

TECHNICAL MEMORANDUM

To: Nevada Environmental Response Trust

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

From: Dana Grady

Date: June 15, 2021

Subject: Las Vegas Wash Bioremediation Pilot 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 which summarizes Tetra Tech's progress during April 2021 toward successfully implementing the Las Vegas Wash Bioremediation Pilot Study.

Task Progress Update: April 2021

Task M19 – Las Vegas Wash Pilot Study

- Current Status
 - *Injections* – The first injection event was completed in December 2020 and included injections into all three pilot study zones (Zone 1, 2, and 3) within the alluvium and/or Upper Muddy Creek formation (UMCf). A summary of the first injection event was provided in the January 2021 monthly progress report. The second injection event was performed from April 12, 2021 to April 21, 2021 and included injections into only the Zone 2 alluvium. Due to slower groundwater flow rates in the UMCf, the next round of injections into Zones 1, 2, and 3 UMCf will likely not occur until fourth quarter 2021. During the second injection event into the Zone 2 alluvium, all injection wells accepted the targeted design quantity of carbon substrate solution and follow-up distribution water. A layout map and construction details of all injection, monitoring, and extraction wells are provided on Figures 1 through 4 and Table 1. A photographic log of the second injection event is provided in Attachment 1 and details of the second injection event, including a summary of injection rates, pressures, quantities, and specific gravity information are included in Tables 2 through 6 as attachments to this monthly progress report.
 - *Effectiveness Monitoring* – Baseline groundwater sampling was completed in the fall of 2020 prior to the first injection event. The monitoring program described in the Work Plan Addendum was subsequently implemented to evaluate the effectiveness of in-situ bioremediation. As part of this monitoring program, groundwater sampling was conducted on a biweekly basis for the Zone 2 alluvium for the first two months post-injection and was followed by a monthly sampling program thereafter, which is ongoing. Groundwater sampling for the UMCf and UMCf-coarse grained

(UMCf-cg) in Zones 1, 2, and 3 has been conducted on a monthly basis since the first injection event. Available groundwater analytical results from the baseline sampling event and subsequent effectiveness monitoring events performed from December 2020 to March 2021 (two biweekly sampling events and the first three monthly sampling events following injections) are provided in Table 7. Results from the sampling event conducted three months post-injection (March 2021) are summarized below. Groundwater analytical results from the fourth monthly groundwater sampling event recently conducted from April 5, 2021 through April 15, 2021 will be provided in future monthly progress reports as data become available.

- Zone 2 Alluvium:
 - Groundwater samples collected from cross-gradient monitoring wells LVWPS-A2-MW04A/B and LVWPS-A2-MW05A/B, which are located approximately 17 feet from each end of the Zone 2 injection well transect, continue to exhibit perchlorate concentration decreases ranging from 29 to 99 percent reduction when compared to baseline concentrations. Perchlorate concentrations in groundwater samples collected from LVWPS-A2-MW05B continue to exhibit perchlorate concentrations below detection limits.
 - Groundwater samples collected from the 14 monitoring wells located approximately 50 to 100 feet downgradient of the injection well transect exhibited an overall average percentage decrease in groundwater perchlorate concentrations (compared to baseline concentrations) of 51 percent during the third monthly post-injection sampling event (March 2021). Groundwater samples collected from four of these 14 monitoring wells continue to exhibit perchlorate concentration reductions of greater than 90 percent when compared to baseline. Additionally, groundwater samples collected from LVWPS-A2-MW14A and LVWPS-A2-MW17A/B exhibited the lowest perchlorate concentrations measured to date three months after injections.
 - Groundwater samples collected three months after injection activities from monitoring wells LVWPS-MW208B and LVWPS-MW223B, which are located approximately 200-250 feet downgradient from the injection well transect, continued to exhibit perchlorate concentration decreases of greater than 80 percent when compared to baseline concentrations.
 - Chlorate results followed a similar pattern to perchlorate results for samples collected three months post-injection. Groundwater samples collected from two of the four cross-gradient monitoring wells continued to show decreases in chlorate concentrations of greater than 75 percent compared to baseline. Groundwater samples collected from eight of the 18 monitoring wells located between 50 and 250 feet downgradient from the injection well transect exhibited reductions in chlorate concentration of greater than 75 percent. Groundwater samples collected from six of these eight monitoring wells exhibited concentration decreases greater than 90 percent when compared to baseline.
 - Nitrate concentrations in groundwater were also evaluated because it is often a competing and preferred electron acceptor and carbon substrate consumer. Nitrate concentrations in groundwater samples collected from Zone 2 alluvium monitoring wells averaged 17 milligrams per liter (mg/L) during the baseline sampling event. Since injections began, nitrate concentrations have reduced an average of 56 percent in groundwater samples collected from cross-gradient and downgradient monitoring wells. During the second monthly sampling event, groundwater samples collected from 14 cross-gradient or downgradient

monitoring wells exhibited decreases in nitrate concentrations to less than 10 mg/L. Groundwater samples collected from four of these 14 monitoring wells exhibited nitrate concentrations less than the detection limit of 0.014 mg/L.

- Zone 1, 2, and 3 UMCf/UMCf-cg:
 - Zone 1 UMCf – Approximately three months following injections into Zone 1 UMCf, groundwater samples collected from monitoring wells LVWPS-U1-MW08A and LVWPS-U1-MW08B, which are both located approximately 25 feet downgradient from the injection well transect, indicated perchlorate concentrations below the sample detection limit (less than 0.31 µg/L) and 54 µg/L, respectively. Other notable observations include groundwater samples collected from one monitoring well located 100 feet downgradient from the injection well transect (LVWPS-U1-MW09B), where perchlorate concentrations indicated a reduction of 34 percent compared to baseline conditions three months after the injection event. Lastly, immediately following the first injection event, reductions in perchlorate concentrations were also observed in two upgradient monitoring wells, namely LVWPS-U1-MW06B and LVWPS-U1-MW07, due to the low effective porosity causing injectate solution to move farther from the injection points (both upgradient and downgradient) while injecting under pressure. As expected, three months after the injection event, upgradient perchlorate concentrations continue to increase as the injectate solution has migrated downgradient. Nitrate and chlorate concentrations followed a similar pattern to perchlorate.
 - Zone 2 UMCf – Approximately three months following injections into Zone 2 UMCf, groundwater samples collected from cross-gradient monitoring wells LVWPS-U2-MW04 and LVWPS-U2-MW05, which are screened in the UMCf and located approximately 12 feet from each end of the Zone 2 injection well transect, continue to indicate perchlorate concentrations less than the sample detection limit in both monitoring wells. Additionally, groundwater samples collected from all monitoring wells located 25 to 50 feet downgradient from the injection well transect exhibited slight perchlorate concentration decreases of up to 39 percent when compared to baseline concentrations. Lastly, groundwater samples collected from monitoring well LVWPS-MW223C, which is located approximately 200 feet downgradient from the Zone 2 injection well transect, indicate a perchlorate concentration reduction of approximately 53 percent when compared to baseline, likely indicative of a preferential flow path in this vicinity. Nitrate and chlorate concentrations followed a similar pattern to perchlorate.
 - Zone 3 UMCf-cg – Approximately two months following injections into Zone 3 UMCf-cg, groundwater samples collected from three of the six monitoring wells located approximately 25 feet downgradient exhibited a greater than 89% reduction in perchlorate concentrations compared to baseline. In addition, groundwater samples collected from monitoring wells LVWPS-U3-MW10A/B, which are located approximately 100 feet downgradient from the Zone 3 injection well transect, both exhibited a greater than 99% reduction in perchlorate, chlorate, and nitrate concentrations compared to baseline. Lastly, groundwater samples collected from LVWPS-U2-MW12B, which is located approximately 150 feet downgradient, continued to indicate decreasing perchlorate, chlorate, and nitrate concentrations two months after injections, with concentration decreases of greater than 78 percent when compared to baseline for all three analytes.

These observations farther downgradient relative to observations in the UMCf in Zones 1 and 2 are likely related to the coarser-grained aquifer matrix in Zone 3 UMCf-cg and faulting in the area.

- Surface water sampling was performed prior to injection activities on October 16, 2020 and October 29, 2020. Five surface water sampling events have since been performed on a monthly basis since December 2020 (during injections) and continuing through April 2021 (after injections). Although limited surface water sampling will be periodically conducted downgradient of the study area, reducing perchlorate concentrations in surface water is not an objective of this pilot study. Noteworthy results related to the pilot study will be summarized in future monthly progress reports as warranted.
- Dye Study – As part of injection activities, rhodamine WT and fluorescein tracer dyes were injected into the alluvium and UMCf/UMCf-cg, respectively. A summary of the sampling program and results from the December 2020 and January 2021 sampling events was presented to NDEP on March 4, 2021. Available analytical results for dye samples collected during baseline activities, injection activities, and the December 2020 through March 2021 effectiveness monitoring events are provided in Table 8. There were several cases where charcoal samplers showed low detections of dye, but the water samples did not show dye, indicating that either the dye peak already passed before the water sample was collected, or the levels of dye in the water were too low to be detectable. Results from future sampling events will be evaluated to provide additional clarification of the likely scenario. Noteworthy results during this monitoring period (March 2021 sampling event) are described below:
 - Zone 2 Alluvium:
 - During injection activities, rhodamine tracer dye was measured in all four of the Zone 2 alluvium dose response wells. Three months following injection activities, rhodamine tracer dye was still being detected in either charcoal or water samples from all four dose response wells.
 - Cross-gradient monitoring wells LVWPS-A2-MW04A/B and LVWPS-A2-MW05A/B (located approximately 17 feet from either end of the Zone 2 injection well transect) had detections of rhodamine dye with the field probe in all four of these wells during injections. Three months following injections, rhodamine dye was still detected in groundwater samples collected from one monitoring well LVWPS-A2-MW05B. However, total organic carbon (TOC) concentrations (a surrogate for the carbon substrate injected) remain elevated above baseline concentrations in all four cross-gradient wells. This is expected based on the ability of the emulsified vegetable oil to adsorb to the subsurface in the vicinity of the injection well transect, whereas the tracer dye continues to move downgradient.
 - As expected, the high groundwater flow velocity in the alluvium resulted in many downgradient wells observing the presence of dye during active injections or within a few days after injections were completed. Approximately three months after injection activities were completed, rhodamine dye was detected in Zone 2 alluvium groundwater samples collected from five monitoring wells located 50 to 250 feet downgradient from the injection well transect. Additionally, rhodamine dye was detected in charcoal samplers collected from 11 monitoring wells located 50 to 250 feet downgradient from the injection well transect. Lastly, three months after injections, rhodamine dye continued to be detected in charcoal collected from LVWPS-MW209 and LVWPS-MW210A/B, which are located approximately 625 and 850 feet downgradient, respectively.

- Zone 1, 2, and 3 UMCf/UMCf-cg:
 - Zone 1 UMCf – Three months after injections were completed in Zone 1 UMCf, fluorescein tracer dye was no longer detected in groundwater samples collected 50 feet upgradient from the injection well transect at LVWPS-U1-MW06B and LVWPS-U1-MW07 indicating downgradient migration over time. Dye continued to be detected in both charcoal and groundwater samples collected from all four dose response wells and monitoring wells LVWPS-U1-MW08A/B (located 25 feet downgradient). In addition, fluorescein dye was detected in charcoal collected from monitoring well LVWPS-U1-MW02B (located approximately 33 feet downgradient) for the first time three months after the first injection event.
 - Zone 2 UMCf – Approximately three months after injections, fluorescein was detected in the groundwater sample collected from dose response well LVWPS-U2-DR02 and both cross-gradient monitoring wells LVWPS-U2-MW04 and LVWPS-U2-MW05, which are located approximately 12 feet from the injection well transect. Rhodamine and low levels of fluorescein continued to be detected in charcoal at LVWPS-U2-MW17, which is located 100 feet downgradient. The rhodamine detection is from the injections into the Zone 2 alluvium, which likely migrated into the downgradient UMCf well due to localized downward gradients present within Zone 2. Fluorescein was also detected in charcoal samples from six alluvial wells located 50 and 100 feet downgradient from the Zone 2 UMCf injection well transect, indicating upflux from the UMCf into the alluvium in the Zone 2 vicinity. These wells (LVWPS-A2-MW08C, LVWPS-A2-MW17C, LVWPS-A2-MW14A, LVWPS-A2-MW12A/B, and LVWPS-A2-MW13B) have had fluorescein detections in charcoal beginning in December 2020 to January 2021, which continued across multiple subsequent months. Two wells (LVWPS-A2-MW08C, LVWPS-A2-MW17C) have also had intermittent detections of fluorescein in water samples.
 - Zone 3 UMCf-cg – Approximately three months after injections were completed in the Zone 3 UMCf-cg, fluorescein continued to be detected in either charcoal or groundwater samples collected from all dose response wells and four of the six monitoring wells located approximately 25 feet downgradient from the Zone 3 injection well transect. In addition, fluorescein tracer dye was detected in charcoal and/or groundwater samples collected from monitoring wells LVWPS-U3-MW10A/B and LVWPS-MW12A/B, which are located approximately 100 and 150 feet downgradient, respectively.
- Access and Permitting
 - All access agreements and permits are now in place for all projected pilot study activities.
- Schedule and Progress Updates
 - The fifth monthly effectiveness monitoring event is scheduled for the week of May 3, 2021. In accordance with the Work Plan Addendum, the effectiveness monitoring program associated with Zones 1, 2, and 3 UMCf and UMCf-cg will be performed on a bimonthly basis beginning in May 2021 and continuing on a bimonthly basis until additional injections are performed in the UMCf/UMCf-cg.
 - The third injection event into all remediation zones is tentatively planned for the fourth quarter of 2021. The exact timing of the injection event will be determined based on results from the on-going effectiveness monitoring program.

- **Health and Safety**
 - There were no safety incidents related to Task M19 during April 2021.
 - Safety measures continue to be implemented to minimize potential exposure to COVID-19, including the use of face coverings, gloves, and hand sanitizer, as well as protocols for monitoring temperatures, minimizing the number of people on site at one time, and evaluating tasks to increase physical distance between personnel.

CERTIFICATION

Las Vegas Wash Bioremediation Pilot 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: Jay A Steinberg Not Individually, but Solely as President of the Trustee, 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: 6/15/21

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: Las Vegas Wash Bioremediation Pilot Study Monthly Progress Report, Nevada Environmental Response Trust Site, Henderson, Nevada.



David S. Wilson, CEM
Field Operations Manager/Geologist
Tetra Tech, Inc.

June 15, 2021

Date

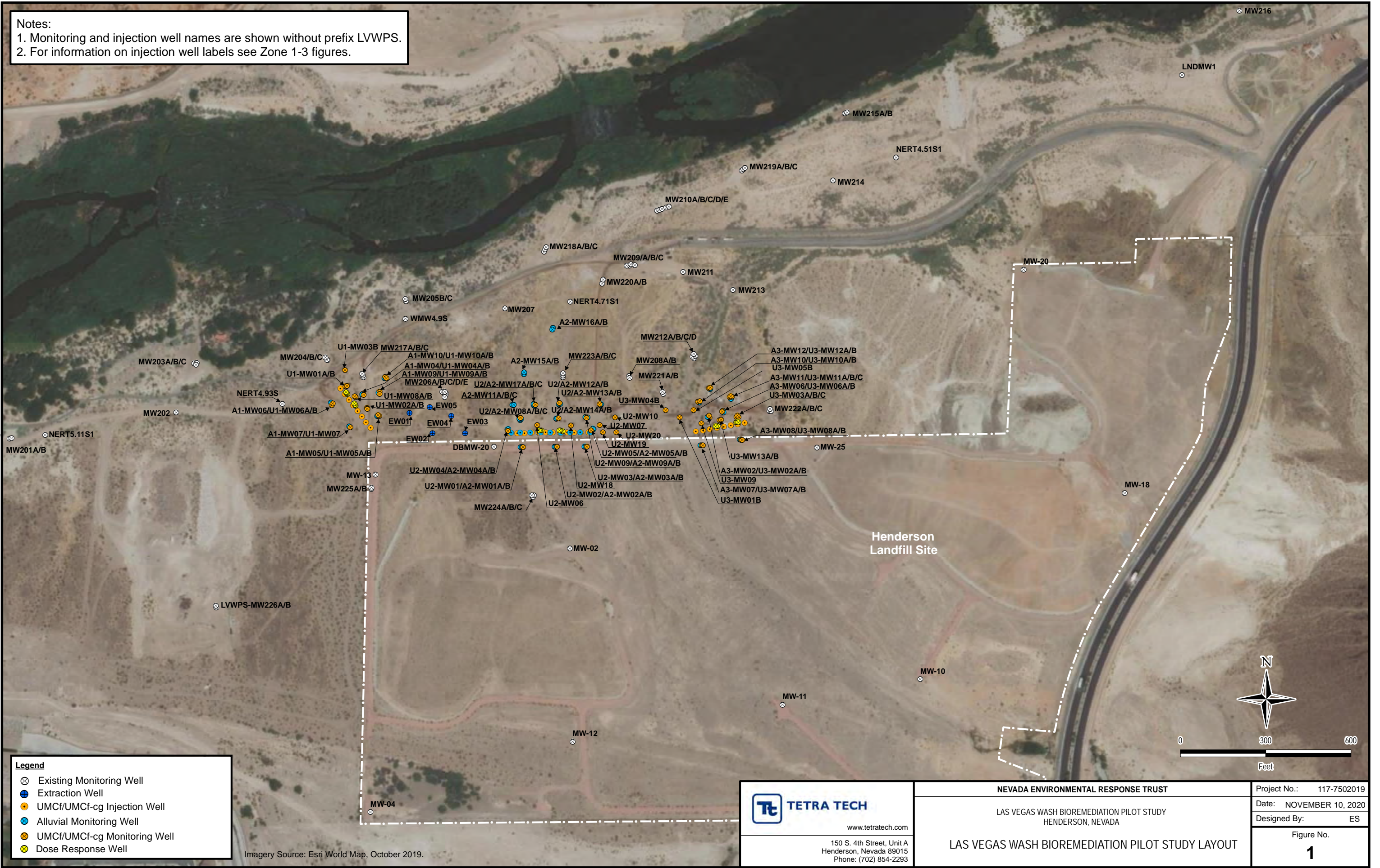
Nevada CEM Certificate Number: 2385
Nevada CEM Expiration Date: September 19, 2022

Figures

Notes:

1. Monitoring and injection well names are shown without prefix LVWPS.
2. For information on injection well labels see Zone 1-3 figures.

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Legend

- Existing Monitoring Well
- Extraction Well
- UMCf/UMCf-cg Injection Well
- Alluvial Monitoring Well
- UMCf/UMCf-cg Monitoring Well
- Dose Response Well

Imagery Source: Esri World Map, October 2019.

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NEVADA ENVIRONMENTAL RESPONSE TRUST
 LAS VEGAS WASH BIOREMEDIATION PILOT STUDY
 HENDERSON, NEVADA
LAS VEGAS WASH BIOREMEDIATION PILOT STUDY LAYOUT

Project No.:	117-7502019
Date:	NOVEMBER 10, 2020
Designed By:	ES
Figure No.	1

- Legend**
- ⊕ Extraction Well
 - ⊙ Dual-Nested UMCf Injection Well
 - ⊗ Alluvial Monitoring Well
 - ⊗ UMCf Monitoring Well
 - ⊗ UMCf (Semi-consolidated) Monitoring Well
 - ⊗ Dose Response Well



Note:
Monitoring and injection well names are shown without prefix LVWPS.



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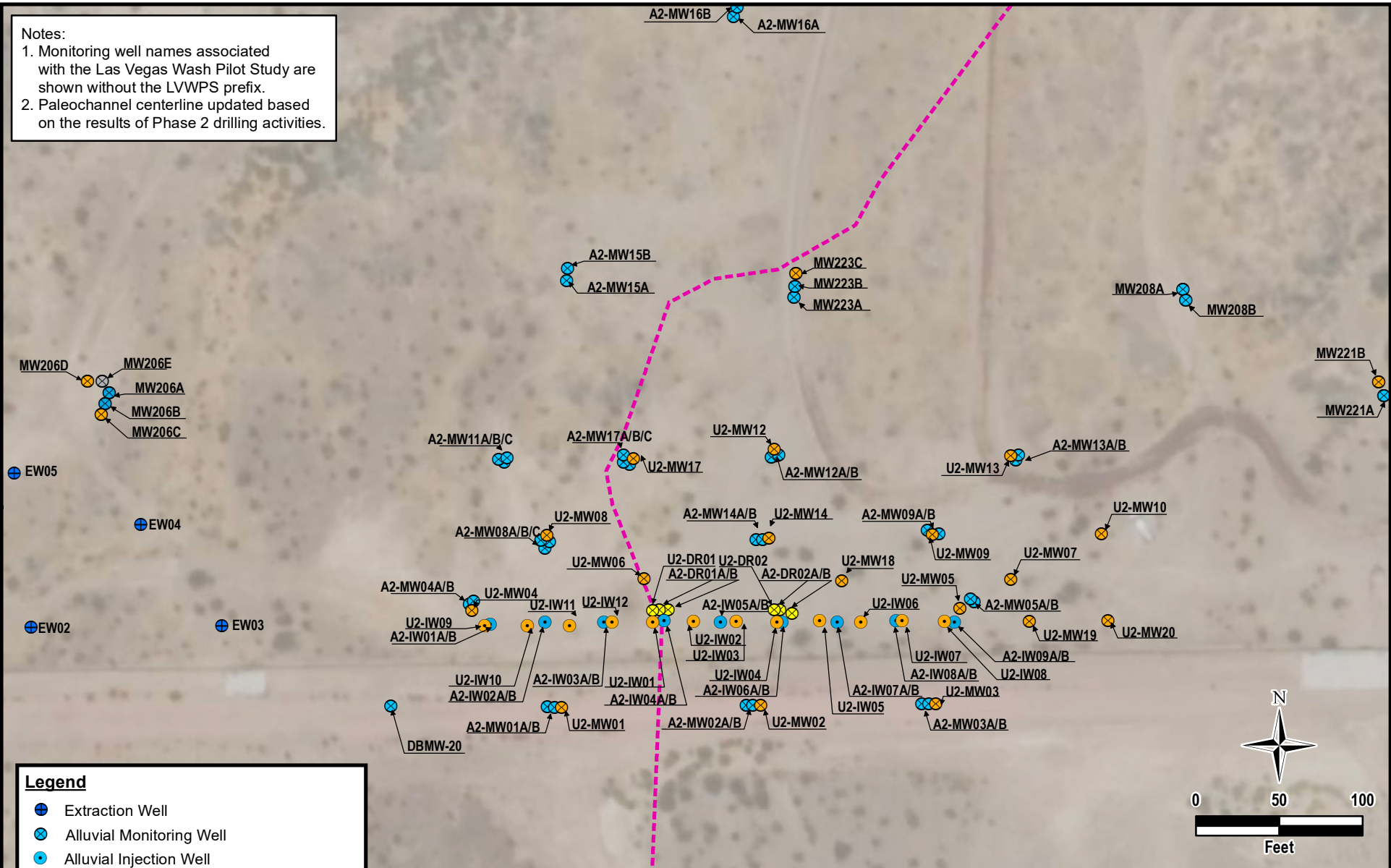
LAS VEGAS WASH BIOREMEDIATION PILOT STUDY
HENDERSON, NEVADA

WELL LAYOUT FOR ZONE 1 STUDY AREA

PROJECT NO.: 117-7502019
DATE: NOVEMBER 10, 2020
DESIGNED BY: ES

Figure No.
2

Notes:
 1. Monitoring well names associated with the Las Vegas Wash Pilot Study are shown without the LVWPS prefix.
 2. Paleochannel centerline updated based on the results of Phase 2 drilling activities.



Legend

- ⊕ Extraction Well
- ⊗ Alluvial Monitoring Well
- ⊙ Alluvial Injection Well
- ⊗ UMCf Monitoring Well
- ⊗ UMCf (semi-consolidated) Monitoring Well
- ⊙ UMCf Injection Well
- ⊗ Dose-Response Well
- Paleochannel Centerline








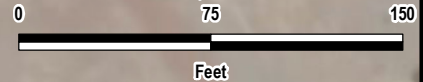
 TETRA TECH www.tetrattech.com 150 S. 4th Street, Unit A Henderson, Nevada 89015 Phone: (702) 854-2293	NEVADA ENVIRONMENTAL RESPONSE TRUST LAS VEGAS WASH BIOREMEDIATION PILOT STUDY HENDERSON, NEVADA	PROJECT NO.: 117-7502019 DATE: APRIL 7, 2021 DESIGNED BY: ES
	WELL LAYOUT FOR ZONE 2 STUDY AREA	

Figure No.
3

Legend

-  Alluvial Monitoring Well
-  Dose-Response Well
-  UMCf/UMCf-cg Injection Well
-  UMCf/UMCf-cg Monitoring Well



Notes:
1. Monitoring and injection well names are shown without prefix LVWPS.

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NEVADA ENVIRONMENTAL RESPONSE TRUST
LAS VEGAS WASH BIOREMEDIATION PILOT STUDY
HENDERSON, NEVADA

WELL LAYOUT FOR ZONE 3 STUDY AREA

PROJECT NO.:	117-7502019
DATE:	MARCH 30, 2021
DESIGNED BY:	ES
Figure No.	4

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Tables

Table 1
Phase 2 Well Construction Details
Las Vegas Wash Bioremediation Pilot Study

Well ID	Screened Lithology	Northing	Easting	Ground Surface Elevation	Top of Casing Elevation	Depth to Water ¹	Construction Type	Construction Material	Slot Size	Filter Pack Gradation	Borehole Diameter	Borehole Total Depth	Well Diameter	Nominal Screen Length	Well Total Depth	Bottom of Screen	Top of Screen
				feet amsl	feet amsl	feet bTOC			inches		inches	feet bgs	inches	feet	feet bgs	feet bgs	feet bgs
Zone 1 Study Area																	
LWVPS-A1-DR01	Alluvium	26735024.80	838207.19	1524.18	1523.98	29.38	Single	Schedule 40 PVC	0.020	#3	6	83.5	2	20	83	82.5	62.8
LWVPS-A1-DR02	Alluvium	26734983.35	838236.38	1524.57	1524.20	29.54	Single	Schedule 40 PVC	0.020	#3	6	79.0	2	20	78.5	78	58.3
LWVPS-A1-MW04	Alluvium	26735022.91	838259.32	1529.32	1529.30	34.87	Single	Schedule 40 PVC	0.020	#3	6	92.5	2	20	89.5	89	69.3
LWVPS-A1-MW05	Alluvium	26734946.32	838312.17	1530.88	1530.55	36.10	Single	Schedule 40 PVC	0.020	#3	6	95.0	2	20	89.5	89	69.3
LWVPS-A1-MW06	Alluvium	26734994.26	838149.70	1523.90	1523.76	28.80	Single	Schedule 40 PVC	0.020	#3	6	85.0	2	20	79.5	79	59.3
LWVPS-A1-MW07	Alluvium	26734911.17	838213.86	1525.06	1524.99	30.15	Single	Schedule 40 PVC	0.020	#3	6	80.0	2	20	78.5	78	58.3
LWVPS-A1-MW09	Alluvium	26735029.71	838317.19	1529.61	1529.43	35.62	Single	Schedule 40 PVC	0.020	#3	6	107.0	2	20	106	105.5	85.8
LWVPS-A1-MW10	Alluvium	26735080.18	838337.96	1527.26	1527.07	33.55	Single	Schedule 40 PVC	0.020	#3	6	91.5	2	20	91	90.5	70.8
LWVPS-U1-DR01A	UMCf	26735027.64	838205.37	1524.09	1524.00	29.15	Single	Schedule 40 PVC	0.010	#2/16	6	116.5	2	25	115.5	115	90.3
LWVPS-U1-DR01B	UMCf	26735030.53	838203.16	1524.07	1523.94	28.89	Single	Schedule 80 PVC	0.010	#2/16	6	152.5	2	30	151.5	151	121.3
LWVPS-U1-DR02A	UMCf	26734986.83	838234.68	1524.02	1523.92	29.15	Single	Schedule 40 PVC	0.010	#2/16	6	117.5	2	30	117	116.5	86.8
LWVPS-U1-DR02B	UMCf	26734991.38	838232.08	1523.92	1523.71	28.63	Single	Schedule 80 PVC	0.010	#2/16	6	153.5	2	30	153	152.5	122.8
LWVPS-U1-IW01A	UMCf	26735044.59	838183.29	1523.67	1523.72	28.91	Dual-Nested	Schedule 40 PVC	0.010	#2/16	10	155.0	2	25	114	113.5	88.8
LWVPS-U1-IW01B	UMCf	26735044.44	838182.98	1523.67	1523.65	28.76		Schedule 40 PVC	0.010	#2/16			2	25	145.5	145	120.3
LWVPS-U1-IW02A	UMCf	26735024.11	838198.37	1524.46	1524.39	29.41	Dual-Nested	Schedule 40 PVC	0.010	#2/16	10	155.0	2	25	115.5	115	90.3
LWVPS-U1-IW02B	UMCf	26735023.96	838198.03	1524.46	1524.43	29.42		Schedule 40 PVC	0.010	#2/16			2	30	151.5	151	121.3
LWVPS-U1-IW03A	UMCf	26735004.66	838213.18	1523.88	1523.55	28.59	Dual-Nested	Schedule 40 PVC	0.010	#2/16	10	155.0	2	25	119	118.5	93.8
LWVPS-U1-IW03B	UMCf	26735004.34	838213.12	1523.88	1523.53	28.40		Schedule 40 PVC	0.010	#2/16			2	25	150.5	150	125.3
LWVPS-U1-IW04A	UMCf	26734984.96	838228.48	1523.90	1523.65	28.89	Dual-Nested	Schedule 40 PVC	0.010	#2/16	10	155.0	2	30	117	116.5	86.8
LWVPS-U1-IW04B	UMCf	26734984.86	838228.18	1523.90	1523.59	28.49		Schedule 40 PVC	0.010	#2/16			2	30	153	152.5	122.8
LWVPS-U1-IW05A	UMCf	26734965.08	838243.71	1524.36	1524.25	29.45	Dual-Nested	Schedule 40 PVC	0.010	#2/16	10	155.0	2	25	114	113.5	88.8
LWVPS-U1-IW05B	UMCf	26734965.09	838243.38	1524.36	1524.23	29.21		Schedule 40 PVC	0.010	#2/16			2	25	145.5	145	120.3
LWVPS-U1-IW06A	UMCf	26734945.21	838258.76	1524.91	1525.12	30.40	Dual-Nested	Schedule 40 PVC	0.010	#2/16	10	157.5	2	25	113	112.5	87.8
LWVPS-U1-IW06B	UMCf	26734945.02	838258.36	1524.91	1525.07	30.06		Schedule 40 PVC	0.010	#2/16			2	30	149.5	149	119.3
LWVPS-U1-IW07A	UMCf	26734925.20	838273.28	1529.08	1528.30	33.50	Dual-Nested	Schedule 40 PVC	0.010	#2/16	10	160.0	2	25	121	120.5	95.8
LWVPS-U1-IW07B	UMCf	26734925.28	838272.95	1529.08	1528.66	33.46		Schedule 40 PVC	0.010	#2/16			2	25	152.5	152	127.3
LWVPS-U1-IW08A	UMCf	26734905.81	838289.00	1529.69	1530.71	35.85	Dual-Nested	Schedule 40 PVC	0.010	#2/16	10	170.0	2	30	125.5	125	95.3
LWVPS-U1-IW08B	UMCf	26734905.38	838288.84	1529.69	1530.83	35.70		Schedule 40 PVC	0.010	#2/16			2	25	157	156.5	131.8
LWVPS-U1-MW01A	UMCf	26735054.25	838206.27	1526.30	1526.15	31.60	Single	Schedule 40 PVC	0.010	#2/16	6	116.0	2	25	115.5	115	90.3
LWVPS-U1-MW01B	UMCf	26735052.48	838200.84	1525.78	1525.85	30.95	Single	Schedule 80 PVC	0.010	#2/16	8	157.5	4	20	153.5	153	133.5
LWVPS-U1-MW02A	UMCf	26734972.90	838277.36	1529.90	1529.61	35.00	Single	Schedule 40 PVC	0.010	#2/16	6	120.0	2	25	119.5	119	94.3
LWVPS-U1-MW02B	UMCf	26734976.53	838276.51	1529.75	1529.63	34.81	Single	Schedule 80 PVC	0.010	#2/16	8	165.0	4	25	162	161.5	136.9
LWVPS-U1-MW03B	UMCf	26735108.31	838199.29	1527.13	1527.06	32.32	Single	Schedule 80 PVC	0.010	#2/16	8	165.0	4	20	154.5	154	134.5
LWVPS-U1-MW04A	UMCf	26735021.39	838264.46	1529.55	1529.35	34.82	Single	Schedule 40 PVC	0.010	#2/16	6	126.5	2	25	124.5	124	99.3
LWVPS-U1-MW04B	UMCf	26735026.82	838262.94	1529.47	1529.33	34.59	Single	Schedule 80 PVC	0.010	#2/16	8	175.0	4	25	165	164.5	139.9
LWVPS-U1-MW05A	UMCf	26734947.22	838319.22	1530.32	1529.93	35.52	Single	Schedule 40 PVC	0.010	#2/16	6	122.0	2	25	121	120.5	95.8
LWVPS-U1-MW05B	UMCf	26734951.22	838315.42	1530.45	1530.30	35.40	Single	Schedule 80 PVC	0.010	#2/16	8	172.5	4	25	162	161.5	136.9
LWVPS-U1-MW06A	UMCf	26734986.21	838153.16	1523.81	1523.70	28.56	Single	Schedule 40 PVC	0.010	#2/16	6	106.5	2	20	105.5	105	85.3
LWVPS-U1-MW06B	UMCf	26734991.82	838156.18	1524.09	1523.73	28.51	Single	Schedule 40 PVC	0.010	#2/16	6	143.0	2	25	134.5	134	109.3
LWVPS-U1-MW07	UMCf	26734907.19	838218.01	1525.17	1524.96	30.16	Single	Schedule 40 PVC	0.010	#2/16	6	140.0	2	25	111.5	111	86.3
LWVPS-U1-MW08A	UMCf	26735014.52	838236.36	1524.11	1523.97	29.20	Single	Schedule 40 PVC	0.010	#2/16	6	120.0	2	25	119	118.5	93.8
LWVPS-U1-MW08B	UMCf	26735017.13	838233.33	1523.84	1523.74	28.75	Single	Schedule 80 PVC	0.010	#2/16	6	151.0	2	25	150.5	150	125.3
LWVPS-U1-MW09A	UMCf	26735032.96	838320.87	1529.36	1529.11	35.12	Single	Schedule 40 PVC	0.010	#2/16	6	126.0	2	10	125.5	125	115.3
LWVPS-U1-MW09B	UMCf	26735025.78	838320.98	1529.37	1529.08	34.62	Single	Schedule 80 PVC	0.010	#2/16	6	156.0	2	25	155.5	155	130.3
LWVPS-U1-MW10A	UMCf	26735085.42	838340.44	1527.11	1527.02	33.20	Single	Schedule 40 PVC	0.010	#2/16	6	125.0	2	25	124.5	124	99.3
LWVPS-U1-MW10B	UMCf	26735081.08	838344.98	1527.40	1527.21	32.98	Single	Schedule 80 PVC	0.010	#2/16	6	160.0	2	25	155.5	155	130.3
Zone 2 Study Area																	
LWVPS-A2-DR01A	Alluvium	26734896.39	838889.65	1524.78	1524.77	31.90	Single	Schedule 40 PVC	0.020	#3	6	72.0	2	35	71.5	71	36.3
LWVPS-A2-DR01B	Alluvium	26734896.42	838884.23	1524.80	1524.57	31.75	Single	Schedule 40 PVC	0.020	#3	6	113.0	2	35	112.5	112	77.3
LWVPS-A2-DR02A	Alluvium	26734894.17	838964.08	1524.91	1524.65	32.00	Single	Schedule 40 PVC	0.020	#3	6	52.5	2	15	52	51.5	36.8
LWVPS-A2-DR02B	Alluvium	26734896.56	838956.61	1524.91	1524.90	32.09	Single	Schedule 40 PVC	0.020	#3	6	78.5	2	20	78	77.5	57.8
LWVPS-A2-IW01A	Alluvium	26734887.97	838782.98	1530.17	1529.79	36.44	Dual-Nested	Schedule 40 PVC	0.020	#3	10	105.0	2	25	66.5	66	41.3
LWVPS-A2-IW01B	Alluvium	26734888.00	838782.65	1530.17	1529.78	36.64		Schedule 40 PVC	0.020	#3			2	25	98	97.5	72.8
LWVPS-A2-IW02A	Alluvium	26734888.97	838815.84	1529.49	1529.01	35.88	Dual-Nested	Schedule 40 PVC	0.020	#3	10	110.0	2	30	69	68.5	38.8
LWVPS-A2-IW02B	Alluvium	26734889.05	838815.49	1529.49	1529.03	36.22		Schedule 40 PVC	0.020	#3			2	25	100.5	100	75.3
LWVPS-A2-IW03A	Alluvium	26734888.88	838851.00	1527.28	1526.93	33.94	Dual-Nested	Schedule 40 PVC	0.020	#3	10	115.0	2	30	67.5	67	37.3
LWVPS-A2-IW03B	Alluvium	26734889.18	838850.83	1527.28	1526.93	33.94		Schedule 40 PVC	0.020	#3			2	30	104	103.5	73.8
LWVPS-A2-IW04A	Alluvium	26734889.81	838887.08	1524.70	1524.57	31.70	Dual-Nested	Schedule 40 PVC	0.020	#3	10	115.0	2	35	71.5	71	36.3
LWVPS-A2-IW04B	Alluvium	26734890.02	838886.74	1524.70	1524.61	31.80		Schedule 40 PVC	0.020	#3			2	35	112.5	112	77.3

Table 1
Phase 2 Well Construction Details
 Las Vegas Wash Bioremediation Pilot Study

Well ID	Screened Lithology	Northing	Easting	Ground Surface Elevation	Top of Casing Elevation	Depth to Water ¹	Construction Type	Construction Material	Slot Size	Filter Pack Gradation	Borehole Diameter	Borehole Total Depth	Well Diameter	Nominal Screen Length	Well Total Depth	Bottom of Screen	Top of Screen
				feet amsl	feet amsl	feet bTOC			inches		inches	feet bgs	inches	feet	feet bgs	feet bgs	feet bgs
LWVPS-A2-IW05A	Alluvium	26734889.15	838921.04	1524.89	1524.86	32.05	Dual-Nested	Schedule 40 PVC	0.020	#3	10	105.0	2	25	63	62.5	37.8
LWVPS-A2-IW05B	Alluvium	26734889.30	838920.74	1524.89	1524.83	31.94		Schedule 40 PVC	0.020	#3			2	25	94	93.5	68.8
LWVPS-A2-IW06A	Alluvium	26734888.81	838957.92	1524.94	1524.91	32.20	Dual-Nested	Schedule 40 PVC	0.020	#3	10	80.0	2	15	52	51.5	36.8
LWVPS-A2-IW06B	Alluvium	26734888.84	838957.55	1524.94	1524.89	32.10		Schedule 40 PVC	0.020	#3			2	20	78	77.5	57.8
LWVPS-A2-IW07A	Alluvium	26734889.27	838991.11	1524.39	1524.31	31.57	Dual-Nested	Schedule 40 PVC	0.020	#3	10	85.0	2	15	50.5	50	35.3
LWVPS-A2-IW07B	Alluvium	26734889.32	838990.81	1524.39	1524.34	31.57		Schedule 40 PVC	0.020	#3			2	20	76.5	76	56.3
LWVPS-A2-IW08A	Alluvium	26734889.80	839026.35	1524.85	1524.74	32.10	Dual-Nested	Schedule 40 PVC	0.020	#3	10	90.0	2	20	56	55.5	35.8
LWVPS-A2-IW08B	Alluvium	26734889.91	839026.04	1524.85	1524.80	32.15		Schedule 40 PVC	0.020	#3			2	20	82	81.5	61.8
LWVPS-A2-IW09A	Alluvium	26734889.16	839061.18	1525.33	1525.37	32.68	Dual-Nested	Schedule 40 PVC	0.020	#3	10	85.0	2	15	52	51.5	36.8
LWVPS-A2-IW09B	Alluvium	26734889.14	839060.89	1525.33	1525.37	32.69		Schedule 40 PVC	0.020	#3			2	15	74	73.5	58.8
LWVPS-A2-MW01A	Alluvium	26734838.04	838817.08	1526.61	1526.29	33.07	Single	Schedule 40 PVC	0.020	#3	6	61	2	20	60.5	60	40.3
LWVPS-A2-MW01B	Alluvium	26734837.91	838821.64	1526.61	1526.16	33.09	Single	Schedule 40 PVC	0.020	#3	6	91	2	20	90.5	90	70.3
LWVPS-A2-MW02A	Alluvium	26734839.33	838936.61	1527.83	1527.49	34.66	Single	Schedule 40 PVC	0.020	#3	6	61	2	20	60.5	60	40.3
LWVPS-A2-MW02B	Alluvium	26734839.33	838940.48	1527.88	1527.62	34.55	Single	Schedule 40 PVC	0.020	#3	6	91	2	20	90.5	90	70.3
LWVPS-A2-MW03A	Alluvium	26734839.87	839041.77	1528.00	1527.72	34.95	Single	Schedule 40 PVC	0.020	#3	6	60	2	20	58.5	58	38.3
LWVPS-A2-MW03B	Alluvium	26734839.96	839046.05	1528.02	1527.68	34.90	Single	Schedule 40 PVC	0.020	#3	6	85	2	20	84.5	84	64.3
LWVPS-A2-MW04A	Alluvium	26734900.17	838770.49	1527.54	1527.55	34.24	Single	Schedule 40 PVC	0.020	#3	6	64.5	2	20	64	63.5	43.8
LWVPS-A2-MW04B	Alluvium	26734901.60	838772.88	1528.17	1527.86	34.91	Single	Schedule 40 PVC	0.020	#3	6	96.0	2	20	95.5	95	75.3
LWVPS-A2-MW05A	Alluvium	26734901.04	839073.31	1524.49	1524.18	31.50	Single	Schedule 40 PVC	0.020	#3	6	53.0	2	15	52	51.5	36.8
LWVPS-A2-MW05B	Alluvium	26734903.12	839070.97	1524.49	1524.29	31.68	Single	Schedule 40 PVC	0.020	#3	6	75.0	2	15	74	73.5	58.8
LWVPS-A2-MW08A	Alluvium	26734933.48	838815.75	1529.44	1529.35	36.36	Single	Schedule 40 PVC	0.020	#3	6	56.0	2	15	55.5	55	40.3
LWVPS-A2-MW08B	Alluvium	26734937.17	838818.51	1529.20	1528.84	35.90	Single	Schedule 40 PVC	0.020	#3	6	81.3	2	20	80	79.5	59.8
LWVPS-A2-MW08C	Alluvium	26734938.06	838813.32	1529.24	1528.93	36.25	Single	Schedule 40 PVC	0.020	#3	6	110.0	2	20	106.5	106	86.3
LWVPS-A2-MW09A	Alluvium	26734942.12	839052.25	1523.77	1523.56	30.91	Single	Schedule 40 PVC	0.020	#3	6	56.0	2	20	55	54.5	34.8
LWVPS-A2-MW09B	Alluvium	26734943.95	839045.22	1523.85	1523.67	31.31	Single	Schedule 40 PVC	0.020	#3	6	85.0	2	20	79	78.5	58.8
LWVPS-A2-MW11A	Alluvium	26734984.76	838791.31	1528.05	1528.00	35.10	Single	Schedule 40 PVC	0.020	#3	6	61.5	2	20	60.5	60	40.3
LWVPS-A2-MW11B	Alluvium	26734986.77	838787.83	1528.01	1527.79	35.06	Single	Schedule 40 PVC	0.020	#3	6	86.0	2	20	85.5	85	65.3
LWVPS-A2-MW11C	Alluvium	26734987.49	838793.00	1528.09	1527.81	35.36	Single	Schedule 40 PVC	0.020	#3	6	114.0	2	20	110.5	110	90.3
LWVPS-A2-MW12A	Alluvium	26734988.20	838951.66	1523.08	1522.85	30.24	Single	Schedule 40 PVC	0.020	#3	6	46.0	2	10	45	44.5	34.9
LWVPS-A2-MW12B	Alluvium	26734989.46	838955.96	1523.15	1522.94	30.48	Single	Schedule 40 PVC	0.020	#3	6	75.0	2	20	69.5	69	49.3
LWVPS-A2-MW13A	Alluvium	26734986.06	839098.37	1523.62	1523.23	31.00	Single	Schedule 40 PVC	0.020	#3	6	62.0	2	20	61.5	61	41.3
LWVPS-A2-MW13B	Alluvium	26734989.09	839099.95	1523.60	1523.40	31.44	Single	Schedule 40 PVC	0.020	#3	6	90.0	2	20	86.6	86.1	66.4
LWVPS-A2-MW14A	Alluvium	26734938.41	838942.48	1524.15	1523.84	31.16	Single	Schedule 40 PVC	0.020	#3	6	51.5	2	15	51	50.5	35.8
LWVPS-A2-MW14B	Alluvium	26734938.74	838946.20	1524.51	1524.32	31.70	Single	Schedule 40 PVC	0.020	#3	6	80.0	2	20	75	74.5	54.8
LWVPS-A2-MW15A	Alluvium	26735094.04	838828.85	1521.20	1520.95	28.70	Single	Schedule 40 PVC	0.020	#3	6	61.0	2	20	60	59.5	39.8
LWVPS-A2-MW15B	Alluvium	26735101.30	838829.49	1521.68	1521.37	29.34	Single	Schedule 40 PVC	0.020	#3	6	110.0	2	20	90.5	90	70.3
LWVPS-A2-MW16A	Alluvium	26735252.27	838928.69	1520.47	1520.73	29.34	Single	Schedule 40 PVC	0.020	#3	6	56.0	2	20	56	55.5	35.8
LWVPS-A2-MW16B	Alluvium	26735258.00	838931.03	1520.25	1520.51	29.21	Single	Schedule 40 PVC	0.020	#3	6	90.0	2	20	80.5	80	60.3
LWVPS-A2-MW17A	Alluvium	26734983.57	838866.47	1526.43	1526.35	33.65	Single	Schedule 40 PVC	0.020	#3	6	61.5	2	20	60.5	60	40.3
LWVPS-A2-MW17B	Alluvium	26734985.17	838863.03	1526.25	1526.26	33.65	Single	Schedule 40 PVC	0.020	#3	6	86.0	2	20	85.5	85	65.3
LWVPS-A2-MW17C	Alluvium	26734989.37	838862.92	1526.03	1525.81	33.86	Single	Schedule 40 PVC	0.020	#3	6	115.5	2	20	110.5	110	90.3
LWVPS-U2-DR01	UMCf	26734896.14	838880.43	1524.84	1524.74	32.06	Single	Schedule 40 PVC	0.010	#2/16	6	142.0	2	20	141.5	141	121.3
LWVPS-U2-DR02	UMCf	26734896.48	838953.23	1524.85	1524.76	32.25	Single	Schedule 40 PVC	0.010	#2/16	6	109.5	2	25	109	108.5	83.8
LWVPS-U2-IW01	UMCf	26734889.36	838880.42	1524.71	1524.63	32.09	Single	Schedule 40 PVC	0.010	#2/16	6	155.0	2	20	141.5	141	121.2
LWVPS-U2-IW02	UMCf	26734889.50	838905.01	1525.09	1525.07	32.55	Single	Schedule 40 PVC	0.010	#2/16	6	145.0	2	25	141.5	141	116.2
LWVPS-U2-IW03	UMCf	26734889.40	838930.38	1524.99	1524.91	32.25	Single	Schedule 40 PVC	0.010	#2/16	6	125.0	2	25	124.5	124	99.2
LWVPS-U2-IW04	UMCf	26734888.87	838954.79	1524.89	1524.84	32.10	Single	Schedule 40 PVC	0.010	#2/16	6	145.0	2	25	109	108.5	83.7
LWVPS-U2-IW05	UMCf	26734889.80	838980.34	1524.54	1524.54	32.80	Single	Schedule 40 PVC	0.010	#2/16	6	120.0	2	30	118	117.5	87.7
LWVPS-U2-IW06	UMCf	26734889.08	839005.30	1524.82	1524.70	32.52	Single	Schedule 40 PVC	0.010	#2/16	6	115.0	2	15	104.5	104	89.2

