Temporary Flow Monitoring Study

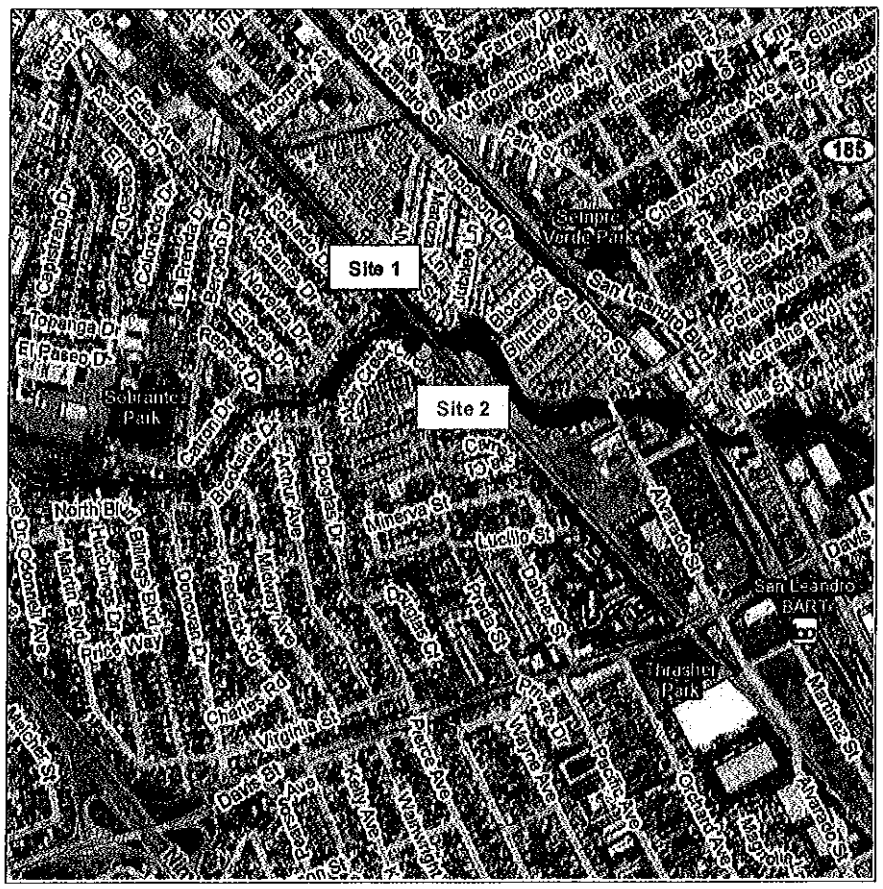
Sanitary Sewer Collection System

Monitoring Site: Site 1

Manhole Address: In easement just off fence line northeast of Alder Creek Circle

Size/Type of Line: 21-inch Pipe

Data Summary Report



V&A

Site Information Report

Monitoring Site: Site 1

Location: In easement just off fence line northeast of Alder Creek Circle

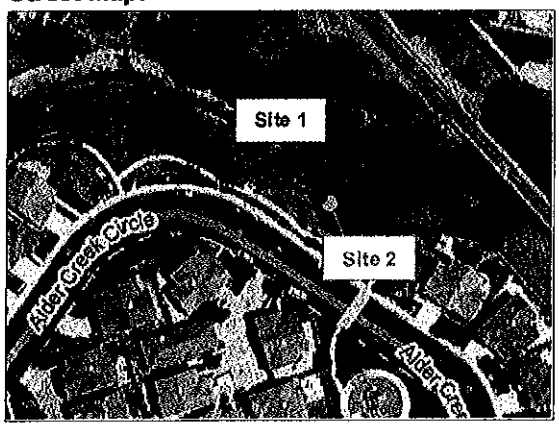
Diameter: 21 inches

Average Dry Weather Flow: 0.437 *MGD*

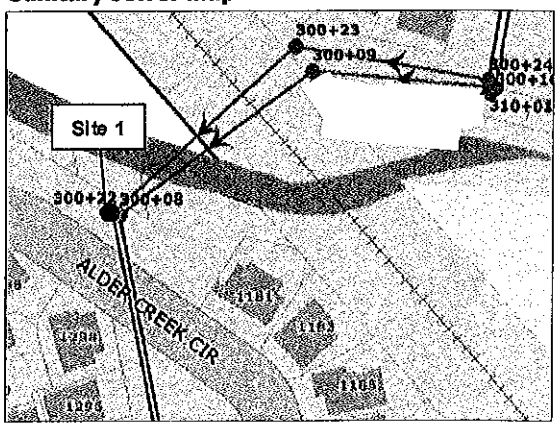
Peak Measured Flow: 0.865 *MGD*

Street-level photo:

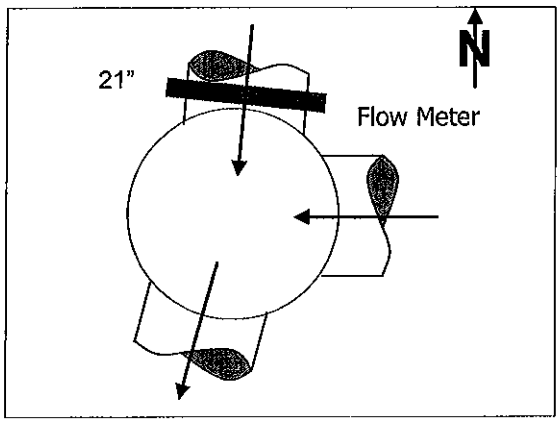
Street map:



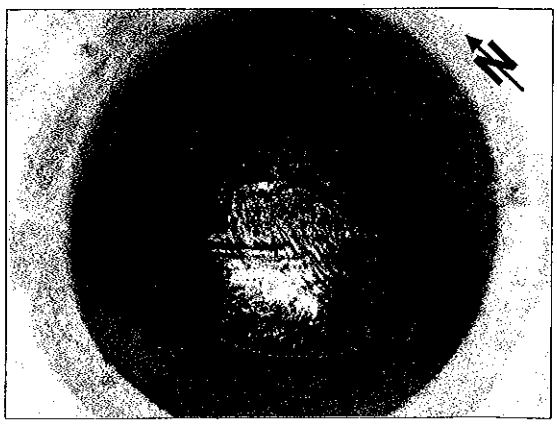
Sanitary sewer map:



Flow sketch:



Plan View Photo:



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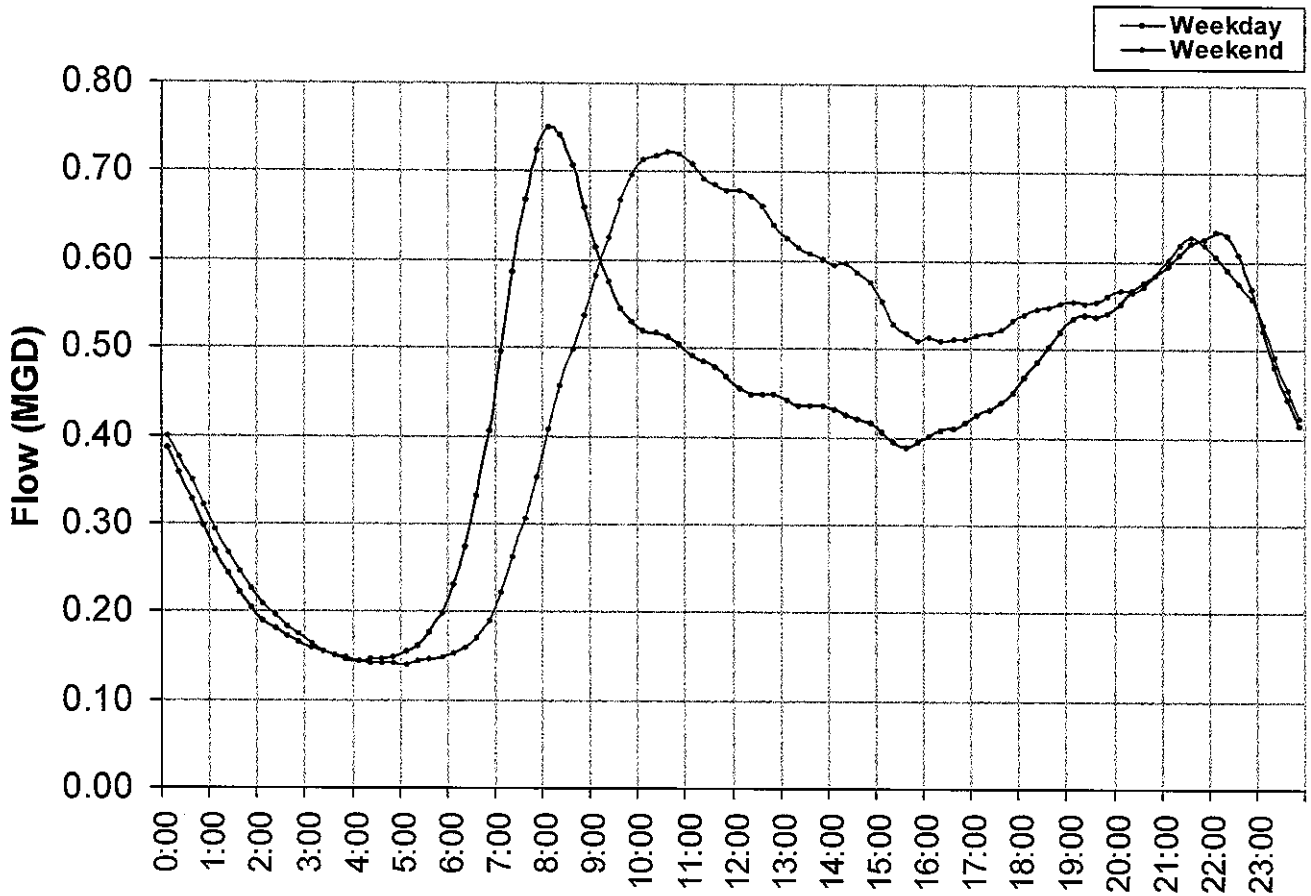
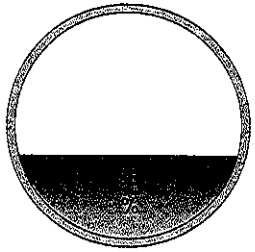
Average Dry Weather Flow

Monitoring Site:
Site 1

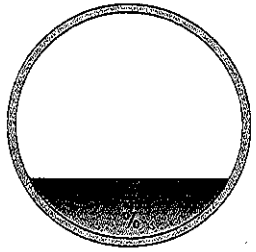


Peak Measured Flow:
0.865 *MGD*



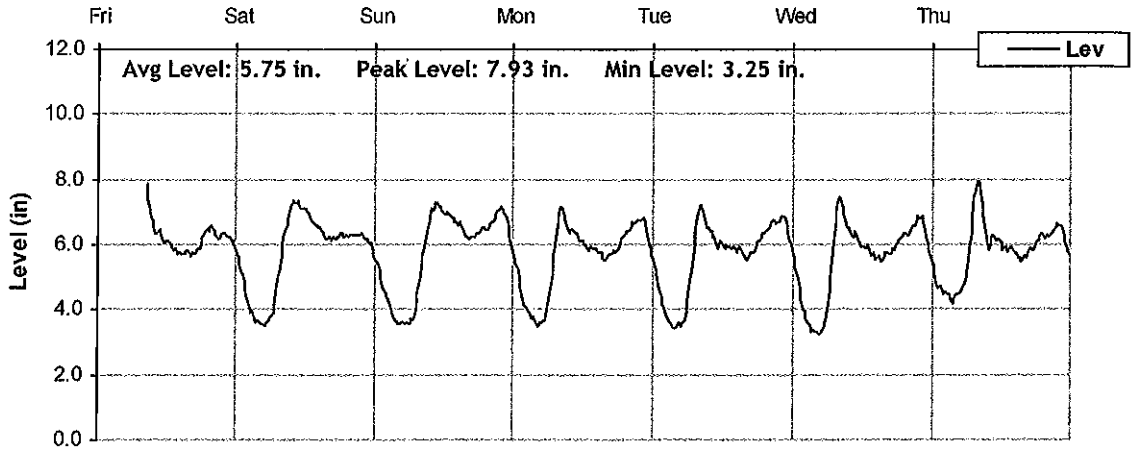
Peak measured flow shown in weekly graphs on following pages

