

TECHNICAL MEMORANDUM

To: Nevada Environmental Response Trust

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

From: Dana Grady

Date: January 3, 2023

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

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 November 2022 toward successfully implementing the Las Vegas Wash Zero-Valent Iron (ZVI)-Enhanced Bioremediation Treatability Study.

Task Progress Update: November 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. Table 2 presents a summary of the groundwater analytical results. Perchlorate detections ranged from 0.093 to 7.53 milligrams per liter (mg/L), while chlorate detections ranged from 11.9 to 101 mg/L. Concentrations were generally consistent with historical results from monitoring wells located within the proposed test areas.
 - Aquifer testing, including both borehole dilution and slug testing, of newly installed wells began on October 26, 2022 and was completed on November 7, 2022. Data is being processed and a summary of the results will be provided in the December 2022 monthly progress report.
 - The drainage study for the grading permit application package was submitted to the City of Henderson on October 24, 2022. Comments on the drainage study were received from City of

Henderson on November 17, 2022. The drainage study was revised and resubmitted on November 23, 2022.

- Schedule and Progress Updates
 - Following City of Henderson approval, the drainage study will be submitted to the Clark County Regional Flood Control District (CCRFCD) for review and approval. The grading permit application package will also be submitted to City of Henderson at the same time to be reviewed concurrently with CCRFCD review of the drainage study.
 - 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 November 2022.

CERTIFICATION

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

Not Individually, but Solely
as President of the Trustee

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: 1/3/23

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



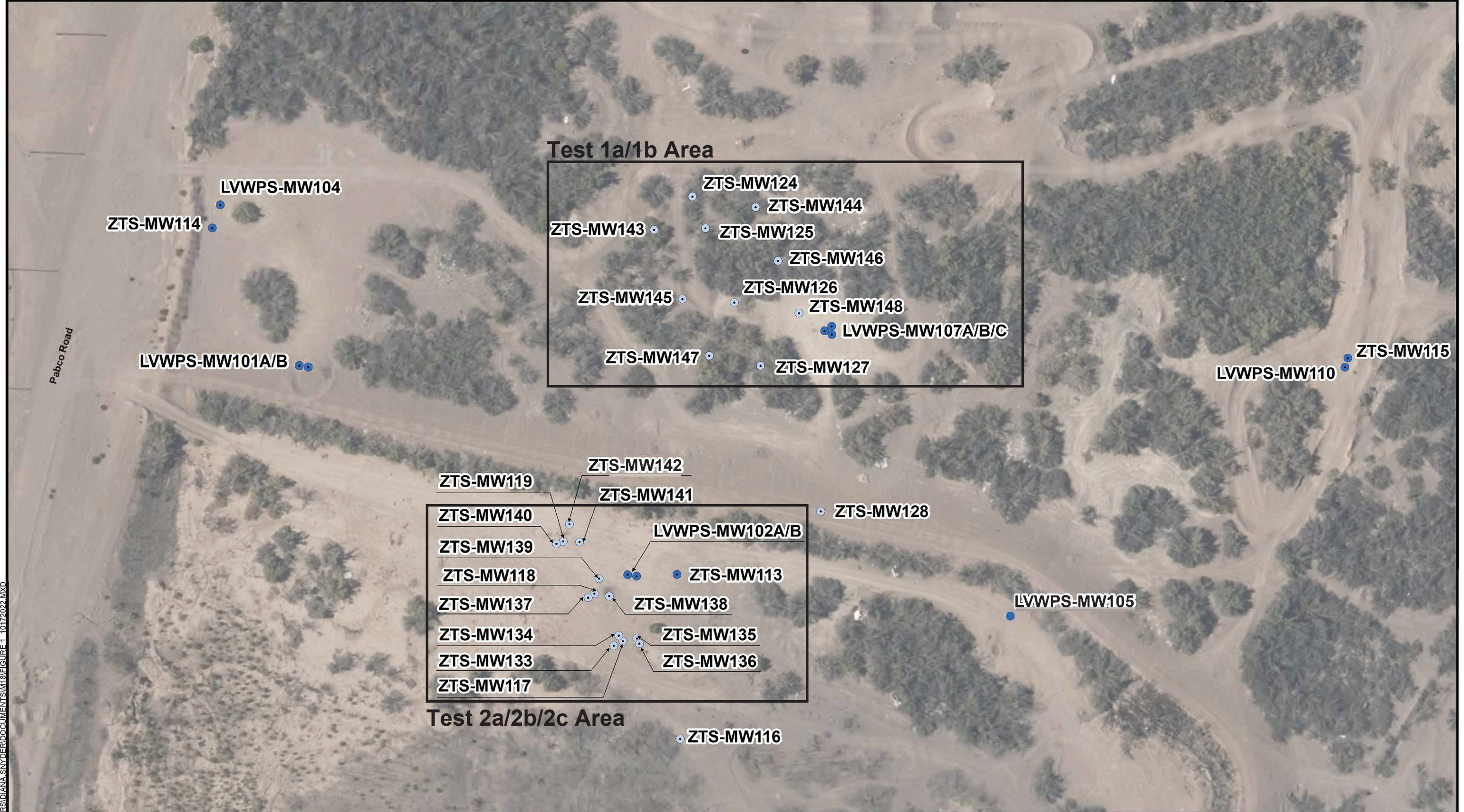
David S. Wilson, CEM
Principal Engineer
Tetra Tech, Inc.

January 3, 2023

Date

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

Figures

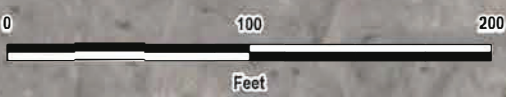


DOCUMENT PATH: C:\USERS\DIANA.SNYDER\DOCUMENTS\M18\FIGURE 1_10172022.MXD

Legend

- Existing Monitoring Well Location
- Pre-Construction Monitoring Wells

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



TETRA TECH

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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 ¹	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.

