Red Hill Groundwater Sampling Log

WELL NO. RHMW2254-01 LOCATION: Inside Tunnel PROJECT NO. 60571032

DATE: 7/22/19 TIME: 0755 CLIMATIC CONDITIONS: In Tunnel

Depth to groundwater		Final Depth	Depth to Product	Depth to bottom		Purge			
Previous (ft btoc)	Current (ft btoc)	(ft btoc)	(ft btoc)	Previous (ft btoc)	Current (ft btoc)	Flow rate (mL/min)	Start Time	Total Volume (gal)	Battery Pack
*82.70	NM	NM	NM	115.79	NM	300	0847	2 1/8	Aecom Duralast 64943
**82.66	NM								

Pump settings:	Pressure (PSI)		Discharge (sec)		Fill (sec)	
Previous/Actual	50	50	25	25	35	35

Headspace VOCs:	0	ppm	Ambient VOCs:	0	ppm
Headspace O_2:	20.9	%	Ambient O_2:	20.9	%
Headspace LEL:	0	%	Ambient LEL:	0	%
Ambient CO:	0	ppm	Ambient H_2S:	0	%
O/W Interface Probe Type/Water Level Meter:	NA		Serial Number:	NA	
Gas Detector Type:	MultiRAE		Serial Number:	M0120099Q8	
Water Quality Meter Type:	In-Situ Smartroll MP		Serial Number:	512733	

Stabilization:+/- 0.2 ºC, +/- 3% conductivity, +/- 10% DO, +/- 0.1 pH, +/-10 mv ORP, turb=as low as possible (< 10 NTU ideal) for 3 consecutive readings following a min of 5 readings

Depth to water measured from outside casing (free fall). Measure to survey mark.

* 200' Oil/Water Interface Probe measurement

** 500' Calibrated Water Level Meter measurement (N-1)

SAMPLING EQUIPMENT: Dedicated bladder pump

APPEARANCE OF SAMPLE: COLOR: Clear

SEDIMENT: None

ODOR/OTHER: None

LABORATORY ANALYSIS PARAMETERS AND PRESERVATIVES / NUMBER AND TYPES OF SAMPLE CONTAINERS USED: 18 primary + 13 dup + 18 MS/MSD =49 total

VOAs HCl: 4+4+4 =**12** H2SO4: 2 = **2**	Amber 1-L: 3+3+6= **12** 1-L (800mL): 2+2+4=**8** 500-mL: 2+2+4= **8**	Poly **500mL HN03=2+2=4** 250 mL H2SO4: **1** 250 mL HCl (brown): **1 filtered** 250 mL unpreserved.: **1**

SAMPLE IDENTIFICATION NUMBER(S) **ERH838 (N, MS/MSD)** **ERH839 (Dup)** **ERH837 (Trip Blank)**

DATE: 07/22/19 TIME: Start: 0908 End: 1121 Start: 0908 End: 1121 Start:0900

DECONTAMINATION PROCEDURES: Alconox, DI H_2O, Isopropyl, and DI H_2O wash

NOTES: NM = not measured / pump MP-3 on

NA = not applicable

SAMPLED BY: KL, DH, MM SAMPLES DELIVERED TO: APPL TRANSPORTER: FedEx

WELL NO. RHMW2254-01 LOCATION: Inside Tunnel PROJECT NO. 60571032

TIME	DTW	GALLONS REMOVED	TDS (ppm)	pH	SP. COND. (mS/cm)	D.O. (mg/L)	TURB. (NTU)	TEMP. (°C)	ORP (mV)	SAL (psu)
0844	Water at surface									
0848		5/8	328.51	7.76	0.31	8.13	0.18	23.88	193.2	0.2
0852		2/3	339.32	7.72	0.51	8.38	0.20	22.98	198.2	0.3
0856		1	341.96	7.72	0.52	8.46	0.15	22.51	195.5	0.3
0900		1.25	342.04	7.72	0.53	8.55	0.15	22.44	191.1	0.3
0904		1 5/8	343.16	7.72	0.53	8.53	0.13	22.43	188.0	0.3
0908	Start sampling									

Red Hill Groundwater Sampling Log

WELL NO. RHMW01 LOCATION: Inside Tunnel PROJECT NO. 60571032

DATE: 07/23/19 TIME: 1219 CLIMATIC CONDITIONS: Inside Tunnel

Depth to groundwater		Final Depth	Depth to Product	Depth to bottom		Purge			
Previous (ft btoc)	Current (ft btoc)	(ft btoc)	(ft btoc)	Previous (ft btoc)	Current (ft btoc)	Flow rate (mL/min)	Start Time	Total Volume (gal)	Battery Pack
*82.52	*82.64	**82.60	NA	99.8	NM	75 - 90	1249	11.5L	Aecom Duralast 64943
[a] 82.48	**82.60								

Pump settings:	Pressure (PSI)		Discharge (sec)		Fill (sec)	
Previous/Actual	50	45	7	7	8	8

Headspace VOCs:	0.1	ppm	Ambient VOCs:	0.0 ppm
Headspace O_2:	20.9	%	Ambient O_2:	20.9 %
Headspace LEL:	0.0	%	Ambient LEL:	0.0 %
Ambient CO:	0.0	ppm	Ambient H_2S:	0.0 ppm
O/W Interface Probe Type/Water Level Meter:	Heron		Serial Number:	01-5920
Gas Detector Type:	MultiRAE		Serial Number:	M0120983Q7
Water Quality Meter Type:	In-Situ Smartroll MP		Serial Number:	512733

Stabilization:+/- 0.2 ºC, +/- 3% conductivity, +/- 10% DO, +/- 0.1 pH, +/-10 mv ORP, turb=as low as possible (< 10 NTU ideal) for 3 consecutive readings following a min of 5 readings

Depth to water measured from red survey mark on top of permanent casing.

* 200' Oil/Water Interface Probe measurement

** 500' Calibrated Water Level Meter measurement (N-1)

[a] 1000' Calibrated Water Level Meter measurement (N-2) (N-1 not available during April Event)

TIME	DTW**	GALLONS REMOVED	TDS (ppm)	pH	SP. COND. (mS/cm)	D.O. (mg/L)	TURB. (NTU)	TEMP. (°C)	ORP (mV)	SAL (psu)
1246	Water at surface									
1249	82.60	1L	204.07	7.25	0.31	1.41	0.14	25.33	35.0	0.2

(see next page)

SAMPLING EQUIPMENT: Bladder Pump

APPEARANCE OF SAMPLE: COLOR: Clear

SEDIMENT: None

ODOR/OTHER: None

LABORATORY ANALYSIS PARAMETERS AND PRESERVATIVES / NUMBER AND TYPES OF SAMPLE CONTAINERS USED: 17 Primary = 17 Total

VOAs HCl: **4** H2SO4: **2**	Amber 1-L: **3** 500-mL: **2** 1-L (800mL): **2**	Poly 500ml HN03 = **1** 250 mL H2SO4: **1** 250 mL HCl (brown): **1 filtered** 250 mL unpres.: **1**

SAMPLE IDENTIFICATION NUMBER(S) **ERH844 (N)** **ERH843 (TB)**

DATE: 07/23/19 TIME: Start: 1515 End: 1720 Start: 1230

DECONTAMINATION PROCEDURES: Alconox, DI water, Isopropyl, and DI water wash

NOTES: Pump intake ± 1.5' +86.5' out measurement = 88' using AECOM water level meter

N-1; NM = not measured, NA = not applicable

SAMPLED BY: CE, KL, DH

SAMPLES DELIVERED TO: APPL TRANSPORTER: FedEx

WELL NO. RHMW01 LOCATION: Inside Tunnel PROJECT NO. 60571032

TIME	DTW**	GALLONS REMOVED	TDS (ppm)	pH	SP. COND. (mS/cm)	D.O. (mg/L)	TURB. (NTU)	TEMP. (°C)	ORP (mV)	SAL (psu)
1253	82.60	~2L	205.57	7.13	0.32	0.95	0.11	24.83	38.6	0.2
1257	82.60	2L	206.14	7.11	0.32	1.49	0.27	24.74	39.4	0.2
1301		~3L	206.41	7.19	0.32	10.20	0.53	24.84	35.5	0.2
	Bubbles coming up, waiting for pump to work itself out									
1305	Pulled pump, replaced bladder. Waiting for all air bubbles to clear. Flow 90									
1347	82.58	4.5L	204.81	7.12	0.32	3.36	1.05	25.39	47.0	0.2
1351	82.58	4.8L	204.95	7.09	0.32	1.92	0.08	25.10	43.3	0.2
1355	82.58	5L	204.90	7.07	0.32	2.26	0.29	24.91	44.1	0.2
1359	82.58	5.25L	204.64	7.06	0.31	1.89	0.09	24.73	46.5	0.2
1403	82.58	6L	204.75	7.06	0.31	1.09	0.11	24.61	47.2	0.2
1407	82.58	6.25L	204.81	7.06	0.32	0.96	0.10	24.56	46.8	0.2
1411	82.58	6.5L	205.21	7.05	0.32	0.94	0.07	24.60	45.9	0.2
1415	82.58	7L	205.48	7.05	0.32	1.17	0.37	24.87	43.4	0.2
1419	DO climbed back up, paused readings									
1441	Flow = 80mL/min									
1454	82.58	9.5L	202.77	7.05	0.31	1.02	0.12	24.56	53.1	0.2
1458	82.58	10L	202.79	7.05	0.31	0.95	0.19	24.58	52.7	0.2
1502	82.58	~10L	202.70	7.04	0.31	0.88	0.11	24.54	52.3	0.2
1506	82.58	10.5L	202.69	7.04	0.31	0.83	0.11	24.52	52.5	0.2
1510	82.58	10.75L	202.00	7.04	0.31	0.80	0.08	24.49	52.2	0.2
1556	During sampling bubbles appeared. Paused sampling to remove bubbles									
1606	Restarted sampling									

Red Hill Groundwater Sampling Log

WELL NO. RHMW02 LOCATION: Inside Tunnel PROJECT NO. 60571032

DATE: 07/23/19 TIME: 0840 CLIMATIC CONDITIONS: Inside Tunnel

Depth to groundwater		Final Depth	Depth to Product	Depth to bottom		Purge			
Previous (ft btoc)	Current (ft btoc)	(ft btoc)	(ft btoc)	Previous (ft btoc)	Current (ft btoc)	Flow rate (mL/min)	Start Time	Total Volume (gal)	Battery Pack
*85.29	*85.40	**85.30	NA	99	NM	300	0922	3.5	AECOM Duralast 604943
[a] 85.23	**85.33								

Pump settings:	Pressure (PSI)		Discharge (sec)		Fill (sec)	
Previous/Actual	50	50	25	25	35	35

Headspace VOCs:	0.2	ppm	Ambient VOCs:	0.3	ppm
Headspace O_2:	15.1	%	Ambient O_2:	20.9	%
Headspace LEL:	0.0	%	Ambient LEL:	0.0	%
Ambient CO:	0.0	%	Ambient H_2S:	0.0	%
O/W Interface Probe Type/Water Level Meter:	HERON		Serial Number:	01-5920	
Gas Detector Type:	MultiRAE		Serial Number:	M0120983Q7	
Water Quality Meter Type:	In-Situ Smartroll MP		Serial Number:	512733	

Stabilization:+/- 0.2 ºC, +/- 3% conductivity, +/- 10% DO, +/- 0.1 pH, +/-10 mv ORP, turb=as low as possible (< 10 NTU ideal) for 3 consecutive readings following a min of 5 readings

Depth to water measured from red survey mark on top of permanent casing.

