AVALON GOLD EXPLORATION INC.

Application for Environmental Permit

Omai PL PL#03/2024 in file GS14: A-1009/000/24

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1. INTRODUCTION

This report describes the work program planned by Avalon Gold Exploration Inc. ("Avalon" or the "Company") for 2024 and 2025 over the 4,590 acre Omai PL, located in the Essequibo Region of the Potaro Mining District. This program is designed to continue the rapid advancement of work on the former producing Omai gold property towards the re-development of a large-scale gold mining operation.

Over the past three years the Company discovered and established a new 4.3 million ounce fresh-rock gold resource complying with the Canadian Securities Regulators NI 43-101 rules and verified by an independent qualified consultant. A major milestone for the Omai project was the Company's completion of a Preliminary Economic Assessment ("PEA") in April 2024, that outlines a mine plan for initial production of 1.83 million ounces of gold from a Wenot open pit mine. The mine will produce an average of 142,000 ounces of gold per year for a 13-year mine life. A 9,000 tonne per day processing plant will be established west of the former Fennel open pit. This mining operation will move an average of 77,000 tonnes of rock *per day* from the Wenot deposit. The initial capital requirement for construction is estimated at US$375 million.

The 2024-2025 proposed work program will continue the definition and expansion of gold resources and continue engineering studies in order to develop an economically sound, actionable mine plan that addresses responsible environmental stewardship.

The planned program consists mostly diamond drilling, minor geophysics, minor geological mapping and trenching, all very low environmental impact work. This work is to expand and optimize the resource for development, combined with engineering studies that will focus on advancing the Wenot deposit towards production.

The 2024-2025 proposed work plan also incorporates engineering studies that, subject to approval, will include initiating the de-watering of the Wenot pit in 2024. The de-watering of the Wenot pit is a critical first step, essential and fundamental to re-development of the Omai mine. As this process is a long lead time (estimated at 12-24 months), the Company intends to advance this as soon as EPA approval is received. The Company completed a comprehensive water study in late 2023, confirming no deleterious elements present in the Wenot or Fennel pit water (Appendix A). An assimilative capacity study to determine dilution and mixing scenarios into the Essequibo River is planned, utilizing a methodology supported by the U.S. EPA. Due to the very high flow rate of the Essequibo River, the planned pumping rate from the Wenot Pit would have no negative impacts on the water quality of the Essequibo River and is likely to have a minor positive effect on the water quality. Upon commencement of de-watering, a regular sampling program downstream of the entrance point will be implemented.

Additional non-impact engineering studies planned include inspection and sampling of the No. 2 Tailings Facility, as its status is central to the re-development plan for Omai. Full inspection of the tailings dams and contents is required given recent third-party disturbances. The company will work with government to continue the monitoring of local activity that would compromise the tailings dams. Prior to any work on the tailings, the Company needs to first have clarification of the availability of the full tailings facility to the future Omai mine plan as part lies outside of the current Omai PL.

None of the planned work would result in any disturbance to communities or have any significant environmental impact. These programs do not include any extraction of material from the property, other than small drill core, water, and soil samples taken for analyses, and potentially small samples of residual tailings. The work program commenced in late January 2024 and is expected to continue through to the end of 2025. The planned work program described herein is respectfully submitted to the Guyana Environmental Protection Agency for review.

2. PROJECT DESCRIPTION

Exploration has been conducted on the Omai PL by Avalon Gold since 2019, achieving key milestones that have significantly advanced the project. The Company has conducted diamond drilling on the property for much of the last three years, as well as exploring several areas of the property with mapping, trenching, and sampling. Three Mineral Resource Estimates have been completed, verified by independent consultants and filed in compliance with the Canadian Securities Regulators. The current Wenot resource consists of newly identified gold mineralized fresh rock as follows:

17,541,000 tonnes grading 1.34 g/t Au for 756,600 ounces (Indicated), plus
20,115,000 tonnes grading 1.72 g/t Au for 1,112,600 ounces (Inferred)

The company also completed a study of previous drill data from the Gilt Creek deposit (located beneath the past-producing Fennel pit) and re-examined the data, remaining core, and modelled the deposit. The first ever NI 43-101 Mineral Resource Estimate was published for Gilt Creek as:

11,123,000 tonnes grading 3.22 g/t Au for 1,151,000 ounces (Indicated), plus
6,186,000 tonnes grading 3.35 g/t Au for 665,000 ounces (Inferred)

In April 2024, a Preliminary Economic Study was published detailing a mine plan for the development of the Wenot open pit deposit. The plan supports development of the Wenot deposit as a large “super pit” with dimensions of 2.4 km by 868m to a 442 m depth. This results in a 13 year mine life with total production of 1.83 million ounces of gold. Processing would be through a large 9,000 tonne per day processing plant.

The 2024-2025 planned program consists of significant diamond drilling with the goals of 1) expanding on this mine plan, 2) extending the mine life from 13 years to 20 years and 3) to improve the overall economics to ensure a sustainable long-life, large scale mine for Omai. In addition, proposed engineering studies are to 1) prepare to de-water the Wenot pit in an environmentally safe way, 2) determine the state and availability of the existing tailings facility, examining any re-furbishment requirements, 3) determine metallurgy, and 4) assess power needs and alternative low carbon energy solutions.

2.1 Location and Access

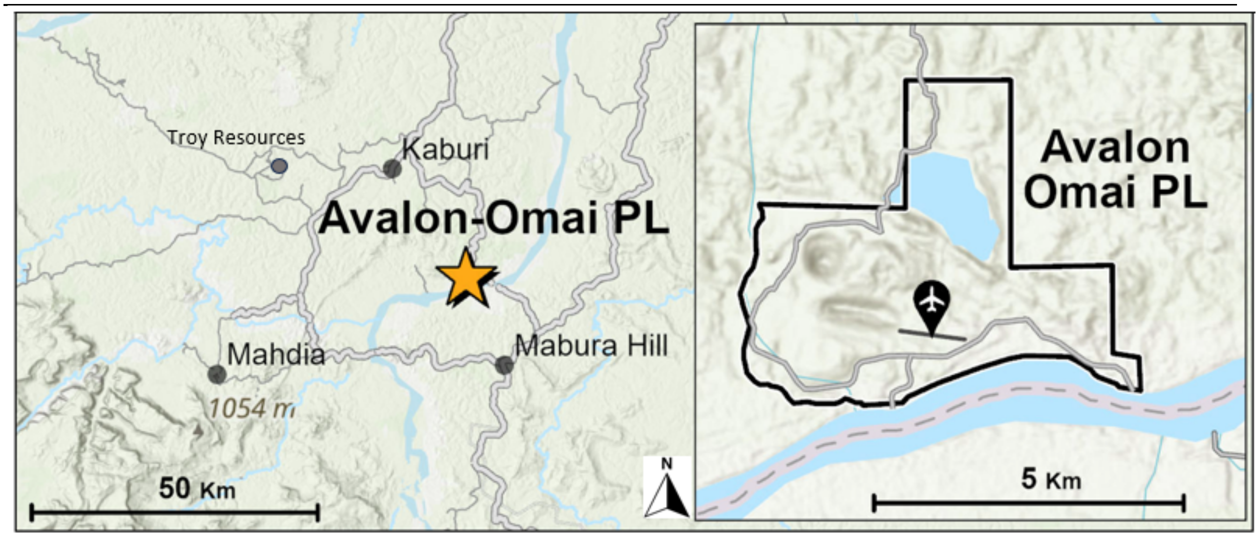
The Omai Prospecting Licence (PL) is located in Essequibo Region, Potaro Mining District, approximately 160km SSW of Georgetown, 75km SSW of Linden (Figure 1a, 1b) and 48 km ENE of Mahdia.

The PL is accessible by road from Georgetown by 4WD vehicle or truck in approximately 5 ½ to 6 hours. The route is via asphalt road from Georgetown to Linden, then a laterite / sand road to just past Mile 58 on the Linden to Mabura road, then an 8 km long side road that goes to the Omai Crossing where a pontoon barge, run by Mekdeci, takes passengers and vehicles across the Essequibo river directly onto the Omai PL (Figures 1a and 1b). With construction to upgrade the Linden-Mabura road well underway, travel time by road will be reduced and there will be less frequent need for air travel. This will assist in the transport of employees and supplies in the future and mobilization of equipment during the construction and operations phases at the Omai property.

A second route to Georgetown is via a poor sand road that connects northward to the Bartica-Potaro Road through the PL. A 1-km long airstrip is located within the PL, east of the Wenot Pit. Omai is about a 40 minute flight from Georgetown. This airstrip was officially re-certified in 2022 and continues to be inspected by the Guyana Civil Aviation Authority annually.

Figure 1a. Omai Prospecting Licence (PL) - Regional Location Map

Figure 1b. Omai PL – Road Access from Linden



2.2 Omai PL (GS14: A-1009/000/24) Description

The Omai PL covers 4,590 acres (1,857.6 hectares) in the Potaro Mining District. It was granted April 25, 2019, pursuant to a Trust Deed signed December 24, 2018. The Omai PL was renewed April 29, 2024, described as GGMC PL#03/2024 in file GS14: A-1009/000/24 as a tract of state land in the Potaro Mining District No. 2 as shown on Terra Surveys Topographic Map 44NE at scale 1:50,000 with reference point 'X' located at the confluence of the Essequibo River and the Seballi Rivers with geographic coordinates of Longitude 58^{o} 42'40.09"W and Latitude 5 25'20.262"N, also known as the Omai Prospecting License. A copy of the Omai PL is shown in Figure 2. The Omai PL is shown in Figure 3 as it appears on the GGMC map, with a number of overlapping aggregate claims, the status of which is largely unconfirmed.

The current Omai PL replaces the Prospecting License GGMC PL#01/2019 in file GS14: A-1001/000/18, which was the original 3 year PL that was renewed for its two one year periods on April 25 2022, and February 24 2023. In consideration for the license, Avalon agreed in 2019 to pay the GGMC an aggregate fee of US$4 million to secure the Omai PL and by April 26, 2022 the entire amount had been paid. The current PL#03/2024 in file GS14: A-1009/000/24 was granted on April 29th 2024, the initial 3 year period of the Omai PL comes due April 30, 2027.

Figure 2. Copy of Official Omai Prospecting Licence - PL#03/2024 in file GS14: A-1009/000/24

Annex 1

Description of Area : GS14: A-1009/000/24

Tract of state land located in the Potaro Mining District No. 2 as shown on Terra Surveys Topographic Map 44NE & NW, at scale 1:50,000 with reference point 'X' located at the confluence of the Essequibo River and the Seballi Rivers with geographical coordinates of Longitude **58°42'40.09"W** and Latitude **5°25'20.262"N**

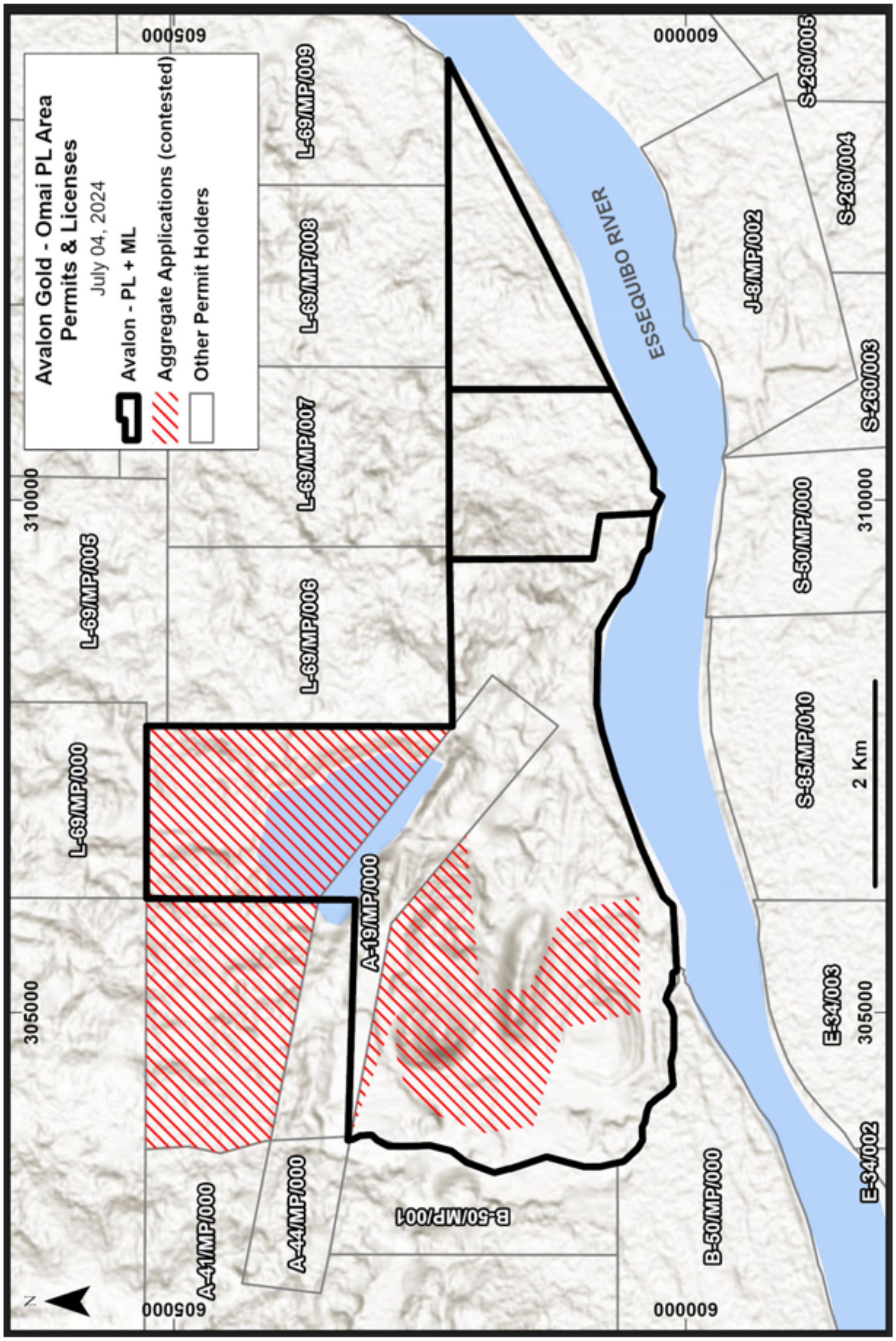
Thence at a true bearing of **321.28°**, for a distance of **909.92 yards**, to the point of commencement:

Point A, located at geographical coordinates of longitude **58°42'57.37"W** and latitude **5°25'41.722"**, thence along the left bank of the Essequibo River for a distance of approximately **3 miles 80.96 yards,** to **Point B**, located at geographical coordinates of longitude **58°45'22.41"W** and latitude **5°25'34.90"**,thence along the left bank of the Omai River for a distance of approximately **3 miles 207.68 yards,** to **Point C**, located at geographical coordinates of longitude **58°46'16.025"W** and latitude **5°27'19.436"**, thence at true bearing of **91.61°**, for a distance of approximately **1 mile 787.721 yards**, to **Point D**, located at geographical coordinates of longitude **58°45'.288"W** and latitude **5°27'17.316"**, thence at true bearing of **.21°**, for a distance of approximately **1 mile 484.7 yards**, to **Point E**, located at geographical coordinates of longitude **58°45'.04"W** and latitude **5°28'23.768"**, thence at true bearing of **89.84°**, for a distance of approximately **1 mile 79.4732 yards**, to **Point F**, located at geographical coordinates of longitude **58°44'5.334"W** and latitude **5°28'23.916"**, thence at true bearing of **179.96°**, for a distance of approximately **1 mile 1526.83 yards**, to **Point G**, located at geographical coordinates of longitude **58°44'5.269"W** and latitude **5°26'46.612"**, thence at true bearing of **88.78°**, for a distance of approximately **1 mile 22.6963 yards**, to **Point H**, located at geographical coordinates of longitude **58°43'12.266"W** and latitude **5°26'47.738"**, thence at true bearing of **179.57°**, for a distance of approximately **1543.32 yards**, to **Point I**, located at geographical coordinates of longitude **58°43'11.921"W** and latitude **5°26'2.051"**, thence at true bearing of **98.92°**, for a distance of approximately **461.357 yards**, to **Point J**, located at geographical coordinates of longitude **58°42'58.367"W** and latitude **5°25'59.934"**, thence at true bearing of **176.88°**, for a distance of approximately **616.109 yards**, to the point of commencement at **Point A**

Thus enclosing an area of approximately **4584 acres**, save and except all lands lawfully held or occupied.

