

TECHNICAL MEMORANDUM

To: Nevada Environmental Response Trust

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

From: Dana Grady

Date: February 22, 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 January 2021 toward successfully implementing the Las Vegas Wash Bioremediation Pilot Study.

Task Progress Update: January 2021

Task M19 – Las Vegas Wash Pilot Study

- Current Status
 - The first injection event was completed in December 2020 and the pilot study is currently in the effectiveness monitoring phase. A summary of the injections and on-going effectiveness monitoring program and results are provided below. A layout map and construction details of all injection, monitoring, and extraction wells are provided as Figures 1 through 4 and Table 1.
 - *Injection Activities* – Mobilization and set-up activities associated with the first injection event began on November 30, 2020. Injections into all three remediation zones (Zones 1, 2, and 3) were performed from December 7, 2020 to December 22, 2020, with demobilization of the majority of injection equipment by December 23, 2020. Following the completion of active injections, frac tanks and residual materials and equipment were demobilized in late December 2020 through early January 2021. Details of the first injection event, including a summary of injection rates, pressures, quantities, and specific gravity information, are included in Tables 2 through 9 as attachments to this monthly progress report. Noteworthy items from the first injection event are as follows:
 - As described in the Work Plan Addendum, in order to more accurately determine the effective porosity of the formation in the vicinity of the injection well transect, two dose response well clusters were installed at strategic locations within each of the three zones to monitor for dye included in the injection solution. During the injection process, groundwater from the dose response monitoring wells was periodically monitored using visual observation and commercially available field

probes to determine when breakthrough of the dye occurred and log the concentrations of dye at specific cumulative injection volumes. Results from this monitoring indicated that the Zone 2 alluvium generally had an effective porosity in the expected designed range; therefore, no changes were made to the Zone 2 alluvium targeted distribution water volumes. Results from the dose response monitoring in the Zones 1, 2, and 3 Upper Muddy Creek formation (UMCf) and UMCf-coarse grained (UMCf-cg) indicated a lower effective porosity, generally ranging from 1 to 2 percent, which is lower than the previous conservative estimate of 7 percent. As a result, the UMCf and UMCf-cg distribution water volumes were proportionately reduced using the new porosity estimates. Although this resulted in lower distribution water volumes, at a minimum, each of the injection wells were flushed with at least six borehole volumes (using the borehole diameter, screened interval, and filter pack porosity).

- Of the 64 injection wells installed as part of the pilot study, five injection wells screened within the UMCf/UMCf-cg in Zones 2 and 3 did not take the designed volume of injectate during the first injection event. The UMCf has varying lithology, cementation, and compaction, and is also locally faulted. All of these factors lead to variable injection capacity and a limited subset of wells with low injectability was expected.
 - Specifically, three of the five injection wells are located in Zone 2 (LVWPS-U2-IW06, LVWPS-U2-IW07, and LVWPS-U2-IW10). LVWPS-U2-IW06 and LVWPS-U2-IW07 are installed in an area of thin unconsolidated UMCf just above a bedrock high. As a result, the screened intervals are shorter and the observed geology in these intervals included a larger proportion of strongly cemented material, which may have resulted in decreased injection capacity. The LVWPS-U2-IW10 screened interval is in significantly finer-grained material (nearly 100% silt) as compared to other injection wells in this transect. Similar to LVWPS-U2-IW06 and LVWPS-U2-IW07, it is located in an area with only a thin zone of unconsolidated UMCf.
 - The fourth and fifth injection wells are located within a single location in Zone 3 (LVWPS-U3-IW08A/B) and is the closest of all injection wells to the bedrock outcrop and adjacent fault. These two wells at this location are screened across a larger proportion of poorly-sorted UMCf-cg fan deposits and less of the normally well-sorted UMCf material, which likely resulted in lower dispersive/diffusive transport and therefore decreased injection capacity.
- ***Effectiveness Monitoring*** – Baseline groundwater sampling was completed in the fall of 2020 prior to the first injection event. Following the first injection event, the monitoring program described in the Work Plan Addendum was implemented to evaluate the effectiveness of in-situ bioremediation. As part of this monitoring program, groundwater sampling is being conducted on a biweekly basis for the Zone 2 alluvium for the first two months post-injection followed by monthly sampling. Groundwater sampling is being conducted monthly for Zones 1, 2, and 3 UMCf/UMCf-cg.
 - The following effectiveness monitoring events have been completed through January 2021:

- The first biweekly effectiveness monitoring groundwater sampling event for Zone 2 monitoring wells screened in the alluvium was conducted from December 21, 2020 to December 23, 2020.
- The first monthly effectiveness monitoring event for monitoring wells screened in all three remediation zones was conducted from January 11, 2021 to January 18, 2021.
- The second biweekly sampling event for Zone 2 monitoring wells screened in the alluvium was performed from January 25, 2021 to January 29, 2021.
- Groundwater analytical results from the baseline sampling event and first biweekly sampling event are provided in Table 10. Groundwater analytical results from the first monthly and second biweekly groundwater sampling event will be provided in future monthly progress reports as data become available. Results from the first biweekly sampling event of monitoring wells screened in Zone 2 alluvium are summarized below.
 - Cross-gradient monitoring wells LVWPS-A2-MW04A/B and LVWPS-A2-MW05A/B were installed in the alluvium approximately 17 feet from the injection well at either end of the Zone 2 transect to provide information regarding the radius of influence (ROI) of the injection wells (See Figure 3). Approximately two weeks after injection activities were complete, results indicate the targeted ROI was achieved during injections. Evidence of this includes the observation of contaminant concentration decreases, presence of dye, and/or increases of total organic carbon (TOC), which can sometimes be a surrogate parameter to evaluate carbon substrate distribution in the subsurface, at all four cross-gradient monitoring wells. These cross-gradient monitoring wells exhibited an average percentage decrease in groundwater perchlorate concentrations (compared to baseline concentrations) ranging from 18 percent to more than 99 percent, indicating that biodegradation of perchlorate is occurring two weeks after the first injection event.
 - 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 54 percent during the first biweekly sampling event. Of these 14 monitoring wells, groundwater samples collected from four monitoring wells had a greater than 95 percent reduction in perchlorate concentration during the first biweekly sampling event.
 - Groundwater samples collected from monitoring wells LVWPS-MW208B and LVWPS-MW223B, which are located approximately 200-250 feet downgradient of the injection well transect, exhibited perchlorate concentration decreases of 36 percent and 59 percent when compared to baseline concentrations, respectively.
 - Chlorate results followed a similar pattern to perchlorate results for samples collected during the first biweekly sampling event. Groundwater samples collected from two of the four cross-gradient monitoring wells showed decreases in chlorate concentrations of greater than 98 percent compared to baseline. Groundwater samples collected from 12 of the 18

monitoring wells located between 50 and 250 feet downgradient of the injection well transect exhibited reductions in chlorate concentration of greater than 50 percent. Of these 12 monitoring wells, groundwater samples collected from seven of these 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 at Zone 2 alluvium monitoring wells averaged 17 milligrams per liter (mg/L) during the baseline sampling event. During the first biweekly sampling event, groundwater samples collected from 19 cross-gradient or downgradient monitoring wells exhibited decreases in nitrate concentrations to less than 10 mg/L. Of these 19 monitoring wells, groundwater samples collected from eight monitoring wells exhibited nitrate concentrations less than 1 mg/L.
- Surface water sampling is being conducted on a monthly basis at various locations along the Las Vegas Wash as part of the on-going surface water sampling program for the NERT site. As part of the pilot study, additional surface water locations were added in the vicinity of the Las Vegas Wash that is immediately downgradient of the pilot study area. 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. However, samples are being periodically collected to monitor for potential decreases in contaminant concentrations and/or increases in total organic carbon concentrations in likely downgradient discharge locations. Additionally, the first six months of samples will also include analysis of tracer dye (both charcoal and groundwater samples), which may inform approximately where the injected, tracer-tagged water from the study area is entering the Las Vegas Wash. Surface water sampling was performed prior to injection activities on October 16, 2020 and October 29, 2020. Two surface water sampling events have since been performed in December 2020 (during injections) and January 2021 (after injections). 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 sampling events are summarized below.
 - During active injections, samples were collected from: (i) each batch injected, (ii) periodically from the dose response well clusters (located approximately 7 feet downgradient of the injection wells), (iii) select downgradient monitoring wells based on field screening of the wells for the presence of dye. Additionally, charcoal samplers (a qualitative tool) were installed prior to the injections in nearby upgradient, cross-gradient, and downgradient monitoring wells within each remediation zone and collected following completion of the injection event. Charcoal samplers continue to collect dye over a period of time, so analysis of the charcoal samplers indicates presence or absence of dye at any point during suspension of the sampler in the well (in this case the duration of injection

activities). If dye is or was present based on the charcoal sampler results, the groundwater sample is analyzed to determine a dye concentration at the time of sample collection. Lastly, during effectiveness monitoring events, charcoal and groundwater samples are collected from upgradient, downgradient, and cross-gradient monitoring wells.

- Analytical results for dye samples collected during baseline activities, injection activities, and the first biweekly effectiveness monitoring event are provided Tables 11 through 13. Notable results include:
 - Zone 2 Alluvium:
 - During injection activities, rhodamine tracer dye was measured in all four of the Zone 2 alluvium dose response wells.
 - As previously discussed, cross-gradient monitoring wells LVWPS-A2-MW04A/B and LVWPS-A2-MW05A/B were installed in the alluvium approximately 17 feet from the injection well transect at either end of the Zone 2 injection well transect to provide information regarding the ROI. Rhodamine dye was detected with the field probe in all four of these wells during injections, confirming the ROI was achieved.
 - 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 3-5 days after injection activities were completed, rhodamine dye was detected in Zone 2 alluvium groundwater samples collected from all dose response wells, one cross-gradient monitoring well cluster, and at least one well in each 50-foot downgradient monitoring well cluster (including wells LVWPS-A2-MW08B/C, LVWPS-A2-MW09A/B, and LVWPS-A2-MW14A/B).
 - Approximately two weeks after Zone 2 alluvium injections were complete, rhodamine was detected in groundwater samples collected from several monitoring wells located approximately 100 feet downgradient of the injection well transect (namely, LVWPS-A2-MW12B, LVWPS-A2-MW13B, and LVWPS-A2-MW17C). Dye also continued to be detected two weeks after injections were completed in samples collected from cross-gradient monitoring well cluster LVWPS-A2-MW05A/B and several monitoring wells located 50 feet downgradient.
 - Zone 1, 2, and 3 UMCf/UMCf-cg:
 - Fluorescein tracer dye was present in all 11 dose response wells screened in the UMCf/UMCf-cg in the three remediation zones based on analysis of groundwater samples via field probe and laboratory analysis. In Zones 1 and 3, no fluorescein tracer dye was detected in the dose response wells screened in the alluvium, indicating that the carbon substrate solution did not travel to the alluvium during injection activities in the vicinity of the injection well transects. During Zone 2 UMCf injections, fluorescein was detected in one dose response well screened in the alluvium, namely LVWPS-A2-DR02B. This may be due to

- increased vertical permeability in Zone 2 UMCf due to preferential flow pathways generated by faulting.
- After injections were completed in Zone 1 UMCf, fluorescein tracer dye was detected in groundwater 50 feet upgradient of the injection well transect at LVWPS-U1-MW06B and LVWPS-U1-MW07. This was expected based on the low effective porosities calculated from dose response well data during injection activities (discussed above). Low effective porosity causes injectate solution to move farther from the injection points (both upgradient and downgradient) during injections, particularly when injecting under pressure. Dye was also detected at monitoring wells LVWPS-U1-MW08A/B located 25 feet downgradient during and after injection activities.
 - In Zone 2 UMCf, fluorescein was detected in groundwater samples collected from dose response wells and one cross-gradient monitoring well located approximately 12 feet from the injection well transect (LVWPS-U2-MW05) during injection activities.
 - Lastly, after injections were completed in the Zone 3 UMCg-cg, fluorescein was detected in groundwater samples collected from all monitoring well clusters screened in the UMCf-cg approximately 25 feet downgradient of the Zone 3 injection well transect including at monitoring wells LVWPS-U3-MW03B, LVWPS-U3-MW09, and LVWPS-U3-MW13A/B.
 - One additional interesting finding is that very low levels of rhodamine with a shifted fluorescence peak are being detected in Zone 1 UMCf well charcoal samplers (but not water samples). The shift in peak is often associated with older, degraded rhodamine, which may point to remnants of a historical tracer test upgradient near the Las Vegas Wash. It should be noted that rhodamine was not injected into Zone 1 UMCf.
 - It should be noted that 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 are so low that they are not detectable. Results from future sampling events will be evaluated to provide additional clarification of the likely scenario.
- Access and Permitting
 - All access agreements and permits are now in place for all projected pilot study activities.
 - Schedule and Progress Updates
 - The second monthly effectiveness monitoring event is scheduled for the week of February 8, 2021.
 - Health and Safety
 - There were no safety incidents related to Task M19 during January 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

Not Individually, but Solely
as President of the Trustee

Signature: Jay A. Steinberg, not individually,
but solely in his representative capacity as President of the Nevada Environmental Response Trust Trustee

Name: Jay A. Steinberg, not individually, but solely in his representative capacity as President of the Nevada Environmental Response Trust Trustee

Title: Solely as President and not individually

Company: Le Petomane XXVII, Inc., not individually, but solely in its representative capacity as the Nevada Environmental Response Trust Trustee

Date: 2/22/21

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.



Kyle Hansen, CEM
Field Operations Manager/Geologist
Tetra Tech, Inc.

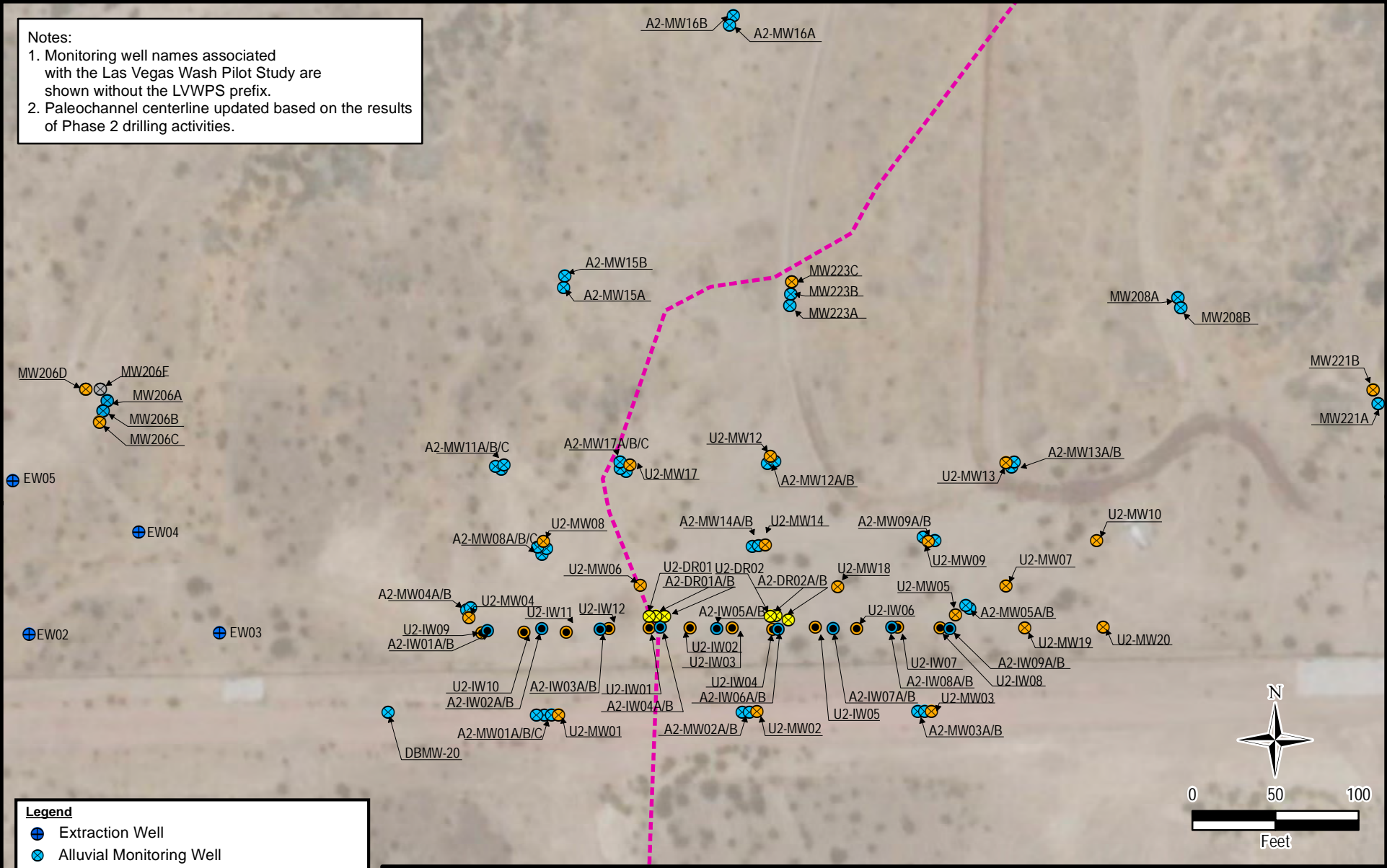
February 22, 2021

Date

Nevada CEM Certificate Number: 2167
Nevada CEM Expiration Date: September 18, 2022

Figures

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

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NEVADA ENVIRONMENTAL RESPONSE TRUST
 LAS VEGAS WASH BIOREMEDIATION PILOT STUDY
 HENDERSON, NEVADA
WELL LAYOUT FOR ZONE 2 STUDY AREA

PROJECT NO.: 117-7502019
 DATE: NOVEMBER 10, 2020
 DESIGNED BY: ES
 Figure No.
3

C:\Users\ELLYN.SWENSON\LVW Monitoring Well Installation Figures\BL04 Groundwater Contours\Zone2_Contours_ShallowestQal_1110.mxd

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

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 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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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
LVWPS-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

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				feet amsl	feet amsl	feet bTOC			inches		inches	feet bgs	inches	feet	feet bgs	feet bgs	feet bgs	
LVWPS-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	
LVWPS-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	
LVWPS-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	
LVWPS-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	
LVWPS-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	
LVWPS-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	
LVWPS-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	
LVWPS-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	
LVWPS-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	
LVWPS-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	
LVWPS-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	
LVWPS-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	
LVWPS-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	
LVWPS-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	
LVWPS-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	
LVWPS-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	
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	

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 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	
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			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			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			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			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			2	25	143	142.5	117.8	
LVWPS-U3-IW06C	UMCf-cg	26734914.32	839556.27	1522.79	1522.85	31.02	Triple-Nested	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		Schedule 40 PVC	0.010	#2/16			2	25	111.5	111	86.3	
LVWPS-U3-IW07B	UMCf-cg	26734918.38	839580.95	1523.32	1523.03	31.02	Triple-Nested	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			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			2	25	143	142.5	117.8	
LVWPS-U3-IW08C	UMCf-cg	26734923.00	839604.97	1523.23	1523.10	31.05	Triple-Nested	Schedule 40 PVC	0.010	#2/16	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	
LVWPS-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	
LVWPS-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	
LVWPS-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	
LVWPS-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	
LVWPS-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	
LVWPS-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	
LVWPS-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	
LVWPS-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	
LVWPS-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	
LVWPS-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	
LVWPS-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	
LVWPS-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	
LVWPS-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	
LVWPS-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	
LVWPS-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	
LVWPS-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	
LVWPS-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	
LVWPS-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	
LVWPS-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	
LVWPS-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																		
LVWPS-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	
LVWPS-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	

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
LVWPS-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
LVWPS-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
LVWPS-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 1 - December 2020
Las Vegas Wash Bioremediation Pilot Study
 Nevada Environmental Response Trust

Date	Extraction Well	Start Time	Stop Time	Average Flow Rate	Volume Extracted	Cumulative Volume Extracted
				gpm	gal	gal
12/4/2020	LVWPS-EW01	14:03	15:56	59.0	6,670.6	6,670.6
	LVWPS-EW02	-	-	-	-	-
	LVWPS-EW03	14:27	15:56	56.6	5,037.5	5,037.5
	LVWPS-EW04	13:55	15:56	66.6	8,063.6	8,063.6
	LVWPS-EW05	14:06	15:56	23.5	2,590.3	2,590.3
	LVWPS-MW206B	-	-	-	-	-
12/7/2020	LVWPS-EW01	15:51	16:53	47.9	2,972.2	9,642.8
	LVWPS-EW02	15:49	16:53	24.8	1,586.3	1,586.3
	LVWPS-EW03	15:47	16:53	46.7	3,080.6	8,118.1
	LVWPS-EW04	15:48	16:53	51.5	3,345.3	11,408.9
	LVWPS-EW05	15:50	16:53	26.1	1,644.2	4,234.6
	LVWPS-MW206B	16:30	16:53	56.0	1,287.7	1,287.7
12/8/2020	LVWPS-EW01	7:50	8:56	45.1	2,973.9	12,616.6
	LVWPS-EW02	7:50	8:56	19.4	1,281.6	2,867.9
	LVWPS-EW03	7:46	8:56	52.3	3,659.9	11,778.0
	LVWPS-EW04	7:46	8:56	58.4	4,086.6	15,495.5
	LVWPS-EW05	7:50	8:56	24.3	1,605.5	5,840.1
	LVWPS-MW206B	7:46	8:56	46.2	3,231.6	4,519.2
12/9/2020	LVWPS-EW01	7:57	8:41	57.0	2,509.2	15,125.8
	LVWPS-EW02	7:57	8:41	25.0	1,098.0	3,965.8
	LVWPS-EW03	7:55	8:41	56.3	2,591.6	14,369.6
	LVWPS-EW04	7:55	8:41	63.1	2,901.4	18,396.9
	LVWPS-EW05	7:57	8:41	30.4	1,335.8	7,175.8
	LVWPS-MW206B	7:55	8:41	56.6	2,603.7	7,123.0
12/9/2020	LVWPS-EW01	11:02	11:43	62.6	2,566.2	17,692.0
	LVWPS-EW02	11:02	11:43	27.5	1,128.4	5,094.2
	LVWPS-EW03	11:03	11:43	64.1	2,563.8	16,933.4
	LVWPS-EW04	11:03	11:43	72.0	2,878.2	21,275.1
	LVWPS-EW05	11:02	11:43	33.4	1,369.1	8,545.0
	LVWPS-MW206B	11:03	11:43	64.5	2,581.4	9,704.3
12/9/2020	LVWPS-EW01	-	-	-	-	17,692.0
	LVWPS-EW02	-	-	-	-	5,094.2
	LVWPS-EW03	14:16	14:23	66.6	466.2	17,399.6
	LVWPS-EW04	14:16	14:23	73.2	512.2	21,787.3
	LVWPS-EW05	-	-	-	-	8,545.0
	LVWPS-MW206B	14:16	14:23	66.4	464.5	10,168.9
12/10/2020	LVWPS-EW01	7:20	9:35	61.5	8,304.6	25,996.6
	LVWPS-EW02	7:20	9:35	26.9	3,636.5	8,730.7
	LVWPS-EW03	7:20	9:35	61.6	8,316.7	25,716.3
	LVWPS-EW04	7:20	9:35	69.4	9,362.5	31,149.8
	LVWPS-EW05	7:20	9:35	32.4	4,378.6	12,923.6
	LVWPS-MW206B	7:20	9:35	62.0	8,370.4	18,539.2

Table 2
Summary of Groundwater Extraction Activities
Injection Event 1 - December 2020
Las Vegas Wash Bioremediation Pilot Study
 Nevada Environmental Response Trust

Date	Extraction Well	Start Time	Stop Time	Average Flow Rate	Volume Extracted	Cumulative Volume Extracted
				gpm	gal	gal
12/10/2020	LVWPS-EW01	10:52	16:15	58.1	18,753.3	44,749.9
	LVWPS-EW02	10:52	16:15	28.9	9,327.7	18,058.4
	LVWPS-EW03	10:52	16:15	57.1	18,427.7	44,144.0
	LVWPS-EW04	10:52	16:15	64.6	20,853.8	52,003.6
	LVWPS-EW05	10:52	16:15	31.1	10,058.0	22,981.6
	LVWPS-MW206B	10:52	16:15	58.1	18,781.3	37,320.6
12/11/2020	LVWPS-EW01	11:15	13:18	54.7	6,723.7	51,473.6
	LVWPS-EW02	11:15	13:18	31.6	3,886.0	21,944.4
	LVWPS-EW03	11:15	13:18	62.2	7,654.3	51,798.3
	LVWPS-EW04	11:15	13:18	70.7	8,697.6	60,701.2
	LVWPS-EW05	11:15	13:18	28.9	3,557.4	26,539.0
	LVWPS-MW206B	11:15	13:18	55.7	6,856.5	44,177.1
12/12/2020	LVWPS-EW01	8:14	8:44	41.0	1,228.6	52,702.2
	LVWPS-EW02	8:14	8:44	32.8	982.9	22,927.3
	LVWPS-EW03	8:14	8:44	57.8	1,734.0	53,532.3
	LVWPS-EW04	8:14	8:44	49.1	1,471.9	62,173.1
	LVWPS-EW05	8:14	8:44	21.4	640.8	27,179.8
	LVWPS-MW206B	8:14	8:44	62.3	1,868.3	46,045.3
12/14/2020	LVWPS-EW01	7:57	8:43	63.7	2,928.4	55,630.6
	LVWPS-EW02	7:57	8:43	36.7	1,687.1	24,614.4
	LVWPS-EW03	7:57	8:43	36.7	1,687.4	55,219.7
	LVWPS-EW04	7:57	8:43	41.0	1,886.3	64,059.4
	LVWPS-EW05	7:57	8:43	33.6	1,547.6	28,727.4
	LVWPS-MW206B	7:57	8:43	36.7	1,690.3	47,735.6
12/15/2020	LVWPS-EW01	7:24	8:16	59.6	3,098.3	58,728.9
	LVWPS-EW02	7:24	8:16	34.3	1,781.2	26,395.6
	LVWPS-EW03	7:24	8:16	61.7	3,206.6	58,426.3
	LVWPS-EW04	7:24	8:16	63.3	3,292.5	67,351.8
	LVWPS-EW05	7:24	8:16	31.6	1,641.4	30,368.8
	LVWPS-MW206B	7:24	8:16	61.8	3,212.9	50,948.5
12/17/2020	LVWPS-EW01	7:04	7:16	49.5	593.4	59,322.3
	LVWPS-EW02	7:04	7:16	28.3	339.5	26,735.1
	LVWPS-EW03	7:04	7:16	54.9	658.7	59,085.0
	LVWPS-EW04	7:04	7:21	56.6	961.6	68,313.4
	LVWPS-EW05	7:04	7:16	27.1	325.3	30,694.1
	LVWPS-MW206B	7:04	7:21	50.8	863.8	51,812.4
12/18/2020	LVWPS-EW01	7:17	9:02	50.6	5,313.0	64,635.3
	LVWPS-EW02	7:17	9:02	26.2	2,753.8	29,488.9
	LVWPS-EW03	7:17	9:02	44.5	4,667.8	63,752.8
	LVWPS-EW04	7:17	9:02	49.1	5,152.0	73,465.4
	LVWPS-EW05	7:17	9:02	26.7	2,807.0	33,501.0
	LVWPS-MW206B	7:17	9:02	46.0	4,829.2	56,641.6

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Table 2
Summary of Groundwater Extraction Activities
Injection Event 1 - December 2020
Las Vegas Wash Bioremediation Pilot Study
Nevada Environmental Response Trust

Date	Extraction Well	Start Time	Stop Time	Average Flow Rate	Volume Extracted	Cumulative Volume Extracted
				gpm	gal	gal
12/19/2020	LVWPS-EW01	7:22	7:35	58.5	760.0	65,395.2
	LVWPS-EW02	7:22	7:35	22.2	288.6	29,777.5
	LVWPS-EW03	-	-	-	-	63,752.8
	LVWPS-EW04	7:22	7:35	44.1	573.5	74,038.9
	LVWPS-EW05	7:22	7:35	33.2	431.1	33,932.2
	LVWPS-MW206B	-	-	-	-	56,641.6
12/22/2020	LVWPS-EW01	-	-	-	-	65,395.2
	LVWPS-EW02	-	-	-	-	29,777.5
	LVWPS-EW03	7:07	7:19	66.4	796.7	64,549.6
	LVWPS-EW04	7:07	7:08	69.2	69.2	74,108.1
	LVWPS-EW05	-	-	-	-	33,932.2
	LVWPS-MW206B	-	-	-	-	56,641.6
EVENT TOTAL						324,404.1