* 200' Oil/Water Interface Probe measurement

** 500' Calibrated Water Level Meter measurement (N-1)

[a] 1000' Calibrated Water Level Meter measurement (N-2) (N-1) not available during April Event

SAMPLING EQUIPMENT: Dedicated Bladder Pump

APPEARANCE OF SAMPLE: COLOR: Clear

SEDIMENT: None

ODOR/OTHER: Hydrocarbon odor

LABORATORY ANALYSIS PARAMETERS AND PRESERVATIVES / 17 Primary + 11 Duplicate = 28 Total

NUMBER AND TYPES OF SAMPLE CONTAINERS USED:

VOAs	Amber	Poly
HCl: 4 + 4 = **8**	1-L: 3 + 3 = **6**	500mL HNO3=**1**
H2SO4: **2**	500-mL: 2 + 2 = **4**	250 mL H2SO4: **1**
	1-L: (800 ml): 2 + 2 = **4**	250 mL HCl (brown): **1 filtered**
		250 mL unpres.: **1**

SAMPLE IDENTIFICATION NUMBER(S) **ERH846 (N)** **ERH847 (dup)** **ERH845 (Trip Blank)**

DATE: 07/23/19 TIME: Start: 0950 End: 1049 Start: 0950 End: 1049 Start:0915

DECONTAMINATION PROCEDURES: Alconox, DI water, Isopropyl, and DI water wash

NOTES: NM = not measured, NA = not applicable

SAMPLED BY: DH, CE, KL

SAMPLES DELIVERED TO: APPL TRANSPORTER: FedEx

WELL NO. RHMW02 LOCATION: Inside Tunnel PROJECT NO. 60571032

TIME	DTW**	LITERS REMOVED	TDS (ppm)	pH	SP. COND. (mS/cm)	D.O. (mg/L)	TURB. (NTU)	TEMP. (°C)	ORP (mV)	SAL (psu)
0905	Water at surface									
0915	300mL/min flow rate set. Paused to retrieve smartroll display									
0922	85.32	NM	353.62	6.70	0.54	1.02	0.33	25.60	-20.6	0.3
0926	85.32	NM	355.92	6.68	0.55	0.40	0.26	24.33	-18.4	0.3
0930	85.32	7.5	356.34	6.69	0.55	0.34	0.22	24.10	-14.3	0.3
0934	85.32	9.5	356.62	6.69	0.55	0.31	NM	24.06	-9.8	0.3
0938	85.32	11L	355.75	6.69	0.55	0.30	0.17	24.04	-5.3	0.3
0942	85.31	12L	356.06	6.69	0.55	0.31	0.14	24.08	-7.9	0.3
0946	85.31	13L	355.45	6.69	0.55	0.30	0.16	24.18	-9.8	0.3
0950	Start sampling									

Red Hill Groundwater Sampling Log

WELL NO. RHMW03 LOCATION: Inside Tunnel PROJECT NO. 60571032

DATE: 07/22/19 TIME: 1430 CLIMATIC CONDITIONS: Inside Tunnel

Depth to groundwater		Final Depth	Depth to Product	Depth to bottom		Purge			
Previous (ft btoc)	Current (ft btoc)	(ft btoc)	(ft btoc)	Previous (ft btoc)	Current (ft btoc)	Flow rate (mL/min)	Start Time	Total Volume (gal)	Battery Pack
*102.48	*101.60	101.90	NA	117.30	NM	300	1506	10L	AECOM Duralast 84943
[a] 102.46	**101.55								

Pump settings:	Pressure (PSI)		Discharge (sec)		Fill (sec)	
Previous/Actual	55	55	25	25	35	35

Headspace VOCs:	2.1	ppm	Ambient VOCs:	0.0	ppm
Headspace O_2:	20.1	%	Ambient O_2:	20.9	%
Headspace LEL:	0.0	%	Ambient LEL:	0.0	%
Ambient CO:	0.0	ppm	Ambient H_2S:	0.0	%
O/W Interface Probe Type/Water Level Meter:	HERON		Serial Number:	01-5920	
Gas Detector Type:	MultiRAE		Serial Number:	M0120099Q8	
Water Quality Meter Type:	In-Situ Smartroll MP		Serial Number:	512733	

Stabilization:+/- 0.2 ºC, +/- 3% conductivity, +/- 10% DO, +/- 0.1 pH, +/-10 mv ORP, turb=as low as possible (< 10 NTU ideal) for 3 consecutive readings following a min of 5 readings

Depth to water measured from red survey mark on top of permanent casing.

* 200' Oil/Water Interface Probe measurement

** 500' Calibrated Water Level Meter measurement (N-1)

[a] 1000' Calibrated Water Level Meter measurement (N-2) (N-1 not available during April Event)

SAMPLING EQUIPMENT: Dedicated Bladder Pump

APPEARANCE OF SAMPLE: COLOR: Clear

SEDIMENT: None

ODOR/OTHER: None

LABORATORY ANALYSIS PARAMETERS AND PRESERVATIVES / NUMBER AND TYPES OF SAMPLE CONTAINERS USED: 17 primary = 17 total

VOAs	Amber	Poly
HCl: **4**	1-L: **3**	250 mL H2SO4: **1**
H2SO4: **2**	500-mL: **2**	250 mL HCl (brown): **1 filtered**
	1-L (800mL): **2**	250 mL unpres.: **1**
		500mL HNO3: **1**

SAMPLE IDENTIFICATION NUMBER(S) **ERH849** **ERH848 (Trip Blank)**

DATE: 07/22/19 TIME: Start:1526 End: 1555 Start:1457

DECONTAMINATION PROCEDURES: Alconox, DI water, Isopropyl, and DI water wash

NOTES: NM = not measured

NA = not applicable

SAMPLED BY: DH, KL, CE

SAMPLES DELIVERED TO: APPL TRANSPORTER: FedEx

WELL NO. RHMW03 LOCATION: Inside Tunnel PROJECT NO. 60571032

TIME	DTW**	GALLONS REMOVED	TDS (ppm)	pH	SP. COND. (mS/cm)	D.O. (mg/L)	TURB. (NTU)	TEMP. (°C)	ORP (mV)	SAL (psu)
1458	Water at surface									
1506	102.00	4L	517.41	6.93	0.80	1.49	2.44	27.51	200.3	0.4
1510	101.89	5L	514.19	6.88	0.79	1.04	1.31	27.06	203.8	0.4
1514	101.89	6L	513.96	6.88	0.79	1.06	0.65	26.97	202.4	0.4
1518	101.89	7.5L	513.56	6.89	0.79	1.04	0.38	26.88	198.6	0.4
1522	101.89	8.5L	514.18	6.90	0.79	1.08	0.28	26.83	195.6	0.4
1526	Start sampling									

Red Hill Groundwater Sampling Log

WELL NO. RHMW04 LOCATION: Outside Tunnel PROJECT NO. 60571032

DATE:07/23/19 TIME: 0802 CLIMATIC CONDITIONS: Sunny, 82°, 65% humidity, no rain

Depth to groundwater		Final Depth	Depth to Product	Depth to bottom		Purge			
Previous (ft btoc)	Current (ft btoc)	(ft btoc)	(ft btoc)	Previous (ft btoc)	Current (ft btoc)	Flow rate (mL/min)	Start Time	Total Volume (gal)	Nitrogen used
*292.83	*292.94	292.84	NA	305	NM	275	0827	~15L	Start:1600/2800 End: 300/2600
[a] 292.53	**292.85								

Pump settings:	Pressure (PSI)		Discharge (sec)		Fill (sec)	
Previous/Actual QED Settings	140	135	28	45	32	30 QED Settings

Headspace VOCs: 0.0 ppm Ambient VOCs: 0.0 ppm

O/W Interface Probe Type/Water Level Meter: (rental) HERON (calibrated) N-2 Serial Number: 01-5881 / N-2

Gas Detector Type: MiniRAE 3000 (10.6 eV) Serial Number: 592-908165

Water Quality Meter Type: In-Situ Smartroll MP Serial Number: 589972

Stabilization:+/- 0.2 ºC, +/- 3% conductivity, +/- 10% DO, +/- 0.1 pH, +/-10 mv ORP, turb=as low as possible (< 10 NTU ideal) for 3 consecutive readings following a min of 5 readings

Depth to water measured from red survey mark on top of permanent casing.

* 500' Oil/Water Interface Probe measurement

** 1000' Calibrated Water Level Meter measurement (N-2)

[a] (N-2 and N-1 not available during April Event, measurement from January Event)

TIME	DTW**	LITERS REMOVED	TDS (ppm)	pH	SP. COND. (mS/cm)	D.O. (mg/L)	TURB. (NTU)	TEMP. (°C)	ORP (mV)	SAL (psu)
0838	Water at surface									
0848	292.88	2.5	282.18	7.32	0.66	7.47	0.30	24.96	115.3	0.2
0853	292.87	3.75	289.36	7.4	0.45	8.29	0.97	23.11	105.6	0.2

(see next page)

SAMPLING EQUIPMENT: Dedicated Bladder Pump

APPEARANCE OF SAMPLE: COLOR: Clear

SEDIMENT: None

ODOR/OTHER: None

LABORATORY ANALYSIS PARAMETERS AND PRESERVATIVES / NUMBER AND TYPES OF SAMPLE CONTAINERS USED: 17 Primary = 17 total

VOAs	Amber	Poly
HCl: **4**	1-L: **3**	500mL HN03: **1**
H2SO4: **2**	1-L (800 mL): **2**	250 mL HCl: **1**
	500-mL: **2**	250 mL HCl (brown): **1 filtered**
		250 mL unpres.: **1**

SAMPLE IDENTIFICATION NUMBER(S) **ERH851 (N)** **ERH850 (Trip Blank)**

DATE: 07/22/19 TIME: Start:0940 End:1028 Start:0930

DECONTAMINATION PROCEDURES: Alconox, DI water, Isopropyl, and DI water wash

NOTES: QED Controller used

SAMPLED BY: GM, EB, TV

SAMPLES DELIVERED TO: APPL TRANSPORTER: FedEx

WELL NO. RHMW04 LOCATION: Outside Tunnel PROJECT NO. 60571032

TIME	DTW**	LITERS REMOVED	TDS (ppm)	pH	SP. COND. (mS/cm)	D.O. (mg/L)	TURB. (NTU)	TEMP. (°C)	ORP (mV)	SAL (psu)
0858	292.87	5.25	289.47	7.4	0.45	8.39	0.20	22.91	104.4	0.2
0903	292.85	6.3	290.60	7.36	0.45	8.47	0.14	22.96	106.0	0.2
0908	292.85	8.0	290.68	7.4	0.45	8.48	0.45	22.85	105.3	0.2
0913	292.85	9.0	290.96	7.4	0.45	8.50	0.13	22.84	103.3	0.2
0918	292.85	10.5	290.76	7.37	0.45	8.49	0.62	22.83	104.4	0.2
0923	292.85	11.6	290.62	7.35	0.45	8.46	0.45	22.83	106.7	0.2
0940	Started collecting sample. Dropped flow rate to ~125mL/min for VOA sampling									
	Returned to ~275mL/min for ambers/plastics									

