

Figure

\\TTS134FS1\SUP-GIS\ARCPR\2\INERT\MXD\SAMPLE_LOCATION_M15_MONTHLY_032018.MXD



Imagery Source: Esri World Map, June 2015

Legend
● Monthly Sample Locations

Tt TETRA TECH
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 Henderson, Nevada 89015
 PHONE: (702) 854-2293

NEVADA ENVIRONMENTAL RESPONSE TRUST
 LAS VEGAS WASH MONTHLY SAMPLING
 HENDERSON, NEVADA
LAS VEGAS WASH SAMPLE POINT LOCATIONS

Project No.:	117-7502018
Date:	SEPTEMBER 17, 2018
Designed By:	ES
Figure No.	1

Attachment A

Surface Water Sampling Logs



Task Name: LVW Surface Water Sampling

Task Manager: Jesse Bunkers

Task No: M15

Date: 5/1/20

Field Samplers: JB, PG

Sampling Method: Dipper Bottle

Equipment Decon. Method: DI Rinse

Time	Location ID	Depth of Water (ft)	Depth of Sample (ft)	Temp. (°C)	pH (pH Units)	Conductivity (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Color	Odor
0800	LVW8.85	0.8	0.4	24.1	7.87	1.802	7.64	191.1	1.17	clear	none
0845	LVW7.2	2.0	1.0	22.7	7.84	2.163	7.80	172.0	0.20	"	"
0915	LVW6.6-1	2.6	1.3	22.9	7.89	2.250	7.85	192.9	1.39	"	"
0915	LVW6.6-2	5.8	2.9	22.7	7.94	1.971	8.48	190.8	1.29	"	"
0915	LVW6.6-3	1.4	0.7	22.5	7.96	1.842	7.77	191.6	0.33	"	"
0930	LVW6.05	1.4	0.7	23.2	8.04	2.078	9.23	188.0	1.76	"	"
1015	C1-E	0.0	0.0	24.4	7.86	4.352	7.75	197.1	2.78	"	"
1015	C1-W	0.0	0.0	23.7	7.83	4.412	7.73	193.2	3.15	"	"
1030	LVW5.3-1	5.6	2.8	27.4	8.11	2.229	8.34	186.8	1.28	"	"
1030	LVW5.3-2	1.0	0.5	26.1	8.24	2.145	9.06	183.1	2.05	"	"
1030	LVW5.3-3	1.0	0.5	26.1	8.31	2.124	8.85	185.2	1.71	"	"
1030	LVW5.3-4	0.6	0.3	26.0	8.37	2.114	9.91	185.3	1.92	"	"
1030	LVW5.3-5	0.8	0.4	25.8	8.40	2.117	9.32	185.9	1.84	"	"
1030	LVW5.3-6	0.6	0.3	24.8	8.34	2.122	8.69	189.1	1.70	"	"
1115	LVW4.75-1	1.8	0.9	26.2	8.14	2.150	7.90	191.5	1.14	"	"
1115	LVW4.75-2	1.8	0.9	25.2	8.18	2.184	8.55	191.3	1.49	"	"
1115	LVW4.75-3	1.6	0.8	25.5	8.28	2.149	9.28	193.0	0.42	"	"
QA/QC Samples/ID: LVW7.2-20200501-FB		QA/QC Samples/ID: LVW7.2-1.0-20200501-FD				QA/QC Samples/ID: LVW6.05-20200501-FB					
QA/QC Sample Time: 0845		QA/QC Sample Time: 0845				QA/QC Sample Time: 0930					
C1-W C1-E	Flow (L/s): 2.35	C1-E C1-W	Flow (L/s): 0.60	C-12	Flow (L/s): No Flow						
	Width (ft): 0.80 Depth (ft): 0.083		Width (ft): 0.56 Depth (ft): 0.040		Width (ft): - Depth (ft): -						

Observations/Comments:



SURFACE WATER SAMPLING LOG

Task Name: LVW Surface Water Sampling

Task Manager: Jesse Bunkers

Task No: M15

Date: 5/1/20

Field Samplers: JB, PG

Sampling Method: Dipper Bottle

Equipment Decon. Method: DI Rinse

Time	Location ID	Depth of Water (ft)	Depth of Sample (ft)	Temp. (°C)	pH (pH Units)	Conductivity (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Color	Odor
1115	LVW4.75-4	2.2	1.1	25.2	8.31	2.139	8.69	196.4	1.50	clear	None
1115	LVW4.75-5	1.6	0.8	25.1	8.25	2.132	8.61	198.8	1.66	"	"
1145	LVW4.2-1	3.2	1.6	26.7	8.24	2.207	8.31	189.3	1.01	"	"
1145	LVW4.2-2	5.2	2.6	26.0	8.19	2.154	8.44	188.2	1.64	"	"
1145	LVW4.2-3	5.8	2.9	25.7	8.21	2.143	8.65	190.9	1.96	"	"
1145	LVW4.2-4	3.2	1.6	25.7	8.20	2.129	8.44	195.4	0.95	"	"
1215	LVW3.5-1	3.4	1.7	27.2	8.30	2.179	8.97	194.2	1.70	"	"
1215	LVW3.5-2	1.8	0.9	26.0	8.36	2.178	9.40	193.0	1.66	"	"
1215	LVW3.5-3	3.4	1.7	25.1	8.39	2.168	9.04	187.0	1.65	"	"
1215	LVW3.5-4	2.6	1.3	25.6	8.38	2.156	8.91	182.8	1.50	"	"
1215	LVW3.5-5	4.434	1.7	24.8	8.38	2.162	9.30	178.1	1.53	"	"
1215	LVW3.5-6	3.4	1.7	25.3	8.37	2.153	9.16	168.7	1.90	"	"
1300	LVW0.55	2.0	1.0	27.5	8.44	2.185	8.37	171.3	0.03	"	"

QA/QC Samples/ID: LVW6.05-0.7-20200501

QA/QC Samples/ID: LVW^{0.55}~~3.5~~-1.0-20200501-FD

QA/QC Samples/ID: LVW0.55-20200501-FB

QA/QC Sample Time: 0930

QA/QC Sample Time: 1300

QA/QC Sample Time: 1300

C1-E Flow (L/s): _____
 Width (ft): _____ Depth (ft): _____

C1-W Flow (L/s): _____
 Width (ft): _____ Depth (ft): _____

C-12 Flow (L/s): _____
 Width (ft): _____ Depth (ft): _____

Observations/Comments:

Attachment B
Field Investigation Daily Logs



Task Name: LVW Surface Water Sampling	Task Manager: Jesse Bunkers	Date: 5/1/20
Field Personnel: JB, PG	Task No: M15	
Location: Las Vegas Wash	Reported by: J. Bunkers	

Weather Conditions: 75-89°F Sunny, Calm

Total Vehicle Mileage: 25

Task Visitors / Subcontractors: None

Matters of Safety:
Heat Stress

Problems / Concerns and Corrective Actions Taken:
None

Time	Activities
0700	Meet sampling team at NERT site, tailgate safety meeting, gather supplies
0800	Collect sample LVW8.85, move to LVW7.2
0845	Collect samples LVW7.2 and field dup and field blank ^B , move to LVW6.6
0915	Collect samples LVW6.6-1 thru LVW6.6-3, sandbar at 6.6-3, mod location to 36.089462°N, 114.993152°W, move to LVW6.05
0930	Collect samples LVW6.5 and field dup and field blank, move to C-1 channel, no flow at C-12, measure flow and dimensions at C-1 culvert (see sampling log)
1015	Collect samples C1-E and C1-W, move to LVW5.3
1030	Collect samples LVW5.3-1 thru LVW5.3-6, move to LVW4.75
1115	Collect samples LVW4.75-1 thru LVW4.75-5, move to LVW4.2
1145	Collect samples LVW4.2-1 thru LVW4.2-4, move to LVW3.5
1215	Collect samples LVW3.5-1 thru LVW3.5-6, move to LVW0.55
1300	Collect samples LVW0.55 and field dup and field blank, move to office
1400	Clean and store sampling equipment, pack sample coolers for shipping
1420	Hand over samples to Eurofins carrier

<input checked="" type="checkbox"/> LVW8.85: 36.107231, -115.019994	<input checked="" type="checkbox"/> LVW5.3-6: 36.090660, -114.973903	<input checked="" type="checkbox"/> LVW4.2-2: 36.094817, -114.954612
<input checked="" type="checkbox"/> LVW7.2: 36.090604, -115.000302	<input checked="" type="checkbox"/> C1-E: 36.086147, -114.972022	<input checked="" type="checkbox"/> LVW4.2-3: 36.094978, -114.954716
<input checked="" type="checkbox"/> LVW6.6-1: 36.089145, -114.993282	<input checked="" type="checkbox"/> C1-W: 36.086147, -114.972022	<input checked="" type="checkbox"/> LVW4.2-4: 36.095108, -114.954806
<input checked="" type="checkbox"/> LVW6.6-2: 36.089351, -114.993309	<input checked="" type="checkbox"/> C12: 36.086125, -114.970255 No flow	<input checked="" type="checkbox"/> LVW3.5-1: 36.100422, -114.943298
<input checked="" type="checkbox"/> LVW6.6-3: 36.089485, -114.993333 Modified	<input checked="" type="checkbox"/> LVW4.75-1: 36.092979, -114.961810	<input checked="" type="checkbox"/> LVW3.5-2: 36.100459, -114.943329
<input checked="" type="checkbox"/> LVW6.05: 36.087849, -114.985682	<input checked="" type="checkbox"/> LVW4.75-2: 36.093130, -114.961928	<input checked="" type="checkbox"/> LVW3.5-3: 36.100548, -114.943390
<input checked="" type="checkbox"/> LVW5.3-1: 36.089867, -114.973112	<input checked="" type="checkbox"/> LVW4.75-3: 36.093277, -114.962051	<input checked="" type="checkbox"/> LVW3.5-4: 36.100585, -114.943405
<input checked="" type="checkbox"/> LVW5.3-2: 36.090072, -114.973322	<input checked="" type="checkbox"/> LVW4.75-4: 36.093431, -114.962174	<input checked="" type="checkbox"/> LVW3.5-5: 36.100606, -114.943451
<input checked="" type="checkbox"/> LVW5.3-3: 36.090218, -114.973467	<input checked="" type="checkbox"/> LVW4.75-5: 36.093580, -114.962301	<input checked="" type="checkbox"/> LVW3.5-6: 36.100645, -114.943493
<input checked="" type="checkbox"/> LVW5.3-4: 36.090367, -114.973612	<input checked="" type="checkbox"/> LVW4.2-1: 36.094695, -114.954570	<input checked="" type="checkbox"/> LVW0.55: 36.122158, -114.904631
<input checked="" type="checkbox"/> LVW5.3-5: 36.090513, -114.973758		

Prepared by: Jesse Bunkers Signature: [Signature] Date: 5/1/20

Attachment C Calibration Logs

EQUIPCO

Rentals Sales Service

YSI ProDSS RENTAL CALIBRATION CERTIFICATE

SERVICE TECHNICIAN: T.L.

DATE: 4/27/2020

RENTAL CUSTOMER: TETRA TECH.

INSTRUMENT INFORMATION

RENTAL I.D. NUMBER: YSIPRODSS. 38

SERIAL NUMBER: 19J100049

CALIBRATION INFORMATION

PARAMETER:	STANDARD:	PASS	LOT #
1. CONDUCTIVITY	1,000 µMhos	<input checked="" type="checkbox"/>	<u>039920</u>
2. pH ZERO	pH 7	<input checked="" type="checkbox"/>	<u>038497</u>
pH SLOPE	pH 4	<input checked="" type="checkbox"/>	<u>038496</u>
pH SLOPE	pH 10	<input checked="" type="checkbox"/>	<u>57332</u>
3. DISSOLVED OXYGEN	Air Calibration	<input checked="" type="checkbox"/>	N/A
DISSOLVED OXYGEN ZERO TEST	Barometric pressure = 760mmHg (Sodium Sulfite)	<input type="checkbox"/>	<u>N/A</u>
4. TURBIDITY ZERO	0.0 NTU's	<input checked="" type="checkbox"/>	<u>04/27/2020</u>
TURBIDITY SPAN	100 NTU's	<input checked="" type="checkbox"/>	<u>04/27/2020</u>
5. REDOX (ORP)	231mV (YSI Zobell solution)	<input checked="" type="checkbox"/>	<u>032420</u>

TECHNICAL MEMORANDUM

To: Chris Ritchie, Ramboll

Cc: Steve Clough, Nevada Environmental Response Trust
Annika Deurlington, Jesse King, Emeryville Lab Data, Ramboll
David Bohmann, Tetra Tech

From: Jesse Bunkers and James Roman

Date: July 20, 2020

Subject: **June 2020 Monthly Groundwater Monitoring Summary
Nevada Environmental Response Trust Site
Henderson, NV**

MONTHLY DEPTH TO WATER MEASUREMENTS

At the direction of the Nevada Environmental Response Trust (NERT or Trust), Tetra Tech, Inc. (Tetra Tech) has prepared this summary for the June 2020 monthly depth-to-water measurement event. This activity was performed in accordance with Ramboll's update to the *Remedial Performance Groundwater Sampling and Analysis Plan*, dated March 4, 2020 and approved by Nevada Division of Environmental Protection (NDEP) on March 16, 2020, and *Field Guidance Document No. 008 – Groundwater and Free Product Level Measurements*, dated March 24, 2017.

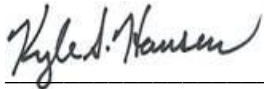
The depth to water was measured at 24 monitoring wells on June 8, 2020. The well locations are identified on Figure 1. No deviations from the groundwater monitoring program were encountered. All wells were observed to be in good condition.

The field water level measurement log is included in Attachment A. The electronic data deliverable (EDD), with the recorded depth to water data, will be transmitted separately as an Excel file.

CERTIFICATION

I hereby certify that I am responsible for the services described in this document and for the preparation of this document. The services described in this document have been prepared in a manner consistent with the current standards of the profession, and to the best of my knowledge, comply with all applicable federal, state, and local statutes, regulations, and ordinances. I hereby certify that all laboratory analytical data was generated by a laboratory certified by the NDEP for each constituent and media presented herein.

Description of Services Provided: Prepared June 2020 Monthly Groundwater Monitoring Summary.



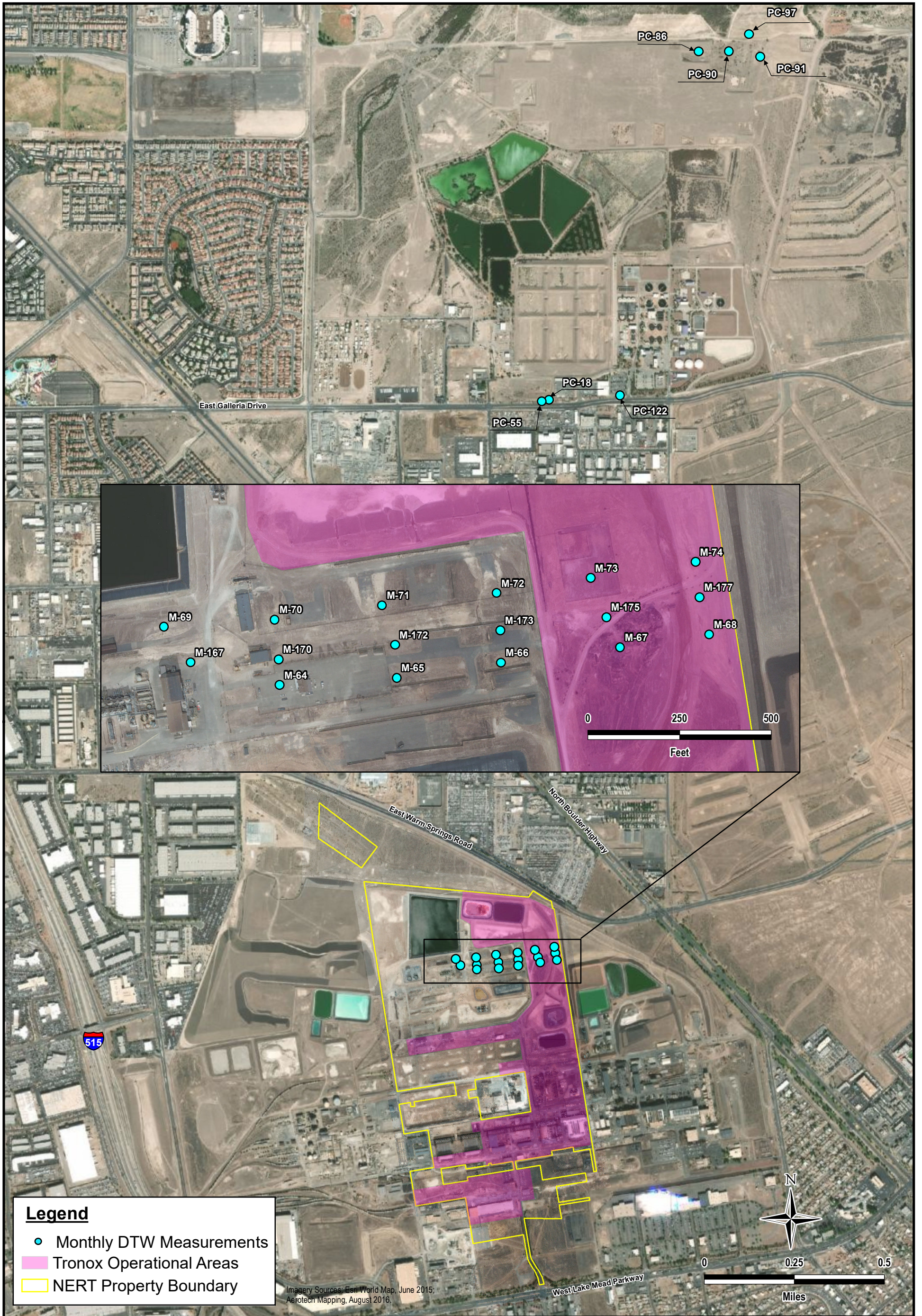
7/20/2020

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

Date

Nevada CEM Certificate Number: 2167
Nevada CEM Expiration Date: September 18, 2020

Figure



Legend

- Monthly DTW Measurements
- Tronox Operational Areas
- NERT Property Boundary

Imagery Sources: Esri World Map, June 2015; Aerotech Mapping, August 2016.



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NEVADA ENVIRONMENTAL RESPONSE TRUST

GROUNDWATER MONITORING PROGRAM
HENDERSON, NEVADA

MONTHLY WATER LEVEL MEASUREMENT WELLS

Project No.: 117-7502017

Date: JULY 10, 2020

Designed By: ES

Figure No.

1

Attachment A
Field Water Level Measurement Log



WELL WATER LEVEL MEASUREMENT LOG

Task Name: GW Monitoring Task No: H02 Date: June 8, 2020

Task Manager: Jesse Bunkers Location: Site Wide

Equipment Model/Type: Solinst Water Level Meter Serial Number: 269523 Recorded by: J. Bunkers

Table with 6 columns: Time, Well ID, Measuring Point, Depth to Static Water Level (ft BMP), Condition of Well and Well Seal, Dedicated Tubing (Y/N). Rows include measurements for wells M-73, M-175, M-67, M-74, M-177, M-68, M-167, M-69, M-70, M-170, M-64, M-65, M-172, M-71, M-66, M-173, M-72, PC-91, PC-97, PC-90, PC-86, PC-122, PC-18, and PC-55.

BMP = Below Measuring Point

TOC = Top of Casing (Well Riser)

DP = Dedicated Pump



JUNE 2020 Sampling Event

DTW readings taken manually on all Interceptor Wells, SWF, AWF and AP5 Wells

Issues/Concerns

IWF, SWF, AWF, AP5 Wells	DTW taken with Geotech Water Level Meter Serial #7053.
PC99R2/R3	When taking DTW readings, PC-99R2 was feeding into PC-99R3 so quickly that splash was preventing us from obtaining an accurate DTW reading. Unable to remove transducer from well or pass with TWD probe. Recorded DTW readings from Control Panel
AP5 Wells	Sampled by ETI JUNE 4 2020. Will be done on a Monthly basis by ETI.
*ART-1, ART-2, ART-4, ART-6, *ART-8A, PC-150, *I-AC, I-AD, I-B, I-E, I-F, I-G, I-I, *I-J, I-L, I-Q, I-R, I-V	*All have more than 1-foot difference in DTW from 5/2020 to 6/2020. Data recorded on field sheet
ART-2 and ART-2A	Both wells running at time of DTW and Sampling. Sample bottles labeled as ART-2/2A 6 2 20
I-AB, I-AC, I-AD	DTW taken prior to turning well on to sample, purged prior to collecting sample.
I-Q	DTW probe hitting top of pump. Unable to bypass pump/motor with DTW probe.
I-P	ETI daily DTW measurements.
	Emily McGuire and Thomas McDaniel sampled JUNE 2020

FD/EB

SWF	PC-120 6 2 20 - FD	PC-121 6 2 20 - EB
AWF	ART-4 6 2 20 - FD	ART-7B 6 2 20 - EB
IWF	I-AA 6 4 20 - FD	I-AB 6 4 20 - EB
AP5 Wells	E2-5 6 4 20 - FD	E1-1 6 4 20 - EB

**Per email from Emily Gilson dated 4/12/2017 – removed historical_reference_elev and water_level_elev data from 2017 Groundwater Sampling EDD

Field Forms changes	TWD will be marked with a “NM” not measured, unless a manual reading obtained. Manually record TWD in May
Monthly Table changes	Effective 9/13/2018- Well casing and LT Elevations email from David Bohmann dated 9/13/18 Effective 8/1/2017 - TWD recorded annually in May - forms are to be marked at NM (Not Measured) per email from Katie Linscott 7/19/2017
Sampling Changes	Effective 3/16/2020 – NDEP approved NERT Remedial Performance Monitoring SAP, Revision 1 - ART-6 will only be sampled by Tetra Tech in November and May.

WATER SAMPLING FIELD LOG

Project/Site: NERT Project - Henderson Nevada	Well: I-AA
Sampling Team: Emily McGuire	Date(s): 6/4/20
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

DTW ONLY

Well Depth Information-	Date: 6/4/20	Time: 0727
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft): 38.16	<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel	
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-		Date: 6/4/20	Start Time: 1100	
Sample Time	pH	EC/MC	Temp	Well Observations
1100	7.22 <small>pH</small>	4.88 <small>mS/Cm</small>	33.2 <small>°C</small>	
Sample Appearance: clear				
Finish Time: 1105				

Analyses:	CLO4	TDS/NO3	CR	CLO3	TDS/NO3/SO4/CL	CRVI
Bottles:	1btl	1btl	1btl	1btl	1btl	1btl
Total Bottles: <u>5</u>						

DUP EC Reading	QC
mS/Cm	pH
°C	

I-AA 6 4 20-FD
Collected at same time for same analysis before moving to next well.

PH: 7.23 mS/Cm: 487 °C: 33.2

WATER SAMPLING FIELD LOG

Project/Site: NERT Project - Henderson Nevada	Well: I-AB
Sampling Team: Emily McGuire	Date(s): 6/4/20
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

DTW ONLY

Well Depth Information-	Date: 6/4/20	Time: 0729
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft): 33.75		
Height of Water Column(ft):		
<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel		

Well Purge Required

Turned pump on at **1105**, flowing at **6.7** gpm. Purged for **3** minutes, **2** minutes required per well purge spreadsheet. Turned well off at **1135**.

Field Measurements-		Date: 6/4/20	Start Time: 1105	
Sample Time	pH	EC/MC	Temp	Well Observations
1108	7.29 <small>pH</small>	4.80 <small>mS/Cm</small>	33.3 <small>°C</small>	
Sample Appearance: clear				
Finish Time: 1112				

Analyses:	CLO4	TDS/NO3	CR	CLO3	TDS/NO3/SO4/CL	CRVI
Bottles:	1btl	1btl	1btl	1btl	1btl	1btl
Total Bottles: 5						

DUP EC Reading	QC
mS/Cm	pH
°C	

I-AB 6 4 20-EB
 Collected for same analysis before moving to next well.
 Time: 1110 EC: 0.08 °C: 24.8 pH: 8.00

WATER SAMPLING FIELD LOG

Well: I-AC

Date(s): 6/8/20

Project/Site: NERT Project - Henderson Nevada

Sampling Team: Emily McGuire

Sampling Method: Collected From Sample Port Hand Bailed due to well Location

Weather Conditions: Sunny

DTW ONLY

Well Depth Information- Date: 6/8/20 Time: 1133

Total Well Depth(ft): NM
('NM' - No measurement taken, manually measured annually)

Depth to Water(ft): 30.42
 Manually Taken at Well Taken at Control Panel

Height of Water Column(ft):

Well Purge Required

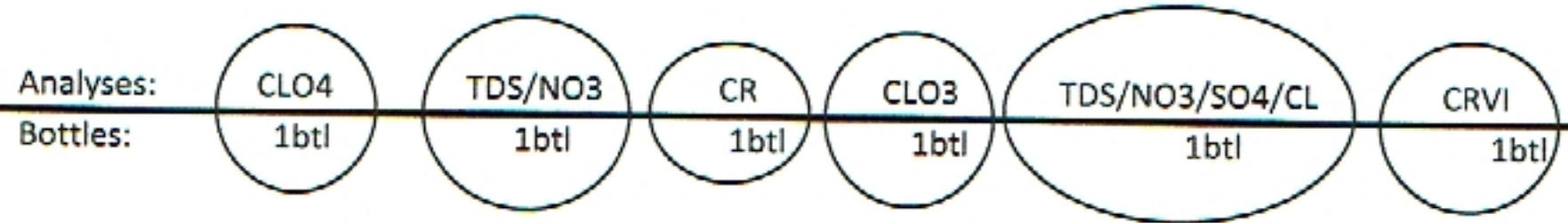
Turned pump on at 1208, flowing at 1.49 gpm. Purged for 8 minutes, 8 minutes required per well purge spreadsheet. Turned well off at 1220.

Field Measurements- Date: 6/ /20 Start Time: 1216

Sample Time	pH	EC/MC	Temp	Well Observations
<u>1217</u>	<u>7.59</u> <small>pH</small>	<u>7.07</u> <small>mS/Cm</small>	<u>22.9</u> <small>°C</small>	

Sample Appearance: pale yellow

Finish Time: 1220



Total Bottles: 5

DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

Well: I-AD

Date(s): 6/8/20

Project/Site: NERT Project - Henderson Nevada

Sampling Team: Emily McGuire

Sampling Method: Collected From Sample Port Hand Bailed due to well Location

Weather Conditions: Sunny

DTW ONLY

Well Depth Information- Date: 6/8/20 Time: 1212

Total Well Depth(ft): NM
('NM') - No measurement taken, manually measured annually

Depth to Water(ft): 30.37

Manually Taken at Well Taken at Control Panel

Height of Water Column(ft):

Well Purge Required

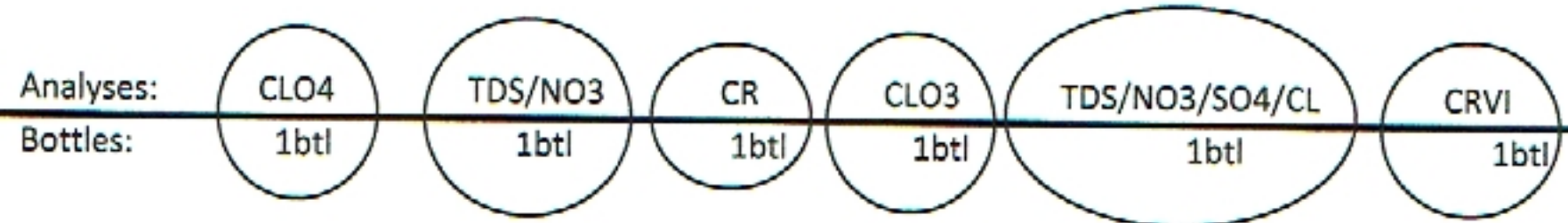
Turned pump on at 1213, flowing at 12.5 gpm. Purged for 8 minutes, 2 minutes required per well purge spreadsheet. Turned well off at 1223.