Table 1
Phase 2 Well Construction Details
Las Vegas Wash Bioremediation Pilot Study

Well ID	Screened Lithology	Northing	Easting	Ground Surface Elevation	Top of Casing Elevation	Depth to Water ¹	Construction Type	Construction Material	Slot Size	Filter Pack Gradation	Borehole Diameter	Borehole Total Depth	Well Diameter	Nominal Screen Length	Well Total Depth	Bottom of Screen	Top of Screen
				feet amsl	feet amsl	feet bTOC			inches		inches	feet bgs	inches	feet bgs	feet bgs	feet bgs	
LVWPS-U2-IW07	UMCf	26734889.76	839029.85	1524.95	1524.98	32.40	Single	Schedule 40 PVC	0.010	#2/16	6	115.0	2	15	106.5	106	91.2
LVWPS-U2-IW08	UMCf	26734889.41	839055.50	1525.34	1525.29	32.72	Single	Schedule 40 PVC	0.010	#2/16	6	115.0	2	25	109	108.5	83.7
LVWPS-U2-IW09	UMCf	26734886.72	838779.73	1529.53	1529.26	36.22	Single	Schedule 40 PVC	0.010	#2/16	6	130.0	2	25	128.5	128	103.2
LVWPS-U2-IW10	UMCf	26734887.07	838805.16	1529.51	1529.59	36.72	Single	Schedule 40 PVC	0.010	#2/16	6	135.0	2	20	129.5	129	109.3
LVWPS-U2-IW11	UMCf	26734886.91	838830.51	1528.30	1528.02	35.26	Single	Schedule 40 PVC	0.010	#2/16	6	135.0	2	25	134.2	133.7	108.9
LVWPS-U2-IW12	UMCf	26734889.28	838856.13	1526.66	1526.14	33.53	Single	Schedule 40 PVC	0.010	#2/16	6	139.0	2	25	138	137.5	112.8
LVWPS-U2-MW01	UMCf	26734837.77	838825.83	1526.69	1526.40	33.42	Single	Schedule 40 PVC	0.010	#2/16	6	125	2	20	117.5	117	97.3
LVWPS-U2-MW02	UMCf	26734839.36	838945.11	1527.94	1527.68	35.20	Single	Schedule 40 PVC	0.010	#2/16	6	126	2	25	125.5	125	100.3
LVWPS-U2-MW03	UMCf	26734839.69	839050.30	1527.99	1527.66	34.91	Single	Schedule 40 PVC	0.010	#2/16	6	115	2	20	110.5	110	90.3
LVWPS-U2-MW04	UMCf	26734895.79	838771.90	1528.66	1528.35	35.35	Single	Schedule 40 PVC	0.010	#2/16	6	130.0	2	25	128.5	128	103.2
LVWPS-U2-MW05	UMCf	26734897.24	839064.72	1524.94	1524.76	32.20	Single	Schedule 40 PVC	0.010	#2/16	6	110.0	2	25	108.5	108	83.2
LVWPS-U2-MW06	UMCf	26734914.99	838875.13	1525.48	1524.89	32.40	Single	Schedule 40 PVC	0.010	#2/16	6	142.5	2	20	142	141.5	121.8
LVWPS-U2-MW07	UMCf	26734914.74	839095.07	1524.53	1524.37	31.82	Single	Schedule 40 PVC	0.010	#2/16	6	120.0	2	20	108.5	108	88.2
LVWPS-U2-MW08	UMCf	26734941.29	838816.82	1529.11	1528.75	36.21	Single	Schedule 40 PVC	0.010	#2/16	6	135.0	2	20	133.5	133	113.2
LVWPS-U2-MW09	UMCf	26734941.56	839048.32	1523.83	1523.62	31.61	Single	Schedule 40 PVC	0.010	#2/16	6	115.0	2	20	105.2	104.7	84.9
LVWPS-U2-MW10	UMCf	26734942.01	839149.60	1525.67	1525.57	34.12	Single	Schedule 40 PVC	0.010	#2/16	6	120.0	2	20	110.5	110	90.2
LVWPS-U2-MW12	UMCf	26734992.74	838953.32	1523.09	1522.89	31.20	Single	Schedule 40 PVC	0.010	#2/16	6	110.0	2	25	108.5	108	83.2
LVWPS-U2-MW13	UMCf	26734988.97	839095.12	1523.52	1523.42	31.89	Single	Schedule 40 PVC	0.010	#2/16	6	120.0	2	15	110	109.5	94.7
LVWPS-U2-MW14	UMCf	26734939.25	838950.26	1524.77	1524.30	32.70	Single	Schedule 40 PVC	0.010	#2/16	6	110.0	2	25	108.5	108	83.2
LVWPS-U2-MW17	UMCf	26734987.32	838868.87	1526.17	1525.88	34.19	Single	Schedule 40 PVC	0.010	#2/16	6	137.7	2	20	137	136.5	117
LVWPS-U2-MW18	UMCf	26734914.05	838993.79	1524.16	1524.09	32.53	Single	Schedule 40 PVC	0.010	#2/16	6	114.0	2	25	113.5	113	88.3
LVWPS-U2-MW19	UMCf	26734889.37	839106.34	1525.18	1525.07	32.71	Single	Schedule 40 PVC	0.010	#2/16	6	115.0	2	20	111.5	111	91.2
LVWPS-U2-MW20	UMCf	26734889.93	839153.61	1525.44	1525.24	32.98	Single	Schedule 40 PVC	0.010	#2/16	6	115.0	2	20	108.5	108	88.2
LVWPS-BH01	---	26734872.28	838780.13	1530.46	---	---	Soil Boring	---	---	---	6	105.0	---	---	---	---	---
Zone 3 Study Area																	
LVWPS-A3-DR01	Alluvium	26734911.52	839503.33	1522.87	1522.71	30.41	Single	Schedule 40 PVC	0.020	#3	6	76.5	2	20	76	75.5	55.8
LVWPS-A3-MW02	Alluvium	26734944.12	839475.20	1522.61	1522.39	30.30	Single	Schedule 40 PVC	0.020	#3	6	85.0	2	20	73	72.5	52.8
LVWPS-A3-MW06	Alluvium	26734960.45	839530.77	1522.32	1521.99	30.03	Single	Schedule 40 PVC	0.020	#3	6	76.0	2	20	75.5	75	55.3
LVWPS-A3-MW07	Alluvium	26734843.39	839449.63	1525.17	1525.06	32.48	Single	Schedule 40 PVC	0.020	#3	6	75	2	20	75	74.5	54.8
LVWPS-A3-MW08	Alluvium	26734864.46	839588.62	1525.58	1525.30	32.90	Single	Schedule 40 PVC	0.020	#3	6	110	2	20	105	104.5	84.8
LVWPS-A3-MW10	Alluvium	26734994.40	839445.10	1521.78	1521.72	30.06	Single	Schedule 40 PVC	0.020	#3	6	77.0	2	20	76.5	76	56.3
LVWPS-A3-MW11	Alluvium	26735007.80	839556.93	1521.33	1521.36	29.41	Single	Schedule 40 PVC	0.020	#3	6	80.0	2	20	74	73.5	53.8
LVWPS-A3-MW12	Alluvium	26735042.88	839483.87	1520.86	1520.75	29.13	Single	Schedule 40 PVC	0.020	#3	6	80.0	2	20	79.5	79	59.3
LVWPS-U3-DR01A	UMCf-cg	26734912.10	839506.61	1522.95	1522.72	30.55	Single	Schedule 40 PVC	0.010	#2/16	6	124.5	2	30	123.5	123	93.3
LVWPS-U3-DR01B	UMCf-cg	26734912.55	839510.18	1522.84	1522.69	30.71	Single	Schedule 80 PVC	0.010	#2/16	6	160.0	2	30	159.5	159	129.3
LVWPS-U3-DR02A	UMCf-cg	26734924.88	839575.78	1523.27	1523.13	30.96	Single	Schedule 40 PVC	0.010	#2/16	6	112.5	2	25	111.5	111	86.3
LVWPS-U3-DR02B	UMCf-cg	26734925.39	839579.10	1523.15	1522.98	31.05	Single	Schedule 40 PVC	0.010	#2/16	6	144.0	2	25	143	142.5	117.8
LVWPS-U3-DR02C	UMCf-cg	26734925.79	839582.56	1523.10	1522.90	31.03	Single	Schedule 80 PVC	0.010	#2/16	6	175.0	2	25	174.5	174	149.3
LVWPS-U3-IW01	UMCf-cg	26734893.19	839433.14	1522.95	1525.61	34.12	Single	Schedule 40 PVC	0.010	#2/16	10	118.0	2	35	115.5	115	80.2
LVWPS-U3-IW02A	UMCf-cg	26734896.96	839458.60	1522.81	1524.20	33.32	Dual-Nested	Schedule 40 PVC	0.010	#2/16	10	128.0	2	20	99.5	99	79.3
LVWPS-U3-IW02B	UMCf-cg	26734896.77	839458.31	1522.81	1524.22	32.78		Schedule 40 PVC	0.010	#2/16	10	128.0	2	20	125	124.5	104.8
LVWPS-U3-IW03A	UMCf-cg	26734901.01	839482.33	1522.92	1524.25	32.31	Dual-Nested	Schedule 40 PVC	0.010	#2/16	10	144.0	2	25	103	102.5	77.8
LVWPS-U3-IW03B	UMCf-cg	26734901.38	839482.28	1522.92	1524.33	32.61		Schedule 40 PVC	0.010	#2/16	10	144.0	2	30	139.5	139	109.3
LVWPS-U3-IW04A	UMCf-cg	26734905.65	839507.50	1523.09	1522.80	30.46	Dual-Nested	Schedule 40 PVC	0.010	#2/16	10	160.0	2	30	123.5	123	93.3
LVWPS-U3-IW04B	UMCf-cg	26734905.89	839507.21	1523.09	1522.81	30.87		Schedule 40 PVC	0.010	#2/16	10	160.0	2	30	159.5	159	129.3
LVWPS-U3-IW05A	UMCf-cg	26734909.80	839531.81	1522.62	1522.80	31.46	Dual-Nested	Schedule 40 PVC	0.010	#2/16	10	175.0	2	35	126.5	126	91.3
LVWPS-U3-IW05B	UMCf-cg	26734909.78	839531.47	1522.62	1522.80	30.58		Schedule 40 PVC	0.010	#2/16	10	175.0	2	35	168	167.5	132.8
LVWPS-U3-IW06A	UMCf-cg	26734914.65	839556.40	1522.79	1522.83	30.52	Triple-Nested	Schedule 40 PVC	0.010	#2/16	10	175.0	2	25	111.5	111	86.3
LVWPS-U3-IW06B	UMCf-cg	26734914.56	839556.00	1522.79	1522.89	30.68		Schedule 40 PVC	0.010	#2/16	10	175.0	2	25	143	142.5	117.8
LVWPS-U3-IW06C	UMCf-cg	26734914.32	839556.27	1522.79	1522.85	31.02		Schedule 40 PVC	0.010	#2/16	10	175.0	2	25	174.5	174	149.3
LVWPS-U3-IW07A	UMCf-cg	26734918.75	839580.97	1523.32	1523.03	30.80	Triple-Nested	Schedule 40 PVC	0.010	#2/16	10	175.0	2	25	111.5	111	86.3
LVWPS-U3-IW07B	UMCf-cg	26734918.38	839580.95	1523.32	1523.03	31.02		Schedule 40 PVC	0.010	#2/16	10	175.0	2	25	143	142.5	117.8
LVWPS-U3-IW07C	UMCf-cg	26734918.60	839580.61	1523.32	1523.03	31.02		Schedule 40 PVC	0.010	#2/16	10	175.0	2	25	174.5	174	149.3
LVWPS-U3-IW08A	UMCf-cg	26734923.35	839605.13	1523.23	1523.11	30.87	Triple-Nested	Schedule 40 PVC	0.010	#2/16	10	175.0	2	25	111.5	111	86.3
LVWPS-U3-IW08B	UMCf-cg	26734923.06	839605.34	1523.23	1523.09	31.08		Schedule 40 PVC	0.010	#2/16	10	175.0	2	25	143	142.5	117.8
LVWPS-U3-IW08C	UMCf-cg	26734923.00	839604.97	1523.23	1523.10	31.05		Schedule 40 PVC	0.010	#2/16	10	175.0	2	25	174.5	174	149.3
LVWPS-U3-MW01B	UMCf-cg	26734942.69	839376.18	1522.54	1522.41	30.90	Single	Schedule 80 PVC	0.010	#2/16	8	107.5	4	20	103.8	103.3	83.8
LVWPS-U3-MW02A	UMCf-cg	26734948.75	839479.60	1522.40	1522.13	30.42	Single	Schedule 40 PVC	0.010	#2/16	6	98.5	2	15	97.5	97	82.3
LVWPS-U3-MW02B	UMCf-cg	26734943.22	839481.31	1522.50	1522.21	30.76	Single	Schedule 80 PVC	0.010	#2/16	8	130.0	4	20	123	122.5	103
LVWPS-U3-MW03A	UMCf-cg	26734944.17	839583.42	1522.80	1522.68	30.60	Single	Schedule 40 PVC	0.010	#2/16	6	112.5	2	25	111.5	111	86.3

Table 1
Phase 2 Well Construction Details
 Las Vegas Wash Bioremediation Pilot Study

Well ID	Screened Lithology	Northing	Easting	Ground Surface Elevation	Top of Casing Elevation	Depth to Water ¹	Construction Type	Construction Material	Slot Size	Filter Pack Gradation	Borehole Diameter	Borehole Total Depth	Well Diameter	Nominal Screen Length	Well Total Depth	Bottom of Screen	Top of Screen	
				feet amsl	feet amsl	feet bTOC			inches		inches	feet bgs	inches	feet	feet bgs	feet bgs	feet bgs	
LWVPS-U3-MW03B	UMCf-cg	26734944.11	839576.72	1522.86	1522.49	30.68	Single	Schedule 80 PVC	0.010	#2/16	8	179.0	4	25	176.2	175.7	151.1	
LWVPS-U3-MW03C	UMCf-cg	26734949.67	839579.79	1522.47	1522.21	30.32	Single	Schedule 40 PVC	0.010	#2/16	6	143.5	2	25	143	142.5	117.8	
LWVPS-U3-MW04B	UMCf-cg	26734968.11	839326.96	1522.25	1521.92	30.36	Single	Schedule 80 PVC	0.010	#2/16	8	102.5	4	20	98.2	97.7	78.2	
LWVPS-U3-MW05B	UMCf-cg	26734968.70	839425.48	1522.17	1521.98	30.50	Single	Schedule 80 PVC	0.010	#2/16	8	112.5	4	20	105.2	104.7	85.2	
LWVPS-U3-MW06A	UMCf-cg	26734962.99	839525.84	1522.04	1521.91	30.10	Single	Schedule 40 PVC	0.010	#2/16	6	116.5	2	25	115.5	115	90.3	
LWVPS-U3-MW06B	UMCf-cg	26734965.59	839528.63	1522.18	1521.92	30.20	Single	Schedule 80 PVC	0.010	#2/16	8	152.5	4	25	150.4	149.9	125.3	
LWVPS-U3-MW07A	UMCf-cg	26734843.54	839454.21	1525.21	1524.95	32.40	Single	Schedule 40 PVC	0.010	#2/16	6	100	2	15	98	97.5	82.8	
LWVPS-U3-MW07B	UMCf-cg	26734843.26	839458.27	1525.26	1524.93	32.87	Single	Schedule 40 PVC	0.010	#2/16	6	126	2	20	125	124.5	104.8	
LWVPS-U3-MW08A	UMCf-cg	26734863.82	839592.64	1525.64	1525.45	33.40	Single	Schedule 40 PVC	0.010	#2/16	6	145	2	25	143	142.5	117.8	
LWVPS-U3-MW08B	UMCf-cg	26734863.16	839597.03	1525.70	1525.28	33.21	Single	Schedule 80 PVC	0.010	#2/16	6	175	2	25	174.5	174	149.3	
LWVPS-U3-MW09	UMCf-cg	26734922.06	839452.86	1522.74	1525.38	34.00	Single	Schedule 40 PVC	0.010	#2/16	6	115.0	2	25	108	107.5	82.8	
LWVPS-U3-MW10A	UMCf-cg	26734997.78	839440.95	1521.78	1521.47	30.09	Single	Schedule 40 PVC	0.010	#2/16	6	97.0	2	10	95.5	95	85.3	
LWVPS-U3-MW10B	UMCf-cg	26734999.52	839447.11	1521.68	1521.55	30.14	Single	Schedule 40 PVC	0.010	#2/16	6	130.0	2	20	121.5	121	101.3	
LWVPS-U3-MW11A	UMCf-cg	26735013.48	839552.91	1521.42	1521.39	29.79	Single	Schedule 40 PVC	0.010	#2/16	6	107.5	2	20	106.5	106	86.3	
LWVPS-U3-MW11B	UMCf-cg	26735014.90	839559.83	1521.28	1521.35	29.91	Single	Schedule 40 PVC	0.010	#2/16	6	138.0	2	25	137.5	137	112.3	
LWVPS-U3-MW11C	UMCf-cg	26735017.93	839555.86	1521.33	1521.20	29.83	Single	Schedule 80 PVC	0.010	#2/16	6	170.0	2	20	163.4	163	143.3	
LWVPS-U3-MW12A	UMCf-cg	26735045.73	839479.41	1521.01	1520.83	29.40	Single	Schedule 40 PVC	0.010	#2/16	6	109.5	2	20	108.5	108	88.3	
LWVPS-U3-MW12B	UMCf-cg	26735047.74	839484.29	1520.91	1520.74	29.36	Single	Schedule 40 PVC	0.010	#2/16	6	140.0	2	25	138.5	138	113.3	
LWVPS-U3-MW13A	UMCf-cg	26734933.25	839516.75	1522.40	1522.24	30.21	Single	Schedule 40 PVC	0.010	#2/16	6	122.5	2	25	121.5	121	96.3	
LWVPS-U3-MW13B	UMCf-cg	26734934.09	839522.37	1522.01	1521.91	30.00	Single	Schedule 40 PVC	0.010	#2/16	6	155.0	2	15	148	147.5	132.8	
Extraction Wells																		
LWVPS-EW01	Alluvium	26734957.94	838426.21	1530.03	1529.74	35.74	Single	Schedule 40 PVC with Stainless Steel Wire Wrap Screen	0.020	12-20	10	95.0	6	40	85	84.5	44.8	
LWVPS-EW02	Alluvium	26734885.98	838507.29	1523.66	1523.25	29.20	Single	Schedule 40 PVC with Stainless Steel Wire Wrap Screen	0.020	12-20	10	61.0	6	30	58.5	58	28.3	
LWVPS-EW03	Alluvium	26734886.94	838621.90	1523.14	1522.70	28.95	Single	Schedule 40 PVC with Stainless Steel Wire Wrap Screen	0.020	12-20	10	81.0	6	30	70.5	70	40.3	
LWVPS-EW04	Alluvium	26734947.54	838573.33	1522.40	1521.92	28.20	Single	Schedule 40 PVC with Stainless Steel Wire Wrap Screen	0.020	12-20	10	47.0	6	20	46.5	46	26.3	
LWVPS-EW05	Alluvium	26734978.54	838497.51	1529.76	1529.42	35.60	Single	Schedule 40 PVC with Stainless Steel Wire Wrap Screen	0.020	12-20	10	81.0	6	30	80.5	80	50.3	

Notes
 amsl - above mean sea level
 bgs - below ground surface
 bTOC - below top of casing
 PVC - polyvinyl chloride
 UMCf - Upper Muddy Creek formation
 UMCf-cg - Upper Muddy Creek formation - coarse grained facies
 UMCf/Horse Springs- Alternating layers of UMCf, semi-consolidated UMCf, and reworked Horse Springs formation.
 UMCf (Semi-Cons) - Semi-consolidated Upper Muddy Creek formation
 --- Not Applicable

1. Depth to water measurements collected in October 2020.
 2. Well names including IW indicate an injection well. Well names including DR indicate a dose response well. Well names including MW indicate a monitoring well. Well names including EW indicate an extraction well.

Table 2
Summary of Groundwater Extraction Activities
Injection Event 2 - April 2021
 Las Vegas Wash Bioremediation Pilot Study

Date	Extraction Well	Start Time	Stop Time	Average Flow Rate	Volume Extracted	Cumulative Volume Extracted
				gpm	gal	gal
4/14/2021	LVWPS-EW01	15:49	17:17	51.3	4,511.3	4,511.3
	LVWPS-EW02	16:38	17:14	22.6	814.4	814.4
	LVWPS-EW03	15:35	17:14	54.6	5,406.5	5,406.5
	LVWPS-EW04	15:16	17:14	44.0	5,196.8	5,196.8
	LVWPS-EW05	16:12	17:14	26.0	1,611.2	1,611.2
	LVWPS-MW206B	15:43	17:14	54.8	4,987.1	4,987.1
4/15/2021	LVWPS-EW01	11:40	12:27	59.7	2,805.4	7,316.7
	LVWPS-EW02	11:40	12:27	23.1	1,083.4	1,897.8
	LVWPS-EW03	11:37	12:27	60.2	3,011.1	8,417.6
	LVWPS-EW04	11:37	12:31	58.2	3,144.9	8,341.7
	LVWPS-EW05	11:39	12:31	24.6	1,278.9	2,890.1
	LVWPS-MW206B	11:39	12:31	58.7	3,053.1	8,040.2
4/16/2021	LVWPS-EW01	15:15	17:00	56.8	5,961.0	13,277.7
	LVWPS-EW02	15:15	17:00	21.0	2,202.1	4,099.9
	LVWPS-EW03	15:15	17:00	56.9	5,977.7	14,395.3
	LVWPS-EW04	15:13	17:00	64.0	6,851.0	15,192.7
	LVWPS-EW05	15:13	17:00	23.1	2,468.0	5,358.1
	LVWPS-MW206B	15:13	17:00	57.1	6,111.2	14,151.4
4/17/2021	LVWPS-EW01	14:53	17:00	33.2	4,210.7	17,488.4
	LVWPS-EW02	14:53	17:00	12.0	1,522.3	5,622.1
	LVWPS-EW03	14:49	17:00	34.1	4,461.5	18,856.9
	LVWPS-EW04	9:23	9:25	83.0	166.0	15,358.7
	LVWPS-EW04	14:33	17:00	33.3	4,896.5	20,255.2
	LVWPS-EW05	14:53	17:00	13.4	1,696.9	7,055.0
	LVWPS-MW206B	14:49	17:00	32.9	4,314.1	18,465.5
4/18/2021	LVWPS-EW01	8:49	16:45	49.3	23,455.9	40,944.3
	LVWPS-EW02	8:49	16:45	18.0	8,591.7	14,213.8
	LVWPS-EW03	8:46	16:45	48.7	23,323.1	42,180.0
	LVWPS-EW04	8:46	16:45	56.0	26,835.6	47,090.8
	LVWPS-EW05	8:49	16:45	20.2	9,636.7	16,691.6
	LVWPS-MW206B	8:46	12:00	57.2	11,098.5	29,564.0
	LVWPS-MW206B	13:01	16:45	57.1	12,784.5	42,348.5
4/19/2021	LVWPS-EW01	8:51	11:15	56.4	8,120.3	49,064.7
	LVWPS-EW02	8:51	14:10	12.1	3,869.3	18,083.2
	LVWPS-EW03	8:49	11:15	55.4	8,094.7	50,274.7
	LVWPS-EW04	8:49	14:10	38.3	12,306.6	59,397.4
	LVWPS-EW05	8:51	14:14	13.5	4,367.3	21,059.0
	LVWPS-MW206B	8:51	11:15	57.4	8,264.3	50,612.7
4/19/2021	LVWPS-EW01	13:27	14:10	57.0	2,452.9	51,517.5
	LVWPS-EW02	-	-	-	-	18,083.2
	LVWPS-EW03	13:25	14:14	54.8	2,684.0	52,958.7
	LVWPS-EW04	-	-	-	-	59,397.4
	LVWPS-EW05	-	-	-	-	21,059.0
LVWPS-MW206B	13:25	14:14	55.1	2,697.8	53,310.6	

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Table 2
Summary of Groundwater Extraction Activities
Injection Event 2 - April 2021
Las Vegas Wash Bioremediation Pilot Study

Date	Extraction Well	Start Time	Stop Time	Average Flow Rate	Volume Extracted	Cumulative Volume Extracted
				gpm	gal	gal
4/20/2021	LVWPS-EW01	-	-	-	-	51,517.5
	LVWPS-EW02	-	-	-	-	18,083.2
	LVWPS-EW03	7:50	7:55	60.2	301.1	53,259.8
	LVWPS-EW04	-	-	-	-	59,397.4
	LVWPS-EW05	-	-	-	-	21,059.0
	LVWPS-MW206B	-	-	-	-	53,310.6
EVENT TOTAL						256,627.4

Notes:

gpm - gallons per minute

gal - gallons

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Table 3
Summary of Injection Activities
Injection Event 2 - April 2021
Las Vegas Wash Bioremediation Pilot Study

Injection Date	Injection Well ID	Injection Start Time	Injection Stop Time	Injection Duration ⁽¹⁾	Average Flow Rate	Sustained Pressure ⁽²⁾	Volume of Injectate Solution Injected	Volume of Distribution Water Injected
				min	gpm	psi	gal	gal
4/16/2021	LVWPS-A2-IW01A	11:48 AM	2:42 PM	174	14.9	3	2592.4	0
	LVWPS-A2-IW01B	11:48 AM	2:42 PM	174	15.0	0	2606.6	0
	LVWPS-A2-IW02A	11:48 AM	2:42 PM	174	17.1	0	2983.3	0
	LVWPS-A2-IW02B	11:48 AM	2:42 PM	174	17.5	0	3050.9	0
	LVWPS-A2-IW03A	11:48 AM	2:42 PM	174	12.5	6	2166.3	0
	LVWPS-A2-IW03B	11:48 AM	2:42 PM	174	11.3	21.5	1965.0	0
	LVWPS-A2-IW04A	11:48 AM	2:42 PM	174	17.9	9	3117.8	0
	LVWPS-A2-IW04B	11:48 AM	2:42 PM	174	19.0	0	3300.0	0
	LVWPS-A2-IW05A	11:48 AM	2:42 PM	174	12.8	0	2227.3	0
	LVWPS-A2-IW05B	11:48 AM	2:42 PM	174	13.8	23	2395.4	0
	LVWPS-A2-IW06A	11:48 AM	2:42 PM	141	8.9	0	1254.3	0
	LVWPS-A2-IW06B	11:48 AM	2:42 PM	141	8.8	14	1237.9	0
	LVWPS-A2-IW07A	11:48 AM	2:42 PM	174	10.7	8	1861.5	0
	LVWPS-A2-IW07B	11:48 AM	2:42 PM	174	11.6	20.5	2020.0	0
	LVWPS-A2-IW08A	11:48 AM	2:42 PM	174	15.7	0	2726.4	0
LVWPS-A2-IW08B	11:48 AM	2:42 PM	174	15.3	4	2665.1	0	
LVWPS-A2-IW09A	11:48 AM	12:08 PM	134	15.5	0	2078.6	0	
LVWPS-A2-IW09B	11:48 AM	12:08 PM	134	15.1	0	2025.3	0	
Daily Summary							42,274.0	0
4/17/2021	LVWPS-A2-IW01A	10:02 AM	10:59 AM	57	14.5	2	829.1	0
	LVWPS-A2-IW01B	10:02 AM	10:58 AM	56	14.6	0	815.5	0
	LVWPS-A2-IW02A	10:02 AM	11:03 AM	61	17.4	0	1060.2	0
	LVWPS-A2-IW02B	10:02 AM	11:02 AM	60	4.3	0	257.7	0
	LVWPS-A2-IW03A	10:02 AM	1:36 PM	183	9.6	10	1763.1	0
	LVWPS-A2-IW03B	10:02 AM	1:46 PM	193	10.1	33	1954.0	0
	LVWPS-A2-IW04A	10:02 AM	11:12 AM	70	19.3	9	1347.7	0
	LVWPS-A2-IW04B	10:02 AM	11:09 AM	67	18.3	8	1224.6	0
	LVWPS-A2-IW05A	10:02 AM	11:22 AM	80	13.9	0	1110.3	0
	LVWPS-A2-IW05B	10:02 AM	11:11 AM	69	13.7	23	942.4	0
	LVWPS-A2-IW06A	10:02 AM	12:28 PM	146	6.8	0	989.3	0
	LVWPS-A2-IW06B	10:02 AM	12:28 PM	146	10.3	12	1503.2	0
	LVWPS-A2-IW07A	10:02 AM	11:10 AM	68	5.6	4	381.2	0
	LVWPS-A2-IW07B	10:02 AM	11:05 AM	63	11.4	13.5	721.3	0
	LVWPS-A2-IW08A	10:02 AM	10:16 AM	14	5.4	0	75.5	0
LVWPS-A2-IW08B	10:02 AM	10:16 AM	14	9.8	0	136.8	0	
LVWPS-A2-IW09A	10:02 AM	10:22 AM	20	9.4	0	187.5	0	
LVWPS-A2-IW09B	10:02 AM	10:21 AM	19	12.7	0	241.4	0	
Daily Summary							15,540.8	0
4/17/2021	LVWPS-A2-IW01A	3:44 PM	5:00 PM	66	9.3	0	0	615.1
	LVWPS-A2-IW01B	3:44 PM	5:00 PM	66	8.9	0	0	589.7
	LVWPS-A2-IW02A	3:44 PM	5:00 PM	76	9.9	0	0	751.3
	LVWPS-A2-IW02B	3:44 PM	5:00 PM	76	10.0	0	0	761.8
	LVWPS-A2-IW03A	3:44 PM	5:00 PM	76	7.3	17	0	552.1
	LVWPS-A2-IW03B	3:44 PM	5:00 PM	76	6.7	15	0	510.1
	LVWPS-A2-IW04A	3:44 PM	5:00 PM	76	9.7	0	0	739.9
	LVWPS-A2-IW04B	3:44 PM	5:00 PM	76	9.6	0	0	728.7
	LVWPS-A2-IW05A	3:44 PM	5:00 PM	76	9.2	0	0	698.1
	LVWPS-A2-IW05B	3:40 PM	5:00 PM	80	9.1	8	0	731.7
	LVWPS-A2-IW06A	3:40 PM	5:00 PM	80	8.5	0	0	680.3
	LVWPS-A2-IW06B	3:40 PM	5:00 PM	80	8.5	6	0	681.9
	LVWPS-A2-IW07A	3:40 PM	5:00 PM	80	9.5	0	0	759.3
	LVWPS-A2-IW07B	3:40 PM	5:00 PM	80	9.5	0	0	758.4
	LVWPS-A2-IW08A	3:40 PM	5:00 PM	80	10.0	0	0	802.3
LVWPS-A2-IW08B	3:40 PM	5:00 PM	80	10.1	0	0	809.5	
LVWPS-A2-IW09A	3:40 PM	5:00 PM	80	9.6	0	0	769.9	
LVWPS-A2-IW09B	3:40 PM	5:00 PM	80	9.7	0	0	775.9	
Daily Summary							0	12,716.0

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Table 3
Summary of Injection Activities
Injection Event 2 - April 2021
Las Vegas Wash Bioremediation Pilot Study

Injection Date	Injection Well ID	Injection Start Time	Injection Stop Time	Injection Duration ⁽¹⁾	Average Flow Rate	Sustained Pressure ⁽²⁾	Volume of Injectate Solution Injected	Volume of Distribution Water Injected
				min	gpm	psi	gal	gal
4/18/2021	LVWPS-A2-IW01A	8:23 AM	4:45 PM	443	15.8	0	0	7,019.3
	LVWPS-A2-IW01B	8:23 AM	4:45 PM	443	15.9	0	0	7,062.6
	LVWPS-A2-IW02A	8:23 AM	4:45 PM	425	16.0	0	0	6,796.2
	LVWPS-A2-IW02B	8:23 AM	4:45 PM	425	15.8	0	0	6,723.1
	LVWPS-A2-IW03A	8:23 AM	4:45 PM	443	12.9	14	0	5,695.8
	LVWPS-A2-IW03B	8:23 AM	4:45 PM	443	12.2	25.5	0	5,419.1
	LVWPS-A2-IW04A	8:23 AM	4:45 PM	443	16.0	12	0	7,100.8
	LVWPS-A2-IW04B	8:23 AM	4:45 PM	443	16.2	0	0	7,161.1
	LVWPS-A2-IW05A	8:23 AM	4:45 PM	443	15.0	6	0	6,651.9
	LVWPS-A2-IW05B	8:23 AM	4:45 PM	443	15.0	20.5	0	6,661.3
	LVWPS-A2-IW06A	8:23 AM	4:45 PM	443	13.8	0	0	6,094.0
	LVWPS-A2-IW06B	8:23 AM	4:45 PM	443	14.8	21	0	6,555.0
	LVWPS-A2-IW07A	8:23 AM	4:45 PM	443	13.5	3.5	0	5,963.5
	LVWPS-A2-IW07B	8:23 AM	4:45 PM	443	13.6	20.5	0	6,013.5
	LVWPS-A2-IW08A	8:23 AM	4:45 PM	443	15.7	0	0	6,933.7
	LVWPS-A2-IW08B	8:23 AM	4:45 PM	443	15.3	3.5	0	6,758.5
LVWPS-A2-IW09A	8:23 AM	4:45 PM	443	16.0	0	0	7,098.4	
LVWPS-A2-IW09B	8:23 AM	4:45 PM	443	16.0	0	0	7,092.0	
Daily Summary							0	118,799.5
4/19/2021	LVWPS-A2-IW01A	8:47 AM	1:44 PM	212	20.0	4.5	0	4,245.2
	LVWPS-A2-IW01B	8:47 AM	1:44 PM	212	19.9	0	0	4,227.2
	LVWPS-A2-IW02A	8:47 AM	3:07 PM	295	22.0	0	0	6,489.1
	LVWPS-A2-IW02B	8:44 AM	3:07 PM	298	13.4	0	0	3,999.6
	LVWPS-A2-IW03A	8:44 AM	5:15 PM	426	15.5	23	0	6,622.6
	LVWPS-A2-IW03B	8:44 AM	5:15 PM	426	15.7	32.5	0	6,707.3
	LVWPS-A2-IW04A	8:44 AM	4:04 PM	355	21.9	24	0	7,757.2
	LVWPS-A2-IW04B	8:44 AM	5:05 PM	416	18.3	5	0	7,610.7
	LVWPS-A2-IW05A	8:44 AM	2:11 PM	242	17.5	7	0	4,236.2
	LVWPS-A2-IW05B	8:44 AM	2:11 PM	242	17.3	20.5	0	4,193.2
	LVWPS-A2-IW06A	8:44 AM	10:44 AM	120	8.4	0	0	1,011.1
	LVWPS-A2-IW06B	8:44 AM	10:44 AM	120	19.0	22	0	2,279.1
	LVWPS-A2-IW07A	8:44 AM	11:32 AM	168	6.3	16	0	1,063.0
	LVWPS-A2-IW07B	8:44 AM	11:32 AM	168	16.3	16.5	0	2,743.1
LVWPS-A2-IW08A	8:44 AM	10:38 AM	114	17.5	0	0	1,991.0	
LVWPS-A2-IW08B	8:44 AM	10:38 AM	114	18.9	3.5	0	2,159.2	
Daily Summary							0	67,335.0
4/20/2021	LVWPS-A2-IW03A	8:00 AM	9:18 AM	78	11.4	14	0	889.9
	LVWPS-A2-IW03B	8:00 AM	9:18 AM	78	14.4	33	0	1,124.6
Daily Summary							0	2,014.5
Injection Event Summary							57,815	200,865

Notes:

gpm - gallons per minute

min - minutes

gal - gallons

psi - pounds per square inch

¹Injection duration indicates the total minutes of active injection per day, accounting for any downtime in injections that may have occurred throughout the day. Therefore, injection duration may be less than the difference in daily injection start and stop times indicated.

²Sustained pressure reported represents the highest pressure recored during the injection interval indicated.

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Table 4
Batch Quantities
Injection Event 2 - April 2021
Las Vegas Wash Bioremediation Pilot Study

Batch ID	1B	2C	3A	4A
EVO (gallons)	2,699	2,623	2,930	3,313
Glycerin (gallons)	54.2	54.2	54.2	54.2
Sodium Sulfite (lbs)	50	50	50	50
Water (gallons)	11,556	11,696	11,419	11,902
Total Injectate Solution (gallons)	14,309	14,373	14,403	15,269

Notes:

lbs - pounds

mL - milliliters

Table 5
Specific Gravity Calibration Measurements
Injection Event 2 - April 2021
 Las Vegas Wash Bioremediation Pilot Study

Standard Dilution Parts EOS _{PRO} and Amendments ⁽¹⁾ to Parts Extracted Groundwater	EOS _{PRO} % by weight	Emulsified Vegetable Oil Concentration % by weight	Hydrometer Readings (Calibrated for 60°F)					Sample Temperature (°F)					Temperature Corrected Specific Gravity						
			Dup-1	Dup-2	Dup-3	Dup-4	Dup-5	Dup-1	Dup-2	Dup-3	Dup-4	Dup-5	Dup-1	Dup-2	Dup-3	Dup-4	Dup-5	Average	SD
			1:0 - EOS _{PRO} Only - Delivery 1	100.0%	59.8%	0.963	0.962	0.965	0.964	0.963	78	77	76	76	75	0.965	0.964	0.967	0.966
1:2 - EOS _{PRO} standard - Delivery 1	33.3%	19.9%	0.985	0.986	0.986	0.986	0.987	72	74	75	74	74	0.986	0.987	0.988	0.987	0.988	0.987	0.001
1:4 - EOS _{PRO} standard - Delivery 1	20.0%	12.0%	0.994	0.993	0.993	0.993	0.993	72	72	72	74	74	0.995	0.994	0.994	0.994	0.994	0.995	0.0004
1:6 - EOS _{PRO} standard - Delivery 1	14.3%	8.5%	0.996	0.995	0.996	0.995	0.996	68	70	70	72	72	0.997	0.996	0.997	0.996	0.997	0.997	0.001
0:1 - Extracted Groundwater Only	0.0%	0.0%	1.004	1.005	1.005	1.004	1.004	70	72	72	72	72	1.005	1.006	1.006	1.005	1.005	1.006	0.001
0:1 - Ammended Groundwater	0.0%	0.0%	1.008	1.007	1.006	1.007	1.007	68	70	70	70	71	1.009	1.008	1.007	1.008	1.008	1.008	0.001
1:4 - EOS _{PRO} standard - Delivery 2	20.0%	12.0%	0.992	0.993	0.993	0.992	0.993	86	86	85	84	83	0.995	0.996	0.996	0.995	0.996	0.996	0.001
1:4 - EOS _{PRO} standard - Delivery 3	20.0%	12.0%	0.992	0.991	0.992	0.992	0.992	83	83	83	82	82	0.995	0.994	0.995	0.995	0.995	0.995	0.0004

Notes:

Dup - sample duplicate

SD - standard deviation

1. Injectate solution includes emulsified vegetable oil (EOS_{PRO}), glycerin, and sodium sulfite mixed into extracted groundwater. A 1:4 injectate stock solution standard was prepared for each mixture of deliveries of EOS_{PRO} used for batch mixing.

Table 6
Specific Gravity Measurements
Injection Event 2 - April 2021
 Las Vegas Wash Bioremediation Pilot Study

Batch Number	Date	Time	Batch Volume Remaining	Average Hydrometer Readings (Calibrated for 60°F)	Average Sample Temperature (°F)	Average Corrected Specific Gravity	Calculated Percent Oil	Within Acceptable Range ⁽¹⁾	Comments
			gallons						
1B	4/15/2021	11:37	14476.1	0.985	78	0.987	25.7%	NO	Pre-injection. Continued mixing.
1B	4/15/2021	13:06	14476.1	0.993	77	0.995	12.6%	YES	Pre-injection.
1B	4/16/2021	9:50	14476.1	0.995	72	0.996	12.3%	YES	Pre-injection.
2C	4/16/2021	10:17	14550.7	0.993	76	0.995	12.9%	YES	Pre-injection.
3A	4/16/2021	10:29	14560.5	0.995	75	0.996	11.1%	YES	Pre-injection.
1B	4/16/2021	12:22	10459.5	0.993	80	0.995	12.9%	YES	
1B	4/16/2021	12:53	3510.2	0.993	80	0.995	12.6%	YES	
2C	4/16/2021	13:20	10351.84	0.992	78	0.994	14.4%	YES	
2C	4/16/2021	13:41	3487.48	0.992	82	0.995	13.8%	YES	
3A	4/16/2021	14:05	10459.5	0.993	80	0.995	12.6%	YES	
3A	4/16/2021	14:19	6250.79	0.994	80	0.996	12.0%	YES	
4A	4/17/2021	9:37	15823.2	0.990	76	0.992	17.1%	YES	Pre-injection.
4A	4/17/2021	10:29	10948.8	0.991	77	0.993	16.5%	YES	
4A	4/17/2021	10:56	5725.5	0.991	76	0.993	16.8%	YES	

1. The acceptable range of specific gravity measurements was determined to be 0.991 to 0.999 for EOS_{PRO} Deliveries 1 and 3, and 0.992 to 1.000 for batches mixed from EOS_{PRO} Delivery 2. This was determined by taking +/- 10% of the difference between the pure EOS_{PRO} and the pure extracted groundwater (equivalent to 0.004) and then adding and subtracting that value with the specific gravity of the 1:4 standard (shown in Table 5).

