



## SOLIDIFICATION: FACTORS AND ANALYSIS

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# To Solidify or not to Solidify?

## FACTORS TO CONSIDER

- Amount of waste generated
- Rules and regulations of disposal
- Disposal cost at site
- Logistics
- Equipment and personnel
- Solidification material
- Non-productive time (NPT)



## WASTE GENERATION

- HDD
  - Hole diameter<sup>2</sup>/ 24.52
  - 1 CY = 202 gallons
- Daylighting spoils
- Excavation spoils



## RULES AND REGULATIONS OF DISPOSAL

- Federal, state, and local regulations
- Client mandates
- How can the drilling waste be disposed?
- How is the drilling waste classified?
- Are there specific disposal site requirements?
- What disposal sites can accept the waste?



## •DISPOSAL COST AT SITE

- How much does it cost to dispose of drilling waste at the sites selected?
- Is the cost different for liquid waste compared to solid waste?
- Are there limitations to the quantity that can be accepted?



## • LOGISTICS

- How long does it take for transportation to disposal site back to job site?
  - May not be a constant
- Is there a centralized location for consolidation and what does it cost?
- What does a dump truck cost compared to a vac truck?

## • EQUIPMENT AND PERSONNEL

- What is the cost of equipment required for solidification?
- What does it cost for personnel to operate that equipment?
- \*\*\*\*\*ADEQUATE MIXING OF SOLIDIFICATION MATERIAL IS KEY\*\*\*\*\*



## • SOLIDIFICATION MATERIAL

- Organic and Inorganic
- Organic – less expensive per pound but can add significant volume
  - Sawdust, wood pellets, grasses, corn cob/husk
  - Regionally influenced
- Inorganic – more expensive per pound but add less volume
  - Bentonite, polymer, fly ash, lime/cement
- Nature of the slurry has a lot of impact on solidification – Pilot Testing!



## • NON-PRODUCTIVE TIME (NPT)

- Stoppage of progress on a job site
- Project delays

## •DISPOSAL EXAMPLE — VAC TO DISPOSAL SITE

- 3<sup>rd</sup> party vac service – \$200-\$250 / Hour
- Round trip time to disposal site – 1 to 3 hours depending on traffic
- Cost of disposal at disposal site per 10 yards - \$150
- Total cost - \$350 to \$900 to dispose of 10 yards

## •DISPOSAL EXAMPLE — SOLIDIFICATION

- 3<sup>rd</sup> party vac service to solidification setup – \$200-\$250
- Round trip time to solidification site – 1 Hour
- Equipment and personnel per 10 yards - \$75
- Solidification material – 1% BW – \$340
- Dump truck to haul solidified waste to disposal site - \$125
- Cost of disposal at dump site per 10 yards - \$150
- Total cost - \$890 to \$935 to dispose of 10 yards

## • LIQUID VS SOLID DISPOSAL

- In this scenario, it is more cost effective for contractor to dispose of liquid waste
- **However, this scenario does not factor in NPT, disposal site closures due to rain events, temporary road closures, or cost of project delay**
- Solidification brings a level of consistency and flexibility that should be accounted for
- Developing solidification expertise can help overcome unforeseen complications



## • DON'T GO IT ALONE!

- Ask suppliers/manufacturers to help you find a solution!



# • CONTACT INFORMATION

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