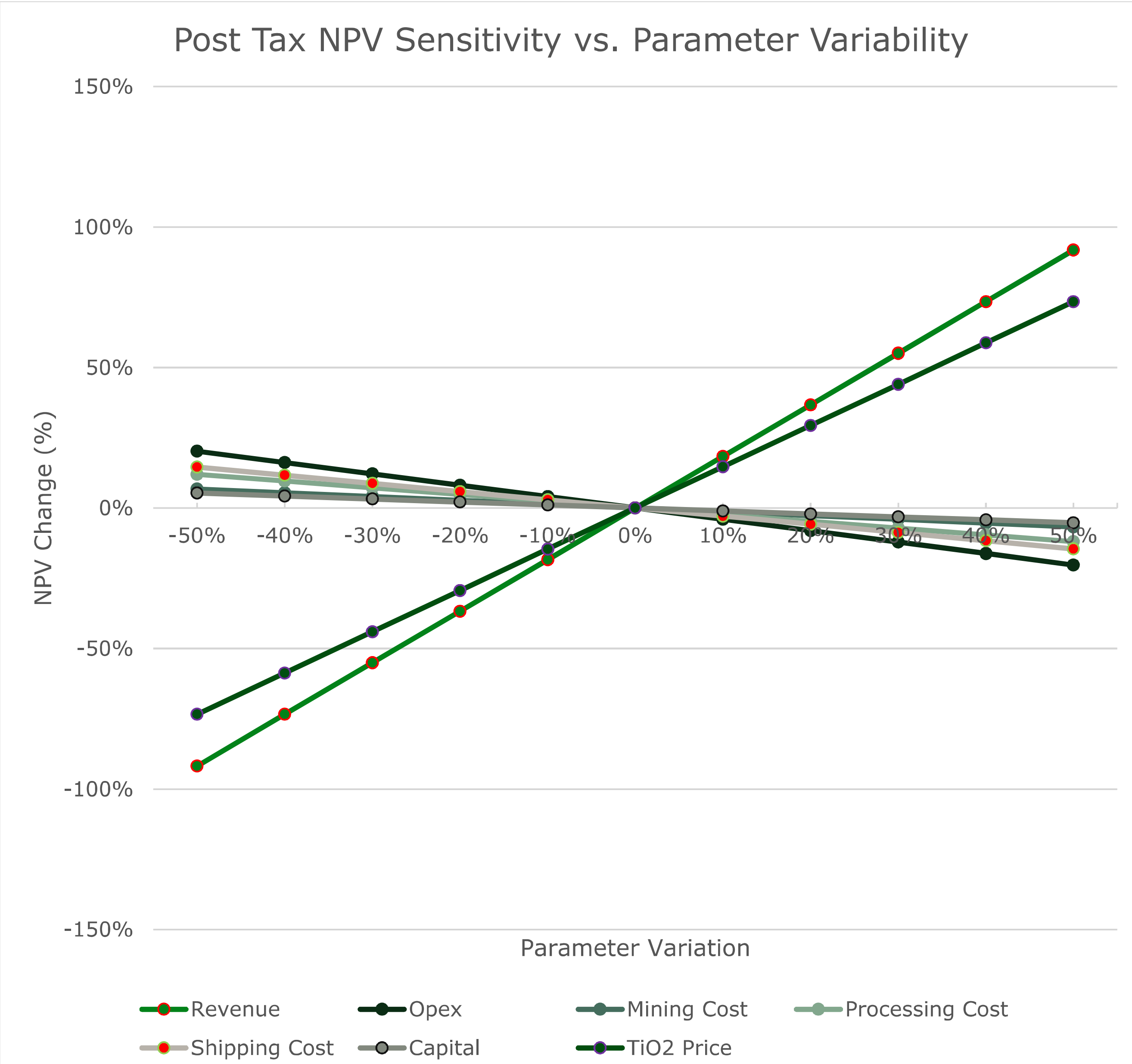
FIGURE 22-2 PRE-TAX IRR SENSITIVITY



22.6.2 POST-TAX BASIS

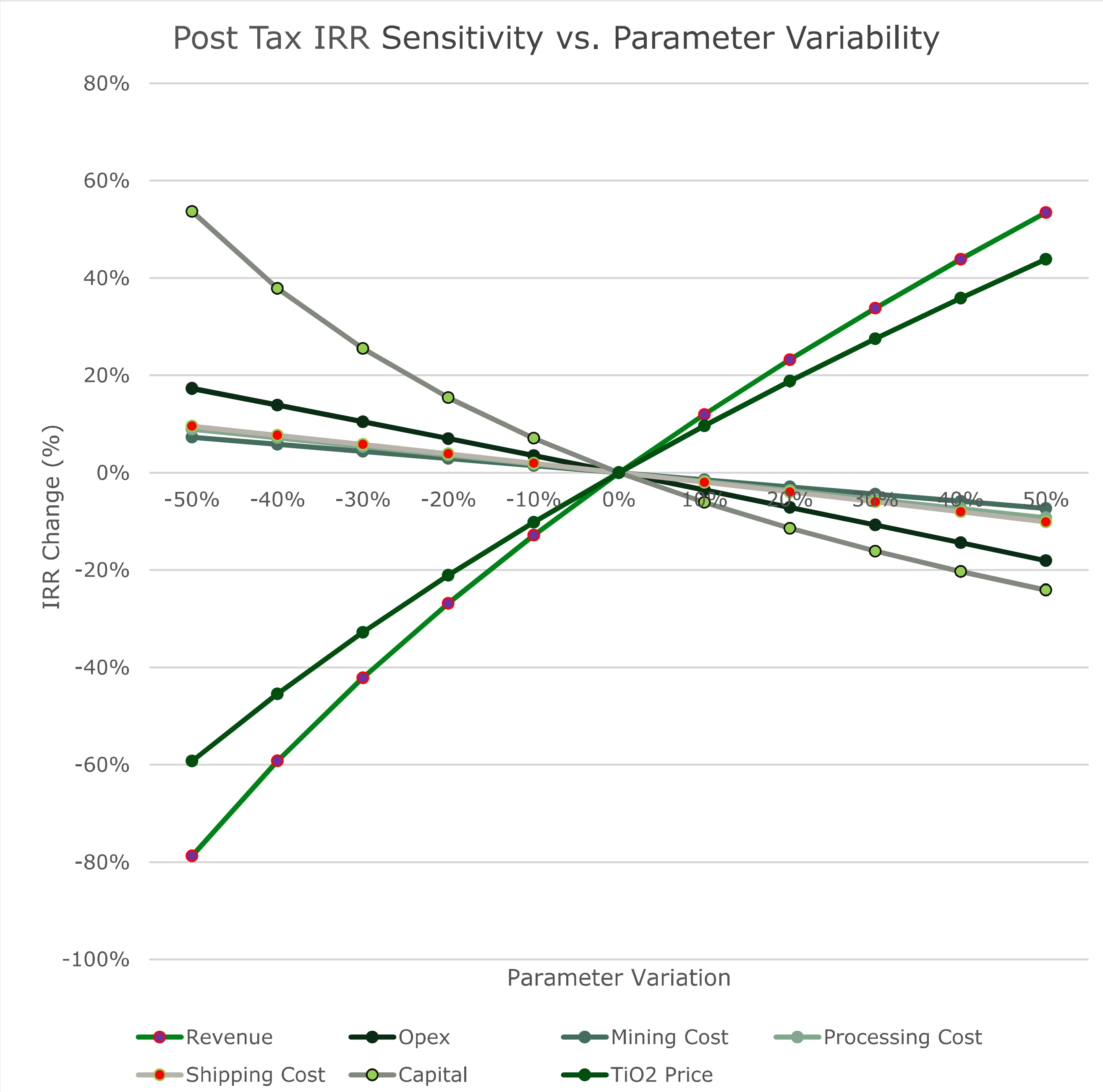
On a post-tax basis, the La Blache Property NPV was found to be most sensitive to the revenue from concentrate sales and TiO_2 concentrate price, and least sensitive to changes in capital expenditures as shown in Figure 22-3.

FIGURE 22-3 POST-TAX NPV SENSITIVITY – DISCOUNT RATE 8% A.P.



Also on a post-tax basis the La Blache Property IRR was found to be most sensitive to the revenue from concentrate sales and TiO_2 concentrate