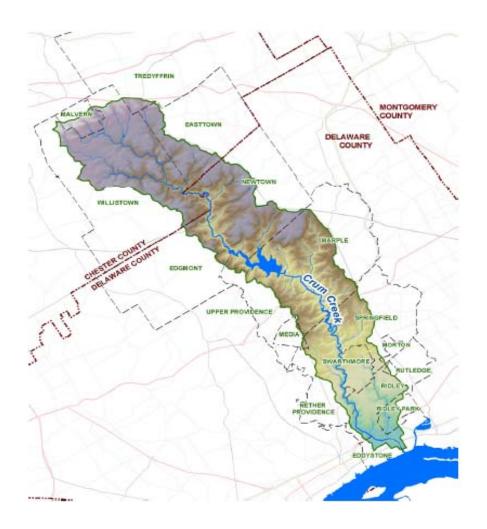
CRUM CREEK WATERSHED ACT 167 STORMWATER MANAGEMENT PLAN



VOLUME III TECHNICAL APPENDIX

CHESTER AND DELAWARE COUNTIES, PENNSYLVANIA

DECEMBER 2011

CRUM CREEK WATERSHED ACT 167 STORMWATER MANAGEMENT PLAN

CHESTER AND DELAWARE COUNTIES, PENNSYLVANIA

VOLUME III TECHNICAL APPENDIX

December 2011

DEP DOCUMENT # GRN100021546 FILE NO. SWMP 084-23 BLE PROJECT NO. 2004-1553-00

PREPARED BY:

DELAWARE COUNTY PLANNING DEPARTMENT

Court House and Government Center Building 201 West Front Street Media, PA 19063-2751

and

CHESTER COUNTY PLANNING COMMISSION

601 Westtown Road, Suite 270 P.O. Box 2747 West Chester, PA 19380-0990

ENGINEERING CONSULTANT:

Borton-LAWSON ENGINEERING, INC. 3893 Adler Place, Suite 100 Bethlehem, PA 18017

DELAWARE COUNTY COUNCIL

John J. Whelan, Chairman Christine Fizzano Cannon, Vice Chairman Thomas J. McGarrigle Andy Lewis Mario J. Civera, Jr.

CHESTER COUNTY COMMISSIONERS

Terrence Farrell Kathi Cozzone Ryan Costello

DELAWARE COUNTY PLANNING DEPARTMENT

Thomas J. O'Brien, AIA, Chairman Thomas J. Judge, Vice Chairman Kenneth J. Zitarelli, Secretary Kathy A. Bogosian Lorraine Bradshaw Patrick L. Patterson William C. Payne

CHESTER COUNTY PLANNING COMMISSION

Judy L. DiFilippo, Chairman Nancy Mohr, Vice Chairman Dr. Douglas Fasick Matthew Hammond, P.E. Martin E. Shane Joseph J. Tarantino Joseph J. Vicuso, P.E., L.S. John C, Washington, III

ENGINEERING CONSULTANT

Borton-Lawson Engineering, Inc.

CRUM CREEK WATERSHED DESIGNATED WPAC MEMBERS As of October 10, 2007

Delaware County

Delaware County Planning Department Ms. Karen Holm

Manager, Environmental Section

Delaware County Conservation District Mr. Edward Magargee

District Manager

Eddystone Borough Ms. Francine Howat

Manager

Edgmont Township Ms. Samantha Reiner

Manager

Marple Township Mr. Anthony Hamaday

Manager

Mr. Joseph Flicker Manager (former)

Media Borough Mr. Jeffrey Smith

Manager

Morton Borough Ms. Delores Giardina

Council Member

Nether Providence Township Mr. Jonathan Sutton

EAC Chairman

Newtown Township Mr. George Clement

Assistant Manager

Ridley Township Mr. Charles J. Catania, Jr.

Municipal Engineer

Ridley Park Borough Ms. Terry Bradley

Manager

Rutledge Borough Mr. Edward O. McGaughey

Manager

Springfield Township Mr. Michael T. LeFevre

Manager

Swarthmore Borough Ms. Nancy Crickman

EAC Member

Alternate: Ms. Jane Billings

Upper Providence Township Mr. Anthony Hamaday

Manager (former)

Chester County

Chester County Planning Commission Ms. Carrie Conwell

Environmental/Open Space Planner

Chester County Conservation District Mr. Dan Greig

District Manager

Easttown Township Mr. Dave Burman

Assistant Manager

Malvern Borough Ms. Sandra L Kelley

Manager

Tredyffrin Township Mr. Stephen Burgo, P.E.

Municipal Engineer

Willistown Township Mr. Hugh J. Murray, Sr.

Manager

Others

Chester County Water Resources Authority Ms. Janet Bowers

Director

Chester Ridley Crum Watersheds Association Mr. Gary Snyder

President

Alternate: Ms. Anne Murphy

Natural Resources Conservation Service (NRCS) Mr. Sam High

District Conservationist

Aqua Pennsylvania Mr. Preston Luitweiler

Alternate: Craig Marleton

VOLUME III – TECHNICAL APPENDIX TABLE OF CONTENTS

- A. WATERSHED PEAK FLOWS SUMMARY TABLES
- B. HEC-HMS MODEL OUTPUT TABLES
- C. OBSTRUCTION CAPACITY SUMMARY FORMS (FORM B)
- D. DATA COLLECTION FORMS BY MUNICIPALITY IN ALPHABETICAL ORDER (FORMS A, C J, O)
- E. INFILL REDEVELOPMENT CRITERIA

A. WATERSHED PEAK FLOWS SUMMARY TABLES

CRUM CREEK ACT 167 SUMMARY FLOW TABLES

ACT 167 SUMMARY FLOW TABLES EXISTING CONDITIONS SUBAREA FLOWS								
				EXISTING	CONDITION	NS SUBARI	EAFLOWS	
	HMS	Subarea			1	1, 1	1	400 14
Subbasin	Element	DA	2- Yr	5- Yr	10- Yr	25- Yr	50- Yr	100- Yr
50	50	1.08	290.13	482.40	529.93	630.38	808.79	1010.07
51	51	1.97	375.03	609.91	667.95	820.99	1072.35	1357.39
52	52	1.59	293.29	474.27	505.57	608.35	799.58	1016.73
53	53	0.75	143.98	233.59	245.25	291.28	388.24	499.26
54	54	1.41	189.10	320.24	427.91	589.28	728.00	884.37
55	55	1.09	203.72	334.60	345.87	406.14	547.25	710.35
56	56	0.45	125.48	213.95	287.06	396.79	491.28	597.97
57	57	1.46	213.35	372.24	406.49	500.81	675.59	876.73
58	58	1.34	393.93	632.30	640.85	688.01	929.45	1205.40
59	59	0.69	166.54	271.39	284.93	340.78	454.43	583.90
60	60	2.04	173.71	675.30	763.37	976.84	1316.90	1708.25
61	61	1.95	664.66	1080.52	1238.13	1571.34	2018.72	2525.41
62	62	1.17	273.89	442.45	496.75	620.12	800.51	1004.43
63	63	1.61	377.92	600.19	680.03	851.03	1081.86	1339.64
64	64	0.75	98.80	196.78	249.19	343.19	453.70	579.23
65	65	2.96	968.21	1746.03	2558.34	3666.52	4464.07	5356.38
66	66	2.78	302.19	622.34	728.06	883.80	1174.64	1506.10
67	67	1.07	207.31	341.04	364.97	441.69	587.17	754.56
68	68	2.30	594.61	945.41	1129.81	1455.48	1817.09	2222.39
69	69	1.27	344.31	542.62	610.28	762.11	966.51	1193.28
70	70	1.39	482.85	784.94	859.05	1058.84	1384.43	1752.19
71	71	0.91	301.95	471.21	583.16	759.59	927.65	1114.67
72	72	0.87	183.28	291.30	315.60	383.91	497.59	625.12
73	73	0.84	214.66	338.97	374.89	463.44	593.16	737.67
74	74		90.55	137.91	165.24	210.99	258.22	310.72
75	75	1.27	242.80	376.73	551.29	811.25	969.17	1143.32
76	76	0.42	249.40	372.02	457.61	585.64	698.96	823.34
77	77	1.20	170.60	299.97	427.50	607.67	735.51	875.49
78	78		377.28	573.29	643.60	800.94	990.81	1194.32
79	79	1	124.11	174.73	196.79	241.84	289.19	339.33

CRUM CREEK ACT 167 SUMMARY FLOW TABLES

			EXISTING CONDITIONS CUMULATIVE FLOWS					
Subbasin	HMS Element	Cumulative DA	2- Yr	5- Yr	10- Yr	25- Yr	50- Yr	100- Yr
62	1	16.98	1,423	2,372	2,687	3,312	4,303	5,451
78	101	34.65	1,336	2,440	3,014	4,035	5,248	6,599
77	102	3.37	591	960	1,364	1,962	2,367	2,815
55	103	6.47	897	1,450	1,591	1,933	2,501	3,145
US 60*	104	9.78	1,193	1,940	2,180	2,686	3,448	4,311
50	105	1.08	290	482	530	630	809	1,010
58	106	1.34	394	633	641	688	929	1,205
51	11	3.04	618	1,014	1,129	1,399	1,817	2,289
52	12	5.38	840	1,363	1,497	1,825	2,363	2,973
54&56	13	1.86	228	381	507	696	859	1,042
57	14	3.32	425	730	890	1,169	1,498	1,876
60	15	11.82	1,260	2,087	2,352	2,900	3,719	4,646
59	16	13.85	1,329	2,194	2,482	3,057	3,935	5,002
61	17	15.80	1,383	2,285	2,598	3,183	4,142	5,253
66	18	26.14	1,355	2,420	2,834	3,651	4,745	5,965
68	19	28.44	1,253	2,313	2,804	3,697	4,834	6,098
69&70	20	31.10	1,286	2,383	2,897	3,830	4,999	6,300
72&73	21	32.81	1,318	2,430	2,963	3,926	5,118	6,445
71	22	0.91	302	471	583	760	928	1,115
74	23	33.13	1,328	2,442	2,979	3,948	5,145	6,476
75	24	2.18	452	706	1,026	1,521	1,837	2,186
76	25	33.55	1,335	2,449	2,995	3,974	5,174	6,510
63	3	1.61	378	600	680	851	1,082	1,340
64&65	7	22.29	1,294	2,320	2,679	3,397	4,420	5,558
US 70*	9	38.02	1,678	2,592	3,525	5,100	6,338	7,767

*Note: The HMS Element is located upstream of the subbasin listed. All other HMS elements are directly downstream of the subasin(s) listed.

ES

Project: Final_Crum_Creek Simulation Run: 1-yr

Start of Run: 15May2006, 00:00 Basin Model: Crum 2-yr PK Meteorologic Model: 1-YR

Compute Time: 22Aug2007, 11:24:36 Control Specifications: Synthetic Storm

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
1	16.9760	792.95	15May2006, 17:20	873.67
10	38.2700	990.35	15May2006, 16:25	1867.92
101	34.6500	767.40	16May2006, 04:25	1604.03
102	3.3730	312.50	15May2006, 14:05	221.29
103	6.4660	485.61	15May2006, 15:35	352.05
104	9.7830	640.75	15May2006, 15:25	522.89
105	1.0750	147.34	15May2006, 13:00	62.88
106	1.3390	206.07	15May2006, 12:40	68.32
11	3.0410	325.74	15May2006, 13:15	155.62
12	5.3790	451.26	15May2006, 14:50	291.03
13	1.8550	116.89	15May2006, 14:10	107.89
14	3.3170	209.04	15May2006, 14:00	170.84
15	11.8230	687.98	15May2006, 15:35	594.47
16	13.8540	733.28	15May2006, 16:20	713.33
17	15.8030	766.98	15May2006, 16:50	805.43
18	26.1380	742.13	15May2006, 22:00	1170.70
19	28.4420	703.77	16May2006, 01:30	1195.37
20	31.0970	723.56	16May2006, 01:35	1346.00
21	32.8100	745.22	16May2006, 01:35	1461.58
22	0.9090	171.84	15May2006, 12:55	67.95
23	33.1290	753.90	16May2006, 01:45	1501.53
24	2.1760	255.10	15May2006, 13:25	155.28
25	33.5490	770.53	15May2006, 13:55	1551.24
27	26.1380	740.06	15May2006, 23:30	1154.65
28	28.4420	703.40	16May2006, 02:00	1189.25

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
29	31.0970	723.25	16May2006, 02:10	1337.81
3	1.6080	209.02	15May2006, 13:25	91.32
30	32.8100	745.10	16May2006, 01:50	1458.07
31	0.9090	167.97	15May2006, 13:15	67.95
32	33.1290	753.78	16May2006, 02:00	1498.15
33	2.1760	250.48	15May2006, 14:00	155.28
34	33.5490	759.65	16May2006, 04:25	1516.16
36	16.9760	789.39	15May2006, 18:20	873.67
37	1.6080	204.41	15May2006, 14:00	91.32
41	22.2940	697.99	15May2006, 22:05	1039.34
42	38.0230	972.55	15May2006, 16:25	1820.33
43	3.0410	299.70	15May2006, 15:05	155.62
44	9.7830	638.98	15May2006, 15:40	522.89
45	1.8550	116.32	15May2006, 14:35	107.89
46	5.3790	443.22	15May2006, 15:40	291.03
47	11.8230	681.78	15May2006, 16:20	594.47
48	13.8540	729.62	15May2006, 16:55	713.33
49	15.8030	764.67	15May2006, 17:25	805.43
50	1.0750	147.34	15May2006, 13:00	62.88
51	1.9660	201.46	15May2006, 13:35	92.74
52	1.5900	158.38	15May2006, 13:50	83.24
53	0.7480	78.29	15May2006, 13:30	52.17
54	1.4050	94.08	15May2006, 14:20	67.03
55	1.0870	108.39	15May2006, 13:25	61.02
56	0.4500	61.99	15May2006, 12:45	40.86
57	1.4620	100.64	15May2006, 13:45	62.95
58	1.3390	206.07	15May2006, 12:40	68.32
59	0.6920	90.01	15May2006, 13:05	50.54
60	2.0400	154.90	15May2006, 13:10	71.59
61	1.9490	358.10	15May2006, 12:35	92.10
62	1.1730	149.00	15May2006, 13:10	68.24
63	1.6080	209.02	15May2006, 13:25	91.32

Hydrologic Element	Drainage Area (Ml2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
64	0.7540	36.62	15May2006, 13:40	41.67
65	2.9560	406.91	15May2006, 12:30	99.69
66	2.7790	100.49	15May2006, 13:55	71.83
67	1.0650	110.54	15May2006, 13:20	59.53
68	2.3040	329.63	15May2006, 13:10	116.62
69	1.2660	191.94	15May2006, 13:15	80.97
7	22.2940	701.22	15May2006, 19:55	1060.82
70	1.3890	258.61	15May2006, 12:35	75.78
71	0.9090	171.84	15May2006, 12:55	67.95
72	0.8700	101.61	15May2006, 13:40	61.49
73	0.8430	119.87	15May2006, 13:20	62.28
74	0.3190	54.02	15May2006, 13:20	43.46
75	1.2670	137.13	15May2006, 14:35	87.33
76	0.4200	150.50	15May2006, 12:30	53.09
77	1.1970	74.99	15May2006, 15:00	66.00
78	1.1010	215.03	15May2006, 13:20	87.87
79	0.2470	80.44	15May2006, 13:05	47.59
9	38.0230	978.23	15May2006, 16:10	1825.32
Crum Dam 23-020	28.4420	703.77	16May2006, 01:30	1195.37
Geist 23-079	22.2940	701.22	15May2006, 19:55	1060.82

Project: Final_Crum_Creek Simulation Run: 2-yr

Start of Run: 15May2006, 00:00 Basin Model: Crum 2-yr

End of Run: 17May2006, 00:05 Meteorologic Model: 2-YR

Hydrologic	Drainage Area	Peak Discharge	Time of Peak	Volume
Element	(MI2)	(CFS)		(AC-FT)
1	16.9760	1452.49	15May2006, 17:10	1324.40
10	38,2700	1690.81	15May2006, 16:25	2937.89
101	34.6500	1386.77	16May2006, 04:05	2548.96
102	3.3730	591.23	15May2006, 14:05	336.53
103	6.4660	897.09	15May2006, 15:35	530.88
104	9.7830	1193.08	15May2006, 15:20	785.97
105	1.0750	290.13	15May2006, 12:55	93.88
106	1.3390	393.93	15May2006, 12:40	102.99
11	3.0410	617.85	15May2006, 13:10	240.77
12	5.3790	839.82	15May2006, 14:45	441.75
13	1.8550	227.88	15May2006, 14:00	156.59
14	3.3170	425.18	15May2006, 13:50	255.10
15	11.8230	1282.81	15May2006, 15:30	907.08
16	13.8540	1354.28	15May2006, 16:10	1079.00
17	15.8030	1410.02	15May2006, 16:45	1223.58
18	26.1380	1412.35	15May2006, 21:35	1858.67
19	28.4420	1301.21	16May2006, 00:50	1946.44
20	31.0970	1336.95	16May2006, 00:50	2176.26
21	32.8100	1369.10	16May2006, 01:15	2343.58
22	0.9090	301.95	15May2006, 12:55	97.12
23	33.1290	1378.86	16May2006, 01:30	2393.46
24	2.1760	451.80	15May2006, 13:25	229.39
25	33.5490	1386.04	16May2006, 01:40	2458.42
27	26.1380	1405.25	15May2006, 23:05	1841.91
28	28.4420	1300.19	16May2006, 01:15	1939.65

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
29	31.0970	1335.46	16May2006, 01:25	2167.11
3	1.6080	377.92	15May2006, 13:25	140.93
30	32.8100	1368.43	16May2006, 01:30	2339.63
31	0.9090	294.96	15May2006, 13:10	97.12
32	33.1290	1378.24	16May2006, 01:45	2389.65
33	2.1760	442.91	15May2006, 14:00	229.39
34	33.5490	1378.69	16May2006, 04:05	2417.82
36	16.9760	1449.34	15May2006, 18:05	1324.40
37	1.6080	369.19	15May2006, 14:00	140.93
41	22.2940	1338.73	15May2006, 21:35	1635.51
42	38.0230	1667.79	15May2006, 16:25	2879.57
43	3.0410	566.23	15May2006, 15:00	240.77
44	9.7830	1189.84	15May2006, 15:35	785.97
45	1.8550	226.77	15May2006, 14:25	156.59
46	5.3790	823.45	15May2006, 15:35	441.75
47	11.8230	1272.58	15May2006, 16:15	907.08
48	13.8540	1349.03	15May2006, 16:45	1079.00
49	15.8030	1407.06	15May2006, 17:15	1223.58
50	1.0750	290.13	15May2006, 12:55	93.88
51	1.9660	375.03	15May2006, 13:35	146.89
52	1.5900	293.29	15May2006, 13:45	128.97
53	0.7480	143.98	15May2006, 13:30	72.01
54	1.4050	189.10	15May2006, 14:15	104.28
55	1.0870	203.72	15May2006, 13:25	89.13
56	0.4500	125.48	15May2006, 12:40	52.30
57	1.4620	213.35	15May2006, 13:40	98.51
58	1.3390	393.93	15May2006, 12:40	102.99
59	0.6920	166.54	15May2006, 13:00	68.93
60	2.0400	368.79	15May2006, 13:05	121.11
61	1.9490	664.66	15May2006, 12:35	144.58
62	1.1730	273.89	15May2006, 13:10	100.81
63	1.6080	377.92	15May2006, 13:25	140.93

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
64	0.7540	98.80	15May2006, 13:30	59.60
65	2.9560	968.21	15May2006, 12:30	179.31
66	2.7790	302.19	15May2006, 13:40	136.92
67	1.0650	207.31	15May2006, 13:15	86.24
68	2.3040	594.61	15May2006, 13:10	185.61
69	1.2660	344.31	15May2006, 13:15	121.64
7	22.2940	1349.82	15May2006, 19:30	1657.63
70	1.3890	482.85	15May2006, 12:35	114.97
71	0.9090	301.95	15May2006, 12:55	97.12
72	0.8700	183.28	15May2006, 13:40	87.85
73	0.8430	214.66	15May2006, 13:20	88.62
74	0.3190	90.55	15May2006, 13:20	53.83
75	1.2670	242.80	15May2006, 14:30	132.27
76	0.4200	249.40	15May2006, 12:30	68.78
77	1.1970	170.60	15May2006, 14:50	107.14
78	1.1010	377.28	15May2006, 13:20	131.13
79	0.2470	124.11	15May2006, 13:05	58.32
9	38.0230	1678.14	15May2006, 16:05	2885.49
Crum Dam 23-02	028.4420	1301.21	16May2006, 00:50	1946.44
Geist 23-079	22.2940	1349.82	15May2006, 19:30	1657.63

Project: Final_Crum_Creek Simulation Run: 5-yr

Start of Run: 15May2006, 00:00 Basin Model: Crum 2-yr

End of Run: 17May2006, 00:05 Meteorologic Model: 5-YR

Compute Time: 17Aug2007, 09:07:37 Control Specifications: Synthetic Storm

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
1	16.9760	2371.61	15May2006, 16:00	1935.44
10	38.2700	2604.14	15May2006, 16:25	4376.45
101	34.6500	2440.47	16May2006, 03:30	3827.63
102	3.3730	959.58	15May2006, 14:05	484.56
103	6.4660	1450.10	15May2006, 15:30	770.40
104	9.7830	1940.01	15May2006, 15:20	1141.64
105	1.0750	482.40	15May2006, 12:55	135.32
106	1.3390	651.89	15May2006, 12:40	150.02
11	3.0410	1014.17	15May2006, 13:10	354.65
12	5.3790	1362.99	15May2006, 14:45	643.13
13	1.8550	381.30	15May2006, 13:55	223.19
14	3.3170	729.58	15May2006, 13:45	371.24
15	11.8230	2086.53	15May2006, 15:30	1332.46
16	13.8540	2194.17	15May2006, 16:05	1576.22
17	15.8030	2284.90	15May2006, 15:35	1791.15
18	26.1380	2419.86	15May2006, 21:05	2799.59
19	28.4420	2313.38	16May2006, 00:00	2972.64
20	31.0970	2383.28	16May2006, 00:20	3306.67
21	32.8100	2429.98	16May2006, 00:50	3542.02
22	0.9090	471.21	15May2006, 12:55	134.77
23	33.1290	2441.75	16May2006, 01:05	3604.85
24	2.1760	706.37	15May2006, 13:25	323.87
25	33.5490	2449.36	16May2006, 01:15	3688.88
27	26.1380	2410.44	15May2006, 22:35	2782.15
28	28.4420	2310.92	16May2006, 00:25	2965.26

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
29	31.0970	2378.73	16May2006, 00:55	3296.66
3	1.6080	600.19	15May2006, 13:25	205.66
30	32.8100	2428.29	16May2006, 01:05	3537.68
31	0.9090	460.43	15May2006, 13:10	134.77
32	33.1290	2440.38	16May2006, 01:15	3600.65
33	2.1760	692.06	15May2006, 13:55	323.87
34	33.5490	2431.32	16May2006, 03:30	3643.33
36	16.9760	2363.29	15May2006, 17:10	1935.44
37	1.6080	585.92	15May2006, 14:00	205.66
41	22.2940	2305.57	15May2006, 21:10	2445.22
42	38.0230	2575.17	15May2006, 16:25	4305.42
43	3.0410	926.69	15May2006, 15:00	354.65
44	9.7830	1934.16	15May2006, 15:35	1141.64
45	1.8550	379.37	15May2006, 14:25	223.19
46	5.3790	1336.02	15May2006, 15:35	643.13
47	11.8230	2072.46	15May2006, 16:10	1332.46
48	13.8540	2188.23	15May2006, 16:40	1576.22
49	15.8030	2281.20	15May2006, 16:10	1791.15
50	1.0750	482.40	15May2006, 12:55	135.32
51	1.9660	609.91	15May2006, 13:30	219.32
52	1.5900	474.27	15May2006, 13:45	189.69
53	0.7480	233.59	15May2006, 13:30	98.79
54	1.4050	320.24	15May2006, 14:15	155.11
55	1.0870	334.60	15May2006, 13:25	127.27
56	0.4500	213.95	15May2006, 12:40	68.08
57	1.4620	372.24	15May2006, 13:35	148.05
58	1.3390	651.89	15May2006, 12:40	150.02
59	0.6920	271.39	15May2006, 13:00	93.74
60	2.0400	675.30	15May2006, 13:00	190.82
61	1.9490	1080.52	15May2006, 12:35	214.93
62	1.1730	442.45	15May2006, 13:10	144.29
63	1.6080	600.19	15May2006, 13:25	205.66

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
64	0.7540	196.78	15May2006, 13:25	85.58
65	2.9560	1746.03	15May2006, 12:25	288.92
66	2.7790	622.34	15May2006, 13:40	231.73
67	1.0650	341.04	15May2006, 13:15	122.64
68	2.3040	945.41	15May2006, 13:10	276.03
69	1.2660	542.62	15May2006, 13:15	174.26
7	22.2940	2320.31	15May2006, 19:10	2467.96
70	1.3890	784.94	15May2006, 12:35	167.16
71	0.9090	471.21	15May2006, 12:55	134.77
72	0.8700	291.30	15May2006, 13:40	122.44
73	0.8430	338.97	15May2006, 13:20	122.91
74	0.3190	137.91	15May2006, 13:20	67.17
75	1.2670	376.73	15May2006, 14:30	189.09
76	0.4200	372.02	15May2006, 12:30	88.23
77	1.1970	299.97	15May2006, 14:45	160.69
78	1.1010	573.29	15May2006, 13:20	184.30
79	0.2470	174.73	15May2006, 13:05	71.04
9	38.0230	2592.43	15May2006, 16:05	4312.19
Crum Dam 23-026	28.4420	2313.38	16May2006, 00:00	2972.64
Geist 23-079	22.2940	2320.31	15May2006, 19:10	2467.96

Project: Final_Crum_Creek Simulation Run: 10-yr

Start of Run: 15May2006, 00:00 Basin Model: Crum 2-yr End of Run: 17May2006, 00:05 Meteorologic Model: 10-YR

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
1	16.9760	3141.24	15May2006, 15:55	2434.42
10	38.2700	3389.21	16May2006, 03:20	5542.51
101	34.6500	3314.84	16May2006, 03:05	4868.20
102	3.3730	1251.60	15May2006, 14:05	601.01
103	6.4660	1899.50	15May2006, 15:30	964.70
104	9.7830	2547.03	15May2006, 15:15	1431.56
105	1.0750	637.96	15May2006, 12:55	168.81
106	1.3390	864.38	15May2006, 12:40	188.51
11	3.0410	1336.57	15May2006, 13:10	446.90
12	5.3790	1787.43	15May2006, 14:45	806.21
13	1.8550	507.43	15May2006, 13:55	277.77
14	3.3170	982.49	15May2006, 13:45	466.86
15	11.8230	2741.01	15May2006, 15:25	1680.29
16	13.8540	2888.27	15May2006, 14:50	1982.77
17	15.8030	3029.02	15May2006, 15:25	2254.91
18	26.1380	3211.20	15May2006, 20:55	3570.13
19	28.4420	3150.88	15May2006, 23:30	3812.39
20	31.0970	3239.42	15May2006, 23:55	4229.99
21	32.8100	3299.60	16May2006, 00:30	4519.82
22	0.9090	605.75	15May2006, 12:55	164.63
23	33.1290	3314.24	16May2006, 00:40	4592.97
24	2.1760	907.82	15May2006, 13:25	398.14
25	33.5490	3324.49	16May2006, 00:55	4691.81
27	26.1380	3199.93	15May2006, 22:25	3552.24
28	28.4420	3147.66	16May2006, 00:00	3804.63

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
29	31.0970	3235.26	16May2006, 00:30	4219.44
3	1.6080	778.12	15May2006, 13:25	257.33
30	32.8100	3297.85	16May2006, 00:45	4515.23
31	0.9090	592.01	15May2006, 13:10	164.63
32	33.1290	3312.81	16May2006, 00:55	4588.52
33	2.1760	889.51	15May2006, 13:55	398.14
34	33.5490	3304.34	16 M ay2006, 03:10	4643.07
36	16.9760	3127.08	15May2006, 17:00	2434.42
37	1.6080	759.34	15May2006, 14:00	257.33
41	22.2940	3065.15	15May2006, 21:00	3106.27
42	38.0230	3381.42	16May2006, 03:20	5461.89
43	3.0410	1219.73	15May2006, 15:00	446.90
44	9.7830	2540.76	15May2006, 15:30	1431.56
45	1.8550	504.96	15May2006, 14:20	277.77
46	5.3790	1751.92	15May2006, 15:35	806.21
47	11.8230	2723.78	15May2006, 16:10	1680.29
48	13.8540	2879.29	15May2006, 15:30	1982.77
49	15.8030	3022.11	15May2006, 16:00	2254.91
50	1.0750	637.96	15May2006, 12:55	168.81
51	1.9660	801.98	15May2006, 13:30	278.09
52	1.5900	620.91	15May2006, 13:45	238.66
53	0.7480	307.15	15May2006, 13:25	120.64
54	1.4050	427.91	15May2006, 14:15	196.70
55	1.0870	442.43	15May2006, 13:25	158.49
56	0.4500	287.06	15May2006, 12:40	81.07
57	1.4620	505.16	15May2006, 13:35	189.09
58	1.3390	864.38	15May2006, 12:40	188.51
59	0.6920	357.46	15May2006, 13:00	113.97
60	2.0400	932.43	15May2006, 13:00	248.74
61	1.9490	1420.77	15May2006, 12:35	272.14
62	1.1730	579.79	15May2006, 13:10	179.51
63	1.6080	778.12	15May2006, 13:25	257.33

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
64	0.7540	280.24	15May2006, 13:20	107.33
65	2.9560	2388.52	15May2006, 12:25	378.64
66	2.7790	898.26	15May2006, 13:35	311.32
67	1.0650	451.73	15May2006, 13:15	152.54
68	2.3040	1227.68	15May2006, 13:10	348.49
69	1.2660	700.11	15May2006, 13:15	216.00
7	22.2940	3083.02	15May2006, 19:00	3129.41
70	1.3890	1030.56	15May2006, 12:35	209.35
71	0.9090	605.75	15May2006, 12:55	164.63
72	0.8700	378.00	15May2006, 13:40	150.14
73	0.8430	438.20	15May2006, 13:20	150.24
74	0.3190	175.48	15May2006, 13:20	77.74
75	1.2670	481.02	15May2006, 14:30	233.50
76	0.4200	466.52	15May2006, 12:30	103.29
77	1.1970	401.80	15May2006, 14:40	202.88
78	1.1010	722.00	15May2006, 13:15	225.13
79	0.2470	212.27	15May2006, 13:05	80.62
9	38.0230	3383.86	16May2006, 03:00	5469.21
Crum Dam 23	022804420	3150.88	15May2006, 23:30	3812.39
Geist 23-079	22.2940	3083.02	15May2006, 19:00	3129.41

Project: Final_Crum_Creek Simulation Run: 25-yr

Start of Run: 15May2006, 00:00 Basin Model: Crum-100-yr

End of Run: 17May2006, 00:05 Meteorologic Model: 25-YR

Compute Time: 17Aug2007, 09:06:55 Control Specifications: Synthetic Storm

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
1	16.9760	3312.08	15May2006, 16:00	2577.52
10	38.2700	5152.64	15May2006, 15:00	6364.45
101	34.6500	4034.68	15May2006, 21:20	5515.58
102	3.3730	1962.23	15May2006, 15:00	770.79
103	6.4660	1933.47	15May2006, 15:45	979.40
104	9.7830	2685.96	15May2006, 15:30	1534.09
105	1.0750	630.38	15May2006, 13:10	184.55
106	1.3390	688.01	15May2006, 12:55	182.18
11	3.0410	1398.63	15May2006, 13:20	469.92
12	5.3790	1824.67	15May2006, 15:00	826.46
13	1.8550	696.27	15May2006, 13:50	359.34
14	3.3170	1169.21	15May2006, 13:50	554.70
15	11.8230	2900.46	15May2006, 15:40	1802.62
16	13.8540	3057.04	15May2006, 16:15	2096.84
17	15.8030	3183.47	15May2006, 15:35	2388.78
18	26.1380	3650.75	15May2006, 19:15	4028.72
19	28.4420	3697.29	15May2006, 20:15	4342.21
20	31.0970	3830.05	15May2006, 20:25	4779.35
21	32.8100	3926.34	15May2006, 20:45	5081.54
22	0.9090	759.59	15May2006, 12:55	195.22
23	33.1290	3948.47	15May2006, 20:50	5165.28
24	2.1760	1521.27	15May2006, 13:40	498.51
25	33.5490	3974.11	15May2006, 21:00	5283.08
27	26.1380	3648.91	15May2006, 19:30	4025.89
28	28.4420	3695.32	15May2006, 20:30	4337.94

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
29	31.0970	3827.87	15May2006, 20:50	4773.65
3	1.6080	851.03	15May2006, 13:25	274.36
30	32.8100	3925.21	15May2006, 20:55	5079.10
31	0.9090	711.49	15May2006, 13:40	195.22
32	33.1290	3947.63	15 M ay2006, 21:00	5162.93
33	2.1760	1415.38	15May2006, 15:05	498.51
34	33.5490	3971.81	15May2006, 21:25	5276.67
36	16.9760	3299.13	15May2006, 17:10	2577.52
37	1.6080	831.29	15May2006, 14:00	274.36
41	22.2940	3394.17	15May2006, 19:25	3497.13
42	38.0230	5082.68	15May2006, 15:00	6281.26
43	3.0410	1285.73	15May2006, 15:10	469.92
44	9.7830	2678.23	15May2006, 15:45	1534.09
45	1.8550	692.79	15May2006, 14:20	359.34
46	5.3790	1788.49	15May2006, 15:50	826.46
47	11.8230	2879.47	15May2006, 16:20	1802.62
48	13.8540	3047.41	15May2006, 16:50	2096.84
49	15.8030	3178.28	15May2006, 17:15	2388.78
50	1.0750	630.38	15May2006, 13:10	184.55
51	1.9660	820.99	15May2006, 13:35	285.37
52	1.5900	608.35	15May2006, 13:50	237.99
53	0.7480	291.28	15May2006, 13:35	118.55
54	1.4050	589.28	15May2006, 14:10	258.79
55	1.0870	406.14	15May2006, 13:30	152.93
56	0.4500	396.79	15May2006, 12:40	100.55
57	1.4620	500.81	15May2006, 13:40	195.35
58	1.3390	688.01	15May2006, 12:55	182.18
59	0.6920	340.78	15May2006, 13:05	112.03
60	2.0400	976.84	15May2006, 13:05	268.53
61	1.9490	1571.34	15May2006, 12:35	291.94
62	1.1730	620.12	15May2006, 13:10	188.74
63	1.6080	851.03	15May2006, 13:25	274.36

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
64	0.7540	343.19	15May2006, 13:25	126.13
65	2.9560	3666.52	15May2006, 12:25	571.92
66	2.7790	883.80	15May2006, 14:15	379.05
67	1.0650	441.69	15May2006, 13:20	152.54
68	2.3040	1455.48	15May2006, 13:10	397.64
69	1.2660	762.11	15May2006, 13:15	228.00
7	22.2940	3396.99	15May2006, 19:05	3500.96
70	1.3890	1058.84	15May2006, 12:40	213.41
71	0.9090	759.59	15May2006, 12:55	195.22
72	0.8700	383.91	15May2006, 13:40	152.41
73	0.8430	463.44	15May2006, 13:20	155.48
74	0.3190	210.99	15May2006, 13:20	86.18
75	1.2670	811.25	15May2006, 13:45	303.29
76	0.4200	585.64	15May2006, 12:30	120.15
77	1.1970	607.67	15May2006, 14:20	272.28
78	1.1010	800.94	15May2006, 13:20	238.91
79	0.2470	241.84	15May2006, 13:05	83.19
9	38.0230	5100.14	15May2006, 14:45	6286.37
Crum Dam 23-	02280.4420	3697.29	15May2006, 20:15	4342.21
Geist 23-079	22.2940	3396.99	15May2006, 19:05	3500.96

Project: Final_Crum_Creek Simulation Run: 50-yr

Start of Run: 15May2006, 00:00 Basin Model: Crum-100-yr

End of Run: 17May2006, 00:05 Meteorologic Model: 50-YR

Compute Time: 17Aug2007, 09:07:24 Control Specifications: Synthetic Storm

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
1	16.9760	4303.23	15May2006, 15:55	3191.05
10	38.2700	6400.66	15May2006, 15:00	7808.58
101	34.6500	5247.95	15May2006, 20:55	6806.93
102	3.3730	2367.27	15May2006, 15:00	912.66
103	6.4660	2501.31	15May2006, 15:45	1215.25
104	9.7830	3447.60	15May2006, 15:25	1890.83
105	1.0750	808.79	15May2006, 13:10	225.62
106	1.3390	929.45	15May2006, 12:55	228.72
11	3.0410	1816.86	15May2006, 13:20	582.56
12	5.3790	2363.21	15May2006, 14:55	1024.60
13	1.8550	858.67	15May2006, 13:50	429.50
14	3.3170	1498.41	15May2006, 13:45	675.58
15	11.8230	3719.15	15May2006, 15:35	2231.61
16	13.8540	3934.71	15May2006, 14:55	2596.85
17	15.8030	4141.92	15May2006, 15:25	2959.24
18	26.1380	4744.62	15May2006, 18:55	4986.88
19	28.4420	4834.27	15May2006, 19:55	5387.81
20	31.0970	4999.40	15May2006, 20:00	5926.25
21	32.8100	5118.53	15May2006, 20:20	6294.50
22	0.9090	927.65	15May2006, 12:55	231.81
23	33.1290	5144.67	15May2006, 20:25	6391.02
24	2.1760	1836.70	15May2006, 13:40	589.00
25	33.5490	5174.41	15May2006, 20:35	6526.74
27	26.1380	4743.10	15May2006, 19:10	4984.01
28	28.4420	4832.34	15May2006, 20:10	5383.42

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
29	31.0970	4997.32	15May2006, 20:25	5920.38
3	1.6080	1081.86	15May2006, 13:25	336.91
30	32.8100	5117.36	15May2006, 20:30	6291.99
31	0.9090	868.77	15May2006, 13:40	231.81
32	33.1290	5143.77	15May2006, 20:35	6388.60
33	2.1760	1707.91	15May2006, 15:05	589.00
34	33.5490	5171.94	15May2006, 21:00	6520.13
36	16.9760	4281.52	15May2006, 17:00	3191.05
37	1.6080	1056.15	15May2006, 14:00	336.91
41	22.2940	4416.71	15May2006, 19:10	4316.87
42	38.0230	6319.87	15May2006, 15:00	7714.31
43	3.0410	1667.25	15May2006, 15:10	582.56
44	9.7830	3439.13	15May2006, 15:40	1890.83
45	1.8550	854.34	15May2006, 14:15	429.50
46	5.3790	2316.63	15May2006, 15:45	1024.60
47	11.8230	3694.67	15May2006, 16:20	2231.61
48	13.8540	3921.50	15May2006, 15:30	2596.85
49	15.8030	4131.53	15May2006, 16:00	2959.24
50	1.0750	808.79	15May2006, 13:10	225.62
51	1.9660	1072.35	15May2006, 13:35	356.93
52	1.5900	799.58	15May2006, 13:50	297.05
53	0.7480	388.24	15May2006, 13:30	144.99
54	1.4050	728.00	15May2006, 14:10	312.15
55	1.0870	547.25	15May2006, 13:30	190.65
56	0.4500	491.28	15May2006, 12:40	117.35
57	1.4620	675.59	15May2006, 13:40	246.08
58	1.3390	929.45	15May2006, 12:55	228.72
59	0.6920	454.43	15May2006, 13:05	136.52
60	2.0400	1316.90	15May2006, 13:05	340.78
61	1.9490	2018.72	15May2006, 12:35	362.39
62	1.1730	800.51	15May2006, 13:10	231.82
63	1.6080	1081.86	15May2006, 13:25	336.91

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
64	0.7540	453.70	15May2006, 13:20	153.92
65	2.9560	4464.07	15May2006, 12:25	688.49
66	2.7790	1174.64	15May2006, 14:10	480.92
67	1.0650	587.17	15May2006, 13:20	189.09
68	2.3040	1817.09	15May2006, 13:10	486.61
69	1.2660	966.51	15May2006, 13:15	278.22
7	22.2940	4419.55	15May2006, 18:50	4320.76
70	1.3890	1384.43	15May2006, 12:35	264.61
71	0.9090	927.65	15May2006, 12:55	231.81
72	0.8700	497.59	15May2006, 13:40	185.75
73	0.8430	593.16	15May2006, 13:20	188.38
74	0.3190	258.22	15May2006, 13:20	99.03
75	1.2670	969.17	15May2006, 13:45	357.19
76	0.4200	698.96	15May2006, 12:30	138.15
77	1.1970	735.51	15May2006, 14:20	323.66
78	1.1010	990.81	15May2006, 13:20	286.80
79	0.2470	289.19	15May2006, 13:05	94.28
9	38.0230	6338.25	15May2006, 14:45	7719.59
Crum Dam 23	02804420	4834.27	15May2006, 19:55	5387.81
Geist 23-079	22.2940	4419.55	15May2006, 18:50	4320.76

Project: Final_Crum_Creek Simulation Run: 100-yr

Start of Run: 15May2006, 00:00

Basin Model:

Crum-100-yr

End of Run:

17May2006, 00:05

Meteorologic Model:

100-YR

Compute Time: 22Aug2007, 09:52:43

Control Specifications: Synthetic Storm

Volume Units:

AC-FT

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
1	16.9760	5450.65	15May2006, 15:50	3891.84
10	38.2700	7838.47	15May2006, 15:05	9445.09
101	34.6500	6598.96	15May2006, 20:30	8273.74
102	3.3730	2814.51	15May2006, 15:00	1070.34
103	6.4660	3144.56	15May2006, 15:40	1484.41
104	9.7830	4311.04	15May2006, 15:25	2297.65
105	1.0750	1010.07	15May2006, 13:05	272.12
106	1.3390	1205.40	15May2006, 12:55	282.27
11	3.0410	2289.32	15May2006, 13:20	710.70
12	5.3790	2973.27	15May2006, 14:55	1250.32
13	1.8550	1041.76	15May2006, 13:50	508.77
14	3.3170	1876.35	15May2006, 13:45	813.25
15	11.8230	4645.50	15May2006, 15:30	2721.36
16	13.8540	5001.99	15May2006, 14:45	3168.25
17	15.8030	5253.02	15May2006, 15:20	3610.97
18	26.1380	5965.12	15May2006, 18:40	6078.40
19	28.4420	6098.34	15May2006, 19:35	6578.23
20	31.0970	6299.76	15May2006, 19:45	7231.36
21	32.8100	6445.03	15May2006, 20:00	7674.34
22	0.9090	1114.67	15May2006, 12:55	272.78
23	33.1290	6475.91	15May2006, 20:05	7785.17
24	2.1760	2186.21	15May2006, 13:40	689.73
25	33.5490	6510.51	15May2006, 20:15	7940.77
27	26.1380	5963.75	15May2006, 18:55	6075.49
28	28.4420	6096.27	15May2006, 19:50	6573.72

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
29	31.0970	6297.61	15May2006, 20:05	7225.33
3	1.6080	1339.64	15May2006, 13:25	407.50
30	32.8100	6443.98	15May2006, 20:05	7671.75
31	0.9090	1043.81	15May2006, 13:40	272.78
32	33.1290	6474.89	15May2006, 20:15	7782.68
33	2.1760	2032.01	15May2006, 15:05	689.73
34	33.5490	6508.17	15May2006, 20:35	7933.95
36	16.9760	5418.23	15May2006, 16:55	3891.84
37	1.6080	1307.20	15May2006, 14:00	407.50
41	22.2940	5555.20	15May2006, 19:00	5250.03
42	38.0230	7751.44	15May2006, 15:10	9338.63
43	3.0410	2098.72	15May2006, 15:05	710.70
44	9.7830	4299.80	15May2006, 15:40	2297.65
45	1.8550	1036.74	15May2006, 14:15	508.77
46	5.3790	2915.43	15May2006, 15:45	1250.32
47	11.8230	4620.73	15May2006, 16:15	2721.36
48	13.8540	4983.09	15 M ay2006, 15:25	3168.25
49	15.8030	5237.32	15May2006, 15:55	3610.97
50	1.0750	1010.07	15May2006, 13:05	272.12
51	1.9660	1357.39	15May2006, 13:35	438.58
52	1.5900	1016.73	15May2006, 13:45	364.29
53	0.7480	499.26	15May2006, 13:30	175.34
54	1.4050	884.37	15May2006, 14:10	372.40
55	1.0870	710.35	15May2006, 13:25	234.08
56	0.4500	597.97	15May2006, 12:40	136.37
57	1.4620	876.73	15May2006, 13:40	304.48
58	1.3390	1205.40	15May2006, 12:55	282.27
59	0.6920	583.90	15May2006, 13:05	164.62
60	2.0400	1708.25	15May2006, 13:00	423.71
61	1.9490	2525.41	15May2006, 12:35	442.72
62	1.1730	1004.43	15May2006, 13:10	280.86
63	1.6080	1339.64	15May2006, 13:25	407.50

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
64	0.7540	579.23	15May2006, 13:20	185.62
65	2.9560	5356.38	15May2006, 12:25	819.28
66	2.7790	1506.10	15May2006, 14:10	597.20
67	1.0650	754.56	15May2006, 13:15	231.16
68	2.3040	2222.39	15May2006, 13:10	586.97
69	1.2660	1193.28	15May2006, 13:15	334.72
7	22.2940	5558.13	15May2006, 18:40	5253.97
70	1.3890	1752.19	15May2006, 12:35	322.92
71	0.9090	1114.67	15May2006, 12:55	272.78
72	0.8700	625.12	15May2006, 13:40	223.50
73	0.8430	737.67	15May2006, 13:20	225.51
74	0.3190	310.72	15May2006, 13:20	113.43
75	1.2670	1143.32	15May2006, 13:45	416.95
76	0.4200	823.34	15May2006, 12:30	158.08
77	1.1970	875.49	15May2006, 14:20	380.60
78	1.1010	1194.32	15May2006, 13:20	339.79
79	0.2470	339.33	15May2006, 13:05	106.46
9	38.0230	7766.51	15May2006, 14:50	9344.08
Crum Dam 23	02280.4420	6098.34	15May2006, 19:35	6578.23
Geist 23-079	22.2940	5558.13	15May2006, 18:40	5253.97

Project: Final_Crum_Creek Simulation Run: 100-Future

Start of Run: 15May2006, 00:00 Basin Model: Crum-100-yr FLU

End of Run: 17May2006, 00:05 Meteorologic Model: 100-YR

Compute Time: 22Aug2007, 09:48:30 Control Specifications: Synthetic Storm

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
1	16.9760	5488.07	15May2006, 15:50	3971.74
10	38.2700	7862.63	15May2006, 15:05	9550.67
101	34.6500	6696.59	15May2006, 20:30	8378.87
102	3.3730	2817.17	15May2006, 15:00	1071.10
103	6.4660	3248.46	15May2006, 15:45	1516.20
104	9.7830	4403.48	15May2006, 15:25	2331.00
105	1.0750	1019.25	15May2006, 13:05	273.99
106	1.3390	1215.44	15May2006, 12:55	284.05
11	3.0410	2409.53	15May2006, 13:20	741.13
12	5.3790	3082.24	15May2006, 14:55	1281.53
13	1.8550	1040.97	15May2006, 13:50	508.61
14	3.3170	1882.40	15May2006, 13:45	814.80
15	11.8230	4731.68	15May2006, 15:35	2753.89
16	13.8540	5016.46	15May2006, 14:45	3201.80
17	15.8030	5281.70	15May2006, 15:20	3677.48
18	26.1380	6049.29	15May2006, 18:40	6177.40
19	28.4420	6192.33	15May2006, 19:35	6684.19
20	31.0970	6394.98	15May2006, 19:40	7338.38
21	32.8100	6541.24	15May2006, 19:55	7780.81
22	0.9090	1116.61	15May2006, 12:55	273.18
23	33.1290	6572.11	15May2006, 20:05	7891.26
24	2.1760	2188.99	15May2006, 13:40	690.45
25	33.5490	6607.28	15May2006, 20:10	8046.66
27	26.1380	6048.12	15May2006, 18:55	6174.48
28	28.4420	6190.51	15May2006, 19:50	6679.67

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
29	31.0970	6392.84	15May2006, 20:00	7332.33
3	1.6080	1377.38	15May2006, 13:25	416.68
30	32.8100	6540.23	15May2006, 20:05	7778.22
31	0.9090	1045.63	15May2006, 13:40	273.18
32	33.1290	6571.29	15May2006, 20:10	7888.76
33	2.1760	2034.55	15May2006, 15:05	690.45
34	33.5490	6605.03	15May2006, 20:35	8039.83
36	16.9760	5456.91	15May2006, 16:55	3971.74
37	1.6080	1343.86	15May2006, 14:00	416.68
41	22.2940	5640.74	15May2006, 19:05	5346.25
42	38.0230	7778.57	15May2006, 15:10	9444.50
43	3.0410	2209.43	15May2006, 15:05	741.13
44	9.7830	4392.47	15May2006, 15:40	2331.00
45	1.8550	1036.00	15May2006, 14:15	508.61
46	5.3790	3020.92	15May2006, 15:45	1281.53
47	11.8230	4699.74	15May2006, 16:20	2753.89
48	13.8540	4998.46	15May2006, 15:25	3201.80
49	15.8030	5266.69	15May2006, 15:55	3677.48
50	1.0750	1019.25	15May2006, 13:05	273.99
51	1.9660	1468.27	15May2006, 13:35	467.14
52	1.5900	1020.14	15May2006, 13:45	365.24
53	0.7480	498.56	15May2006, 13:30	175.16
54	1.4050	883.22	15May2006, 14:10	371.99
55	1.0870	712.78	15May2006, 13:25	234.67
56	0.4500	599.51	15May2006, 12:40	136.62
57	1.4620	883.10	15May2006, 13:40	306.19
58	1.3390	1215.44	15May2006, 12:55	284.05
59	0.6920	580.10	15May2006, 13:05	163.87
60	2.0400	1703.97	15May2006, 13:00	422.89
61	1.9490	2759.45	15May2006, 12:35	475.68
62	1.1730	1066.91	15May2006, 13:10	294.26
63	1.6080	1377.38	15May2006, 13:25	416.68

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (AC-FT)
64	0.7540	603.00	15May2006, 13:20	191.00
65	2.9560	5369.18	15May2006, 12:25	821.08
66	2.7790	1514.40	15May2006, 14:10	599.88
67	1.0650	755.02	15May2006, 13:15	231.27
68	2.3040	2253.98	15May2006, 13:10	594.05
69	1.2660	1195.78	15May2006, 13:15	335.27
7	22.2940	5643.57	15May2006, 18:45	5350.19
70	1.3890	1755.85	15May2006, 12:35	323.43
71	0.9090	1116.61	15May2006, 12:55	273.18
72	0.8700	622.08	15May2006, 13:40	222.69
73	0.8430	738.93	15May2006, 13:20	225.80
74	0.3190	309.18	15May2006, 13:20	113.04
75	1.2670	1144.28	15May2006, 13:45	417.28
76	0.4200	822.18	15May2006, 12:30	157.90
77	1.1970	875.60	15May2006, 14:20	380.65
78	1.1010	1190.98	15May2006, 13:20	339.04
79	0.2470	338.00	15May2006, 13:05	106.17
9	38.0230	7792.28	15May2006, 14:50	9449.97
Crum Dam 23	022804420	6192.33	15May2006, 19:35	6684.19
Geist 23-079	22.2940	5643.57	15May2006, 18:45	5350.19

C. OBSTRUCTION CAPACITY SUMMARY FORMS (FORM B)

Machine Mach	Completed by: Checked by: Date(s):	Completed by: sdb Checked by: Date(s):			Ĺ	248	3722/2006		Γ	E E E E	T= Amount of fill D= Diameter HT = Height W = Width	Eបបស់	msty = Stone Masonty Structure. CRP = Corrugated Metal Pipe. CPP = Corrugated Polyethylene Pipe. CRCMP = Bitumineus Coated Corrugated Metal Pipe.	
Control Anderson Case 1 <							1	Shape (Y)		Moasuren	sonts			
Particular 18	Map ID.	Owner or Address	Capacity	Area		Part of Culvert	Culve	art Bride				Kew		
Professionary 2,50 1 1 1 1 1 1 1 1 1	# 100000	of Obstruction	Crs)	30.11		Bridger rumose	<u> </u>		£ ;			000	MSRYHWWW	
Control Colores (Application Processes) State State Colores (Application Processes) State Colores (App	RIDOTO	Fairview AV	653	52	-		×		2.0	ļ	1.2	90.0	Concrete/HW,WW	1 pier
Publication Fig. 1	WILDOS	Deven RD/Warren av	211	24	-		×		2.5			90.0	MSRY/HW	
Windering St. 1 St. 1 St. 2	WILDOS	Abby RD	85	18	-		×		0.3			90.0	MSRY/HW,WW	
Professional Part	WIL017	Warren av	245	9	-		×		0.7			0.06	MSRY/HW/WW	
Proceeding Conference 15	W1L024	Remington RD	285	30	-		×		3.0			0.06	MSRY/HW/WW	
Proceeding Coloner, 131 71 71 71 72 72 72 72 7	WIL048	Hillview RD	18	9			×		1.3			90.0	MSRY	Water deeper than top of cuivert
Markelene RD 364 24 2 2 2 2 2 2 2 2	WILDES	6-8-10 Barr RD Culvert	133	17			×		2.0			90.0	MSRY	Very Clogged
Proceeded Formation Control	EAS010	White Horse RD	364	24	c,		×		1.5			0.08	Concrete/HW/WW	2 Culverts, See Diagram
Promotive Region Region	EAS019	Fox Greek Farm Field culver	10	ь	-		×		0.1			0.06	MSRY/SW	
Principle 431 54 54 54 54 54 54 54 5	VPR003	Rose Valley RD/Dicks Run	513	73			×		1.0			0.06	Congrete/HW/WW	
Provide Michaelpa St. 1	VPR008	Avondale	433	93	+		×		2.0	_		90.0	Concrete	Washington and the second seco
Principle Late Clear Charmer 845 1 1 1 1 1 1 1 1 1	RID021	646 Michigan St	358	4	٠-		×		2.0			90.0	Concrete	
Purple Ridge RO RR claimer 845 45 1 1 1 1 1 1 1 1 1	9WA009	Harvard Lane / Little Crum	607	80	-		×		1.5			45.0	Concrete/ HW, WW	
Final Mai RD 145 145 14 15 15 15 15	NPRO33	Pine Ridge RD RR culvert	842	45	-		×		13.0			80.0	Concrete / HW,WW	***************************************
RT 200 Calent 155 15 1 1 1 1 1 1 1	NPR034	Plush Will RD	189	23	-		×		2.0			90.06	Concrete / HW,WW	
Prize Coloment Fune 166 24 1 7 7 7 7 7 7 7 7 7	SPR004	RT 420 Culvert	195	16	-		×		2.0	_		0.06	Concrete/ HW, WW	See Diagram
Fig. 20 Cubert Fig. 3 Fig. 4 Fi	800848	8T420 Culvert / Funeral Home	186	24	-		×		2.0			90.06	Concrete / WW	
Rose Tree Videols Smirn Library 1182 149 1 1 1 1 1 1 1 1 1	SPR010	RT 420 Culvert	645	2	-		×		2.0	-		90.06	Concrete/HW,SW	***************************************
Comm. Callege Divine Clabbe	SPR012	RT 420 S Culvert	17.5	16	-		×		4.0			90.0	Concrete/HW.WW	
Comm. Calege Whileway 2	MARG04	Rose Tree Woods Swim Club	1,192	140	-		×		1.5			70.0	Concrete	
Comm College Well-way 2 28	MAR009	Comm. College Drive	411	48	-		×		2.0	\dashv		0.08	Concrete/SW	Channel is pond
Cade Hermational Old Mapple RO 356 24 1 1 1 1 1 2 5 5 5 5 5 5 5 5 5	MAR012	Comm. College Walkway 2	299	56	1		×		4.5			0.08	Concrete/ HW,SW	
Troop Firm Rg gH 322 1,935 80 1 X X X X X X X X X	MAR022	GAP International/ Old Maple RD	356	24	1		×		8.0			90.0	Concrete/HW/	Picture
Principort	VEVVO33	Tropo Farm Rd off 252	1.095	80	1		×		6.5			20.0	Concrete/HW,WW	
RR Bridge (Mouth) 33,654 1 X A 6 132 175 6 900 Concrete RR Bridge (Mouth) 23,365 1,792 1 X 4 140 120 50 900 Concrete RR Bridge 2 (Mouth) 15,346 1,413 1 X A 4 150 900 Concrete Lilecycle Engineering 3,534 40 1 X A 6 6 900 Concrete Grubb ROS 303 40 1 X A 6 6 6 Concrete Grubb ROS 304 1 X A 1 X A 1 A A A 6 6 Concrete Grubb ROS 304 40 1 X A 1 A A 1 A A A 1 A A A 1 A A A A B B	25	PennDOT	4,146	125	2	×					2.0	20.02	Concrete	See Sketch A1
RR Bridge 2 (Mouth) 23,565 1,792 1 X 4,0 1 4,0 60,0 Concrete Lifecycle Engineering 35,56 1,413 1 X 4 4,5 1,5 9,0 9,0 Concrete Lifecycle Engineering 35,50 304 1 X 4 6 9,0 9,0 MSRYHWU Grubb RD S 303 40 1 X 4 6 9,0 9,0 MSRYHWU Grubb RD S 303 1,0 1 X 1 X 1,0 0 0 9,0 MSRYHWU Grubb RD W 1,50 1,0 1 X 0 0 0 0 0 0 MSRYHWU Device Rough RD W 1,50 1 X 0	RIDOO1	RR Bridge (Mouth)	33,654	2,264	-	×					5.0	90.0	Concrete	2 Piers, Diagram
First production	RID002	RR Bridge 2 (Mouth)	23,365	1,792	-	×					5.0	90.0	Concrete	2 piers
Lifecycle Engineering 3,627 304 1 X X X 15 10 10 10 10 10 10 10	RID003	RT 291 (Mouth)	19,348	1,413	1	×					3.0	90.0	Concrete	î pier
Grubb RO,S 40 1 X <th< td=""><td>RID004</td><td>Lifecycle Engineering</td><td>3,692</td><td>304</td><td>1</td><td>×</td><td></td><td></td><td></td><td></td><td></td><td>0.08</td><td>MSRY</td><td>Building on Bridge</td></th<>	RID004	Lifecycle Engineering	3,692	304	1	×						0.08	MSRY	Building on Bridge
Gruub RD.N 459 32 1 X 04 0 4 6 60 MSRYIHWITZWW B. G. Lugsbraam from MIL13 66 13 1 X 0 X 0 5 5 9 MSRYIHW Devision Teach In Mills of Search From Will S	WILO10	Grubb RD S	303	40	-	×			-	-		90.0	MSRYHW	
30 ft ugstraam from/MI 13 66 13 1 x 03 x 03 35 35 35 36 90 MSRYIHW Durvevery 10° down From Vall 24 155 18 1 x 23 1 5 5 5 5 5 5 5 90 MSRYIHW Univerently 10° down From Vall 24 1,564 128 12 x 1 x 1 x 2 5 2.5 2.0 90.0 MSRYIHW Hillstew RD 1,564 255 1 x x 2 5 2.0 90.0 MSRYIHW Uniffy RUP Sun Familia 1,564 256 1 x x x 2 5 2.0 90.0 Concrete/HVW Uniffy RUP Sun Familia 1,323 1 x x x x x x x x x x x x x x x x x x x	WIL011	Grubb RD N	199	32	-	×			_	-		90.0	MSRY/HW 1/2WW	
Divisional pix 155 18 1 1 1 1 1 1 1 1	WILDIS	30 ft upstream fromWIL13	99	13	-	×			\neg			90.0	MSRYIHW	Small footbridge
Diversity 100 Gown From Vall 24 584 56 1 7 1 7 1 8 1 8 1 8 1 8 1 8 1 8 1 8 1 8 1 8 1 8 1 8 1 8 1 8 1 8 1 8 1 8 1 8 9	WIL014	Paoji pk	155	18	-	×			-			90.0	MSRY/HW	
Warrier Ave South 1,200 127 1 x x 25 2.5 2.0 9.0 9.0 Concrete Hillyfave ND 1,538 259 1 x 0 x 0.0 9.0 9.0 MSRY Douls RD 1,364 285 1 x 0 x 0 9.0 9.0 MSRY Whilehors RD 1,354 22 1 x 0 x 1 x 0 x 0 9.0 Concrete/MW Whilehors RD 1,323 140 x x 0 x 1 x 0 x 0 0 0 9.0 Concrete/HW/W Grubb MIII RO 520 60 x </td <td>WIL034</td> <td>Driveway 100' down from WIL34</td> <td>384</td> <td>S</td> <td>1</td> <td>×</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>90.0</td> <td>MSRYWW</td> <td></td>	WIL034	Driveway 100' down from WIL34	384	S	1	×						90.0	MSRYWW	
Hill/rick RD 1,554 259 1 X 0 0 37.0 2.0 9.0 MSRY Dufflyin Run Farm 215 285 1 X 0 7 0.0 9.0 9.0 Concrete/MW Whilehouse RD 1,323 140 1 X 1 X 1 2 9.0 Whilehouse RD Grubb MIII/Mahitehorse 6 1,323 140 1 X 1 X 1 0 9.0 Concrete(HW)W Grubb MIII/Mahitehorse 2,223 400 1 X 1 X 9.0 MSRY/SW Grubb MIII/Mahitehorse 2,223 400 1 X 1 X 9.0 400 400 MSRY/SW Grubb MIII/Mahitehorse 2,223 400 1 X 0 1 50 9.0 Concrete/HW/W Grubb MIII/Mahitehorse 2,223 400 1 X 0 1 0 0 0	WIL041	Warren Ave South	1,200	127	-	×			-	-		90.0	Concrete	
Dufflyin Run Farm 215 22 1 X 0 9 9 90.0 Concrete/MW Whitehouse RD 1,323 140 1 X 1 4 6 90 90 Whood Grubb MIII RD 520 140 1 X 7 4 5 90 90 Wood Grubb MIII RD 520 60 1 X 1 X 1 5 90 MSRY/SW Grubb MIII RD 520 400 1 X 0 1 5 90 MSRY/SW Grubb MIII RD 520 400 1 X 0 1 5 90 MSRY/SW Grubb MIII RD 520 400 1 X 0 1 0	WIL047	Hälview RD	1,638	259	-	×					2.0	90.06	MSRY	1 pier
Dufflyn Run Farm 215 32 1 X 10 X 10 40 8.0 90.0 Wood WANIERDIAGE ROD 1,323 140 1 X 7 4,5 310 2.0 90.0 ConcreteHWWW Grubb MIII/Whitehorse 520 60 1 X 1 X 1 X 9.0 MSRY/S/W Grubb MIII/Whitehorse 2,828 400 1 X 0 1 400 400 500 ConcreteHWWW 6.6.10 Barr RD Bridge 900 138 1 X 0 1 0	WILDS3	Oavis RD	1,964	285	+-	×						90.0	Concrete/WW	
WANDER-DIATE ROUSE RIO 1,323 140 1 X 27 4,5 310 20 900 Concrete/HWVW GLUDD MIII ROUS 520 60 1 X 1 X 15 80 900 MSRY/S/W GLUDD MIII WARRIEGIONS 2,828 400 1 X 0 10 400 400 500 Concrete/HW/WW G.S.10 Barr RD Bridge 900 138 1 X 0 X 0 50 500 Concrete	WILOS8	Duffryn Run Farm	215	32	-	×			-			90.0	Wood	
Grubb Mill RD 520 60 1 X 15 75 8.0 90.0 Grubb Mill/Whiteforse 2,828 400 1 X 0.0 10.0 4.0 9.0 6.6.10 Barr RD Bridge 900 138 1 X 0 5.0 5.0 5.0 9.0	WIL060	Whitehorse RD	1,323	140	1	×				-4	2.0	90.0	Concrete/HW/WW	1 pier
Grubb MII/VARiletorse 2,828 400 1 X 0,0 10,0 40,0 90,0 6.6-1/0 Barr RD Bridge 900 138 1 X 0 5 6,0 23.0 80.0	WIL062	Grubb Mill RD	520	09		×			-	1		0.06	MSRY/SW	
6-8-10 Bain RD Bridge 990 138 1 X N 05 6.0 23.0 90.0	WIL063	Grubb Mill/Whitehorse	2,828	400	-	×			\dashv			0.08	Concrete/ HW, WW	
	WILDEG	6-8-10 Barr RD Bridge	900	138		×	$\frac{1}{1}$	1	-+			90.0	Concrete	

	_		•	
;				
5				

Watershed: Completed by: S Checked by:	qps	Orum Greek	¥			3/22/2006		Box Culverts Calculation Sheet	n Sheet	T= Amo D= Dian HT = He	T= Amount of fill msry = D= Diameter CMP = HT = Height CPP =	msry = Stone Masonry Structure CMP = Corrugated Metal Pipo CPP = Corrugated Polyethylone Pipo	
Ì				£		Opening	ine		Γ	Wa Wi	or Width (if app	BCCMP = Bituminous Coated Corrugated Metal Pip (Icable)	
					Туре		Shape (V	Ω		Σ	SJL.		
Map 10.	Owner or Address	Capacity	Area (SO ET)	\$ 5	Part of Culver Bridge? Primos	Culvert	Culvert 10 O	Bridge	Q ₽	M (E)	PW skew	- material	NoTES
EAS009	7 Farm, White Horse RD	310	40	-	×			×		4.0 10.0		MSRY/HW	
EAS020	Fox Creek Farm Bridge	205	36	٠-	×			×	0.5	4.0 9.0	0.06	MSRY, Wood/HW	
WIL073	Goshen RD County Line	6,026	488	-	×	-		×	4.5	8.0 61.0	90.0	Concrete/WW	
W1L074	Goshen RD covered bridge	6,026	488	-	×			×	4.5	8.0 61.0	90.0	Wood	
NEW005	Crum Creek RD	704	98	-	×			×	1.0	6.1 15.5	90.06	Concrete/WW	
NEW006	Crum Creek RD Private Bridge	294	48	-	×			×	0.7	4.0 12.0	0.06	Wood	
NEW012	Echo Valley Ln/Private Bridge	99	12	-	×			×	8.0	2.0 6.0	0.06	Wood	Estimate, could only get close to bridge
NEW026	Gradyville/Hunter Run	807	88					×	2.0	7.0 12.5	0.06	Concrete/WWV	
NEW027	Giest Res/Gradyville RD	21,087	1,540	F	×			×	3.5	20.0 77.0	90.0	Concrete	*HT estimated (Water depth unkown)
NEW028	Giest Res/Biship Hollow RD	17,986	1,350		×			×	3.5	18.0 75.0	90.0	Concrete/WW	
NPR001	Rose Valley RD	21,706	1,716	1	×			×	4.0	12.0 143.0	4.0 90.0	concrete	See Diagram
NPR002	Rose Valley RD/Dicks Run	904	108	1	×		_	×	1.0	9.0 12.0	90.0	Concrete	
NPRO05	Dicks Run under tumpike	2,180	294	٠-	×			×	0.8	7.0 42.0	30.0	Wood/Metal	
NPR007	Dicks Ruo under turneike	285	25	-	×			×	0.8	2.5 20.0	0.06	WoodMetal	
NPRONG	Avondale & Copples	290	99	-	×			×	2.0	6.5 10.0	90.0	Concrete/WW	
NPB010	Avondale	059	130	-	×			×	0.2	4.0 32.5	0.06	Wood	
NDOOL	alebrand	322	87	-	×			×	1.0	4.0 12.0	90.0	Concrete	
Crocon	247 Superposite	250	2		, ,		_	×	╫		0.06	Concrete	
Z COUCH	Signature of ChC	273	5 5	-	. >	-	-	*		₩	0.08	Concrete	
\$ FOUND	Sign Co.	ì	3 6	١.	,		_	* *	┢	-	45.0	Concrete	
NPR014	Aconoale & Oak Khob	9,6	9 8	- •	,			* >	+	╁	9	Concrete	
SHAGO	Klatey Park Pond	0	8		,			,	╁		Š	Consession Office	
RID012	Bullens Ln	4,605	Ş	-	× ;	-	1	< ,		3.0 00 C	2 8	Contrate	
RID013	Crum Creek Dr. Park	17,974	3,369	-	*		+		+-		0.00	2000	
RID015	Haverford & MacDade	1,863	184		×	+	-	× ;	+		0.0/	Concelle	
RID016	MacDade	906	135		×		+	×	+	+-	90.0	Consider	
RID017	Michigan St	984	88	-	×	-	+	×	+		0.08	Concrete	
RID018	Michigan St	582	35	-	×		-	×	-+	+	0.06	Wood	
RID019	Michigan St	169	31	-	×	+	_	×	0.5	3.3 9.5	0.06	λοοά	
RID020	307 Michigan St	182	33	<u>,-</u>	×		+	×	0.5	3.5 9.5	90.0	Моод	
RID022	Near 646 Michigan St	35	18	-	×		-	×	0.5	3.0 6.0	90.0	Wood	
RID023	Near 646 Michigan St	186	32	-	×			×	0.7	3.5 9.0	0.06	Weed	
SWA004	College Ave	196	27	ν	×			×	1.5	3.0 9.0	0.06	MSRY	
SWA005	Benjamine West rd	268	32	-	×			×	2.0	4.0 8.0	90'06	MSRY	
SWA007	Dartmouth Ave	256	27	-	×			×	3.0	3.0 9.0	0.06	MSRY/HW	
SWA008	Amhert Ave / Little Crum	330	38	-	×			×		4.2 9.0	90.0	MSRY	
SWA010	Yale Lane / Little Crum	608	56		×			×	10	9.5 10.0	80.0	Concrete/ SW, HW	
SWA011	Yale Lane Park / Little Grum	999	113	-	×			×	9.0	4.5 25.0	90.0	Steel, Wood	
NPR037	Dicks Run private bridge	736	45	-	×			×	0.5	3.0 15.0	90.0	Wood	
NPR038	Circle off Avondale Near RB Tracks	671	100	-	×			×	1.0	4.0 25.0	90.0	Wood	
NPR041	Plush Mill Rd over crum	6,947	603	-	×			×	3.5	9.0 67.0	0.06	Concrete	
NPR015	Crum Creek Rd / Oak Valley Rd	261	36	-	×			×	1.5	3.0 12.0	0.08	Concrete / HW/WW	
NPR022	Beatty Rd over Crum	12,021	850	-	×			×	6.0	10.0 85.0	90.0	Concrete/HW	
NPR029	Beechwood RD / Pine Ridge	254	65		×		_	×	0.3	3.8 13.0	0'06	Wood	
NPR031	606 Pine Ridge RD	182	24	_	×			×	1.5	4.0 6.0	0.00	Concrete	Sounds like sewage discharge

Estimate, could only get close to bridge NOTES Water Depth Estimated Te Amount of fill mary = Stone Masonry Structure
De Diameter CMF accompased Metal File
W = Width CPP = Corrugated Polyethyene Pipe
W = Width SCAMP = Bituminous Coated Corrugated Metal Pipe
Mosurements
Mosurements Concrete/HW,WW Concrete/HW,SW Concrete/HW,WW Concrete/HW,WW Concrete/HW,WW Concrete/HW,WW MSRY/HW.WW MSRY/HW/WW MSRY / HW Concrete Concrete Concrete Concrete Concrete MSRY Wood Wood Wood 90.0 90.0 90.0 0.06 45.0 90.0 90.0 90.0 90.0 45.0 90.0 0.06 70.0 90.0 90.0 90.0 90.0 90.0 90.0 0.06 0.06 900 (ff) (ff) (ff) (ff) (ff) 14.0 349.0 3.0 6.0 33.0 4.5 5.0 30.0 10.0 4.0 3.0 6.5 22.0 4.0 19.5 7.0 19.0 12.0 21.0 4.0 10.0 8.0 5.5 10.0 7.5 15.0 22.0 4.5 8.0 10.0 70.0 10.0 6.0 20.0 28.0 90.0 5.0 5.5 4.0 2.3 5.3 20 3.0 4.0 4.5 2.0 1.0 12.0 x 3.0 2.3 Box Culverts Calculation Sheet 1.0 1.0 9.0 10.0 1.5 7.0 0.9 X 3.0 03 0.7 7.0 X 1.0 1.5 3/22/2006 8 × × Nos. of? 4,886 120 2,520 150 198 42 133 55 98 43 22 7.8 252 દ \$ 700 23 23 Crum Creek Capacity (CFS) 72,471 1,122 2,835 44,726 2,323 1,084 1.030 995 7,826 1,837 523 829 355 1,640 299 355 100 380 7 50 63 110 Crum Creek Rd over Grum Creek RT420 sidewalk / Funeral Home Crum Creek Rd / Rose Tree Rd Crum Creek Rd/Spring Valley Troop Farm Rd/Hunter Run 606 Pine Ridge RD yard bridge Dicks Run South of Plush Mill Backyard Bridge off Farnum Paxon Hollow / Trout Run RR Bridge off Thompson 433 Kerr RD Yard Bridge Paxon Hollow over Crum Sidewalk 525 RT 420 RT 420 / Dairy Cottage Park Near Turnpike State Rd over Crum Owner or Address of Obstruction RT 420 S Sidewalk RR Tracks off 320 2 Thompson Rd Palmer Mill RD RT420 Sidewalk Thempson Rd gps Watershed: Completed by: Checked by: Date(s): MAR013 MAR015 MAR020 NPR035 SPR007 SPR009 SPR013 SPR015 SPR016 SPR018 UPR008 UPR010 MAR021 NEW034 Map 1D. SPR003 SPR011 SPR014 SPR019 UPR017 NPR032 SPR006 UPR011

1.0

×

23

NEW036 Gradyville Rd / Bishop Hollow Rd

Watershed: Completed by: Checked by: Date(s): NOTE: Different	sdb 3/22/2006 i parameters assigned to Cl	WP and RCP cu	oulverts in c	capacity					E C M	T= Amount of fill. D= Diameter HT = Height W = Width PW = Pier Width	T= Amount of fill C D= Dameter C HT = Height C W = Width PW = Pier Width (if applicable)	msr CMI CPF 8CC 8CC	msy = Stone Masony Structure CMP - Corrugated Metal Price CPP - Corrugated Polyethylene Pipe BCCMP = Bituminous Coated Corrugated Metal Pipe (a)	
			30.00	Туре	Sha	nape (<)	Measu	Measurements		l			2000年的1月1日 · 1000年 ·	
Map ID.	Owner or Address	Capacity	Area en	Nos. Part of Culvert	ert Culv	ulvert Bridge	F (#)	ე €	¥ €	ā. 8	PW skew		material	Notes
SPB004	ţ	:	:			×	2.0		1		<u> </u>		Concrete/ HW. WW	See Diagram
FAS008	Toad Hall	*	0.50	2		×	2.0	0.8			5	90.06	RCP/HW,WW	2 Pipes, see diagram
EAS011	2490 White Horse RD	147	7.07	2		×	3.3				ŏ	0.06	RCP/HW	See Diagram
NEW023	491 Bishop Hollow	06	4.91	2		×	2.5	5 2.5			σ	90.0	SP/HW	See Diagram
NPR028	701 Beechwood RD	75	3.14	2		×	5.0	0.7			க	90.0	RCP/HW,SW	See Diagram
11PR014	Dog Kennel RD	20	4.91	2		×	0.2	2.5			7	70.0	RCP	See Diagram for UPP013
MARGOE	Cedar Grove Rd	376	19.63	2		×	2.0	5.0			4	45.0	RCP/HW	
SWADD6	racks downstream from SW	1179	17.35	e		×	18.0	0 4.7			ō	90.0	BCCMP/SP/RCP	See Diagram
UPR021	Crum Creek Rd near RT 1	61	3.14	8		×	1.0	0 2.0			6	90.06	Concrete/HW	See Diagram
5	Inkowa	38	3.14	-		×	5.0	0 2.0	•		-	0.0	CMP	Bottom corroded
EASO04	Supartown RD		0.35	-	-	×	2.0	\vdash			6	0.06	MSRY	Small inlet/large outlet
			1		-	,	00,	┢			ď	000	WHICK	
TRE002	Walter st	199	28.27			< ×	0.0	+			, 6	90.06	RCP/HW,SW	
140.004	al access ABC vocacdacosis	27.0	10.62	_		×	9	-			6	0.06	RCP/HW/WW	Clogged
VALUE OF	Cisemiowei Oroveiiloi iii	3,7	12.57			× ×	1.0	\vdash			6	90.0	RCP/HW, 1/2 WW	
COOTIAN.	Committee On	2 6	12.57			X	1.0	ļ			6	0.06	CMP	
VAIL OUR	Devos RD Mayor School	188	19.63	-		×	2.0				6	0.06	RCP/HW.WW	
1441.018	Eisachower PD #2	126	19.63		<u> </u>	×	0.0	0.5			6	90.06	RCP	
VAII 019	EisenhowerRD #4	126	19.63			×	0.0	H			9	0.08	RCP	
1MI 022	Stone hende I age South	192	15.90	-		×	4.3	3 4.5			· 6	90.0	RCP/HW,WW	
WII 023	6 Salisbury Lane	95	9,62	-		×	2.5	-			65	90.0	RCP/HW,WW	
WI.028	Spring RD	02	7.07	-		×	2.8	3.0			67	0.06	CMP	
WILOSO	Laurel Cirice (small pipe)	52	7.07	+		×	1.5	3.0			°	90.0	CMP	overflow pipe
WIL031	aurel Circle upper (small pip	8	7.07	-		×	0,1	3.0			6	90.0	CMP	overflow pipe
WILO38	Pond across from Potters	13	3.14	1		×	0.0	0 2.0			-	0.06	RCP	Overflow waiting to happen
W1.044	9 Hunt Club Ln	23	3,14	1		×	1.5	5 2.0		1	7	100.0	BCCMP	
WILDSO	730 Hillview RD	23	3.14	τ-		×	1.5	5 2.0			6	0.06	dS	
WIL054	Davis RD	12	3.14	-		×	1.0	0 2.0			6	90.0	CMP	
WILDS6	13 Brooke Ln	33	4.91	1		×	1.0	0 2.5	10			0.06	RCP	
WIL059	Grubb Mit	50	7.07	-		×	1.0	0 3.0			5	0.06	CMP	
WI 061	790 Grubb Mill RD	30	3.14	1		×	2.8	8 2.0			8	80.0	CMP	
WILDER	White Horse RD	12	1.77	-		×	1.4	4 1.5	_			90.0	сре	
FAS014	Buttonwood RD	-	0.20	-		×	1.0	0 0.5			0,	90.0	CMP/HW,WW	
EAS015	Fox RD	96	12.57	-		×	1,0	0 4.0			ω	85.0	RCP/HW,WW	
EAS016	Donate drive off Minite Horse	90	2	-		×	9'0	6 2.5	10			90.0	RCP/SW	Pond spills into pipe
FAS018	2430 White Horse	17	3.14			×	0.5		_			90.0	BCCMP	Vertical inlet in small pond
			-											

	1/22/2006	OTF. Billion of a second conference of the Call and OCD authority.
	3/22/2006	the state of the s
Checked by:	Date(s):	ATP. Differen

Checked by: Date(s): NOTE: Different	Discounty 197. United by 3/22/2006 NOTE: Different parameters assigned to CMP and RCP culverts in capacity	:MP and RCP	culverts in	capacity	A CONTRACTOR OF THE CONTRACTOR		HT = Height W = Width	v w ¹	CMP = Corrugated Metal Pipe CPP = Corrugated Polyethylene Pipe BCCMP = Bituminous Coated Corrugated Metal Pipe	8
100	A A C. M. A. A. A. C. M. A.		1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Туре	Shape (<)	Measurements	PVV = Prer vvidth (it applicable)	applicable		
Map ID.	Owner or Address	Capacity	Area	Nos. Part of Culvert	Culvert Bridge	G T G	HT W PW	skew	material	Nores
WI 070	6075 White Horse RD	4	1.13		×	0.0	2	0	CPP	No Channel
WIL071	Marlborough RD	22	3.14		×	1.2 2.0	0	0.06	BCCMP/SW	
WIL072	Goshen RD	115	12.57	* -	×	2.0 4.0	0	0.06	RCP/HW/WW	
WILO75	Goshen RD	52	5.31	1-1	×	2.8 2.6	9	90.0	CMP	work being done on inlet side
NEW001	Horse Farm off Goshen	6	1.77	-	×	0.6	S	90.0	CMP/ww,Hw	
NEW002	Boot RD N Bridge	160	19,63	-	×	1.0 5.0	0	90.0	MSRY	Lewis Run
NEW003	Boot RD S	347	28.27	1	×	4,0 6.0	0	0.06	RCP/HW	
NEW004	Goshen RD/Lewis Run	128	15.90	-	×	1.1 4.5	2	0.06	RCP/HW, 1/2WW	
NEW007	Pheasant Lane	37	4.91		×	1,4 2.	2.5	0.06	RCP/HW	
NEWO11	Echo Valley Ln/Meadow Ln		3.14	-	×	2.5 2.	2.0	90.0	RCP/HW/WW	No Channel, Underground water source
NEW013	331 Echo Valley Ln		1.77	-	×	3.0 1.	1.5	90.0	CMP	
NEW014	Goshen RD	21	3.14		×		2.0	90.0	BCCMP/HW	
NEW015	Pine St	28	3,14	-	×	2.5 2.	2.0	90.0	RCP/HW	
NEW016	Main St/Summit	108	8.55	-	×	5.3 3.	3.3	90.0	RCР/HW	
NFW017	Summit En	32	3,14	-	×	3.2 2.	2.0	90.0	BCCMP/HW	
NEW018	Summit/Chestnut	122	8,55	-	×	7.0 3.	3.3	80.0	RCP/HW	
NEW019	Hickory Ln	20	3.14	1	×	1.0 2.	2.0	0.06	RCP/HW	
NEW020	Private RD off Bishop Hollov		1.77	1	×	2.0 1.	1.5	90.06	CMP/HW	
NEW021	Williamson House off Bishop		1.77	1	×	4.5	1.5	90.0	RCP/HW	
NEW022	481 Bishop Hollow	87	12.57	1	×	0.6	4.0	90.0	RCP/HW	
NEW024	541 Bishop Hollow	38	4.91	1	×	1.5 2.	2.5	90.0	CMP/HW	
NEW025	Gradyville/Bishop Hollow		12.57	-	×	1.0	4.0	60.0	BCCMP/HW,1/2WW	
UPR001	Providence RD/Pineville Dr	r 43	4.91	Ţ	×	2.3 2.	2.5	90.0	RCP/HW	GPS NEW27
UPR002	Wilton Wooods RD		12.57	7-	×	1.5	4.0	0.06	RCP/HW,WW	GPS NEW28
UPR003	115 Wilton Woods	125	12.57	-	×	2.5	4.0	90.0	CMP	GPS NEW29, Driveway
UPR004	111 Wilton Woods	125	12.57	-	×	2.5 4	4,0	90.0	OMP	GPS NEW30. Dríveway
UPR005	Providence/Bishap Hollow		1.77	1	×	3.0	1.5	90.0	WHMS	GPS NEW31
UPR006	Horseshoe Ln	Ì	9.62	-	×	5.0 3.	3.5	0.08	CMP	GPS NEW32, Intet severty clogged
SWA003	Chesterrd	10	2.54	-	×	0.0	1.8	90.0	ROP	
NPR016	423 Oak Valley RD	164	23.76		×	0.1 5	5.5	90.0	вссмени	Driveway Bridge
NPR017	421 Oak Valley RD	164	23.76		×	0.1	5.5	90.06	BCCMP/HW	Driveway Bridge
NPR018	419 Oak Valley RD	164	23.76	-	×	0.1	5.5	90.0	BCCMP/HW	Driveway Bridge
NPR019	417 Oak Valley RD	164	23.76	-	×	0.1 5	5.5	90.0	BCCMP/HW	Driveway Bridge
NPR020	415 Oak Valley RD	201	23.76	-	×	1.0 5	5.5	90.0	BCCMP/HW	Driveway Bridge
NPR021	413 Oak Valley RD	193	23.76	-	×	0.8	5.5	0.08	BCCMP/HW	Driveway Bridge
NPR023	501 Beatty RD	4	4.91	-	×	2.0 2	2.5	90.0	RCP/HW,WW	No Channel
NPR024	505 Beatty RD	33	4.91	-	×	1.0	2.5	90.0	RCP/HW.WW	
					_	-	-			_

Watershed:
Completed by: sdb
Checked by: 3/22/2006
Date(s): 3/22/2006
NOTE: Different parameters as

<u>सं</u> के सु	dbs	Crum Creek	¥			Circular I	Circular Culverts Calculation Sheet	ulation Sheet	T= Amount or D= Diameter	T= Amount of fill. D= Diameter		msry = Stone Masonry Structure CMP = Corrugated Metal Pipe CPP = Corrugated Poletiviene Pipe	
NOTE: Different	Date(s). State(2006) NOTE: Different parameters assigned to CMP and RCP culverts in capacity	MP and RCF	culverts in	capac	ity			-	W=W	看	W = Width	BCCMP = Bituminous Coated Corrugated Metal Pipe	
					Opening	3, 10,			1	ler vyion	T (II applicati		
					Type	Shape (<)		Measurements	-				
Mac (D		21	Area	ş	Part of Culvert	Culvert	Bridge	T D	HT W	ΡW	1.1		NOTES
**	of Obstruction	(CFS)	(SQ. FT)	ć	of? Bridge 7 Purpose	。 []		(ft) (ft)	(u)	€	angle	material of the transfer of the second of the second	
NPR026	d RD	106	12.57	-		×		1.5 4.0			90.0	RCP/HW	
NPR027	704 Beechwood RD	169	19.63	-		×		1.3 5.0	٠ ا		90.0	RCP/HW,SW	
NPR036	Dicks Run Near RR Tracks	L.	70.7	-		×		1.8 3.0) (90.0	Concrete / HW,WW/	
20000	04:0	Ľ	15.00	7		>		-			006	CMP/HW	
SPRUD	Country Cities On	296	19.63			×		†		_	0.06	RCP/HW	
SPROOS	433 Kerr RD	174	15.90	,		×		T	2		90.0	RCP/HW.SW	
SPR031	Paner Mill RD Culved	7.5	7.07			×		3.5 3.0) [90.0	RCP	
MADOR	Oavon Hallow	433	12.57	-		×		3.0 4.0			80.0	BCCMP/HW,WW	
UPRO12	ite Hollow Rd / Dog Kennel		7.07	-		×		2.0 3.0) [90.0	RCP/HW	
UPR013	Dog Kennel RD	<u> </u>	7.07	-		×		1.3 3.0	C		70.0	RCP/HW	
UPR015	Dog Kennel RD	99	7.07	-		×		2.5 3.0	6		90.0	RCP/HW	
UPR016	Famum RD	29	7.07	Ψ.		×		2.5 3.0	0		90.0	BCCMP/HW,SW	
1198018	Meetinghouse La	35	7.07	-		×		4.5 3.0	C		90.0	CMP/HW/WW	
UPR020	Crum Creek Rd duck pond		1.77			×		1,2 1.5	5		90.08	СРР/НW	
MAR003	Parkview Dr	L	38,48	-		×		4.0 7.0	0		90.0	RCP/HW,WW	
MAR007	Cedar Grove Rd W	79	7.07	-		×		4.0 3.0	0	_	90.0	RCP/HW	
MAROOS	r Grove Rd / Old Cedar Gro		4.91	-		×		2.0 2.5	2		90.0	CMP / HW	Very Corroded
MAR010	Comm. College Top		4.91			×		3.5 2.5	2		90.0	RCP/HW/WW	
MAR011	Comm. College Walkway	34	3.14	+		×		4.0 2.0	0	-	90.06	RCP	
MAR014	1024 Palmer Mill RD	161	12.57	-		×		5.0 4.	4.0	-	90.0	CMP/HW,SW	Very Corroded
MAR016	Paxon Hollow Rd	62	70.7	1		×		2.0 3.0	0	-	90.0	CMP/HW	
MAR017	inchester Rd near Paxon Hi	106	70.7	-		×		8.0 3.0	0	-	90.0	RCP/HW	
MAR018	pring Valley Rd off Crum Cr	185	12.57	-		×		7.0 4.0	0		90.0	CMPIHW,WW	
MAR019	pring Valley Rd off Crum Cr	164	12.57	-		×		5.2 4.	4.0	-	90.0	CMP/HW,WW	
MAR024	Old Maple Rd near quarry	126	19.63	7		×		0.0	5.0	-	90.0	RCP/HW,WW	
MAR025	Old Maple Rd	306	19.63	-		×		8.0 5.0	0	-	90.0	RCP/HW,WW	
NEW030	Off Rt 252	47	6.16			×		1,4 2.8	8	-	90.0	SP/HW,1/2 ww	
NEW032	Rt 252 / Hunter Run	62	7.07	-		×		2.0 3.	3.0	4	30.0	CMP/HW	
NEW035	Camelot Ln off 252	21	1.77			×		4.8	1,5		90.0	CMP/HW;WW	
NEW037	Sunnise Assisted Living	11	0.79			×		8.0 1.	1.0	1	0.06	RCPJHW	
WIL027	Driveway off Sugartown RD	3	0.44			×		1.5	0.8	***************************************	90.0	RCP	Man-Made channel through lawn
MAR027	1180 Paxon Hollow	134	7.07	2		×		2.5 3.	3.0		90.0	WH/dS	See Diagram

Elliptical Capacity Calculation Sheet

Crum Creek Watershed:

Completed by: sdb Checked by: Date(s):

Elliptical Culverts Calculation Sheet

I main pipe, 1 overflow pipe, See Diagram Erosion around outlet end of pipe Bank eroding around pipe inlet NOTES Wingwalls have outfalls Martins Run/arch pipe 2 pipes, See Diagram Pipes, see diagram 2 pipes, lots of debris Pipes Touching OO Pipe cut on angle same as Wil.31 See Diagram GPS New33 See Diagram See Diagram Golf Course arch pipe Corroded T= Amount of fil. msy = Stone Masonny Structure
D= Diameter CMP = Corrugated Metal Pipe
HT # Hight CPP = Corrugated Polyethylene Pipe
HW = Width BCMP = Bituminous Coated Corrugated Metal Pipe
PW = Pier Width (if applicable) BCCMP/HW,WW вссмрини, мм BCCMP/HW/WW **BCCMP/HW/WW BCCMP/HW,WW** RCP/HW WW CMP/HW,WW CMP/HW/WW RCP/HW/WW CMP/HW,WW CMP/HW,WW RCP/HW/WW RCP/HW,WW RCP/HW,WW CMP/HW,WW RCP/HW/WW BCCMP/www CMP/ HW CMP/HW MSRY/HW CMP/HW MSRY/HW CMP/HW BCCMP RCP/HW CMP/HW CMPs CMP CMP OMO CMP CMP CMP 80 OMP SP S 100.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90'0 90.0 90.0 90.0 90.0 90.0 45.0 90.0 45.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 90.0 8 8 90.0 90.0 90.0 80.0 5.5 2.0 13.0 6.5 3.3 3.0 5.0 5.0 0.4 4.5 6.0 6.0 3.0 6.0 4.0 7.0 4.5 8.0 6.0 6.0 5.5 5.0 3.6 3.3 5.0 8.0 6.0 4.8 5.0 6.0 5.3 6.0 8.0 9.0 7.0 3.0 4.0 5.0 4.5 3.8 4.0 2.0 4.0 2.5 2.5 5.5 4.0 5.0 4.0 2.5 5.0 5.0 1,5 4.3 3.0 3.5 4.0 4.0 0.4 9 5.5 4.0 2.3 3.5 3.0 3.5 3.5 4.0 3.5 4.5 2.3 3.0 3,5 4.5 2.0 2.3 Culvert Bridge T D 1.2 4.5 2.5 0.7 5 5.0 0.5 0.5 0.0 1.0 0.5 2.0 1, 2 2.2 13 0 4.5 15.0 2.0 2.0 0.5 2.5 0. 2.8 2.0 0.5 1,0 2.0 0.7 5. 0.5 0.3 5 7. 0.5 0,0 5 NOTE: Different parameters assigned to CMP and RCP culverts in capacity column

Trace Opening × × × × × × × Part of Culvert Bridge? Purpose S S SQ. FT) 18.85 18.85 27.49 24.74 18.85 10.60 13,74 11,78 13,99 13.74 34,56 18.85 18.85 18.85 14.57 18.85 18.85 32.99 34,56 25.53 15.12 11.78 51.05 13.74 13,74 10.01 18.85 21.23 10.60 7.85 4.71 8.8 5.74 6.28 6.50 3.89 7.23 Capacity (CFS) 145 98 177 145 57.4 234 38 114 108 421 338 127 174 109 124 5 55 88 348 312 118 92 57 92 217 122 150 290 167 85 544 83 187 ă 1 2 89 31 Devon RD West of Sugartown RC White Horse RD 100' from EAS12 Hillview RD 150' from WIL49 Laurel Cirice upper (big pipe) Old Maple Rd/Construction Devon RD near blind school Echo Valley Ln/Lewis Run Crum Creek Rd/ State Rd Waynesborough RD East Waynesborough RD Golf Andrews RD/Harvey Ln Wildwood RD off Warren 2470 White Horse RD Laurel Circle (big pipe) Battles Ln/Lewis Run 310 Crum Creek Rd Malvern Prep School Brampton Chase RD Owner or Address of Obstruction 2430 White Horse Cedar Grove RD Martins Run RD 10 Hunt Club Ln Pine Ridge RD Potters Nursery Darby Rd/252 int 637 Warren Ave Echo Valley Ln Sugartown RD Barr RD West Rt 252 North Forest Lane Spring RD 5 Brooke Ln Martin DR Long Lane Bridle Way Barr RD MAR023 WILO36 EAS013 EAS003 WIL025 WIL043 WIL 045 WIL064 NEW008 NEW010 UPR007 UPR009 **UPR019** NEW031 WIL037 EAS005 MAR001 MAR002 WIL001 WIL006 WIL015 WfL020 WIL026 WIL030 WIL031 WIL,039 WIL.055 NEW009 NPR030 EAS017 WI 029 WILO33 WIL035 WIL040 Map ID. EAS012 WIL 049 WIL021

Crum Creek Watershed: Completed by: sdb Checked by: Date(s):

Elliptical Culverts Calculation Sheet

NOTES TE Amount of fill mssy = Stone Masonry Structure

O= Diameter CMP = Comugated Metal Pipe
HT = Height CPP = Comugated Polyethylene Pipe
W= Worldth

Workfull (I applicable)
Measurements CMP/HW.WW CMP/www material 90.0 90.0 Nos. Part of Culvert Culvert Bridge T D HT W FW Stew or Bridged Purpose D O O CAL (f) (f) (f) (f) (f) and 2.6 4.0 3.0 4.5 5.0 1.2 3/22/2006
NOTE: Different parameters assigned to CMP and RCP culverts in capacity column
Opening
Shape (7) Area (SQ. FT) 8.17 10.60 Capacity (CFS) 59 93 Owner or Address of Obstruction RT 252 / Dudie Dr Colonial Way Map ID. # NEW029 W1.012

Watershed: Crum Creek		Creek Creek	ek K					Arch Culver.	Arch Culverts Calculation Sheet	o suece						
Completed by: sdb	qps											T. A.	= Amount of fill		msry = Stone Masonry Structure	
Checked by. Date(s).							3/22/2008					E E	U= Uameter H7 × Height W = Width		CONP ≈ Corrugated Polyethylone Pipo CPP ≈ Corrugated Polyethylone Pipo BCCMP ≈ Bituminous Coated Corrugated Metal Pipo	
						-	Opening		-			Š	PW = Pier Width (if applicable)	(if applica	516)	
						TVOG	-	Shapo (<)	ς	<u> </u>	W	Measurements	S)	-		
						-			-	_	L	_	-			
Civey	Owner or Addinger	Capacity	Area	No.	Part of	Culvert	L	Culvert Bridge	Bridge	-	0	HT. W	₹	skew.		NOTES
. **	of Obstruction	(CFS)		Ġ	Bridge?	-	0	000	<u> </u>	(μ)	(g)	(u) (u)	(μ)	andlo	material	
SWA001	Swathmore Ave / Wellesey rd	168	3.60	2	×				×	3.0		1.8 3.0	ا	90.0	MSRYHW	See Diagram
SWADD1	Swathmore Ave / Wellesey rd	_	10.13	-					×	3.0		1.9 8.0	_	90.0	MSRYHW	See Diagram
50	Strausstown Boro	1042	53,33	-					×	12.0	•	8.0 10.0		0.0	Concrete	Wing Wall
RIDOOS	RT 13	1261	65.88	2	×				×	8,		5.4 18.3	3 5.0	90.0	MSRY	See Diagram
WILGOZ	100 ft upstream from WiLO1	108	11.67	ſ	×				×	2.5		2.5 7.0		90.0	MSRY	See Back
WILD32	Jaffery RD	999	66.00	-	×				×	2.0		6.0 16.5		0.06	MSRY	diagram on back
WIL046	Still Meadow Farm	130	13.94	-	×				×	2.0		4.1 5.1		0.06	MSRY	See Diagram
WIL052	Whitehorse (Grubb) RD	2145	208.00	-	×				×	0.0		13.0 24.0		90.0	MSRYMW	See Diagram
WIL057	Duffryn Run' South Valley RD	쳝	44.80	-	×				×	0.5		5.6 12.0	0	90.0	MSRY/HW,WW	See Diagram
EAS006	Twinbrook RD	343	33.33	1	×				×	1.8		5.0 10.0	0	90.0	Concrete	See Diagram
SWA002	Ogden rd	120	10.00	4	×				×	4.5		3.0 5.0		30.0	MSRYHW	See Diagram
MAROOS	Cedar Grove Rd / Trout Run	5709	400.00	+	×				×	4.0		12.0 50.0		90.0	Concrete	
NPR004	Dicks Run under turnpike	693	66.57	-	×			_	×	10		10.0 10.0		90.0	MSRY	See Diagram
NPR039	RR Bridge over Dicks	2207	90.00	,	×			_	×	20.0		9.0 15.0		800	MSRY/HW,SW	See Diagram
OVOCON	and office a second	35.8	46.67	,	×				×	10.0		7.0 10.0		96	Concrete/HVV	See Diagram

Creek	
ច	
Sel	
5	
	a

	msyr = Stone Masony Structuro CMP = Coringsted Metal Ploc CMP = Coringsted Metal Ploc SCOMP = Standard Polyethylare Ploc SCOMP = Standard Solvethylare Ploc				The second of th	NO OBSTRUCTION	NO OBSTRUCTION	NO OBSTRUCTION	NO ACCESS	NO ACCESS	NO ACCESS	Can't see pipe, Completely covered with leaves	NO ACCESS, Fenced	NO OBSTRUCTION	NO OBSTRUCTION	No Access	NO CASSING CITION	NO OBSTRUCTION	Bridge gone / New one currently being constructed	NO COSTRUCTION	NO OBSTRUCTION	NO OBSTRUCTION	
	T= Amount of file msy = Stone Maso D= Damelor CARP = Corrugated HT = Height CPP = Corrugated W = Wdth		Moasurements		(tt) (tt) angle																		_
No Data Cuiverts Calculation Sheet	3/22/2006	Opening	Shape (*)	0 1 1	(ii) (iii) Li Ci O O Des	×	×																
Orum Greek			ed/	Capacity Area Nos.		#DIV/0 0 1 X	X L CONTINUE						×	X			×	x 1			1 X	×	
No Data Capacity Calculation Sheet Watershed:	qps.			Dwner or Address	Map ID. # of Obstruction				Bridge	100	ŀ	WILDS1 732 Hillview RD	-	-	RID014 Rt 320 over Crum	SWA012 RR Tracks over Crum	SPR020 Park Bridge over Crum	SPR022 Turnpike over Crum	SPR023 Paper Mil Rd over Crum	┝	SPR017 Rt 320 Bridge	UPR022 Rt 1 over Crum Creek	

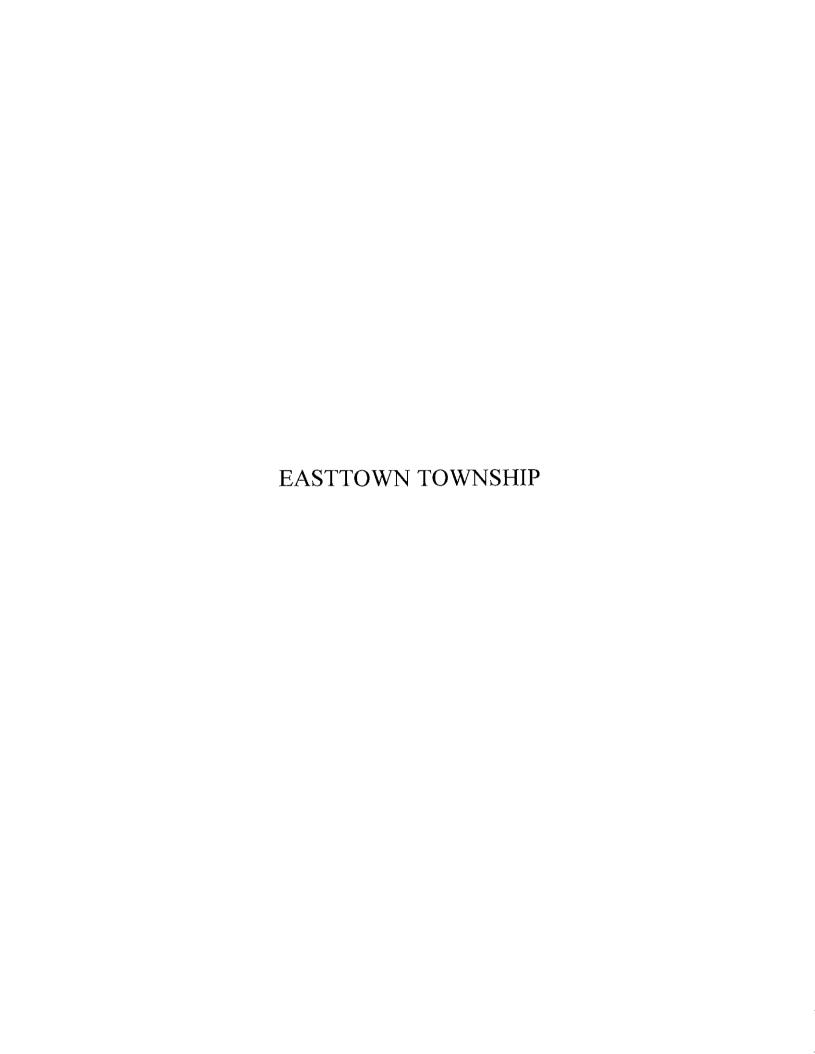
D. DATA COLLECTION FORMS (FORMS A, C – J, O)

Outfall Data Summary Forms (Form O)

Outfall Data / Master List			1	+								4	1
Municipality Map ID	Pipe Swale No	Photo No	Storm Drain	Time Pig	Pipe Diam inch Depth of flow inch	Channel Depth feet	Channel Bottom fret	Channel Side Mopes	Flow Observed	Celar Oder	Opstream land use	Nating He	Headwall Borton-Lawson Note
MARPLE MAR001		CMP			42	2 Directly	otai	Stream	Yex	Clean	Neighborhood	0	
MARPLE MAR002		CMP	Н		42	Flat	3 1/2 -	1.1				0 -	
MARPIE MAROO3		DRI, CIP	Not Sure		2-6	Directly	olui	Stream				0	
MARPLE MARGOS		PVC			80	.9	1	3.4				0	
MARPLE MARGOS		RCP			24	2	4	2.1					
MARPLE MAROOT	C:3	RCP N 1 2 CP	Yex		24	Disserts:	S op.	Stream	2 2	1	Neighborhood	7 0	
MARPLE MARONS		PLASTIC			2-12	Directly		Stream					
MARPLE MARGIO		CIP			[0]	Directly		Stream					
MARPLE MARGII		RCP	Yes		36	9		1.2				-	
MARPLE MAR012	C-12	RCP			77	3	7	1:6		Big Rocks/ Wood	Neighborhood	700	
MARPLE MAROI3		CI.AY	Xex X		60 500	2		Change	No.		İ		
MARPLE MAROIA		RCPERICK			181181	Directly	0101	300011	oN.				
MARPLE MARKET		NCP PCP			CXORIS	3,6	18	1.2	Yes	Ē		0	
MANAGE MANAGED	l	1000			Ut.	4	7	7.	Yes			0	
MADDE B MAROIS		GMD.	Yex		36	3 2-5	12	5:1	Yes			1	
MARPLE MAR019		RCP			48	2	9	Box	Yes	I		-	
MARPLE MAR020	ĺ	RCP			10	1	3	2.1			-	q	
MARPLE MAR021		CMD			36	4	***	3:1	***************************************		ı	0	
MARPLE MAR022	C-22	- 1	Yex		Couldn't get a good	sed look at it		3.1		Bamboo forest	Neighborhood	0	
MARPLE MAR023	C-33	CMP	1		12	2 67	7	3:1		1		0	
MARPLE MAR024	C-24	CMB			30	3 2	15	CS .			-	9 4	
MARPLE MAR025	C-25	CREEK	Not Sure			6 1-2	3	5		Sediment Debus	Neighborhood	5	
MARPLE MAR026	C-26	CMP	- 1		÷		9	1:2		١		-	
MARPLE MAR027	C:37	RCP	- 1		24		5)E).		١	ı		
MARPLE MAR028	82°C	CREEK			8	3	4	1.1		ı	ı	2 -	
MARPLE MAR029	C-29	RC CHANNEL		-		7	*	NO.					
MARPILE, MARO30	و د د	S. S.	I CK		0	STORY OF	3	1.1	-	l	l	-	
NINET PARK RPANI	7	VIN		2.50 P.V.	84	-	~	8				~	
DINI EV DADE PROG	16-32	N/A		1.55 P.V.	81	0	4	2:1				0	
RIDI EY PARK REYOL	100	A/X		1.55 PM	18	0	7	2:1				0	
RIDLEY PARK RP005	1700	V/X	Ϋ́ς	2:00 PM	18	1 0	6	2:1				-	
RIDLEY PARK RP006	1.CC-51	VIV		2:05 PM	24	0	~7	2:1				0	
RIDLEY PARK RP007	19-001	NA	Yes	2.05 PM	18	0 2	4	2.1					
RIDLEY PARK RP008	1.CC-71	VIN		2:06 PM	18	0	4	1.7		1		5 -	-
RIDLEY PARK RP009	200	VV		132 PM	91		*	2.1			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
STOLET PARK REGIO	10.00	VIV	200	1.35 ph/	26		*	2:1				0	
BENEVAL PARKET DOOR	100-101	WIN		1.16 PA	85	3	2	.3		V/N	residential		
FIGG AGAG AS ICIG	100.13	Y.Y.		Nd XI-1	85	0	4	133				0	
PIOLE NOVE PROSE	12.00	VIV	ž	1-20 PM	88	0	7	51	No			0	
RINEY PARK RP015	17:00	V/X	1	1.22 PM	38	0 1.5	3	1.5					
RIDI EY PARK RP016	151001	VV	No Ditch	10:57 AM	NONE	0	0	1.2				0	
PICE PARK RP017	17.55	V/X	Yes	11:00 AM	24		9	1.2				0	
PAINT DA PARK RIVER	100-121	VIV	Flat Ditch	11 05 AM	HON	0	0	E1	No				
REDIEY PARK RP019	1,00-181	Ś	Flat Ditch	11.06 AM	0	0	0	1:2				0	
RIDI EY PARK RE020	1.00-191	V/N	Yes	L07 PM	16	3	9	1:2					
RIDLEY PARK RP021	1.CC-201	V/N	Yes	1:07 PM	36	4	9	1:3					
REDIEY TWP REDOOL	00-7	NA	Yex	4:35 PM	26	s s	40	15:7					
RIDLEY TWP REX002	CC-3	N/N		4:15 PM	36	8	35			ĺ			
RBH.EY TWP RID003	700	Y'X	Yes	4:25 PM	12	9	35	7.8		V.N.	Digoways		
RJDLEY TWP RITX604	5.00	N/N		4.30 PM	86		30	639					
RIDLEY TWP RIEX005	CC3	VIV		3:15 PM	8	0	30.	0.7		l		20	
RIDLEY TWP RIEXON	8 8	VIX	ļ	3:15 PM	10		7.1	2.5		orango/ net colored			
KIDLEY IWP KILKOV	3	NIN NIN		2.50 DV	o.		5	\$4.78				0	
KUNEY I WP KILKUS	555	ALL		2. S. O. V.	0.	3.2		7634					
OUNTE LINE PHONE	3 2	VIC	NO.	7.40 02.4	95	7	\$	1.1				0	
CLOCKE SAWT VS KING	61:33	WX	oldessagoni	dim to	erowth								
RENT EY TWP	CC-13	NIN	Yes	3.05 PM	24	01 0	30	1.1				0	
REDLEY TWP1 RUX013	ı	N/N		8:30 AM	18	9	9	4:6					
RIDLEY TWP RID014	ļ.	NA		9:00 AM	10	8	9	1:1				0	
RIOLEY TWP REDOLS	П	NA		9:30 AM	2 X 24	.25	01	2:8		ļ			
RIDLEY TWP REPOILS		N/A		10:00 AM	30	0	7	7:80			***************************************		
RIDLEY TWP RITX017	l	N/A		10:30 AM	52	2 3	*7	Ī					
RIDLEY TWP RIDOIS		N/N		11:00 AM	18	0	20						
RIDLEY TWP REX019	1.CC-5A	N/A	No	11:30 AM	15	9	20	7.7	No	NIN	residential	5 3	
RIDGY TWP RIDGE	1	N/A	-	12.00 PM	81		6						
RIDLEY TWP RHX021		N/A		12:30 PM	67	20							
RIDLEY IWP KINZZ	ı	N/A		8.50 AW	01	0	31						
RIDLEY TWP KILX23	1	ANA	***************************************	9.00 AM	161	27.2	31				residential		
KHALET I WP] KHAMA	1	NAME OF TAXABLE PARTY.		Y. S.V. ANN.13	la.	15							

Sorton-Lawson Notes									T				T									Ī												Or control of the original	On spreadstate dila	b' as bothing	rather than 'c'																																							
Headwall		_						+-														1	1									†				-						1	-																					010	Yes	343	X-SX	92	XeX	VEX	Off.	OU.	sax	OU.	NOA	
Rating	-	2.	0	0	-	5	3 :	2	3	0	•	1	5 0	₹ 	7	-	ō	0	7	c	0	0	0	٥	2*	9	1	5 2		0	3 (٥	ō				0	6	77	2	0	0	0	=	0	~	=	-	<u>ء</u>	ō	0	0	YN C	3 5	٥	V/N	0	0	¢	0	~	-	0		ē	1	0	C	0	6	=	0	0	Ī	0	1,
Costream land use	commercial	commercial	nsidental	residential	residential	residenting	residential	restrong	residential	tonidoning!	feringing	Topical	residential	ioouax	commercial	commercial	xchool	residential	fethobisor	residential	, mx	ins.	Rec	Kec	Rec	ambe				ratter.	22	æ	æ	~	R	2	Rec	œ	R	æ	2	×	Funeral Home	æ	×	VIN	Y D	Rec	V/N	School	~	2	*	æ	æ	2	residential	landential	leiste dential	leadendary	residential	residential	recidential	residential	residential	revidential	rexidentias	Sections	Factorian Contract							
Cetor Odor	KN KN	NA	NIA	NA	V/N	N/N	N.V.	VIV	AUX.	NIA	NIA	177	NA	Viv	W.V.	aigne	WW	VAN	oninge/ nixt colored	V/N	V.Z	N/N	N/A	NV	N/A	NA	VAX.	Crood	poor)	(1880	0001	0001)	Geod				Good	Good	Collapsed	Orange in Color	Good	Cood	Good	Some algae	Crood	Detached	Brownish	Brownish	Good	Good	Good	Cood	NW	Ciood	Coord	VW	Good	Debrix	Algae present	Good	Orange on Rip-Rap	3/4 blocked w/ rocks	Good								clear		clear	10	amolo	1.00
How Observed	ov.	oN.	No	Ν	Νο	Yes	Yes	res	Yex	Var	, 10°	GA.	NO.	ο _N	Yes	Yes	S.	92	No-Yes	Νο	No.	Yes	Se.	οN	જ	No.	οχ. :	Yes	Yex	Yes	Y	Yes	οN				2	No.	Yes	Yes	Yes	Yes	Yex	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	V/N	Yes	5 %	VVV	No	%													initialian Seminim	O C	٧٧	No.	700	1031
Channel Side Mapes			17	=	12:3	10.5	8:6	5.5	7.0	07:01	3.1		15.10	10:15	1:1	10:15	10:15	2.1	1:1	1:1	1:1	5: 2.5	\$ 5	12.5	18	9	9	2:1	Vertical	2:1	4.1	2:1	7.1				<u> </u>	2.3	2.2	Ξ	П	2.1	[1]	3.5	2:1	1:1	Vertical	1:1	Vertical	1.3	Vertical	13	N/N	Vertical	1.10	VV	AN	1:1	1-1	stone wall	stone wall	2.1	d	Par	6-1	3:1	2.17	7.1	7.7	31.	13.5		6:1	A/N	6.1	13.,
Channel Bottom feet	35	.81	.81	13	8	20	20	07.	87	Ol V	0 2	C1	22	5	01	91	5	8	7.75	12	10,75	9		9.6	ş	7	7	25	15	35	35.	35	151				⊈	5	101	~	>	9-10:	01	8	8	53	7	30	9	10	7	9	VIX	10	97-01	V/N	N/N	01	34	35	2	10	01	-	- 0	c	c	0 4	0	c v	9	* 00	011	71 V	0	10
Channel Depth free	6 6	¢	6	6	3	2	3	7	7.1	7.	e s	×	9	16.	\$1	91	91	2.75	5.75	6.75	4.25	3	\$	0	0	0	0	92	12	VX	_	V/V	5				-	>	1	9	2	7	47	ę.	7	N/N	·	01	\$	9		**	2	VIN	01	2)	NAN	01	21			-3	***		2.		3.1	7		0				9 6		31
Depth of flow inch	5 0		0	0	0	-	25	.25	2	2		5	0	0	25	2	0	0	-6	0	0	25	0	4-15	36	2.5	3-28	8	0	0	0	0	0				c	C	0	trickle	0	-	0	-	0	0	trickle	trickle	0	2	-	0	VN	0	0	O V/N	10		oldoin	-		- 0	0 0	2	70	7	0	0		0	5 6	0	0 -	- 0		. T.
Pipe Diam in	15								***************************************					87										1.00 PM				777	8	8	swaje	24	areas				-	23	(tolei to) 31	81	24	24	30	98	24	90	30	54	18	09	48" wide 15	15	NA	72	77	V/N	>1							Olliws Olliws		08			-					30		
Time	10:00 AM	11 00 034	11:30 AM	12-00 PM	12:30 PM	MG 00:1	1.30 PM	2:00 PM	2.30 PM	3.00 PM	3:30 PW	4:00 PM	4,30 PM	5.00 PM	8:30 AM	WV 00 6	9:30 AM	10.00 AM	10:30 AM	11.00 AM	11:30 AM	12:00 PM	12:30 PM	1.00 PM	1:30 PM	2:00 PM	2:30 PM																															503	5000	57.6	508	203	0.42	0.50	8:40 AW	8:40 AM	WV 05-3	8.40 AM	9.00 AM	9.20 AM	9.30 AM	9.40 AM	WV 00.0	10.00 AM	10.00 April	10.04 AM
arm Drain	, ve	N S	Y. Y.	Yex	Yes	οŅ	No.	Ϋ́	Yes	Š.	Yes	Yes	ζč	Ϋ́c×	%	, N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yex	Yes	Yes	Yes	Yes	-			,	2 3	3	5 3	Ž	Yes	Yes	Ϋ́c«	Yes	Yes	ž	Yes	Ϋ́ς	Yes	ne channel	Yes	Yes	Yes	¥\$,	va. v	2	,		20 5	,	>	3	202	Tes	Yex	Xcs	š.	,cx	XII.	ž,	, co	So.	Ç,	2	Yes
Photo No Ne		VIV.	Y/X	VIN	N/A	N/A	N/N	NN	NN	VX	N/A	V/V	NA	NA	N/A	N/N	V/X	N/N	N/A	V/N	VVV	NA	ΝΑ	N/N	V/N	N/N	NIA		2	3	4	\$	\$			••••	·	, 0	¢	0.11	12	72	12	82	61	21/22/23/24	25	26	27	82	29 sto	30	31	NV	32	3,1	35	3 %	30	30	30/40	O+ME	7 5	75	1.2.3	*	9	7	6	9	(dixc 2) 1	2		-3 4	C	ý
Plye Swale No	1,00.433	75.55	1 C.C. 8F	CC-81	1,CC-9	01-2271	IJ	ICC:II	1	- 1		-	1				l		ı	l			Ì	1,CC-23							q																				91V			71V		ļ				-			-											22		
9	202		2001	RED02	REX	RIDOS	RIDOS	RIDO3	TWP REX034	TWP RITX035	TWP RIEXO36	TWP RED037	TWP RE2038	FWP REX039	"WP RID040	TWP RIFX041	rwP REX042	rwP: RIDO43	TWP RIPOLA	TWP RIDOAS	TWP RIIX046	TWP RID047	rwP R03048	TWP RIIX049	TWP R13050	TWP RITX051	TWP RIDOS2	ELD SPR001	ELD SPR002	ELD SPR003;	ELD SPR004		ŧ					- 1	EL.D. SPROMS		110 808 011	FI DI SPRO12	ELL SPROFT	FI D SPROID	FI DI SPROIS	FI DI SPROIS	FI.D. SPR017	STORES KITT	FLD SPR019	FLD SPR020	ELD SPR021	FI,D SPR022	IELD SPR023	TELID SPR024	(F.I.D. SPR025	IFLD SPROZ	THE CHANGE	OLOGO COLOGO	ELLD SPRUZ	TELED SPROSE	COORD OF THE	15.15 SP (USZ	HILL SPRUSS	JELES SPRUSA	OKE SWAGO	ORE SWA002	ORE SWA003	ORE SWA004	ORE SWA005	TORE SWA006	ORE SWAGO	ORE SWAGOS	TORE SWA009	IORE SWA010	ORE SWAUL	TORE SWA012
Municipality Ma	RIDLEY	KINGE	T A H KILD	RDLEY	RIDI EY I	RIDLEY	RIDLEY 1	RIDLEY:	RIDLEY	RIDLEY	RIDLEY	RIDLEY	RIDLEY	RIDLEY	RIDLEY	RIDER .	RTDL EY	KDLEY.	RIDLEY	PIDY EY	RDLEY.	RDLEY	KIDLEY :	RIDLEY TWP	RIDLEY	RIDLEY	RIDLEY	SPRINGF	SPRINGE	SPRINGE	SPRINGFI	SPRINGE	SPRINGEL					SPIKING PELL	SPRING	TOWN CO.	CLOVING S	NPRINGFIELD	TON OUS	SPRINGE	CHUNICAN	SPRINGE	dUNI dds	SPRINGE	SPRINGE	SPRINGE	SPRINGE	SPRINGE	SPRINGE	SPRINGE	SPRINGE	SPRINGE	SPRINGE	SPRINGS	SPRINGE	SPRINGE	con with	SPRINGE	NAK NC	N.K.	SWARTHN	SWARTHM	SWARTHA	SWARTHN	SWARTHA	SWARTHA	SWARTHN	SWARTHN	SWARTHA	SWARTHMORE	SWARTHA	SWARTHA

SWAMON STATE AND MARKED STATE AND SWAMON SWA	2 2 3 N/A 3	10 8	1:2 Yes 1:2 No 5 No	clear residential clear residential MA residential	all 0 Yes	
SWA001 27 10 17 10 17 10 17 10 17 17	N/A 3				0 -	
SWA001 28					- 1	
SWAGON 20 Ves 11.55 AM 1.18 SWAGON 31 (abs.3)1 auscentral 10.55 AM 1.18 SWAGON 31 (abs.3)2 Yes 11.50 AM 1.18 SWAGON 31 Yes 11.50 AM 1.18 SWAGON 32 Yes 11.50 AM 1.18 SWAGON 34 Yes 11.50 AM 1.18 SWAGON 35 Yes 11.50 AM 1.18 SWAGON 36 Yes 11.50 AM 1.18 SWAGON 37 Yes 11.50 AM 1.18 SWAGON 38 Yes 11.50 AM 1.18 SWAGON 38 Yes 11.50 AM 1.18 SWAGON 41 Yes 11.50 AM 1.18 SWAGON 42 Yes 11.50 AM 1.18 SWAGON 43 Yes 11.50 AM 1.18 SWAGON 44 Yes 11.50 AM Yes <t< td=""><td>-</td><td></td><td></td><td></td><td>1</td><td></td></t<>	-				1	
SWA0018 36 International control 1160 AM 6445 SWA0018 33 (dhe.3)1 manager of 1150 AM 1518 SWA0021 34 7 Ves. 11.20 AM 138 SWA0022 34 7 Ves. 11.20 AM 138 SWA0023 36 9 Ves. 11.20 AM 138 SWA0024 37 Ves. 11.20 AM 138 SWA0025 36 6 Ves. 11.20 AM 138 SWA026 37 Ves. 11.20 AM 138 Na. SWA027 36 Ves. 11.20 AM Sv3 Ves. 11.20 AM Sv3 SWA028 45 Ves. 11.20 AM Sv3 Ves. 11.20 AM Sv3 SWA029 41 Ves. 11.20 AM Sv3 Ves. 11.20 AM Sv3 SWA029 42 Ves. 11.20 AM Sv3 Ves. 11.20 AM Sv3 SWA029 43 Ves. 11.20 AM Sv3 Ves. 11.20 AM Sv3 SWA029 44 Yes 10.20 AM Sv3.21<	0				0	
SWA002 31 (phac 3) Yes 11.20 AM 15.8 SWA002 33 F Yes 11.20 AM 18 SWA002 34 F 11.20 AM 18 SWA002 35 F 11.20 AM 18 SWA002 36 F 11.20 AM 18 SWA022 38 Yes 11.20 AM 18 SWA023 41 Yes 11.20 AM 18 SWA024 42 Yes 11.20 AM 18 SWA024 43 Yes 12.20 PM 18 SWA024 44 Yes 12.20 PM 18 SWA026 45 Yes 12.20 PM 18 SWA027 45	VX				0	
SWAGOS 51 Composite 1150 AM 15.18 SWAGOS 53 7 Yes 11.00 AM 13.00 AM SWAGOS 54 7 Yes 11.50 AM 13.00 AM SWAGOS 54 7 Yes 11.50 AM 13.00 AM SWAGOS 55 8 Yes 11.50 AM 13.00 AM SWAGOS 56 66.65 4) 1 Yes 11.50 AM 13.00 AM SWAGOS 66 7 Yes 11.50 AM 13.00 AM 13.00 AM SWAGOS 41 7 Yes 11.50 AM 13.00 AM 13.00 AM SWAGOS 42 6 Yes 12.00 PM 13.00 AM 13.00 AM 13.00 AM SWAGOS 43 7 Yes 12.00 PM 13.00 AM 13.00 AM <td>V/N</td> <td></td> <td></td> <td></td> <td>0</td> <td></td>	V/N				0	
SWA021 SYA021 SYA022 S	0				0	
SWA022 NA Tee 11.20 AM 18 SWA032 SS Yee 11.20 AM 13 SWA032 SS Yee 11.20 AM 13 SWA032 SS (dise 4) Yee 11.20 AM SVS SWA032 SS (dise 4) Yee 11.20 AM SVS SWA032 41 Yee 11.20 AM SVS 13.20 PM SVS SWA032 42 Yee 11.20 AM SVS 13.20 PM 18 SWA032 43 Yee 12.00 PM 18 Yee 12.00 PM 18 SWA033 43 Yee 12.00 PM 18 Yee 12.00 PM 18 SWA034 43 Yee 12.00 PM 18.00 PM <td>0</td> <td></td> <td></td> <td></td> <td>0</td> <td></td>	0				0	
SWAGES \$1 Yes 11.50 OA 11.50 OA SWAGES \$1 Yes 11.50 OA 11.50 OA SWAGES \$7 Yes 11.50 OA \$25 SWAGES \$3 (diss-d) Yes 11.50 OA \$25 SWAGES 41 Yes 11.50 OA \$24 Init SWAGES 42 Yes 12.50 PA \$24 Init SWAGES 42 Yes 12.50 PA \$24 Init SWAGES 43 Yes 12.50 PA \$24 Init SWAGES 45 Yes 12.50 PA		into stream		N/A residential	٥	
SWAGOS 36 Yea 11.35 AM 18 SWAGOS 38 (disa-0.1) Yes 11.35 AM 18 SWAGOS 38 (disa-0.1) Yes 11.35 AM SAS SWAGOS 41 Ches. 0.1 Yes 11.35 AM SAS SWAGOS 42 Yes 12.00 PM 24 Inches. 0.2 SWAGOS 42 Yes 12.00 PM 23 Inches. 0.2 SWAGOS 45 Yes 12.20 PM 24 Inches. 0.2 SWAGOS 45 Yes 12.20 PM 18 Trick SWAGOS 46 Yes 12.20 PM 18 Trick SWAGOS <th< td=""><td>9 0</td><td></td><td></td><td></td><td>0</td><td></td></th<>	9 0				0	
SWA026 ST (Mes J) Yes 11.50 AM SSS SWA026 59 (Mes J) Yes 11.53 AM SSS SWA028 41 (Mes J) Yes 11.50 AM 12.40 SWA028 41 6 Yes 12.00 PM 18 SWA020 42 6 Yes 12.00 PM 18 SWA021 42 6 Yes 12.00 PM 18 SWA023 43 8 Yes 12.00 PM 18 SWA024 46 7 Yes 12.00 PM 18 SWA024 46 7 Yes 12.40 PM 18 SWA025 48 7 Yes 12.40 PM 18 SWA024 46 10 Yes 12.40 PM 18 SWA025 48 Yes 12.40 PM 18 SWA026 48 Yes 10.40 AM 18.42 AM WILCOR 3 Yes 10.50 AM 18.42 AM <td></td> <td>8 1.2</td> <td></td> <td></td> <td>С</td> <td>***************************************</td>		8 1.2			С	***************************************
SWA025 SW Gles 4) Yes 11-95 AM SeS SeS SWA025 SWA025 Gles 4) Yes 11-95 AM Gles 4 SWA025 Gles 4) Yes 11-90 AM Gles 4 SWA025 Gles 4) Yes 11-90 AM SWA025 Gles 4) Yes 11-90 AM SWA025 Gles 4) Yes 11-90 AM SWA025 Gles 4 SWA025 Gles 5) Yes 12-90 PM SWA025 Gles 5) Yes 11-90 AM SWA025 Gles 5) Yes Yes 11-90 AM SWA025 Gles 5) Yes 11-90 A	0				0	
SWA023 39 Vec 11-00 AM 100 CB SWA034 41 Vec 11-00 AM 24 SWA030 43 Vec 12.00 PM 24 SWA031 43 Vec 12.00 PM 18 SWA032 44 Vec 12.00 PM 18 SWA033 45 Vec 12.00 PM 18 SWA034 45 Vec 12.00 PM 18 SWA034 45 Vec 12.00 PM 18 SWA035 48 Vec 12.40 PM 18 SWA036 48 Vec 10.40 AM 18 SWA036 48 Vec 10.50 AM Swale WILLOM 4 Vec 10.50 AM Swale WILLOW 5 Vec 10.50 AM Swale WILLOW 1 Vec 10.50 AM	2				0	
SWAGES 40 (b)sa f/4 Yes 11.50 AM 23 SWAGES 41 6 Yes 12.00 PM 24 miss SWAGES 42 6 Yes 12.00 PM 18 miss SWAGES 43 8 Yes 12.00 PM 18 miss SWAGES 45 7 12.00 PM 18 miss miss SWAGES 45 7 12.00 PM 18 miss miss SWAGES 47 4 8 Yes 12.00 PM 18 miss SWAGES 47 4 8 Yes 12.00 PM 18 miss SWAGES 47 4 Yes 12.00 PM 18 miss 18 SWAGES 47 4 Yes 10.00 AM 18 18 Miss 18 SWAGES 48 Yes 10.00 AM 18.00 Miss 18 Miss 18 WILLOSD <td>0</td> <td></td> <td></td> <td></td> <td>0</td> <td></td>	0				0	
SWAGD2 41 S Yes 12.00 PM 18 SWAGD3 43 7 Yes 12.00 PM 24 uids SWAGD3 43 7 Yes 12.00 PM 18 uids SWAGD3 45 7 Yes 12.00 PM 18 uids SWAGD3 45 7 Yes 12.00 PM 18 uids SWAGD3 45 Yes 12.00 PM 18 uids 18 SWAGD3 45 Yes 12.00 PM 18 uids 18 SWAGD3 47 Yes 12.00 PM 18 uids 18 SWAGD3 48 Yes 10.00 AM 18 uids 18 WILGOD 1 Yes 10.50 AM swale 18 yes 10.50 AM swale WILGOS 5 Yes 10.50 AM swale wids 18 yes 11.00 AM swale WILGOS 11	0				-	
SWAGOS 42 6 Yes 12.00 PM 23 miss SWAGOS 45 7 Yes 12.40 PM 18 miss SWAGOS 45 7 Yes 12.40 PM 18 miss SWAGOS 46 10 Yes 12.47 PM 19 miss SWAGOS 46 10 Yes 12.47 PM 18 miss SWAGOS 46 10 Yes 12.47 PM 18 miss SWAGOS 47 Yes 10.15 AM swale 1 miss SWAGOS 47 Yes 10.15 AM swale 1 miss WILLORD 3 Yes 10.15 AM swale 1 miss WILLOR 3 Yes 11.05 AM swale 1 miss WILLOR 3 Yes 11.05 AM swale 1 miss WILLOR 3 Yes 11.05 AM swale 1	0				0	
SWAGES 45 Yes 12.0 PM 18 1.6 1.	S.		E.		٥	
SWA023 45 Ves 12.40 PM 15 SWA024 45 9 Yes 12.40 PM 15 SWA024 46 10 Yes 12.47 PM 30 trick SWA024 46 10 Yes 12.47 PM 30 trick SWA026 47 Yes 10.05 AM 18 Yes 10.15 AM Yes SWA026 47 Yes 10.05 AM 18 Yes 10.15 AM Yes 11.15 AM Yes	, Ct				-	
SWAGAS 45 Yes 12.45 PM 15 SWAGAS 45 Yes 12.45 PM 15 SWAGAS 47 (dies 5) Yes 12.97 PM 15 SWAGAS 48 Yes 12.97 PM 15 7 WILGOD 2 Yes 10.00 PM 18 7 WILGOS 3 Yes 10.00 AM 18 7 WILGOS 3 Yes 10.00 AM 18 7 WILGOS 3 Yes 10.00 AM 38.21 7 WILGOS 3 Yes 10.00 AM 38.21 7 WILGOS 3 Yes 10.00 AM 38.21 1 WILGOS 3 Yes 10.00 AM 38.21 1 WILGOS 4 Yes 11.00 AM 38.21 1 WILGOS 5 Yes 11.00 AM 38.21 1 WILGOS 11 Yes 11.00 AM 38.21	5	9	No.		0	
SWAGAS 45 7 ks 12.45 PM 15 SWAGAS 46 7 (disc 5) Yes 12.47 PM 50 SWAGAS 47 (disc 5) Yes 12.47 PM 50 Fried WILLORD 3 Yes 10.90 PM 15.45 AM 18 7 WILLORD 3 Yes 10.00 AM 18 7 18 7 WILLORD 5 Yes 10.00 AM 80.21 18 7 18 7 18 7 18 7 18 7 18 7 18 7 18 7 18 7 18 7 18 7 18 7 18 7 18						
SWA053 465 9 Yes 12.45 PM 15 track SWA054 467 (die 5) Yes 12.45 PM 30 track SWA054 47 (die 5) Yes 12.45 PM 15 Track SWA055 47 (die 5) Yes 12.45 PM 15 Track WL005 3 Yes 12.05 PM 18 Track 16 Tr						
SWA0545 46 (iii e S) Ves 12.47 PM 50 Luck SWA055 48 (iii e S) 1 Yes 12.47 PM 50 I SWA055 48 Yes 10.00 PM 14.4 Feet 16.00 PM 14.4 Feet 16.00 PM 14.4 Feet 16.00 PM 17.00 PM	0	9	30	N/N respectful	40	
SWA0055 457 (dies D) Yes 120 PM 143 Sept 7 VMILOSI 2 Yes 160 AM 18 7 WILLOSI 3 Yes 103 AM 18 WILLOSI 3 Yes 103 AM 18 WILLOSI 3 Yes 103 AM 30 AM WILLOSI 3 Yes 113 AM 30 AM WILLOSI 11 Yes 113 AM 30 AM WILLOSI 12 Yes 1130 AM 30 AM WILLOSI 13 Yes 1130 AM 30 AM WILLOSI 13 Yes 1130 AM 30 AM			5	,,	٥	
WULGON 48 1 Yes 140 PM 141 VSTPC 7 WULGON 3 Yes 160 PM 181 7 WULGON 3 Yes 160 PAM 181 7 WULGON 3 Yes 160 PAM 181 7 WULGON 8 Yes 160 PAM 3842 13 WULGON 8 Yes 1625 AM 132 13 WULGON 9 9 Yes 110 PAM 3842 18 WULGON 10 10 Yes 110 PAM 3842 18 WULGON 11 Yes 110 PAM 3842 18 18 WULGON 11 Yes 110 PAM 3842 18 <td></td> <td></td> <td></td> <td>N/A residential</td> <td></td> <td></td>				N/A residential		
WILLOOD 1 Yes 10.95 AM 18 7 WULLOOD 3 Yes 10.95 AM 18 7 WULLOOD 5 Yes 10.95 AM 18 7 WILLOOD 55 Yes 10.95 AM 8.12 1.00 AM WILLOOD 5 Yes 10.95 AM 1.82 1.82 WILLOOD 6 Yes 10.95 AM 1.82 1.82 WILLOOD 9 8 Yes 11.95 AM 1.82 WILLOOD 10 1.1 Yes 11.95 AM 1.82 WILLOOD 1.1 Yes 11.90 AM 38.21 1.82 WILLOOD	TiO 6 1010 Attenti	15			5 6	
WILLORD 2 Yes 10.00 AM 6f1 7 WILLOR 5 Yes 10.00 AM 18 WILLOR 55 Yes 10.90 AM swale WILLOR 85 5 Yes 10.90 AM swale WILLOR 86 Yes 10.90 AM swale 12 WILLOR 8 Yes 10.95 AM 146.24 14 WILLOR 10 Yes 11.05 AM swale 14 WILLOR 11 Yes 11.05 AM swale 14 WILLOR 12 14 Yes 11.05 AM swale WILLOR 15 Yes 11.05 AM swale WILLOR 15 <td></td> <td>(0)</td> <td>00/</td> <td></td> <td></td> <td></td>		(0)	00/			
WILLOSH 3 Yes 10.15 AM 118 WILLOSH SS 5 Yes 10.90 AM wasie WILLOSH SS 5 Yes 10.90 AM wasie WILLOSH SS Yes 10.90 AM wasie WILLOSH S Yes 10.50 AM wasie WILLOSH S Yes 10.50 AM wasie WILLOSH D Yes 10.50 AM wasie WILLOSH D Yes 11.00 AM 38-21		7.7	Yes			
WILLOSA 54 Yes 10.00 AM wede WILLOSA SS 6 Yes 10.00 AM wede WILLOSA 7 7 10.00 AM wede WILLOSA 8 Yes 10.63 AM 18. WILLOSA 9 Yes 10.63 AM 18. WILLOSA 10 Yes 11.05 AM Swalz WILLOSA 11 Yes 11.05 AM Swalz WILLOSA 11 Yes 11.05 AM Swalz WILLOSA 12 Yes 11.05 AM Swalz WILLOSA 13 Yes 11.05 AM Swalz WILLOS		36	res			
WILLOST SS 5 Yes 10.90 AM worde WILLOST 7 7 5 Yes 10.25 AM 1.2 WILLOST 8 Yes 10.25 AM 1.2 1.2 WILLOST 9 Yes 10.25 AM 1.8 1.8 WILLOST 10 1.0 Yes 11.0 AM 38.2.1 WILLOST 1.1 Yes 11.0 AM 38.2.1 WILLOST 1.1 Yes 11.0 AM 38.2.1 WILLOST 1.1 Yes 11.5 AM words WILLOST 1.2 Yes 11.5 AM words WILLOST 1.2 Yes 11.50 AM words WILLOST 1.3 Yes 11.50 AM words WILLOST 1.3<		42	No.			
WILOM S6 Ves 10.95 AM wile WILOM 8 Yes 10.55 AM 14.24 WILOM 8 Yes 10.55 AM 14.24 WILOM 10 Yes 10.55 AM 18.21 WILOM 11 Yes 11.05 AM 88.21 WILOM 11 Yes 11.05 AM 88.21 WILOM 11 Yes 11.05 AM 88.21 WILOM 11 Yes 11.15 AM 88.21 WILOM 11 Yes 11.15 AM 88.21 WILOM 12 Yes 11.20 AM 88.21 WILOM 13 Yes 11.20 AM 88.21 WILOM 15 Yes		70	32 12			
WILLORD 7 Yes 10.65 AM 14.224 WILLORD 9 Yes 10.65 AM 14.224 WILLORD 10 Yes 11.05 AM 38-21 WILLORD 11 Yes 11.05 AM 38-21 WILLORD 11 Yes 11.05 AM 38-21 WILLORD 12 Yes 11.5 AM swale WILLORD 13 Yes 11.25 AM swale WILLORD 13 Yes 11.20 AM swale WILLORD 13 Yes 11.40 AM 19.22 WILLORD 13 Yes 11.40 AM 19.22 WILLORD		00	ON			
WILGON 8 Yes 10.65 AM 14.524 WILGON 9 Yes 10.65 AM 18.23 WILGON 10 Yes 11.00 AM 38.21 WILGON 11 Yes 11.00 AM 38.21 WILGON 11 Yes 11.00 AM 38.21 WILGON 12 Yes 11.50 AM 38.41 WILGON 12 Yes 11.50 AM 38.41 WILGON 12 Yes 11.50 AM 38.41 WILGON 13 Yes 11.50 AM 38.41 WILGON 12 <td></td> <td>48</td> <td>ON .</td> <td>-</td> <td></td> <td></td>		48	ON .	-		
WILGOD 9 7 Ves 11.05 AAM 388-21 WILGOD 10 11 Yes 11.05 AAM 388-21 WILGOD 11 11 O AAM 388-21 388-21 WILGOD 11 11 O AAM 388-21 WILGOD 12 14 Yes 11.25 AAM 388-21 WILGOD 12 14 Yes 11.20 AAM 388-21 WILGOD 15 Yes 11.20 AAM 388-21 WILGOD 15 Yes 11.20 AAM 388-21 WILGOD 16 Yes 11.20 AAM 388-21 WILGOD 17 Yes 11.20 AAM 388-21 WILGOD 18 Yes 11.20 AAM 388-21 WILGOD 18 Yes 11.20 AAM 388-21 WILGOD 18 Yes 11.20 AAM 388-22 WILGOD 18 Yes 11.20 AAM 388-22 WILGOD 11.20 AAM 11.20 AAM 388-22		\$\$	ON S			
WILGOIN Decirity Test H.O. AMI 788-21 WILCOIN Decirity Test H.O. AMI 198-20 WILCOIN Decirity H.O. AMI 198		458	ON			
WILCOLD 10 11 Yes 11.5 AM Stack Swale WILCOLD 13 Yes 11.5 AM Swale Swale WILCOLD 13 Yes 11.5 AM Swale Sw		508	ON.	***************************************		
WILORD 11 12 Yes 11.15 AM swale WILOR 12 14 Yes 11.25 AM swale WILOR 12 14 Yes 11.20 AM swale WILOR 12 16 Yes 11.20 AM swale WILOR 13 Yes 11.20 AM swale WILOR 14 Yes 11.20 AM swale WILOR 15 Yes 11.40 AM swale WILOR 15 Yes 11.40 AM swale WILOR 15 Yes 11.45 AM swale WILOR 15 Yes 11.45 AM swale WILOR 15 Yes 11.45 AM swal		108	ON			
WILLOIS 11 Yes 11.5 AM weels WILLOIS 12 14 Yes 11.20 AM weels WILLOIS 12 15 Yes 11.20 AM weels WILLOIS 15 Yes 11.20 AM weels WILLOIS 17 Yes 11.20 AM weels WILLOIS 17 Yes 11.20 AM weels WILLOIS 18 Yes 11.20 AM weels WILLOIS 18 Yes 11.20 AM weels WILLOIS 19 Yes 11.20 AM weels WILLOIS 20 Yes 11.20 AM weels WILLOIS 21 Yes 11.20 AM weels WILLOIS 22 Yes 11.45 AM weels WILLOIS 23 Yes 11.65 AM weels WILLOIS 25 Yes 11.65 AM weels WILLOIS 26 Yes 11.65 AM weels <		30	on			
WILDS 12 14 Yes 1120 AM Swale	9 0	36	300			
WILLORS 12 15 Yes 11.20 AM swale WILLOR 15 Yes 11.20 AM swale WILLOR 17 Yes 11.20 AM swale WILLOR 17 Yes 11.20 AM swale WILLOR 13 Yes 11.20 AM swale WILLOR 14 Yes 11.20 AM swale WILLOR 14 Yes 11.40 AM 18.21 WILLOR 21 Yes 11.40 AM 18.22 WILLOR 15 Yes 11.40 AM 18.22 WILLOR 15 Yes 11.45 AM 18.22 WILLOR 25 11.45 AM 18.24 18.24 WILLOR 25 Yes 11.65 AM 20.24 WILLO		30	000			
WILGOR 15 16 Yes 150 AM 20x15 WILGOR WILGOR 150 AM WILGOR WILGOR 150 AM WILGOR WILGOR 150 AM WILGOR WILGOR 150 AM WILGOR 150 AM WILGOR 150 AM WILGOR WILG	9 0	30	300			
WILLORY R Yes 11:30 AM Svable			300	O Kestgenttal		
WHI.018	01	30	ON			
WHI GOD 15 19 Yes 11-20 AM 18-20 19-20		36	oN.			
WHIGOD 14 20 Yes 11-40 AM 1952-0 WHIGOZ 1 Yes 11-40 AM 1952-0 WHIGOZ 15 Yes 11-45 AM 1952-0 WHIGOZ 15 23 11-45 AM 10-62-1 WHIGOZ 24 11-45 AM 10-62-1 WHIGOZ 25 11-45 AM 10-62-1 WHIGOZ 27 Yes 11-65 AM 10-62-1 WHIGOZ 27 Yes 11-65 AM 20-62-1 WHIGOZ 17	0		oX.			
WHI DECEMBER DEC	0		Ne			
WH 022 wwist work WH 023 15 22 11.45 AM 10.62.4 WH 024 23 11.45 AM 10.62.4 10.62.4 WH 025 24 11.45 AM 10.62.4 10.62.4 WH 026 25 11.45 AM 3.80.6 10.62.4 WH 027 25 Yes 11.05 AM 3.02.4 WH 028 16 Yes 11.05 AM 3.02.4 WH 029 17 27 Yes 11.05 AM 3.02.4 WH 029 17 27 Yes 11.55 AM 3.02.4 WH 029 17 27 Yes 11.05 AM 3.02.4 WH 029 17 27 Yes 11.55 AM 3.02.4 WH 029 17 27 Yes 11.55 AM 3.02.4 WH 024 27 13.05 PM 2.05 PM 1.5 WH 024 23 14.5 PM 2.05 PM 1.5 WH 025 23 24.5 PM 1.5	0		No			A-4-4-4-4-4-4-4-4-4-4-4-4-4-4-4-4-4-4-4
WILGST 13 22 11.45 AM swale WILGST 23 11.45 AM 10.624 WILGST 23 11.45 AM 10.624 WILGST 25 11.45 AM 10.624 WILGST 25 11.45 AM 10.624 WILGST 25 11.45 AM 10.624 WILGST 26 14.6 PM 20.224 WILGST 16 76 11.6 PM 20.224 WILGST 17 27 76 11.6 PM 20.15 WILGST 16 26 76 11.5 PM 20.15 WILGST 16 27 76 11.5 PM 20.15 WILGST 16 26 76 11.5 PM 20.15 WILGST 16 16 76 14.5 PM 20.5 PM WILGST 17 76 14.5 PM 20.5 PM 15 WILGST 16 16 16 16 16 WILGST 16 <td>0</td> <td>24x6</td> <td>92</td> <td>O Kesidential</td> <td>0</td> <td></td>	0	24x6	92	O Kesidential	0	
WILGS 15 22 11.45 AM 10.624 WILGS 23 11.45 AM 10.624 WILGS 24 11.45 AM 10.624 WILGS 25 11.45 AM 30.624 WILGS 16 75 11.45 AM 30.624 WILGS 16 75 11.05 AM 30.24 WILGS 17 75 11.05 AM 30.24 WILGS 17 75 11.05 AM 30.24 WILGS 17 75 11.05 AM 20.10 WILGS 18 28 Yes 13.05 PM 20.15 WILGS 20 75 14.5 PM 20.57 15 WILGS 20 75 14.5 PM 20.5 PM 15 WILGS 21 75 20.5 PM 15 15	0	24x6	No	8		
WILO25 23 11.35 AM swale WILO26 24 11.45 AM 10.624 WILO26 25 VC 11.45 AM swale WILO28 16 26 VC 11.05 AM 37.24 WILO29 17 27 VC 11.05 PM 12.22 WILO29 17 27 VC 11.5 PM 12.24 WILO39 17 27 VC 11.5 PM 2.71.5 WILO31 19 VC 13.5 PM 2.47.5 WILO31 20 VC 14.5 PM 2.47.5 WILO34 21 VC 14.5 PM 2.47.4 WILO34 21 VC 15.0 PM 15. WILO34 22 VC 1.50 PM 15. WILO35 23 VC 1.50 PM 15.						
WILLORD 24 IL145 AM Stocks WILLOR 25 Yes IL16 PAM 20234 WILLOR 26 Yes IL10 PAM 20234 WILLOR 17 Yes IL10 PAM 120234 WILLOR 17 Yes IL10 PAM 120234 WILLORD 17 Yes IL10 PAM 2015 WILLORD 18 Yes IL10 PAM 2015 WILLORD 10 Yes IL10 PAM 2015 WILLORD 13 Yes 1.00 PAM 15 WILLORD 13 Yes 1.00 PAM 15 WILLORD 13 Yes 1.00 PAM 15 WILLORD 13 Yes <td></td> <td>24x6</td> <td></td> <td></td> <td></td> <td></td>		24x6				
WILOZY 25 Yes 11.65 AM ANNable WILOSY 16 75 11.05 AM 30.24 WILOSY 17 27 Yes 11.0 PM 10.224 WILOSY 17 Yes 11.0 PM 20.24 WILOSY 18 Yes 11.5 PM 20.15 WILOSY 28 Yes 13.5 PM 2A/15 WILOSY 29 Yes 14.5 PM 2A/34 WILOSY 21 Yes 15.0 PM 2A/34 WILOSY 23 14.1 Yes 2.00 PM 15 WILOSY 23 14.1 Yes 2.00 PM 15						
WILO3S 16 76 Yes 11.0 PM 9X24 WILO3D 17 27 Yes 11.0 PM 10.23 WILO3C 17 27 Yes 11.0 PM 20.15 WILO3C 18 28 Yes 13.0 PM 20.15 WILO3C 20 Yes 14.5 PM 24.73 WILO3C 30 Yes 14.5 PM 24.73 WILO3C 31 Yes 14.5 PM 24.73 WILO3C 31 Yes 1.00 PM 15 WILO3C 32 34 Yes 2.05 PM 15 WILO3C 32 34 Yes 2.05 PM 15		24×6				***************************************
WILGOS 17 27 Yes 1.10 PM 1223.4 WILGOS 17 27 Yes 1.15 PM 20.15 WILGOS 18 28 Yes 1.35 PM 20.15 WILGOS 19 70 Yes 1.45 PM 2.43.4 WILGOS 20 Yes 1.45 PM 2.43.4 WILGOS 31 Yes 1.50 PM 1.5 WILGOS 20 Yes 2.05 PM 1.5 WILGOS 23 31 Yes 2.05 PM 1.5	0	120	ox .			
WILGON 17 27 Yes 115 PM 20 IS WILGON 18 Yes 115 PM 2X15 WILGON 18 Yes 135 PM 2X15 WILGON 19 Yes 145 PM 24X34 WILGON 20 Yes 145 PM 24X34 WILGON 20 Yes 150 PM 15 WILGON 23 Xh Yes 200 PM 15		120	0.0			
WILGOS 18 28 Yes 13.0 PM 20.5 WILGOS 19 70 Yes 145.PM 245.34 WILGOS 20 Yes 145.PM 245.34 WILGOS 31 Yes 145.PM 245.34 WILGOS 21 31 Yes 20.0 PM 15 WILGOS 22 32 34 Yes 20.5 PM 15		48	Yes			
WILO32 29 Yes 135 PM 15 WILO34 20 Yes 145 PM 24374 WILO34 21 31 Yes 145 PM 24374 WILO34 21 31 Yes 150 PM 24374 WILO36 22 34 Yes 260 PM 15 WILO36 23 34 Yes 265 PM 15		24	200			
WH.034 20 30 Yes 1-39 PM 24A34 WH.034 22 33 Yes 2.00 PM 15 WH.036 23 34 Yes 2.00 PM 15		8	Vari	The state of the s		
WILIO54 22 33 Yes 200 PM 15 WILIO56 22 14 Yes 205 PM 15		10	200			
WIL055 22 As 7cs 2.00 PW 153 WIL056 23 34 Yes 2.05 PM 15	07	70	2			
WI.036 23 34 Yes 2.05 PM 15		. 03	S. N			
3. 1 San	***************************************	.48	- N			
WH.057 24 35 Tex 2.10 PM; swale			N.	mr.d 0		
WILDOO 26 37 Yes 2:25 PM 15x19			No	O Fa	0	
WHACAC 277 38 Vec 2.40 PMS 36	0 28	64	oN.			
WHITE AND VALUE TO THE SAME AND		72	No.			
2.50 USA 1975 C		108	Yes			





BOARD OF SUPERVISORS 566 Beaumont Road, PO Box 79, Devon PA 19333 Edward M. Strogen, Jr., Chairman Telephone: 610-687-3000 / Fax: 610-687-9666 Vincent J. Rogusky, Vice Chair William F. Connor, III James G. Spofford Richard T. Frazier

July 20, 2005

Karen Holm **Delaware County Planning Commission** Government Center Building 201 West Front Street Media, PA 19063-2751

Re: Crum Creek Watershed

Dear Ms. Holm:

Enclosed herewith please find the survey forms completed by Easttown Township for the Crum Creek Watershed for your review and use.