Notes:

gpm - gallons per minute

gal - gallons

Table 3
Summary of Injection Activities - Zone 1 UMCf
Injection Event 1 - December 2020
Las Vegas Wash Bioremediation Pilot Study
 Nevada Environmental Response Trust

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
12/13/2020	LVWPS-U1-IW01A	11:18 AM	2:51 PM	213	6.7	21	1,431.7	0
	LVWPS-U1-IW01B	11:18 AM	2:51 PM	213	5.7	23	1,223.3	0
	LVWPS-U1-IW02A	11:18 AM	2:51 PM	180	5.2	24	930.7	0
	LVWPS-U1-IW02B	11:18 AM	2:51 PM	180	5.5	11	994.0	0
	LVWPS-U1-IW03A	11:18 AM	2:51 PM	194	5.1	25	981.8	0
	LVWPS-U1-IW03B	11:18 AM	2:51 PM	194	5.2	6.5	1,015.8	0
	LVWPS-U1-IW04A	11:18 AM	2:51 PM	180	5.5	17	981.9	0
	LVWPS-U1-IW04B	11:18 AM	2:51 PM	180	6.0	6.5	1,074.1	0
	LVWPS-U1-IW05A	11:22 AM	2:51 PM	209	6.4	17	1,330.9	0
	LVWPS-U1-IW05B	11:22 AM	2:51 PM	209	6.5	21	1,364.9	0
	LVWPS-U1-IW06A	11:22 AM	2:51 PM	209	6.4	26.5	1,344.0	0
	LVWPS-U1-IW06B	11:22 AM	2:51 PM	209	6.6	13.5	1,370.7	0
	LVWPS-U1-IW07A	11:22 AM	2:51 PM	209	6.2	14	1,293.0	0
	LVWPS-U1-IW07B	11:22 AM	2:51 PM	209	6.5	8	1,363.9	0
	LVWPS-U1-IW08A	11:22 AM	2:51 PM	209	6.8	4	1,412.2	0
LVWPS-U1-IW08B	11:22 AM	2:51 PM	209	6.3	7	1,324.1	0	
Daily Summary							19,437.1	0
12/14/2020	LVWPS-U1-IW01A	10:36 AM	11:44 AM	68	3.0	13	206.0	0
	LVWPS-U1-IW01B	10:36 AM	11:54 AM	78	5.3	14	415.0	0
	LVWPS-U1-IW02A	10:29 AM	1:28 PM	179	3.6	13	642.1	0
	LVWPS-U1-IW02B	10:29 AM	1:28 PM	179	5.2	5.5	929.8	0
	LVWPS-U1-IW03A	10:29 AM	12:40 PM	131	5.0	19	656.0	0
	LVWPS-U1-IW03B	10:29 AM	12:32 PM	123	5.1	0	622.0	0
	LVWPS-U1-IW04A	10:29 AM	1:30 PM	181	5.0	9	903.1	0
	LVWPS-U1-IW04B	10:29 AM	1:20 PM	171	4.7	9	811.6	0
	LVWPS-U1-IW05A	10:46 AM	11:45 AM	59	5.5	9	322.2	0
	LVWPS-U1-IW05B	10:46 AM	11:42 AM	56	5.1	14.5	287.0	0
	LVWPS-U1-IW06A	10:46 AM	12:37 PM	111	2.4	9	266.1	0
	LVWPS-U1-IW06B	10:46 AM	12:37 PM	111	5.4	7	603.6	0
	LVWPS-U1-IW07A	10:46 AM	12:10 PM	84	4.3	9	364.0	0
	LVWPS-U1-IW07B	10:46 AM	12:09 PM	83	3.5	3.5	293.0	0
	LVWPS-U1-IW08A	10:46 AM	12:32 PM	106	5.2	0	556.0	0
LVWPS-U1-IW08B	10:46 AM	12:34 PM	108	2.6	0	286.1	0	
Daily Summary							8,163.4	0

Table 3
Summary of Injection Activities - Zone 1 UMCf
Injection Event 1 - December 2020
Las Vegas Wash Bioremediation Pilot Study
 Nevada Environmental Response Trust

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
12/14/2020	LVWPS-U1-IW01A	1:52 PM	3:23 PM	91	6.1	0	0	559.1
	LVWPS-U1-IW01B	2:11 PM	2:53 PM	42	5.0	14	0	212.0
	LVWPS-U1-IW02A	1:52 PM	3:37 PM	105	5.2	16	0	547.9
	LVWPS-U1-IW02B	2:11 PM	2:58 PM	47	5.2	5.5	0	243.0
	LVWPS-U1-IW03A	1:52 PM	3:36 PM	104	5.4	18	0	557.0
	LVWPS-U1-IW03B	2:11 PM	2:55 PM	44	4.8	0	0	211.0
	LVWPS-U1-IW04A	1:52 PM	3:41 PM	109	5.9	12	0	641.1
	LVWPS-U1-IW04B	2:11 PM	2:57 PM	46	5.3	10	0	242.0
	LVWPS-U1-IW05A	1:52 PM	3:37 PM	105	5.4	15	0	562.1
	LVWPS-U1-IW05B	2:11 PM	2:53 PM	42	5.0	14	0	212.0
	LVWPS-U1-IW06A	1:52 PM	3:43 PM	111	5.1	14	0	567.0
	LVWPS-U1-IW06B	2:11 PM	2:56 PM	45	5.5	8.5	0	246.1
	LVWPS-U1-IW07A	1:52 PM	3:39 PM	107	5.3	8	0	564.1
	LVWPS-U1-IW07B	2:11 PM	2:52 PM	41	5.2	4	0	213.1
	LVWPS-U1-IW08A	1:52 PM	3:48 PM	116	5.5	0	0	641.0
	LVWPS-U1-IW08B	2:11 PM	2:51 PM	40	5.5	0	0	218.0
Daily Summary							0	6,436.5
Injection Event Summary							27,600.5	6,436.5

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.

Table 4
Summary of Injection Activities - Zone 2 Alluvium
Injection Event 1 - December 2020
Las Vegas Wash Bioremediation Pilot Study
 Nevada Environmental Response Trust

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
12/7/2020	LVWPS-A2-IW01A	1:25 PM	3:30 PM	125	3.9	0	488.6	0
	LVWPS-A2-IW01B	1:25 PM	3:30 PM	125	1.5	0	188.3	0
	LVWPS-A2-IW02A	1:25 PM	3:30 PM	125	13.3	0	1,657.5	0
	LVWPS-A2-IW02B	1:25 PM	3:30 PM	125	14.2	0	1,777.4	0
	LVWPS-A2-IW03A	1:25 PM	3:30 PM	125	11.5	0	1,438.8	0
	LVWPS-A2-IW03B	1:25 PM	3:30 PM	125	8.5	0	1,068.1	0
	LVWPS-A2-IW04A	1:25 PM	3:30 PM	125	13.3	0	1,663.0	0
	LVWPS-A2-IW04B	1:25 PM	3:30 PM	125	8.8	0	1,098.1	0
	LVWPS-A2-IW05A	1:25 PM	3:30 PM	125	12.4	0	1,548.4	0
	LVWPS-A2-IW05B	1:25 PM	3:30 PM	125	12.2	3	1,528.2	0
	LVWPS-A2-IW06A	1:25 PM	3:30 PM	125	13.7	0	1,715.2	0
	LVWPS-A2-IW06B	1:25 PM	3:30 PM	125	12.3	0	1,541.1	0
	LVWPS-A2-IW07A	1:25 PM	3:30 PM	125	11.7	14	1,462.7	0
	LVWPS-A2-IW07B	1:25 PM	3:30 PM	125	12.6	0	1,572.4	0
	LVWPS-A2-IW08A	1:25 PM	3:30 PM	125	15.6	0	1,950.0	0
	LVWPS-A2-IW08B	1:25 PM	3:30 PM	125	14.6	0	1,825.3	0
LVWPS-A2-IW09A	1:25 PM	3:30 PM	125	15.9	0	1,981.7	0	
LVWPS-A2-IW09B	1:25 PM	3:30 PM	125	14.9	0	1,865.4	0	
Daily Summary							26,370	0
12/8/2020	LVWPS-A2-IW01A	2:25 PM	3:48 PM	83	12.0	0	996.2	0
	LVWPS-A2-IW01B	2:25 PM	3:48 PM	83	13.1	0	1,091.1	0
	LVWPS-A2-IW02A	2:25 PM	3:48 PM	83	14.3	0	1,185.7	0
	LVWPS-A2-IW02B	2:25 PM	3:48 PM	83	9.7	0	804.3	0
	LVWPS-A2-IW03A	2:25 PM	3:48 PM	83	10.4	18	865.8	0
	LVWPS-A2-IW03B	2:25 PM	3:48 PM	83	5.3	28	437.3	0
	LVWPS-A2-IW04A	2:25 PM	3:48 PM	83	8.4	0	699.8	0
	LVWPS-A2-IW04B	2:25 PM	3:48 PM	83	11.0	0	911.7	0
	LVWPS-A2-IW05A	2:25 PM	3:48 PM	83	9.5	0	791.1	0
	LVWPS-A2-IW05B	2:25 PM	3:48 PM	83	10.3	14	851.7	0
	LVWPS-A2-IW06A	2:25 PM	3:48 PM	83	4.8	0	400.3	0
	LVWPS-A2-IW06B	2:25 PM	3:48 PM	83	8.8	0	731.8	0
	LVWPS-A2-IW07A	2:25 PM	3:48 PM	83	6.4	0	530.2	0
	LVWPS-A2-IW07B	2:25 PM	3:48 PM	83	8.7	0	723.7	0
	LVWPS-A2-IW08A	2:25 PM	3:48 PM	83	6.7	0	558.6	0
	LVWPS-A2-IW08B	2:25 PM	3:48 PM	83	8.3	0	687.8	0
LVWPS-A2-IW09A	2:25 PM	3:48 PM	83	6.0	0	495.8	0	
LVWPS-A2-IW09B	2:25 PM	3:48 PM	83	6.8	0	564.3	0	
Daily Summary							13,328	0

Table 4
Summary of Injection Activities - Zone 2 Alluvium
Injection Event 1 - December 2020
Las Vegas Wash Bioremediation Pilot Study
 Nevada Environmental Response Trust

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
12/9/2020	LVWPS-A2-IW01A	9:26 AM	4:49 PM	237	18.1	0	2,509.2	1,778
	LVWPS-A2-IW01B	9:26 AM	4:49 PM	224	18.9	0	2,714.6	1,522
	LVWPS-A2-IW02A	9:26 AM	4:49 PM	181	18.3	0	1,869.3	1,451
	LVWPS-A2-IW02B	9:26 AM	4:49 PM	171	18.0	0	1,282.4	1,803
	LVWPS-A2-IW03A	9:26 AM	4:49 PM	345	12.4	25	3,556.6	719
	LVWPS-A2-IW03B	9:26 AM	4:49 PM	339	6.6	35	1,805.8	438
	LVWPS-A2-IW04A	9:26 AM	4:49 PM	245	18.3	0	2,848.4	1,640
	LVWPS-A2-IW04B	9:26 AM	4:49 PM	241	21.1	0	3,206.1	1,884
	LVWPS-A2-IW05A	9:26 AM	4:49 PM	189	15.7	0	1,555.5	1,407
	LVWPS-A2-IW05B	9:26 AM	4:49 PM	191	12.9	23	1,553.4	910
	LVWPS-A2-IW06A	9:26 AM	4:49 PM	166	15.7	0	501.5	2,102
	LVWPS-A2-IW06B	9:26 AM	4:49 PM	166	16.9	0	928.6	1,881
	LVWPS-A2-IW07A	9:26 AM	4:49 PM	163	11.9	0	624.6	1,321
	LVWPS-A2-IW07B	9:26 AM	4:49 PM	171	12.4	0	902.9	1,225
	LVWPS-A2-IW08A	9:26 AM	4:49 PM	169	12.3	0	761.3	1,313
	LVWPS-A2-IW08B	9:26 AM	4:49 PM	166	13.4	0	757.0	1,468
	LVWPS-A2-IW09A	9:26 AM	4:49 PM	177	12.5	0	167.4	2,050
LVWPS-A2-IW09B	9:26 AM	4:49 PM	178	13.1	0	215.3	2,118	
Daily Summary							27,760	27,030
12/10/2020	LVWPS-A2-IW01A	9:23 AM	3:59 PM	396	16.4	0	0	6,496
	LVWPS-A2-IW01B	9:23 AM	3:59 PM	396	17.4	0	0	6,891
	LVWPS-A2-IW02A	9:23 AM	3:59 PM	396	19.2	0	0	7,589
	LVWPS-A2-IW02B	9:23 AM	3:59 PM	396	16.0	0	0	6,334
	LVWPS-A2-IW03A	9:23 AM	3:59 PM	396	10.9	0	0	4,304
	LVWPS-A2-IW03B	9:23 AM	3:59 PM	396	13.4	8	0	5,288
	LVWPS-A2-IW04A	9:23 AM	3:59 PM	396	20.5	0	0	8,116
	LVWPS-A2-IW04B	9:23 AM	3:59 PM	396	22.8	0	0	9,011
	LVWPS-A2-IW05A	9:23 AM	3:59 PM	396	17.4	0	0	6,891
	LVWPS-A2-IW05B	9:23 AM	3:59 PM	396	19.4	3	0	7,669
	LVWPS-A2-IW06A	9:23 AM	3:59 PM	396	11.3	0	0	4,462
	LVWPS-A2-IW06B	9:23 AM	3:59 PM	396	14.6	0	0	5,788
	LVWPS-A2-IW07A	9:23 AM	3:59 PM	396	11.8	0	0	4,689
	LVWPS-A2-IW07B	9:23 AM	3:59 PM	396	14.7	0	0	5,818
	LVWPS-A2-IW08A	9:23 AM	3:59 PM	396	13.9	0	0	5,515
	LVWPS-A2-IW08B	9:23 AM	3:59 PM	396	14.8	0	0	5,878
	LVWPS-A2-IW09A	9:23 AM	3:59 PM	396	13.7	2	0	5,439
LVWPS-A2-IW09B	9:23 AM	3:59 PM	396	13.6	0	0	5,371	
Daily Summary							0	111,550

Table 4
Summary of Injection Activities - Zone 2 Alluvium
Injection Event 1 - December 2020
Las Vegas Wash Bioremediation Pilot Study
 Nevada Environmental Response Trust

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	
12/11/2020	LVWPS-A2-IW01A	10:41 AM	2:18 PM	217	14.0	1	0	3,034	
	LVWPS-A2-IW01B	10:41 AM	2:24 PM	223	13.0	0	0	2,896	
	LVWPS-A2-IW02A	10:41 AM	2:42 PM	241	18.8	0	0	4,523	
	LVWPS-A2-IW02B	10:41 AM	2:26 PM	225	12.4	0	0	2,795	
	LVWPS-A2-IW03A	10:41 AM	3:59 PM	318	21.0	0	0	6,687	
	LVWPS-A2-IW03B	10:41 AM	3:59 PM	318	22.8	12	0	7,260	
	LVWPS-A2-IW04A	10:41 AM	2:39 PM	238	21.0	0	0	4,999	
	LVWPS-A2-IW04B	10:41 AM	2:27 PM	226	17.3	0	0	3,900	
	LVWPS-A2-IW05A	10:41 AM	1:40 PM	179	15.3	0	0	2,731	
	LVWPS-A2-IW05B	10:41 AM	1:35 PM	174	14.1	0	0	2,450	
	LVWPS-A2-IW06A	10:00 AM	11:38 AM	98	8.7	0	0	849	
	LVWPS-A2-IW06B	10:00 AM	11:45 AM	105	13.2	0	0	1,389	
	LVWPS-A2-IW07A	10:00 AM	11:49 AM	109	12.9	2	0	1,401	
	LVWPS-A2-IW07B	10:00 AM	12:05 PM	125	16.1	2	0	2,014	
	LVWPS-A2-IW08A	10:00 AM	12:10 PM	130	18.7	3	0	2,431	
	LVWPS-A2-IW08B	10:00 AM	12:09 PM	129	14.8	0	0	1,913	
	LVWPS-A2-IW09A	-	-	-	-	-	-	-	-
	LVWPS-A2-IW09B	-	-	-	-	-	-	-	-
Daily Summary							0	51,272	
12/22/2020	LVWPS-A2-IW04A ⁽³⁾	1:25 PM	2:20 PM	55	5.0	0	275	0	
	LVWPS-A2-IW04B	8:48 AM	9:15 AM	27	13.1	0	93	262	
Daily Summary							368	262	
Injection Event Summary							67,826	190,113	

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.

³ Duration and injection rate estimated.

Table 5
Summary of Injection Activities - Zone 2 UMCf
Injection Event 1 - December 2020
Las Vegas Wash Bioremediation Pilot Study
 Nevada Environmental Response Trust

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
12/20/2020	LVWPS-U2-IW01	8:44 AM	3:10 PM	386	2.0	33	780.2	0
	LVWPS-U2-IW02	8:44 AM	3:10 PM	386	2.1	35	809.4	0
	LVWPS-U2-IW03	8:44 AM	3:10 PM	386	0.7	37.5	273.9	0
	LVWPS-U2-IW04	8:13 AM	3:10 PM	417	2.6	35	1,083.4	0
	LVWPS-U2-IW05	8:13 AM	3:10 PM	417	4.3	35	1,795.1	0
	LVWPS-U2-IW06	8:13 AM	11:48 AM	139	0.2	45	28.9	0
	LVWPS-U2-IW07	8:13 AM	11:48 AM	139	0.1	45	15.6	0
	LVWPS-U2-IW08	8:13 AM	3:10 PM	417	2.1	36	887.9	0
	LVWPS-U2-IW09	8:44 AM	3:10 PM	386	3.4	35.5	1,305.7	0
	LVWPS-U2-IW10	8:44 AM	11:54 AM	121	0.4	35	47.1	0
	LVWPS-U2-IW11	8:44 AM	11:54 AM	121	1.0	35	116.6	0
	LVWPS-U2-IW12	8:44 AM	3:10 PM	386	1.1	35	429.1	0
Daily Summary							7,573.0	0
12/21/2020	LVWPS-U2-IW01	7:50 AM	3:21 PM	426	2.1	29.5	887.0	0
	LVWPS-U2-IW02	7:50 AM	1:36 PM	346	3.9	31	1,358.1	0
	LVWPS-U2-IW03	7:50 AM	3:21 PM	366	1.2	35	439.9	0
	LVWPS-U2-IW04	7:39 AM	3:27 PM	431	2.3	29.5	977.3	0
	LVWPS-U2-IW05	7:39 AM	3:46 PM	377	4.6	26	1,741.9	0
	LVWPS-U2-IW06	7:39 AM	7:48 AM	9	0.8	45	7.3	0
	LVWPS-U2-IW07	7:39 AM	7:48 AM	9	0.7	45	5.9	0
	LVWPS-U2-IW08	7:39 AM	3:21 PM	462	2.4	35	1,101.5	0
	LVWPS-U2-IW09	7:50 AM	3:21 PM	426	4.7	35	1,999.8	0
	LVWPS-U2-IW10	7:50 AM	7:58 AM	8	0.9	45	7.5	0
	LVWPS-U2-IW11	7:50 AM	3:21 PM	426	0.8	35.5	324.3	0
	LVWPS-U2-IW12	7:50 AM	1:59 PM	369	1.5	34	566.0	0
Daily Summary							9,416.7	0
12/22/2020	LVWPS-U2-IW01	1:12 PM	3:38 PM	81	1.2	16	0	98.8
	LVWPS-U2-IW02	1:12 PM	1:21 PM	9	8.1	20	0	73.3
	LVWPS-U2-IW03	1:12 PM	1:44 PM	32	1.8	24	0	56.2
	LVWPS-U2-IW04	1:20 PM	1:35 PM	15	4.5	25	0	66.8
	LVWPS-U2-IW05	1:20 PM	2:59 PM	51	2.7	14	0	140.1
	LVWPS-U2-IW06	1:20 PM	1:40 PM	20	0.4	27	0	7.2
	LVWPS-U2-IW07	1:20 PM	1:40 PM	20	0.3	26	0	5.1
	LVWPS-U2-IW08	1:20 PM	1:40 PM	20	3.3	25.5	0	66.8
	LVWPS-U2-IW09	1:12 PM	2:38 PM	50	2.0	3	0	98.8
	LVWPS-U2-IW10	1:12 PM	2:20 PM	68	0.8	2	0	53.7
	LVWPS-U2-IW11	1:12 PM	2:09 PM	57	1.1	22	0	65.5
	LVWPS-U2-IW12	1:12 PM	1:47 PM	35	1.9	19	0	66.0
Daily Summary							0	798.2

Table 5
Summary of Injection Activities - Zone 2 UMCf
Injection Event 1 - December 2020
Las Vegas Wash Bioremediation Pilot Study
 Nevada Environmental Response Trust

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
12/22/2020	LVWPS-U2-IW01 ⁽³⁾	9:15 AM	10:00 AM	45	5.2	35	235	0.0
	LVWPS-U2-IW03 ⁽³⁾	9:15 AM	10:00 AM	45	0.2	35	10	0.0
	LVWPS-U2-IW08 ⁽³⁾	9:15 AM	10:00 AM	45	0.1	35	5	0.0
Daily Summary							250	0.0
Injection Event Summary							17,239.6	798.2

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.

³ Duration and injection rate estimated.

Table 6
Summary of Injection Activities - Zone 3 UMCf-cg
Injection Event 1 - December 2020
Las Vegas Wash Bioremediation Pilot Study
 Nevada Environmental Response Trust

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
12/16/2020	LVWPS-U3-IW01	1:24 PM	4:23 PM	179	4.7	0	838.7	0
	LVWPS-U3-IW02A	1:24 PM	4:23 PM	179	4.8	24	850.3	0
	LVWPS-U3-IW02B	1:24 PM	4:23 PM	179	4.7	0	844.2	0
	LVWPS-U3-IW03A	1:24 PM	4:23 PM	179	4.5	0	813.4	0
	LVWPS-U3-IW03B	1:24 PM	4:23 PM	179	4.8	0	855.9	0
	LVWPS-U3-IW04A	1:24 PM	4:23 PM	179	4.7	0	833.3	0
	LVWPS-U3-IW04B	1:24 PM	4:23 PM	179	4.6	5	829.5	0
	LVWPS-U3-IW05A	1:24 PM	4:23 PM	179	4.6	0	818.9	0
	LVWPS-U3-IW05B	1:24 PM	4:23 PM	179	4.6	0	824.2	0
	LVWPS-U3-IW06A	1:24 PM	4:26 PM	182	4.4	6	795.1	0
	LVWPS-U3-IW06B	1:24 PM	4:26 PM	182	4.3	0	786.9	0
	LVWPS-U3-IW06C	1:24 PM	4:26 PM	182	4.5	0	815.6	0
	LVWPS-U3-IW07A	1:24 PM	4:26 PM	182	4.0	30.5	735.6	0
	LVWPS-U3-IW07B	1:24 PM	4:26 PM	182	3.9	17	710.5	0
	LVWPS-U3-IW07C	1:24 PM	4:26 PM	182	4.2	15.5	765.4	0
	LVWPS-U3-IW08A	1:24 PM	4:26 PM	182	2.0	35	360.9	0
LVWPS-U3-IW08B	1:24 PM	4:26 PM	182	2.7	35	496.5	0	
LVWPS-U3-IW08C	1:24 PM	4:26 PM	182	2.9	10	522.8	0	
Daily Summary							13,498	0
12/17/2020	LVWPS-U3-IW01	8:53 AM	3:02 PM	357	3.8	0	1,338.8	0
	LVWPS-U3-IW02A	8:53 AM	3:01 PM	356	1.7	17	606.5	0
	LVWPS-U3-IW02B	8:53 AM	2:59 PM	354	1.7	0	612.7	0
	LVWPS-U3-IW03A	8:53 AM	2:58 PM	353	2.7	0	946.7	0
	LVWPS-U3-IW03B	8:53 AM	2:59 PM	354	3.7	0	1,293.2	0
	LVWPS-U3-IW04A	8:53 AM	3:03 PM	358	3.2	5	1,140.7	0
	LVWPS-U3-IW04B	8:53 AM	3:02 PM	357	3.2	0	1,144.6	0
	LVWPS-U3-IW05A	9:06 AM	3:04 PM	346	4.2	0	1,470.1	0
	LVWPS-U3-IW05B	9:06 AM	3:04 PM	346	4.2	0	1,465.7	0
	LVWPS-U3-IW06A	9:16 AM	3:03 PM	335	2.8	22	942.6	0
	LVWPS-U3-IW06B	9:16 AM	3:02 PM	334	2.9	5	952.7	0
	LVWPS-U3-IW06C	9:16 AM	3:03 PM	335	2.8	3.5	932.2	0
	LVWPS-U3-IW07A	8:53 AM	3:42 PM	397	2.8	29	1,100.1	0
	LVWPS-U3-IW07B	8:53 AM	3:42 PM	397	2.8	28	1,125.1	0
	LVWPS-U3-IW07C	8:53 AM	3:45 PM	400	2.7	23	1,071.1	0
	LVWPS-U3-IW08A	8:53 AM	3:46 PM	401	0.9	33	350.3	0
LVWPS-U3-IW08B	8:53 AM	3:46 PM	401	1.1	35	451.4	0	
LVWPS-U3-IW08C	8:53 AM	3:46 PM	401	2.6	35	1,042.5	0	
Daily Summary							17,987	0

Table 6
Summary of Injection Activities - Zone 3 UMCf-cg
Injection Event 1 - December 2020
Las Vegas Wash Bioremediation Pilot Study
 Nevada Environmental Response Trust

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
12/18/2020	LVWPS-U3-IW01	9:30 AM	3:07 PM	337	5.2	0	0	1,766.0
	LVWPS-U3-IW02A	9:30 AM	1:08 PM	218	5.2	16	0	1,125.0
	LVWPS-U3-IW02B	9:30 AM	10:06 AM	36	5.4	3	0	194.1
	LVWPS-U3-IW03A	9:30 AM	1:32 PM	242	5.4	5	0	1,304.1
	LVWPS-U3-IW03B	9:30 AM	10:17 AM	47	5.8	0	0	271.1
	LVWPS-U3-IW04A	9:30 AM	2:23 PM	293	5.2	0	0	1,526.1
	LVWPS-U3-IW04B	9:30 AM	10:17 AM	47	5.6	7.5	0	264.2
	LVWPS-U3-IW05A	9:30 AM	3:16 PM	346	5.1	15	0	1,768.1
	LVWPS-U3-IW05B	9:30 AM	10:22 AM	52	5.9	6.5	0	305.5
	LVWPS-U3-IW06A	9:37 AM	10:14 AM	37	5.8	27	0	213.6
	LVWPS-U3-IW06B	9:37 AM	10:17 AM	40	5.8	11	0	232.3
	LVWPS-U3-IW06C	9:37 AM	1:53 PM	256	5.2	12	0	1,341.1
	LVWPS-U3-IW07A	9:37 AM	10:14 AM	37	5.8	4	0	213.5
	LVWPS-U3-IW07B	9:37 AM	10:17 AM	40	5.8	7.5	0	232.2
	LVWPS-U3-IW07C	9:37 AM	1:32 PM	235	5.7	28	0	1,345.3
	LVWPS-U3-IW08A	9:37 AM	1:06 PM	209	1.3	35	0	265.1
	LVWPS-U3-IW08B	9:37 AM	1:41 PM	244	1.0	36	0	232.0
LVWPS-U3-IW08C	9:37 AM	3:56 PM	379	3.5	35	0	1,341.0	
Daily Summary							0	13,940
Injection Event Summary							31,484	13,940

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.