Field Measurements- Date: 6/8/20 Start Time: 1220

Sample Time	pH	EC/MC	Temp	Well Observations
<u>1221</u>	<u>7.68</u> <small>pH</small>	<u>6.57</u> <small>mS/Cm</small>	<u>23.8</u> <small>°C</small>	

Sample Appearance: clear

Finish Time: 1223



Total Bottles: 5

DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

Project/Site: NERT Project - Henderson Nevada	Well: I-AR
Sampling Team: Emily McGuire	Date(s): 6/4/20
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

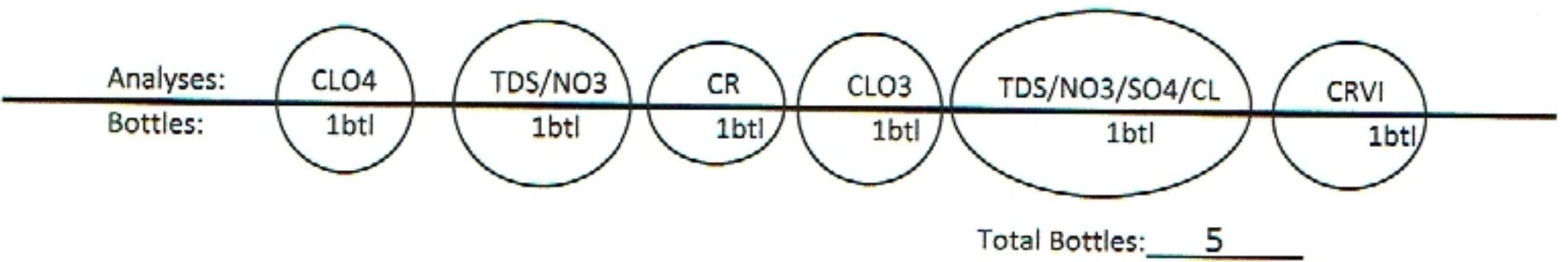
DTW ONLY

Well Depth Information-	Date: 6/4/20	Time: 1129
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually</small>		
Depth to Water(ft):	35.02	
	<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel	
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-	Date: 6/4/20	Start Time: 1130		
Sample Time	pH	EC/MC	Temp	Well Observations
1131	7.25 <small>pH</small>	6.31 <small>mS/Cm</small>	33.6 <small>°C</small>	
Sample Appearance: cloudy w/ orange				
Finish Time: 1133				



DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

Project/Site: NERT Project - Henderson Nevada	Well: I-B
Sampling Team: Emily McGuire	Date(s): 6/ 4 /20
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

DTW ONLY

Well Depth Information-	Date: 6/ 4 /20	Time: 0731
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft): 43.82		
<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel		
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-		Date: 6/ 4 /20	Start Time: 1112	
Sample Time	pH	EC/MC	Temp	Well Observations
1113	7.02 <small>pH</small>	5.53 <small>mS/Cm</small>	33.2 <small>°C</small>	
Sample Appearance: clear				
Finish Time: 1115				

Analyses:	CLO4	TDS/NO3	CR	CLO3	TDS/NO3/SO4/CL	CRVI
Bottles:	1btl	1btl	1btl	1btl	1btl	1btl
Total Bottles: <u>5</u>						

DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

Project/Site: NERT Project - Henderson Nevada	Well: I-C
Sampling Team: Emily McGuire	Date(s): 6/9/20
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

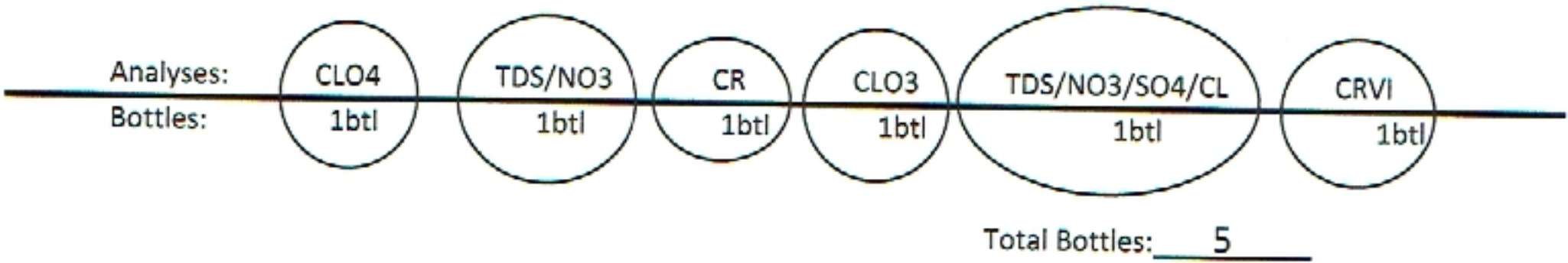
DTW ONLY

Well Depth Information-	Date: 6/9/20	Time: 1028
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft):	31.39	
	<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel	
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-	Date: 6/9/20	Start Time: 1059		
Sample Time	pH	EC/MC	Temp	Well Observations
1100	7.16 <small>pH</small>	7.77 <small>mS/Cm</small>	27.6 <small>°C</small>	
Sample Appearance: pale yellow				
Finish Time: 1102				



DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

Project/Site: NERT Project - Henderson Nevada	Well: I-D
Sampling Team: Emily McGuire	Date(s): 6/9/20
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

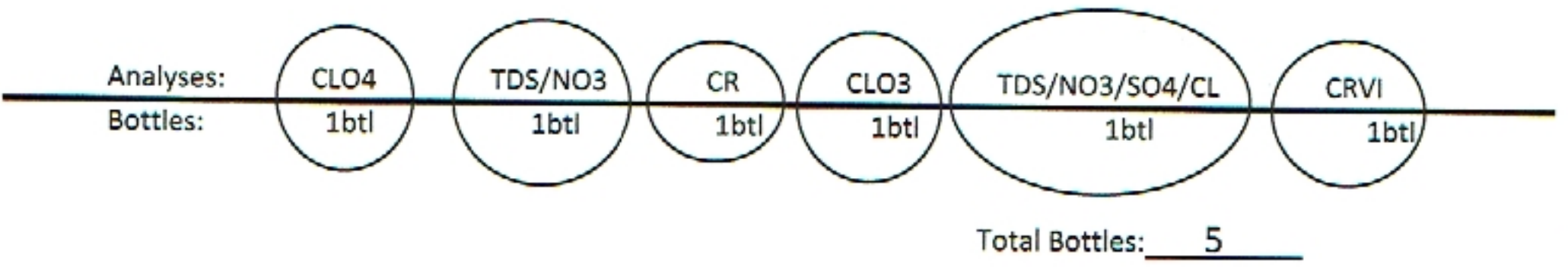
DTW ONLY

Well Depth Information-	Date: 6/9/20	Time: 1055
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft):	27.92	
<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel		
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-				Date: 6/9/20	Start Time: 1102
Sample Time	pH	EC/MC	Temp	Well Observations	
1103	7.51 <small>pH</small>	8.49 <small>mS/Cm</small>	27.7 <small>°C</small>		
Sample Appearance: Pale yellow					
Finish Time: 1105					



DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

Project/Site: NERT Project - Henderson Nevada	Well: I-E
Sampling Team: Emily McGuire	Date(s): 6/ 9 /20
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

DTW ONLY

Well Depth Information-	Date: 6/ 9 /20	Time: 1052
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft): 31.57		
<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel		
Height of Water Column(ft):		

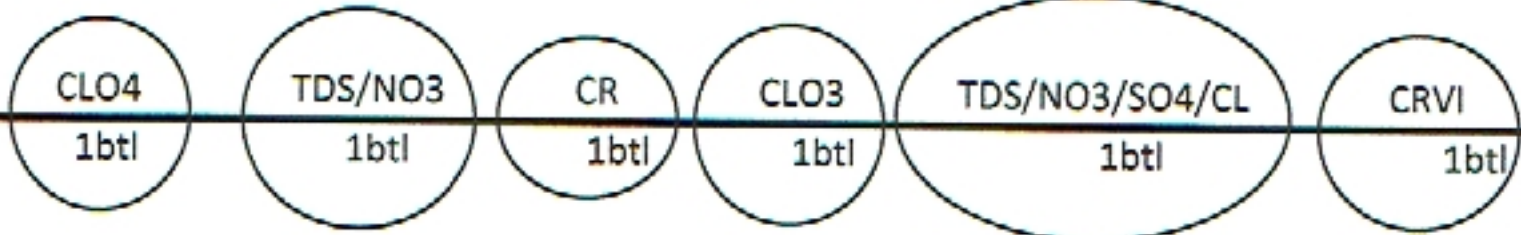
Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-		Date: 6/ 9 /20	Start Time: 1110	
Sample Time	pH	EC/MC	Temp	Well Observations
1111	7.60 <small>pH</small>	7.79 <small>mS/Cm</small>	27.3 <small>°C</small>	
Sample Appearance: pale yellow				
Finish Time: 1114				

Analyses:

Bottles:



Total Bottles: 5

DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

Project/Site: NERT Project - Henderson Nevada	Well: I-F
Sampling Team: Emily McGuire	Date(s): 6/9/20
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

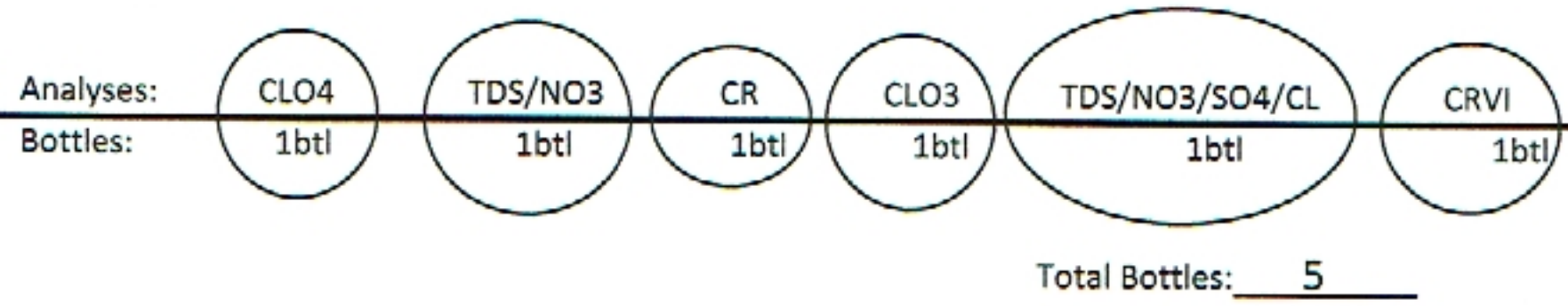
DTW ONLY

Well Depth Information-	Date: 6/9/20	Time: 1047
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft): 26.46		
<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel		
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-		Date: 6/9/20	Start Time: 1124	
Sample Time	pH	EC/MC	Temp	Well Observations
1125	7.60 <small>pH</small>	8.99 <small>mS/Cm</small>	27.1 <small>°C</small>	
Sample Appearance: yellow				
Finish Time: 1127				



DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

	Well: I-G
Project/Site: NERT Project - Henderson Nevada	Date(s): 6/9/20
Sampling Team: Emily McGuire	
Sampling Method:	<input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location
Weather Conditions: Sunny	

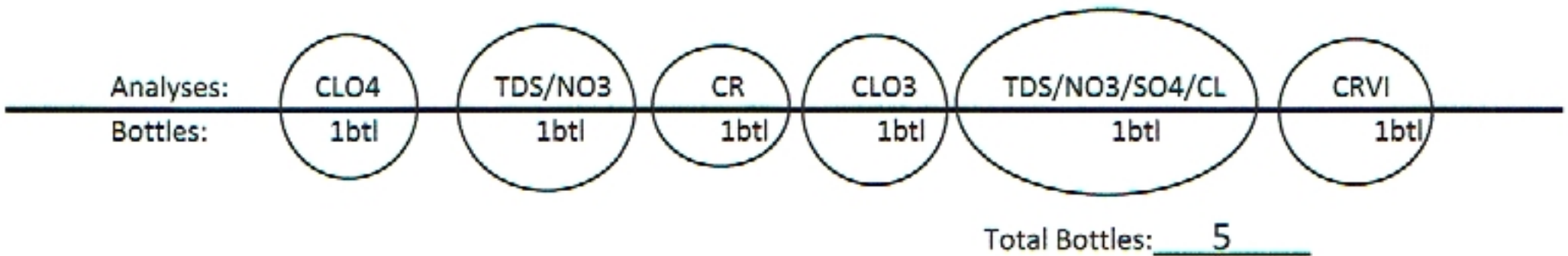
DTW ONLY

Well Depth Information-	Date: 6/9/20	Time: 1045
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft):	30.91	
	<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel	
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-		Date: 6/9/20	Start Time: 1132	
Sample Time	pH	EC/MC	Temp	Well Observations
1133	7.36 <small>pH</small>	10.81 <small>mS/Cm</small>	30.6 <small>°C</small>	
Sample Appearance: yellow				
Finish Time: 1136				



DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

Project/Site: NERT Project - Henderson Nevada	Well: I-H
Sampling Team: Emily McGuire	Date(s): 6/9/20
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

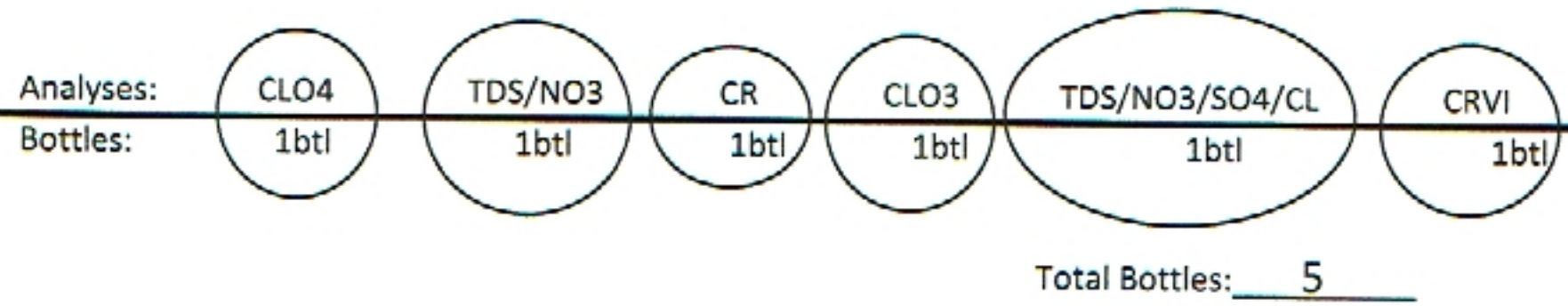
DTW ONLY

Well Depth Information-	Date: 6/9/20	Time: 1035
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft):	32.07	
<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel		
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-		Date: 6/9/20	Start Time: 1146	
Sample Time	pH	EC/MC	Temp	Well Observations
1147	7.60 <small>pH</small>	10.46 <small>mS/Cm</small>	30.2 <small>°C</small>	
Sample Appearance: yellow				
Finish Time: 1149				



DUP EC Reading	QC
10.54 <small>mS/Cm</small>	7.01 <small>pH</small>
29.4 <small>°C</small>	

WATER SAMPLING FIELD LOG

Project/Site: NERT Project - Henderson Nevada	Well: <u>I-I</u>
Sampling Team: Emily McGuire	Date(s): <u>6/8/20</u>
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: <u>Sunny</u>	

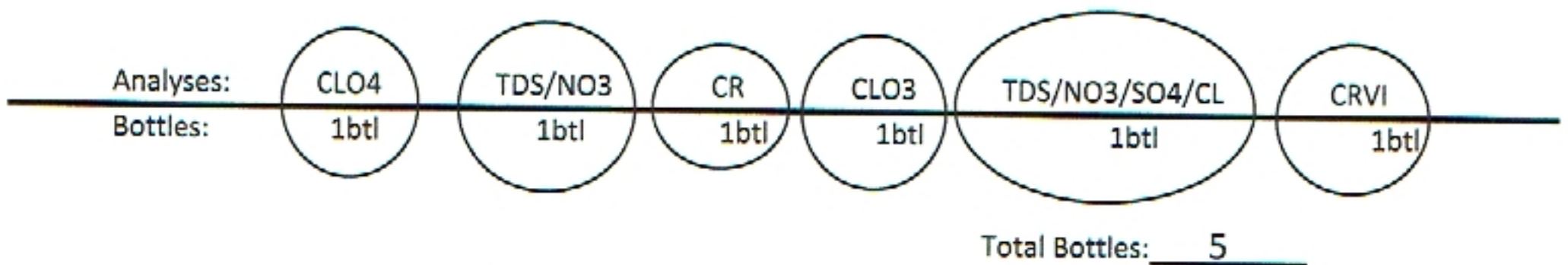
DTW ONLY

Well Depth Information-	Date: <u>6/8/20</u>	Time: <u>1142</u>
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft): <u>23.42</u>		
<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel		
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-		Date: <u>6/8/20</u>	Start Time: <u>1143</u>	
Sample Time	pH	EC/MC	Temp	Well Observations
<u>1144</u>	<u>7.40</u> <small>pH</small>	<u>7.70</u> <small>mS/Cm</small>	<u>25.5</u> <small>°C</small>	
Sample Appearance: <u>yellow</u>				
Finish Time: <u>1146</u>				



DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

Project/Site: NERT Project - Henderson Nevada	Well: I-J
Sampling Team: Emily McGuire	Date(s): 6/8/20
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

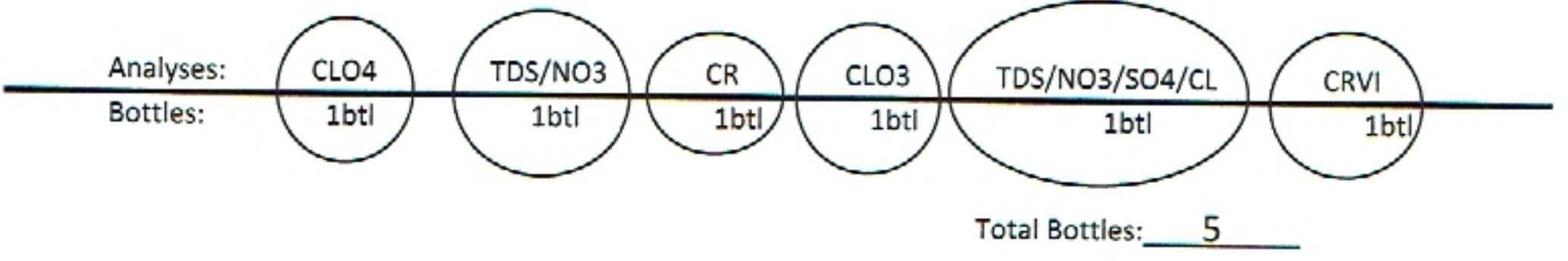
DTW ONLY

Well Depth Information-	Date: 6/8/20	Time: 1153
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually</small>		
Depth to Water(ft): 37.49		
<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel		
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-		Date: 6/8/20	Start Time: 1153	
Sample Time	pH	EC/MC	Temp	Well Observations
1154	7.69 <small>pH</small>	6.28 <small>mS/Cm</small>	24.3 <small>°C</small>	
Sample Appearance: pale yellow				
Finish Time: 1159				



DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

Project/Site: NERT Project - Henderson Nevada	Well: I-K
Sampling Team: Emily McGuire	Date(s): 6/8/20
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

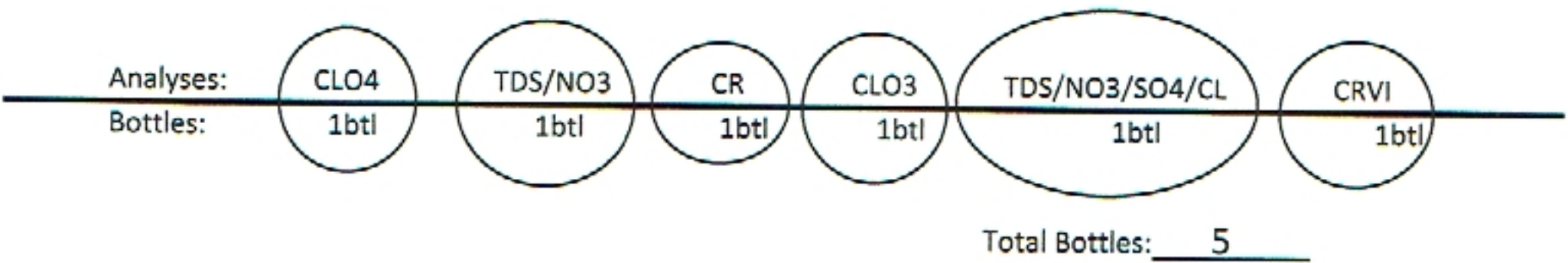
DTW ONLY

Well Depth Information-	Date: 6/8/20	Time: 1201
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft): 34.38		
<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel		
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-		Date: 6/8/20	Start Time: 1204	
Sample Time	pH	EC/MC	Temp	Well Observations
1205	7.57 <small>pH</small>	6.89 <small>mS/Cm</small>	24.7 <small>°C</small>	
Sample Appearance: pale yellow				
Finish Time: 1207				



DUP EC Reading	QC
6.91 <small>mS/Cm</small>	7.03 <small>pH</small>
24.9 <small>°C</small>	

WATER SAMPLING FIELD LOG

	Well: I-L
Project/Site: NERT Project - Henderson Nevada	Date(s): 6/4/20
Sampling Team: Emily McGuire	
Sampling Method:	<input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location
Weather Conditions: Sunny	

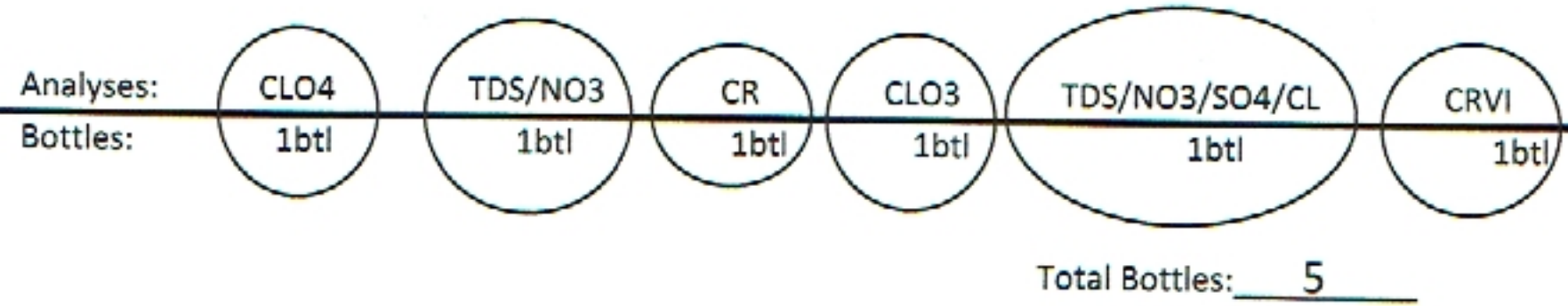
DTW ONLY

Well Depth Information-	Date: 6/4/20	Time: 0737
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft):	32.42	
	<input checked="" type="checkbox"/> Manually Taken at Well	<input type="checkbox"/> Taken at Control Panel
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-	Date: 6/4/20	Start Time: 1121		
Sample Time	pH	EC/MC	Temp	Well Observations
1122	7.21 <small>pH</small>	6.14 <small>mS/Cm</small>	31.3 <small>°C</small>	
Sample Appearance: Clear				
Finish Time: 1124				



DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

	Well: I-m
Project/Site: NERT Project - Henderson Nevada	Date(s): 6/9/20
Sampling Team: Emily McGuire	
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

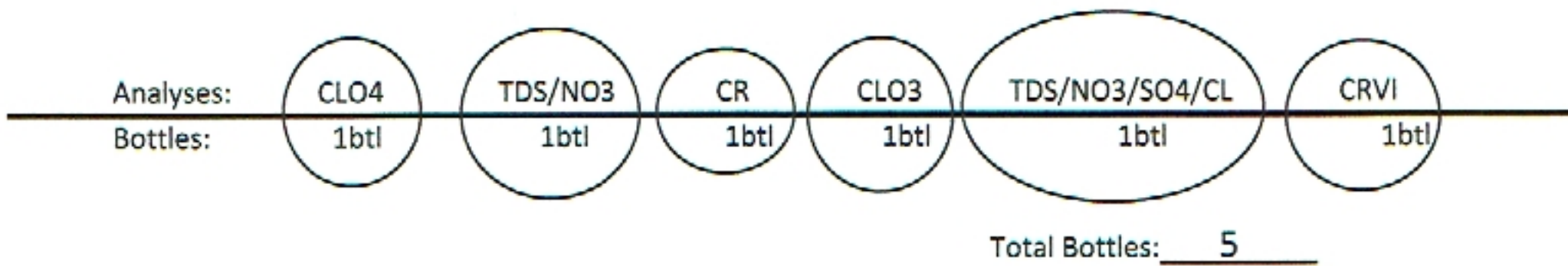
DTW ONLY

Well Depth Information-	Date: 6/9/20	Time: 1053
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft):	29.54	
	<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel	
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-		Date: 6/9/20	Start Time: 1105	
Sample Time	pH	EC/MC	Temp	Well Observations
1106	7.68 <small>pH</small>	7.61 <small>mS/Cm</small>	26.4 <small>°C</small>	
Sample Appearance: pale yellow				
Finish Time: 1109				



DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

	Well: I-N
Project/Site: NERT Project - Henderson Nevada	Date(s): 6/9/20
Sampling Team: Emily McGuire	
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

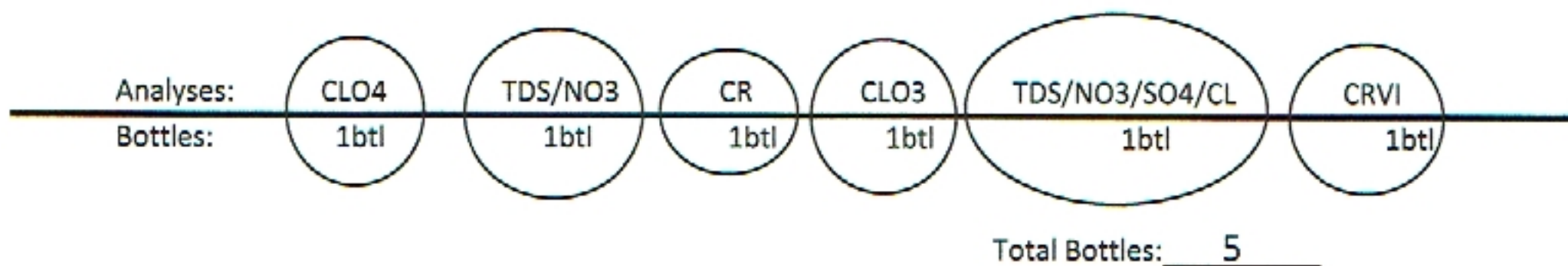
DTW ONLY

Well Depth Information-	Date: 6/9/20	Time: 1048
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft): 28.55		
<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel		
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-		Date: 6/9/20	Start Time: 1114	
Sample Time	pH	EC/MC	Temp	Well Observations
1115	7.42 <small>pH</small>	8.16 <small>mS/Cm</small>	27.0 <small>°C</small>	
Sample Appearance: pale yellow				
Finish Time: 1120				



DUP EC Reading	QC
8.20 <small>mS/Cm</small>	7.03 <small>pH</small>
26.9 <small>°C</small>	

WATER SAMPLING FIELD LOG

Well: I-0

Date(s): 6/9/20

Project/Site: NERT Project - Henderson Nevada

Sampling Team: Emily McGuire

Sampling Method: Collected From Sample Port Hand Bailed due to well Location

Weather Conditions: Sunny

DTW ONLY

Well Depth Information- Date: 6/9/20 Time: 1031

Total Well Depth(ft): NM
('NM') - No measurement taken, manually measured annually)

Depth to Water(ft): 29.51

Manually Taken at Well Taken at Control Panel

Height of Water Column(ft):

Well Purge Required

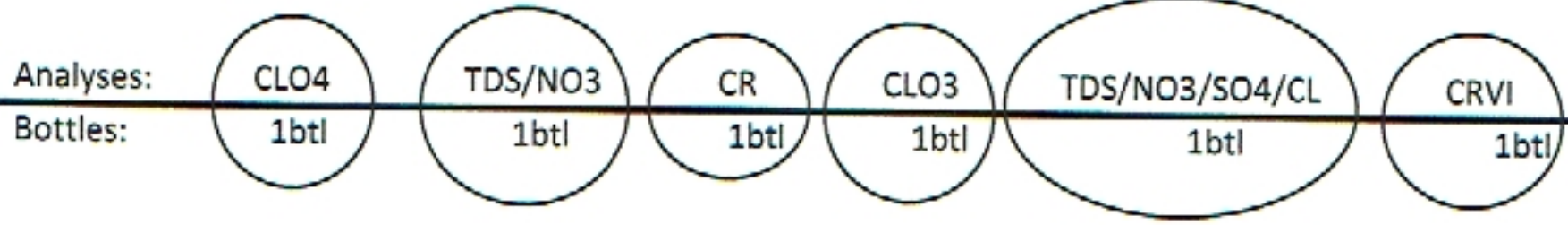
Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements- Date: 6/9/20 Start Time: 1201

Sample Time	pH	EC/MC	Temp	Well Observations
<u>1202</u>	<u>7.45</u> <small>pH</small>	<u>10.15</u> <small>mS/Cm</small>	<u>29.4</u> <small>°C</small>	

Sample Appearance: yellow

Finish Time: 1206



Total Bottles: 5

DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

	Well: I-P
Project/Site: NERT Project - Henderson Nevada	Date(s): 6/9/20
Sampling Team: Emily McGuire	
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions:	

DTW ONLY

Well Depth Information-	Date: 6/9/20	Time: 1033
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft): 28.89		
<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel		
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-	Date: 6/9/20	Start Time: 1151		
Sample Time	pH	EC/MC	Temp	Well Observations
1152	7.44 <small>pH</small>	10.57 <small>mS/Cm</small>	28.6 <small>°C</small>	
Sample Appearance: yellow				
Finish Time: 1155				

Analyses:	CLO4	TDS/NO3	CR	CLO3	TDS/NO3/SO4/CL	CRVI
Bottles:	1btl	1btl	1btl	1btl	1btl	1btl
					Total Bottles: <u>5</u>	

DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

	Well: I-Q
Project/Site: NERT Project - Henderson Nevada	Date(s): 6/9/20
Sampling Team: Emily McGuire	
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

DTW ONLY

Well Depth Information-	Date: 6/9/20	Time: 0651
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually</small>		
Depth to Water(ft):	31.05	
	<input type="checkbox"/> Manually Taken at Well	<input checked="" type="checkbox"/> Taken at Control Panel
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-	Date: 6/9/20	Start Time: 1127		
Sample Time	pH	EC/MC	Temp	Well Observations
1128	7.61 <small>pH</small>	10.46 <small>mS/Cm</small>	28.8 <small>°C</small>	
Sample Appearance: yellow				
Finish Time: 1132				

Analyses:	CLO4	TDS/NO3	CR	CLO3	TDS/NO3/SO4/CL	CRVI
Bottles:	1btl	1btl	1btl	1btl	1btl	1btl

Total Bottles: 5

DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

	Well: <u>I-R</u>
Project/Site: NERT Project - Henderson Nevada	Date(s): <u>6/4</u> /20
Sampling Team: Emily McGuire	
Sampling Method:	<input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location
Weather Conditions: <u>Sunny</u>	

DTW ONLY

Well Depth Information-	Date: <u>6/4</u> /20	Time: <u>0733</u>
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft):	<u>30.50</u>	
	<input checked="" type="checkbox"/> Manually Taken at Well	<input type="checkbox"/> Taken at Control Panel
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-	Date: <u>6/4</u> /20	Start Time: <u>1115</u>		
Sample Time	pH	EC/MC	Temp	Well Observations
<u>1116</u>	<u>7.11</u> <small>pH</small>	<u>6.55</u> <small>mS/Cm</small>	<u>34.2</u> <small>°C</small>	
Sample Appearance: <u>clear</u>				
Finish Time: <u>1118</u>				

Analyses:	CLO4	TDS/NO3	CR	CLO3	TDS/NO3/SO4/CL	CRVI
Bottles:	1btl	1btl	1btl	1btl	1btl	1btl
Total Bottles: <u>5</u>						

DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

Well: I-5

Date(s): 6/4 /20

Project/Site: NERT Project - Henderson Nevada

Sampling Team: Emily McGuire

Sampling Method: Collected From Sample Port Hand Bailed due to well Location

Weather Conditions: Sunny

DTW ONLY

Well Depth Information- Date: 6/4 /20 Time: 0739

Total Well Depth(ft): NM
('NM') - No measurement taken, manually measured annually)

