APPENDIX I

Storm Sewer Computations

DONE BY: RSW
CHECKED BY:
MANNINGS "N": 0.013

DATE: 4/10/2012
DATE:
YEAR DESIGNED: 5

STORM SEWER COMPUTATION

PROJECT NAME: Seven Hill - Hemlock Creek (Existing Conditions)
PROJECT NUMBER: 09452 PID

SHEET 1 OF 1

1	2	3	4	5	6		7		8	9	10		11	12	13	14	15	16	17	18	19	20	21	22	23	24
STRUCTURE NO.	MH OR CB	STATION	SIDE	AREA NO.	DRAINAGE AREA (Acres)		TIME OF CONCENTRATION (minutes)		RAIN-FALL (in/hr)	COEFF OF RUNOFF	COLUMN 4 X COLUMN 7		DISCHARGE (CFS) Q=CIA	PIPE SIZE (in)	LENGTH OF RUN (ft)	SLOPE OF RUN (%)	VELOCITY (ft/sec)	PIPE CAPACITY (cfs)	INVERT ELEV. INTO MH	INVERT ELEV. OUT OF MH	HYD GRADE RAINFALL i hg	HYD GRADE DISCHARGE Q hg	FRICT SLOPE (%) Sf	HEADLOSS (ft) H	ELEV. OF HYD GRADE	CASTING ELEV.
					INC. A	SUM A	INC. T	SUM T	i	C	INC. CA	SUM CA	SUM Q	D	L	S	v	Q								
	CHERRY LANE																									
7739	MH				4.32	4.32	30.0	30.0	2.44	0.42	1.81	1.81	4.43	15	312	0.42	3.4	4.20		1126.45						
7153	MH				4.63	8.95	1.5	31.5	2.37	0.42	1.94	3.76	8.91	24	298	0.54	5.3	16.63	1125.13	1124.93						
7063	MH				4.48	13.43	0.9	32.5	2.33	0.42	1.88	5.64	13.14	24	600	0.52	5.2	16.39	1123.32	1123.32						
6731	MH				1.76	15.19	1.9	34.4	2.24	0.42	0.74	6.38	14.29	24	300	0.50	5.1	16.00	1120.17	1120.17						
6682	MH				2.63	17.82	1.0	35.4	2.21	0.42	1.10	7.48	16.54	24	300	1.37	8.4	26.51	1118.67	1118.67						
6426	MH				2.47	20.29	0.6	35.9	2.18	0.42	1.04	8.52	18.58	24	300	1.53	8.9	28.01	1114.55	1114.55						
6360	MH				2.30	22.59	0.6	36.5	2.16	0.42	0.97	9.49	20.49	24	276	2.79	12.0	37.76	1109.95	1109.95						
4875	MH				2.74	25.33	0.4	36.9	2.14	0.42	1.15	10.64	22.77	30	67	0.61	6.5	32.09	1102.26	1102.26						
4857	MH				2.61	27.94	0.2	37.1	2.14	0.42	1.10	11.73	25.11	30	461	1.04	8.5	41.90	1101.85	1101.85						
7993	MH				0.22	28.16	0.9	38.0	2.10	0.42	0.09	11.83	24.84	30	15	0.67	8.8	33.49	1097.04	1096.74						
7981	MH				0.27	28.43	0.0	38.0	2.10	0.42	0.11	11.94	25.08	30	30	1.00	8.4	41.02	1096.64	1096.54						
HW																			1096.24							
	NEMET DRIVE and SEVEN HILLS BOULEVARD																									
2303	MH				2.12	2.12	30.0	30.0	2.44	0.42	0.89	0.89	2.17	15	305	0.66	4.3	5.23		1117.25						
2197	MH				2.84	4.96	1.2	31.2	2.38	0.42	1.19	2.08	4.96	18	306	0.30	3.3	5.79	1115.25	1115.15						
2263	MH				0.00	4.96	1.6	32.7	2.31	0.42	0.00	2.08	4.81	18	295	0.42	3.8	6.78	1114.22	1114.02						
1939	MH				4.20	9.16	1.3	34.0	2.25	0.42	1.76	3.85	8.66	18	298	0.85	5.5	9.70	1112.79	1112.59						
1784	MH				4.30	13.46	0.9	34.9	2.22	0.42	1.81	5.65	12.55	21	302	0.63	5.2	12.60	1110.05	1109.85						
1718	MH				3.19	16.65	1.0	35.9	2.18	0.42	1.34	6.99	15.24	21	302	0.94	6.4	15.34	1107.94	1107.84						
1660	MH				6.17	22.82	0.8	36.7	2.15	0.42	2.59	9.58	20.61	21	303	1.93	9.2	22.04	1105.01	1105.01						
1607	MH				3.91	26.73	0.6	37.2	2.13	0.42	1.64	11.23	23.91	24	293	1.64	9.2	28.99	1099.15	1099.05						
1336	MH				4.78	31.51	0.5	37.8	2.11	0.42	2.01	13.23	27.92	24	293	1.97	10.1	31.75	1094.24	1094.24						
1265	MH				4.52	36.03	0.5	38.2	2.09	0.42	1.90	15.13	31.63	24	279	2.46	11.3	35.45	1088.47	1088.37						
4490	MH				3.24	39.27	0.4	38.7	2.08	0.42	1.36	16.49	34.31	30	165	1.20	9.2	44.93	1081.52	1081.22						
4466	MH				0.75	40.02	0.3	39.0	2.07	0.42	0.32	16.81	34.79	30	238	1.12	8.9	43.44	1079.24	1079.24						
4276	MH				3.41	43.43	0.4	39.4	2.05	0.42	1.43	18.24	37.39	30	190	1.00	8.4	41.02	1076.57	1076.57						
HW																			1074.67							
	SEVEN HILLS BOULEVARD - SIDE RUN																									
4711	MH				0.55	0.55	30.0	30.0	2.44	0.42	0.23	0.23	0.56	12	153	2.27	6.8	5.37		1092.78						
4678	MH				1.93	2.48	0.4	30.4	2.41	0.42	0.81	0.81	1.95	12	245	2.16	6.7	5.24	1089.31	1089.21						
4490	MH																		1083.92							
	TWILIGHT DRIVE																									
3709	MH				0.00	0.00	30.0	30.0	2.44	0.45	0.00	0.00	0.00	12	319	0.30	2.5	1.96		1118.27						
3718	MH				2.43	2.43	2.1	32.1	2.44	0.45	1.09	1.09	2.67	15	298	0.92	5.0	6.19	1117.30	1117.30						
3406	MH				4.80	7.23	1.0	33.1	2.39	0.45	2.16	3.25	7.78	18	303	0.95	5.8	10.24	1114.56	1114.56						
3266	MH				5.26	12.49	0.9	34.0	2.35	0.45	2.37	5.62	13.21	18	299	1.28	6.7	11.90	1111.68	1111.68						
3353	MH				3.70	16.19	0.7	34.7	2.31	0.45	1.67	7.29	16.83	18	301	2.37	9.1	16.16	1107.64	1107.74						
3069	MH				3.92	20.11	0.5	35.3	2.29	0.45	1.76	9.05	20.72	18	298	2.47	9.3	16.51	1100.62	1100.62						
3139	MH				3.95	24.06	0.5	35.8	2.27	0.45	1.78	10.83	24.58	24	301	2.65	11.7	30.83	1093.26	1093.16						
2769	MH				3.76	27.82	0.4	36.2	2.25	0.45	1.69	12.52	28.17	24	325	1.36	8.4	26.35	1085.18	1085.18						
2689	MH				4.11	31.93	0.6	36.9	2.23	0.45	1.85	14.37	32.04	24	184	1.70	9.4	29.46	1080.77	1080.67						
2727	MH				1.33	33.26	0.3	37.2	2.21	0.45	0.60	14.97	33.08	24	195	1.00	7.2	22.62	1077.55	1077.55						
HW																			1075.60							
	SOUTH MARY AND MARY LANE																									
6137	MH				1.33	1.33	30.0	30.0	2.44	0.48	0.64	0.64	1.56	12	324	2.12	6.6	5.18		1077.79						
6050	MH				6.19	7.52	0.8	30.8	2.39	0.48	2.97	3.61	8.63	12	51	2.59	7.3	5.73	1070.93	1070.43						
6037	MH				0.12	7.64	0.1	30.9	2.39	0.48	0.06	3.67	8.78	12	166	2.43	7.1	5.55	1069.11	1069.11						
5786	MH				1.94	9.58	0.4	31.3	2.38	0.48	0.93	4.60	10.94	12	192	1.72	5.9	4.67	1065.08	1065.08						
5819	MH				5.69	15.27	0.5	31.9	2.36	0.48	2.73	7.33	17.30	12	40	6.50	11.6	9.08	1061.78	1061.78						
5707	MH				1.41	16.68	0.1	31.9	2.36	0.48	0.68	8.01	18.90	12	100	1.00	4.5	3.56	1059.18	1058.98						
HW																			1057.98							
	NORTH MARY LANE																									
5581	MH				1.03	1.03	30.0	30.0	2.44	0.48	0.49	0.49	1.21	12	223	7.15	12.1	9.53		1079.68						
5847	MH				2.61	3.64	0.3	30.3	2.42	0.48	1.25	1.25	3.03	12	129	1.36	5.3	4.15	1063.73	1063.63						
5819	MH																		1061.88							
	SEVEN HILLS BOULEVARD and SHADY LANE																									
4170	MH				0.43	0.43	30.0	30.0	2.44	0.68	0.29	0.29	0.71	12	80	1.86	6.2	4.86		1074.87						
4133	MH				0.08	0.51	0.2	30.2	2.42	0.68	0.05	0.35	0.84	12	67	2.91	7.7	6.08	1073.38	1073.38						
4115	MH				0.99	1.50	0.1	30.4	2.41	0.68	0.67	1.02	2.46	12	301	1.64	5.6	4.56	1071.43	1069.83						
5017	MH				0.58	2.08	0.9	31.2	2.37	0.68	0.39	1.41	3.35	12	282	2.99	7.8	6.16	1064.69	1064.79						
5068	MH				2.23	4.31	0.6	31.8	2.34	0.68	1.52	2.93	6.86	12	256	3.81	8.9	6.95	1056.37	1056.17						
5225	MH				1.34	5.65	0.5	32.3	2.32	0.68	0.91	3.84	8.91	15	254	3.86	10.3	12.70	1046.34	1046.34						
5416	MH				1.74	7.39	0.4	32.7	2.30	0.68	1.18	5.03	11.56	15	100	1.00	5.3	6.46	1036.53	1036.43						
HW																			1035.43							

DONE BY: RSW
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STORM SEWER COMPUTATION

PROJECT NAME: Seven Hill - Hemlock Creek (Reduced i)
PROJECT NUMBER: 09452
PID

SHEET 1 OF 1

1	2	3	4	5	6		7		8	9	10		11	12	13	14	15	16	17	18	19	20	21	22	23	24
STRUCTURE NO	MH OR CB	STATION	SIDE	AREA NO.	DRAINAGE AREA (Acres)		TIME OF CONCENTRATION (minutes)		RAIN-FALL (in/hr)	COEFF OF RUNOFF	COLUMN 4 X COLUMN 7		DISCHARGE (CFS) Q=CIA	PIPE SIZE (in)	LENGTH OF RUN (ft)	SLOPE OF RUN (%)	VELOCITY (ft/sec)	PIPE CAPACITY (cfs)	INVERT ELEV. INTO MH	INVERT ELEV. OUT OF MH	HYD GRADE RAINFALL	HYD GRADE DISCHARGE	FRICT. SLOPE (%)	HEADLOSS (ft)	ELEV. OF HYD GRADE	CASTING ELEV
					INC. A	SUM A	INC. T	SUM T	i	C	INC. CA	SUM CA	SUM Q	D	L	S	v	Q			i hg	Q hg	Sf	H		
	CHERRY LANE																									
7739	MH				4.32	4.32	30.0	30.0	2.29	0.42	1.81	1.81	4.15	15	312	0.42	3.4	4.20		1126.45						
7153	MH				4.63	8.95	1.5	31.5	2.22	0.42	1.94	3.76	8.34	24	298	0.54	5.3	16.63	1125.13	1124.93						
7063	MH				4.48	13.43	0.9	32.5	2.18	0.42	1.88	5.64	12.30	24	600	0.52	5.2	16.39	1123.32	1123.32						
6731	MH				1.76	15.19	1.9	34.4	2.09	0.42	0.74	6.38	13.33	24	300	0.50	5.1	16.00	1120.17	1120.17						
6582	MH				2.63	17.82	1.0	35.4	2.06	0.42	1.10	7.48	15.42	24	300	1.37	8.4	26.51	1118.67	1118.67						
6426	MH				2.47	20.29	0.6	35.9	2.03	0.42	1.04	8.52	17.30	24	300	1.53	8.9	28.01	1114.55	1114.55						
6360	MH				2.30	22.59	0.6	36.5	2.01	0.42	0.97	9.49	19.07	24	276	2.79	12.0	37.76	1109.95	1109.95						
4875	MH				2.74	25.33	0.4	36.9	1.99	0.42	1.15	10.64	21.17	30	67	0.61	6.5	32.09	1102.26	1102.26						
4857	MH				2.61	27.94	0.2	37.1	1.99	0.42	1.10	11.73	23.35	30	461	1.04	8.5	41.90	1101.85	1101.85						
7993	MH				0.22	28.16	0.9	38.0	1.95	0.42	0.09	11.83	23.06	30	15	0.67	6.8	33.49	1097.04	1096.74						
7981	MH				0.27	28.43	0.0	38.0	1.95	0.42	0.11	11.94	23.28	30	30	1.00	8.4	41.02	1096.64	1096.54						
HW																			1096.24							
	NEMET DRIVE and SEVEN HILLS BOULEVARD																									
2363	MH				2.12	2.12	30.0	30.0	2.29	0.42	0.89	0.89	2.04	15	305	0.66	4.3	5.23		1117.25						
2197	MH				2.84	4.96	1.2	31.2	2.23	0.42	1.19	2.08	4.65	18	306	0.30	3.3	5.79	1115.25	1115.15						
2263	MH				0.00	4.96	1.6	32.7	2.16	0.42	0.00	2.08	4.50	18	295	0.42	3.8	6.76	1114.22	1114.02						
1939	MH				4.20	9.16	1.3	34.0	2.10	0.42	1.76	3.85	8.08	18	298	0.85	5.5	9.70	1112.79	1112.59						
1784	MH				4.30	13.46	0.9	34.9	2.07	0.42	1.81	5.65	11.70	21	302	0.63	5.2	12.80	1110.05	1109.85						
1718	MH				3.19	16.65	1.0	35.9	2.03	0.42	1.34	6.99	14.20	21	302	0.94	6.4	15.34	1107.94	1107.84						
1660	MH				6.17	22.82	0.8	36.7	2.00	0.42	2.59	9.58	19.17	21	303	1.93	9.2	22.04	1105.01	1105.01						
1607	MH				3.91	26.73	0.6	37.2	1.98	0.42	1.64	11.23	22.23	24	293	1.64	9.2	28.99	1099.15	1099.05						
1336	MH				4.78	31.51	0.5	37.8	1.96	0.42	2.01	13.23	25.94	24	293	1.97	10.1	31.75	1094.24	1094.24						
1265	MH				4.52	36.03	0.5	38.2	1.94	0.42	1.90	15.13	29.35	24	279	2.46	11.3	35.45	1088.47	1088.37						
4490	MH				3.24	39.27	0.4	38.7	1.93	0.42	1.36	16.49	31.83	30	165	1.20	9.2	44.93	1081.52	1081.22						
4466	MH				0.75	40.02	0.3	39.0	1.92	0.42	0.32	16.81	32.27	30	238	1.12	8.9	43.44	1079.24	1079.24						
4276	MH				3.41	43.43	0.4	39.4	1.90	0.42	1.43	18.24	34.66	30	190	1.00	8.4	41.02	1076.57	1076.57						
HW																			1074.67							
	SEVEN HILLS BOULEVARD - SIDE RUN																									
4711	MH				0.55	0.55	30.0	30.0	2.29	0.42	0.23	0.23	0.53	12	153	2.27	6.8	5.37		1092.78						
4678	MH				1.93	2.48	0.4	30.4	2.26	0.42	0.81	0.81	1.83	12	245	2.16	6.7	5.24	1089.31	1089.21						
4490	MH																		1083.92							
	TWILIGHT DRIVE																									
3799	MH				0.00	0.00	30.0	30.0	2.29	0.45	0.00	0.00	0.00	12	319	0.30	2.5	1.96		1118.27						
3718	MH				2.43	2.43	2.1	32.1	2.29	0.45	1.09	1.09	2.50	15	296	0.92	5.0	6.19	1117.30	1117.30						
3406	MH				4.80	7.23	1.0	33.1	2.24	0.45	2.16	3.25	7.29	18	303	0.95	5.6	10.24	1114.56	1114.56						
3286	MH				5.26	12.49	0.9	34.0	2.20	0.45	2.37	5.62	12.37	18	299	1.28	6.7	11.90	1111.68	1111.68						
3353	MH				3.70	16.19	0.7	34.7	2.16	0.45	1.67	7.29	15.74	18	301	2.37	9.1	16.16	1107.84	1107.74						
3069	MH				3.92	20.11	0.5	35.3	2.14	0.45	1.76	9.05	19.37	18	298	2.47	9.3	16.51	1100.62	1100.62						
3139	MH				3.95	24.06	0.5	35.8	2.12	0.45	1.78	10.83	22.95	24	301	2.65	11.7	36.83	1093.26	1093.16						
2769	MH				3.76	27.82	0.4	36.2	2.10	0.45	1.69	12.52	26.29	24	325	1.36	8.4	26.35	1085.18	1085.18						
2689	MH				4.11	31.93	0.6	36.9	2.08	0.45	1.85	14.37	29.89	24	184	1.70	9.4	29.46	1080.77	1080.67						
2727	MH				1.33	33.26	0.3	37.2	2.06	0.45	0.60	14.97	30.83	24	195	1.00	7.2	22.62	1077.55	1077.55						
HW																			1075.60							
	SOUTH MARY AND MARY LANE																									
6137	MH				1.33	1.33	30.0	30.0	2.29	0.48	0.64	0.64	1.46	12	324	2.12	6.6	5.18		1077.79						
6050	MH				6.19	7.52	0.8	30.8	2.24	0.48	2.97	3.61	8.09	12	51	2.59	7.3	5.73	1070.93	1070.43						
6037	MH				0.12	7.64	0.1	30.9	2.24	0.48	0.06	3.67	8.21	12	166	2.43	7.1	5.56	1069.11	1069.11						
5758	MH				1.94	9.58	0.4	31.3	2.23	0.48	0.93	4.60	10.25	12	192	1.72	5.9	4.67	1065.08	1065.08						
5819	MH				5.69	15.27	0.5	31.9	2.21	0.48	2.73	7.33	16.20	12	40	6.50	11.6	9.08	1061.78	1061.78						
5707	MH				1.41	16.68	0.1	31.9	2.21	0.48	0.68	8.01	17.69	12	100	1.00	4.5	3.56	1059.18	1058.98						
HW																			1057.98							
	NORTH MARY LANE																									
5581	MH				1.03	1.03	30.0	30.0	2.29	0.48	0.49	0.49	1.13	12	223	7.15	12.1	9.53		1079.68						
5847	MH				2.61	3.64	0.3	30.3	2.27	0.48	1.25	1.25	2.84	12	129	1.36	5.3	4.15	1063.73	1063.63						
5819	MH																		1061.88							
	SEVEN HILLS BOULEVARD and SHADY LANE																									
4170	MH				0.43	0.43	30.0	30.0	2.29	0.68	0.29	0.29	0.67	12	80	1.86	6.2	4.86		1074.87						
4133	MH				0.08	0.51	0.2	30.2	2.27	0.68	0.05	0.35	0.79	12	67	2.91	7.7	6.08	1073.38	1073.38						
4115	MH				0.99	1.50	0.1	30.4	2.26	0.68	0.67	1.02	2.31	12	301	1.64	5.8	4.56	1071.43	1069.83						
5017	MH				0.58	2.08	0.9	31.2	2.22	0.68	0.39	1.41	3.14	12	282	2.99	7.8	6.16	1064.89	1064.79						
5088	MH				2.23	4.31	0.6	31.8	2.19	0.68	1.52	2.93	6.42	12	256	3.81	8.9	6.95	1056.37	1056.17						
5225	MH				1.34	5.65	0.5	32.3	2.17	0.68	0.91	3.84	8.34	15	254	3.86	10.3	12.70	1046.34	1046.34						
5416	MH				1.74	7.39	0.4	32.7	2.15	0.68	1.18	5.03	10.80	15	100	1.00	5.3	6.46	1036.53	1036.43						
HW																			1035.43							