Table 2
Pre-Construction Groundwater Sampling Results
 Las Vegas Wash ZVI-Enhanced Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Screened Interval	E314.0	E300.1	Anions by E300.0/SW9065A						CALC
						Perchlorate	Chlorate	Bromide	Chloride	Fluoride	Nitrate (as N)	Nitrite (as N)	Sulfate	Nitrogen
						ft bgs	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LVWPS-MW102A	10/21/2022	N	BL02	UMCf	47.0 - 66.6	3,700	35,400	<3,530	2,320,000	<640	6,230	<420	5,630,000	4,980
LVWPS-MW102B	10/21/2022	N	BL02	UMCf (Semi-Cons)	76.8 - 96.5	<30	<24,000	<7,060	12,000,000	<1,280	<960	<840	34,800,000	24,700
LVWPS-MW107A	10/24/2022	N	BL02	Alluvium	24.8 - 34.5	7,070	91,100	3530	1,170,000	640	19,600	420	2,650,000	18,000
LVWPS-MW107B	10/21/2022	N	BL02	UMCf	46.0 - 65.8	<30	<2,400	<7,060	1,200,000	<1,280	<960	<840	2,830,000	1,630
LVWPS-MW107C	10/24/2022	N	BL02	UMCf (Semi-Cons)	100.3 - 120.0	30	24000	35300	14,900,000	6400	4800	4200	42,000,000	638
ZTS-MW113	10/25/2022	N	BL02		20.0 - 30.0	6,830	79,600	3530	1,180,000	640	18,500	420	2,700,000	18,100
ZTS-MW116	9/1/2022	N	BL01	UMCf	33.0 - 48.0	3,510	12,600	----	----	----	6,710	----	2,660,000	----
ZTS-MW116	10/25/2022	N	BL02	UMCf	33.0 - 48.0	4,110	21,600	3530	862,000	640	5,110	420	2,760,000	5,650
ZTS-MW117	9/1/2022	N	BL01	UMCf	40.5 - 55.5	2,840	7,320	----	----	----	3,360	----	1,460,000	----
ZTS-MW117	10/19/2022	N	BL02	UMCf	40.5 - 55.5	<0.3	<2,400	<353	698,000	994	<48	232	1,100,000	<50
ZTS-MW117	10/19/2022	FD	BL02	UMCf	40.5 - 55.5	<0.3	<2,400	<353	636,000	988	<48	231	1,010,000	<50
ZTS-MW118	9/1/2022	N	BL01	Alluvium	13.5 - 23.5	7,160	89,900	----	----	----	19,400	----	2,640,000	----
ZTS-MW118	10/21/2022	N	BL02	Alluvium	13.5 - 23.5	6,710	86,600	<7,060	1,200,000	<1,280	19,200 J-	<840	2,620,000	18,900
ZTS-MW119	9/1/2022	N	BL01	Alluvium	15.0 - 25.0	6,150	65,500	----	----	----	18,000	----	2,530,000	----
ZTS-MW119	10/19/2022	N	BL02	Alluvium	15.0 - 25.0	7,530	87,200	<3,530	1,220,000	<640	18,100	<420	2,820,000	17,900
ZTS-MW119	10/19/2022	FD	BL02	Alluvium	15.0 - 25.0	7,180	93,800	<3,530	1,230,000	<640	18,100	<420	2,770,000	18,300
ZTS-MW124	8/31/2022	N	BL01	Alluvium	24.0 - 34.0	3,730	36,200	----	----	----	16,500	----	2,440,000	----
ZTS-MW124	8/31/2022	FD	BL01	Alluvium	24.0 - 34.0	3,690	36,900	----	----	----	16,300	----	2,460,000	----
ZTS-MW124	10/18/2022	N	BL02	Alluvium	24.0 - 34.0	3,930	36,800	<7,060	872,000	<1,280	16,700	<840	2,450,000	17,900
ZTS-MW124	10/18/2022	FD	BL02	Alluvium	24.0 - 34.0	3,970	37,200	<7,060	864,000	<1,280	16,600	<840	2,430,000	17,600
ZTS-MW125	8/31/2022	N	BL01	UMCf	40.0 - 50.0	2,890	23,400	----	----	----	12,600	----	2,210,000	----
ZTS-MW125	10/24/2022	N	BL02	UMCf	40.0 - 50.0	93	2400	353	750,000	1,040	349	42	1,210,000	50
ZTS-MW125	10/24/2022	FD	BL02	UMCf	40.0 - 50.0	----	----	----	----	----	----	----	----	----
ZTS-MW126	8/31/2022	N	BL01	Alluvium	20.0 - 30.0	6,570	71,300	----	----	----	15,600	----	2,650,000	----
ZTS-MW126	10/18/2022	N	BL02	Alluvium	20.0 - 30.0	7,210	74,600	<7,060	1,130,000	<1,280	17,100	<840	2,630,000	18,600
ZTS-MW126	10/18/2022	FD	BL02	Alluvium	20.0 - 30.0	7,450	78,300	<7,060	1,120,000	<1,280	17,000	<840	2,620,000	15,400
ZTS-MW127	8/31/2022	N	BL01	Alluvium	18.0 - 23.0	8,260	100,000	----	----	----	19,000	----	2,550,000	----
ZTS-MW127	10/24/2022	N	BL02	Alluvium	18.0 - 23.0	7,100	98,200	3530	1,190,000	640	20,000	420	2,650,000	18,800
ZTS-MW128	9/1/2022	N	BL01	UMCf	42.0 - 52.0	4,710	13,300	----	----	----	7,250	----	2,060,000	----
ZTS-MW128	10/25/2022	N	BL02	UMCf	42.0 - 52.0	6,060	51,400	3530	1,060,000	640	11,600	420	2,630,000	12,600
ZTS-MW133	10/20/2022	N	BL02	UMCf	54.0 - 69.0	2,150	19,800	<7,060	1,350,000	<1,280	3,030	<840	2,750,000	2,020
ZTS-MW134	10/19/2022	N	BL02	UMCf	26.0 - 36.0	6,980	101,000	<3,530	1,150,000	<640	20,200	<420	2,460,000	18,400
ZTS-MW135	10/19/2022	N	BL02	UMCf	54.0 - 69.0	2,690	21,700	<3,530	1,350,000	<640	3,710	<420	2,700,000	2,640
ZTS-MW136	10/20/2022	N	BL02	UMCf	27.0 - 47.0	805	11,900	<3,530	685,000	<640	2,130	<420	1,180,000	2,330
ZTS-MW137	10/20/2022	N	BL02	Alluvium	14.0 - 24.0	6,620	95,200	<353	1,160,000	579	18,200	101	2,720,000	18,900
ZTS-MW138	10/20/2022	N	BL02	Alluvium	14.0 - 24.0	6,860	85,100	<353	1,150,000	535	18,100	114	2,640,000	18,800
ZTS-MW139	10/21/2022	N	BL02	Alluvium	13.0 - 23.0	6,970	94,900	<7,060	1,170,000	<1,280	18,700	<840	2,590,000	18,600
ZTS-MW140	10/21/2022	N	BL02	Alluvium	15.5 - 25.5	6,650	93,400	<7,060	1,150,000	<1,280	18,500	<840	2,600,000	18,700
ZTS-MW141	10/21/2022	N	BL02	Alluvium	14.5 - 24.5	7,030	86,300	3530	1,180,000	640	17,400	420	2,720,000	17,900
ZTS-MW142	10/21/2022	N	BL02	Alluvium	16.0 - 26.0	6,760	83,600	<7,060	1,130,000	<1,280	17,400	<840	2,620,000	18,600
ZTS-MW143	10/18/2022	N	BL02	Alluvium	23.0 - 33.0	4,300	45,000	<7,060	919,000	<1,280	16,800	<840	2,520,000	26,600

