

# Appendix D

## Hydrology

EXSYSIN

0

T1 RANCHO PALOS VERDES SAN RAMON EX SYSTEM HYDRAULICS

T2 PREPARED EG 10/7/10 FROM ASBUILTS

T3 FILENAME: EXSYSIN

	0.00	128.58	84						
	50.00	141.50	84					12.18	
JX	52.00	141.54	84						
R	192.33	143.36	84						1
JX	195.50	143.40	84	18	.013	13.1	148.90	90.00	
R	226.50	143.80	84						1
JX	229.67	143.84	84	18	.013	1.2	149.30	90.00	
R	430.00	146.44	84						
JX	538.34	147.85	84	18	.013	23.9	150.60	90.00	
R	540.02	147.87	84						
R	583.04	148.43	84						1
R	583.54	148.44	84					90.00	27.71
JX	593.54	148.57	84	36	.013	0.1	150.52	49.68	
R	624.20	148.96	84						1
R	626.86	148.97	84					90.00	26.31
JX	627.98	148.98	84	18	.013	28.7	154.40	90.00	
R	859.17	152.02	84						1
JX	871.17	153.18	72	72	.013	148.9	152.63	55.74	
R	946.88	160.50	72						1
JX	950.88	160.82	48	18	.013	0.1	163.30	90.00	
R	1028.25	166.37	48						
R	1071.20	169.46	48						1
JX	1078.20	171.79	48						
R	1084.11	172.28	48					424.00	7.55
R	1243.82	181.83	48						1
JX	1248.48	182.28	48						
R	1278.48	185.82	48						1
JX	1281.65	186.19	48	18	.013	0.1	193.73	90.00	
R	1359.39	195.37	48						
R	1528.00	215.27	48					424.00	22.79
R	1530.00	215.51	48						1
JX	1537.67	216.41	48	30	.013	4.1	217.07	30.00	
	1540.00	219.16	48						
	1555.73	220.81	48						
R	1711.28	237.14	48					400.00	22.28
R	1755.47	241.78	48						
R	1914.17	258.45	48						1
JX	1920.33	259.83	48						
R	1921.49	259.95	48					400.00	23.78
R	1935.33	260.67	48						1
JX	1939.33	261.09	48	18	.013	0.1	262.71	90.00	
JX	2017.75	269.32	48	24	.013	13.1	270.20	45.00	
R	2132.51	281.37	48						
R	2312.45	300.27	48					400.00	25.77
R	2378.72	307.22	48						
R	2415.00	311.04	48						1
JX	2425.00	313.33	48						
R	2608.30	355.75	48						
JX	2612.30	356.68	48	18	.013	0.1	356.22	51.00	
R	2679.22	372.40	48					400.00	44.94
SH	2679.22	372.40	48						
CD	48	4							4.00
CD	30	4							2.50
CD	18	4							1.50
CD	24	4							2.00
CD	84	4							7.00
CD	72	4							6.00
CD	36	4							3.00



1540.13  
1556.19  
1572.24  
1588.28  
1604.32  
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1652.45  
1668.50  
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1700.58  
1716.63  
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1764.76  
1780.80  
1796.84  
1812.89  
1828.93  
1844.97  
1861.02  
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1909.14  
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1941.23  
1957.27  
1973.32  
1989.36  
2005.40  
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2101.66  
2117.71  
2133.75  
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2165.84  
2181.88  
2197.92  
2213.97  
2230.01  
2246.05  
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850.29  
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882.38  
898.42  
914.46  
930.51  
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978.64  
994.68  
1010.72  
1026.77  
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1106.98  
1123.03  
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1203.24  
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1267.42  
1283.46  
1299.50  
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1363.67  
1379.72  
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1411.80  
1427.85  
1443.89  
1459.93  
1475.98  
1492.02  
1508.06  
1524.11

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EX: OUT

0.00

1.58	0.23491	372.40	3.942	376.342	257.0	20.51	6.534	382.876	0.00	3.942	1.682	4.00	0.00	0.00	0
2679.22		372.40	3.942	376.342	257.0	20.51	6.534	382.876	0.00	3.942	1.682	4.00	0.00	0.00	0
0.00		372.40	3.942	376.342	257.0	20.51	6.534	382.876	0.00	3.942	1.682	4.00	0.00	0.00	0

