

# Tungsten space, it looks like happy days are here again.

New Tungsten players are as rare as hen's teeth. The brutal price drop after the surge during the so-called Supercycle chopped off most Tungsten wannabes at the knees and left less than a handful of viable players while bankrupting some of the better-known producers. It didn't help that the Chinese sabotaged the market with uncommercial moves.

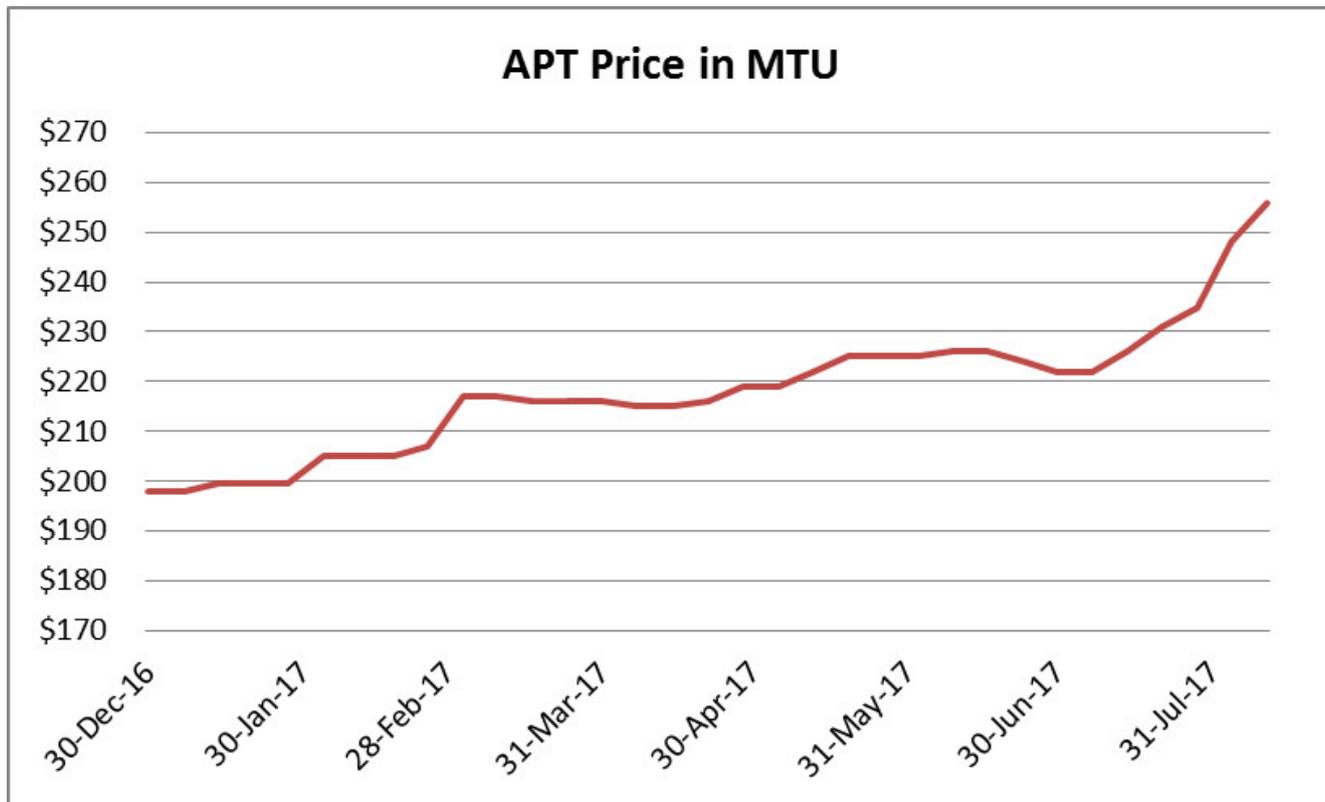
So we were intrigued when a new kid, [Happy Creek Minerals Ltd.](#) (TSXV: HPY), appeared on the block. Its principal focus is the Fox property, which is a 100%-owned, new tungsten discovery containing indicated resources grading 0.817% WO<sub>3</sub> and inferred resources grading 1.568% WO<sub>3</sub>. A portion of the resources are within an open pit and overall, are among the highest grade in the western world. The deposits are open to further expansion and the 10 km by 3 km mineral system hosts seven known zones at surface.

