

## **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 2<sup>nd</sup> Quarter 2018. Water level measurements were recorded before the sampling event on April 17, 2018 for the relatively shallow standpipe monitoring wells and for the Westbay™ multiport wells. Water level measurements were recorded after the sampling event on April 30, 2018 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-11, MW-12, MW-22, MW-23, and MW-26, were not accessible during the collection of pre-sampling groundwater elevations. Therefore, the groundwater elevation collected prior to sampling on April 19 (MW-4), April 25 (MW-11), April 26 (MW-12), April 24 (MW-22), April 18 (MW-23), and April 24 (MW-26) will be used for groundwater elevation contouring.

## WELL GAUGING DATA

Project # 180417-HH1 Date 09/12/18 Client Tidewater

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	0910					24.96	Ded pump	
MW-5	4	1113					100.56	Ded pump	
MW-6	4	1055					219.02	Ded pump	
MW-7	4	1326					245.85	Ded pump	
MW-8	4	1134					170.65	Ded pump	
MW-9	4	0915					18.92	Ded pump	
MW-10	4	1125					120.21	Ded pump	
MW-13	4	1015					215.00	Ded pump.	
MW-15	4	1106					30.71	Ded pump	
MW-16	4	1318					268.52	284.75	✓

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

WELL ID: MW-3  
 DATE: 04/17/18  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING: 1100.34  
 WEATHER: Clear  
DTW - 174.36

PROBE TYPE: Westbay Sampler 0-500psi  
 SERIAL NO.: EMS 2502  
 PROJECT: JPL Pasadena  
 OPERATOR(S): T. Hoare  
 ATM. PRESSURE (Palm): (start) 74.17 (finish) 14.19  
 Temp: 16.33°C 18.31°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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (oC)				
5	653	650	222.89	233.86	222.89	19.62	506.82	146.18	653	0932
4	558	556	181.64	194.07	181.64	20.74	415.03	142.97	558	0934
3	346	343	89.48	102.39	89.48	21.22	203.52	142.48	346	0936
2	252	250	48.61	62.11	48.61	20.73	110.60	141.40	252	0938
1	172	170	14.28	31.56	14.28	19.71	40.12	131.88	172	0940

Comments: Collar Detect is 2' above sample port

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

WELL ID: MW-4  
 DATE: 04/19/18  
 LOCATION: JPL  
 ELEV. TOP OF WASTBAY CASING: 1082.84  
 WEATHER: Clear

PROBE TYPE: Westbay Sampler 0-500psi  
 SERIAL NO. EMS2502  
 PROJECT: JPL Pasadena  
 OPERATOR(S): T. Horan  
 ATM. PRESSURE (Patm): (start) 14.23 <sup>max</sup> (finish) 14.13  
 Temp: 14.23 18.39°C

DTW - 151.24

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 <sup>2</sup> Outside Casing P2	mH <sup>2</sup> O Inside Casing	Trans. Temp. (oC)				
5	513	511	172.36	184.24	172.36	19.93	392.49	120.51	513	0719
4	392	389	119.54	131.86	119.54	20.84	271.65	120.35	392	0721
3	322	319	89.02	101.52	89.02	20.82	201.65	120.35	322	0723
2	240	238	53.21	66.05	53.21	20.34	119.83	120.17	240	0725
1	150	148	14.22	31.73	14.22	19.27	40.65	109.35	150	0727

Comments: Collar Detect is 2' above sample port

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

WELL ID: MW-11  
 DATE: 04/25/18  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING: 1139.3  
 WEATHER: Clear  
 DTW-174.88

PROBE TYPE: Westbay Sampler 0-500psi  
 SERIAL NO.: EMS 2502  
 PROJECT: JPL Pasadena  
 OPERATOR(S): T. Hickey  
 ATM. PRESSURE (Palm): (start) 14.12 (finish)  
 Temp: 30.83°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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (°C)				
5	639	637	215.26	209.38	215.26	22.48	450.46	188.54	639	1336
4	524	521	165.71	169.63	165.71	22.18	358.76	165.24	524	1338
3	429	426	124.73	125.95	124.73	21.32	257.99	171.01	429	1340
2	259	256	51.00	54.70	51.00	19.73	93.62	165.38	259	1342
1	149	145	14.16	25.21	14.16	18.51	25.58	123.42	149	1344