Table 2
Pre-Construction Groundwater Sampling Results
 Las Vegas Wash ZVI-Enhanced Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Screened Interval	E314.0	E300.1	Anions by E300.0/SW9065A						CALC
						Perchlorate	Chlorate	Bromide	Chloride	Fluoride	Nitrate (as N)	Nitrite (as N)	Sulfate	Nitrogen
						ft bgs	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ZTS-MW144	10/18/2022	N	BL02	Alluvium	24.0 - 34.0	5,590	41,300	<7,060	1,100,000	<1,280	16,100	<840	2,520,000	18,900
ZTS-MW145	10/24/2022	N	BL02	UMCf	39.0 - 49.0	1,630	14,900	3530	888,000	640	4,260	420	1,860,000	3,730
ZTS-MW146	10/24/2022	N	BL02	UMCf	41.0 - 51.0	2,820	20,600	3530	1,080,000	640	6,590	420	2,480,000	5,500
ZTS-MW147	10/18/2022	N	BL02	Alluvium	19.5 - 29.5	7,390	93,300	<7,060	1,140,000	<1,280	18,700	<840	2,550,000	21,500
ZTS-MW148	10/24/2022	N	BL02	Alluvium	22.0 - 32.0	7,400	94,800	3530	1,150,000	640	19,300	420	2,640,000	38,500

Table 2
Pre-Construction Groundwater Sampling Results
 Las Vegas Wash ZVI-Enhanced Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	E351.2	E353.2	E365.4	SM4500-P-E	Alkalinity by SM2320B	AM20GAX	Dissolved Metals by SW6010B	Dissolved Metals by SW6020	
					Total Kjeldahl Nitrogen (TKN)	Nitrogen, Nitrate-Nitrite	Phosphorus	Orthophosphorus as PO4	Alkalinity as CaCO3	Hydrogen	Silicon	Aluminum	Antimony
					µg/L	µg/L	µg/L	µg/L	µg/L	nmol	µg/L	µg/L	µg/L
LWVPS-MW102A	10/21/2022	N	BL02	UMCf	337 J	4,640	132 J	132	89,000	1.8 J	28,000	<18.5	<1.03
LWVPS-MW102B	10/21/2022	N	BL02	UMCf (Semi-Cons)	44,600	<50	199 J	426	96,300	1.6 J	<1,400	<18.5	<103
LWVPS-MW107A	10/24/2022	N	BL02	Alluvium	700	18,000	35	14	106,000	13	33,500	18.5	1.03
LWVPS-MW107B	10/21/2022	N	BL02	UMCf	1,630	<50	<35	<14	97,100	2 J	24,800	<18.5	<1.03
LWVPS-MW107C	10/24/2022	N	BL02	UMCf (Semi-Cons)	638	50	139	537	85,700	36	4,040	18.5	103
ZTS-MW113	10/25/2022	N	BL02		280	18,100	35	14	101,000	0.85 J	3,520	18.5	1.03
ZTS-MW116	9/1/2022	N	BL01	UMCf	----	----	----	----	----	----	----	----	----
ZTS-MW116	10/25/2022	N	BL02	UMCf	140	5,650	35	89	94,100	<0.49	3,370	18.5	1.03
ZTS-MW117	9/1/2022	N	BL01	UMCf	----	----	----	----	----	----	----	----	----
ZTS-MW117	10/19/2022	N	BL02	UMCf	<140	<50	<35	64	109,000	230	29,500	<18.5	<1.03
ZTS-MW117	10/19/2022	FD	BL02	UMCf	<140	<50	<35	63	108,000	230	29,000	<18.5	<1.03
ZTS-MW118	9/1/2022	N	BL01	Alluvium	----	----	----	----	----	----	----	----	----
ZTS-MW118	10/21/2022	N	BL02	Alluvium	<700	18,900	<35	<14	118,000	7 J+	41,400	<18.5	<1.03
ZTS-MW119	9/1/2022	N	BL01	Alluvium	----	----	----	----	----	----	----	----	----
ZTS-MW119	10/19/2022	N	BL02	Alluvium	<560	17,900	<35	<14	109,000	1.7	21,200 J	<18.5	<1.03
ZTS-MW119	10/19/2022	FD	BL02	Alluvium	<700	18,300	<35	<14	103,000	1.6	40,200 J	<18.5	<1.03
ZTS-MW124	8/31/2022	N	BL01	Alluvium	----	----	----	----	----	----	----	----	----
ZTS-MW124	8/31/2022	FD	BL01	Alluvium	----	----	----	----	----	----	----	----	----
ZTS-MW124	10/18/2022	N	BL02	Alluvium	<1,400	15,500	<35	<14	102,000	2.6	33,200	<18.5	<1.03
ZTS-MW124	10/18/2022	FD	BL02	Alluvium	2,560	15,000	<35	<14	102,000	2.9	32,200	<18.5	<1.03
ZTS-MW125	8/31/2022	N	BL01	UMCf	----	----	----	----	----	----	----	----	----
ZTS-MW125	10/24/2022	N	BL02	UMCf	140	50	35	143	132,000	7.2	23,000	18.5	1.03
ZTS-MW125	10/24/2022	FD	BL02	UMCf	----	----	----	----	----	7.2	----	----	----
ZTS-MW126	8/31/2022	N	BL01	Alluvium	----	----	----	----	----	----	----	----	----
ZTS-MW126	10/18/2022	N	BL02	Alluvium	2,810	15,800	<35 UJ	<14	110,000	2.5	40,000	<18.5	<1.03
ZTS-MW126	10/18/2022	FD	BL02	Alluvium	<1400 UJ	15,400	<35 UJ	<14	110,000	2	39,800	<18.5	<1.03
ZTS-MW127	8/31/2022	N	BL01	Alluvium	----	----	----	----	----	----	----	----	----
ZTS-MW127	10/24/2022	N	BL02	Alluvium	700	18,800	35	14	118,000	27	34,100	18.5	1.03
ZTS-MW128	9/1/2022	N	BL01	UMCf	----	----	----	----	----	----	----	----	----
ZTS-MW128	10/25/2022	N	BL02	UMCf	616	12,000	131	316	96,500	4.9	3,160	18.5	1.03
ZTS-MW133	10/20/2022	N	BL02	UMCf	<140	2,020	<35	73	85,900	35	28,300	<18.5	<1.03
ZTS-MW134	10/19/2022	N	BL02	UMCf	<1,400	18,400	<35	<14	100,000	0.49	36,000	<18.5	<1.03
ZTS-MW135	10/19/2022	N	BL02	UMCf	<140	2,640	<35	62	90,500	100	28,000	<18.5	<1.03
ZTS-MW136	10/20/2022	N	BL02	UMCf	<140	2,160	<35	61	117,000	28	32,400	<18.5	<1.03
ZTS-MW137	10/20/2022	N	BL02	Alluvium	<700	18,900	<35	90	106,000	21	39,200	<18.5	<1.03
ZTS-MW138	10/20/2022	N	BL02	Alluvium	<700	18,800	<35	114	117,000	30	36,500	<18.5	<1.03
ZTS-MW139	10/21/2022	N	BL02	Alluvium	<700	18,600	<35	40	111,000	15	37,500	<18.5	<1.03
ZTS-MW140	10/21/2022	N	BL02	Alluvium	<700	18,700	<35	139	106,000	6 J+	41,400	<18.5	<1.03
ZTS-MW141	10/21/2022	N	BL02	Alluvium	280	17,900	35	39	111,000	8.8	3,830	18.5	1.03
ZTS-MW142	10/21/2022	N	BL02	Alluvium	<700	18,600	<35	58	102,000	----	41,000	<18.5	<1.03
ZTS-MW143	10/18/2022	N	BL02	Alluvium	11,300	15,300	<35	<14	103,000	110	33,800	<18.5	<1.03

