Environmental Topic
Subsurface characterization at contaminated sites (Remediation technologies for contaminated sites topic area)

Proposed Project Title
Advanced site characterization tools (ASCT) for better site characterization

Project Deliverables
- Update the 2019 ASCT document to reflect new and improved tools and develop sections on overall investigation design and data interpretation and use.
- Fact sheets
- Online and workshop training building on the workshops completed at Battelle and AEHS, expanded to consider high-resolution site characterization (HRSC) design.

State Team Leaders
1. Team Leaders will be sourced for interest by ITRC.

Proposal Contacts
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Problem Statement
- Advanced site characterization tools are recognized as essential to developing and implementing HRSC but adoption is limited by a lack of guidance on the investigation design and interpretation of the results. The ASCT team developed guidance on the field application of the tools but never developed a training program beyond select videos on particular tools.
- The ASCT document needs to be expanded to develop broad guidelines that integrate the data from advanced site characterization tools into a timely, robust, comprehensive understanding of the site at an appropriate scale to solve problems,
- An ASCT team would develop training on applying ASCT tools to HRSC investigations and using the data in conceptual site models.
- Since the ASCT guidance was published in 2019, remote sensing using drone technology has improved with clearer regulatory guidance and more tools provided for remote sensing platforms. In addition, more tools are available, including time-lapse surface resistivity techniques, The existing guidance needs to be expanded to include the wider universe of tools and provide guidance on how to use the various tools together in a holistic HRSC. Expanding the ASCT guidance to include methods to design HRSC investigations at small commercial facilities like dry cleaners and gas stations would provide state regulators, practitioners, and site owners the tools they need to fully implement HRSC and lead to quicker and more efficient cleanups at these small-scale sites.

Advanced site characterization tools and HRSC are still not routinely used at release investigation and cleanups, particularly small facilities like dry cleaners and gas stations. One reason, as noted in EPA's recent study on HRSC at leaking underground storage tank sites, is the absence of a regulatory framework and understanding on how to apply HRSC information to make decisions at the beginning of release investigations or at ongoing cleanup sites. The other main barrier to using ASCT in characterizations remains the perception of costs: this team will expand on the findings of the 2023 EPA study of the benefits and costs of HRSC to show how the "return on investigation" helps reduce costs overall and allows better and more timely decision making.

This ITRC team will develop tips and frameworks to design investigations and use HRSC information in developing conceptual site models by expanding and further developing the ASCT guidance.

The original ASCT team finalized its guidance and developed short videos to promote and provide an introduction to the web-based tool. The team presented the ASCT guidance via workshops at the 2022 Battelle Chlorinated conference and the 2024 AEHS San Diego conference and will be presenting a workshop at the 2024 Battelle Chlorinated conference. From these trainings it is clear there is interest in updating the ASCT guidance, providing guidance on designing HRSC investigations, and developing a training team to promote the use of the advanced site characterization tools using the guidance and web-based tool.

Additional Information

We propose the team draw on the following information and reach out to past team members and others to help develop the updated guidance and training:

Existing document and resources:

- ITRC ASCT, PVI, LNAPL, Mass Flux documents
- Clu-in High-Resolution Site Characterization Resources and EPA OSRTI Groundwater high-resolution site characterization training
- Expedited Site Assessment Tools for Underground Storage Tank Sites: A Guide for Regulators (EPA 510-B-16-004, October 2016)
- High-Resolution Site Characterization at Petroleum Underground Storage Tank Release Sites: Applicability, Benefits and Costs (April 2023)
- High resolution site characterization guidance for groundwater restoration sites, May 2023 Air Force Civil Engineer Center

Subject Matter Experts likely to be interested

Ed Winner, RGI; Jim Finegan, Liz Simmons, Kleinfelder; Chris Mulry, GES; Curt Stanley, GSI; Joann Dyson, GHD
Randy St Germain, Dakota; Wes McCall, Geoprobe
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