DONE BY: RSW
CHECKED BY:
MANNINGS "N": 0.013

DATE: 4/10/2012
DATE:
YEAR DESIGNED: 10

STORM SEWER COMPUTATION

PROJECT NAME: Seven Hill - Hemlock Creek (Existing Conditions)
PROJECT NUMBER: 09452 PID

SHEET 1 OF 1

1	2	3	4	5	6		7		8	9	10		11	12	13	14	15	16	17	18	19	20	21	22	23	24
STRUCTURE NO.	MH OR CB	STATION	SIDE	AREA NO.	DRAINAGE AREA (Acres)		TIME OF CONCENTRATION (minutes)		RAIN-FALL (in/hr)	COEFF OF RUNOFF	COLUMN 4 X COLUMN 7		DISCHARGE (CFS) Q=CIA	PIPE SIZE (in)	LENGTH OF RUN (ft)	SLOPE OF RUN (%)	VELOCITY (ft/sec)	PIPE CAPACITY (cfs)	INVERT ELEV. INTO MH	INVERT ELEV. OUT OF MH	HYD GRADE RAINFALL i hg	HYD GRADE DISCHARGE Q hg	FRICT. SLOPE (%) Sf	HEADLOSS (ft) H	ELEV. OF HYD. GRADE	CASTING ELEV.
					INC. A	SUM A	INC. T	SUM T	i	C	INC. CA	SUM CA	SUM Q	D	L	S	v	Q								
	CHERRY LANE																									
7739	MH				4.32	4.32	30.0	30.0	2.79	0.42	1.81	1.81	5.06	15	312	0.42	3.4	4.20		1126.45						
7153	MH				4.63	8.95	1.5	31.5	2.71	0.42	1.94	3.76	10.19	24	298	0.54	5.3	16.63	1125.13	1124.93						
7063	MH				4.48	13.43	0.9	32.5	2.68	0.42	1.88	5.64	15.00	24	600	0.52	5.2	16.39	1123.32	1123.32						
6731	MH				1.76	15.19	1.9	34.4	2.56	0.42	0.74	6.38	16.33	24	300	0.50	5.1	16.00	1120.17	1120.17						
6662	MH				2.63	17.82	1.0	35.4	2.52	0.42	1.10	7.48	18.86	24	300	1.37	8.4	26.51	1118.67	1118.67						
6426	MH				2.47	20.29	0.6	35.9	2.49	0.42	1.04	8.52	21.22	24	300	1.53	8.9	28.01	1114.55	1114.55						
6360	MH				2.30	22.59	0.6	36.5	2.47	0.42	0.97	9.49	23.43	24	276	2.79	12.0	37.78	1109.95	1109.95						
4875	MH				2.74	25.33	0.4	36.9	2.45	0.42	1.15	10.64	26.06	30	67	0.61	6.5	32.09	1102.26	1102.26						
4857	MH				2.61	27.94	0.2	37.1	2.44	0.42	1.10	11.73	28.63	30	461	1.04	8.5	41.90	1101.85	1101.85						
7093	MH				0.22	28.16	0.9	38.0	2.40	0.42	0.09	11.83	28.39	30	15	0.67	6.8	33.49	1097.04	1096.74						
7081	MH				0.27	28.43	0.0	38.0	2.40	0.42	0.11	11.94	28.66	30	30	1.00	8.4	41.02	1096.64	1096.54						
HW																			1096.24							
	NEMET DRIVE and SEVEN HILLS BOULEVARD																									
2363	MH				2.12	2.12	30.0	30.0	2.79	0.42	0.89	0.89	2.48	15	305	0.66	4.3	5.23		1117.25						
2197	MH				2.84	4.96	1.2	31.2	2.71	0.42	1.19	2.08	5.65	18	300	0.30	3.3	5.79	1115.25	1115.15						
2283	MH				0.00	4.96	1.6	32.7	2.63	0.42	0.00	2.08	5.48	18	295	0.42	3.8	6.78	1114.22	1114.02						
1939	MH				4.20	9.16	1.3	34.0	2.57	0.42	1.76	3.85	9.89	18	298	0.85	5.5	9.70	1112.79	1112.59						
1784	MH				4.30	13.46	0.9	34.9	2.53	0.42	1.81	5.65	14.30	21	302	0.63	5.2	12.80	1110.05	1109.85						
1718	MH				3.19	16.65	1.0	35.9	2.49	0.42	1.34	6.99	17.41	21	302	0.94	6.4	15.34	1107.94	1107.84						
1660	MH				6.17	22.82	0.8	36.7	2.45	0.42	2.59	9.58	23.48	21	303	1.93	9.2	22.04	1105.01	1105.01						
1007	MH				3.91	26.73	0.6	37.2	2.43	0.42	1.64	11.23	27.28	24	293	1.64	9.2	28.99	1099.15	1099.05						
1336	MH				4.78	31.51	0.5	37.8	2.41	0.42	2.01	13.23	31.89	24	293	1.97	10.1	31.75	1094.24	1094.24						
1265	MH				4.52	36.03	0.5	38.2	2.39	0.42	1.90	15.13	36.17	24	279	2.46	11.3	35.45	1088.47	1088.37						
4490	MH				3.24	39.27	0.4	38.7	2.37	0.42	1.36	16.49	39.09	30	165	1.20	9.2	44.93	1081.52	1081.22						
4466	MH				0.75	40.02	0.3	39.0	2.36	0.42	0.32	16.81	39.67	30	238	1.12	8.9	43.44	1079.24	1079.24						
4276	MH				3.41	43.43	0.4	39.4	2.34	0.42	1.43	18.24	42.68	30	190	1.00	8.4	41.02	1076.57	1076.57						
HW																			1074.67							
	SEVEN HILLS BOULEVARD - SIDE RUN																									
4711	MH				0.55	0.55	30.0	30.0	2.79	0.42	0.23	0.23	0.64	12	153	2.27	6.8	5.37		1092.78						
4678	MH				1.93	2.48	0.4	30.4	2.76	0.42	0.81	0.81	2.24	12	245	2.16	6.7	5.24	1089.31	1089.21						
4490	MH																		1083.92							
	TWILIGHT DRIVE																									
3799	MH				0.00	0.00	30.0	30.0	2.79	0.45	0.00	0.00	0.00	12	319	0.30	2.5	1.96		1118.27						
3718	MH				2.43	2.43	2.1	32.1	2.79	0.45	1.09	1.09	3.05	15	298	0.92	5.0	6.19	1117.30	1117.30						
3406	MH				4.80	7.23	1.0	33.1	2.73	0.45	2.16	3.25	8.88	18	303	0.95	5.6	10.24	1114.56	1114.56						
3286	MH				5.28	12.49	0.9	34.0	2.68	0.45	2.37	5.62	15.06	18	299	1.28	6.7	11.90	1111.68	1111.68						
3353	MH				3.70	16.19	0.7	34.7	2.64	0.45	1.67	7.29	19.23	18	301	2.37	9.1	16.16	1107.84	1107.74						
3069	MH				3.92	20.11	0.5	35.3	2.62	0.45	1.76	9.05	23.71	18	298	2.47	9.3	16.51	1100.62	1100.62						
3139	MH				3.95	24.06	0.5	35.8	2.59	0.45	1.78	10.83	28.04	24	301	2.65	11.7	36.83	1093.26	1093.16						
2769	MH				3.76	27.82	0.4	36.2	2.57	0.45	1.69	12.52	32.17	24	325	1.36	8.4	26.35	1085.18	1085.18						
2589	MH				4.11	31.93	0.6	36.9	2.54	0.45	1.85	14.37	36.50	24	184	1.70	9.4	29.46	1080.77	1080.67						
2727	MH				1.33	33.26	0.3	37.2	2.53	0.45	0.60	14.97	37.87	24	195	1.00	7.2	22.62	1077.55	1077.55						
HW																			1075.60							
	SOUTH MARY AND MARY LANE																									
6137	MH				1.33	1.33	30.0	30.0	2.79	0.48	0.64	0.64	1.78	12	324	2.12	6.6	5.18		1077.79						
6050	MH				6.19	7.52	0.8	30.8	2.77	0.48	2.97	3.61	10.00	12	51	2.59	7.3	5.73	1070.93	1070.43						
6037	MH				0.12	7.64	0.1	30.9	2.76	0.48	0.06	3.67	10.12	12	166	2.43	7.1	5.55	1069.11	1069.11						
5786	MH				1.94	9.58	0.4	31.3	2.70	0.48	0.93	4.60	12.42	12	192	1.72	5.9	4.67	1065.08	1065.08						
5819	MH				5.69	15.27	0.5	31.9	2.66	0.48	2.73	7.33	19.50	12	40	6.50	11.6	9.08	1061.78	1061.78						
5707	MH				1.41	16.68	0.1	31.9	2.63	0.48	0.68	8.01	21.06	12	100	1.00	4.5	3.56	1059.18	1058.98						
HW																			1057.98							
	NORTH MARY LANE																									
5581	MH				1.03	1.03	30.0	30.0	2.79	0.48	0.49	0.49	1.38	12	223	7.15	12.1	9.53		1070.68						
5847	MH				2.61	3.64	0.3	30.3	2.76	0.48	1.25	1.25	3.46	12	129	1.36	5.3	4.15	1063.73	1063.63						
5819	MH																		1061.88							
	SEVEN HILLS BOULEVARD and SHADY LANE																									
4170	MH				0.43	0.43	30.0	30.0	2.79	0.68	0.29	0.29	0.82	12	80	1.88	6.2	4.95		1074.87						
4133	MH				0.08	0.51	0.2	30.2	2.77	0.68	0.05	0.35	0.96	12	67	2.91	7.7	6.08	1073.38	1073.38						
4115	MH				0.99	1.50	0.1	30.4	2.76	0.68	0.67	1.02	2.82	12	301	1.64	5.6	4.56	1071.43	1069.83						
5017	MH				0.58	2.08	0.9	31.2	2.70	0.68	0.39	1.41	3.82	12	282	2.99	7.8	6.16	1064.89	1064.79						
5088	MH				2.23	4.31	0.6	31.8	2.66	0.68	1.52	2.93	7.80	12	258	3.81	8.9	6.96	1056.37	1056.17						
5225	MH				1.34	5.65	0.5	32.3	2.63	0.68	0.91	3.84	10.10	15	254	3.86	10.3	12.70	1046.34	1046.34						
5416	MH				1.74	7.39	0.4	32.7	2.61	0.68	1.18	5.03	13.12	15	100	1.00	5.3	6.46	1036.53	1036.43						
HW																			1035.43							