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-12  
 DATE: 04/26/18  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING 1102.14  
 WEATHER: Clear  
 DTW - 134.89

PROBE TYPE Westbay Sampler 0-500psi  
 SERIAL NO. EMS 2502  
 PROJECT JPL Pasadena  
 OPERATOR(S) T. Hines  
 ATM. PRESSURE (Patm): (start) 14.10 (finish) 14.13  
 Temp: 24.14 °C 20.91 °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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (°C)				
5	548	546	194.91	187.94	194.91	21.50	401.05	146.95	548	1519
4	436	435	146.10	142.81	146.10	21.41	296.93	139.07	436	1522
3	323	322	96.90	94.07	96.90	20.14	184.49	138.51	323	1524
2	243	242	62.01	59.91	62.01	19.11	105.68	137.32	243	1526
1	140	139	16.96	22.70	16.96	18.22	19.84	120.16	140	1527

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-14  
 DATE: 04/12/18  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING: 1173.47  
 WEATHER: Clear

PROBE TYPE: Westbay Sampler 0-500psi  
 SERIAL NO.: EMMS 2502  
 PROJECT: JPL Pasadena  
 OPERATOR(S): T. Hocung  
 ATM. PRESSURE (Patm): (start) 14.14 (finish) 14.17  
 Temp: 21.59°C 20.66°C

DTW - 191.99'

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 <sup>2</sup> Outside Casing P2	mH <sup>2</sup> O Inside Casing	Trans. Temp. (oC)				
5	540	538	166.38	160.96	166.38	21.10	338.71	201.29	540	1258
4	456	454	129.79	124.54	129.79	21.13	254.69	201.31	456	1300
3	382	381	97.56	92.43	97.56	20.79	180.62	201.38	382	1302
2	277	274	51.87	46.70	51.87	20.24	75.12	201.88	277	1304
1	207	205	21.33	16.02	21.33	19.82	4.34	202.66	207	1306

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-17  
 DATE: 04/17/18  
 LOCATION: JPL  
 ELEV. TOP OF WASTBAY CASING 1191.21  
 WEATHER: Clear

PROBE TYPE: Westbay Sampler 0-500psi  
 SERIAL NO. EMS 2502  
 PROJECT: JPL Pasadena  
 OPERATOR(S): T. Hoang  
 ATM. PRESSURE (Patm): (start) 14.12 (finish) 14.14  
 Temp: 22.26°C 20.82°C

DTW - 208.29'

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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (oC)				
5	726	723	239.14	214.71	239.14	20.59	462.76	263.24	726	1220
4	582	581	176.91	158.23	176.91	20.36	332.46	249.54	582	1222
3	468	466	122.49	108.95	127.49	19.51	218.77	249.23	468	1224
2	370	367	85.00	70.24	85.00	18.54	129.47	240.53	370	1226
1	250	248	32.78	17.97	32.78	17.51	8.88	241.12	250	1228

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-18  
 DATE: 09/17/18  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING: 1225.41  
 WEATHER: Clear  
 PTW-294.19

PROBE TYPE: Westbay Sampler 0-500psi  
 SERIAL NO.: EMS 2502  
 PROJECT: JPL Pasadena  
 OPERATOR(S): T. Hoang  
 ATM. PRESSURE (Patm): (start) 14.110 (finish) 14.09  
 Temp: 17.38°C 18.05°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 <sup>2</sup> Outside Casing P2	mH <sup>2</sup> O Inside Casing	Trans. Temp. (oC)				
5	684	681	184.25	184.67	184.25	19.42	393.50	290.50	684	0850
4	564	561	132.10	135.88	132.10	20.06	280.95	283.05	564	0852
3	424	422	71.26	78.96	71.26	19.47	149.49	274.51	424	0854
2	330	327	30.33	36.15	30.33	18.11	50.87	279.13	330	0856
1	270	268	14.25	14.21	14.25	17.59	0.25	269.75	270	0858

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-19  
 DATE: 04/17/18  
 LOCATION: JPL  
 ELEV. TOP OF WASTBAY CASING 1142.94  
 WEATHER: Clear  
 DTW - 239, 139, 74