**Table 7
Batch Injection Quantities
Injection Event 1 - December 2020
Las Vegas Wash Bioremediation Pilot Study
Nevada Environmental Response Trust**

Zone	Batch ID	EVO (gallons)	Glycerin (gallons)	AquaPure (gallons)	Sodium Sulfite (lbs)	Water (gallons)	Rhodamine Dye (mL)	Fluorescein Dye (mL)	Total Injectate Solution (gallons)
Zone 1 - UMCf	1C	2,760	23	17.5	35	11,047	-	308	13,847
Zone 1 - UMCf	2B	2,743	21	17.1	35	10,998	-	307	13,779
Zone 1 - UMCf Total		5,503	44	35	70	22,045	-	615	27,626
Zone 2 - Alluvium	1B	2,949	57	19	40	11,670	197	-	14,695
Zone 2 - Alluvium	2C	2,659	50	17	36	10,385	176	-	13,110
Zone 2 - Alluvium	3A	2,741	52	17	37	10,821	183	-	13,631
Zone 2 - Alluvium	4B	2,741	52	17	37	10,927	184	-	13,737
Zone 2 - Alluvium	5C	2,323	48	14	32	9,852	164	-	12,236
Zone 2 - Alluvium	8T	55	0	0	0	220	0	0	275
Zone 2 - Alluvium Total		13,468	259	84	182	53,874	905	-	67,684
Zone 2 - UMCf	1B	2,759	16	18	15	11,425	-	308	14,218
Zone 2 - UMCf	2C	450	5	4	4	2,629	-	69	3,088
Zone 2 - UMCf Total		3,209	21	22	18	14,054	-	377	17,306
Zone 3 - UMCf-cg	1C	2,683	18	17	34	10,734	-	299	13,451
Zone 3 - UMCf-cg	2B	2,682	18	17	34	10,743	-	299	13,460
Zone 3 - UMCf-cg	3C	940	8	6	12	3,782	-	105	4,735
Zone 3 - UMCf-cg Total		6,305	44	40	80	25,259	-	704	31,647
Carbon Substrate Solution Total		28,485	367	180	350	115,232	1,264	1,695	144,263
Zone 2 - Alluvium	6A	-	-	-	-	13,350	179	-	13,350
Zone 2 - Alluvium	7B	-	-	-	-	13,350	179	-	13,350
Distribution Water with Dye Only		-	-	-	-	26,700	359	-	26,700

Notes:

lbs - pounds

mL - milliliters

Table 8
Specific Gravity Calibration Measurements
Injection Event 1 - December 2020
 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 and 2	100.0%	59.8%	0.960	0.959	0.970	0.960	0.965	74	72	65	65	65	0.961	0.960	0.970	0.960	0.965	0.964	0.004
1:2 - EOS _{PRO} standard	33.3%	19.9%	0.990	0.991	0.992	0.991	0.991	64	64	64	67.5	68	0.990	0.991	0.992	0.992	0.992	0.992	0.001
1:4 - EOS _{PRO} standard	20.0%	12.0%	0.994	0.995	0.996	0.996	0.996	65.5	65	65	65.5	64.5	0.995	0.995	0.996	0.997	0.996	0.996	0.001
1:6 - EOS _{PRO} standard	14.3%	8.5%	0.995	0.997	0.997	0.997	0.998	70	68	68.5	66.5	66.5	0.996	0.998	0.998	0.998	0.999	0.998	0.001
0:1 - Extracted Groundwater Only	0.0%	0.0%	1.002	1.003	1.002	1.005	1.002	69.5	69.5	70	66	66	1.003	1.004	1.003	1.006	1.003	1.004	0.001
0:1 - Ammended Groundwater	0.0%	0.0%	1.005	1.004	1.004	1.003	1.003	70	69.5	70.5	70	71	1.006	1.005	1.005	1.004	1.004	1.005	0.001
1:4 - EOS _{PRO} standard - Deliveries 1 through 4	20.0%	12.0%	0.996	0.996	0.996	0.996	0.996	58	58	58.5	58.5	59	0.996	0.996	0.996	0.996	0.996	0.996	0.000
1:4 - EOS _{PRO} standard - After Delivery 5	20.0%	12.0%	0.996	0.996	0.996	0.996	0.996	64.5	66	65.5	66	66	0.996	0.997	0.997	0.997	0.997	0.997	0.000
1:4 - EOS _{PRO} standard - After Delivery 6	20.0%	12.0%	0.995	0.996	0.996	0.995	0.996	63	62	62	61	61	0.995	0.996	0.996	0.995	0.996	0.996	0.001

Notes:
 Dup - sample duplicate
 SD - standard deviation
 1. Injectate solution includes emulsified vegetable oil (EOS_{PRO}), phosphate solution (Aquapure 3601 NSF), 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 9
Specific Gravity Measurements
Injection Event 1 - December 2020
 Las Vegas Wash Bioremediation Pilot Study

Zone	Batch Number	Date	Time	Batch Volume Remaining	Hydrometer Readings (Calibrated for 60°F)	Sample Temperature (°F)	Corrected Specific Gravity	Calculated Percent Oil	Within Acceptable Range ⁽¹⁾	Comments
				gallons						
Zone 2 - Alluvium	1B	12/5/2020	15:34	14698	0.994	64	0.994	14.7%	YES	Pre-injection.
	1B	12/6/2020	7:16	14698	0.996	58	0.996	11.7%	YES	Pre-injection. Pre-mixing on 12/6.
	1B	12/7/2020	11:21	14698	0.995	66	0.996	11.7%	YES	Pre-injection.
	1B	12/7/2020	14:03	7024	0.996	65	0.996	11.7%	YES	
	1B	12/7/2020	14:24	3696	0.996	66	0.997	10.2%	YES	
	2C	12/5/2020	16:20	13109	0.996	63	0.996	11.7%	YES	Pre-injection.
	2C	12/6/2020	7:29	13109	0.995	56	0.995	13.2%	YES	Pre-injection.
	2C	12/7/2020	11:32	13109	0.996	66	0.997	10.2%	YES	Pre-injection.
	2C	12/7/2020	14:44	11632 ⁽²⁾	0.996	66	0.997	10.2%	YES	
	2C	12/7/2020	15:05	3745	0.996	64	0.996	11.7%	YES	
	3A	12/8/2020	12:12	13641	0.996	68	0.997	10.2%	YES	Pre-injection.
	3A	12/8/2020	15:19	10136	0.995	69	0.996	11.7%	YES	
	3A	12/8/2020	15:33	5732	0.995	67	0.996	11.7%	YES	
	4B	12/8/2020	12:51	13915	0.993	69	0.994	14.7%	YES	Pre-injection.
	4B	12/9/2020	7:58	13895	0.995	56	0.995	13.2%	YES	
	4B	12/9/2020	9:55	10156	0.995	66	0.996	11.7%	YES	
	4B	12/9/2020	10:15	5262	0.995	66	0.996	11.7%	YES	
	5C	12/9/2020	8:04	12417	0.996	60	0.996	11.7%	YES	Pre-injection.
5C	12/9/2020	10:51	10400	0.995	69	0.996	11.7%	YES		
5C	12/9/2020	11:20	6485.7	0.995	71	0.996	11.7%	YES		
Zone 1	1C	12/13/2020	7:28	13721	0.995	53	0.995	13.2%	YES	
	1C	12/13/2020	12:13	10401	0.993	62	0.994	14.7%	YES	
	1C	12/13/2020	13:17	4528	0.995	62	0.995	13.2%	YES	
	1C	12/13/2020	13:58	841	0.996	62	0.997	10.2%	YES	
	2B	12/13/2020	7:24	13774	0.995	53	0.994	14.7%	YES	
	2B	12/13/2020	14:43	10156	0.995	59	0.995	13.2%	YES	
	2B	12/14/2020	10:50	7611	0.995	62	0.996	11.7%	YES	
2B	12/14/2020	11:40	4283	0.995	59	0.995	13.2%	YES		
Zone 3	1C	12/16/2020	7:38	13435	0.995	52	0.994	14.7%	YES	Pre-injection.
	1C	12/16/2020	13:57	10401	0.996	61	0.996	11.7%	YES	
	1C	12/16/2020	14:42	6877	0.996	61	0.996	11.7%	YES	
	1C	12/16/2020	15:57	1690	0.995	58	0.995	13.2%	YES	
	2B	12/16/2020	7:53	13464	0.992	55	0.992	17.7%	NO	Pre-injection. Continue mixing.
	2B	12/16/2020	12:56	13464	0.994	65	0.994	14.7%	YES	Pre-injection.
	2B	12/17/2020	9:48	10840	0.996	57	0.995	13.2%	YES	
	2B	12/17/2020	11:00	4088	0.996	60	0.996	11.7%	YES	
	2B	12/17/2020	11:55	564	0.994	60	0.994	14.7%	YES	
	3C	12/17/2020	12:00	4978	0.994	63	0.995	13.2%	YES	Pre-injection.
	3C	12/17/2020	12:55	1788	0.994	65	0.995	13.2%	YES	
	3C	12/17/2020	13:33	2375	0.994	64	0.995	13.2%	YES	
3C	12/17/2020	14:50	1298	0.993	63	0.994	14.7%	YES		

Table 9
Specific Gravity Measurements
Injection Event 1 - December 2020
 Las Vegas Wash Bioremediation Pilot Study

Zone	Batch Number	Date	Time	Batch Volume Remaining	Hydrometer Readings (Calibrated for 60°F)	Sample Temperature (°F)	Corrected Specific Gravity	Calculated Percent Oil	Within Acceptable Range ⁽¹⁾	Comments
				gallons						
Zone 2 - UMCf	1B	12/21/2020	7:22	9725.4	0.996	52	0.996	11.7%	YES	Pre-injection. After mixing with 2C.
	1B	12/21/2020	9:10	8002.8	0.996	59	0.996	11.7%	YES	
	1B	12/21/2020	11:25	4263.9	0.996	63	0.996	11.7%	YES	
	1B	12/21/2020	13:40	759.9	0.996	67	0.997	10.2%	YES	
	2C	12/20/2020	7:34	7660.2	0.997	58	0.997	10.2%	YES	Pre-injection. After mixing with 1B.
	2C	12/20/2020	9:51	5702.8	0.994	61	0.994	14.7%	YES	
	2C	12/20/2020	10:22	4919.7	0.995	63	0.996	11.7%	YES	
	2C	12/20/2020	13:14	2374.4	0.994	62	0.995	13.2%	YES	

Notes:

1. The acceptable range of specific gravity measurements was determined to be 0.992 to 1.000 for EOS_{PRO} Deliveries 1 through 4, and 0.993 to 1.001 for batches mixed after EOS_{PRO} Delivery 5, and 0.992 to 1.000 for batches mixed after EOS_{PRO} Delivery 6. This was determined by taking +/- 10% of the difference between the pure EOS_{PRO} with amendments solution 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 8).

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

Table 10
Groundwater Analytical Results
 Las Vegas Wash Bioremediation Pilot Study

Well	Sample Date	Sample ID	QC Type	Event	Zone	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
						µg/L	µg/L	mg/L	mg/L	mg/L	mg/L
LVWPS-A1-MW04	9/30/2020	LVWPS-A1-MW04-BL04	N	BL04	Zone 1	2,000	12,000	15	1,600	1.5	2.26
LVWPS-A1-MW05	9/30/2020	LVWPS-A1-MW05-BL04	N	BL04	Zone 1	2,900	16,000	19	2,000	1.6	2.90
LVWPS-A1-MW06	9/29/2020	LVWPS-A1-MW06-BL04	N	BL04	Zone 1	1,900	9,000	13	1,300	1.4	1.16
LVWPS-A1-MW07	9/30/2020	LVWPS-A1-MW07-BL04	N	BL04	Zone 1	2,900	16,000	19	1,900	1.6	1.43
LVWPS-A1-MW09	9/30/2020	LVWPS-A1-MW09-BL04	N	BL04	Zone 1	2,700	15,000	16	1,600	1.6	1.17
LVWPS-A1-MW10	10/1/2020	LVWPS-A1-MW10-BL04	N	BL04	Zone 1	4,400 J-	14,000	16	1,600	1.4	1.13
LVWPS-A1-MW10	10/1/2020	LVWPS-A1-MW10-BL04-FD	FD	BL04	Zone 1	3,700	14,000	16	1,700	1.5	--
LVWPS-A2-IW01A	10/1/2020	LVWPS-A2-IW01A-BL04	N	BL04	Zone 2	3,300	5,100	19	--	--	4.10
LVWPS-A2-IW01A	10/1/2020	LVWPS-A2-IW01A-BL04-FD	FD	BL04	Zone 2	3,300	5,000	19	--	--	--
LVWPS-A2-IW01B	10/1/2020	LVWPS-A2-IW01B-BL04	N	BL04	Zone 2	2,300	5,400	20	--	--	4.23
LVWPS-A2-IW02A	10/1/2020	LVWPS-A2-IW02A-BL04	N	BL04	Zone 2	2,900	5,200	18	--	--	4.29
LVWPS-A2-IW02B	10/2/2020	LVWPS-A2-IW02B-BL04	N	BL04	Zone 2	3,800	6,100	20	--	--	4.44
LVWPS-A2-IW03A	10/2/2020	LVWPS-A2-IW03A-BL04	N	BL04	Zone 2	3,300	5,400	20	--	--	4.44
LVWPS-A2-IW03B	10/2/2020	LVWPS-A2-IW03B-BL04	N	BL04	Zone 2	3,400	5,500	18	--	--	4.30
LVWPS-A2-IW03B	10/2/2020	LVWPS-A2-IW03B-BL04-FD	FD	BL04	Zone 2	2,700	5,400	18	--	--	--
LVWPS-A2-IW04A	10/2/2020	LVWPS-A2-IW04A-BL04	N	BL04	Zone 2	2,700	5,600	20	--	--	4.43
LVWPS-A2-IW04B	10/2/2020	LVWPS-A2-IW04B-BL04	N	BL04	Zone 2	3,200	5,000	18	--	--	5.05
LVWPS-A2-IW05A	10/2/2020	LVWPS-A2-IW05A-BL04	N	BL04	Zone 2	4,800	6,200	19	--	--	4.44
LVWPS-A2-IW05B	10/2/2020	LVWPS-A2-IW05B-BL04	N	BL04	Zone 2	4,400	5,300	19	--	--	4.47
LVWPS-A2-IW06A	10/5/2020	LVWPS-A2-IW06A-BL04	N	BL04	Zone 2	3,700	5,900	18	--	--	5.36
LVWPS-A2-IW06B	10/5/2020	LVWPS-A2-IW06B-BL04	N	BL04	Zone 2	4,600	4,900	18	--	--	4.75
LVWPS-A2-IW07A	10/5/2020	LVWPS-A2-IW07A-BL04	N	BL04	Zone 2	3,100	5,500	21	--	--	4.76
LVWPS-A2-IW07A	10/5/2020	LVWPS-A2-IW07A-BL04-FD	FD	BL04	Zone 2	2,800	5,600	20	--	--	--
LVWPS-A2-IW07B	10/5/2020	LVWPS-A2-IW07B-BL04	N	BL04	Zone 2	2,700	4,500	16	--	--	5.14
LVWPS-A2-IW08A	10/5/2020	LVWPS-A2-IW08A-BL04	N	BL04	Zone 2	3,500	4,800	20	--	--	4.79
LVWPS-A2-IW08B	10/5/2020	LVWPS-A2-IW08B-BL04	N	BL04	Zone 2	2,100	3,600	13	--	--	5.54
LVWPS-A2-IW09A	10/5/2020	LVWPS-A2-IW09A-BL04	N	BL04	Zone 2	2,000	3,000	13	--	--	5.36
LVWPS-A2-IW09B	10/6/2020	LVWPS-A2-IW09B-BL04	N	BL04	Zone 2	1,500	2,300	9.1	--	--	6.22
LVWPS-A2-MW01A	10/8/2020	LVWPS-A2-MW01A-BL04	N	BL04	Zone 2	2,900	5,500	20	2,200	1.8	4.48
LVWPS-A2-MW01A	10/8/2020	LVWPS-A2-MW01A-BL04-FD	FD	BL04	Zone 2	2,900	5,600	19	2,200	1.8	--
LVWPS-A2-MW01A	12/23/2020	LVWPS-A2-MW01A-EM01	N	EM01	Zone 2	3,600	5,100	19	2,200	2.1	3.69
LVWPS-A2-MW01B	10/8/2020	LVWPS-A2-MW01B-BL04	N	BL04	Zone 2	3,100	5,200	18	2,100	1.7	4.49
LVWPS-A2-MW01B	12/23/2020	LVWPS-A2-MW01B-EM01	N	EM01	Zone 2	3,000	5,000	18	2,200	1.7	4.16
LVWPS-A2-MW02A	10/8/2020	LVWPS-A2-MW02A-BL04	N	BL04	Zone 2	3,700	6,500	18	2,600	1.3	4.19
LVWPS-A2-MW02A	10/8/2020	LVWPS-A2-MW02A-BL04-FD	FD	BL04	Zone 2	3,800	6,600	18	2,600	1.3	--
LVWPS-A2-MW02A	12/23/2020	LVWPS-A2-MW02A-EM01	N	EM01	Zone 2	3,800	8,100	18	2,700	1.2	5.28
LVWPS-A2-MW02B	10/8/2020	LVWPS-A2-MW02B-BL04	N	BL04	Zone 2	2,300	3,900	14	2,100	1.2	5.81
LVWPS-A2-MW02B	12/23/2020	LVWPS-A2-MW02B-EM01	N	EM01	Zone 2	2,200	4,900	15	2,300	1.3	5.57
LVWPS-A2-MW03A	10/9/2020	LVWPS-A2-MW03A-BL04	N	BL04	Zone 2	1,300	2,000	9.2	1,800	0.63	6.82
LVWPS-A2-MW03A	10/9/2020	LVWPS-A2-MW03A-BL04-FD	FD	BL04	Zone 2	1,300	2,000	9.1	1,800	0.70	--
LVWPS-A2-MW03A	12/23/2020	LVWPS-A2-MW03A-EM01	N	EM01	Zone 2	1,100	7,500	7.3	1,700	0.47 J	6.86
LVWPS-A2-MW03B	10/9/2020	LVWPS-A2-MW03B-BL04	N	BL04	Zone 2	2,000	3,700	12	2,000	0.92	6.21
LVWPS-A2-MW03B	12/23/2020	LVWPS-A2-MW03B-EM01	N	EM01	Zone 2	3,600	3,500	12	2,100	0.87 J-	5.56
LVWPS-A2-MW04A	10/2/2020	LVWPS-A2-MW04A-BL04	N	BL04	Zone 2	4,100 J	5,300	19	2,100	1.7	5.60
LVWPS-A2-MW04A	10/2/2020	LVWPS-A2-MW04A-BL04-FD	FD	BL04	Zone 2	2,900 J	5,200	19	2,100	1.7	--
LVWPS-A2-MW04A	12/22/2020	LVWPS-A2-MW04A-EM01	N	EM01	Zone 2	2,600	5,100	19	2,100	2.2 J	3.79
LVWPS-A2-MW04A	12/22/2020	LVWPS-A2-MW04A-EM01-FD	FD	EM01	Zone 2	2,600	5,100	19	2,100	1.8	--
LVWPS-A2-MW04B	10/2/2020	LVWPS-A2-MW04B-BL04	N	BL04	Zone 2	3,400	7,300	22	2,200	1.7	3.65
LVWPS-A2-MW04B	12/22/2020	LVWPS-A2-MW04B-EM01	N	EM01	Zone 2	2,800	7,300	13	2,100	23	0.49
LVWPS-A2-MW05A	10/5/2020	LVWPS-A2-MW05A-BL04	N	BL04	Zone 2	2,400	3,900	14	2,200	1.1	6.22
LVWPS-A2-MW05A	12/22/2020	LVWPS-A2-MW05A-EM01	N	EM01	Zone 2	310	73	0.91	2,200	170	0.91
LVWPS-A2-MW05B	10/5/2020	LVWPS-A2-MW05B-BL04	N	BL04	Zone 2	1,900	2,300	8.7	2,000	0.66	7.24
LVWPS-A2-MW05B	12/22/2020	LVWPS-A2-MW05B-EM01	N	EM01	Zone 2	2.9	<4.0	<0.014	1,800	170 J-	0.35
LVWPS-A2-MW05B	12/22/2020	LVWPS-A2-MW05B-EM01-FD	FD	EM01	Zone 2	2.9	<4.0	0.026 J	2,000	170	--

Table 10
Groundwater Analytical Results
 Las Vegas Wash Bioremediation Pilot Study

Well	Sample Date	Sample ID	QC Type	Event	Zone	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
						µg/L	µg/L	mg/L	mg/L	mg/L	mg/L
LVWPS-A2-MW08A	9/30/2020	LVWPS-A2-MW08A-BL04	N	BL04	Zone 2	2,700	2,100	20	2,100	1.9 J+	5.27
LVWPS-A2-MW08A	12/23/2020	LVWPS-A2-MW08A-EM01	N	EM01	Zone 2	1,400	2,000	4.7	2,100	7.4	0.91
LVWPS-A2-MW08B	10/1/2020	LVWPS-A2-MW08B-BL04	N	BL04	Zone 2	3,800	6,000	21	2,000	1.8	5.25
LVWPS-A2-MW08B	12/23/2020	LVWPS-A2-MW08B-EM01	N	EM01	Zone 2	2,400	4,900	18	2,000	2.4	1.45
LVWPS-A2-MW08C	10/1/2020	LVWPS-A2-MW08C-BL04	N	BL04	Zone 2	4,100	7,200	21	2,200	1.7	4.92
LVWPS-A2-MW08C	12/23/2020	LVWPS-A2-MW08C-EM01	N	EM01	Zone 2	110	<10	<0.014	2,400	210	0.81
LVWPS-A2-MW09A	10/9/2020	LVWPS-A2-MW09A-BL04	N	BL04	Zone 2	3,400	5,500	17	2,500	1.4	5.63
LVWPS-A2-MW09A	12/22/2020	LVWPS-A2-MW09A-EM01	N	EM01	Zone 2	1,900	2,300	8.3 J-	2,000	1.7 J	4.92
LVWPS-A2-MW09B	10/9/2020	LVWPS-A2-MW09B-BL04	N	BL04	Zone 2	1,600	2,100	8.8	2,000	0.60	7.44
LVWPS-A2-MW09B	12/22/2020	LVWPS-A2-MW09B-EM01	N	EM01	Zone 2	1,500	1,600	5.5	1,800	0.69	3.74
LVWPS-A2-MW11A	10/2/2020	LVWPS-A2-MW11A-BL04	N	BL04	Zone 2	3,100	5,300	19	2,100	1.7	4.72
LVWPS-A2-MW11A	10/2/2020	LVWPS-A2-MW11A-BL04-FD	FD	BL04	Zone 2	3,100	5,100	19	2,100	1.7	--
LVWPS-A2-MW11A	12/23/2020	LVWPS-A2-MW11A-EM01	N	EM01	Zone 2	2,900	5,000	19	2,100	2.0	3.75
LVWPS-A2-MW11B	10/2/2020	LVWPS-A2-MW11B-BL04	N	BL04	Zone 2	2,900	7,200	21	2,100	1.7	4.18
LVWPS-A2-MW11B	12/23/2020	LVWPS-A2-MW11B-EM01	N	EM01	Zone 2	2,600	6,100	22	2,100	2.3 J	7.73
LVWPS-A2-MW11C	10/2/2020	LVWPS-A2-MW11C-BL04	N	BL04	Zone 2	3,500	11,000	23	2,100	1.6	3.91
LVWPS-A2-MW11C	12/23/2020	LVWPS-A2-MW11C-EM01	N	EM01	Zone 2	3,000	9,800	23	2,100	<0.26	3.43
LVWPS-A2-MW12A	10/6/2020	LVWPS-A2-MW12A-BL04	N	BL04	Zone 2	4,400	5,300	18	2,100	1.7	4.83
LVWPS-A2-MW12A	12/22/2020	LVWPS-A2-MW12A-EM01	N	EM01	Zone 2	32	50 J	<0.014	2,500	120	0.56
LVWPS-A2-MW12A	12/22/2020	LVWPS-A2-MW12A-EM01-FD	FD	EM01	Zone 2	40	48 J	<0.014	2,400	120	--
LVWPS-A2-MW12B	10/7/2020	LVWPS-A2-MW12B-BL04	N	BL04	Zone 2	4,000	5,600	19	2,300	1.6	4.82
LVWPS-A2-MW12B	12/22/2020	LVWPS-A2-MW12B-EM01	N	EM01	Zone 2	12	<10	<0.014	2,100	45	0.53
LVWPS-A2-MW13A	10/1/2020	LVWPS-A2-MW13A-BL04	N	BL04	Zone 2	1,200	2,100	10	1,800	0.76	6.60
LVWPS-A2-MW13A	12/22/2020	LVWPS-A2-MW13A-EM01	N	EM01	Zone 2	1,100	1,300	7.3	1,900	1.4	6.32
LVWPS-A2-MW13B	10/1/2020	LVWPS-A2-MW13B-BL04	N	BL04	Zone 2	2,200	4,300	15	2,200	1.2	5.76
LVWPS-A2-MW13B	12/22/2020	LVWPS-A2-MW13B-EM01	N	EM01	Zone 2	610	830	3.5	2,200	32	2.43
LVWPS-A2-MW14A	10/6/2020	LVWPS-A2-MW14A-BL04	N	BL04	Zone 2	2,600	5,400	19	2,200	1.7	5.77
LVWPS-A2-MW14A	10/6/2020	LVWPS-A2-MW14A-BL04-FD	FD	BL04	Zone 2	2,700	5,100	19	2,200	1.7	--
LVWPS-A2-MW14A	12/22/2020	LVWPS-A2-MW14A-EM01	N	EM01	Zone 2	130	240	0.58 J-	2,300	28	0.33
LVWPS-A2-MW14A	12/22/2020	LVWPS-A2-MW14A-EM01-FD	FD	EM01	Zone 2	140	210	0.58 J-	2,200	29	--
LVWPS-A2-MW14B	10/6/2020	LVWPS-A2-MW14B-BL04	N	BL04	Zone 2	2,800	5,400	18	2,300	1.6	5.42
LVWPS-A2-MW14B	12/22/2020	LVWPS-A2-MW14B-EM01	N	EM01	Zone 2	1,700	2,800	7.9	2,400	7.4	0.28
LVWPS-A2-MW15A	10/7/2020	LVWPS-A2-MW15A-BL04	N	BL04	Zone 2	3,400	5,100	20	2,100	1.7	4.55
LVWPS-A2-MW15A	12/21/2020	LVWPS-A2-MW15A-EM01	N	EM01	Zone 2	3,000	5,100	19	2,000	1.9	4.42
LVWPS-A2-MW15B	10/8/2020	LVWPS-A2-MW15B-BL04	N	BL04	Zone 2	3,200	9,000	22	2,300	1.7	3.90
LVWPS-A2-MW15B	12/22/2020	LVWPS-A2-MW15B-EM01	N	EM01	Zone 2	3,300	7,600	24	2,200	2.0	4.30
LVWPS-A2-MW16A	10/9/2020	LVWPS-A2-MW16A-BL04	N	BL04	Zone 2	3,500	5,800	22	2,100	1.6	5.17
LVWPS-A2-MW16A	12/22/2020	LVWPS-A2-MW16A-EM01	N	EM01	Zone 2	3,600	5,600	21	2,000	1.8	3.55
LVWPS-A2-MW16B	10/9/2020	LVWPS-A2-MW16B-BL04	N	BL04	Zone 2	3,600	9,000	22	2,200	1.5	4.45
LVWPS-A2-MW16B	10/9/2020	LVWPS-A2-MW16B-BL04-FD	FD	BL04	Zone 2	3,400	9,100	22	2,200	1.6	--
LVWPS-A2-MW16B	12/22/2020	LVWPS-A2-MW16B-EM01	N	EM01	Zone 2	4,100	7,800	22 J-	2,100	2.0	3.44
LVWPS-A2-MW17A	10/1/2020	LVWPS-A2-MW17A-BL04	N	BL04	Zone 2	2,500	5,300	19	2,100	1.7	4.90
LVWPS-A2-MW17A	12/22/2020	LVWPS-A2-MW17A-EM01	N	EM01	Zone 2	2,100	2,100	6.4	2,200	2.8	0.37
LVWPS-A2-MW17B	10/1/2020	LVWPS-A2-MW17B-BL04	N	BL04	Zone 2	2,700	5,700	21	2,100	1.7	4.83
LVWPS-A2-MW17B	12/22/2020	LVWPS-A2-MW17B-EM01	N	EM01	Zone 2	560	350	1.2	2,200	7.6	0.37
LVWPS-A2-MW17C	10/1/2020	LVWPS-A2-MW17C-BL04	N	BL04	Zone 2	2,200	3,700	14	2,100	1.1	5.67
LVWPS-A2-MW17C	12/22/2020	LVWPS-A2-MW17C-EM01	N	EM01	Zone 2	2,000	1,700	4.3	1,900	4.8	2.30
LVWPS-A3-MW02	10/5/2020	LVWPS-A3-MW02-BL04	N	BL04	Zone 3	100	150	7.0	900	0.29 J	6.42
LVWPS-A3-MW06	10/5/2020	LVWPS-A3-MW06-BL04	N	BL04	Zone 3	110	150	9.0	1,300	0.45 J	7.24
LVWPS-A3-MW07	10/8/2020	LVWPS-A3-MW07-BL04	N	BL04	Zone 3	100	210	6.4	1,100	0.45 J	6.98
LVWPS-A3-MW08	10/8/2020	LVWPS-A3-MW08-BL04	N	BL04	Zone 3	120	180	8.5	1,600	0.81	4.73
LVWPS-A3-MW10	10/5/2020	LVWPS-A3-MW10-BL04	N	BL04	Zone 3	200	200	7.5	870	0.26 J	7.31
LVWPS-A3-MW11	10/7/2020	LVWPS-A3-MW11-BL04	N	BL04	Zone 3	78	160	9.2	1,600	0.96	8.50
LVWPS-A3-MW12	10/5/2020	LVWPS-A3-MW12-BL04	N	BL04	Zone 3	200	270	7.2	1,200	0.40 J	6.48

