



Blasting at Surface Mines

Emmett Malone, Marie Bernardo



COLORADO
Air Pollution Control Division
Department of Public Health & Environment

Large Surface Mines in Colorado



Cripple Creek & Victor Gold Mine



Colowyo Coal Mine

Blasting in Open Pits

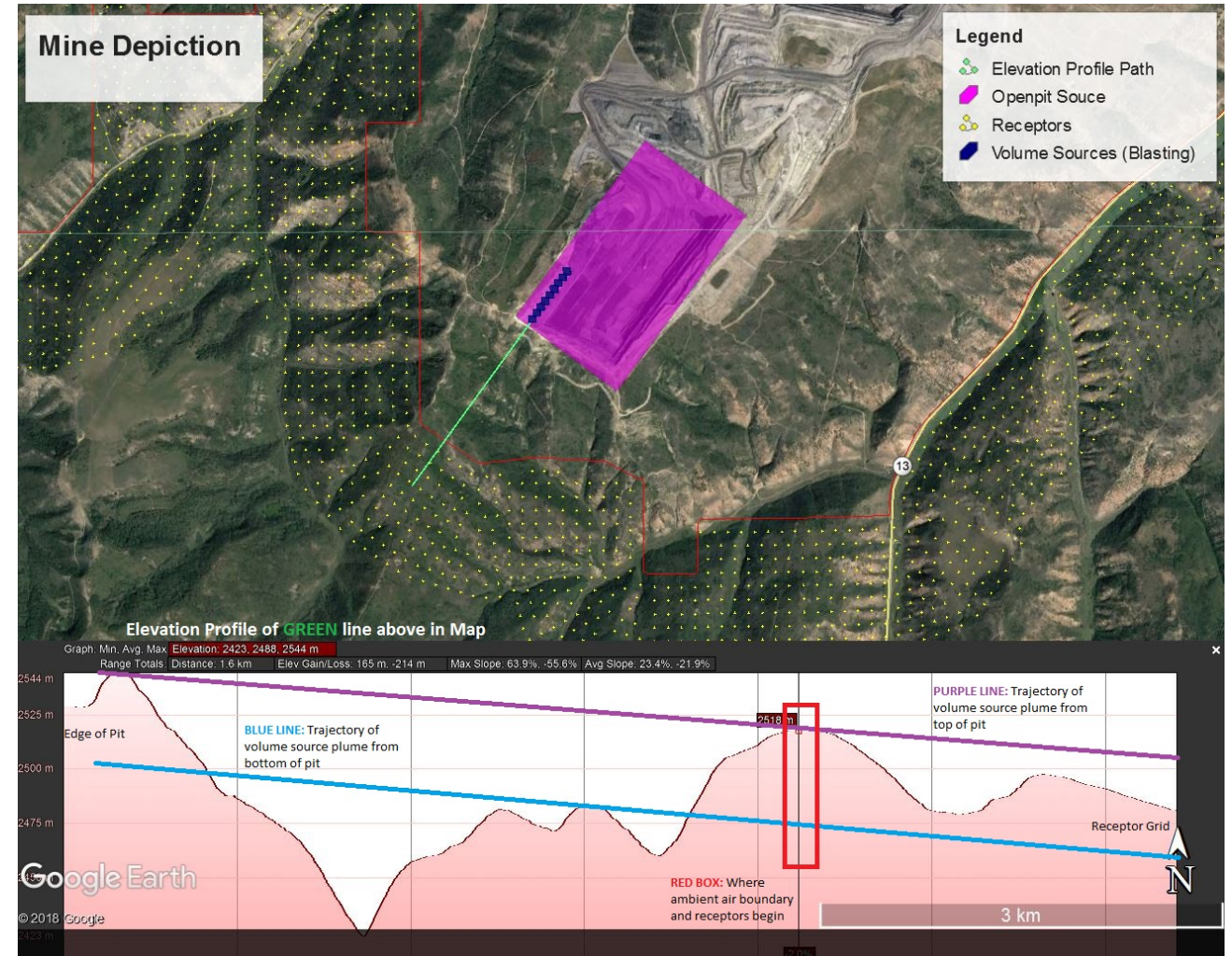


How to represent in AERMOD?

- 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) = $\text{Initial Cloud Diameter (OBODM)} / 2.15$
 - Sigma Y (AERMOD) = $\text{Initial Cloud Diameter (OBODM)} / 4.3$
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?