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# Constantine advances Alaskan discovery

## JUNIOR TRACKS VMS ZONES IN ELEPHANT COUNTRY

BY GWEN PRESTON

### SITE VISIT

HAINES, ALASKA — In a normal market, the first 2008 drill results out of the Palmer project in Alaska would have been big news. Following up on a 2007 discovery hole that hit 24 metres of volcanogenic massive sulphides (VMS) in the South Wall zone, **Constantine Metal Resources** (CEM-V, CNSNF-O) drilled hole 11 and pulled core out of the ground containing 71 metres of VMS mineralization across three distinct zones, with grades averaging 1.3% copper, 6% zinc, 0.4% lead, 0.5 gram gold per tonne and 48 grams silver.

It was a whopper hole. But it was not a normal market — it was September 2008 and the world economy was falling apart, pulling junior exploration companies down with it, regardless of their news.

"We picked an unfortunate time to make a major discovery," says Darwin Green, vice-president of exploration for Constantine, with a smile.

BY GWEN PRESTON

A rock hammer rests on one of the massive sulphide boulders exposed by a receding glacier at the Mount Henry Clay zone at its Palmer project in Alaska. Constantine has not yet drilled the zone, but a large set of samples from the boulders returned average grades of 1% copper, 19% zinc, 0.2 gram gold per tonne and 38 grams silver.

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The market meltdown certainly made it hard for Constantine to drum up excitement about Palmer, but that hasn't dampened the company's drive. The Constantine team is hunting a major VMS deposit in elephant country and results so far hint they might be on their way.

The "elephant country" claim is a legitimate one — Palmer sits within the same late Triassic trend that hosts the Greens Creek and Windy Craggy deposits. Greens Creek, some 150 km south, has been called the best VMS deposit in the world in terms of value per tonne of ore. In 2008, the mine, which is now owned by **Hecla Mining** (HL-N), produced 5.8 million oz. silver, 54,650 oz. gold, 52,000 tons zinc and 16,600 tons lead and, after almost 20 years of production, the deposit still boasts proven and probable reserves of 8 million tons (7.3 million tonnes) grading 470 grams per tonne silver, 3.8 grams gold, 10.5% zinc and 3.8% lead.

Windy Craggy, which sits 55 km northwest of Palmer, is the fourth-largest VMS deposit and the largest Besshi-type VMS deposit in the world, with a historic resource of 300 million tonnes averaging 1.7% copper, 0.09% cobalt, 3.5 grams silver and 0.2 gram gold. Despite its size and value, Windy Craggy was never developed because its discovery in the late 1980s prompted the British Columbian government to designate a 9,600-sq.-km swath of land in northwestern B.C. as the Tatshenshini-Alsek Provincial Park, sheltering it from development.

So Palmer is in elephant country indeed. But the challenges that often accompany major exploration or, more importantly, development projects in the Far North are luckily not present at Palmer. The project is 50 km along a paved highway from the year-round deep-sea port of Haines. The Alaska state power grid tracks the highway, passing through the property, and hydropower capacity in the region is currently being upgraded.

In contrast to what happened at Windy Craggy, land in the Palmer project area is specifically designated for resource development. The project is within the Porcupine placer mining district, and is also within a designated logging area. And Constantine holds its key prospective land via federal claims; the company also staked a chunk of flatter ground below its exploration zones for potential development purposes and those state claims overlie lands held by the Alaska Mental Health Trust — which is mandated to promote resource development on its lands for the benefit of its trustees.

How much resource there is at Palmer to develop is still an un-answered question but Constantine is working the steep terrain to figure it out.

The Palmer project contains some 15 km of strike along three northwest-trending corridors. The northernmost trend is known as the Glacier Creek corridor and it has provided Constantine's best drill results to date. Those intercepts came from two zones, known as the South Wall and RW zones, that are in fact the same zone split between opposite limbs of a flat-plunging, asymmetric fold structure. Other, as-yet-undrilled targets extend the Glacier Creek corridor to the northwest and southeast.

Mineralization in the South Wall starts at the peak of a mountain and stretches down almost vertically. The zones — there are three — run parallel to the steep south side of the mountain. To drill in the area, Constantine's field crew, hanging from climbing ropes, builds drill platforms on what is essentially a cliff.

South of the South Wall-RW zones is the Cap-Silver zone, which marks the southeastern end of the second Palmer trend. At the northwestern end of this unnamed trend, which runs parallel to the Glacier Creek corridor roughly 3 km south, is the Mount Henry Clay zone. And the third prospective corridor at Palmer is another few kilometres south and hosts several showings, but is unnamed and remains a target for the future.

