

MEMO

Date **November 15, 2018**
To **Nevada Environmental Response Trust**
From **John Pekala, Scott Warner, and Chris Ritchie**
Copy to **Nevada Division of Environmental Protection**
Subject **United States Environmental Protection Agency**
Galleria Drive ZVI-Enhanced Bioremediation Treatability
Study Monthly Progress Report

TASK PROGRESS UPDATE: SEPTEMBER 2018

At the direction of the Nevada Environmental Response Trust (NERT or Trust), Ramboll US Corporation (Ramboll) has prepared this memorandum which summarizes Ramboll's progress during September 2018 toward successfully implementing the Galleria Drive ZVI-Enhanced Bioremediation Treatability Study.

TASK M18 – GALLERIA DRIVE ZVI-ENHANCED BIOREMEDIATION TREATABILITY STUDY

- Task Leaders – Scott Warner / Chris Ritchie
- Current Status
 - Phase 1 of the treatability study is underway. The pre-design field investigation as specified in the work plan is complete; bench-scale testing is in progress. Phase 2 (design and implementation of a field test) will be proposed in early 2019 as part of a forthcoming Work Plan Addendum.
 - Column testing is underway. Two test columns have been packed and are currently operating to test reduction of nitrate, chlorate, and perchlorate under dynamic, site-simulated conditions. One column is testing ZVI alone and the other column is testing ZVI with added organic carbon. Preliminary results indicate that in both columns nitrate and chlorate are rapidly removed. Also, while perchlorate removal has been observed in the column with added organic carbon, it has not yet been observed in the ZVI-only column. Data collection is ongoing.
- Schedule and Progress Updates
 - Field work related to the pre-design field investigation as specified in the work plan is complete. Additional deeper investigation has been proposed and will be submitted in a forthcoming work plan modification.
 - Bench-scale testing is expected to continue through November 2018.

- This task initially had a work plan addendum scheduled for submittal at the end of August 2018. To allow for additional time necessary for the completion of column tests due to analytical interferences encountered prior to column startup, we now anticipate submittal of a work plan addendum in early 2019.
- Health and Safety
 - There were no safety incidents during September 2018.

Galleria Drive ZVI-Enhanced 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: 11/15/18

Galleria Drive ZVI-Enhanced Bioremediation Treatability Study Progress Update

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

Responsible Certified Environmental Manager (CEM) for this project

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: Prepared Galleria Drive ZVI-Enhanced Bioremediation Treatability Study Progress Update, Nevada Environmental Response Trust Site, Henderson, Nevada



November 15, 2018

John M. Pekala, PG
Principal

Date

Certified Environmental Manager
Ramboll Environ US Corporation
CEM Certificate Number: 2347
CEM Expiration Date: September 20, 2020