Table 10
Groundwater Analytical Results
 Las Vegas Wash Bioremediation Pilot Study

Well	Sample Date	Sample ID	QC Type	Event	Zone	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
						µg/L	µg/L	mg/L	mg/L	mg/L	mg/L
LVWPS-EW01	9/29/2020	LVWPS-EW01-BL04	N	BL04	Extraction	2,900	13,000	23	2,200	1.6	2.76
LVWPS-EW02	9/29/2020	LVWPS-EW02-BL04	N	BL04	Extraction	2,900	5,500	20	2,100	1.9	4.29
LVWPS-EW03	9/30/2020	LVWPS-EW03-BL04	N	BL04	Extraction	3,100	5,000	18	2,100	1.7	4.09
LVWPS-EW04	9/30/2020	LVWPS-EW04-BL04	N	BL04	Extraction	2,800	5,200	20	2,100	2.0	4.35
LVWPS-EW05	9/29/2020	LVWPS-EW05-BL04	N	BL04	Extraction	2,800	11,000	23	2,100	1.8	2.32
LVWPS-EW05	9/29/2020	LVWPS-EW05-BL04-FD	FD	BL04	Extraction	2,800	11,000	23	2,100	1.7	--
LVWPS-MW201A	9/28/2020	LVWPS-MW201A-BL04	N	BL04	General Vicinity	1,800	11,000	13	--	--	0.59
LVWPS-MW201B	9/28/2020	LVWPS-MW201B-BL04	N	BL04	General Vicinity	610	560	0.55	--	--	1.13
LVWPS-MW202	9/29/2020	LVWPS-MW202-BL04	N	BL04	General Vicinity	1,100	6,000	12	--	--	0.80
LVWPS-MW203A	9/30/2020	LVWPS-MW203A-BL04	N	BL04	General Vicinity	120	<40	9.3	--	--	0.74
LVWPS-MW203A	9/30/2020	LVWPS-MW203A-BL04-FD	FD	BL04	General Vicinity	120	<40	9.3	--	--	--
LVWPS-MW203B	9/30/2020	LVWPS-MW203B-BL04	N	BL04	General Vicinity	2.6 J-	<40	<0.014	--	--	0.88
LVWPS-MW203C	9/30/2020	LVWPS-MW203C-BL04	N	BL04	General Vicinity	<0.31	<20	<0.014	--	--	0.65
LVWPS-MW204	9/28/2020	LVWPS-MW204-BL04	N	BL04	General Vicinity	1,600	10,000	14	1,300	1.4	1.84
LVWPS-MW204	9/28/2020	LVWPS-MW204-BL04-FD	FD	BL04	General Vicinity	1,600	10,000	14	1,300	1.3	--
LVWPS-MW204B	9/28/2020	LVWPS-MW204B-BL04	N	BL04	General Vicinity	12,000	22,000	15	1,800	0.75	2.92
LVWPS-MW204C	10/7/2020	LVWPS-MW204C-BL04	N	BL04	General Vicinity	46	<100	<0.028	--	--	2.40
LVWPS-MW205B	9/28/2020	LVWPS-MW205B-BL04	N	BL04	General Vicinity	1,300	6,300	12	--	--	0.50
LVWPS-MW205C	9/29/2020	LVWPS-MW205C-BL04	N	BL04	General Vicinity	790	2,700	11	--	--	0.87
LVWPS-MW206A	9/30/2020	LVWPS-MW206A-BL04	N	BL04	Extraction	3,400 J-	8,500	23	--	--	3.77
LVWPS-MW206B	9/30/2020	LVWPS-MW206B-BL04	N	BL04	Extraction	2,800	16,000	10	--	--	1.84
LVWPS-MW206C	9/30/2020	LVWPS-MW206C-BL04	N	BL04	Extraction	4,900 J-	6,000	3.4	--	--	2.70
LVWPS-MW206D	10/6/2020	LVWPS-MW206D-BL04	N	BL04	Extraction	9.5	<10	<0.014	--	--	2.08
LVWPS-MW206E	10/5/2020	LVWPS-MW206E-BL04	N	BL04	Extraction	39	<100	<0.014	--	--	2.11
LVWPS-MW207	9/28/2020	LVWPS-MW207-BL04	N	BL04	General Vicinity	2,200	14,000	18	1,800	1.5	1.55
LVWPS-MW207	12/22/2020	LVWPS-MW207-EM01	N	EM01	General Vicinity	4,900	13,000	17	1,900	1.6	1.27
LVWPS-MW208A	10/9/2020	LVWPS-MW208A-BL04	N	BL04	Zone 2	1,900	2,900	12	2,100	0.93	5.77
LVWPS-MW208A	12/23/2020	LVWPS-MW208A-EM01	N	EM01	Zone 2	2,200	2,300	9.4	1,900	0.81	4.14
LVWPS-MW208B	10/9/2020	LVWPS-MW208B-BL04	N	BL04	Zone 2	2,100	3,200	12	2,000	1.0	5.90
LVWPS-MW208B	12/23/2020	LVWPS-MW208B-EM01	N	EM01	Zone 2	870	42 J	0.23	1,900	11	0.31
LVWPS-MW208B	12/23/2020	LVWPS-MW208B-EM01-FD	FD	EM01	Zone 2	810	39 J	0.23	1,900	11	--
LVWPS-MW209	10/6/2020	LVWPS-MW209-BL04	N	BL04	General Vicinity	2,700	8,500	22	2,200	1.6	4.40
LVWPS-MW209	10/6/2020	LVWPS-MW209-BL04-FD	FD	BL04	General Vicinity	2,800	9,000	22	2,200	1.6	--
LVWPS-MW209	12/21/2020	LVWPS-MW209-EM01	N	EM01	General Vicinity	3,000	7,600	18	2,200	1.8	2.38
LVWPS-MW209A	10/6/2020	LVWPS-MW209A-BL04	N	BL04	General Vicinity	2,800	6,800	21	2,200	1.7	4.72
LVWPS-MW209A	12/21/2020	LVWPS-MW209A-EM01	N	EM01	General Vicinity	3,000	5,300	20	2,300	1.6	3.96
LVWPS-MW209B	10/6/2020	LVWPS-MW209B-BL04	N	BL04	General Vicinity	2,700	8,300	21	--	--	4.30
LVWPS-MW209C	10/7/2020	LVWPS-MW209C-BL04	N	BL04	General Vicinity	8,500	12,000	14	--	--	2.44
LVWPS-MW210A	10/6/2020	LVWPS-MW210A-BL04	N	BL04	General Vicinity	2,600	12,000	20	1,800	1.5	2.44
LVWPS-MW210A	12/21/2020	LVWPS-MW210A-EM01	N	EM01	General Vicinity	3,100	13,000	21	2,000	1.6	2.04
LVWPS-MW210B	10/6/2020	LVWPS-MW210B-BL04	N	BL04	General Vicinity	2,800	9,700	22	2,100	1.6	3.60
LVWPS-MW210B	12/21/2020	LVWPS-MW210B-EM01	N	EM01	General Vicinity	2,800	8,300	15	2,100	1.9	1.48
LVWPS-MW210C	10/11/2020	LVWPS-MW210C-BL04	N	BL04	General Vicinity	10,000 J-	17,000	15	--	--	2.59
LVWPS-MW210D	10/7/2020	LVWPS-MW210D-BL04	N	BL04	General Vicinity	8,500	10,000	3.8	--	--	3.24
LVWPS-MW210E	10/7/2020	LVWPS-MW210E-BL04	N	BL04	General Vicinity	4,400	7,100	2.2	--	--	2.19
LVWPS-MW211	9/30/2020	LVWPS-MW211-BL04	N	BL04	General Vicinity	2,000	3,200	14	2,100	1.1	6.33
LVWPS-MW211	12/21/2020	LVWPS-MW211-EM01	N	EM01	General Vicinity	2,100	3,000	13	1,900	0.99	5.52
LVWPS-MW212A	10/5/2020	LVWPS-MW212A-BL04	N	BL04	Zone 3	390	460	8.5	1,200	0.47 J	6.73
LVWPS-MW212A	12/21/2020	LVWPS-MW212A-EM01	N	EM01	Zone 3	400	510	8.9	1,200	0.43 J	6.56
LVWPS-MW212B	10/5/2020	LVWPS-MW212B-BL04	N	BL04	Zone 3	170	200	7.7	980	0.32 J	6.48
LVWPS-MW212B	12/22/2020	LVWPS-MW212B-EM01	N	EM01	Zone 3	150	190	7.8	1,100	0.29 J	6.57
LVWPS-MW212C	10/5/2020	LVWPS-MW212C-BL04	N	BL04	Zone 3	7,800	11,000	8.4	--	--	4.32
LVWPS-MW212D	10/8/2020	LVWPS-MW212D-BL04	N	BL04	Zone 3	6,800	11,000	10	--	--	5.60
LVWPS-MW213	10/11/2020	LVWPS-MW213-BL04	N	BL04	General Vicinity	170	260	3.2	--	--	4.96

Table 10
Groundwater Analytical Results
 Las Vegas Wash Bioremediation Pilot Study

Well	Sample Date	Sample ID	QC Type	Event	Zone	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
						µg/L	µg/L	mg/L	mg/L	mg/L	mg/L
LVWPS-MW213	10/1/2020	LVWPS-MW213-BL04-FD	FD	BL04	General Vicinity	140	270	3.2	--	--	--
LVWPS-MW214	10/7/2020	LVWPS-MW214-BL04	N	BL04	General Vicinity	2,500	3,700	14	--	--	5.16
LVWPS-MW215A	10/8/2020	LVWPS-MW215A-BL04	N	BL04	General Vicinity	2,600 J-	9,700	17	--	--	1.26
LVWPS-MW215B	10/9/2020	LVWPS-MW215B-BL04	N	BL04	General Vicinity	2,600	6,700	11	--	--	1.46
LVWPS-MW216	10/7/2020	LVWPS-MW216-BL04	N	BL04	General Vicinity	1,100	930	4.0	--	--	0.66
LVWPS-MW216	10/7/2020	LVWPS-MW216-BL04-FD	FD	BL04	General Vicinity	1,100	940	4.1	--	--	--
LVWPS-MW217A	9/30/2020	LVWPS-MW217A-BL04	N	BL04	Zone 1	2,200	11,000	15	1,500	1.4	2.60
LVWPS-MW217B	9/30/2020	LVWPS-MW217B-BL04	N	BL04	Zone 1	7,300	14,000	15	1,600	1.0	2.53
LVWPS-MW217C	10/5/2020	LVWPS-MW217C-BL04	N	BL04	Zone 1	6,200	10,000	12	1,600	1.5	2.53
LVWPS-MW218A	10/5/2020	LVWPS-MW218A-BL04	N	BL04	General Vicinity	5,100	14,000	20	1,900	1.4	4.72
LVWPS-MW218A	12/21/2020	LVWPS-MW218A-EM01	N	EM01	General Vicinity	3,200	14,000	21	2,000	1.5	3.89
LVWPS-MW218B	10/2/2020	LVWPS-MW218B-BL04	N	BL04	General Vicinity	8,400	13,000	16	--	--	5.83
LVWPS-MW218C	10/2/2020	LVWPS-MW218C-BL04	N	BL04	General Vicinity	5,300	7,200	4.3	--	--	1.78
LVWPS-MW219A	10/9/2020	LVWPS-MW219A-BL04	N	BL04	General Vicinity	3,500	8,500	19	--	--	5.78
LVWPS-MW219B	10/9/2020	LVWPS-MW219B-BL04	N	BL04	General Vicinity	2.2	<100	<0.014	--	--	3.23
LVWPS-MW219C	10/9/2020	LVWPS-MW219C-BL04	N	BL04	General Vicinity	53	<10	0.045 J	--	--	2.43
LVWPS-MW220A	10/5/2020	LVWPS-MW220A-BL04	N	BL04	General Vicinity	3,100	9,400	21	2,100	1.6	3.77
LVWPS-MW220A	12/21/2020	LVWPS-MW220A-EM01	N	EM01	General Vicinity	3,100	7,000	20	2,200	1.8	3.31
LVWPS-MW220B	10/7/2020	LVWPS-MW220B-BL04	N	BL04	General Vicinity	4,200	10,000	12	--	--	2.66
LVWPS-MW221A	10/6/2020	LVWPS-MW221A-BL04	N	BL04	Zone 2	990 J-	710	8.4	1,500 J+	0.51 J-	7.60
LVWPS-MW221A	12/22/2020	LVWPS-MW221A-EM01	N	EM01	Zone 2	610	710	8.2	1,500	1.7 J	6.85
LVWPS-MW221B	10/6/2020	LVWPS-MW221B-BL04	N	BL04	Zone 2	6,600	11,000	5.8	1,500 J+	0.54	3.09
LVWPS-MW222A	10/2/2020	LVWPS-MW222A-BL04	N	BL04	Zone 3	2,900	3,800	4.1	--	--	2.97
LVWPS-MW222B	10/7/2020	LVWPS-MW222B-BL04	N	BL04	Zone 3	1,500	1,200	1.6	--	--	3.10
LVWPS-MW222C	10/2/2020	LVWPS-MW222C-BL04	N	BL04	Zone 3	1,500	1,300	2.4	--	--	2.25
LVWPS-MW223A	10/6/2020	LVWPS-MW223A-BL04	N	BL04	Zone 2	3,300	5,900	17	2,400	1.4	4.57
LVWPS-MW223A	10/6/2020	LVWPS-MW223A-BL04-FD	FD	BL04	Zone 2	3,900	5,800	17	2,400	1.4	--
LVWPS-MW223A	12/22/2020	LVWPS-MW223A-EM01	N	EM01	Zone 2	4,100	370	0.54	2,700	11	0.33
LVWPS-MW223B	10/6/2020	LVWPS-MW223B-BL04	N	BL04	Zone 2	3,300	6,100	20	2,100	1.8	4.26
LVWPS-MW223B	12/22/2020	LVWPS-MW223B-EM01	N	EM01	Zone 2	2,100	2,800	6.7 J-	2,100	3.5	0.44
LVWPS-MW223C	10/7/2020	LVWPS-MW223C-BL04	N	BL04	Zone 2	5,700	7,700	14	2,100	1.1	2.77
LVWPS-MW224A	10/7/2020	LVWPS-MW224A-BL04	N	BL04	Zone 2	2,300	2,900	11	2,000	0.90	6.09
LVWPS-MW224A	12/23/2020	LVWPS-MW224A-EM01	N	EM01	Zone 2	2,700	2,800	11	2,200	1.4 J	6.34
LVWPS-MW224B	10/7/2020	LVWPS-MW224B-BL04	N	BL04	Zone 2	200	220	0.63	--	--	1.48
LVWPS-MW224C	10/8/2020	LVWPS-MW224C-BL04	N	BL04	Zone 2	30	<100	0.068	--	--	2.10
LVWPS-MW225A	10/7/2020	LVWPS-MW225A-BL04	N	BL04	General Vicinity	2,300	5,200	22	--	--	4.35
LVWPS-MW225A	10/7/2020	LVWPS-MW225A-BL04-FD	FD	BL04	General Vicinity	2,300	5,200	22	--	--	--
LVWPS-MW225B	10/7/2020	LVWPS-MW225B-BL04	N	BL04	General Vicinity	4,000	5,100	3.3	--	--	1.92
LVWPS-MW226A	10/1/2020	LVWPS-MW226A-BL04	N	BL04	General Vicinity	2,800	5,100	19	--	--	3.71
LVWPS-MW226A	10/1/2020	LVWPS-MW226A-BL04-FD	FD	BL04	General Vicinity	2,300	4,900	19	--	--	--
LVWPS-MW226B	10/1/2020	LVWPS-MW226B-BL04	N	BL04	General Vicinity	37	<100	<0.014	--	--	0.79
LVWPS-U1-IW01A	9/29/2020	LVWPS-U1-IW01A-BL04	N	BL04	Zone 1	9,700	18,000	14	--	--	0.86
LVWPS-U1-IW01B	9/29/2020	LVWPS-U1-IW01B-BL04	N	BL04	Zone 1	7,800	13,000	13	--	--	0.80
LVWPS-U1-IW02A	9/30/2020	LVWPS-U1-IW02A-BL04	N	BL04	Zone 1	2,200	5,000	11	--	--	0.68
LVWPS-U1-IW02B	9/30/2020	LVWPS-U1-IW02B-BL04	N	BL04	Zone 1	3,400	6,900	9.8	--	--	1.82
LVWPS-U1-IW03A	9/30/2020	LVWPS-U1-IW03A-BL04	N	BL04	Zone 1	2,500	5,200	13	--	--	0.68
LVWPS-U1-IW03B	9/30/2020	LVWPS-U1-IW03B-BL04	N	BL04	Zone 1	1,400	3,900	10	--	--	2.18
LVWPS-U1-IW04A	9/28/2020	LVWPS-U1-IW04A-BL04	N	BL04	Zone 1	3,500	6,600	12	--	--	0.53
LVWPS-U1-IW04A	9/28/2020	LVWPS-U1-IW04A-BL04-FD	FD	BL04	Zone 1	3,500	6,600	12	--	--	--
LVWPS-U1-IW04B	9/28/2020	LVWPS-U1-IW04B-BL04	N	BL04	Zone 1	3,400	4,800	11	--	--	2.37
LVWPS-U1-IW05A	9/29/2020	LVWPS-U1-IW05A-BL04	N	BL04	Zone 1	2,100	4,300	10	--	--	0.51
LVWPS-U1-IW05B	9/29/2020	LVWPS-U1-IW05B-BL04	N	BL04	Zone 1	2,500	5,100	11	--	--	1.34
LVWPS-U1-IW06A	9/30/2020	LVWPS-U1-IW06A-BL04	N	BL04	Zone 1	2,400	3,600	8.5	--	--	1.60
LVWPS-U1-IW06B	9/30/2020	LVWPS-U1-IW06B-BL04	N	BL04	Zone 1	2,500	3,900	10	--	--	2.07

Table 10
Groundwater Analytical Results
 Las Vegas Wash Bioremediation Pilot Study

Well	Sample Date	Sample ID	QC Type	Event	Zone	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
						µg/L	µg/L	mg/L	mg/L	mg/L	mg/L
LVWPS-U1-IW07A	10/1/2020	LVWPS-U1-IW07A-BL04	N	BL04	Zone 1	3,100	4,500	9.5	--	--	3.39
LVWPS-U1-IW07B	10/1/2020	LVWPS-U1-IW07B-BL04	N	BL04	Zone 1	4,300	4,900	9.5	--	--	2.21
LVWPS-U1-IW08A	10/1/2020	LVWPS-U1-IW08A-BL04	N	BL04	Zone 1	4,000	7,500	9.7	--	--	1.60
LVWPS-U1-IW08B	10/1/2020	LVWPS-U1-IW08B-BL04	N	BL04	Zone 1	4,900	6,700	11	--	--	1.92
LVWPS-U1-MW01A	9/28/2020	LVWPS-U1-MW01A-BL04	N	BL04	Zone 1	6,100	11,000	14	1,600	1.0	1.98
LVWPS-U1-MW01B	9/28/2020	LVWPS-U1-MW01B-BL04	N	BL04	Zone 1	7,100	12,000	13	1,800	1.2 J-	1.72
LVWPS-U1-MW02A	9/29/2020	LVWPS-U1-MW02A-BL04	N	BL04	Zone 1	4,200	7,600	12	1,600	1.2	4.60
LVWPS-U1-MW02B	10/7/2020	LVWPS-U1-MW02B-BL04	N	BL04	Zone 1	2,400	4,100	11	8,300	1.1	2.35
LVWPS-U1-MW03B	9/29/2020	LVWPS-U1-MW03B-BL04	N	BL04	Zone 1	4,300	7,800	14	1,400	1.5	6.71
LVWPS-U1-MW04A	9/30/2020	LVWPS-U1-MW04A-BL04	N	BL04	Zone 1	4,500	9,100	13	1,600	1.0	0.84
LVWPS-U1-MW04B	10/1/2020	LVWPS-U1-MW04B-BL04	N	BL04	Zone 1	4,200	9,200	13	1,700	2.1	1.75
LVWPS-U1-MW05A	9/29/2020	LVWPS-U1-MW05A-BL04	N	BL04	Zone 1	10,000	15,000	14	1,900	1.0	2.23
LVWPS-U1-MW05B	9/29/2020	LVWPS-U1-MW05B-BL04	N	BL04	Zone 1	5,100	8,800	13	1,800	1.2	1.71
LVWPS-U1-MW06A	9/29/2020	LVWPS-U1-MW06A-BL04	N	BL04	Zone 1	1,100	3,300	11	970	1.5	0.98
LVWPS-U1-MW06B	9/29/2020	LVWPS-U1-MW06B-BL04	N	BL04	Zone 1	1,700	3,800	11	1,000	1.7	1.03
LVWPS-U1-MW07	9/30/2020	LVWPS-U1-MW07-BL04	N	BL04	Zone 1	4,100	7,700	5.6	2,000	0.84	3.78
LVWPS-U1-MW08A	9/30/2020	LVWPS-U1-MW08A-BL04	N	BL04	Zone 1	4,700	7,300	13	1,500	1.7	2.21
LVWPS-U1-MW08B	9/30/2020	LVWPS-U1-MW08B-BL04	N	BL04	Zone 1	2,800	5,500	10	1,400	1.3	3.10
LVWPS-U1-MW09A	9/30/2020	LVWPS-U1-MW09A-BL04	N	BL04	Zone 1	7,500	12,000	13	1,900	1.8	1.62
LVWPS-U1-MW09B	9/30/2020	LVWPS-U1-MW09B-BL04	N	BL04	Zone 1	6,400	11,000	9.6	1,900	0.89	1.80
LVWPS-U1-MW10A	10/2/2020	LVWPS-U1-MW10A-BL04	N	BL04	Zone 1	9,200	16,000	9.9	2,000	0.55	3.77
LVWPS-U1-MW10B	10/2/2020	LVWPS-U1-MW10B-BL04	N	BL04	Zone 1	4,600	5,100	3.8	1,800	0.53	1.68
LVWPS-U2-IW01	10/8/2020	LVWPS-U2-IW01-BL04	N	BL04	Zone 2	8,100	12,000	9.0	--	--	3.48
LVWPS-U2-IW01	10/8/2020	LVWPS-U2-IW01-BL04-FD	FD	BL04	Zone 2	6,900	11,000	8.6	--	--	--
LVWPS-U2-IW02	10/8/2020	LVWPS-U2-IW02-BL04	N	BL04	Zone 2	8,100	12,000	8.7	--	--	3.80
LVWPS-U2-IW03	10/8/2020	LVWPS-U2-IW03-BL04	N	BL04	Zone 2	7,100	11,000	12	--	--	2.66
LVWPS-U2-IW04	10/8/2020	LVWPS-U2-IW04-BL04	N	BL04	Zone 2	3,900	6,500	19	--	--	4.10
LVWPS-U2-IW05	10/8/2020	LVWPS-U2-IW05-BL04	N	BL04	Zone 2	8,500	14,000	12	--	--	4.95
LVWPS-U2-IW06	10/8/2020	LVWPS-U2-IW06-BL04	N	BL04	Zone 2	10,000	17,000	14	--	--	3.46
LVWPS-U2-IW07	10/6/2020	LVWPS-U2-IW07-BL04	N	BL04	Zone 2	6,000	8,700	5.7	--	--	1.85
LVWPS-U2-IW08	10/6/2020	LVWPS-U2-IW08-BL04	N	BL04	Zone 2	12,000	20,000	17	--	--	5.08
LVWPS-U2-IW09	10/6/2020	LVWPS-U2-IW09-BL04	N	BL04	Zone 2	35	63 J	0.11	--	--	2.85
LVWPS-U2-IW10	10/6/2020	LVWPS-U2-IW10-BL04	N	BL04	Zone 2	400	150	<0.014	--	--	3.48
LVWPS-U2-IW11	10/6/2020	LVWPS-U2-IW11-BL04	N	BL04	Zone 2	1,400	2,400	2.6	--	--	3.31
LVWPS-U2-IW12	10/8/2020	LVWPS-U2-IW12-BL04	N	BL04	Zone 2	5,900	8,300	11	--	--	4.65
LVWPS-U2-MW01	10/8/2020	LVWPS-U2-MW01-BL04	N	BL04	Zone 2	360	450	0.89	2,500	0.36 J	1.63
LVWPS-U2-MW02	10/8/2020	LVWPS-U2-MW02-BL04	N	BL04	Zone 2	5,200	8,300	6.2	1,800	0.64	8.10
LVWPS-U2-MW03	10/9/2020	LVWPS-U2-MW03-BL04	N	BL04	Zone 2	2,100	3,400	11	2,000	0.98	3.53
LVWPS-U2-MW04	10/6/2020	LVWPS-U2-MW04-BL04	N	BL04	Zone 2	160	260	0.27	3,000	0.27 J	0.93
LVWPS-U2-MW05	10/5/2020	LVWPS-U2-MW05-BL04	N	BL04	Zone 2	9,300	15,000	8.4	1,300	0.41 J	4.35
LVWPS-U2-MW06	10/1/2020	LVWPS-U2-MW06-BL04	N	BL04	Zone 2	4,100	7,300	9.5	1,900	0.94	2.79
LVWPS-U2-MW07	10/2/2020	LVWPS-U2-MW07-BL04	N	BL04	Zone 2	1,600	2,600	10	1,900	0.74	5.79
LVWPS-U2-MW08	10/1/2020	LVWPS-U2-MW08-BL04	N	BL04	Zone 2	4,600	8,100	17	2,100	1.5	2.63
LVWPS-U2-MW09	10/9/2020	LVWPS-U2-MW09-BL04	N	BL04	Zone 2	12,000	18,000	17	2,200	1.1	2.06
LVWPS-U2-MW10	10/2/2020	LVWPS-U2-MW10-BL04	N	BL04	Zone 2	6,000	8,900	15	2,200	1.1	4.16
LVWPS-U2-MW12	10/7/2020	LVWPS-U2-MW12-BL04	N	BL04	Zone 2	8,800	12,000	18	2,000	1.1	4.13
LVWPS-U2-MW13	10/2/2020	LVWPS-U2-MW13-BL04	N	BL04	Zone 2	5,400	11,000	17	2,100	1.2	3.58
LVWPS-U2-MW13	10/2/2020	LVWPS-U2-MW13-BL04-FD	FD	BL04	Zone 2	5,800	11,000	17	2,300	1.4	--
LVWPS-U2-MW14	10/6/2020	LVWPS-U2-MW14-BL04	N	BL04	Zone 2	11,000	360	17	2,000	0.78	5.18
LVWPS-U2-MW17	10/1/2020	LVWPS-U2-MW17-BL04	N	BL04	Zone 2	4,500	10,000	11	1,700	0.66	2.28
LVWPS-U2-MW18	10/5/2020	LVWPS-U2-MW18-BL04	N	BL04	Zone 2	8,400	10,000	18	2,200	1.3	4.49
LVWPS-U2-MW19	10/2/2020	LVWPS-U2-MW19-BL04	N	BL04	Zone 2	12,000	14,000	14	2,100	1.0	3.29
LVWPS-U2-MW20	10/2/2020	LVWPS-U2-MW20-BL04	N	BL04	Zone 2	6,000	13,000	12	2,200	1.5	1.38
LVWPS-U3-IW01	10/9/2020	LVWPS-U3-IW01-BL04	N	BL04	Zone 3	3,100	4,900	8.3	--	--	5.57

Table 10
Groundwater Analytical Results
 Las Vegas Wash Bioremediation Pilot Study