price, and least sensitive to changes in capital expenditures as shown in Figure 22-4.

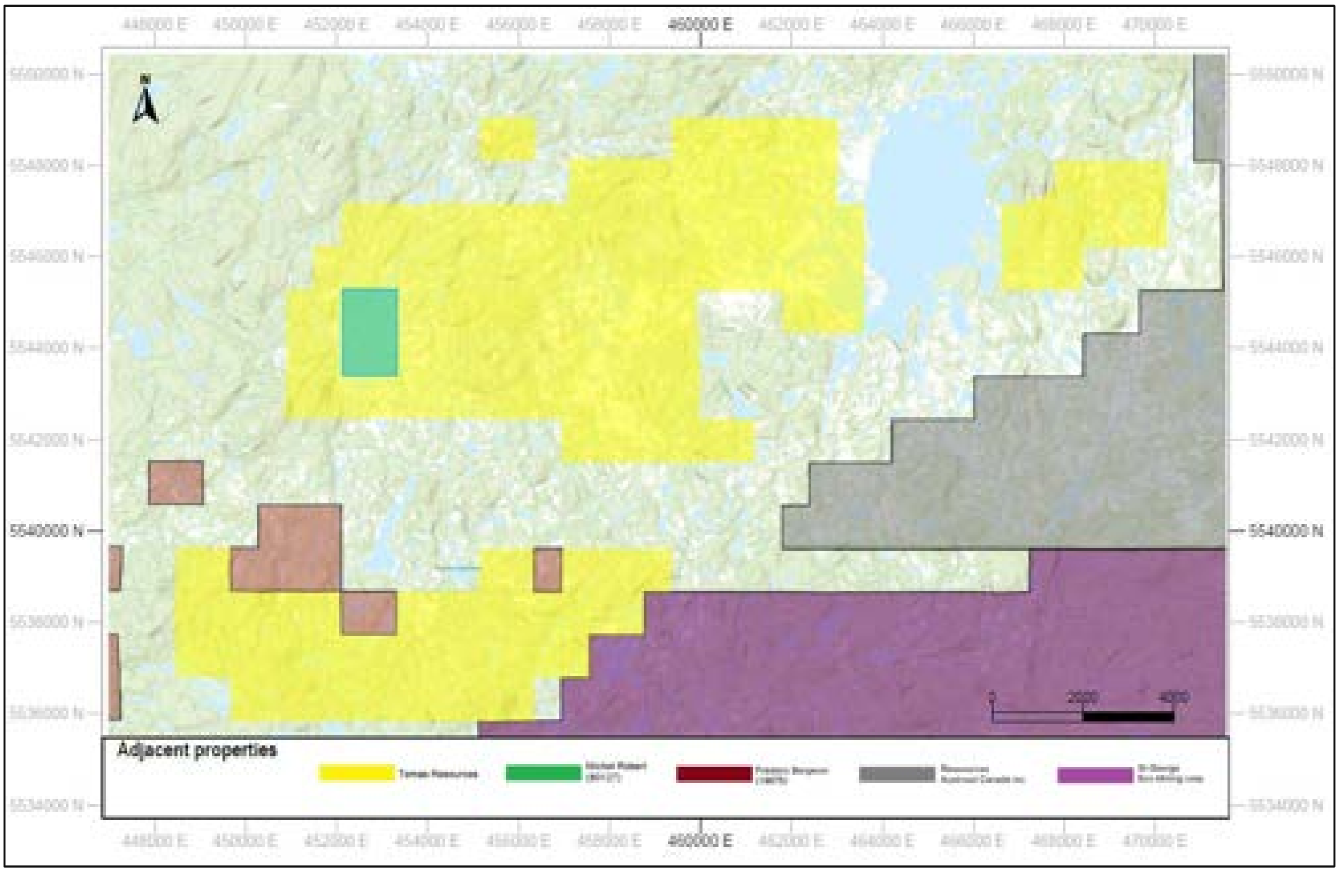
FIGURE 22-4 POST-TAX IRR SENSITIVITY



23. ADJACENT PROPERTIES

The authors have not identified any neighboring projects that are pertinent to the progression of the project, nor have they found any claims that would restrict the development of infrastructure associated with the La Blache project. The Michel Robert claims are the nearest to the project, yet they pose no constraints on the potential expansion or development of La Blache.