Figure 3 Map of Omai PL

Figure 3. Map of Omai PL and Nearby Permits and Licences



2.3 Land Use

The area covered by the Omai PL has seen extensive mining activity over the past 150 plus years. The easy access, being located along the western side of the Essequibo River, and the historically rich surficial gold content has attracted multiple generations of both small-scale mining of alluvium and saprolite as well as larger scale mining of saprolite and fresh rock.

There are currently several different activities underway on the Omai PL in addition to the Company's gold exploration activities, these include a large-scale aggregate operation, a separate aggregate processing operation, a small logging operation and occasional road disturbances. The current land use is shown in figures 4a, 4b and 4c. Current and potential future land use can be described as follows:

1) **Forestry**: Decades of logging and site clearing for mining over much of the Omai PL has left only 10 to 15% of the property currently forested. Much of the property is covered by grasses, shrubs, vines and small trees that have been established post-mining. Although most of the property is cleared, a small logging operation commenced recently on the northeastern part of the tailing dam.

2) **Mine Tailings Facility:** A large tailings facility and surrounding impacted area (approx. 435 acres), remaining from the 1993-2005 large scale mining operation, covers roughly 9% of the PL. It is expected that this tailings facility will be refurbished and re-used as a critical component for the future mine operation. At present however, a small part of the tailings facility lies outside of the Omai PL which precludes and work or assessement until the rights to the full facility can be confirmed.

3) **Open Pits:** Two large water-filled pits, related to the 1993-2005 large scale mining, cover approximately 6% of the PL. Given the newly discovered gold resources beneath and along strike of the Wenot pit, it is expected that this will be de-watered and the pit significantly expanded.

4) **Porknocker Pitted Areas**: Although site reclamation was completed in 2006-7 by Iamgold Corporation, once the Mining Licence (ML) was relinquished, local artisanal miners ("porknockers") arrived on site in large numbers and dug pits to mine residual saprolite and alluvium, leaving an unsightly pock-marked landscape that in aggregate covers approximately 350 acres or 10% of the PL. No porknockers are currently active on the Omai PL but occasionally set up small operations that are quickly removed by the Company's security team. A large operation was established early in 2024 along the western boundary of the Omai PL, in the Omai Creek, adding to the disturbances.

5) **Riverbank Dredging:** River dredgers are actively mining the Essequibo riverbank which forms the southern boundary of the Omai PL. These dredgers have consumed approximately 115 acres of the Omai PL since it was granted in 2019 (see Figure 4A). These operations are approaching the main road access and the eastern end of the Omai airstrip.

6) **Rock Stockpiles**: Stockpiled rock from the two mined pits cover large areas of the property. The stockpiles consist of mined rock deemed uneconomic to process through the

mill during the time of the large-scale mining operation, when gold was less than US$400 per ounce. It is very likely that these stockpiles contain economically recoverable gold for a large-scale mining operation with a conventional mill, however a lack of clarity of overlapping rights preclude consideration at this time. Revegetation initiatives and mother nature have re-established grasses, shrubs and scattered small trees over some of these stockpile areas. A very prominent stockpile south of the Wenot pit covers approximately 226 acres and sampling has shown that it contains gold that can likely be economically extracted by a future large-scale operation but will require a mill for effective gold recoveries. Other stockpiled rock will be needed for construction of a future large-scale operation, for mine roads, building foundations and tailings dam raises.

7) **Aggregate Mining**: A large-scale aggregate operation arrived and established a large operation on the Omai PL in mid-February 2022, together with a camp with an estimated 15-25 workers. This group have also advanced construction of a docking facility from the southern part of the Omai PL into the Essequibo River.

8) **Aggregate Processing**: Metallica has established a crushing operation covering main areas of prospective geology immediately between the four known mineralized deposits identified by Avalon. The area covers approximately 13 acres in an area of the proposed new mill site.

9) **Roads:** A network of dirt access roads cover the Omai PL, including a public road that extends from the Potaro landing, across the property and then north towards Karouni. This provides access to the highly populated porkknocker site over the former "Quartz Hill" prospect. Public access across the Omai PL is an inconvenience and security issue at the present time, but relocation of this road will be essential prior to any decision on mine construction.

10) **Airstrip:** A one-kilometre airstrip is located in the central part of the Omai PL and has been regularly maintained and inspected annually, most recently in June 2024.

11) **Exploration Camp**: The Company maintains a permanent exploration camp consisting of two large buildings that were formerly warehouses for the operating mine. The camp includes a large core logging and storage facility, offices, a large workshop, living quarters, flush toilets and showers, and canteen facilities. The camp can accommodate up to 60 people. The Company maintains a security team on site at all times.

12) **Agriculture:** There is no evidence of past agriculture in this area, probably due to the remoteness from any established communities, together with the history of mining activity. Given the level of disturbance by porknocker activity and waste dumps from large scale mining, any significant agriculture is highly unlikely in the future.

Figure 4 Omai PL Area Land Use

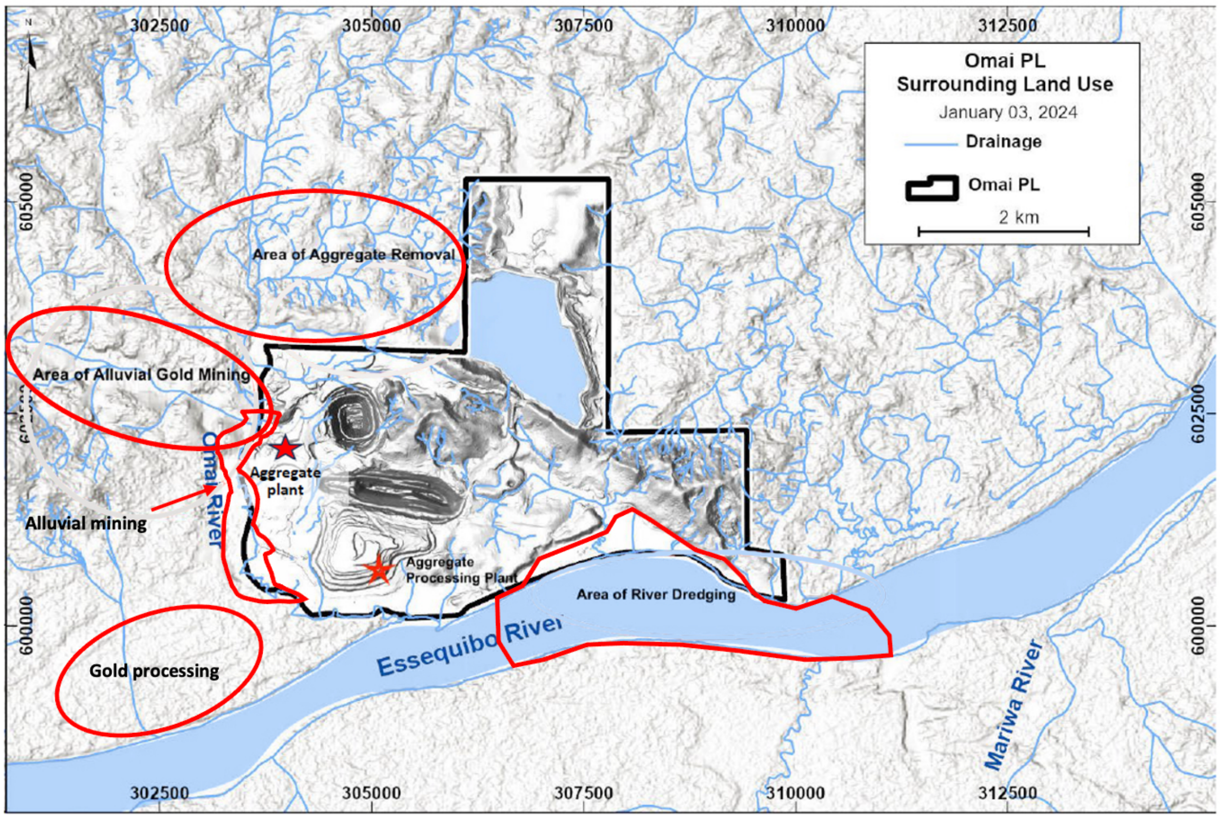


Figure 4a Omai PL Detailed Land Use

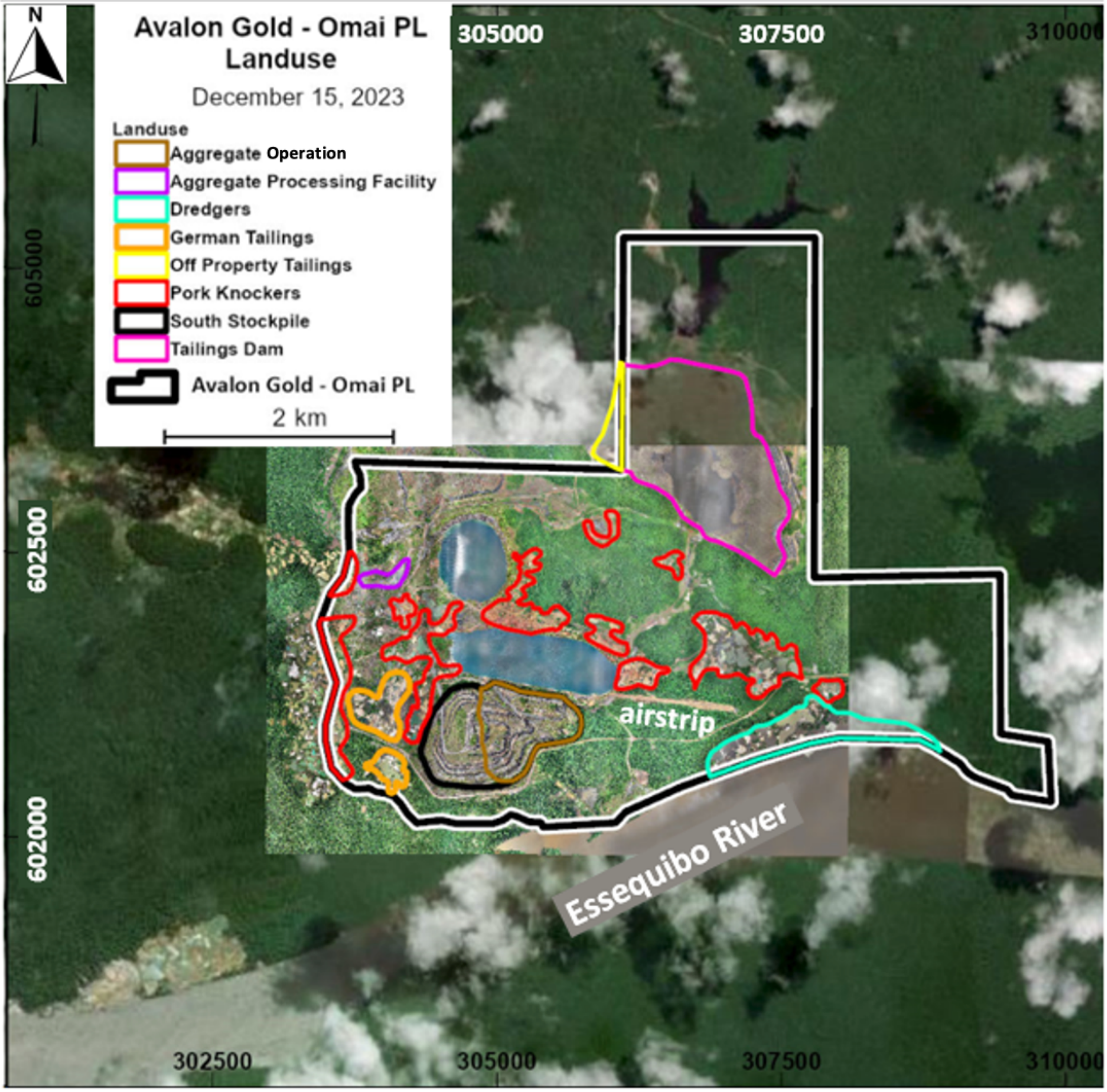


Figure 4b Infrastructure on Drone Image Background

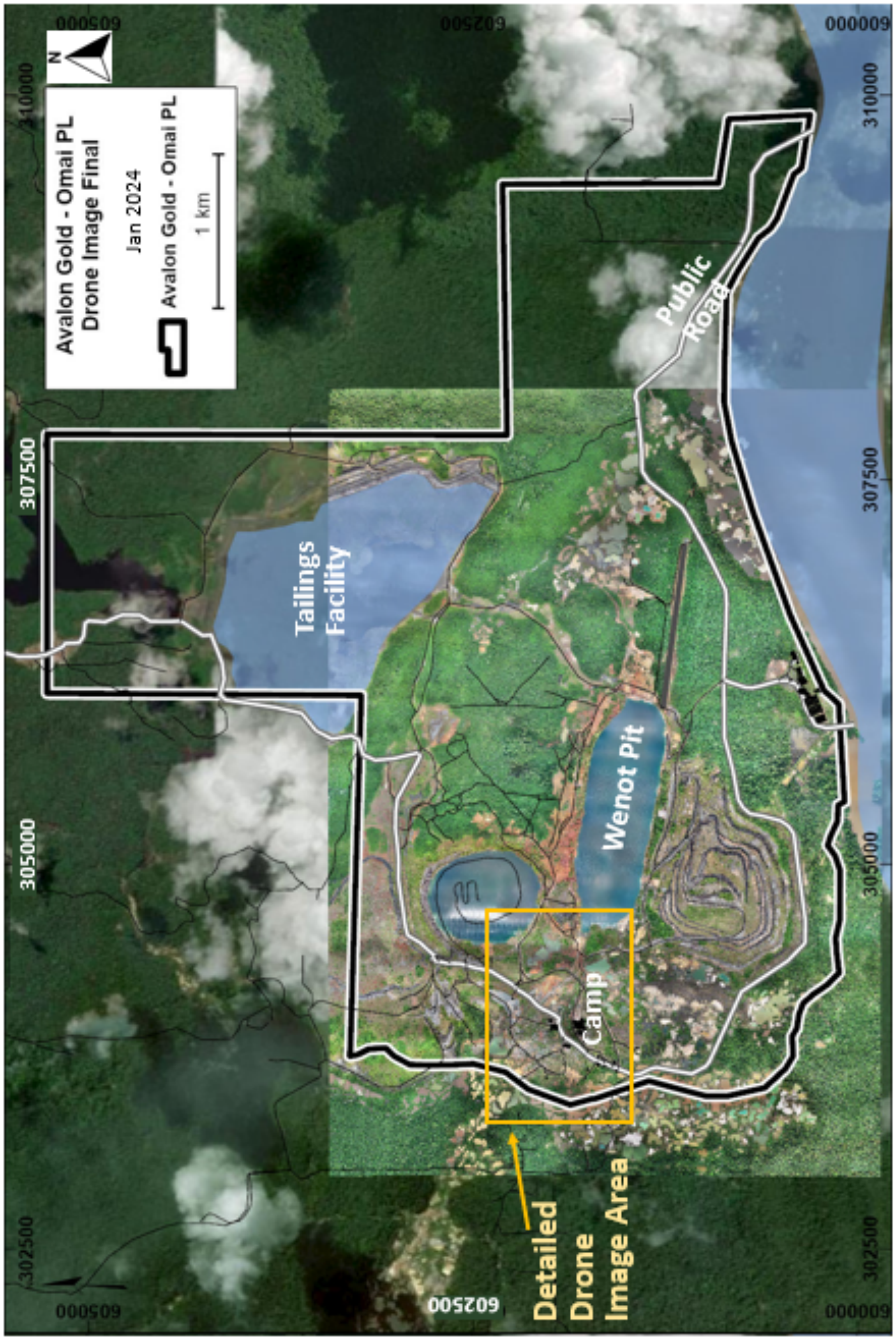


Figure 4b. Omai PL – Detailed Land Use (on drone image)

Figure 4c Omai PL Camp Area

Figure 4c Insert Map of Omai PL Camp Area (on drone image)

2.4 Geology and Mineralization

2.4.1 Regional Geology

The regional geology on and around the Omai PL consists of the Paleoproterozoic Barama-Mazaruni Supergroup, a greenstone terrane deformed and metamorphosed during the Trans-Amazonian orogeny, a tectonic-magmatic event that occurred between approximately 2.25 and 1.9 billion years ago (Ga). The rock sequence comprises alternating felsic to mafic and ultramafic volcanic flows interlayered with thick sedimentary units. The base of the sequence is dominated by tholeiitic basalts and associated mafic-ultramafic bodies and sills, which are overlain by intermediate and felsic volcanic rocks interlayered with immature clastic sedimentary rocks. The metamorphic grade is generally lower greenschist facies, although locally the volcano-sedimentary rocks are metamorphosed to pumpellyite-prehnite or amphibolite facies.