Depth to Water(ft): 29.88
 Manually Taken at Well Taken at Control Panel

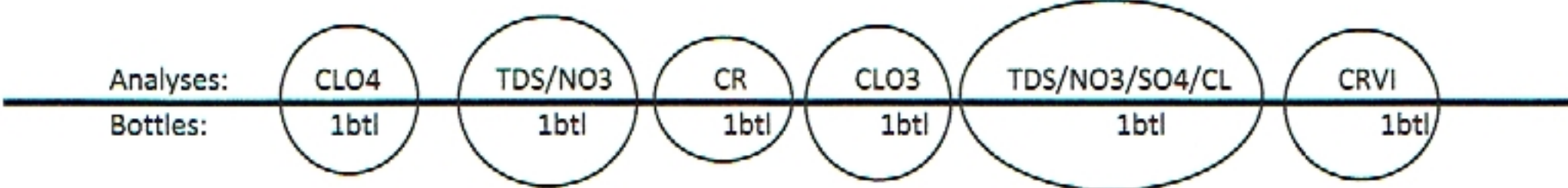
Height of Water Column(ft):

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements- Date: 6/4 /20 Start Time: 1124

Sample Time	pH	EC/MC	Temp	Well Observations
<u>1125</u>	<u>7.30</u> <small>pH</small>	<u>6.73</u> <small>mS/Cm</small>	<u>30.5</u> <small>°C</small>	
Sample Appearance: <u>pale yellow</u>				
Finish Time: <u>1127</u>				



Total Bottles: 5

DUP EC Reading	QC
<u>6.75</u> <small>mS/Cm</small>	<u>7.01</u> <small>pH</small>
<u>30.4</u> <small>°C</small>	

WATER SAMPLING FIELD LOG

	Well: I-T
Project/Site: NERT Project - Henderson Nevada	Date(s): 6/9/20
Sampling Team: Emily McGuire	
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

DTW ONLY

Well Depth Information-	Date: 6/9/20	Time: 1044
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft): 30.78	<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel	
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-		Date: 6/9/20	Start Time: 1136	
Sample Time	pH	EC/MC	Temp	Well Observations
1137	7.47 <small>pH</small>	11.02 <small>mS/Cm</small>	30.1 <small>°C</small>	
Sample Appearance: Yellow				
Finish Time: 1148				

Analyses:

Bottles:

CLO4

1btl

TDS/NO3

1btl

CR

1btl

CLO3

1btl

TDS/NO3/SO4/CL

1btl

CRVI

1btl

Total Bottles: 5

DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

Well: I-U

Project/Site: NERT Project - Henderson Nevada

Date(s): 6/9/20

Sampling Team: Emily McGuire

Sampling Method: Collected From Sample Port Hand Bailed due to well Location

Weather Conditions: Sunny

DTW ONLY

Well Depth Information- Date: 6/ /20 Time: _____

Total Well Depth(ft): NM
('NM') - No measurement taken, manually measured annually)

Depth to Water(ft): _____
 Manually Taken at Well Taken at Control Panel

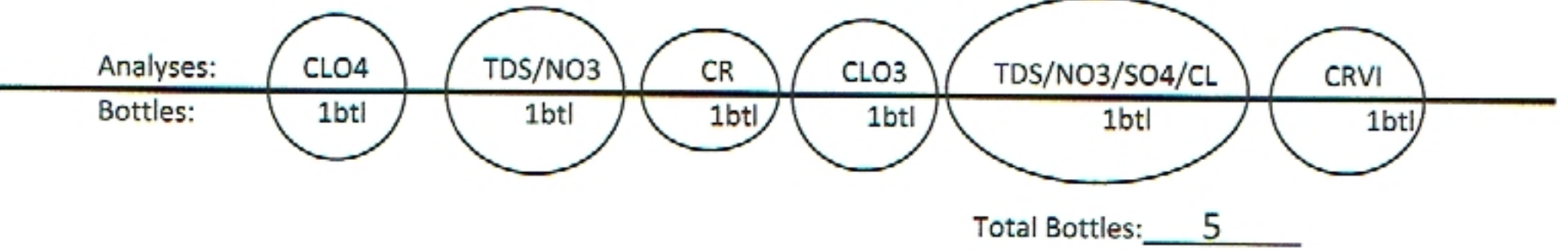
Height of Water Column(ft): _____

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements- Date: 6/9/20 Start Time: 1140

Sample Time	pH	EC/MC	Temp	Well Observations
<u>1141</u>	<u>7.33</u> <small>pH</small>	<u>11.41</u> <small>mS/Cm</small>	<u>30.3</u> <small>°C</small>	
Sample Appearance: <u>yellow</u>				
Finish Time: <u>1146</u>				



DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

Well: I-V

Date(s): 6/8/20

Project/Site: NERT Project - Henderson Nevada

Sampling Team: Emily McGuire

Sampling Method: Collected From Sample Port Hand Bailed due to well Location

Weather Conditions: Sunny

DTW ONLY

Well Depth Information- Date: 6/8/20 Time: 1135

Total Well Depth(ft): NM
('NM') - No measurement taken, manually measured annually)

Depth to Water(ft): 31.41
 Manually Taken at Well Taken at Control Panel

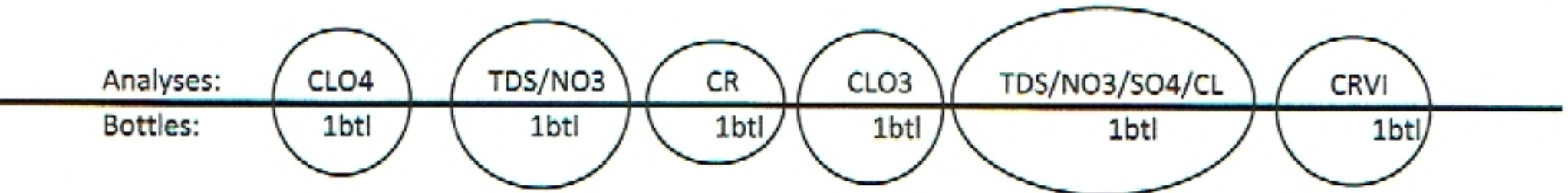
Height of Water Column(ft):

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements- Date: 6/8/20 Start Time: 1137

Sample Time	pH	EC/MC	Temp	Well Observations
<u>1138</u>	<u>6.97</u> <small>pH</small>	<u>9.19</u> <small>mS/Cm</small>	<u>26.8</u> <small>°C</small>	
Sample Appearance: <u>yellow</u>				
Finish Time: <u>1140</u>				



Total Bottles: 5

DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

	Well: I-W
Project/Site: NERT Project - Henderson Nevada	Date(s): 6/9/20
Sampling Team: Emily McGuire	
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

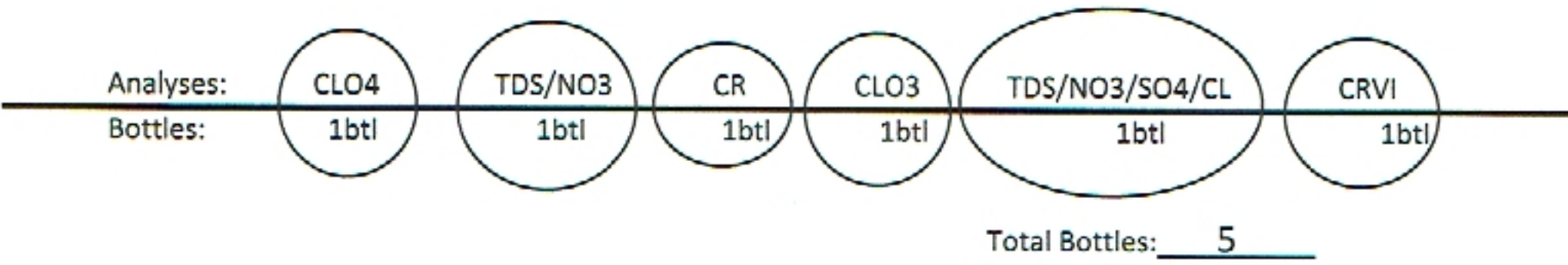
DTW ONLY

Well Depth Information-	Date: 6/9/20	Time: 1032
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft): 28.72		
<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel		
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-	Date: 6/9/20	Start Time: 1155		
Sample Time	pH	EC/MC	Temp	Well Observations
1156	7.44 <small>pH</small>	10.23 <small>mS/Cm</small>	29.7 <small>°C</small>	
Sample Appearance: yellow				
Finish Time: 1201				



DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

	Well: 1-X
Project/Site: NERT Project - Henderson Nevada	Date(s): 6/9 /20
Sampling Team: Emily McGuire	
Sampling Method:	<input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location
Weather Conditions: Sunny	

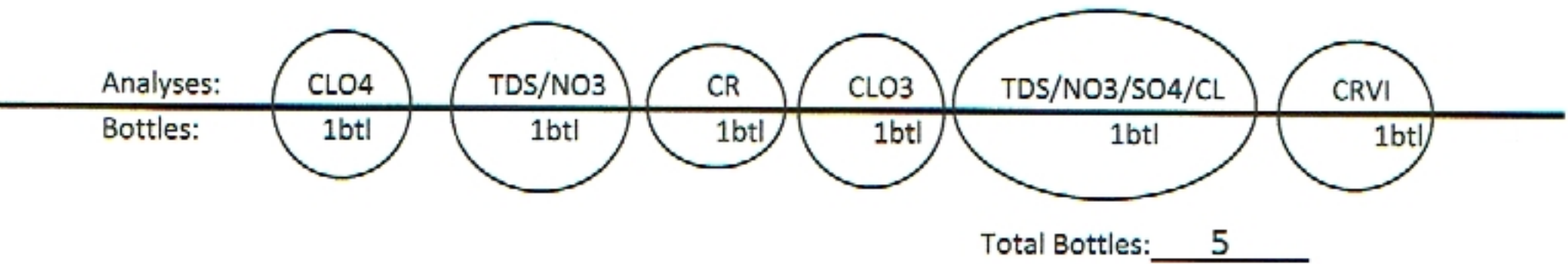
DTW ONLY

Well Depth Information-	Date: 6/9 /20	Time: 1048
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft):	28.27	
	<input checked="" type="checkbox"/> Manually Taken at Well	<input type="checkbox"/> Taken at Control Panel
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-		Date: 6/9 /20	Start Time: 1120	
Sample Time	pH	EC/MC	Temp	Well Observations
1121	7.60 <small>pH</small>	8.80 <small>mS/Cm</small>	27.3 <small>°C</small>	
Sample Appearance: yellow				
Finish Time: 1129				



DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

Well: I-4

Date(s): 6/4/20

Project/Site: NERT Project - Henderson Nevada

Sampling Team: Emily McGuire

Sampling Method: Collected From Sample Port Hand Bailed due to well Location

Weather Conditions: Sunny

DTW ONLY

Well Depth Information- Date: 6/4/20 Time: 0735

Total Well Depth(ft): NM
('NM') - No measurement taken, manually measured annually)

Depth to Water(ft): 33.19
 Manually Taken at Well Taken at Control Panel

Height of Water Column(ft):

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements- Date: 6/4/20 Start Time: 1118

Sample Time	pH	EC/MC	Temp	Well Observations
<u>1119</u>	<u>7.21</u> <small>pH</small>	<u>6.29</u> <small>mS/Cm</small>	<u>32.7</u> <small>°C</small>	
Sample Appearance: <u>clear</u>				
Finish Time: <u>1121</u>				

Analyses:

CLO4

TDS/NO3

CR

CLO3

TDS/NO3/SO4/CL

CRVI

Bottles:

1btl

1btl

1btl

1btl

1btl

1btl

Total Bottles: 5

DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

Project/Site: NERT Project - Henderson Nevada	Well: I-Z
Sampling Team: Emily McGuire	Date(s): 6/ 8 /20
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

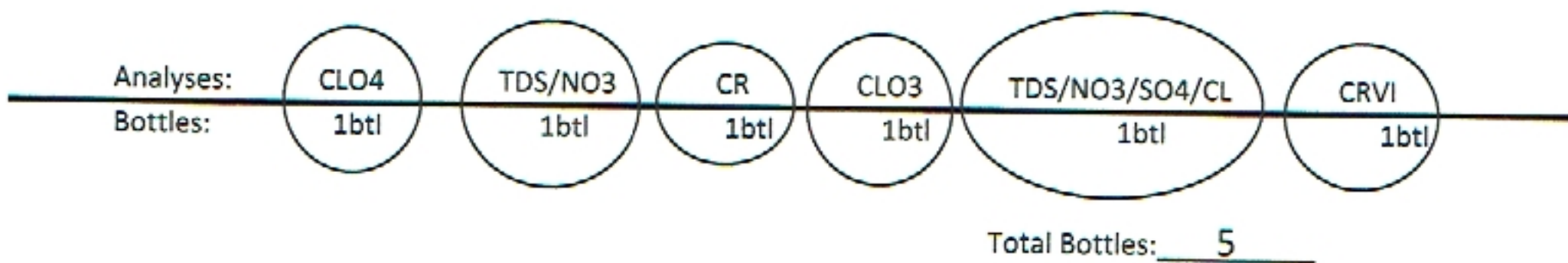
DTW ONLY

Well Depth Information-	Date: 6/ 8 /20	Time: 1147
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft): 28.48		
<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel		
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-				Date: 6/ 8 /20	Start Time: 1147
Sample Time	pH	EC/MC	Temp	Well Observations	
1148	7.69 <small>pH</small>	7.04 <small>mS/Cm</small>	24.9 <small>°C</small>		
Sample Appearance: pale yellow					
Finish Time: 1152					



DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

	Well: ART-1
Project/Site: NERT Project - Henderson Nevada	Date(s): 6/ 2 /20
Sampling Team: Emily McGuire	
Sampling Method: <input type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

DTW ONLY

Well Depth Information-	Date: 6/ 2 /20	Time: 0603
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft): 32.41	<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel	
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-		Date: 6/ 2 /20	Start Time:	
Sample Time	pH	EC/MC	Temp	Well Observations
	pH	mS/Cm	°C	
Sample Appearance:				
Finish Time:				

Analyses:	CLO4	TDS/NO3	CR	CLO3	TDS/NO3/SO4/CL	CRVI
Bottles:	1btl	1btl	1btl	1btl	1btl	1btl

Total Bottles: 0

DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

	Well: ART-1A
Project/Site: NERT Project - Henderson Nevada	Date(s): 6/ 2 /20
Sampling Team: Emily McGuire	
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

DTW ONLY

Well Depth Information-	Date: 6/ 2 /20	Time: 0605
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft):	32.63	
	<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel	
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-				Date: 6/ 2 /20	Start Time: 1118
Sample Time	pH	EC/MC	Temp	Well Observations	
1119	7.39 <small>pH</small>	7.13 <small>mS/Cm</small>	35.8 <small>°C</small>		
Sample Appearance: clear					
Finish Time: 1122					

Analyses:	CLO4	TDS/NO3	CR	CLO3	TDS/NO3/SO4/CL	CRVI
Bottles:	1btl	1btl	1btl	1btl	1btl	1btl
					Total Bottles: <u>5</u>	

DUP EC Reading	QC
<small>mS/Cm</small>	<small>pH</small>
<small>°C</small>	

WATER SAMPLING FIELD LOG

	Well: ART-2
Project/Site: NERT Project - Henderson Nevada	Date(s): 6/2/20
Sampling Team: Emily McGuire	
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

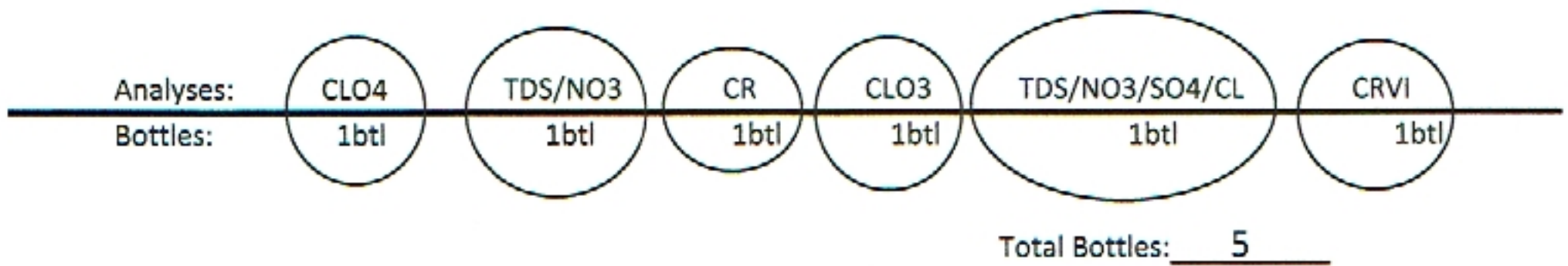
DTW ONLY ***ART-2 and ART-2A running concurrently**
Bottles labeled ART-2/2A 6 20

Well Depth Information-	Date: 6/2/20	Time: 0559
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually</small>		
Depth to Water(ft): 34.28		
<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel		
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-		Date: 6/6/20	Start Time: 1122	
Sample Time	pH	EC/MC	Temp	Well Observations
1123	7.09 <small>pH</small>	13.84 <small>mS/Cm</small>	31.8 <small>°C</small>	
Sample Appearance: clear				
Finish Time: 1126				



DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

	Well: ART-2A
Project/Site: NERT Project - Henderson Nevada	Date(s): 6/2 /20
Sampling Team: Emily McGuire	
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

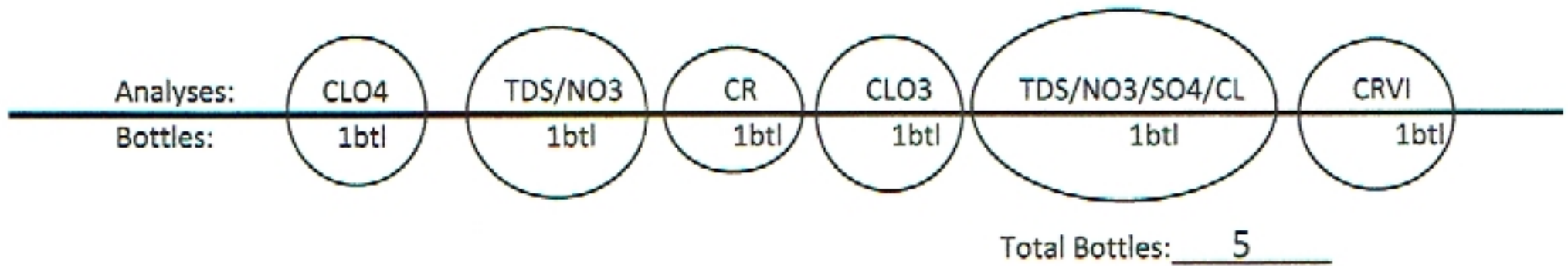
DTW ONLY *** ART-2 and ART-2A running concurrently. Bottles labeled ART-2/2A 6 20**

Well Depth Information-	Date: 6/2 /20	Time: 0601
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually</small>		
Depth to Water(ft): 34.96		
<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel		
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-	Date: 6/ /20	Start Time:		
Sample Time	pH	EC/MC	Temp	Well Observations
See	ART-2 <small>pH</small>	for info <small>mS/Cm</small>	°C	
Sample Appearance:				
Finish Time:				



DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

	Well: ART-3
Project/Site: NERT Project - Henderson Nevada	Date(s): 6/ 2 /20
Sampling Team: Emily McGuire	
Sampling Method: <input type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: sunny	

DTW ONLY

Well Depth Information-	Date: 6/ 2 /20	Time: 0550
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft): 35.86		
<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel		
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-		Date: 6/ 2 /20	Start Time:	
Sample Time	pH	EC/MC	Temp	Well Observations
	pH	mS/Cm	°C	
Sample Appearance:				
Finish Time:				

Analyses:	CLO4	TDS/NO3	CR	CLO3	TDS/NO3/SO4/CL	CRVI
Bottles:	1btl	1btl	1btl	1btl	1btl	1btl

Total Bottles: 0

DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

	Well: ART-3A
Project/Site: NERT Project - Henderson Nevada	Date(s): 6/ 2 /20
Sampling Team: Emily McGuire	
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

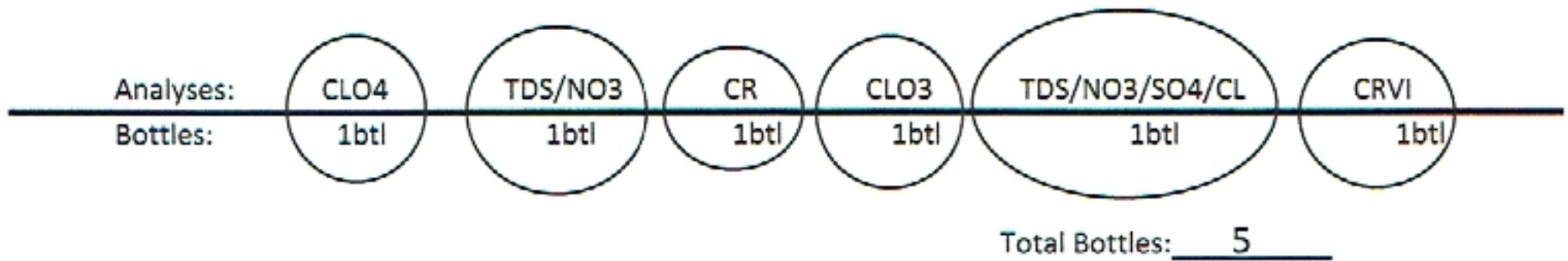
DTW ONLY

Well Depth Information-	Date: 6/ 2 /20	Time: 0552
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft): 44.69		
<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel		
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-	Date: 6/ 2 /20	Start Time: 1126		
Sample Time	pH	EC/MC	Temp	Well Observations
1127	7.25 <small>pH</small>	10.18 <small>mS/Cm</small>	27.6 <small>°C</small>	
Sample Appearance: clear				
Finish Time: 1129				



DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

	Well: ART-4
Project/Site: NERT Project - Henderson Nevada	Date(s): 6/ 2 /20
Sampling Team: Emily McGuire	
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

DTW ONLY

Well Depth Information-	Date: 6/ 2 /20	Time: 0548
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft):	39.32	
	<input checked="" type="checkbox"/> Manually Taken at Well	<input type="checkbox"/> Taken at Control Panel
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-	Date: 6/ 2 /20	Start Time: 1129		
Sample Time	pH	EC/MC	Temp	Well Observations
1130	7.44 <small>pH</small>	7.55 <small>mS/Cm</small>	28.4 <small>°C</small>	
Sample Appearance: clear				
Finish Time: 1138				

Analyses:	CLO4	TDS/NO3	CR	CLO3	TDS/NO3/SO4/CL	CRVI
Bottles:	1btl	1btl	1btl	1btl	1btl	1btl
Total Bottles: <u>5</u>						

DUP EC Reading	QC
mS/Cm	pH
°C	

ART-4 6 2 20 - FD
 collected at same time
 for same analysis before
 moving to next well.
 mS/Cm: 7.55 pH: 7.43 °C: 28.4

WATER SAMPLING FIELD LOG

	Well: ART-4A
Project/Site: NERT Project - Henderson Nevada	Date(s): 6/2/20
Sampling Team: Emily McGuire	
Sampling Method: <input type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

DTW ONLY

Well Depth Information-	Date: 6/2/20	Time: 0546
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually</small>		
Depth to Water(ft): 34.70	<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel	
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-	Date: 6/ /20	Start Time: 1138 AM		
Sample Time	pH	EC/MC	Temp	Well Observations
1139 AM				
	pH	mS/Cm	°C	
Sample Appearance:				
Finish Time:				

Analyses:	CLO4	TDS/NO3	CR	CLO3	TDS/NO3/SO4/CL	CRVI
Bottles:	1btl	1btl	1btl	1btl	1btl	1btl

Total Bottles: 0

DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

	Well: ART-6
Project/Site: NERT Project - Henderson Nevada	Date(s): 6/2/20
Sampling Team: Emily McGuire	
Sampling Method: <input type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

DTW ONLY

Well Depth Information-	Date: 6/2/20	Time: 0620
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft):	34.83	
	<input checked="" type="checkbox"/> Manually Taken at Well	<input type="checkbox"/> Taken at Control Panel
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-		Date: 6/ /20	Start Time: 1138 am	
Sample Time	pH	EC/MC	Temp	Well Observations
1139 am				
	pH	mS/Cm	°C	
Sample Appearance:				
Finish Time:				

Analyses:	CLO4	TDS/NO3	CR	CLO3	TDS/NO3/SO4/CL	CRVI
Bottles:	1btl	1btl	1btl	1btl	1btl	1btl

Total Bottles: 0

DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

	Well: ART-7A
Project/Site: NERT Project - Henderson Nevada	Date(s): 6/ 2 /20
Sampling Team: Emily McGuire	
Sampling Method: <input type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

DTW ONLY

Well Depth Information-	Date: 6/ 2 /20	Time: 0616
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft):	33.81 SM 29.73	<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-	Date: 6/ /20	Start Time:		
Sample Time	pH	EC/MC	Temp	Well Observations
	pH	mS/Cm	°C	
Sample Appearance:				
Finish Time:				

Analyses:	CLO4	TDS/NO3	CR	CLO3	TDS/NO3/SO4/CL	CRVI
Bottles:	1btl	1btl	1btl	1btl	1btl	1btl

Total Bottles: 0

DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

Project/Site: NERT Project - Henderson Nevada	Well: ART-7B
Sampling Team: Emily McGuire	Date(s): 6/ 2 /20
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

DTW ONLY

Well Depth Information-	Date: 6/ 2 /20	Time: 0615
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually</small>		
Depth to Water(ft): 43.40 SM 40.79		
<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel		
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-	Date: 6/ 2 /20	Start Time: 1138		
Sample Time	pH	EC/MC	Temp	Well Observations
1139	7.40 <small>pH</small>	9.93 <small>mS/Cm</small>	27.5 <small>°C</small>	
Sample Appearance: Clear w/ air bubbles				
Finish Time: 1145				

Analyses:	CLO4	TDS/NO3	CR	CLO3	TDS/NO3/SO4/CL	CRVI
Bottles:	1btl	1btl	1btl	1btl	1btl	1btl
Total Bottles: <u>5</u>						

DUP EC Reading	QC
mS/Cm	pH
°C	

ART-7B 6 2 20-EB
collected for same analysis
before moving to next well.

Time: 1142 mS/Cm: 0.02 pH: 8.37 °C: 33.1

WATER SAMPLING FIELD LOG

	Well: ART-8
Project/Site: NERT Project - Henderson Nevada	Date(s): 6/2/20
Sampling Team: Emily McGuire	
Sampling Method: <input type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

DTW ONLY

Well Depth Information-	Date: 6/2/20	Time: 0555
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft): 35.25		
<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel		
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-		Date: 6/ /20	Start Time:	
Sample Time	pH	EC/MC	Temp	Well Observations
	pH	mS/Cm	°C	
Sample Appearance:				
Finish Time:				

Analyses:	CLO4	TDS/NO3	CR	CLO3	TDS/NO3/SO4/CL	CRVI
Bottles:	1btl	1btl	1btl	1btl	1btl	1btl

Total Bottles: 0

DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

	Well: ART-8A
Project/Site: NERT Project - Henderson Nevada	Date(s): 6/ 2 /20
Sampling Team: Emily McGuire	
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

DTW ONLY

Well Depth Information-	Date: 6/ 2 /20	Time: 0557
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft):	46.21	
	<input checked="" type="checkbox"/> Manually Taken at Well	<input type="checkbox"/> Taken at Control Panel
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-		Date: 6/ 2 /20	Start Time: 1145	
Sample Time	pH	EC/MC	Temp	Well Observations
1146	7.25 <small>pH</small>	13.05 <small>mS/Cm</small>	29.7 <small>°C</small>	
Sample Appearance: clear				
Finish Time: 1148				

Analyses:	CLO4	TDS/NO3	CR	CLO3	TDS/NO3/SO4/CL	CRVI
Bottles:	1btl	1btl	1btl	1btl	1btl	1btl
Total Bottles: <u> 5 </u>						

DUP EC Reading	QC
13.02 <small>mS/Cm</small>	7.03 <small>pH</small>
29.6 <small>°C</small>	

WATER SAMPLING FIELD LOG

	Well: ART-9
Project/Site: NERT Project - Henderson Nevada	Date(s): 6/ 2 /20
Sampling Team: Emily McGuire	
Sampling Method:	<input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location
Weather Conditions: Sunny	

DTW ONLY

Well Depth Information-	Date: 6/ 2 /20	Time: 0618
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft): 32.80	<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel	
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-		Date: 6/ 2 /20	Start Time: 1149	
Sample Time	pH	EC/MC	Temp	Well Observations
1150	7.47 <small>pH</small>	7.94 <small>mS/Cm</small>	27.6 <small>°C</small>	
Sample Appearance: clear				
Finish Time: 1152				

Analyses:

Bottles:

CLO4

1btl

TDS/NO3

1btl

CR

1btl

CLO3

1btl

TDS/NO3/SO4/CL

1btl

CRVI

1btl

Total Bottles: 5

DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

	Well: PC-99 R2/R3
Project/Site: NERT Project - Henderson Nevada	Date(s): 6/ 2 /20
Sampling Team: Emily McGuire	
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

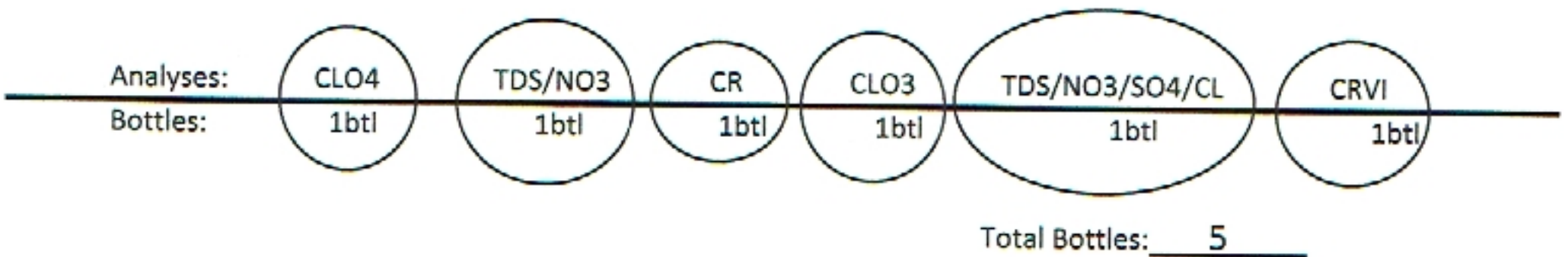
DTW ONLY

Well Depth Information-	Date: 6/ 2 /20	Time: 0900
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft): 10.87	<input type="checkbox"/> Manually Taken at Well <input checked="" type="checkbox"/> Taken at Control Panel	
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-				Date: 6/ 2 /20	Start Time: 1209
Sample Time	pH	EC/MC	Temp	Well Observations	
1210	7.50 <small>pH</small>	5.23 <small>mS/Cm</small>	27.2 <small>°C</small>		
Sample Appearance: clear					
Finish Time: 1212					



DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

Project/Site: NERT Project - Henderson Nevada	Well: PC-115R
Sampling Team: Emily McGuire	Date(s): 6/2/20
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

DTW ONLY

Well Depth Information-	Date: 6/2/20	Time: 0520
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually</small>		
Depth to Water(ft): 11.88		
<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel		
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-		Date: 6/2/20	Start Time: 1212	
Sample Time	pH	EC/MC	Temp	Well Observations
1213	7.39 <small>pH</small>	3.93 <small>mS/Cm</small>	25.4 <small>°C</small>	
Sample Appearance: Clear				
Finish Time: 1215				

Analyses:	CLO4	TDS/NO3	CR	CLO3	TDS/NO3/SO4/CL	CRVI
Bottles:	1btl	1btl	1btl	1btl	1btl	1btl
Total Bottles: <u>5</u>						

DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

Project/Site: NERT Project - Henderson Nevada	Well: PC-116R
Sampling Team: Emily McGuire	Date(s): 6/2/20
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

DTW ONLY

Well Depth Information-	Date: 6/2/20	Time: 0517
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually</small>		
Depth to Water(ft): 15.06		
<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel		
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-				Date: 6/2/20	Start Time: 1215
Sample Time	pH	EC/MC	Temp	Well Observations	
1216	7.41 <small>pH</small>	4.43 <small>mS/Cm</small>	25.1 <small>°C</small>		
Sample Appearance: clear					
Finish Time: 1218					

Analyses:	CLO4	TDS/NO3	CR	CLO3	TDS/NO3/SO4/CL	CRVI
Bottles:	1btl	1btl	1btl	1btl	1btl	1btl
Total Bottles: <u>5</u>						

DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

	Well: PC-117
Project/Site: NERT Project - Henderson Nevada	Date(s): 6/2/20
Sampling Team: Emily McGuire	
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

DTW ONLY

Well Depth Information-	Date: 6/2/20	Time: 0510
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft): 14.74		
<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel		
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-	Date: 6/2/20	Start Time: 1218		
Sample Time	pH	EC/MC	Temp	Well Observations
1219	7.38 <small>pH</small>	3.52 <small>mS/Cm</small>	24.1 <small>°C</small>	
Sample Appearance: clear				
Finish Time: 1221				

Analyses:	CLO4	TDS/NO3	CR	CLO3	TDS/NO3/SO4/CL	CRVI
Bottles:	1btl	1btl	1btl	1btl	1btl	1btl
Total Bottles: <u>5</u>						

DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

Project/Site: NERT Project - Henderson Nevada	Well: PC-118
Sampling Team: Emily McGuire	Date(s): 6/2/20
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

DTW ONLY

Well Depth Information-	Date: 6/2/20	Time: 0524
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually</small>		
Depth to Water(ft): 7.72		
<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel		
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-	Date: 6/2/20	Start Time: 1221
Sample Time: 1222	pH: 7.51	EC/MC: 3.36
	<small>pH</small>	<small>mS/Cm</small>
		Temp: 24.1
		<small>°C</small>
Sample Appearance: Clear		
Finish Time: 1223		

Analyses:	CLO4	TDS/NO3	CR	CLO3	TDS/NO3/SO4/CL	CRVI
Bottles:	1btl	1btl	1btl	1btl	1btl	1btl
Total Bottles: <u>5</u>						

DUP EC Reading	QC
3.36 <small>mS/Cm</small>	6.99 <small>pH</small>
24.1 <small>°C</small>	

WATER SAMPLING FIELD LOG

	Well: PC-119
Project/Site: NERT Project - Henderson Nevada	Date(s): 6/ 2 /20
Sampling Team: Emily McGuire	
Sampling Method:	<input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location
Weather Conditions: Sunny	

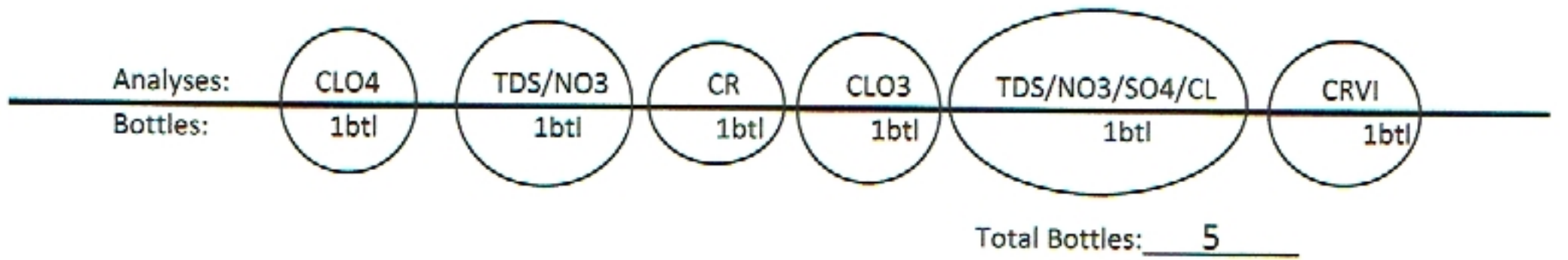
DTW ONLY

Well Depth Information-	Date: 6/ 2 /20	Time: 0528
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually</small>		
Depth to Water(ft):	6.54	
	<input checked="" type="checkbox"/> Manually Taken at Well	<input type="checkbox"/> Taken at Control Panel
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-		Date: 6/ 2 /20	Start Time: 1223	
Sample Time	pH	EC/MC	Temp	Well Observations
1224	7.46 <small>pH</small>	2.85 <small>mS/Cm</small>	23.2 <small>°C</small>	
Sample Appearance: clear				
Finish Time: 1225				



DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

Project/Site: NERT Project - Henderson Nevada	Well: PC-120
Sampling Team: Emily McGuire	Date(s): 6/2/20
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

DTW ONLY

Well Depth Information-	Date: 6/2/20	Time: 0531
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually</small>		
Depth to Water(ft):	5.41	
	<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel	
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-		Date: 6/2/20	Start Time: 1225	
Sample Time	pH	EC/MC	Temp	Well Observations
1226	7.47 <small>pH</small>	2.56 <small>mS/Cm</small>	23.4 <small>°C</small>	
Sample Appearance: clear				
Finish Time: 1230				

Analyses:	CLO4	TDS/NO3	CR	CLO3	TDS/NO3/SO4/CL	CRVI
Bottles:	1btl	1btl	1btl	1btl	1btl	1btl
Total Bottles: 5						

DUP EC Reading	QC
mS/Cm	pH
°C	

PC-120 6 2 20-FD
Collected at same time for same analysis before moving on to next well.

pH: 7.45 mS/Cm: 2.55 °C: 22.8

WATER SAMPLING FIELD LOG

Project/Site: NERT Project - Henderson Nevada	Well: PC-121
Sampling Team: Emily McGuire	Date(s): 6/ 2 /20
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

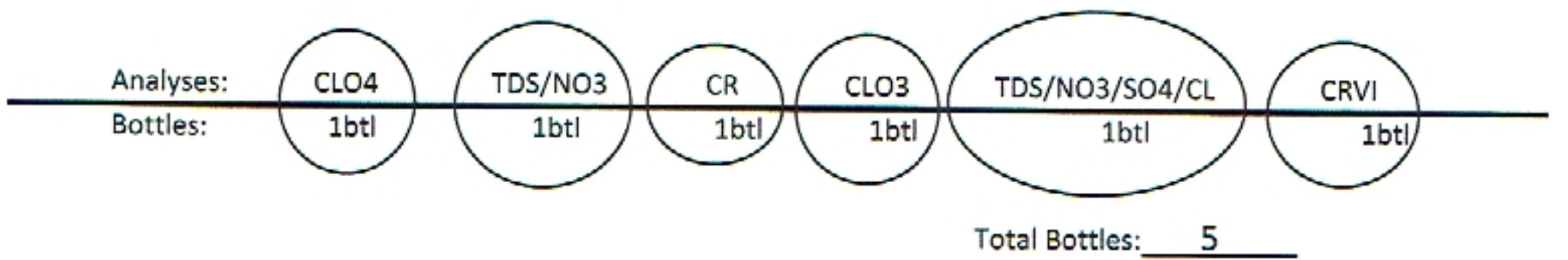
DTW ONLY

Well Depth Information-	Date: 6/ 2 /20	Time: 0534
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually</small>		
Depth to Water(ft): 4.41		
<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel		
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-		Date: 6/ 2 /20	Start Time: 1230	
Sample Time	pH	EC/MC	Temp	Well Observations
1231	7.47 <small>pH</small>	2.56 <small>mS/Cm</small>	23.1 <small>°C</small>	
Sample Appearance: clear				
Finish Time: 1235				



DUP EC Reading	QC
mS/Cm	pH
°C	

PC-121 6 2 20-EB
 collected for same analysis
 before moving on to next well
 Time: 1233 mS/Cm: 0.02 pH: 8.50 °C: 33.1

WATER SAMPLING FIELD LOG

Project/Site: NERT Project - Henderson Nevada	Well: PC-133
Sampling Team: Emily McGuire	Date(s): 6/2/20
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

DTW ONLY

Well Depth Information-	Date: 6/2/20	Time: 0500
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft): 20.11		
<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel		
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-				Date: 6/2/20	Start Time: 1235
Sample Time	pH	EC/MC	Temp	Well Observations	
1236	7.46 <small>pH</small>	2.82 <small>mS/Cm</small>	23.6 <small>°C</small>		
Sample Appearance: clear					
Finish Time: 1238					

Analyses:

Bottles:

CLO4

1btl

TDS/NO3

1btl

CR

1btl

CLO3

1btl

TDS/NO3/SO4/CL

1btl

CRVI

1btl

Total Bottles: 5

DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

Project/Site: NERT Project - Henderson Nevada	Well: PC-150
Sampling Team: Emily McGuire	Date(s): 6/2/20
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

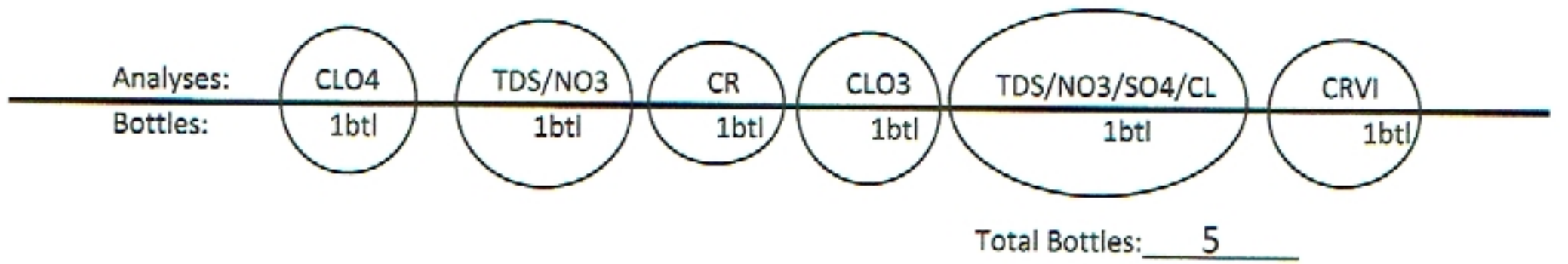
DTW ONLY

Well Depth Information-	Date: 6/2/20	Time: 0609
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft): 40.83		
<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel		
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-		Date: 6/2/20	Start Time: 1152	
Sample Time	pH	EC/MC	Temp	Well Observations
1153	6.77 7.45 <small>9m</small> pH	6.77 mS/Cm	30.7 °C	
Sample Appearance: clear				
Finish Time:				



DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

	Well: E1-1
Project/Site: NERT Project - Henderson Nevada	Date(s): 6/4/20
Sampling Team: Emily McGuire	
Sampling Method:	<input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location
Weather Conditions: Sunny	

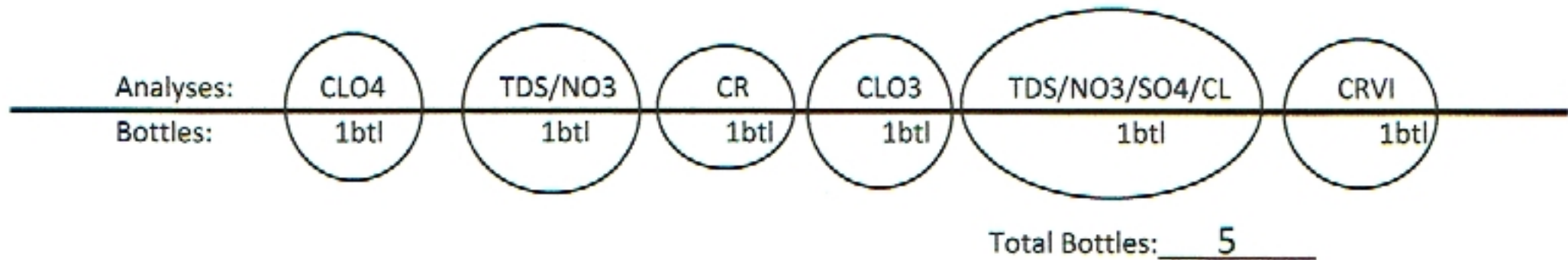
DTW ONLY

Well Depth Information-	Date: 6/4/20	Time: 0714
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft):	43.10	
	<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel	
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-	Date: 6/4/20	Start Time: 1138SM - 1145		
Sample Time	pH	EC/MC	Temp	Well Observations
1146SM 1138	7.03 pH	5.06 mS/Cm	32.2 °C	
Sample Appearance: clear				
Finish Time: 1150				



DUP EC Reading	QC
mS/Cm	pH
°C	

E1-1 6 4 20-EB
 Collected for same analysis before moving on to next well.

Time: 1148 pH: 0.08 mS/Cm: 8.01 °C: 24:

WATER SAMPLING FIELD LOG

	Well: E1-2
Project/Site: NERT Project - Henderson Nevada	Date(s): 6/4/20
Sampling Team: Emily McGuire	
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

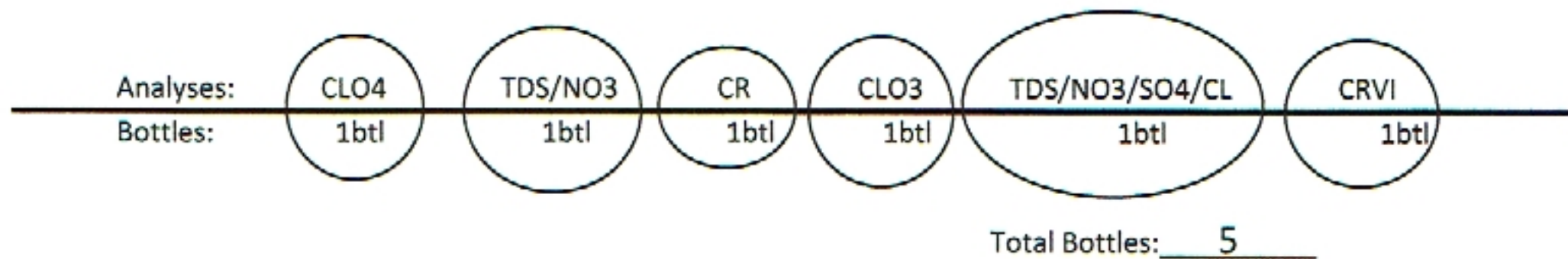
DTW ONLY

Well Depth Information-	Date: 6/4/20	Time: 0719
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft):	44.32	
	<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel	
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-		Date: 6/4/20	Start Time: 1142	
Sample Time	pH	EC/MC	Temp	Well Observations
1143	6.81 <small>pH</small>	7.02 <small>mS/Cm</small>	32.8 <small>°C</small>	
Sample Appearance: clear				
Finish Time: 1144				



DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

	Well: E1-3
Project/Site: NERT Project - Henderson Nevada	Date(s): 6/4/20
Sampling Team: Emily McGuire	
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

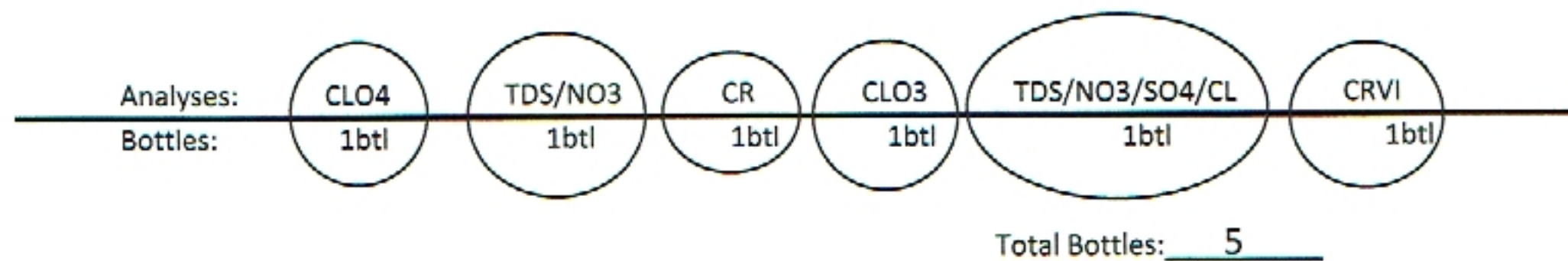
DTW ONLY

Well Depth Information-	Date: 6/4/20	Time: 0712
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually</small>		
Depth to Water(ft):	40.60	
	<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel	
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-	Date: 6/4/20	Start Time: 1138		
Sample Time	pH	EC/MC	Temp	Well Observations
1139	6.80 <small>pH</small>	6.43 <small>mS/Cm</small>	33.9 <small>°C</small>	
Sample Appearance: Clear				
Finish Time: 1141				



DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

	Well: <u>EZ-1</u>
Project/Site: NERT Project - Henderson Nevada	Date(s): <u>6/4/20</u>
Sampling Team: Emily McGuire	
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: <u>Sunny</u>	

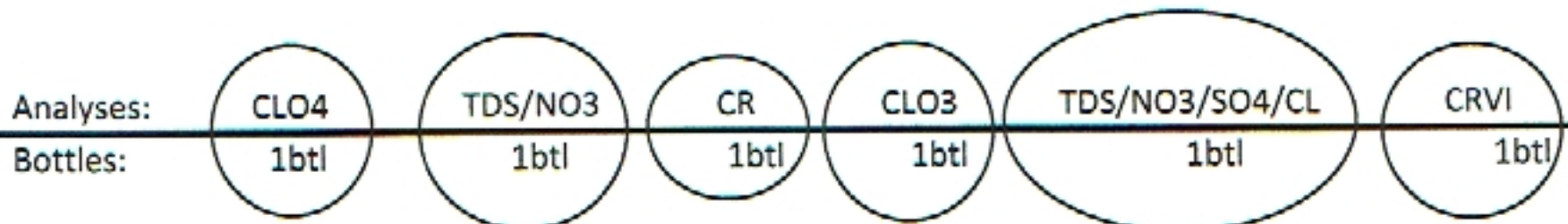
DTW ONLY

Well Depth Information-	Date: <u>6/4/20</u>	Time: <u>41.31</u>
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually</small>		
Depth to Water(ft): <input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel		
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-		Date: <u>6/4/20</u>	Start Time: <u>1151</u>	
Sample Time	pH	EC/MC	Temp	Well Observations
<u>1152</u>	<u>7.08</u> <small>pH</small>	<u>4.69</u> <small>mS/Cm</small>	<u>29.3</u> <small>°C</small>	
Sample Appearance: <u>clear</u>				
Finish Time: <u>1155</u>				



Total Bottles: 5

DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

	Well: E2-2
Project/Site: NERT Project - Henderson Nevada	Date(s): 6/ 4 /20
Sampling Team: Emily McGuire	
Sampling Method:	<input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location
Weather Conditions: Sunny	

DTW ONLY

Well Depth Information-	Date: 6/ 4 /20	Time: 0718
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually</small>		
Depth to Water(ft):	43.13	
	<input checked="" type="checkbox"/> Manually Taken at Well	<input type="checkbox"/> Taken at Control Panel
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-	Date: 6/ 4 /20	Start Time: 1156		
Sample Time	pH	EC/MC	Temp	Well Observations
1157	7.07 <small>pH</small>	4.07 <small>mS/Cm</small>	29.4 <small>°C</small>	
Sample Appearance: clear w/ debris				
Finish Time: 1200				

Analyses:

Bottles:

CLO4

1btl

TDS/NO3

1btl

CR

1btl

CLO3

1btl

TDS/NO3/SO4/CL

1btl

CRVI

1btl

Total Bottles: 5

DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

	Well: EZ-3
Project/Site: NERT Project - Henderson Nevada	Date(s): 6/4/20
Sampling Team: Emily McGuire	
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

DTW ONLY

Well Depth Information-	Date: 6/4/20	Time: 0719
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually</small>		
Depth to Water(ft):	43^{cm} 3957	<input type="checkbox"/> Taken at Control Panel
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-		Date: 6/4/20	Start Time: 1201	
Sample Time	pH	EC/MC	Temp	Well Observations
1202	7.12 <small>pH</small>	5.11 <small>mS/Cm</small>	27.8 <small>°C</small>	
Sample Appearance: Clear				
Finish Time: 1204				

Analyses:

CLO4

TDS/NO3

CR

CLO3

TDS/NO3/SO4/CL

CRVI

Bottles:

1btl

1btl

1btl

1btl

1btl

1btl

Total Bottles: 5

DUP EC Reading	QC
5.10 <small>mS/Cm</small>	7.03 <small>pH</small>
27.9 <small>°C</small>	

WATER SAMPLING FIELD LOG

	Well: E2-4
Project/Site: NERT Project - Henderson Nevada	Date(s): 6/4/20
Sampling Team: Emily McGuire	
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

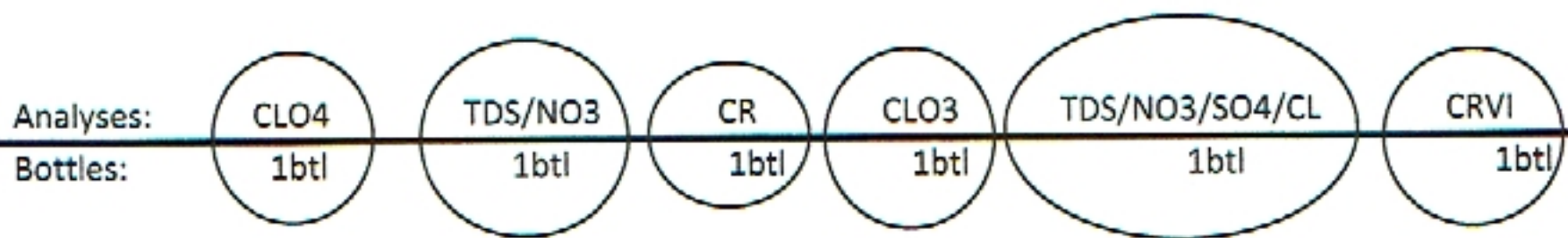
DTW ONLY

Well Depth Information-	Date: 6/4/20	Time: 43.76 0721
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually</small>		
Depth to Water(ft): 43.76	<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel	
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-		Date: 6/4/20	Start Time: 1205	
Sample Time	pH	EC/MC	Temp	Well Observations
1206	7.23 <small>pH</small>	5.77 <small>mS/Cm</small>	27.1 <small>°C</small>	
Sample Appearance: Clear				
Finish Time: 1209				



Total Bottles: 5

DUP EC Reading	QC
mS/Cm	pH
°C	

WATER SAMPLING FIELD LOG

	Well: EZ-5
Project/Site: NERT Project - Henderson Nevada	Date(s): 6/ 4 /20
Sampling Team: Emily McGuire	
Sampling Method: <input checked="" type="checkbox"/> Collected From Sample Port <input type="checkbox"/> Hand Bailed due to well Location	
Weather Conditions: Sunny	

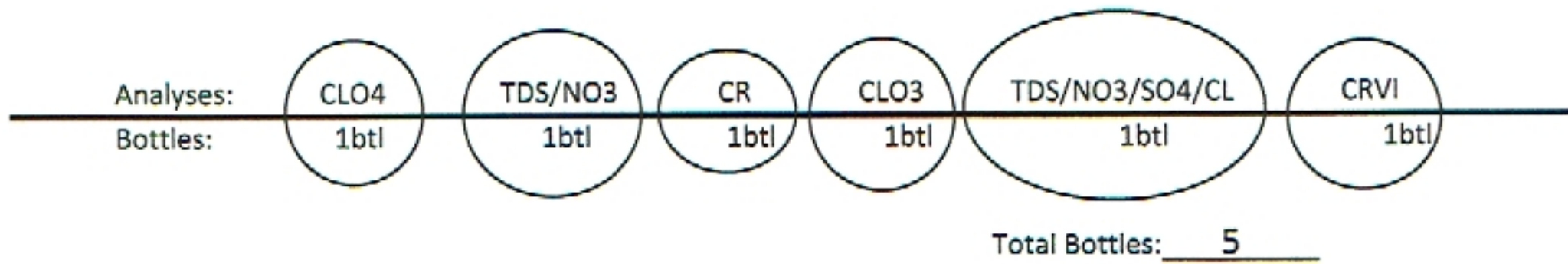
DTW ONLY

Well Depth Information-	Date: 6/ 4 /20	Time: 0723
Total Well Depth(ft): NM <small>('NM') - No measurement taken, manually measured annually)</small>		
Depth to Water(ft):	42.92	
	<input checked="" type="checkbox"/> Manually Taken at Well <input type="checkbox"/> Taken at Control Panel	
Height of Water Column(ft):		

Well Purge Required

Turned pump on at _____, flowing at _____ gpm. Purged for _____ minutes, _____ minutes required per well purge spreadsheet. Turned well off at _____.

Field Measurements-	Date: 6/ 4 /20	Start Time: 1209		
Sample Time	pH	EC/MC	Temp	Well Observations
1210	6.93 <small>pH</small>	6.32 <small>mS/Cm</small>	28.3 <small>°C</small>	
Sample Appearance: clear w/ debris				
Finish Time: 1215				



DUP EC Reading	QC
mS/Cm	pH
°C	

EZ-5 6 4 20-FD
 Collected at same time for same analysis before moving on to next well.

pH: 6.92 mS/Cm: 6.37 °C: 28.5

DAILY SAMPLING RIG INSPECTION SHEET

Date: 6/2/20

Completed By: Emily McGuire

Pre Sampling Safety Meeting-

Time: 0430

Wells to be sampled today: ART/PC wells

Dangers and hazards with wells to be sampled: opening vaults

Name: E. McGuire

Signature: [Signature]

Name: T. McDaniel

Signature: [Signature]

Sampling Equipment Inspection-

Time:

Items To Be Checked	Issues Found	N/A <input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Coolers		
<input checked="" type="checkbox"/> Forms		
<input checked="" type="checkbox"/> pH probe (calibrated)		
<input checked="" type="checkbox"/> DTW meter		
<input checked="" type="checkbox"/> Vault Keys		
<input checked="" type="checkbox"/> Water		
<input checked="" type="checkbox"/> PPE		

Vehicle Inspection-

Time:

Items To Be Checked	Issues Found	N/A <input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Tires and Lug Nuts		
<input checked="" type="checkbox"/> Steering Wheel		
<input checked="" type="checkbox"/> Lights		
<input checked="" type="checkbox"/> Horn		
<input checked="" type="checkbox"/> Radiator Fluid		
<input checked="" type="checkbox"/> Engine Oil		
<input checked="" type="checkbox"/> Parking Brake		
<input checked="" type="checkbox"/> Brakes and Brake Fluid		
Check Gauges		
<input checked="" type="checkbox"/> Oil Light		
<input checked="" type="checkbox"/> Battery Light		



DAILY MAINTENANCE AND CALIBRATION LOG

Date: 6/2/20

HANNA FIELD EC METER		Time/Analyst
Known Value	1288	0925/EM
Temp Comp Value	25.0	
Calibration Value	1292	
Standard Temp	25.0	
Changed Buffers		

HANNA FIELD pH METER			Time/Analyst
Known Value	7.0	8.0	0920/EM
Calibration Value	7.01	8.02	
Buffer Temp	25.5	25.0	
Changed Buffers			

Duplicate EC Reading(s)				
Well	1st EC	1st Temp	2nd EC	2nd Temp
ART-8A	13.05	29.7	13.02	29.6
PC-118	3.36	24.1	3.36	24.1

QC's
7.03
6.99
Closing QC
6.99

G9TWD Meter Heron Instruments Dipper-T Well Depth Indicator Probe, Serial No: WD790

DTW Meter Geotech Water Level Meter, Serial No: 7053

Verified By: E. McDi

DAILY SAMPLING RIG INSPECTION SHEET

Date: 6/4/20

Completed By: E. McGuire

Pre Sampling Safety Meeting-		Time: <u>0630</u>
Wells to be sampled today: <u>IWF West / APS</u>		
Dangers and hazards with wells to be sampled:		
Name: <u>E. McGuire</u>	Signature: <u>E. McGuire</u>	
Name:	Signature:	

Sampling Equipment Inspection-		Time: <u>0635</u>
Items To Be Checked	Issues Found	N/A <input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Coolers		
<input checked="" type="checkbox"/> Forms		
<input checked="" type="checkbox"/> pH probe (calibrated)		
<input checked="" type="checkbox"/> DTW meter		
<input checked="" type="checkbox"/> Vault Keys		
<input checked="" type="checkbox"/> Water		
<input checked="" type="checkbox"/> PPE		

Vehicle Inspection-		Time: <u>0630</u>
Items To Be Checked	Issues Found	N/A <input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Tires and Lug Nuts		
<input checked="" type="checkbox"/> Steering Wheel		
<input checked="" type="checkbox"/> Lights		
<input checked="" type="checkbox"/> Horn		
<input checked="" type="checkbox"/> Radiator Fluid		
<input checked="" type="checkbox"/> Engine Oil		
<input checked="" type="checkbox"/> Parking Brake		
<input checked="" type="checkbox"/> Brakes and Brake Fluid		
Check Gauges		
<input checked="" type="checkbox"/> Oil Light		
<input checked="" type="checkbox"/> Battery Light		



DAILY MAINTENANCE AND CALIBRATION LOG

Date: 6/4/20

HANNA FIELD EC METER		Time/Analyst
Known Value	1288	0617/EM
Temp Comp Value	25.0	
Calibration Value	1289	
Standard Temp	25.4	
Changed Buffers		

HANNA FIELD pH METER			Time/Analyst
Known Value	7.0	8.0	0613/EM
Calibration Value	7.01	7.99	
Buffer Temp	25.8	26.0	
Changed Buffers			Yes <input checked="" type="checkbox"/>

