

# CASE STUDY



**MineScape improved forecasts, boosted recovery, cut costs, and prevented delays by identifying and planning for adverse roof conditions.**

- ✓ Improved forecasts
- ✓ Increased recovery
- ✓ Reduced costs
- ✓ Avoided delays



Client  
**SUBSIDIARY OF  
CORE NATURAL  
RESOURCES INC.**



Industry  
**MINING  
(UNDERGROUND  
COAL)**



Location  
**NORTH  
AMERICA**





# THE CUSTOMER

Core Natural Resources (NYSE: CNR) is a leading US-based producer and exporter of high-quality, low-cost coal for global markets, supplying both metallurgical coal and high-calorific-value thermal coal.

## Core Natural Resources is a major US Coal Producer:



owns and operates 11 mines including 8 longwalls



≈87 mln short tons of coal per year

## Core's coal is used in:

- ✓ Steel & construction
- ✓ Industrial applications
- ✓ Power generation
- ✓ Aerospace & advanced materials

"Using MineScape, we improved production forecast accuracy by clearly identifying adverse roof conditions. By transforming drill hole and scope hole data into actionable insights, we were able to avoid difficult mining conditions and forecast adverse areas that could impact production rates.



**Joe Wickline,**  
Senior Engineer, Core –  
Leer South Mine

# THE CHALLENGES



## Geological Model Foundation

When designing an underground coal mine, an accurate geological model forms the foundation of effective extraction and long-term mine planning. Detailed knowledge of coal quantities, quality parameters, and the spatial location of seams and mining horizons is essential to optimise mine design and production scheduling.



## Adverse Roof Conditions

At the Leer South underground longwall mine, roof material is cut above the coal in continuous miner sections to support the ventilation system; however, mining revealed zones of very hard roof stratigraphy in some development areas, which significantly slowed production.



## Production Impact

As a result, continuous miner development fell behind the planned longwall schedule, creating the risk of longwall downtime and significant impacts to production targets and costs, while necessary plan changes to shorten development sections led to reduced longwall panel lengths and unrealized coal recovery.



**“MineScape is critical to the success of both our mine planning process and our mining operations.”**

**Joe Wickline,**  
Senior Engineer, Core – Leer South Mine



# THE SOLUTION

To address these challenges, Core adopted MineScape to integrate drill hole and scope hole data and analyse roof lithology above the coal seam. Using MineScape's advanced interrogation and visualisation tools, Core achieved the following:



Hard stratigraphic zones were clearly identified



Engineers were able to anticipate difficult mining conditions



Production forecast accuracy was improved

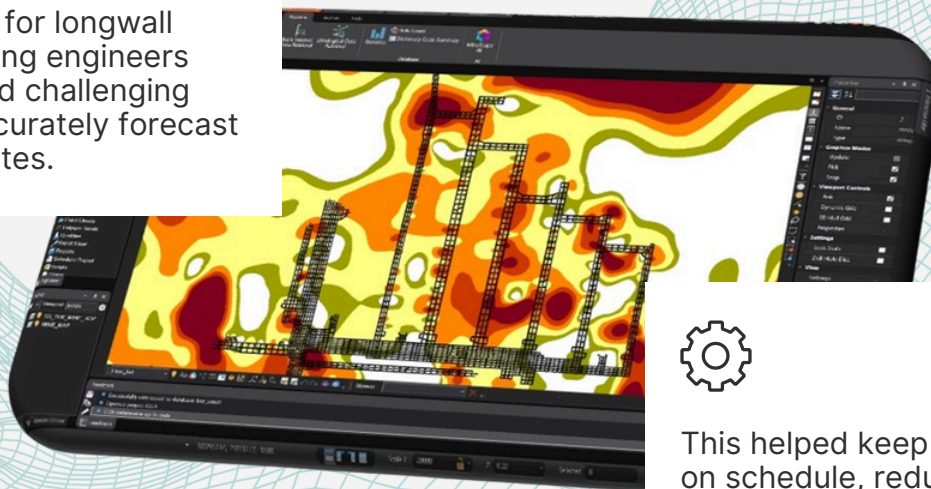


Coal recovery increased while operating costs were reduced

Core modelled roof lithology above the coal seam within planned mine boundaries to generate maps showing the spatial extent of both difficult and favorable mining conditions



These insights were used to optimize continuous miner development for longwall panels, allowing engineers to plan around challenging areas and accurately forecast production rates.



This helped keep development on schedule, reduce costs, and ensure longwall readiness in line with production targets.



# THE RESULTS

By using MineScope, Core Natural Resources developed an accurate geological model, proactive identification and management of adverse roof conditions enabling more reliable mine planning and production forecasting.

## Results:

- ✓ increased coal recovery
- ✓ reduced operating costs
- ✓ avoidance of unplanned development delays
- ✓ elimination of operational disruptions



Drill hole data

Scope hole data



Specific lithology thickness

Above seam roof in mining horizon



Model thickness

Model spatial limits

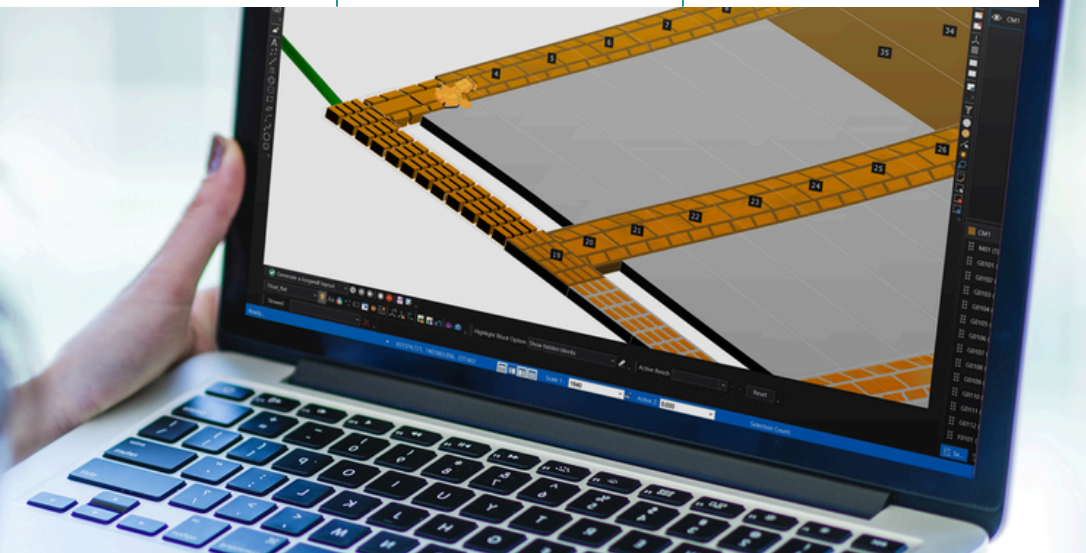
Generate maps



Mine design

Roof zones

Adverse conditions



Accurate geological model



Identify adverse mining conditions



Improved planning & forecasting



3D visualization tools clarifies plan

# CONTACT US

AUSTRALIA | BRAZIL | CANADA | CHILE | CHINA | ECUADOR |  
PHILIPPINES | INDIA | INDONESIA | KAZAKHSTAN | MALAYSIA |  
SOUTH AFRICA | MEXICO | MONGOLIA | PERU | GHANA  
TURKEY | UNITED KINGDOM | USA | UZBEKISTAN

 [dataminesoftware.com](https://dataminesoftware.com)

 [dataminesoftware.com/contact](https://dataminesoftware.com/contact)



Submit a request