2. Tank level approximated based on sample collection time and average injection rates.

Table 7
Groundwater Analytical Results
 Las Vegas Wash Bioremediation Pilot Study

Well	Sample Date	QC Type	Event	Zone	Screened Lithology	Screened Interval	Perchlorate by USEPA Method 314.0	Chlorate by USEPA Method 300.1B	Nitrate (as N) by USEPA Method 300.0	Sulfate by USEPA Method 300.0	Total Organic Carbon by SM 5310B	Dissolved Oxygen Field Measurement
						ft bgs	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L
LVWPS-A1-MW04	9/30/2020	N	BL04	Zone 1	Alluvium	69.3 - 89.0	2,000	12,000	15	1,600	1.5	2.26
LVWPS-A1-MW04	1/13/2021	N	EM02	Zone 1	Alluvium	69.3 - 89.0	2,400	15,000	17	1,700	1.5	1.38
LVWPS-A1-MW04	1/13/2021	FD	EM02	Zone 1	Alluvium	69.3 - 89.0	2,800	15,000	17	1,700	1.4	----
LVWPS-A1-MW04	2/9/2021	N	EM04	Zone 1	Alluvium	69.3 - 89.0	3,000	15,000	17	1,800	1.4 J-	1.35
LVWPS-A1-MW04	2/9/2021	FD	EM04	Zone 1	Alluvium	69.3 - 89.0	3,000	15,000	17	1,800	1.4 J-	----
LVWPS-A1-MW04	3/9/2021	N	EM05	Zone 1	Alluvium	69.3 - 89.0	3,000	16,000	16	1,900	1.5	0.74
LVWPS-A1-MW04	3/9/2021	FD	EM05	Zone 1	Alluvium	69.3 - 89.0	2,900	15,000	16	2,000	1.5	----
LVWPS-A1-MW05	9/30/2020	N	BL04	Zone 1	Alluvium	69.3 - 89.0	2,900	16,000	19	2,000	1.6	2.90
LVWPS-A1-MW05	1/15/2021	N	EM02	Zone 1	Alluvium	69.3 - 89.0	3,300	17,000	21	2,200	1.6	1.54
LVWPS-A1-MW05	2/10/2021	N	EM04	Zone 1	Alluvium	69.3 - 89.0	3,600	18,000	20	2,200	1.7	1.20
LVWPS-A1-MW05	3/10/2021	N	EM05	Zone 1	Alluvium	69.3 - 89.0	3,400	16,000	20	2,000	1.5	2.03
LVWPS-A1-MW06	9/29/2020	N	BL04	Zone 1	Alluvium	59.3 - 79.0	1,900	9,000	13	1,300	1.4	1.16
LVWPS-A1-MW06	1/14/2021	N	EM02	Zone 1	Alluvium	59.3 - 79.0	3,200 J	11,000	15	1,500	1.5	1.38
LVWPS-A1-MW06	1/14/2021	FD	EM02	Zone 1	Alluvium	59.3 - 79.0	2,300 J	11,000	15	1,600	1.4	----
LVWPS-A1-MW06	2/9/2021	N	EM04	Zone 1	Alluvium	59.3 - 79.0	2,300	11,000	15	1,500	1.5 J-	1.07
LVWPS-A1-MW06	2/9/2021	FD	EM04	Zone 1	Alluvium	59.3 - 79.0	2,300	11,000	15	1,500	1.3 J-	----
LVWPS-A1-MW06	3/9/2021	N	EM05	Zone 1	Alluvium	59.3 - 79.0	2,300	11,000	15	1,600	1.4	1.22
LVWPS-A1-MW06	3/9/2021	FD	EM05	Zone 1	Alluvium	59.3 - 79.0	2,400	11,000	15	1,600	1.5	----
LVWPS-A1-MW07	9/30/2020	N	BL04	Zone 1	Alluvium	58.3 - 78.0	2,900	16,000	19	1,900	1.6	1.43
LVWPS-A1-MW07	1/14/2021	N	EM02	Zone 1	Alluvium	58.3 - 78.0	3,200	17,000	20	2,200	1.6	1.22
LVWPS-A1-MW07	2/10/2021	N	EM04	Zone 1	Alluvium	58.3 - 78.0	3,400	17,000	19	2,200	1.6	1.08
LVWPS-A1-MW07	3/9/2021	N	EM05	Zone 1	Alluvium	58.3 - 78.0	3,400	17,000	20	2,200	1.5	1.21
LVWPS-A1-MW09	9/30/2020	N	BL04	Zone 1	Alluvium	85.8 - 105.5	2,700	15,000	16	1,600	1.6	1.17
LVWPS-A1-MW09	1/13/2021	N	EM02	Zone 1	Alluvium	85.8 - 105.5	2,500	14,000	13	1,800	4.2	1.06
LVWPS-A1-MW09	2/11/2021	N	EM04	Zone 1	Alluvium	85.8 - 105.5	3,100	14,000	15 J-	2,000	1.6	0.66
LVWPS-A1-MW09	3/11/2021	N	EM05	Zone 1	Alluvium	85.8 - 105.5	3,200	16,000	18	1,900	1.5	1.83
LVWPS-A1-MW10	10/1/2020	N	BL04	Zone 1	Alluvium	70.8 - 90.5	4,400 J-	14,000	16	1,600	1.4	1.13
LVWPS-A1-MW10	10/1/2020	FD	BL04	Zone 1	Alluvium	70.8 - 90.5	3,700	14,000	16	1,700	1.5	----
LVWPS-A1-MW10	1/13/2021	N	EM02	Zone 1	Alluvium	70.8 - 90.5	3,100	16,000	17	1,800	1.5	1.11
LVWPS-A1-MW10	2/8/2021	N	EM04	Zone 1	Alluvium	70.8 - 90.5	3,600	16,000	17	1,800	1.5 J-	0.60
LVWPS-A1-MW10	3/9/2021	N	EM05	Zone 1	Alluvium	70.8 - 90.5	3,000	16,000	17	2,000	1.4	0.77
LVWPS-A2-IW01A	10/1/2020	N	BL04	Zone 2	Alluvium	41.3 - 66.0	3,300	5,100	19	----	----	4.10
LVWPS-A2-IW01A	10/1/2020	FD	BL04	Zone 2	Alluvium	41.3 - 66.0	3,300	5,000	19	----	----	----
LVWPS-A2-IW01B	10/1/2020	N	BL04	Zone 2	Alluvium	72.8 - 97.5	2,300	5,400	20	----	----	4.23
LVWPS-A2-IW02A	10/1/2020	N	BL04	Zone 2	Alluvium	38.8 - 68.5	2,900	5,200	18	----	----	4.29
LVWPS-A2-IW02B	10/2/2020	N	BL04	Zone 2	Alluvium	75.3 - 100.0	3,800	6,100	20	----	----	4.44
LVWPS-A2-IW03A	10/2/2020	N	BL04	Zone 2	Alluvium	37.3 - 67.0	3,300	5,400	20	----	----	4.44
LVWPS-A2-IW03B	10/2/2020	N	BL04	Zone 2	Alluvium	73.8 - 103.5	3,400	5,500	18	----	----	4.30
LVWPS-A2-IW03B	10/2/2020	FD	BL04	Zone 2	Alluvium	73.8 - 103.5	2,700	5,400	18	----	----	----
LVWPS-A2-IW04A	10/2/2020	N	BL04	Zone 2	Alluvium	36.3 - 71.0	2,700	5,600	20	----	----	4.43
LVWPS-A2-IW04B	10/2/2020	N	BL04	Zone 2	Alluvium	77.3 - 112.0	3,200	5,000	18	----	----	5.05
LVWPS-A2-IW05A	10/2/2020	N	BL04	Zone 2	Alluvium	37.8 - 62.5	4,800	6,200	19	----	----	4.44
LVWPS-A2-IW05B	10/2/2020	N	BL04	Zone 2	Alluvium	68.8 - 93.5	4,400	5,300	19	----	----	4.47
LVWPS-A2-IW06A	10/5/2020	N	BL04	Zone 2	Alluvium	36.8 - 51.5	3,700	5,900	18	----	----	5.36
LVWPS-A2-IW06B	10/5/2020	N	BL04	Zone 2	Alluvium	57.8 - 77.5	4,600	4,900	18	----	----	4.75
LVWPS-A2-IW07A	10/5/2020	N	BL04	Zone 2	Alluvium	35.3 - 50.0	3,100	5,500	21	----	----	4.76
LVWPS-A2-IW07A	10/5/2020	FD	BL04	Zone 2	Alluvium	35.3 - 50.0	2,800	5,600	20	----	----	----
LVWPS-A2-IW07B	10/5/2020	N	BL04	Zone 2	Alluvium	56.3 - 76.0	2,700	4,500	16	----	----	5.14
LVWPS-A2-IW08A	10/5/2020	N	BL04	Zone 2	Alluvium	35.8 - 55.5	3,500	4,800	20	----	----	4.79
LVWPS-A2-IW08B	10/5/2020	N	BL04	Zone 2	Alluvium	61.8 - 81.5	2,100	3,600	13	----	----	5.54
LVWPS-A2-IW09A	10/5/2020	N	BL04	Zone 2	Alluvium	36.8 - 51.5	2,000	3,000	13	----	----	5.36
LVWPS-A2-IW09B	10/6/2020	N	BL04	Zone 2	Alluvium	58.8 - 73.5	1,500	2,300	9.1	----	----	6.22
LVWPS-A2-MW01A	10/8/2020	N	BL04	Zone 2	Alluvium	40.3 - 60.0	2,900	5,500	20	2,200	1.8	4.48
LVWPS-A2-MW01A	10/8/2020	FD	BL04	Zone 2	Alluvium	40.3 - 60.0	2,900	5,600	19	2,200	1.8	----
LVWPS-A2-MW01A	12/23/2020	N	EM01	Zone 2	Alluvium	40.3 - 60.0	3,600	5,100	19	2,200	2.1	3.69
LVWPS-A2-MW01A	1/13/2021	N	EM02	Zone 2	Alluvium	40.3 - 60.0	2,700	6,300	19	2,100	1.9	3.75
LVWPS-A2-MW01A	1/25/2021	N	EM03	Zone 2	Alluvium	40.3 - 60.0	2,900	5,100	18	2,100	1.9 J+	3.46
LVWPS-A2-MW01A	2/10/2021	N	EM04	Zone 2	Alluvium	40.3 - 60.0	2,800	4,900	19	2,000	2.0	3.68
LVWPS-A2-MW01A	3/10/2021	N	EM05	Zone 2	Alluvium	40.3 - 60.0	3,100	5,200	20	2,100	1.9	3.70
LVWPS-A2-MW01B	10/8/2020	N	BL04	Zone 2	Alluvium	70.3 - 90.0	3,100	5,200	18	2,100	1.7	4.49
LVWPS-A2-MW01B	12/23/2020	N	EM01	Zone 2	Alluvium	70.3 - 90.0	3,000	5,000	18	2,200	1.7	4.16
LVWPS-A2-MW01B	1/13/2021	N	EM02	Zone 2	Alluvium	70.3 - 90.0	2,800	6,700	18	2,200	2.1	3.97
LVWPS-A2-MW01B	1/25/2021	N	EM03	Zone 2	Alluvium	70.3 - 90.0	3,200	5,200	18	2,100	2.4 J+	3.44

Table 7
Groundwater Analytical Results
Las Vegas Wash Bioremediation Pilot Study

Well	Sample Date	QC Type	Event	Zone	Screened Lithology	Screened Interval	Perchlorate by USEPA Method 314.0	Chlorate by USEPA Method 300.1B	Nitrate (as N) by USEPA Method 300.0	Sulfate by USEPA Method 300.0	Total Organic Carbon by SM 5310B	Dissolved Oxygen Field Measurement
						ft bgs	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L
LVWPS-A2-MW01B	2/10/2021	N	EM04	Zone 2	Alluvium	70.3 - 90.0	2,800	4,800	19	2,300	1.8	4.13
LVWPS-A2-MW01B	3/10/2021	N	EM05	Zone 2	Alluvium	70.3 - 90.0	3,400	5,000	20	2,100	1.8	4.43
LVWPS-A2-MW02A	10/8/2020	N	BL04	Zone 2	Alluvium	40.3 - 60.0	3,700	6,500	18	2,600	1.3	4.19
LVWPS-A2-MW02A	10/8/2020	FD	BL04	Zone 2	Alluvium	40.3 - 60.0	3,800	6,600	18	2,600	1.3	----
LVWPS-A2-MW02A	12/23/2020	N	EM01	Zone 2	Alluvium	40.3 - 60.0	3,800	8,100	18	2,700	1.2	5.28
LVWPS-A2-MW02A	1/12/2021	N	EM02	Zone 2	Alluvium	40.3 - 60.0	3,900	6,300	18	2,600	1.2	4.46
LVWPS-A2-MW02A	1/25/2021	N	EM03	Zone 2	Alluvium	40.3 - 60.0	4,200	7,100	20	2,500	1.3 J+	3.93
LVWPS-A2-MW02A	2/9/2021	N	EM04	Zone 2	Alluvium	40.3 - 60.0	3,900	6,200	17	1,900	1.2 J-	4.61
LVWPS-A2-MW02A	3/9/2021	N	EM05	Zone 2	Alluvium	40.3 - 60.0	3,700	6,100	17	2,800	1.4	3.99
LVWPS-A2-MW02B	10/8/2020	N	BL04	Zone 2	Alluvium	70.3 - 90.0	2,300	3,900	14	2,100	1.2	5.81
LVWPS-A2-MW02B	12/23/2020	N	EM01	Zone 2	Alluvium	70.3 - 90.0	2,200	4,900	15	2,300	1.3	5.57
LVWPS-A2-MW02B	1/13/2021	N	EM02	Zone 2	Alluvium	70.3 - 90.0	2,100	3,600	14	2,100	1.2	5.79
LVWPS-A2-MW02B	1/25/2021	N	EM03	Zone 2	Alluvium	70.3 - 90.0	3,700	4,000	13	2,000	1.3 J+	5.11
LVWPS-A2-MW02B	2/10/2021	N	EM04	Zone 2	Alluvium	70.3 - 90.0	2,300	3,900	15	2,200	1.3	5.77
LVWPS-A2-MW02B	3/10/2021	N	EM05	Zone 2	Alluvium	70.3 - 90.0	2,500	3,800	16	2,300	1.4	5.43
LVWPS-A2-MW03A	10/9/2020	N	BL04	Zone 2	Alluvium	38.3 - 58.0	1,300	2,000	9.2	1,800	0.63	6.82
LVWPS-A2-MW03A	10/9/2020	FD	BL04	Zone 2	Alluvium	38.3 - 58.0	1,300	2,000	9.1	1,800	0.70	----
LVWPS-A2-MW03A	12/23/2020	N	EM01	Zone 2	Alluvium	38.3 - 58.0	1,100	7,500	7.3	1,700	0.47 J	6.86
LVWPS-A2-MW03A	1/14/2021	N	EM02	Zone 2	Alluvium	38.3 - 58.0	1,100	1,600	7.8	1,900	0.54	7.34
LVWPS-A2-MW03A	1/25/2021	N	EM03	Zone 2	Alluvium	38.3 - 58.0	2,500	3,300	9.2	1,800	0.77 J+	5.88
LVWPS-A2-MW03A	2/10/2021	N	EM04	Zone 2	Alluvium	38.3 - 58.0	1,200	1,600	8.3	1,900	0.52	7.08
LVWPS-A2-MW03A	3/10/2021	N	EM05	Zone 2	Alluvium	38.3 - 58.0	1,300	1,500	8.1	1,900	0.49 J	6.92
LVWPS-A2-MW03B	10/9/2020	N	BL04	Zone 2	Alluvium	64.3 - 84.0	2,000	3,700	12	2,000	0.92	6.21
LVWPS-A2-MW03B	12/23/2020	N	EM01	Zone 2	Alluvium	64.3 - 84.0	3,600	3,500	12	2,100	0.87 J-	5.56
LVWPS-A2-MW03B	1/14/2021	N	EM02	Zone 2	Alluvium	64.3 - 84.0	2,100	3,600	12	2,100	0.96	6.03
LVWPS-A2-MW03B	1/26/2021	N	EM03	Zone 2	Alluvium	64.3 - 84.0	2,300	3,400	9.8	1,900	1.0 J+	5.24
LVWPS-A2-MW03B	2/10/2021	N	EM04	Zone 2	Alluvium	64.3 - 84.0	2,200	3,500	13	2,200	1.0	5.86
LVWPS-A2-MW03B	3/10/2021	N	EM05	Zone 2	Alluvium	64.3 - 84.0	2,300	3,500	13	2,200	1.1	5.40
LVWPS-A2-MW04A	10/2/2020	N	BL04	Zone 2	Alluvium	43.8 - 63.5	4,100 J	5,300	19	2,100	1.7	5.60
LVWPS-A2-MW04A	10/2/2020	FD	BL04	Zone 2	Alluvium	43.8 - 63.5	2,900 J	5,200	19	2,100	1.7	----
LVWPS-A2-MW04A	12/22/2020	N	EM01	Zone 2	Alluvium	43.8 - 63.5	2,600	5,100	19	2,100	2.2 J	3.79
LVWPS-A2-MW04A	12/22/2020	FD	EM01	Zone 2	Alluvium	43.8 - 63.5	2,600	5,100	19	2,100	1.8	----
LVWPS-A2-MW04A	1/12/2021	N	EM02	Zone 2	Alluvium	43.8 - 63.5	2,700	4,900	20	2,200	1.9	3.84
LVWPS-A2-MW04A	1/12/2021	FD	EM02	Zone 2	Alluvium	43.8 - 63.5	2,700	4,900	19	2,200	2.1	----
LVWPS-A2-MW04A	1/26/2021	N	EM03	Zone 2	Alluvium	43.8 - 63.5	2,800	4,900	19	1,900	2.0 J+	3.67
LVWPS-A2-MW04A	1/26/2021	FD	EM03	Zone 2	Alluvium	43.8 - 63.5	2,700	4,900	19	1,900	1.8 J+	----
LVWPS-A2-MW04A	2/9/2021	N	EM04	Zone 2	Alluvium	43.8 - 63.5	2,100	7,200	21	1,900	3.4 J-	4.44
LVWPS-A2-MW04A	2/9/2021	FD	EM04	Zone 2	Alluvium	43.8 - 63.5	2,200	7,100	21	1,800	2.4 J-	----
LVWPS-A2-MW04A	3/9/2021	N	EM05	Zone 2	Alluvium	43.8 - 63.5	2,900	5,400	19	2,300	1.9	4.00
LVWPS-A2-MW04A	3/9/2021	FD	EM05	Zone 2	Alluvium	43.8 - 63.5	2,800	5,200	19	2,200	2.0	----
LVWPS-A2-MW04B	10/2/2020	N	BL04	Zone 2	Alluvium	75.3 - 95.0	3,400	7,300	22	2,200	1.7	3.65
LVWPS-A2-MW04B	12/22/2020	N	EM01	Zone 2	Alluvium	75.3 - 95.0	2,800	7,300	13	2,100	2.3	0.49
LVWPS-A2-MW04B	1/12/2021	N	EM02	Zone 2	Alluvium	75.3 - 95.0	700	1,300	3.0	2,300	52	0.66
LVWPS-A2-MW04B	1/26/2021	N	EM03	Zone 2	Alluvium	75.3 - 95.0	1,100	2,400	3.7	1,900	34	0.46
LVWPS-A2-MW04B	2/9/2021	N	EM04	Zone 2	Alluvium	75.3 - 95.0	650	1,800	3.5	2,000	51 J-	4.06
LVWPS-A2-MW04B	3/9/2021	N	EM05	Zone 2	Alluvium	75.3 - 95.0	1,200	1,700	4.0	2,100	34	0.29
LVWPS-A2-MW05A	10/5/2020	N	BL04	Zone 2	Alluvium	36.8 - 51.5	2,400	3,900	14	2,200	1.1	6.22
LVWPS-A2-MW05A	12/22/2020	N	EM01	Zone 2	Alluvium	36.8 - 51.5	310	73	0.91	2,200	170	0.91
LVWPS-A2-MW05A	1/13/2021	N	EM02	Zone 2	Alluvium	36.8 - 51.5	330	190	1.5	2,000	50	0.28
LVWPS-A2-MW05A	1/26/2021	N	EM03	Zone 2	Alluvium	36.8 - 51.5	720	460	1.8	1,600	120	0.44
LVWPS-A2-MW05A	2/9/2021	N	EM04	Zone 2	Alluvium	36.8 - 51.5	1,900	2,500	7.4	2,000	9.8 J-	3.20
LVWPS-A2-MW05A	3/10/2021	N	EM05	Zone 2	Alluvium	36.8 - 51.5	1,200	1,200	5.2 J+	1,700	22	1.70
LVWPS-A2-MW05B	10/5/2020	N	BL04	Zone 2	Alluvium	58.8 - 73.5	1,900	2,300	8.7	2,000	0.66	7.24
LVWPS-A2-MW05B	12/22/2020	N	EM01	Zone 2	Alluvium	58.8 - 73.5	2.9	<4.0	<0.014	1,800	170 J-	0.35
LVWPS-A2-MW05B	12/22/2020	FD	EM01	Zone 2	Alluvium	58.8 - 73.5	2.9	<4.0	0.026 J	2,000	170	----
LVWPS-A2-MW05B	1/13/2021	N	EM02	Zone 2	Alluvium	58.8 - 73.5	<0.31	<10	<0.014	1,400	150	0.29
LVWPS-A2-MW05B	1/13/2021	FD	EM02	Zone 2	Alluvium	58.8 - 73.5	<0.31	<10	<0.014	1,400	150	----
LVWPS-A2-MW05B	1/26/2021	N	EM03	Zone 2	Alluvium	58.8 - 73.5	<0.31	<10	<0.014	860	220	0.45
LVWPS-A2-MW05B	2/9/2021	N	EM04	Zone 2	Alluvium	58.8 - 73.5	<0.31	<10	<0.014	590	160 J-	0.26
LVWPS-A2-MW05B	2/9/2021	FD	EM04	Zone 2	Alluvium	58.8 - 73.5	<0.31	<10	<0.014	610	140 J-	----
LVWPS-A2-MW05B	3/10/2021	N	EM05	Zone 2	Alluvium	58.8 - 73.5	<0.31	<10	<0.014	270	280 J	1.25
LVWPS-A2-MW05B	3/10/2021	FD	EM05	Zone 2	Alluvium	58.8 - 73.5	<0.31	<10	<0.014	270	170 J	----
LVWPS-A2-MW08A	9/30/2020	N	BL04	Zone 2	Alluvium	40.3 - 55.0	2,700	2,100	20	2,100	1.9 J+	5.27

Table 7
Groundwater Analytical Results
Las Vegas Wash Bioremediation Pilot Study

Well	Sample Date	QC Type	Event	Zone	Screened Lithology	Screened Interval	Perchlorate by USEPA Method 314.0	Chlorate by USEPA Method 300.1B	Nitrate (as N) by USEPA Method 300.0	Sulfate by USEPA Method 300.0	Total Organic Carbon by SM 5310B	Dissolved Oxygen Field Measurement
						ft bgs	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L
LVWPS-A2-MW08A	12/23/2020	N	EM01	Zone 2	Alluvium	40.3 - 55.0	1,400	2,000	4.7	2,100	7.4	0.91
LVWPS-A2-MW08A	1/15/2021	N	EM02	Zone 2	Alluvium	40.3 - 55.0	750	1,300	3.2	2,200	25	1.84
LVWPS-A2-MW08A	1/26/2021	N	EM03	Zone 2	Alluvium	40.3 - 55.0	1,100	1,800	6.1	1,800	6.5	0.86
LVWPS-A2-MW08A	2/10/2021	N	EM04	Zone 2	Alluvium	40.3 - 55.0	1,800	3,400	11	2,000	2.7	0.61
LVWPS-A2-MW08A	3/10/2021	N	EM05	Zone 2	Alluvium	40.3 - 55.0	2,000	3,200	13	2,100	2.3	0.83
LVWPS-A2-MW08B	10/1/2020	N	BL04	Zone 2	Alluvium	59.8 - 79.5	3,800	6,000	21	2,000	1.8	5.25
LVWPS-A2-MW08B	12/23/2020	N	EM01	Zone 2	Alluvium	59.8 - 79.5	2,400	4,900	18	2,000	2.4	1.45
LVWPS-A2-MW08B	1/15/2021	N	EM02	Zone 2	Alluvium	59.8 - 79.5	2,100	4,400	15	2,100	2.2	1.76
LVWPS-A2-MW08B	1/26/2021	N	EM03	Zone 2	Alluvium	59.8 - 79.5	2,500	4,600	16	1,900	2.4 J+	1.54
LVWPS-A2-MW08B	2/10/2021	N	EM04	Zone 2	Alluvium	59.8 - 79.5	2,600	4,700	20	2,200	2.3	1.96
LVWPS-A2-MW08B	3/10/2021	N	EM05	Zone 2	Alluvium	59.8 - 79.5	2,800	4,900	19	2,300	2.1	2.18
LVWPS-A2-MW08C	10/1/2020	N	BL04	Zone 2	Alluvium	86.3 - 106.0	4,100	7,200	21	2,200	1.7	4.92
LVWPS-A2-MW08C	12/23/2020	N	EM01	Zone 2	Alluvium	86.3 - 106.0	110	<10	<0.014	2,400	210	0.81
LVWPS-A2-MW08C	1/15/2021	N	EM02	Zone 2	Alluvium	86.3 - 106.0	<0.31	<10	<0.014	2,100	130	0.35
LVWPS-A2-MW08C	1/28/2021	N	EM03	Zone 2	Alluvium	86.3 - 106.0	<3.1	<10	<0.014	1,400	91	0.42
LVWPS-A2-MW08C	2/10/2021	N	EM04	Zone 2	Alluvium	86.3 - 106.0	140	39 J	<0.014	1,500	100	0.29
LVWPS-A2-MW08C	3/10/2021	N	EM05	Zone 2	Alluvium	86.3 - 106.0	130	<10	<0.014	1,300	53	0.23
LVWPS-A2-MW09A	10/9/2020	N	BL04	Zone 2	Alluvium	34.8 - 54.5	3,400	5,500	17	2,500	1.4	5.63
LVWPS-A2-MW09A	12/22/2020	N	EM01	Zone 2	Alluvium	34.8 - 54.5	1,900	2,300	8.3 J-	2,000	1.7 J	4.92
LVWPS-A2-MW09A	1/11/2021	N	EM02	Zone 2	Alluvium	34.8 - 54.5	3,000	3,200	12	2,400	1.5	2.82
LVWPS-A2-MW09A	1/11/2021	FD	EM02	Zone 2	Alluvium	34.8 - 54.5	3,200	3,400	12	2,500	1.6	----
LVWPS-A2-MW09A	1/26/2021	N	EM03	Zone 2	Alluvium	34.8 - 54.5	2,200	2,700	8.7	2,400	2.1 J+	1.94
LVWPS-A2-MW09A	2/8/2021	N	EM04	Zone 2	Alluvium	34.8 - 54.5	2,100	3,000	11	2,300	1.4	4.10
LVWPS-A2-MW09A	2/8/2021	FD	EM04	Zone 2	Alluvium	34.8 - 54.5	2,200	3,100	11	2,300	1.5	----
LVWPS-A2-MW09A	3/8/2021	N	EM05	Zone 2	Alluvium	34.8 - 54.5	2,300	3,400	13	2,100	1.4	2.09
LVWPS-A2-MW09A	3/8/2021	FD	EM05	Zone 2	Alluvium	34.8 - 54.5	2,300	3,300	11	2,200	1.5	----
LVWPS-A2-MW09B	10/9/2020	N	BL04	Zone 2	Alluvium	58.8 - 78.5	1,600	2,100	8.8	2,000	0.60	7.44
LVWPS-A2-MW09B	12/22/2020	N	EM01	Zone 2	Alluvium	58.8 - 78.5	1,500	1,600	5.5	1,800	0.69	3.74
LVWPS-A2-MW09B	1/14/2021	N	EM02	Zone 2	Alluvium	58.8 - 78.5	1,300	1,700	6.1	1,900	0.59	3.90
LVWPS-A2-MW09B	1/27/2021	N	EM03	Zone 2	Alluvium	58.8 - 78.5	1,500	1,600	6.5	1,700	0.64	3.54
LVWPS-A2-MW09B	2/8/2021	N	EM04	Zone 2	Alluvium	58.8 - 78.5	1,500	1,800	7.2	1,800	0.71	4.12
LVWPS-A2-MW09B	3/8/2021	N	EM05	Zone 2	Alluvium	58.8 - 78.5	1,400	1,800	7.2	1,700	0.63	6.42
LVWPS-A2-MW11A	10/2/2020	N	BL04	Zone 2	Alluvium	40.3 - 60.0	3,100	5,300	19	2,100	1.7	4.72
LVWPS-A2-MW11A	10/2/2020	FD	BL04	Zone 2	Alluvium	40.3 - 60.0	3,100	5,100	19	2,100	1.7	----
LVWPS-A2-MW11A	12/23/2020	N	EM01	Zone 2	Alluvium	40.3 - 60.0	2,900	5,000	19	2,100	2.0	3.75
LVWPS-A2-MW11A	1/13/2021	N	EM02	Zone 2	Alluvium	40.3 - 60.0	2,500	5,600	19	2,100	1.9	3.37
LVWPS-A2-MW11A	1/27/2021	N	EM03	Zone 2	Alluvium	40.3 - 60.0	2,200	4,700	5.2	1,900	1.9	3.34
LVWPS-A2-MW11A	2/9/2021	N	EM04	Zone 2	Alluvium	40.3 - 60.0	2,700	4,700	21	2,000 J-	1.7 J-	5.05
LVWPS-A2-MW11A	3/9/2021	N	EM05	Zone 2	Alluvium	40.3 - 60.0	2,800	4,900	21	2,300	1.8	4.31
LVWPS-A2-MW11B	10/2/2020	N	BL04	Zone 2	Alluvium	65.3 - 85.0	2,900	7,200	21	2,100	1.7	4.18
LVWPS-A2-MW11B	12/23/2020	N	EM01	Zone 2	Alluvium	65.3 - 85.0	2,600	6,100	22	2,100	2.3 J	7.73
LVWPS-A2-MW11B	1/13/2021	N	EM02	Zone 2	Alluvium	65.3 - 85.0	2,600	6,500	22	2,100	2.2	7.13
LVWPS-A2-MW11B	1/27/2021	N	EM03	Zone 2	Alluvium	65.3 - 85.0	3,300	6,900	23	1,900	1.9	3.35
LVWPS-A2-MW11B	2/8/2021	N	EM04	Zone 2	Alluvium	65.3 - 85.0	3,200	8,000	23	2,000	1.8	8.67
LVWPS-A2-MW11B	3/9/2021	N	EM05	Zone 2	Alluvium	65.3 - 85.0	3,000	6,600	23	2,100	1.8	6.28
LVWPS-A2-MW11C	10/2/2020	N	BL04	Zone 2	Alluvium	90.3 - 110.0	3,500	11,000	23	2,100	1.6	3.91
LVWPS-A2-MW11C	12/23/2020	N	EM01	Zone 2	Alluvium	90.3 - 110.0	3,000	9,800	23	2,100	<0.26	3.43
LVWPS-A2-MW11C	1/14/2021	N	EM02	Zone 2	Alluvium	90.3 - 110.0	2,900	9,900	23	2,300	1.7	3.14
LVWPS-A2-MW11C	1/27/2021	N	EM03	Zone 2	Alluvium	90.3 - 110.0	3,500	11,000	24	2,000	2.2	2.67
LVWPS-A2-MW11C	2/9/2021	N	EM04	Zone 2	Alluvium	90.3 - 110.0	3,200	11,000	24	1,900	1.6 J-	6.27
LVWPS-A2-MW11C	3/10/2021	N	EM05	Zone 2	Alluvium	90.3 - 110.0	3,000	11,000	24	2,100	2.0	3.91
LVWPS-A2-MW12A	10/6/2020	N	BL04	Zone 2	Alluvium	34.9 - 44.5	4,400	5,300	18	2,100	1.7	4.83
LVWPS-A2-MW12A	12/22/2020	N	EM01	Zone 2	Alluvium	34.9 - 44.5	32	50 J	<0.014	2,500	120	0.56
LVWPS-A2-MW12A	12/22/2020	FD	EM01	Zone 2	Alluvium	34.9 - 44.5	40	48 J	<0.014	2,400	120	----
LVWPS-A2-MW12A	1/11/2021	N	EM02	Zone 2	Alluvium	34.9 - 44.5	<0.31	<4.0	<0.014	2,100	92	0.74
LVWPS-A2-MW12A	1/27/2021	N	EM03	Zone 2	Alluvium	34.9 - 44.5	<0.31	<10	<0.014	200	8.0	0.45
LVWPS-A2-MW12A	2/8/2021	N	EM04	Zone 2	Alluvium	34.9 - 44.5	<0.31	<10	0.023 J	14	33	1.34
LVWPS-A2-MW12A	3/8/2021	N	EM05	Zone 2	Alluvium	34.9 - 44.5	0.47 J	<10	<0.014	290	4.0	0.18
LVWPS-A2-MW12B	10/7/2020	N	BL04	Zone 2	Alluvium	49.3 - 69.0	4,000	5,600	19	2,300	1.6	4.82
LVWPS-A2-MW12B	12/22/2020	N	EM01	Zone 2	Alluvium	49.3 - 69.0	12	<10	<0.014	2,100	45	0.53
LVWPS-A2-MW12B	1/12/2021	N	EM02	Zone 2	Alluvium	49.3 - 69.0	170	130	0.036 J	2,300	11	0.68
LVWPS-A2-MW12B	1/27/2021	N	EM03	Zone 2	Alluvium	49.3 - 69.0	220	140	<0.014	1,900	2.8	0.57
LVWPS-A2-MW12B	1/27/2021	FD	EM03	Zone 2	Alluvium	49.3 - 69.0	220	150	<0.014	2,000	2.9	----

Table 7
Groundwater Analytical Results
Las Vegas Wash Bioremediation Pilot Study

Well	Sample Date	QC Type	Event	Zone	Screened Lithology	Screened Interval	Perchlorate by USEPA Method 314.0	Chlorate by USEPA Method 300.1B	Nitrate (as N) by USEPA Method 300.0	Sulfate by USEPA Method 300.0	Total Organic Carbon by SM 5310B	Dissolved Oxygen Field Measurement
						ft bgs	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L
LVWPS-A2-MW12B	2/8/2021	N	EM04	Zone 2	Alluvium	49.3 - 69.0	20	28 J	<0.014	2,100	2.8	1.31
LVWPS-A2-MW12B	3/8/2021	N	EM05	Zone 2	Alluvium	49.3 - 69.0	340	490	1.1	1,900	2.4	0.23
LVWPS-A2-MW13A	10/1/2020	N	BL04	Zone 2	Alluvium	41.3 - 61.0	1,200	2,100	10	1,800	0.76	6.60
LVWPS-A2-MW13A	12/22/2020	N	EM01	Zone 2	Alluvium	41.3 - 61.0	1,100	1,300	7.3	1,900	1.4	6.32
LVWPS-A2-MW13A	1/11/2021	N	EM02	Zone 2	Alluvium	41.3 - 61.0	1,100	1,100	5.9	2,300	1.7	0.85
LVWPS-A2-MW13A	1/27/2021	N	EM03	Zone 2	Alluvium	41.3 - 61.0	1,700	1,900	8.9	2,000	1.6	1.12
LVWPS-A2-MW13A	2/10/2021	N	EM04	Zone 2	Alluvium	41.3 - 61.0	2,000	2,300	12	2,000	1.4	1.87
LVWPS-A2-MW13A	3/11/2021	N	EM05	Zone 2	Alluvium	41.3 - 61.0	1,400	1,900	8.5	1,900	1.1 J	4.82
LVWPS-A2-MW13B	10/1/2020	N	BL04	Zone 2	Alluvium	66.4 - 86.1	2,200	4,300	15	2,200	1.2	5.76
LVWPS-A2-MW13B	12/22/2020	N	EM01	Zone 2	Alluvium	66.4 - 86.1	610	830	3.5	2,200	32	2.43
LVWPS-A2-MW13B	1/12/2021	N	EM02	Zone 2	Alluvium	66.4 - 86.1	38	58 J	0.11 J	2,100	21	0.49
LVWPS-A2-MW13B	1/27/2021	N	EM03	Zone 2	Alluvium	66.4 - 86.1	52	26 J	0.71	1,700	9.6	0.44
LVWPS-A2-MW13B	2/10/2021	N	EM04	Zone 2	Alluvium	66.4 - 86.1	170	240	0.76	1,600	3.6	0.85
LVWPS-A2-MW13B	3/11/2021	N	EM05	Zone 2	Alluvium	66.4 - 86.1	520	380	3.3	1,800	1.8	1.19
LVWPS-A2-MW14A	10/6/2020	N	BL04	Zone 2	Alluvium	35.8 - 50.5	2,600	5,400	19	2,200	1.7	5.77
LVWPS-A2-MW14A	10/6/2020	FD	BL04	Zone 2	Alluvium	35.8 - 50.5	2,700	5,100	19	2,200	1.7	----
LVWPS-A2-MW14A	12/22/2020	N	EM01	Zone 2	Alluvium	35.8 - 50.5	130	240	0.58 J-	2,300	28	0.33
LVWPS-A2-MW14A	12/22/2020	FD	EM01	Zone 2	Alluvium	35.8 - 50.5	140	210	0.58 J-	2,200	29	----
LVWPS-A2-MW14A	1/13/2021	N	EM02	Zone 2	Alluvium	35.8 - 50.5	200	250	0.57	1,900	31	0.69
LVWPS-A2-MW14A	1/13/2021	FD	EM02	Zone 2	Alluvium	35.8 - 50.5	210	220	0.59	1,900	32	----
LVWPS-A2-MW14A	1/28/2021	N	EM03	Zone 2	Alluvium	35.8 - 50.5	50	65 J	0.24	950	59	1.02
LVWPS-A2-MW14A	1/28/2021	FD	EM03	Zone 2	Alluvium	35.8 - 50.5	59	52 J	0.25	960	61	----
LVWPS-A2-MW14A	2/9/2021	N	EM04	Zone 2	Alluvium	35.8 - 50.5	23	<10	0.053	890	41 J-	0.72
LVWPS-A2-MW14A	2/9/2021	FD	EM04	Zone 2	Alluvium	35.8 - 50.5	23	<10	0.038 J	890	41 J-	----
LVWPS-A2-MW14A	3/9/2021	N	EM05	Zone 2	Alluvium	35.8 - 50.5	13	12 J	<0.014	920	49	0.27
LVWPS-A2-MW14A	3/9/2021	FD	EM05	Zone 2	Alluvium	35.8 - 50.5	13	32 J	<0.014	910	50	----
LVWPS-A2-MW14B	10/6/2020	N	BL04	Zone 2	Alluvium	54.8 - 74.5	2,800	5,400	18	2,300	1.6	5.42
LVWPS-A2-MW14B	12/22/2020	N	EM01	Zone 2	Alluvium	54.8 - 74.5	1,700	2,800	7.9	2,400	7.4	0.28
LVWPS-A2-MW14B	1/13/2021	N	EM02	Zone 2	Alluvium	54.8 - 74.5	1,800	3,800	10	2,300	3.1	0.70
LVWPS-A2-MW14B	1/25/2021	N	EM03	Zone 2	Alluvium	54.8 - 74.5	2,400	3,000	8.6	2,100	2.2 J+	0.98
LVWPS-A2-MW14B	2/9/2021	N	EM04	Zone 2	Alluvium	54.8 - 74.5	1,400	2,600	9.5	2,000	6.2 J-	0.73
LVWPS-A2-MW14B	3/10/2021	N	EM05	Zone 2	Alluvium	54.8 - 74.5	2,200	3,700	13	2,100	2.1	1.41
LVWPS-A2-MW15A	10/7/2020	N	BL04	Zone 2	Alluvium	39.8 - 59.5	3,400	5,100	20	2,100	1.7	4.55
LVWPS-A2-MW15A	12/21/2020	N	EM01	Zone 2	Alluvium	39.8 - 59.5	3,000	5,100	19	2,000	1.9	4.42
LVWPS-A2-MW15A	1/11/2021	N	EM02	Zone 2	Alluvium	39.8 - 59.5	2,800	5,400	19	2,200	1.9	3.70
LVWPS-A2-MW15A	1/25/2021	N	EM03	Zone 2	Alluvium	39.8 - 59.5	2,900	5,000	18	2,000	2.0 J+	3.59
LVWPS-A2-MW15A	2/9/2021	N	EM04	Zone 2	Alluvium	39.8 - 59.5	2,200	4,800	20	1,900	2.0 J-	4.64
LVWPS-A2-MW15A	3/9/2021	N	EM05	Zone 2	Alluvium	39.8 - 59.5	2,800	4,900	21	2,000	1.9	4.17
LVWPS-A2-MW15B	10/8/2020	N	BL04	Zone 2	Alluvium	70.3 - 90.0	3,200	9,000	22	2,300	1.7	3.90
LVWPS-A2-MW15B	12/22/2020	N	EM01	Zone 2	Alluvium	70.3 - 90.0	3,300	7,600	24	2,200	2.0	4.30
LVWPS-A2-MW15B	1/12/2021	N	EM02	Zone 2	Alluvium	70.3 - 90.0	3,300	8,400	24	2,300	1.8	3.05
LVWPS-A2-MW15B	1/26/2021	N	EM03	Zone 2	Alluvium	70.3 - 90.0	3,400	9,000	25	2,000	1.8 J+	9.30 E
LVWPS-A2-MW15B	2/9/2021	N	EM04	Zone 2	Alluvium	70.3 - 90.0	2,600	9,500	24	1,800	1.7 J-	3.99
LVWPS-A2-MW15B	3/9/2021	N	EM05	Zone 2	Alluvium	70.3 - 90.0	3,100	9,400	25	2,100	1.7	3.95
LVWPS-A2-MW16A	10/9/2020	N	BL04	Zone 2	Alluvium	35.8 - 55.5	3,500	5,800	22	2,100	1.6	5.17
LVWPS-A2-MW16A	12/22/2020	N	EM01	Zone 2	Alluvium	35.8 - 55.5	3,600	5,600	21	2,000	1.8	3.55
LVWPS-A2-MW16A	1/12/2021	N	EM02	Zone 2	Alluvium	35.8 - 55.5	2,900	5,300	21	2,300	1.7	3.87
LVWPS-A2-MW16A	1/25/2021	N	EM03	Zone 2	Alluvium	35.8 - 55.5	3,900	5,300	20	2,000	1.8 J+	3.87
LVWPS-A2-MW16A	2/9/2021	N	EM04	Zone 2	Alluvium	35.8 - 55.5	2,600	5,600	22	1,900	1.7 J-	3.35
LVWPS-A2-MW16A	3/12/2021	N	EM05	Zone 2	Alluvium	35.8 - 55.5	2,600	5,700	23	2,000	2.0 J+	3.86
LVWPS-A2-MW16B	10/9/2020	N	BL04	Zone 2	Alluvium	60.3 - 80.0	3,600	9,000	22	2,200	1.5	4.45
LVWPS-A2-MW16B	10/9/2020	FD	BL04	Zone 2	Alluvium	60.3 - 80.0	3,400	9,100	22	2,200	1.6	----
LVWPS-A2-MW16B	12/22/2020	N	EM01	Zone 2	Alluvium	60.3 - 80.0	4,100	7,800	22 J-	2,100	2.0	3.44
LVWPS-A2-MW16B	1/12/2021	N	EM02	Zone 2	Alluvium	60.3 - 80.0	3,000	9,200	22	2,300	1.7	3.57
LVWPS-A2-MW16B	1/25/2021	N	EM03	Zone 2	Alluvium	60.3 - 80.0	3,500	8,400	20	2,000	1.8 J+	3.63
LVWPS-A2-MW16B	2/9/2021	N	EM04	Zone 2	Alluvium	60.3 - 80.0	2,900	8,500	22	1,900	1.7 J-	2.68
LVWPS-A2-MW16B	3/12/2021	N	EM05	Zone 2	Alluvium	60.3 - 80.0	3,000	10,000	11	2,100	1.8 J+	8.61
LVWPS-A2-MW17A	10/1/2020	N	BL04	Zone 2	Alluvium	40.3 - 60.0	2,500	5,300	19	2,100	1.7	4.90
LVWPS-A2-MW17A	12/22/2020	N	EM01	Zone 2	Alluvium	40.3 - 60.0	2,100	2,100	6.4	2,200	2.8	0.37
LVWPS-A2-MW17A	1/11/2021	N	EM02	Zone 2	Alluvium	40.3 - 60.0	2,100	3,000	8.7	2,200	2.0	0.67
LVWPS-A2-MW17A	1/26/2021	N	EM03	Zone 2	Alluvium	40.3 - 60.0	2,700	3,700	14	1,900	2.4 J+	1.77 E
LVWPS-A2-MW17A	2/8/2021	N	EM04	Zone 2	Alluvium	40.3 - 60.0	2,400	3,600	13	2,000	1.9	1.18
LVWPS-A2-MW17A	3/8/2021	N	EM05	Zone 2	Alluvium	40.3 - 60.0	1,900	3,500	14	1,900	2.0	3.86

Table 7
Groundwater Analytical Results
Las Vegas Wash Bioremediation Pilot Study

Well	Sample Date	QC Type	Event	Zone	Screened Lithology	Screened Interval	Perchlorate by USEPA Method 314.0	Chlorate by USEPA Method 300.1B	Nitrate (as N) by USEPA Method 300.0	Sulfate by USEPA Method 300.0	Total Organic Carbon by SM 5310B	Dissolved Oxygen Field Measurement
						ft bgs	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L
LVWPS-A2-MW17B	10/1/2020	N	BL04	Zone 2	Alluvium	65.3 - 85.0	2,700	5,700	21	2,100	1.7	4.83
LVWPS-A2-MW17B	12/22/2020	N	EM01	Zone 2	Alluvium	65.3 - 85.0	560	350	1.2	2,200	7.6	0.37
LVWPS-A2-MW17B	1/11/2021	N	EM02	Zone 2	Alluvium	65.3 - 85.0	790	1,200	3.2	2,200	6.8	0.26
LVWPS-A2-MW17B	1/26/2021	N	EM03	Zone 2	Alluvium	65.3 - 85.0	870	1,300	3.3	1,700	4.5	7.06 E
LVWPS-A2-MW17B	2/8/2021	N	EM04	Zone 2	Alluvium	65.3 - 85.0	1,100	1,400	4.5	1,800	3.5	4.10
LVWPS-A2-MW17B	3/8/2021	N	EM05	Zone 2	Alluvium	65.3 - 85.0	530	560	3.1	1,700	3.2	3.35
LVWPS-A2-MW17C	10/1/2020	N	BL04	Zone 2	Alluvium	90.3 - 110.0	2,200	3,700	14	2,100	1.1	5.67
LVWPS-A2-MW17C	12/22/2020	N	EM01	Zone 2	Alluvium	90.3 - 110.0	2,000	1,700	4.3	1,900	4.8	2.30
LVWPS-A2-MW17C	1/11/2021	N	EM02	Zone 2	Alluvium	90.3 - 110.0	660	920	2.6	2,100	3.6	0.91
LVWPS-A2-MW17C	1/26/2021	N	EM03	Zone 2	Alluvium	90.3 - 110.0	720	1,000	2.5	1,800	2.9	3.80 E
LVWPS-A2-MW17C	2/8/2021	N	EM04	Zone 2	Alluvium	90.3 - 110.0	570	760	2.1	1,200	62	3.93
LVWPS-A2-MW17C	3/8/2021	N	EM05	Zone 2	Alluvium	90.3 - 110.0	1,300	2,100	6.7	1,700	1.4	7.18
LVWPS-A3-MW02	10/5/2020	N	BL04	Zone 3	Alluvium	52.8 - 72.5	100	150	7.0	900	0.29 J	6.42
LVWPS-A3-MW02	1/14/2021	N	EM02	Zone 3	Alluvium	52.8 - 72.5	100	140	7.2	1,000	0.35 J	6.18
LVWPS-A3-MW02	2/11/2021	N	EM04	Zone 3	Alluvium	52.8 - 72.5	130	130	7.4 J-	920	0.28 J	6.68
LVWPS-A3-MW02	3/11/2021	N	EM05	Zone 3	Alluvium	52.8 - 72.5	120	140	7.3	1,000	0.29 J	6.17
LVWPS-A3-MW06	10/5/2020	N	BL04	Zone 3	Alluvium	55.3 - 75.0	110	150	9.0	1,300	0.45 J	7.24
LVWPS-A3-MW06	1/15/2021	N	EM02	Zone 3	Alluvium	55.3 - 75.0	100	160	8.6	1,400	0.61 J-	6.47
LVWPS-A3-MW06	2/10/2021	N	EM04	Zone 3	Alluvium	55.3 - 75.0	120	140	8.9	1,300	0.48 J	6.27
LVWPS-A3-MW06	3/12/2021	N	EM05	Zone 3	Alluvium	55.3 - 75.0	140	150 J+	8.2	1,200	0.43 J	6.28
LVWPS-A3-MW07	10/8/2020	N	BL04	Zone 3	Alluvium	54.8 - 74.5	100	210	6.4	1,100	0.45 J	6.98
LVWPS-A3-MW07	1/15/2021	N	EM02	Zone 3	Alluvium	54.8 - 74.5	130	230	7.1	1,200	<1.0	6.70
LVWPS-A3-MW07	2/11/2021	N	EM04	Zone 3	Alluvium	54.8 - 74.5	130	200	7.5 J-	1,100	0.34 J	6.71
LVWPS-A3-MW07	3/11/2021	N	EM05	Zone 3	Alluvium	54.8 - 74.5	160	250	7.1	1,200	0.37 J	5.93
LVWPS-A3-MW08	10/8/2020	N	BL04	Zone 3	Alluvium	84.8 - 104.5	120	180	8.5	1,600	0.81	4.73
LVWPS-A3-MW08	1/14/2021	N	EM02	Zone 3	Alluvium	84.8 - 104.5	71	160	8.4	1,700	1.1 J	6.42
LVWPS-A3-MW08	2/11/2021	N	EM04	Zone 3	Alluvium	84.8 - 104.5	83	170	8.1 J-	1,600	0.80	6.32
LVWPS-A3-MW08	3/10/2021	N	EM05	Zone 3	Alluvium	84.8 - 104.5	66	150	8.4	1,500	<1.0	5.94
LVWPS-A3-MW10	10/5/2020	N	BL04	Zone 3	Alluvium	56.3 - 76.0	200	200	7.5	870	0.26 J	7.31
LVWPS-A3-MW10	1/14/2021	N	EM02	Zone 3	Alluvium	56.3 - 76.0	190	220	7.7	930	0.44 J	6.97
LVWPS-A3-MW10	2/11/2021	N	EM04	Zone 3	Alluvium	56.3 - 76.0	180	180	7.9 J-	950	<0.26	6.84
LVWPS-A3-MW10	3/11/2021	N	EM05	Zone 3	Alluvium	56.3 - 76.0	170	200	8.4	910	0.34 J	6.76
LVWPS-A3-MW11	10/7/2020	N	BL04	Zone 3	Alluvium	53.8 - 73.5	78	160	9.2	1,600	0.96	8.50
LVWPS-A3-MW11	1/15/2021	N	EM02	Zone 3	Alluvium	53.8 - 73.5	55 J	140	8.4	1,700	0.72	6.84
LVWPS-A3-MW11	2/11/2021	N	EM04	Zone 3	Alluvium	53.8 - 73.5	68	150	7.6	1,600	0.65	6.69
LVWPS-A3-MW11	3/11/2021	N	EM05	Zone 3	Alluvium	53.8 - 73.5	63	140	7.8	1,700	0.82	6.40
LVWPS-A3-MW12	10/5/2020	N	BL04	Zone 3	Alluvium	59.3 - 79.0	200	270	7.2	1,200	0.40 J	6.48
LVWPS-A3-MW12	1/13/2021	N	EM02	Zone 3	Alluvium	59.3 - 79.0	230	260	7.1	1,200	0.35 J	5.84
LVWPS-A3-MW12	2/12/2021	N	EM04	Zone 3	Alluvium	59.3 - 79.0	190	280	7.6	1,200	0.41 J	8.24
LVWPS-A3-MW12	3/12/2021	N	EM05	Zone 3	Alluvium	59.3 - 79.0	140	190	5.8	1,100	0.45 J	4.29
LVWPS-EW01	9/29/2020	N	BL04	Extraction	Alluvium	44.8 - 84.5	2,900	13,000	23	2,200	1.6	2.76
LVWPS-EW01	3/12/2021	N	EM05	Extraction	Alluvium	44.8 - 84.5	3,400	14,000	23	2,000	1.7 J+	2.34
LVWPS-EW02	9/29/2020	N	BL04	Extraction	Alluvium	28.3 - 58.0	2,900	5,500	20	2,100	1.9	4.29
LVWPS-EW02	3/12/2021	N	EM05	Extraction	Alluvium	28.3 - 58.0	2,900	7,000	23	2,000	1.9 J+	4.54
LVWPS-EW03	9/30/2020	N	BL04	Extraction	Alluvium	40.3 - 70.0	3,100	5,000	18	2,100	1.7	4.09
LVWPS-EW03	3/12/2021	N	EM05	Extraction	Alluvium	40.3 - 70.0	2,900	5,300	21	2,000	2.2 J+	3.92
LVWPS-EW03	3/12/2021	FD	EM05	Extraction	Alluvium	40.3 - 70.0	3,000	5,500	22	2,100	2.1 J+	----
LVWPS-EW04	9/30/2020	N	BL04	Extraction	Alluvium	26.3 - 46.0	2,800	5,200	20	2,100	2.0	4.35
LVWPS-EW04	3/12/2021	N	EM05	Extraction	Alluvium	26.3 - 46.0	2,900	5,600	23	2,100	2.1 J+	4.68
LVWPS-EW05	9/29/2020	N	BL04	Extraction	Alluvium	50.3 - 80.0	2,800	11,000	23	2,100	1.8	2.32
LVWPS-EW05	9/29/2020	FD	BL04	Extraction	Alluvium	50.3 - 80.0	2,800	11,000	23	2,100	1.7	----
LVWPS-EW05	3/15/2021	N	EM05	Extraction	Alluvium	50.3 - 80.0	3,100	12,000	24	2,100	1.8	2.22
LVWPS-MW201A	9/28/2020	N	BL04	General Vicinity	Alluvium	28.2 - 47.8	1,800	11,000	13	----	----	0.59
LVWPS-MW201B	9/28/2020	N	BL04	General Vicinity	UMCf	60.1 - 79.8	610	560	0.55	----	----	1.13
LVWPS-MW202	9/29/2020	N	BL04	General Vicinity	Alluvium	41.8 - 61.5	1,100	6,000	12	----	----	0.80
LVWPS-MW203A	9/30/2020	N	BL04	General Vicinity	Alluvium	34.8 - 54.5	120	<40	9.3	----	----	0.74
LVWPS-MW203A	9/30/2020	FD	BL04	General Vicinity	Alluvium	34.8 - 54.5	120	<40	9.3	----	----	----
LVWPS-MW203B	9/30/2020	N	BL04	General Vicinity	UMCf	75.1 - 94.7	2.6 J-	<40	<0.014	----	----	0.88
LVWPS-MW203C	9/30/2020	N	BL04	General Vicinity	UMCf (Semi-Cons)	100.3 - 120.0	<0.31	<20	<0.014	----	----	0.65
LVWPS-MW204	9/28/2020	N	BL04	General Vicinity	Alluvium	50.3 - 70.0	1,600	10,000	14	1,300	1.4	1.84
LVWPS-MW204	9/28/2020	FD	BL04	General Vicinity	Alluvium	50.3 - 70.0	1,600	10,000	14	1,300	1.3	----
LVWPS-MW204B	9/28/2020	N	BL04	General Vicinity	UMCf	101.5 - 121.2	12,000	22,000	15	1,800	0.75	2.92
LVWPS-MW204C	10/7/2020	N	BL04	General Vicinity	UMCf (Semi-Cons)	150.5 - 170.0	46	<100	<0.028	----	----	2.40