RANCHO PALOS VERDES SAN RAMON EX SYSTEM HYDRAULICS  
 PREPARED EG 10/7/10 FROM ASBUILTS  
 FILENAME: EXSYSIN

0.00	.IWX	E	.	.	.	.	.	.	.	.	.	.	.	.	R
16.04	.IW X	E	.	.	.	.	.	.	.	.	.	.	.	.	R
32.09	IWCH	E	.	.	.	.	.	.	.	.	.	.	.	.	R
48.13	IWCH	E	.	.	.	.	.	.	.	.	.	.	.	.	R
64.17	I WX	E	.	.	.	.	.	.	.	.	.	.	.	.	R
80.22	IWCH	E	.	.	.	.	.	.	.	.	.	.	.	.	R
96.26	I WX	E	.	.	.	.	.	.	.	.	.	.	.	.	R
112.30	IWX	E	.	.	.	.	.	.	.	.	.	.	.	.	R
128.35	IWCH	E	.	.	.	.	.	.	.	.	.	.	.	.	R
144.39	I XH	E	.	.	.	.	.	.	.	.	.	.	.	.	R
160.43	I WX	E	.	.	.	.	.	.	.	.	.	.	.	.	R
176.48	IWX	E	.	.	.	.	.	.	.	.	.	.	.	.	R
192.52	IWX	E	.	.	.	.	.	.	.	.	.	.	.	.	JX
208.56	I WX	E	.	.	.	.	.	.	.	.	.	.	.	.	R
224.61	I WX	E	.	.	.	.	.	.	.	.	.	.	.	.	JX
240.65	I WX	E	.	.	.	.	.	.	.	.	.	.	.	.	R
256.69	IWX	E	.	.	.	.	.	.	.	.	.	.	.	.	JX
272.73	IWX	E	.	.	.	.	.	.	.	.	.	.	.	.	R
288.78	IWX	E	.	.	.	.	.	.	.	.	.	.	.	.	R
304.82			.	.	.	.	.	.	.	.	.	.	.	.	
320.86			.	.	.	.	.	.	.	.	.	.	.	.	
336.91			.	.	.	.	.	.	.	.	.	.	.	.	
352.95			.	.	.	.	.	.	.	.	.	.	.	.	
368.99			.	.	.	.	.	.	.	.	.	.	.	.	
385.04			.	.	.	.	.	.	.	.	.	.	.	.	
401.08			.	.	.	.	.	.	.	.	.	.	.	.	
417.12			.	.	.	.	.	.	.	.	.	.	.	.	
433.17			.	.	.	.	.	.	.	.	.	.	.	.	
449.21			.	.	.	.	.	.	.	.	.	.	.	.	
465.25			.	.	.	.	.	.	.	.	.	.	.	.	
481.30			.	.	.	.	.	.	.	.	.	.	.	.	
497.34			.	.	.	.	.	.	.	.	.	.	.	.	
513.38			.	.	.	.	.	.	.	.	.	.	.	.	
529.43			.	.	.	.	.	.	.	.	.	.	.	.	
545.47			.	.	.	.	.	.	.	.	.	.	.	.	
561.51			.	.	.	.	.	.	.	.	.	.	.	.	
577.56			.	.	.	.	.	.	.	.	.	.	.	.	
593.60			.	.	.	.	.	.	.	.	.	.	.	.	
609.64			.	.	.	.	.	.	.	.	.	.	.	.	
625.69			.	.	.	.	.	.	.	.	.	.	.	.	
641.73			.	.	.	.	.	.	.	.	.	.	.	.	

5.57 0.23491

EX: JUT

.048241 0.27

1.682 0.00

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WATER SURFACE PROFILE LISTING

RANCHO PALOS VERDES SAN RAMON EX SYSTEM HYDRAULICS

PREPARED EG 10/7/10 FROM ASBUILTS

FILENAME: EXSYSIN

STATION AVBPR	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH	HGT/ DIA	BASE/ ID NO.	ZL NO
L/ELEM	SO				SF AVE	HF			NORM DEPTH			ZR
2659.60 0.00	367.79	2.804	370.595	257.0	27.30	11.575	382.170	0.00	3.942	4.00	0.00	0.00
4.82	0.23491				.043053	0.21				1.682		0.00
2664.42 0.00	368.92	2.932	371.855	257.0	26.03	10.524	382.379	0.00	3.942	4.00	0.00	0.00
4.16	0.23491				.038570	0.16				1.682		0.00
2668.58 0.00	369.90	3.071	372.972	257.0	24.82	9.567	382.539	0.00	3.942	4.00	0.00	0.00
3.58	0.23491				.034736	0.12				1.682		0.00
2672.16 0.00	370.74	3.225	373.966	257.0	23.67	8.698	382.664	0.00	3.942	4.00	0.00	0.00
3.02	0.23491				.031546	0.10				1.682		0.00
2675.18 0.00	371.45	3.401	374.852	257.0	22.57	7.907	382.759	0.00	3.942	4.00	0.00	0.00
2.46	0.23491				.029101	0.07				1.682		0.00
2677.64	372.03	3.613	375.642	257.0	21.52	7.188	382.830	0.00	3.942	4.00	0.00	0.00

EX: JUT

0.00																					
23.68	0.23142																				
2574.58	347.95	2.033	349.979	257.1	40.07	24.926	374.905	0.00	3.942	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00																					
18.62	0.23142																				
2593.20	352.26	2.111	354.367	257.1	38.20	22.661	377.028	0.00	3.942	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00																					
15.10	0.23142																				
2608.30	355.75	2.194	357.944	257.1	36.42	20.598	378.542	0.00	3.942	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00																					
JUNCT STR	0.23250																				
2612.30	356.68	2.218	358.898	257.0	35.92	20.034	378.932	0.00	3.942	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00																					
8.92	0.23491																				
2621.22	358.77	2.284	361.059	257.0	34.65	18.643	379.702	0.00	3.942	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00																					
10.21	0.23491																				
2631.43	361.17	2.376	363.549	257.0	33.04	16.949	380.498	0.00	3.942	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00																					
8.70	0.23491																				
2640.13	363.22	2.473	365.690	257.0	31.50	15.407	381.097	0.00	3.942	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00																					
7.46	0.23491																				
2647.59	364.97	2.576	367.546	257.0	30.03	14.007	381.553	0.00	3.942	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00																					
6.44	0.23491																				
2654.03	366.48	2.686	369.169	257.0	28.64	12.732	381.901	0.00	3.942	4.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00																					



