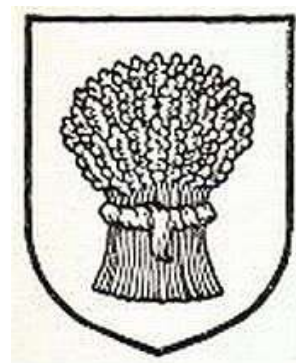


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HALLGARTEN + COMPANY

Initiation of Coverage

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First Phosphate

(CSE: PHOS | FSE: KD0 | OTCQB: FRSPF)

Strategy: LONG

Key Metrics	
Price (CAD)	\$0.27
12-Month Target Price (CAD)	\$0.70
Upside to Target	159%
12mth high-low	\$0.15 to \$0.475
Market Cap (CAD mn)	\$20.55
Shares Outstanding (mns)	76.1
Fully diluted	104.5

First Phosphate

Multiplying the Potential Demand Drivers

- + First Phosphate is aiming to be the newest large producer of Phosphate in North America and the only one fully oriented towards the lithium iron phosphate (LFP) battery format
- + Lithium Iron Phosphate batteries are the rising “new kid on the block” in the EV space, this format already has substantial penetration in larger vehicle formats, such as buses and has been in use in China since the early to late 2000s
- + The Bégin-Lamarche project has moved into first position in priority for development
- + The Bégin-Lamarche project (BLM) has excellent access/infrastructure and is strategically located in proximity to the port of Saguenay on the St Lawrence and the Hébertville-Station intermodal rail station, giving the project access to North American and global markets
- + A PEA on BLM should be published before year end
- + The company has an array of partnerships with the A-list of Phosphate processors and technology partners in North America, Europe and Australia in the LFP space
- + The company has secured the First Saguenay facility to prepare for the production of battery precursor material pCAM on a commercial scale
- ✗ We must await the publication of the PFS on BLM for the CapEx (and the value-added) of the production to Purified Phosphoric Acid (PPA) to be fleshed out
- ✗ The likely start-up CapEx is sizeable and then the addition of PPA production facilities will add substantially to this, even though the plant may be a JV with one of its technology partners
- ✗ The financing environment is tough in the battery metals complex, with investors being willing to fund only projects with a realistic perspective of production.

The Icing on the Phosphate

The fertilizer applications of Phosphate have long been the most vital of this mineral’s applications, essentially providing a growing world population with a growing food supply over the last 150 years. The other multiplicity of chemical and industrial applications for the mineral could not even hope to add up to Phosphate’s agricultural usages until now. The new applications in the EV industry have the potential to not only be enormous but also change the direction of travel of battery formulations.

The mineral has already been long in use as the electrolyte in Li-Ion batteries but now is part of the challenger battery cathode material, Lithium Iron Phosphate (LFP), to the “inevitability” of Lithium Ion’s coronation as the be-all-and-end-all for EV energy storage.

Significant new mine developers of Phosphate supply are very few. There are two in Quebec and one of these, First Phosphate, has a significant advantage in being much closer to the St Lawrence Seaway. It has seized the advantage presented by the rise of the LFP format to put together a string of alliances with those involved in the new batteries and their precursor chemicals.

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The company's thesis is that, with anticipated primary recovery of a >40% pure phosphate concentrate, amongst the world's purest, this will be ideal for the creation of large quantities of PPA for the LFP battery industry. 90% of such concentrate can be converted into battery-grade PPA and thereby by passing the fertilizer markets entirely and focusing strictly on the value-add battery market. Added to this are secondary recoveries of ilmenite (~39% TiO₂) and magnetite (~68% Fe) which should greatly reduce costs of production of the Phosphate concentrate. The company is advanced in investigating the potential to upgrade the magnetite recovered into iron powder: this is equally valuable material input in the LFP Cam production process which also has a scarcity factor in North America.

In this initiation of coverage, we shall look at the rising new application(s) of phosphate in the battery metals space, the Bégin-Lamarche project, its technology partnerships, its progress and next steps and its economics.

Some Background

First Phosphate listed on the CSE in late February of 2023. Previously, in August of 2022 the company had exercised an option by issuing 6,000,000 Shares to Glen Eagle Resources Inc., the vendor of a phosphate exploration property known as the Lac à l'Original, Lac Vanel and Mirepoix Trilogy, and paid \$991,000 to Glen Eagle, and a later payment (now made) of \$500,000.

It also undertook a financing at that time to raise ~CAD\$1.76mn. It also appointed P&E Mining Consultants Inc. and SGS Canada Inc. to complete its NI 43-101 Mineral Resource Estimate Technical Reports and undertake metallurgical testing on the newly acquired assets.

Since then, the company has pivoted to the BLM deposit where it has found much greater concentration of phosphate which is much closer to existing infrastructure.

The Shifting Tides of Battery Metal Formulations

In the beginning there were Lead-Acid batteries, and they served their purpose for well over 100 years, but they clearly had no place in the electric vehicle world as they just cannot hold the same amount of energy that an EV needs to operate. In the battery world, the non-ICE applications of batteries were dominated, until recent decades, by the wretched alkaline batteries (AA, AAA etc) composed of steel and a mix of zinc/manganese/potassium/graphite, that suffer from low power density, short lives, lack of amenability to recharging and a tendency to ultimately corrode when potassium hydroxide released from batteries interacted with air.

Then came the Lithium-ion battery. Initially in small formats for electronics, phones and laptops, it eventually escalated in size to the units that now serve in EVs and hybrids. With size, the shortcomings of expensive (and difficult to source) inputs, such as Cobalt, became exacerbated and the safety issue (of thermal runaway i.e. tendency to overheat and burst into flames) have led to rising preoccupation.

Of late a scramble has developed by OEMs and others to evolve, and trial, other metal formulations to short-circuit (pardon the pun) the Li-ion dominance. With this goal, Lithium Iron Phosphate (LFP)

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batteries have been making a push for breaking Lithium-ion's dominance, with some success so far in heavyweight formats, such as buses.

LFP's major commercial advantages are that it poses few safety concerns such as overheating and explosion, as well as long cycle lifetimes, relatively high power-density and has a wider operating temperature range. Power plants and automobiles use LFP.

Phosphate – In Brief

Phosphate (which has the chemical symbol P) is the naturally occurring form of the element phosphorus, found in many phosphate minerals. In mineralogy and geology, phosphate refers to a rock or ore containing phosphate ions. Phosphorite are mined to obtain phosphorus for use in agriculture and industry. Phosphorous has a concentration in the Earth's crust of about one gram per kilogram (compared with copper at about 0.06 grams). In minerals, phosphorus generally occurs in the mineral apatite.

In its review of the mineral for 2022, the USGS noted that world production was estimated to be about the same as that in 2020, with China, Morocco, and the United States remaining the leading producers. Production in Jordan, Morocco, and Saudi Arabia increased as expansions to capacity were being ramped up in 2021. Capacity expansion projects were ongoing in Brazil, Kazakhstan, Mexico, Russia, and South Africa; however, none of the projects were expected to be completed until after 2024.

The increases in world consumption and trade in recent years were driven by high crop prices, increased planted crop area, and increased crop exports. This was attributed to a rebound from poor weather conditions in the growing season. South America and Asia were leading regions of growth in consumption of phosphate fertilizer.

The global Phosphate market had been anticipated to reach a valuation of US\$16.8bn in 2023, driven by increasing demand for specialty phosphates. This trend was creating new opportunities for phosphate, driving a projected compound annual growth rate of 2.4% between 2023 and 2033, and reaching a total valuation of approximately US\$21.4bn by 2033.

While the primary factor driving the growth of the phosphates market is worldwide agricultural expansion, the rising usage in battery formulations is a factor that had not been foreseen even ten years ago.

Lithium Iron Phosphate (LFP) Batteries

A major trend in the world of batteries and electric vehicles is the rising penetration of lithium-iron phosphate batteries. Chief amongst the attractions is that LFP format batteries have a lower cost than the more widely used application, Nickel Manganese Cobalt (NMC) batteries, and they last approximately twice as long. The key component of these challenger batteries is Lithium iron phosphate, or lithium ferro-phosphate (LFP), which is an inorganic compound with the formula LiFePO_4 .

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LFP's other major commercial advantages are that it poses few safety concerns such as overheating and explosion, as well as long-cycle lifetimes, high power density and has a wider operating temperature range. Power plants and automobiles use LFP.

These advantages are why LFP battery sales are surging globally and now account for close to 66% of total Chinese battery output.

This battery chemistry is targeted for use in power tools, electric vehicles, solar energy installations and more recently large grid-scale energy storage.

Most lithium batteries (Li-ion) used in consumer electronics products use cathodes made of Lithium compounds such as Lithium Cobalt oxide (LiCoO_2), Lithium Manganese oxide (LiMn_2O_4), and Lithium Nickel oxide (LiNiO_2). The anodes are generally made of graphite.

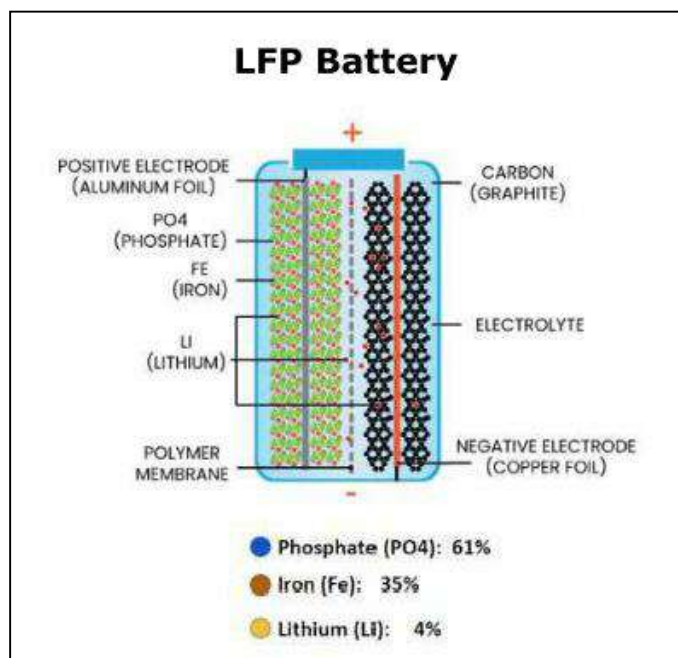
LFP technology has been recognized for several decades now. The principal features are:

- an operating voltage of 3.3 V
- charge density of 170 mAh/g
- high power density
- long cycle life
- stability at high temperatures

The major differences between LFP batteries and other lithium-ion battery types are that LFP batteries contain no Cobalt (removing ethical and economic questions about Cobalt's availability) and have a flat discharge curve. As is well-known, Lithium Cobalt oxide-based battery chemistries are more prone to thermal runaway if overcharged and cobalt is both expensive and not widely geographically available.

Drawbacks

However, LFP batteries are not without their drawbacks. Amongst these are the high electronic resistivity of LFP, as well as the lower maximum charge/discharge voltage. The energy density is significantly lower than LiCoO_2 (although higher than the nickel–metal hydride battery). Although LFP has 25% less specific energy (Wh/g) than lithium batteries with oxide (e.g. nickel–cobalt–manganese, NCM) cathode materials, primarily due to its operational voltage (3.2 volts vs 3.7 volts for NCM-type cathode chemistries), it has 70% more than nickel-hydrogen batteries.



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The Value Added – Purified Phosphoric Acid (PPA)

Phosphoric acid is a colorless, odorless phosphorus-containing solid, and inorganic compound with the chemical formula H_3PO_4 and is produced industrially by one of two routes, wet processes and dry processes. It is commonly encountered as an 85% aqueous solution, which is a colourless, odourless, and non-volatile syrupy liquid. It is a major industrial chemical, being a component of many fertilizers and utilized in LFP battery formulations.

The Strategy

Early on, First Phosphate teamed up with Queen's University. In their opinion, although enormous reserves of phosphate rock exist, only a small portion is ideally suited for LFP battery production. The raw material for cathode manufacture is generally constrained by the supply of pure phosphoric acid with low trace element concentrations. The university's research showed that phosphatic ores derived from anorthosites (< 3 ppm of Cd, Pb, U, and Th) may be the best source to produce much larger quantities of purified phosphoric acid with low levels of deleterious trace elements (90% feedstock conversion for igneous phosphate vs generally 20% for sedimentary ores). To that end the company has focused its attentions on that mineralisation and partnerships that can mobilise First Phosphate's potential output of Purified Phosphoric Acid, inserting the company in the value-added chain of LFP's in North America.

