

5/9/2018

**United States Army Corps of Engineers – New England District  
Cold Regions Research and Engineering Laboratory (CRREL)  
Restoration Advisory Board**

**Minutes of Meeting #21**

**Wednesday, May 9<sup>th</sup>, 2018  
Richmond Middle School (RMS) Library  
Hanover, New Hampshire**

Attending: Rod Rustad – Amec Foster Wheeler – [Rod.Rustad@woodplc.com](mailto:Rod.Rustad@woodplc.com)  
Scott Calkin – Amec Foster Wheeler – [Scott.Calkin@woodplc.com](mailto:Scott.Calkin@woodplc.com)  
Darrell Moore (Chair) – USACE - [Darrell.A.Moore@usace.army.mil](mailto:Darrell.A.Moore@usace.army.mil)  
Ken Richards – NHDES – [Kenneth.Richards@des.nh.gov](mailto:Kenneth.Richards@des.nh.gov)  
Kristine McDevitt – Community Member – [Kristinemcd@hotmail.com](mailto:Kristinemcd@hotmail.com)  
Glen Gordon - Amec Foster Wheeler – [Glen.Gordon@woodplc.com](mailto:Glen.Gordon@woodplc.com)  
Chief Martin McMillan – Hanover Fire Dept. [Martin.McMillan@hanovernh.org](mailto:Martin.McMillan@hanovernh.org)  
Tony Daigle – SAU 70 – [anthonydaigle@sau70.org](mailto:anthonydaigle@sau70.org)  
Jack Besse - Amec Foster Wheeler – [Jack.Besse@woodplc.com](mailto:Jack.Besse@woodplc.com)

Observing: Terry Harwood – CRREL– [bartlett.harwood@usace.army.mil](mailto:bartlett.harwood@usace.army.mil)  
Gary Pasternak – CRREL  
Larry Cain- USACE – [Larry.Cain@usace.army.mil](mailto:Larry.Cain@usace.army.mil)

Agenda:

- Review/Accept January 17<sup>th</sup>, 2018 Meeting Minutes
- Frost Effects Research Facility Vapor Intrusion Investigation
- Soil Vapor Extraction Pilot Testing – Enhanced Permeability of the Shallow Soils
- Smoke Testing (Round 2) the Main Laboratory
- Status of Feasibility Study and Engineering Evaluation/Cost Analysis Reports
- Public Comments
- Schedule next meeting and adjourn

Items comments and notes:

US Army Corps of Engineers New England District (COE NAE) led by Darrell Moore calls meeting to order at 16:10, minutes from previous meeting are reviewed and accepted.

COE NAE summarizes the meeting agenda, including the FERF Vapor Intrusion (VI) Investigation, Soil Vapor Extraction (SVE) Pilot Testing Enhanced Permeability injections, Smoke Testing of the Main Lab, and an update on the Feasibility Study (FS) and Engineering Evaluation/Cost Analysis (EECA) reports.

Amec Foster Wheeler personnel provide details on FERF investigation. Discusses past uses of the FERF for context. It is noted that TCE may have been used in concrete testing historically, and could be a

potential source within the FERF. Legacy Documents suggest it was a compound called Percol, which contained PCE.

Began looking at FERF in detail in 2016, found higher concentrations in winter/early spring.

Took one day during a barometric low to do an in-depth look at FERF with the Hapsite, including 35 indoor air samples and 3 sub-slab samples. Further in-depth events will take place during high and low-pressure periods.

Amec Foster Wheeler personnel explain there was a clear concentration gradient from east to west within the FERF, and that there was a high sub-slab result below the north-east mechanical room.

Amec Foster Wheeler give an overview of the FERF Soil vapor implant installation plan. Depths for implants will be between 10-75 ft. Will try and tie in SV locations to hit the western portion of the GW/vapor plumes. May end up installing an SVE system depending on results from soil vapor testing.

Chief McMillan questions the specifics of the concrete/TCE (Percol) testing, and what exactly the source was.

NHDES mentions that there is a Lebanon site with TCE contamination he manages where the concrete was the source of contamination, and the concrete came from CRREL.

NHDES brings conversation back to the CRREL site, and Amec Foster Wheeler personnel mention that the CSM suggests a source outside the building creating a VI problem.

Amec Foster Wheeler discusses the next round of smoke testing. Second round will evaluate fixes from previous round of testing, and potentially identify other leaks that may have been masked by larger leaks.

There is discussion of potential future enhancement of permeability of the shallow soils in AOC2 and AOC9. Will look at testing before full scale.

NHDES asks whether the injections might create preferential pathways during the injection process, and reduce the effectiveness of SVE. COE NAE explains that even if it does drop concentrations for the influent to the SVE System initially, the overall effect will create a larger area of impact for each SVE well.

Amec Foster Wheeler gives an explanation of the technology, describing it as a loose sand layer injected at certain depths which promotes airflow through the loose sand.

Amec Foster Wheeler discusses the proposed 3-well clusters as a test set at each AOC to determine effectiveness of technology at CRREL.

NHDES asks about how the injection is controlled. Amec Foster Wheeler explains that the injection is done at a set depth, and will follow the natural layering of the varved soil.

COE NAE goes over upcoming work:

- Draft FS is under NAE review
- EECA finalized last week
- Final RI in June

- Continuing to evaluate VI at FERF, drilling begins around June 6
- SVE pilot testing ongoing

NHDES asks how we include the FERF investigation into the RI – COE NAE suggests it can be included in the supplemental RI for offsite activities. NHDES questions if it could be included in the FS? Amec Foster Wheeler personnel state that as there is no selected remedy at this time, it would be hard to tie into the FS as written. COE NAE states that he can provide more clarity on that once further investigation at the FERF is performed.

COE NAE summarizes the meeting with Dr. Badams and the RMS principal to discuss reducing frequency of RMS sampling. Mrs. McDevitt asks whether that included soil vapor sampling. COE NAE mentions that the SV is not tied into regular RMS sampling, and would be done either annually with synoptic rounds, or driven by proving the effectiveness of SVE.

COE NAE mentions the future testing of Vermont wells that had not been previously samples within radius, and that the future proposal to Vermont will be done once that testing is completed.

NHDES questions whether Sub-slab samples would be reduced at RMS concurrently with Indoor air. COE NAE states that sub-slab samples are collected concurrently with indoor air, and thus would be reduced as well. NHDES asks to clarify the schedule going forward for both soil vapor and sub-slab. COE NAE states there is no set schedule for soil vapor. Sub-slab and indoor air would be twice annual for 2 years, and then would reduce to once per year thereafter, and determine which season would be more representative once sampling is reduced to once per year.

NHDES requests an informal plan (nonbinding) for RMS sampling going forward to hand off.

Mrs. McDevitt mentions the detection by Dartmouth's consultant at a Fletcher circle house which was not replicated in further testing is still perceived as a problem by the public, and could be a point of information to try to get out.

Meeting adjourned at 17:20