

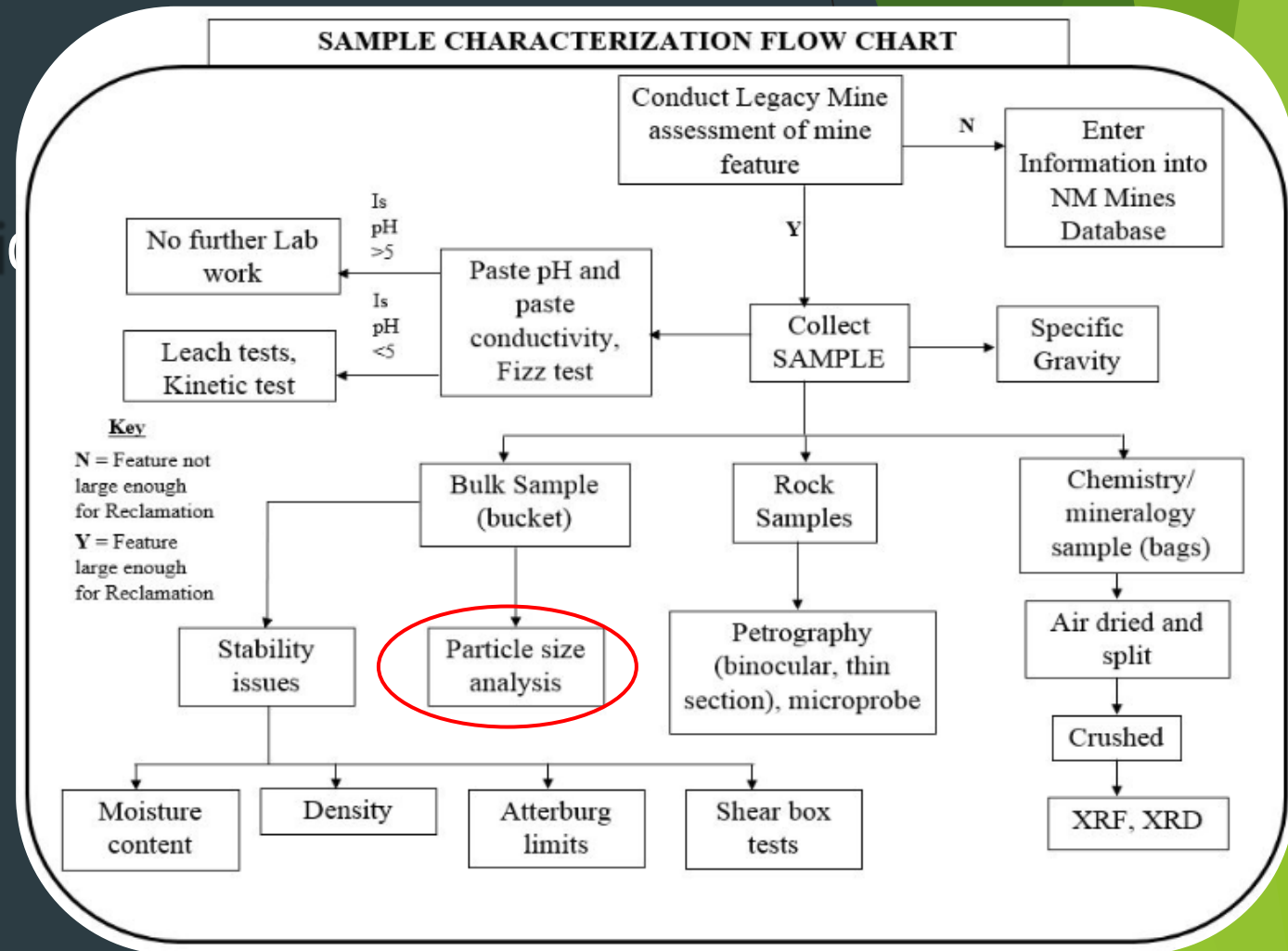
Geotechnical Engineering Considerations of AML Project

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Outline

- Importance
- Piles in Our Current District
- Sampling
- Indicators of Instability
- Methodology
- Findings
- Acknowledgments
- Questions



Importance

- ▶ Determine stability of rock piles
- ▶ Determine suitability of rock piles to be used as backfill



Photo Courtesy of John Durica



Hayden Hill Gold Mine Waste Rock Failure, Copyright AMEC

Pile in Our Current Districts

- ▶ Currently inventorying mines in the North Magdalena, Rosedale, and Jicarilla Districts
- ▶ Relatively Small Waste Rock Piles
- ▶ Dumped at Angle of Repose
- ▶ Since Deposition, slight cementation of the particles has occurred



Photo Courtesy of John Durica

Sampling

- ▶ Bulk Samples are collected from waste piles during inventory if deemed feasible or necessary
- ▶ Flags are staked around the pile to ensure the sample accurately represents the pile
- ▶ Samples are taken from each flag site and stored in a 5 gallon bucket



Photo Courtesy of Marcus Silva

Indicators of Instability

- ▶ Lack of Vegetation
- ▶ Sloughing
- ▶ Creep
- ▶ Signs of Previous Failure
- ▶ Tension Cracks
- ▶ Water
- ▶ Bent Fence Lines