The Art of the Deal(s)

A key tenet at First Phosphate is not to reinvent the wheel, but rather to partner with technology leaders in the fields of phosphate processing and LFP applications. To this end it has cooperation and R&D relationships with the following entities:

- **Prayon Technologies**
- **American Battery Factory**
- Queens University
- **Port Saguenay**
- Norfalco (Glencore)
- CMAX Retombees
- Craler – TFI International
- Agrinova
- Integrals Power

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- Lithium Australia
- **Ultion Technologies**
- **Rapidwall / Rapidseal**
- **Groupe Goyette**

We expand upon the key partnerships through this Initiation and in Appendix I.

Offtakers

First Phosphate has signed technology collaboration/offtake deals with two major players in the LFP space in the United States. The expectation is that additional cell production partners and facilities are expected to use First Phosphate's LFP as recommended. These transactions are with American Battery and Ultion.

Each additional facility is expected to ramp up to at least 2,000 tonnes per year LFP/LFMP CAM consumption by 2030. There are at least two additional production partner facilities being contemplated by Ultion at this time.

The MOU with Ultion together with the MOU with American Battery Factory provide First Phosphate with a total minimum offtake potential of 46,000 tonnes of LFP CAM to be fulfilled slowly starting in 2026 and ramping up by 2028/2029.

The Projects

While the principal project until 2023 was that at Lac à l'Original, with a resource and PEA in hand, the other project at Bégin-Lamarche came up fast as a challenger in the race to development, due to infrastructure considerations and a welter of excellent exploration results coming through. For this reason, we shall deal with Bégin-Lamarche first despite Lac à l'Original being more advanced on the documentation front.

As can be noted, Bégin-Lamarche is closer to port and with better road access than Lac à l'Original, and notably the Lac à Paul project of Arianne Phosphate. Lac à Paul is about 300km driving distance from Port of Saguenay, Lac à l'Original is 140km and Bégin-Lamarche is 70 km.

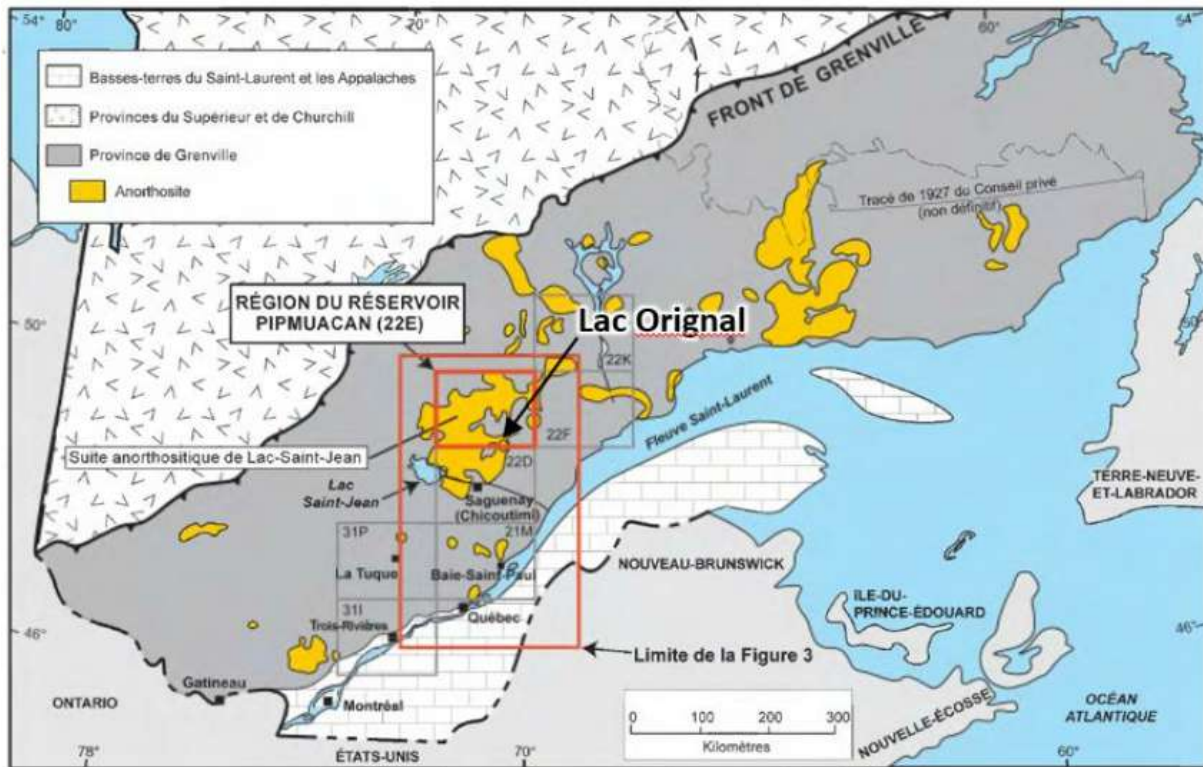
The map below shows the relationship of Bégin-Lamarche to the port at Saguenay, the NATO air force base, the Hébertville Station intermodal rail station and First Saguenay secondary processing facility for iron phosphate pre-cursor.



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Regional Geology

As noted earlier, First Phosphate, working with its partners at Queens University resolved to target the phosphate potential of the Lac-Saint-Jean Anorthosite Suite (LSJAS). This suite occurs in the central part of the Grenville Structural Province, which is ~1600 km long and ~350 km wide Mesoproterozoic orogenic belt along the southeastern margin of the Canadian Shield.



The LSJAS is the largest anorthosite body in the world and the LSJAS is interpreted to have intruded in multiple phases over ~170 million years starting at 1160 million years ago.

The region has mineralized occurrences of apatite, Iron, Titanium, Vanadium and Nickel-Copper sulphide mineralization associated with the AMCG (anorthosite-mangerite-charnokite-granite) suites.

The region where First Phosphate has its assets contains Phosphate-rich anorthosites that are part of this regional Proterozoic (LSJA) Suite.

On Apatite

Apatite is fairly common as an accessory mineral in igneous and metamorphic rocks where it is the most common phosphate mineral form to be found. Occurrences are usually found as small grains which are often visible only in thin sections. The chemical formula of apatite is $\text{Ca}_5(\text{PO}_4)_3(\text{F},\text{Cl},\text{OH})$. The molecular weight of the phosphate molecule (PO_4) in apatite is 41.8%. Apatite is also found in clastic sedimentary

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rock as grains eroded out of the source rock over time. Phosphorite is a phosphate-rich sedimentary rock containing as much as 80% apatite which is present as cryptocrystalline masses. Economic quantities of apatite are also sometimes found in nepheline syenite or in carbonatites.

The Port

In October of 2022, the company signed an MOU with the port of Saguenay. The MOU engages discussions between the parties to provide potential deep-sea access to ship phosphate concentrate internationally and greenfield land on which to build its facilities. The deal comes on the heels of the Quebec Premier Francois Legault's electoral commitment to invest CAD\$117.2mn in infrastructure at the Port of Saguenay.

In March of 2024, the company signed an MOU with Groupe Goyette. First Phosphate and GG are to work towards determining the rail line options for the movement of the company's products and supplies to and from Saguenay and the rest of North America through the Hébertville-Station intermodal facility owned and operated by GG.

Pivoting to Bégin-Lamarche

As the exploration program has advanced the much higher grades at Bégin-Lamarche have made clear that this deposit may move to a lead position in the priorities for development at First Phosphate. First of the attractions is the likely greater volumes that this deposit might yield (though the upcoming NI43-101 and PEA will ascertain this in the summer/fall). Over and beyond the mineralogical attractions of the deposit the proximity to infrastructure is a key deciding factor. Factors in the balance that are in Bégin-Lamarche's favour include:

- Workforce at 5-7 kms proximity
- Outside of snow belt
- On municipal land
- On (5kms) hydro-electric power grid
- Near provincial highways
- Near port (as previously mentioned)
- Near to the Hébertville-Station intermodal truck-to-rail facility

The project being sited here also has the support of the two municipalities and the local indigenous group.

The Bégin-Lamarche Project

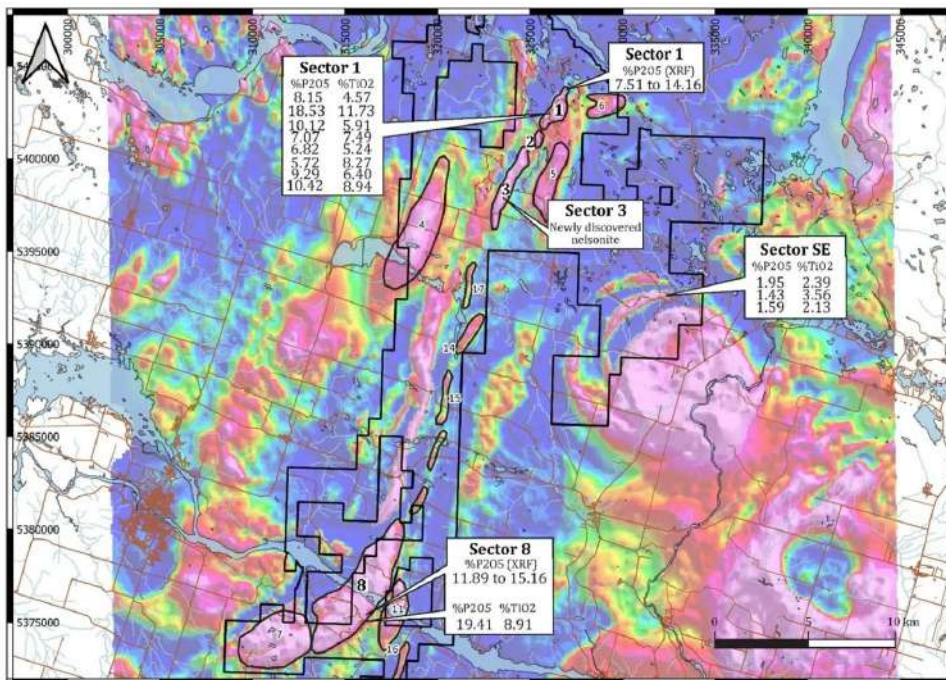
This property is located approximately 70 kms driving distance from the deep-sea Port of Saguenay (thus

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closer to sea access than Lac L'Original). This has hitherto been seen as the company's secondary asset, but recent exploration (as detailed anon) has transformed it into the project to be developed first.

Bégin-Lamarche - Exploration

Most of the exploration focus has shifted to the Bégin-Lamarche deposit, the feature which drove the decision to focus here was a seven-kilometres-long airborne magnetic linear anomaly.



During the autumn of 2022, a geological reconnaissance and sampling program on behalf of First Phosphate was undertaken at the Bégin-Lamarche project with the results being released in January of 2023. The findings were:

- At the northern tip of the area (Target 1), a new high-grade phosphate discovery was made immediately to the north of the initial discovery. A thick layer of nelsonite (phosphate-bearing rock), potentially up to 130m in thickness, revealed between 7.51% and 14.16% P₂O₅ and between 2.09% and 18.14% TiO₂
- A new phosphate mineralized area (Target 3) was also discovered approximately 4km south and on strike with the initial discovery. Field investigation showed that the nelsonite ranges from 30m to 60m in thickness
- Airborne magnetic survey interpretation seems to demonstrate a potential strike length of 8km and a thickness of up to 130 m for the high-grade phosphate-bearing horizon
- The Larouche sector (Target 8) with six of the 19 surface grab samples taken assaying at over

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10% P₂O₅.