If you have any questions, please contact the undersigned or Surender Kohli.

Sincerely,

Gene R. Williams, Township Manager

Cc: Surender Kohli P.E.

Email: easttown@easttown.org Website: www.easttown.org

CRUM CREEK WATERSHED ACT 167 STORMWATER MANAGEMENT PLAN

MUNICIPALITY QUESTIONNAIRE

Please fill out the following questionnaire and return it to Karen Holm at the Delaware County Planning Department, Court House and Government Center Building, 201 West Front St. Media, PA 19063 as soon as possible. If you have any questions or comments, or if you would like these forms in digital format, please call Karen at 610-891-5213 or e-mail her at https://doi.org/10.1016/journal.com/holm/mode.co.delaware.pa.us.

PART I - GENERAL INFORMATION

Municipality:	EASTIONN Toursmit
Contact Person:	Gene R. WILLIAMS
WPAC Designee:	SUREMORR S. KONLI
Title:	Township ENGINEER
Address:	56 6 BEAUMON RAM
Address.	P-0. Box 79 Deron PA 19333
Phone:	610-687-3000
Fax:	610-687-9666
	rm (if different from Contact Person):
-	
Name:	
Address:	
Phone:	
Fax:	
E-mail:	

PART II - REGULATORY ACTIVITIES

A. Please indicate the regulations you currently use to manage development.

REGULATION	MUNICIPAL ORDINANCE	COUNTY ORDINANCE
Zoning Ordinance	V	
Subdivision/Land Development Ordinance	V	
Separate Stormwater Ordinance		
Separate Floodplain Ordinance		

B. Please indicate the agencies/individuals who review and approve land development plans and zoning variance/waiver requests.

	LAND DEVELO	PMENT PLANS		/WAIVER REQUESTS
ENTITY	REVIEW	APPROVE	REVIEW	APPROVE
Supervisors				
Municipal				
Engineering	1			
Department				
Municipal				
Planning				
Department				
County Planning	1.0			
Department				
County				
Conservation				
District				
Zoning Hearing				
Board				
Consulting	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \			
Engineer				
Others (List				
Below				

-	
C.	Please provide copies of your zoning, subdivision/land development, and separate stormwater management and floodplain ordinances and your current zoning map when you return this questionnaire. Please list these documents below.
_	Subdiving a land derelopment ordinal
-	Zong MAP.

PART III - MUNICIPAL AND LOCAL PLANNING ACTIVITIES

Please indicate below whether your community has approved the following plans and maps and the date of the most recent update.

ITEM	APPROVED/DATE	IN PROGRESS	PLANNED WITHIN NEXT YEAR
PA Act 537 Sewage Facilities Plan	1999		
Comprehensive Land Use Plan	2001		
Existing Land Use Maps		1005	
Proposed Land Use Maps		2005	
Zoning Maps		2005	

PART IV - FLOOD INSURANCE PROGRAM AND COMPREHENSIVE LAND USE PLAN

Please indicate below whether your community participates in the National Flood Insurance Program:

ITEM	PARTICIPATES (Y/N)
Flood Hazard Boundary Map (FHBM)	Y
Participates in FEMA Emergency Program	у
Participates in FEMA Regular Program	ý

PART V - EXISTING STORMWATER RELATED PROBLEMS AND STRUCTURES

Please complete the matrices on the following pages (Forms A and C-J) to describe any significant stormwater-related problems (Form A), Existing or Proposed Flood Control Projects (Forms C & D), Existing or Proposed Storm Water Control Facilities (Forms E and F), Existing or Proposed Stormwater Collection Systems (Forms G & H), Present and Projected Development in the Flood Hazard Area (Form I), and Water Quality Problem Areas (Form J) that you are aware of in your municipality.

What we would like to ask of you is that you complete as much of the attached data collection forms as possible. There is a different form for each item of information as summarized in the attached "FORM DESCRIPTION SUMMARY. The process would be as follows starting with the problem areas (Form A):

- Place the location of the problem area on the map as shown in the attached example map.
- Draw a box on the map with the problem area identifier starting with A-1 with an arrow leading from the problem area identifier to the problem area.
- Place an A-1 in the first column of FORM A.
- Put a check in each box in the A-1 column that represents the problems associated with that particular problem area.
- Repeat with the next problem area (A-2) and so on.

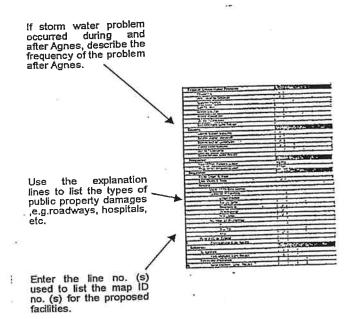
													-	
		STORM	WATER	RPROB	LEM AR	EAS FO	RM A.	SHE			OF			
WATERSHED					MPLET			Befor	re Filli	ng Ou	ıt For	m,		
MATEROTIED	CAMM CHEEN								Instru					
Name:	Crum creek		Name	2:	Sure	nder	Ch	Li						
	ENS17 mm 70			hone:	610-6			For C	County	/ Use:				
Municipality:	Chester 10	V-MILT	Date:			1105								
County:	C Lenter		Duto.	I	7		1							
MAP NO. *		A- I	A-2	A-	A-	A-	A-	A-	A-	A-	A-	A-	A-	
Types of Storm W	ater Problems	1	201		H 1272						10000			
Flooding		×	×											
Accelerated Erosio	in	V	Xi.	-	1									
Sedimentation		<u> </u>	1											
Landslide														
Groundwater														
Water Pollution														
Other (Explain)														
Explanation Line N	Io. (On Back)	1	2											
Cause (s)														
Storm Water Volur	ne	×	×	1										
Storm Water Veloc		-												
Storm Water Direct														
Water Obstruction														
Other (Explain)														
Explanation Line N	lo (On Back)													
Frequency	to: (On Buok)		5.5											
Year Most Recent	Occurred	04	04											
Year First Known		-	101											
Regularity	Occurred		1000						Y 100 1					
More Than 1 Year		NAME OF TAXABLE PARTY.	X			- Contains								1
Less Than 1 Year				1										
			1	1									1	
Only During Agne					0.00	5.74							Wales	8
Duration (If Appli	Cable	X	×			100000000000000000000000000000000000000		N.S. Company			T			
Less Than 1 Day		-	+^		1									
1 Day + (Enter Da					al evening			题与企		1		VI, its		į.
Property Damage		and the second	and the same of	Away was a substant	MANAGES I	(C)4968241320	SECTION STATE		Name of the last					
Loss of Life/Vital	Services	-	+	1		1								
Private	l	-			-	1								
More Than One C		1	+	+	+	+		1						
Types of Propertie						+								
Number of Proper		-	-											
Public (List Types		+	+	-										
Explanation Line	INO. (OII DACK)	1.00 A.B.		P.V.		NAME OF THE OWNER, OF THE OWNER, OF THE OWNER, OF THE OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER, OWNER,							722	1
Solutions	-				Stores Harris	and Assessment								
Suggested	No (On Book)	-	-		-	-								
Explanation Line		-	+	1	_	-	-							
Formally Propose			-		-	_	+	-	1					
Explanation Line	No. (On Back) ID No. if found o		ther f	orm lie	ting pro	nnoso	d faci	lities	1	1				

INSTRUCTIONS

Begin with A.1 as the first map number to identify the first' storm water problem area. Illustrate the defined problem on the watershed map provided, and identify it with its map number.

For each storm water problem area within your municipality, enter the map identification number at the head of the column. Describe the problem by placing a check (4 in the appropriate blocks of the column under this map identification

When an additional explanation is required, write the line number(s) used in the column marked "Explanation Line No. (s)*.Example 1, 2-3, etc.



Definitions

Storm Water Problem Area

An area that defines the farthest extent of a storm water problem, including any area that experiences property damage, inundation, accelerated erosion, surface water pollution, groundwater pollution, landslides, or any other problem as a result of storm water runoff.

Groundwater
Water in the ground below the water table.

Accelerated Erosion

The removal of the surface of the land through the combined action of man's activities and the natural processes at a rate greater than would occur because of the natural process alone.

Sedimentation

The process by which soil or other surface materials, transported by surface water, is deposited on the surface water. stream bottoms.

Water Obstruction

Any dike, bridge, culvert, wall, wingwall, fill, pier, wharf, embankment, abutment, or other structure located in, along, across, or projecting into any watercourse, floodway, or body of water.

	EXPLANATION	LINES (continued)	
	culvert size Restriction	1	
4-2	culvent size Rentrichan		
=			
=			
=			

Eastown (Eas)

f

TROSEEN S

L:\GiSData\\isc-stormwater\Act167DOCS\\DataCollectionForms\obsforms.xls

A D

Multiply Cuttor Cuttor	Municipal Stream Obstruction Data			FORM B - OBSTRUC	FORM B - OBSTRUCTION DATA COLLECTION is completed by: とんのか よっこの	RUCTION D	ATA COLLE	ECTION	T∈ Amount of fill Diameter	7 MD	E E	Meterial msy = Store Masony Stucture		OF / S	
Type	nous Eastonn/Cla			Field work p. Date(s):		120	TO		HT = Height W = Width PW = Pler M	Adth	8 8 8 8		WW ≈ Wingwaii SW ≈ Sidewali		
1 1 1 1 1 1 1 1 1 1			Part of	Sulvent	Shape	S Bridge	1		Surements r w	Wd.		MATERIAL / INLET CONDITION		NOTES	T
	4400 60 0 8 d 8 R d 8000 01 1 1 1 1 1 1 1 1	$\perp \downarrow \downarrow \downarrow$) agona					1111	+++		6 9 9	4	707 6 70		TTTT
	74 15 74 74 74 74 74 74 74 74 74 74 74 74 74	4	7		>	+++-	+++	1/2		, } \ }	355	1	3-6		13.1
)								
								++++	+++				Ш		

				EXISTING F		NTROL PRO	JECT FORM C.	NONE	- SHEE	T OF
WATERSHEI)	FORM CO	MPLETED E		2000 001	TITOLITA	TYPICAL TYPES OF	FLOOD CON	TROL PROJECT	
	Crum Creek	Name: Telephone: Date:	Surende	Kohl1 1-3000		Channel Ex Channel Re Rock Ripra		G	evee Sabions Pipe Channel	Dams Floodwall Concrete Lining
For County U	se:		- Hand H							
Map ID No.	Type of Flood Contro	l Project	Year Constr Built	Expected Life Yrs.	Design Frequency Yrs.	Flood Discharge C.F.S. (if known)		Owner Name	e, Address, and F	Phone
C-										27
C-										÷
C								,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
C-										
C-										

FORM D

				PROPOSED	FLOOD CO	NTROL PF	ROJECT FO	ORM D.			SHEET OF
WATERSHE	D	FORM CO					TYPICAL 1	YPES OF F	LOOD CO	NTROL PRO	DJECTS
Name: Municipality: County:	EDS170m Tup	Name: Telephone: Date:	Surencle 610-687- 512110	3000		Channel Ex Channel Re Rock Ripra	ealignment			Levee Gabions Pipe Chann	Dams Floodwall nel Concrete Lining
For County L	Jse:										
Map ID No.	Type of Flood Control Project	Stud YES Prelim.	ly Phase Be Final	gun N0	Year Constr. Planned	Projected Compltn. Date	Expected Life Yrs.	Design Frequency Yrs.	Flood Discharge C.F.S.	Map ID No. Form A*	Owner Name, Address, and Phone
D-											
D-											
D-											
D-											
D-											

^{*} Enter the storm water problem area's Map ID No., if the proposed project will solve or reduce any / all of an identified drainage problem.

				EXISTING S	STORM WATER CONTRO		SHEET	OF			
WATERSHE Name: Municipality: County:	Crum Emizono Jup Chester	1	Surenda 610-687	KIL.	A ut	perinit ater Control Facility natural / man-made device or tilized to reduce the rate and / om a site or sites.	structure specifically design	ned and / or unoff			
For County L	Jse:										
Map ID No.	Type of Storm Wat Control Facility	er	Year Built		Contact Person Namę, Address and I			Comments			
E- (STORM wate Del	tenhan	1996	June 11 C many	nesbragh —						
E- 2	h		1995		<i>ــ</i>						
E- 3	n		1980	PHERE	em Run jn estate						
E- 1	N.		1996	Bern	jn estate						
E-											
E-							<u> </u>				
E-											
E-							*				
Detention F	Retention Basin	TYPICAL T	YPES OF S	STORM WAT	ER CONTROL FACILITIE	S Roof-Top Storage					
Natural Pond	or Wetland					Semi-Pervious Paving					
Parking Lot F	Pondling					Infiltration Device (S	. •				

					PROPOSED	FLOOD CO	NTDOL DI	PO JECT FO	RM F		SHEET)F
			F0014 00			FLOOD CO	NIKOLFI	ROJECTIO	I XIVI I .	DEFINITION			
WATERSHE)		FORM CO	MPLETED	Λ		Storm	Water Contro	ol Facility	DEI IIIIIIII			
				C (1)	Yoll		Storm	A natural / r	nan-made	device or structu	re specifically	designed and /	or
Name:	Crum		Name:	Siverela				utilized to re	duce the	rate and / or volu	me of storm wa	ater runoff	
Municipality:	EDS17 cm	Two	Telephone:					from a site		Tato and 7 of You			
County:	chester		Date:	57311	85°			IIOIII a Site	JI 31100.				
For County U	se:												
	T	C C t = \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		Dranged C	onstr. Dates	Map No.		ontact Perso	on.	-		Comments	
Map ID No.		f Storm Wat rol Facility	ei 	Start	End	Form A*		Address and					
F-		TOTT GOING			0	0							
				700	the last	orld							
F					· ·								
F-													
F-				-									
Lett s													
F-													
F-								-					
F-								3					
F-													
* Enter the s	orm water pr	oblem area'	s Map ID No	., if the prop	osed project	will solve or	reduce any	/ all of an io	lentified dr	rainage problem.			
			TYPICAL T	YPES OF S	TORM WAT	ER CONTRO	E FACILII	I E S					
Detention / R	etention Basi	n		-					Roof-Top				
Natural Pond									Semi-Per	vious Paving			171
Parking Lot F				1	1				Infiltration	Device (Seepag	ge / Recharge I	Basin or Under	ground Lank)

FORM G (Front)

		1													
		1			EXISTING F	LOOD CON	TROL PRO	JECT FOR	M G.			SHEET		OF	
ATER	SHED		FORM CO	MPLETED E					INSTRUCTIO	NS				1 1	
	Crum	colok			7.0	Diagram ea	ch system	on the appr	opriate map. E	Establish ma	ap points to	show chang	es in syste	em elements,	
ame:	-1 W.n		Name:	Surenda	- Kohli	pipe size, o	r pipe direc	tion. (If unk	nown, outline t	he system e	extent.) Com	plete this to	orm only w	to within a	
unicipa	ality: (=Yas	170m	Telephone:	610-24	4-55-91	information	on constru	ction is avai	lable. Use a se	eparate forn	n for each add	tional aveta	m 20 num	here higher	
ounty:			Date:			system con	secutively (ex. G-1,G-2	2,G-3). Start the	e first point	t See Semi	lonai syste	e & Form	n Reverse	
						For example	e, G-3 ends	one syster	n, so G-23 beg	jins the nex	Design	ne Diagram	3 Q T OIIII V	Name o	f Final
Ma	ap I.D.	Sy	stem's Elemen	ts (x)		Measuren			Material	Year	Data	Contact	Person	Ownersh	
	No.				Pipe		annel / Swa		Material	Constr.	Available	Name an		Maintenance F	
From	То	Pipe	Open Channel	Swale	D	TW	В	Depth		Consu.	Available	Traine an			
						DN2=	ana	lette.							
	G-				14	7702	0,00	7-14							
	-					-									
i-	G-														
	G-					-									
}-	<u> </u>					1									
	G-	-													
,-	<u> </u>														
3-	G-														
	1														
}-	G-														
- 3-	G-									-			-	-	
3-	G-														
3-	G-								 						
								-							
}-	G-					-		-							
3-	G-														
		I ent key on re	l	-	-	-									

											SHEET	-	OF.		
		DDESENIT	& PROJECTED	DEVELOR	MENT IN T	HE FLOOD	HAZARD AREA	(FORM 1)			SHEET	, ——`	1	1	
VATERSI		TILOLIVI	FORM CO	MPI FTED I	3Y				DEFINITIO	N					
VATERS	חבט		TORWIGO				FLOOD HAZAF	D AREA:				5551.05	10		
		C 2011	Name:	Sirende	Kell			A NOR	MALLY DRY L	AND AREA	THAT HAS	BEEN OR	18	-	
Name:	cyum	Creen	Telephone:	115 7	14-5591			SUSCE	PTABLE TO E	EING INUI	IDATED BY	IHE		-	-
	ity: axon	ma	Date:	610 6	7 33 11			100-YE	AR FLOOD.		1			-	
County:	chest	er	Date.	-		-		no	detail in fe	In home	wilste				
								110	looding occi		0 0	1 1 -6	Ba.	ges	-
For Count	ty Use:							6	looding occi	in gen	willy ala	+3 Ira 21	4-		+
			0511517	Veen		Cor	tact Person		- 3	1 0	Comments	3			
Map ID	TYP	E OF DEVE	LOPMENT	Year			dress and Phone								
No.				Built		Ivaine, Au									
							-								
-							-								
							-								
												-	+		
1-										-					
										-		-	+		
	-									-		-			
												-			
1-										1				-	_
														-	
		-													
-					1										
							+			7					
l -															
							+			-i					
											-				
-												-			
		1											-		
1_														-	-
				1							-			-	
	_				1	1								1	_

		MATE	D OLIAI	.ITY PRO	DIEMA	DEACE	ODM	, en	EET_		OF	1	-	Ť
WATEROUTER		WAIE	R QUAL	ITY PRO		RM CO				1	_ OF _	1	Ī	╁
WATERSHED			+	-	FOI	TIVI CO	IVILEE	ILD	k		-	-	-	╁
N	(num wel	1,	-		Nam	<u>. </u>	-		0.	V.		-		╁
Name:			+	-		hone:		ren		Kor	hoo	1	+	╁
Municipality:	anson 1	mo	+	+	Date		6	513	OK)-		chro	+	+	╁
County:	chester	 	+	1	Date	1		2/2	110	5			1	╁
SITE		J-	J-	J-	J-	J-	J-	J-	J-	J-	J-	J-	J-	
Types of Water Qu	ality Problems													
High Community To														
High Temperature														
High Turbidity														Γ
Hydrocarbon Polluti	on													
Low Community Div														
Low Dissolved Oxyg														
Low pH														
Nutrient Enrichment												4		
Poor Habitat														Γ
Other/Explanation L	ine No.													
Potential Cause(s)														
Agriculture														
Construction Site														
Erosion														
Lake Discharge														
STP Outfall														
Other/Explanation L	ine No.													
Frequency	NAME OF TAXABLE PARTY O													
Year Most Recent C	occurence													
Year First Known O	ccurence													
Source of Informat														Γ
County Water Qualit														Γ
Driveby														
Other/Explanation L	ine No.													
		EXPL	ANAT	ION LIN	IES									
1														
2														
3														
4														
5								111111						
3														
7														
В					1									
9														
10				T										
i				2mari							٨		wsten	

Form O - Outfall Data

			wit your.									
			work has been conducted to date. This internation will asternal dung was - 2006 year.	Describe land dRating	upstream drain (0-2) area.	ut						
	t Rain	2	in willy o	Water	Color/Odor upstr (specify if float area.	algae or sediment	present)					
ours: Yes	Days Since Last Rain	- k	MIS is former	Flow o	Observed (Yes or no)							
Time Since Last Rain was > 72 Hours: Yes_	Da	Cyum creek.	to clate. 7	Channel	Side Slopes* (H:V)							
nce Last Rain		ater:	onducted	Channel	Bottom	(feet)						
Time Sir	10	Name of receiving water:	ha beer c	Channel	Depth							
	> 0.1 inches	Name of	eld work	Depth of	flow in pipe (feet)							
Date:	< 0.1 inches:	0	No Lad	Pipe	Diameter (inches)							
SACI	Quantity of Last Rain: < 0.1 inches: > 0.1 inches	Elega am Jameson C		Time	(00:00) am/pm	•:						
Su Remoial KMLI	Quantity of	سسه لدي		Storm	Drain? Yes/No	Not	sure					
Sule				Photo	**							
erson:		funicipality:		be	wale							

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling,

blocked catch basins or drain)

H/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

NOTES:



12/06/2004 09:47 6106879666



566 Beaumont Road, PO Box 79, Devon, PA 19333 Telephone: 610.687.3000 Fax: 610.687.9666

FAX TRANSMITTAL

DATE:	12	4	عاد	54	
	_		_		

SEND TO: Bollan

FAX #: 610-837-5918

FROM: Suyende KII.

FAX#:

610.687.9666

PHONE #:

610.687.3000

PAGES:

(including cover)

ORIGINAL: [] WILL BE MAILED

WILL NOT BE MAILED

COMMENTS:

If you do not receive the complete number of pages indicated or there is a problem with the transmission of this fax, please call 610.687.3000. Thank you.



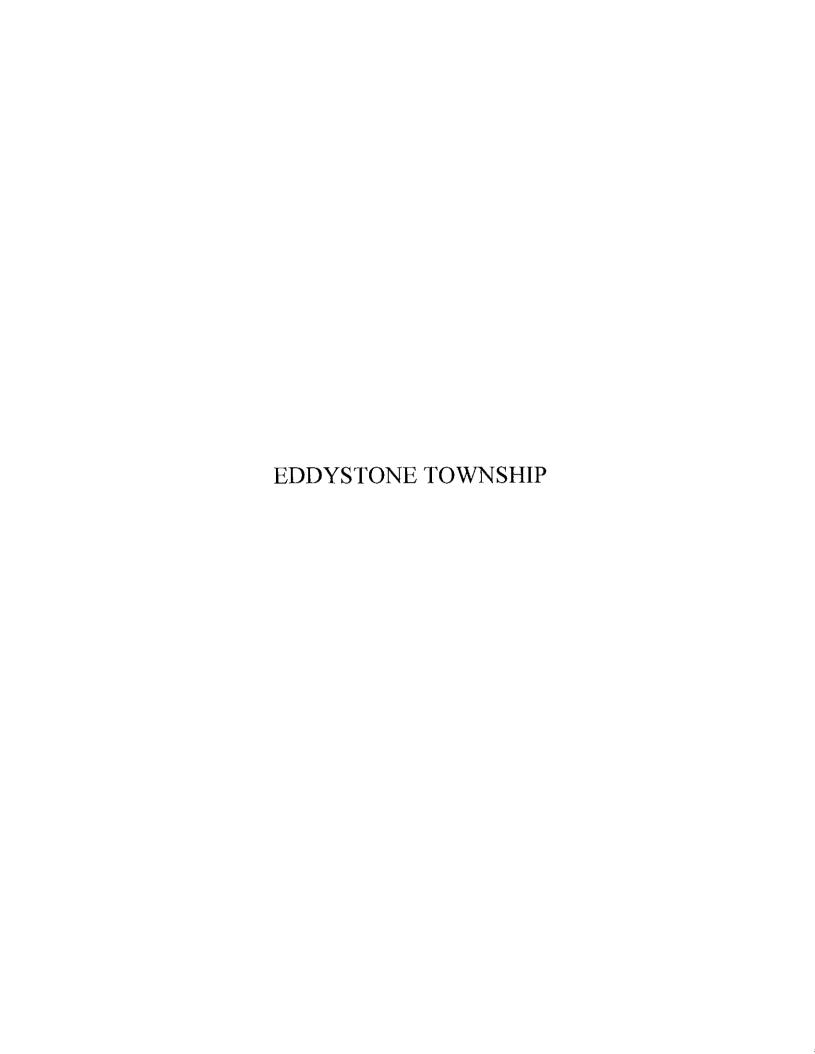
566 Beaumont Road, PO Box 79, Devon, PA 19333 Telephone: 610.687.3000 Fax: 610.687.9666

FAX TRANSMITTAL

SEND TO: Boill Brokan	FAX #: 610-837-5918
FROM: SUVENDE KUL. EASTTOWN TOWNSHIP	FAX#: 610.687.9666 PHONE #: 610.687.3000
PAGES: (including cover) ORIGINAL: [] WILL BE MAILED	WILL NOT BE MAILED
COMMENTS:	

0.8 Miles CCPC, 2003 Chester County **Srum Creek Watershed** 1 inch = 0.4 mile-ownship 1:25344 Easttown 7 Municipal Area Outside the Crum Creek Watershed Crum Creek Watershed Rivers and Streams Municipal Boundary Ponds and Lakes and Parcels Roads

0.8 Miles CCPC, 2003 **Srum Creek Watershed** Chester County Easttown Township 1 inch = 0.4 mile1:25344 Municipal Area Outside the Crum Creek Watershed **Crum Creek Watershed** Rivers and Streams Municipal Boundary Ponds and Lakes Land Parcels Roads





Borough of Eddystone

August 25, 2005

Ms. Karen Holm Delaware County Planning Department Government Center Building 201 W. Front Street Media, PA 19063

RE: Crum Creek Watershed

Act 167 Stormwater Management Plan

Dear Ms. Holm:

Enclosed please find the completed questionnaire on the subject project.

Very truly yours,

Brian Lauer

Borough Secretary

Brean Lauly

BL/pm Enclosure (1)

cc: CEA File No. 82800-115-CCW

CRUM CREEK WATERSHED ACT 167 STORMWATER MANAGEMENT PLAN

MUNICIPALITY QUESTIONNAIRE

Please fill out the following questionnaire and return it to Karen Holm at the Delaware County Planning Department, Court House and Government Center Building, 201 West Front St. Media, PA 19063 as soon as possible. If you have any questions or comments, or if you would like these forms in digital format, please call Karen at 610-891-5213 or e-mail her at holmk@co.delaware.pa.us.

PART I - GENERAL INFORMATION

Municipality:	Eddystone Borough
Contact Person:	Brian Lauer, Borough Secretary
WPAC Designee:	Charles J. Catania
Title:	Borough Engineer
Address:	520 W. MacDade Boulevard
	Milmont Park, PA 19033-3311
Phone:	610-532-2884
Fax:	610-532-2923
Person Completing f	form (if different from Contact Person):
Name:	Jamie H. Bricker
Address:	520 W. MacDade Boulevard
	Milmont Park, PA 19033-3311
Phone:	610-532-2884
Fax:	610-532-2923
E-mail:	jamie@cataniaengineering.com

PART II - REGULATORY ACTIVITIES

A. Please indicate the regulations you currently use to manage development.

REGULATION	MUNICIPAL ORDINANCE	COUNTY ORDINANCE
Zoning Ordinance	Chapter 295	
Subdivision/Land Development Ordinance	N/A	
Separate Stormwater Ordinance	No. 609	
Separate Floodplain Ordinance	N/A	

B. Please indicate the agencies/individuals who review and approve land development plans and zoning variance/waiver requests.

	LAND DEVELO	PMENT PLANS	ZONING VARIANCE/	WAIVER REQUESTS
ENTITY	REVIEW	APPROVE	REVIEW	APPROVE
Supervisors	X	X		
Municipal				
Engineering				
Department				
Municipal	X		X	
Planning				
Department				
County Planning	X		X	
Department				
County	X	X		
Conservation				
District				
Zoning Hearing		£5	X	X
Board				
Consulting	X		X	
Engineer				
Others (List				
Below				

Please provide copies of your zoning, subdivision/land development, and separate stormwat	eı
management and floodplain ordinances and your current zoning map when you return this	6
questionnaire. Please list these documents below.	

Zoning Chapter 295

Stormwater Management Ordinance No. 609 (Crum Creek Act 167 Ordinance – not included) Zoning Map – Borough of Eddystone (4/19/04)

PART III - MUNICIPAL AND LOCAL PLANNING ACTIVITIES

Please indicate below whether your community has approved the following plans and maps and the date of the most recent update.

			PLANNED WITHIN
ITEM	APPROVED/DATE	IN PROGRESS	NEXT YEAR
PA Act 537 Sewage Facilities Plan	May 2003		
Comprehensive Land Use Plan	April 2004		
Existing Land Use Maps	April 2004		
Proposed Land Use Maps	April 2004		
Zoning Maps	April 2004		

PART IV - FLOOD INSURANCE PROGRAM AND COMPREHENSIVE LAND USE PLAN

Please indicate below whether your community participates in the National Flood Insurance Program:

ITEM	PARTICIPATES (Y/N)
Flood Hazard Boundary Map (FHBM)	Y
Participates in FEMA Emergency Program	N
Participates in FEMA Regular Program	Y

PART V - EXISTING STORMWATER RELATED PROBLEMS AND STRUCTURES

Please complete the matrices on the following pages (Forms A and C-J) to describe any significant stormwater-related problems (Form A), Existing or Proposed Flood Control Projects (Forms C & D), Existing or Proposed Storm Water Control Facilities (Forms E and F), Existing or Proposed Stormwater Collection Systems (Forms G & H), Present and Projected Development in the Flood Hazard Area (Form I), and Water Quality Problem Areas (Form J) that you are aware of in your municipality.

What we would like to ask of you is that you complete as much of the attached data collection forms as possible. There is a different form for each item of information as summarized in the attached "FORM DESCRIPTION SUMMARY. The process would be as follows starting with the problem areas (Form A):

- Place the location of the problem area on the map as shown in the attached example map.
- Draw a box on the map with the problem area identifier starting with A-1 with an arrow leading from the problem area identifier to the problem area.
- Place an A-1 in the first column of FORM A.
- Put a check in each box in the A-1 column that represents the problems associated with that particular problem area.
- Repeat with the next problem area (A-2) and so on.

- Repeat for existing flood control projects (FORM C) placing a triangle on the maps and starting the labeling with C-1.
- Repeat for all forms.

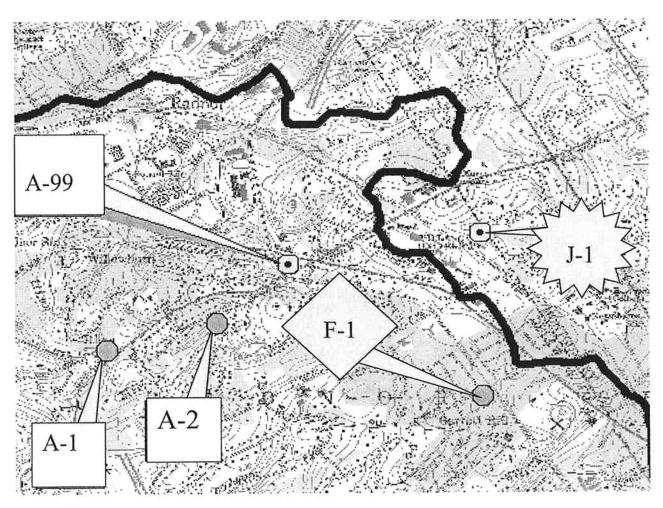
The sample map attached shows three problem areas (A99- A1 and A-2), one proposed flood control project (F-1) and one water quality problem (J1).

Use additional paper to provide <u>detailed</u> descriptions of your most serious problems and attach a map to show the location of the problem. Attach photographs, if available.

If you have any storm or combined sewers, please provide maps showing the collection system and overflow discharge locations and an estimate of the average annual discharge at each overflow point.

The more detail you provide, the better we will be able to evaluate the situation for your municipality. We appreciate your help.

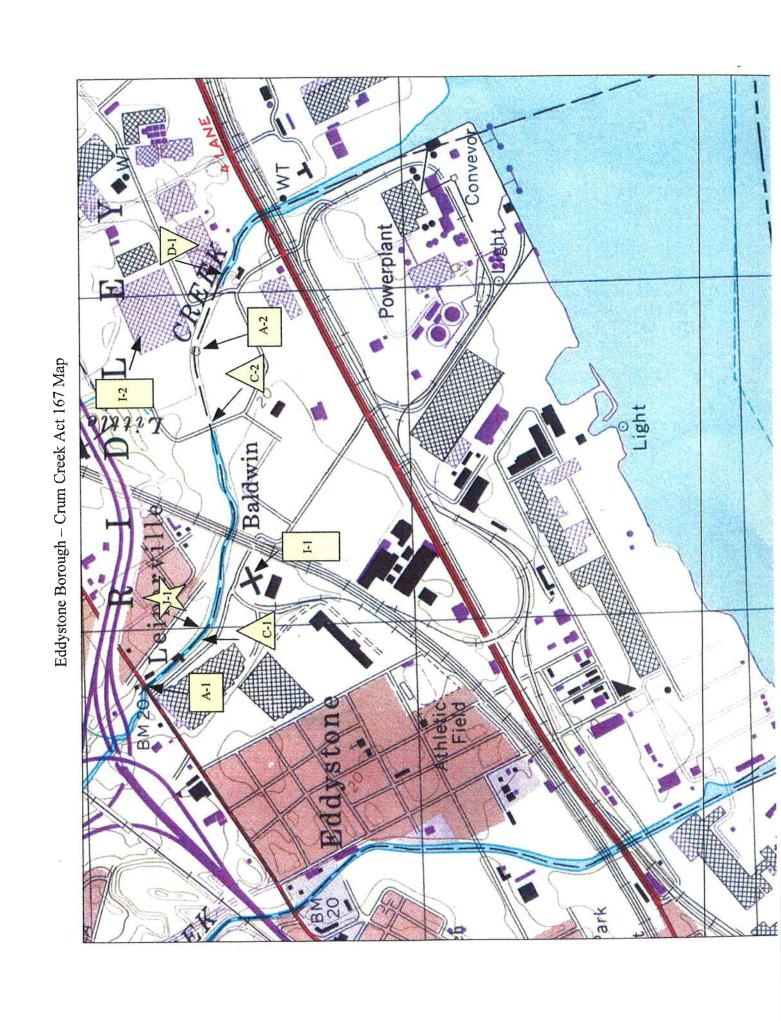
Sample Location of Information from Data Collection Forms on the Municipal Map



C:\Documents and Settings\charles catania\My Documents\U Bricker\Eddystone 82800\Act 167\EB - CC Act 167 Questionnaire,doc

705	FORM A - STORM WATER PROBLEM AREAS SHEET 2 OF 2
	EXPLANATION LINES
1	CC flooding at Chester Pike bridge
2	CC flooding on Boeing's site, formally proposed floodwall to alleviate

	FC	ORM A -	STORM	WATE	R PRO	BLEM A	REAS	SH	EET	1	OF	2	
WATERSHED)		FOR	м со	MPLE	TED B	Y	Before	-	-			
							5-11-5-	See Ir	struct	ions o	n Back		
Name:	Crum Creek		Name		Jamie	H. Bri	icker						
Municipality:	Eddystone Bo	rough	Telepl	none:	610-5	32-288	34	For Co	ounty l	Jse:			
County:	Delaware		Date:		8/24/2			1					
County.	Dolaware				L			1					
MAP NO. *		A-1	A-2	Α-	A-	A-	Α-	A-	Α-	A-	A-	A-	A-
Types of Storm	Water Problems		ii ja	male.		A							
Flooding		X	X										
Accelerated Eros	ion												
Sedimentation													
Landslide													_
Groundwater													
Water Pollution			1										
Other (Explain)													
Explanation Line	No. (On Back)	1_	2										
Cause (s)												a Rings	
Storm Water Vol	ume	X	X										
Storm Water Vel	ocity												
Storm Water Dire	ection												
Water Obstructio	n	X											
Other (Explain)													
Explanation Line	No. (On Back)												
Frequency		12.23	at A Constitution	N G W	0.5200	NAME OF	MACON.				MASS		The second
Year Most Recer	nt Occurred	2003	2002										
Year First Known	Occurred	?	?										
Regularity				ante:		10#15	HENRY				1116		AND DESCRIPTION OF THE PERSON
More Than 1 Yea	ar												
Less Than 1 Yea	nr	X	X										
Only During Agn	es												
Duration (If App	licable)	e teda								I CANE			
Less Than 1 Day	/	X											
1 Day + (Enter D	ays)												Lane Section
Property Damag			1000	950					Par A		10000		BANK Y
Loss of Life/Vital	Services												
Private			X										
More Than One	Owner												
Types of Propert	ties		Ind										-
Number of Prope	erties		1										
Public (List Type	es)	X											
Explanation Line		1										2000	Series and
Solutions		201127	122			- 2088	9 / 4 / 1		1.01.0	a service		185MH	Service Control
Suggested												-	-
Explanation Line	No. (On Back)												
Formally Propos			X										-
Explanation Line			2										
	D No. if found	on an	v other	form	listina	propos	sed fa	cilities.					



			1000	EXISTING F	-LOOD CON	JTROL PRO	EXISTING FLOOD CONTROL PROJECT FORM C.	SHEET	1 OF 1	
WATERSHED	0	FORM CO	FORM COMPLETED BY	.			TYPICAL TYPES OF FLOOD CONTROL PROJECTS	O CONTROL PROJECTS		
Name.		Name:	Jamie H. Br	icker		Channel Ex	Channel Excavation / Widening	Levee	Dams	1
Municipality:	Municipality: Eddystone Borough	one:	610-532-2884	84		Channel Realignment	alignment	Gabions	Floodwall	
County:	П	Date:	8/24/2005			Rock Riprap		Pipe Channel	Concrete Lining	
For County Use:	se:									
Map ID No.	Type of Flood Control Project	l Project	Year	Expected	Design Flood	Flood	Owne	Owner Name, Address, and Phone	one	
			Constr Built	Life Yrs.	Frequency Yrs.	Frequency Discharge Yrs. C.F.S. (if known)				
2	Stone Channel Walls		c	¢.	c	ć	Ġ.			
C-2	Concrete Box Culvert		٠.	C	c	¢.	The Boeing Company (Dale Davis) P.O. Box 16858 P25-75 Philadelphia. PA 19142-0858	e Davis) (610) 591-2006 3	31-2006	
ڻ ن										
ట										
ပ်										

				PROPOSEL	PROPOSED FLOOD CONTROL PROJECT FORM D.	NATROL PR	ROJECT FO	RM D.			SHEET 1 OF 1
WATERSHED		FORM CON	FORM COMPLETED BY	>			TYPICAL T	YPES OF FI	TYPICAL TYPES OF FLOOD CONTROL PROJECTS	TROL PRC	JECTS
Name:	Crum Creek	Name:	Jamie H. Bricker	cker		Channel Ex	Channel Excavation / Widening	/idening	_	Levee	Dams
Minicipality	Minicipality Eddystone Borough	Telephone: 610-532-2884	610-532-28	34		Channel Realignment	alignment		Ū	Gabions	Floodwall
County:	Delaware	Date:	8/24/2005			Rock Riprap	o d			Pipe Channel	el Concrete Lining
For County Use:	se:										
Map ID No.	Map ID No. Type of Flood Control Project	Stud	Study Phase Begun	unt	Year	Projected Expected	Expected	Design Flood	Flood	Мар	Owner Name, Address, and Phone
		YES		ON	Constr.	Compltn.	Life	Frequency Discharge	Discharge	D No.	
		Prelim.	Final		Planned	Date	Yrs.	Yrs.	C.F.S.	Form A*	
					2004/						The Boeing Company (Dale Davis) P.O. Box 16858
D-1	floodwall		×		2005	2005	100	100-yr.	10335	A-2	P25-75
					- 11						Philadelphia, PA 19142-0858 (610) 591-2006
d											
<u></u>											
۵-											
<u></u>											
		ON CLASS	if the prope	tooion poo	will column or	Judi John	/ all of an ide	antified drain	lage probler		

* Enter the storm water problem area's Map ID No., if the proposed project will solve or reduce any / all of an identified drainage problem.

FORM E

				EXISTING (EXISTING STORM WATER CONTROL FACILITIES FORM E.	ES FORM E.	SHEET 1 OF 1
WATERSHED		FORM CO	FORM COMPLETED BY	BY		DEFINITION	
Name:	Crum Creek	Name:	Jamie H. B	ricker	Storm Water Control Facility A natural / man-mad	acility n-made device or stru	Vater Control Facility A natural / man-made device or structure specifically designed and / or
Municipality:	Eddystone Borough	Jue:	610-532-2884	384	utilized to reduc	ce the rate and / or w	utilized to reduce the rate and / or volume of storm water runoff
County:	Delaware	Date:	8/24/2005		from a site or sites.	sites.	
For County Use:	lse:						
Map ID No.	Type of Storm Water	3F	Year		Contact Person		Comments
	Control Facility		Built		Name, Address and Phone		
ம்	No stormwater control facilities exist in the Crum Creek Watershed boundaries of Eddystone Borough.	cilities exist shed Borough.					
ம்							
ய்							
ய்							
ம்							
ய்							
ய்							
ம்							
		TYPICAL T	YPES OF S	TORM WAT	TYPICAL TYPES OF STORM WATER CONTROL FACILITIES		
Detention / R	Detention / Retention Basin				Ro	Roof-Top Storage	
Natural Pond or Wetland	1 or Wetland				Ser	Semi-Pervious Paving	
Parking Lot Ponding	Ponding				Infi Rec	Infiltration Device (Seepage / Recharge Basin or Underground Tank)	age / aground Tank)

FORM F

				PROPOSED	STORM W	PROPOSED STORM WATER CONTROL FACILITIES FORM F.	SHEET 1 OF 1
WATERSHED	Q:	FORM CO	MPLETED B	}. <u>\</u>		DEFINITION	<
	Creek	Name:	Jamie H. Bricker	icker		Storm Water Control Facility A natural / man-made device or structure specifically designed and / or	cture specifically designed and / or
Municipality:	Eddystone Borough	Telephone:	Telephone: 610-532-2884	84		utilized to reduce the rate and / or volume of storm water runoff	blume of storm water runoff
County:	Delaware	Date:	8/24/2005			from a site of sites.	
For County Use:	Use:						
Map ID No.	Type of Storm Water	ē	Proposed (Proposed Constr. Date Start End	Map No. Form A*	Contact Person Name, Address and Phone	Comments
此	No stormwater control facilities are proposed within Eddystone Borough.	cilities are ine Borough.					
ď.							
Ľ.		es:					
ď.							
ıŁ							
岾					ni.		
ıŁ.							
u <u>i</u>							
* Enter the	stormwater problem area's	Map ID No.,	if the proposy YPES OF ST	sed project w rorm wate	ill solve or r	* Enter the stormwater problem area's Map ID No., if the proposed project will solve or reduce and / all of an identified drainage problem. TYPICAL TYPES OF STORM WATER CONTROL FACILITIES	
Detention /	Detention / Retention Basin					Roof-Top Storage	
Natural Pond or Wet Parking Lot Ponding	Natural Pond or Wetland Parking Lot Ponding					Infiltration Device (Seepage / Recharge Basin or Underground Tank)	age / arground Tank)

						EXISTING	1,000 CO!	NTROL PRO	EXISTING FLOOD CONTROL PROJECT FORM G.	G		SHEEL	20
WATERSHED	0		FORM COMPLETED BY	PLETED BY					INSTRUCTIONS	SN	1 1 1	1 000	- steemele
	50			41		Diagram ea	ch system c	on the approp	riate map. Es	tablish map	points to sn	Diagram each system on the appropriate map, Establish map points to show changes in system elements,	n elements,
Name: Cr	Crum Creek		Name:	Jamie H. Bricker	sker	pipe size, o	pipe direct	ion, (IT UNKING	wn, outline th	e system ex	tent.) Comp	pipe size, or pipe direction, (if unknown, outline the system extent.) Complete unit only mere specine	te within a
Municipalii Eddystone Borough	idystone B	sorough	Telephone:	610-532-288	4	information	on construc	tion is availa	Die. Use a ser	parate rorm	or each sys	information on construction is available. Use a separate form for each system, identify the points within a	ts widill a
County: De	Delaware		Date:	8/24/2005		system con	secutively (e	ex. G-1, G-2,	G-3). Start then	ne first point	in each add See Samol	system consecutively (ex. G-1, G-2, G-3). Start the first point in each additional system 20 numbers nigher.	nbers nigner. on Reverse.
		Č	domeio Clamos	(4)		Meacur	Measurements*	ole system	B20 07 0 05	2000	Design		Name of Final
Map ID		Sys	System's Elements (x)	(x)	Ding	incason.	Channel / Swale	ale	Material	Year	Data	Contact Person	Ownership and
NO.	,		0	Cumplo	2	MT.	ď	Denth		Constr.	Available	Name and Phone	Maintenance Responsibility
From	0	ad L	Open Channel	1	٥		,	2					
<u>ტ</u>		NONE											
ტ ტ													
<u>ф</u>													
ල්													
-5 -5													
<u>ල</u>													
ф ф													
ල් ල්													
-6 -6													
ტ ტ													
ტ ტ	100												
*See measurement key on reverse side	ement key	y on revei	se side										

FORM H

Crum Creek Name: Jamie H. Bricker							PROPOSE	D FLOOD	PROPOSED FLOOD CONTROL PROJECT FORM H.	PROJECT	FORM H.			SHEET	1 OF 1
Crum Creek Name: Jamile H Bricker On the major in proper a standard content on protection gradient a map pet in processed standard content on protection gradient and pet in the content of the con	WATERS	4ED		FORM CO	MPLETED	BY				INSTRUCT	SNOL)	
Name: Jamie H. Bricker Telephone (310-532-2884) The waystan and we det we and reading system in the construction graving system for proceeds additions to existing systems. Response for the construction of							On the map for p	roposed stormw	ater collection sys	lems, diagram ea	ich proposed syst	em, Indicate a map p	oint to show change	ss in system elements, pipe size	pipe direction and connections
	Name:	Crum Cre	ek	Name:	Jamie H. B	ricker	to existing system	m. For proposed	additions to existing	ng systems, diagr	an only the addit	ons and their connec	tion point into the e	dsting system. Complete a sep	arate form for each proposed,
Page	Municipal	Eddyston	e Borough	Telephone	610-532-28	384	new system and	one for each exis	sting system havir	ng one or more pr	suotippe pasodo.	Identify the points w	ithin a system cons	ecutively (ex. G-1, G-2, G-3). S	tart the tirst point in each
Map 1D System's Elements (x) Pippe Channel Swale Depth Map 1D Proposed Design Depth Map 1D Depth Map 1D Depth Map Ma	County:	Delaware		1008	8/24/2005		additional system	n 20 numbers hig	ther (if H-3 ends o	ine system, begin	the next with H-2	3). Be sure to show	he point where pro	posed additions connect into ex	sting systems, using the map
Form To Pipe Den Channel Swale Depth Material Nos.** Const. Dates Depth Available Depth Available Depth Available Depth Available Depth Available Depth Available Available Depth Available Availabl	Ma	0	Svete	am's Flemer	uts (x)		Measur	ements*		di con	Map I.D	Proposed		-	Name of Final
From Town Town Booth Both Form A Start End Available Name and Phone H- NONE	200	<u>.</u>	5		(1)	Pipe	5	annel / Sw	ale	Material	Nos.**	Constr. Dat			Ownership and
Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y			Pipe	Dpen Channe	1	۵	1 1	ė	Depth		Form A		\neg	_	Maintenance Responsibility
	±	±	NONE												
	±	土													
	±	±													
	±	土													
	±	±													
	土	±													
	±	±													
	士	±													
	土	±													
	土	土													
	±	±													

FORMI

		PRESENT &	PROJECT	ED DEVELOF	PRESENT & PROJECTED DEVELOPMENT IN THE FLOOD HAZARD AREA FORM I.	SHEET 1 OF	
WATERSHED	0	FORM COMPLETED BY	APLETED I	BY	DEFINITION	NOIT	
Name.		Name.	Jamie H. B.	ricker	FLOOD HAZARD AREA A normally dry land area that has been or is	las been or is	-
Municipality:	Borough	Telephone: 610-532-2884	610-532-28	384	susceptible to being inundated by the	by the	
County:		Date:	8/24/2005		100-year flood.		
For County Use:	se:						
Map ID No.	TYPE OF DEVELOPMENT	PMENT	Year Built		Contact Person Name, Address and Phone	Comments	
1-1	Baldwin Towers			Baldwin Office Associates 1001 E Hector St Ste 100 Conshohocken, PA 19428	e Associates or St Ste 100 en , PA 19428		
1-2	Boeing			Boeing Comp P.O. Box 168 P25-75	Boeing Company P.O. Box 16858 P25-75 Philadelphia PA 19142-0858		
<u>-</u>							
1							
	1011-		2				

	WATER	QUALIT	Y PRO	BLEM A	REAS F	ORM .	J.	SH	IEET_1	OF _1	
WATERSHED					FOR	M CON	IPLETE	D BY			
											\sim
Name:	Crum Creek				Name:		Jamie	H. Bric	ker		
Municipality:	Eddystone Boro	ugh			Teleph	one:	610-5	32-2884			
County:	Delaware				Date:		8/24/2	2005			
SITE		J-1	J-	J-	J-	J-	J-	J-	J-	J-	J-
Types of Water C	Quality Problems								1 2 1	- 15	
High Community ⁻	Tolerance	x									
High Temperature											
High Turbidity											
Hydrocarbon Pollu	ution										
Low Community D											
Low Dissolved Ox											
Low pH											
Nutrient Enrichme	ent										
Poor Habitat		X									
Other/Explanation	Line No.										
Potential Cause(
Agriculture											
Construction Site											
Erosion											
Lake Discharge											
STP Outfall											
Other/Explanation	n Line No.	1									
Frequency		OF THE		80							
Year Most Recen	t Occurrence	2004		74							
Year First Known	Occurrence	?									
Source of Inform	nation		I EST K	×II.	7.7				12.	Σ	
County Water Qu											
Driveby		×									
Other/Explanation	n Line No.										
		NATION	LINES	S							
1 below Chester	pike, lined channel,	rubbish i	in strear	n, heav	y silt						
2											
3											
4											
5											
6											
7											
8											
9											

Form O - Outfall Data

Date: 8/24/05 Jamie H. Bricker Person:

Time Since Last Rain was > 72 Hours: Yes_

Quantity of Last Rain: < 0.1 inches: > 0.1 inches

Days Since Last Rain: Five (8/19/05)

Municipality: Eddystone Borough

Crum Creek

Name of receiving water:

Rating (0-2)					
Describe land use of upstream drainage area.					
Flow Water Observed Color/Odor (Yes or no) (specify if floatables, algae or sediment present)					
Flow Observed (Yes or no)					
Channel Side Slopes* (H:V)					
Channel Bottom Width (feet)					
Channel Depth					
Depth of flow in pipe (fect)					
Pipe Diameter (inches)					
Time (00:00) am/pm					
Storm Drain? Yes/No Not sure					
Photo #					
Pipe Swale #	None				

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment deposition, algae or debris, pipe collapsed or crumbling,

blocked catch basins or drain)

H/V = Horizontal to vertical ratio

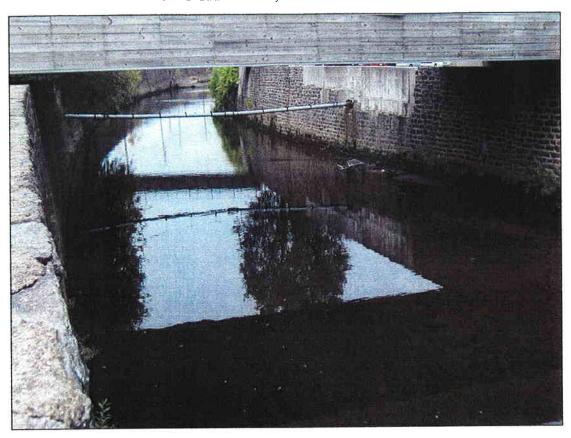
*1:1 = Vertical - rectangular channel

NOTES:

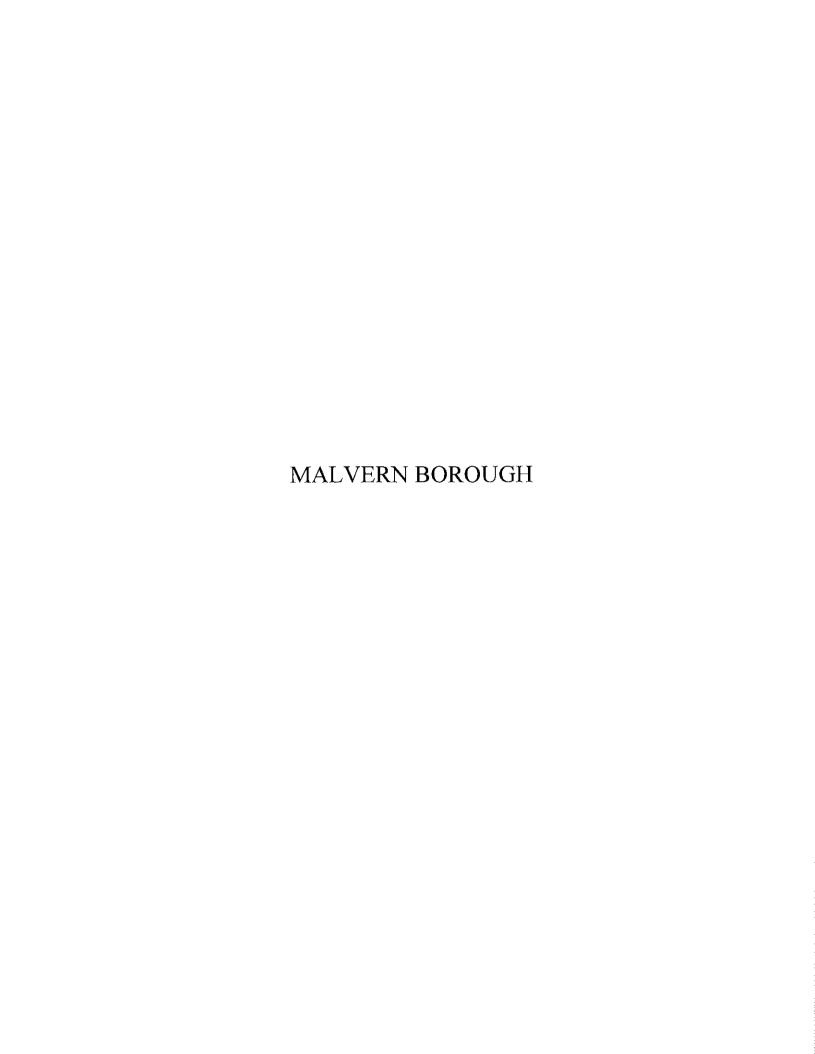
Eddystone Borough does not have any storm sewers or outfalls in the Crum Creek watershed

Form O - Outfall Data.xls

J-1 Crum Creek, below Chester Pike









EDWARD B. WALSH & ASSOCIATES, INC.

Complete Civil Engineering Design / Consultation Services

March 23, 2004

Mr. Justin D. Kauffman, Environmental Planner Delaware County Planning Department Government Center Building 201 West Front Street Media, PA 19063-2751

Re:

Crum Creek Act 167 Stormwater Management Plan

Outfall Map

Malvern Borough

Dear Mr. Kauffman:

Enclosed please find two (2) copies of the outfall map for Malvern Borough in accordance with your request (letter dated February 19, 2004). As discussed with Karen Holm from your office, we have not completed the Form O – Outfall Data worksheet to date. It is our intention to gather that information during the screening process of the outfall locations.

Also as discussed with Ms. Holm, please copy myself on future request for information associated with Malvern Borough involvement in the Act 167 Plan.

If you should have any questions or require any additional information, please do not hesitate to contact me.

Very truly yours,

EDWARD B. WALSH & ASSOCIATES, INC.

Malvern Borough Engineers

Daniel H. Daley, P.

encl.

cc: Sandra L. Kelley, Borough Manager, w/o encl.



EDWARD B. WALSH & ASSOCIATES, INC.

Complete Civil Engineering Design / Consultation Services

September 16, 2004

Delaware County Planning Department Attn. Ms. Karen Holm Government Center Building 201 West Front Street Media, PA 19063-2751 Phone (610) 891.5200

RE:

Crum Creek Watershed Act 167 Plan

Malvern Borough, Chester County

Dear Ms. Holm:

On behalf of Malvern Borough, enclosed please find one (1) copy of the completed survey forms provided by your office. If you should have any questions or require any additional information, please do not hesitate to contact me.

Very truly yours,

EDWARD B. WALSH & ASSOCIATES, INC.

Malyern Borough Engineers

Dahiel H. Daley, P.

cc: Sandra L. Kelley, Malvern Borough

CRUM CREEK WATERSHED ACT 167 STORMWATER MANAGEMENT PLAN

MUNICIPALITY QUESTIONNAIRE

Please fill out the following questionnaire and return it to Karen Holm at the Delaware County Planning Department, Court House and Government Center Building, 201 West Front St. Media, PA 19063 as soon as possible. If you have any questions or comments, or if you would like these forms in digital format, please call Karen at 610-891-5213 or e-mail her at holmk@co.delaware.pa.us.

THE CALL	
Municipality:	MALYERN BOROUGH
Contact Person:	SANDRA L. KELLEY
WPAC Designee:	SANDRA L. KELLEY
Title:	BOROUGH MANAGER
Address:	ONE EAST FIRST AVENUE - SUITE 3
	PO BOX 437 MALVERN PA 19355
Phone:	610. 644. 2602
Fax:	610.644.4504
Person Completing f	orm (if different from Contact Person):
Name:	DANIEL DALEY, PE - BOROUGH ENGINEER
Address:	E.B. WALSH & ASSOC., INC., 55 COUNTRY CLUB DR.
	SUITE 100, DOWNINGTOWN PA 19335
Phone:	610. 518. 1360
Fax:	610.518.1255
E-mail:	ddaley a ebwalshinc.com

PART I. GENERAL INFORMATION

PART II - REGULATORY ACTIVITIES

A. Please indicate the regulations you currently use to manage development.

REGULATION	MUNICIPAL ORDINANCE	COUNTY ORDINANCE
Zoning Ordinance	X	
Subdivision/Land Development Ordinance	×	
Separate Stormwater Ordinance		
Separate Floodplain Ordinance		

B. Please indicate the agencies/individuals who review and approve land development plans and zoning variance/waiver requests.

BOROUGH COUNCI	LAND DEVELO	PMENT PLANS	ZONING VARIANCE	
ENTITY	REVIEW	APPROVE	REVIEW	APPROVE
Supervisors-		×		X
Municipal		/		
Engineering				
Department				
Municipal				
Planning				
Department				
County Planning				
Department	X			
County				
Conservation				
District				
Zoning Hearing				V
Board			X	
Consulting	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		V	
Engineer	X			
Others (List				
Below				

J.	Please provide copies of your zoning, subdivision/land development, and separate stormwater
	management and floodplain ordinances and your current zoning map when you return this
	questionnaire. Please list these documents below.
20	VING ORDINANCE (TABLE OF CONTENTS ONLY) - 2003*
201	VING MAP
SL	DO (SELECT SECTIONS) - 1973*

ENOTE MALVERN BOROUGH IN PROCESS OF SLOO REWRITE]

* IF COMPLETE COPY NEEDED - PLEASE CONTACT S. KELLEY @ BOROUGH

PART III - MUNICIPAL AND LOCAL PLANNING ACTIVITIES

Please indicate below whether your community has approved the following plans and maps and the date of the most recent update.

ITEM	APPROVED/DATE	IN PROGRESS	PLANNED WITHIN NEXT YEAR
PA Act 537 Sewage Facilities Plan	1993		
Comprehensive Land Use Plan	1999		
Existing Land Use Maps	1999		
Proposed Land Use Maps	1999		
Zoning Maps	2003		

PART IV - FLOOD INSURANCE PROGRAM AND COMPREHENSIVE LAND USE PLAN

Please indicate below whether your community participates in the National Flood Insurance Program:

ITEM	PARTICIPATES (Y/N)
Flood Hazard Boundary Map (FHBM)	?
Participates in FEMA Emergency Program	?
Participates in FEMA Regular Program	?

PART V - EXISTING STORMWATER RELATED PROBLEMS AND STRUCTURES

Please complete the matrices on the following pages (Forms A and C-J) to describe any significant stormwater-related problems (Form A), Existing or Proposed Flood Control Projects (Forms C & D), Existing or Proposed Storm Water Control Facilities (Forms E and F), Existing or Proposed Stormwater Collection Systems (Forms G & H), Present and Projected Development in the Flood Hazard Area (Form I), and Water Quality Problem Areas (Form J) that you are aware of in your municipality.

What we would like to ask of you is that you complete as much of the attached data collection forms as possible. There is a different form for each item of information as summarized in the attached "FORM DESCRIPTION SUMMARY. The process would be as follows starting with the problem areas (Form A):

- Place the location of the problem area on the map as shown in the attached example map.
- Draw a box on the map with the problem area identifier starting with A-1 with an arrow leading from the problem area identifier to the problem area.
- Place an A-1 in the first column of FORM A.
- Put a check in each box in the A-1 column that represents the problems associated with that particular problem area.
- Repeat with the next problem area (A-2) and so on.

- Repeat for existing flood control projects (FORM C) placing a triangle on the maps and starting the labeling with C-1.
- Repeat for all forms.

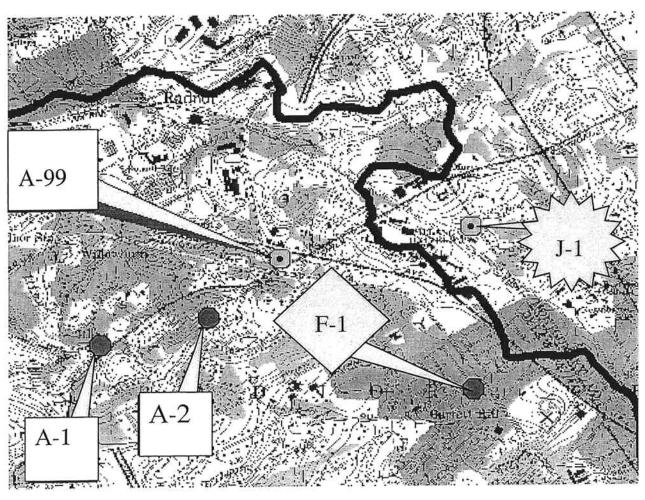
The sample map attached shows three problem areas (A99- A1 and A-2), one proposed flood control project (F-1) and one water quality problem (J1).

Use additional paper to provide <u>detailed</u> descriptions of your most serious problems and attach a map to show the location of the problem. Attach photographs, if available.

If you have any storm or combined sewers, please provide maps showing the collection system and overflow discharge locations and an estimate of the average annual discharge at each overflow point.

The more detail you provide, the better we will be able to evaluate the situation for your municipality. We appreciate your help.

Sample Location of Information from Data Collection Forms on the Municipal Map



FORM COMPLETED BY WATERSHED Name: DANIEL H. PALEY P.E -BORDUGH EGR Name: CRUM CREEK Telephone: 610.518.1360 Municipality: MALVERN 09-15-04 Date: County: CHESTER A-A-A-A-A-A-2 A-3 A-4 A-5 A-A-MAP NO. A-99 A- 1 Types of Storm Water Problems X Flooding Х Accelerated Erosion Sedimentation Landslide Groundwater Water Pollution Х Other (Explain) Explanation Line No.(s) Cause(s) Storm Water Volume X Storm Water Velocity X X Storm Water Direction Water Obstruction X X Other (Explain) Explanation Line No.(s) requency Year Most Recent Occurred Year First Known to Occur Regularity More Than 1/Year Less Than 1/Y.ear Only During Agnes or Hoyd Duration (If Applicable) Less Than One Day One Day + (Enter Days) Property Damages Loss of Life / Vital Services More Than One Owner Types of Properties Undeveloped Agricultural Residential Commercial Industrial Number of Properties 2-10 11+ Public (List Types) STREET PARK Explanation Line No.(s) Solutions Suggested Explanation Line No.(s) Formally Proposed Explanation Line No.(s)

EXPLANATION LINES

1 A-1 FLOOD OF ROADWAY - UNDERSIZED CULVERT (LOCATED IN WILLISTOWN TWP.)

2 A-2 BOROUGH HAS RECEIVED COMPLAINT RE. STORMWATER DISCHARGE - CONCENTRATED FLOW

3 A-3 BORO. RECEIVED COMPLAINTS RE. STORMWATER FLOWS (NO STORMSEWER EXISTS IN ROAD)

4 A-4 CONCENTRATED POINT DISCHARGE OF PIPE ONTO WARREN AVE. - NO ROADSIDE SWALE

OR STORM SEWER EXISTS

INSTRUCTIONS

Begin with A.1 as the first map number to identify the first' storm water problem area. Illustrate the defined problem on the watershed map provided, and identify it with its map number.

For each storm water problem area within your municipality, enter the map identification number at the head of the column. Describe the problem by placing a check (4 in the appropriate blocks of the column under this map identification

When an additional explanation is required, write the line number(s) used in the column marked "Explanation Line No. (s)".Example 1, 2-3, etc.

f storm water problem occurred during and after Agnes, describe the requency of the problem	
(las Appel	Trans of Selling times frances
after Agnes.	-th-tra
	Act on the System Separate of the System Control of the System Co
	Separate of 1999
	200 100
: \	Garage on
	a see I lead on
	A se 15/2 met
	Little Con Facial
	Causaria
	Storie Science Schooling
	Dece that there's
. /	Sierra viz in zamen
	Court Contraction
	CONTRACTOR AND A STATE OF THE S
	Contained and Hall
	Insure
	Carl Cont Control Cold
	heuren .
	Vin This Liver
4	Cas Dira I rev
	Part .
	Ven Cre Gener
	Comment of Asserting
	, W. P. H. S. M
مملئه مساحب الم	1977 1979
Jse the explanation	Separate and the separa
300 and and	America (
ines to list the types of	" aginir
11100 10 1101 111= -71	"S, the pl Principal
public property damages	
Jubilo bioboit) daming	2-9
e.g.roadways, hospitals,	
c.g.ioudivajo, nospitato	North a least
etc.	
;10.	Signed
	Salaration cost health
	from the tracered
· · · · · · · · · · · · · · · · · · ·	A GATHAM CA NAME
/	
Enter the line no. (s)	
ised to list the map ID	900
() (*
io. (s) for the proposed	
acilities	

Definitions

Storm Water Problem Area

An area that defines the farthest extent of a storm water problem, including any area that experiences property damage, inundation, accelerated erosion, surface water pollution, groundwater pollution, landslides, or any other problem as a result of storm water runoff.

Groundwater

Water in the ground below the water table.

Accelerated Erosion

The removal of the surface of the land through the combined action of man's activities and the natural processes at a rate greater than would occur because of the natural process alone.

Sedimentation

The process by which soil or other surface materials, transported by surface water, is deposited on stream bottoms.

Water Obstruction

Any dike, bridge, culvert, wall, wingwall, fill, pier, wharf, embankment, abutment, or other structure located in, along, across, or projecting into any watercourse, floodway, or body of water.

	EXPLANATION LINES (continued)
5	POTENTIAL STREAM CHANNEL FROSION (MINOR) IN TEUP PARKLAND

1455

FORM C

				EXISTING	FLOOD CO	OOD CONTROL PROJECT FORM C. SHEET OF							
WATERSHE	D	FORM CO	MPLETED I	3Y			TYPICAL TYPES C	OF FLOOD CONTROL PROJECT	TS				
County:	MALVERN	Name: DAN DALEY Telephone: 610.518.1360 Date: 69-15-64				Channel Ex Channel Rock Ripra	_	Levee Gabions Pipe Channel	Dams Floodwall Concrete Lining				
For County L	Jse:								₩ °				
Map ID No.	Type of Flood Contro	l Project	Year Constr Built	Expected Life Yrs.	Design Frequency Yrs.	Flood Discharge C.F.S. (if known)		Owner Name, Address, and	Phone				
C- [STORM SEWER RIP-RAP EN DISSAPATO	- OUTLET	2000 ?			?	MALVERN	Borough					
C-									-				
C-	P			-				16					
C-				1				r.	4				
C								* 3	-				

FORM D

NO PROPOSED FLOOD CONTROL PROJECTS ANTICIPATED.

				PROPOSED	FLOOD C	ONTROL P				SHEET OF				
WATERSHE	D	FORM CC	MPLETED	BY			TYPICAL '	TYPES OF I	FLOOD CO	NTROL PR	OJECTS			
Name: Municipality: County:	CRUM CREEK- MALVERN CHESTER-	Name: D. DACEY Telephone: 6(0.5/8.1360 Date: 09-15-94					xcavation / ealignment ap	_		Levee Gabions Pipe Chani	Dams Floodwall nel Concrete Lining			
For County L	Jse:													
Map ID No.	Type of Flood Control Project			egun N0	Year Constr. Planned	Projected Compltn. Date	Expected Life Yrs.	Design Frequency Yrs.		Map ID No. Form A*	Owner Name, Address, and Phone			
D-														
D-	,													
D-										9.1				
D-									•					
D-									_,					

^{*} Enter the storm water problem area's Map ID No., if the proposed project will solve or reduce any / all of an identified drainage problem.

				EXISTING S	STORM WATER CONTROL FACILITIES FORM E.	SHEETOF							
		T FORM CO	MPLETED F		DEFINITIO	DN							
WATERSHE	D	FORMICO	IVIF CE I CD I	- I	Storm Water Control Facility								
	_	Name		F./	A natural / man-made device or structure specifically designed and / or								
Name:	CRUM CREEK	Name:	D. DAL		utilized to reduce the rate and / or	volume of storm water runoff							
Municipality:	MALVERN		610.51		from a site or sites.								
County:	CITESTER	Date:	09-15	-04	Hom a site of sites.								
For County U	Jse:				· .								
M. IDM.	Type of Storm Wat	er	Year		Contact Person	Comments							
Map ID No.	Control Facility		Built		Name, Address and Phone								
	Control racinty		MODIFIE	>									
E-	DETENTION F	3A (IN)	2003	MALVE	PN PREP SCHOOL (PRIVATE)								
	DE (TIO 11000 +	7/3//	123		* * * * * * * * * * * * * * * * * * *								
E-													
E- 2					The state of the s	LOCATED IN WILLISTOWN (DEVELOPMENT							
E- 2	DETENTION BA	ISIN	2002	VILLAGE OF PENNWYCK HOMEOWNERS ASSOC. LOCATED IN WILLISTOWN (DEVEL									
E- 3 ·	DETENTION BAY	ι'n	2002-03	MALVE	W RETREAT HOUSE	W/I MALVERN BORONGH)							
E-	WITH INFILTRATIO	" TRENCH		CHARLE	& BURGY								
				313 5	NAMEN AVE.								
E-				MALVE	en pa 19355								
E-													
·													
E-				-									
	1	TYPICAL T	YPES OF S	TORM WAT	ER CONTROL FACILITIES	•							
Detention / R	Retention Basin				Roof-Top Storage								
Natural Pond	d or Wetland				Semi-Pervious Paving								
Traculari ond	1			Ĭ.									
				i	Infiltration Device (Seepage /								
Parking Lot F	Pondling				militation bevioe (ecopage)								

					PROPOSED	FLOOD C	ONTROL PE	ROJECT FO	DRM F.		SHEET	(OF	
NATERSHE			FORM CO	MPLETED I		1				DEFINITION	-			
VATERSHE	,		1 01111 00				Storm \	Vater Contr	ol Facility					
Name:	C 0	Incry.	Name:	D. DALE	1/		Otomi.	A natural /	man-made	device or struc	cture specifically des	signed and	ОГ	
	CKUM	CREEK	Telephone:	610.518	1260			utilized to r	educe the r	ate and / or vo	lume of storm water	runoff		
Municipality:	MALL		Date:	09-15-				from a site						
County:	CHEST	FIZ	Date.	09-15-	7			nom a one	or onco.					
For County U	se:													
)e								
Map ID No.	Туре	of Storm Wat	er	Proposed Constr. Dates		Map No.		ontact Perso	Control of the Contro			Comments	5	-
	Co	ontrol Facility		Start	End	Form A*		Address and						- r
=- 1	BASIN	- DETENT	NOI	01-05	08-05		REMED	RECOVE	LY CAR	CENTER	(PROPOSED	INSTITU	TIONAL	HOMEE
•							(PRIV	ATE OU	WER)		PARKING	LOT)		/
=_														
F.														
									-					
-2														
=_						•								
														ļ
						3 1					14			
=_														
										1				
=_														
Enter the st	orm water	problem area's	s Map ID No.	if the propo	sed project v	will solve or	reduce any	/ all of an id	lentified dra	ainage problen	1.			
			TYPICAL TY	PES OF ST	TORM WATE	R CONTRO	OL FACILITI	ES						
Detention / Re	etention Ba	sin							Roof-Top (
	al Pond or Wetland				-11		-		Semi-Pervious Paving					
	ng Lot Pondling							Infiltration Device (Seepage / Recharge Basin or Underground Tank)						

COLLECTION FACILITIES HAVE NOT BEEN MAPPED BY BORENGH

	DATE																
					EXISTING S	STORM WAT	TER COLLE		LITIES FORM			SHEET_		OF			
ATERS	SHED		FORM COM	IPLETED B	Y				INSTRUCTIO								
						Diagram e	ach system	on the appro	priate map. Es	stablish map	points to sho	ow changes	in system	elements,			
ame:	CRUN	1 CREEK	Name:	D. DALE		pipe size, o	pipe size, or pipe direction. (If unknown, outline the system extent.) Complete this form only where specific										
lunicipa	lity: MAL	VERN	Telephone:	60.51	8.1360	information	nformation on construction is available. Use a separate form for each system. Identify the points within a										
ounty:		STER	Date:	09-15	04	system cor	system consecutively (ex. G-1,G-2,G-3). Start the first point in each additional system 20 numbers higher. For example, G-3 ends one system, so G-23 begins the next. See Sample Diagrams & Form on Reverse.										
								one system	, so G-23 begin	ns the next.		Diagrams &	TOITH OILE	Name o	f Einel		
Maj	p I.D.	Sys	tem's Elements (x)			Measuren		<u> </u>		No.	Design Data	Contact	Dornon	Ownerst			
	No.				Pipe		hannel / Sw		Material	Year Constr.	Available	Name an		Maintenance	-		
From	То	Pipe	Open Channel	Swale	D	TW	В	Depth		Consu.	Available	Name an	u Filone	Maniferiance	(esponsibility		
											94						
}-	G-					-	 							-			
			-				ļ										
	G-		-					-									
j -	G-		-														
<u>-</u>	G-					1											
}-	G-																
}-	G-							1									
i -	G-													_			
} -	G-						-			-			 				
								-						-			
j-	G-		-			-	ļ							+			
							<u> </u>										
)-	G-						<u> </u>										
) -	G-		- F				1										
,-	G-		-														
3-	G-		1														
		l key on reve	rea sida														

(NO PROPOSES	FACILITIES
	PROP

			POSED FA		PROPOSE	D STORM WA	ATER COLI	ECTION FA	CILITIES FOR	IVI M (10 IIX	.0)		SHEE	Τ		
VATERS	ILED		FORM COM	MPLETED B	Υ				INSTRUCTIO	NS					Fee and connections	
VATERS	שובט					On the map for prop	osed storm water c	ollection systems, diag	gram each proposed sys	lem. Indicate a map	point to show	changes in s	ystem elem	ents, pipe size, pipe direc	In and connections	
			Name:	D. PALEY	/	to existing systems.	For proposed addit	tions to existing system	ns, diagram only the add	tions and their conne	ection point in	to the existin	g system. C	omplete a separate form	or each proposed,	
Vame:	LRUM	CREEK	Telephone:	410.5/	2.1360		- 4	evetern having one of f	nare proposed additions	Identify the points w	vithin a syster	n consecutive	ely (ex. H-1,	H-2, H-3). Start the first p	OINT III EACH	
	lity: MAL	VERN	Date:	09-15-	04	additional system 2) numbers higher (i	f H-3 ends one system	, begin the next with H-2	3). Be sure to show	the point who	ere proposed	additions co	onnect into existing system	ns, using me map	
County:	CHES	TEAL	Date.	7	-	point number from t	he existing system	form and map. See Sa	mple Diagrams and Fon	n on Reverse						of Final
	<u> </u>	SVC	stem's Elements (x)			Measurem				Map I.D.		osed	-	Contact Person	Name of Final Ownership and	
	(114)		Terris Licinen	T (x)	Pipe	Open	Channel /	Swale	Material	Nos.**		. Dates	Data	Name and		
	No.	Disc	Channal	Swale	D	TW	В	Depth		Form A	Start	End	Avail.	Phone	Maintenance f	Responsibility
From	То	Pipe	Open Channel	Owalc												
			-												-	
H	H-		-												-	
H	H-		-								-					
											-		-			
H	H-		-													
				-									-			
H	H-		-	 												
	ļ., —		-										-			
H-	H															1
	ļ.,——		-								-		-			1
H	H			-											-	
											-		-		_	
H	H-												-	-		
	111		-									-	+			
H	H-		-								_	-	-			-
			+									-	-	-		
H	H-		-													-
	ļ.,			-								1	-	-		1
H	H-		-											-	_	
	H-			-	1								1	drainage probl		-

NO KNOWN BEVELOPMENT (WI MALVERN) FORMI NO PROPOSED/PROJECT (N FHA

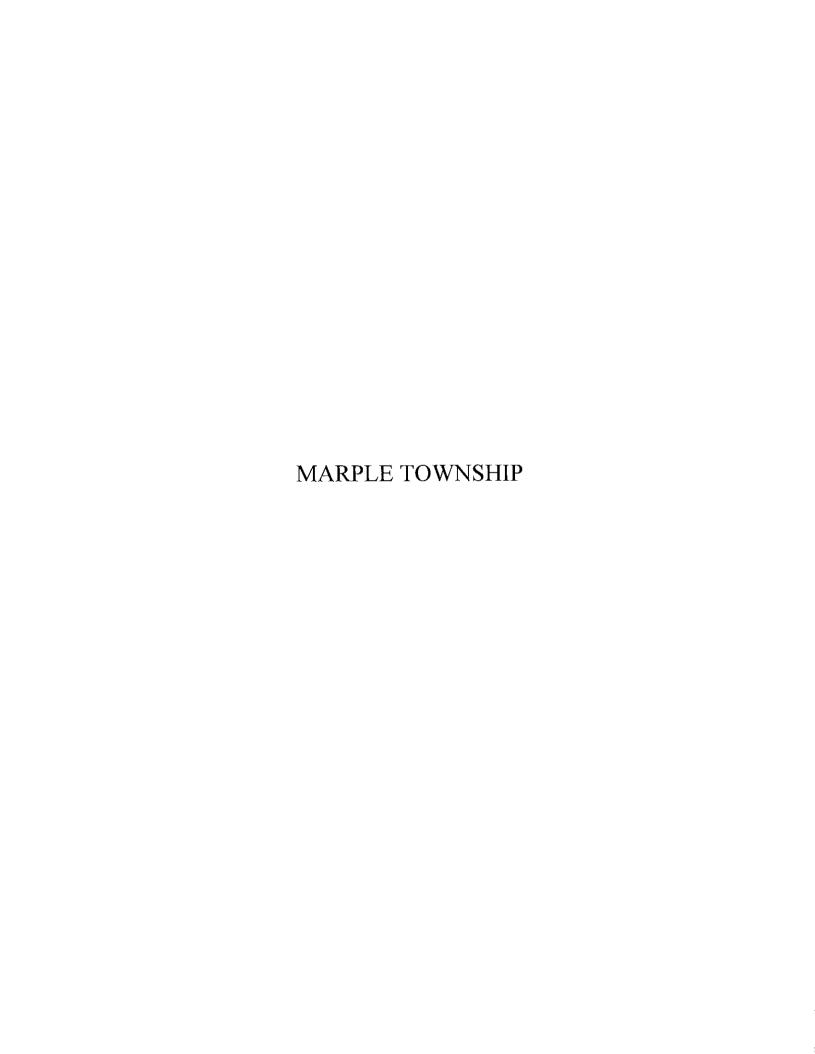
				[
		PRESENT &	PROJECTE	D DEVELO	PMENT IN T	HE FLOOD	HAZARD A	REA (FOF	RM 1)			SHEET_		OF		
WATERS	HED		FORM CO	MPLETED	BY					DEFINITIO	N					
							FLOOD H	AZARD AR								
Name:	CRUM	CREEK	Name: Þ	. DALE	y				A NORMA	ALLY DRY L	AND AREA	AH TAHT	S BEEN OR	IS		
Municipal	ty: MAL	VELN	Telephone:	610.51	B. 1360						EING INU	INUNDATED BY THE				
County:	CHE	STER	Date:	09-15	-04				100-YEAF	R FLOOD.						
					/											
or Count	y Use:															
Map ID	TYPE	OF DEVEL	OPMENT	Year	Œ.		tact Person					Comment	S			
No.				Built		Name, Add	dress and P	hone								
-																
-																
-																
								•								
-										24						
-																
							188									
-																
-																
			/					_								

NO KNOWN WATER QUALITY PROBLEMS W/ MALVERN BOROUGH (NO TESTING OR OBSERVATION OCCURRED) WATER QUALITY PROBLEM AREAS (FORM J)

<u>Watershed</u>				rm Comp							
Name CRUM CREE	K_			ame		NDA					
Municipality MALUERN				lephone		.518		6			
County CHESTER			Da	ate	09-15-04						
Site:	J-	J-	J-	J-	J-	J-	/ J-	J-			
Types of Water Quality Problems							1				
High Community Tolerance											
High Temperature											
High Turbidity											
Hydrocarbon Pollution											
Low Community Diversity											
Low Dissolved Oxygen											
Low pH											
Nutrient Enrichment											
Poor Habitat											
Other / Explanation Line No.											
Potential Causes(s)											
Agriculture											
Construction Site											
Erosion											
Lake Discharge						_					
STP Outfall											
Other / Explanation Line No.											
Frequency						_					
Year Most Recent Occurrence											
Year First Known Occurrence						-					
Source of Information								-			
Streamwatch							_				
County Water Quality Study							-	_			
Driveby						-					
CCD Complaint Investigation						_					
Other / Explanation Line No.						4					
Explanation Lines											
1.											
2.											
0	VIII. 1										



- LOCATOR MAP **CRUM CREEK WATERSHED**



Marple Twsp (MAR)

O _					FOR	MB-08	STRUC	TON DA	FORM B - OBSTRUCTION DATA COLLECTION	CTION					SHEET / MOF
Municipa	Municipal Stream Obstruction Data	TQ.			Records completed by	npleted t	y: 87.	NON	(SX.11)		To Amount of fill	tof fill		Material	Inlet Canditions
Watershed	Watershed: Cream Calary			. 6	Field work personnel:	ersonne	7		_		D= Diameter	ji s		mary = Stone Masonry Structure OMP = Comunited Meal Plos	HW = Hendwell WW = Winowell
Municipality	Municipality/County: Marple / Clester	12 S		_	Date(s): 12// -	1/2	12	1201	50		W = Width PW = Pier Width	Width		8 a	SW = Sidewall
			•		Opening	guit		Γ						RCP = Reinforced Concrete Pipe SP = Steel Pipe	
				Type	Н		Shape (✓)	H		Mea	Measurements				
Map ID.	Owner or Address Of Obstruction	Capacity (CFS)	Nos.	Part of Bridge?	Culvert	Culvert	10	Bridge	- €	F 8	× £	M &	skew	- MATERIAL / INLET CONDITION	NOTES
1	Caser break Rd	5 4		,			×		7			H	2	CM9 HW	/101/
			-	1		-	×	4	1	7 t ld (100)		10		NIST AM LEGIS	0.00
MAV - 2	Tours and the Control of the Control					>		1			1)	110	Sur mill of the	
MARK	Por o hear words Swarm				T	No.			5		1 20	1	10	torowal/	
MARS	COSECCIONA POTTO APP		-	7		-	>		1	ブ	R	,	06	Contracto	
MARCO	Caciontocont E.O.					>	+		-1	1)	}	14.5	FC - FC	
MAK	(phos a mo R. d W					>			1	1		1	000	一 日本の日本	The state of the s
No.	Colonia about	9.00				>			10		0		95		Change of Conso
MA-P V	- LC116CA	1	-			,	+	f	+	+	0	1	20	2000	
	CO VIETE ON WEST			12	100000000000000000000000000000000000000	^			1	20			G	2000	
SAR S			-			7			4	7	3 60	1	5	(ONCORE) CE TE	
MAR. B	Palmay Mill RO		_	7			H	^	7	H	5,3 10)	70	Concorded Hartwell	
MARIN	10201					>			15	1		1	06	CMP/AW, SW	Verw Corraded
MARIE	Poston stellert / treather			1				/	2.8)	0 70	^	00	Congress Name and	
11.1.2 10	DOLON BUILDING					>				5	1	A I		CM C Hay	
APP L	4.27	C C C C				>/	1	1	XI	100	1 1	1 1	20	(SE CO)	
/II/H/ 10	1810 Spalla Valla H. Cram Ch. K.d.		T					1			+			C 20 12 12 12 12 12 12 12 12 12 12 12 12 12	
1000	1		-	1.		*		1	-	(2 70	1	00	Can Can Tal Can Can	
M & O Z J	CX Sound of the second			1				>	-	1	2	1	06	07 000	
MAR 27	Warders ON	(20 000				7			×	_		1	90		しきる
WAY 75	STATES AND STATES OF THE PARTY						7		2	1	9		01	CAR 1-W	
MAR ZH	No Amperial Mess Conne								D	V		1	(40)	RED I HELLINGS	
MARITE	Sid Matthe (Gd)		,			^			00	IC.		1	00 -	15 CONTENT WILL	
MARZE	17 SPR UPD 16					$\frac{1}{2}$			1			+	+		
MARZ	51600 000					+	1	1	+	+	+	+	1		
						+	1	1	+	+	+	+	+		
						1	ŀ		-	-	+	+			
						F	-	F	-	-		-	-		
						L	-			-			-		
										H					
										-		_			
							1	+	+	+	-	+	1		
						1	1	1	1	-	-	-			

Crom Creek Water shed Form O-Outfall Data

Time Since Last Rain was ≥ 72 Hours: Yes $$ 24 hrs.	Days Since Last Rain 24 hrs.	Name of receiving water:
erson: ADAM HYLAUGHEIM FRANKHON, BEACH Date: 7/24/03 T	Quantity of Last Rain: < 0.1 inches: > 0.1 inches	funicipality: MARPLE Township Name of rece
Person: Andra		Municipality: _

Describe land use of Rating	dor upstream drainage (0-2)	if floatables, area.	algae or sediment			n Neighborhore) C	7.	12 12 (2) 12 (2) (2) (2) (2) (2)	10 00 (2) (2) (2) (3) (4) (4) (5) (5) (5) (5)	100 pm 010 gray	an Neighborhare) C an (Dilo pre) houses 1 pros houses 0 con/sectionent Weighborhare) C con/sectionent Weighborhare) C con/sectionent Weighborhare) C	Meghance) of Colored Neighbordee) pros hears pros hears Neighbordee) or /sectionent Neighbordee) or /sectionent Neighbordee) or /sectionent Neighbordee)	Meighburger) Old pre) hears pres hears Neighburger) A / jediment Weighburger) Courting/ Neighburger) Se pleat life Neighburger) Old pres Neighburger) Old pres Neighburger) Old pres Neighburger) Old pres Old pr
Color/Odor) (specify if floatables,	(specify if floatables,	algae or sediment	algae of securions	present)		Claga		(24 d (2)(3)	(2) d	Clean Clean Clean Sed. Boild up Old p.pcs Dresc / rediment #	(3) July 100	Clean Clean Sed. Boild up Old p.pcs Brezen/zediment # Clean Sed. Couthing(to 1)	1 (34 4 2)
Observed Colc (Yes or no) (spe alga		alga	pres		7		2	7- S					
lopes*		(H:V)			strain);!	1:1 streem	1:1 strein strein	strein strein strein 3:4	1:1 strein strein 3:4 2:1	5 treem 5 treem 5 treem 3:4 2:1 [:5	5 treem 5 treem 5 treem 3:4 2:1 [:5
	Bottom	Width ((feet)		यु	0.17	3/2	3 /2 / mbc	3/2 3/2	3/2/2	3/2 3/2 3/4	72/ E 3/41 3/41 3/41 3/41 3/41 3/41 3/41 3/41	1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
	Depth				B.C. H.	**	Flat	Flat	Flat Draetly Drectly	Flat Drackly G"	Flat Dractly 6"	Flat Directly 6" 21 15'	Flat Directly 6" 21 15' Directly
To indeed	flow in pipe	(feet)			,,2		,,1		,,1	, , ,			
	Diameter f	(inches)			27.7		,,2h	"2-5"	"32 "2h	"3-2 "2-2	"32 "2h"	"hz" "hz" "hz" "hz" "hz"	"h2" "h2" "h2" "h2" "h2"
nme kripe	(00:00)												
STOTE TITLE	Drain? (0			sure)-	_	>-)- r)- r · r ·	2- 1- 1- 2-	2- 4- 6- 2- 2-	2- 4- 6- 2- 2- 2- 2-	2- 4- 6- 2- 2- 2- 2-
01007	1 #		4	S	CAN								
Pipe	Swale	#1:			1-		7-2	2-2		C-3 C-4 C-4		C-7 C-7 C-5 C-6 C-6	2-2 2-3 2-3 2-3 2-5 2-5 2-5 2-5 2-5

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling,

blocked catch basins or drain)

H/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

Crom Creek Wotershed

Form O - Outfall Data

24 hrs 34 hz Time Since Last Rain was > 72 Hours: Yes_ Days Since Last Rain Name of receiving water: Cra Creek Person: ADAM MELLEHLIN, R.V. & B Enginees Date: 1 24/03 Quantity of Last Rain: < 0.1 inches: > 0.1 inches Municipality: Mynpur Township

	-		_	Т	$\neg \tau$								
Rating	(0-2)				-	~	2	0	0	0	0.	0	-
JC	upstream drainage	area.			Park	Wightherael	Weighberhere?	Neighborhood	Neighborhoed	Werghberhous)	Weigh berhood	Wrigh to chee co	Weigh the Hoce c)
	Color/Odor	(Yes or no) (specify if floatables,	algae or sediment	present)	Clay (Cla)	ScJ, mest trash	13g acres/weeg	CID/Recks/pobbles	Checa	Bambec Everywhere Weighter here	Eresten (hittom)	War Arhre	Rund/ Redd/ Fresh Weigh to there?
Flow	Observed	(Yes or no)			2	5	7	2	J-	5	2	7-	2-
Channel	Side Slopes*	(II:V)			strain	1:2	9;1	17.)	3	2:1	7:1	h:1	1:5
Channel	Bottom	Width ((JooJ)		inte	e,	7	,,	>tree m	-	-8-	٦/,	,21
Channel	Depth				Directly	(0,1,	e,	,,1	inte	* -	iè	31	15-7
Depth of	Now in pipe	(feet)				,,,	3"	,,2	Direchly	,	3,	1,7	3"
Pipe I	Diameter	(inches)			10.6	>(2"	"HZ	8.1.	MUET	342	8"(h.K)	30"	36"
Time	(00:00)												
Storm	Drain?			sure)~	7~	3~	7	- 5-	٥٠	7-	5-	7-
Photo	华				CIP	4	Rep	Class	Rec/Brek	12 CID	Rep	Rep	CMP
Pipe	Swale	#			2)-2	Ç -((2.12	コー	C -18	10 -16 Ben	(-17 Rep	C-(8 CMP

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no crosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling,

blocked catch basins or drain)

II/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

CRUM Creek Watershed

Form O - Outfall Data

54 hz	24 hrs.	
Time Since Last Rain was > 72 Hours: Yes 24 hrs.	Days Since Last Rain	Crun Creek
Date: 7 24/03 Time Since I	inches: > 0.1 inches	Name of receiving water:
B.V & B	Quantity of Last Rain: < 0.1 inches:	MARPLE TCLMSHIP
Person: Aban McCAUCHLING	J	Municipality:

-			-										
Rating	(0-2)				-	0	0	0	0	2	C	-	_
Describe land use of	upstream drainage	агеа.			Weighter hace	13A5CIN	Received Brown	Waghburhow	Weighborber	Naytherbow/stra	Wagyboloce	Winghherhood	New Washurlance
Water	Color/Odor	(specify if floatables,	algae or sediment	present)	Encrein/ Secument Weighter hoor	Ercound Sine	Clery/plants (fens) Rocedxide Broill	Bembec formest Neighborhow	Bruduc Forest Weighborhood	Brain (Botton) Naythorbow/stan	Section Cathlackner Weighburhood	Sec), ment	Sectioneral (LUFS) New Warpertow
Flow	Observed	(Уся от по)			>	20)-	3-	5	7-)-)-	J
Channel	Side Slopes*	(II:V)			(2x	1:2	3:(13:{	3:(1:5	١. ٤	1:2	Flect
Channel	Bottom	Width	(feet)		,9)	3(, h	K at it	,2	151	۶,	C	3,
Channel	Depth				۲,	1.0	<u>"</u> 9	get a gard lock at it	0,,	,2	,2-,1	,)	
Depth of	flow in pipe	(feet)			,,2		1	get a	,,2	31:	9	וו	
Pipe	Diameter	(inches)			181	(در	3(0"	Cicolon	1,21	36"		1.	,, 22
Time	(00:00)												
Storm	Drain?	Ycs/No	Not	sure)-	2-)~	2-	2-	>-	2	2-	7-
Photo	#				Rep	RCP	CMP	2	3	CAR	Creek	CMP	RCP
Pipe	Swale	#			C-19	C. 20 REP	12-2	4-22	(2-23	HZ -7	6-25	0-26	C-27 RCP

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no crosion or sediment, pipe in good repair)

1=Nceds rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling,

blocked catch basins or drain)

II/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

7

CRUM Creek WATERSHED

Form O - Outfall Data

es 24 hrs	1 Z4 hrs,	
Time Since Last Rain was > 72 Hours: Yes 24 hrs.	Days Since Last Rain_	Name of receiving water: Crow Creek
Date: 7/24/05	inches: > 0.1 inches	
Person: Alana Michaelina RV & B.	المراقبة (المراقبة المراقبة المراقبة Quantity of Last Rain: < 0.1 inches:	MARPLE TOWNSHIP
Person: Albana		Municipality:

Rating (0-2)	0	_	0			
Describe land use of Rupstream drainage (((\$000)	V4.6.33	Read			
Flow Water Observed Color/Odor (Yes or no) (specify if floatables, algae or sediment	present)	Algae	Ge Cis			
Flow Observed (Yes or no)	5-	2	2			
Channel Flow Side Slopes* Observed (II:V) (Yes or no))	13ch				•
Channel (Bottom Swidth (Cet)	, 1,	7,	C reeld			
Channel Depth	1-1	,2	ر ئاد			
Depth of (low in pipe leet)	w *		Directly			
Pipe Diameter (inches)	18 m		118)			
Time (00:00) am/pm						
Storm Drain? Yes/No	sure ?	2-	>-			
Photo	1-00 SC-4	13C 3C 3C 3C 3C 3C 3C 3C	CMP			
Pipe Swale #	32.4	6-29	C-30 CM2			

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no crosion or sediment, pipe in good repair)

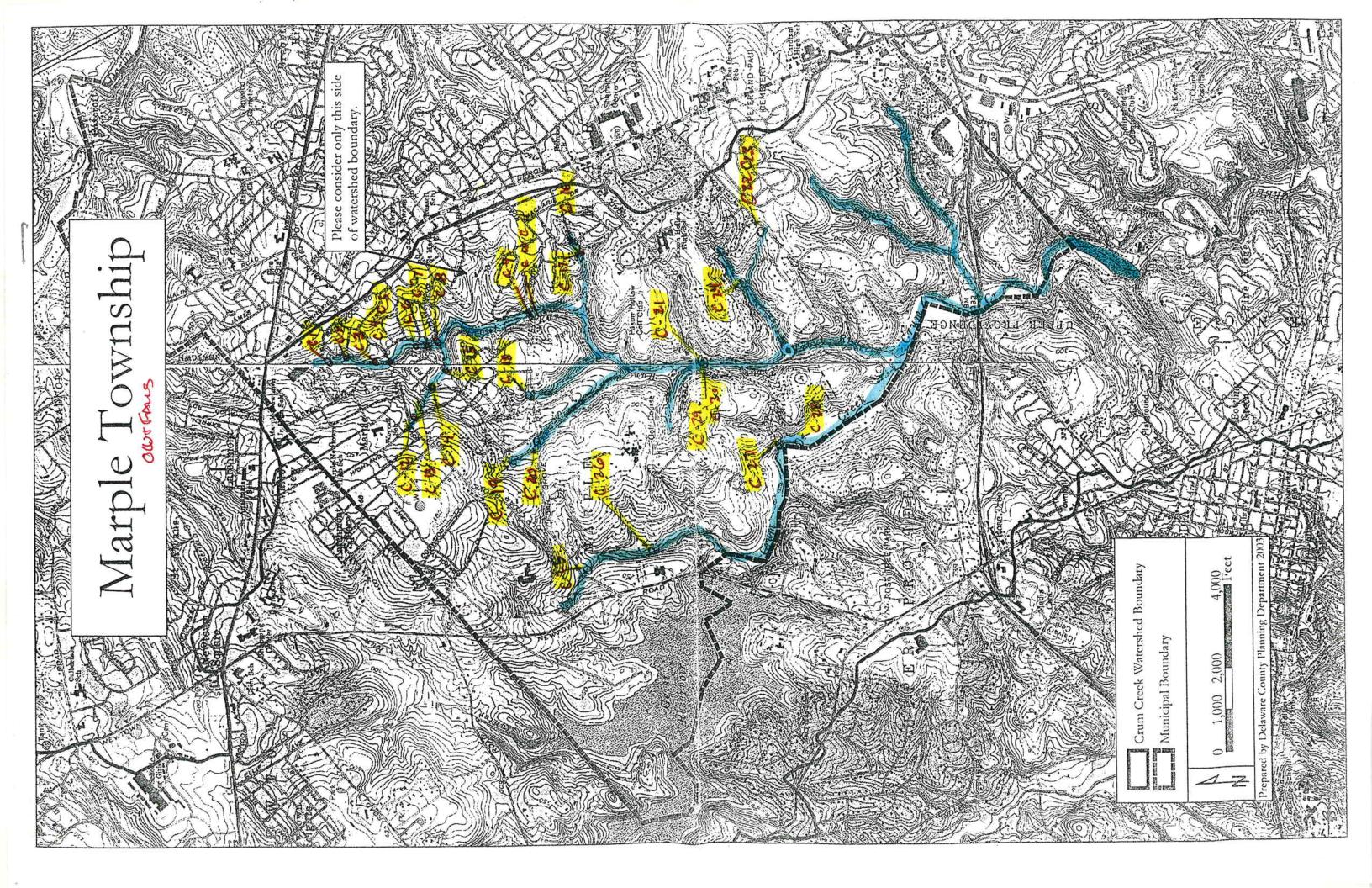
1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling,

blocked catch basins or drain)

II/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel





DELAWARE COUNTY PLANNING DEPARTMENT

DCPD

Court House/ Government Center, 201 W. Front St., Media, PA 19063

Office Location: Toal Building, 2nd & Orange Sts., Media, PA 19063

Phone: (610) 891-5200

FAX: (610) 891-5203

E-mail: planning department@co.delaware.pa.us

TO:

Bill Brokaw

FROM:

Christopher Gallagher

DATE:

11/1/05

RE:

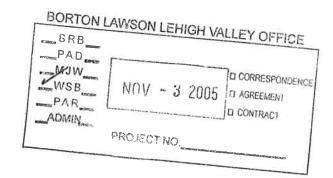
Crum Creek Stormwater Management Plan

Marple Township Forms

Bill,

Please find enclosed the completed Marple Township survey, forms, and maps.

If you require and further information, please do not hesitate to contact me at (610)-891-5130.





Form O - Outfall Data

17.5.	73,	
ours: Yes 48	Days Since Last Rain 48 hrs,	<u>\</u>
Time Since Last Rain was \geq 72 Hours: Yes $\mu \delta h \rho_{\delta}$.	Days Since L	Name of receiving water: ひみんなく くったん
		frecciving water: _
Date: 7/25/03	> 0.1 inches	Name o
	reks & Breich Enge Quantity of Last Rain: < 0.1 inches: > 0.1 inches	cres ship
Person: MBAN, MCLAUGALIN	Quantity of Last Rain:	dunicipality: MARRAGE TCLERShip
Person: MARAE	P. compy han	Municipality:

Rating (0-2)	0 -	- 0	0	0			
Describe land use of upstream drainage area.	PARAME 10-7	Meghbs-bocc)	Poerch bord	Major Poci			
Flow Water Observed Color/Odor (Yes or no) (specify if floatables, algae or sediment present)	(car)	Brench Reells/ Plents	Nebre	Picont Life			
Flow Observed (Yes or no)		2 7	2-	7-			
Channel Side Slopes* (II:V)		1:1				1)•	TE
Channel Bottom Width (feet)	5 frec. 1	streem 4'	، الرودي	shirt on			
Channel Depth	ishe	wto C.	عادز	<u>ئ</u> ک			
Depth of flow in pipe (feet)	Directly inte	Bireithy	Directity	Directly			
Pipe Diameter (inches)	1,71	" + 2	IN LET	(v Læt			
Time (00:00) am/pm							
Storm Drain? Yes/No Not		J- J-	7-	5-			
Photo	410	Plex 13.0	R Cy	Rep			U.
Pipe Swale	0-19 CIP	10-21 Plants	10-22 RCW	12-23 Rep			

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no crosion or sediment, pipe in good repair)

1=Needs recheeking (some dry weather flow, moderate sequiring or sediment deposition, some floatables or debuis, odor, algae, pipe in poor condition)

blocked catch basins or drain)

II/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

²⁼Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling,

Bd Ovainerd Location of margine Outfalls: Unnamed Rain, starting at Itils, matin RA, Endrug in Party Creek N of Four Hill Rd. 1. INS has outlails from parking lot and apparents, 100 K. 2. culvert from IHS contains a second Pipe jost above, perhaps from intervening around, Both pipos feet headwaters Of Ron, beside Greek Church 3. White PVC pipe encased in condrete, downstream and by 150 Chappeled intra 34. 12 pipe encased in condrete, downstream and by 150 Chappeled intra 4. Approx. 12 diam Pipe Han Orchard Do, at head of tombutary. 5, Several hundred heat downstreambrown friortany is a ~ 16° aleminum PRE, wit below 2748 S. Kent Rood, causing considerable erosion \$ of s bank 5A. N Brusk, 2 100' dønnetnesmok ovtkall 5, Avams Dames Road 6. Just be our Cheory hill Reg on Township preparty this big out fall feeds a find tury. to unnamed Rin.

grell

7. I am told there is an diffall where Onnamed Rus neeks Darby Creek. 8. Bin one on Sw cooner, Darry Creek/Sprowl. Langford Run 1. Run starts in 3 adjecent outfalls below mulin Rel 2. The first of New Ardmore
2. Ave, E bank, 3. On S side of NA Ave Bridge, on either side of colored, are outfalls, 4. 1501 donnation, E. W. bank.

Whotstorie Run 1. Rvn starts, here in Radhill Dr. ovtRall. This short segment before it gods undergrand at Parkney, was, bright orange this spring, possibly From irrorde. I santhis same problem at lang fand weep holes between Sproul and novem the and at Lang Road outtall no: 2; and on Trout kun outfall 4. 2. This pipe may be surta aberton it may be the outfall For storm downs evident withe parking lots under which it passes. 3. This trib starts in an outfall

Sof Read Rds draining 12 mart 4. At end of many t Rd, Ebank. north's Ron

Spring to 1

Care

Lane

Dood

Dood

Dood

Dood

The walkary

Ford

The walkary

Th 15t wateron Start 2 at fall 3 mill out hu & (pfeschrein) and fall 5 in stream) Parking 1 25 Joutfallo

ortholl 7 is at middle dive, on east bank, between Cedar Gree and Palmer's raid Rds " Boot Run 1. Run starts in this big pipe under Giant DE Parking lots 2. About 400' downstream (3 2 small dam next to an E bank properthat my draw Down Torra 3, 150' Not where Backview Dr. crosses Trant Run, on w banks 4. About 500' NO of Cedar Grave Rdg E bank, 6-8' in land from stream reste redforange offluent 5, 50° N, of Cedar Grove Ebank 6. W boule, Paxon Morlan Golf 7. 5 side, Pakan Mollow Rde bondge W bank

8. This pipe kan no longer kneking. It's on 5 banks of a tributary, not shown on map, that Starts below the rind de School Pipe is 30 & domistrada Arm ontrance to Golf Correse Wottond Run 1. W bonks 10' downstream of state Road, and to west of Market woods Drives 2. Jollow This trib 150' downstroom to where it joins effluent Room Blue Route pand, coming out of a big constructe current. 3. A hard one to Red. At State Roya stream enters a culvertfunder Blue Route) that leads to a pondi Follow this stream 300 South to its origin ma pipe coming from what Bure Route, near intersection with by press. Water is remarkably clear.

water out Alls Bil Brinstof 32573127 Jasip 1 2003 Chris



Remington & Vernick Engineers Remington, Vernick & Vena Engineers Remington, Vernick & Beach Engineers Remington, Vernick & Walberg Engineers

July 28, 2003

EDWARD VERNICK, P.E., C.M.E., President CRAIG F. REMINGTON, P.L.S., P.P., Vice President

EXECUTIVE VICE PRESIDENTS

Michael D. Vena, P.E., P.P., C.M.E. Edward J. Walberg, P.E., P.P., C.M.E. Thomas F. Beach, P.E., C.M.E.

DIRECTOR OF OPERATIONS CORPORATE SECRETARY Bradley A. Blubaugh, B.A., M.P.A.

SENIOR ASSOCIATES

John J. Cantwell, R.E., P.P., C.M.E. Alan Dittenhofer, P.E., P.P., C.M.E. Frank J. Seney, Jr., P.E., P.P., C.M.E. Terence Vogt, P.E., P.P., C.M.E. Dennis K. Yoder, P.E., P.P., C.M.E.

Remington & Vernick Engineers

232 Kings Highway East Haddonfield, NJ 08033 (856) 795-9595 (856) 795-1882 (fax)

18 East Broad Street Burlington City, NJ 08016 (609) 387-7053 (609) 387-5320 (fax)

Remington, Vernick & Vena Engineers

9 Allen Street Toms River, NJ 08753 (732) 286-9220 (732) 505-8416 (fax)

Remington, Vernick & Walberg Engineers

845 North Main Street Pleasantville, NJ 08232 (609) 645-7110 (609) 645-7076 (fax)

4907 New Jersey Avenue Wildwood City, NJ 08260 (609) 522-5150 (609) 522-5313 (fax)

9550 Highland Street 2rd Level Mauricetown, NJ 08329 (609) 785-7000 (609) 785-3125 (fax)

Remington, Vernick & Beach Engineers

922 Fayette Street Conshohocken, PA 19428 (610) 940-1050 (610) 940-1161 (fax)

University Office Plaza Commonwealth Building 260 Chapman Road, Ste. 104F Newark, DE 19702 (302) 266-0212 (302) 266-6208 (fax)

www.rve.com

Karen Holm Delaware County Planning Department Government Center Building 201 West Front Street Media, PA 19063-2751

Re: Township of Marple

Act 167 Stormwater Management Plan for the Crum Creek and Darby Creek

Our File # PDMAT350

Dear Ms. Holm:

Enclosed please find one copy of the Crum Creek and Darby Creek outfall maps and outfall data sheets. The maps and sheets were completed as per the directions given at the July 8, 2003 Act 167 conference held at Marple Township. We understand that the County will use this information to develop an ordinance and produce electronic GIS mappings that can be used by the Township for their Year 1 NPDES submission.

Should you have any questions please feel free to contact me directly at (610) 940-1050, extension 513.

Very truly yours,

Remington, Vernick & Beach Engineers

Christopher J. Fazio, P.E., C.M.E.

Cc: Joseph Flicker, Town Manager (w/ enclosure) Thomas F. Beach, P.E., C.M.E. (w/ enclosure)

Crum Creek Water shed

Form O - Outfall Data

Aunicipality:		erson: Abawa d
Municipality: MARPLE Township Name of reco	Quantity of Last Rain: < 0.1 inches: > 0.1 inches	Person: איז אין
Name of receiving water: Low Locell	Days Since Last Rain 24 Mrs.	Time Since Last Rain was >72 Hours: Yes 24 hrs.

6-5	8-3	C- 57	C-6	5-5	C-4	C-3	6-2	1-3			#	Swale	Pipe
1 1	Physho	13012	1200	PVC	C12	616 C16	CMP	C.Mis				#	Photo
7-		<u>-</u> c	C		7	٠	-(- (.	sure	Not	Yes/No	Drain?	Storm
											am/pm	(00:00)	Time
2-12"	147	24"	24"	81,	811	2-6"	42"	420			(inches)	Diameter	Pipe
	l'a			×			ι,,	2"		- 500	(feet)	flow in pipe	Depth of
Birechly	Dircetty	51	2,1	6.,	Directly	Diraetly	Flat	1 rath				Depth	Channel
- ਵ	<u>آ</u>	<u>د-</u>	4'	٠.	250	इं ट	3 1/2	aki		(feet)	Width	Bottom	Channel
streem	Stran	[15]	1:2	7:8	st-faza	Stream	1;1	st/coun			(A:H)	Side Slopes*	Channel
Z	2	Z	2	2	2	2	-0	-<			(Yes or no)	Observed	Flow
Trank Deterioration	(Sec.)	Sco. / cranking/	Clean	Bresich / sectiment Weighherheed	Old pres	Sect. Build -up	Clean	Clean	present)	algae or sediment		Color/Odor	Water
Tray Deterior Pary Sing, e Inteller	No gh borhood	Sco. / crackmy/ trash/plantlife Norghborhood	Nochharherd	1+ Weighterbaco	hours) un houses	Newsharbaco	Neighboliere)			атеа.	upstream drainage	Describe land use of
2	C	2	0	0	0		0	0				(0-2)	Rating

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling,

blocked catch basins or drain)

H/V = I-forizontal to vertical ratio

*1:1 = Vertical - rectangular channel

Form O - Outfall Data

Days Since Last Rain 24 hrs.	Quantity of Last Rain: < 0.1 inches: > 0.1 inches Days Since I Municipality: ΜΑΛΡικ Τομιονίο μο Μοιοίρα Ναιοίρα δετος ενίπος water: Δετιον Δετεκ
ince Last Rain was \geq 72 Hours: Yes Z H hr	Person: Alson Mandellery) R. V. & B. Enginees, Date: "U 24/03 Time Since Last Rain was >72 He

Weigh	Parant / Reedy Trush Weigh berlice?	-c	1:5	(2)	2-51	3"	36"		-5	CMP	3-13
Wrigh bushowd	Word Achre	-C	1:-	T,	31	ч"	30"		~<	RCP	ر-[٦
Weigh higherd	Easen (hotton)	~	1:5	18	ئ	3'	81.(px)		-(ROP	51- B
weight	Beember Everywher Weighterhouse)	3	7:1	-	-,		24"		٠, ر	Rep	C-18
Neighborhood	Clean	-('n	stree m	15 K	Directly	[MLET		-0	rer/Brick	6-14
Newshberhood	Cip/Rocks/pobbles	7	1.5.)	1'	ť,	7,7	8:		at	Clay	6-13
Neighber house	138 Brise / Luces	7	1:6	ť	6,	3,,	240		-5	RCV	21-12
Weighholace	Sed, ment trash	~	7:1	6,	6.	H"	≥6°*		~(RUP	Û-11
Park	Clay (Cla)	2	Strain	1.2 de	DICECTLY		10"		~C	CIP	C-10
	present)								sure		
	algae or sediment			(fcct)					Not		
агеа.	(specify if floatables,	(Yes or no)	(II:V)	Width		(fect)	(inches)	am/pın	Yes/No		#
upstream drainage		Observed	Side Slopes*	Bottom	Depth	flow in pipe	Diameter	(00:00)	Drain?	#	Swale
Describe land use of	Walcr	Flow	Channel	Channel	Channel	Depth of	Pipe	Time	Storm	Photo	Pipe

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no crosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2=Inpairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling,

blocked catch basins or drain)

II/Y = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

Form O - Outfall Data

dunicipality:		erson: Aban J
Municipality: אווים	المانزي of Last Rain: < 0.1 inches: > 0.1 inches	erson: ADAM MCLAUCHLIN, A. V & B Date: 7 24/03 Time
Name of receiving water: <u> </u>	Days Since Last Rain 24 hrs.	Date: The Since Last Rain was > 72 Hours: Yes 24 hrs.