DONE BY: RSW
CHECKED BY:
MANNINGS "N": 0.013

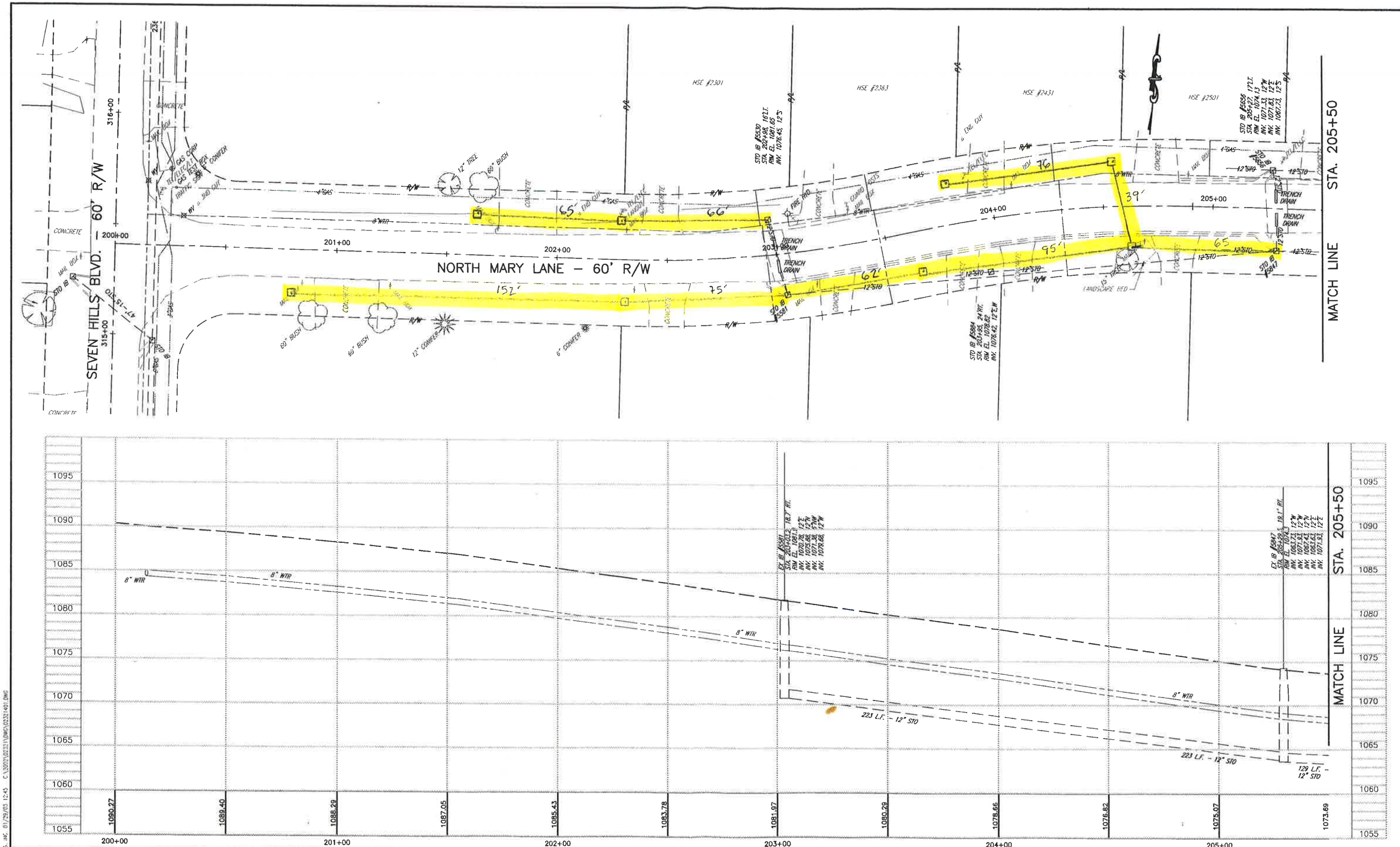
DATE: 4/10/2012
DATE:
YEAR DESIGNED: 10

STORM SEWER COMPUTATION

PROJECT NAME: Seven Hill - Hemlock Creek (Reduced I)
PROJECT NUMBER: 09452 PID

SHEET 1 OF 1

1	2	3	4	5	6		7		8	9	10		11	12	13	14	15	16	17	18	19	20	21	22	23	24
STRUCTURE NO.	MH OR CB	STATION	SIDE	AREA NO.	DRAINAGE AREA (Acres)		TIME OF CONCENTRATION (minutes)		RAIN-FALL (in/hr)	COEFF OF RUNOFF	COLUMN 4 X COLUMN 7		DISCHARGE (CFS) Q=CIA	PIPE SIZE (in)	LENGTH OF RUN (ft)	SLOPE OF RUN (%)	VELOCITY (ft/sec)	PIPE CAPACITY (cfs)	INVERT ELEV INTO MH	INVERT ELEV OUT OF MH	HYD GRADE RAINFALL	HYD GRADE DISCHARGE	FRICT SLOPE (%)	HEADLOSS (ft)	ELEV. OF HYD GRADE	CASTING ELEV
					INC. A	SUM A	INC. T	SUM T	i	C	INC. CA	SUM CA	SUM Q	D	L	S	v	Q			i hg	Q hg	Sf	H		
	CHERRY LANE																									
7739	MH				4.32	4.32	30.0	30.0	2.64	0.42	1.81	1.81	4.79	15	312	0.42	3.4	4.20		1126.45						
7153	MH				4.63	8.95	1.5	31.5	2.56	0.42	1.94	3.76	9.62	24	298	0.54	5.3	16.63	1125.13	1124.93						
7063	MH				4.48	13.43	0.9	32.5	2.51	0.42	1.88	5.64	14.16	24	600	0.52	5.2	16.39	1123.32	1123.32						
6731	MH				1.76	15.19	1.9	34.4	2.41	0.42	0.74	6.38	15.38	24	300	0.50	5.1	16.00	1120.17	1120.17						
6682	MH				2.83	17.82	1.0	35.4	2.37	0.42	1.10	7.48	17.74	24	300	1.37	6.4	26.51	1118.67	1118.67						
6425	MH				2.47	20.29	0.6	35.9	2.34	0.42	1.04	8.52	19.94	24	300	1.53	6.9	28.01	1114.55	1114.55						
6360	MH				2.30	22.59	0.6	36.5	2.32	0.42	0.97	9.49	22.01	24	276	2.70	12.0	37.76	1109.95	1109.95						
4875	MH				2.74	25.33	0.4	36.9	2.30	0.42	1.15	10.64	24.47	30	67	0.61	6.5	32.09	1102.26	1102.26						
4857	MH				2.61	27.94	0.2	37.1	2.29	0.42	1.10	11.73	26.87	30	461	1.04	8.5	41.90	1101.85	1101.85						
7093	MH				0.22	28.16	0.9	38.0	2.25	0.42	0.09	11.83	26.61	30	15	0.67	6.8	33.49	1097.04	1096.74						
7981	MH				0.27	28.43	0.0	38.0	2.25	0.42	0.11	11.94	26.87	30	30	1.00	8.4	41.02	1096.64	1096.54						
HW																			1096.24							
	NEMET DRIVE and SEVEN HILLS BOULEVARD																									
2363	MH				2.12	2.12	30.0	30.0	2.64	0.42	0.89	0.89	2.35	15	305	0.66	4.3	5.23		1117.25						
2197	MH				2.84	4.96	1.2	31.2	2.56	0.42	1.19	2.08	5.33	18	306	0.30	3.3	5.79	1115.25	1115.15						
2263	MH				0.00	4.96	1.6	32.7	2.48	0.42	0.00	2.08	5.17	18	295	0.42	3.8	6.78	1114.22	1114.02						
1939	MH				4.20	9.16	1.3	34.0	2.42	0.42	1.76	3.85	9.31	18	298	0.85	5.5	9.70	1112.79	1112.59						
1784	MH				4.30	13.46	0.9	34.9	2.38	0.42	1.81	5.65	13.45	21	302	0.63	5.2	12.60	1110.05	1109.85						
1718	MH				3.19	16.65	1.0	35.9	2.34	0.42	1.34	6.99	16.36	21	302	0.94	6.4	15.34	1107.94	1107.84						
1660	MH				6.17	22.82	0.8	36.7	2.30	0.42	2.59	9.58	22.04	21	303	1.93	9.2	22.04	1105.01	1105.01						
1607	MH				3.91	26.73	0.6	37.2	2.28	0.42	1.64	11.23	25.60	24	293	1.64	9.2	28.99	1099.15	1099.05						
1336	MH				4.78	31.51	0.5	37.8	2.26	0.42	2.01	13.23	29.91	24	293	1.97	10.1	31.75	1094.24	1094.24						
1265	MH				4.52	36.03	0.5	38.2	2.24	0.42	1.90	15.13	33.90	24	279	2.46	11.3	35.45	1088.47	1088.37						
4490	MH				3.24	39.27	0.4	38.7	2.22	0.42	1.36	16.49	36.62	30	165	1.20	9.2	44.93	1081.52	1081.22						
4466	MH				0.75	40.02	0.3	39.0	2.21	0.42	0.32	16.81	37.15	30	238	1.12	8.9	43.44	1079.24	1079.24						
4276	MH				3.41	43.43	0.4	39.4	2.19	0.42	1.43	18.24	39.95	30	190	1.00	8.4	41.02	1076.57	1076.57						
HW																			1074.67							
	SEVEN HILLS BOULEVARD - SIDE RUN																									
4711	MH				0.55	0.55	30.0	30.0	2.64	0.42	0.23	0.23	0.61	12	153	2.27	6.8	5.37		1092.78						
4678	MH				1.93	2.48	0.4	30.4	2.61	0.42	0.81	0.81	2.12	12	245	2.16	6.7	5.24	1089.31	1089.21						
4490	MH																		1083.92							
	TWILIGHT DRIVE																									
3799	MH				0.00	0.00	30.0	30.0	2.64	0.45	0.00	0.00	0.00	12	319	0.30	2.5	1.98		1118.27						
3718	MH				2.43	2.43	2.1	32.1	2.64	0.45	1.09	1.09	2.89	15	298	0.92	5.0	6.19	1117.30	1117.30						
3406	MH				4.80	7.23	1.0	33.1	2.58	0.45	2.16	3.25	8.39	18	303	0.95	5.8	10.24	1114.56	1114.56						
3286	MH				5.26	12.49	0.9	34.0	2.53	0.45	2.37	5.62	14.22	18	299	1.28	6.7	11.90	1111.66	1111.66						
3353	MH				3.70	16.19	0.7	34.7	2.49	0.45	1.67	7.29	18.14	18	301	2.37	9.1	16.16	1107.84	1107.74						
3069	MH				3.92	20.11	0.5	35.3	2.47	0.45	1.76	9.05	22.35	18	298	2.47	9.3	16.51	1100.62	1100.62						
3139	MH				3.95	24.06	0.5	35.8	2.44	0.45	1.78	10.83	26.42	24	301	2.65	11.7	36.63	1093.26	1093.16						
2799	MH				3.76	27.82	0.4	36.2	2.42	0.45	1.69	12.52	30.30	24	325	1.36	8.4	26.35	1085.18	1085.18						
2589	MH				4.11	31.93	0.6	36.9	2.39	0.45	1.85	14.37	34.34	24	184	1.70	9.4	29.46	1080.77	1080.67						
2727	MH				1.33	33.26	0.3	37.2	2.38	0.45	0.60	14.97	35.62	24	196	1.00	7.2	22.62	1077.55	1077.55						
HW																			1075.60							
	SOUTH MARY AND MARY LANE																									
6137	MH				1.33	1.33	30.0	30.0	2.64	0.48	0.64	0.64	1.69	12	324	2.12	6.6	5.18		1077.79						
6050	MH				6.19	7.52	0.8	30.8	2.62	0.48	2.97	3.61	9.46	12	51	2.59	7.3	5.73	1070.93	1070.43						
6037	MH				0.12	7.64	0.1	30.9	2.61	0.48	0.06	3.67	9.57	12	166	2.43	7.1	5.55	1069.11	1069.11						
5766	MH				1.94	9.58	0.4	31.3	2.55	0.48	0.93	4.60	11.73	12	192	1.72	5.9	4.67	1065.08	1065.08						
5819	MH				5.69	15.27	0.5	31.9	2.51	0.48	2.73	7.33	18.40	12	40	6.50	11.6	9.08	1061.78	1061.78						
5707	MH				1.41	16.68	0.1	31.9	2.48	0.48	0.68	8.01	19.86	12	100	1.00	4.5	3.56	1059.18	1058.98						
HW																			1057.98							
	NORTH MARY LANE																									
5561	MH				1.03	1.03	30.0	30.0	2.64	0.48	0.49	0.49	1.31	12	223	7.15	12.1	9.53		1079.68						
5847	MH				2.61	3.64	0.3	30.3	2.61	0.48	1.25	1.25	3.27	12	129	1.36	5.3	4.15	1063.73	1063.63						
5819	MH																		1061.88							
	SEVEN HILLS BOULEVARD and SHADY LANE																									
4170	MH				0.43	0.43	30.0	30.0	2.64	0.68	0.29	0.29	0.77	12	60	1.86	6.2	4.86		1074.87						
4133	MH				0.08	0.51	0.2	30.2	2.62	0.68	0.05	0.35	0.91	12	67	2.91	7.7	6.08	1073.38	1073.38						
4115	MH				0.99	1.50	0.1	30.4	2.61	0.68	0.67	1.02	2.66	12	301	1.64	5.8	4.56	1071.43	1069.83						
5017	MH				0.58	2.08	0.9	31.2	2.55	0.68	0.39	1.41	3.61	12	282	2.99	7.8	6.16	1064.89	1064.79						
5088	MH				2.23	4.31	0.6	31.8	2.51	0.68	1.52	2.93	7.36	12	258	3.81	8.9	6.96	1056.37	1056.17						
5225	MH				1.34	5.65	0.5	32.3	2.48	0.68	0.91	3.84	9.53	15	254	3.86	10.3	12.70	1046.34	1046.34						
5416	MH				1.74	7.39	0.4	32.7	2.46	0.68	1.18	5.03	12.36	15	100	1.00	5.3	6.46	1036.53	1036.43						
HW																			1035.43							



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330.499.8488 email: [illegible]

REV NO	DESCRIPTION	DATE	BY	CHK'D

HEMLOCK CREEK WATERSHED UTILITY IMPROVEMENT

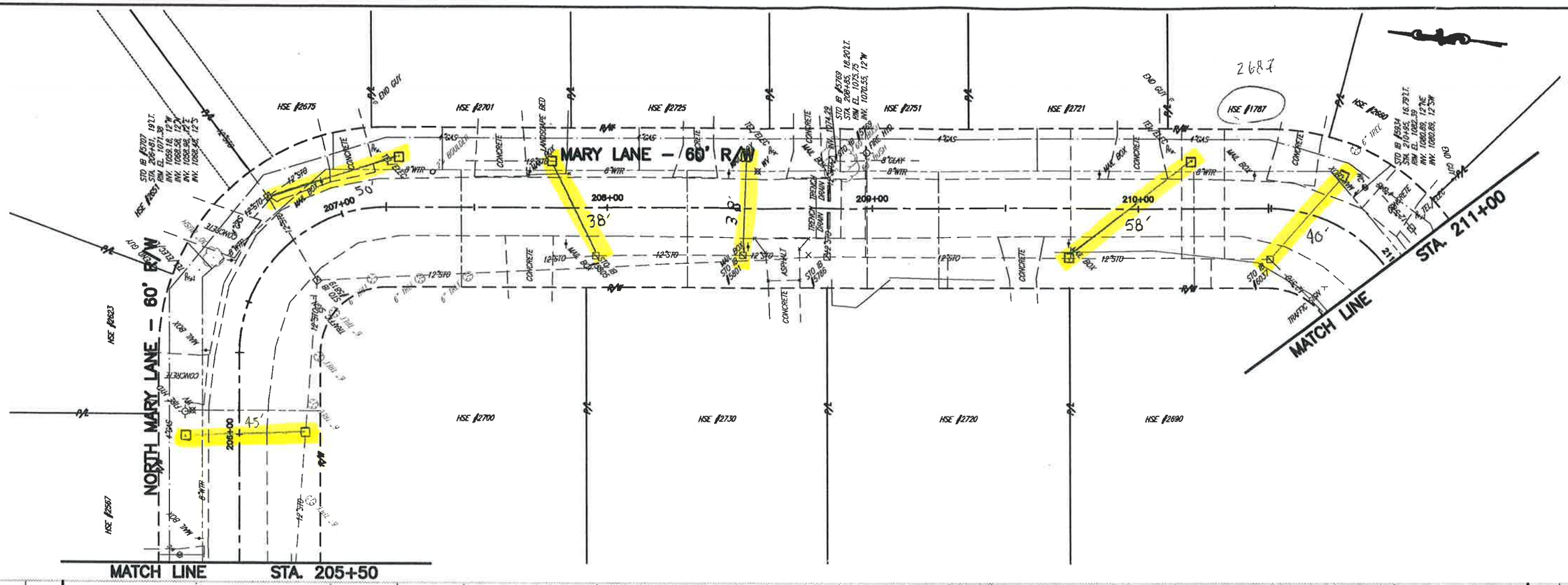
Seven Hills, Cuyahoga County, Ohio

DATE	8/24/11
DRAWN BY	B.E.K.
CHECKED BY	R.H.G.
APPROVED BY	R.H.G.
F.B. No.	1308 Pg. 146

PLAN & PROFILE

NORTH MARY LANE
STA. 200+00 TO STA. 205+00

SCALE	
HOR	1" = 20'
VERT	1" = 5'
CONTRACT No	09452
SHEET NO	X
OF	X



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330.499.8488 www.ctnc@ctconsultants.com

REV. NO.	DESCRIPTION	DATE	BY	CH'K'D.