Duplicate EC Reading(s)				
Well	1st EC	1st Temp	2nd EC	2nd Temp
I-5	6.73	30.5	6.75	30.4
E2-3	5.11	27.8	5.10	27.9

QC's
7.01
7.03
Closing QC
7.03

G9TWD Meter Heron Instruments Dipper-T Well Depth Indicator Probe, Serial No: WD790

DTW Meter Geotech Water Level Meter, Serial No: 7053

Verified By: E. McDi

DAILY SAMPLING RIG INSPECTION SHEET

Date: 6/8/20 Completed By: E. McGuire

Pre Sampling Safety Meeting-	Time: <u>1015</u>
Wells to be sampled today: <u>Borman I-wells</u>	
Dangers and hazards with wells to be sampled: <u>Borman on-site hazards</u>	
Name: <u>E. McGuire</u>	Signature: <u>E McGuire</u>
Name:	Signature:

Sampling Equipment Inspection-		Time: <u>1020</u>
Items To Be Checked	Issues Found	N/A <input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Coolers		
<input checked="" type="checkbox"/> Forms		
<input checked="" type="checkbox"/> pH probe (calibrated)		
<input checked="" type="checkbox"/> DTW meter		
<input checked="" type="checkbox"/> Vault Keys		
<input checked="" type="checkbox"/> Water		
<input checked="" type="checkbox"/> PPE		

Vehicle Inspection-		Time: <u>1025</u>
Items To Be Checked	Issues Found	N/A <input type="checkbox"/>
<input checked="" type="checkbox"/> Tires and Lug Nuts		
<input checked="" type="checkbox"/> Steering Wheel		
<input checked="" type="checkbox"/> Lights		
<input checked="" type="checkbox"/> Horn		
<input checked="" type="checkbox"/> Radiator Fluid		
<input checked="" type="checkbox"/> Engine Oil		
<input checked="" type="checkbox"/> Parking Brake		
<input checked="" type="checkbox"/> Brakes and Brake Fluid		
Check Gauges		
<input checked="" type="checkbox"/> Oil Light		
<input checked="" type="checkbox"/> Battery Light		



DAILY MAINTENANCE AND CALIBRATION LOG

Date: 6/8/20

HANNA FIELD EC METER		Time/Analyst
Known Value	1288	1045 /EM
Temp Comp Value	1283 SM 25.0	
Calibration Value	24.5 SM 1283	
Standard Temp	24.5	
Changed Buffers		

HANNA FIELD pH METER			Time/Analyst
Known Value	7.0	8.0	1042 /EM
Calibration Value	7.01	7.99	
Buffer Temp	25.3	25.7	
Changed Buffers			

Duplicate EC Reading(s)				
Well	1st EC	1st Temp	2nd EC	2nd Temp
I-K	6.89	24.7	6.91	24.9

QC's
7.03
Closing QC
7.01

G9TWD Meter Heron Instruments Dipper-T Well Depth Indicator Probe, Serial No: WD790
 DTW Meter Geotech Water Level Meter, Serial No: 7053

Verified By: E. McElin

DAILY SAMPLING RIG INSPECTION SHEET

Date: 6/9/20

Completed By: Emily McGuire

Pre Sampling Safety Meeting-	Time: 0922
Wells to be sampled today: IWF Middle/East	
Dangers and hazards with wells to be sampled: none	
Name: E. McGuire	Signature: E. McGuire
Name:	Signature:

Sampling Equipment Inspection-		Time: 0925
Items To Be Checked	Issues Found	N/A <input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Coolers		
<input checked="" type="checkbox"/> Forms		
<input checked="" type="checkbox"/> pH probe (calibrated)		
<input checked="" type="checkbox"/> DTW meter		
<input checked="" type="checkbox"/> Vault Keys		
<input checked="" type="checkbox"/> Water		
<input checked="" type="checkbox"/> PPE		

Vehicle Inspection-		Time: 0925
Items To Be Checked	Issues Found	N/A <input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Tires and Lug Nuts		
<input checked="" type="checkbox"/> Steering Wheel		
<input checked="" type="checkbox"/> Lights		
<input checked="" type="checkbox"/> Horn		
<input checked="" type="checkbox"/> Radiator Fluid		
<input checked="" type="checkbox"/> Engine Oil		
<input checked="" type="checkbox"/> Parking Brake		
<input checked="" type="checkbox"/> Brakes and Brake Fluid		
Check Gauges		
<input checked="" type="checkbox"/> Oil Light		
<input checked="" type="checkbox"/> Battery Light		



DAILY MAINTENANCE AND CALIBRATION LOG

Date: 6/9/20

HANNA FIELD EC METER		Time/Analyst
Known Value	1288	0925/ EM
Temp Comp Value	25.0	
Calibration Value	1290	
Standard Temp	24.7	
Changed Buffers Yes <input checked="" type="checkbox"/>		

HANNA FIELD pH METER			Time/Analyst
Known Value	7.0	8.0	0927/ EM
Calibration Value	7.01	8.03	
Buffer Temp	25.3	25.4	
Changed Buffers Yes <input checked="" type="checkbox"/>			

Duplicate EC Reading(s)				
Well	1st EC	1st Temp	2nd EC	2nd Temp
I-N	8.16	27.0	8.20	26.9
I-H	10.46	30.2	10.54	29.9

QC's
7.03
7.01
Closing QC
6.98

G9TWD Meter Heron Instruments Dipper-T Well Depth Indicator Probe, Serial No: WD790
 DTW Meter Geotech Water Level Meter, Serial No: 7053

Verified By: E. McGin

TECHNICAL MEMORANDUM

To: Chris Ritchie and Chris Stubbs, Ramboll

Cc: Steve Clough, Nevada Environmental Response Trust
Matthew Edelstein, Craig Knox, Emeryville Lab Data, Ramboll
David Bohmann, Tetra Tech

From: Jesse Bunkers and James Roman

Date: July 20, 2020

Subject: June 2020 Monthly Las Vegas Wash Surface Water Sampling
Nevada Environmental Response Trust Site
Henderson, NV

MONTHLY SURFACE WATER SAMPLING ACTIVITIES

At the direction of the Nevada Environmental Response Trust (NERT or Trust), Tetra Tech, Inc. (Tetra Tech) has prepared this summary for the June 2020 Las Vegas Wash Surface Water Sampling event for the NERT Site.

The ten sample locations described in the *Surface Water Sampling and Analysis Plan, Revision 3 (SAP), Las Vegas Wash* (Tetra Tech, October 2018) are shown on Figure 1. Tetra Tech collected 30 independent samples from ten sample locations within the Las Vegas Wash (the Wash) and a channel flowing into the Wash (C-1 Channel) on June 9, 2020. For samples from the Wash, each location was accessed either by wading into the Wash or by float tube. At each sample location, Tetra Tech measured the total depth of the Wash, recorded the water quality field parameters, and collected a sample. All samples were collected at the approximate mid-water depth using the discrete hand-grab sample technique described in the SAP. For samples from the C-1 Channel, the channel width, depth of water, and flow were measured and documented in the surface water sampling logs. The diameters of the C-1 Channel #1-W and #1-E were measured to be 2 feet.

Samples were stored in coolers at 4°C and transferred under chain-of-custody documentation to Eurofins Calscience Laboratory (ECL) in Irvine, California following completion of sampling. All samples were analyzed for perchlorate, chlorate and total dissolved solids using EPA Methods 314.0, 300.1, and SM 2540C, respectively. The ECL laboratory reports are available for Ramboll via ECL's Total Access website.

Deviations from the Wash surface water sampling program encountered during the June 2020 sampling event include:

- Field personnel were not able to sample the designated location for LVW6.6-3 due to the presence of a sandbar at the sample location. The sandbar extended above the water surface; therefore, no surface water was present at the sample location. The sample was collected as close as possible to the original

sample location. The sample location was recorded with a handheld GPS and the sample was collected at the coordinates 36.089462° N, 114.993152° W.

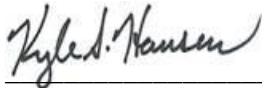
- There was no flow at location C-12 Channel #2; accordingly, a sample was not collected.

Surface water sampling logs are provided in Attachment A. Field investigation daily logs and calibration logs are included in Attachments B and C, respectively. The electronic data deliverable (EDD) with the recorded sample depths and field parameters will be transmitted in a separate Excel file.

CERTIFICATION

I hereby certify that I am responsible for the services described in this document and for the preparation of this document. The services described in this document have been prepared in a manner consistent with the current standards of the profession, and to the best of my knowledge, comply with all applicable federal, state, and local statutes, regulations, and ordinances. I hereby certify that all laboratory analytical data was generated by a laboratory certified by the NDEP for each constituent and media presented herein.

Description of Services Provided: Prepared June 2020 monthly Las Vegas Wash surface water sampling summary.



7/20/2020

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

Date

Nevada CEM Certificate Number: 2167
Nevada CEM Expiration Date: September 18, 2020

Figure

\\TTS134FS1\SUP-GIS\ARCP\2\INERT\MXD\SAMPLE_LOCATION_M15_MONTHLY_032018.MXD



Imagery Source: Esri World Map, June 2015

Legend
● Monthly Sample Locations

Tt TETRA TECH
www.tetrattech.com
 150 S. 4th Street, Unit A
 Henderson, Nevada 89015
 PHONE: (702) 854-2293

NEVADA ENVIRONMENTAL RESPONSE TRUST
 LAS VEGAS WASH MONTHLY SAMPLING
 HENDERSON, NEVADA
LAS VEGAS WASH SAMPLE POINT LOCATIONS

Project No.:	117-7502018
Date:	SEPTEMBER 17, 2018
Designed By:	ES
Figure No.	1

Attachment A

Surface Water Sampling Logs



Task Name: LVW Surface Water Sampling

Task Manager: Jesse Bunkers

Task No: M15

Date: 6/9/20

Field Samplers: J. Bunkers, P. Groff

Sampling Method: Dipper Equipment Decon. Method: DI Rinse

Time	Location ID	GPS Coordinates (Lat, Long)	Depth of Water (ft)	Depth of Sample (ft)	Width (ft) (Channel Only)	Flow (gpm) (Channel Only)	Temp. (°C)	pH (pH Units)	Conductivity (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Color	Odor
0745	LVW8.85		0.8	0.4			23.4	7.84	1.522	7.70	224.6	4.0	clear	none
0830	LVW7.2		2.2	1.1			23.2	7.97	1.702	7.90	193.2	3.5	clear	none
0845	LVW6.6-1		2.6	1.3			23.4	8.09	1.851	7.56	204.7	2.7	clear	none
0845	LVW6.6-2		5.6	2.8			22.9	8.08	1.725	7.83	203.6	3.1	clear	none
0845	LVW6.6-3		1.4	0.7			22.5	8.08	1.628	7.84	203.4	3.0	clear	none
0915	LVW6.05		1.0	0.5			22.8	8.12	1.850	8.49	207.1	3.3	clear	none
0945	C1-E		0.04	-	0.50	0.52	23.9	7.99	3.875	7.57	216.5	2.2	clear	none
0945	C1-U		0.10	-	0.87	1.96	23.3	7.94	4.018	7.58	217.9	2.9	clear	none
1015	LVW5.3-1		5.6	2.8			25.4	8.31	1.945	7.86	174.3	6.1	clear	none
1015	LVW5.3-2		0.4	0.2			24.9	8.35	1.854	8.43	177.1	2.0	clear	none
1015	LVW5.3-3		1.0	0.5			24.9	8.38	1.855	8.35	180.8	2.2	clear	none
1015	LVW5.3-4		0.4	0.2			25.2	8.43	1.829	8.44	182.6	1.7	clear	none
1015	LVW5.3-5		0.6	0.3			25.3	8.44	1.832	8.43	184.7	1.7	clear	none
1015	LVW5.3-6		1.2	0.6			23.8	8.41	1.835	8.71	187.4	1.8	clear	none
1045	LVW4.75-1		1.6	0.8			24.8	8.33	1.904	7.73	208.3	4.9	clear	none
1045	LVW4.75-2		2.0	1.0			24.3	8.23	1.907	7.79	209.6	2.3	clear	none
1045	LVW4.75-3		2.0	1.0			24.4	8.24	1.881	7.95	209.4	2.3	clear	none

QA/QC Samples/ID: LVW7.2-1.1-20200609-FD

QA/QC Samples/ID: LVW6.05-0.5-20200609-FD

QA/QC Samples/ID: LVW6.05-20200609-FB

QA/QC Sample Time: 0830

QA/QC Sample Time:

QA/QC Sample Time:

Bottle Set Summary:

125 mL Plastic

500 mL Plastic

250 mL Plastic

125 mL w/ EDA

Observations/Comments:



Task Name: LVW Surface Water Sampling Task Manager: Jesse Bunkers Task No: M15 Date: 6/9/20
 Field Samplers: J. Bunkers, P. Grotz Sampling Method: Dipper Equipment Decon. Method: DI Rinse

Time	Location ID	GPS Coordinates (Lat, Long)	Depth of Water (ft)	Depth of Sample (ft)	Width (ft) (Channel Only)	Flow (gpm) (Channel Only)	Temp. (°C)	pH (pH Units)	Conductivity (mS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Color	Odor
1045	LVW4.75-4		2.4	1.2			24.5	8.25	1.856	7.87	209.0	2.6	clear	none
1045	LVW4.75-5		2.2	1.1			23.9	8.24	1.863	7.93	208.7	2.0	clear	none
1115	LVW4.2-1		2.4	1.2			24.6	8.40	1.907	8.55	202.5	3.3	clear	none
1115	LVW4.2-2		4.4	2.2			24.8	8.31	1.867	8.07	203.2	1.9	clear	none
1115	LVW4.2-3		4.8	2.4			25.0	8.28	1.857	7.98	203.2	2.4	clear	none
1115	LVW4.2-4		3.4	1.7			25.3	8.26	1.852	8.13	203.4	2.8	clear	none
1200	LVW3.5-1		3.0	1.5			25.4	8.33	1.905	8.25	202.0	2.0	clear	none
1200	LVW3.5-2		1.6	0.8			25.0	8.32	1.888	8.27	206.3	2.1	clear	none
1200	LVW3.5-3		3.0	1.5			25.0	8.33	1.880	8.30	206.8	2.2	clear	none
1200	LVW3.5-4		2.4	1.2			25.4	8.33	1.878	8.32	207.0	1.8	clear	none
1200	LVW3.5-5		3.4	1.7			25.4	8.32	1.879	8.32	207.9	2.1	clear	none
1200	LVW3.5-6		3.0	1.5			25.4	8.33	1.877	8.34	207.7	2.0	clear	none
1300	LVW0.55		2.2	1.1			25.6	8.57	1.909	7.82	203.1	3.7	clear	none

QA/QC Samples/ID: LVW0.55-1.1-20200609-FD QA/QC Samples/ID: LVW0.55-20200609-FB QA/QC Samples/ID: —
 QA/QC Sample Time: 1300 QA/QC Sample Time: 1300 QA/QC Sample Time: —
 Bottle Set Summary: 125 mL Plastic 35 500 mL Plastic
 250 mL Plastic 35 125 mL w/ EDA 35

Observations/Comments:

Attachment B
Field Investigation Daily Logs



Task Name: LVW Surface Water Sampling Task Manager: Jesse Bunkers Date: 6/9/20

Field Personnel: J. Bunkers, P. Groff Task No: M15

Location: Las Vegas Wash Reported by: J. Bunkers

Weather Conditions: $\approx 89^{\circ}F$, Sunny, Calm

Total Vehicle Mileage: 30

Task Visitors / Subcontractors: None

Matters of Safety:

Rapid water

Problems / Concerns and Corrective Actions Taken:

None

Time	Activities
------	------------

0630	Tailgate / safety meeting with TT crew at TT office, gather supplies, move to field to begin collecting surface water samples
0700	Arrive at LVW Wetlands Park
0745	Collect LVW 8.85, move to LVW 7.2
0830	Collect LVW 7.2 and field dup, move to LVW 6.6
0845	Collect samples LVW 6.6-1, LVW 6.6-2, and LVW 6.6-3, modified location for 6.6-3 due to sandbar to: $36.089462^{\circ}N$, $114.993152^{\circ}W$, move to LVW 6.05
0915	Collect LVW 6.05 and FI and FB, move to C-1 channel
0945	Collect samples C1-E and C1-W, no flow at C-12, move to LVW 5.3
1015	Collect samples LVW 5.3-1 through LVW 5.3-6, move to LVW 4.75
1045	Collect samples LVW 4.75-1 through LVW 4.75-5, move to LVW 4.2
1115	Collect samples LVW 4.2-1 through LVW 4.2-4, move to LVW 3.5
1200	Collect samples LVW 3.5-1 through LVW 3.5-6, move to LVW 0.55
1300	collect samples LVW 0.55 and field duplicate and field blank
	* All sample locations were verified with hand-held gps
1400	Clean and store sampling equipment, Hand off samples to courier

	C1-E	C1-W
width (ft)	0.50	0.87
depth (ft)	0.04	0.10
flow (L/s)	0.52	1.96

1500 Done for day

Prepared by: Jesse Bunkers

Signature: *J. Bunkers*

Date: 6/9/20

Attachment C Calibration Logs



CALIBRATION LOG - WATER QUALITY METER

Task Name: LVW Surface Water Sampling	Task No.: M15	Rental from: EQUIPCO	Task Manager: Jesse Bunkers
Field Personnel: Jesse Bunkers, Patrick Groff		Serial Number: .11	Type: YSI ProDSS

Date	Time	Temp (°C)	Pre-Calibration							Post-Calibration						
			pH (pH = 4.0)	pH (pH = 7.0)	pH (pH = 10.0)	ORP (mV)	Cond. (mS/cm)	DO (%)	Turbidity (NTU)	pH (pH = 4.0)	pH (pH = 7.0)	pH (pH = 10.0)	ORP (mV)	Cond. (mS/cm)	DO (%)	Turbidity (NTU)
6/5/2020	08:30	31.0	3.94	7.02	9.94	X	1.030	X	0.8	4.00	7.00	10.00	X	1.000	X	0

Notes:

Annual Groundwater Monitoring and
GWETS Performance Report
Nevada Environmental Response Trust Site
Henderson, Nevada

APPENDIX E
DATA VALIDATION SUMMARY REPORT (DVSR)
(AVAILABLE ELECTRONICALLY ON USB FLASH DRIVE)

Annual Groundwater Monitoring and
GWETS Performance Report
Nevada Environmental Response Trust Site
Henderson, Nevada

APPENDIX F
ELECTRONIC DATA DELIVERABLE (EDD)
(AVAILABLE ELECTRONICALLY ON USB FLASH DRIVE)

Annual Groundwater Monitoring and
GWETS Performance Report
Nevada Environmental Response Trust Site
Henderson, Nevada

APPENDIX G ENVIRONMENTAL FOOTPRINT ANALYSIS

**TABLE G-1: ENVIRONMENTAL FOOTPRINT INVENTORY DATA SOURCES,
JULY 2019 - JUNE 2020**

**Nevada Environmental Response Trust Site
Henderson, Nevada**

Parameter	Data Sources
Personnel Transportation	Personnel transportation estimates are compiled by the Trust, Ramboll, Tetra Tech, and Envirogen for tasks associated with the Remedial Performance Monitoring Program (RPM) and the Groundwater Extraction and Treatment System (GWETS).
	Flight distances are estimated using the approximate distance from the starting location city/airport to Las Vegas airport. Driving distances are estimated using the approximate driving distance reported by Google Maps.
	Transportation associated with one-time events (e.g. system construction) is not included.
On-site Equipment Usage	Envirogen's gasoline usage for on-site vehicles is compiled from available vehicle analysis reports.
	Tetra Tech's and Ramboll's gasoline usage for on-site vehicles is estimated using approximate mileage amounts provided by field personnel and an assumed fuel efficiency determined based on type of vehicle used and type of vehicle usage.
	Estimates for fuel usage for other on-site equipment are provided by Envirogen.
	Equipment usage associated with one-time events (e.g. system construction) is not included.
Electricity Usage	Electricity usage is compiled from invoices received from the Colorado River Commission of Nevada and NV Energy.
	Fuel mix information for grid electricity is available from the Colorado River Commission of Nevada and NV Energy websites.
Materials Usage and Transportation	Materials usage information is provided by Envirogen personnel based on electronic outputs from their process control systems.
	All information regarding specifications and formulations is obtained from Safety Data Sheets maintained at the Site.
	Information regarding mode of transportation to the Site and location of manufacture is provided by Envirogen. Fuel types are assumed based on mode of transportation. Distances traveled are estimated based on the approximate distance between the manufacturing location and the Site.
	Materials usage and transportation associated with one-time events (e.g. system construction) is not included.
Waste Disposal and Transportation	Waste disposal and transportation information is compiled from invoices provided by Envirogen and Tetra Tech containing information regarding waste hauled off-site. Invoice line items are counted to determine the number of pickup trips. Distances traveled are estimated based on the distance between the disposal location and the Site.
Water Usage	Surface water usage is determined based on totalizer readings from the Site's main water supply line and subtracting totalizer readings associated with usage by Tronox (not part of Site operations). For periods when readings from the Site's main water supply line were not available, surface water usage was estimated by summing readings from individual point discharge locations.
	Extracted groundwater is calculated from the GWETS field sheet maintained by Tetra Tech and Envirogen.
	GW-11 evaporation is estimated based on GW-11 stage area estimates provided by Envirogen and historic pan evaporation data (Shevenell 1996).
Off-site Laboratory Analyses	The total number of analyses conducted is compiled based on information available from the Site's Analytical Database maintained by Ramboll and only includes sampling related to GWETS operations and the RPM program. Quality Assurance (QA) and Quality Control (QC) samples, including equipment blanks, field blanks, trip blanks, and field duplicates, are also included. Pricing information for each analytical method is estimated based on unit prices provided by TestAmerica.

TABLE G-2: PERSONNEL TRANSPORTATION, JULY 2019 - JUNE 2020

Nevada Environmental Response Trust Site

Henderson, Nevada

Personnel Location/ Activities	Number of Personnel	Estimated Roundtrips to Site per Person	Roundtrip Distance to Site (miles)	Mode of Transportation	Transport Fuel Type	Notes		
Groundwater Extraction and Treatment System (GWETS) Activities								
GWETS Operations and Maintenance	2	84	30	Car	Gasoline	[A]		
	1	150	20					
	4	150	30					
	7	84	30	Light-Duty Truck				
	2	120	20					
	2	120	10					
	2	150	30					
	5	150	20					
Extraction Well and Conveyance Maintenance	2	123	30	Van	Gasoline			
	2	123	30	Heavy-Duty Truck				
Groundwater Monitoring	2	123	30	Van	Gasoline			
General Site Management	2	120	30	Van	Gasoline			
	2	120	30	Heavy-Duty Truck				
IX Monitoring and Management	2	123	30	Heavy-Duty Truck	Gasoline			
Director of Remediation	1	60	10	Car	Gasoline	[B]		
Chicago	1	3	3,020	Flight	NA	[B]		
Atlanta	2	1	3,490	Flight	NA	[C]		
Denver	1	2	1,260	Flight	NA	[C]		
	2	1						
Houston	1	1	2,440	Flight	NA	[C]		
Las Vegas Area	2	4	20	Car	Gasoline	[C]		
	1	2						
	1	262	20	Light-Duty Truck		[C]		
Salt Lake City	1	4	870	Car	Gasoline	[C]		
	1	3						
	1	2						
	1	3	740	Flight			NA	[C]
	1	6						
Remedial Performance Monitoring (RPM) Activities								
Boise	1	1	1,280	Light-Duty Truck	Gasoline	[C]		
Denver	1	1	1,530	Light-Duty Truck	Gasoline	[C]		
	1	3	1,260	Flight	NA			
	2	1						
Las Vegas Area	1	61	20	Car	Gasoline	[C]		
	1	25						
	1	8						
Orange County	1	1	540	Light-Duty Truck	Gasoline	[C]		
	2	1	450	Flight	NA			
Missoula	1	1	1,920	Light-Duty Truck	Gasoline	[C]		
Phoenix	1	1	510	Flight	NA	[C]		
	1	2				[D]		
Sacramento	1	4	790	Flight	NA	[C]		
	2	1						

TABLE G-2: PERSONNEL TRANSPORTATION, JULY 2019 - JUNE 2020

Nevada Environmental Response Trust Site

Henderson, Nevada

Personnel Location/ Activities	Number of Personnel	Estimated Roundtrips to Site per Person	Roundtrip Distance to Site (miles)	Mode of Transportation	Transport Fuel Type	Notes
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Notes

- A) Travel estimates were provided by Envirogen.
- B) Travel estimates were provided by the Nevada Environmental Response Trust.
- C) Travel estimates were provided by Tetra Tech.
- D) Travel estimates were provided by Ramboll.
- E) Average roundtrip distances are rounded to the nearest 10 miles.
- F) For each flight, a 30-mile car trip is assumed to account for roundtrip transportation from the airport to the Site.

NA = Not Applicable

TABLE G-3: ON-SITE EQUIPMENT USAGE, JULY 2019 - JUNE 2020
Nevada Environmental Response Trust Site
Henderson, Nevada

On-site Equipment	Fuel Quantity (gallons)	Fuel Type	Notes
Groundwater Extraction and Treatment System (GWETS) Activities			
Combined Truck Use	2,390	Gasoline	[A]
Back-up Air Compressor	20	Diesel	[B]
Pressure Washer	48	Gasoline	[C]
Remedial Performance Monitoring (RPM) Activities			
Combined Truck Use	380	Gasoline	[A]

Notes

A) Gasoline usage was estimated based on vehicle usage information provided by Envirogen, Tetra Tech, and Ramboll personnel. Estimates shown are rounded to the nearest 10 gallons.

B) Personnel with Envirogen indicated approximately 20 gallons of diesel are used per year for operation of the back up air compressor at the groundwater treatment plant (GWTP).

C) Personnel with Envirogen indicated approximately 4 gallons of gasoline are used per month for operation of the pressure washer.

TABLE G-4: ELECTRICITY USAGE, JULY 2019 - JUNE 2020
Nevada Environmental Response Trust Site
Henderson, Nevada

Grid Electricity	Kilowatt-hours	Energy Source	Notes
Treatment Plant	5,536,484	Colorado River Commission of NV	[A]
Extraction Wells and Lift Stations	1,535,358	NV Energy	[B]
Total Electricity Used	7,071,842	-	-

Notes

A) The Colorado River Commission of Nevada is responsible for acquiring and managing Nevada's water and hydropower resources from the Colorado River. Electricity provided by the Colorado River Commission of Nevada to the NERT Site is generated from hydropower resources.

B) NV Energy is listed as the electricity provider on invoices for the off-site extraction wells and pump stations. Information regarding the energy sources of electricity provided is available from the following document:

https://www.nvenergy.com/publish/content/dam/nvenergy/bill_inserts/2020/07_jul/power-content-insert-south-2020-06_1_25.pdf

TABLE G-5: MATERIALS USAGE AND TRANSPORTATION, JULY 2019 - JUNE 2020
Nevada Environmental Response Trust Site
Henderson, Nevada

Material Type	Quantity	Units	Location of Manufacture	One-way Distance to Site (miles)	Mode of Transportation	Specific Gravity	Density (lbs/gal)
Ferrous sulfate (FeSO ₄)	12,000	gal	South Gate, CA	250	Truck	1.203	10.02
Defoamer XFO-10S FG	110	gal	Santa Fe Springs, CA	250	Truck	1.00	8.35
PolymerDewater BF CP 9869 (New)	290	gal	Riceboro, GA	2,200	Truck	0.12	1.00
DAF polymer BF CP 2661	5,200	gal	Greensboro, South Carolina	2,250	Truck	1.03	8.60
Polymer Superfloc 4818 RS GWTP	430	lbs	Madison, Alabama	1,750	Truck	1.072	8.95
Lime (hydrated lime)	4,500	lbs	Sainte Genevieve, MO	1,600	Truck	2.2	-
Ethanol (190 proof)	94,000	gal	Peoria, IL	1,950	Train	0.817	-
				250	Truck		
Phosphoric acid (H ₃ PO ₄)	4,800	gal	Pocatello, ID	600	Truck	1.20-1.26	10.0-10.5
pH adjustment (NaOH)	21,000	gal	Plaquemine, LA	1,650	Train/Truck	1.33	11.1
Micronutrients (VWNA micronutrient)	10,000	gal	South Gate, CA	250	Truck	1.1075	9.24
Hydrogen peroxide (H ₂ O ₂)	17,000	gal	Longview, WA	1,050	Truck	1.1327	9.44
			Woodstock, TN	1,600			
Ferric chloride (FeCl ₃)	3,600	gal	Mojave, CA	200	Truck	-	11.8-12.0
Aluminum Chlorohydrate (ACH)	2,200	gal	Phoeniz, AZ	300	Truck	-	11.1 - 11.3
Ion exchange (IX) resin	200	cubic feet	India	10,400	Boat	1.0-1.15	-
				2,550	Truck		
Granular activated carbon (GAC)	20,000	lbs	Pittsburg, PA	2,200	Truck	0.4-0.7	3.3-5.8

Notes

gal = gallons lbs = pounds

- A) Materials usage information is provided by Envirogen personnel based on electronic outputs from their process control systems and inventory ordering information. Envirogen reported all materials are refined and none of the materials are from recycled sources.
- B) Information regarding location of manufacture and mode of transportation is provided by Envirogen personnel. Approximate one-way distance to the Site is estimated using Google Maps rounded to the nearest 50 miles.
- C) Specific gravity and density information for each material is obtained from Safety Data Sheets maintained at the Site.
- D) According to Envirogen personnel, the GAC is tested annually for potential contaminant breakthrough and is replaced only if breakthrough is observed. Approximately one hundred percent of the GAC is regenerated and reused.

TABLE G-6: WASTE DISPOSAL AND TRANSPORTATION, JULY 2019 - JUNE 2020
Nevada Environmental Response Trust Site
Henderson, Nevada

Waste Generated	Notes	Quantity	Units	Number of Trips	Treatment/ Disposal Site	One-way Distance to Site (miles)	Mode of Transportation
Fluidized Bed Reactor (FBR) Sludge	A	550	tons	86	Apex Industrial Solid Landfill	30	Truck
Groundwater Water Treatment Plant (GWTP) Sludge		23	tons	3			
Ion Exchange (IX) Resin		25	tons	5			

Notes

A) Information regarding FBR sludge, GWTP sludge, IX resin and Spent GAC hauled off-site was compiled from invoices provided by Envirogen personnel.