The enhanced reconnaissance exploration of Autumn 2022 resulted in a total of 140 rock samples being gathered from this and the results were released in February of 2023. These showed:

- Multiple high grade surface grab samples of up to 18.96% P₂O₅ and 6.81% TiO₂ (titanium)
- Results from Target 1 contained rich & thick layers of phosphate rock that extend within the original strike zone. Seventy surface sample results confirmed management's opinion of the high-grade nature of the phosphate discovery with 30% of assays grading over 10% P₂O₅
- A new discovery was made on Target 3 where the results of 38 grab samples in a 30-60 m wide nelsonite produced multiple phosphate assays of over 10% P₂O₅. This target is located approximately 3,000 m to the south of Target 1

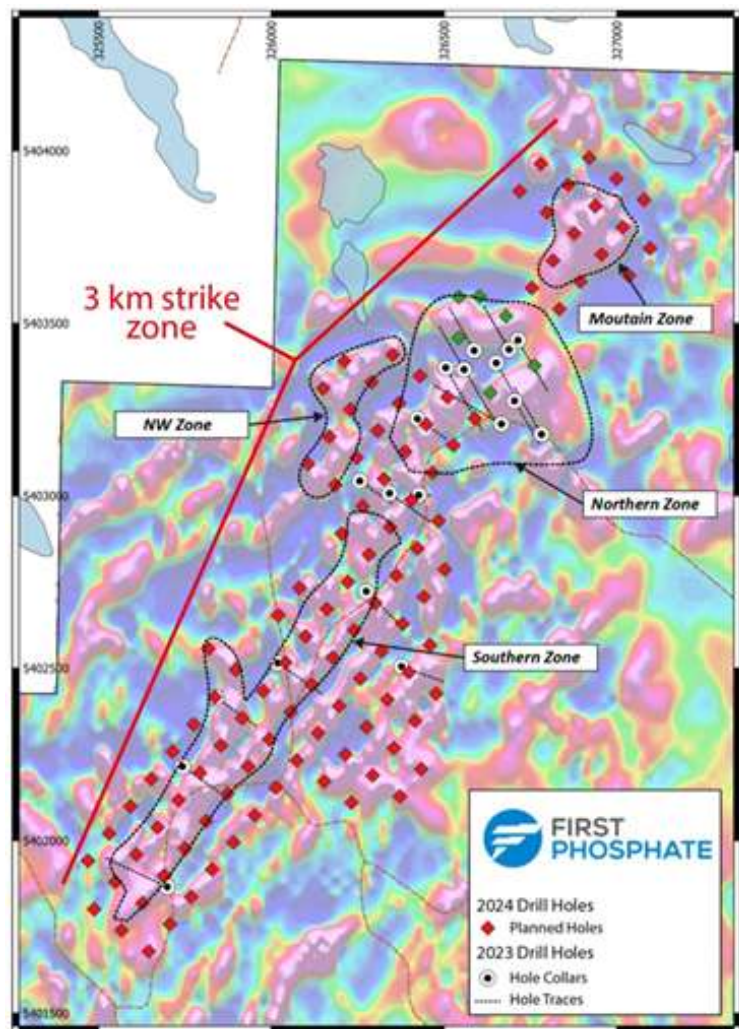
Earlier surface sampling and magnetic surveying showed that a strike zone of 2.5kms by 400m, containing rich phosphate rock layers, can be delineated within the Target 1 sector.

Encouragingly, analysis of 43 trace elements, including U, Th, REE, As and Cd indicates very low concentrations of potentially deleterious elements.

The 2023/4 Campaign

In February 2023, a maiden drilling program consisting of 7,600m, across 38 drill holes, commenced, with an initial 4,661 m of drilling.

The drilling program outlined four Phosphate layers in the Northern Zone. The layers are 300m long and a true width of up to 70 m. Hole BL-23-21 returned 6.75% P₂O₅ over 133.3m from 122.5m in the drill hole. The Southern Zone also revealed a 1,500m long phosphate layer having a true width of at least 100m. Hole BL-23-14 returned 5% P₂O₅ over 133.65m starting from 18 m in the drill hole.



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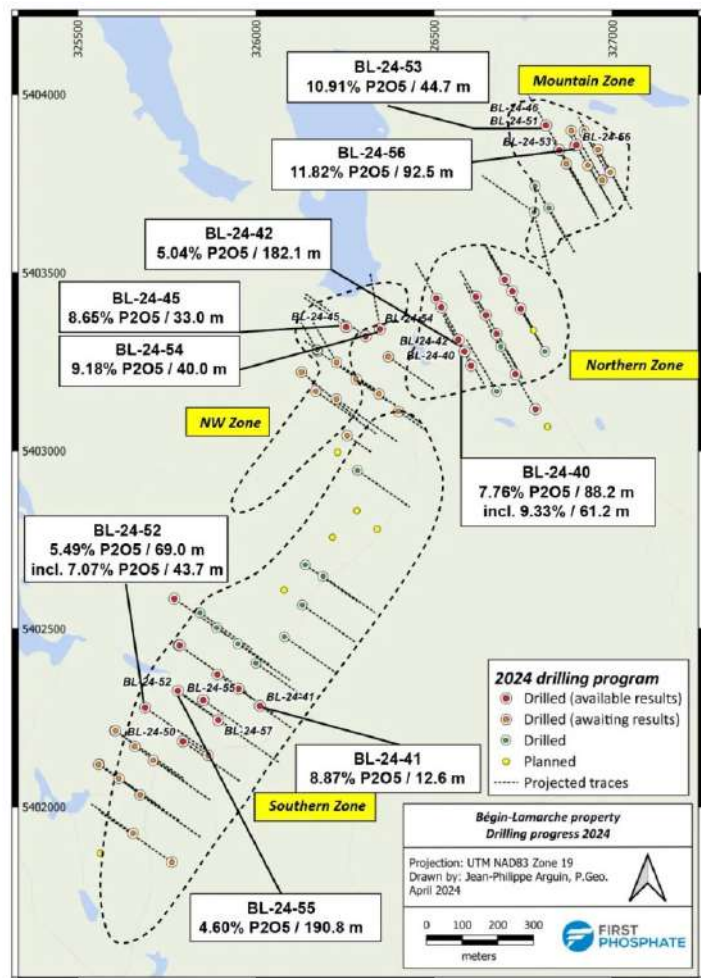
In the fall of 2023, a field prospection program outlined a new Phosphate layer extending for 500 m in Sector 1, where 14 of the 26 samples collected returned over 10% P₂O₅. In Sector 8, many samples returned over 20% P₂O₅ and one sample returned 39.45% P₂O₅, which represents a purity of over 95%.

In mid-March of 2024 initial assay results from the first 3,394m of the current 25,000m drill program were announced. The most notable results so far (by zone) have been:

- **Phosphate Mountain Zone:** nine drill holes have been completed to date in the Phosphate Mountain Zone, ones which have intersected high apatite-bearing peridotite visually containing from 30% to 80% apatite over widths of up to 43m
- **Northern Zone:** Drill hole BL-24-25 intersected 9.89% P₂O₅ over 42.8m starting at a depth of 74.20. Drill hole BL-24-26 intersected 9.44% P₂O₅ over 89.1m starting at a depth of 6.9m
- **Northwestern Zone:** Drill holes BL-24-49 and BL-24-54 intersected 20 m and 40 m of peridotite, respectively, visually containing 30% apatite.
- **Southern Zone:** Drill hole BL-24-24 intersected 5.22% P₂O₅ over 129.6m starting at a depth of 61.3m. Drill hole BL-24-35 intersected a new higher-grade layer of 7.82% P₂O₅ over 22.4m starting at a depth of 165.1m

In late April the company announced the third set of assay results. The features were:

- **Phosphate Mountain Zone:** Drill hole BL-24-56 intersected 11.82% P₂O₅ over 92.5 m starting at a surface depth of 6.5 m. Drilling in the Phosphate Mountain Zone revealed a thick layer (90 m) of phosphate-bearing nelsonite outcropping on surface with numerous other high-grade intersections at greater than 10% P₂O₅
- **Northern Zone:** Drill hole BL-24-



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40 intersected 7.76% P₂O₅ over 88.2 m from a depth of 186.0 m including 9.33% P₂O₅ over 61.2 m

- **Northwestern Zone:** Drill hole BL-24-54 intersected 9.18% P₂O₅ over 40 m from a starting depth of 61.1 m
- **Southern Zone:** Drill hole BL-24-55 intersected 4.60% P₂O₅ over 190.8 m from a starting surface depth of 4 m

Further results were announced in mid-May with standouts being:

- **Phosphate Mountain Zone:** Drill hole BL-24-67 intersected 11.85% P₂O₅ over 84 m starting at a surface depth of 3 m. Drilling in the Phosphate Mountain Zone revealed a thick 90 m layer of phosphate bearing nelsonite rock outcropping at surface with numerous other high-grade intersects grading at over 10% P₂O₅. Drill hole BL-24-82 returned a sub-intersection of 20.51% P₂O₅ over 9.75 m within a 77.7 phosphate intersect grading at 11.07% P₂O₅. This sub-section also contains a 2.1 m massive apatite vein that returned 30.73% P₂O₅
- **Southern Zone:** Drill hole BL-24-60 intersected 5.21% P₂O₅ over 194 m from a surface depth of 4.0 m and drill hole BL-24-83 intersected 5.81% P₂O₅ over 216.1 m starting at surface. Drilling revealed many phosphate layers over 10% P₂O₅ at the base of the main phosphate layer. Drill hole BL-24-84 intersected 8.41% P₂O₅ over 77.1 m starting at 6 m. In the technical team's opinion these results demonstrate that high-grade phosphate layers also occur in the Southern Zone

The 25,929 m drill program was completed ahead of schedule on April 29, 2024.

The Maiden Resource Estimate at Bégin-Lamarche

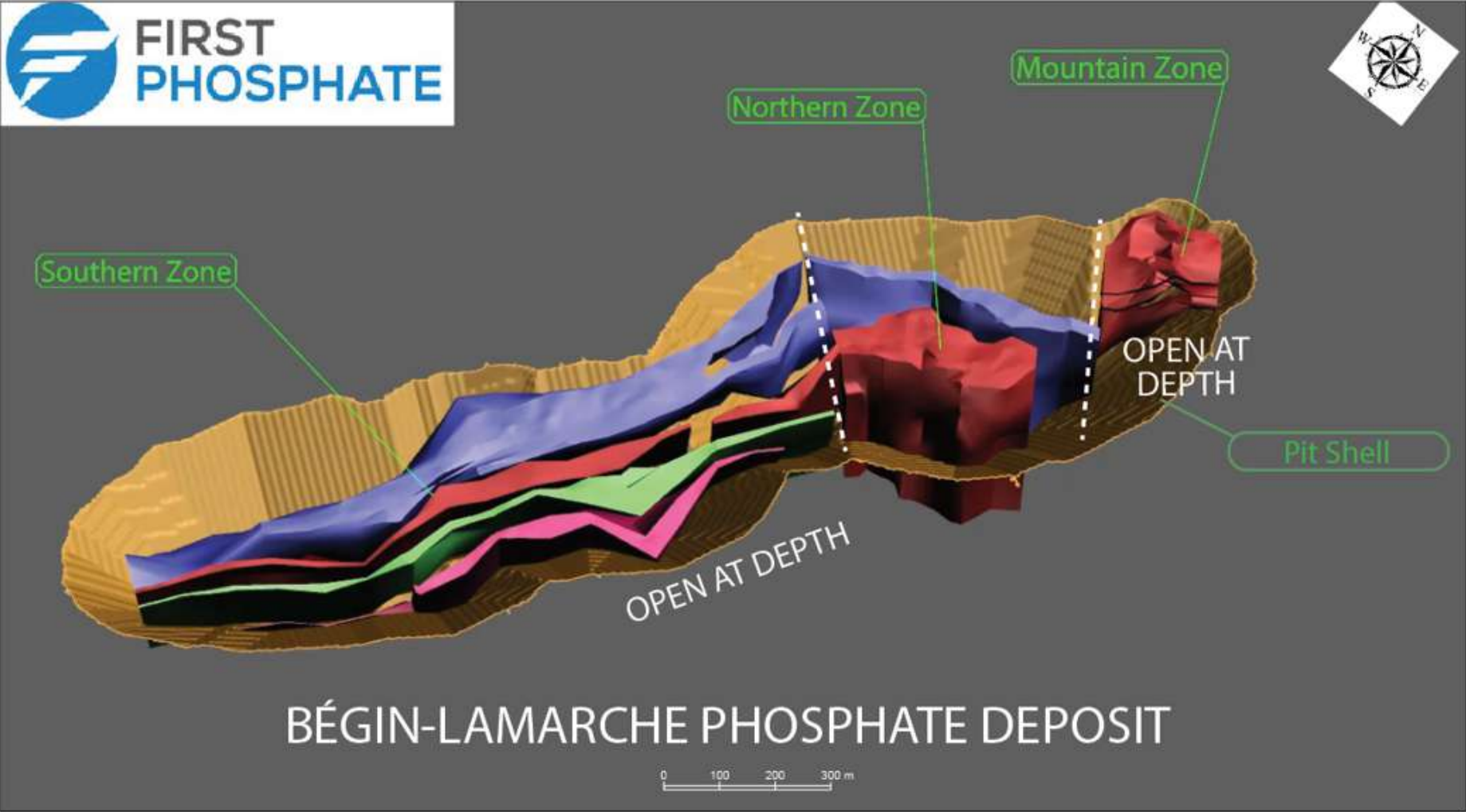
The goal was to produce a Maiden Resource on Bégin-Lamarche during 2024 and this was duly published in late September of this year. The MRE, with an effective date of September 9, 2024, was carried out by M. Antoine Yassa, P.Geo., of P&E Mining Consultants Inc.

