



TB AMATI STRATEGIC METALS FUND

# Amati Site Visit Series

i-80  
GOLD CORP

By Mark Smith, Fund Manager



## IAU-TSX - A TB Amati Strategic Metals Fund Portfolio Company Lone Tree Mine Project

**T**he Lone Tree mine project is located approximately 30 miles east of Winnemucca, Nevada and 20 miles northwest of Battle Mountain, Nevada.

The operations are accessible from interstate 80 (I-80) by paved highway. This processing facility will be at the heart of i-80's 'Hub and Spoke' operation, with a plan to feed the plant from 4 surrounding mines, potentially producing 250,000oz of gold per year by 2025/2026. There are 5 main stages to this development and production strategy, highlighted in Figure 1.

- Underground mining will commence at Granite Creek:**
  - Ore will initially be toll processed at the Twin Creeks facility
  - After refurbishment, ore will be processed at Lone Tree Autoclave
- Open pit mining to start at Buffalo Mountain, processing ore at Lone Tree Leach pads.**
- Refurbishment of Lone Tree Autoclave.**
- Underground mining at Ruby Hill, processing ore at Lone Tree Autoclave**
- Underground mining at McCoy-Cove:**
  - Autoclave ore will be processed at Lone Tree Autoclave.
  - Roaster ore will be toll processed at Gold Quarry.

The Lone Tree property was acquired in October 2021 by i-80 Gold Corporation (i-80) from Nevada Gold Mines (NGM), a joint-venture between the world's two largest gold producers, Barrick Gold Corporation and Newmont Corporation. This acquisition will provide i-80 with important processing infrastructure including an autoclave, CIL (carbon-in-leach) mill, and a heap leach facility complete with assay lab and gold refinery. The agreement also includes interim processing arrangements at NGM facilities (Nevada Gold Mines).

Ranked next to Nevada Gold Mines, i-80 is the largest holder of gold resources in the Central Nevada district, along the Carlin/Battle Mountain trend and targeting to become one of the main producers in the State. The current stated resources (M,I,I) stand at 14.6Moz Au and 180.7Moz Ag. i-80 is targeting another ~20% AuEq resource expansion by the end of 2022 with multiple drilling campaigns underway.

+30,000m underground and surface drilling program underway at Granite Creek

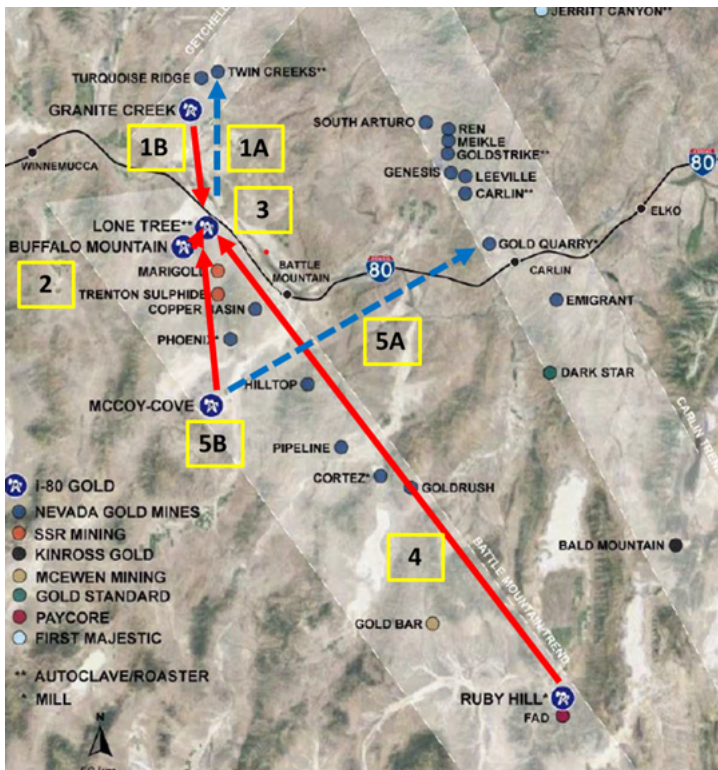
+20,000m drilling program recently started at Ruby Hill



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The economic concentrations of gold typically occur near the fault intersections, along the margins of intrusive bodies, or at contacts between siliceous and carbonate lithologies. Extensional tectonics and high angle faulting provided the pathways for the mineralizing fluids to flow. However the gold is encapsulated in sulphides and is refractory, presenting metallurgical challenges (and maybe opportunities).

