

# Preliminary Sewer Analysis

Tentative Tract 17555  
3355 & 3303 Via Lido  
Newport Beach, California

## Prepared for:

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June 2013

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# SEWER STUDY

3355 & 3303 VIA LIDO – NEWPORT BEACH

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## **A. Introduction**

This sewer analysis has been prepared for Shubin + Donaldson Architects, for the proposed project site located at the northwest corner of Via Lido and Via Malaga, in the City of Newport Beach, County of Orange, California. The 1.2 acre site currently contains 3 existing buildings encompassing slightly more than half of the site.

The “3355 & 3303 Via Lido” project consists of 23 dwelling.

The effluents produced by the site will be conveyed via gravity flow through a proposed onsite 6-inch sewer main connecting to the existing 15-inch sewer approximately near the southwest corner of the site along the centerline of Via Lido.

The purpose of this analysis is to provide supplemental design information to design the on site sewer system for “3355 & 3303 Via Lido” (23 dwelling units) and to “confirm adequate capacity”.

Additionally, this report also demonstrates that the proposed sewer design meets the following requirements:

- a. Peak flows in the 15” existing sewer mains are less than ½ full
- b. For public sewer lines and/or lines that directly connect to public sewer, the flow velocity is 2 feet per second or greater.
- c. For private sewer lines either the velocity is at least 2 feet per second or the slope of the pipe is a minimum of 2.0%, per the California Plumbing Code (2010).
- d. Minimum slope is greater than 0.004 ft/ft.

Note: These calculations are based on the Preliminary Grading Plan for Tentative Tract No. 17555. Should the layout of the proposed sewer system change in order to meet project needs, the analysis may need to be recalculated.

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## B. Methodology

The existing project effluent was first measured by collection of data done within an average of 1-hour data intervals taken from the existing 15” sewer for which the point of connection of the proposed site sewer is located. Per the data collected by ADS Environmental Services it was discovered that flows varied ranging as low as 0.15 MGD and peaking as high as 0.60 MGD.

Next, the proposed project effluent was estimated utilizing flows generated on a total DFU basis. As outlined in the table below, DFU counts per each plan type of the proposed project were taken as suggested by Table 7-3 *Drainage Fixture Unit Values* of the 2010 California Plumbing Code, then multiplying each plan type DFU times the number of plan types. The summation of all DFU counts of all plan types yield a number of 478 total DFU. Using this DFU count and applying the number to Chart A-2 of Appendix A of the 2010 California Plumbing Code, a total demand load of 120 gallons per minute (GPM) is assumed.

For our final steps, flow depth and velocity were calculated using the Manning equation for circular pipes based on a roughness coefficient of friction of  $n=0.011$  for PVC sewer pipe and applying our known total Q. Our known Q was taken by converting a peak flow of 0.60 MGD (from the existing effluent) into cubic feet per second (cfs) yielding 0.9299 cfs and adding to the converted demand load of 0.2667 cfs (converted from 120 GPM) totaling to 1.20 cfs. The results of which can be seen in the reports summary outlined at the end of this report.

		PLAN TYPES					
		Island Type 1 (x10)	Island Type 2 (x1)	Island Type 3 (x1)	Harbor Type 1 (x3)	Harbor Type 2 (x8)	
<b>FIXTURE TYPES</b>	Toilets	3 = 3 DFU	3 = 3 DFU	4 = 4 DFU	4 = 4 DFU	4 = 4 DFU	
	Bathtub	2 = 4 DFU	2 = 4 DFU	3 = 6 DFU	2 = 4 DFU	2 = 4 DFU	
	Bathroom Sink	4 = 4 DFU	4 = 4 DFU	5 = 5 DFU	5 = 5 DFU	5 = 5 DFU	
	Kitchen Sink	1 = 2 DFU	1 = 2 DFU	1 = 2 DFU	1 = 2 DFU	1 = 2 DFU	
	Dishwasher	1 = 2 DFU	none	none	none	none	
	Washer (clothing)	1 = 3 DFU	none	none	none	1 = 3 DFU	
	Shower (single)	1 = 2 DFU	1 = 2 DFU	1 = 2 DFU	1 = 2 DFU	1 = 2 DFU	
	Shower (multi)	none	none	none	1 = 3 DFU	1 = 3 DFU	
<b>TOTAL DFU =</b>		20 DFU X 10 = 200 DFU	15 DFU X 1 = 15 DFU	19 DFU X 1 = 19 DFU	20 DFU X 3 = 60 DFU	23 DFU X 8 = 184 DFU	<b>478 DFU TOTAL</b>

