

# Union Bay PGE Property

## Avalon Development Corporation Summary Report 2015

- 132 surface samples with >1 ppm platinum (Pt) ranging up to 17.5 ppm Pt
- Prospective ground extends over 6 km of bedrock strike within the wehrlite and adjacent units
- Drill intercepts of 10.5 ppm Pt over 0.5 m and 7 ppm Pt over 1.16 m
- Pt:Pd Ratios > 5:1, discrete platinum iron alloys hosted in Fe-oxide veins and pods
- Drill ready project with tidewater access in an area designated for mineral development by the USFS

The Union Bay Platinum prospect (UBPP) is located on the Cleveland Peninsula in Southeast Alaska, 55 km northwest of the city of Ketchikan. Platinum group element (PGE) enriched magnetite is hosted in the ultramafic lithologies of the Union Bay Alaskan-type Complex. These late magmatic magnetite veins appear to follow the structural fabric of the folded Wehrlite Unit (olivine and diopside rich rock) and are spatially associated with veins of low-Fe diopside. Magnetite and diopside veining appears to be the result of late magmatic fluids which circulated through the intrusive body first leaching PGE and later depositing PGE within magnetite veins and pods. The circulation of late magmatic fluids provided a concentration mechanism for PGE at Union Bay, unlike the other Alaskan-type mafic-ultramafic intrusions of the Alaska Panhandle which do not display remarkable PGE enrichment.

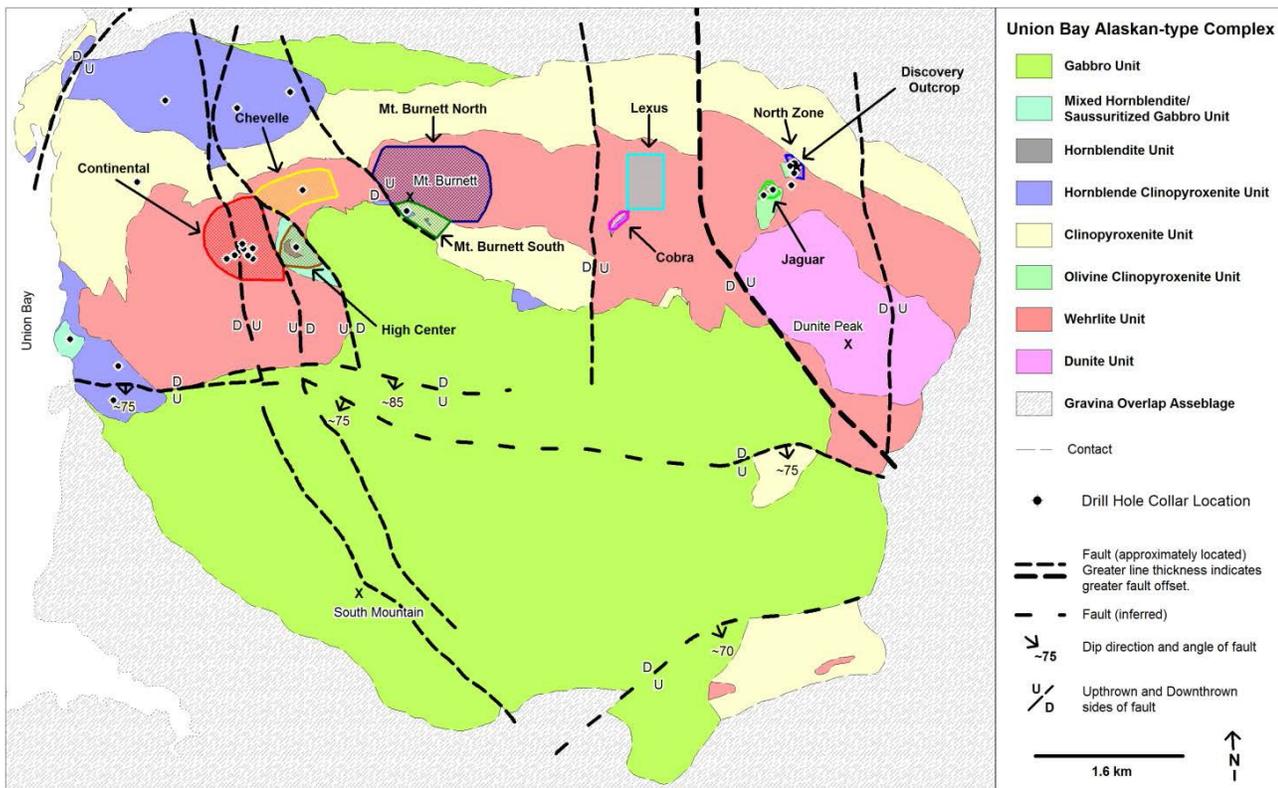


Figure 1: Geologic Map of the Union Bay Alaskan-type Ultramafic Complex including Pt prospect outlines and drill hole collar locations.

