

Highland Valley Copper

generates \$100,000 additional value

in one blast

CASE STUDY

Commodity

Copper

Geology

Disseminated porphyry

Powder Factor

1.2 kg/m³

Location

Canada

Teck's Highland Valley Copper Operations, an open-pit mine located in British Columbia, Canada, produces copper and molybdenum.

- Drills and blasts 15m benches, which are mined in a single pass
- Gradational porphyry copper-molybdenum deposits

Challenges

Maximising recovered value

- Given the gradational nature of the ore body, movement was not considered to be a contributing factor to dilution or ore loss
- However, visual identifiers on the muck pile indicated blast movement but the amount of displacement was difficult to quantify
- Mine operations sought to further optimize the kriged model to include less inherent dilution

Results

Accounting for blast movement reduces waste in the mill and maximizes ore yield—adding C\$100,000 in one blast

Accurate tracking of blast movement helps improve operational efficiency at Highland Valley Copper.

An example blast demonstrates the extent of movement and recovered value. Movement occurs within all blasts, and horizontal movement variation $\pm 50\%$ from the mean is common.

- In this blast, measured horizontal movement ranged from 2 – 11m¹ (6 – 36 ft) and vertical movement was up to 6.4m (21 ft)

By accurately accounting for blast movement, Highland Valley Copper:

- **Avoided 35% dilution**—22,700¹ tonnes of very low grade waste were diverted from the mill
- **Maximized ore yield**—15,400 tonnes of higher grade ore were recovered, avoiding 24% ore loss
- **Increased revenue**—by reducing dilution and ore loss the mine increased recovered value by C\$100,000^{1,2}

1. Numbers are rounded

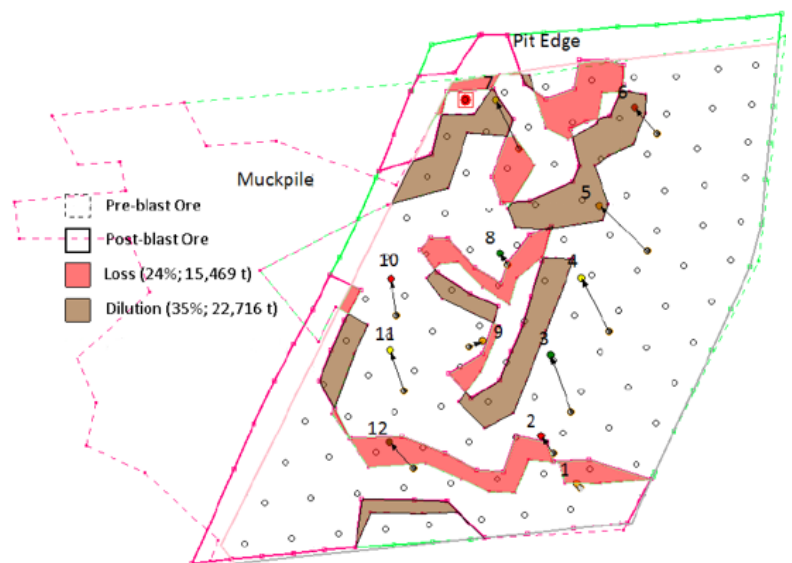
2. Supplied by Highland Valley Copper and calculated at a copper price of US\$5,500/t

Image Credit: infotel.ca: contributed by Teck Highland Valley Copper

Solution

The BMM System accurately translated post-blast dig lines

- Blast movement monitors (BMMs) were installed in monitoring holes throughout the shot
- Installation and detection as per site standard operating procedures
- BMM Explorer software calculated new dig lines, and areas of ore loss and dilution that would have occurred without monitoring



In this blast, accounting for movement diverted 22,716 t of waste from the mill and recovered 15,469 t of high grade ore.

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