Table 7
Groundwater Analytical Results
Las Vegas Wash Bioremediation Pilot Study

Well	Sample Date	QC Type	Event	Zone	Screened Lithology	Screened Interval	Perchlorate by USEPA Method 314.0	Chlorate by USEPA Method 300.1B	Nitrate (as N) by USEPA Method 300.0	Sulfate by USEPA Method 300.0	Total Organic Carbon by SM 5310B	Dissolved Oxygen Field Measurement
						ft bgs	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L
LVWPS-MW205B	9/28/2020	N	BL04	General Vicinity	Alluvium	64.9 - 84.6	1,300	6,300	12	----	----	0.50
LVWPS-MW205C	9/29/2020	N	BL04	General Vicinity	Alluvium	100.3 - 120.0	790	2,700	11	----	----	0.87
LVWPS-MW206A	9/30/2020	N	BL04	Extraction	Alluvium	39.8 - 59.5	3,400 J-	8,500	23	----	----	3.77
LVWPS-MW206B	9/30/2020	N	BL04	Extraction	Alluvium	69.9 - 89.5	2,800	16,000	10	----	----	1.84
LVWPS-MW206C	9/30/2020	N	BL04	Extraction	UMCf	100.3 - 120.0	4,900 J-	6,000	3.4	----	----	2.70
LVWPS-MW206D	10/6/2020	N	BL04	Extraction	UMCf	125.3 - 145.0	9.5	<10	<0.014	----	----	2.08
LVWPS-MW206E	10/5/2020	N	BL04	Extraction	UMCf (Semi-Cons)	195.5 - 205.0	39	<100	<0.014	----	----	2.11
LVWPS-MW207	9/28/2020	N	BL04	General Vicinity	Alluvium	68.1 - 87.8	2,200	14,000	18	1,800	1.5	1.55
LVWPS-MW207	12/22/2020	N	EM01	General Vicinity	Alluvium	68.1 - 87.8	4,900	13,000	17	1,900	1.6	1.27
LVWPS-MW207	1/29/2021	N	EM03	General Vicinity	Alluvium	68.1 - 87.8	2,500	14,000	14	1,800	1.7	1.09
LVWPS-MW207	3/12/2021	N	EM05	General Vicinity	Alluvium	68.1 - 87.8	3,000	14,000	19	1,800	1.6 J+	2.38
LVWPS-MW208A	10/9/2020	N	BL04	Zone 2	Alluvium	39.9 - 59.5	1,900	2,900	12	2,100	0.93	5.77
LVWPS-MW208A	12/23/2020	N	EM01	Zone 2	Alluvium	39.9 - 59.5	2,200	2,300	9.4	1,900	0.81	4.14
LVWPS-MW208A	1/13/2021	N	EM02	Zone 2	Alluvium	39.9 - 59.5	13,000 J	2,600	11	2,000	0.88	5
LVWPS-MW208A	1/27/2021	N	EM03	Zone 2	Alluvium	39.9 - 59.5	2,200	2,600	11	2,000	0.92	5.82 E
LVWPS-MW208A	2/10/2021	N	EM04	Zone 2	Alluvium	39.9 - 59.5	2,400	2,500	11	2,100	0.96	5.07
LVWPS-MW208A	3/10/2021	N	EM05	Zone 2	Alluvium	39.9 - 59.5	1,800 J+	2,800	10 J-	1,900	0.91	4.85
LVWPS-MW208B	10/9/2020	N	BL04	Zone 2	Alluvium	65.3 - 85.0	2,100	3,200	12	2,000	1.0	5.90
LVWPS-MW208B	12/23/2020	N	EM01	Zone 2	Alluvium	65.3 - 85.0	870	42 J	0.23	1,900	11	0.31
LVWPS-MW208B	12/23/2020	FD	EM01	Zone 2	Alluvium	65.3 - 85.0	810	39 J	0.23	1,900	11	----
LVWPS-MW208B	1/13/2021	N	EM02	Zone 2	Alluvium	65.3 - 85.0	63	46	0.33	1,800	8.4	0.83
LVWPS-MW208B	1/27/2021	N	EM03	Zone 2	Alluvium	65.3 - 85.0	74	56 J	0.25	1,600	9.9	3.35 E
LVWPS-MW208B	1/27/2021	FD	EM03	Zone 2	Alluvium	65.3 - 85.0	63	55 J	0.28	1,600	10	----
LVWPS-MW208B	2/11/2021	N	EM04	Zone 2	Alluvium	65.3 - 85.0	150	180	0.83 J-	1,400 J-	1.4	1.54
LVWPS-MW208B	3/10/2021	N	EM05	Zone 2	Alluvium	65.3 - 85.0	330	380	2.3	1,900	1.2	0.44
LVWPS-MW209	10/6/2020	N	BL04	General Vicinity	Alluvium	71.3 - 91.0	2,700	8,500	22	2,200	1.6	4.40
LVWPS-MW209	10/6/2020	FD	BL04	General Vicinity	Alluvium	71.3 - 91.0	2,800	9,000	22	2,200	1.6	----
LVWPS-MW209	12/21/2020	N	EM01	General Vicinity	Alluvium	71.3 - 91.0	3,000	7,600	18	2,200	1.8	2.38
LVWPS-MW209	1/27/2021	N	EM03	General Vicinity	Alluvium	71.3 - 91.0	2,600	7,800	19	2,000	1.8	2.94 E
LVWPS-MW209	3/11/2021	N	EM05	General Vicinity	Alluvium	71.3 - 91.0	2,700	8,500	18	2,100	1.7	2.66
LVWPS-MW209A	10/6/2020	N	BL04	General Vicinity	Alluvium	35.3 - 55.0	2,800	6,800	21	2,200	1.7	4.72
LVWPS-MW209A	12/21/2020	N	EM01	General Vicinity	Alluvium	35.3 - 55.0	3,000	5,300	20	2,300	1.6	3.96
LVWPS-MW209A	1/27/2021	N	EM03	General Vicinity	Alluvium	35.3 - 55.0	2,300	3,700	14	2,100	2.4	2.59 E
LVWPS-MW209A	3/11/2021	N	EM05	General Vicinity	Alluvium	35.3 - 55.0	1,800	3,500	11	2,000	1.8	2.25
LVWPS-MW209B	10/6/2020	N	BL04	General Vicinity	UMCf-cg	110.3 - 130.0	2,700	8,300	21	----	----	4.30
LVWPS-MW209C	10/7/2020	N	BL04	General Vicinity	UMCf-cg	151.0 - 170.5	8,500	12,000	14	----	----	2.44
LVWPS-MW210A	10/6/2020	N	BL04	General Vicinity	Alluvium	35.3 - 55.0	2,600	12,000	20	1,800	1.5	2.44
LVWPS-MW210A	12/21/2020	N	EM01	General Vicinity	Alluvium	35.3 - 55.0	3,100	13,000	21	2,000	1.6	2.04
LVWPS-MW210A	1/29/2021	N	EM03	General Vicinity	Alluvium	35.3 - 55.0	2,900	11,000	17	1,800	1.6	2.66
LVWPS-MW210A	3/12/2021	N	EM05	General Vicinity	Alluvium	35.3 - 55.0	2,900	11,000	9.7	1,900	1.7 J+	2.78
LVWPS-MW210B	10/6/2020	N	BL04	General Vicinity	Alluvium	70.1 - 89.8	2,800	9,700	22	2,100	1.6	3.60
LVWPS-MW210B	12/21/2020	N	EM01	General Vicinity	Alluvium	70.1 - 89.8	2,800	8,300	15	2,100	1.9	1.48
LVWPS-MW210B	1/29/2021	N	EM03	General Vicinity	Alluvium	70.1 - 89.8	2,400	7,800	14	2,000	1.8	1.62
LVWPS-MW210B	3/12/2021	N	EM05	General Vicinity	Alluvium	70.1 - 89.8	2,500	9,600	8.5	2,000	1.9 J+	1.48
LVWPS-MW210C	10/1/2020	N	BL04	General Vicinity	UMCf-cg	100.3 - 120.0	10,000 J-	17,000	15	----	----	2.59
LVWPS-MW210D	10/7/2020	N	BL04	General Vicinity	UMCf-cg	130.4 - 140.0	8,500	10,000	3.8	----	----	3.24
LVWPS-MW210E	10/7/2020	N	BL04	General Vicinity	UMCf-cg	145.5 - 165.0	4,400	7,100	2.2	----	----	2.19
LVWPS-MW211	9/30/2020	N	BL04	General Vicinity	Alluvium	50.0 - 69.7	2,000	3,200	14	2,100	1.1	6.33
LVWPS-MW211	12/21/2020	N	EM01	General Vicinity	Alluvium	50.0 - 69.7	2,100	3,000	13	1,900	0.99	5.52
LVWPS-MW211	1/29/2021	N	EM03	General Vicinity	Alluvium	50.0 - 69.7	850	1,300	4.4	1,800	1.3 J	1.20
LVWPS-MW211	3/12/2021	N	EM05	General Vicinity	Alluvium	50.0 - 69.7	950	1,300	6.0	1,800	1.4 J	1.24
LVWPS-MW212A	10/5/2020	N	BL04	Zone 3	Alluvium	34.3 - 54.0	390	460	8.5	1,200	0.47 J	6.73
LVWPS-MW212A	12/21/2020	N	EM01	Zone 3	Alluvium	34.3 - 54.0	400	510	8.9	1,200	0.43 J	6.56
LVWPS-MW212A	1/27/2021	N	EM03	Zone 3	Alluvium	34.3 - 54.0	400	470	8.7	1,200	0.45 J	8.10 E
LVWPS-MW212A	3/12/2021	N	EM05	Zone 3	Alluvium	34.3 - 54.0	380	460	8.6	1,200	0.41 J	6.60
LVWPS-MW212B	10/5/2020	N	BL04	Zone 3	Alluvium	59.8 - 79.5	170	200	7.7	980	0.32 J	6.48
LVWPS-MW212B	12/22/2020	N	EM01	Zone 3	Alluvium	59.8 - 79.5	150	190	7.8	1,100	0.29 J	6.57
LVWPS-MW212B	1/27/2021	N	EM03	Zone 3	Alluvium	59.8 - 79.5	210	200	8.1	1,100	<1.0	9.04 E
LVWPS-MW212B	3/12/2021	N	EM05	Zone 3	Alluvium	59.8 - 79.5	180	180	8.2	1,100	<2.6	6.95
LVWPS-MW212C	10/5/2020	N	BL04	Zone 3	UMCf-cg	100.3 - 120.0	7,800	11,000	8.4	----	----	4.32
LVWPS-MW212D	10/8/2020	N	BL04	Zone 3	UMCf-cg	125.5 - 145.0	6,800	11,000	10	----	----	5.60
LVWPS-MW213	10/1/2020	N	BL04	General Vicinity	Alluvium	40.1 - 59.8	170	260	3.2	----	----	4.96
LVWPS-MW213	10/1/2020	FD	BL04	General Vicinity	Alluvium	40.1 - 59.8	140	270	3.2	----	----	----

Table 7
Groundwater Analytical Results
Las Vegas Wash Bioremediation Pilot Study

Well	Sample Date	QC Type	Event	Zone	Screened Lithology	Screened Interval	Perchlorate by USEPA Method 314.0	Chlorate by USEPA Method 300.1B	Nitrate (as N) by USEPA Method 300.0	Sulfate by USEPA Method 300.0	Total Organic Carbon by SM 5310B	Dissolved Oxygen Field Measurement
						ft bgs	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L
LVWPS-MW214	10/7/2020	N	BL04	General Vicinity	Alluvium	34.4 - 44.0	2,500	3,700	14	----	----	5.16
LVWPS-MW215A	10/8/2020	N	BL04	General Vicinity	Alluvium	13.5 - 33.2	2,600 J-	9,700	17	----	----	1.26
LVWPS-MW215B	10/9/2020	N	BL04	General Vicinity	Bedrock	40.7 - 45.3	2,600	6,700	11	----	----	1.46
LVWPS-MW216	10/7/2020	N	BL04	General Vicinity	Alluvium	10.4 - 20.0	1,100	930	4.0	----	----	0.66
LVWPS-MW216	10/7/2020	FD	BL04	General Vicinity	Alluvium	10.4 - 20.0	1,100	940	4.1	----	----	----
LVWPS-MW217A	9/30/2020	N	BL04	Zone 1	Alluvium	51.3 - 71.0	2,200	11,000	15	1,500	1.4	2.60
LVWPS-MW217A	1/12/2021	N	EM02	Zone 1	Alluvium	51.3 - 71.0	2,600	14,000	17	1,800	1.5	1.75
LVWPS-MW217A	2/9/2021	N	EM04	Zone 1	Alluvium	51.3 - 71.0	2,700	14,000	17	1,300	1.5 J-	2.21
LVWPS-MW217A	3/12/2021	N	EM05	Zone 1	Alluvium	51.3 - 71.0	2,800	15,000	17	1,600	1.6 J+	1.31
LVWPS-MW217B	9/30/2020	N	BL04	Zone 1	UMCf	100.3 - 120.0	7,300	14,000	15	1,600	1.0	2.53
LVWPS-MW217B	1/13/2021	N	EM02	Zone 1	UMCf	100.3 - 120.0	9,500	14,000	15	1,700	1.3 J	1.03
LVWPS-MW217B	2/10/2021	N	EM04	Zone 1	UMCf	100.3 - 120.0	8,600	14,000	15	1,800	1.1	1.12
LVWPS-MW217B	3/10/2021	N	EM05	Zone 1	UMCf	100.3 - 120.0	9,400	13,000	14	1,800	1.2 J	1.19
LVWPS-MW217C	10/5/2020	N	BL04	Zone 1	UMCf	155.5 - 175.0	6,200	10,000	12	1,600	1.5	2.53
LVWPS-MW217C	1/13/2021	N	EM02	Zone 1	UMCf	155.5 - 175.0	7,100	11,000	12	1,700	1.8 J	1.02
LVWPS-MW217C	1/13/2021	FD	EM02	Zone 1	UMCf	155.5 - 175.0	7,500	10,000	12	1,700	1.8 J	----
LVWPS-MW217C	2/10/2021	N	EM04	Zone 1	UMCf	155.5 - 175.0	6,700	11,000	12	1,700	1.7	1.19
LVWPS-MW217C	2/10/2021	FD	EM04	Zone 1	UMCf	155.5 - 175.0	6,700	11,000	12	1,700	1.6	----
LVWPS-MW217C	3/10/2021	N	EM05	Zone 1	UMCf	155.5 - 175.0	7,200	10,000	11	1,800	1.4	1.13
LVWPS-MW217C	3/10/2021	FD	EM05	Zone 1	UMCf	155.5 - 175.0	7,300	10,000	13	1,800	1.5	----
LVWPS-MW218A	10/5/2020	N	BL04	General Vicinity	Alluvium	35.3 - 55.0	5,100	14,000	20	1,900	1.4	4.72
LVWPS-MW218A	12/21/2020	N	EM01	General Vicinity	Alluvium	35.3 - 55.0	3,200	14,000	21	2,000	1.5	3.89
LVWPS-MW218A	1/26/2021	N	EM03	General Vicinity	Alluvium	35.3 - 55.0	3,400	12,000	19	1,800	1.5 J+	4.61 E
LVWPS-MW218A	3/15/2021	N	EM05	General Vicinity	Alluvium	35.3 - 55.0	2,900	12,000	20	1,800	1.5	4.05
LVWPS-MW218B	10/2/2020	N	BL04	General Vicinity	UMCf/UMCf-cg	100.3 - 120.0	8,400	13,000	16	----	----	5.83
LVWPS-MW218C	10/2/2020	N	BL04	General Vicinity	UMCf/UMCf-cg	136.0 - 155.5	5,300	7,200	4.3	----	----	1.78
LVWPS-MW219A	10/9/2020	N	BL04	General Vicinity	Alluvium	35.1 - 49.8	3,500	8,500	19	----	----	5.78
LVWPS-MW219B	10/9/2020	N	BL04	General Vicinity	UMCf/Bedrock	75.3 - 95.0	2.2	<100	<0.014	----	----	3.23
LVWPS-MW219C	10/9/2020	N	BL04	General Vicinity	UMCf/Bedrock	115.5 - 135.0	53	<10	0.045 J	----	----	2.43
LVWPS-MW220A	10/5/2020	N	BL04	General Vicinity	Alluvium	60.3 - 80.0	3,100	9,400	21	2,100	1.6	3.77
LVWPS-MW220A	12/21/2020	N	EM01	General Vicinity	Alluvium	60.3 - 80.0	3,100	7,000	20	2,200	1.8	3.31
LVWPS-MW220A	1/28/2021	N	EM03	General Vicinity	Alluvium	60.3 - 80.0	3,500	9,000	22	2,200	1.6	3.77 E
LVWPS-MW220A	3/11/2021	N	EM05	General Vicinity	Alluvium	60.3 - 80.0	2,800	9,800	20	2,000	1.7	2.54
LVWPS-MW220B	10/7/2020	N	BL04	General Vicinity	UMCf-cg	134.5 - 154.0	4,200	10,000	12	----	----	2.66
LVWPS-MW221A	10/6/2020	N	BL04	Zone 2	Alluvium	50.3 - 70.0	990 J-	710	8.4	1,500 J+	0.51 J-	7.60
LVWPS-MW221A	12/22/2020	N	EM01	Zone 2	Alluvium	50.3 - 70.0	610	710	8.2	1,500	1.7 J	6.85
LVWPS-MW221A	1/12/2021	N	EM02	Zone 2	Alluvium	50.3 - 70.0	710	740	8.3	1,600	0.46 J	6.62
LVWPS-MW221A	1/28/2021	N	EM03	Zone 2	Alluvium	50.3 - 70.0	720	750	8.2	1,500	0.48 J	7.82 E
LVWPS-MW221A	2/8/2021	N	EM04	Zone 2	Alluvium	50.3 - 70.0	700	780	8.4	1,600	0.61	6.41
LVWPS-MW221A	3/9/2021	N	EM05	Zone 2	Alluvium	50.3 - 70.0	720	800	8.2	1,700	0.49 J	6.92
LVWPS-MW221B	10/6/2020	N	BL04	Zone 2	UMCf/UMCf-cg	83.7 - 103.2	6,600	11,000	5.8	1,500 J+	0.54	3.09
LVWPS-MW222A	10/2/2020	N	BL04	Zone 3	UMCf/UMCf-cg	80.3 - 100.0	2,900	3,800	4.1	----	----	2.97
LVWPS-MW222B	10/7/2020	N	BL04	Zone 3	UMCf-cg	150.3 - 170.0	1,500	1,200	1.6	----	----	3.10
LVWPS-MW222C	10/2/2020	N	BL04	Zone 3	UMCf-cg	214.0 - 233.5	1,500	1,300	2.4	----	----	2.25
LVWPS-MW223A	10/6/2020	N	BL04	Zone 2	Alluvium	45.3 - 65.0	3,300	5,900	17	2,400	1.4	4.57
LVWPS-MW223A	10/6/2020	FD	BL04	Zone 2	Alluvium	45.3 - 65.0	3,900	5,800	17	2,400	1.4	----
LVWPS-MW223A	12/22/2020	N	EM01	Zone 2	Alluvium	45.3 - 65.0	4,100	370	0.54	2,700	11	0.33
LVWPS-MW223A	1/11/2021	N	EM02	Zone 2	Alluvium	45.3 - 65.0	730	820	1.4	2,600	<21	1.14
LVWPS-MW223A	1/26/2021	N	EM03	Zone 2	Alluvium	45.3 - 65.0	2,700	3,700	9.1	2,600	1.4 J+	1.03 E
LVWPS-MW223A	2/8/2021	N	EM04	Zone 2	Alluvium	45.3 - 65.0	2,700	3,500	9.6	2,500	1.5	0.24
LVWPS-MW223A	3/8/2021	N	EM05	Zone 2	Alluvium	45.3 - 65.0	2,900	4,400	12	2,400	1.5	0.78
LVWPS-MW223B	10/6/2020	N	BL04	Zone 2	Alluvium	70.3 - 90.0	3,300	6,100	20	2,100	1.8	4.26
LVWPS-MW223B	12/22/2020	N	EM01	Zone 2	Alluvium	70.3 - 90.0	2,100	2,800	6.7 J-	2,100	3.5	0.44
LVWPS-MW223B	1/11/2021	N	EM02	Zone 2	Alluvium	70.3 - 90.0	1,700	2,100	6.6	2,300	30 J	0.75
LVWPS-MW223B	1/28/2021	N	EM03	Zone 2	Alluvium	70.3 - 90.0	330	470 J-	1.8	1,700	10	7.53 E
LVWPS-MW223B	2/8/2021	N	EM04	Zone 2	Alluvium	70.3 - 90.0	270	240	0.51	1,600	2.4	0.38
LVWPS-MW223B	3/8/2021	N	EM05	Zone 2	Alluvium	70.3 - 90.0	390	1,300	3.0	1,200	2.2	0.62
LVWPS-MW223C	10/7/2020	N	BL04	Zone 2	UMCf	95.5 - 110.0	5,700	7,700	14	2,100	1.1	2.77
LVWPS-MW223C	1/11/2021	N	EM02	Zone 2	UMCf	95.5 - 110.0	46	64	0.10	270	<21	0.92
LVWPS-MW223C	2/8/2021	N	EM04	Zone 2	UMCf	95.5 - 110.0	2,600	4,300	9.2	2,000	1.1	1.08
LVWPS-MW223C	3/8/2021	N	EM05	Zone 2	UMCf	95.5 - 110.0	2,700	5,300	8.8	1,900	1.1	1.47
LVWPS-MW224A	10/7/2020	N	BL04	Zone 2	Alluvium	55.3 - 75.0	2,300	2,900	11	2,000	0.90	6.09
LVWPS-MW224A	12/23/2020	N	EM01	Zone 2	Alluvium	55.3 - 75.0	2,700	2,800	11	2,200	1.4 J	6.34

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						ft bgs	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L
LVWPS-MW224A	1/29/2021	N	EM03	Zone 2	Alluvium	55.3 - 75.0	1,900	3,000	9.9	1,900	1.5 J	5.75
LVWPS-MW224A	3/11/2021	N	EM05	Zone 2	Alluvium	55.3 - 75.0	2,000	3,700	9.6	2,200	0.87	6.39
LVWPS-MW224B	10/7/2020	N	BL04	Zone 2	UMCf	106.8 - 126.5	200	220	0.63	----	----	1.48
LVWPS-MW224C	10/8/2020	N	BL04	Zone 2	UMCf (Semi-Cons)	174.5 - 194.0	30	<100	0.068	----	----	2.10
LVWPS-MW225A	10/7/2020	N	BL04	General Vicinity	Alluvium	49.3 - 69.0	2,300	5,200	22	----	----	4.35
LVWPS-MW225A	10/7/2020	FD	BL04	General Vicinity	Alluvium	49.3 - 69.0	2,300	5,200	22	----	----	----
LVWPS-MW225B	10/7/2020	N	BL04	General Vicinity	UMCf	90.5 - 110.0	4,000	5,100	3.3	----	----	1.92
LVWPS-MW226A	10/1/2020	N	BL04	General Vicinity	Alluvium	40.3 - 55.0	2,800	5,100	19	----	----	3.71
LVWPS-MW226A	10/1/2020	FD	BL04	General Vicinity	Alluvium	40.3 - 55.0	2,300	4,900	19	----	----	----
LVWPS-MW226B	10/1/2020	N	BL04	General Vicinity	UMCf (Semi-Cons)	77.5 - 97.0	37	<100	<0.014	----	----	0.79
LVWPS-U1-IW01A	9/29/2020	N	BL04	Zone 1	UMCf	88.8 - 113.5	9,700	18,000	14	----	----	0.86
LVWPS-U1-IW01B	9/29/2020	N	BL04	Zone 1	UMCf	120.3 - 145.0	7,800	13,000	13	----	----	0.80
LVWPS-U1-IW02A	9/30/2020	N	BL04	Zone 1	UMCf	90.3 - 115.0	2,200	5,000	11	----	----	0.68
LVWPS-U1-IW02B	9/30/2020	N	BL04	Zone 1	UMCf	121.3 - 151.0	3,400	6,900	9.8	----	----	1.82
LVWPS-U1-IW03A	9/30/2020	N	BL04	Zone 1	UMCf	93.8 - 118.5	2,500	5,200	13	----	----	0.68
LVWPS-U1-IW03B	9/30/2020	N	BL04	Zone 1	UMCf	125.3 - 150.0	1,400	3,900	10	----	----	2.18
LVWPS-U1-IW04A	9/28/2020	N	BL04	Zone 1	UMCf	86.8 - 116.5	3,500	6,600	12	----	----	0.53
LVWPS-U1-IW04A	9/28/2020	FD	BL04	Zone 1	UMCf	86.8 - 116.5	3,500	6,600	12	----	----	----
LVWPS-U1-IW04B	9/28/2020	N	BL04	Zone 1	UMCf	122.8 - 152.5	3,400	4,800	11	----	----	2.37
LVWPS-U1-IW05A	9/29/2020	N	BL04	Zone 1	UMCf	88.8 - 113.5	2,100	4,300	10	----	----	0.51
LVWPS-U1-IW05B	9/29/2020	N	BL04	Zone 1	UMCf	120.3 - 145.0	2,500	5,100	11	----	----	1.34
LVWPS-U1-IW06A	9/30/2020	N	BL04	Zone 1	UMCf	87.8 - 112.5	2,400	3,600	8.5	----	----	1.60
LVWPS-U1-IW06B	9/30/2020	N	BL04	Zone 1	UMCf	119.3 - 149.0	2,500	3,900	10	----	----	2.07
LVWPS-U1-IW07A	10/1/2020	N	BL04	Zone 1	UMCf	95.8 - 120.5	3,100	4,500	9.5	----	----	3.39
LVWPS-U1-IW07B	10/1/2020	N	BL04	Zone 1	UMCf	127.3 - 152.0	4,300	4,900	9.5	----	----	2.21
LVWPS-U1-IW08A	10/1/2020	N	BL04	Zone 1	UMCf	95.3 - 125.0	4,000	7,500	9.7	----	----	1.60
LVWPS-U1-IW08B	10/1/2020	N	BL04	Zone 1	UMCf	131.8 - 156.5	4,900	6,700	11	----	----	1.92
LVWPS-U1-MW01A	9/28/2020	N	BL04	Zone 1	UMCf	90.3 - 115.0	6,100	11,000	14	1,600	1.0	1.98
LVWPS-U1-MW01A	1/14/2021	N	EM02	Zone 1	UMCf	90.3 - 115.0	6,900	11,000	12	1,600	1.2 J	2.08
LVWPS-U1-MW01A	2/10/2021	N	EM04	Zone 1	UMCf	90.3 - 115.0	7,800	11,000	13	1,600	1.5	1.93
LVWPS-U1-MW01A	3/11/2021	N	EM05	Zone 1	UMCf	90.3 - 115.0	6,500	10,000	13	1,500	1.4 J	5.27
LVWPS-U1-MW01B	9/28/2020	N	BL04	Zone 1	UMCf	133.5 - 153.0	7,100	12,000	13	1,800	1.2 J-	1.72
LVWPS-U1-MW01B	1/14/2021	N	EM02	Zone 1	UMCf	133.5 - 153.0	510	1,100	1.5	360	2.1	1.58
LVWPS-U1-MW01B	2/10/2021	N	EM04	Zone 1	UMCf	133.5 - 153.0	8,200	13,000	12	1,900	1.0	0.63
LVWPS-U1-MW01B	3/11/2021	N	EM05	Zone 1	UMCf	133.5 - 153.0	8,900	12,000	10	1,800	1.2	0.69
LVWPS-U1-MW02A	9/29/2020	N	BL04	Zone 1	UMCf	94.3 - 119.0	4,200	7,600	12	1,600	1.2	4.60
LVWPS-U1-MW02A	1/14/2021	N	EM02	Zone 1	UMCf	94.3 - 119.0	5,400	8,400	12	1,700	1.3 J	0.9
LVWPS-U1-MW02A	2/11/2021	N	EM04	Zone 1	UMCf	94.3 - 119.0	5,600	8,500	12	1,700	1.1	0.72
LVWPS-U1-MW02A	3/11/2021	N	EM05	Zone 1	UMCf	94.3 - 119.0	5,400	8,300	12	1,700	1.4 J	1.54
LVWPS-U1-MW02B	10/7/2020	N	BL04	Zone 1	UMCf	136.9 - 161.5	2,400	4,100	11	8,300	1.1	2.35
LVWPS-U1-MW02B	1/14/2021	N	EM02	Zone 1	UMCf	136.9 - 161.5	2,300	3,500	6.5	1,700	1.6	0.88
LVWPS-U1-MW02B	2/11/2021	N	EM04	Zone 1	UMCf	136.9 - 161.5	2,100	2,900	5.9 J-	1,700	1.5	0.77
LVWPS-U1-MW02B	3/11/2021	N	EM05	Zone 1	UMCf	136.9 - 161.5	2,900	4,500	8.0	1,700	1.3	0.75
LVWPS-U1-MW03B	9/29/2020	N	BL04	Zone 1	UMCf	134.5 - 154.0	4,300	7,800	14	1,400	1.5	6.71
LVWPS-U1-MW03B	1/14/2021	N	EM02	Zone 1	UMCf	134.5 - 154.0	5,500	8,900	13	1,400	1.2	0.69
LVWPS-U1-MW03B	2/11/2021	N	EM04	Zone 1	UMCf	134.5 - 154.0	5,500	8,500	14 J-	1,400	1.2	1.13
LVWPS-U1-MW03B	3/11/2021	N	EM05	Zone 1	UMCf	134.5 - 154.0	6,300	9,700	13	1,500	1.3	1.21
LVWPS-U1-MW04A	9/30/2020	N	BL04	Zone 1	UMCf	99.3 - 124.0	4,500	9,100	13	1,600	1.0	0.84
LVWPS-U1-MW04A	1/13/2021	N	EM02	Zone 1	UMCf	99.3 - 124.0	6,400	10,000	13	1,600	1.3 J	1.15
LVWPS-U1-MW04A	2/10/2021	N	EM04	Zone 1	UMCf	99.3 - 124.0	6,500	11,000	13	1,700	1.0	1.96
LVWPS-U1-MW04A	3/9/2021	N	EM05	Zone 1	UMCf	99.3 - 124.0	6,000	8,900	11	1,700	1.3 J	0.84
LVWPS-U1-MW04B	10/1/2020	N	BL04	Zone 1	UMCf	139.9 - 164.5	4,200	9,200	13	1,700	2.1	1.75
LVWPS-U1-MW04B	1/13/2021	N	EM02	Zone 1	UMCf	139.9 - 164.5	5,300	10,000	13	1,700	1.8	0.46
LVWPS-U1-MW04B	2/9/2021	N	EM04	Zone 1	UMCf	139.9 - 164.5	4,900	9,700	14	1,700	1.7 J-	0.68
LVWPS-U1-MW04B	3/9/2021	N	EM05	Zone 1	UMCf	139.9 - 164.5	6,000	9,500	14	1,800	1.8 J	0.83
LVWPS-U1-MW05A	9/29/2020	N	BL04	Zone 1	UMCf	95.8 - 120.5	10,000	15,000	14	1,900	1.0	2.23
LVWPS-U1-MW05A	1/18/2021	N	EM02	Zone 1	UMCf	95.8 - 120.5	8,900	15,000	14	2,100	<2.1	1.11
LVWPS-U1-MW05A	2/10/2021	N	EM04	Zone 1	UMCf	95.8 - 120.5	10,000	15,000	14	2,100	1.1	0.89
LVWPS-U1-MW05A	3/10/2021	N	EM05	Zone 1	UMCf	95.8 - 120.5	8,300	14,000	13	1,800	1.6 J	3.61
LVWPS-U1-MW05B	9/29/2020	N	BL04	Zone 1	UMCf	136.9 - 161.5	5,100	8,800	13	1,800	1.2	1.71
LVWPS-U1-MW05B	1/13/2021	N	EM02	Zone 1	UMCf	136.9 - 161.5	9,800	14,000	13	1,800	1.1	0.5
LVWPS-U1-MW05B	2/10/2021	N	EM04	Zone 1	UMCf	136.9 - 161.5	12,000	19,000	15	2,200	1.2	0.90
LVWPS-U1-MW05B	3/9/2021	N	EM05	Zone 1	UMCf	136.9 - 161.5	9,600	15,000	14	2,100	1.0	0.92

Table 7
Groundwater Analytical Results
Las Vegas Wash Bioremediation Pilot Study

Well	Sample Date	QC Type	Event	Zone	Screened Lithology	Screened Interval	Perchlorate by USEPA Method 314.0	Chlorate by USEPA Method 300.1B	Nitrate (as N) by USEPA Method 300.0	Sulfate by USEPA Method 300.0	Total Organic Carbon by SM 5310B	Dissolved Oxygen Field Measurement
						ft bgs	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L
LVWPS-U1-MW06A	9/29/2020	N	BL04	Zone 1	UMCf	85.3 - 105.0	1,100	3,300	11	970	1.5	0.98
LVWPS-U1-MW06A	1/14/2021	N	EM02	Zone 1	UMCf	85.3 - 105.0	1,300	3,300	9.0	1,100	2.0	0.84
LVWPS-U1-MW06A	2/9/2021	N	EM04	Zone 1	UMCf	85.3 - 105.0	1,300	3,000	10	990	1.4 J-	0.52
LVWPS-U1-MW06A	3/10/2021	N	EM05	Zone 1	UMCf	85.3 - 105.0	1,400	3,100	10	1,100	1.5	0.70
LVWPS-U1-MW06B	9/29/2020	N	BL04	Zone 1	UMCf	109.3 - 134.0	1,700	3,800	11	1,000	1.7	1.03
LVWPS-U1-MW06B	1/12/2021	N	EM02	Zone 1	UMCf	109.3 - 134.0	21	8.7 J	0.17 J	1,100	12	0.27
LVWPS-U1-MW06B	2/10/2021	N	EM04	Zone 1	UMCf	109.3 - 134.0	1,000	1,400	2.0	1,100	1.9	0.74
LVWPS-U1-MW06B	3/10/2021	N	EM05	Zone 1	UMCf	109.3 - 134.0	1,300	2,300	4.4	1,200	1.8 J	0.38
LVWPS-U1-MW07	9/30/2020	N	BL04	Zone 1	UMCf	86.3 - 111.0	4,100	7,700	5.6	2,000	0.84	3.78
LVWPS-U1-MW07	1/14/2021	N	EM02	Zone 1	UMCf	86.3 - 111.0	430	110	<0.014	1,700	210	0.73
LVWPS-U1-MW07	2/10/2021	N	EM04	Zone 1	UMCf	86.3 - 111.0	370	180	0.081	1,600	180	0.38
LVWPS-U1-MW07	3/12/2021	N	EM05	Zone 1	UMCf	86.3 - 111.0	1,300	2,000	0.42	1,800	19 J+	0.32
LVWPS-U1-MW08A	9/30/2020	N	BL04	Zone 1	UMCf	93.8 - 118.5	4,700	7,300	13	1,500	1.7	2.21
LVWPS-U1-MW08A	1/12/2021	N	EM02	Zone 1	UMCf	93.8 - 118.5	<0.31	<10	<0.14	990	300	0.33
LVWPS-U1-MW08A	2/9/2021	N	EM04	Zone 1	UMCf	93.8 - 118.5	<0.31	<10	<0.014	700	420 J-	1.21
LVWPS-U1-MW08A	3/11/2021	N	EM05	Zone 1	UMCf	93.8 - 118.5	<0.31	<10	<0.014	410	180	0.30
LVWPS-U1-MW08B	9/30/2020	N	BL04	Zone 1	UMCf	125.3 - 150.0	2,800	5,500	10	1,400	1.3	3.10
LVWPS-U1-MW08B	1/11/2021	N	EM02	Zone 1	UMCf	125.3 - 150.0	3.9	<10	<0.014	1,100	230	0.23
LVWPS-U1-MW08B	1/11/2021	FD	EM02	Zone 1	UMCf	125.3 - 150.0	3.8	<10	0.014 R	1,400	220	---
LVWPS-U1-MW08B	2/9/2021	N	EM04	Zone 1	UMCf	125.3 - 150.0	<0.31	<10	<0.014	1,100	270 J-	0.41
LVWPS-U1-MW08B	2/9/2021	FD	EM04	Zone 1	UMCf	125.3 - 150.0	<0.31	<10	<0.014	1,100	300 J-	---
LVWPS-U1-MW08B	3/10/2021	N	EM05	Zone 1	UMCf	125.3 - 150.0	54	35 J	0.047 J	1,000	100	0.39
LVWPS-U1-MW08B	3/10/2021	FD	EM05	Zone 1	UMCf	125.3 - 150.0	43	35 J	0.060	1,000	98	---
LVWPS-U1-MW09A	9/30/2020	N	BL04	Zone 1	UMCf	115.3 - 125.0	7,500	12,000	13	1,900	1.8	1.62
LVWPS-U1-MW09A	1/13/2021	N	EM02	Zone 1	UMCf	115.3 - 125.0	8,600	13,000	12	1,900	0.88	0.75
LVWPS-U1-MW09A	2/10/2021	N	EM04	Zone 1	UMCf	115.3 - 125.0	7,800	12,000	12	2,000	1.1	1.08
LVWPS-U1-MW09A	3/11/2021	N	EM05	Zone 1	UMCf	115.3 - 125.0	9,100	12,000	12	2,100	0.95	0.99
LVWPS-U1-MW09B	9/30/2020	N	BL04	Zone 1	UMCf	130.3 - 155.0	6,400	11,000	9.6	1,900	0.89	1.80
LVWPS-U1-MW09B	1/13/2021	N	EM02	Zone 1	UMCf	130.3 - 155.0	3,800	5,900	12	1,700	<2.1	0.74
LVWPS-U1-MW09B	2/10/2021	N	EM04	Zone 1	UMCf	130.3 - 155.0	3,500	5,700	11	1,700	1.2	0.60
LVWPS-U1-MW09B	3/11/2021	N	EM05	Zone 1	UMCf	130.3 - 155.0	4,200	5,300	10	2,300	1.4 J	0.89
LVWPS-U1-MW10A	10/2/2020	N	BL04	Zone 1	UMCf	99.3 - 124.0	9,200	16,000	9.9	2,000	0.55	3.77
LVWPS-U1-MW10A	1/13/2021	N	EM02	Zone 1	UMCf	99.3 - 124.0	13,000 J	17,000	10	2,000	1.2 J	3.28
LVWPS-U1-MW10A	2/9/2021	N	EM04	Zone 1	UMCf	99.3 - 124.0	10,000	16,000	9.8	2,000	0.46 J	5.98
LVWPS-U1-MW10A	3/9/2021	N	EM05	Zone 1	UMCf	99.3 - 124.0	12,000	17,000	10	2,100	0.49 J	3.70
LVWPS-U1-MW10B	10/2/2020	N	BL04	Zone 1	UMCf	130.3 - 155.0	4,600	5,100	3.8	1,800	0.53	1.68
LVWPS-U1-MW10B	1/12/2021	N	EM02	Zone 1	UMCf	130.3 - 155.0	4,600	5,500	4.6	1,900	<1.3	1.37
LVWPS-U1-MW10B	2/9/2021	N	EM04	Zone 1	UMCf	130.3 - 155.0	2,900	6,800	4.0	1,900	<1.0 UJ	2.00
LVWPS-U1-MW10B	3/9/2021	N	EM05	Zone 1	UMCf	130.3 - 155.0	3,900	5,700	4.1	2,000	<1.0	2.27
LVWPS-U2-IW01	10/8/2020	N	BL04	Zone 2	UMCf	121.2 - 141.0	8,100	12,000	9.0	---	---	3.48
LVWPS-U2-IW01	10/8/2020	FD	BL04	Zone 2	UMCf	121.2 - 141.0	6,900	11,000	8.6	---	---	---
LVWPS-U2-IW02	10/8/2020	N	BL04	Zone 2	UMCf	116.2 - 141.0	8,100	12,000	8.7	---	---	3.80
LVWPS-U2-IW03	10/8/2020	N	BL04	Zone 2	UMCf	99.2 - 124.0	7,100	11,000	12	---	---	2.66
LVWPS-U2-IW04	10/8/2020	N	BL04	Zone 2	UMCf	83.7 - 108.5	3,900	6,500	19	---	---	4.10
LVWPS-U2-IW05	10/8/2020	N	BL04	Zone 2	UMCf	87.7 - 117.5	8,500	14,000	12	---	---	4.95
LVWPS-U2-IW06	10/8/2020	N	BL04	Zone 2	UMCf	89.2 - 104.0	10,000	17,000	14	---	---	3.46
LVWPS-U2-IW07	10/6/2020	N	BL04	Zone 2	UMCf	91.2 - 106.0	6,000	8,700	5.7	---	---	1.85
LVWPS-U2-IW08	10/6/2020	N	BL04	Zone 2	UMCf	83.7 - 108.5	12,000	20,000	17	---	---	5.08
LVWPS-U2-IW09	10/6/2020	N	BL04	Zone 2	UMCf	103.2 - 128.0	35	63 J	0.11	---	---	2.85
LVWPS-U2-IW10	10/6/2020	N	BL04	Zone 2	UMCf	109.3 - 129.0	400	150	<0.014	---	---	3.48
LVWPS-U2-IW11	10/6/2020	N	BL04	Zone 2	UMCf	108.9 - 133.7	1,400	2,400	2.6	---	---	3.31
LVWPS-U2-IW12	10/8/2020	N	BL04	Zone 2	UMCf	112.8 - 137.5	5,900	8,300	11	---	---	4.65
LVWPS-U2-MW01	10/8/2020	N	BL04	Zone 2	UMCf	97.3 - 117.0	360	450	0.89	2,500	0.36 J	1.63
LVWPS-U2-MW01	1/14/2021	N	EM02	Zone 2	UMCf	97.3 - 117.0	85	93 J	0.11	2,600	<1.0	2.76
LVWPS-U2-MW01	2/10/2021	N	EM04	Zone 2	UMCf	97.3 - 117.0	200	260	0.98	2,500	0.46 J	1.94
LVWPS-U2-MW01	3/10/2021	N	EM05	Zone 2	UMCf	97.3 - 117.0	26	<10	<0.014	2,100	2.2	0.43
LVWPS-U2-MW02	10/8/2020	N	BL04	Zone 2	UMCf	100.3 - 125.0	5,200	8,300	6.2	1,800	0.64	8.10
LVWPS-U2-MW02	1/12/2021	N	EM02	Zone 2	UMCf	100.3 - 125.0	7,100	9,600	9.1	1,900	<1.3	2.13
LVWPS-U2-MW02	2/9/2021	N	EM04	Zone 2	UMCf	100.3 - 125.0	5,600	13,000	7.7	1,800	<1.0 UJ	2.93
LVWPS-U2-MW02	3/9/2021	N	EM05	Zone 2	UMCf	100.3 - 125.0	6,600	10,000	7.0	1,900	<1.0	3.38
LVWPS-U2-MW03	10/9/2020	N	BL04	Zone 2	UMCf	90.3 - 110.0	2,100	3,400	11	2,000	0.98	3.53
LVWPS-U2-MW03	1/14/2021	N	EM02	Zone 2	UMCf	90.3 - 110.0	1,800	3,300	12	2,100	1.4 J	3.53
LVWPS-U2-MW03	2/10/2021	N	EM04	Zone 2	UMCf	90.3 - 110.0	2,200	3,500	13	2,100	1.2	5.49