TABLE G-7: WATER USAGE, JULY 2019 - JUNE 2020
Nevada Environmental Response Trust Site
Henderson, Nevada

Water Source	Quantity	Unit	Use/Fate
Extracted Groundwater	677	MGal	Treat and discharge to Las Vegas Wash
Lake Mead	17.2	MGal	See Note A
GW-11 Evaporation	38.0	MGal	Evaporation - See Note B

Notes

MGal = million gallons

A) Lake Mead water is used for granular activated carbon (GAC) backwash events, which occur on average three times per month. Lake Mead water is also used for Fluidized Bed Reactor (FBR) polymer additions, groundwater treatment plant polymer additions, washing down equipment in the treatment plant, sanitary water, seal water for FBR pumps, AP Area flushing, and AP-5 solids removal and treatment (which ended in the second half of 2018). After use, Lake Mead water is discharged to GW-11 and then eventually treated and discharged to Las Vegas Wash, except for sanitary water which is discharged to an on-site septic system.

B) GW-11 evaporation was estimated using information contained within the GW-11 Pond Volume Model maintained by Envirogen. The GW-11 Pond Volume Model includes measured pond water levels (collected approximately twice per month) and corresponding calculated pond volume and stage area estimates. Stage area estimates and historical pan evaporation data (Shevenell 1996) are used to calculate estimated evaporation during the reporting period. Details of these calculations are included in the SEFA input workbook.

TABLE G-8: OFF-SITE LABORATORY ANALYSES, JULY 2019 - JUNE 2020
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Method	Estimated Analytical Unit Price	Number of Analyses
Groundwater Extraction and Treatment System (GWETS) Analyses			
East Well Feed and West Well Feed - Weekly			
Chromium	EPA 200.7	\$25	104
Chromium, Hexavalent Dissolved	EPA 218.6	\$50	104
Perchlorate	EPA 314.0	\$25	104
FBR Plant Influent - Weekly			
Chromium	EPA 200.7	\$25	52
Iron	EPA 200.7	\$8	52
Chromium, Hexavalent Dissolved	EPA 218.6	\$50	52
Nitrate as N	EPA 300_ORGFMS	\$8	52
Nitrite as N	EPA 300_ORGFMS	\$8	52
Total Inorganic Nitrogen	NTOTAL	\$5	52
Perchlorate	EPA 314.0	\$25	52
Nitrogen, Kjeldahl	EPA 351.2	\$25	52
Ammonia as N	SM400-NH3-D	\$20	52
FBR Plant Effluent - Weekly			
Chromium	EPA 200.7	\$25	52
Chromium, Hexavalent Dissolved	EPA 218.6	\$50	52
Nitrate as N	EPA 300_ORGFMS	\$8	52
Perchlorate	EPA 314.0	\$25	52
FBR Effluent and FBR Influent - Monthly			
Chlorate	EPA 300.1	\$12	24
FBR Influent - Quarterly			
Manganese	EPA 200.7	\$25	4
Total Dissolved Solids	SM 2540C	\$10	4
GW-11 Composite			
Calcium	EPA 200.7	\$25	4
Iron	EPA 200.7	\$8	4
Chromium, Hexavalent Dissolved	EPA 218.6	\$50	4
Chloride	EPA 300_ORGFM_28D	\$8	4
Sulfate	EPA 300_ORGFM_28D	\$8	4
Chlorate	EPA 300.1	\$12	4
Total Suspended Solids	SM 2540D	\$10	4
pH	SM 4500H+	\$8	4
pH (Field)	FIELD SAMPLING (SM 4500H+)	\$0	16
GW-11 Static Mixer			
Chromium	EPA 200.7	\$25	12
Chromium, Hexavalent Dissolved	EPA 218.6	\$50	12
Perchlorate	EPA 314.0	\$25	12

TABLE G-8: OFF-SITE LABORATORY ANALYSES, JULY 2019 - JUNE 2020

Nevada Environmental Response Trust Site

Henderson, Nevada

Analyte	Method	Estimated Analytical Unit Price	Number of Analyses	
GWTP Discharge				
Chromium	EPA 200.7	\$25	52	
Chromium, Hexavalent Dissolved	EPA 218.6	\$50	52	
Perchlorate	EPA 314.0	\$25	52	
IX Effluent - Composite and IX Influent - Composite				
Perchlorate	EPA 314.0	\$25	104	
IX Influent				
Chromium	EPA 200.7	\$25	12	
Molybdenum		\$8	12	
Selenium		\$8	12	
Vanadium		\$8	12	
Uranium	EPA 200.8	\$8	12	
Total Phosphorus as P	EPA 365.3	\$22	12	
Bicarbonate as HCO3	SM 2320	\$11	12	
Carbonate as CO3				
Total Alkalinity as CaCO3				
Total Dissolved Solids	SM 2540C	\$10	4	
IX Resin				
Disinfection By-Products	EPA 300.1	\$17	1	
Perchlorate	EPA 314.0	\$35	1	
Arsenic	EPA 6010R	\$25	1	
Barium		\$8	1	
Cadmium		\$8	1	
Chromium		\$8	1	
Lead		\$8	1	
Selenium		\$8	1	
Silver		\$8	1	
TCLP		EPA 6010R	\$95	1
Mercury		EPA 7471R	\$22	1
TCLP	EPA 7471R	\$62	1	
Volatile Organics	SW 8260R	\$50	1	
TCLP	SW 8260R	\$90	1	
Free Liquid	SW 9095	\$18	1	
Ignitability Solids	SW 7.1.2	\$23	1	
FBR Solids & Iron Oxide Bin 235				
Arsenic	EPA 6010R	\$25	2	
Barium		\$8	2	
Cadmium		\$8	2	
Chromium		\$8	2	
Lead		\$8	2	

TABLE G-8: OFF-SITE LABORATORY ANALYSES, JULY 2019 - JUNE 2020

Nevada Environmental Response Trust Site

Henderson, Nevada

Analyte	Method	Estimated Analytical Unit Price	Number of Analyses
Selenium	EPA 6010R	\$8	2
Silver		\$8	2
TCLP		\$95	2
Mercury	EPA 7471R	\$22	2
TCLP	EPA 7471R	\$62	2
Volatile Organics	SW 8260R	\$50	2
TCLP	SW 8260R	\$90	2
Free Liquid	SW 9095	\$18	2
Outfall 001 Effluent - Quarterly			
Antimony	EPA 200.7	\$100	4
Arsenic			
Beryllium			
Boron			
Cadmium			
Chromium			
Copper			
Lead			
Nickel			
Selenium			
Silver			
Thallium			
Zinc			
Mercury	EPA 245.1	\$22	4
Chloride	EPA 300_ORGFM_28D	\$8	4
Asbestos	EPA 600/R-94-134	\$306	4
Pesticides & PCBs	EPA 608	\$120	4
Volatile Organics	EPA 624	\$45	8
Base Neutral Acid Extractables	EPA 625	\$125	4
2,3,7,8-Tetrachlorodibenzo-p-dioxin	EPA 1613B	\$325	4
Oil & Grease	EPA 1664	\$35	4
Total Dissolved Solids	SM 2540C	\$10	4
Cyanide, Total	SM 4500-CN-E	\$33	4
Outfall 001 Effluent - Monthly			
Sulfate	EPA 300_ORGFM_28D	\$8	12
Sulfide	SM 4500-S2-D	\$23	12
Outfall 001 Effluent - Weekly			
Chromium	EPA 200.7	\$25	52
Iron	EPA 200.7	\$8	52
Manganese	EPA 200.7	\$8	52
Chromium, Hexavalent Dissolved	EPA 218.6	\$50	52

TABLE G-8: OFF-SITE LABORATORY ANALYSES, JULY 2019 - JUNE 2020

Nevada Environmental Response Trust Site

Henderson, Nevada

Analyte	Method	Estimated Analytical Unit Price	Number of Analyses
Nitrate as N	EPA 300_ORGFMS	\$8	52
Nitrite as N		\$8	52
Total Inorganic Nitrogen	NTOTAL	\$5	52
Perchlorate	EPA 314.0	\$25	52
Ammonia as N	EPA 350.1	\$20	52
Total Phosphorus as P	EPA 365.3	\$22	52
Apparent Color	SM 2120	\$10	52
pH		\$8	52
Total Suspended Solids	SM 2540D	\$10	52
Dissolved Oxygen	SM 4500 OG	\$10	52
pH	SM 4500H+	\$8	52
pH (Field)	FIELD SAMPLING (SM 4500H+)	\$0	52
Carbonaceous Biochemical Oxygen Demand	SM 5210B	\$30	52
Las Vegas Wash 5.5			
Iron	EPA 200.7	\$25	4
Manganese		\$8	4
Total Dissolved Solids	SM 2540C	\$10	4
GW-11 Composite			
Arsenic	EPA 200.7	\$25	4
Boron		\$8	4
Chromium		\$8	4
Manganese		\$8	4
Selenium		\$8	4
Nitrate as N	EPA 300_ORGFMS	\$8	4
Nitrite as N		\$8	4
Total Inorganic Nitrogen	NTOTAL	\$5	4
Perchlorate	EPA 314.0	\$25	4
Ammonia as N	EPA 350.1	\$20	4
Total Phosphorus as P	EPA 365.3	\$22	4
Total Dissolved Solids	SM 2540C	\$10	4
FBR Bio-Solids (Solid)			
Arsenic	EPA 6010	\$25	1
Cadmium		\$8	1
Chromium		\$8	1
Copper		\$8	1
Lead		\$8	1
Molybdenum		\$8	1
Nickel		\$8	1
Selenium		\$8	1
Zinc		\$8	1

TABLE G-8: OFF-SITE LABORATORY ANALYSES, JULY 2019 - JUNE 2020
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Method	Estimated Analytical Unit Price	Number of Analyses
Mercury	EPA 7471	\$22	1
Percent Moisture	--	\$0	1
Estimated Total Cost of GWETS Analyses		\$56,664	
Remedial Performance Monitoring (RPM) Analyses			
Performance Monitoring Program Wells			
Chromium	EPA 200.7	\$25	1274
Chromium, Hexavalent	EPA 218.6	\$50	816
Nitrate as N	EPA 300_ORGFMS	\$8	1198
Chlorate	EPA 300.1	\$12	1321
Perchlorate	EPA 314.0	\$25	1353
Total Dissolved Solids	SM 2540C	\$10	1274
pH (Field)	FIELD SAMPLING (SM 4500H+)	\$0	768
Volatile Organic Compounds (VOCs)	SW 8260B	\$45	342
Volatile Organic Compounds (VOCs)	SW 8260B SIM	\$80	342
NPDES Requirements for Performance Monitoring Well M-10			
Arsenic	EPA 200.7	\$8	4
Boron		\$8	4
Iron		\$8	4
Manganese		\$8	4
Selenium		\$8	4
Chloride	EPA 300_ORGFM_28D	\$8	4
Nitrite as N	EPA 300_ORGFMS	\$8	4
Ammonia as N	EPA 350.1	\$20	4
Total Inorganic Nitrogen	NTOTAL	\$5	4
RCRA Requirements for Performance Monitoring Wells H-28A, M-5A, M-6A, and M-7B			
Boron	EPA 200.7	\$8	8
Iron		\$8	8
Manganese		\$8	8
Sodium		\$8	8
Chloride	EPA 300_ORGFM_28D	\$8	8
Sulfate		\$8	8
Phenols	EPA 420	\$35	8
Specific Conductance	SM 2510	\$10	8
Total Organic Carbon	SM 5310C	\$30	8
Total Organic Halides	SW 9020B	\$75	8
Performance Monitoring Program Surface Water Sampling			
Chlorate	EPA 300.1	\$12	444
Perchlorate	EPA 314.0	\$25	444
Total Dissolved Solids	SM 2540C	\$10	444

TABLE G-8: OFF-SITE LABORATORY ANALYSES, JULY 2019 - JUNE 2020
Nevada Environmental Response Trust Site
Henderson, Nevada

Analyte	Method	Estimated Analytical Unit Price	Number of Analyses
Performance Monitoring Program Northshore Road (LVW 0.55)			
Perchlorate	EPA 314.0	\$25	24
Estimated Total Cost of RPM Analyses		\$210,777	

Notes

A) Analytical costs were estimated based on TestAmerica Laboratories Inc. 2017 Unit Price List for NERT Projects included in the Master Project Subcontract Agreement between Ramboll and TestAmerica and correspondence with TestAmerica. Laboratory method names, matrix designations, and total number of analyses conducted were compiled from laboratory EDDs maintained in the NERT project database.

Annual Groundwater Monitoring and
GWETS Performance Report
Nevada Environmental Response Trust Site
Henderson, Nevada

ATTACHMENTS

Annual Groundwater Monitoring and
GWETS Performance Report
Nevada Environmental Response Trust Site
Henderson, Nevada

ATTACHMENT A
2020 MASS ESTIMATE FOR REMEDIAL INVESTIGATION STUDY AREA

Prepared for
Nevada Environmental Response Trust
Henderson, Nevada

Prepared by
Ramboll US Consulting, Inc.
Emeryville, California

Project Number
1690016062

Date
February 26, 2021

2020 MASS ESTIMATE FOR THE REMEDIAL INVESTIGATION STUDY AREA NEVADA ENVIRONMENTAL RESPONSE TRUST HENDERSON, NEVADA

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ACRONYMS AND ABBREVIATIONS

1D	one-dimensional
2D	two-dimensional
3D	three-dimensional
AMPAC/Endeavour	American Pacific Corporation/Endeavour LLC
AOC3	Settlement Agreement and Administrative Order on Consent, BMI Common Areas, Phase 3 (NDEP 2006)
AWF	Athens Road Well Field
bgs	below ground surface
BMI	Black Mountain Industrial
BRC	Basic Remediation Company LLC
CEM	Certified Environmental Manager
cg	coarse-grained facies
COPC	chemical of potential concern
Cr(III)	Trivalent chromium
Cr(VI)	Hexavalent chromium
ENSR	ENSR Corporation
fg	fine-grained facies
FS	Feasibility Study
ft/ft	feet per foot
GWETS	groundwater extraction and treatment system
GWMO	Groundwater Monitoring Optimization Plan
ITRC	Interstate Technology and Regulatory Council
IWF	Interceptor Well Field
KMCC	Kerr-McGee Chemical Corporation
NDEP	Nevada Division of Environmental Protection
NERT	Nevada Environmental Response Trust
NMR	nuclear magnetic resonance
OSSM	Olin/Stauffer/Syngenta/Montrose
OU	Operable Unit
Qal	Quaternary alluvium
Ramboll	Ramboll US Corporation
Ramboll Environ	Ramboll Environ US Corporation

RAO	remedial action objective
RI/FS	Remedial Investigation and Feasibility Study
Site	Nevada Environmental Response Trust Site
SWF	Seep Well Field
Tetra Tech	Tetra Tech, Inc.
TIMET	Titanium Metals Corporation
Tronox	Tronox LLC
Trust	Nevada Environmental Response Trust
UMCf	Upper Muddy Creek Formation
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey

1. INTRODUCTION

This attachment, prepared by Ramboll US Consulting, Inc. (Ramboll) on behalf of the Nevada Environmental Response Trust (the Trust or NERT), presents updated mass estimates for perchlorate and chromium remaining in the subsurface within the NERT Remedial Investigation (RI) Study Area. The mass estimates were developed using the approach described in the 2017 RI Study Area Mass Estimate and Expanded Performance Metrics Technical Approach Technical Memorandum (the Tech Memo), prepared by Ramboll Environ (2017) and approved by the Nevada Division of Environmental Protection (NDEP) on October 29, 2017. The RI Study Area includes the 346-acre NERT Site Study Area, located within the Black Mountain Industrial (BMI) Complex, and an additional approximately 5,500 acres within unincorporated Clark County and the City of Henderson, Nevada (see Figure 1).

Mass estimates performed for the RI Study Area using the approach described in the Tech Memo were presented as attachments to the 2018 and 2019 Annual Remedial Performance Reports (Ramboll 2018, 2019). The 2018 and 2019 Mass Estimate Attachments describe the methodologies applied to estimate perchlorate and chromium mass in the NERT RI Study Area, and provide detailed descriptions of the regional and local site geology and hydrogeology, geospatial analysis methods applied to interpolate sample data and estimate mass over regular grids, and assumptions made regarding partitioning of chemicals across the sorbed and mobile phases that have been integrated into the calculations. The 2019 Mass Estimate Attachment also includes a comprehensive compilation of soil physical property datasets, including results from nuclear magnetic resonance (NMR) logging completed for the RI and various pilot/treatability studies.

The contaminant mass in the subsurface is presented as total tons of each chemical summed over three Operable Units (OUs) and three vertical intervals. The vertical intervals are derived from the site lithology and water table and include the Vadose Zone, saturated Quaternary alluvial deposits (Qal), and saturated Upper Muddy Creek Formation (UMCf).¹

The OUs include:

- OU-1: NERT Site Study Area, extended to include adjacent areas where perchlorate and chromium originating from the NERT Site may have migrated (Mass Estimate Extension Area).
- OU-2: NERT Off-Site Study Area south of Galleria Drive and the Eastside Sub-Area (within the Eastside Study Area)
- OU-3: NERT Off-Site Study Area north of Galleria Drive, the Downgradient Study Area, and the Northeast Sub-Area (within the Eastside Study Area)

¹ Detailed descriptions of the Qal and UMCf deposits are provided in the 2018 and 2019 Mass Estimate Attachments.

The boundaries of the mass estimates are shown within the NERT RI Study Area boundaries in Figure 1 and with the OU boundaries in Figure 2. The mass estimate boundary for perchlorate includes the entire NERT RI Study Area (including the Mass Estimate Extension Area), whereas the mass estimate boundary for chromium is limited to OU-1, the Mass Estimate Extension Area, and the NERT Off-Site Area, since the potential presence of hexavalent chromium and chromium in groundwater within and migrating from the Eastside Sub-Area will be investigated and remediated by Basic Remediation Company LLC (BRC), if necessary, pursuant to the terms of the Settlement Agreement and Administrative Order on Consent, BMI Common Areas, Phase 3, with NDEP ("AOC3"; NDEP 2006). Perchlorate mass present within some areas near the western boundaries of OU-2 and OU-3 has been excluded from the mass estimate, because contaminant mass in these areas is associated with the perchlorate plume from the AMPAC/Endeavour site.

The 2020 mass estimate presented in this attachment incorporates new groundwater monitoring data collected since June 2019, plus additional vadose zone soil sample data collected in OU-3 as part of ongoing Phase 3 RI field work, and as part of the Las Vegas Wash Bioremediation Pilot Study (Tetra Tech 2019a).

Additional soil sample data was not available for the saturated UMCf and vadose zone in OU-1 to supplement the data presented in the 2019 mass estimates. Instead, a mass balance approach was used for each unit and OU to update the mass estimate presented in the 2019 Mass Estimate Attachment for the current conditions.

RI data to be collected after the summer of 2020 will be incorporated and presented in the next mass estimate update anticipated to be presented as an attachment to the 2021 Annual Remedial Performance Report. Since future mass estimates will incorporate new data as they become available, the mass estimates may change either up or down as contaminant mass is removed from the environment through ongoing removal actions and as areas of the RI Study Area are better characterized leading to more accurate mass estimates.

2. MASS ESTIMATE METHODOLOGY

Detailed descriptions of the methodologies applied to estimate contaminant mass in the NERT RI Study Area were provided in the 2018 and 2019 Mass Estimate Attachments. This 2020 mass estimate continues to apply these methods, which generally involve the following components:

Concentration Grid: For each lithology interval, standard geospatial interpolation methods such as kriging are applied to estimate the spatial distribution of chemical concentrations over a uniform grid.

Thickness Grid: The elevations of the ground surface, water table, and Qal/UMCf contact are used to generate a grid of values representing the vertical extent of impact for each lithology interval.

Mass Grid: The concentration grid and thickness grid are applied to generate a grid of chemical mass per grid cell, taking into account the physical properties of the soil media and partitioning between phases.

All of these grids use a standard cell size of 50 ft X 50 ft. The cells of the mass grid are summed over the relevant boundaries to produce total mass estimates in tons.

Chemical and Physical Property Data

The groundwater data used for the mass estimate have been updated to use data collected through June 2020, including data collected as part of the 2020 annual monitoring event, data from new wells installed as part of the Phase 3 RI, data collected for the Seep Well Field Area Bioremediation Treatability Study (Tetra Tech 2019b), and recent groundwater data provided by other facilities in the BMI complex. The perchlorate mass estimate for the vadose zone uses soil data incorporated in prior mass estimates supplemented with soil sampling data collected in OU-3 as part of the Baseline Ecological Risk Assessment, the Downgradient Study Area Investigation, and the Las Vegas Wash Bioremediation Pilot Study (Tetra Tech 2019a).

Analytical results below the sample quantitation limit are included in the mass estimates by using a surrogate value of one-half the quantitation limit.

For certain components of the mass estimate, soil data have been integrated with groundwater data by converting groundwater data into equivalent soil concentrations using the following equation:

$$C_s = C_w \left(K_d + \frac{\theta_w}{\rho_b} \right)$$

where C_s is the equivalent soil concentration [mg/kg], C_w is the pore water (groundwater) concentration [mg/L], K_d is the distribution coefficient [L/kg], θ_w is the total porosity [-], and ρ_b is the dry soil bulk density [kg/m³].

The 2020 mass estimate incorporates the same soil physical property values (total porosity, bulk density) as the 2019 mass estimate. The derivation of these values is described in the 2019 Mass Estimate Attachment. The 2020

mass estimate continues to assume a K_d value of 0 L/kg for perchlorate (i.e., no sorption) and 2 L/kg for chromium.

Water Table and Lithologic Contact Elevations

The 2019 mass estimate used the water table presented in the 2018 Annual Remedial Performance Report (Ramboll 2018) to estimate the vertical extent of the saturated zone. The potentiometric surface represents a snapshot of the water table at a given time and can rise and fall based on climatic changes and groundwater extraction. A rising water table will influence the mass estimate totals by increasing the volume of the saturated zone and decreasing the volume of the vadose zone. These volume changes will then influence the calculation of total masses, even without a change in measured chemical concentrations. Since movement of the water table is a transient effect that complicates the comparison of year over year trends, the 2020 mass estimate continues to use the 2018 water table.

The alluvium/UMCf contact and ground surface elevation dataset have not been updated from the 2019 mass estimate. Thus, the 2020 mass estimate uses the same thickness grids as the 2019 mass estimate.

3. PERCHLORATE MASS ESTIMATE

The perchlorate mass estimate includes the entire NERT RI Study Area and the Mass Estimate Extension Area (Figure 1). This section describes the datasets used to estimate perchlorate mass in each OU and subsurface zone. Although the methods used to estimate perchlorate mass are briefly described herein, more detailed descriptions of these methods are included in the 2018 and 2019 Mass Estimate Attachments.

A summary of the estimated perchlorate mass for each OU and vertical interval plus a comparison of the 2020 mass estimate results with those from 2019 are provided at the end of this section.

3.1 Vadose Zone

The vadose zone mass estimate for perchlorate applies two different methods to account for variations in sample density and perchlorate transport mechanisms across the NERT RI Study Area. One method is applied to OU-1 and the eastern side of OU-2, and the other is applied to the western side of OU-2 and all of OU-3.

OU-1 and eastern OU-2 are locations of historical perchlorate manufacturing and/or disposal that have been densely sampled in the vadose zone as part of prior site investigation activities. Since new vadose zone sample data is not available for these areas, the mass estimates for OU-1 and eastern OU-2 were not updated in 2020. These values remain 890 tons for OU-1 and 120 tons for eastern OU-2.

A second method of mass estimation is utilized for OU-3 and the western side of OU-2. These areas are not known to have been used as manufacturing or disposal areas and have relatively low sample densities. To estimate mass in these regions, they are first vertically divided into the upper and lower vadose zones. In the lower vadose zone (the bottom 10 feet of the vadose zone), soil is presumed to be impacted by perchlorate as a result of a historically higher water table, and contaminant mass is interpolated using soil samples from the lower vadose zone (expressed as equivalent pore water concentrations using the sample moisture content) and the most recent shallow groundwater potentiometric surface contours presented in the Annual Report. The resulting concentration grid is then used to derive a mass grid using the average site-wide bulk density of alluvium, average moisture content of lower vadose soil samples, and the lower vadose zone thickness grid.

The lower vadose zone mass estimate for western OU-2 and all of OU-3 has been updated to use the perchlorate shallow groundwater contours presented in Plate 6 of the 2020 Annual Remedial Performance Report, and the most recent set of lower vadose soil samples. The updated mass distribution is shown in the upper left panel of Figure 3. The total mass of perchlorate in the lower vadose zone is now estimated as 161 tons in western OU-2 and 14 tons in OU-3.²

² The 2020 lower vadose mass estimate uses the average bulk density for the alluvium (1,500 kg/m³) and average lower vadose sample moisture content (10.8%) consistent with the 2019 mass estimate.

Since there are a limited number of soil samples collected in the upper vadose zone, spatial interpolation between samples is infeasible, and sample concentrations are instead averaged over four sub-regions referred to as Upper Vadose Parcels (see top right panel of Figure 3). Assuming the average site-wide bulk density of alluvium ($1,500 \text{ kg/m}^3$), and the average upper vadose thickness within each sub-region, the resulting mass of perchlorate in the upper vadose zone is estimated as 71 tons in western OU-2 and 50 tons in OU-3.³

The lower panel of Figure 3 shows the sum of upper and lower vadose zone perchlorate mass grids for western OU-2 and OU-3, plus the 2019 mass grids for OU-1 and the eastern side of OU-2. Incorporating the 2019 vadose zone mass estimates for OU-1 and eastern OU-2, the total perchlorate vadose zone mass (rounded) is estimated as 890 tons for OU-1, 350 tons for OU-2, and 64 tons for OU-3.

3.2 Saturated Alluvium

The mass of perchlorate in the saturated alluvium was calculated using the same method applied to the 2018 and 2019 mass estimates. The 2020 mass estimate incorporates the alluvium saturated thickness dataset and soil porosity value (0.43) from the 2019 mass estimate.

Consistent with prior mass estimates, a perchlorate concentration grid for the saturated alluvium was generated from the 2020 interpreted shallow perchlorate plume contour lines (Plate 6 of 2020 Annual Remedial Performance Report) and measured concentrations of perchlorate at wells screened at or near the water table. The mass grid was derived by multiplying the concentration grid, thickness grid, and porosity in each cell. Figure 4 presents the estimated mass grid for perchlorate in the saturated alluvium.

The total mass of perchlorate in the saturated alluvium was calculated for each OU by summing the cell masses. The resulting saturated alluvium perchlorate mass is currently estimated to be 34 tons in OU-1, 350 tons in OU-2, and 54 tons in OU-3. Although perchlorate concentrations are relatively high in both OU-1 and OU-2 downgradient of the historical manufacturing areas within OU-1, the mass in OU-2 exceeds that in OU-1 due to the higher volume of groundwater in the alluvium.

3.3 Saturated UMCf

Additional soil sample data were not available for the saturated UMCf and vadose zone in OU-1 to supplement the data presented in the 2019 mass estimate. The limited number of new soil sample data in OU-2 and OU-3 from the ongoing treatability studies did not significantly change the concentrations from those used in the 2019 mass estimate. Therefore, a mass balance approach was adopted to update the 2019 mass estimate within the saturated UMCf. The mass balance approach assumes continuity of mass in each lithologic unit and OU and utilizes simulated mass fluxes across the OU boundaries estimated using the Phase 6 groundwater model in conjunction with

³ Since the upper vadose zone mass estimates are based on simple regional averages of sparse and non-randomly distributed sample data, these results are considered less reliable than estimates from more heavily sampled regions of the site.

measured mass removals in extraction system and measured mass loading into the Las Vegas Wash. Horizontal mass flux normal to OU boundaries is shown for perchlorate in Figure 5a.

3.4 Summary of Perchlorate Mass Totals

Table 1 compares the estimates of perchlorate mass within the NERT RI Study Area for 2019 and 2020. Since the soil physical property dataset and unit thicknesses were not updated from 2019, the differences in total perchlorate mass between years shown below originate from the availability of new sample data, changes in measured groundwater perchlorate concentrations, and the interpretation of the shallow plume contours. Estimated mass in saturated UMCf was updated using a mass balance approach, as described in Section 3.3.

Table 1. Summary of Perchlorate Mass Totals (tons)

Unit	OU	2019	2020
Vadose Zone	OU-1	890	890 ^[a]
	OU-2	340	350
	OU-3	99	64
Saturated Alluvium	OU-1	39	34
	OU-2	360	350
	OU-3	53	54
Saturated UMCf	OU-1	1,500	1,388
	OU-2	1,800	1,751
	OU-3	200	174

Note: [a] Value is from the 2019 mass estimate.

Table 2 incorporates error ranges into the estimate perchlorate mass values using the relative uncertainties derived in the 2019 Mass Estimate Attachment and summarizes mass by geologic unit and OU. The intervals represent a margin of one standard error around the estimated total mass value. The overall mass distribution is also presented as a chart in Figure 6.

Table 2. Total Perchlorate Mass by Geologic Unit and OU (tons)

Unit	OU-1	OU-2	OU-3	Total By Unit
Vadose Zone	890±130	350±40	64±10	1,304±180
Saturated Alluvium	34±3	350±60	54±6	438±69
Saturated UMCf	1,390±200	1,758±400	172±30	3,320±630
Total by OU	2,314±333	2,458±500	290±46	5,062±879

The perchlorate mass estimate will continue to be refined as additional data become available. The next version of the mass estimate will be prepared as part of the next Annual Remedial Performance Report in 2021. This update will include the results of additional sampling to be completed for the OU-3 RI and additional results that become available from ongoing monitoring and pilot and treatability studies.

4. CHROMIUM MASS ESTIMATE

The chromium mass estimate method is generally similar to that used for perchlorate, the main differences being that a different boundary is used (Figure 2) and that the method accounts for the speciation of chromium in different media. The methodologies applied to calculate chromium mass described in this section are described in detail in the 2018 and 2019 Mass Estimate Attachments.

As noted in the prior attachments, chromium occurs in both the trivalent [Cr(III)] and hexavalent [Cr(VI)] oxidation states, and measurements of total chromium include both forms. A prior soil background study identified concentrations of background Cr(III) up to 16 mg/kg and did not detect Cr(VI) above 0.25 mg/kg. Thus, total chromium soil measurements in the vadose zone are not useful for distinguishing background chromium from chromium resulting from historical manufacturing operations that occurred on OU-1. Accordingly, the vadose zone mass estimate for chromium is focused on summing the mass of measured Cr(VI).

Measurements of total chromium in groundwater are expected to be primarily hexavalent chromium. Consistent with previous mass estimates, the 2020 mass estimate uses total chromium results measured in groundwater for estimating Cr(VI) mass in the saturated alluvium and UMCf.