Well	Sample Date	Sample ID	QC Type	Event	Zone	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
						µg/L	µg/L	mg/L	mg/L	mg/L	mg/L
LVWPS-U3-IW02A	10/6/2020	LVWPS-U3-IW02A-BL04	N	BL04	Zone 3	10,000	15,000	14	--	--	4.02
LVWPS-U3-IW02B	10/6/2020	LVWPS-U3-IW02B-BL04	N	BL04	Zone 3	5,200	9,700	9.4	--	--	3.61
LVWPS-U3-IW03A	10/6/2020	LVWPS-U3-IW03A-BL04	N	BL04	Zone 3	1,800	3,500	8.3	--	--	3.56
LVWPS-U3-IW03B	10/6/2020	LVWPS-U3-IW03B-BL04	N	BL04	Zone 3	1,600	3,200	7.9	--	--	4.91
LVWPS-U3-IW04A	10/7/2020	LVWPS-U3-IW04A-BL04	N	BL04	Zone 3	210	390	7.7	--	--	5.74
LVWPS-U3-IW04B	10/7/2020	LVWPS-U3-IW04B-BL04	N	BL04	Zone 3	680	1,100	5.8	--	--	3.71
LVWPS-U3-IW05A	10/7/2020	LVWPS-U3-IW05A-BL04	N	BL04	Zone 3	230	380	7.8	--	--	5.74
LVWPS-U3-IW05B	10/7/2020	LVWPS-U3-IW05B-BL04	N	BL04	Zone 3	530	870	7.4	--	--	5.83
LVWPS-U3-IW06A	10/7/2020	LVWPS-U3-IW06A-BL04	N	BL04	Zone 3	340	540	7.6	--	--	5.89
LVWPS-U3-IW06B	10/8/2020	LVWPS-U3-IW06B-BL04	N	BL04	Zone 3	5,700	1,800	7.6	--	--	4.72
LVWPS-U3-IW06C	10/8/2020	LVWPS-U3-IW06C-BL04	N	BL04	Zone 3	3,800	4,100	8.1	--	--	5.71
LVWPS-U3-IW07A	10/8/2020	LVWPS-U3-IW07A-BL04	N	BL04	Zone 3	1,400	2,000	7.1	--	--	3.57
LVWPS-U3-IW07B	10/8/2020	LVWPS-U3-IW07B-BL04	N	BL04	Zone 3	9,400	15,000	9.0	--	--	0.80
LVWPS-U3-IW07C	10/9/2020	LVWPS-U3-IW07C-BL04	N	BL04	Zone 3	7,300	14,000	8.0	--	--	0.73
LVWPS-U3-IW08A	10/8/2020	LVWPS-U3-IW08A-BL04	N	BL04	Zone 3	1,900	2,600	5.8	--	--	0.79
LVWPS-U3-IW08A	10/8/2020	LVWPS-U3-IW08A-BL04-FD	FD	BL04	Zone 3	1,900	2,600	5.5	--	--	--
LVWPS-U3-IW08B	10/8/2020	LVWPS-U3-IW08B-BL04	N	BL04	Zone 3	15,000	21,000	12	--	--	0.94
LVWPS-U3-IW08C	10/9/2020	LVWPS-U3-IW08C-BL04	N	BL04	Zone 3	2,400	3,500	2.3	--	--	0.66
LVWPS-U3-MW01B	10/5/2020	LVWPS-U3-MW01B-BL04	N	BL04	Zone 3	2,000	1,800	0.24	1,700	6.3	2.06
LVWPS-U3-MW02A	10/5/2020	LVWPS-U3-MW02A-BL04	N	BL04	Zone 3	3,000	770	5.7	1,400	0.54	2.01
LVWPS-U3-MW02B	10/5/2020	LVWPS-U3-MW02B-BL04	N	BL04	Zone 3	8,400	12,000	10	2,000	2.1	1.70
LVWPS-U3-MW03A	10/2/2020	LVWPS-U3-MW03A-BL04	N	BL04	Zone 3	3,300	4,500	7.5	2,800	0.57 J-	6.40
LVWPS-U3-MW03A	10/2/2020	LVWPS-U3-MW03A-BL04-FD	FD	BL04	Zone 3	3,500	4,500	7.5	2,800	0.62 J-	--
LVWPS-U3-MW03B	10/2/2020	LVWPS-U3-MW03B-BL04	N	BL04	Zone 3	3,800	13,000	9.1	1,900	0.41 J	3.23
LVWPS-U3-MW03C	10/1/2020	LVWPS-U3-MW03C-BL04	N	BL04	Zone 3	4,900	12,000	7.7	1,900	0.32 J	2.96
LVWPS-U3-MW04B	10/2/2020	LVWPS-U3-MW04B-BL04	N	BL04	Zone 3	120	67 J	<0.014	1,600	6.8	2.03
LVWPS-U3-MW05B	10/2/2020	LVWPS-U3-MW05B-BL04	N	BL04	Zone 3	9.4	<10	<0.014	1,900	8.4	2.07
LVWPS-U3-MW06A	10/5/2020	LVWPS-U3-MW06A-BL04	N	BL04	Zone 3	9,900	15,000	13	1,700	0.48 J	5.05
LVWPS-U3-MW06B	10/7/2020	LVWPS-U3-MW06B-BL04	N	BL04	Zone 3	630	1,200	6.6	1,500	0.43 J	4.23
LVWPS-U3-MW07A	10/9/2020	LVWPS-U3-MW07A-BL04	N	BL04	Zone 3	250	540	5.9	1,200	0.39 J	5.45
LVWPS-U3-MW07B	10/9/2020	LVWPS-U3-MW07B-BL04	N	BL04	Zone 3	4,800	8,500	9.2	2,100	0.41 J	6.07
LVWPS-U3-MW08A	10/8/2020	LVWPS-U3-MW08A-BL04	N	BL04	Zone 3	15,000	22,000	14	2,300	0.47 J	5.05
LVWPS-U3-MW08B	10/8/2020	LVWPS-U3-MW08B-BL04	N	BL04	Zone 3	6,100	8,100	4.9	2,200	2.6	2.46
LVWPS-U3-MW09	10/7/2020	LVWPS-U3-MW09-BL04	N	BL04	Zone 3	3,500	6,100	4.8	1,300	<0.26	4.35
LVWPS-U3-MW10A	10/5/2020	LVWPS-U3-MW10A-BL04	N	BL04	Zone 3	2,600	3,200	3.0	1,800	0.77	0.99
LVWPS-U3-MW10B	10/5/2020	LVWPS-U3-MW10B-BL04	N	BL04	Zone 3	3,200	4,200	6.5	1,600	0.32 J	6.76
LVWPS-U3-MW11A	10/7/2020	LVWPS-U3-MW11A-BL04	N	BL04	Zone 3	10,000	16,000	9.8	2,000	0.42 J	2.55
LVWPS-U3-MW11B	10/7/2020	LVWPS-U3-MW11B-BL04	N	BL04	Zone 3	4,100	9,600	5.2	1,900	0.33 J	1.23
LVWPS-U3-MW11C	10/8/2020	LVWPS-U3-MW11C-BL04	N	BL04	Zone 3	5,300	7,100	8.5	2,000	0.46 J	4.73
LVWPS-U3-MW12A	10/6/2020	LVWPS-U3-MW12A-BL04	N	BL04	Zone 3	2,700	4,200	5.1	1,800	0.38 J	2.67
LVWPS-U3-MW12B	10/6/2020	LVWPS-U3-MW12B-BL04	N	BL04	Zone 3	6,000	4,900	6.6	1,700	0.27 J	5.94
LVWPS-U3-MW13A	10/7/2020	LVWPS-U3-MW13A-BL04	N	BL04	Zone 3	3,900	7,200	11	2,000	0.45 J	5.44
LVWPS-U3-MW13B	10/7/2020	LVWPS-U3-MW13B-BL04	N	BL04	Zone 3	350	550	6.8	1,500	0.45 J	5.92

Notes:

mg/L - milligrams per liter

ug/L - micrograms per liter

-- not analyzed

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

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.

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

Table 11
Tracer Dye Concentration of Batches
Injection Event 1 - December 2020
 Las Vegas Wash Bioremediation Pilot Study

Batch Type	Batch ID	Sample ID	Lab Sample Number	Sample Type	Date/Time Collected	Fluorescein		Rhodamine WT	
						Peak (nm)	Conc (ppb)	Peak (nm)	Conc (ppb)
Zone 2 - Alluvium - Carbon	1B	BO-1B-20201205	E9378	N	12/5/20 1610	ND	ND	567.0	5,720
Zone 2 - Alluvium - Carbon	2C	BO-2C-20201205	E9379	N	12/5/20 1625	ND	ND	567.0	7,390
Zone 2 - Alluvium - Carbon	3A	BO-3A-20201208	E9393	N	12/8/20 1248	ND	ND	567.6	7,170
Zone 2 - Alluvium - Carbon	4B	BO-4B-20201209	E9394	N	12/9/20 0731	ND	ND	567.0	7,240
Zone 2 - Alluvium - Carbon	5C	BO-5C-20201209	E9395	N	12/9/20 0741	ND	ND	567.0	6,250
Zone 2 - Alluvium Distribution Water	6A	BW-6A-20201209	E9403	N	12/9/20 1559	ND	ND	567.0	7,700
Zone 2 - Alluvium Distribution Water	7B	BW-7B-20201209	E9404	N	12/9/20 1300	ND	ND	567.1	7,350
Zone 1 - UMCf - Carbon	1C	BO-1C-20201213	E9434	N	12/13/20 0800	513.7	1,050	ND	ND
Zone 1 - UMCf - Carbon	2B	BO-2B-20201213	E9435	N	12/13/20 0745	513.9	889	ND	ND
Zone 3 - UMCf-cg Carbon	1C	BO-1C-20201215	E9817	N	12/15/20 1505	515.9 **	911	ND	ND
Zone 3 - UMCf-cg Carbon	1C	BO-1C-20201215-FD	E9818	FD	12/15/20 1504	515.8 **	1,290	ND	ND
Zone 3 - UMCf-cg Carbon	2B	BO-2B-20201215	E9819	N	12/15/20 1450	515.4 **	2,300	ND	ND
Zone 3 - UMCf-cg Carbon	3C	BO-3C-20201217	E9867	N	12/17/20 1212	515.8 **	753	ND	ND
Zone 2 - UMCf - Carbon	2C	BO-2C-20201219	E9887	N	12/19/20 1325	515.6 **	648	ND	ND
Zone 2 - UMCf - Carbon	1B	BO-1B-20201221	E9910	N	12/21/20 0710	515.4 **	463	ND	ND
Zone 2 - UMCf - Carbon	1B	BO-1B-20201221-FD	E9911	FD	12/21/20 0710	515.8 **	242	ND	ND

Notes:

- nm - nanometers
- conc - concentration
- ppb - parts per billion
- N - normal sample
- 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.

Table 12
Groundwater Dye Field Measurements
 Las Vegas Wash Bioremediation Pilot Study

Dose Response Well ID	Sample Date and Time	Upgradient Injection Well	Totalizer Reading for Injection Well at Sample Time	Field Probe Measurements		
				Rhodamine WT Concentration	Fluorescein Concentration	Sample Temperature
			gallons	ppb	ppb	°C
LVWPS-A2-DR01A	12/7/2020 14:07	LVWPS-A2-IW04A	238	0.00	NA	22.63
LVWPS-A2-DR01A	12/7/2020 14:59	LVWPS-A2-IW04A	1,673	0.00	NA	21.10
LVWPS-A2-DR01A	12/7/2020 16:08	LVWPS-A2-IW04A	1,663	60.43	NA	20.37
LVWPS-A2-DR01A	12/8/2020 10:51	LVWPS-A2-IW04A	0	116.00	NA	22.30
LVWPS-A2-DR01A	12/8/2020 14:34	LVWPS-A2-IW04A	5	121.03	NA	19.08
LVWPS-A2-DR01A	12/8/2020 15:19	LVWPS-A2-IW04A	155	139.02	NA	19.91
LVWPS-A2-DR01A	12/8/2020 15:29	LVWPS-A2-IW04A	353	136.82	NA	19.40
LVWPS-A2-DR01A	12/8/2020 15:38	LVWPS-A2-IW04A	514	158.23	NA	19.19
LVWPS-A2-DR01A	12/8/2020 15:45	LVWPS-A2-IW04A	610	137.39	NA	18.59
LVWPS-A2-DR01A	12/9/2020 9:46	LVWPS-A2-IW04A	304	130.45	NA	19.78
LVWPS-A2-DR01A	12/9/2020 10:02	LVWPS-A2-IW04A	576	150.97	NA	18.25
LVWPS-A2-DR01A	12/9/2020 10:23	LVWPS-A2-IW04A	997	174.61	NA	18.03
LVWPS-A2-DR01A	12/9/2020 10:50	LVWPS-A2-IW04A	1,486	154.20	NA	19.97
LVWPS-A2-DR01A	12/9/2020 11:17	LVWPS-A2-IW04A	1,997	141.58	NA	20.12
LVWPS-A2-DR01A	12/9/2020 11:42	LVWPS-A2-IW04A	2,418	175.67	NA	21.06
LVWPS-A2-DR01A	12/9/2020 12:08	LVWPS-A2-IW04A	2,843	171.94	NA	20.83
LVWPS-A2-DR01A	12/9/2020 15:11	LVWPS-A2-IW04A	2,848	178.27	NA	16.74
LVWPS-A2-DR01A	12/9/2020 15:34	LVWPS-A2-IW04A	3,019	191.19	NA	16.56
LVWPS-A2-DR01A	12/9/2020 15:46	LVWPS-A2-IW04A	3,090	222.51	NA	15.83
LVWPS-A2-DR01A	12/9/2020 15:56	LVWPS-A2-IW04A	3,490	259.02	NA	16.66
LVWPS-A2-DR01A	12/9/2020 16:13	LVWPS-A2-IW04A	3,838	294.42	NA	17.11
LVWPS-A2-DR01A	12/9/2020 16:47	LVWPS-A2-IW04A	4,395	187.51	NA	18.66
LVWPS-A2-DR01B	12/7/2020 14:09	LVWPS-A2-IW04B	265	0.00	NA	22.30
LVWPS-A2-DR01B	12/7/2020 15:01	LVWPS-A2-IW04B	833	90.02	NA	21.19
LVWPS-A2-DR01B	12/7/2020 16:12	LVWPS-A2-IW04B	1,098	111.16	NA	20.02
LVWPS-A2-DR01B	12/8/2020 10:55	LVWPS-A2-IW04B	0	0.00	NA	23.10

Table 12
Groundwater Dye Field Measurements
 Las Vegas Wash Bioremediation Pilot Study

Dose Response Well ID	Sample Date and Time	Upgradient Injection Well	Totalizer Reading for Injection Well at Sample Time	Field Probe Measurements		
				Rhodamine WT Concentration	Fluorescein Concentration	Sample Temperature
				gallons	ppb	°C
LVWPS-A2-DR01B	12/8/2020 14:36	LVWPS-A2-IW04B	6	82.53	NA	19.73
LVWPS-A2-DR01B	12/8/2020 15:21	LVWPS-A2-IW04B	286	83.05	NA	19.48
LVWPS-A2-DR01B	12/8/2020 15:30	LVWPS-A2-IW04B	508	99.43	NA	19.60
LVWPS-A2-DR01B	12/8/2020 15:40	LVWPS-A2-IW04B	698	91.05	NA	19.04
LVWPS-A2-DR01B	12/8/2020 15:49	LVWPS-A2-IW04B	809	81.95	NA	18.79
LVWPS-A2-DR01B	12/9/2020 9:48	LVWPS-A2-IW04B	325	1.09	NA	18.88
LVWPS-A2-DR01B	12/9/2020 10:06	LVWPS-A2-IW04B	635	0.00	NA	20.42
LVWPS-A2-DR01B	12/9/2020 10:25	LVWPS-A2-IW04B	1,116	0.00	NA	18.27
LVWPS-A2-DR01B	12/9/2020 10:53	LVWPS-A2-IW04B	1,675	109.21	NA	20.77
LVWPS-A2-DR01B	12/9/2020 11:20	LVWPS-A2-IW04B	2,146	106.32	NA	20.22
LVWPS-A2-DR01B	12/9/2020 11:45	LVWPS-A2-IW04B	2,653	113.03	NA	20.79
LVWPS-A2-DR01B	12/9/2020 12:11	LVWPS-A2-IW04B	3,161	97.05	NA	21.87
LVWPS-A2-DR01B	12/9/2020 15:15	LVWPS-A2-IW04B	3,206	120.15	NA	16.07
LVWPS-A2-DR01B	12/9/2020 15:36	LVWPS-A2-IW04B	3,396	126.91	NA	16.08
LVWPS-A2-DR01B	12/9/2020 15:47	LVWPS-A2-IW04B	3,652	125.64	NA	15.85
LVWPS-A2-DR01B	12/9/2020 15:58	LVWPS-A2-IW04B	3,872	127.28	NA	16.27
LVWPS-A2-DR01B	12/9/2020 16:16	LVWPS-A2-IW04B	4,232	121.43	NA	16.50
LVWPS-A2-DR01B	12/9/2020 16:45	LVWPS-A2-IW04B	4,979	109.12	NA	19.30
LVWPS-A2-DR02A	12/7/2020 13:58	LVWPS-A2-IW06A	393	0.00	NA	23.05
LVWPS-A2-DR02A	12/7/2020 14:00	LVWPS-A2-IW06A	1,278	113.54	NA	20.88
LVWPS-A2-DR02A	12/7/2020 15:55	LVWPS-A2-IW06A	1,715	106.95	NA	19.58
LVWPS-A2-DR02A	12/8/2020 10:37	LVWPS-A2-IW06A	0	3.50	NA	24.15
LVWPS-A2-DR02A	12/8/2020 15:01	LVWPS-A2-IW06A	60	23.04	NA	20.74
LVWPS-A2-DR02A	12/8/2020 15:24	LVWPS-A2-IW06A	221	40.48	NA	20.43
LVWPS-A2-DR02A	12/8/2020 15:33	LVWPS-A2-IW06A	244	42.84	NA	20.36
LVWPS-A2-DR02A	12/8/2020 16:55	LVWPS-A2-IW06A	400	24.53	NA	18.46

Table 12
Groundwater Dye Field Measurements
 Las Vegas Wash Bioremediation Pilot Study

Dose Response Well ID	Sample Date and Time	Upgradient Injection Well	Totalizer Reading for Injection Well at Sample Time	Field Probe Measurements		
				Rhodamine WT Concentration	Fluorescein Concentration	Sample Temperature
				gallons	ppb	ppb
LVWPS-A2-DR02A	12/9/2020 9:51	LVWPS-A2-IW06A	49	0.00	NA	19.30
LVWPS-A2-DR02A	12/9/2020 9:56	LVWPS-A2-IW06A	84	0.00	NA	19.30
LVWPS-A2-DR02A	12/9/2020 10:09	LVWPS-A2-IW06A	199	4.52	NA	19.20
LVWPS-A2-DR02A	12/9/2020 10:16	LVWPS-A2-IW06A	252	1.20	NA	19.42
LVWPS-A2-DR02A	12/9/2020 10:30	LVWPS-A2-IW06A	369	2.95	NA	20.40
LVWPS-A2-DR02A	12/9/2020 10:37	LVWPS-A2-IW06A	419	2.01	NA	20.54
LVWPS-A2-DR02A	12/9/2020 10:42	LVWPS-A2-IW06A	468	1.31	NA	20.76
LVWPS-A2-DR02A	12/9/2020 15:04	LVWPS-A2-IW06A	502	63.60	NA	19.27
LVWPS-A2-DR02A	12/9/2020 15:27	LVWPS-A2-IW06A	984	119.19	NA	19.53
LVWPS-A2-DR02A	12/9/2020 15:41	LVWPS-A2-IW06A	1,253	125.37	NA	19.86
LVWPS-A2-DR02A	12/9/2020 15:51	LVWPS-A2-IW06A	1,454	140.98	NA	19.10
LVWPS-A2-DR02A	12/9/2020 16:09	LVWPS-A2-IW06A	1,850	144.31	NA	19.91
LVWPS-A2-DR02A	12/9/2020 16:19	LVWPS-A2-IW06A	2,195	149.28	NA	19.62
LVWPS-A2-DR02B	12/7/2020 14:01	LVWPS-A2-IW06B	322	0.00	NA	23.37
LVWPS-A2-DR02B	12/7/2020 14:52	LVWPS-A2-IW06B	1,050	0.00	NA	21.22
LVWPS-A2-DR02B	12/7/2020 16:00	LVWPS-A2-IW06B	1,541	0.00	NA	19.25
LVWPS-A2-DR02B	12/8/2020 10:39	LVWPS-A2-IW06B	0	121.15	NA	23.18
LVWPS-A2-DR02B	12/8/2020 15:03	LVWPS-A2-IW06B	40	128.62	NA	20.64
LVWPS-A2-DR02B	12/8/2020 15:25	LVWPS-A2-IW06B	362	129.28	NA	20.20
LVWPS-A2-DR02B	12/8/2020 15:35	LVWPS-A2-IW06B	505	129.59	NA	20.08
LVWPS-A2-DR02B	12/9/2020 9:53	LVWPS-A2-IW06B	92	117.59	NA	18.23
LVWPS-A2-DR02B	12/9/2020 9:57	LVWPS-A2-IW06B	157	111.38	NA	19.68
LVWPS-A2-DR02B	12/9/2020 10:11	LVWPS-A2-IW06B	368	126.33	NA	18.24
LVWPS-A2-DR02B	12/9/2020 10:18	LVWPS-A2-IW06B	465	125.04	NA	20.74
LVWPS-A2-DR02B	12/9/2020 10:33	LVWPS-A2-IW06B	679	125.14	NA	19.76
LVWPS-A2-DR02B	12/9/2020 10:38	LVWPS-A2-IW06B	772	97.01	NA	21.09

Table 12
Groundwater Dye Field Measurements
 Las Vegas Wash Bioremediation Pilot Study

Dose Response Well ID	Sample Date and Time	Upgradient Injection Well	Totalizer Reading for Injection Well at Sample Time	Field Probe Measurements		
				Rhodamine WT Concentration	Fluorescein Concentration	Sample Temperature
				gallons	ppb	ppb
LVWPS-A2-DR02B	12/9/2020 10:43	LVWPS-A2-IW06B	860	122.37	NA	20.98
LVWPS-A2-DR02B	12/9/2020 15:05	LVWPS-A2-IW06B	929	139.65	NA	17.89
LVWPS-A2-DR02B	12/9/2020 15:28	LVWPS-A2-IW06B	1,411	136.35	NA	18.19
LVWPS-A2-DR02B	12/9/2020 15:42	LVWPS-A2-IW06B	1,680	136.45	NA	18.05
LVWPS-A2-DR02B	12/9/2020 15:52	LVWPS-A2-IW06B	1,881	136.76	NA	18.27
LVWPS-A2-DR02B	12/9/2020 16:10	LVWPS-A2-IW06B	2,277	136.80	NA	19.01
LVWPS-A2-DR02B	12/9/2020 16:23	LVWPS-A2-IW06B	2,622	136.33	NA	19.80
LVWPS-U2-DR01	12/7/2020 14:11	-	-	0.00	NA	22.16
LVWPS-U2-DR01	12/7/2020 15:02	-	-	0.00	NA	21.37
LVWPS-U2-DR01	12/7/2020 16:13	-	-	0.00	NA	20.02
LVWPS-U2-DR01	12/8/2020 11:00	-	-	0.00	NA	23.10
LVWPS-U2-DR01	12/8/2020 14:38	-	-	0.00	NA	20.00
LVWPS-U2-DR01	12/8/2020 15:51	-	-	0.00	NA	19.17
LVWPS-U2-DR01	12/9/2020 10:06	-	-	0.00	NA	20.08
LVWPS-U2-DR01	12/9/2020 11:22	-	-	0.00	NA	20.61
LVWPS-U2-DR01	12/9/2020 15:37	-	-	0.00	NA	16.48
LVWPS-U2-DR02	12/7/2020 14:04	-	-	2.02	NA	22.69
LVWPS-U2-DR02	12/7/2020 14:55	-	-	0.00	NA	21.53
LVWPS-U2-DR02	12/7/2020 16:02	-	-	0.00	NA	19.40
LVWPS-U2-DR02	12/8/2020 10:41	-	-	0.00	NA	23.58
LVWPS-U2-DR02	12/8/2020 15:05	-	-	0.00	NA	20.51
LVWPS-U2-DR02	12/9/2020 10:13	-	-	0.00	NA	20.02
LVWPS-U2-DR02	12/9/2020 15:30	-	-	0.00	NA	17.43
LVWPS-U2-DR02	12/9/2020 16:24	-	-	0.00	NA	20.21
LVWPS-A3-DR01	12/16/2020 13:39	-	-	NA	0.00	22.84
LVWPS-A3-DR01	12/16/2020 14:56	-	-	NA	0.00	15.50

Table 12
Groundwater Dye Field Measurements
 Las Vegas Wash Bioremediation Pilot Study

Dose Response Well ID	Sample Date and Time	Upgradient Injection Well	Totalizer Reading for Injection Well at Sample Time	Field Probe Measurements		
				Rhodamine WT Concentration	Fluorescein Concentration	Sample Temperature
				gallons	ppb	ppb
LVWPS-A3-DR01	12/17/2020 13:37	-	-	NA	0.00	21.87
LVWPS-U3-DR01A	12/16/2020 13:36	LVWPS-U3-IW04A	41	NA	0.00	23.50
LVWPS-U3-DR01A	12/16/2020 14:19	LVWPS-U3-IW04A	245	NA	51.18	22.85
LVWPS-U3-DR01A	12/16/2020 14:58	LVWPS-U3-IW04A	431	NA	15.27	20.72
LVWPS-U3-DR01A	12/16/2020 15:55	LVWPS-U3-IW04A	691	NA	99.22	18.72
LVWPS-U3-DR01A	12/17/2020 9:06	LVWPS-U3-IW04A	45	NA	6.16	15.71
LVWPS-U3-DR01A	12/17/2020 10:22	LVWPS-U3-IW04A	402	NA	14.32	19.02
LVWPS-U3-DR01A	12/17/2020 11:06	LVWPS-U3-IW04A	513	NA	24.61	20.83
LVWPS-U3-DR01A	12/17/2020 12:35	LVWPS-U3-IW04A	828	NA	18.53	21.77
LVWPS-U3-DR01A	12/17/2020 13:34	LVWPS-U3-IW04A	1,016	NA	37.72	20.88
LVWPS-U3-DR01A	12/17/2020 14:38	LVWPS-U3-IW04A	1,109	NA	10.59	22.88
LVWPS-U3-DR01A	12/17/2020 14:50	LVWPS-U3-IW04A	1,109	NA	14.54	21.95
LVWPS-U3-DR01B	12/16/2020 13:38	LVWPS-U3-IW04A	32	NA	0.00	21.34
LVWPS-U3-DR01B	12/16/2020 14:21	LVWPS-U3-IW04A	229	NA	85.98	21.87
LVWPS-U3-DR01B	12/16/2020 15:01	LVWPS-U3-IW04B	416	NA	61.14	20.37
LVWPS-U3-DR01B	12/16/2020 15:52	LVWPS-U3-IW04B	694	NA	87.05	11.39
LVWPS-U3-DR01B	12/17/2020 9:12	LVWPS-U3-IW04B	39	NA	90.16	16.33
LVWPS-U3-DR01B	12/17/2020 10:17	LVWPS-U3-IW04B	410	NA	74.49	19.62
LVWPS-U3-DR01B	12/17/2020 11:08	LVWPS-U3-IW04B	567	NA	83.20	19.65
LVWPS-U3-DR01B	12/17/2020 12:31	LVWPS-U3-IW04B	809	NA	80.38	17.52
LVWPS-U3-DR01B	12/17/2020 13:32	LVWPS-U3-IW04B	1,017	NA	83.41	20.78
LVWPS-U3-DR01B	12/17/2020 14:39	LVWPS-U3-IW04B	1,049	NA	83.28	21.64
LVWPS-U3-DR01B	12/17/2020 14:55	LVWPS-U3-IW04B	1,114	NA	91.17	19.26
LVWPS-U3-DR02A	12/16/2020 13:49	LVWPS-U3-IW04B	104	NA	0.00	22.15
LVWPS-U3-DR02A	12/16/2020 14:29	LVWPS-U3-IW04B	291	NA	90.37	21.48
LVWPS-U3-DR02A	12/16/2020 15:10	LVWPS-U3-IW07A	473	NA	89.29	20.63

Table 12
Groundwater Dye Field Measurements
 Las Vegas Wash Bioremediation Pilot Study

