

ATTACHMENT 5: WATER LEVEL MEASUREMENTS

This attachment contains water level measurements for the JPL relatively shallow standpipe monitoring wells (MW-1, MW-5 through MW-10, MW-13, MW-15, and MW-16) and the Westbay™ multiport wells (MW-3, MW-4, MW-11, MW-12, MW-14, and MW-17 through MW-26) obtained during the third quarter 2017. Water level measurements were recorded before the sampling event on July 21, 2017 for the relatively shallow standpipe monitoring wells and for the Westbay™ multiport wells. Water level measurements were recorded after the sampling event on August 4, 2017 for the relatively shallow standpipe monitoring wells and the Westbay™ multiport wells. Water levels for the shallow wells were measured using a Solinst™ water level meter. In the deep multiport wells, the hydraulic head at each sampling port was measured with a Westbay™ MOSDAX sampling probe. Water level measurements were conducted by Blaine Tech Services, Inc.

Note: MW-4, MW-17, and MW-22 were not accessible during the collection of pre-sampling groundwater elevations. Therefore, the groundwater elevations collected prior to sampling on July 31 for MW-4, July 26 for MW-17, and July 27 for MW-22 will be used for groundwater elevation contouring.

WELL GAUGING DATA

Project # 170721-A1A1 Date 07/21/17 Client Bodhi Group

Site JPL, Pasadena, CA

Well ID	Well Size (in.)	Time Gauged	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC	
MW-1	4	0843					29.95	Dead pump	<div style="border: 1px solid black; border-radius: 50%; width: 20px; height: 20px; margin: 0 auto;"></div>	
MW-5	4	1303					99.83	Dead pump		
MW-6	4	1116					215.34	Dead pump		
MW-7	4	1346					238.51	267.60		
MW-8	4	1312					164.71	Dead pump		
MW-9	4	0840					22.00	Dead pump		
MW-10	4	1125					116.55	Dead pump		
MW-13	4	1158					210.13	234.95		
MW-15	4	1229					34.65	Dead pump		
MW-16	4	1343					260.53	284.77		V

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-3
 DATE: 07/21/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING 1100.34
 WEATHER: Clear

PROBE TYPE Westbay Sampler 0-500psi
 SERIAL NO. EMS 2502
 PROJECT JPL Pasadena
 OPERATOR(S) T-Hoang
 ATM. PRESSURE (Patm): (start) 14.11 (finish) 14.10
 Temp: 21.52°C 20.43°C

DTW - 177.14

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (oC)				
5	653	650	221.61	235.13	221.61	21.96	509.92	143.08	653	0855
4	558	555	180.37	194.35	180.37	22.45	415.84	142.16	558	0857
3	346	344	88.16	102.71	88.16	21.99	204.42	141.58	346	0859
2	252	250	47.28	62.66	47.28	21.14	112.03	139.97	252	0901
1	172	170	14.23	31.42	14.23	20.00	39.96	132.04	172	0903

Comments: Collar Detect is 2' above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-4

PROBE TYPE Westbay Sampler 0-500psi

DATE: 07/31/17

SERIAL NO. EMS 2502

LOCATION: JPL

PROJECT JPL Pasadena

ELEV. TOP OF WESTBAY CASING 1082.84

OPERATOR(S) T. HONAN

WEATHER: Clear

ATM. PRESSURE (Patm): (start) 14.11 (finish) 14.13

PTW - 151.86'

Temp: 21.77°C 20.43°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (oC)				
5	513	510	172.02	184.26	172.02	21.40	392.49	120.51	513	0701
4	392	390	119.26	131.87	119.26	21.75	271.63	120.37	392	0703
3	322	322	88.70	101.49	88.70	21.41	201.54	120.46	322	0706
2	240	238	52.88	66.01	52.88	20.85	119.69	120.31	240	0708
1	150	148	14.23	30.51	14.23	18.92	37.79	112.21	150	0710

Comments: Collar Detect is 2' above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-11
 DATE: 07/21/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1139.3
 WEATHER: Clear
 DTW - 169.43'

