

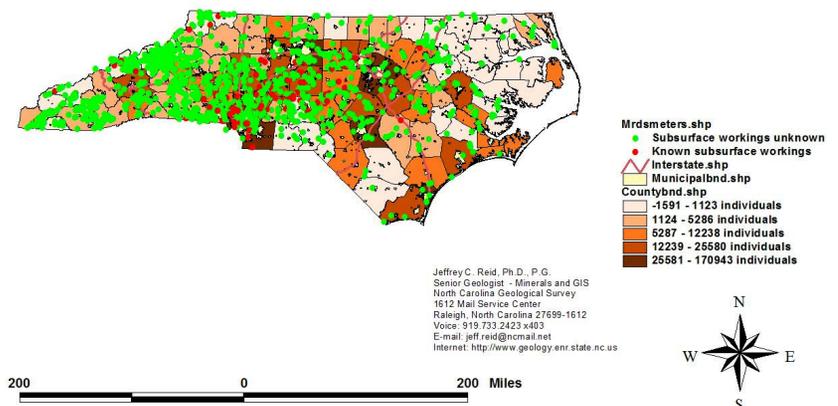
Old 'hard rock' mines in North Carolina

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Old 'hard rock' mines in North Carolina

- Urbanization in high population growth areas encroach on historic old mines
- Old mines predate the NC Mining Act
- Increased incidents involving mine surface breaches and 'close encounters'
- Many mines (hundreds) with known subsurface workings as deep as 900 feet

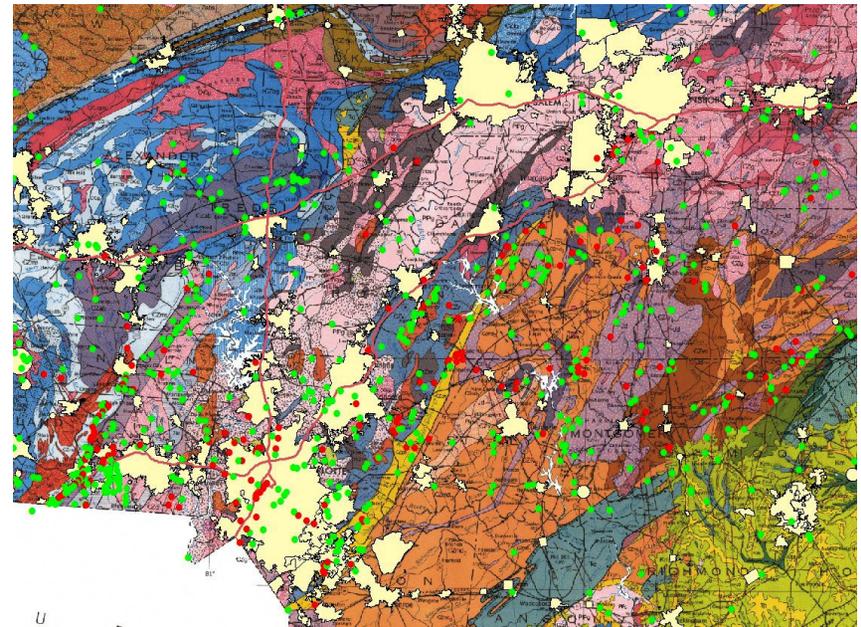
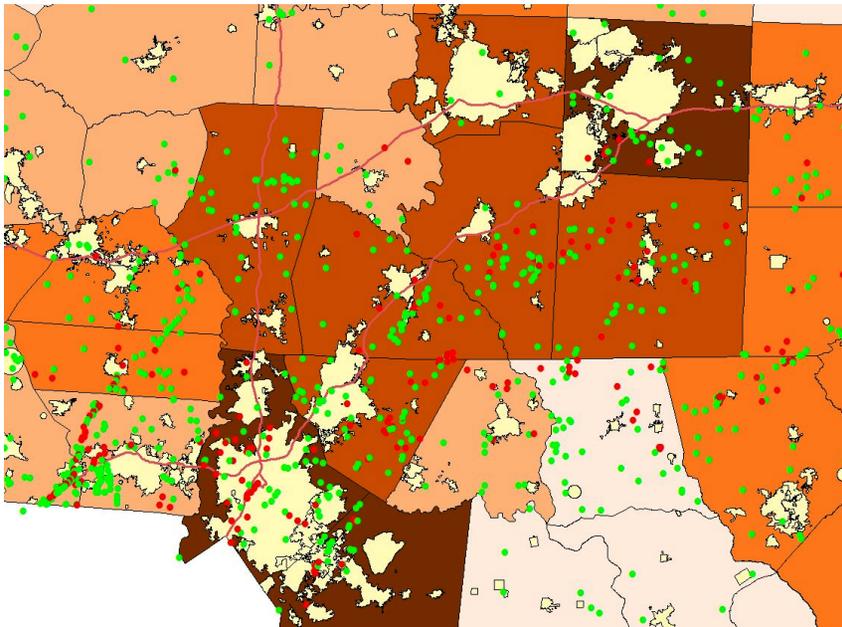
Old mines with known and unknown subsurface workings, with population growth (projected) to 2010