C-277	C-16	C-25	C- 24	(-23	C - 22	C-21	6-20	C-19			#	Swale	Pipe
1 KCP	CAM	CRER	Care	5 CMP	. 7	CMP	17.6%	ROP				#	Photo
-(٦-(. ~	-<	C	7.	-(-C	- (sure	Not	Ycs/No	Drain?	Storm
											am/pm	(00:00)	Time
.,,22	4		36"	121	(Cioolon't	36°"	(Oli	48"			(inches)	Diameter	Pipe
	("	6"	31	2"	riget a	4"		2"			(feet)	flow in pipe	Depth of
	1'	1,5,	2,	e	_	Ç"		Н,				Depth	Channel
3,	C	ν	15,	12	good look at it	7,	vī	Ē		(fect)	Width	Bottom	Channel
Flat	1:2	7 . 3	1:5	3:1	1: 2	31.1	1:2	188			(IEV)	Side Slopes*	Channel
τ	-(-(7	~	-7	-(0	-((Yes or no)	Observed	Flow
Scolment (10fs)	Sec), mont	Section entitlestre Weighterhood	Broxies (130Hom)	12 caboo forest	Bamboo tomest Washburkine	Class/ Plants Chen	Brown of Sine	Erchan Scalment Waghterhood	present)	algae or sediment	(Yes or no) (specify if floatables,	Color/Odor	Water
New Waghahared	Neighborhood	· Weighborhoed	Broxier (Buffern) Naghbolow/stren	Bumboo forest Weighbrhood	- Washburkowi	Clary/plants (fers) Road xide 13 Rolls	130517	Waghbarhood			агса.	upstream drainage	Describe land use of
	_:	0	C	C	0	0	2	-				(0-2)	Rating

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no crosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling,

blocked catch basins or drain)

II/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

CRUM Creek WATERSHED

Form 0 - Outfall Data

Quantity of Last Rain: < 0.1 inches: > 0.1 inches Days Since Last Rain ZH hrs.	Municipality: MARPLE TOWNSHIP Name of receiving water: Crum Creek	ipality: MARPL	Municip
	Days Since Last Rain	Quantity	
Person: Alban いくしついいにい パルも B. Date: '7/24/05 Time Since Last Rain was >72 Hours: Yes 24 hrs	Melavesur, RV & B. Date: '7(24/05 Time Since Last Rain was >72 Hours: Yes 24 h/シ	Abam McLauca	Person:

		 	 	,						_
			C-30	6-29	85-3			#	Swale	Pipe
			CMP	Chranel	Creek				#	Photo
			-(C	, 7	sure	Not		Drain?	Storm
						11.19			(00:00)	Time
			118)		181			(inches)	Diameter	Pipe
			Pirectly		- ₩			(fect)	pipe	Depth of
			3 6	2,	~.				Depth	Channel
			Creek	r,	4		(fcct)	Width	Boltom	Channel
,				130%	1:1			(II:V)	Side Slopes*	Channel
			5	7	-((Yes or no)	Observed	Flow
			(RU)	Mare	Coes	present)	algae or sediment	(Yes or no) (specify if floatables,	Color/Odor	Water
			Rond	Wee dis	\w co\$ \$			агеа.	upstream drainage	Describe land use of
			C	-	0				(0-2)	Rating
-		 								

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no crosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling,

blocked catch basins or drain)

II/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

thered 1	stream Connector	Eron of wells		いたいと	.8	2,		11831		-¢	1 cm/	D-5
	iv angly-rhood	Plat /s-diment	7:	1:3	8.	7.		24"		~C	15 CP	D - 3
- hz., d 0	Meghborboad	Clecia		130 x	17'	r.	6"	72"		-c	RCP/CAR	7-4
chesch 1	ine gly berlieved	Brusica/sectional	3	11:60	3	13/17		(° =		-0	R CP	D-6
1600	Military house	TRASUL (Laces (Debro	7	Deste yel	vi	.2.		121		-c	} C(P	7-6
hord	Maxwherhard	Lever-			Jan 125	5et a good look	140000	1,72		-(RCP	h-4
houd	ivightor hood	Tresh	5	1:1	V.	W	-u	18"		-(Plastic	5-9
shock)	Weshbarhow	Leve est			lcc.K	get good	Couldn't	1,21		~	CMP	2-4
Accel)	BASIN (Pecce)	Metal Gate off	(132.14	121	3,	6"	1811		-<	P.C.D	-
		present)								sure		
		algae or sediment			(fcet)	,				Not		-
	area.	(specify if Iloalables,	(Yes or no)	(II:V)	Width		(fcet)	(inches)	am/pm	Yes/No		72
inage (0-4)	upstream drainage	Color/Odor	Observed	opes*	Bottom	Depth	flow in pipe	Diameter	(00:00)	Drain?	#	Swale
JC	Describe land use of		How	Channel	Channel	Channel	Depth of	Pipe	Time	Storm	Photo	Pipe

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no crosion or sediment, pipe in good repair)

I=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some fluatables or debris, odor, algae, pipe in poor condition)

2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil slicen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling,

blocked catch basins or drain)

II/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

JOTES

Name of receiving water: DARBY Creck	Municipality: MARPLE TOWNShyp Name o
Days Since Last Rain 4 8 hrs.	Rem rybn كريمبيدان ﴿ الاقتصالة عنه: < 0.1 inches: > 0.1 inches
Date: 7 2.5 / C3 Time Since Last Rain was > 72 Hours: Yes 48 hc.	

31-1	0-17	71-4		1	_	7-12)-C	D-(C			72	Swale	Pipe
413	Rep	8 ca/Cmp	RCP	Rep/Brell	Kay Jose	R-C17/	Rep	N. 26/20 3				#	Photo
-(-0	-6	~(-د	^ ا	~<	~([']	-¢	sure	Not	Ycs/No	Drain?	Slorin
							٠				am/pm	(00:00)	Time
18"	36"	3,9%	181	15/15/	lancie	[ルトドユ	184	INCEL			(inches)	Diameter	Pipe
	3"			Pineckly	Birectly	Durchly	ũ	Piretty			(feet)	flow in pipe	Depth of
12:1	Pircitly		PirecHly	Mk	šk	3	Dimerric	who		1		Depth	Channel
2	5/8	\sigma_{-}	3	そできょう	stree is	7 7 7	15°50	HICLM		(feet)	Width	Bottom	Channel
Hardwill	2+120.m	\$7 Y	2 trecon				St-rown				(II:V)	Side Slopes*	Channel
5	-5	.5	2	~	-(2	~	-<			(Yes or no)	Observed	
Cook	Example 1	chicking (play 1.4	Gers / Stone well	Erz	ECEN	Becco / Erbach	ちな人を含む	はたらんへ	present)	algae or sediment	or no) (specify it floatables,	Color/Odor	Water
Rolling lot	Me Shhurton (Exactly & plant like bagh behood	Noic 4 bestocd	Nough believe ci	Nughbahani	March Rad	Warnbarhoad	Wesh bornerd			dica.	Calli Clallingo	21
O			0	_									Kating

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no crosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling,

blocked catch basins or drain)

II/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel



Remington & Vernick Engineers Remington, Vernick & Vena Engineers Remington, Vernick & Beach Engineers Remington, Vernick & Walberg Engineers EDWARD VERNICK, P.E., C.M.E., President CRAIG F. REMINGTON, P.L.S., P.P., Vice President

EXECUTIVE VICE PRESIDENTS Michael D. Vena, P.E., P.P., C.M.E. Edward J. Walberg, P.E., P.P., C.M.E. Thomas F. Beach, P.E., C.M.E.

June 10, 2005

DIRECTOR OF OPERATIONS CORPORATE SECRETARY Bradley A. Blubaugh, B.A., M.P.A.

SENIOR ASSOCIATES

John J. Cantwell, P.E., P.P., C.M.E. Alan Dittenhofer, P.E., P.P., C.M.E. Frank J. Seney, Jr., P.E., P.P., C.M.E. Terence Vogt, P.E., P.P., C.M.E. Dennis K. Yoder, P.E., P.P., C.M.E.

Remington & Vernick Engineers

232 Kings Highway East Haddonfield, NJ 08033 (856) 795-9595 (856) 795-1882 (fax)

18 East Broad Street Burlington City, NJ 08016 (609) 387-7053 (609) 387-5320 (fax)

Remington, Vernick & Vena Engineers

9 Allen Street Toms River, NJ 08753 (732) 286-9220 (732) 505-8416 (fax)

Remington, Vernick & Walberg Engineers

845 North Main Street Pleasantville, NJ 08232 (609) 645-7110 (609) 645-7076 (fax)

4907 New Jersey Avenue Wildwood City, NJ 08260 (609) 522-5150 (609) 522-5313 (fax)

Remington, Vernick & Beach Engineers

922 Fayette Street Conshohocken, PA 19428 (610) 940-1050 (610) 940-1161 (fax)

University Office Plaza Commonwealth Building 260 Chapman Road Ste. 104F Newark, DE 19702 (302) 266-0212 (302) 266-6208 (fax)

www.rve.com

Delaware County Planning Department Government Center Building 201 West Front Street Media, PA 19063

Attn: Karen Holm

Re: Marple Township

Crum Creek Watershed Planning

Our File# PDMAT387

Dear Karen:

Attached, please find one (1) copy of the information you requested for the Crum Creek Watershed Planning Report.

Should you need any further assistance on this matter please feel free to contact our office at (610) 940-1050.

Very truly yours,

Remington, Vernick & Beach Engineers

Christopher J. Fazio, P.E., C.M.E

Enclosures

cc: Joseph Wm. Flicker, Township Manager

Thomas F. Beach, Executive Vice President

Chris Serpente, P.E.

CRUM CREEK WATERSHED ACT 167 STORMWATER MANAGEMENT PLAN

MUNICIPALITY QUESTIONNAIRE

PART I - GENERAL INFORMATION

Municipality:	MARPLE TOWN SHIP
Contact Person:	JOE FLICKER
WPAC Designee:	JOE FLICKER
Title:	TOWNSHIP MANAGER
Address:	227 SOUTH SPROUL RD
	BROOMALL PA 19008
Phone:	610.356.4040
Fax:	610.356.3587
Person Completing for	orm (if different from Contact Person):
Name:	C. SERPENTE
Address:	REMINGTON, VERNICIC+ BEACH ENGINEERS
	P22 FAYETTE ST
Phone:	CONSHOHOCKEN, PA 19428
Fax:	610. 940. 1050 ×519 , FAX: 610.940. 1161
E-mail:	

PART II - REGULATORY ACTIVITIES

A. Please indicate the regulations you currently use to manage development.

REGULATION	MUNICIPAL ORDINANCE	COUNTY ORDINANCE
Zoning Ordinance	×	
Subdivision/Land Development Ordinance	X	
Separate Stormwater Ordinance	X.	
Separate Floodplain Ordinance	Х	

B. Please indicate the agencies/individuals who review and approve land development plans and zoning variance/waiver requests.

	LAND DEVELO	PMENT PLANS	ZONING VARIANCI	E/WAIVER REQUESTS
ENTITY	REVIEW	APPROVE	REVIEW	APPROVE
Supervisors	(X		X
Municipal				
Engineering				
Department				
Municipal				
Planning				
Department	X			
County Planning				
Department	X			
County				
Conservation				
District	<u> </u>			
Zoning Hearing	_ ,		✓	
Board	<u> </u>			
Consulting			✓	
Engineer	<u> </u>			
Others (List				
Below				

C. Please provide **copies** of your zoning, subdivision/land development, and separate stormwater management and floodplain ordinances and your current zoning map when you return this questionnaire. Please list these documents below.

COMING	VIA MAIL	. PLS CALL	
CHIRIS	SERPENTE	610,940,1050	X519
	NEEDED.		

PART III - MUNICIPAL AND LOCAL PLANNING ACTIVITIES

Please indicate below whether your community has approved the following plans and maps and the date of the most recent update.

ITEM	APPROVED/DATE	IN PROGRESS	PLANNED WITHIN NEXT YEAR
PA Act 537 Sewage Facilities Plan	X		
Comprehensive Land Use Plan		X	PLANNED REVISION
Existing Land Use Maps		X	PLANNED REVISION
Proposed Land Use Maps			
Zoning Maps		X	EXPECT 6/05

PART IV - FLOOD INSURANCE PROGRAM AND COMPREHENSIVE LAND USE PLAN

Please indicate below whether your community participates in the National Flood Insurance Program:

ITEM	PARTICIPATES (Y/N)
Flood Hazard Boundary Map (FHBM)	
Participates in FEMA Emergency Program	Y
Participates in FEMA Regular Program	

PART V - EXISTING STORMWATER RELATED PROBLEMS AND STRUCTURES

Please complete the matrices on the following pages (Forms A and C-J) to describe any significant stormwater-related problems (Form A), Existing or Proposed Flood Control Projects (Forms C & D), Existing or Proposed Storm Water Control Facilities (Forms E and F), Existing or Proposed Stormwater Collection Systems (Forms G & H), Present and Projected Development in the Flood Hazard Area (Form I), and Water Quality Problem Areas (Form J) that you are aware of in your municipality.

What we would like to ask of you is that you complete as much of the attached data collection forms as possible. There is a different form for each item of information as summarized in the attached "FORM DESCRIPTION SUMMARY. The process would be as follows starting with the problem areas (Form A):

- Place the location of the problem area on the map as shown in the attached example map.
- Draw a box on the map with the problem area identifier starting with A-1 with an arrow leading from the problem area identifier to the problem area.
- Place an A-1 in the first column of FORM A.
- Put a check in each box in the A-1 column that represents the problems associated with that particular problem area.
- Repeat with the next problem area (A-2) and so on.

- Repeat for existing flood control projects (FORM C) placing a triangle on the maps and starting the labeling with C-1.
- Repeat for all forms.

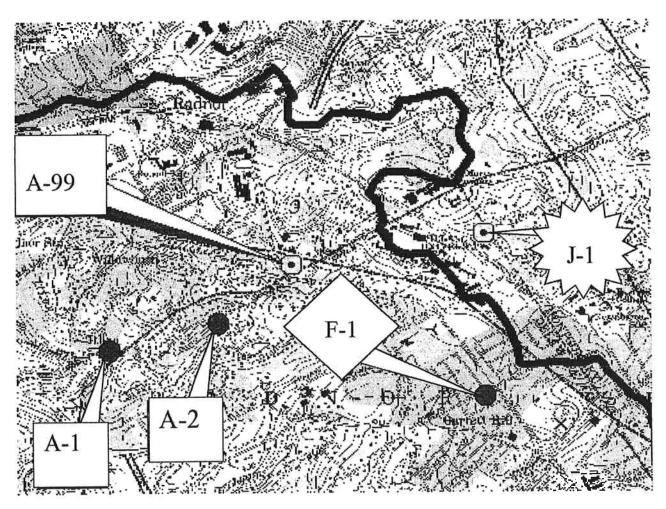
The sample map attached shows three problem areas (A99- A1 and A-2), one proposed flood control project (F-1) and one water quality problem (J1).

Use additional paper to provide <u>detailed</u> descriptions of your most serious problems and attach a map to show the location of the problem. Attach photographs, if available.

If you have any storm or combined sewers, please provide maps showing the collection system and overflow discharge locations and an estimate of the average annual discharge at each overflow point.

The more detail you provide, the better we will be able to evaluate the situation for your municipality. We appreciate your help.

Sample Location of Information from Data Collection Forms on the Municipal Map



		CTODA	LAZZE		SLEM AF	EAC E		QL.	IEET_	1	OF_	1	-
		STORM							re Filli	na Oi		n	T
WATERSHED			FOR	IVI CO	MPLET	EDD	1		Instru				
	00-1 -1-1-00		Niama			- 0 4	Park Ser		IIIStiut	LIUNS	OILD	ack	
Name:	CRUM/OARA		Name		C.3	ERY	EUI	For	Count	, l lco:			
	MARPLE				610,9	140	1050	POL	County	USE.			-
County:	DELAWARK		Date:			05							
MAP NO. *		A-	A- 2	A-3	A-4	A- 5	A-	A-	A-	A-	A-	Α-	A-
Types of Storm W	Vater Problems							HOUSE STATE					
Flooding		X	X		1	X		_					-
Accelerated Erosic													
Sedimentation	00							_	-				-
Landslide	NO			ļ.,,				-			-		-
Groundwater				X	X				-		-	-	
Water Pollution									-			-	
Other (Explain)								<u> </u>	-				-
Explanation Line N	lo. (On Back)					and the same		e racasans	NO STREET	AND SERVICE	aconditions	OLOGO STRUCTO	PS2000000000000000000000000000000000000
Cause (s)								AND THE STREET	864			T CHE	
Storm Water Volur	me	X	X	X	X	X						-	
Storm Water Veloc	city	an deples										_	1
Storm Water Direc	tion												1
Water Obstruction													
Other (Explain)												-	-
Explanation Line N	No. (On Back)							The state of the s		-	188400000		AND REPORTED TO
Frequency													
Year Most Recent	Occurred	05	05	05	05	05					ļ	-	
Year First Known	Occurred							to compatito	and delicement	-	NO SECURIOR DE	- Contract	unitary to comme
Regularity													
More Than 1 Year		Y	Y	4	Y	M							-
Less Than 1 Year													
Only During Agne	s										IN THE REAL PROPERTY.	and the same	
Duration (If Appli				7		4		500	South St	part of	OF SERVICE	1	
Less Than 1 Day		Y		L Y									
1 Day + (Enter Da	ıys)		≈3			02							
Property Damage	1	81/35	E USA									198	
Loss of Life/Vital S		X										1_	
Private		X	X										
More Than One C)wner												
Types of Propertie													
Number of Proper													
Public (List Types													
Explanation Line I													
Solutions		JOANS N								*			
Suggested													
Explanation Line	No. (On Back)												
Formally Propose													
Explanation Line													
* Include Map	ID No. if found o	n any	other fo	orm lis	ting pro	posec	facili	ities.					

A-1: BRIDGE OUT. APARTMENT DAMAGE.

A-2: HOUSE DAMAGE

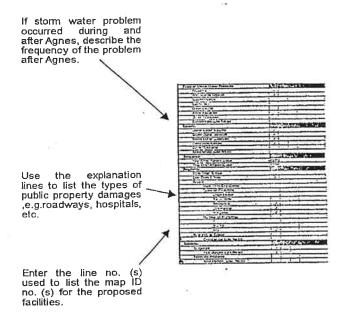
A-5: FLOODING ON WATER COMPANY PROPERTY

INSTRUCTIONS

Begin with A.1 as the first map number to identify the first' storm water problem area. Illustrate the defined problem on the watershed map provided, and identify it with its map number.

For each storm water problem area within your municipality, enter the map identification number at the head of the column. Describe the problem by placing a check (4 in the appropriate blocks of the column under this map identification

When an additional explanation is required, write the line number(s) used in the column marked "Explanation Line No. (s)".Example 1, 2-3, etc.



Definitions

Storm Water Problem Area

An area that defines the farthest extent of a storm water problem, including any area that experiences property damage, inundation, accelerated erosion, surface water pollution, groundwater pollution, landslides, or any other problem as a result of storm water runoff.

Groundwater

Water in the ground below the water table.

Accelerated Erosion

The removal of the surface of the land through the combined action of man's activities and the natural processes at a rate greater than would occur because of the natural process alone.

Sedimentation

The process by which soil or other surface materials, transported by surface water, is deposited on stream bottoms.

Water Obstruction

Any dike, bridge, culvert, wall, wingwall, fill, pier, wharf, embankment, abutment, or other structure located in, along, across, or projecting into any watercourse, floodway, or body of water.

EXPLANATION LINES (continued)
44

MATERIALED		FORM COL	MPI FTED B	EXISTING F	LOOD CON	TROL PRO	EXISTING FLOOD CONTROL PROJECT FORM C. TYPICAL TYPES OF FLO	SHEET	OF
WAIERSHE						-			
Name: Municipality: County:	CRUM PARBY MARPLE DELAWARE	Name: Telephone: Date:	C. SER 610. 91	PENTE 10.1050 05		Channel Excavation / Channel Realignment Rock Riprap	Channel Excavation / Widening Channel Realignment Rock Riprap	Levee Gabions Pipe Channel	Dams Floodwall Concrete Lining
For County Use:	se:								
Map ID No.	Type of Flood Control Project	ol Project	Year Constr Built	Expected Life Yrs.	Prequency Discharge Yrs. C.F.S. (if known)	Flood Discharge C.F.S. (if known)	Ó	Owner Name, Address, and Phone	ione
5	1000 FOOT ROCK + WIRE	LOWG 2003	2003	25			LAWRENCE	COURT APARTI	APARTMENTS
6-2	RECONSTANCTED MANHOLE, INSTALLED 2005 BLACKTOP RERM IN DRIVEL	CTEU INSTALLED 2005	2005 RIVELLA	35			ALL ISON D		
6 9	1 W ac	RECONSTRUCTED 2005	2005	25			GLEN SPRING	S CIRCLE	
-5 -5	AUDED S S SEWERS IN	STORM	2005	25			LANGFORD #	ROAD	
ర									

C-1 => FLOODING STILL A PROBLEM

C-2, C-3=> IMPROVEMENT IN FLOODING

	PROPOSED	PROPOSED FLOOD CONTROL PROJECT FORM D.	FORM D.	SHEET	ET OF
WATERSHED	FORM COMPLETED BY	TYPICAL	TYPICAL TYPES OF FLOOD CONTROL PROJECTS	NTROL PROJEC	TS
Name: CRM/ page Municipality: MAKPLE County: DELAWARE	Name: C. SERPEUTE Telephone: 610, 940,105 TE Date: 6/3-105	Channel Excavation / Widening Channel Realignment Rock Riprap	/ Widening nt	Levee Gabions Pipe Channel	Dams Floodwall Concrete Lining
For County Use:					
Map ID No. Type of Flood Control Project	Study Phase Begun YES N0 Prelim Final	Year Projected Expected Constr. Compltn. Life Planned Date Yrs.	Frequency Discharge Yrs. C.F.S.	Map ID No. Form A*	Owner Name, Address, and Phone
Ġ	/				
Ġ		X			
Ġ					
- <u>0</u>					
<u>-</u>	/				
* Enter the storm water problem are	* Enter the storm water problem area's Map ID No., if the proposed project will solve or reduce any / all of an identified drainage problem.	will solve or reduce any / all of a	n identified drainage pro	blem.	

in			EXI	EXISTING STORM WATER CONTROL FACILITIES FORM E.	SHEET OF
Type of Storm Water Type of Storm Water Type of Storm Water Script Storage Type of Storm Water Script Storage Type of Storage Typical Types of STORM WATER CONTROL FACILITIES Roof-Top Storage Semi-Pervious Paving Infiltration Device (Seepa diling) Berhaman Basin Control Infiltration Device (Seepa Basin or Infiltration Basin Storage Basin or Infiltration Basin Control Infil	WATERSHE Name: Municipality: County:	CRUM DARBY DELAWARE	S S S S S S S S S S S S S S S S S S S	Storm V	structure specifically designed and / or or volume of storm water runoff
Retention Basin Type of Storm Water Control Facility RETENTION 8 ASIN 2004 SVAMP / WETLAND X RETENTION 8 ASIN 2004 PRIVATELY OUNED YRIVATELY OUNED PRIVATELY OUNED YRIVATELY OUNED RETENTION 8 ASIN X RETENTION 8 ASIN	For County	Use:			
RETENTION BASIN 2004 PRIVATELY OWNED Suranto Wettention Basin 1993 WARPITE TOWNSHIP	Map ID No.	Type of Storm Water Control Facility	Year Built	Contact Person Name, Address and Phone	Comments
2 SUAMP/WETLAND X 3 RETENTION RASIN 1993 MARRIE TOWNSHIP TYPICAL TYPES OF STORM WATER CONTROL FACILITIES Roof-Top Storage Ritural Pond or Wetland Infiltration Device (Seepage / Infi	<u>—</u>	RETENTION 8 AS			NOT OWNED BY TOWNSHIP
S RETENTION PASIN 1993 MARTER CONTROL FACILITIES TYPICAL TYPES OF STORM WATER CONTROL FACILITIES Irking Lot Pondling	F. 7	SWAMP/ WETLAN	X	>	NATURAL SWAMP AREA
tention / Retention Basin TYPICAL TYPES OF STORM WATER CONTROL FACILITIES Ithring Lot Pondling	∼	RETENTION RASI	199	`	
stention / Retention Basin atural Pond or Wetland srking Lot Pondling	ம்	2			
tention / Retention Basin tural Pond or Wetland rking Lot Pondling	ம்				
tention / Retention Basin tural Pond or Wetland rking Lot Pondling	ம்				
tention / Retention Basin TYPICAL TYPES OF STORM WATER CONTROL FACILITIES Itural Pond or Wetland rking Lot Pondling	ш				
TYPICAL TYPES OF STORM WATER CONTROL FACILITIES	ய்				
	Detention /		L TYPES OF STOR	000	
	Natural Pon	d or Wetland		Semi-Pervious Pavin	Ð
	Parking Lot	Pondling		Infiltration Device (Se Recharge Basin or U.	eepage / Inderground Tank)

designed and other runoff Comment Comm						STORMY	VATER	ACILITIES			i	
FORM COMPLETED BY Storm Water Control Card Date: Storm Water Control Facility				PROP(OSED FL	NOO TOOK	TROL PROJECT			SHEET	40	
Storm Water Control Canding Storm Water Control Canding Storm Water Canding Storm Water Telephone: Type of Storm Water Telephone: Type of Storm Water Free Const. Dates Map No. Control Facility Start End Form A. Name. Address and Start End Form A. Name. Address and Sewers/Multits Start Acoustine A. Tork Acos 2005 Start End Form A. Name. Address and Sewers/Multits Start Acoustine A. Tork Acos 2005 Start End Form A. Name. Address and Sewers/Multits Start End Form A. Name. Address and Sewers/ It the proposed project will solve or reduce any / all of an id Typical Types OF STORM WATER CONTROL FACILITIES Retention Basin For Westand Pondling	VATERSHE		FORM CO.	MPLETED BY					FINITION			
CRUM MARCH Name: C. SERREDITE A natural / Inch							Storm Water Co	ontrol Facility				
Type of Storm Water Sewers Telephone: Type of Storm Water Type of Storm Water Control Facility Start A005 A005 A005 A007 TYPES OF STORM WATER CONTROL FACILITIES Actention Basin Toward of Westand Toward of Westand Toward of Westand Toward of Westand Type of Storm Water Trephone: Type of Storm Water Trephone: Type of Storm Water ame.	O PHAN MAPRO	Name:	1 .			A natur	al / man-made devi	ce or structure	specifically des	signed and / or		
Second Storm Water Proposed Constr. Dates Map No. Contact Person Control Facility Start End Form A Name, Address and Sewers / Map No. Contact Person Start End Form A Name, Address and Sewers / Map 12 2005 2005 Sewers / Map 12 2005 Sewers / Map 1	funicipality.	1100 5	Telephone:				utilized	to reduce the rate	and / or volume	of storm water	. runoff	
Type of Storm Water Control Facility Start Control Facility Start S	ounty:	VEL AWARE	Date:				from a	site or sites.				
Type of Storm Water Proposed Constr. Dates Map No. Contact Person Control Facility Start End Form A Name, Address and Start End Form A Name, Address and Start Start 2005 2005 2005 Start 2005 2005 2005 Start 2005 2005 Ithe proposed project will solve or reduce any all of an id TYPICAL TYPES OF STORM WATER CONTROL FACILITIES Retention Basin dor Wetland Propuling	or County U	se:			+							
Saut End Form A* Name, Address and Seart End Form A* Name, Address and Sewers/Inlets Saughtrowal Took 2005 2005 Sewers/Inlets Sewers/Inlets Storm water problem area's Map ID No., if the proposed project will solve or reduce any / all of an id TYPICAL TYPES OF STORM WATER CONTROL FACILITIES Retention Basin dor Wetland Pondling	oly Clinch	Type of Storm Wa	fer	Proposed Constr. D	9	No.	Contact P	erson			Comments	
Sewers/Inlers 2 S Agentowal Trowal 2005 2005 11 12 12 12 13 13 13 13	200	Control Facility		Start En	T	ırm A*	Name, Address	and Phone				
2 S AG PITIONAL Server(S) INLETS SENERAS / INLETS TYPICAL TYPES OF STORM WATER CONTROL FACILITIES TYPICAL TYPES OF STORM WATER CONTROL FACILITIES stention / Relention Basin stural Pond or Westand string Lot Pondling		A OD!		2005	205		MARPLE	TOWNSHIP	Σ	PAPLE	GARDENS	
Enter the storm water problem area's Map ID No., if the proposed project will solve or reduce any / all of an id TYPICAL TYPES OF STORM WATER CONTROL FACILITIES stention / Retention Basin stural Pond or Wetland arking Lot Pondling	6	2	STALETS	_	V		:	***	7	WGFORD	ROAD	
Enter the storm water problem area's Map ID No., if the proposed project will solve or reduce any / all of an id TYPICAL TYPES OF STORM WATER CONTROL FACILITIES atural Pond or Wetland stural Pond or Wetland arking Lot Pondling		1202000	LETS									
Enter the storm water problem area's Map ID No., if the proposed project will solve or reduce any / all of an id TYPICAL TYPES OF STORM WATER CONTROL FACILITIES stention / Retention Basin tural Pond or Wetland king Lot Pondling												
Enter the storm water problem area's Map ID No., if the proposed project will solve or reduce any / all of an id TYPICAL TYPES OF STORM WATER CONTROL FACILITIES ttention / Relention Basin ttural Pond or Wetland Irking Lot Pondling												
Enter the storm water problem area's Map ID No., if the proposed project will solve or reduce any / all of an id TYPICAL TYPES OF STORM WATER CONTROL FACILITIES stention / Retention Basin ttural Pond or Wetland rking Lot Pondling												
Enter the storm water problem area's Map ID No., if the proposed project will solve or reduce any / all of an id TYPICAL TYPES OF STORM WATER CONTROL FACILITIES tention / Retention Basin tural Pond or Wetland rking Lot Pondling												
Enter the storm water problem area's Map ID No., if the proposed project will solve or reduce any / all of an id TYPICAL TYPES OF STORM WATER CONTROL FACILITIES tention / Retention Basin tural Pond or Wetland rking Lot Pondling	87				-							
Enter the storm water problem area's Map ID No., if the proposed project will solve or reduce any / all of an id TYPICAL TYPES OF STORM WATER CONTROL FACILITIES stention / Retention Basin stural Pond or Wetland arking Lot Pondling												
problem area's Map ID No., if the proposed project will solve or reduce any / all of an id TYPICAL TYPES OF STORM WATER CONTROL FACILITIES in												
vroblem area's Map ID No., if the proposed project will solve or reduce any / all of an id TYPICAL TYPES OF STORM WATER CONTROL FACILITIES sin												
TYPICAL TYPES OF STORM WATER CONTROL FACILITIES sin		1	ON CL	id the proposed at	- Jim topic	anive or re	Ance any / all of ;	an identified drainac	Je problem.			
in	Enter the	iorii watei propieri area	TYPICAL T	YPES OF STORM	WATER (SONTROL						
	Detention / R	etention Basin						Roof-Top Stor.	age.			
	Vatural Ponc	or Wetland						Semi-Pervious	Paving			
	Parking Lot	Pondling						Infiltration Dev	ice (Seepage /	Recharge Basi	n or Underground	d lank)

						- A	Stormander	hole dian						
					EXISTING FLOOD		HROLPR	CONTROL PROJECT FORM G.	M.G.			SHEET	OF	
WATERSHED	HED		FORM CO	FORM COMPLETED BY	37				INSTRUCTIONS	SNC				
						Diagram e	ach system	on the appr	opriate map.	Establish m	ap points to	Diagram each system on the appropriate map. Establish map points to show changes in system elements,	system eleme	nts,
Name:			Name:			pipe size, t	or pipe dire	ction. (If unk	nown, outline	the system (extent.) Con	pipe size, or pipe direction. (If unknown, outline the system extent.) Complete this form only where specific	ally where spec	ific
Municipality:	~	MARPLE	Telephone:			information	on constr	iction is avai	lable. Use a s	eparate form	n for each sy	information on construction is available. Use a separate form for each system, Identify the points within a	e points within	a
County:			Date:			system co.	secutively	(ex. G-1,G-;	2,G-3). Start ti	he first point	in each add	system consecutively (ex. G-1,G-2,G-3). Start the first point in each additional system 20 numbers higher.	numbers high	er.
						For examp	le, G-3 end	Is one syster	n, so G-23 be	gins the nex	rt. See Sam	For example, G-3 ends one system, so G-23 begins the next. See Sample Diagrams & Form on Reverse.	orm on Revers	ė,
Mar	Map I.D.	Sys	System's Elements (x)	ts (x)		Measurements *	nents *				Design			Name of Final
	No.				Pipe	34.5	Channel / Swale	/ale	Material	Year	Data	Contact Person		Ownership and
From	T0	Pipe	Open Channel	Swale	Q	MI.	В	Depth		Constr.	Available	Name and Phone		Maintenance Responsibility
ç,	ģ													
9	Ġ													
9	ර												+	
ර	6													
6	ტ													
9	ල්													
Ġ	ය්													
ó	Ġ													
ය්	5													
9	ර													
r P	9													

WATERSHED FORM COMPLETED BY On the map for proposed drom water collection to make a collection to m	PROPOSED FLOOD CONT	CONTROL PROJECT FORM H.		SHEET	I OF		
AKE Name: 0.5 BR Poute Telephone: 610. 9 40. 1050 AKE Date: 6/9 05 System's Elements (x) Pipe Pipe Open Channel Swale D X X 18"0 X 12"W		INSTRU	INSTRUCTIONS				
AKE Date: 0. SERPENTE Telephone: 6/0. 9 4 0. 1050 AKE Date: 6/9 05 System's Elements (x) Pipe Pipe Open Channel Swale D X 18"0 X 12"W	On the map for propose	On the map for proposed storm water collection systems, diagram sach proposed system indicate a map point to show changes in system elements, pipe size, pipe direction and connections	ach proposed system. Indicate a	map point to show changes in sys	tem elements, pipe size, !	ipe direction and connections	
Telephone: 610, 9, 40, 1050 1050		to existing systems. For proposed additions to existing systems, diagram only the additions and their connection point into the existing system. Complete a separate form for each proposed,	trem only the additions and their	connection point into the existing	system, Complete a separ	ate form for each proposed,	
System's Elements (x) System's Elements (x) Pipe Pipe N X 13"W X 12"W	Ő	new system and one for each existing system having one or more proposed additions. Identify the points within a system consecutively (ex. H-1, H-2, H-3). Start the first point in each	oposed additions, Identify the p	oints within a system consecutively	(ex. H-1, H-2, H-3). Start	the first point in each	
No. To Pipe Open Channel Swale D H- 3	50/	additional system 20 numbers higher (if H-3 ands one system, begin the next with H-23.) Be sure to show the point where proposed additions commed, into existing systems, using the map	the next with H-23). Be sure to	show the point where proposed ac	tditions connect into existi	ng systems, using the map	
Map I.D. System's Elements (x) Pipe No. To Pipe D 1 H- D IS¹\Ø IS²\Ø 4H- H- IS²\Ø IS²\Ø H- H- IS²\Ø IS²\Ø H- H- IS²\Ø IS²\Ø H- H- IS²\Ø IS²\Ø H- IS²\Ø IS²\Ø IS²\Ø	point number from the	point number from the existing system form and map. See Sample Diagrams and Form on Reverse.	lagrams and Form on Reverse.				
No. No. 1 H- 5 X IS¹¹√ 1 H- IS²¹√ H- H- H-	Measuremer	ıts *	Map I.D.	Proposed	Design Contact Person	Name of Final	
70 Pipe Open Channel Swale D T 1 H- 5 X	_	nannel / Swale Material	Nos.**	. Dates Data	Name and	Ownership and	
7	0	B Depth	Form A S	Start End Avail.	Phone Ma	Maintenance Responsibility	
4 H 28 X H H H H H H H H H H H H H H H H H H H		GITOS	-	2005 2005		MAMPLE	SEE
25 H 28 X H H H H H H H H H H H H H H H H H H H	18.0	ADS				TOWNSHIP	F-2
26 H 28 X H H H H H H H		01705		2005 2005		MARPLE	SPE
4 4 4 4 4	W1.61	405				TOWNSHIP	1-1

SHEET OF			THAT HAS BEEN OR IS	NDATED BY THE			Comments									
	DEFINITION	Ä.	A NORMALLY DRY LAND AREA	SUSCEPTABLE TO BEING INUNDATED BY THE	100-YEAR FLOOD.											
THE FLOOD HAZARD AREA (FORM 1		FLOOD HAZARD AREA:					Contact Person	Name, Address and Phone								
	FORM COMPLETED BY						Year	Built								
PRESENT & PROJECTED DEVELOPMENT IN	FORM CON		Name:		Date:		TYPE OF DEVELOPMENT									
	WATERSHED		Vame:	Municipality: MARK	County:	For County Use:	Map ID	No.	•				1			

		WATE	R OHA	ITY PRO	BLFM	ARFAS	FORM	J. S	HEET		OF			Г
NATERSHED		WATE	Tabra	1	FO	RM CC	MPL	ETED		T	T		T	†
MATEROTIED		1	-	+	10.	1			Ť			1		1
Name:		+	1	-	Nam	e:	1	1						1
Municipality:	MARPL	E	1			ohone:								
County:	JAI WILL	-	1	1	Date			1						T
odiny.			1			T								
SITE		J-	J-	J-	J-	J-	J-	J-	J-	J-	J-	J-	d-	
Types of Water Qu	ality Problems										1 2			
High Community To														
High Temperature		1												
High Turbidity										1	/			
Hydrocarbon Pollut	ion									/				1
Low Community Div		1							1	1			1	
Low Dissolved Oxy			1						1/					L
Low pH			1						1			_		1
Nutrient Enrichmen	t							1/						-
Poor Habitat				1				/						1
Other/Explanation	ine No.				J		1	_				_		-
Potential Cause(s					1		/			_		-		1
Agriculture							1					_		-
Construction Site					1	1						_		-
Erosion						X_				_		-		-
Lake Discharge					1	1			1		-	1		1
STP Outfall				_	/	\perp		-	4	-		+	-	+
Other/Explanation	Line No.		_		4_		/	-	-	-		-	-	╀
Frequency				1/			1	-	-	-	-	-		+
Year Most Recent	Occurence			/	-	-	1	4	-		-	+-	-	+
Year First Known C	Оссигелсе		1	4	-	1_	-	1	_	-		-	-	+
Source of Informa			/	-	-	-	-	1	-	-	-	-	-	+
County Water Qua	ity Study		/_	-	-	-	4-	+	4	-	-	+-	-	+
Driveby		\perp	-	-	-	-	-	-	1	+	-	-	+	+
Other/Explanation	Line No.	1/2/5:	0.010	FIGNITI	NEC	+	-	1	1		+	+	+-	+
		EXPL	ANA	TION L	NE2	+	+	-	+	-	-	+	-	+
1	/	-	+		+	+	-	+	+-	\	+-	+	+	+
2	/		+-	+-	+	+	+-		_	1	+	+	_	+
3	/	-	+-	+	-	+	+	-	+	1	+	1	-	+
4		+	+	-	+	+-	+	+	-	+-	1	+	+-	+
5		-	+-	-	+	+	+	+	+	+-	+	1	+	+
6		_	+	-	+	+	-	-	_	+	+-	1	+	+
7	<u> </u>	-	-	-	+	+	-	+	+	+	_	-	-	+
8		-	+-	_	-	+	+-	-	-	-		+	_	+
9		-	-	-	+-	+	+	+	-	+		+	_	+
10		-	-	-	-	-	-	-	-	_	-	_	_	+

Form O - Outfall Data

Person:				Date:		Time S	ince Last Ra	in was <u>≥</u> 72]
		Quantity	of Last Rain	: < 0.1 inches	s: > 0.1 inche	S		I
Municipa	lity: M	ARPLE	<u> </u>		Name of	receiving v	vater:	
			- 19					
Pipe	Photo	Storm	Time	Pipe	Depth of	Channel	Channel	Channel
wale	#	Drain?	(00:00)	Diameter	flow in pipe	Depth	Bottom	Side Slopes
		Yes/No	am/pm	(inches)	(feet)		Width	(H:V)
	\	Not			ľ		(feet)	
		эцге						
		1					-	
		-						
			_					
			_	1/				
						<u> </u>	_	
	_		/	1		-		
		-						and Market Assess

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor (

2=Impairment - needs investigation (flow exhibiting odors, foarn, solids, turbidity or oil sheen, considerable sediment depositoin, algae or de blocked catch basins or drain)

H/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

NOTES:



Remington & Vernick Engineers Remington, Vernick & Vena Engineers Remington, Vernick & Beach Engineers Remington, Vernick & Walberg Engineers EDWARD VERNICK, P.E., C.M.E., President CRAIG F. REMINGTON, P.L.S., P.P., Vice President

EXECUTIVE VICE PRESIDENTS Michael D. Vena, P.E., P.P., C.M.E. Edward J. Walberg, P.E., P.P., C.M.E. Thomas F. Beach, P.E., C.M.E.

DIRECTOR OF OPERATIONS CORPORATE SECRETARY Bradley A. Blubaugh, B.A., M.P.A.

SENIOR ASSOCIATES

John J. Cantwell, P.E., P.P., C.M.E. Alan Dittenhofer, P.E., P.P., C.M.E. Frank J. Seney, Jr., P.E., P.P., C.M.E. Terence Vogt, P.E., P.P., C.M.E. Dennis K. Yoder, P.E., P.P., C.M.E.

Remington & Vernick Engineers

232 Kings Highway East Haddonfield, NJ 08033 (856) 795-9595 (856) 795-1882 (fax)

18 East Broad Street Burlington City, NJ 08016 (609) 387-7053 (609) 387-5320 (fax)

Remington, Vernick & Vena Engineers

9 Allen Street Toms River, NJ 08753 (732) 286-9220 (732) 505-8416 (fax)

Remington, Vernick & Walberg Engineers

845 North Main Street Pleasantville, NJ 08232 (609) 645-7110 (609) 645-7076 (fax)

4907 New Jersey Avenue Wildwood City, NJ 08260 (609) 522-5150 (609) 522-5313 (fax)

Remington, Vernick & Beach Engineers

922 Fayette Street Conshohocken, PA 19428 (610) 940-1050 (610) 940-1161 (fax)

University Office Plaza Commonwealth Building 260 Chapman Road Ste. 104F Newark, DE 19702 (302) 266-0212 (302) 266-6208 (fax)

www.rve.com

June 10, 2005

Delaware County Planning Department Government Center Building 201 West Front Street Media, PA 19063

Attn: Karen Holm

Re: Marple Township

Crum Creek Watershed Planning

Our File# PDMAT387

Dear Karen:

Attached, please find one (1) copy of the information you requested for the Crum Creek Watershed Planning Report.

Should you need any further assistance on this matter please feel free to contact our office at (610) 940-1050.

Very truly yours,

Remington, Vernick & Beach Engineers

Christopher J. Fazio, P.E., C.M.E

Enclosures

cc:

Joseph Wm. Flicker, Township Manager Thomas F. Beach, Executive Vice President Chris Serpente, P.E.

Established in 1901

CRUM CREEK WATERSHED ACT 167 STORMWATER MANAGEMENT PLAN

MUNICIPALITY QUESTIONNAIRE

Please fill out the following questionnaire and return it to Karen Holm at the Delaware County Planning Department, Court House and Government Center Building, 201 West Front St. Media, PA 19063 as soon as possible. If you have any questions or comments, or if you would like these forms in digital format, please call Karen at 610-891-5213 or e-mail her at holmk@co.delaware.pa.us.

PART I - GENERAL INFORMATION

Municipality:	MARPLE TOWN SHIP
Contact Person:	JOE FLICKER
WPAC Designee:	JOE FLICKER
Title:	TOWNSHIP MANAGER
Address:	227 SOUTH SPROUL RD
	BROOMALL PA 19008
Phone:	610.356.4040
Fax:	610.356.3587
Person Completing for	rm (if different from Contact Person):
Name:	C. SERPENTE
Address:	REMINGTON, VERNICIC+ BEACH ENGINEERS
	922 FAMETTE ST
Phone:	CONSHOHOCKEN, PA 19428
Fax:	610, 940. 1050 ×519 , FAX: 610.940. 1161
E-mail:	

PART II - REGULATORY ACTIVITIES

A. Please indicate the regulations you currently use to manage development.

REGULATION	MUNICIPAL ORDINANCE	COUNTY ORDINANCE
Zoning Ordinance	X	
Subdivision/Land Development Ordinance	X	
Separate Stormwater Ordinance	X,	
Separate Floodplain Ordinance	X	

B. Please indicate the agencies/individuals who review and approve land development plans and zoning variance/waiver requests.

	LAND DEVELO	PMENT PLANS	ZONING VARIANCE	E/WAIVER REQUESTS
ENTITY	REVIEW	APPROVE	REVIEW	APPROVE
Supervisors		X		X
Municipal				
Engineering	1			4
Department				
Municipal				
Planning	,			
Department	X			
County Planning				
Department	X			
County				
Conservation				
District	<u> </u>			
Zoning Hearing			✓	
Board	<u> </u>			
Consulting				
Engineer	X	, n		
Others (List				
Below				

C. Please provide **copies** of your zoning, subdivision/land development, and separate stormwater management and floodplain ordinances and your current zoning map when you return this questionnaire. Please list these documents below.

COMING	VIA MAIL	. PLS CALL	
CHIRIS	SERPENTE	610,940,1050	x519
IF	NEEDED.		

PART III - MUNICIPAL AND LOCAL PLANNING ACTIVITIES

Please indicate below whether your community has approved the following plans and maps and the date of the most recent update.

ITEM	APPROVED/DATE	IN PROGRESS	PLANNED WITHIN NEXT YEAR
PA Act 537 Sewage Facilities Plan	X		
Comprehensive Land Use Plan		X	PLANNED REVISION
Existing Land Use Maps		X	PLANNED REVISION
Proposed Land Use Maps			
Zoning Maps		X	EXPECT 6/05

PART IV - FLOOD INSURANCE PROGRAM AND COMPREHENSIVE LAND USE PLAN

Please indicate below whether your community participates in the National Flood Insurance Program:

ITEM	PARTICIPATES (Y/N)
Flood Hazard Boundary Map (FHBM)	
Participates in FEMA Emergency Program	Υ
Participates in FEMA Regular Program	

PART V - EXISTING STORMWATER RELATED PROBLEMS AND STRUCTURES

Please complete the matrices on the following pages (Forms A and C-J) to describe any significant stormwater-related problems (Form A), Existing or Proposed Flood Control Projects (Forms C & D), Existing or Proposed Storm Water Control Facilities (Forms E and F), Existing or Proposed Stormwater Collection Systems (Forms G & H), Present and Projected Development in the Flood Hazard Area (Form I), and Water Quality Problem Areas (Form J) that you are aware of in your municipality.

What we would like to ask of you is that you complete as much of the attached data collection forms as possible. There is a different form for each item of information as summarized in the attached "FORM DESCRIPTION SUMMARY. The process would be as follows starting with the problem areas (Form A):

- Place the location of the problem area on the map as shown in the attached example map.
- Draw a box on the map with the problem area identifier starting with A-1 with an arrow leading from the problem area identifier to the problem area.
- Place an A-1 in the first column of FORM A.
- Put a check in each box in the A-1 column that represents the problems associated with that particular problem area.
- Repeat with the next problem area (A-2) and so on.

- Repeat for existing flood control projects (FORM C) placing a triangle on the maps and starting the labeling with C-1.
- Repeat for all forms.

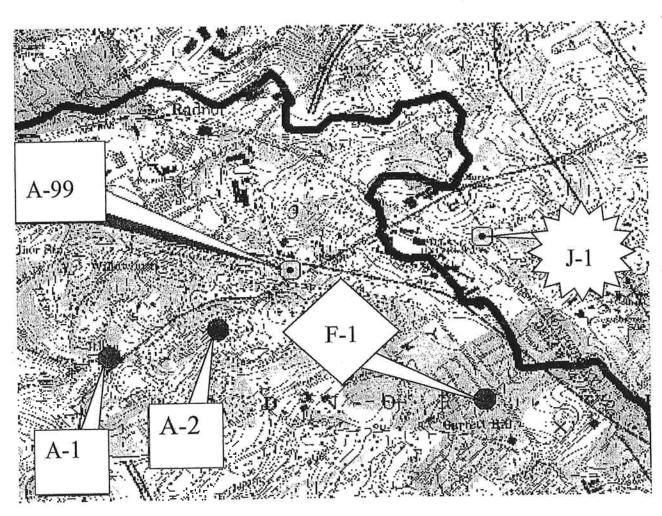
The sample map attached shows three problem areas (A99- A1 and A-2), one proposed flood control project (F-1) and one water quality problem (J1).

Use additional paper to provide <u>detailed</u> descriptions of your most serious problems and attach a map to show the location of the problem. Attach photographs, if available.

If you have any storm or combined sewers, please provide maps showing the collection system and overflow discharge locations and an estimate of the average annual discharge at each overflow point.

The more detail you provide, the better we will be able to evaluate the situation for your municipality. We appreciate your help.

Sample Location of Information from Data Collection Forms on the Municipal Map



										_				_
	V	STORM						SH	EET_		OF_			_
WATERSHED		·	FOR	м со	MPLET	ED B,	Y		re Filli					_
									Instruc	ctions	On B	ack	-	
Name:	CRUM/OARR	/	Name	:	C.S	ERI	ENT	<u> </u>				-	-	_
Municipality:	CRUM/OARA MARPLE		Telep	hone:	610.9	140	1050	For (County	/ Use:				_
County:	DELAWARE		Date:		610.9	05								_
,													-	_
MAP NO. *		A-	A- 2	A-3	A-4	A- 5	A-	A-	A-	A-	A-	A-	A-	
Types of Storm V	Vater Problems						No. 1						20 THE REAL PROPERTY.	_
Flooding		X	X			X						-	-	_
Accelerated Erosic	on 100											-	-	_
Sedimentation	100												-	_
Landslide	NO													_
Groundwater				X	X							-		
Water Pollution														
Other (Explain)												-		
Explanation Line	No. (On Back)									200,000,000	SAN CONTRACTOR OF	DATE OF SAME	FALLSCON SPECIAL	_
Cause (s)		a poor			2 (6) (7)			of Police		144	100			_
Storm Water Volu	me	X	X	X	X	X						-		_
Storm Water Velo	city			1							_	_		
Storm Water Direc														_
Water Obstruction	1													
Other (Explain)		7										-		
Explanation Line	No. (On Back)								NAME AND ADDRESS OF THE OWNER, TH	ra expenses	entitle es	*****	PERZONALISES	_
Frequency														
Year Most Recen	Occurred	05	05	05	05	05								_
Year First Known						"				-	O NUMBER OF STREET	ra-connects	substant and and	
Regularity												4850d		_
More Than 1 Yea	г	Y	Y	4	Y	M								
Less Than 1 Year		1			. Ni									
Only During Agne											-	*******		
Duration (If App														
Less Than 1 Day		Y		Y										_
1 Day + (Enter Day	ays)	-	×3			2					ME STEINGEN	THE VEHICLE WASHINGTON	NO CALIFORNIA DE LA CAL	_
Property Damag			vy alia										77.40	_
Loss of Life/Vital		X												_
Private		X	X											_
More Than One (1,,										-		
Types of Properti														_
Number of Prope														_
Public (List Type:														-
Explanation Line											-	1983 VENEZURAN		-
Solutions	(=::====;									V. V.	13.00	0.00	10000	_
Suggested		Sand Street Street			-									L
Explanation Line	No. (On Back)													1
Formally Propose														1
Explanation Line	No. (On Back)													_
* Include Man	ID No. if found o	n anv	other f	orm lis	ting pro	pose	d facil	ities.						

A-1: BRIDGE OUT. APARTMENT DAMAGE.

A-2: HOUSE DAMAGE

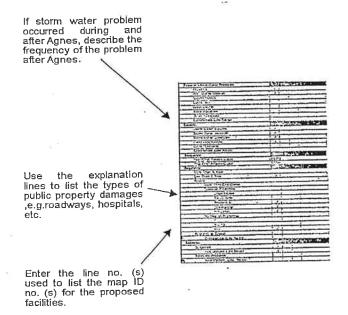
A-5: FLOODING ON WATER COMPANY PROPERTY

INSTRUCTIONS

Begin with A.1 as the first map number to identify the first' storm water problem area. Illustrate the defined problem on the watershed map provided, and identify it with its map number.

For each storm water problem area within your municipality, enter the map identification number at the head of the column. Describe the problem by placing a check (4 in the appropriate blocks of the column under this map identification

When an additional explanation is required, write the line number(s) used in the column marked "Explanation Line No. (s)".Example 1, 2-3, etc.



Definitions

An area that defines the farthest extent of a storm water problem, including any area that experiences property damage, inundation, accelerated erosion, surface water pollution, groundwater pollution, landslides, or any other problem as a result of storm water runoff.

Groundwater

Water in the ground below the water table.

Accelerated Erosion

The removal of the surface of the land through the combined action of man's activities and the natural processes at a rate greater than would occur because of the natural process alone.

Sedimentation
The process by which soil or other surface materials, transported by surface water, is deposited on stream bottoms.

Water Obstruction

Any dike, bridge, culvert, wall, wingwall, fill, pier, wharf, embankment, abutment, or other structure located in, along, across, or projecting into any watercourse, floodway, or body of water.

EXPLANATION LINES (continued)
·

			Ш	XISTING F	LOOD CONTROL PF	ROJECT FORM C.	SHEET	OF
WATERSHED	0	FORM CON	IPLETED BY	>	FORM COMPLETED BY TYPICAL TYPES	TYPICAL TYPES OF FLOOD CONTROL PROJECTS	D CONTROL PROJECTS	
Name: Municipality: County:	CRUM DARBY MARPLE DELAWARE	Name: Telephone: Date:	C. SERPEN 610. 940.1 6/7/05	10.1050 10.050	Channel Exc Channel Res Rock Riprap	Channel Excavation / Widening Channel Realignment Rock Riprap	Levee Gabions Pipe Channel	Dams Floodwall Concrete Lining
For County Use:	se:							
Map ID No.	Type of Flood Control Project	of Project	Year Constr Built	Expected Life Yrs.	Design Flood Frequency Discharge Yrs, C.F.S.		Owner Name, Address, and Phone	one
- ئ	1000 FOOT ROCK + WIRE SWALE	LOWG MESH 2003	2003	25		LAW RENCE	COURT APARTA	APARTMEUTS
6. 3	ع الله	CTEO 1005 INSTALLED 1005	2005 RIVEW	225		ALLISON DRV	,	
c- 3	ADDED FRENCH BYAINS, RECONSTRUCTED 2005 MANHOLE	on Structer		25	2	GLEN SPAIN G	C1861F	
6- 4	ADDED S S SEWERS IN	STORM	2005	25		LANGFORD RO	₩ 040	
ర								

C-1 => PLOODING STILL A PROBLENT

C-2, C-3=> IMPROVEMENT IN FLOODING

	PROPOSED	PROPOSED FLOOD CONTROL PROJECT FORM D. SHEET O	OF
WATERSHED	FORM COMPLETED BY		
Name: CRAM/DARB Municipality: MAKPLE County: DELAWARE	D4864 Name: C. SERPENTE	Channel Excavation / Widening Levee Dams Channel Realignment Gabions Floodwall Rock Riprap Pipe Channel Concrete Lining	ining
For County Use:			
Map ID No. Type of Flood Control Project	Study Phase Begun YES N0 Prelim Final	Year Projected Expected Compiler Expected Date Design Flood Date Flood Date Map Date Owner Name, Address, and Phone Date Compiler Life Frequency Prs. Frequency Discharge C.F.S. Form A*	ress, and Phone
D.	/		
ď			
Ġ			
ď			
D-			
* Enter the storm water problem a	rea's Map ID No., if the proposed project	* Enter the storm water problem area's Map ID No., if the proposed project will solve or reduce any / all of an identified drainage problem.	

Name: Canada Date: Canada Can			EXISTING	EXISTING STORM WATER CONTROL FACILITIES FORM E.	SHEET OF
No. Type of Storm Water Search Storm Water Som Water Storm Water Built Contact Person Start Soft Storm Water Built Sulf PRIVATELY OWNED SWAMP CONTROL FACILITIES Rethantion Basin Pond or Wettand Pond or Wettand Infiltration Device (Seepa Recharge Basin or Under Property or Under	WATERSHE Name: Municipality: County:	CRUM DARBY DELANARE	MPLETE 610.	Storm Water Control Facility A natural / man-made device or st utilized to reduce the rate and / or from a site or sites.	N ructure specifically designed and / or volume of storm water runoff
Type of Storm Water Year Contact Person Control Facility Built Name, Address and Phone AETENTION & ASIN 2004 PRIVATELY OUNED PRIVATELY OUNED SUAMP WETTENTION & YOUR YETTENTION & ASIN 1993 Markfulle TOW NSHIP TYPICAL TYPES OF STORM WATER CONTROL FACILITIES Roof-Top Storage Retention Basin and or Wettand Inflittation Device (Seepa Recharge Basin or Under Recharge Basin or Under	For County	Use:	-		
RETENTION BASIN 2004 PRIVATELY OWNED SVAMP WETLAND X WARTLE TOWNSHIP	Map ID No.		Year	Contact Person Name, Address and Phone	Comments
2 SVAMP WETLAND X WARTER TOWNSHIP Setting on / Retention Basin TYPICAL TYPES OF STORM WATER CONTROL FACILITIES Roof-Top Storage Sturial Pond or Wetland Infiltration Device (Seepage / Recharge Basin or Underground Tank)	—	RETENTION BASIN	_		NOT OWNED BY TOWNSHIP
A RETENTION 8451N 1993 MARTER TOWNS	E 7	SWAMP/ WETLAND	×	*	- 1
stention / Retention Basin stural Pond or Wetland string Lot Pondling	~	RETENTION RASIN	1993		
stention / Retention Basin stural Pond or Wetland arking Lot Pondling	ப் ம்				
stention / Retention Basin atural Pond or Wetland arking Lot Pondling	u				
TYPICAL TYPES OF STORM WATER CONTROL FACILITIES sin	ı				
TYPICAL TYPES OF STORM WATER CONTROL FACILITIES sin	ய்				
TYPICAL TYPES OF STORM WATER CONTROL FACILITIES sin	ம்				
	Detention /		YPES OF STORM WAT		
	Natural Por	nd or Wetland		Semi-Pervious Pavin	D
	Parking Lo	t Pondling		Infiltration Device (Se Recharge Basin or U	epage / nderground Tank)

						STORM	WATER	すらにしていた			
				4	PROPOSED	FLACTOCO CO	ED FLAGE CONTROL PROJECT FORM F.	FORM F.		SHEET	PO-
MATERSHED			FORM CON	FORM COMPLETED BY					DEFINITION		
	-						Storm Water	Storm Water Control Facility			
Name.	Course Mach	1.040	Name:	TICHON O	747		A natı	ıral / man-made	A natural / man-made device or structure specifically designed and / or	specifically des	signed and / or
Municipality.	O OV	1700	one:	1			utilize	d to reduce the	utilized to reduce the rate and / or volume of storm water runoff	of storm water	runoff
County:	VEL AWARE	74 17	Date:				from	from a site or sites.			
For County Use:	.a.										
o fumoo lo											Comments
Map ID No.	Type o	Type of Storm Water		Proposed Constr. Dates	nstr. Dates	Map No.	Mama Addres	Name Address and Phone			
<u>-</u>	Cont	Control Facility	STO ON	200K	2005	VIIIIOL	MARILE	Town SHIP		MARPLE	GARDENS
		SPWERK/IN ETS	77								
F- 2	SAOD	4001T1004		2005	2005		2		7	LANGFORD	8040
	v	-	INVETS								
ıţ.											
F-											
ıŁ											
u'.											
T.											
* Enter the s	form water or	roblem area!	s Map ID No.	if the propo	sed project	will solve or	reduce any / all o	of an identified o	Enter the shorm water problem area's Map ID No. if the proposed project will solve or reduce any / all of an identified drainage problem.		
			TYPICAL T	PES OF ST	ORM WATE	ER CONTRO	TYPICAL TYPES OF STORM WATER CONTROL FACILITIES			1, 2,	
	La Citation	2						Roof-Tor	Roof-Top Storage		
Determinally R	Determine Netermine Basin						-	Semi-Pe	Semi-Pervious Paving		
Natural Political of Donalling	Jonalina Jonalina							Infiltratio	n Device (Seepage /	Recharge Bas	Infiltration Device (Seepage / Recharge Basin or Underground Tank)
TO CUINTO))	

FORM G (Front)

FORM COMPLETED BY Diagram each system on the appropriate map. Establish map points to show changes in system Name: Diagram each system on the appropriate map. Establish map points to show changes in system Name: Diagram each system on the appropriate map. Establish map points to show changes in system Name: Diagram each system and points to show changes in system Name: Diagram each system Name: Diagram each system Name: Diagram each system Name: Diagram each system Name:					-λ _	Stormwater hollochia	2 hother						
Name					EXISTING		TROLPRC	JECT FOR	M.G.			SHEET	OF.
Name: Diagram each system on the appropriatite map. Establish map puritis to show changes in system size. or pige direction, (if unfrown), outline the system extent.) Complete this form only will information on construction is available. Use a separate form for each system only will promate on construction is available. Use a separate form for each system only will be a separate form for each system. Identify the point system. So large the first point in each additional system. So large the first point in sys	VATERSHE		FORM COI	WPLETED	ВУ				INSTRUCTIO	NS			
Name: Name: Information on construction is available. Use a separate form for each system. And the first point in each additional system consecutivity (e.g., Cs.1.Gs.3.Gs.3). Start the first point in each additional system. So Gs.23 begins the next. See Sample Diagrams & Form on Channel System consecutivity (e.g., Cs.1.Gs.3.Gs.3). Start the first point in each additional system. So Gs.23 begins the next. See Sample Diagrams & Form on Channel System or Channel Swale Diagrams & Form on						Diagram e	ach system	on the appro	opriate map.	Establish me	up points to	show changes in sys	tem elements,
Information on construction is available. Information on construction on construct	ame:		Name:			pipe size,	or pipe direc	tion. (If unkr	own, outline t	he system e	extent.) Com	plete this form only v	where specific
System contact Syst	lunicipality:	MARPLE	Telephone:			information	non constru	ction is avail	lable. Use a s	eparate form	tor each sy	stem. Identify the po	ints within a
For example, G-3 ends one system, so G-23 begins the next, so G-23 begins the next, so G-12 begins the next and phone	ounty:		Date:			system co	nsecutively (ex. G-1,G-2	(G-3). Start tr	e first point	in each add	rtional system zu nur	noers nigner.
Map I.D. System's Elements (x) Measurements Material Year Design No.						For examp	le, G-3 ends	one syster	n, so G-23 be	gins the nex	t. See Sam	ile Diagrams & Form	on Keverse.
No. Pipe Channel Swale D TW B Depth Swale D TW B Depth Channel Swale D TW B Depth Constr. Available Name and Phone Name and P	Map I.D		stem's Elemen	ts (x)		Measure	ments.				Design		Name of Final
To Pipe Open Channel Swale D TW B Depth Constr. Available Name and Phone No				Pipe		hannel / Swa	ale	Material	Year	Data	Contact Person	Ownership and	
	1	H	Open Channel		۵	W.L	8	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
	6												

					PROPOSE	FHOOPE	CHIROLP	PROJECT FLOOP CONTROL PROJECT FORM H	NRM H.			SHEET		OF OF	
100114			EOD MACO	EODIM COMPLETED BY	7. COL	1000			INSTRUCTIONS	SNC					
חשוואשוואא						On the map for pri	oposed storm wat	er collection system	s, diagram each propr	ssed system, Indica	ste a map point to shi	ow changes in a	system elements, pipe	In proposed atom water collection systems, diagram each proposed system, Indicate a map point to show changes in system elements, pipe size, pipe direction and connections	
Name: (RIVE	MARKY	Name:	C. S.P.R.	S ERPENTE	to existing system	s. For proposed a	dditions to existing.	systems, diagram only	the additions and	their connection poin	I into the existir	ng system, Complete a	to existing systems. For proposed additions to existing systems, diagram only the additions and their connection point into the existing system. Compilete a separate form for each proposed,	
Aunicipalit.			Telephone:	610. 9L	940.1050	new system and o	one for each existi	ng system having o.	ne or more proposed	additions, Identify If	he points within a sys	lem consecutiv	ely (ex. H-1, H-2, H-3).	and one for each existing system heaving one or more proposed additions, identify the points within a system consecutively (ex. H-1, H-2, H-3). Start the first point in each and one for each existing system heaving one or more proposed additions, identify the points within a system consecutively (ex. H-1, H-2, H-3). Start the first point in each	
County:	NEI MICARE	'n		9	SO	additional system	20 numbers hight	ar (if H-3 ends one s	system, begin the next	with H-23). Be sur	re to show the point v	where proposed	additions connect into	additional system 20 numbers higher (if H-3 ends one system, begin the next with H-22). Be sure to show the point where proposed additions connect into existing systems, using the map	
	W-1-12	Т		-		point number from	n the existing systa	em form and map. §	point number from the existing system form and map. See Sample Diagrams and Form on Reverse.	and Form on Reve		7		i	-
Man		Syste	System's Elements (x)	(x) (x)		Measurements *	ments *			Map I.D.	Proposed		Design Contact Person	Name of Final	
2	. CZ				Pipe	Open	Open Channel / Swale	Swafe	Material	Nos.**	Const. Dates	-	Name and	Ownership and	
Erom	٥	Pine	Onen Channel	Swale	۵	WI	8	Depth		Form A	Start End	Avail	Phone	Maintenance Responsibility	
-		T		L					airos		2005 2005	2		MAMPLE	SEE
1	\c	>			18.0				ADS					TOUNSHIP	7-3
-		1			,				30110	- 11	1200S 200S	S		NAMPLE	SPE
1	1				101101				A D<					TOS 33115	1 1
H- 3/5 H	H- 40	×			D 71										
È	Ė														
T E	1														
												-			1
±	±											-			
											1				
노	±														
土	±														
±	H-														
÷	H														
	H														

			FORM	H DATA
H-1 => H-S	⊬l-1	H-3	2,300 2 (12.00 10.00 00.00 00.00 00.00	
				LANGFORD ROAD
	H-2	~ <u>%</u>	30	17
		H- H	H-5	EYISTING INLET G-1
			HOLLSE	
			90	SEE MAP E-2
			SPRING ROAD	
			- K	
			•	
H-25=> H-	28	MA	RPLE	GARDEN PARK
	,	TO K	\ \	
			1	
		ANN ROAD	1	H-25
		ANN ROAD	1	H-25
		ANN ROAD	1	
		ANN ROAD		H-25 H-26 EXISTING INLET G-21
		ANN ROAD		H-25 H-26 EXISTING INLET G-21
		ANN ROAD		H-25 H-26 EXISTING INLET G-21
		ANN ROAD		H-25 H-26 EXISTING INLET G-21
		ANN ROAD		H-25 H-26 EXISTING INLET G-21
		ANN ROAD		H-25 H-26 EXISTING INLET G-21
		ANN ROAD		H-25 H-26 EXISTING INLET G-21
		ANN ROAD		H-25 H-26 EXISTING INLET G-21
		ANN ROAD		H-25 H-26 EXISTING INLET G-21
		ANN ROAD		H-25 H-26 EXISTING INLET G-21
		ANN ROAD		H-25 H-26 EXISTING INLET G-21
		ANN ROAD		H-25 H-26 EXISTING INLET G-21

D AREA (FORM 1) OF	DEFINITION	FLOOD HAZARD AREA:	A NORMALLY DRY LAND AREA THAT HAS BEEN OR IS	SUSCEPTABLE TO BEING INUNDATED BY THE	100-YEAR FLOOD.		rson	nd Phone									
DEVELOPMENT IN THE FLOOD HAZARD AREA (FORM 1							Year Contact Person	Built Name, Address and Phone					· ·				
NI TNAMEN TINDESCENT & DESCENT OF CHILD PRINTED TO THE CHILD THE C	MANTERSHED FORM COMPLETED BY		Name:	Minicipality: MARPI & Telephone:		For County Use:	Man ID TYPE OF DEVELOPMENT				1			<u>1</u>			

		1000-	. 01101 "	TV DDG	DI CAL A	DEAC	EODM	1 0	HEET_		OF_			
		WATER	QUALI	TY PRO	BLEMA	REAS	FORM.	J. SI			T OF		T	_
WATERSHED			-	_	FUR	МСО	IVIPLE	TIED	DI	-	-	-	+	
		-	-		Name		-	-	-	-	-			
Name:				-	Telep		\vdash	-	+		1		1	
Municipality:	MARPL	<u> </u>		-	Date:	none.	-	+	+	-	+		1	
County:		-		-	Date.		-	1	+	-			1	
SITE		J-	J-	J-	J-	J-	J-	J-	J-	J-	J	J-	J-	
Types of Water Qua	lify Problems													
High Community Tole											1/	_		_
High Temperature		1									/_			
High Turbidity										1				
Hydrocarbon Pollutio	n													_
Low Community Dive									/	1		_	-	-
Low Dissolved Oxyge									/	_		1_	-	-
Low pH							1.5	1	1_			-	-	-
Nutrient Enrichment								1/					-	-
Poor Habitat								/			-		-	1
Other/Explanation Li	ne No.			1			1					-		-
Potential Cause(s)					1		/				-	-	-	+
Agriculture					1	/	1_		-	-	-	-	-	+
Construction Site						/				-	-	-	-	╀
Erosion						X			-	-	-	+	-	╀
Lake Discharge					1/	1	_	-	_	-	-	-	-	+
STP Outfall					/	1		_	-	_	+	-	_	+
Other/Explanation Li	ne No.				4		1	-	-	-	-	+-	-	+
Frequency				/			1	-	-	-	-	+	-	+
Year Most Recent O	сситепсе			/_			1		_	-	-	+		-
Year First Known Oc	curence		1	1			-	1	+	-	-	-	_	+
Source of Informat	ion		/		_	-	_	1	-	-	-	+-		+
County Water Qualit	y Study		1			-		1	-	-	-	+	-	+
Driveby		1			-	1	_	-	1	+-	-	-	+-	+
Other/Explanation L	ine No.	/	1	1	LIE -	-	-	-	1	-	+	+-	+	+
		EXP	ANAT	ION LI	NES	-	-	-	1	-	+-	-	+-	+
1		1			-	-	-	-		1	-	-	-	+
2		-		-	-	-	-	+-	-	1		+	-	+
3	/	-		-	-	-	-	-	-	1	-	-	+	+
4			1	<u> </u>	-			+-	+	1	+	+	-	+
5				-	-	-		-		-	-	+-		+
6		1			-	1	-	-		+-	-	+	_	+
7						-	-	-		-	-	+	-	+
8					-	1	-	+-	-	-	-	+		+
9				-		-	-	-		-	-	+		+
10					1		111			1		-		_

Form O - Outfall Data

Person:				Date:		Time S	ince Last Ra	in was <u>></u> 72 I
					s: > 0.1 inche			1
Municipa	lity: M	42716			Name of	receiving v	yator:	
Pipe Swale	Photo	Storm Drain? Yes/No Not	Time (00:00) am/pm	Pipe Diameter (inches)	Depth of flow in pipe (feet)	Channel Depth	Channel Bottom Width (feet)	Channel Side Slopes* (H:V)

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

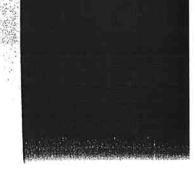
1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor (

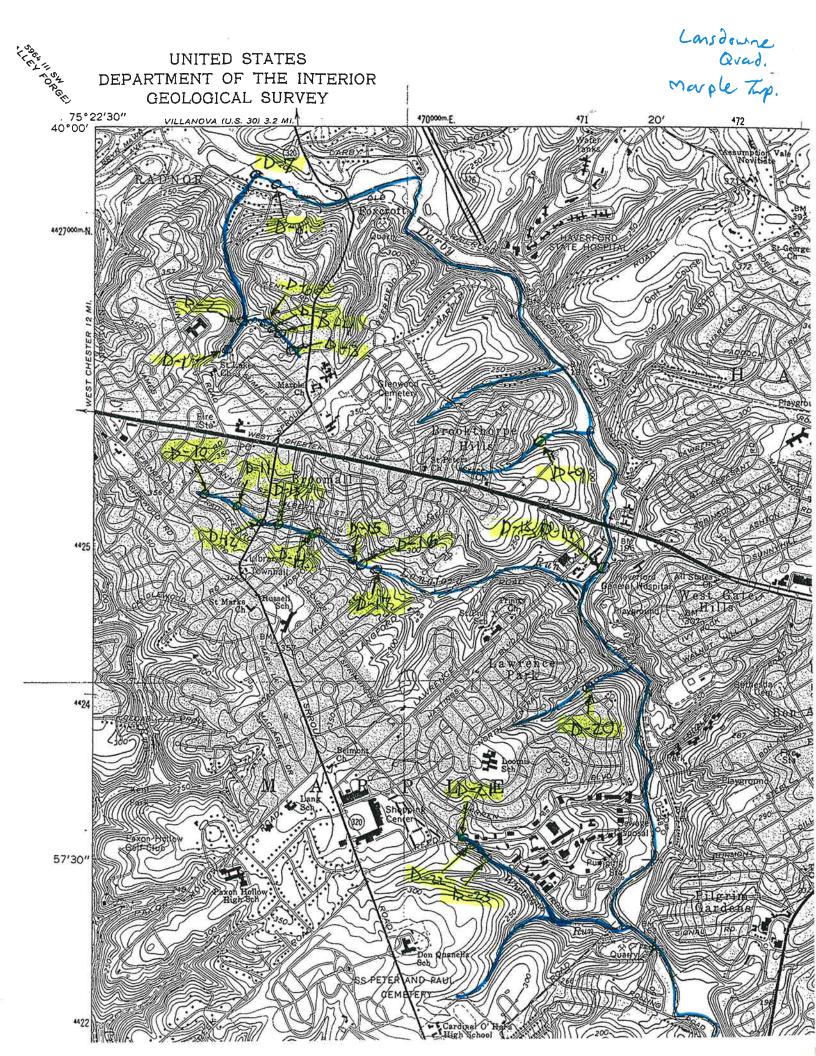
2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or de blocked catch basins or drain)

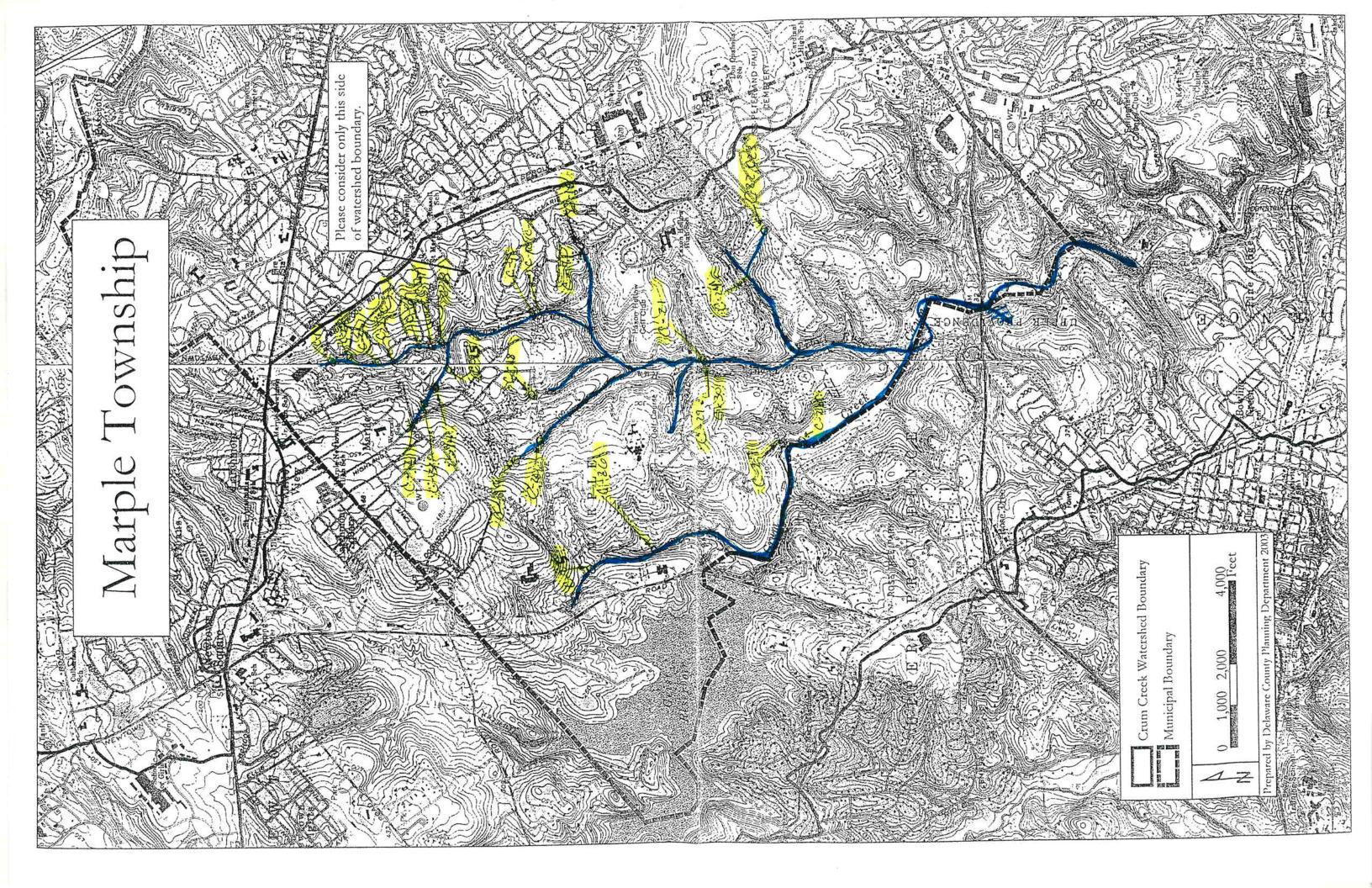
H/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

NOTES:









CRUM CREEK WATERSHED ACT 167 STORMWATER MANAGEMENT PLAN

MUNICIPALITY QUESTIONNAIRE

PART I - GENERAL	LINFORMATION
Municipality:	BOROUGH OF MEDIA
Contact Person:	JEFFREY A SMITH
WPAC Designee:	
Title:	BORDUGH MAHAGER
Address:	301 N JACKSON ST 2M FLOOR
	MEDIA PA 19063
Phone:	610-566-5210 Ext 242
Fax:	610-566.0335
Person Completing fo	rm (if different from Contact Person):
Name:	Jim JEFFERY CODE ENFORCEMENT DIRECTOR
Address:	301 N JACKSON ST 2ND FLOOR
	MEDIA PA 19063
Phone:	610-566.5210 × 246
	610-566-0335
Fax: E-mail:	Jim - jeffery@mediaborough.com
D-man.	him in a series of the series and the series are th

PART II - REGULATORY ACTIVITIES

A. Please indicate the regulations you currently use to manage development.

REGULATION	MUNICIPAL ORDINANCE	COUNTY ORDINANCE
Zoning Ordinance	~	
Subdivision/Land Development Ordinance	V	
Separate Stormwater Ordinance		
Separate Floodplain Ordinance	V	

B. Please indicate the agencies/individuals who review and approve land development plans and zoning variance/waiver requests.

	LAND DEVELO	PMENT PLANS	ZONING VARIANCE/WAIVER REQUESTS				
ENTITY	REVIEW	APPROVE	REVIEW	APPROVE			
Supervisors	V	~		?			
Municipal							
Engineering							
Department							
Municipal							
Planning							
Department							
County Planning				4			
Department							
County							
Conservation	V						
District							
Zoning Hearing							
Board							
Consulting							
Engineer							
Others (List							
Below							

C.	Please provide copies of your zoning, subdivision/land development, and separate stormwater management and floodplain ordinances and your current zoning map when you return this questionnaire. Please list these documents below.

PART III - MUNICIPAL AND LOCAL PLANNING ACTIVITIES

Please indicate below whether your community has approved the following plans and maps and the date of the most recent update.

ITEM	APPROVED/DATE	IN PROGRESS	PLANNED WITHIN NEXT YEAR
PA Act 537 Sewage Facilities Plan	V		
Comprehensive Land Use Plan	~		
Existing Land Use Maps	V		
Proposed Land Use Maps			
Zoning Maps	V		

PART IV - FLOOD INSURANCE PROGRAM AND COMPREHENSIVE LAND USE PLAN

Please indicate below whether your community participates in the National Flood Insurance Program:

ITEM	PARTICIPATES (Y/N)
Flood Hazard Boundary Map (FHBM)	
Participates in FEMA Emergency Program	
Participates in FEMA Regular Program	V

PART V - EXISTING STORMWATER RELATED PROBLEMS AND STRUCTURES

Please complete the matrices on the following pages (Forms A and C-J) to describe any significant stormwater-related problems (Form A), Existing or Proposed Flood Control Projects (Forms C & D), Existing or Proposed Storm Water Control Facilities (Forms E and F), Existing or Proposed Stormwater Collection Systems (Forms G & H), Present and Projected Development in the Flood Hazard Area (Form I), and Water Quality Problem Areas (Form J) that you are aware of in your municipality.

What we would like to ask of you is that you complete as much of the attached data collection forms as possible. There is a different form for each item of information as summarized in the attached "FORM DESCRIPTION SUMMARY. The process would be as follows starting with the problem areas (Form A):

- Place the location of the problem area on the map as shown in the attached example map.
- Draw a box on the map with the problem area identifier starting with A-1 with an arrow leading from the problem area identifier to the problem area.
- Place an A-1 in the first column of FORM A.
- Put a check in each box in the A-1 column that represents the problems associated with that particular problem area.
- Repeat with the next problem area (A-2) and so on.

- Repeat for existing flood control projects (FORM C) placing a triangle on the maps and starting the labeling with C-1.
- Repeat for all forms.

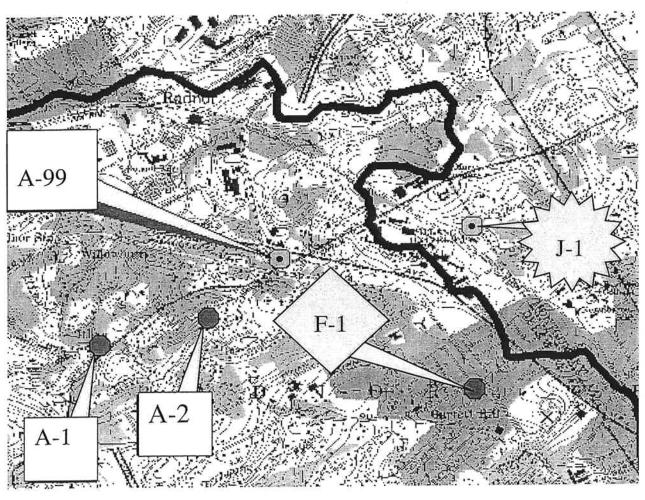
The sample map attached shows three problem areas (A99- A1 and A-2), one proposed flood control project (F-1) and one water quality problem (J1).

Use additional paper to provide <u>detailed</u> descriptions of your most serious problems and attach a map to show the location of the problem. Attach photographs, if available.

If you have any storm or combined sewers, please provide maps showing the collection system and overflow discharge locations and an estimate of the average annual discharge at each overflow point.

The more detail you provide, the better we will be able to evaluate the situation for your municipality. We appreciate your help.

Sample Location of Information from Data Collection Forms on the Municipal Map



Act 167 Watershed Storm Water Management Plan Form Description Summary

	Ś
-orm	V

escription

torm Water Problem Areas



Obstructions

Drainage Flooding

Types of Examples

Erosion/Sedimentation

Existing Flood Control Projects



Proposed Flood Control Projects



Existing Storm Water Control Facility



Proposed Storm Water Existing Storm Water Control Facility

Collection System

G



Proposed Storm Water Collection System



Present & Projected Development in the Flood Hazard Area

Culverts

Bridges

Structures

Channel, Excavation

Floodwalls, etc. Rip-Rap

Channel Excavation Rip-Rap

Floodwalls, etc.

Recharge Basins Detention Basins

Roof-Top Storage

Roof-Top Storage Detention Basins Recharge Basins

Man-Made Channels Storm Sewers Diversions

Man-Made Channels Storm Sewers Diversions Subdivision/Site Plans

Sources of Information

Existing Studies or Reports Fownship Documentation Fownship Engineer Personal Memory

Subdivision Applications Owner of Structure Fownship Engineer Township Files Roadmasters

Township Engineer Township Records Owner of Facility

Fownship Engineer Township Records Owner of Facility

Township Engineer Subdivision Files Owner of Facility

Township Engineer Subdivision Files Owner of Facility

Township Engineer Owner of System (Developers) Existing Plans

Township Engineer Owner of System (Developer) Existing Plans

Flood Insurance Studies Subdivision/Site Plans Private Flood Studies General Knowledge Township Engineer

Conservation District Municipalities

Water Quality Problems

Agriculture

Construction Site

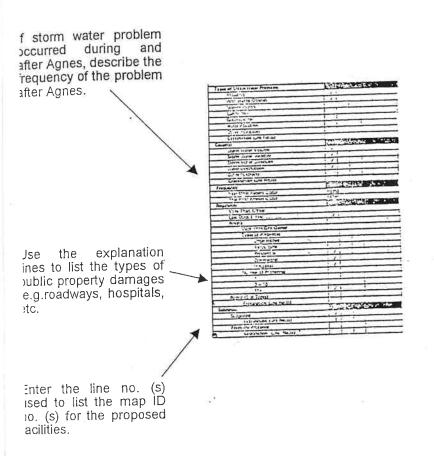
WATERSHED	1		PLETE	D BY			5						
lame:	Name	Name:											
Municipality:	Telephone:												
County:	Date:												
	sample							т.				1.	Γ.
MAP NO.	A-99	A-	A-	A-	A-	A-	A-	A-	A-	A-	A-	A-	A-
Types of Storm Water Problems							4-11-	-				Ţ	
Flooding	X					4				-		-	-
Accelerated Erosion	X							-	-	-		-	
Sedimentation		-	-		-		+		-		-	-	-
Landslide	-	-	+	-		-	-	-			-		
Groundwater		1	-	_		-		-		-	-		-
Water Pollution	×	-	-	-		-	-	-		-	-		
Other (Explain)		-			-	-	-	-		-	-		
Explanation Line No.(s)						1-				mir v			2
Cause(s)		-		7	-W.	1	1			100			
Storm Water Volume	X	-	-	-	-		-		-				
Storm Water Velocity	X	-	-		+	-	+	-	1	1			
Storm Water Direction	X	-			+	1-	-	1	-	-			
Water Obstruction	X	-		+	-	1	+	1	-	1			
Other (Explain)		-	-	-	+					1			
Explanation Line No.(s)	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	17 657	6 18 90	V. N. eq.	SEW 18	- 0	2	1 Destroy		44.653	W 14		
Frequency Year Most Recent Occurred					7-			W	-				
		+	+	-	-	-							
Year First Known to Occur	N. S. S. S. S. S.			744	Se State	Mary Control			J. 10.99	A Child	5.476 1	22000	
Regularity More Than 1/Year	X	e promoten		7 883				i i					
Less Than 1/Year	 ^	+			1								
Only During Agnes or Floyd		+	\top										
Duration (If Applicable)	# FEET	# 10 1			27		11183.00	They w			quare s.		
Less Than One Day	×												
One Day + (Enter Days)													
Property Damages	Tilsyle.							Test Line	Sage To A		25 W		
Loss of Life / Vital Services											-		2
Private											-	 	-
More Than One Owner												ļ	-
Types of Properties		1										-	+-
Undeveloped									-	-	-	-	-
Agricultural									-	-	-		-
Residential									-	-	-	-	+
Commercial	X					-		-	-		-	-	+
Industrial							_	-	-	+		+	+-
Number of Properties									-	-	+	+	-
1	_						-			+	-	-	+
2-10	X	-		_	-	-	-		-	+	+	-	+
11+					-	-			-	+	-	+	+
Public (List Types)			_	_	-	-	-	-		-		+	+
Explanation Line No.(s)	***************************************		200.00								12.0		1
Solutions				1000	36 B.W.	. ¥ = 0	Met of the				MENT OF		
Suggested						-	-		+	+		+	+
Explanation Line No.(s)	1						_	-	-	+	1		1
Formally Proposed		-			-	+	-	-	+	+			
Explanation Line No.(s)													-6-

INSTRUCTIONS

Begin with A.1 as the first map number to identify the first' storm water problem area. Illustrate the defined problem on the watershed map provided, and identify it with its map number.

For each storm water problem area within your municipality, enter the map identification number at the head of the column. Describe the problem by placing a check (4 in the appropriate blocks of the column under this map identification number.

When an additional explanation is required, write the line number(s) used in the column marked "Explanation Line No. (s)".Example 1, 2-3, etc.



Definitions

Storm Water Problem Area

An area that defines the farthest extent of a storm water problem, including any area that experiences property damage, inundation, accelerated erosion, pollution, groundwater pollution, water surface landslides, or any other problem as a result of storm water runoff.

Groundwater

Water in the ground below the water table.

Accelerated Erosion

The removal of the surface of the land through the combined action of man's activities and the natural processes at a rate greater than would occur because of the natural process alone.

Sedimentation

The process by which soil or other surface materials, transported by surface water, is deposited on stream bottoms.

Water Obstruction

Any dike, bridge, culvert, wall, wingwall, fill, pier, wharf, embankment, abutment, or other structure located in, along, across, or projecting into any watercourse, floodway, or body of water.

EXPLANATION LINES (continued)	

FORM C

EXISTING						FLOOD CONTROL PROJECT FORM C. SHEETOF					
WATERSHE)	FORM CO	MPLETED I	BY	TYPICAL TYPES OF FLOOD CONTROL PROJECTS						
Name: Municipality: County:	7	Name: Telephone: Date:				Channel Ex Channel Re Rock Ripra		Levee Gabions Pipe Channel	Dams Floodwall Concrete Lining		
For County U	se:								s.	*	
Map ID No.	D No. Type of Flood Control Project Year Expected Constr Life Built Yrs.			Design Frequency Yrs.	Design Flood Owner Name, Address, and Phone Frequency Discharge Yrs. C.F.S. (if known)						
C-									-		
C-									3 -		
C-	ř.							¥		÷	
C-				-							
C								¥	=		

FORM D

						FLOOD CONTROL PROJECT FORM D.					SHEETOF
WATERSHED FORM COMPLETED BY				TYPICAL TYPES OF FLOOD CONTROL PROJECTS							
Name: Municipality: County:	Name: Telephone: Date:				Channel Realignment					Levee Gabions Pipe Chan	Dams Floodwall nel Concrete Lining
For County U	Jse:										,
Map ID No.	YE		Study Phase Begun YES N0 Prelim. Final		Constr. Co	Projected Compltn. Date	Expected Life Yrs.	fe Frequency Dis-		Map ID No. Form A*	Owner Name, Address, and Phone
D-											
D-											
D-						~					
D-									#C		
D-									_		30 81

^{*} Enter the storm water problem area's Map ID No., if the proposed project will solve or reduce any / all of an identified drainage problem.

FORM E

		FX	STING STORM	WATER CONTROL FACILITIES FORM E.	SHEETOF					
WATERSHED		FORM COMPLETED BY		DEFINITION Storm Water Control Facility						
Name: Name: Telephone:				A natural / man-made device or structure specifically designed and / or utilized to reduce the rate and / or volume of storm water runoff						
Municipality: _ County: _		Date:		from a site or sites.						
For County Use:				4	3*					
Map ID No.	No. Type of Storm Water Year Control Facility Built		Nam	Contact Person ne, Address and Phone	Comments					
E-	and to	Contact County		* *						
E-										
E-										
E										
E-										
E-										
E-				*						
E-										
Detection / De		TYPICAL TYPES OF STO	RM WATER CON	ITROL FACILITIES Roof-Top Storage	÷					
Detention / Retention Basin Natural Pond or Wetland				Semi-Pervious Paving						
Parking Lot P			1	Infiltration Device (Seepage /						

				PROPOSET	FLOOD CC	NTROL PROJ	FCT FORM	=		SHEET		OF	
WIEDOUED		FORM CO	MOI ETED		T	MINOLINO	LOTT OTAL		FINITION			T	
VATERSHED		FORIVI CO	MPLETED	Ы		Storm Wate	er Control Fa		111111111111111111111111111111111111111			+	
		Name:				Δ n	atural / man-	nade dev	ice or structure	specifically d	esigned and	/ or	
lame:		Telephone:		ļ		Utili	zed to reduce	the rate	and / or volum	e of storm wat	er runoff		
Municipality:		Date:					n a site or sit		did / Or toldiii	1			
County:		Date.		-	-	1101	Tra Site of Sit	.				1	
or County Use	: -			 									
Map ID No.	Type of Storm Wa	ter	Proposed (Constr. Dates	Map No.		ct Person				Comment	is	
	Control Facility		Start	End	Form A*	Name, Addı	ess and Pho	ne					
=_				A Company									
												-	
=_													
-													
												4	
=41			in the second										
			+1										
=_													
==													
Enter the stor	m water problem area'	s Map ID No.	, if the prop	osed project	will solve or r	educe any / all	of an identif	ed draina	ge problem.				
	i	TYPICAL T	PES OF S	TORM WATE	R CONTRO	L FACILITIES							
Detention / Rete	ention Basin							-Top Stor					
latural Pond or						-		-Pervious					
Parking Lot Pon							Infiltr	ation Dev	ice (Seepage /	Recharge Ba	sin or Under	ground Tank)	

			_		EVICTING	STORM WAY	ER COLLE	CTION FACI	LITIES FORM	G		SHEET	(OF	
			T FORM OOM			STORIVI VVA	LIN COLLLY	TIONTAG	INSTRUCTIO		ļ	O'ILL'			
VATER	RSHED		FORM COM	PLEIED BY			1	the appro	priate map. Es		points to sh	ow changes i	in system	elements	
						Diagram e	ach system o	on the appro	priate map. Es	stablisti iliap	tent / Comple	to this form	only wher	e specific	
Name:			Name:			pipe size, o	or pipe direct	ion. (II unkii	own, outline the	e system ex	tent.) Comple	ere this torri	bo points	within a	
Junicip	ality:		Telephone:			information	on construc	tion is availa	ble. Use a sep	parate form i	or each syste	ant overten 2	Tie hours	willing a	
county:			Date:			system cor	isecutively (ex. G-1,G-2,	G-3). Start the	first point in	each additio	Diagrams 9	Form on [Siligher.	
						For examp	le, G-3 ends	one system	, so G-23 begin	ns the next.	See Sample	Diagrams &	FUIII UII I	Name o	f Cinal
M	ap I.D.	Sy	stem's Elements	s (x)		Measuren					Design	0 1 1 1		A PROPERTY OF	EN SOUTH PROPERTY.
	No.				Pipe		hannel / Swa		Material	Year	Data	Contact F		Ownersh	
From	То	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name and	Pnone	Maintenance F	kesponsibility
							-			-					
} -	G-		-												
3-	G-														
						24		V11						_	
}-	G-					The second manual control of the second manua									
											-				
3-	G-					-				 					
3-	G-														
3-	G-										-				
										ļ				-	7.5
3-	G-					-									
3-	G-														
<u> </u>															
3-	G-									-					
											-				
3-	G-								•//		-				
3-	G-										1				
	neasurement		Jan pida				1	1							

						D STORM W	ATER COLL	FCTION FA	CILITIES FOR	M H (10 YR	S)		SHEE		OF	
							1	1	INSTRUCTION	1/2						
VATER:	SHED		FORM COM	NPLETED B.	<u>Y</u>			d diameter d	amm each proposed sys	lem Indicate a map	oaint to show	changes in s	ystem elem	ents, pipe size, pipe direct	ion and connections	
II (TELL						On the map for pro	posed storm water o	ollection systems, drag	rain each proposes sys	itions and their conn	ection point in	nto the existin	g system, C	omplete a separate form f	or each proposed.	
Vame:			Name:			to existing systems	For proposed addit	tions to existing system	ns, diagram only die add	Identify the points	ithin a system	m consecutive	ly (ex. H-1,	H-2, H-3). Start the first p	oint in each	
	litte		Telephone:			new system and or	e lor each existing :	system having one or	nore proposed additions	Identity the points ?	the point wh	ere proposed	additions co	onnect into existing system	s, using the map	
Municipa	ility.		Date:			additional system 2	0 numbers higher (i	f H-3 ends one system	, begin the next with H-2	23). Be sure to show	ine point wit	ere proposed		onnect into existing system		
County:			154,51			point number from	the existing system	form and map. See Sa	mple Diagrams and For	m on Reverse.	Depr	oosed	Decien	Contact Person	Name o	of Final
		CVG	tem's Element	S (X)		Measuren	nents *			Map I.D.				Name and	Owners	
	ıp I.D.	Sys	Terra Llement	1	Pipe	Oper	Channel /	Swale	Material	Nos.**		. Dates	Data		Maintenance F	
	No.			Swale	D	TW	В	Depth		Form A	Start	Ena	Avail.	Phone	Wall terrance i	(CSPOTIOIDINE)
From	То	Pipe	Open Channel	Swale		1								-		
																-
H-	H-															
							-									
H-	H-						-									
																<u> </u>
H-	H-						-				1					
H-	H-						-		n		1					
[]-	1.0							_								
11	H-									+	-		-			
H	10-										-		1			
	1										-	-		· · · · · · · · · · · · · · · · · · ·		
H	H-		+									-				
	-										-	-	-			1
H-	H-			<u> </u>								1		-	-	
				-	<u> </u>						-	-	-		-	
H-	H-		-	-									-			
					-		1									
H-	H-			-		-										
		,														-
H-	H-						-									
							_									
H-	H-				*			1	need stainst	will solve or	reduce	any / all	of the	drainage probl	ems.	

l PR	ESENT & PROJECTED I	DEVELOPMENT	IN THE FLOOD	HAZARD A	REA (FOF	RM 1)		SHEET	OF		
VATERSHED	FORM COMP			1		T .	DEFINITION		T T		
				FLOOD HA	ZARD AR	EA:					
lame:	Name:						LLY DRY LAN	D AREA THAT HAS	BEEN OR IS		
Municipality:	Telephone:			-		SUSCEPT	ABLE TO BEIN	NG INUNDATED BY	THE		
County:	Date:					100-YEAR					
							T				
or County Use:				-		-	 				_
Map ID TYPE OF	DEVELOPMENT	Year	Con	tact Person				Comments			
No.		Built		dress and Pl	none						1
-											
										-73-23-1	
_											
				<u> </u>		 	-				
_											
											-
							<u> </u>				_
											_
-											-
											-
											-
•											
•											

WATER QUALITY PROBLEM AREAS (FORM J)

Municipality			Dat	ephone te				
County	7				7.	7,		
Site:	J-	J-	J-	J-	J-	J-	J-	J-
Types of Water Quality Problems					_			
High Community Tolerance			_					
High Temperature	-							
High Turbidity					-	_		
Hydrocarbon Pollution						_	_	
Low Community Diversity							-	
Low Dissolved Oxygen								
Low pH							_	
Nutrient Enrichment					-			
Poor Habitat								
Other / Explanation Line No.								
Potential Causes(s)							_	
Agriculture								
Construction Site								
Erosion						_		
Lake Discharge								
STP Outfall								
Other / Explanation Line No.								
Frequency								
Year Most Recent Occurrence								
Year First Known Occurrence								
Source of Information								
Streamwatch								
County Water Quality Study						141		
Driveby								
CCD Complaint Investigation					9			
Other / Explanation Line No.								

Form 0 - Outfall Data

Days Since Last Rain Time Since Last Rain was ≥ 72 Hours: Yes Name of receiving water: Quantity of Last Rain: < 0.1 inches: > 0.1 inches Date: Municipality:

50/05	Healworll yes/No	4000	7,65	No	No) Yes	Yes	No	No	28/3	No	Yes
	Rating (0-2)		0	ŕ	0	Minor De 65'S	Σ. Ο.Ό	De 47.15	0		0	0
AND DESCRIPTION OF PERSONS ASSESSMENT	Describe land use of upstream drainage area.		RESID	2	<i>"</i>	"	10	Comme +	Res		Res	Ses
	Water Color/Odor (specify if floatables,	algae or sediment present)	HOME	11	<i>''</i>	. "	Clear	None	Clear		Clear	None
8 1	Flow Observed (Yes or no)		<i>%</i>	<i>∨</i>	NO	NO	No	Noi	No		No	No
Service Control of the Control of th	Channel Side Slopes* (II:V)		1 703	2:1	7:4	1:1	7:7	1:1	1:3		1:1	
	E E	(leet)	18	7,	, 15	/4'	151	10'	8		301	20,
H-100	Channel Depth		101	1,	7	, 2	,, 8/	7-21	3/		151	15
	Depth of flow in pipe (feet).		0	0	0	0	110 "	0	0		0	, Q
	Pipe I Diameter f (inches) (25.	No Pipe Frosod Cook	1/8/	36"	1,10	,, 8/			8/	20
	Time P (00:00) T (00:00)		8 40	6905	5160	0460	1000	0/0/	11235		1100	Nos
	m n? No	Not sure	YES	Yes	Yes	Yes.	Yes	Sak	SWA	,	Yes	sal
	The second second	is any		54	7	47	9	7	00	<i>,</i>	9	10 System:
	Pipe I		_ /	B	AG	3	4	7	9	7	0	S A 10 Rating System:
			la.	Z	, 5		-					1

J-No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling,

blocked catch basins or drain)

W/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

NOTES:

Rulph said out fall for #7 is same as

500 A

Form O - Outfall Data

-	w			1 :							1,1			, 34°,
in a	Person:	3 0	Brien	124111	//AS Date:	7	7/07 Ti	ime Since I	O'Y Time Since Last Rain was > 72 Hours: Yes.	s ≥ 72 Hou	us: Yes // 6	ä		
	gl _a , na maig		Quantity o	f Last Rain: <	Quantity of Last Rain: < 0.1 inches: > 0.1 inches	> 0.1 inches	*		Day	Days Since Last Rain	t Rain 3 %			
	Municipality:	lity:	Media	. 2		Ž	Name of receiving water: 10 room of	ving water:	Broom	7	C. Ke			
-/	Tax (18)													X *
	Pipe_ I	Photo .	Storm	Time	Pipe	Depth of	Channel	Channel	Channel	Flow	Water	Describe land use of	Rating	Heal woll
	Swale /	#	Drain?	(00:00)	Diameter	flow in pipe	Depth	Bottom	Side Slopes*	Observed	Color/Odor	upstream drainage	(0-5)	Ves///2
	74	DISK	Yes/No	ат/рт	(inches).	(fect).		Width (· (V:II)	(Yes or no)	(specify if floatables,	area.		
gi di	September 1	5	Not					(feet)			algae or sediment present)			× 1
	8	4	20%	1320	1181	C	100	3.1	1:1	No	Noar	Roc	0	No
4	101	_	Ye.	12:55	200.	Q	500	20%	7:4	\mathcal{N}_c	4000	Res	0	Ves
Z.	LOA	ત	You	1300	1/2/	0	:0	7	5/1	No	NA	Res		Yes
5	201	~	785	1306	1481	0	200	Strom	Stream	- Cana	ALIA	11	0	No
1	11	L ₃	\\	1340	1,51	0		~	1:3	No	NA	Res	0	Yes
	13	2	50%	1350	.8.1	0	~	Stream	1:5	No	Streng Clear	Res	0	Ter
7	13	1	Yes	1355	30"	0	1	1	7:1	-	**************************************	Kes	0	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
10/2	14	-00	× ×	1465	11.01	0	\ \ \ \ \	H. Merida	1:4	11/2/10	Clear	17	0	Yes
	1	7			110.	•	7	1		~	11 1	Q		7.7

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair) Rating System: [Yes

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

²⁼Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling,

blocked catch basins or drain)

H/V = Horizontal to vertical ratio

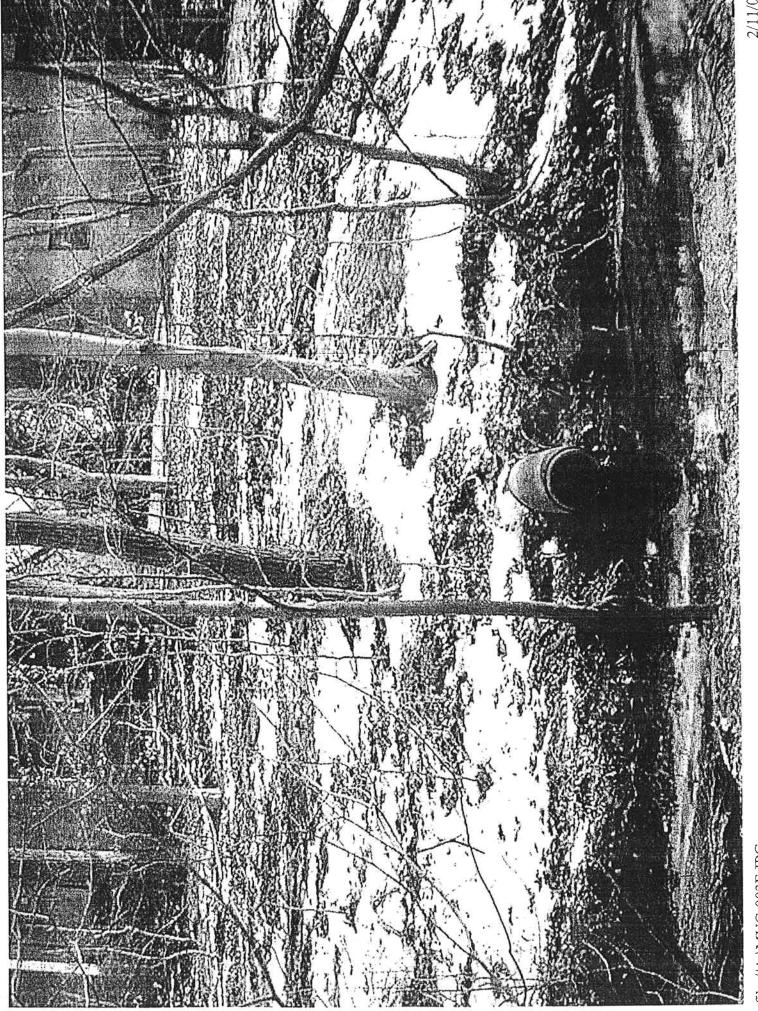
^{*1:1 =} Vertical - rectangular channel

NOTES:

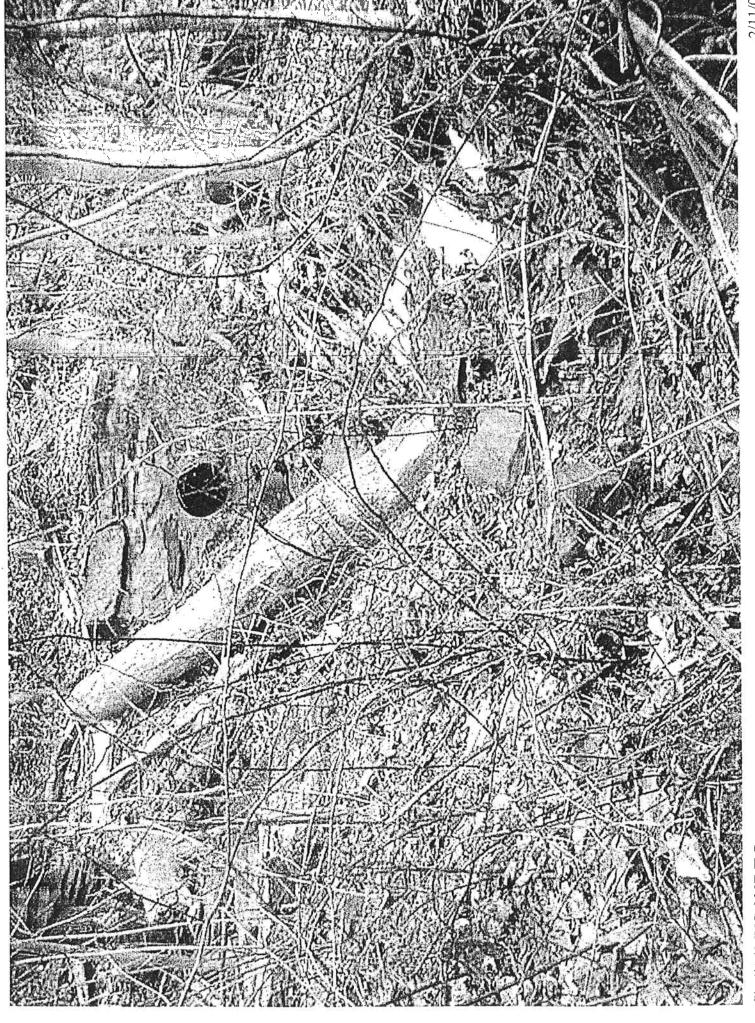
Media Disky - Molo #1 - Pipe Swale # 10

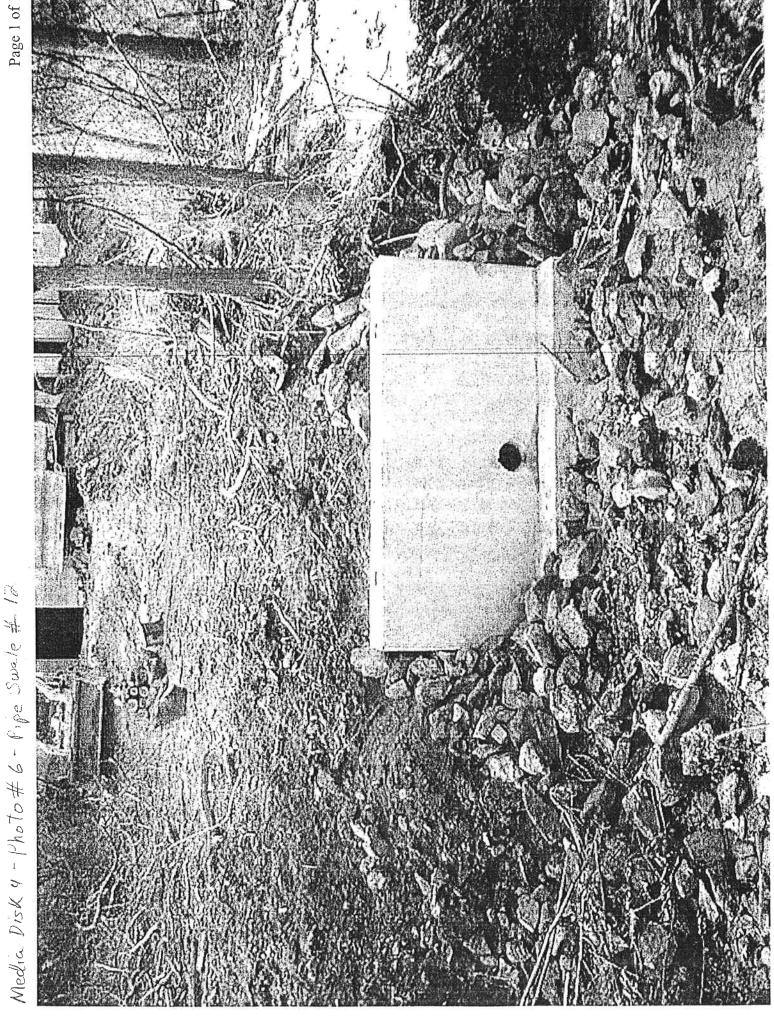
file://A:\/MVC-001F.JPG



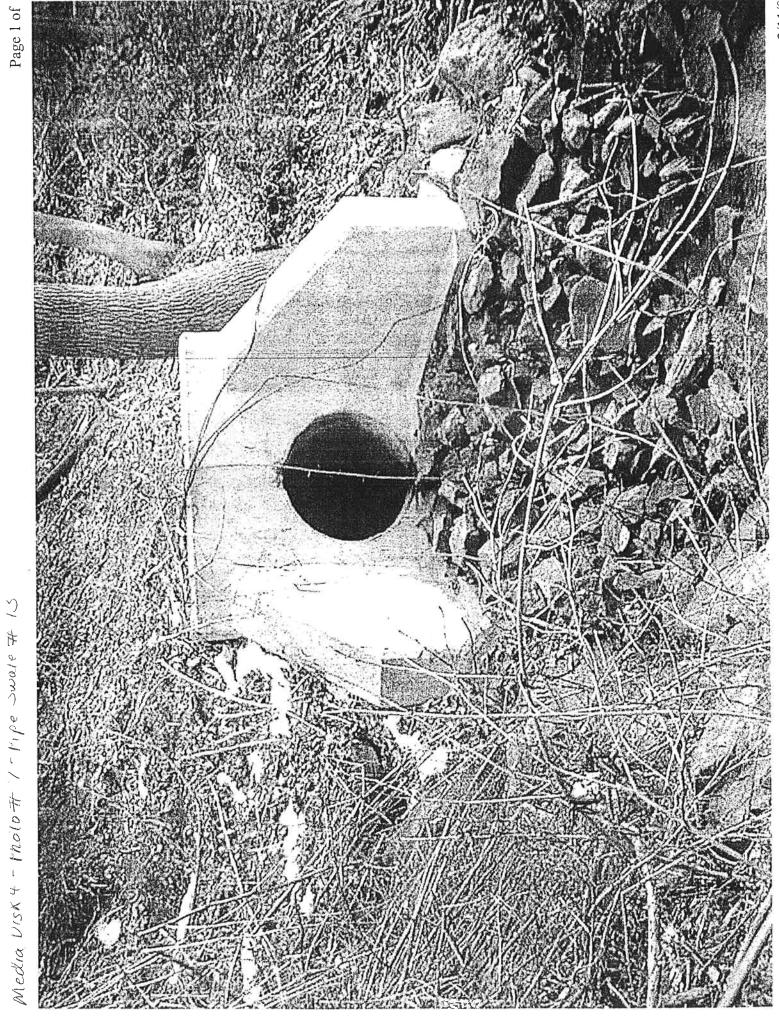


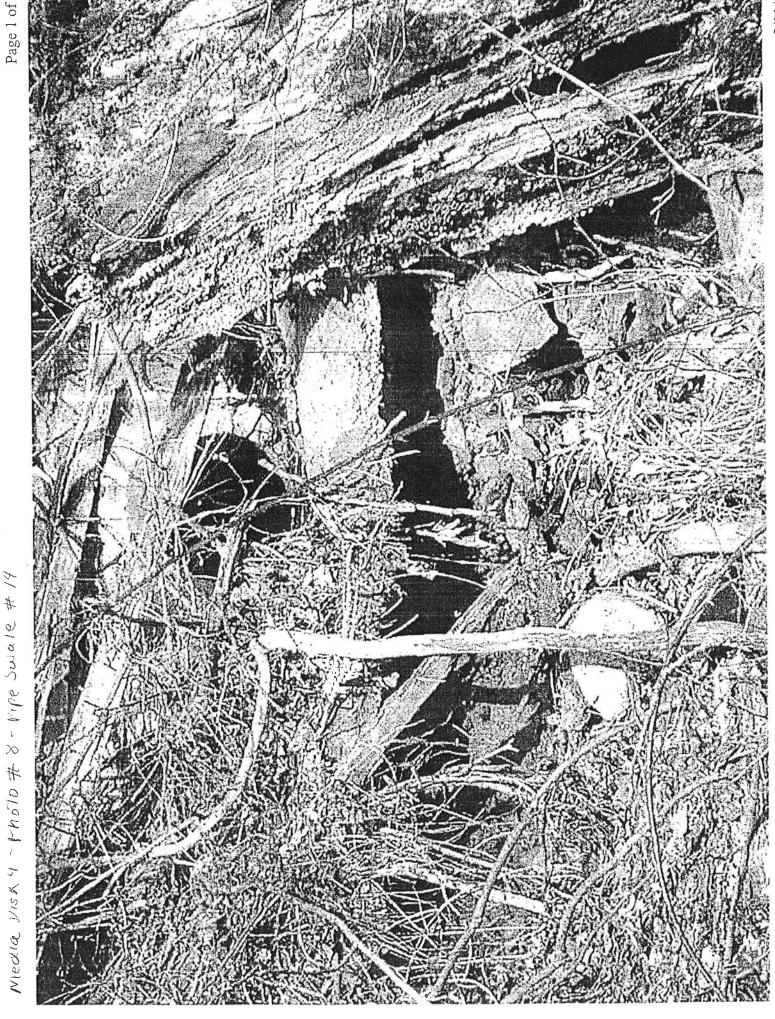
file://A:\MVC-003F.JPG



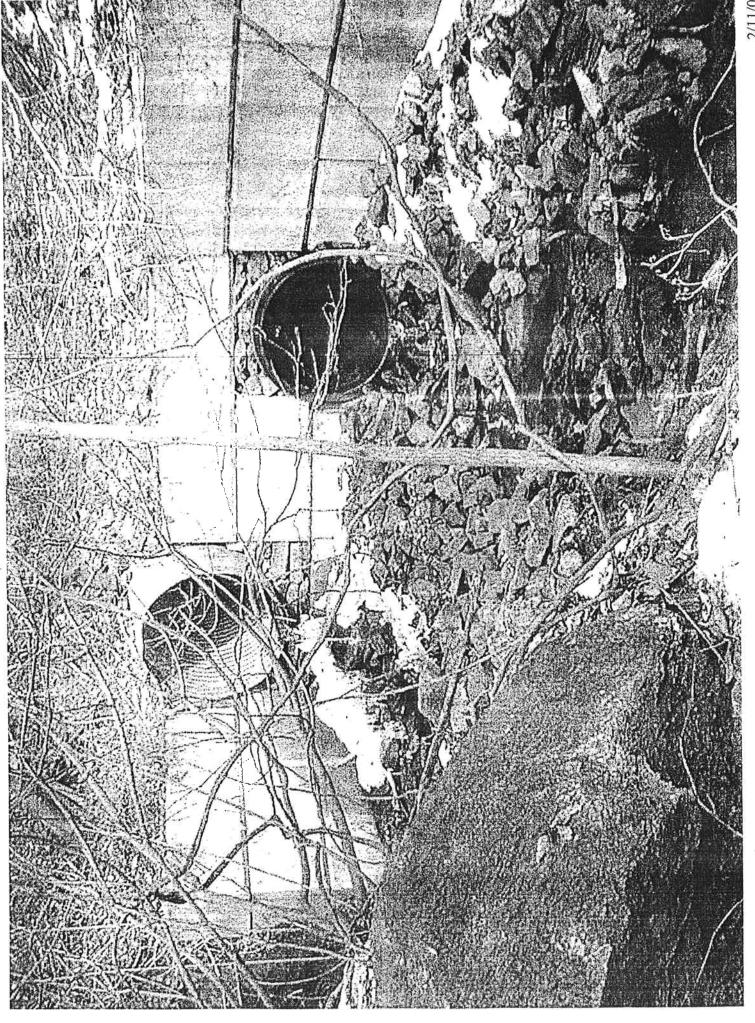


file://A:\MVC-006F.JPG





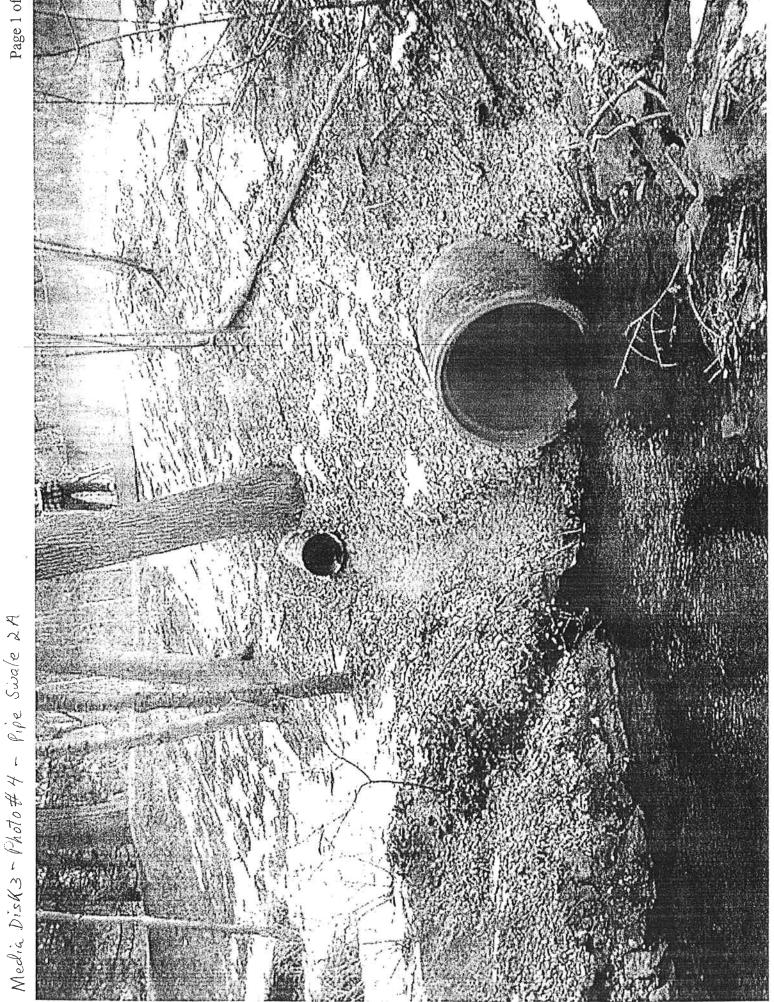




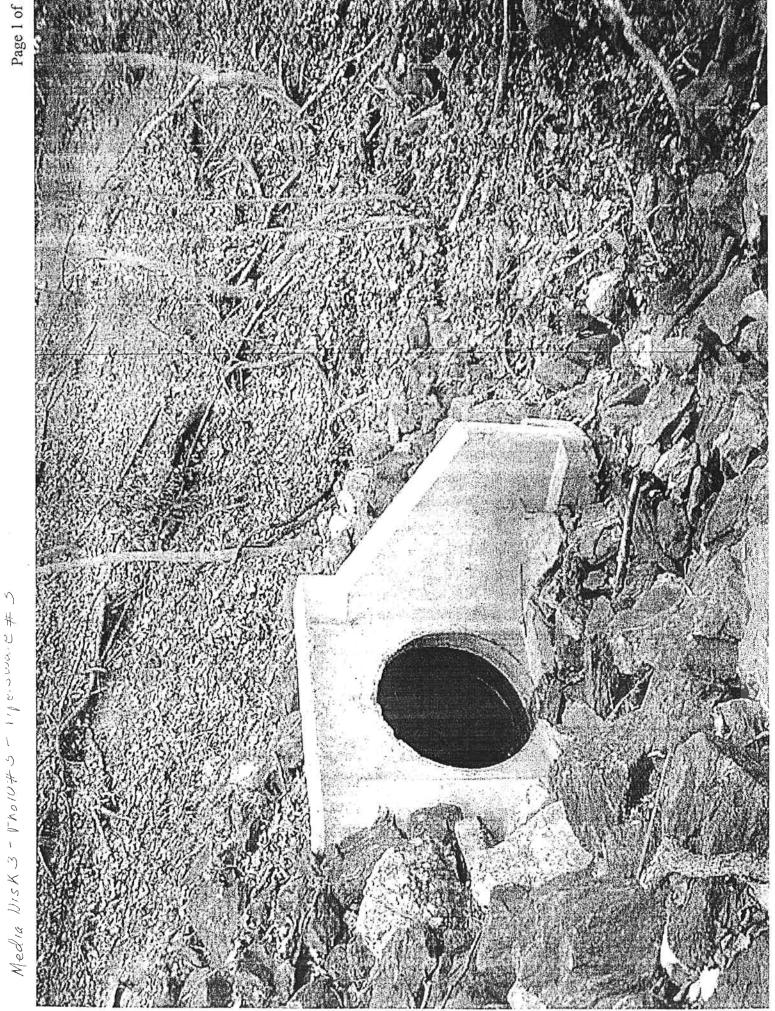
file://A:\MVC-010F.JPG

Media Disk 3 - Moto# 2 - Vipe swe





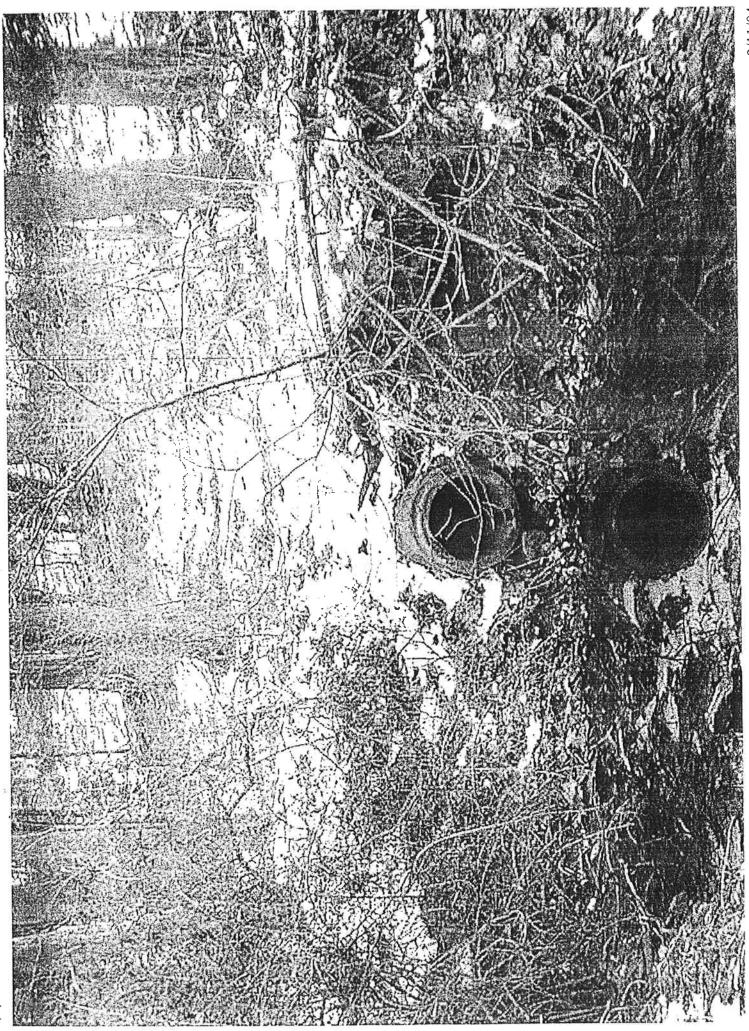
file://A:\/MVC-004F.JPG



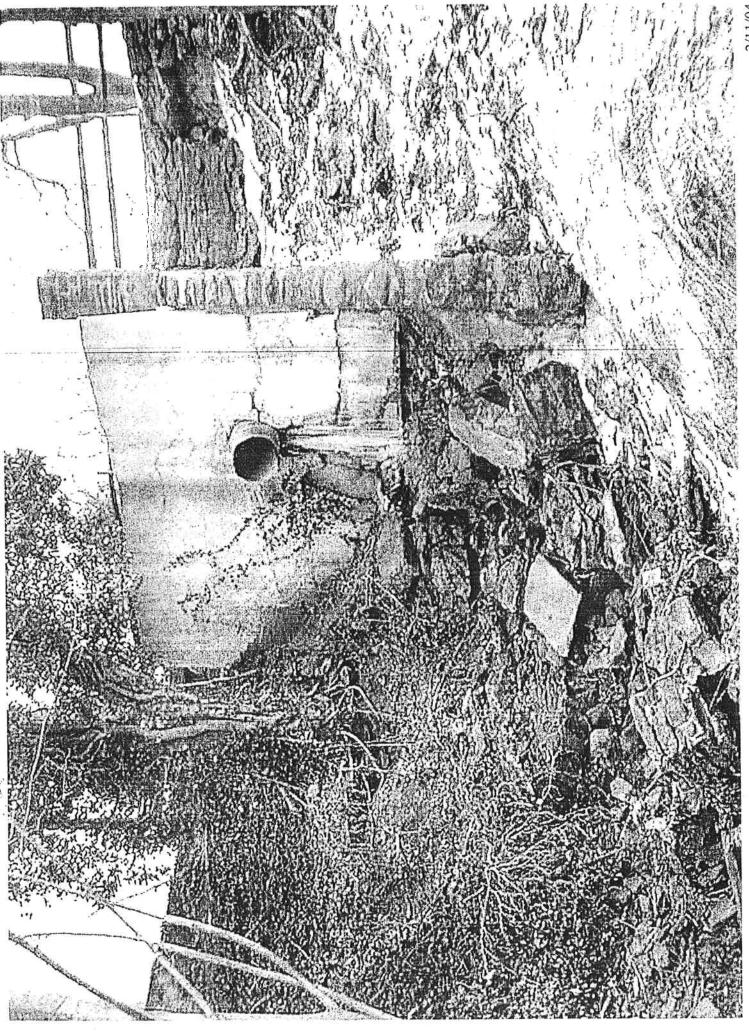
Media Disk3 - Photo#6- life Swale #4

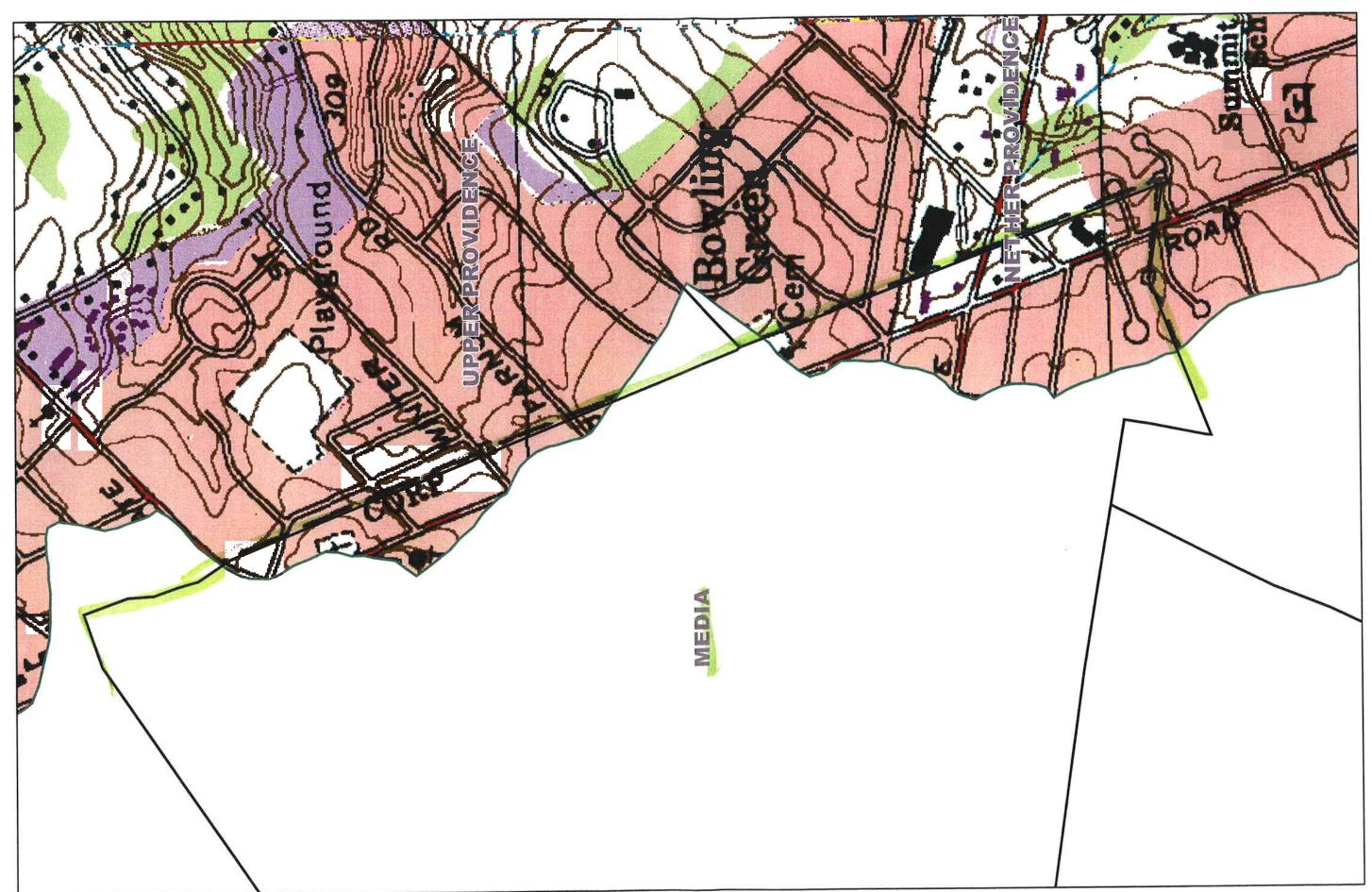


file://A:\IMVC-007F.JPG

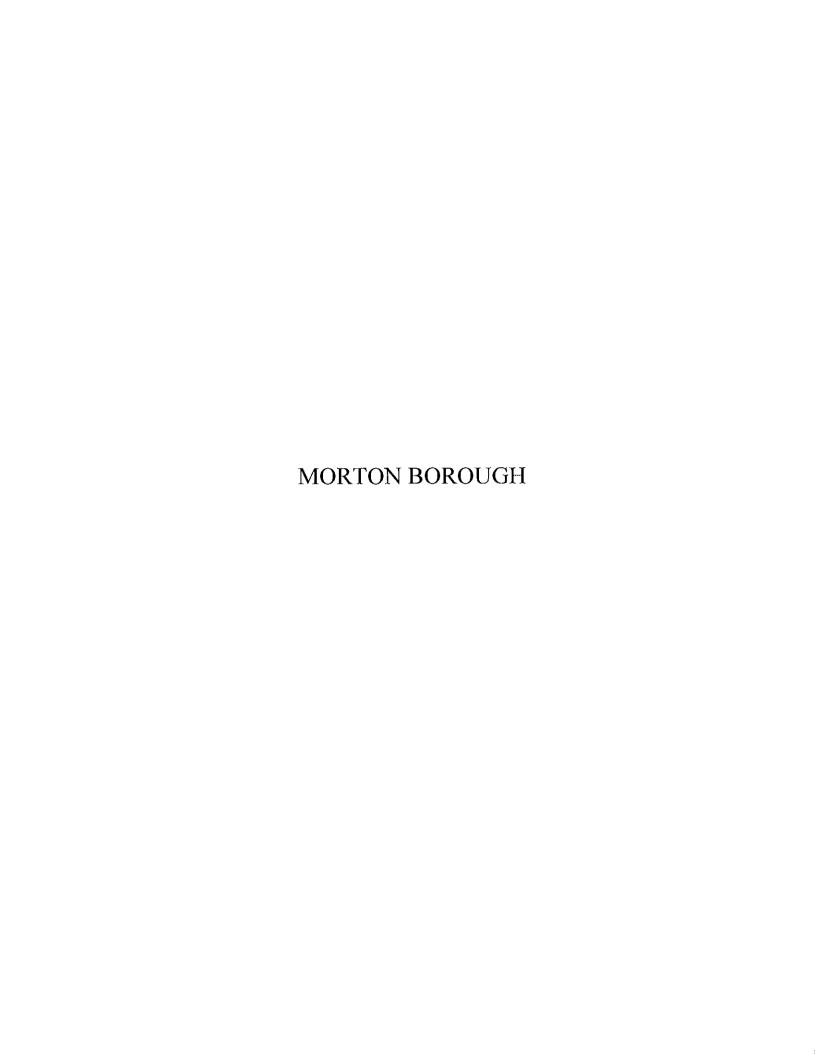


file://A:\MVC-009F.JPG





- LOCATOR MAP **CRUM CREEK WATERSHED**





CATANIA ENGINEERING ASSOCIATES, INC.