Red Hill Groundwater Sampling Log

WELL NO. RHMW05 LOCATION: Inside Tunnel PROJECT NO. 60571032

DATE: 07/22/19 TIME: 1248 CLIMATIC CONDITIONS: Inside Tunnel

Depth to groundwater		Final Depth	Depth to Product	Depth to bottom		Purge			
Previous (ft btoc)	Current (ft btoc)	(ft btoc)	(ft btoc)	Previous (ft btoc)	Current (ft btoc)	Flow rate (mL/min)	Start Time	Total Volume (gal)	Battery Pack
*82.04	*82.12	**82.08	NA	93	NM	300	1304	2.5	AECOM Duralast 84943
[a]82.00	**82.07								

Pump settings:	Pressure (PSI)		Discharge (sec)		Fill (sec)	
Previous/Actual	45	45	25	25	35	35

Headspace VOCs:	0.0	ppm	Ambient VOCs:	0.0	ppm
Headspace O_2:	20.9	%	Ambient O_2:	20.9	%
Headspace LEL:	0.0	%	Ambient LEL:	0.0	%
Ambient CO:	0.0	ppm	Ambient H_2S:	0.0	%
O/W Interface Probe Type/Water Level Meter:	HERON		Serial Number:	01-5920	
Gas Detector Type:	MultiRAE		Serial Number:	M0120099Q8	
Water Quality Meter Type:	In-Situ Smartroll MP		Serial Number:	512733	

Stabilization:+/- 0.2 ºC, +/- 3% conductivity, +/- 10% DO, +/- 0.1 pH, +/-10 mv ORP, turb=as low as possible (< 10 NTU ideal) for 3 consecutive readings following a min of 5 readings

Depth to water measured from red survey mark on top of permanent casing.

* 200' Oil/Water Interface Probe measurement

** 500' Calibrated Water Level Meter measurement (N-1)

[a] 1000' Calibrated Water Level Meter measurement (N-2) (N-1 not available during April 2019 Event)

SAMPLING EQUIPMENT: Dedicated Bladder Pump

APPEARANCE OF SAMPLE: COLOR: Clear

SEDIMENT: None

ODOR/OTHER: None

LABORATORY ANALYSIS PARAMETERS AND PRESERVATIVES / NUMBER AND TYPES OF SAMPLE CONTAINERS USED: 17 Primary = 17 total

VOAs HCl: **4** H2SO4: **2**	Amber 1-L: **3** 1-L (800 mL): **2** 500-mL: **2**	Poly 500mL HN03:**1** 250 mL H2SO4: **1** 250 mL HCl (brown): **1 filtered** 250 mL unpres.: **1**

SAMPLE IDENTIFICATION NUMBER(S) **ERH853 (N)** **ERH852 (Trip Blank)**

DATE: 07/22/19 TIME: Start:1328 End:1405 Start:1310 End: 1310

DECONTAMINATION PROCEDURES: Alconox, DI water, Isopropyl, and DI water wash

NOTES: NA – not applicable, NM – not measured

SAMPLED BY: KL, DH, CE

SAMPLES DELIVERED TO: APPL TRANSPORTER: FedEx

WELL NO. RHMW05 LOCATION: Inside Tunnel PROJECT NO. 60571032

TIME	DTW**	GALLONS REMOVED	TDS (ppm)	pH	SP. COND. (mS/cm)	D.O. (mg/L)	TURB. (NTU)	TEMP. (°C)	ORP (mV)	SAL (psu)
1301	Water at surface									
1304	82.7	5/8	483.62	8.14	0.74	8.49	0.82	24.92	191.5	0.4
1308	82.7	7/8	484.79	8.14	0.75	8.30	1.26	24.42	191.3	0.4
1312	82.7	-	484.47	8.14	0.75	8.28	0.59	24.37	189.1	0.4
1316	82.7	6L	484.61	8.15	0.75	8.29	0.38	24.41	186.4	0.4
1320	82.7	7L	484.44	8.15	0.75	8.31	0.31	24.38	184.8	0.4
1324	82.7	8L	484.55	8.15	0.75	8.30	0.28	24.38	182.2	0.4
1328	Start sampling									

Red Hill Groundwater Sampling Log

WELL NO. RHMW06 LOCATION: Outside Tunnel PROJECT NO. 60571032

DATE: 07/22/19 TIME: 1230 CLIMATIC CONDITIONS: Overcast, 86°,82%

Depth to groundwater		Final Depth	Depth to Product	Depth to bottom		Purge			
Previous (ft btoc)	Current (ft btoc)	(ft btoc)	(ft btoc)	Previous (ft btoc)	Current (ft btoc)	Flow rate (mL/min)	Start Time	Total Volume (gal)	Nitrogen used
*239.92	*239.93	239.86	NA	263.20	NM	275	1303	14.5L	Start: 1800 End: 700
[a]239.60	**239.86								

Pump settings:	Pressure (PSI)		Discharge (sec)		Fill (sec)	
Previous/Actual QED Settings	120	125	25	45	25	20 Settings for QED Controller

Headspace VOCs: 0.0 ppm Ambient VOCs: 0.0 ppm

O/W Interface Probe Type/Water Level Meter: (rental / calibrated) HERON / N-2 Serial Number: 01-5881 / N-2

Gas Detector Type: MiniRAE 3000 (10.6 eV) Serial Number: 592-908165

Water Quality Meter Type: In-Situ Smartroll MP Serial Number: 589972

Stabilization:+/- 0.2 ºC, +/- 3% conductivity, +/- 10% DO, +/- 0.1 pH, +/-10 mv ORP, turb=as low as possible (< 10 NTU ideal) for 3 consecutive readings following a min of 5 readings

Depth to groundwater is measured from the top of grey plate (survey mark).

* 500' Oil/Water Interface Probe measurement

** 1000' Calibrated Water Level Meter measurement (N-2)

[a] (N-2 and N-1 not available during April Event, measurement from January Event)

TIME	DTW**	LITERS REMOVED	TDS (ppm)	pH	SP. COND. (mS/cm)	D.O. (mg/L)	TURB. (NTU)	TEMP. (°C)	ORP (mV)	SAL (psu)
1317	Water at surface									
1329	239.90	2.5	1148.12	7.39	1.76	6.54	3.89	28.39	73.0	0.9
1334	239.89	2.75	1194.57	6.90	1.84	6.55	0.39	24.67	77.6	0.9

(see next page)

SAMPLING EQUIPMENT: Dedicated Bladder Pump

APPEARANCE OF SAMPLE: COLOR: Clear

SEDIMENT: None

ODOR/OTHER: None

LABORATORY ANALYSIS PARAMETERS AND PRESERVATIVES / NUMBER AND TYPES OF SAMPLE CONTAINERS USED: 17 Primary = 17 total

VOAs HCl: **4** H2SO4: **2**	Amber 1-L: **3** 1-L (800mL): **2** 500-mL: **2**	Poly 500mL HN03:**1** 250 mL H2SO4: **1** 250 mL HCl (brown): **1 filtered** 250 mL unpres.: **1**

SAMPLE IDENTIFICATION NUMBER(S) **ERH855 (N)** **ERH854 (Trip Blank)**

DATE: 07/22/19 TIME: Start:1415 End:1520 Start:1345

DECONTAMINATION PROCEDURES: Alconox, DI water, Isopropyl, and DI water wash

NOTES: Standpipe Measurement: with N-2: 239.93 ft btoc @12:45

SAMPLED BY: TV, GM, EB

SAMPLES DELIVERED TO: APPL TRANSPORTER: FedEx

WELL NO. RHMW06 LOCATION: Outside Tunnel PROJECT NO. 60571032

TIME	DTW**	LITERS REMOVED	TDS (ppm)	pH	SP. COND. (mS/cm)	D.O. (mg/L)	TURB. (NTU)	TEMP. (°C)	ORP (mV)	SAL (psu)
1339	239.93	4	1198.73	6.82	1.83	6.53	0.40	24.20	80.8	0.9
1344	Switch to 300mL/min									
1344	239.89	5	1193.31	6.8	1.84	6.54	0.60	24.04	83.2	0.9
1349	239.89	6.5	1198.78	6.79	1.85	6.39	0.69	24.08	84.5	0.9
1354	239.89	8.3	1196.51	6.77	1.84	6.90	0.29	23.97	86.4	0.9
1359	239.86	9.5	1197.64	6.77	1.84	6.79	0.36	23.95	87.5	0.9
1404	239.86	10.75	1198.08	6.77	1.84	6.85	0.32	23.97	88.7	0.9
1409	239.86	12.5	1196.61	6.77	1.84	6.90	0.31	24.01	89.8	0.9
1415	Started collecting sample. Dropped flow rate slightly to ~100mL/min.									
	Returned to ~250-275mL/min for ambers/plastics									

Red Hill Groundwater Sampling Log

WELL NO. RHMW07 LOCATION: Outside Tunnel PROJECT NO. 60571032

DATE: 07/22/19 TIME: 0811 CLIMATIC CONDITIONS: Partly cloudy, 83°, 82%

Depth to groundwater		Final Depth	Depth to Product	Depth to bottom		Purge			
Previous (ft btoc)	Current (ft btoc)	(ft btoc)	(ft btoc)	Previous (ft btoc)	Current (ft btoc)	Flow rate (mL/min)	Start Time	Total Volume (gal)	Nitrogen used
*197.06	*196.98	197.31	NA	217.76	NM	300	0910	~6.5	Start: 1900 End:900
[a]197.02	**196.96								

Pump settings:	Pressure (PSI)		Discharge (sec)		Fill (sec)	
Previous/Actual QED cont settings	95	95	30	45	30	25 Settings for QED Controller

Headspace VOCs: 0.0 ppm Ambient VOCs: 0.0 ppm

O/W Interface Probe Type/Water Level Meter: (rental) / (calibrated) HERON / N-2 Serial Number: 01-5881 / N-2

Gas Detector Type: MiniRAE 3000 (10.6 eV) Serial Number: 592-908165

Water Quality Meter Type: In-Situ Smartroll MP Serial Number: 589972

Stabilization:+/- 0.2 ºC, +/- 3% conductivity, +/- 10% DO, +/- 0.1 pH, +/-10 mv ORP, turb=as low as possible (< 10 NTU ideal) for 3 consecutive readings following a min of 5 readings

Depth to groundwater is measure from top of grey plate (survey mark).