Table 2
Pre-Construction Groundwater Sampling Results
 Las Vegas Wash ZVI-Enhanced Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	E351.2	E353.2	E365.4	SM4500-P-E	Alkalinity by SM2320B	AM20GAX	Dissolved Metals by SW6010B	Dissolved Metals by SW6020	
					Total Kjeldahl Nitrogen (TKN)	Nitrogen, Nitrate-Nitrite	Phosphorus	Orthophosphorus as PO4	Alkalinity as CaCO3	Hydrogen	Silicon	Aluminum	Antimony
					µg/L	µg/L	µg/L	µg/L	µg/L	nmol	µg/L	µg/L	µg/L
ZTS-MW144	10/18/2022	N	BL02	Alluvium	3,590	15,300	<35	<14	118,000	92	35,100	<18.5	<1.03
ZTS-MW145	10/24/2022	N	BL02	UMCf	140	3,730	35	14	114,000	7.3	25,100	18.5	1.03
ZTS-MW146	10/24/2022	N	BL02	UMCf	140	5,500	35	14	127,000	10	25,000	18.5	1.03
ZTS-MW147	10/18/2022	N	BL02	Alluvium	3,950	17,500	<35	<14	102,000	59	39,300	<18.5	<1.03
ZTS-MW148	10/24/2022	N	BL02	Alluvium	20,400	18,100	35	41	107,000	5.4	34,400	18.5	1.03

Table 2
Pre-Construction Groundwater Sampling Results
 Las Vegas Wash ZVI-Enhanced Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Dissolved Metals by SW6020									
					Arsenic	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LVWPS-MW102A	10/21/2022	N	BL02	UMCf	71.1	11.2	<0.19	2,360	<0.15	529,000	14.6	<0.0596	<1.51	<28.1
LVWPS-MW102B	10/21/2022	N	BL02	UMCf (Semi-Cons)	<0.18	<38.1	<0.19	12,400	<0.15	552,000	<1.24	<0.0596	<1.51	<28.1
LVWPS-MW107A	10/24/2022	N	BL02	Alluvium	49.8	23.6	0.19	3,330	0.15	643,000	87.6	0.0596	1.51	28.1
LVWPS-MW107B	10/21/2022	N	BL02	UMCf	<0.18	21.2	<0.19	1,720	<0.15	257,000	<1.24	<0.0596	<1.51	<28.1
LVWPS-MW107C	10/24/2022	N	BL02	UMCf (Semi-Cons)	2.48	2,760	19	11,000	0.15	531,000	1.24	0.0596	1.51	28.1
ZTS-MW113	10/25/2022	N	BL02		56.5	25.8	0.19	2,660	0.15	628,000	102	0.0596	1.51	28.1
ZTS-MW116	9/1/2022	N	BL01	UMCf	33.7	----	----	----	----	436,000	21.6	----	----	<28.1
ZTS-MW116	10/25/2022	N	BL02	UMCf	51.7	14.7	0.19	2,440	0.15	424,000	33	0.0596	1.51	28.1
ZTS-MW117	9/1/2022	N	BL01	UMCf	77.9	----	----	----	----	229,000	10.8	----	----	<28.1
ZTS-MW117	10/19/2022	N	BL02	UMCf	39	23.5	<0.19	1,110	<0.15	182,000	<24.8	<0.0596	<1.51	<28.1
ZTS-MW117	10/19/2022	FD	BL02	UMCf	37.9	23.1	<0.19	1,110	<0.15	176,000	<12.4	<0.0596	<1.51	<28.1
ZTS-MW118	9/1/2022	N	BL01	Alluvium	36.1	----	----	----	----	687,000	48.7	----	----	<28.1
ZTS-MW118	10/21/2022	N	BL02	Alluvium	48.8	27.1	<0.19	3,190	<0.15	702,000	61.7	<0.0596	<1.51	<28.1
ZTS-MW119	9/1/2022	N	BL01	Alluvium	26.7	----	----	----	----	663,000	44.9	----	----	<28.1
ZTS-MW119	10/19/2022	N	BL02	Alluvium	55.6	28.9	<0.19	2,440	<0.15	711,000	91.8	<0.0596	<1.51	<28.1
ZTS-MW119	10/19/2022	FD	BL02	Alluvium	53.3	29.2	<0.19	3,000	<0.15	750,000	<62	<0.0596	9.21	<28.1
ZTS-MW124	8/31/2022	N	BL01	Alluvium	44	----	----	----	----	545,000	31.6	----	----	<28.1
ZTS-MW124	8/31/2022	FD	BL01	Alluvium	43.7	----	----	----	----	544,000	30.8	----	----	<28.1
ZTS-MW124	10/18/2022	N	BL02	Alluvium	47.1 J	20.7 J	<0.19	2,370 J	<0.15	574,000 J	32.2 J	<0.0596	<1.51	<28.1
ZTS-MW124	10/18/2022	FD	BL02	Alluvium	<0.18 UJ	87.3 J	<0.19	59.6 J	<0.15	47,400 J	<1.24 UJ	<0.0596	<1.51	<28.1
ZTS-MW125	8/31/2022	N	BL01	UMCf	40.1	----	----	----	----	466,000	16.1	----	----	<28.1
ZTS-MW125	10/24/2022	N	BL02	UMCf	22.2	33.2	0.19	1,560	0.15	199,000	1.24	0.0596	1.51	28.1
ZTS-MW125	10/24/2022	FD	BL02	UMCf	----	----	----	----	----	----	----	----	----	----
ZTS-MW126	8/31/2022	N	BL01	Alluvium	37.3	----	----	----	----	600,000	43.3	----	----	<28.1
ZTS-MW126	10/18/2022	N	BL02	Alluvium	52.4	24.7	<0.19	2,460	<0.15	643,000	73.4	<0.0596	<1.51	<28.1
ZTS-MW126	10/18/2022	FD	BL02	Alluvium	58.1	24.1	<0.19	2,550	<0.15	696,000	77.8	<0.0596	<1.51	<28.1
ZTS-MW127	8/31/2022	N	BL01	Alluvium	29.7	----	----	----	----	632,000	74.4	----	----	<28.1
ZTS-MW127	10/24/2022	N	BL02	Alluvium	40.7	20.4	0.19	3,270	0.15	660,000	74.8	0.0596	1.51	28.1
ZTS-MW128	9/1/2022	N	BL01	UMCf	15.6	----	----	----	----	344,000	4.76	----	----	<28.1
ZTS-MW128	10/25/2022	N	BL02	UMCf	23.4	27.8	0.19	2,190	0.15	498,000	22.9	0.0596	1.51	28.1
ZTS-MW133	10/20/2022	N	BL02	UMCf	77.1	12.9	<0.19	1,250	<0.15	464,000	5.13	<0.0596	<1.51	<28.1
ZTS-MW134	10/19/2022	N	BL02	UMCf	50.3	28.9	<0.19	2,570	<0.15	785,000	<62	<0.0596	<1.51	<28.1
ZTS-MW135	10/19/2022	N	BL02	UMCf	78.1	13.1	<0.19	1,490	<0.15	579,000	<24.8	<0.0596	<1.51	<28.1
ZTS-MW136	10/20/2022	N	BL02	UMCf	8.02	38.5	<0.19	1,330	<0.15	258,000	10.2	<0.0596	<1.51	<28.1
ZTS-MW137	10/20/2022	N	BL02	Alluvium	52.4	29.1	<0.19	2,710	<0.15	633,000	95.3	<0.0596	<1.51	<28.1
ZTS-MW138	10/20/2022	N	BL02	Alluvium	44.5	39.1	<0.19	2,630	<0.15	662,000	97.6	<0.0596	<1.51	<28.1
ZTS-MW139	10/21/2022	N	BL02	Alluvium	29.8	39	<0.19	2,970	<0.15	732,000	56.3	<0.0596	<1.51	<28.1
ZTS-MW140	10/21/2022	N	BL02	Alluvium	53.4	32.1	<0.19	2,710	<0.15	668,000	94.9	<0.0596	<1.51	<28.1
ZTS-MW141	10/21/2022	N	BL02	Alluvium	45.8	30.9	0.19	2,660	0.15	614,000	69.8	0.0596	1.51	28.1
ZTS-MW142	10/21/2022	N	BL02	Alluvium	56.4	29.5	<0.19	2,520	<0.15	659,000	88.6	<0.0596	<1.51	<28.1
ZTS-MW143	10/18/2022	N	BL02	Alluvium	52.7	20.6	<0.19	2,070	<0.15	641,000	34.1	<0.0596	<1.51	<28.1