Constantine was formed in 2006 for the explicit purpose of exploring Palmer. But president and CEO Garfield MacVeigh was no newcomer to the project — MacVeigh and Wayne Livingstone, now another Constantine director, had been involved with Palmer since the mid-1990s, when they acquired it for **Rubicon Minerals** (RMX-T, RBY-X).

Local prospector Merrill Palmer first discovered base metal sulphides and massive barite in the area in 1969. He staked the property, giving it his name, and to this day, continues to explore the region.

In 1979, Anaconda Copper drilled three core holes on the property, all on the Glacier Creek corridor. All three failed to intersect the main mineralized horizons. By 1983, exploration successes at the nearby Windy Craggy and Greens Creeks deposits had ignited interest in the area and the discovery of high-grade massive sulphide boulders at Palmer, grading up to 33% zinc and 2.5% copper, catalyzed four drill programs between 1984 and 1999. Unfortunately, all 13 holes failed to hit a home run.

The results Rubicon did get at Palmer, though, were enough to keep MacVeigh interested. So when Rubicon spun the project out into a subsidiary, which then created Constantine to take the project on, MacVeigh left Rubicon to chase the sniffs of a significant VMS deposit at Palmer.

To aid his efforts, MacVeigh recruited Darwin Green, former vice-president of exploration for Niblack Mining (now part of **CBR Gold** [CBG-V, CBGFF-O]). For his work at Niblack, another Alaskan

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VMS project where Green managed surface exploration while permitting and then developing an underground exploration adit, Green won the Commissioner's Special Recognition Award for Project Excellence from the Alaska Department of Natural Resources. But Green was not only familiar with Alaska — he also completed his master's thesis at Palmer, sponsored by Rubicon and guided by MacVeigh.

Constantine's first drill program at Palmer, in 2006, returned intersections similar to those Rubicon had pulled from the ground: semi-massive to massive sulphides with good grades, but only over a few metres. In 2007, things continued the same way, until almost the end of the drilling program when a drill at the RW zone returned 14 metres of 3.79% copper, 7.24% zinc, 0.2% lead, 0.37 gram gold and 47 grams silver.

Then the company moved the drill 400 metres east and hit 24.2 metres of massive sulphides grading 1.19% copper, 6.46% zinc, 0.45% lead, 0.67 gram gold and 48.2 grams silver. The area around hole 9 is now known as the South Wall zone.

When the summer of 2008 came along, Constantine was raring to follow up on its tantalizing hits from the end of its 2007 season. Focusing on the South Wall zone, the company drilled 12 holes and came away with 17 massive sulphide intercepts, nine of them longer than 20 metres. The results made it clear that the South Wall comprises three steeply dipping, parallel zones.

The most impressive result of 2008 came from hole 11, which cut through all three South Wall zones to return a cumulative 71 metres of high-grade massive sulphide mineralization. Zone 1 returned 36.3 metres grading 1.54% copper, 5.45% zinc, 0.45% lead, 0.47 gram gold and 28.5 grams silver. Zone 2 provided 20.4 metres of 1.53% copper, 7.62% zinc, 0.37% lead, 0.81 gram gold and 100.7 grams silver. And zone 3 returned 12.6 metres at 0.47% copper, 6.27% zinc, 0.15% lead, 0.3 gram gold and 24.3 grams silver.

Another notable hit, in hole 14, returned 46.4 metres of zone 1 mineralization grading 2.78% copper, 3.4% zinc, 0.19 gram gold and 17.5 grams silver, followed by 23.8 metres of zone 2 rock averaging 0.26% copper, 1.82% zinc, 0.31% lead, 0.2 gram gold and 32.8 grams silver. Hole 17 cut 27.5 metres grading 2.52% copper, 3.38% zinc, 0.15% lead, 0.32 gram gold and 25.5 grams silver from zone 1, and then 4.8 metres grading 0.91% copper, 21.39% zinc, 0.38% lead, 0.04 gram gold and 19.4 grams silver in zone 2.

"That hole 11 — that was when we knew we had something big," Green says. "Then we went out 300 metres, down 300 metres, and we just couldn't get off it."

Unfortunately, the bulk of Constantine's drill results from 2008 came out in the fall, while the world was plunging into a recession. Rather than getting a share price boost for any of its news, the company's shares fell. The problem that created was one of money — Constantine needed funds to support another drill program in 2009.

Those funds came together in mid-July, when the company closed a $3-million non-brokered private placement and almost immediately started drilling. Forced into a late start, the company only managed to complete 10 holes, but results received to date are promising.

