



**Curtis & Tompkins Laboratories**

FULL SERVICE ENVIRONMENTAL ANALYTICAL TESTING

# Soil Gas Sampling with a Helium Leak Detection Shroud

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# Introduction

- a. Leak Detection Options
- b. Helium Leak Detection
- c. Leak Tracer System Design
- d. Use and experience



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# Why Leak Check?

Proof of Sample Integrity

Leaks result in sample dilution

- Leaks in Train Fittings
- Down Well Leaks



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# Leak Testing Options

- Liquid Tracer
  - 2-Propanol (IPA)
    - Qualitative, interferes, raises RL's
- Helium
  - Quantitative, no interference
  - “Pain in the neck”



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# Helium Advantages

- Frequently used for leak detection
- Inert, doesn't interfere with targets
- Easily Measurable
- Allows estimate of dilution





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# Why Build & Rent He Shrouds?

- Our clients asked us
- Design using best available technology
- Lab resources required
  - cleaning, maintenance, testing, validation



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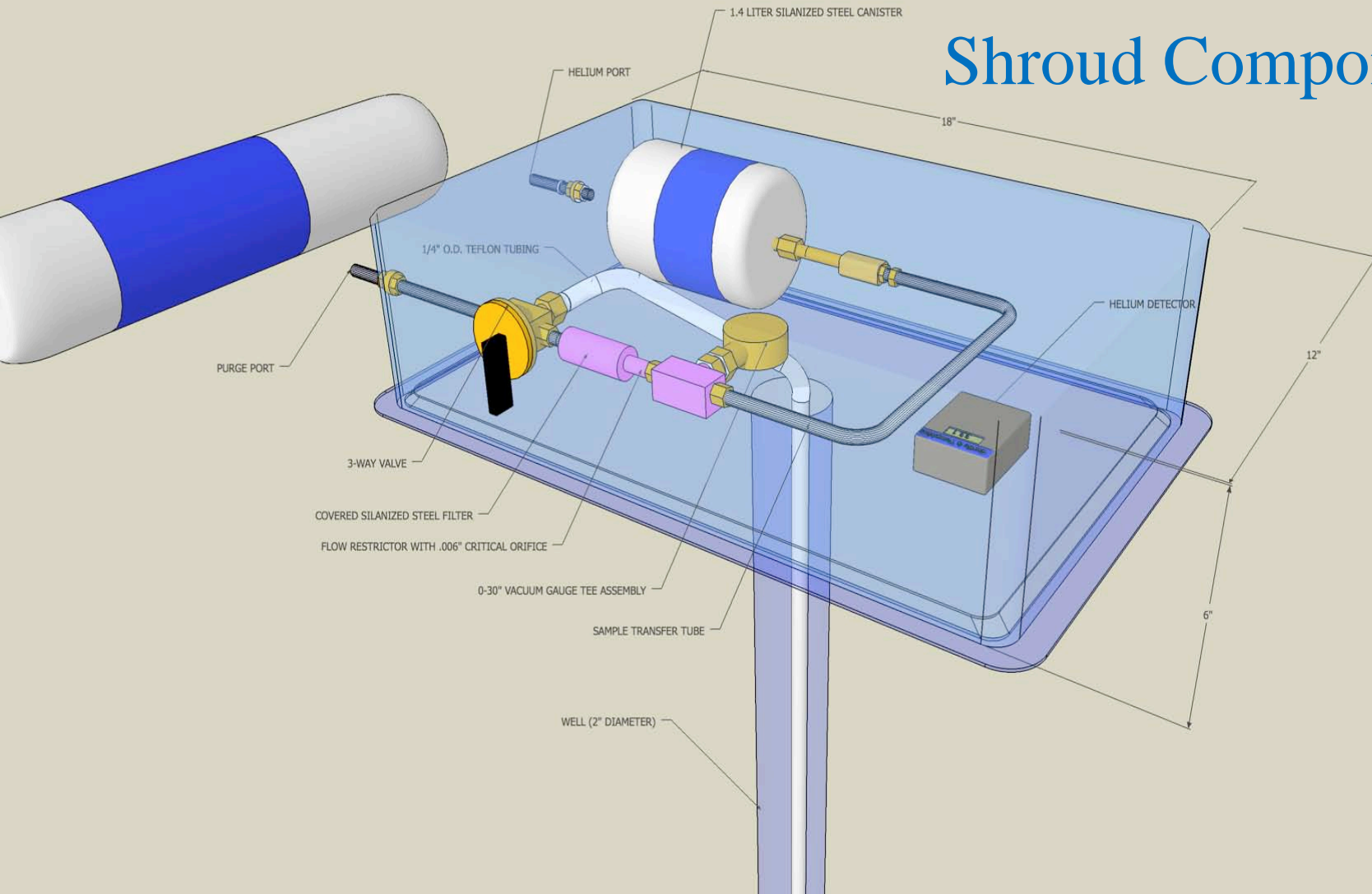
# Design Considerations