Table 2
Pre-Construction Groundwater Sampling Results
 Las Vegas Wash ZVI-Enhanced Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Dissolved Metals by SW6020									
					Arsenic	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ZTS-MW144	10/18/2022	N	BL02	Alluvium	47.2	20.2	<0.19	2,310	<0.15	717,000	25.2	<0.0596	<1.51	<28.1
ZTS-MW145	10/24/2022	N	BL02	UMCf	16.3	27.3	0.19	1,830	0.15	355,000	1.24	0.0596	1.51	28.1
ZTS-MW146	10/24/2022	N	BL02	UMCf	23.1	33.1	0.19	2,250	0.15	436,000	1.24	0.0596	1.51	28.1
ZTS-MW147	10/18/2022	N	BL02	Alluvium	59.9	27	<0.19	2,540	<0.15	691,000	100	<0.0596	<1.51	<28.1
ZTS-MW148	10/24/2022	N	BL02	Alluvium	51.2	25.3	0.19	3,220	0.15	643,000	86.8	0.0596	1.51	28.1

Table 2
Pre-Construction Groundwater Sampling Results
 Las Vegas Wash ZVI-Enhanced Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Dissolved Metals by SW6020								
					Lead	Magnesium	Manganese	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LVWPS-MW102A	10/21/2022	N	BL02	UMCf	<0.849	910,000	20	73.1	<0.816	519,000	56.5	<0.07	1,250,000
LVWPS-MW102B	10/21/2022	N	BL02	UMCf (Semi-Cons)	<84.9	5,840,000	204	<34.8	<0.816	4,840,000	<0.3	<7	8,060,000
LVWPS-MW107A	10/24/2022	N	BL02	Alluvium	0.849	248,000	0.704	92.1	2.01	123,000	38.8	0.07	670,000
LVWPS-MW107B	10/21/2022	N	BL02	UMCf	<0.849	387,000	14.5	<0.348	<0.816	546,000	<0.3	<0.07	736,000
LVWPS-MW107C	10/24/2022	N	BL02	UMCf (Semi-Cons)	84.9	6,410,000	314	34.8	0.816	5,770,000	0.3	7	9,210,000
ZTS-MW113	10/25/2022	N	BL02		0.849	210,000	0.704	73.7	2.85	155,000	46.2	0.07	635,000
ZTS-MW116	9/1/2022	N	BL01	UMCf	----	----	132	----	----	----	----	----	----
ZTS-MW116	10/25/2022	N	BL02	UMCf	0.849	241,000	20.4	71	2.28	189,000	16.4	0.07	703,000
ZTS-MW117	9/1/2022	N	BL01	UMCf	----	----	122	----	----	----	----	----	----
ZTS-MW117	10/19/2022	N	BL02	UMCf	<0.849	137,000	123	27.4	<0.816	94,700	<0.3	<0.07	426,000
ZTS-MW117	10/19/2022	FD	BL02	UMCf	<0.849	135,000	117	27.5	<0.816	93,800	<0.3	<0.07	416,000
ZTS-MW118	9/1/2022	N	BL01	Alluvium	----	----	71.2	----	----	----	----	----	----
ZTS-MW118	10/21/2022	N	BL02	Alluvium	<0.849	254,000	<0.704	82.4	3.14	117,000	42.3	<0.07	780,000
ZTS-MW119	9/1/2022	N	BL01	Alluvium	----	----	95.2	----	----	----	----	----	----
ZTS-MW119	10/19/2022	N	BL02	Alluvium	<0.849	243,000	<0.704	102	2.42	131,000	39.7	<0.07	701,000
ZTS-MW119	10/19/2022	FD	BL02	Alluvium	<0.849	263,000	<0.704	96.8	2.23	137,000	40.2	<0.07	755,000
ZTS-MW124	8/31/2022	N	BL01	Alluvium	----	----	21.1	----	----	----	----	----	----
ZTS-MW124	8/31/2022	FD	BL01	Alluvium	----	----	20	----	----	----	----	----	----
ZTS-MW124	10/18/2022	N	BL02	Alluvium	<0.849	205,000 J	<0.704	376 J	2.19 J+	61,800 J	47.6 J	<0.07	591,000 J
ZTS-MW124	10/18/2022	FD	BL02	Alluvium	<0.849	11,300 J	<0.704	<0.348 UJ	<0.816	<108 UJ	<0.3 UJ	<0.07	4,440 J
ZTS-MW125	8/31/2022	N	BL01	UMCf	----	----	105	----	----	----	----	----	----
ZTS-MW125	10/24/2022	N	BL02	UMCf	0.849	142,000	322	83.7	0.816	145,000	4.28	0.07	501,000
ZTS-MW125	10/24/2022	FD	BL02	UMCf	----	----	----	----	----	----	----	----	----
ZTS-MW126	8/31/2022	N	BL01	Alluvium	----	----	388	----	----	----	----	----	----
ZTS-MW126	10/18/2022	N	BL02	Alluvium	<0.849	255,000	33.6	122	4.31 J+	108,000	36.7	<0.07	680,000
ZTS-MW126	10/18/2022	FD	BL02	Alluvium	<0.849	289,000	37.6	119	3.19	112,000	39.2	<0.07	770,000
ZTS-MW127	8/31/2022	N	BL01	Alluvium	----	----	245	----	----	----	----	----	----
ZTS-MW127	10/24/2022	N	BL02	Alluvium	0.849	241,000	45.6	91.8	9.01	90,500	42.9	0.07	685,000
ZTS-MW128	9/1/2022	N	BL01	UMCf	----	----	379	----	----	----	----	----	----
ZTS-MW128	10/25/2022	N	BL02	UMCf	0.849	269,000	172	31.3	3.66	139,000	30.5	0.07	665,000
ZTS-MW133	10/20/2022	N	BL02	UMCf	<0.849	397,000	21.7	75	<0.816	151,000	35.1	<0.07	780,000
ZTS-MW134	10/19/2022	N	BL02	UMCf	<0.849	238,000	26.6	71.6	2.85	179,000	40.4	<0.07	704,000
ZTS-MW135	10/19/2022	N	BL02	UMCf	<0.849	431,000	30.7	54.7	<0.816	153,000	38.8	<0.07	765,000
ZTS-MW136	10/20/2022	N	BL02	UMCf	<0.849	155,000	361	31.2	<0.816	102,000	8.42	<0.07	458,000
ZTS-MW137	10/20/2022	N	BL02	Alluvium	<0.849	234,000	33.9	85.8	4.69	157,000	42.8	<0.07	718,000
ZTS-MW138	10/20/2022	N	BL02	Alluvium	<0.849	214,000	73.3	76.9	3.16	162,000	42.3	<0.07	717,000
ZTS-MW139	10/21/2022	N	BL02	Alluvium	<0.849	248,000	317	80.5	6.12	129,000	41.1	<0.07	762,000
ZTS-MW140	10/21/2022	N	BL02	Alluvium	<0.849	267,000	43.3	96.9	3.26	141,000	40.2	<0.07	782,000
ZTS-MW141	10/21/2022	N	BL02	Alluvium	0.849	241,000	28.8	96.8	2.94	116,000	43	0.07	716,000
ZTS-MW142	10/21/2022	N	BL02	Alluvium	<0.849	268,000	5.99	110	2.79	135,000	39.5	<0.07	686,000
ZTS-MW143	10/18/2022	N	BL02	Alluvium	<0.849	246,000	6.85	391	2.03	66,100	51.2	<0.07	695,000