PROBE TYPE Westbay Sampler 0-500psi  
 SERIAL NO. EMS 2502  
 PROJECT JPL Pasadena  
 OPERATOR(S) T. Hollen  
 ATM. PRESSURE (P<sub>atm</sub>): (start) 14.16 (finish) 14.17  
 Temp: 14.66°C 16.51°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-P <sub>atm</sub> )*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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (oC)				
5	498	496	169.73	145.94	169.73	17.12	304.02	193.98	498	0817
4	444	442	147.17	122.56	147.17	18.21	250.08	193.92	444	0819
3	392	389	123.79	101.72	123.79	18.59	202.00	190.00	392	0821
2	314	312	89.91	67.49	89.91	18.78	123.03	190.97	314	0823
1	242	240	58.74	36.42	58.74	18.67	51.35	190.65	242	0825

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-20  
 DATE: 09/17/18  
 LOCATION: JPL  
 ELEV. TOP OF WASTBAY CASING 1165.05  
 WEATHER: Clear

PROBE TYPE Westbay Sampler 0-500psi  
 SERIAL NO. EMS 2502  
 PROJECT JPL Pasadena  
 OPERATOR(S) T. Hoang  
 ATM. PRESSURE (P<sub>atm</sub>): (start) 14.09 (finish) 14.12

DTW-239.71

Temp: 15.70°C 17.91°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-P <sub>atm</sub> )*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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (oC)				
5	900	896	301.60	306.34	301.60	18.77	674.22	225.78	900	0747
4	700	696	214.67	212.86	214.67	20.87	458.56	241.44	700	0749
3	562	558	154.54	153.82	154.54	20.59	322.36	239.64	562	0751
2	392	389	81.24	81.86	81.24	19.42	156.35	235.65	392	0753
1	230	228	14.30	14.25	14.30	17.89	0.37	229.63	230	0755

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-21  
 DATE: 04/17/18  
 LOCATION: JPL  
 ELEV. TOP OF WASTBAY CASING 1059.10  
 WEATHER: Clear

PROBE TYPE Westbay Sampler 0-500psi  
 SERIAL NO. EMS 2502  
 PROJECT JPL Pasadena  
 OPERATOR(S) T. HOGAN  
 ATM. PRESSURE (Patm): (start) 14.18 (finish) 14.19  
 Temp: 19.10°C 18.31°C

DTW - 115.92'

Port No.	Depth to Moas. 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 <sup>2</sup> Outside Casing P2	mH <sup>2</sup> O Inside Casing	Trans. Temp. (oC)				
5	372	370	126.50	136.01	126.50	19.59	281.06	90.94	372	1034
4	310	309	99.49	109.10	99.49	19.91	219.12	90.88	310	1036
3	240	239	69.49	79.27	69.49	19.65	150.16	89.84	240	1038
2	161	160	35.06	45.09	35.06	19.40	71.31	89.69	161	1039
1	90	89	14.28	14.23	14.28	19.05	0.12	89.88	90	1041

Comments: Collar Detect is 2' above sample port

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

WELL ID: MW-22  
 DATE: 04/24/18  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING: 1176.98  
 WEATHER: Clear  
PTW - 193.08'

PROBE TYPE: Westbay Sampler 0-500psi  
 SERIAL NO.: EMS 2502  
 PROJECT: JPL Pasadena  
 OPERATOR(S): T. Hoang  
 ATM. PRESSURE (P<sub>atm</sub>): (start) 14.01 (finish) 14.03  
 Temp: 17.15°C 20.23°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 <sup>2</sup> Outside Casing P2	mH <sup>2</sup> O Inside Casing	Trans. Temp. (oC)				
5	588	586	186.22	176.86	186.22	20.75	375.69	212.31	588	0719
4	467	465	133.87	125.50	133.87	21.74	257.21	209.79	467	0721
3	389	387	99.94	93.05	99.94	21.49	182.35	206.65	389	0724
2	329	327	73.93	66.97	73.93	21.12	122.18	206.82	329	0726
1	245	243	30.98	29.99	30.98	20.46	36.87	208.13	245	0728

Comments: Collar Detect is 1' above sample port

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

WELL ID: MW-23  
 DATE: 04/18/18  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING 1108.84  
 WEATHER: Clear  
 DTW - 135.48'