FIGURE 23-1 ADJACENT PROPERTIES TO THE TEMAS LA BLACHE PROJECT



24. OTHER RELEVANT DATA AND INFORMATION

24.1 INTRODUCTION

24.2 PROJECT EXECUTION PLAN

The project execution plan has not yet been created in detail, the project execution plan will be developed during the pre-feasibility stage of the Property after any necessary trade-off studies have been executed in order to consider only a few major project execution options with regards to mine planning and mineral processing.

24.2.1 HEALTH, SAFETY, AND ENVIRONMENT

Temas will be required to undertake desktop and field studies to support an EIA and permit applications.

The scope of studies could include, but may not be limited to:

- Meteorology and air quality;
- Soils;
- Vegetation and wetlands;
- Wildlife and wildlife habitat;
- Fish and fish habitat;
- Surface and groundwater quality;
- Surface and groundwater quantity;
- Metal leaching and acid rock drainage potential (static and kinetic testing);
- Socio-economics and land use; and
- Archaeological and cultural heritage investigations.

24.2.2 COMMUNITY ENGAGEMENT

Temas has commenced initial engagement activities with communities and Indigenous communities in the vicinity of the Property and will continue to do so throughout Project advancement and future operations.

Temas must develop communication plans and Property materials to inform communities of interest of the Property, assist in discussions, identify and resolve issues, and maintain records of engagement as required by regulatory authorities.

24.2.3 TIMELINE

After this PEA report is published, it would be assumed that Temas would continue with exploration drilling in order to upgrade the resource to indicated or better such that a PFS could be undertaken and a Mineral Reserve Estimate stated. Should the economics of the project appear favourable within the context of the PFS, then a FS study would be undertaken. Environmental and social baseline studies would proceed in parallel with PFS and FS development to support the regulatory processes. On completion of the Environmental Assessment process, and receipt of government project approval, Temas could proceed to complete applications for permits and authorizations to construct and operate the Property.

Once all governmental authorizations are received, the Property would then proceed to detailed engineering studies in advance of construction. Temas Resources would work on the development of construction packages and source the purchase of all major equipment required for the Property. Any required detailed engineering not included in the FS would be scheduled after the completion of the FS.

Mine site construction work, including pre-stripping, would proceed once the minimum required detailed engineering is completed and the construction execution plan is finalized and approved. The mill start-up would be scheduled for approximately 24-36 months after the site construction is initiated with a mill ramp up over the initial 18 months of operation.

24.2.4 EXECUTION STRATEGY

Temas will assemble an owner's team to manage the detailed engineering, procurement, and construction. The owners team will contract consultants to conduct the detailed engineering for each discipline, as required.

24.2.4.1 ENGINEERING

Engineering work performed to date is primarily focussed on mine engineering and mineral processing at a conceptual PEA level.

Mine engineering work has focused on the mine pit optimisation, scheduling, and design.

Mineral processing engineering work has focussed on providing a novel processing option that is proprietary and would possibly be the first major operation to use this technology/process.

Substantial additional and detailed engineering work is required at the next stages of the Property and prior to finalizing determination of project viability.

24.2.4.2 PROCUREMENT AND CONTRACTS

The cost and revenue assumptions in this study are based on benchmarks and scaling. There are no binding procurement or offtake contracts in place to support the cost and revenue parameter assumptions.

24.2.5 CONSTRUCTION LABOUR REQUIREMENTS

The labour requirements will target sourcing the local labour force as much as possible in order to benefit the local community but also to minimize travel, accommodation, and logistics to bring in labour from outside the immediate area, or from outside of the province. The least favourable option economically and logistically would be to bring in persons from outside of the country.

24.2.6 CAMP

A large and fully equipped camp is envisaged. Significant engineering and planning work will be required to full appreciate size and cost for the camp starting at the construction phase.

24.2.7 MINE DEVELOPMENT

Temas will prioritize site preparation and installation of temporary infrastructure to initiate the earthworks and mill construction as early as possible.

While the main access road is already in place but requiring some upgrade, where required, temporary roads will be established using exploration roads.

The industrial pads for the process plant and other infrastructure will be cleared and leveled, and excavation of waste material from the starter pit will be initiated early to provide aggregates for the infrastructure.

Permanent roads and other infrastructure not essential during the initial construction phase, will be initiated once mill construction has begun,

24.2.8 HOUSEKEEPING AND HAZARDOUS WASTE MANAGEMENT

Temas will develop an environmental management system of management plans, including waste management plans for construction and operating generated waste streams. Waste will be classified as hazardous and non-hazardous, available for re-purpose, recycling, incineration or offsite disposal. Inventories will be maintained for regulator compliance reports. All construction and mining staff and contractors will be trained in proper waste management procedures.

24.2.9 CONSTRUCTION EQUIPMENT AND EQUIPMENT LEAD TIME

Consideration will need to be made for the availability of contractor construction equipment availability and potentially long lead times for critical plant and mobile equipment.

24.2.10 COMMUNICATION

The project site is located within range of commercial telecommunications providers.

24.2.11 CONSTRUCTION POWER

Due to proximity to the grid, the project assumes that power will be connected and ready to use right from the beginning of the construction phase.

24.2.12 COMMISSIONING

The commission of the various capital projects and major equipment will be executed by sub-contractors specialized in each work package commissioning.

24.2.13 PRODUCTION RAMP-UP

Due to the large size of the Property it is anticipated that a ramp up period will likely be required, however at the PEA level of study there has been no in depth investigation of realistic ramp up restrictions.