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 Las Vegas Wash ZVI-Enhanced Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Dissolved Metals by SW6020								
					Lead	Magnesium	Manganese	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ZTS-MW144	10/18/2022	N	BL02	Alluvium	<0.849	272,000	27.9	329	2.85	69,000	51.3	<0.07	768,000
ZTS-MW145	10/24/2022	N	BL02	UMCf	0.849	208,000	374	168	2.07	121,000	12.5	0.07	549,000
ZTS-MW146	10/24/2022	N	BL02	UMCf	0.849	270,000	1,160	156	5.01	170,000	16	0.07	669,000
ZTS-MW147	10/18/2022	N	BL02	Alluvium	<0.849	264,000	10.6	99.7	4.72	139,000	40.2	<0.07	770,000
ZTS-MW148	10/24/2022	N	BL02	Alluvium	0.849	244,000	20.9	95.9	2.38	125,000	39.3	0.07	672,000

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Pre-Construction Groundwater Sampling Results
 Las Vegas Wash ZVI-Enhanced Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Dissolved Metals by SW6020						SM2540C	SW9060A/SM5310B		
					Strontium	Thallium	Tin	Titanium	Vanadium	Zinc	Total Dissolved Solids	Dissolved Organic Carbon	Total Inorganic Carbon	Total Organic Carbon
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
LVWPS-MW102A	10/21/2022	N	BL02	UMCf	10,600	<0.121	<0.655	<2.18	27.5	<3.02	10,600,000	1,050 J+	19,200	<102
LVWPS-MW102B	10/21/2022	N	BL02	UMCf (Semi-Cons)	10,400	<12.1	<65.5	<2.18	<0.664	<3.02	52,600,000	4,660 J+	18,900	2,650
LVWPS-MW107A	10/24/2022	N	BL02	Alluvium	13,800	0.121	0.655	2.18	20.8	3.02	5,610,000	1,300	24,800	1,850
LVWPS-MW107B	10/21/2022	N	BL02	UMCf	7,290	<0.121	<0.655	<2.18	<0.664	<3.02	5,720,000	<106	20,600	<102
LVWPS-MW107C	10/24/2022	N	BL02	UMCf (Semi-Cons)	7,650	12.1	65.5	2.18	0.664	3.02	80,600,000	4,390	17,300	4,990
ZTS-MW113	10/25/2022	N	BL02		13,200	0.121	0.655	2.18	19.2	3.02	4,650,000	1,640	22,700	1,580
ZTS-MW116	9/1/2022	N	BL01	UMCf	----	----	----	----	----	----	3,360,000	----	----	----
ZTS-MW116	10/25/2022	N	BL02	UMCf	11,500	0.121	0.655	2.18	15.4	3.02	4,510,000	106	21,300	6,160
ZTS-MW117	9/1/2022	N	BL01	UMCf	----	----	----	----	----	----	2,730,000	----	----	----
ZTS-MW117	10/19/2022	N	BL02	UMCf	3,420	<0.121	<0.655	<2.18	<0.664	<3.02	2,420,000	<106	23,800	<102
ZTS-MW117	10/19/2022	FD	BL02	UMCf	3,380	<0.121	<0.655	<2.18	<0.664	<3.02	2,460,000	<106	23,900	<102
ZTS-MW118	9/1/2022	N	BL01	Alluvium	----	----	----	----	----	----	8,540,000	----	----	----
ZTS-MW118	10/21/2022	N	BL02	Alluvium	16,700	<0.121	<0.655	<2.18	18	<3.02	5,830,000	2,120 J	23,400 J-	2,050
ZTS-MW119	9/1/2022	N	BL01	Alluvium	----	----	----	----	----	----	9,080,000	----	----	----
ZTS-MW119	10/19/2022	N	BL02	Alluvium	13,300	<0.121	<0.655	<2.18	20.1	<3.02	3,650,000	1,260 J+	22,900	1,850 J+
ZTS-MW119	10/19/2022	FD	BL02	Alluvium	13,900	<0.121	<0.655	<2.18	19.7	<3.02	3,590,000	1,760 J+	22,100	1,620 J+
ZTS-MW124	8/31/2022	N	BL01	Alluvium	----	----	----	----	----	----	3,020,000	----	----	----
ZTS-MW124	8/31/2022	FD	BL01	Alluvium	----	----	----	----	----	----	2,310,000	----	----	----
ZTS-MW124	10/18/2022	N	BL02	Alluvium	12,400 J	<0.121	<0.655	<2.18	25.2 J	<3.02	4,750,000	10,200 J	21,700	1,480 J+