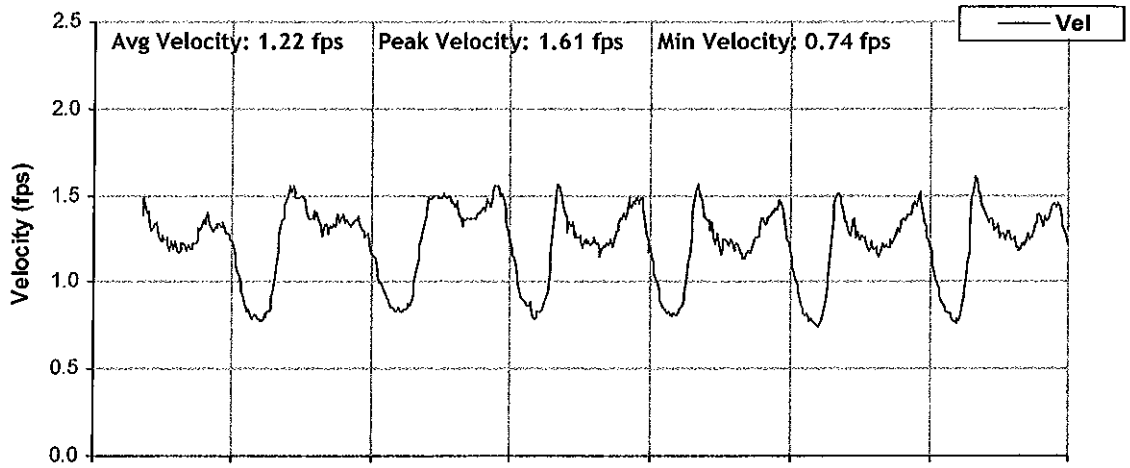
Average Dry Weather Flow:
0.437 *MGD*

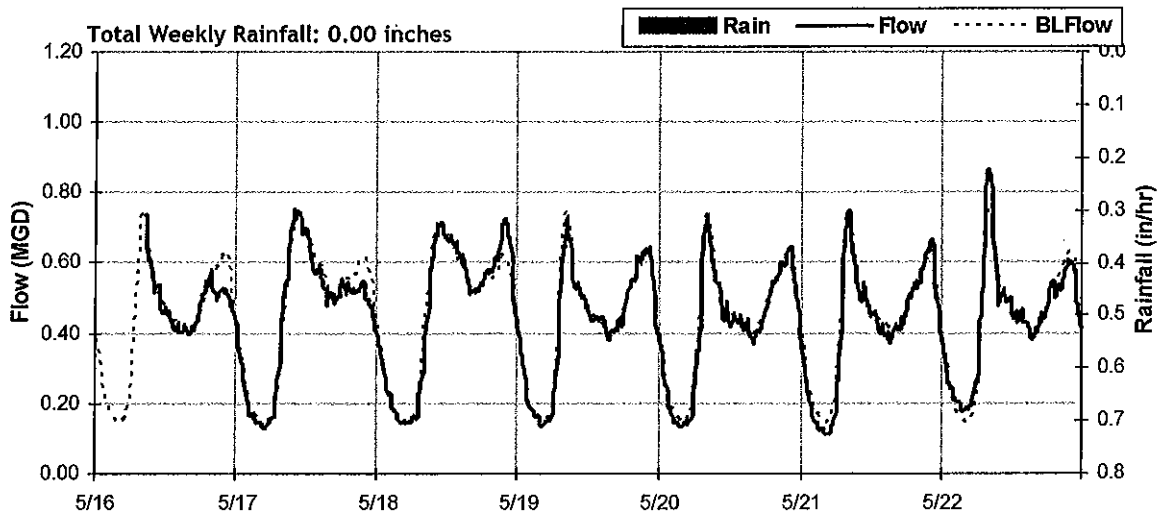


Level, Velocity and Flow
From 5/16/2008 to 5/23/2008

Monitoring Site:
Site 1







Avg Flow: 0.444 MGD Peak Flow: 0.865 MGD Min Flow: 0.114 MGD

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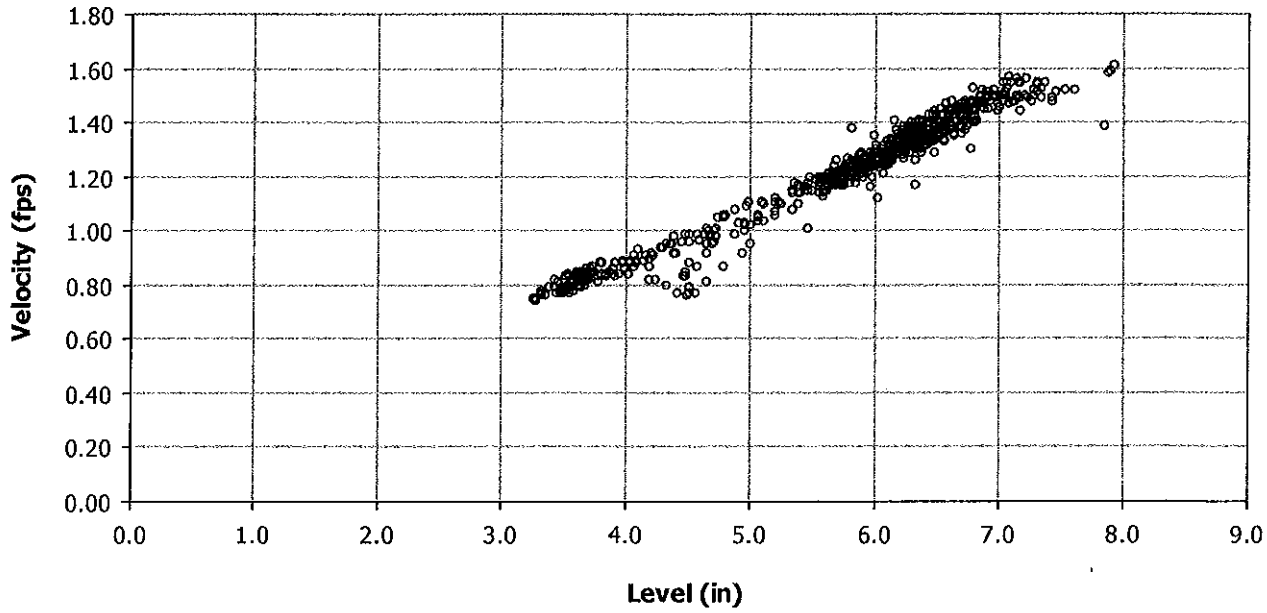
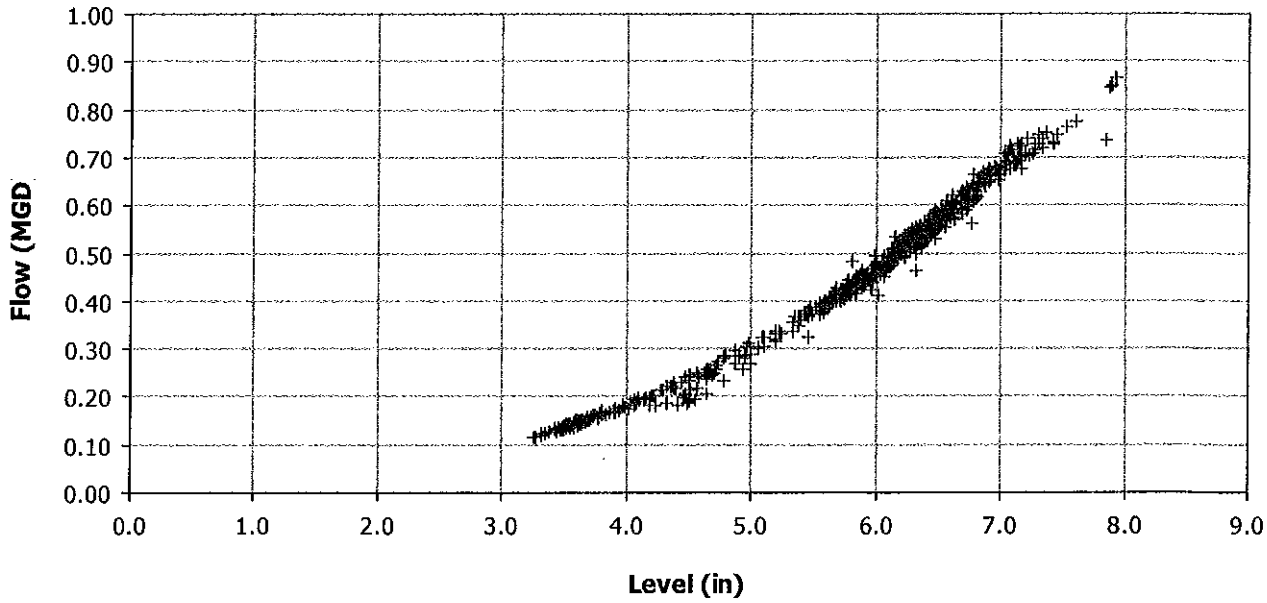
	Scatter Plots (Flow, Velocity vs. Depth)	**Monitoring Site:** Site 1