PROBE TYPE: Westbay Sampler 0-500psi
 SERIAL NO.: EMS2502
 PROJECT: JPL Pasadena
 OPERATOR(S): T. Hoars
 ATM. PRESSURE (Patm): (start) 74.07 (finish) 14.10
 Temp: 26.67°C 19.31°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (oC)				
5	639	637	217.17	205.02	217.17	23.57	440.45	198.55	639	1211
4	524	521	167.84	169.06	167.84	22.64	357.49	166.51	524	1213
3	429	426	126.76	125.84	126.76	21.68	257.78	171.22	429	1215
2	259	256	53.19	55.31	53.19	20.25	95.67	163.93	259	1217
1	149	147	14.16	26.17	14.16	19.10	27.85	121.15	149	1219

Comments: Collar Detect is 6" above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-12
 DATE: 07/21/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING 1102.14
 WEATHER: Clear
 DTW - 134.68

PROBE TYPE Westbay Sampler 0-500psi
 SERIAL NO. EMS 2502
 PROJECT JPL Pasadena
 OPERATOR(S) T. Hoang
 ATM. PRESSURE (Patm): (start) 74.11 (finish) 14.13
 Temp: 27.51°C 24.31°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ₂ O Inside Casing	Trans. Temp. (oC)				
5	548	547	194.75	182.68	194.75	23.77	388.84	159.16	548	1243
4	436	434	145.91	141.83	145.91	22.92	294.60	141.40	436	1245
3	323	321	96.84	94.06	96.84	21.66	184.40	138.60	323	1247
2	243	241	62.01	60.29	62.01	20.49	106.49	136.51	243	1249
1	140	140	17.98	22.45	17.98	19.11	19.19	120.81	140	1255

Comments: Collar Detect is 6" above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-14
 DATE: 07/21/17
 LOCATION: JPL
 ELEV. TOP OF WASTBAY CASING 1173.47
 WEATHER: Clear
 PTW -192.56

PROBE TYPE Westbay Sampler 0-500psi
 SERIAL NO. EMS 2502
 PROJECT JPL Pasadena
 OPERATOR(S) T. Hoang
 ATM. PRESSURE (Patm): (start) 14.08 (finish) 14.10
 Temp: 25.37°C 21.54°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (oC)				
5	540	539	166.05	161.16	166.05	22.36	339.27	200.73	540	1101
4	456	455	129.52	124.96	129.52	21.89	255.75	200.25	456	1103
3	382	380	97.36	92.92	97.36	21.30	181.84	200.16	382	1105
2	277	276	51.47	47.54	51.47	20.85	77.15	199.85	277	1106
1	207	205	21.00	17.48	21.00	20.17	7.80	199.20	207	1108

Comments: Collar Detect is 6" above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-17
 DATE: 07/26/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING 1191.21
 WEATHER: Clear
 DTW - 208.15

PROBE TYPE Westbay Sampler 0-500psi
 SERIAL NO. EMS 2502
 PROJECT JPL Pasadena
 OPERATOR(S) T. Harris
 ATM. PRESSURE (Patm): (start) 14.09 (finish) 14.11
 Temp: 14.09 27.30C 20.31C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ₂ O Inside Casing	Trans. Temp. (oC)				
5	726	724	239.47	219.36	239.47	19.52	473.51	252.49	726	0708
4	582	580	177.91	155.45	177.91	19.44	326.67	255.93	582	0710
3	468	467	127.67	112.42	127.67	18.62	226.80	241.20	468	0712
2	370	369	85.08	72.73	85.08	17.06	135.24	234.76	370	0714
1	250	249	32.84	25.56	32.84	16.27	26.42	223.58	250	0716

Comments: Collar Detect is 6" above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-18
 DATE: 07/21/17
 LOCATION: JPL
 ELEV. TOP OF WASTBAY CASING 1225.41
 WEATHER: Clear
 DTW - 294.17

PROBE TYPE Westbay Sampler 0-500psi
 SERIAL NO. EMS 2502
 PROJECT JPL Pasadena
 OPERATOR(S) T. Hoams
 ATM. PRESSURE (Patm): (start) 14.06 (finish) 14.08
 Temp: 21.41°C 20.42°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (oC)				
5	684	680	184.20	186.01	184.20	21.01	396.64	287.36	684	0815
4	564	560	132.31	135.77	132.31	135.21, 08 ^{ATM}	280.74	283.26	564	0817
3	424	420	71.43	80.87	71.43	20.21	154.08	269.92	424	0819
2	330	327	30.29	41.67	30.29	19.09	63.65	266.35	330	0821
1	270	267	14.16	15.95	14.16	18.12	4.31	265.69	270	0822