# SEWER STUDY

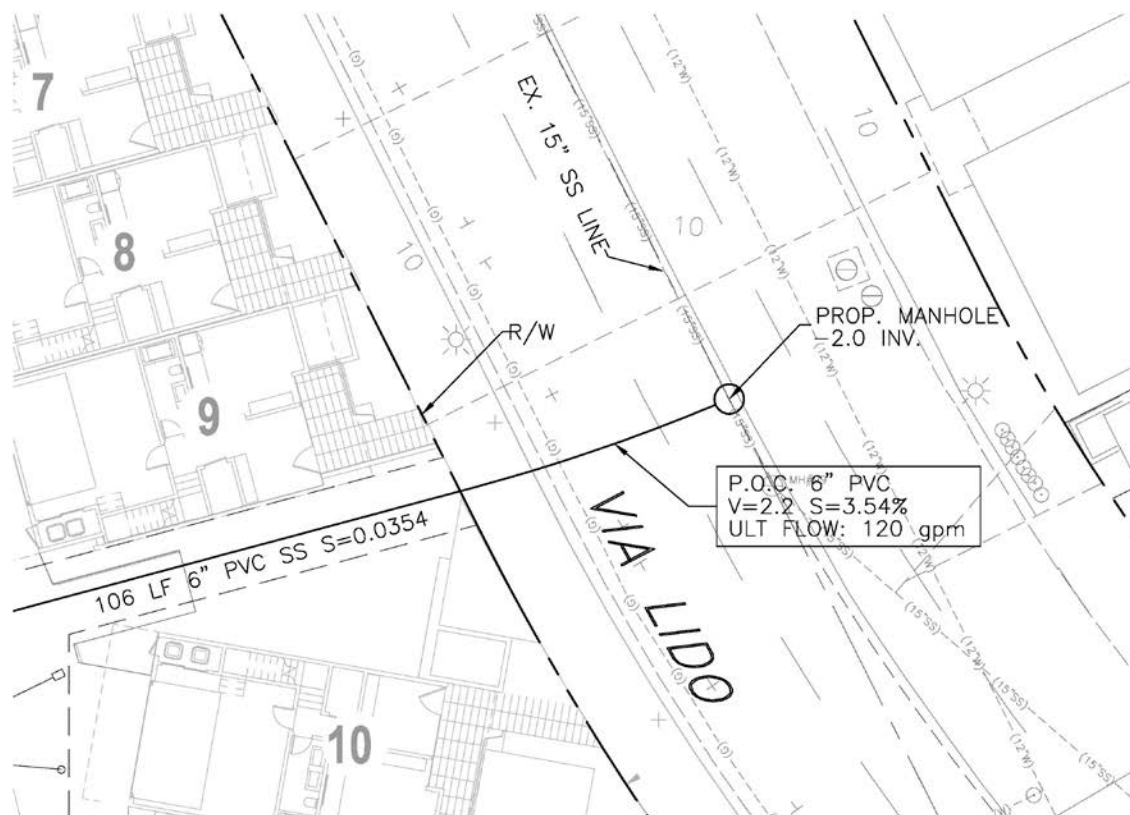
3355 & 3303 VIA LIDO – NEWPORT BEACH



## C. Conclusion

The results from this sewer analysis demonstrate the following:

- All public and/or public connected sewer mains meets design criteria and guidelines; a minimum slope of 0.004 ft/ft, cleaning velocity of 2 feet per second or greater, and a peak depth of flow of less than 50 percent.
- All private sewer mains meet the minimum slope of 0.004 ft/ft, have a velocity exceeding 2 feet per second or a slope greater than 2%, and a peak depth of flow of less than 50 percent.
- See Report Summary for summary of slope, peak Q, and velocity at the point of connection.



# SEWER STUDY

3355 & 3303 VIA LIDO – NEWPORT BEACH



## Report Summary

### Channel Report

Hydraflow Express Extension for AutoCAD® Civil 3D® 2013 by Autodesk, Inc.