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Hourly Data: Depth, Velocity and Flow
From 5/16/2008 to 5/23/2008

Monitoring Site:
Site 1

	Level (in)	Vel (fps)	Flow (MGD)
Weekly Average:	5.76	1.22	0.444
Weekly Minimum:	3.28	0.75	0.116
Weekly Maximum:	7.63	1.56	0.795

	Friday 5/16/2008			Saturday 5/17/2008			Sunday 5/18/2008			Monday 5/19/2008			Tuesday 5/20/2008			Wednesday 5/21/2008			Thursday 5/22/2008			
Hour	Level (in)	Vel (fps)	Flow (MGD)	Level (in)	Vel (fps)	Flow (MGD)	Level (in)	Vel (fps)	Flow (MGD)	Level (in)	Vel (fps)	Flow (MGD)	Level (in)	Vel (fps)	Flow (MGD)	Level (in)	Vel (fps)	Flow (MGD)	Level (in)	Vel (fps)	Flow (MGD)	Hour
0:00				5.48	1.13	0.365	5.40	1.13	0.357	5.40	1.16	0.366	5.30	1.13	0.347	5.24	1.06	0.323	5.18	1.14	0.340	0:00
1:00				4.74	0.98	0.257	4.69	0.99	0.257	4.52	0.97	0.240	4.45	0.96	0.232	4.30	0.93	0.212	4.68	0.97	0.250	1:00
2:00				4.02	0.85	0.176	4.22	0.93	0.206	3.99	0.88	0.181	3.81	0.85	0.163	3.71	0.82	0.153	4.51	0.86	0.210	2:00
3:00				3.68	0.81	0.148	3.74	0.86	0.161	3.72	0.85	0.158	3.51	0.82	0.140	3.36	0.78	0.126	4.30	0.82	0.187	3:00
4:00				3.58	0.79	0.139	3.58	0.84	0.147	3.57	0.81	0.142	3.52	0.82	0.141	3.28	0.75	0.116	4.48	0.77	0.187	4:00
5:00				3.61	0.80	0.142	3.56	0.84	0.146	3.79	0.85	0.162	3.71	0.86	0.159	3.54	0.80	0.139	4.73	0.84	0.222	5:00
6:00				3.93	0.85	0.172	3.70	0.87	0.159	4.94	1.02	0.289	4.88	1.05	0.291	4.83	1.01	0.275	5.70	1.06	0.367	6:00
7:00				5.13	1.06	0.314	4.57	1.02	0.255	6.45	1.40	0.568	6.57	1.42	0.593	6.76	1.38	0.602	7.43	1.47	0.727	7:00
8:00	7.48	1.44	0.714	6.34	1.32	0.523	5.78	1.23	0.428	7.01	1.53	0.695	7.06	1.52	0.698	7.20	1.49	0.703	7.63	1.56	0.795	8:00
9:00	6.63	1.37	0.576	7.06	1.49	0.683	6.77	1.41	0.610	6.48	1.37	0.559	6.51	1.37	0.563	6.56	1.36	0.565	6.33	1.42	0.562	9:00
10:00	6.39	1.33	0.531	7.32	1.54	0.742	7.19	1.49	0.699	6.38	1.32	0.525	6.21	1.31	0.506	6.31	1.31	0.515	6.17	1.35	0.516	10:00
11:00	6.10	1.26	0.470	7.15	1.49	0.694	7.09	1.49	0.687	6.16	1.27	0.484	6.05	1.25	0.461	6.11	1.30	0.488	6.13	1.31	0.495	11:00
12:00	6.03	1.24	0.457	6.98	1.46	0.662	6.93	1.50	0.668	5.92	1.23	0.441	5.96	1.22	0.442	5.94	1.26	0.456	5.94	1.27	0.460	12:00
13:00	5.80	1.20	0.419	6.65	1.37	0.577	6.81	1.48	0.644	5.92	1.22	0.440	5.91	1.22	0.439	5.78	1.20	0.418	5.85	1.27	0.449	13:00
14:00	5.74	1.19	0.410	6.53	1.38	0.571	6.67	1.45	0.612	5.82	1.23	0.433	5.87	1.21	0.429	5.63	1.20	0.402	5.76	1.25	0.432	14:00
15:00	5.75	1.21	0.417	6.26	1.31	0.510	6.37	1.36	0.541	5.62	1.18	0.396	5.68	1.17	0.396	5.58	1.18	0.390	5.54	1.19	0.391	15:00
16:00	5.72	1.20	0.410	6.20	1.31	0.501	6.21	1.36	0.522	5.67	1.21	0.409	5.68	1.17	0.395	5.73	1.21	0.415	5.67	1.22	0.414	16:00
17:00	5.92	1.23	0.442	6.20	1.32	0.505	6.29	1.36	0.533	5.80	1.23	0.430	5.88	1.21	0.431	5.87	1.23	0.436	5.86	1.26	0.448	17:00
18:00	6.36	1.32	0.525	6.29	1.36	0.532	6.44	1.40	0.565	6.09	1.32	0.494	6.21	1.28	0.490	6.16	1.29	0.490	6.11	1.34	0.504	18:00
19:00	6.48	1.36	0.554	6.26	1.36	0.527	6.49	1.43	0.584	6.36	1.38	0.549	6.45	1.35	0.547	6.34	1.35	0.534	6.24	1.35	0.522	19:00
20:00	6.27	1.31	0.509	6.28	1.33	0.519	6.70	1.46	0.621	6.60	1.44	0.603	6.68	1.39	0.589	6.43	1.39	0.560	6.27	1.37	0.532	20:00
21:00	6.31	1.32	0.520	6.33	1.36	0.536	7.05	1.54	0.706	6.74	1.46	0.629	6.74	1.42	0.612	6.76	1.45	0.626	6.50	1.44	0.587	21:00
22:00	6.27	1.31	0.511	6.18	1.29	0.493	6.94	1.50	0.671	6.73	1.46	0.628	6.78	1.42	0.616	6.72	1.47	0.630	6.51	1.42	0.582	22:00
23:00	6.02	1.26	0.463	5.90	1.24	0.442	6.18	1.33	0.508	5.98	1.26	0.462	6.07	1.25	0.468	5.92	1.29	0.464	5.89	1.28	0.458	23:00
Average:	**6.20**	**1.28**	**0.496**	**5.75**	**1.22**	**0.447**	**5.81**	**1.26**	**0.470**	**5.65**	**1.21**	**0.428**	**5.64**	**1.19**	**0.423**	**5.58**	**1.19**	**0.418**	**5.81**	**1.22**	**0.443**	**Ave**
Minimum:	**5.72**	**1.19**	**0.410**	**3.58**	**0.79**	**0.139**	**3.56**	**0.84**	**0.146**	**3.57**	**0.81**	**0.142**	**3.51**	**0.82**	**0.140**	**3.28**	**0.75**	**0.116**	**4.30**	**0.77**	**0.187**	**Min**
Maximum:	**7.48**	**1.44**	**0.714**	**7.32**	**1.54**	**0.742**	**7.19**	**1.54**	**0.706**	**7.01**	**1.53**	**0.695**	**7.06**	**1.52**	**0.698**	**7.20**	**1.49**	**0.703**	**7.63**	**1.56**	**0.795**	**Max**