The MRE was based upon 120 drill holes, totalling 29,762 metres. The database contained 7,968 assays for percentage of P₂O₅, Fe₂O₃ and TiO₂. The most salient features were:

- An Inferred pit-constrained Mineral Resource: 214mntonnes @ 6.01% P₂O₅ (phosphate)
- An Indicated pit-constrained Mineral Resource: 41.5mn tonnes@ 6.49% P₂O₅

Including Mountain Zone:

- Indicated Mineral Resource of 9.3 Mt @ 8.19% P₂O₅
- Inferred Mineral Resource of 6.8 Mt @ 8.57% P₂O₅



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The phosphate deposit is comprised of three mineralized zones within the deposit, as can be noted from the pit-shell cutaway on the preceding page.

The three zones are continuous, only separated by faults within the deposit and extend to a length of 2,500 m. The Mountain Zone is a single phosphate-bearing mass having a diameter of up to 200 m and a length of 250 m. Drilling at the Mountain Zone intersected massive apatite (phosphate-bearing mineral) veins of up to 2 m. The Northern zone is comprised of two phosphate layers ranging from 100 to 200 m in thickness and a length of 600 m. The Southern Zone bears four phosphate layers, one of them having up to 200 m in thickness and extending to 1,700 m.

Notably, the potential for by-product credits was raised by recovering two additional primary mineral products: a magnetite concentrate (iron) and an ilmenite concentrate (titanium). Additionally, the Bégin-Lamarche deposit contains very low levels of potentially deleterious elements.

Metallurgical test work indicates an anticipated apatite concentrate grade of 40% P₂O₅ at a 91% recovery.

Bégin-Lamarche Mineral Resource Estimate				
Pit-constrained at 2.5% P₂O₅ cut-off				
Category	Zone	Tonnes mns	P₂O₅ %	Contained P₂O₅ tonnes
Indicated	Mountain	9.3	8.19%	758,000
	Northern	32.2	6.00%	1,934,000
	Total	41.5	6.49%	2,692,000
Inferred	Mountain	6.8	8.57%	584,000
	Northern	44.3	6.98%	3,090,000
	Southern	162.9	5.63%	9,177,000
	Total	214	6.01%	12,851,000

The deposit is open at depth.

The metrics driving the P₂O₅ cut-off value included:

- US\$: CAD\$ Exchange Rate: \$0.75
- P₂O₅ Price (32%): US\$180/t (approximate two-year trailing average)
- P₂O₅ Price (40%): US\$225/t
- P₂O₅ Process Recovery: 91%

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- Processing Cost: CAD\$14.00/t
- G&A: CAD\$3.00/t
- Mining Cost: CAD\$2.75/t (mineralized material and waste)
- Pit Slopes: 45°

Phosphate Concentrate Pilot Plant

The company brought on-stream a pilot plant in mid-June of 2023 which utilized material from Bégin-Lamarche. The pilot plant, located at the facilities of SGS in Quebec City, uses fully solventless, environmentally friendly extraction methods.

This development was prompted by encouraging bench test results, demonstrating a recovery of 91.4% of its phosphate-bearing apatite to a concentrate containing 40.2% P_2O_5 (phosphate). The purpose of the pilot plant was to process a large bulk sample.

A 15-tonne bulk sample was crushed to a diameter of 20 mm and sent to SGS. Based on 15 separate crushed rock specimens, the bulk sample assayed 7.6% P_2O_5 (phosphate) and 6.9% TiO_2 (titanium oxide).

Its goal was the production of phosphate concentrate to be used in the formulation of battery-grade purified phosphoric acid for use in the manufacture of cathode active material (CAM) for the LFP battery industry in North America.

The pilot plant produces a super high-grade phosphate concentrate approaching 41% P_2O_5 . The pilot plant has produced over 900 kilograms of apatite concentrate which have been sent to the facilities of Prayon SA in Belgium for the production of battery-grade purified phosphoric acid.



The battery-grade PPA produced by Prayon was then sent to other partners for homologation into their

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LFP cathode active material production processes.

In a further advance, in mid-February of 2024, it was announced that the pilot plant had gone the next step and had transformed its merchant-grade phosphoric acid (MGA) into battery-grade purified phosphoric acid (PPA) in conformity with Prayon's food-grade/battery-grade specification.

It's worth mentioning that the pilot plant also produces marketable recoveries of ilmenite and magnetite.

Grant from Quebec

In early March of 2024, the company received a mining research and innovation grant from the Quebec Ministry of Natural Resources & Forestry. The grant provides financial support of \$315,236 to continue mineralogical study on its apatite, ilmenite and magnetite concentrates. The project also includes the processing of the mine tailings for re-use in the cement construction industry.

Metallurgy

The concentration processes that First Phosphate expects to utilize were developed in the SGS laboratory. These begin with a moderate grind followed by the removal of magnetite with the use of a low intensity magnetic separator (LIMS). The LIMS tails were subsequently subjected to special reagent conditioning and flotation processes that resulted in the production of a high-grade apatite concentrate. A concluding test involved the production of an apatite concentrate in a 6-stage locked cycle test.

The concentrate assayed 40.3% P_2O_5 , close to the pure mineral composition of 41.7% P_2O_5 . The metallurgical recovery of the apatite was high at 91%.

Mineralogical studies (by SGS and Queen's University) indicated that the Lac à l'Original apatite is a high-purity fluorapatite, which is very low in heavy metals, as well as low in chloride content.

These chemical characteristics are favourable for the production of high-purity phosphoric acid for conversion to a variety of valuable products including a key component of LFP batteries.

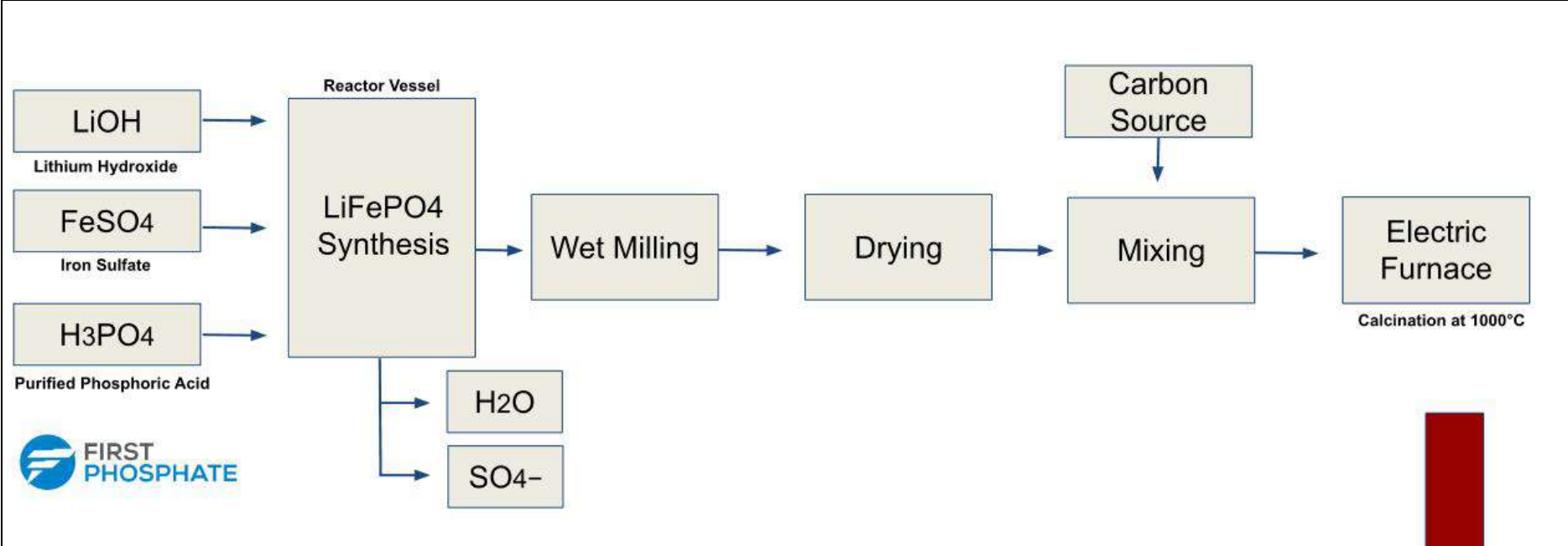
Igneous Advantage

The igneous phosphate ore found at the Bégin-Lamarche project is mostly from nelsonite and oxide-apatite-mafic-ultramafic rocks. The P_2O_5 of the ultramafic rock ranges from 2.6% to 15.0 wt.%. The average P_2O_5 grading of the phosphate is 6.01%. Testing suggests that the phosphate ore from this deposit could produce a high-quality phosphate concentrate with a P_2O_5 content of ~40.9 wt.%, which is above the global average P_2O_5 of marketable phosphate concentrates produced from igneous ore from other countries (36.9 wt.%).

Production

To upgrade the PPA to LFP batteries the following process is employed:

Below can be seen the process by which PPA, combined with Lithium and Iron, is converted into the LFP for battery usages:



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The process for creating PPA is three-stage:

- Phosphate bearing rock is crushed and processed to obtain Concentrated Phosphate Rock (25%-41% purity level). Sedimentary Rock (25%-34%). Igneous Rock (38%-41%)
- The concentrated Phosphate rock is then processed into medium-purity Merchant Grade Phosphoric Acid (MGA) for fertilizer and animal feed
- The next stage in upgrading takes Merchant Grade Phosphoric Acid (MGA) via further processing to Purified Phosphoric Acid (PPA)

Development Moves – First Saguenay

In early September of 2024, the company announced that it had secured a facility lease for a 10,000 tonne per annum iron phosphate cathode active material pre-cursor (pCAM) plant. Iron phosphate is a key pre-cursor used in the production of cathode active material for LFP batteries. The First Saguenay Facility has been tight-sized at a capex of US\$65mn.

The leased facility is in Saguenay (La Baie). The establishment of the First Saguenay plant should lead to the creation of approximately one hundred new high-tech jobs in the Saguenay-Lac-St-Jean Region.

First Saguenay is intended to work synergistically in the transformation and value-added processing of the feedstock from the PHOS's proposed mining operations, which are located approximately 80 km and 120 km from the plant. First Saguenay has a strategic logistical advantage located some 20 kms from the deep-sea port of Saguenay.

Meshing with the Feasibility Study

The company has begun the first phase of its project feasibility study with Ultion Technologies (see Appendix I), a US-based company that is a pioneer in the LFP battery industry. The study is to determine the infrastructure required to support the permit applications as well as the lease facility retrofitting requirements.

The technology to be implemented is proven and already operating in two other facilities in the world, one with a capacity of 10,000 tonnes per annum and another with a capacity of 50,000 tonnes per annum, as announced on December 11, 2023. As a result of the industrial capacity of the chosen technology, First Saguenay expects to be able to move directly into commercial-size, scalable production without having to go through a pilot stage.

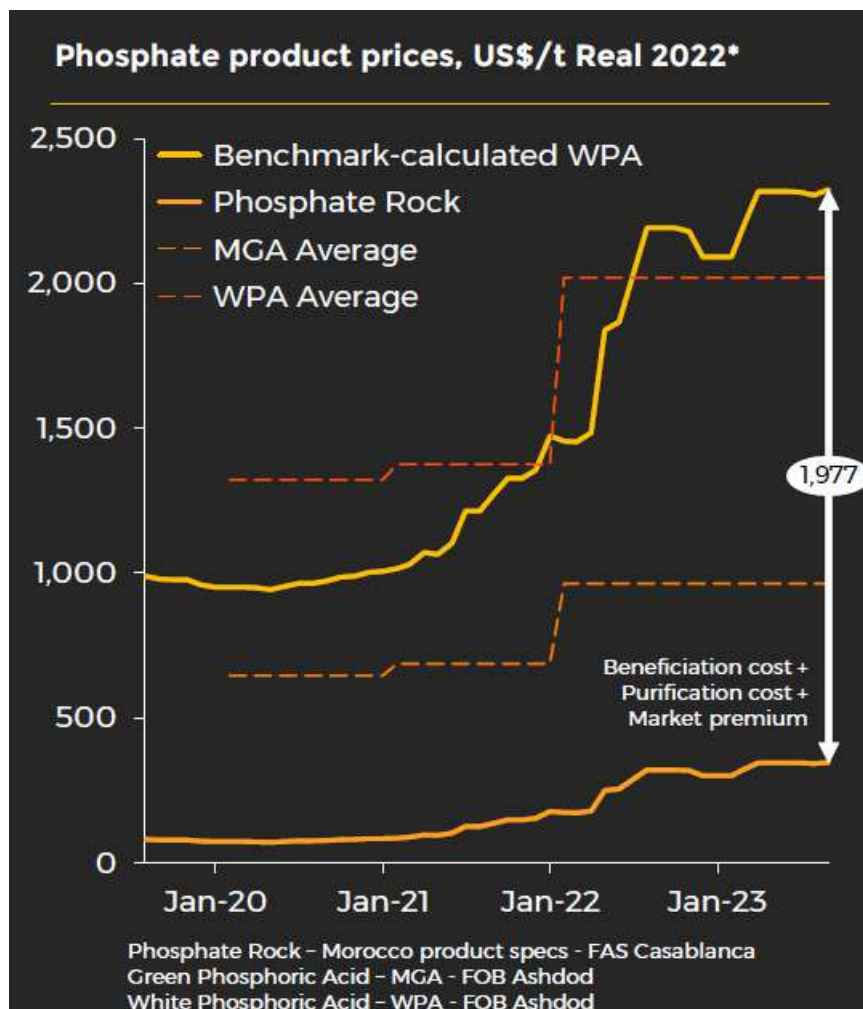
Initial production from First Saguenay is anticipated for the first quarter of 2026 to meet anticipated demand from existing partners, American Battery Factory (see Appendix I) and Ultion, as well as other potential clients in the fields of energy storage, electric vehicles and specialized battery products with which the PHOS is in advanced discussions.