Dose Response Well ID	Sample Date and Time	Upgradient Injection Well	Totalizer Reading for Injection Well at Sample Time	Field Probe Measurements		
				Rhodamine WT Concentration	Fluorescein Concentration	Sample Temperature
			gallons	ppb	ppb	°C
LVWPS-U3-DR02A	12/16/2020 15:45	LVWPS-U3-IW07A	541	NA	23.91	22.02
LVWPS-U3-DR02A	12/16/2020 16:13	LVWPS-U3-IW07A	691	NA	97.50	19.23
LVWPS-U3-DR02A	12/17/2020 9:27	LVWPS-U3-IW07A	95	NA	99.94	20.72
LVWPS-U3-DR02A	12/17/2020 10:37	LVWPS-U3-IW07A	419	NA	90.22	21.11
LVWPS-U3-DR02A	12/17/2020 11:17	LVWPS-U3-IW07A	561	NA	91.46	14.18
LVWPS-U3-DR02A	12/17/2020 11:47	LVWPS-U3-IW07A	653	NA	93.22	21.19
LVWPS-U3-DR02A	12/17/2020 12:45	LVWPS-U3-IW07A	796	NA	95.41	19.97
LVWPS-U3-DR02A	12/17/2020 14:42	LVWPS-U3-IW07A	918	NA	93.79	21.24
LVWPS-U3-DR02A	12/17/2020 15:15	LVWPS-U3-IW07A	1,010	NA	90.26	21.86
LVWPS-U3-DR02B	12/16/2020 13:51	LVWPS-U3-IW07B	112	NA	79.84	22.65
LVWPS-U3-DR02B	12/16/2020 14:31	LVWPS-U3-IW07B	306	NA	75.82	17.92
LVWPS-U3-DR02B	12/16/2020 15:12	LVWPS-U3-IW07B	456	NA	98.39	17.71
LVWPS-U3-DR02B	12/16/2020 15:42	LVWPS-U3-IW07B	520	NA	99.59	21.20
LVWPS-U3-DR02B	12/16/2020 16:15	LVWPS-U3-IW07B	664	NA	103.78	19.28
LVWPS-U3-DR02B	12/17/2020 9:25	LVWPS-U3-IW07B	142	NA	74.19	18.27
LVWPS-U3-DR02B	12/17/2020 10:40	LVWPS-U3-IW07B	453	NA	70.94	17.55
LVWPS-U3-DR02B	12/17/2020 11:19	LVWPS-U3-IW07B	592	NA	96.61	14.24
LVWPS-U3-DR02B	12/17/2020 11:56	LVWPS-U3-IW07B	691	NA	98.30	13.17
LVWPS-U3-DR02B	12/17/2020 12:49	LVWPS-U3-IW07B	833	NA	92.49	21.97
LVWPS-U3-DR02B	12/17/2020 14:44	LVWPS-U3-IW07B	942	NA	73.41	21.51
LVWPS-U3-DR02B	12/17/2020 15:17	LVWPS-U3-IW07B	1,032	NA	63.95	20.81
LVWPS-U3-DR02C	12/16/2020 13:54	LVWPS-U3-IW07B	109	NA	20.83	23.44
LVWPS-U3-DR02C	12/16/2020 14:33	LVWPS-U3-IW07C	303	NA	4.09	22.90
LVWPS-U3-DR02C	12/16/2020 15:15	LVWPS-U3-IW07C	489	NA	2.85	20.76
LVWPS-U3-DR02C	12/16/2020 15:41	LVWPS-U3-IW07C	559	NA	27.77	21.39
LVWPS-U3-DR02C	12/16/2020 16:17	LVWPS-U3-IW07C	715	NA	9.68	19.17

Table 12
Groundwater Dye Field Measurements
 Las Vegas Wash Bioremediation Pilot Study

Dose Response Well ID	Sample Date and Time	Upgradient Injection Well	Totalizer Reading for Injection Well at Sample Time	Field Probe Measurements		
				Rhodamine WT Concentration	Fluorescein Concentration	Sample Temperature
				gallons	ppb	ppb
LVWPS-U3-DR02C	12/17/2020 9:24	LVWPS-U3-IW07C	133	NA	49.54	17.62
LVWPS-U3-DR02C	12/17/2020 10:44	LVWPS-U3-IW07C	447	NA	5.11	21.69
LVWPS-U3-DR02C	12/17/2020 11:22	LVWPS-U3-IW07C	588	NA	21.78	21.26
LVWPS-U3-DR02C	12/17/2020 11:58	LVWPS-U3-IW07C	680	NA	6.02	21.43
LVWPS-U3-DR02C	12/17/2020 12:52	LVWPS-U3-IW07C	820	NA	7.39	21.25
LVWPS-U3-DR02C	12/17/2020 14:46	LVWPS-U3-IW07C	888	NA	65.62	21.64
LVWPS-U3-DR02C	12/17/2020 15:19	LVWPS-U3-IW07C	973	NA	80.22	21.88
LVWPS-A1-DR01	12/13/2020 11:32	-	-	NA	0.00	14.82
LVWPS-A1-DR01	12/13/2020 12:27	-	-	NA	0.00	20.23
LVWPS-A1-DR01	12/13/2020 13:56	-	-	NA	0.00	14.39
LVWPS-A1-DR01	12/14/2020 11:01	-	-	NA	0.00	17.97
LVWPS-A1-DR01	12/14/2020 12:42	-	-	NA	0.00	20.71
LVWPS-A1-DR02	12/13/2020 11:30	-	-	NA	0.00	19.95
LVWPS-A1-DR02	12/13/2020 12:36	-	-	NA	0.00	20.20
LVWPS-A1-DR02	12/13/2020 14:01	-	-	NA	0.00	19.13
LVWPS-A1-DR02	12/14/2020 10:50	-	-	NA	0.00	20.89
LVWPS-U1-DR01A	12/13/2020 11:33	LVWPS-U1-IW02A	59	NA	0.00	16.69
LVWPS-U1-DR01A	12/13/2020 12:00	LVWPS-U1-IW02A	198	NA	0.00	20.89
LVWPS-U1-DR01A	12/13/2020 12:29	LVWPS-U1-IW02A	344	NA	1.07	20.57
LVWPS-U1-DR01A	12/13/2020 13:13	LVWPS-U1-IW02A	499	NA	0.00	20.54
LVWPS-U1-DR01A	12/13/2020 13:57	LVWPS-U1-IW02A	631	NA	3.34	16.23
LVWPS-U1-DR01A	12/13/2020 14:29	LVWPS-U1-IW02A	814	NA	3.79	18.99
LVWPS-U1-DR01A	12/13/2020 14:48	LVWPS-U1-IW02A	931	NA	4.94	15.47
LVWPS-U1-DR01A	12/14/2020 8:11	LVWPS-U1-IW02A	931	NA	0.00	18.43
LVWPS-U1-DR01A	12/14/2020 9:50	LVWPS-U1-IW02A	931	NA	0.00	21.77
LVWPS-U1-DR01A	12/14/2020 11:00	LVWPS-U1-IW02A	79	NA	60.02	20.68

Table 12
Groundwater Dye Field Measurements
 Las Vegas Wash Bioremediation Pilot Study

Dose Response Well ID	Sample Date and Time	Upgradient Injection Well	Totalizer Reading for Injection Well at Sample Time	Field Probe Measurements		
				Rhodamine WT Concentration	Fluorescein Concentration	Sample Temperature
			gallons	ppb	ppb	°C
LVWPS-U1-DR01A	12/14/2020 11:36	LVWPS-U1-IW02A	189	NA	16.10	21.29
LVWPS-U1-DR01A	12/14/2020 11:59	LVWPS-U1-IW02A	405	NA	21.26	21.90
LVWPS-U1-DR01A	12/14/2020 12:36	LVWPS-U1-IW02A	425	NA	4.00	21.68
LVWPS-U1-DR01A	12/14/2020 13:15	LVWPS-U1-IW02A	545	NA	30.53	21.29
LVWPS-U1-DR01B	12/13/2020 11:34	LVWPS-U1-IW02B	52	NA	0.00	18.81
LVWPS-U1-DR01B	12/13/2020 12:02	LVWPS-U1-IW02B	187	NA	77.84	19.71
LVWPS-U1-DR01B	12/13/2020 12:32	LVWPS-U1-IW02B	324	NA	90.78	19.63
LVWPS-U1-DR01B	12/13/2020 13:31	LVWPS-U1-IW02B	621	NA	84.44	19.59
LVWPS-U1-DR01B	12/13/2020 15:34	LVWPS-U1-IW02B	994	NA	87.08	19.31
LVWPS-U1-DR01B	12/14/2020 7:17	LVWPS-U1-IW02B	994	NA	62.80	7.39
LVWPS-U1-DR01B	12/14/2020 10:58	LVWPS-U1-IW02B	112	NA	40.39	17.52
LVWPS-U1-DR01B	12/14/2020 11:32	LVWPS-U1-IW02B	279	NA	40.72	21.09
LVWPS-U1-DR01B	12/14/2020 12:00	LVWPS-U1-IW02B	268	NA	38.75	19.45
LVWPS-U1-DR01B	12/14/2020 12:34	LVWPS-U1-IW02B	632	NA	43.71	20.95
LVWPS-U1-DR01B	12/14/2020 13:12	LVWPS-U1-IW02B	601	NA	30.72	20.66
LVWPS-U1-DR02A	12/13/2020 11:40	LVWPS-U1-IW04A	96	NA	0.00	20.43
LVWPS-U1-DR02A	12/13/2020 12:07	LVWPS-U1-IW04A	229	NA	97.00	20.22
LVWPS-U1-DR02A	12/13/2020 12:38	LVWPS-U1-IW04A	364	NA	77.10	21.24
LVWPS-U1-DR02A	12/13/2020 13:19	LVWPS-U1-IW04A	530	NA	86.93	14.80
LVWPS-U1-DR02A	12/13/2020 14:03	LVWPS-U1-IW04A	660	NA	77.80	19.20
LVWPS-U1-DR02A	12/13/2020 14:35	LVWPS-U1-IW04A	855	NA	67.25	20.50
LVWPS-U1-DR02A	12/13/2020 14:54	LVWPS-U1-IW04A	982	NA	55.72	13.91
LVWPS-U1-DR02A	12/14/2020 8:07	LVWPS-U1-IW04A	982	NA	40.32	16.95
LVWPS-U1-DR02A	12/14/2020 10:47	LVWPS-U1-IW04A	109	NA	16.71	21.28
LVWPS-U1-DR02A	12/14/2020 11:19	LVWPS-U1-IW04A	216	NA	48.40	21.49
LVWPS-U1-DR02A	12/14/2020 11:39	LVWPS-U1-IW04A	300	NA	43.49	21.04

Table 12
Groundwater Dye Field Measurements
 Las Vegas Wash Bioremediation Pilot Study

Dose Response Well ID	Sample Date and Time	Upgradient Injection Well	Totalizer Reading for Injection Well at Sample Time	Field Probe Measurements		
				Rhodamine WT Concentration	Fluorescein Concentration	Sample Temperature
				gallons	ppb	ppb
LVWPS-U1-DR02B	12/13/2020 11:42	LVWPS-U1-IW04B	107	NA	0.00	19.55
LVWPS-U1-DR02B	12/13/2020 12:09	LVWPS-U1-IW04B	242	NA	0.00	20.55
LVWPS-U1-DR02B	12/13/2020 12:39	LVWPS-U1-IW04B	388	NA	0.00	21.04
LVWPS-U1-DR02B	12/13/2020 13:17	LVWPS-U1-IW04B	575	NA	0.00	18.08
LVWPS-U1-DR02B	12/13/2020 15:34	LVWPS-U1-IW04B	1,074	NA	0.00	17.75
LVWPS-U1-DR02B	12/14/2020 7:17	LVWPS-U1-IW04B	1,074	NA	2.38	13.30
LVWPS-U1-DR02B	12/14/2020 9:45	LVWPS-U1-IW04B	1,074	NA	0.00	21.80
LVWPS-U1-DR02B	12/14/2020 10:47	LVWPS-U1-IW04B	51	NA	0.00	21.27
LVWPS-U1-DR02B	12/14/2020 11:22	LVWPS-U1-IW04B	281	NA	0.00	21.33
LVWPS-U1-DR02B	12/14/2020 11:43	LVWPS-U1-IW04B	397	NA	0.00	21.67
LVWPS-A2-DR01A	12/20/2020 9:31	-	-	NA	0.00	18.17
LVWPS-A2-DR01A	12/20/2020 10:07	-	-	NA	0.00	13.04
LVWPS-A2-DR01A	12/20/2020 11:10	-	-	NA	0.00	21.51
LVWPS-A2-DR01A	12/20/2020 12:17	-	-	NA	0.00	22.49
LVWPS-A2-DR01A	12/20/2020 13:22	-	-	NA	0.00	21.68
LVWPS-A2-DR01A	12/20/2020 14:33	-	-	NA	0.00	20.78
LVWPS-A2-DR01A	12/21/2020 8:13	-	-	NA	1.19	14.46
LVWPS-A2-DR01A	12/21/2020 9:09	-	-	NA	0.00	18.38
LVWPS-A2-DR01A	12/21/2020 10:05	-	-	NA	0.00	21.17
LVWPS-A2-DR01A	12/21/2020 11:09	-	-	NA	0.00	25.68
LVWPS-A2-DR01A	12/21/2020 12:05	-	-	NA	0.00	25.38
LVWPS-A2-DR01A	12/21/2020 13:12	-	-	NA	1.32	24.27
LVWPS-A2-DR01A	12/21/2020 14:06	-	-	NA	1.12	26.67
LVWPS-A2-DR01B	12/20/2020 9:33	-	-	NA	94.58	19.21
LVWPS-A2-DR01B	12/20/2020 10:09	-	-	NA	71.32	19.19
LVWPS-A2-DR01B	12/20/2020 11:12	-	-	NA	68.48	20.42

Table 12
Groundwater Dye Field Measurements
 Las Vegas Wash Bioremediation Pilot Study

Dose Response Well ID	Sample Date and Time	Upgradient Injection Well	Totalizer Reading for Injection Well at Sample Time	Field Probe Measurements		
				Rhodamine WT Concentration	Fluorescein Concentration	Sample Temperature
				gallons	ppb	°C
LVWPS-A2-DR01B	12/20/2020 12:15	-	-	NA	92.67	22.92
LVWPS-A2-DR01B	12/20/2020 13:21	-	-	NA	87.07	18.05
LVWPS-A2-DR01B	12/20/2020 14:35	-	-	NA	84.57	21.65
LVWPS-A2-DR01B	12/21/2020 8:11	-	-	NA	91.04	10.23
LVWPS-A2-DR01B	12/21/2020 8:11	-	-	NA	98.19	11.37
LVWPS-A2-DR01B	12/21/2020 10:10	-	-	NA	112.85	19.77
LVWPS-A2-DR01B	12/21/2020 11:05	-	-	NA	117.61	24.18
LVWPS-A2-DR01B	12/21/2020 12:05	-	-	NA	85.02	24.27
LVWPS-A2-DR01B	12/21/2020 13:14	-	-	NA	97.83	23.54
LVWPS-A2-DR01B	12/21/2020 14:08	-	-	NA	90.09	NM
LVWPS-A2-DR02A	12/20/2020 8:53	-	-	NA	0.00	18.25
LVWPS-A2-DR02A	12/20/2020 10:21	-	-	NA	0.00	20.39
LVWPS-A2-DR02A	12/20/2020 11:25	-	-	NA	0.00	21.29
LVWPS-A2-DR02A	12/20/2020 12:28	-	-	NA	0.00	23.45
LVWPS-A2-DR02A	12/20/2020 13:54	-	-	NA	0.00	22.66
LVWPS-A2-DR02A	12/20/2020 14:54	-	-	NA	0.00	18.72
LVWPS-A2-DR02A	12/21/2020 8:28	-	-	NA	0.00	17.87
LVWPS-A2-DR02A	12/21/2020 9:19	-	-	NA	0.00	19.47
LVWPS-A2-DR02A	12/21/2020 10:30	-	-	NA	0.00	23.13
LVWPS-A2-DR02A	12/21/2020 11:15	-	-	NA	0.00	23.70
LVWPS-A2-DR02A	12/21/2020 12:15	-	-	NA	0.00	23.51
LVWPS-A2-DR02A	12/21/2020 13:12	-	-	NA	0.00	24.00
LVWPS-A2-DR02A	12/21/2020 14:26	-	-	NA	0.00	23.96
LVWPS-A2-DR02B	12/20/2020 8:51	-	-	NA	93.12	18.05
LVWPS-A2-DR02B	12/20/2020 10:15	-	-	NA	93.78	19.81
LVWPS-A2-DR02B	12/20/2020 11:24	-	-	NA	84.85	21.87

Table 12
Groundwater Dye Field Measurements
 Las Vegas Wash Bioremediation Pilot Study

Dose Response Well ID	Sample Date and Time	Upgradient Injection Well	Totalizer Reading for Injection Well at Sample Time	Field Probe Measurements		
				Rhodamine WT Concentration	Fluorescein Concentration	Sample Temperature
				gallons	ppb	ppb
LVWPS-A2-DR02B	12/20/2020 12:30	-	-	NA	91.48	22.98
LVWPS-A2-DR02B	12/20/2020 13:52	-	-	NA	76.84	22.75
LVWPS-A2-DR02B	12/20/2020 14:52	-	-	NA	87.52	17.46
LVWPS-A2-DR02B	12/21/2020 8:26	-	-	NA	79.64	17.33
LVWPS-A2-DR02B	12/21/2020 9:21	-	-	NA	109.31	17.79
LVWPS-A2-DR02B	12/21/2020 10:18	-	-	NA	104.29	22.40
LVWPS-A2-DR02B	12/21/2020 11:12	-	-	NA	98.38	24.54
LVWPS-A2-DR02B	12/21/2020 12:17	-	-	NA	84.31	24.31
LVWPS-A2-DR02B	12/21/2020 13:15	-	-	NA	90.95	24.03
LVWPS-A2-DR02B	12/21/2020 14:28	-	-	NA	85.30	24.00
LVWPS-U2-DR01	12/20/2020 9:29	LVWPS-U2-IW01	96	NA	0.00	19.47
LVWPS-U2-DR01	12/20/2020 10:11	LVWPS-U2-IW01	260	NA	0.00	20.43
LVWPS-U2-DR01	12/20/2020 11:00	LVWPS-U2-IW01	390	NA	0.00	22.29
LVWPS-U2-DR01	12/20/2020 12:13	LVWPS-U2-IW01	500	NA	1.48	24.07
LVWPS-U2-DR01	12/20/2020 13:18	LVWPS-U2-IW01	603	NA	2.44	24.24
LVWPS-U2-DR01	12/20/2020 14:44	LVWPS-U2-IW01	730	NA	0.00	22.01
LVWPS-U2-DR01	12/21/2020 8:09	LVWPS-U2-IW01	36	NA	0.00	15.29
LVWPS-U2-DR01	12/21/2020 9:14	LVWPS-U2-IW01	171	NA	1.35	18.97
LVWPS-U2-DR01	12/21/2020 10:09	LVWPS-U2-IW01	292	NA	1.50	20.50
LVWPS-U2-DR01	12/21/2020 11:13	LVWPS-U2-IW01	417	NA	1.17	23.64
LVWPS-U2-DR01	12/21/2020 12:04	LVWPS-U2-IW01	522	NA	1.13	24.76
LVWPS-U2-DR01	12/21/2020 13:15	LVWPS-U2-IW01	671	NA	0.92	23.92
LVWPS-U2-DR01	12/21/2020 14:11	LVWPS-U2-IW01	783	NA	0.96	25.00
LVWPS-U2-DR02	12/20/2020 8:49	LVWPS-U2-IW04	81	NA	0.00	18.07
LVWPS-U2-DR02	12/20/2020 10:17	LVWPS-U2-IW04	467	NA	109.04	19.36
LVWPS-U2-DR02	12/20/2020 11:25	LVWPS-U2-IW04	599	NA	79.43	21.29

Table 12
Groundwater Dye Field Measurements
 Las Vegas Wash Bioremediation Pilot Study

Dose Response Well ID	Sample Date and Time	Upgradient Injection Well	Totalizer Reading for Injection Well at Sample Time	Field Probe Measurements		
				Rhodamine WT Concentration	Fluorescein Concentration	Sample Temperature
			gallons	ppb	ppb	°C
LVWPS-U2-DR02	12/20/2020 12:26	LVWPS-U2-IW04	738	NA	76.28	22.54
LVWPS-U2-DR02	12/20/2020 13:51	LVWPS-U2-IW04	870	NA	83.43	21.07
LVWPS-U2-DR02	12/20/2020 14:49	LVWPS-U2-IW04	1,041	NA	96.85	20.61
LVWPS-U2-DR02	12/21/2020 8:25	LVWPS-U2-IW04	121	NA	60.83	16.88
LVWPS-U2-DR02	12/21/2020 9:23	LVWPS-U2-IW04	288	NA	44.96	19.03
LVWPS-U2-DR02	12/21/2020 10:17	LVWPS-U2-IW04	405	NA	32.93	21.70
LVWPS-U2-DR02	12/21/2020 11:13	LVWPS-U2-IW04	525	NA	33.80	22.50
LVWPS-U2-DR02	12/21/2020 12:18	LVWPS-U2-IW04	650	NA	73.87	23.37
LVWPS-U2-DR02	12/21/2020 13:17	LVWPS-U2-IW04	770	NA	40.96	23.84
LVWPS-U2-DR02	12/21/2020 14:30	LVWPS-U2-IW04	829	NA	23.60	22.84

Notes:

nm - nanometers

ppb - parts per billion

Table 13
Groundwater Dye Analytical Results
Las Vegas Wash Bioremediation Pilot Study

Location	Sample Date	Depth (ft bgs)	Sample ID	Lab Sample ID	Fluorescein				Rhodamine WT (RWT)				Eosine				Sulforhodamine B (SRB)			
					Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
					nm	ppb	nm	ppb	nm	ppb	nm	ppb	nm	ppb	nm	ppb	nm	ppb	nm	ppb
LVWPS-A1-DR01	9/28/2020	72.5	LVWPS-A1-DR01-BL04	E7750	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/13/2020	72.5	LVWPS-A1-DR01-20201213-1	E9445	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/14/2020	72.5	LVWPS-A1-DR01-20201214	E9423	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/29/2020	72.5	LVWPS-A1-DR01-INJ	E9922	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-A1-DR02	9/28/2020	67.8	LVWPS-A1-DR02-BL04	E7747	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/13/2020	67.8	LVWPS-A1-DR02-20201213-1	E9446	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/14/2020	67.8	LVWPS-A1-DR02-20201214	E9413	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/29/2020	67.8	LVWPS-A1-DR02-INJ	E9928	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-A1-MW04	9/30/2020	79.2	LVWPS-A1-MW04-BL04	E7787	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/29/2020	79.2	LVWPS-A1-MW04-INJ	E9682	ND	ND	---	---	562.2 **	25.6	---	---	ND	ND	---	---	ND	ND	---	---
	12/29/2020	79.2	LVWPS-A1-MW04-INJ	E9916	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-A1-MW05	9/30/2020	78.9	LVWPS-A1-MW05-BL04	E7779	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/29/2020	78.9	LVWPS-A1-MW05-INJ	E9685	ND	ND	---	---	562.3 **	39.7	---	---	ND	ND	---	---	ND	ND	---	---
	12/29/2020	78.9	LVWPS-A1-MW05-INJ	E9917	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-A1-MW06	9/29/2020	69.1	LVWPS-A1-MW06-BL04	E7770	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/28/2020	69.1	LVWPS-A1-MW06-INJ	E9675	ND	ND	---	---	563.2 **	44.5	---	---	ND	ND	---	---	ND	ND	---	---
	12/28/2020	69.1	LVWPS-A1-MW06-INJ	E9912	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-A1-MW07	9/30/2020	68.1	LVWPS-A1-MW07-BL04	E7837	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/29/2020	68.1	LVWPS-A1-MW07-INJ	E9691	ND	ND	---	---	562.1 **	32.3	---	---	ND	ND	---	---	ND	ND	---	---
	12/29/2020	68.1	LVWPS-A1-MW07-INJ	E9931	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-A1-MW09	9/30/2020	95.5	LVWPS-A1-MW09-BL04	E7775	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
LVWPS-A1-MW10	10/1/2020	80.5	LVWPS-A1-MW10-BL04	E7795	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	10/1/2020	80.5	LVWPS-A1-MW10-BL04-FD	E7796	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
LVWPS-A2-DR01A	9/28/2020	53.7	LVWPS-A2-DR01A-BL04	E7754	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/7/2020	53.7	LVWPS-A2-DR01A-20201207	E9381	---	---	ND	ND	---	---	566.8	28.4	---	---	ND	ND	---	---	ND	ND
	12/8/2020	53.7	LVWPS-A2-DR01A-20201208	E9387	---	---	ND	ND	---	---	565.8	286	---	---	ND	ND	---	---	ND	ND
	12/9/2020	53.7	LVWPS-A2-DR01A-20201209	E9396	---	---	ND	ND	---	---	569.0	5,920	---	---	ND	ND	---	---	ND	ND
	12/12/2020	53.7	LVWPS-A2-DR01A-INJ	E9470	---	---	ND	ND	---	---	566.5	104	---	---	ND	ND	---	---	ND	ND
	12/20/2020	53.7	LVWPS-A2-DR01A-20201220	E9872	---	---	ND	ND	---	---	574.1	11.6	---	---	ND	ND	---	---	ND	ND
LVWPS-A2-DR01B	12/21/2020	53.7	LVWPS-A2-DR01A-20201221	E9890	---	---	ND	ND	---	---	574.1	9.77	---	---	ND	ND	---	---	ND	ND
	9/28/2020	94.5	LVWPS-A2-DR01B-BL04	E7755	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/7/2020	94.5	LVWPS-A2-DR01B-20201207	E9382	---	---	ND	ND	---	---	566.8	32.5	---	---	ND	ND	---	---	ND	ND
	12/8/2020	94.5	LVWPS-A2-DR01B-20201208	E9388	---	---	ND	ND	---	---	566.2	22.2	---	---	ND	ND	---	---	ND	ND
	12/9/2020	94.5	LVWPS-A2-DR01B-20201209	E9397	---	---	ND	ND	---	---	566.2	503	---	---	ND	ND	---	---	ND	ND
	12/11/2020	94.5	LVWPS-A2-DR01B-INJ	E9889	---	---	ND	ND	---	---	566.2 **	379	---	---	ND	ND	---	---	ND	ND
	12/20/2020	94.5	LVWPS-A2-DR01B-20201220-1	E9873	---	---	ND	ND	---	---	568.0 **	115	---	---	ND	ND	---	---	ND	ND
	12/20/2020	94.5	LVWPS-A2-DR01B-20201220-2	E9874	---	---	ND	ND	---	---	567.1 **	168	---	---	ND	ND	---	---	ND	ND
	12/20/2020	94.5	LVWPS-A2-DR01B-20201220-3	E9875	---	---	ND	ND	---	---	567.0 **	223	---	---	ND	ND	---	---	ND	ND
	12/20/2020	94.5	LVWPS-A2-DR01B-20201220-4	E9876	---	---	ND	ND	---	---	567.0 **	272	---	---	ND	ND	---	---	ND	ND
	12/21/2020	94.5	LVWPS-A2-DR01B-20201221-1	E9891	---	---	ND	ND	---	---	567.2 **	146	---	---	ND	ND	---	---	ND	ND
	12/21/2020	94.5	LVWPS-A2-DR01B-20201221-2	E9892	---	---	ND	ND	---	---	567.0 **	381	---	---	ND	ND	---	---	ND	ND
LVWPS-A2-DR02A	12/21/2020	94.5	LVWPS-A2-DR01B-20201221-3	E9893	---	---	ND	ND	---	---	567.2 **	107	---	---	ND	ND	---	---	ND	ND
	12/21/2020	94.5	LVWPS-A2-DR01B-20201221-4	E9894	---	---	ND	ND	---	---	567.6 **	126	---	---	ND	ND	---	---	ND	ND
	9/28/2020	43.9	LVWPS-A2-DR02A-BL04	E7758	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/7/2020	43.9	LVWPS-A2-DR02A-20201207	E9384	---	---	ND	ND	---	---	566.1	326	---	---	ND	ND	---	---	ND	ND
	12/8/2020	43.9	LVWPS-A2-DR02A-20201208	E9390	---	---	ND	ND	---	---	566.2	13.5	---	---	ND	ND	---	---	ND	ND
	12/9/2020	43.9	LVWPS-A2-DR02A-20201209	E9399	---	---	ND	ND	---	---	567.0	189	---	---	ND	ND	---	---	ND	ND
	12/9/2020	43.9	LVWPS-A2-DR02A-20201209	E9399 Rep	---	---	ND	ND	---	---	567.0	216	---	---	ND	ND	---	---	ND	ND
	12/12/2020	43.9	LVWPS-A2-DR02A-INJ	E9468	---	---	ND	ND	---	---	567.1	72.7	---	---	ND	ND	---	---	ND	ND
	12/20/2020	43.9	LVWPS-A2-DR02A-20201220	E9882	---	---	ND	ND	---	---	573.1	0.323	---	---	ND	ND	---	---	ND	ND
	12/21/2020	43.9	LVWPS-A2-DR02A-20201221	E9899	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-A2-DR02B	9/28/2020	67.7	LVWPS-A2-DR02B-BL04	E7757	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/7/2020	67.7	LVWPS-A2-DR02B-20201207	E9385	---	---	506.0	0.022	---	---	573.4	0.244	---	---	ND	ND	---	---	ND	ND
	12/8/2020	67.7	LVWPS-A2-DR02B-20201208	E9391	---	---	ND	ND	---	---	566.2	115	---	---	ND	ND	---	---	ND	ND
	12/9/2020	67.7	LVWPS-A2-DR02B-20201209	E9401	---	---	ND	ND	---	---	566.9	98.0	---	---	ND	ND	---	---	ND	ND
	12/12/2020	67.7	LVWPS-A2-DR02B-INJ	E9469	---	---	ND	ND	---	---	566.6	250	---	---	ND	ND	---	---	ND	ND
	12/20/2020	67.7	LVWPS-A2-DR02B-20201220-1	E9883	---	---	515.1 **	28.1	---	---	566.7 **	275	---	---	ND	ND	---	---	ND	ND
	12/20/2020	67.7	LVWPS-A2-DR02B-20201220-2	E9884	---	---	515.5 **	15.1	---	---	567.0 **	246	---	---	ND	ND	---	---	ND	ND
	12/20/2020	67.7	LVWPS-A2-DR02B-20201220-3	E9885	---	---	515.6 **	35.6	---	---	566.1 **	71.9	---	---	ND	ND	---	---	ND	ND
	12/20/2020	67.7	LVWPS-A2-DR02B-20201220-4	E9886	---	---	515.3 **	28.8	---	---	566.9 **	258	---	---	ND	ND	---	---	ND	ND
	12/21/2020	67.7	LVWPS-A2-DR02B-20201221-1	E9901	---	---	516.1 **	37.2	---	---	566.2 **	134	---	---	ND	ND	---	---	ND	ND
	12/21/2020	67.7	LVWPS-A2-DR02B-20201221-2	E9902	---	---	515.9 **	58.9	---	---	566.5 **	204	---	---	ND	ND	---	---	ND	ND
	12/21/2020	67.7	LVWPS-A2-DR02B-20201221-3	E9903	---	---	515.5 **	46.5	---	---	565.4 **	25.7	---	---	ND	ND	---	---	ND	ND
12/21/2020	67.7	LVWPS-A2-DR02B-20201221-4	E9904	---	---	515.5 **	45.7	---	---	566.5 **	48.0	---	---	ND	ND	---	---	ND	ND	