Consulting Engineers & Land Surveyors

June 14, 2005 File No. 83500-115-CC

Chris Gallagher
Delaware County Planning Department
Office of Housing and Community Development
600 N. Jackson Street, Room 101
Media, PA 19063

RE:

Crum Creek Watershed Act 167

Morton Borough

Dear Mr. Gallagher:

Enclosed, please find the completed municipal survey forms for the Crum Creek Watershed Act 167 Stormwater Management Plan.

If you have any questions, or require any additional information, please do not hesitate to contact me.

Very truly yours,

Jamie H. Bricker, E.I.T.

Gamie H Bricker

for Catania Engineering Associates, Inc.

JHB/pm Enclosures

cc: Martha Preston, Secretary

520 W. MacDade Boulevard, Milmont Park, Pennsylvania 19033-3311 Phone: (610) 532-2884 Fax: (610) 532-2923 E-Mail: CEAINC1@aol.com

CRUM CREEK WATERSHED ACT 167 STORMWATER MANAGEMENT PLAN

MUNICIPALITY QUESTIONNAIRE

Please fill out the following questionnaire and return it to Karen Holm at the Delaware County Planning Department, Court House and Government Center Building, 201 West Front St. Media, PA 19063 as soon as possible. If you have any questions or comments, or if you would like these forms in digital format, please call Karen at 610-891-5213 or e-mail her at holmk@co.delaware.pa.us.

PART I - GENERAL INFORMATION

Municipality:	Morton Borough
Contact Person:	Martha Preston, Secretary
WPAC Designee:	Charles J. Lillicrapp, Jr.
Title:	Councilman
Address:	Highland & Sycamore Avenues
	Morton, PA 19070
Phone:	610-543-4565
Fax:	610-543-8392
Person Completing for	orm (if different from Contact Person):
Name:	Jamie H. Bricker
Address:	520 W. MacDade Boulevard
	Milmont Park, PA 19033-3311
Phone:	610-532-2884
Fax:	610-532-2923
E-mail:	jamie@cataniaengineering.com

PART II - REGULATORY ACTIVITIES

A. Please indicate the regulations you currently use to manage development.

REGULATION	MUNICIPAL ORDINANCE	COUNTY ORDINANCE
Zoning Ordinance	No. 588	
Subdivision/Land Development Ordinance		X
Separate Stormwater Ordinance	pending	
Separate Floodplain Ordinance	No. 623	

B. Please indicate the agencies/individuals who review and approve land development plans and zoning variance/waiver requests.

	LAND DEVELO	PMENT PLANS	ZONING VARIANCE	/WAIVER REQUESTS
ENTITY	REVIEW	APPROVE	REVIEW	APPROVE
Supervisors	X	X		
Municipal				
Engineering		1		
Department				
Municipal	X		į.	
Planning				
Department				
County Planning	X			
Department				
County	X			
Conservation				
District			37	X
Zoning Hearing		-5	X	^
Board				
Consulting	X			
Engineer				
Others (List				
Below				

V====	
, C.	Please provide copies of your zoning, subdivision/land development, and separate stormwater management and floodplain ordinances and your current zoning map when you return this
	questionnaire. Please list these documents below.
Morto	Borough Zoning Ordinance No. 588
Morto	on Borough Flood Hazard District Overlay (Zoning Ordinance) No. 623
1120111	

PART III - MUNICIPAL AND LOCAL PLANNING ACTIVITIES

Please indicate below whether your community has approved the following plans and maps and the date of the most recent update.

ITEM	APPROVED/DATE	IN PROGRESS	PLANNED WITHIN NEXT YEAR
PA Act 537 Sewage Facilities Plan	3/13/2002		
Comprehensive Land Use Plan	10/2002		
Existing Land Use Maps	10/2002		
Proposed Land Use Maps	10/2002		
Zoning Maps	1995		

PART IV - FLOOD INSURANCE PROGRAM AND COMPREHENSIVE LAND USE PLAN

Please indicate below whether your community participates in the National Flood Insurance Program:

ITEM	PARTICIPATES (Y/N)
Flood Hazard Boundary Map (FHBM)	Y
Participates in FEMA Emergency Program	N
Participates in FEMA Regular Program	Y

PART V - EXISTING STORMWATER RELATED PROBLEMS AND STRUCTURES

Please complete the matrices on the following pages (Forms A and C-J) to describe any significant stormwater-related problems (Form A), Existing or Proposed Flood Control Projects (Forms C & D), Existing or Proposed Storm Water Control Facilities (Forms E and F), Existing or Proposed Stormwater Collection Systems (Forms G & H), Present and Projected Development in the Flood Hazard Area (Form I), and Water Quality Problem Areas (Form J) that you are aware of in your municipality.

What we would like to ask of you is that you complete as much of the attached data collection forms as possible. There is a different form for each item of information as summarized in the attached "FORM DESCRIPTION SUMMARY. The process would be as follows starting with the problem areas (Form A):

- Place the location of the problem area on the map as shown in the attached example map.
- Draw a box on the map with the problem area identifier starting with A-1 with an arrow leading from the problem area identifier to the problem area.
- Place an A-1 in the first column of FORM A.
- Put a check in each box in the A-1 column that represents the problems associated with that particular problem area.
- Repeat with the next problem area (A-2) and so on.

- Repeat for existing flood control projects (FORM C) placing a triangle on the maps and starting the labeling with C-1.
- Repeat for all forms.

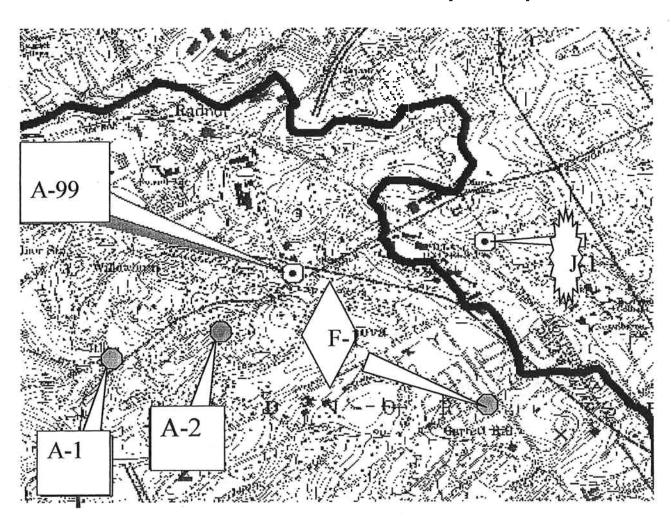
The sample map attached shows three problem areas (A99- A1 and A-2), one proposed flood control project (F-1) and one water quality problem (J1).

Use additional paper to provide <u>detailed</u> descriptions of your most serious problems and attach a map to show the location of the problem. Attach photographs, if available.

If you have any storm or combined sewers, please provide maps showing the collection system and overflow discharge locations and an estimate of the average annual discharge at each overflow point.

The more detail you provide, the better we will be able to evaluate the situation for your municipality. We appreciate your help.

Sample Location of Information from Data Collection Forms on the Municipal Map



			F	ORM A	- STOR	M WATE	R PRO	BLEM	AREAS	s	HEET_	1	_OF_	1	
1///	TEP	SHED			FOI	RM CC	MPLF	TED	BY	Befo	re Filli	ng Out	Form,		
VVA	ILIN	טוונט			+	00							on Bac		
Na			Crum Creek		Nam	D .	Jamie	e H F	Bricker	1					
Nar		- I:L	-	- h	_					For C	County	Use:			
		ality:	Morton Boroug	gn	_	ohone:			004	┤ॅ``	- our ity	-50.			
Cou	inty:		Delaware		Date		8/5/2	UU4		+					
MA	P NC). *		A-	A-	A-	A-	A-	A-	Α-	A-	A-	A-	A-	A-
			Water Problems			(87 I)*	12.1		PL			J-r	1000	2.4	
Floo															
		ed Erosi	on												
Sedi	menta	ation												1	
Land	slide														
Gro	ındwa	iter													
Wat	er Pol	llution										-	_		
-	er (Ex												, ,		
-			No. (On Back)												
_	se (s)										-1-			F-1	
_		ter Volu	ıme												
Stor	m Wa	ter Velo	ocity												
Stor	m Wa	ater Dire	ction												
Wat	er Ob	struction	n												
Othe	er (Ex	plain)													
			No. (On Back)												
	quenc			1	1.17	telling be	i je k	id.	17	1942	- 2.5		1867	1915	
Yea	r Mos	t Recen	t Occurred												
Yea	r First	Known	Occurred												
Reg	ularit	y		3711			17/20	1,17		42		8 35	_		1776
Mor	e Tha	n 1 Yea	r												
Les	s Thai	n 1 Yea	Γ												
Only	/ Duri	ng Agne	es												
		(If Appl			Jul 1		No. Sec.	JES!		C Salva	Sil			7	100
Les	s Tha	n 1 Day													
1 D	ay + (I	Enter Da	ays)												
Pro	perty	Damag	e	S or s						1,511		Mark	g X		
			Services											_	ļ.,
Priv	ate							- 3							
Mor	e Tha	n One (Owner												
_		Properti													-
Nur	nber o	of Prope	rties												_
Put	lic (Li	st Type:	s)												-
_			No. (On Back)												
Sol	ution	<u>s</u>					3.5			15				1.6	
	geste														_
			No. (On Back)												1
_		Propose													
Exp	lanati	ion Line	No. (On Back)												
* Ir	rclud	е Мар	ID No. if found	on ar	y othe	r form	listing	propo	osed fa	cilities				1	

				XISTING F	LOOD CON	TROL PRO.	JECT FORM C.	SHEET	1 OF	F	
WATERSHED		FORM CON	PLETED B	-		L	FORM COMPLETED BY TYPICAL TYPES OF FLOO	TYPICAL TYPES OF FLOOD CONTROL PROJECTS			
Name:	Srum Creek	Name: Jamie H. Wenger	Jamie H. Wo	enger		Channel Exc	Channel Excavation / Widening	Levee	Dams Floodwall		
County:	County: Delaware	Date: {	3/5/2004		, <u>.</u>	Rock Riprap		Pipe Channel	Concrete Lining	ing	
For County Use:	 										
Map ID No.	Type of Flood Control Project	ol Project	Year		Design Flood	Flood	NWO	Owner Name, Address, and Phone	one		
			Constr Built	Life Yrs.	Frequency Discharge Yrs. C.F.S. (if known)	Discharge C.F.S. (if known)					
ر ن	NONE No portions of Crum Creek or any of its tributaries lie in Morton.	sek or 1 Morton.									
ပ်											
ს			0								
ట											
ს											

			ā	ROPOSED	FLOOD CC	DNTROL PR	OJECT FO	RM D.		S	SHEET 1 OF 1	
WATERSHED	Q	FORM COI	FORM COMPLETED BY TYPICAL TYPES (LYPICAL TO	TYPICAL TYPES OF FLOOD CONTROL PROJECTS	OOD CON	TROL PRO.	IECTS	
Name: Municipality: County:	Crum Creek Morton Borough Delaware	Name: Telephone: Date:	Name: Jamie H. Bricker Telephone: 610-532-2884 Date: 8/5/2004	oker 4		Channel Excavation / Widening Channel Realignment Rock Riprap	cavation / Malignment	Videning	э O В	Levee Gabions Pipe Channel	Dams Floodwall Concrete Lining	
For County Use:	lse:											
Map ID No.	Type of Flood Control Project		Study Phase Begun	-S	Year	Projected E	Expected	Design Flood	pool	Мар	Owner Name, Address, and Phone	
			-	ON N	Constr.	Compltn.		Frequency Discharge	Discharge	ID No.		
		Prelim.	Final		Planned	Date	Yrs.	Yrs.	C.F.S.	Form A*		T
(None							•		×		
.	No portions of Crum Crk or any of its tributaries lie within Morton	~										
٥												
ř.							3					
۵												
					а							
<u>ا</u>												
94 (A												
٥												
5												
• Enter the	Enter the storm water problem area's Map ID No., if the proposed project will solve or reduce any / all of an identified drainage problem.	s's Map ID No.	., if the propos	sed project	will solve or	reduce any	/all of an id	lentified drain	nage proble	m.		

				EXISTING	EXISTING STORM WATER CONTROL FACILITIES FORM E.		SHEET 1 OF 1	
WATERSHED	Q	FORM CON	FORM COMPLETED BY	34	IO	DEFINITION		
Name:	Orum Creek	Name:	Jamie H. Br	ricker	Storm Water Control Facility A natural / man-made device or structure specifically designed and / or	vice or structure specifi	ically designed and / or	
pality:	Morton	Telephone:	610-532-28	84	utilized to reduce the rate and / or volume of storm water runoff	e and / or volume of sto	irm water runoff	
County:	Delaware	Date: 8/5/2004	8/5/2004		from a site or sites.			
For County Use:	Jse:							
Map ID No.	Type of Storm Water	er	Year		Contact Person		Comments	
	Control Facility		Built		Name, Address and Phone			Ī
ம்	None No stormwater control facilites exist within Morton Borough.	cilites exist						
ம்								
ш								
ய்								
ய்								
ம்								
ш								
ம்								
		TYPICAL T	YPES OF S	TORM WAT	TYPICAL TYPES OF STORM WATER CONTROL FACILITIES			
Detention / F	Detention / Retention Basin				Roof-Top Storage	orage		
Natural Pon	Natural Pond or Wetland				Semi-Pervious Paving	us Paving		
Parking Lot Pondling	Pondling	-			Infiltration De Recharge Ba	Infiltration Device (Seepage / Recharge Basin or Underground Tank)	ank)	

				PROPOSED	STORM W	PROPOSED STORM WATER CONTROL FACILITIES FORM F.	SHEET 1 OF 1
WATERSHED		FORM CC	MPLETED !	BY		DEFINITION	
.a Za	Crum Creek	Na Na Na Na Na Na Na Na Na Na Na Na Na N	Jamie H. B	ricker		Storm Water Control Facility A natural / man-made device or structure specifically designed and / or	ure specifically designed and / or
ality:		Telephone:	610-532-2884	384		utilized to reduce the rate and / or volume of storm water runoff	ume of storm water runoff
	9	Date:	8/5/2004			from a site or sites.	
For County Use:							
Map ID No.	Type of Storm Water Control Facility	je;	Proposed Start	Proposed Constr. Date Start End	Map No. Form A*	Contact Person Name, Address and Phone	Comments
ᇿ	None No stormwater control facilites are proposed within Morton Borough.	ncilites are Borough.					
Ľ.							
ı.							
Ľ.							
Ľ.							
址							
Ľ.							
Ľ.							
* Enter the st	tormwater problem area's	Map ID No.	if the proportion	sed project v	vill solve or r	Enter the stormwater problem area's Map ID No., if the proposed project will solve or reduce and / all of an identified drainage problem.	
Detention / R	Detention / Retention Basin					Roof-Top Storage	
Natural Pond or Wetland	or Wetland					Semi-Pervious Paving	
Parking Lot Pondling	ondling					Infiltration Device (Seepage / Recharge Basin or Underground Tank)	ge / ground Tank)
,						Recharg	e Basin or Under

						EXISTING F	LOOD COI	NTROL PRC	EXISTING FLOOD CONTROL PROJECT FORM G.	9		SHEET	1 OF 1
WATERSHED	印		FORM COMPLETED BY	PLETED BY		Diagram 69	ch evetem	orde ad or	INSTRUCTIONS	NS stablish man	noints to sh	INSTRUCTIONS Diagram each evertem on the annountate man Establish man noints to show changes in system elements.	elements.
Name.	Crum Creek		Name:	Jamie H. Bricker	cker	pipe size, or	pipe directi	ion. (If unkno	own, outline th	e system ex	tent.) Comp	pipe size, or pipe direction. (If unknown, outline the system extent.) Complete this form only where specific	are specific
alii	Morton		Telephone:	610-532-2884	14	information	on construc	tion is availa	ible. Use a sej	parate form	for each sys	information on construction is available. Use a separate form for each system, Identify the points within a	s within a
County:	Delaware		Date:	8/5/2004		system con	secutively (e	ex. G-1, G-2,	G-3). Start th	he first point	in each add	system consecutively (ex. G-1, G-2, G-3). Start the first point in each additional system 20 numbers higher	bers higher.
						For example	e, G-3 ends	one system	, so G-23 beg	ins the next	See Samp	For example, G-3 ends one system, so G-23 begins the next. See Sample Diagrams & Form on Reverse.	Namo of Final
Ma	Map ID	Sys	System's Elements (x)	ts (x)	Geig	Measur	Measurements	o c	Material	Vear	Data	Contact Person	Ownership and
	No.	i			200	S AF	alliel Swe	Donth		Constr	Available	Name and Phone	Maintenance Responsibility
From	0	Pipe	Open Channel	Swale	٥	۸۸۱	٥	nebul		COLISII.	O Adiabas	200	
ტ	ტ	NONE											
ტ	ტ		,										
,	,												
5	5												
_{တ်}	ර												
ဖ်	ტ												
ල්	ტ												
ල්	ტ												
ტ	ъ ф												
ල්	ь́												
ල්	ტ												
ල්	ტ												
*See mea	surement	*See measurement key on reverse side	rse side										

Name							1))	000		1.(0) OCED EOOD OOK (0) EOO OCED OKED (0) EOO OCED OKED (0) EOO OCED (0) EOO OCED					1110	
System's Elements (x) NONE NONE NONE Telephone: 610-532-2884 8/5/2004 System's Elements (x) Pipe Den Channel Swale D Pipe Pipe Pipe Pipe Pipe Pipe Pipe Pipe	WATER	SHED		FORM COM	PLETED B	*				INSTRUCTIC	SNC					
Mame: Jamie H. Bricker Name: Jamie H. Bricker Delaware Date: 8/5/2004 Date: 8/5/2							On the map for	roposed stormw	ater collection sys	stems, diagram each	proposed system.	Indicate a map po	oint to show chi	anges in syster	n elements, pipe size, pipi	direction and connections
Morton Telephone: 610-532-2884 Delaware Date: 815/2004 Delaware Date: 815/	Name:	Crum Cre	sek	Name:	Jamie H. B.	ricker	to existing system	n. For proposed	additions to exist	ing systems, diagran	n only the additions	and their connect	tion point into the	he existing syst	iem. Complete a separate	form for each proposed,
Delaware Date: 8/5/2004 About	Municipa	lil Morton		Telephone:	610-532-28	184	new system and	one for each exi	sting system havi	ng one or more prop.	osed additions. Ide	entify the points w.	Ithin a system o	consecutively (ex. G-1, G-2, G-3). Start t	e first point in each
Map ID System's Elements (x) Measurements (x) Measurements (x) Measurements (x) Measurements (x) Measurements (x) Data (x) Data (x) Data (x) Data (x) Data (x) Data (x) Available (x) H- NONE TW Depth (x) TW Depth (x) Material (x) Material (x) Material (x) Material (x) Data (x) </td <td>County:</td> <td>Delaware</td> <td></td> <td>Date</td> <td>8/5/2004</td> <td></td> <td>additional syster.</td> <td>n 20 numbers hi</td> <td>gher (If H-3 ends (</td> <td>one system, begin the</td> <td>e next with H-23).</td> <td>Be sure to show to</td> <td>he point where</td> <td>proposed addi</td> <td>tions connect into existing</td> <td>systems, using the map</td>	County:	Delaware		Date	8/5/2004		additional syster.	n 20 numbers hi	gher (If H-3 ends (one system, begin the	e next with H-23).	Be sure to show to	he point where	proposed addi	tions connect into existing	systems, using the map
Map ID System's Elements (x) Measurements Map ID Proposed Design							point number fro	m he existing sy	stem form and ma	p. See Sample Dia	grams and Form or	Reverse.				
No. Tom Tow Pipe Channel / Swale Material Nos.** Constr. Dates Details between Programmer Pro	Σ	ap ID	Syst	em's Element	(x) s;		Measur	ements*			Map I.D	Propo	sed	Design		Name of Final
H- NONE		No.				Pipe	ర్	annel / Sw	ale	Material	Nos.	Constr.	Dates	Data	Contact Person	Ownership and
NON	From	7	Pipe	Open Channel	Swale	۵	WT	В	Depth		Form A	Start	Г	Available	Name and Phone	Maintenance Responsibility
	土	÷	NONE													
	±	土														
	土	±														
	±	±														
	土	±														
	±	土														
	±	±														
	±	±														
	±	±														
	± ·	±			*											
	±	±														

		PRESENT 8	PROJECT	ED DEVELOP	MENT IN THE FLOOD HAZARD AREA FORM I.		SHEET 1 OF 1
WATERSHED		FORM CO	MPLETED E	34		DEFINITION	
					FLOOD HAZARD AREA		
Name:	Orum Creek	Name:	Jamie H. Bı	ricker	A normally dry land area th	at has been or is	
Municipality: Morton	Morton	Telephone:	Telephone: 610-532-2884	184	susceptible to being inundated by the	ated by the	
County:	Delaware	Date:	8/5/2004		100-year flood.		
For County Use:							
Map ID No.	TYPE OF DEVELOPMENT	MENT	Year Built		Contact Person Name, Address and Phone		Comments
	NONE There are no flood hazard areas in the Crum Creek watershed	d areas in					
	portion of the Borough.						
<u>.</u>	ř.					*1	
<u>-</u>							×
<u>.</u>	, ES						
<u>.</u>		*					

MATERICIER		WILK	WUNLI			EAS FOR			HEET_		DF	
WATERSHED					1,0	THE COL	741 LL 1					
Name:	Crum Creek				Nam	e:	Jami	e H. Br	icker			
	Morton Boroug	h				phone:	610-	532-28	84			
County:	Delaware				Date							8/5/2004
oounty.	Dominic											
SITE		J-	J-	J-	J-	J-	J-	J-	J-	J-	J-	J-
Types of Water C	Quality Problems											
High Community		NONE										
High Temperature	9											_
High Turbidity												
Hydrocarbon Poll	ution								_			
Low Community I	Diversity											
Low Dissolved Ox										_		
Low pH										_		_
Nutrient Enrichme	ent											
Poor Habitat												
Other/Explanation	n Line No.											
Potential Cause												
Agriculture										_		
Construction Site												
Erosion											_	
Lake Discharge									_			
STP Outfall												-
Other/Explanation	n Line No.											
Frequency											-	_
Year Most Recen	t Occurence								_			
Year First Known	Occurence											
Source of Inform	nation											
County Water Qu	ality Study											
Driveby												
Other/Explanatio	n Line No.	1										
	EX	PLANA	NOIT	LINES	3							
1. There are no C	Crum Creek Waters	hed tribu	taries i	n Morton	Borough							
2												
3												
4												
5												
6												
7												
8												
9												
10												

Date: 2/26/04	
Jamie H. Wenger	
Person:	

Time Since Last Rain was > 72 Hours: Yes

Quantity of Last Rain: < 0.1 inches: > 0.1 inches

Days Since Last Rain: Two (2/24/04)

Municipality: Morton Borough

Name of receiving water: Crum Creek

Rating	(0-2)	1 1								
Describe land use of	upstream drainage	атеа.								-
Water	Color/Odor	(Yes or no) (specify if floatables,	algae or sediment	present)		,				
Flow	Observed	(Yes or no)								
Channel	*	(H:V)			4					
Channel	Bottom		(feet)							
Channel							•			
Depth of)e	(feet)								
	Diameter									
Time		am/pm		8						
Storm		Yes/No	Not	sure						
Photo										
Pipe	Swale	**			None					

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment deposition, algae or debris, pipe collapsed or crumbling,

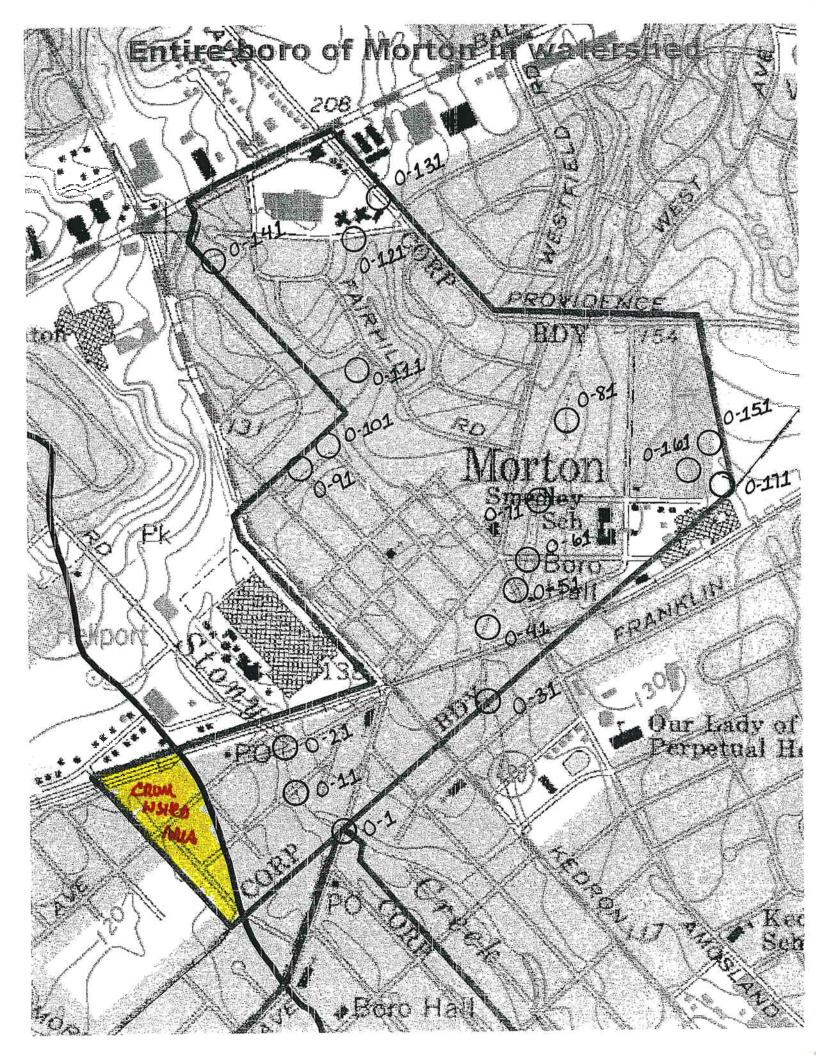
blocked catch basins or drain)

H/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

NOTES:

Morton Borough does not have any storm sewers or appurtenances connecting to outfalls on Crum Creek or in the Watershed



Time Since Last Rain was > 72 Hours: Yes_ Date: 2/26/04 Person: Jamie H. Wenger

Quantity of Last Rain: < 0.1 inches: > 0.1 inches

Days Since Last Rain: Two (2/24/04)

Municipality: Morton Borough

Name of receiving water: Crum Creek

Rating (0-2)				
Describe land use of upstream drainage area.				
Flow Water Observed Color/Odor (Yes or no) (specify if floatables, algae or sediment present)				
Flow Observed (Yes or no)				
Channel Flow Side Slopes* Observed (H:V) (Yes or no)				
Channel Bottom Width (feet)				
Depth of Channel flow in pipe Depth (feet)				
Pipe Diameter (inches)				
Time (00:00) am/pm				
Storm Drain? Yes/No Not				
Photo #				
Pipe Swale #	None			

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment deposition, algae or debris, pipe collapsed or crumbling,

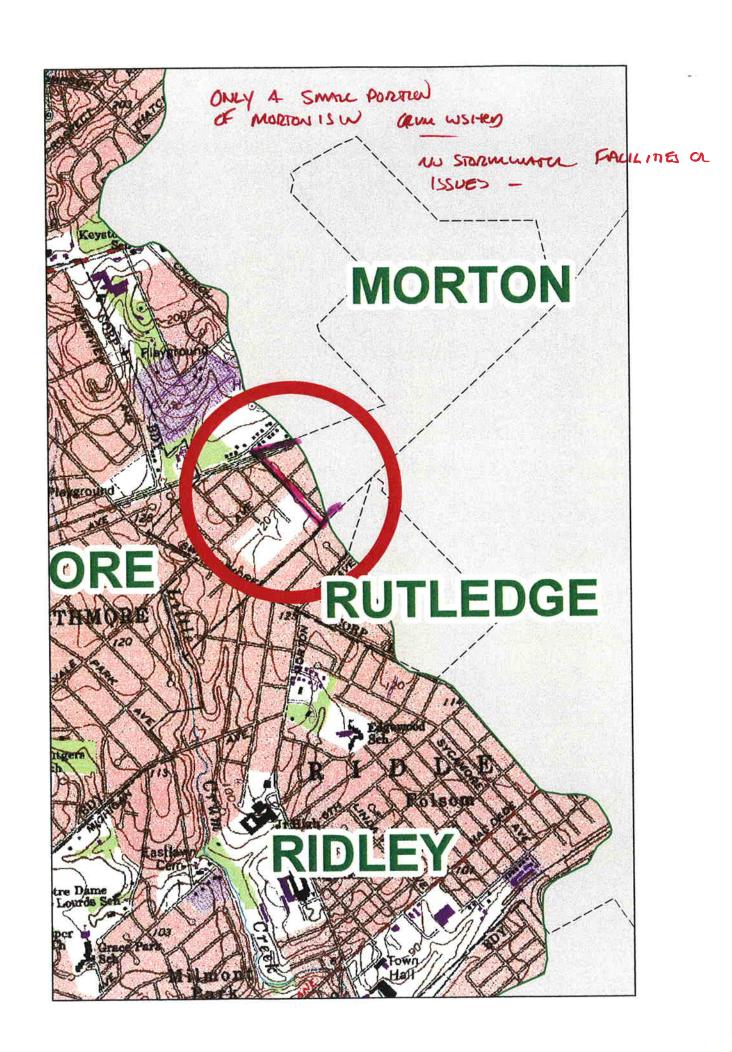
blocked catch basins or drain)

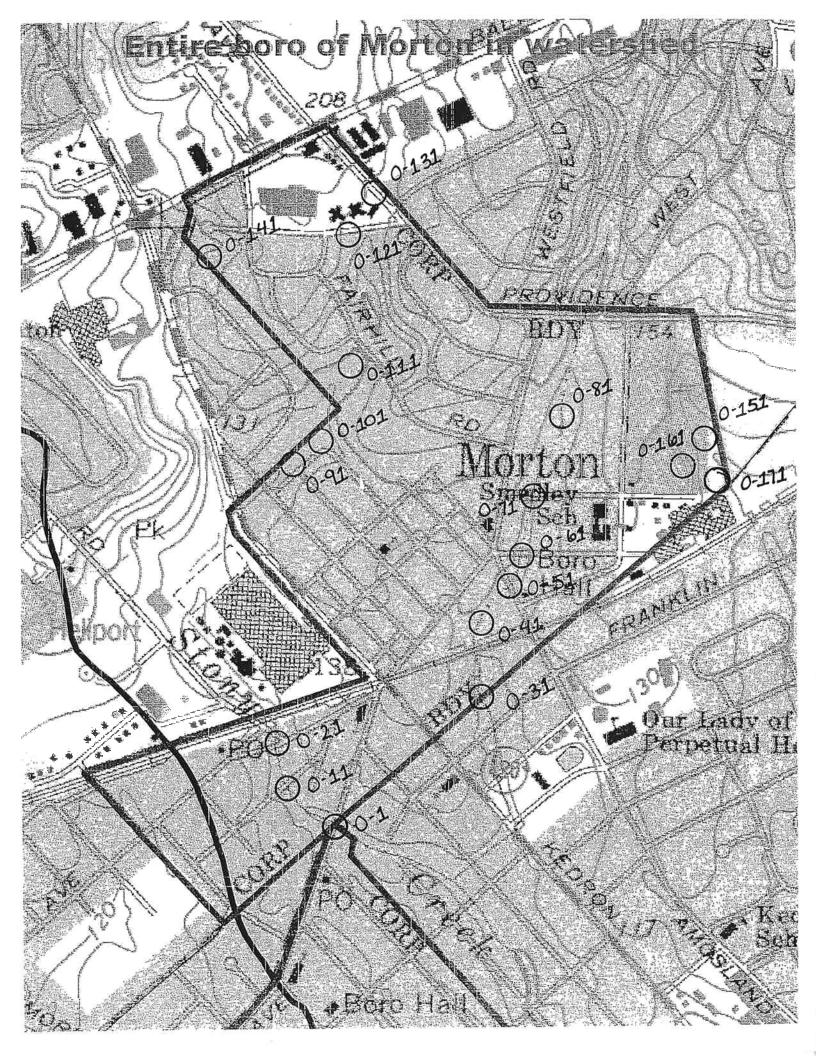
H/V = Horizontal to vertical ratio

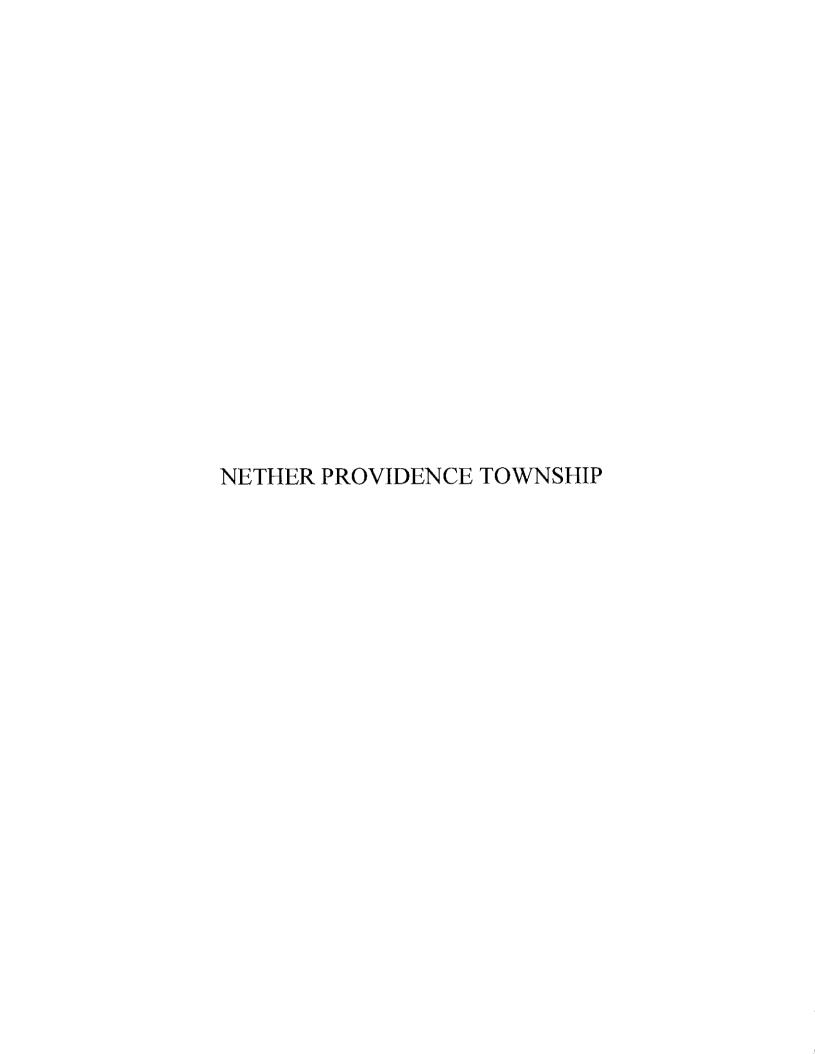
*1:1 = Vertical - rectangular channel

NOTES:

Morton Borough does not have any storm sewers or appurtenances connecting to outfalls on Crum Creek or in the Watershed







TOWNSHIP OF NETHER PROVIDENCE

214 Sykes Lane, Wallingford, PA 19086-6350 (610) 566-4516 Fax (610) 892-2890

John P. Kennedy, President 5th Ward				Gary J. Cumming Douglas C. Roge	
David L. Hackett, Vice Presid	lent Berran	Charles and a second		Catania Engineer	
1st Ward	PORTON	VANAON FEHIGH A	LLEY OFFICE	Theresa H. White	, Treasurer
Sara Lynn Petrosky	SRB				
2nd Ward	PAD	him and a superior of the second seco	············		
J. Manly Parks	W.W		O CORRESPONDENCE	E	
3rd Ward	V WSB	NOV 2 1 2005	D AGREEMENT	(I)	
John J. Salvucci	PAR		CONTRACT		
4 th Ward	ADMIN			T 20 2005	
Robert E. O'Connor	many Coppe	PROJECT NO.		June 28, 2005	
6th Ward		**************************************	The state of the s	1	
Robert M. Firkser				7	
7 th Ward					

Mr. Chris Gallagher Delaware County Planning Department Court House/Government Center 201 W. Front Street Media, PA 19063

Re: Storm Water Outfall Mapping

Dear Mr. Gallagher:

Enclosed for your file please find copies of "Form O - Outfall Data" for all of Nether Providence Township as well as color pictures for each outfall listing. Also enclosed is a storm sewer map for Nether Providence Township.

Please note that the "C" indicates those outfalls entering an unnamed tributary to Crum Creek. "D" indicates outfalls to Dicks Run that is tributary to Crum Creek. "V" indicates outfalls entering Vernon Run which is tributary to Ridley Creek (enters in Rose Valley Borough). "B" indicates outfalls into Beatty Run which is tributary to Ridley Creek. "B + #" indicates outfalls into a tributary of Beatty Run which ultimately enters Ridley Creek.

Please feel free to contact me if you have any questions.

Yours truly,

Gary J. Cummings Township Manager

Cc: Jerry Breitmayer Charles Catania, Jr. Gary Snyder, NP EAC Board of Commissioners Nather Frovide nea

March Part Street Part Street						FOKE I	FORM B - OBSTRUCTION DATA COLLECTION	200100	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	OLLECTIN							
Field work personnel:	unicipal	Stream Obstruction Data			Reco	rds compl	eted by:	Bron	1300	20		T= Amount of fill			Material		Inlet Conditions
Type Caberral Ca		7						1				0≂ Dlameter		Ě	g.	fW = Headwall	
Type Shape	stershed:				Field	work pers	sonnel:					HT = Height		S		WV = Wingwall	
1500 Chart	willouioin	County 1/21	9 16		Date			1	-			W = Width PW = Pler Width	_	6 S		sW = Sidewall	
Control of Control o	e de la company		J)			Change			_	ı				6	OP = Reinforced Concrete Pipe De Steed Pine		
Owner or Address Of Observation Consorts Test of Observation Consorts Name of Address Of Observation Consorts Test of Observation Co					Type			2			Measure	ments		П			
Section Control Cont					\vdash		Culvert	\vdash	Н	۵	Ħ	×	PW	skew	MATERIAL / INLET CONDITION		NOTES
Market M	1	1.01	1	+	+		0		£1	€	€ C	E 17	E J	angle	Brown		
District		AND AND DE	-			-	+	7	-		0	6		00	3		
Distriction industries	S. C. S.	9				3					2	D 7		06	consisted, 114.	100	
Control Cont	17 45	Distriction was en TP		TO THE REAL PROPERTY.				1			M buch	0			msry ,	The state of the s	
	5113	11 11 11 11	-					7				100		00	metal wood		
Character Char	ST C	UMBING			7	+	1		10		K	4		<	1		
Control of 1	5117	2 old Plan walled !						7	7		0 10	070		200	THE STATE OF THE S		
Colored Colo	8 T B	avoidale		-		7	1		100		0	0		270	sone de l'alla		
Avandall	-	3		,				>	1		(0)	200		25			
# 12 Ock Konch 1	1/1/12	oug						7	1		1	3.0		200			
1	7.11	LA ON OR AL	No.					1	1		100	000		000	Control Assessment		
1 1 1 1 1 1 1 1 1 1	21 12	917						2			0			300	Canal Reform		
1	14	E.		1		+	+	1	1		07	0		1	2000		
March Marc	-	-b		1			+	>							CONCENTRAL	1	
H S S S S S S S S S	5)		1)								
173 Oktobrow 174 175 Oktobrow	ET 15	CHAIR COLOR WILLIAM	THE RESERVE OF THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED						511.5		1	1	1	200	CHOCKER IN COLON	1	
11	FILE	S Ook tellner				3	>		6	517							
FTT HIS LINE AND	17117	11 0 11 174		-	-	+	>		5	i,	1		1				Dir Feel
	-	2.07					>		0	S	1			00	BECATPINA)		30 7 00
From the continuent	1000	1/ L1 H				THE PARTY OF	*		8	5:5		ľ		00	BCC MY / HA	TY ST	272
ET 25 Security No Savience N	CT 70						N			61.5			l	0.63	8123101NW		
FT72 St Arri (2) day grown FT 25 Sp miles and the literature (2) FT 25 Sp miles and the literature (3) FT 25 Sp miles and the literature (3) FT 25 Sp miles and the literature (3) FT 26 Sp miles and the literature (3) FT 27 Sp miles and the litera	10+2	412 //					1		30	515			-	17.6	SCHOOL NEW		
Fit 26 Section 2010 Mean in Se	ナナンフ	かんなすい いかれていか	-		^	-		_		-	01	50	Ì		CONTACK / WILL		
FT 25 Speculation (1) Mean 20.	12-5-7	COI GOSTIN II					7	A Second	7	215			1	S. Contraction	NOTE THE	CHO CHO	ARI / DUFLE
Fit 25 Springland Williams A 1	12 - 7	200					^			518	١	N	1	00		the contract of	
ET 24 Rech (1907) Previous Part (1907) Previous Par	2000	0							2	~	-)	1	000	PCD/HW. SW		
Et 24 Reckwood Prevides 1	91	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		-	-	-	1	-	1/2	1	1	})	(30)	11011111		
Et 24 Sectional (Previdual 1)	77 17	Dood I Dece					7			L	1	1		710	CANADA MACATA AND A STATE OF THE STATE OF TH		
ET 24 Recommond (Programme) 1 V 05 - 40 15 - 90 1 P 18		1	1				1>		1	6	١)	1	0	C12 (20160)	The state of	20, 10
18130 Diversible 12-1 1	1		The state of the s		-			-		1	100	1		176	() free of	,	
ETTER FLOOR MINERAL MANAGEMENT AND	15 Ta	Church L Virgin	1	+	1	+	+	+	6	1				20	0 - 400 0 0 0 0 0 0		
ET 29 Flock Mill P 4 - 50 - 50 - 50 - 50 - 50 - 50 - 50 -	VEY 30	3			-	1	1		-			9	1	N/O		and the second	Ca Commi
E139 n 1 14 Conset	16 7 51	CO to that kinds was			7				10			9			Constrain	C 10110	The Manual of
ET 29 Plack Mill B 8 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	STATE OF	Seal South			/				D. W. C.		17		The second		and the second second		
ET 24 Block Mill B 8	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	The Columnia	-				1		13	١	43	0	1	05/	Concrete / His 1 WW		
	ガナウを	Dich Mil				ľ	1		~	1	245	,	1	00	Concern March will		
				The state of the s	,			3.	6	0000		6-	-	100	Me A . / L		

C			FORM B	FORM B - OBSTRUCTION DATA COLLECTION	TION DA	TA COLLEC	NOITS					SHEET) (OF	
Municipal Stream Obstruction Data		Reco	Records completed by:	ed by:	0.80	3000		T* Amount of fill	M M		Material		Inlet Conditions	
					1	-		D- Dlameter			msry = Stone Masonry Structure	HW = Headwall		
Watershed: CV J.M. CCCC.		Field	Field work personnel:					HT = Height			CMP = Comugated Metal Pipe	WW = Wingwell	7	
	9				-			W = Width			CPP = Compated Polyethylene Pipe	SW = Sidewall		
Municipality/County: A)? 12 DON 10 MILE	_	Date(s):	ļ	1-1/71	12/201	2		PW = Pier Width	ndth		BCCMP ≈ Bituminous Coated CMP			
											ACP = Reinforced Concrete Pipe			
	L		Opening								SP = Steel Pipe			
		Туре		Shape (<)			Meas	Measurements						
Complete Com	Ш		\dashv	1		-	+	+			MATERIAL / INLET CONDITION	NOI	NOTES	
_	Nos.	_	4	-	Bridge	+	토	3	M.	skew				
(CFS)	1	Bridge? Pur	Purpose	0		4	€	+	E	audie	- 1			
APETST DRYSHING DIVIDER B		7			>)	0.5	2002			
NEW 38 Citt of allowed o west All		^	7 1 5		7.	\perp	1	75	<u>'</u>	200	t	(
NEW STATE OF STATES AND NOTES		_ >			^	100		7	1	012	10 CAP/ 0/10 P	\	510	
NET 40 Prairie		>							1	9		17 700	0.00	
Mill B & moor		>			>	2,5		9	1	20	Course La)	
			-		1		+		4	1		1		
							-							
				-										
						-								
						-								
					-					L				
				+	+	-	1	-	-					
			1	†	+	-	1		+	-				
			1	†	+	†	1	+	+	1		-		
		+	1	1	+	+	+	+	+	-				
		-	-	1	+	+	1	+	-	-				
			1		+	+	+		1	1				
					+	+		1	+					
					+	+	+	+	1					
						1	1	1	1	1		 		
					1	1	1	+	+	1		-		
							1		-					
							-	+	-					
					_				-					
								-	1					
							+	1	-	1				
							-	-	-	4				
								-	4	4				
								-						
									-	-				
									-					
									-	-				
					7		-	-	-	4				
							1		-	4				
					1			-	-	3				
							-	-	-	4				
			-			_		_		_				

	Î	
6 115 05 Time Since Last Rain was > 72 Hours: Yes	Days Since Last Rain	Name of receiving water: Yernon Sun
Jerome Date: 6/15/05 Time Si	< 0.1 inches: > 0.1 inches	Township Name of receiving v
Person: Breitmayer, Jero	Quantity of Last Rain: < 0.1 inche	Municipality: Wether frozidence

_	_	-	_		1	_			r —	_	_	
Rating	(0-2)				_	_	0	0				
Describe land use of	upstream drainage	area.			Rec	Rec	8	Say				
Water	Color/Odor	(specify if floatables,	algae or sediment	present)	(lear	Algac	Clear	() ear-				
Flow	Observed	(Уеѕ ог по)			Yes	201	Yer	Sali				
-	Side Slopes*	(V:H)	**		2:3	63.A	8:5	7:1				
	_	Width	(feet)		141	199	lin'ı	10;				
Channel	Depth				2 /	, h	10	. × ·				
	flow in pipe	(feet)		ř	1. S.	151	,	٠٤.				
					30 "1	LINGP 36'BR	30×3	" 4h				
	(00:00)				1:00 Pm	LINSP	1 30 P					
		20	Not	sure	V es	Yes	Z S	765	-			
Photo	#				Ner.	Ven Y	Ven 3	Ven'l	-			
	Swale	#			<u></u>	43	5	VH				

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling,

blocked catch basins or drain)

H/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel



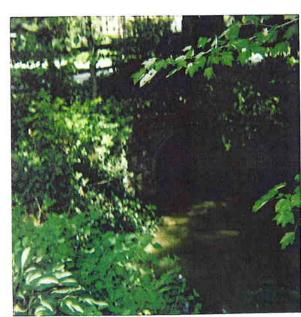
Verna 2 - Dentis Lane Twin 36" corregated, V-2



Vern 1 Sapovit & Rak
30" V-1



Vern 3 - Twin 30" - Highland wall, AUC.



Vernony - 42" concrete
Possum Hollow + Fox W-4

	7+9	
Time Since Last Rain was > 72 Hours: Yes_	Days Since Last Rain	Dicks Run
Leconse Date: 6/16/05 Time Since La	Quantity of Last Rain: < 0.1 inches: > 0.1 inches	Providence Two Name of receiving water:
Person: Breitmayer	Quantity o	Municipality: Nether

			_	_		_						-	
Rating	(0-2)					0	0	0	0	Ŷ	0	0	0
Describe land use of	upstream drainage	агеа.				Res	Res	Res	Res	Res	Res	Res	Res
Water	Color/Odor	(specify if floatables,	algae or sediment	present)		NIA	Clear	NA	NIA	M M	Clear	יזין ועי	Clear
	Observed	(Yes or no)				No	Ves	NO	No	0/v	485	·WD	Ves
	Side Slopes*	(V:H)	v			#: F	4.3	5:3	1:4	12 :3	Mr. 3	7:1	15.
	_	Width	(feet)			18	3-1	1.0	121	ון ו	4	i &	is
	Depth					, h	18	6'	6,	3	6 3	, Ь	te co
	flow in pipe	(feet)		20		0	to	0	0	.0	, 1	0	્ર
Pipe	Diameter	(inches)				74,48"	30 "x2	1811	181	18 11	11.81	1.81	1.81
	(00:00)	ат/рт				3:15 P 24!	2:300	9.40P	7:30A	7:45 A	7.4579	8,000	81570 A
Storm	Drain? (Yes/No	Not	surc		多在了	998	Yes	Yes	You	Yes	5	Yes
Photo	≠ t:				•.	ta	03	hQ.	20	26	07	28	19
Pipe	Swale	3ts			DI	23	13	h C	-75	9	26	23	P 9

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no crosion or sediment, pipe in good tepair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling,

blocked catch basins or drain)

H/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

	I	
7	7	
Time Since Last Rain was \geq 72 Hours: Yes	Days Since Last Rain	Dicks Run
Since Las		Mame of receiving water:
Date: 6 1 1	tes: > 0.1 inches	Two · Nar
-ecome	Quantity of Last Rain: < 0.1 inches: > 0.1 inches	Providence
Breitmaye.	Quantity of La	v. Methor
Person:		Municipality:

Describe land use of Rating	upstream drainage (0-2)					Ses O	65 0	Res 0 Res 0 Res 0					2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
Describe 1		loatables, area.	iment		2				4	1		4 4 4 4	
v Water	Observed Color/Odor	(Yes or no) (specify if floatables,	algae or sediment	present)	NO NI		wo we	. " "	2	2	3		
Channel Flow	Side Slopes* Obse	(Yes			4,3 A		5.8 1	5:8 1	5.8	3:5	00 V.Cb		
Channel	Bottom	Width	(feet)		17,		101	5.6	101	19-19-19-19-19-19-19-19-19-19-19-19-19-1	0446	0 4446	00000000
Channel	Depth				19		- -	0	6-1	10,	4.00	07000	20-2-5-6-6-8-8-8-8-8-8-8-8-8-8-8-8-8-8-8-8-8
Depth of	flow in pipe	(feet)		£	0		0	0 4	0,00	000	0,000 4	040040	0400500
Pipe	Diameter	(inches)			18 11		181	36.1	36.1	36.1	36.1 10.1 15.01 N/A	1 7 1 1 1	1 7 1 1 1
Тіте	(00:00)	am/pm			9:30A		1030A	10:30A	10:30A 10:46A	10:30A 10:46A 10:45A	10:30A 10:46A 11:05A 11:05A	10:30A 10:40A 11:00A 11:00A	10:30A 10:40A 11:00A 11:05A 11:15A
Storm	Drain?	Yes/No	Not	sure	1/25		Yes	Yes	Yes Yes	yes yes	Yes Yes Ves Nos	Yes Yes	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
Photo	*				010		Dil					D 13	11 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Pipe	Swale	#±			210		Ď	Dig Dig	DI3	DIS PIS	D 14	110 110 110	PHA PHA

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

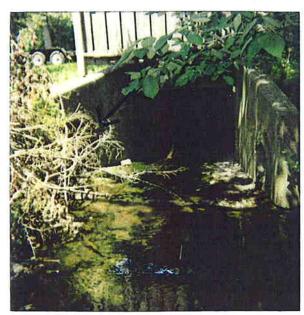
1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling,

blocked catch basins or drain)

H/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel



Digwood @ Plush Mill . Dicks Run D-3



D5 - From Green Valley To concrete swant to Dicks Run



From Knoll to Dicks Ron D4 - 18" concrete



D7 - Possoreth Now to Dicks Run - Frain Station



D6 - Possym HoMow Fo Dicks Run - Stain & Station



D9 - Avondale @ Cricket To Dicks Ron

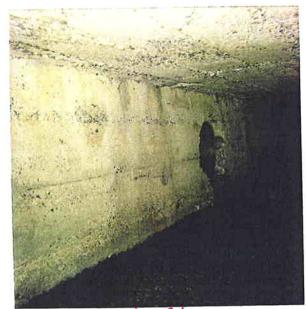


From Knoll@ Turner to Picks Run. D8

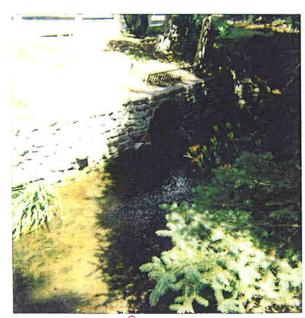




DIO - Sykes Cul De Sac To Dicks Run



under Avandale Rd @ 6moll to Dicks from D 13



Avondarle @ Kershawl to Dicks Run D 12



D15 - Copples @ Hundale Storm Drain Lurb Swail. Entering Dicks Run



DIY - Col De Secof KNOLL ed to Dicks Run



D17 - Averbale Dendof conserver sidewalk with Blue Route overhead to Diebs Run



DIG Avandale @ entrance of Leaf Site entering Dicks Runi



D18 - Avandale just before intersection of Rughley Rosed

1

7	5	
Jos Time Since Last Rain was > 72 Hours: Yes	Days Since Last Rain	Name of receiving water: Loum Ceck
JeronDate: 61:5/05 Tim	Quantity of Last Rain: < 0.1 inches: > 0:1 inches	windence Two Name of receiving
Person: Breitmanger	Quantity of Last	Municipality: Nether Po

_	_		_				-			_	_	
Raling	(0-5)				ଚ	0	Ø	O	0			
Describe land use of	upstream drainage	area.			Res	Res	Pes	Res	Res			
Water	Color/Odor	(specify if floatables,	algae or sediment	present)	M/M	NIA	アル	かりな	rlear	,		
Flow	Observed	(Yes or no)			No	S.C.	NO	מא	yes			
Channel	Side Slopes*	(H:V)	1.		1:1	1:1	NIA		1;1		i i	
Channel	_	Width ((feet)			Š.	n/v	~ ~	, SO			
Channel	Depth				- Ø	 (%)	MA	-00	, 9	e e		
Oepth of	flow in pipe	(feet)			0	0	0	Э	-	÷		
Pipe					1, he	246	27.5	30.1	4811			
Time	(00:00)	ат/рш (11:00 A	11° 10A	0 % 11	Morring	12 11150 A			
Storm	Drain? (Yes/No	Not	sure	1/65	Yes	7 (5)	2	245	-		
Photo	‡±				J	S	3	ָר לין	55			
Pipe	Swale	₹t:			717	67	3	ربر	5			

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

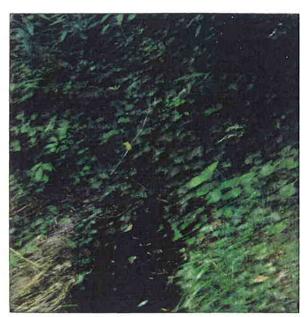
1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

blocked catch basins or drain)

H/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

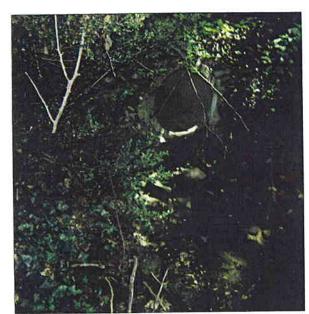
²⁻Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling.



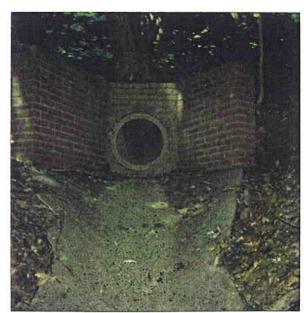
Officially 2 & Crum



DAKUALLEY CHI Coum

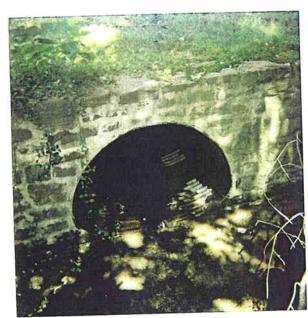


4 (rumm - 817 Park Ridgo to Beechwood 64



ParkRidge #3 crim

Can



5 crvmm - Intersection Hemlock + Pane Ridge C5

Time Since Last Rain was \geq 72 Hours: Yes	Days Since Last Rain 7	er: Brathy Run
Dietonayer Terome Date: 6/17/05	Quantity of Last Rain: < 0.1 inches: > 0.1 inches	cipality: Wether frondence Ju Name of receiving water:
Person:	(<u>-</u> 2	Mum

			-	_					-		
Rating (0-2)			0	0	0	0	0	ð	0	Q	0
Describe land use of upstream drainage	area.		Res	Res	Res	Res	Res	Res	Res	Res	Res
Water Color/Odor	(specify if floatables,	algae or sediment	(lear	CATAL WIR	NIA	MA	RIA	NIM	NiA	(bar	N/A
Flow Observed			MA	Νο	No	No	No	No	0№	CON /A	NO
Channel Side Slopes*		÷	1:1		- ; ;	5:3	1:1		1:1.	1;1	6:3
Channel Bottom		(feet)	124	į	Ц	10	8	8	8		13
Channel Depth			?) ×0	6	(what	٥٠	8	500	8	(Jourt	9
Depth of Ilow in pipe		ă	to 8 0x	Q	to Box	9	Q	0	9	to Box	Q
Pipe Diameter			Direct	13 11	Nich	181	3411	181	1181	Diat	1181
Time (00:00)			710 R	7:159	7:30 K	7:40	8,con	Right R	AGE 8	8 45th	4,00 4
Storm Storm Drain?		Not	705	165	nies	700	1 45	465	163	1/25	Nes
Photo 8			31	53	83	134	85	86	67	88	139
Pipe Swale	#		18	BA	83	मुख	35	36	187	38	3C

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling,

blocked catch basins or drain)

H/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

								-		 -
	Rating (0-2)		O	0	0	2	Ó	0		
	Describe land use of	area.	Res	Res	Res	5	Res	Res		
rs: Yes \checkmark Rain \checkmark	Water	loatables, iment	NA	N 1A	W/A	W/A	N 1 A	WIA		
Days Since Last Rain	Flow	<u> </u>	W.0	NO	WU	N	\$ O	No		
ast Rair	Channel		7:1	1; 6	ر د بر د	1	7.6	7:1	-	
ime Since I	Channel		20	(3)	00	S	13	7)	
Les Name of receiving water:	Channel		0	9	8	00	9	9		
	Depth of		0	0	Q		0	୍ତ		
Co.1 inches: >0		(inches)	OK.	13 E	1181		1281	1121)	
Amayel Gowpa Quantity of Last Rain: < 0.1 inches: N & Mrl Providence Th	Time		9:15M	9:30A	9:40	9:55	H 01 ; 01	10:15		
Suantity of La	Storm		22	745	145	Yes	Yes	165		
13	Photo		air	311	813	BH 314	なろろ	1316		
erson: Br	adic	24 24 25	310	13/11	813	13 14	318	1316		

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no crosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling,

blocked catch basins or drain)

H/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel



Dewey Care - New Development 18" File to Beetty & B2



Taylor Drive-Storm Drain to Box Colvert Beatty Ron



Bowles 12" Pipe



115 Madow - Storm Drain Direct to hox Culvert - Beatty Rin BB3

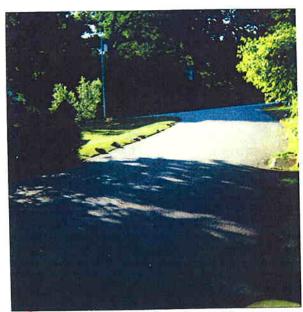
B 4



Beatty 6 "Berkshire to Beatty Rm. B6



620 morris - 2411 To seetle



Beatty 8 - Beatty 1 + 2 join at Devon + eveterford Open storm Box Culvert B8



Beatty 7 - B7 19 Berkshine to Beetty Ron



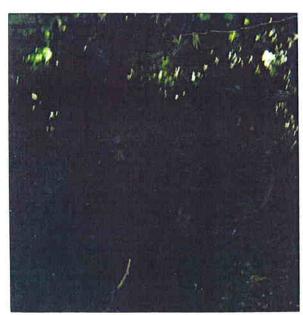
Beatty 16 U Waterford Ewille to Beatty from B10



Boatty 9 - 0 from Waterford way - 240 B-9



Beaffy 12 - Pleasant Hill



Beatty 11 - From Pleasant Hill Rd 809 BII



Beatty 14 - 403 Harrey B14



37 Waterford Way Beatly 13 B13



Beatly 16 - 806 Harvey
240 BIB



Beatty 15 804 Harvey B15

	ŀ	
7	2	
25 Time Since Last Rain was > 72 Hours: Yes	Days Since Last Rain	Beatly flux
6/16/05 Time Since Last	1 inches	Name of receiving water:
Date:	nches: > 0	jan)
Derome	Last Rain: < 0.1 inches: > 0.1 inches	Previdence
Breibnager	2 MS , (Jo)	ucipality: Weth
Person:		Municipal

	_	_	_		,								
Raling	(7-0)				0	O	Q	0		0	0	0	6
JC	upstream dramage	area.			Res	Rrs	Res	Res	Res	Res	Res	Res	RCS
Water Color/Odor	Colot/Odol	(specify if floatables,	algae or sediment	present)	(lear	Head	llear	Clear	Clear	Clear	Mear	(1000	Ma
Flow	-	(Yes or no)			Yes	Val	Yor	705	Ves	Vies	11/25	Yes	00
Channel	obes	(H:V)			A	4	1:1	1:1	1:1	111	111	3:3	MA
Channel C	_	Width ((feet)		10/	100	0	2	9	9	(X)	13	21/4
-	Depin				7	£,	Do	ired 6	Sweetb	0	8 to	\ \dots	Swa. 1
	n pipe	(feet)		ů:	et Dra	rect Dise	4,	Cent D	vert 1	o Culluch	1 Fran	west De	Concepte
Pipe	4	(inches)			Box Collect	Box Cit.	34"	Box Co	Box 6	MANGO	Box Cal	Box (41	1.81
Time		ат/рт			7:15	1,30	7:45	7:50	7:56	2:00	8:30	7:40	>
Storm		Yes/No	Not	sure	15	Nes	1/25	Ves	1/63	1,25	1/1/5	1/05	1/3
Photo					BT 1	818	813	Br 4	BIC	Br 6	B1 7	270	R/ G
Pipe		\$E			87.1	813	873	श्रेप	875	BIG	BT7	218	879

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

²⁼Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling,

blocked catch basins or drain)

H/V = Horizontal to vertical ratio

^{*1:1 =} Vertical - rectangular channel

	7	
7/ox Time Since Last Rain was \geq 72 Hours: Yes	Days Since Last Rain	Beatty Run
17/05 Time Since Last	ches	Name of receiving water:
Date:	Quantity of Last Rain: < 0.1 inches: > 0.1 inches	idence Tup
SILLS (TOKN)	Greentity of Last R.	V. Neyper 1 co
Person:		Municipality:

_				-	_		P - 7		r	_		_	
Raling	(0-5)				0	0	70	0					
Describe land use of	upstream drainage	агеа.			Res	RES	Res	Res					
Water	Color/Odor	(specify if floatables,	algae or sediment	present)	A I W	NIA	Mp	2/13					
Flow	Observed	(Yes or no)			No	No	wa	200					
Channel	opes*	(H:V)			1:1) :1	3.3	5:3			٠		
Channel ((feet)		61	13	ē.	2					
Channel	Depth				4	17	'n	-5					
Depth of (flow in pipe I	(feet)		40	of to	0	A Direct	1200					
Pipe	Diameter	(inches)			Dor (Junt	181	130 Rose (Jlod	Borcale	,				
Time		am/pm			17.mg	12,10	1330	13:36					
		Yes/No	Not	sure	Yes	Yes	Ves	/					
Photo	华				5/10	高	8/18	RIN3 BT 13					
Pipe	Swale	≵ t			DT10 5610	187.11	8112	KINS	3				

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling.

blocked catch basins or drain)

H/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel



300 Fas Filed B+2



Direct to Box Colvert

B+1

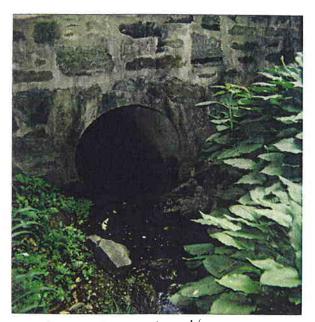


405 Scott LANE



Side YARD OF 300 Fristien

Bry

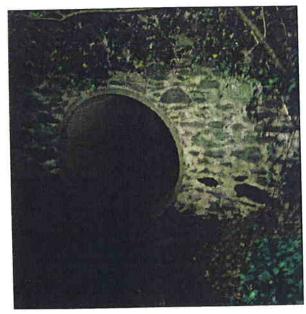


7+6

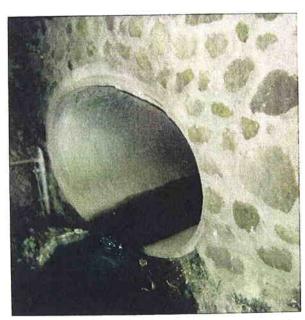
B+6 406 Scott Lane



Pt5 404 Scott LANE



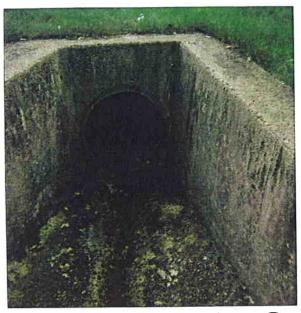
Bt 1008 Georgetown @ sheffield



Bt \$407 Christian Lane Side WARD



FO ROPCUlvert



Bt9 604 Creek side of



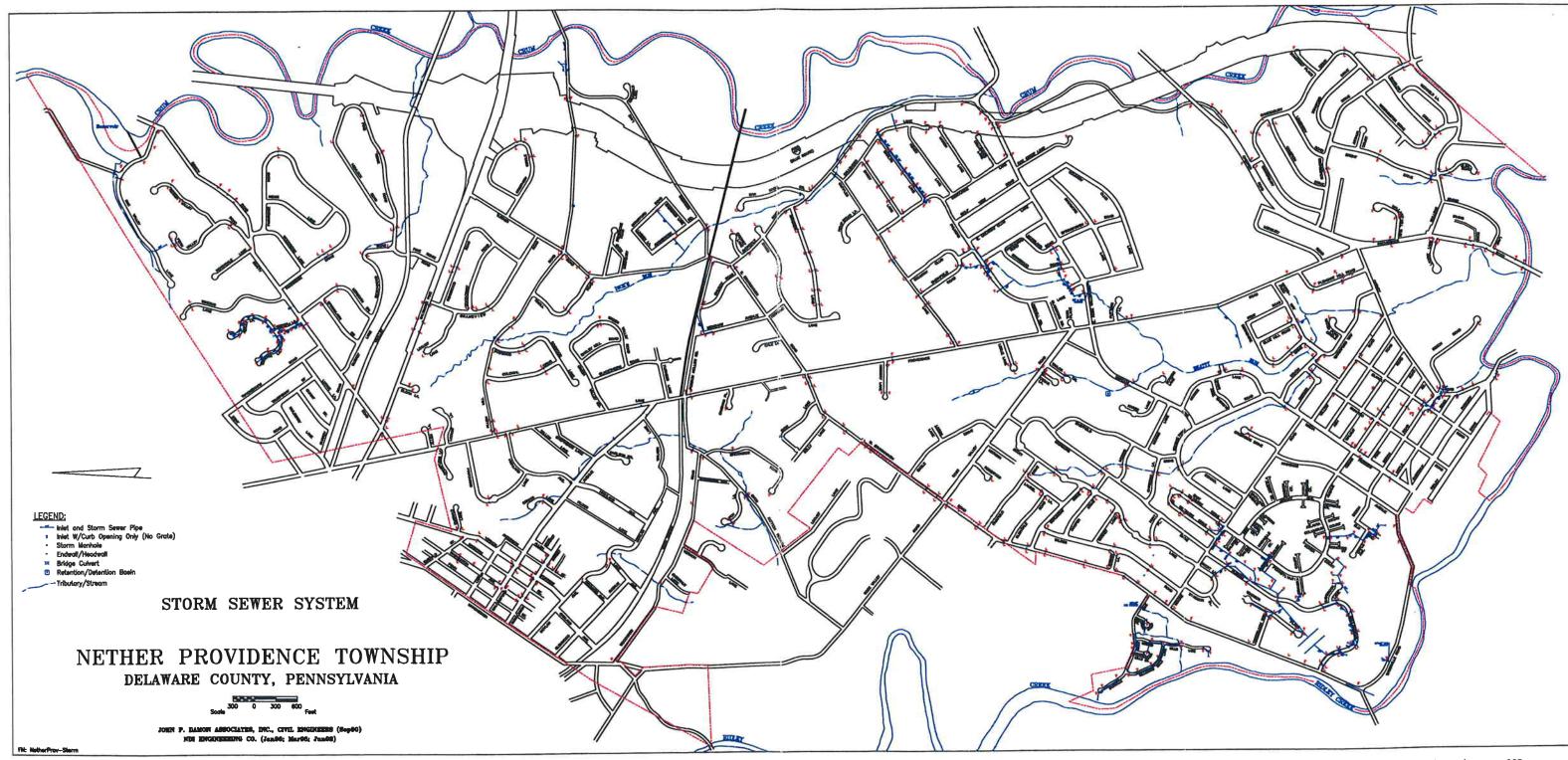
BT12 719 Oxford Direct to Box colvert



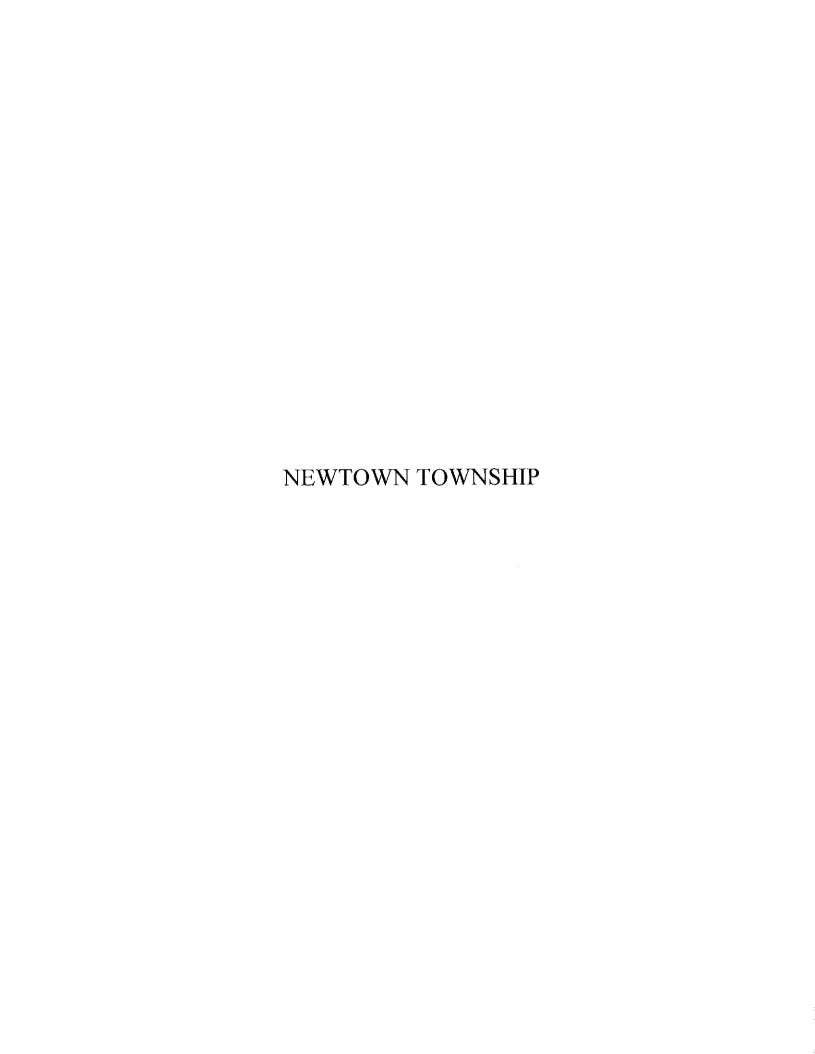
B+ 111



B+ 13 Devon At watterford Direct to Box Colvert



Attachment III



CRUM CREEK WATERSHED ACT 167 STORMWATER MANAGEMENT PLAN

MUNICIPALITY QUESTIONNAIRE

PART I - GENERAL INFORMATION Municipality: Contact Person: WPAC Designee: Title: Address: Phone: Fax: Person Completing form (if different from Contact Person): Name: Address: Phone: Fax: E-mail:

PART II - REGULATORY ACTIVITIES

A. Please indicate the regulations you currently use to manage development.

REGULATION	MUNICIPAL ORDINANCE	COUNTY ORDINANCE
Zoning Ordinance		
Subdivision/Land Development Ordinance		
Separate Stormwater Ordinance	IN DIACCESS	
Separate Floodplain Ordinance	*	

B. Please indicate the agencies/individuals who review and approve land development plans and zoning variance/waiver requests.

	LAND DEVELO	PMENT PLANS	ZONING VARIANCE	
ENTITY	REVIEW	APPROVE	REVIEW	APPROVE
Supervisors		L-/-		-
Municipal				
Engineering			\	
Department				
Municipal				
Planning				
Department				
County Planning			1	
Department				
County				
Conservation				
District				
Zoning Hearing		e.	special exceptions	e vananas
Board				
Consulting				
Engineer				
Others (List				
Below				

landscape engineer V
Please provide copies of your zoning, subdivision/land development, and separate stormwater management and floodplain ordinances and your <u>current zoning map</u> when you return this questionnaire. Please list these documents below. Zoning, land development ordinance, Zoning map
Storm water management ordinance is in progress

PART III - MUNICIPAL AND LOCAL PLANNING ACTIVITIES

Please indicate below whether your community has approved the following plans and maps and the date of the most recent update.

ITEM	APPROVED/DATE	IN PROGRESS	PLANNED WITHIN NEXT YEAR
PA Act 537 Sewage Facilities Plan			
Comprehensive Land Use Plan			
Existing Land Use Maps			
Proposed Land Use Maps			
Zoning Maps	account datax	130 Ch 0110	1011 different

PART IV - FLOOD INSURANCE PROGRAM AND COMPREHENSIVE LAND USE PLAN

Please indicate below whether your community participates in the National Flood Insurance Program:

ITEM	PARTICIPATES (Y/N)
Flood Hazard Boundary Map (FHBM)	У
Participates in FEMA Emergency Program	7
Dortioinatos in FEMA Regular Program	?
•	Waitingto rear from Engineer. Tourship didn't know
	Tourship didn't know

PART V - EXISTING STORMWATER RELATED PROBLEMS AND STRUCTURES

Please complete the matrices on the following pages (Forms A and C-J) to describe any significant stormwater-related problems (Form A), Existing or Proposed Flood Control Projects (Forms C & D), Existing or Proposed Storm Water Control Facilities (Forms E and F), Existing or Proposed Stormwater Collection Systems (Forms G & H), Present and Projected Development in the Flood Hazard Area (Form I), and Water Quality Problem Areas (Form J) that you are aware of in your municipality.

What we would like to ask of you is that you complete as much of the attached data collection forms as possible. There is a different form for each item of information as summarized in the attached "FORM DESCRIPTION SUMMARY. The process would be as follows starting with the problem areas (Form A):

- Place the location of the problem area on the map as shown in the attached example map.
- Draw a box on the map with the problem area identifier starting with A-1 with an arrow leading from the problem area identifier to the problem area.
- Place an A-1 in the first column of FORM A.
- Put a check in each box in the A-1 column that represents the problems associated with that particular problem area.
- Repeat with the next problem area (A-2) and so on.

EXPLANATION LINES

1 Uncontrolled run off from Polan property onto 3 Echo Waltey Properties

2 Township, Brandy wine Conscruency & Township considering options with Polan

3 Crum Creek averflows onto street & property across street

4 Bartrum Bridge property - Road Closes

5 Waterflow obstructed by Goshen Rd.

6 Dublic Rd. - Closes when flooded

7 Standing water creates mold problem, Impervious surfaces impedes infiltration

Newtown (NEW)

worth angle of the control of the co	Flectoride's completed by.
Field work personnel:	Field work personnet:
Type Opening Shape (*) Opening Shape (*) Account Coulvert Bridge T D HT W PW sfew with angle of the count wides of the count of the count wide of the count of the count wide of the count of the cou	Type Opening Principle Opening Openi
Type Shape (*) Measurements Type Shape (*) Measurements Note that the property of the prope	Type Shape (7) Measurements New York Material (NET CONDITION Measurements New York Material (NET CONDITION New York Material (NET CONDITION NEW York NEW
Downer or Andress Of Obstruction Capacity Nos. Part of Cabacit Ca	Type Shape () Measurements Mare Macaulements Macaule
Wasse Figure or Authors of Obstruction Copset Part of Cahent Cahent Energy T D HT W PW Seew Copset Cops	Part of Cohert Bridge T D HT W FW Seew MATERIAL / INLET CONDITION Bridge: Purpose □ O O □ □ M
Wasterface of fasters Control	1
March Marc	
Convoice	1
Control Cont	2 1, 2 - 40 100 100 100 100 100 100 100 100 100
Control Cont	2 1.5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
	21.2
	2.5.5.7.7.7.9.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0
	2 11,5 1
	2 1,5 7 40 MM PAN 2 2,2 2 40 MM PAN 2 3,2 3 40 MM PAN 2 3,2 3 40 MM PAN 2 4,5 7,5 7 40 MM PAN 2 5,5 7 40 MM PAN 2 6,5 7 60 MM PAN 2 7,5 7 70 MM PAN 2 7,5 7
	2.5 2.5
Secretary And	212 22 90 SCONO HAS 213 22 90 SCONO HAS 213 22 90 SCONO HAS 214 25 15 90 SCONO HAS 215 25 - 90 SCONO HAS 215 25 SCONO HAS
	23.2 22
Summing Control Cont	21.2 2.2
Simple Policy P	21.2 2.2 100 RCON HILL MANNEY 1.5 2.5 100 RCON HILL MANNEY 2.6 2.5 100 RCON HILL MANNEY 2.6 2.5 100 RCON HILL MANNEY 2.6 2.5 100 RCON HILL MANNEY 2.7 2.5 100 RCON HILL MANNEY 2.8 2.5 100 RCON HILL MANNEY 2.9 2.5 2.5 100 RCON HILL MANNEY 2.9 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5
State Charles Charle	2
We have a fee bish on both	1.5 1/5 2.5 90 CCN PROPERTY OF THE STATE
Washington Solve Washington	1.5 1/5 90 800 th 1.5 1/5 1/5 1/5 1/5 1/5 1/5 1/5 1/5 1/5 1/
Washington William Small Washington	1.5 1/5
	1.5 2.5 -
2 541 8-15-40 Holling / Strang Holling /	2.5 2.5 7 60 NOW HELD 1.5 S.1 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1
	1.5 2.5 - 60 1500 Hay 10 Say 15 Say 1
15 15 15 15 15 15 15 15	1.5 1.5 1 20 CM 20 M20 M20 M20 M20 M20 M20 M20 M20 M20
Selected (Maharana) Selected	12.5
Abbut 60 / Piretile of Piretile of Post 17:5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2, 2, 5
Additional Printing of 100 Co.	25 25 27 20 CMV 25 25 25 25 25 25 25 25 25 25 25 25 25
36 95 52	20 CMU 11, 12, 12, 13, 14, 15, 15, 15, 17, 17, 17, 17, 17, 17, 17, 17, 17, 17
1 1 1 X	20 CMU SO HE SO THE STATE OF TH
1 - 1	10 CO THE THE CO
000	10 50 th 20 150 150 150 150 150 150 150 150 150 15
,	100 CONT. 100 CO
(3/5)	
5 - 20 7 -	1 2 10 11 2 10 20 11 2
820 50 1 25 1 20 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1	1 2 1

NEW+ON (NEW)

١					2	1000 - 0 IIIVO		מספונים בעוש פסודים וופו								Park Style Tellung		
Winicin (Municipal Stream Obstruction Data				Records completed by:	omplete	d by:	50.00	18000	0		T= Amount of fill	T.		Material		Inlet Conditions	
		2						1.0		į		D- Diameter			many = Stone Masonry Structure	HW = Headwall		
Watersher	Watershed: Com Chelk	20			Field work personnel:	c berson	nel:					HT = Height			CMP « Corrugated Metal Pipe	WW = Wingwall		
Municipali	Municipality/County: A Fundament of States		5 1 5		Date(s): 12/1 -	121	21 - 1	2	0	1		W = Width PW = Pier Width	5		CPP = Corrugated Polyetylene Pipe BCCMP = Bitumincus Costed CMP	SW = Sidewall		
	Camping) -		Č	orinon									RCP = Reinforced Concrete Pipe			
		-	T	۴	Type		Shape (✓)				Measu	Measurements						
Map ID.	Owner or Address Of Obstruction	Capacity	Nos.	Part of	Culvert		Culver	Bridge	⊢E	۵٤	₽€	≥ €	₩.	skew	MATERIAL / INLET CONDITION	7	NOTES	
NEW BLO	87252 /D. JOBE	6	5	phone in the second	and a		×	H			200	\sqcup		0	CANAL LATE			
		1	- 0				7			740	6		ι.	100	JO 1841: 1030	2 ruic	100 100	1
MENT	1 2 2 2 2 1 1 2 1 2 1 2 2 2 2 2 2 2 2 2		-				X		r	2	1	1	1	00	CME AM			
ATT STATE	The Control of the 757					>		-	600	1	u	110	1	0	CORTINUTATION TO SOLVE			
MENT	THEORY NO FE		_	>			H	>	7	J	9	43	1	372	13 11			
MEGSH	A CONTRACTOR OF THE PARTY OF	E 100	- 1		7		7		人	(5)	81			01	C/413 S / S / S / S		THE PERSON NAMED IN COLUMN TWO IS NOT THE PERSON NAMED IN COLUMN TWO I	
W. Carl	S Bredon To Ap Light Wall La		À	10				1		1	5.2	1	1	0	/ CAN			
MENHY	HCMXSS ASSESSED LANG		_	*		1	>	+	x		}	1	1	10	1000100			
		+				#	1	+			1		1					
						#	+	+					L	L				
		-					F	H						Ц				
								H										
		1				#	+	+			1	1	1	1				
		+				+	+	+			1	-	-	1				
						1	Ŧ	+				-	1					
							F	+										
						1		+			1	-	1	1				
		1				1	7	+			1	+	1	1				
					1	1	Ŧ	+			-	-	-					
						F	F	+				-	L					
						F		_										
		-																
							-	+						+				
						1	-	+			1	1	1	1		-		
					1	1	-	+	1	1	1	1	-	+				
						1	-	+		_	-	1	-	-		-		
					-	-	-	-					L					
						-	-	+	1	1	1	+	+			+		
						1	1	-										

						LOOD CO		OJECT FORM C.	SHEET_	OF
	WATERSHE	D	FORM CO	MPLETED	BY			TYPICAL TYPES OF FLOOD C	CONTROL PROJECTS	
	Name: Municipality: County:	neutoun	Name: Telephone: Date:	Toglia & 610 356. 8.30.0	0900		Channel Ex Channel Re Rock Ripra	•	Levee Gabions Pipe Channel	Dams Floodwall Concrete Lining
	For County U	se:								·
	Map ID No.	Type of Flood Control	Project	Year Constr Built	Expected Life Yrs.	Design Frequency Yrs.		Owner N	lame, Address, and Pho	ne
(D)	C- (Culvert		03	7.			Goshen Roll	-	a
(£).	C- 3	Culvert	*	03	7			Boot & Goslen	đ	
(F)	c-3	Rip Rap Storn System	ndein	01					4	
Walls	C-	Blacked dra pipe repair			,			Mar sowmille	Timberlauen - not planned	or approved yet
	C							ū.		

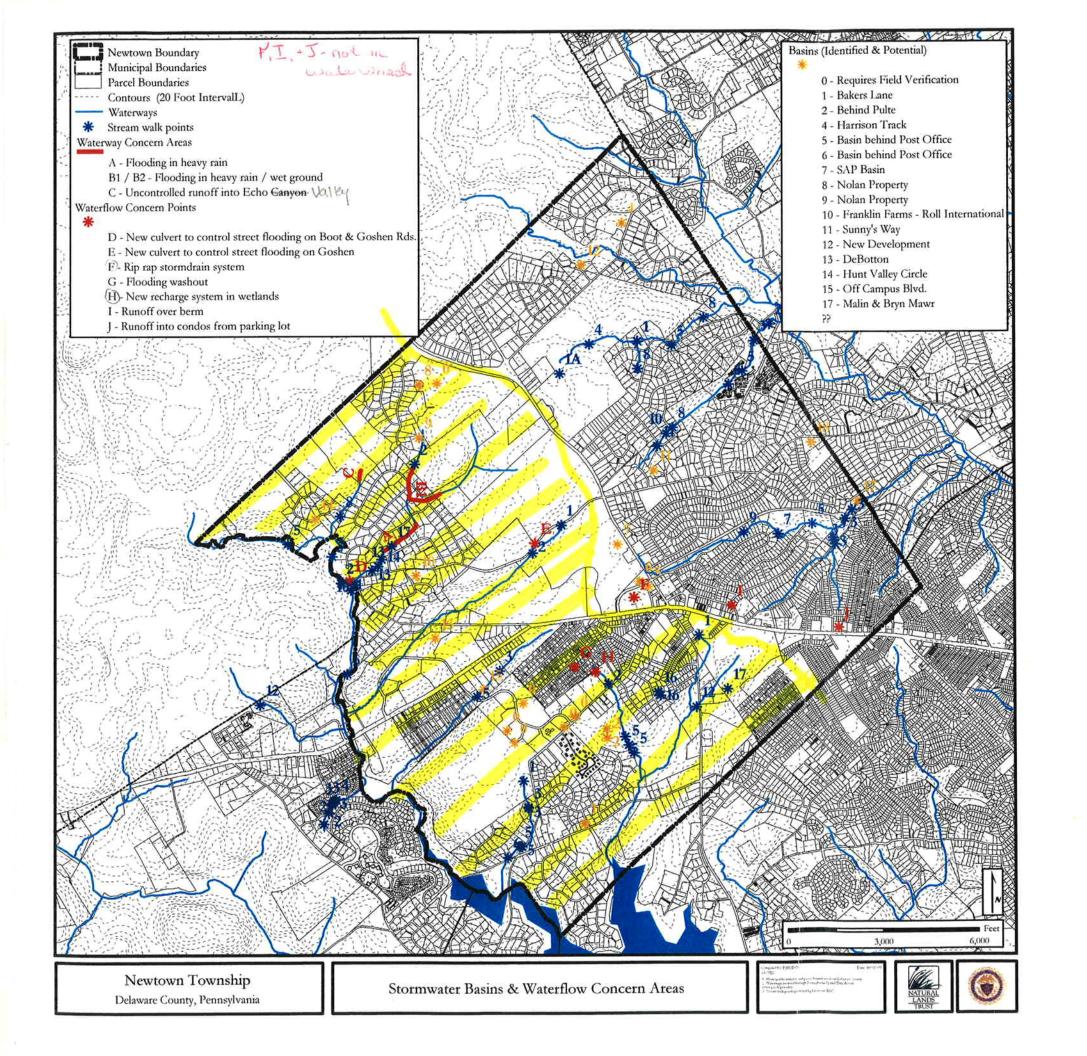
					PROPOSED	FLOOD C	ONTROL P					SHEET OF 1
	WATERSHE	D	I :	MPLETED				TYPICAL	TYPES OF I	FLOOD CO	NTROL PR	OJECTS
	Name: Municipality: County:	Crum Crcek Newtown Delaware	Name: Telephone: Date:	10911a 610 · 35 8·30 · 1	Linda Bower 6,0200 OH		Channel E Channel R Rock Ripra	ealignment	_		Levee Gabions Pipe Chan	Dams Floodwall nel Concrete Lining
	For County L	se:	L	0.1								
Ì	Map ID No.	Type of Flood Control Project	Stud YES Prelim.	dy Phase B Final	egun N0	Year Constr. Planned	Projected Compltn. Date	Expected Life Yrs.	Design Frequency Yrs.		Map ID No. Form A*	Owner Name, Address, and Phone
)	D-	Discharge System into wetlands or		Fillat		05	05	?	115.	C.F.3.	DI	Newtour Heights
	D-	Discharge System into wetlands or approved area adjacent to creck							waltur info.60v engu	y toget nice ver		
	D-											
	D-	*										
	D-											

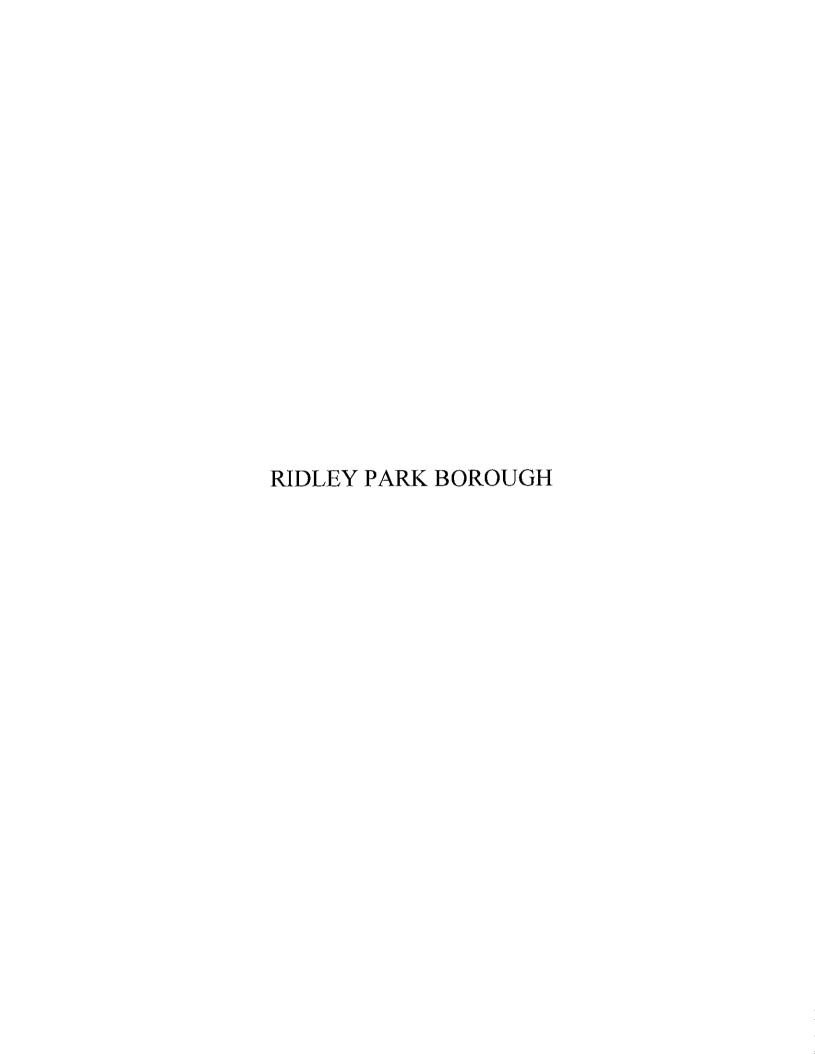
^{*} Enter the storm water problem area's Map ID No., if the proposed project will solve or reduce any / all of an identified drainage problem.

We have not identified water availty Problem areas in our Township

WATER QUALITY PROBLEM AREAS (FORM J)

Watershed Name Municipality County Site: J- Types of Water Quality Problems High Community Tolerance High Temperature High Turbidity Hydrocarbon Pollution Low Community Diversity Low Dissolved Oxygen Low Ph Nutrient Enrichment Poor Habitat Other / Explanation Line No. Potential Causes(s) Agriculture Construction Site Erosion Lake Discharge STP Outfall Other / Explanation Line No. Frequency Year First Known Occurrence Source of Information Streamwatch County Water Quality Study Driveby CCD Complaint Investigation Other / Explanation Line No. Explanation Lines 1.	Watershed 0				rm Comp	leted By	<u>Y</u>	74-1	
Site: J- Types of Water Quality Problems High Community Tolerance High Temperature High Turbidity Hydrocarbon Pollution Low Community Diversity Low Dissolved Oxygen Low pH Nutrient Enrichment Poor Habitat Other / Explanation Line No. Potential Causes(s) Agriculture Construction Site Erosion Lake Discharge STP Outfall Other / Explanation Line No. Frequency Year Most Recent Occurrence Year First Known Occurrence Year First Known Occurrence Source of Information Streamwatch County Water Quality Study Driveby CCD Complaint Investigation Other / Explanation Line No. Explanation Lines 1.	Name Crom Creek						aria	109110	1
Site: J- Types of Water Quality Problems High Community Tolerance High Temperature High Turbidity Hydrocarbon Pollution Low Community Diversity Low Dissolved Oxygen Low pH Nutrient Enrichment Poor Habitat Other / Explanation Line No. Potential Causes(s) Agriculture Construction Site Erosion Lake Discharge STP Outfall Other / Explanation Line No. Frequency Year Most Recent Occurrence Year First Known Occurrence Year First Known Occurrence Source of Information Streamwatch County Water Quality Study Driveby CCD Complaint Investigation Other / Explanation Line No. Explanation Lines 1.	Municipality Newtown Town	ship				61D.	325 48	30	
Site: J- Types of Water Quality Problems High Community Tolerance High Temperature High Turbidity Hydrocarbon Pollution Low Community Diversity Low Dissolved Oxygen Low pH Nutrient Enrichment Poor Habitat Other / Explanation Line No. Potential Causes(s) Agriculture Construction Site Erosion Lake Discharge STP Outfall Other / Explanation Line No. Frequency Year Most Recent Occurrence Year First Known Occurrence Year First Known Occurrence Source of Information Streamwatch County Water Quality Study Driveby CCD Complaint Investigation Other / Explanation Line No. Explanation Lines 1.	County Delaure		_	Da	te	9.1	5.04		
High Community Tolerance High Temperature High Turbidity Hydrocarbon Pollution Low Community Diversity Low Dissolved Oxygen Low pH Nutrient Enrichment Poor Habitat Other / Explanation Line No. Potential Causes(s) Agriculture Construction Site Erosion Lake Discharge STP Outfall Other / Explanation Line No. Frequency Year Most Recent Occurrence Year First Known Occurrence Year First Known Occurrence Source of Information Streamwatch County Water Quality Study Driveby CCD Complaint Investigation Other / Explanation Line No. Explanation Lines 1.			J-	J-	J-	J-	J-	J-	J-
High Temperature High Turbidity Hydrocarbon Pollution Low Community Diversity Low Dissolved Oxygen Low pH Nutrient Enrichment Poor Habitat Other / Explanation Line No. Potential Causes(s) Agriculture Construction Site Erosion Lake Discharge STP Outfall Other / Explanation Line No. Frequency Year Most Recent Occurrence Year First Known Occurrence Source of Information Streamwatch County Water Quality Study Driveby CCD Complaint Investigation Other / Explanation Line No. Explanation Line No. Explanation Lines 1.	Types of Water Quality Problems								
High Turbidity Hydrocarbon Pollution Low Community Diversity Low Dissolved Oxygen Low pH Nutrient Enrichment Poor Habitat Other / Explanation Line No. Potential Causes(s) Agriculture Construction Site Erosion Lake Discharge STP Outfall Other / Explanation Line No. Frequency Year Most Recent Occurrence Year First Known Occurrence Source of Information Streamwatch County Water Quality Study Driveby CCD Complaint Investigation Other / Explanation Line No. Explanation Lines 1.	High Community Tolerance								
Hydrocarbon Pollution Low Community Diversity Low Dissolved Oxygen Low pH Nutrient Enrichment Poor Habitat Other / Explanation Line No. Potential Causes(s) Agriculture Construction Site Erosion Lake Discharge STP Outfall Other / Explanation Line No. Frequency Year Most Recent Occurrence Year First Known Occurrence Source of Information Streamwatch County Water Quality Study Driveby CCD Complaint Investigation Other / Explanation Line No. Explanation Lines 1. Explanation Lines 1.	High Temperature								
Low Community Diversity Low Dissolved Oxygen Low pH Nutrient Enrichment Poor Habitat Other / Explanation Line No. Potential Causes(s) Agriculture Construction Site Erosion Lake Discharge STP Outfall Other / Explanation Line No. Frequency Year Most Recent Occurrence Year First Known Occurrence Source of Information Streamwatch County Water Quality Study Driveby CCD Complaint Investigation Other / Explanation Line No. Explanation Lines 1.	High Turbidity								
Low Dissolved Oxygen Low pH Nutrient Enrichment Poor Habitat Other / Explanation Line No. Potential Causes(s) Agriculture Construction Site Erosion Lake Discharge STP Outfall Other / Explanation Line No. Frequency Year Most Recent Occurrence Year First Known Occurrence Source of Information Streamwatch County Water Quality Study Driveby GCD Complaint Investigation Other / Explanation Line No. Explanation Lines 1.	Hydrocarbon Pollution								
Low pH Nutrient Enrichment Poor Habitat Other / Explanation Line No. Potential Causes(s) Agriculture Construction Site Erosion Lake Discharge STP Outfall Other / Explanation Line No. Frequency Year Most Recent Occurrence Year First Known Occurrence Source of Information Streamwatch County Water Quality Study Driveby CCD Complaint Investigation Other / Explanation Line No. Explanation Lines 1.	Low Community Diversity								
Nutrient Enrichment Poor Habitat Other / Explanation Line No. Potential Causes(s) Agriculture Construction Site Erosion Lake Discharge STP Outfall Other / Explanation Line No. Frequency Year Most Recent Occurrence Year First Known Occurrence Source of Information Streamwatch County Water Quality Study Driveby CCD Complaint Investigation Other / Explanation Line No. Explanation Lines 1.	Low Dissolved Oxygen								
Poor Habitat Other / Explanation Line No. Potential Causes(s) Agriculture Construction Site Erosion Lake Discharge STP Outfall Other / Explanation Line No. Frequency Year Most Recent Occurrence Year First Known Occurrence Source of Information Streamwatch County Water Quality Study Driveby CCD Complaint Investigation Other / Explanation Line No. Explanation Lines 1. County Lines 1. Explanation Lines 1.	Low pH							_	
Other / Explanation Line No. Potential Causes(s) Agriculture Construction Site Erosion Lake Discharge STP Outfall Other / Explanation Line No. Frequency Year Most Recent Occurrence Year First Known Occurrence Source of Information Streamwatch County Water Quality Study Driveby CCD Complaint Investigation Other / Explanation Line No. Explanation Lines 1. —————————————————————————————————	Nutrient Enrichment								
Potential Causes(s) Agriculture Construction Site Erosion Lake Discharge STP Outfall Other / Explanation Line No. Frequency Year Most Recent Occurrence Year First Known Occurrence Source of Information Streamwatch County Water Quality Study Driveby CCD Complaint Investigation Other / Explanation Line No. Explanation Lines 1.									
Potential Causes(s) Agriculture Construction Site Erosion Lake Discharge STP Outfall Other / Explanation Line No. Frequency Year Most Recent Occurrence Year First Known Occurrence Source of Information Streamwatch County Water Quality Study Driveby CCD Complaint Investigation Other / Explanation Line No. Explanation Lines 1.	Other / Explanation Line No.								
Construction Site Erosion Lake Discharge STP Outfall Other / Explanation Line No. Frequency Year Most Recent Occurrence Year First Known Occurrence Source of Information Streamwatch County Water Quality Study Driveby CCD Complaint Investigation Other / Explanation Line No. Explanation Lines 1.									
Erosion Lake Discharge STP Outfall Other / Explanation Line No. Frequency Year Most Recent Occurrence Year First Known Occurrence Source of Information Streamwatch County Water Quality Study Driveby CCD Complaint Investigation Other / Explanation Line No. Explanation Lines 1.	Agriculture								
Erosion Lake Discharge STP Outfall Other / Explanation Line No. Frequency Year Most Recent Occurrence Year First Known Occurrence Source of Information Streamwatch County Water Quality Study Driveby CCD Complaint Investigation Other / Explanation Line No. Explanation Lines 1.	Construction Site								
STP Outfall Other / Explanation Line No. Frequency Year Most Recent Occurrence Year First Known Occurrence Source of Information Streamwatch County Water Quality Study Driveby CCD Complaint Investigation Other / Explanation Line No.									
Other / Explanation Line No. Frequency Year Most Recent Occurrence Year First Known Occurrence Source of Information Streamwatch County Water Quality Study Driveby CCD Complaint Investigation Other / Explanation Line No.	Lake Discharge	ijii							
Frequency Year Most Recent Occurrence Year First Known Occurrence Source of Information Streamwatch County Water Quality Study Driveby CCD Complaint Investigation Other / Explanation Line No.	STP Outfall								
Year Most Recent Occurrence Year First Known Occurrence Source of Information Streamwatch County Water Quality Study Driveby CCD Complaint Investigation Other / Explanation Line No. Explanation Lines 1.	Other / Explanation Line No.								
Year First Known Occurrence Source of Information Streamwatch County Water Quality Study Driveby CCD Complaint Investigation Other / Explanation Line No. Explanation Lines 1.	Frequency								
Source of Information Streamwatch County Water Quality Study Driveby CCD Complaint Investigation Other / Explanation Line No. Explanation Lines 1.	Year Most Recent Occurrence								
Streamwatch County Water Quality Study Driveby CCD Complaint Investigation Other / Explanation Line No. Explanation Lines 1.	Year First Known Occurrence								
County Water Quality Study Driveby CCD Complaint Investigation Other / Explanation Line No. Explanation Lines 1.	Source of Information								
County Water Quality Study Driveby CCD Complaint Investigation Other / Explanation Line No. Explanation Lines 1.	Streamwatch								
CCD Complaint Investigation Other / Explanation Line No. Explanation Lines 1.									
Other / Explanation Line No. Explanation Lines 1.									
Explanation Lines 1.	CCD Complaint Investigation					-			
Explanation Lines 1.	Other / Explanation Line No.	1							
	Explanation Lines								
2.	1.								
	2.								







CATANIA ENGINEERING ASSOCIATES, INC.

Consulting Engineers & Land Surveyors

November 16, 2005 File No. 83600-115-8

Justin D. Kauffman
Environmental Planner
Delaware County Planning Department
Court House & Government Center Building
201 West Front Street
Media, PA 19063

Re:

Borough of Ridley Park

Crum Creek Act 167 Plan

Dear Mr. Kauffman:

Enclosed please find forms A through J completed for the Crum Creek Watershed portion of Ridley Park Borough.

Should you have any questions or comments, please feel free to contact me.

Very truly yours,

Jamie H. Bricker, EIT

James H Bricker

for Catania Engineering Assoc., Inc.

JHB/sjm Enclosures

CC:

Robert Poole

DELAWARE COUNTY PLANNING DEPARTMENT

DCPD

Court House/ Government Center, 201 W. Front St., Media, PA 19063

Office Location: Toal Building, 2nd & Orange Sts., Media, PA 19063

Phone: (610) 891-5200

FAX: (610) 891-5203

E-mail: planning_department@co.delaware.pa.us

		BORTON LAWSON LEHIGH VALLEY OFFICE
TO:	Bill Brokaw	GRB
FROM:	Christopher Gallagher	MAW NOV 3 0 2005 D AGREEMENT
DATE:	11/1/05	PAR El CONTRACT
RE:	Crum Creek Stormwater Manago	ement Plan PROJECT NO

Bill,

Please find attached Forms A through J for Ridley Park Borough.

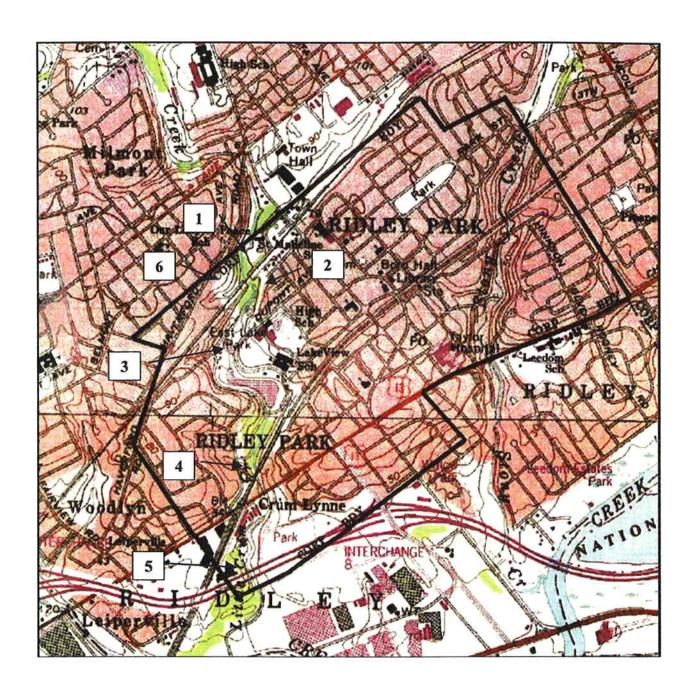
Ridley Park Borough Forms

If you require any additional information, please do not hesitate to contact me at (610)-891-5130.

		FORM A	- STOR	M WAT	ER PRC	BLEM A	AREAS	SI	HEET_	1	_OF	2	-
WATERSHED)		FOR	м со	MPLE	TED B	Υ			_	Form, n Back		
								1366 11	i jou uCl	10115 0	n Daci	•	
Name:	Crum Creek		Name			H. Bri		- 0		11			
Municipality:	Ridley Park B	orough	Telep	hone:	610-5	32-288	34	For C	ounty	Use:			
County:	Delaware		Date:		11/15/	2005							
MAP NO. *		A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
Types of Storm V	Nator Problems	EVOTES	1,2		Elishins)	AUBE						1830 16	
10-	Valer Froblems	X			None and the		Х						
Flooding Accelerated Erosic	DD.	TX	X		X	Х							
Sedimentation	JI1	+^	 ^	X									
Landslide		1		- ^ <u>`</u>									
Groundwater													
Water Pollution		+		X									
	<u> </u>	-	_	<u> </u>			X						
Other (Explain)	I. (O- Deals)	1	2	3	4	5	6	7	8	9	10	11	12
Explanation Line N	vo. (On Back)	LEI HILLS	10.00.07.01	OEKK!		MERCHAN,	5. Ules	JERO C	5364		SERVI	THE CO	Ville E
Cause (s)		X	X		X	X	X		1	PAGE CATALOG			
Storm Water Volu		$+\hat{x}$	^	X	X	X	_^		 	†			
Storm Water Velo		+^	+^	<u> ^</u>	-	_^	_	-	 	 	1	-	
Storm Water Dire		+	-			-			 	_		<u> </u>	
Water Obstruction	1	+^	-					-	-		-	_	+-
Other (Explain)		+	-		-			-	1	-			_
Explanation Line N	No. (On Back)	057300	Bert Servi	Contain	intiles o		27/6/8/20			10570		NO.	No.
Frequency		0005	0005	0005	2005	2005	2005				SHILLS		DISCHA
Year Most Recent		2005		-	2005		?	-	-	-		-	-
Year First Known	Occurred	?	?	?	?	?	2507541	A COLUMN	Mus	15VU29V	133.00	SILE	A SULEME
Regularity		3.6		· ·	halte.	V	V		4000				
More Than 1 Year		<u> </u>	X	X	X	X	X	-		-	+	+	+
Less Than 1 Year								-	-	-	-	-	-
Only During Agne		-	1	90/23-	-	E-100107	V SAMVE		A CONTRACT	(Ottories	i kellatsu	i i Santa	
Duration (If Appl	licable)			Mark.	33454		Miles III						LILE YOU HE
Less Than 1 Day		4			-		-		-	-	-	-	-
1 Day + (Enter Da	ays)	1	1		1	Mark State	1		a santa	U8633755	The Park	STUDIES I	7 II 1400
Property Damag			STATE OF				100		100			GUARTE	1001
Loss of Life/Vital	Services						l	-	-	-	-	-	-
Private		X	X		X	X	X			-	+-		+
More Than One C	Owner	X			X				-	-	-		
Types of Properti	es	R	R		R		R			-	-	-	
Number of Prope	rties		1				1		_	-	-		-
Public (List Types	s)			Rec								-	
Explanation Line	No. (On Back)												and the same
Solutions		Hiller										1000	
Suggested													
Explanation Line	No. (On Back)												-
Formally Propose													-
Explanation Line													
	ID No. if found	d on ar	v othe	r form	listing	propo	sed fa	acilities	s.				

	FORM A - STORM WATER PROBLEM AREAS SHEET 2 OF 2
	EXPLANATION LINES
1	accelerated erosion and periodic flooding at Swim Club upstream of CSX RR culvert
2	accelerated erosion at end of East Rodgers Street
3	sedimentation in sediment basin above East Lake Park
4	accelerated erosion upstream of RR bridge
5	accelerated erosion upstream of I-95
6	flooding public safety issues
7	
8	
9	
10	
11	
12	
	196

RIDLEY PARK BOROUGH



REGUL PORK

							1	-						0	1
				FOR	FORM B - OBSTRUCTION DATA COLLECTION	TRUCTIC	N DATAK	COLLECTI	NO						OF ()
Municipal Stream Obstruction Data	ıta			Records completed by:	mpleted by	Brian		0 0		T. Amount of fill	=		Material	Inlet Conditions	lens
A constant				- John Mary	-losacoac	, ,	- 1			De Diameter		T d	mary = Stone Masonry Structure	HW = Headwall	
Watershed: (7.0%)	,			ried work personnier.		12/20/82	3 2			W- Width		5 8	CPP = Corrugated Polyethylene Pipe	SW = Sidewall	
Municipality/County: Kill ey Park/ Delawork	7.77	3	20	Date(s): ' 1/ /		2/2	1	1		PW = Pler Width	£	8 5	BCCMP = Bluminous Coated CMP RCP = Rainforced Concrete Pipe		
				Ope	Opening	Shape (<)	+		Measurements	ements		გ	SP = Steet Pipe		
Map ID. Owner or Address Of Obstruction	Capacity	Nos.	Part of	Julvert	Culvert	Bridge		Δ €	토	× €	W (#		MATERIAL / INLET CONDITION	NOTES	s.
Real Riding the pond	(616)	5	a a a a a a a a a a a a a a a a a a a			11	17	Щ	13.5	-	++	2	Conereds .		
												\dagger			
					1						1	+			
							$\ $					\parallel			
						1	-					+			
						+	-					1			
						Ħ	\parallel								
						#	1	1							
						+	-	-							
												H			
						1		1				†			
								-			1	+			
									_						
						1	+	-	1						
						-		-							
						+		1	1						
						+		-	-			1			
						T	-								
					1	1	+	+	1			1			
						+	+	-	-			T			
						F									
					-	1	+	-	1	1		1			
						1	$\frac{1}{2}$	-				1			

				EXISTING I	FLOOD COI	NTROL PRO	DJECT FORM C.	SHEET	1	OF_	1
WATERSHE	D	FORM CO	MPLETED BY				TYPICAL TYPES OF FLOOD C	ONTROL PROJECTS			
Name: Municipality: County:	Crum Creek Ridley Park Borough Delaware	Name: Telephone: Date:	Jamie H. Brid 610-532-288 11/15/2005		1	Channel Ex Channel Rock Ripra	•	Levee Gabions Pipe Channel	Dams Floodwa Concret		
For County U	Jse:		****								
Map ID No.	Type of Flood Contro	ol Project	Year Constr Built	Expected Life Yrs.	Design Frequency Yrs.	Flood Discharge C.F.S. (if known)	l	ame, Address, and Ph	one		
C-1	East Lake Park Dam	rehab	1960 (?) 1994	100	N/A	N/A	Robert Poole (610) 532-21 105 E. Ward Street, Ridley Park				
C-2	East Lake Park Lake Bank Stabilization	(rip rap)	1999	10	N/A	N/A	Robert Poole (610) 532-21 105 E. Ward Street, Ridley Park				
C-3	East Lake Park Debris & Sediment Rem	oval	1999 2003 2004	5	N/A	N/A	Robert Poole (610) 532-21 105 E. Ward Street, Ridley Park				
C-4	Hillside Road Bank Stab & Channel Deflectors	ilization	2000	10	N/A	N/A	Robert Poole (610) 532-21 105 E. Ward Street, Ridley Park				
C-											*

				PROPOSED	FLOOD CO	ONTROL PE	ROJECT FO	DRM D.			SHEET	1	OF_	1
WATERSHE	D	FORM CO	MPLETED BY				TYPICAL 1	TYPES OF F	LOOD CO	NTROL PR	OJECTS			
Name: Municipality: County:	Crum Creek Ridley Park Borough Delaware	Name: Telephone: Date:	Jamie H. Brid 610-532-288 11/15/2005			Channel Ex Channel Re Rock Ripra	ealignment	_		Levee Gabions Pipe Chan	nel	Dams Floodwa Concrete		
For County U	Jse:	1												
Map ID No.	Type of Flood Control Project	Stu YES Prelim.	dy Phase Beg	N0	Year Constr. Planned	Projected Compltn. Date	Expected Life Yrs.	Design Frequency Yrs.	Flood Discharge C.F.S.	Map ID No. Form A*	Owner	Name, Ad	ldress, a	nd Phone
D-1	East Lake Park Debris & Sediment Removal		Х		2005	N/A				3	Robert Po 105 E. Wa		610) 532 Ridley P	-2100 Park, PA 19078
D-														
D-									×					
D-														
D-														

^{*} Enter the storm water problem area's Map ID No., if the proposed project will solve or reduce any / all of an identified drainage problem.

FORM E

	X X X X X X X X X X X X X X X X X X X			EXISTING S	STORM WATER CONTROL FACILITIES FORM E.	SHEET 1 OF 1
VATERSHE	D	FORM CO	MPLETED	BY		NITION
Name:	Crum Creek		Jamie H. B 610-532-28 8/17/2004		Storm Water Control Facility A natural / man-made device utilized to reduce the rate ar from a site or sites.	e or structure specifically designed and / or od / or volume of storm water runoff
or County L	Jse:	-dh-				
Map ID No.	Type of Storm Wa		Year Built		Contact Person Name, Address and Phone	Comments
E-1	Rodgers Street Storage Structure		1995		e (610) 532-2100 I Street, Ridley Park, PA 19078	72" CMP underground storage pipes
E-2	Kings Court Retention Basin		?	Homeowner	s Association	
E-						
E-						
E						
E-						
E-						
E-						
Detention / F	Retention Basin	TYPICAL T	YPES OF S	TORM WATE	ER CONTROL FACILITIES Roof-Top Storag	ge
Natural Pond	d or Wetland				Semi-Pervious F	Paving
Parking Lot F	Pondling				Infiltration Devic Recharge Basin	e (Seepage / or Underground Tank)

				PROPOSED	STORM W	ATER CONTROL FACILITIES FORM F.	SHEET <u>1</u> OF <u>1</u>
WATERSHE	:D	FORM CO	MPLETED BY			DEFINITION	ON
						Storm Water Control Facility	t t collection dead for
Name:	Crum Creek	Name:	Jamie H. Brid				structure specifically designed and / or
Municipality:			610-532-288	4		utilized to reduce the rate and / o	r volume of storm water runoff
County:	Delaware	Date:	11/15/2005			from a site or sites.	
For County (Jse:						
Map ID No.	Type of Storm Water		Proposed C	onstr. Date	Map No.	Contact Person	Comments
Map 12 Tto:	Control Facility		Start	End	Form A*	Name, Address and Phone	
F-	There are NO proposed control facilities within the of Ridley Park				*		
F-							
F-							
F-0							
F-							
F-							*
F-				VI.			
F-							
* Enter the s	I stormwater problem area's	Map ID No.,	if the propose YPES OF STO	ed project wil	solve or red	duce and / all of an identified drainage proble	em.
Detention / F	Retention Basin	I YPICAL I	17E3 UF 310		CONTROL	Roof-Top Storage	
Natural Pon	d or Wetland					Semi-Pervious Pavin	g
Parking Lot	Pondling					Infiltration Device (Se Recharge Basin or U	

					EXISTING	STORMWA	TER COLLE		STEM FORM			SHEET	1 OF <u>13</u>
NATERSH	ED		FORM COM	PLETED BY					NSTRUCTION				
						Diagram ea	ch system o	n the appro	oriate map. Es	stablish ma _l	points to sh	now changes in system	elements,
Name:	Crum Creek		Name:	Jamie H. Br	icker	pipe size, or	pipe directi	on. (lf unkno	own, outline th	ne system e	xtent.) Comp	lete this form only whe	ere specific
Municipality	Ridley Park	Borough	Telephone:	610-532-288	34	information	on construc	tion is availa	ible. Use a se	parate form	for each sys	stem. Identify the points	s within a
County:	Delaware	-	Date:	11/15/2005		system cons	secutively (e	x. G-1, G-2	G-3). Start tl	he first poin	t in each add	litional system 20 num	bers higher.
•			_			For example	e, G-3 ends	one system	, so G-23 beg	ins the next	. See Samp	le Diagrams & Form o	n Reverse.
Ma	ap ID	Sys	stem's Elemen	ts (x)		Measure					Design		Name of Final
	No.				Pipe		nannel / Swa		Material	Year	Data	Contact Person	Ownership and
From	То	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
G-1	G-2	X			24"				HDPE	2001	Y	Robert Poole 610-532-2100	Ridley Park Borough
3-2	G-3	X			24"				HDPE	2001	Y	Robert Poole 610-532-2101	Ridley Park Borough
G-3	G-4	X			24"				HDPE	2001	Y	Robert Poole 610-532-2102	Ridley Park Borough
G-4	G-5	X			18"				HDPE	2001	Υ	Robert Poole 610-532-2103	Ridley Park Borough
G-4	G-6	X			18"				HDPE	2001	Y	Robert Poole 610-532-2104	Ridley Park Borough
			-	1									
G-26	G-27	X	T		?								Penn Dot
				L.									
G-47	G-48	X			?						N	Robert Poole 610-532-2104	Ridley Park Borough
										-	N	Robert Poole	Ridley Park Borough
G-48	G-49	×			?							610-532-2105	
G-48	G-50	X			?						N	Robert Poole 610-532-2106	Ridley Park Borough

					EXISTING	STORMWA	TER COLL	ECTION SY	STEM FORM	G.		SHEET_	<u>2</u> OF	13
WATERSH	IED.		FORM COM	PLETED BY				11	ISTRUCTION	18				
			1			Diagram eac	ch system o	on the appro	priate map. E	stablish ma	p points to s	how changes in syster	n elements	,
Name:	Crum Creek	(Name:	Jamie H. Bri	cker	pipe size, or	pipe direct	ion. (If unkn	own, outline t	he system (extent.) Com	plete this form only wi	here specifi	С
	y: Ridley Park		Telephone:	610-532-288	34	Information	on construc	tion is avail	able. Use a se	eparate forr	n for each sy	stem. Identify the poir	nts within a	
County:	Delaware		Date:	11/15/2005		system cons	ecutively (ex. G-1, G-2	, G-3). Start	the first poi	nt in each ac	dditional system 20 nu	mbers high	er.
		1881				For example	, G-3 ends	one system	, so G-23 beg	jins the nex	t. See Sam	ple Diagrams & Form	on Reverse	
M	lap ID	Svs	stem's Elemen	ts (x)		Measure					Design		Nan	ne of Final
	No.	1		,	Pipe	Ch	annel / Swa	ale	Material	Year	Data	Contact Person		ership and
From	То	Pipe	Open Channel	Swale	Ď	TW	В	Depth		Constr.	Available	Name and Phone		ce Responsibility
G-70	G-71	X									N	Robert Poole	Ridley I	Park Borough
											1	610-532-2100		
G-71	G-72	X									N	Robert Poole	Ridley I	Park Borough
	10.12	1										610-532-2101		
G-72	G-73	X									N	Robert Poole	Ridley I	Park Borough
0 12	10 10	1		1								610-532-2102		
G-73	G-74	X		*							N	Robert Poole	Ridley	Park Borough
0-70	0 / -	1 ^				1						610-532-2103		
G-74	G-75	X									N	Robert Poole	Ridley	Park Borough
0-14	10-70											610-532-2104		
G-75	G-76	 x 								1	N	Robert Poole	Ridley	Park Borough
0 10	0 10								= ==			610-532-2105		
G-75	G-77	X	 								N	Robert Poole	Ridley	Park Borough
0-73	10-77										1	610-532-2106		
G-75	G-78	 x	-								N	Robert Poole	Ridley	Park Borough
0-13	0-70											610-532-2107		
G-78	G-79	X									N	Robert Poole	Ridley	Park Borough
G-70	0-73	^										610-532-2108		
G-79	G-80	X									N	Robert Poole	Ridley	Park Borough
U-1 0	10-00					1			l			610-532-2109		
G-78	G-81	+ x		İ							N	Robert Poole	Ridley	Park Borough
0-70	10-01	^	1									610-532-2110		
G-81	G-82	X			<u> </u>						N	Robert Poole	Ridley	Park Borough
G-01	G-02	^				1						610-532-2111		

					EXISTING	STORMWA	TER COLLE	ECTION SY	STEM FORM	G.		SHEET	3 OF 13
WATERSH	HED		FORM COMP	PLETED BY					NSTRUCTION				
						Diagram ea	ch system o	n the appro	priate map. Es	stablish ma	p points to s	how changes in syster	n elements,
Name:	Crum Creek		Name:	Jamie H. Bri	icker	pipe size, or	pipe direct	ion. (If unkn	own, outline tl	ne system e	extent.) Com	plete this form only wh	nere specific
	y: Ridley Park		Telephone:	610-532-288	34	information	on construc	tion is avail	able. Use a se	parate forn	n for each sy	stem. Identify the poir	nts within a
County:	Delaware			11/15/2005		system cons	secutively (e	ex. G-1, G-2	2, G-3). Start t	the first poi	nt in each ac	dditional system 20 nu	mbers higher.
			1			For example	e, G-3 ends	one system	, so G-23 beg	ins the nex	t. See Sam	ple Diagrams & Form	on Reverse.
N	lap ID	Svs	tem's Element	s (x)		Measure	ements*				Design		Name of Final
	No.			. ,	Pipe	Ch	annel / Swa	ale	Material	Year	Data	Contact Person	Ownership and
From	То	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
G-102	G-103	X			24"						N	Robert Poole	Ridley Park Borough
												610-532-2100	
G-103	G-104	X			18"						N	Robert Poole	Ridley Park Borough
					1		1					610-532-2101	
G-103	G-105	X			24"				RCP		N	Robert Poole	Ridley Park Borough
		11										610-532-2102	
G-105	G-106	X	-		15"						N	Robert Poole	Ridley Park Borough
100												610-532-2103	
G-105	G-107				24"				RCP		N	Robert Poole	Ridley Park Borough
100	10.101			1								610-532-2104	
G-107	G-108	X			12"						N	Robert Poole	Ridley Park Borough
0 101	0.00		11	1			1					610-532-2105	
G-107	G-109	X			24"				RCP		N	Robert Poole	Ridley Park Borough
107	00	/										610-532-2106	
G-109	G-110	X	-		24"						N	Robert Poole	Ridley Park Borough
0 100	0 110	1 /		1				1	i			610-532-2107	
G-110	G-111	X			12"						N	Robert Poole	Ridley Park Borough
				l	1							610-532-2108	
G-110	G-112	 X			24"						N	Robert Poole	Ridley Park Borough
0-110	0 112					1		1				610-532-2109	
G-112	G-113	X				1					N	Robert Poole	Ridley Park Borough
0-112	0-115	^										610-532-2110	
G-113	G-114	 X	-		-						N	Robert Poole	Ridley Park Borough
0-110	13 117					1						610-532-2111	
G-114	G-115	 x									N	Robert Poole	Ridley Park Borough
J3=114	0-110	^		1				1				610-532-2112	

[- column	EXISTING	STORMWA	TER COLL	ECTION SY	STEM FORM	G.		SHEET_	4	OF_	13
WATERSH	IED		FORM COM	PLETED BY		W			ISTRUCTION						
						Diagram ead	ch system o	on the appro	priate map. Es	stablish ma	p points to s	how changes in syste	m eleme	ents,	
Name:	Crum Creek		Name:	Jamie H. Bri	cker	pipe size, or	pipe direct	ion. (If unkn	own, outline th	ne system e	extent.) Com	plete this form only w	here sp	ecific	
I .	y: Ridley Park	Borough	Telephone:	610-532-288	4	information	on construc	tion is avail	able. Use a se	eparate forn	n for each sy	stem. Identify the poi	nts withi	n a	
County:	Delaware		Date:	11/15/2005		system cons	ecutively (ex. G-1, G - 2	2, G-3). Start t	the first poi	nt in each ac	dditional system 20 nu	mbers h	nigher.	
1						For example	e, G-3 ends	one system	, so G-23 beg	ins the nex	t. See Sam	ple Diagrams & Form	on Rev	erse.	
М	ap ID	Sys	stem's Elemen	ts (x)		Measure	ements*				Design		1	Name o	
I .	No.			, ,	Pipe	Ch	annel / Swa	ale	Material	Year	Data	Contact Person	1	Dwn er sh	•
From	То	Pipe	Open Channel	Swale	D	TW B Depth			Constr.	Available	Name and Phone			Responsibility	
G-113	G-116	X									N	Robert Poole	Ridi	ey Parl	k Borough
												610-532-2112			
G-116	G-117	X		1							N	Robert Poole	Ridl	ey Parl	k Borough
		1 ~	1	1								610-532-2113			
G-117	G-118	X									N	Robert Poole	Ridl	ey Parl	k Borough
'''	1.0	^										610-532-2114			

					EXISTING	STORMWA	TER COLLI		STEM FORM			SHEET_	<u>5</u> OF <u>13</u>
WATERSH	HED		FORM COMF	LETED BY				IN	ISTRUCTION	S			
						Diagram ead	ch system o	on the approp	oriate map. Es	stablish ma	p points to s	how changes in systen	n elements,
Name:	Crum Creek	(Jamie H. Bri		pipe size, or	pipe direct	ion. (If unkn	own, outline th	ne system e	extent.) Com	plete this form only wh	nere specific
Municipalit	y: Ridley Park	Borough	4.0	610-532-288	34	information	on construc	tion is availa	able. Use a se	parate forn	n for each sy	stem. Identify the poin	its within a
County:	Delaware		Date:	11/15/2005		system cons	secutively (ex. G-1, G-2	, G-3). Start t	he first poi	nt in each ac	Iditional system 20 nur	nbers nigner.
								one system	, so G-23 beg	ins the nex	t. See Sam	ple Diagrams & Form o	Name of Final
	lap ID	Sys	tem's Element	s (x)		Measure		,	Matarial	V	Design Data	Contact Person	Ownership and
	No.				Pipe		annel / Swa		Material	Year	Available	Name and Phone	Maintenance Responsibility
From	То	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	N	Robert Poole	Ridley Park Borough
G-138	G-139	X			18"						IN .	610-532-2112	
G-139	G-140	X									N	Robert Poole 610-532-2113	Ridley Park Borough
G-140	G-141	X									N	Robert Poole 610-532-2114	Ridley Park Borough
G-141	G-142	X									N	Robert Poole 610-532-2115	Ridley Park Borough
3-162	G-163	X			18"						N	Robert Poole 610-532-2112	Ridley Park Borough
G-163	G-164	X									N	Robert Poole 610-532-2113	Ridley Park Borough
								:		J	-		
G-184	G-185	X			18"	1/6					N	Robert Poole 610-532-2112	Ridley Park Borough
G-185	G-186	X			18"		•				N	Robert Poole 610-532-2113	Ridley Park Borough
G-186	G-187	X									N	Robert Poole 610-532-2114	Ridley Park Borough
G-187	G-188	X									N	Robert Poole 610-532-2115	Ridley Park Borough

		-			EXISTING S	STORMWA	TER COLL	ECTION SY	STEM FORM	l G.		SHEET_	6 OF <u>13</u>
M	lap ID	Sys	stem's Elements	s (x)		Measure					Design		Name of Final
	No.	·			Pipe	Ch	annel / Swa	ale	Material	Year	Data	Contact Person	Ownership and
From	То	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
G-208	G-209	X									N	Robert Poole	Ridley Park Borough
												610-532-2115	
G-229	G-230	T X	T		18"			I			N	Robert Poole	Ridley Park Borough
0 220	200		1 1									610-532-2115	
G-230	G-231	X	1		18"						N	Robert Poole	Ridley Park Borough
												610-532-2116	
G-230	G-232	X									N	Robert Poole	Ridley Park Borough
			1 1		1			1				610-532-2117	
G-232	G-233	X									N	Robert Poole	Ridley Park Borough
												610-532-2118	
		-1	······································				•						
G-253	G-254	T X	T		18" (x2)		1			T	T N	Robert Poole	Ridley Park Borough
G-200	G-254	^			10 (XZ)						1	610-532-2115	_
G-254	G-255	 X			1						N	Robert Poole	Ridley Park Borough
0-204	0-200	1 ^	1								****	610-532-2116	
G-255	G-256	X									N	Robert Poole	Ridley Park Borough
Q 200	0 200											610-532-2117	
G-256	G-257	+ x									N	Robert Poole	Ridley Park Borough
0.200	0 201											610-532-2118	
							*		***************************************	%			
G-277	G-278	T X			18"			Г	<u> </u>		N	Robert Poole	Ridley Park Borough
												610-532-2118	
G-278	G-279	X									N	Robert Poole	Ridley Park Borough
	1	j										610-532-2119	

FORM G (4)

					EXISTING	STORMWA	TER COLL	ECTION SY	STEM FORM	G.		SHEET	7 OF 13
M	Map ID System's Elements (x)					Measure	ements*				Design		Name of Final
No.		-,			Pipe	Ch	Channel / Swale			Year	Data	Contact Person	Ownership and
From	То	Pipe	Open Channel	Swale	D	TW	B Depth			Constr.	Available	Name and Phone	Maintenance Responsibility
G-299	G-300	×									N	Robert Poole 610-532-2118	Ridley Park Borough
G-300	G-301	X									N	Robert Poole 610-532-2119	Ridley Park Borough
G-301	G-302	X									N	Robert Poole 610-532-2120	Ridley Park Borough
G-302	G-303	X									N	Robert Poole 610-532-2121	Ridley Park Borough
G-323	G-324	X			22"						N	Robert Poole 610-532-2118	Ridley Park Borough
G-324	G-325	X									N	Robert Poole 610-532-2119	Ridley Park Borough
G-325	G-326	X									N	Robert Poole 610-532-2120	Ridley Park Borough

					EXISTING	STORMWA	TER COLLI	ECTION SY	STEM FORM	G.		SHEET	88	OF 13	
WATERSHED FORM COMPLETED BY					INSTRUCTIONS Diagram each system on the appropriate map. Establish map points to show changes in system elements,										
Name:	Crum Creek	<	Name:	Jamie H. Bri	cker	pipe size, or pipe direction. (If unknown, outline the system extent.) Complete this form only where specific									
Municipalit	y: Ridley Park	Borough	Telephone: 610-532-2884			information on construction is available. Use a separate form for each system. Identify the points within a									
County:	Delaware		Date: 11/15/2005			system consecutively (ex. G-1, G-2, G-3). Start the first point in each additional system 20 numbers higher. For example, G-3 ends one system, so G-23 begins the next. See Sample Diagrams & Form on Reverse.								ngner.	
								one system	, so G-23 begi	ins the nex	t. See Sam	pie Diagrams & Form o	JII Keve	Name of Final	
M	lap ID	Sys	stem's Elements (x)			Measurements*			Material	Year	Design Data	Contact Person Name and Phone		Ownership and	
No.					Pipe	Channel / Swale		Maintenance Responsibility							
From	То	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Robert Poole		ey Park Boroug	
G-346	G-347	X									N	610-532-2118			
G-347	G-348	X									N	Robert Poole 610-532-2119	Ridle	ey Park Boroug	
G-368 G-369	G-369 G-370	X									N N	610-532-2118 Robert Poole 610-532-2119	Ridl	ey Park Boroug	
								1			I N	Robert Poole	Ridl	ey Park Borouç	
G-390	G-391	X										610-532-2118			
G-391	G-392	Х									Ņ	Robert Poole 610-532-2119		ley Park Boroug	
G-392	G-393	X									N	Robert Poole 610-532-2120		ley Park Borou	
G-391	G-394	X									N	Robert Poole 610-532-2121		ley Park Borouç	
G-394	G-395	X									N	Robert Poole 610-532-2122		ley Park Borouç	
G-395	G-396	X									N	Robert Poole 610-532-2123	Rid	ley Park Borou	

					EXISTING			ECTION SY	STEM FORM	G.	I B. J. I	SHEET_	9 OF 13 Name of Final
Map ID No.		System's Elements (x)			Measurements*				50000 00 N 00	1000	Design	0 1 1 5	
					Pipe Channel / S		annel / Sw		Material	Year	Data	Contact Person	Ownership and
From	То	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
G-416	G-417	X									N	Robert Poole	Ridley Park Borough
		10000			1							610-532-2118	
G-417	G-418	X									N	Robert Poole	Ridley Park Borough
0-417	0-410	^			1 1							610-532-2119	
G-438	G-439	X									N	Robert Poole 610-532-2118	Ridley Park Borough
G-459	G-460	T X			T 1			1		T	N	Robert Poole	Ridley Park Borough
0-400	10 400	1 ^										610-532-2118	
G-460	G-461		1 x								N	Robert Poole	Ridley Park Borough
0-400	0 401	N.	, n									610-532-2119	
G-461	G-462	+ x									N	Robert Poole	Ridley Park Borough
G-401	0-402	_ ^	1 1									610-532-2120	
G-462	G-463	1	1 x								N	Robert Poole	Ridley Park Borough
G- 4 02	3-400		^					1				610-532-2121	
G-463	G-464	X						1			N	Robert Poole	Ridley Park Borough
			1				1	1			1	610-532-2122	II.