EX: JUT

48.96	0.10487	.164342	8.05	2.123	0.00
2378.72	307.22	32.777	341.825	4.00	0.00
36.28	0.10529	.185887	6.74	2.120	0.00
2415.00	311.04	35.780	348.588	4.00	0.00
JUNCT STR	0.22900	.195616	1.96		0.00
2425.00	313.33	35.435	350.539	4.00	0.00
48.51	0.23142	.186042	9.02	1.690	0.00
2473.51	324.56	33.178	359.554	4.00	0.00
45.78	0.23142	.167021	7.65	1.690	0.00

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WATER SURFACE PROFILE LISTING

RANCHO PALOS VERDES SAN RAMON EX SYSTEM HYDRAULICS

PREPARED EG 10/7/10 FROM ASBUILTS

FILENAME: EXSYSIN

STATION AVBPR	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH	HGT/ DIA	BASE/ ID NO.	ZL NO	NO PIER
L/ELEM	SO					SF AVE	HF		NORM DEPTH		ZR		
2519.29	335.15	1.887	337.038	257.1	44.07	30.157	367.195	0.00	3.942	4.00	0.00	0.00	0
31.61	0.23142					.146921	4.64			1.690		0.00	
2550.90	342.46	1.958	344.423	257.1	42.02	27.422	371.845	0.00	3.942	4.00	0.00	0.00	0

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EX: JUT  
RANCHO PALOS VERDES SAN RAMON EX SYSTEM HYDRAULICS  
PREPARED EG 10/7/10 FROM ASBUILTS  
FILENAME: EXSYSIN

STATION AVBPR	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH	HGT/ DIA	BASE/ ID NO.	ZL	NO PIER
L/ELEM	SO	NORM DEPTH											ZR
1935.33 0.00	260.67	2.262	262.932	270.3	36.88	21.115	284.047	0.00	3.952	4.00	0.00	0.00	0
JUNCT STR	0.10500												0.00
1939.33 0.00	261.09	2.263	263.353	270.2	36.85	21.088	284.441	0.00	3.952	4.00	0.00	0.00	0
JUNCT STR	0.10495												0.00
2017.75 0.00	269.32	2.091	271.411	257.1	38.69	23.245	294.656	0.00	3.942	4.00	0.00	0.00	0
114.76	0.10500												0.00
2132.51 0.00	281.37	2.054	283.424	257.1	39.57	24.316	307.740	0.00	3.942	4.00	0.00	0.00	0
105.25	0.10504												0.00
2237.76 0.00	292.43	1.989	294.414	257.1	41.20	26.352	320.766	0.00	3.942	4.00	0.00	0.00	0
74.69	0.10504												0.00
2312.45 0.00	300.27	1.917	302.187	257.1	43.21	28.992	331.179	0.00	3.942	4.00	0.00	0.00	0
17.31	0.10487												0.00
2329.76 0.00	302.08	1.896	303.981	257.1	43.81	29.798	333.779	0.00	3.942	4.00	0.00	0.00	0

JUT

0.28	1.18026							.119047	0.03	1.126		0.00
1537.95	216.74	2.111	218.847	270.3	40.18	25.063	243.910	0.00	3.952	4.00	0.00	0.00
0.00												
2.05	1.18026							.111143	0.23	1.126		0.00
1540.00	219.16	2.194	221.354	270.3	38.30	22.781	244.135	0.00	3.952	4.00	0.00	0.00
0.00												
15.73	0.10490							.104155	1.64	2.190		0.00
1555.73	220.81	2.194	223.004	270.3	38.30	22.774	245.778	0.00	3.952	4.00	0.00	0.00
0.00												
155.55	0.10498							.103337	16.07	2.188		0.00
1711.28	237.14	2.204	239.344	270.3	38.08	22.512	261.856	0.00	3.952	4.00	0.00	0.00
0.00												
44.19	0.10500							.102162	4.51	2.188		0.00
1755.47	241.78	2.210	243.990	270.3	37.96	22.379	266.369	0.00	3.952	4.00	0.00	0.00
0.00												
158.70	0.10504							.098791	15.68	2.188		0.00
1914.17	258.45	2.252	260.702	270.3	37.09	21.365	282.067	0.00	3.952	4.00	0.00	0.00
0.00												
JUNCT STR	0.22403							.093347	0.58			0.00
1920.33	259.83	2.289	262.119	270.3	36.35	20.518	282.637	0.00	3.952	4.00	0.00	0.00
0.00												
1.16	0.10345							.090886	0.11	2.198		0.00
1921.49	259.95	2.289	262.239	270.3	36.35	20.518	282.757	0.00	3.952	4.00	0.00	0.00
0.00												
13.84	0.05202							.092616	1.28	2.768		0.00

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WATER SURFACE PROFILE LISTING

STATION	INVERT	DEPTH	W.S.	Q	VEL	VEL	ENERGY	SUPER	CRITICAL	HGT/	BASE/	ZL	NO
AVBPR	ELEV	OF FLOW	ELEV		HEAD	GRD.EL.	ELEV	ELEV	DEPTH	DIA	ID NO.	PIER	
L/ELEM	SO				SF AVE	HF				NORM DEPTH	ZR		
30.00	0.11800											2.131	0.00
1278.48	185.82	2.137	187.957	274.5	40.20	25.089	213.046	0.00	3.955	4.00	0.00	0.00	0
0.00													
JUNCT STR	0.11672					.117192	0.37					0.00	
1281.65	186.19	2.135	188.325	274.4	40.21	25.108	213.433	0.00	3.955	4.00	0.00	0.00	0
0.00													
77.74	0.11809					.117053	9.10			2.130		0.00	
1359.39	195.37	2.138	197.508	274.4	40.16	25.041	222.549	0.00	3.955	4.00	0.00	0.00	0
0.00													
168.61	0.11802					.115544	19.48			2.131		0.00	