→ Figure 1: Map of i-80's planned hub and spoke model in Nevada



Source: i-80, Amati

The permitted autoclave processing plant will be a significantly important facility after a comprehensive retrofit, converting the autoclave from an acidic flow sheet to a basic (alkaline) one. The replacement cost of this facility is estimated to be around US\$800m-US\$1.2bn, if i-80 had to build from new. The plant was last operated by Barrick in 2006, at a throughput rate of 2,800tpd slurried ore (200tpd above nameplate). i-80 plan to feed the autoclave at 2,500tpd.

The previous autoclave process used heat, pressure, and oxygen to oxidize sulphide minerals prior to cyanidation. The autoclaving of the slurried ore is performed for a sufficient amount of time (historically 48 minutes) to oxidize the sulfidic compounds in the ore, where the gold is associated with. The oxidized ore is then more amenable to subsequent conventional gold extraction techniques (CIL-Carbon in Leach).

The refurbishment of the plant will take 2 years, and we expect to cost about US\$250m in capital. The flow sheet will include the following:

- forming an aqueous slurry of refractory sulfidic gold-containing ore with an alkaline material;
- subjecting the slurry to an oxidation step, and simultaneously autoclaving the slurry;
- oxygenating the slurry and cooling to about ambient temperature and adjusting the pH to around 10.

→ Figure 2: Lone Tree processing facilities, Nevada



Source: i-80, Amati

The gold containing slurry can then be subjected to standard CIL processes in leach tanks to extract the gold. The boiler capacity will have to increase, as having thermal capacity will provide flexibility to the plant, to accommodate mineralogical variability.

The alkaline route relies on additional heat input rather than heat from sulphur oxidation (exothermic reaction). A mercury abatement circuit will have to be installed to capture deleterious elements, as air quality standards have increased since 2006. Given the complexity of the processing route a 6-8 month commissioning and ramp up period is expected from Q1-2025, after a 2 year refurbishment period.



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→ **Figure 3: Inside the plant site - good structural integrity after 16 years of rest**



Source: i-80, Amati

The plant last operated in 2006, however the condition of the plant is surprisingly good – Figure 3, Figure 4. Hatch Engineering have been commissioned to retrofit the plant, and have already disassembled the plant to check the condition of the pumps, valves, piping, electrical circuits, motors and comminution circuit. Hatch / i-80 have inspected the autoclave integrity with external x-ray analysis and internal inspection. They will rebrick the internal protective walls as the autoclave is planned to operate at 390°F (temp) and 305psi (pressure) – Figure 5.

→ **Figure 4: Amati fund managers (Mark Smith & Georges Lequime) next to ball mill (crushing facility)**



Source: i-80, Amati



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→ Figure 5: View of the Autoclave and associated pipe work



Note the inspection ladder down into autoclave interior.  
Source: Amati

## Granite Creek

This brownfield mine site is located at the Intersection of the Getchell and Battle Mountain mineralised trends and immediately South of NGM’s Twin Creeks and Turquoise Ridge mining operations – Figure 6. The Granite Creek Mine hosts both open pit and underground orebodies. The underground deposit at Granite Creek represents one of the highest-grade gold deposits in North America with resource grades in excess of 10 g/t Au.

Importantly, NGM interim processing agreement allows i-80 to fast-track mine development with priority on the upper orebody. The discovery of the South Pacific Zone (a new orebody) has the potential to significantly increase high-grade resources located in close proximity to the existing mine development.

i-80 is targeting completion of an underground feasibility study at Granite Creek in Q4/22, in addition to a Mineral Resource update following completion of the drill program, and we look forward to both these updates along with further ongoing exploration results.