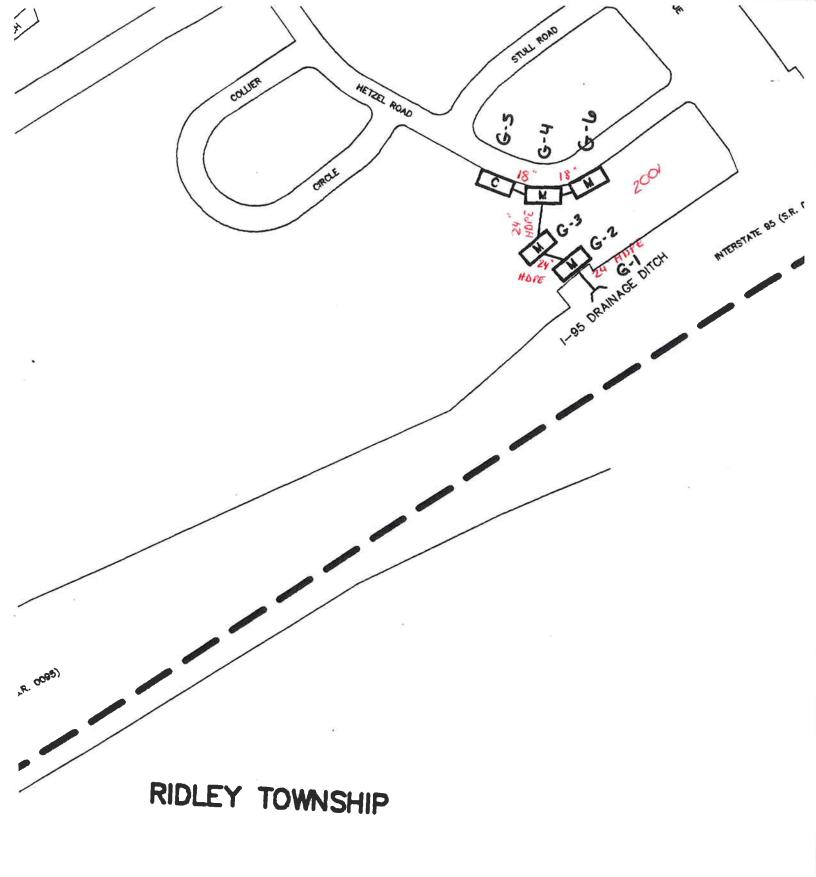
					EXISTING	STORMWA	TER COLL	ECTION SY	STEM FORM	G.		SHEET	10OF	13
WATERSH	IED		FORM COM	PLETED BY					NSTRUCTION					
	· 					Diagram ea	ch system o	on the appro	priate map. E	stablish ma	p points to s	how changes in systen	n elements,	
Name:	Crum Creek		Name:	Jamie H. Br	icker	pipe size, or	r pipe direct	tion. (If unkn	own, outline the	he system e	extent.) Com	iplete this form only wh	nere specific	
	y: Ridley Park		Telephone:	610-532-288	34	Tinformation	on construc	ction is avail	able. Use a se	eparate forn	n for each sy	stem. Identify the poir	nts within a	
County:	Delaware		Date:	11/15/2005		system cons	secutively (ex. G-1, G-2	2, G-3). Start	the first poi	nt in each ac	dditional system 20 nur	mbers higher.	
,			1			For example	e, G-3 ends	one system	, so G-23 beg	ins the nex	t. See Sam	ple Diagrams & Form o	on Reverse.	Several 15
М	ap ID	Sys	tem's Elemen	its (x)		Measure				1	Design		Name	of Final
1	No.			. ,	Pipe	Ch	nannel / Sw	ale	Material	Year	Data	Contact Person	Owners	•
From	То	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name and Phone		Responsibility
G-484	G-485	X			24"				CPP		Y	Robert Poole	Ridley Pa	rk Borough
												610-532-2118		
G-485	G-486	X			24"				CPP		Y	Robert Poole	Ridley Pa	rk Borough
					1							610-532-2119		
G-486	G-487	X			36"				CPP		Υ	Robert Poole	Ridley Pa	rk Borough
			1									610-532-2120		
G-487	G-488	X			36"				CPP		Y	Robert Poole	Ridley Pa	rk Borough
												610-532-2121		
G-488	G-489	X							CPP		Υ	Robert Poole	Ridley Pa	rk Borough
				1								610-532-2122		
G-488	G-490	X			30"				CPP		Y	Robert Poole	Ridley Pa	rk Borough
	1											610-532-2123		
G-490	G-491	X			-				CPP		Y	Robert Poole	Ridley Pa	rk Borough
			1	1	ľ							610-532-2124		
G-491	G-492	X			24"				CPP		Ä	Robert Poole	Ridley Pa	rk Borough
										1		610-532-2125		
G-492	G-493	X			18"				CPP		Y	Robert Poole	Ridley Pa	rk Borough
												610-532-2126		
G-493	G-494	X			15"				CPP		Υ	Robert Poole	Ridley Pa	rk Borough
	1											610-532-2127		
G-493	G-495	X			15"				CPP		Y	Robert Poole	Ridley Pa	rk Borough
							1					610-532-2128		

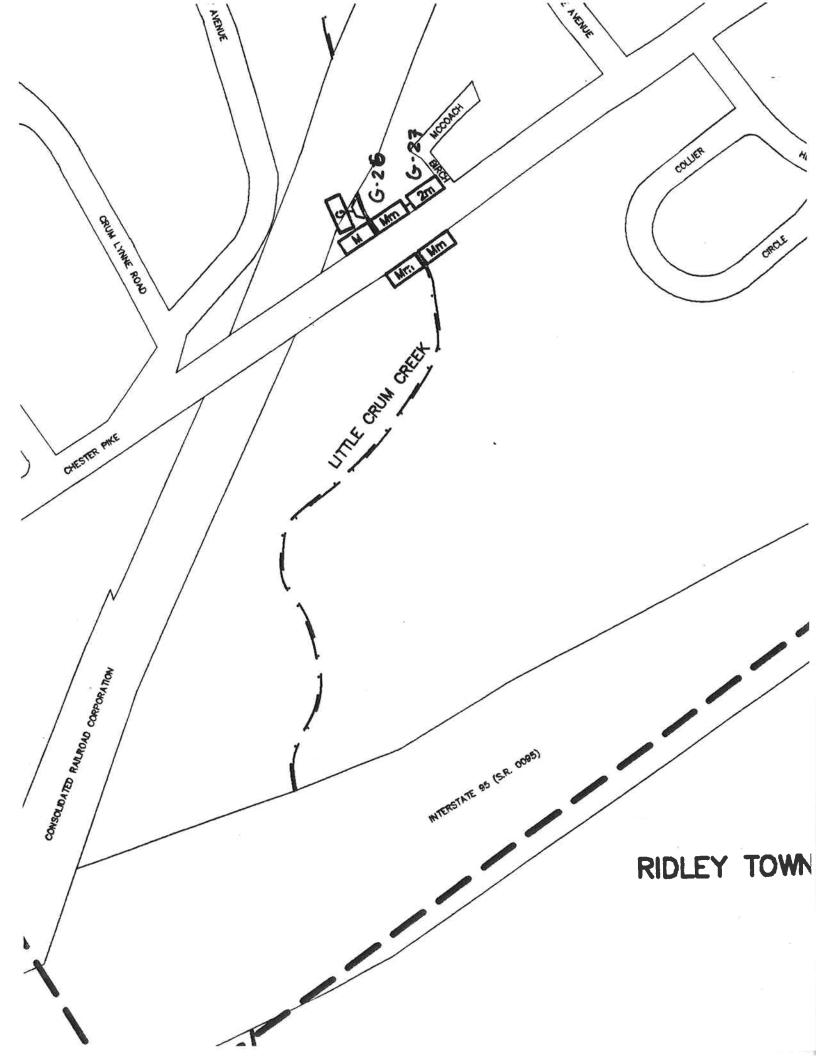
					EXISTING	STORMWA	TER COLL		STEM FORM			SHEET	11OF	13
WATERSI	HED		FORM COMP	PLETED BY				11	ISTRUCTION	IS				
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						Diagram ea	ch system	on the appro	priate map. E	stablish ma	p points to s	how changes in systen	n elements,	
Name:	Crum Creek		Name:	Jamie H. Bri	cker	nine size. o	nipe direc	tion. (If unkn	own, outline the	he system e	extent.) Com	plete this form only wh	nere specific	
	ty: Ridley Park		EL :	610-532-288		1 information	on construe	ction is avail	able. Use a se	eparate form	n for each sy	/stem. Identify the poir	its within a	
County:	Delaware	Boroagii		11/15/2005		1system cons	secutively (ex. G-1. G-2	2, G-3). Start	the first poi	nt in each ac	lditional system 20 nur	nbers higher.	
Journey.	Delaware					For example	e, G-3 ends	one system	i, so G-23 beg	ins the next	t. See Sam	ole Diagrams & Form	on Reverse.	
Λ.	fap ID	Svs	tem's Element	s (x)		Measur	ements*				Design		Name of	
	No.	, ,,,		,	Pipe	Ch	annel / Sw	ale	Material	Year	Data	Contact Person	Ownersh	•
From	То	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance R	
G-515	G-516	X			15"						N	Robert Poole 610-532-2118	Ridley Park	_
G-516	G-517	X			15"						N	Robert Poole 610-532-2119	Ridley Park	Borough
G-517	G-518	X			15"						N	Robert Poole 610-532-2120	Ridley Park	Borough
G-539	G-540	X			15"						N	610-532-2118 Robert Poole 610-532-2119	Ridley Park	(Borougi
G-560	G-561	X			36 x 24						N	Sec. 10.	CSX Ra	
G-561	G-562		X									Robert Poole 610-532-2118	Ridley Park	
G-562	G-564	X			18"						Y	Robert Poole 610-532-2119	Ridley Park	
G-564	G-563	X			72"						Y	Robert Poole 610-532-2120	Ridley Parl	-
G-564	G-565	X			72"	,					Y	Robert Poole 610-532-2121	Ridley Parl	k Boroug
G-565	G-566	 X			24"						Y	Robert Poole 610-532-2122	Ridley Parl	k Boroug

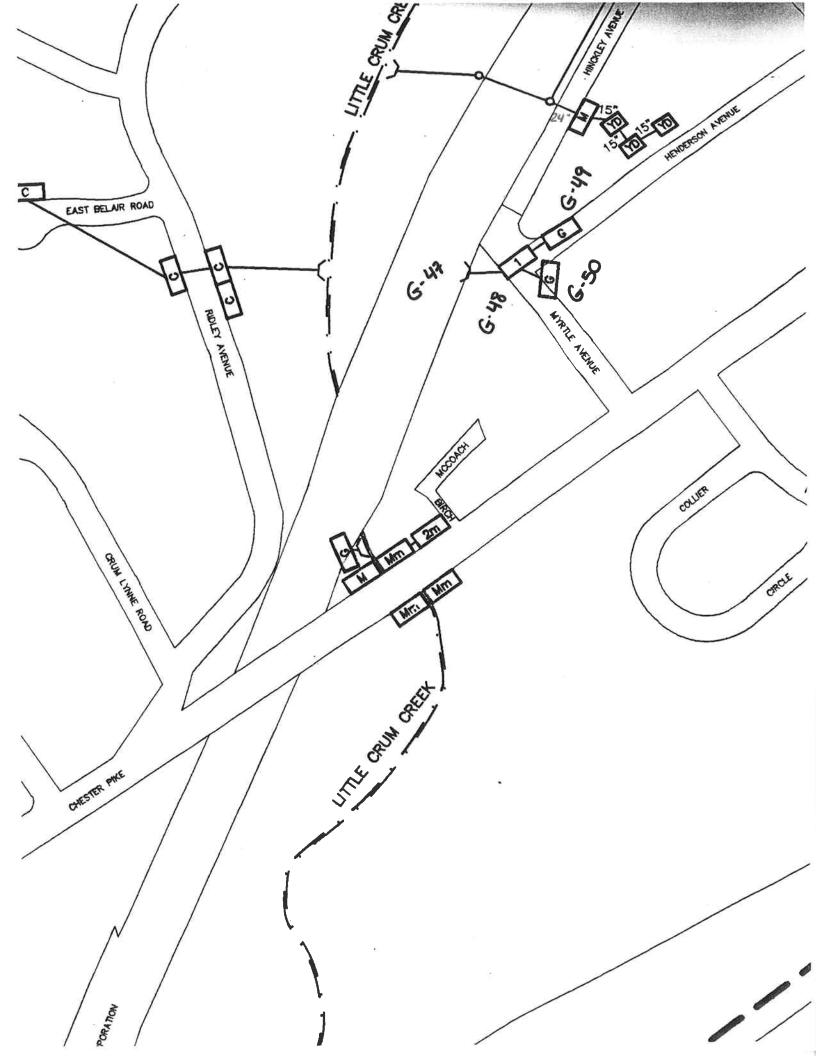
FORM G (7)

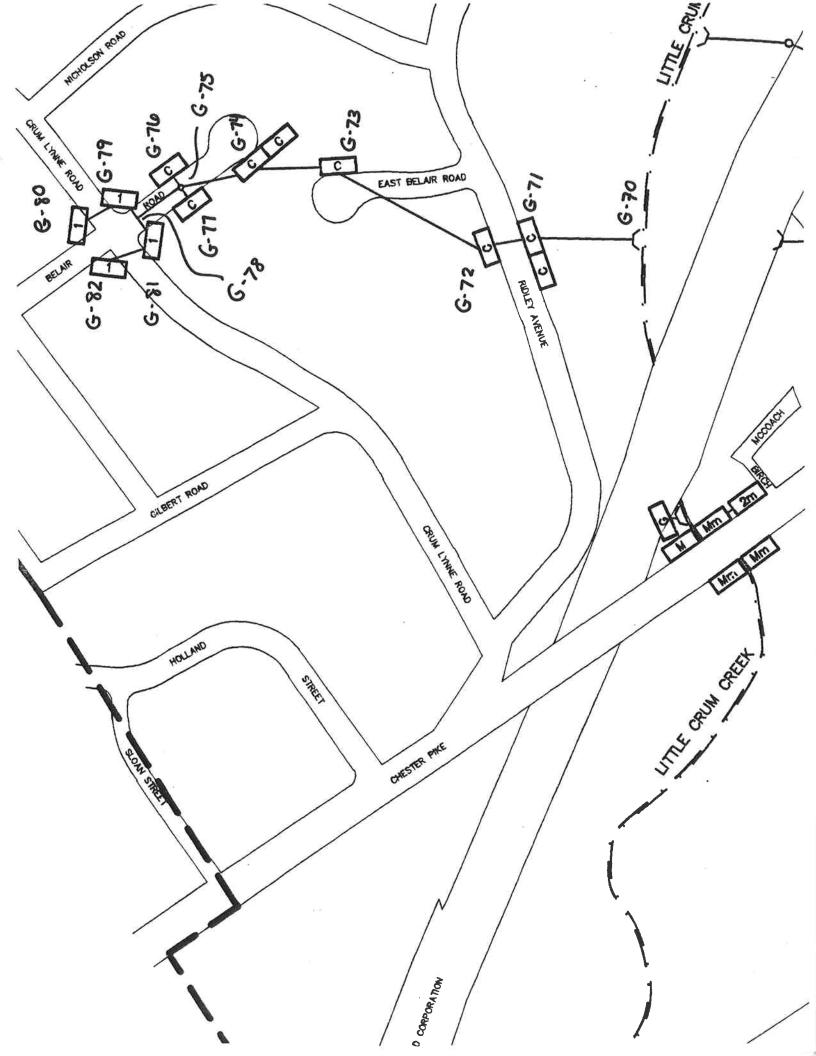
					EXISTING	STORMWA ⁻	TER COLL	ECTION SY	STEM FORM	G.		SHEET	12OF13
N	lap ID	Svs	tem's Elements			Measure					Design		Name of Final
	No.				Pipe	Ch	annel / Swa	ale	Material	Year	Data	Contact Person	Ownership and
From	То	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
G-566	G-567	X			24"						N	Robert Poole 610-532-2118	Ridley Park Borough
G-567	G-568	X			15"						N	Robert Poole 610-532-2119	Ridley Park Borough
G-568	G-569	X			15"						N	Robert Poole 610-532-2120	Ridley Park Borough
G-567	G-570	X			24"						N	Robert Poole 610-532-2121	Ridley Park Borough
G-570	G-571	X			18"						N	Robert Poole 610-532-2122	Ridley Park Borough
G-571	G-572	X			18"						N	Robert Poole 610-532-2123	Ridley Park Borough
G-572	G-573	X			15"						N	Robert Poole 610-532-2124	Ridley Park Borough

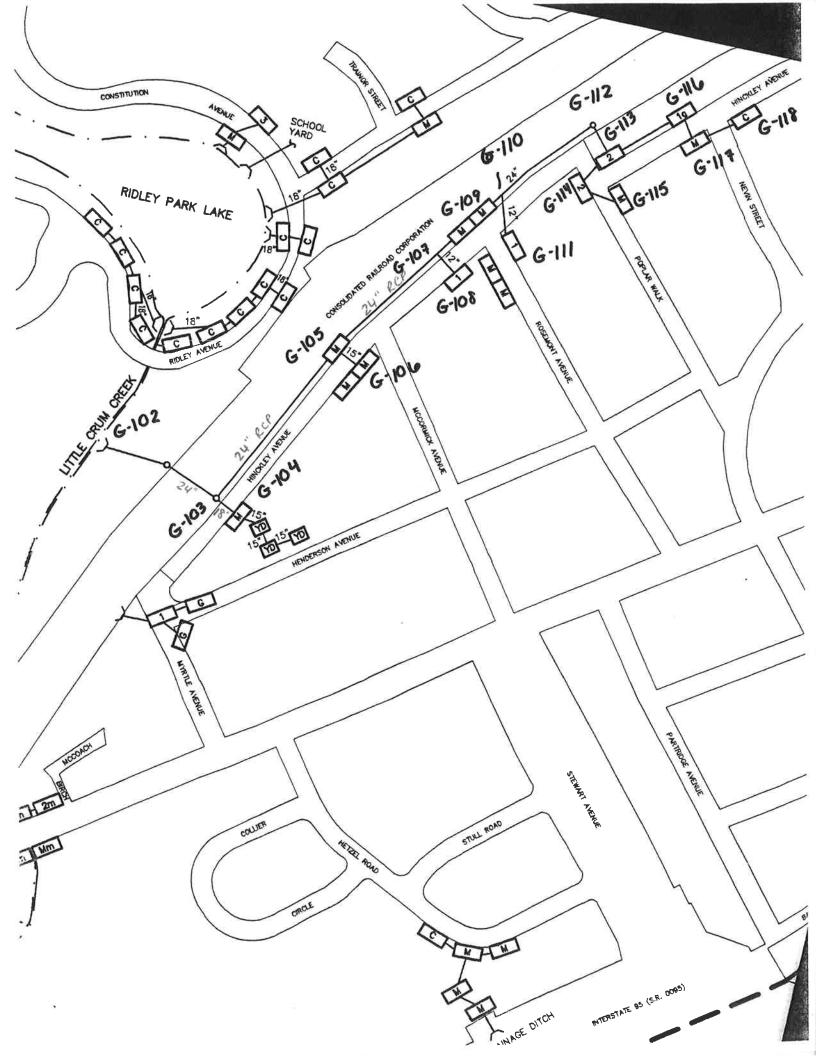
					EXISTING	STORMWA	TER COLLE	CTION SY	STEM FORM	G.		SHEET	13 OF 13
WATERSH	IFD		FORM COM	PLETED BY	117 - 1 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7				NSTRUCTION				
7771121101						Diagram ea	ch system o	n the appro	priate map. E	stablish ma	p points to s	how changes in syster	n elements,
Name:	Crum Creek		Name:	Jamie H. Bri	cker	pipe size, or	pipe directi	on. (If unkr	nown, outline th	he system e	extent.) Com	plete this form only wh	nere specific
	y: Ridley Park		Telephone:	610-532-288		information	on construct	tion is avail	able. Use a se	eparate form	n fo <mark>r</mark> each sy	stem. Identify the poir	nts within a
County:	Delaware		Date:	11/15/2005		system cons	secutively (e	x. G-1, G-2	2, G-3). Start 1	the first poi	nt in each ad	lditional system 20 nui	mbers higher.
ooung.	Bolattaro		1			For example	e, G-3 ends	one system	n, so G-23 beg	ins the nex	t. See Samp	ole Diagrams & Form	on Reverse.
M	ap ID	T Svs	tem's Element	ts (x)		Measure					Design		Name of Final
	No.			` '	Pipe	Ch	annel / Swa	le	Material	Year	Data	Contact Person	Ownership and
From	То	Pipe	Open Channel	Swale	Ď	TW	В	Depth	1	Constr.	Available	Name and Phone	Maintenance Responsibility
G-593	G-594	X									N	Robert Poole	Ridley Park Borough
0 000	10 00 1	1									1	610-532-2118	
G-594	G-595	X									N	Robert Poole	Ridley Park Borough
0 00 1	000		l .									610-532-2119	
G-595	G-596	X									N	Robert Poole	Ridley Park Borough
0 000												610-532-2120	
G-596	G-597	X									N	Robert Poole	Ridley Park Borough
0 000	001	^	1		i i							610-532-2121	
G-597	G-598	X									N	Robert Poole	Ridley Park Borough
C 00.		1 1										610-532-2122	
G-595	G-599	 X 									N	Robert Poole	Ridley Park Borough
000		^					1					610-532-2123	

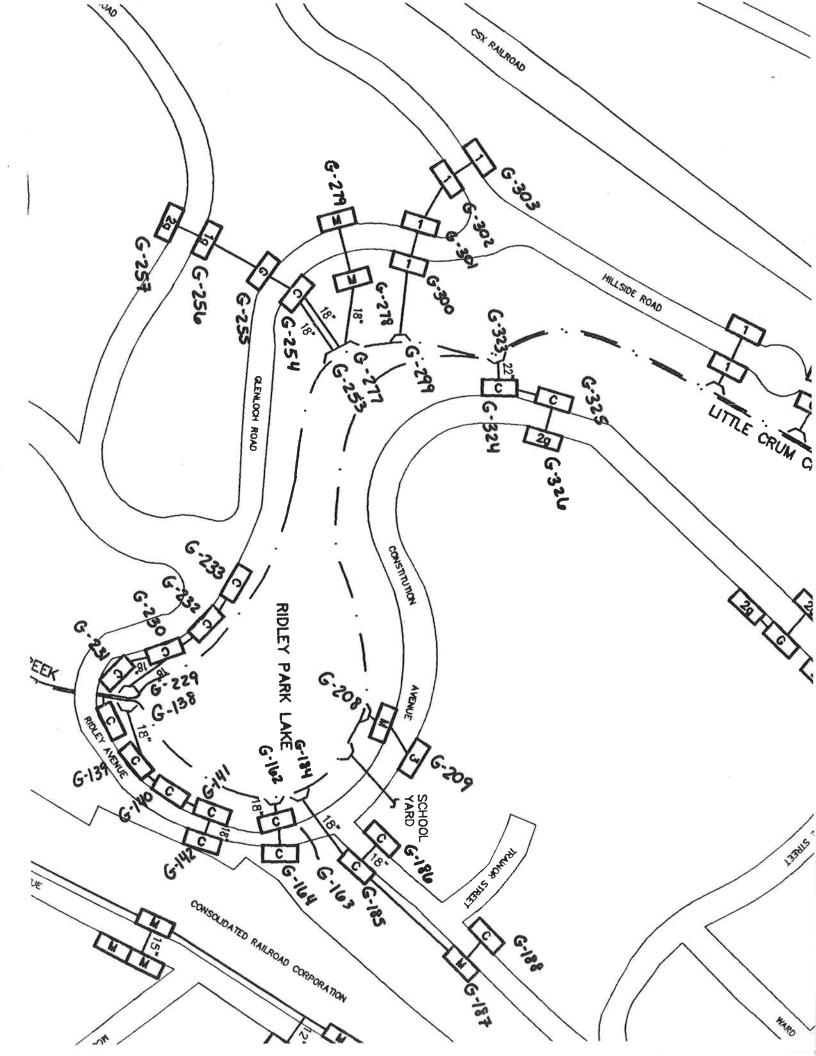


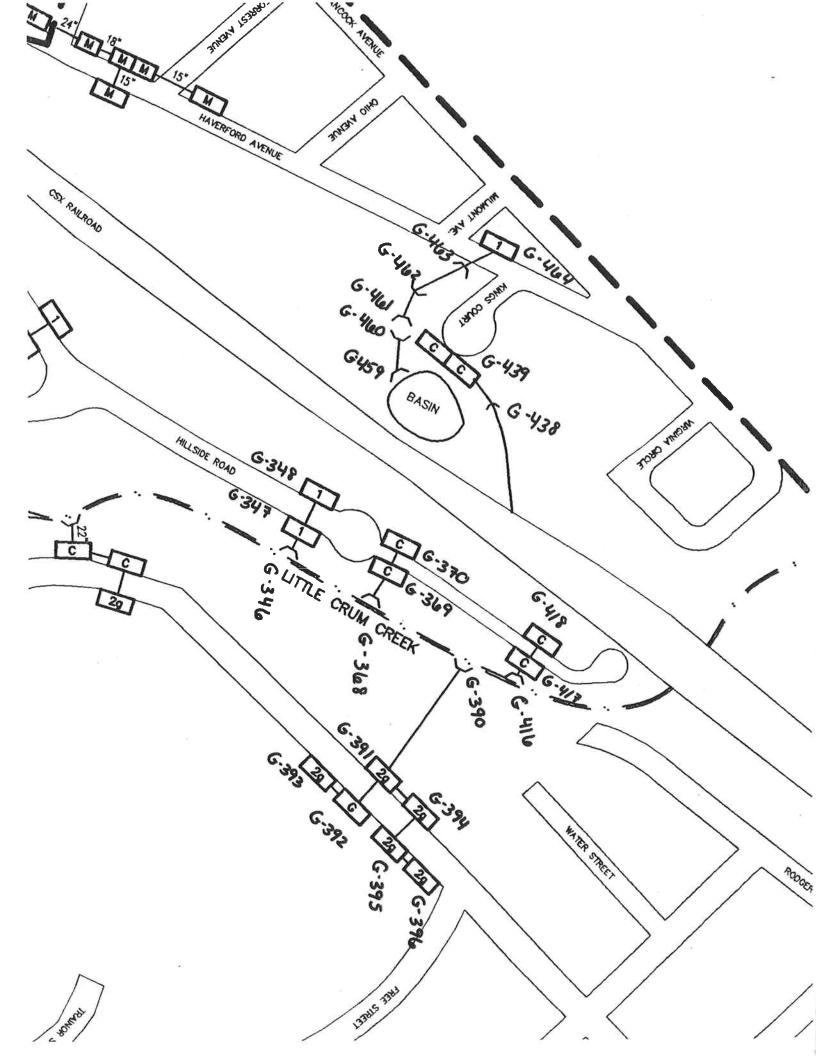


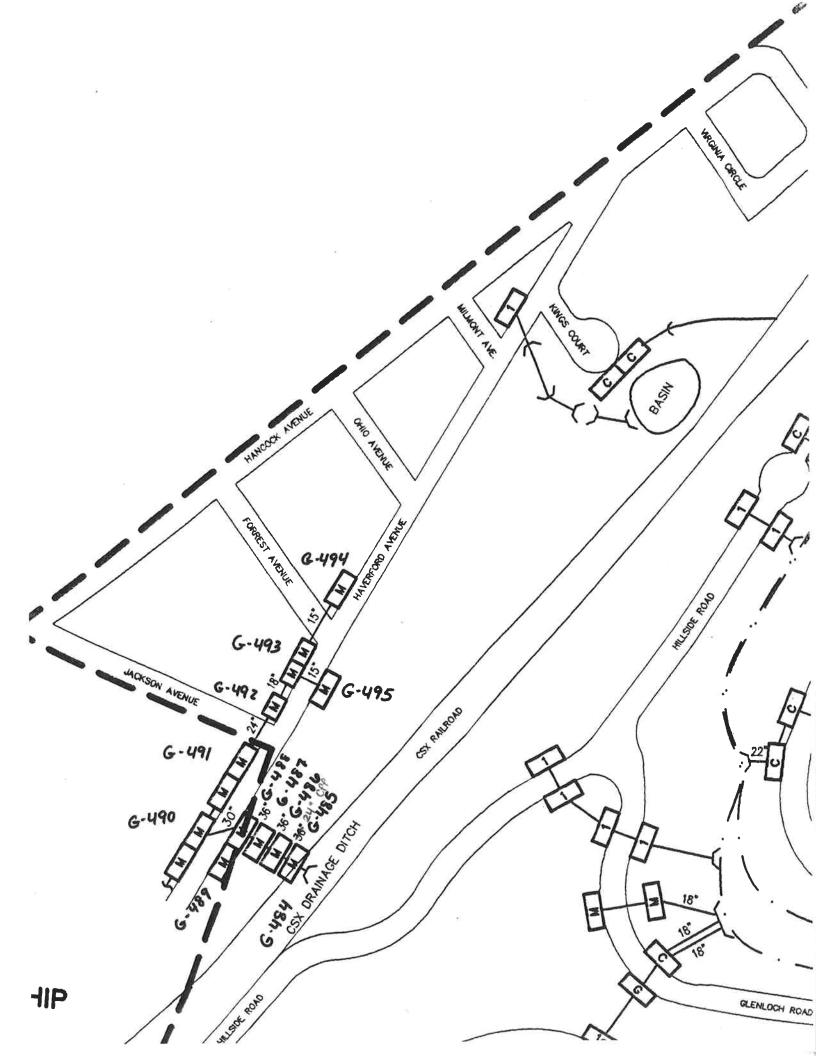


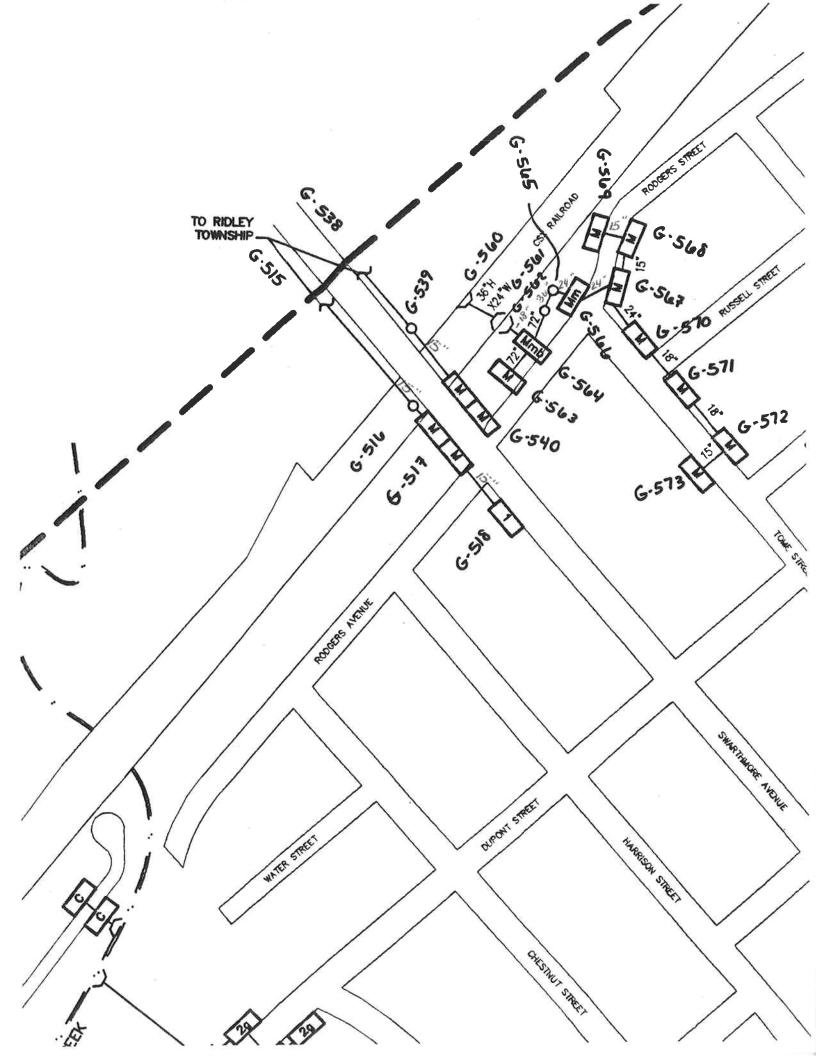


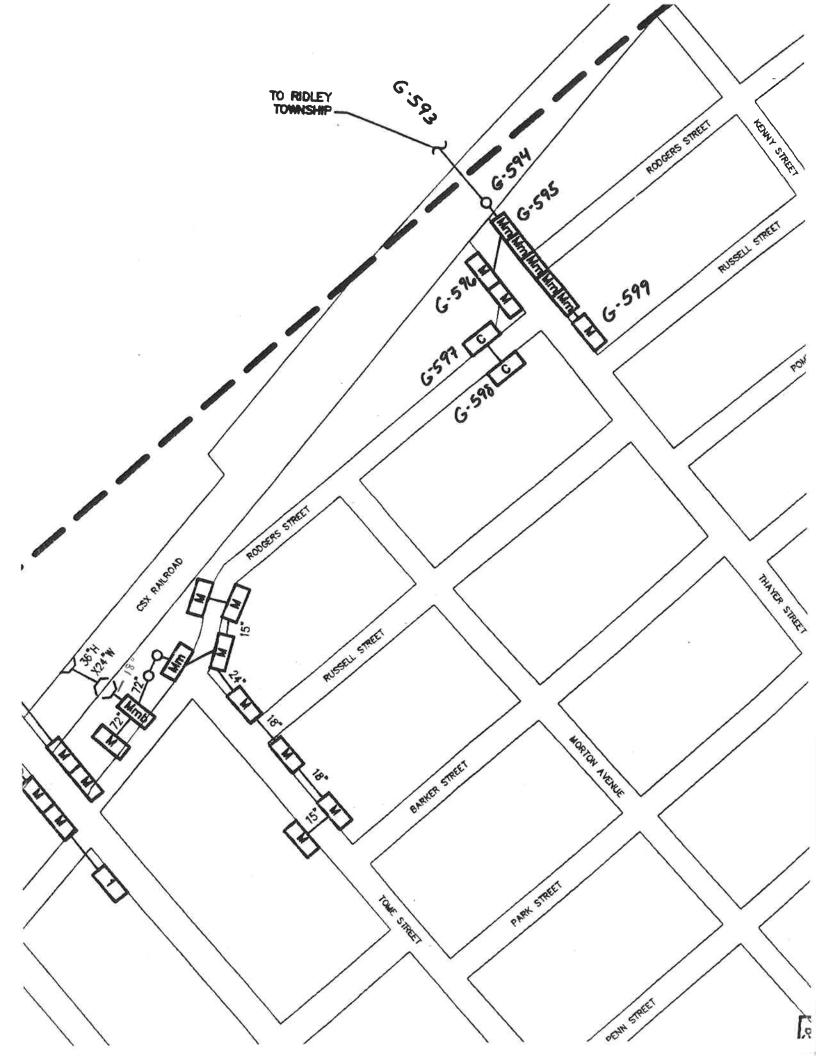


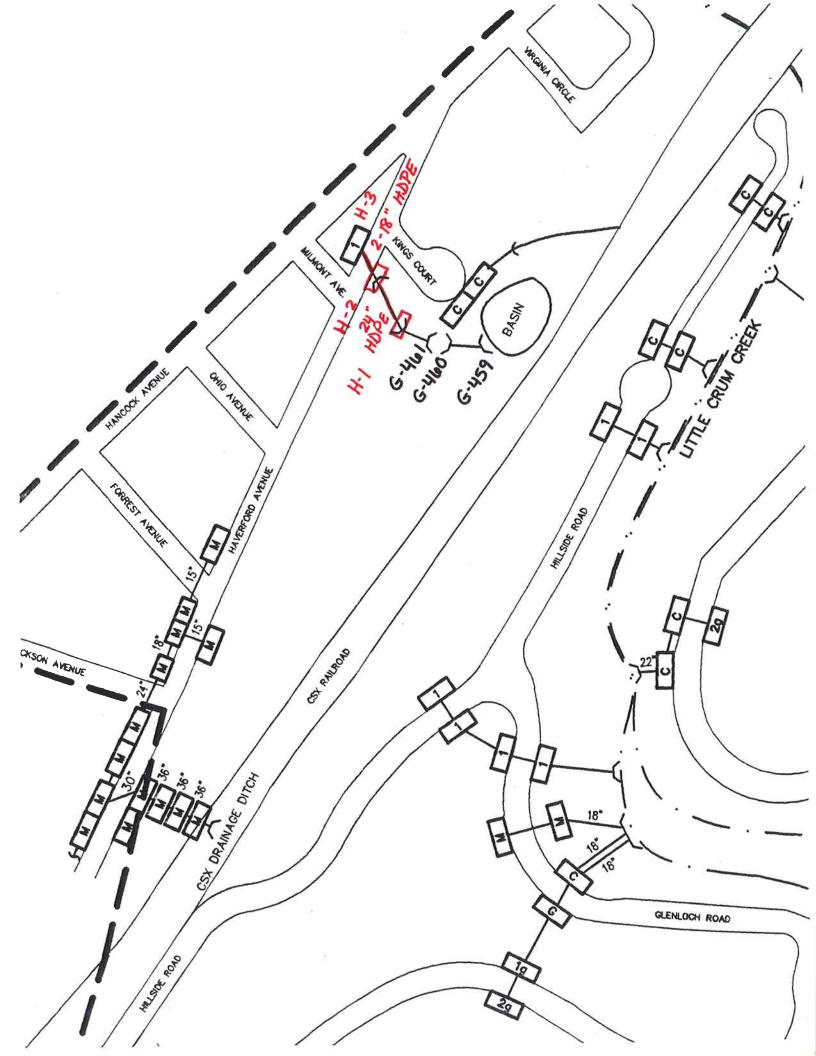












						PROPOSI	ED STORM			SYSTEM FO	DRM H.			SHEET	1_OF1_
WATERSH	HED		FORM COM	PLETED BY	1				INSTRUCTION						
															ipe direction and connections
Name:	Crum Creek			Jamie H. Br											ate form for each proposed,
Municipalit	y: Ridley Park	Borough	Telephone:		84									ly (ex. G-1, G-2, G-3). Sta	
County:	Delaware		Date:	11/15/2005								the point wher	e proposed a	additions connect into exist	ng systems, using the map
			1					stem form and ma	p. See Sample Dia						Name of Final
	lap ID	Sys	tem's Element	s (x)			ements*			Map I.D		osed	Design	O	
	No.				Pipe		nannel / Sv		Material	Nos.**	Constr		Data	Contact Person	Ownership and
From	То	Pipe	Open Channel	Swale	D	TW	В	Depth		Form A	Start	End	Available		Maintenance Responsibility
G-461	H-1	X			24"				RCP	A-6	Nov-05	Nov-05		Robert Poole 610-532-2100	Ridley Park Borough
H-1	H-2	Х			24"				HDPE	A-6	Nov-05	Nov-05		Robert Poole 610-532-2101	Ridley Park Borough
H-2	H-3	X			18"				HDPE	A-6	Nov-05	Nov-05		Robert Poole 610-532-2102	Ridley Park Borough
					(x2)						-		-	010-332-2102	
H-	H-					į.									
H-	H-														
H-	H-														
H-	H-														
H-	H-														
H-	H-														·
H-	H-														
H-	H-														

^{*}See measurement key on reverse side. **Enter the stormwater problem areas' Map I.D. Nos., if proposed project will solve or reduce any / all of the drainage problems.

FORM I

		PRESENT 8	& PROJECTE	D DEVELOP	MENT IN THE FL	OOD HAZARD AREA F	FORM I.		SHEET	1	OF	1
WATERSHE	D		MPLETED BY			OD HAZARD AREA	DEFIN					
Name:	Crum Creek	Name:	Jamie H. Brid			A normally dry la			i			
Municipality:		Telephone:	610-532-288	4		susceptible to be	eing inundated	d by the				
County:	Delaware	Date:	11/16/2005			100-year flood.						
For County U	Jse:											
Map ID No.	TYPE OF DEVELO	PMENT	Year Built		Contact Name, Addre	Person ss and Phone			Com	ments		
l - 1	Ridley Park Swim Club,	Recreation		Box 352 Ridley Park								
L-												
(-											===	-
1-												
I-								×				
1-												
I-		-H										
1-		41										

	WATER QL	JALITY P	ROBLE	M ARE	AS FOR	RM J.		SHEE	T1	OF_	1
WATERSHED							MPLETE	DBY			
Name:	Crum Creek				Name	:	Jamie	H. Bric	ker		
Municipality:	Ridley Park Bord	ough			Telepl	hone:	610-5	32-288	4		
County:	Delaware				Date:		11/16/	2005			
-	4										
SITE		J-1	J-	J-	J-	J-	J-	J-	J-	J-	J-
Types of Water	Quality Problems	75.00				200					
High Community											
High Temperatu	ıre										
High Turbidity		X									
Hydrocarbon Po	ollution						•				
Low Community	Diversity										
Low Dissolved (Oxygen										
Low pH											
Nutrient Enrichr	nent										
Poor Habitat											
Other/Explanati	on Line No.										
Potential Caus	e(s)	la seri	Legal de	and the		10.00			1		Joseph
Agriculture											
Construction Sit	te										
Erosion		X									
Lake Discharge											
STP Outfall											
Other/Explanati	on Line No.	1							A January Street		buttons
Frequency				W.			0.571111				1,00
Year Most Rece	ent Occurence	2005									
Year First Know	vn Occurence	?									
Source of Info	rmation		de jús					1113		158,12	
County Water C	Quality Study										
Driveby		X									
Other/Explanati	ion Line No.										
	EXPLA	NATIO	V LINE	s							
1 Heavy sedim	ent in basin above lak	ke, dredg	ing appi	roximat	ely ever	y other	year				
2											
3											
4											
5											
6											
7											
8											
9											
10											



CATANIA ENGINEERING ASSOCIATES, INC.

Consulting Engineers & Land Surveyors

March 30, 2004 File No. 83600-115-8

Justin D. Kauffman Delaware County Planning Department Government Center 201 W. Front Street Media, PA 19063-2751

Re:

Borough of Ridley Park

Crum Creek Act 167 Stormwater Management Plan

Dear Mr. Kauffman:

Enclosed please find the completed Form O - Outfall Data and Storm Sewer Map locating all outfalls for the Crum Creek Watershed.

Should you have any questions or comments, please feel free to contact me.

Very truly yours,

Jame H. Wenger, EIT

for Catania Engineering Assoc., Inc.

JHW/lns Enclosure

CC:

Bob Poole

Form O - Outfall Data

Person: David Rowlyk, Highway Forman

Date: 3/30/04

Time Since Last Rain was \geq 72 Hours: Yes_

Quantity of Last Rain: < 0.1 inches: > 0.1 inches

Days Since Last Rain: four

Municipality: Borough of Ridley Park

Name of receiving water: Crum Creek via Little Crum Creek

	Dine	Dhoto	Storm	Time	Pine	Depth of	Channel	Channel	Channel	Flow	Water	Describe land use of	Rating
	r ipc Swale	7	Drain?	(00:00)	Diameter	flow in pipe	Depth		Side Slopes*	Observed	Color/Odor	upstream drainage	(0-2)
	3 31		Yes/No	am/pm	(inches)	(feet)	(feet)		(H:V)	(Уеѕ ог по)	(specify if floatables,	агеа.	
			Not					(feet)			algae or sediment		
			sure								present)		
5000	LCC-1	N/A	Yes	2:30 PM	*8	0	12'	.8	1:4	No	N/A	residential	0
200	LCC - 11	N/A	Yes	2:24 PM	48"	2"	1,	-∞	1:8	Yes	oil sheen / rust color	residential	1
00 3	LCC - 21	N/A	Yes	1:55 PM	18"	0	-1	'4	2:1	No	N/A	residential	0
200	LCC - 31	N/A	Yes	1:55 PM	18"	0	1.1	4,	2:1	o _N	debris	residential	0
4			Yes	2:00 PM	18"	0	1.1	,9	2:1	No	N/A	residential	-
0 00			Yes	2:05 PM	24"	0	-	4-	2:1	No	N/A	residential	0
	_		Yes	2:05 PM	18"	0	2,	4.	2:1	No	N/A	residential	0
0 0	LCC - 71	N/A	Yes	2:06 PM	18"	0	2,	.4	2:1	No	N/A	residential	0
600	LCC - 81	N/A	Yes	1:32 PM	18"	0.5"	1,	2,	2:1	Yes	oil sheen / rust color	residential	1

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment deposition, algae or debris, pipe collapsed or crumbling,

blocked catch basins or drain)

H/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

Form O - Outfall Data Cont'd

Person: David Rowlyk, Highway Foreman

Date: 3/30/04

Time Since Last Rain was \geq 72 Hours: Yes_

Quantity of Last Rain: < 0.1 inches: > 0.1 inches

Days Since Last Rain:

Municipality: Borough of Ridley Park

Name of receiving water: Crum Creek

Swale # Drain? (0) # Not Sure LCC - 91 N/A Yes LCC - 101 N/A Yes LCC - 121 N/A Yes LCC - 131 N/A Yes LCC - 131 N/A Yes LCC - 141 N/A Yes		Diameter (inches)	flow in pipe (feet)	Depth	Rottom	÷		- John (1-5)		1000
N/A Yes N/A Yes N/A Yes N/A Yes N/A Yes N/A Yes N/A Yes N/A Yes	PM PM		(feet)			Side Slopes*	Observed	Color/Odor	upsurcam uramage	(7-0)
N/A Yes N/A Yes N/A Yes N/A Yes N/A Yes N/A Yes	1:34 PM 1:36 PM	36"		(feet)	Width	(H:V)	(Yes or no)	(specify if floatables,	area.	
N/A N/A N/A N/A N/A N/A N/A	1:34 PM 1:36 PM	36"			(feet)			algae or sediment		
N/A N/A N/A N/A	1:34 PM 1:36 PM	36"						present)		
N/A N/A N/A N/A	1:36 PM		2"	T.	4.	2:1	Yes	rust color	residential	-
N/A N/A N/A		24"	0	1,	4	2:1	No	N/A	residential	0
N/A N/A N/A	1:16 PM	18"	0	3,	2,	1:3	No	N/A	residential	0
N/A N/A	1:18 PM	18"	0	2,	14	1:3	No	N/A	residential	0
N/A	1:20 PM	18"	0	-1	4.	1:5	No	N/A	recreational	0
	1:22 PM	18"	0	1.5'	3,	1:5	No	N/A	residential	0
LCC - 151 N/A No Ditch	10:57 AM	None	0	0	0	1:2	No	N/A	residential	0
LCC - 161 N/A Yes	11:00 AM	24"	0	,9	.9	1:2	No	N/A	residential	0
LCC - 171 N/A Flat Ditch 11:05 AM	11:05 AM	None	0	0	0	1:2	No	N/A	residential	0

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment deposition, algae or debris, pipe collapsed or crumbling,

blocked catch basins or drain)

H/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

NOTES:

Form O - Outfall Data Cont'd

Person: David Rowlyk, Highway Forman

Date: 3/30/04

Time Since Last Rain was \geq 72 Hours: Yes_

Quantity of Last Rain: < 0.1 inches: > 0.1 inches

Days Since Last Rain: four

Municipality: Borough of Ridley Park

Name of receiving water: Crum Creek via Little Crum Creek

Rating (0-2)	0	-	0			
Describe land use of upstream drainage area.	railroad	residential	railroad / res.			
Water Color/Odor (specify if floatables, algae or sediment present)	N/A	algae, rust color	sediment			
Flow Observed (Yes or no)	No	No	No			
Channel Side Slopes* (H:V)	1:2	1:2	1:2			
Channel Bottom Width (feet)	0	,9	,9			
Channel Depth (feet)	0	31	4.			
Depth of flow in pipe (feet)	0	0	0			
Pipe Diameter (inches)	0	16"	36"			
Time (00:00) am/pm	11:06 AM	1:07 PM	1:07 PM			
Storm Drain? Yes/No	.CC - 181 N/A Flat Ditch 11:06 AM	Yes	Yes			
Photo	N/A	N/A	N/A			
Pipe Swale #	LCC - 181	LCC - 191	LCC - 201			

619

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

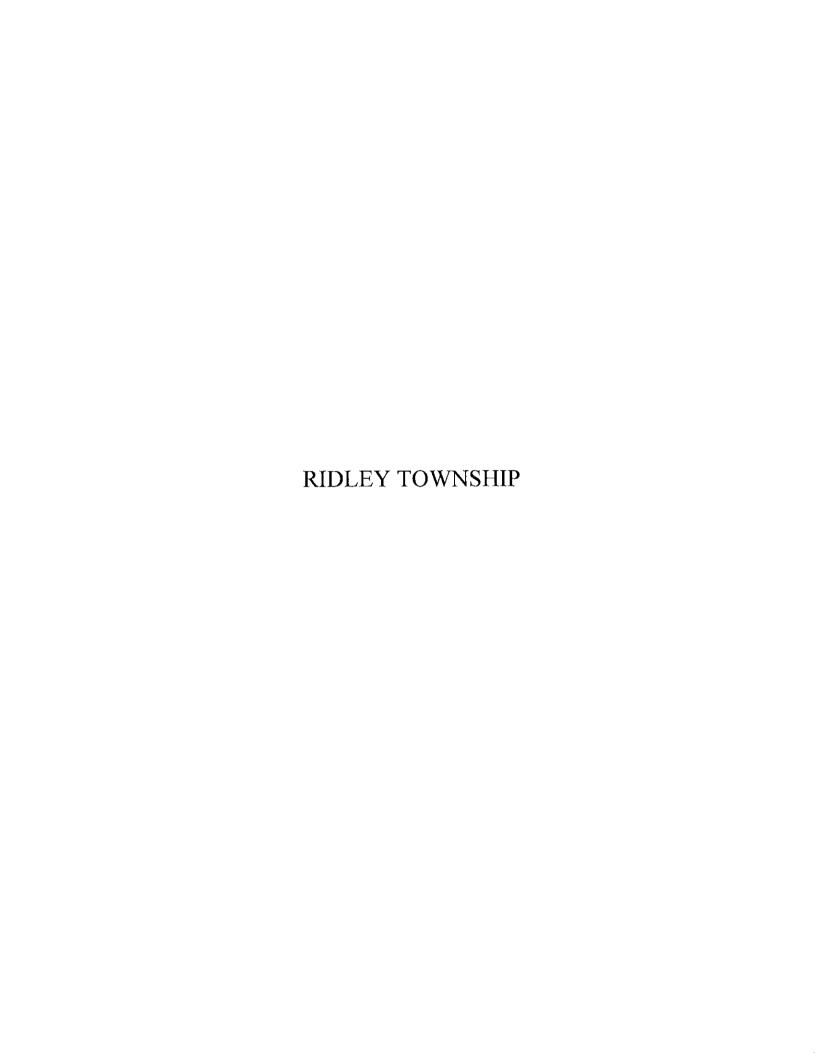
2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment deposition, algae or debris, pipe collapsed or crumbling.

blocked catch basins or drain)

H/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

NOTES:



RIDLEY TOWNSHIP STORMWATER INFORMATION

Provided for:

Act 167 Crum Creek Watershed

Stormwater Management Plan

83020-115-80 CEA que

Description

Storm Water Problem Areas

(n)

Obstructions

(ပ

Existing Flood Control Projects



Proposed Flood Control Projects



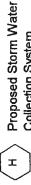
Existing Storm Water Control Facility



Proposed Storm Water

Control Facility

Existing Storm Water Collection System ์ บ



Present & Projected Development in the Collection System



Water Quality Problems

Construction Site

Agriculture

Types of Examples

Flooding Drainage

Erosion/Sedimentation

Culverts 置

Structures

Channel, Excavation Rip-Rap

Floodwalls, etc.

Channel Excavation Floodwalls, etc. Rip-Rap

Roof-Top Storage Recharge Basins **Detention Basins**

Roof-Top Storage Detention Basins Recharge Basins

Man-Made Channels Storm Sewers Diversions

Man-Made Channels Storm Sewers Diversions Subdivision/Site Plans

Existing Studies or Reports Sources of Information

Fownship Documentation Township Engineer Personal Memory

Subdivision Applications Township Engineer Owner of Structure **Township Files** Roadmasters

Township Engineer Township Records Owner of Facility

Township Records Township Engineer Owner of Facility

Township Engineer Owner of Facility Subdivision Files

Township Engineer Owner of Facility Subdivision Files

Owner of System (Developers) Township Engineer **Existing Plans**

Owner of System (Developer) Existing Plans Township Engineer

Flood Insurance Studies Subdivision/Site Plans Private Flood Studies General Knowledge Township Engineer

Conservation District Municipalities

CRUM CREEK WATERSHED ACT 167 STORMWATER MANAGEMENT PLAN

MUNICIPALITY QUESTIONNAIRE

Please fill out the following questionnaire and return it to Karen Holm at the Delaware County Planning Department, Court House and Government Center Building, 201 West Front St. Media, PA 19063 as soon as possible. If you have any questions or comments, or if you would like these forms in digital format, please call Karen at 610-891-5213 or e-mail her at <a href="https://holm.ncbi.nlm.n

PART I - GENERAL INFORMATION

Municipality:	Ridley Township
Contact Person:	Anne E. Howanski, Manager
WPAC Designee:	Charles J. Catania, Jr.
Title:	Township Engineer
Address:	520 W. MacDade Boulevard
	Milmont Park, PA 19033-3311
Phone:	610-532-2884
Fax:	610-532-2923
Person Completing for	orm (if different from Contact Person):
Name:	Jamie H. Bricker
Address:	520 W. MacDade Boulevard
	Milmont Park, PA 19033-3311
Phone:	610-532-2884
Fax:	610-532-2923
E-mail:	jamie@cataniaengineering.com

PART II - REGULATORY ACTIVITIES

A. Please indicate the regulations you currently use to manage development.

REGULATION	MUNICIPAL ORDINANCE	COUNTY ORDINANCE
Zoning Ordinance	Chapter 325	
Subdivision/Land Development Ordinance	No. 1443	
Separate Stormwater Ordinance	No. 1688	
Separate Floodplain Ordinance	Under SLDO No. 1443	

B. Please indicate the agencies/individuals who review and approve land development plans and zoning variance/waiver requests.

	LAND DEVELO	PMENT PLANS	ZONING VARIANCE	WAIVER REQUESTS
ENTITY	REVIEW	APPROVE	REVIEW	APPROVE
Supervisors	X	X		
Municipal		¥		
Engineering				
Department				
Municipal	X		X	
Planning				
Department				
County Planning	. X		X	
Department				
County	X	X		
Conservation				
District				
Zoning Hearing			X	X
Board				
Consulting	X		X	
Engineer				
Others (List				
Below		<u> </u>	m 7 . 00°	11 C 1 +1

Township Commissioners are considered Supervisors. The Zoning Officer will forward the approved/disapproved variances to the applicant along with the necessary permit(s).

C.	Please provide copies of your zoning, subdivision/land development, and separate stormwater
	management and floodplain ordinances and your current zoning map when you return this
	questionnaire. Please list these documents below.

Zoning Chapter 325
Subdivision and Land Development Ordinance No. 1443
Stormwater Management Design Ordinance No. 1688

PART III - MUNICIPAL AND LOCAL PLANNING ACTIVITIES

Please indicate below whether your community has approved the following plans and maps and the date of the most recent update.

ITEM	APPROVED/DATE	IN PROGRESS	PLANNED WITHIN NEXT YEAR
PA Act 537 Sewage Facilities Plan	March 2002		
Comprehensive Land Use Plan	Dec. 1974		
Existing Land Use Maps	Dec. 1974		
Proposed Land Use Maps	Dec. 1974		
Zoning Maps	May 2001	(revisions)	

PART IV – FLOOD INSURANCE PROGRAM AND COMPREHENSIVE LAND USE PLAN

Please indicate below whether your community participates in the National Flood Insurance Program:

ITEM	PARTICIPATES (Y/N)
Flood Hazard Boundary Map (FHBM)	Y
Participates in FEMA Emergency Program	N
Participates in FEMA Regular Program	Y

PART V - EXISTING STORMWATER RELATED PROBLEMS AND STRUCTURES

Please complete the matrices on the following pages (Forms A and C-J) to describe any significant stormwater-related problems (Form A), Existing or Proposed Flood Control Projects (Forms C & D), Existing or Proposed Storm Water Control Facilities (Forms E and F), Existing or Proposed Stormwater Collection Systems (Forms G & H), Present and Projected Development in the Flood Hazard Area (Form I), and Water Quality Problem Areas (Form J) that you are aware of in your municipality.

What we would like to ask of you is that you complete as much of the attached data collection forms as possible. There is a different form for each item of information as summarized in the attached "FORM DESCRIPTION SUMMARY. The process would be as follows starting with the problem areas (Form A):

- Place the location of the problem area on the map as shown in the attached example map.
- Draw a box on the map with the problem area identifier starting with A-1 with an arrow leading from the problem area identifier to the problem area.
- Place an A-1 in the first column of FORM A.
- Put a check in each box in the A-1 column that represents the problems associated with that particular problem area.
- Repeat with the next problem area (A-2) and so on.

- Repeat for existing flood control projects (FORM C) placing a triangle on the maps and starting the labeling with C-1.
- Repeat for all forms.

The sample map attached shows three problem areas (A99- A1 and A-2), one proposed flood control project (F-1) and one water quality problem (J1).

Use additional paper to provide <u>detailed</u> descriptions of your most serious problems and attach a map to show the location of the problem. Attach photographs, if available.

If you have any storm or combined sewers, please provide maps showing the collection system and overflow discharge locations and an estimate of the average annual discharge at each overflow point.

The more detail you provide, the better we will be able to evaluate the situation for your municipality. We appreciate your help.

Sample Location of Information from Data Collection Forms on the Municipal Map

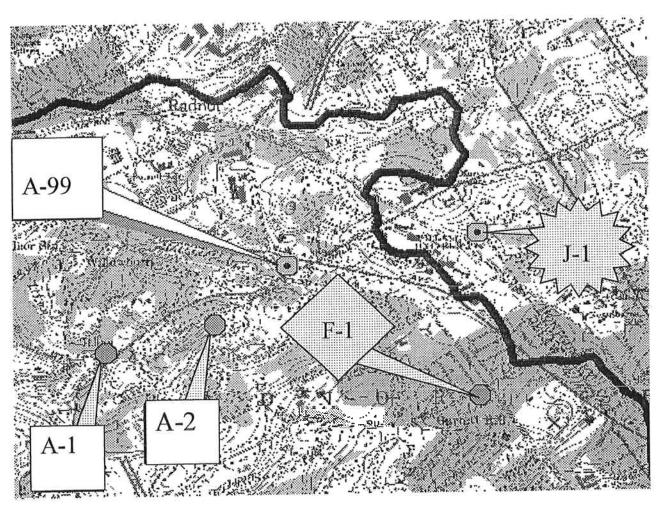


Table of Contents

Form A: Stormwater Problem Areas

Form C: Existing Flood Control Projects

Form D: Proposed Flood Control Projects

Form E: Existing Stormwater Control Facilities

Form F: Proposed Stormwater Control Facilities

Form G: Existing Stormwater Collection System

Forms G-1 through G-25

Form H: Proposed Stormwater Collection System

Form I: Present and Projected Development in the Flood Hazard Area

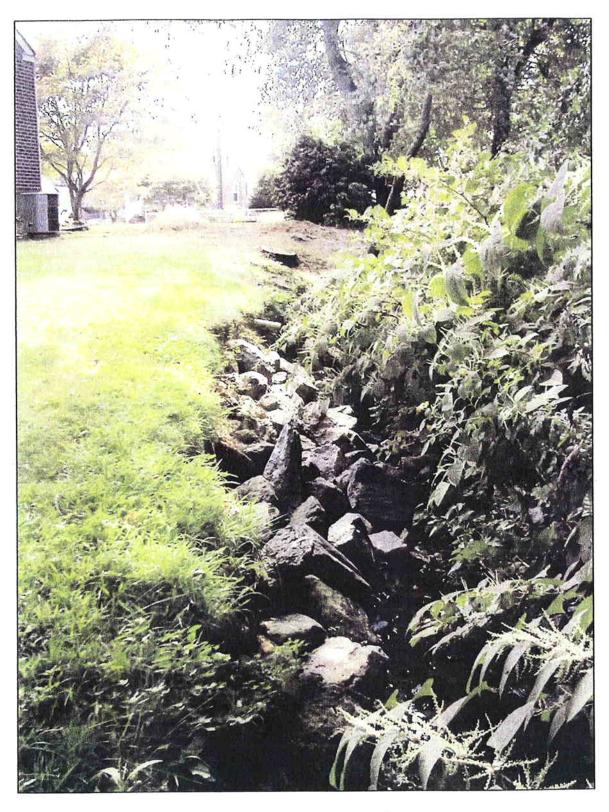
Form J: Water Quality Problems

				FORM COMPLETED BY Before Filling Out Form,									
WATERSHED			FORM COMPLETED BY					See Instructions on Back					
Name: Crum Creek			Name: Jamie H. Bricker										
Municipality: Ridley Towship			Telep	hone:	610-5	32-288	84	For C	ounty	Use:			
County:	Delaware		Date:		8/18/2								
County.	100141141												
MAP NO. *		A-1	A-2	A-3	A-4	A-5	A-6	A-7	A-8	A-9	A-10	A-11	A-12
Types of Storm \	Nater Problems												
Flooding		X	Х	X	X	Х	X	Х		Х	Х	Х	
Accelerated Eros	ion	X					X	Х	Х	Х	Х	Х	X
Sedimentation											X		
Landslide													
Groundwater													
Water Pollution													
Other (Explain)													
Explanation Line	No. (On Back)	1	2	3	4	5	6	7	8	9	10	11	12
Cause (s)													
Storm Water Volu	ıme	X	Х	X	X	Х	X	X	X	X	Х	X	
Storm Water Velo	ocity	X					Х	Х	X	X.	Х		X
Storm Water Dire	ction						X	Х	X	X	Х		
Water Obstruction	n					X		Х		X	Х	X	
Other (Explain)													
Explanation Line	No. (On Back)												
Frequency													
Year Most Recen	t Occurred	2004	2004	2002		2003		2003			2002	2002	2002
Year First Known	Occurred	?	?	?	?	?	?	?	?	?	?	?	?
Regularity													
More Than 1 Yea	Γ	X	Х					Х					
Less Than 1 Year	r			Х	X	X	Х			X	X	X	
Only During Agne	s												
Duration (If Appl	icable)												
Less Than 1 Day		X	Х	Х	X	Х	Х	Х		X	X	X	
1 Day + (Enter Da	ays)												
Property Damag	e												
Loss of Life/Vital	Services					Х							
Private				Х	Х		Х	X	X	Х	Х	X	X
More Than One C	Owner						Х	X	X	X	X	X	X
Types of Properties R		R		Ind	Ind		R	R	R	R	R	R/C	R
Number of Prope	rties			1	1		12	8	5	6	20	8	4
Public (List Types	;)		X			Х							
Explanation Line	No. (On Back)		2			5		7					
Solutions													
Suggested													
	No. (On Back)												
Explanation Line			1	1	1 1/							1	1
	Formally Proposed			X 3	X								12

	FORM A - STORM WATER PROBLEM AREAS SHEET 2 OF 2
	EXPLANATION LINES
1	CC flooding and erosion at Bullens Lane bridge
2	Lincoln St. flooding
3	CC flooding on Boeing's site, formally proposed floodwall to alleviate
4	LCC flooding on Boeing's site, formally proposed berm to protect site
5	CC flooding at Chester Pike bridge
6	LCC flooding and erosion at Manor Circle/Arlington upstream to the municipal boundary
7	LCC flooding behind Georgetown Road, several homes flooded, rock deflector installed
8	CC streambank erosion behind Valley Rd
9	LCC UNT flooding and erosion near Milmont Ave and Brookside Ave
10	LCC UNT flooding and erosion behind Muhlenberg Ave
11	2nd Avenue flooding
12	LCC UNT erosion near Edgewood Ave and Village Rd, rip rap installed
12	Loo day erasion near angular

Roley Twp. 2 Miles

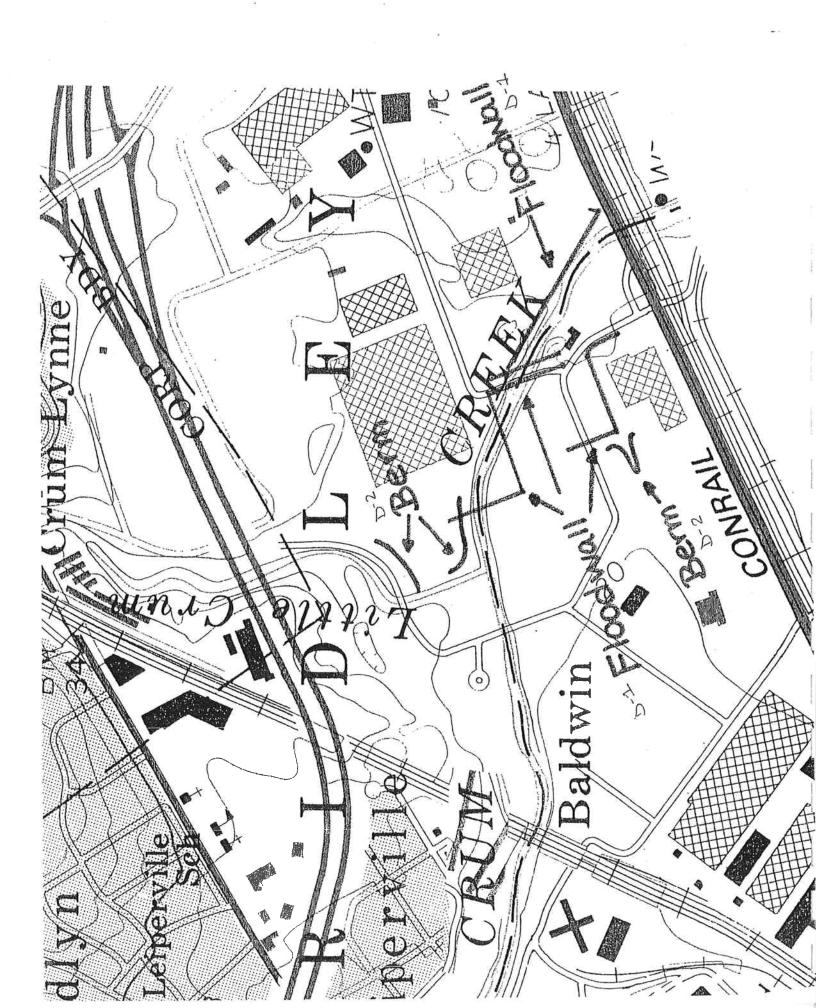
				EXISTING	FLOOD CO	NTROL PR	OJECT FORM C.	SHEET_	1	OF_	1	
WATERSH	ED	FORM CC	MPLETED E	3Y	TYPICAL TYPES OF FLOOD CONTROL PROJECTS							
Name: Municipality County:	Delaware	Name: Telephone: Date:	Jamie H. B 610-532-28 8/18/2004	3.000	Channel Excavation / Widening Channel Realignment Rock Riprap			Levee Gabions Pipe Channel	Dams Floodwal Concrete			
For County	Use:				*							
Map ID No.	Type of Flood Contro	ol Project	Year Constr Built	Expected Life Yrs.	Design Frequency Yrs.	Flood Discharge C.F.S. (if known)	<u>.</u>	ame, Address, and Pho	ne	7.		
C-1	rock deflector installed for bank stabilization on Little Creek west of Georgeton	le Crum	2000	100	N/A	N/A	Anne E. Howanski (610) 53 100 E. Mac Dade Blvd, Folsom, I					
C-2	rip rap installed on erode near Edgewood Ave and		2003	10	N/A	N/A	see A-12 Theresa Banson (610) 33- 916 Edgewood Ave, Folsom, PA					
C-												
C-												
C-												



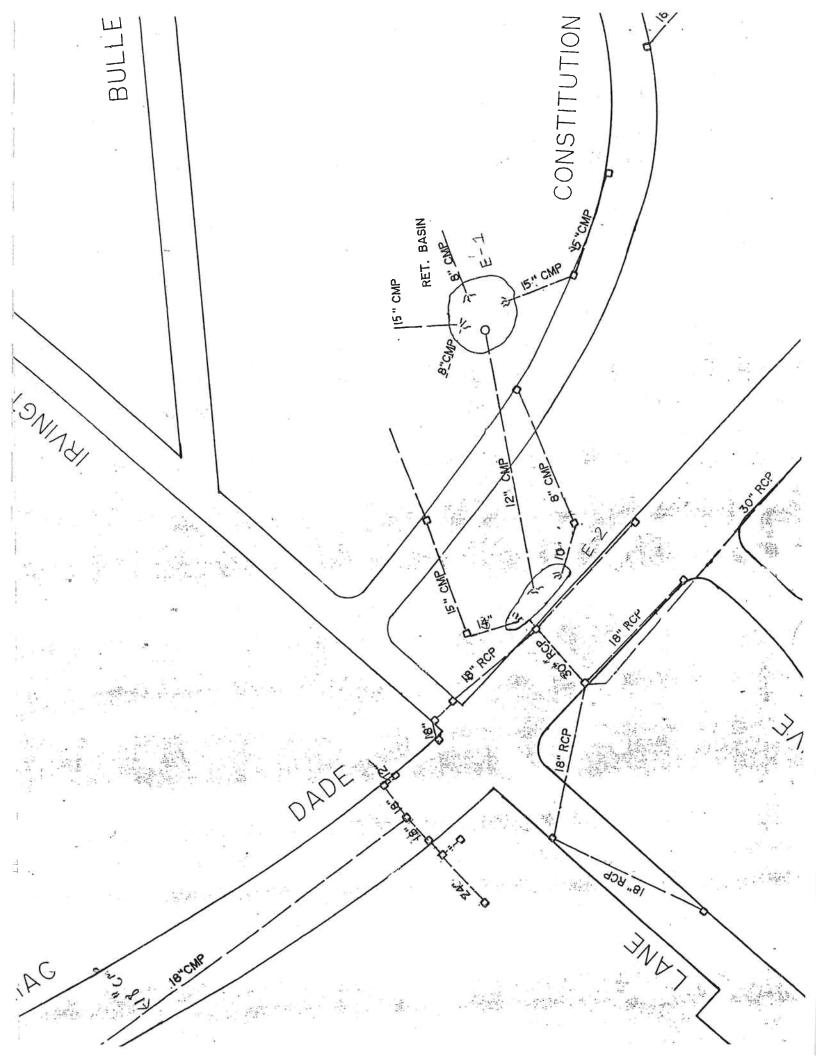
Little Crum Creek, Unnamed tributary Rip rap bank stabilization near Edgewood Ave and Village Rd Identified as A-12 and C-2

				PROPOSED	FLOOD CO	ONTROL PI	ROJECT F	ORM D.			SHEET 1 OF 1	
WATERSHED FORM COMPLETED BY						TYPICAL TYPES OF FLOOD CONTROL PROJECTS						
Name: Municipality: County:	Crum Creek Ridley Township Delaware	Name: Jamie H. Bricker Telephone: 610-532-2884 Date: 8/18/2004			Channel Excavation / Widening Channel Realignment Rock Riprap				Levee Dams Gabions Floodwall Pipe Channel Concrete Lining			
or County L	Jse:											
Map ID No.	Type of Flood Control Project	YES NO		Year Projected Expected Design Constr. Compltn. Life Frequency Planned Date Yrs. Yrs.			Map ID No. Form A*					
D-1	floodwall	Prelim.	X		2004/ 2005	2005	100	100-yr.	10335	3	The Boeing Company (Dale Davis) P.O. Box 16858 P25-75 Philadelphia, PA 19142-0858 (610) 591-2006	
D-2	berm		X		2004/ 2005	2005	100	100-yr.	10335	4	The Boeing Company (Dale Davis) P.O. Box 16858 P25-75 Philadelphia, PA 19142-0858 (610) 591-2006	
D-		4										
D-				ē.								
D-												

^{*} Enter the storm water problem area's Map ID No., if the proposed project will solve or reduce any / all of an identified drainage problem.



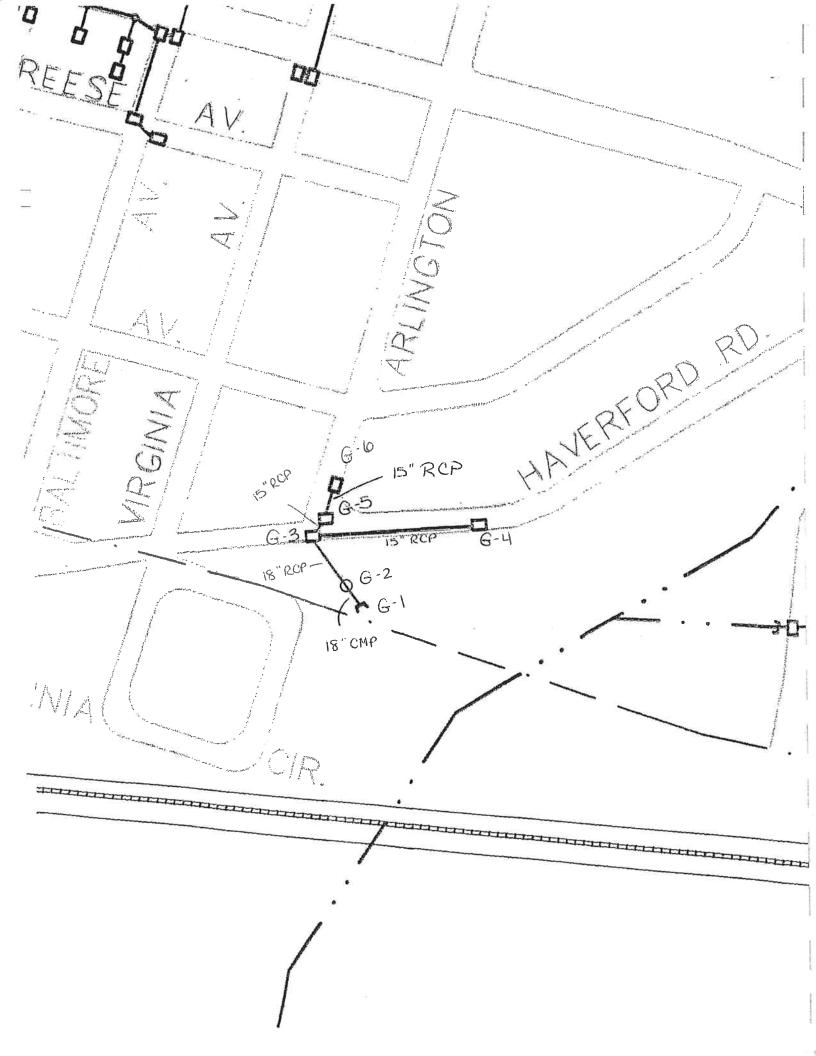
				EXISTING S	STORM WATER CONT	ROL FACILITIES FORM E.	SHI	EET 1	OF_	1					
WATERSHE	D	FORM CO	MPLETED I	3Y			NITION								
Name: Municipality: County:	Crum Creek Ridley Township Delaware	Name: Telephone: Date:	Jamie H. B 610-532-28 8/17/2004				/ man-made device or structure specifically designed and / or proceedings of the rate and / or volume of storm water runoff								
For County U															
Map ID No.	Type of Storm Wat	ter	Year Built		Contact Person	Comme									
E-1	Retention Basin		1983	1855 Consti	ci, Executive Director tution Ave, Woodlyn PA	(610) 490-6205 19094	Delaware Cour								
E-2	Retention Basin		1983	1856 Consti	ci, Executive Director tution Ave, Woodlyn PA	(610) 490-6206 19094	Delaware Cour		nority						
E-3	Retention Basin		2001		Green Estates Drive, Folsom, PA 1903	33	Swarthmore Gi	Swarthmore Green Estates							
E-								· ·							
E-								OX							
E-															
E-							*								
E-								The second second second							
Detention / F	Retention Basin	TYPICAL T	YPES OF S	TORM WAT	ER CONTROL FACILIT	ER CONTROL FACILITIES Roof-Top Storage									
Natural Pond	d or Wetland					Semi-Pervious Paving									
Parking Lot I	Pondling					Infiltration Device (Seepage / Recharge Basin or Underground Tank)									



Detention Pasin E-3 Swarthmore Green Estates

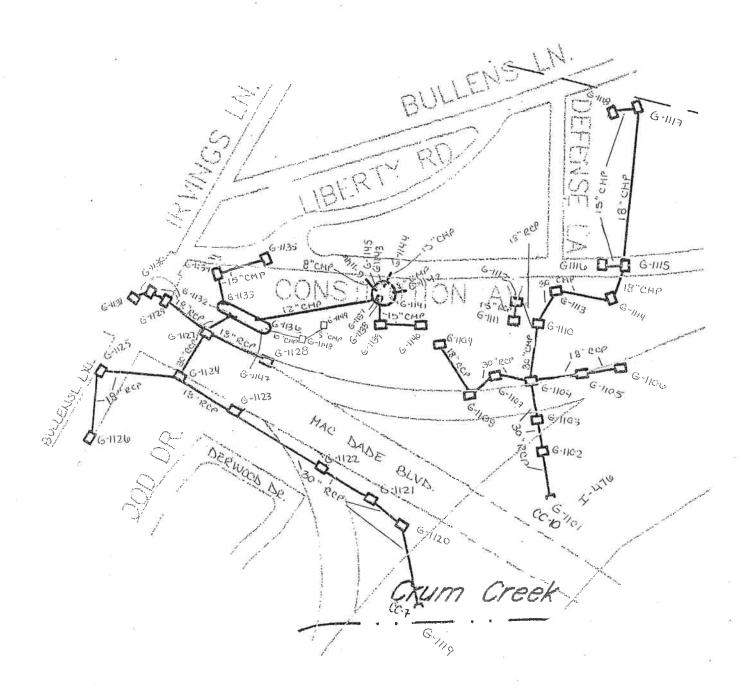
					STORM WATER CONTROL FACILITIES FORM F. SHEET 1 OF 1											
WATERSHE	D	FORM CO	MPLETED E	3Y		DEFINITION										
						Storm Water Control Facility										
Name:	Crum Creek	Name:	Jamie H. B			A natural / man-made device or structur										
Municipality:	Ridley Township	Telephone:		384		utilized to reduce the rate and / or volum	ne of storm water runoff									
County:	Delaware	Date:	8/17/2004			from a site or sites.										
For County U	se:															
			LD. L		NA N. T	0 1 1 5										
Map ID No.	Type of Storm Wat	er		Constr. Date		Contact Person	Comments									
	Control Facility		Start	End	Form A*	Name, Address and Phone										
F-	No proposed stormwater															
	facilities exist within the I															
	Township, Crum Creek V	Vatershed														
F-																
F-																
F-																
F-	2															
F-																
F-																
F-																
* Enter the st	I tormwater problem area's	Map ID No.,	if the propos	sed project w	III solve or re	educe and / all of an identified drainage problem.										
						DL FACILITIES										
Detention / R	etention Basin				Roof-Top Storage											
Natural Pond	or Wetland				Semi-Pervious Paving											
Parking Lot F	Pondling				Infiltration Device (Seepage / Recharge Basin or Underground Tank)											
						Recharge basin or undergio	Junu Tank)									

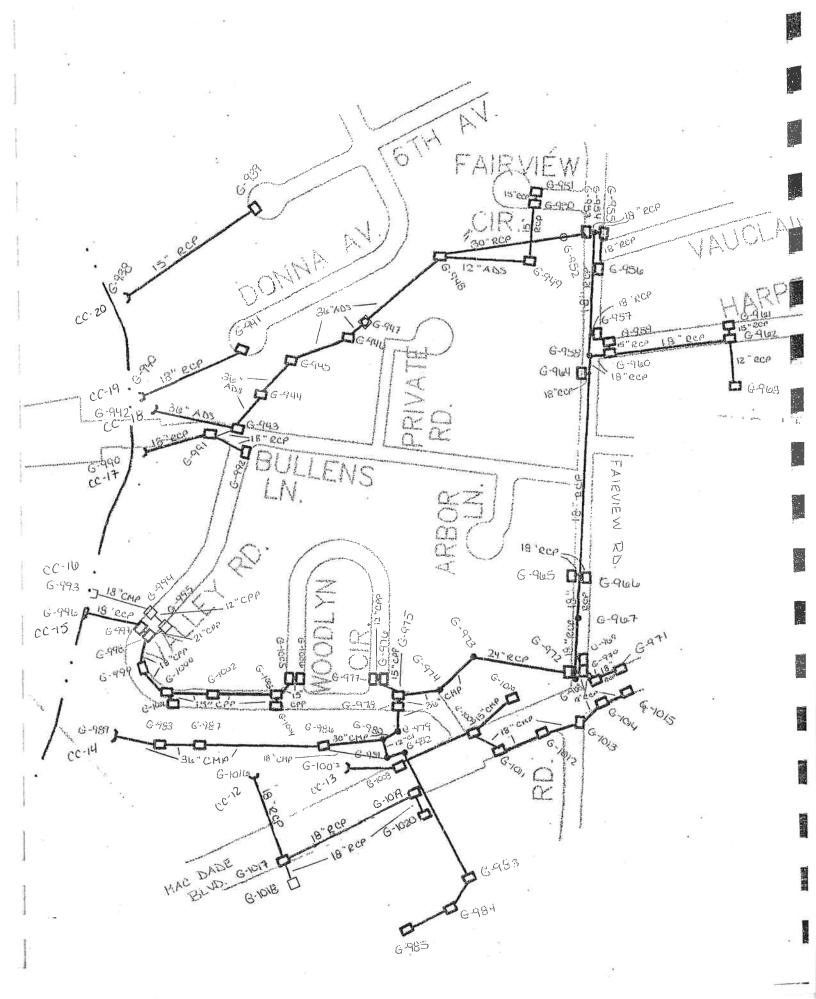
					EXISTING	STORMWAT	TER COLLE	ECTION SY	STEM FORM	G.		SHEET_	1 OF 67				
WATERSH	1ED		FORM COM	PLETED BY		INSTRUCTIONS											
						Diagram each system on the appropriate map. Establish map points to show changes in system elements,											
Name:	Crum Creek		Name:	Jamie H. Br	icker	pipe size, or pipe direction. (If unknown, outline the system extent.) Complete this form only where specific											
Municipalit	y: Ridley Town	ship	Telephone:	610-532-288	84	information on construction is available. Use a separate form for each system. Identify the points within a											
County: Delaware			Date:	8/9/2004		system consecutively (ex. G-1, G-2, G-3). Start the first point in each additional system 20 numbers higher.											
	he			de resultante de la companya della companya della companya de la companya della c		For example	le Diagrams & Form o	n on Reverse.									
N	lap ID	Sys	stem's Elemen	ts (x)		Measure	ements*				Design		Name of Final				
No.					Pipe	Ch	annel / Swa	ale	Material	Year	Data	Contact Person	Ownership and				
From	То	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibilit				
G-1	G-2	X			18"				CMP	c. 1951	no	Anne Howanski	Ridley Township				
												610-833-1922					
G-2	G-3	X			18"				RCP	c. 1951	no	Anne Howanski	Ridley Township				
												610-833-1923					
G-3	G-4	X			15"				RCP	c. 1998	no	Anne Howanski	Ridley Township				
			li e									610-833-1923					
3 -3	G-5	X			15"				RCP	c. 1951	no	Anne Howanski	Ridley Township				
	(+)											610-833-1923					
G-5	G-6	X			15"				RCP	c. 1998	no	Anne Howanski	Ridley Township				
			1				1					610-833-1924					

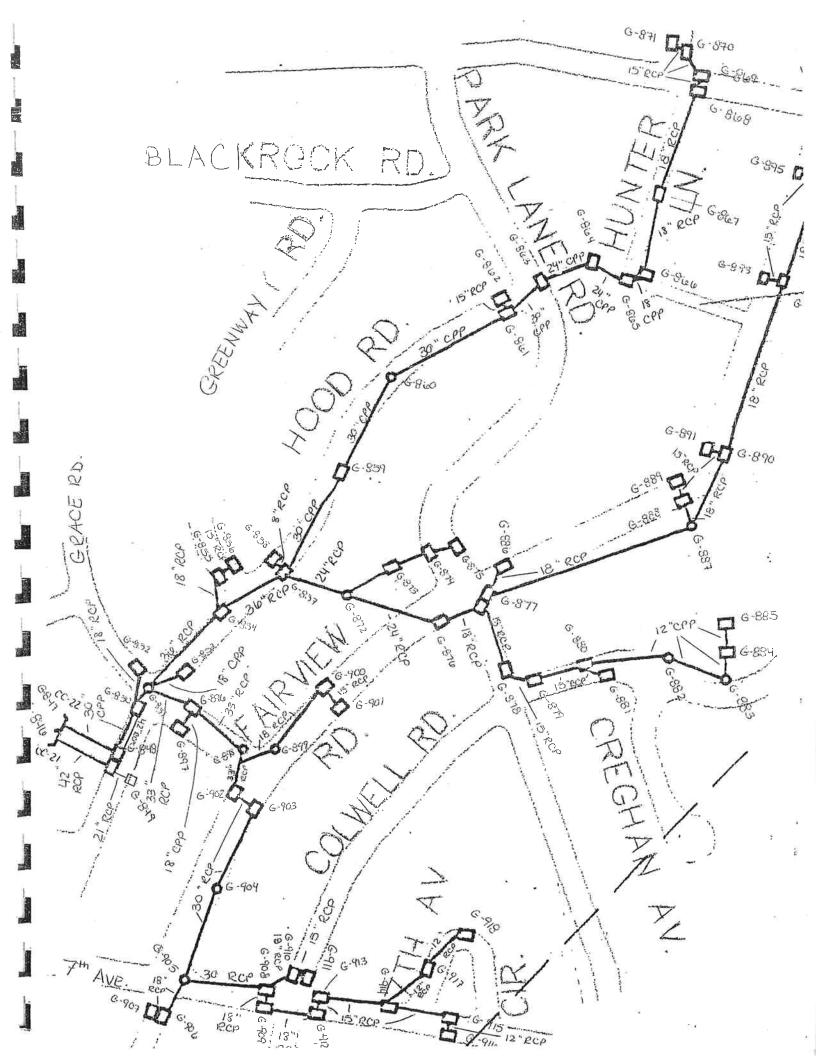


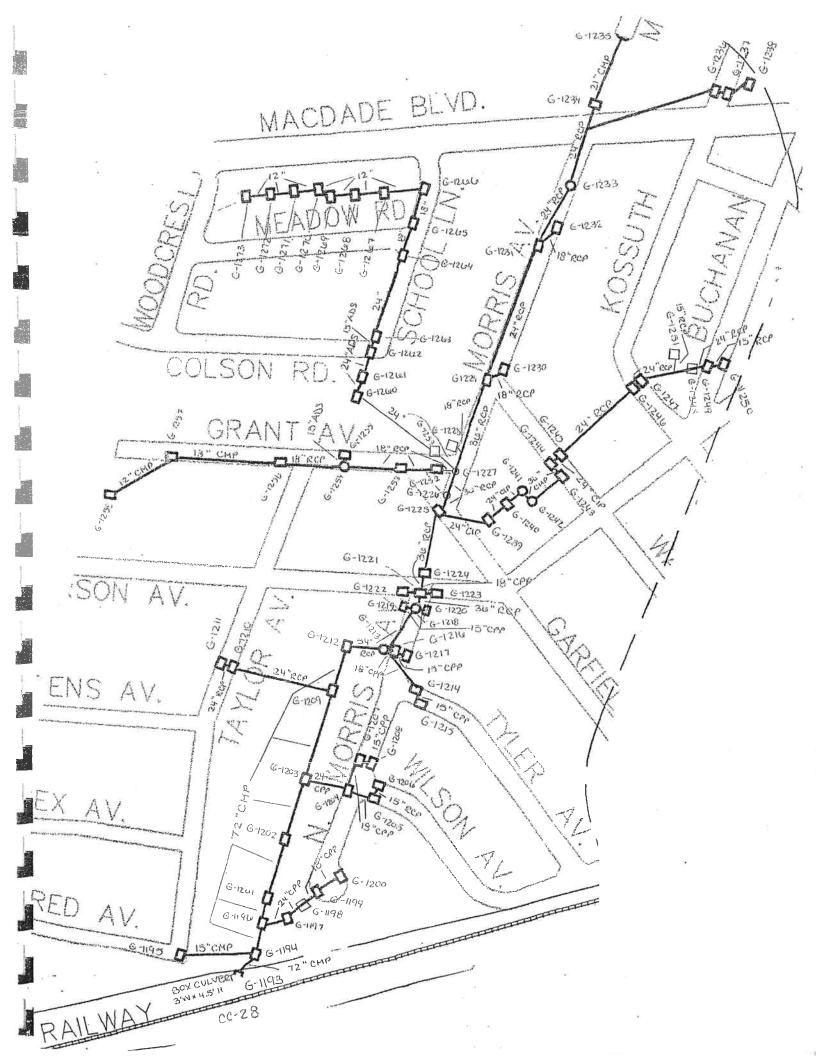
					EXISTING	STORMWAT	ER COLLE	CTION SYS	STEM FORM	G.		SHEET	3 OF 67
N	îap ID	Svs	stem's Elements		1	Measure					Design		Name of Final
	No.				Pipe	Pipe Channel / Swale				Year	Data	Contact Person	Ownership and
From	То	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
G-38	G-40	X			12"				RCP	c. 1995	no	Anne Howanski 610-833-1923	Ridley Township
G-29	G-41	X		***************************************	30"				RCP	c. 1995	no	Anne Howanski 610-833-1924	Ridley Township
G-41	G-42	X			24"				RCP	c. 1995	no	Robert Poole 610-532-2100	Ridley Park Borough
G-42	G-43	X			18"				RCP	c. 1995	no	Robert Poole 610-532-2101	Ridley Park Borough
G-43	G-44	X			15"				RCP	c. 1995	no	Robert Poole 610-532-2102	Ridley Park Borough
G-43	G-45	X			15"				RCP	c. 1995	no	Robert Poole 610-532-2103	Ridley Park Borough

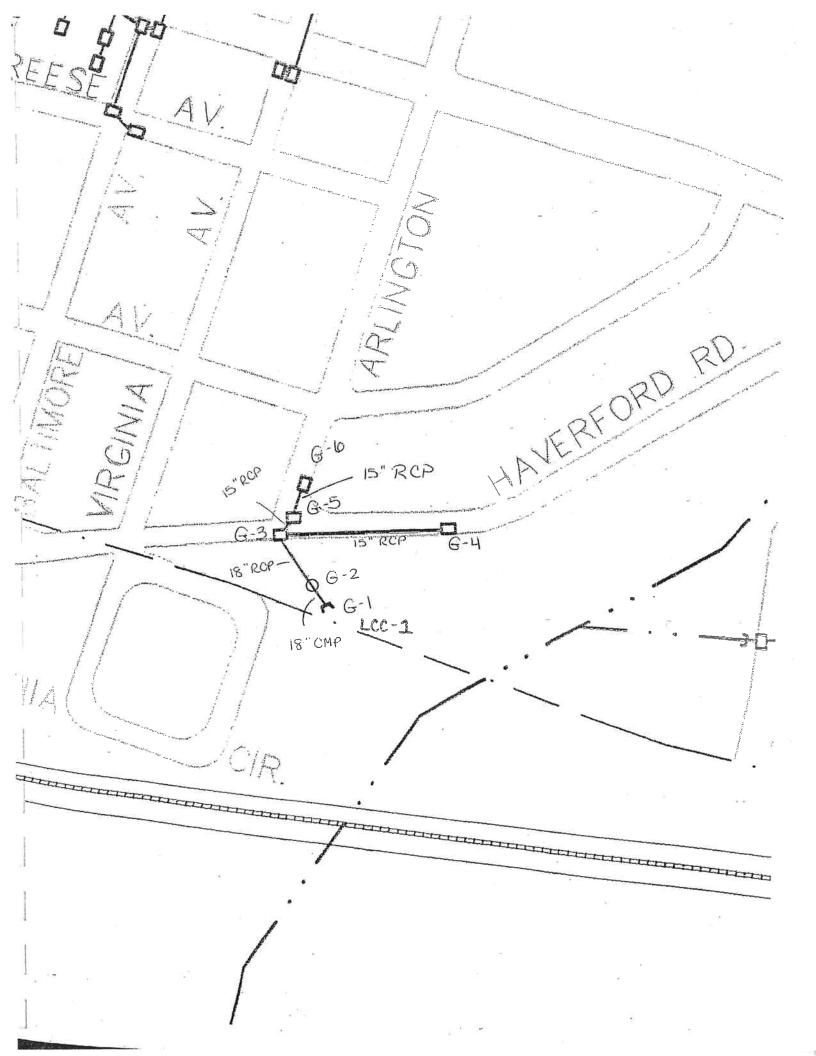
					EXISTING	STORMWA	TER COLLE	CTION SY	STEM FORM	3.		SHEET_	2 OF <u>67</u>						
WATERSH	lED .		FORM COM	PLETED BY		INSTRUCTIONS													
Name:	Crum Creek		Name:	Jamie H. Br	ricker	Diagram ea	Diagram each system on the appropriate map. Establish map points to show changes in system elements, pipe size, or pipe direction. (If unknown, outline the system extent.) Complete this form only where specific information on construction is available. Use a separate form for each system. Identify the points within a												
Municipalit			Telephone:	610-532-28															
County:	Delaware		Date:	8/9/2004								litional system 20 num							
•	<u>, </u>		1			For example	e, G-3 ends	one system	, so G-23 begin	ns the next.	le Diagrams & Form o	on Reverse.							
N	lap ID	T Svs	stem's Elemen	ts (x)		Measur					Design		Name of Final						
	No.			. ,	Pipe	Ch	annel / Swa	ale	Material	Year	Data	Contact Person	Ownership and						
From	To	Pipe	Open Channel	Swale	Ď	TW	B Depth		1	Constr.	Available	Name and Phone	Maintenance Responsibility						
G-26	G-27	X			24"				Type 'S' CPP	c. 1995	no	Robert Poole 610-532-2100	Ridley Park Borough						
G-27	G-28	X			36"				RCP	c. 1995	no	Anne Howanski 610-833-1922	Ridley Township						
G-28	G-29	X			30"				RCP	c. 1995	no	Anne Howanski 610-833-1923	Ridley Township						
G-29	G-30	X			12"				CPP	c. 1995	no	Anne Howanski 610-833-1924	Ridley Township						
G-29	G-31	Х			24"				RCP	c. 1995	no	Anne Howanski 610-833-1925	Ridley Township						
G-31	G-32	X			24"				RCP	c. 1995	no	Anne Howanski 610-833-1926	Ridley Township						
G-31	G-33	X			15"				RCP	c. 1995	no	Anne Howanski 610-833-1927	Ridley Township						
G-32	G-34	X			15"				RCP	c. 1995	no	Anne Howanski 610-833-1928	Ridley Township						
G-34	G-35	Х			12"				RCP	c. 1995	no	Anne Howanski 610-833-1929	Ridley Township						
G-34	G-36	X			15"				RCP	c. 1995	no	Anne Howanski 610-833-1930	Ridley Township						
G-34	G-37	X			15"				RCP	c. 1995	no	Anne Howanski 610-833-1931	Ridley Township						
G-37	G-38	X			15"				RCP	c. 1995	no	Anne Howanski 610-833-1922	Ridley Township						
G-38	G-39	Х			6"				RCP	c. 1995	no	Anne Howanski 610-833-1922	Ridley Township						



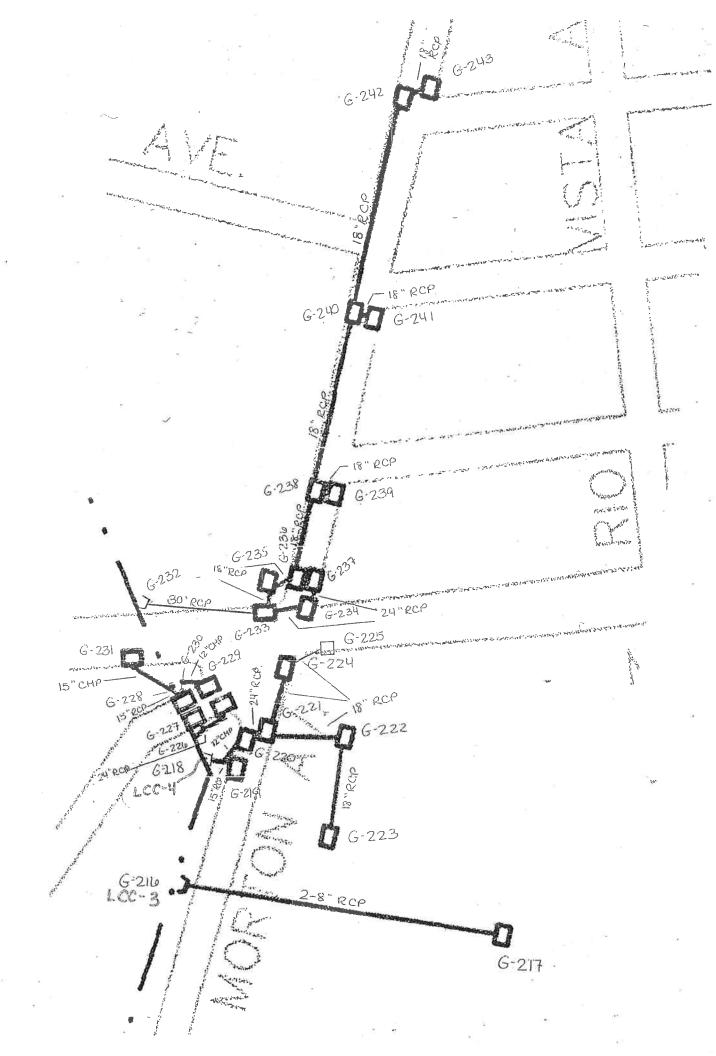


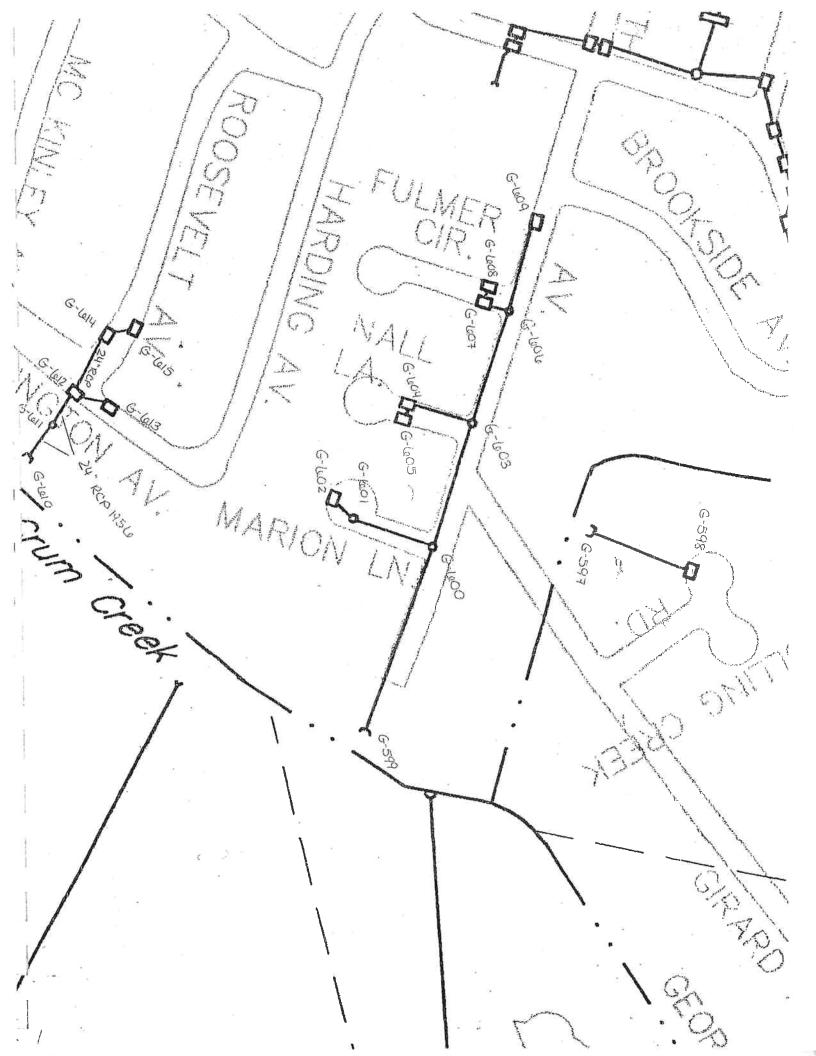


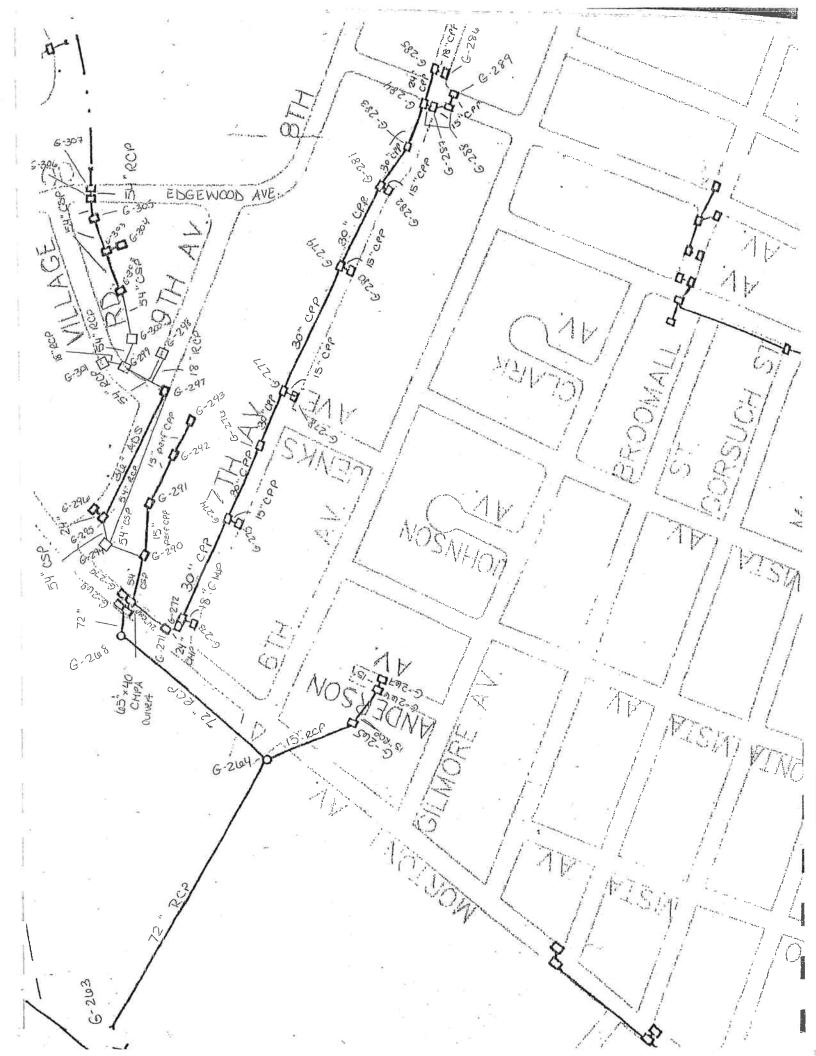




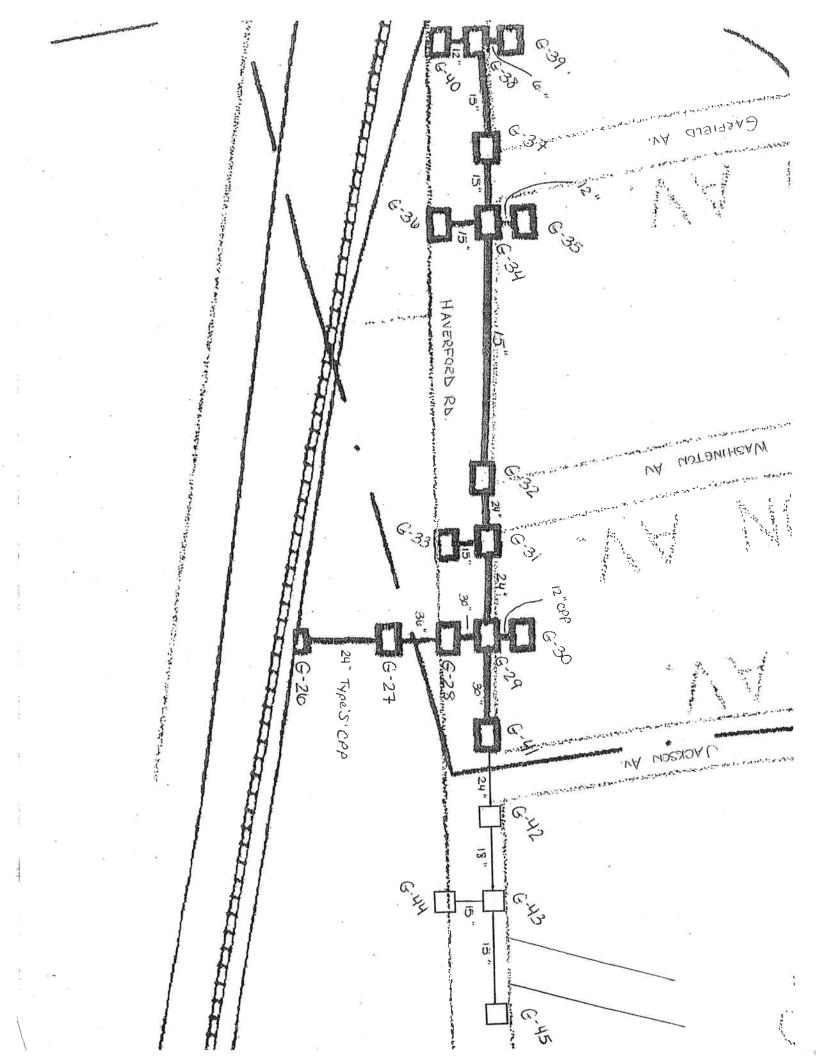
MACONDE BLIT 5 x D' R.C. CUMBRY £7-9





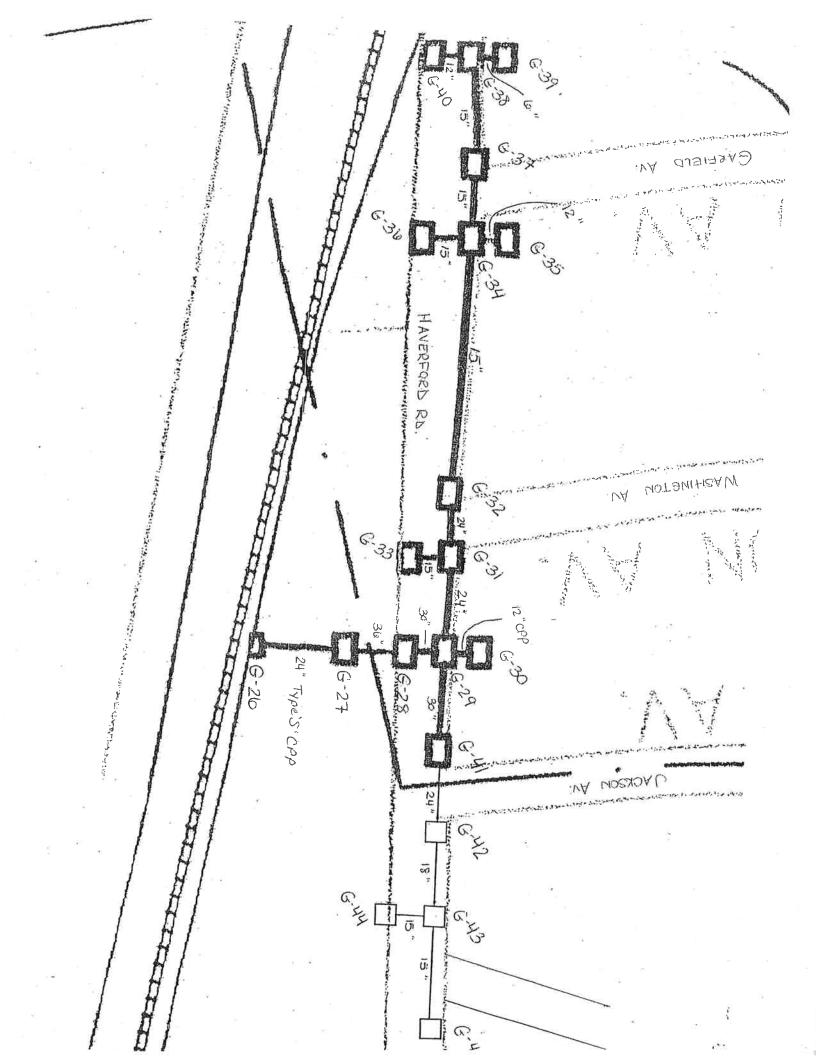


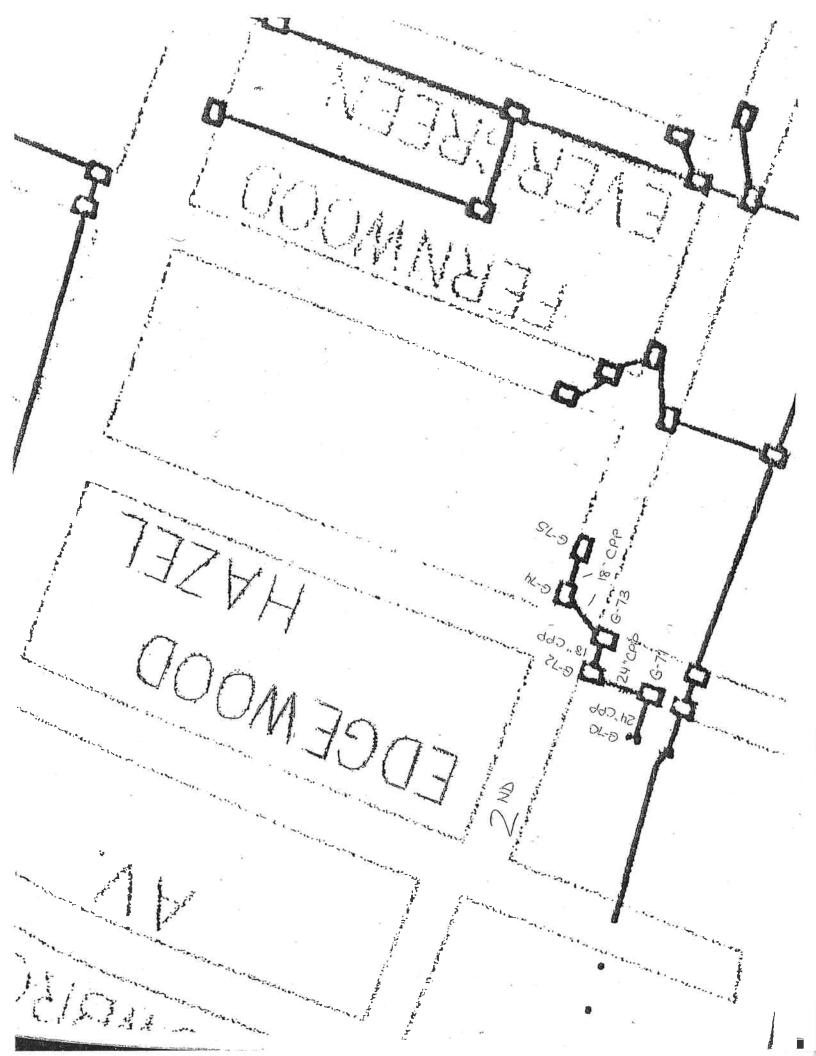
EDGEWOOD HAZEL

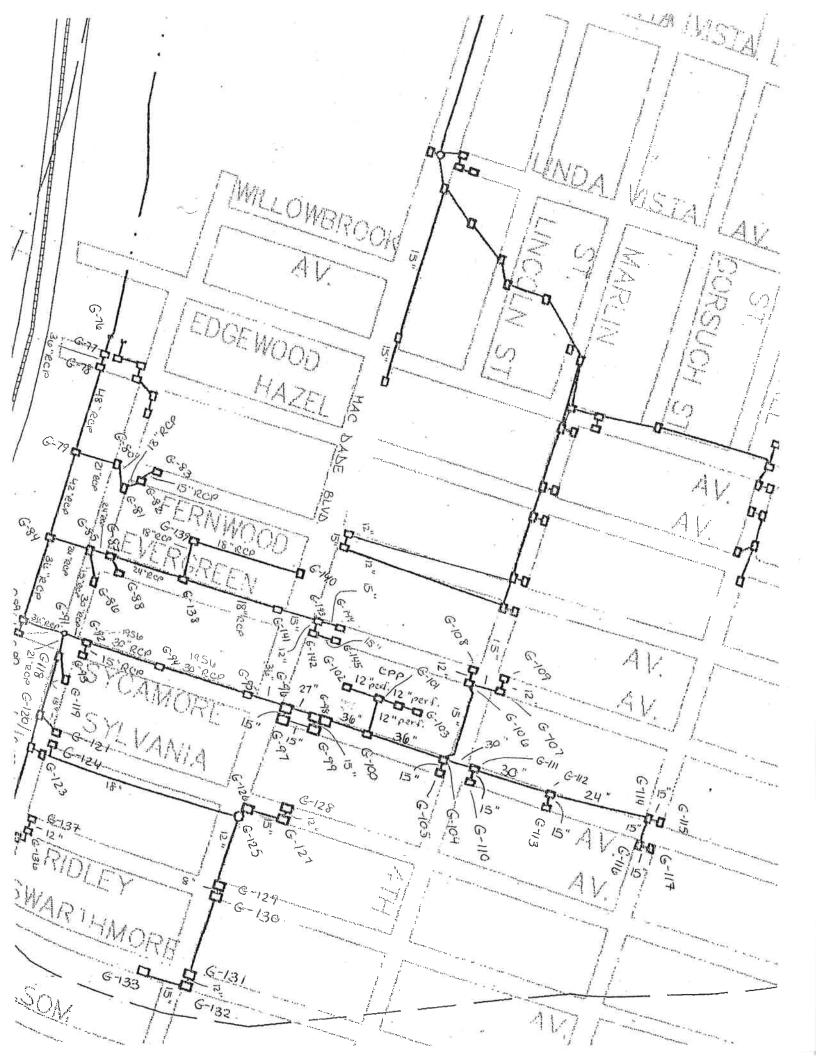


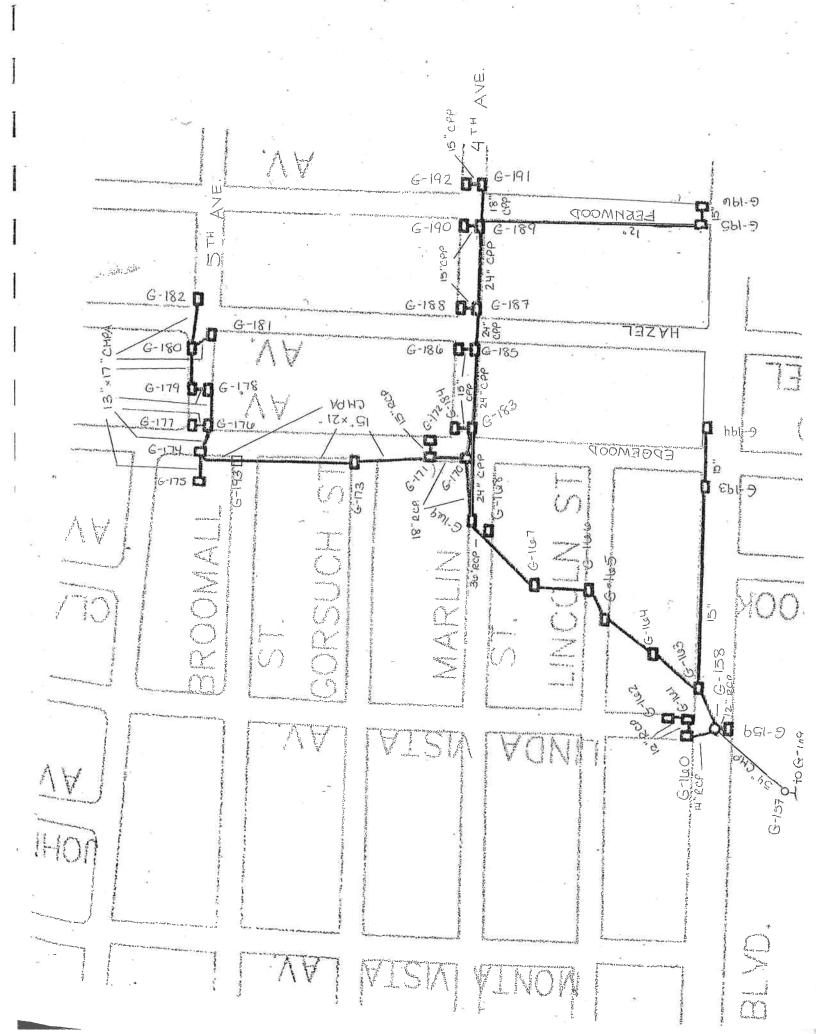
4 OF 67	points to show changes in system elements, ent.) Complete this form only where specific or each system. Identify the points within a n each additional system 20 numbers higher. See Sample Diagrams & Form on Reverse.	Name of Final	Ownership and	Maintenance Responsibility	Ridley Township		Ridley Township		Ridley Township	The second secon	Ridley Township		Ridley Township	The second secon	Ridley Township	Ridley Township		Ridley Township		Ridley Township		Ridley Township			
SHEET			Contact Person	Name and Phone	Anne Howanski	610-833-1922	Anne Howanski	610-833-1922	Anne Howanski	610-833-1923	Anne Howanski	610-833-1924	Anne Howanski	610-833-1925	Anne Howanski 610-833-1926	Anne Howanski	610-833-1927	Anne Howanski	610-833-1928	Anne Howanski	610-833-1929	Anne Howanski	610-833-1930		
		Design	Data	Available	о О		2		<u>о</u> г		on		01		OU	20		<u>о</u> г		00		91			
(5)		parate form the first point ins the next		Үеаг	Constr.	c. 1951	•	c. 1996		c. 1996		c. 1996		r		c. 1995	c. 1995		c. 1995		c. 1995		c. 1995		
ECTION SYSTEM FORM G	INSTRUCTIONS opriate map. Esta	own, oddine une ible. Use a sep	G-3). Start the	800	Material		RCP		RC	Culvert	RC	Culvert	RC	Culvert	natural		СРР	CPP		CPP		CPP		CPP	
				wale	Depth																				
ATER COL		system consecutively	Measurements*	Channel / Swale	В															-					
EXISTING STORMWATER COLI	Diagram e	informatio	system co	Measu		ML																		=	
EXISTIN	TED BY SC C C C C C C C C C C C C C C C C C C	. ə w	Wall Mu	1																					

MACDADE BLID 60-8 5 x D x C. CUNNELY



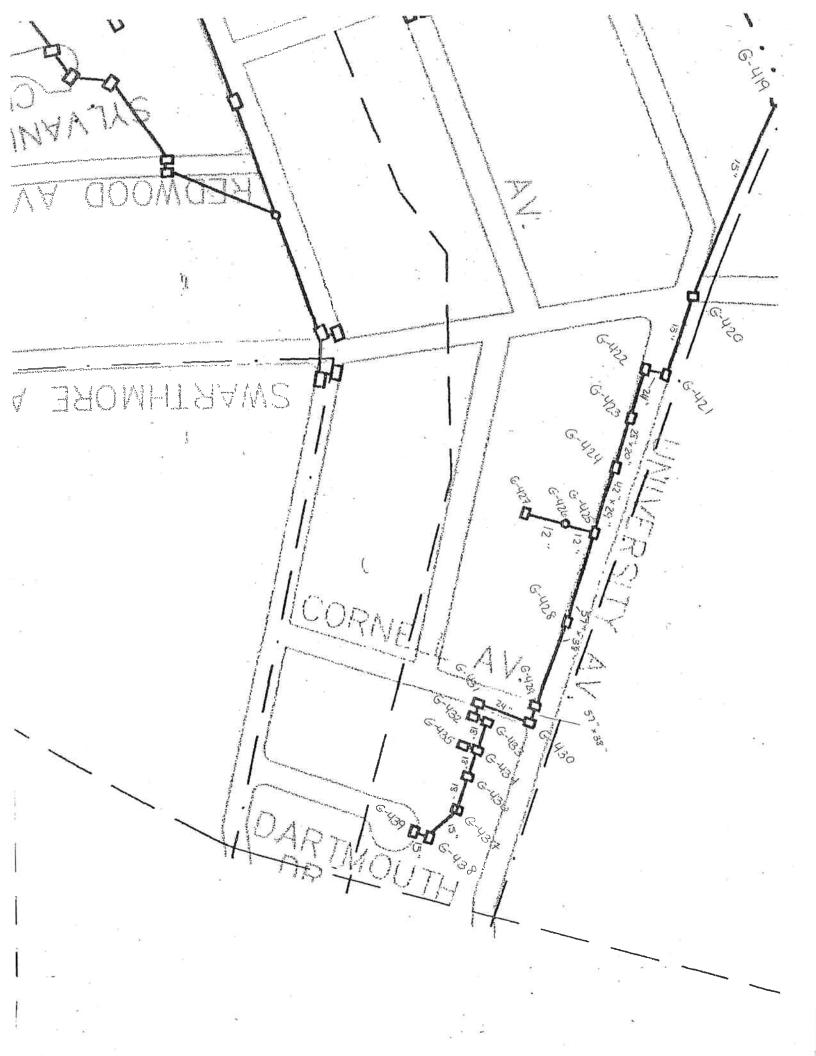


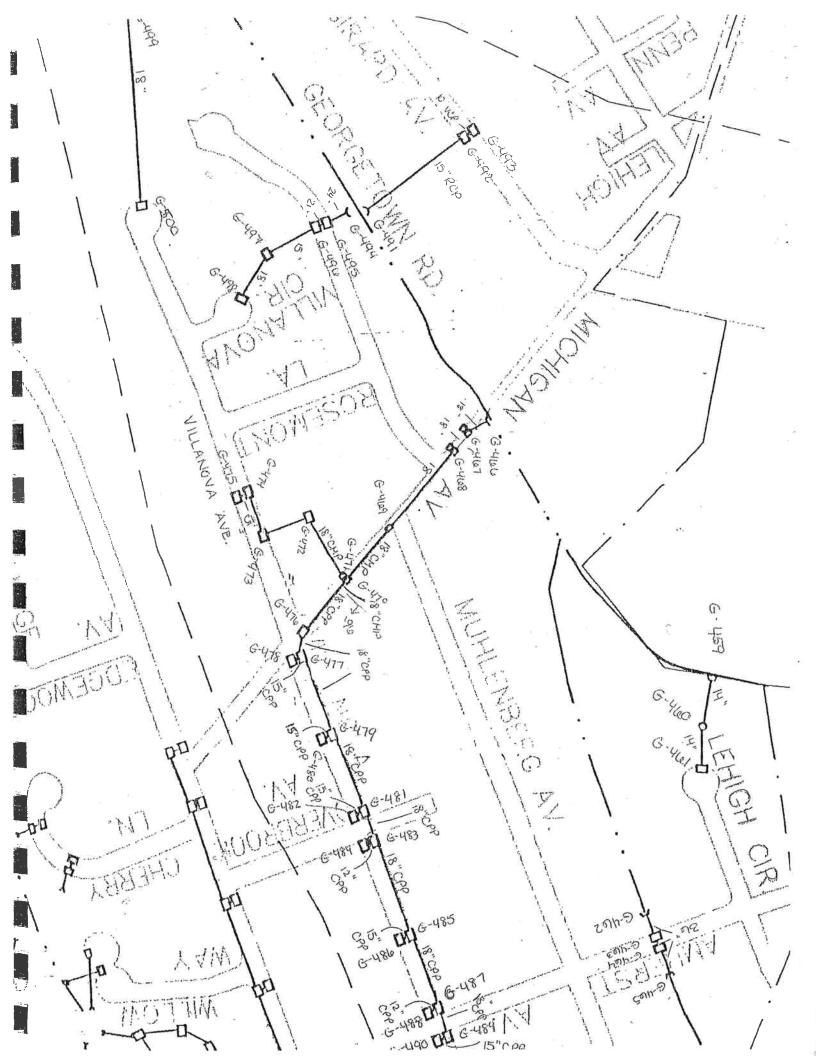


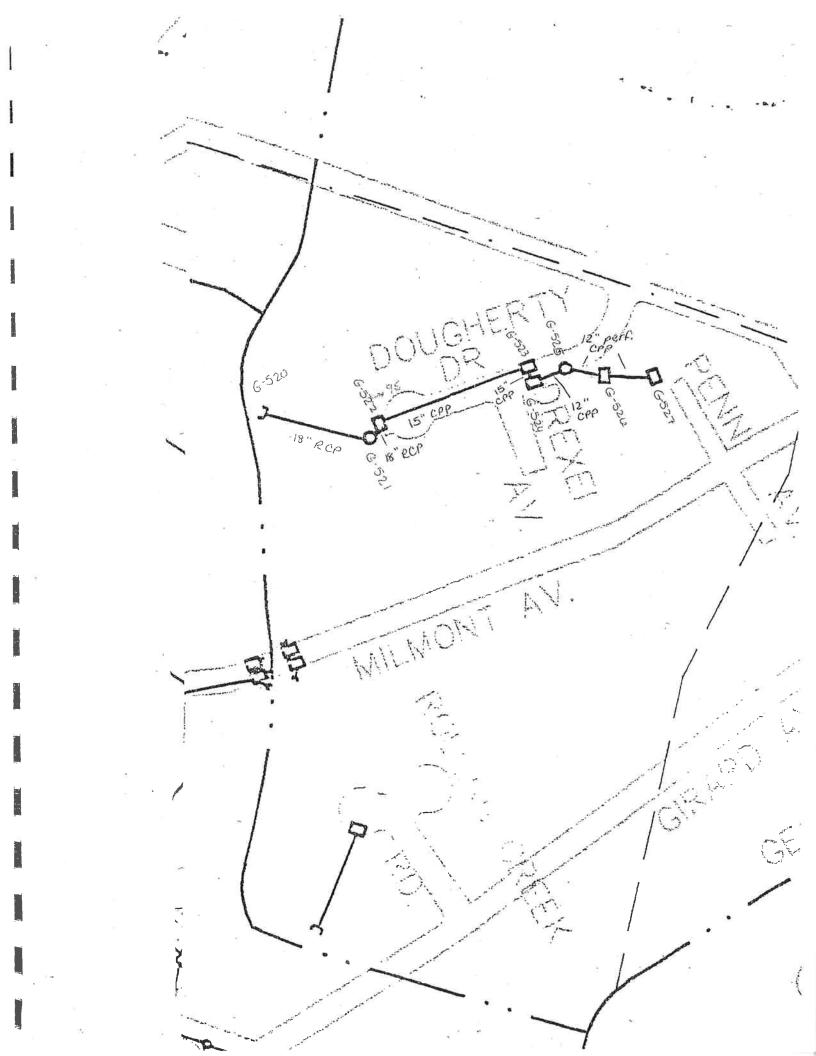


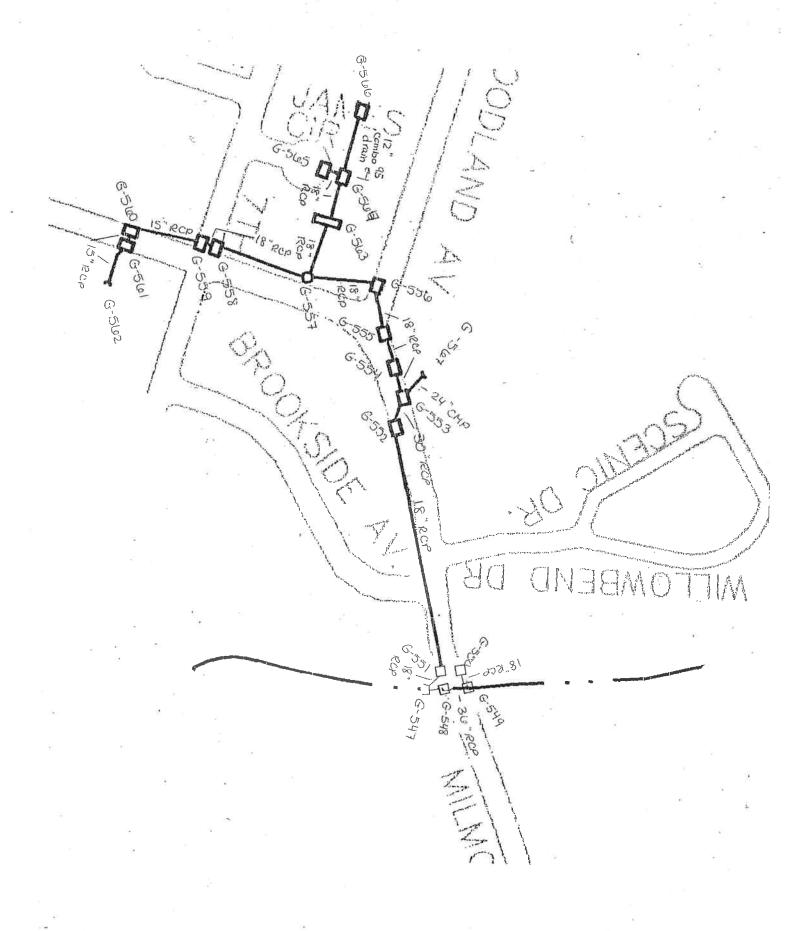
SCO SCO G-326 6:33 e.334 31, KCb 3VA AINAVJYZ 15. CC0 15" RCP 6-352 15" RCP 13"CCP G-5:80 3/18.3 OH AV DI D

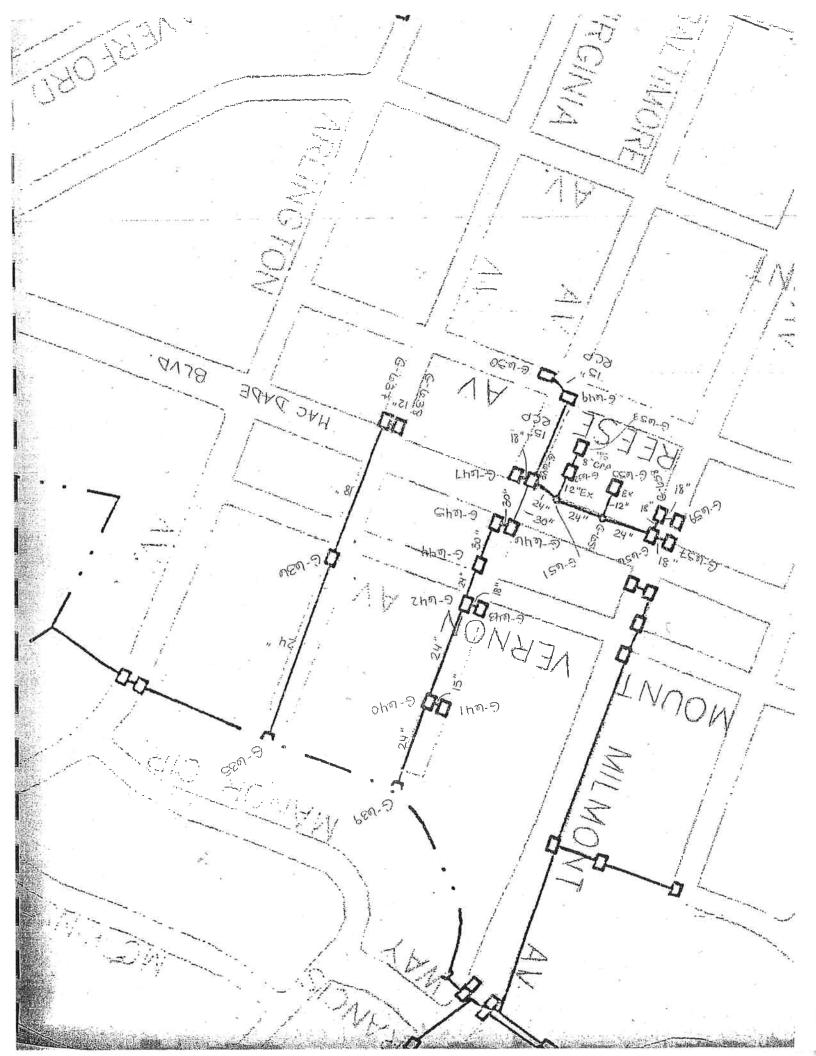
RTHMORE 6-381 - : 088-9 WA COSTA DE

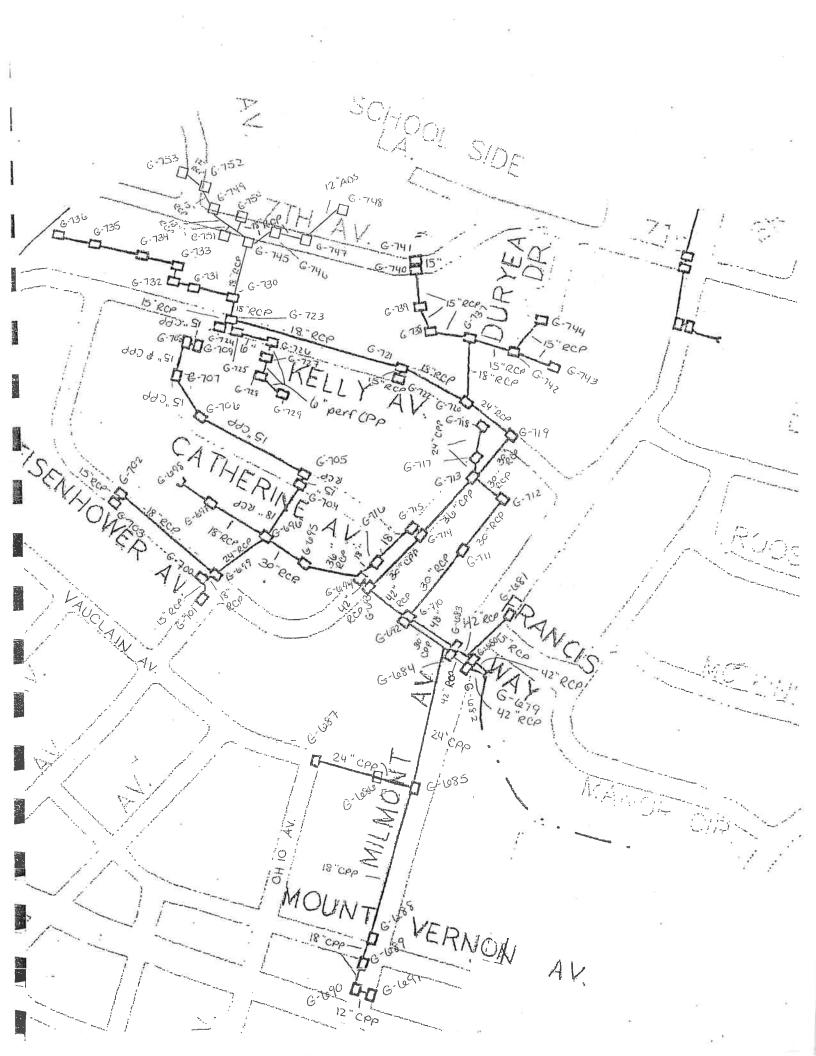


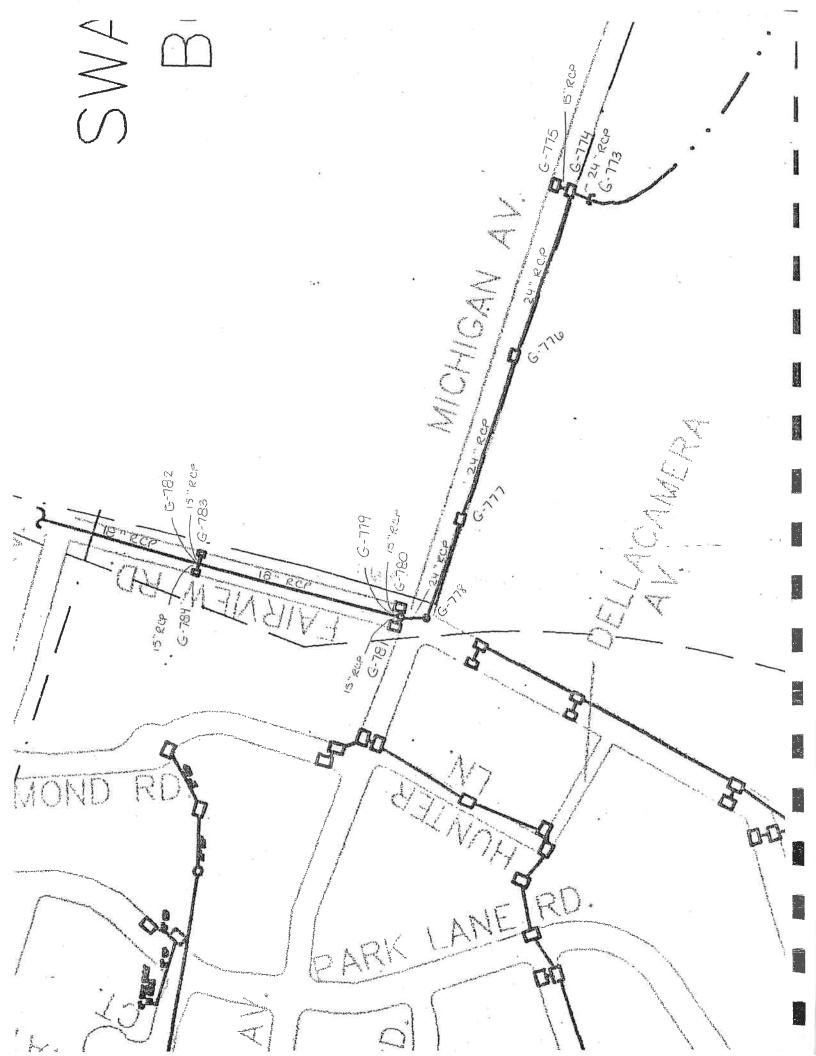












Form O - Outfall Data

Person: J. H. Bricker

Date: 12/

Time Since Last Rain was > 72 Hours:

Quantity of Last Rain: < 0.1 inches: > 0.1 inches

Days Since Last Rain:

Municipality: Ridley Township

Name of receiving water: Crum Creek

	_	نحند	_	Т		П			Т		\neg	П	\neg
Rating	(0-5)												
Describe land use of Rating	upstream drainage	area.											
Water	Color/Odor	(Yes or no) (specify if floatables,	algae or sediment	present)				Ť					
Flow	Observed	(Yes or no)											
Channel	bes*	(H:V)											
Channel		Width	(feet)										
Channel	Depth												
Depth of	ē	(feet)											
Pipe	eter				12" TCP	36"PCP	18" RCP	24" RCP	18."	18"	3C" RCP	27" RCP	30" RCP
Time	(00:00)	am/pm											
Storm	Drain?	Yes/No	Not	sure									
Photo	**												
Pine	4)	*			CC-1	CC-2	CC-3	CC-4	cc-5	9-22	CC-7	S-CO-8	6-22

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment deposition, algae or debris, pipe collapsed or crumbling,

blocked catch basins or drain)

H/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

SHICK

Form O - Outfall Data

Person: J. H. Bricker

Date: 12/

Time Since Last Rain was > 72 Hours:

Quantity of Last Rain: < 0.1 inches: > 0.1 inches

Days Since Last Rain:

Municipality: Ridley Township

Crum Creek Name of receiving water:

<u>_</u>	upstream drainage (0-2)	area.											
Water	Color/Odor	(Yes or no) (specify if floatables,	algae or sediment	present)									
Flow	Observed	(Yes or no)											
Channel	Side Slopes* Observed	(H:V)											
Channel		Width											
Channel	Depth												
Depth of	e)	(feet)											
Pipe	Diameter	(inches)			30 " RCP	18" RCP	18" RCP	0.1	340" CMP	18" RCP	18 "CHP	18" RCP	
Time													
Storm	Drain?	Yes/No	Not	sure									
Photo	3 7#							-					
Pine	Swale	**	:		CC -10	CC -11	CC-12	CC -13	CC -14	CC -15	CC -16	CC -17	

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment deposition, algae or debris, pipe collapsed or crumbling,

blocked catch basins or drain)

H/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

NOTES:

Form O - Outfall Data

Person: J. H. Bricker

Date: 12/04

Time Since Last Rain was > 72 Hours:

Quantity of Last Rain: < 0.1 inches: > 0.1 inches

Days Since Last Rain:

Municipality: Ridley Township

Crum Creek Name of receiving water:

				The second second								
Pipe	Photo	Storm	Time	Pipe	Depth of	Channel		Channel	Flow	Water	4_	Rating
Swale	*	Drain?	(00:00)	Diameter	flow in pipe	Depth		Side Slopes*	Observed	Color/Odor	upstream drainage	(0-2)
**		Yes/No	am/pm	(inches)	(feet)		Width	(H:V)	(Yes or no)	(Yes or no) (specify if floatables,	area.	
		Not								algae or sediment		
		sure								present)		
CC-19				18" RCP								
CC -20				15" RCP								
CC -21				42" RCP								
CC -22				30,06								
CC -23				30"RCP								
CC -24				24" CSP			- 14					
CC -25				24" RCP								
CC -26				15" RCP								
CC -27				30" ADS								
cc-28				72" CHP								

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

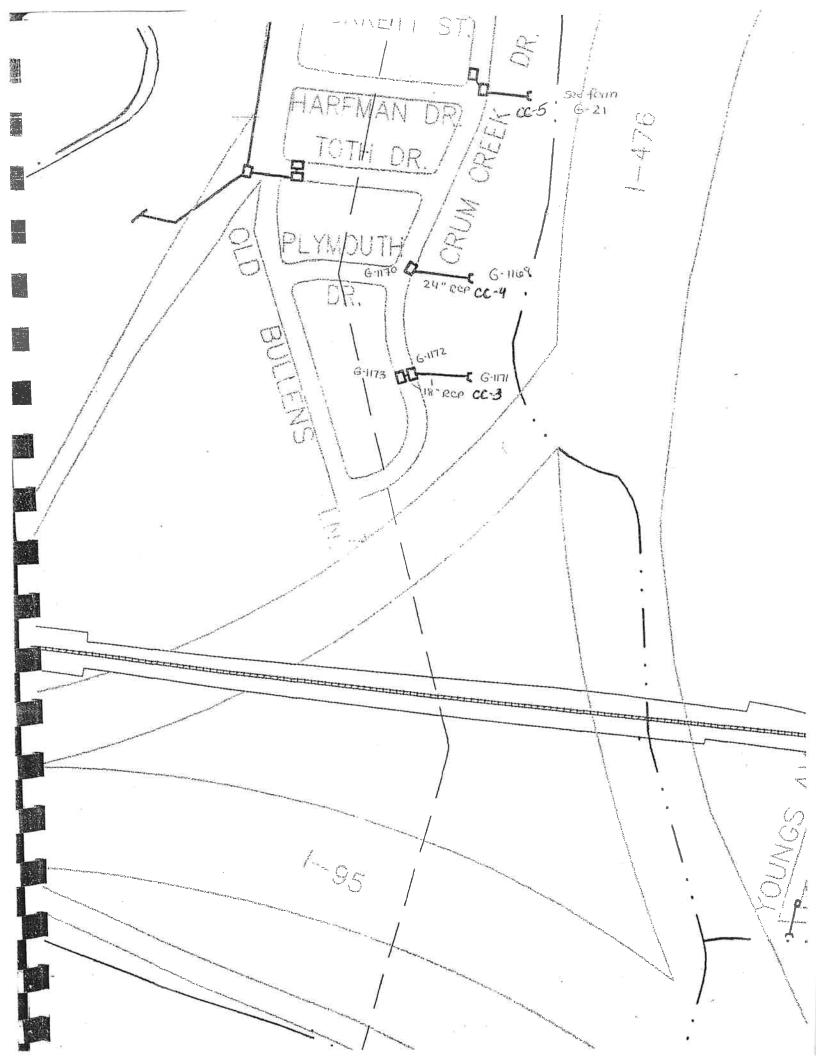
2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment deposition, algae or debris, pipe collapsed or crumbling,

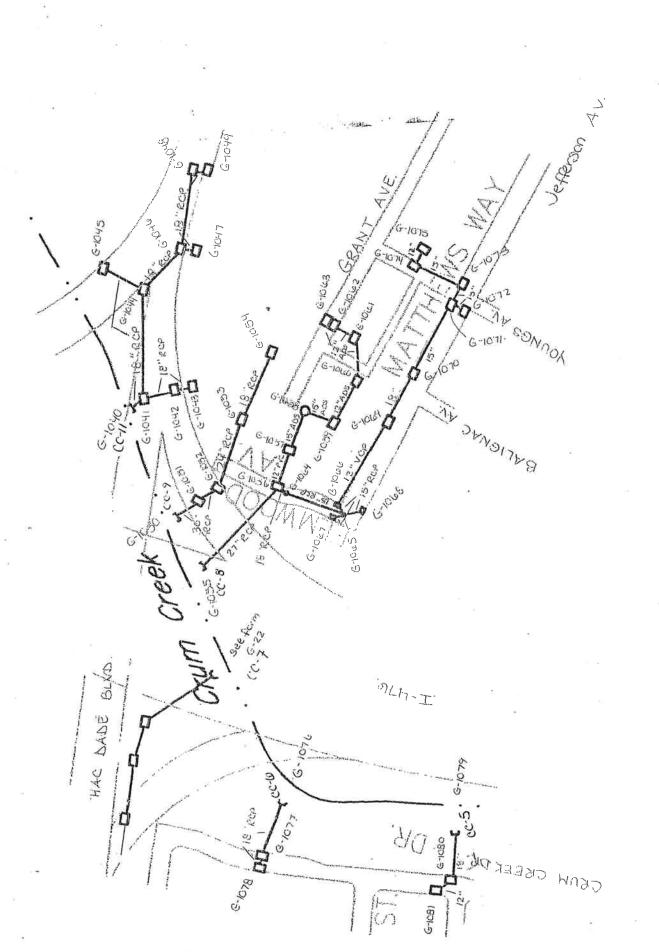
blocked catch basins or drain)

H/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

ガ双 UNT+Crum Creek SANS 15 PCF G1305 Gr Spr G-12416 is per G-13/54 6-1308 Q 24 G-Joseph D ROP 24" RCP 1204 G-130 24" CSP G-1311 15" VCP 1 G-1315 6-139 G-1.312 15" BCP G-1313 cc -26 h2-33 RAMOALL G-1318- RCP 6-1318 0-1322 6,1326 9000 CC-2 6-1325 G-1321 6-1323 247 CC-1 G-1324 nu.