ZTS-MW124	10/18/2022	FD	BL02	Alluvium	91.5 J	<0.121	<0.655	<2.18	<0.664 UJ	<3.02	4,220,000	1,230 J	23,900	1,580 J+
ZTS-MW125	8/31/2022	N	BL01	UMCf	----	----	----	----	----	----	3,650,000	----	----	----
ZTS-MW125	10/24/2022	N	BL02	UMCf	11,800	0.121	0.655	2.18	0.664	3.02	2,930,000	106	30,600	1,020
ZTS-MW125	10/24/2022	FD	BL02	UMCf	----	----	----	----	----	----	----	----	----	----
ZTS-MW126	8/31/2022	N	BL01	Alluvium	----	----	----	----	----	----	3,710,000	----	----	----
ZTS-MW126	10/18/2022	N	BL02	Alluvium	13,100	<0.121	<0.655	<2.18	21.2	<3.02	4,720,000	1,390 J+	25,500	1,830 J+
ZTS-MW126	10/18/2022	FD	BL02	Alluvium	15,600	<0.121	<0.655	<2.18	22.7	<3.02	5,300,000	1,620 J+	24,900	1,670 J+
ZTS-MW127	8/31/2022	N	BL01	Alluvium	----	----	----	----	----	----	4,660,000	----	----	----
ZTS-MW127	10/24/2022	N	BL02	Alluvium	14,500	0.121	2.39	2.18	19.2	3.02	5,550,000	2,230	24,400	2,430
ZTS-MW128	9/1/2022	N	BL01	UMCf	----	----	----	----	----	----	3,050,000	----	----	----
ZTS-MW128	10/25/2022	N	BL02	UMCf	12,700	0.121	0.655	2.18	11	3.02	7,670,000	1,120	22,000	102
ZTS-MW133	10/20/2022	N	BL02	UMCf	8,890	<0.121	<0.655	<2.18	23.8	<3.02	3,020,000 J-	1,180 J+	17,600	1,050 J+
ZTS-MW134	10/19/2022	N	BL02	UMCf	11,400	<0.121	<0.655	<2.18	16.3	162	4,580,000 J-	1,740 J+	21,200	1,540 J+
ZTS-MW135	10/19/2022	N	BL02	UMCf	11,100	<0.121	<0.655	<2.18	24.9	39.8	5,970,000	<106	18,200	<102
ZTS-MW136	10/20/2022	N	BL02	UMCf	5,240	<0.121	<0.655	<2.18	<0.664	<3.02	2,950,000	<106	25,000	1,680 J+
ZTS-MW137	10/20/2022	N	BL02	Alluvium	12,400	<0.121	<0.655	<2.18	18.4	<3.02	3,540,000	1,690 J+	21,300	2,240 J+
ZTS-MW138	10/20/2022	N	BL02	Alluvium	11,600	<0.121	<0.655	<2.18	14.7	<3.02	4,720,000	1,840 J+	20,400 J-	2,060 J+
ZTS-MW139	10/21/2022	N	BL02	Alluvium	14,900	<0.121	<0.655	<2.18	12.5	<3.02	6,030,000	1,740 J+	25,200	2,030
ZTS-MW140	10/21/2022	N	BL02	Alluvium	12,100	<0.121	<0.655	<2.18	19.9	<3.02	5,590,000	1,670 J+	22,300 J	1,370
ZTS-MW141	10/21/2022	N	BL02	Alluvium	13,900	0.121	0.655	2.18	18.4	3.02	4,950,000	1,330	24,800	3,430
ZTS-MW142	10/21/2022	N	BL02	Alluvium	12,100	<0.121	<0.655	<2.18	22.2	<3.02	5,500,000	1,900 J+	22,100	1,150
ZTS-MW143	10/18/2022	N	BL02	Alluvium	12,100	<0.121	<0.655	<2.18	27	91.5	4,570,000	<106	23,700	1,440 J+

Table 2
Pre-Construction Groundwater Sampling Results
 Las Vegas Wash ZVI-Enhanced Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	Dissolved Metals by SW6020						SM2540C	SW9060A/SM5310B		
					Strontium	Thallium	Tin	Titanium	Vanadium	Zinc	Total Dissolved Solids	Dissolved Organic Carbon	Total Inorganic Carbon	Total Organic Carbon
					µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
ZTS-MW144	10/18/2022	N	BL02	Alluvium	13,900	<0.121	<0.655	<2.18	23.5	125	4,750,000	1,270 J+	27,800	1,560 J+
ZTS-MW145	10/24/2022	N	BL02	UMCf	6,830	0.121	0.655	2.18	0.664	3.02	3,710,000	106	25,800	102
ZTS-MW146	10/24/2022	N	BL02	UMCf	11,600	0.121	0.655	2.18	6.72	3.02	5,180,000	1,390	29,800	1,590
ZTS-MW147	10/18/2022	N	BL02	Alluvium	14,100	<0.121	<0.655	<2.18	20.8	<3.02	4,720,000	1,270 J+	22,800	1,700 J+
ZTS-MW148	10/24/2022	N	BL02	Alluvium	14,000	0.121	0.655	2.18	19.5	3.02	5,420,000	1,600	27,100	1,800