Comments: Collar Detect is 6" above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-19
 DATE: 07/21/17
 LOCATION: JPL
 ELEV. TOP OF WASTBAY CASING: 1142.94
 WEATHER: Clear

PROBE TYPE: Westbay Sampler 0-500psi
 SERIAL NO.: EMS2502
 PROJECT: JPL Pasadena
 OPERATOR(S): T. Hoang
 ATM. PRESSURE (Patm): (start) 14.14 (finish) 14.12
 Temp: 24.84°C 22.31°C

DTW - 138.05

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (oC)				
5	498	495	170.31	144.54	170.31	22.13	300.88	197.12	498	0925
4	444	442	147.72	121.22	147.72	21.12	247.08	196.92	444	0928
3	392	389	124.35	103.36	124.35	20.70	205.88	186.12	392	0930
2	314	311	90.34	69.59	90.34	20.23	127.97	186.03	314	0931
1	242	239	59.24	39.60	59.24	19.62	58.78	183.22	242	0932

Comments: Collar Detect is 6" above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-20
 DATE: 07/21/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1165.05
 WEATHER: Clear
 PTW -241.15

PROBE TYPE: Westbay Sampler 0-500psi
 SERIAL NO. EMS ~~4700~~ 2502
 PROJECT: JPL Pasadena
 OPERATOR(S): T. Hoang
 ATM. PRESSURE (Patm): (start) 14.05 (finish) 14.03
 Temp: 20.91°C 17.97°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ₂ O Inside Casing	Trans. Temp. (oC)				
5	900	895	301.63	310.57	301.63	20.43	684.12	215.88	900	0736
4	700	696	214.32	218.50	214.32	21.61	471.71	228.29	700	0738
3	562	558	154.71	154.71	154.71	21.18	324.55	237.45	562	0740
2	392	389	80.88	86.19	80.88	20.03	166.47	225.53	392	0742
1	230	227	14.19	15.21	14.19	18.12	2.72	227.28	230	0744

Comments: Collar Detect is 6" above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-21 HA
 DATE: 07/17/17 07/21/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING 1059.10
 WEATHER: Clear
 DTW - 117.13

PROBE TYPE Westbay Sampler 0-500psi
 SERIAL NO. EMS 2502
 PROJECT JPL Pasadena
 OPERATOR(S) T. Hoang
 ATM. PRESSURE (Patm): (start) 14.10 (finish) 14.13
 Temp: 25.11°C 24.30°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ₂ O Inside Casing	Trans. Temp. (oC)				
5	372	370	125.87	137.12	125.87	24.57	283.74	88.26	372	1031
4	310	308	98.90	110.28	98.90	22.84	221.82	88.18	310	1033
3	240	239	68.88	80.51 110.28 ⁱⁿ	68.88	19.88	153.14	86.86 86.86	240	1035
2	161	160	34.39	46.46	34.39	20.96	74.59	86.41	161	1037
1	90	88	14.20	15.71	14.20	19.61	3.65	86.35	90	1039

Comments: Collar Detect is 2' above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-22
 DATE: 07/27/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING 1176.98
 WEATHER: Clear

PROBE TYPE Westbay Sampler 0-500psi
 SERIAL NO. EMS 2502
 PROJECT JPL Pasadena
 OPERATOR(S) T. Hoang
 ATM. PRESSURE (Patm): (start) 14.06 (finish) 14.08
 Temp: 23.04°C 20.91°C

DTW - ~~12~~ 172.65

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (oC)				
5	588	586	195.10	175.30	195.10	21.86	371.93	216.07	588	0654
4	467	466	142.74	124.48	142.74	22.02	254.69	212.31	467	0656
3	389	388	108.86	93.16	108.86	21.70	182.44	206.56	389	0658
2	329	328	82.83	67.13	82.83	21.09	122.39	206.61	329	0700
1	245	244	45.89	31.48	45.89	20.50	40.14	204.86	245	0702

Comments: Collar Detect is 1' above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-23
 DATE: 07/21/17
 LOCATION: JPL
 ELEV. TOP OF WASTBAY CASING 1108.84
 WEATHER: Clear
 DTW - 125.92'