The UBPP is located in the Tongass National Forest of southern Southeast Alaska and under the jurisdiction of the U.S. Forest Service. The area is designated for mineral development along a proposed power line corridor with tidewater access to Union Bay and Ernest Sound, part of the Inside Passage.

Recent exploration at the UBPP (2000-2005) has produced a sizable library of geologic, geochemical, and geophysical data. Exploration activities include: 36 diamond drill holes, 414 saw channel outcrop samples, 1,708 grab rock outcrop samples, a limited number of stream sediment, pan concentrate, and basal soil samples, an airborne magnetic and electro-magnetic survey, extensive bedrock mapping, reflected light microscopy and electron probe micro-analytical studies, and an  $^{40}\text{Ar}/^{39}\text{Ar}$  age date of alteration hornblende. In total there is fire assay data (Pt, Pd, Au) for 9756 geologic samples, nickel sulfide collection fire assay data (Os, Ir, Ru, Rh, Pt, Pd) for 59 rock samples, and multi-element ICP-AES data for 9,557 geologic samples.

Exploration has produced a deposit model with numerous drill ready targets on what still remains an underexplored ultramafic massif. PGE enriched magnetite primarily occurs as veins and pods in the Wehrlite Unit and near its contact with the overlying Mixed Hornblendite/Saussuritized Gabbro Unit. The highest grade outcrop samples have been collected at the North Zone prospect (17.5 ppm Pt) and Continental prospect (14.9 ppm Pt) 6 km to the west within the Wehrlite Unit (Figure 1). Of the 36 core holes drilled, 28 shallow holes were drilled on the nine principle prospects: 11 at North Zone, 10 at Continental, 3 at Jaguar, 2 at Mt. Burnett South, and one each at Chevelle and High Center. North Zone and Jaguar have returned the highest grade drill intercepts of 10.5 ppm Pt over 0.5 m and 7 ppm Pt over 1.16 m respectively. Drilling at Continental has defined an eastern dip to PGE enriched magnetite veining, coincident with the fabric of the folded magmatic layering. In addition, results from drilling at Continental revealed that PGE enriched magnetite veining has a distinct geochemical signature which can be traced for 120 meters in the subsurface along an E-W oriented fence of drill holes on the plateau. An elevated vanadium-titanium to iron ratio is indicative of PGE enriched magnetite veins allowing veining to be traced indirectly in drill results mitigating the nuggety nature of PGE mineralization.

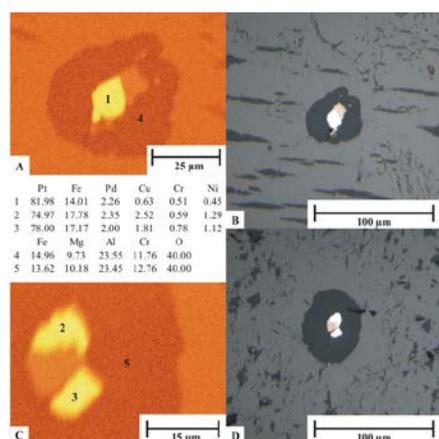


Figure 2: Petrographic image from the Union Bay prospect, Alaska.

Reflected light microscopy and electron probe micro-analytical (EPMA) mineralogical investigations documented the presence of isoferroplatinum (Figure 2 analysis 1) and tetraferroplatinum (Figure 2 analyses 2 and 3) in magnetite veins with hydrous silicate alteration minerals surrounding those veins. Figure 2 displays reflected light photomicrographs and the results of EPMA analyses and elemental mapping back scatter electron images of platinum group minerals (PGM) within magnetite from polished thin sections created with sample material of late-magmatic/hydrothermal magnetite veining. PGM serve as nucleation points for exsolutions of picotite spinel (Figure 2 analyses 4 and 5). PGE are hosted in discrete minerals, amenable to physical separation and concentration. The platinum iron alloy minerals are located near the boundaries and between aggregate magnetite grains and the hydrous silicate alteration minerals of vein selvages.

The Union Bay project represents an under explored and highly prospective PGE target that warrants follow-up diamond core drilling to determine the ultimate size and grade of the layered mafic-ultramafic complex that hosts the high grade platinum-palladium mineralization discovered in the past. The relative proximity to Ketchikan, a major service and transportation hub, offers increased logistical possibilities and efficiency to exploration programs. Avalon Development Corporation (ADC) is well situated to implement future exploration on the Union Bay project. ADC has over 20 years of experience in this region of SE Alaska, including all of the

recent work conducted on the Union Bay project. The company has conducted exploration programs for gold, platinum, copper, and nickel in SE Alaska and has established a logistical network of contractors, personnel experienced in the wet weather and steep terrain, and a good working relationship with State and Federal regulatory permitting agencies.

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