Table 2
Pre-Construction Groundwater Sampling Results
 Las Vegas Wash ZVI-Enhanced Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	FIELD TESTS								
					Conductivity	Dissolved Oxygen	Ferrous Iron	Oxidation-Reduction Potential	pH	Purge Rate	Sulfide	Temperature	Turbidity
					mS/cm	mg/L	mg/L	mV	SU	mL/min	mg/L	C	NTU
LWVPS-MW102A	10/21/2022	N	BL02	UMCf	11.664	0.55	0 U	-35	7.26	300	0 U	23	146
LWVPS-MW102B	10/21/2022	N	BL02	UMCf (Semi-Cons)	49.317	0.48	0 U	-240.7	7.38	100	0 U	23.9	116.3
LWVPS-MW107A	10/24/2022	N	BL02	Alluvium	6.222	5.9	0 U	84	7.12	300	0 U	21.7	5.6
LWVPS-MW107B	10/21/2022	N	BL02	UMCf	7.344	2.22	0 U	-170	7.28	100	0 U	26.6	8.9
LWVPS-MW107C	10/24/2022	N	BL02	UMCf (Semi-Cons)	63.475	3.92	0 U	-5.8	7.46	80	0 U	21.3	333.7
ZTS-MW113	10/25/2022	N	BL02		7.997	2.89	0 U	91.9	7.13	300	0 U	22.9	4.1
ZTS-MW116	9/1/2022	N	BL01	UMCf	6.685	0.36	----	-0.2	7.34	300	----	27	478.2
ZTS-MW116	10/25/2022	N	BL02	UMCf	7.049	0.46	0 U	-17.7	7.35	200	0 U	21.5	36.8
ZTS-MW117	9/1/2022	N	BL01	UMCf	5.788	2.29	----	88.4	7.3	80	----	34.6	25
ZTS-MW117	10/19/2022	N	BL02	UMCf	2.013	1.7	0 U	-116.3	7.43	100	0 U	21.1	8.3
ZTS-MW117	10/19/2022	FD	BL02	UMCf	----	----	----	----	----	----	----	----	----
ZTS-MW118	9/1/2022	N	BL01	Alluvium	7.639	3.07	----	105.5	7.06	300	----	27.1	17
ZTS-MW118	10/21/2022	N	BL02	Alluvium	4.031	3.4	0 U	94.6	6.98	300	0 U	22.6	6.8
ZTS-MW119	9/1/2022	N	BL01	Alluvium	7.085	3.05	----	115.6	7.03	285	----	26	33.3
ZTS-MW119	10/19/2022	N	BL02	Alluvium	6.421	4.57	0 U	164.2	7.04	300	0 U	23.9	15.2
ZTS-MW119	10/19/2022	FD	BL02	Alluvium	----	----	----	----	----	----	----	----	----
ZTS-MW124	8/31/2022	N	BL01	Alluvium	6.3	3.9	----	134.4	7.04	300	----	26.7	-3.7
ZTS-MW124	8/31/2022	FD	BL01	Alluvium	----	----	----	----	----	----	----	----	----
ZTS-MW124	10/18/2022	N	BL02	Alluvium	6.208	4.32	0 U	106.3	7.16	200	0 U	25.7	3.5
ZTS-MW124	10/18/2022	FD	BL02	Alluvium	----	----	----	----	----	----	----	----	----
ZTS-MW125	8/31/2022	N	BL01	UMCf	6.736	1.97	----	117.1	7.17	100	----	31.2	7.5
ZTS-MW125	10/24/2022	N	BL02	UMCf	3.123	1.61	0 U	-17.9	7.4	140	0 U	19.2	22.1
ZTS-MW125	10/24/2022	FD	BL02	UMCf	----	----	----	----	----	----	----	----	----
ZTS-MW126	8/31/2022	N	BL01	Alluvium	7.382	1.91	----	111.1	7.25	300	----	26.9	5
ZTS-MW126	10/18/2022	N	BL02	Alluvium	7.111	3.65	0 U	102.8	7.19	300	0 U	24.8	14.2
ZTS-MW126	10/18/2022	FD	BL02	Alluvium	----	----	----	----	----	----	----	----	----
ZTS-MW127	8/31/2022	N	BL01	Alluvium	7.583	2.86	----	124	7.01	300	----	28	6.3
ZTS-MW127	10/24/2022	N	BL02	Alluvium	4.654	2.58	0 U	51.2	6.95	285	0 U	22.4	12.9
ZTS-MW128	9/1/2022	N	BL01	UMCf	7.153	0.53	----	85.2	7.34	90	----	35.2	55.2
ZTS-MW128	10/25/2022	N	BL02	UMCf	7.65	0.65	0 U	40.8	7.22	100	0 U	23.3	41.3
ZTS-MW133	10/20/2022	N	BL02	UMCf	4.71	1.35	0 U	19.7	7.25	165	0 U	21.1	115.7
ZTS-MW134	10/19/2022	N	BL02	UMCf	3.823	4.84	0 U	136	7.18	0	0 U	24.6	8.4
ZTS-MW135	10/19/2022	N	BL02	UMCf	4.194	1.41	0 U	18.2	7.31	225	0 U	24.4	98.2
ZTS-MW136	10/20/2022	N	BL02	UMCf	3.095	1.23	0 U	-128.5	7.4	100	0 U	23	71.9
ZTS-MW137	10/20/2022	N	BL02	Alluvium	4.917	5.37	0 U	106.5	7.07	315	0 U	23.4	35.6
ZTS-MW138	10/20/2022	N	BL02	Alluvium	5.205	4.22	0 U	117.7	8.02	300	0 U	23.5	68.3
ZTS-MW139	10/21/2022	N	BL02	Alluvium	4.133	3.25	0 U	76.8	7.05	300	0 U	23.5	21.2
ZTS-MW140	10/21/2022	N	BL02	Alluvium	4.139	4.97	0 U	112.3	7.08	300	0 U	23.6	82.3
ZTS-MW141	10/21/2022	N	BL02	Alluvium	8.367	3.42	0 U	98.6	7.1	300	0 U	24.2	38.6
ZTS-MW142	10/21/2022	N	BL02	Alluvium	4.16	4.54	0 U	111.6	7.06	315	0 U	24.3	106.7
ZTS-MW143	10/18/2022	N	BL02	Alluvium	4.62	4.28	0 U	218.2	7.08	300	0 U	24.8	7.2

Table 2
Pre-Construction Groundwater Sampling Results
 Las Vegas Wash ZVI-Enhanced Bioremediation Treatability Study

Well	Sample Date	QC Type	Event	Screened Lithology	FIELD TESTS								
					Conductivity	Dissolved Oxygen	Ferrous Iron	Oxidation-Reduction Potential	pH	Purge Rate	Sulfide	Temperature	Turbidity
					mS/cm	mg/L	mg/L	mV	SU	mL/min	mg/L	C	NTU
ZTS-MW144	10/18/2022	N	BL02	Alluvium	4.384	2.79	0 U	146.8	7.05	300	0 U	22.9	8.2
ZTS-MW145	10/24/2022	N	BL02	UMCf	4.985	0.47	0 U	-1.5	7.38	200	0 U	23.3	9.5
ZTS-MW146	10/24/2022	N	BL02	UMCf	3.424	2.24	0 U	36	7.26	100	0 U	18.1	5
ZTS-MW147	10/18/2022	N	BL02	Alluvium	4.784	4.99	0 U	142.2	7.16	300	0 U	23.3	34.8
ZTS-MW148	10/24/2022	N	BL02	Alluvium	6.419	8.1	0 U	107.4	7.37	300	0 U	23.1	20.8

Notes:

bgs - below ground surface

J- The result is an estimated quantity, but the result may be biased low.

J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

J+ The result is an estimated quantity, but the result may be biased high.

UJ The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

mg/L - milligram per liter

mS/cm - milliSiemens per centimeter

mV - millivolts

nmol - nanomol

SU - standard units

N - normal field sample

µg/L - micrograms per liter

UMCf - Upper Muddy Creek formation

< - The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

FD - field duplicate