Table 13
Groundwater Dye Analytical Results
Las Vegas Wash Bioremediation Pilot Study

Location	Sample Date	Depth (ft bgs)	Sample ID	Lab Sample ID	Fluorescein				Rhodamine WT (RWT)				Eosine				Sulforhodamine B (SRB)			
					Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
					nm	ppb	nm	ppb	nm	ppb	nm	ppb	nm	ppb	nm	ppb	nm	ppb	nm	ppb
LVWPS-A2-MW01A	10/8/2020	49.8	LVWPS-A2-MW01A-BL04	E8231	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/12/2020	49.8	LVWPS-A2-MW01A-INJ	E9312	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
	12/23/2020	49.8	LVWPS-A2-MW01A-EM01	E9697	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW01B	10/8/2020	79.7	LVWPS-A2-MW01B-BL04	E8232	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/15/2020	79.7	LVWPS-A2-MW01B-INJ	E9377	---	---	ND	ND	---	---	573.6	0.135	---	---	ND	ND	---	---	ND	ND
LVWPS-A2-MW02A	12/23/2020	79.7	LVWPS-A2-MW01B-EM01	E9733	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
	10/8/2020	49.8	LVWPS-A2-MW02A-BL04	E8225	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	10/8/2020	49.8	LVWPS-A2-MW02A-BL04-FD	E8226	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/12/2020	49.8	LVWPS-A2-MW02A-INJ	E9313	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW02B	12/23/2020	49.8	LVWPS-A2-MW02A-EM01	E9748	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
	10/8/2020	79.9	LVWPS-A2-MW02B-BL04	E8228	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/12/2020	79.9	LVWPS-A2-MW02B-INJ	E9314	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW03A	12/23/2020	79.9	LVWPS-A2-MW02B-EM01	E9749	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
	10/9/2020	47.9	LVWPS-A2-MW03A-BL04	E8235	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	10/9/2020	47.9	LVWPS-A2-MW03A-BL04-FD	E8236	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/12/2020	47.9	LVWPS-A2-MW03A-INJ	E9315	ND	ND	---	---	562.0 **	2.46	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW03B	12/23/2020	47.9	LVWPS-A2-MW03A-EM01	E9746	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
	10/9/2020	73.8	LVWPS-A2-MW03B-BL04	E8237	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/12/2020	73.8	LVWPS-A2-MW03B-INJ	E9316	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW04A	12/23/2020	73.8	LVWPS-A2-MW03B-EM01	E9747	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
	10/2/2020	53.7	LVWPS-A2-MW04A-BL04	E7814	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/14/2020	53.7	LVWPS-A2-MW04A-INJ	E9345	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
	12/14/2020	53.7	LVWPS-A2-MW04A-INJ-FD	E9346	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW04B	12/22/2020	53.7	LVWPS-A2-MW04A-EM01	E9743	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
	12/22/2020	53.7	LVWPS-A2-MW04A-EM01-FD	E9744	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
	10/2/2020	84.9	LVWPS-A2-MW04B-BL04	E7838	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/14/2020	84.9	LVWPS-A2-MW04B-INJ	E9347	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW05A	12/22/2020	84.9	LVWPS-A2-MW04B-EM01	E9745	515.6	1.00	---	---	ND	ND	---	---	539.6	4.39	---	---	ND	ND	---	---
	12/22/2020	84.9	LVWPS-A2-MW04B-EM01	E9958	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	10/5/2020	43.9	LVWPS-A2-MW05A-BL04	E7816	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/12/2020	43.9	LVWPS-A2-MW05A-INJ	E9317	ND	ND	---	---	566.8	16,000	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW05B	12/12/2020	43.9	LVWPS-A2-MW05A-EM01	E9461	---	---	ND	ND	---	---	567.3	157	---	---	ND	ND	---	---	ND	ND
	12/22/2020	43.9	LVWPS-A2-MW05A-EM01	E9741	ND	ND	---	---	568.4	5,110	---	---	ND	ND	---	---	ND	ND	---	---
	12/22/2020	43.9	LVWPS-A2-MW05A-EM01	E9956	---	---	ND	ND	---	---	574.9	43.2	---	---	ND	ND	---	---	ND	ND
	10/5/2020	66	LVWPS-A2-MW05B-BL04	E7817	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/12/2020	66	LVWPS-A2-MW05B-INJ	E9318	ND	ND	---	---	566.6	3,900	---	---	ND	ND	---	---	ND	ND	---	---
	12/12/2020	66	LVWPS-A2-MW05B-INJ	E9462	---	---	ND	ND	---	---	566.7	271	---	---	ND	ND	---	---	ND	ND
LVWPS-A2-MW08A	12/12/2020	66	LVWPS-A2-MW05B-INJ-FD	E9319	ND	ND	---	---	566.4	3,430	---	---	ND	ND	---	---	ND	ND	---	---
	12/12/2020	66	LVWPS-A2-MW05B-INJ-FD	E9463	---	---	ND	ND	---	---	566.7	271	---	---	ND	ND	---	---	ND	ND
	12/22/2020	66	LVWPS-A2-MW05B-EM01	E9742	ND	ND	---	---	567.0	13,800	---	---	ND	ND	---	---	ND	ND	---	---
	12/22/2020	66	LVWPS-A2-MW05B-EM01	E9957	---	---	ND	ND	---	---	566.6 **	98.3	---	---	ND	ND	---	---	ND	ND
LVWPS-A2-MW08B	12/22/2020	66	LVWPS-A2-MW05B-EM01-FD	E9781	ND	ND	---	---	566.9	17,200	---	---	ND	ND	---	---	ND	ND	---	---
	12/22/2020	66	LVWPS-A2-MW05B-EM01-FD	E9974	---	---	ND	ND	---	---	566.8 **	59.9	---	---	ND	ND	---	---	ND	ND
	9/30/2020	47.6	LVWPS-A2-MW08A-BL04	E7786	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/14/2020	47.6	LVWPS-A2-MW08A-INJ	E9333	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW08C	12/23/2020	47.6	LVWPS-A2-MW08A-EM01	E9734	ND	ND	---	---	565.0	5.00	---	---	539.4	3.49	---	---	ND	ND	---	---
	12/23/2020	47.6	LVWPS-A2-MW08A-EM01	F0192	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	10/1/2020	69.3	LVWPS-A2-MW08B-BL04	E7789	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
LVWPS-A2-MW09A	12/14/2020	69.3	LVWPS-A2-MW08B-INJ	E9334	ND	ND	---	---	566.9	31.6	---	---	ND	ND	---	---	ND	ND	---	---
	12/14/2020	69.3	LVWPS-A2-MW08B-INJ	E9475	---	---	ND	ND	---	---	574.2	0.305	---	---	ND	ND	---	---	ND	ND
	12/23/2020	69.3	LVWPS-A2-MW08B-EM01	E9736	ND	ND	---	---	568.0	56.7	---	---	ND	ND	---	---	ND	ND	---	---
	12/23/2020	69.3	LVWPS-A2-MW08B-EM01	E9955	---	---	ND	ND	---	---	576.7	0.089	---	---	ND	ND	---	---	ND	ND
LVWPS-A2-MW09B	10/1/2020	95.9	LVWPS-A2-MW08C-BL04	E7790	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/14/2020	95.9	LVWPS-A2-MW08C-INJ	E9335	ND	ND	---	---	567.5	648	---	---	ND	ND	---	---	ND	ND	---	---
	12/14/2020	95.9	LVWPS-A2-MW08C-INJ	E9476	---	---	ND	ND	---	---	574.4	0.640	---	---	ND	ND	---	---	ND	ND
	12/23/2020	95.9	LVWPS-A2-MW08C-EM01	E9735	516.1	377	---	---	568.3	287	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW09C	12/23/2020	95.9	LVWPS-A2-MW08C-EM01	E9954	---	---	515.2 **	4.82	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	10/9/2020	44.5	LVWPS-A2-MW09A-BL04	E8242	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/12/2020	44.5	LVWPS-A2-MW09A-INJ	E9321	ND	ND	---	---	566.6	109	---	---	539.4	15.2	---	---	ND	ND	---	---
	12/12/2020	44.5	LVWPS-A2-MW09A-INJ	E9464	---	---	ND	ND	---	---	573.8	0.643	---	---	ND	ND	---	---	ND	ND
LVWPS-A2-MW09D	12/22/2020	44.5	LVWPS-A2-MW09A-EM01	E9727	ND	ND	---	---	567.9	695	---	---	ND	ND	---	---	ND	ND	---	---
	12/22/2020	44.5	LVWPS-A2-MW09A-EM01	E9952	---	---	ND	ND	---	---	573.8	13.2	---	---	ND	ND	---	---	ND	ND

Table 13
Groundwater Dye Analytical Results
Las Vegas Wash Bioremediation Pilot Study

Location	Sample Date	Depth (ft bgs)	Sample ID	Lab Sample ID	Fluorescein				Rhodamine WT (RWT)				Eosine				Sulforhodamine B (SRB)			
					Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
					nm	ppb	nm	ppb	nm	ppb	nm	ppb	nm	ppb	nm	ppb	nm	ppb	nm	ppb
LVWPS-A2-MW09B	10/9/2020	68.5	LVWPS-A2-MW09B-BL04	E8243	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/12/2020	68.5	LVWPS-A2-MW09B-INJ	E9322	ND	ND	---	---	563.6 **	10.6	---	---	ND	ND	---	---	ND	ND	---	---
	12/12/2020	68.5	LVWPS-A2-MW09B-INJ	E9465	---	---	ND	ND	---	---	575.9	0.243	---	---	ND	ND	---	---	ND	ND
	12/22/2020	68.5	LVWPS-A2-MW09B-EM01	E9728	ND	ND	---	---	564.8	6.62	---	---	538.9 **	6.99	---	---	ND	ND	---	---
	12/22/2020	68.5	LVWPS-A2-MW09B-EM01	E9953	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-A2-MW11A	10/2/2020	50.2	LVWPS-A2-MW11A-BL04	E7811	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/14/2020	50.2	LVWPS-A2-MW11A-INJ	E9336	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
	12/23/2020	50.2	LVWPS-A2-MW11A-EM01	E9730	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW11B	10/2/2020	75	LVWPS-A2-MW11B-BL04	E7812	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/14/2020	75	LVWPS-A2-MW11B-INJ	E9337	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW11B	12/23/2020	75	LVWPS-A2-MW11B-EM01	E9731	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW11C	10/2/2020	99.9	LVWPS-A2-MW11C-BL04	E7813	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/14/2020	99.9	LVWPS-A2-MW11C-INJ	E9338	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
	12/23/2020	99.9	LVWPS-A2-MW11C-EM01	E9732	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW12A	10/6/2020	39.5	LVWPS-A2-MW12A-BL04	E8195	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/12/2020	39.5	LVWPS-A2-MW12A-INJ	E9331	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
	12/22/2020	39.5	LVWPS-A2-MW12A-EM01	E9725	ND	ND	---	---	ND	ND	---	---	539.4	2.84	---	---	ND	ND	---	---
LVWPS-A2-MW12B	10/7/2020	59	LVWPS-A2-MW12B-BL04	E8209	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/12/2020	59	LVWPS-A2-MW12B-INJ	E9332	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
	12/22/2020	59	LVWPS-A2-MW12B-EM01	E9726	ND	ND	---	---	567.6	205	---	---	539.8	5.04	---	---	ND	ND	---	---
	12/22/2020	59	LVWPS-A2-MW12B-EM01	E9951	---	---	ND	ND	---	---	566.9 **	8.14	---	---	ND	ND	---	---	ND	ND
LVWPS-A2-MW13A	10/1/2020	50.8	LVWPS-A2-MW13A-BL04	E7802	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/12/2020	50.8	LVWPS-A2-MW13A-INJ	E9323	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
	12/22/2020	50.8	LVWPS-A2-MW13A-EM01	E9723	ND	ND	---	---	ND	ND	---	---	538.9 **	16.9	---	---	ND	ND	---	---
LVWPS-A2-MW13B	10/1/2020	76.1	LVWPS-A2-MW13B-BL04	E7803	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/12/2020	76.1	LVWPS-A2-MW13B-INJ	E9324	ND	ND	---	---	565.7	31.9	---	---	538.9 **	12.1	---	---	ND	ND	---	---
	12/12/2020	76.1	LVWPS-A2-MW13B-INJ	E9466	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/22/2020	76.1	LVWPS-A2-MW13B-EM01	E9724	ND	ND	---	---	568.0	906	---	---	ND	ND	---	---	ND	ND	---	---
	12/22/2020	76.1	LVWPS-A2-MW13B-EM01	E9950	---	---	ND	ND	---	---	572.8	14.9	---	---	ND	ND	---	---	ND	ND
LVWPS-A2-MW14A	10/6/2020	42.9	LVWPS-A2-MW14A-BL04	E8196	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	10/6/2020	42.9	LVWPS-A2-MW14A-BL04-FD	E8197	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/12/2020	42.9	LVWPS-A2-MW14A-INJ	E9328	ND	ND	---	---	564.0 **	13.9	---	---	538.7 **	14.4	---	---	ND	ND	---	---
	12/12/2020	42.9	LVWPS-A2-MW14A-INJ	E9472	---	---	ND	ND	---	---	574.4	1.26	---	---	ND	ND	---	---	ND	ND
	12/12/2020	42.9	LVWPS-A2-MW14A-INJ-FD	E9329	ND	ND	---	---	566.6	11.8	---	---	538.7 **	16.0	---	---	ND	ND	---	---
	12/12/2020	42.9	LVWPS-A2-MW14A-INJ-FD	E9473	---	---	ND	ND	---	---	574.2	1.85	---	---	ND	ND	---	---	ND	ND
	12/22/2020	42.9	LVWPS-A2-MW14A-EM01	E9714	ND	ND	---	---	566.6	38.6	---	---	539.4	15.2	---	---	ND	ND	---	---
	12/22/2020	42.9	LVWPS-A2-MW14A-EM01	E9947	---	---	ND	ND	---	---	573.6	1.44	---	---	ND	ND	---	---	ND	ND
	12/22/2020	42.9	LVWPS-A2-MW14A-EM01-FD	E9715	ND	ND	---	---	566.4	50.8	---	---	539.4	16.6	---	---	ND	ND	---	---
LVWPS-A2-MW14B	10/6/2020	64.5	LVWPS-A2-MW14B-BL04	E8198	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/12/2020	64.5	LVWPS-A2-MW14B-INJ	E9330	ND	ND	---	---	564.0 **	5.37	---	---	ND	ND	---	---	ND	ND	---	---
	12/12/2020	64.5	LVWPS-A2-MW14B-EM01	E9695	ND	ND	---	---	567.8	29.6	---	---	540.1	1.61	---	---	ND	ND	---	---
	12/22/2020	64.5	LVWPS-A2-MW14B-EM01	E9933	---	---	ND	ND	---	---	574.6	1.34	---	---	ND	ND	---	---	ND	ND
	12/22/2020	64.5	LVWPS-A2-MW14B-EM01	E9948	---	---	ND	ND	---	---	572.6	3.35	---	---	ND	ND	---	---	ND	ND
LVWPS-A2-MW15A	10/7/2020	49.5	LVWPS-A2-MW15A-BL04	E8248	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/14/2020	49.5	LVWPS-A2-MW15A-INJ	E9339	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
	12/21/2020	49.5	LVWPS-A2-MW15A-EM01	E9721	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW15B	10/8/2020	79.9	LVWPS-A2-MW15B-BL04	E8249	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/14/2020	79.9	LVWPS-A2-MW15B-INJ	E9341	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
	12/22/2020	79.9	LVWPS-A2-MW15B-EM01	E9722	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW16A	10/9/2020	46	LVWPS-A2-MW16A-BL04	E8245	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/14/2020	46	LVWPS-A2-MW16A-INJ	E9348	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
	12/22/2020	46	LVWPS-A2-MW16A-EM01	E9707	514.2	1.83	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
	12/22/2020	46	LVWPS-A2-MW16A-EM01	E9943	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-A2-MW16B	10/9/2020	70.5	LVWPS-A2-MW16B-BL04	E8246	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/14/2020	70.5	LVWPS-A2-MW16B-INJ	E9349	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
	12/22/2020	70.5	LVWPS-A2-MW16B-EM01	E9708	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A2-MW17A	10/1/2020	50.1	LVWPS-A2-MW17A-BL04	E7797	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/14/2020	50.1	LVWPS-A2-MW17A-INJ	E9342	ND	ND	---	---	ND	ND	---	---	539.0 **	10.4	---	---	ND	ND	---	---
	12/22/2020	50.1	LVWPS-A2-MW17A-EM01	E9711	ND	ND	---	---	564.0 **	2.94	---	---	539.4	2.77	---	---	ND	ND	---	---
	12/22/2020	50.1	LVWPS-A2-MW17A-EM01	F0190	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-A2-MW17B	10/1/2020	75.2	LVWPS-A2-MW17B-BL04	E7798	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/14/2020	75.2	LVWPS-A2-MW17B-INJ	E9343	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
	12/22/2020	75.2	LVWPS-A2-MW17B-EM01	E9712	ND	ND	---	---	567.2	15.1	---	---	540.0	1.40	---	---	ND	ND	---	---
	12/22/2020	75.2	LVWPS-A2-MW17B-EM01	E9945	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND

Table 13
Groundwater Dye Analytical Results
Las Vegas Wash Bioremediation Pilot Study

Location	Sample Date	Depth (ft bgs)	Sample ID	Lab Sample ID	Fluorescein				Rhodamine WT (RWT)				Eosine				Sulforhodamine B (SRB)			
					Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
					nm	ppb	nm	ppb	nm	ppb	nm	ppb	nm	ppb	nm	ppb	nm	ppb	nm	ppb
LVWPS-A2-MW17C	10/1/2020	100	LVWPS-A2-MW17C-BL04	E7799	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/14/2020	100	LVWPS-A2-MW17C-INJ	E9344	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
	12/22/2020	100	LVWPS-A2-MW17C-EM01	E9713	ND	ND	---	---	567.9	300	---	---	ND	ND	---	---	ND	ND	---	---
	12/22/2020	100	LVWPS-A2-MW17C-EM01	E9946	---	---	ND	ND	---	---	573.6	23.2	---	---	ND	ND	---	---	ND	ND
LVWPS-A3-DR01	9/28/2020	65.5	LVWPS-A3-DR01-BL04	E7759	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/16/2020	65.5	LVWPS-A3-DR01-20201216	E9829	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/17/2020	65.5	LVWPS-A3-DR01-20201217	E9844	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/29/2020	65.5	LVWPS-A3-DR01-INJ	E9918	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-A3-MW02	10/5/2020	62.5	LVWPS-A3-MW02-BL04	E7839	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/30/2020	62.5	LVWPS-A3-MW02-INJ	E9759	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A3-MW06	10/5/2020	64.9	LVWPS-A3-MW06-BL04	E7826	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/30/2020	64.9	LVWPS-A3-MW06-INJ	E9753	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A3-MW07	10/8/2020	64.5	LVWPS-A3-MW07-BL04	E8229	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
LVWPS-A3-MW07	12/30/2020	64.5	LVWPS-A3-MW07-INJ	E9764	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A3-MW08	10/8/2020	94.4	LVWPS-A3-MW08-BL04	E8233	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/30/2020	94.4	LVWPS-A3-MW08-INJ	E9767	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-A3-MW10	10/5/2020	66.1	LVWPS-A3-MW10-BL04	E7828	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
LVWPS-A3-MW11	10/7/2020	63.7	LVWPS-A3-MW11-BL04	E8214	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
LVWPS-A3-MW12	10/5/2020	69.1	LVWPS-A3-MW12-BL04	E7822	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
LVWPS-EW01	9/29/2020	64.4	LVWPS-EW01-BL04	E7766	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
LVWPS-EW02	9/29/2020	42.8	LVWPS-EW02-BL04	E7767	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
LVWPS-EW03	9/30/2020	54.8	LVWPS-EW03-BL04	E7768	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
LVWPS-EW04	9/30/2020	35.7	LVWPS-EW04-BL04	E7769	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
LVWPS-EW05	9/29/2020	64.9	LVWPS-EW05-BL04	E7764	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	9/29/2020	64.9	LVWPS-EW05-BL04-FD	E7765	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
LVWPS-MW204	9/28/2020	60	LVWPS-MW204-BL04	E7761	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	9/28/2020	60	LVWPS-MW204-BL04-FD	E7762	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
LVWPS-MW204B	9/28/2020	111.2	LVWPS-MW204B-BL04	E7763	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	9/28/2020	77.8	LVWPS-MW207-BL04	E7734	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/22/2020	77.8	LVWPS-MW207-EM01	E9696	514.3	1.72	---	---	562.3 **	33.3	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW207	12/22/2020	77.8	LVWPS-MW207-EM01	E9934	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	10/9/2020	49.6	LVWPS-MW208A-BL04	E8239	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/12/2020	49.6	LVWPS-MW208A-INJ	E9325	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
	12/23/2020	49.6	LVWPS-MW208A-EM01	E9698	ND	ND	---	---	ND	ND	---	---	539.5	0.792	---	---	ND	ND	---	---
LVWPS-MW208B	10/9/2020	75	LVWPS-MW208B-BL04	E8241	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/12/2020	75	LVWPS-MW208B-INJ	E9326	ND	ND	---	---	ND	ND	---	---	538.5 **	0.641	---	---	ND	ND	---	---
	12/23/2020	75	LVWPS-MW208B-EM01	E9699	ND	ND	---	---	567.6	139	---	---	539.7	10.7	---	---	ND	ND	---	---
	12/23/2020	75	LVWPS-MW208B-EM01	E9935	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-MW209	10/6/2020	80.7	LVWPS-MW209-BL04	E8203	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/21/2020	80.7	LVWPS-MW209-EM01	E9716	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW209A	10/6/2020	45	LVWPS-MW209A-BL04	E8204	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/21/2020	45	LVWPS-MW209A-EM01	E9717	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW209B	10/6/2020	120	LVWPS-MW209B-BL04	E8205	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
LVWPS-MW210A	10/6/2020	44.8	LVWPS-MW210A-BL04	E8206	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/21/2020	44.8	LVWPS-MW210A-EM01	E9704	ND	ND	---	---	561.7 **	27.6	---	---	ND	ND	---	---	ND	ND	---	---
	12/21/2020	44.8	LVWPS-MW210A-EM01	E9938	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-MW210B	10/6/2020	79.6	LVWPS-MW210B-BL04	E8207	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/21/2020	79.6	LVWPS-MW210B-EM01	E9705	ND	ND	---	---	563.4 **	19.0	---	---	541.0	2.19	---	---	ND	ND	---	---
	12/21/2020	79.6	LVWPS-MW210B-EM01	E9939	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-MW211	9/30/2020	59.6	LVWPS-MW211-BL04	E7783	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/21/2020	59.6	LVWPS-MW211-EM01	E9706	513.9 **	2.27	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
	12/21/2020	59.6	LVWPS-MW211-EM01	E9942	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-MW212A	10/5/2020	43.9	LVWPS-MW212A-BL04	E7832	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/21/2020	43.9	LVWPS-MW212A-EM01	E9737	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW212B	10/5/2020	69.7	LVWPS-MW212B-BL04	E7833	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/22/2020	69.7	LVWPS-MW212B-EM01	E9738	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW217A	9/30/2020	61	LVWPS-MW217A-BL04	E7784	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
LVWPS-MW217B	9/30/2020	110.1	LVWPS-MW217B-BL04	E7785	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
LVWPS-MW217C	10/5/2020	165.1	LVWPS-MW217C-BL04	E7815	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
LVWPS-MW218A	10/5/2020	44.9	LVWPS-MW218A-BL04	E7821	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/21/2020	44.9	LVWPS-MW218A-EM01	E9718	ND	ND	---	---	561.7 **	13.1	---	---	ND	ND	---	---	ND	ND	---	---
	12/21/2020	44.9	LVWPS-MW218A-EM01	E9949	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-MW220A	10/5/2020	69.8	LVWPS-MW220A-BL04	E7831	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/21/2020	69.8	LVWPS-MW220A-EM01	E9719	ND	ND	---	---	567.2	1.32	---	---	ND	ND	---	---	ND	ND	---	---
	12/21/2020	69.8	LVWPS-MW220A-EM01	F0191	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND

Table 13
Groundwater Dye Analytical Results
Las Vegas Wash Bioremediation Pilot Study