2.4.2 Property Geology & Mineralization

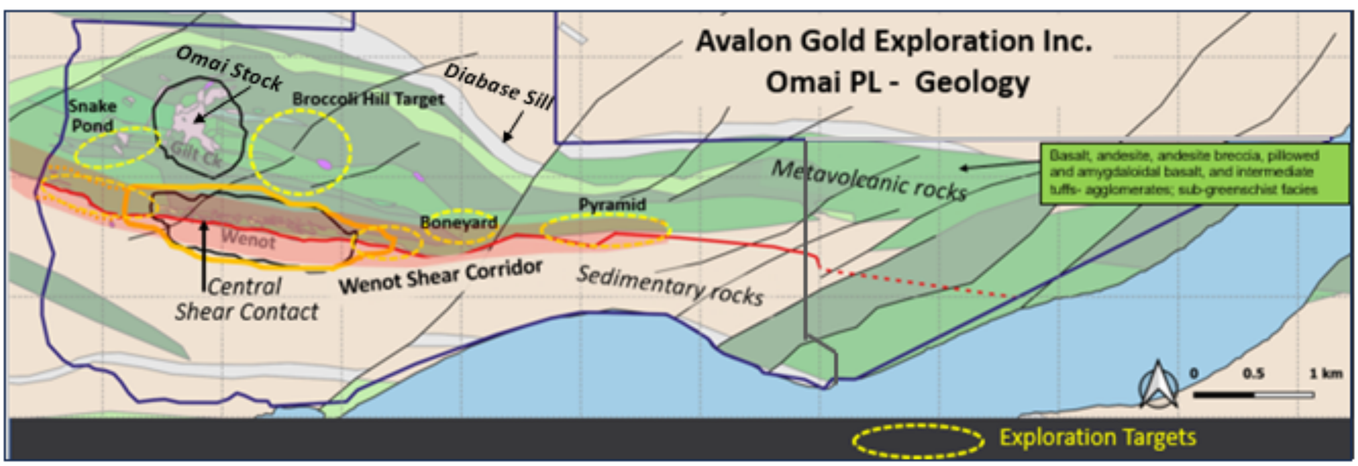
The Omai PL is underlain by greenstone terrane, dominated by a prominent structural feature, the broad east-west trending Wenot shear corridor that straddles the contact between a sequence of predominantly volcanic rocks to the north and a predominantly sedimentary sequence to the south (Figure 5). The lithologic sequence to the north consists of mafic volcanic to intermediate volcanic cycles with minor intercalated sediments. The northern volcanic unit was intruded by a quartz monzodiorite plug (the Omai stock). The stock has an irregular lobate shape with dimensions of roughly 250m (W-E) by almost 500m (N-S).

The south side of the Wenot shear is dominated by fine to medium grained sediments, typically lithic wackes derived from volcanic material. These sediments often display distinctive fining-upward sequences ranging from a metre to tens of meters thick. Multiple phases of quartz-feldspar porphyry, rhyolite, and diorite/microdiorite dikes intruded both the volcanic sequence and to a lesser degree the sedimentary sequence, and most abundantly within the 150 to 500m wide Wenot shear corridor. Post-mineralization mafic dikes and sills were intruded periodically from Mesoproterozoic to Triassic times. The Barama-Mazaruni volcano-sedimentary sequence has been metamorphosed to lower greenschist facies. A late diabase sill (140-180m true thickness) is exposed at surface, forming the buttress dam of the tailing impoundment in the northeastern part of the Omai PL. This diabase dips to the southwest at 15-20° and forms the bottom of the past-producing Fennel pit where it bisects the Omai stock. The Gilt Creek deposit lies below this diabase sill.

The fresh-rock gold deposits at Omai are classic orogenic gold deposits, hosted within a greenstone belt. At Omai, there are two major gold deposits (Wenot and Fennel) both the focus of previous large scale open pit mining operations. The Fennel deposit and the underlying Gilt Creek deposit are mainly hosted within the Omai stock and to a lesser extent, the adjacent volcanic rocks, including tholeiitic basalts and calc-alkaline andesites. Mineralization occurs within wide subhorizontal zones of quartz veins and stockworks that host the higher grade gold mineralization. Lower grade gold is more widespread, disseminated within the quartz monzodiorite.

The Wenot gold deposit consists of at least four distinctive subvertical to steeply north dipping zones that host gold mineralization within the broad 150 to 500m wide Wenot shear Corridor. The shear corridor is the product of multiple deformation events that created variably brittle and ductile zones across a broad affected area. There are four main zones of mineralization within the Wenot Shear corridor and have been identified at least 2.5km along the shear. The main shear contact hosts a persistent quartz-feldspar porphyry dike with an adjacent highly sheared proto-mylonite within the southern sediments. Both lithologies often host significant gold mineralization and extend the full length of the Wenot deposit. A package of interfingering felsic and diorite dikes occurs north of the central contact shear and often hosts significant gold mineralization within quartz vein stockworks or in more subtle altered and sulphidized ductile shears. Additional gold-bearing zones within the volcanics and often wide zones within the sediments are associated with local shearing, quartz veining and associated alteration including minor sulphidization in the form of euhedral pyrite.

Figure 5 Omai PL Geological Map



2.5 Geological Exploration History

The Omai Property has a long history of exploration and gold production from both small and large scale operations (Table 1). Most historical mining on the Omai property focused on the surficial saprolite and alluvial deposits that resulted from the weathering and erosion of the underlying primary “fresh rock” mineralization.

A number of larger international companies conducted various exploration activities with several establishing mostly "fresh rock" mines, including Ventures Ltd. (1937), Anaconda (1947-1950), and most significantly Golden Star Resources Ltd. and Cambior Inc. (1993-2005). Between 1993 and 2005, the Omai property produced 3.8 million ounces of gold from 78 million tonnes of material with an average grade of 1.5 g/t Au.

Avalon Gold Exploration Inc. (Guyana) acquired the Omai PL on April 25, 2019. On-site exploration commenced in 2020 with a detailed airborne magnetic and radiometric geophysics survey over the entire property, refurbishment of old warehouses for accommodations, offices and core logging facilities, followed by aggressive exploration consisting of trenching, mapping, compilations, database construction, geophysics and drilling from early 2021 and through 2023. A summary of work completed by Avalon since 2019 is included in Table 2.

Avalon's drilling resulted in the discovery of significant new gold resources of 4.3 million ounces (as of January 2024), complying with NI 43-101 standards. An updated resource estimate, incorporating 2023 drill results, is underway.

Table 1. Summary of Historical Exploration and Mining on the Omai PL

- 1889-1896: During this time 1870 kg (60,000 oz) of gold were recovered by simple hand methods conducted by local prospectors, primarily from the creeks draining the mineralized areas.

- 1896-1911: A German syndicate continued exploration through diamond drilling and tunnelling, producing 1,910 kg (61,200 oz) of gold prior to selling the property in 1907. From 1907 to 1911 the claims area was sub-leased to local prospectors who extracted 460 kg (14,800 oz) of gold. By 1911 a total of 4,240 kg (136,400 oz) of gold had been recovered at Omai. Since then, local prospectors have worked on the area at various times, but no records of production are maintained.

- 1937: Ventures Ltd. of Toronto, Canada acquired the property. No record of their program is available. The low gold price at the time and increasing deposit depth likely caused them to abandon the project.

- 1947-1950: Anaconda British Guiana Mines Ltd. (Anaconda) acquired the Omai PL and completed detailed surface and underground exploration. 73 drill holes were completed and drill logs have been preserved. After installing a bulk sampling plant, Anaconda terminated their operations in 1950.

- 1985-1987: Golden Star Resources Ltd., a Canadian-based exploration company acquired the Omai PL, working with Anaconda's exploration data. Golden Star commenced systematic geochemical sampling, geological mapping and diamond drilling but little data from that era is available. Soon after this work, they negotiated a joint venture agreement with Placer Dome Inc.

- 1987-1990: Placer Dome Inc. through its wholly owned subsidiary Placer (Guyana) Ltd., were operators in a joint venture with Golden Star Resources Ltd. They expanded the camp facilities, mobilized personnel and equipment, and advanced exploration to a resource evaluation stage. Placer Dome drilled many exploration targets and their drill logs are preserved. Placer Dome declined to pursue development so Golden Star approached Cambior.

- 1990-2006: Denison Mines Ltd. and Cambior Inc stepped back to completed basic exploration consisting of stream sediment geochemistry, banka (cased augering), profile and grid auger drilling and MMI (Mobile Metal Ion) geochemical sampling more broadly across the property. More shallow sampling methods were followed up by deeper auger drilling.

- 1990 – 2006 Cambior Inc. (Val d'Or, Quebec) completed a "bankable feasibility study" around 1991 and subsequently secured a mining license. A total of 394 diamond drillholes (60,486 m) were drilled to define the Fennel open pit deposit. Omai Gold Mines Ltd. (Guyana) was formed to conduct open pit mining from two separate deposits (Wenot and Fennel) which commenced in March 1994 and ceased in September 2005, during which time a total of 3,800,000 ounces of gold were produced (78 million tonnes grading 1.5 g/t Au). Omai processed both soft rock (saprolite) and hard rock (andesite, quartz diorite and rhyolite) through an 8,000 tonne per day mill using cyanidation and carbon-in-pulp (CIP) as the processing method, producing an average of 300,000 ounces of gold per year over a 12-year period. Mine profitability was severely affected by low gold prices throughout the mine life and was one factor in the mine's closure.

- 2006-2007 After mining at Omai ceased, a 46,000m (27 hole) diamond drill program was started by Cambior to test the Omai Stock for an underground resource beneath the thick diabase sill at the bottom of the Fennel Pit. During that time, Cambior was taken over by Iamgold, that continued with the drilling. In early 2007 an unpublished resource of 17.5 million tonnes at 2.5 g/t Au, for 1.4 million ounces of gold, was calculated. This grade was too low to be economic and the project was relinquished to the Government of Guyana.

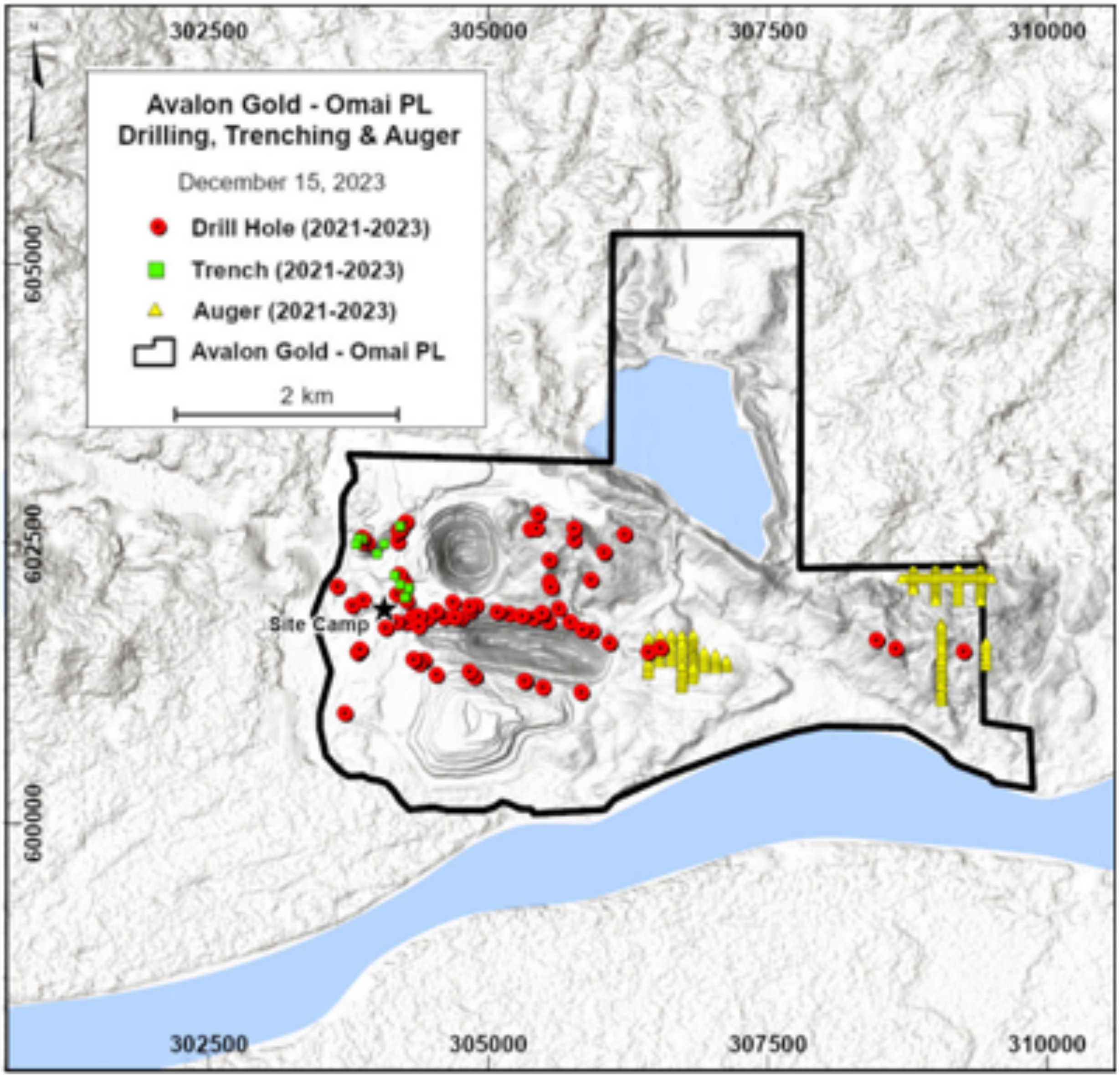
- In 2012, a PL was granted to Mahdia Gold Corp covering the Omai area. The company fell into financial distress, exacerbated by the death of the Exploration Manager. Much of the data was lost and some of the core drilled was not assayed. Mahdia completed 20 drill holes totalling ~6,000 metres mostly focused on Wenot including the western and eastern ends.