* 500' Oil/Water Interface Probe measurement (01-5881)

** 1000' Calibrated Water Level Meter measurement (N-2)

[a] (N-2 and N-1 not available during April Event, measurement from January Event)

TIME	DTW**	GALLONS REMOVED	TDS (ppm)	pH	SP. COND. (mS/cm)	D.O. (mg/L)	TURB. (NTU)	TEMP. (°C)	ORP (mV)	SAL (psu)
0916	Water at surface									
0948	197.41	3	1160.58	6.58	1.78	4.28	0.40	25.4	96.8	0.9
0953	197.45	3.5	1170.05	6.84	1.80	4.19	0.30	24.25	94.7	0.9
0958	197.53	14L	1164.04	6.91	1.79	3.99	0.69	24.04	95.3	0.9

(see next page)

SAMPLING EQUIPMENT: Dedicated Bladder Pump

APPEARANCE OF SAMPLE: COLOR: Clear

SEDIMENT: None

ODOR/OTHER: None

LABORATORY ANALYSIS PARAMETERS AND PRESERVATIVES / NUMBER AND TYPES OF SAMPLE CONTAINERS USED: 17 Primary = 17 total

VOAs HCl: **4** H2SO4: **2**	Amber 1-L: **3** 1-L(800mL): **2** 500-mL: **2**	Poly 500mL HN03:**1** 250 mL H2SO4: **1** 250 mL HCl (brown): **1 filtered** 250 mL unpres.: **1**

SAMPLE IDENTIFICATION NUMBER(S) **ERH857 (N)** **ERH856 (Trip Blank)**

DATE: 07/22/19 TIME: Start:1040 End:1155 Start:1035

DECONTAMINATION PROCEDURES: Alconox, DI water, Isopropyl, and DI water wash

NOTES: Standpipe Measurement: w/N-2 : 196.96 ft btoc @8:15

Pesticide on ground all around well area.

SAMPLED BY: TV, GM, EB

SAMPLES DELIVERED TO: APPL TRANSPORTER: FedEx

WELL NO. RHMW07 LOCATION: Outside Tunnel PROJECT NO. 60571032

TIME	DTW*	GALLONS REMOVED	TDS (ppm)	pH	SP. COND. (mS/cm)	D.O. (mg/L)	TURB. (NTU)	TEMP. (°C)	ORP (mV)	SAL (psu)
1003	Lowered flow rate (300mL) in 80 sec									
1003	197.59	14.7L	1164.24	6.92	1.79	3.96	1.26	24.04	95.3	0.9
1008	Lowered flow rate									
1008	197.56	17L	1159.75	6.94	1.78	3.94	1.6	24.22	95.9	0.9
1013	Lowered flow rate									
1013	197.57	18.5L	1159.76	6.95	1.77	3.94	0.31	24.09	96.0	0.9
1018	Lowered flow rate									
1018	197.56	19L	1160.73	6.94	1.78	3.89	0.70	24.31	95.9	0.9
	Lowered flow rate to reduce drawdown ~160mL/min									
1023	197.49	20L	1155.92	6.96	1.77	3.80	0.69	25.03	95.9	0.9
1028	197.46	21L	1152.48	6.95	1.76	3.81	0.40	25.17	97.8	0.9
1033	197.43	21.5L	1145.66	6.95	1.75	3.74	0.31	25.31	97.9	0.9
1038	197.42	22L	1142.63	6.96	1.74	3.64	0.54	25.31	99.0	0.9
1040	Started collecting sample. Dropped flow rate slightly to ~100mL/min for VOAs.									
	Increased back to ~160mL/min or ambers/plastic									

Red Hill Groundwater Sampling Log

WELL NO. RHMW08 LOCATION: Outside Tunnel PROJECT NO. 60571032

DATE: 08/07/19 TIME: 0905 CLIMATIC CONDITIONS: Sunny, hot, 90% humidity, 87°F

Depth to groundwater		Final Depth	Depth to Product	Depth to bottom		Purge			
Previous (ft btoc)	Current (ft btoc)	(ft btoc)	(ft btoc)	Previous (ft btoc)	Current (ft btoc)	Flow rate (mL/min)	Start Time	Total Volume (gal)	Nitrogen used
*291.32	*291.48	**291.35	NA	311.30	NM	210	1052	2.75	1900 – E small tank 1400-900
[a] 291.18	**291.36								

Pump settings:	Pressure (PSI)		Discharge (sec)		Fill (sec)	
Previous/Actual	145	140	31	30	29	26

Headspace VOCs: 0.0 ppm Ambient VOCs: 0.0 ppm

O/W Interface Probe Type/Water Level Meter: Solinst Heron — Serial Number: 14573 (N-2) 01-5881

Gas Detector Type: MiniRAE 3000 (10.6 eV) — Serial Number: 592-902229

Water Quality Meter Type: InSitu Smartroll MP — Serial Number: 646770

Stabilization:+/- 0.2 ºC, +/- 3% conductivity, +/- 10% DO, +/- 0.1 pH, +/-10 mv ORP, turb=as low as possible (< 10 NTU ideal) for 3 consecutive readings following a min of 5 readings

Depth to groundwater is measure from top of grey plate (survey mark).

* 500' Oil/Water Interface Probe measurement

** 1000' Calibrated Water Level Meter measurement (N-2)

[a] 500' Calibrated Water Level Meter measurement (N-1) (HER fixed, N-2 was with tunnel team)

TIME	DTW**	GALLONS REMOVED	TDS (ppm)	pH	SP. COND. (mS/cm)	D.O. (mg/L)	TURB. (NTU)	TEMP. (°C)	ORP (mV)	SAL (psu)
1248	Water at surface. DO recal @ 1300									
1314	291.38	5	508.09	7.99	0.79	8.44	0.1	28.58	104.7	0.4
1316	291.37	—	521.99	7.99	0.80	8.26	0.12	26.21	104.5	0.4
1318	291.36	—	521.76	7.99	0.81	8.08	0.12	26.00	104.2	.04

(see next page)

SAMPLING EQUIPMENT: Dedicated Bladder Pump

APPEARANCE OF SAMPLE: COLOR: Clear

SEDIMENT: None

ODOR/OTHER: None

LABORATORY ANALYSIS PARAMETERS AND PRESERVATIVES / NUMBER AND TYPES OF SAMPLE CONTAINERS USED: 16 primary = 16 total

VOAs	Amber	Poly
HCl: **4**	1-L: **3**	250 mL H2SO4: **1**
H2SO4: **2**	500-mL: **2**	250 mL HCl (brown): **1 filtered**
	1-L (800 mL): **2**	250 mL unpres.: **1**

SAMPLE IDENTIFICATION NUMBER(S) **ERH859 (N)** **ERH858 (Trip Blank)**

DATE: 08/07/19 TIME: Start:1335 End:1424 Start:1300

DECONTAMINATION PROCEDURES: Alconox, DI water, Isopropyl, and DI water wash

NOTES: 0935 Attempted to use rental pump. Pump not providing water and flattening bladders. 1230 switched back To dedicated well pump with new bladder and check ball.

SAMPLED BY: KL, RS, CE

SAMPLES DELIVERED TO: APPL TRANSPORTER: FedEx

WELL NO. RHMW08 LOCATION: Outside Tunnel PROJECT NO. 60571032

TIME	DTW**	LITERS REMOVED	TDS (ppm)	pH	SP. COND. (mS/cm)	D.O. (mg/L)	TURB. (NTU)	TEMP. (°C)	ORP (mV)	SAL (psu)
1320	291.38	6	520.57	7.99	0.80	7.79	0.14	25.86	104.1	0.4
1322	291.38	—	521.31	7.98	0.80	7.60	0.16	25.73	104.0	0.4
1324	291.37	—	521.82	7.98	0.80	7.42	0.11	25.60	103.9	0.4
1326	291.36	7	521.76	7.99	0.80	7.32	0.11	25.61	103.7	0.4
1328	291.36	—	520.69	7.99	0.80	7.23	0.10	25.52	103.7	0.4
1330	291.36	7.5	519.54	7.99	0.80	7.11	0.12	25.47	103.7	0.4
1335	Start sampling									

Red Hill Groundwater Sampling Log

WELL NO. RHMW09 LOCATION: Outside Tunnel PROJECT NO. 60571032

DATE:07/23/19 TIME: 1203 CLIMATIC CONDITIONS: Sunny, 82°,62% humidity, light winds, no rain

Depth to groundwater		Final Depth	Depth to Product	Depth to bottom		Purge			
Previous (ft btoc)	Current (ft btoc)	(ft btoc)	(ft btoc)	Previous (ft btoc)	Current (ft btoc)	Flow rate (mL/min)	Start Time	Total Volume (gal)	Nitrogen used
*376.39	*376.52	376.41	NA	396.69	NM	275mL/min	1301	16L	Start:2800 End:1500
[a] 376.29	**376.42								

Pump settings:	Pressure (PSI)		Discharge (sec)		Fill (sec)	
Previous/Actual QED settings	180	185	40	60	40	40 QED Settings

Headspace VOCs: 0.0 ppm Ambient VOCs: 0.0 ppm

O/W Interface Probe Type/Water Level Meter: (rental)/(calibrated) HERON/N-2 Serial Number: 01-5881/N-2

Gas Detector Type: MiniRAE 3000 (10.6 eV) Serial Number: 592-908165

Water Quality Meter Type: In-Situ SmarTroll MP Serial Number: 589972

+Stabilization:+/- 0.2 ºC, +/- 3% conductivity, +/- 10% DO, +/- 0.1 pH, +/-10 mv ORP, turb=as low as possible (< 10 NTU ideal) for 3 consecutive readings following a min of 5 readings

Depth to groundwater is measure from top of grey plate (survey mark).

* 500' Oil/Water Interface Probe measurement

** 1000' Calibrated Water Level Meter measurement (N-2)

[a] 500' Calibrated Water Level Meter measurement (N-1) (HER fixed, N-2 was with tunnel team)

TIME	DTW**	LITERS REMOVED	TDS (ppm)	pH	SP. COND. (mS/cm)	D.O. (mg/L)	TURB. (NTU)	TEMP. (°C)	ORP (mV)	SAL (psu)
1313	Water at surface									
1325	376.41	2	206.90	7.69	0.32	7.46	0.39	28.20	113.8	0.2
1330	376.41	3.25	217.46	7.63	0.33	8.21	0.34	25.60	119.0	0.2
1335	376.41	4.0	217.33	7.64	0.34	8.76	0.34	24.62	111.3	0.2
1340	Stopped pumping to recalibrate DO sensor (108.7, 7.93mg/L, 31.5)									

(see next page)

SAMPLING EQUIPMENT: Dedicated Bladder Pump

APPEARANCE OF SAMPLE: COLOR: Clear

SEDIMENT: None

ODOR/OTHER: No odor

LABORATORY ANALYSIS PARAMETERS AND PRESERVATIVES / NUMBER 17 primary = 17 total
AND TYPES OF SAMPLE CONTAINERS USED:

VOAs	Amber	Poly
HCl: **4**	1-L: **3**	500mL HN03:**1**
H2SO4: **2**	500-mL: **2**	250 mL H2SO4: **1**
	1-L (800 mL): **2**	250 mL HCl (brown): **1 filtered**
		250 mL unpres.: **1**

SAMPLE IDENTIFICATION NUMBER(S) **ERH861 (N)** **ERH860 (Trip Blank)**

DATE: 07/23/19 TIME: Start:1440 End:1548 Start:1435

DECONTAMINATION PROCEDURES: Alconox, DI water, Isopropyl, and DI water wash

NOTES: QED Controller used

SAMPLED BY: GM, TV and EB

SAMPLES DELIVERED TO: APPL TRANSPORTER: FedEx

WELL NO. RHMW09 LOCATION: Outside Tunnel PROJECT NO. 60571032

TIME	DTW**	LITERS REMOVED	TDS (ppm)	pH	SP. COND. (mS/cm)	D.O. (mg/L)	TURB. (NTU)	TEMP. (°C)	ORP (mV)	SAL (psu)
1350	376.40	6.5	212.92	6.31	0.33	7.19	0.67	27.22	121.7	0.2
1355	376.40	7.5	217.07	6.89	0.34	7.75	0.45	25.14	125.4	0.2
1400	376.40	8.6	218.73	7.12	0.34	7.74	0.18	24.88	126.4	0.2
1405	376.40	9.8	223.44	7.42	0.37	7.81	0.12	24.43	125.8	0.2
1410	376.40	11	224.37	7.47	0.34	7.85	0.08	24.54	128.1	0.2
1415	376.40	12.2	221.80	7.51	0.34	7.84	0.12	24.60	129.5	0.2
1420	376.40	13.3	219.04	7.50	0.34	7.83	0.05	24.38	127.7	0.2
1425	376.40	14.1	219.24	7.53	0.34	7.88	0.06	24.36	129.3	0.2
1430	376.40	15.2	220.08	7.55	0.34	7.90	0.08	24.40	128.5	0.2
1440	Start collecting sample. Dropped flow rate to ~120mL/min for VOA Sampling									
	Returned to ~275 mL/min for sampling									

Red Hill Groundwater Sampling Log

WELL NO. RHMW10 LOCATION: Outside Tunnel PROJECT NO. 60571032

DATE: 07/24/19 TIME: 1253 CLIMATIC CONDITIONS: Sunny, 85°, 63% humidity, mild range wind.