Thursday, Jun 20 2013

<Name>

#### Circular

Diameter (ft) = 1.25

Invert Elev (ft) = 100.00

Slope (%) = 0.14

N-Value = 0.011

#### Calculations

Compute by: Known Q

Known Q (cfs) = 1.20

#### Highlighted

Depth (ft) = 0.57

Q (cfs) = 1.200

Area (sqft) = 0.55

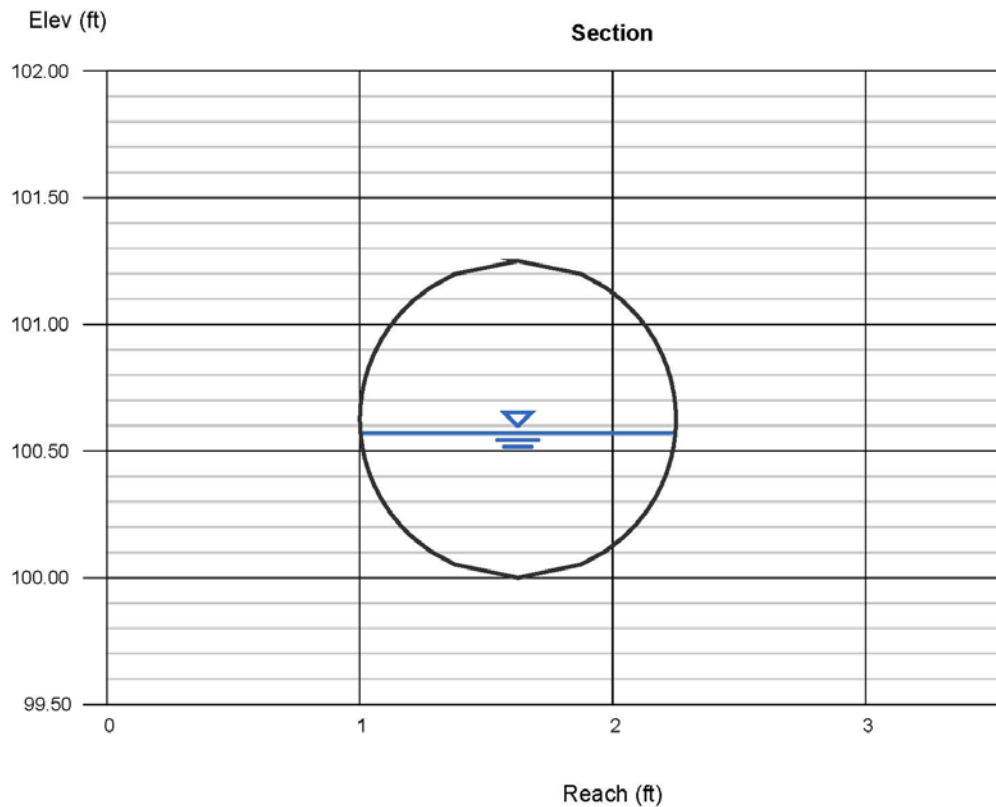
Velocity (ft/s) = 2.19

Wetted Perim (ft) = 1.86

Crit Depth, Yc (ft) = 0.44

Top Width (ft) = 1.25

EGL (ft) = 0.64



# **Appendix A**

Sewer Manhole Monitoring 3/21/13 – 3/27/13

NB_04LIDO	"Average=Hourly"	"QualityFlag=FALSE"	"QualityValue=FALSE"
DateTime	"MP1\DFINAL"	"MP1\QFINAL"	"MP1\VFINAL"
M/d/yyyy h:mm:ss tt	"inches"	"MGD"	"feet/sec"
3/21/2013 0:00	2.8	0.267	2.45
3/21/2013 1:00	2.53	0.209	2.24
3/21/2013 2:00	2.68	0.233	2.31
3/21/2013 3:00	2.71	0.245	2.34
3/21/2013 4:00	2.71	0.241	2.36
3/21/2013 5:00	2.93	0.298	2.58
3/21/2013 6:00	3.1	0.329	2.65
3/21/2013 7:00	3.53	0.507	3.52
3/21/2013 8:00	3.55	0.52	3.59
3/21/2013 9:00	3.64	0.558	3.74
3/21/2013 10:00	3.43	0.488	3.53
3/21/2013 11:00	3.41	0.486	3.52
3/21/2013 12:00	3.14	0.4	3.22
3/21/2013 13:00	3.08	0.377	3.07
3/21/2013 14:00	3.1	0.377	3.05
3/21/2013 15:00	3	0.346	2.94
3/21/2013 16:00	2.92	0.311	2.74
3/21/2013 17:00	3.09	0.39	3.21
3/21/2013 18:00	3.15	0.397	3.2
3/21/2013 19:00	3.31	0.433	3.27
3/21/2013 20:00	3.34	0.449	3.35
3/21/2013 21:00	3.28	0.427	3.23
3/21/2013 22:00	3.19	0.37	2.92
3/21/2013 23:00	3.08	0.349	2.84
3/22/2013 0:00	2.67	0.235	2.34
3/22/2013 1:00	2.49	0.207	2.29
3/22/2013 2:00	2.55	0.204	2.2
3/22/2013 3:00	2.55	0.205	2.17
3/22/2013 4:00	2.57	0.201	2.14
3/22/2013 5:00	2.77	0.251	2.33
3/22/2013 6:00	3.11	0.345	2.79