HEMLOCK CREEK WATERSHED UTILITY IMPROVEMENT

Seven Hills, Cuyahoga County, Ohio

DATE: 8/24/11
DRAWN BY: B.E.K.
CHECKED BY: R.H.G.
APPROVED BY: R.H.G.
F.B. No. 1308 PG. 146

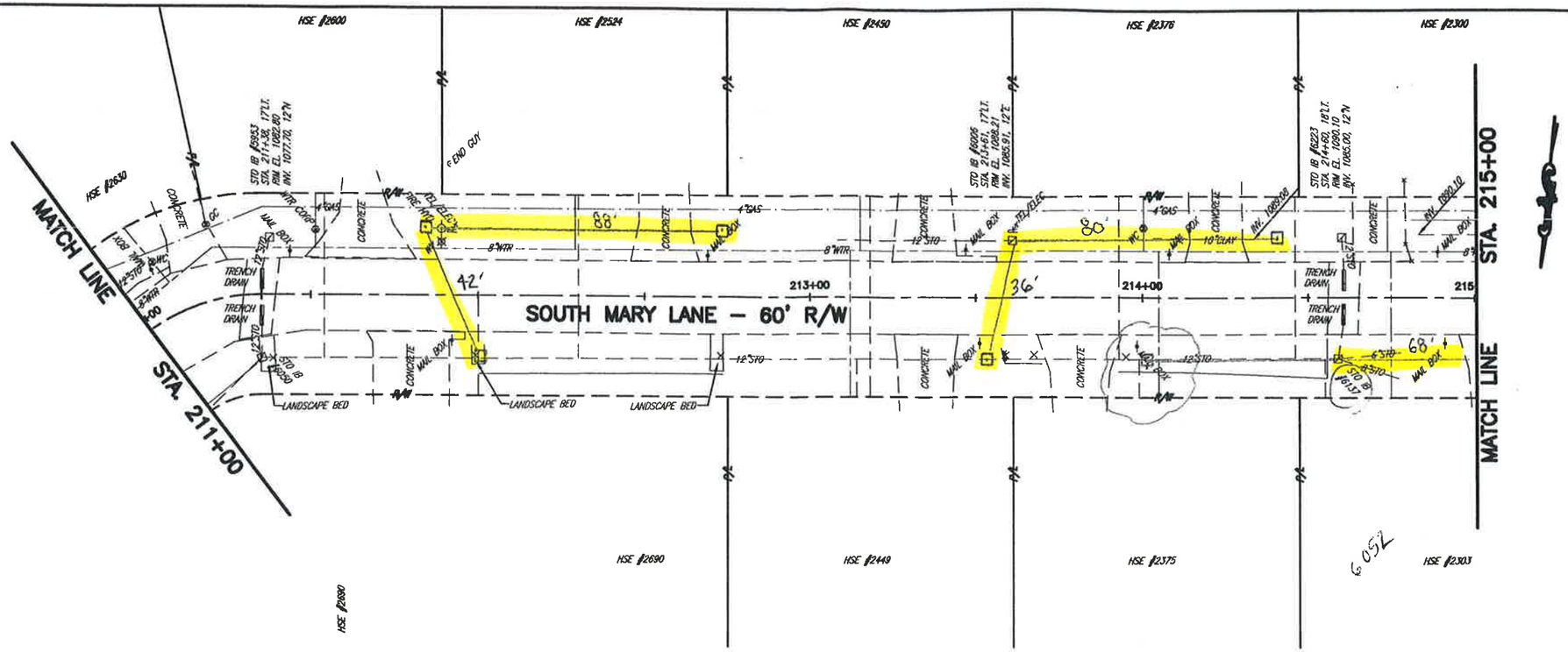
PLAN & PROFILE

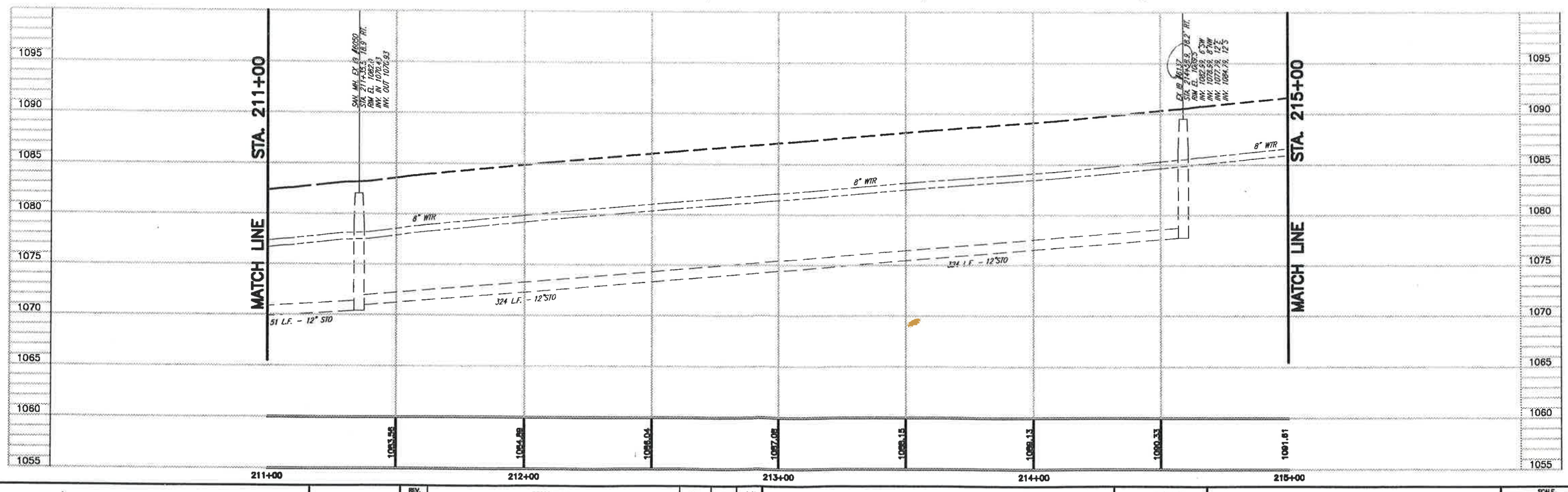
MARY LANE
STA. 205+50 TO STA. 211+00

SCALE
HOR. 1" = 20'
VERT. 1" = 5'

CONTRACT No. 09452

SHEET NO. X OF X





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REV. NO.	DESCRIPTION	DATE	BY	CH'K'D.

HEMLOCK CREEK WATERSHED UTILITY IMPROVEMENT

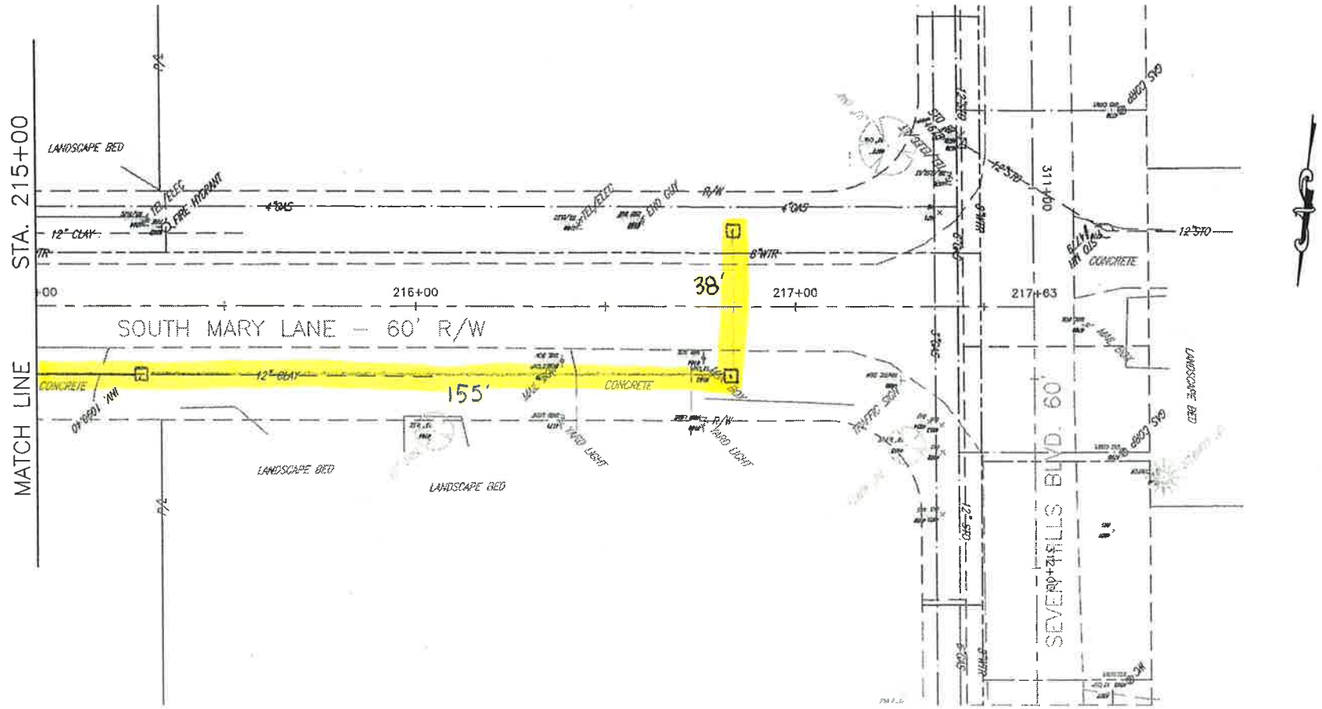
Seven Hills, Cuyahoga County, Ohio

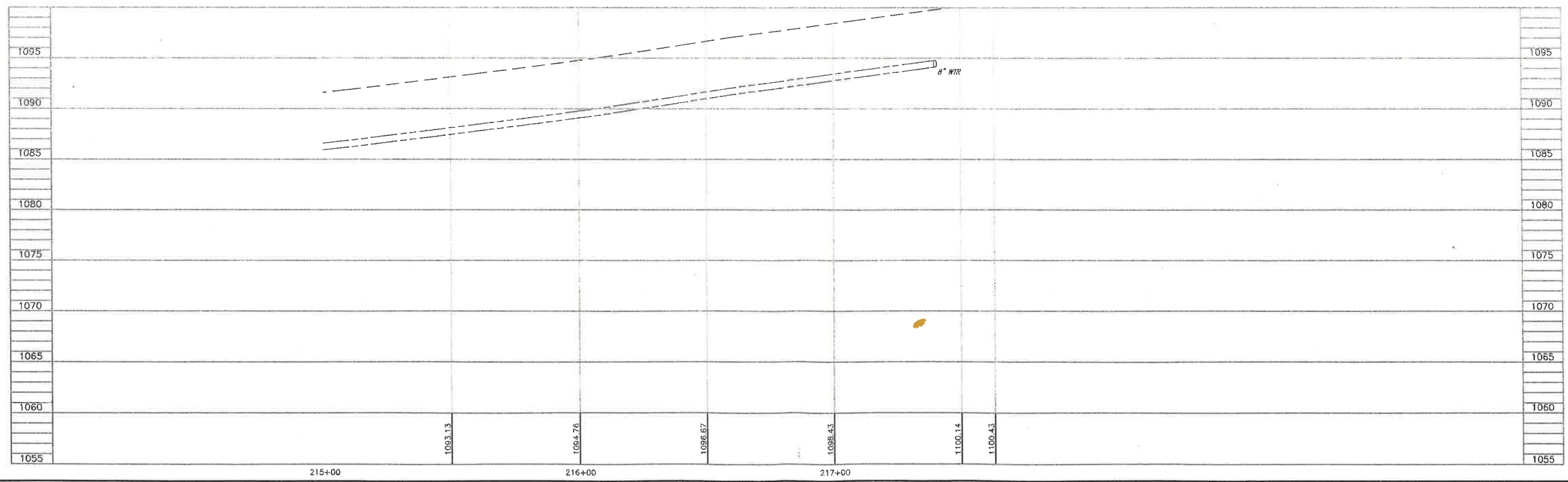
DATE: 8/24/11
DRAWN BY: B.E.K.
CHECKED BY: R.H.G.
APPROVED BY: R.H.G.
F.B. No. 1308 PG. 146

PLAN & PROFILE

SOUTH MARY LANE
STA. 211+00 TO STA. 215+00

SCALE
HOR. 1" = 20'
VERT. 1" = 5'
CONTRACT No. 09452
SHEET NO. X OF X





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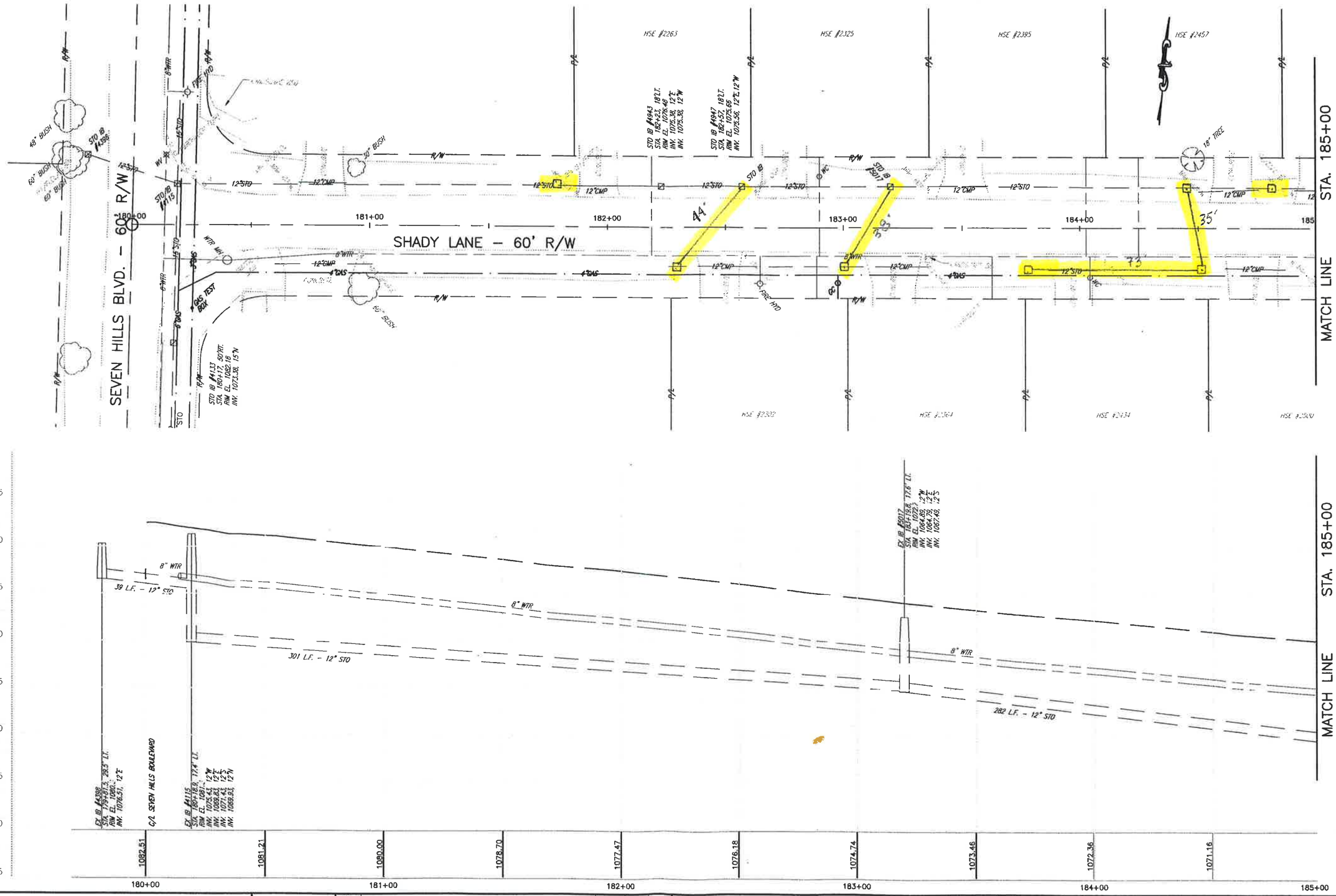
HEMLOCK CREEK WATERSHED
UTILITY IMPROVEMENT

Seven Hills, Cuyahoga County, Ohio

8/24/11
B.E.K.
R.H.G.
R.H.G.
1308 146

PLAN & PROFILE
SOUTH MARY LANE
STA. 215+00 TO STA. 217+63

1" = 20'
1" = 5'
09452
X X



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REV NO	DESCRIPTION	DATE	BY	CHK'D

HEMLOCK CREEK WATERSHED UTILITY IMPROVEMENT

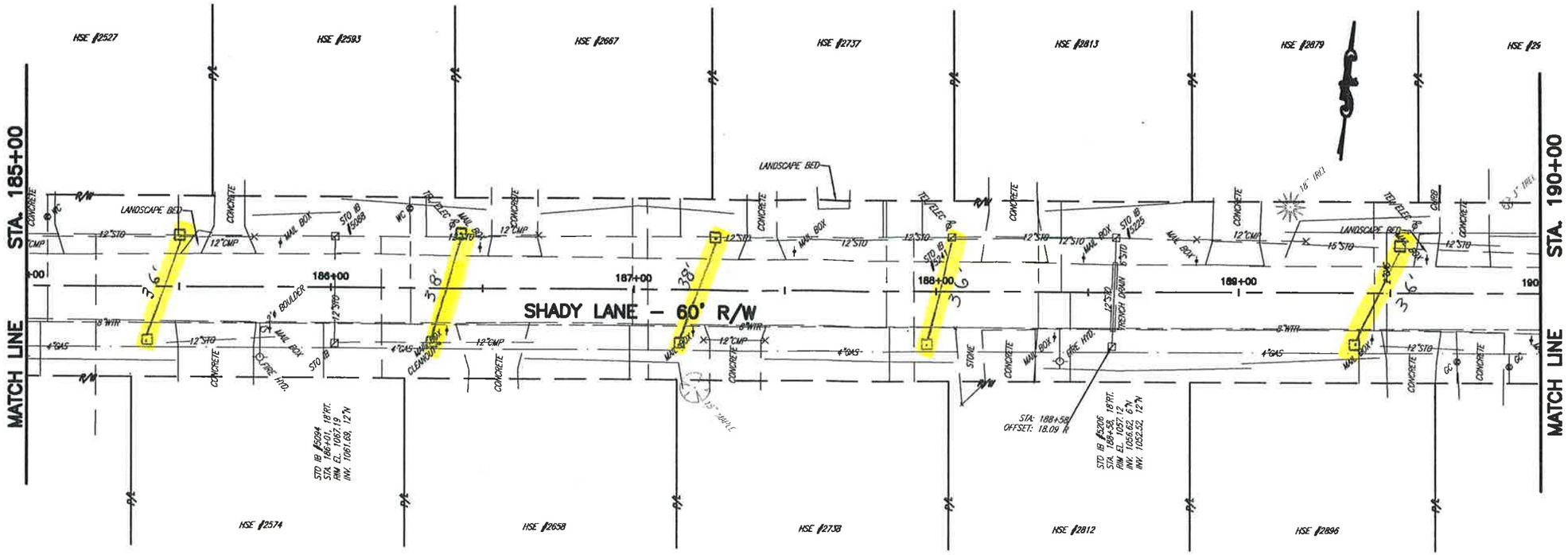
Seven Hills, Cuyahoga County, Ohio

DATE 8/24/11
DRAWN BY B.E.K.
CHECKED BY R.H.G.
APPROVED BY R.H.G.
F.B. NO. 1309 PG. 146

PLAN & PROFILE

SHADY LANE
STA. 180+00 TO STA. 185+00

SCALE	
HOR	1" = 20'
VERT	1" = 5'
CONTRACT No	
09452	
SHEET NO	OF
X	X



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REV. NO.	DESCRIPTION	DATE	BY	CH'K'D.