24.3 RISK MANAGEMENT

At the PEA level of study there are many technical risks that could affect the technical feasibility and economic outcome of the Property. It is not permitted to suggest economic viability of a project at the PEA level of study as stated in NI 43-101 guidelines for mineral resource disclosure.

Risks common to most mining projects are typically mitigated with engineering, planning, and pro-active management.

External risks beyond the control of the Property include factors such as wildfires, political conditions, mineral prices, exchange rate, regulations and government legislation.

At the next stage of the project a Risk Register will be created to outline evaluate all potential foreseeable risks and recommended mitigation where feasible.

Some additional common sources of risk include:

- Permit approval delays
- Inflation of Capex and Opex costs
- Overrun of the project cost / Estimate accuracy
- Supply chain disruptions
- Mineral recovery underperformance
- Mineral Reserve reconciliation issues
- Lack of skilled labour and consequent personnel logistics
- Unpredictable accommodation and flight costs for personnel not local to project
- Risk of a severe injury or fatality / subsequent shut down for investigation
- Uncertainty of Social Licence
- Unforeseen Natural Events such as severe precipitation or drought for example.

25. INTERPRETATION AND CONCLUSIONS

25.1 GEOLOGY AND MINERAL RESOURCES

In the opinion of the report author, the MRE reported herein is a reasonable representation of the Mineral Resources found at the La Blache deposit at the current level of sampling. The Mineral Resources were estimated in conformity with CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines and are reported in accordance with NI 43-101.

The estimate is based on drill data collected from 45 drillholes drilled in 2010-2011 and 8 validation drillholes drilled by Temas in 2022 all supported by a QAQC program.

These Mineral Resources have been classified in the Inferred category and significant drilling is still required before advancing to a PFS level of study.

The Mineral Resources of 99.7 Mt at 6.26 % TiO_2 in the Semi-Massive Oxide domain and 108.8 Mt at 17.83 % TiO_2 and the Massive Oxide domain are reported within a Lerchs-Grossman open pit shell and are effective as of Feb. 07, 2024 (Table 25-1).

TABLE 25-1 MINERAL RESOURCES STATEMENT FOR THE INFERRED MATERIAL IN THE SMO AND MO DOMAINS

TiO_2 Eq. Cut Off Grade (%)	Rock Type	Resource Category	Tonnage (Mt)	TiO_2 (%)	Fe_2O_3 (%)	V_2O_5 (%)	TiO_2 Eq. (%)
4.8	SMO	Inferred	99.7	6.26%	21.98%	0.07%	8.34%
4.4	MO	Inferred	108.8	17.83%	59.40%	0.32%	24.30%
Total			**208.5**	**12.29%**	**41.50%**	**0.20%**	**16.67%**

Recovery of V_2O_5 was included in the TiO_2Eq calculation of the Resource estimate in order to assess the full potential of the mineralization although not included in the economic analysis of the project.

Mineral Resources are not Mineral Reserves and do not have demonstrated economic viability. There is no certainty that all or any part of the Mineral Resource will be converted into Mineral Reserves.

25.2 MINING

Open pit optimization was conducted using Datamine's StudioNPVS software to determine the optimal economic shape of the open pit to guide the PEA mine schedule in addition to a conceptual pit design.

Pit optimizations used the parameters shown here in Table 25-2.

TABLE 25-2 PIT OPTIMISATION PARAMETERS

Parameters	ERM Value	Unit
Sales Revenue		
Exchange Ratio	1.35	CAD/USD

Parameters	ERM Value	Unit
Price Fe_2O_3	125	USD/t
Price TiO_2	2200	USD/t
Price V_2O_5	14200	USD/t
Operating Costs		
Mining Cost	5	USD/t
Processing Cost	25	USD/t feed
G&A Cost	5	USD/t feed
Shipping Cost	35.5	USD/t feed
Metallurgy		
Massive Oxide		
Recovery Fe_2O_3	92.1	%
Recovery TiO_2	71.8	%
Recovery V_2O_5	75.0	%
Semi-Massive Oxide		
Recovery Fe_2O_3	85	%
Recovery TiO_2	65	%
Recovery V_2O_5	70	%
Geotechnical Parameters		
Overall Angle	45	degrees
Material Density		
Mineralized Material		
MO Massive Oxides		4.42
SMO Semi-Massive Oxides		3.28
Host Rock (Anorthosite)-Default Density		2.84
Pit Optimization Parameters		
Dilution	5%	
Mining Recovery	95%	
Mill Throughput Rate	7,800,000	
Annual Discounting	5%	

LG Optimized pit shells were generated, and the optimized pit shells selected for the basis of the mine plan's pushbacks 1 and 2: Pits 1 and 5.

The mine design and schedule have been completed to a level appropriate for a PEA level of study.

The mine design presented in this study is based on the selected optimized pit shell.

An owner mining approach with conventional open pit mining techniques is planned on 10 m benches with a final 20 m bench height excavated in most pit walls.

Bench face angles, and berm widths were standardized on generic dimensions and the overall slope angles were assumed to be 45 degrees whereas there is no geotechnical information available to date.

Loading in the pit uses a fleet of hydraulic shovels consisting of three Hitachi EX8000-6 face shovel, and two Caterpillar 834 front-end loader. The loading fleet is matched with CAT 795F AC mining trucks.

Production drilling is planned to be executed using two electrical rotary blasthole rigs.

The blasthole diameter is 254 mm (10 in.) with a 9.25 m x 9.25m pattern for a targeted powder factor of 0.50 kg/t in waste and 0.50 kg/t in mineralized material.

Pre-split drilling is planned due to the incompetent nature of the rock mass.

Dewatering of the pits will be undertaken in advance of mining with a combination of well fields outside of the pit and dry prime pumps pulling water from in-pit sumps.

Waste rock will be stored in one large waste dump to the northeast of the pit. It's location and shape were selected to minimize impact on the many small lakes in the area.

The LOM plan details 14 years of production, preceded by two years for pr-production for a total project life of 16 years.