We thought it might be useful to review what they have discovered.

## **Tungsten**

As we recently wrote, this hardening alloy metal was looking like the wallflower at the specialty metals dance. Most other things had recovered slightly during 2016 but Tungsten was stranded. The supply of the metal has been dominated by China for some while and as with other metals under Chinese domination commercial considerations has little to do with production decision-making. The stagnation was also somewhat understandable with demand largely coming from the stable machine tool market and the very depressed drill-bit activity in the oil & gas and mining spaces. The former was trending slightly up, the mining sector meanwhile was merely a twinkle

in the eye for prospective recovery in 2016 and the oil & gas sector was suffering the hangover from hell from years of hyperactivity.



Source: Almonty Industries

As the chart above shows the gain thus far this year has been 20% which is respectable in anyone's book but still pales compared to the type of moves that other basic materials like Manganese and Chromite managed during the past 18 months. Tungsten has been one of the few spaces that has seen consolidation with Almonty Industries vacuuming up a number of competing or potentially competing players. Meanwhile North American Tungsten went bankrupt (as did Malaga) and Wolf Minerals walks across hot coals in its search for profitability.

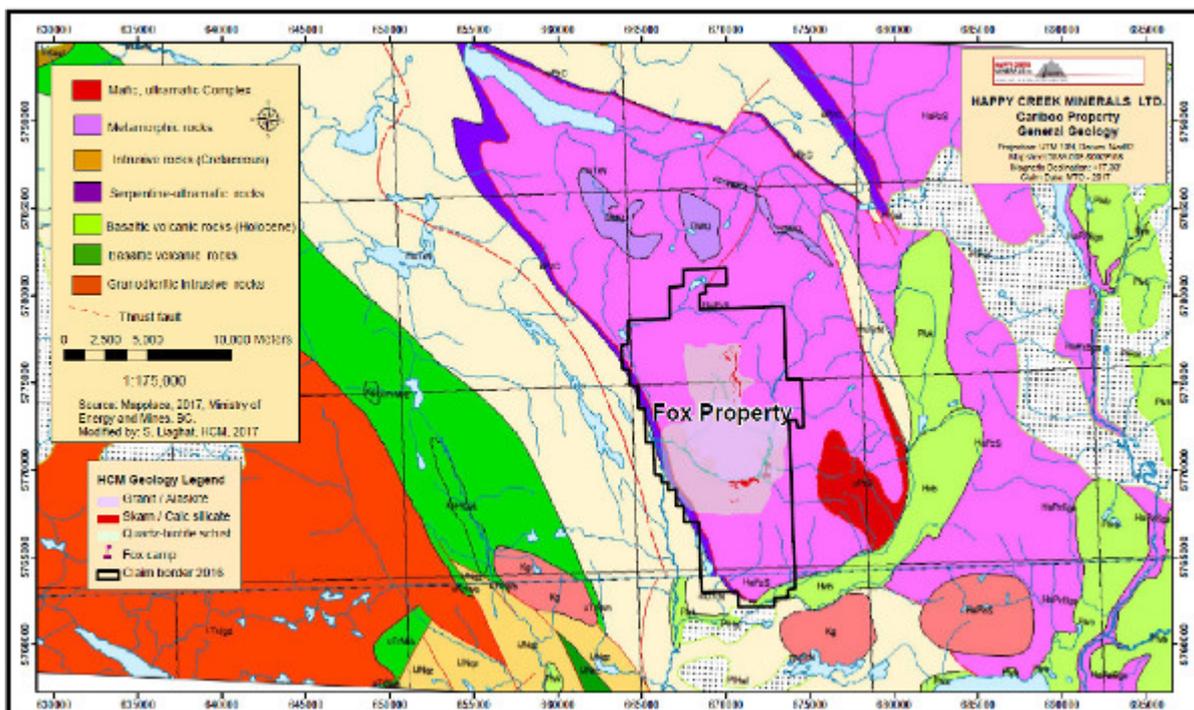
The dilemma for the end users is that new projects that are advanced are rare indeed and those on the drawing boards like Sisson and Mactung are eye-wateringly gigantic. Most other juniors have wilted on the vine during the dry period so it will need prices to continue rising and cross the \$300 per MTU

level (and hold there) before investors have much choice in the space. Thus it is into this rather quiet scene that Happy Creek has ventured.