HEMLOCK CREEK WATERSHED UTILITY IMPROVEMENT

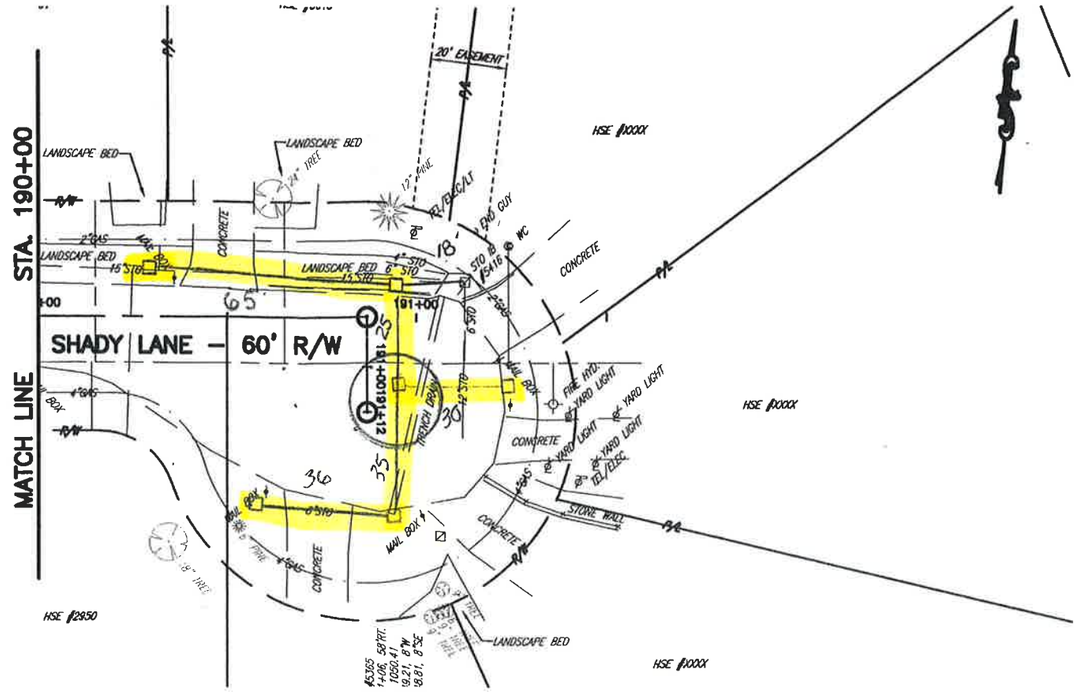
Seven Hills, Cuyahoga County, Ohio

DATE: 8/24/11
DRAWN BY: B.E.K.
CHECKED BY: R.H.G.
APPROVED BY: R.H.G.
F.B. No. 1308 PG. 146

PLAN & PROFILE

SHADY LANE
STA. 185+00 TO STA. 190+00

SCALE
HOR. 1" = 20'
VERT. 1" = 5'
CONTRACT No. 09452
SHEET NO. X OF X



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REV. NO.	DESCRIPTION	DATE	BY	CH'K'D.

HEMLOCK CREEK WATERSHED UTILITY IMPROVEMENT

Seven Hills, Cuyahoga County, Ohio

DATE: 8/24/11
DRAWN BY: B.E.K.
CHECKED BY: R.H.G.
APPROVED BY: R.H.G.
F.B. No. 1308 PG. 146

PLAN & PROFILE

SHADY LANE
STA. 190+00 TO CUL-DE-SAC

SCALE
HOR. 1" = 20'
VERT. 1" = 5'
CONTRACT No. 09452
SHEET NO. X OF X

STORM SEWER SYSTEM

PID : Cherry **Date :** 01/11/2012 **Project :** Seven Hills Hemlock Creek **Location :** Cherry Avenue and Seven Hills Boulevard

Description : **Designer :** LCH

Rainfall Area: A **Just Full Capacity Frequency (yrs.) :** 5 **Hydraulic Gradient Frequency (yrs.) :** 25

Minimum Pipe Size : 12.00 **Tailwater Elevation (ft.):** 0.00

JUNCTION From	JUNCTION To	STATION From To	ΔAREA ΣAREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (5 yrs.)	RAINFALL INTENSITY (25 yrs.)	DISCHARGE (cfs.) (5 yrs.)	DISCHARGE (cfs.) (25 yrs.)	PIPE DIAM. (in.)	PIPE LENGTH (ft.)	PIPE SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
7739	7153		4.32	1.81	30.00	2.44	3.08	4.4	5.6	15	312.0	0.0042	1126.45	3.87	4.52	0.0075	1129.39	1133.85	4.46	6.15	CB 2-2B
			4.32	1.81									1125.13				1127.06	1134.33			0.013
7153	7063		4.63	1.94	31.34	2.37	3.08	8.9	11.6	24	298.0	0.0054	1124.93	5.39	17.89	0.0026	1127.06	1134.33	7.27	7.40	CB 2-2B
			8.95	3.76									1123.32				1126.28	1135.32			0.013
7063	6731		4.48	1.88	32.26	2.33	3.08	13.1	17.4	24	600.0	0.0052	1123.32	5.80	17.63	0.0059	1126.28	1135.32	9.04	10.00	CB 2-2B
			13.43	5.64									1120.17				1122.73	1131.57			0.013
6731	6682		1.76	0.74	33.99	2.24	3.08	14.3	19.7	24	300.0	0.0050	1120.17	5.76	17.21	0.0076	1122.73	1131.57	8.84	9.40	CB 2-2B
			15.19	6.38									1118.67				1120.47	1128.57			0.013
6682	6426		2.63	1.10	34.86	2.21	3.05	16.5	22.8	24	300.0	0.0137	1118.67	8.89	28.52	0.0102	1120.10	1128.57	8.47	7.90	CB 2-2B
			17.82	7.48									1114.55				1116.40	1122.75			0.013
6426	6360		2.47	1.04	35.42	2.18	3.02	18.6	25.7	24	300.0	0.0153	1114.55	9.53	30.13	0.0129	1116.06	1122.75	6.69	6.20	CB 2-2B
			20.29	8.52									1109.95				1111.84	1117.85			0.013
6360	4875		2.30	0.97	35.94	2.16	2.99	20.5	28.4	24	276.0	0.0279	1109.95	12.26	40.62	0.0157	1111.24	1117.85	6.61	5.90	CB 2-2B
			22.59	9.49									1102.26				1104.46	1110.66			0.013
4875	4857		2.74	1.15	36.32	2.14	2.99	22.8	31.8	30	67.0	0.0061	1102.26	7.09	34.52	0.0060	1104.46	1110.66	6.20	5.90	CB 2-2B
			25.33	10.64									1101.85				1104.06	1112.25			0.013

STORM SEWER SYSTEM

JUNCTION From	JUNCTION To	STATION From To	ΔAREA ΣAREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (5 yrs.)	RAINFALL INTENSITY (25 yrs.)	DISCHARGE (cfs.) (5 yrs.)	DISCHARGE (cfs.) (25 yrs.)	PIPE DIAM. (in.)	PIPE LENGTH (ft.)	PIPE SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
4857	7993		2.61	1.10	36.48	2.14	2.94	25.1	34.5	30	461.0	0.0104	1101.85	8.91	45.07	0.0071	1103.58	1112.25	8.67	7.90	CB 2-2B
			27.94	11.73									1097.04				1099.29	1104.54			0.013
7993	7981		0.22	0.09	37.34	2.10	2.94	24.9	34.8	30	15.0	0.0067	1096.74	7.47	36.03	0.0072	1099.00	1104.54	5.54	5.30	CB 2-2B
			28.16	11.83									1096.64				1098.89	1104.94			0.013
7981	HW		0.27	0.11	37.37	2.10	2.94	25.1	35.1	30	30.0	0.0100	1096.54	8.77	44.12	0.0073	1098.71	1104.94	6.23	5.90	CB 2-2B
			28.43	11.94									1096.24				1098.50	1096.24			0.013

STORM SEWER SYSTEM

PID : Cherry **Date :** 01/11/2012 **Project :** Seven Hills Hemlock Creek **Location :** Cherry Avenue and Seven Hills Boulevard

Description : **Designer :** LCH

Rainfall Area: A **Just Full Capacity Frequency (yrs.) :** 10 **Hydraulic Gradient Frequency (yrs.) :** 25

Minimum Pipe Size : 12.00 **Tailwater Elevation (ft.):** 0.00

JUNCTION From	JUNCTION To	STATION From To	ΔAREA Σ AREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (10 yrs.)	RAINFALL INTENSITY (25 yrs.)	DISCHARGE (cfs.) (10 yrs.)	DISCHARGE (cfs.) (25 yrs.)	PIPE DIAM. (in.)	PIPE LENGTH (ft.)	PIPE SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
7739	7153		4.32	1.81	30.00	2.79	3.09	5.1	5.6	15	312.0	0.0042	1126.45	4.13	4.52	0.0075	1129.45	1133.85	4.40	6.15	CB 2-2B
			4.32	1.81						Warning			1125.13				1127.10	1134.33			0.013
7153	7063		4.63	1.94	31.26	2.72	3.09	10.2	11.6	24	298.0	0.0054	1124.93	5.56	17.89	0.0026	1127.10	1134.33	7.23	7.40	CB 2-2B
			8.95	3.76									1123.32				1126.31	1135.32			0.013
7063	6731		4.48	1.88	32.15	2.67	3.09	15.0	17.4	24	600.0	0.0052	1123.32	5.92	17.63	0.0059	1126.31	1135.32	9.01	10.00	CB 2-2B
			13.43	5.64									1120.17				1122.75	1131.57			0.013
6731	6682		1.76	0.74	33.84	2.58	3.09	16.4	19.7	24	300.0	0.0050	1120.17	5.80	17.21	0.0076	1122.75	1131.57	8.82	9.40	CB 2-2B
			15.19	6.38									1118.67				1120.47	1128.57			0.013
6682	6426		2.63	1.10	34.71	2.53	3.06	19.0	22.9	24	300.0	0.0137	1118.67	9.18	28.52	0.0102	1120.10	1128.57	8.47	7.90	CB 2-2B
			17.82	7.48									1114.55				1116.40	1122.75			0.013
6426	6360		2.47	1.04	35.25	2.51	3.03	21.4	25.8	24	300.0	0.0153	1114.55	9.82	30.13	0.0130	1116.06	1122.75	6.69	6.20	CB 2-2B
			20.29	8.52									1109.95				1111.84	1117.85			0.013
6360	4875		2.30	0.97	35.76	2.48	3.00	23.6	28.5	24	276.0	0.0279	1109.95	12.69	40.62	0.0158	1111.25	1117.85	6.60	5.90	CB 2-2B
			22.59	9.49									1102.26				1104.47	1110.66			0.013
4875	4857		2.74	1.15	36.12	2.47	3.00	26.2	31.9	30	67.0	0.0061	1102.26	7.29	34.52	0.0060	1104.47	1110.66	6.19	5.90	CB 2-2B
			25.33	10.64									1101.85				1104.06	1112.25			0.013

STORM SEWER SYSTEM

JUNCTION From	JUNCTION To	STATION From To	ΔAREA ΣAREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (10 yrs.)	RAINFALL INTENSITY (25 yrs.)	DISCHARGE (cfs.) (10 yrs.)	DISCHARGE (cfs.) (25 yrs.)	PIPE DIAM. (in.)	PIPE LENGTH (ft.)	PIPE SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
4857	7993		2.61 27.94	1.10 11.73	36.28	2.46	2.95	28.9	34.7	30	461.0	0.0104	1101.85 1097.04	9.20	45.07	0.0071	1103.58 1099.29	1112.25 1104.54	8.67	7.90	CB 2-2B 0.013
7993	7981		0.22 28.16	0.09 11.83	37.11	2.42	2.95	28.6	34.9	30	15.0	0.0067	1096.74 1096.64	7.67	36.03	0.0072	1099.00 1098.89	1104.54 1104.94	5.54	5.30	CB 2-2B 0.013
7981	HW		0.27 28.43	0.11 11.94	37.14	2.42	2.95	28.9	35.2	30	30.0	0.0100	1096.54 1096.24	9.05	44.12	0.0074	1098.72 1098.50	1104.94 1096.24	6.22	5.90	CB 2-2B 0.013

STORM SEWER SYSTEM

PID : Cherry **Date :** 01/11/2012 **Project :** Seven Hills Hemlock Creek **Location :** Cherry Avenue and Seven Hills Boulevard

Description : **Designer :** LCH

Rainfall Area: A **Just Full Capacity Frequency (yrs.) :** 25 **Hydraulic Gradient Frequency (yrs.) :** 25

Minimum Pipe Size : 12.00 **Tailwater Elevation (ft.):** 0.00

JUNCTION From	JUNCTION To	STATION From To	ΔAREA ΣAREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (25 yrs.)	(25 yrs.)	DISCHARGE (cfs.) (25 yrs.)	(25 yrs.)	PIPE DIAM. (in.)	PIPE LENGTH (ft.)	PIPE SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
7739	7153		4.32	1.81	30.00	3.41	3.11	6.2	5.6	15	312.0	0.0042	1126.45	5.04	4.52	0.0076	1129.57	1133.85	4.28	6.15	CB 2-2B
			4.32	1.81						Warning			1125.13				1127.19	1134.33			0.013
7153	7063		4.63	1.94	31.03	3.33	3.11	12.5	11.7	24	298.0	0.0054	1124.93	5.82	17.89	0.0027	1127.19	1134.33	7.14	7.40	CB 2-2B
			8.95	3.76									1123.32				1126.39	1135.32			0.013
7063	6731		4.48	1.88	31.89	3.27	3.11	18.5	17.6	24	600.0	0.0052	1123.32	5.88	17.63	0.0060	1126.39	1135.32	8.93	10.00	CB 2-2B
			13.43	5.64						Warning			1120.17				1122.78	1131.57			0.013
6731	6682		1.76	0.74	33.59	3.16	3.11	20.2	19.9	24	300.0	0.0050	1120.17	6.42	17.21	0.0077	1122.78	1131.57	8.79	9.40	CB 2-2B
			15.19	6.38						Warning			1118.67				1120.47	1128.57			0.013
6682	6426		2.63	1.10	34.36	3.11	3.08	23.3	23.1	24	300.0	0.0137	1118.67	9.52	28.52	0.0104	1120.11	1128.57	8.46	7.90	CB 2-2B
			17.82	7.48									1114.55				1116.40	1122.75			0.013
6426	6360		2.47	1.04	34.89	3.08	3.05	26.3	26.0	24	300.0	0.0153	1114.55	10.13	30.13	0.0132	1116.07	1122.75	6.68	6.20	CB 2-2B
			20.29	8.52									1109.95				1111.84	1117.85			0.013
6360	4875		2.30	0.97	35.38	3.05	3.02	29.0	28.7	24	276.0	0.0279	1109.95	13.24	40.62	0.0161	1111.25	1117.85	6.60	5.90	CB 2-2B
			22.59	9.49									1102.26				1104.48	1110.66			0.013
4875	4857		2.74	1.15	35.73	3.03	3.02	32.3	32.2	30	67.0	0.0061	1102.26	7.45	34.52	0.0061	1104.48	1110.66	6.18	5.90	CB 2-2B
			25.33	10.64									1101.85				1104.07	1112.25			0.013

STORM SEWER SYSTEM

JUNCTION From	JUNCTION To	STATION From To	ΔAREA ΣAREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (25 yrs.)	(25 yrs.)	DISCHARGE (cfs.) (25 yrs.)	(25 yrs.)	PIPE DIAM. (in.)	PIPE LENGTH (ft.)	PIPE SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
4857	7993		2.61	1.10	35.88	3.02	2.98	35.5	34.9	30	461.0	0.0104	1101.85	9.57	45.07	0.0072	1103.59	1112.25	8.66	7.90	CB 2-2B
			27.94	11.73									1097.04				1099.29	1104.54			0.013
7993	7981		0.22	0.09	36.68	2.98	2.98	35.2	35.2	30	15.0	0.0067	1096.74	7.72	36.03	0.0074	1099.01	1104.54	5.53	5.30	CB 2-2B
			28.16	11.83									1096.64				1098.90	1104.94			0.013
7981	HW		0.27	0.11	36.72	2.98	2.97	35.5	35.5	30	30.0	0.0100	1096.54	9.41	44.12	0.0075	1098.73	1104.94	6.21	5.90	CB 2-2B
			28.43	11.94									1096.24				1098.50	1096.24			0.013

