

APPENDIX A
Hydrant Flow Test Field Data

Fire Hydrant Flow Test

City of Manhattan Beach

Date 1/19/2021
 Tested By Roxana Carrillo & Adelina Pirijanyan
 Weather Cold, overcast
 Location 23rd Street

Start Time 7:45 AM
 End Time 8:35 AM

Test No. 1
 Pressure Zone Main

HYDRANTS

Test A
Normal Conditions

Test B
Peck Reservoir Offline

Test C
Block 35 Facility Offline

Flow Hydrant	Location	ID	Elevation (ft)	Test A				Test B				Test C				
				PSI	GPM	Time	Duration (min)	PSI	GPM	Time	Duration (min)	PSI	GPM	Time	Duration (min)	
	2208 Faymont Ave	FH 446	70	26	2,021	8:16 AM	2	29	2,134	8:30 AM	2	Test not conducted				

Pitot Diameter = 4 inches
 C factor = 0.83

Pressure Hydrant	Location	ID	Elevation (ft)	Test A				Test B				Test C				
				Static		Residual		Static		Residual		Static		Residual		
				PSI	Time	PSI	Time	PSI	Time	PSI	Time	PSI	Time	PSI	Time	
	2208 Harkness St	FH 449	77	93	8:13 AM	76	8:16 AM	97	8:28 AM	79	8:30 AM	Test not conducted				

NOTES

Field Crew: City - Michael Taylor, Joel, Tim Birthisel / Stantec - Roxana Carrillo, Adelina Pirijanyan / SoCal Flow Testing - Dan Hildebrandt, Lillian Hildebrandt, George Provencher

Power outage at Block 35 Facility, waiting to start the first test until power back. Power back at approximately 8:10 AM

Confirmed Test A at normal conditions with Peck Reservoir and Block 35 Facility both online

Confirmed Test B Peck Reservoir offline and Block 35 Facility online

Fire Hydrant Flow Test

City of Manhattan Beach

Date 1/19/2021
 Tested By Roxana Carrillo & Adelina Pirijanyan
 Weather Cool, overcast
 Location Rosecrans Avenue

Start Time 8:41 AM
 End Time 9:10 AM

Test No. 2
 Pressure Zone Main

HYDRANTS

Test A
Normal Conditions

Test B
Peck Reservoir Offline

Test C
Block 35 Facility Offline

Flow Hydrant	Location	ID	Elevation (ft)	Test A				Test B				Test C				
				PSI	GPM	Time	Duration (min)	PSI	GPM	Time	Duration (min)	PSI	GPM	Time	Duration (min)	
	1800 Rosecrans Ave	FH 514	77	39	2,475	8:58 AM	2	39	2,475	9:07 AM	2	Test not conducted				

Pitot Diameter = 4 inches
 C factor = 0.83

Pressure Hydrant	Location	ID	Elevation (ft)	Test A				Test B				Test C				
				Static		Residual		Static		Residual		Static		Residual		
				PSI	Time	PSI	Time	PSI	Time	PSI	Time	PSI	Time	PSI	Time	
	1800F Rosecrans Ave	FH 513	78	97	8:56 AM	67	8:58 AM	92	9:05 AM	68	9:07 AM	Test not conducted				

NOTES

Waiting to start first test until operator addresses issues at 2nd St BPS and Larsson BPS, operator confirms ready to begin at 8:55 AM

Same field crew

Fire Hydrant Flow Test

City of Manhattan Beach

Date 1/19/2021
 Tested By Roxana Carrillo & Adelina Pirijanyan
 Weather Cool, overcast
 Location Fairway Drive

Start Time 9:15 AM
 End Time 9:45 AM

Test No. 3
 Pressure Zone Main

HYDRANTS

Test A
Normal Conditions

Test B
Peck Reservoir Offline

Test C
Block 35 Facility Offline

Flow Hydrant	Location	ID	Elevation (ft)	Test A				Test B				Test C				
				PSI	GPM	Time	Duration (min)	PSI	GPM	Time	Duration (min)	PSI	GPM	Time	Duration (min)	
	22 Fairway Dr	FH 539	76	34	2,311	9:31 AM	2	33	2,276	9:42 AM	1.5	Test not conducted				

Pitot Diameter = 4 inches
 C factor = 0.83

Pressure Hydrant	Location	ID	Elevation (ft)	Test A				Test B				Test C				
				Static		Residual		Static		Residual		Static		Residual		
				PSI	Time	PSI	Time	PSI	Time	PSI	Time	PSI	Time	PSI	Time	
	2 San Miguel Ct	FH 540	74	97	9:28 AM	82	9:31 AM	94	9:41 AM	79	9:42 AM	Test not conducted				

