

Discrete Depth Sampling: Impact of the Right Solution

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Presentation Overview

- Challenge: Discrete Depth Sampling (DDS)
- Solution: HydraSleeve™
- Supporting Evidence: Case Studies and Regulatory Acceptance
- Conclusions

Challenge: Discrete Depth Sampling (DDS)

- DDS is used to help characterize impact
- DDS at Phoenix, MD project
- Defining DDS intervals
- Tools used: FLUTe, Passive Bag Samplers, Low Flow Sampling... and HydraSleeveTM

Solution: HydraSleeve™

- Passive bag sampler
- Designated discrete depth
- Ambient equilibrium
- Any location within the screened interval



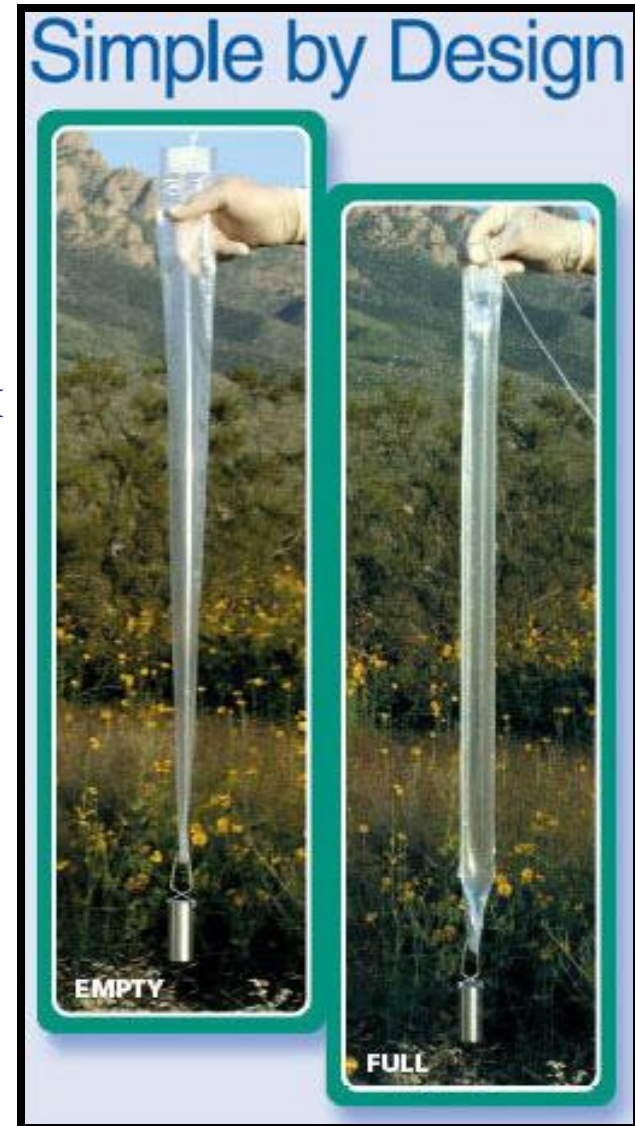
HydraSleeve™: Field Use

○ Three Step Process

#1 - Deployment of HydraSleeve™

#2 - Retrieval of HydraSleeve™

#3 - Sample Collection



HydraSleeve™: Equipment Needed



Step #1 – Deployment of HydraSleeve™



Step #1 – Deployment of HydraSleeve™



Step #2 – Retrieval of HydraSleeve™



Step #2 – Retrieval of HydraSleeve™



Step #3 – Sample Collection from HydraSleeve™

- As easy as opening a Capri Sun...



