A New Direction
Horizontal Directional Drilling Applications for Abandoned Mine Remediation and Cleanup of Acid Mine Drainage

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BACKGROUND

- 35 years as a service provider to the mining industry, developing directional drilling for projects including: degasification, exploration, dewatering, water transfer, abandoned mine verification, and shallow depleted oil development (oil mining).

- 17 years providing dewatering / water transfer services to the mining industry, state / local government, & private entities. Approximately 30% of drilling revenues is derived from this category (dewatering / water transfer).
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Horizontal Dewatering / AMD Cleanup

Example Projects

- **US EPA – Argentine Mine**
  Govt project – remote AMD site

- **PADEP - Kalp / Melcroft**
  Govt project – residential AMD site

- **Jewell Smokeless**
  Private business project – residential AMD site

- **PacificCorp – Deer Creek**
  Private business project – mine closure cost minimization
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Let’s avoid this
Benefits

- No interaction with mine seal
- Gravity drainage
- Determine water level with PSI
- Start hole closer to treatment system
- Intercept multiple low points
US EPA – Rico, Colorado

- Very similar project as Gold King.
- Drawdown mine pool to reduce head pressure on mine blockage to prevent a blowout.
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Argentine Mine Pool Draw-Down

US EPA – Rico, Colorado

- 2x 8 inch horizontal acid mine water drainage wells.
- Initial development of 100 ft through unconsolidated broken ground.
- Utilized a casing advancer.
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Kalp Site

Acid Mine Drainage / Mine Pool Control

PADEP - Somerset County, Pennsylvania

Drill Station
PADEP - Somerset County, Pennsylvania

- 2x 450ft x 12 inch diameter gravity fed drainage boreholes to control mine pool.
- Elimination of weeping / seepage along outcrop.
- Elimination of catastrophic failure (blowout potential).
- 2007 OMSRE Appalachian Regional Award

Kalp Site
Acid Mine Drainage / Mine Pool Control
PADEP - Somerset County, Pennsylvania

- Very tight working confines.
- All drilling effluent and cuttings had to be contained and disposed of.
- Discharge water was recirculated back into the mine pool while drilling & reaming.
Jewell Smokeless

- Water seeping out of outcrop, damaging nearby homes and buildings.
- Diminished relations with local community.
- Risk for blowout if left unchecked.
Jewell Smokeless

• 5.75” hole drilled to 1,445’, punched out into mine at lowest elevation.

• Water gravity drained, diverted across road to treatment pond before discharged.

• Eliminated seepage at outcrop around homes, increased control on mine pool level.
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Deer Creek Mine Water Transfer

PacificCorp - Huntington, Utah

- 1x 12 Inch, HDPE lined water transfer borehole.
- 4,860 ft length.
- Connected two longwall coal mining districts.
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Deer Creek Mine Water Transfer

PacificCorp - Huntington, Utah

- Provided consolidated drainage for treatment of mine discharge at one central location.
- Alternative would have been to pump perpetually from one of the sites or treat water at two sites.
Summary:
When Does Horizontal Drilling Make the Most Sense?

- Need to relieve impounded water safely
- Long-term pumping costs associated with traditional methods
- Minimize surface disturbance and excavations needed
- Consolidate treatment
THANK YOU!

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