→ Figure 6: Setting of Granite Creek, showing the UG portals (in/out)



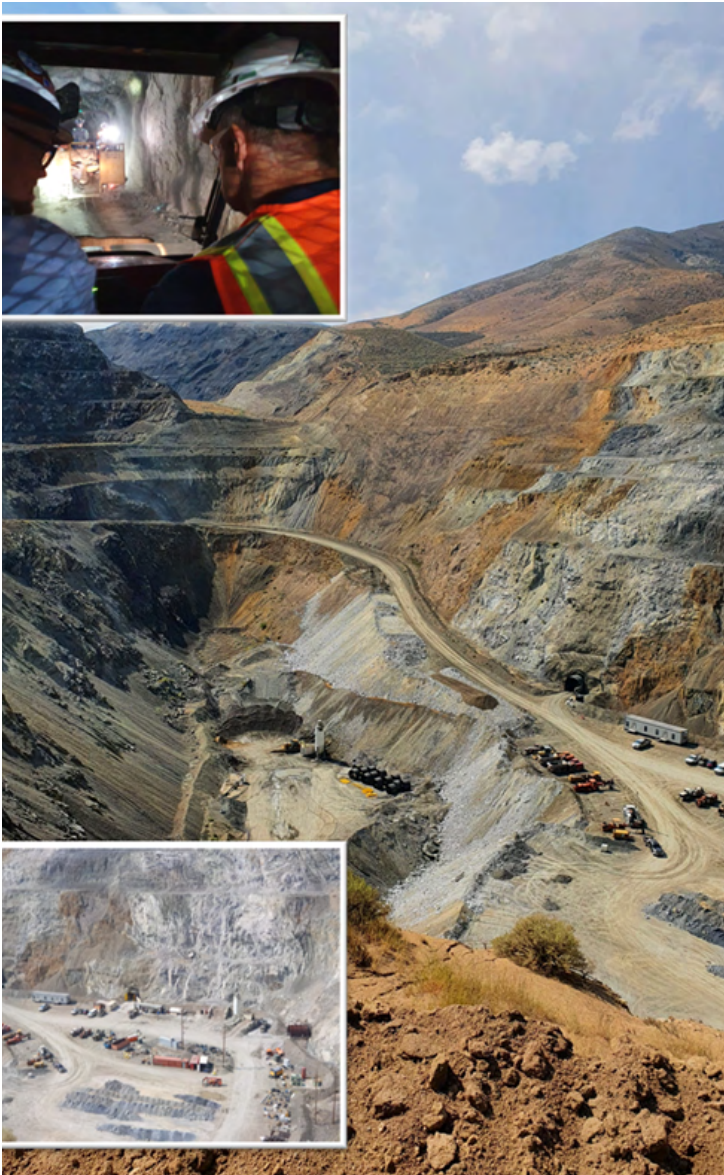
Source: Amati



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Mineralisation at Granite Creek is carlin-style, similar to nearby deposits at Turquoise Ridge and Twin Creeks. Since 1980, the property has produced nearly one million ounces of gold, primarily from the CX, Mag, and Range Front Zones that are all located in the hanging wall of the east-dipping Range Front fault of the Osgood Mountains.

→ **Figure 7: Granite Creek OP with UG portal and Amati Fund Manager (Georges Lequime) descending into the mine**



Source: Amati

The decline is being extended to depth to facilitate underground drilling and deposit development – Figure 7. Current development rates are 120ft per day. Currently 4 ore headings are developed and the plan is to develop 2 sublevels at Ogee zone and continue the main decline into South Pacific Zone, Figure 8.