Depth to groundwater		Final Depth	Depth to Product	Depth to bottom		Purge			
Previous (ft btoc)	Current (ft btoc)	(ft btoc)	(ft btoc)	Previous (ft btoc)	Current (ft btoc)	Flow rate (mL/min)	Start Time	Total Volume (gal)	Nitrogen used
*476.45	*476.58	**476.38 @1811	NA	497.37	NM	200mL/min	1315	3	Start:2800 end:600 Start:2800 End:1100
[a] 476.35	**476.40								

Pump settings:	Pressure (PSI)		Discharge (sec)		Fill (sec)	
Previous/Actual QED Settings	—	230	—	60	—	45 QED Settings

Headspace VOCs: 0.0 ppm Ambient VOCs: 0.0 ppm

O/W Interface Probe Type/Water Level Meter: (rental) / (calibrated) HERON / N-2 Solinst Serial Number: 01-5881 / N-2

Gas Detector Type: MiniRAE 3000 (10.6 eV) Serial Number: 592-908165

Water Quality Meter Type: InSitu SmarTroll MP Serial Number: 589972

Stabilization:+/- 0.2 ºC, +/- 3% conductivity, +/- 10% DO, +/- 0.1 pH, +/-10 mv ORP, turb=as low as possible (< 10 NTU ideal) for 3 consecutive readings following a min of 5 readings

Depth to groundwater is measure from top of grey plate (survey mark).

* 500' Oil/Water Interface Probe measurement

** 1000' Calibrated Water Level Meter measurement (N-2)

[a] 500' Calibrated Water Level Meter measurement (N-1) (HER fixed, N-2 was with tunnel team)

TIME	DTW**	GALLONS REMOVED	TDS (ppm)	pH	SP. COND. (mS/cm)	D.O. (mg/L)	TURB. (NTU)	TEMP. (°C)	ORP (mV)	SAL (psu)
1332	Water at surface									
1352	Water squirting erratically. Stopped flow and reestablished pressure, flow and discharge									

(see next page)

SAMPLING EQUIPMENT: Dedicated Bladder Pump

APPEARANCE OF SAMPLE: COLOR: Clear

SEDIMENT: None

ODOR/OTHER: No odor

LABORATORY ANALYSIS PARAMETERS AND PRESERVATIVES / NUMBER AND TYPES OF SAMPLE CONTAINERS USED: 17 Primary = 17 total

VOAs	Amber	Poly
HCl: **4**	1-L: **3**	500mL HN03:**1**
H2SO4: **2**	500-mL: **2**	250 mL H2SO4: **1**
	1-L (800mL): **2**	250 mL HCl (brown): **1 filtered**
		250 mL unpres.: **1**

SAMPLE IDENTIFICATION NUMBER(S) **ERH863 (N)** **ERH862 (Trip Blank)**

DATE: 07/24/19 TIME: Start:1700 End:1807 Start:1530

DECONTAMINATION PROCEDURES: Alconox, DI water, Isopropyl, and DI water wash

NOTES:

SAMPLED BY: MH, RS, GM, and TV

SAMPLES DELIVERED TO: APPL TRANSPORTER: FedEx

WELL NO. RHMW10 LOCATION: Outside Tunnel PROJECT NO. 60571032

TIME	DTW**	LITERS REMOVED	TDS (ppm)	pH	SP. COND. (mS/cm)	D.O. (mg/L)	TURB. (NTU)	TEMP. (°C)	ORP (mV)	SAL (psu)
1403	Pulled pump, changed bladder, redeployed pump									
1528	Pump back in well. Starts to pump and reset controller settings									
1543	Water at surface again									
1553	No reading	1.75	166.55	7.81	0.29	No reading	1.36	26.41	135.0	0.1
1600	476.40	2.0	189.00	7.77	0.29	No reading	0.70	26.59	134.2	0.1
1605	476.40	2.5	188.09	7.77	0.29	11.0	0.70	26.13	135.0	0.1
1609	476.40	3.0	189.21	7.75	0.28	10.61	1.10	25.53	131.2	0.1
1613	Spot check in cal. Chamber					7.96mg/L	98.6% Saturation			
1618	476.40	5	190.63	7.58	0.29	9.34	0.60	25.67	135.2	0.1
1623	476.35	5.5	193.00	7.49	0.29	7.93	1.3	25.67	137.6	0.1
1629	476.37	7.5	193.20	7.41	0.30	8.35	1.70	25.21	137.8	0.1
1635	476.37	8.5	190.97	7.54	0.29	8.37	1.40	25.37	138.2	0.1
1640	476.37	9	192.40	7.53	0.29	8.30	1.30	25.48	138.2	0.1
1645	476.37	9.75	190.76	7.51	0.29	8.09	1.70	25.13	138.4	0.1
1650	476.37	10.5	192.45	7.51	0.29	8.11	1.31	25.21	138.2	0.1
1700	Started collecting sample. Dropped flow rate slightly to ~100mL/min									
	Returned to ~200-235mL/min for ambers/plastics									

Westbay Well Groundwater Sampling

Field Data Sheet

Project: 60571032 Red Hill | Ambient VOCs (ppm): 0.0 | Date: 8/1/2019

Monitoring Well No.: RHMW11 | Headspace VOCs (ppm): 0.0 | Sheet: 1 of 1

Sampling Zone No(s).: Zone 5 | Start Time: 8:39 | Atm. Reading: 14.79 | Sampling Equipment: EMS 5255

Sampled by: BM, GM, TV, SM | End Time: 1215 | Atm. Reading: 14.80

Time	Port No.	Run No.	Surface Function Tests (probe in flushing collar)						Position Sampler					Sample Collection Checks (probe located at sampling zone in Westbay casing)								Comments (volume recovered)
			Shoe Out	Close Valve	Check Vacuum	Open Valve	Evacuate Bottles (3-5 psi)	Close Valve	Shoe In	Arm In	Locate Port	Arm Out	Land Probe	Pressure in Westbay (psi)	Shoe Out	Zone Pressure (psi)	Open Valve	Zone Pressure (psi)	Close Valve	Shoe In	Pressure in Westbay (psi)	
841	Z5	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	29.82	✓	55.76	✓	55.28	✓	✓	29.79	Physical Parameters
900	Z5	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	29.83	✓	55.77	✓	55.58	✓	✓	29.77	VOAs TPH d/o
918	Z5	3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	29.83	✓	55.75	✓	55.79	✓	✓	29.73	TPH d/o
940	Z5	4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	29.75	✓	55.75	✓	55.75	✓	✓	29.74	PAHs + TPH d/o
956	Z5	5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	29.71	✓	55.78	✓	55.71	✓	✓	29.72	PAHs + TPH d/o
1018	Z5	6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	29.72	✓	55.75	✓	55.75	✓	✓	29.72	Physical Parameters
1051	Z5	7	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	29.68	✓	55.75	✓	55.79	✓	✓	29.73	TPH d/o + PAHs
1110	Z5	8	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	29.69	✓	55.75	✓	55.79	✓	✓	29.68	TPH d/o + SVOCs
1127	Z5	9	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	29.69	✓	55.75	✓	55.77	✓	✓	29.68	SVOCs + polys
1144	Z5	10	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	29.64	✓	55.75	✓	55.79	✓	✓	29.67	Polys
1215	Z5	11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	29.60	✓	55.79	✓	55.76	✓	✓	29.61	Physical Parameters

TIME	Liters Removed	TDS (ppm)	pH	SP. COND. (mS/cm)	D.O. (mg/L)	TURB. (NTU)	TEMP. (°C)	ORP (mV)	SAL (ppt)	Comments
9:07	1	263.33	7.68	0.41	0.35	0.44	25.26	57.7	0.2	
10:43	6	277.57	7.80	0.43	0.25	0.88	27.69	35.3	0.2	
12:40	11	271.95	8.06	0.42	0.18	0.36	29.02	34.3	0.2	

Sample Identification Numbers: ERH878 (N) & ERH877(TB)

Sample Start Time: 9:00 | End Time: 12:10

Appearance of Sample: COLOR: CLEAR

SEDIMENT: NONE

OTHER: NONE

Notes:

LABORATORY ANALYSIS PARAMETERS AND PRESERVATIVES / NUMBER AND TYPES OF SAMPLE CONTAINERS USED:

17 Primary

VOAs	**Amber**	**Poly**
HCl: **4**	1-L: **3**	250 mL H2SO4: **1**
H2SO4: **2**	500-mL: **2**	250 mL HCl (brown): **1** **filtered**
	1-L (800 mL): **2**	250 mL unpres.: **1**

Poly 500mL HN03: **1**

Westbay Well Groundwater Sampling

Field Data Sheet

Project: 60571032 Red Hill | Ambient VOCs (ppm): 0.0 | Date: 8/5/2019

Monitoring Well No.: RHMW11 | Headspace VOCs (ppm): 0.0 | Sheet: 1 of 1

Sampling Zone No(s).: Zone 7 | Start Time: 7:48 | Atm. Reading: 14.77 | Sampling Equipment: EMS 5255

Sampled by: BM, TV, GM, EH | End Time: 13:25 | Atm. Reading: 14.79

Time	Port No.	Run No.	Surface Function Tests (probe in flushing collar)						Position Sampler					Sample Collection Checks (probe located at sampling zone in Westbay casing)								Comments (volume recovered)
			Shoe Out	Close Valve	Check Vacuum	Open Valve	Evacuate Bottles (3-5 psi)	Close Valve	Shoe In	Arm In	Locate Port	Arm Out	Land Probe	Pressure in Westbay (psi)	Shoe Out	Zone Pressure (psi)	Open Valve	Zone Pressure (psi)	Close Valve	Shoe In	Pressure in Westbay (psi)	
758	Z7	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.89	✓	54.72	✓	53.54	✓	✓	14.96	Physical parameters
824	Z7	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.87	✓	54.33	✓	53.02	✓	✓	14.96	polys and H2S04 VOAs (TOC)
851	Z7	3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.88	✓	53.32	✓	52.74	✓	✓	14.95	HNO3 500mL polys
919	Z7	4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.89	✓	52.95	✓	52.12	✓	✓	14.97	filtered samples
941	Z7	5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.88	✓	52.94	✓	52.66	✓	✓	14.95	800mL Amber
1007	Z7	6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.89	✓	53.16	✓	52.29	✓	✓	14.92	800mL Amber
1031	Z7	7	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.90	✓	52.98	✓	52.36	✓	✓	14.93	Physical parameters
1054	Z7	8	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.92	✓	52.78	✓	52.37	✓	✓	14.94	1L amber
1117	Z7	9	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.87	✓	52.96	✓	52.28	✓	✓	14.98	1L amber
1142	Z7	10	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.88	✓	52.90	✓	52.21	✓	✓	14.92	1L amber
1206	Z7	11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.89	✓	52.61	✓	52.19	✓	✓	14.90	500mL ambers
1233	Z7	12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.87	✓	52.41	✓	51.76	✓	✓	14.90	VOAs
1258	Z7	13	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.85	✓	52.26	✓	51.75	✓	✓	14.94	Physical parameters