V&A

Temporary Flow Monitoring Study

Sanitary Sewer Collection System

Monitoring Site: Site 2

Manhole Address: In easement just off fence line northeast of Alder Creek Circle

Size/Type of Line: 18-inch Pipe

Data Summary Report

V&A

Site Information Report

Monitoring Site: Site 2

Location: In easement just off fence line northeast of Alder Creek Circle

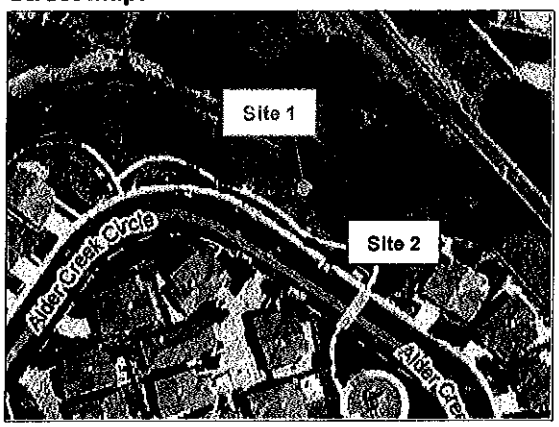
Diameter: 18 inches

Average Dry Weather Flow: 0.178 *MGD*

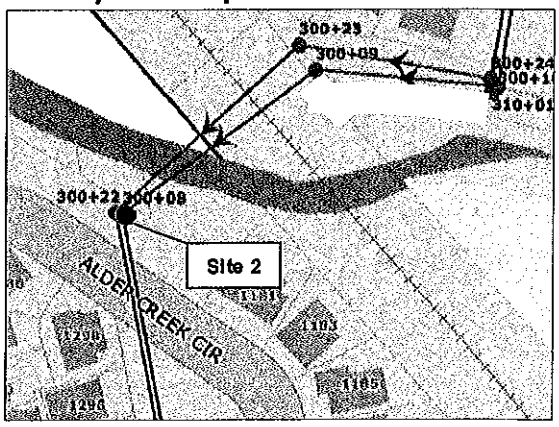
Peak Measured Flow: 0.307 *MGD*

Street-level photo:

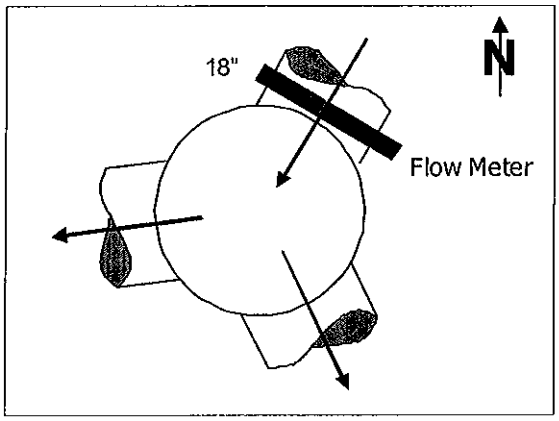
Street map:



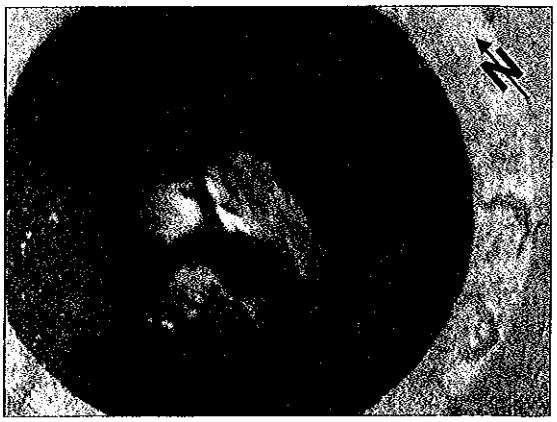
Sanitary sewer map:



Flow sketch:



Plan View Photo:



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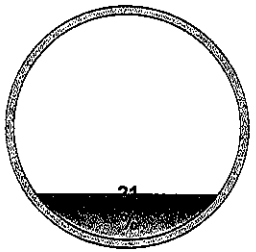
Average Dry Weather Flow

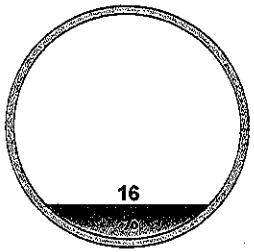
Monitoring Site:
Site 2

Peak Measured Flow:
0.307 *MGD*



Peak measured flow shown in weekly graphs on following pages

Average Dry Weather Flow:
0.178 *MGD*



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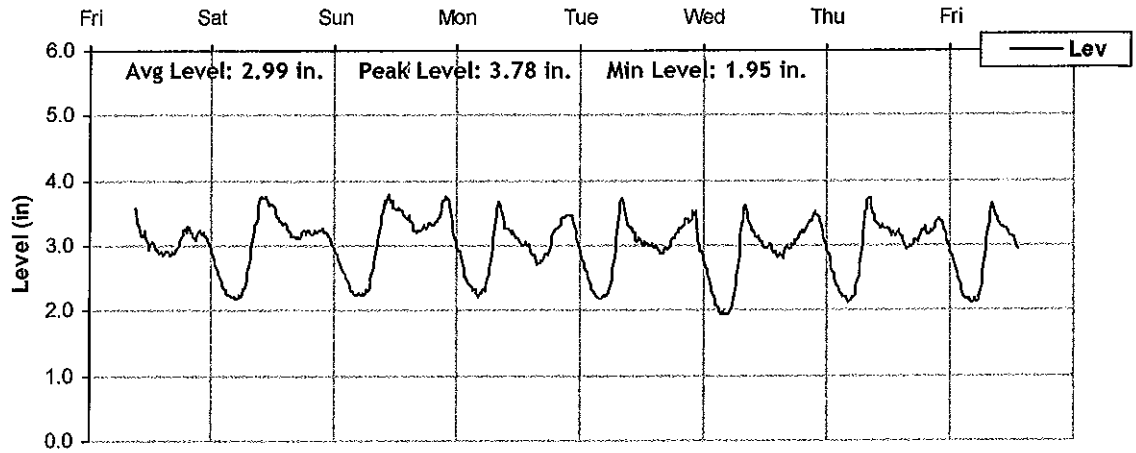
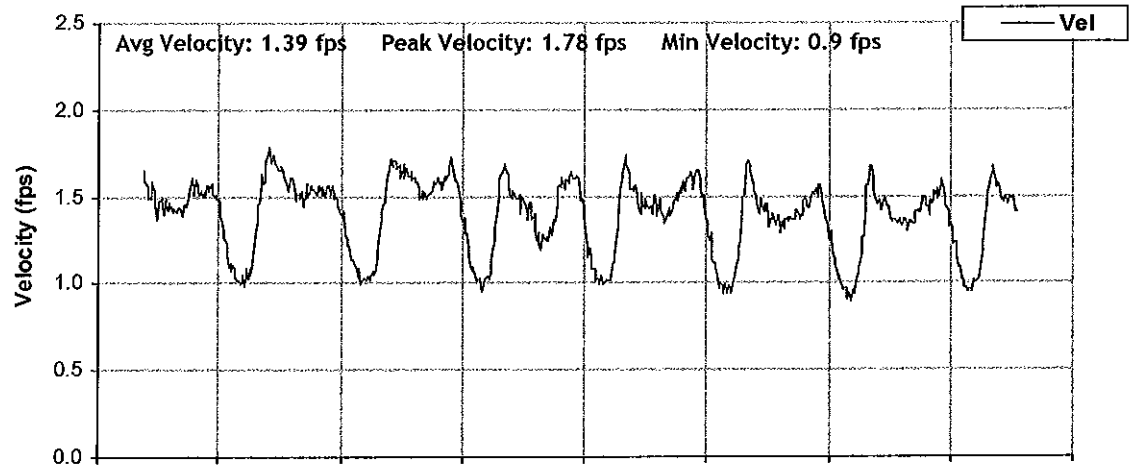
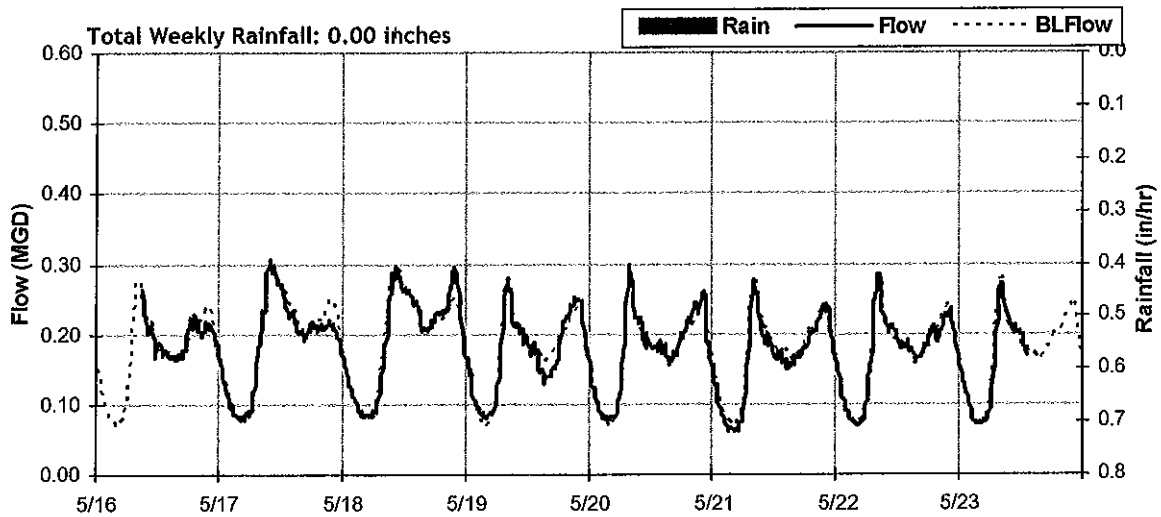
Level, Velocity and Flow
From 5/16/2008 to 5/23/2008