Zone 1 provided two intercepts: 29.8 metres grading 2.1% copper, 0.85% zinc, 0.09 gram gold and 8 grams silver in hole 23 and 18.7 metres of 1.16% copper, 4.2% zinc, 0.1% lead, 0.3 gram gold and 29.2 grams silver in hole 24. And hole 26 cut 6.1 metres grading 1.53% copper, 9.17% zinc, 0.02% lead, 0.18 gram gold and 18 grams silver from zone 2.

Assay results from the remaining 2009 holes are pending.

"It has all the hallmarks of a big system," Green says. "You see alteration zones that you can track for kilometres — across valleys, up glaciers, through peaks — with ore-grade showings. And in general, vertically stacked lenses like the ones at South Wall indicate a long-lived system."

The three South Wall zones combine to give some 70 metres width. To date, Constantine has traced the zones along 380 metres of strike and to a dip extent of 315 metres. But the same alteration appears to outcrop on the other side of the mountain, another 900 metres away. And Constantine has not yet tried drilling from the base of the mountain to test the system at depth.

As for tonnage, the massive sulphide mineralization at Palmer contains significant barite, which makes the rock dense and building tonnes easier. Constantine is looking to define 10 million tonnes in its initial resource calculation, which it will complete once the rest of the 2009 drill results are in.

"This is a new discovery in a world-class environment," MacVeigh says. "And we're still in the early stages, but it shows all the signs of a major massive sulphide system."

MacVeigh and his team are just as excited about the discovery as they are about its location and the ease with which it could likely be mined. All three of the South Wall zones are close to vertical and steep, thick zones of this type support lower-cost underground mining methods. The idea at Palmer would be to drive a 300-metre tunnel into the base of the mountain and then mine each zone from the bottom up. And the bulk of the tunnel development would occur in the hangingwall rocks, which are carbonate-rich and thus would not cause issues with acid-rock drainage.

"Accessibility for these types of deposits is absolutely critical," Green says. "When you say Alaska, people

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automatically think remote and cold and hard to mine, but that's just really not the case here."

Limited time and funds means Constantine has had to focus on just one zone at Palmer, leaving other prospects for another day. But some of the other showings make them hard to ignore.

"We would love to have an extra drill chasing other targets," Green says. "And at some point, we will."

The next major target is right beside the South Wall. The RW zone has already provided a few promising massive sulphide intercepts and it remains completely open along strike to the northeast and at depth. The zone's alteration envelope is known to extend through the length of the mountain, which would mean a strike length of more than 1 km if mineralization persists throughout.

This year, one of the holes probing the South Wall zone intercepted RW mineralization on its way. Hole 24 returned 9.1 metres of 0.23% copper, 3.08% zinc, 0.53% lead, 0.49 gram gold and 46.8 grams silver in oxidized RW rock. The intercept extended the total strike length of the RW zone to 195 metres.

The Glacier Creek corridor, home to the South Wall and RW zone, is the only place where Constantine has drilled. But the parallel trend to the south hosts some intriguing showings and historic drilling efforts produced some interesting results.

The Mount Henry Clay (MHC) zone is at the terminus of a perched glacier. The receding glacier has been slowly exposing the zone, leaving in its wake a col littered with high-grade, massive sulphide boulders. Chip samples from one large boulder returned 1.8 metres averaging 2% copper and 33% zinc. When a large number of these boulders were sampled, the average grades were 1% copper, 19.3% zinc, 0.4% lead, 0.22 gram gold and 38.2 grams silver.

Earlier explorers at Palmer punched 13 holes into MHC, trying to find the source of these boulders, but were unsuccessful. Drills did return wide intersections of lower-grade copper mineralization in intensely altered rock, but no massive sulphide. As the 2006 Palmer technical report states: "The Mount Henry Clay prospect remains an attractive enigma."

And at the northwestern end of this more southern trend is the Cap-Silver prospect, a silver-rich, barite-dominated zone with locally elevated zinc, lead and gold. Base and precious metal mineralization is hosted within veined and brecciated basalt, which is capped by a bed of massive pyretic barite.

"It's the right alteration, the right trend — it still needs to be explored, but it's got all the right smoke," says Green of the Cap-Silver area, which remains untested at depth.

Other areas on the Palmer property also hold promise. The Nunatak showing produced a bulk sample of baritic, semi-massive sulphides grading 3.2 grams gold and 406 grams silver. And samples from the Hanging Glacier area averaged 0.36% copper, 14.1% zinc, 2.3% lead, 1.58 grams gold and 199 grams silver.

Constantine shares recently traded at 25¢ apiece. The company has a 52-week trading range of 8-41.5¢ and 60 million shares outstanding.