

## **ATTACHMENT 5: WATER LEVEL MEASUREMENTS**

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This attachment contains water level measurements for the JPL relatively shallow standpipe monitoring wells (i.e., MW-1, MW-5 through MW-10, MW-13, MW-15, and MW-16) and the Westbay™ multiport wells (i.e., MW-3, MW-4, MW-11, MW-12, MW-14, and MW-17 through MW-26) obtained during the third quarter 2022. Water level measurements were recorded before and after the sampling event on July 29, 2022, and August 12, 2022, respectively. Monitoring wells MW-17, MW-20, MW-22, and MW-25 were not accessible during the collection of pre-sampling groundwater elevations. Therefore, the groundwater elevations collected prior to sampling on August 3 for MW-17, August 1 for MW-20, August 4 for MW-22, and August 2 for MW-25, were used for groundwater elevation contouring. 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.

WELL GAUGING DATA

Project # 220729-HH1 Date 07/29/22 Client Tidewater

Site JPL Tidewater 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	1330					32.30	Ded pump	
MW-5	4	0803					134.03	Ded pump	
MW-6	4	0828					DRY	237.54	
MW-7	4	0700					DRY	264.21	
MW-8	4	1519					DRY	202.02	
MW-9	4	1335					27.49	Ded pump	
MW-10	4	0813					DRY	140.53	153.54
MW-13	4	0735					DRY	234.25	
MW-15	4	0748					37.94	Ded pump	
MW-16	4	0721					283.94	284.43	↓

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

WELL ID: MW-3

PROBE TYPE Westbay Sampler 0-500psi

DATE: 07/29/22

SERIAL NO. EMS 2502

LOCATION: JPL

PROJECT JPL Pasadena

ELEV. TOP OF WESTBAY CASING 1100.34

OPERATOR(S) T. Hoang

WEATHER: Clear

ATM. PRESSURE (Palm): (start) 14.07 (finish) 14.08

DTW -180.18

Temp: 25.69°C 20.11°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	kg/cm <sup>2</sup>	mH <sub>2</sub> O	Trans. Temp. (oC)				
			Inside Casing	Outside Casing P2	Inside Casing					
5	653	651	218.64	217.35	218.64	22.76	468.97	184.03	653	1322
4	558	556	177.32	176.49	177.32	21.96	374.70	183.30	558	1324
3	346	344	85.17	84.74	85.17	19.46	163.04	182.96	346	1327
2	252	250	44.27	44.07	44.27	18.81	69.21	182.79	252	1329
1	172	170	14.17	14.11	14.17	18.26	4.71	167.29	172	1331

Comments: Collar Detect is 2' above sample port

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

WELL ID: MW-4  
 DATE: 07/29/22  
 LOCATION: JPL  
 ELEV. TOP OF WASTBAY CASING 1082.84  
 WEATHER: Clear  
DTW - 157.69'

PROBE TYPE Westbay Sampler 0-500psi  
 SERIAL NO. IMS 8502  
 PROJECT JPL Pasadena  
 OPERATOR(S) T. Hoang  
 ATM. PRESSURE (Patm): (start) 14.10 (finish) 14.09  
 Temp: 19.90°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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (oC)				
5	513	511	168.96	16.613	168.96	20.93	350.73	162.27	513	1010
4	392	390	116.07	11.370	116.07	21.28	229.78	162.22	392	1012
3	322	320	85.46	8.331	85.46	20.92	159.67	162.33	322	1014
2	240	237	49.67	4.832	49.67	20.45	78.95	161.05	240	1016
1	150	148	14.14	1.415	14.14	18.85	0.12	149.88	150	1018

Comments: Collar Detect is 2' above sample port

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

WELL ID: MW-11  
 DATE: 07/29/22  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING 1139.3  
 WEATHER: Clear  
 DTW - 212.22'

PROBE TYPE Westbay Sampler 0-500psi  
 SERIAL NO. EMS2502  
 PROJECT JPL Pasadena  
 OPERATOR(S) T. Hoan  
 ATM. PRESSURE (Patm): (start) 14.06 (finish) 14.09  
 Temp: 23.47°C 14.39°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	639	637	198.61	176.31	198.61	22.56	374.31	264.69	639	1100
4	524	522	149.07	149.55	149.07	22.27	312.58	211.42	524	1102
3	429	427	108.19	107.43	108.19	20.43	215.40	213.60	429	1104 *
2	259	257	34.54	34.64	34.54	20.11	59.01	199.99	259	1106
1	149	147	14.14	22.29	14.14	19.13	18.99	130.01	149	1108

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-12  
 DATE: 07/29/11  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING: 1102.14  
 WEATHER: Clear

PROBE TYPE: Westbay Sampler 0-500psi  
 SERIAL NO. EMS2502  
 PROJECT: JPL Pasadena  
 OPERATOR(S): T. Hoan  
 ATM. PRESSURE (Patm): (start) 14.06 (finish) 14.09  
 Temp: 24.36°C 18.40°C

DTW - 176.71'