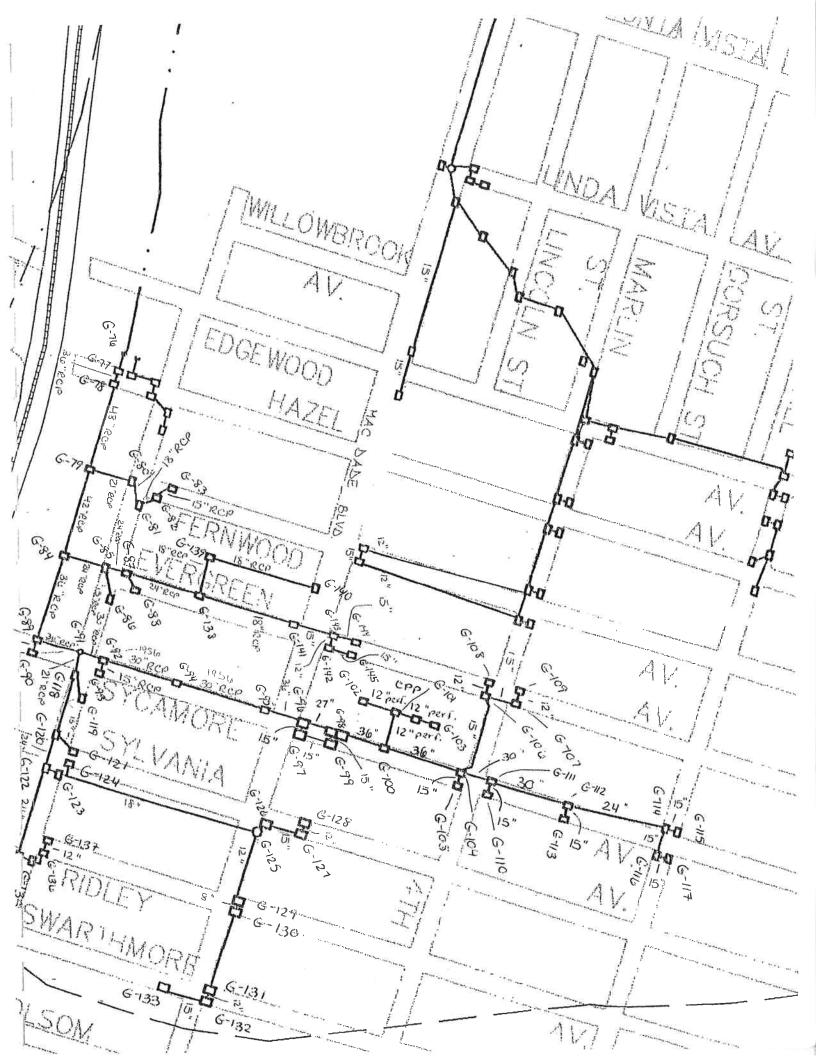
					EXISTING	STORMWAT	ER COLLE	CTION SYS	STEM FORM	j.		SHEET	5 OF 67
	Crum Creek Ridley Town Delaware		FORM COMI Name: Telephone: Date:	Jamie H. Br 610-532-286 8/9/2004	icker	Diagram eac pipe size, or information o	h system o pipe directi on construc	n the appropon. (If unknotion is availa	oriate map. Esown, outline the	tablish map e system ex parate form	tent.) Comp for each sys in each add	ow changes in system lete this form only who tem. Identify the point itional system 20 num	s within a bers higher.
County:	Delaware		- Bate.	5,0,200		For example	, G-3 ends	one system	so G-23 begi	ns the next.	See Sampl	e Diagrams & Form o	Name of Final
	lap ID No.	Sys	stem's Elemen		Pipe	Measure Ch	ments* annel / Swa	ale	Material	Year Constr.	Design Data Available	Contact Person Name and Phone	Ownership and Maintenance Responsibilit
From 3-76	To G-77	Pipe X	Open Channel	Swale	36"	TW	В	Depth	RCP	c. 1955	no	Anne Howanski 610-833-1922	Ridley Township
3 -77	G-78	X			36"				RCP	c. 1955	no	Anne Howanski 610-833-1922	Ridley Township
G-78	G-79	X		-	48"				RCP	c. 1955	no	Anne Howanski 610-833-1923	Ridley Township
3- 79	G-80	X	-		21"				RCP	c. 1955	no	Anne Howanski 610-833-1924	Ridley Township
G-80	G-81	X			18"				RCP	c. 1955	no	Anne Howanski 610-833-1925	Ridley Township
G-81	G-82	X			18"				RCP	c. 1995	no	Anne Howanski 610-833-1926	Ridley Township
G-82	G-83	X			15"				RCP	c. 1995	no	Anne Howanski 610-833-1927	Ridley Township
G-79	G-84	X			42"				RCP	c. 1995	no	Anne Howanski 610-833-1928	Ridley Township
G-84	G-85	X			24"				RCP	c. 1995	no	Anne Howanski 610-833-1929	Ridley Township
G-85	G-86	X			15"				RCP	c. 1995	no	Anne Howanski 610-833-1930	Ridley Township
G-85	G-87	X	-		24"				RCP	c. 1955	no	Anne Howanski 610-833-1931	Ridley Township
G-87	G-88	X	-		18"				RCP	c. 1955	no	Anne Howanski 610-833-1922	Ridley Township
G-87	G-138	X	-		24"		1.	1	RCP	c. 1955	no	Anne Howanski 610-833-1922	Ridley Township

					EXISTING	STORMWAT	TER COLL	ECTION SYS	STEM FORM	<u>G.</u>		SHEET_	6 OF 67 Name of Final
N/	lap ID	Svs	stem's Elements	(x)		Measure	ements*				Design	0 I (F)	1
	No.	",	=		Pipe	Ch	annel / Sw	ale	Material	Year	Data	Contact Person	Ownership and
From	To	Pipe	Open Channel	Swale	Ď	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibilit
3-138	G-139	X	Орен опаппе		18"				RCP	c. 1955	no	Anne Howanski 610-833-1923	Ridley Township
G-139	G-140	X			18"				RCP	c. 1955	no	Anne Howanski 610-833-1924	Ridley Township
G-138	G-141	X			18"				RCP	c. 1955	no	Anne Howanski 610-833-1925	Ridley Township
G-141	G-143	X			15"				RCP	c. 1995	no	Anne Howanski 610-833-1926	Ridley Township
G-143	G-142	X			12"				RCP	c. 1995	no	Anne Howanski 610-833-1927	Ridley Township
G-143	G-144	X			15"				RCP	c. 1995	no	Anne Howanski 610-833-1928	Ridley Township
9-142	G-145	X			15"				RCP	c. 1995	no	Anne Howanski 610-833-1929	Ridley Township
G-84	G-89	X			36"				RCP	c. 1995	no	Anne Howanski 610-833-1930	Ridley Township
G-89	G-90	X			15"				RCP	c. 1955	no	Anne Howanski 610-833-1922	Ridley Township
G-89	G-91	X			36"				RCP	c. 1955	no	Anne Howanski 610-833-1922	Ridley Township
3-91	G-92	X			30"				RCP	c. 1955	no	Anne Howanski 610-833-1922	Ridley Township
G-92	G-93	X		-	15"				RCP	c. 1955	no	Anne Howanski 610-833-1923	Ridley Township
G-92	G-94	X	02		30"				RCP	c. 1955	no	Anne Howanski 610-833-1924	Ridley Township
G-94	G-95	X	100		30"				RCP	c. 1955	no	Anne Howanski 610-833-1925	Ridley Township
3-95	G-96	X			36"				RCP	c. 1955	no	Anne Howanski 610-833-1926	Ridley Township
G-96	G-97	X			15"				RCP	c. 1955	no	Anne Howanski 610-833-1927	Ridley Township

					EXISTING			ECTION SYS	STEM FORM	G,		SHEET	7 OF 67 Name of Final
N	lap ID	T Svs	stem's Elements	s (x)		Measure					Design		
	No.	1		` ,	Pipe	Ch	annel / Swa	ale	Material	Year	Data	Contact Person	Ownership and
From	T To	Pipe	Open Channel	Swale	b	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
3-96	G-98	X	Open onamer		27"				RCP	c. 1955	no	Anne Howanski	Ridley Township
3-90	0-30	1	1							}		610-833-1928	
3-98	G-99	X	+		15"				RCP	c. 1955	no	Anne Howanski	Ridley Township
5-90	19-99	^	1									610-833-1929	
G-98	G-100	X	-		36"				RCP	c.1995	no	Anne Howanski	Ridley Township
5-90	G-100	^	1									610-833-1930	
0.400	G-101	X	-		12"			-	PCPP	c. 1995	no	Anne Howanski	Ridley Township
G-100	G-101	^	1 1		12							610-833-1931	
0.404	0.400	 			12"		-		PCPP	c. 1995	no	Anne Howanski	Ridley Township
G-101	G-102	X	1 1		12		1					610-833-1922	
- 121		 	4		12"				PCPP	c. 1995	no	Anne Howanski	Ridley Township
G-101	G-103	X	1		12		1	1				610-833-1922	
- 122		 			36"		-		RCP	c. 1955	no	Anne Howanski	Ridley Township
G-100	G-104	Х			30	ľ				0, 1000		610-833-1923	
		- V			15"				RCP	c. 1955	no	Anne Howanski	Ridley Township
G-104	G-105	Х			15		1	1	'	0, 1000		610-833-1924	
			_		15"			-	RCP	c. 1955	no	Anne Howanski	Ridley Township
G-104	G-106	X			15		1		1101	0. 1000		610-833-1925	
					15"				RCP	c. 1995	no	Anne Howanski	Ridley Township
G-106	G-107	X			15				1.01	0. 1000	,,,,	610-833-1926	
			_		12"				RCP	c. 1995	no	Anne Howanski	Ridley Township
G-107	G-109	X			12"	l			1	0. 1000	110	610-833-1927	
					12"				RCP	c. 1995	no	Anne Howanski	Ridley Township
G-106	G-108	X			12	l			I ROI	0. 1000	1.5	610-833-1928	
					30"		9	-	RCP	c. 1995	no	Anne Howanski	Ridley Township
G-104	G-111	Х		•	30"			1	1101	0. 1000		610-833-1929	
					15"		 	+	RCP	c. 1995	no	Anne Howanski	Ridley Township
G-111	G-110	X	1		15"				1.01	0. 1500	"	610-833-1930	,
					00"		-	-	RCP	c. 1996	no	Anne Howanski	Ridley Township
G-111	G-112	X			30"				NOP	0.1550	1	610-833-1931	
					1				RCP	c. 1995	no	Anne Howanski	Ridley Township
G-112	G-113	Х			15"				KCP	C. 1980	1 110	610-833-1922	,,
												010-030-1022	

					EXISTING :	STORMWAT	TER COLL	ECTION SY	STEM FORM	Ģ,		SHEET	8 OF 67 Name of Final
N/	lap ID	T Svs	stem's Elements	(x)		Measure					Design		1
	No.		3.5(m c = 1.0111.0111.0	V-7	Pipe	Ch	annel / Sw	ale	Material	Year	Data	Contact Person	Ownership and
From	To To	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
G-112	G-114	X	Opon oname.		24"				RCP	c. 1995	no	Anne Howanski 610-833-1922	Ridley Township
G-114	G-115	X			15"				RCP	c. 1995	no	Anne Howanski 610-833-1923	Ridley Township
G-114	G-116	X			15"				RCP	c. 1995	no	Anne Howanski 610-833-1924	Ridley Township
3-116	G-117	X			15"				RCP	c. 1995	no	Anne Howanski 610-833-1925	Ridley Township
3-91	G-118	X		2 da 2 Taltimo	21"				RCP	c. 1955	no	Anne Howanski 610-833-1926	Ridley Township
G-118	G-119	X			15"				RCP	c. 1955	no	Anne Howanski 610-833-1927	Ridley Township
G-118	G-120	X			24"			- 11-11-11-11-11-11-11-11-11-11-11-11-11	RCP	c. 1955	no	Anne Howanski 610-833-1928	Ridley Township
G-120	G-122	X			24"				RCP	c. 1955	no	Anne Howanski 610-833-1929	Ridley Township
G-120	G-121	X			15"				RCP	c. 1955	no	Anne Howanski 610-833-1930	Ridley Township
G-122	G-123	X			18"				RCP	c. 1955	no	Anne Howanski 610-833-1931	Ridley Township
G-123	G-125	X			18"				RCP	c. 1955	no	Anne Howanski 610-833-1931	Ridley Township
G-125	G-126	X			15"				RCP	c. 1955	no	Anne Howanski 610-833-1922	Ridley Township
G-126	G-127	X	1		15"				RCP	c. 1955	no	Anne Howanski 610-833-1923	Ridley Township
G-127	G-128	X			12"				RCP	c. 1955	no	Anne Howanski 610-833-1924	Ridley Township
G-125	G-129	X			12"				RCP	c. 1955	no	Anne Howanski 610-833-1925	Ridley Township
G-129	G-130	X			8"				RCP	c. 1995	no	Anne Howanski 610-833-1926	Ridley Township

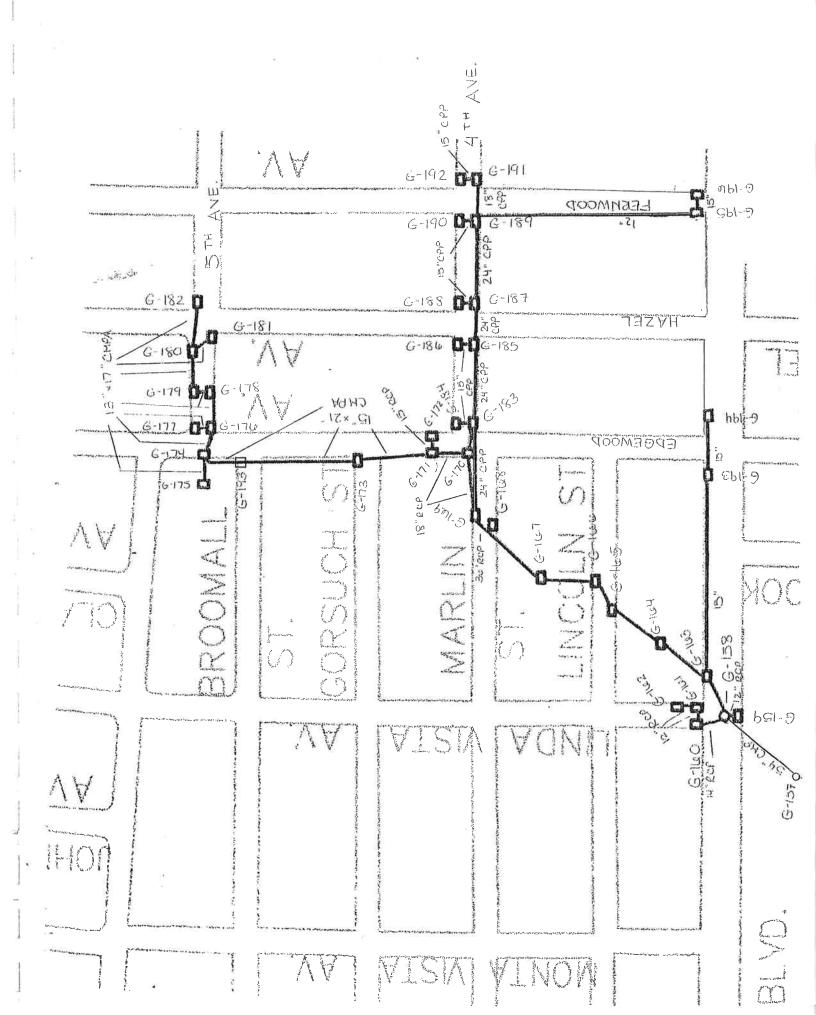
					EXISTING :	STORMWAT	ER COLLE	CTION SYS	STEM FORM	G.		SHEET	9 OF 67
M	ap ID	Sys	stem's Elements	(x)		Measure			05. 27		Design	0 1 10	Name of Final
	No.			` ,	Pipe	Ch	annel / Swa	ale	Material	Year	Data	Contact Person	Ownership and
From	То	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
G-130	G-131	X			15"				RCP	c. 1995	no	Anne Howanski 610-833-1927	Ridley Township
G-131	G-132	X			12"				RCP	c. 1995	no	Anne Howanski 610-833-1928	Ridley Township
G-132	G-133	X			15"				RCP	c. 1995	no	Anne Howanski 610-833-1929	Ridley Township
G-122	G-134	X			24"				RCP	c. 1995	no	Anne Howanski 610-833-1930	Ridley Township
G-134	G-135	X	1	,,, , , , , , , , , , , , , , , , , ,	18"				RCP	c. 1955	no	Anne Howanski 610-833-1931	Ridley Township
G-135	G-136	X			18"				RCP	c. 1955	no	Anne Howanski 610-833-1932	Ridley Township
G-136	G-137	X			12"				RCP	c. 1955	no	Anne Howanski 610-833-1933	Ridley Township



					EXISTING	STORMWAT	TER COLLE	CTION SYS	STEM FORM	Э.		SHEET_	10 OF <u>67</u>
WATERSH	EN		FORM COMP	LETED BY	EXIOTITE			11	NSTRUCTION	S			
VAIENSI	ED		T OT CITY			Diagram eac	h system o	n the appro	priate map. Es	tablish map	points to sh	now changes in system	n elements,
Name:	Crum Creek		Name:	Jamie H. Br	icker	nina siza or	nine direction	on (Ifunkno	own, outline the	e svstem ex	tent.) Comp	plete this form only wh	ere specific
				610-532-28		information of	on construct	ion is availa	able. Use a ser	parate form	for each svs	stem. Identity the point	s within a
Municipality County:	Delaware	3111P	4	8/10/2004	117	Toyetom cone	ecutively (e	v G-1 G-2	G-3) Start th	ne first point	in each add	litional system 20 num	ibers nigher.
Journey.	Delaware		- Daile.	0, 10,200		For example	G-3 ends	one system	, so G-23 begi	ns the next.	See Samp	le Diagrams & Form o	n Reverse.
N/	ap ID	Sys	stem's Element	s (x)		Measure	ements*				Design		Name of Fillal
	No.	0,5	, com o momon	(/1)	Pipe		annel / Swa	le	Material	Year	Data	Contact Person	Ownership and
From	To To	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibilit
3-157	G-158	X	Opon oname.		54"				CMP	c. 1955	no	Anne Howanski 610-833-1922	Ridley Township
G-158	G-159	X			12"				RCP	c. 1955	no	Anne Howanski 610-833-1922	Ridley Township
G-158	G-160	X			15"				RCP	c, 1955	no	Anne Howanski 610-833-1923	Ridley Township
G-160	G-161	X			12"				RCP	c. 1955	no	Anne Howanski 610-833-1924	Ridley Township
G-161	G-162	X	1		12"				RCP	c. 1955	no	Anne Howanski 610-833-1925	Ridley Township
G-158	G-163	X			36"				RCP	c. 1955	no	Anne Howanski 610-833-1926	Ridley Township
G-163	G-164	X			36"	1			RCP	c. 1955	no	Anne Howanski 610-833-1927	Ridley Township
G-164	G-165	X			36"				RCP	c. 1955	no	Anne Howanski 610-833-1928	Ridley Township
G-165	G-166	X			36"				RCP	c. 1955	no	Anne Howanski 610-833-1929	Ridley Township
G-166	G-167	X			36"				RCP	c. 1955	no	Anne Howanski 610-833-1930	Ridley Township
G-167	G-168	X			36"				RCP	c. 1955	no	Anne Howanski 610-833-1922	Ridley Township
G-168	G-169	X			36"				RCP	c. 1955	no	Anne Howanski 610-833-1922	Ridley Township
G-169	G-170	X			18"				RCP	c. 1955	no	Anne Howanski 610-833-1922	Ridley Township

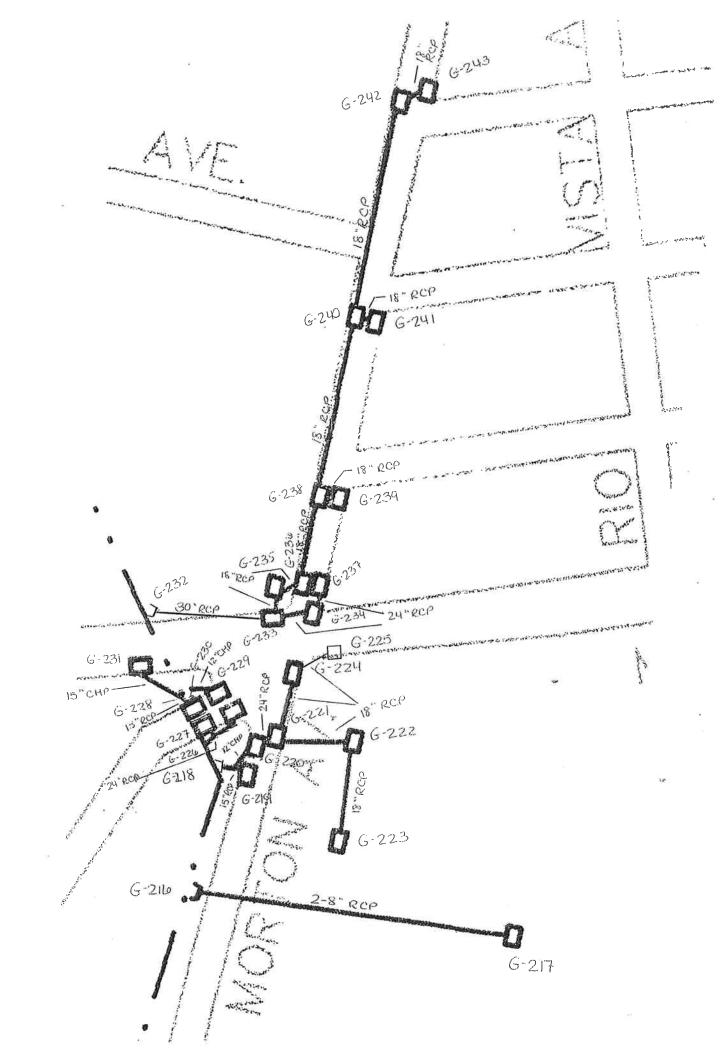
					EXISTING S	TORMWAT	ER COLLE	ECTION SYS	STEM FORM	G		SHEET _	11 OF <u>67</u>
IV.	lap ID	T Svs	stem's Elements	s (x)		Measure	ments*				Design	_	Name of Final
	No.			` '	Pipe	Ch	annel / Swa	ale	Material	Year	Data	Contact Person	Ownership and
From	To	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibilit
G-170	G-171	X	Open chame.		18"				RCP	c. 1955	no	Anne Howanski 610-833-1923	Ridley Township
G-171	G-172	X			15"				RCP	c. 1955	no	Anne Howanski 610-833-1924	Ridley Township
3-171	G-173	X			15"x21"				CMPA	c. 1993	no	Anne Howanski 610-833-1925	Ridley Township
G-173	G-193	X			15"x21"				СМРА	c. 1993	no	Anne Howanski 610-833-1926	Ridley Township
3-193	G-174	X			15"x21"				CMPA	c. 1993	no	Anne Howanski 610-833-1927	Ridley Township
G-174	G-175	X			13"x17"				CMPA	c. 1993	no	Anne Howanski 610-833-1928	Ridley Township
G-174	G-176	X			13"x17"				CMPA	c. 1993	no	Anne Howanski 610-833-1929	Ridley Township
G-176	G-177	X			13"x17"	and the second			CMPA	c. 1995	no	Anne Howanski 610-833-1930	Ridley Township
G-176	G-178	X			13"x17"				CMPA	c. 1995	no	Anne Howanski 610-833-1931	Ridley Township
G-178	G-179	X			13"x17"				CMPA	c. 1995	no	Anne Howanski 610-833-1922	Ridley Township
G-179	G-180	X			13"x17"	-th-			CMPA	c. 1995	no	Anne Howanski 610-833-1922	Ridley Township
G-180	G-181	X			13"x17"				CMPA	c. 1995	no	Anne Howanski 610-833-1923	Ridley Township
G-180	G-182	X			13"x17"				CMPA	c. 1995	no	Anne Howanski 610-833-1924	Ridley Township
G-169	G-183	X			24"				CPP	c. 1995	no	Anne Howanski 610-833-1925	Ridley Township
G-183	G-184	X			15"				CPP	c. 1995	no	Anne Howanski 610-833-1926	Ridley Township
G-183	G-185	X			24"				CPP	c. 1995	no	Anne Howanski 610-833-1927	Ridley Township

					EXISTING	Measure	ments*	-011011011	STEM FORM		Design	_	Name of Final
	ap ID	Sys	stem's Elements	(X)	Pipe		annel / Swa	ale	Material	Year	Data	Contact Person	Ownership and
	No		,	Curala	D	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
From	То	Pipe	Open Channel	Swale	15"	1 7 7			CPP	c. 1995	no	Anne Howanski	Ridley Township
G-185	G-186	X			15		<u>l</u>					610-833-1928	
	1				0.411			-	CPP	c. 1995	no	Anne Howanski	Ridley Township
3-185	G-187	X			24"			1				610-833-1929	
					150			-	CPP	c. 1995	no	Anne Howanski	Ridley Township
G-187	G-188	X			15"			1				610-833-1930	
					1			-	CPP	c. 1995	no	Anne Howanski	Ridley Township
G-187	G-189	X			15"		1		011	0. ,		610-833-1931	
									CPP	c. 1995	no	Anne Howanski	Ridley Township
G-189	G-190	X			15"			1	011	0. 1000		610-833-1922	
									CPP	c. 1995	no	Anne Howanski	Ridley Township
G-189	G-191	X			18"			1	011	0. 1000		610-833-1922	
									CPP	c. 1995	no	Anne Howanski	Ridley Township
G-191	G-192	X			15"				OFT	0. 1000		610-833-1923	
	1								RCP	c. 1955	no	Anne Howanski	Ridley Township
G-163	G-193	X			15"				I KOF	0. 1000	1	610-833-1924	
0 100	3								RCP	c. 1955	no	Anne Howanski	Ridley Township
G-193	G-194	X			15"				I KCP	C. 1900	110	610-833-1925	44
O 100	1								RCP	c. 1955	no	Anne Howanski	Ridley Township
G-189	G-195	X			12"			i	KCP	0, 1800		610-833-1926	
C 100	15 155								+ BCD	c. 1955	no	Anne Howanski	Ridley Township
G-195	G-196	X			15"				RCP	C. 1955	110	610-833-1927	



					EXISTING	STORMWA	ER COLLE	CTION SYS	STEM FORM	G.		SHEET_	13 OF <u>67</u>
WATERSHI	=D		FORM COMP	LETED BY					ISTRUCTION				
, v, (; E) (O) (i						Diagram ead	ch system o	n the approp	oriate map. Es	stablish map	points to sh	now changes in syster	n elements,
viame:	Crum Creek		Name:	Jamie H. Br	icker	pipe size, or	pipe directi	on. (If unkno	own, outline th	ne system ex	ktent.) Comp	lete this form only wh	ere specific
√unicipality				610-532-288		information of	on construc	tion is availa	ble. Use a se	parate form	for each sys	stem. Identify the poin	ts within a
County:	Delaware	СПР		8/10/2004		system cons	ecutively (e	x. G-1. G-2.	G-3). Start t	he first point	in each add	litional system 20 num	nbers higher.
ounty.	Delaware		-			For example	G-3 ends	one system,	so G-23 beg	ins the next	See Samp	le Diagrams & Form o	on Reverse.
. M	ap ID	Svs	stem's Elements	s (x)		Measure					Design		Name of Final
	No.		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	- (**)	Pipe	Ch	annel / Swa	ale	Material	Year	Data	Contact Person	Ownership and
From	To To	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibilit
G-216	G-217	X	Open channel	5,,,,,,	2-8"				RCP	c. 1950	no	Anne Howanski 610-833-1922	Ridley Township
G-218	G-219	X			15"				RCP	c. 1950	no	Anne Howanski 610-833-1922	Ridley Township
3-218	G220	Х			12"				CMP	c. 1950	no	Anne Howanski 610-833-1923	Ridley Township
G-220	G-221	X			24"				RCP	c. 1950	no	Anne Howanski 610-833-1924	Ridley Township
G-221	G-222	X			18"				RCP	c. 1950	no	Anne Howanski 610-833-1925	Ridley Township
G-222	G-223	X			18"				RCP	c. 1950	no	Anne Howanski 610-833-1926	Ridley Township
G-221	G-224	X			18"				RCP	c. 1950	no	Anne Howanski 610-833-1927	Ridley Township
G-224	G-225	X			18"				RCP	c. 1950	no	Anne Howanski 610-833-1928	Ridley Township
3-226	G-227	X			24"				RCP	c. 1950	no	Anne Howanski 610-833-1929	Ridley Township
3-228	G-229	X			12"				CMP	c. 1950	no	Anne Howanski 610-833-1930	Ridley Township
G-228	G-230	X			15"				RCP	c. 1950	no	Anne Howanski 610-833-1931	Ridley Township
G-230	G-231	X			15"				CMP	c. 1950	no	Anne Howanski 610-833-1922	Ridley Township
G-232	G-233	X			30"				RCP	c. 1950	no	Anne Howanski 610-833-1922	Ridley Township

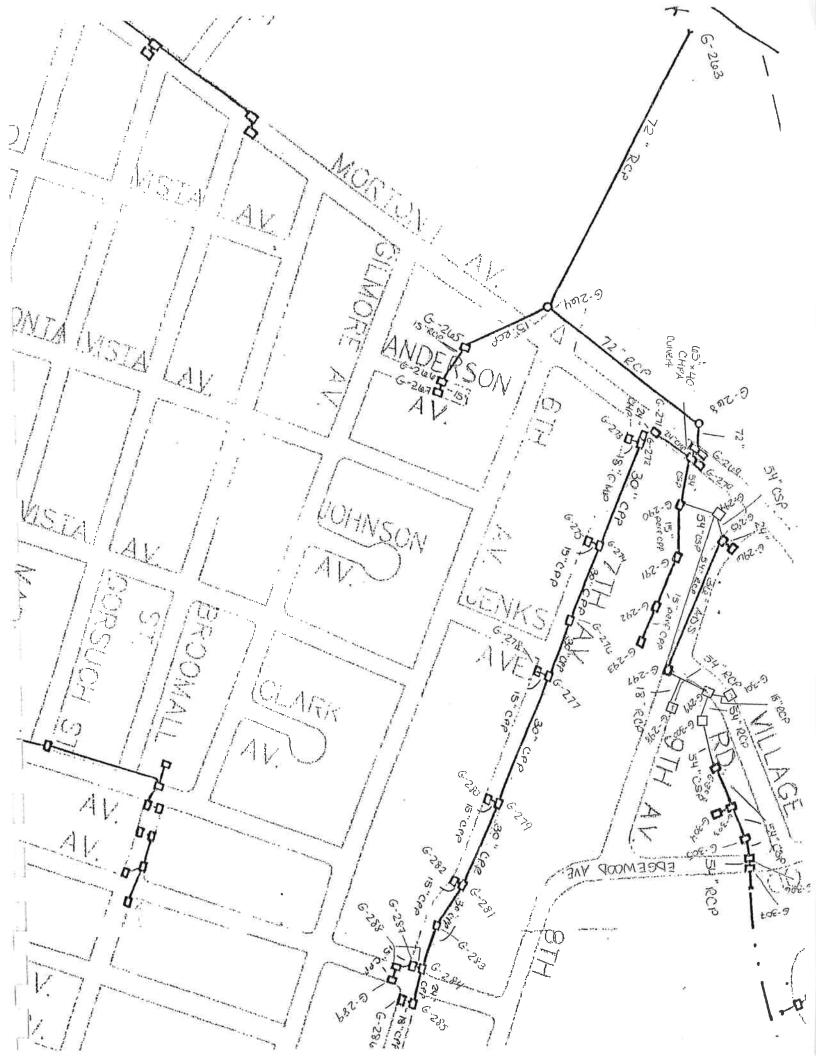
					EXISTING	STORMWA	ER COLLI	CTION SY	STEM FORM	G.		SHEET _	14 OF <u>67</u>
NA.	ap ID	T Svs	stem's Elements			Measure					Design		Name of Final
	No.	J	CONTO LIGITION	(~)	Pipe	Ch	annel / Swa	ale	Material	Year	Data	Contact Person	Ownership and
From	To To	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
G-233	G234	X	Open Gharmer		24"				RCP	c. 1950	no	Anne Howanski 610-833-1923	Ridley Township
G-234	G-237	X			24"				RCP	c. 1950	no	Anne Howanski 610-833-1924	Ridley Township
G-233	G-235	X			18"				RCP	c. 1950	no	Anne Howanski 610-833-1925	Ridley Township
G-235	G-236	X	 		18"				RCP	c. 1950	no	Anne Howanski 610-833-1926	Ridley Township
G-236	G-238	X			18"				RCP	c. 1950	no	Anne Howanski 610-833-1927	Ridley Township
G-238	G-239	X.	1		18"				RCP	c. 1950	no	Anne Howanski 610-833-1928	Ridley Township
G-238	G-240	X			18"				RCP	c. 1950	no	Anne Howanski 610-833-1929	Ridley Township
G-240	G-241	X			18"				RCP	c. 1950	no	Anne Howanski 610-833-1930	Ridley Township
G-240	G-242	X			18"				RCP	c. 1950	no	Anne Howanski 610-833-1931	Ridley Township
G-242	G-243	X			18"				RCP	c. 1950	no	Anne Howanski 610-833-1932	Ridley Township



					EXISTING	STORMWA	TER COLLE	CTION SY	STEM FORM	G.		SHEET_	15OF_	67
WATERSH	HED		FORM COM	PLETED BY					NSTRUCTION					
Name: Municipalit County:	Crum Creek y: Ridley Towr Delaware		Name: Telephone: Date:	Jamie H. Bi 610-532-28 8/10/2004		pipe size, or information system cons	r pipe directi on construc secutively (e	on. (If unkn tion is availa x. G-1, G-2	own, outline thable. Use a se , G-3). Start tl	e system ex parate form ne first poin	ktent.) Comp for each sys t in each add	now changes in syster plete this form only wh stem. Identify the poin ditional system 20 num	ere specific ts within a nbers higher.	
			L					one system	, so G-23 beg	ins the next		ole Diagrams & Form o	n Reverse. Name	- f T! l
N	/lap ID No.		stem's Elemen		Pipe	Ch	ements* nannel / Swa		Material	Year	Design Data	Contact Person	Owners	hip and
From	То	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance	
G-263	G-264	X			72"				RCP	c. 1950	no	Anne Howanski 610-833-1922	Ridley Towns	
G-264	G-265	X			15"				RCP	c. 1950	no	Anne Howanski 610-833-1922	Ridley Towns	ship
G-265	G-266	X			15"				RCP	c. 1950	no	Anne Howanski 610-833-1923	Ridley Towns	ship
G-266	G-267	X			15"				RCP	c. 1950	no	Anne Howanski 610-833-1924	Ridley Towns	ship
G-264	G-268	Х			72"				RCP	c. 1950	no	Anne Howanski 610-833-1925	Ridley Towns	ship
G-268	G-269	X			72"				RCP	c. 1950	no	Anne Howanski 610-833-1926	Ridley Towns	ship
G-269	G-270	X			65"x40"				CMPA	c. 1950	no	Anne Howanski 610-833-1927	Ridley Towns	ship
G-270	G-271	X			24"				CMP	c. 1995	no	Anne Howanski 610-833-1928	Ridley Towns	hip
G-271	G-272	X			24"				СМР	c. 1995	no	Anne Howanski 610-833-1929	Ridley Towns	ship
G-272	G-273	X			18"				СМР	c. 1995	no	Anne Howanski 610-833-1930	Ridley Towns	ship
G-272	G-274	X			30"				CPP	c. 1995	no	Anne Howanski 610-833-1931	Ridley Towns	ship
G-274	G-275	X			15"				CPP	c. 1995	no	Anne Howanski 610-833-1932	Ridley Towns	ship
G-274	G-276	X			30"				CPP	c. 1995	no	Anne Howanski 610-833-1933	Ridley Towns	ship

					EXISTING	STORMWA	TER COLLE	CTION SYS	STEM FORM	G.		SHEET	16OF_ <u>67</u>
N	lap ID	Svs	stem's Elements			Measure					Design		Name of Final
	No.	,		` /	Pipe	Ch	annel / Swa	ale	Material	Year	Data	Contact Person	Ownership and
From	То	Pipe	Open Channel	Swale	Ď	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
G-276	G-277	X			30"				CPP	c. 1995	no	Anne Howanski 610-833-1922	Ridley Township
G-277	G-278	Х			15"				CPP	c. 1995	no	Anne Howanski 610-833-1922	Ridley Township
G-277	G-279	X			30"				CPP	c. 1995	no	Anne Howanski 610-833-1923	Ridley Township
G-279	G-280	X			15"				CPP	c. 1995	no	Anne Howanski 610-833-1924	Ridley Township
G-279	G-281	X			30"				CPP	c. 1995	no	Anne Howanski 610-833-1925	Ridley Township
G-281	G-282	X			15"				CPP	c. 1995	no	Anne Howanski 610-833-1926	Ridley Township
G-281	G-283	X			30"				CPP	c. 1995	no	Anne Howanski 610-833-1927	Ridley Township
G-283	G-284	Х			30"				CPP	c. 1995	no	Anne Howanski 610-833-1928	Ridley Township
G-284	G-285	Х			24"				CPP	c. 1995	no	Anne Howanski 610-833-1929	Ridley Township
G-285	G-286	X			18"				CPP	c. 1995	no	Anne Howanski 610-833-1930	Ridley Township
G-284	G-287	X			15"				CPP	c. 1995	no	Anne Howanski 610-833-1931	Ridley Township
G-287	G-288	X			15"				CPP	c. 1995	no	Anne Howanski 610-833-1932	Ridley Township
G-288	G-289	X			15"				CPP	c. 1995	no	Anne Howanski 610-833-1933	Ridley Township
G-270	G-290	X .			54"				CSP	c. 1993	no	Anne Howanski 610-833-1922	Ridley Township
G-290	G-291	Х			15"				PCPP	c. 1993	no	Anne Howanski 610-833-1922	Ridley Township
G-291	G-292	X			15"				PCPP	c. 1993	no	Anne Howanski 610-833-1923	Ridley Township

					EXISTING	STORMWAT	TER COLLE	ECTION SYS	STEM FORM	G.		SHEET	17 OF 67
N	lap ID	Sys	stem's Elements	s (x)		Measure	ements*				Design		Name of Final
	No.				Pipe	Ch	annel / Swa	ale	Material	Year	Data	Contact Person	Ownership and
From	То	Pipe	Open Channel	Swale	Ď	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
G-292	G-293	X			15"				PCPP	c. 1993	no	Anne Howanski 610-833-1924	Ridley Township
G-290	G-294	X			54"				CSP	c. 1993	no	Anne Howanski 610-833-1925	Ridley Township
G-294	G-295	X			54"				CSP	c. 1993	no	Anne Howanski 610-833-1926	Ridley Township
G-295	G-296	X			24"				CSP	c. 1993	no	Anne Howanski 610-833-1927	Ridley Township
G-295	G-297	X		363	36"				ADS	c. 1993	no	Anne Howanski 610-833-1928	Ridley Township
G-294	G-297	X			54"				RCP	c. 1950	no	Anne Howanski 610-833-1929	Ridley Township
G-297	G-299	X			54"				RCP	c. 1950	no	Anne Howanski 610-833-1929	Ridley Township
G-297	G-298	Х			18"	<u> </u>			RCP	c. 1950	no	Anne Howanski 610-833-1930	Ridley Township
G-299	G-301	Х			18"				RCP	c. 1950	no	Anne Howanski 610-833-1931	Ridley Township
G-299	G-300	X			54"				RCP	c. 1950	no	Anne Howanski 610-833-1932	Ridley Township
G-300	G-302	X			54"				CSP	c. 1993	no	Anne Howanski 610-833-1933	Ridley Township
G-302	G-303	Х			54"				CSP	c. 1993	no	Anne Howanski 610-833-1922	Ridley Township
G-303	G-304	X			15"				CSP	c. 1993	no	Anne Howanski 610-833-1923	Ridley Township
G-303	G-305	X			54"				CSP	c. 1993	no	Anne Howanski 610-833-1924	Ridley Township
G-305	G-306	X			54"				CSP	c. 1993	no	Anne Howanski 610-833-1925	Ridley Township
G-306	G-307	X			54"				RCP	c. 1950	no	Anne Howanski 610-833-1926	Ridley Township



					EXISTING	STORMWA	TER COLLE		STEM FORM			SHEET_	<u>18</u> OF <u>67</u>
WATERSH	HED		FORM COMP	PLETED BY					NSTRUCTION				
	Crum Creek y: Ridley Towr		Telephone:	Jamie H. Br 610-532-28		pipe size, or	pipe directi	on. (If unkn	own, outline th	e system e	xtent.) Comp	now changes in syster plete this form only wh stem. Identify the poin	ere specific
County:	Delaware		Date:	8/10/2004		system cons	secutively (e	x. G-1, G-2	, G-3). Start tl	he first point	t in each add	ditional system 20 num	nbers higher.
			<u> </u>					one system	, so G-23 beg	ins the next		le Diagrams & Form o	
	lap ID	Sys	stem's Element	s (x)		Measure					Design		Name of Final
From	No.		T 2		Pipe		annel / Swa		Material	Year	Data	Contact Person	Ownership and
	To	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
G-326	G-327	X			24"				RCP	c. 1954	no	Anne Howanski 610-833-1933	Ridley Township
G-327	G-328	X			21"				RCP	c. 1954	no	Anne Howanski 610-833-1922	Ridley Township
G-328	G-329	Х			15"				RCP	c. 1954	no	Anne Howanski 610-833-1923	Ridley Township
G-329	G-330	X			15"				RCP	c. 1954	no	Anne Howanski 610-833-1924	Ridley Township
G-328	G-331	X			18"				RCP	c. 1954	no	Anne Howanski 610-833-1925	Ridley Township
G-331	G-332	X			15"				RCP	c. 1954	no	Anne Howanski 610-833-1926	Ridley Township
G-332	G-333	Х			15"				RCP	c. 1954	no	Anne Howanski 610-833-1927	Ridley Township
G-334	G-335	Х			24"				RCP	c. 1955	no	Anne Howanski 610-833-1928	Ridley Township
G-335	G-336	Х			24"				RCP	c. 1955	no	Anne Howanski 610-833-1929	Ridley Township
G-336	G-337	X			21"				RCP	c. 1955	no	Anne Howanski 610-833-1930	Ridley Township
G-337	G-338	Х			21"				RCP	c. 1955	no	Anne Howanski 610-833-1931	Ridley Township
G-338	G-339	Х			15"				CPP	c. 1995	no	Anne Howanski 610-833-1932	Ridley Township
G-338	G-340	Х			18"				CPP	c. 1995	no	Anne Howanski 610-833-1933	Ridley Township

					EXISTING :	STORMWAT	TER COLLE	CTION SY	STEM FORM	G.		SHEET	19 OF 67
N	lap ID	Sy	stem's Elements	s (x)		Measure	ements*				Design		Name of Final
	No.				Pipe		annel / Swa	ile	Material	Year	Data	Contact Person	Ownership and
From	То	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
G-340	G-341	X			12"				CPP	c. 1995	no	Anne Howanski	Ridley Township
												610-833-1933	
G-338	G-342	X			21"				RCP	c. 1955	no	Anne Howanski	Ridley Township
												610-833-1922	
G-342	G-343	X			15"				RCP	c. 1955	no	Anne Howanski	Ridley Township
												610-833-1923	
G-343	G-344	X			15"				RCP	c. 1955	no	Anne Howanski	Ridley Township
												610-833-1924	
G-342	G-345	X			15"				RCP	c. 1955	no	Anne Howanski	Ridley Township
	_											610-833-1925	
G-345	G-346	X			15"		1220		RCP	c. 1955	no	Anne Howanski	Ridley Township
		1										610-833-1926	
G-347	G-348	X			30"				RCP	c. 1965	no	Anne Howanski	Ridley Township
												610-833-1927	
G-349	G-350	X			30"				RCP	c. 1965	no	Anne Howanski	Ridley Township
		1										610-833-1928	
G-351	G-352	X			12"				RCP	c. 1985	no	Anne Howanski	Ridley Township
		1	1									610-833-1929	
G-352	G-353	X			12"				RCP	c. 1985	no	Anne Howanski	Ridley Township
			3.									610-833-1930	
G-354	G-355	X			15"				RCP	c. 1985	no	Anne Howanski	Ridley Township
												610-833-1931	
G-355	G-356	Х			15"				RCP	c. 1985	no	Anne Howanski	Ridley Township
										į.		610-833-1932	

SYLVANIA AVE. S. S.

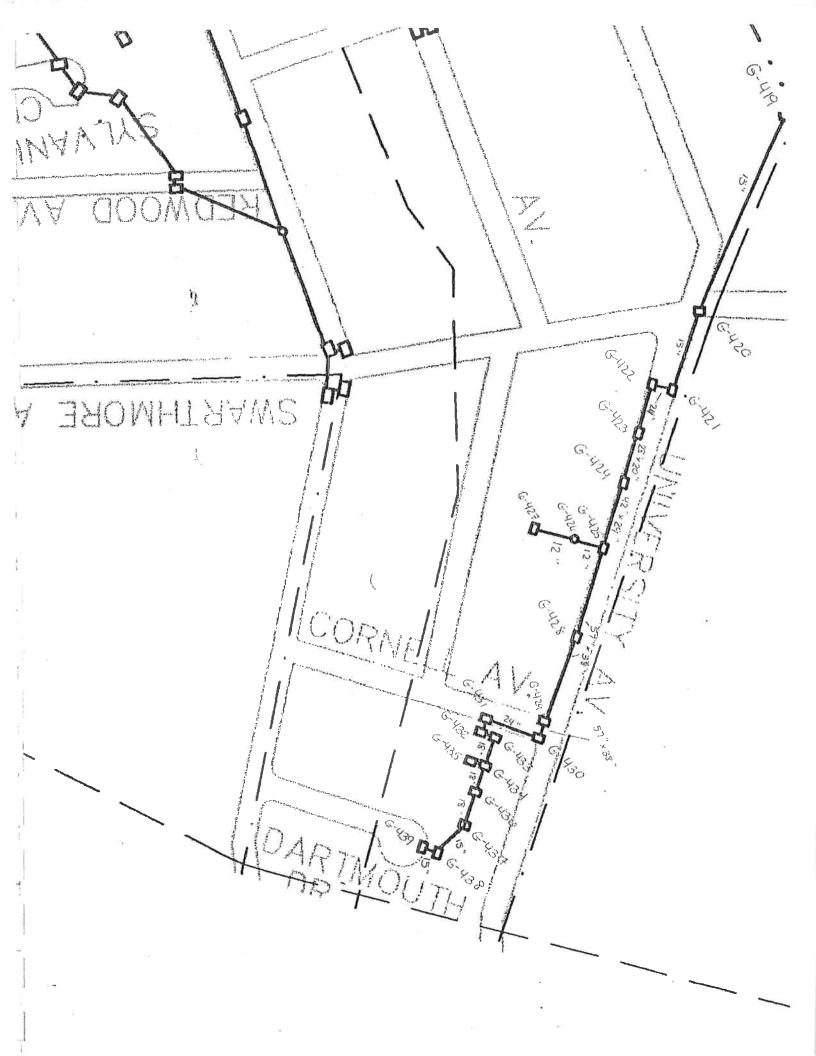
					EXISTING	STORMWA	TER COLLE	ECTION SY	STEM FORM	G.		SHEET_	20 OF 67
WATERSH	1ED		FORM COMP	PLETED BY					VSTRUCTION	NS			
						Diagram ead	ch system d	n the appro	priate map. Es	stablish map	points to sh	now changes in syster	n elements,
Name:	Crum Creek	(Name:	Jamie H. Br	ricker	pipe size, or	pipe directi	ion. (If unkn	own, outline th	ne system e	xtent.) Comp	olete this form only wh	ere specific
Municipalit	y: Ridley Town	ship	Telephone:	610-532-28	84	information	on construc	tion is availa	able. Use a se	parate form	for each sys	stem. Identify the poin	s within a
County:	Delaware		Date:	8/11/2004								ditional system 20 num	
1.						For example	e, G-3 ends	one system	, so G-23 beg	ins the next	. See Samp	le Diagrams & Form o	n Reverse.
N	lap ID	Sys	tem's Element	s (x)		Measure				T	Design		Name of Final
	No.				Pipe	Ch	annel / Swa	ale	Material	Year	Data	Contact Person	Ownership and
From	To	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibilit
G-376	G-377	X			30"				RCP	c. 1955	no	Anne Howanski 610-833-1933	Ridley Township
G-377	G-378	X			12"				combo drain	c. 1995	no	Anne Howanski 610-833-1922	Ridley Township
G-378	G-379	Х			12"				combo drain	c. 1995	no	Anne Howanski 610-833-1923	Ridley Township
G-377	G-380	Х			30"				RCP	c. 1955	no	Anne Howanski 610-833-1924	Ridley Township
G-380	G-381	Х			30"				RCP	c. 1955	no	Anne Howanski 610-833-1925	Ridley Township
G-381	G-382	Х			15"				RCP	c. 1955	no	Anne Howanski 610-833-1926	Ridley Township
G-381	G-383	Х			30"				CPP	c. 1995	no	Anne Howanski 610-833-1927	Ridley Township
G-383	G-384	Х			30"				CPP	c. 1995	no	Anne Howanski 610-833-1928	Ridley Township
G-384	G-385	Х			30"				CPP	c. 1995	no	Anne Howanski 610-833-1929	Ridley Township
G-385	G-386	Х			30"				RCP	c. 1955	no	Anne Howanski 610-833-1930	Ridley Township
G-386	G-387	Х			18"				RCP	c. 1955	no	Anne Howanski 610-833-1931	Ridley Township
G-387	G-388	Х			18"				RCP	c. 1955	no	Anne Howanski 610-833-1931	Ridley Township
G-387	G-389	Х			18"				RCP	c. 1955	no	Anne Howanski 610-833-1932	Ridley Township

N	lap ID	T Svs	stem's Elements	(x)		Measure	ements*			T	Design		Name of Final
	No.	1		(* -)	Pipe		annel / Swa	ale	Material	Year	Data	Contact Person	Ownership and
From	То	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
G-389	G-390	X			18"				RCP	c. 1955	no	Anne Howanski 610-833-1933	Ridley Township
3-386	G-391	X			18"				RCP	c. 1955	no	Anne Howanski 610-833-1922	Ridley Township
G-391	G-392	X			18"				RCP	c. 1955	no	Anne Howanski 610-833-1923	Ridley Township
G-392	G-393	X			18"				RCP	c. 1955	no	Anne Howanski 610-833-1924	Ridley Township
G-392	G-394	X			21"				RCP	c. 1955	no	Anne Howanski 610-833-1925	Ridley Township
G-394	G-395	X			18"				RCP	c. 1955	no	Anne Howanski 610-833-1926	Ridley Township
G-394	G-396	X			21"				RCP	c. 1955	no	Anne Howanski 610-833-1927	Ridley Township
3-396	G-397	X			18"				RCP	c. 1955	no	Anne Howanski 610-833-1928	Ridley Township
396	G-398	X			21"				RCP	c. 1955	no	Anne Howanski 610-833-1929	Ridley Township
G-398	G-399	X			21"x18"				CMPA	c. 1955	no	Anne Howanski 610-833-1930	Ridley Township

RTHMORE G.387 35.0 7 12" combo direin ĽΩ Casty By 25.

					EXISTING	STORMWA	TER COLLE	CTION SY	STEM FORM	G.		SHEET_	22 C	F 67
WATERSH	HED		FORM COMP	PLETED BY					NSTRUCTION					
Name: Municipalit County:	Crum Creek y: Ridley Town Delaware		Telephone:	Jamie H. Br 610-532-28 8/11/2004		pipe size, or information system cons	pipe directi on constructionsecutively (e	on. (If unkn tion is avail x. G-1, G-2	own, outline thable. Use a se G-3). Start tl	ne system e parate form he first poin	xtent.) Comp for each sys t in each add	now changes in syster plete this form only wh stem. Identify the poin ditional system 20 nun	ere specific ts within a nbers highe	
	1 ID	1 0	l tanda Elamant	ha (14)	Г			one system	i, so G-23 beg	ins the next		le Diagrams & Form o		ne of Final
IV	lap ID No.	Sys	stem's Element	is (x)	Pipe	the street of th	ements* nannel / Swa	ale	Material	Year	Design Data	Contact Person	1	ership and
From	То	Pipe	Open Channel	Swale	Ď	TW	В	Depth		Constr.	Available	Name and Phone	Maintenar	nce Responsibility
G-419	G-420	X			15"				RCP	c. 1953	no	Anne Howanski 610-833-1933	Ridley To	vnship
G-420	G-421	Х			15"	HILLS OF STREET			RCP	c. 1953	no	Anne Howanski 610-833-1922	Ridley To	vnship
G-421	G-422	Х			24"				RCP	c. 1953	no	Anne Howanski 610-833-1923	Ridley To	vnship
G-422	G-423	Х			24"				RCP	c. 1953	no	Anne Howanski 610-833-1924	Ridley To	vnship
G-423	G-424	Х			28"x20"				CMPA	c. 1953	no	Anne Howanski 610-833-1925	Ridley To	vnship
G-424	G-425	X			42"x29"				CMPA	c. 1953	no	Anne Howanski 610-833-1926	Ridley To	vnship
G-425	G-426	Х			12"				RCP	c. 1953	no	Anne Howanski 610-833-1927	Ridley To	vnship
G-426	G-427	Х			12"				RCP	c. 1953	no	Anne Howanski 610-833-1928	Ridley To	vnship
G-425	G-428	Х			57"x38"				CMPA	c. 1953	no	Anne Howanski 610-833-1929	Ridley To	vnship
G-428	G-429	Х			57"x38"				CMPA	c. 1953	no	Anne Howanski 610-833-1930	Ridley To	vnship
G-429	G-430	Х			57"x38"				CMPA	c. 1953	no	Anne Howanski 610-833-1931	Ridley To	vnship
G-430	G-431	X			24"				RCP	c. 1953	no	Anne Howanski 610-833-1931	Ridley To	vnship
G-431	G-432	Х			24"				RCP	c. 1953	no	Anne Howanski 610-833-1932	Ridley To	vnship

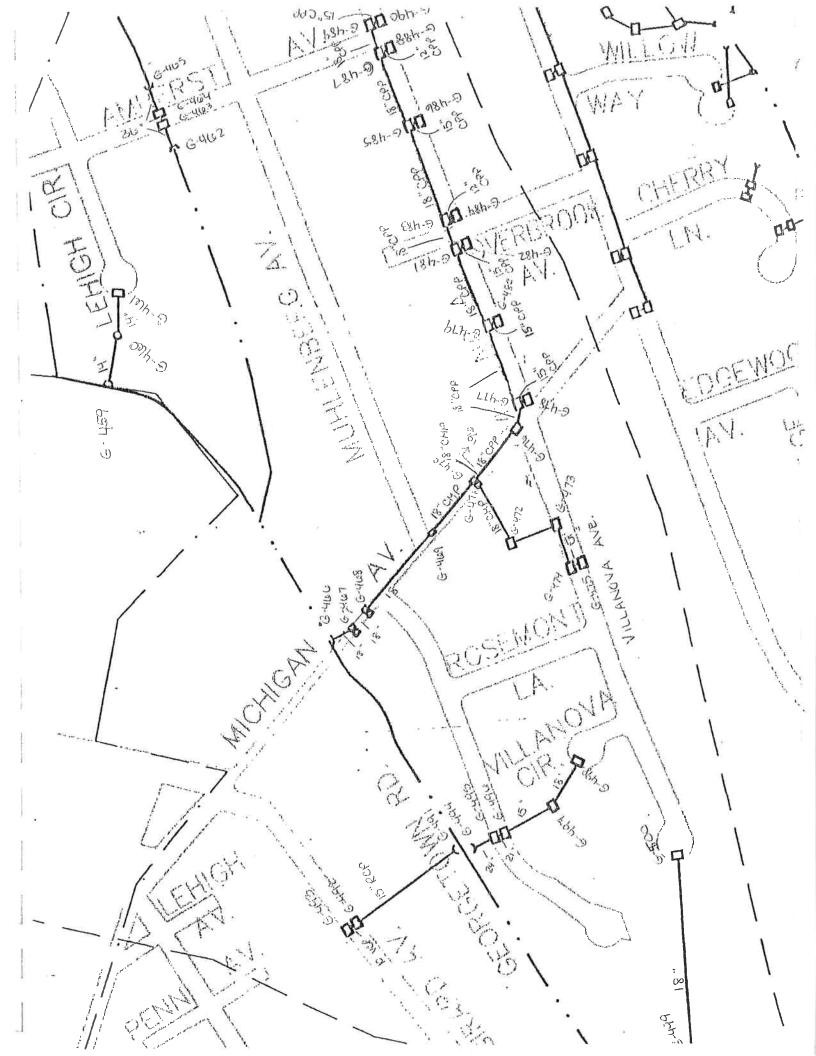
					EXISTING	STORMWAT	TER COLLE	ECTION SYS	STEM FORM	G.		SHEET	23 OF 67
N	lap ID	Sys	stem's Elements	s (x)		Measure	ements*				Design		Name of Final
	No.	0			Pipe	Ch	annel / Swa	ale	Material	Year	Data	Contact Person	Ownership and
From	То	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
G-432	G-433	X			18"	ÿ			RCP	c. 1953	no	Anne Howanski 610-833-1933	Ridley Township
G-433	G-434	X		20110	18"				RCP	c. 1953	no	Anne Howanski 610-833-1922	Ridley Township
G-434	G-435	X			15"				RCP	c. 1953	no	Anne Howanski 610-833-1923	Ridley Township
G-434	G-436	Х			18"				RCP	c. 1953	no	Anne Howanski 610-833-1924	Ridley Township
G-436	G-437	Х			18"				RCP	c. 1953	no	Anne Howanski 610-833-1925	Ridley Township
G-437	G-438	X			15"				RCP	c. 1953	no	Anne Howanski 610-833-1926	Ridley Township
G-438	G-439	X			15"				RCP	c. 1953	no	Anne Howanski 610-833-1927	Ridley Township



	VIII.				EXISTING	STORMWA	TER COLL	ECTION SY	STEM FORM	G.		SHEET	24 OF 67
WATERSH	łED		FORM COMP	PLETED BY				I	NSTRUCTION	NS			
						Diagram ea	ch system o	on the appro	priate map. Es	stablish maj	points to sh	now changes in system	n elements,
Name:	Crum Creek			Jamie H. Br		pipe size, or	pipe direct	ion. (If unkn	own, outline th	ne system e	xtent.) Comp	plete this form only wh	ere specific
Municipalit	y: Ridley Town	nship	Telephone:	610-532-288	84	information	on construc	ction is availa	able. Use a se	parate form	for each sv	stem. Identify the poin	ts within a
County:	Delaware		Date:	8/11/2004		system cons	secutively (ex. G-1, G-2	, G-3). Start ti	he first poin	t in each add	ditional system 20 nun	nbers higher
			1									le Diagrams & Form	
M	lap ID	Sys	stem's Element	s (x)	-	Measure					Design		Name of Final
	No.				Pipe	Ch	annel / Swa	ale	Material	Year	Data	Contact Person	Ownership and
From	То	Pipe	Open Channel	Swale	D	TW	В	Depth	1	Constr.	Available	Name and Phone	Maintenance Responsib
G-459	G-460	X			14"				RCP	c. 1956	no	Anne Howanski 610-833-1933	Ridley Township
G-460	G-461	Х			14"				RCP	c. 1956	no	Anne Howanski 610-833-1922	Ridley Township
G-462	G-463	X			36"				RCP	c. 1957	no	Anne Howanski 610-833-1923	Ridley Township
G-463	G-464	Х			36"				RCP	c. 1957	no	Anne Howanski 610-833-1924	Ridley Township
G-464	G-465	X			36"				RCP	c. 1957	no	Anne Howanski 610-833-1925	Ridley Township
G-466	G-467	X			18"				RCP	c. 1957	no	Anne Howanski 610-833-1926	Ridley Township
G-467	G-467	X			18"				RCP	c. 1957	no	Anne Howanski 610-833-1927	Ridley Township
G-468	G-469	X			18"				RCP	c. 1957	по	Anne Howanski 610-833-1928	Ridley Township
G-469	G-470	X			18"				CMP	c. 1957	no	Anne Howanski 610-833-1929	Ridley Township
G-470	G-471	Х			18"				CMP	c. 1957	no	Anne Howanski 610-833-1930	Ridley Township
G-471	G-472	X			18"				CMP	c. 1951	no	Anne Howanski 610-833-1931	Ridley Township
G-472	G-473	X			18"				RCP	c. 1951	no	Anne Howanski 610-833-1932	Ridley Township
G-473	G-474	X			15"				RCP	c. 1951	no	Anne Howanski 610-833-1933	Ridley Township

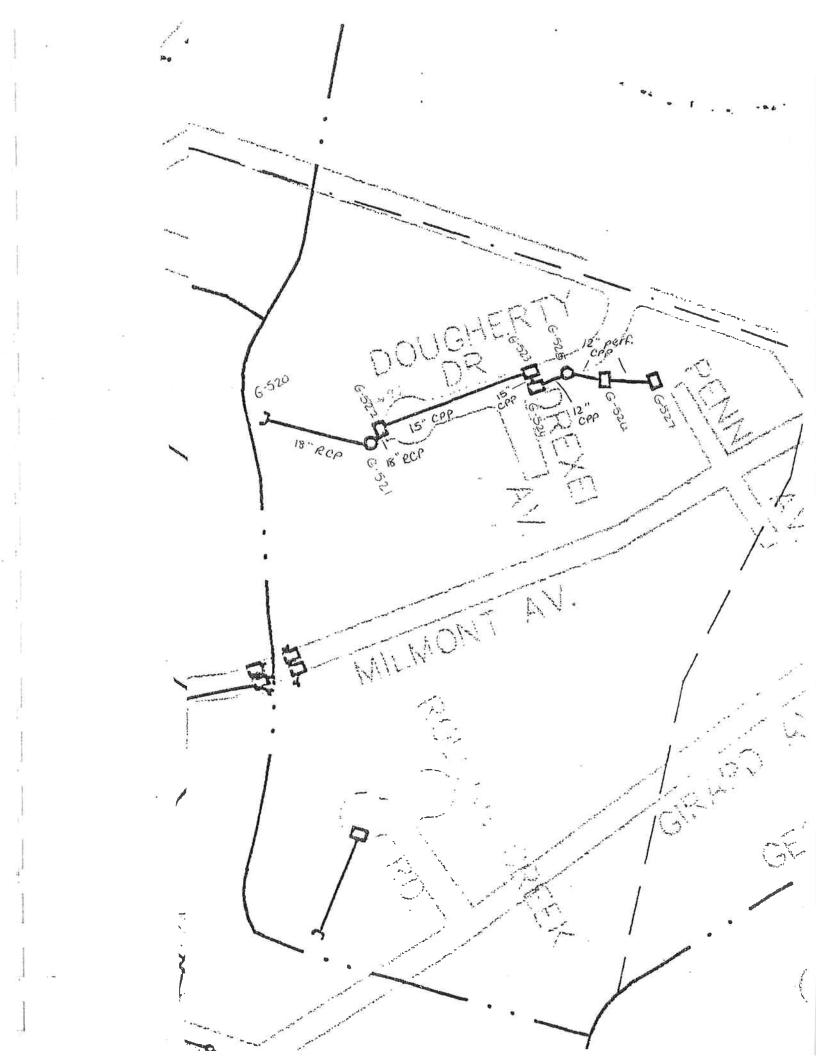
					EXISTING	STORMWA	TER COLL	ECTION SY	STEM FORM	G.		SHEET	25 OF <u>67</u>
N	lap ID	Sys	stem's Elements	s (x)		Measure	ements*				Design		Name of Final
	No.				Pipe	Ch	annel / Swa	ale	Material	Year	Data	Contact Person	Ownership and
From	То	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
G-474	G-475	X			15"				RCP	c. 1951	no	Anne Howanski 610-833-1933	Ridley Township
G-470	G-476	Х			18"				CPP	c. 1996	no	Anne Howanski 610-833-1922	Ridley Township
G-476	G-477	X			18"				CPP	c. 1996	no	Anne Howanski 610-833-1923	Ridley Township
G-477	G-478	X			15"				CPP	c. 1996	no	Anne Howanski 610-833-1924	Ridley Township
G-477	G-479	X			18"				CPP	c. 1996	no	Anne Howanski 610-833-1925	Ridley Township
G-479	G-480	X			15"				CPP	c. 1996	no	Anne Howanski 610-833-1926	Ridley Township
G-479	G-481	X			18"				CPP	c. 1996	no	Anne Howanski 610-833-1927	Ridley Township
G-481	G-482	Х			15"				CPP	c. 1996	no	Anne Howanski 610-833-1928	Ridley Township
G-481	G-483	Х			18"				CPP	c. 1996	no	Anne Howanski 610-833-1929	Ridley Township
G-483	G-484	X			12"				CPP	c. 1996	no	Anne Howanski 610-833-1930	Ridley Township
G-483	G-485	Х			18"				CPP	c. 1996	no	Anne Howanski 610-833-1931	Ridley Township
G-485	G-486	Х			15"				CPP	c. 1996	no	Anne Howanski 610-833-1932	Ridley Township
G-485	G-487	Х			18"				CPP	c. 1996	no	Anne Howanski 610-833-1933	Ridley Township
G-487	G-488	X			12"				CPP	c. 1996	no	Anne Howanski 610-833-1933	Ridley Township
G-487	G-489	Х			18"				CPP	c. 1996	no	Anne Howanski 610-833-1922	Ridley Township
G-489	G-490	Х			15"				CPP	c. 1996	no	Anne Howanski 610-833-1923	Ridley Township

	7				EXISTING	STORMWAT	TER COLL	ECTION SYS	STEM FORM	G.		SHEET_	<u> 26 OF 67</u>
Map ID No.		System's Elements (x)			Measurements*						Design		Name of Final
					Pipe	Channel / Swale			Material	Year	Data	Contact Person	Ownership and
From	То	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
G-491	G-492	X			15"				RCP	c. 1961	no	Anne Howanski 610-833-1924	Ridley Township
G-492	G-493	X			10"				VCP	c. 1961	no	Anne₊Howanski 610-833-1925	Ridley Township
G-494	G-495	X			24"				RCP	c. 1957	no	Anne Howanski 610-833-1926	Ridley Township
G-495	G-496	Х			21"				RCP	c. 1957	no	Anne Howanski 610-833-1927	Ridley Township
G-496	G-497	X			15"				RCP	c. 1957	no	Anne Howanski 610-833-1928	Ridley Township
G-497	G-498	X			18"				RCP	c. 1957	no	Anne Howanski 610-833-1929	Ridley Township
G-499	G-500	X			18"	25147.14			RCP	c. 1951	no	Anne Howanski 610-833-1930	Ridley Township



FORM G (12)

					EXISTING	STORMWAT	TER COLLE	CTION SY	STEM FORM	G.		SHEET_	27OF	67
WATERSH	lED		FORM COM	PLETED BY				11	VSTRUCTION	IS				
												now changes in syster		
Name:	Crum Creek		Name:	Jamie H. Br	icker	pipe size, or	pipe directi	on. (If unkno	own, outline th	e system e	xtent.) Comp	lete this form only wh	ere specific	
Municipalit	y: Ridley Town	nship	Telephone:	610-532-28	84	information of	on construc	tion is availa	able. Use a se	parate form	for each sys	stem. Identify the poin	ts within a	
County:	Delaware	1,7	Date:	8/11/2004	117.11	system cons	ecutively (e	x. G-1, G-2	G-3). Start th	ne first point	t in each add	litional system 20 num	nbers higher.	
						For example	, G-3 ends	one system	, so G-23 beg	ins the next	. See Samp	le Diagrams & Form o	n Reverse.	
	lap ID	Sys	stem's Element	is (x)		Measure	ements*				Design		Name of	f Final
	No.				Pipe	Ch	annel / Swa	ile	Material	Year	Data	Contact Person	Ownersh	ip and
From	То	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance R	esponsibilit
G-520	G-521	X			18"				RCP	c. 1953	no	Anne Howanski	Ridley Townsh	nip
		1										610-833-1933		
G-521	G-522	X			18"				RCP	c. 1953	no	Anne Howanski	Ridley Townsh	nip
												610-833-1922		
G-522	G-523	X			15"				CPP	c. 1995	no	Anne Howanski	Ridley Townsh	nip
												610-833-1923		
G-523	G-524	X			15"				CPP	c. 1995	no	Anne Howanski	Ridley Townsh	nip
												610-833-1924		
G-524	G-525	X			12"				CPP	c. 1995	no	Anne Howanski	Ridley Townsh	nip
							Le consum estad					610-833-1925		
G-525	G-526	X			12"				PCPP	c. 1995	no	Anne Howanski	Ridley Townsh	nip
												610-833-1926		
G-526	G-527	X			12"				PCPP	c. 1995	no	Anne Howanski	Ridley Townsh	nip
												610-833-1927		



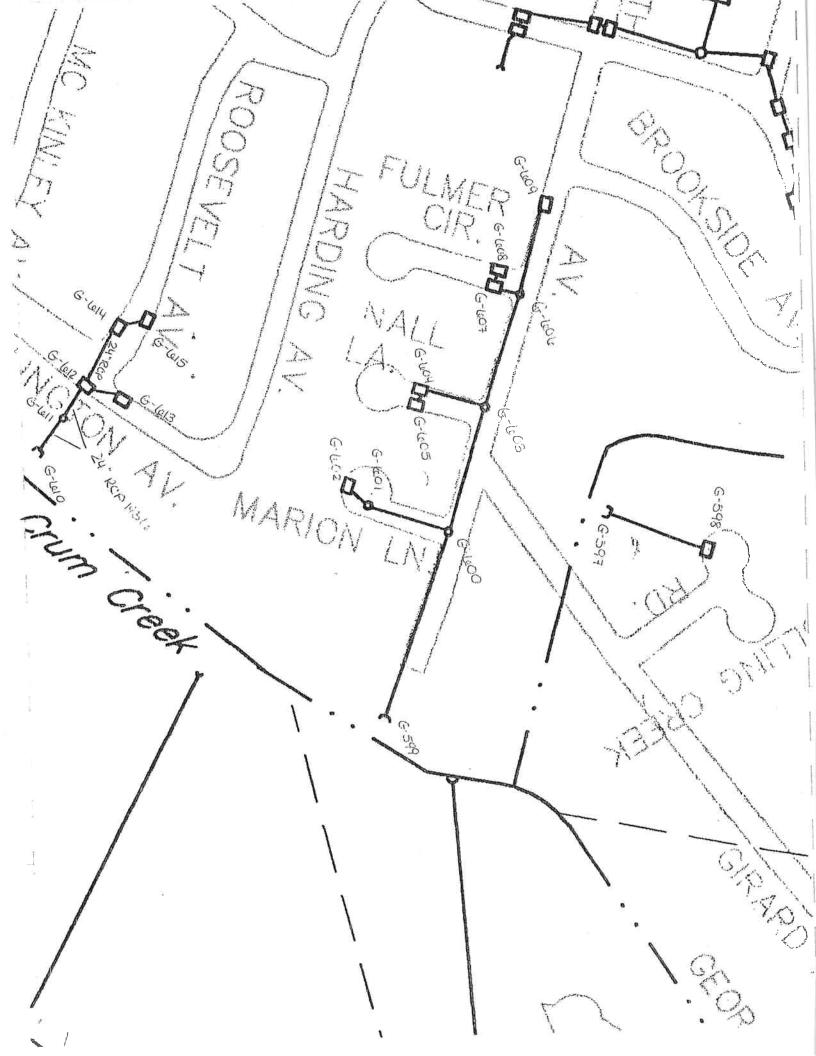
					EXISTING	STORMWA	TER COLLE	CTION SY	STEM FORM	G.		SHEET _	28 OF 67
WATERSH	łED		FORM COMP	PLETED BY					NSTRUCTION				
												now changes in system	
Name:	Crum Creek			Jamie H. Br		pipe size, or	pipe direction	on. (If unkn	own, outline th	e system e	ktent.) Com	plete this form only wh	ere specific
Municipalit	y: Ridley Town	nship		610-532-28	84	∫information o	on construct	ion is availa	ible. Use a se	parate form	for each sys	stem. Identify the point	ts within a
County:	Delaware		Date:	8/12/2004		system cons	secutively (e:	x. G-1, G-2	, G-3). Start tl	ne first point	t in each add	ditional system 20 num	nbers higher.
-						For example	e, G-3 ends	one system	, so G-23 beg	ins the next		le Diagrams & Form o	n Reverse.
N	lap ID	Sys	stem's Element	s (x)		Measure					Design		Name of Final
	No.	i			Pipe	Ch	annel / Swa	le	Material	Year	Data	Contact Person	Ownership and
From	То	Pipe	Open Channel	Swale	Ď	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
G-547	G-548	X			36"				RCP	c. 1957	no	Anne Howanski	Ridley Township
												610-833-1933	
G-548	G-549	X			36"				RCP	c. 1957	no	Anne Howanski	Ridley Township
												610-833-1922	
G-549	G-550	X			18"				RCP	c. 1957	no	Anne Howanski	Ridley Township
0 0 10	0 000	^										610-833-1923	
G-547	G-551	 x 			18"				RCP	c. 1957	no	Anne Howanski	Ridley Township
0 0 11	10 001	^		1		1				1		610-833-1924	
G-551	G-552	 x	-		18"				RCP	c. 1957	no	Anne Howanski	Ridley Township
0.001	0 002				"			,				610-833-1925	, ,
G-552	G-553	 x 			30"				RCP	c. 1957	no	Anne Howanski	Ridley Township
0.002	0 000	1 ^	1	1		1	1					610-833-1926	'
G-553	G-554	X	+		18"				RCP	c. 1957	no	Anne Howanski	Ridley Township
0-000	0-354	1 ^		i	1 10	1			11.01	51 1001		610-833-1926	, , , ,
G-553	G-567	+ x			24"	 			CMP	c. 1957	no	Anne Howanski	Ridley Township
0-000	0-307	1 ^	1		27				0	0. 100.		610-833-1927	
G-554	G-555	X			18"	1			RCP	c. 1957	no	Anne Howanski	Ridley Township
G-554	G-555	^			"				1.01	0. 1001		610-833-1928	
G-555	G-556	 x			18"				RCP	c. 1957	no	Anne Howanski	Ridley Township
G-555	G-550	_ ^			10	1		=	1.01	0. 1001	""	610-833-1929	l'adis, remiemp
G-556	G-557	X			18"	 	-		RCP	c. 1957	no	Anne Howanski	Ridley Township
G-556	G-557	^		Ü	10				1.01	0. 1007	110	610-833-1930	Thatey termemp
C 557	C 550	 			18"				RCP	c. 1957	no	Anne Howanski	Ridley Township
G-557	G-558	X			10				I NOF	6, 1907	110	610-833-1931	Tradicy Township
0.550	0.550		-		4011				RCP	c. 1957	- no	Anne Howanski	Ridley Township
G-558	G-559	X	1		18"			1	I KUP	U. 1957	no	610-833-1932	Izidies Lownship
		1	4								J	010-033-1832	

					EXISTING	STORMWAT	TER COLLE	CTION SY	STEM FORM	G.		SHEET _	29	OF 6	7
WATERSH	IED		FORM COM	PLETED BY		1		11	NSTRUCTION	IS					
,,,,,,						Diagram ead	ch system o	n the appro	priate map. Es	stablish map	points to sh	low changes in systen	n elemen	is,	
Name:	Crum Creek	(Name:	Jamie H. Br	icker	pipe size, or	pipe directi	on. (If unknown	own, outline th	e system e	ktent.) Comp	lete this form only who	ere speci	fic	
Municipality			Telephone:	610-532-288		Tinformation of	on construc	tion is availa	able. Use a sei	parate form	for each sys	stem. Identify the point	ts within a	1	
County:	Delaware	io.iiip	Date:	8/11/2004		Isystem cons	ecutively (e	x. G-1. G-2	G-3). Start th	ne first poin	t in each add	litional system 20 num	nbers high	ier.	
eung.	EP CIGITISII S		1			For example	G-3 ends	one system	, so G-23 begi	ins the next	. See Samp	le Diagrams & Form o	n Revers	e	
M	ap ID	T Svs	stem's Elemen	ts (x)		Measure					Design		l N	lame of Fin	
	No.	,		,	Pipe	Ch	annel / Swa	ale	Material	Year	Data	Contact Person		wnership a	
From	To	Pipe	Open Channel	Swale	Ď	TW	В	Depth		Constr.	Available	Name and Phone		nance Respo	onsibility
3-559	G-560	X	1		15"	1		1	RCP	c. 1957	no	Anne Howanski	Ridley T	ownship	
5 000		^		1				· ·				610-833-1933			
G-560	G-561	X			15"				RCP	c. 1957	no	Anne Howanski	Ridley T	ownship	
5 000	10 30 1	"										610-833-1933			
G-561	G-562	+			15"				RCP	c. 1957	no	Anne Howanski	Ridley T	ownship	
5 00 1	0 302											610-833-1922			
G-557	G-563	T X			18"				RCP	c. 1957	no	Anne Howanski	Ridley T	ownship	
5 001	10 000					1		1				610-833-1923			
G-563	G-564	X			18"				RCP	c. 1957	no	Anne Howanski	Ridley 7	ownship	
5 000	007											610-833-1924			
G-564	G-565	X		1	18"	-			RCP	c. 1957	no	Anne Howanski	Ridley 7	ownship	
J 00-7	300	^										610-833-1925			
G-564	G-566	X			12"	1			combo	c. 1995	no	Anne Howanski	Ridley 7	ownship	
-	0 000								drain	1		610-833-1926	1		

18" RCP OWBEND HO CO ~<u>`</u>` 2007. AMB 6-5 WOL Sog 9

					EXISTING	STORMWAT	ER COLLE	CTION SY	STEM FORM	G.		SHEET_	30 OF <u>67</u>
WATERSHE	D		FORM COMP			Diagram eac	sh evetem o	ll n the appro	NSTRUCTION priate map. Es	IS stablish map	points to sh	low changes in system	n elements,
lame: Municipality: County:	Crum Creek Ridley Town Delaware		Name: Telephone: Date:	Jamie H. Bri 610-532-288 8/12/2004		pipe size, or information of	pipe direction construct	on. (If unkni tion is availa x G-1 G-2	own, outline th able. Use a se G-3). Start th	e system ex parate form ne first point	itent.) Comp for each sys in each add	stem. Identify the point litional system 20 num	ts within a bers higher.
, , , , , , , , , , , , , , , , , , , ,	=				,			one system	i, so G-23 beg	ins the next.	Design	le Diagrams & Form o	Name of Final
	ap ID No.	Sys	stem's Elemen		Pipe		annel / Swa		Material	Year	Design Data Available	Contact Person Name and Phone	Ownership and Maintenance Responsibility
From	То	Pipe	Open Channel	Swale	D	TW	В	Depth	RCP	Constr.	no	Anne Howanski	Ridley Township
G-597	G-598	X	1		18"				1 101	0. 1000	110	610-833-1933	
G-599	G-600	X			24"	-			RCP	c. 1966	no	Anne Howanski 610-833-1933	Ridley Township
3-600	G-601	X			18"				RCP	c. 1966	no	Anne Howanski 610-833-1922	Ridley Township
G-601	G-602	X			15"				RCP	c. 1966	no	Anne Howanski 610-833-1923	Ridley Township
G-600	G-603	X			24"				RCP	c. 1966	no	Anne Howanski 610-833-1924	Ridley Township
G-603	G-604	X	- 		18"				RCP	c. 1980	no	Anne Howanski 610-833-1925	Ridley Township
G-604	G-605	X			15"				RCP	c. 1980	no	Anne Howanski 610-833-1926	Ridley Township
G-603	G-606	X		·	18"				RCP	c. 1966	no	Anne Howanski 610-833-1927	Ridley Township
G-606	G-607	X			18"				RCP	c. 1966	no	Anne Howanski 610-833-1928	Ridley Township
G-607	G-608	X		<u> </u>	15"				RCP	c. 1966	no	Anne Howanski 610-833-1929	Ridley Township
G-606	G-609	X			18"				RCP	c. 1966	no	Anne Howanski 610-833-1930	Ridley Township
G-610	G-611	X		-	24"				RCP	c. 1952	no	Anne Howanski 610-833-1931	Ridley Township
G-611	G-612	X	1		24"	1			RCP	c. 1952	no	Anne Howanski 610-833-1932	Ridley Township

. M	ap ID	Svs	tem's Elements	(x)		Measure	ments*		2.02		Design	Contact Doroon	Name of Final Ownership and
	•	,		` '	Pipe	Cha	annel / Swa	ale	Material	Year	Data	Contact Person	I:
	No.	Ding	Channel I	Swale	D	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsib
From	10	Pipe	Open Channel	Owale	4511				RCP	c. 1952	no	Anne Howanski	Ridley Township
3-612	G-613	X			15"				1.01	5		610-833-1933	
									RCP	c. 1952	no	Anne Howanski	Ridley Township
3-612	G-614	X			24"				1.01	0. 1002		610-833-1933	
					450				RCP	c. 1952	no	Anne Howanski	Ridley Township
3-614	G-615	X			15"				1.01	0002		610-833-1922	



					EXISTING	STORMWA	TER COLLE	CTION SY	STEM FORM	G.		SHEET _	32 OF <u>67</u>
WATERSH	ED	-	FORM COMP	PLETED BY					NSTRUCTION				
						Diagram ead	ch system o	n the appro	priate map. Es	stablish map	points to sh	now changes in system	n elements,
Name:	Crum Creek		Name:	Jamie H. Br	icker	pipe size, or	pipe directi	on. (If unkn	own, outline th	e system ex	ktent.) Comp	lete this form only wh	ere specific
Municipality				610-532-28		Information of	on construct	ion is availa	able. Use a sei	parate form	for each sys	stem. Identify the point	ts within a
County:	Delaware	0.116		8/12/2004		Tsystem cons	ecutively (e	x, G-1, G-2	, G-3). Start th	ne first point	in each add	∄itional system 20 num	ibers higher.
Obunity.	Bolavialo		1			For example	G-3 ends	one system	i, so G-23 begi	ins the next.	See Samp	le Diagrams & Form o	n Reverse.
M	ap ID	Svs	tem's Element	s (x)		Measure					Design		Name of Final
	No.			()	Pipe		annel / Swa	ile	Material	Year	Data	Contact Person	Ownership and
From	To	Pipe	Open Channel	Swale	D	TW	В	Depth	1	Constr.	Available	Name and Phone	Maintenance Responsibilit
G-635	G-636	X	- Open chamer		24"				RCP	c. 1950	no	Anne Howanski 610-833-1933	Ridley Township
G-636	G-637	X			18"				RCP	c. 1950	no	Anne Howanski 610-833-1933	Ridley Township
G-637	G-638	X			12"				RCP	c. 1950	no	Anne Howanski 610-833-1922	Ridley Township
G-639	G-640	X			24"				RCP	c. 1950	no	Anne Howanski 610-833-1923	Ridley Township
G-640	G-641	X			15"				RCP	c. 1950	no	Anne Howanski 610-833-1924	Ridley Township
G-640	G-642	X			24"				RCP	c. 1950	no	Anne Howanski 610-833-1925	Ridley Township
G-642	G-643	X			18"				RCP	c. 1950	no	Anne Howanski 610-833-1926	Ridley Township
G-642	G-644	X			24"				RCP	c. 1950	no	Anne Howanski 610-833-1927	Ridley Township
G-644	G-645	X			30"				RCP	c. 1950	no	Anne Howanski 610-833-1928	Ridley Township
G-645	G-646	X			30"				RCP	c. 1950	no	Anne Howanski 610-833-1929	Ridley Township
G-646	G-648	X			30"				RCP	c. 1950	no	Anne Howanski 610-833-1930	Ridley Township
G-648	G-647	X			18"				RCP	c. 1950	no	Anne Howanski 610-833-1931	Ridley Township
G-648	G-649	X			15"				RCP	c. 1950	no	Anne Howanski 610-833-1932	Ridley Township

					EXISTING	STORMWAT	ER COLL	ECTION SY	STEM FORM	G.	,	SHEET	33 OF 67
I./I	ap ID	T Svs	stem's Elements	s (x)		Measure					Design		Name of Final
	No.			. ,	Pipe	Ch	annel / Sw	ale	Material	Year	Data	Contact Person	Ownership and
From	To	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
G-649	G-650	X	Open onarmer		15"				RCP	c. 1950	no	Anne Howanski	Ridley Township
G-049	G-050	^	1		'							610-833-1933	
0.040	G-651	+ x			24"			 	RCP	c. 1950	no	Anne Howanski	Ridley Township
G-648	G-651	^			_ ~				1			610-833-1933	
0.054	10.050	 			12"				RCP	c. 1950	no	Anne Howanski	Ridley Township
G-651	G-652	^	1		12		V					610-833-1922	
0.050	0.050	 	4		8"			-	CPP	c. 1995	no	Anne Howanski	Ridley Township
G-652	G-653	X	1		٥			1		1		610-833-1923	
0.054	0.054	 x			24"				RCP	c. 1950	no	Anne Howanski	Ridley Township
G-651	G-654	_ ^			27							610-833-1924	
0.054	0.055	+ x	-		12"				RCP	c. 1950	no	Anne Howanski	Ridley Township
G-654	G-655	^	1		12			1				610-833-1925	
0.054	0.050	 			24"				RCP	c. 1950	no	Anne Howanski	Ridley Township
G-654	G-656	X			24				1			610-833-1926	
0.050	0.057				18"			-	RCP	c. 1950	no	Anne Howanski	Ridley Township
G-656	G-657	X			10		1		,	1		610-833-1927	
0.050	0.050	 			18"		-	1	RCP	c. 1950	no	Anne Howanski	Ridley Township
G-656	G-658	X			10				1	1	1.00	610-833-1928	
0.050	0.050				18"				RCP	c. 1950	no	Anne Howanski	Ridley Township
G-658	G-659	X		ľ.	10		1		1	1 2	200	610-833-1929	

MUNORY VERNE NEBLOBLI

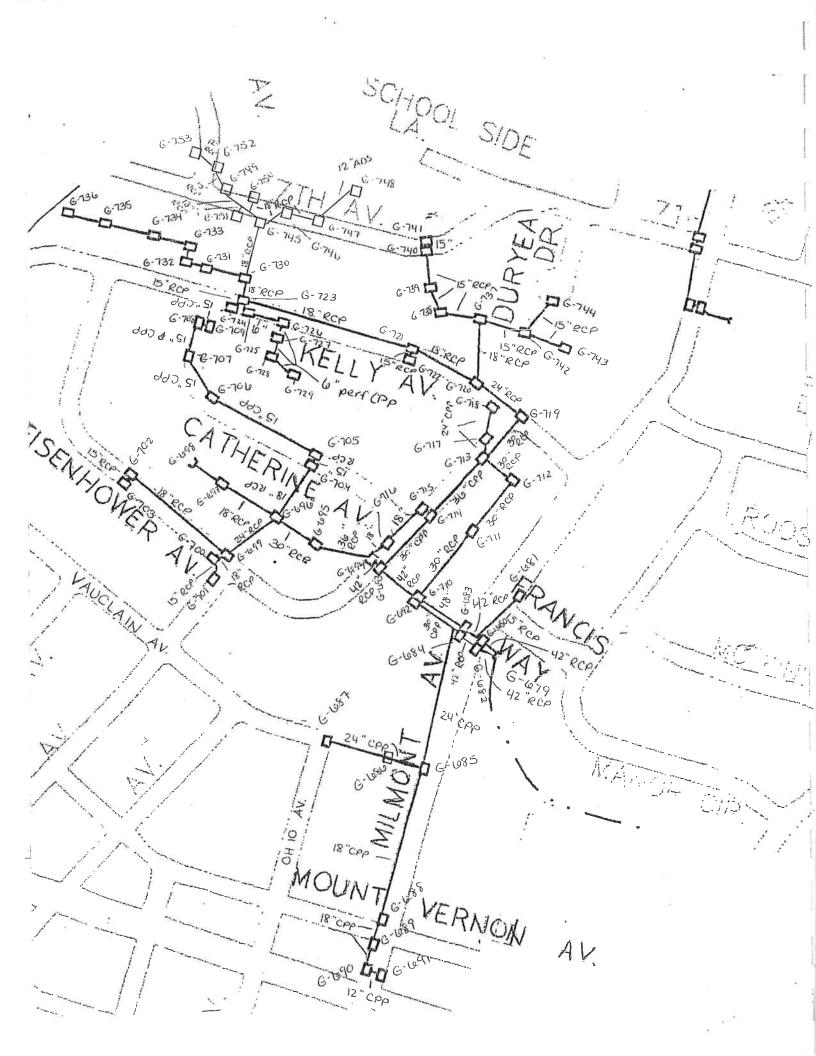
					EXISTING	STORMWA	TER COLLE	CTION SY	STEM FORM	G.		SHEET_	34 OF	67
WATERSH	HED		FORM COM	PLETED BY					VSTRUCTION					
						Diagram ead	ch system o	n the appro	priate map. Es	stablish map	points to sh	now changes in systen	n elements,	
Name:	Crum Creek		Name:	Jamie H. Br	icker	pipe size, or	pipe directi	on. (If unkn	own, outline th	ië system ex	ktent.) Comp	lete this form only wh	ere specific	
Municipalit	y: Ridley Town	ship	Telephone:	610-532-28	84	information	on construct	tion is availa	able. Use a se	parate form	for each sys	stem. Identify the point	ts within a	
County:	Delaware		Date:	8/12/2004		system cons	secutively (e	x. G-1, G-2	, G-3). Start tl	he first point	in each add	litional system 20 num	nbers higher.	
•	-		1	E		For example	e, G-3 ends	one system	, so G-23 beg	ins the next.	. See Samp	le Diagrams & Form o	on Reverse.	
N	/lap ID	Sys	tem's Elemen	ts (x)		Measure				1	Design		Nam	e of Final
	No.	1			Pipe	Ch	annel / Swa	ile	Material	Year	Data	Contact Person	1	ership and
From	То	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name and Phone		ce Responsibility
G-679	G-680	X			42"				RCP	c. 1993	no	Anne Howanski	Ridley Tow	nship
			<u> </u>							1055		610-833-1933	Didley Tex	mahin
G-680	G-681	X			15"				RCP	c. 1955	no	Anne Howanski 610-833-1933	Ridley Tow	
G-680	G-683	X			42"				RCP	c. 1955	no	Anne Howanski 610-833-1922	Ridley Tow	nship
G-679	G-682	X			42"				RCP	c. 1993	no	Anne Howanski 610-833-1923	Ridley Tow	nship
G-682	G-684	X			42"				RCP	c. 1993	no	Anne Howanski 610-833-1924	Ridley Tow	nship
G-684	G-685	Х			24"				CPP	c. 1993	no	Anne Howanski 610-833-1925	Ridley Tow	nship
G-685	G-686	X			24"				CPP	c. 1993	no	Anne Howanski 610-833-1926	Ridley Tow	nship
G-686	G-687	Х			24"				CPP.	c. 1993	no	Anne Howanski 610-833-1927	Ridley Tow	nship
G-685	G-688	Х			18"				CPP	c. 1993	no	Anne Howanski 610-833-1928	Ridley Tow	nship
G-688	G-689	X			18"				CPP	c. 1993	no	Anne Howanski 610-833-1929	Ridley Tow	
G-689	G-690	Х			18"				CPP	c. 1993	no	Anne Howanski 610-833-1930	Ridley Tow	
G-690	G-691	X			12"				CPP	c. 1993	no	Anne Howanski 610-833-1931	Ridley Tow	
G-684	G-692	X			30"				CPP	c. 1993	no	Anne Howanski 610-833-1932	Ridley Tow	nship.

					EXISTING	STORMWA	TER COLLE	ECTION SY	STEM FORM	G.		SHEET_	35OF_ <u>67_</u>
N.	lap ID	Sv	stem's Elements	s (x)	<u> </u>	Measure					Design		Name of Final
IV	No.	"		- ()	Pipe		annel / Swa	ale	Material	Year	Data	Contact Person	Ownership and
From	To	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
G-692	G-693	X			42"				RCP	c. 1955	no	Anne Howanski 610-833-1933	Ridley Township
G-693	G-694	X			42"				RCP	c. 1955	no	Anne Howanski 610-833-1933	Ridley Township
G-694	G-695	X			36"				RCP	c. 1955	no	Anne Howanski 610-833-1922	Ridley Township
G-695	G-696	X			30"		MIE 20. 14 80		RCP	c. 1955	no	Anne Howanski 610-833-1923	Ridley Township
G-696	G-697	X			18"				RCP	c. 1955	no	Anne Howanski 610-833-1924	Ridley Township
G-697	G-698	X			18"				RCP	c. 1955	no	Anne Howanski 610-833-1925	Ridley Township
G-696	G-699	Х			24"				RCP	c. 1955	no	Anne Howanski 610-833-1926	Ridley Township
G-699	G-700	X			18"				RCP	c. 1955	no	Anne Howanski 610-833-1927	Ridley Township
G-700	G-701	X			15"				RCP	c. 1955	no	Anne Howanski 610-833-1928	Ridley Township
G-699	G-702	Х			18"				RCP	c. 1955	no	Anne Howanski 610-833-1929	Ridley Township
G-702	G-703	X			15"				RCP	c. 1955	no	Anne Howanski 610-833-1930	Ridley Township
G-696	G-704	X			18"				RCP	c. 1955	no	Anne Howanski 610-833-1931	Ridley Township
G-704	G-705	X		H	15"				RCP	c. 1955	no	Anne Howanski 610-833-1932	Ridley Township
G-705	G-706	X			15"				CPP	c. 1995	no	Anne Howanski 610-833-1933	Ridley Township
G-706	G-707	X			15"				CPP	c. 1995	no	Anne Howanski 610-833-1934	Ridley Township
G-707	G-708	X			15"				CPP	c. 1995	no	Anne Howanski 610-833-1935	Ridley Township

					EXISTING S	STORMWAT	ER COLLE	CTION SYS	STEM FORM	G.		SHEET _	<u>36</u> OF <u>67</u>
N/	lap ID	I Svs	stem's Elements	s (x)		Measure	ments*				Design		Name of Final
	No.		Stoffi o Elomonia	. (/-//	Pipe	Ch	annel / Swa	ale	Material	Year	Data	Contact Person	Ownership and
From	To	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
G-708	G-709	X	Spell ellermen		15"				CPP	c. 1995	no	Anne Howanski 610-833-1933	Ridley Township
G-683	G-710	X			48"				RCP	c. 1955	no	Anne Howanski 610-833-1933	Ridley Township
G-710	G-711	X			30"				RCP	c. 1955	no	Anne Howanski 610-833-1922	Ridley Township
G-711	G-712	X			30"				RCP	c. 1955	no	Anne Howanski 610-833-1923	Ridley Township
G-712	G-713	X			30"				RCP	c. 1955	no	Anne Howanski 610-833-1924	Ridley Township
G-713	G-714	X			36"				CPP	c. 1995	no	Anne Howanski 610-833-1925	Ridley Township
G-714	G-693	X			30"				CPP	c. 1995	no	Anne Howanski 610-833-1926	Ridley Township
G-715	G-716	X			18"				RCP	c. 1955	no	Anne Howanski 610-833-1928	Ridley Township
G-716	G-694	Х			18"				RCP	c. 1955	no	Anne Howanski 610-833-1929	Ridley Township
G-713	G-717	X			24"				CPP	c. 1995	no	Anne Howanski 610-833-1930	Ridley Township
G-717	G-718	Х			24"				CPP	c. 1995	no	Anne Howanski 610-833-1931	Ridley Township
G-713	G-719	X			30"				RCP	c. 1955	no	Anne Howanski 610-833-1932	Ridley Township
G-719	G-720	X			24"				RCP	c. 1955	no	Anne Howanski 610-833-1933	Ridley Township
G-720	G-721	X			18"				RCP	c. 1955	no	Anne Howanski 610-833-1934	Ridley Township
G-721	G-722	X			15"				RCP	c. 1955	no	Anne Howanski 610-833-1935	Ridley Township
G-721	G-723	X			18"			i.	RCP	c. 1955	no	Anne Howanski 610-833-1933	Ridley Township

					EXISTING S			CTION SY	STEM FORM	G.	, , ,	SHEET _	37 OF <u>67</u>
N	lap ID	T Sys	stem's Elements	s (x)		Measure	ments*				Design		Name of Final
	No.	,		` '	Pipe	Ch	annel / Swa	ale .	Material	Year	Data	Contact Person	Ownership and
From	То	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibilit
G-723	G-724	X			15"				RCP	c. 1955	no	Anne Howanski 610-833-1933	Ridley Township
G-725	G-726	X			6"				CPP	c. 1995	no	Anne Howanski 610-833-1923	Ridley Township
3-726	G-727	X			6"				PCPP	c. 1995	no	Anne Howanski 610-833-1924	Ridley Township
G-727	G-728	X			6"				PCPP	c. 1995	no	Anne Howanski 610-833-1925	Ridley Township
G-728	G-729	X		<u> </u>	6"				PCPP	c. 1995	no	Anne Howanski 610-833-1926	Ridley Township
G-723	G-730	X			18"				RCP	c. 1955	no	Anne Howanski 610-833-1927	Ridley Township
G-730	G-731	X			18"				RCP	c. 1955	no	Anne Howanski 610-833-1928	Ridley Township
G-731	G-732	X			18"				RCP	c. 1955	no	Anne Howanski 610-833-1929	Ridley Township
G-732	G-733	X			18"				RCP	c. 1955	no	Anne Howanski 610-833-1930	Ridley Township
G-733	G-734	X			18"	one and a half			RCP	c. 1955	no	Anne Howanski 610-833-1931	Ridley Township
3-734	G-735	X		A TOTAL CONTRACTOR OF THE PARTY	18"				RCP	c. 1955	no	Anne Howanski 610-833-1932	Ridley Township
G-735	G-736	X			18"				RCP	c. 1955	no	Anne Howanski 610-833-1933	Ridley Township
G-720	G-737	X			18"				RCP	c. 1955	no	Anne Howanski 610-833-1934	Ridley Township
S-737	G-738	X			15"				RCP	c. 1955	no	Anne Howanski 610-833-1935	Ridley Township
G-738	G-739	X			15"				RCP	c. 1955	no	Anne Howanski 610-833-1933	Ridley Township
G-739	G-740	X			15"				RCP	c. 1955	по	Anne Howanski 610-833-1933	Ridley Township

					EXISTING	STORMWAT	ER COLL	ECTION SYS	STEM FORM	G.		SHEET_	38 OF <u>67</u>
M	lap ID	I Sv	stem's Elements			Measure				i i	Design		Name of Final
	No.	0,		(11)	Pipe	Ch	annel / Swa	ale	Material	Year	Data	Contact Person	Ownership and
From	To	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
G-740	G-741	X	Open onamer	0110110	15"				RCP	c. 1955	no	Anne Howanski 610-833-1922	Ridley Township
G-737	G-742	X			15"				RCP	c. 1955	no	Anne Howanski 610-833-1923	Ridley Township
G-742	G-743	X			15"				RCP	c. 1955	no	Anne Howanski 610-833-1924	Ridley Township
G-742	G-744	X			15"				RCP	c. 1960	no	Anne Howanski 610-833-1925	Ridley Township
G-730	G-745	X)	15"				RCP	c. 1955	no	Anne Howanski 610-833-1925	Ridley Township
G-745	G-746	X			18"				RCP	c. 1955	no	Anne Howanski 610-833-1926	Ridley Township
G-746	G-747	Х			18"				RCP	c. 1955	no	Anne Howanski 610-833-1927	Ridley Township
G-747	G-748	X			12"				ADS	c. 1955	no	Anne Howanski 610-833-1928	Ridley Township
G-745	G-750	X			18"				RCP	c. 1955	no	Anne Howanski 610-833-1929	Ridley Township
G-745	G-751	X			18"				RCP	c. 1955	no	Anne Howanski 610-833-1930	Ridley Township
G-745	G-749	X			18"				RCP	c. 1955	no	Anne Howanski 610-833-1931	Ridley Township
G-749	G-752	X			15"				RCP	c. 1955	no	Anne Howanski 610-833-1932	Ridley Township
G-752	G-753	X			12"				RCP	c. 1955	no	Anne Howanski 610-833-1933	Ridley Township



					EXISTING	STORMWA	TER COLLE	CTION SY	STEM FORM	G.		SHEET_	39 (OF _	67
WATERSH	IED		FORM COM	PLETED BY					NSTRUCTION	1 S					
						Diagram ead	ch system o	n the appro	priate map. Es	stablish map	points to sl	now changes in syster	n elements	3,	
Name:	Crum Creek		Name:	Jamie H. Br	icker	pipe size, or	pipe directi	on. (If unkn	own, outline th	ne system e	xtent.) Comp	lete this form only wh	ere specific	С	
Municipality	: Ridley Towns	ship	Telephone:	610-532-28	84	information (on construc	tion is availa	able. Use a se	parate form	for each sys	stem. Identify the poin	ts within a		
County:	Delaware		Date:	8/16/2004		system cons	secutively (e	x. G-1, G-2	, G-3). Start tl	he first poin	t in each add	litional system 20 num	bers highe	er.	
						For example	e, G-3 ends	one system	, so G-23 beg	ins the next	. See Samp	le Diagrams & Form o			
M	ap ID	Sys	tem's Element	ts (x)		Measure	ements*				Design		Na	me of	Final
	No.				Pipe	Ch	annel / Swa	ıle	Material	Year	Data	Contact Person	Ow	nership	ρ and
From	То	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name and Phone			esponsibility
G-773	G-774	Х			24"				RCP	c. 1957	no	Anne Howanski	Ridley To	wnshi	p
												610-833-1933			
G-774	G-775	Х			15"				RCP	c. 1957	no	Anne Howanski	Ridley To	wnshi	p
												610-833-1933			
G-774	G-776	Х			24"				RCP	c. 1957	no	Anne Howanski	Ridley To	wnshi	p
				L	1							610-833-1922			
G-776	G-777	X			24"				RCP	c. 1957	no	Anne Howanski	Ridley To	wnshi	р
												610-833-1923			
G-777	G-778	Х			24"				RCP	c. 1957	no	Anne Howanski	Ridley To	wnshi	p
			1									610-833-1924	1		
G-778	G-779	Х			24"				RCP	c. 1957	no	Anne Howanski	Ridley To	wnshi	p
												610-833-1925			
G-779	G-780	X			15"				RCP	c. 1957	no	Anne Howanski	Ridley To	wnshi	ıp
												610-833-1926			
G-779	G-781	Х			15"				RCP	c. 1957	no	Anne Howanski	Ridley To	wnshi	ıp
												610-833-1927			
G-779	G-782	Х			18"				RCP	c. 1957	no	Anne Howanski	Ridley To	wnshi	ıp
												610-833-1928			
G-782	G-783	X			15"				RCP	c. 1957	no	Anne Howanski	Ridley To	wnshi	р
												610-833-1929			
G-782	G-784	X			15"				RCP	c. 1957	no	Anne Howanski	Ridley To	wnshi	ıp
												610-833-1930			
G-782	G-Swarth-	Х			18"				RCP	c. 1957	no	Anne Howanski	Ridley To	wnshi	p
	more Boro											610-833-1931			

SWA G-779

					EXISTING	STORMWAT	ER COLLE	CTION SYS	STEM FORM	G.		SHEET _	40 OF 67
	Crum Creek				icker	Diagram eac pipe size, or information o	ch system o pipe directi on construc	n the appropon. (If unknotion is availa	NSTRUCTION priate map. Es own, outline the libe. Use a sel	S stablish map e system ex parate form	tent.) Comp for each sys in each add	ow changes in system lete this form only who tem. Identify the point itional system 20 num	s within a bers higher.
County:	Delaware		Date.	0/10/2004		For example	. G-3 ends	one system	, so G-23 begi	ns the next.	See Samp	le Diagrams & Form o	n Reverse. Name of Final
	ap ID No.	Sys	stem's Element		Pipe	Measure Ch	ements* annel / Swa	ale	Material	Year Constr.	Design Data Available	Contact Person Name and Phone	Ownership and Maintenance Responsibilit
From S-804	To G-805	Pipe X	Open Channel	Swale	30"	TW	В	Depth	RCP	c. 1953	no	Anne Howanski 610-833-1933	Ridley Township
-805	G-806	X			30"				RCP	c. 1953	no	Anne Howanski 610-833-1933	Ridley Township
G-806	G-807	X			15"				RCP	c. 1953	no	Anne Howanski 610-833-1922	Ridley Township
G-806	G-808	X			30"				RCP	c. 1953	no	Anne Howanski 610-833-1923	Ridley Township
G-808	G-809	X			18"				RCP	c. 1953	no	Anne Howanski 610-833-1924	Ridley Township
3-809	G-810	X			15"				RCP	c. 1953	no	Anne Howanski 610-833-1925	Ridley Township
3-808	G-811	X		<u> </u>	15"				RCP	c. 1953	no	Anne Howanski 610-833-1926	Ridley Township
G-811	G-812	X			15"				RCP	c. 1953	no	Anne Howanski 610-833-1927	Ridley Township
G-812	G-812A	X			15"				RCP	c. 1953	no	Anne Howanski 610-833-1928	Ridley Township
G-812A	G-813	X			27"				RCP	c. 1953	no	Anne Howanski 610-833-1929	Ridley Township
G-813	G-814	X			27"				RCP	c. 1953	no	Anne Howanski 610-833-1930	Ridley Township
G-814	G-815	X			24"				RCP	c. 1953	no	Anne Howanski 610-833-1931	Ridley Township
G-815	G-816	X			18"				RCP	c. 1953	no	Anne Howanski 610-833-1932	Ridley Township

					EXISTING S	STORMWAT	ER COLLE	CTION SYS	STEM FORM	G.		SHEET_	41 OF 67
N/I	ap ID	Svs	stem's Elements	(x)		Measure				1	Design		Name of Final
	No.			()	Pipe	Ch	annel / Swa	ale	Material	Year	Data	Contact Person	Ownership and
From	To	Pipe	Open Channel	Swale	Ď	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
G-815	G-817	X	Opon Chamer		24"				RCP	c. 1953	no	Anne Howanski	Ridley Township
3-013	0-017	1 ^										610-833-1933	
G-817	G-818	- Y	1		18"				RCP	c. 1953	no	Anne Howanski	Ridley Township
J-011	10-010	_			'0			-				610-833-1933	[i
G-818	G-819	 x			18"			1	RCP	c. 1953	no	Anne Howanski	Ridley Township
J-010	G-619	_ ^			"						1	610-833-1922	
G-819	G-820	X			15"				RCP	c. 1953	no	Anne Howanski	Ridley Township
3-018	G-620	^			1 10 1							610-833-1923	
 G-817	G-821	 X	-		21"			·	RCP	c. 1953	no	Anne Howanski	Ridley Township
G-017	G-021	^										610-833-1924	
G-821	G-822	 x	 		8"	- VIIII-			RCP	c. 1953	no	Anne Howanski	Ridley Township
G-02 1	G-022	^	1 1		"							610-833-1925	
G-821	G-823	+ x			8"				RCP	c. 1953	no	Anne Howanski	Ridley Township
G-02 I	G-025	^	1									610-833-1926	
G-821	G-824	 x			21"				RCP	c. 1953	no	Anne Howanski	Ridley Township
G-02 1	G-024	^	1		-							610-833-1927	
G-824	G-825	X	+		21"				RCP	c. 1953	no	Anne Howanski	Ridley Township
J-024	G-020	_ ^			1 - 1							610-833-1928	
G-825	G-826	X	-		21"				RCP	c. 1953	no	Anne Howanski	Ridley Township
G-020	3-020	^	1		~'		1:					610-833-1929	

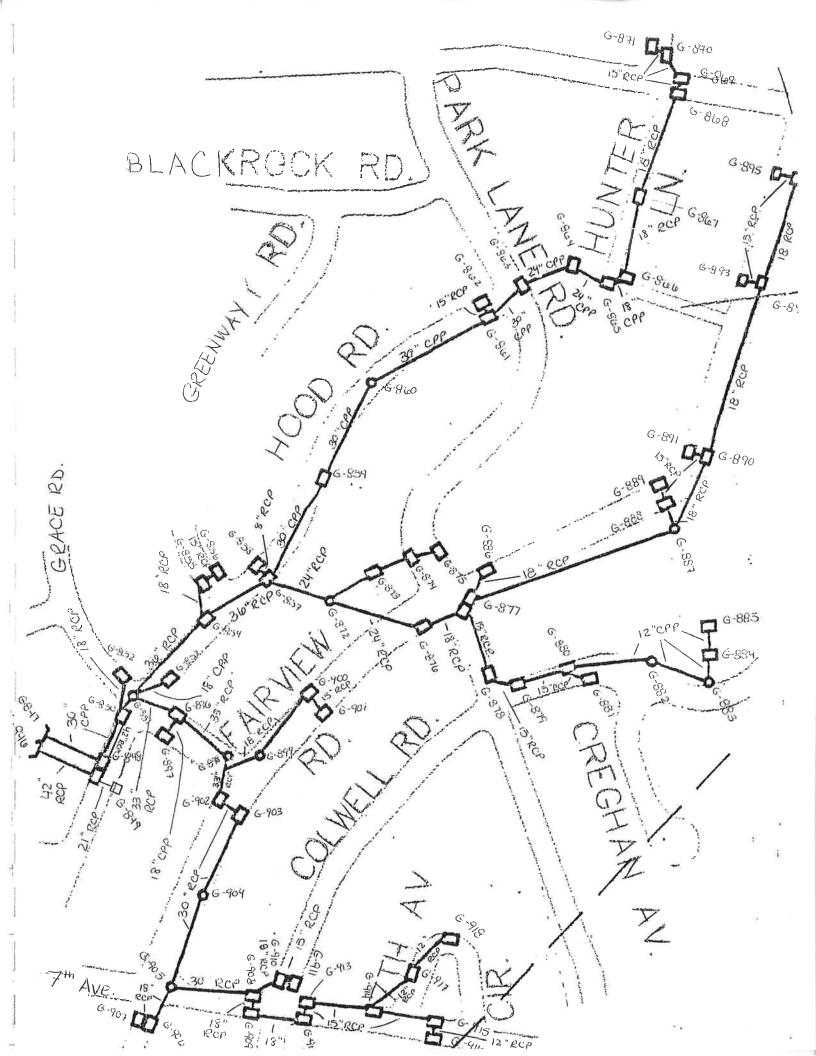
					EXISTING	STORMWA	TER COLLE	CTION SY	STEM FORM	Ğ.		SHEET _	42OF	67
WATERSH	HED		FORM COMP	LETED BY					NSTRUCTION					
						Diagram ead	ch system o	n the appro	priate map. Es	stablish map	points to sh	now changes in syster	n elements,	
Name:	Crum Creek	(Name:	Jamie H. Br	icker	pipe size, or	pipe direction	on. (If unkn	own, outline th	ie system ex	ktent.) Comp	lete this form only wh	ere specific	
Municipalit	y: Ridley Town	nship	Telephone:	610-532-28	84	information (on construct	tion is avail	able. Use a se	parate form	for each sys	stem. Identify the poin	ts within a	
County:	Delaware		Date:	8/16/2004	2	system cons	secutively (e	x. G-1, G-2	, G-3). Start tl	ne first point	t in each add	litional system 20 num	nbers higher.	
,			1 '		***************************************	For example	e, G-3 ends	one system	, so G-23 beg	ins the next	. See Samp	le Diagrams & Form o	n Reverse.	
N	lap ID	Svs	tem's Element	s (x)		Measure	ements*				Design		Name	of Final
	No.	1			Pipe	T Ch	annel / Swa	ile	Material	Year	Data	Contact Person	Owners	ship and
From	То	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance	Responsibility
G-846	G-848	X			42"				RCP	c. 1952	no	Anne Howanski 610-833-1933	Ridley Town	ship
G-847	G-848	X			30"				CPP	c. 1993	no	Anne Howanski 610-833-1933	Ridley Town	ship
G-848	G-849	X			21"				RCP	c.1952	no	Anne Howanski 610-833-1922	Ridley Town	ship
G-848	G-850	Х			30"				CPP	c. 1993	no	Anne Howanski 610-833-1923	Ridley Town	ship
G-848	G-850	X			42"				RCP	c. 1952	no	Anne Howanski 610-833-1924	Ridley Town	ship
G-850	G-852	X			18"				RCP	c. 1952	no	Anne Howanski 610-833-1924	Ridley Town	ship
G-850	G-851	X			36"				RCP	c. 1952	no	Anne Howanski 610-833-1925	Ridley Town	ship
G-851	G-853	X		**************************************	18"				CPP	c. 1993	no	Anne Howanski 610-833-1926	Ridley Town	ship
G-851	G-854	X			36"				RCP	c. 1952	no	Anne Howanski 610-833-1927	Ridley Town	ship
G-854	G-855	X			18"				RCP	c. 1952	no	Anne Howanski 610-833-1928	Ridley Town	ship
G-855	G-856	X			15"				RCP	c. 1952	no	Anne Howanski 610-833-1929	Ridley Town	ship
G-854	G-857	X			36"				RCP	c. 1952	no	Anne Howanski 610-833-1930	Ridley Town	ıship
G-857	G-858	X			8"				RCP	c. 1952	no	Anne Howanski 610-833-1931	Ridley Town	nship

					EXISTING	STORMWA [*]	TER COLL	ECTION SY	STEM FORM	G.		SHEET _	43 OF 67
N	lap ID	Sy:	stem's Elements	s (x)		Measure	ements*				Design		Name of Final
	No.	1			Pipe	Ch	annel / Swa	ale	Material	Year	Data	Contact Person	Ownership and
From	To	Pipe	Open Channel	Swale	Ď	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
G-857	G-859	X			30"				CPP	c. 1995	no	Anne Howanski 610-833-1932	Ridley Township
G-859	G-860	X			30"				CPP	c. 1995	no	Anne Howanski 610-833-1933	Ridley Township
G-860	G-861	Х			30"	•			CPP	c. 1995	no	Anne Howanski 610-833-1933	Ridley Township
G-861	G-862	X			15"				RCP	c. 1952	no	Anne Howanski 610-833-1922	Ridley Township
G-861	G-863	Х			30"				CPP	c. 1995	no	Anne Howanski 610-833-1923	Ridley Township
G-863	G-864	Х			24"				CPP	c. 1995	no	Anne Howanski 610-833-1924	Ridley Township
G-864	G-865	Х			24"				CPP	c. 1995	no	Anne Howanski 610-833-1925	Ridley Township
G-865	G-866	Х			18"				CPP	c. 1995	no	Anne Howanski 610-833-1926	Ridley Township
G-866	G-867	Х			18"				RCP	c. 1952	no	Anne Howanski 610-833-1927	Ridley Township
G-867	G-868	Х			18"				RCP	c. 1952	no	Anne Howanski 610-833-1928	Ridley Township
G-868	G-869	Х			15"				RCP	c. 1952	no	Anne Howanski 610-833-1929	Ridley Township
G-869	G-870	Х			15"				RCP	c. 1952	no	Anne Howanski 610-833-1930	Ridley Township
G-870	G-871	Х			15"				RCP	c. 1952	no	Anne Howanski 610-833-1931	Ridley Township
G-857	G-872	Х			24"				RCP	c. 1952	no	Anne Howanski 610-833-1932	Ridley Township
G-872	G-873	Х							RCP	c. 1952	no	Anne Howanski 610-833-1930	Ridley Township
G-873	G-874	Х							RCP	c. 1952	no	Anne Howanski 610-833-1931	Ridley Township

					EXISTING:	STORMWAT	TER COLL	ECTION SYS	STEM FORM	G.		SHEET	44 OF 67
	lap ID	Svs	stem's Elements			Measure				1	Design		Name of Final
.,	No.	1		` '	Pipe	Ch	annel / Swa	ale	Material	Year	Data	Contact Person	Ownership and
From	To	Pipe	Open Channel	Swale	Ď	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
G-874	G-875	X							RCP	c. 1952	no	Anne Howanski .610-833-1932	Ridley Township
G-872	G-876	X			24"				RCP	c. 1954	no	Anne Howanski 610-833-1933	Ridley Township
G-876	G-877	X			18"				RCP	c. 1954	по	Anne Howanski 610-833-1933	Ridley Township
3-877	G-878	X			18"				RCP	c. 1954	no	Anne Howanski 610-833-1922	Ridley Township
G-878	G-879	X			15"				RCP	c. 1954	no	Anne Howanski 610-833-1923	Ridley Township
G-879	G-880	Х			15"				RCP	c. 1954	no	Anne Howanski 610-833-1924	Ridley Township
G-880	G-881	Х			15"				RCP	c. 1954	no	Anne Howanski 610-833-1925	Ridley Township
G-880	G-882	X			12"				CPP	c. 1952	no	Anne Howanski 610-833-1926	Ridley Township
G-882	G-883	Х			12"				CPP	c. 1952	no	Anne Howanski 610-833-1927	Ridley Township
G-883	G-884	X			12"				CPP	c. 1952	no	Anne Howanski 610-833-1928	Ridley Township
G-884	G-885	Х			12"				CPP	c. 1952	no	Anne Howanski 610-833-1929	Ridley Township
G-877	G-886	Х			18"				RCP	c. 1954	no	Anne Howanski 610-833-1930	Ridley Township
G-877	G-887	Х			18"				RCP	c, 1954	no	Anne Howanski 610-833-1931	Ridley Township
G-887	G-888	X			18"				RCP	c. 1954	no	Anne Howanski 610-833-1932	Ridley Township
G-888	G-889	Х			15"				RCP	c. 1954	no	Anne Howanski 610-833-1930	Ridley Township
G-887	G-890	Х			18"				RCP	c. 1954	no	Anne Howanski 610-833-1931	Ridley Township