Table 7
Groundwater Analytical Results
Las Vegas Wash Bioremediation Pilot Study

Well	Sample Date	QC Type	Event	Zone	Screened Lithology	Screened Interval	Perchlorate by USEPA Method 314.0	Chlorate by USEPA Method 300.1B	Nitrate (as N) by USEPA Method 300.0	Sulfate by USEPA Method 300.0	Total Organic Carbon by SM 5310B	Dissolved Oxygen Field Measurement
						ft bgs	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L
LVWPS-U2-MW03	3/10/2021	N	EM05	Zone 2	UMCf	90.3 - 110.0	2,200	3,400	13	2,200	1.3 J	5.02
LVWPS-U2-MW04	10/6/2020	N	BL04	Zone 2	UMCf	103.2 - 128.0	160	260	0.27	3,000	0.27 J	0.93
LVWPS-U2-MW04	1/11/2021	N	EM02	Zone 2	UMCf	103.2 - 128.0	2.0	<10	<0.014	2,900	9.5	0.49
LVWPS-U2-MW04	2/8/2021	N	EM04	Zone 2	UMCf	103.2 - 128.0	<1.6	<10	<0.014	2,800	38	1.56
LVWPS-U2-MW04	3/8/2021	N	EM05	Zone 2	UMCf	103.2 - 128.0	<0.31	<10	<0.014	3,700	56	0.81
LVWPS-U2-MW05	10/5/2020	N	BL04	Zone 2	UMCf	83.2 - 108.0	9,300	15,000	8.4	1,300	0.41 J	4.35
LVWPS-U2-MW05	1/13/2021	N	EM02	Zone 2	UMCf	83.2 - 108.0	2.7	<10	<0.014	1,100	1,100	0.24
LVWPS-U2-MW05	2/10/2021	N	EM04	Zone 2	UMCf	83.2 - 108.0	<0.31 UJ	<10	<0.014	810	910	0.51
LVWPS-U2-MW05	3/10/2021	N	EM05	Zone 2	UMCf	83.2 - 108.0	<0.31	<10	0.016 J	420	1,000	1.22
LVWPS-U2-MW06	10/1/2020	N	BL04	Zone 2	UMCf	121.8 - 141.5	4,100	7,300	9.5	1,900	0.94	2.79
LVWPS-U2-MW06	1/11/2021	N	EM02	Zone 2	UMCf	121.8 - 141.5	4,200	5,700	7.0	2,000	<1.3	1.01
LVWPS-U2-MW06	2/8/2021	N	EM04	Zone 2	UMCf	121.8 - 141.5	3,900	5,500	8.0	2,000	1.3 J	1.45
LVWPS-U2-MW06	3/9/2021	N	EM05	Zone 2	UMCf	121.8 - 141.5	3,700	5,200	7.7	2,200	1.2 J	2.12
LVWPS-U2-MW07	10/2/2020	N	BL04	Zone 2	UMCf	88.2 - 108.0	1,600	2,600	10	1,900	0.74	5.79
LVWPS-U2-MW08	10/1/2020	N	BL04	Zone 2	UMCf	113.2 - 133.0	4,600	8,100	17	2,100	1.5	2.63
LVWPS-U2-MW08	1/11/2021	N	EM02	Zone 2	UMCf	113.2 - 133.0	3,100	9,400	9.1	1,900	<0.26	0.54
LVWPS-U2-MW08	2/8/2021	N	EM04	Zone 2	UMCf	113.2 - 133.0	3,400	9,200	9.8	1,800	1.1 J	1.84
LVWPS-U2-MW08	3/8/2021	N	EM05	Zone 2	UMCf	113.2 - 133.0	4,600	14,000	10	1,500	0.50 J	1.99
LVWPS-U2-MW09	10/9/2020	N	BL04	Zone 2	UMCf	84.9 - 104.7	12,000	18,000	17	2,200	1.1	2.06
LVWPS-U2-MW09	1/18/2021	N	EM02	Zone 2	UMCf	84.9 - 104.7	9,800	15,000	17	2,300	1.4 J	2.21
LVWPS-U2-MW09	2/8/2021	N	EM04	Zone 2	UMCf	84.9 - 104.7	10,000	15,000	16	1,900	2.6 J	3.42
LVWPS-U2-MW09	3/8/2021	N	EM05	Zone 2	UMCf	84.9 - 104.7	8,900	16,000	17	2,000	1.1	3.36
LVWPS-U2-MW10	10/2/2020	N	BL04	Zone 2	UMCf	90.2 - 110.0	6,000	8,900	15	2,200	1.1	4.16
LVWPS-U2-MW12	10/7/2020	N	BL04	Zone 2	UMCf	83.2 - 108.0	8,800	12,000	18	2,000	1.1	4.13
LVWPS-U2-MW12	1/12/2021	N	EM02	Zone 2	UMCf	83.2 - 108.0	7,000	11,000	16	1,900	1.4 J	3.9
LVWPS-U2-MW12	2/8/2021	N	EM04	Zone 2	UMCf	83.2 - 108.0	7,500	11,000	15	2,000	1.0 J	3.80
LVWPS-U2-MW12	3/8/2021	N	EM05	Zone 2	UMCf	83.2 - 108.0	6,100	14,000	13	1,900	1.1	2.73
LVWPS-U2-MW13	10/2/2020	N	BL04	Zone 2	UMCf	94.7 - 109.5	5,400	11,000	17	2,100	1.2	3.58
LVWPS-U2-MW13	10/2/2020	FD	BL04	Zone 2	UMCf	94.7 - 109.5	5,800	11,000	17	2,300	1.4	----
LVWPS-U2-MW14	10/6/2020	N	BL04	Zone 2	UMCf	83.2 - 108.0	11,000	360	17	2,000	0.78	5.18
LVWPS-U2-MW14	1/13/2021	N	EM02	Zone 2	UMCf	83.2 - 108.0	9,600	20,000	8.9	1,900	1.4 J	0.82
LVWPS-U2-MW14	2/9/2021	N	EM04	Zone 2	UMCf	83.2 - 108.0	7,300	12,000	13	1,900	2.1 J	1.49
LVWPS-U2-MW14	3/10/2021	N	EM05	Zone 2	UMCf	83.2 - 108.0	9,200	11,000	11	1,800	1.1	1.26
LVWPS-U2-MW17	10/1/2020	N	BL04	Zone 2	UMCf	117.0 - 136.5	4,500	10,000	11	1,700	0.66	2.28
LVWPS-U2-MW17	1/12/2021	N	EM02	Zone 2	UMCf	117.0 - 136.5	1,800	800	<0.14	2,200	6.1	0.64
LVWPS-U2-MW17	1/12/2021	FD	EM02	Zone 2	UMCf	117.0 - 136.5	2,100	810	0.036 J	2,200	6.6	----
LVWPS-U2-MW17	2/8/2021	N	EM04	Zone 2	UMCf	117.0 - 136.5	2,000	3,900	3.9	2,000	2.0	2.19
LVWPS-U2-MW17	2/8/2021	FD	EM04	Zone 2	UMCf	117.0 - 136.5	2,200	3,800	3.9	2,000	1.9 J	----
LVWPS-U2-MW17	3/9/2021	N	EM05	Zone 2	UMCf	117.0 - 136.5	3,400	6,500	6.2	2,100	2.0	2.52
LVWPS-U2-MW17	3/9/2021	FD	EM05	Zone 2	UMCf	117.0 - 136.5	3,400	6,600	6.6	2,100	2.0	----
LVWPS-U2-MW18	10/5/2020	N	BL04	Zone 2	UMCf	88.3 - 113.0	8,400	10,000	18	2,200	1.3	4.49
LVWPS-U2-MW18	1/11/2021	N	EM02	Zone 2	UMCf	88.3 - 113.0	5,800	8,800	18	2,400	1.8 J	2.83
LVWPS-U2-MW18	2/8/2021	N	EM04	Zone 2	UMCf	88.3 - 113.0	6,000	8,800	18	2,000	<2.6 UJ	4.08
LVWPS-U2-MW18	3/9/2021	N	EM05	Zone 2	UMCf	88.3 - 113.0	5,100	9,500	17	2,400	1.8	3.15
LVWPS-U2-MW19	10/2/2020	N	BL04	Zone 2	UMCf	91.2 - 111.0	12,000	14,000	14	2,100	1.0	3.29
LVWPS-U2-MW20	10/2/2020	N	BL04	Zone 2	UMCf	88.2 - 108.0	6,000	13,000	12	2,200	1.5	1.38
LVWPS-U3-IW01	10/9/2020	N	BL04	Zone 3	UMCf-cq	80.2 - 115.0	3,100	4,900	8.3	----	----	5.57
LVWPS-U3-IW02A	10/6/2020	N	BL04	Zone 3	UMCf-cq	79.3 - 99.0	10,000	15,000	14	----	----	4.02
LVWPS-U3-IW02B	10/6/2020	N	BL04	Zone 3	UMCf-cq	104.8 - 124.5	5,200	9,700	9.4	----	----	3.61
LVWPS-U3-IW03A	10/6/2020	N	BL04	Zone 3	UMCf-cq	77.8 - 102.5	1,800	3,500	8.3	----	----	3.56
LVWPS-U3-IW03B	10/6/2020	N	BL04	Zone 3	UMCf-cq	109.3 - 139.0	1,600	3,200	7.9	----	----	4.91
LVWPS-U3-IW04A	10/7/2020	N	BL04	Zone 3	UMCf-cq	93.3 - 123.0	210	390	7.7	----	----	5.74
LVWPS-U3-IW04B	10/7/2020	N	BL04	Zone 3	UMCf-cq	129.3 - 159.0	680	1,100	5.8	----	----	3.71
LVWPS-U3-IW05A	10/7/2020	N	BL04	Zone 3	UMCf-cq	91.3 - 126.0	230	380	7.8	----	----	5.74
LVWPS-U3-IW05B	10/7/2020	N	BL04	Zone 3	UMCf-cq	132.8 - 167.5	530	870	7.4	----	----	5.83
LVWPS-U3-IW06A	10/7/2020	N	BL04	Zone 3	UMCf-cq	86.3 - 111.0	340	540	7.6	----	----	5.89
LVWPS-U3-IW06B	10/8/2020	N	BL04	Zone 3	UMCf-cq	117.8 - 142.5	5,700	1,800	7.6	----	----	4.72
LVWPS-U3-IW06C	10/8/2020	N	BL04	Zone 3	UMCf-cq	149.3 - 174.0	3,800	4,100	8.1	----	----	5.71
LVWPS-U3-IW07A	10/8/2020	N	BL04	Zone 3	UMCf-cq	86.3 - 111.0	1,400	2,000	7.1	----	----	3.57
LVWPS-U3-IW07B	10/8/2020	N	BL04	Zone 3	UMCf-cq	117.8 - 142.5	9,400	15,000	9.0	----	----	0.80
LVWPS-U3-IW07C	10/9/2020	N	BL04	Zone 3	UMCf-cq	149.3 - 174.0	7,300	14,000	8.0	----	----	0.73
LVWPS-U3-IW08A	10/8/2020	N	BL04	Zone 3	UMCf-cq	86.3 - 111.0	1,900	2,600	5.8	----	----	0.79
LVWPS-U3-IW08A	10/8/2020	FD	BL04	Zone 3	UMCf-cq	86.3 - 111.0	1,900	2,600	5.5	----	----	----

Table 7
Groundwater Analytical Results
Las Vegas Wash Bioremediation Pilot Study

Well	Sample Date	QC Type	Event	Zone	Screened Lithology	Screened Interval	Perchlorate by USEPA Method 314.0	Chlorate by USEPA Method 300.1B	Nitrate (as N) by USEPA Method 300.0	Sulfate by USEPA Method 300.0	Total Organic Carbon by SM 5310B	Dissolved Oxygen Field Measurement
						ft bgs	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L
LVWPS-U3-IW08B	10/8/2020	N	BL04	Zone 3	UMCf-cg	117.8 - 142.5	15,000	21,000	12	----	----	0.94
LVWPS-U3-IW08C	10/9/2020	N	BL04	Zone 3	UMCf-cg	149.3 - 174.0	2,400	3,500	2.3	----	----	0.66
LVWPS-U3-MW01B	10/5/2020	N	BL04	Zone 3	UMCf-cg	83.8 - 103.3	2,000	1,800	0.24	1,700	6.3	2.06
LVWPS-U3-MW01B	1/15/2021	N	EM02	Zone 3	UMCf-cg	83.8 - 103.3	1,900	2,700	0.79	1,800	3.9	1.26
LVWPS-U3-MW01B	2/11/2021	N	EM04	Zone 3	UMCf-cg	83.8 - 103.3	2,300	2,500	1.8	1,800	3.6	1.35
LVWPS-U3-MW01B	3/15/2021	N	EM05	Zone 3	UMCf-cg	83.8 - 103.3	2,200	2,700	1.3	1,700	3.0	0.98
LVWPS-U3-MW02A	10/5/2020	N	BL04	Zone 3	UMCf-cg	82.3 - 97.0	3,000	770	5.7	1,400	0.54	2.01
LVWPS-U3-MW02A	1/14/2021	N	EM02	Zone 3	UMCf-cg	82.3 - 97.0	1,900	3,200	6.0	1,500	0.37 J	3.75
LVWPS-U3-MW02A	1/14/2021	FD	EM02	Zone 3	UMCf-cg	82.3 - 97.0	2,300	3,300	6.1	1,500	0.41 J	----
LVWPS-U3-MW02A	2/11/2021	N	EM04	Zone 3	UMCf-cg	82.3 - 97.0	2,700	4,200	5.2 J-	1,400	0.41 J	2.51
LVWPS-U3-MW02A	2/11/2021	FD	EM04	Zone 3	UMCf-cg	82.3 - 97.0	2,900	4,200	5.3 J-	1,300	0.46 J	----
LVWPS-U3-MW02A	3/11/2021	N	EM05	Zone 3	UMCf-cg	82.3 - 97.0	2,400	3,600	5.6	1,500	0.48 J	2.93
LVWPS-U3-MW02A	3/11/2021	FD	EM05	Zone 3	UMCf-cg	82.3 - 97.0	2,500	3,700	6.3	1,500	0.44 J	----
LVWPS-U3-MW02B	10/5/2020	N	BL04	Zone 3	UMCf-cg	103.0 - 122.5	8,400	12,000	10	2,000	2.1	1.70
LVWPS-U3-MW02B	1/14/2021	N	EM02	Zone 3	UMCf-cg	103.0 - 122.5	190	370	0.29	1,800	14	0.49
LVWPS-U3-MW02B	2/11/2021	N	EM04	Zone 3	UMCf-cg	103.0 - 122.5	6,100	9,800	9.2 J-	1,900	2.7	1.42
LVWPS-U3-MW02B	3/11/2021	N	EM05	Zone 3	UMCf-cg	103.0 - 122.5	7,200	12,000	7.4	2,100	3.4	0.73
LVWPS-U3-MW03A	10/2/2020	N	BL04	Zone 3	UMCf-cg	86.3 - 111.0	3,300	4,500	7.5	2,800	0.57 J-	6.40
LVWPS-U3-MW03A	10/2/2020	FD	BL04	Zone 3	UMCf-cg	86.3 - 111.0	3,500	4,500	7.5	2,800	0.62 J-	----
LVWPS-U3-MW03A	1/14/2021	N	EM02	Zone 3	UMCf-cg	86.3 - 111.0	3,400	5,500	7.4	2,900	<2.1	4.38
LVWPS-U3-MW03A	2/11/2021	N	EM04	Zone 3	UMCf-cg	86.3 - 111.0	3,400	4,800	7.5	2,800	0.37 J	5.40
LVWPS-U3-MW03A	3/11/2021	N	EM05	Zone 3	UMCf-cg	86.3 - 111.0	3,100	4,900	7.2	3,000	<1.0	5.31
LVWPS-U3-MW03B	10/2/2020	N	BL04	Zone 3	UMCf-cg	151.1 - 175.7	3,800	13,000	9.1	1,900	0.41 J	3.23
LVWPS-U3-MW03B	1/14/2021	N	EM02	Zone 3	UMCf-cg	151.1 - 175.7	100	<10	<0.014	1,900 J-	61	0.23
LVWPS-U3-MW03B	2/11/2021	N	EM04	Zone 3	UMCf-cg	151.1 - 175.7	86	21 J	<0.014	1,900	38	0.57
LVWPS-U3-MW03B	3/12/2021	N	EM05	Zone 3	UMCf-cg	151.1 - 175.7	430	93 J	<0.028	1,600	48	0.49
LVWPS-U3-MW03C	10/1/2020	N	BL04	Zone 3	UMCf-cg	117.8 - 142.5	4,900	12,000	7.7	1,900	0.32 J	2.96
LVWPS-U3-MW03C	1/14/2021	N	EM02	Zone 3	UMCf-cg	117.8 - 142.5	4,800	4,300	1.6	2,000	2.6	0.43
LVWPS-U3-MW03C	2/11/2021	N	EM04	Zone 3	UMCf-cg	117.8 - 142.5	5,700	6,800	3.4	2,000	3.9	0.46
LVWPS-U3-MW03C	3/11/2021	N	EM05	Zone 3	UMCf-cg	117.8 - 142.5	6,000	8,600	4.2	2,100	1.3	0.62
LVWPS-U3-MW04B	10/2/2020	N	BL04	Zone 3	UMCf-cg	78.2 - 97.7	120	67 J	<0.014	1,600	6.8	2.03
LVWPS-U3-MW05B	10/2/2020	N	BL04	Zone 3	UMCf-cg	85.2 - 104.7	9.4	<10	<0.014	1,900	8.4	2.07
LVWPS-U3-MW05B	1/15/2021	N	EM02	Zone 3	UMCf-cg	85.2 - 104.7	96 J	39 J	<0.014	1,900	7.3	1.11
LVWPS-U3-MW05B	2/11/2021	N	EM04	Zone 3	UMCf-cg	85.2 - 104.7	460	130	<0.014	1,800	5.9	0.42
LVWPS-U3-MW05B	3/11/2021	N	EM05	Zone 3	UMCf-cg	85.2 - 104.7	510	250	0.11	1,900	4.9	1.18
LVWPS-U3-MW06A	10/5/2020	N	BL04	Zone 3	UMCf-cg	90.3 - 115.0	9,900	15,000	13	1,700	0.48 J	5.05
LVWPS-U3-MW06A	1/15/2021	N	EM02	Zone 3	UMCf-cg	90.3 - 115.0	<6,300	13,000	12	1,800 J-	<1.0	4.12
LVWPS-U3-MW06A	2/12/2021	N	EM04	Zone 3	UMCf-cg	90.3 - 115.0	9,400	15,000	12	1,700	0.50	3.39
LVWPS-U3-MW06A	3/15/2021	N	EM05	Zone 3	UMCf-cg	90.3 - 115.0	15,000	25,000	17	1,800	<1.0	2.72
LVWPS-U3-MW06B	10/7/2020	N	BL04	Zone 3	UMCf-cg	125.3 - 149.9	630	1,200	6.6	1,500	0.43 J	4.23
LVWPS-U3-MW06B	1/14/2021	N	EM02	Zone 3	UMCf-cg	125.3 - 149.9	820	1,500	6.1	1,600	0.58	2.37
LVWPS-U3-MW06B	2/11/2021	N	EM04	Zone 3	UMCf-cg	125.3 - 149.9	1,100	1,600	5.9	1,500	0.58	2.68
LVWPS-U3-MW06B	3/11/2021	N	EM05	Zone 3	UMCf-cg	125.3 - 149.9	1,400	2,000	6.1	1,600	0.56	2.96
LVWPS-U3-MW07A	10/9/2020	N	BL04	Zone 3	UMCf-cg	82.8 - 97.5	250	540	5.9	1,200	0.39 J	5.45
LVWPS-U3-MW07A	1/15/2021	N	EM02	Zone 3	UMCf-cg	82.8 - 97.5	260	530	6.1	1,200	0.37 J	6.37
LVWPS-U3-MW07A	2/11/2021	N	EM04	Zone 3	UMCf-cg	82.8 - 97.5	300	440	6.6 J-	1,100	0.27 J	6.50
LVWPS-U3-MW07A	3/11/2021	N	EM05	Zone 3	UMCf-cg	82.8 - 97.5	260	430	5.9	1,200	<1.0	6.23
LVWPS-U3-MW07B	10/9/2020	N	BL04	Zone 3	UMCf-cg	104.8 - 124.5	4,800	8,500	9.2	2,100	0.41 J	6.07
LVWPS-U3-MW07B	1/14/2021	N	EM02	Zone 3	UMCf-cg	104.8 - 124.5	4,600	7,900	9.5	2,100	<2.1	6.26
LVWPS-U3-MW07B	2/12/2021	N	EM04	Zone 3	UMCf-cg	104.8 - 124.5	4,900	7,400	9.4	1,800	0.41 J	6.51
LVWPS-U3-MW07B	3/12/2021	N	EM05	Zone 3	UMCf-cg	104.8 - 124.5	4,500	7,400	9.3	2,700	<1.0	7.04
LVWPS-U3-MW08A	10/8/2020	N	BL04	Zone 3	UMCf-cg	117.8 - 142.5	15,000	22,000	14	2,300	0.47 J	5.05
LVWPS-U3-MW08A	1/15/2021	N	EM02	Zone 3	UMCf-cg	117.8 - 142.5	14,000	20,000	14	2,400	<1.0	4.22
LVWPS-U3-MW08A	2/12/2021	N	EM04	Zone 3	UMCf-cg	117.8 - 142.5	14,000	20,000	13	2,300	0.40 J	4.55
LVWPS-U3-MW08A	3/12/2021	N	EM05	Zone 3	UMCf-cg	117.8 - 142.5	12,000	19,000	12	2,200	0.40 J	4.31
LVWPS-U3-MW08B	10/8/2020	N	BL04	Zone 3	UMCf-cg	149.3 - 174.0	6,100	8,100	4.9	2,200	2.6	2.46
LVWPS-U3-MW08B	1/15/2021	N	EM02	Zone 3	UMCf-cg	149.3 - 174.0	7,400	8,100	5.3	2,200	1.0 J	0.86
LVWPS-U3-MW08B	2/12/2021	N	EM04	Zone 3	UMCf-cg	149.3 - 174.0	5,700	8,100	5.5	2,000	0.68	1.04
LVWPS-U3-MW08B	3/12/2021	N	EM05	Zone 3	UMCf-cg	149.3 - 174.0	5,200	8,500	5.6	2,000	<1.0	0.97
LVWPS-U3-MW09	10/7/2020	N	BL04	Zone 3	UMCf-cg	82.8 - 107.5	3,500	6,100	4.8	1,300	<0.26	4.35
LVWPS-U3-MW09	1/15/2021	N	EM02	Zone 3	UMCf-cg	82.8 - 107.5	14	<10	<0.014	1,100	300	0.52
LVWPS-U3-MW09	2/10/2021	N	EM04	Zone 3	UMCf-cg	82.8 - 107.5	90	<10	<0.014	1,100	97	0.72
LVWPS-U3-MW09	3/12/2021	N	EM05	Zone 3	UMCf-cg	82.8 - 107.5	130	<10	<0.014 UJ	610	76	0.33

Table 7
Groundwater Analytical Results
Las Vegas Wash Bioremediation Pilot Study

Well	Sample Date	QC Type	Event	Zone	Screened Lithology	Screened Interval	Perchlorate by USEPA Method 314.0	Chlorate by USEPA Method 300.1B	Nitrate (as N) by USEPA Method 300.0	Sulfate by USEPA Method 300.0	Total Organic Carbon by SM 5310B	Dissolved Oxygen Field Measurement
						ft bgs	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L
LVWPS-U3-MW10A	10/5/2020	N	BL04	Zone 3	UMCf-cg	85.3 - 95.0	2,600	3,200	3.0	1,800	0.77	0.99
LVWPS-U3-MW10A	1/14/2021	N	EM02	Zone 3	UMCf-cg	85.3 - 95.0	0.96 J	<10	<0.014	1,200	310	0.76
LVWPS-U3-MW10A	2/11/2021	N	EM04	Zone 3	UMCf-cg	85.3 - 95.0	8.4 J	<10	<0.014 UJ	1,100	4.6	0.89
LVWPS-U3-MW10A	3/11/2021	N	EM05	Zone 3	UMCf-cg	85.3 - 95.0	11	<10	<0.014	1,100	5.7	0.28
LVWPS-U3-MW10B	10/5/2020	N	BL04	Zone 3	UMCf-cg	101.3 - 121.0	3,200	4,200	6.5	1,600	0.32 J	6.76
LVWPS-U3-MW10B	1/14/2021	N	EM02	Zone 3	UMCf-cg	101.3 - 121.0	0.69 J	<10	<0.014	1,500	280	0.54
LVWPS-U3-MW10B	2/11/2021	N	EM04	Zone 3	UMCf-cg	101.3 - 121.0	<0.31	<10	<0.014 UJ	98	42	0.76
LVWPS-U3-MW10B	3/11/2021	N	EM05	Zone 3	UMCf-cg	101.3 - 121.0	<0.31	<10	<0.014	190	42	0.34
LVWPS-U3-MW11A	10/7/2020	N	BL04	Zone 3	UMCf-cg	86.3 - 106.0	10,000	16,000	9.8	2,000	0.42 J	2.55
LVWPS-U3-MW11A	1/15/2021	N	EM02	Zone 3	UMCf-cg	86.3 - 106.0	11,000	18,000	11	2,000	<1.0	3.02
LVWPS-U3-MW11A	2/12/2021	N	EM04	Zone 3	UMCf-cg	86.3 - 106.0	11,000	18,000	12	2,000	0.30 J	3.14
LVWPS-U3-MW11A	3/11/2021	N	EM05	Zone 3	UMCf-cg	86.3 - 106.0	12,000	17,000	11	2,200	<1.0	2.34
LVWPS-U3-MW11B	10/7/2020	N	BL04	Zone 3	UMCf-cg	112.3 - 137.0	4,100	9,600	5.2	1,900	0.33 J	1.23
LVWPS-U3-MW11B	1/18/2021	N	EM02	Zone 3	UMCf-cg	112.3 - 137.0	5,400	7,600	4.9	2,100	<1.0	2.13
LVWPS-U3-MW11B	2/12/2021	N	EM04	Zone 3	UMCf-cg	112.3 - 137.0	3,800	7,000	4.9	1,800	<0.26	1.44
LVWPS-U3-MW11B	3/12/2021	N	EM05	Zone 3	UMCf-cg	112.3 - 137.0	4,200	7,500	4.6	1,800	<1.0	0.51
LVWPS-U3-MW11C	10/8/2020	N	BL04	Zone 3	UMCf-cg	143.3 - 163.0	5,300	7,100	8.5	2,000	0.46 J	4.73
LVWPS-U3-MW11C	1/18/2021	N	EM02	Zone 3	UMCf-cg	143.3 - 163.0	6,500	6,800	8.1	2,000	<1.0	4.03
LVWPS-U3-MW11C	2/12/2021	N	EM04	Zone 3	UMCf-cg	143.3 - 163.0	3,800	6,200	8.3	1,700	0.34 J	2.92
LVWPS-U3-MW11C	3/12/2021	N	EM05	Zone 3	UMCf-cg	143.3 - 163.0	4,200	6,700	7.8	1,700	<1.0	3.34
LVWPS-U3-MW12A	10/6/2020	N	BL04	Zone 3	UMCf-cg	88.3 - 108.0	2,700	4,200	5.1	1,800	0.38 J	2.67
LVWPS-U3-MW12A	1/15/2021	N	EM02	Zone 3	UMCf-cg	88.3 - 108.0	2,300	3,200	3.3	1,800	0.60	1.07
LVWPS-U3-MW12A	2/12/2021	N	EM04	Zone 3	UMCf-cg	88.3 - 108.0	2,000	2,800	2.5	1,600	3.7	1.79
LVWPS-U3-MW12A	3/12/2021	N	EM05	Zone 3	UMCf-cg	88.3 - 108.0	1,700	2,500	2.0	1,600	<1.0	0.63
LVWPS-U3-MW12B	10/6/2020	N	BL04	Zone 3	UMCf-cg	113.3 - 138.0	6,000	4,900	6.6	1,700	0.27 J	5.94
LVWPS-U3-MW12B	1/15/2021	N	EM02	Zone 3	UMCf-cg	113.3 - 138.0	1,900	2,600	2.7	2,000	0.45 J	1.79
LVWPS-U3-MW12B	2/12/2021	N	EM04	Zone 3	UMCf-cg	113.3 - 138.0	830	980	0.99	1,500	27	0.94
LVWPS-U3-MW12B	3/12/2021	N	EM05	Zone 3	UMCf-cg	113.3 - 138.0	820	1,100	1.3	1,500	1.8 J+	1.28
LVWPS-U3-MW13A	10/7/2020	N	BL04	Zone 3	UMCf-cg	96.3 - 121.0	3,900	7,200	11	2,000	0.45 J	5.44
LVWPS-U3-MW13A	1/15/2021	N	EM02	Zone 3	UMCf-cg	96.3 - 121.0	3,900	7,400	10	2,100	<1.0	4.84
LVWPS-U3-MW13A	2/11/2021	N	EM04	Zone 3	UMCf-cg	96.3 - 121.0	4,200	6,300	10	2,000	0.45 J	5.32
LVWPS-U3-MW13A	3/12/2021	N	EM05	Zone 3	UMCf-cg	96.3 - 121.0	4,100	6,500	9.9 J-	1,900	<1.0	4.53
LVWPS-U3-MW13B	10/7/2020	N	BL04	Zone 3	UMCf-cg	132.8 - 147.5	350	550	6.8	1,500	0.45 J	5.92
LVWPS-U3-MW13B	1/15/2021	N	EM02	Zone 3	UMCf-cg	132.8 - 147.5	<0.31	<10	<0.014	910	65	0.2
LVWPS-U3-MW13B	1/15/2021	FD	EM02	Zone 3	UMCf-cg	132.8 - 147.5	<0.31	<10	<0.014	920	65	----
LVWPS-U3-MW13B	2/12/2021	N	EM04	Zone 3	UMCf-cg	132.8 - 147.5	<0.31	<10	<0.014	830	130	0.47
LVWPS-U3-MW13B	2/12/2021	FD	EM04	Zone 3	UMCf-cg	132.8 - 147.5	<0.31	<10	<0.014	850	130	----
LVWPS-U3-MW13B	3/15/2021	N	EM05	Zone 3	UMCf-cg	132.8 - 147.5	<0.31	<10	<0.014	880	22	0.38
LVWPS-U3-MW13B	3/15/2021	FD	EM05	Zone 3	UMCf-cg	132.8 - 147.5	<0.31	<10	<0.014	900	25	----

Notes:

- Not tested.
- 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.
- < The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
- R The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.

Table 8
Tracer Dye Analytical Results
 Las Vegas Wash Bioremediation Pilot Study

Location	Sample Date	Depth (ft bgs)	Sample ID	Event	Zone	Eosine		Eosine		Fluorescein		Fluorescein		Rhodamine WT (RWT)		Rhodamine WT (RWT)		Sulforhodamine B (SRB)		Sulforhodamine B (SRB)	
						Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
						Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)
LWPS-A1-DR01	9/28/2020	72.5	LWPS-A1-DR01-BL04	BL04	Zone 1	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LWPS-A1-DR01	12/13/2020	72.5	LWPS-A1-DR01-20201213-1	INJ	Zone 1	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LWPS-A1-DR01	12/14/2020	72.5	LWPS-A1-DR01-20201214	INJ	Zone 1	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LWPS-A1-DR01	12/29/2020	72.5	LWPS-A1-DR01-INJ	INJ	Zone 1	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LWPS-A1-DR01	1/12/2021	72.5	LWPS-A1-DR01-EM02	EM02	Zone 1	ND	ND	ND	ND	ND	ND	ND	ND	561.2 **	8.58	ND	ND	ND	ND	ND	ND
LWPS-A1-DR01	2/11/2021	72.5	LWPS-A1-DR01-EM04	EM04	Zone 1	ND	ND	ND	ND	515.9	1.46	ND	ND	562.2 **	25.4	ND	ND	ND	ND	ND	ND
LWPS-A1-DR01	3/15/2021	72.5	LWPS-A1-DR01-EM05	EM05	Zone 1	ND	ND	ND	ND	516.2	0.990	ND	ND	562.3 **	23.7	ND	ND	ND	ND	ND	ND
LWPS-A1-DR02	9/28/2020	67.8	LWPS-A1-DR02-BL04	BL04	Zone 1	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LWPS-A1-DR02	12/13/2020	67.8	LWPS-A1-DR02-20201213-1	INJ	Zone 1	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LWPS-A1-DR02	12/14/2020	67.8	LWPS-A1-DR02-20201214	INJ	Zone 1	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LWPS-A1-DR02	12/29/2020	67.8	LWPS-A1-DR02-INJ	INJ	Zone 1	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LWPS-A1-DR02	1/12/2021	67.8	LWPS-A1-DR02-EM02	EM02	Zone 1	ND	ND	ND	ND	ND	ND	ND	ND	562.8 **	16.7	ND	ND	ND	ND	ND	ND
LWPS-A1-DR02	2/11/2021	67.8	LWPS-A1-DR02-EM04	EM04	Zone 1	ND	ND	ND	ND	ND	ND	ND	ND	562.7 **	43.6	ND	ND	ND	ND	ND	ND
LWPS-A1-DR02	3/15/2021	67.8	LWPS-A1-DR02-EM05	EM05	Zone 1	ND	ND	---	---	ND	ND	---	---	562.4 **	34.7	---	---	ND	ND	---	---
LWPS-A1-MW04	9/30/2020	79.2	LWPS-A1-MW04-BL04	BL04	Zone 1	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LWPS-A1-MW04	12/29/2020	79.2	LWPS-A1-MW04-INJ	INJ	Zone 1	ND	ND	ND	ND	ND	ND	ND	ND	562.2 **	25.6	ND	ND	ND	ND	ND	ND
LWPS-A1-MW04	1/13/2021	79.2	LWPS-A1-MW04-EM02	EM02	Zone 1	ND	ND	ND	ND	ND	ND	ND	ND	561.0 **	2.34	ND	ND	ND	ND	ND	ND
LWPS-A1-MW04	2/9/2021	79.2	LWPS-A1-MW04-EM04	EM04	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LWPS-A1-MW04	3/9/2021	79.2	LWPS-A1-MW04-EM05	EM05	Zone 1	ND	ND	---	---	ND	ND	---	---	563.0 **	1.95	---	---	ND	ND	---	---
LWPS-A1-MW05	9/30/2020	78.9	LWPS-A1-MW05-BL04	BL04	Zone 1	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LWPS-A1-MW05	12/29/2020	78.9	LWPS-A1-MW05-INJ	INJ	Zone 1	ND	ND	ND	ND	ND	ND	ND	ND	562.3 **	39.7	ND	ND	ND	ND	ND	ND
LWPS-A1-MW05	1/15/2021	78.9	LWPS-A1-MW05-EM02	EM02	Zone 1	ND	ND	ND	ND	ND	ND	ND	ND	562.3 **	14.0	ND	ND	ND	ND	ND	ND
LWPS-A1-MW05	2/10/2021	78.9	LWPS-A1-MW05-EM04	EM04	Zone 1	ND	ND	ND	ND	ND	ND	ND	ND	562.1 **	36.3	ND	ND	ND	ND	ND	ND
LWPS-A1-MW05	3/10/2021	78.9	LWPS-A1-MW05-EM05	EM05	Zone 1	ND	ND	---	---	ND	ND	---	---	562.3 **	29.9	---	---	ND	ND	---	---
LWPS-A1-MW06	9/29/2020	69.1	LWPS-A1-MW06-BL04	BL04	Zone 1	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LWPS-A1-MW06	12/28/2020	69.1	LWPS-A1-MW06-INJ	INJ	Zone 1	ND	ND	ND	ND	ND	ND	ND	ND	563.2 **	44.5	ND	ND	ND	ND	ND	ND
LWPS-A1-MW06	1/14/2021	69.1	LWPS-A1-MW06-EM02	EM02	Zone 1	ND	ND	ND	ND	ND	ND	ND	ND	562.6 **	34.2	ND	ND	ND	ND	ND	ND
LWPS-A1-MW06	2/9/2021	69.1	LWPS-A1-MW06-EM04	EM04	Zone 1	ND	ND	ND	ND	ND	ND	ND	ND	562.2 **	37.5	ND	ND	ND	ND	ND	ND
LWPS-A1-MW06	3/9/2021	69.1	LWPS-A1-MW06-EM05	EM05	Zone 1	ND	ND	---	---	ND	ND	---	---	562.3 **	39.9	---	---	ND	ND	---	---
LWPS-A1-MW07	9/30/2020	68.1	LWPS-A1-MW07-BL04	BL04	Zone 1	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LWPS-A1-MW07	12/29/2020	68.1	LWPS-A1-MW07-INJ	INJ	Zone 1	ND	ND	ND	ND	ND	ND	ND	ND	562.1 **	32.3	ND	ND	ND	ND	ND	ND
LWPS-A1-MW07	1/14/2021	68.1	LWPS-A1-MW07-EM02	EM02	Zone 1	ND	ND	ND	ND	ND	ND	ND	ND	561.9 **	21.0	ND	ND	ND	ND	ND	ND
LWPS-A1-MW07	2/10/2021	68.1	LWPS-A1-MW07-EM04	EM04	Zone 1	ND	ND	ND	ND	ND	ND	ND	ND	561.7 **	22.4	ND	ND	ND	ND	ND	ND
LWPS-A1-MW07	3/9/2021	68.1	LWPS-A1-MW07-EM05	EM05	Zone 1	ND	ND	---	---	ND	ND	---	---	562.3 **	34.8	---	---	ND	ND	---	---
LWPS-A1-MW09	9/30/2020	95.5	LWPS-A1-MW09-BL04	BL04	Zone 1	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LWPS-A1-MW09	1/13/2021	95.5	LWPS-A1-MW09-EM02	EM02	Zone 1	ND	ND	ND	ND	515.4	10.5	ND	ND	561.7 **	4.93	ND	ND	ND	ND	ND	ND
LWPS-A1-MW09	2/11/2021	95.5	LWPS-A1-MW09-EM04	EM04	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LWPS-A1-MW09	3/11/2021	95.5	LWPS-A1-MW09-EM05	EM05	Zone 1	ND	ND	---	---	ND	ND	---	---	562.6 **	1.92	---	---	ND	ND	---	---
LWPS-A1-MW10	10/1/2020	80.5	LWPS-A1-MW10-BL04	BL04	Zone 1	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LWPS-A1-MW10	10/1/2020	80.5	LWPS-A1-MW10-BL04-FD	BL04	Zone 1	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LWPS-A1-MW10	1/13/2021	80.5	LWPS-A1-MW10-EM02	EM02	Zone 1	ND	ND	ND	ND	515.3	7.16	ND	ND	562.1 **	34.4	ND	ND	ND	ND	ND	ND
LWPS-A1-MW10	2/8/2021	80.5	LWPS-A1-MW10-EM04	EM04	Zone 1	ND	ND	ND	ND	ND	ND	ND	ND	560.8 **	4.60	ND	ND	ND	ND	ND	ND
LWPS-A1-MW10	3/9/2021	80.5	LWPS-A1-MW10-EM05	EM05	Zone 1	ND	ND	ND	ND	ND	ND	ND	ND	564.6	1.30	ND	ND	ND	ND	ND	ND
LWPS-A2-DR01A	9/28/2020	53.7	LWPS-A2-DR01A-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LWPS-A2-DR01A	12/7/2020	53.7	LWPS-A2-DR01A-20201207	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	566.8	28.4	---	---	ND	ND
LWPS-A2-DR01A	12/8/2020	53.7	LWPS-A2-DR01A-20201208	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	565.8	286	---	---	ND	ND
LWPS-A2-DR01A	12/9/2020	53.7	LWPS-A2-DR01A-20201209	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	569.0	5,920	---	---	ND	ND

Table 8
Tracer Dye Analytical Results
 Las Vegas Wash Bioremediation Pilot Study

Location	Sample Date	Depth (ft bgs)	Sample ID	Event	Zone	Eosine		Eosine		Fluorescein		Fluorescein		Rhodamine WT (RWT)		Rhodamine WT (RWT)		Sulforhodamine B (SRB)		Sulforhodamine B (SRB)	
						Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
						Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)
LVWPS-A2-DR01A	12/12/2020	53.7	LVWPS-A2-DR01A-INJ	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	566.5	104	---	---	ND	ND
LVWPS-A2-DR01A	12/20/2020	53.7	LVWPS-A2-DR01A-20201220	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	574.1	11.6	---	---	ND	ND
LVWPS-A2-DR01A	12/21/2020	53.7	LVWPS-A2-DR01A-20201221	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	574.1	9.77	---	---	ND	ND
LVWPS-A2-DR01A	1/12/2021	53.7	LVWPS-A2-DR01A-EM02	EM02	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	567.7	574	567.0 **	44.1	ND	ND	ND	ND
LVWPS-A2-DR01A	2/12/2021	53.7	LVWPS-A2-DR01A-EM04	EM04	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	567.1	84.7	567.0	23.6	ND	ND	ND	ND
LVWPS-A2-DR01A	3/15/2021	53.7	LVWPS-A2-DR01A-EM05	EM05	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	567.7	41.9	ND	ND	ND	ND	ND	ND
LVWPS-A2-DR01B	9/28/2020	94.5	LVWPS-A2-DR01B-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-A2-DR01B	12/7/2020	94.5	LVWPS-A2-DR01B-20201207	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	566.8	32.5	---	---	ND	ND
LVWPS-A2-DR01B	12/8/2020	94.5	LVWPS-A2-DR01B-20201208	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	566.2	22.2	---	---	ND	ND
LVWPS-A2-DR01B	12/9/2020	94.5	LVWPS-A2-DR01B-20201209	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	566.2	503	---	---	ND	ND
LVWPS-A2-DR01B	12/11/2020	94.5	LVWPS-A2-DR01B-INJ	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	566.2 **	379	---	---	ND	ND
LVWPS-A2-DR01B	12/20/2020	94.5	LVWPS-A2-DR01B-20201220-1	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	568.0 **	115	---	---	ND	ND
LVWPS-A2-DR01B	12/20/2020	94.5	LVWPS-A2-DR01B-20201220-2	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	567.1 **	168	---	---	ND	ND
LVWPS-A2-DR01B	12/20/2020	94.5	LVWPS-A2-DR01B-20201220-3	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	567.0 **	223	---	---	ND	ND
LVWPS-A2-DR01B	12/20/2020	94.5	LVWPS-A2-DR01B-20201220-4	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	567.0 **	272	---	---	ND	ND
LVWPS-A2-DR01B	12/21/2020	94.5	LVWPS-A2-DR01B-20201221-1	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	567.2 **	146	---	---	ND	ND
LVWPS-A2-DR01B	12/21/2020	94.5	LVWPS-A2-DR01B-20201221-2	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	567.0 **	381	---	---	ND	ND
LVWPS-A2-DR01B	12/21/2020	94.5	LVWPS-A2-DR01B-20201221-3	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	567.2 **	107	---	---	ND	ND
LVWPS-A2-DR01B	12/21/2020	94.5	LVWPS-A2-DR01B-20201221-4	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	567.6 **	126	---	---	ND	ND
LVWPS-A2-DR01B	1/12/2021	94.5	LVWPS-A2-DR01B-EM02	EM02	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	568.7	2,170	567.7 **	95.5	ND	ND	ND	ND
LVWPS-A2-DR01B	2/12/2021	94.5	LVWPS-A2-DR01B-EM04	EM04	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	567.3	18.6	568.2 **	111	ND	ND	ND	ND
LVWPS-A2-DR01B	3/15/2021	94.5	LVWPS-A2-DR01B-EM05	EM05	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	569.1	1,240	568.0 **	59.7	ND	ND	ND	ND
LVWPS-A2-DR02A	9/28/2020	43.9	LVWPS-A2-DR02A-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-A2-DR02A	12/7/2020	43.9	LVWPS-A2-DR02A-20201207	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	566.1	326	---	---	ND	ND
LVWPS-A2-DR02A	12/8/2020	43.9	LVWPS-A2-DR02A-20201208	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	566.2	13.5	---	---	ND	ND
LVWPS-A2-DR02A	12/9/2020	43.9	LVWPS-A2-DR02A-20201209	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	567.0	189	---	---	ND	ND
LVWPS-A2-DR02A	12/9/2020	43.9	LVWPS-A2-DR02A-20201209-DU	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	567.0	216	---	---	ND	ND
LVWPS-A2-DR02A	12/12/2020	43.9	LVWPS-A2-DR02A-INJ	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	567.1	72.7	---	---	ND	ND
LVWPS-A2-DR02A	12/20/2020	43.9	LVWPS-A2-DR02A-20201220	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	573.1	0.323	---	---	ND	ND
LVWPS-A2-DR02A	12/21/2020	43.9	LVWPS-A2-DR02A-20201221	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-A2-DR02A	1/12/2021	43.9	LVWPS-A2-DR02A-EM02	EM02	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	567.6	29.9	ND	ND	ND	ND	ND	ND
LVWPS-A2-DR02A	2/12/2021	43.9	LVWPS-A2-DR02A-EM04	EM04	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	566.6	7.09	574.2	1.95	ND	ND	ND	ND
LVWPS-A2-DR02A	3/15/2021	43.9	LVWPS-A2-DR02A-EM05	EM05	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	566.9	8.79	573.2	4.70	ND	ND	ND	ND
LVWPS-A2-DR02B	9/28/2020	67.7	LVWPS-A2-DR02B-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-A2-DR02B	12/7/2020	67.7	LVWPS-A2-DR02B-20201207	INJ	Zone 2	---	---	ND	ND	---	---	506.0	0.022	---	---	573.4	0.244	---	---	ND	ND
LVWPS-A2-DR02B	12/8/2020	67.7	LVWPS-A2-DR02B-20201208	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	566.2	115	---	---	ND	ND
LVWPS-A2-DR02B	12/9/2020	67.7	LVWPS-A2-DR02B-20201209	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	566.9	98.0	---	---	ND	ND
LVWPS-A2-DR02B	12/12/2020	67.7	LVWPS-A2-DR02B-INJ	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	566.6	250	---	---	ND	ND
LVWPS-A2-DR02B	12/20/2020	67.7	LVWPS-A2-DR02B-20201220-1	INJ	Zone 2	---	---	ND	ND	---	---	515.1 **	28.1	---	---	566.7 **	275	---	---	ND	ND
LVWPS-A2-DR02B	12/20/2020	67.7	LVWPS-A2-DR02B-20201220-2	INJ	Zone 2	---	---	ND	ND	---	---	515.5 **	15.1	---	---	567.0 **	246	---	---	ND	ND
LVWPS-A2-DR02B	12/20/2020	67.7	LVWPS-A2-DR02B-20201220-3	INJ	Zone 2	---	---	ND	ND	---	---	515.6 **	35.6	---	---	566.1 **	71.9	---	---	ND	ND
LVWPS-A2-DR02B	12/20/2020	67.7	LVWPS-A2-DR02B-20201220-4	INJ	Zone 2	---	---	ND	ND	---	---	515.3 **	28.8	---	---	566.9 **	258	---	---	ND	ND
LVWPS-A2-DR02B	12/21/2020	67.7	LVWPS-A2-DR02B-20201221-1	INJ	Zone 2	---	---	ND	ND	---	---	516.1 **	37.2	---	---	566.2 **	134	---	---	ND	ND
LVWPS-A2-DR02B	12/21/2020	67.7	LVWPS-A2-DR02B-20201221-2	INJ	Zone 2	---	---	ND	ND	---	---	515.9 **	58.9	---	---	566.5 **	204	---	---	ND	ND
LVWPS-A2-DR02B	12/21/2020	67.7	LVWPS-A2-DR02B-20201221-3	INJ	Zone 2	---	---	ND	ND	---	---	515.5 **	46.5	---	---	565.4 **	25.7	---	---	ND	ND
LVWPS-A2-DR02B	12/21/2020	67.7	LVWPS-A2-DR02B-20201221-4	INJ	Zone 2	---	---	ND	ND	---	---	515.5 **	45.7	---	---	566.5 **	48.0	---	---	ND	ND
LVWPS-A2-DR02B	1/12/2021	67.7	LVWPS-A2-DR02B-EM02	EM02	Zone 2	ND	ND	ND	ND	516.3	24.4	515.4 **	11.6	567.4	57.4	565.9 **	24.5	ND	ND	ND	ND