TIME	Liters Removed	TDS (ppm)	pH	SP. COND. (mS/cm)	D.O. (mg/L)	TURB. (NTU)	TEMP. (°C)	ORP (mV)	SAL (psu)	Comments
828	1	107.42	6.89	0.26	0.54	2.45	25.47	86.7	0.1	
1058	7	160.98	7.09	0.25	0.57	0.72	29.65	65.0	0.1	
1333	13	167.39	6.61	0.26	0.63	1.28	28.50	57.3	0.1	

Sample Identification Numbers: ERH874 (N) & ERH873 (TB)

Sample Start Time: 855 1253 End Time: 1253

Appearance of Sample: COLOR: Murky

SEDIMENT: None

OTHER: None

Sampling Order: 1. all 250 mL plastics and 40 mL H2SO4 vials, 2. 500 mL HNO3 plastic, 3. 1L ambers and 40 mL HCl vials, 4. 500 mL ambers, 5. 40 mL unpres vials

Notes:

LABORATORY ANALYSIS PARAMETERS AND PRESERVATIVES / NUMBER AND TYPES OF SAMPLE CONTAINERS USED:

24 Primary

VOAs	**Amber**	Poly
HCl: **4**	1-L: **3**	250 mL H2SO4: **1**
Unpres: **3**	500-mL: **2**	250 mL HCl (brown): **1 filtered**
H2SO4: **2 + 2 filtered**	1-L (800 mL): **2**	250 mL unpres.: **2 + 1 filtered**
		500 mL HN03: **1**

Westbay Well Groundwater Sampling

Field Data Sheet

Project: 60571032 Red Hill | Ambient VOCs (ppm): 0.0 | Date: 7/30/2019

Monitoring Well No.: RHMW14 | Headspace VOCs (ppm): 0.0 | Sheet: 1 of 1

Sampling Zone No(s).: Zone 3 | Start Time: 735 | Atm. Reading: 14.79 | Sampling Equipment: EMS 5285

Sampled by: BM, BL, TV, EB | End Time: 1658 | Atm. Reading: 14.81

Time	Port No.	Run No.	Surface Function Tests (probe in flushing collar)						Position Sampler					Sample Collection Checks (probe located at sampling zone in Westbay casing)								Comments (volume recovered)
			Shoe Out	Close Valve	Check Vacuum	Open Valve	Evacuate Bottles (3-5 psi)	Close Valve	Shoe In	Arm In	Locate Port	Arm Out	Land Probe	Pressure in Westbay (psi)	Shoe Out	Zone Pressure (psi)	Open Valve	Zone Pressure (psi)	Close Valve	Shoe In	Pressure in Westbay (psi)	
735	Z3	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	41.08	✓	85.96	✓	85.96	✓	✓	41.15	Physical parameters
801	Z3	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	41.23	✓	86.00	✓	86.00	✓	✓	41.15	250mL plastics
821	Z3	3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	41.04	✓	85.99	✓	Zone pressure when ? Valve too high. Canisters might be full. Pull up do not use for sample				
841	Z3	4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	41.02	✓	86.02	✓	86.00	✓	✓	40.97	500mL plastics
904	Z3	5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	40.92	✓	86.00	✓	86.00	✓	✓	40.94	filtered
929	Z3	6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	41.05	✓	86.00	✓	85.97	✓	✓	40.96	1L ambers PAHs
953	Z3	7	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	40.93	✓	85.99	✓	86.01	✓	✓	40.94	1L ambers PAHs
1014	Z3	8	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	40.90	✓	86.00	✓	86.00	✓	✓	40.91	1L ambers PAHs
1035	Z3	9	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	40.89	✓	85.98	✓	85.99	✓	✓	40.91	1L ambers PAHs
1102	Z3	10	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	40.87	✓	86.01	✓	86.02	✓	✓	40.87	1L ambers PAHs
1128	Z3	11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	40.88	✓	86.01	✓	85.99	✓	✓	40.85	Physical parameters
1154	Z3	12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	40.80	✓	86.03	✓	86.02	✓	✓	40.84	1L ambers PAHs
1216	Z3	13	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	40.81	✓	86.00	✓	86.02	✓	✓	40.81	1L ambers PAHs
1238	Z3	14	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	40.79	✓	86.02	✓	86.02	✓	✓	40.81	VOCs

TIME	Liters Removed	TDS (ppm)	pH	SP. COND. (mS/cm)	D.O. (mg/L)	TURB. (NTU)	TEMP. (°C)	ORP (mV)	SAL (psu)	Comments
805	1	192.39	7.30	0.30	1.33	2.40	25.17	95.5	0.1	
1155	10	176.22	7.87	0.27	0.87	4.46	28.97	104.6	0.1	
1722	25	183.18	7.90	0.28	0.93	3.55	29.27	92.6	0.1	

Sample Identification Numbers: ERH882 (N, MS/MSD) & ERH881 (TB) & ERH883 (FD)

Sample Start Time: 815 | End Time: 1628

Appearance of Sample: COLOR: clear

SEDIMENT: none

OTHER: none

Sampling Order: 1. all 250 mL plastics and 40 mL H2SO4 vials, 2. 500 mL HNO3 plastic, 3. 1L ambers and 40 mL HCl vials, 4. 500 mL ambers, 5. 40 mL unpres vials

Notes: TB=ERH 879

LABORATORY ANALYSIS PARAMETERS AND PRESERVATIVES / NUMBER AND TYPES OF SAMPLE CONTAINERS USED:

24 Primary + 14 Dup +24 MS/MSD = 62 total

VOAs	Amber	Poly
HCl: **4+4+4 = 12**	1-L: **3+3+6 = 12**	250 mL H2SO4: **1**
Unpres: **3+3+6 = 12**	500-mL: **2+2+4 =8**	250 mL HCl (brown): **1 filtered**
H2SO4: **2 + 2 filtered**	1-L (800 mL): **2+2+4 = 8**	250 mL unpres.: **2 + 1 filtered**
		500 mL HN03: **1**

Westbay Well Groundwater Sampling

Field Data Sheet

The following bottles were not collected: 1x1 amber ERH883 PAHs, 1x800mL amber ERH882MS/MSD, 1x500mL amber ERH882 SVOCs, 3x500mL ambers ERH882MS/MSD-SVOCs, 1x500mL amber ERH883-SVOCs

Time	Port No.	Run No.	Surface Function Tests (probe in flushing collar)						Position Sampler					Sample Collection Checks (probe located at sampling zone in Westbay casing)								Comments (volume recovered)
			Shoe Out	Close Valve	Check Vacuum	Open Valve	Evacuate Bottles (3-5 psi)	Close Valve	Shoe In	Arm In	Locate Port	Arm Out	Land Probe	Pressure in Westbay (psi)	Shoe Out	Zone Pressure (psi)	Open Valve	Zone Pressure (psi)	Close Valve	Shoe In	Pressure in Westbay (psi)	
1304	Z3	15	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	40.77	✓	86.02	✓	86.01	✓	✓	40.79	800mL ambers (TPH-d/o)
1327	Z3	16	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	40.77	✓	86.03	✓	86.02	✓	✓	40.75	TPH-d/o
1345	Z3	17	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	40.73	✓	86.04	✓	86.02	✓	✓	40.73	TPH-d/o
1401	Z3	18	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	40.70	✓	86.01	✓	86.01	✓	✓	40.69	TPH-d/o
1418	Z3	19	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	40.67	✓	85.99	✓	85.98	✓	✓	40.71	TPH-d/o
1442	Z3	20	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	40.68	✓	86.00	✓	85.99	✓	✓	40.70	TPH-d/o SVOC
1505	Z3	21	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	40.67	✓	86.01	✓	86.00	✓	✓	40.68	SVOC / EDB
1518	Z3	22	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	40.68	✓	85.99	✓	86.00	✓	✓	40.65	PAHs
1536	Z3	23	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	40.69	✓	86.00	✓	85.99	✓	✓	40.65	PAHs
1552	Z3	24	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	40.68	✓	86.00	✓	86.01	✓	✓	40.63	PAHs
1609	Z3	25	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	40.60	✓	85.99	✓	86.00	✓	✓	40.63	PAHs
1647	Z3	26	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	40.61	✓	85.96	✓	86.00	✓	✓	40.60	Parameters
MAG1 OFF/ON																						

Westbay Well Groundwater Sampling

Field Data Sheet

Project: 60571032 Red Hill | Ambient VOCs (ppm): 0.0 | Date: 7/29/2019

Monitoring Well No.: RHMW14 | Headspace VOCs (ppm): 0.0 | Sheet: 1 of 1

Sampling Zone No(s).: Zone 4 | Start Time: 959 | Atm. Reading: 14.82 | Sampling Equipment: EMS 5285

Sampled by: BM, BL, TV, EB | End Time: 1622 | Atm. Reading: 14.78

Time	Port No.	Run No.	Surface Function Tests (probe in flushing collar)						Position Sampler					Sample Collection Checks (probe located at sampling zone in Westbay casing)								Comments (volume recovered)
			Shoe Out	Close Valve	Check Vacuum	Open Valve	Evacuate Bottles (3-5 psi)	Close Valve	Shoe In	Arm In	Locate Port	Arm Out	Land Probe	Pressure in Westbay (psi)	Shoe Out	Zone Pressure (psi)	Open Valve	Zone Pressure (psi)	Close Valve	Shoe In	Pressure in Westbay (psi)	
959	Z4	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.97	✓	56.34	✓	56.27	✓	✓	15.03	Physical parameters
1045	Z4	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.96	✓	56.31	✓	56.10	✓	✓	15.00	250mL poly, 40mL H2SO4 VOA
1111	Z4	3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.94	✓	56.28	✓	56.05	✓	✓	15.00	HSO4 + filtered
1143	Z4	4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.95	✓	56.27	✓	56.00	✓	✓	14.99	HNO3 - MgCa
1212	Z4	5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.96	✓	56.28	✓	56.12	✓	✓	15.00	HNO3 + PAHs
1235	Z4	6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.94	✓	56.28	✓	56.07	✓	✓	14.99	Physical parameters
1301	Z4	7	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.94	✓	56.30	✓	56.13	✓	✓	15.00	PAHs
1330	Z4	8	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.94	✓	56.29	✓	56.12	✓	✓	14.99	PAHs
1355	Z4	9	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.94	✓	56.28	✓	56.12	✓	✓	14.98	PAHs + TPH-d/o
1420	Z4	10	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.94	✓	56.28	✓	56.10	✓	✓	14.97	TPH-d/o
1440	Z4	11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.94	✓	56.27	✓	56.10	✓	✓	14.97	TPH-d/o + SVOCs
1505	Z4	12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.94	✓	56.26	✓	56.11	✓	✓	14.97	SVOCs, VOCs,EDB
1524	Z4	13	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.93	✓	56.25	✓	56.10	✓	✓	14.97	didn't need water
1556	Z4	14	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.90	✓	56.29	✓	56.01	✓	✓	14.96	Physical parameters