Photo Courtesy of John Durica

Methodology

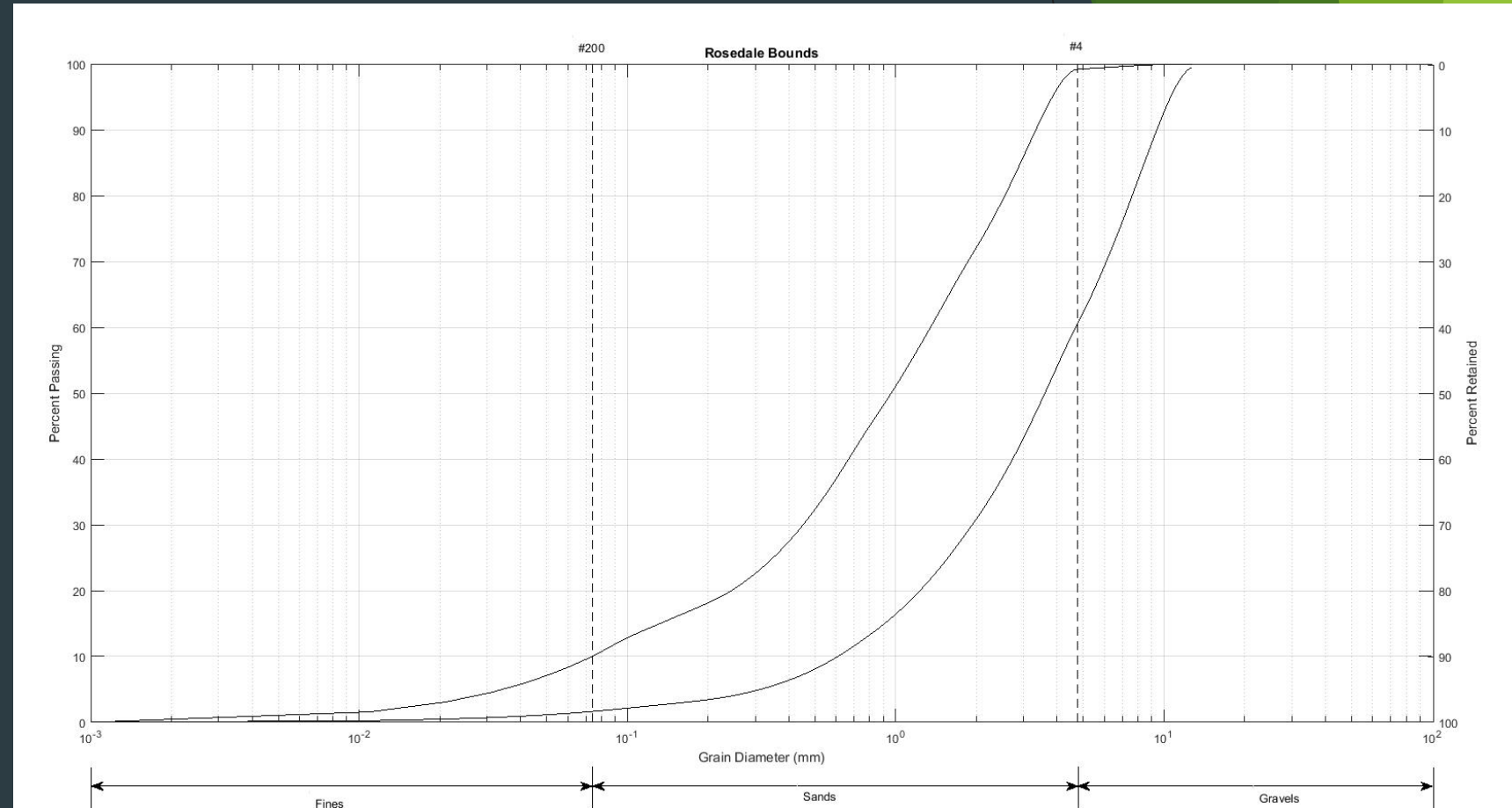
- ▶ Using the New Mexico Tech Soil Mechanics Laboratory
- ▶ Particle Size Analysis: ASTM Standard C 136
 - Sieves Used: ½ inch, 4, 10, 20, 60, 140, 200, and pan
- ▶ If the pile is deemed unstable, further testing is performed
- ▶ Further testing on disturbed samples from the cemented rock piles would result in a lower reported strength than in-situ



Photo Courtesy of John Durica

Findings

- ▶ Well graded soils
- ▶ No unstable piles have been found



Acknowledgements

- ▶ Dr. Virginia McLemore, New Mexico Bureau of Geology
- ▶ Dr. Navid Mojtabai, New Mexico Tech Mineral Engineering Department
- ▶ Dr. Ingar Walder, New Mexico Tech Mineral Engineering Department
- ▶ Marcus Silva, New Mexico Tech Mineral Engineering Department
- ▶ William Zutah, New Mexico Tech Mineral Engineering Department
- ▶ John Durica, New Mexico Tech Mineral Engineering Department
- ▶ Joseph Blais, New Mexico Tech Mathematics Department
- ▶ Amy Trivett, New Mexico Bureau of Geology
- ▶ Ben Sears, New Mexico Tech Mechanical Engineering Department
- ▶ New Mexico Bureau of Geology
- ▶ New Mexico Tech Mineral Engineering Department

Thank You!

Questions