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	176.31	153.15	176.31	21.94	320.88	227.12	548	0946
4	436	435	127.65	121.63	127.65	21.77	248.16	187.84	436	0948
3	323	321	78.47	75.88	78.47	20.73	142.62	180.38	323	0950
2	243	241	43.60	42.39	43.60	19.65	65.36	177.64	243	0952
1	140	138	14.13	14.12	14.13	18.81	0.14	139.86	140	0954

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-14  
 DATE: 07/29/22  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING 1173.47  
 WEATHER: Clear

PROBE TYPE Westbay Sampler 0-500psi  
 SERIAL NO. EMS ~~2502~~ 2502  
 PROJECT JPL Pasadena  
 OPERATOR(S) T. How  
 ATM. PRESSURE (Patm): (start) 17.09 (finish) 17.11

DTW - 199.58'

Temp: 25.20°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 <sup>2</sup> Outside Casing P2	mH <sup>2</sup> O Inside Casing	Trans. Temp. (oC)				
5	540	539	162.83	144.92	162.83	23.10	301.82	238.18	540	1157
4	456	454	126.30	108.75	126.30	22.52	218.38	237.62	456	1159
3	382	381	94.10	76.68	94.10	21.74	144.40	237.60	382	(ft) 1151201
2	277	275	48.44	31.20	48.44	20.70	39.47	237.53	277	1203
1	207	206	17.94	14.13	17.94	20.21	0.09	206.91	207	1205

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-17  
 DATE: ~~08/03/22~~ 08/03/22  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING 1191.21  
 WEATHER: Clear  
 DTW - 211.88

PROBE TYPE Westbay Sampler 0-500psi  
 SERIAL NO. EMS ~~2502~~ 2502  
 PROJECT JPL Pasadena  
 OPERATOR(S) T. Hoang  
 ATM. PRESSURE (Patm): (start) 19.05 (finish) 14.08  
 Temp: 22.31°C 17.91°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 <sup>2</sup> O Inside Casing	Trans. Temp. (oC)				
5	726	726	237.78	180.55	237.78	20.52	384.12	341.88	726	0742
4	582	581	175.40	125.95	175.40	20.34	258.15	323.85	582	0744
3	468	466	125.95	93.02	125.95	19.25	182.18	285.82	468	0746
2	370	369	83.31	54.55	83.31	18.21	93.43	276.57	370	0748
1	250	249	31.15	14.13	31.15	17.55	0.18	249.82	250	0750

Comments: Collar Detect is 6" above sample port



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

WELL ID: MW-18  
 DATE: 07/29/22  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING 1225.41  
 WEATHER: Clear

PROBE TYPE Westbay Sampler 0-500psi  
 SERIAL NO. EMS 2502  
 PROJECT JPL Pasadena  
 OPERATOR(S) H. Hoan  
 ATM. PRESSURE (Patm): (start) 19.02 (finish) 19.07  
 Temp: 29.53°C 19.40°C

DTW - 297.41

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	682	182.59	159.92	182.59	24.57	336.59	347.41	684	1400
4	564	562	130.50	112.71	130.50	23.43	227.68	336.32	564	1402
3	424	422	69.68	63.02	69.68	21.48	113.04	310.96	424	1404
2	330	328	28.78	25.35	28.78	20.12	26.14	303.86	330	1406
1	270	268	14.13	14.12	14.13	19.37	0.23	269.77	270	1408

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-19  
 DATE: 07/29/22  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING 1142.94  
 WEATHER: Clear/Hot  
 DTW-144.11

PROBE TYPE Westbay Sampler 0-500psi  
 SERIAL NO. EMS 2502  
 PROJECT JPL Pasadena  
 OPERATOR(S) T. Hoang  
 ATM. PRESSURE (Patm): (start) 14.04 (finish) 14.07  
 Temp: 25.48°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 <sup>2</sup> Outside Casing P2	mH <sup>2</sup> O Inside Casing	Trans. Temp. (oC)				
5	498	496	167.49	115.00	167.49	23.19	232.91	265.09	498	1428
4	444	442	144.07	91.81	144.07	22.33	179.42	264.58	444	1430
3	392	391	131.55 <del>127.27</del>	84.20	131.55 <del>127.27</del>	21.27	161.86	230.14	392	1432
2	314	312	87.65	50.91	87.65	20.74	85.06	228.94	314	1434
1	242	240	56.41	21.80	56.41	20.06	17.90	224.10	242	1436

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-20  
 DATE: 08/01/22  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING 1165.05  
 WEATHER: Clear  
 DTW - 249.91

PROBE TYPE Westbay Sampler 0-500psi  
 SERIAL NO. EMS 2902  
 PROJECT JPL Pasadena  
 OPERATOR(S) T. Hoenig  
 ATM. PRESSURE (Patm): (start) 14.10 (finish) 14.11  
 Temp: 24.35C 16.87C