The mining strategy involves traditional load and haul techniques, employing hydraulic excavators, front shovels, and/or wheel loaders based on the topography and the primary production equipment available for the Property.

Material transportation will involve hauling from the bench to the crusher, ROM stockpiles, or waste dump, depending on the nature of the material. Additionally, auxiliary equipment such as bulldozers, graders, and various vehicles is deployed for tasks related to maintenance, support, services, and utilities.

This mining approach envisions extracting a total of 486.1 million metric tonnes of material throughout the mine's lifespan, consisting of 107.73 million metric tonnes of mill feed and 378.39 million metric tonnes of waste, with an average strip ratio of 3.2.

The peak mining rate will be approximately 66.73 Mtpy in year five with a peak of 58.89Mt of waste moved. The average mining rate is 30.38 Mtpy over the LOM.

25.3 MINE ECONOMICS

The results of the discounted cashflow model generated from the LoM mining and production schedule are indicative of a Property that warrants further investigation and additional drilling to derisk uncertainty in the mineral resource estimate.

NI 43-101 clearly states that a PEA cannot suggest nor claim that a Property will be economically viable. However, based on the existing inferred resource and the costs, recoveries and metal prices assumed in the study underlying this report the resulting financial indicators indicate that PFS level studies are warranted.

The pretax economic indicators of the Property include a total cash flow CAD $20.2 billion, a pretax net present value (NPV) of CAD$9.0B with an assumed discounting rate of 8% and an internal rate of return (IRR) of 70.8%.

The post tax economic indicators of the Property include a total cash flow CAD $14.9 billion, a post tax net present value (NPV) of CAD $6.6 billion with an assumed discounting rate of 8% and an internal rate of return (IRR) of 60.8%.

The payback period will also be 3 years after construction begins, which will occur in the second year of the production phase of the Property.

Note: The calculated internal rate of return (IRR) of the project does not include potential external financing costs and assumes that all required funding will be equity based. The net present value (NPV) calculations assumed a discounting rate of 8%.

The discounted cash flow model includes revenues, costs, taxes and other known factors directly related to the project but excludes indirect factors such as financing costs, sunk costs and corporate obligations.

26. RECOMMENDATIONS

ERM Recommends the following with regards to the La Blache Property.

26.1 GEOLOGY AND MINERAL RESOURCE

26.1.1 TOPOGRAPHIC SURVEY

The report author recommends conduct a Lidar survey to generate accurate topography map and ensure that drill hole collars elevation is matching the topographic surface.

26.1.2 EXPLORATION AND RESOURCE DEFINITION DRILLING

The resource definition drilling program can be divided into two phases. The first phase aims to upgrade the classification of resources included in the first and second pushback as defined in Chapter 16, reaching a maximum depth of approximately 300 m, corresponding to the shallow part of the deposit. The second phase is intended to upgrade the classification of resources at depths exceeding 300 m, up to a maximum of around 500 m, which are included in the final pit shell.

To upgrade the resources from Inferred to Indicated, the average drillhole spacing should be adjusted from the current spacing of around 85 m to 50 m. Based on this criterion and the geometry of the inferred zone in the MO and SMO domains, it is recommended to consider a minimum diamond infill drill program of approximately 30,000 m in the first phase for the shallow part of the deposit, with the objective of upgrading the resource classification from Inferred to Indicated. In the second phase, a drilling of 20,000 m is recommended for the deeper part of the deposit. Due to the size of the deposit, ERM doesn't see a need to explore new areas within Temas claims to expand the resources.

The infill drilling program should include:

- Multi-element assay analysis that can be used to generate mineral proxies, comminution and recovery performance indicators and identify any anticipated deleterious elements.
- A comprehensive QAQC program including core duplicates.
- A round robin of standards of 3 laboratories to identify the most reliable analytical laboratory.
- Geotechnical logging of the drill holes for open pit design considerations.
- Waste rock characterization for environmental considerations.
- Identifying the source of samples with low vanadium grade values in the massive oxide domain and rectify the data.
- Drilling several twinned holes (around 4 holes) to validate the 2010 and 2011 drilled holes, especially the deeper holes to the east of the deposit.
- Continue measuring density for all samples collected in future drilling campaigns.

Proposed budget for the two phases of explorations is shown in Table 26-1.

TABLE 26-1 PROPOSED BUDGET FOR THE TWO PHASES OF EXPLORATIONS

Exploration Cost $ CDN		
	Phase 1	**Phase 2**
Lidar survey	100,000	
Drilling	7,500,000	5,000,000
Sampling	1,125,000	750,000
Analyses	600,000	600,000
Report	80,000	80,000
Total	**9,405,000**	**6,430,000**

26.2 PROCESSING

The report author recommends more detailed testing on variability samples to advance to the next stage of the project development (assuming PFS). For example, the semi-massive oxide domain was not tested. The semi-massive oxide domain samples should be selected to be representative and be tested for overall mineralogy, grindability and Bond indexes, as well as the metallurgical separation testing - leaching, oxidation, solvent extraction for Fe, Ti and V.

The report author recommends characterisation testing on the environmental tailing residue aspects including settling and hydraulic conductivity and confirm the tailings residue inertness to metals leaching. Characterise the recycle water quality and potential for impurity buildups in tailings residue recycle water.

Recycling testing of reagents has not yet been evaluated in the mini pilot plant. Meaning it is recommended to also test the effect of recycling HCL and MgCl2 in the leaching testing. This would evaluate the impact of recycled reagents in the leaching efficiency and the impurity build-up in the solvent extraction circuits. Consider the production of MgO to remove Mg in the MgCl2 bleed and add revenue.

The report author understands Temas had initiated Vanadium recovery testing and recommends the testing continues and the results are finalised with Process Ortech.

The report author recommends studying the impact of the particle size and morphology of the final TiO_2 product using laser size analysis. Work in partnership with end users (off takers) to generate samples for end user evaluation and to develop market acceptance.

The report author suggests use of computer models like METSIM or ASPEN to assist in further process pilot plant equipment testing and flowsheet optimization.