STORM SEWER SYSTEM

PID : Nemet **Date :** 01/11/2012 **Project :** Seven Hills Hemlock Creek **Location :** Nemet Drive and Seven Hills Boulevard

Description : **Designer :** LCH

Rainfall Area: A **Just Full Capacity Frequency (yrs.) :** 5 **Hydraulic Gradient Frequency (yrs.) :** 25

Minimum Pipe Size : 12.00 **Tailwater Elevation (ft.):** 0.00

JUNCTION From	JUNCTION To	STATION From To	ΔAREA ΣAREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (5 yrs.)	RAINFALL INTENSITY (25 yrs.)	DISCHARGE (cfs.) (5 yrs.)	DISCHARGE (cfs.) (25 yrs.)	PIPE DIAM. (in.)	PIPE LENGTH (ft.)	PIPE SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
2363	2197		2.12 2.12	0.89 0.89	30.00	2.44	2.86	2.2	2.5	15	305.0	0.0066	1117.25 1115.25	4.06	5.63	0.0015	1132.41 1131.94	1121.55 1129.35	-10.86	3.05	CB 2-2B 0.013
2197	2263		2.84 4.96	1.19 2.08	31.25	2.38	2.86	4.9	6.0	18	306.0	0.0030	1115.15 1114.22	3.68	6.23	0.0032	1131.94 1130.96	1129.35 1129.72	-2.59	12.70	CB 2-2B 0.013
2263	1939		0.00 4.96	0.00 2.08	32.64	2.31	2.86	4.8	6.0	18	295.0	0.0042	1114.02 1112.79	4.16	7.30	0.0032	1130.96 1130.01	1129.72 1128.69	-1.24	14.20	CB 2-2B 0.013
1939	1784		4.20 9.16	1.76 3.85	33.82	2.25	2.86	8.7	11.0	18	298.0	0.0085	1112.59 1110.05	6.21	10.43	0.0109	1130.01 1126.76	1128.69 1125.55	-1.32	14.60	CB 2-2B 0.013
1784	1718		4.30 13.46	1.81 5.65	34.62	2.22	2.86	12.5	16.1	21	302.0	0.0063	1109.85 1107.94	5.97	13.55	0.0104	1126.76 1123.62	1125.55 1123.74	-1.21	13.95	CB 2-2B 0.013
1718	1660		3.19 16.65	1.34 6.99	35.46	2.18	2.86	15.2	20.0	21	302.0	0.0087	1107.84 1105.21	6.99	15.91	0.0159	1123.62 1118.83	1123.74 1120.91	0.12	14.15	CB 2-2B 0.013
1660	1607		6.17 22.82	2.59 9.58	36.18	2.15	2.86	20.6	27.4	21	303.0	0.0193	1105.01 1099.15	10.41	23.70	0.0298	1118.83 1109.80	1120.91 1111.95	2.08	14.15	CB 2-2B 0.013
1607	1336		3.91 26.73	1.64 11.23	36.67	2.13	2.86	23.9	32.1	24	293.0	0.0164	1099.05 1094.24	10.30	31.18	0.0201	1109.80 1103.92	1111.95 1105.64	2.15	10.90	CB 2-2B 0.013

STORM SEWER SYSTEM

JUNCTION From	JUNCTION To	STATION From To	ΔAREA ΣAREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (5 yrs.)	RAINFALL INTENSITY (25 yrs.)	DISCHARGE (cfs.) (5 yrs.)	DISCHARGE (cfs.) (25 yrs.)	PIPE DIAM. (in.)	PIPE LENGTH (ft.)	PIPE SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
1336	1265		4.78	2.01	37.14	2.11	2.86	27.9	37.8	24	293.0	0.0197	1094.24	11.41	34.15	0.0279	1103.92	1105.64	1.72	9.40	CB 2-2B
			31.51	13.23									1088.47				1095.75	1101.17			0.013
1265	4490		4.52	1.90	37.57	2.09	2.86	31.7	43.2	24	279.0	0.0246	1088.37	12.76	38.13	0.0365	1095.75	1101.17	5.42	10.80	CB 2-2B
			36.03	15.13									1081.52				1085.57	1093.72			0.013
4711	4678		0.55	0.23	30.00	2.44	3.37	0.6	0.8	12	153.0	0.0227	1092.78	4.41	5.77	0.0005	1093.04	1104.58	11.54	10.80	CB 2-2B
			36.58	15.36									1089.31				1089.99	1101.11			0.013
4678	4490		1.93	0.81	30.58	2.41	2.86	2.5	3.0	12	245.0	0.0216	1089.21	6.61	5.63	0.0070	1089.75	1101.11	11.36	10.90	CB 2-2B
			38.51	16.17									1083.92				1085.57	1093.72			0.013
4490	4466		0.76	0.32	37.93	2.08	2.86	34.3	47.1	30	165.0	0.0120	1081.22	10.08	48.33	0.0132	1085.57	1093.72	8.15	10.00	CB 2-2B
			39.27	16.49									1079.24				1083.40	1090.74			0.013
4466	4276		0.75	0.32	38.20	2.07	2.86	34.7	48.0	30	238.0	0.0112	1079.24	9.83	46.73	0.0137	1083.40	1090.74	7.34	9.00	CB 2-2B
			40.02	16.81									1076.57				1080.14	1084.87			0.013
4276	HW		3.41	1.43	38.61	2.05	2.86	37.4	52.1	30	190.0	0.0100	1076.57	9.47	44.12	0.0161	1080.14	1084.87	4.73	5.80	CB 2-2B
			43.43	18.24									1074.67				1077.08	1074.67			0.013

STORM SEWER SYSTEM

PID : Nemet **Date :** 01/11/2012 **Project :** Seven Hills Hemlock Creek **Location :** Nemet Drive and Seven Hills Boulevard

Description : **Designer :** LCH

Rainfall Area: A **Just Full Capacity Frequency (yrs.) :** 10 **Hydraulic Gradient Frequency (yrs.) :** 25

Minimum Pipe Size : 12.00 **Tailwater Elevation (ft.):** 0.00

JUNCTION From	JUNCTION To	STATION From To	ΔAREA ΣAREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (10 yrs.)	RAINFALL INTENSITY (25 yrs.)	DISCHARGE (cfs.) (10 yrs.)	DISCHARGE (cfs.) (25 yrs.)	PIPE DIAM. (in.)	PIPE LENGTH (ft.)	PIPE SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
2363	2197		2.12 2.12	0.89 0.89	30.00	2.79	2.86	2.5	2.5	15	305.0	0.0066	1117.25 1115.25	4.20	5.63	0.0016	1132.67 1132.20	1121.55 1129.35	-11.12	3.05	CB 2-2B 0.013
2197	2263		2.84 4.96	1.19 2.08	31.21	2.72	2.86	5.7	6.0	18	306.0	0.0030	1115.15 1114.22	3.73	6.23	0.0032	1132.20 1131.21	1129.35 1129.72	-2.85	12.70	CB 2-2B 0.013
2263	1939		0.00 4.96	0.00 2.08	32.58	2.64	2.86	5.5	6.0	18	295.0	0.0042	1114.02 1112.79	4.28	7.30	0.0032	1131.21 1130.26	1129.72 1128.69	-1.49	14.20	CB 2-2B 0.013
1939	1784		4.20 9.16	1.76 3.85	33.72	2.58	2.86	9.9	11.0	18	298.0	0.0085	1112.59 1110.05	6.25	10.43	0.0110	1130.26 1126.99	1128.69 1125.55	-1.57	14.60	CB 2-2B 0.013
1784	1718		4.30 13.46	1.81 5.65	34.52	2.54	2.86	14.4	16.2	21 Warning	302.0	0.0063	1109.85 1107.94	5.98	13.55	0.0104	1126.99 1123.84	1125.55 1123.74	-1.44	13.95	CB 2-2B 0.013
1718	1660		3.19 16.65	1.34 6.99	35.36	2.50	2.86	17.5	20.0	21 Warning	302.0	0.0087	1107.84 1105.21	7.28	15.91	0.0159	1123.84 1119.03	1123.74 1120.91	-0.10	14.15	CB 2-2B 0.013
1660	1607		6.17 22.82	2.59 9.58	36.05	2.47	2.86	23.7	27.4	21	303.0	0.0193	1105.01 1099.15	9.84	23.70	0.0300	1119.03 1109.95	1120.91 1111.95	1.88	14.15	CB 2-2B 0.013
1607	1336		3.91 26.73	1.64 11.23	36.57	2.45	2.86	27.5	32.1	24	293.0	0.0164	1099.05 1094.24	10.50	31.18	0.0202	1109.95 1104.04	1111.95 1105.64	2.00	10.90	CB 2-2B 0.013

STORM SEWER SYSTEM

JUNCTION From	JUNCTION To	STATION From To	ΔAREA ΣAREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (10 yrs.)	RAINFALL INTENSITY (25 yrs.)	DISCHARGE (cfs.) (10 yrs.)	DISCHARGE (cfs.) (25 yrs.)	PIPE DIAM. (in.)	PIPE LENGTH (ft.)	PIPE SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
1336	1265		4.78 31.51	2.01 13.23	37.03	2.43	2.86	32.1	37.9	24	293.0	0.0197	1094.24 1088.47	11.52	34.15	0.0280	1104.04 1095.83	1105.64 1101.17	1.60	9.40	CB 2-2B 0.013
1265	4490		4.52 36.03	1.90 15.13	37.46	2.41	2.86	36.4	43.3	24	279.0	0.0246	1088.37 1081.52	12.84	38.13	0.0366	1095.83 1085.61	1101.17 1093.72	5.34	10.80	CB 2-2B 0.013
4711	4678		0.55 36.58	0.23 15.36	30.00	2.79	3.37	0.6	0.8	12	153.0	0.0227	1092.78 1089.31	4.63	5.77	0.0005	1093.04 1089.99	1104.58 1101.11	11.54	10.80	CB 2-2B 0.013
4678	4490		1.93 38.51	0.81 16.17	30.55	2.76	2.86	2.9	3.0	12	245.0	0.0216	1089.21 1083.92	6.83	5.63	0.0070	1089.75 1085.61	1101.11 1093.72	11.36	10.90	CB 2-2B 0.013
4490	4466		0.76 39.27	0.32 16.49	37.82	2.39	2.86	39.4	47.2	30	165.0	0.0120	1081.22 1079.24	10.32	48.33	0.0132	1085.61 1083.43	1093.72 1090.74	8.11	10.00	CB 2-2B 0.013
4466	4276		0.75 40.02	0.32 16.81	38.08	2.38	2.86	40.0	48.1	30	238.0	0.0112	1079.24 1076.57	10.04	46.73	0.0137	1083.43 1080.16	1090.74 1084.87	7.31	9.00	CB 2-2B 0.013
4276	HW		3.41 43.43	1.43 18.24	38.48	2.36	2.86	43.1	52.2	30	190.0	0.0100	1076.57 1074.67	9.46	44.12	0.0162	1080.16 1077.08	1084.87 1074.67	4.71	5.80	CB 2-2B 0.013

STORM SEWER SYSTEM

PID : Nemet **Date :** 01/11/2012 **Project :** Seven Hills Hemlock Creek **Location :** Nemet Drive and Seven Hills Boulevard

Description : **Designer :** LCH

Rainfall Area: A **Just Full Capacity Frequency (yrs.) :** 25 **Hydraulic Gradient Frequency (yrs.) :** 25

Minimum Pipe Size : 12.00 **Tailwater Elevation (ft.):** 0.00

JUNCTION From	JUNCTION To	STATION From To	ΔAREA ΣAREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (25 yrs.)	(25 yrs.)	DISCHARGE (cfs.) (25 yrs.)	(25 yrs.)	PIPE DIAM. (in.)	PIPE LENGTH (ft.)	PIPE SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
2363	2197		2.12	0.89	30.00	3.41	2.90	3.0	2.6	15	305.0	0.0066	1117.25	4.42	5.63	0.0016	1134.15	1121.55	-12.60	3.05	CB 2-2B
			2.12	0.89									1115.25				1133.66	1129.35			0.013
2197	2263		2.84	1.19	31.15	3.33	2.90	6.9	6.0	18	306.0	0.0030	1115.15	3.92	6.23	0.0033	1133.66	1129.35	-4.31	12.70	CB 2-2B
			4.96	2.08						Warning			1114.22				1132.65	1129.72			0.013
2263	1939		0.00	0.00	32.45	3.24	2.90	6.7	6.0	18	295.0	0.0042	1114.02	4.38	7.30	0.0033	1132.65	1129.72	-2.93	14.20	CB 2-2B
			4.96	2.08									1112.79				1131.68	1128.69			0.013
1939	1784		4.20	1.76	33.58	3.16	2.90	12.2	11.2	18	298.0	0.0085	1112.59	6.89	10.43	0.0113	1131.68	1128.69	-2.99	14.60	CB 2-2B
			9.16	3.85						Warning			1110.05				1128.32	1125.55			0.013
1784	1718		4.30	1.81	34.30	3.12	2.90	17.6	16.4	21	302.0	0.0063	1109.85	7.33	13.55	0.0107	1128.32	1125.55	-2.77	13.95	CB 2-2B
			13.46	5.65						Warning			1107.94				1125.09	1123.74			0.013
1718	1660		3.19	1.34	34.98	3.08	2.90	21.5	20.3	21	302.0	0.0087	1107.84	8.94	15.91	0.0164	1125.09	1123.74	-1.35	14.15	CB 2-2B
			16.65	6.99						Warning			1105.21				1120.14	1120.91			0.013
1660	1607		6.17	2.59	35.55	3.04	2.90	29.2	27.8	21	303.0	0.0193	1105.01	12.12	23.70	0.0307	1120.14	1120.91	0.77	14.15	CB 2-2B
			22.82	9.58						Warning			1099.15				1110.83	1111.95			0.013
1607	1336		3.91	1.64	35.96	3.02	2.90	33.9	32.6	24	293.0	0.0164	1099.05	10.79	31.18	0.0207	1110.83	1111.95	1.12	10.90	CB 2-2B
			26.73	11.23						Warning			1094.24				1104.76	1105.64			0.013

STORM SEWER SYSTEM

JUNCTION From	JUNCTION To	STATION From To	ΔAREA ΣAREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (25 yrs.)	(25 yrs.)	DISCHARGE (cfs.) (25 yrs.)	(25 yrs.)	PIPE DIAM. (in.)	LENGTH (ft.)	SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
1336	1265		4.78	2.01	36.42	2.99	2.90	39.6	38.4	24	293.0	0.0197	1094.24	12.61	34.15	0.0288	1104.76	1105.64	0.88	9.40	CB 2-2B
			31.51	13.23						Warning			1088.47				1096.34	1101.17			0.013
1265	4490		4.52	1.90	36.80	2.97	2.90	45.0	43.9	24	279.0	0.0246	1088.37	14.31	38.13	0.0376	1096.34	1101.17	4.83	10.80	CB 2-2B
			36.03	15.13						Warning			1081.52				1085.84	1093.72			0.013
4711	4678		0.55	0.23	30.00	3.41	3.37	0.8	0.8	12	153.0	0.0227	1092.78	4.89	5.77	0.0005	1093.04	1104.58	11.54	10.80	CB 2-2B
			36.58	15.36									1089.31				1089.99	1101.11			0.013
4678	4490		1.93	0.81	30.52	3.37	2.90	3.5	3.0	12	245.0	0.0216	1089.21	7.16	5.63	0.0072	1089.76	1101.11	11.35	10.90	CB 2-2B
			38.51	16.17									1083.92				1085.84	1093.72			0.013
4490	4466		0.76	0.32	37.13	2.95	2.90	48.7	47.8	30	165.0	0.0120	1081.22	9.92	48.33	0.0136	1085.84	1093.72	7.88	10.00	CB 2-2B
			39.27	16.49						Warning			1079.24				1083.60	1090.74			0.013
4466	4276		0.75	0.32	37.40	2.94	2.90	49.4	48.8	30	238.0	0.0112	1079.24	10.06	46.73	0.0141	1083.60	1090.74	7.14	9.00	CB 2-2B
			40.02	16.81						Warning			1076.57				1080.24	1084.87			0.013
4276	HW		3.41	1.43	37.80	2.92	2.90	53.2	52.9	30	190.0	0.0100	1076.57	10.84	44.12	0.0166	1080.24	1084.87	4.63	5.80	CB 2-2B
			43.43	18.24						Warning			1074.67				1077.09	1074.67			0.013

STORM SEWER SYSTEM

PID : Twilight **Date :** 01/11/2012 **Project :** Seven Hills Hemlock Creek **Location :** Twilight Drive