NOTES

Field Crew: City - Michael Taylor, Joel, Garrett, Eric Jensen / Stantec - Roxana Carrillo, Adelina Pirijanyan / SoCal Flow Testing - Dan Hildebrandt, Lillian Hildebrandt, George Provencher

Note at flow hydrant - difficult to open because a tree is within 18-inches of the hydrant in addition to a large root adjoining the foot of the hydrant

When flow hydrant initially opened, some sediment visible in water but cleared out quickly

Eric requests test result data, would like to provide the data to ISO at City Fire Department (FD). The FD is interested in conducting flow testing as well, City figures the FD can use

these test results for their purposes.

Fire Hydrant Flow Test

City of Manhattan Beach

Date 1/19/2021
 Tested By Roxana Carrillo & Adelina Pirijanyan
 Weather Warm, slight overcast, some wind
 Location Blanche Road

Start Time 9:54 AM
 End Time 10:19 AM

Test No. 4
 Pressure Zone Main

HYDRANTS

Test A
Normal Conditions

Test B
Peck Reservoir Offline

Test C
Block 35 Facility Offline

Flow Hydrant	Location	ID	Elevation (ft)	Test A				Test B				Test C				
				PSI	GPM	Time	Duration (min)	PSI	GPM	Time	Duration (min)	PSI	GPM	Time	Duration (min)	
	598 36th St	FH 215	123	30	2,170	10:17 AM	2	29	2,134	10:06 AM	2	Test not conducted				

Pitot Diameter = 4 inches
 C factor = 0.83

Pressure Hydrant	Location	ID	Elevation (ft)	Test A				Test B				Test C				
				Static		Residual		Static		Residual		Static		Residual		
				PSI	Time	PSI	Time	PSI	Time	PSI	Time	PSI	Time	PSI	Time	
	599 35th St	FH 218	117	84	10:15 AM	70	10:17 AM	86	10:04 AM	68	10:06 AM	Test not conducted				

NOTES

Conducting Test B first, then Test A

Fire Hydrant Flow Test

City of Manhattan Beach

Date 1/19/2021
 Tested By Roxana Carrillo & Adelina Pirijanyan
 Weather Sunny, windy, cool
 Location 45th Street

Start Time 10:25 AM
 End Time 10:55 AM

Test No. 5
 Pressure Zone Main

HYDRANTS

Test A
Normal Conditions

Test B
Peck Reservoir Offline

Test C
Block 35 Facility Offline

Flow Hydrant	Location	ID	Elevation (ft)	Test A				Test B				Test C				
				PSI	GPM	Time	Duration (min)	PSI	GPM	Time	Duration (min)	PSI	GPM	Time	Duration (min)	
	4419 Highland Ave	FH 315	94	30	2,170	10:42 AM	2	30	2,170	10:53 AM	2	Test not conducted				

Pitot Diameter = 4 inches
 C factor = 0.83

Pressure Hydrant	Location	ID	Elevation (ft)	Test A				Test B				Test C				
				Static		Residual		Static		Residual		Static		Residual		
				PSI	Time	PSI	Time	PSI	Time	PSI	Time	PSI	Time	PSI	Time	
	318 45th St	FH 319	139	69	10:40 AM	33	10:42 AM	69	10:51 AM	32	10:53 AM	Test not conducted				

NOTES

Some sediment when initially opening flow hydrant, for both Test A and B

Highland Ave Main Line is asbestos cement pipe (ACP), all laterals connecting to the Highland Ave Main that are not ACP have water quality issues as indicated by City staff

Fire Hydrant Flow Test

City of Manhattan Beach

Date 1/19/2021
 Tested By Roxana Carrillo & Adelina Pirijanyan
 Weather Warm, windy, sunny
 Location 31st Street

Start Time 11:03 AM
 End Time 11:50 AM

Test No. 6
 Pressure Zone Main

HYDRANTS

Test A
Normal Conditions

Test B
Peck Reservoir Offline

Test C
Block 35 Facility Offline

Flow Hydrant	Location	ID	Elevation (ft)	Test A				Test B				Test C				
				PSI	GPM	Time	Duration (min)	PSI	GPM	Time	Duration (min)	PSI	GPM	Time	Duration (min)	
	3020 Alma Ave	FH 279	154	18	1,681	11:45 AM	2	18	1,681	11:28 AM	2	Test not conducted				

Pitot Diameter = 4 inches
 C factor = 0.83

Pressure Hydrant	Location	ID	Elevation (ft)	Test A				Test B				Test C				
				Static		Residual		Static		Residual		Static		Residual		
				PSI	Time	PSI	Time	PSI	Time	PSI	Time	PSI	Time	PSI	Time	
	3201 Highland Ave	FH 282	120	82	11:43 AM	70	11:45 AM	79	11:26 AM	69	11:28 AM	Test not conducted				

NOTES

Slight delay to start first desk due to trouble finding pressure hydrant along Highland Ave, found within large bush around 11:17 AM

Test B conducted first, then Test A. Some sediment visible when initially opened flow hydrant, cleared after approximately 30 seconds.