The report author recommends testing the designed process plant flowsheet at a more detailed level prior to and during the PFS level of study. Future test work should include all areas of the flowsheet to obtain future data required for preliminary engineering and prefeasibility study of the technology. For example, an area of the flowsheet, the recovery of iron oxide from pyrohydrolysis was not performed in the mini-pilot testing and is recommended be conducted.

The report author recommends for the next stage of project development that a detailed test program is designed and executed for testing the titanium pigment production, recoveries and grades to properly design the pigment production plant and its expected performance parameters.

26.3 MINING

A number of studies should be performed prior to advancing the La Blache Project to a PFS or DFS level of study.

The report author recommends investigation of various mine sizes to determine what can be mined with minimal water body disturbance from the pit, but also from the corresponding sizes of waste dumps and tailings ponds. Estimates cost of $20,000.

Investigation into maximum usage of electrically powered shovels, haul trucks and/or conveyors is recommended as a pre PFS trade-off study given the low cost of electricity in Quebec and the requirement for extending power from the Hydro Quebec power grid for processing and crushing operations. Estimated cost of $20,000.

The report author recommends that some geotechnical and hydrogeological investigation and analysis work be performed to de-risk pit slope angles for future pit designs, which would include:

- Drilling geotechnical holes in areas where pit walls will likely to be and performing geotechnical assessments. Estimated cost of $200,000.
- Installing wire piezometers to verify pore pressure buildup. Estimated cost of $20,000.
- Carrying out uniaxial compressive strength tests on samples from geotechnical holes for all geological units. Estimated cost of $50,000.
- Carrying out direct shear tests along any bedding planes, faults, or areas of significant jointing. Estimated cost of $25,000.
- Gathering structural geology data and reviewing potential kinematic failures on the hanging walls and end walls. Estimated cost of $25,000.
- Performing hydrogeological tests and assessment of site groundwater conditions around proposed pit location. Estimated cost of $200,000.

The report author recommends that a labour force study be undertaken to understand the availability and cost of local labour and professionals. Estimated cost of $10,000.

26.4 INFRASTRUCTURE

The report author recommends hydrology and hydrogeological, and aquatic biology investigations to help determine effects of water management on:

- Establishing potential locations for the waste dump/s and the tailings dam
- Need to dam or divert any lakes or rivers on the property
- Rate of Inflow of water into the pit
- Mitigation and potential offset plans for fish and fish habitat

The total cost of the above studies will be $100,000.

26.5 MARKETING

Whereas the scale of the project will depend greatly on the size of the TiO_2 market, the report author recommends investing in an in-depth market study and approaching potential offtake customers to determine contract terms available in the near term and future potential.

As assumed in this study the potential output of the Property could potentially produce up to 10% of the current global market for Titanium Dioxide. Adjusting the level of Titanium Dioxide produced that would best suit market demand while minimizing the impact on pricing levels will be highly important to study and understand.

The estimated cost of these studies will cost $30,000.

26.6 COSTS

The report author recommends confirming and/or obtaining detailed power costs and potential options for connecting to the provincial power grid through consultation with Hydro Quebec. Electrical power from the hydro powered grid in this region is a very strong economic advantage to the project. Estimated cost of $10,000.

It is also recommended to investigate current labour and other major cost from other major projects in Quebec such as:

- Urban Barry, Windfall and Quevillon (Owned by Osisko)
- Nemaska
- Sayona
- Bloom Lake

The report author also recommends engaging various equipment suppliers to understand price options for Caterpillar, Komatsu, Volvo, Liebherr, Scania, Sandvik, Atlas Copco and other auxiliary mining equipment providers. Estimated cost of $10,000.

Leasing or renting mobile equipment may also offer potential advantages through reductions or deferments in capital expenditures albeit at the usual expense of increased operating costs.

The report author also recommends the possibility of engaging contract mining for some or all parts of the mining operation.

The report author recommends a drilling and blasting study in conjunction with a comminution study in order to understand the full energy required to reduce the mineral fragmentation size down to required processing dimensions. Estimated cost of $30,000.

26.7 ENVIRONMENT, SOCIAL, PERMITTING, AND GOVERNANCE

The report author recommends the following staged approach:

- Phase 1: Establish initial socio-economic study and define regulatory and permitting path and requirements, including scope of environmental studies to support EA and Permitting; continue early engagement: $150,000.
- Phase 2: Undertake Year 1 EA baseline environmental and social studies; pre-EA engagement: $1,000,000.

In addition, the report author recommends:

- A study to understand the availability of local labour, contractors and suppliers, and professionals as well as partnering opportunities with local First Nations and Metis.
- Undertaking a strategic review of potential key environmental constraints with the objective of identifying long-lead environmental baseline study needs to be progressively commenced in conjunction with advanced stages of project development, and in support of approved information requirements supporting Environmental Assessment and permitting.
- Continuation of consultation activities and instituting formal documentation of First Nations', Metis and community engagement.

26.8 ECONOMICS AND SENSITIVITY

The report author recommends revisiting the economics and sensitivity of the project regularly as:

- The metal prices change;
- Further metallurgical testing produces greater certainty regarding titanium and vanadium recoveries; and
- As certainty on costs improves through receipt of budget pricing on equipment and services with relatively large costs.

The estimated costs of the above studies will be $60,000.