Discussions of the datasets used in the 2020 mass estimate and a brief summary of methods applied to estimate chromium mass in each OU and subsurface zone are provided in this section. A comparison of the 2020 mass estimate results with those from 2019 is provided at the end of this section.

4.1 Vadose Zone

As with perchlorate, two different methods for vadose zone chromium mass estimation have been applied to account for variations in sample density and Cr(VI) transport mechanisms across the chromium mass estimate area. OU-1 was used for manufacturing and previously contained unlined ditches and disposal ponds which leached chromium-containing wastewater to groundwater. These areas have been densely sampled in the vadose zone and analyzed for Cr(VI) as part of various site investigation activities, and thus have sufficient data to support interpolation. Since new data was not available to update the total mass of Cr(VI) in OU-1, the 2019 mass estimate (13 tons) was not updated for 2020.

The western portions of OU-2 and OU-3 are not known to have been used as disposal areas and have much lower sample densities. Cr(VI) present in the vadose zone in these areas is believed to result primarily from a historically higher water table (Malmberg 1965; Harill 1976; Plume 1989). Cr(VI) mass in these areas was estimated using a similar method as was applied for perchlorate: Cr(VI) present in the lowest 10 feet of the vadose zone was assumed to result from a historically higher water table and may be correlated with the current chromium distribution in groundwater. Unlike the perchlorate mass estimate for these areas, soil sample data was not integrated into the

concentration grid, chromium mass was estimated for both the pore water and sorbed phases, and the upper vadose zone (where present) was assumed to be unimpacted.

To estimate Cr(VI) concentrations in the lower vadose zone, the concentration grid for Cr(VI) in the saturated alluvium (see Section 4.2) was transformed into an equivalent lower vadose zone soil concentration grid using the average gravimetric moisture content of all lower vadose zone perchlorate soil samples across western OU-2 and OU-3 available in the Site database (10.8%) (Ramboll 2018). A mass grid was then derived using the lower vadose thickness grid and alluvium bulk density of 1,500 kg/m³. This grid, which represents the mass of chromium dissolved in pore water, was summed to estimate chromium mass in the lower vadose zone pore water for each OU.

To account for chromium in the sorbed phase, the quantity of Cr(VI) sorbed to the soil matrix in the impacted portion of the vadose zone was estimated from the aqueous phase masses using the following expression:

$$M_{sorb} = M_{aq} \cdot \frac{K_d}{\theta_g}$$

where θ_g is the gravimetric moisture content (10.8%), and K_d is 2 L/kg.

The distribution of Cr(VI) in the vadose zone is shown in Figure 7. The resulting estimated vadose zone mass of Cr(VI) in each OU is shown in Table 3.

Table 3. Hexavalent Chromium in the Vadose Zone (tons)

	Aqueous	Sorbed	Total
OU-1	-	-	13 [a]
OU-2	0.41	7.6	8.0
OU-3	0.02	0.37	0.39

Note: [a] Value is from the 2019 mass estimate. Since the mass of Cr(VI) in OU-1 was derived directly from soil concentration data, it has not been decomposed into aqueous and sorbed components.

4.2 Saturated Alluvium

The mass of Cr(VI) in the saturated alluvium was estimated using the same method applied in the 2018 and 2019 mass estimates. A hexavalent chromium concentration grid for the saturated alluvium was generated from the 2020 interpreted shallow chromium plume contour lines (Plate 7 of 2020 Annual Report) and measured concentrations of total chromium at wells screened at or near the water table. The resulting mass grid, which represents Cr(VI) in the dissolved phase, was derived by multiplying the concentration grid, thickness grid, and porosity in each cell.

The sorbed mass was estimated using a K_d of 2 L/kg, average alluvium bulk density (1,500 kg/m³), average alluvium total porosity (0.43), and the following expression, derived from the partitioning relationship between soil and groundwater concentrations described in Section 2:

$$M_{sorb} = M_{aq} \cdot \frac{K_d \cdot \rho_B}{\theta_w}$$

The resulting estimates of current Cr(VI) mass (in tons) in the aqueous and sorbed phases for each OU are provided in Table 4. The distribution of total Cr(VI) mass is shown in Figure 8.

Table 4. Hexavalent Chromium in the Saturated Alluvium (tons)

	Aqueous	Sorbed	Total
OU-1	0.40	2.8	3.2
OU-2	0.69	4.9	5.6
OU-3	0.05	0.36	0.41

4.3 Saturated UMCf

A similar mass balance approach to the one described in Section 3.3 for perchlorate was used to update the hexavalent chromium mass estimate in the UMCf. Additional soil sample data were not available for the saturated UMCf and vadose zone in OU-1 to supplement the data presented in the 2019 mass estimate. The limited number of new soil sample data in OU-2 and OU-3 from the ongoing treatability studies did not contribute meaningfully to 2019 mass estimate. Therefore, a mass balance approach was adopted to update the 2019 mass estimate in saturated UMCf. Figure 5b presents horizontal mass fluxes across OU boundaries for chromium.

4.4 Summary of Hexavalent Chromium Mass Totals

Table 5 summarizes the estimates of hexavalent chromium mass within the NERT RI Study Area for 2019 and 2020. The 2020 estimates are similar to those from 2019.

Table 5. Summary of Hexavalent Chromium Mass Totals (tons)

Unit	OU	2019	2020
Vadose Zone	OU-1	13	13 ^[a]
	OU-2	7.6	8.0
	OU-3	0.39	0.39
Saturated Alluvium	OU-1	3.3	3.2
	OU-2	5.5	5.6
	OU-3	0.40	0.41
Saturated UMCf	OU-1	74	73.07
	OU-2	7.5	7.38
	OU-3	0.58	0.56

Note: [a] Value is from the 2019 mass estimate.

Table 6 incorporates confidence intervals into the estimated hexavalent chromium mass values using the relative uncertainties derived in the 2019 Mass Estimate Attachment and summarizes mass by geologic unit and OU. The intervals represent a margin of one standard error around the estimated total mass value. The overall mass distribution is also presented as a chart in Figure 9.

Table 6. Total Hexavalent Chromium Mass by Geologic Unit and OU (tons)

Unit	OU-1	OU-2	OU-3	Total By Unit
Vadose Zone	13±2.0	8.0±2.7	0.4±0.1	21.4±4.8
Saturated Alluvium	3.2±1.4	5.6±2.8	0.4±0.2	9.2±4.4
Saturated UMCf	73±35	7.4±3.6	0.6±0.4	81.0±39.0
Total by OU	89.2±38.4	21.0±9.1	1.4±0.7	111.6±48.2

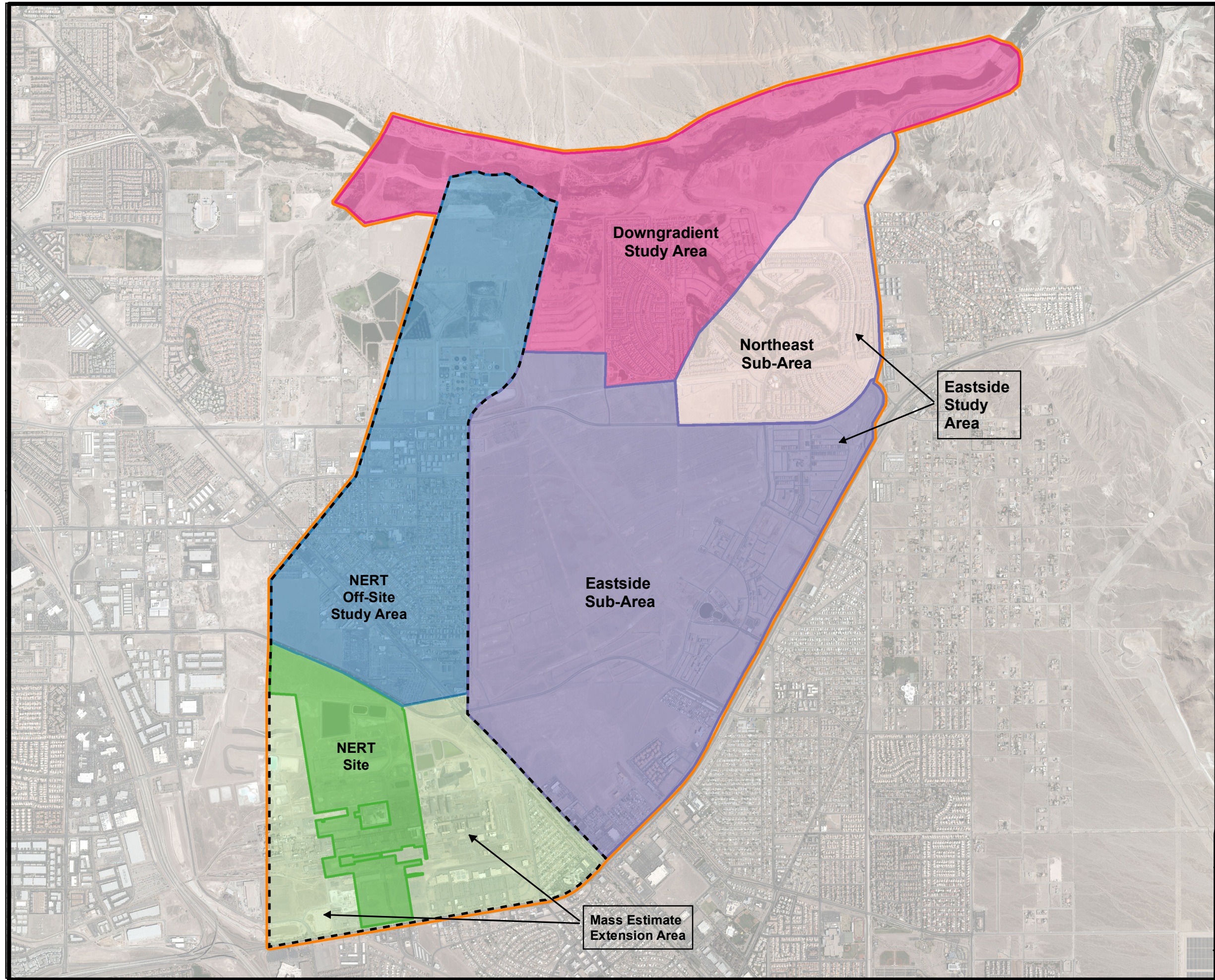
As with perchlorate, the hexavalent chromium mass estimates will continue to be refined as additional data become available. The next version of the mass estimate will be prepared as part of the next Annual Remedial Performance Report in 2021. This update will include the complete results of additional sampling to be completed for the OU-3 RI and additional results that become available from ongoing monitoring and pilot and treatability studies.

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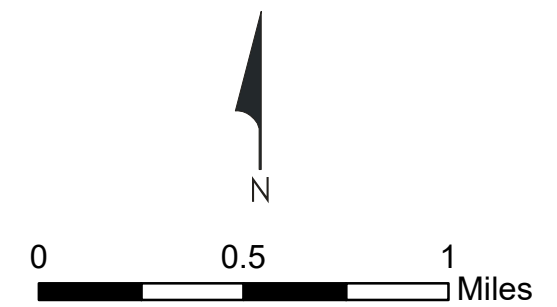
FIGURES

Path: \\ncev\pfs1\ENG\LePetemane\NERT\GWM\Annual Performance Reports\2019 Annual\MassEstimate\MXD\Figure 1 - Investigation Boundaries.mxd



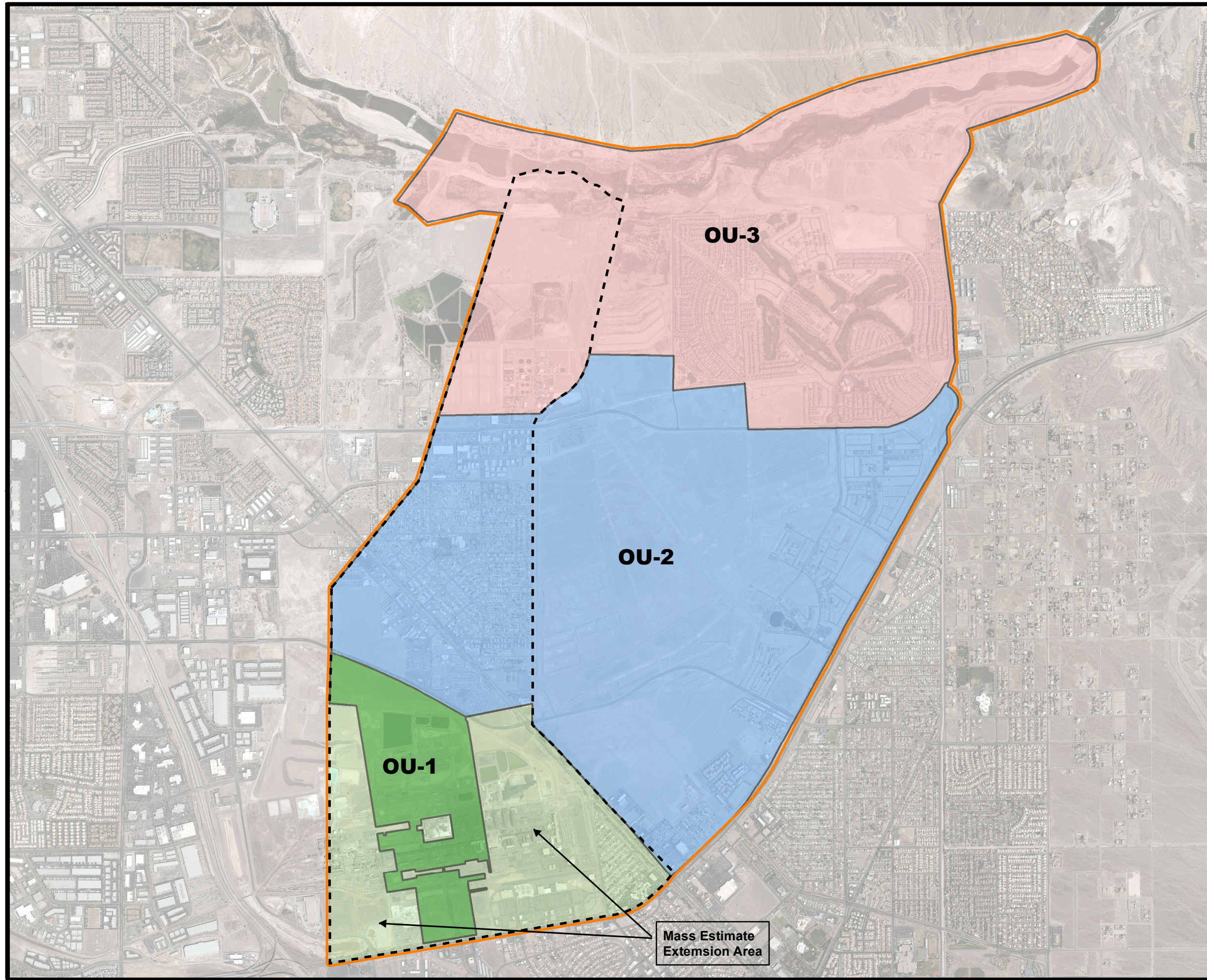
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- Mass Estimate Boundaries**
- Perchlorate Mass Estimate Area
 - Chromium Mass Estimate Area





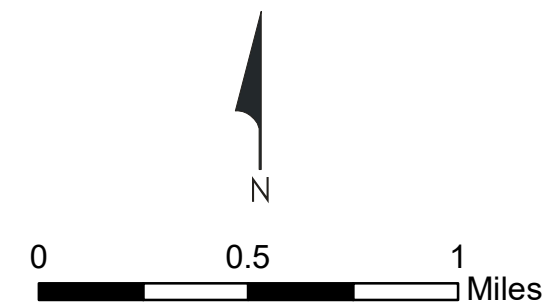
NERT RI Study Area and Mass Estimate Areas
Nevada Environmental Response Trust Site
Henderson, Nevada

Date: 2019-12-19	Contract Number: 21-41400C	Figure 1
Drafter: LAT	Approved:	Revised:



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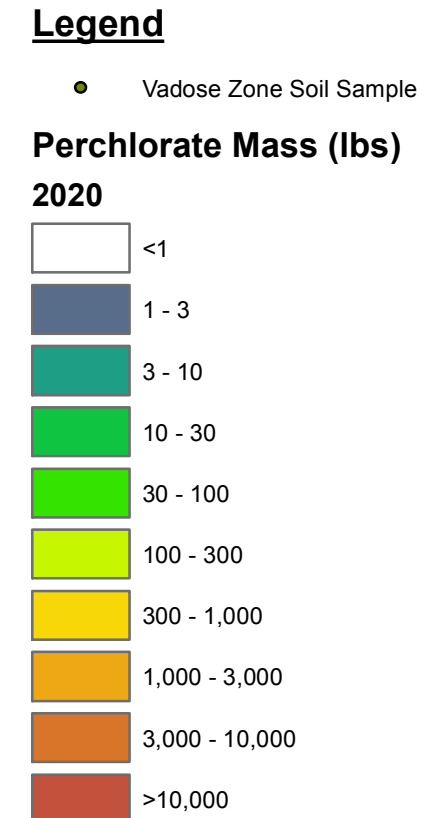
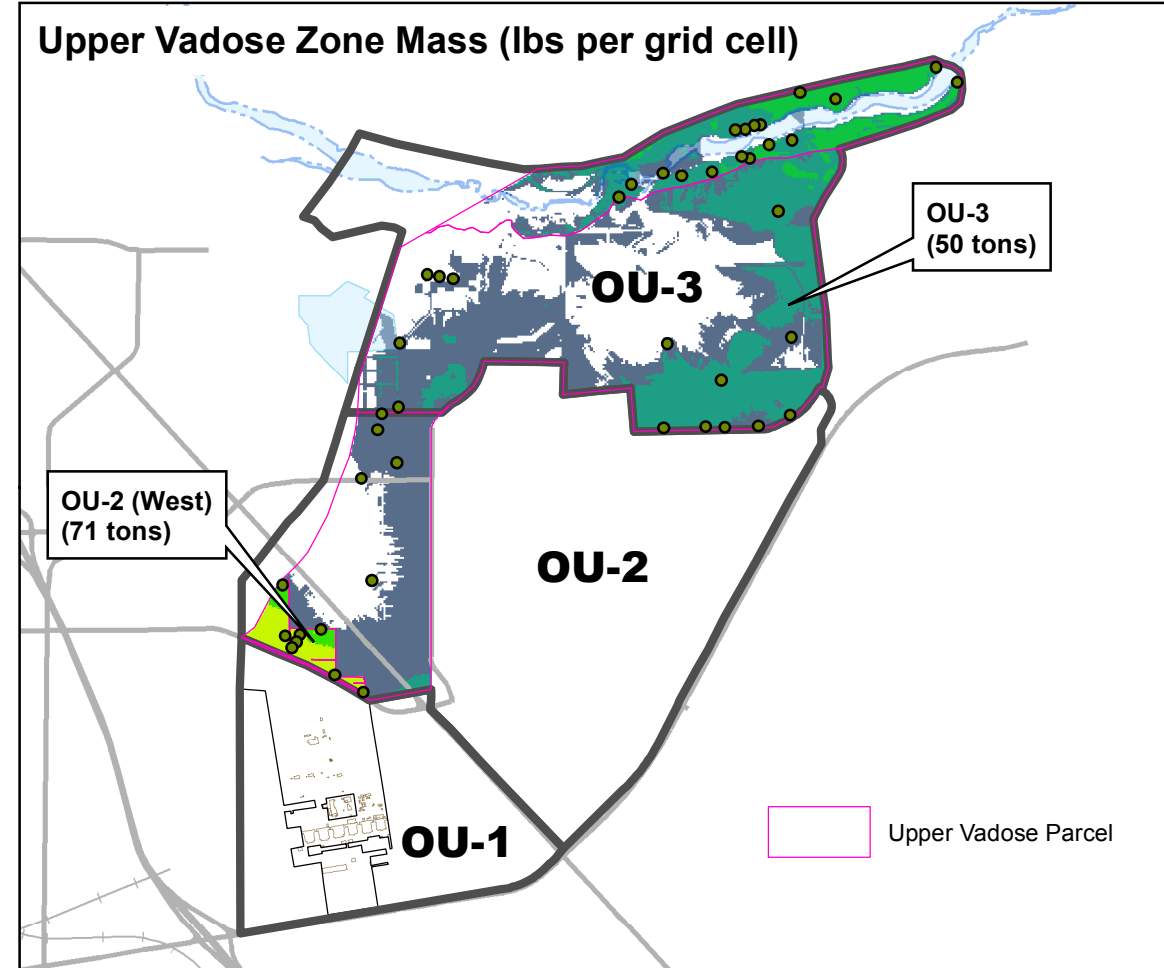
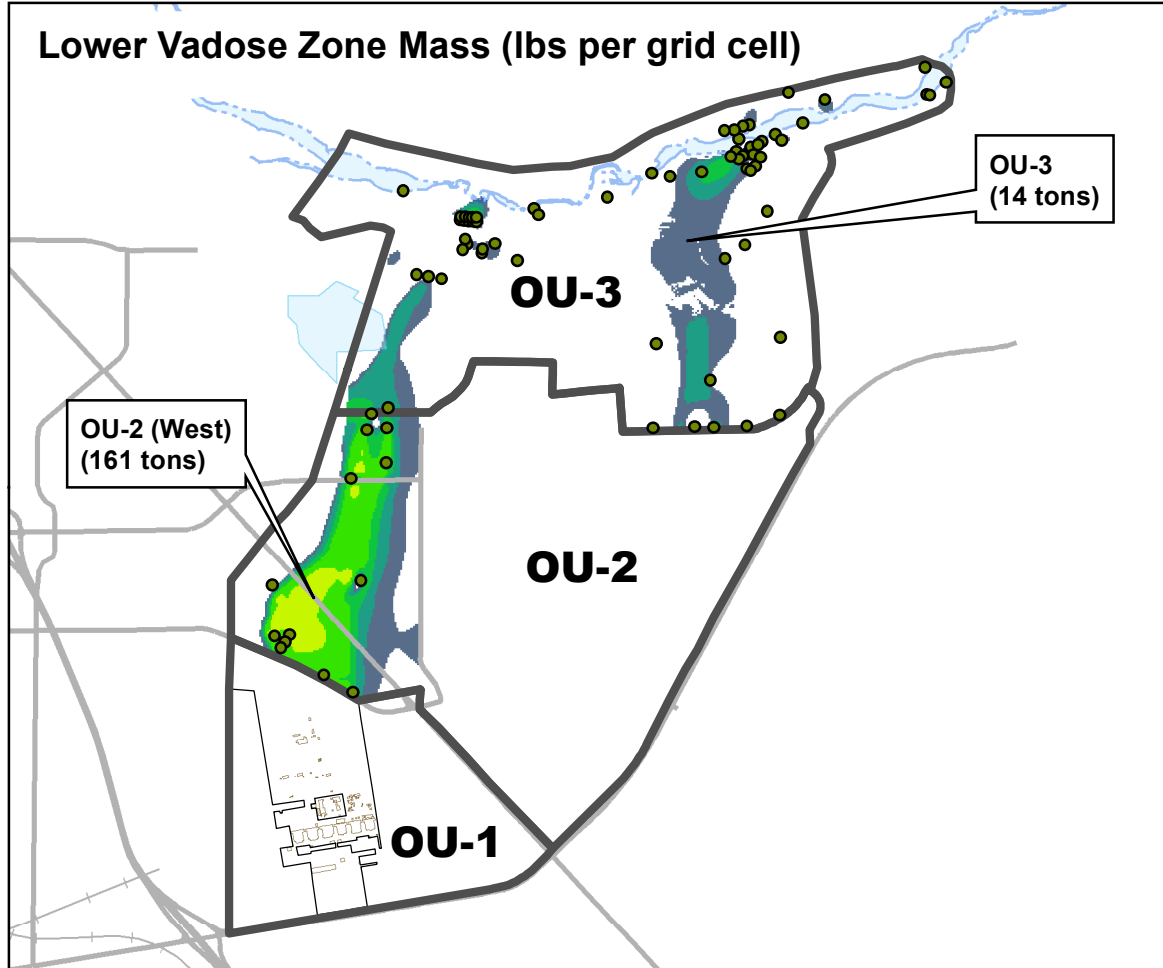
- Mass Estimate Boundaries**
-  Perchlorate Mass Estimate Area
 -  Chromium Mass Estimate Area



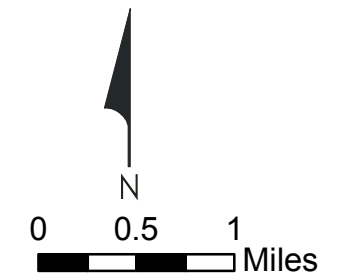
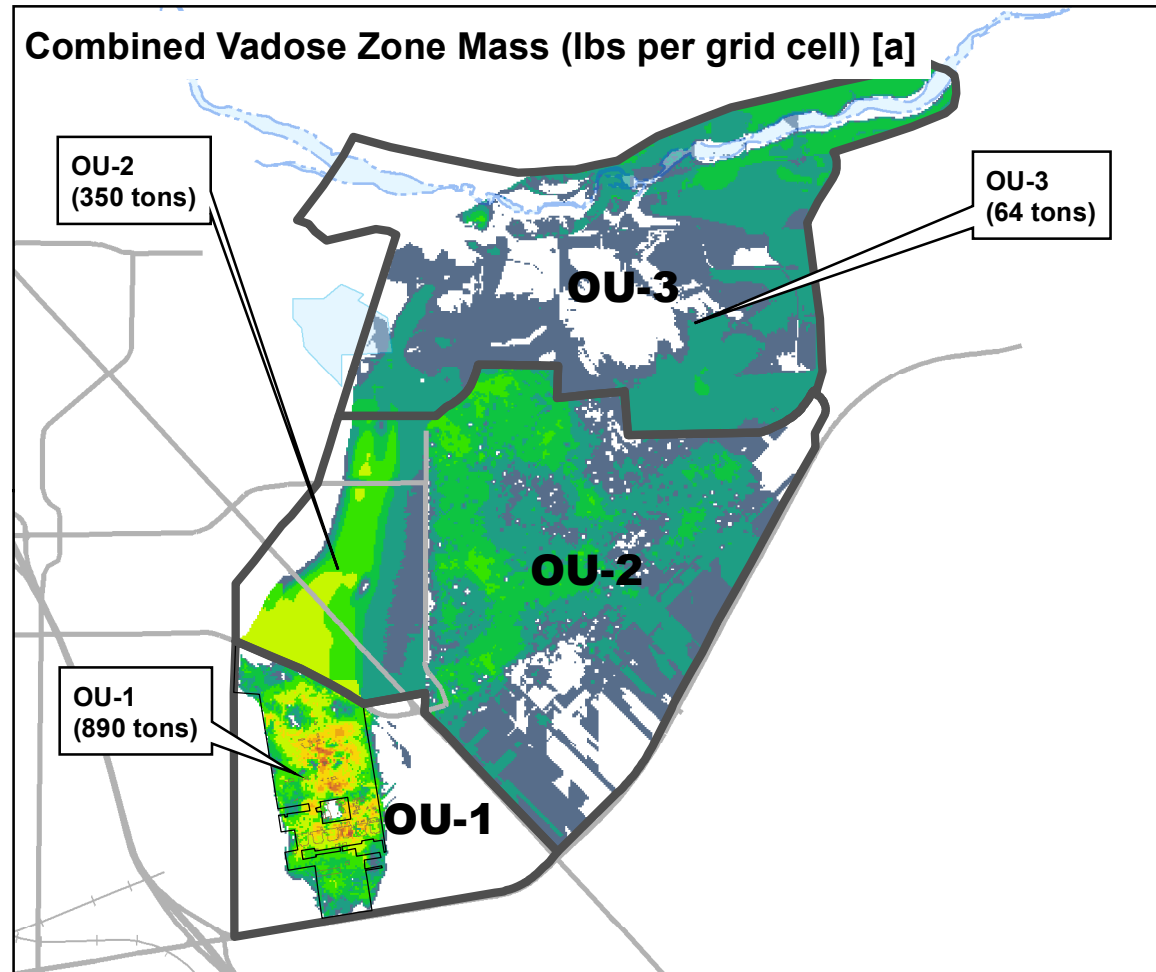
NERT OUs and Mass Estimate Areas
Nevada Environmental Response Trust Site
Henderson, Nevada

Date: 2019-12-19	Contract Number: 21-41400C	Figure 2
Drafter: LAT	Approved:	Revised:

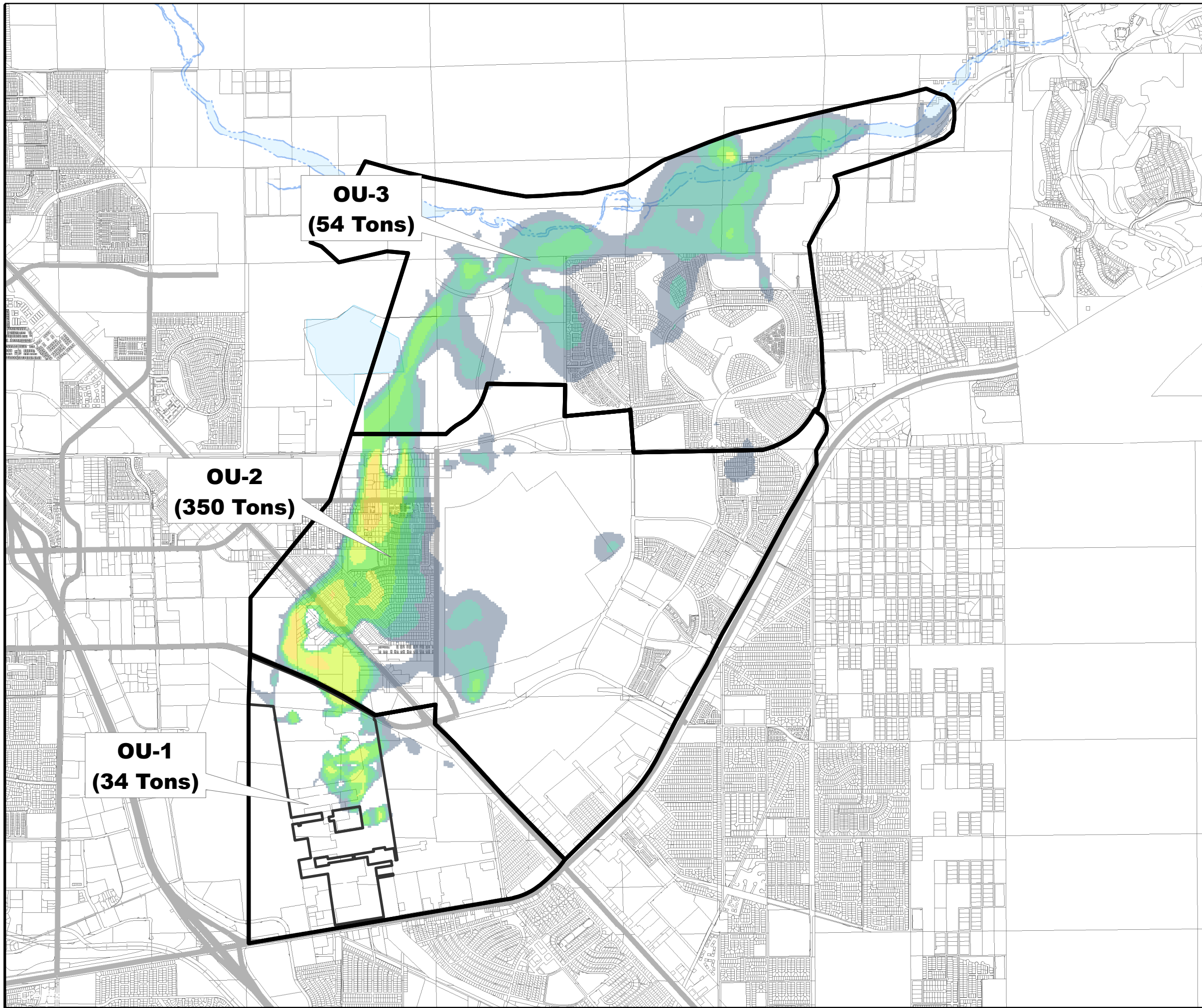
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Note: Masses shown are per 50x50 ft grid cell.
 [a] Data for OU-1 and eastern OU-2 from 2019 Annual Report Mass Estimate. Data for western OU-2 and OU-3 are the sum of the lower and upper vadose zone masses in the top panels.

