

TECHNICAL MEMORANDUM

To: Nevada Environmental Response Trust

Cc: Nevada Division of Environmental Protection

From: Dan Pastor and Dana Grady

Date: September 26, 2017

Subject: Seep Well Field Area Bioremediation Treatability Study Progress Update

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 made during August 2017 toward successfully implementing the Seep Well Field (SWF) Area Bioremediation Treatability Study.

Task Progress Update: August 2017

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

- Task Leader – Author
- Current Status
 - Batch EOS[®] adsorption and desorption tests have been completed and the results are currently being finalized to develop Langmuir model-based isotherms for both the alluvium and UMCf soils. Initial analyses of results indicate that the UMCf adsorbs more EOS[®] compared to the alluvium for the same amount of soil, which suggests that EOS[®] may last longer in the UMCf and require less frequent injections. The results of the batch adsorption tests were used to design and set up the flow-through column adsorption/desorption tests, which are currently in operation and expected to last approximately six weeks. Initial results of the column tests will be provided as they become available in monthly updates submitted by UNLV to Tetra Tech.
 - A request was sent to the Southern Nevada Water Authority (SNWA) to obtain permission to sample monitoring well COH-2B, which is located approximately 900 feet downgradient of the injection well transects and appears to be a useful supplemental monitoring point. SNWA approved this request on July 26, 2017, and monitoring well COH-2B was sampled on August 9, 2017.
 - The Water Appropriations Permit was received on August 15, 2017.
 - The first injection event began on August 21, 2017 and was completed on September 11, 2017. A summary of injection activities and total quantities injected will be presented in the September 2017 Progress Update Memo.

- Schedule and Progress Updates
 - Task remains on schedule.
 - Injections were completed on September 11, 2017.
 - The effectiveness monitoring program began the week of September 18, 2017 and will consist of four weekly groundwater sampling events.
- Health and Safety
 - There were no safety incidents related to Task M11 during August 2017.

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

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: _____

CERTIFICATION

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



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

9/26/2017

Date

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