Description : **Designer :** LCH

Rainfall Area: A **Just Full Capacity Frequency (yrs.) :** 5 **Hydraulic Gradient Frequency (yrs.) :** 25

Minimum Pipe Size : 12.00 **Tailwater Elevation (ft.):** 0.00

JUNCTION From	JUNCTION To	STATION From / To	ΔAREA / ΣAREA (acres)	ΔCA / ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (5 yrs.)	RAINFALL INTENSITY (25 yrs.)	DISCHARGE (cfs.) (5 yrs.)	DISCHARGE (cfs.) (25 yrs.)	PIPE DIAM. (in.)	PIPE LENGTH (ft.)	PIPE SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
3799	3718		0.00 0.00	0.00	30.00	2.44	3.07	0.0	0.0	12	319.0	0.0030	1118.27 1117.30	0.00	2.11	0.0000	1154.73 1154.73	1125.60 1122.60	-29.13	6.33	CB 2-2B 0.013
3718	3406		2.43 2.43	1.09 1.09	30.00	2.44	3.07	2.7	3.4	15	298.0	0.0092	1117.30 1114.56	4.86	6.66	0.0027	1154.73 1153.92	1122.60 1120.30	-32.13	4.05	CB 2-2B 0.013
3406	3286		4.80 7.23	2.16 3.25	31.02	2.39	3.07	7.8	10.0	18	303.0	0.0092	1114.46 1111.68	6.28	10.82	0.0091	1153.92 1151.18	1120.30 1117.40	-33.62	4.34	CB 2-2B 0.013
3286	3353		5.26 12.49	2.37 5.62	31.83	2.35	3.07	13.2	17.3	18 Warning	299.0	0.0128	1111.68 1107.84	7.46	12.81	0.0270	1151.18 1143.10	1131.57 1115.70	-19.61	18.39	CB 2-2B 0.013
3353	3069		3.70 16.19	1.67 7.29	32.49	2.31	3.07	16.9	22.4	18	301.0	0.0237	1107.74 1100.62	10.37	17.38	0.0454	1143.10 1129.43	1115.70 1108.80	-27.40	6.46	CB 2-2B 0.013
3069	3139		3.92 20.11	1.76 9.05	32.98	2.29	3.07	20.7	27.8	18 Warning	298.0	0.0247	1100.62 1093.26	11.73	17.76	0.0701	1129.43 1108.55	1108.80 1100.00	-20.63	6.68	CB 2-2B 0.013
3139	2769		3.95 24.06	1.78 10.83	33.40	2.27	3.07	24.6	33.3	24	301.0	0.0265	1093.16 1085.18	12.57	39.62	0.0216	1108.55 1102.04	1100.00 1095.40	-8.55	4.84	CB 2-2B 0.013
2769	2689		3.76 27.82	1.69 12.52	33.80	2.25	3.07	28.2	38.5	24	325.0	0.0136	1085.18 1080.77	8.98	28.35	0.0289	1102.04 1092.65	1095.40 1087.20	-6.64	8.22	CB 2-2B 0.013

STORM SEWER SYSTEM

JUNCTION From	To	STATION From To	ΔAREA ΣAREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (5 yrs.)	(25 yrs.)	DISCHARGE (cfs.) (5 yrs.)	(25 yrs.)	PIPE DIAM. (in.)	LENGTH (ft.)	SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
2689	2727		4.11	1.85	34.40	2.23	3.07	32.0	44.2	24	184.0	0.0170	1080.67	10.18	31.69	0.0381	1092.65	1087.20	-5.45	4.53	CB 2-2B
			31.93	14.37						Warning			1077.55				1085.64	1084.20			0.013
2727	HW		1.33	0.60	34.70	2.21	3.07	33.1	46.0	24	195.0	0.0100	1077.55	10.54	24.34	0.0413	1085.64	1084.20	-1.44	4.65	CB 2-2B
			33.26	14.97						Warning			1075.60				1077.59	1077.60			0.013

STORM SEWER SYSTEM

PID : Twilight **Date :** 01/11/2012 **Project :** Seven Hills Hemlock Creek **Location :** Twilight Drive

Description : **Designer :** LCH

Rainfall Area: A **Just Full Capacity Frequency (yrs.) :** 10 **Hydraulic Gradient Frequency (yrs.) :** 25

Minimum Pipe Size : 12.00 **Tailwater Elevation (ft.):** 0.00

JUNCTION From	JUNCTION To	STATION From To	ΔAREA ΣAREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (10 yrs.)	RAINFALL INTENSITY (25 yrs.)	DISCHARGE (cfs.) (10 yrs.)	DISCHARGE (cfs.) (25 yrs.)	PIPE DIAM. (in.)	PIPE LENGTH (ft.)	PIPE SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
3799	3718		0.00 0.00	0.00	30.00	2.79	3.10	0.0	0.0	12	319.0	0.0030	1118.27 1117.30	0.00	2.11	0.0000	1155.91 1155.91	1125.60 1122.60	-30.31	6.33	CB 2-2B 0.013
3718	3406		2.43 2.43	1.09 1.09	30.00	2.79	3.10	3.1	3.4	15	298.0	0.0092	1117.30 1114.56	5.03	6.66	0.0027	1155.91 1155.09	1122.60 1120.30	-33.31	4.05	CB 2-2B 0.013
3406	3286		4.80 7.23	2.16 3.25	30.99	2.73	3.10	8.9	10.1	18	303.0	0.0092	1114.46 1111.68	6.43	10.82	0.0092	1155.09 1152.31	1120.30 1117.40	-34.79	4.34	CB 2-2B 0.013
3286	3353		5.26 12.49	2.37 5.62	31.77	2.69	3.10	15.1	17.4	18 Warning	299.0	0.0128	1111.68 1107.84	8.55	12.81	0.0274	1152.31 1144.10	1131.57 1115.70	-20.74	18.39	CB 2-2B 0.013
3353	3069		3.70 16.19	1.67 7.29	32.36	2.66	3.10	19.4	22.6	18 Warning	301.0	0.0237	1107.74 1100.62	10.95	17.38	0.0461	1144.10 1130.23	1115.70 1108.80	-28.40	6.46	CB 2-2B 0.013
3069	3139		3.92 20.11	1.76 9.05	32.81	2.63	3.10	23.8	28.0	18 Warning	298.0	0.0247	1100.62 1093.26	13.48	17.76	0.0711	1130.23 1109.03	1108.80 1100.00	-21.43	6.68	CB 2-2B 0.013
3139	2769		3.95 24.06	1.78 10.83	33.18	2.61	3.10	28.3	33.5	24	301.0	0.0265	1093.16 1085.18	12.93	39.62	0.0220	1109.03 1102.42	1100.00 1095.40	-9.03	4.84	CB 2-2B 0.013
2769	2689		3.76 27.82	1.69 12.52	33.57	2.59	3.10	32.4	38.8	24 Warning	325.0	0.0136	1085.18 1080.77	10.33	28.35	0.0294	1102.42 1092.88	1095.40 1087.20	-7.02	8.22	CB 2-2B 0.013

STORM SEWER SYSTEM

JUNCTION From	JUNCTION To	STATION From To	ΔAREA ΣAREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (10 yrs.)	RAINFALL INTENSITY (25 yrs.)	DISCHARGE (cfs.) (10 yrs.)	DISCHARGE (cfs.) (25 yrs.)	PIPE DIAM. (in.)	PIPE LENGTH (ft.)	PIPE SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
2689	2727		4.11	1.85	34.09	2.57	3.10	36.9	44.5	24	184.0	0.0170	1080.67	11.73	31.69	0.0387	1092.88	1087.20	-5.68	4.53	CB 2-2B
			31.93	14.37						Warning			1077.55				1085.77	1084.20			0.013
2727	HW		1.33	0.60	34.36	2.55	3.10	38.2	46.4	24	195.0	0.0100	1077.55	12.16	24.34	0.0420	1085.77	1084.20	-1.57	4.65	CB 2-2B
			33.26	14.97						Warning			1075.60				1077.59	1077.60			0.013

STORM SEWER SYSTEM

PID : Twilight **Date :** 01/11/2012 **Project :** Seven Hills Hemlock Creek **Location :** Twilight Drive

Description : **Designer :** LCH

Rainfall Area: A **Just Full Capacity Frequency (yrs.) :** 25 **Hydraulic Gradient Frequency (yrs.) :** 25

Minimum Pipe Size : 12.00 **Tailwater Elevation (ft.):** 0.00

JUNCTION From	JUNCTION To	STATION From To	ΔAREA ΣAREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (25 yrs.)	RAINFALL INTENSITY (25 yrs.)	DISCHARGE (cfs.) (25 yrs.)	DISCHARGE (cfs.) (25 yrs.)	PIPE DIAM. (in.)	PIPE LENGTH (ft.)	PIPE SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
3799	3718		0.00 0.00	0.00	30.00	3.41	3.13	0.0	0.0	12	319.0	0.0030	1118.27 1117.30	0.00	2.11	0.0000	1157.40 1157.40	1125.60 1122.60	-31.80	6.33	CB 2-2B 0.013
3718	3406		2.43 2.43	1.09 1.09	30.00	3.41	3.13	3.7	3.4	15	298.0	0.0092	1117.30 1114.56	5.28	6.66	0.0028	1157.40 1156.57	1122.60 1120.30	-34.80	4.05	CB 2-2B 0.013
3406	3286		4.80 7.23	2.16 3.25	30.94	3.34	3.13	10.9	10.2	18 Warning	303.0	0.0092	1114.46 1111.68	6.15	10.82	0.0094	1156.57 1153.73	1120.30 1117.40	-36.27	4.34	CB 2-2B 0.013
3286	3353		5.26 12.49	2.37 5.62	31.76	3.28	3.13	18.5	17.6	18 Warning	299.0	0.0128	1111.68 1107.84	10.44	12.81	0.0280	1153.73 1145.37	1131.57 1115.70	-22.16	18.39	CB 2-2B 0.013
3353	3069		3.70 16.19	1.67 7.29	32.24	3.25	3.13	23.7	22.8	18 Warning	301.0	0.0237	1107.74 1100.62	13.40	17.38	0.0470	1145.37 1131.23	1115.70 1108.80	-29.67	6.46	CB 2-2B 0.013
3069	3139		3.92 20.11	1.76 9.05	32.61	3.23	3.13	29.2	28.3	18 Warning	298.0	0.0247	1100.62 1093.26	16.52	17.76	0.0725	1131.23 1109.63	1108.80 1100.00	-22.43	6.68	CB 2-2B 0.013
3139	2769		3.95 24.06	1.78 10.83	32.91	3.21	3.13	34.7	33.9	24	301.0	0.0265	1093.16 1085.18	13.34	39.62	0.0224	1109.63 1102.89	1100.00 1095.40	-9.63	4.84	CB 2-2B 0.013
2769	2689		3.76 27.82	1.69 12.52	33.29	3.18	3.13	39.8	39.2	24 Warning	325.0	0.0136	1085.18 1080.77	12.68	28.35	0.0299	1102.89 1093.17	1095.40 1087.20	-7.49	8.22	CB 2-2B 0.013

STORM SEWER SYSTEM

JUNCTION From	JUNCTION To	STATION From To	ΔAREA ΣAREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (25 yrs.)	(25 yrs.)	DISCHARGE (cfs.) (25 yrs.)	(25 yrs.)	PIPE DIAM. (in.)	PIPE LENGTH (ft.)	PIPE SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
2689	2727		4.11	1.85	33.72	3.15	3.13	45.3	44.9	24	184.0	0.0170	1080.67	14.43	31.69	0.0394	1093.17	1087.20	-5.97	4.53	CB 2-2B
			31.93	14.37						Warning			1077.55				1085.92	1084.20			0.013
2727	HW		1.33	0.60	33.93	3.14	3.13	47.0	46.8	24	195.0	0.0100	1077.55	14.96	24.34	0.0427	1085.92	1084.20	-1.72	4.65	CB 2-2B
			33.26	14.97						Warning			1075.60				1077.59	1077.60			0.013

STORM SEWER SYSTEM

PID : Shady Lane **Date :** 01/12/2012 **Project :** Seven Hills Hemlock Creek **Location :** Shady Lane and Seven Hills Boulevard

Description : **Designer :** LCH

Rainfall Area: A **Just Full Capacity Frequency (yrs.) :** 5 **Hydraulic Gradient Frequency (yrs.) :** 25

Minimum Pipe Size : 12.00 **Tailwater Elevation (ft.):** 0.00

JUNCTION From	JUNCTION To	STATION From To	ΔAREA ΣAREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (5 yrs.)	RAINFALL INTENSITY (25 yrs.)	DISCHARGE (cfs.) (5 yrs.)	DISCHARGE (cfs.) (25 yrs.)	PIPE DIAM. (in.)	PIPE LENGTH (ft.)	PIPE SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
4170	4133		0.43 0.43	0.29 0.29	30.00	2.44	3.21	0.7	0.9	12	80.0	0.0186	1074.87 1073.38	4.43	5.23	0.0007	1077.23 1077.18	1083.57 1082.18	6.34	7.70	CB 2-2B 0.013
4133	4115		0.08 0.51	0.05 0.35	30.30	2.42	3.21	0.8	1.1	12	67.0	0.0291	1073.38 1071.43	5.45	6.54	0.0010	1077.18 1077.11	1082.18 1081.33	5.00	7.80	CB 2-2B 0.013
4115	5017		0.99 1.50	0.67 1.02	30.51	2.41	3.21	2.5	3.3	12	301.0	0.0164	1069.83 1064.89	5.93	4.91	0.0084	1077.11 1074.58	1081.30 1072.70	4.19	10.47	CB 2-2B 0.013
5017	5088		0.58 2.08	0.39 1.41	31.35	2.37	3.21	3.4	4.5	12	282.0	0.0299	1064.79 1056.37	8.00	6.62	0.0162	1074.58 1070.02	1072.70 1065.90	-1.88	6.91	CB 2-2B 0.013
5088	5225		2.23 4.31	1.52 2.93	31.94	2.34	3.21	6.9	9.4	12	258.0	0.0381	1056.17 1046.34	10.10	7.48	0.0694	1070.02 1052.10	1065.90 1057.10	-4.12	8.73	CB 2-2B 0.013
5225	5416		1.34 5.65	0.91 3.84	32.37	2.32	3.21	8.9	12.3	15	254.0	0.0386	1046.34 1036.53	11.20	13.66	0.0363	1052.10 1042.88	1057.10 1047.53	5.00	9.51	CB 2-2B 0.013
5416	HW		1.74 7.39	1.18 5.03	32.74	2.30	3.21	11.6	16.1	15 Warning	100.0	0.0100	1036.43 1035.43	9.43	6.95	0.0621	1042.88 1036.67	1047.53 1036.68	4.65	9.85	CB 2-2B 0.013

STORM SEWER SYSTEM

PID : Shady Lane **Date :** 01/12/2012 **Project :** Seven Hills Hemlock Creek **Location :** Shady Lane and Seven Hills Boulevard

Description : **Designer :** LCH

Rainfall Area: A **Just Full Capacity Frequency (yrs.) :** 10 **Hydraulic Gradient Frequency (yrs.) :** 25

Minimum Pipe Size : 12.00 **Tailwater Elevation (ft.):** 0.00

JUNCTION From	JUNCTION To	STATION From To	ΔAREA ΣAREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (10 yrs.)	RAINFALL INTENSITY (25 yrs.)	DISCHARGE (cfs.) (10 yrs.)	DISCHARGE (cfs.) (25 yrs.)	PIPE DIAM. (in.)	PIPE LENGTH (ft.)	PIPE SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
4170	4133		0.43 0.43	0.29 0.29	30.00	2.79	3.21	0.8	0.9	12	80.0	0.0186	1074.87 1073.38	4.62	5.23	0.0007	1077.39 1077.33	1083.57 1082.18	6.18	7.70	CB 2-2B 0.013
4133	4115		0.08 0.51	0.05 0.35	30.29	2.77	3.21	1.0	1.1	12	67.0	0.0291	1073.38 1071.43	5.67	6.54	0.0010	1077.33 1077.27	1082.18 1081.33	4.85	7.80	CB 2-2B 0.013
4115	5017		0.99 1.50	0.67 1.02	30.49	2.76	3.21	2.8	3.3	12	301.0	0.0164	1069.83 1064.89	6.10	4.91	0.0084	1077.27 1074.73	1081.30 1072.70	4.03	10.47	CB 2-2B 0.013
5017	5088		0.58 2.08	0.39 1.41	31.31	2.72	3.21	3.8	4.5	12	282.0	0.0299	1064.79 1056.37	8.28	6.62	0.0162	1074.73 1070.15	1072.70 1065.90	-2.03	6.91	CB 2-2B 0.013
5088	5225		2.23 4.31	1.52 2.93	31.88	2.68	3.21	7.9	9.4	12 Warning	258.0	0.0381	1056.17 1046.34	10.01	7.48	0.0697	1070.15 1052.16	1065.90 1057.10	-4.25	8.73	CB 2-2B 0.013
5225	5416		1.34 5.65	0.91 3.84	32.30	2.66	3.21	10.2	12.3	15	254.0	0.0386	1046.34 1036.53	11.51	13.66	0.0364	1052.16 1042.91	1057.10 1047.53	4.94	9.51	CB 2-2B 0.013
5416	HW		1.74 7.39	1.18 5.03	32.67	2.64	3.21	13.3	16.1	15 Warning	100.0	0.0100	1036.43 1035.43	10.81	6.95	0.0623	1042.91 1036.67	1047.53 1036.68	4.62	9.85	CB 2-2B 0.013

