Chemical analysis indicates that the quartz may be suitable for fused quartz and silica glass applications. Fluorite comprises up to 30% of the tailings present. Shallow drilling and pits ~6 ft deep recovered ~60-pounds of wet tailings from gridded sites on the tailings deposit.

The Tungsten (Hamme) Queen mine is located at Tungsten, NC, 16 miles northwest of Henderson, NC, and 2 miles south of the Tungsten Queen mine. The Tungsten Queen Mine Tailings Evaluation, Vance Co., NC: A Potential Silica Resource study was undertaken to determine if a high purity quartz concentrate could be produced using bench scale beneficiated methods including flotation, magnetic, and gravity separation processes. Tailings sampling was part of a statewide tailings sampling project by North Carolina and Virginia Governments.

The Tungsten (Hamme) Queen tailings pond was sampled for mineral composition and chemical analysis. Samples were taken from each pit for grain size analysis. The image shows the backhoe pit locations. Samples were collected in a 5-gallon plastic pail. Sample collection on 13 June 2013 used a power auger and shovel. Samples were collected from various MP-1 and MP-2 areas. Sample collection along the eastern bank of Richland Creek was performed in August 2013.

The flotation process followed the following steps:
1. Scrubbed for 5 minutes @~65% solids.
2. H13 feed was screened over a 30 mesh sieve. The minus 30 mesh fraction (-30 x 0 mesh) was wet magnetic separation. Non-mags were collected for subsequent froth flotation processing.
3. Non-magnets were collected for subsequent froth flotation processing.
4. Iron Flotation #1.
5. Conditioning at <3.0 pH with (HH-70) petroleum sulfonate for Iron Float #2.
7. Gravity Separation
8. Mica Flotation #1.
10. Mica Flotation #3.

The Tungsten Queen Mine Tailings Evaluation, Vance Co., NC: A Potential Silica Resource study was undertaken to determine if a high purity quartz concentrate could be produced using bench scale beneficiated methods including flotation, magnetic, and gravity separation processes. Tailings sampling was part of a statewide tailings sampling project by North Carolina and Virginia Governments. The investigation of the Tailings pond at Tungsten Queen Mine was performed in August 2013. Samples were collected in a 5-gallon plastic pail. Sample collection on 13 June 2013 used a power auger and shovel. Samples were collected from various MP-1 and MP-2 areas. Sample collection along the eastern bank of Richland Creek was performed in August 2013.

Analytical results

The analytical results of the tailings pond (HPQ) concentrate analysis and its XRF chemical analysis shows the concentrate to be a high purity quartz material.

References and suggested readings

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Petrography of fractions

High purity quartz: Applications, impurity levels, market size, and price

A high purity quartz concentrate was produced using bench scale beneficiated methods including flotation, magnetic, and gravity separation processes. Tailings sampling was part of a statewide tailings sampling project by North Carolina and Virginia Governments. The Tungsten Queen Mine Tailings Evaluation, Vance Co., NC: A Potential Silica Resource study was undertaken to determine if a high purity quartz concentrate could be produced using bench scale beneficiated methods including flotation, magnetic, and gravity separation processes. Tailings sampling was part of a statewide tailings sampling project by North Carolina and Virginia Governments. The investigation of the Tailings pond at Tungsten Queen Mine was performed in August 2013. Samples were collected in a 5-gallon plastic pail. Sample collection on 13 June 2013 used a power auger and shovel. Samples were collected from various MP-1 and MP-2 areas. Sample collection along the eastern bank of Richland Creek was performed in August 2013.