TIME	Liters Removed	TDS (ppm)	pH	SP. COND. (mS/cm)	D.O. (mg/L)	TURB. (NTU)	TEMP. (°C)	ORP (mV)	SAL (psu)	Comments
1057	1	182.80	6.95	0.28	1.10	7.26	30.99	63.0	0.1	delay due to ipad overheating
1307	6	185.14	7.25	0.28	0.30	6.78	31.66	50.3	0.1	containers in sun
1627	14	177.31	7.22	0.27	0.78	3.09	30.98	53.7	0.1	containers in sun

Sample Identification Numbers: ERH880 (N) & ERH881 (TB)

Sample Start Time: 1040 End Time: 1548

Appearance of Sample: COLOR: Murky

SEDIMENT: None

OTHER: None

Sampling Order: 1. all 250 mL plastics and 40 mL H2SO4 vials, 2. 500 mL HNO3 plastic, 3. 1L ambers and 40 mL HCl vials, 4. 500 mL ambers, 5. 40 mL unpres vials

Notes: Forgot to filter 2 H2SO4 VOAs, ERH890'

LABORATORY ANALYSIS PARAMETERS AND PRESERVATIVES / NUMBER AND TYPES OF SAMPLE CONTAINERS USED:

24 Primary

VOAs	**Amber**	Poly
HCl: **4**	1-L: **3**	250 mL H2SO4: **1**
Unpres: **3**	500-mL: **2**	250 mL HCl (brown): **1 filtered**
H2SO4: **2 + 2 filtered**	1-L (800 mL): **2**	250 mL unpres.: **2 + 1 filtered**
		500 mL HN03: **1**

Westbay Well Groundwater Sampling

Field Data Sheet

Project: 60571032 Red Hill | Ambient VOCs (ppm): 0.0 | Date: 7/31/2019

Monitoring Well No.: RHMW14 | Headspace VOCs (ppm): 0.0 | Sheet: 1 of 1

Sampling Zone No(s).: Zone 4 | Start Time: 811 | Atm. Reading: 14.79 | Sampling Equipment: EMS 5285

Sampled by: BM, GM, TV, SM | End Time: 850 | Atm. Reading: 14.77

Time	Port No.	Run No.	Surface Function Tests (probe in flushing collar)						Position Sampler					Sample Collection Checks (probe located at sampling zone in Westbay casing)								Comments (volume recovered)
			Shoe Out	Close Valve	Check Vacuum	Open Valve	Evacuate Bottles (3-5 psi)	Close Valve	Shoe In	Arm In	Locate Port	Arm Out	Land Probe	Pressure in Westbay (psi)	Shoe Out	Zone Pressure (psi)	Open Valve	Zone Pressure (psi)	Close Valve	Shoe In	Pressure in Westbay (psi)	
811	Z4	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.92	✓	56.22	✓	55.73	✓	✓	14.96	Parameters
834	Z4	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.94	✓	56.23	✓	55.87	✓	✓	14.96	2 H2SO4 VOAs

TIME	Liters Removed	TDS (ppm)	pH	SP. COND. (mS/cm)	D.O. (mg/L)	TURB. (NTU)	TEMP. (°C)	ORP (mV)	SAL (pptsu)	Comments
0847	1	184.58	6.78	0.28	1.70	0.59	25.41	92.2	0.1	

Sample Identification Numbers: ERH890

Sample Start Time: 0811 End Time: 830

Appearance of Sample: COLOR: Murky

SEDIMENT: None

OTHER: None

Sampling Order: 1. all 250 mL plastics and 40 mL H2SO4 vials, 2. 500 mL HNO3 plastic, 3. 1L ambers and 40 mL HCl vials, 4. 500 mL ambers, 5. 40 mL unpres vials

Notes: 2H2SO4 VOAs filtered

LABORATORY ANALYSIS PARAMETERS AND PRESERVATIVES / NUMBER AND TYPES OF SAMPLE CONTAINERS USED:

2 Primary

VOAs	**Amber**	Poly
HCl: **0**	1-L: **0**	250 mL H2SO4: **0**
Unpres:**0**	500-mL: **0**	250 mL HCl (brown): **0**
H2SO4: **2 filtered**	1-L (800 mL): **0**	250 mL unpres.: **0**
		500 mL HN03: **0**

Westbay Well Groundwater Sampling

Field Data Sheet

Project: 60571032 Red Hill | Ambient VOCs (ppm): 0.0 | Date: 7/31/2019

Monitoring Well No.: RHMW14 | Headspace VOCs (ppm): 0.0 | Sheet: 1 of 1

Sampling Zone No(s).: Zone 5 | Start Time: 935 | Atm. Reading: 14.91 | Sampling Equipment: EMS 5285

Sampled by: BM, GM, TV, MS | End Time: 1348 | Atm. Reading: 14.81

Time	Port No.	Run No.	Surface Function Tests (probe in flushing collar)						Position Sampler					Sample Collection Checks (probe located at sampling zone in Westbay casing)								Comments (volume recovered)
			Shoe Out	Close Valve	Check Vacuum	Open Valve	Evacuate Bottles (3-5 psi)	Close Valve	Shoe In	Arm In	Locate Port	Arm Out	Land Probe	Pressure in Westbay (psi)	Shoe Out	Zone Pressure (psi)	Open Valve	Zone Pressure (psi)	Close Valve	Shoe In	Pressure in Westbay (psi)	
935	Z5	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.90	✓	43.51	✓	43.40	✓	✓	14.92	Physical parameters
952	Z5	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.92	✓	43.47	✓	43.38	✓	✓	14.91	250mL poly, H2SO4 VOAs
1014	Z5	3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.89	✓	43.47	✓	43.37	✓	✓	14.94	500mL plastic + PAHs
1031	Z5	4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.90	✓	43.44	✓	43.34	✓	✓	14.95	500mL plastic + PAHs
1048	Z5	5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.90	✓	43.42	✓	43.34	✓	✓	14.96	PAHs
1105	Z5	6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.92	✓	43.44	✓	43.33	✓	✓	14.93	TPH-d/o PAHs
1124	Z5	7	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.89	✓	43.44	✓	43.38	✓	✓	14.93	Physical parameters
1155	Z5	8	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.88	✓	43.44	✓	43.33	✓	✓	14.95	TPH-d/o PAHs
1218	Z5	9	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.90	✓	43.41	✓	43.30	✓	✓	14.90	TPH-d/o SVOCs
1231	Z5	10	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.87	✓	43.39	✓	43.32	✓	✓	14.90	Filtered samples
1246	Z5	11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.89	✓	43.39	✓	43.26	✓	✓	14.91	SVOCs, 250mL poly
1305	Z5	12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.89	✓	43.40	✓	43.30	✓	✓	14.90	VOAs
1332	Z5	13	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.89	✓	43.39	✓	43.30	✓	✓	14.92	Physical parameters

TIME	Liters Removed	TDS (ppm)	pH	SP. COND. (mS/cm)	D.O. (mg/L)	TURB. (NTU)	TEMP. (°C)	ORP (mV)	SAL (ppt)	Comments
959	1	220.30	6.92	0.34	0.42	0.52	27.22	84.1	0.2	
1154	7	220.36	7.23	0.34	0.41	1.96	33.09	80.6	0.2	
1353	13	209.55	7.42	0.32	0.59	1.48	30.55	76.5	0.2	

Sample Identification Numbers: ERH872 (N) ERH871 (TB)

Sample Start Time: 935 End Time: 1342

Appearance of Sample: COLOR: Murky

SEDIMENT: None

OTHER: None

Sampling Order: 1. all 250 mL plastics and 40 mL H2SO4 vials, 2. 500 mL HNO3 plastic, 3. 1L ambers and 40 mL HCl vials, 4. 500 mL ambers, 5. 40 mL unpres vials

Notes: Change ERH #s To 872 (N) 871 (TB); ERH872@1010

LABORATORY ANALYSIS PARAMETERS AND PRESERVATIVES / NUMBER AND TYPES OF SAMPLE CONTAINERS USED:

24 Primary

VOAs	**Amber**	Poly
HCl: **4**	1-L: **3**	250 mL H2SO4: **1**
Unpres: **3**	500-mL: **2**	250 mL HCl (brown): **1 filtered**
H2SO4: **2 + 2 filtered**	1-L (800 mL): **2**	250 mL unpres.: **2 + 1 filtered**
		500 mL HN03: **1**

Westbay Well Groundwater Sampling

Field Data Sheet

Project: 60571032 Red Hill | Ambient VOCs (ppm): 0.0 | Date: 8/6/2019

Monitoring Well No.: RHMW14 | Headspace VOCs (ppm): 0.0 | Sheet: 1 of 1

Sampling Zone No(s).: Zone 7 | Start Time: 735 | Atm. Reading: 14.72 | Sampling Equipment: EMS5285

Sampled by: MH, BM, GM, TV | End Time: 1132 | Atm. Reading: 14.79

Time	Port No.	Run No.	Surface Function Tests (probe in flushing collar)						Position Sampler					Sample Collection Checks (probe located at sampling zone in Westbay casing)								Comments (volume recovered)
			Shoe Out	Close Valve	Check Vacuum	Open Valve	Evacuate Bottles (3-5 psi)	Close Valve	Shoe In	Arm In	Locate Port	Arm Out	Land Probe	Pressure in Westbay (psi)	Shoe Out	Zone Pressure (psi)	Open Valve	Zone Pressure (psi)	Close Valve	Shoe In	Pressure in Westbay (psi)	
737	Z7	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.85	✓	25.95	✓	25.88	✓	✓	14.90	For parameters
758	Z7	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.87	✓	25.90	✓	25.81	✓	✓	14.94	Polys
815	Z7	3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.88	✓	25.83	✓	25.73	✓	✓	14.94	metals, TPH -d/o
835	Z7	4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.89	✓	25.74	✓	25.69	✓	✓	14.92	filters
853	Z7	5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.87	✓	25.70	✓	25.64	✓	✓	14.93	TPH-d/o
917	Z7	6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.86	✓	25.66	✓	25.61	✓	✓	14.93	parameters
939	Z7	7	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.87	✓	25.64	✓	25.57	✓	✓	14.92	TPH-d/o, PAHs
955	Z7	8	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.85	✓	25.58	✓	25.51	✓	✓	14.93	PAHs
1012	Z7	9	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.85	✓	25.51	✓	25.47	✓	✓	14.94	PAHs
1027	Z7	10	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.85	✓	25.45	✓	25.41	✓	✓	14.92	PAHs, SVOCs
1042	Z7	11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.87	✓	25.43	✓	25.36	✓	✓	14.94	SVOCs, VOAs
1100	Z7	12	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.84	✓	25.37	✓	25.30	✓	✓	14.94	VOAs
1116	Z7	13	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	14.87	✓	25.35	✓	25.24	✓	✓	14.92	parameters