PROBE TYPE Westbay Sampler 0-500psi
 SERIAL NO. EMS 2502
 PROJECT JPL Pasadena
 OPERATOR(S) T. Hoang
 ATM. PRESSURE (Patm): (start) 14.09 (finish) 14.13
 Temp: 24.97°C 23.05°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (oC)				
5	542	540	194.80	185.09	194.80	23.19	394.40	147.60	542	1137
4	445	443	152.72	143.17	152.72	22.81	297.70	147.30	445	1139
3	319	317	98.24	91.51	98.24	22.19	178.92	140.48	319	1141
2	254	252	70.09	63.52	70.09	21.66	113.94	140.06	254	1143
1	174	172	35.27	30.31	35.27	20.99	37.33	136.67	174	1145

Comments: Collar Detect is 1' above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-24
 DATE: 07/21/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING 1200.94
 WEATHER: Clear

PROBE TYPE Westbay Sampler 0-500psi
 SERIAL NO. EMS2502
 PROJECT JPL Pasadena
 OPERATOR(S) T. Hoang
 ATM. PRESSURE (Patm): (start) 14.04 (finish) 14.05
 Temp: 27.56°C 23.43°C

PTW-210.05

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (oC)				
5	678	676	216.97	200.28	216.97	25.10	429.63	248.37	678	1324
4	554	552	164.41	149.51	164.41	23.72	312.51	241.49	554	1327
3	435	432	111.82	101.08	111.82	23.10	200.78	234.22	435	1329
2	373	371	84.93	71.77	84.93	22.70	140.08	232.92	373	1331
1	279	276	44.16	36.57	44.16	22.62	51.95	227.05	279	1333

Comments: Collar Detect is 1' above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-25
 DATE: 07/21/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING 934.53
 WEATHER: Clear
 DTW - 243.95

PROBE TYPE Westbay Sampler 0-500psi
 SERIAL NO. EMS2502
 PROJECT JPL Pasadena
 OPERATOR(S) T. Houry
 ATM. PRESSURE (Patm): (start) 14.16 (finish) 14.19
 Temp: 21.53°C 20.71°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (oC)				
5	713	711	218.19	207.03	218.19	21.40	444.88	268.12	713	0658
4	633	631	183.77	171.67	183.77	21.65	363.31	269.69	633	0700
3	503	500	127.42	119.16	127.42	21.32	242.17	260.83	503	0703
2	423	421	92.61	88.66	92.61	20.93	171.80	251.20	423	0705
1	358	356	64.53	62.45	64.53	20.40	111.34	246.66	358	0707

Comments: Collar Detect is 2' below sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-26
 DATE: 07/21/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING 1059.08
 WEATHER: Clear
 DTW-66.01

PROBE TYPE Westbay Sampler 0-500psi
 SERIAL NO. EMS 2502
 PROJECT JPL Pasadena
 OPERATOR(S) T. Hoang
 ATM. PRESSURE (Patm): (start) 14.13 (finish) 14.15
 Temp: 24.65°C 22.31°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (oC)				
2	215	211	78.50	60.65	78.50	23.09	107.28	107.72	215	0940
1	135	131	43.70	25.48	43.70	21.30	26.14	108.86	135	0942

Comments: Collar Detect is 2' below sample port

WELL GAUGING DATA

Project # 170721-HH1 Date 08/04/17 Client Bechtel

Site JPL, Pasadena, CA

Well ID	Well Size (in.)	Time Gauged	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC	
MW-1	4	0848					31.41	Dee RF2		
MW-5	4	1245					102.56	Dee RF2		
MW-6	4	1105					217.24	Dee RF2		
MW-7	4	1457					240.52	267.55		
MW-8	4	1200					167.63	Dee RF2		
MW-9	4	0852					23.11	Dee RF2		
MW-10	4	1143					119.03	Dee RF2		
MW-13	4	1155					212.75	234.93		
MW-15	4	1207					35.90	Dee RF2		
MW-16	4	1450					263.09	284.71		

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-3
 DATE: 08/04/17
 LOCATION: JPL
 ELEV. TOP OF WASTBAY CASING 1100.34
 WEATHER: Clear
 DTW - 175.44'

PROBE TYPE Westbay Sampler 0-500psi
 SERIAL NO. EMS 2502
 PROJECT JPL Pasadena
 OPERATOR(S) T. Hoang
 ATM. PRESSURE (Patm): (start) 14.11 (finish) 14.14
 Temp: 21.86°C 22.08°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (oC)				
5	653	650	222.32	233.96	222.32	24.46	507.12	145.88	653	0905
4	558	555	181.08	193.43	181.08	24.07	413.62	144.38	558	0907
3	346	344	88.89	101.71	88.89	22.92	202.02	143.98	346	0909
2	252	250	48.01	61.63	48.01	22.19	109.56	142.44	252	0911
1	172	170	14.24	30.16	14.24	20.72	36.96	135.04	172	0913