→ **Figure 8: Amati Fund Manager (Mark Smith) in decline development and start of ore cross cut**



Source: Amati

The plan is to develop 10 ore headings with possibly 2 redundant stopes in development to sustain 1000tpd ore production, with sufficient production flexibility. The plan is to develop across to the South Pacific Zone and down into the Ogee Zone. The ground is very fragmented in the upper orebody of Ogee zone and mineralisation is structurally controlled. Mineralisation is primarily sooty, fine-grained pyrite with gold hosted in arsenic-rich rims. Altered rocks are commonly decarbonatised, argillised, and silicified. This alteration and structural interference create brittle, and sometimes incompetent ground in the upper levels. The decline development uses a lot of rock bolting, steel meshing and shotcrete to ensure stable development. We expect as the development decline goes deeper, underground support will be less, but initially mining will be expensive, however the orebody's high grade could ensure an operating margin.

i-80 Gold recently announced the results from 19 exploration drill holes from the South Pacific Zone (SPZ) – Figure 9, with key intercepts including 15.3 g/t Au over 7.1m (downhole width, from 385m depth), 19.6 g/t Au over 10.4m (DHW, from 346m depth), and 44.4 g/t Au over 6.4m (DHW, from 422m depth). The SPZ remains open for expansion along strike to the north and at depth. i-80 had previously increased the planned 2022 drill program to 30,000m, and the company continues to extend the existing decline to develop access to the South Pacific Zone.

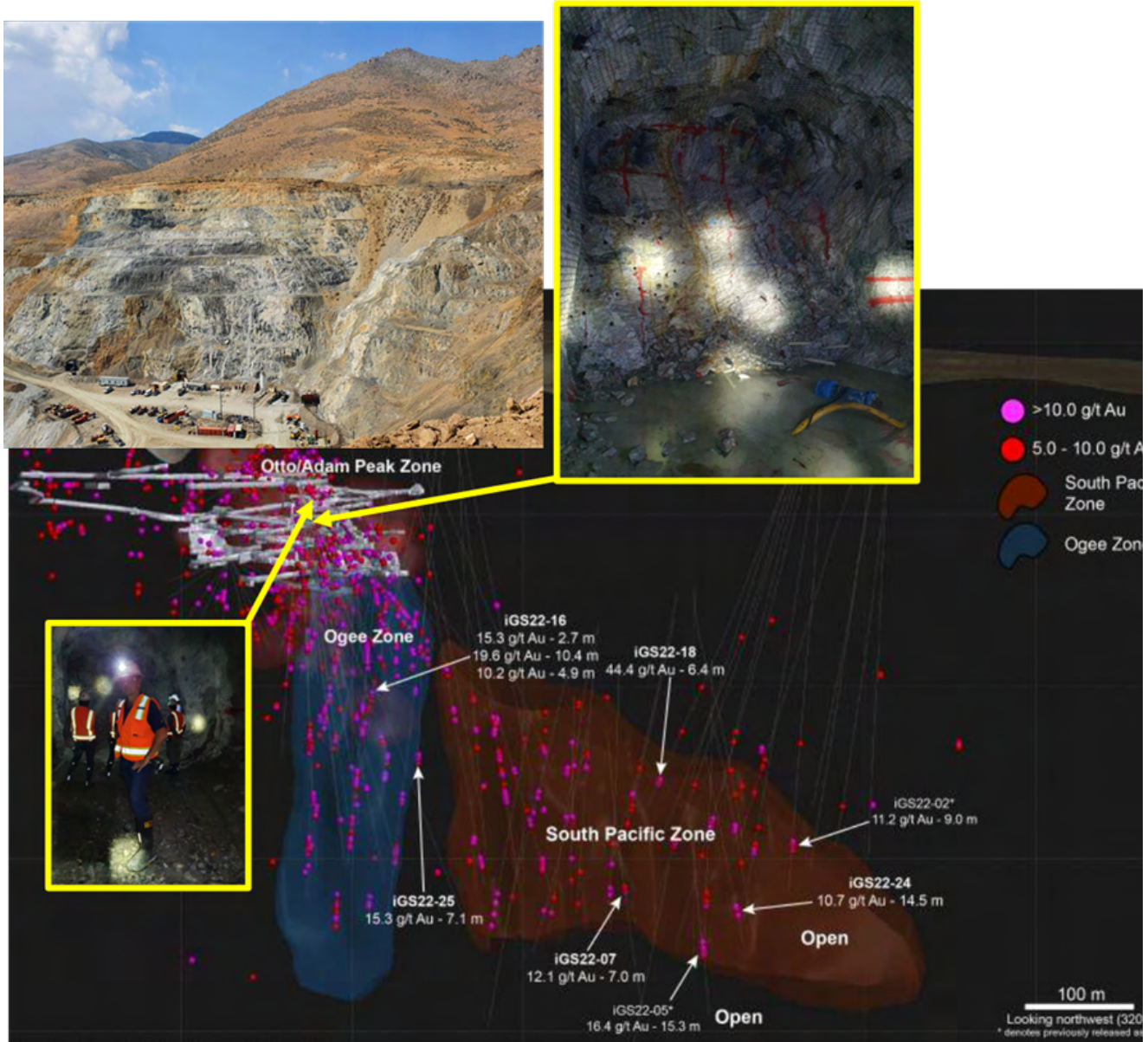
A new resource opportunity is located immediately below, and to the north of, the current underground workings. High-grade mineralization in multiple fault structures that demonstrate consistency over a strike length of more than 600 metres and a dip length of approximately 250 metres. Wide open for expansion along strike to the north and at depth.