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28. ABBREVIATIONS AND UNITS OF MEASURE

Abbreviations:

AAS	atomic absorption spectroscopy
Ag	silver
AR	assessment report
Au	gold
Ca	calcium
CSE	Canadian
Cu	copper
DBA	Doing business as
DDH	diamond drill hole
EM	electromagnetic
FA	fire assay
Fe	Iron
Fe_2O_3	Magnetite
GESTIM	Gestion des titres miniers (Management of mining titles)
GPS	global positioning system
HLEM	horizontal loop EM
IP	Induced polarization
IPL	International Plasma Laboratories
ISO	International Standards Organization
K	potassium
Ltd	Limited
M+I	measured and indicated
Ma	million years ago
MERN	Ministry of Energy and Natural Resources
MRNFQ	Ministère des Ressources Naturelles et des Forêts de Quebec
MTO	Mineral Titles Online
N	North
NI	National Instruments
Ni	Nickel

NAD-83	North American Datum (1983)
NE	northeast
NI 43-101	National Instrument 43-101
NNE	north-northeast
NSR	net smelter return
Pb	lead
P. Geo	Professional Geologist
QA	quality assurance
QC	quality control
QSP	quartz-sericite-pyrite
RQD	Rock-quality designation
SCC	sericite-clay-chlorite
TSX-V	Toronto Stock Exchange – Ventures
TiO_2	Titanium Oxide
UTM	Universal Transverse Mercator
VLF-EM	very low frequency EM
V_2O_5	Vanadium Oxide
W	west
Zn	zinc

Units:

cm	centimetre
%	Percent
°	Degrees
°C	Degrees Celsius
C$	Canadian dollar
g/t	grams/tonne
ha	hectare
km	kilometre
Km^2	Square Kilometres
kg	kilogram

m	metre
mm	millimetre
mV/V	millivolt per volt
nT	nanotesla
oz/ton	troy ounce per short ton
ppb	part per billion
ppm	part per million
µm	microns

CERTIFICATE OF QUALIFIED PERSON – GARTH MATTI LIUKKO, P.ENG.

I, Garth Matti Liukko, do hereby certify that,

- I am employed as a Principal Mining Engineer by ERM Consultants Canada Limited, 2010-120 Adelaide Street West, Toronto, Ontario, Canada, M5H 1T1 and carried out this assignment for ERM Consultants Canada Ltd.
- I graduated with a B.Eng. degree in Mining Engineering from Laurentian University in Sudbury, Ontario, Canada (1991).
- I am a member in good standing of the Professional Engineers of Ontario, License 90533399.
- I have continuously worked as a mining engineer for 32 years since graduation.
- I have read the definition of "Qualified Person" set out in Regulation 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in Regulation 43-101/NI 43-101) and past relevant work experience, I fulfil the requirements to be a "Qualified Person" for the purposes of Regulation 43-101/NI 43-101.
- I have not visited the property.
- I am responsible for sections 2, 3, 16, 18, 19, 21, 22 and 23, and portions of sections 1, 24, 25, 26 and 27 of the technical report titled "Preliminary Economic Assessment for the La Blache Project, Quebec, Canada, NI 43-101 Technical Report for Temas Resources Corp." (following the NI 43-101 Standards of Disclosure and Form 43-101F1) (the "Technical Report"), effective date of March 24, 2024, and signature date dated of March 24, 2024.
- I have not had prior involvement with the property that is the subject of the Technical Report.
- I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.
- I am independent of the issuer, applying all of the tests in section 1.5 of Regulation 43-101.
- I have read Regulation 43-101 respecting standards of disclosure for mineral projects, as well as Form 43-101F1, and the Technical Report has been prepared in accordance with that regulation and form.
- 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.

Effective Date: 28 March, 2024

Garth Liukko, P. Eng.

Signature Date: 28 March, 2024

03/28/24

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CERTIFICATE OF QUALIFIED PERSON

Pierre-Luc Richard, P.Geo., M.Sc.

This certificate applies to the NI 43-101 Technical Report titled "Preliminary Economic Assessment for the La Blache Project, Quebec, Canada, NI 43-101 Technical Report for Temas Resources Corp." (the "Technical Report"), following the NI 43-101 Standards of Disclosure and Form 43-101F1, with an effective date of March 28, 2024, and a signature date of March 28, 2024.

I, Pierre-Luc Richard, P.Geo., M.Sc., as a co-author of the Technical Report, do hereby certify that:

I am a Professional Geologist in the consulting firm PLR Resources Inc., located at 2000 McGill College Avenue, Suite 600, Montreal, Quebec H3A 3H3.

I graduated from the University of Quebec in Montreal – Bachelor of Science (B.Sc.) Geology in 2004 and obtained from the University of Quebec in Montreal a Master of Science (M.Sc.) Earth Sciences (2012).

I am a member in good standing of the Ordre des Géologues du Québec (OGQ Member No. 1119), the Association of Professional Geoscientists of Ontario (APO Member No. 1714), and the Northwest Territories Association of Professional Engineers and Geoscientists (NAPEG Member No. L2465).

I have practiced my profession in the mining industry for more than 20 years. My exploration and mining expertise has been acquired with numerous companies through my career. I managed and QP'd numerous technical reports, mineral resource estimates, and audits as a consultant with different firms, and for PLR Resources since 2022.

I have read the definition of "Qualified Person" set out in Regulation 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in Regulation 43-101/NI 43-101) and past relevant work experience, I fulfil the requirements to be a "Qualified Person" for the purposes of Regulation 43-101/NI 43-101. I am independent of the issuer applying all the tests in Section 1.5 of NI 43-101.

I am responsible for sections 4 to 12 of the technical report titled "Preliminary Economic Assessment for the La Blache Project, Quebec, Canada; NI 43-101 Technical Report for Temas Resources Corp." (following the NI 43-101 Standards of Disclosure and Form 43-101F1) (the "Technical Report"), effective date of March 23, 2024, and signature date of March 23, 2024.

I have visited the Project on October 21, 2022 and the core handling facility in La Baie on November 25, 2022.

I have not had prior involvement with the property that is the subject of the Technical Report.

As at the effective date of the Technical Report, to the best of my knowledge, information, and belief, I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.

I am independent of the issuer, applying all of the tests in section 1.5 of Regulation 43-101.

I have read Regulation 43-101 respecting standards of disclosure for mineral projects, as well as Form 43-101F1, and the Technical Report has been prepared in accordance with that regulation and form.

Signed and sealed on March 28, 2024.

GÉOLOGUE / GEOLOGIST
PIERRE-LUC RICHARD
1119
QUÉBEC

Pierre-Luc Richard, P.Geo., M.Sc.

Effective Date: 28 March 2024
Signature Date: 28 March 2024

Certificate of Qualified Person – Jacques Dumouchel, P.Geo.