					EXISTING:			CTION SYS	STEM FORM	G.		SHEET_	45 OF <u>67</u>
N	lap ID	Sys	stem's Elements	s (x)		Measure					Design		Name of Final
	No.				Pipe		annel / Swa		Material	Year	Data	Contact Person	Ownership and
From	То	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
3-890	G-891	X			15"				RCP	c. 1954	no	Anne Howanski 610-833-1932	Ridley Township
S-890	G-892	Х			18"				RCP	c. 1954	no	Anne Howanski 610-833-1933	Ridley Township
G-892	G-893	X			15"				RCP	c. 1954	no	Anne Howanski 610-833-1933	Ridley Township
S-892	G-894	X			18"				RCP	c. 1954	no	Anne Howanski 610-833-1922	Ridley Township
G-894	G-895	X			15"				RCP	c. 1954	no	Anne Howanski 610-833-1923	Ridley Township
3-851	G-896	X			33"				RCP	c. 1952	no	Anne Howanski 610-833-1924	Ridley Township
S-896	G-897	Х			18"				CPP	c. 1993	no	Anne Howanski 610-833-1925	Ridley Township
3-896	G-898	X			33"				RCP	c. 1952	no	Anne Howanski 610-833-1926	Ridley Township
S-898	G-899	Х			18"				RCP	c. 1952	no	Anne Howanski 610-833-1927	Ridley Township
3-899	G-900	Х			18"				RCP	c. 1952	no	Anne Howanski 610-833-1928	Ridley Township
G-900	G-901	Х			15"				RCP	c. 1952	no	Anne Howanski 610-833-1929	Ridley Township
S-898	G-902	Х			33"				RCP	c. 1952	no	Anne Howanski 610-833-1930	Ridley Township
G-902	G-903	X			30"				RCP	c. 1952	no	Anne Howanski 610-833-1931	Ridley Township
9-903	G-904	X			30"				RCP	c. 1952	no	Anne Howanski 610-833-1932	Ridley Township
3-904	G-905	X.			30"				RCP	c. 1952	no	Anne Howanski 610-833-1930	Ridley Township
9-905	G-906	Х			18"				RCP	c. 1952	no	Anne Howanski 610-833-1931	Ridley Township

					EXISTING :	STORMWA [*]	TER COLLE	CTION SYS	STEM FORM	G.		SHEET	46 OF <u>67</u>
M	ap ID	Sys	stem's Elements	s (x)		Measure	ements*				Design		Name of Final
	No.				Pipe	Ch	annel / Swa		Material	Year	Data	Contact Person	Ownership and
From	То	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibilit
G-906	G-907	X			18"				RCP	c. 1952	no	Anne Howanski 610-833-1932	Ridley Township
3-905	G-908	X		V	30"				RCP	c. 1952	no	Anne Howanski 610-833-1932	Ridley Township
G-908	G-910	X			18"	- X			RCP	c. 1952	no	Anne Howanski 610-833-1933	Ridley Township
G-910	G-911	X			15"	Tenegra e de Maria			RCP	c. 1952	no .	Anne Howanski 610-833-1933	Ridley Township
G-908	G-909	X			18"				RCP	c. 1952	no	Anne Howanski 610-833-1922	Ridley Township
3-909	G-912	X			18"				RCP	c. 1952	no	Anne Howanski 610-833-1923	Ridley Township
3-912	G-913	X			15"				RCP	c. 1967	no	Anne Howanski 610-833-1924	Ridley Township
9-913	G-914	X			15"				RCP	c. 1967	no	Anne Howanski 610-833-1925	Ridley Township
9-914	G-915	X			15"				RCP	c. 1967	no	Anne Howanski 610-833-1926	Ridley Township
9-915	G-916	X			12"				RCP	c. 1952	no	Anne Howanski 610-833-1927	Ridley Township
G-914	G-917	Х			12"				RCP	c. 1952	no	Anne Howanski 610-833-1928	Ridley Township
3-917	G-918	X		10.00	12"				RCP	c. 1952	no	Anne Howanski 610-833-1929	Ridley Township



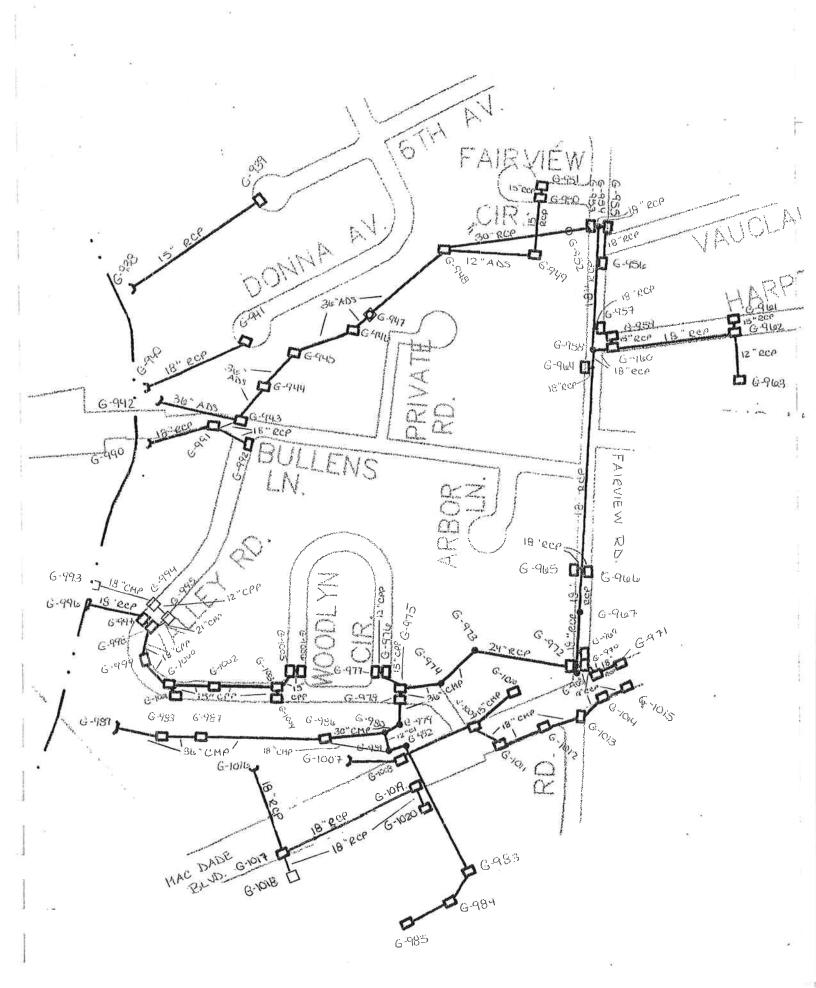
							1000	0,10,140	C V V C C L V V L L			CHEET	47 OF 67
					EXISTING	STORMWA	IER COLLE	CHONSYS	EXISTING STORMWATER COLLECTION SYSTEM FORM G.	'n		STEEL	5
WATERSHED	9		FORM COMPLETED B	LETED BY		Diag menoring	sh evetern on	אן מסקמים פלז ר	INSTRUCTIONS	S ablish mad	points to sh	INSTRUCTIONS Diagram each system on the appropriate map. Establish map points to show chandes in system elements,	elements,
Nomo.	Crim Creek		.emeN	Jamie H. Br	Bricker	pipe size, of	pipe directic	n. (If unknow	wn, outline the	system exi	tent.) Compi	program each system on the appropriate management of the system extent.) Complete this form only where specific	re specific
Municipality.	Municipality: Ridley Township	ghip	Ü	610-532-2884	84	information	on constructi	ion is availat	ole. Use a sep	arate form i	for each sys	information on construction is available. Use a separate form for each system. Identify the points within a	s within a
County:	Delaware			8/16/2004		system cons	secutively (e)	x. G-1, G-2,	G-3). Start th	e first point	in each add	system consecutively (ex. G-1, G-2, G-3). Start the first point in each additional system 20 numbers nigher For some of 2 and 2 and 2 and 2 and 2 and 2 and 2 and 2 and 2 and 2 and 2 and 2 and 2 and 2 and 3 and 3 and 3	bers nigher. n Reverse.
M	Ol deM	SVS	Svetem's Flements (x)	(X)		Neasure	Measurements*	one system,	2-50 Deg	ווב ווכער	Design		Name of Final
	j S	26			Pipe	ຮ	Channel / Swale	<u>0</u>	Material	Year	Data	Contact Person	Ownership and
From		Pipe	Open Channel	Swale	۵	WL	8	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
G-938	G-939	×			151				RCP	c. 1959	ou	Anne Howanski 610-833-1933	Ridley Township
G-940	G-941	×			18"				RCP	c, 1961	5	Anne Howanski 610-833-1933	Ridley Township
G-942	G-943	×			36"				ADS	c. 1991	2	Anne Howanski 610-833-1922	Ridley Township
G-943	G-944	×			36"				ADS	c. 1991	2	Anne Howanski 610-833-1923	Ridley Township
G-944	G-945	×			36"				ADS	c. 1991	2	Anne Howanski 610-833-1924	Ridley Township
G-945	G-946	×			36"				ADS	c. 1991	OL	Anne Howanski 610-833-1924	Ridley Township
G-946	G-947	×			36"				ADS	c. 1991	01	Anne Howanski 610-833-1925	Ridley Township
G-947	G-948	×			36"				ADS	c. 1991	22	Anne Howanski 610-833-1926	Ridley Township
G-948	G-949	×			12"				ADS	c. 1991	OU	Anne Howanski 610-833-1927	Ridley Township
G-949	G-950	×			15				RCP	c. 1959	01	Anne Howanski 610-833-1928	Ridley Township
G-950	G-951	×			15"				RCP	c, 1959	01	Anne Howanski 610-833-1929	Ridley Township
G-948	G-952	×			30*		,		RCP	c. 1959	υu	Anne Howanski 610-833-1930	Ridley Township
G-952	G-953	×			30"				RCP	c. 1959	ou	Anne Howanski 610-833-1931	Ridley Township

					SUNITSIVE	EXISTING STORMWATER COLLECTION SYSTEM FORM G	TE COLLEC	SYS NOIT	TEM FORM C	\r		SHEET	48 OF 67
(10)	9	Syl	System's Flaments (X)	(X)	2	Measurements*	nents*				Design		Name of Final
<u>v</u> Z	Na V	Ś		3	Pipe	Cha	Channel / Swale	a	Material	Year	Data	Contact Person	Ownership and
FICE	5	Pine	Open Channel	Swale	۵	- WT	m	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
G-953	G-954	×			181				RCP	c. 1959	2	Anne Howanski 610-833-1932	Ridley Lownship
G-954	G-955	×			18				RCP	c. 1959	e e	Anne Howanski 610-833-1933	Ridley Township
G-955	G-956	×			181				RCP	c, 1959	50	Anne Howanski 610-833-1933	Ridley Township
G-954	G-957	×			18"				RCP	c. 1959	OL.	Anne Howanski 610-833-1922	Ridley Township
G-954	G-958	×			18#				RCP	c, 1959	인	Anne Howanski 610-833-1923	Ridley Township
G-958	096-5	×			18"				RCP	c. 1959	2	Anne Howanski 610-833-1924	Ridley Township
G-960	G-959	×			15"				RCP	c, 1959	2	Anne Howanski 610-833-1925	Ridley Township
096-5	G-962	×			<u>*</u>				RCP	c. 1959	2	Anne Howanski 610-833-1926	Ridley Township
G-962	G-961	×			15"				RCP	c. 1959	ou	Anne Howanski 610-833-1927	Ridley Township
G-962	G-963	×			12"				RCP	c. 1959	οu	Anne Howanski 610-833-1928	Ridley Township
G-958	G-964	×			18"				RCP	c, 1959	2	Anne Howanski 610-833-1929	Ridley Township
G-958	G-965	×			18"				RCP	c. 1959	ou	Anne Howanski 610-833-1930	Ridley Township
G-958	996-5	×			188				RCP	c. 1959	ou	Anne Howanski 610-833-1931	Ridley Township
G-958	G-967	×			18"				RCP	c. 1959	ОП	Anne Howanski 610-833-1932	Ridley Township
G-967	G-968	×			18				RCP	c. 1959	OU	Anne Howanski 610-833-1930	Ridley Township
G-968	G-969	×			18"				RCP	c. 1959	ou	Anne Howanski 610-833-1931	Ridley Township

					EXISTING	CI CIVINIA	1		EXISTING STORIMINATER COLLECTION STOLETH STATE		Docion		Name of Final
Ma	Man ID	Svs	System's Elements (x)	(x) s		Measur	Measurements*		800	1,000	i Sign		Cacatidary
2	I CN				Pipe	Ö	Channel / Swale	e e	Material	Year	Data	Contact Person	Cwirelship and
From	To	Pipe	Open Channel	Swale	٥	ML	а	Depth		Constr.	Available	Name and Phone	Didley Townshin
G-969	G-970	×			18				AC P	C. 1938	2	610-833-1932	discussion forms
G-970	G-971	×			18"				RCP	c. 1959	9	Anne Howanski 610-833-1933	Ridley Township
6-968	G-972	×			24"				RCP	c. 1959	00	Anne Howanski 610-833-1933	Ridley Township
G-972	G-973	×			24"				RCP	c. 1959	OU	Anne Howanski 610-833-1922	Ridley Township
G-973	G-974	×			36"				CMP	c. 1991	οü	Anne Howanski 610-833-1923	Ridley Township
G-974	G-975	×			36"				CMP	c. 1991	OL.	Anne Howanski 610-833-1924	Ridley Township
G-975	6-976	×			15"				CPP	c. 1996	ᅃ	Anne Howanski 610-833-1925	Ridley Township
976-9	G-977	×			12"				CPP	c. 1996	ОП	Anne Howanski 610-833-1926	Ridley Township
G-975	G-978	×			36"				CMP	c. 1991	ou	Anne Howanski 610-833-1927	Ridley Township
G-978	6-979	×			36"				CMP	c. 1991	OL	Anne Howanski 610-833-1928	Ridley Township
6-62	086-9	×			30				CMP	c. 1991	OU	Anne Howanski 610-833-1929	Ridley Township
G-980	G-981	×			12"				CIP	c. 1959	ou	Anne Howanski 610-833-1930	Ridley Township
G-981	G-982	×			18.				RCP	c. 1959	92	Anne Howanski 610-833-1931	Ridley Township
G-982	G-983	×			18"				RCP	c. 1959	OU	Anne Howanski 610-833-1932	Ridley Township
G-983	G-984	×			18"				RCP	c. 1959	OU	Anne Howanski 610-833-1930	Ridley Township
G-984	G-985	×			15"				RCP	c. 1959	ou	Anne Howanski 610-833-1931	Ridley Township

					・ウベニのマル	CAMAZO	110011	10:00	EXISTING STORMWATER COLLECTION STOLEM FORM G	j			
Of new		SVS	System's Flements (x)			Measurements*	ments*				Design		Name of Final
A CA		Ś			Pipe	5	Channel / Swale	e	Material	Үеаг	Data	Contact Person	Ownership and
From	To OT	Pipe	Open Channel	Swale	٥	WI	8	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
G-980 G-986		×			30"				CMP	c. 1959	OL.	Anne Howanski 610-833-1932	Kidley township
G-986 G-981		×			100				CMP	c, 1959	인	Anne Howanski 610-833-1933	Ridley Township
G-986 G-987		×			36"				CMP	c. 1991	οu	Anne Howanski 610-833-1933	Ridley Township
G-987 G-988	88	×			36"				CMP	c. 1991	01	Anne Howanski 610-833-1933	Ridley Township
G-988 G-989	68	×			36"				CMP	c. 1991	ОП	Anne Howanski 610-833-1922	Ridley Township
G-990 G-991	91	×			18				RCP	c, 1959	OL.	Anne Howanski 610-833-1923	Ridley Township
G-991 G-943	43	×			18"				RCP	c. 1959	인	Anne Howanski 610-833-1924	Ridley Township
G-991 G-992	92	×			<u>18</u>				RCP	c. 1959	oп	Anne Howanski 610-833-1925	Ridley Township
G-993 G-994	94	×			18"				CMP	c. 1996	oп	Anne Howanski 610-833-1926	Ridley Township
G-994 G-995	95	×			12"				CPP	c. 1996	ou	Anne Howanski 610-833-1927	Ridley Township
G-996 G-997	161	×			<u>\$</u>				RCP	c, 1959	ОП	Anne Howanski 610-833-1928	Ridley Township
G-997 G-998	86	×			<u>*</u>				RCP	c. 1959	011	Anne Howanski 610-833-1929	Ridley Township
G-995 G-998	86	×			21"				CPP	c, 1996	OU	Anne Howanski 610-833-1930	Ridley Township
G-998 G-999	66	×			18,				CPP	c, 1996	ОП	Anne Howanski 610-833-1931	Ridley Township
G-999 G-1	G-1000	×			18"				CPP	c. 1996	oп	Anne Howanski 610-833-1932	Ridley Township
G-1000 G-1	G-1001	×			15"				CPP	c. 1996	ОП	Anne Howanski 610-833-1930	Ridley Township

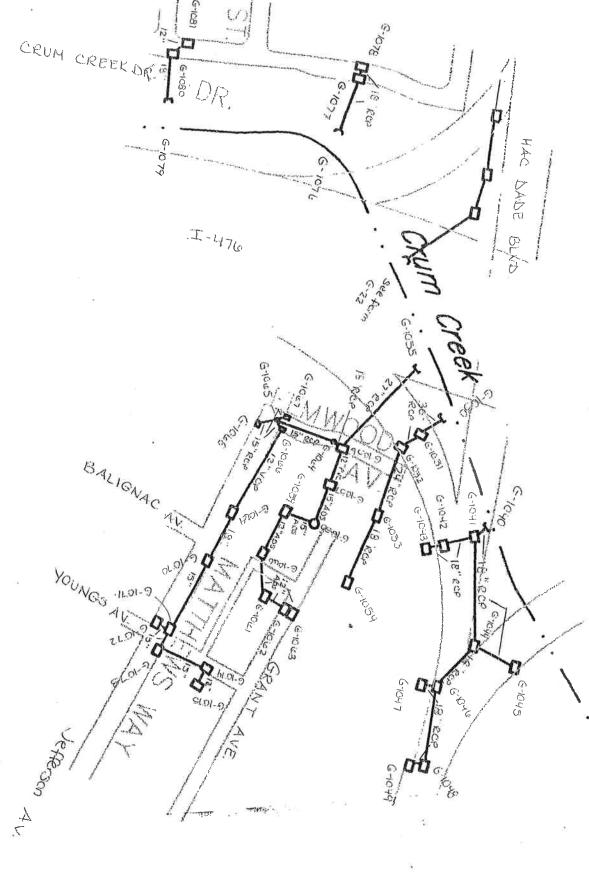
					EXICING	CHINNA	1110011	2020	EXISTING STORMWATER COLLECTION STOLEM TOWN				Mamo of Einel
Mar	Ol new	SvS	System's Elements (x)	(x)		Measurements*	ments*		1000		Design		The state of the s
Na	A CIV	5			Pipe	Cha	Channel / Swale		Material	Year	Data	Contact Person	Ownersnip and
	2	Pipe	Open Channel	Swale	۵	WL	8	Depth	400	Constr.	Available	Name and Phone	Ridley Township
G-1000	G-1002	×			15"				5		2	610-833-1931	durante form
G-1002	G-1003	×			15"				CPP	c. 1996	OU.	Anne Howanski 610-833-1932	Ridley Township
G-1003	G-1004	×			15"				CPP	c. 1996	ou Ou	Anne Howanski 610-833-1932	Ridley Township
G-1003	G-1005	×			15"				CPP	c. 1996	о́г	Anne Howanski 610-833-1933	Ridley Township
G-1005	G-1006	×			15"				CPP	c. 1996	OU	Anne Howanski 610-833-1933	Ridley Township
G-1007	G-1008	×			24"				RCP	c. 1959	ou	Anne Howanski 610-833-1922	Ridley Township
G-1008	G-1009	×			24"				RCP	c, 1959	on O	Anne Howanski 610-833-1923	Ridley Township
G-1009	G-1010	×			15"				CMP	c. 1959	on O	Anne Howanski 610-833-1924	Ridley Township
G-1009	G-1011	×			18"				CMP	c. 1959	01	Anne Howanski 610-833-1925	Ridley Township
G-1011	G-1012	×			18"				CMP	c. 1959	2	Anne Howanski 610-833-1926	Ridley Township
G-1012	G-1013	×			18"				CMP	c. 1959	OU	Anne Howanski 610-833-1927	Ridley Township
G-1013	G-1014	×			18"				RCP	c. 1959	22	Anne Howanski 610-833-1928	Ridley Township
G-1014	G-1015	×			18"				RCP	c. 1959	9	Anne Howanski 610-833-1929	Ridley Township
G-1016	G-1017	×			18"				RCP	c. 1959	9	Anne Howanski 610-833-1930	Ridley Township
G-1017	G-1018	×			18				RCP	c. 1959	92	Anne Howanski 610-833-1931	Ridley Township
G-1017	G-1019	×			18"				RCP	c. 1959	ou	Anne Howanski 610-833-1932	Ridley Township
0,404.0	0-1000	×			18"				RCP	c. 1959	ou	Anne Howanski	Ridley Township



					CVICTING	TAMMACTO	EP COLIE	SAS NOIL	G MACHINE SYSTEM FORM SYSTEM FORM G	r.		SHEET	52 OF 67	
WATERSHED	Ω		FORM COMPLETED B'	>	2			Z	INSTRUCTIONS	S	40	notavo di gondo mo	a mement n	
						Diagram eaci	h system or	the approp	riate map. Est	tabilish map	points to sind	Diagram each system on the appropriate map. Establish map points to show changes in system each system. The system extent 1 Complete this form only where specific	re specific	
Name:	Crum Creek		Name:	Jamie H. Brid	.e.	pipe size, or I	olpe directic	on. (IT UNKNO	אוו סחווום וווג	a system of	ierit.) Compi	tom Idontify the point	within a	_
Municipality:	Municipality: Ridley Township	diti	Telephone:	610-532-2884		information o	n constructi	ion is availat	ble. Use a sep	arate torm i	or each sys	information on construction is available. Use a separate form for each system, identify the boults within a	S WILLIII G	
County:	Delaware		Date:	8/17/2004		system const	scutively (e) G-3 ends o	x. G-1, G-2,	G-3). Start th so G-23 begir	ie first point as the next.	in each addi See Sampli	system consecutively (ex. G-1, G-2, G-3). Start the first point in each additional system 20 numbers ligher. For example, G-3 ends one system, so G-23 begins the next. See Sample Diagrams & Form on Reverse.	pers riigner. n Reverse.	
O.N.	Ol colo	SVS	Svetem's Flaments (x)	(x) x		Measurements*	ments*				Design		Name of Final	
2	1 2	Ś			Pipe	Cha	Channel / Swale	e	Material	Year	Data	Contact Person	Ownership and	
200	4	Dina	Onen Channel	Swale		M.	8	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility	
G-1040	G-1041	×			18"				RCP	c. 1952	ou	Anne Howanski 610-833-1933	Ridley Township	
G-1041	G-1042	×			18.				RCP	c, 1952	9	Anne Howanski	Ridley Township	
												-000		
G-1042	G-1043	×			18"				RCP	c. 1952	2	Anne Howanski 610-833-1922	Ridiey I ownsnip	
G-1041	G-1044	×			189				RCP	c. 1952	2	Anne Howanski 610-833-1923	Ridley Township	
1	4045	>			ig.				RCP	c. 1952	50	Anne Howanski	Ridley Township	
4-104	5-10-10	<			2							610-833-1924		
G-1044	G-1046	×			18"				RCP	c. 1952	92	Anne Howanski 610-833-1924	Ridley Township	
G-1046	G-1047	×			18.				RCP	c. 1952	2	Anne Howanski 610-833-1925	Ridley Township	
G-1046	G-1048	×			18"				RCP	c. 1952	91	Anne Howanski 610-833-1926	Ridley Township	
G-1048	G-1049	×			18"				RCP	c. 1952	2	Anne Howanski 610-833-1927	Ridley Township	1000
G-1050	G-1051	×			30"				RCP	c. 1952	ou	Anne Howanski 610-833-1928	Ridley Township	
G-1051	G-1052	×			30"				RCP	c. 1952	<u>о</u> г	Anne Howanski 610-833-1929	Ridley Township	
G-1052	G-1053	×			24"				RCP	c. 1952	oп	Anne Howanski 610-833-1930	Ridley Township	
G-1053	G-1054	×			18				RCP	c. 1952	ОП	Anne Howanski 610-833-1931	Ridley Township	

				FXISTING	STORMWAT	FR COLLEC	CTION SYS	EXISTING STORMWATER COLLECTION SYSTEM FORM G.	(r)		SHEET	53 OF 6/
Ol reM	NS.	System's Flements (x)	(x) s		Measurements*	ments*				Design		Name of Final
O ON O	ô	Stein S Elemen	3	Pipe	Ü	Channel / Swale	a	Material	Year	Data	Contact Person	Ownership and
Erom To	e did	Open Channel	Swale	۵	WL.	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
G-10				27"				RCP	c. 1952	2	Anne Howanski 610-833-1932	Ridley Township
G-1056 G-1057	×			12"				PVC	c. 1952	22	Anne Howanski 610-833-1933	Ridley Township
G-1057 G-1058	×			15"				ADS	c. 1990	2	Anne Howanski 610-833-1933	Ridley Township
G-1058 G-1059	×			15"				ADS	c. 1990	ОП	Anne Howanski 610-833-1922	Ridley Township
G-1059 G-1060	×			12"				ADS	c. 1990	<u>و</u>	Anne Howanski 610-833-1923	Ridley Township
G-1060 G-1061	×			12"				ADS	c. 1990	00	Anne Howanski 610-833-1924	Ridley Township
G-1061 G-1062	×			12"				ADS	c. 1990	00	Anne Howanski 610-833-1925	Ridley Township
G-1062 G-1063	×			12"				ADS	c. 1990	OD	Anne Howanski 610-833-1926	Ridley Township
G-1056 G-1064	×			18"				RCP	c. 1952	ou	Anne Howanski 610-833-1927	Ridley Township
G-1064 G-1065	×			15"				RCP	c. 1952	00	Anne Howanski 610-833-1928	Ridley Township
G-1065 G-1066	×			15"				RCP	c. 1952	OL.	Anne Howanski 610-833-1929	Ridley Township
G-1065 G-1067	×			15.				RCP	c. 1952	ОП	Anne Howanski 610-833-1930	Ridley Township
G-1065 G-1068	×			15				RCP	c, 1952	2	Anne Howanski 610-833-1931	Ridley Township
G-1066 G-1069	×			12"				VCP	c. 1952	92	Anne Howanski 610-833-1932	Ridley Township
G-1069 G-1070	×			<u></u>				RCP	c. 1952	92	Anne Howanski 610-833-1930	Ridley Township
G-1070 G-1071	×			15"				RCP	c. 1952	22	Anne Howanski 610-833-1931	Ridley Township

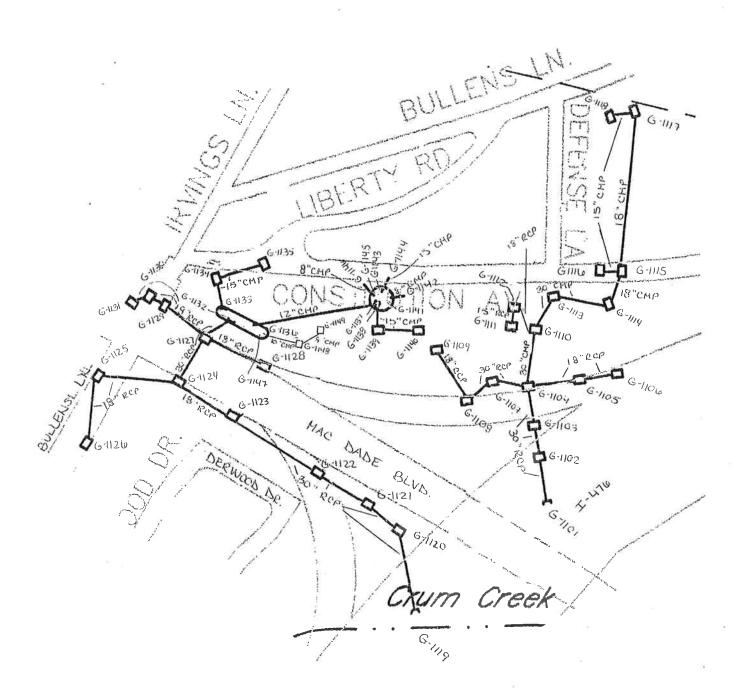
					EXICTING	TANMMAT	FR COLLE	SYS NOTION	EXISTING STORMWATER COLLECTION SYSTEM FORM G.	chi		SHEET	54 OF 67
N. C.	9	0	stromola almost	(2)		Measurements*	ments*				Design		Name of Final
2	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	, i		(V)	Pipe	Cha	Channel / Swale	ie	Material	Year	Data	Contact Person	Ownership and
	1	acio	Onen Channel	Swale		ML.	60	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
	0.00	,	Olimbio lodo		45.				RCP	c. 1952	01	Anne Howanski	Ridley Township
6-10/1	6-1072	<			2							610-833-1932	
7,070	4073	>			15"				RCP	c. 1952	2	Anne Howanski	Ridley Township
- 107	6-10/2	<			2							610-833-1933	The state of the s
0 4070	7,077	>			15.				RCP	c. 1952	2	Anne Howanski	Ridley Township
5/01-5	101-0	<			2							610-833-1933	
7,077	0.4076	}			10#				RCP	c. 1952	2	Anne Howanski	Ridley Township
4-10/4	6-10/2	<			ī							610-833-1922	
04040	77077	>			18"				RCP	c. 1952	92	Anne Howanski	Ridley Township
0/01-5	2/01-5	<			<u> </u>							610-833-1923	
	0.4070	>			18#				RCP	c. 1952	2	Anne Howanski	Ridley Township
201-5	0.01-0	<			2							610-833-1924	
1	00000	>			18"				RCP	c. 1952	92	Anne Howanski	Ridley Township
8/01-5	0001-5	<			2							610-833-1925	
0004	1001	*			12"				RCP	c. 1952	2	Anne Howanski	Ridley Township
001-5	1001-0	<			!							610-833-1926	



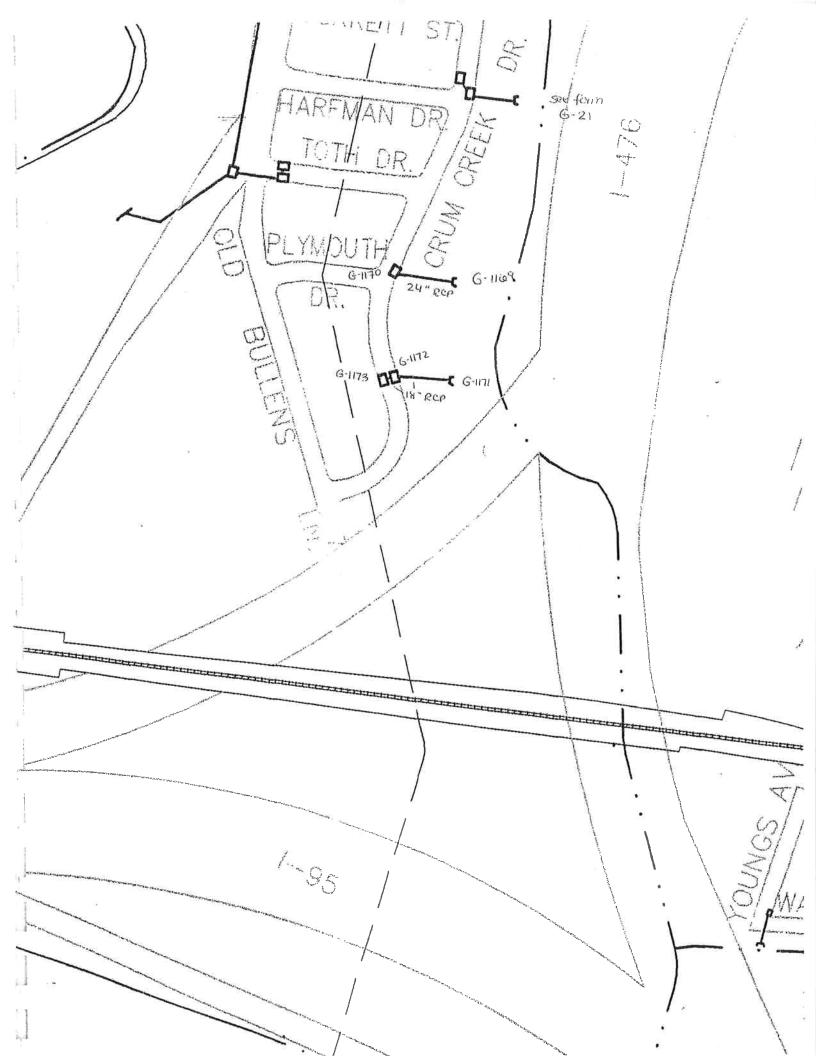
				PXISTING	STORMWA	TER COLLE	ECTION SYS	EXISTING STORMWATER COLLECTION SYSTEM FORM G.	3.		SIJELI	
WATERSHED		FORM COMPLETED BY	800		a margain	o metern o	II III	INSTRUCTIONS poriate map. Esta	S tablish map	points to sh	INSTRUCTIONS Night appropriate map. Establish map points to show changes in system elements,	n elements,
Sum Crum Creek	y	Name:	Jamie H. Bricker	cker	pipe size, or	pipe direct	ion. (If unkno	own, outline the	e system ext	tent.) Comp	pipe size, or pipe direction. (If unknown, outline the system extent.) Complete this form only where specific	ere specific
Minicipality: Ridley Township	diyar	io	610-532-2884	34	information (on construc	tion is availe	able. Use a ser	parate rorm r	or each sys	information on construction is available. Use a separate form for each system, usefully one points in the first party of the points in the first party of the first p	nbers higher.
County: Delaware			8/17/2004		system cons	secutively (e	ex. G-1, G-2	system consecutively (ex. G-1, G-2, G-3). Start the filtst point	ie first point	See Samp	system consecutively (ex. G-1, G-2, G-3). Start the first boint in each additional system 25 hours of some on Reverse.	on Reverse.
					For example	omente"	010 37350			Design		Name of Final
. Map ID	Ś	System's Elements (x)	(x)	gio	Measur	Channel / Swale	ale	Material	Year	Data	Contact Person	Ownership and
No.				2	, VI	a	Denth		Constr.	Available	Name and Phone	Maintenance Responsibility
н	Pipe >	Open Channel	Swale	30.	^	2		RCP	c. 1941	01	Anne Howanski	Ridley Township
G-1101 G-1102	<										610-833-1933	1
G-1102 G-1103	×			30				RCP	c. 1941	2	Anne Howanski 610-833-1933	Ridley Township
G-1103 G-1104	×			30,				RCP	c. 1941	ou	Anne Howanski 610-833-1922	Ridley Township
G-1104 G-1105	×			18"				RCP	c. 1941	2	Anne Howanski 610-833-1923	Ridley Township
G-1105 G-1106	×			18"				RCP	c. 1941	2	Anne Howanski 610-833-1924	Ridley Township
G-1104 G-1107	×			30"				RCP	c. 1941	OL	Anne Howanski 610-833-1924	Ridley Township
G-1107 G-1108	×			30"				RCP	0. 1941	2	Anne Howanski 610-833-1925	Ridley Township
G-1108 G-1109	×			18"				RCP	c. 1941	2	Anne Howanski 610-833-1926	Ridley Township
G-1104 G-1110	×			30				CMP	c. 1941	2	Anne Howanski 610-833-1927	Ridley Township
G-1110 G-1112	×			18"				RCP	c. 1941	2	Anne Howanski 610-833-1928	Ridley Township
G-1112 G-1111	×			15,				RCP	c. 1941	OL	Anne Howanski 610-833-1929	Ridley Township
G-1110 G-1113	×			30,,				CMP	c. 1941	2	Anne Howanski 610-833-1930	Ridley Township
G-1113 G-1114	×	-		30"				CMP	c. 1941	9	Anne Howanski 610-833-1931	Ridley Township

				EXIOLING	CAMMAN	-		EAISTING STORMWATEN COLLECTION OF STATE		Cocion		Name of Final
Map ID	Ś	System's Elements (x)	(x)		Measurements*	ments.			,		Contact Derson	Ownership and
i C				Pipe	r S	Channel / Swale		Material	Year	. data	Manager Person	
From To	Pipe	Open Channel	Swale	۵	WL	В	Depth	4	Constr.	Available	Appe Howanski	Ridley Township
G-1114 G-1115	×			<u>~</u>				<u>F</u>		2	610-833-1932	
G-1115 G-1116	×			15"				CMP	c. 1941	<u>o</u>	Anne Howanski 610-833-1933	Ridley Township
G-1116 G-1117	×			18"				CMP	c. 1941	o O	Anne Howanski 610-833-1933	Ridley Township
G-1117 G-1118	×			15				CMP	c. 1941	2	Anne Howanski 610-833-1922	Ridley Township
G-1119 G-1120	×			30"				RCP	c, 1983	2	Anne Howanski 610-833-1923	Ridley Township
G-1120 G-1121	×			30"				RCP	c.1983	2	Anne Howanski 610-833-1924	Ridley Township
G-1121 G-1122	×			30"				RCP	c, 1983	οu	Anne Howanskí 610-833-1925	Ridley Township
G-1122 G-1123	×			30"				RCP	c, 1983	по	Anne Howanski 610-833-1926	Ridley Township
G-1123 G-1124	×			18"				RCP	c. 1983	ОП	Anne Howanski 610-833-1927	Ridley Township
G-1124 G-1125	×			18"				RCP	c. 1983	oп	Anne Howanski 610-833-1928	Ridley Township
G-1125 G-1126	×			18				RCP	c. 1983	סנו	Anne Howanski 610-833-1929	Ridley Township
G-1124 G-1127	×			30"				RCP	c. 1983	ou	Anne Howanskí 610-833-1930	Ridley Township
G-1127 G-1128	×			181				RCP	c. 1983	ОП	Anne Howanski 610-833-1931	Ridley Township
G-1127 G-1129	×			18				RCP	c. 1983	00	Anne Howanski 610-833-1932	Ridley Township
G-1129 G-1130	×			18.				RCP	c. 1983	oп	Anne Howanski 610-833-1930	Ridley Township
G-1130 G-1131	×			18"				RCP	c. 1983	OLL	Anne Howanski	Ridley Township

					PXISTINGS	TORMWA	TER COLLE	CTION SYS	EXISTING STORMWATER COLLECTION SYSTEM FORM G.	(ri		מחבבו	
4		9.00	************************			Measur	Measurements*				Design		Name of Final
	Map IU	ń	System & Elements (A)	(<)	Pine	Ö	Channel / Swale	<u>e</u>	Material	Year	Data	Contact Person	Ownership and
	NO.			1		WIL	a	Denth		Constr	Available	Name and Phone	Maintenance Responsibility
From	ō	Pipe	Open Channel	Swale		^^			000	7983	2	Anne Howanski	Ridley Township
G-1127	G-1132	×			30				Š	3		610-833-1932	
	, ,	,			15"				CMP	c. 1983	ou	Anne Howanski	Ridley Township
G-1133	6-1134	<			2							610-833-1933	
	2077	ļ			151				CMP	c. 1983	9	Anne Howanski	Ridley Township
G-1134	G-1135	<			2							610-833-1933	
0.4400	7,407	>			12"				CMP	c, 1983	2	Anne Howanski	Ridley Township
G-1.130	2 -5	<			!							610-833-1922	
	9	>			401				CMP	c, 1983	OU.	Anne Howanski	Ridley Township
G-1147	G-1148	<			2							610-833-1923	
		,			ō				CMP	c. 1983	20	Anne Howanski	Ridley Township
G-1148	G-1149	×			0							610-833-1924	
					11.2				CMP	c. 1983	2	Anne Howanski	Ridley Township
G-1138	G-1139	× —			2				;			610-833-1923	
	0,77	,			17"				CMP	c. 1983	ou	Anne Howanski	Ridley Township
G-1138	G-1140	<			2							610-833-1924	
		,			ià				CMP	c. 1983	OLL	Anne Howanski	Ridley Township
G-1141	6-1142	<)							610-833-1925	
		,			450				CMP	c. 1983	OL	Anne Howanski	Ridley Township
G-1143	G-1144	<			2	2						610-833-1926	
		,			ā				CMP	c. 1983	01	Anne Howanski	Ridley Township
G-1145	G-1146	×			5							610-833-1926	



					EXISTING	EXISTING F	LOOD COI	NTROL PRO	EXISTING EXISTING FLOOD CONTROL PROJECT FORM G.	ග්		מחבורו	אובנו 30 סב סו
								IN	SNOITCHATAN	ď			
WATERSHED			FORM COMPLETED BY	LEIEUBY		 Diagram ea	ch system o	in the approp	riate map. Es	tablish map	points to sh	Diagram each system on the appropriate map. Establish map points to show changes in system elements,	n elements,
Name.	Crum Creek		Name:	Jamie H. Bricker	cker	pipe size, or	r pipe directi	ion. (If unkno	wn, outline the	e system ex	tent.) Comp	pipe size, or pipe direction. (If unknown, outline the system extent.) Complete this form only where specific	ere specific
Municipality:		ship	Telephone:	610-532-286	884	information	on construc	ction is availa	ble. Use a ser	parate rorm	ror each sy:	Information on construction is available. Use a separate form for each system, definity use points within a information on construction is available. On the first state of the second system 20 numbers high	the warming
County:	101		Date:	8/17/2004		system con	secutively (c	ex. G-1, G-2,	G-3). Start tr. sn G-23 hedii	ne tirst point ns the next.	See Samp	system consecutively (ex. G-1, G-2, G-3). Start the first point in each additional system to manage or system is a consecutive on the consecutive of the consecutive	on Reverse.
						בים באמווהו	0,000	20000			2000		Name of Final
M	Man ID	Svs	System's Elements (x)	(x) s		Measur	Measurements*		2000 CO0000		Design		on citation of
	1 C S				Pipe	Ö	Channel / Swale	ale	Material	Year	Data	Contact Person	Ownership and
	.0.			-	0	T-1.A.1	0	Conth		Constr	Available	Name and Phone	Maintenance Responsibility
From	2	Pipe	Open Channel	Swale	2	^	۵	ממחח	000	1000	C	Anne Howanski	Ridley Township
G-1169	G-1170	×			24"				7	C. 1902	2	610-833-1933	
									000	4050	000	Anna Howanski	Ridley Township
G-1171	G-1172	×			<u></u>				۲ ر	C. 1902	2	610-833-1933	
									000	4080	2	Anna Howanski	Ridley Township
G-1172	G-1173	×			<u>~</u>				r S	C. 1302	2	610-833-1922	



					EXISTING	STORMWAI	FER COLLE	CTION SYS	EXISTING STORMWATER COLLECTION SYSTEM FORM G	cn.		SHEET	59 OF 67
WATERSHED	ED .		FORM COMPLETED BY	PLETED BY			4000	Al Control of	INSTRUCTIONS	S Pablish man	points to sh	INSTRUCTIONS Diagrams and the commentate man Establish man points to show change in system elements	n elements
Name:	Crum Creek		Name:	Jamie H. Bricker	ricker	pipe size, or	n system or pipe directic	n ure approp	wn, outline the	system ex	tent.) Comp	Diagram each system on the appropriate map, Establish map points to show changes in system exemental pipe size, or pipe direction. (If unknown, outline the system extent.) Complete this form only where specific	ere specific
Municipality	Municipality: Ridley Township	ship	Telephone:	610-532-28	384	information c	on constructi	ion is availa	ble. Use a sep	arate form	for each sys	information on construction is available. Use a separate form for each system. Identify the points within a	ts within a
County:	Delaware		Date:	8/17/2004		system cons	ecutively (e)	x. G-1, G-2,	G-3). Start th	e first point	in each add	system consecutively (ex. G-1, G-2, G-3). Start the first point in each additional system 20 numbers higher	bers higher.
,						For example	G-3 ends	one system,	so G-23 begii	ns the next.	See Samp	For example, G-3 ends one system, so G-23 begins the next. See Sample Diagrams & Form on Reverse	nn Reverse.
Ma	Map ID	Sys	System's Elements (x)	ts (x)		Measurements*	ements*				Design		Name of Final
_	No.		Ti		Pipe	ნ	Channel / Swale	e	Material	Year	Data	Contact Person	Ownership and
From	2	Pipe	Open Channel	Swale	۵	ML	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
G-1193	G-1194	×			72"				CMP	c. 1990	2	Anne Howanski 610-833-1933	Ridley Township
G-1194	G-1195	×			15"				CMP	c. 1995	인	Anne Howanski 610-833-1933	Ridley Township
G-1194	G-1196	×	-		72"				CMP	c. 1990	2	Anne Howanski 610-833-1922	Ridley Township
G-1196	G-1197	×			24"				CPP	c. 2004	2	Anne Howanski 610-833-1923	Ridley Township
G-1197	G-1198	×			24"				СРР	c. 2004	2	Anne Howanski	Ridley Township
												010-633-1924	H
G-1198	G-1199	×			18				CPP	c. 2004	2	Anne Howanski 610-833-1925	Ridley Lownship
G-1199	G-1200	×			18				. CPP	c. 2004	01	Anne Howanski 610-833-1926	Ridley Township
G-1196	G-1201	×			72"				CMP	c, 1990	ОП	Anne Howanskí 610-833-1927	Ridley Township
G-1201	G-1202	×			72"				CMP	c. 1995	ou	Anne Howanski 610-833-1928	Ridley Township
G-1202	G-1203	×			72"				CMP	c. 1995	OU.	Anne Howanski 610-833-1929	Ridley Township
G-1203	G-1204	×			24"				СРР	c. 2004	oп	Anne Howanski 610-833-1930	Ridley Township
G-1204	G-1205	×			181				СРР	c. 2004	OU	Anne Howanski 610-833-1931	Ridiey Township
G-1205	G-1206	×			15"				RCP	c. 1955	OU	Anne Howanski 610-833-1932	Ridley Township

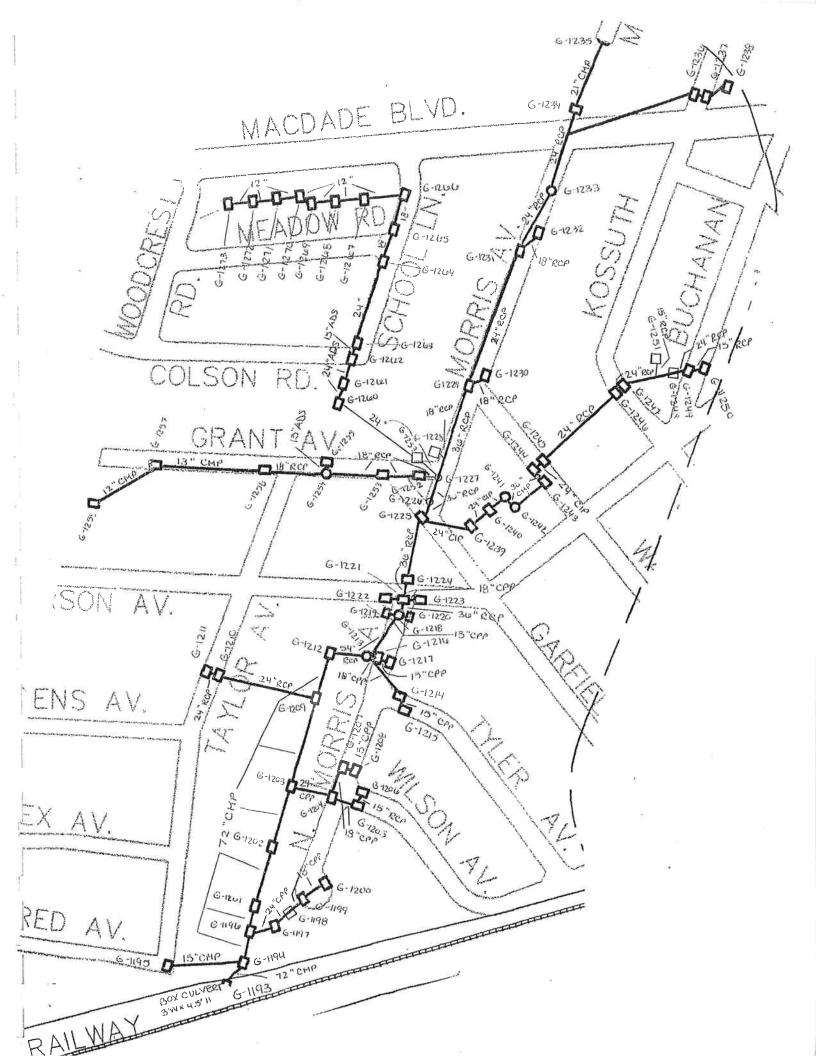
					EXISTING	STORMWAT	FR COLLEC	SYS NOTE:	EXISTING STORMWATER COLLECTION SYSTEM FORM G	cri		SHEET	60 OF 67
Ol oeM		SVS	System's Elements (x)	(x)		Measurements*	ments*				Design		Name of Final
N O				(m) -	Pipe	Chi	Channel / Swale	a	Material	Year	Data	Contact Person	Ownership and
From	2	Pipe	Open Channel	Swale	٥	WT.	m	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
G-1204 G-1207	202	×			18"				СРР	c, 2004	OU.	Anne Howanskí 610-833-1933	Ridley Township
G-1207 G-1208	508	×			15"				CPP	c. 2004	2	Anne Howanski 610-833-1933	Ridley Township
G-1203 G-1209	509	×			72"				CMP	c. 1995	2	Anne Howanski 610-833-1922	Ridley Township
G-1209 G-1210	210	×			24"				RCP	c. 1955	2	Anne Howanski 610-833-1923	Ridley Township
G-1210 G-1211	211	×			24"				RCP	c, 1955	2	Anne Howanski 610-833-1924	Ridley Township
G-1209 G-1212	212	×			72"				CMP	c. 1995	인	Anne Howanski 610-833-1925	Rídley Township
G-1212 G-1213	213	×			54"				RCP	c. 1955	ОП	Anne Howanski 610-833-1926	Ridley Township
G-1213 G-1214	214	×			£ 80				СРР	c. 2004	ou	Anne Howanski 610-833-1927	Ridley Township
G-1214 G-1215	215	×			15"				СРР	c. 2004	01	Anne Howanski 610-833-1928	Ridley Township
G-1213 G-1216	216	×			18				CPP	c. 2004	oп	Anne Howanski 610-833-1929	Ridley Township
G-1216 G-1217	217	×			15"				CPP	c. 2004	<u>о</u> г	Anne Howanski 610-833-1930	Ridley Township
G-1213 G-1218	218	×			.24"	11			RCP	c, 1955	OU	Anne Howanski 610-833-1931	Ridley Township
G-1218 G-1219	219	×			15"				СРР	c, 2004	ou	Anne Howanski 610-833-1932	Ridley Township
G-1218 G-1220	520	×			15"				CPP	c. 2004	ОП	Anne Howanskí 610-833-1933	Ridley Township
G-1218 G-1221	221	×			36"				RCP	c, 1955	OU	Anne Howanski 610-833-1934	Rídiey Township
G-1221 G-1222	222	×			18				CPP	c. 2004	OU	Anne Howanski 610-833-1935	Ridley Township

				・りとこのマゴ			2000	100				
Man ID	SVS	System's Elements (x)			Measurements*	ments*				Design		Name of Final
j 7	260			Pipe	Cha	Channel / Swale		Material	Year	Data	Contact Person	Ownership and
<u>-</u>	Pine	Open Channel	Swale	0	WL	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
G-1223	×			18.				CPP	c, 2004	0	Anne Howanski 610-833-1933	Kidley Lownship
G-1224	×			36"				RCP	c, 1955	OL.	Anne Howanski 610-833-1933	Ridley Township
G-1225	×			36"				RCP	c. 1955	<u>е</u>	Anne Howanski 610-833-1922	Ridley Township
G-1226	×			36"				RCP	c. 1955	OL	Anne Howanski 610-833-1923	Ridley Township
G-1227	×			36"				RCP	c. 1955	ОП	Anne Howanski 610-833-1924	Ridley Township
G-1228	×			18"				RCP	c. 1955	OU	Anne Howanski 610-833-1925	Ridley Township
G-1229	×			36"				RCP	c. 1955	00	Anne Howanski 610-833-1926	Ridley Township
G-1230	×			18"				RCP	c. 1955	OU	Anne Howanski 610-833-1927	Ridley Township
G-1231	×			24"				RCP	c, 1955	οu	Anne Howanski 610-833-1928	Ridley Township
G-1232	×			18"				RCP	c, 1955	ou	Anne Howanski 610-833-1929	Ridley Township
G-1233	×			24"				RCP	c. 1955	ou	Anne Howanski 610-833-1930	Ridley Township
G-1234	×			24"				RCP	c, 1955	OU	Anne Howanski 610-833-1931	Ridley Township
G-1235	×			21"				CMP	c. 1955	ou	Anne Howanski 610-833-1932	Ridley Township
G-1236	×			18#				RCP	c. 1955	OU	Anne Howanski 610-833-1933	Ridley Township
G-1237	×			18"				RCP	c. 1955	ou ,	Anne Howanski 610-833-1934	Ridley Township
G-1238	×			18,				RCP	c. 1955	00	Anne Howanski	Ridley Township

					EXISTING	STORMWAT	ER COLLEC	SYS NOIT:	EXISTING STORMWATER COLLECTION SYSTEM FORM G.		3	SHEET	62 OF 67
C) Cell	2	SVS	System's Flements (x)	(X)		Measurements*	nents*				Design		Name of Final
	<u>)</u>				Pipe	Cha	Channel / Swale		Material	Year	Data	Contact Person	Ownership and
From	To	Pipe	Open Channel	Swale	۵	WI	m	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
	G-1239	×			24"				CIP	c. 1955	2	Anne Howanski 610-833-1933	Ridley Lownship
G-1239 (G-1240	×			24"				CIP	c. 1955	БП	Anne Howanski 610-833-1933	Ridley Township
G-1240	G-1241	×			24"				CIP	c. 1955	인	Anne Howanski 610-833-1922	Ridley Township
G-1241	G-1242	×			36"				CMP	c. 1989	2	Anne Howanski 610-833-1923	Ridley Township
G-1242	G-1243	×			36"				CMP	c. 1989	<u>е</u>	Anne Howanski 610-833-1924	Ridley Township
G-1243	G-1244	×			36"				CMP	c. 1989	OU	Anne Howanski 610-833-1925	Ridley Township
G-1244	G-1245	×			24"				CIP	c. 1955	01	Anne Howanski 610-833-1926	Ridley Township
G-1245	G-1246	×			24"				RCP	c. 1955	OU	Anne Howanski 610-833-1927	Ridley Township
G-1246	G-1247	×			24"				RCP	c, 1955	OΠ	Anne Howanski 610-833-1928	Ridley Township
G-1247	G-1248	×			24"				RCP	c, 1955	OLi	Anne Howanski 610-833-1929	Ridley Township
G-1248	G-1249	×			24"				RCP	c. 1955	OL.	Anne Howanski 610-833-1930	Ridley Township
G-1249	G-1250	×			15"				RCP	c. 1955	no	Anne Howanski 610-833-1931	Ridley Township
G-1247	G-1251	×			15"				RCP	c. 1955	ОП	Anne Howanski 610-833-1933	Ridley Township
G-1227	G-1252	×			18"				RCP	c. 1955	OU	Anne Howanski 610-833-1934	Ridley Township
G-1252	G-1253	×			18"		-		RCP	c. 1955	ПО	Anne Howanski 610-833-1935	Ridley Township
G-1253	G-1254	×			18"				RCP	c. 1955	oп	Anne Howanski 610-833-1933	Ridley Township

				EXISTING	STORMWAI	77700 21	つうとうこう	EXISTING STORMWATER COLLECTION SYSTEM FORM G.	5			
Class	NO.	Svetam's Flaments (x)	(x)		Measurements*	ments*				Design		Name of Final
OI dew	<u></u>	Stell S Cleiner	3	Pipe	Che	Channel / Swale	o)	Material	Year	Data	Contact Person	Ownership and
From To	Pipe	Open Channel	Swale	۵	- WT	В	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
G-12	×			15"				ADS	c. 1991	2	Anne Howanski 610-833-1933	Naiey Lowinship
G-1254 G-1256	×			181				RCP	c. 1955	인	Anne Howanski 610-833-1922	Ridley Township
G-1256 G-1257	×			18"				CMP	c. 1955	ОП	Anne Howanski 610-833-1923	Ridley Township
G-1257 G-1258	×			12"				CMP	c. 1955	ou	Anne Howanski 610-833-1924	Ridley Township
G-1227 G-1259	×			24"				RCP	c. 1955	OU	Anne Howanski 610-833-1925	Ridley Township
G-1259 G-1260	×			24"				RCP	c. 1955	ои	Anne Howanski 610-833-1926	Ridley Township
G-1260 G-1261	×			24"				ADS	c. 1991	ou	Anne Howanski 610-833-1927	Ridley Township
G-1261 G-1262	×			24"				ADS	c. 1991	9	Anne Howanski 610-833-1928	Ridley Township
G-1262 G-1263	×			15"				ADS	c. 1991	ОП	Anne Howanski 610-833-1929	Ridley Township
G-1263 G-1264	×			24"				RCP	c. 1955	OL	Anne Howanski 610-833-1930	Ridley Township
G-1264 G-1265	×			18"				RCP	c. 1955	ou	Anne Howanski 610-833-1931	Ridley Township
G-1265 G-1266	×			18,				RCP	c. 1955	ou	Anne Howanski 610-833-1932	Ridley Township
G-1266 G-1267	×			12"				RCP	c. 1955	ဥ	Anne Howanski 610-833-1933	Ridley Township
G-1267 G-1268	×			12"				RCP	c. 1955	ou	Anne Howanski 610-833-1934	Ridley Township
G-1268 G-1269	×			12"				RCP	c. 1955	ou	Anne Howanski 610-833-1935	Ridley Township
G-1269 G-1270	×			12"				RCP	c, 1955	ou	Anne Howanski 610-833-1933	Ridley Township

					EXISTING	STORMWAT	ER COLLE	CTION SYS	EXISTING STORMWATER COLLECTION SYSTEM FORM G.	Ö		SHEET 64	- 11
Ma	Of new	SAC	System's Elements (x)			Measurements*	ments*				Design		Name of Final
	J C	Š.			Pipe	Che	Channel / Swale	lle	Material	Year	Data	Contact Person	Ownership and
E COL	1	acia	Onen Channel	Swale	۵	WI	æ	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
5	2				-0.2				RCP	c. 1955	2	Anne Howanski	Ridley Township
G-1270	6-12/1	<			7				9			610-833-1933	
									000	1200		identification of	Didloy Township
***** C	04040	>			12"				Z C D	C, 1855	2	Anne mowaliski	Lylaidy Lowellship
	2/2/-5	<			!							610-833-1922	
									000	4055	5	Nane Hower	Ridley Township
07010	C 1273	×			12				7		2	NO DAY	discount of the second
2121-0	0-12/3	<			!							610-833-1923	



					EXISTING	STORMWAT	ER COLLEC	CTION SYS	EXISTING STORMWATER COLLECTION SYSTEM FORM G	C.		SHEET	65 OF 67
WATERSHED	03		FORM COMPLETED BY	PLETED BY				<u>Z</u>	INSTRUCTIONS	S			of constant
	Crum Creek		Name:	Jamie H. Bricker	icker	Diagram eac pipe size, or	th system on pipe direction	the approp ויו. יחי (If unkno)	riate map. Est wn, outline the	tablish map s system ext	points to sn ent.) Compl	Diagram each system on the appropriate map. Establish map points to show changes in system elements, pipe size, or pipe direction. (If unknown, outline the system extent.) Complete this form only where specific	relements, are specific
Municipality		did	Telephone:	610-532-2884	84	information o	in constructiv	ion is availat	ble. Use a sep	parate form 1	or each sys.	information on construction is available. Use a separate form for each system. Identify the points within a	s within a
County:	Delaware		Date:	8/17/2004		system consi	ecutively (ex	k. G-1, G-2,	G-3). Start the	ie first point	in each add. See Sample	system consecutively (ex. G-1, G-2, G-3). Start the first point in each additional system 20 numbers higher. For example, G-3 ands one system so G-23 hearing the next. See Sample Diagrams & Form on Reverse.	bers higher. n Reverse.
PA .	Ol osM	ans.	System's Flements (x)	(x) \$1		Measurements*	ments*				Design		Name of Final
	2 0	Ś		(1)	Pipe	Ch.	Channel / Swale	Ф	Material	Үеаг	Data	Contact Person	Ownership and
From	2	Pipe	Open Channel	Swale	۵	MΤ	8	Depth		Constr.	Available	Name and Phone	Maintenance Responsibility
G-1293	G-1294	×			30"				ADS	c. 1990	OL OL	Anne Howanski 610-833-1933	Ridley Township
G-1294	G-1295	×			18.				ADS	c. 1990	6	Anne Howanski 610-833-1933	Ridley Township
G-1295	G-1296	×			15"				ADS	c. 1990	0	Anne Howanski 610-833-1922	Ridley Township
G-1294	G-1297	×			24"				ADS	c. 1990	OL.	Anne Howanski 610-833-1923	Ridley Township
G-1297	G-1298	×			18"				ADS	c. 1990	OU	Anne Howanski 610-833-1924	Ridley Township
G-1298	G-1299	×			15"				ADS	c. 1990	OU	Anne Howanski 610-833-1925	Ridley Township
G-1294	G-1300	×			18				RCP	c. 1955	OL.	Anne Howanski 610-833-1926	Ridley Township
G-1300	G-1301	×			181				RCP	c. 1955	OU	Anne Howanski 610-833-1927	Ridley Township
G-1301	G-1302	×			15				RCP	c. 1955	2	Anne Howanski 610-833-1928	Ridley Township
G-1302	G-1303	×			15,				RCP	c. 1955	OU	Anne Howanski 610-833-1929	Ridley Township
G-1304	G-1305	×			24"				RCP	c. 1955	OU	Anne Howanski 610-833-1930	Ridley Township
G-1304	G-1306	×			24"				RCP	c. 1955	ου	Anne Howanski 610-833-1931	Ridley Township
G-1306	G-1307	×			24"				RCP	c, 1955	OΠ	Anne Howanski 610-833-1932	Ridley Township

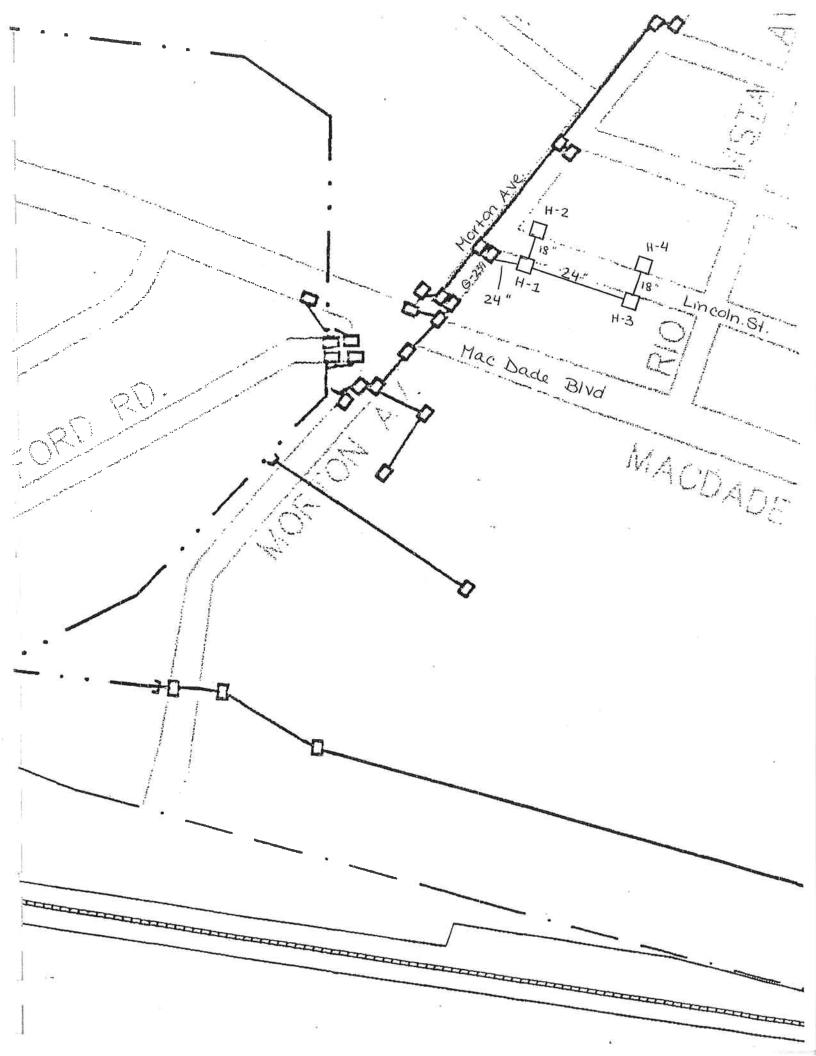
Weasurements* Material Year Design Contact Person Walle D TW B Depth RCP c. 1955 no Anne Howanski R 18" RCP c. 1955 no Anne Howanski R 18" RCP c. 1955 no Anne Howanski R					PXISTING	STORMWAT	FER COLLE	ECTION SYS	STEM FORM (ø		SHEET 67	
Swale D					0110101						Doeinn		Name of Final
Pipe Channel / Swale Material Year Data Contact resont		Syster	n's Element	(X) s		Measure	ments			:			Ownership and
Swale D TVV B Depth Constr. Available Name and Priorie 18" Anne Howanski R 6:10-833-1933 18" Anne Howanski RCP c. 1955 no Anne Howanski 6:10-833-1933 6:10-833-1933					Pipe	5	annel / Swa	ale	Material	Year	Data	Colliact reison	Villagorous Decorposibility
Open Channel Swale Description Co. 1955 no Anne Howanski 18" RCP c. 1955 no Anne Howanski 18" RCP c. 1955 no Anne Howanski 610-833-1933 610-833-1933 610-833-1933	l			1	c	WIL	a	Depth		Constr.	Available	Name and Filone	Manual Constant Stranger
KCP C. 1955 10 Africa 1033-1933 610-833-1933 610-833-1933 610-833-1933		9	Doen Channel	OWAIG	2	200	1		000	4000	000	Appropries	Ridley Township
RCP c. 1955 no Anne Howanski 610-833-1933		1			101				Z C	C	2	Normal DITT	
RCP c. 1955 no Anne Howanski 610-833-1933	×				0							610-833-1933	
RCP c. 1955 no Anne Howariski 610-833-1933								27					Cident Township
									٥٥٥	1955	2	Anne Howanski	Chaley Lowinship
	×				<u>σ</u>				2	5		610-833-1933	

15" ADS G-1299 A Rep • G-1303 6×1952 6-12418 18.0cl , 12° RCR 6-12pa 6-1308 THE PERSON NAMED IN COLUMN TWO IS NOT THE OWNER, THE PERSON NAMED IN COLUMN TWO IS NOT THE OWNER, THE PERSON NAMED IN COLUMN TO THE OWNER, THE PERSON NAMED IN COLUMN TO THE OWNER, THE PERSON NAMED IN COLUMN TO THE OWNER, THE PERSON NAMED IN COLUMN TO THE OWNER, THE PERSON NAMED IN COLUMN TO THE OWNER, THE PERSON NAMED IN COLUMN TO THE OWNER, THE PERSON NAMED IN COLUMN TO THE OWNER, THE PERSON NAMED IN COLUMN TO THE OWNER, THE PERSON NAMED IN COLUMN TO THE OWNER, THE PERSON NAMED IN COLUMN TO THE OWNER, THE PERSON NAMED IN COLUMN TO THE OWNER, T THE PERSON NAMED IN COLUMN TWO IS NOT THE OWNER, THE OW PCP3 20, T _6-13⁶⁰ 24 6-1257 D ece IS CREEK PARTY OF THE PARTY OF . 24" RCP 67/304 24°C5P G-1319 G-134 G-1312 15" RCP G-1313 The College G-1318 RCP G-1322 61323 6-1325 6-1321 6-1323 G-1324 12"TCP nu

1

PROPOSED FLOOD CONTROL PROJECT FORM H.
Jamie H. Bricker to existing system. For proposed additions to existing systems, diagram only the additions and their connection point into the existing system. For proposed additions to existing system connection that point in each
1elephone: 5 10–532-2684 new system and one or each examine system; system; system; state or the system; using the map to show the point where proposed additions connect into existing system; using the map Bate: 8/17/2004 additions system; on numbers higher (if H-2 ends one system; begin the next with H-23). Be sure to show the point where proposed additions connect into existing system; using the map.
- boin
Meas
Pipe Channel / Swale
D TW B Depth
24"
18"
24"
18"

ide. **Enter the stormwater problem areas' Map I.D. Nos., if proposed project will solve or reduce any / all of the drainage problems.



FORI...

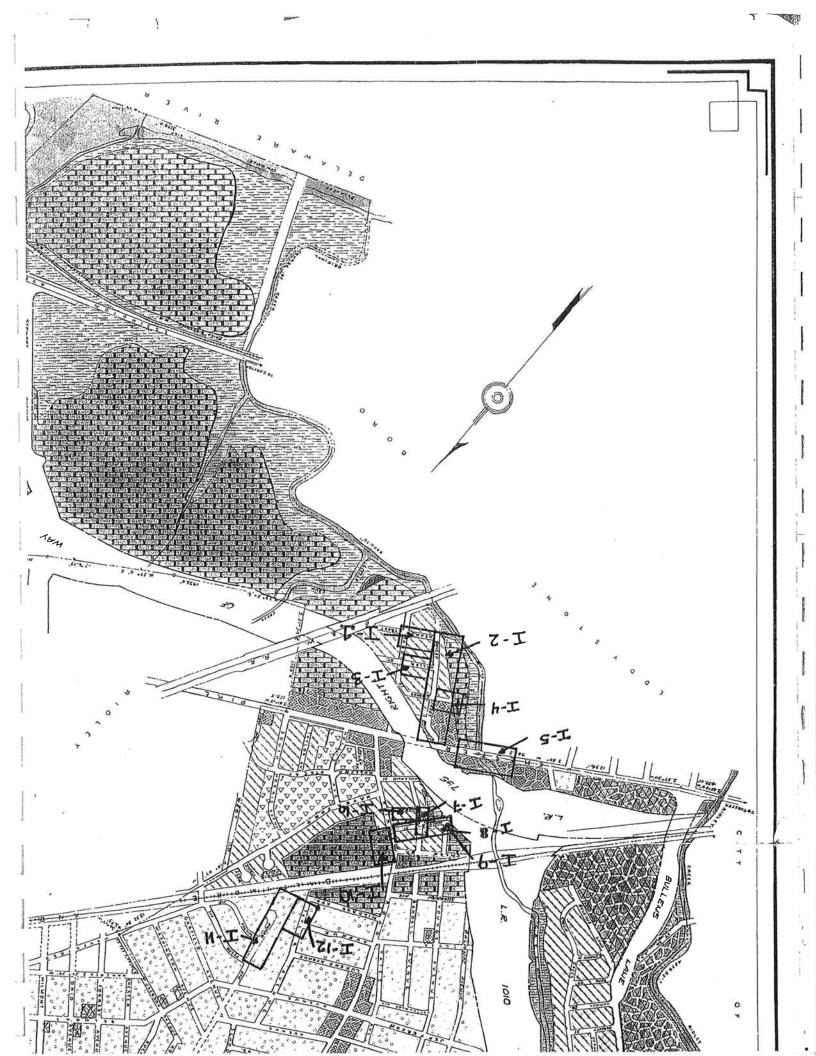
		9 TINDODGO	DBESENT 8 BBO IECTED	TED DEVISI OPMENT IN THE FLOOD HAZARD AREA FORM I.	SHEET 1 OF 3
WATERSHED		FORM CON	FORM COMPLETED BY	FLOOD HA	
Name:			Jamie H. Bricker	er	
ality:	Ridley Township	one:	610-532-2884	884 susceptible to being inundated by the 100-year flood.	
County.					
For County Use:	se:				
Map ID No.	TYPE OF DEVELOPMENT	MENT	Year Built	Contact Person Name, Address and Phone	Comments
1-1	Residential - 1300 block Adams St.	Adams St.	٤	Various Owners	
1-2	Residential and Industrial 600 block Smiley St		خ	Various Owners	
e 3	Residential 1300 Block Miller St		د	Various Owners	
4-1	Residential, Commercial, and Industrial 1400 block Gibbons St		3	Various Owners	
- 5	Industrial and Commercial south 1400 block Chester Pk north 1400 and 1500 blk Chester Pk	al - Pk Chester Pk	ć	Various Owners	
9 - 1	Residential north 1300 block Worrall St	St	خ	Various Owners	
1-7	Residential 100 block Randall St.		خ	Various Owners	
<u>ω</u>	Industrial and Residential		٤	Various Owners	

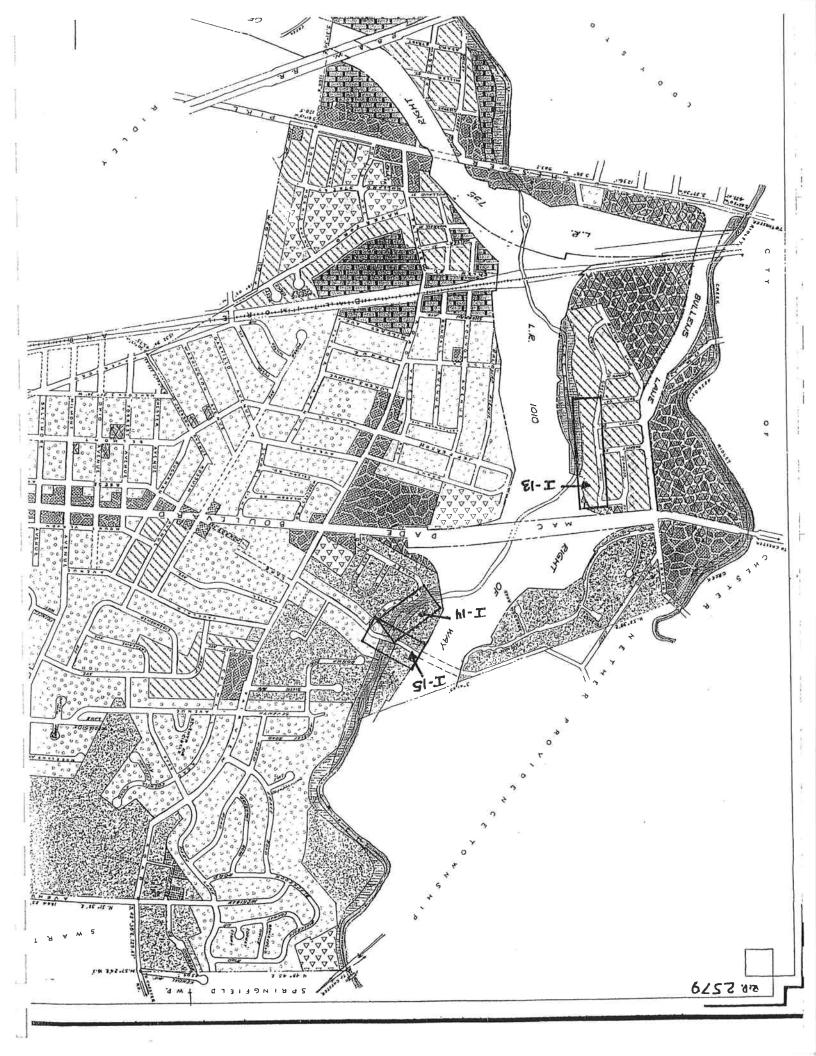
- FOR....

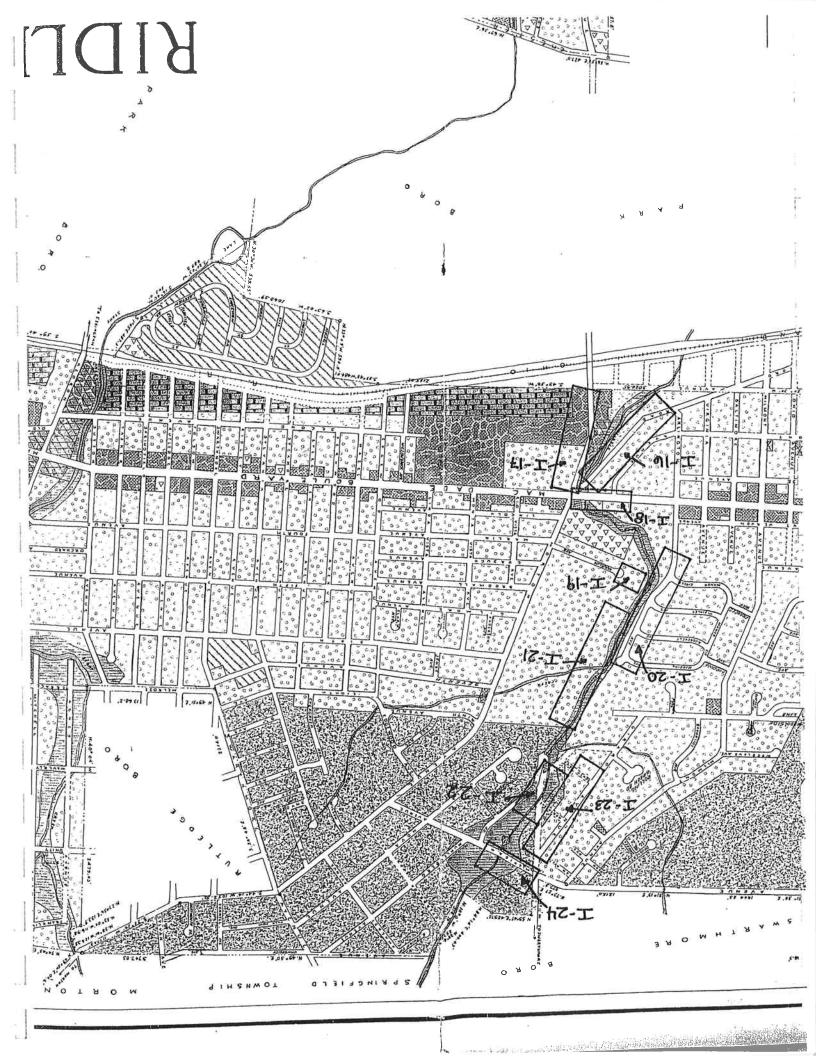
	PRESENT & PROJECTED	PROJECT	ED DEVELOPMENT IN THE FLOOD HAZARD AREA FORM I	
Map ID No.	TYPE OF DEVELOPMENT	Year Built		Comments
6-1	Industrial and Residential lower 100 block Youngs St.	2	Various Owners	
1 - 10	Industrial 200 block Fairview Rd.	خ	Various Owners	
1 - 11	Residential west lower 100 block Morris Ave	1970	Various Owners	
1 - 12	Residential east lower 100 block Taylor Ave	1970	Various Owners	
1- 13	Residential, east upper 100 and 200 block Crum Creek Drive	1965	Various Owners	most structures are above the flood hazard, yards encroach and experience flooding
1 - 14	Residential west upper 1300 block Valley Road	1953	Various Owners	
1 - 15	Residential Bullens Lane from Valley Rd west to twp boundary	1965	Various Owners	area displays frequent flooding
1 - 16	Residential east 20 block Haverford Road	1953	Various Owners	
1 - 17	Residential and Commercial Morton Ave twp boundary to Mac Dade	Ċ	Various Owners	
1-18	Apartment and Residential north lower 200 and 100 blocks Mac Dade Boulevard	1974	Various Owners	
- 19	Residential 129 and 131 Marlin St	1958	Various Owners	

FORWIT

	DDECENT &	PRO IECT	PRESENT & PROJECTED DEVELOPMENT IN THE FLOOD HAZARD AREA FORM I.	SHEET 3 OF 3
Map ID No.	TYPE OF DEVELOPMENT	Year	Contact Person Name Address and Phone	Comments
1 - 20	Residential east 400 thru 600 blocks Arlington Ave	1951	Various Owners	
1-21	Ridley Township High School Morton Ave	1938	Various Owners	structures are above the flood hazard, fields encroach floodplain
1 - 22	Residential west 900 block Georgetown Rd	1957	Various Owners	homes often flooded
I - 23	Residential east 900 and lower 1000 blocks Girard Avenue	1961	Various Owners	structures above flood hazards, yards encroach floodplain
1 - 24	Residential 300 block Michigan Ave	1957	Various Owners	
<u>a</u>			טט	no furture development is expected in the flood hazard area

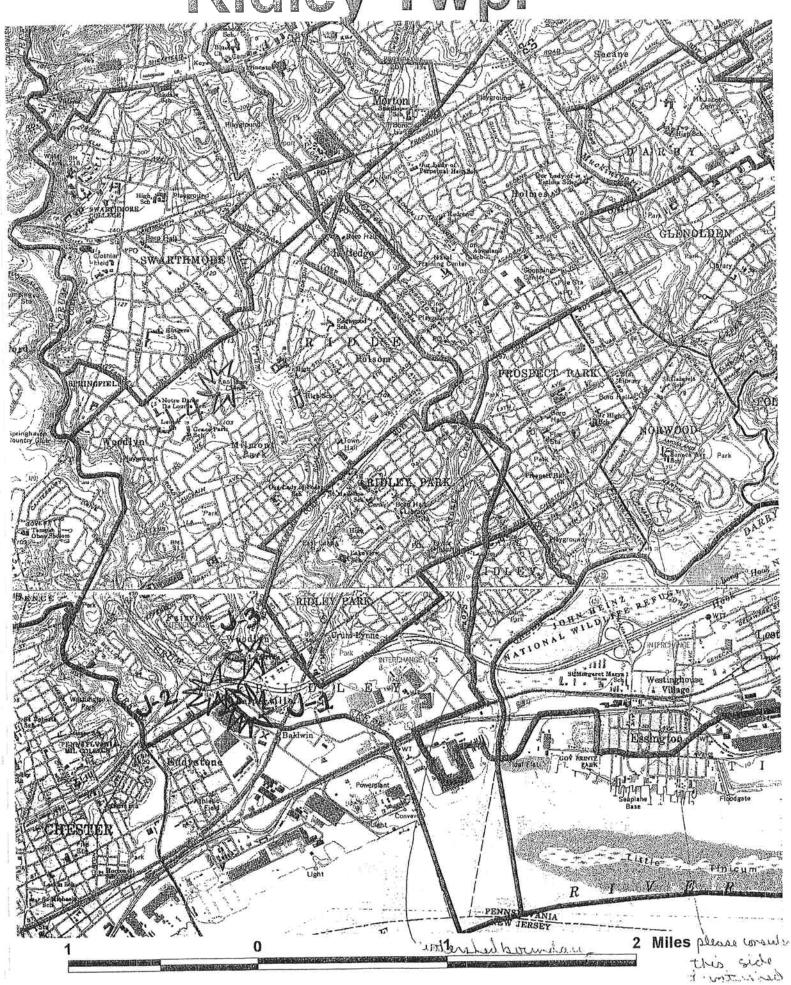


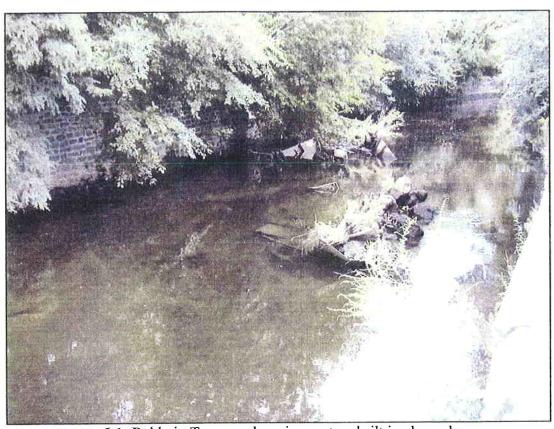




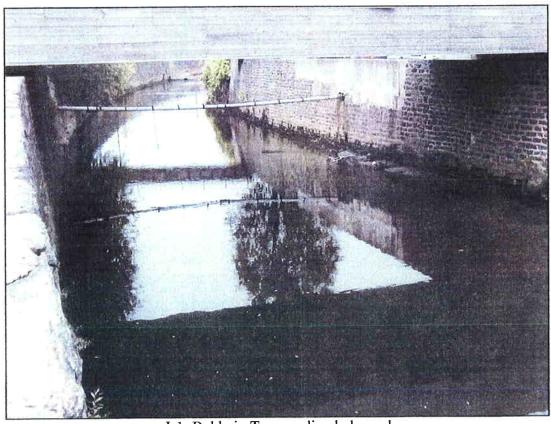
	WATER	R QUALI	TY PRO	BLEM A	REAS	ORM .	J.	S	HEET_	1	OF_	1
WATERSHED							IPLETE				- 25-12-12-	
Name:	Crum Creek				Name:		Jamie	H. Brid	ker			
Municipality:	Ridley Township				Teleph	one:	610-5	32-2884	4			
County:	Delaware				Date:		8/25/2	004				
SITE		J-1	J-2	J-3	J-4	J-	J-	J-	J-	J-	J-	J-
Types of Water C	uality Problems										1	-
High Community	Tolerence	Х		X								
High Temperature												
High Turbidity											<u> </u>	
Hydrocarbon Pollu	ution		?		?							
Low Community D	Diversity											
Low Dissolved Ox	ygen											
Low pH												
Nutrient Enrichme	ent											
Poor Habitat		X		X								
Other/Explanation	Line No.											f
Potential Cause(s)											
Agriculture												
Construction Site												1
Erosion												
Lake Discharge									_			
STP Outfall			X									
Other/Explanation	Line No.	1	2	3	4							
Frequency								İ				
Year Most Recen	2004	2004	2004	2004					_			
Year First Known	Occurence	?	?	?	?						ĺ	
Source of Inform	nation								1			
County Water Qu	ality Study											
Driveby		X	X	Х	X							
Other/Explanation												
	EXPLA	NATIO	N LINE	S								
1 below Chester	pike, lined channel	, shoppir	ng carts	in strea	m, heav	y silt, n	o visible	wildlife				
2 orange sedime	nt deposits, oil she	en visible	9									
3 algea and heav	vy debris in channe	lized stre	eam									
4 orange sedime	ent deposits, foamy	film on w	vater sui	face								
5												
6												
7												
8												
9	WENCH THE TOTAL											
10												

Rdey Two.

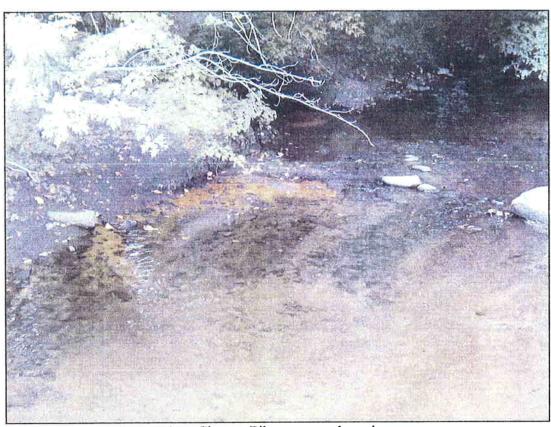




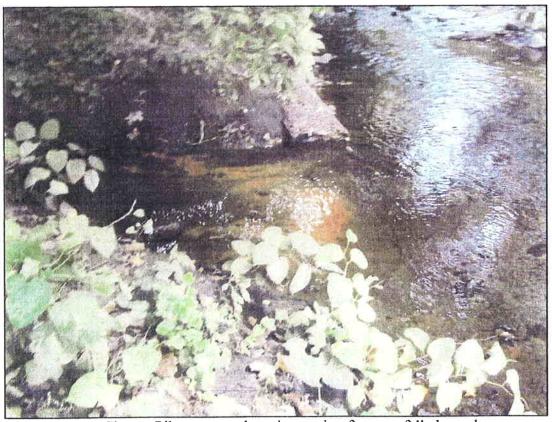
J-1, Baldwin Towers: shopping cart and silt in channel



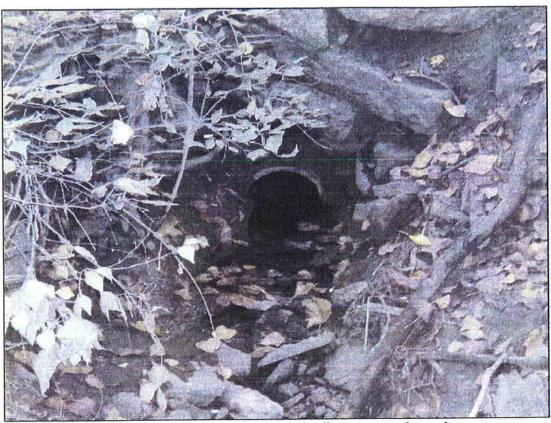
J-1, Baldwin Towers: lined channel



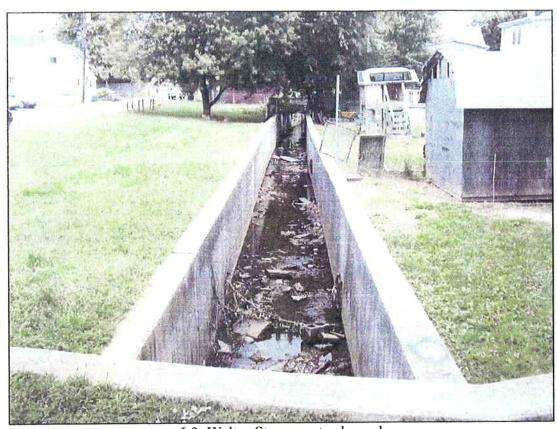
J-2, Chester Pike: orange deposits

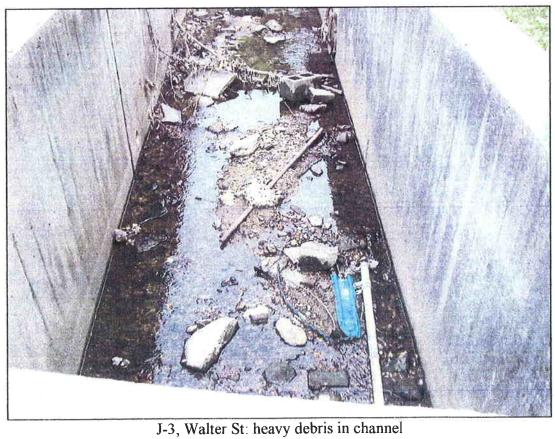


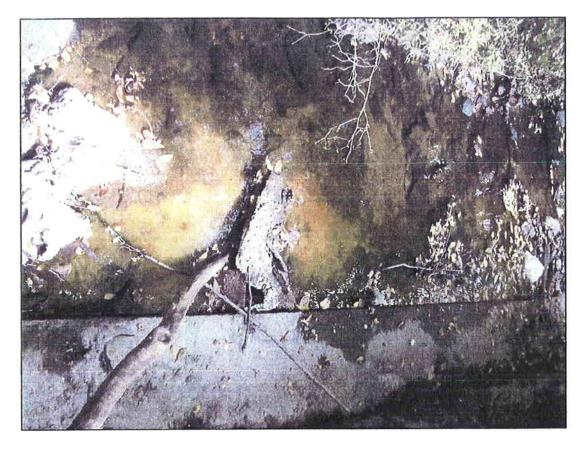
J-2, Chester Pike: orange deposits coming from outfall channel



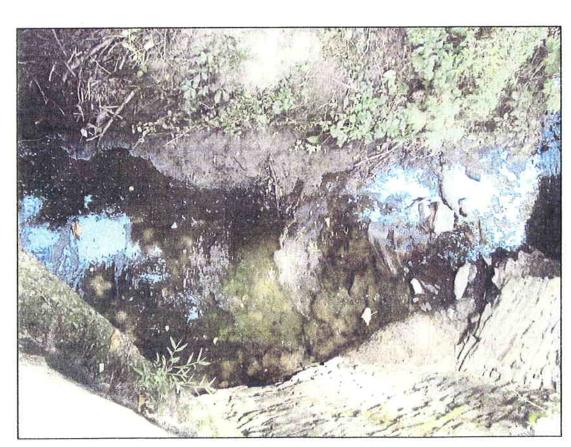
J-2, Chester Pike: outfall pipe feeding orange channel







J-4, Milmont Ave: orange sediment



J-4, Milmont Ave: foam on water surface

Form O - Outfall Data

Person: J. H. Bricker

Date: 12/04

Time Since Last Rain was > 72 Hours:

Quantity of Last Rain: < 0.1 inches: > 0.1 inches

Days Since Last Rain:

Municipality: Ridley Township

Crum Creek via Little Crum Creek Name of receiving water:

				Т	\neg				П	T	T	Т	
Rating	(0-5)												
Describe land use of Rating	upstream drainage	area.											
Water	Color/Odor	(Yes or no) (specify if floatables,	algae or sediment	present)									
Flow	Observed	(Yes or no)											
Channel	Side Slopes*	(H:V)											
Channel		Width	(feet)										
Channel	Depth												
Depth of	be	(feet)											
Pipe	eter				CH2 . 83	18" PCP	2						
Time		ат/рт											
Storm				sure									
Photo	*												
Pine	41	7#			LCC -1	LCC -2	LCC -3	LCC -4	LCC -5	9- DOT	LCC -7	rcc-8	FCC -9

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment deposition, algae or debris, pipe collapsed or crumbling.

blocked catch basins or drain)

H/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

NOTES:

Form O - Outfall Data Cont'd

Date: 12/04 Person: J. H. Bricker

Time Since Last Rain was > 72 Hours:

Quantity of Last Rain: < 0.1 inches: > 0.1 inches

Days Since Last Rain:

Crum Creek via Little Crum Creek Name of receiving water:

Municipality: Ridley Township

Pipe

Rating (0-5)Describe land use of upstream drainage (specify if floatables, algae or sediment Color/Odor present) (Yes or no) Observed Flow Side Slopes* Channel (H:V) Channel Bottom Width (feet) Channel Depth flow in pipe Depth of (feet) Diameter (inches) (00:00) ат/рт Drain? Yes/No Storm Not Photo LCC -11 LCC -12 LCC -13 LCC-10 Swale

Rating System:

LCC -14 LCC-15 LCC -16 LCC-17 LCC -18 0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment deposition, algae or debris, pipe collapsed or crumbling,

blocked catch basins or drain)

H/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

Form O - Outfall Data Cont'd

Person: J. H. Bricker

Date: 12/04

Time Since Last Rain was > 72 Hours:

Quantity of Last Rain: < 0.1 inches: > 0.1 inches

Days Since Last Rain:

Municipality: Ridley Township

Crum Creek via Little Crum Creek Name of receiving water:

				Т									
	(0-5)												
ų.	upstream drainage	area.											
Water	Color/Odor	(Yes or no) (specify if floatables,	algae or sediment	present)									
Flow	Observed	(Yes or no)	-										
	obes*	(H:V)											
Channel		Width	(feet)										
Channel	Depth												
Depth of	flow in pipe	(feet)											
Pipe	Diameter	(inches)											
Time		ат/рт											
Storm				sure									
Photo	#												
Pipe	Swale	*			LCC -19	LCC -20	LCC -21	LCC -22	LCC -23	LCC -24	LCC -25	LCC -26	LCC -27

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment deposition, algae or debris, pipe collapsed or crumbling,

blocked catch basins or drain)

H/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

Form O - Outfall Data Cont'd

Person: J. H. Bricker

Date: 12/04

Time Since Last Rain was > 72 Hours:

Quantity of Last Rain: < 0.1 inches: > 0.1 inches

Days Since Last Rain:

Municipality: Ridley Township

Crum Creek via Little Crum Creek Name of receiving water:

Photo	Storm	Time	Pipe	Depth of	Channel		Channel	Flow		4	Rating
Ω	Drain?	(00:00)	Diameter	flow in pipe	Depth		Side Slopes*	Observed	Color/Odor	upstream drainage	(0-2)
	Yes/No	am/pm	(inches)	(feet)		Width	(H:V)	(Yes or no)	(Yes or no) (specify if floatables,	area,	
	Not					(teet)			algae or sediment		
	sure								present)		
1											
1											
1											

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment deposition, algae or debris, pipe collapsed or crumbling,

blocked catch basins or drain)

H/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

NOTES:

Form O - Outfall Data Cont'd

Person: J. H. Bricker Date: 12/04 Tin

Time Since Last Rain was > 72 Hours:

Quantity of Last Rain: < 0.1 inches: > 0.1 inches

Days Since Last Rain:

Name of receiving water: Crum Creek via Little Crum Creek

Municipality: Ridley Township

_			_				 	 	 	
Rating	(0-5)									
Describe land use of Rating	upstream drainage	area.								
Water	Color/Odor	(Yes or no) (specify if floatables,	algae or sediment	present)						
Flow	Observed	(Yes or no)								
Channel	Side Slopes*	(H:V)				s, report t				
Channel		Width	(feet)							
Channel	Depth									
Depth of	e e	(feet)								
Г		(inches)								
Time	(00:00)	am/pm	,							
Storm	Drain?	Yes/No	Not	sure						
Photo	31									
1	Swale				LCC -37	LCC -38				

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment deposition, algae or debris, pipe collapsed or crumbling.

blocked catch basins or drain)

H/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

NOTES:

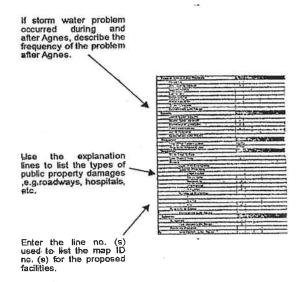
CRUM CREE	K WATERSHED	include.	FOR	M COI	MPLET	ED BY	/	Before	e Filli	ng Ou	ıt Forr	n,	
	(a) (a) (b) (b) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c		at Aller					See II	nstruc	ctions	On Ba	ack	
Name:			Name		C.J. C							All Sir	18. A
Municipality:	Ridley Township	D	HET TOOK THAT SEE	NO. Y PROTOCOL CONTRACTOR	610-5			For C	ounty	Use:			
County:	Delaware		Date:		July30	,2003		1000					
MAP NO. *	nch vax 2.0% 2.0%	A-1	A-2	A-3	A-4	A-5	A-6	A- 7	A-8	A-9	A-10	A-	A-
Types of Storm	Water Problems												100
Flooding				Х	x	Х	Х	Х	Nicla		Х		
Accelerated Eros	ion		x			Х	Х	Х	Х	х	X		
Sedimentation		X					Х						
Landslide	· · · · · · · · · · · · · · · · · · ·												
Groundwater													
Water Pollution													
Other (Explain)													
Explanation Line	No. (On Back)	1	2	3	6	7	8	9	10	11	12	an intractor	
Cause (s)			, 10				here are			200			
Storm Water Vol	ume			Х	X	Х	х	Х			Х		
Storm Water Vel	ocity		Х			Х	X	X	X	X			
Storm Water Dire	ection		Х			Х	X	X	Х				
Water Obstructio	n			х		Х	Х	X			Х		
Other (Explain)													
Explanation Line	No. (On Back)			4									PROTEIN TO
Frequency				YAL Y					1,000			April 1	
Year Most Recer	nt Occurred			2003	2002	2003	2002				2002		
Year First Known	Occurred			?	?	?	?	?	***************************************	10.00		Christian (19)	1820H - 18CH
Regularity				2.004					The Control		ALC NO.	V	1 () N
More Than 1 Yea	ır							X					
Less Than 1 Yea	Г			Х	Х	Х	X		<u> </u>		X		
Only During Agno	es or Floyd			With the same	- The state of	Company of the		THE STATE OF THE S	estimate	115702.1101	DANGE TO SERVE		
Duration (If App	licable)					D'E				67.16	dental (Syri		(V.C., VI
Less Than 1 Day				X	X	X	X	X	<u> </u>	-	X		
1 Day + (Enter D	ays)		1	-	in the state of th	1000	Open crosses		ORCULU-	000000000000000000000000000000000000000		10000000	1000000
Property Dama	<u>je</u>	12. 6 57	a lary				45				100		6.5
Loss of Life/Vital	Services			X			_	-	_	_		<u> </u>	-
Private			X		-	X	X	X	X	X	X	-	-
More Than One	Owner		Х			X	X	X	X	X	X	-	-
Types of Propert	ies		R		Ind	R	R	R	R	R	R/C	-	-
Number of Prope	erties	_	5		1	6	20	8	12	4	8		
Public (List Type	s)							-	-	-	-	-	-
Explanation Line	No. (On Back)			5	700000000000000000000000000000000000000	The Control	A separate	Jan China Survivo	11000				V 100 2
Solutions				0.5								1000	
Suggested					1		_		 	-	-	-	-
Explanation Line	No. (On Back)								1_	-	-	-	-
Formally Propos					-		_		-	-	-	-	-
	No. (On Back)					1	1		1	1	1	1	L

INSTRUCTIONS

Begin with A.1 as the first map number to identify the first' storm water problem area. Illustrate the defined problem on the watershed map provided, and identify it with its map number.

For each storm water problem area within your municipality, enter the map identification number at the head of the column. Describe the problem by placing a check (4 in the appropriate blocks of the column under this map identification

When an additional explanation is required, write the line number(s) used in the column marked "Explanation Line No. (s)".Example 1, 2-3, etc.



Definitions

Storm Water Problem Area

An area that defines the farthest extent of a storm water problem, including any area that experiences property damage, inundation, accelerated eroslon, surface water pollution, groundwater pollution, landslides, or any other problem as a result of storm water runoff.

Groundwater
Water in the ground below the water table.

Accelerated Erosion

The removal of the surface of the land through the combined action of man's activities and the natural processes at a rate greater than would occur because of the natural process alone.

Sedimentation

The process by which soil or other surface materials, transported by surface water, is deposited on stream bottoms.

Water Obstruction

Any dike, bridge, culvert, wall, wingwall, fill, pier, wharf, embankment, abutment, or other structure located in, along, across, or projecting into any watercourse, floodway, or body of water.

		EXPLANATI	ON LINES (contin	ued)	
>					
		1000-00			
	versus and a second				

- 1 PennDOT installed flood cell that accumulates sedimentation decreasing flood cell capacity
- 2 Streambank erosion along rear of homes on Valley Rd
- 3. Chester Pike flooding
- 4 culvert under Chester Pike
- 5 Chester Pike closed to traffic during flooding
- 6 Boeing Industrial facility flooding
- 7 Milmont Avenue near Brookside Lane flooding & erosion
- 8. Muhlenberg Ave flooding and erosion
- 9 Georgetown Rd flooding and erosion
- 10 Ridley High School/Arlington Ave erosion
- 11 Edgewood Ave erosion
- 12 2nd Ave flooding

Prop. C. Docho



Turning Ideas Into Reality



CATANIA ENGINEERING ASSOCIATES, INC.

Consulting Engineers & Land Surveyors

May 19, 2005 File No. 83350-115

Karen Holm Delaware County Planning Department Court House & Government Center Building 201 West Front Street Media, PA 19063

RE:

Crum Creek, Act 167

Rutledge Borough

Dear Karen:

Enclosed, please find the following:

- 1. Act 167 Municipality Questionnaire
- 2. Zoning Ordinance
- 3. Zoning Map
- 4. SLDO
- 5. Map of Storm Sewer System

Should you have any questions or comments, please feel free to contact me.

Very truly yours,

Charles J. Catania, Jr., PE

for Catania Engineering Associates, Inc.

CJC, Jr/pm Enclosures

CC:

Ed McGaughey

CRUM CREEK WATERSHED ACT 167 STORMWATER MANAGEMENT PLAN

MUNICIPALITY QUESTIONNAIRE

Please fill out the following questionnaire and return it to Karen Holm at the Delaware County Planning Department, Court House and Government Center Building, 201 West Front St. Media, PA 19063 as soon as possible. If you have any questions or comments, or if you would like these forms in digital format, please call Karen at 610-891-5213 or e-mail her at holmk@co.delaware.pa.us.

PART I - GENERAL INFORMATION

Municipality:	Rutledge Remogh
Contact Person:	Edward O We Gaughey
WPAC Designee:	Charles L. Catario, Sc.
Title:	TOWNSHIP ENGINEER
Address:	500 W was side restructed
	Milyon 1 Tribe 28 19033-3E1
Phone:	6.2-50-229
Fax:	
Person Completing for	rm (if different from Contact Person):
Name:	Charles I comma , or & Christie Face
Address:	was in me and England
	ALL MORT HAVE, PA (4055 SI
Phone:	610-512-2684
Fax:	6-0-532-4632
E-mail:	

PART II - REGULATORY ACTIVITIES

A. Please indicate the regulations you currently use to manage development.

REGULATION	MUNICIPAL ORDINANCE	COUNTY ORDINANCE
Zoning Ordinance	No 414	
Subdivision/Land Development Ordinance	No. 300	
Separate Stormwater Ordinance		
Separate Floodplain Ordinance		

B. Please indicate the agencies/individuals who review and approve land development plans and zoning variance/waiver requests.

	LAND DEVELO	PMENT PLANS	ZONING VARIANCE	
ENTITY	REVIEW	APPROVE	REVIEW	APPROVE
Supervisors	k	X		
Municipal				
Engineering				
Department				
Municipal				
Planning				
Department	X			
County Planning	T.T.			
Department	У.			
County				
Conservation		1		
District	x	, k		
Zoning Hearing			X	
Board			X	X
Consulting				
Engineer	Χ			
Others (List				
Below				

C. Please provide **copies** of your zoning, subdivision/land development, and separate stormwater management and floodplain ordinances and your current zoning map when you return this questionnaire. Please list these documents below.

Zonine Ordinarce	No. 414	
Land Subdivision	ordinance No x22	
FOLG STROYNETON	SCOUNTY TOO SEE	

PART III - MUNICIPAL AND LOCAL PLANNING ACTIVITIES

Please indicate below whether your community has approved the following plans and maps and the date of the most recent update.

ITEM	APPROVED/DATE	IN PROGRESS	PLANNED WITHIN NEXT YEAR
PA Act 537 Sewage Facilities Plan	V		
Comprehensive Land Use Plan		×	
Existing Land Use Maps		X	
Proposed Land Use Maps		y	
Zoning Maps	<u>\</u>		

PART IV - FLOOD INSURANCE PROGRAM AND COMPREHENSIVE LAND USE PLAN

Please indicate below whether your community participates in the National Flood Insurance Program:

ITEM	PARTICIPATES (Y/N)
Flood Hazard Boundary Map (FHBM)	¥
Participates in FEMA Emergency Program	Υ
Participates in FEMA Regular Program	\

PART V - EXISTING STORMWATER RELATED PROBLEMS AND STRUCTURES

Please complete the matrices on the following pages (Forms A and C-J) to describe any significant stormwater-related problems (Form A), Existing or Proposed Flood Control Projects (Forms C & D), Existing or Proposed Storm Water Control Facilities (Forms E and F), Existing or Proposed Stormwater Collection Systems (Forms G & H), Present and Projected Development in the Flood Hazard Area (Form I), and Water Quality Problem Areas (Form J) that you are aware of in your municipality.

What we would like to ask of you is that you complete as much of the attached data collection forms as possible. There is a different form for each item of information as summarized in the attached "FORM DESCRIPTION SUMMARY. The process would be as follows starting with the problem areas (Form A):

- Place the location of the problem area on the map as shown in the attached example map.
- Draw a box on the map with the problem area identifier starting with A-1 with an arrow leading from the problem area identifier to the problem area.
- Place an A-1 in the first column of FORM A.
- Put a check in each box in the A-1 column that represents the problems associated with that particular problem area.
- Repeat with the next problem area (A-2) and so on.

- Repeat for existing flood control projects (FORM C) placing a triangle on the maps and starting the labeling with C-1.
- Repeat for all forms.

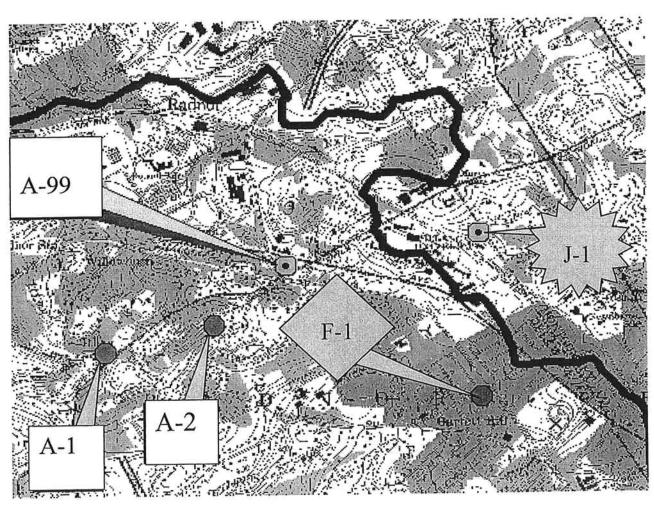
The sample map attached shows three problem areas (A99- A1 and A-2), one proposed flood control project (F-1) and one water quality problem (J1).

Use additional paper to provide <u>detailed</u> descriptions of your most serious problems and attach a map to show the location of the problem. Attach photographs, if available.

If you have any storm or combined sewers, please provide maps showing the collection system and overflow discharge locations and an estimate of the average annual discharge at each overflow point.

The more detail you provide, the better we will be able to evaluate the situation for your municipality. We appreciate your help.

Sample Location of Information from Data Collection Forms on the Municipal Map



FORM DESCRIPTION SUMMARY ACT 167 WATERSHED STORMWATER MANAGEMENT PLAN

Sources of Information	Existing studies or reports, Township Documentation, Personal memory, Township engineer Owner or structure	township files, subdivision applications, roadmaster, township engineer	Township records, township engineer, owner of facility	Township records, township engineer, owner of facilitiy	Subdivision files, township engineer, owner of facility	Subdivision files, township engineer, owner of facility	Existing plans, township engineer, owner of system	Existing plans, township engineer, owner of system	Studies, Subdivision / Site Plans, General knowledge, Township engineer, Private flood studies	Municipalities, Conservation District
Types of <u>Examples</u>	Flooding, Drainage, Erosion/Sedimentation	Bridges. Culverts, Fill, Structures	Channel excavation, riprap, floodwalls, etc.	Channel excavation, riprap, floodwalls, etc.	Detention basins, recharge basins, roof-top stroage	Detention basins, recharge basins, roof- top stroage	Storm sewers, man- made channels, diversions	Storm sewers, man- made channels, diversions	Subdivision / site plans	Construction sites, agriculture
Description	Stormwater Problem Areas	Obstructions	Existing Flood Control Projects	Proposed Flood Control Projects	Existing Stormwater Control Facilities	Proposed Stormwater Control Facilities	Existing Stormwater Collection Systems	Proposed Stormwater Collection Systems	Present & Projected Development in Flood Hazard Areas	Water Quality Problem Areas
Symbol			\triangleleft	\triangleright	\Diamond	\Diamond	\bigcirc	\bigcirc		公
Form	∢	Ф	O	۵	ш	ш	ტ	Ι	-	7

Turning Ideas Into Reality



CATANIA ENGINEERING ASSOCIATES, INC.

Consulting Engineers & Land Surveyors

February 26, 2004 File No. 83350-115-W

Justin D. Kauffman Delaware County Planning Department Government Center 201 W. Front Street Media, PA 19063-2751

Re:

Rutledge Borough

Darby - Cobbs Creek Act 167 Stormwater Management Plan

Crum Creek Act 167 Stormwater Management Plan

Dear Mr. Kauffman:

Enclosed please find completed Form O - Outfall Data for the above referenced projects. Please note that there are no outfalls in the Borough. A map of the storm sewer system is attached.

Should you have any questions or comments, please feel free to contact me.

Very truly yours,

Jamie H. Wenger, EIT

Jamiett Wenger

for Catania Engineering Assoc., Inc.

JHW/drl Enclosure

CC:

Rutledge Borough

520 W. MacDade Boulevard, Milmont Park, Pennsylvania 19033-3311 Phone: (610) 532-2884 Fax: (610) 532-2923 E-Mail: CEAINC1@aol.com

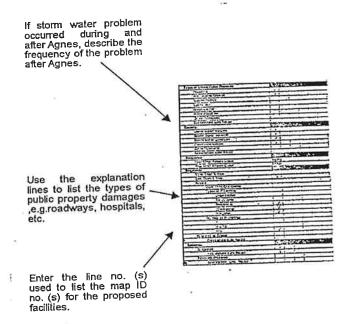
		0705	43474	D DD 05		FAC FO	DA4 A	SHE	ET	\	OF\			
		STORM		R PROB					e Filli			<u>, </u>	-	_
WATERSHED			FOR	RM CO	MPLE	EDB	Y		nstruc					
		1		L				See	nstruc	JUONS	OILD	ack	-	_
	Jam Creek	-	Nam			ne Pa		Far	Sounds	, Lloo:			-	
	P.S. Lidge	-		ohone:		32 3		For	ounty	USE.			-	
County:	oclavace	-	Date	:	5/1	8105						-	-	
			-	ļ. —	ΙΔ	Δ.	_	1	Δ	A-	A-	A-	A-	├
MAP NO. *		A-	A-	A-	A-	A-	A-	A-	A-	A-		- A	A-	
Types of Storm Wa	ater Problems			设置"路"		1545		Service No.	- m		7.	N-EXTREM		-
Flooding		-		-	1	PONI	-		-				+	\vdash
Accelerated Erosion	1		-	-			-		-			-		-
Sedimentation			-	+		-		-				-	+	\vdash
Landslide			-			-	-					-	+	-
Groundwater									-	-	-	-	+	-
Water Pollution			-									-	+	+
Other (Explain)			-				<u> </u>	-	-		_	-	+	-
Explanation Line No	o. (On Back)				SOURCE COMMISSION OF THE PERSON	10342 mm		West 54	Company of the	en carrie		San San San San San San San San San San	_	
Cause (s)									3000			KASTE!		1
Storm Water Volum	е				-		_					-	4	-
Storm Water Veloci	ty				-	-	-	-				-		\vdash
Storm Water Directi	ion						-			_	-		-	-
Water Obstruction					1				_			-		1
Other (Explain)												-		-
Explanation Line No	o. (On Back)						-	and the second		-	Name and Add		- COLUMN 1	⇂
Frequency													AND D	-
Year Most Recent (Occurred							-	-					╀
Year First Known C	ccurred											SANSWILLIAM I		_
Regularity		126,72,1	1 × 1 × 1									Power.		4_
More Than 1 Year									-			-		+
Less Than 1 Year												-		+
Only During Agnes										NAME OF TAXABLE PARTY.				
Duration (If Applic	able)	100				2013			11/1/2012					4_
Less Than 1 Day														_
1 Day + (Enter Day	s)													_
Property Damage		THE SAME		OT Y										4_
Loss of Life/Vital Se	ervices													╀
Private														\perp
More Than One Ov	vner													1
Types of Properties														_
Number of Properti														1
Public (List Types)														1
Explanation Line N	o, (On Back)													
Solutions		200 000												
Suggested														
Explanation Line N	o. (On Back)													
Formally Proposed														
	o. (On Back)													

INSTRUCTIONS

Begin with A.1 as the first map number to identify the first' storm water problem area. Illustrate the defined problem on the watershed map provided, and identify it with its map number.

For each storm water problem area within your municipality, enter the map identification number at the head of the column. Describe the problem by placing a check (4 in the appropriate blocks of the column under this map identification

When an additional explanation is required, write the line number(s) used in the column marked "Explanation Line No. (s)".Example 1, 2-3, etc.



Definitions

Storm Water Problem Area

An area that defines the farthest extent of a storm water problem, including any area that experiences property damage, inundation, accelerated erosion, surface water pollution, groundwater pollution, landslides, or any other problem as a result of storm water runoff.

Groundwater

Water in the ground below the water table.

Accelerated Erosion

The removal of the surface of the land through the combined action of man's activities and the natural processes at a rate greater than would occur because of the natural process alone.

Sedimentation

The process by which soil or other surface materials, transported by surface water, is deposited on stream bottoms.

Any dike, bridge, culvert, wall, wingwall, fill, pier, wharf, embankment, abutment, or other structure located in, along, across, or projecting into any watercourse, floodway, or body of water.

	EXPLAN	IATION LINES	(continued	1)		
		•				
	_					
					2012	
					_	

				EXISTING F	LOOD CON	NTROL PRO	JECT FORM C.	SHEET	
WATERSHE	O	FORM CO	MPLETED E				TYPICAL TYPES OF FLOOI	D CONTROL PROJECTS	3
Name: Municipality: County:	Crown Creek Rutledge Octomore		Christie P 610-532-6 5/8/05	2884	di L	Channel Ex Channel Re Rock Ripra		Levee Gabions Pipe Channel	Dams Floodwall Concrete Lining
For County U	se:	1							
Map ID No.	Type of Flood Contro ਮ੭੦ ਅ €	ol Project	Year Constr Built	Expected Life Yrs.	Design Frequency Yrs.	Flood Discharge C.F.S. (if known)	Owne	er Name, Address, and P	hone
C-									54F
C-									
C-									
C-									
C-		4	5.						

				PROPOSED	FLOOD CO	ONTROL PE	ROJECT FC	RM D.			SHEET 1 OF 1
WATERSHE	D	FORM COM					TYPICAL T	YPES OF F	LOOD COI	NTROL PRO	DJECTS
Name: Municipality: County:	0.001	Telephone:	Chastle 60 522 51,8105	2854	1	Channel Ex Channel Re Rock Ripra	ealignment	Widening		Levee Gabions Pipe Chann	Dams Floodwall nel Concrete Lining
For County L	Jse:										
Map ID No.	Type of Flood Control Project Study Phase Begun YES N0 Prelim. Final					Projected Compltn. Date	Expected Life Yrs.	Design Frequency Yrs.		Map ID No. Form A*	Owner Name, Address, and Phone
D-											
D-											
D-											
D-											
D-											

^{*} Enter the storm water problem area's Map ID No., if the proposed project will solve or reduce any / all of an identified drainage problem.

			EX	ISTING S	TORM WATER CONTROL FACILITIES FO	ORM E.	SHEET	1	OF_	
WATERSHE Name: Municipality: County:	compret	Name:	Christie T 610 532 5/18/05		Storm Water Control Facility A natural / man-mac	DEFINITION	e specifically des e of storm water	igned and runoff	d/or	
For County L	Jse:	M								
Map ID No.	Type of Storm Wate	er	Year Built		Contact Person Name, Address and Phone			Comme	nts	
E-	13005									
E-										
E-										
E-										
E-										
E-										
E-										
E-										
Detention / R	Letention Basin	TYPICAL T	YPES OF STO	RM WATE	ER CONTROL FACILITIES Roof-To	op Storage			£	
Natural Pond	d or Wetland				Semi-Pe	ervious Paving				
Parking Lot F	Pondling					on Device (Seepage				

FORM F

		+	1	DDODOSET	FLOOD CO	NTROI PE	ROJECT FO	RM F		SHEET	V.	OF \
		FORM 00			I FLOOD CO	NIKOLFI	COSECTIO	XIVI I	DEFINITION			
WATERSHE	D	FORM CO	MPLETED E) Y		Storm 1	Vater Contro	I Facility	DEI IMINOR			
				ga-No.		Storin	A poturol / r	n i acility	device or structur	e specifically de	signed and	I / or
Vame:	Crun Cheste	Name:	Unristrice				A flatural / f	duce the	rate and / or volum	e of storm water	r runoff	
Municipality:		Telephone:	610522						late and i of voidin	ic of Storm water	Turion	
County:	toclaw re	Date:	5/18/05				from a site of	or sites.				
For County L	Jse:											
Map ID No.	Type of Storm Wa	ter	Proposed Co	nstr. Dates	Map No.	С	ontact Perso	n			Commer	nts
	Control Facility		Start	End	Form A*	Name,	Address and	Phone				
F-	130136											
F-												
F-												
_		-										
F-												
F-												
F-												
F-							,					
F-												
* Enter the s	storm water problem area	's Map ID No.	, if the propo	sed project	will solve or r	educe any	/ all of an id	entified dr	rainage problem.			
		TYPICAL T	YPES OF S	TORM WAT	ER CONTRO	L FACILIT	IES					
Detention / R	Retention Basin							Roof-Top				
Natural Pond								Semi-Per	vious Paving			1 - 13
Parking Lot F			1					Infiltration	Device (Seepage	/ Recharge Ba	sin or Unde	erground Tank)

FORM G (Front)

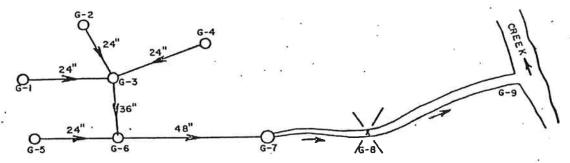
														<u></u>	
						FLOOD CON	ITROL PRO	JECT FOR	M G.			SHEET	(OF /	
VATER	SHED		FORM CO	MPLETED E	Y				INSTRUCTIO				l		
						Diagram ea	ach system	on the appr	opriate map. E	establish ma	ap points to	show chang	ges in syst	em elements	<u>),</u>
ame:	Crom	creek	Name:	christie	Pace	pipe size, o	or pipe direc	ction. (If unk	nown, outline t	he system e	extent.) Con	ipiete this to	orm only w	nere specific	,
	ality: Que	10 del	Telephone:	600 23		information	on constru	ction is avai	lable. Use a se	eparate torn	n tor each s	/stem. iden	tilly the poil	here higher	-
ounty:	12010	Local	Date:	511810	5	system cor	rsecutively	(ex. G-1,G-2	2,G-3). Start th	e first point	in each add	llional Syste	S S Form	on Poverse	
						For examp	le, G-3 end	s one syster	n, so G-23 beg	gins the nex	L. See Samp	Die Diagran	is a ruilli	Name	of Final
Ma	ıp I.D.	Sys	stem's Elemer	ıts (x)		Measurer		ļ	Material	Year	Design Data	Contact	Porcon		ship and
	No.				Pipe		hannel / Sw		Material	Constr.	Available	Name an			Responsibility
From	То	Pipe	Open Channel	Swale	D	TW	В	Depth		Consu.	Available	Name an	I THORIC	Wantenance	Teoperiolizinty
		- · · · · · · · · · · · · · · · · · · ·	Jene			-								-	
i-	G-														
) -	G-							-							
	G-			-					-						
) -	G-			ļ											
,-	10-	-		-											
}-	G-	-													
	ļ														
} -	G-														
j_	G-														
}-	G-												_	-	
														_	
}-	G-													-	-
										-					
)-	G-									_		(F)	-		
													-		
} -	G-	-				-	 			+	!		-		1
	G-														
3-		ent key on rev		1		1				-	1				1

Measurement ,
Key

D = Diameter

TW = Top Width

B = Bottom Width



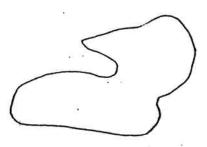
SAMPLE DIAGRAM FOR SYSTEM ONE

G-29 24" 36" 48" G-32 G-33

SAMPLE DIAGRAM FOR SYSTEM TWO

SAMPLE FORM (System One Only)

650	-	_				-	- 42	· restry	-	COLLECTIO	M TYLITM	1044 8	FUL -a-
WATE	Ранкэ				. ~	AM CO-		D BY	1		==:		and an electric services of the second section of the second section of the second section of the second section of the section sectio
-	_	1		וע			=	_	-	7-	=		Part Or and
_	5		- P	-	_	17	-	-		-	-		
8.1	6.3				MT.				-	1976	7=	John Das 123-4687	Burush of ASC
6.3	67	,			34"				CMF	1978	Y=	Julya Daga 123-4967	house of ANC
Ç4	61	,			24"				0.00	LOTE	Yes	Des 123-4167 سمبر	Bursuph of ARC
6)	G-4	,			34"				Chr	1978	Y-	July Day 173-497	Surveys at ASC
64	G-1	,			ж.				000	1976	v-	July Day 123-4907	Benegited ARC
GL	87	,			44-			~	0=	1076	V	O= 123-4567	bush of ARC
C I	61		,		Г	14"	24"	N-	Commission	1000	V=	July Com (234)67	
C-6	04		1	,		n.	*	н•	-	-			Saraugh of ASC N
a	•	Γ											
۰										1			
					Г		Г	T	1				



Outline known areas where construction exists but construction data is unavailable.

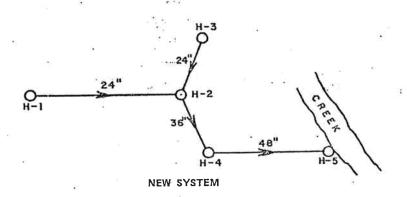
FORM H (Front)

					PROPOSED	FLOOD C	ONTROL F	ROJECT FO	ORM H.		I		SHEE	T \	OF 1	
WATER	SHED		FORM CO	MPLETED I					INSTRUCTION	ONS						
						On the map for pr	oposed storm water	er collection systems	s, diagram each propos	sed system. Indicate	a map point	to show char	nges in syst	em etements, pipe size,	pipe direction and	connections
Name:	Com	C.C.C.L.See	Name:	Christia	Pack.									ystem. Complete a sepa		
Municipa	ality: Ruth	edge	Telephone:	C-10 53										(ex. H-1, H-2, H-3). Star		
	Delau		Date:	5/18/0	5	additional system	20 numbers highe	r (if H-3 ends one sy	stem, begin the next w	vith H-23). Be sure to	show the p	oint where p	roposed ad	ditions connect into exis	ting systems, using	the map
						point number from	n the existing syste	m form and map. Se	ee Sample Diagrams a	nd Form on Reverse	,					
Ма	p I.D.	Sys	tem's Elemen	ts (x)		Measurer				Map I.D.		osed		Contact Person		e of Final
	No.		8		Pipe		Channel /		Material	Nos.**		. Dates		Name and		rship and
From	То	Pipe	Open Channel	Swale	D	TW	В	Depth		Form A	Start	End	Avail.	Phone	Maintenanc	e Responsibility
			ONE													
H	H-	1			<u> </u>										-	+
										_						
H	H-		<u> </u>							-	-		-			
H-	H-									-					-	
1-	11-						-			_						
H-	H-		 													
-	-		1													
H-	H-															
-	H-															
- 1-	H-															
-	H-										-					
						ļ					-					
- -	H-	1	-					-		-	-		-		-	+
- -	H-		-							-	-		-			
-	U-		-								-		-			
 -	H-					-	-	-			-				-	

SAMPLE DIAGRAMS

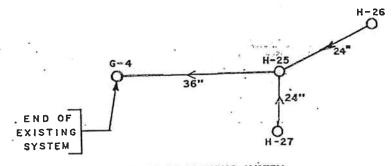
Measurement Key

D = Diameter
TW = Top Width
B = Bottom Width



SAMPLE FORM (New System Only)

HATE					-	,	-(4118	DY.	ા ≔				-		they appears, disposed only the confidence and per and the processing to perform a forming the per above processing. All numbers formings contained for Mad and processing and appears to the second and and processing appears to the performance of the second and processing appears to the performance of the second and and processing appears to the performance of the second and appears to the performance of the
~	-			- 1/1	-	-	-	-		=:	-	=	H	===	
-	74_	Des.	Derrie .	lect	-	TW.		_Deck_		-	**			777	Bursuph of ABC
**	#3				24"				Char	*1	1963	1943	Yes	Jahre One 123-4647	-
***	11.7	,			24"				0.00	м	1193	1963	Ym	Jahrs Dar 123-4987	Burneyh of ABC
		,			30"		•		CMP	A-2	1967	1963	V	Jahra Dans 173-4967	Carred 14 ABC
H-3	**	,			40.				Car.	4.2	1942	1093	V==	Jan Om 123-1947	Servery of ASC
,,		\vdash													
-	-	+			\vdash						Г				
*	14	1	-		-	-	-	-	-	+	T	1			
*	*				_	_	_	_	-	-	-	-	-		
*								_		_	-	-	-		-
*	*				_		_	_	-	-	-	+	-		
**	14												_		



ADDITION TO EXISTING SYSTEM

							LATADD ADE	A / FODA4	4.)			SHEET	1 ()F		
		PRESENT	& PROJECTE	D DEVELOPM	ENT IN T	HE FLOOD	HAZARD ARE	A (FORM	1)	DEELVITION		SHELT				
ATERS	HED		FORM CO	MPLETED BY						DEFINITION	N	-				
							FLOOD HAZA	ARD AREA	\:							
ame.	Cxinn	Chack	Name:	Christie &	n ()			1	NORMA	LLY DRY LA	ND AREA	THAT HAS	BEEN OR	S		
Aunicina	Crum lity: pox		Telephone:	66 5 33	MRAG				SUSCEPT	ABLE TO BE	EING INUN	DATED BY	THE			
iuriicipa	ity. Port	4000	Date:	5/18/05	Herd or 1	1			00-YEAR	FLOOD.						
ounty:	12010	Moore	Date.	SIIVION		+										
_		_				-										
or Coun	ty Use:									1						
						1	1 . (D					Comments				
Map ID	TY	PE OF DEVE	LOPMENT	Year			tact Person					Commente				
No.				Built		Name, Ad	dress and Pho	ne				-				
_		NONE														
										1						
		_														l
							 									
										1						
										1						
-										-					-	
														-		
												-				
				 		+	 									
				-		-	-									
-										-						
												+				
																-
-															-	
															1	-
	-					1										
	-															
						-										
							-									
														-		1

		WATER	R QUAL	ITY PRO	BLEM A	AREAS F	ORM	J. SH	EET_	ı	OF_	1		
WATERSHED						RM CO			BY					
WITEROTIES			-											
Name:	Cours aska	k			Name	e:	Chr	182	(Pau				
Municipality:	Rostodor					hone:		0	532	4	884			
County:	Delaurera				Date		_		30					
County.	See Establishment		1	1										
SITE		J-	J-	J-	J-	J-	J-	J-	J-	J-	J-	J-	J-	
Types of Water Qu	uality Problems													
High Community To	olerence													_
High Temperature														
High Turbidity														
Hydrocarbon Pollut	tion													
Low Community Di													1	
Low Dissolved Oxy														
Low pH														
Nutrient Enrichmen	nt.		1											
Poor Habitat														
Other/Explanation	Line No.													
Potential Cause(s														
Agriculture												1		
Construction Site			1											
Erosion														
Lake Discharge				1										
STP Outfall			1											
Other/Explanation	Line No													
Frequency														
Year Most Recent	Occurence		1											
Year First Known C			1		1	1								
Source of Informa														
County Water Qual		-	1	_										
Driveby	illy Olddy		1	+	1									
Other/Explanation	Line No													
Other Explanation	Line ivo.	FXPI	ANAT	ION LI	NES									
1		-	T	1										
2		<u> </u>	1		1	1								
3			1	1			1	1	Ì	1				
4		-	1		_			1						
5				+										
				+	+	+	1		1	1		1		
6					+	1	+	+				1	1	
0		-	+	-	1		1		1	1		1		
8		-	+	+	-	+	+	1	1	1	1	1		1
9		+	+	-	-	+	+	+	_	1	†	1		1
10		-	-	-	-	-	+-	-	-	+	+	+	+	
			_				_		1		1		_	

Form O - Outfall Data

	a: One (2/24/04)	Township System
Time Since Last Rain was \geq 72 Hours: Yes	Days Since Last Rain: One (2/24/04)	Name of receiving water: Darby Creek via Stoney Creek via Ridley Township System
Date: 2/25/04 Ti	Quantity of Last Rain: < 0.1 inches: > 0.1 inches	Name of receiving wa
Jamie H. Wenger	Quantity of Last Ra	Aunicipality: Rutledge Borough
Person:		Municipal

Rating (0-2)						
Describe land use of upstream drainage area.						
Flow Water Observed Color/Odor (Yes or no) (specify if floatables, algae or sediment present)		*				
Flow Observed (Yes or no)			#c			
Channel Flow Side Slopes* Observed (H:V) (Yes or no)						
Channel Bottom Width (feet)						
					-	
Depth of Channe flow in pipe Depth (feet)						
Pipe Diameter (inches)						
Time (00:00) am/pm						
Storm Drain? Yes/No Not						
Photo #						
Pipe Swale #	None					

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling,

blocked catch basins or drain)

H/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

NOTES:

Rutledge Borough Storm Sewer System is tied into Ridley Township's System, two outfalls on Stoney Creek outside of the Borough boundary convey storm water from within the Borough

Form O - Outfall Data

Days Since Last Rain: One (2/24/04) Time Since Last Rain was > 72 Hours: Yes_ Quantity of Last Rain: < 0.1 inches: > 0.1 inches Date: 2/25/04 Jamie H. Wenger Person:

Municipality: Rutledge Borough

Name of receiving water: Crum Creek

Rating (0-2)				
Describe land use of upstream drainage area.				
Flow Water Observed Color/Odor (Yes or no) (specify if floatables, algae or sediment present)				
Flow Observed (Yes or no)				
Channel Flow Side Slopes* Observed (H:V) (Yes or no)				
Channel Bottom Width (feet)				
Channel Depth				
Depth of flow in pipe (fect)				
Pipe Diameter (inches)				
Time (00:00) am/pm				
Storm 1 Drain? (Yes/No 6 Not sure				
Photo (#				
Pipe Swale #	None			

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling,

blocked catch basins or drain)

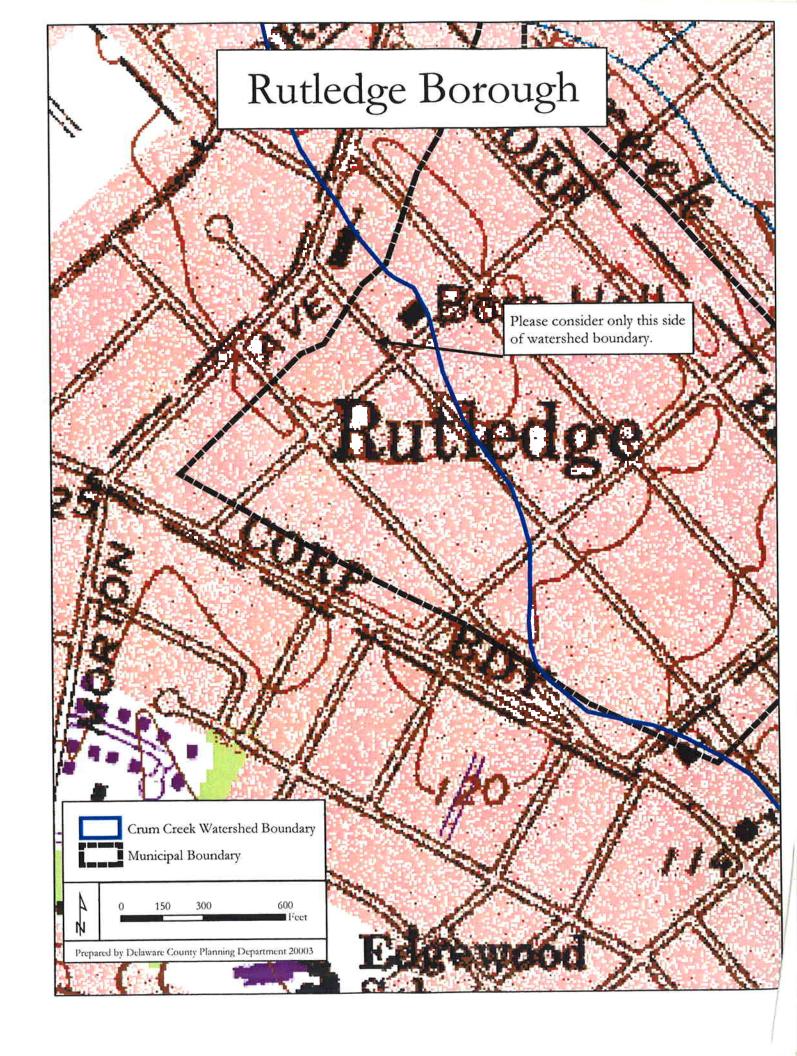
H/V = Horizontal to vertical ratio

*1;1 = Vertical - rectangular channel

NOTES:

Rutledge Borough does not have any storm sewers or appurtenances connecting to outfalls on Crum Creek or in the Watershed

Form O - Outfall Data.xls



Form O - Outfall Data

Fime Since Last Rain was > 72 Hours: Yes	Days Since Last Rain: One (2/24/04)	Name of receiving water: Crum Creek
Date: 2/25/04	< 0.1 inches: > 0.1 inches	Nam
Jamie H. Wenger	Quantity of Last Rain: <	Aunicipality: Rutledge Borough
Person:		Municip

		 	-		
(0-2)					
Describe land use of upstream drainage area.					
Flow Water (Yes or no) (specify if floatables, algae or sediment present)					
Flow Observed (Yes or no)					
Channel Flow Side Slopes* Observed (H:V) (Yes or no)					
Channel Bottom Width (feet)					
Channel Depth					
Depth of flow in pipe (feet)					
Pipe Diameter (inches)					
Time (00:00) am/pm					
Storm Drain? Yes/No Not					
Photo #					
Pipe B Swale #	None				

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling.