Table 8
Tracer Dye Analytical Results
 Las Vegas Wash Bioremediation Pilot Study

Location	Sample Date	Depth (ft bgs)	Sample ID	Event	Zone	Eosine		Eosine		Fluorescein		Fluorescein		Rhodamine WT (RWT)		Rhodamine WT (RWT)		Sulforhodamine B (SRB)		Sulforhodamine B (SRB)					
						Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
						Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)
LVWPS-A2-DR02B	2/12/2021	67.7	LVWPS-A2-DR02B-EM04	EM04	Zone 2	ND	ND	ND	ND	516.8	33.5	514.6 **	15.6	566.2	168	566.9 **	59.0	ND	ND	ND	ND				
LVWPS-A2-DR02B	3/15/2021	67.7	LVWPS-A2-DR02B-EM05	EM05	Zone 2	ND	ND	ND	ND	516.1	40.8	517.4 **	13.8	567.1	87.4	567.0 **	17.0	ND	ND	ND	ND				
LVWPS-A2-MW01A	10/8/2020	49.8	LVWPS-A2-MW01A-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-A2-MW01A	12/12/2020	49.8	LVWPS-A2-MW01A-INJ	INJ	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW01A	12/23/2020	49.8	LVWPS-A2-MW01A-EM01	EM01	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW01A	1/13/2021	49.8	LVWPS-A2-MW01A-EM02	EM02	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW01A	1/25/2021	49.8	LVWPS-A2-MW01A-EM03	EM03	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW01A	2/10/2021	49.8	LVWPS-A2-MW01A-EM04	EM04	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW01A	3/10/2021	49.8	LVWPS-A2-MW01A-EM05	EM05	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW01B	10/8/2020	79.7	LVWPS-A2-MW01B-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-A2-MW01B	12/15/2020	79.7	LVWPS-A2-MW01B-INJ	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	573.6	0.135	---	---	ND	ND				
LVWPS-A2-MW01B	12/23/2020	79.7	LVWPS-A2-MW01B-EM01	EM01	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW01B	1/13/2021	79.7	LVWPS-A2-MW01B-EM02	EM02	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW01B	1/25/2021	79.7	LVWPS-A2-MW01B-EM03	EM03	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW01B	2/10/2021	79.7	LVWPS-A2-MW01B-EM04	EM04	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW01B	3/10/2021	79.7	LVWPS-A2-MW01B-EM05	EM05	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW02A	10/8/2020	49.8	LVWPS-A2-MW02A-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-A2-MW02A	10/8/2020	49.8	LVWPS-A2-MW02A-BL04-FD	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-A2-MW02A	12/12/2020	49.8	LVWPS-A2-MW02A-INJ	INJ	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW02A	12/23/2020	49.8	LVWPS-A2-MW02A-EM01	EM01	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW02A	1/12/2021	49.8	LVWPS-A2-MW02A-EM02	EM02	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW02A	1/25/2021	49.8	LVWPS-A2-MW02A-EM03	EM03	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW02A	2/9/2021	49.8	LVWPS-A2-MW02A-EM04	EM04	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW02A	3/9/2021	49.8	LVWPS-A2-MW02A-EM05	EM05	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW02B	10/8/2020	79.9	LVWPS-A2-MW02B-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-A2-MW02B	12/12/2020	79.9	LVWPS-A2-MW02B-INJ	INJ	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW02B	12/23/2020	79.9	LVWPS-A2-MW02B-EM01	EM01	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW02B	1/13/2021	79.9	LVWPS-A2-MW02B-EM02	EM02	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW02B	1/25/2021	79.9	LVWPS-A2-MW02B-EM03	EM03	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW02B	2/10/2021	79.9	LVWPS-A2-MW02B-EM04	EM04	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW02B	3/10/2021	79.9	LVWPS-A2-MW02B-EM05	EM05	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW03A	10/9/2020	47.9	LVWPS-A2-MW03A-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-A2-MW03A	10/9/2020	47.9	LVWPS-A2-MW03A-BL04-FD	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-A2-MW03A	12/12/2020	47.9	LVWPS-A2-MW03A-INJ	INJ	Zone 2	ND	ND	---	---	ND	ND	---	---	562.0 **	2.46	---	---	ND	ND	---	---				
LVWPS-A2-MW03A	12/23/2020	47.9	LVWPS-A2-MW03A-EM01	EM01	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW03A	1/14/2021	47.9	LVWPS-A2-MW03A-EM02	EM02	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	562.6 **	1.59	ND	ND	ND	ND	ND	ND				
LVWPS-A2-MW03A	1/25/2021	47.9	LVWPS-A2-MW03A-EM03	EM03	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	561.1 **	1.10	ND	ND	ND	ND	ND	ND				
LVWPS-A2-MW03A	2/10/2021	47.9	LVWPS-A2-MW03A-EM04	EM04	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	563.3 **	1.68	ND	ND	ND	ND	ND	ND				
LVWPS-A2-MW03A	3/10/2021	47.9	LVWPS-A2-MW03A-EM05	EM05	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW03B	10/9/2020	73.8	LVWPS-A2-MW03B-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-A2-MW03B	12/12/2020	73.8	LVWPS-A2-MW03B-INJ	INJ	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW03B	12/23/2020	73.8	LVWPS-A2-MW03B-EM01	EM01	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW03B	1/14/2021	73.8	LVWPS-A2-MW03B-EM02	EM02	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW03B	1/26/2021	73.8	LVWPS-A2-MW03B-EM03	EM03	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW03B	2/10/2021	73.8	LVWPS-A2-MW03B-EM04	EM04	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW03B	3/10/2021	73.8	LVWPS-A2-MW03B-EM05	EM05	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW04A	10/2/2020	53.7	LVWPS-A2-MW04A-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				

Table 8
Tracer Dye Analytical Results
Las Vegas Wash Bioremediation Pilot Study

Location	Sample Date	Depth (ft bgs)	Sample ID	Event	Zone	Eosine		Eosine		Fluorescein		Fluorescein		Rhodamine WT (RWT)		Rhodamine WT (RWT)		Sulforhodamine B (SRB)		Sulforhodamine B (SRB)					
						Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
						Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)
LVWPS-A2-MW04A	12/14/2020	53.7	LVWPS-A2-MW04A-INJ	INJ	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW04A	12/14/2020	53.7	LVWPS-A2-MW04A-INJ-FD	INJ	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW04A	12/22/2020	53.7	LVWPS-A2-MW04A-EM01	EM01	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW04A	12/22/2020	53.7	LVWPS-A2-MW04A-EM01-FD	EM01	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW04A	1/12/2021	53.7	LVWPS-A2-MW04A-EM02	EM02	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW04A	1/12/2021	53.7	LVWPS-A2-MW04A-EM02-FD	EM02	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW04A	1/26/2021	53.7	LVWPS-A2-MW04A-EM03	EM03	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW04A	1/26/2021	53.7	LVWPS-A2-MW04A-EM03-FD	EM03	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW04A	2/9/2021	53.7	LVWPS-A2-MW04A-EM04	EM04	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW04A	2/9/2021	53.7	LVWPS-A2-MW04A-EM04-FD	EM04	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW04A	3/9/2021	53.7	LVWPS-A2-MW04A-EM05	EM05	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW04B	10/2/2020	84.9	LVWPS-A2-MW04B-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-A2-MW04B	12/14/2020	84.9	LVWPS-A2-MW04B-INJ	INJ	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW04B	12/22/2020	84.9	LVWPS-A2-MW04B-EM01	EM01	Zone 2	539.6	4.39	ND	ND	515.6	1.00	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND				
LVWPS-A2-MW04B	1/12/2021	84.9	LVWPS-A2-MW04B-EM02	EM02	Zone 2	ND	ND	ND	ND	515.2	100	507.1	0.442	567.4	1.94	ND	ND	ND	ND	ND	ND				
LVWPS-A2-MW04B	1/26/2021	84.9	LVWPS-A2-MW04B-EM03	EM03	Zone 2	ND	ND	ND	ND	514.7	5.70	ND	ND	566.0	1.10	ND	ND	ND	ND	ND	ND				
LVWPS-A2-MW04B	2/9/2021	84.9	LVWPS-A2-MW04B-EM04	EM04	Zone 2	ND	ND	ND	ND	515.2	16.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND				
LVWPS-A2-MW04B	3/9/2021	84.9	LVWPS-A2-MW04B-EM05	EM05	Zone 2	ND	ND	ND	ND	515.2	23.5	506.2	0.152	ND	ND	ND	ND	ND	ND	ND	ND				
LVWPS-A2-MW05A	10/5/2020	43.9	LVWPS-A2-MW05A-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-A2-MW05A	12/12/2020	43.9	LVWPS-A2-MW05A-INJ	INJ	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	566.8	16,000	567.3	157	ND	ND	ND	ND				
LVWPS-A2-MW05A	12/22/2020	43.9	LVWPS-A2-MW05A-EM01	EM01	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	568.4	5,110	574.9	43.2	ND	ND	ND	ND				
LVWPS-A2-MW05A	1/13/2021	43.9	LVWPS-A2-MW05A-EM02	EM02	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	569.7	1,510	566.3 **	19.2	ND	ND	ND	ND				
LVWPS-A2-MW05A	1/26/2021	43.9	LVWPS-A2-MW05A-EM03	EM03	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	570.1	79.6	ND	ND	ND	ND	ND	ND				
LVWPS-A2-MW05A	2/9/2021	43.9	LVWPS-A2-MW05A-EM04	EM04	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	568.8	5.54	ND	ND	ND	ND	ND	ND				
LVWPS-A2-MW05A	3/10/2021	43.9	LVWPS-A2-MW05A-EM05	EM05	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	568.3	10.9	ND	ND	ND	ND	ND	ND				
LVWPS-A2-MW05B	10/5/2020	66	LVWPS-A2-MW05B-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-A2-MW05B	12/12/2020	66	LVWPS-A2-MW05B-INJ	INJ	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	566.6	3,900	566.7	271	ND	ND	ND	ND				
LVWPS-A2-MW05B	12/12/2020	66	LVWPS-A2-MW05B-INJ-FD	INJ	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	566.4	3,430	566.7	271	ND	ND	ND	ND				
LVWPS-A2-MW05B	12/22/2020	66	LVWPS-A2-MW05B-EM01	EM01	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	567.0	13,800	566.6 **	98.3	ND	ND	ND	ND				
LVWPS-A2-MW05B	12/22/2020	66	LVWPS-A2-MW05B-EM01-FD	EM01	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	566.9	17,200	566.8 **	59.9	ND	ND	ND	ND				
LVWPS-A2-MW05B	1/13/2021	66	LVWPS-A2-MW05B-EM02	EM02	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	568.6	2,250	567.1 **	51.0	ND	ND	ND	ND				
LVWPS-A2-MW05B	1/13/2021	66	LVWPS-A2-MW05B-EM02-FD	EM02	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	568.6	1,750	567.3 **	46.8	ND	ND	ND	ND				
LVWPS-A2-MW05B	1/26/2021	66	LVWPS-A2-MW05B-EM03	EM03	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	569.1	1,750	567.1 **	26.5	ND	ND	ND	ND				
LVWPS-A2-MW05B	1/26/2021	66	LVWPS-A2-MW05B-EM03-FD	EM03	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	569.3	2,430	566.7 **	19.2	ND	ND	ND	ND				
LVWPS-A2-MW05B	2/9/2021	66	LVWPS-A2-MW05B-EM04	EM04	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	567.7	1,680	574.3	21.4	ND	ND	ND	ND				
LVWPS-A2-MW05B	2/9/2021	66	LVWPS-A2-MW05B-EM04-FD	EM04	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	567.1	3,510	574.3	22.7	ND	ND	ND	ND				
LVWPS-A2-MW05B	3/10/2021	66	LVWPS-A2-MW05B-EM05	EM05	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	567.2	4,820	574.3	18.9	ND	ND	ND	ND				
LVWPS-A2-MW08A	9/30/2020	47.6	LVWPS-A2-MW08A-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-A2-MW08A	12/14/2020	47.6	LVWPS-A2-MW08A-INJ	INJ	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A2-MW08A	12/23/2020	47.6	LVWPS-A2-MW08A-EM01	EM01	Zone 2	539.4	3.49	ND	ND	ND	ND	ND	ND	565.0	5.00	ND	ND	ND	ND	ND	ND				
LVWPS-A2-MW08A	1/15/2021	47.6	LVWPS-A2-MW08A-EM02	EM02	Zone 2	539.4	3.17	ND	ND	ND	ND	ND	ND	567.2	126	573.5	4.44	ND	ND	ND	ND				
LVWPS-A2-MW08A	1/26/2021	47.6	LVWPS-A2-MW08A-EM03	EM03	Zone 2	539.9	1.07	ND	ND	ND	ND	ND	ND	567.2	6.06	ND	ND	ND	ND	ND	ND				
LVWPS-A2-MW08A	2/10/2021	47.6	LVWPS-A2-MW08A-EM04	EM04	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	566.6	3.40	ND	ND	ND	ND	ND	ND				
LVWPS-A2-MW08A	3/10/2021	47.6	LVWPS-A2-MW08A-EM05	EM05	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	567.9	46.0	ND	ND	ND	ND	ND	ND				
LVWPS-A2-MW08B	10/1/2020	69.3	LVWPS-A2-MW08B-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-A2-MW08B	12/14/2020	69.3	LVWPS-A2-MW08B-INJ	INJ	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	566.9	31.6	574.2	0.305	ND	ND	ND	ND				
LVWPS-A2-MW08B	12/23/2020	69.3	LVWPS-A2-MW08B-EM01	EM01	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	568.0	56.7	576.7	0.089	ND	ND	ND	ND				

Table 8
Tracer Dye Analytical Results
 Las Vegas Wash Bioremediation Pilot Study

Location	Sample Date	Depth (ft bgs)	Sample ID	Event	Zone	Eosine		Eosine		Fluorescein		Fluorescein		Rhodamine WT (RWT)		Rhodamine WT (RWT)		Sulforhodamine B (SRB)		Sulforhodamine B (SRB)	
						Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
						Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)
LVWPS-A2-MW08B	1/15/2021	69.3	LVWPS-A2-MW08B-EM02	EM02	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	566.9	27.5	ND	ND	ND	ND	ND	ND
LVWPS-A2-MW08B	1/26/2021	69.3	LVWPS-A2-MW08B-EM03	EM03	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW08B	2/10/2021	69.3	LVWPS-A2-MW08B-EM04	EM04	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW08B	3/10/2021	69.3	LVWPS-A2-MW08B-EM05	EM05	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	562.6 **	0.758	ND	ND	ND	ND	ND	ND
LVWPS-A2-MW08C	10/1/2020	95.9	LVWPS-A2-MW08C-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-A2-MW08C	12/14/2020	95.9	LVWPS-A2-MW08C-INJ	INJ	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	567.5	648	574.4	0.640	ND	ND	ND	ND
LVWPS-A2-MW08C	12/23/2020	95.9	LVWPS-A2-MW08C-EM01	EM01	Zone 2	ND	ND	ND	ND	516.1	377	515.2 **	4.82	568.3	287	ND	ND	ND	ND	ND	ND
LVWPS-A2-MW08C	1/15/2021	95.9	LVWPS-A2-MW08C-EM02	EM02	Zone 2	ND	ND	ND	ND	515.4	108	507.7	1.56	567.5	50.9	ND	ND	ND	ND	ND	ND
LVWPS-A2-MW08C	1/28/2021	95.9	LVWPS-A2-MW08C-EM03	EM03	Zone 2	ND	ND	ND	ND	515.1	86.0	518.8 **	1.92	567.7	18.6	ND	ND	ND	ND	ND	ND
LVWPS-A2-MW08C	2/10/2021	95.9	LVWPS-A2-MW08C-EM04	EM04	Zone 2	ND	ND	ND	ND	515.3	98.9	507.6	0.577	567.5	52.8	574.8	1.54	ND	ND	ND	ND
LVWPS-A2-MW08C	3/10/2021	95.9	LVWPS-A2-MW08C-EM05	EM05	Zone 2	ND	ND	ND	ND	515.1	56.7	506.2	0.427	567.7	70.9	ND	ND	ND	ND	ND	ND
LVWPS-A2-MW09A	10/9/2020	44.5	LVWPS-A2-MW09A-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-A2-MW09A	12/12/2020	44.5	LVWPS-A2-MW09A-INJ	INJ	Zone 2	539.4	15.2	ND	ND	ND	ND	ND	ND	566.6	109	573.8	0.643	ND	ND	ND	ND
LVWPS-A2-MW09A	12/22/2020	44.5	LVWPS-A2-MW09A-EM01	EM01	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	567.9	695	573.8	13.2	ND	ND	ND	ND
LVWPS-A2-MW09A	1/11/2021	44.5	LVWPS-A2-MW09A-EM02	EM02	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	567.5	262	572.7	8.11	ND	ND	ND	ND
LVWPS-A2-MW09A	1/26/2021	44.5	LVWPS-A2-MW09A-EM03	EM03	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	568.3	63.4	ND	ND	ND	ND	ND	ND
LVWPS-A2-MW09A	2/8/2021	44.5	LVWPS-A2-MW09A-EM04	EM04	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	567.5	80.4	574.2	0.062	ND	ND	ND	ND
LVWPS-A2-MW09A	3/8/2021	44.5	LVWPS-A2-MW09A-EM05	EM05	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	567.5	276	ND	ND	ND	ND	ND	ND
LVWPS-A2-MW09B	10/9/2020	68.5	LVWPS-A2-MW09B-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-A2-MW09B	12/12/2020	68.5	LVWPS-A2-MW09B-INJ	INJ	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	563.6 **	10.6	575.9	0.243	ND	ND	ND	ND
LVWPS-A2-MW09B	12/22/2020	68.5	LVWPS-A2-MW09B-EM01	EM01	Zone 2	538.9 **	6.99	ND	ND	ND	ND	ND	ND	564.8	6.62	ND	ND	ND	ND	ND	ND
LVWPS-A2-MW09B	1/14/2021	68.5	LVWPS-A2-MW09B-EM02	EM02	Zone 2	538.4 **	2.60	ND	ND	ND	ND	ND	ND	567.6	72.2	ND	ND	ND	ND	ND	ND
LVWPS-A2-MW09B	1/27/2021	68.5	LVWPS-A2-MW09B-EM03	EM03	Zone 2	538.0 **	1.14	ND	ND	ND	ND	ND	ND	568.1	99.3	ND	ND	ND	ND	ND	ND
LVWPS-A2-MW09B	2/8/2021	68.5	LVWPS-A2-MW09B-EM04	EM04	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	567.7	80.9	ND	ND	ND	ND	ND	ND
LVWPS-A2-MW09B	3/8/2021	68.5	LVWPS-A2-MW09B-EM05	EM05	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	567.0	185	ND	ND	ND	ND	ND	ND
LVWPS-A2-MW11A	10/2/2020	50.2	LVWPS-A2-MW11A-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-A2-MW11A	12/14/2020	50.2	LVWPS-A2-MW11A-INJ	INJ	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW11A	12/23/2020	50.2	LVWPS-A2-MW11A-EM01	EM01	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW11A	1/13/2021	50.2	LVWPS-A2-MW11A-EM02	EM02	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW11A	1/27/2021	50.2	LVWPS-A2-MW11A-EM03	EM03	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW11A	2/9/2021	50.2	LVWPS-A2-MW11A-EM04	EM04	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW11A	3/9/2021	50.2	LVWPS-A2-MW11A-EM05	EM05	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW11B	10/2/2020	75	LVWPS-A2-MW11B-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-A2-MW11B	12/14/2020	75	LVWPS-A2-MW11B-INJ	INJ	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW11B	12/23/2020	75	LVWPS-A2-MW11B-EM01	EM01	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW11B	1/13/2021	75	LVWPS-A2-MW11B-EM02	EM02	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW11B	1/27/2021	75	LVWPS-A2-MW11B-EM03	EM03	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW11B	2/8/2021	75	LVWPS-A2-MW11B-EM04	EM04	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW11B	3/9/2021	75	LVWPS-A2-MW11B-EM05	EM05	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW11C	10/2/2020	99.9	LVWPS-A2-MW11C-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-A2-MW11C	12/14/2020	99.9	LVWPS-A2-MW11C-INJ	INJ	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW11C	12/23/2020	99.9	LVWPS-A2-MW11C-EM01	EM01	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW11C	1/14/2021	99.9	LVWPS-A2-MW11C-EM02	EM02	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW11C	1/27/2021	99.9	LVWPS-A2-MW11C-EM03	EM03	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW11C	2/9/2021	99.9	LVWPS-A2-MW11C-EM04	EM04	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW11C	3/10/2021	99.9	LVWPS-A2-MW11C-EM05	EM05	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW12A	10/6/2020	39.5	LVWPS-A2-MW12A-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---

Table 8
Tracer Dye Analytical Results
 Las Vegas Wash Bioremediation Pilot Study

Location	Sample Date	Depth (ft bgs)	Sample ID	Event	Zone	Eosine		Eosine		Fluorescein		Fluorescein		Rhodamine WT (RWT)		Rhodamine WT (RWT)		Sulforhodamine B (SRB)		Sulforhodamine B (SRB)	
						Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
						Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)
LVWPS-A2-MW12A	12/12/2020	39.5	LVWPS-A2-MW12A-INJ	INJ	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW12A	12/22/2020	39.5	LVWPS-A2-MW12A-EM01	EM01	Zone 2	539.4	2.84	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW12A	1/11/2021	39.5	LVWPS-A2-MW12A-EM02	EM02	Zone 2	538.5 **	7.36	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW12A	1/27/2021	39.5	LVWPS-A2-MW12A-EM03	EM03	Zone 2	ND	ND	ND	ND	515.0	1.31	ND	ND	567.3	13.0	ND	ND	ND	ND	ND	ND
LVWPS-A2-MW12A	2/8/2021	39.5	LVWPS-A2-MW12A-EM04	EM04	Zone 2	ND	ND	ND	ND	514.9	1.73	ND	ND	567.7	145	572.8	15.1	ND	ND	ND	ND
LVWPS-A2-MW12A	3/8/2021	39.5	LVWPS-A2-MW12A-EM05	EM05	Zone 2	ND	ND	ND	ND	514.8	2.24	ND	ND	567.6	340	573.6	15.9	ND	ND	ND	ND
LVWPS-A2-MW12B	10/7/2020	59	LVWPS-A2-MW12B-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-A2-MW12B	12/12/2020	59	LVWPS-A2-MW12B-INJ	INJ	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW12B	12/22/2020	59	LVWPS-A2-MW12B-EM01	EM01	Zone 2	539.8	5.04	ND	ND	ND	ND	ND	ND	567.6	205	566.9 **	8.14	ND	ND	ND	ND
LVWPS-A2-MW12B	1/12/2021	59	LVWPS-A2-MW12B-EM02	EM02	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	567.5	789	572.8	6.01	ND	ND	ND	ND
LVWPS-A2-MW12B	1/27/2021	59	LVWPS-A2-MW12B-EM03	EM03	Zone 2	ND	ND	ND	ND	514.5	1.04	ND	ND	567.5	23.1	ND	ND	ND	ND	ND	ND
LVWPS-A2-MW12B	2/8/2021	59	LVWPS-A2-MW12B-EM04	EM04	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	567.7	78.4	573.3	1.39	ND	ND	ND	ND
LVWPS-A2-MW12B	3/8/2021	59	LVWPS-A2-MW12B-EM05	EM05	Zone 2	ND	ND	ND	ND	514.9	1.48	ND	ND	567.9	34.4	573.8	2.30	ND	ND	ND	ND
LVWPS-A2-MW13A	10/1/2020	50.8	LVWPS-A2-MW13A-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-A2-MW13A	12/12/2020	50.8	LVWPS-A2-MW13A-INJ	INJ	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW13A	12/22/2020	50.8	LVWPS-A2-MW13A-EM01	EM01	Zone 2	538.9 **	16.9	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW13A	1/11/2021	50.8	LVWPS-A2-MW13A-EM02	EM02	Zone 2	539.5	2.98	ND	ND	ND	ND	ND	ND	567.2	20.8	ND	ND	ND	ND	ND	ND
LVWPS-A2-MW13A	1/27/2021	50.8	LVWPS-A2-MW13A-EM03	EM03	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	568.1	438	572.2	5.47	ND	ND	ND	ND
LVWPS-A2-MW13A	2/10/2021	50.8	LVWPS-A2-MW13A-EM04	EM04	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	568.0	762	574.2	0.986	ND	ND	ND	ND
LVWPS-A2-MW13A	3/11/2021	50.8	LVWPS-A2-MW13A-EM05	EM05	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	567.6	1,640	ND	ND	ND	ND	ND	ND
LVWPS-A2-MW13B	10/1/2020	76.1	LVWPS-A2-MW13B-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-A2-MW13B	12/12/2020	76.1	LVWPS-A2-MW13B-INJ	INJ	Zone 2	538.9 **	12.1	ND	ND	ND	ND	ND	ND	565.7	31.9	ND	ND	ND	ND	ND	ND
LVWPS-A2-MW13B	12/22/2020	76.1	LVWPS-A2-MW13B-EM01	EM01	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	568.0	906	572.8	14.9	ND	ND	ND	ND
LVWPS-A2-MW13B	1/12/2021	76.1	LVWPS-A2-MW13B-EM02	EM02	Zone 2	ND	ND	ND	ND	515.0	11.2	ND	ND	568.0	549	573.5	8.29	ND	ND	ND	ND
LVWPS-A2-MW13B	1/27/2021	76.1	LVWPS-A2-MW13B-EM03	EM03	Zone 2	ND	ND	ND	ND	515.1	8.78	ND	ND	567.6	456	562.2 **	24.9	ND	ND	ND	ND
LVWPS-A2-MW13B	2/10/2021	76.1	LVWPS-A2-MW13B-EM04	EM04	Zone 2	ND	ND	ND	ND	515.3	3.45	ND	ND	567.1	190	574.2	7.01	ND	ND	ND	ND
LVWPS-A2-MW13B	3/11/2021	76.1	LVWPS-A2-MW13B-EM05	EM05	Zone 2	ND	ND	ND	ND	515.1	8.94	ND	ND	567.9	488	ND	ND	ND	ND	ND	ND
LVWPS-A2-MW14A	10/6/2020	42.9	LVWPS-A2-MW14A-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-A2-MW14A	10/6/2020	42.9	LVWPS-A2-MW14A-BL04-FD	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-A2-MW14A	12/12/2020	42.9	LVWPS-A2-MW14A-INJ	INJ	Zone 2	538.7 **	14.4	ND	ND	ND	ND	ND	ND	564.0 **	13.9	574.4	1.26	ND	ND	ND	ND
LVWPS-A2-MW14A	12/12/2020	42.9	LVWPS-A2-MW14A-INJ-FD	INJ	Zone 2	538.7 **	16.0	ND	ND	ND	ND	ND	ND	566.6	11.8	574.2	1.85	ND	ND	ND	ND
LVWPS-A2-MW14A	12/22/2020	42.9	LVWPS-A2-MW14A-EM01	EM01	Zone 2	539.4	15.2	ND	ND	ND	ND	ND	ND	566.6	38.6	573.6	1.44	ND	ND	ND	ND
LVWPS-A2-MW14A	12/22/2020	42.9	LVWPS-A2-MW14A-EM01-FD	EM01	Zone 2	539.4	16.6	ND	ND	ND	ND	ND	ND	566.4	50.8	572.6	3.35	ND	ND	ND	ND
LVWPS-A2-MW14A	1/13/2021	42.9	LVWPS-A2-MW14A-EM02	EM02	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	567.2	450	573.6	5.00	ND	ND	ND	ND
LVWPS-A2-MW14A	1/13/2021	42.9	LVWPS-A2-MW14A-EM02-FD	EM02	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	567.2	396	573.6	6.19	ND	ND	ND	ND
LVWPS-A2-MW14A	1/28/2021	42.9	LVWPS-A2-MW14A-EM03	EM03	Zone 2	ND	ND	ND	ND	514.4	1.62	ND	ND	568.3	294	566.2 **	19.2	ND	ND	ND	ND
LVWPS-A2-MW14A	1/28/2021	42.9	LVWPS-A2-MW14A-EM03-FD	EM03	Zone 2	ND	ND	ND	ND	514.8	1.43	ND	ND	567.8	293	563.5 **	23.1	ND	ND	ND	ND
LVWPS-A2-MW14A	2/9/2021	42.9	LVWPS-A2-MW14A-EM04	EM04	Zone 2	ND	ND	ND	ND	515.2	1.45	ND	ND	566.6	3,460	573.5	7.27	ND	ND	ND	ND
LVWPS-A2-MW14A	2/9/2021	42.9	LVWPS-A2-MW14A-EM04-FD	EM04	Zone 2	ND	ND	ND	ND	515.2	1.19	ND	ND	566.3	2,890	573.8	6.24	ND	ND	ND	ND
LVWPS-A2-MW14A	3/9/2021	42.9	LVWPS-A2-MW14A-EM05	EM05	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	567.2	1,510	573.8	3.36	ND	ND	ND	ND
LVWPS-A2-MW14B	10/6/2020	64.5	LVWPS-A2-MW14B-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-A2-MW14B	12/12/2020	64.5	LVWPS-A2-MW14B-INJ	INJ	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	564.0 **	5.37	573.4	0.222	ND	ND	ND	ND
LVWPS-A2-MW14B	12/22/2020	64.5	LVWPS-A2-MW14B-EM01	EM01	Zone 2	540.1	1.61	ND	ND	ND	ND	ND	ND	567.8	29.6	574.6	1.34	ND	ND	ND	ND
LVWPS-A2-MW14B	1/13/2021	64.5	LVWPS-A2-MW14B-EM02	EM02	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	567.6	104	ND	ND	ND	ND	ND	ND
LVWPS-A2-MW14B	1/25/2021	64.5	LVWPS-A2-MW14B-EM03	EM03	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	567.9	38.0	ND	ND	ND	ND	ND	ND
LVWPS-A2-MW14B	2/9/2021	64.5	LVWPS-A2-MW14B-EM04	EM04	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	567.9	48.2	574.9	0.908	ND	ND	ND	ND
LVWPS-A2-MW14B	3/10/2021	64.5	LVWPS-A2-MW14B-EM05	EM05	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	567.6	216	ND	ND	ND	ND	ND	ND

Table 8
Tracer Dye Analytical Results
 Las Vegas Wash Bioremediation Pilot Study

Location	Sample Date	Depth (ft bgs)	Sample ID	Event	Zone	Eosine		Eosine		Fluorescein		Fluorescein		Rhodamine WT (RWT)		Rhodamine WT (RWT)		Sulforhodamine B (SRB)		Sulforhodamine B (SRB)	
						Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
						Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)
LVWPS-A2-MW15A	10/7/2020	49.5	LVWPS-A2-MW15A-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-A2-MW15A	12/14/2020	49.5	LVWPS-A2-MW15A-INJ	INJ	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW15A	12/21/2020	49.5	LVWPS-A2-MW15A-EM01	EM01	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW15A	1/11/2021	49.5	LVWPS-A2-MW15A-EM02	EM02	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW15A	1/25/2021	49.5	LVWPS-A2-MW15A-EM03	EM03	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW15A	2/9/2021	49.5	LVWPS-A2-MW15A-EM04	EM04	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW15A	3/9/2021	49.5	LVWPS-A2-MW15A-EM05	EM05	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW15B	10/8/2020	79.9	LVWPS-A2-MW15B-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-A2-MW15B	12/14/2020	79.9	LVWPS-A2-MW15B-INJ	INJ	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW15B	12/22/2020	79.9	LVWPS-A2-MW15B-EM01	EM01	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW15B	1/12/2021	79.9	LVWPS-A2-MW15B-EM02	EM02	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW15B	1/26/2021	79.9	LVWPS-A2-MW15B-EM03	EM03	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW15B	2/9/2021	79.9	LVWPS-A2-MW15B-EM04	EM04	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW15B	3/9/2021	79.9	LVWPS-A2-MW15B-EM05	EM05	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW16A	10/9/2020	46	LVWPS-A2-MW16A-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-A2-MW16A	12/14/2020	46	LVWPS-A2-MW16A-INJ	INJ	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW16A	12/22/2020	46	LVWPS-A2-MW16A-EM01	EM01	Zone 2	ND	ND	ND	ND	514.2	1.83	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-A2-MW16A	1/12/2021	46	LVWPS-A2-MW16A-EM02	EM02	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW16A	1/25/2021	46	LVWPS-A2-MW16A-EM03	EM03	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW16A	2/9/2021	46	LVWPS-A2-MW16A-EM04	EM04	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW16A	3/12/2021	46	LVWPS-A2-MW16A-EM05	EM05	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW16B	10/9/2020	70.5	LVWPS-A2-MW16B-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-A2-MW16B	12/14/2020	70.5	LVWPS-A2-MW16B-INJ	INJ	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW16B	12/22/2020	70.5	LVWPS-A2-MW16B-EM01	EM01	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW16B	1/12/2021	70.5	LVWPS-A2-MW16B-EM02	EM02	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW16B	1/25/2021	70.5	LVWPS-A2-MW16B-EM03	EM03	Zone 2	540.0	0.973	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW16B	2/9/2021	70.5	LVWPS-A2-MW16B-EM04	EM04	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW16B	3/12/2021	70.5	LVWPS-A2-MW16B-EM05	EM05	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW17A	10/1/2020	50.1	LVWPS-A2-MW17A-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-A2-MW17A	12/14/2020	50.1	LVWPS-A2-MW17A-INJ	INJ	Zone 2	539.0 **	10.4	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW17A	12/22/2020	50.1	LVWPS-A2-MW17A-EM01	EM01	Zone 2	539.4	2.77	ND	ND	ND	ND	ND	ND	564.0 **	2.94	ND	ND	ND	ND	ND	ND
LVWPS-A2-MW17A	1/11/2021	50.1	LVWPS-A2-MW17A-EM02	EM02	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	567.7	119	572.2	2.96	ND	ND	ND	ND
LVWPS-A2-MW17A	1/26/2021	50.1	LVWPS-A2-MW17A-EM03	EM03	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	568.0	135	ND	ND	ND	ND	ND	ND
LVWPS-A2-MW17A	2/8/2021	50.1	LVWPS-A2-MW17A-EM04	EM04	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	567.2	289	574.2	2.15	ND	ND	ND	ND
LVWPS-A2-MW17A	3/8/2021	50.1	LVWPS-A2-MW17A-EM05	EM05	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	567.2	604	ND	ND	ND	ND	ND	ND
LVWPS-A2-MW17B	10/1/2020	75.2	LVWPS-A2-MW17B-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-A2-MW17B	12/14/2020	75.2	LVWPS-A2-MW17B-INJ	INJ	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW17B	12/22/2020	75.2	LVWPS-A2-MW17B-EM01	EM01	Zone 2	540.0	1.40	ND	ND	ND	ND	ND	ND	567.2	15.1	ND	ND	ND	ND	ND	ND
LVWPS-A2-MW17B	1/11/2021	75.2	LVWPS-A2-MW17B-EM02	EM02	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	568.0	110	ND	ND	ND	ND	ND	ND
LVWPS-A2-MW17B	1/26/2021	75.2	LVWPS-A2-MW17B-EM03	EM03	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	567.9	33.9	ND	ND	ND	ND	ND	ND
LVWPS-A2-MW17B	2/8/2021	75.2	LVWPS-A2-MW17B-EM04	EM04	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	567.0	51.1	572.2	2.91	ND	ND	ND	ND
LVWPS-A2-MW17B	3/8/2021	75.2	LVWPS-A2-MW17B-EM05	EM05	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	567.4	47.3	ND	ND	ND	ND	ND	ND
LVWPS-A2-MW17C	10/1/2020	100	LVWPS-A2-MW17C-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-A2-MW17C	12/14/2020	100	LVWPS-A2-MW17C-INJ	INJ	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW17C	12/22/2020	100	LVWPS-A2-MW17C-EM01	EM01	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	567.9	300	573.6	23.2	ND	ND	ND	ND
LVWPS-A2-MW17C	1/11/2021	100	LVWPS-A2-MW17C-EM02	EM02	Zone 2	538.8 **	5.42	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW17C	1/26/2021	100	LVWPS-A2-MW17C-EM03	EM03	Zone 2	537.0 **	0.676	ND	ND	515.2	0.799	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 8
Tracer Dye Analytical Results
 Las Vegas Wash Bioremediation Pilot Study

Location	Sample Date	Depth (ft bgs)	Sample ID	Event	Zone	Eosine		Eosine		Fluorescein		Fluorescein		Rhodamine WT (RWT)		Rhodamine WT (RWT)		Sulforhodamine B (SRB)		Sulforhodamine B (SRB)					
						Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
						Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)
LVWPS-A2-MW17C	2/8/2021	100	LVWPS-A2-MW17C-EM04	EM04	Zone 2	ND	ND	ND	ND	515.4	0.482	508.2	0.588	ND	ND	ND	ND	ND	ND	ND	ND				
LVWPS-A2-MW17C	3/8/2021	100	LVWPS-A2-MW17C-EM05	EM05	Zone 2	ND	ND	ND	ND	515.1	5.34	ND	ND	567.5	27.5	ND	ND	ND	ND	ND	ND				
LVWPS-A3-DR01	9/28/2020	65.5	LVWPS-A3-DR01-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-A3-DR01	12/16/2020	65.5	LVWPS-A3-DR01-20201216	INJ	Zone 3	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND				
LVWPS-A3-DR01	12/17/2020	65.5	LVWPS-A3-DR01-20201217	INJ	Zone 3	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND				
LVWPS-A3-DR01	12/29/2020	65.5	LVWPS-A3-DR01-INJ	INJ	Zone 3	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND				
LVWPS-A3-DR01	1/18/2021	65.5	LVWPS-A3-DR01-EM02	EM02	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A3-DR01	2/12/2021	65.5	LVWPS-A3-DR01-EM04	EM04	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A3-DR01	3/15/2021	65.5	LVWPS-A3-DR01-EM05	EM05	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A3-MW02	10/5/2020	62.5	LVWPS-A3-MW02-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-A3-MW02	12/30/2020	62.5	LVWPS-A3-MW02-INJ	INJ	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A3-MW02	1/14/2021	62.5	LVWPS-A3-MW02-EM02	EM02	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A3-MW02	2/11/2021	62.5	LVWPS-A3-MW02-EM04	EM04	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A3-MW02	3/11/2021	62.5	LVWPS-A3-MW02-EM05	EM05	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A3-MW06	10/5/2020	64.9	LVWPS-A3-MW06-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-A3-MW06	12/30/2020	64.9	LVWPS-A3-MW06-INJ	INJ	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A3-MW06	1/15/2021	64.9	LVWPS-A3-MW06-EM02	EM02	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A3-MW06	2/10/2021	64.9	LVWPS-A3-MW06-EM04	EM04	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A3-MW06	3/12/2021	64.9	LVWPS-A3-MW06-EM05	EM05	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A3-MW07	10/8/2020	64.5	LVWPS-A3-MW07-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-A3-MW07	12/30/2020	64.5	LVWPS-A3-MW07-INJ	INJ	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A3-MW07	1/15/2021	64.5	LVWPS-A3-MW07-EM02	EM02	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A3-MW07	2/11/2021	64.5	LVWPS-A3-MW07-EM04	EM04	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A3-MW07	3/11/2021	64.5	LVWPS-A3-MW07-EM05	EM05	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A3-MW08	10/8/2020	94.4	LVWPS-A3-MW08-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-A3-MW08	12/30/2020	94.4	LVWPS-A3-MW08-INJ	INJ	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A3-MW08	1/14/2021	94.4	LVWPS-A3-MW08-EM02	EM02	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A3-MW08	2/11/2021	94.4	LVWPS-A3-MW08-EM04	EM04	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A3-MW08	3/10/2021	94.4	LVWPS-A3-MW08-EM05	EM05	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A3-MW10	10/5/2020	66.1	LVWPS-A3-MW10-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-A3-MW10	1/14/2021	66.1	LVWPS-A3-MW10-EM02	EM02	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A3-MW10	2/11/2021	66.1	LVWPS-A3-MW10-EM04	EM04	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A3-MW10	3/11/2021	66.1	LVWPS-A3-MW10-EM05	EM05	Zone 3	ND	ND	---	---	ND	ND	---	---	564.6	2.15	---	---	ND	ND	---	---				
LVWPS-A3-MW11	10/7/2020	63.7	LVWPS-A3-MW11-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-A3-MW11	1/15/2021	63.7	LVWPS-A3-MW11-EM02	EM02	Zone 3	ND	ND	ND	ND	ND	ND	ND	ND	565.9	11.2	ND	ND	ND	ND	ND	ND				
LVWPS-A3-MW11	2/11/2021	63.7	LVWPS-A3-MW11-EM04	EM04	Zone 3	ND	ND	ND	ND	ND	ND	ND	ND	564.8	2.15	ND	ND	ND	ND	ND	ND				
LVWPS-A3-MW11	3/11/2021	63.7	LVWPS-A3-MW11-EM05	EM05	Zone 3	ND	ND	---	---	ND	ND	---	---	565.2	3.45	---	---	ND	ND	---	---				
LVWPS-A3-MW12	10/5/2020	69.1	LVWPS-A3-MW12-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-A3-MW12	1/13/2021	69.1	LVWPS-A3-MW12-EM02	EM02	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A3-MW12	2/12/2021	69.1	LVWPS-A3-MW12-EM04	EM04	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-A3-MW12	3/12/2021	69.1	LVWPS-A3-MW12-EM05	EM05	Zone 3	ND	ND	ND	ND	518.8	7.80	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND				
LVWPS-EW01	9/29/2020	64.4	LVWPS-EW01-BL04	BL04	Extraction	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-EW02	9/29/2020	42.8	LVWPS-EW02-BL04	BL04	Extraction	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-EW03	9/30/2020	54.8	LVWPS-EW03-BL04	BL04	Extraction	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-EW04	9/30/2020	35.7	LVWPS-EW04-BL04	BL04	Extraction	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-EW05	9/29/2020	64.9	LVWPS-EW05-BL04	BL04	Extraction	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-EW05	9/29/2020	64.9	LVWPS-EW05-BL04-FD	BL04	Extraction	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				

**Table 8
Tracer Dye Analytical Results
Las Vegas Wash Bioremediation Pilot Study**

Location	Sample Date	Depth (ft bgs)	Sample ID	Event	Zone	Eosine		Eosine		Fluorescein		Fluorescein		Rhodamine WT (RWT)		Rhodamine WT (RWT)		Sulforhodamine B (SRB)		Sulforhodamine B (SRB)	
						Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
						Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)
LVWPS-MW204	9/28/2020	60	LVWPS-MW204-BL04	BL04	General Vicinity	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-MW204	9/28/2020	60	LVWPS-MW204-BL04-FD	BL04	General Vicinity	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-MW204B	9/28/2020	111.2	LVWPS-MW204B-BL04	BL04	General Vicinity	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-MW207	9/28/2020	77.8	LVWPS-MW207-BL04	BL04	General Vicinity	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-MW207	12/22/2020	77.8	LVWPS-MW207-EM01	EM01	General Vicinity	ND	ND	ND	ND	514.3	1.72	ND	ND	562.3 **	33.3	ND	ND	ND	ND	ND	ND
LVWPS-MW207	1/18/2021	77.8	LVWPS-MW207-EM02	EM02	General Vicinity	ND	ND	ND	ND	515.8	12.0	ND	ND	562.6 **	18.9	ND	ND	ND	ND	ND	ND
LVWPS-MW207	1/29/2021	77.8	LVWPS-MW207-EM03	EM03	General Vicinity	ND	ND	ND	ND	515.5	8.77	ND	ND	560.5 **	11.6	ND	ND	ND	ND	ND	ND
LVWPS-MW207	2/12/2021	77.8	LVWPS-MW207-EM04	EM04	General Vicinity	ND	ND	ND	ND	516.1	7.72	ND	ND	561.9 **	13.4	ND	ND	ND	ND	ND	ND
LVWPS-MW207	3/12/2021	77.8	LVWPS-MW207-EM05	EM05	General Vicinity	ND	ND	ND	ND	515.4	12.4	ND	ND	561.7 **	32.5	ND	ND	ND	ND	ND	ND
LVWPS-MW208A	10/9/2020	49.6	LVWPS-MW208A-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-MW208A	12/12/2020	49.6	LVWPS-MW208A-INJ	INJ	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW208A	12/23/2020	49.6	LVWPS-MW208A-EM01	EM01	Zone 2	539.5	0.792	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW208A	1/13/2021	49.6	LVWPS-MW208A-EM02	EM02	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW208A	1/27/2021	49.6	LVWPS-MW208A-EM03	EM03	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW208A	2/10/2021	49.6	LVWPS-MW208A-EM04	EM04	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	564.7	2.16	ND	ND	ND	ND	ND	ND
LVWPS-MW208A	3/10/2021	49.6	LVWPS-MW208A-EM05	EM05	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW208B	10/9/2020	75	LVWPS-MW208B-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-MW208B	12/12/2020	75	LVWPS-MW208B-INJ	INJ	Zone 2	538.5 **	0.641	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW208B	12/23/2020	75	LVWPS-MW208B-EM01	EM01	Zone 2	539.7	10.7	ND	ND	ND	ND	ND	ND	567.6	139	ND	ND	ND	ND	ND	ND
LVWPS-MW208B	1/13/2021	75	LVWPS-MW208B-EM02	EM02	Zone 2	ND	ND	ND	ND	515.8	1.65	ND	ND	568.0	31.3	572.2	3.26	ND	ND	ND	ND
LVWPS-MW208B	1/27/2021	75	LVWPS-MW208B-EM03	EM03	Zone 2	ND	ND	ND	ND	514.4	1.26	ND	ND	568.6	16.8	ND	ND	ND	ND	ND	ND
LVWPS-MW208B	2/11/2021	75	LVWPS-MW208B-EM04	EM04	Zone 2	ND	ND	ND	ND	515.5	23.6	506.8	0.017	567.4	594	573.7	0.891	ND	ND	ND	ND
LVWPS-MW208B	3/10/2021	75	LVWPS-MW208B-EM05	EM05	Zone 2	ND	ND	ND	ND	514.7	2.06	ND	ND	567.9	73.9	573.8	3.03	ND	ND	ND	ND
LVWPS-MW209	10/6/2020	80.7	LVWPS-MW209-BL04	BL04	General Vicinity	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-MW209	12/21/2020	80.7	LVWPS-MW209-EM01	EM01	General Vicinity	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW209	1/18/2021	80.7	LVWPS-MW209-EM02	EM02	General Vicinity	541.0	2.14	ND	ND	ND	ND	ND	ND	565.6	17.4	ND	ND	ND	ND	ND	ND
LVWPS-MW209	1/27/2021	80.7	LVWPS-MW209-EM03	EM03	General Vicinity	543.0 **	1.01	ND	ND	ND	ND	ND	ND	564.8	13.6	ND	ND	ND	ND	ND	ND
LVWPS-MW209	2/12/2021	80.7	LVWPS-MW209-EM04	EM04	General Vicinity	ND	ND	ND	ND	515.7	0.761	ND	ND	564.6 **	37.1	ND	ND	ND	ND	ND	ND
LVWPS-MW209	3/11/2021	80.7	LVWPS-MW209-EM05	EM05	General Vicinity	ND	ND	ND	ND	515.7	2.56	ND	ND	564.7	48.6	ND	ND	ND	ND	ND	ND
LVWPS-MW209A	10/6/2020	45	LVWPS-MW209A-BL04	BL04	General Vicinity	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-MW209A	12/21/2020	45	LVWPS-MW209A-EM01	EM01	General Vicinity	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW209A	1/18/2021	45	LVWPS-MW209A-EM02	EM02	General Vicinity	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW209A	1/27/2021	45	LVWPS-MW209A-EM03	EM03	General Vicinity	539.6	0.743	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW209A	2/12/2021	45	LVWPS-MW209A-EM04	EM04	General Vicinity	541.0	0.744	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW209A	3/11/2021	45	LVWPS-MW209A-EM05	EM05	General Vicinity	541.5	1.23	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW209B	10/6/2020	120	LVWPS-MW209B-BL04	BL04	General Vicinity	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-MW210A	10/6/2020	44.8	LVWPS-MW210A-BL04	BL04	General Vicinity	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-MW210A	12/21/2020	44.8	LVWPS-MW210A-EM01	EM01	General Vicinity	ND	ND	ND	ND	ND	ND	ND	ND	561.7 **	27.6	ND	ND	ND	ND	ND	ND
LVWPS-MW210A	1/18/2021	44.8	LVWPS-MW210A-EM02	EM02	General Vicinity	ND	ND	ND	ND	ND	ND	ND	ND	561.6 **	14.3	ND	ND	ND	ND	ND	ND
LVWPS-MW210A	1/29/2021	44.8	LVWPS-MW210A-EM03	EM03	General Vicinity	ND	ND	ND	ND	ND	ND	ND	ND	560.7 **	5.45	ND	ND	ND	ND	ND	ND
LVWPS-MW210A	2/12/2021	44.8	LVWPS-MW210A-EM04	EM04	General Vicinity	ND	ND	ND	ND	ND	ND	ND	ND	561.9 **	15.5	ND	ND	ND	ND	ND	ND
LVWPS-MW210A	3/12/2021	44.8	LVWPS-MW210A-EM05	EM05	General Vicinity	ND	ND	ND	ND	ND	ND	ND	ND	561.2 **	23.7	ND	ND	ND	ND	ND	ND
LVWPS-MW210B	10/6/2020	79.6	LVWPS-MW210B-BL04	BL04	General Vicinity	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-MW210B	12/21/2020	79.6	LVWPS-MW210B-EM01	EM01	General Vicinity	541.0	2.19	ND	ND	ND	ND	ND	ND	563.4 **	19.0	ND	ND	ND	ND	ND	ND
LVWPS-MW210B	1/18/2021	79.6	LVWPS-MW210B-EM02	EM02	General Vicinity	540.6 **	3.52	ND	ND	516.1	2.89	ND	ND	567.2	101	ND	ND	ND	ND	ND	ND
LVWPS-MW210B	1/29/2021	79.6	LVWPS-MW210B-EM03	EM03	General Vicinity	ND	ND	ND	ND	515.7	4.72	ND	ND	567.5	90.8	ND	ND	ND	ND	ND	ND
LVWPS-MW210B	2/12/2021	79.6	LVWPS-MW210B-EM04	EM04	General Vicinity	ND	ND	ND	ND	515.4	0.533	ND	ND	564.8	19.7	575.2	0.078	ND	ND	ND	ND