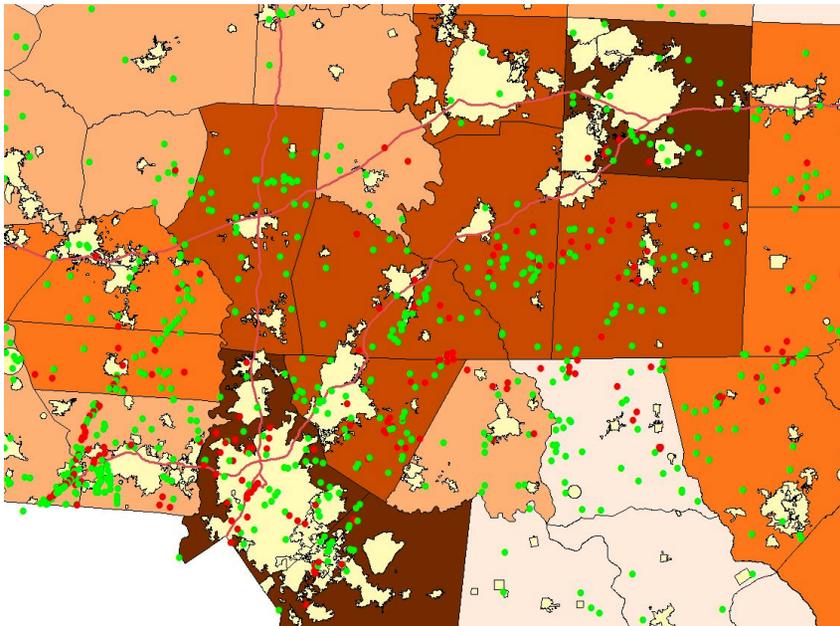
Mines with known subsurface workings

- Piedmont
 - Gold (hundreds)
 - Tin (tens)
 - Tungsten (one)
 - Coal (limited workings)
- Mountains
 - Mica (hundreds, or more?)
 - Feldspar (hundreds?)
 - Other industrial minerals ?

Old 'hard rock' mines in rapid growth areas – North Carolina

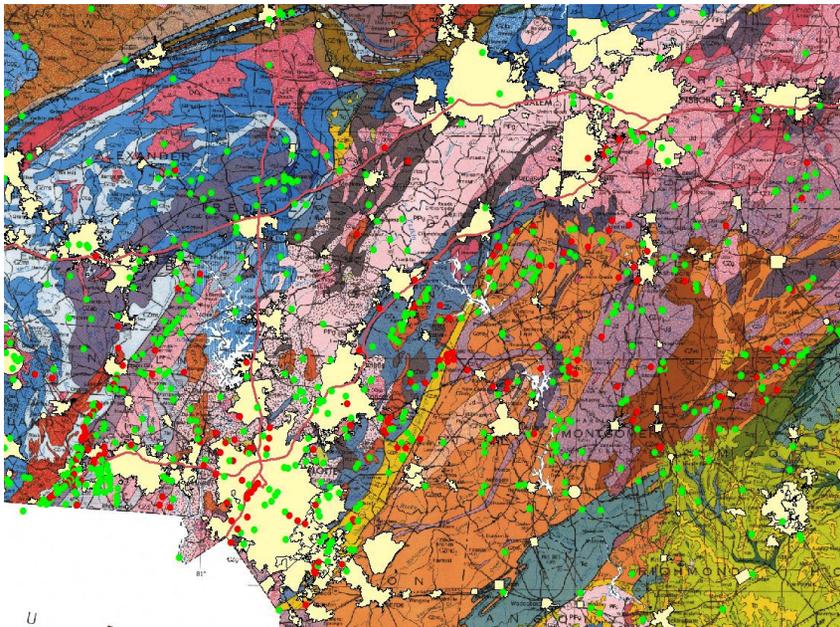


Recent examples – North Carolina



- February 18, 2000 – Phoenix gold mine breached surface
- Golf course home development built over abandoned gold mine
- Result: “19th” hole

Recent examples – North Carolina



- Spring 2003
 - Concord (Cabarrus Co.) – likely gold mine ventilation shaft breaches back yard following heavy rain
 - Union County – citizen reports he fell into shallow depression between workings; his probing with iron rod suggested deeper workings (high growth area just east of Charlotte).
 - Concurrent issue – high arsenic in groundwater

Some future challenges

- High population growth counties in Piedmont “crescent”
 - Urbanization encroaching on old ‘hard rock’ areas
 - Likely high speed rail route from Washington, D.C. to Charlotte
- Highway construction (e.g., Tin – Lincoln Co.)
- Asheville area as retirement destination

Assets and challenges

- Highly developed state 'corporate' GIS & orthoimage database
- Capable trained staff
- Solid hardware and ArcGIS 8.x GIS software asset base – computers, large format scanners &, plotters, OFR reports, etc.
- Serving data and scanned geologic maps on *via* Internet and ArcIMS,
- National database experience (NGMDB)
- Cash strapped (salaries and operations)
- Limited staff available (temporary staff needed to make substantial advances – nearby university student 'pool')
- Holder of many paper maps (e.g., mica and feldspar), gold, etc., dating from 1896
- Limited current staff time
- Server approaching limits
- LISTSERVE ? to facilitate communication

Assets and challenges, cont'd

- Field verification of database locations needed
- Field investigation of selected Piedmont sites with known subsurface workings needed
- Resources needed to support field work and confirm locations
- Ground penetrating radar (GPR) equipment needed
- Other subsurface investigation tools needed