City received complaints from clients with issues of cloudy water during Test B, will skip Test No. 7 for now to avoid additional complaints

Test No. 8 and No. 10 not ready for testing because flow valves are being installed and calibrated in the Larsson Zone

Lunch break 11:50 AM to 12:30 PM, meet at Test No. 9 next

Fire Hydrant Flow Test

City of Manhattan Beach

Date 1/19/2021
 Tested By Roxana Carrillo & Adelina Pirijanyan
 Weather Cool, very windy
 Location 15th Street

Start Time 3:10 PM
 End Time 3:43 PM

Test No. 7
 Pressure Zone Main

HYDRANTS

Test A
Normal Conditions

Test B
Peck Reservoir Offline

Test C
Block 35 Facility Offline

Flow Hydrant	Location	ID	Elevation (ft)	Test A				Test B				Test C				
				PSI	GPM	Time	Duration (min)	PSI	GPM	Time	Duration (min)	PSI	GPM	Time	Duration (min)	
	604 15th St	FH 162	153	13	1,429	3:22 PM	2	13	1,429	3:40 PM	2	Test not conducted				

Pitot Diameter = 4 inches
 C factor = 0.83

Pressure Hydrant	Location	ID	Elevation (ft)	Test A				Test B				Test C				
				Static		Residual		Static		Residual		Static		Residual		
				PSI	Time	PSI	Time	PSI	Time	PSI	Time	PSI	Time	PSI	Time	
	1428 N Ardmore Ave	FH 163	114	77	3:20 PM	60	3:22 PM	82	3:38 PM	58	3:40 PM	Test not conducted				

NOTES

Sediment visible when opened flow hydrant, clear after about 1 minute

Fire Hydrant Flow Test

City of Manhattan Beach

Date 1/19/2021
 Tested By Roxana Carrillo & Adelina Pirijanyan
 Weather Cool, very windy
 Location 8th Street

Start Time 2:47 PM
 End Time 3:03 PM

Test No. 8
 Pressure Zone Larsson

HYDRANTS

Test A
Normal Conditions

Test B
Peck Reservoir Offline

Test C
Block 35 Facility Offline

Flow Hydrant	Location	ID	Elevation (ft)	Test A				Test B				Test C				
				PSI	GPM	Time	Duration (min)	PSI	GPM	Time	Duration (min)	PSI	GPM	Time	Duration (min)	
	828 8th St	FH 343	204	36	1,007	2:58 PM	2	Test not conducted				Test not conducted				

Pitot Diameter = 2.5 inches
 C factor = 0.9

Pressure Hydrant	Location	ID	Elevation (ft)	Test A				Test B				Test C				
				Static		Residual		Static		Residual		Static		Residual		
				PSI	Time	PSI	Time	PSI	Time	PSI	Time	PSI	Time	PSI	Time	
	712 Pacific Ave	FH 344	167	83	2:56 PM	73	2:58 PM	Test not conducted				Test not conducted				

NOTES

2.5-inch diameter pitot used at flow hydrant

2nd St BPS offline

Test No. 8 and No. 10 tested under the same conditions, both use 2.5-inch diameter pitot for flow hydrant and all other test locations use 4-inch diameter

Operator indicated Larsson BPS has 2 pumps on each at 1100 gpm, at 100%

Fire Hydrant Flow Test

City of Manhattan Beach

Date 1/19/2021
 Tested By Roxana Carrillo & Adelina Pirijanyan
 Weather Sunny, warm
 Location 1st Street

Start Time 12:30 PM
 End Time 12:58 PM

Test No. 9
 Pressure Zone Main

HYDRANTS

Test A
Normal Conditions

Test B
Peck Reservoir Offline

Test C
Block 35 Facility Offline

Flow Hydrant	Location	ID	Elevation (ft)	Test A				Test B				Test C				
				PSI	GPM	Time	Duration (min)	PSI	GPM	Time	Duration (min)	PSI	GPM	Time	Duration (min)	
	100 Manhattan Ave	FH 378	53	46	2,688	12:47 PM	2	Test not conducted				Test not conducted				