Market Dynamics

PPA currently is a capacity-constrained output. There are only a handful of suppliers of note of PPA in the Western World, all of which are integrated into pre-existing food or industrial production chains, and, as such almost all output is fully-committed to current offtakers. There is deemed to be little excess PPA left for LFP production.

There are five international producers of this product, so it is somewhat of an oligopoly. The larger players are Nurtrien USA, ICL Israel, Prayon Belgium (see Appendix I), while two smaller players are Haifa Chemical Israel, and Innophos Mexico.

The price for the various grades, as per Benchmark, is shown in the graphic below:



It is estimated that to accommodate LFP battery demand in North America by 2030, an amount some 2x-3x the amount of PPA currently available will be required.

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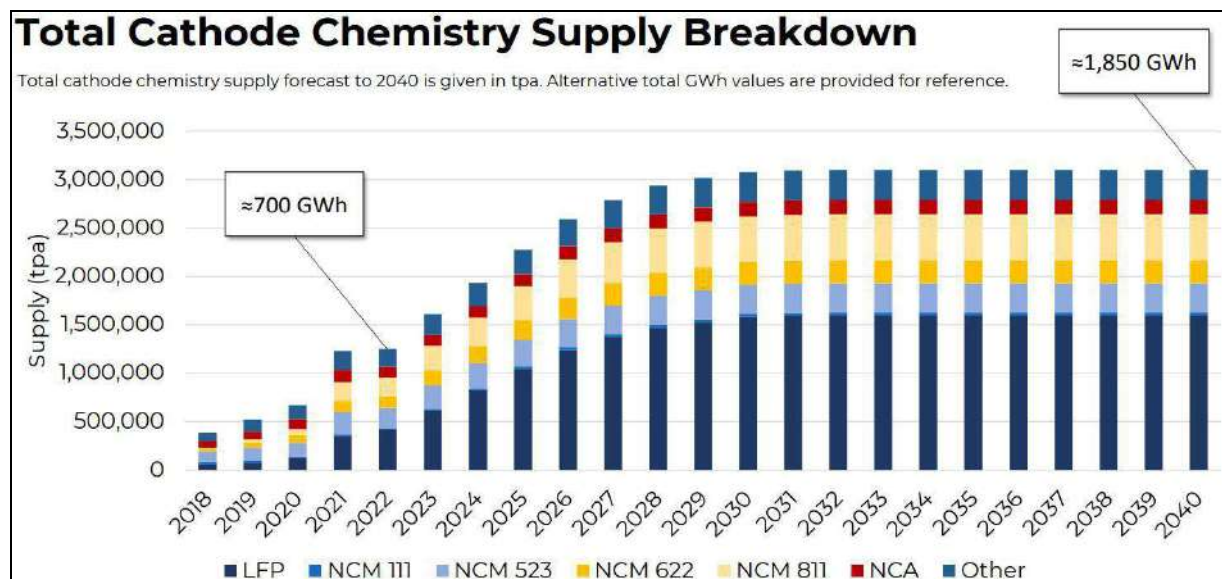
Benchmark

The increased use of cheaper lithium iron phosphate (LFP) batteries in electric vehicles and energy storage will require a lot more purified phosphoric acid.

Led by Chinese companies BYD and CATL, LFP battery cells are increasingly being used in markets outside China. The weighted average LFP battery cell price fell by 18% in 2023 to around US\$81.6 a kWh, according to Benchmark.

Increasing lithium-ion battery demand paired with a rising intensity of purified phosphoric acid (PPA) usage is set to increase the need for this raw material in cathodes by more than 28 times compared with 2020, according to Benchmark's Phosphoric Acid Market Outlook.

The chart that follows shows Benchmark's perception of the mix of various formats and their market shares, going forward.



Source: Benchmark Mineral Intelligence 2022 | Q2 2022 Forecast

Although supply of the phosphate rock feedstock is not likely to be a concern, the bottleneck for PPA supply is expected to be in refining. In this area, China dominates. There are just three PPA expansion projects planned outside of China.

The PPA Component

All this discussion leads to the question of what relevance is this to First Phosphate when its extant PEA is based upon essentially selling a Phosphate product to global markets that does not include the value-added of a PPA upgrading component. This absence leaves a large part of the story untold for while it involves a significant CapEx component (possibly as high as CAD\$500mn) for constructing a PPA plant at

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Saguenay, it also omits the much higher revenue potential from production of the elaborated product, that could generate revenues per tonne of final product that are six-times those for the fertilizer product.

As they say in the classics, all will be revealed, but it awaits a PFS before this component is brought into the full glare of daylight.

Another Application as Li-Ion's Secret Sauce

We have occupied a distinct niche for the last five years in being almost alone in turning up at battery metal conferences and using the words “electrolyte” and “lithium hexafluorophosphate” in polite conversation. A few of the more savvy in the rooms nod their heads while the rest just nod off or wonder to themselves, when is he going to talk about cathodes and anodes. And yet the electrolyte is a crucial part of any battery formulation. Ignore it at one's peril.

Lithium hexafluorophosphate is an inorganic compound with the formula LiPF_6 . It is a white crystalline powder. The main use of LiPF_6 is in commercial secondary batteries. It has the ability of dissolving in binary and ternary solvents, e.g. cyclic carbonates and linear carbonates. After lithium hexafluorophosphate dissolves in these solvents, it shows high electrolytic conductivity and thermal stability which is a desired property for Li-ion batteries.

The West has largely dropped the ball on this component of the battery supply chain, with the fluorspar element of the equation having been let run down by the West over many decades, such that only South Africa and Mexico figure as major producers outside of China.

In our humble view there is great potential to create a North American source of the electrolyte to service the growing number of gigaplants across the continent. This could add a second string to First Phosphate's bow.

The Province Joins the Fray

We were somewhat bemused to see that the province of Quebec has created its own critical minerals list. We could muse upon the motivation but shall not. This is the first time we have heard of such a list created in a provincial/state jurisdiction anywhere in the world except that, apparently, Ontario also has one.

The latest announcement added apatite (phosphate) to the province's list of critical and strategic minerals. The announcement was embedded in the 2023-2025 Action Plan for the implementation of the Quebec Plan for the Development of Critical and Strategic Minerals 2020-2025.

With this addition, Quebec joins the Province of Ontario, the European Union and South Korea as jurisdictions that recognize phosphate as a critical and strategic mineral.

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The EximBank LOI

In late September of 2023 the company announced that it had received an LOI from the Export-Import Bank of the United States, where EXIM signalled that it would be able to provide financing in the amount of up to US\$170mn to LFP.

The LOI is in support of the procurement of U.S. goods and services by First Phosphate in Canada and is eligible for a maximum repayment term of 10 years and expires on October 14, 2024.

Moreover, the transaction may be eligible for special consideration under Section 402 of EXIM's 2019 reauthorization (P.L. 116-94), which directs EXIM to take steps to mitigate the competitive impact of export support provided by the People's Republic of China and other covered countries for opportunities such as this one and/or to advance the comparative leadership of the United States in the Transformational Export Areas under EXIM's China and Transformational Exports Program (CTEP).

First Phosphate notes that the LOI does not represent a financing commitment and does not guarantee the Company's access to any or all financing from EXIM. EXIM is to conduct its standard due diligence prior to issuing a final commitment for this transaction. All final commitments must be in compliance with EXIM policies as well as program, legal and eligibility requirements.

As a side note we would mention that, in April of 2024, the company announced the appointment of Gary Stanley to its advisory board. He has more than 40 years' experience with the U.S. Department of Commerce in Washington, DC. He served under every U.S. President from Ronald Reagan to Joe Biden. During his tenure, he worked with both public and private sector stakeholders to strengthen American supply chains and to enhance U.S. global competitiveness in critical minerals, metals, chemicals, and other materials industries. He was lead author of the [2019 US Federal Critical Minerals Strategy](#) which became the foundation for the U.S. Government's critical mineral supply chain prerogatives. This initiative also led to the creation of the [2019 USA-Canada Critical Minerals Working Group](#) which has contributed to the advancement of various critical minerals projects involving American and Canadian companies.

Financing

In mid-December of 2023 the company announced that it would be raising CAD\$2mn in a private placement consisting of three offerings:

- \$0.40 per Hard Dollar Unit (includes a half-warrant at \$0.50 expiring Dec 31, 2025; with an accelerator at \$0.80)
- \$0.50 per Flow-Through Share (no warrant)

As it turned out, demand was overwhelming, and the original targets were well surpassed.

On December 22 of 2023 the company announced that it had closed on an initial tranche of the non-

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brokered private placement financing for gross proceeds of a minimum of \$2mn. As part of the first tranche, the company issued 1,970,000 Flow-Through Shares for aggregate gross proceeds of \$985,000.

On the 2nd of January, the company announced that its second tranche was oversubscribed by a factor of 275%. As a result, the company issued a total of 3,090,438 Hard-Dollar Units and 12,560,000 Flow-Through Shares for aggregate gross proceeds of CAD\$7,516,175 between the two tranches of offering.

Then in mid-January the company reported the closure of the Third Tranche. The company issued 1,768,250 Hard Dollar Units for gross proceeds of CAD\$707,300. Ergo, the aggregate proceeds from the three tranches totaled \$8,223,475.

There are currently 17,002,284 warrants outstanding. These are made up of:

- 5,250,000 @ \$0.40
- 10,144,495 @ \$0.50
- 1,607,789 @ \$1.25

With so many of these at the money or nearly in the money this could be a useful financing source over the next couple of years.

A total of CAD\$17.5mn has been raised for the company to date.

First Nations' Accord

The most relevant community as far as First Phosphate's operations are concerned is the Pekuakamiulnuatsh Takuhikan, which is the political and administrative organization that represents the Pekuakamiulnuatsh Nation. The Pekuakamiulnuatsh Nation has 10,840 members, many of whom live in the community of Mashteuiatsh, on the bank of the Pekuakami (Lac Saint-Jean).

In early April of this year the company announced that it had signed a collaboration agreement with respect to its proposed phosphate mine and LFP cathode active material plant project in the Saguenay-Lac-Saint-Jean region.

The agreement sets out guidelines regarding employment opportunities, business horizons, environmental protection across the Nitassinan (the ancestral lands of the First Nation), harmonization of exploration work with the members of the First Nation who occupy the Nitassinan, and the supervision of future work.

Also under consideration is the potential for future access to the industrial park at Mashteuiatsh for project development and financial participation in the project by the First Nation.

First Phosphate agreed to issue:

- (a) an initial 50,000 shares to the ilnu-aitun funds (dedicated to Ilnu culture) and 50,000 shares to

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the Nelueun funds (dedicated to ilnu language)

- (b) such number of shares equal to 2.5% of the exploration and development expenditures by the company on the First Nations lands, calculated and payable annually

The exploration and development expenditures are subject to a minimum of 100,000 shares per year, payable annually in advance, including 100,000 shares to be issued in connection with the signing for the 2024 calendar year.

Arianne Phosphate (TSX-V: DAN , OTC: DRRSF) – The Other Kid on the Block

As we noted earlier, Arianne Phosphate had ownership over the Lac a l'Original project over 20 years ago. Founded in 1997 under the name Arianne Resources Inc./Arianne Phosphate Inc. is currently focused on developing its Lac à Paul greenfield project.

The project is, in the words of its management “fully permitted and construction-ready” with significant improvements since 2013 FS. The project might create ~1,000 jobs during operation and could contribute CAD\$12bn in economic benefit to the region.