Comments: Collar Detect is 2' above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-4
 DATE: 08/04/17
 LOCATION: JPL
 ELEV. TOP OF WASTBAY CASING: 1082.84
 WEATHER: Clear
 DTW - 151.82'

PROBE TYPE: Westbay Sampler 0-500psi
 SERIAL NO. EMS2502
 PROJECT: JPL Pasadena
 OPERATOR(S): T. Hoang
 ATM. PRESSURE (Patm): (start) 14.06 (finish) 14.09
 Temp: 30.08°C 20.09°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (oC)				
5	513	510	171.67	183.80	171.67	26.11	391.52	121.48	513	1222
4	392	390	119.04	131.39	119.04	21.37	270.61	121.39	392	1225
3	322	320	88.55	101.06	88.55	23.45	200.64	121.36	322	1228
2	240	238	52.79	65.61	52.79	20.30	118.86	121.14	240	1230
1	150	148	14.20	30.08	14.20	21.19	36.89	113.11	150	1232

Comments: Collar Detect is 2' above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-11

PROBE TYPE: Westbay Sampler 0-500psi

DATE: 08/04/17

SERIAL NO. EMS 2502

LOCATION: JPL

PROJECT: JPL Pasadena

ELEV. TOP OF WESTBAY CASING: 1139.3

OPERATOR(S): T. Hoams

WEATHER: Clear

ATM. PRESSURE (Patm): (start) 14.08 (finish) 14.12

DTW - 171.03'

Temp: 24.78°C 22.35°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (oC)				
5	639	637	216.54	204.03	216.54	22.96	438.12	200.88	639	1336
4	524	521	167.05	168.24	167.05	22.53	355.55	168.45	524	1338
3	429	427	126.09	124.94	126.09	21.84	255.66	173.34	429	1340
2	259	257	52.50	54.32	52.50	20.06	92.74	166.26	259	1342
1	149	147	14.18	25.67	14.18	19.01	26.65	122.35	149	1344

Comments: Collar Detect is 6" above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-12
 DATE: 02/04/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING 1102.14
 WEATHER: Clear
 DTW - 134.60

PROBE TYPE Westbay Sampler 0-500psi
 SERIAL NO. EMS 2502
 PROJECT JPL Pasadena
 OPERATOR(S) T. Hoang
 ATM. PRESSURE (Patm): (start) 14.11 (finish) 14.13
 Temp: 26.12°C 24.01

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (oC)				
5	548	547	194.74	181.67	194.74	23.54	386.51	161.49	548	1259
4	436	434	146.09	140.90	146.09	22.92	292.46	143.54	436	1301
3	323	321	96.89	92.99	96.89	21.63	181.93	141.07	323	1303
2	243	243	62.89 59.09	59.09	62.89 19.80	19.80	103.72	139.28	243	1305
1	140	139	62.06 17.11	19.79	62.06 17.11	18.96	13.06	126.94	140	1307

Comments: Collar Detect is 6" above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-14

PROBE TYPE Westbay Sampler 0-500psi

DATE: 08/04/17

SERIAL NO. EMS2502

LOCATION: JPL

PROJECT JPL Pasadena

ELEV. TOP OF WASTBAY CASING 1173.47

OPERATOR(S) T. HOOKS

WEATHER: Clear

ATM. PRESSURE (Patm): (start) 14.08 (finish) 14.11

HA DTW = 116.18 DTW = 192.87'

Temp: 25.14°C 23.83°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (oC)				
5	540	539	165.80	160.33	165.80	24.28	337.33	202.67	540	1049
4	456	454	129.23	124.13	129.23	23.77	253.82	202.18	456	1051
3	382	380	97.06	92.11	97.06	22.31	179.95	202.05	382	1053
2	277	276	51.44 52.26	46.68	51.44 52.26	20.68	75.14	201.86	277	1055
1	207	205	20.92	16.63	20.92	20.26	5.81	201.19	207	1057

Comments: Collar Detect is 6" above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-17
 DATE: 08/04/17
 LOCATION: JPL
 ELEV. TOP OF WASTBAY CASING: 1191.21
 WEATHER: Clear
DTW - 208.18'