Table 8
Tracer Dye Analytical Results
 Las Vegas Wash Bioremediation Pilot Study

Location	Sample Date	Depth (ft bgs)	Sample ID	Event	Zone	Eosine		Eosine		Fluorescein		Fluorescein		Rhodamine WT (RWT)		Rhodamine WT (RWT)		Sulforhodamine B (SRB)		Sulforhodamine B (SRB)	
						Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
						Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)
LVWPS-MW210B	3/12/2021	79.6	LVWPS-MW210B-EM05	EM05	General Vicinity	ND	ND	ND	ND	515.8	2.61	ND	ND	565.2	29.0	ND	ND	ND	ND	ND	ND
LVWPS-MW211	9/30/2020	59.6	LVWPS-MW211-BL04	BL04	General Vicinity	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-MW211	12/21/2020	59.6	LVWPS-MW211-EM01	EM01	General Vicinity	ND	ND	ND	ND	513.9 **	2.27	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-MW211	1/18/2021	59.6	LVWPS-MW211-EM02	EM02	General Vicinity	538.8 **	3.31	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW211	1/29/2021	59.6	LVWPS-MW211-EM03	EM03	General Vicinity	538.0 **	0.958	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW211	2/12/2021	59.6	LVWPS-MW211-EM04	EM04	General Vicinity	ND	ND	ND	ND	516.8	1.23	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-MW211	3/12/2021	59.6	LVWPS-MW211-EM05	EM05	General Vicinity	ND	ND	ND	ND	515.4	3.36	ND	ND	564.6	3.90	ND	ND	ND	ND	ND	ND
LVWPS-MW212A	10/5/2020	43.9	LVWPS-MW212A-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-MW212A	12/21/2020	43.9	LVWPS-MW212A-EM01	EM01	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW212A	1/18/2021	43.9	LVWPS-MW212A-EM02	EM02	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW212A	1/27/2021	43.9	LVWPS-MW212A-EM03	EM03	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW212A	2/12/2021	43.9	LVWPS-MW212A-EM04	EM04	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW212A	3/12/2021	43.9	LVWPS-MW212A-EM05	EM05	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW212B	10/5/2020	69.7	LVWPS-MW212B-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-MW212B	12/22/2020	69.7	LVWPS-MW212B-EM01	EM01	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW212B	1/18/2021	69.7	LVWPS-MW212B-EM02	EM02	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW212B	1/27/2021	69.7	LVWPS-MW212B-EM03	EM03	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW212B	2/12/2021	69.7	LVWPS-MW212B-EM04	EM04	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW212B	3/12/2021	69.7	LVWPS-MW212B-EM05	EM05	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW217A	9/30/2020	61	LVWPS-MW217A-BL04	BL04	Zone 1	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-MW217A	1/12/2021	61	LVWPS-MW217A-EM02	EM02	Zone 1	ND	ND	ND	ND	515.2	6.87	ND	ND	562.9 **	42.0	ND	ND	ND	ND	ND	ND
LVWPS-MW217A	2/9/2021	61	LVWPS-MW217A-EM04	EM04	Zone 1	ND	ND	ND	ND	ND	ND	ND	ND	562.5 **	33.3	ND	ND	ND	ND	ND	ND
LVWPS-MW217A	3/12/2021	61	LVWPS-MW217A-EM05	EM05	Zone 1	ND	ND	ND	ND	ND	ND	ND	ND	562.1 **	20.5	ND	ND	ND	ND	ND	ND
LVWPS-MW217B	9/30/2020	110.1	LVWPS-MW217B-BL04	BL04	Zone 1	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-MW217B	1/13/2021	110.1	LVWPS-MW217B-EM02	EM02	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW217B	2/10/2021	110.1	LVWPS-MW217B-EM04	EM04	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW217B	3/10/2021	110.1	LVWPS-MW217B-EM05	EM05	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW217C	10/5/2020	165.1	LVWPS-MW217C-BL04	BL04	Zone 1	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-MW217C	1/13/2021	165.1	LVWPS-MW217C-EM02	EM02	Zone 1	ND	ND	ND	ND	ND	ND	ND	ND	560.3 **	1.90	ND	ND	ND	ND	ND	ND
LVWPS-MW217C	1/13/2021	165.1	LVWPS-MW217C-EM02-FD	EM02	Zone 1	ND	ND	ND	ND	ND	ND	ND	ND	558.2 **	2.70	ND	ND	ND	ND	ND	ND
LVWPS-MW217C	2/10/2021	165.1	LVWPS-MW217C-EM04	EM04	Zone 1	ND	ND	ND	ND	ND	ND	ND	ND	561.6 **	1.30	ND	ND	ND	ND	ND	ND
LVWPS-MW217C	2/10/2021	165.1	LVWPS-MW217C-EM04-FD	EM04	Zone 1	ND	ND	ND	ND	ND	ND	ND	ND	558.8 **	1.68	ND	ND	ND	ND	ND	ND
LVWPS-MW217C	3/10/2021	165.1	LVWPS-MW217C-EM05	EM05	Zone 1	ND	ND	---	---	ND	ND	---	---	559.2 **	1.44	---	---	ND	ND	---	---
LVWPS-MW218A	10/5/2020	44.9	LVWPS-MW218A-BL04	BL04	General Vicinity	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-MW218A	12/21/2020	44.9	LVWPS-MW218A-EM01	EM01	General Vicinity	ND	ND	ND	ND	ND	ND	ND	ND	561.7 **	13.1	ND	ND	ND	ND	ND	ND
LVWPS-MW218A	1/18/2021	44.9	LVWPS-MW218A-EM02	EM02	General Vicinity	ND	ND	ND	ND	ND	ND	ND	ND	561.9 **	9.72	ND	ND	ND	ND	ND	ND
LVWPS-MW218A	1/26/2021	44.9	LVWPS-MW218A-EM03	EM03	General Vicinity	ND	ND	ND	ND	ND	ND	ND	ND	562.3 **	2.38	ND	ND	ND	ND	ND	ND
LVWPS-MW218A	2/12/2021	44.9	LVWPS-MW218A-EM04	EM04	General Vicinity	ND	ND	ND	ND	ND	ND	ND	ND	562.5 **	11.0	ND	ND	ND	ND	ND	ND
LVWPS-MW218A	3/15/2021	44.9	LVWPS-MW218A-EM05	EM05	General Vicinity	ND	ND	ND	ND	ND	ND	ND	ND	562.0 **	17.3	ND	ND	ND	ND	ND	ND
LVWPS-MW220A	10/5/2020	69.8	LVWPS-MW220A-BL04	BL04	General Vicinity	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-MW220A	12/21/2020	69.8	LVWPS-MW220A-EM01	EM01	General Vicinity	ND	ND	ND	ND	ND	ND	ND	ND	567.2	1.32	ND	ND	ND	ND	ND	ND
LVWPS-MW220A	1/18/2021	69.8	LVWPS-MW220A-EM02	EM02	General Vicinity	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW220A	1/28/2021	69.8	LVWPS-MW220A-EM03	EM03	General Vicinity	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW220A	2/12/2021	69.8	LVWPS-MW220A-EM04	EM04	General Vicinity	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW220A	3/11/2021	69.8	LVWPS-MW220A-EM05	EM05	General Vicinity	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW221A	10/6/2020	60	LVWPS-MW221A-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-MW221A	12/12/2020	60	LVWPS-MW221A-INJ	INJ	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	562.4 **	4.93	ND	ND	ND	ND	ND	ND

Table 8
Tracer Dye Analytical Results
 Las Vegas Wash Bioremediation Pilot Study

Location	Sample Date	Depth (ft bgs)	Sample ID	Event	Zone	Eosine		Eosine		Fluorescein		Fluorescein		Rhodamine WT (RWT)		Rhodamine WT (RWT)		Sulforhodamine B (SRB)		Sulforhodamine B (SRB)	
						Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
						Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)
LVWPS-MW221A	12/22/2020	60	LVWPS-MW221A-EM01	EM01	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW221A	1/12/2021	60	LVWPS-MW221A-EM02	EM02	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW221A	1/28/2021	60	LVWPS-MW221A-EM03	EM03	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW221A	2/8/2021	60	LVWPS-MW221A-EM04	EM04	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW221A	3/9/2021	60	LVWPS-MW221A-EM05	EM05	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	562.0 **	2.99	ND	ND	ND	ND	ND	ND
LVWPS-MW221B	10/6/2020	93.4	LVWPS-MW221B-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-MW223A	10/6/2020	55.1	LVWPS-MW223A-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-MW223A	10/6/2020	55.1	LVWPS-MW223A-BL04-FD	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-MW223A	12/14/2020	55.1	LVWPS-MW223A-INJ	INJ	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW223A	12/22/2020	55.1	LVWPS-MW223A-EM01	EM01	Zone 2	539.4	6.82	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW223A	1/11/2021	55.1	LVWPS-MW223A-EM02	EM02	Zone 2	538.5 **	22.1	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW223A	1/26/2021	55.1	LVWPS-MW223A-EM03	EM03	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW223A	2/8/2021	55.1	LVWPS-MW223A-EM04	EM04	Zone 2	ND	ND	ND	ND	513.5 **	0.717	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-MW223A	3/8/2021	55.1	LVWPS-MW223A-EM05	EM05	Zone 2	ND	ND	ND	ND	515.1	6.58	ND	ND	567.8	261	573.1	0.282	ND	ND	ND	ND
LVWPS-MW223B	10/6/2020	80.1	LVWPS-MW223B-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-MW223B	12/14/2020	80.1	LVWPS-MW223B-INJ	INJ	Zone 2	539.7	3.39	ND	ND	ND	ND	ND	ND	566.1	17.6	ND	ND	ND	ND	ND	ND
LVWPS-MW223B	12/22/2020	80.1	LVWPS-MW223B-EM01	EM01	Zone 2	540.2	2.29	ND	ND	ND	ND	ND	ND	567.6	28.4	ND	ND	ND	ND	ND	ND
LVWPS-MW223B	1/11/2021	80.1	LVWPS-MW223B-EM02	EM02	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	567.6	23.3	ND	ND	ND	ND	ND	ND
LVWPS-MW223B	1/28/2021	80.1	LVWPS-MW223B-EM03	EM03	Zone 2	539.4	0.538	ND	ND	515.2	0.604	ND	ND	568.6	4.11	ND	ND	ND	ND	ND	ND
LVWPS-MW223B	2/8/2021	80.1	LVWPS-MW223B-EM04	EM04	Zone 2	ND	ND	ND	ND	515.2	5.89	508.2	0.617	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-MW223B	3/8/2021	80.1	LVWPS-MW223B-EM05	EM05	Zone 2	ND	ND	ND	ND	515.4	41.9	ND	ND	567.2	15.0	ND	ND	ND	ND	ND	ND
LVWPS-MW223C	10/7/2020	102.6	LVWPS-MW223C-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-MW223C	1/11/2021	102.6	LVWPS-MW223C-EM02	EM02	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW223C	2/8/2021	102.6	LVWPS-MW223C-EM04	EM04	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW223C	3/8/2021	102.6	LVWPS-MW223C-EM05	EM05	Zone 2	ND	ND	ND	ND	515.1	0.987	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-MW224A	10/7/2020	65	LVWPS-MW224A-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-MW224A	12/23/2020	65	LVWPS-MW224A-EM01	EM01	Zone 2	ND	ND	ND	ND	ND	ND	ND	ND	562.0 **	3.35	ND	ND	ND	ND	ND	ND
LVWPS-MW224A	1/18/2021	65	LVWPS-MW224A-EM02	EM02	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW224A	1/29/2021	65	LVWPS-MW224A-EM03	EM03	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW224A	2/12/2021	65	LVWPS-MW224A-EM04	EM04	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW224A	3/11/2021	65	LVWPS-MW224A-EM05	EM05	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U1-DR01A	9/28/2020	102.6	LVWPS-U1-DR01A-BL04	BL04	Zone 1	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-U1-DR01A	12/13/2020	102.6	LVWPS-U1-DR01A-20201213-1	INJ	Zone 1	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR01A	12/13/2020	102.6	LVWPS-U1-DR01A-20201213-2	INJ	Zone 1	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR01A	12/13/2020	102.6	LVWPS-U1-DR01A-20201213-3	INJ	Zone 1	---	---	ND	ND	---	---	507.1	0.959	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR01A	12/13/2020	102.6	LVWPS-U1-DR01A-20201213-4	INJ	Zone 1	---	---	ND	ND	---	---	513.8	0.901	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR01A	12/14/2020	102.6	LVWPS-U1-DR01A-20201214-5	INJ	Zone 1	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR01A	12/14/2020	102.6	LVWPS-U1-DR01A-20201214-6	INJ	Zone 1	---	---	ND	ND	---	---	515.2	3.35	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR01A	12/14/2020	102.6	LVWPS-U1-DR01A-20201214-1	INJ	Zone 1	---	---	ND	ND	---	---	514.9	1.79	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR01A	12/14/2020	102.6	LVWPS-U1-DR01A-20201214-2	INJ	Zone 1	---	---	ND	ND	---	---	515.2	18.2	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR01A	12/14/2020	102.6	LVWPS-U1-DR01A-20201214-3	INJ	Zone 1	---	---	ND	ND	---	---	506.8	1.18	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR01A	12/14/2020	102.6	LVWPS-U1-DR01A-20201214-4	INJ	Zone 1	---	---	ND	ND	---	---	515.0	3.03	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR01A	12/29/2020	102.6	LVWPS-U1-DR01A-INJ	INJ	Zone 1	---	---	ND	ND	---	---	507.0	0.700	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR01A	1/12/2021	102.6	LVWPS-U1-DR01A-EM02	EM02	Zone 1	ND	ND	ND	ND	515.4	22.8	515.4 **	1.98	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U1-DR01A	2/11/2021	102.6	LVWPS-U1-DR01A-EM04	EM04	Zone 1	ND	ND	ND	ND	515.5	31.1	507.2	1.59	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U1-DR01A	3/15/2021	102.6	LVWPS-U1-DR01A-EM05	EM05	Zone 1	ND	ND	ND	ND	515.4	8.59	507.4	1.33	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U1-DR01B	9/28/2020	136.1	LVWPS-U1-DR01B-BL04	BL04	Zone 1	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---

Table 8
Tracer Dye Analytical Results
 Las Vegas Wash Bioremediation Pilot Study

Location	Sample Date	Depth (ft bgs)	Sample ID	Event	Zone	Eosine		Eosine		Fluorescein		Fluorescein		Rhodamine WT (RWT)		Rhodamine WT (RWT)		Sulforhodamine B (SRB)		Sulforhodamine B (SRB)	
						Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
						Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)
LVWPS-U1-DR01B	9/28/2020	136.1	LVWPS-U1-DR01B-BL04-FD	BL04	Zone 1	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-U1-DR01B	12/13/2020	136.1	LVWPS-U1-DR01B-20201213-1	INJ	Zone 1	---	---	ND	ND	---	---	515.4	17.1	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR01B	12/13/2020	136.1	LVWPS-U1-DR01B-20201213-2	INJ	Zone 1	---	---	ND	ND	---	---	514.1	177	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR01B	12/13/2020	136.1	LVWPS-U1-DR01B-20201213-3	INJ	Zone 1	---	---	ND	ND	---	---	513.7	179	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR01B	12/14/2020	136.1	LVWPS-U1-DR01B-20201214-5	INJ	Zone 1	---	---	ND	ND	---	---	513.2	165	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR01B	12/14/2020	136.1	LVWPS-U1-DR01B-20201214-6	INJ	Zone 1	---	---	ND	ND	---	---	513.5	96.5	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR01B	12/14/2020	136.1	LVWPS-U1-DR01B-20201214-1	INJ	Zone 1	---	---	ND	ND	---	---	515.7	136	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR01B	12/14/2020	136.1	LVWPS-U1-DR01B-20201214-2	INJ	Zone 1	---	---	ND	ND	---	---	515.7	167	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR01B	12/14/2020	136.1	LVWPS-U1-DR01B-20201214-3	INJ	Zone 1	---	---	ND	ND	---	---	515.7	259	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR01B	12/14/2020	136.1	LVWPS-U1-DR01B-20201214-4	INJ	Zone 1	---	---	ND	ND	---	---	513.8	204	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR01B	12/29/2020	136.1	LVWPS-U1-DR01B-INJ	INJ	Zone 1	---	---	ND	ND	---	---	515.4 **	65.6	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR01B	1/12/2021	136.1	LVWPS-U1-DR01B-EM02	EM02	Zone 1	ND	ND	ND	ND	516.5	91.9	15.8 **	56.9	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U1-DR01B	2/11/2021	136.1	LVWPS-U1-DR01B-EM04	EM04	Zone 1	ND	ND	ND	ND	517.3	98.7	515.5 **	144	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U1-DR01B	3/15/2021	136.1	LVWPS-U1-DR01B-EM05	EM05	Zone 1	ND	ND	ND	ND	517.1	127	515.7 **	138	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U1-DR02A	9/28/2020	101.6	LVWPS-U1-DR02A-BL04	BL04	Zone 1	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-U1-DR02A	12/13/2020	101.6	LVWPS-U1-DR02A-20201213-1	INJ	Zone 1	---	---	ND	ND	---	---	515.3	23.4	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR02A	12/13/2020	101.6	LVWPS-U1-DR02A-20201213-2	INJ	Zone 1	---	---	ND	ND	---	---	515.2	11.8	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR02A	12/13/2020	101.6	LVWPS-U1-DR02A-20201213-3	INJ	Zone 1	---	---	ND	ND	---	---	514.6	10.0	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR02A	12/13/2020	101.6	LVWPS-U1-DR02A-20201213-4	INJ	Zone 1	---	---	ND	ND	---	---	515.1	12.9	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR02A	12/14/2020	101.6	LVWPS-U1-DR02A-20201214-5	INJ	Zone 1	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR02A	12/14/2020	101.6	LVWPS-U1-DR02A-20201214-6	INJ	Zone 1	---	---	ND	ND	---	---	516.1	3.35	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR02A	12/14/2020	101.6	LVWPS-U1-DR02A-20201214-6-DU	INJ	Zone 1	---	---	ND	ND	---	---	515.4	2.63	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR02A	12/14/2020	101.6	LVWPS-U1-DR02A-20201214-1	INJ	Zone 1	---	---	ND	ND	---	---	515.6	5.08	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR02A	12/14/2020	101.6	LVWPS-U1-DR02A-20201214-2	INJ	Zone 1	---	---	ND	ND	---	---	515.9	3.81	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR02A	12/14/2020	101.6	LVWPS-U1-DR02A-20201214-3	INJ	Zone 1	---	---	ND	ND	---	---	515.3	22.9	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR02A	12/14/2020	101.6	LVWPS-U1-DR02A-20201214-4	INJ	Zone 1	---	---	ND	ND	---	---	515.3	18.4	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR02A	12/29/2020	101.6	LVWPS-U1-DR02A-INJ	INJ	Zone 1	---	---	ND	ND	---	---	515.9 **	8.30	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR02A	1/12/2021	101.6	LVWPS-U1-DR02A-EM02	EM02	Zone 1	ND	ND	ND	ND	515.3	14.7	516.7 **	14.0	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U1-DR02A	2/11/2021	101.6	LVWPS-U1-DR02A-EM04	EM04	Zone 1	ND	ND	ND	ND	516.1	54.6	516.2 **	10.1	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U1-DR02A	3/15/2021	101.6	LVWPS-U1-DR02A-EM05	EM05	Zone 1	ND	ND	ND	ND	515.7	18.7	515.4 **	2.00	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U1-DR02B	9/28/2020	137.5	LVWPS-U1-DR02B-BL04	BL04	Zone 1	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-U1-DR02B	12/13/2020	137.5	LVWPS-U1-DR02B-20201213-1	INJ	Zone 1	---	---	ND	ND	---	---	506.8	0.087	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR02B	12/13/2020	137.5	LVWPS-U1-DR02B-20201213-2	INJ	Zone 1	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR02B	12/13/2020	137.5	LVWPS-U1-DR02B-20201213-3	INJ	Zone 1	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR02B	12/14/2020	137.5	LVWPS-U1-DR02B-20201214-5	INJ	Zone 1	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR02B	12/14/2020	137.5	LVWPS-U1-DR02B-20201214-4	INJ	Zone 1	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR02B	12/14/2020	137.5	LVWPS-U1-DR02B-20201214-1	INJ	Zone 1	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR02B	12/14/2020	137.5	LVWPS-U1-DR02B-20201214-2	INJ	Zone 1	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR02B	12/14/2020	137.5	LVWPS-U1-DR02B-20201214-3	INJ	Zone 1	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR02B	12/29/2020	137.5	LVWPS-U1-DR02B-INJ	INJ	Zone 1	---	---	ND	ND	---	---	507.0	1.01	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR02B	1/12/2021	137.5	LVWPS-U1-DR02B-EM02	EM02	Zone 1	ND	ND	ND	ND	515.2	2.99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U1-DR02B	2/11/2021	137.5	LVWPS-U1-DR02B-EM04	EM04	Zone 1	ND	ND	ND	ND	515.4	12.4	507.2	0.173	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U1-DR02B	3/15/2021	137.5	LVWPS-U1-DR02B-EM05	EM05	Zone 1	ND	ND	ND	ND	515.4	4.14	507.9	0.098	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U1-MW01A	9/28/2020	102.6	LVWPS-U1-MW01A-BL04	BL04	Zone 1	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-U1-MW01A	12/13/2020	102.6	LVWPS-U1-MW01A-20201213	INJ	Zone 1	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-MW01A	12/28/2020	102.6	LVWPS-U1-MW01A-INJ	INJ	Zone 1	ND	ND	ND	ND	ND	ND	ND	ND	558.0 **	3.15	ND	ND	ND	ND	ND	ND
LVWPS-U1-MW01A	1/14/2021	102.6	LVWPS-U1-MW01A-EM02	EM02	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---

Table 8
Tracer Dye Analytical Results
Las Vegas Wash Bioremediation Pilot Study

Location	Sample Date	Depth (ft bgs)	Sample ID	Event	Zone	Eosine		Eosine		Fluorescein		Fluorescein		Rhodamine WT (RWT)		Rhodamine WT (RWT)		Sulforhodamine B (SRB)		Sulforhodamine B (SRB)					
						Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
						Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)
LVWPS-U1-MW01A	2/10/2021	102.6	LVWPS-U1-MW01A-EM04	EM04	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U1-MW01A	3/11/2021	102.6	LVWPS-U1-MW01A-EM05	EM05	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U1-MW01B	9/28/2020	143.4	LVWPS-U1-MW01B-BL04	BL04	Zone 1	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-U1-MW01B	12/28/2020	143.4	LVWPS-U1-MW01B-INJ	INJ	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U1-MW01B	1/14/2021	143.4	LVWPS-U1-MW01B-EM02	EM02	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U1-MW01B	2/10/2021	143.4	LVWPS-U1-MW01B-EM04	EM04	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U1-MW01B	3/11/2021	143.4	LVWPS-U1-MW01B-EM05	EM05	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U1-MW02A	9/29/2020	106.4	LVWPS-U1-MW02A-BL04	BL04	Zone 1	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-U1-MW02A	12/13/2020	106.4	LVWPS-U1-MW02A-20201213	INJ	Zone 1	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND				
LVWPS-U1-MW02A	12/29/2020	106.4	LVWPS-U1-MW02A-INJ	INJ	Zone 1	ND	ND	ND	ND	ND	ND	ND	ND	560.6 **	1.92	ND	ND	ND	ND	ND	ND				
LVWPS-U1-MW02A	1/14/2021	106.4	LVWPS-U1-MW02A-EM02	EM02	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U1-MW02A	2/11/2021	106.4	LVWPS-U1-MW02A-EM04	EM04	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U1-MW02A	3/11/2021	106.4	LVWPS-U1-MW02A-EM05	EM05	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U1-MW02B	10/7/2020	149.1	LVWPS-U1-MW02B-BL04	BL04	Zone 1	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-U1-MW02B	12/13/2020	149.1	LVWPS-U1-MW02B-20201213	INJ	Zone 1	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND				
LVWPS-U1-MW02B	12/13/2020	149.1	LVWPS-U1-MW02B-20201213	INJ	Zone 1	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND				
LVWPS-U1-MW02B	12/29/2020	149.1	LVWPS-U1-MW02B-INJ	INJ	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U1-MW02B	1/14/2021	149.1	LVWPS-U1-MW02B-EM02	EM02	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U1-MW02B	2/11/2021	149.1	LVWPS-U1-MW02B-EM04	EM04	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U1-MW02B	3/11/2021	149.1	LVWPS-U1-MW02B-EM05	EM05	Zone 1	ND	ND	ND	ND	514.9	1.54	ND	ND	560.6 **	1.57	ND	ND	ND	ND	ND	ND				
LVWPS-U1-MW03B	9/29/2020	144.2	LVWPS-U1-MW03B-BL04	BL04	Zone 1	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-U1-MW03B	12/29/2020	144.2	LVWPS-U1-MW03B-INJ	INJ	Zone 1	ND	ND	ND	ND	ND	ND	ND	ND	560.1 **	4.66	ND	ND	ND	ND	ND	ND				
LVWPS-U1-MW03B	1/14/2021	144.2	LVWPS-U1-MW03B-EM02	EM02	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U1-MW03B	2/11/2021	144.2	LVWPS-U1-MW03B-EM04	EM04	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U1-MW03B	3/11/2021	144.2	LVWPS-U1-MW03B-EM05	EM05	Zone 1	ND	ND	---	---	ND	ND	---	---	563.0 **	1.01	---	---	ND	ND	---	---				
LVWPS-U1-MW04A	9/30/2020	111.5	LVWPS-U1-MW04A-BL04	BL04	Zone 1	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-U1-MW04A	12/29/2020	111.5	LVWPS-U1-MW04A-INJ	INJ	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U1-MW04A	1/13/2021	111.5	LVWPS-U1-MW04A-EM02	EM02	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U1-MW04A	2/10/2021	111.5	LVWPS-U1-MW04A-EM04	EM04	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U1-MW04A	3/9/2021	111.5	LVWPS-U1-MW04A-EM05	EM05	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U1-MW04B	10/1/2020	152.1	LVWPS-U1-MW04B-BL04	BL04	Zone 1	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-U1-MW04B	12/29/2020	152.1	LVWPS-U1-MW04B-INJ	INJ	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U1-MW04B	1/13/2021	152.1	LVWPS-U1-MW04B-EM02	EM02	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U1-MW04B	2/9/2021	152.1	LVWPS-U1-MW04B-EM04	EM04	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U1-MW04B	3/9/2021	152.1	LVWPS-U1-MW04B-EM05	EM05	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U1-MW05A	9/29/2020	107.8	LVWPS-U1-MW05A-BL04	BL04	Zone 1	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-U1-MW05A	12/29/2020	107.8	LVWPS-U1-MW05A-INJ	INJ	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U1-MW05A	1/18/2021	107.8	LVWPS-U1-MW05A-EM02	EM02	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U1-MW05A	2/10/2021	107.8	LVWPS-U1-MW05A-EM04	EM04	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U1-MW05A	3/10/2021	107.8	LVWPS-U1-MW05A-EM05	EM05	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U1-MW05B	9/29/2020	149.1	LVWPS-U1-MW05B-BL04	BL04	Zone 1	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-U1-MW05B	12/29/2020	149.1	LVWPS-U1-MW05B-INJ	INJ	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U1-MW05B	1/13/2021	149.1	LVWPS-U1-MW05B-EM02	EM02	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U1-MW05B	2/10/2021	149.1	LVWPS-U1-MW05B-EM04	EM04	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U1-MW05B	3/9/2021	149.1	LVWPS-U1-MW05B-EM05	EM05	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U1-MW06A	9/29/2020	95.1	LVWPS-U1-MW06A-BL04	BL04	Zone 1	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-U1-MW06A	12/28/2020	95.1	LVWPS-U1-MW06A-INJ	INJ	Zone 1	ND	ND	ND	ND	ND	ND	ND	ND	562.2 **	4.66	ND	ND	ND	ND	ND	ND				

Table 8
Tracer Dye Analytical Results
 Las Vegas Wash Bioremediation Pilot Study

Location	Sample Date	Depth (ft bgs)	Sample ID	Event	Zone	Eosine		Eosine		Fluorescein		Fluorescein		Rhodamine WT (RWT)		Rhodamine WT (RWT)		Sulforhodamine B (SRB)		Sulforhodamine B (SRB)	
						Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
						Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)
LVWPS-U1-MW06A	1/14/2021	95.1	LVWPS-U1-MW06A-EM02	EM02	Zone 1	ND	ND	ND	ND	ND	ND	ND	ND	562.5 **	3.81	ND	ND	ND	ND	ND	ND
LVWPS-U1-MW06A	2/9/2021	95.1	LVWPS-U1-MW06A-EM04	EM04	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U1-MW06A	3/10/2021	95.1	LVWPS-U1-MW06A-EM05	EM05	Zone 1	ND	ND	---	---	ND	ND	---	---	563.4 **	1.68	---	---	ND	ND	---	---
LVWPS-U1-MW06B	9/29/2020	121.3	LVWPS-U1-MW06B-BL04	BL04	Zone 1	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-U1-MW06B	12/28/2020	121.3	LVWPS-U1-MW06B-INJ	INJ	Zone 1	ND	ND	ND	ND	515.1	7.50	506.8	0.125	562.5 **	2.85	ND	ND	ND	ND	ND	ND
LVWPS-U1-MW06B	1/12/2021	121.3	LVWPS-U1-MW06B-EM02	EM02	Zone 1	ND	ND	ND	ND	515.1	2.02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U1-MW06B	2/10/2021	121.3	LVWPS-U1-MW06B-EM04	EM04	Zone 1	ND	ND	ND	ND	514.4	0.937	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U1-MW06B	3/10/2021	121.3	LVWPS-U1-MW06B-EM05	EM05	Zone 1	ND	ND	ND	ND	514.5	1.38	ND	ND	562.7 **	1.95	ND	ND	ND	ND	ND	ND
LVWPS-U1-MW07	9/30/2020	98.5	LVWPS-U1-MW07-BL04	BL04	Zone 1	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-U1-MW07	12/29/2020	98.5	LVWPS-U1-MW07-INJ	INJ	Zone 1	ND	ND	ND	ND	515.3	37.2	507.1	0.684	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U1-MW07	1/14/2021	98.5	LVWPS-U1-MW07-EM02	EM02	Zone 1	ND	ND	ND	ND	514.9	0.690	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U1-MW07	2/10/2021	98.5	LVWPS-U1-MW07-EM04	EM04	Zone 1	ND	ND	ND	ND	514.7	0.992	507.1	0.243	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U1-MW07	3/12/2021	98.5	LVWPS-U1-MW07-EM05	EM05	Zone 1	ND	ND	ND	ND	515.2	0.824	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U1-MW08A	9/30/2020	106.1	LVWPS-U1-MW08A-BL04	BL04	Zone 1	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-U1-MW08A	12/29/2020	106.1	LVWPS-U1-MW08A-INJ	INJ	Zone 1	ND	ND	ND	ND	516.2	470	514.7 **	12.2	567.0	5.61	561.3 **	1.28	ND	ND	ND	ND
LVWPS-U1-MW08A	1/12/2021	106.1	LVWPS-U1-MW08A-EM02	EM02	Zone 1	ND	ND	ND	ND	515.3	101	515.6 **	12.6	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U1-MW08A	2/9/2021	106.1	LVWPS-U1-MW08A-EM04	EM04	Zone 1	ND	ND	ND	ND	515.5	29.9	507.4	4.74	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U1-MW08A	3/11/2021	106.1	LVWPS-U1-MW08A-EM05	EM05	Zone 1	ND	ND	ND	ND	515.4	88.1	513.4 **	3.02	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U1-MW08B	9/30/2020	137.6	LVWPS-U1-MW08B-BL04	BL04	Zone 1	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-U1-MW08B	12/13/2020	137.6	LVWPS-U1-MW08B-20201213-1	INJ	Zone 1	---	---	ND	ND	---	---	514.9	11.0	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-MW08B	12/13/2020	137.6	LVWPS-U1-MW08B-20201213	INJ	Zone 1	---	---	ND	ND	---	---	515.8	2.54	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-MW08B	12/13/2020	137.6	LVWPS-U1-MW08B-20201213-2	INJ	Zone 1	---	---	ND	ND	---	---	515.2	16.5	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-MW08B	12/14/2020	137.6	LVWPS-U1-MW08B-20201214	INJ	Zone 1	---	---	ND	ND	---	---	515.2	6.92	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-MW08B	12/29/2020	137.6	LVWPS-U1-MW08B-INJ	INJ	Zone 1	ND	ND	ND	ND	515.4	185	515.0 **	8.54	567.2	3.09	ND	ND	ND	ND	ND	ND
LVWPS-U1-MW08B	12/29/2020	137.6	LVWPS-U1-MW08B-INJ-FD	INJ	Zone 1	ND	ND	ND	ND	515.4	199	514.7 **	11.3	567.6	3.54	ND	ND	ND	ND	ND	ND
LVWPS-U1-MW08B	1/11/2021	137.6	LVWPS-U1-MW08B-EM02	EM02	Zone 1	ND	ND	ND	ND	515.5	11.2	515.7 **	4.91	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U1-MW08B	1/11/2021	137.6	LVWPS-U1-MW08B-EM02-FD	EM02	Zone 1	ND	ND	ND	ND	515.7	9.63	517.5 **	11.3	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U1-MW08B	2/9/2021	137.6	LVWPS-U1-MW08B-EM04	EM04	Zone 1	ND	ND	ND	ND	515.8	33.4	515.3 **	4.34	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U1-MW08B	2/9/2021	137.6	LVWPS-U1-MW08B-EM04-FD	EM04	Zone 1	ND	ND	ND	ND	515.8	31.7	515.6 **	3.77	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U1-MW08B	3/10/2021	137.6	LVWPS-U1-MW08B-EM05	EM05	Zone 1	ND	ND	ND	ND	515.8	58.2	507.3	0.661	570.0	2.99	ND	ND	ND	ND	ND	ND
LVWPS-U1-MW09A	9/30/2020	120	LVWPS-U1-MW09A-BL04	BL04	Zone 1	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-U1-MW09A	1/13/2021	120	LVWPS-U1-MW09A-EM02	EM02	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U1-MW09A	2/10/2021	120	LVWPS-U1-MW09A-EM04	EM04	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U1-MW09A	3/11/2021	120	LVWPS-U1-MW09A-EM05	EM05	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U1-MW09B	9/30/2020	142.4	LVWPS-U1-MW09B-BL04	BL04	Zone 1	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-U1-MW09B	1/13/2021	142.4	LVWPS-U1-MW09B-EM02	EM02	Zone 1	ND	ND	ND	ND	ND	ND	ND	ND	566.9	11.3	ND	ND	ND	ND	ND	ND
LVWPS-U1-MW09B	2/10/2021	142.4	LVWPS-U1-MW09B-EM04	EM04	Zone 1	ND	ND	ND	ND	ND	ND	ND	ND	566.6	6.50	ND	ND	ND	ND	ND	ND
LVWPS-U1-MW09B	3/11/2021	142.4	LVWPS-U1-MW09B-EM05	EM05	Zone 1	ND	ND	---	---	ND	ND	---	---	565.5	2.02	---	---	ND	ND	---	---
LVWPS-U1-MW10A	10/2/2020	111.6	LVWPS-U1-MW10A-BL04	BL04	Zone 1	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-U1-MW10A	1/13/2021	111.6	LVWPS-U1-MW10A-EM02	EM02	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U1-MW10A	2/9/2021	111.6	LVWPS-U1-MW10A-EM04	EM04	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U1-MW10A	3/9/2021	111.6	LVWPS-U1-MW10A-EM05	EM05	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U1-MW10B	10/2/2020	142.5	LVWPS-U1-MW10B-BL04	BL04	Zone 1	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-U1-MW10B	1/12/2021	142.5	LVWPS-U1-MW10B-EM02	EM02	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U1-MW10B	2/9/2021	142.5	LVWPS-U1-MW10B-EM04	EM04	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U1-MW10B	3/9/2021	142.5	LVWPS-U1-MW10B-EM05	EM05	Zone 1	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U2-DR01	9/28/2020	131.1	LVWPS-U2-DR01-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---

Table 8
Tracer Dye Analytical Results
Las Vegas Wash Bioremediation Pilot Study

Location	Sample Date	Depth (ft bgs)	Sample ID	Event	Zone	Eosine		Eosine		Fluorescein		Fluorescein		Rhodamine WT (RWT)		Rhodamine WT (RWT)		Sulforhodamine B (SRB)		Sulforhodamine B (SRB)					
						Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
						Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)
LWVPS-U2-DR01	12/7/2020	131.1	LWVPS-U2-DR01-20201207	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND				
LWVPS-U2-DR01	12/8/2020	131.1	LWVPS-U2-DR01-20201208	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND				
LWVPS-U2-DR01	12/9/2020	131.1	LWVPS-U2-DR01-20201209	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND				
LWVPS-U2-DR01	12/20/2020	131.1	LWVPS-U2-DR01-20201220-1	INJ	Zone 2	---	---	ND	ND	---	---	506.2	0.016	---	---	ND	ND	---	---	ND	ND				
LWVPS-U2-DR01	12/20/2020	131.1	LWVPS-U2-DR01-20201220-2	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND				
LWVPS-U2-DR01	12/20/2020	131.1	LWVPS-U2-DR01-20201220-3	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND				
LWVPS-U2-DR01	12/20/2020	131.1	LWVPS-U2-DR01-20201220-4	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND				
LWVPS-U2-DR01	12/21/2020	131.1	LWVPS-U2-DR01-20201221-1	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND				
LWVPS-U2-DR01	12/21/2020	131.1	LWVPS-U2-DR01-20201221-2	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND				
LWVPS-U2-DR01	12/21/2020	131.1	LWVPS-U2-DR01-20201221-3	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND				
LWVPS-U2-DR01	12/21/2020	131.1	LWVPS-U2-DR01-20201221-4	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND				
LWVPS-U2-DR01	12/31/2020	131.1	LWVPS-U2-DR01-INJ	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND				
LWVPS-U2-DR01	1/12/2021	131.1	LWVPS-U2-DR01-EM02	EM02	Zone 2	ND	ND	ND	ND	514.8	0.938	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND				
LWVPS-U2-DR01	2/12/2021	131.1	LWVPS-U2-DR01-EM04	EM04	Zone 2	ND	ND	ND	ND	515.6	0.863	ND	ND	566.9	1.57	ND	ND	ND	ND	ND	ND				
LWVPS-U2-DR01	3/15/2021	131.1	LWVPS-U2-DR01-EM05	EM05	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LWVPS-U2-DR02	9/28/2020	96.1	LWVPS-U2-DR02-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LWVPS-U2-DR02	12/7/2020	96.1	LWVPS-U2-DR02-20201207	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND				
LWVPS-U2-DR02	12/8/2020	96.1	LWVPS-U2-DR02-20201208	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND				
LWVPS-U2-DR02	12/9/2020	96.1	LWVPS-U2-DR02-20201209	INJ	Zone 2	---	---	ND	ND	---	---	ND	ND	---	---	575.7	0.206	---	---	ND	ND				
LWVPS-U2-DR02	12/20/2020	96.1	LWVPS-U2-DR02-20201220-1	INJ	Zone 2	---	---	ND	ND	---	---	515.4 **	160	---	---	ND	ND	---	---	ND	ND				
LWVPS-U2-DR02	12/20/2020	96.1	LWVPS-U2-DR02-20201220-2	INJ	Zone 2	---	---	ND	ND	---	---	515.7 **	151	---	---	ND	ND	---	---	ND	ND				
LWVPS-U2-DR02	12/20/2020	96.1	LWVPS-U2-DR02-20201220-3	INJ	Zone 2	---	---	ND	ND	---	---	515.7 **	87.8	---	---	ND	ND	---	---	ND	ND				
LWVPS-U2-DR02	12/20/2020	96.1	LWVPS-U2-DR02-20201220-4	INJ	Zone 2	---	---	ND	ND	---	---	515.7 **	97.3	---	---	ND	ND	---	---	ND	ND				
LWVPS-U2-DR02	12/21/2020	96.1	LWVPS-U2-DR02-20201221-1	INJ	Zone 2	---	---	ND	ND	---	---	515.7 **	185	---	---	ND	ND	---	---	ND	ND				
LWVPS-U2-DR02	12/21/2020	96.1	LWVPS-U2-DR02-20201221-2	INJ	Zone 2	---	---	ND	ND	---	---	515.4 **	67.3	---	---	ND	ND	---	---	ND	ND				
LWVPS-U2-DR02	12/21/2020	96.1	LWVPS-U2-DR02-20201221-3	INJ	Zone 2	---	---	ND	ND	---	---	515.8 **	202	---	---	ND	ND	---	---	ND	ND				
LWVPS-U2-DR02	12/21/2020	96.1	LWVPS-U2-DR02-20201221-4	INJ	Zone 2	---	---	ND	ND	---	---	515.4 **	652	---	---	ND	ND	---	---	ND	ND				
LWVPS-U2-DR02	12/21/2020	96.1	LWVPS-U2-DR02-20201221-4-FD	INJ	Zone 2	---	---	ND	ND	---	---	515.8 **	464	---	---	ND	ND	---	---	ND	ND				
LWVPS-U2-DR02	12/31/2020	96.1	LWVPS-U2-DR02-INJ	INJ	Zone 2	---	---	ND	ND	---	---	516.2 **	38.3	---	---	ND	ND	---	---	ND	ND				
LWVPS-U2-DR02	1/12/2021	96.1	LWVPS-U2-DR02-EM02	EM02	Zone 2	ND	ND	ND	ND	516.1	1,610	515.6 **	97.1	567.2	8.72	ND	ND	ND	ND	ND	ND				
LWVPS-U2-DR02	2/12/2021	96.1	LWVPS-U2-DR02-EM04	EM04	Zone 2	ND	ND	ND	ND	516.7	256	514.9 **	58.8	ND	ND	ND	ND	ND	ND	ND	ND				
LWVPS-U2-DR02	3/15/2021	96.1	LWVPS-U2-DR02-EM05	EM05	Zone 2	ND	ND	ND	ND	516.3	157	515.8 **	47.2	567.6	6.04	ND	ND	ND	ND	ND	ND				
LWVPS-U2-MW01	10/8/2020	106.9	LWVPS-U2-MW01-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LWVPS-U2-MW01	1/4/2021	106.9	LWVPS-U2-MW01-INJ	INJ	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LWVPS-U2-MW01	1/14/2021	106.9	LWVPS-U2-MW01-EM02	EM02	Zone 2	ND	ND	ND	ND	514.9	1.13	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND				
LWVPS-U2-MW01	2/10/2021	106.9	LWVPS-U2-MW01-EM04	EM04	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LWVPS-U2-MW01	3/10/2021	106.9	LWVPS-U2-MW01-EM05	EM05	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LWVPS-U2-MW02	10/8/2020	112.4	LWVPS-U2-MW02-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LWVPS-U2-MW02	1/4/2021	112.4	LWVPS-U2-MW02-INJ	INJ	Zone 2	ND	ND	ND	ND	513.7 **	0.685	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND				
LWVPS-U2-MW02	1/12/2021	112.4	LWVPS-U2-MW02-EM02	EM02	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LWVPS-U2-MW02	2/9/2021	112.4	LWVPS-U2-MW02-EM04	EM04	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LWVPS-U2-MW02	3/9/2021	112.4	LWVPS-U2-MW02-EM05	EM05	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LWVPS-U2-MW03	10/9/2020	99.8	LWVPS-U2-MW03-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LWVPS-U2-MW03	1/4/2021	99.8	LWVPS-U2-MW03-INJ	INJ	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LWVPS-U2-MW03	1/14/2021	99.8	LWVPS-U2-MW03-EM02	EM02	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LWVPS-U2-MW03	2/10/2021	99.8	LWVPS-U2-MW03-EM04	EM04	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LWVPS-U2-MW03	3/10/2021	99.8	LWVPS-U2-MW03-EM05	EM05	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				