We expect the current resource (M,I,I) of 770Koz Au at 11.53g/t to materially increase with future drilling campaigns.



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→ **Figure 9: Granite Creek long section, showing plunging ore shoots of the Ogee and SPZ**  
 Source: i-80, Amati



## Geology of the deposits

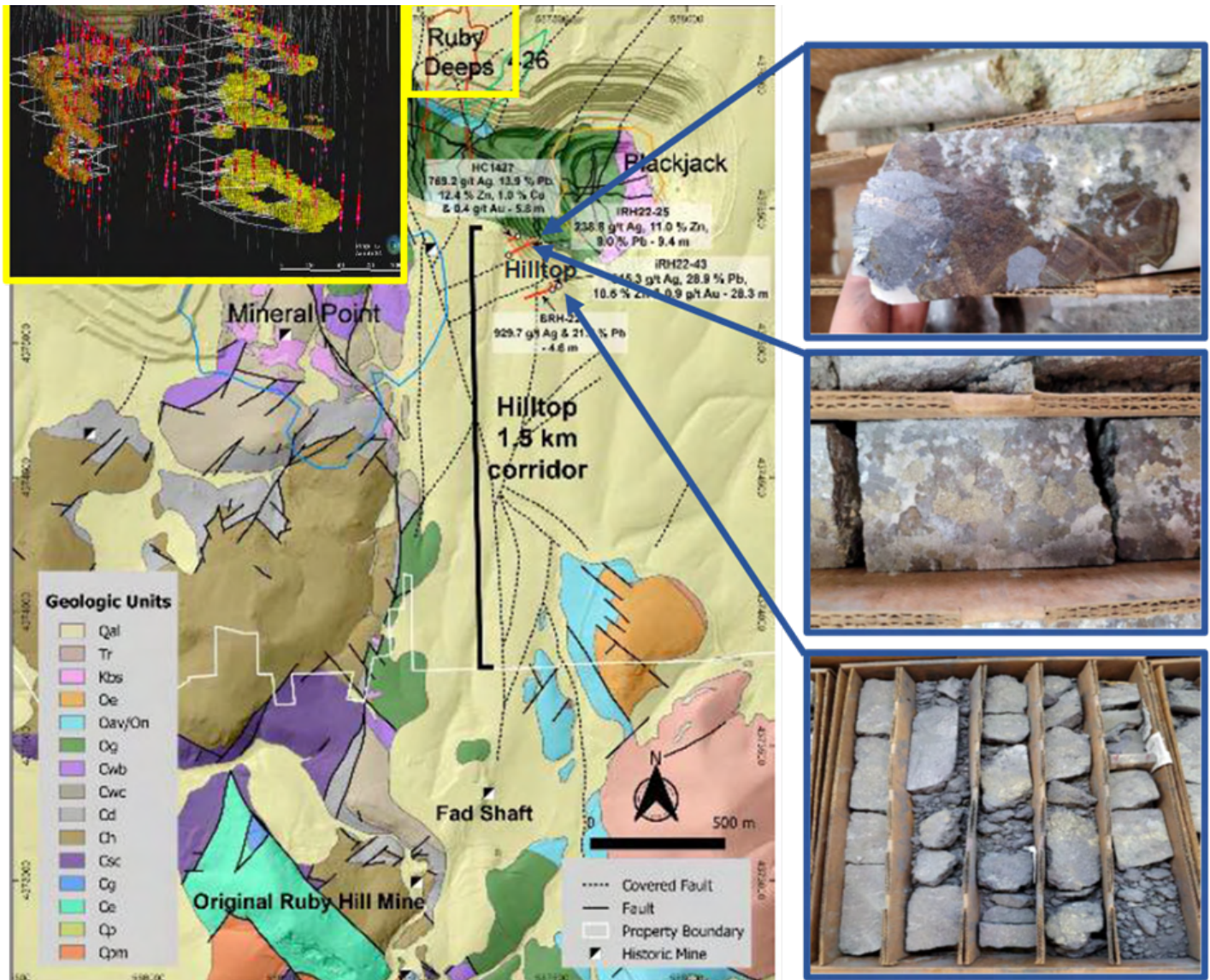
The deposits in the Battle Mountain district appears to be related genetically to porphyry systems, even though many deposits do not contain obvious near-surface features that would indicate this connection, mainly because the gold-silver mineralisation in these deposits may be over one km away from the intrusions. Due to complex tectonic and extensional phases in the region, the mineralization in these deposits may have substantially different geometric associations to the intrusive centres and be hosted in different stratigraphic horizons.