Location	Sample Date	Depth (ft bgs)	Sample ID	Lab Sample ID	Fluorescein				Rhodamine WT (RWT)				Eosine				Sulforhodamine B (SRB)			
					Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
					nm	ppb	nm	ppb	nm	ppb	nm	ppb	nm	ppb	nm	ppb	nm	ppb	nm	ppb
LVWPS-MW221A	10/6/2020	60	LVWPS-MW221A-BL04	E8201	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/12/2020	60	LVWPS-MW221A-INJ	E9327	ND	ND	---	---	562.4 **	4.93	---	---	ND	ND	---	---	ND	ND	---	---
	12/12/2020	60	LVWPS-MW221A-INJ	E9467	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/22/2020	60	LVWPS-MW221A-EM01	E9739	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-MW221B	10/6/2020	93.4	LVWPS-MW221B-BL04	E8202	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
LVWPS-MW223A	10/6/2020	55.1	LVWPS-MW223A-BL04	E8190	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	10/6/2020	55.1	LVWPS-MW223A-BL04-FD	E8191	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/14/2020	55.1	LVWPS-MW223A-INJ	E9702	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
	12/22/2020	55.1	LVWPS-MW223A-EM01	E9709	ND	ND	---	---	ND	ND	---	---	539.4	6.82	---	---	ND	ND	---	---
LVWPS-MW223B	10/6/2020	80.1	LVWPS-MW223B-BL04	E8192	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/14/2020	80.1	LVWPS-MW223B-INJ	E9703	ND	ND	---	---	566.1	17.6	---	---	539.7	3.39	---	---	ND	ND	---	---
	12/14/2020	80.1	LVWPS-MW223B-INJ	E9936	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/22/2020	80.1	LVWPS-MW223B-EM01	E9710	ND	ND	---	---	567.6	28.4	---	---	540.2	2.29	---	---	ND	ND	---	---
12/22/2020	80.1	LVWPS-MW223B-EM01	E9944	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	
LVWPS-MW223C	10/7/2020	102.6	LVWPS-MW223C-BL04	E8211	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
LVWPS-MW224A	10/7/2020	65	LVWPS-MW224A-BL04	E8247	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
LVWPS-MW224A	12/23/2020	65	LVWPS-MW224A-EM01	E9701	ND	ND	---	---	562.0 **	3.35	---	---	ND	ND	---	---	ND	ND	---	---
	12/23/2020	65	LVWPS-MW224A-EM01	F0189	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-DR01A	9/28/2020	102.6	LVWPS-U1-DR01A-BL04	E7751	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/13/2020	102.6	LVWPS-U1-DR01A-20201213-1	E9436	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/13/2020	102.6	LVWPS-U1-DR01A-20201213-2	E9437	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/13/2020	102.6	LVWPS-U1-DR01A-20201213-3	E9438	---	---	507.1	0.959	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/13/2020	102.6	LVWPS-U1-DR01A-20201213-4	E9439	---	---	513.8	0.901	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/14/2020	102.6	LVWPS-U1-DR01A-20201214-5	E9428	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/14/2020	102.6	LVWPS-U1-DR01A-20201214-6	E9429	---	---	515.2	3.35	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/14/2020	102.6	LVWPS-U1-DR01A-20201214-1	E9414	---	---	514.9	1.79	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/14/2020	102.6	LVWPS-U1-DR01A-20201214-2	E9415	---	---	515.2	18.2	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/14/2020	102.6	LVWPS-U1-DR01A-20201214-3	E9416	---	---	506.8	1.18	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/14/2020	102.6	LVWPS-U1-DR01A-20201214-4	E9417	---	---	515.0	3.03	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
12/29/2020	102.6	LVWPS-U1-DR01A-INJ	E9923	---	---	507.0	0.700	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	
LVWPS-U1-DR01B	9/28/2020	136.1	LVWPS-U1-DR01B-BL04	E7752	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	9/28/2020	136.1	LVWPS-U1-DR01B-BL04-FD	E7836	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/13/2020	136.1	LVWPS-U1-DR01B-20201213-1	E9447	---	---	515.4	17.1	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/13/2020	136.1	LVWPS-U1-DR01B-20201213-2	E9448	---	---	514.1	177	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/13/2020	136.1	LVWPS-U1-DR01B-20201213-3	E9449	---	---	513.7	179	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/14/2020	136.1	LVWPS-U1-DR01B-20201214-5	E9430	---	---	513.2	165	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/14/2020	136.1	LVWPS-U1-DR01B-20201214-6	E9431	---	---	513.5	96.5	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/14/2020	136.1	LVWPS-U1-DR01B-20201214-1	E9418	---	---	515.7	136	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/14/2020	136.1	LVWPS-U1-DR01B-20201214-2	E9419	---	---	515.7	167	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/14/2020	136.1	LVWPS-U1-DR01B-20201214-3	E9421	---	---	515.7	259	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/14/2020	136.1	LVWPS-U1-DR01B-20201214-4	E9422	---	---	513.8	204	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
12/29/2020	136.1	LVWPS-U1-DR01B-INJ	E9924	---	---	515.4 **	65.6	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	
LVWPS-U1-DR02A	9/28/2020	101.6	LVWPS-U1-DR02A-BL04	E7748	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/13/2020	101.6	LVWPS-U1-DR02A-20201213-1	E9441	---	---	515.3	23.4	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/13/2020	101.6	LVWPS-U1-DR02A-20201213-2	E9442	---	---	515.2	11.8	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/13/2020	101.6	LVWPS-U1-DR02A-20201213-3	E9443	---	---	514.6	10.0	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/13/2020	101.6	LVWPS-U1-DR02A-20201213-4	E9444	---	---	515.1	12.9	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/14/2020	101.6	LVWPS-U1-DR02A-20201214-5	E9425	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/14/2020	101.6	LVWPS-U1-DR02A-20201214-6	E9426	---	---	516.1	3.35	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/14/2020	101.6	LVWPS-U1-DR02A-20201214-6	E9426 Rep	---	---	515.4	2.63	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/14/2020	101.6	LVWPS-U1-DR02A-20201214-1	E9405	---	---	515.6	5.08	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/14/2020	101.6	LVWPS-U1-DR02A-20201214-2	E9406	---	---	515.9	3.81	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/14/2020	101.6	LVWPS-U1-DR02A-20201214-3	E9407	---	---	515.3	22.9	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
12/14/2020	101.6	LVWPS-U1-DR02A-20201214-4	E9408	---	---	515.3	18.4	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	
12/29/2020	101.6	LVWPS-U1-DR02A-INJ	E9929	---	---	515.9 **	8.30	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	
LVWPS-U1-DR02B	9/28/2020	137.5	LVWPS-U1-DR02B-BL04	E7749	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/13/2020	137.5	LVWPS-U1-DR02B-20201213-1	E9450	---	---	506.8	0.087	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/13/2020	137.5	LVWPS-U1-DR02B-20201213-2	E9451	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/13/2020	137.5	LVWPS-U1-DR02B-20201213-3	E9452	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/14/2020	137.5	LVWPS-U1-DR02B-20201214-5	E9427	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/14/2020	137.5	LVWPS-U1-DR02B-20201214-4	E9412	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/14/2020	137.5	LVWPS-U1-DR02B-20201214-1	E9409	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/14/2020	137.5	LVWPS-U1-DR02B-20201214-2	E9410	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
12/14/2020	137.5	LVWPS-U1-DR02B-20201214-3	E9411	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	
12/29/2020	137.5	LVWPS-U1-DR02B-INJ	E9930	---	---	507.0	1.01	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	

Table 13
Groundwater Dye Analytical Results
Las Vegas Wash Bioremediation Pilot Study

Location	Sample Date	Depth (ft bgs)	Sample ID	Lab Sample ID	Fluorescein				Rhodamine WT (RWT)				Eosine				Sulforhodamine B (SRB)			
					Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
					nm	ppb	nm	ppb	nm	ppb	nm	ppb	nm	ppb	nm	ppb	nm	ppb	nm	ppb
LVWPS-U1-MW01A	9/28/2020	102.6	LVWPS-U1-MW01A-BL04	E7735	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/13/2020	102.6	LVWPS-U1-MW01A-20201213	E9453	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/28/2020	102.6	LVWPS-U1-MW01A-INJ	E9678	ND	ND	---	---	558.0 **	3.15	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U1-MW01B	9/28/2020	143.4	LVWPS-U1-MW01B-BL04	E9915	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	---	---
	12/28/2020	143.4	LVWPS-U1-MW01B-INJ	E9679	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
	9/29/2020	106.4	LVWPS-U1-MW02A-BL04	E7834	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
LVWPS-U1-MW02A	12/13/2020	106.4	LVWPS-U1-MW02A-20201213	E9456	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/29/2020	106.4	LVWPS-U1-MW02A-INJ	E9683	ND	ND	---	---	560.6 **	1.92	---	---	ND	ND	---	---	ND	ND	---	---
	12/29/2020	106.4	LVWPS-U1-MW02A-INJ	F0187	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-MW02B	10/7/2020	149.1	LVWPS-U1-MW02B-BL04	E8212	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/13/2020	149.1	LVWPS-U1-MW02B-20201213	E9455	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/13/2020	149.1	LVWPS-U1-MW02B-20201213	E9454	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-MW03B	9/29/2020	144.2	LVWPS-U1-MW03B-BL04	E7835	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/29/2020	144.2	LVWPS-U1-MW03B-INJ	E9693	ND	ND	---	---	560.1 **	4.66	---	---	ND	ND	---	---	ND	ND	---	---
	12/29/2020	144.2	LVWPS-U1-MW03B-INJ	F0188	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-MW04A	9/30/2020	111.5	LVWPS-U1-MW04A-BL04	E7788	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/29/2020	111.5	LVWPS-U1-MW04A-INJ	E9694	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U1-MW04B	10/1/2020	152.1	LVWPS-U1-MW04B-BL04	E7794	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/29/2020	152.1	LVWPS-U1-MW04B-INJ	E9681	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U1-MW05A	9/29/2020	107.8	LVWPS-U1-MW05A-BL04	E7774	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/29/2020	107.8	LVWPS-U1-MW05A-INJ	E9686	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U1-MW05B	9/29/2020	149.1	LVWPS-U1-MW05B-BL04	E7773	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/29/2020	149.1	LVWPS-U1-MW05B-INJ	E9687	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U1-MW06A	9/29/2020	95.1	LVWPS-U1-MW06A-BL04	E7771	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/28/2020	95.1	LVWPS-U1-MW06A-INJ	E9676	ND	ND	---	---	562.2 **	4.66	---	---	ND	ND	---	---	ND	ND	---	---
	12/28/2020	95.1	LVWPS-U1-MW06A-INJ	E9913	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-MW06B	9/29/2020	121.3	LVWPS-U1-MW06B-BL04	E7772	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/28/2020	121.3	LVWPS-U1-MW06B-INJ	E9677	515.1	7.50	---	---	562.5 **	2.85	---	---	ND	ND	---	---	ND	ND	---	---
	12/28/2020	121.3	LVWPS-U1-MW06B-INJ	E9914	---	---	506.8	0.125	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-MW07	9/30/2020	98.5	LVWPS-U1-MW07-BL04	E7778	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/29/2020	98.5	LVWPS-U1-MW07-INJ	E9692	515.3	37.2	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
	12/29/2020	98.5	LVWPS-U1-MW07-INJ	E9932	---	---	507.1	0.684	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-MW08A	9/30/2020	106.1	LVWPS-U1-MW08A-BL04	E7781	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/29/2020	106.1	LVWPS-U1-MW08A-INJ	E9688	516.2	470	---	---	567.0	5.61	---	---	ND	ND	---	---	ND	ND	---	---
	12/29/2020	106.1	LVWPS-U1-MW08A-INJ	E9925	---	---	514.7 **	12.2	---	---	561.3 **	1.28	---	---	ND	ND	---	---	ND	ND
LVWPS-U1-MW08B	9/30/2020	137.6	LVWPS-U1-MW08B-BL04	E7782	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/13/2020	137.6	LVWPS-U1-MW08B-20201213-1	E9457	---	---	514.9	11.0	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/13/2020	137.6	LVWPS-U1-MW08B-20201213	E9459	---	---	515.8	2.54	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/13/2020	137.6	LVWPS-U1-MW08B-20201213-2	E9458	---	---	515.2	16.5	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/14/2020	137.6	LVWPS-U1-MW08B-20201214	E9432	---	---	515.2	6.92	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/29/2020	137.6	LVWPS-U1-MW08B-INJ	E9689	515.4	185	---	---	567.2	3.09	---	---	ND	ND	---	---	ND	ND	---	---
	12/29/2020	137.6	LVWPS-U1-MW08B-INJ	E9926	---	---	515.0 **	8.54	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/29/2020	137.6	LVWPS-U1-MW08B-INJ-FD	E9690	515.4	199	---	---	567.6	3.54	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U1-MW09A	9/30/2020	120	LVWPS-U1-MW09A-BL04	E7776	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	
LVWPS-U1-MW09B	9/30/2020	142.4	LVWPS-U1-MW09B-BL04	E7777	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	
LVWPS-U1-MW10A	10/2/2020	111.6	LVWPS-U1-MW10A-BL04	E7809	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	
LVWPS-U1-MW10B	10/2/2020	142.5	LVWPS-U1-MW10B-BL04	E7810	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	
LVWPS-U2-DR01	9/28/2020	131.1	LVWPS-U2-DR01-BL04	E7753	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/7/2020	131.1	LVWPS-U2-DR01-20201207	E9383	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/8/2020	131.1	LVWPS-U2-DR01-20201208	E9389	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/9/2020	131.1	LVWPS-U2-DR01-20201209	E9398	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/20/2020	131.1	LVWPS-U2-DR01-20201220-1	E9868	---	---	506.2	0.016	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/20/2020	131.1	LVWPS-U2-DR01-20201220-2	E9869	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/20/2020	131.1	LVWPS-U2-DR01-20201220-3	E9870	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/20/2020	131.1	LVWPS-U2-DR01-20201220-4	E9871	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/21/2020	131.1	LVWPS-U2-DR01-20201221-1	E9895	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/21/2020	131.1	LVWPS-U2-DR01-20201221-2	E9896	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/21/2020	131.1	LVWPS-U2-DR01-20201221-3	E9897	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/21/2020	131.1	LVWPS-U2-DR01-20201221-4	E9898	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
12/31/2020	131.1	LVWPS-U2-DR01-INJ	E9971	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	

Table 13
Groundwater Dye Analytical Results
Las Vegas Wash Bioremediation Pilot Study

Location	Sample Date	Depth (ft bgs)	Sample ID	Lab Sample ID	Fluorescein				Rhodamine WT (RWT)				Eosine				Sulforhodamine B (SRB)			
					Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
					nm	ppb	nm	ppb	nm	ppb	nm	ppb	nm	ppb	nm	ppb	nm	ppb	nm	ppb
LVWPS-U2-DR02	9/28/2020	96.1	LVWPS-U2-DR02-BL04	E7756	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/7/2020	96.1	LVWPS-U2-DR02-20201207	E9386	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/8/2020	96.1	LVWPS-U2-DR02-20201208	E9392	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/9/2020	96.1	LVWPS-U2-DR02-20201209	E9402	---	---	ND	ND	---	---	575.7	0.206	---	---	ND	ND	---	---	ND	ND
	12/20/2020	96.1	LVWPS-U2-DR02-20201220-1	E9888	---	---	515.4 **	160	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/20/2020	96.1	LVWPS-U2-DR02-20201220-2	E9878	---	---	515.7 **	151	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/20/2020	96.1	LVWPS-U2-DR02-20201220-3	E9879	---	---	515.7 **	87.8	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/20/2020	96.1	LVWPS-U2-DR02-20201220-4	E9881	---	---	515.7 **	97.3	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/21/2020	96.1	LVWPS-U2-DR02-20201221-1	E9905	---	---	515.7 **	185	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/21/2020	96.1	LVWPS-U2-DR02-20201221-2	E9906	---	---	515.4 **	67.3	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/21/2020	96.1	LVWPS-U2-DR02-20201221-3	E9907	---	---	515.8 **	202	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/21/2020	96.1	LVWPS-U2-DR02-20201221-4	E9908	---	---	515.4 **	652	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
12/21/2020	96.1	LVWPS-U2-DR02-20201221-4-FD	E9909	---	---	515.8 **	464	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	
12/31/2020	96.1	LVWPS-U2-DR02-INJ	E9970	---	---	516.2 **	38.3	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	
LVWPS-U2-MW01	10/8/2020	106.9	LVWPS-U2-MW01-BL04	E8230	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	1/4/2021	106.9	LVWPS-U2-MW01-INJ	E9777	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U2-MW02	10/8/2020	112.4	LVWPS-U2-MW02-BL04	E8227	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	1/4/2021	112.4	LVWPS-U2-MW02-INJ	E9778	513.7 **	0.685	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U2-MW03	10/9/2020	99.8	LVWPS-U2-MW03-BL04	E8238	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	1/4/2021	99.8	LVWPS-U2-MW03-INJ	E9779	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U2-MW04	10/6/2020	115.3	LVWPS-U2-MW04-BL04	E8208	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/31/2020	115.3	LVWPS-U2-MW04-INJ	E9776	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U2-MW05	10/5/2020	95.4	LVWPS-U2-MW05-BL04	E7841	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/31/2020	95.4	LVWPS-U2-MW05-INJ	E9771	516.2	843	---	---	567.0 **	4.38	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U2-MW06	10/1/2020	131.1	LVWPS-U2-MW06-BL04	E7792	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/31/2020	131.1	LVWPS-U2-MW06-INJ	E9774	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U2-MW08	10/1/2020	122.7	LVWPS-U2-MW08-BL04	E7791	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/31/2020	122.7	LVWPS-U2-MW08-INJ	E9775	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U2-MW09	10/9/2020	94.6	LVWPS-U2-MW09-BL04	E8244	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/31/2020	94.6	LVWPS-U2-MW09-INJ	E9770	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U2-MW12	10/7/2020	95.4	LVWPS-U2-MW12-BL04	E8210	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	10/6/2020	95.1	LVWPS-U2-MW14-BL04	E8199	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
LVWPS-U2-MW14	12/31/2020	95.1	LVWPS-U2-MW14-INJ	E9773	514.9	1.90	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
	12/31/2020	95.1	LVWPS-U2-MW14-INJ	E9969	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-U2-MW17	10/1/2020	126.5	LVWPS-U2-MW17-BL04	E7801	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	10/5/2020	100.6	LVWPS-U2-MW18-BL04	E7818	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
LVWPS-U2-MW18	12/31/2020	100.6	LVWPS-U2-MW18-INJ	E9772	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
	9/28/2020	108	LVWPS-U3-DR01A-BL04	E7739	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
LVWPS-U3-DR01A	12/17/2020	108	LVWPS-U3-DR01A-20201217-1	E9845	---	---	514.9 **	1.29	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/17/2020	108	LVWPS-U3-DR01A-20201217-2	E9846	---	---	515.5 **	3.51	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/17/2020	108	LVWPS-U3-DR01A-20201217-3	E9847	---	---	514.9 **	3.53	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/17/2020	108	LVWPS-U3-DR01A-20201217-4	E9848	---	---	514.7 **	0.559	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/29/2020	108	LVWPS-U3-DR01A-INJ	E9919	---	---	507.1	1.57	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-DR01B	9/28/2020	144.1	LVWPS-U3-DR01B-BL04	E7741	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/16/2020	144.1	LVWPS-U3-DR01B-20201216-1	E9825	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/16/2020	144.1	LVWPS-U3-DR01B-20201216-2	E9826	---	---	514.1 **	155	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/16/2020	144.1	LVWPS-U3-DR01B-20201216-3	E9827	---	---	515.7 **	135	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/16/2020	144.1	LVWPS-U3-DR01B-20201216-4	E9828	---	---	515.1 **	7.32	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/17/2020	144.1	LVWPS-U3-DR01B-20201217-1	E9849	---	---	515.4 **	407	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/17/2020	144.1	LVWPS-U3-DR01B-20201217-2	E9850	---	---	515.7 **	209	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/17/2020	144.1	LVWPS-U3-DR01B-20201217-3	E9851	---	---	515.7 **	210	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
12/17/2020	144.1	LVWPS-U3-DR01B-20201217-4	E9852	---	---	515.1 **	39.1	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	
12/29/2020	144.1	LVWPS-U3-DR01B-INJ	E9921	---	---	515.8 **	30.9	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	
LVWPS-U3-DR02A	9/28/2020	98.6	LVWPS-U3-DR02A-BL04	E7742	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/16/2020	98.6	LVWPS-U3-DR02A-20201216-1	E9830	---	---	515.3 **	36.0	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/16/2020	98.6	LVWPS-U3-DR02A-20201216-2	E9831	---	---	513.8 **	114	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/16/2020	98.6	LVWPS-U3-DR02A-20201216-3	E9832	---	---	515.6 **	2.37	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/16/2020	98.6	LVWPS-U3-DR02A-20201216-4	E9833	---	---	515.7 **	125	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/17/2020	98.6	LVWPS-U3-DR02A-20201217-4-FD	E9866	---	---	515.6 **	83.2	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/30/2020	98.6	LVWPS-U3-DR02A-INJ	E9959	---	---	515.1 **	73.5	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
12/30/2020	98.6	LVWPS-U3-DR02A-INJ	E9961	---	---	516.0 **	67.5	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	

Table 13
Groundwater Dye Analytical Results
Las Vegas Wash Bioremediation Pilot Study

Location	Sample Date	Depth (ft bgs)	Sample ID	Lab Sample ID	Fluorescein				Rhodamine WT (RWT)				Eosine				Sulforhodamine B (SRB)			
					Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
					nm	ppb	nm	ppb	nm	ppb	nm	ppb	nm	ppb	nm	ppb	nm	ppb	nm	ppb
LVWPS-U3-DR02B	9/28/2020	130	LVWPS-U3-DR02B-BL04	E7743	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/16/2020	130	LVWPS-U3-DR02B-20201216-1	E9834	---	---	515.7 **	144	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/16/2020	130	LVWPS-U3-DR02B-20201216-2	E9835	---	---	515.3 **	14.1	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/16/2020	130	LVWPS-U3-DR02B-20201216-3	E9836	---	---	515.3 **	154	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/16/2020	130	LVWPS-U3-DR02B-20201216-4	E9837	---	---	515.3 **	26.1	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/17/2020	130	LVWPS-U3-DR02B-20201217-1	E9857	---	---	515.8 **	224	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/17/2020	130	LVWPS-U3-DR02B-20201217-2	E9858	---	---	515.4 **	12.3	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/17/2020	130	LVWPS-U3-DR02B-20201217-3	E9859	---	---	515.2 **	27.3	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
12/17/2020	130	LVWPS-U3-DR02B-20201217-4	E9861	---	---	515.5 **	55.7	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	
LVWPS-U3-DR02C	9/28/2020	161.5	LVWPS-U3-DR02C-BL04	E7744	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/16/2020	161.5	LVWPS-U3-DR02C-20201216-1	E9838	---	---	507.1	0.337	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/16/2020	161.5	LVWPS-U3-DR02C-20201216-2	E9839	---	---	507.0	0.400	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/16/2020	161.5	LVWPS-U3-DR02C-20201216-3	E9841	---	---	507.1	1.10	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/16/2020	161.5	LVWPS-U3-DR02C-20201216-3-FD	E9843	---	---	507.0	0.346	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/16/2020	161.5	LVWPS-U3-DR02C-20201216-4	E9842	---	---	507.1	0.943	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/17/2020	161.5	LVWPS-U3-DR02C-20201217-1	E9862	---	---	507.9	0.490	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/17/2020	161.5	LVWPS-U3-DR02C-20201217-2	E9863	---	---	507.2	0.879	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/17/2020	161.5	LVWPS-U3-DR02C-20201217-3	E9864	---	---	507.3	0.909	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/17/2020	161.5	LVWPS-U3-DR02C-20201217-4	E9865	---	---	515.3 **	6.41	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
12/30/2020	161.5	LVWPS-U3-DR02C-INJ	E9962	---	---	516.4 **	51.2	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	
LVWPS-U3-MW01B	10/5/2020	93.5	LVWPS-U3-MW01B-BL04	E7819	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
LVWPS-U3-MW02A	10/5/2020	89.4	LVWPS-U3-MW02A-BL04	E7824	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/30/2020	89.4	LVWPS-U3-MW02A-INJ	E9761	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW02B	10/5/2020	112.5	LVWPS-U3-MW02B-BL04	E7825	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/30/2020	112.5	LVWPS-U3-MW02B-INJ	E9762	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW03A	10/2/2020	98.6	LVWPS-U3-MW03A-BL04	E7805	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	10/2/2020	98.6	LVWPS-U3-MW03A-BL04-FD	E7806	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/30/2020	98.6	LVWPS-U3-MW03A-INJ	E9750	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW03B	10/2/2020	163	LVWPS-U3-MW03B-BL04	E7804	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
LVWPS-U3-MW03B	12/30/2020	163	LVWPS-U3-MW03B-INJ	E9751	515.7	116	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
	12/30/2020	163	LVWPS-U3-MW03B-INJ	E9963	---	---	508.2	0.226	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-MW03C	10/1/2020	129.9	LVWPS-U3-MW03C-BL04	E7793	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/30/2020	129.9	LVWPS-U3-MW03C-INJ	E9752	515.5	8.21	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
	12/30/2020	129.9	LVWPS-U3-MW03C-INJ	E9964	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-MW04B	10/2/2020	87.7	LVWPS-U3-MW04B-BL04	E7807	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
LVWPS-U3-MW05B	10/2/2020	94.8	LVWPS-U3-MW05B-BL04	E7808	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
LVWPS-U3-MW06A	10/5/2020	102.6	LVWPS-U3-MW06A-BL04	E7827	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/30/2020	102.6	LVWPS-U3-MW06A-INJ	E9754	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW06B	10/7/2020	137.3	LVWPS-U3-MW06B-BL04	E8213	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/30/2020	137.3	LVWPS-U3-MW06B-INJ	E9755	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW07A	10/9/2020	89.9	LVWPS-U3-MW07A-BL04	E8221	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/30/2020	89.9	LVWPS-U3-MW07A-INJ	E9765	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW07B	10/9/2020	114.3	LVWPS-U3-MW07B-BL04	E8222	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/30/2020	114.3	LVWPS-U3-MW07B-INJ	E9766	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW08A	10/8/2020	130	LVWPS-U3-MW08A-BL04	E8234	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/30/2020	130	LVWPS-U3-MW08A-INJ	E9768	514.1	0.439	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
	12/30/2020	130	LVWPS-U3-MW08A-INJ	F0193	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-MW08B	10/8/2020	161.2	LVWPS-U3-MW08B-BL04	E8224	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/30/2020	161.2	LVWPS-U3-MW08B-INJ	E9769	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
LVWPS-U3-MW09	10/7/2020	97.8	LVWPS-U3-MW09-BL04	E8219	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/30/2020	97.8	LVWPS-U3-MW09-INJ	E9763	515.4	22.8	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
	12/30/2020	97.8	LVWPS-U3-MW09-INJ	E9967	---	---	515.4 **	2.51	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
LVWPS-U3-MW10A	10/5/2020	89.9	LVWPS-U3-MW10A-BL04	E7829	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
LVWPS-U3-MW10B	10/5/2020	111.1	LVWPS-U3-MW10B-BL04	E7830	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
LVWPS-U3-MW11A	10/7/2020	96.2	LVWPS-U3-MW11A-BL04	E8215	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
LVWPS-U3-MW11B	10/7/2020	124.8	LVWPS-U3-MW11B-BL04	E8216	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
LVWPS-U3-MW11C	10/8/2020	153.1	LVWPS-U3-MW11C-BL04	E8223	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
LVWPS-U3-MW12A	10/6/2020	98	LVWPS-U3-MW12A-BL04	E8193	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
LVWPS-U3-MW12B	10/6/2020	125.5	LVWPS-U3-MW12B-BL04	E8194	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
LVWPS-U3-MW13A	10/7/2020	108.5	LVWPS-U3-MW13A-BL04	E8217	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/30/2020	108.5	LVWPS-U3-MW13A-INJ	E9756	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---

Table 13
Groundwater Dye Analytical Results
 Las Vegas Wash Bioremediation Pilot Study

Location	Sample Date	Depth (ft bgs)	Sample ID	Lab Sample ID	Fluorescein				Rhodamine WT (RWT)				Eosine				Sulforhodamine B (SRB)			
					Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater		Charcoal		Groundwater	
					nm	ppb	nm	ppb	nm	ppb	nm	ppb	nm	ppb	nm	ppb	nm	ppb	nm	ppb
LVWPS-U3-MW13B	10/7/2020	140.1	LVWPS-U3-MW13B-BL04	E8218	---	---	ND	ND	---	---	ND	ND	---	---	---	---	---	---	---	---
	12/30/2020	140.1	LVWPS-U3-MW13B-INJ	E9757	515.3	77.9	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
	12/30/2020	140.1	LVWPS-U3-MW13B-INJ	E9965	---	---	507.0	0.133	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND
	12/30/2020	140.1	LVWPS-U3-MW13B-INJ-FD	E9758	515.3	87.3	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND	---	---
	12/30/2020	140.1	LVWPS-U3-MW13B-INJ-FD	E9966	---	---	507.3	0.299	---	---	ND	ND	---	---	ND	ND	---	---	ND	ND

Notes:

- nm - nanometers
- conc - concentration
- ppb - parts per billion
- **A fluorescence peak
- Not tested

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.