Table 2. Summary of Work Completed by Avalon Gold Exploration Inc. since 2019

On April 26, 2019, the Omai PL was granted to Avalon Gold Exploration Inc. (Guyana) for a payment of US$4.0 million. A new Omai PL was granted April 29, 2024 replacing the earlier Omai PL. Since the PL was granted, Avalon has completed the following work (Figure 6):

- Constructed a new permanent 60-person camp with offices and core facility, refurbishing old warehouses;
- airstrip rehabilitated and maintained with annual inspections;
- satellite communications installed and recently updated;
- airborne geophysics survey including aeromagnetics and radiometrics;
- a new environmental baseline study (flora and fauna) and water survey in 2021;
- assembled and integrated historical work into a new GPS-unified digital database with numerous compilations and modelling ongoing;
- recovered, re-logged and assayed surviving 2012 core (most not previously assayed), including core being photographed, cut, examined with collection of XRF and magnetic susceptibility measurements;
- 71 drill holes totaling 22,490 metres completed with 18,731 gold assayed done, 533 multi-element analyses, and 457 specific gravity readings taken;
- Gilt Creek historic data was verified with re-sampling as possible; extensive re-modelling (46 holes, 27,000 m) allowed the review and validation by the independent consultant who completed the first ever NI 43-101 Mineral Resource Estimate on Gilt Creek;
- Detailed geological interpretations of all Wenot drilling to date, to revise the working model and to assist in the development of refined mineralized zones (as wireframes) for the next mineral resource estimate which is underway;
- 20 trenches completed with 249 samples assayed, covering multiple exploration targets across the property, with mapping and sampling as exposures allow;
- 509 auger samples along the Wenot shear corridor and on the Slam target;
- Thin section analysis on 12 Wenot rock samples;
- Magnetic vector inversion analysis by world-renowned geophysicist was successful at refining and prioritizing magnetic targets across the Omai PL;
- Engineering firm evaluated potential mine development plans and provided an initial report in mid-2023 for (re-)developing a large-scale mining operation at Omai;
- A comprehensive water sampling and water quality survey of the water contained in the two pits was completed as part of a larger 2024 planned study to support the potential near-term de-watering of the Wenot pit (see Appendix A);
- Induced Polarization (IP) geophysical survey was completed in 2023 on specific parts of the property to define additional resource extensions to the east and west of Wenot;
- Completion of three NI 43-101 Mineral Resource Estimates, the most recent published in January 2024, establishing a 4.3 million ounce fresh-rock gold resource;
- Preliminary Economic Assessment (PEA) was published in April 2024 for a Wenot Open Pit mine to produce an average of 142,000 ounces of gold per year over 13 years for production of 1.83 million ounces.

Figure 6. Omai PL – Location of Exploration Work Completed



The Company's exploration to date on the property has consisted of a number of non-invasive surveys that have not resulted in any significant new land disturbances nor have they had environmental impact. Surface disturbances by Avalon on the Omai PL have been limited to preparation of drill pads and trenches. Efforts are made to minimize surface disturbance and to leave sites clear of debris. These areas are expected to revegetate naturally, and this process has already started at some earlier drill sites.

2.6 Baseline Environmental Studies

Subsequent to the Omai mine closure and relinquishment, a number of environmental baseline studies have been completed. In March 2012, a water baseline study was completed by Amec Americas Ltd. Samples were collected from the Wenot and Fennel pits and confluence of the Omai and Essequibo rivers. Results indicated no deleterious concentrations of cyanide, arsenic, cadmium, chromium, lead, mercury or other metals that exceeded International Finance Corporation (IFC) Effluent Guidelines or Canadian Council of Ministers of the Environment (CCME) Water Quality Guidelines for the Protection of Aquatic Life.

Avalon Gold Exploration completed a water, sediment and biodiversity survey in early 2021, engaging L. Kalicharan. Teams conducted surface water and sediment sampling, and inventoried plants and animals (fishes, birds, herps and mammals) to identify any endangered, rare and threatened species at six different localities within the PL. The report concluded that although the property shows significant biodiversity, no endangered and threatened species were reported.

In February 2021, Ground Structures Engineering again collected a series of water samples to establish baseline characterization of the surface water quality on the Omai property. Samples were collected from the Wenot and Fennel pits and at a location on the Omai River downstream of the former Tailings Pond No. 1, and at the confluence of the Omai and Essequibo rivers. Results showed no parameters exceeding either IFC Effluent Guidelines or CCME Water Quality Guidelines for the Protection of Aquatic Life. Parameters which are typically of greatest concern, including cyanide (free and total), arsenic, cadmium, chromium, lead and mercury, all returned analytical values below the minimum detection limit. At two sites, total suspended solids (TSS) exceeded the IFC EHS which also recorded the highest turbidity, likely related to small-scale alluvial mining activities near the water source outside or prior to the granting of the PL to Avalon. TSS was below minimum standards for both the Wenot and Fennel past-producing pits.

In November-December, 2023, a comprehensive water sampling program was undertaken as a baseline environmental study and also to establish the suitability of the Wenot and Fennel pit water for possible drainage into the Essequibo river. This survey included sampling by boat at several levels within the water columns of the Wenot and Fennel pits as well as within the nearby Essequibo river, both upriver and downriver from the Omai PL.

2.7 Water Study

The future re-opening of the OMAI gold mine will require dewatering of the existing open pits, which would require pumping water into the nearby Essequibo River. Therefore, characterization of both the pit water chemistry and the receiving water body (Essequibo River) chemistry is essential to understand any potential impacts. To that end, this report describes water sampling that took place over a span of 3 days between November 14 and 16, 2023, to characterize the chemistry and water quality of the Wenot and Fennell pit water, sampling through the vertical water column, and the adjacent Essequibo River.

A total of 86 water samples were collected from the OMAI Wenot and Fennell pits and 26 water samples from the Essequibo River. The samples were collected from 3 sites on the

Wenot pit (sampling day 1), 2 sites on the Fennell pit (sampling day 2) and at 4 sites on the Essequibo River (sampling day 3). Samples were collected at various depths through the water column, the deepest from 190m on the Fennell pit. Quality control samples, including field duplicates, distilled water blanks and replicates of a certified water standard were incorporated into the sample sequence prior to submission to Activation Laboratories (ISO/IEC 17025:2017 and ISO 9001:2015 accredited) in Georgetown (Guyana) and Ancaster, Ontario. The samples were analyzed for a suite of 59 metals (including arsenic, cadmium, copper, mercury and lead), bioavailable cyanide (weak acid dissociable) and major anions (including chloride, nitrate and sulphate). In addition to obtaining water samples, a multi-parameter water quality sonde (YSI ProDSS with GPS enabled handheld logger) was deployed to profile and collect data on bulk parameters pH, ORP, conductivity, temperature, dissolved oxygen and turbidity. All samples were submitted promptly to the laboratory and results were reported within the recommended sample holding times (28 days for metals and anions; 14 days for cyanide).

SAMPLING METHODS

Sampling on the Wenot and Fennell pits utilized a small boat to access centre basin locations, evenly spaced along the lengths of each pit (Figure 1). The sample locations on the Wenot pit were refined based on the bathymetry that was completed by AMEC (AMEC 2012b). A portable Garmin depth-finder connected to a transducer mounted to the boat transom provided depth to bottom.

Water sampling at each location was done with a Van Dorn style (Wildco Beta bottle) horizontal sampler. Sample depths were nominally at 2m, 10m, 25m, 40m, 45m, 50m, 60m and 65m on the Wenot pit and 2m, 10m, 50m, 100m, 160m, 190m on the Fennell pit. Prior to water sampling, a multi-parameter water quality sonde (YSI ProDSS with GPS enabled handheld logger) was deployed to profile pH, ORP, conductivity, temperature, dissolved oxygen (optical) and turbidity to a depth of 60m (maximum length 3 of cable available). Water quality sonde measurements on water samples deeper than 60m was done by transferring water from the Wildco Beta bottle sampler into the Sonde calibration cup and recording measurements immediately after sample collection while still in the boat on station. During both water sampling and YSI profiling, great care was taken to not touch the bottom substrate.

The water sampling on the Essequibo River was also done by boat utilizing the same methodology as on the OMAI pits. Profiling with the YSI sonde was undertaken prior to water sampling. Water samples were obtained from depths of 1m, 2m, 4m and 6m, depending on the total water depth at each station. Three stations were located on the downstream side of the OMAI mine site and one station on the upstream side (see Figure 1). During both water sampling and YSI profiling, great care was taken to not touch the bottom substrate. However, there was dredging/sluicing activity by several barges on the river, upstream of sample sites 1 to 3 and downstream of sample site #4.

At each sample station, both on the OMAI pits and the Essequibo River, 60ml HDPE bottles were used to collect separate aliquots for each of metals, anions and cyanide analysis. All sample bottles were triple rinsed in the water to be sampled, prior to being filled and tightly capped. The OMAI pit water was collected and poured off into sample bottles with no other treatment (unfiltered). The Essequibo River water samples, due to high turbidity (>20 FNU), were pressure filtered on-site using 60ml plastic syringes (with no rubber parts) and Millipore 33mm Durapore 0.45um filters. On average, 2 filters were required for each 60 ml sample. All water samples were placed in a cooler filled with ice for transport back to base and subsequently kept refrigerated.

All sample station locations (GPS coordinates) were recorded with the GPS enabled YSI ProDSS handheld data logger, in addition to a handheld Garmin GPS.

Figure 7 Plan View Of Water Sampling Locations

Water sampling locations for the November 2023 water quality survey.

Figure 8 Water Survey

Personnel preparing for water sampling of the Wenot Pit water (November 2023)

Figure 9 Water Sample Collection

Water sample collection (November 2023)

SUMMARY, CONCLUSIONS AND RECOMENDATIONS

The water chemistry of the OMAI Wenot and Fennell pit waters have been characterized to depth by the collection and analysis of water at 5 sample stations and 26 depth intervals to a maximum depth of 190m at the Fennell pit. Samples were delivered to the laboratory promptly and results were reported within the recommended sample holding times (28 days for metals and anions; 14 days for cyanide). Review of all quality control (QC) data demonstrated overall good reproducibility and excellent accuracy. The OMAI pits (Wenot and Fennell) water chemistry results, when compared to established surface water quality objectives (e.g. CCME; Canadian Council of Ministers of the Environment and PWQO; Ontario Provincial Water Quality Objectives) show no exceedances. In particular, all arsenic, cadmium, cyanide, copper, lead, mercury, nitrate and sulphate results were well below accepted water quality objectives for the protection of aquatic life. All cyanide data was reported below the method detection limit of 0.002 mg/L (accepted objective is 0.005 mg/L) and all mercury data was reported below the method detection limit of 0.2 ug/L (accepted objective is 0.2 ug/L).

The majority of results from the sampling on the Essequibo River were also within established surface water quality objectives, except for 3 sites with minor copper exceedances. It should be noted that the CCME and PWQO guideline values have no regulatory standing in Guyana but were used for comparative purposes as current best industry practice concentrations. The parameters which are typically of greatest concern, including arsenic, cyanide, cadmium, chromium, lead and mercury, all returned analytical concentrations either below the method detection limit or well below established water quality objectives for the protection of aquatic life.

At the OMAI pits, the alkaline pH (average 7.8) is most likely the main controlling factor on metal solubility, resulting in generally dilute metal concentrations within the water. The pit waters are generally well oxygenated and have very low suspended sediment. Based on the water sampling results from the Essequibo River, it is suggested that the addition of the OMAI pit waters would not have deleterious effects locally or downstream and potentially could improve the current esthetic and chemical water quality of the river for some parameters.

3. EXISTING CONDITIONS

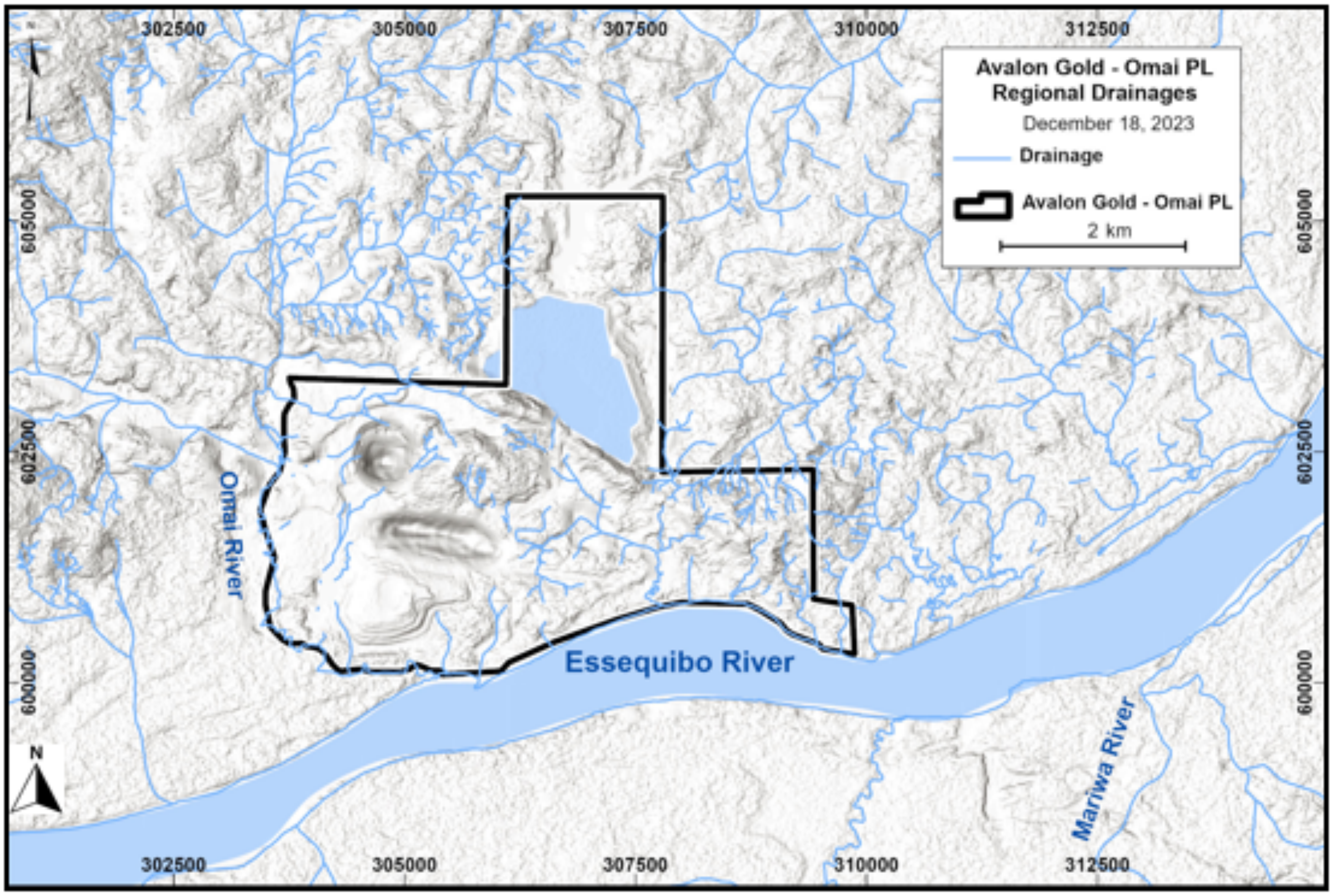
3.1 Description of Existing Landscape

The landscape is typical of a humid equatorial climate with intensely oxidized saprolitic soils The current Omai PL landscape reflects the intensity of historical small and large-scale gold mining. Less than 10% of the property remains forested. The most prominent topographic features include: (i) two large rainwater-filled pits that are remnants from large scale mining that took place between 1994-2005, (ii) the historic No. 2 tailings facility, covering approximately 12% of the current Omai PL, (iii) concentrations of small water-filled pits resulting from artisanal “porknocker” activities, and (iv) extensive, variably revegetated, stockpiles of rock from the former large-scale mining operation.

3.2 Drainage

The original drainage patterns over the Omai PL have been greatly modified by former large and small scale mining activities. Gold mining of surficial deposits of alluvium and saprolite are mostly responsible for the current disrupted drainage patterns, shown in Figure 10.