Following our site visit (and the above mentioned issues) we consider the CEO, COO and senior processing technical advisor at i-80, with collective experience in exploration, mine development and operations, key attributes to the company's focus. There are a lot of moving parts to this investment, in terms of metallurgy, process engineering, mine development and exploration. The fund managers at Amati understand and appreciate the development risks to this investment, but also recognise the long-term potential of this district. Ruby Hill is a prime example...



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→ Figure 10: Regional geological plan of Ruby Hill, including the Ruby Deeps UG orebodies



Source: i-80, Canaccord; Amati

Ruby Hill consists of multiple open-pit oxide (Mineral Point & West/East Archimedes) and underground sulphide/oxide deposits (426/Ruby Deeps), with on-site processing facilities including a VAT leach plant and leach pad. Ruby was mined as an open-pit by Barrick from 2007-2013 before a pit wall failure forced the mine's closure. i-80 acquired the project for US\$150M in 2021. i-80 is now engaged in a recently expanded 20,000m+ exploration drill program at Ruby, which has delivered multiple sets of highly impressive drill results.

Highlights include:

- 238.8 g/t Ag, 11.0 % Zn & 9.0 % Pb over 9.4 m from 561.9m
- 469.5 g/t Ag, 11.8 % Zn & 18.2 % Pb over 2.1 m from 587.5m

- 1006.0 g/t Ag, 10.9 % Zn, 27.7 % Pb & 1.6 % Cu over 0.9 m from 745.7m
- 515.3 g/t Ag, 28.9 % Pb, 10.5 % Zn & 0.9 g/t Au over 28.3 m from 145.9m

The fund managers of the TB Amati Strategic Metals Fund have dual expertise from the mining industry and finance. I hope that this 2nd in the Amati Site Visit Series highlights how we can apply our skills to discover new investment opportunities for the fund.



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## Literature

Further, in case you missed our last site visit piece, please [click here](#) to read Amati Site Visit Series 1: Vulcan Energy.



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