STORM SEWER SYSTEM

PID : Shady Lane **Date :** 01/12/2012 **Project :** Seven Hills Hemlock Creek **Location :** Shady Lane and Seven Hills Boulevard

Description : **Designer :** LCH

Rainfall Area: A **Just Full Capacity Frequency (yrs.) :** 25 **Hydraulic Gradient Frequency (yrs.) :** 25

Minimum Pipe Size : 12.00 **Tailwater Elevation (ft.):** 0.00

JUNCTION From	JUNCTION To	STATION From To	ΔAREA ΣAREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (25 yrs.)	(25 yrs.)	DISCHARGE (cfs.) (25 yrs.)	(25 yrs.)	PIPE DIAM. (in.)	PIPE LENGTH (ft.)	PIPE SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
4170	4133		0.43	0.29	30.00	3.41	3.22	1.0	0.9	12	80.0	0.0186	1074.87	4.86	5.23	0.0007	1077.72	1083.57	5.85	7.70	CB 2-2B
			0.43	0.29									1073.38				1077.67	1082.18			0.013
4133	4115		0.08	0.05	30.27	3.39	3.22	1.2	1.1	12	67.0	0.0291	1073.38	5.99	6.54	0.0010	1077.67	1082.18	4.51	7.80	CB 2-2B
			0.51	0.35									1071.43				1077.60	1081.33			0.013
4115	5017		0.99	0.67	30.46	3.38	3.22	3.4	3.3	12	301.0	0.0164	1069.83	6.38	4.91	0.0085	1077.60	1081.30	3.70	10.47	CB 2-2B
			1.50	1.02									1064.89				1075.04	1072.70			0.013
5017	5088		0.58	0.39	31.25	3.32	3.22	4.7	4.6	12	282.0	0.0299	1064.79	8.64	6.62	0.0164	1075.04	1072.70	-2.34	6.91	CB 2-2B
			2.08	1.41									1056.37				1070.42	1065.90			0.013
5088	5225		2.23	1.52	31.79	3.28	3.22	9.6	9.5	12	258.0	0.0381	1056.17	12.24	7.48	0.0703	1070.42	1065.90	-4.52	8.73	CB 2-2B
			4.31	2.93						Warning			1046.34				1052.29	1057.10			0.013
5225	5416		1.34	0.91	32.14	3.26	3.22	12.5	12.4	15	254.0	0.0386	1046.34	11.79	13.66	0.0367	1052.29	1057.10	4.81	9.51	CB 2-2B
			5.65	3.84									1036.53				1042.96	1047.53			0.013
5416	HW		1.74	1.18	32.50	3.23	3.22	16.2	16.2	15	100.0	0.0100	1036.43	13.24	6.95	0.0628	1042.96	1047.53	4.57	9.85	CB 2-2B
			7.39	5.03						Warning			1035.43				1036.67	1036.68			0.013

STORM SEWER SYSTEM

PID : Mary Lane **Date :** 01/12/2012 **Project :** Seven Hills Hemlock Creek **Location :** North Mary Lane, South Mary Lane and Mary Lane

Description : **Designer :** LCH

Rainfall Area: A **Just Full Capacity Frequency (yrs.) :** 5 **Hydraulic Gradient Frequency (yrs.) :** 25

Minimum Pipe Size : 12.00 **Tailwater Elevation (ft.):** 0.00

JUNCTION From	JUNCTION To	STATION From To	ΔAREA ΣAREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (5 yrs.)	RAINFALL INTENSITY (25 yrs.)	DISCHARGE (cfs.) (5 yrs.)	DISCHARGE (cfs.) (25 yrs.)	PIPE DIAM. (in.)	PIPE LENGTH (ft.)	PIPE SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
6137	6050		1.33 1.33	0.64 0.64	30.00	2.44	3.30	1.6	2.1	12	324.0	0.0212	1077.79 1070.93	5.77	5.58	0.0035	1192.65 1191.52	1089.50 1082.00	-103.15	10.71	CB 2-2B 0.013
6050	6037		6.19 7.52	2.97 3.61	30.94	2.39	3.30	8.6	11.9	12 Warning	51.0	0.0259	1070.43 1069.11	10.99	6.17	0.1113	1191.52 1185.85	1082.00 1080.70	-109.52	10.57	CB 2-2B 0.013
6037	5786		0.12 7.64	0.06 3.67	31.01	2.39	3.30	8.8	12.1	12 Warning	166.0	0.0243	1069.11 1065.08	11.15	5.97	0.1149	1185.85 1166.78	1080.70 1075.50	-105.15	10.59	CB 2-2B 0.013
5786	5819		1.94 9.58	0.93 4.60	31.26	2.38	3.30	10.9	15.2	12 Warning	192.0	0.0172	1065.08 1061.78	13.91	5.02	0.1806	1166.78 1132.10	1075.50 1072.40	-91.28	9.42	CB 2-2B 0.013
5819	5707		2.05 11.63	0.98 5.58	31.49	2.36	3.30	17.3	24.2	12 Warning	40.0	0.0650	1061.78 1059.18	22.06	9.77	0.4589	1132.10 1113.74	1072.40 1071.38	-59.70	9.62	CB 2-2B 0.013
5707	HW		1.41 13.04	0.68 6.26	31.52	2.36	3.30	18.9	26.4	12 Warning	100.0	0.0100	1058.98 1057.98	24.08	3.83	0.5476	1113.74 1058.98	1071.38 1058.98	-42.36	11.40	CB 2-2B 0.013
5581	5847		1.03 14.07	0.49 6.75	30.00	2.44	3.30	1.2	1.6	12	223.0	0.0715	1079.68 1063.73	8.27	10.25	0.0021	1135.93 1135.46	1081.90 1074.30	-54.03	1.22	CB 2-2B 0.013
5847	5819		2.61 16.68	1.25 8.01	30.45	2.42	3.30	4.2	5.8	12	129.0	0.0136	1063.63 1061.88	6.02	4.46	0.0261	1135.46 1132.10	1074.30 1072.40	-61.16	9.67	CB 2-2B 0.013

STORM SEWER SYSTEM

PID : Mary Lane **Date :** 01/12/2012 **Project :** Seven Hills Hemlock Creek **Location :** North Mary Lane, South Mary Lane and Mary Lane

Description : **Designer :** LCH

Rainfall Area: A **Just Full Capacity Frequency (yrs.) :** 10 **Hydraulic Gradient Frequency (yrs.) :** 25

Minimum Pipe Size : 12.00 **Tailwater Elevation (ft.):** 0.00

JUNCTION From	JUNCTION To	STATION From To	ΔAREA Σ AREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (10 yrs.)	RAINFALL INTENSITY (25 yrs.)	DISCHARGE (cfs.) (10 yrs.)	DISCHARGE (cfs.) (25 yrs.)	PIPE DIAM. (in.)	PIPE LENGTH (ft.)	PIPE SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
6137	6050		1.33 1.33	0.64 0.64	30.00	2.79	3.30	1.8	2.1	12	324.0	0.0212	1077.79 1070.93	5.97	5.58	0.0035	1193.30 1192.16	1089.50 1082.00	-103.80	10.71	CB 2-2B 0.013
6050	6037		6.19 7.52	2.97 3.61	30.90	2.74	3.30	9.9	11.9	12 Warning	51.0	0.0259	1070.43 1069.11	12.59	6.17	0.1118	1192.16 1186.46	1082.00 1080.70	-110.16	10.57	CB 2-2B 0.013
6037	5786		0.12 7.64	0.06 3.67	30.97	2.73	3.30	10.0	12.1	12 Warning	166.0	0.0243	1069.11 1065.08	12.77	5.97	0.1154	1186.46 1167.30	1080.70 1075.50	-105.76	10.59	CB 2-2B 0.013
5786	5819		1.94 9.58	0.93 4.60	31.19	2.72	3.30	12.5	15.2	12 Warning	192.0	0.0172	1065.08 1061.78	15.94	5.02	0.1815	1167.30 1132.45	1075.50 1072.40	-91.80	9.42	CB 2-2B 0.013
5819	5707		2.05 11.63	0.98 5.58	31.39	2.71	3.30	19.9	24.2	12 Warning	40.0	0.0650	1061.78 1059.18	25.29	9.77	0.4611	1132.45 1114.00	1072.40 1071.38	-60.05	9.62	CB 2-2B 0.013
5707	HW		1.41 13.04	0.68 6.26	31.42	2.71	3.30	21.7	26.4	12 Warning	100.0	0.0100	1058.98 1057.98	27.62	3.83	0.5502	1114.00 1058.98	1071.38 1058.98	-42.62	11.40	CB 2-2B 0.013
5581	5847		1.03 14.07	0.49 6.75	30.00	2.79	3.30	1.4	1.6	12	223.0	0.0715	1079.68 1063.73	8.66	10.25	0.0021	1136.30 1135.83	1081.90 1074.30	-54.40	1.22	CB 2-2B 0.013
5847	5819		2.61 16.68	1.25 8.01	30.43	2.77	3.30	4.8	5.8	12 Warning	129.0	0.0136	1063.63 1061.88	6.15	4.46	0.0262	1135.83 1132.45	1074.30 1072.40	-61.53	9.67	CB 2-2B 0.013

STORM SEWER SYSTEM

PID : Mary Lane **Date :** 01/12/2012 **Project :** Seven Hills Hemlock Creek **Location :** North Mary Lane, South Mary Lane and Mary Lane

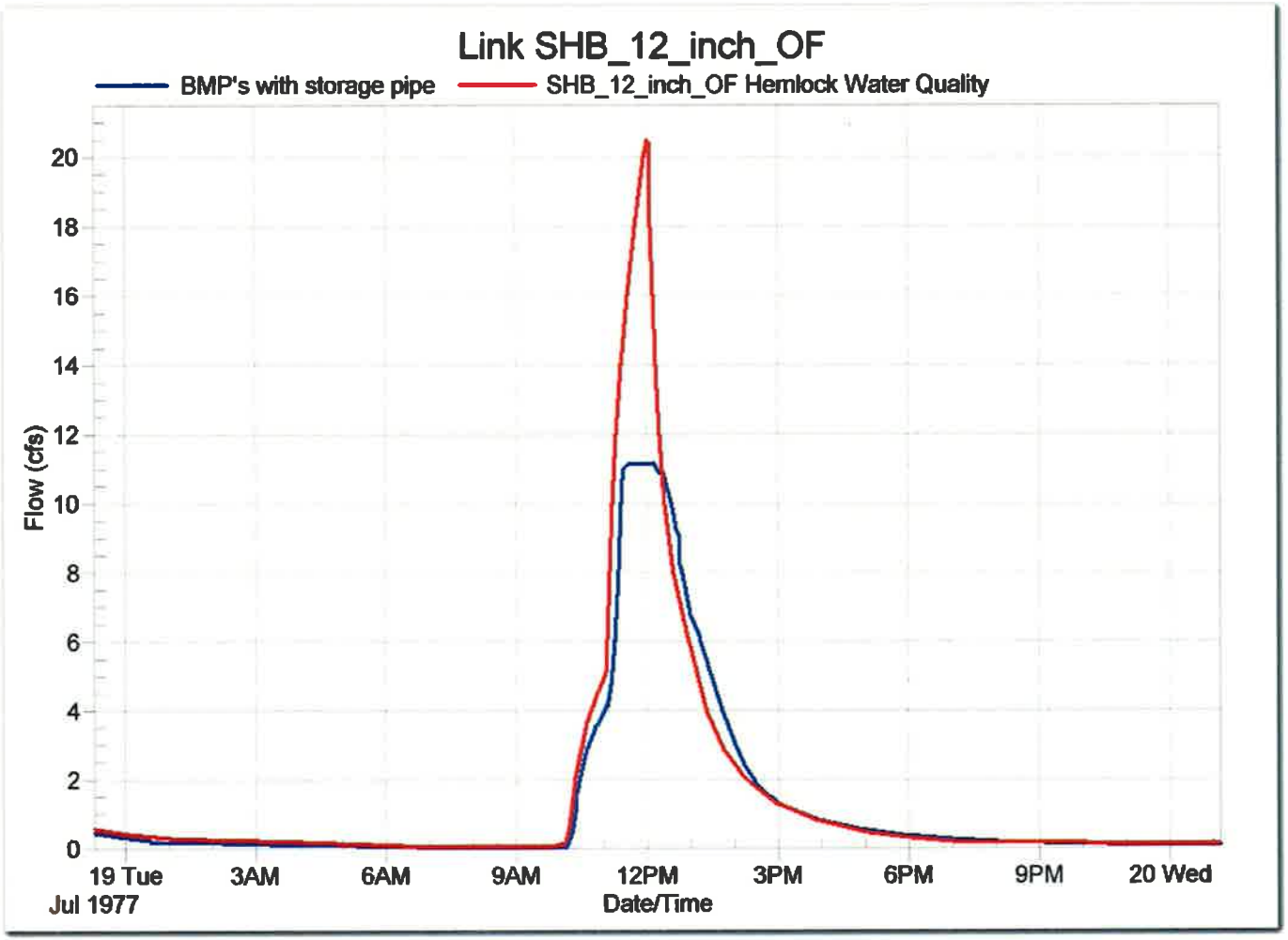
Description : **Designer :** LCH

Rainfall Area: A **Just Full Capacity Frequency (yrs.) :** 25 **Hydraulic Gradient Frequency (yrs.) :** 25

Minimum Pipe Size : 12.00 **Tailwater Elevation (ft.):** 0.00

JUNCTION From	JUNCTION To	STATION From To	ΔAREA Σ AREA (acres)	ΔCA ΣCA	BEGIN TIME (min.)	RAINFALL INTENSITY (25 yrs.)	(25 yrs.)	DISCHARGE (cfs.) (25 yrs.)	(25 yrs.)	PIPE DIAM. (in.)	LENGTH (ft.)	SLOPE (ft./ft.)	F/L PIPE IN / OUT (ft.)	MEAN VEL (fps.)	JUST FULL CAPACITY (cfs.)	FRICT SLOPE (ft./ft.)	HYGR EL. IN / OUT (ft.)	COVER IN / OUT (ft.)	COVER MINUS HY GR	COVER MINUS CROWN	INLET TYPE MANNING'S 'n'
6137	6050		1.33	0.64	30.00	3.41	3.31	2.2	2.1	12	324.0	0.0212	1077.79	6.31	5.58	0.0035	1194.17	1089.50	-104.67	10.71	CB 2-2B
			1.33	0.64									1070.93				1193.03	1082.00			0.013
6050	6037		6.19	2.97	30.86	3.35	3.31	12.1	12.0	12	51.0	0.0259	1070.43	15.38	6.17	0.1126	1193.03	1082.00	-111.03	10.57	CB 2-2B
			7.52	3.61						Warning			1069.11				1187.29	1080.70			0.013
6037	5786		0.12	0.06	30.91	3.34	3.31	12.3	12.2	12	166.0	0.0243	1069.11	15.61	5.97	0.1162	1187.29	1080.70	-106.59	10.59	CB 2-2B
			7.64	3.67						Warning			1065.08				1168.00	1075.50			0.013
5786	5819		1.94	0.93	31.09	3.33	3.31	15.3	15.2	12	192.0	0.0172	1065.08	19.50	5.02	0.1827	1168.00	1075.50	-92.50	9.42	CB 2-2B
			9.58	4.60						Warning			1061.78				1132.93	1072.40			0.013
5819	5707		2.05	0.98	31.25	3.32	3.31	24.3	24.3	12	40.0	0.0650	1061.78	30.97	9.77	0.4641	1132.93	1072.40	-60.53	9.62	CB 2-2B
			11.63	5.58						Warning			1059.18				1114.36	1071.38			0.013
5707	HW		1.41	0.68	31.27	3.32	3.31	26.6	26.5	12	100.0	0.0100	1058.98	33.82	3.83	0.5538	1114.36	1071.38	-42.98	11.40	CB 2-2B
			13.04	6.26						Warning			1057.98				1058.98	1058.98			0.013
5581	5847		1.03	0.49	30.00	3.41	3.31	1.7	1.6	12	223.0	0.0715	1079.68	9.17	10.25	0.0021	1136.80	1081.90	-54.90	1.22	CB 2-2B
			14.07	6.75									1063.73				1136.33	1074.30			0.013
5847	5819		2.61	1.25	30.41	3.38	3.31	5.9	5.8	12	129.0	0.0136	1063.63	7.52	4.46	0.0264	1136.33	1074.30	-62.03	9.67	CB 2-2B
			16.68	8.01						Warning			1061.88				1132.93	1072.40			0.013

Outfall Hydrographs



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