



Soil Treatability Study

Energy Technology Engineering Center • U.S. Department of Energy

Soil Treatability Investigation Group January 31, 2012 Draft Group Memory

Logistics

The Soil Treatability Investigation Group met on Tuesday, January 31, 2012, from 1:00 – 5:00 p.m. in the Community Room at Simi Valley Town Center located at 1555 Simi Town Center Way, Simi Valley, CA. This document serves as a summary of the discussions that occurred.

Participants

The following STIG members participated in the meeting in person: William Preston Bowling, Gloria Bowman, Rick Brandlin, Sharon Lee Ford, Holly Huff, Barbara Johnson, Dawn Kowalski, Betsey Landis, Marie Mason, Lissa Miller, Mark Osokow, Noa Rishe, Chris Rowe, Alan Salazar, Alec Uzemeck, and Jacquie Young.

People who participated via conference call included STIG members Margery Brown, Jackie Curry, Brian Sujata, and Abraham Weitzberg and Al Sorkin (IYB Inc.).

Observers/agency representatives included: Jazmin Bell (US Department of Energy [DOE]), Randy Dean (CH2M Hill), Merrilee Fellows (NASA), Dixie Hambrick (MWH), Stephanie Jennings (DOE), Patricia Johnson (Sandia National Laboratories [SNL]), John Jones (DOE), Yvette LaDuke (California Department of Toxic Substances Control [DTSC]), Christi Leigh (SNL), Charles Newell (GSI Environmental), Roger Paulson (DTSC), Laura Rainey (DTSC), Janis Trone (SNL), John Wondolleck (CDM), and Pete Zorba (NASA).

STIG members who did not attend included: Andy Cano, John Detwiler, Diana Dixon-Davis, David Karchem, Bonnie Klea, John Luker, Jenny Marek, Jim McElvaney, Brian Rogers, Teena Takata, Barbara Tejada, Christina Walsh, Joanne Yvanek-Garb.

Objectives

The January 31st meeting was designed to support discussion about the following topics:

- The experts who participated in the expert survey process
- The scenarios that were presented to the soil remediation experts
- The results of the expert survey process
- Next steps

Welcome and Introductions

John Jones and Stephanie Jennings (DOE) welcomed everyone and thanked them for their willingness to participate in the Soil Treatability Investigation Group (STIG). They introduced

Wendy Lowe (P2 Solutions) who will be serving to facilitate the STIG. All others in attendance introduced themselves.

Expert Survey Process

Christi Leigh (SNL) started by reminding the STIG members about the scope of work that SNL has undertaken: the SNL team has been tasked with recommending a set of technologies that might address the soil contamination in Area IV at Santa Susana Field Laboratory (SSFL). DOE will make the final decision as to what will be done to accomplish cleanup at the site, although the final approval authority will be DTSC's responsibility as that agency is the regulator overseeing the cleanup. It was stressed that the Administrative Order on Consent (AOC) will not allow any contamination to remain on site (it cannot be immobilized or contained). The default for site contamination is excavation. In other words, if no remedial technology can eliminate the contamination in compliance with the cleanup standards established in the AOC, then it must be excavated and disposed elsewhere.

Since the last STIG meeting, SNL developed a set of 14 scenarios to represent the range of soil types, depths, and conditions at the site. The scenarios were presented to 56 experts to solicit their opinions as to what remediation approaches might be useful for conditions such as those presented in the scenarios. The experts included researchers from universities, industry representatives, officials with various state and federal agencies, and SNL personnel.

The experts were asked to consider each of the 14 scenarios and recommend:

- A technology or technology train¹ to address the site contamination
- Rate the effectiveness, reliability/durability, and treatment duration for that recommendation
- Describe why they made that recommendation
- Describe characteristics of the scenario that restricted their choice of technology
- Describe limitations for implementing the recommended technology
- Describe the potential impacts of implementing the technology.

A total of thirteen people have submitted responses to date, including ten SNL staff and three representatives from private industry. These individuals included seven chemical and/or environmental engineers, three hydro-geologists, two geochemists, and one biologist.

Dr. Charles Newell, who had provided a public information session on soil remediation the previous evening, provided a summary of the various technologies available for addressing soil contamination.² He explained that there are four key approaches, including:

- Excavation (dig and haul)
- Treatment and movement to the surface
- Convert through the use of microorganisms or chemicals
- Immobilization.

He went on to briefly explain treatment mechanisms that rely on principles of:

- Physics, including excavation and soil vapor extraction

¹ A treatment train is a series of technologies that are used sequentially to accomplish a series of objectives when no single treatment is available to accomplish all of the objectives

² Dr. Newell's full presentation from 1/30/12 is available at the ETEC website

- Chemistry, including chemical oxidation
- A combination of physics and chemistry, including soil flushing and thermal remediation
- Biology, including bioremediation and phytoremediation.

Dr. Leigh went on to briefly describe the 14 scenarios and the technologies mentioned most often by the experts were revealed (see attached presentation).

In summary, the technologies selected most often by the experts included:

- Soil vapor extraction
- In-situ flushing
- Biostimulation
- Incineration
- Phytodegradation.

She also reviewed the recommended technologies for each type of contaminant as well as the technologies recommended by each expertise type that participated.

The STIG members discussed the results and asked questions to clarify what had been presented.

The SNL team asked the participants whether the response to the survey was adequate or whether additional effort should be undertaken to gain a larger number of responses. The following summarizes a number of points made:

- It would have been nice to get more responses from university staff
- Some responses might yet come in
- SNL could identify technologies that it is already certain it would like to explore further using bench (laboratory) and pilot-scale tests
- SNL might develop a decision making analysis or tree to help determine which technologies are ready for bench-scale or pilot-scale testing
- SNL could proceed to the next steps with the information currently in hand, while continuing to gather more information as possible and/or to focus results
- For additional input from universities, perhaps SNL should invite input from specialists rather than generalists
- SNL might want to interview academics with specific questions to focus the information gathering
- SNL might want to ask for further information from those experts who did respond rather than trying to get more people to respond
- SNL should keep moving and has enough information to proceed
- SNL should not close the door on getting input from those who have not yet responded as those opinions may still come in later
- SNL might want to contact project managers at other DOE sites (for example, Savannah River or Hanford) and interview them for additional information gathering.

Eventually, it was agreed that the STIG is satisfied that the SNL team has obtained a healthy set of recommendations and should be able to proceed with developing its plans for conducting bench and pilot-scale studies.

Meeting Protocols

Wendy Lowe explained that some folks had been unhappy with the selected day and time of meetings upon learning that meetings are expected to be four hours long. She re-pollled the group.

Based on the results of the poll, the group will meet starting at 5:00 p.m. The best days of the week are Wednesday and Thursday. (One more form was submitted after the meeting and it now appears that Thursday evenings are slightly better than Wednesday evenings.)

Next Steps

The next meeting will be scheduled to provide input to SNL in the next steps of their study. It will be scheduled consistent with input received from the STIG members and announced in advance.