An updated engineering study was undertaken in late 2022 and early 2023 and estimates CapEx for the Lac à Paul project to be an eye-watering ~US\$1.55 billion, based on a \$1.35 US/CAD exchange rate.

To put the two companies in perspective we might note that First Phosphate is currently just about as far away from a mine as Arianne. If Arianne got the cash to build, they still would have numerous bridges to build (literally) and a new port to build on the north side of the Saguenay for about CAD\$500mn. To put this in perspective, \$500mn is similar to the estimated (back of the envelope) cost of First Phosphate’s mine or PPA plant, where a significant component of the value added resides.

In contrast, First Phosphate resolved to build a PPA plant as opposed to a new port. The company intends to use existing infrastructure as the company regards itself as being in the LFP business, not in the port construction and administration business.

Board

Laurence W. Zeifman, Chairman, is an audit partner of Zeifmans LLP, a mid-sized Toronto public accounting firm. He has four decades of experience in public accounting. He is also former director of the Ottawa Senators Hockey Club and a former Alternate Governor of the National Hockey League.

John Passalacqua, CEO & executive director, is an international business strategist with over 35 years of extensive technology and capital markets experience. In 1998, he gained the title of a top 50 international business strategist on the early internet. He is involved in private and public market planning for companies in emerging industries. He has lived in Quebec and is fluently bilingual.

Bennett Kurtz, CFO & executive director is principal of Kurtz Financial Group. He has experience in financing public companies and taking private companies public. He has multi-faceted business

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experience in finance, management, sales, marketing and administrative functions including business analysis, public business unit segmentation, internal and external analytics.

Peter J.F. Nicholson, non-executive director, is the Founder, President and controlling shareholder of Wealth Creation Preservation & Donation Inc. (WCPD), a leader in Canadian tax-assisted investments, with a specialized focus on philanthropic tax planning and tax reduction in the mining industry. His work with many donors, foundations, institutions, and boards, has generated over \$350 million for client donations and he has served as a board member for many foundations across Canada, such as Winnipeg's Canadian Museum of Human Rights, Children's Hospital of Eastern Ontario, Ottawa Regional Cancer Foundation and founder of the Exuma Foundation of Canada.

Risks

It is important to highlight some of the potential risks for Imperial Metals and thus one should consider:

- ✘ Financing challenges
- ✘ Phosphate (and potential PPA) price fluctuations
- ✘ Entry of other challengers to the PPA space
- ✘ Other battery formulations advance more rapidly

Financing challenges come with the territory in the mining space. As noted, the company has aspirations to JV with various of the PPA producers or technology developers to build plants to capture the value-added and enhance margins. However, in the first instance it needs to fund the initial mine and that is a number in excess of US\$550mn which it must either source itself or by taking on a strategic partner.

It is key to remember that First Phosphate is not dependent upon the EV boom. Its product is readily sellable even in the context that EV's had never been invented or even heard of. While EV demand and uptake of LFP formulations adds icing to the cake of potential markets, it is not the be-all-and-end-all.

At the current time there are no other advanced developers in the Phosphate space that are targeting the marketplace in the way First Phosphate has been doing. Additionally, its alliances, while not precluding major players doing deals with other potential entrants, do give the company a significant advantage over other interlopers.

Novel battery formulations are appearing at a steady pace but as the industry advances, the cost of switching formats for end-users (e.g. retooling) becomes more disruptive to their business models and credibility.

Conclusion

The uses of Phosphate as a fertilizer are well-rehearsed so we need not repeat them, but they do provide an underlying safety net for any Phosphate producer for there will always be demand, and seemingly rising demand from the agricultural sector, especially demands for a high-purity product from those in the agritech space. The proposition of First Phosphate though is to capitalize upon the value-

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added component that building an EV production chain in North America affords.

The LFP format is not new but hitherto has not been at the forefront in the EV party but nevertheless seizing ground as the shortcomings of the mainstream Li-ion battery format are becoming evident. It is factors like the lower cost of LFP, its simplicity, lowered risk of thermal runaway, shortages of (or restricted access to) Cobalt and finally the relative domination by China of a large part of the battery production chain (at least up until now) that are prompting the adoption of the LFP alternative. Alarm bells are ringing all over as to the risks of Chinese domination of the EV space. The boat has clearly not sailed on this front, with the slower adoption (than predicted) of EV's in the West permitting a potential rethink and pivot on energy storage modes, particularly in North America.

Beyond EV's, the LFP format is also used for energy storage, including battery walls for siting in garages (Tesla) and larger scale energy storage (wind, solar, hydro).

First Phosphate has become a company on a mission to secure partnerships on all fronts and at all levels to ensure the best & brightest are applied to the task of establishing it in the value-added part of the battery chain and ensuring North American offtakers for its eventual production out of its properties in the Saguenay-Lac-St-Jean areas of Quebec.

The next step at Begin-Lamarche is to publish a detailed PEA and then a PFS (adding the value-added PPA production plans). This would put the company on the road to a development decision. The whole battery metal space is in somewhat of a swoon of late, so the focus now shifts to tying in offtakers/partners and starting along to road to project financing.

When looking at the nearest comp, Arianne Phosphate, we can't help but note that First Phosphate is closer to port, has a more realistic & cohesive plan and has a better suite of technical and industry partners. It is also eschewing the port-build strategy which is really an unnecessary reinvention of the wheel. Over and above this, it is trading at one third of Arianne's market cap at the current time. Our conservative price target would only take First Phosphate to the same value that Arianne has now.

Therefore, we are initiating First Phosphate with a **LONG** rating with a 12-month target price of CAD\$0.70.

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Appendix I: Partnerships

A-List of Technology and Infrastructure Partners

The A-List in North American Battery Evolution

A key tenet at First Phosphate is not to reinvent the wheel, but rather to partner with technology leaders in the fields of phosphate processing and LFP applications. To this end it has cooperation and R&D relationships with the following entities:

- **Prayon Technologies**
- **American Battery Factory**
- Queens University
- **Saguenay Port**
- Norfalco (Glencore)
- CMAX Retombees
- Craler – TFI International
- Agrinova
- Integrals Power
- Lithium Australia
- **Ultion Technologies**
- **Rapidwall / Rapidseal**
- **Groupe Goyette**

Prayon – Technology for Phosphate Processing

The relationship here dates back to February of 2023 when First Phosphate signed an MOU with Prayon, a Belgian corporation. The MOU engages the parties to collaborate towards assessing feasibility and potential partnership in the areas of phosphate concentration production and offtake; LFP grade

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phosphoric acid toll processing; license for LFP grade phosphoric acid production facility; and development of LFP cathode active material manufacturing plant.

Prayon is a leading force in phosphate R & D and production. Originally called S.A. Métallurgique de Prayon, with a focus on Zinc and Phosphorus, it has been in business for over 140 years and now has 1,400 employees. The group has production sites in Belgium, France, Switzerland and the United States, research and development sites in Belgium and a testing and validation facility in Bulgaria (Technophos). OCP and Wallonie Entreprendre (WE) are Prayon's two shareholders.

The Central-Prayon Process (CPP) is used at its central production site in Engis, Belgium and has been in operation for more than 40 years. It is a model of circular economy in the phosphoric acid world as more than 90% of its co-product phosphogypsum is reused in the cement or plaster industry.

With American Battery Factory

American Battery Factory Inc. (ABF), a Lithium Iron Phosphate (LFP) battery cell manufacturer, is developing the first-ever network of LFP cell giga-factories in the United States. ABF has recently broken ground in Tucson, Arizona on a two-million square foot gigafactory. The site will provide an estimated 1,000 jobs from US\$1.2bn in capital investment.

An MOU with American Battery Factory was signed on September 13th of 2023 to "support" production of up to 40,000 tonnes of annual fully North American manufactured lithium iron phosphate (LFP) cathode active material (CAM).

ABF projects sustained annual demand for LFP CAM starting in 2026 and achieving up to 40,000 tonnes of annual LFP CAM requirement by 2028 at its first planned LFP battery manufacturing facility in Tuscon, Arizona.

First Phosphate will provide raw materials during its own ramping up and test process to be channeled directly into LFP CAM produced for ABF. LFP CAM produced by way of the partnership is to be integrated into ABF battery cells and end-user energy storage products.

Then in late January of 2024, First Phosphate Corp. announced that it has entered into a multi-party agreement with American Battery Factory and Integrals Power Limited of Milton Keynes, United Kingdom to produce LFP CAM.

With Ultion Technologies

In early-December, the company announced that it had signed a MOU with Ultion Technologies Inc of Las Vegas, Nevada for the purchase of a non-exclusive, perpetual license to technology for the production of LFP and lithium iron manganese phosphate (LFMP) cathode active material (CAM).

The LFP technology contemplated by this MOU is currently in production in two facilities, one with 10,000 tonnes per annum of capacity and one with 50,000 tonnes per annum of capacity. The LFMP

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technology contemplated by this MOU is currently under development and being produced at a quantity of several tonnes per month.

Ultion is expected to provide a proven, commercial-grade LFP production technology as well as offtake into the LFP CAM specialty products segment of the market.

The terms of the agreement between the parties include:

- Ultion shall grant a fully paid, royalty-free perpetual license to First Phosphate for the transfer of the LFP CAM production technology
- Ultion shall transfer all documents necessary for First Phosphate to implement the purchased LFP CAM technology commercially

A similar LFMP Technology Document Package will include all documents, technology and information as the LFP Technology Document Package. It will also include any equipment changes or modifications that are required to produce LFMP with the same equipment as specified for LFP production.

Ultion will also provide First Phosphate with assistance in equipment acquisition and installation, engineering support, equipment design, start up, and personnel training.

First Phosphate may purchase one or both technologies as well as pay an additional fee to secure an exclusive right to the LFMP technology for the North American market.

First Phosphate shall work to provide Ultion with up to 2,000 tonnes per annum of LFP CAM for its LFP battery cell manufacturing business for specialty products. Ultion is planning on beginning production in 2025 which will need up to 500 tonnes of LFP CAM and will ramp up to full production requiring up to 2,000 tonnes by 2029.

Rapidwall / Rapidseal

In May of 2024, the company announced that it has entered into a partially binding LOI with the Australian company, Rapid Building Systems Pty Ltd,^a for the development of a Rapidwall manufacturing plant in the Saguenay-Lac-St-Jean Region. PHOS will be granted a license for the exclusive sales and marketing rights for Canada to RBS's Rapidwall and Rapidseal products.

The Rapidwall Manufacturing System would allow First Phosphate to upcycle the clean phosphogypsum produced from its proposed purified phosphoric acid plant into building material panels. Rapidwall is a prefabricated load-bearing walling panel manufactured in a moulding process using glass-fibre reinforced, water-resistant gypsum plaster, suitable for use in single, double or multi-storey housing and for commercial and industrial development.

The Rapidseal Manufacturing System would also allow PHOS to upcycle phosphogypsum from its proposed operations into a fire-resistant spray plaster (gypsum) for solutions developed against spontaneous combustion and fire-prevention in mining, bio-organic landfill and forestry operations.

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Groupe Goyette

In March of 2024, the company announced that it had signed an MOU with Groupe Goyette (GG) of Saint-Hyacinthe, Quebec for the accommodation of PHOS's logistical footprint at the Hébertville-Station intermodal facility in the Saguenay-Lac-St-Jean region.

Under the agreement, First Phosphate and GG are to work towards determining the rail line options for the movement of products and supplies to and from Saguenay with North American sources and destinations through the Hébertville-Station intermodal facility owned and operated by GG.

Specific emphasis is to be placed on rapid truck-to-rail intermodal capabilities and flow of the products specifically to the automobile industry heartland in the Windsor-Detroit corridor.

Appendix II: Lac à l'Original

Overhauled by Bégin-Lamarche

- + The former front runner in the development stakes, the Lac à l'Original project, has an extant PEA signalling a potential LoM of at least 14 years
- ✘ The PEA only deals with the production of a Phosphate product, it awaits a PFS for the value-added of the production to Purified Phosphoric Acid (PPA) to be fleshed out
- ✘ The start-up CapEx is sizeable at around US\$550mn then the addition of PPA production facilities will add substantially to this, even though the plant may be a JV with one of its technology partners

A Matter of Priorities

While this project was first out of the gate and holds a meaningful resource and a PEA, the stronger MRE at Bégin-Lamarche and its better access to port, resulted in the Lac à l'Original project being overhauled by the Bégin-Lamarche project, upon publication of the latter's maiden MRE.

Lac à l'Original

The Lac à l'Original property consists of 1,445 CDC claims, with a total area of 79,663 ha, as shown on the map on the following page.

