

# 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:** Dana Grady

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**Date:** November 30, 2022

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**Subject:** Las Vegas Wash ZVI-Enhanced Bioremediation Treatability Study Monthly Progress Report

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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 to summarize Tetra Tech's progress during October 2022 toward successfully implementing the Las Vegas Wash Zero-Valent Iron (ZVI)-Enhanced Bioremediation Treatability Study.

## Task Progress Update: October 2022

### Task M18 – Las Vegas Wash ZVI-Enhanced Bioremediation Treatability Study

- Current Status
  - The first phase of pre-construction field activities, which included the installation and development of nine pre-construction pilot wells, began on August 17, 2022 and was completed on August 31, 2022. The second phase of pre-construction field activities, which included the installation and development of 16 additional pre-construction pilot wells to confirm final alignment, configuration, and terminal depths of the Test 1a/1b and Test 2a/2b/2c ZVI installations, began on September 21, 2022 and was completed on October 11, 2022. A layout map and construction details for the pilot wells are provided on Figure 1 and in Table 1.
  - Groundwater sampling of the 25 newly installed pre-construction monitoring wells and six existing monitoring wells (LVWPS-MW102A/B, LVWPS-MW107A/B/C, and ZTS-MW113) was performed from October 17, 2022 to October 25, 2022. Groundwater analytical results will be provided in future monthly progress reports as the data are received from the laboratory.
  - Aquifer testing, including both borehole dilution and slug testing, of newly installed wells began on October 26, 2022 and is ongoing.
  - The drainage study for the grading permit application package was submitted to the City of Henderson on October 24, 2022.
- Schedule and Progress Updates
  - Comments on the drainage study are expected to be received from City of Henderson by November 17, 2022. Following City of Henderson approval, the drainage study will be submitted

to the Clark County Regional Flood Control District (CCRFCD) for review and approval. Concurrent with CCRFCD review of the drainage study, the grading permit application package will be submitted to City of Henderson.

- Initial site preparation activities including road improvements, staging area construction, and benching activities will begin immediately following issuance of the grading permit.
- Health and Safety
  - There were no health and safety incidents related to Task M18 during October 2022.

## CERTIFICATION

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### Las Vegas Wash ZVI-Enhanced Bioremediation Treatability Study Monthly Progress Report

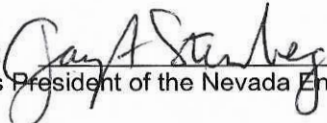
**Nevada Environmental Response Trust Site  
(Former Tronox LLC Site)  
Henderson, Nevada**

#### 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 as President of the Trust**  
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:** 11/30/22

## 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:** Prepared Las Vegas Wash ZVI-Enhanced Bioremediation Treatability Study Monthly Progress Report.



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**David S. Wilson, CEM**  
Principal Engineer  
Tetra Tech, Inc.