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 WATER SURFACE PROFILE LISTING  
 RANCHO PALOS VERDES SAN RAMON EX SYSTEM HYDRAULICS  
 PREPARED EG 10/7/10 FROM ASBUJLTS  
 FILENAME: EXSYSIN

STATION	INVERT	DEPTH	W.S.	Q	VEL	VEL	ENERGY	SUPER	CRITICAL	HGT/	BASE/	ZL	NO
AVBPR	ELEV	OF FLOW	ELEV		HEAD	GRD.EL.	ELEV	ELEV	DEPTH	DIA	ID NO.	PIER	
L/ELEM	SO				SF AVE	HF				NORM DEPTH	ZR		
1528.00	215.27	2.152	217.422	274.4	39.81	24.615	242.037	0.00	3.955	4.00	0.00	0.00	0
0.00													
2.00	0.12000					.114214	0.23			2.120		0.00	
1530.00	215.51	2.153	217.663	274.4	39.81	24.607	242.270	0.00	3.955	4.00	0.00	0.00	0
0.00													
JUNCT STR	0.11734					.117091	0.90					0.00	
1537.67	216.41	2.101	218.511	270.3	40.42	25.364	243.875	0.00	3.952	4.00	0.00	0.00	0
0.00													

STATION AVBPR	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	EX: JUT VEL	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH	HGT/ DIA	BASE/ ID NO.	ZL	NO PIER
L/ELEM	SO					SF AVE	HF		NORM DEPTH			ZR	
1028.25 0.00	166.37	2.344	168.714	274.5	35.88	19.993	188.707	0.00	3.955	4.00	0.00	0.00	0
42.95	0.07194					.089300	3.84		2.495			0.00	
1071.20 0.00	169.46	2.307	171.767	274.5	36.58	20.773	192.540	0.00	3.955	4.00	0.00	0.00	0
JUNCT STR	0.33286					.086415	0.60		0.00			0.00	
1078.20 0.00	171.79	2.396	174.186	274.5	34.94	18.953	193.139	0.00	3.955	4.00	0.00	0.00	0
5.91	0.08291					.081285	0.48		2.381			0.00	
1084.11 0.00	172.28	2.397	174.677	274.5	34.93	18.944	193.621	0.00	3.955	4.00	0.00	0.00	0
62.58	0.05980					.086093	5.39		2.660			0.00	
1146.69 0.00	176.02	2.311	178.333	274.5	36.49	20.674	199.007	0.00	3.955	4.00	0.00	0.00	0
53.29	0.05980					.096912	5.16		2.660			0.00	
1199.98 0.00	179.21	2.222	181.431	274.5	38.27	22.740	204.171	0.00	3.955	4.00	0.00	0.00	0
43.84	0.05980					.109775	4.81		2.660			0.00	
1243.82 0.00	181.83	2.139	183.969	274.5	40.14	25.016	208.985	0.00	3.955	4.00	0.00	0.00	0
JUNCT STR	0.09657					.116937	0.54		0.00			0.00	
1248.48 0.00	182.28	2.136	184.416	274.5	40.21	25.104	209.520	0.00	3.955	4.00	0.00	0.00	0

JUNCT STR	0.00893	EXC	JUT	0.02	0.00								
627.98	148.98	3.470	152.450	423.5	22.25	7.689	160.139	0.00	5.418	7.00	0.00	0.00	0
69.23	0.01315					.018860	1.31			3.819			0.00
697.21	149.89	3.389	153.279	423.5	22.93	8.165	161.444	0.00	5.418	7.00	0.00	0.00	0
88.82	0.01315					.020957	1.86			3.819			0.00
786.03	151.06	3.266	154.324	423.5	24.05	8.982	163.306	0.00	5.418	7.00	0.00	0.00	0
73.14	0.01315					.023829	1.74			3.819			0.00
859.17	152.02	3.149	155.169	423.5	25.22	9.880	165.049	0.00	5.418	7.00	0.00	0.00	0
JUNCT STR	0.09667					.057950	0.70						0.00
871.17	153.18	1.892	155.072	274.6	35.94	20.055	175.127	0.00	4.538	6.00	0.00	0.00	0
75.71	0.09668					.088582	6.71			1.860			0.00
946.88	160.50	1.913	162.413	274.6	35.37	19.429	181.842	0.00	4.538	6.00	0.00	0.00	0
JUNCT STR	0.08000					.084012	0.34						0.00
950.88	160.82	2.395	163.215	274.5	34.95	18.968	182.183	0.00	3.955	4.00	0.00	0.00	0
77.37	0.07173					.084240	6.52			2.497			0.00

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WATER SURFACE PROFILE LISTING

RANCHO PALOS VERDES SAN RAMON EX SYSTEM HYDRAULICS

PREPARED EG 10/7/10 FROM ASBUILTS

FILENAME: EXSYSIN

EX:

540.02	147.87	3.984	151.854	452.3	20.00	6.210	158.064	0.00	5.588	7.00	0.00	0.00	0
0.00													
43.02	0.01302					.013105	0.56			3.991			0.00
583.04	148.43	3.982	152.412	452.3	20.01	6.216	158.628	0.00	5.588	7.00	0.00	0.00	0
0.00													
0.50	0.02000					.013109	0.01			3.502			0.00

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WATER SURFACE PROFILE LISTING