PROBE TYPE: Westbay Sampler 0-500psi
 SERIAL NO.: EMS2502
 PROJECT: JPL Pasadena
 OPERATOR(S): T. Hoang
 ATM. PRESSURE (Patm): (start) 74.09 (finish) 14.10
 Temp: 20.32°C 20.45°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (oC)				
5	726	725	239.20	218.51	239.20	20.29	471.57	254.43	726	0740
4	582	580	177.11	154.77	177.11	20.27	324.53	257.47	582	0743
3	468	466	127.44	111.90	127.44	19.53	225.62	242.38	468	0745
2	370	368	85.07	72.14	85.07	18.51	133.90	236.10	370	0749
1	250	248	32.81	24.83	32.81	17.61	24.75	225.25	250	0751

Comments: Collar Detect is 6" above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-18
 DATE: 08/04/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1225.41
 WEATHER: Clear
 DTW - 294.33'

PROBE TYPE: Westbay Sampler 0-500psi
 SERIAL NO.: EMS 2502
 PROJECT: JPL Pasadena
 OPERATOR(S): T. Hooley
 ATM. PRESSURE (Patm): (start) 14.07 (finish) 14.09
 Temp: 20.43°C 20.51°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (oC)				
5	684	682	184.16	185.21	184.16	21.31	394.77	289.23	684	0804
4	564	561	132.00	135.04	132.00	21.35	279.03	284.97	564	0806
3	424	421	71.20	79.99	71.20	20.25	152.03	271.97	424	0809
2	330	327	31.05	38.32	31.05	19.06	55.90	274.10	330	0811
1	270	267	14.22	15.25	14.22	18.42	2.68	267.32	270	0813

Comments: Collar Detect is 6" above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-19
 DATE: 8/4/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1142.94
 WEATHER: clear

PROBE TYPE: Westbay Sampler 0-500psi
 SERIAL NO.: EM2502
 PROJECT: JPL Pasadena
 OPERATOR(S): T. Hoang
 ATM. PRESSURE (Patm): (start) 14.12 (finish) 14.15
 Temp: 28.19°C 24.11°C

DTW = 138.20'

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (oC)				
5	498	495	170.30	143.60	170.30	24.02	298.64	199.36	498	0955
4	444	442	146.72	120.29	146.72	22.89	244.86	199.14	444	0957
3	392	390	124.18	102.55	124.18	22.06	203.94	188.06	392	0959
2	314	312	90.44	91.75	90.44	20.81	179.02	134.98	314	1001
1	242	240	60.16	68.82	60.16	20.25	126.12	115.88	242	1003

Comments: Collar Detect is 6" above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-20
 DATE: 08/04/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1165.05
 WEATHER: Clear

PROBE TYPE: Westbay Sampler 0-500psi
 SERIAL NO.: EMSR2J02
 PROJECT: JPL Pasadena
 OPERATOR(S): T. Hoang
 ATM. PRESSURE (Patm): (start) 14.10 (finish) 14.13
 Temp: 20.81°C 20.31°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (oC)				
			301.62		301.62					
5	900	895	302.63	310.08	302.63	22.61	682.76	217.24	900	0710
4	700	697	214.85	217.44	214.85	22.20	469.04	230.96	700	0713
3	562	558	154.94	154.53	154.94	21.76	323.90	238.10	562	0715
2	392	388	81.03	85.95	81.03	20.34	165.69	226.31	392	0717
1	230	227	14.21	14.90	14.21	18.90	1.78	228.22	230	0718

Comments: Collar Detect is 6" above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-21
 DATE: 8/04/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1059.10
 WEATHER: Clear
 DTW - 116.18

PROBE TYPE: Westbay Sampler 0-500psi
 SERIAL NO.: EMS 2502
 PROJECT: JPL Pasadena
 OPERATOR(S): J. Hagan
 ATM. PRESSURE (Patm): (start) 14.12 (finish) 14.14
 Temp: 26.11°C 22.59°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (oC)				
5	372	370	126.51	136.29	126.51	23.85	281.80	90.20	372	1021
4	310	308	99.54	109.43	99.54	22.97	219.83	90.17	310	1023
3	240	239	69.17	79.64	69.17	22.16	151.11	88.89	240	1025
2	161	159	34.85	45.59	34.85	21.31	72.56	88.44	161	1027
1	90	89	14.21	15.89	14.21	20.73	4.04	85.96	90	1029