**Table 8
Tracer Dye Analytical Results
Las Vegas Wash Bioremediation Pilot Study**

Location	Sample Date	Depth (ft bgs)	Sample ID	Event	Zone	Eosine		Eosine		Fluorescein		Fluorescein		Rhodamine WT (RWT)		Rhodamine WT (RWT)		Sulforhodamine B (SRB)		Sulforhodamine B (SRB)					
						Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
						Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)
LVWPS-U2-MW04	10/6/2020	115.3	LVWPS-U2-MW04-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-U2-MW04	12/31/2020	115.3	LVWPS-U2-MW04-INJ	INJ	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U2-MW04	1/11/2021	115.3	LVWPS-U2-MW04-EM02	EM02	Zone 2	ND	ND	ND	ND	513.8 **	0.471	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND				
LVWPS-U2-MW04	2/8/2021	115.3	LVWPS-U2-MW04-EM04	EM04	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U2-MW04	3/8/2021	115.3	LVWPS-U2-MW04-EM05	EM05	Zone 2	ND	ND	ND	ND	514.7	0.770	507.2	0.055	ND	ND	ND	ND	ND	ND	ND	ND				
LVWPS-U2-MW05	10/5/2020	95.4	LVWPS-U2-MW05-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-U2-MW05	12/31/2020	95.4	LVWPS-U2-MW05-INJ	INJ	Zone 2	ND	ND	ND	ND	516.2	843	516.4 **	13.1	567.0 **	4.38	ND	ND	ND	ND	ND	ND				
LVWPS-U2-MW05	1/13/2021	95.4	LVWPS-U2-MW05-EM02	EM02	Zone 2	ND	ND	ND	ND	515.9	67.7	516.1 **	113	ND	ND	ND	ND	ND	ND	ND	ND				
LVWPS-U2-MW05	2/10/2021	95.4	LVWPS-U2-MW05-EM04	EM04	Zone 2	ND	ND	ND	ND	516.7	38.0	507.5	5.53	ND	ND	ND	ND	ND	ND	ND	ND				
LVWPS-U2-MW05	3/10/2021	95.4	LVWPS-U2-MW05-EM05	EM05	Zone 2	ND	ND	ND	ND	518.9	29.3	507.4	5.03	ND	ND	ND	ND	ND	ND	ND	ND				
LVWPS-U2-MW06	10/1/2020	131.1	LVWPS-U2-MW06-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-U2-MW06	12/31/2020	131.1	LVWPS-U2-MW06-INJ	INJ	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U2-MW06	1/11/2021	131.1	LVWPS-U2-MW06-EM02	EM02	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U2-MW06	2/8/2021	131.1	LVWPS-U2-MW06-EM04	EM04	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U2-MW06	3/9/2021	131.1	LVWPS-U2-MW06-EM05	EM05	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U2-MW08	10/1/2020	122.7	LVWPS-U2-MW08-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-U2-MW08	12/31/2020	122.7	LVWPS-U2-MW08-INJ	INJ	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U2-MW08	1/11/2021	122.7	LVWPS-U2-MW08-EM02	EM02	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U2-MW08	2/8/2021	122.7	LVWPS-U2-MW08-EM04	EM04	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U2-MW08	3/8/2021	122.7	LVWPS-U2-MW08-EM05	EM05	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U2-MW09	10/9/2020	94.6	LVWPS-U2-MW09-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-U2-MW09	12/31/2020	94.6	LVWPS-U2-MW09-INJ	INJ	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U2-MW09	1/18/2021	94.6	LVWPS-U2-MW09-EM02	EM02	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U2-MW09	2/8/2021	94.6	LVWPS-U2-MW09-EM04	EM04	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U2-MW09	3/8/2021	94.6	LVWPS-U2-MW09-EM05	EM05	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U2-MW12	10/7/2020	95.4	LVWPS-U2-MW12-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-U2-MW12	1/12/2021	95.4	LVWPS-U2-MW12-EM02	EM02	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U2-MW12	2/8/2021	95.4	LVWPS-U2-MW12-EM04	EM04	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U2-MW12	3/8/2021	95.4	LVWPS-U2-MW12-EM05	EM05	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U2-MW14	10/6/2020	95.1	LVWPS-U2-MW14-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-U2-MW14	12/31/2020	95.1	LVWPS-U2-MW14-INJ	INJ	Zone 2	ND	ND	ND	ND	514.9	1.90	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND				
LVWPS-U2-MW14	1/13/2021	95.1	LVWPS-U2-MW14-EM02	EM02	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U2-MW14	2/9/2021	95.1	LVWPS-U2-MW14-EM04	EM04	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U2-MW14	3/10/2021	95.1	LVWPS-U2-MW14-EM05	EM05	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U2-MW17	10/1/2020	126.5	LVWPS-U2-MW17-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-U2-MW17	1/12/2021	126.5	LVWPS-U2-MW17-EM02	EM02	Zone 2	ND	ND	ND	ND	515.2	2.50	506.5	0.106	567.2	50.0	575.7	1.16	ND	ND	ND	ND				
LVWPS-U2-MW17	1/12/2021	126.5	LVWPS-U2-MW17-EM02-FD	EM02	Zone 2	ND	ND	ND	ND	514.8	3.90	508.7	0.136	567.6	67.2	572.0	1.44	ND	ND	ND	ND				
LVWPS-U2-MW17	2/8/2021	126.5	LVWPS-U2-MW17-EM04	EM04	Zone 2	ND	ND	ND	ND	515.1	3.17	ND	ND	567.3	16.9	ND	ND	ND	ND	ND	ND				
LVWPS-U2-MW17	2/8/2021	126.5	LVWPS-U2-MW17-EM04-FD	EM04	Zone 2	ND	ND	ND	ND	515.2	3.94	ND	ND	567.5	19.5	ND	ND	ND	ND	ND	ND				
LVWPS-U2-MW17	3/9/2021	126.5	LVWPS-U2-MW17-EM05	EM05	Zone 2	ND	ND	ND	ND	514.9	2.79	506.5	0.030	567.2	15.2	572.2	0.110	ND	ND	ND	ND				
LVWPS-U2-MW18	10/5/2020	100.6	LVWPS-U2-MW18-BL04	BL04	Zone 2	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-U2-MW18	12/31/2020	100.6	LVWPS-U2-MW18-INJ	INJ	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U2-MW18	1/11/2021	100.6	LVWPS-U2-MW18-EM02	EM02	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U2-MW18	2/8/2021	100.6	LVWPS-U2-MW18-EM04	EM04	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U2-MW18	3/9/2021	100.6	LVWPS-U2-MW18-EM05	EM05	Zone 2	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U3-DR01A	9/28/2020	108	LVWPS-U3-DR01A-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-U3-DR01A	12/16/2020	108	LVWPS-U3-DR01A	INJ	Zone 3	---	---	ND	ND	---	---	506.9	0.024	---	---	ND	ND	---	---	ND	ND				

Table 8
Tracer Dye Analytical Results
 Las Vegas Wash Bioremediation Pilot Study

Location	Sample Date	Depth (ft bgs)	Sample ID	Event	Zone	Eosine		Eosine		Fluorescein		Fluorescein		Rhodamine WT (RWT)		Rhodamine WT (RWT)		Sulforhodamine B (SRB)		Sulforhodamine B (SRB)	
						Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
						Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)
LVWPS-U3-DR01A	12/16/2020	108	LVWPS-U3-DR01A	INJ	Zone 3	---	---	ND	ND	---	---	515.9 **	1.16	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-DR01A	12/16/2020	108	LVWPS-U3-DR01A	INJ	Zone 3	---	---	ND	ND	---	---	515.1 **	0.796	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-DR01A	12/16/2020	108	LVWPS-U3-DR01A	INJ	Zone 3	---	---	ND	ND	---	---	515.4 **	99.9	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-DR01A	12/17/2020	108	LVWPS-U3-DR01A-20201217-1	INJ	Zone 3	---	---	ND	ND	---	---	514.9 **	1.29	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-DR01A	12/17/2020	108	LVWPS-U3-DR01A-20201217-2	INJ	Zone 3	---	---	ND	ND	---	---	515.5 **	3.51	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-DR01A	12/17/2020	108	LVWPS-U3-DR01A-20201217-3	INJ	Zone 3	---	---	ND	ND	---	---	514.9 **	3.53	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-DR01A	12/17/2020	108	LVWPS-U3-DR01A-20201217-4	INJ	Zone 3	---	---	ND	ND	---	---	514.7 **	0.559	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-DR01A	12/29/2020	108	LVWPS-U3-DR01A-INJ	INJ	Zone 3	---	---	ND	ND	---	---	507.1	1.57	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-DR01A	1/18/2021	108	LVWPS-U3-DR01A-EM02	EM02	Zone 3	ND	ND	ND	ND	515.5	22.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U3-DR01A	2/12/2021	108	LVWPS-U3-DR01A-EM04	EM04	Zone 3	ND	ND	ND	ND	515.8	18.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U3-DR01A	3/15/2021	108	LVWPS-U3-DR01A-EM05	EM05	Zone 3	ND	ND	ND	ND	515.5	71.4	507.9	0.390	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U3-DR01B	9/28/2020	144.1	LVWPS-U3-DR01B-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-U3-DR01B	12/16/2020	144.1	LVWPS-U3-DR01B-20201216-1	INJ	Zone 3	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-DR01B	12/16/2020	144.1	LVWPS-U3-DR01B-20201216-2	INJ	Zone 3	---	---	ND	ND	---	---	514.1 **	155	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-DR01B	12/16/2020	144.1	LVWPS-U3-DR01B-20201216-3	INJ	Zone 3	---	---	ND	ND	---	---	515.7 **	135	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-DR01B	12/16/2020	144.1	LVWPS-U3-DR01B-20201216-4	INJ	Zone 3	---	---	ND	ND	---	---	515.1 **	7.32	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-DR01B	12/17/2020	144.1	LVWPS-U3-DR01B-20201217-1	INJ	Zone 3	---	---	ND	ND	---	---	515.4 **	407	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-DR01B	12/17/2020	144.1	LVWPS-U3-DR01B-20201217-2	INJ	Zone 3	---	---	ND	ND	---	---	515.7 **	209	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-DR01B	12/17/2020	144.1	LVWPS-U3-DR01B-20201217-3	INJ	Zone 3	---	---	ND	ND	---	---	515.7 **	210	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-DR01B	12/17/2020	144.1	LVWPS-U3-DR01B-20201217-4	INJ	Zone 3	---	---	ND	ND	---	---	515.1 **	39.1	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-DR01B	12/29/2020	144.1	LVWPS-U3-DR01B-INJ	INJ	Zone 3	---	---	ND	ND	---	---	515.8 **	30.9	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-DR01B	1/18/2021	144.1	LVWPS-U3-DR01B-EM02	EM02	Zone 3	ND	ND	ND	ND	516.2	74.8	516.8 **	136	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U3-DR01B	2/12/2021	144.1	LVWPS-U3-DR01B-EM04	EM04	Zone 3	ND	ND	ND	ND	513.9 **	15.8	515.2 **	108	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U3-DR01B	3/15/2021	144.1	LVWPS-U3-DR01B-EM05	EM05	Zone 3	ND	ND	ND	ND	516.4	313	516.2 **	137	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U3-DR02A	9/28/2020	98.6	LVWPS-U3-DR02A-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-U3-DR02A	12/16/2020	98.6	LVWPS-U3-DR02A-20201216-1	INJ	Zone 3	---	---	ND	ND	---	---	515.3 **	36.0	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-DR02A	12/16/2020	98.6	LVWPS-U3-DR02A-20201216-2	INJ	Zone 3	---	---	ND	ND	---	---	513.8 **	114	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-DR02A	12/16/2020	98.6	LVWPS-U3-DR02A-20201216-3	INJ	Zone 3	---	---	ND	ND	---	---	515.6 **	2.37	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-DR02A	12/16/2020	98.6	LVWPS-U3-DR02A-20201216-4	INJ	Zone 3	---	---	ND	ND	---	---	515.7 **	125	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-DR02A	12/17/2020	98.6	LVWPS-U3-DR02A	INJ	Zone 3	---	---	ND	ND	---	---	515.6 **	101	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-DR02A	12/17/2020	98.6	LVWPS-U3-DR02A	INJ	Zone 3	---	---	ND	ND	---	---	515.5 **	61.9	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-DR02A	12/17/2020	98.6	LVWPS-U3-DR02A	INJ	Zone 3	---	---	ND	ND	---	---	515.7 **	103	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-DR02A	12/17/2020	98.6	LVWPS-U3-DR02A	INJ	Zone 3	---	---	ND	ND	---	---	515.7 **	78.5	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-DR02A	12/17/2020	98.6	LVWPS-U3-DR02A-20201217-4-F	INJ	Zone 3	---	---	ND	ND	---	---	515.6 **	83.2	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-DR02A	12/30/2020	98.6	LVWPS-U3-DR02A-INJ	INJ	Zone 3	---	---	ND	ND	---	---	515.1 **	73.5	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-DR02A	12/30/2020	98.6	LVWPS-U3-DR02A-INJ	INJ	Zone 3	---	---	ND	ND	---	---	516.0 **	67.5	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-DR02A	1/18/2021	98.6	LVWPS-U3-DR02A-EM02	EM02	Zone 3	ND	ND	ND	ND	516.1	295	515.3 **	76.0	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U3-DR02A	2/11/2021	98.6	LVWPS-U3-DR02A-EM04	EM04	Zone 3	ND	ND	ND	ND	516.5	78.6	515.4 **	63.6	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U3-DR02A	3/15/2021	98.6	LVWPS-U3-DR02A-EM05	EM05	Zone 3	ND	ND	ND	ND	516.1	133	515.5 **	49.4	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U3-DR02B	9/28/2020	130	LVWPS-U3-DR02B-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-U3-DR02B	12/16/2020	130	LVWPS-U3-DR02B-20201216-1	INJ	Zone 3	---	---	ND	ND	---	---	515.7 **	144	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-DR02B	12/16/2020	130	LVWPS-U3-DR02B-20201216-2	INJ	Zone 3	---	---	ND	ND	---	---	515.3 **	14.1	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-DR02B	12/16/2020	130	LVWPS-U3-DR02B-20201216-3	INJ	Zone 3	---	---	ND	ND	---	---	515.7 **	154	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-DR02B	12/16/2020	130	LVWPS-U3-DR02B-20201216-4	INJ	Zone 3	---	---	ND	ND	---	---	515.3 **	26.1	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-DR02B	12/17/2020	130	LVWPS-U3-DR02B-20201217-1	INJ	Zone 3	---	---	ND	ND	---	---	515.8 **	224	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-DR02B	12/17/2020	130	LVWPS-U3-DR02B-20201217-2	INJ	Zone 3	---	---	ND	ND	---	---	515.4 **	12.3	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-DR02B	12/17/2020	130	LVWPS-U3-DR02B-20201217-3	INJ	Zone 3	---	---	ND	ND	---	---	515.2 **	27.3	---	---	ND	ND	---	---	ND	ND

Table 8
Tracer Dye Analytical Results
 Las Vegas Wash Bioremediation Pilot Study

Location	Sample Date	Depth (ft bgs)	Sample ID	Event	Zone	Eosine		Eosine		Fluorescein		Fluorescein		Rhodamine WT (RWT)		Rhodamine WT (RWT)		Sulforhodamine B (SRB)		Sulforhodamine B (SRB)					
						Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
						Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)
LVWPS-U3-DR02B	12/17/2020	130	LVWPS-U3-DR02B-20201217-4	INJ	Zone 3	---	---	ND	ND	---	---	515.5 **	55.7	---	---	ND	ND	---	---	ND	ND				
LVWPS-U3-DR02B	1/18/2021	130	LVWPS-U3-DR02B-EM02	EM02	Zone 3	ND	ND	ND	ND	516.2	74.3	515.3 **	60.2	ND	ND	ND	ND	ND	ND	ND	ND				
LVWPS-U3-DR02B	2/11/2021	130	LVWPS-U3-DR02B-EM04	EM04	Zone 3	ND	ND	ND	ND	515.5	4.51	515.4 **	38.0	ND	ND	ND	ND	ND	ND	ND	ND				
LVWPS-U3-DR02B	3/15/2021	130	LVWPS-U3-DR02B-EM05	EM05	Zone 3	ND	ND	ND	ND	516.7	80.9	515.4 **	29.5	ND	ND	ND	ND	ND	ND	ND	ND				
LVWPS-U3-DR02C	9/28/2020	161.5	LVWPS-U3-DR02C-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-U3-DR02C	12/16/2020	161.5	LVWPS-U3-DR02C-20201216-1	INJ	Zone 3	---	---	ND	ND	---	---	507.1	0.337	---	---	ND	ND	---	---	ND	ND				
LVWPS-U3-DR02C	12/16/2020	161.5	LVWPS-U3-DR02C-20201216-2	INJ	Zone 3	---	---	ND	ND	---	---	507.0	0.400	---	---	ND	ND	---	---	ND	ND				
LVWPS-U3-DR02C	12/16/2020	161.5	LVWPS-U3-DR02C-20201216-3	INJ	Zone 3	---	---	ND	ND	---	---	507.1	1.10	---	---	ND	ND	---	---	ND	ND				
LVWPS-U3-DR02C	12/16/2020	161.5	LVWPS-U3-DR02C-20201216-3-F	INJ	Zone 3	---	---	ND	ND	---	---	507.0	0.346	---	---	ND	ND	---	---	ND	ND				
LVWPS-U3-DR02C	12/16/2020	161.5	LVWPS-U3-DR02C-20201216-4	INJ	Zone 3	---	---	ND	ND	---	---	507.1	0.943	---	---	ND	ND	---	---	ND	ND				
LVWPS-U3-DR02C	12/17/2020	161.5	LVWPS-U3-DR02C-20201217-1	INJ	Zone 3	---	---	ND	ND	---	---	507.9	0.490	---	---	ND	ND	---	---	ND	ND				
LVWPS-U3-DR02C	12/17/2020	161.5	LVWPS-U3-DR02C-20201217-2	INJ	Zone 3	---	---	ND	ND	---	---	507.2	0.879	---	---	ND	ND	---	---	ND	ND				
LVWPS-U3-DR02C	12/17/2020	161.5	LVWPS-U3-DR02C-20201217-3	INJ	Zone 3	---	---	ND	ND	---	---	507.3	0.909	---	---	ND	ND	---	---	ND	ND				
LVWPS-U3-DR02C	12/17/2020	161.5	LVWPS-U3-DR02C-20201217-4	INJ	Zone 3	---	---	ND	ND	---	---	515.3 **	6.41	---	---	ND	ND	---	---	ND	ND				
LVWPS-U3-DR02C	12/30/2020	161.5	LVWPS-U3-DR02C-INJ	INJ	Zone 3	---	---	ND	ND	---	---	516.4 **	51.2	---	---	ND	ND	---	---	ND	ND				
LVWPS-U3-DR02C	1/18/2021	161.5	LVWPS-U3-DR02C-EM02	EM02	Zone 3	ND	ND	ND	ND	516.1	11.2	516.6 **	25.0	ND	ND	ND	ND	ND	ND	ND	ND				
LVWPS-U3-DR02C	2/12/2021	161.5	LVWPS-U3-DR02C-EM04	EM04	Zone 3	ND	ND	ND	ND	516.8	7.45	506.2	1.36	ND	ND	ND	ND	ND	ND	ND	ND				
LVWPS-U3-DR02C	3/15/2021	161.5	LVWPS-U3-DR02C-EM05	EM05	Zone 3	ND	ND	ND	ND	516.3	13.9	505.3 **	0.721	ND	ND	ND	ND	ND	ND	ND	ND				
LVWPS-U3-MW01B	10/5/2020	93.5	LVWPS-U3-MW01B-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-U3-MW01B	1/15/2021	93.5	LVWPS-U3-MW01B-EM02	EM02	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U3-MW01B	2/11/2021	93.5	LVWPS-U3-MW01B-EM04	EM04	Zone 3	ND	ND	ND	ND	ND	ND	ND	ND	566.8	1.97	ND	ND	ND	ND	ND	ND				
LVWPS-U3-MW01B	3/15/2021	93.5	LVWPS-U3-MW01B-EM05	EM05	Zone 3	ND	ND	---	---	ND	ND	---	---	568.0	2.92	---	---	ND	ND	---	---				
LVWPS-U3-MW02A	10/5/2020	89.4	LVWPS-U3-MW02A-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-U3-MW02A	12/30/2020	89.4	LVWPS-U3-MW02A-INJ	INJ	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U3-MW02A	1/14/2021	89.4	LVWPS-U3-MW02A-EM02	EM02	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U3-MW02A	2/11/2021	89.4	LVWPS-U3-MW02A-EM04	EM04	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U3-MW02A	3/11/2021	89.4	LVWPS-U3-MW02A-EM05	EM05	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U3-MW02B	10/5/2020	112.5	LVWPS-U3-MW02B-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-U3-MW02B	12/30/2020	112.5	LVWPS-U3-MW02B-INJ	INJ	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U3-MW02B	1/14/2021	112.5	LVWPS-U3-MW02B-EM02	EM02	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U3-MW02B	2/11/2021	112.5	LVWPS-U3-MW02B-EM04	EM04	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U3-MW02B	3/11/2021	112.5	LVWPS-U3-MW02B-EM05	EM05	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U3-MW03A	10/2/2020	98.6	LVWPS-U3-MW03A-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-U3-MW03A	10/2/2020	98.6	LVWPS-U3-MW03A-BL04-FD	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-U3-MW03A	12/30/2020	98.6	LVWPS-U3-MW03A-INJ	INJ	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U3-MW03A	1/14/2021	98.6	LVWPS-U3-MW03A-EM02	EM02	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U3-MW03A	2/11/2021	98.6	LVWPS-U3-MW03A-EM04	EM04	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U3-MW03A	3/11/2021	98.6	LVWPS-U3-MW03A-EM05	EM05	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---				
LVWPS-U3-MW03B	10/2/2020	163	LVWPS-U3-MW03B-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-U3-MW03B	12/30/2020	163	LVWPS-U3-MW03B-INJ	INJ	Zone 3	ND	ND	ND	ND	515.7	116	508.2	0.226	ND	ND	ND	ND	ND	ND	ND	ND				
LVWPS-U3-MW03B	1/14/2021	163	LVWPS-U3-MW03B-EM02	EM02	Zone 3	ND	ND	ND	ND	515.9	9.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND				
LVWPS-U3-MW03B	2/11/2021	163	LVWPS-U3-MW03B-EM04	EM04	Zone 3	ND	ND	ND	ND	515.9	7.36	509.4	0.161	ND	ND	ND	ND	ND	ND	ND	ND				
LVWPS-U3-MW03B	3/12/2021	163	LVWPS-U3-MW03B-EM05	EM05	Zone 3	ND	ND	ND	ND	516.3	16.0	510.4 **	0.235	ND	ND	ND	ND	ND	ND	ND	ND				
LVWPS-U3-MW03C	10/1/2020	129.9	LVWPS-U3-MW03C-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---				
LVWPS-U3-MW03C	12/30/2020	129.9	LVWPS-U3-MW03C-INJ	INJ	Zone 3	ND	ND	ND	ND	515.5	8.21	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND				
LVWPS-U3-MW03C	1/14/2021	129.9	LVWPS-U3-MW03C-EM02	EM02	Zone 3	ND	ND	ND	ND	515.3	0.815	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND				
LVWPS-U3-MW03C	2/11/2021	129.9	LVWPS-U3-MW03C-EM04	EM04	Zone 3	ND	ND	ND	ND	515.2	0.602	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND				

Table 8
Tracer Dye Analytical Results
Las Vegas Wash Bioremediation Pilot Study

Location	Sample Date	Depth (ft bgs)	Sample ID	Event	Zone	Eosine		Eosine		Fluorescein		Fluorescein		Rhodamine WT (RWT)		Rhodamine WT (RWT)		Sulforhodamine B (SRB)		Sulforhodamine B (SRB)	
						Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
						Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)
LVWPS-U3-MW03C	3/11/2021	129.9	LVWPS-U3-MW03C-EM05	EM05	Zone 3	ND	ND	ND	ND	514.4	0.841	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U3-MW04B	10/2/2020	87.7	LVWPS-U3-MW04B-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-U3-MW05B	10/2/2020	94.8	LVWPS-U3-MW05B-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-U3-MW05B	1/15/2021	94.8	LVWPS-U3-MW05B-EM02	EM02	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW05B	2/11/2021	94.8	LVWPS-U3-MW05B-EM04	EM04	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW05B	3/11/2021	94.8	LVWPS-U3-MW05B-EM05	EM05	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW06A	10/5/2020	102.6	LVWPS-U3-MW06A-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-U3-MW06A	12/30/2020	102.6	LVWPS-U3-MW06A-INJ	INJ	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW06A	1/15/2021	102.6	LVWPS-U3-MW06A-EM02	EM02	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW06A	2/12/2021	102.6	LVWPS-U3-MW06A-EM04	EM04	Zone 3	ND	ND	ND	ND	513.9 **	0.662	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U3-MW06A	3/15/2021	102.6	LVWPS-U3-MW06A-EM05	EM05	Zone 3	ND	ND	ND	ND	514.8	1.28	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U3-MW06B	10/7/2020	137.3	LVWPS-U3-MW06B-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-U3-MW06B	12/30/2020	137.3	LVWPS-U3-MW06B-INJ	INJ	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW06B	1/14/2021	137.3	LVWPS-U3-MW06B-EM02	EM02	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW06B	2/11/2021	137.3	LVWPS-U3-MW06B-EM04	EM04	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW06B	3/11/2021	137.3	LVWPS-U3-MW06B-EM05	EM05	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW07A	10/9/2020	89.9	LVWPS-U3-MW07A-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-U3-MW07A	12/30/2020	89.9	LVWPS-U3-MW07A-INJ	INJ	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW07A	1/15/2021	89.9	LVWPS-U3-MW07A-EM02	EM02	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW07A	2/11/2021	89.9	LVWPS-U3-MW07A-EM04	EM04	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW07A	3/11/2021	89.9	LVWPS-U3-MW07A-EM05	EM05	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW07B	10/9/2020	114.3	LVWPS-U3-MW07B-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-U3-MW07B	12/30/2020	114.3	LVWPS-U3-MW07B-INJ	INJ	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW07B	1/14/2021	114.3	LVWPS-U3-MW07B-EM02	EM02	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW07B	2/12/2021	114.3	LVWPS-U3-MW07B-EM04	EM04	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW07B	3/12/2021	114.3	LVWPS-U3-MW07B-EM05	EM05	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW08A	10/8/2020	130	LVWPS-U3-MW08A-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-U3-MW08A	12/30/2020	130	LVWPS-U3-MW08A-INJ	INJ	Zone 3	ND	ND	ND	ND	514.1	0.439	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U3-MW08A	1/15/2021	130	LVWPS-U3-MW08A-EM02	EM02	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW08A	2/12/2021	130	LVWPS-U3-MW08A-EM04	EM04	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW08A	3/12/2021	130	LVWPS-U3-MW08A-EM05	EM05	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW08B	10/8/2020	161.2	LVWPS-U3-MW08B-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-U3-MW08B	12/30/2020	161.2	LVWPS-U3-MW08B-INJ	INJ	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW08B	1/15/2021	161.2	LVWPS-U3-MW08B-EM02	EM02	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW08B	2/12/2021	161.2	LVWPS-U3-MW08B-EM04	EM04	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW08B	3/12/2021	161.2	LVWPS-U3-MW08B-EM05	EM05	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW09	10/7/2020	97.8	LVWPS-U3-MW09-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-U3-MW09	12/30/2020	97.8	LVWPS-U3-MW09-INJ	INJ	Zone 3	ND	ND	ND	ND	515.4	22.8	515.4 **	2.51	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U3-MW09	1/15/2021	97.8	LVWPS-U3-MW09-EM02	EM02	Zone 3	ND	ND	ND	ND	515.7	1.98	518.8 **	4.52	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U3-MW09	2/10/2021	97.8	LVWPS-U3-MW09-EM04	EM04	Zone 3	ND	ND	ND	ND	514.9	2.63	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U3-MW09	3/12/2021	97.8	LVWPS-U3-MW09-EM05	EM05	Zone 3	---	---	ND	ND	---	---	507.0	0.324	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-MW10A	10/5/2020	89.9	LVWPS-U3-MW10A-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-U3-MW10A	1/14/2021	89.9	LVWPS-U3-MW10A-EM02	EM02	Zone 3	ND	ND	ND	ND	515.9	6.08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U3-MW10A	2/11/2021	89.9	LVWPS-U3-MW10A-EM04	EM04	Zone 3	ND	ND	ND	ND	515.8	3.31	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U3-MW10A	3/11/2021	89.9	LVWPS-U3-MW10A-EM05	EM05	Zone 3	ND	ND	ND	ND	515.7	5.55	ND	ND	566.1	4.01	ND	ND	ND	ND	ND	ND
LVWPS-U3-MW10B	10/5/2020	111.1	LVWPS-U3-MW10B-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-U3-MW10B	1/14/2021	111.1	LVWPS-U3-MW10B-EM02	EM02	Zone 3	ND	ND	ND	ND	515.9	9.62	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 8
Tracer Dye Analytical Results
 Las Vegas Wash Bioremediation Pilot Study

Location	Sample Date	Depth (ft bgs)	Sample ID	Event	Zone	Eosine		Eosine		Fluorescein		Fluorescein		Rhodamine WT (RWT)		Rhodamine WT (RWT)		Sulforhodamine B (SRB)		Sulforhodamine B (SRB)	
						Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
						Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)	Peak(nm)	Conc.(ppb)
LVWPS-U3-MW10B	2/11/2021	111.1	LVWPS-U3-MW10B-EM04	EM04	Zone 3	ND	ND	ND	ND	515.8	35.8	507.7	1.35	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U3-MW10B	3/11/2021	111.1	LVWPS-U3-MW10B-EM05	EM05	Zone 3	ND	ND	ND	ND	515.4	152	507.8	0.300	567.2	3.70	ND	ND	ND	ND	ND	ND
LVWPS-U3-MW11A	10/7/2020	96.2	LVWPS-U3-MW11A-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-U3-MW11A	1/15/2021	96.2	LVWPS-U3-MW11A-EM02	EM02	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW11A	2/12/2021	96.2	LVWPS-U3-MW11A-EM04	EM04	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW11A	3/11/2021	96.2	LVWPS-U3-MW11A-EM05	EM05	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW11B	10/7/2020	124.8	LVWPS-U3-MW11B-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-U3-MW11B	1/18/2021	124.8	LVWPS-U3-MW11B-EM02	EM02	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW11B	2/12/2021	124.8	LVWPS-U3-MW11B-EM04	EM04	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW11B	3/12/2021	124.8	LVWPS-U3-MW11B-EM05	EM05	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW11C	10/8/2020	153.1	LVWPS-U3-MW11C-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-U3-MW11C	1/18/2021	153.1	LVWPS-U3-MW11C-EM02	EM02	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW11C	2/12/2021	153.1	LVWPS-U3-MW11C-EM04	EM04	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW11C	3/12/2021	153.1	LVWPS-U3-MW11C-EM05	EM05	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW12A	10/6/2020	98	LVWPS-U3-MW12A-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-U3-MW12A	1/15/2021	98	LVWPS-U3-MW12A-EM02	EM02	Zone 3	ND	ND	ND	ND	515.5	0.536	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U3-MW12A	2/12/2021	98	LVWPS-U3-MW12A-EM04	EM04	Zone 3	ND	ND	ND	ND	515.9	1.31	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U3-MW12A	3/12/2021	98	LVWPS-U3-MW12A-EM05	EM05	Zone 3	ND	ND	ND	ND	515.4	2.57	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U3-MW12B	10/6/2020	125.5	LVWPS-U3-MW12B-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-U3-MW12B	1/15/2021	125.5	LVWPS-U3-MW12B-EM02	EM02	Zone 3	ND	ND	ND	ND	516.0	3.88	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U3-MW12B	2/12/2021	125.5	LVWPS-U3-MW12B-EM04	EM04	Zone 3	ND	ND	ND	ND	515.4	1.98	508.4	0.253	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U3-MW12B	3/12/2021	125.5	LVWPS-U3-MW12B-EM05	EM05	Zone 3	ND	ND	ND	ND	515.3	11.0	507.2	0.112	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U3-MW13A	10/7/2020	108.5	LVWPS-U3-MW13A-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-U3-MW13A	12/30/2020	108.5	LVWPS-U3-MW13A-INJ	INJ	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW13A	1/15/2021	108.5	LVWPS-U3-MW13A-EM02	EM02	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW13A	2/11/2021	108.5	LVWPS-U3-MW13A-EM04	EM04	Zone 3	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW13A	3/12/2021	108.5	LVWPS-U3-MW13A-EM05	EM05	Zone 3	ND	ND	---	---	ND	ND	---	---	570.2	1.45	---	---	ND	ND	---	---
LVWPS-U3-MW13B	10/7/2020	140.1	LVWPS-U3-MW13B-BL04	BL04	Zone 3	---	---	---	---	---	---	ND	ND	---	---	ND	ND	---	---	---	---
LVWPS-U3-MW13B	12/30/2020	140.1	LVWPS-U3-MW13B-INJ	INJ	Zone 3	ND	ND	ND	ND	515.3	77.9	507.0	0.133	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U3-MW13B	12/30/2020	140.1	LVWPS-U3-MW13B-INJ-FD	INJ	Zone 3	ND	ND	ND	ND	515.3	87.3	507.3	0.299	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U3-MW13B	1/15/2021	140.1	LVWPS-U3-MW13B-EM02	EM02	Zone 3	ND	ND	ND	ND	515.3	5.08	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U3-MW13B	1/15/2021	140.1	LVWPS-U3-MW13B-EM02-FD	EM02	Zone 3	ND	ND	ND	ND	515.3	9.60	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U3-MW13B	2/12/2021	140.1	LVWPS-U3-MW13B-EM04	EM04	Zone 3	ND	ND	ND	ND	515.2	10.7	507.7	0.267	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U3-MW13B	2/12/2021	140.1	LVWPS-U3-MW13B-EM04-FD	EM04	Zone 3	ND	ND	ND	ND	515.3	7.91	508.8	0.246	ND	ND	ND	ND	ND	ND	ND	ND
LVWPS-U3-MW13B	3/15/2021	140.1	LVWPS-U3-MW13B-EM05	EM05	Zone 3	ND	ND	ND	ND	514.4	12.2	505.9	0.128	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

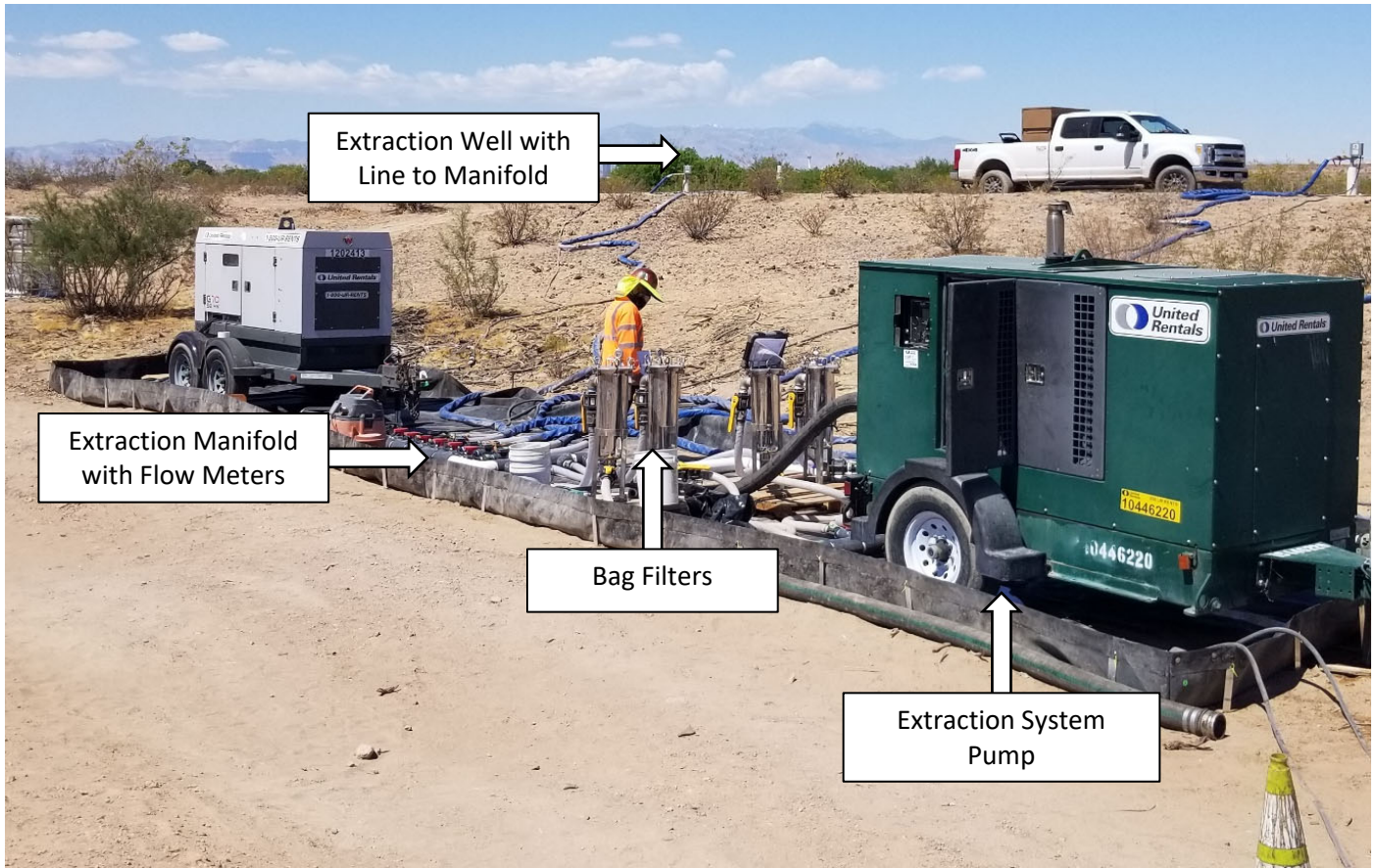
- nm nanometers
- conc concentration
- ppb parts per billion
- ND No dye detected
- FD field duplicate
- ** A fluorescence peak is present that does not meet all the criteria for this dye. However, it has been calculated as a positive dye result. See note 2 below.

1. Dye concentrations are based upon standards used at the Ozark Underground Laboratory (OUL). The standard concentrations are based upon the as sold weight of the dye that the OUL uses - 20% by weight for rhodamine WT and 75% by weight for fluorescein.

2. Emission fluorescence peaks are a function of the dye and the liquid matrix of the sample. Narrow acceptable wavelength ranges usually used as a criterion for positive dye detections do not always apply to samples from this study due to the presence of varying concentrations of emulsified vegetable oil and an eluting solution mixed in with the samples.

Attachment 1

Photo Logs



Extraction system with generator, bag filters, and extraction system pump.



Right: Four bag filters are used to filter sediment from the extracted groundwater prior to the groundwater being pumped to the frac tanks/injection system in the laydown area.
 Left: Extraction manifold with flow meter for each extraction well.



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 Pilot Study, Injection Event 2**

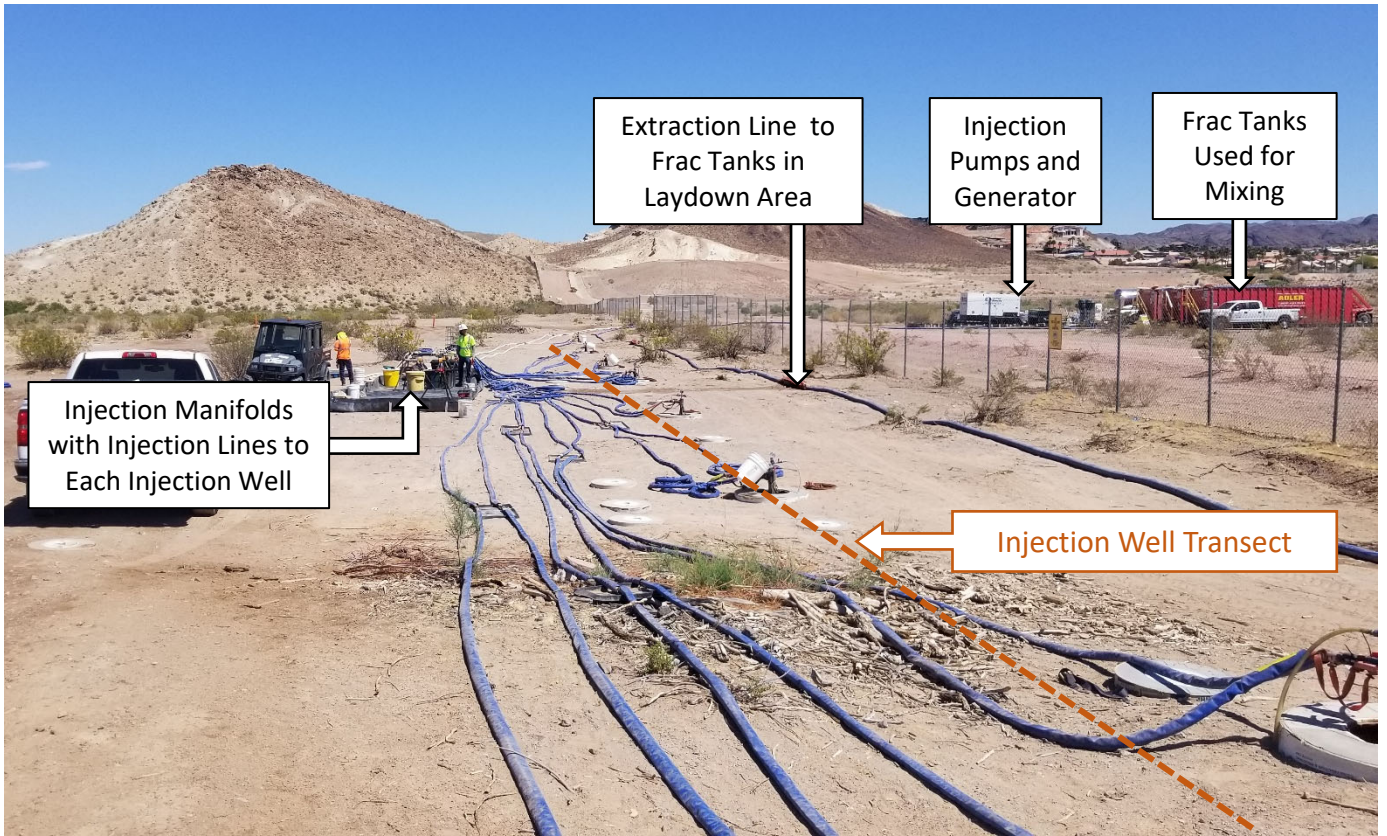
Project No.:117-7502019-M19-01

Date.: 5/12/2021

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Extraction line to laydown area with three (red) frac tanks. Zone 2 injection well transect with injection lines to each dual-nested injection well screened in the alluvium.



Injection manifold with flow meters and pressure gauges for each injection well.



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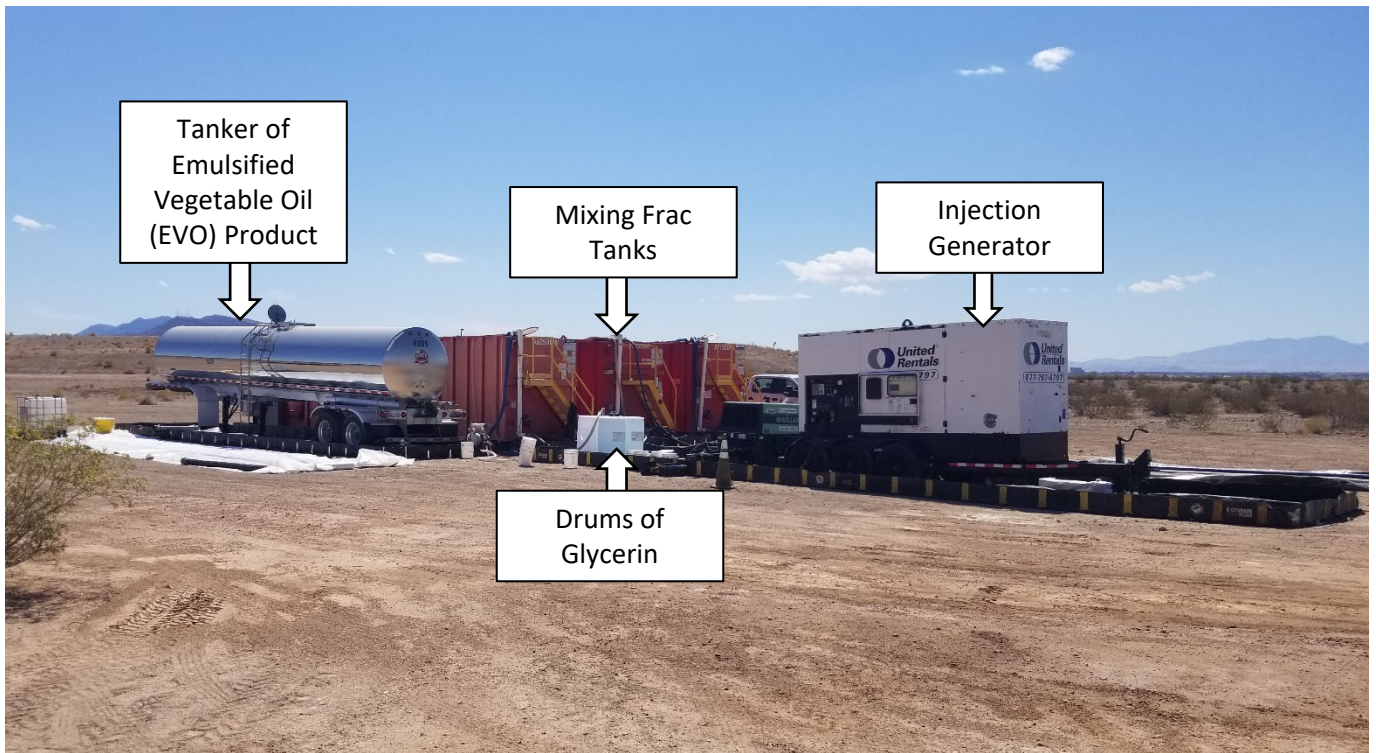
Project No.:117-7502019-M19-01

Date.: 5/12/2021

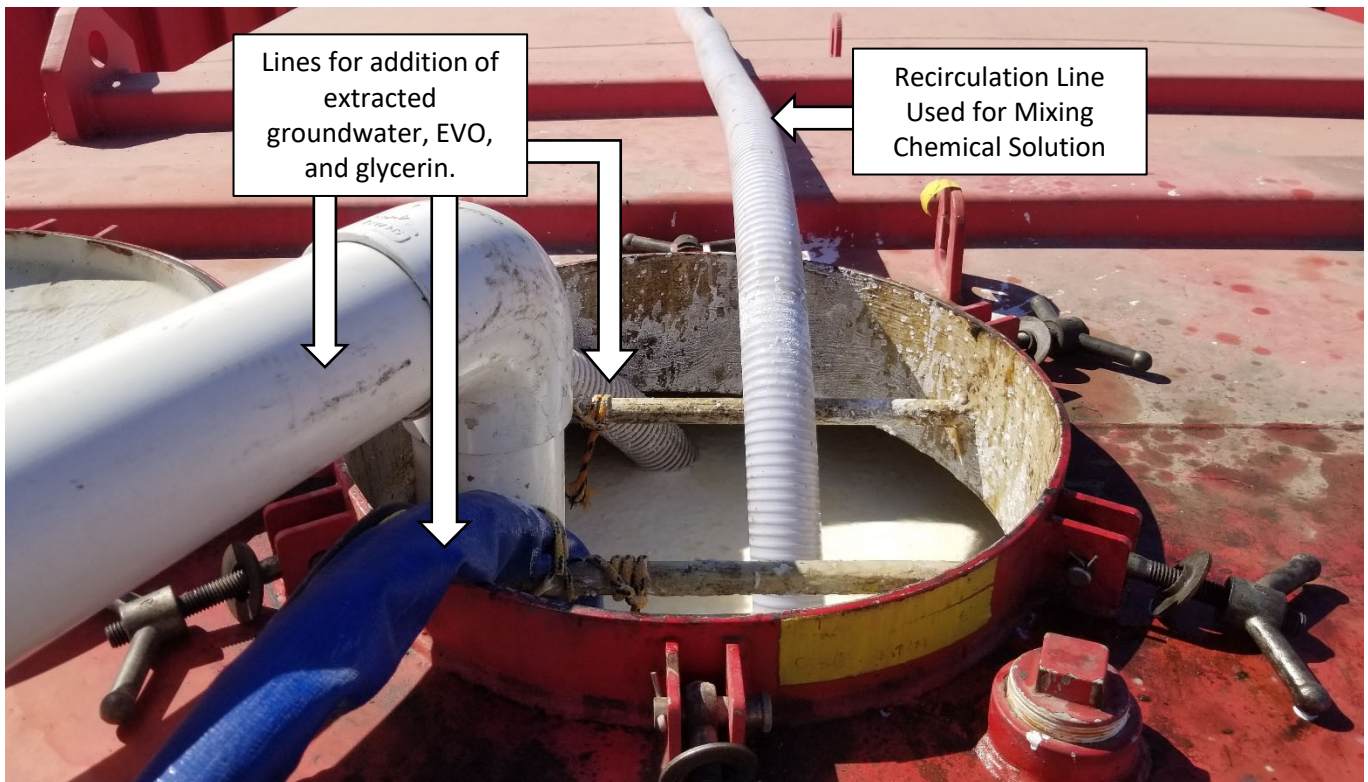
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Injection laydown area with chemical amendments, mixing frac tanks and injection system (generator and pumps).



Frac tank used for mixing with 1 part EVO to 4 parts groundwater chemical injectate solution. Submersible pumps recirculate solution to mix solution components.



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Collecting a sample of the injectate solution for specific gravity analysis to ensure the solution is mixed thoroughly prior to injection.



Measuring specific gravity and temperature of injectate solution sample.



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