

# TECHNICAL MEMORANDUM

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**To:** Nevada Environmental Response Trust

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**Cc:** Nevada Division of Environmental Protection  
United States Environmental Protection Agency

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**From:** Dan Pastor and Dana Grady

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**Date:** February 19, 2018

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**Subject:** Seep Well Field Area Bioremediation Treatability Study Progress Update

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At the direction of the Nevada Environmental Response Trust (NERT or Trust), Tetra Tech, Inc. (Tetra Tech) has prepared this memorandum which summarizes Tetra Tech's progress during January 2018 toward successfully implementing the Seep Well Field (SWF) Area Bioremediation Treatability Study.

## Task Progress Update: January 2018

### Task M11 – Seep Well Field Area Bioremediation Treatability Study (SWFTS)

- Task Leader – Dana Grady/Dan Pastor
- Current Status
  - The second injection event began on January 22, 2018 and will be completed in February. During this event, a designed carbon substrate solution was injected into 16 of the 25 injection wells during the week of January 22 – 29. Injection wells that were selected to receive carbon substrate were determined based on several factors including, but not limited to, total organic carbon (TOC) concentrations observed in the injection wells during the most recent sampling event, results of perchlorate, chlorate, nitrate, and TOC in downgradient monitoring wells during the December sampling event, groundwater flow directions, and injection pressures and flow rates observed during the first injection event performed in August and September 2017. The carbon/amendments and associated quantities included approximately 7,700 gallons of emulsified oil substrate (EOS<sup>®</sup>) and 50 pounds of sodium sulfite diluted with 30,800 gallons of extracted groundwater for a dilution ratio of 1 part EOS<sup>®</sup> : 4 parts water.
  - Following the addition of the carbon substrate solution, distribution water is being injected to enhance subsurface distribution within the injection well transects. The source of the distribution water and dilution water used during carbon injections has been and will continue to be groundwater extracted from the select 4-inch monitoring wells located upgradient of the injection well transects. Final quantities of distribution water will be reported in the February monthly progress report once the second injection event activities have been completed.

- Slug testing was performed the week of January 15 on select injection and monitoring wells to establish conditions prior to the second injection event.
- No groundwater sampling was performed during January 2018 due to slug testing and injection activities. Groundwater sampling will resume in February to evaluate the effects of the second injection event.
- Schedule and Progress Updates
  - This task remains on schedule.
  - The second injection event will be completed in February.
  - The next groundwater sampling event is scheduled for the week of February 19 – 23.
- Health and Safety
  - There were no safety incidents related to Task M11 during January 2018.

## CERTIFICATION

### Seep Well Field Area Bioremediation Treatability Study Progress Update

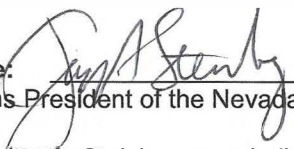
Nevada Environmental Response Trust Site  
(Former Tronox LLC Site)  
Henderson, Nevada

#### Nevada Environmental Response Trust (NERT) Representative Certification

I certify that this document and all attachments submitted to the Division were prepared at the request of, or under the direction or supervision of NERT. Based on my own involvement and/or my inquiry of the person or persons who manage the systems(s) or those directly responsible for gathering the information or preparing the document, or the immediate supervisor of such person(s), the information submitted and provided herein is, to the best of my knowledge and belief, true, accurate, and complete in all material respects.

Office of the Nevada Environmental Response Trust

Le Petomane XXVII, not individually, but solely in its representative capacity as the Nevada Environmental Response Trust Trustee

*not individually, but solely as Pres. JT*  
**Signature:**  \_\_\_\_\_, not individually, but solely in his representative capacity as President of the Nevada Environmental Response Trust Trustee

**Name:** Jay A. Steinberg, not individually, but solely in his representative capacity as President of the Nevada Environmental Response Trust Trustee

**Title:** Solely as President and not individually

**Company:** Le Petomane XXVII, Inc., not individually, but solely in its representative capacity as the Nevada Environmental Response Trust Trustee

**Date:** 2/1/18

## CERTIFICATION

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I hereby certify that I am responsible for the services described in this document and for the preparation of this document. The services described in this document have been prepared in a manner consistent with the current standards of the profession, and to the best of my knowledge, comply with all applicable federal, state, and local statutes, regulations, and ordinances. I hereby certify that all laboratory analytical data was generated by a laboratory certified by the NDEP for each constituent and media presented herein.

**Description of Services Provided:** Seep Well Field Area Bioremediation Treatability Study Progress Update, Nevada Environmental Response Trust Site, Henderson, Nevada.



2/19/2018

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**Kyle Hansen, CEM**  
Field Operations Manager/Geologist  
Tetra Tech, Inc.

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Date

Nevada CEM Certificate Number: 2167  
Nevada CEM Expiration Date: September 18, 2018