The Lac à l'Original region has a long history of mineral exploration work since the 1940s and government geoscientific surveys since the 1960s. In 1943, Waddington explored for magnetite deposits on behalf of the Québec Government on the western part of the Lac à l'Original property near Lake Onatchiway. Waddington concluded that there were no important magnetite deposits in the area. In 1977, Shell Resources compiled all the metal occurrences in the Eastern Grenville Province and recommended follow-up work, mainly for zinc deposits.

This asset is owned 100% by First Phosphate and is free of NSR royalties and all other forms of royalty.

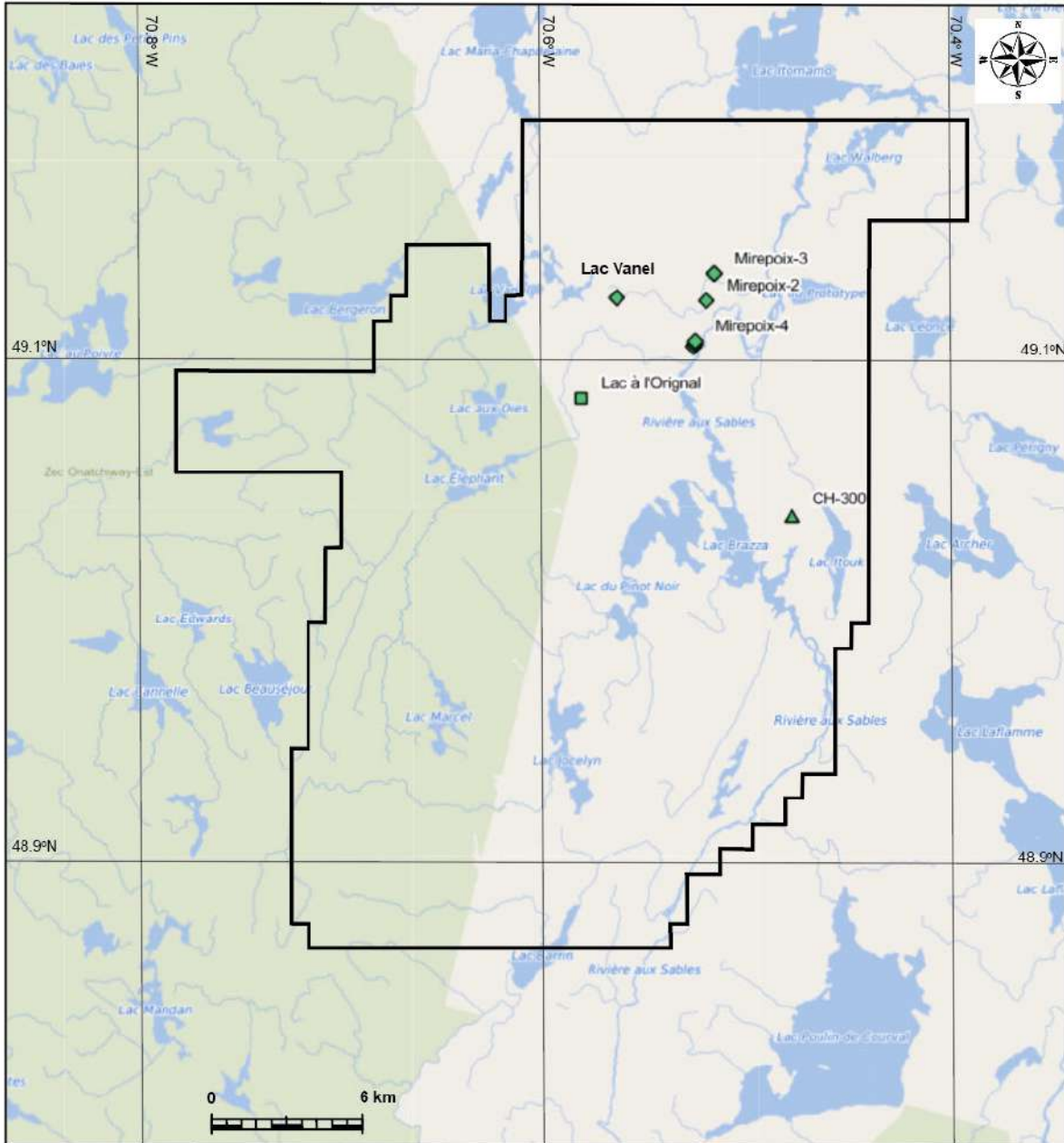
Lac à l'Original Geology

Lac à l'Original is regarded as a Proterozoic-age anorthosite-hosted magmatic phosphate deposit. Anorthosites are plagioclase-enriched intrusive rocks, which may ultimately be derived from basalt magma produced in the mantle.

The three main showings on the project are: Lac à l'Original, Lac Vanel (2 km north of the actual Lac à l'Original), and Mirepoix (6 km northeast). All three showings have been drilled, and a phosphate deposit has been defined at Lac à l'Original. The Lac à l'Original deposit is hosted in an oxide (magnetite and

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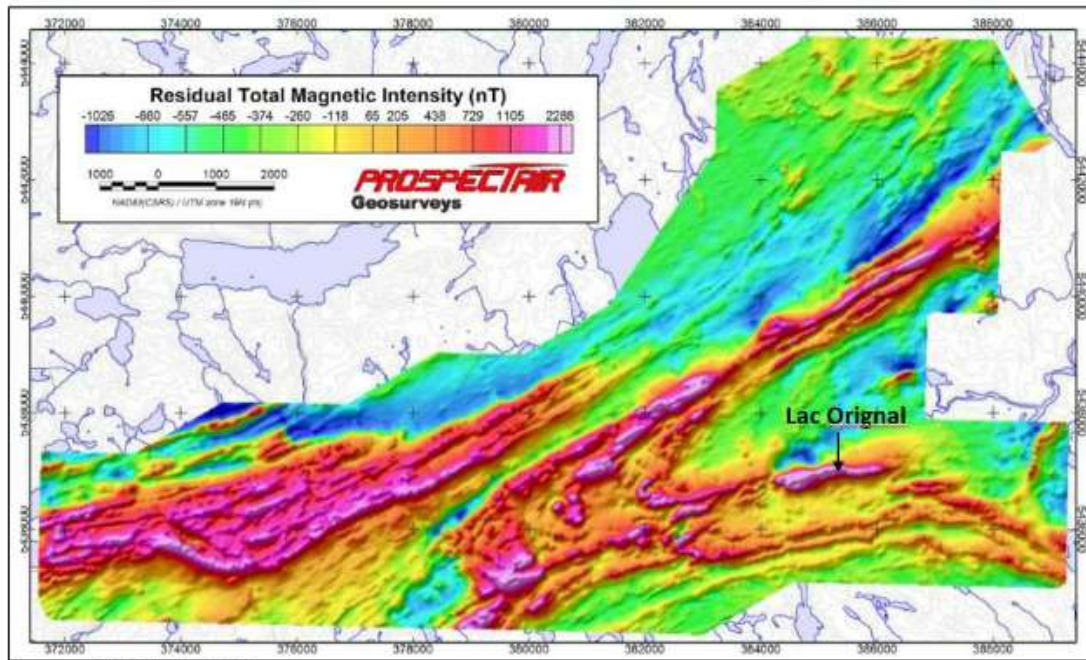
ilmenite) gabbro unit at least 1 km long and up to 70 m thick.



The use of X-Ray power diffraction analyses and thin section petrographic studies have confirmed that deposit area rock samples contain plagioclase, orthopyroxene, clinopyroxene, ilmenite, magnetite, apatite, and biotite. The mafic silicate phases occur as intercumulus phases. Apatite, ilmenite and magnetite are ubiquitous accessory minerals and may reach major proportions of the rocks. Apatite is

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the principal phosphate-bearing mineral of the Lac à l'Original deposit.



Three major northeast to southwest-trending deformation zones affect the region. These deformation zones form km-wide corridors and have been traced for several tens of kms along strike.

Lac à l'Original - Exploration

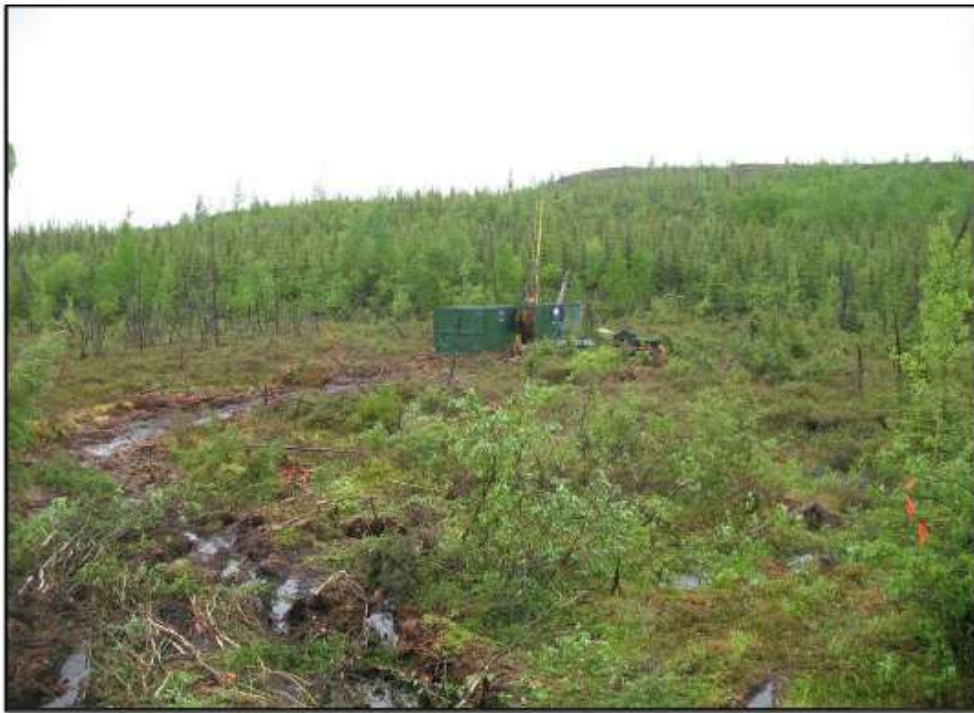
In 1998, a prospector, Léopold Tremblay, discovered the Lac à l'Original showing, with samples that returned assays of up to >7% P₂O₅. Later that year, Léopold Tremblay and Charles Boivin discovered the nearby Mirepoix phosphate-titanium showing.

Interestingly, following an evaluation by IOS Services Géoscientifiques, the property was optioned by Les Ressources d'Arianne in 1999. In 2000, Arianne completed three drill holes totaling 150 m, which were designed to determine the thickness of the mineralized horizon at Mirepoix. The best intersection returned 5.86% P₂O₅ and 10.23% TiO₂ over 4 m.

In the fall of 2000 and the spring of 2001, Arianne excavated 45 trenches on various mineralized horizons and completed 11 drill holes totalling 290 m. The four best intersections of the first unit returned 2.74% P₂O₅ and 4.14% TiO₂ over 24.98 m, 3.41% P₂O₅ and 6.21% TiO₂ over 11.10 m, 2.95% P₂O₅ and 4.31% TiO₂ over 25.13 m, and 3.64% P₂O₅ and 4.34% TiO₂ over 23.10 m.

A ground magnetic survey was carried over the claims in January 2001. During the fall of 2001, four areas were mechanically stripped to better understand the attitude of the mineralization, and 13 drill holes were completed for a total of 470.8 m. The two best drill hole intersections were 3.39% P₂O₅ and 4.42% TiO₂ over 15 m and 2.44% P₂O₅ and 5.29% TiO₂ over 14 m.

Monday, October 7, 2024



An interesting feature of First Phosphate’s stewardship of this project was the rapid progression from the acquisition in early 2022 to a resource a year later. This was principally because of the work done by Glen Eagle, before First Phosphate’s acquisition of the project.

In October of 2022, the company received drilling permits for the Lac à l’Original project, consisting of up to 150 holes for a total of up to 25,000 m of drilling, though this has not been executed as yet.

The Lac a L’Original Resource

The NI43-101 compliant Technical Report containing the latest MRE was prepared by P&E Mining Consultants Inc. of Brampton, Ontario, and was released in mid-November of 2022.