RANCHO PALOS VERDES SAN RAMON EX SYSTEM HYDRAULICS

PREPARED EG 10/7/10 FROM ASBUILTS

FILENAME: EXSYSIN

STATION AVBPR	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH	HGT/ DIA	BASE/ ID NO.	ZL PIER	NO
L/ELEM	SO					SF AVE	HF			NORM DEPTH		ZR	

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583.54	148.44	3.983	152.423	452.3	20.00	6.212	158.635	0.00	5.588	7.00	0.00	0.00	0
0.00													

JUNCT STR 0.01300 .013111 0.13 0.00

593.54	148.57	3.981	152.551	452.2	20.01	6.217	158.768	0.00	5.587	7.00	0.00	0.00	0
0.00													

30.66 0.01272 .013143 0.40 4.020 0.00

624.20	148.96	3.976	152.936	452.2	20.04	6.235	159.171	0.00	5.587	7.00	0.00	0.00	0
0.00													

2.66 0.00376 .013216 0.04 7.000 0.00

626.86	148.97	3.967	152.937	452.2	20.09	6.270	159.207	0.00	5.587	7.00	0.00	0.00	0
0.00													

EX: JUT

50.00	141.50	4.397	145.897	490.5	19.27	5.767	151.664	0.00	5.794	7.00	0.00	0.00	0
0.00	JUNCT STR	0.02000				.011349	0.02					0.00	
52.00	141.54	4.405	145.945	490.5	19.23	5.741	151.686	0.00	5.794	7.00	0.00	0.00	0
0.00	140.33	0.01297				.010721	1.50		4.210			0.00	
192.33	143.36	4.578	147.938	490.5	18.39	5.253	153.191	0.00	5.794	7.00	0.00	0.00	0
0.00	JUNCT STR	0.01262				.010951	0.03					0.00	
195.50	143.40	4.269	147.669	477.4	19.42	5.858	153.527	0.00	5.726	7.00	0.00	0.00	0
0.00	31.00	0.01290				.011709	0.36		4.143			0.00	
226.50	143.80	4.285	148.085	477.4	19.33	5.805	153.890	0.00	5.726	7.00	0.00	0.00	0
0.00	JUNCT STR	0.01262				.011713	0.04					0.00	
229.67	143.84	4.261	148.101	476.2	19.42	5.855	153.956	0.00	5.720	7.00	0.00	0.00	0
0.00	19.35	0.01298				.011742	0.23		4.128			0.00	
249.02	144.09	4.271	148.362	476.2	19.36	5.821	154.183	0.00	5.720	7.00	0.00	0.00	0
0.00	180.98	0.01298				.011033	2.00		4.128			0.00	
430.00	146.44	4.448	150.888	476.2	18.46	5.291	156.179	0.00	5.720	7.00	0.00	0.00	0
0.00	JUNCT STR	0.01302				.011728	1.27					0.00	
538.34	147.85	3.985	151.835	452.3	19.99	6.207	158.042	0.00	5.588	7.00	0.00	0.00	0
0.00	1.68	0.01191				.013092	0.02		4.106			0.00	



EX: JUT

32.94	137.09	3.482	140.574	490.5	25.65	10.218	150.792	0.00	5.794	7.00	0.00	0.00	0
0.00													
4.10	0.25840					.064584	0.26			2.414			0.00
37.04	138.15	3.616	141.768	490.5	24.46	9.289	151.057	0.00	5.794	7.00	0.00	0.00	0
0.00													
3.50	0.25840					.056920	0.20			2.414			0.00
40.54	139.06	3.756	142.811	490.5	23.32	8.444	151.255	0.00	5.794	7.00	0.00	0.00	0
0.00													
2.98	0.25840					.050204	0.15			2.414			0.00
43.52	139.83	3.903	143.729	490.5	22.23	7.677	151.406	0.00	5.794	7.00	0.00	0.00	0
0.00													
2.54	0.25840					.044326	0.11			2.414			0.00
46.06	140.48	4.058	144.539	490.5	21.20	6.979	151.518	0.00	5.794	7.00	0.00	0.00	0
0.00													
2.14	0.25840					.039183	0.08			2.414			0.00
48.20	141.04	4.222	145.258	490.5	20.21	6.344	151.602	0.00	5.794	7.00	0.00	0.00	0
0.00													
1.80	0.25840					.034688	0.06			2.414			0.00
0													

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WATER SURFACE PROFILE LISTING

RANCHO PALOS VERDES SAN RAMON EX SYSTEM HYDRAULICS

PREPARED EG 10/7/10 FROM ASBUILTS

FILENAME: EXSYSIN

STATION AVBPR	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL HEAD	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH	HGT/ DIA	BASE/ ID NO.	ZL NO	NO PIER
L/ELEM	SO				SF AVE	HF			NORM DEPTH			ZR	

U/S DATA STATION INVERT SECT EX: JUT W S ELEV  
 2679.22 372.40 48 372.40

NO EDIT ERRORS ENCOUNTERED-COMPUTATION IS NOW BEGINNING  
 \*\* WARNING NO. 2 \*\* - WATER SURFACE ELEVATION GIVEN IS LESS THAN OR EQUALS INVERT ELEVATION IN HDWKDS, W.S.ELEV = INV + DC  
 ERROR MESSAGE NO. 2 - WATER SURFACE ELEVATION GIVEN IS LESS THAN OR EQUALS INVERT ELEVATION IN OTLTUS, W.S.ELEV = INV + DC  
 LICENSEE: HARRIS & ASSOCIATES F0515P  
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WATER SURFACE PROFILE LISTING  
 RANCHO PALOS VERDES SAN RAMON EX SYSTEM HYDRAULICS  
 PREPARED EG 10/7/10 FROM ASBUILTS  
 FILENAME: EXSYSIN