- Guidance compliant
- Small: Packaging & Transport
- Minimize field tubing connections
- *Real Time* leak detection before sampling
- Scalable: 12 wells/8 hours
- Low Cost & Simple to Use



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# Shroud Components







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# Helium Detectors

- Flow Through and Diffusion Cell
  - Diffusion Detector inside shroud
  - Flow Thru Detector in purge line
- Small, lightweight, portable, simple
- Battery Powered
- Quick, Accurate, Precise



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# Helium Detectors





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## Costs

- Shroud equipment rental adds \$70 per sample for 8 wells
- \$235 for the first sample
- Additional field labor costs
- What circumstances justify extra costs for a QC procedure?



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## Shroud/Train Prep

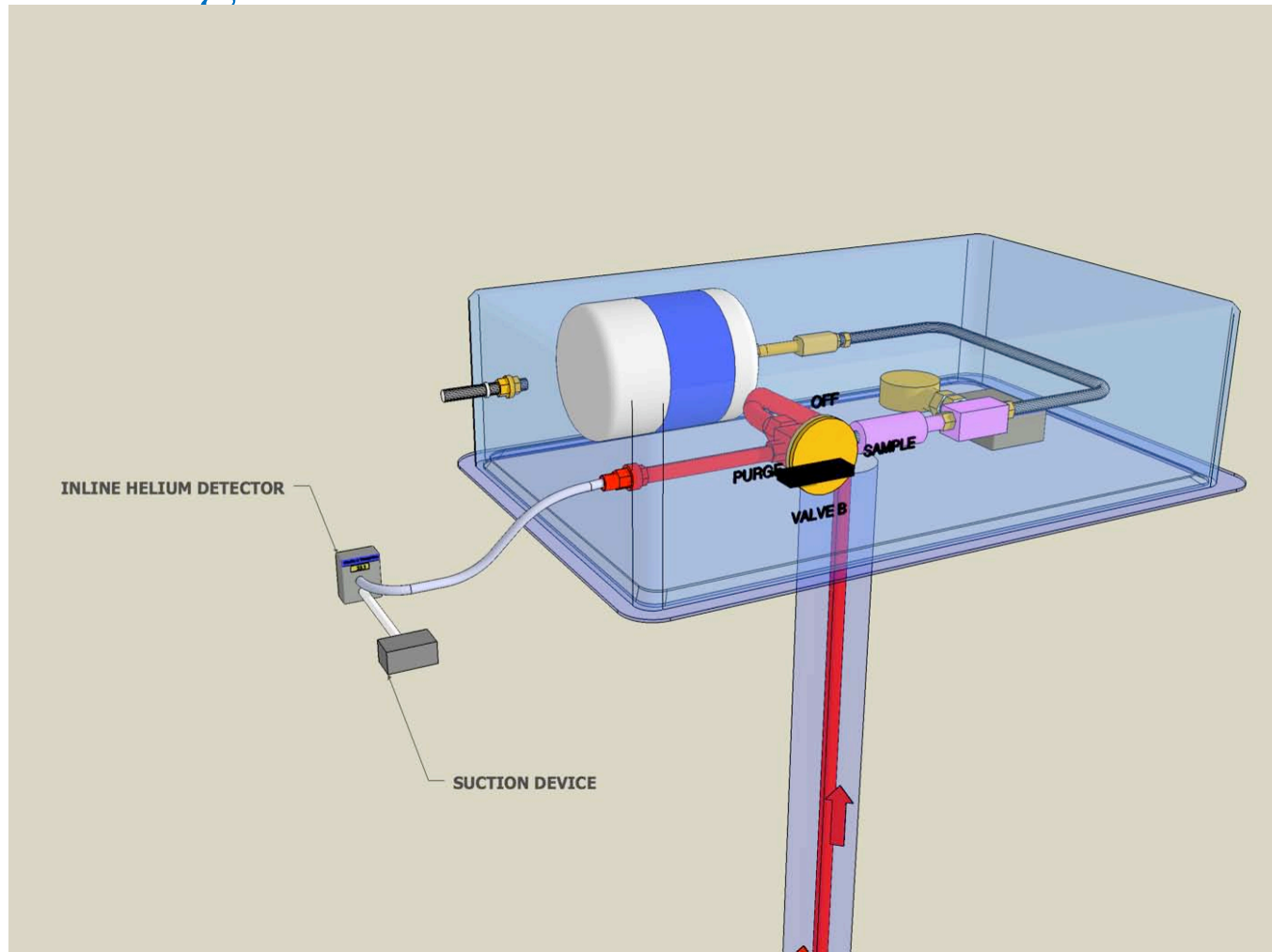
- Disassemble Shroud/Train/Valve
- Clean train with Air/N flow, 60C, 4-8 hrs
- Blank test train with clean lab air, TO-15
- Performance test with TO-15 cal gas mix
- Reassemble Valve, Train, Box
- Leak Test
  - *He Charge & leak detector check fittings*
  - *Vacuum Decay “Shut in” Test*