## Fox

The company's target for a Tungsten development is the Fox property approximately 70 km northeast of the town of 100 Mile House in British Columbia. It consists of 31 converted legacy and new cell claims totaling 13,589 hectares. All tenures are 100% owned by Happy Creek and are subject to a 2.5% Net Smelter Royalty (NSR), with Happy Creek having the right to purchase 1% of the NSR. Happily, the property has no known environmental liabilities.

This deposit consists of a tungsten-molybdenum porphyry type system similar in age to the nearby Boss mountain molybdenum mine (situated some 30kms o the west). The southern and central portion of the property are easily accessible by paved and gravel logging roads from 100 Mile House, the largest community in the region.



The Fox property contains eight areas of tungsten mineralization. Tungsten mineralization is hosted mainly in

calc-silicate rocks of the Snowshoe Formation. The consultants classified this as a Tungsten skarn deposit. They noted that known intrusion-related skarn deposits having similar characteristics which occur in the Southern BC and Yukon areas such as Emerald /Dodger, Dimac, MacTung (Yukon, Canada) and Cantung (Northwest Territories), Canada.

## Resource

In March 2017, the mining consultants, AGP of Barrie, Ontario produced a NI 43-101 Resource Update for the RC Zone and Maiden Resource Estimate for the BN Zone of the Fox Tungsten Project. The table below shows a summary of the estimate.

ZONE	CLASSIFICATION	Cut-off WO <sub>3</sub> (%)	Tonnes (t)	WO <sub>3</sub> (%)	WO <sub>3</sub> (kg/t)	WO <sub>3</sub> MTU	Contained WO <sub>3</sub> (kg)
Ridley Creek	Indicated in-pit	>0.2	329,000	0.729	7.29	250,000	2,500,000
Ridley Creek	Indicated underground	>0.55	157,000	0.940	9.40	147,000	1,470,000
Ridley Creek	Inferred in-pit	>0.2	14,000	0.630	6.30	9,000	90,000
Ridley Creek	Inferred- underground	>0.55	93,000	0.825	8.25	77,000	770,000
BN	Inferred- underground	>0.55	254,00	1.892	18.92	480,000	4,800,000
	<b>Total Indicated</b>		<b>486,000</b>	<b>0.817</b>	<b>8.17</b>	<b>397,000</b>	<b>3,970,000</b>
	<b>Total Inferred</b>		<b>361,000</b>	<b>1.568</b>	<b>15.68</b>	<b>566,000</b>	<b>5,660,000</b>

It is important to note with the Tungsten price moving strongly higher that the resource estimate employed a Tungsten price cutoff of US\$166.52/MTU of WO<sub>3</sub> in concentrate in making the calculation. In order to assess the Mineral Resources an in-situ resource cut-off grade of 0.20% WO<sub>3</sub> was applied for potential open pit resources and 0.55% WO<sub>3</sub> for potential underground material. It would seem evident that the resource would expand quite significantly with a price cut-off closer to the current market price.

A Lerchs-Grossman optimized shell was generated by the consultants to constrain the potential open pit material. Parameters used to generate this shell included:

- 50° slopes for the pit shell
- CAD\$8/t mining, CAD\$26/t milling, CAD\$10/t of G&A operating costs
- 8% W<sub>3</sub> recovery to a 68% W<sub>3</sub> concentrate
- CAD\$208.15/MTU W<sub>3</sub> price
- economics applied to Indicated and Inferred materials