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	900	898	297.83	293.19	297.83	22.32	643.86	256.14	900	0740
4	700	699	210.78	199.83	210.78	22.43	416.94	283.06	700	0743
3	562	560	150.73	138.76	150.73	21.28	287.59	274.41	562	0745
2	392	391	76.63	69.68	76.63	17.96	128.22	263.78	392	0747
1	230	230	14.22	14.22	14.22	16.96	0.28	229.72	230	0749

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-21  
 DATE: 07/29/22  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING: 1059.10  
 WEATHER: Clear

PROBE TYPE: Westbay Sampler 0-500psi  
 SERIAL NO. EMS ~~2502~~ 2502  
 PROJECT: JPL Pasadena  
 OPERATOR(S): T. Hoon  
 ATM. PRESSURE (Patm): (start) 14.07 (finish) 14.09  
 Temp: 28.12°C 20.43°C

DTW-119.18

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	372	370	124.88	120.40	124.88	24.50	245.30	126.70	372	1259
4	310	308	97.89	93.59	97.89	23.00	183.45	126.55	310	1256
3	240	239	67.85	63.75	67.85	22.10	114.61	125.39	240	1258
2	161	160	33.46	29.169	33.46	21.21	36.04	124.96	161	1300
1	90	88	14.11	14.13	14.11	20.69	0.14	89.86	90	1302

Comments: Collar Detect is 2' above sample port

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

WELL ID: MW-22  
 DATE: 08/04/22  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING 1176.98  
 WEATHER: Clear  
 DTW-245.93'

PROBE TYPE Westbay Sampler 0-500psi  
 SERIAL NO. EMS 2502  
 PROJECT JPL Pasadena  
 OPERATOR(S) T. Hoan  
 ATM. PRESSURE (Patm): (start) 79.03 (finish) 14.01  
 Temp: 23.90°C 20.98°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	164.15	153.89	164.15	22.78	322.66	265.34	588	0728
4	467	465	111.53	104.56	111.53	22.59	208.85	258.15	467	0730
3	389	387	77.56	75.84	77.56	22.20	142.60	246.40	389	0732
2	329	327	51.39	49.77	51.39	21.84	82.45	246.55	329	0734
1	245	243	14.14	14.13	14.14	21.40	0.23	244.77	245	0736

Comments: Collar Detect is 1' above sample port

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

WELL ID: MW-23  
 DATE: 07/29/22  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING 1108.84  
 WEATHER: Clear  
 DTW-143.12

PROBE TYPE Westbay Sampler 0-500psi  
 SERIAL NO. FMS ██████████ 2502  
 PROJECT JPL Pasadena  
 OPERATOR(S) T. Howes  
 ATM. PRESSURE (Patm): (start) 14.07 (finish) 14.09  
 Temp: 23.81°C 20.40°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	542	540	187.34	164.19	187.34	22.97	346.33	195.67	542	1129
4	445	444	145.26	122.25	145.26	22.50	249.57	195.43	445	1131
3	319	318	90.70	73.72	90.70	21.77	137.61	181.39	319	1133
2	254	252	62.47	45.66	62.47	21.18	72.88	181.12	254	1135
1	174	172	27.77	14.18	27.77	20.54	0.25	173.75	174	1137

Comments: Collar Detect is 1' above sample port

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

WELL ID: MW-24  
 DATE: 07/29/22  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING 1200.94  
 WEATHER: Clear  
 DTW - 252.30'

PROBE TYPE Westbay Sampler 0-500psi  
 SERIAL NO. EMS 2502  
 PROJECT JPL Pasadena  
 OPERATOR(S) T. Hoag  
 ATM. PRESSURE (Patm): (start) 14.06 (finish) 14.09  
 Temp: 23.15°C 22.10°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	678	676	198.67	175.06	198.67	22.90	371.43	306.57	678	0918
4	554	552	145.10	127.84	145.10	22.44	262.49	291.51	554	0919
3	435	433	93.43	82.97	93.43	22.16	158.98	276.02	435	0921
2	373	373	66.60	56.97	66.60	22.10	98.99	274.01	373	0923
1	279	277	25.84	19.22	25.84	22.29	11.90	267.10	279	0925

Comments: Collar Detect is 1' above sample port

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

WELL ID: MW-25  
 DATE: 08/02/22  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING 934.53  
 WEATHER: Clear

PROBE TYPE Westbay Sampler 0-500psi  
 SERIAL NO. EMS 2502  
 PROJECT JPL Pasadena  
 OPERATOR(S) T. Hoop  
 ATM. PRESSURE (Patm): (start) 14.10 (finish) 14.12  
 Temp: 25.84°C 21.66°C

PTW - 249.68

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	711	216.06	211.15	216.06	23.11	454.59	258.41	713	1005
4	633	631	181.55	177.77	181.55	22.92	377.59	255.41	633	1007
3	503	501	125.19	123.17	125.19	22.36	251.62	251.38	503	1009
2	423	421	90.43	89.83	90.43	21.91	174.71	248.29	423	1011
1	358	357	62.08	62.36	62.08	21.53	111.34	246.66	358	1013

Comments: Collar Detect is 2' below sample port