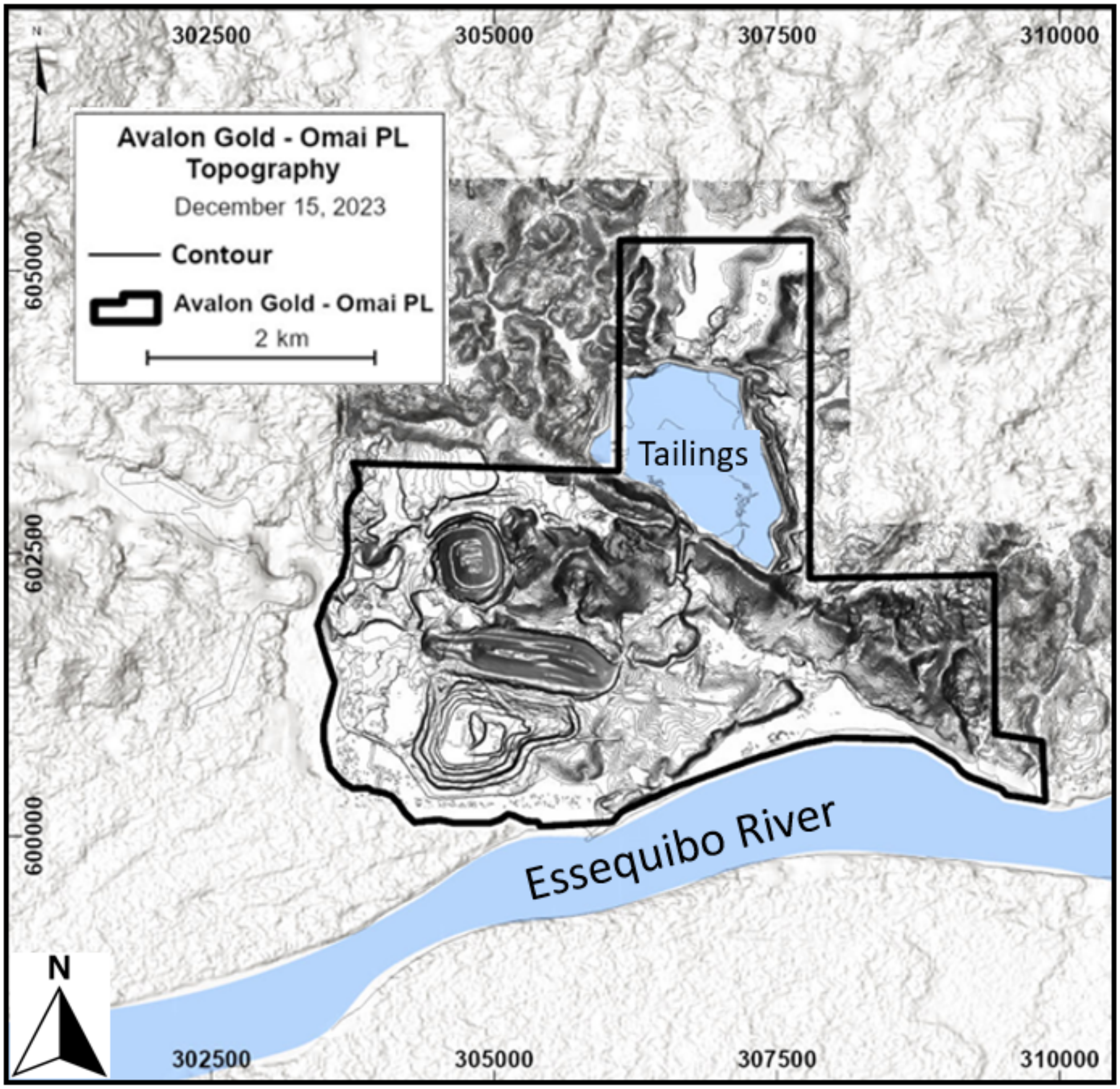
Figure 10. Drainage Patterns in the Omai PL Area



3.3 Topography

The Omai PL is relatively flat, punctuated by a few 50-120m high, small knobby hills. The PL lies on the western to northwestern shore of the Essequibo River, at a very distinctive sharp eastern bend in the river (Figure 11).

Figure 11. Topography of the Omai PL Area



4. PROJECT WORK PROGRAM AND ENVIRONMENTAL IMPACT

The 2024 & 2025 planned work program focuses on diamond drilling, engineering studies, and other low environmental impact activities that will advance the Omai PL towards a final mine plan and construction. De-watering of the Wenot pit is fundamental to the re-development of a large-scale mine at Omai. De-watering of Wenot is expected to take 12-24 months. As such, this work should commence as soon as possible.

4.1 Phase 1 – Exploration & Wenot Pit De-Watering

- Minimum 10,000 m diamond drill program to continue expanding and advancing resource definition of the Wenot gold deposit;
- 2,500 m drill program to continue work on specific known near-mine exploration targets (Blueberry Hill, Snake Pond; Broccoli Hill);
- Expand water baseline study to include an assimilative capacity model, and design a sampling program for the material at the bottom of the Wenot pit, which is expected to proceed only once the water level in the Wenot pit is lowered;
- Possible sampling of material contained within the existing tailings facility, and initial engineering study of the potential refurbishment and capacity facility;
- Surveying of the proposed pit and southern stockpile to determine removal needed for the proposed central Wenot pit layback;
- Initiate investigation of power needs and sources with a focus on alternatives for sustainable and low-carbon energy solutions for the mine;
- Engineering plan for de-watering of the Wenot pit and work with EPA to develop a community consultation plan;
- Begin De-Watering of the Wenot Pit (see more detailed plan below)

4.2 Phase 2 – Mine Development & Engineering Studies

- 5,000 m diamond drill program to commence upgrading resources to reserves for the Wenot gold deposit development;
- 2,500 m drill program to continue work on specific known near-mine exploration targets (Blueberry Hill, Snake Pond, Boneyard and Broccoli Hill);
- Shallow condemnation grid drilling (aircore) to test to a potential mill site that is coincident with a shallow high-grade gold target area;
- Detailed engineering study for refurbishment of the existing tailings facility in preparation for mining, including content sampling program;
- Engineering plan to initate stockpile removal for the planned Wenot pit layback;
- Advance plans for power needs and sources with a focus on sustainable and low-carbon energy solutions;
- Advance metallurgical studies building on historical Omai production and mill data.

4.3 Phase 3 – Earthworks, Construction and Operation

- Develop a framework for Earthworks and Construction;
- Develop a framework for Operation;

4.4 Environmental Impact of Phase 1 and Phase 2 Planned Work Programs

De-watering Assimilative Capacity Modelling: Assimilative Capacity or "near field" modelling explores dilution/mixing scenarios based on the end of pipe design, location and discharge flow rate etc.This type of study is considered industry standard and uses a software program called CORMIX, which was developed/supported by the US EPA. The goal is to estimate the length and shape of the mixing zone and distance downstream where the river conditions would return to ambient (up river) concentrations. In addition to sampling for alkalinity, mercury and the pit tailings, additional parameters including average Essequibo river depth, river depth at proposed discharge point, and flow rates at several points on the river will be collected.

Diamond Drilling: Since much of the Omai PL was deforested many decades ago, this proposed drilling will not result in removal of a significant number of trees or other environmental disturbances. Pre-existing roads cover much of the area and will be used to access new drill sites. Preparation of drill pads mostly entails site flattening of an area roughly 40m by 40m using an excavator.

Geophysics (IP): For the geophysics surveying, flagged lines are marked along brushed out grid lines that are tied in by GPS. No signficant cutting is done. The lines are only cleared enough to allow the geophysics crew and helpers to walk and pull wires along the line. All wires are removed at the completion of the survey.

Engineering Studies: Engineering studies in 2024 and 2025 are to: 1) determine how to optimize the de-watering and preparation of the Wenot pit, 2) determine the excess capacity and requirements to refurbish the tailings, 3) evaluate and advance plans for power needs and sources, and 4) advance metallurgical studies. These will have no environmental impact as these are predominantly desktop studies relying on exising data combined with site visits.

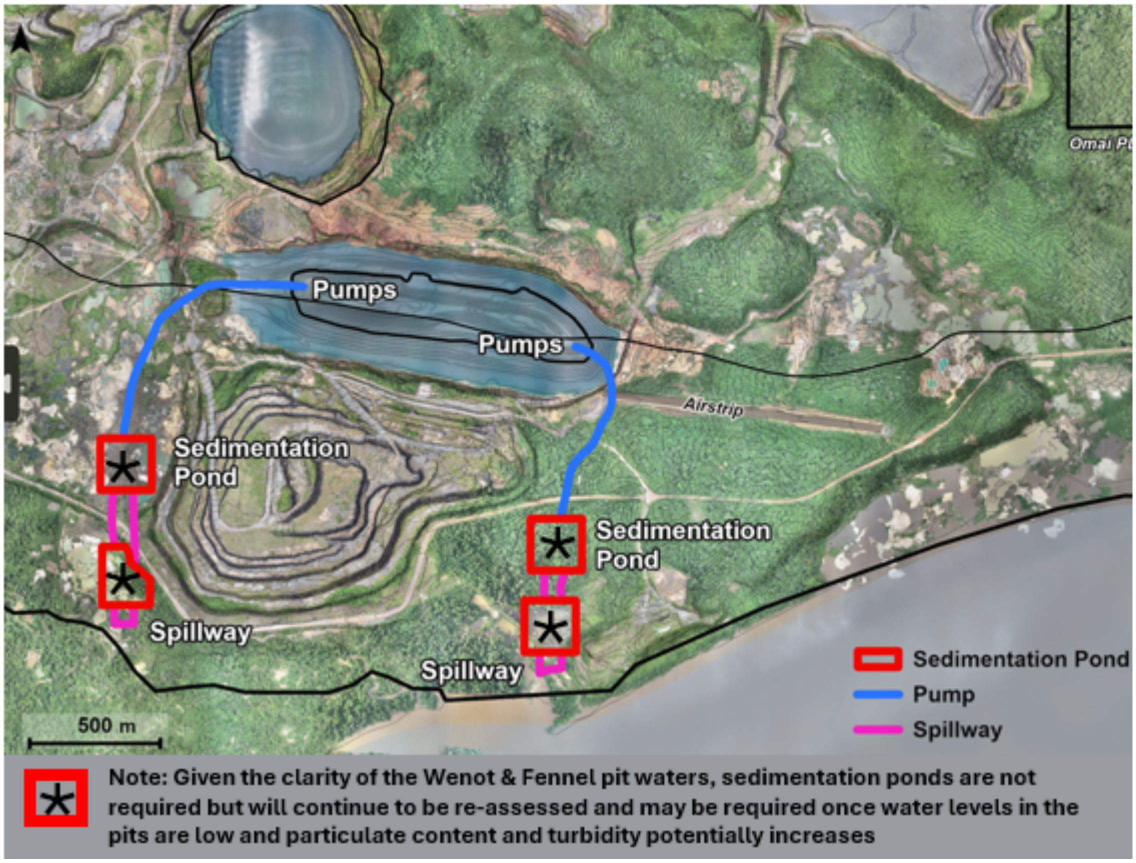
Aircore Condemnation Drilling: The 2025 aircore grid condemnation drilling for a mill site will require preparation of a number of drill pads. Much of this area is highly disturbed as it was covered by past mine infrastructure, a new aggregate operation, and much is underlain by waste rock. One nearby hill is forested but covers less than 100 acres. Care will be taken to minimize cutting.

4.5 Wenot Pit De-Watering Plan

The Plan for dewatering the Wenot Pit involves the use of 10” electric submersible pumps, generators to power these pumps, and sedimentation ponds for flow discharge prior to final discharge into the Essequibo River.

Dewatering will be done in phases from both the eastern and western ends of the pit to add flexibility for maintenance of the dewatering system. Each phase will be determined by pre-set discharge flow rate. As the water level decreases below 50m, stage pumps along with holding tanks and or booster pumps will be installed. Perimeter ditches will be excavated around the pit to minimize surface water runoff back into the pit. It is expected that spillways will be installed along the discharge flow path and once the water level in the Wenot pit is significantly lower, a series of sedimentation ponds may be required to minimize the impact of suspended solids on the environment.

Figure 12 Wenot Pit De-Watering System (Conceptual)



5. PROJECT SUPPORT ACTIVITIES

5.1 Occupational Health & Safety

Avalon Gold is committed to a high standard of health and safety for its employees and believes that a safe workplace is the first priority. Weekly compulsory on-site meetings are convened to discuss health and safety issues. A health and safety officer is assigned to oversee any current issues and to report any concerns. Visiting management complete a safety inspection of the site and reiterate requirements and discuss any concerns with staff.

All workers are provided with high visibility vests, hard hats, and boots which are required to be worn when working in the field, along with eye protection as needed. Helmets or hard hats are required when driving ATVs.

The Omai PL has a well-established permanent camp that includes two large re-purposed warehouses, two adjacent bunk houses and a kitchen canteen. The camp has indoor accommodation for up to 60 people. Worker's rooms are single occupancy, with a mixture of air conditioned rooms and non air conditioned rooms with fans. Electric power for the camp site is provided by two diesel generators, one 28 kva, and one 35kva. Indoor flush toilets, showers, and laundry facilities are available to all staff. There are separate men's and women's flush toilet and shower facilities. The permanent camp includes large indoor core logging and storage facilities and two large offices, located in the same building as the main accommodation.

The primary water source for camp is collected rainwater, which is treated with chlorine purification tablets and UV. During the dry season water is sourced from the Wenot Pit and is subject to the same treatment regime plus filtration. Water collection barrels are emptied and cleaned on a regular basis.

Five current staff members on regular rotation took a 1-week first aid training course, and one member of the security team was a military medic. There is a supply of over-the-counter drugs kept in a locked room on site (senior camp staff have the key). Waste bins in all rooms and toilets are emptied by camp staff into garbage bags which are removed to a burn pit. There is a septic tank system that was refurbished in 2020.

5.2 Vector Control

The Omai campsite is fogged for mosquitoes once a week during work programs. Test kits for malaria are available in camp. There have been no incidents of malaria that were sourced at site. A few positive tests in 2023 were attributed to exposure during employee breaks at home or recurrences related to previous malaria infections.

5.3 Emergency Response

Avalon maintains a 1-km dirt airstrip on the property. Emergency evacuations would be by fixed wing airplane with access to the property in about 40-minute from Georgetown's Ogle airport, or about 90 minutes round trip. Helicopters, available through Roraima, can land on the airstrip, with a flight time from Georgetown of approximately 25 minutes. An array of lights can be quickly assembled at the western end of the airstrip that can facilitate helicopter landings at night in the case of emergencies after dark. For less urgent issues, the property has road access to Linden's medical facilities in approximately four to four and one-half hours.

5.4 Community Outreach

The Omai PL is isolated with no established communities on the PL or nearby. The closest communities are Linden, approximately 82km away by road, with a population of around 40,000, and Mahdia, located approximately 45km away by road to the southwest with a population of around 3,500. There is a 300-person Amerindian community at Grand Falls, approximately 28km to the east.

To date and in 2024-2025, the Company's activities do not result in any impact to the environment nor affect any communities. A formal outreach program has not been established, however, attendance at a reunion of Omai employees in Linden in September 2023 allowed interaction with many in the community regarding activities on the project. Based on communications it was clear that many people in the community follow the company's developments on the website, social media, and through regular newspaper coverage. As soon as the Company establishes a de-watering or mine plan a series of regular community engagement events will be implemented, communicating the development plan, steps and any potential impact to the environment or to any stakeholders.

6. ENVIRONMENTAL MANAGEMENT

The planned work program described herein will be reviewed under an application submitted to the Guyana Environmental Protection Agency. The EPA will identify the relevant, appropriate, and applicable measures to avoid, mitigate and or minimize the potential negative impacts associated with the project.

The planned work program activities envisaged will include minor line cutting, preparation of drill pads, core sampling, geological mapping, soil and water quality sampling within the PL, and the creation of spillways and potentially two settling ponds. Personnel involved in these activities will access the project site via pick-up trucks, atv and on foot. Environmental impacts from the work program activities would consequently be limited to potential impacts from personnel access to the PL.

Minor vegetation clearing will be required for surveying work. Domestic waste from the project support camp is collected and buried in a waste pit on site. Potential impacts to soil arise from the storage of fuel oils and the potential for spills. Fuel drums are elevated off the ground and stored upright, minimizing the chance of leakage. Spill prevention such as spill trays, shut off valves, and fuel pumps are used during refueling.

Waste oil from engines, motors, transmissions, gearboxes, and similar pieces are collected in drip trays or other containers and placed in plastic drums labelled "Waste Oil", which are securely sealed with a bung and appropriately stored when not in use. When full, these drums will be transported offsite and the waste oil disposed in accordance with EPA best practice guidance.