Monitoring Site:
Site 2





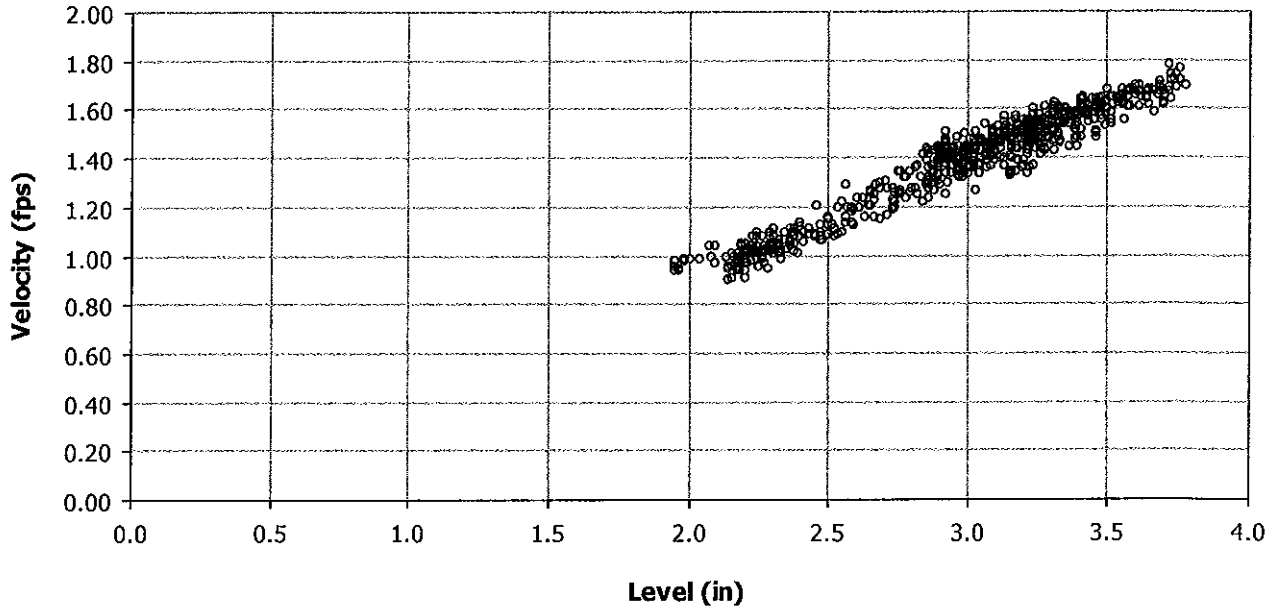


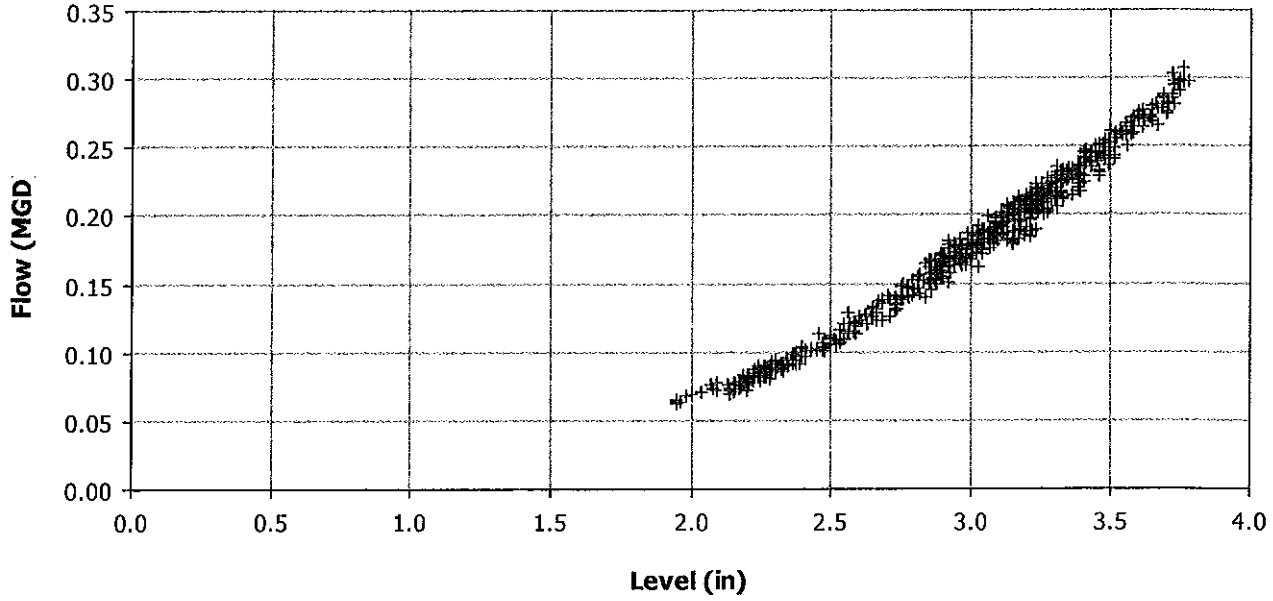
Avg Flow: 0.179 MGD Peak Flow: 0.307 MGD Min Flow: 0.063 MGD

V&A

Scatter Plots (Flow, Velocity vs. Depth)

Monitoring Site: Site 2





V&A

Hourly Data: Depth, Velocity and Flow
From 5/16/2008 to 5/23/2008

Monitoring Site:
Site 2

	Level (in)	Vel (fps)	Flow (MGD)
Weekly Average:	3.00	1.39	0.181
Weekly Minimum:	1.95	0.93	0.064
Weekly Maximum:	3.74	1.73	0.298