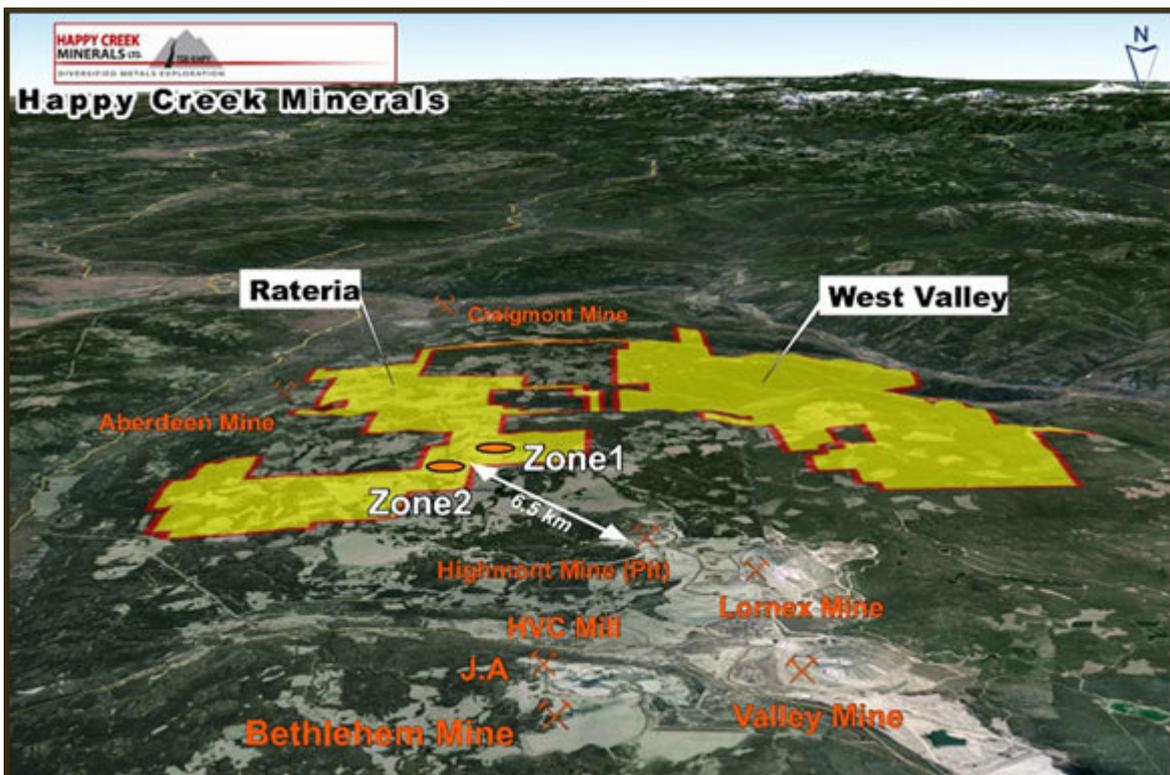
Happy Creek's plan is to continue expanding the resources and advance the Fox project to a Preliminary Economic Assessment and this would obviously use a more current price in the model.

### **Other Endeavours**

In addition, at the 100% owned Rateria property that adjoins to the east and west, respectively, the southern portion of the Highland Valley Copper mine property, and adjoins to the north of the former Craigmont copper mine property, located north of Merritt, British Columbia. Happy Creek has been working on its discovery of two new copper zones that are 6.5 km from a currently producing open pit at the Highland Valley, Canada's largest open pit copper producer (see pic below).



The map below gives an idea of where Happy Creek's properties are vis-à-vis the Highland Valley complex.



Drill results from Zone 1 include 145m of 0.25% copper starting from 9.8m and intervals containing up to 95m of 0.67% copper occur. At Zone 2, drill results include 92.8m of 0.30% copper, 0.15 g/t gold starting at 12.19m, and 146m of 0.46% copper, 0.10 g/t gold starting at 53.0m. Both zone 1 and 2 are open to further expansion and contain predominantly bornite-chalcocite copper mineralogy. Clearly there is a need for much more work, but the focus has switched to the Tungsten property for the short- to medium-term.

## **Conclusion**

With any luck the Tungsten rebound will go under the radar of the promotorial carpetbaggers of the mining sector and mainly be noticed by serious investors and players in the space. That way the likes of Happy Creek and the hardy band of developers who survived the last five years will have the space to themselves without the distractions of squawking wannabes.

With high grades at the Fox property Happy Creek will be the explorer to watch as the Hemmerdon experience has shown that low grades do not cut it when stacking up project economics.

In the Tungsten space, it looks like happy (or at least happier) days are here again.