STATION AVBPR	INVERT ELEV	DEPTH OF FLOW	W.S. ELEV	Q	VEL	VEL	ENERGY GRD.EL.	SUPER ELEV	CRITICAL DEPTH	HGT/ DIA	BASE/ ID NO.	ZL NO
L/ELEM	SO				SF AVE	HF			NORM DEPTH	ZR		
0.00	128.58	2.929	131.509	490.5	32.13	16.030	147.539	0.00	5.794	7.00	0.00	0.00
7.23	0.25840				.120485	0.87				2.414		0.00
7.23	130.45	3.007	133.456	490.5	31.04	14.959	148.415	0.00	5.794	7.00	0.00	0.00
8.30	0.25840				.107852	0.90				2.414		0.00
15.53	132.59	3.118	135.711	490.5	29.59	13.600	149.311	0.00	5.794	7.00	0.00	0.00
6.85	0.25840				.094789	0.65				2.414		0.00
22.38	134.36	3.234	137.596	490.5	28.22	12.364	149.960	0.00	5.794	7.00	0.00	0.00
5.73	0.25840				.083351	0.48				2.414		0.00
28.11	135.84	3.355	139.198	490.5	26.90	11.239	150.437	0.00	5.794	7.00	0.00	0.00
4.83	0.25840				.073340	0.35				2.414		0.00

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WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO	42 IS A JUNCTION U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
MAN H		2017.75	269.32	48	24	0	0.013	13.1	0.0	270.20	0.00	45.00	0.00
0													
ELEMENT NO	43 IS A REACH U/S DATA	STATION	INVERT	SECT			N					ANGLE	ANG PT
MAN H		2132.51	281.37	48			0.013					0.00	0.00
0													
ELEMENT NO	44 IS A REACH U/S DATA	STATION	INVERT	SECT			N					ANGLE	ANG PT
MAN H		2312.45	300.27	48			0.013				400.00	25.77	0.00
0													
ELEMENT NO	45 IS A REACH U/S DATA	STATION	INVERT	SECT			N					ANGLE	ANG PT
MAN H		2378.72	307.22	48			0.013					0.00	0.00
0													
ELEMENT NO	46 IS A REACH U/S DATA	STATION	INVERT	SECT			N					ANGLE	ANG PT
MAN H		2415.00	311.04	48			0.013					0.00	0.00
1													
ELEMENT NO	47 IS A JUNCTION U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
MAN H		2425.00	313.33	48	0	0	0.013	0.0	0.0	0.00	0.00	0.00	0.00
0													
ELEMENT NO	48 IS A REACH U/S DATA	STATION	INVERT	SECT			N					ANGLE	ANG PT
MAN H		2608.30	355.75	48			0.013					0.00	0.00
0													
ELEMENT NO	49 IS A JUNCTION U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
MAN H		2612.30	356.68	48	18	0	0.013	0.1	0.0	356.22	0.00	51.00	0.00
0													
ELEMENT NO	50 IS A REACH U/S DATA	STATION	INVERT	SECT			N					ANGLE	ANG PT
MAN H		2679.22	372.40	48			0.013					44.94	0.00
0													
ELEMENT NO	51 IS A SYSTEM HEADWORKS												

EX: JUT 0.013

1

ELEMENT NO	IS A	JUNCTION	STATION	INVERT	SECT	LAT-1	LAT-2	N	Q3	Q4	INVERT-3	INVERT-4	PHI 3	PHI 4
32	IS A	JUNCTION	1537.67	216.41	48	30	0	0.013	4.1	0.0	217.07	0.00	30.00	0.00
		U/S DATA												
33	IS A	REACH												
		U/S DATA												
MAN H														
0			1540.00	219.16	48			0.013						
		U/S DATA												
34	IS A	REACH												
		U/S DATA												
MAN H														
0			1555.73	220.81	48			0.013						
		U/S DATA												
35	IS A	REACH												
		U/S DATA												
MAN H														
0			1711.28	237.14	48			0.013						
		U/S DATA												
36	IS A	REACH												
		U/S DATA												
MAN H														
0			1755.47	241.78	48			0.013						
		U/S DATA												
37	IS A	REACH												
		U/S DATA												
MAN H														
0			1914.17	258.45	48			0.013						
		U/S DATA												
38	IS A	JUNCTION	1920.33	259.83	48			0.013	0.0	0.0	0.00	0.00	0.00	0.00
		U/S DATA												
MAN H														
0			1921.49	259.95	48			0.013						
		U/S DATA												
40	IS A	REACH												
		U/S DATA												
MAN H														
1			1935.33	260.67	48			0.013						
		U/S DATA												
41	IS A	JUNCTION												
		U/S DATA												
MAN H														
0														
		U/S DATA												