November 30, 2022

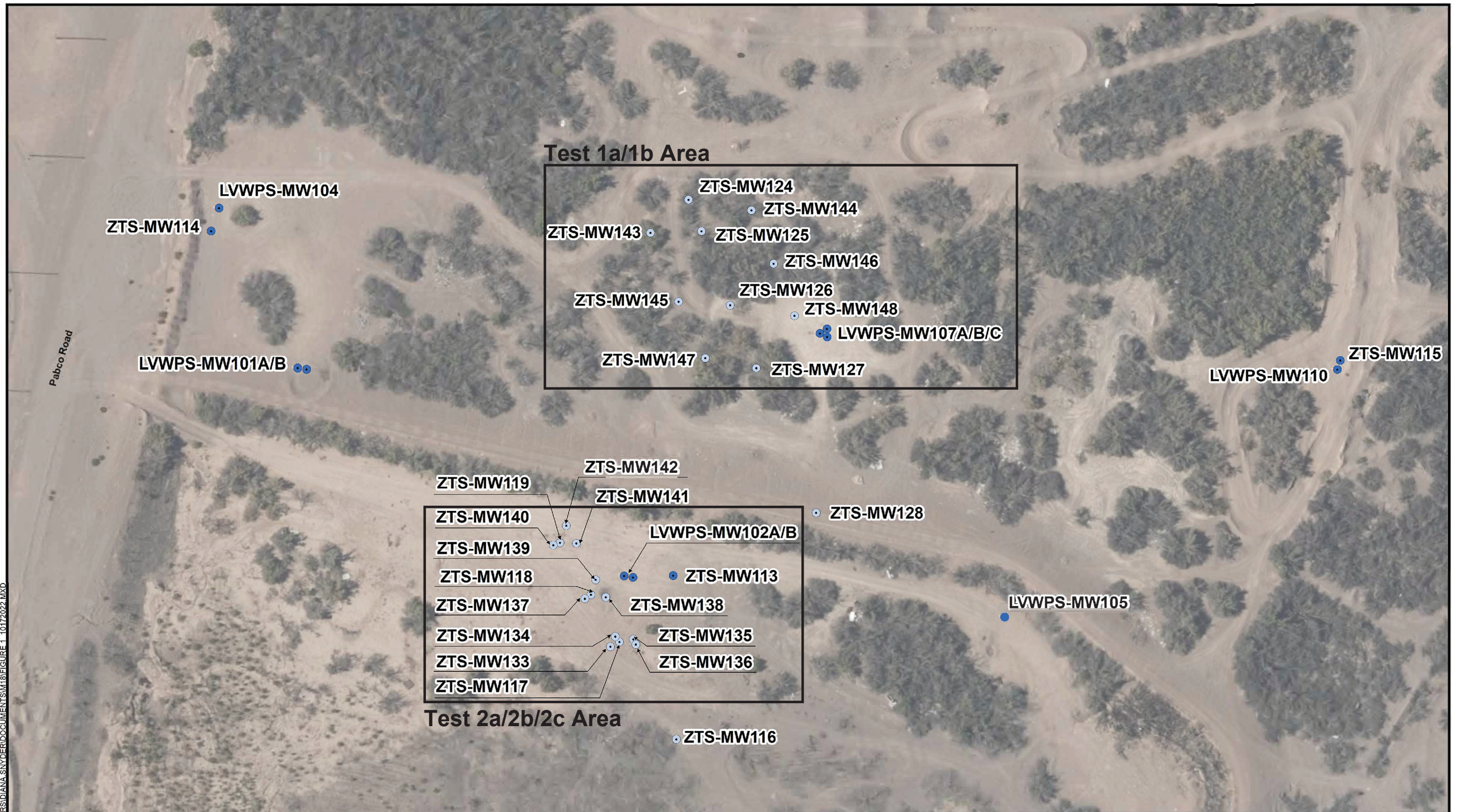
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Date

Nevada CEM Certificate Number: 2385  
Nevada CEM Expiration Date: September 19, 2024

## Figures

DOCUMENT PATH: C:\USERS\DIANA.SNYDER\DOCUMENTS\18\FIGURE 1\_10172022.MXD

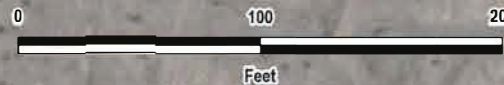


**Legend**

- Existing Monitoring Well Location
- ⊙ Pre-Construction Monitoring Wells

**Notes:**

1. Imagery Source: Esri World Map, October 2019.



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NEVADA ENVIRONMENTAL RESPONSE TRUST

LAS VEGAS WASH ZVI-ENHANCED BIOREMEDIATION TREATABILITY STUDY  
MONTHLY PROGRESS REPORT  
HENDERSON, NEVADA

**PRE-CONSTRUCTION MONITORING WELLS**

PROJECT NO.: 117-7502022

DATE: OCTOBER 17, 2022

DESIGNED BY: AAM

Figure No.

**1**

## Tables

**Table 1**  
**Phase 2 Pre-Construction Well Construction Details**  
 Las Vegas Wash ZVI-Enhanced Bioremediation Treatability Study