3/22/2013 7:00	3.45	0.497	3.54
3/22/2013 8:00	3.6	0.556	3.75
3/22/2013 9:00	3.62	0.57	3.87
3/22/2013 10:00	3.48	0.514	3.62
3/22/2013 11:00	3.42	0.501	3.64
3/22/2013 12:00	3.27	0.453	3.49
3/22/2013 13:00	3.31	0.457	3.44
3/22/2013 14:00	3.15	0.375	2.98



3/22/2013 15:00	3.03	0.372	3.11
3/22/2013 16:00	3.11	0.376	3.07
3/22/2013 17:00	3.16	0.411	3.23
3/22/2013 18:00	3.2	0.431	3.44
3/22/2013 19:00	3.23	0.426	3.34
3/22/2013 20:00	3.43	0.47	3.34
3/22/2013 21:00	3.31	0.433	3.27
3/22/2013 22:00	3.17	0.381	3.07
3/22/2013 23:00	3.04	0.34	2.86
3/23/2013 0:00	2.87	0.284	2.55
3/23/2013 1:00	2.48	0.199	2.23
3/23/2013 2:00	2.5	0.199	2.2
3/23/2013 3:00	2.58	0.217	2.24
3/23/2013 4:00	2.43	0.194	2.19
3/23/2013 5:00	2.68	0.224	2.25
3/23/2013 6:00	2.79	0.254	2.43
3/23/2013 7:00	3.16	0.361	2.86
3/23/2013 8:00	3.43	0.489	3.51
3/23/2013 9:00	3.69	0.585	3.84
3/23/2013 10:00	3.62	0.582	3.9
3/23/2013 11:00	3.47	0.531	3.81
3/23/2013 12:00	3.29	0.485	3.74
3/23/2013 13:00	3.13	0.396	3.23
3/23/2013 14:00	3.12	0.401	3.28
3/23/2013 15:00	3.11	0.374	3.02
3/23/2013 16:00	3.09	0.377	3.14
3/23/2013 17:00	3.29	0.437	3.31
3/23/2013 18:00	3.19	0.393	3.13
3/23/2013 19:00	3.23	0.411	3.21
3/23/2013 20:00	3.23	0.411	3.21
3/23/2013 21:00	3.26	0.436	3.39
3/23/2013 22:00	3.13	0.371	3.03
3/23/2013 23:00	3.02	0.32	2.72
3/24/2013 0:00	2.91	0.308	2.7
3/24/2013 1:00	2.75	0.254	2.46
3/24/2013 2:00	2.59	0.23	2.38
3/24/2013 3:00	2.39	0.175	2.04
3/24/2013 4:00	2.58	0.218	2.22
3/24/2013 5:00	2.43	0.187	2.12
3/24/2013 6:00	2.75	0.241	2.36
3/24/2013 7:00	3.02	0.332	2.82
3/24/2013 8:00	3.4	0.472	3.44
3/24/2013 9:00	3.51	0.544	3.82