There are no anticipated impacts to air, surface and groundwater resulting from the planned work program. All applicable Guyana occupational safety and health requirements are instituted including the emergency response protocols, and malaria prevention and treatment.

Marcel Cameron

Elaine Ellingham

<u>Appendix I</u>

Final Report on the OMAI Gold Mines Wenot and Fennel Pit Water and Essequibo River Sampling Project, Guyana

Final Report on the OMAI Gold Mines Wenot and Fennell Pit Water and Essequibo River Sampling Project, Guyana

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Revised July 5, 2024

INTRODUCTION

The future re-opening of the OMAI gold mine will require dewatering of the existing open pits, which would require pumping water into the nearby Essequibo River. Therefore, characterization of both the pit water chemistry and the receiving water body (Essequibo River) chemistry is essential to understand any potential impacts. To that end, this report describes water sampling that took place over a span of 3 days between November 14 and 16, 2023, to characterize the chemistry and water quality of the Wenot and Fennell pit water and the adjacent Essequibo River.

A total of 86 water samples were collected from the OMAI Wenot and Fennell pits and 26 water samples from the Essequibo River. The samples were collected from 3 sites on the Wenot pit (sampling day 1), 2 sites on the Fennell pit (sampling day 2) and at 4 sites on the Essequibo River (sampling day 3). Samples were collected at various depths through the water column, the deepest from 190m on the Fennell pit. Quality control samples, including field duplicates, distilled water blanks and replicates of a certified water standard were incorporated into the sample sequence prior to submission to Activation Laboratories (ISO/IEC 17025:2017 and ISO 9001:2015 accredited) in Georgetown (Guyana) and Ancaster, Ontario. The samples were analyzed for a suite of 59 metals (including arsenic, cadmium, copper, mercury and lead), bioavailable cyanide (weak acid dissociable) and major anions (including chloride, nitrate and sulphate). In addition to obtaining water samples, a multi-parameter water quality sonde (YSI ProDSS with GPS enabled handheld logger) was deployed to profile and collect data on bulk parameters pH, ORP, conductivity, temperature, dissolved oxygen and turbidity. All samples were submitted promptly to the laboratory and results were reported within the recommended sample holding times (28 days for metals and anions; 14 days for cyanide).

This work builds on the previous environmental baseline assessment completed over the OMAI Gold mine property in 2021 (Kalicharan 2021) and water sampling completed in 2012 (AMEC 2012a). The baseline study included surface water sampling of ponds and rivers on the property, in addition to samples of pit water (taken close to shore) from each of the Wenot and Fennell pits. The AMEC study consisted of sampling pit water and one sample on the Essequibo River. Samples were analyzed for a variety of parameters including total dissolved solids (TDS), total suspended solids (TSS), turbidity, Mercury (Hg) and heavy metals by ICP-MS. Notably, all Hg results were <0.2 ppb and no other metals were considered to be of concern.

SAMPLING METHODS

Sampling on the Wenot and Fennell pits utilized a small boat to access centre basin locations, evenly spaced along the lengths of each pit (Figure 1). The sample locations on the Wenot pit were refined based on the bathymetry that was completed by AMEC (AMEC 2012b). A portable Garmin depth-finder connected to a transducer mounted to the boat transom provided depth to bottom

Water sampling at each location was done with a Van Dorn style (Wildco Beta bottle) horizontal sampler. Sample depths were nominally at 2m, 10m, 25m, 40m, 45m, 50m, 60m and 65m on the Wenot pit and 2m, 10m, 50m, 100m, 160m, 190m on the Fennell pit. Prior to water sampling, a multi-parameter water quality sonde (YSI ProDSS with GPS enabled handheld logger) was deployed to profile pH, ORP, conductivity, temperature, dissolved oxygen (optical) and turbidity to a depth of 60m (maximum length

Figure 1. Map showing water sample stations on the Wenot pit, Fennell pit and Essequibo River.

of cable available). Water quality sonde measurements on water samples deeper than 60m was done by transferring water from the Wildco Beta bottle sampler into the Sonde calibration cup and recording measurements immediately after sample collection while still in the boat on station. During both water sampling and YSI profiling, great care was taken to not touch the bottom substrate.

The water sampling on the Essequibo River was also done by boat utilizing the same methodology as on the OMAI pits. Profiling with the YSI sonde was undertaken prior to water sampling. Water samples were obtained from depths of 1m, 2m, 4m and 6m, depending on the total water depth at each station. Three stations were located on the downstream side of the OMAI mine site and one station on the upstream side (see Figure 1). During both water sampling and YSI profiling, great care was taken to not touch the bottom substrate. However, there was dredging/sluicing activity by several barges on the river, upstream of sample sites 1 to 3 and downstream of sample site #4.

At each sample station, both on the OMAI pits and the Essequibo River, 60ml HDPE bottles were used to collect separate aliquots for each of metals, anions and cyanide analysis. All sample bottles were

Water (metals n=41; anions n=40; CN n=31; including field duplicates)									SLRS-6 (n=4)			
Element	Analytical Method	Units	MDL	Mean	Median	RANGE Min	RANGE Max	Estimated Precision	Certified Value	Mean Q.C. Result	Accuracy Error %	Coefficient of Variation (95%)
Ag	ICP-MS	ug/L	0.2	<0.2	<0.2	<0.2	<0.2	n/a	-	<0.2	n/a	n/a
Al	ICP-MS	ug/L	2	13	7	3	100	±5	33.8	31.25	7.5	10.9
As	ICP-MS	ug/L	0.03	0.39	0.20	0.06	0.93	±0.6	0.57	0.5975	4.8	4.2
Ba	ICP-MS	ug/L	0.1	9.1	9.5	6.2	13.4	±5	14.28	13.975	2.1	1.8
Be	ICP-MS	ug/L	0.1	<0.1	<0.1	<0.1	<0.1	n/a	0.0066	<0.1	n/a	n/a
Bi	ICP-MS	ug/L	0.3	<0.3	<0.3	<0.3	<0.3	n/a	-	<0.3	n/a	n/a
Ca	ICP-MS	ug/L	700	21955	25900	350	35700	±10000	8760	8250	5.8	5.8
Cd	ICP-MS	ug/L	0.01	<0.01	<0.01	<0.01	0.01	n/a	0.0063	0.013	98.4	190.4
Ce	ICP-MS	ug/L	0.001	0.106	0.007	0.002	1.02	±0.01	-	0.308	n/a	6.2
Cyanide	Colourimetry	mg/L	0.002	<0.002	<0.002	<0.002	<0.002	n/a	-	n/a	n/a	n/a
Co	ICP-MS	ug/L	0.005	0.037	0.02	0.009	0.202	±0.02	0.053	0.058	9.4	16.7
Cr	ICP-MS	ug/L	0.5	<0.5	<0.5	<0.5	0.5	n/a	0.252	<0.5	n/a	n/a
Cs	ICP-MS	ug/L	0.001	0.089	0.071	0.039	0.140	±0.08	-	0.005	n/a	0.0
Cu	ICP-MS	ug/L	0.2	0.8	<0.2	<0.2	7.5	±1	23.9	25.3	5.6	2.1
Dy	ICP-MS	ug/L	0.001	0.006	0.001	<0.001	0.054	±0.003	-	0.022	n/a	23.6
Er	ICP-MS	ug/L	0.001	0.004	<0.001	<0.001	0.025	±0.002	-	0.012	n/a	16.3
Eu	ICP-MS	ug/L	0.001	0.002	<0.001	<0.001	0.021	±0.002	-	0.006	n/a	0.0
Fe	ICP-MS	ug/L	10	45	<10	<10	360	±10	84.3	80	5.1	0.0
Ga	ICP-MS	ug/L	0.01	0.019	0.02	0.01	0.07	±0.01	-	0.02	n/a	0.0
Gd	ICP-MS	ug/L	0.001	0.008	<0.001	<0.001	0.075	±0.003	-	0.031	n/a	18.4
Ge	ICP-MS	ug/L	0.01	0.022	<0.01	<0.01	0.07	n/a	-	<0.01	n/a	77.0
Hf	ICP-MS	ug/L	0.001	<0.001	<0.001	<0.001	0.01	±0.0005	-	0.002	n/a	81.6
Hg	ICP-MS	ug/L	0.2	<0.2	<0.2	<0.2	<0.2	n/a	-	<0.2	n/a	n/a
Ho	ICP-MS	ug/L	0.001	0.001	<0.001	<0.001	0.009	n/a	-	0.004	n/a	23.5
In	ICP-MS	ug/L	0.001	<0.001	<0.001	<0.001	0.002	n/a	-	<0.001	n/a	n/a
K	ICP-MS	ug/L	30	3786	2900	950	6720	±3000	651	583	10.5	5.2
La	ICP-MS	ug/L	0.001	0.042	0.005	<0.001	0.392	±0.01	-	0.252	n/a	2.9
Li	ICP-MS	ug/L	1	<1	<1	<1	2	±1	-	<1	n/a	n/a
Lu	ICP-MS	ug/L	0.001	<0.001	<0.001	<0.001	0.002	±0.001	-	0.002	n/a	0.0
Mg	ICP-MS	ug/L	2	5155	6310	502	7040	±800	2133	2055	3.7	4.9
Mn	ICP-MS	ug/L	0.1	2.7	2	0.3	12.7	±2.5	2.12	2.1	0.9	7.8
Mo	ICP-MS	ug/L	0.1	2.1	2.4	<0.1	3.3	±1.0	0.215	0.2	7.0	0.0
Na	ICP-MS	ug/L	5	16435	13300	1730	29100	±12000	2760	2655	3.8	4.4
Nb	ICP-MS	ug/L	0.005	<0.005	<0.005	<0.005	<0.005	n/a	-	<0.005	n/a	n/a
Nd	ICP-MS	ug/L	0.001	0.048	0.005	<0.001	0.45	±0.02	-	0.234	n/a	4.1
Ni	ICP-MS	ug/L	0.3	<0.3	<0.3	<0.3	1.90	±1.5	0.616	0.63	1.5	16.0
Pb	ICP-MS	ug/L	0.01	0.11	0.07	<0.01	1.22	±0.125	0.17	0.23	35.3	79.4
Pr	ICP-MS	ug/L	0.001	0.012	<0.001	<0.001	0.112	±0.002	-	0.061	n/a	3.3
Rb	ICP-MS	ug/L	0.005	3.87	3.73	3.49	4.77	±1	-	1.35	n/a	2.6
Sb	ICP-MS	ug/L	0.01	0.09	0.06	<0.01	0.16	±0.08	0.3372	0.35	2.3	3.3
Sc	ICP-MS	ug/L	1	<1	<1	<1	<1	n/a	-	<1	n/a	n/a
Se	ICP-MS	ug/L	0.2	0.4	0.3	<0.2	0.8	±0.3	-	<0.2	n/a	n/a
Si	ICP-MS	ug/L	200	8832	4100	2800	21400	±15000	-	1925	n/a	9.9
Sm	ICP-MS	ug/L	0.001	0.009	<0.001	<0.001	0.094	±0.005	-	0.039	n/a	24.8
Sn	ICP-MS	ug/L	0.1	<0.1	<0.1	<0.1	0.2	n/a	-	<0.1	n/a	n/a
Sr	ICP-MS	ug/L	0.04	101	125	7.4	141	±20	40.66	37.2	8.4	3.4
Ta	ICP-MS	ug/L	0.001	<0.001	<0.001	<0.001	<0.001	n/a	-	<0.001	n/a	n/a
Tb	ICP-MS	ug/L	0.001	0.001	<0.001	<0.001	0.01	n/a	-	0.004	n/a	0.0
Te	ICP-MS	ug/L	0.1	<0.1	<0.1	<0.1	<0.1	n/a	-	<0.1	n/a	n/a
Th	ICP-MS	ug/L	0.001	0.005	<0.001	<0.001	0.03	±0.005	-	0.015	n/a	23.9
Ti	ICP-MS	ug/L	0.1	6.6	7.6	0.6	10.6	±3	-	2.9	n/a	6.5
Tl	ICP-MS	ug/L	0.001	0.013	0.01	0.003	0.036	±0.01	-	0.024	n/a	264.5
Tm	ICP-MS	ug/L	0.001	<0.001	<0.001	<0.001	0.003	±0.01	-	0.002	n/a	57.1
U	ICP-MS	ug/L	0.001	0.040	0.038	0.023	0.065	±0.03	0.0698	0.068	2.2	1.5
V	ICP-MS	ug/L	0.1	1.3	0.8	0.4	2.6	±1.5	0.351	0.3	14.5	0.0
W	ICP-MS	ug/L	0.02	0.76	0.43	<0.02	2.23	n/a	-	<0.02	n/a	n/a
Y	ICP-MS	ug/L	0.003	0.038	0.014	<0.003	0.238	±0.03	-	0.133	n/a	4.3
Yb	ICP-MS	ug/L	0.001	0.003	<0.001	<0.001	0.021	±0.001	-	0.013	n/a	20.7
Zn	ICP-MS	ug/L	0.5	2.5	0.9	<0.5	44.6	±1.5	1.76	2.2	26.4	29.7
Zr	ICP-MS	ug/L	0.01	0.02	<0.01	<0.01	0.13	±0.005	-	0.07	n/a	0.0
F	IC	mg/L	0.01	0.06	0.07	<0.01	0.1	±0.03	-	n/a	n/a	n/a
Cl	IC	mg/L	0.03	2.65	2.90	1.35	3.33	±0.2	-	n/a	n/a	n/a
NO_2 (nitrite)	IC	mg/L	0.01	<0.01	0.01	<0.01	0.01	n/a	-	n/a	n/a	n/a
Br	IC	mg/L	0.03	0.03	0.03	<0.03	0.07	n/a	-	n/a	n/a	n/a
NO_3 (nitrate)	IC	mg/L	0.01	0.42	0.10	0.01	1	±0.1	-	n/a	n/a	n/a
PO_4	IC	mg/L	0.02	<0.02	0.02	<0.02	0.02	n/a	-	n/a	n/a	n/a
SO_4	IC	mg/L	0.03	47.87	36.85	0.42	84	±0.2	-	n/a	n/a	n/a

Notes:
1. ICP-MS= Inductively Coupled Plasma Mass Spectroscopy
2. IC= Ion Chromatography
3. MDL=method detection limit.
4. Coefficient of variation at two standard deviations (95% confidence level)
5. SLRS-6 is a National Research Council St. Lawrence River Standard
6. Estimated precision at 95% confidence level; ICP-MS elements based on 14 duplicate pairs; anions based on 10 duplicate pairs
7. Mean Q.C. Result = Average concentration obtained for SLRS-6

Table 1. Summary of metals and anions analyzed, basic statistics and estimates of precision.

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triple rinsed in the water to be sampled, prior to being filled and tightly capped. The OMAI pit water was collected and poured off into sample bottles with no other treatment (unfiltered). The Essequibo River water samples, due to high turbidity (>20 FNU), were pressure filtered on-site using 60ml plastic syringes (with no rubber parts) and Millipore 33mm Durapore 0.45um filters. On average, 2 filters were required for each 60 ml sample. All water samples were placed in a cooler filled with ice for transport back to base and subsequently kept refrigerated.

All sample station locations (GPS coordinates) were recorded with the GPS enabled YSI ProDSS handheld data logger, in addition to a handheld Garmin GPS.

SAMPLE PRESERVATION AND ANALYTICAL METHODS

Upon returning to base after each sampling day, the samples destined for metals analysis and cyanide analysis were preserved by the addition of nitic acid and sodium hydroxide respectively. A repeater pipette with disposable tips was used to dispense the solutions; for samples destined for metals scan, 0.5 ml of concentrated (70%) ultra-pure (JT Baker) HNO_3 acid to achieve pH of less <2; for the samples destined for cyanide analysis, 1 ml of NaOH (1M) solution to achieve a pH >12. No preservation additive was required for the samples destined for major anions analysis. All samples were kept cool (~2-4° C) by refrigeration until transported to the laboratory in coolers with ice.

Activation Laboratories carried out the following analysis (see Table 1):

Metals: Inductively Coupled Mass Spectrometry (Code 6 ICP-MS) for 59 metals.