Well ID	Screened Lithology	Northing	Easting	Ground Surface Elevation	Top of Casing Elevation	Depth to Water <sup>1</sup>	Groundwater Elevation	Casing Material	Slot Size	Filter Pack Gradation	Nominal Borehole Diameter	Borehole Total Depth	Well Diameter	Nominal Screen Length	Well Total Depth	Bottom of Screen	Top of Screen
				feet amsl	feet amsl	ft bTOC	amsl		inches		inches	feet bgs	inches	feet	feet bgs	feet bgs	feet bgs
ZTS-MW116	UMCf	26732461.29	833014.94	1548.45	1547.92	16.75	1531.17	Schedule 40 PVC	0.010	#2/16	6	55	2	15	48.5	48	33
ZTS-MW117	UMCf	26732546.84	832964.21	1547.64	1547.32	16.30	1531.02	Schedule 40 PVC	0.010	#2/16	8	75	4	15	56	55.5	40.5
ZTS-MW118	Alluvium	26732588.00	832939.61	1547.64	1547.41	16.78	1530.63	Schedule 40 PVC	0.020	#3	8	40	4	10	24	23.5	13.5
ZTS-MW119	Alluvium	26732634.25	832912.06	1547.46	1547.12	16.80	1530.32	Schedule 40 PVC	0.020	#3	8	37.5	4	10	25.5	25	15
ZTS-MW124	Alluvium	26732935.79	833025.72	1544.78	1544.44	16.28	1528.16	Schedule 40 PVC	0.020	#3	8	40	4	10	34.5	34	24
ZTS-MW125	UMCf	26732907.80	833037.00	1546.94	1546.51	18.49	1528.02	Schedule 40 PVC	0.010	#2/16	8	75	4	10	50.5	50	40
ZTS-MW126	Alluvium	26732842.82	833063.07	1548.61	1548.47	20.38	1528.09	Schedule 40 PVC	0.020	#3	8	40	4	10	30.5	30	20
ZTS-MW127	Alluvium	26732787.83	833086.14	1548.05	1547.67	19.48	1528.19	Schedule 40 PVC	0.020	#3	8	40	4	5	23.5	23	18
ZTS-MW128	UMCf	26732659.68	833137.95	1555.83	1555.41	26.89	1528.52	Schedule 40 PVC	0.010	#2/16	6	75	2	10	52.5	52	42
ZTS-MW133	UMCf	26732542.30	832957.28	1547.79	1547.51	10.24	1537.27	Schedule 40 PVC	0.010	#2/16	6	75	2	15	69.5	69	54
ZTS-MW134	UMCf	26732551.09	832961.57	1547.75	1547.54	16.78	1530.76	Schedule 40 PVC	0.010	#2/16	6	37	2	10	36.5	36	26
ZTS-MW135	UMCf	26732548.80	832977.51	1547.56	1547.42	10.13	1537.29	Schedule 40 PVC	0.010	#2/16	6	76	2	15	69.5	69	54
ZTS-MW136	UMCf	26732544.12	832979.70	1547.67	1547.29	16.54	1530.75	Schedule 40 PVC	0.010	#2/16	6	55	2	20	47.5	47	27
ZTS-MW137	Alluvium	26732584.41	832934.77	1547.68	1547.44	16.80	1530.64	Schedule 40 PVC	0.020	#3	6	28	2	10	24.5	24	14
ZTS-MW138	Alluvium	26732585.74	832953.21	1547.68	1547.35	16.81	1530.54	Schedule 40 PVC	0.020	#3	6	25	2	10	24.5	24	14
ZTS-MW139	Alluvium	26732601.13	832944.31	1547.36	1547.07	16.59	1530.48	Schedule 40 PVC	0.020	#3	6	30	2	10	23.5	23	13
ZTS-MW140	Alluvium	26732631.52	832907.03	1547.30	1546.73	16.36	1530.37	Schedule 40 PVC	0.020	#3	6	30	2	10	26.0	25.5	15.5
ZTS-MW141	Alluvium	26732633.15	832927.38	1547.65	1547.39	17.12	1530.27	Schedule 40 PVC	0.020	#3	6	30	2	10	25.0	24.5	14.5
ZTS-MW142	Alluvium	26732648.69	832918.45	1547.42	1546.81	16.62	1530.19	Schedule 40 PVC	0.020	#3	6	27	2	10	26.5	26	16
ZTS-MW143	Alluvium	26732906.40	832992.60	1545.04	1544.90	16.51	1528.39	Schedule 40 PVC	0.020	#3	6	35	2	10	33.5	33	23
ZTS-MW144	Alluvium	26732926.25	833081.32	1544.47	1544.52	16.82	1527.70	Schedule 40 PVC	0.020	#3	6	40	2	10	34.5	34	24
ZTS-MW145	UMCf	26732845.93	833017.26	1547.43	1547.13	18.73	1528.40	Schedule 40 PVC	0.010	#2/16	8	50	4	10	49.5	49	39
ZTS-MW146	UMCf	26732879.40	833100.75	1548.63	1547.33	20.61	1526.72	Schedule 40 PVC	0.010	#2/16	8	55	4	10	51.5	51	41
ZTS-MW147	Alluvium	26732796.25	833040.66	1547.65	1547.18	18.70	1528.48	Schedule 40 PVC	0.020	#3	6	35	2	10	30.0	29.5	19.5
ZTS-MW148	Alluvium	26732833.56	833119.27	1548.62	1548.41	20.67	1527.74	Schedule 40 PVC	0.020	#3	6	35	2	10	32.5	32.0	22.0

Notes  
 amsl - above mean sea level  
 bgs - below ground surface  
 bTOC - below top of casing  
 PVC - polyvinyl chloride  
 UMCf - Upper Muddy Creek formation  
 1. Depth to water collected on October 17, 2022.