Comments: Collar Detect is 2' above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-22
 DATE: 05/04/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING 1176.98
 WEATHER: Clear
PTW-173.731

PROBE TYPE Westbay Sampler 0-500psi
 SERIAL NO. EMS2502
 PROJECT JPL Pasadena
 OPERATOR(S) T. Hoong
 ATM. PRESSURE (Patm): (start) 74.07 (finish) 14.10
 Temp: 27.83°C 20.55°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (oC)				
5	588	586	194.42	174.63	194.42	24.63	370.34	217.66	588	1429
4	467	468	142.87	123.85	142.87	23.99	253.19	213.81	467	1431
3	389	387	108.24	92.59	108.24	22.40	181.08	207.92	389	1433
2	329	327	82.30	66.59	82.30	21.99	121.09	207.91	329	1436
1	245	243	45.36	30.91	45.36	21.52	38.78	206.22	245	1438

Comments: Collar Detect is 1' above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-23
 DATE: 08/04/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING 1108.84
 WEATHER: Clear
 DTW - 126.91'

PROBE TYPE Westbay Sampler 0-500psi
 SERIAL NO. EMS 2502
 PROJECT JPL Pasadena
 OPERATOR(S) T. Hoang
 ATM. PRESSURE (Patm): (start) 14.11 (finish) 14.15
 Temp: 26.79°C 23.49°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (oC)				
5	542	540	194.32	184.20	194.32	24.71	392.31	149.69	542	1125
4	445	443	152.30	142.26	152.30	23.56	295.55	149.45	445	1128
3	319	317	97.84	90.56	97.84	22.60	176.28	142.72	319	1130
2	254	252	69.60	62.56	69.60	21.98	111.68	142.32	254	1132
1	174	172	34.93	29.26	34.93	21.33	34.86	139.14	174	1134

Comments: Collar Detect is 1' above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-24
 DATE: 08/04/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1200.94
 WEATHER: Clear
 DTW - 210.18

PROBE TYPE: Westbay Sampler 0-500psi
 SERIAL NO. EMS 2502
 PROJECT: JPL Pasadena
 OPERATOR(S): T. Hoang
 ATM. PRESSURE (Patm): (start) 74.03 (finish) 14.05
 Temp: 25.12°C 21.85°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (oC)				
5	678	676	216.95	199.30	216.95	24.39	427.37	250.63	678	1400
4	554	552	163.24	148.58	163.24	23.02	310.36	243.64	554	1402
3	435	432	111.73	100.14	111.73	22.38	198.61	236.39	435	1404
2	373	372	85.69	73.73	85.69	22.00	137.68	235.32	373	1406
1	279	277	84.72 44.11	35.53	84.72 44.11	22.15	49.55	229.45	279	1408

Comments: Collar Detect is 1' above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-25
 DATE: 08/04/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING 934.53
 WEATHER: Clear
 DTW - 244.20'

PROBE TYPE Westbay Sampler 0-500psi
 SERIAL NO. EMS2502
 PROJECT JPL Pasadena
 OPERATOR(S) T. Hoan
 ATM. PRESSURE (Patm): (start) 14.14 (finish) 14.16
 Temp: 28.19°C 23.41°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (oC)				
5	713	711	218.12	213.81	218.12	24.27	460.59	252.41	713	0641
4	633	631	183.59	180.53	183.59	23.23	383.82	249.18	633	0643
3	503	501	122.47	125.18	122.47	22.42	256.12	246.88	503	0646
2	423	421	92.69	90.73	92.69	21.86	176.65	246.35	423	0648
1	358	356	64.51	62.52	64.51	21.18	111.57	246.43	358	0650

Comments: Collar Detect is 2' below sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-26
 DATE: 08/04/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING 1059.08
 WEATHER: clear
 DTW - 66.17'

PROBE TYPE Westbay Sampler 0-500psi
 SERIAL NO. EMS 2502
 PROJECT JPL Pasadena
 OPERATOR(S) T. Hoang
 ATM. PRESSURE (Patm): (start) 14.14 (finish) 14.16
 Temp: 24.61°C 22.66°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (oC)				
2	215	211	78.44	60.38	78.44	23.34	106.63	108.37	215	0933
1	135	131	43.60	25.40	43.60	21.97	25.93	109.07	135	0935

Comments: Collar Detect is 2' below sample port