Pitot Diameter = 4 inches
 C factor = 0.83

Pressure Hydrant	Location	ID	Elevation (ft)	Test A				Test B				Test C				
				Static		Residual		Static		Residual		Static		Residual		
				PSI	Time	PSI	Time	PSI	Time	PSI	Time	PSI	Time	PSI	Time	
	121 Neptune Ave	FH 379	30	117	12:45 PM	99	12:47 PM	Test not conducted				Test not conducted				

NOTES

Only Test A conducted at this location to avoid client complaints, when Test B was conducted at other locations City received client complaints

Test No. 8 and No. 10 are not ready because flow valves are still being installed and calibrated in the Larsson Zone

Will conduct Test No. 11 next

Fire Hydrant Flow Test

City of Manhattan Beach

Date 1/19/2021
 Tested By Roxana Carrillo & Adelina Pirijanyan
 Weather Sunny, cool, very windy
 Location Prospect Avenue

Start Time 1:45 PM
 End Time 2:36 PM

Test No. 10
 Pressure Zone Larsson

HYDRANTS

Test A
 Normal Conditions

Test B
 Peck Reservoir Offline

Test C
 Block 35 Facility Offline

2nd St BPS Offline

Flow Hydrant	Location	ID	Elevation (ft)	Test A				Test B				Test C				
				PSI	GPM	Time	Duration (min)	PSI	GPM	Time	Duration (min)	PSI	GPM	Time	Duration (min)	
	1221 Tennyson St	FH 64	166	45	1,126	2:07 PM	2	47	1,151	2:34 PM	2	Test not conducted				

Pitot Diameter = 2.5 inches

C factor = 0.9

Pressure Hydrant	Location	ID	Elevation (ft)	Test A				Test B				Test C				
				Static		Residual		Static		Residual		Static		Residual		
				PSI	Time	PSI	Time	PSI	Time	PSI	Time	PSI	Time	PSI	Time	
	1203 Artesia Blvd	FH 69	179	81	2:05 PM	63	2:07 PM	82	2:32 PM	68	2:34 PM	Test not conducted				

NOTES

Using 2.5-inch diameter pitot for this test location. Had to clean field equipment due to wood debris stuck inside diffuser from previous test location (Test No. 11).

Only conducting Test A since test location near Block 35 Facility. Prior to opening flow hydrant, 190 gpm demand in system, 1 pump on at 83% at Block 35. 2nd St BPS turned on but shouldn't have

until Larsson BPS pumps are utilized. Will conduct another test (Test B) but will manually close 2nd St BPS prior to re-testing. Approximately 20 minutes until 2nd St BPS confirmed to be offline and

ready to conduct Test B. Peck Reservoir and Block 35 still online. Larsson BPS 2 pumps on at 1100 gpm each at 97%, 3rd pump still off.

Fire Hydrant Flow Test

City of Manhattan Beach

Date 1/19/2021
 Tested By Roxana Carrillo & Adelina Pirijanyan
 Weather Sunny, windy, warm
 Location Aviation Boulevard

Start Time 1:11 PM
 End Time 1:37 PM

Test No. 11
 Pressure Zone Main

HYDRANTS

Test A
Normal Conditions

Test B
Peck Reservoir Offline

Test C
Block 35 Facility Offline

Flow Hydrant	Location	ID	Elevation (ft)	Test A				Test B				Test C				
				PSI	GPM	Time	Duration (min)	PSI	GPM	Time	Duration (min)	PSI	GPM	Time	Duration (min)	
	1760 Nelson Ave	FH 22	96	31	2,206	1:19 PM	2	22	1,859	1:35 PM	2	Test not conducted				

Pitot Diameter = 4 inches
 C factor = 0.83

Pressure Hydrant	Location	ID	Elevation (ft)	Test A				Test B				Test C				
				Static		Residual		Static		Residual		Static		Residual		
				PSI	Time	PSI	Time	PSI	Time	PSI	Time	PSI	Time	PSI	Time	
	1769 Nelson Ave	FH 23	93	93	1:17 PM	77	1:19 PM	91	1:33 PM	79	1:35 PM	Test not conducted				

NOTES

Sediment visible when opened flow hydrant, cleared within 15 seconds

This test location and Test No. 1 to 7 and No. 9 use 4-inch diameter pitot at flow hydrant

Test No. 8 and No. 10 are ready for testing, flow valve installed and calibrated

Conduct Test No. 10 next, then Test No. 8, and Test No. 7 last

Eric requested we email him a summary of field work, test results, accomplishments, and next steps