Anions: Ion Chromatography (Code 6B) for Fluoride (F), Nitrite (NO_2), Nitrate (NO_3), Chloride (Cl), Phosphate (PO_4), Bromide (Br) and Sulphate (SO_4)

Cyanide: Weak acid distillation-automated colourimetry for weak acid dissociable cyanide (WAD CN)

QUALITY CONTROL

Within the sample sequence for metals analysis, blind quality control samples consisted of 9 field duplicates, 6 distilled water blanks (4 unfiltered, 2 filtered and all acidified with HNO3) and 4 certified reference standards (SLRS-6). The laboratory carried out replicate analysis of another 5 samples. The results for the water blanks demonstrated no metal contamination from either the filters or the nitric acid.

Within the sample sequence for anions analysis, blind quality control samples consisted of 8 field duplicates and 6 distilled water blanks (all unfiltered and unacidified). The laboratory carried out replicate analysis of another 2 samples. Within the sample sequence for cyanide analysis, blind quality control samples consisted of 8 field duplicates and 5 distilled water blanks (3 unfiltered, 2 filtered, with 1 ml NaOH added to two of the unfiltered). The results for the water blanks demonstrated no cyanide contamination from either the filters or the NaOH solution.

In order to quantify overall reproducibility (precision), all duplicate pairs data were plotted to examine their 1:1 relationship. The internal laboratory replicates were combined with the submitted blind field duplicates and plotted on X–Y charts. Precision estimates (see Table 1) were based on the determination of the variation of 95% (95% confidence level) of the data from a 1:1 ratio. Based on the analysis of the duplicate pairs, the reproducibility of the all data is considered good to excellent and fall within a range that is typical for the methods employed. The only exception was for silicon (Si) which displayed very poor precision, but this is not unexpected because of spectral interferences (due to nitrogen gas from the HNO_3 preservative) that render the ICP-MS unreliable. Also note that precision for some parameters (Ag, Be, Bi, cyanide, Hg, In, Nb, Sc, Te) could not be estimated since concentrations were determined to be below detection limits.

Typically, the results for the laboratory replicates performed better than field duplicates, the latter adding inherent sampling methodology process variance to any laboratory analytical variance. In addition many metals exist at very low concentrations, often close to the detection limits of the ICP-MS instrument, where issues with signal/noise ratio and instrument "noise" can cause apparent imprecision, compared to data well above the limits of quantitation. As such, the estimates of precision are considered worst case estimates that incorporate natural field variance and therefore increase confidence that resulting geochemical data is robust.

Prior to leaving base camp each morning, the pH and dissolved oxygen (DO) probes on the YSI ProDSS sonde were calibrated. This involved a 2-point (pH 4 and 7) calibration. DO calibration was a single point at 100% O_2 saturation. The electrical conductivity (EC) probe was calibrated on the first morning using a 1413 uS/cm NIST standard and thereafter checked each morning to confirm accuracy. The YSI temperature probe was checked against a standalone lab grade digital thermometer to verify accuracy. The YSI barometer was also verified against the internal barometer of a Garmin handheld GPS. All daily calibrations and checks were completed successfully and all parameters exhibited excellent accuracy and consistency over the course of the field work.

CHARGE BALANCE

Charge balance calculations were completed to compare with electrical conductivity to ensure no significant flaws are present in the laboratory chemical data. The calculations are based on the fundamental principle of electro-neutrality within aqueous solutions; the principle of electro-neutrality requires that the sum in eq/L or meq/L of the positive ions (cations) must equal the sum of negative ions (anions) in solution. Briefly, this is done by converting the reported mass basis (ug/L or mg/L) concentrations to an equivalent basis (meq/L) by dividing the mass concentration (mg/L) by the equivalent weight (atomic weight divided by the charge). The sum of cations charge and anions charge are both plotted against EC, along with a best fit line that represents the theoretical relationship between electrical conductivity and anion (NaCl solution) or cation ($CaCO_3$ solution) equivalence. These plots for the pit and river water dataset show that both the cations and anions total charge plot roughly in parallel to the theoretical EC-cation/anion best fit line, which indicates the laboratory data is consistent with the measured electrical conductivity in both the pit water and river water.

COMPARISON OF WENOT AND FENNELL PIT WATER

The Wenot and Fennell pit water chemistry is virtually indistinguishable for the parameters: temperature, pH, Cr, Cu, Eu, Hf, Ho, Lu, Mg, Ni, Nitrite, Phosphate, Tb, Tm and Zn. The Wenot pit water, on average, has higher concentrations/values for Al, Cs, F, Ga, K, Mn, Mo,Na, Nitrate, Pb, Sb, Se, Sulphate, Sr, Th, light REE, EC, DO, ORP and TDS. Conversely, the Fennell pit water, on average, has higher

	As	Ba	Ca	Co	Ge	Li	Ti	U	V	W	Y	Al	Cs	F	Ga	K	Mn	Mo	Na	NO_3	Pb	Sb	Se	SO_4	Sr	Th	SpCond	ODO	ORP	TDS
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	ug/L	ug/L	ug/L	mg/L	ug/L	ug/L	µS/cm	% Sat	mV	mg/L
Wenot Pit																														
Mean	0.24	7.2	26447	0.021	0.010	0.6	7.7	0.039	0.6	0.53	0.006	8	0.124	0.08	0.018	5797	2.1	3.1	25807	0.86	0.12	0.14	0.6	79.3	130	0.0007	332.9	85.1	89.0	216.2
Fennell Pit																														
Mean	0.85	10.4	30091	0.034	0.05	0.8	8.8	0.051	2.5	1.61	0.023	6	0.067	0.06	0.01	2645	1.8	2.2	12200	0.03	0.09	0.05	0.2	33.3	120	0.0005	261.1	78.1	76.4	169.6

	Al	Ba	Ce	Co	Cu	Dy	Er	Fe	Ga	Gd	Hf	Ho	La	Lu	Mn	Nd	Ni	Pb	Pr	Sm	Tb	Th	Tl	Tm	Y	Yb	Zr	Turbidity	ODO	ORP
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	FNU	% Sat	mV
OMAI Pits																														
Mean	7	8.6	0.010	0.027	0.3	0.001	0.001	7	0.016	0.001	0.001	0.001	0.006	0.001	1.9	0.005	0.22	0.10	0.001	0.001	0.0005	0.0006	0.010	0.001	0.013	0.001	0.006	-0.14	82.1	83.7
Essequibo River																														
Mean	37	10.6	0.445	0.072	2.6	0.026	0.013	183	0.03	0.033	0.0024	0.0047	0.172	0.0014	5.6	0.203	0.32	0.14	0.049	0.039	0.0046	0.020	0.021	0.002	0.127	0.011	0.078	31.76	94.5	122.3

	As	Br	Ca	Cl	Cs	F	Ge	In	K	Li	Mg	Mo	Na	NO_2	NO_3	PO_4	Rb	Sb	Se	Sn	SO_4	Sr	Ti	U	V	W	Zn	pH	SpCond	TDS
	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		µS/cm	mg/L
OMAI Pits																														
Mean	0.48	0.03	28031	2.96	0.103	0.08	0.026	0.001	4578	0.7	6461	2.7	20547	0.010	0.51	0.02	3.93	0.11	0.5	0.06	59.7	127	8.2	0.044	1.3	0.97	2.7	7.8	302.5	196.5
Essequibo R																														
Mean	0.07	0.02	350	1.42	0.042	0.02	0.01	0.0005	969	0.5	515	0.1	1816	0.005	0.09	0.01	3.68	0.02	0.1	0.05	0.5	7.7	0.8	0.027	0.9	0.01	1.6	6.7	19.2	12.4

Table 2. Comparison of average metals and anions concentrations determined in water samples from the Wenot pit, Fennell pit and the Essequibo River. The Essequibo R. data is compared to the average of the Wenot and Fennell pits (the OMAI pits).

concentrations for As, Ba, Ca, Co, Ge, Li, Rb, Ti, U, V, W, Y and heavy REE (see Table 2). Since the pH and temperature between the 2 water bodies are essentially the same, it is suggested that these chemical differences are the result of differing bedrock geology, in particular, perhaps the presence of significant diabase at the Fennell pit. The higher sulphate at the Wenot pit may be due to higher sulphide concentrations and/or the presence of tailings on the pit bottom. One sample from the Fennel pit site #1 from a depth of 50m, returned a Zn concentration of 44.6 ug/L, which exceeds the 20 ug/L PWQO guideline. However, a routine field duplicate at this depth returned a Zn concentration of <0.5 ug/L, therefore it is suspected the 44.6 ug/L result to be an analytical flyer. Otherwise, all metals and parameters determined in water from both pits, when compared to established surface water quality objectives (e.g. CCME; Canadian Council of Ministers of the Environment and PWQO; Ontario Provincial Water Quality Objectives) show no exceedances. In particular, all arsenic, cadmium, cyanide, copper, lead, mercury, nitrate and sulphate results were well below accepted water quality objectives for the protection of aquatic life. The average water "hardness" ($CaCO_3$ calculated from Ca concentrations) which has a bearing on CCME/PWQO guidelines, is 66 mg/L for the Wenot pit and 75 mg/L for the Fennell pit, which would be considered at the threshold between soft and moderately hard water.

COMPARISON OF PIT WATER WITH ESSEQUIBO RIVER WATER

The OMAI pit water and Essequibo River water are distinctly different, the only similar parameters they have in common is water temperature and Ag, Be, Bi, Cd, Cr, Cyanide, Hg, Nb, Sc, Ta, Te levels (all data are non-detects, below detection limits, except for a few very low Cd and Cr values). The OMAI pit waters, on average, have higher concentrations/values for pH, As, Br, Ca, Cl, Cs, EC, F, Ge, In, K, Li, Mg, Mo, Na, Nitrite, Nitrate, Phosphate, Rb, Sb, Se, Sn, Sulphate, Sr, TDS, Ti, U, V, W and Zn. Conversely, the Essequibo River water, on average, has higher concentrations/values for Turbidity (strongly correlatable and a proxy to total suspended solids; TSS), Al, Ba, Ce, Co, Cu, Dy, Er, Eu, Fe, Ga, Gd, Hf, Ho, La, Lu, Mn, Nd, Ni, DO, ORP, Pb, Pr, Sm, Tb, Th, Tl, Tm, Y, Yb, and Zr (see Table 2). All metals and parameters determined in water from the two OMAI pits, fall below established surface water quality objectives for the protection of aquatic life, published by the Canadian Council of Ministers of the Environment (CCME) and Ontario Provincial Water Quality Objectives (PWQO). However, the Essequibo River sampling returned several PWQO guideline exceedances:

- 5 samples from sites 1 to 3 returned Cu concentrations that exceeded the PWQO of 1 ug/L (highest of 7.5 ug/L)

- 1 field duplicate sample from site #4 returned Al and Fe concentrations that exceeded the PWQO of 75 ug/L and 300 ug/L respectively. However, the associated original sample at that site returned concentrations below the PWQO guidelines

All other metals and parameters determined in the Essequibo River water fall below the established CCME/PWQO surface water quality objectives for the protection of aquatic life. The average water "hardness" ($CaCO_3$ calculated from Ca concentrations) which has a bearing on CCME/PWQO guidelines, is 70 mg/L for the OMAI pit and <1.75 mg/L for the Essequibo River. This corresponds to the OMAI pit water being considered at the threshold between "soft" and moderately "hard", whereas the Essequibo River water would be categorized as "soft".

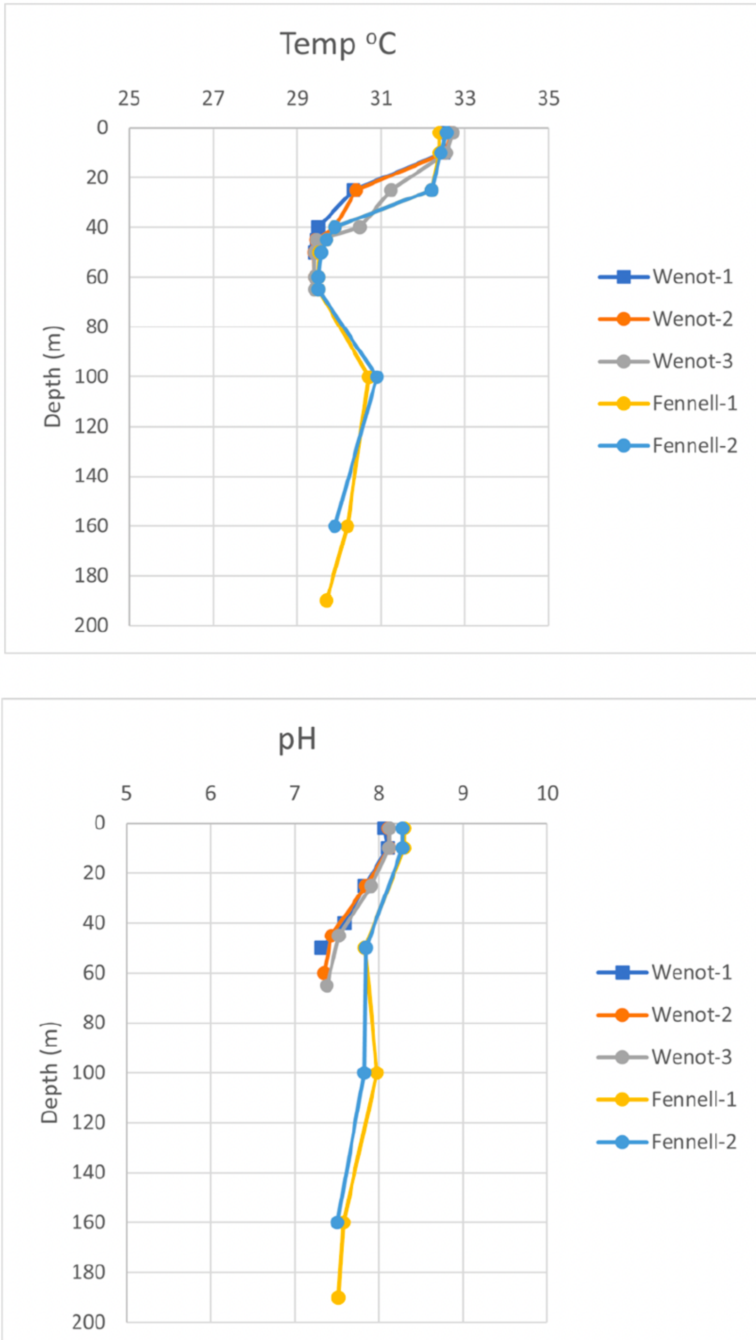

Figure 2. Wenot and Fennell pit profile plots of temperature and pH. Note the measurements below 60m were from samples brought to surface which may have caused the temperature and pH deviation noticeable at 100m depth.