ELEMENT NO	IS A	REACH	U/S DATA	STATION	INVERT	SECT	LAT-1	LAT-2	EX:	JUT	RADIUS	ANGLE	ANG PT	
22	IS A	REACH	U/S DATA	1071.20	169.46	48					0.00	0.00	0.00	
MAN H														
1														
23	IS A	JUNCTION	U/S DATA	1078.20	171.79	48	Q3	Q4	INVERT-3	INVERT-4	0.00	0.00	PHI 3 0.00	PHI 4 0.00
MAN H														
0														
24	IS A	REACH	U/S DATA	1084.11	172.28	48					424.00	7.55	0.00	
MAN H														
0														
25	IS A	REACH	U/S DATA											
MAN H														
1														
26	IS A	JUNCTION	U/S DATA	1248.48	182.28	48	Q3	Q4	INVERT-3	INVERT-4	0.00	0.00	PHI 3 0.00	PHI 4 0.00
MAN H														
1														
27	IS A	REACH	U/S DATA	1278.48	185.82	48					0.00	0.00	0.00	
MAN H														
1														
28	IS A	JUNCTION	U/S DATA	1281.65	186.19	48	Q3	Q4	INVERT-3	INVERT-4	0.00	90.00	PHI 3 0.00	PHI 4 0.00
MAN H														
0														
29	IS A	REACH	U/S DATA	1359.39	195.37	48					0.00	0.00	0.00	
MAN H														
0														
30	IS A	REACH	U/S DATA	1528.00	215.27	48					424.00	22.79	0.00	
MAN H														
0														
5														
F 0 5 1 5 P														
WATER SURFACE PROFILE - ELEMENT CARD LISTING														
31	IS A	REACH	U/S DATA											
MAN H														
0														
5														
PAGE NO														

MAN H	U/S DATA	STATION	INVERT	SECT	EXC	JUT	N	RADIUS	ANGLE	ANG PT	
0		583.54	148.44	84			0.013	90.00	27.71	0.00	
ELEMENT NO 13	IS A JUNCTION U/S DATA	* STATION 593.54	* INVERT 148.57	* SECT 84	* LAT-1 36	* LAT-2 0	N 0.013	* INVERT-3 0.0	* INVERT-4 150.52	* PHI 3 49.68	* PHI 4 0.00
ELEMENT NO 14	IS A REACH U/S DATA	* STATION 624.20	* INVERT 148.96	* SECT 84			N 0.013				
MAN H 1											
ELEMENT NO 15	IS A REACH U/S DATA	* STATION 626.86	* INVERT 148.97	* SECT 84			N 0.013				
MAN H 0											
ELEMENT NO 16	IS A JUNCTION U/S DATA	* STATION 627.98	* INVERT 148.98	* SECT 84	* LAT-1 18	* LAT-2 0	N 0.013	* INVERT-3 28.7	* INVERT-4 154.40	* PHI 3 90.00	* PHI 4 0.00
ELEMENT NO 17	IS A REACH U/S DATA	* STATION 859.17	* INVERT 152.02	* SECT 84			N 0.013				
MAN H 1											
ELEMENT NO 18	IS A JUNCTION U/S DATA	* STATION 871.17	* INVERT 153.18	* SECT 72	* LAT-1 72	* LAT-2 0	N 0.013	* INVERT-3 148.9	* INVERT-4 152.63	* PHI 3 55.74	* PHI 4 0.00
ELEMENT NO 19	IS A REACH U/S DATA	* STATION 946.88	* INVERT 160.50	* SECT 72			N 0.013				
MAN H 1											
ELEMENT NO 20	IS A JUNCTION U/S DATA	* STATION 950.88	* INVERT 160.82	* SECT 48	* LAT-1 18	* LAT-2 0	N 0.013	* INVERT-3 0.1	* INVERT-4 163.30	* PHI 3 90.00	* PHI 4 0.00
4					F 0 5 1 5 P						PAGE NO
WATER SURFACE PROFILE - ELEMENT CARD LISTING											
ELEMENT NO 21	IS A REACH U/S DATA	* STATION 1028.25	* INVERT 166.37	* SECT 48			N 0.013				
MAN H 0											

EX: JUT

MAN H 50.00 141.50 84 0.022  
0

ELEMENT NO 3 IS A JUNCTION U/S DATA  
STATION 52.00 \* INVERT 141.54 \* SECT 84 \* LAT-1 0 \* LAT-2 0 N  
Q3 0.0 \* Q4 0.0 INVERT-3 0.0 INVERT-4 0.0 PHI 3 \* PHI 4 0.0  
ELEMENT NO 4 IS A REACH U/S DATA  
STATION 192.33 \* INVERT 143.36 \* SECT 84 N  
RADIUS ANGLE ANG PT  
0.00 0.00 0.00

ELEMENT NO 5 IS A JUNCTION U/S DATA  
STATION 195.50 \* INVERT 143.40 \* SECT 84 \* LAT-1 18 \* LAT-2 0 N  
Q3 13.1 \* Q4 0.0 INVERT-3 148.90 INVERT-4 0.0 PHI 3 \* PHI 4 0.0  
ELEMENT NO 6 IS A REACH U/S DATA  
STATION 226.50 \* INVERT 143.80 \* SECT 84 N  
RADIUS ANGLE ANG PT  
0.00 0.00 0.00

ELEMENT NO 7 IS A JUNCTION U/S DATA  
STATION 229.67 \* INVERT 143.84 \* SECT 84 \* LAT-1 18 \* LAT-2 0 N  
Q3 1.2 \* Q4 0.0 INVERT-3 149.30 INVERT-4 0.0 PHI 3 \* PHI 4 0.0  
ELEMENT NO 8 IS A REACH U/S DATA  
STATION 430.00 \* INVERT 146.44 \* SECT 84 N  
RADIUS ANGLE ANG PT  
0.00 0.00 0.00