PROBE TYPE Westbay Sampler 0-500psi  
 SERIAL NO. EMS 2502  
 PROJECT JPL Pasadena  
 OPERATOR(S) T. Hoang  
 ATM. PRESSURE (Patm): (start) 14.12 (finish) 14.14  
 Temp: 15.53°C 19.80°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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (oC)				
5	542	539	190.92	185.58	190.92	20.07	395.56	146.44	542	0701
4	445	443	148.83	143.76	148.83	20.82	299.08	145.92	445	0703
3	319	317	94.08	90.68	94.08	20.65	176.62	142.38	319	0705
2	254	252	65.99	62.48	65.99	20.35	111.57	142.43	254	0707
1	174	172	31.20	28.11	31.20	19.99	32.27	141.73	174	0708

Comments: Collar Detect is 1' above sample port

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

WELL ID: MW-24  
 DATE: 04/17/18  
 LOCATION: JPL  
 ELEV. TOP OF WASTBAY CASING 1200.94  
 WEATHER: Clear

PROBE TYPE Westbay Sampler 0-500psi  
 SERIAL NO. EMS 2502  
 PROJECT JPL Pasadena  
 OPERATOR(S) T. Hoernig  
 ATM. PRESSURE (Patm): (start) 14.10 (finish) 14.12  
 Temp: 21.77°C 20.35°C

DTW-211.00

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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (oC)				
5	678	675	216.61	201.83	216.61	22.07	433.09	244.91	678	1147
4	554	551	162.95	150.16	162.95	22.12	313.89	240.11	554	1149
3	435	433	111.39	99.85	111.39	21.88	197.83	237.17	435	1151
2	373	371	84.56	73.11	84.56	21.80	136.14	236.86	373	1153
1	279	277	43.84	33.62	43.84	22.33	45.03	233.97	279	1155

Comments: Collar Detect is 1' above sample port

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

WELL ID: MW-25  
 DATE: 04/17/18  
 LOCATION: JPL  
 ELEV. TOP OF WASTBAY CASING 934.53  
 WEATHER: Clear

PROBE TYPE Westbay Sampler 0-500psi  
 SERIAL NO. EMS4T2502  
 PROJECT JPL Pasadena  
 OPERATOR(S) T. Hoang  
 ATM. PRESSURE (Patm): (start) 14.16 (finish) 14.18  
 Temp: 11.06°C 19.05°C

DTW - 244.58'

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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (°C)				
5	713	710	217.99	216.39	217.99	17.77	466.54	246.46	713	0716
4	633	636	183.68	182.42	183.68	19.24	388.18	244.82	633	0718
3	503	501	127.30	126.66	127.30	19.69	259.54	243.46	503	0720
2	423	421	92.57	91.97	92.57	19.76	179.51	243.49	423	0721
1	358	356	64.25	63.53	64.25	19.75	113.90	244.10	358	0723

Comments: Collar Detect is 2' below sample port

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

WELL ID: MW-26  
 DATE: ~~04/26~~ <sup>11g</sup> 04/24/14  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING: 1059.08  
 WEATHER: Clear  
 DTW - 65.55

PROBE TYPE: Westbay Sampler 0-500psi  
 SERIAL NO.: EMS 7582  
 PROJECT: JPL Pasadena  
 OPERATOR(S): T. Hwang  
 ATM. PRESSURE (Patm): (start) 74.05 (finish) 14.08  
 Temp: 20.11°C 20.33°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 <sup>2</sup> Outside Casing P2	mH <sup>2</sup> O Inside Casing	Trans. Temp. (oC)				
2	215	211	78.86	56.96	78.86	23.97	98.99	116.01	215	1121
1	135	131	43.99	21.22	43.99	21.66	16.54	118.46	135	1123

Comments: Collar Detect is 2' below sample port

## WELL GAUGING DATA

Project # 180417-HH1 Date 04/30/18 Client Televater

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	0915					24.94	Decl pump	
MW-5	4	1322					100.78	Decl pump	
MW-6	4	1155					217.12	Decl pump	
MW-7	4	1510					243.02	Decl pump	
MW-8	4	1218					168.20	Decl pump	
MW-9	4	0920					19.28	Decl pump	
MW-10	4	1329					119.62	Decl pump	
MW-13	4	1210					214.57	Decl pump	
MW-15	4	1225					30.75	Decl pump	
MW-16	4	1505					266.12	284.75	✓

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

WELL ID: MW-3  
 DATE: 09/30/18  
 LOCATION: JPL  
 ELEV. TOP OF WASTBAY 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) 14.10 (finish) 14.13  
 Temp: 18.37°C 19.88°C