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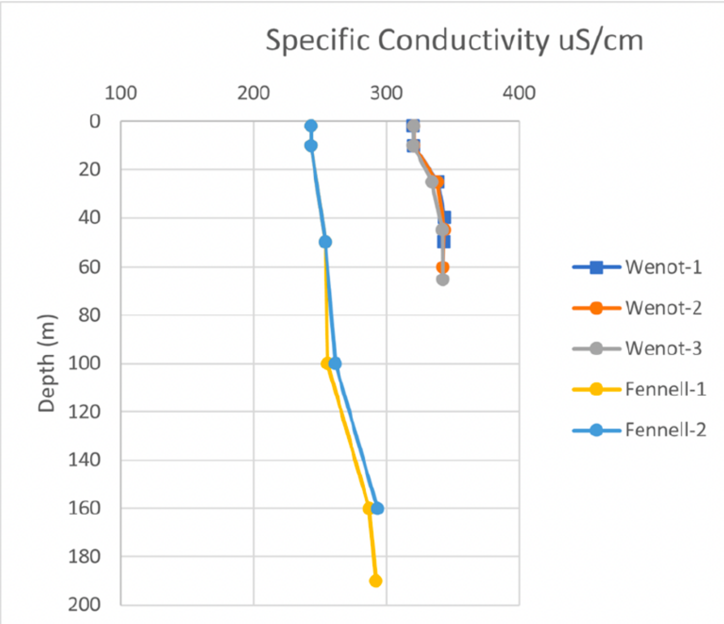

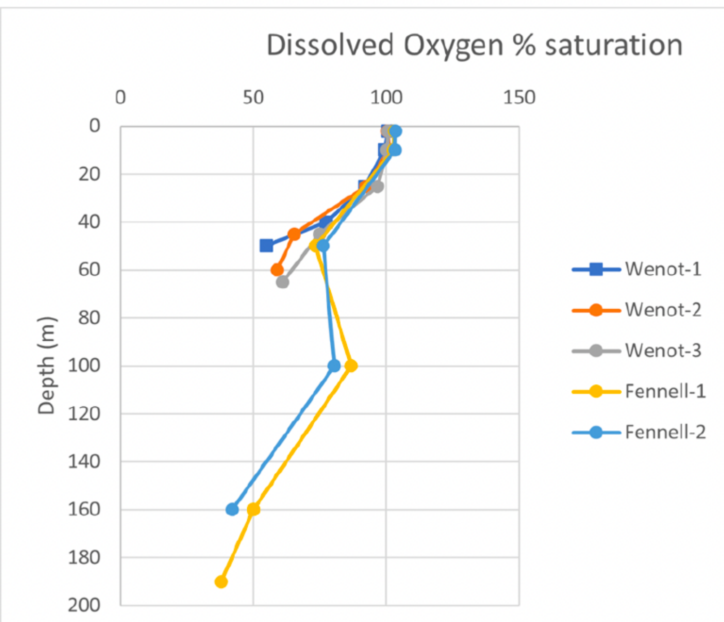

Figure 3. Wenot and Fennell pit profile plots of specific conductivity and dissolved oxygen. Note the measurements below 60m were from samples brought to surface which may have caused the deflections noticeable at 100m depth.

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WATER COLUMN PROFILES AND VARIATION WITH DEPTH

The YSI sonde profiling down both OMAI pit water columns displayed similar characteristics; initially a very gradual drop in temperature, with a relative quick drop of ~2 degrees between 18 and 40 m at the Wenot pit and between 25 to 40 m at the Fennell pit (see Figure 2). This apparent thermocline is slightly deeper at the Fennell pit compared to the Wenot pit. The lowest temperature recorded was approximately 29° C at a depth of 65 m in the Wenot pit, which is only about 3° cooler than at surface. The water is very clear, with low turbidity (essentially zero FNU). The pH at the Wenot pit is slightly lower than Fennell (8.1 vs 8.2 at surface) and gradually drops with depth at both pits, with a recorded low of 7.32 at the Wenot pit and 7.5 at the Fennell pit (Figure 2). Dissolved oxygen also gradually decreases with depth, starting at 100% saturation at surface and dropping to a low of 54.7% at Wenot and 37.9% at Fennell (Figure 3). These characteristics of stable temperature, clear water and good oxygen levels suggest the pit lakes could be classed as oligotrophic.

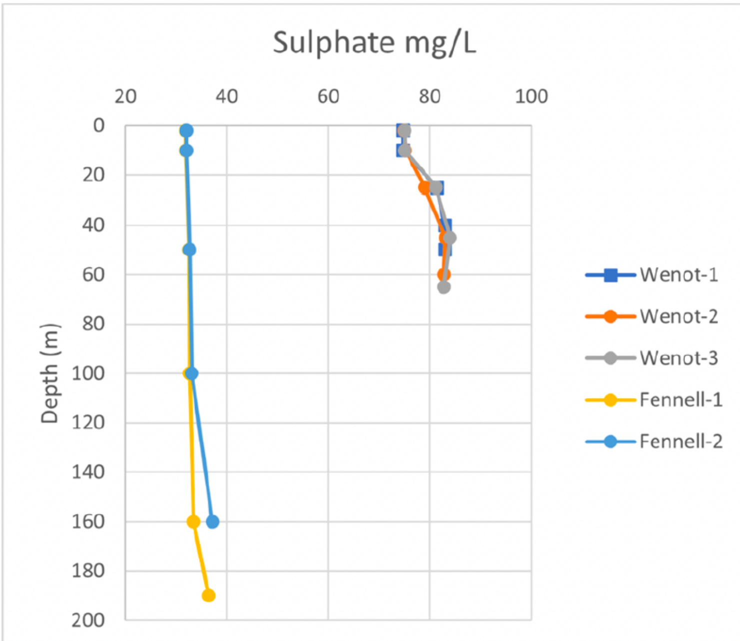
Both specific conductivity and sulphate gradually increase with depth (Figures 3 and 4), as do the parameters TDS and ORP. At the Wenot pit, the metals Ba, Fe, Mg, Mn, Na, Sr and W increase slightly with depth. The same trend occurs at the Fennell pit, with the addition of Ca and Co, but with stable Fe through the water column. With increasing depth, the metals Cu, Pb and Zn display no obvious trends. Most trace metals vary quite randomly through the water column and generally at very low concentrations. The strongest metal increase with depth is that of W (Tungsten, Figure 4) and it is interesting to note that Scheelite has been documented as abundant in the gold bearing veins of the gold deposit (P&E Mining Consultants Inc. 2022).

On the Essequibo River, the bulk parameters recorded by the YSI sonde were very consistent and did not show much, if any, variation with depth. Water temperature (~32°), pH (6.6 – 6.7), DO (94.5%) and specific EC (19.2) were quite consistent at all sample sites. The metals Cu, Sb and Zn decrease from surface to the river bottom, suggesting slight enrichment in the top 1 m of the river. Similarly, the metals Cl and Na and anion SO_4 display a weak decrease with increasing depth. The river water has significant turbidity (average 31 FNU) which did not vary significantly through the water column.

SUMMARY, CONCLUSIONS AND RECOMENDATIONS

The water chemistry of the OMAI Wenot and Fennell pit waters have been characterized to depth by the collection and analysis of water at 5 sample stations and 26 depth intervals to a maximum depth of 190m at the Fennell pit. Samples were delivered to the laboratory promptly and results were reported within the recommended sample holding times (28 days for metals and anions; 14 days for cyanide). Review of all quality control (QC) data demonstrated overall good reproducibility and excellent accuracy. The OMAI pits (Wenot and Fennell) water chemistry results, when compared to established surface water quality objectives (e.g. CCME; Canadian Council of Ministers of the Environment and PWQO; Ontario Provincial Water Quality Objectives) show no exceedances. In particular, all arsenic, cadmium, cyanide, copper, lead, mercury, nitrate and sulphate results were well below accepted water quality objectives for the protection of aquatic life. All cyanide data was reported below the method detection limit of 0.002 mg/L (accepted objective is 0.005 mg/L) and all mercury data was reported below the method detection limit of 0.2 ug/L (accepted objective is 0.2 ug/L).

The majority of results from the sampling on the Essequibo River were also within established surface water quality objectives, except for 3 sites with minor copper exceedances. It should be noted that the



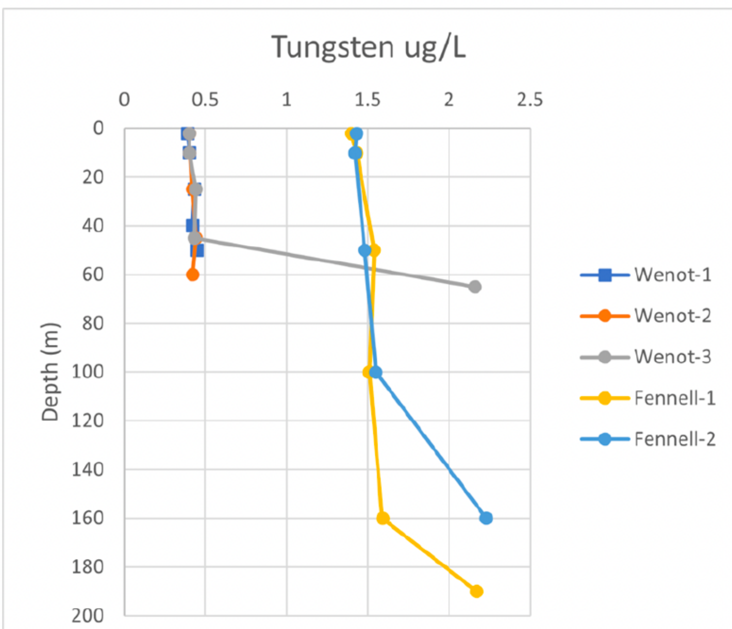


Figure 4. Wenot and Fennell pit profile plots of sulphate and tungsten.

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CCME and PWQO guideline values have no regulatory standing in Guyana but were used for comparative purposes as current best industry practice concentrations. The parameters which are typically of greatest concern, including arsenic, cyanide, cadmium, chromium, lead and mercury, all returned analytical concentrations either below the method detection limit or well below established water quality objectives for the protection of aquatic life.

At the OMAI pits, the alkaline pH (average 7.8) is most likely the main controlling factor on metal solubility, resulting in generally dilute metal concentrations within the water. The pit waters are generally well oxygenated and have very low turbidity, which infers very low levels of suspended sediment. Based on the water sampling results from the Essequibo River, it is suggested that the addition of the OMAI pit waters would not have deleterious effects locally or downstream and potentially could improve the current esthetic and chemical water quality of the river for some parameters. The predicted dewatering plume trajectory and of mixing (dilution) and distance to the transition to ambient water conditions downstream should be modelled using computer software such as CORMIX or Visual Plumes.

Further work to consider includes a more comprehensive environmental baseline study (EBS) focussing on water and sediment chemistry of the river/creek network on the property. In particular, it would be important to characterize current conditions near and downstream (e.g. along the OMAI River) from areas that have undergone artisanal gold mining since the closure of the OMAI gold mine in the early 2000's.

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Appendix II
Wenot Pit De-watering Plan

Internal Memorandum

Date: 13th June 2024

To: Elaine Ellingham, Jason Brewster

From: Marcel Cameron, Country Manager of Avalon Gold Exploration Inc

Subject: Wenot Pit Dewatering Plan

1. **Introduction**

   Avalon Gold Exploration Inc wishes to dewater Wenot Pit to optimize its Exploration drilling program. The Wenot pit, one of 2 mined out pits on its mineral property has a calculated capacity of 42.1Mm^3 (Pawlukiewicz 2023) along with an estimated 17.8Mm^3 of tailings (Sophie Bertrand 2012). The calculated net contained water is 24.3Mm^3 or 6.4B US Gallons.

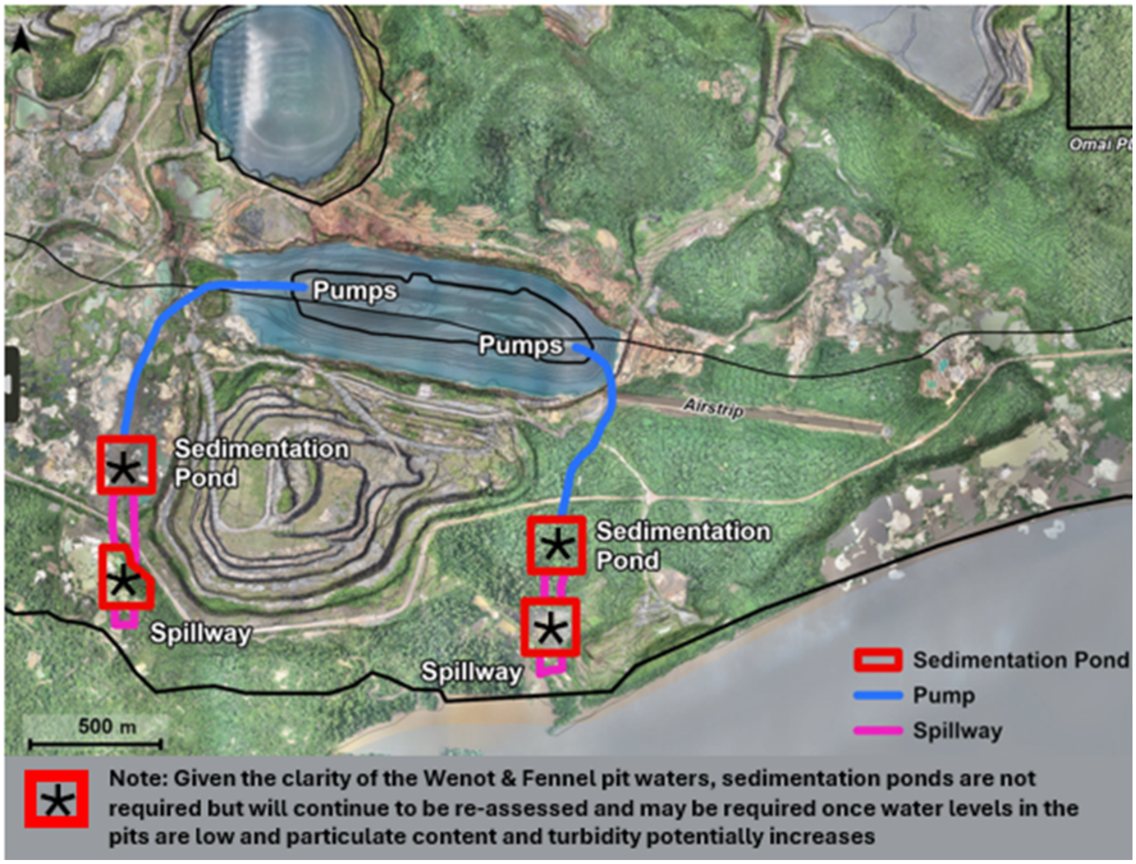
   Characterization study of both Omai pits (Fennel and Wenot Pit) water chemistry and the receiving water body (Essequibo River) was completed in Q4 2023. All metals and parameters determined in both Omai pits (Fennell and Wenot pit) water showed no exceedances of international water quality standard for the protection of aquatic life (Dyer 2024).

   Omai pits water quality was better than the Essequibo River water quality on several parameters, therefore discharging Omai pits water into the Essequibo River will improve its quality at the discharge area and the downstream area of influence (Dyer 2024).

2. **Methodology**

   The Dewatering Plan for Wenot Pit involves the use of 10" electric submersible pumps, generator to power these pumps and sedimentation ponds for flow discharge prior to final discharge into the Essequibo River.

   Planned de-watering is expected to be done in phases from both the eastern and western ends of the pit to add flexibility for maintenance of the dewatering system. Each phase will be determined by pre-set discharge flow rate. As the water level decreases below 50m, stage pumps along with holding tanks and or booster pumps will be installed. Perimeter ditches will be excavated as needed around the pit to minimize surface water runoff back into the pit. A Series of sedimentation ponds equipped with spillways will be installed, as needed, along the discharge flow path to minimize the impact of suspended solids on the environment, as the water level in the pit is lowered.



Graphics 1: Wenot Pit Dewatering System (Conceptual)

Dewatering options were assessed, namely:

2.1 Low Case Option: involves the use of 3 electric submersible pumps at a combined flow rate of 9,000US Gallon/min, operating at an average of 20 hours daily. At the proposed operation rates, it will take an estimated 1.7 years to completely dewater the entire pit. Initial Capital Costs are calculated at USD1.06M and Operating Cost at USD0.41M.

2.2 Base Case Option: involves the use of 5 electric submersible pumps at a combined flow rate of 15,000US Gallon/min, operating at an average of 20 hours daily. At the proposed operation rates, it will take an estimated 1.0 year to completely dewater the entire pit. Initial Capital Costs are calculated at USD1.65M and Operating Cost at USD0.57M.

2.3 High Case Option: involves the use of 7 electric submersible pumps at a combined flow rate of 21,000US Gallon/min, operating at an average of 20 hours daily. At the proposed operation rates, it will take an estimated 0.7 year to completely dewater the entire pit. Initial Capital Costs are calculated at USD2.23M and Operating Cost at USD0.69M.

3. **Recommendation**

   The author will review the Case Option to determine the most cost effective and efficient option in order to advance to the next stages. The author also recommends a study into the possible use of renewable energy to fully or partially power the dewatering system to reduce the operation carbon footprint.

Marcel Cameron, P. Eng
Country Manager
Avalon Gold Exploration Inc

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