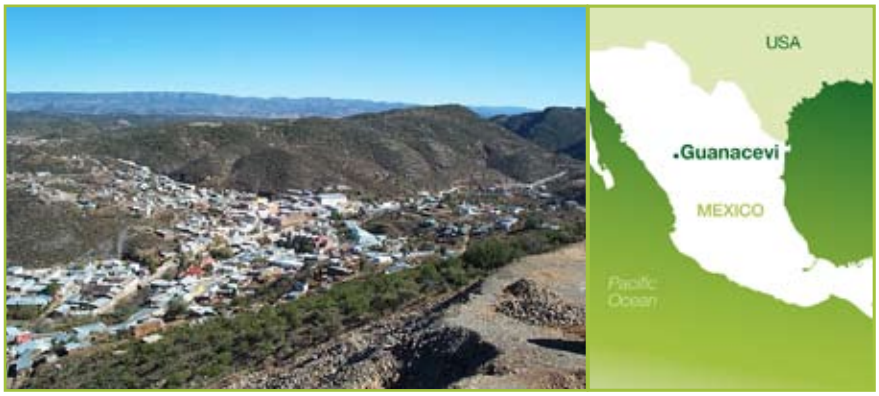
MAPTEK™ Vulcan™

Resource modelling at Endeavour Silver Corp.

Endeavour Silver Corp. is a Canadian based mining company focused on the growth of its silver production, reserves and resources in Mexico. Expansion programs are underway at the high grade Guanaceví Mines Project in the state of Durango and the Bolanitos Mines Project.



The town of Guanaceví in the Sierra Madre Mountains

HIGHLIGHTS

- Vulcan is currently used extensively in all exploration projects in Mexico
- Using Vulcan saves time, and achieves more accurate models

Endeavour is also actively exploring projects in Chihuahua and Michoacan. The company's acquisition and expansion programs should enable Endeavour Silver to join the ranks of the world's top primary silver producers.

One of the areas currently under mining and exploration is the Santa Cruz mine at Guanaceví in the Sierra Madre Mountains. Mining by the Spanish dates back to the 16th century. The district of Guanaceví was renowned for its high silver grades, historically one of the top silver mining districts in Mexico.

In 2007 Guanavecí Mines produced 1,910,000 oz silver and 3,957 oz gold (silver equiv = 2,128,000 oz).

The deposit is modelled in Maptek Vulcan™ using exploration drilling; the model is also updated with channel samples collected during mining.

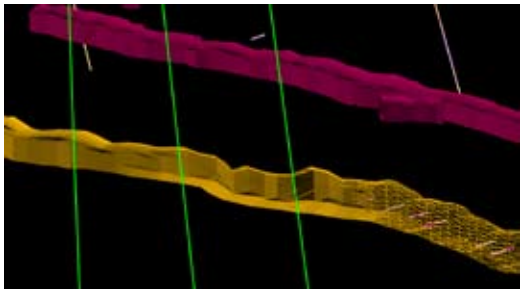
It was decided to use the channel information to model the minimum mining width for the vein. This is achieved by selecting from the channel a length that is at least equal to that width.

A geometrical problem arises here with calculating the minimum real thickness of the vein at each channel. Because the channels are sampled at different angles from the vein, it is difficult to establish the actual minimum width based on the channel orientation and vein azimuth and dip in an efficient way.

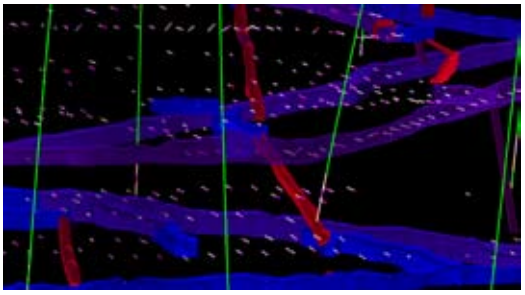
A compositing method was devised to obtain the actual channel length that represents a minimum mining width. The minimum mining width in the real vein thickness direction is projected on the channel plane in order to obtain a length in the channel direction.

This length is then used to create an ore composite, including internal waste as necessary, using the standard Vulcan compositing tools. The procedure is repeated for each channel. There are thousands of channels in the mine, each with a different orientation in sections where the vein changes orientation.

In order to automate this, a lava script was created to perform all of the geometric calculations between the vein triangulation and each of the channels. The script also creates the actual ore composites.



Channel samples and drillholes displayed with surveyed developments



Stopes were removed for easier visualisation

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'Vulcan was a key tool that helped us to efficiently add all our constraints to our modelling. The high level of automation in the application of complex 3-dimensional features provided us with valuable results. We are really happy with the time we saved and the accuracy achieved with the model created in Vulcan.'

Luis Castro, Exploration Manager, Endeavour Silver Corp.

The channel samples are then used in conjunction with exploration drillholes to define mineable vein boundaries. The start and end points of the channel composites are used to build the footwall and hanging wall.

A simple database calculation script is used to classify channels according to the orientation in which they were created, thus the starting side of the channel is known.

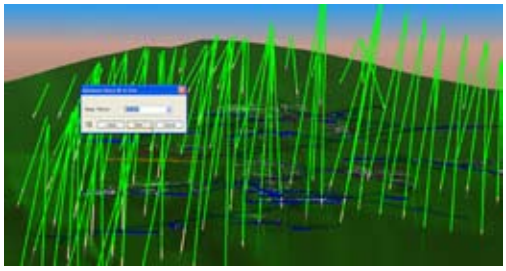
For channels going from the footwall to the hanging wall, the start coordinate represents the footwall and vice versa. The channel points are also controlled by the vein model from the drilling sections.

After this pre-processing, building the resource model is straightforward in Vulcan. The vein model is then triangulated using both the section polygons and the start and end points of the channel composites.

A resource block model is then built, and estimated for silver and gold. A Net Smelter Return (NSR) value is calculated for financial evaluation.

For resource classification, regions are generated based on different incremental distances around the drillholes; resource blocks are then classified based on their distance from the closest drillhole.

Mined-out zones are removed from the vein model and reserves are calculated based on a mine plan developed by the engineering department.



Overall view of part of the main vein showing mine developments, channel samples and exploration drilling