

MEMO

Date **June 22, 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 Road ZVI-Enhanced Bioremediation Treatability
Study Monthly Progress Report

Task Progress Update: May 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 May 2018 toward successfully implementing the Galleria Road ZVI-Enhanced Bioremediation Treatability Study.

Task M18 – Galleria Road ZVI-Enhanced Bioremediation Treatability Study

- Task Leader – Scott Warner / Chris Ritchie
- Current Status
 - Phase 1 of treatability study (pre-design investigation and bench-scale testing) is underway. The Phase 1 findings and resulting Phase 2 treatability study design will be presented in the third quarter 2018 to NDEP, EPA and the NERT Stakeholder's, followed by third-party review and submittal of the Galleria Road ZVI – Enhanced Treatability Study Work Plan Addendum.
 - 2 (design and implementation of a field test) will be proposed later in 2018.
 - Survey of four monitoring well locations was performed on May 15th (ES-33, ES-34, ES-35, and ES-36). Survey coordinates, surface elevations (to top of monitoring well casing) and groundwater elevations are included in Table 2.
 - All seven monitoring wells were sampled in accordance with the work plan on May 23 and May 25.
 - Slug testing has been completed on three of seven monitoring wells (ES-33, ES-35, and ES-36) during the week of May 28th.
 - Bench-scale testing continued at the University of Nevada Las Vegas (UNLV) through the month of May. Batch tests using two different grain sizes of ZVI have been performed. A third grain size of ZVI will be batch tested starting June 20.
- Schedule and Progress Updates

- This task remains on schedule.
- The remaining three monitoring wells (ES-37, ES-38, and ES-39) will be surveyed in June with data available in the June progress report.
- The remaining four monitoring wells (ES-34, ES-37, ES-38, and ES-39) will be slug tested the week of June 11.
- Single-borehole dilution testing and downhole Nuclear Magnetic Resonance (NMR) testing will be completed in June.
- Health and Safety
 - There were no safety incidents related to Task M18 during May 2018.

Attachments

Table 1 – Phase 1 Pre-Design Investigation Soil Boring Summary (Preliminary Information)

Table 2 – Phase 1 Pre-Design Investigation Monitoring Well Summary (Preliminary Information)

Figure 1 – Phase 1 Pre-Design Investigation Boring and Monitoring Well Locations (Preliminary Information)



Galleria Road 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

not individually, but solely as NERT

Signature: Jay A Steinberg, 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: 6/20/18

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



June 22, 2018

John M. Pekala, PG
Principal

Date

Certified Environmental Manager
Ramboll Environ US Corporation
CEM Certificate Number: 2347
CEM Expiration Date: September 20, 2018

TABLE 1: PHASE 1 PRE-DESIGN INVESTIGATION SOIL BORING SUMMARY (Preliminary Information)

Nevada Environmental Response Trust Site

Henderson, Nevada

Boring ID	Boring Total Depth (ft bgs)	Northing (meters)	Easting (meters)	Sample Depths (ft bgs)
ESB-19	35	8146484.332	253179.3197	10, 20, 30
ESB-20	40	8146563.872	253340.684	10, 20, 30, 40
ESB-21	40	8146599.838	253540.2664	10, 20, 30, 40
ESB-22	45	8146535.089	253723.9304	10, 20, 30, 40
ESB-23	45	8146751.406	253647.4086	10, 20, 30, 40
ES-33 (Pilot)	120	8146655.727	253194.3672	10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 40, 50, 60, 70, 80, 90, 100, 110, 120
ES-34 (Pilot)	120	8146673.622	253379.0012	10, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 40, 50, 60, 70, 80, 90, 100, 110, 120
ES-35 (Pilot)	120	8146712.877	253535.9339	10, 20, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 50, 60, 70, 80, 90, 100, 110, 120
ES-36 (Pilot)	120	8146742.077	253750.9373	10, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 50, 60, 70, 80, 90, 100, 110, 120

Notes:

ft bgs - feet below ground surface

Pilot - Soil boring associated with corresponding monitoring well. Drilled approximately 5 feet downgradient from monitoring well.

TABLE 2: PHASE 1 PRE-DESIGN INVESTIGATION MONITORING WELL SUMMARY (Preliminary Information)

Nevada Environmental Response Trust Site

Henderson, Nevada

Monitoring Well ID	Installation Date	Northing (meters)	Easting (meters)	Elevation (ft amsl)	Total Depth (ft bgs)	Screen Length (ft)	Screened Interval (ft)	Depth to Groundwater (ft)	Groundwater Elevation (ft amsl)
ES-33	4/14/2018	26727819.66	830688.49	1626.39	33	15	18 to 33	31.04*	1595.35
ES-34	4/17/2018	26727878.60	831294.61	1630.03	41	15	26 to 41	DRY	-
ES-35	4/15/2018	26727994.68	831812.43	1628.35	45	15	30 to 45	28.23*	1600.12
ES-36	4/17/2018	26728075.74	832531.15	1630.83	45	15	30 to 45	34.28*	1596.55
ES-37	4/27/2018	TBD	TBD	TBD	37	15	22 to 37	29.56*	TBD
ES-38	4/27/2018	TBD	TBD	TBD	40	15	25 to 40	28.30*	TBD
ES-39	4/30/2018	TBD	TBD	TBD	45	15	30 to 45	41.00*	TBD

Notes:

*Depth to water following completion of well installation. Depth to water collected before development.

ft - feet

ft bgs - feet below ground surface

ft amsl - feet above mean sea level

TBD - To Be Determined

Survey data still pending for wells highlighted in yellow.



Legend

- ◆ Deeper Boring
- ◆ Shallow Boring
- ◆ 4-inch diameter monitoring well

**Phase 1 Pre-Design Investigation Boring and Monitoring Well Locations
(Preliminary Information)**

Galleria Road ZVI-Enhanced Bioremediation Treatability Study
Nevada Environmental Trust Site; Henderson, Nevada

**FIGURE
1**