DTW - 174.42

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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (oC)				
5	653	650	223.31	234.87	223.31	20.08	509.32	143.68	653	0932
4	558	556	182.11	194.88	182.11	21.17	417.06	140.94	558	0934
3	346	343	89.89	103.20	89.89	21.37	205.55	140.45	346	0936
2	252	250	49.01	62.73	49.01	20.88	112.19	139.81	252	0938
1	172	170	14.23	31.33	14.23	20.00	39.75	132.25	172	0940

Comments: Collar Detect is 2' above sample port

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

WELL ID: MW-4  
 DATE: 04/30/18  
 LOCATION: JPL  
 ELEV. TOP OF WASTBAY CASING: 1082.84  
 WEATHER: Clear

PROBE TYPE: Westbay Sampler 0-500psi  
 SERIAL NO.: EMS 2502  
 PROJECT: JPL Pasadena  
 OPERATOR(S): T. Huang  
 ATM. PRESSURE (Patm): (start) 14.09 (finish) 14.12  
 Temp: 16.39°C 19.05°C

DTW - 151.29

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 <sup>2</sup> Outside Casing P2	mH <sup>2</sup> O Inside Casing	Trans. Temp. (oC)				
5	513	511	172.58	184.40	172.58	18.75	392.91	120.09	513	1302
4	392	388	119.86	132.00	119.86	19.91	272.02	119.98	392	1304
3	322	319	89.38	101.66	89.38	20.10	202.02	119.98	322	1306
2	240	237	53.65	66.22	53.65	20.16	120.26	119.74	240	1308
1	150	149	14.21	31.47	14.21	19.42	40.10	109.90	150	1309

Comments: Collar Detect is 2' above sample port

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

WELL ID: MW-11  
 DATE: 09/30/15  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING 1139.3  
 WEATHER: Clear

PROBE TYPE Westbay Sampler 0-500psi  
 SERIAL NO. EMS 2502  
 PROJECT JPL Pasadena  
 OPERATOR(S) T. Hoang  
 ATM. PRESSURE (Patm): (start) 14.05 (finish) 14.08  
 Temp: 17.61°C 18.51°C

DTW - 174.97

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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (°C)				
5	639	638	217.61	208.69	217.61	19.12	449.03	189.97	639	1349
4	524	522	167.95	169.67	167.95	20.03	359.02	164.98	524	1351
3	429	426	127.05	126.05	127.05	20.04	258.38	170.62	429	1353
2	259	256	53.38	54.80	53.38	19.37	94.01	164.99	259	1354
1	149	146	14.15	25.42	14.15	18.61	26.23	122.77	149	1355

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-12  
 DATE: 04/30/18  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING: 1102.14  
 WEATHER: Clear

PROBE TYPE: Westbay Sampler 0-500psi  
 SERIAL NO.: EMS 2502  
 PROJECT: JPL Pasadena  
 OPERATOR(S): T. Hoang  
 ATM. PRESSURE (Palm): (start) 74.08 (finish) 14.10

DTW - 134.98

Temp: 18.45°C 18.30°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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (oC)				
5	548	546	194.54	186.87	194.54	19.15	398.63	149.37	548	1235
4	436	435	145.74	142.47	145.74	19.95	296.20	139.80	436	1237
3	323	321	96.63	93.94	96.63	19.61	184.24	138.76	323	1239
2	243	241	61.75	59.84	61.75	19.05	105.57	137.43	243	1241
1	140	139	17.74	20.60	17.74	18.33	15.04	124.96	140	1243

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-14  
 DATE: 04/30/18  
 LOCATION: JPL  
 ELEV. TOP OF WASTBAY CASING 1173.47  
 WEATHER: Clear  
 DTW - 192.07

PROBE TYPE Westbay Sampler 0-500psi  
 SERIAL NO. EMS 2502  
 PROJECT JPL Pasadena  
 OPERATOR(S) T. Huang  
 ATM. PRESSURE (Patm): (start) 14.06 (finish) 14.09  
 Temp: 17.86°C 19.93°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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (oC)				
5	540	538	166.24	161.59	166.24	18.84	340.35	199.65	540	1131
4	456	455	129.84	125.18	129.84	19.81	256.35	199.65	456	1133
3	382	380	97.40	93.09	97.40	19.89	182.32	199.68	382	1135
2	277	274	51.85	47.38	51.85	19.66	76.87	200.13	277	1137
1	207	205	21.21	16.83	21.21	19.41	6.39	200.61	207	1139