Step #3 – Sample Collection from HydraSleeve™



Step #3 – Sample Collection from HydraSleeve™



HydraSleeve™ vs. FLUTE Sampling

○ FLUTE =

Flexible

Liner

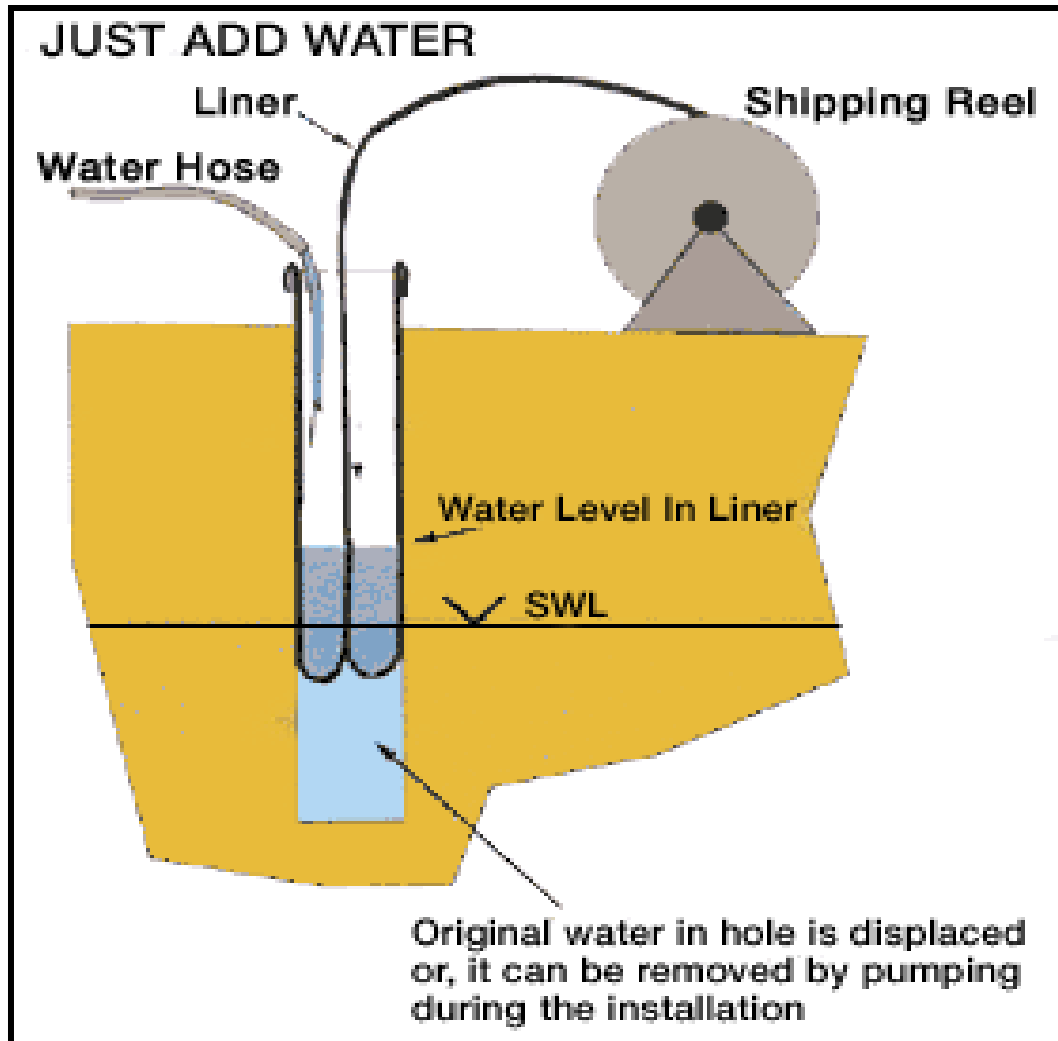
Underground

Technology

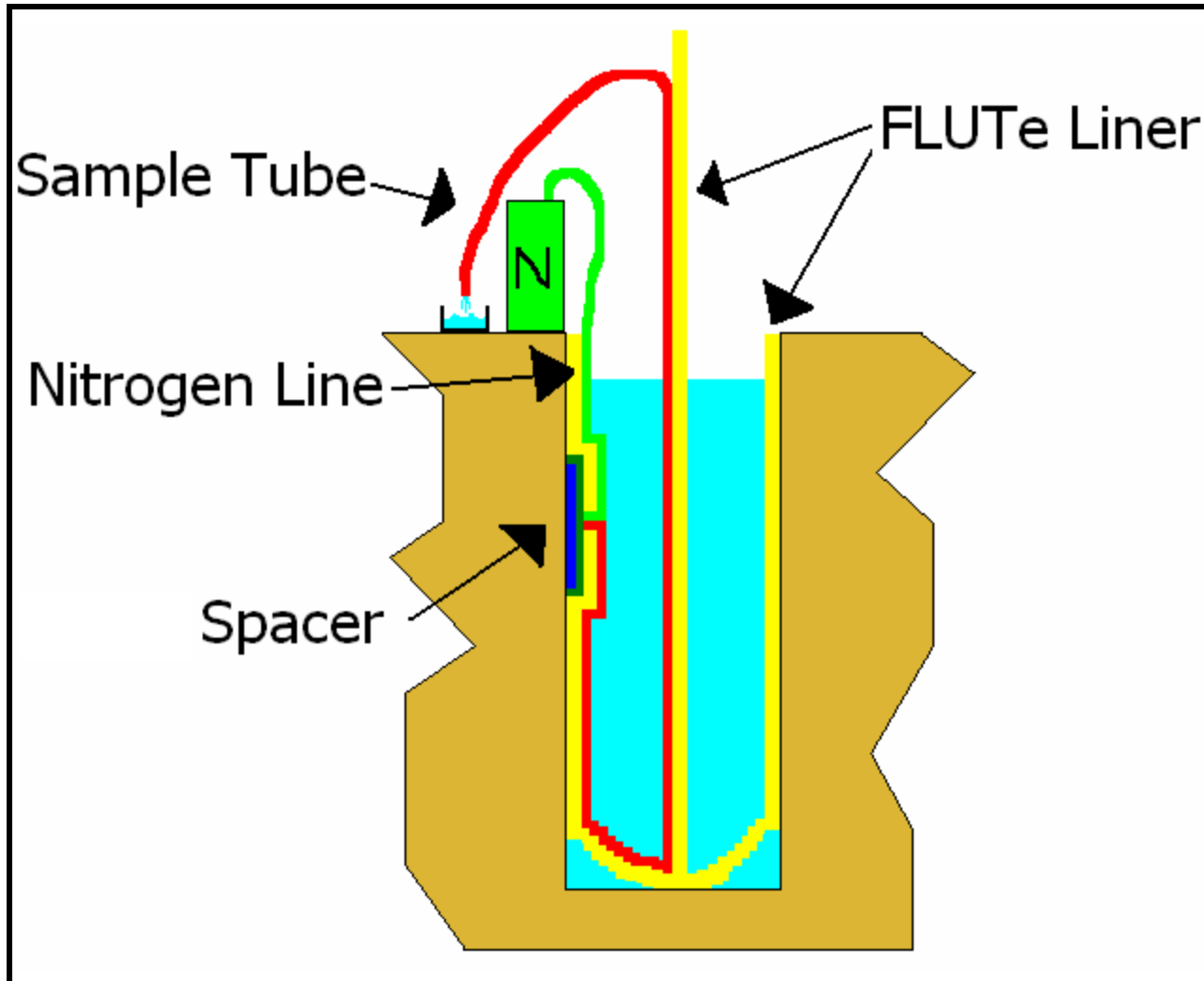
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HydraSleeve™ vs. FLUTe Sampling



HydraSleeve™ vs. FLUTE Sampling



HydraSleeve™ vs. FLUTe Sampling:

HydraSleeve™	FLUTe
Cost Effective ≈ \$25 per HydraSleeve™	Cost Prohibitive ≈ \$50,000 per FLUTe
Intervals can be changed	Intervals are permanent
Eliminates (reduces) purge water	Creates purge water (must purge 3 volumes)
Easy to use	Requires training
Fast sample collection	Sample collection time slowed due to purging
No extra equipment needed	Nitrogen tanks needed

Additional Advantages to Using HydraSleeve™

- Sample for all compounds
- Slow recharge wells
- Lower turbidity than purge and sample
- No decontamination between wells
- Small and convenient for shipping and storing

Case Studies: Phoenix, MD

- Collection of 51 groundwater samples:
 - 11 monitoring wells
 - 3 to 8 HydraSleeves™ per monitoring well
 - 3 consecutive quarters

- Low-mixing, highly reproducible analytical data:
 - **Same detections in the same intervals**
 - **Same NDs in the same intervals**

Case Studies: Additional Studies

- Study on sample “mixing” using HydraSleeve™ - *GeoInsight*
- Study comparing low-flow and Hydrasleeve™ sampling - *Bryan Sladky PECO Energy and John Robert, P.G. Jacques Whitford Company*
- Study comparing traditional purge and sample and HydraSleeve™ sampling - *Kansas Department of Health and the Environment*
- Several Other Studies



Regulatory Acceptance

- MDE requested SOP guidance.
- There are no states that specifically prohibit the use of any passive sampling technology
- Kansas, New Jersey, and Delaware

Conclusions

- HydraSleeve™ results in decreased field labor and project management costs
- Best possible solution to our client
- HydraSleeve™ technology has proven to be the RIGHT solution!

GeoInsight: HydraSleeve™ Website

HYDRASleeve™

www.nopurgesampling.com



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