



# Blasting at Surface Mines

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**COLORADO**  
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Department of Public Health & Environment

# Large Surface Mines in Colorado



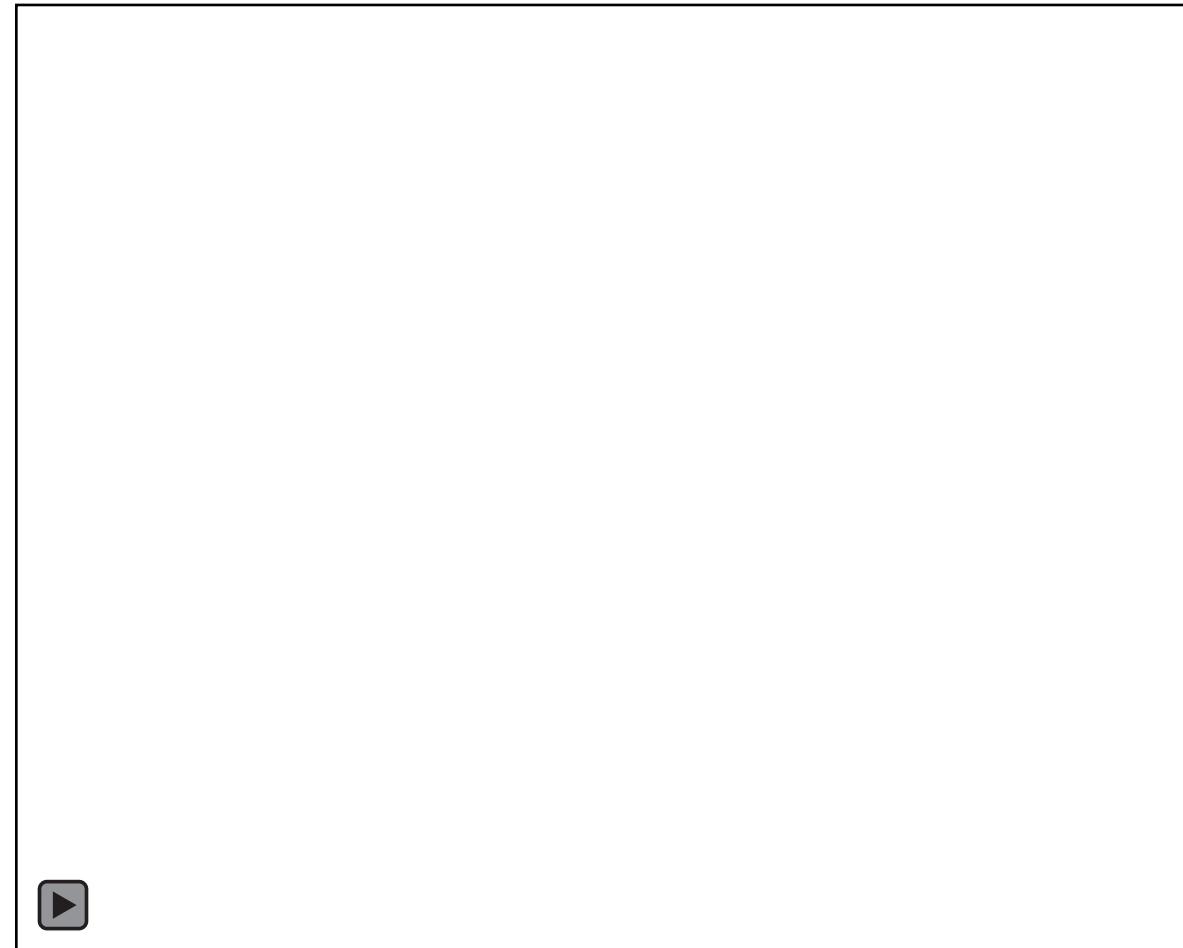
Cripple Creek & Victor Gold Mine



Colowyo Coal Mine



# Blasting in Open Pits



05/08/2019

2019 EPA Regional, State, Local Modeling Workshop



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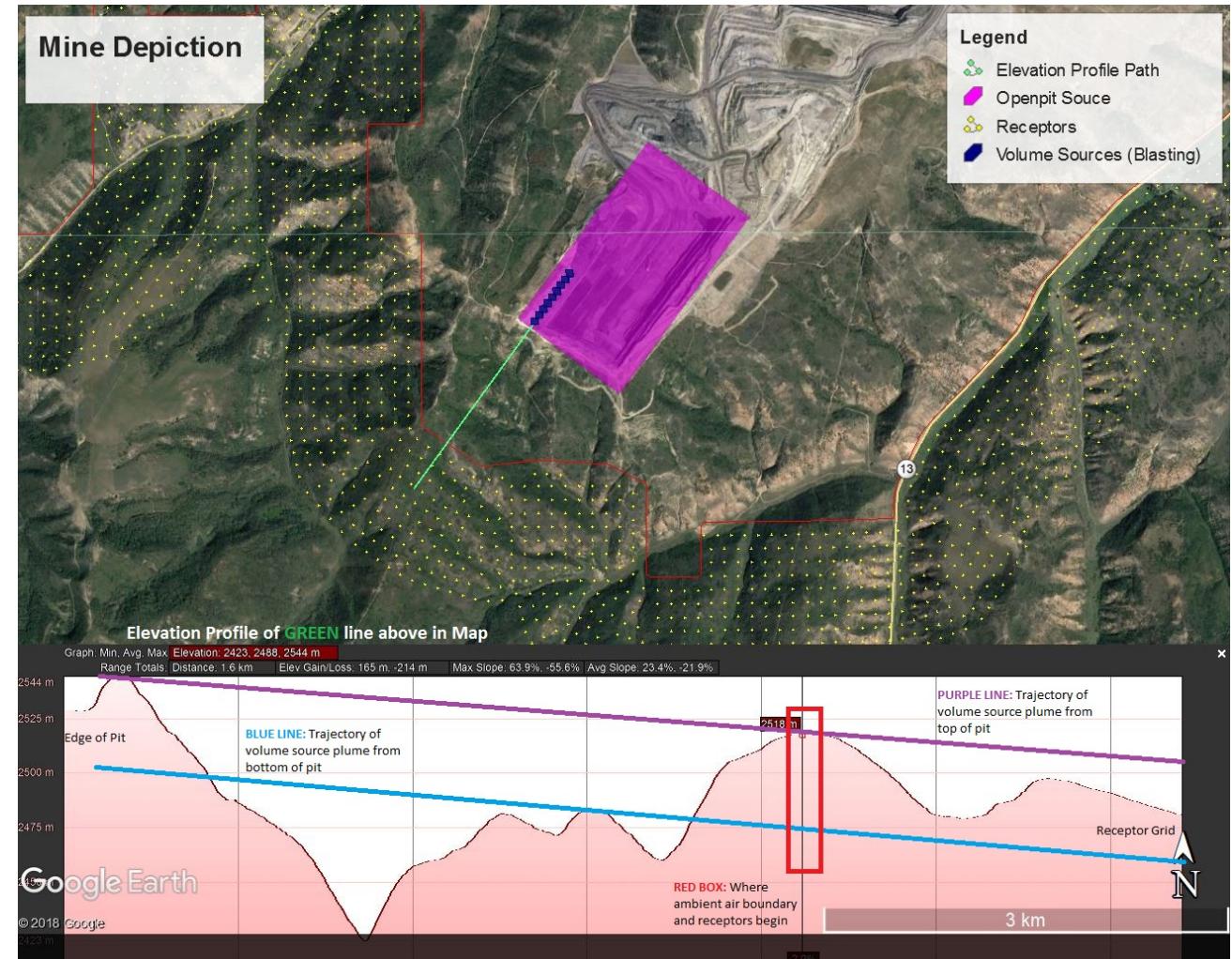


# How to represent in AERMOD?

- Open Burn Open Detonation Model (OBODM) Hybrid with AERMOD
  - Volume Sources in AERMOD using characteristics from OBODM
    - Release Height (AERMOD) =  $\frac{1}{2} * \text{Initial Cloud Diameter (OBODM)}$
    - Sigma Z (AERMOD) = Initial Cloud Diameter (OBODM) / 2.15
    - Sigma Y (AERMOD) = Initial Cloud Diameter (OBODM) / 4.3  
Length of area blasted/4.3
    - Base elevation at rim or bottom of pit?
- OPENPIT source in AERMOD
  - Release Height (AERMOD) =  $\frac{1}{2} * \text{Initial Cloud Diameter (OBODM)}$
  - Physical dimensions of pit used to represent in AERMOD

# Volume Sources

- Base elevation at rim or bottom of pit?
  - Complex terrain makes this a challenge





# Openpit Sources

- Detonation of explosives at bottom of pit using release height calculated from OBODM
- Algorithms in AERMOD calculate what percentage of plume remains in pit
- Remaining plume uses area source algorithms to calculate impacts



# Thoughts? Questions?