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## Purge Test with In Line He Detector



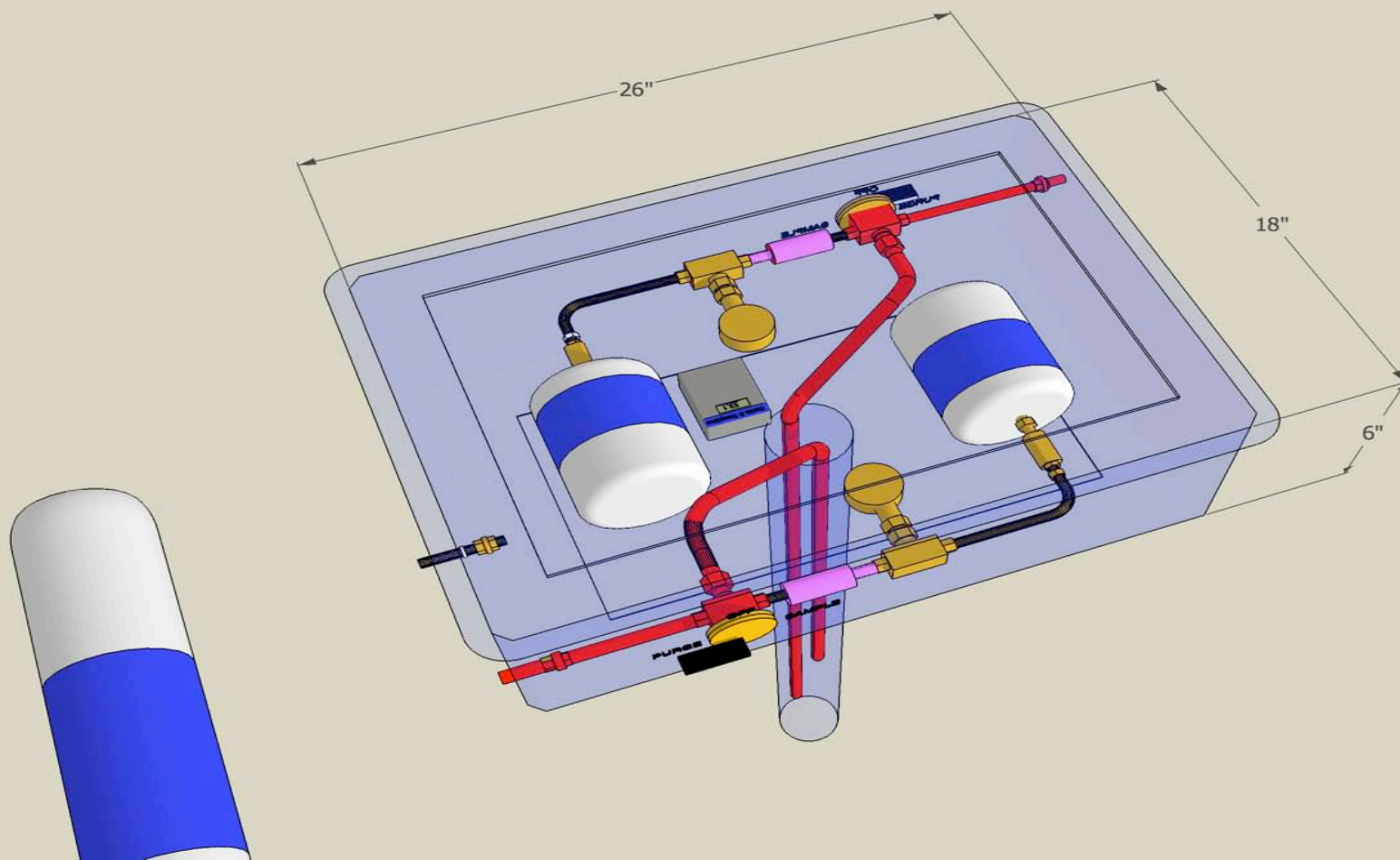




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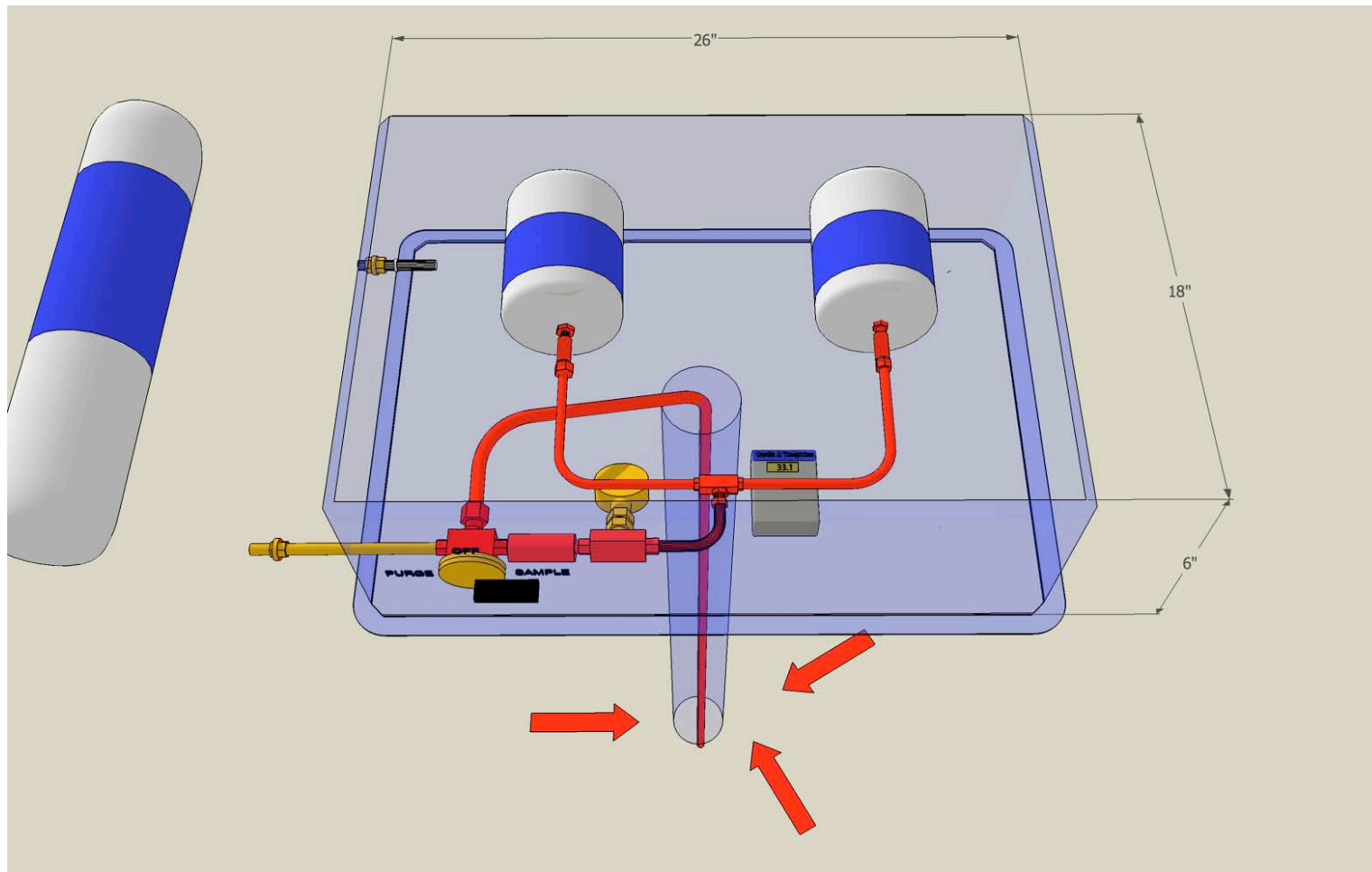
# Dual Depth Sampling Shroud





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# Duplicate Sampling Shroud





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# Acknowledgements

- Blair Okuma and crew @ C&T
- Loi Chau/Alfonso Ang: MACTEC
- Ross Tinline: SVC Environmental
- Heather Wollenburg/Robin Mock: ERRG
- Jeff Schmidt: IRIS Environmental
- Mark Blaisdel: ITSI