ELEMENT NO 9 IS A JUNCTION U/S DATA  
STATION 538.34 \* INVERT 147.85 \* SECT 84 \* LAT-1 18 \* LAT-2 0 N  
Q3 23.9 \* Q4 0.0 INVERT-3 150.60 INVERT-4 0.0 PHI 3 \* PHI 4 0.0  
F 0 5 1 5 P  
PAGE NO

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 10 IS A REACH U/S DATA  
STATION 540.02 \* INVERT 147.87 \* SECT 84 N  
RADIUS ANGLE ANG PT  
0.00 0.00 0.00  
ELEMENT NO 11 IS A REACH U/S DATA  
STATION 583.04 \* INVERT 148.43 \* SECT 84 N  
RADIUS ANGLE ANG PT  
0.00 0.00 0.00

ELEMENT NO 12 IS A REACH  
\* \* \*  
RADIUS ANGLE ANG PT  
0.00 0.00 0.00

EXC JUT

DATE: 10/ 7/2010  
TIME: 10:36

F0515P  
WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

PAGE

CARD NO	SECT NO	CHN	NO OF PIERS	AVE WIDTH	PIER WIDTH	HEIGHT	1 BASE	ZL	ZR	INV	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	
CD	48	4				4.00														
CD	30	4				2.50														
CD	18	4				1.50														
CD	24	4				2.00														
CD	84	4				7.00														
CD	72	4				6.00														
CD	36	4				3.00														

F 0 5 1 5 P

PAGE NO

3

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -

RANCHO PALOS VERDES SAN RAMON EX SYSTEM HYDRAULICS

HEADING LINE NO 2 IS -

PREPARED EG 10/7/10 FROM ASBUILTS

HEADING LINE NO 3 IS -

FILENAME: EXSYSIN F 0 5 1 5 P

PAGE NO

2

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO	1 IS A SYSTEM OUTLET	U/S DATA	STATION	INVERT	SECT
		0.00	128.58	84	

W S ELEV  
128.58

ELEMENT NO	2 IS A REACH	U/S DATA	STATION	INVERT	SECT	RADIUS	ANGLE	ANG PT



257.0

File name: H:\RanchoPV\San Ramon SD\A-Hydrology\WMS\CityofLA\TREE\CLA\_TREE.lac Run date: Thu Oct 07 10:13:11 2010

Los Angeles County Flood Control District  
Modified Rational Method Hydrology

PCT LOCATION IMPV	SUBAREA		Storm Day 4 TOTAL		Storm Frequency 50 TOTAL		CONV		CONV		CONTROL		SOIL		RAIN	
	AREA	Q	AREA	Q	VOLUME	TYPE	LNTH	SLOPE	SIZE	Z	Q	NAME	TC			
0.25	41.7	44.11	41.7	44.11	8.216	0	0	0.00000	0.00	0.00	0	2	28	4.93		
0.00	0.0	0.00	41.7	44.11	8.216	0	1980	0.16020	0.00	0.00	0	2	0	4.93		
0.43	25.8	42.16	67.5	85.83	14.170	0	0	0.00000	0.00	0.00	0	2	12	4.81		
0.00	0.0	0.00	67.5	85.83	14.170	0	2395	0.16657	0.00	0.00	0	2	0	4.81		
0.29	56.2	68.76	123.7	154.48	24.897	0	0	0.00000	0.00	0.00	0	2	19	4.66		
0.00	0.0	0.00	123.7	154.48	24.896	2	650	0.10190	0.00	0.00	0	2	0	4.66		
0.13	35.1	51.90	158.8	205.92	31.733	0	0	0.00000	0.00	0.00	0	202	14	4.56		
0.00	0.0	0.00	158.8	205.92	31.731	2	1362	0.12860	0.00	0.00	0	202	0	4.56		
0.02	43.3	52.24	202.1	256.95	39.217	0	0	0.00000	0.00	0.00	0	202	20	4.50		
0.00	0.0	0.00	202.1	256.95	39.216	4	661	0.17000	3.00	0.00	0	202	0	4.50		
0.91	8.5	14.07	210.6	270.06	41.893	0	0	0.00000	0.00	0.00	0	2	11	4.50		
0.00	0.0	0.00	210.6	270.06	41.892	4	488	0.10500	3.25	0.00	0	2	0	4.50		
0.91	2.8	5.08	213.4	274.11	42.770	0	0	0.00000	0.00	0.00	0	2	9	4.48		
0.00	0.0	0.00	213.4	274.11	42.770	4	669	0.09300	3.50	0.00	0	2	0	4.48		
0.05	29.6	37.93	29.6	37.93	5.300	0	0	0.00000	0.00	0.00	0	202	18	4.52		
0.00	0.0	0.00	29.6	37.93	5.300	4	137	0.17500	2.00	0.00	0	202	0	4.52		
0.20	19.6	29.11	49.2	67.01	8.494	0	0	0.00000	0.00	0.00	0	2	12	4.50		
0.00	0.0	0.00	49.2	67.01	8.494	4	404	0.17500	2.00	0.00	0	2	0	4.50		
0.42	7.9	14.74	57.1	81.32	10.155	0	0	0.00000	0.00	0.00	0	2	8	4.50		
0.00	0.0	0.00	57.1	81.32	10.155	4	288	0.10000	2.25	0.00	0	2	0	4.50		
0.42	2.6	5.61	59.7	86.51	10.702	0	0	0.00000	0.00	0.00	0	2	6	4.50		
1	0.0	0.00	59.7	86.51	10.702	4	114	0.07000	2.25	0.00	0	2	0	4.50		