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-17  
 DATE: 04/30/18  
 LOCATION: JPL  
 ELEV. TOP OF WASTBAY CASING 1191.21  
 WEATHER: Clear  
 DTW - 208.35

PROBE TYPE Westbay Sampler 0-500psi  
 SERIAL NO. EMS2502  
 PROJECT JPL Pasadena  
 OPERATOR(S) T. Hoang  
 ATM. PRESSURE (Palm): (start) 14.03 (finish) 14.07  
 Temp: 16.32°C 15.91°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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (°C)				
5	726	723	239.20	220.03	239.20	17.35	475.24	250.76	726	0817
4	582	581	176.85	159.55	176.85	17.20	335.71	246.29	582	0819
3	468	466	127.60	109.87	127.60	16.36	218.80	249.20	468	0820
2	370	367	85.05	70.63	85.05	16.41	130.58	239.42	370	0821
1	250	248	33.74	19.97	33.74	15.94	13.70	236.30	250	0823
			32.91		32.91					

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-18  
 DATE: 04/30/18  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING: 1225.41  
 WEATHER: Clear

PROBE TYPE: Westbay Sampler 0-500psi  
 SERIAL NO. EMS2502  
 PROJECT: JPL Pasadena  
 OPERATOR(S): T. Hoams  
 ATM. PRESSURE (Patm): (start) 14.09 (finish) 14.11  
 Temp: 16.85°C 18.05°C

DTW - 294.22

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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (oC)				
5	684	681	184.27	183.97	184.27	18.05	391.91	292.09	684	0848
4	564	561	132.24	135.07	132.24	19.20	279.10	284.90	564	0849
3	424	422	71.37	78.89	71.37	16.74	149.49	274.51	424	0851
2	330	327	31.32	38.25	31.32	16.68	55.74	274.26	330	0853
1	270	268	14.21	15.59	14.21	18.38	3.46	266.54	270	0855

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-19  
 DATE: 04/30/18  
 LOCATION: JPL  
 ELEV. TOP OF WASTBAY CASING 1142.94  
 WEATHER: Clear

PROBE TYPE Westbay Sampler 0-500psi  
 SERIAL NO. EMS 2502  
 PROJECT JPL Pasadena  
 OPERATOR(S) T. Hoang  
 ATM. PRESSURE (Patm): (start) 74.06 (finish) 14.07  
 Temp: 19.67°C 19.11°C

DTW - 139.85

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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (oC)				
5	498	496	169.59	145.21	169.59	19.19	302.56	195.44	498	1003
4	444	442	147.10	121.85	147.10	19.34	248.67	195.33	444	1005
3	392	389	123.66	101.62	123.66	19.36	202.00	190.00	392	1007
2	314	312	90.07	67.43	90.07	19.32	123.12	190.88	314	1009
1	242	240	58.48	36.61	58.48	19.12	52.02	189.98	242	1011

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-20  
 DATE: 04/30/18  
 LOCATION: JPL  
 ELEV. TOP OF WASTBAY CASING 1165.05  
 WEATHER: Clear

PROBE TYPE Westbay Sampler 0-500psi  
 SERIAL NO. EMS 2502  
 PROJECT JPL Pasadena  
 OPERATOR(S) T. Hoang  
 ATM. PRESSURE (Patm): (start) 14.07 (finish) 14.06  
 Temp: 17.88°C 17.90°C

DTW - 239.75

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 <sup>2</sup> Outside Casing P2	mH <sup>2</sup> O Inside Casing	Trans. Temp. (oC)				
5	900	896	301.48	306.20	301.48	18.26	673.94	226.06	900	0749
4	700	696	214.53	212.80	214.53	19.95	458.47	241.53	700	0750
3	562	558	154.46	153.70	154.46	19.93	322.13	239.87	562	0752
2	392	389	81.05	81.02	81.05	17.05	154.45	237.55	392	0754
1	230	228	14.23	14.18	14.23	16.61	0.25	229.75	230	0755

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-21  
 DATE: 04/30/18  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING: 1059.10  
 WEATHER: Clear