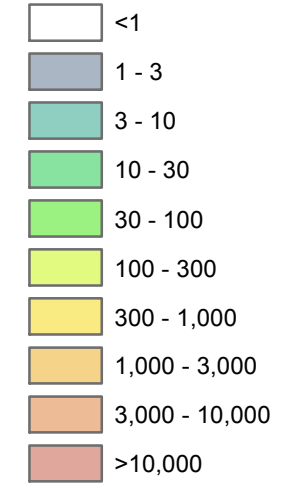


Vadose Zone Perchlorate Mass		
OU-2 (West Side), OU-3		
Nevada Environmental Response Trust Site Henderson, Nevada		
Date: 11/2/2020	Contract Number: 1690006941-021	Figure
Drafter:	Approved:	Revised:
		3



Legend

Perchlorate Mass (lbs)



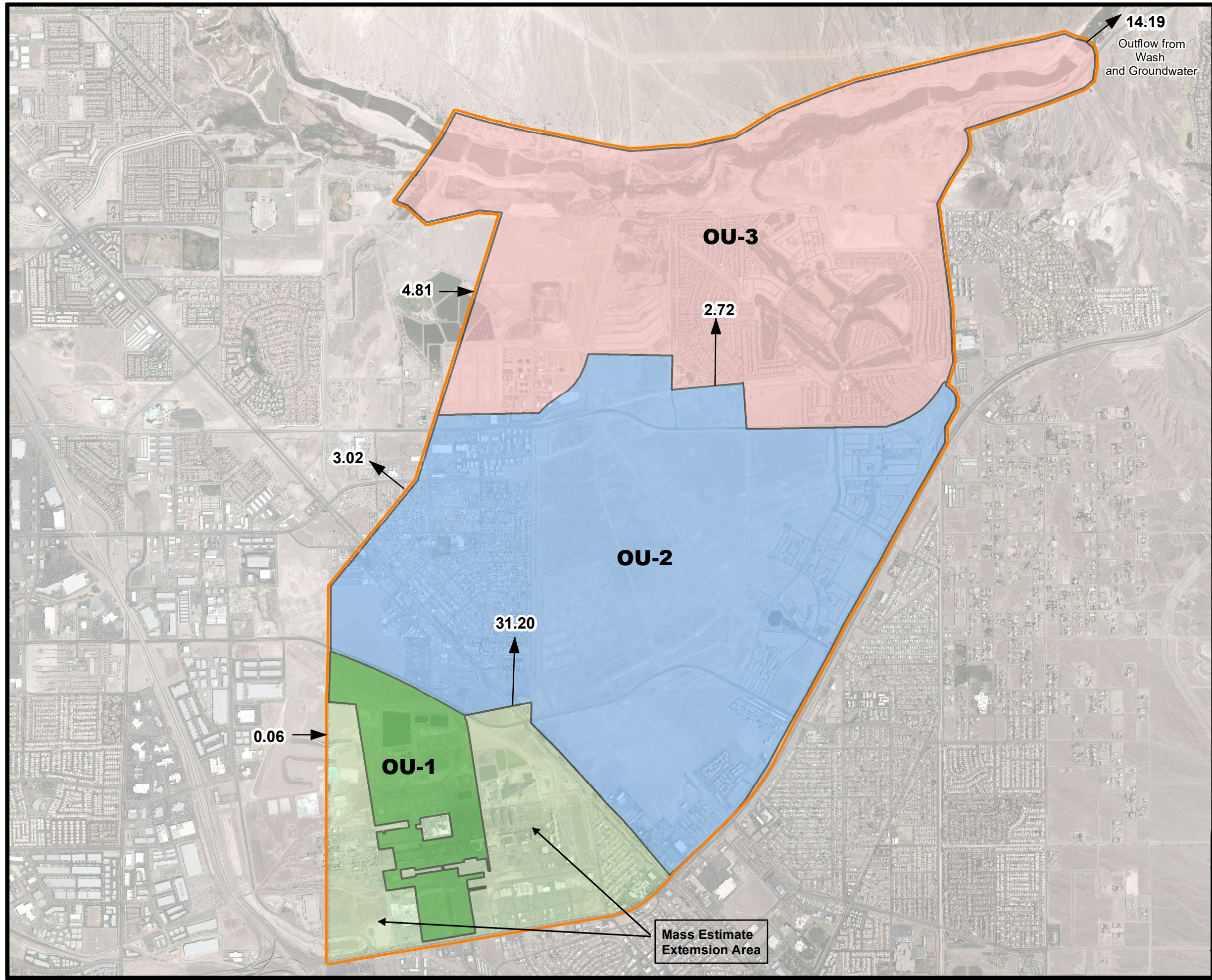
Note: Mass values are pounds per 50 x 50 ft grid cell.



Saturated Alluvium Perchlorate Mass Nevada Environmental Response Trust Site Henderson, Nevada

Date: 02-Nov-20	Contract Number: 1690006941-021	Figure
Drafter:	Approved:	Revised:

Path: H:\LePeromane\NERT\GWM\Annual Performance Reports\2020 Annual Mass Estimate\GIS\Report\Figures\Figure 5a - Horizontal Mass Flux across OUs_Perchlorate.mxd

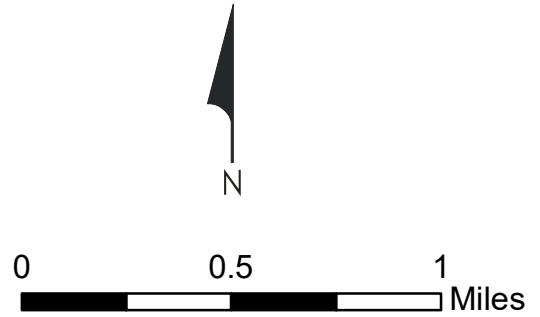


Legend

Mass Estimate Boundaries

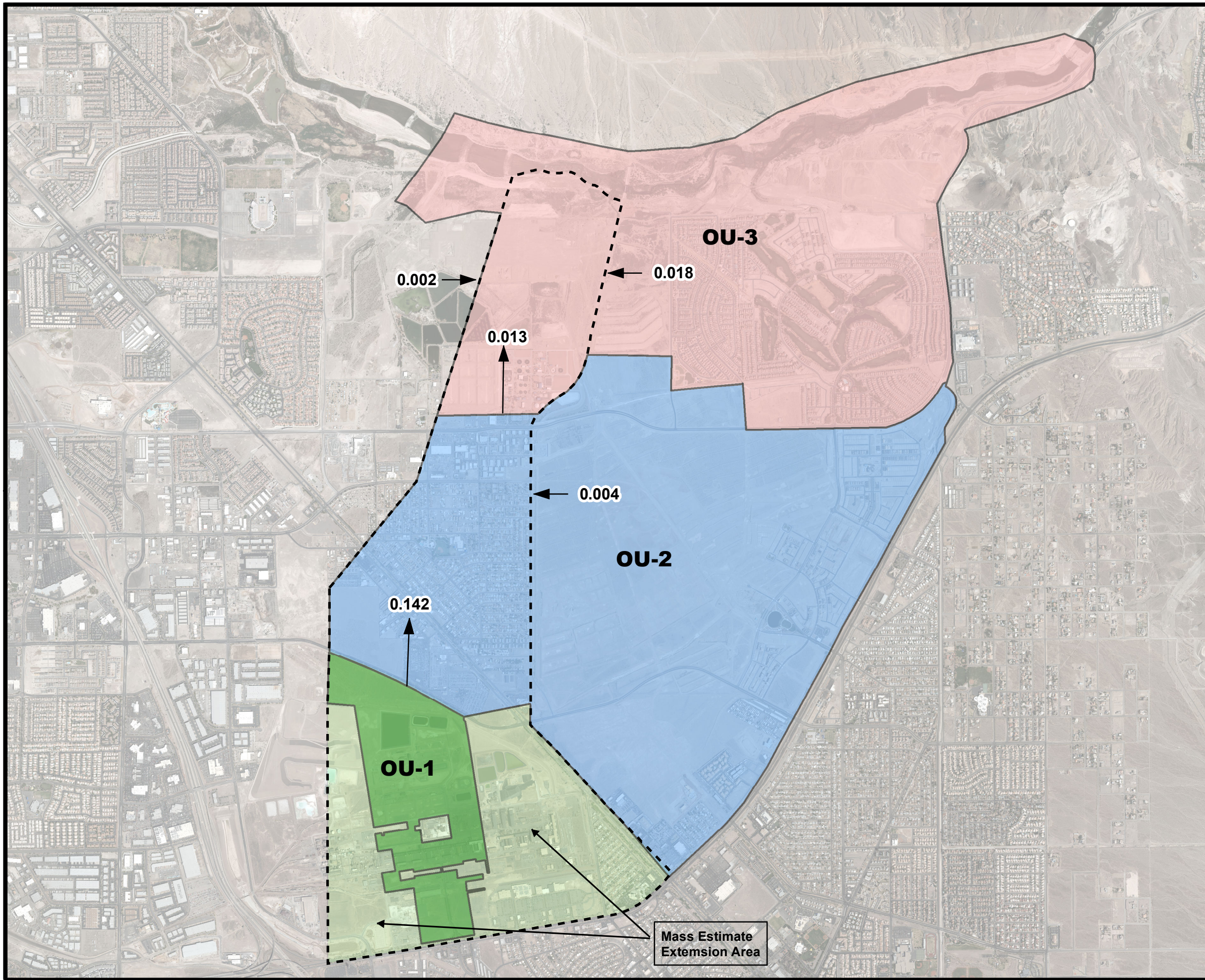
- Perchlorate Mass Estimate Area
- 31.20 Total Perchlorate Mass Flux (ton/y)

ton/y = tons per year



Perchlorate Horizontal Mass Flux
Nevada Environmental Response Trust Site
Henderson, Nevada

Date: 2/23/2021	Contract Number: 1690016062-021	Figure 5a
Drafter: PR	Approved: Revised:	



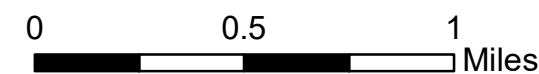
Legend

Mass Estimate Boundaries

Chromium Mass Estimate Area

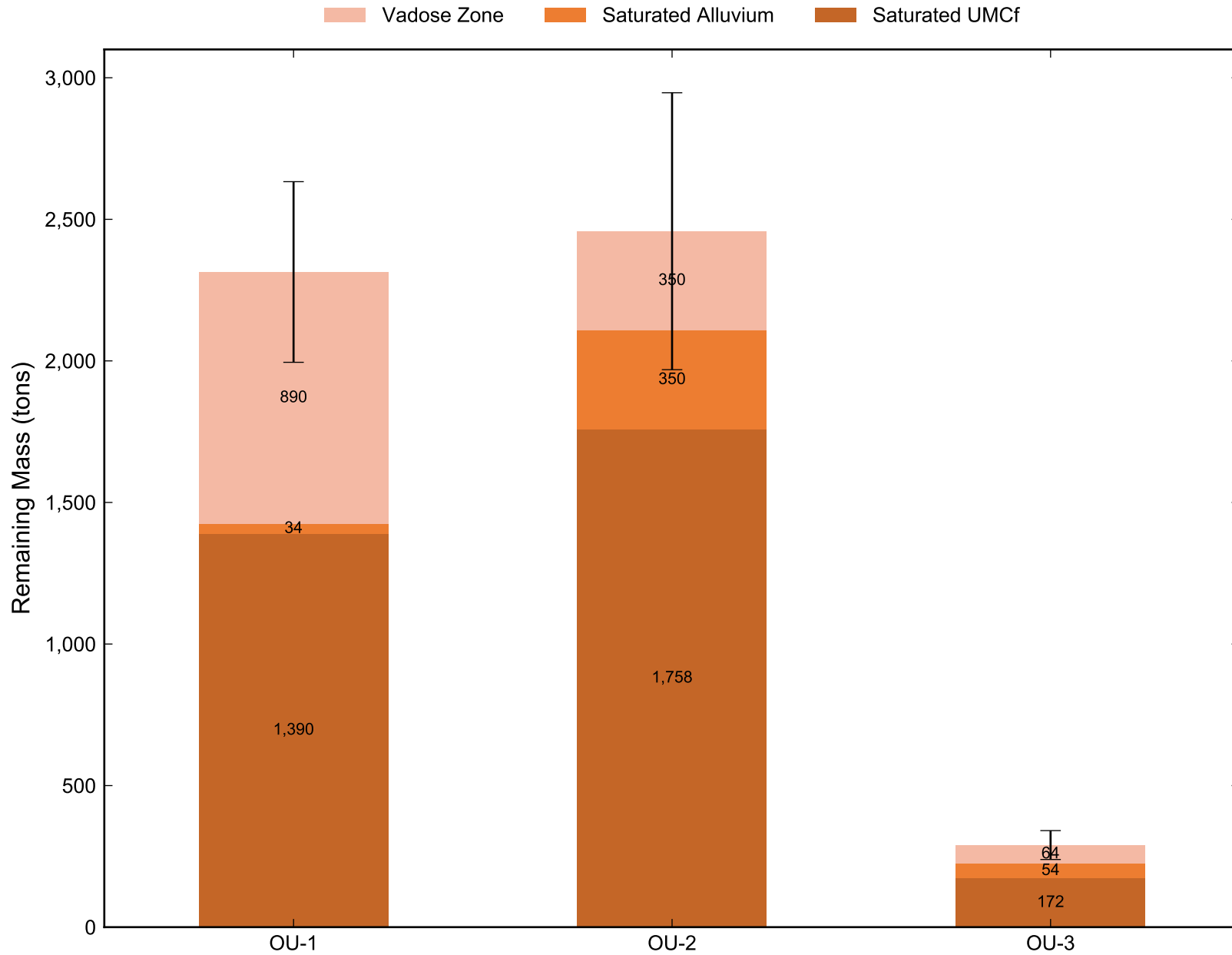
0.142 Total Chromium Mass Flux (ton/y)

ton/y = tons per year



Chromium Horizontal Mass Flux
Nevada Environmental Response Trust Site
Henderson, Nevada

Date: 2/23/2021	Contract Number: 1690016062-021	Figure
Drafter: PR	Approved:	Revised:

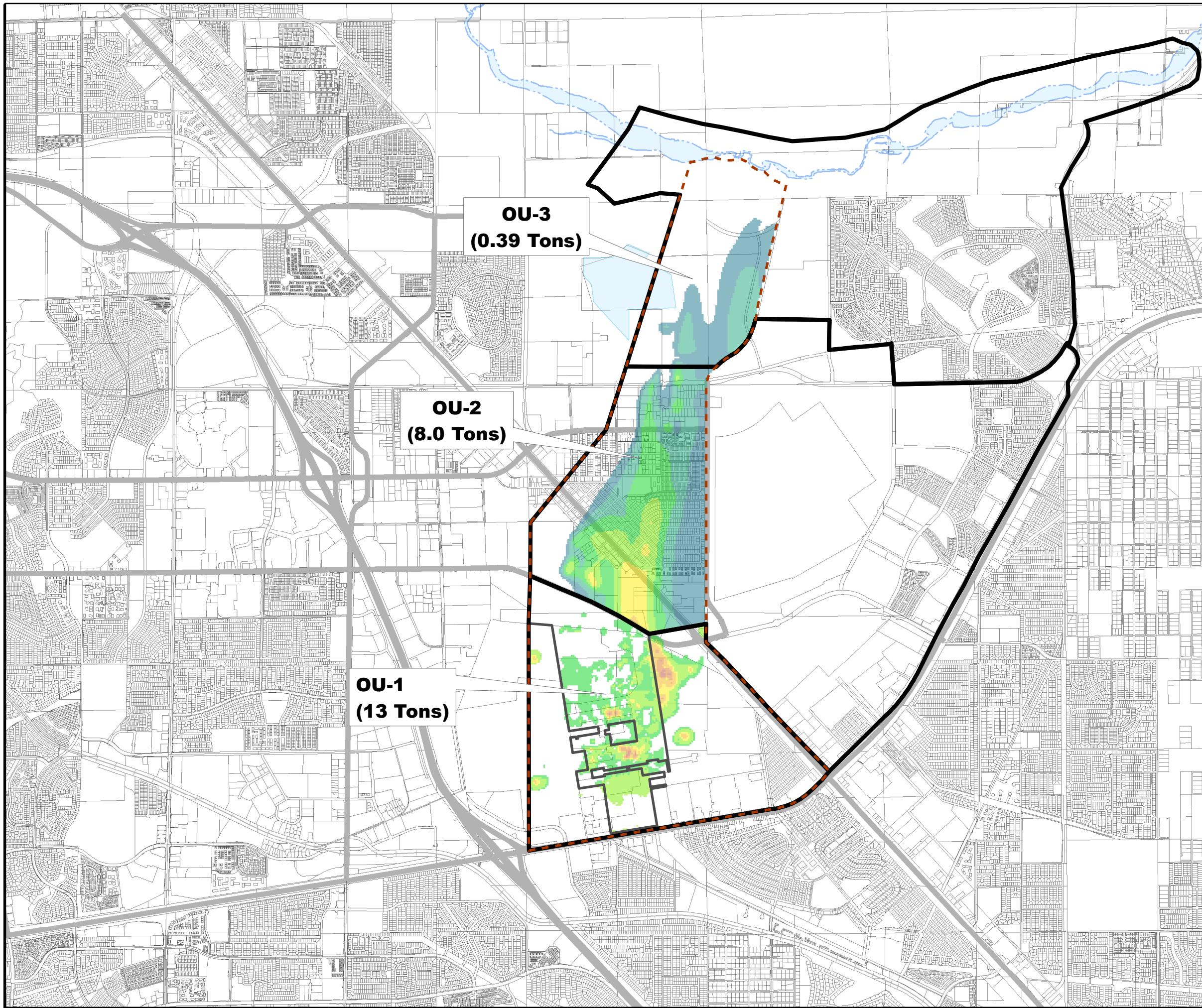


Perchlorate Mass Distribution
 OU-1/OU-2 Remedial Investigation
 Nevada Environmental Response Trust Site; Henderson, Nevada

Figure

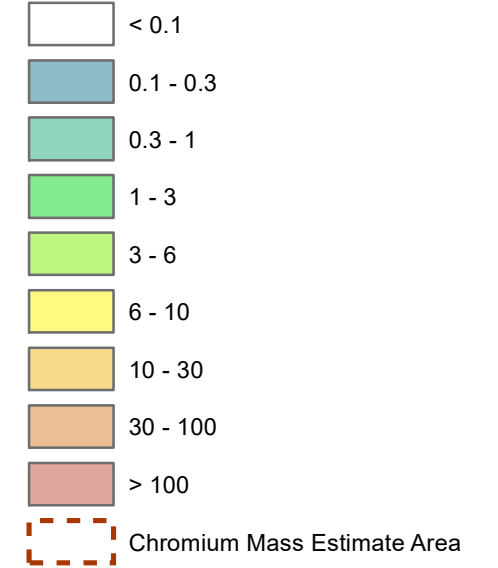
6

\\wcevfps1\ENG\LePetomane\NERT\GWM\Annual Performance Reports\2020 Annual\Mass Estimate\GIS Report\Figures\Figure 7 - Vadose_OU23_HexCr_Mass_Estimate_2020.mxd



Legend

Hexavalent Chromium Mass (lbs)



Note: Masses shown are per 50 x 50 ft grid cell and represent the sum of sorbed and aqueous Cr(VI) in the vadose zone.

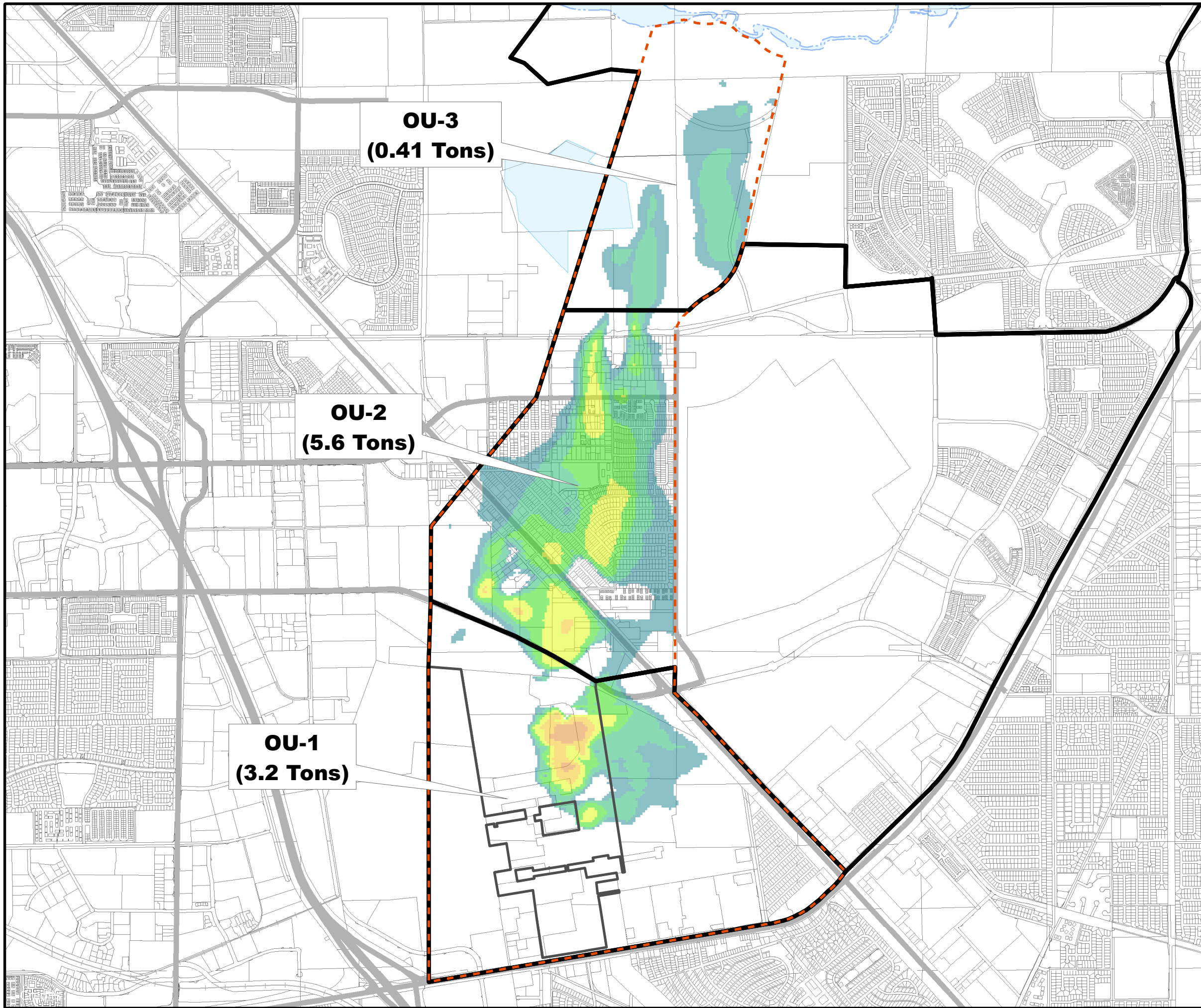


0 1,000 2,000 4,000 6,000 Feet



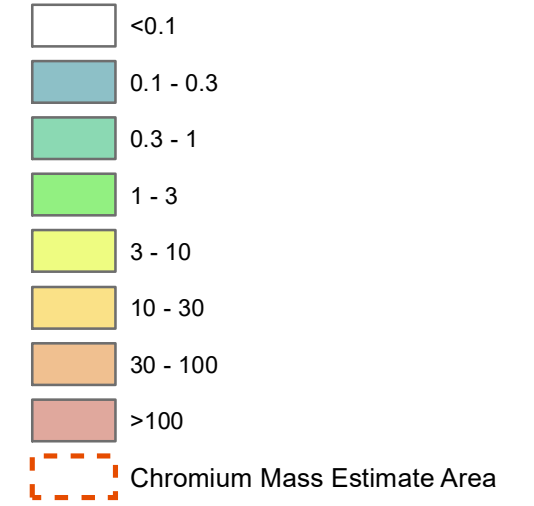
Vadose Zone Hexavalent Chromium Mass
Nevada Environmental Response Trust Site
Henderson, Nevada

Date: 11/12/2020	Contract Number: 1690006941-021	Figure
Drafter:	Approved:	Revised:
		7

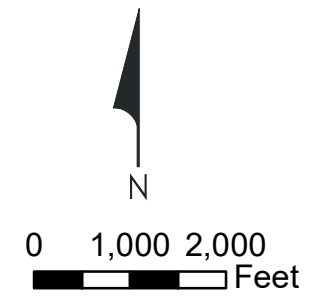


Legend

Hexavalent Chromium Mass (lbs)

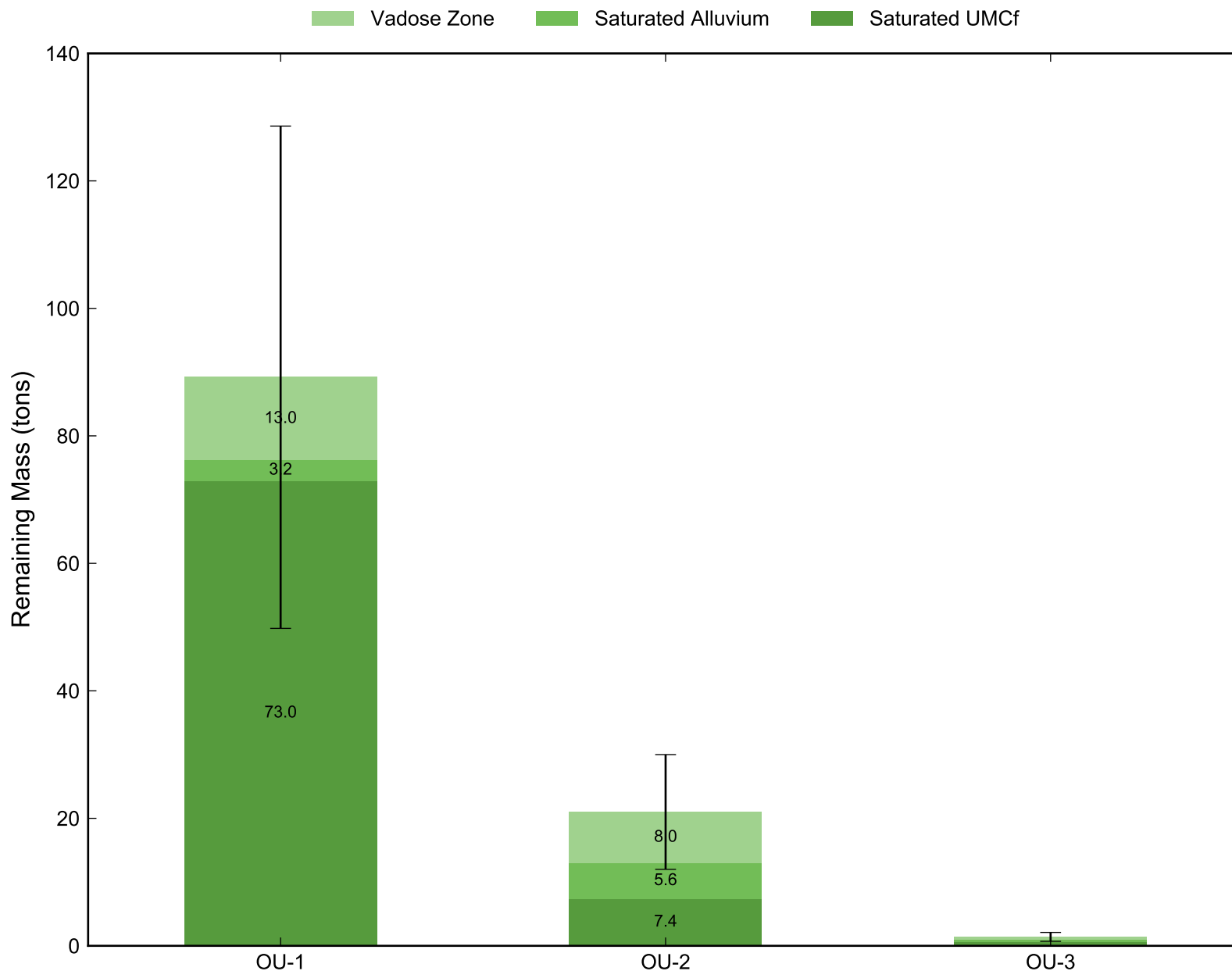


Note: Mass values are pounds per 50 x 50 ft grid cell and represent mass in all phases.



Saturated Alluvium Hexavalent Chromium Mass Nevada Environmental Response Trust Site Henderson, Nevada

Date: 11/12/2020	Contract Number: 1690006941-021	Figure
Drafter:	Approved:	Revised:
		8



Hexavalent Chromium Mass Distribution
 OU-1/OU-2 Remedial Investigation
 Nevada Environmental Response Trust Site; Henderson, Nevada

Figure

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