I, Jacques Dumouchel do hereby certify that,

- I am an independent Geologist, residing in Boucherville, Quebec and carried out this assignment for ERM Consultants Canada Ltd. 2010-120 Adelaide Street West, Toronto, Ontario, M5H 1T1 Canada.
- I graduated with a B.Sc. Honours degree in Geology from the University of Ottawa, Ottawa Canada (1977).
- I am a member in good standing of the Ordre des Géologues du Québec (OGQ #995).
- I have worked as a Geoscientist in exploration and project evaluation since graduation and more specifically in titanium minerals projects for the past 37 years.
- I have read the definition of "Qualified Person" set out in Regulation 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in Regulation 43-101/NI 43-101) and past relevant work experience, I fulfil the requirements to be a "Qualified Person" for the purposes of Regulation 43-101/NI 43-101.
- I have not visited the property.

  I am responsible for the supervision of section 14 and associated work by ERM geoscientist Samer Hmoud, of technical report titled "*Preliminary Economic Assessment for the La Blache Project, Quebec, Canada, NI 43-101 Technical Report for Temas Resources Corp.*" (following the NI 43-101 Standards of Disclosure and Form 43-101F1) (the "Technical Report"), effective date of 07 February 2024, and signature date dated of 28 March 2024.
- I have not had prior involvement with the property that is the subject of the Technical Report.
- I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.
- I am independent of the issuer, applying all of the tests in section 1.5 of Regulation 43-101.
- I have read Regulation 43-101 respecting standards of disclosure for mineral projects, as well as Form 43-101F1, and the Technical Report has been prepared in accordance with that regulation and form.
- 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.

GÉOLOGUE
JACQUES DUMOUCHEL
995
QUÉBEC

Jacques Dumouchel, P. Geo. (OGQ #995)

Effective Date: 7 February 2024
Signature Date: 28 March 2024

Certificate of Author – Georgi Doundarov, P.Eng., PMP, CCP

I, Georgi Doundarov, do hereby certify that,

- I am an associate to ERM Consultants Canada Limited, 2010-120 Adelaide Street West, Toronto, Ontario, Canada, M5H 1T1 and carried out this assignment for ERM Consultants Canada Ltd.
- I am a graduate of the University of Mining and Geology, 1996 with a M.Sc. degree in Mineral Processing and Metallurgy as well as a graduate from the Yokohama National University, Yokohama, Japan, 2005 with a M.Sc. degree in Infrastructure Management - Mineral Processing and Metallurgy.
- I am a Member of the Professional Engineers Ontario (PEO) and registered as a Professional Engineer in the province of Ontario with a number 100107167.
- I have worked as a metallurgical engineer and project/study manager for a total of over 30 years since my graduation.
- I have read the definition of "Qualified Person" set out in Regulation 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in Regulation 43-101/NI 43-101) and past relevant work experience, I fulfil the requirements to be a "Qualified Person" for the purposes of Regulation 43-101/NI 43-101.
- I have not visited the property.

  I am responsible for sections 13, and 17, of technical report titled "*Preliminary Economic Assessment for the La Blache Project, Quebec, Canada, NI 43-101 Technical Report for Temas Resources Corp.*" (following the NI 43-101 Standards of Disclosure and Form 43-101F1) (the "Technical Report"), effective date of 28 March 2024, and signature date dated of 28 March 2024.
- I have not had prior involvement with the property that is the subject of the Technical Report.
- I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.
- I am independent of the issuer, applying all of the tests in section 1.5 of Regulation 43-101.
- I have read Regulation 43-101 respecting standards of disclosure for mineral projects, as well as Form 43-101F1, and the Technical Report has been prepared in accordance with that regulation and form.
- 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.

Effective Date: 28 March 2024

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CERTIFICATE OF AUTHOR – Rolf Schmitt, P.Geo.

I, Rolf Schmitt, do hereby certify that,

I am employed as a Technical Director-Permitting - by ERM Consultants Canada Limited, #1000 – 1100 Melville Street, Vancouver, British Columbia, Canada, V6E 4A6 and carried out this assignment for ERM Consultants Canada Ltd.

I graduated from the University of British Columbia – Bachelor of Science (B.Sc.) Geology (1977), and a Master of Science (M.Sc.) Regional Planning (1985), and University of Ottawa - Master of Science (M.Sc.) Exploration Geochemistry (1993).

I am a member in good standing of the Engineers and Geoscientists of British Columbia, License 19824, and Nunavut Association of Professional Engineers and Geoscientists, License L4706.

I have practiced my profession for 46 years since graduation; 6 years in mineral exploration, 22 years in government mining regulation and geochemical research, and 20 years as a senior mining and natural resource regulatory consultant (since 2005).

I have read the definition of "Qualified Person" set out in Regulation 43-101 ("NI 43-101") and certify that by reason of my education, affiliation with a professional association (as defined in Regulation 43-101/NI 43-101) and past relevant work experience, I fulfil the requirements to be a "Qualified Person" for the purposes of Regulation 43-101/NI 43-101.

I have not visited the property that is the subject of the Technical Report.

I am responsible for sections 1.12, 3.2, 20, 26.7 of the technical report titled "Preliminary Economic Assessment for the La Blache Project, Quebec, Canada; NI 43-101 Technical Report for Temas Resources Corp." (following the NI 43-101 Standards of Disclosure and Form 43-101F1) (the "Technical Report"), effective date of 7 February 2024, and signature date dated of 25 March 2024.

I have not had prior involvement with the property that is the subject of the Technical Report.

I am not aware of any material fact or material change with respect to the subject matter of the Technical Report that is not reflected in the Technical Report, the omission to disclose which makes the Technical Report misleading.

I am independent of the issuer, all of the tests in section 1.5 of Regulation 43-101.

I have read Regulation 43-101 respecting standards of disclosure for mineral projects, as well as Form 43-101F1, and the Technical Report has been prepared in accordance with that regulation and form.

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.

Rolf Schmitt, P.Geo.

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H. R. SCHMITT
BRITISH COLUMBIA
GEOSCIENTIST

Effective Date: 28 March 2024

Signature Date: 28 March 2024

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