Something Doesn't Look Quite Right!

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What's Up With *That?*

Hitting the Life Alert button is not going to work!

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Background

- Building ~50% complete
- Has my crane been moved?
- One side of the structure settling

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What's Up With *That?*

The Players!

- Owner
- Attorneys
- Lenders
- Investors
- Insurance Cos.
- NC Brownfields Program
- Underground Injection Control Program
- Hazardous Waste Program
- Geotechnical Engineers
- City of Raleigh
- Mid-Atlantic

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The Solution

- Install over 1,200 micro-piles to shore up the structure
- Conduct the work concurrently with on-going construction
- Efficiently manage the environmental media

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Environmental Challenges

- Drilling through VIMs system
- Generation of hazardous waste?
  - Drilling water
  - Drilling mud/sludge
- Disposal of IDW
- Repair of VIMs system
- $$$$$$$$$$$$$

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Environmental Solutions

- Can IDW be classified as non-hazardous?
- Find ways to minimize waste generation
- Find cheaper disposal options for IDW
- Minimize disruption to construction

Waste Minimization

- Identify 12 adjacent borings (one shift, one rig)
- Reuse/recycle the mud/water from this set of borings does not constitute cross contamination or introducing contamination
- Received NCBP and NCDEQ approval

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The Process

- Drilling mud pumped through flocculent system or silt bag system.
- Water was then pumped to a 5,000-gallon tank.
- Driller pumped water from tank to rig to complete the recycling loop.

The Process

- Silt bags and mud were characterized and transported off site for disposal
- Water was disposed of via a POTW permit and off-site

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What About the VI Issue?

- How do we ensure the system is salvageable?
  - Smoke tests
  - Pressure testing
  - Resized blowers
  - Post-construction & Pre-occupancy testing

Post Occupancy

- Sampling plans approved by NCBP
- Sub-slab and indoor air (canisters and radiellos)
- Flow and pressure differential readings

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Results

- Amount of IDW required disposal reduced by ~75%
- Significant reduction in costs for disposing of water
- Minimal disruption of micro-pile installation and construction process

Secrets to Success

- Effective Communication
- Think outside the box (innovation)
- Help regulators find a way to say "yes"

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Questions