TIME	Liters Removed	TDS (ppm)	pH	SP. COND. (mS/cm)	D.O. (mg/L)	TURB. (NTU)	TEMP. (°C)	ORP (mV)	SAL (ppt)	Comments
800	1	167.39	6.61	0.26	0.63	2.16	28.50	57.3	0.1	
940	6	231.09	7.19	0.36	0.69	0.64	27.22	92.5	0.1	
1134	13	230.60	7.26	0.35	0.49	5.79	27.69	90.7	0.2	

Sample Identification Numbers: ERH876 (N) & ERH875 (TB)

Sample Start Time: 800 | End Time: 1100

Appearance of Sample: COLOR: Clear

SEDIMENT: None

OTHER: No odor or sheen

Sampling Order: 1. all 250 mL plastics and 40 mL H2SO4 vials, 2. 500 mL HNO3 plastic, 3. 1L ambers and 40 mL HCl vials, 4. 500 mL ambers, 5. 40 mL unpres vials

Notes:

LABORATORY ANALYSIS PARAMETERS AND PRESERVATIVES / NUMBER AND TYPES OF SAMPLE CONTAINERS USED: **24 Primary**

VOAs	**Amber**	**Poly**
HCl: **4**	1-L: **3**	250 mL H2SO4: **1**
Unpres: **3**	500-mL: **2**	250 mL HCl (brown): **1 filtered**
H2SO4: **2 + 2 filtered**	1-L (800 mL): **2**	250 mL unpres.: **2 + 1 filtered**
		500 mL HN03: **1**

Red Hill Groundwater Sampling Log

WELL NO. HDMW2253-03 LOCATION: Outside Tunnel PROJECT NO. 60571032

DATE: 07/25/19 TIME: 0730 CLIMATIC CONDITIONS: Light rain, partly cloudy

Depth to groundwater		Final Depth	Depth to Product	Depth to bottom		Purge			
Previous (ft btoc)	Current (ft btoc)	(ft btoc)	(ft btoc)	Previous (ft btoc)	Current (ft btoc)	Flow rate (mL/min)	Start Time	Total Volume (gal)	Nitrogen used
*206.12	*206.32 @0746	**206.23 @1026	NA	1575	NA	250	0807	4.5	Start:1600 End: 1200
[a] 206.04	**206.25 @0804								

Pump settings:	Pressure (PSI)		Discharge (sec)		Fill (sec)	
Previous/Actual	145	145	30	30	30	30

Headspace VOCs: 0.0 ppm Ambient VOCs: 0.0 ppm

O/W Interface Probe Type/Water Level Meter: HERON / Solinst Serial Number: 01-5881 / N-2

Gas Detector Type: MiniRAE 3000 (10.6 eV) Serial Number: 592-908165

Water Quality Meter Type: In-situ Smartroll MP Serial Number: 589972

Stabilization:+/- 0.2 ºC, +/- 3% conductivity, +/- 10% DO, +/- 0.1 pH, +/-10 mv ORP, turb=as low as possible (< 10 NTU ideal) for 3 consecutive readings following a min of 5 readings

Depth to water measured from red survey mark on top of permanent casing.

* 500' Oil/Water Interface Probe measurement (Reading taken after pump deployment)

** 1000' Calibrated Water Level Meter measurement (N-2) (Reading taken after pump deployment)

[a] 500' Calibrated Water Level Meter measurement (N-1) (HER fixed, N-2 was with tunnel team)

TIME	DTW**	LITERS REMOVED	TDS (ppm)	pH	SP. COND. (mS/cm)	D.O. (mg/L)	TURB. (NTU)	TEMP. (°C)	ORP (mV)	SAL (psu)
0814	Water at surface									
0817	206.27	<1	306.25	7.93	0.47	7.51	49.5	24.86	95.8	0.2
0822	206.27	2	309.28	7.88	0.48	10.65	35.9	24.40	23.9	0.2
0827	206.27	2.5	307.76	6.58	0.47	6.65	20.4	23.95	42.6	0.2

(see next page)

SAMPLING EQUIPMENT: Dedicated Bladder Pump

APPEARANCE OF SAMPLE: COLOR: Clear

SEDIMENT: None

ODOR/OTHER: No ordor or sheen

LABORATORY ANALYSIS PARAMETERS AND PRESERVATIVES / NUMBER AND TYPES OF SAMPLE CONTAINERS USED: 16 primary = 16 total

VOAs	Amber	Poly
HCl: **4**	1-L: **3**	250 mL H2SO4: **1**
H2SO4: **2**	500-mL: **2**	250 mL HCl (brown): **1 filtered**
	1-L (800mL): **2**	250 mL unpres.: **1**

SAMPLE IDENTIFICATION NUMBER(S) **ERH867 (N)** **ERH866 (Trip Blank)**

DATE: 07/25/19 TIME: Start:0937 End:1024 Start:0810 End: —

DECONTAMINATION PROCEDURES: Alconox, DI water, Isopropyl, and DI water wash

NOTES:

SAMPLED BY:

SAMPLES DELIVERED TO: APPL TRANSPORTER: FedEx

WELL NO. HDMW2253-03 LOCATION: Outside Tunnel PROJECT NO. 60571032

TIME	DTW	LITERS REMOVED	TDS (ppm)	pH	SP. COND. (mS/cm)	D.O. (mg/L)	TURB. (NTU)	TEMP. (°C)	ORP (mV)	SAL (psu)
0832	206.28	4	306.92	6.38	0.47	4.24	20.2	23.52	44.0	0.2
0837	206.28	5	306.71	6.34	0.47	3.87	19.9	23.45	43.2	0.2
0842	206.27	6	306.48	6.33	0.47	3.54	20.5	23.41	44.1	0.2
0847	206.27	7	306.21	6.35	0.47	3.21	20.8	23.43	43.8	0.2
0852	206.27	8	306.24	6.34	0.47	2.95	20.5	23.45	41.8	0.2
	Trace of bubbles in discharge (1-2 per discharge)									
0857	206.26	9.5	306.59	6.34	0.47	2.69	19.3	23.45	42.9	0.2
0902	206.27	10.5	306.23	6.33	0.47	2.59	18.0	23.46	43.9	0.2
0907	206.26	11.5	306.35	6.34	0.47	2.35	17.8	23.47	44.7	0.2
0912	206.26	13.0	305.89	6.34	0.47	2.10	18.0	23.50	45.0	0.2
0917	206.27	14.0	306.23	6.35	0.47	2.03	17.2	23.50	46.3	0.2
0922	206.27	15.0	306.90	6.33	0.47	1.49	15.5	23.51	46.0	0.2
0927	206.28	16	308.83	6.34	0.47	1.47	19.0	23.53	44.9	0.2
0932	206.28	17	309.18	6.33	0.47	1.39	19.8	23.54	45.6	0.2
	Reduce flow rate to 100mL/min for sampling VOAs									
	Then return to 250mL/min for ambers and plastics									

Red Hill Groundwater Sampling Log

WELL NO. OWDFMW01 LOCATION: Outside Tunnel PROJECT NO. 60571032

DATE: 07/24/19 TIME: 0700 CLIMATIC CONDITIONS: Partly cloudy, 70° F

Depth to groundwater		Final Depth	Depth to Product	Depth to bottom		Purge			
Previous (ft btoc)	Current (ft btoc)	(ft btoc)	(ft btoc)	Previous (ft btoc)	Current (ft btoc)	Flow rate (mL/min)	Start Time	Total Volume (L)	Nitrogen used
*119.02	*119.10	**119.38	NA	144.74	NM	70	0800	5	2500 start 2200 end
[a]118.96	**119.03								

Pump settings:	Pressure (PSI)		Discharge (sec)		Fill (sec)	
Previous/Actual	65	65	13	13	17	17

Headspace VOCs: 0.0 ppm Ambient VOCs: 0.0 ppm

O/W Interface Probe Type/Water Level Meter: HERON Serial Number: 31242

Gas Detector Type: MultiRAE Serial Number: M0120983Q7

Water Quality Meter Type: In-Situ Smartroll MP Serial Number: 512733

Stabilization:+/- 0.2 ºC, +/- 3% conductivity, +/- 10% DO, +/- 0.1 pH, +/-10 mv ORP, turb=as low as possible (< 10 NTU ideal) for 3 consecutive readings following a min of 5 readings

Depth to water measured from red survey mark on top of permanent casing.

* 200' Oil/Water Interface Probe measurement

** 500' Calibrated Water Level Meter measurement (N-1)

[a] 1000' Calibrated Water Level Meter measurement (N-2) (N-1 not available during April Event)

TIME	DTW**	GALLONS REMOVED	TDS (ppm)	pH	SP. COND. (mS/cm)	D.O. (mg/L)	TURB. (NTU)	TEMP. (°C)	ORP (mV)	SAL (psu)
0758	Water at surface									
0805	119.23	2L	2801.52	8.15	4.31	9.98	1.33	27.07	217.4	2.3
0806	Paused readings to re-establish flow rate and remove bubbles									

(see next page)

SAMPLING EQUIPMENT: Dedicated Bladder Pump

APPEARANCE OF SAMPLE: COLOR: Clear

SEDIMENT: None

ODOR/OTHER: No odor

LABORATORY ANALYSIS PARAMETERS AND PRESERVATIVES / NUMBER AND TYPES OF SAMPLE CONTAINERS USED: 17 Primary = 17 total

VOAs HCl: **4** H2SO4: **2**	Amber 1-L: **3** 1-L (800 mL): **2** 500-mL: **2**	Poly 250 mL H2SO4: **1** 500mL HNO3: **1** 250 mL HCl (brown): **1 filtered** 250 mL unpres.: **1**

SAMPLE IDENTIFICATION NUMBER(S) **ERH865 (Primary)** **ERH864 (Trip Blank)**

DATE: 07/24/19 TIME: Start: 0850 End: 1027 Start: 0755

DECONTAMINATION PROCEDURES: Alconox, DI water, Isopropyl, and DI water wash

NOTES: Guiderail for water level meter fell into well casing, purged and sampled before removing rail with fishing Line and trouble hook as directed by MH, Guide rail recovered when pump was pulled.

SAMPLED BY: CE, KL, DH

SAMPLES DELIVERED TO: APPL TRANSPORTER: FedEx

WELL NO. OWDFMW01 LOCATION: Outside Tunnel PROJECT NO. 60571032

TIME	DTW**	LITERS REMOVED	TDS (ppm)	pH	SP. COND. (mS/cm)	D.O. (mg/L)	TURB. (NTU)	TEMP. (°C)	ORP (mV)	SAL (psu)
0823	Flow = 80mL/min									
0824	119.29	3.5	2763.05	8.92	4.25	7.56	7.21	27.12	215.7	2.3
0828	119.31	3.75	2789.65	8.82	4.29	6.94	6.24	26.96	217.7	2.3
0832	119.33	3.9	2812.45	8.72	4.33	6.33	6.37	26.88	217.1	2.3
0838	119.35	4.25	2817.77	8.68	4.34	5.93	4.74	26.84	215.7	2.3
0842	119.36	4.8	2825.33	8.66	4.35	5.71	3.95	26.85	218.1	2.3
0846	119.37	5.0	2831.68	8.63	4.36	5.52	3.09	26.88	214.8	2.4
0850	Start sampling									