3/24/2013 10:00	3.57	0.563	3.88
3/24/2013 11:00	3.45	0.515	3.72
3/24/2013 12:00	3.42	0.484	3.51
3/24/2013 13:00	3.16	0.396	3.19
3/24/2013 14:00	3.17	0.388	3.09
3/24/2013 15:00	3.04	0.366	3.12
3/24/2013 16:00	3.1	0.366	2.97
3/24/2013 17:00	3.15	0.38	3.06
3/24/2013 18:00	3.25	0.42	3.26
3/24/2013 19:00	3.22	0.431	3.38
3/24/2013 20:00	3.38	0.474	3.5
3/24/2013 21:00	3.28	0.434	3.35
3/24/2013 22:00	3.24	0.416	3.26
3/24/2013 23:00	2.92	0.29	2.55
3/25/2013 0:00	2.67	0.244	2.4
3/25/2013 1:00	2.67	0.243	2.36
3/25/2013 2:00	2.48	0.204	2.19
3/25/2013 3:00	2.43	0.179	2.03
3/25/2013 4:00	2.32	0.165	2.02
3/25/2013 5:00	2.59	0.213	2.22
3/25/2013 6:00	2.78	0.262	2.44
3/25/2013 7:00	3.45	0.5	3.6
3/25/2013 8:00	3.62	0.569	3.84
3/25/2013 9:00	3.65	0.571	3.79
3/25/2013 10:00	3.48	0.535	3.83
3/25/2013 11:00	3.43	0.486	3.52
3/25/2013 12:00	3.34	0.454	3.42
3/25/2013 13:00	3.19	0.41	3.29
3/25/2013 14:00	3.12	0.381	3.1
3/25/2013 15:00	3.03	0.34	2.85
3/25/2013 16:00	2.97	0.334	2.88
3/25/2013 17:00	3.11	0.364	2.97
3/25/2013 18:00	3.12	0.373	3
3/25/2013 19:00	3.18	0.394	3.13
3/25/2013 20:00	3.43	0.484	3.48
3/25/2013 21:00	3.29	0.417	3.18
3/25/2013 22:00	3.33	0.436	3.26
3/25/2013 23:00	2.99	0.305	2.64
3/26/2013 0:00	2.87	0.29	2.56
3/26/2013 1:00	2.48	0.194	2.11
3/26/2013 2:00	2.55	0.199	2.12
3/26/2013 3:00	2.28	0.15	1.89
3/26/2013 4:00	2.51	0.204	2.12

3/26/2013 5:00	2.51	0.207	2.15
3/26/2013 6:00	2.83	0.285	2.56
3/26/2013 7:00	3.38	0.485	3.54
3/26/2013 8:00	3.58	0.543	3.72
3/26/2013 9:00	3.62	0.567	3.83
3/26/2013 10:00	3.65	0.601	4.03
3/26/2013 11:00	3.5	0.519	3.65
3/26/2013 12:00	3.32	0.464	3.5
3/26/2013 13:00	3.28	0.471	3.62
3/26/2013 14:00	3.15	0.399	3.18
3/26/2013 15:00	3	0.342	2.88
3/26/2013 16:00	3.03	0.371	3.08
3/26/2013 17:00	3.03	0.359	2.98
3/26/2013 18:00	3.18	0.418	3.28
3/26/2013 19:00	3.23	0.414	3.23
3/26/2013 20:00	3.4	0.468	3.42
3/26/2013 21:00	3.25	0.416	3.24
3/26/2013 22:00	3.32	0.432	3.26
3/26/2013 23:00	3.2	0.382	2.96
3/27/2013 0:00	3	0.322	2.71
3/27/2013 1:00	2.46	0.192	2.18
3/27/2013 2:00	2.55	0.215	2.25
3/27/2013 3:00	2.33	0.167	1.96
3/27/2013 4:00	2.4	0.186	2.04
3/27/2013 5:00	2.38	0.173	1.98
3/27/2013 6:00	2.79	0.267	2.43
3/27/2013 7:00	3.35	0.433	3.17
3/27/2013 8:00	3.44	0.49	3.54
3/27/2013 9:00	3.5	0.518	3.64
3/27/2013 10:00	3.58	0.546	3.73
3/27/2013 11:00	3.52	0.538	3.76
3/27/2013 12:00	3.37	0.467	3.45
3/27/2013 13:00	3.2	0.418	3.28
3/27/2013 14:00	3.16	0.381	3
3/27/2013 15:00	3.05	0.373	3.12
3/27/2013 16:00	2.94	0.342	2.94
3/27/2013 17:00	2.97	0.33	2.83
3/27/2013 18:00	3.2	0.389	3.03
3/27/2013 19:00	3.34	0.434	3.23
3/27/2013 20:00	3.37	0.471	3.46
3/27/2013 21:00	3.29	0.438	3.33
3/27/2013 22:00	3.38	0.458	3.38
3/27/2013 23:00	3.34	0.436	3.2