PROBE TYPE: Westbay Sampler 0-500psi  
 SERIAL NO. EMS2502  
 PROJECT: JPL Pasadena  
 OPERATOR(S): T. Huang  
 ATM. PRESSURE (Patm): (start) 14.13 (finish) 14.15  
 Temp: 18.95°C 19.25°C

DTW - 115.99' <sup>at</sup>

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) $P(ft) = (P2 - Patm) * 2.307 \text{ ft/psi}$	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 <sup>2</sup> Outside Casing P2	mH <sup>2</sup> O Inside Casing	Trans. Temp. (oC)				
5	372	370	126.49	136.61	126.49	19.29	282.56	89.44	372	1101
4	310	309	99.59	109.75	99.59	19.55	220.60	89.40	310	1103
3	240	239	69.42	79.91	69.42	19.37	151.75	88.25	240	1105
2	161	160	35.04	45.73	35.04	19.16	72.90	88.10	161	1107
1	90	89	14.17	14.44	14.17	18.96	0.72	89.28	90	1109

Comments: Collar Detect is 2' above sample port

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

WELL ID: MW-22  
 DATE: 04/30/18  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING: 1176.98  
 WEATHER: Clear

PROBE TYPE: Westbay Sampler 0-500psi  
 SERIAL NO. EM57502  
 PROJECT: JPL Pasadena  
 OPERATOR(S): T. Hoam  
 ATM. PRESSURE (Patm): (start) (finish)  
 Temp:

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 <sup>2</sup> Outside Casing P2	mH <sup>2</sup> O Inside Casing	Trans. Temp. (oC)				
5	588		- well packed over -							
4	467									
3	389		- unable to access -							
2	329									
1	245									

Comments: Collar Detect is 1' above sample port

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

WELL ID: MW-23  
 DATE: 04/30/18  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING 1108.84  
 WEATHER: Clear

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

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) $P(ft) = (P2 - Patm) * 2.307 \text{ ft/psi}$	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 <sup>2</sup> Outside Casing P2	mH <sup>2</sup> O Inside Casing	Trans. Temp. (oC)				
5	542		- Well ported over -							
4	445									
3	319		- unable to access -							
2	254									
1	174									

Comments: Collar Detect is 1' above sample port

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

WELL ID: MW-24  
 DATE: 04/30/18  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING: 1200.94  
 WEATHER: Clear

PROBE TYPE: Westbay Sampler 0-500psi  
 SERIAL NO.: EMS 2502  
 PROJECT: JPL Pasadena  
 OPERATOR(S): T. Hoang  
 ATM. PRESSURE (Patm): (start) 14.05 (finish) 14.07  
 Temp: 17.95°C 17.90°C

DTW - 211.08

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 <sup>2</sup> Outside Casing P2	mH <sup>2</sup> O Inside Casing	Trans. Temp. (°C)				
5	678	675	216.36	202.53	216.36	20.55	434.82	243.18	678	1434
4	554	552	163.03	150.64	163.03	21.23	315.11	238.89	554	1436
3	435	433	111.32	100.77	111.32	21.33	200.06	234.94	435	1439
2	373	371	84.42	74.07	84.42	21.39	138.47	234.53	373	1442
1	279	277	43.56	34.67	43.56	21.77	47.57	231.43	279	1444

Comments: Collar Detect is 1' above sample port

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

WELL ID: MW-25  
 DATE: 04/30/18  
 LOCATION: JPL  
 ELEV. TOP OF WASTBAY CASING: 934.53  
 WEATHER: Clear  
 DTM-244.61

PROBE TYPE: Westbay Sampler 0-500psi  
 SERIAL NO. EMS 2502  
 PROJECT: JPL Pasadena  
 OPERATOR(S): F. Hoang  
 ATM. PRESSURE (Patm): (start) 74.11 (finish) 14.20  
 Temp: 15.62°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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (oC)				
5	713	710	217.90	216.42	217.90	18.22	466.73	246.27	713	0720
4	633	630	183.54	182.49	183.54	19.30	388.45	244.55	633	0722
3	503	501	127.30	126.72	127.30	19.80	259.79	243.21	503	0724
2	423	421	92.43	92.01	92.43	19.88	179.72	243.28	423	0726
1	358	356	64.27	63.62	64.27	19.85	114.22	243.78	358	0728

Comments: Collar Detect is 2' below sample port