	Friday 5/16/2008			Saturday 5/17/2008			Sunday 5/18/2008			Monday 5/19/2008			Tuesday 5/20/2008			Wednesday 5/21/2008			Thursday 5/22/2008			
Hour	Level (in)	Vel (fps)	Flow (MGD)	Level (in)	Vel (fps)	Flow (MGD)	Level (in)	Vel (fps)	Flow (MGD)	Level (in)	Vel (fps)	Flow (MGD)	Level (in)	Vel (fps)	Flow (MGD)	Level (in)	Vel (fps)	Flow (MGD)	Level (in)	Vel (fps)	Flow (MGD)	Hour
0:00				2.81	1.38	0.157	2.87	1.37	0.160	2.91	1.33	0.159	2.78	1.26	0.141	2.66	1.29	0.135	2.81	1.24	0.142	0:00
1:00				2.58	1.22	0.123	2.65	1.21	0.126	2.60	1.13	0.115	2.54	1.13	0.111	2.34	1.11	0.097	2.50	1.08	0.104	1:00
2:00				2.38	1.09	0.098	2.49	1.12	0.107	2.39	1.05	0.095	2.32	1.03	0.089	2.10	1.00	0.075	2.30	0.99	0.084	2:00
3:00				2.25	1.04	0.085	2.31	1.05	0.090	2.31	1.00	0.085	2.20	1.00	0.080	1.97	0.97	0.065	2.20	0.95	0.075	3:00
4:00				2.20	1.02	0.081	2.26	1.02	0.085	2.27	1.01	0.084	2.21	1.01	0.081	1.95	0.96	0.064	2.17	0.93	0.073	4:00
5:00				2.21	1.04	0.083	2.25	1.03	0.085	2.37	1.07	0.095	2.30	1.07	0.091	2.10	1.04	0.078	2.33	1.02	0.089	5:00
6:00				2.36	1.11	0.098	2.32	1.06	0.091	2.74	1.29	0.143	2.71	1.28	0.140	2.61	1.26	0.130	2.79	1.21	0.136	6:00
7:00				2.75	1.33	0.147	2.63	1.25	0.129	3.36	1.59	0.234	3.42	1.61	0.244	3.37	1.58	0.235	3.50	1.54	0.241	7:00
8:00	3.57	1.65	0.264	3.25	1.56	0.219	3.06	1.46	0.188	3.58	1.66	0.267	3.62	1.68	0.275	3.47	1.66	0.254	3.64	1.62	0.268	8:00
9:00	3.30	1.55	0.223	3.62	1.70	0.278	3.51	1.65	0.260	3.28	1.52	0.216	3.31	1.54	0.222	3.23	1.51	0.210	3.39	1.47	0.218	9:00
10:00	3.18	1.53	0.208	3.74	1.73	0.298	3.72	1.69	0.288	3.23	1.49	0.208	3.19	1.49	0.205	3.14	1.45	0.194	3.30	1.45	0.208	10:00
11:00	3.03	1.45	0.184	3.64	1.67	0.275	3.64	1.66	0.273	3.13	1.47	0.196	3.09	1.45	0.188	3.03	1.43	0.181	3.27	1.45	0.204	11:00
12:00	3.01	1.47	0.185	3.54	1.64	0.260	3.56	1.65	0.263	3.02	1.42	0.179	3.02	1.45	0.183	2.98	1.36	0.168	3.19	1.36	0.186	12:00
13:00	2.92	1.44	0.172	3.38	1.56	0.233	3.50	1.63	0.254	3.04	1.42	0.181	3.01	1.44	0.181	2.94	1.36	0.165	3.19	1.35	0.184	13:00
14:00	2.89	1.44	0.170	3.31	1.59	0.229	3.42	1.60	0.242	2.90	1.31	0.156	2.99	1.44	0.179	2.86	1.34	0.156	3.14	1.35	0.180	14:00
15:00	2.89	1.42	0.168	3.19	1.51	0.206	3.29	1.53	0.219	2.75	1.24	0.137	2.90	1.39	0.165	2.87	1.35	0.159	2.97	1.34	0.165	15:00
16:00	2.90	1.41	0.168	3.14	1.49	0.199	3.22	1.51	0.208	2.78	1.26	0.140	2.93	1.40	0.169	2.97	1.37	0.168	3.00	1.34	0.168	16:00
17:00	2.99	1.46	0.181	3.16	1.52	0.204	3.27	1.51	0.215	2.87	1.32	0.155	3.01	1.45	0.182	3.03	1.39	0.177	3.08	1.41	0.184	17:00
18:00	3.20	1.56	0.214	3.22	1.54	0.213	3.32	1.56	0.226	3.09	1.43	0.187	3.15	1.52	0.204	3.15	1.39	0.186	3.20	1.47	0.201	18:00
19:00	3.25	1.55	0.218	3.19	1.53	0.209	3.34	1.59	0.231	3.27	1.57	0.222	3.25	1.55	0.218	3.23	1.47	0.204	3.22	1.44	0.200	19:00
20:00	3.13	1.52	0.202	3.21	1.53	0.211	3.44	1.58	0.241	3.40	1.57	0.236	3.39	1.62	0.241	3.35	1.48	0.217	3.23	1.49	0.207	20:00
21:00	3.20	1.54	0.211	3.25	1.54	0.216	3.70	1.66	0.281	3.46	1.62	0.247	3.42	1.60	0.241	3.45	1.52	0.232	3.38	1.52	0.225	21:00
22:00	3.18	1.55	0.210	3.19	1.52	0.208	3.65	1.62	0.269	3.42	1.61	0.243	3.38	1.61	0.239	3.41	1.52	0.229	3.34	1.55	0.226	22:00
23:00	3.05	1.50	0.192	3.05	1.46	0.186	3.19	1.49	0.205	3.08	1.48	0.192	2.91	1.46	0.174	3.10	1.38	0.180	3.07	1.40	0.181	23:00
Average:	**3.10**	**1.50**	**0.198**	**3.02**	**1.43**	**0.188**	**3.11**	**1.44**	**0.197**	**2.97**	**1.37**	**0.174**	**2.96**	**1.39**	**0.177**	**2.89**	**1.34**	**0.165**	**3.01**	**1.33**	**0.173**	**Ave**
Minimum:	**2.89**	**1.41**	**0.168**	**2.20**	**1.02**	**0.081**	**2.25**	**1.02**	**0.085**	**2.27**	**1.00**	**0.084**	**2.20**	**1.00**	**0.080**	**1.95**	**0.96**	**0.064**	**2.17**	**0.93**	**0.073**	**Min**
Maximum:	**3.57**	**1.65**	**0.264**	**3.74**	**1.73**	**0.298**	**3.72**	**1.69**	**0.288**	**3.58**	**1.66**	**0.267**	**3.62**	**1.68**	**0.275**	**3.47**	**1.66**	**0.254**	**3.64**	**1.62**	**0.268**	**Max**

V&A