Monday, October 7, 2024

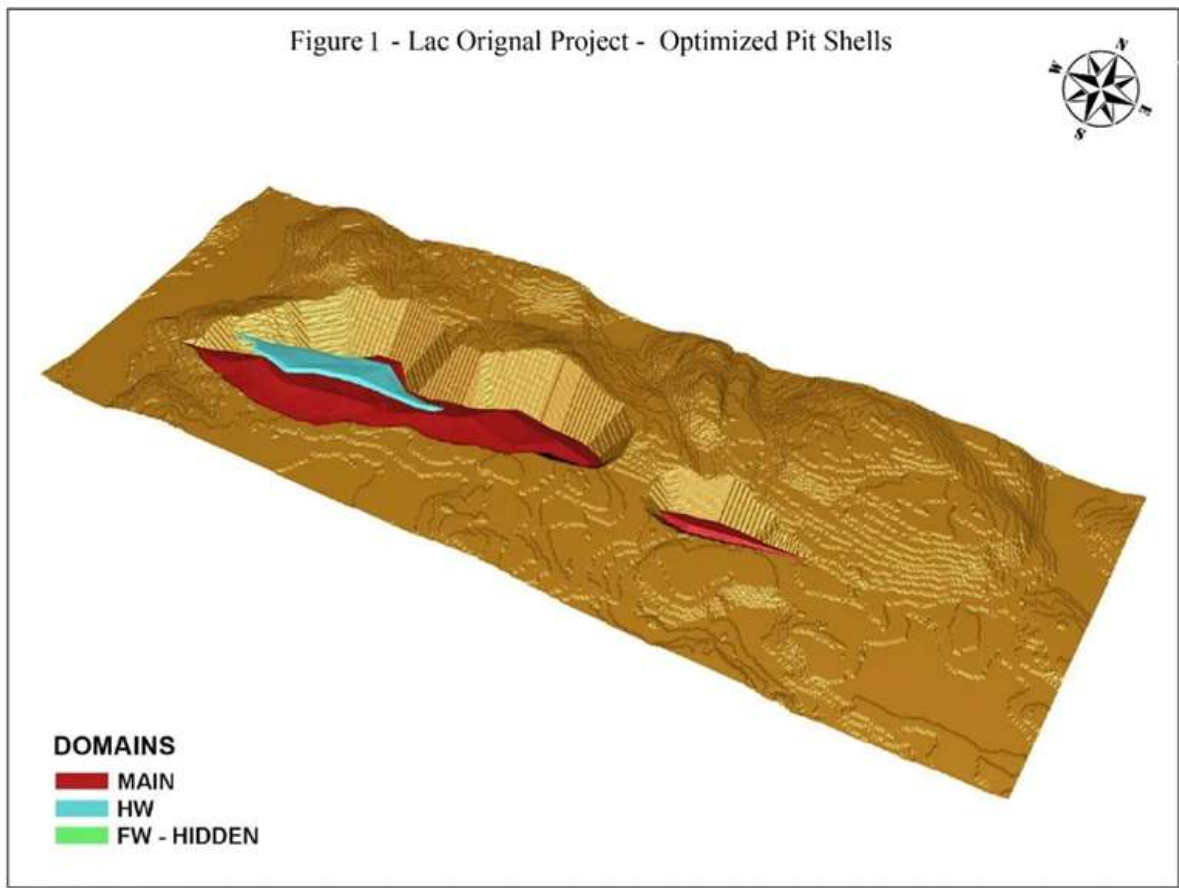
LAC A L'ORIGINAL							
Pit-constrained at 2.5% P2O5 cut-off							
Category	Tonnes mns	P2O5 %	Contained P2O5 tonnes	Fe2O3 %	Contained Fe2O3 tonnes	TiO2 %	Contained TiO2 tonnes
Indicated	15.8	5.18%	821,000	23.90	3,800,000	4.23	67,000
Inferred	33.2	5.06%	1,682,000	22.55	7,500,000	4.16	1,380,000

Interestingly, this resource was almost entirely based upon work done by the preceding owner, Glen Eagle Resources, which had never quantified its work into an MRE.

The cut-off for the P₂O₅ was 2.5%. The components of this calculation were:

- US\$: CAD\$ Exchange Rate 0.80
- P₂O₅ Price US\$200 per tonne (approximate two-year trailing average)
- P₂O₅ Process Recovery 75%
- Processing Cost CAD\$9.00 per tonne
- G&A CAD\$3.25 per tonne
- Mining Cost CAD\$2.50 per tonne
- Pit Slope 45°

The optimized pitshell for the Lac L'Original resource calculation is shown on the following page:



The Preliminary Economic Assessment (PEA)

The NI43-101 compliant Technical Report containing the PEA was also prepared by P&E Mining Consultants and was released in September of 2023. The PEA used the February 2023 Indicated and Inferred Mineral Resources in its calculations.

The main findings were:

- Annual average of 425,000 tonnes of beneficiated phosphate concentrate at over 40% P₂O₅ content, 280,000 tonnes of magnetite and 97,000 tonnes of ilmenite over a 14.2-year mine life
- Pre-tax internal rate of return (IRR) of 21.7% and a pre-tax net present value (NPV) of \$795mn at a 5% discount rate at June 30/23 approximate 18-month trailing average phosphate price and long-term consensus magnetite and ilmenite prices
- After-tax internal rate of return (IRR) of 17.2% and an after-tax net present value (NPV) of \$511mn at a 5% discount rate
- After-tax cash flow of \$567mn in years 1-5, resulting in a 4.9-year payback period from start of production

The project has no outstanding royalties or financing streams registered against it.

The company has an MOU in place for potentially most of its annual phosphate concentrate offtake as well as a potential long-term purified phosphoric acid toll processing agreement.

The mineral prices used in the PEA were (as at June 30th of 2023) approximate 18-month trailing average phosphate price and long-term consensus magnetite and ilmenite prices:

Product Price and FX Assumptions - PEA		
Phosphate	US\$/t	\$367
Magnetite	US\$/t	\$95
Ilmenite	US\$/t	\$250
CAD/USD		1.32

Mine Project

The mine production schedule consists of one year of pre-production and 14.2 years of mine production. The target processing rate is approximately 3.8mn tpa, or 10,500 tpd. To meet the process plant needs, the annual mining rates of feed and waste rock combined will peak at approximately 14 million tpa (i.e.

38,000 tpd) in Years 8 to 11. Overburden would be free digging and not require blasting.

It is anticipated that the mining operations would be conducted 24 hours per day and 7 days per week throughout the entire year. It is expected that diesel-powered hydraulic excavators (10 m bucket size) and front-end loaders (11 m bucket size) will be used to excavate the blasted rock.

It is assumed that an explosive supplier would be contracted for explosive delivery, blasthole charging, and blast control. It is assumed that most of the materials mined will require drilling and blasting.

Mined waste rock will be placed in a single storage facility located southeast of the open pit.

Mine Management

It is assumed that the Lac à l'Original mine will be an owner-operated open pit mine, except for blasting operations. The owner's mining team would undertake all drilling, loading, hauling, and mine site maintenance activities. The owner will also be responsible for technical services, such as mine planning, grade control, geotechnical, and surveying services.

The mining operations personnel will average approximately 99 people, including operators, maintenance, supervision, and technical staff over the LOM.

Processing

The total quantity of feed material sent to the process plant is estimated at 54.04mn tonnes. The overall strip ratio is 1.7:1. Approximately 66% of the 54.04mn feed tonnes consists of Inferred Mineral Resources.

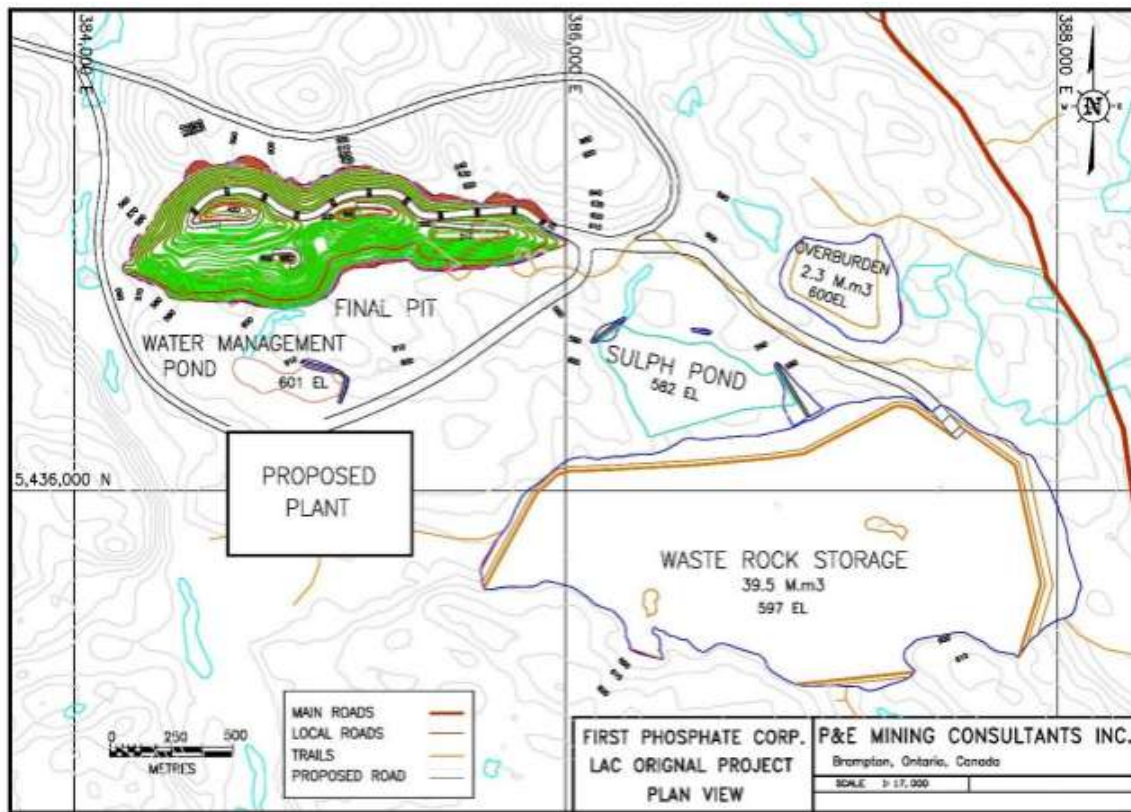
The total connected electrical power for the process plant is estimated at 35 MW. A diesel generator at the process plant will be used for emergency power generation.

A smaller overburden storage facility will also be located east of the open pit exit ramp location. Some of the waste rock will be used in the construction of the two tailings facilities as needed for dam fill or foundation grading purposes.

Tailings Management

The process plant throughput is currently envisioned to be 10,500 tpd from the open pit mine over a planned mine life of 14.2 years, generating a total of 42.6mn tonnes of tailings. The bulk of this will be Non-Potentially Acid Generating (Non-PAG) phosphate tailings (40.5mn tonnes) and will be stored in the Tailings Management Facility. The Potentially Acid Generating (PAG) sulphide tailings (2.1mn tonnes) will be stored separately in the Sulphide Tailings Management Facility (STMF).

The map below shows the locations of the planned storage facilities.



Capital Expenditure

The PEA lays out the expected Capital Costs with a contingency of 20% but without an inflation factor. The projected CapEx covers initial capital costs for construction of a 3.8mn tpa process plant and tailings facility, and to set up an open pit mining site with the necessary infrastructure and pre-production activities, including port infrastructure.

Capital Expenditures			
CAD \$mns	Initial	Sustaining	Total
	\$mns	\$mns	\$mns
Open Pit Equipment & Pre-Strip	\$29.6	\$46.5	\$76.1
Process plant	\$214	\$5.5	\$220.3
Tailings Management Facilities	\$41.6	\$56.8	\$98.3
Indirects, EPCM & Owner's costs	\$110.4	\$0.0	\$110.4
Site & Port infrastructure	\$61.7	\$0.0	\$61.7
Contingency (20%)	\$91.6	\$21.7	\$113.4
Reclamation/Closure less Salvage Value	\$0.0	\$8.3	\$8.3
Totals	\$549.8	\$138.7	\$688.5

The sustaining costs, in reality, will be met out of cash-flow.

Access & Infrastructure

The Lac à l'Original region is easily accessible from the City of Saguenay by Provincial Road 172 to logging road *chemin de la Zec Martin-Valin*, which crosses the property and is maintained year-round by logging companies. At km 81.5 on this road, a secondary logging trail goes northwest for 3.5 km to the Lac à l'Original project area. Many secondary logging roads can be utilized to access various parts of the property.

Other infrastructure will include a dedicated 56 kV feeder line from a Hydro Québec 735 kV line located approximately 20 km south from the proposed process plant site will be constructed to supply all power requirements.

The nearest operating mine of consequence is the famous Niobec Mine (Niobium) operated by Magris Resources, which is located near Saguenay.

Important disclosures

I, Christopher Ecclestone, hereby certify that the views expressed in this research report accurately reflect my personal views about the subject securities and issuers. I also certify that no part of my compensation was, is, or will be, directly or indirectly, related to the specific recommendations or view expressed in this research report.

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