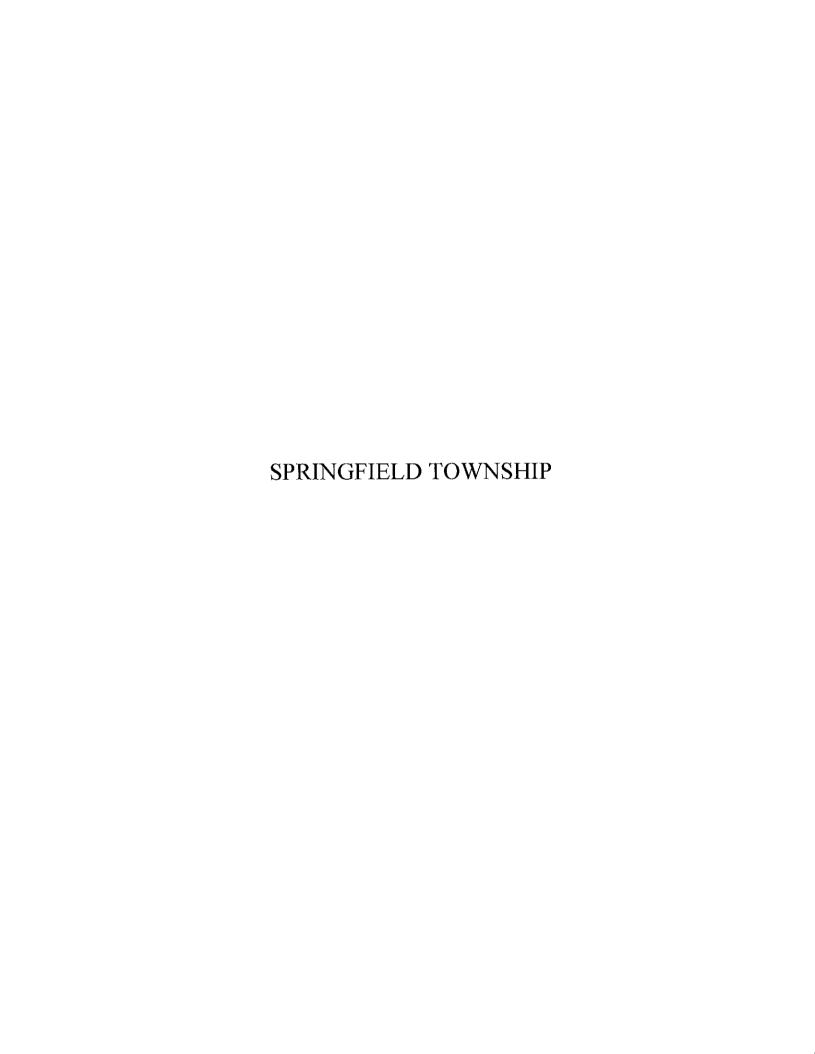
blocked catch basins or drain)

H/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

NOTES:

Rutledge Borough does not have any storm sewers or appurtenances connecting to outfalls on Crum Creek or in the Watershed





SPTW 0402 (SPTW 0500.04)

September 9, 2005

Ms. Karen Holm
Delaware County Planning Department
Government Center Building
201 West Front Street
Media, PA 19063

Re: Springfield Township, Delaware County

Crum Creek Watershed Act 167 Stormwater Management Plan - Phase II

Dear Ms. Holm:

In accordance with the Act 167 Stormwater Management Plan for the Crum Creek Watershed, please accept the attached municipal survey forms on behalf of Springfield Township, Delaware County.

Should you have any questions or comments, please feel free to contact the undersigned.

Very truly yours,

PENNONI ASSOCIATES INC.

oseph Mastronardo, P.E.

Project Engineer

cc:

Michael T. LeFevre, Township Manager, w/enclosure

CRUM CREEK WATERSHED ACT 167 STORMWATER MANAGEMENT PLAN

MUNICIPALITY QUESTIONNAIRE

Please fill out the following questionnaire and return it to Karen Holm at the Delaware County Planning Department, Court House and Government Center Building, 201 West Front St. Media, PA 19063 as soon as possible. If you have any questions or comments, or if you would like these forms in digital format, please call Karen at 610-891-5213 or e-mail her at https://doi.org/10.1001/journal.com/holm/modes/bull/.

PART I - GENERAL INFORMATION

Municipality:	Springfield Township			
Contact Person:	Michael T. LeFevre, Township Manager			
WPAC Designee:	Joseph A. Mastronardo, P.E.			
Title:	Township Consulting Engineer			
Address:	Pennoni Associates, Inc.			
	3001 Market Street, Philadelphia, PA 10104			
Phone:	(215) 222-3000 x3545			
Fax:	(215) 222-0598			
Person Completing fo	rm (if different from Contact Person):			
Name:	Joseph A. Mastronardo, P.E.			
Address:	Pennoni Associates, Inc.			
	3001 Market Street, Philadelphia, PA 10104			
Phone:	(215) 222-3000 x3545			
Fax:	(215) 222-0598			
E-mail:	jmastronardo@pennoni.com			

PART II - REGULATORY ACTIVITIES

A. Please indicate the regulations you currently use to manage development.

REGULATION	MUNICIPAL ORDINANCE	COUNTY ORDINANCE
Zoning Ordinance	X	
Subdivision/Land Development Ordinance	X	
Separate Stormwater Ordinance	X	
Separate Floodplain Ordinance		

B. Please indicate the agencies/individuals who review and approve land development plans and zoning variance/waiver requests.

10	LAND DEVELOP	MENT PLANS	ZONING VARIANCE	/WAIVER REQUESTS
ENTITY	REVIEW	APPROVE	REVIEW	APPROVE
Supervisors		X		X
Municipal				
Engineering				
Department				
Municipal				
Planning	X		X	
Department	(Codes Dept.)			
County Planning	X			
Department				
County				
Conservation	X			
District				
Zoning Hearing				X
Board				
Consulting	X		X	
Engineer				
Others (List				
Below				

C. Please provide **copies** of your zoning, subdivision/land development, and separate stormwater management and floodplain ordinances and your current zoning map when you return this questionnaire. Please list these documents below.

Chapter 123 – Subdivision and Land Development	
Chapter 143 - Zoning	
Ordinance No. 1429 – Stormwater Management	

PART III - MUNICIPAL AND LOCAL PLANNING ACTIVITIES

Please indicate below whether your community has approved the following plans and maps and the date of the most recent update.

			PLANNED WITHIN
ITEM	APPROVED/DATE	IN PROGRESS	NEXT YEAR
PA Act 537 Sewage Facilities Plan	APPROVED		
Comprehensive Land Use Plan	APPROVED/1983		
Existing Land Use Maps	APPROVED/1983		
Proposed Land Use Maps	APPROVED/1983		
Zoning Maps	APPROVED/1985		

PART IV - FLOOD INSURANCE PROGRAM AND COMPREHENSIVE LAND USE PLAN

Please indicate below whether your community participates in the National Flood Insurance Program:

ITEM	PARTICIPATES (Y/N)
Flood Hazard Boundary Map (FHBM)	YES
Participates in FEMA Emergency Program	YES
Participates in FEMA Regular Program	YES

PART V - EXISTING STORMWATER RELATED PROBLEMS AND STRUCTURES

Please complete the matrices on the following pages (Forms A and C-J) to describe any significant stormwater-related problems (Form A), Existing or Proposed Flood Control Projects (Forms C & D), Existing or Proposed Storm Water Control Facilities (Forms E and F), Existing or Proposed Stormwater Collection Systems (Forms G & H), Present and Projected Development in the Flood Hazard Area (Form I), and Water Quality Problem Areas (Form J) that you are aware of in your municipality.

What we would like to ask of you is that you complete as much of the attached data collection forms as possible. There is a different form for each item of information as summarized in the attached "FORM DESCRIPTION SUMMARY. The process would be as follows starting with the problem areas (Form A):

- Place the location of the problem area on the map as shown in the attached example map.
- Draw a box on the map with the problem area identifier starting with A-1 with an arrow leading from the problem area identifier to the problem area.
- Place an A-1 in the first column of FORM A.
- Put a check in each box in the A-1 column that represents the problems associated with that particular problem area.
- Repeat with the next problem area (A-2) and so on.

- Repeat for existing flood control projects (FORM C) placing a triangle on the maps and starting the labeling with C-1.
- Repeat for all forms.

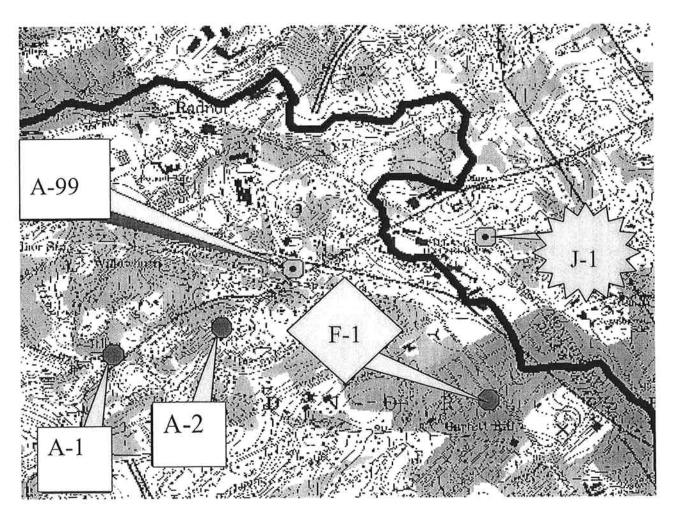
The sample map attached shows three problem areas (A99- A1 and A-2), one proposed flood control project (F-1) and one water quality problem (J1).

Use additional paper to provide <u>detailed</u> descriptions of your most serious problems and attach a map to show the location of the problem. Attach photographs, if available.

If you have any storm or combined sewers, please provide maps showing the collection system and overflow discharge locations and an estimate of the average annual discharge at each overflow point.

The more detail you provide, the better we will be able to evaluate the situation for your municipality. We appreciate your help.

Sample Location of Information from Data Collection Forms on the Municipal Map



													L	_
		STOR		R PROB					EET_	_1_	_ OF _	1_	_	_
WATERSHED			FOF	RM CO	MPLE.	TED B	Υ			ng Oı				
								See	Instru	ctions	On E	Back		_
Name:	Crum Creek		Name			Mastro								_
Municipality:	Springfield Twp		Telep	hone:		222-3	000	For C	County	y Use				
County:	Delaware Cty	17577777	Date:		7/18/2	2005								
MAP NO. *		A-	A-	A-	A-	A-	A-	Α-	A-	A-	A-	A-	A-	
Types of Storm V	Vater Problems												0.83	-
Flooding											4			
Accelerated Erosic	on											12		
Sedimentation												M		
Landslide													1	
Groundwater									•					
Water Pollution											1			
Other (Explain)									1					
Explanation Line N	lo. (On Back)									V	Y			
Cause (s)									`_\			10.00		
Storm Water Volur	me						1							
Storm Water Veloc	city													
Storm Water Direct	ction													
Water Obstruction							0]					
Other (Explain)														
Explanation Line N	lo. (On Back)						1							
Frequency		159												
Year Most Recent	Occurred													
Year First Known	Occurred													
Regularity			i ig	Κ, (\ X								
More Than 1 Year														
Less Than 1 Year														
Only During Floyd														
Duration (If Appli	cable)		1											
Less Than 1 Day														
1 Day + (Enter Da	ys)													
Property Damage	2										的情報			
Loss of Life/Vital S														
Private														
More Than One O	wner													
Types of Propertie											1			
Number of Proper														
Public (List Types														
Explanation Line														
Solutions	1	K		根侧板										
Suggested														
Explanation Line	No. (On Back)													
Formally Propose														T
Explanation Line		1												Г
	ID No. if found o	n anv	other fo	orm list	ing pro	posed	d facili	ities.						J

Spiral (SPR)

Municipal Stream Obstruction Data Flexords completed by																
Flectoride completed by	\bigcirc					FOR	M B - OE	STRUC	TION DA	TA COLLE	CTION					SHEET OF
Field work personnel:	Municip	al Stream Obstruction Dat	the state of			Records cor	npleted t					T= Amount	t of fill		Matedal	Inlet Conditions
Date	Watershed	E Crown Creek				Field work p	ersonnel			- 1		D= Dlamet HT = Helgt	ğ r		mary = Stone Masonry Structure CMP = Compated Metal Pipe	WW = Wingestill
Type Shape (*) Measurements Shape (*) Measurements Shape (*) Measurements Shape (*) Measurements March M	Municipali	Wounty: Springfield	Ď \	واعتياه	,	Date(s):	1/2/	2	22,			W = Width PW = Pler	Width		CPP = Compated Polyethylene Pipe BCCMP = Bituminous Coated CMP	SW a Sidewall
Country Address Of Ostitudios Caseady Nea. Type Shape (7) Measurements Caseady Nea. Cabead									Γ						HCP = Reinforced Concrete Pipe SP = Steel Pipe	
Countrie of Address Of Obstaction Capacity Nas. Part of Cabard Ca					Ţ	П		ape (✓)			Mea	surements				
Countrie (i.j. P.)	Map ID		Capacity	Nos.	Part of		Culve		idge		╫	+	╫	skew	MATERIAL / INLET CONDITION	NOTES
Control Cont	CPR 1	club R d	6.6				7	_		Н	H	\mathbb{H}	Н	20%	(M) / AW	
	5007	M					>	1		5//	1	1 100	1	Ob	A D Com	
		Charles With hes will		15	1		1	1			9	1	1	00	Carl Carlotter	Thought were re-
	I c	8 1001 17		<			1	-	1	17		1	,	000	1200 1400 500	
Control Cont	100	23 Kerr 6) 420 B		-	Y		1	\vdash	+		3	7)	0.6	2000	No.
		20 Sidon for the start of	OTHE		7				. V		+	RA	- 5	10	1 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
Q	3778	RT 42.0 Culment		South Section			X					1 1 1 7	-	Ob	Section A Design	
10 11 12 13 14 15 15 15 15 15 15 15	1	A HEO SIAMON K			>				7	1	1	7 19		05	Contracto	
	SPIKIL	1 1 0 CURRY		_			/			d	7	0	1	00	Contrate House	
13 St Tree will charter 13 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	SACRE	KTTTOS SAMUE	The second second		7				>		,	2	i	06	Comment	
13 18 17 2 2 10 2 10 2 10 2 10 2 10 2 10 2 10	145	HA Will Collect					7			7	1	4)	010	Comments / may was	
He Thompson Carl Manager 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1	SA 470 S			7		+	1	>	9 :	1	1	+	05	1,0000	34000 (5)
# 15 C T	- >1	Thompson R			7		-		300		-	- P	1	200	CONT OF PE	
R. M. S. S. C. Garden M. S. C. C. M. S. C. C. M. S. C. C. M. S. C. C. M. S. C. C. M. S. C. C. M. S. C. C. C. M. S. C. C. C. C. C. C. C. C. C. C. C. C. C.	201 15	C Manager K. D.		1	7		+		1	2	1	000		CIC	The first of the f	
	000	SO CY			\ \											A) to the constraint of the co
REST TO SELECTION OF THE PROPERTY OF THE PROPE	S SON	# Che P. n 102			7				7	-	7,	5	3	T.	・また、う	
P. O. B. C. C. C. C. C. C. C. C. C. C. C. C. C.	01 365	Parit Now Turk Office	Contract of the	Section 2		Service Services			2	2 6 3	7	200	1	60.00	Court MAY HOUSE	College And and College College
The rest lives the state of the rest lives the state of the rest lives the state of the rest lives the rest liv	Spf 71	PACK SHADE DONE COLUM			/											N U Obs
	1	Perk Rd roll					?			A.A.	2	4)	05	KCP	
	- 1				1)						No cá
	27/100	- 20				No. of Concession, Name of Street, or other Persons and Street, or other P			-					10000		Bridge stone New Ore acres
	SA PROPE	一大のかっている」					H.									No 55
							+	+				+	1	-		
							+	+	+		+	+	+	-		
							1	-		+	+	+	-	-		
								L		-	-	-				
									1		+	-	-			
							1	+	#	+	+	+	+	-		
								+	‡	+	+	+	+	-		
											$\frac{1}{2}$	-	-	-		

				FXISTING F	LOOD CON	NTROL PRO	JECT FORM C.	SHEET	1	OF	1
VATERSHE	D	FORM CO	MPLETED BY				TYPICAL TYPES OF FLOC	DD CONTROL PROJECTS	5		
Name:	Crum Creek Springfield Township	Name: Telephone: Date:	Joseph Mast (215) 222-30 7/18/2005	000		Channel Ex Channel Re Rock Ripra		Levee Gabions Pipe Channel	Dams Floodw Concre	all te Lining	5.67 .
For County U	Jse:										
Map ID No.	Type of Flood Control	Project	Year Constr Built	Expected Life Yrs.	Design Frequency Yrs.	Flood Discharge C.F.S. (if known)	Own	ner Name, Address, and Pl	hone		
C-											
C-							LICA	3LE			
C-			N	71	A	PP	LIVA				
C-											
C-											

				PROPOSED	FLOOD CO	ONTROL PI	ROJECT FO	DRM D.			SHEET OF
WATERSHE	D	FORM COM	MPLETED BY		1 2000	0111110=	TYPICAL T	YPES OF F	LOOD CO	NTROL PRO	DJECTS
Name: Municipality: County:	Crum Creek Springfield Township Delaware County		Joseph Mastr (215) 222-300 7/18/2005				xcavation / \ ealignment ap	Widening		Levee Gabions Pipe Chann	Dams Floodwall sel Concrete Lining
For County U	Jse:										
Map ID No.	Type of Flood Control Project	Stud YES Prelim.	ly Phase Beg Final	un N0	Year Constr. Planned	Projected Compltn. Date	Expected Life Yrs.	Design Frequency Yrs.	Flood Discharge C.F.S.	Map ID No. Form A*	Owner Name, Address, and Phone
D-											
D-						a fi	11	24	BL	E	
D-			N	OT	A	77				E	
D-											
D-											

^{*} Enter the storm water problem area's Map ID No., if the proposed project will solve or reduce any / all of an identified drainage problem.

				EXISTING ST	ORM WATER CONTR	OL FACILITIES FOR	RM E	SHEET	1	OF_	1
WATERSHE	D	FORM COM			Storm W	ater Control Facility	DEFINITION			1.4.	
Name:		Name:			A	natural / man-made	device or stru	cture specifically de	signed and	d / or	1
Municipality:		Telephone:			υ	tilized to reduce the r	ate and / or vo	olume of storm water	r runoff		
County:		Date:			fi	om a site or sites.					
		<u> </u>				<i>i</i>					
For County U	Jse:										
Map ID No.	Type of Storm Wat	er	Year		Contact Person				Comme	nts	
and the same and and	Control Facility		Built		Name, Address and	Phone					
E-1	Detention Basin			Frank Pappa			Li	incoln Ave. and Milli	son Dr.		
E-2	Detention Basin			Frank Pappa			С	apie Polk Dr. and M	lillison Dr.		
E-3	Detention Basin			Frank Pappa			F	armhouse Cr. and S	Swarthmor	e Ave.	
E-											
E-											
E-					-						
E-											
E-											
		TYPICAL TY	DEC OF C	TORM WATER	R CONTROL FACILITI	=8					
Detention / F	Retention Basin	TYPICAL IT	PES OF S	TORIVI WATER	CONTROLLACIENT	Roof-Top	Storage				
Natural Pond	d or Wetland					Semi-Perv	vious Paving				
Parking Lot I	Pondling						Device (Seep Basin or Unde	age / erground Tank)			

	-				PROPOSED	ELOOD C	ONTROL DI	ROJECT FO	ORM F			SHEET	1	OF	1
						FLOOD C	JNTROLFI	COSLOTT	JI COURT !	DEFINITIO	N	-	1		
WATERSHE	D		FORM CO	MPLETED BY			01	Matan Cont	al Facility	DEFINITIO	1				
							Storm	Water Cont	OI Facility	device or st	ruoturo coo	cifically de	signed and	1 / or	
Name:	Crum Creel		Name:	Joseph Mastr				A natural /	man-made	rate and / or	ructure spe	torm water	r rupoff	17 01	
Municipality:	Springfield '	Township	Telephone:	(215) 222-300	00					rate and / or	volume of s	Storm wate	Turion		
County:	Delaware C	county	Date:	7/18/2005				from a site	or sites.						
For County (Jse:														
Map ID No.	Type	of Storm Wat	er	Proposed Con	str. Dates	Map No.	С	ontact Pers	on				Commer	nts	
viap ID IVO.		ntrol Facility		Start	End	Form A*	Name,	Address an	d Phone						
F-1	Subsurface			Jul-2005	Jul-2006		Springfield				Willow Bay				
1	Infiltration E		-	301 2000	- Cui 2000		Michael Le	Fevre, Tow	nship Man	ager	Route 320	& Beatty F	Road		
<u> </u>	The second secon	Detention /	-	Constructed,			Springfield			T		Chase Su			
F-2			-	on saintenance and a service a	ination			Fevre, Tow	nshin Man	ager	Beatty Ro				
	Infiltration E		-	Pending Ded				Township	TIOTHP WIGH	ugu.		Chase Su			
F-3		Detention /	1	Constructed,			Mishael	Fevre, Tow	nchin Man	ager	Beatty Ro				
	Infiltration E	Basin		Pending Ded	ication		Iviichaei Le	revie, IOW	monip wan	agei	Deally 110	T COM E			
F															
													_		
F-											-	-	-		
											ļ	-	_	-	
F-															
F-	1														
F-	+														
[1]-															
* F4 41	1	reblem erec	o Mon ID No	, if the propos	ed project w	ill solve or r	educe any	all of an id	entified dra	inage proble	em.				
Enter the	storm water p	problem area	S Map ID NO	YPES OF STO	TEM MATE		L FACILITI	FS	1	3-1					
			I TPICAL I	17E3 UF 310	DIVINI ANY I ET	CONTINU	TAOILITI								
			-					y	Roof-Top	Storage					
	Retention Ba							-		vious Pavin	n				
	d or Wetland						-	-	Infiltration	Device (Se	enage / Re	charge Ras	sin or Unde	eraround 1	ank)
Parking Lot	Pondling								minimation	Device (36	epage / Ne	onarge ba	Jiii Oi Oila	J. 31 5 4 1 1	

														I		Т
					EXISTING	FLOOD CO	TROL PRO	DJECT FOR	RM G.			SHEET		OF		
WATER	SHED		FORM CO	MPLETED	BY				INSTRUCTIO	NS						
									opriate map. I							
	Crum Cre		Name:	Joseph Ma					nown, outline t							
	ality: Spring		Telephone:	(215) 222-	3000	information	on constru	iction is ava	ilable. Use a se	eparate forr	n for each s	ystem. Iden	tify the poi	nts within a		
County:	Delaware		Date:	8/29/2005					2,G-3). Start th							
								s one syste	m, so G-23 beg	gins the nex	kt. See Sam	ole Diagram	s & Form			
	ap I.D.	Sys	stem's Elemen	ts (x)		Measure					Design			Name o		
	No.				Pipe		hannel / Sw		Material	Year	Data	Contact		Ownersh		
From	То	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name an	d Phone	Maintenance F	Responsibility	-
G-	G-															
G-	G-															
G-	G-															
G-	G-									BE						
G-	G-					TA			MA			V				
G-	G-		C				7									
G-	G-															
3 -	G-															
3 -	G-															
G	G-															
G-	G-															
See m	neasureme	nt key on rev	erse side.													

Crum Creek Stormsewers

FROM (NEW)	ID TO (NEW)	FROM (OLD) TO (OLD)	TO (OLD)	CONST DATE PIPE	PIPE	LENGTH	BASIN
	1297	22-23C 4' GRATE	22-22C 4' GRATE	1986	15" CMP/PVT	118'	CRUM CREEK
	1270	23-79C M.H.	23-80C M.H.	1970	18" RCP	17'	CRUM CREEK
	1271	23-84C TYPE M IN	23-83C M.H.	1992	18" RCP/PVT	160'	CRUM CREEK
	1272	23-81C TRENCH B	23-83C M.H.	1992	18" CMP/PVT	166'	CRUM CREEK
	1273	23-83C M.H.	23-82C TYPE M IN 1992	1992	18" RCP/PVT	24'	CRUM CREEK
	1274	23-82C TYPE M IN 23-80C M.H.	23-80C M.H.	1992	18" RCP/PVT	,6	CRUM CREEK
	1577	19-136C M.H.	19-137C CONC. H	1996	15" CORR. I. PIPE	46'	CRUM CREEK
	1276	23-86C INV. 48" C	23-87C INV. 48" C	1987	48" CMP DET. TA	52'	CRUM CREEK
	1253	23-58C 4' SPEC.	23-59C 4' SPEC.	1972	18" RCP/PVT	41,	CRUM CREEK
	1300	22-26C 4' GRATE	22-27C 4' GRATE	1986	15" CMP/PVT	192'	CRUM CREEK
	1572	18-1C 2-4' SPEC.	19-132C M.H.	1996	18" CORR. I. PIPE	290'	CRUM CREEK
	1573	19-132C M.H.	19-133C M.H. Uun	1996	18" CORR. I. PIPE	225'	CRUM CREEK
	1574	19-134C 4' SPEC.	Uunderg'd Storage S 1996	1996	15" CORR. I. PIPE	24'	CRUM CREEK
	1575	19-135C 4' SPEC.	Uunderg'd Storage S 1996	1996	15" CORR. I. PIPE	10'	CRUM CREEK
	1858	18-5 Type C	18-4 Type C	1996	30" ACMP Pvt	48'	CRUM CREEK
	1275	23-85C TYPE C IN	23-86C INV. 48" C	1987	12" CMP/PVT	15'	CRUM CREEK
	1241	23-48C 6' GRATE	23-47C 6' GRATE	1972	24" RCP/PVT	216'	CRUM CREEK
	1217	23-19C TYPE C	23-20C CONC HD	1985	18" RCP/PVT	45'	CRUM CREEK
	1220	23-29C 6' GRATE	23-23C 6' GRATE	1964	18" RCP/PVT	45'	CRUM CREEK

ID TO (NEW)		(OLD)	FROM (OLD) TO (OLD)	CONST DATE PIPE	PIPE	LENGTH	BASIN
1222	23-27C (23-27C 6' GRATE	23-28C 6' GRATE	1970	12" RCP/PVT	15'	CRUM CREEK
1224	23-30C ²	23-30C 4' GRATE	23-31C TYPE M	1970	12" RCP/PVT	265'	CRUM CREEK
1225	23-32C	23-32C TYPE M.	23-31C TYPE M 4"	1994	36" CMP/PVT.	120'	CRUM CREEK
1226	23-31C	23-31C TYPE M	23-24C 6' GRATE	1970	PVT	15'	CRUM CREEK
1269	23-78C M.H.	M.H.	23-79C M.H.	1970	15" RCP/PVT	212'	CRUM CREEK
1229	23-34C 4' SPEC.	4' SPEC.	23-35C 4' GRATE	1991	15" CORR. I.P./PV	50,	CRUM CREEK
1268	23-77C	23-77C 4' GRATE	23-78C M.H.	1970	15" RCP/PVT	20'	CRUM CREEK
1242	23-50C	23-50C 6' GRATE	23-49C 6' GRATE	1972	18" RCP/PVT	215'	CRUM CREEK
1243	23-49C	23-49C 6' GRATE	23-47C 6' GRATE	1972	18" RCP/PVT	200'	CRUM CREEK
1244	23-47C	23-47C 6' GRATE	23-46C 6' GRATE	1972	36" RCP/PVT	216'	CRUM CREEK
1251	23-56C	23-56C 4' SPEC.	23-57C 4' SPEC.	1972	18" RCP/PVT	14'	CRUM CREEK
1252	23-57C	23-57C 4' SPEC.	23-59C 4' SPEC.	1972	18" RCP/PVT	18'	CRUM CREEK
1578	19-138C	19-138C 4' GRATE	19-139C 4' SPEC.	1984	72" Соп. I. P. Unde	140'	CRUM CREEK
1228	23-33C	23-33C CONC. TR	23-25C 6' GRATE	1991	15" CORR. LP./PV	10'	CRUM CREEK
1601	BLDG. UD.	Œ)	19-164 M.H.	1980	12" RCP PVT.	120'	CRUM CREEK
1545	19-1050	7 4'x2' GRA	19-105C 4'x2' GRA 19-106C M.H.	1955	12" TCP PVT.	112'	CRUM CREEK
1546	19-106C M.H.	. M.H.	19-107C M.H.	1955	15" TCP PVT.	284'	CRUM CREEK
1547	19-107C M.H.	. M.H.	19-104C 4' PDH SP	1955	15" TCP PVT.	250'	CRUM CREEK
1555	19-1150	19-115C 4' GRATE	19-117C 4' GRATE	1958	18" RC UD	196'	CRUM CREEK
1598	19-160C M.H.	3 M.H.	19-162C GRATE I	1963	12" RCP PVT.	21'	CRUM CREEK
1576	19-136C M.H.	C M.H.	19-111C 4' SPEC.	1996	18" CORR. I. PIPE	73'	CRUM CREEK

ID TO (NEW)	FROM (OLD) TO (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
1600	24-3C M.H.	19-160C M.H.	1980	12" RCP PVT.	216'	CRUM CREEK
1542	19-101C M.H.	19-102C 12"x24" G 1955	1955	15" TCP PVT.	44'	CRUM CREEK
1602	BLDG. UD.	19-166 M.H.	1980	8" RCP PVT.		CRUM CREEK
1603	19-166C M.H.	19-165C M.H.	1980	8" RCP PVT.	25'	CRUM CREEK
1604	19-165 M.H.	19-164C M.H.	1980	8" RCP PVT.	54'	CRUM CREEK
1605	19-167C TYPE C	19-169C M.H.	1996	15" ACMP PVT.	18'	CRUM CREEK
1606	19-168C TYPE C	72" ACMP	1996	15" ACMP PVT.	15'	CRUM CREEK
1857	23-4 Type C	18-5 Type C	1996	30" ACMP Pvt	43'	CRUM CREEK
1599	19-162C GRATE I	19-163C Junct. Wit 1963	1963	30" RCP PVT.	126'	CRUM CREEK
1596	19-158C M.H.	19-161C Junct. Wit	1980	15" RCP PVT.	118'	CRUM CREEK
1579	19-139C 4' SPEC.	19-140C 4' GRATE	1984	12" CORR. IP PVT.	125'	CRUM CREEK
1582	19-142C 5' SQ GR	JUNCT. @ 24" RC	1963	18" RCP PVT.	110'	CRUM CREEK
1584	19-146C CO	19-145C 4' SQ GR	1963	12" RCP PVT.	260'	CRUM CREEK
1587	19-149C 4' SQ GR	19-150C JUNCT @	1963	24" RCP PVT.	75'	CRUM CREEK
1592	19-156C GRATE I	19-157C M.H.	1980	12" CIP PVT.	100'	CRUM CREEK
1593	BLDG UD	19-159 M.H.	1980	10" CIP PVT.		CRUM CREEK
1544	19-103C 12"x24" G	19-103C 12"x24" G 19-104C 4' PDH SP	1955	PVT.	24'	CRUM CREEK
1595	19-157C M.H.	19-158C M.H.	1980	12" CIP PVT.	47,	CRUM CREEK
1543	19-102C 12"x24" G	19-103C 12"x24" G	1955	PVT.	208'	CRUM CREEK
1597	24-3C M.H.	19-160C M.H.	1980	12" RCP PVT.	214'	CRUM CREEK
1538	19-97C 4'x2' GRAT	19-97C 4x2' GRAT 19-98C 4x2' GRAT 1956	1956	12" TCP PVT.	233'	CRUM CREEK

,	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
	1539	19-98C 4'x2' GRAT	19-98C 4'x2' GRAT 19-99C 4'x2' GRAT 1955	1955	15" TCP PVT.	206'	CRUM CREEK
	1540	19-99C 4'x2' GRAT 19-100C M.H.	19-100C M.H.	1955	15" TCP PVT.	,56	CRUM CREEK
	1541	19-100C M.H.	19-101C M.H.	1955	15" TCP PVT.	178'	CRUM CREEK
	1214	23-15C TYPE M	23-16C TYPE C	1985	18" RCP/PVT	40,	CRUM CREEK
	1594	19-159C M.H.	19-157C M.H.	1980	10" CIP PVT.	55'	CRUM CREEK
	296	7-32 C 4' TYPE M.	7-34 C 4' TYPE M.	1990	24" or 30" RCP	225'	CRUM CREEK
	289	7-25 C 4' TYPE M.	7-27 C 4' TYPE M.	1990	18" or 21" RCP	350'	CRUM CREEK
	290	7-28 C 4' TYPE M.	7-27 C 4' TYPE M.	1990	18" RCP	74'	CRUM CREEK
	291	7-27 C 4' TYPE M.	7-29 C 4' TYPE M.	1990	21" or 27" RCP	150'	CRUM CREEK
	292	7-30 C 4' TYPE S.	7-31 C 4' TYPE M.	1990	18" RCP	40,	CRUM CREEK
	293	7-31 C 4' TYPE M.	7-29 C 4' TYPE M.	1990	18" RCP	,09	CRUM CREEK
	1216	23-17C TYPE C	23-18C TYPE C	1985	18" RCP/PVT	48,	CRUM CREEK
	295	7-33 C 4' TYPE S.	7-32 C 4' TYPE M.	1990	18" RCP	,09	CRUM CREEK
	1043	27-15C 4' GRATE	27-14C 4' TYPE C	1990	15" RCP/PVT	20,	CRUM CREEK
	297	7-35 C 4' TYPE M.	7-34 C 4' TYPE M.	1990	18" RCP	,09	CRUM CREEK
	298	7-36 C M.H.	7-37 C 4' TYPE M.	1990	18" RCP	220'	CRUM CREEK
	299	7-37 C 4' TYPE M.	7-38 C M.H.	1990	24" RCP	260'	CRUM CREEK
	300	7-38 C M.H.	7-39 C CONC HD	1990	24" RCP	100'	CRUM CREEK
	301	7-40 C CONC HD	7-41 C M.H.	0661	36" RCP	375'	CRUM CREEK
	302	7-41 C M.H.	7-42 C CONC HD	1990	36" RCP	16'	CRUM CREEK
	294	7-29 C 4' TYPE M.	7-29 C 4' TYPE M. 7-32 C 4' TYPE M.	1990	21" or 27" RCP	216'	CRUM CREEK,

LINOTH (OLD)	FROM (OLD) 10 (OLD)	CONST DATE PIPE	PIPE	LENGTH	BASIN
19-45C TRENCH D		9961			CRUM CREEK
19-34C 4' GRATE	19-35C 4' GRATE	1966	10" RCP PVT.		CRUM CREEK
19-35C 4' GRATE	19-36C 4' GRATE	1966	12" RCP PVT.		CRUM CREEK
19-36C 4' GRATE	19-14C 4' GRATE	1966	12" RCP PVT.		CRUM CREEK
19-43C 4' GRATE	19-42C 4' GRATE	1966	10" RCP PVT.		CRUM CREEK
19-42C 4' GRATE	19-38C 4' GRATE	1966	12" RCP		CRUM CREEK
19-38C 4' GRATE	19-37C 4' GRATE	1966	12" RCP		CRUM CREEK
7-26 C 4' TYPE M.	7-25 C 4' TYPE M.	1990	18" RCP	,09	CRUM CREEK
19-44C TRENCH D	12" RCP	1966	5" IRON		CRUM CREEK
7-24 C 4' TYPE M.	7-25 C 4' TYPE M.	1990	18" RCP	350'	CRUM CREEK
27-8C 4' SPEC.		1961	18" RC UD		CRUM CREEK
27-9C 4' GRATE	27-10C 4' GRATE	1965	12" CMP/PVT	192'	CRUM CREEK
27-10C 4' GRATE	27-11C 4' GRATE	1965	18" CMP/PVT	174'	CRUM CREEK
27-12C 4' GRATE	27-11C 4' GRATE	1965	12" CMP/PVT	216'	CRUM CREEK
27-11C 4' GRATE	27-15C 4' GRATE	1965	24" CMP/PVT	296'	CRUM CREEK
24-4C 5'x5' GRATE	24-5C 5'x5' GRATE	1963	18" CMP/PVT	316'	CRUM CREEK
19-37C 4' GRATE	19-20C 4' GRATE	1966	12" RCP		CRUM CREEK
23-3C TYPE C	23-4C TYPE C	1995	24" ACMP/PVT	203'	CRUM CREEK
60" HOLDING TA	8-182 C Modified T	1995	60 CMP	20"	CRUM CREEK
23-14C 4' SPEC.	24-111C 4' SPEC.	1985	21" RCP	48'	CRUM CREEK
24-109C 4' SPEC.	24-110C 4' GRATE	1985	30" RCP	48'	CRUM CREEK
	19-45C TRENCH D 19-34C 4' GRATE 19-35C 4' GRATE 19-35C 4' GRATE 19-42C 4' GRATE 19-42C 4' GRATE 19-42C 4' GRATE 19-42C 4' GRATE 19-42C 4' GRATE 27-24 C 4' TYPE M. 27-8C 4' TYPE M. 27-8C 4' GRATE 27-10C 4' GRATE 27-11C 4' GRATE		д н д	1966 1966 1966 1966 1966 1966 1966 1966	1966 10" RCP PVT. 1966 12" RCP PVT. 1966 12" RCP PVT. 1966 12" RCP PVT. 1966 12" RCP PVT. 1966 12" RCP PVT. 1966 12" RCP PVT. 1966 12" RCP PVT. 1966 12" RCP PVT. 1966 12" RCP PVT. 1966 12" RCP PVT. 1967 12" RCP PVT. 1968 12" RCP PVT. 1968 12" RCP PVT. 1968 12" RCP PVT. 1969 12" RCP PVT. 1969 12" RCP PVT. 1969 12" RCP PVT. 1969 12" RCP PVT. 1969 12" RCP PVT. 1969 12" RCP PVT. 1969 12" RCP PVT. 1969 12" RCP PVT. 1969 12" RCP PVT. 1969 12" RCP PVT. 1969 12" RCP PVT. 1969 1969 12" RCP PVT. 1969 1960 12" RCP PVT. 19

ID TO (NEW)	FROM (OLD) TO (OLD)	TO (OLD)	CONST DATE PIPE	PIPE	LENGTH	BASIN
1196	23-18C 6' GRATE	24-116C GRATE	1985	18" RCP PVT	120'	CRUM CREEK
1198	23-18C TYPE C	24-116C 6' GRATE	1985	18" RCP/PVT	120'	CRUM CREEK
1199	18-8 C M.H.	23-2C TYPE C	1995	18" ACMP/PVT	245'	CRUM CREEK
1073		26-1C TYPE C INL	1993	12" CIP (ROOF DR	470'	CRUM CREEK
1201	23-2C TYPE C	23-3C TYPE C	1995	21" ACMP/PVT	30'	CRUM CREEK
1302	22-28C 4' GRATE	22-29C CONC. RA 1986	1986	24" CMP/PVT	27'	CRUM CREEK
1205	23-6C M.H.	23-8C M.H.	1958	18" RCP	112'	CRUM CREEK
1208	18-6C TYPE C	23-8C M.H.	1995	18" ACMP	12'	CRUM CREEK
1211	23-11C TYPE C	23-12C TYPE C	1985	15" RCP/PVT	48,	CRUM CREEK
1212	23-12C TYPE C	23-13C TYPE C	1985	18" RCP/PVT	,59	CRUM CREEK
1213	23-13C TYPE C	23-14C TYPE C	1985	21" RCP/PVT	48'	CRUM CREEK
1206	18-3C GRATE M.H 23-8C M.H.	23-8C M.H.	1995	18" HCMP/PVT	55'	CRUM CREEK
1200	23-1C TYPE C	23-2C TYPE C	1995	15" ACMP/PVT	63'	CRUM CREEK
1119	24-30C YARD DR	24-31C YARD DR	1951	10" TCP	,86	CRUM CREEK
1215	23-16C TYPE C	23-17C TYPE C	1985	18" RCP/PVT	,09	CRUM CREEK
1100	24-5C 5'x5' GRATE	24-6C JUNCT 8'x5'	1963	24" RCP/PVT.		CRUM CREEK
1101	24-8C 5'x5' GRATE	24-9C JUNCT 8'x5'	1980			CRUM CREEK
1113	24-19C TYPE C IN	24-20C TYPE C IN	1987	36" CORR. I PERF.	215'	CRUM CREEK
1114	24-21C M.H.	24-22C M.H.	1987	8"PVC PERF. PIPE	250'	CRUM CREEK
1116	24-27C YARD DR	24-28C YARD DR	1951	8" TCP	,08	CRUM CREEK
1151	24-56C 4' SPEC.	24-57C 6' SPEC.	1980	36" RCP	78'	CRUM CREEK

ID	TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE PIPE	PIPE	LENGTH	BASIN
1118	8	24-29C YARD DR	24-30C YARD DR	1951	8" TCP	,86	CRUM CREEK
1098	∞	19-164C M.H.	24-3C M.H.	1980	12" RCP/PVT	100'	CRUM CREEK
1120	0	24-31C YARD DR	24-32C YARD DR	1951	10" TCP	105'	CRUM CREEK
1121	t-ne	24-32C YARD DR	24-33C YARD DR	1951	12" TCP	105'	CRUM CREEK
1122	2	24-33C YARD DR	24-26C 2'x3' GRAT 1951	1951	15" RCP	297'	CRUM CREEK
1123	м	24-26C 2'x3' GRAT	24-24C 8'x4' CONC	1951	15" RCP	42'	CRUM CREEK
1133	60	24-46C 4' PDH SPE	24-47C 6' GRATE	1957	27" RCP	50,	CRUM CREEK
1301	_	22-27C 4' GRATE	22-28C 4' GRATE	1986	21" CMP/PVT	132'	CRUM CREEK
1117	7	24-28C YARD DR	24-29C YARD DR	1951	8" TCP	83,	CRUM CREEK
1870	0.	18-12 6' Grate	18-18 MH Junct. Bo 1972	1972	30" RCP Pvt	,96	CRUM CREEK
1863	13	18-10 6' Grate	18-11 6' Grate	1972	18" RCP Pvt	264'	CRUM CREEK
1882	12	18-30 6' Grate	18-21 6' Grate	1972	15" RCP Pvt	106'	CRUM CREEK
1881	11	BLDG	18-30 6' Grate	1972	15" RCP Pvt		CRUM CREEK
1880	0;	18-20 6' Grate	18-21 6' Grate	1972	18" RCP Pvt		CRUM CREEK
1879	61	18-23 4' Grate & Tr 18-22 6' Grate	18-22 6' Grate	1972	18" RCP Pvt	112'	CRUM CREEK
1876	92	18-26 6' Grate	18-25 4' Spec	1972	18" RCP Pvt	58,	CRUM CREEK
1883	33	18-21 6' Grate	18-22 6' Grate	1972	18" RCP Pvt		CRUM CREEK
1984	34	18-145 Precast Outl	18-145 Precast Outl 18-146 Conc HDW	1997	18" RCP Pvt	75'	CRUM CREEK
1885	35	23-80 MH	18-31 MH	1970	18" RCP Pvt	294'	CRUM CREEK
1869	59	18-17 6' Grate	18-12 6' Grate	1972	18" RCP Pvt	170'	CRUM CREEK
1868	88	18-14 MH	18-12 6' Grate	1972	RCP Pvt	236'	CRUM CREEK

	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
121	1867	18-16 MH	18-14 MH	1972	18" RCP Pvt	196'	CRUM CREEK
18	1866	18-15 MH	18-14 MH	1972	18" RCP Pvt	298'	CRUM CREEK
113	1865	18-13 6' Grate	18-12 6' Grate	1972	18" RCP Pvt	168'	CRUM CREEK
1	1864	18-11 6' Grate	18-12 6' Grate	1972	18" RCP Pvt	340'	CRUM CREEK
17	1873	18-29 4' Spec	18-27 6' Grate	1972	18" RCP Pvt	295'	CRUM CREEK
1	1976	18-134 4' Type C	18-135 4' Type C	1995	18" CMP Pvt	95'	CRUM CREEK
17	1983	18-144 Trench Drai	18-144 Trench Drai 18-147 Double Type 1997	1997	15" ADS Pvt	40,	CRUM CREEK
1;	1982	18-142 4' Type C	18-143 Conc HDW	1997	18" ADS Pvt	45'	CRUM CREEK
13	1925	18-65 MH	18-70 Stone HDW	1963	48" RCP	24'	CRUM CREEK
1	1981	18-140 4' Type C	18-141 4' Type C	1995	15" CMP Pvt	170'	CRUM CREEK
Ī	1980	18-139 4' Type M	18-140 4' Type C	1995	15" CMP Pvt	-88	CRUM CREEK
Ē	1979	18-138 4' Type C	18-139 4' Type M	1995	15" CMP Pvt	112'	CRUM CREEK
-	1860	18-4 Type C	18-2 MH	1996	30" ACMP Pvt	75'	CRUM CREEK
	1977	18-135 4' Type C	18-136 4' Type C	1995	18" CMP Pvt	65'	CRUM CREEK
-	1871	18-18 MH Junct. Bo	18-18 MH Junct. Bo 18-19 Disch to Cree 1972	1972	RCP Pvt		CRUM CREEK
-	1975	18-133 4' Type C	18-134 4' Type C	5661	15" CMP Pvt	25'	CRUM CREEK
1	1985	18-149 MH	18-147 Double Type 1997	1997	3-48" ACP Det. Sys. 80'	. 80'	CRUM CREEK
1	1974	18-132 4' Type C	18-133 4' Type C	1995	15" CMP Pvt	72'	CRUM CREEK
1	1973	18-131 4' Type C	18-132 4' Type C	1995	15" CMP Pvt	62'	CRUM CREEK
1	1898	18-46 MH	18-45 Stone HDW	1949	24" RCP	120'	CRUM CREEK
1	1886	23-87 INV 48" CM 18-31 MH	18-31 MH	1987	12" CMP Pvt	,09	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
	8/61	18-136 4' Type C	18-137 Conc HDW	1995	18" CMP Pvt	53'	CRUM CREEK
	1861	18-2 MH	18-3 MH	9661	72" ACMP Pvt	43'	CRUM CREEK
13-10C 4' TYPE M	1694 13-11C 4' TYPE M	12-73 4' TYPE M	12-70 4' TYPE M	1990	27" or 36" RCP	316'	CRUM CREEK
13-11C 4' TYPE M	1695 13-12C 4' TYPE M	12-70 4' TYPE M	12-69 4' TYPE M	1990	30" RCP	.29	CRUM CREEK
13-12C 4' TYPE M	1697 14-7C 4' TYPE M	12-69 4' TYPE M	12-66 4' TYPE M	1990	30" or 42" RCP	300'	CRUM CREEK
13-13C 4' TYPE S	1698 14-7C 4' TYPE M	12-65 4' TYPE S	12-66 4' TYPE M	1990	18" RCP	56'	CRUM CREEK
13-14C 4' TYPE S	1701 14-9C 4' TYPE M	12-62 4' TYPE S	12-63 4' TYPE M	1990	18" RCP	58,	CRUM CREEK
13-15C 4' TYPE S	1704 14-10C 4' TYPE M	12-59 4' TYPE S	12-58 4' TYPE M	1990	18" RCP	53'	CRUM CREEK
13-16C 4' TYPE M	1706 14-11C 4' TYPE M	12-55 4' TYPE M	12-88 4' TYPE M	1990	18" RCP	54'	CRUM CREEK
13-17C MH	1711 13-18C MH	12-90 MH	12-87 MH	1990	24" CP	150'	CRUM CREEK
13-18C MH	1712 13-19C CONC HD	12-87 MH	12-86 CONC HDW	1990	36" CiP	,09	CRUM CREEK
13-1C 4' TYPE S	1682 13-2C 4' TYPE M	12-85 4' TYPE S	12-84 4' TYPE M	1990	18" RCP	56'	CRUM CREEK
13-20C 4' TYPE C	1679 13-23C 4' TYPE C	12-52 4' TYPE C	12-54 4' TYPE C	1986	18" ACP	,129	CRUM CREEK
13-21C 4' TYPE C	1677 13-22C 4' TYPE C	12-50 4' TYPE C	12-51 4' TYPE C	1986	18" ACP	32'	CRUM CREEK
13-22C 4' TYPE C	1678 13-23C 4' TYPE C	12-51 4' TYPE C	12-54 4' TYPE C	1986	18" ACP	38'	CRUM CREEK
13-23C 4' TYPE C	1680 13-24C CONC HD	12-54 4' TYPE C	12-53 CONC HDW	1986	24" ACP	55'	CRUM CREEK
13-25C MH	1714 13-26C CONC HD	12-79 MH	12-80 CONC HDW	1990	36" CiP	30,	CRUM CREEK
13-2C 4' TYPE M	1683 13-3C 4' TYPE S	12-84 4' TYPE M	12-83 4' TYPE S	1990	27" RCP	.59	CRUM CREEK
13-3C 4' TYPE S	1684 13-4C 4' TYPE S	12-83 4' TYPE S	12-82 4' TYPE S	0661	27" or 33" RCP	240'	CRUM CREEK
13-4C 4' TYPE S	1685 13-5C 4' TYPE M	12-82 4' TYPE S	12-81 4' TYPE M	1990	27" or 33" RCP	246'	CRUM CREEK
13-5C 4' TYPE M	1686 13-7C 4' TYPE M	12-81 4' TYPE M	12-76 4' TYPE M	1990	27" or 33" RCP	246'	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
13-6C 4' TYPE S	1688 13-7C 4' TYPE M	12-89 4' TYPE S	12-76 4' TYPE M	1990	18" RCP	72'	CRUM CREEK
13-7C 4' TYPE M	1689 13-10C 4' TYPE M	12-76 4' TYPE M	12-73 4' TYPE M	1990	27" or 36" RCP	196'	CRUM CREEK
13-8C 4' TYPE C	1690 13-9C 4' TYPE C	12-75 4' TYPE C	12-74 4' TYPE C	1990	18" RCP	.29	CRUM CREEK
13-9C 4' TYPE C	1691 13-10C 4' TYPE M	12-74 4' TYPE C	12-73 4' TYPE M	1990	18" CIP	46'	CRUM CREEK
14-10C 4' TYPE M	1705 14-13C 4' TYPE M	12-58 4' TYPE M	12-57 4' TYPE M	1990	48" CIP	51'	CRUM CREEK
14-11C 4' TYPE M	1707 14-12C 4' TYPE M	12-88 4' TYPE M	12-56 4' TYPE M	1990	18" RCP	54'	CRUM CREEK
14-12C 4' TYPE M	1708 14-13C 4' TYPE M	12-56 4' TYPE M	12-57 4' TYPE M	1990	18" RCP	210'	CRUM CREEK
14-13C 4' TYPE M	1709 14-14C CONC HD	12-57 4' TYPE M	12-60 CONC HDW	1990	36" CiP	,09	CRUM CREEK
14-15C BARREL R	1710 13-17C MH	12-61 BARREL RIS 12-90 MH	12-90 MH	1990	24" CIP	290'	CRUM CREEK
14-16C 4' SPEC	1666 14-17C 4' SPEC	12-39 4' SPEC	12-38 4' SPEC	1977	22"x13" CMP	35'	CRUM CREEK
14-17C 4' SPEC	1667 14-19C 4' SPEC	12-38 4' SPEC	12-40 4' SPEC	1977	24" RCUD	214'	CRUM CREEK
14-18C 4' SPEC	1668 14-19C 4' SPEC	12-41 4' SPEC	12-40 4' SPEC	1977	22"x13" CMP	45'	CRUM CREEK
14-19C 4' SPEC	1669 14-20C 4' SPEC	12-40 4' SPEC	12-42 4' SPEC	1977	24" RCUD	211'	CRUM CREEK
14-1C 4' TYPE M	1713 13-25C MH	12-78 4' TYPE M	12-79 MH	1990	36" RCP	210'	CRUM CREEK
14-20C 4' SPEC	1670 14-21C 4' SPEC	12-42 4' SPEC	12-43 4' SPEC	1977	24" RCUD	,96	CRUM CREEK
14-21C 4' SPEC	1671 14-22C 4' SPEC	12-43 4' SPEC	12-44 4' SPEC	1977	18"x29" CMP	40,	CRUM CREEK
14-21C 4' SPEC	1672 14-23C 4' SPEC	12-43 4' SPEC	12-45 4' SPEC	1977	21" RCUD	91,	CRUM CREEK
14-23C 4' SPEC	1673 14-24C 4' SPEC	12-45 4' SPEC	12-46 4' SPEC	1977	21" RCUD	100'	CRUM CREEK
14-24C 4' SPEC	1674 14-25C 4' SPEC	12-46 4' SPEC	12-47 4' SPEC	1977	21" RCUD	144'	CRUM CREEK
14-25C 4' SPEC	1675 14-27C 4' SPEC	12-47 4' SPEC	12-49 4' SPEC	1977	29"x18" CMP	64'	CRUM CREEK
14-26C 4' SPEC	1676 14-27C 4' SPEC	12-48 4' SPEC	12-49 4' SPEC	1977	18" RCUD	92,	CRUM CREEK.

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
14-28C 4' SPEC	1656 14-29C 4' SPEC	12-26 4' SPEC	12-27 4' SPEC	1964	18" RCP	44'	CRUM CREEK
14-29C 4' SPEC	1657 14-30C 4' SPEC	12-27 4' SPEC	12-28 4' SPEC	1964	18" RCP	145'	CRUM CREEK
14-2C 4' TYPE S	1687 13-6C 4' TYPE S	12-77 4' TYPE S	12-89 4' TYPE S	1990	18" RCP	74'	CRUM CREEK
14-30C 4' SPEC	1658 14-31C STONE HD	12-28 4' SPEC	12-29 STONE HD	1964	18" RCP	175'	CRUM CREEK
14-32C 4' SPEC	1659 14-33C 6' SPEC	12-30 4' SPEC	12-31 6' SPEC	1964	18" RCP	36'	CRUM CREEK
14-33C 6' SPEC	1660 14-34C MH	12-31 6' SPEC	12-32 MH	1964	21" RCP	50,	CRUM CREEK
14-34C MH	1661 14-35C STONE HD	12-32 MH	12-33 STONE HD	1964	21" RCP	92'	CRUM CREEK
14-36C 6' SPEC	1652 14-37C 6' SPEC	12-21 6' SPEC	12-22 6' SPEC	1964	15" RCP	190'	CRUM CREEK
14-37C 6' SPEC	1653 14-38C STONE HD	12-22 6' SPEC	12-23 STONE HD	1964	18" RCP	190'	CRUM CREEK
14-39C End Conc E	1654 14-40C End Conc E	12-25 End Conc Ero	12-25 End Conc Ero 12-24 End Conc Ero 1963	1963	3'-8" Conc Dish Gut	284'	CRUM CREEK
14-3C CONC HDW	1692 14-4C 4' TYPE M	12-71 CONC HDW 12-72 4' TYPE M	12-72 4' TYPE M	1990	18" CIP	75'	CRUM CREEK
14-41C 6' SPEC.	1628 14-42C 4' SPEC	12-1 6' SPEC.	12-2 4' SPEC	1957	30" RCP	38'	CRUM CREEK
14-42C 4' SPEC	1629 14-43C Stone HDW 12-2 4' SPEC	12-2 4' SPEC	12-3 Stone HDW	1958	30" RCP	188"	CRUM CREEK
14-44C 4' SPEC	1662 14-45C 4' SPEC	12-34 4' SPEC	12-35 4' SPEC	1964	15" RCP	36'	CRUM CREEK
14-45C 4' SPEC	1663 14-46C MH	12-35 4' SPEC	12-36 MH	1964	18" RCP	84'	CRUM CREEK
14-46C MH	1664 14-47C STONE HD	12-36 MH	12-37 STONE HD	1964	18" RCP	130'	CRUM CREEK
14-48C 6' SPEC	1639 14-49C 6' SPEC	12-4 6' SPEC	12-5 6' SPEC	1956	18" RCP	36'	CRUM CREEK
14-49C 6' SPEC	1640 14-50C 4' GRATE	12-5 6' SPEC	12-6 4' GRATE	1956	21" RCP	140'	CRUM CREEK
14-4C 4' TYPE M	1693 13-10C 4' TYPE M	12-72 4' TYPE M	12-73 4' TYPE M	1990	18" RCP	146'	CRUM CREEK
14-50C 4' GRATE	1641 14-51C 4' SPEC	12-6 4' GRATE	12-7 4' SPEC	1956	21" RCP	135'	CRUM CREEK
14-51C 4' SPEC	1642 14-52C 6' SPEC	12-7 4' SPEC	12-8 6' SPEC	1956	24" RCP	,86	CRUM CREEK

FROM (NEW)	ID TO (NEW)		FROM (OLD)	TO (OLD)	CONST DATE PIPE	PIPE	LENGTH	BASIN
14-52C 6' SPEC	1643 14-53C 6' SPEC		12-8 6' SPEC	12-9 6' SPEC	1956	30" RCP	32'	CRUM CREEK
14-53C 6' SPEC	1644 14-54C STONE HD	NE HD 1	12-9 6' SPEC	12-10 STONE HD	1956	30" RCP	343'	CRUM CREEK
14-55C 6' SPEC	1650 14-56C 6' SPEC		12-18 6' SPEC	12-19 6' SPEC	1956	18" RCP	36'	CRUM CREEK
14-56C 6' SPEC	1651 14-57C 6 STONE	H	12-19 6' SPEC	12-20 6 STONE HD 1956	9561	24" RCP	210'	CRUM CREEK
14-58C 6' SPEC	1648 14-59C 4' SPEC		12-15 6' SPEC	12-16 4' SPEC	1956	18" RCP	36'	CRUM CREEK
14-59C 4' SPEC	1649 14-60C STONE HD		12-16 4' SPEC	12-17 STONE HD	1956	21" RCP	152'	CRUM CREEK
14-5C 4' TYPE M	1696 13-12C 4' TYPE M		12-68 4' TYPE M	12-69 4' TYPE M	1990	18" RCP	72'	CRUM CREEK
14-61C 6' SPEC	1645 14-62C 4' SPEC		12-11 6' SPEC	12-12 4' SPEC	1956	18" RCP	50'	CRUM CREEK
14-62C 4' SPEC	1646 14-63C 4' SPEC		12-12 4' SPEC	12-13 4' SPEC	1956	18" RCP	250'	CRUM CREEK
14-63C 4' SPEC	1647 14-64C STONE HD	NE HD 1	12-13 4' SPEC	12-14 STONE HD	1956	21" RCP	150'	CRUM CREEK
14-65C 4' SPEC	1775 14-66C 4' SPEC		13-72 4' SPEC	13-73 4' SPEC	1957	18" RCP	34'	CRUM CREEK
14-66C 4' SPEC	1776 14-67C STONE HD		13-73 4' SPEC	13-74 STONE HD	1957	21' RCP	158'	CRUM CREEK
14-68C 4' SPEC	1781 14-69C 4' SPEC		13-80 4' SPEC	13-81 4' SPEC	1957	18" RCP	32'	CRUM CREEK
14-69C 4' SPEC	1782 14-70C STONE HD	NE HD 1	13-81 4' SPEC	13-82 STONE HD	1958	21" RCP	187′	CRUM CREEK
14-6C 4' TYPE S	1699 14-7C 4' TYPE M		12-67 4' TYPE S	12-66 4' TYPE M	1990	18" RCP	54'	CRUM CREEK
14-71C	1800 14-41C 6' SPEC.		13-83	12-1 6' SPEC.				CRUM CREEK
14-72C 4' SPEC	1777 14-73C 4' SPEC		13-75 4' SPEC	13-76 4' SPEC	1957	15" RCP	32'	CRUM CREEK
14-73C 4' SPEC	1778 14-74C 4' SPEC		13-76 4' SPEC	13-77 4' SPEC	1957	18" RCP	262'	CRUM CREEK
14-74C 4' SPEC	1779 14-75C 4' SPEC		13-77 4' SPEC	13-78 4' SPEC	1957	21" RCP	38'	CRUM CREEK
14-75C 4' SPEC	1780 14-76C 4' GRATE		13-78 4' SPEC	13-79 4' GRATE	1957	24" RCP	133'	CRUM CREEK
14-76C 4' GRATE	1627 14-41C 6' SPEC.		13-79 4' GRATE	12-1 6' SPEC.	1957	24" RCP	132'	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
14-77C 6' GRATE	1729 14-78C 6' SPEC	13-19 6' GRATE	13-20 6' SPEC	1956	18" RCP	30'	CRUM CREEK
14-78C 6' SPEC	1730 14-49C STONE HD	HD 13-20 6' SPEC	13-21 STONE HD	1956	24" RCP	125'	CRUM CREEK
14-7C 4' TYPE M	1700 14-9C 4' TYPE M	12-66 4' TYPE M	12-63 4' TYPE M	1990	42" CIP	270'	CRUM CREEK
14-80C 4' GRATE	1716 14-82C 4' GRATE	13-7 4' GRATE	13-6 4' GRATE	1955	18" RCP	.19	CRUM CREEK
14-81C CONC HD	1715 14-82C 4' GRATE	13-8 CONC HDW	13-6 4' GRATE	1955	18" RCP	112'	CRUM CREEK
14-82C 4' GRATE	1717 15-32C 4' GRATE	13-6 4' GRATE	13-9 4' GRATE		15" CMP	356'	CRUM CREEK
14-83C TRENCH D	1726 14-84C 4' GRATE	13-16 TRENCH DR 13-17 4' GRATE	13-17 4' GRATE	1962	4" CIP	39'	CRUM CREEK
14-84C 4' GRATE	1727 15-36C 4' GRATE	13-17 4' GRATE	13-18 4' GRATE	1962	12" RCP	228'	CRUM CREEK
14-8C 4' TYPE S	1702 14-9C 4' TYPE M	12-64 4' TYPE S	12-63 4' TYPE M	1990	18" RCP	56'	CRUM CREEK
14-9C 4' TYPE M	1703 14-10C 4' TYPE M	12-63 4' TYPE M	12-58 4' TYPE M	1990	48" CIP	196'	CRUM CREEK
15-100C HDW	1849 15-103C#1 OM	14-158 HDW	14-154 #1 OM		RCP	187'	CRUM CREEK
15-101C#1 OM	1850 15-102C #1 OM	14-155 #1 OM	14-156 #1 OM			35'	CRUM CREEK
15-102C #1 OM	1851 15-103C#1 OM	14-156 #1 OM	14-154 #1 OM			42'	CRUM CREEK
15-103C #1 OM	1852 15-104C #1 OM	14-154 #1 OM	14-153 #1 OM			34'	CRUM CREEK
15-104C #1 OM	1853 15-108C MH	14-153 #1 OM	14-157 MH			34'	CRUM CREEK
15-105C #2 OM &	1843 15-106C #1 OM &	14-140 #2 OM & Gr	14-140 #2 OM & Gr 14-151 #1 OM & Gr		18" RCP	150'	CRUM CREEK
15-106C #1 OM &	1844 15-107C #1 OM	14-151 #1 OM & Gr 14-152 #1 OM	14-152 #1 OM		42" RCP	46'	CRUM CREEK
15-107C #1 OM	1845 15-108C MH	14-152 #1 OM	14-157 MH	1955	42" RCP	45'	CRUM CREEK
15-108C MH	1854 15-109C Stone HD	14-157 MH	14-160 Stone HDW	1955	42" RCP	113'	CRUM CREEK
15-10C 6' SPEC	1771 15-11C JUNCT BO	13-67 6' SPEC	13-68 JUNCT BOX	1955	24" RCP	144'	CRUM CREEK
15-110C 2 #1 OM	1855 15-111C Conc HD	14-162 2 #1 OM	14-161 Conc HDW		24" RCP	113'	CRUM CREEK

FROM (NEW)		ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
15-112C 4' Type C	1959		18-116 4' Type C	18-117 MH	1995	18" RCP	12,	CRUM CREEK
15-113C MH	1960	1960 21-3C MH	18-117 MH	18-119 MH		18" RCP	387'	CRUM CREEK
15-11C JUNCT. BO	462	462 15-1C JUNCT. BO	13-68 JUNCT. BO	8-13 JUNCT. BOX	1965	24" RCP	158'	CRUM CREEK
15-12C CHANNEL	1773	1773 15-13C 8.5'x5' CON 13-69A CHANNEL	13-69A CHANNEL	13-70 8.5'x5' CONC 1967	1967	4'x3' Stone Masonry 170'	170'	CRUM CREEK
15-13C HDW CON	1774	1774 15-14C HDW CON	13-70 HDW CONC	13-70 HDW CONC 13-71 HDW CONC 1926	1926	8'x5' Conc Box Cul	31.5	CRUM CREEK
15-15C #1 OM & G	1783	1783 15-16C 4' STD INL	13-85 #1 OM & GR 13-84 4' STD INLE	13-84 4' STD INLE	1935	12" RCP	,9	CRUM CREEK
15-16C 4' STD INL	1784	1784 15-18C 4' STD INL	13-84 4' STD INLE	13-87 4' STD INLE	1935	36" RCP	36'	CRUM CREEK
15-17C #1 OM & G	1785	1785 15-18C 4' STD INL	13-86 #1 OM & GR 13-87 4' STD INLE	13-87 4' STD INLE	1935	12" RCP	,9	CRUM CREEK
15-18C 4' STD INL	1786	1786 15-19C DROP JUN	13-87 4' STD INLE	13-88 DROP JUNC	1973	36" RCP	52'	CRUM CREEK
15-1C JUNCT. BO	461	461 15-2C STONE HD	8-13 C JUNCT. BO	8-14 C STONE HD	5961	60" RCP	128'	CRUM CREEK
15-20C 4' SPEC	1767	1767 15-21C 4' SPEC	13-63 4' SPEC	13-64 4' SPEC	1955	15" RCP	33'	CRUM CREEK
15-21C 4' SPEC	1768	1768 15-22C STONE HD	HD 13-64 4' SPEC	13-65 STONE HD	1955	18" RCP	130'	CRUM CREEK
15-23C 6' SPEC	1765	1765 15-24C 6' SPEC	13-60 6' SPEC	13-61 6' SPEC	1955	18" RCP	38'	CRUM CREEK
15-24C 6' SPEC	1766	1766 15-25C STONE HD	13-61 6' SPEC	13-62 STONE HD	1955	21" RCP	240'	CRUM CREEK
15-26C 4' SPEC	1750	1750 15-27C 4' SPEC	13-40 4' SPEC	13-41 4' SPEC	1955	15" RCP	35'	CRUM CREEK
15-27C 4' SPEC	1751	1751 15-28C STONE HD	13-41 4' SPEC	13-42 STONE HD	1955	18" RCP	128'	CRUM CREEK
15-29C 4' SPEC	1752	1752 15-30C 4' SPEC	13-43 4' SPEC	13-44 4' SPEC	1955	15" RCP	35'	CRUM CREEK
15-30C 4' SPEC	1753	1753 15-31C STONE HD	HD 13-44 4' SPEC	13-45 STONE HD	1955	18" RCP	132'	CRUM CREEK
15-32C 4' GRATE	1718	1718 15-33C 4' GRATE	13-9 4' GRATE	13-5 4' GRATE	1950	27" RCP	75'	CRUM CREEK
15-33C 4' GRATE	1715	1719 15-34C 4' GRATE	13-5 4' GRATE	13-12 4' GRATE	1950	27" RCP	232'	CRUM CREEK
15-34C 4' GRATE	1720	1720 15-38C 6' GRATE	13-12 4' GRATE	13-3 6' GRATE	1950	27" RCP	70,	CRUM CREEK

FROM (NEW)	11	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
15-35C STONE HD	1721	1721 15-37C 6' GRATE	13-1 STONE HDW	13-2 6' GRATE	1958	24" RCP	13'	CRUM CREEK
15-36C 4' GRATE	1728	1728 15-37C 6' GRATE	13-18 4' GRATE	13-2 6' GRATE	1962	12" RCP	128'	CRUM CREEK
15-37C 6' GRATE	1722	1722 15-38C BEGIN OP	13-2 6' GRATE	13-3 6' GRATE	1950	24" RCP	38'	CRUM CREEK
15-38C 6' GRATE	2000	2000 15-39C END 36" R	13-3 6' GRATE	END 36" RCP		36" RCP		CRUM CREEK
15-3CONC HDW	391	391 15-4C CONC HDW	8-104 CONC HDW	8-105 C CONC HD	1926	11.5'x4' CONC BO	35'	CRUM CREEK
15-40C	2001	2001 15-41C						CRUM CREEK
15-42C 4' GRATE	1723	1723 15-43C 4' GRATE	13-10 4' GRATE	13-11 4' GRATE		18" RCP	45'	CRUM CREEK
15-44C 4' SPEC	1754	1754 15-45C 4' SPEC	13-46 4' SPEC	13-47 4' SPEC	1955	15" RCP	38'	CRUM CREEK
15-45C 4' SPEC	1755	1755 15-46C 6' SPEC	13-47 4' SPEC	13-48 6' SPEC	1955	18" RCP	54'	CRUM CREEK
15-46C 6' SPEC	1756	1756 15-47C 6' SPEC	13-48 6' SPEC	13-49 6' SPEC	1955	21" RCP	56'	CRUM CREEK
15-47C 6' SPEC	1757	1757 15-48 4' GRATE	13-49 6' SPEC	13-50 4' GRATE	1955	24" RCP	154'	CRUM CREEK
15-48 4' GRATE	1758	1758 15-49C 4' GRATE	13-50 4' GRATE	13-51 4' GRATE	1976	24" RCP	72'	CRUM CREEK
15-49C 4' GRATE	1759	1759 15-50C STONE HD	13-51 4' GRATE	13-52 STONE HD	1976	24" RCP	63'	CRUM CREEK
15-51C CONC HD	1738	1738 15-53C 6' GRATE	13-26 CONC HDW	13-13 6' GRATE		30" RCP	138'	CRUM CREEK
15-52C STONE HD	1724	1724 15-53C 6' GRATE	13-14 STONE HD	13-13 6' GRATE	1958	15" RCP	11'	CRUM CREEK
15-53C 6' GRATE	1725	1725 15-55C MH	13-13 6' GRATE	13-15 MH	1950	30" RCP	,09	CRUM CREEK
15-54C 4' GRATE	1749	1749 JUNCT 30" RCP	13-39 4' GRATE	JUNCT 30" RCP	1955	18" RCP	,9	CRUM CREEK
15-55C MH	1731	1731 15-56C #1 OM	13-15 MH	13-19 #1 OM	1955	30" RCP	133'	CRUM CREEK
15-56C #1 OM	1732	1732 15-57C#1 OM	13-19 #1 OM	13-20 #1 OM	1955	30" RCP	43'	CRUM CREEK
15-57C #1 OM	1733	1733 15-58C 4' GRATE	13-20 #1 OM	13-21 4' GRATE	1955	30" RCP	115'	CRUM CREEK
15-58C 4' GRATE	1734	1734 15-59C #1 OM	13-21 4' GRATE	13-23 #1 OM	1955	30" RCP	122'	CRUM CREEK

FROM (NEW)		ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
15-59C #1 OM	1735		13-23 #1 OM	13-22 #1 OM	1955	30" RCP	.∞	CRUM CREEK
15-5C #30 M & GR	386	386 15-6C #30M & GR	8-97 C#30 M & G	8-98 C #30M & GR		12" RCP		CRUM CREEK
15-60C #1 OM	1736	1736 15-61 2-#1 OM	13-22 #1 OM	13-24 2-#1 OM	1955	36" RCP	36'	CRUM CREEK
15-61 2-#1 OM	1737	1737 15-62C STONE HD	13-24 2-#1 OM	13-25 STONE HD	1955	36" RCP	150'	CRUM CREEK
15-63C 4' SPEC	1760	1760 15-64C 4' SPEC	13-53 4' SPEC	13-54 4' SPEC	1955	15" RCP	36'	CRUM CREEK
15-64C 4' SPEC	1761	1761 15-65C STONE HD	13-54 4' SPEC	13-55 STONE HD	1955	18" RCP	133'	CRUM CREEK
15-66C CONC HD	1739	1739 15-68C MH	13-27 CONC HDW	13-28 MH	1950	18" RCP	,06	CRUM CREEK
15-67C 4' GRATE	1748	1748 JUNCT 18" RCP	13-38 4' GRATE	JUNCT 18" RCP		18" RCP	,9	CRUM CREEK
15-68C MH	1740	1740 15-69C #1 OM	13-28 MH	13-29 #1 OM	1955	18" RCP	120'	CRUM CREEK
15-69C #1 OM	1741	1741 15-70C #1 OM	13-29 #1 OM	13-30 #1 OM	1955	21" RCP	36'	CRUM CREEK
15-6C#30M & GR	387	387 15-7C GRATE	8-98 C #30 M & G	8-99 C GRATE		12" RCP		CRUM CREEK
15-70C #1 OM	1742	1742 15-71C STONE HD	13-30 #1 OM	13-31 STONE HD	1955	24" RCP	110′	CRUM CREEK
15-72C CONC HD	1743	1743 15-73C MH	13-32 CONC HDW	13-33 MH	1950	24" RCP	62'	CRUM CREEK
15-73C MH	1744	1744 15-74C #1 OM & G	13-33 MH	13-34 #1 OM & GR 1955	1955	24" RCP	148'	CRUM CREEK
15-74C #1 OM & G	1745	1745 15-75C 4' GRATE I	13-34 #1 OM & GR	13-35 4' GRATE IN	1955	24" RCP	34'	CRUM CREEK
15-75C 4' GRATE I	1746	1746 15-76C 2-#1 OM	13-35 4' GRATE IN	13-36 2#1 OM	1955	24" RCP	35'	CRUM CREEK
15-76C 2-#1 OM	1747	1747 15-77C STONE HD	13-36 2-#1 OM	13-37 STONE HD	1955	27" RCP	114'	CRUM CREEK
15-78C STONE HD	1762	1762 15-81C STONE HD	13-56 STONE HD	13-57 STONE HD	1955	60" RCP	100'	CRUM CREEK
15-79C 6' SPEC	1763	1763 CONN TO 60" RCP	13-58 6' SPEC	CONN TO 60" RCP	1955			CRUM CREEK
15-80C 6' SPEC	1764	1764 CONN TO 60" RCP 13-59 6' SPEC	13-59 6' SPEC	CONN TO 60" RCP	1955	18" RCP	12'	CRUM CREEK
15-82C HDW CON	1787	1787 15-83C END CON	13-89 HDW CONC	13-89 HDW CONC 13-90 END CONC 1926	1926	4'x4' Conc Box Cul	42'	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
15-83C END CON	1788 15-84C End Stone	13-90 END CONC	13-91 End Stone &	1972	4'x3' Stone Masonry 150'	150'	CRUM CREEK
15-85C Clean Out	1789 15-93C Clean Out	13-92 Clean Out	13-101 Clean Out	1961	8" to 12" CI Rain W	382'	CRUM CREEK
15-86C 24"x36" CB	1790 Conn to Main Front	13-93 24"x36" CB	Conn to Main Front 1961	1961	8" CIP PVT	40,	CRUM CREEK
15-87C END ROOF	1791 Conn to Main Front	13-96 END ROOF	Conn to Main Front	1961	8" to 10" CIP PVT	130'	CRUM CREEK
15-88C 24"x36" CB	1792 Conn to Roof Drain 13-95 24"x36" CB	13-95 24"x36" CB	Conn to Roof Drain 1961	1961	4" CIP PVT	12'	CRUM CREEK
15-89C 24"x36" CB	1793 Conn to Main Front 13-94 24"x36" CB	13-94 24"x36" CB	Conn to Main Front 1961	1961	8" CIP PVT	40,	CRUM CREEK
15-8C 6' SPEC	1769 15-10C 6' SPEC	13-69 6' SPEC	13-67 6' SPEC	1955	21" RCP	,08	CRUM CREEK
15-90C Conn to Bld	1799 15-96C CONC HD	13-103 Conn to Bld 13-100 CONC HD	13-100 CONC HD	1961	4" to 15" CIP PVT	110'	CRUM CREEK
15-91C Clean Out	1795 Conn to 10" Main D 13-99 Clean Out	13-99 Clean Out	Conn to 10" Main D 1961	1961	8" to 10" CIP PVT	150'	CRUM CREEK
15-92C 4' CB	1796 Conn to 8" Main Dr 13-102 4' CB	13-102 4' CB	Conn to 8" Main Dr	1961	4" CIP PVT	16'	CRUM CREEK
15-93C Clean Out	1794 Conn to 15" Main D 13-101 Clean Out	13-101 Clean Out	Conn to 15" Main D 1961	1961	12" CIP PVT	40,	CRUM CREEK
15-94C 12"x16" 20'	1797 Conn to 15" Main D 13-97 12"x16" 20' L	13-97 12"x16" 20' L	Conn to 15" Main D 1961	1961	6" CIP PVT	56'	CRUM CREEK
15-95C 24"x36" CB	1798 Conn to 15" Main D 13-98 24"x36" CB	13-98 24"x36" CB	Conn to 15" Main D 1961	1961	4" CIP PVT	12'	CRUM CREEK
15-97C End Culvert	1846 15-99C Grate Inlet	14-159 End Culvert 14-150 Grate Inlet	14-150 Grate Inlet				CRUM CREEK
15-98C Conc HDW	1847 Box Culvert	14-149 Conc HDW	Box Culvert			16'	CRUM CREEK
15-99C Grate Inlet	1848 15-108C MH	14-150 Grate Inlet	14-157 MH			330'	CRUM CREEK
15-9C 6' SPEC	1770 15-10C 6' SPEC	13-66 6' SPEC	13-67 6' SPEC	1955	18" RCP	42'	CRUM CREEK
16-108C #2 OM &	1832 16-109C #2 OM &	14-135 #2 OM & Gr	14-135 #2 OM & Gr 14-136 #2 OM & Gr				CRUM CREEK
16-109C #2 OM &	1833 16-110C #2 OM &	14-136 #2 OM & Gr	14-136 #2 OM & Gr 14-137 #2 OM & Gr				CRUM CREEK
16-110C #2 OM &	1834 16-112C #2 OM &	14-137 #2 OM & Gr	14-137 #2 OM & Gr 14-138 #2 OM & Gr				CRUM CREEK
16-111C #2 OM &	1835 16-112C #2 OM &	14-139 #2 OM & Gr	14-139 #2 OM & Gr 14-138 #2 OM & Gr				CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
16-112C #2 OM &	1836 15-105C #2 OM &	14-138 #2 OM & Gr	14-138 #2 OM & Gr 14-140 #2 OM & Gr				CRUM CREEK
16-113C 4' Spec	1826 16-114C 4' Spec	14-128 4' Spec	14-129 4' Spec	1977	15" RCP	32'	CRUM CREEK
16-114C 4' Spec	1827 16-115C 4' Spec	14-129 4' Spec	14-130 4' Spec	1977	15" RCP	.92	CRUM CREEK
16-115C 4' Spec	1828 16-116C 4' Spec	14-130 4' Spec	14-131 4' Spec	1969	18" RCP	55'	CRUM CREEK
16-116C 4' Spec	1829 16-118C #2 OM &	14-131 4' Spec	14-132 #2 OM & Gr 1969	1969	18" RCP	135'	CRUM CREEK
16-117C #2 OM &	1830 16-118C #2 OM &	14-133 #2 OM & Gr	14-133 #2 OM & Gr 14-132 #2 OM & Gr		18" TCP	22'	CRUM CREEK
16-118C #2 OM &	1831 16-119C End 18" T	14-132 #2 OM & Gr	14-132 #2 OM & Gr 14-134 End 18" TC		18" TCP	52'	CRUM CREEK
16-120C 4' Spec	1814 16-121C 4' Spec	14-128 4' Spec	14-129 4' Spec	1955	15" RCP	28'	CRUM CREEK
16-121C 4' Spec	1815 16-122C 4' Spec	14-129 4' Spec	14-106 4' Spec	1955	18" RCP		CRUM CREEK
16-122C 4' Spec	1801 16-123C 4' Spec	14-106 4' Spec	14-107 4' Spec	1955	18" RCP	26'	CRUM CREEK
16-123C 4' Spec	1802 16-124C 4' Grate	14-107 4' Spec	14-108 4' Grate	1964	24" RCP	82,	CRUM CREEK
16-124C 4' Grate	1803 16-125C 4' Grate	14-108 4' Grate	14-109 4' Grate	1964	24" RCP	,08	CRUM CREEK
16-125C 4' Grate	1804 16-126C 6' Grate	14-109 4' Spec	14-110 6' Grate		24" RCP	116'	CRUM CREEK
16-126C 6' Grate	1805 16-127C 6' Grate	14-110 6' Grate	14-111 6' Grate		36" RCP	34'	CRUM CREEK
16-127C 6' Grate	1806 16-128C MH	14-111 6' Grate	14-112 MH	1957	36" RCP	24'	CRUM CREEK
16-128C MH	1807 16-129C Stone HD	14-112 MH	14-113 Stone HDW	1957	36" RCP	180'	CRUM CREEK
16-129C Stone HD	1808 16-131C Stone HD	14-113 Stone HDW	14-114 Stone HDW	1967	3'x3' Stone Channel	125'	CRUM CREEK
16-130C OM & GR	1816 Connect to Channel	14-130 #1 OM	Connect to Channel	1967	18" RCP	15'	CRUM CREEK
16-131C Stone HD	1809 16-132C 4' Grate	14-114 Stone HDW	14-115 4' Grate	1967	45"x29" LO-HED R	١٥٥،	CRUM CREEK
16-132C 4' Grate	1810 16-143C 4' Grate	14-115 4' Grate	14-116 4' Grate	1959	36" RCP	120'	CRUM CREEK
16-133C 4' Spec	1817 16-134C 4' Spec	14-119 4' Spec	14-120 4' Spec	1955	18" RCP	26'	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
16-134C 4' Spec	1818 16-135C HDW at C 14-120 4' Spec	14-120 4' Spec	14-121 HDW at Ch	1955	18" RCP	130'	CRUM CREEK
16-135C HDW at C	1819 16-136C HDW	14-121 HDW	14-122 HDW	1967	Stone Channel 3' Wi	218'	CRUM CREEK
16-136C HDW	1820 16-137C 4' Spec	14-122 HDW	14-123 4' Spec	1953	24" RCP	165'	CRUM CREEK
16-137C 4' Spec	1821 16-138C 4' Spec	14-123 4' Spec	14-124 4' Spec		36" RCP	34'	CRUM CREEK
16-138C 4' Spec	1822 16-141C 4' Grate	14-124 4' Spec	14-125 4' Grate	1977	36" RCP	155'	CRUM CREEK
16-139C 4' Spec	1823 16-140C 4' Spec	14-126 4' Spec	14-127 4' Spec	1977	18" RCP	32'	CRUM CREEK
16-140C 4' Spec	1824 16-141C 4' Grate	14-127 4' Spec	14-125 4' Grate	1977	18" RCP	115'	CRUM CREEK
16-141C 4' Grate	1825 16-142C 4' Grate	14-125 4' Grate	14-118 4' Grate	1977	36"RCP	170'	CRUM CREEK
16-142C 4' Grate	1813 16-143C 4' Grate	14-118 4' Grate	14-116 4' Grate	1959	36" RCP	70,	CRUM CREEK
16-143C 4' Grate	1811 16-144C 4' Spec	14-116 4' Grate	14-117 4' Spec	1959	48" RCP	134'	CRUM CREEK
16-144C 4' Spec	1812 16-145C 4' Spec	14-117 4' Spec	14-105 4' Spec	1959	48" RCP	34'	CRUM CREEK
16-145C 6' SPEC.	1522 16-154C 4' GRATE	14-105C 6' SPEC.	19-81C 4' GRATE	1959	48" RCP	282'	CRUM CREEK
16-146C End 12" V	1837 16-147C #2 OM Inl	14-141 End 12" VC 14-142 #2 OM Inlet	14-142 #2 OM Inlet		12" VCP	85'	CRUM CREEK
16-147C #2 OM Inl	1838 16-148C #2 OM Inl	Inl 14-142 #2 OM Inlet 14-143 #2 OM Inlet	14-143 #2 OM Inlet		12" VCP	33'	CRUM CREEK
16-148C #2 OM Inl	1839 16-149C End 12" V		14-143 #2 OM Inlet 14-144 End 12" VC		12" VCP	84'	CRUM CREEK
16-150C End 12" V	1840 16-151C #2 OM	14-145 End 12" VC 14-146 #2 OM	14-146 #2 OM		12" VCP	136'	CRUM CREEK
16-151C #2 OM	1841 16-152C #2 OM Ini		14-146 #2 OM Inlet 14-147 #2 OM Inlet		12" VCP	33,	CRUM CREEK
16-152C #2 OM Inl	1842 16-153C Conc HD	14-147 #2 OM Inlet 14-148 Conc HDW	14-148 Conc HDW		12" VCP	13'	CRUM CREEK
16-154C 4' GRATE	1523 22-26C 4' GRATE J	19-81C 4' GRATE	19-82C 4' GRATE J	1959	48" RCP	136'	CRUM CREEK
17-52C 2#1 OM	1986 17-53C 2-#1 OM	15-85 2-#1 OM	15-86 2-#1 OM	1953	18" RCP	28'	CRUM CREEK
17-53C 2.#1 OM	1443 23-5C STONE HD	15-86C 2-#1 OM	20-108C STONE H	1953	24" RCP	184'	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
17-54C #1 OM	1987 17-55C #1 OM	15-87 #1 OM	15-88 #1 OM		24" RCP	27'	CRUM CREEK
17-55C #1 OM	1988 17-56C End 24" RC 15-88 #1 OM	15-88 #1 OM	15-89 End 24" RCP 1958	1958	24" RCP	192'	CRUM CREEK
17-56C (field chk fo	1345 23-18C INV. IRON 15-89C	15-89C	20-7C INV. IRON P		24" IRON PIPE AR	60,	CRUM CREEK
17-57C 2- 6' GRAT	1437 23-42C M.H.	15-90C 2- 6' GRAT	20-41C M.H.	1954	15" RCP	217'	CRUM CREEK
18-7 2 Type C	1856 18-8 MH	18-7 2 Type C	18-8 MH	1996	18" ACMP Pvt	140'	CRUM CREEK
20-10C 6' GRATE	1249 20-11C 6' GRATE	23-53C 6' GRATE	23-55C 6' GRATE	1972	48" RCP/PVT	14'	CRUM CREEK
20-11C 6' GRATE	1250 20-12C 4' SPEC.	23-55C 6' GRATE	23-59C 4' SPEC.	1972	48" RCP/PVT	180'	CRUM CREEK
20-12C 4' SPEC.	1254 20-13C M.H.	23-59C 4' SPEC.	23-60C M.H.	1972	48" RCP/PVT	162'	CRUM CREEK
20-13C M.H.	1255 20-14C 6' GRATE	23-60C M.H.	23-61C 6' GRATE	1972	48" RCP/PVT	283*	CRUM CREEK
20-14C 6' GRATE	1862 20-15C MH	23-61 6' Grate	18-9 MH	1972	48" RCP Pvt	212'	CRUM CREEK
20-1C 4' SPEC.	1303 20-2C 4' SPEC.	17-1C 4' SPEC.	17-2C 4' SPEC.		18" RCP	18'	CRUM CREEK
20-2C 4' SPEC.	1304 20-3C END 18" RC	RC 17-2C 4' SPEC	17-3C END 18" RC		18" RCP		CRUM CREEK
20-4C STONE HD	1305 20-5C END 30" RC	17-4C STONE HD	17-5C END 30" RC		30" RCP	40,	CRUM CREEK
20-6C 6' GRATE	1240 20-7C 6' GRATE	23-45C 6' GRATE	23-46C 6' GRATE	1972	36" RCP/PVT	291'	CRUM CREEK
20-7C 6' GRATE	1245 20-8C 6' GRATE	23-46C 6' GRATE	23-51C 6' GRATE	1972	36" RCP/PVT	255'	CRUM CREEK
20-8C 6' GRATE	1246 20-9C 6' GRATE	23-51C 6' GRATE	23-52C 6' GRATE	1972	48" RCP/ PVT	216'	CRUM CREEK
20-9C 6' GRATE	1247 20-10C 6' GRATE	23-52C 6' GRATE	23-53C 6' GRATE	1972	48" RCP/PVT	177'	CRUM CREEK
21-100C #1 OM Inl	1890 21-101C#1 OM Inl	18-35 #1 OM Inlet	18-34 #1 OM Inlet	1954	15" RCP	,06	CRUM CREEK
21-101C #1 OM Inl	1891 21-102C #1 OM &	18-34 #1 OM Inlet	18-36 #1 OM & Gra 1954	1954	24" RCP	233'	CRUM CREEK
21-102C #1 OM &	1892 21-103C #1 OM Inl	Inl 18-36 #1 OM & Gra 18-37 #1 OM Inlet	18-37 #1 OM Inlet	1954	24" RCP	34'	CRUM CREEK
21-103C #1 OM Inl	1893 21-104C#1 OM Inl 18-37#1 OM Inlet 18-38#1 OM Inlet	18-37 #1 OM Inlet	18-38 #1 OM Inlet	1954	27" RCP	74'	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
21-104C #1 OM Inl	1936 21-105C Stone HD	18-38 #1 OM	18-39 Stone HDW	1954	30" RCP	160'	CRUM CREEK
21-106C 4' GRATE	1623 21-107C 4' GRATE	19-189C 4' GRATE	19-188C 4' GRATE	1974	15" RCP	28'	CRUM CREEK
21-107C 4' GRATE	1624 21-109C 4' GRATE	19-188C 4' GRATE	19-190C 4' GRATE	1974	15" RCP	150'	CRUM CREEK
21-108C 4' GRATE	1625 21-109C 4' GRATE	19-191C 4' GRATE	19-190C 4' GRATE	1974	15" RCP	32'	CRUM CREEK
21-109C 4' GRATE	1626 21-111C 4' GRATE	19-190C 4' GRATE	19-172C 4' GRATE	1974	15" RCP	442'	CRUM CREEK
21-10C Type C	1970 21-12C 4' Grate	18-127 Type C	18-128 4' Grate	1995	21" RCP	223'	CRUM CREEK
21-110C 4' GRATE	1608 21-111C 4' GRATE	19-171 4' GRATE	19-172C 4' GRATE	1963	15" RCP	28'	CRUM CREEK
21-111C 4' GRATE	1609 21-113C 4' GRATE	19-172C 4' GRATE	19-172C 4' GRATE 19-173C 4' GRATE	1963	18" RCP	12'	CRUM CREEK
21-112C 6' SPEC.	1607 21-113C 4' GRATE	19-174C 6' SPEC.	19-173C 4' GRATE	1963	21" RCP	32'	CRUM CREEK
21-113C 4' GRATE	1610 21-114C 4' SPEC.	19-173C 4' GRATE	19-175C 4' SPEC.	1963	21" RCP	18'	CRUM CREEK
21-114C 4' SPEC.	1611 21-121C 4' SPEC.	19-175C 4' SPEC.	19-176C 4' SPEC.	1963	21" RCP	53'	CRUM CREEK
21-115C 6' SPEC.	1613 21-117C 4' SPEC.	19-182C 6' SPEC.	19-181C 4' SPEC.	1963	21" RCP	51,	CRUM CREEK
21-116C 4' GRATE	1612 21-117C 4' SPEC.	19-180C 4' GRATE	19-181C 4' SPEC.	1963	15" RCP	32'	CRUM CREEK
21-117C 4' SPEC.	1614 21-119C M.H.	19-181C 4' SPEC.	19-178C M.H.	1963	24" RCP	25'	CRUM CREEK
21-118C 4' GRATE	1615 21-119C M.H.	19-179C 4' GRATE 19-178C M.H.	19-178C M.H.	1963	18" RCP	48'	CRUM CREEK
21-119C M.H.	1616 21-120C 4' SPEC.	19-178C M.H.	19-177C 4' SPEC.	1963	24" RCP	-∞	CRUM CREEK
21-11C Type C	1971 Conn to Exist 21"	18-129 Type C	Conn to Exist 21"	1995	18" RCP	,9	CRUM CREEK
21-120C 4' SPEC.	1617 21-121C 4' SPEC.	19-177C 4' SPEC.	19-176C 4' SPEC.	1963	30" RCP	42'	CRUM CREEK
21-121C 4' SPEC.	1899 21-55C 6' SPEC	19-176 4' Spec	18-46 6' Spec	1963	36" RCP	211'	CRUM CREEK
21-122C 4' SPEC.	1552 21-124C 4' GRATE	19-111C 4' SPEC.	19-113C 4' GRATE	1958	18" RCP	,08	CRUM CREEK
21-123C 4' GRATE	1551 21-124C 4' GRATE		19-112C 4' GRATE 19-113C 4' GRATE	1958	18" RC UD	112'	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD) TO (OLD)	TO (OLD)	CONST DATE PIPE	PIPE	LENGTH	BASIN
21-124C 4' GRATE	1553 21-126C 4' GRATE		19-115C 4' GRATE	1958	18" RC UD	272'	CRUM CREEK
21-125C 6' SPEC.	1554 21-126C 4' GRATE	19-114C 6' SPEC.	19-115C 4' GRATE	1958	18" RCP	.49	CRUM CREEK
21-127C TYPE C	1207 21-139C M.H.	19-170C TYPE C	23-8C M.H.	1995	18" ACMP	78'	CRUM CREEK
21-128C 4' SPEC.	1256 21-129C 4' SPEC.	23-62C 4' SPEC.	23-63C 4' SPEC.	1972	18" RCP/PVT	122'	CRUM CREEK
21-129C 4' SPEC.	1872 21-130C 4' SPEC.	23-63 4' SPEC.	18-29 4' SPEC.	1972	18" RCP Pvt	84'	CRUM CREEK
21-12C 4' Grate	1972 21-13C Conc HDW	18-128 4' Grate	18-130 Conc HDW	1995	21" RCP	110'	CRUM CREEK
21-131C 6' Grate	1875 21-132 4' Spec	18-27 6' Grate	18-25 4' Spec	1972	18" RCP Pvt	17'	CRUM CREEK
21-132C 4' Spec	1877 21-133C 6' Grate	18-25 4' Spec	18-24 6' Grate	1972	18" RCP Pvt	62'	CRUM CREEK
21-133C 6' Grate	1878 21-134C 6' Grate	18-24 6' Grate	18-22 6' Grate	1972	18" RCP Pvt	317'	CRUM CREEK
21-134C 6' Grate	1884 End 24"	18-22 6' Grate	End 24"	1972	24" RCP Pvt		CRUM CREEK
21-136C TYPE C	1203 21-138C M.H.	23-5C TYPE C	23-6C M.H.	1958	18" RCP	198'	CRUM CREEK
21-137C TYPE C	1204 21-138C M.H.	23-7C TYPE C	23-6C M.H.	1995	18" RCP	15'	CRUM CREEK
21-139C M.H.	1209 21-141C TYPE C	23-8C M.H.	23-9C TYPE C	1958	18" RCP	82'	CRUM CREEK
21-140C TYPE C	1210 21-141C TYPE C	23-10C TYPE C	23-9C TYPE C	1985	18" CMP	124'	CRUM CREEK
21-141C TYPE C	1186 21-149C TYPE C	23-9C 4' SPEC.	24-111C TYPE C	1985	18" RCP	142'	CRUM CREEK
21-142C 4' GRATE	1218 21-143C 4' GRATE	23-21C 4' GRATE	23-22C 4' GRATE	1958	18" RC UD	248'	CRUM CREEK
21-143C 4' GRATE	1219 21-144C 6' GRATE	23-22C 4' GRATE	23-23C 6' GRATE	1958	18" RC UD	248'	CRUM CREEK
21-144C 6' GRATE	1221 21-145C 6' GRATE	23-23C 6' GRATE	23-28C 6' GRATE	1958	24" RCP UD	83,	CRUM CREEK
21-145C 6' GRATE	1223 21-146C 6' GRATE	23-28C 6' GRATE	23-24C 6' GRATE	1958	24" RCP UD	389'	CRUM CREEK
21-146C 6' GRATE	1227 21-147C 6' GRATE	23-24C 6' GRATE	23-25C 6' GRATE	1958	24" RC UD	224'	CRUM CREEK
21-147C 6' GRATE	1232 26-4C 6' GRATE	23-25C 6' GRATE	23-26C 6' GRATE	1958	30" RC UD	372'	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
21-148C 4' GRATE	1230 26-1C CONN TO 3	23-35C 4' GRATE	23-36C CONN TO	1958	18" RCP	12'	CRUM CREEK
21-149C 4' SPEC.	1188 26-7C 4' GRATE	24-111C 4' SPEC.	24-112C 4' GRATE 1985	1985	24" RCP	232'	CRUM CREEK
21-14C Stone Conc	1943 21-15C Stone Conc	18-92 Stone Conc C 18-93 Stone Conc C	18-93 Stone Conc C		12'x7' Box Culvert	,09	CRUM CREEK
21-150C 4' SPEC.	1184 21-151C 4' SPEC.	24-106C 4' SPEC.	24-107C 4' SPEC.	1985	15" RCP	,09	CRUM CREEK
21-151C 4' SPEC.	1185 26-8C 4' SPEC.	24-107C 4' SPEC.	24-109C 4' SPEC.	1985	15" RCP	83,	CRUM CREEK
21-16C #1 OM	1939 21-17C #1 OM	18-86 #1 OM	18-87 #1 OM	1954	15" RCP	34'	CRUM CREEK
21-17C #1 OM	1940 21-18C#1 OM & G 18-87#1 OM	18-87 #1 OM	18-88 #1 OM & Gra 1954	1954	18" RCP	176'	CRUM CREEK
21-18C#1 OM & G	1941 21-19C Stone HDW 18-88 #1 OM & Gra 18-89 Stone HDW	18-88 #1 OM & Gra		1954	18" RCP	125'	CRUM CREEK
21-1C Type C	1961 21-3C MH	18-118 Type C	18-119 MH	1995	18" RCP	, 4	CRUM CREEK
21-20C Conc HDW	1947 21-21C 4' Spec	18-98 Conc HDW	18-112 4' Spec		24" RCP	5⊗	CRUM CREEK
21-21C 4' Spec	1952 21-23C 6' Spec	18-112 4' Spec	18-99 6' Spec		24" RCP	45'	CRUM CREEK
21-22C 6' Spec	1953 21-23C 6' Spec	18-113 6' Spec	18-99 6' Spec		15" RCP	5⊗	CRUM CREEK
21-23C 6' Spec	1954 21-24C RR Tie End	18-99 6' Spec	18-115 RR Tie End		24" RCP	30'	CRUM CREEK
21-25C Conc HDW	1955 21-26C Conc HDW	18-105 Conc HDW	18-106 Conc HDW			42,	CRUM CREEK
21-27C Stone HDW	1956 21-28C End CMP	18-107 Stone HDW	18-108 End CMP		12" CMP	75'	CRUM CREEK
21-29C Conc HDW	1957 21-31C Conc HDW	18-110 Conc HDW	18-111 Conc HDW		15" RCP	100'	CRUM CREEK
21-2C Type C	1962 21-3C MH	18-120 Type C	18-119 MH		18" RCP	,09	CRUM CREEK
21-30C End 12" CI	1958 Junct 15" RCP	18-109 End 12" CIP Junct 15" RCP	Junct 15" RCP		12 CIP	,08	CRUM CREEK
21-32C #1 OM	1937 21-33C #1 OM	18-83 #1 OM	18-84 #1 OM	1954	15" RCP	34'	CRUM CREEK
21-33C #1 OM	1938 21-34C Stone HDW 18-84 #1 OM	18-84 #1 OM	18-85 Stone HDW	1954	15" RCP	160'	CRUM CREEK
21-35C Stone HDW	1944 21-36C #1 OM & G 18-94 Stone HDW	18-94 Stone HDW	18-95 #1 OM & Gra 1954	1954	18" RCP	12'	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
21-36C #1 OM & G	1945 21-37C #1 OM & G	18-95#1 OM & Gra	8-95#1 OM & Gra 18-96#1 OM & Gra 1954	1954	18" RCP	40,	CRUM CREEK
21-37C #1 OM & G	1946 21-38C Stone HDW	18-96 #1 OM & Gra	8-96 #1 OM & Gra 18-97 Stone HDW	1954	18" RCP	12'	CRUM CREEK
21-39C Conc HDW	1950 21-40C 4' Spec	18-103 Conc HDW	18-104 4' Spec		18" RCP	35'	CRUM CREEK
21-3C MH	1963 21-4C Type C	18-119 MH	18-121 Type C		18" RCP	118'	CRUM CREEK
21-40C 4' Spec	1951 21-41C End Sts	18-104 4' Spec	18-114 End Sts				CRUM CREEK
21-42C 4' Grate	1949 21-43C 4' Spec	18-102 4' Grate	18-28 4' Spec	1972	18" RCP	40,	CRUM CREEK
21-43C 4' Spec	1874 21-131C 6' Grate	18-28 4' Spec	18-27 6' Grate	1972	18" RCP Pvt	140'	CRUM CREEK
21-44C Stone HDW	1934 21-45C Stone HDW	18-79 Stone HDW	18-80 Stone HDW		10'x7' Stone & Conc 70'	; 70'	CRUM CREEK
21-46C #1 OM	1894 21-49C3 #1 OM	18-40 #1 OM	18-43 #1 OM	1949	18" RCP	24'	CRUM CREEK
21-47C#1 OM	1895 21-49C3 #1 OM	18-41 #1 OM	18-43 #1 OM	1949	15" RCP	36'	CRUM CREEK
21-48C #1 OM	1896 21-49C3 #1 OM	18-42 #1 OM	18-43 #1 OM	1949	18" RCP	36'	CRUM CREEK
21-49C3 #1 OM	1897 21-50C MH	18-43 #1 OM	18-44 MH	1949	24" RCP	152'	CRUM CREEK
21-4C Type C	1964 21-7C Type C	18-121 Type C	18-124 Type C		18" RCP	186'	CRUM CREEK
21-50C M.H.	2008 21-51C Stone HDW	18-44C M.H.	18-45C Stone HDW 1949	1949	24" RCP	120'	CRUM CREEK
21-52C Stone HDW	1933 21-53C MH	18-76 Stone HDW	18-77 MH		18" CIP	,09	CRUM CREEK
21-53C M.H.	2009 21-54C END 24" R	18-77 M.H.	18-78 END 24" RC		24" RCP		CRUM CREEK
21-55C 6' Spec	1900 21-58C 4' Grate	18-46 6' Spec	18-48 4' Grate	1963	42" RCP	65'	CRUM CREEK
21-56C 4' Grate	1903 21-57C 4' Grate	18-75 4' Grate	18-74 4' Grate	1964	15" RCP	30'	CRUM CREEK
21-57C 4' Grate	1904 21-58C 4' Grate	18-74 4' Grate	18-48 4' Grate	1964	18" RCP	28'	CRUM CREEK
21-58C 4' Grate	1901 21-65C MH	18-48 4' Grate	18-51 MH	1963	42" RCP	34'	CRUM CREEK
21-59C 6' Spec	1902 21-62C 4' Grate	18-47 6' Spec	18-73 4' Grate	1963	18" RCP	34'	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE PIPE	PIPE	LENGTH	BASIN
21-5C Type C	1965 21-6C MH	18-122 Type C	18-123 MH	1995	18" RCP	88	CRUM CREEK
21-60C 4' Grate	1905 21-62C 4' Grate	18-71 4' Grate	18-73 4' Grate	1964	15" RCP	25	CRUM CREEK
21-61C 4' Grate	1906 21-62C 4' Grate	18-72 4' Grate	18-73 4' Grate	1964	15" RCP	16'	CRUM CREEK
21-62C 4' Grate	1907 21-63C 4' Spec	18-73 4' Grate	18-49 4' Spec	1964	18" RCP	24'	CRUM CREEK
21-63C 4' Spec	1908 21-64C 4' Spec	18-49 4' Spec	18-50 4' Spec	1963	21" RCP	34'	CRUM CREEK
21-64C 4' Spec	1909 21-65C MH	18-50 4' Spec	18-51 MH	1963	21" RCP	7,	CRUM CREEK
21-65C MH	1910 21-69C MH	18-51 MH	18-52 MH	1963	48" RCP	224'	CRUM CREEK
21-66C 4' Grate	1911 21-67C 6' Grate	18-55 4' Grate	18-54 6' Grate	1963	15" RCP	Stand Pipe	CRUM CREEK
21-67C 6' Grate	1912 21-68C 4' Spec	18-54 6' Grate	18-53 4' Spec	1963	21" RCP	58'	CRUM CREEK
21-68C 4' Spec	1913 21-69C MH	18-53 4' Spec	18-52 MH	1963	21" RCP	,9	CRUM CREEK
21-69C MH	1914 21-70C MH	18-52 MH	18-56 MH	1963	48" RCP	150'	CRUM CREEK
21-6C MH	1966 21-7C Type C	18-123 MH	18-124 Type C	1995	18" RCP	46'	CRUM CREEK
21-70C MH	1915 21-74C MH	18-56 MH	18-57 MH	1963	48" RCP	116'	CRUM CREEK
21-71C 4' Grate	1916 21-72C 6' Grate	18-60 4' Grate	18-59 6' Grate	1963	15" RCP	Stand Pipe	CRUM CREEK
21-72C 6' Grate	1917 21-73C 4' Spec	18-59 6' Grate	18-58 4' Spec	1963	18" RCP	31'	CRUM CREEK
21-73C 4' Spec	1918 21-74C MH	18-58 4' Spec	18-57 MH	1963	18" RCP	.9	CRUM CREEK
21-74C MH	1919 21-75C MH	18-57 MH	18-60 MH	1963	48" RCP	,89	CRUM CREEK
21-75C MH	1920 21-79C MH	18-60 MH	18-64 MH	1963	48" RCP	127'	CRUM CREEK
21-76C 4' Spec	1921 21-77C 4' Spec	18-61 4' Spec	18-62 4' Spec	1963	18" RCP	44,	CRUM CREEK
21-77C 4' Spec	1922 21-78C 4' Spec	18-62 4' Spec	18-63 4' Spec	1963	18" RCP	33*	CRUM CREEK
21-78C 4' Spec	1923 21-79C MH	18-63 4' Spec	18-64 MH	1963	18" RCP	26'	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
21-79C MH	1924 21-80C5 MH	18-64 MH	18-65 MH	1963	48" RCP	207'	CRUM CREEK
21-7C Type C	1967 21-8C Type C	18-124 Type C	18-125 Type C	1995	18" RCP	70,	CRUM CREEK
21-82C #1 OM & G	1929 21-83C #1 OM & G	18-76#1 OM & Gra	8-76#1 OM & Gra 18-77#1 OM & Gra 1953	1953	15" RCP	37'	CRUM CREEK
21-83C #1 OM & G	1930 21-85C #1 OM	18-77 #1 OM & Gra 18-67 #1 OM	18-67 #1 OM	1953	18" RCP	130'	CRUM CREEK
21-84C Stone HDW	1926 21-85C #1 OM	18-66 Stone HDW	18-67 #1 OM	1953	15" RCP	,06	CRUM CREEK
21-85C #1 OM	1927 21-86C #1 OM	18-67 #1 OM	18-68 #1 OM	1953	24" RCP	58'	CRUM CREEK
21-86C #1 OM	1928 21-87C Stone HDW	18-68 #1 OM	18-69 Stone HDW	1953	27" RCP	132'	CRUM CREEK
21-88C #1 OM	1931 21-89C #1 OM	18-78 #1 OM	18-79 #1 OM	1953	18" RCP	34'	CRUM CREEK
21-89C #1 OM	1932 21-90C Stone HDW	18-79 #1 OM	18-80 Stone HDW	1953	21" RCP	105'	CRUM CREEK
21-8C Type C	1968 21-9C Type C	18-125 Type C	18-126 Type C	1995	21" RCP	112'	CRUM CREEK
21-91C #1 OM	1942 21-92C Stone HDW	18-90 #1 OM	18-91 Stone HDW	1954	15" RCP	145'	CRUM CREEK
21-93C 4' Grate	1948 21-94C Stone HDW	18-100 4' Grate	18-101 Stone HDW	1950	15" RCP	115'	CRUM CREEK
21-95C #1 OM & G	1935 21-96C Stone HDW	18-81 #1 OM & Gra	18-81 #1 OM & Gra 18-82 Stone HDW	1954	15" RCP	170'	CRUM CREEK
21-97C MH	1887 21-99C 6' Grate	18-31 MH	18-32 6' Grate	1954	24" RCP Pvt	45'	CRUM CREEK
21-98C Stone HDW	1888 21-99C 6' Grate	18-33 Stone HDW	18-32 6' Grate	1954	24" RCP	110'	CRUM CREEK
21-99C 6' Grate	1889 21-101C #1 OM Inl	18-32 6' Grate	18-34 #1 OM Inlet	1954	24" RCP	186'	CRUM CREEK
21-9C Type C	1969 21-10C Type C	18-126 Type C	18-127 Type C	1995	21" RCP	50'	CRUM CREEK
22-100C 4' SQ GR	1585 22-101C 4' SQ GR	19-145C 4' SQ GR	19-147C 4' SQ GR	1963	30" RCP PVT.	150'	CRUM CREEK
22-101C 4' SQ GR	1586 22-102C JUNCT @	19-147C 4' SQ GR	19-148C JUNCT @	1963	30" RCP PVT.	340'	CRUM CREEK
22-103C 6' SPEC.	1444 22-104C 6' SPEC.	19-1 6' SPEC.	19-2 6' SPEC.	1957	18" RCP	34'	CRUM CREEK
22-104C 6' SPEC.	1445 22-105C 4' GRATE	19-2 6' SPEC.	19-3 4' GRATE	1957	21" RCP	87'	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
22-105C 4' GRATE	1446 22-106C JUNCT M. 19-3 4' GRATE	M. 19-3 4' GRATE	19-4 JUNCT M.H.	1957	21" RCP	.99	CRUM CREEK
22-106C JUNCT M.	1447 22-107C 4' GRATE	E 19-4 JUNCT. BOX	19-5 4' GRATE	1964	24" RCP	100,	CRUM CREEK
22-107C 4' GRATE	1448 22-108C 4' GRATE	E 19-5 4' GRATE	19-6 4' GRATE	1964	24" RCP	324'	CRUM CREEK
22-108C 4' GRATE	1449 22-109C 4' GRATE	E 19-6 4' GRATE	19-7 4' GRATE	1964	24" RCP	202'	CRUM CREEK
22-109C 4' GRATE	1451 22-110C BOX CUL 19-7 4' GRATE	IL 19-7 4' GRATE	19-8 BOX CULV.	1964	24" RCP	100'	CRUM CREEK
22-10C 4' PDH SPE	1548 22-11C 4' SPEC.	19-104C 4' PDH SP	19-108C 4' SPEC.	1955	24" RCP	205'	CRUM CREEK
22-110C BOX CUL	1452 22-111C 36" PIPE	19-8 BOX CULV.	19-9 36" PIPE OUT		7'-6"x3' BOX CUL	+-185	CRUM CREEK
22-111C 36" PIPE	1453 22-115C 6' GRATE	E 19-936" PIPE OUT	19-10 6' GRATE IN		36" RCP	30,	CRUM CREEK
22-112C 4' GRATE	1455 22-115C 6' GRATE	E 19-144'GRATE	19-10 6' GRATE IN	1958	18" RCP	310'	CRUM CREEK
22-113C 4' GRATE	1456 22-114C JUNCT. 1	1 19-15 4' GRATE	19-16 JUNCT. 18"	1958	18" RCP	10'	CRUM CREEK
22-115C 6' GRATE	1457 22-117C 4' GRATE	E 19-10 6' GRATE IN	19-12 4' GRATE	1958	36" RCP	,89	CRUM CREEK
22-116C 4' GRATE	1458 22-117C 4' GRATE	E 19-11 4' GRATE	19-12 4' GRATE	1958	18" RCP	,09	CRUM CREEK
22-117C 4' GRATE	1459 22-118C M.H. GRA 19-12 4' GRATE	& 19-12 4' GRATE	19-13 M.H. GRATE		36" RCP	26'	CRUM CREEK
22-118C M.H. GRA	1373 22-119C M.H. GI	1373 22-119C M.H. GRA 19-13 M.H. GRATE 20-96 M.H. GRATE 1969	20-96 M.H. GRATE	1969	36" RCP	150'	CRUM CREEK
22-119C M.H. GRA	1374 22-120C M.H. GI	1374 22-120C M.H. GRA 20-96 M.H. GRATE 20-97 M.H. GRATE 1969	20-97 M.H. GRATE	1969	36" RCP	82,	CRUM CREEK
22-11C 4' SPEC.	1549 22-12C 4' SPEC.	19-108C 4' SPEC.	19-109C 4' SPEC.	1958	24" RCP	32'	CRUM CREEK
22-120C M.H. GRA	1442 22-121C M.H. GRA	2A 20-97 M.H. GRATE	20-98 M.H. GRATE 1969	1969	42" RCP	164'	CRUM CREEK
22-121C M.H. GRA	1460 22-123C HDW @	1460 22-123C HDW @ C 20-98 M.H. GRATE 19-17 HDW @ CH	19-17 HDW @ CH	1969	48" RCP	50'	CRUM CREEK
22-122C 3' GRATE	1461 22-123C HDW @ C 19-18 3' GRATE	C 19-18 3' GRATE	19-17 HDW @ CH		12" RCP	100'	CRUM CREEK
22-123C HDW @ C	1462 22-124C HDW (a	1462 22-124C HDW @ B 19-17 HDW @ CH	19-19 HDW @ BO	1973	8'x3' STONE MAS	172'	CRUM CREEK
22-125C 2-#1 OM	1097 22-126C#1 OM	24-1C 2-#1 OM	24-2C #1 OM	1953	18" RCP	27'	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
22-126C #1 OM	1580 22-98C 4' SQ GRA	24-2C #1 OM	19-143C 4' SQ GR	1953	18" RCP	180'	CRUM CREEK
22-127C CONC HD	1111 27-15C CONC HD	24-7C CONC HDW 24-18C CONC HD		1964	8'x18' 2'-3' Rip-Rap +-1000'	+-1000'	CRUM CREEK
22-12C 4' SPEC.	1550 22-18C M.H.	19-109C 4' SPEC.	19-110C M.H.	1958	24" RCP	.88	CRUM CREEK
22-13C 4' GRATE	1556 22-14C 4' GRATE	19-116C 4' GRATE	19-116C 4' GRATE 19-117C 4' GRATE	1958	18" RCP	64'	CRUM CREEK
22-14C 4' GRATE	1557 22-15C 4' GRATE	19-117C 4' GRATE	19-117C 4' GRATE 19-118C 4' GRATE	1958	18" RC UD	108'	CRUM CREEK
22-15C 4' GRATE	1558 22-17C 4' GRATE	19-118C 4' GRATE	19-119C 4' GRATE	1958	24" RC UD	,96	CRUM CREEK
22-16C 4' GRATE	1559 22-17C 4' GRATE	19-120C 4' GRATE	19-120C 4' GRATE 19-119C 4' GRATE	1958	18" RCP	64'	CRUM CREEK
22-17C 4' GRATE	1560 22-18C M.H.	19-119C 4' GRATE 19-110C M.H.	19-110C M.H.	1958	24" RC UD	16,	CRUM CREEK
22-18C M.H.	1561 22-20C M.H.	19-110C M.H.	19-121C M.H.	1958	30" RC UD	288'	CRUM CREEK
22-19C 4' GRATE	1562 22-20C M.H.	19-122C 4' GRATE	19-121C M.H.	1958	18" RCP	64'	CRUM CREEK
22-1C 4' GRATE	1618 22-3C 4' GRATE	19-183C 4' GRATE	19-183C 4' GRATE 19-184C 4' GRATE	1974	15" RCP	211'	CRUM CREEK
22-20C M.H.	1563 22-22C 4' GRATE	19-121C M.H.	19-123C 4' GRATE	1958	30" RC UD	504'	CRUM CREEK
22-21C 6' SPEC.	1564 22-22C 4' GRATE	19-124C 6' SPEC.	19-123C 4' GRATE	1958	18" RCP	64'	CRUM CREEK
22-22C 4' GRATE	1565 22-23C M.H.	19-123C 4' GRATE	19-125C M.H.	1958	30" RC UD	308,	CRUM CREEK
22-23C M.H.	1566 22-24C 4' SPEC.	19-125C M.H.	19-126C 4' SPEC.	1958	30" RC UD	224'	CRUM CREEK
22-24C 4' SPEC.	1567 22-92C 10'x7' CON	19-126C 4' SPEC.	19-52C 10'x7' CON	1958	30" RC UD	56'	CRUM CREEK
22-25C 4' GRATE	1524 22-26C 4' GRATE J 19-85C 4' GRATE	19-85C 4' GRATE	19-82C 4' GRATE J 1959	1959	15" RCP	64'	CRUM CREEK
22-26C 4' GRATE J	1525 22-30C 6' SPEC.	19-82C 4' GRATE J 19-83C 6' SPEC.	19-83C 6' SPEC.	1959	48" RCP	138'	CRUM CREEK
22-27C 4' SPEC.	1526 22-28C 4' SPEC.	19-88C 4' SPEC.	19-87C 4' SPEC.	1959	15" RCP	38'	CRUM CREEK
22-28C 4' SPEC.	1527 22-29C 4' SPEC.	19-87C 4' SPEC.	19-86C 4' SPEC.	1959	15" RCP	45'	CRUM CREEK
22-29C 4' SPEC.	1528 22-30C 6' SPEC.	19-86C 4' SPEC.	19-83C 6' SPEC.	1959	15" RCP	128'	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
22-2C 4' GRATE	1619 22-3C 4' GRATE	19-185C 4' GRATE	9-185C 4' GRATE 19-184C 4' GRATE	1974	15" RCP	22.	CRUM CREEK
22-30C 6' SPEC.	1529 22-31C 6' GRATE	19-83C 6' SPEC.	19-84C 6' GRATE	1959	54" RCP	30,	CRUM CREEK
22-31C 6' GRATE	1530 22-32 JUNCT. BO	19-84C 6' GRATE	19-89C JUNCT. BO 1975	1975	54" RCP	15'	CRUM CREEK
22-32 JUNCT. BO	1531 22-34C 4' SPEC.	19-89C JUNCT. BO 19-90C 4' SPEC.	19-90C 4' SPEC.	1975	54" RCP	44.	CRUM CREEK
22-33C 4' SPEC.	1532 22-34C 4' SPEC.	19-91C 4' SPEC.	19-90C 4' SPEC.	1975	15" RCP	34'	CRUM CREEK
22-34C 4' SPEC.	1533 22-35C 4' SPEC.	19-90C 4' SPEC.	19-92C 4' SPEC.	1975	54" RCP	130'	CRUM CREEK
22-35C 4' SPEC.	1534 22-37C 4' SPEC.	19-92C 4' SPEC.	19-94C 4' SPEC.	1975	54" RCP	170'	CRUM CREEK
22-36C 4' SPEC.	1535 22-37C 4' SPEC.	19-93C 4' SPEC.	19-94C 4' SPEC.	1975	15" RCP	37'	CRUM CREEK
22-37C 4' SPEC.	1536 22-38C 4' SPEC.	19-94C 4' SPEC.	19-95C 4' SPEC.	1975	60" RCP	70,	CRUM CREEK
22-38C 4' SPEC.	1537 22-39C STONE HD	19-95C 4' SPEC.	19-96C STONE HD	1975	60" RCP	112'	CRUM CREEK
22-3C 4' GRATE	1620 22-5C 4' GRATE	19-184C 4' GRATE	19-186C 4' GRATE	1974	15" RCP	105'	CRUM CREEK
22-40C #1 OM	1510 22-41C #1 OM	19-69C #1 OM	19-68C #1 OM	1954	15" RCP	45'	CRUM CREEK
22-41C#1 OM	1511 22-42C #1 OM	19-68C #1 OM	19-70C #1 OM	1954	18" RCP	,59	CRUM CREEK
22-42C #1 OM	1512 22-43C 4' SPEC.	19-70C #1 OM	19-71C 4' SPEC.	1966	21" RCP	240'	CRUM CREEK
22-43C 4' SPEC.	1513 22-44C 4' SPEC.	19-71C 4' SPEC.	19-72C 4' SPEC.	1966	24" RCP	220'	CRUM CREEK
22-44C 4' SPEC.	1514 22-45C 4' SPEC.	19-72C 4' SPEC.	19-73C 4' SPEC.	1966	24" RCP	278'	CRUM CREEK
22-45C 4' SPEC.	1515 22-46C JUNCT. BO	19-73C 4' SPEC.	19-74C JUNCT. BO 1966	1966	30" RCP	220'	CRUM CREEK
22-46C JUNCT. BO	1516 22-49C 2-4' SPEC. I		19-74C JUNCT BO 19-59C 2-4' SPEC. I 1966	1966	30" RCP	50'	CRUM CREEK
22-47C STONE HD	1520 22-48C 6' SPEC.	19-76C STONE HD 19-75C 6' SPEC.	19-75C 6' SPEC.	1959	48" RCP	225'	CRUM CREEK
22-48C 6' SPEC.	1521 22-49C 2-4' SPEC. I	19-75C 6' SPEC.	19-59C 2-4' SPEC. I		36" RCP	50'	CRUM CREEK
22-49C 2-4' SPEC, I	1500 22-66C Junct. Box	19-59C 2-4' SPEC. I	19-59C 2-4' SPEC. I 19-58C Junct. Box	1974	58"x36" CORR. I. P 126'	P 126'	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
22-4C 4' GRATE	1621 22-5C 4' GRATE	19-187C 4' GRATE	.9-187C 4' GRATE 19-186C 4' GRATE	1974	15" RCP	22'	CRUM CREEK
22-50C CONC. HD	1499 22-66C Junct. Box	19-57C CONC. HD 19-58C Junct. Box	19-58C Junct. Box	1974	81"x59" CORR. I. P	180'	CRUM CREEK
22-51C 6' GRATE	1497 22-52C 6' GRATE	19-54C 6' GRATE	19-55C 6' GRATE	1974	18" RCP	,96	CRUM CREEK
22-52C 6' GRATE	1498 22-65C 6' GRATE	19-55C 6' GRATE	19-56C 6' GRATE	1974	18" RCP	104'	CRUM CREEK
22-53C 4' SPEC.	1468 22-54C 6' GRATE	19-26C 4' SPEC.	19-27C 6' GRATE	1967	15" RCP	,99	CRUM CREEK
22-54C 6' GRATE	1469 22-55C 4' GRATE	19-27C 6' GRATE	19-28C 4' GRATE		18" RCP	325'	CRUM CREEK
22-55C 4' GRATE	1470 22-56C 4' GRATE	19-28C 4' GRATE	19-29C 4' GRATE	1969	18" RCP	24'	CRUM CREEK
22-56C 4' GRATE	1471 22-57C M.H. JUNC	19-29C 4' GRATE	19-32C M.H. JUNC		21" RCP	160'	CRUM CREEK
22-57C M.H. JUNC	1472 22-58C M.H.	19-32C M.H. JUNC	19-33C M.H.	1983	21" RCP	,99	CRUM CREEK
22-58C M.H.	1473 22-59C 5-#1 GRAT	19-33C M.H.	19-39C 5-#1 GRAT 1983	1983	21" RCP	140'	CRUM CREEK
22-59C 5-#1 GRAT	1474 22-60C 6' SPEC.	19-39C 5-#1 GRAT 19-40C 6' SPEC.	19-40C 6' SPEC.	1961	24" RCP	,86	CRUM CREEK
22-5C 4' GRATE	1622 21-107C 4' GRATE	19-186C 4' GRATE	19-186C 4' GRATE 19-188C 4' GRATE	1974	15" RCP	121'	CRUM CREEK
22-60C 6' SPEC.	1475 22-61C 6' SPEC.	19-40C 6' SPEC.	19-41C 6' SPEC.	1961	24" RCP	28'	CRUM CREEK
22-61C 6' SPEC.	1485 22-62C 4' GRATE	19-41C 6' SPEC.	19-46C 4' GRATE	1961	24" RCP	16'	CRUM CREEK
22-62C 4' GRATE	1493 22-63C 4' GRATE	19-46C 4' GRATE	19-47C 4' GRATE		36" CMP	148'	CRUM CREEK
22-63C 4' GRATE	1494 22-64C 3.5'x11' GR	19-47C 4' GRATE	19-53C 3.5'x11' GR		36" RCP	290'	CRUM CREEK
22-64C 3.5'x11' GR	1495 22-65C 6' GRATE	19-53C 3.5'x11' GR	19-56C 6' GRATE	1964	36" RCP	92'	CRUM CREEK
22-65C 6' GRATE	1496 22-66C Junct. Box	19-56C 6' GRATE	19-58C Junct. Box	1964	36" RCP	,09	CRUM CREEK
22-66C Junct. Box	1501 22-72C Junct. Box	19-58C JUNCT. BO	19-58C JUNCT. BO 19-62C Junct. Box	1974	112"x75" CORR. I.	320'	CRUM CREEK
22-67C 6' GRATE	1504 22-68C 6' GRATE	19-65C 6' GRATE	19-64C 6' GRATE	1974	15" RCP	145'	CRUM CREEK
22-68C 6' GRATE	1505 22-69C 6' GRATE	19-64C 6' GRATE	19-63C 6' GRATE	1974	15" RCP	94,	CRUM CREEK

Wednesday, March 31, 2004

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
22-69C 6' GRATE	1506 22-72C Junct. Box	19-63C 6' GRATE	19-62C Junct. Box	1974	18" RCP	.92	CRUM CREEK
22-6C #1 OM	1517 22-7C #1 OM	19-80C #1 OM	19-79C #1 OM	1950	18" RCP	147'	CRUM CREEK
22-70C 6' GRATE	1502 22-71C 6' GRATE	19-60C 6' GRATE	19-61C 6' GRATE	1974	15" RCP	124'	CRUM CREEK
22-71C 6' GRATE	1503 22-72C Junct. Box	19-61C 6' GRATE	19-62C Junct. Box	1974	18" RCP	135'	CRUM CREEK
22-72C Junct. Box	1508 22-74C Junct. Box	19-62C Junct. Box	19-67C Junct. Box	1974	112"x75" Smooth Fl		CRUM CREEK
22-73C 6' GRATE	1507 112"x75" PIPE AR	19-66C 6' GRATE	112"x75" PIPE AR	1974		11'	CRUM CREEK
22-74C Junct. Box	1509 22-93C MH Junct.	19-67C Junct. Box	19-152C MH Junct.		10'x7' CONC. ARC	112'	CRUM CREEK
22-75C 4' GRATE	1492 10'x7' CONC. ARC	19-51C 4' GRATE	10'x7' CONC. ARC	1958	18" RCP	-∞	CRUM CREEK
22-76C 6' SPEC.	1569 22-78C M.H.	19-128C 6' SPEC.	19-129C M.H.	1958	18" RCP	28'	CRUM CREEK
22-77C 6' SPEC.	1568 22-78C M.H.	19-127C 6' SPEC.	19-129C M.H.	1958	18" RC UD	48'	CRUM CREEK
22-78C M.H.	1570 22-79C 4' SPEC.	19-129C M.H.	19-130C 4' SPEC.	1958	18" RCP	,88	CRUM CREEK
22-79C 4' SPEC.	1571 22-80C Conn To 10'	19-130C 4' SPEC.	19-131C Conn To 1	1958	18" RCP	92,	CRUM CREEK
22-7C #1 OM	1518 22-8C #1 OM	19-79C #1 OM	19-78C #1 OM		18" RCP	34'	CRUM CREEK
22-81C 4' GRATE	1463 22-82C 4' GRATE	19-20C 4' GRATE	19-21C 4' GRATE	1958	18" RCP	.99	CRUM CREEK
22-82C 4' GRATE	1464 22-83C 4' PDH SPE	19-21C 4' GRATE	19-22C 4' PDH SPE 1958	1958	18" RC UD	274'	CRUM CREEK
22-83C 4' PDH SPE	1465 22-85C M.H.	19-22C 4' PDH SPE	19-31C M.H.	1958	18" RC UD	18'	CRUM CREEK
22-84C 4' SPEC.	1467 22-85C M.H.	19-30C 4' SPEC.	19-31C M.H.	1983	15" CMP	37'	CRUM CREEK
22-85C M.H.	1466 22-86C 4' GRATE	19-31C M.H.	19-23C 4' GRATE	1958	18" RCP	64'	CRUM CREEK
22-86C 4' GRATE	1486 22-87C 4' GRATE	19-23C 4' GRATE	19-24C 4' GRATE	1958	18" RCP	,59	CRUM CREEK
22-87C 4' GRATE	1487 22-89C 4' GRATE	19-24C 4' GRATE	19-25C 4' GRATE	1958	18" RC UD	208'	CRUM CREEK
22-88C 4' GRATE	1488 22-89C 4' GRATE	19-48C 4' GRATE	19-25C 4' GRATE	1958	18" RCP	64'	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
22-89C 4' GRATE	1489 22-90C 4' GRATE	19-25C 4' GRATE	19-49C 4' GRATE	1958	18" RC UD	156'	CRUM CREEK
22-8C #1 OM	1519 22-9C END 24" RC 19-78C #1 OM	19-78C #1 OM	19-77C END 24" R		24" RCP	48'	CRUM CREEK
22-90C 4' GRATE	1490 22-91C 4' SPEC.	19-49C 4' GRATE	19-50C 4' SPEC.	1958	18" RC UD	176'	CRUM CREEK
22-91C 4' SPEC.	1491 22-92C 10'x7' CON	19-50C 4' SPEC.	19-52C 10'x7' CON	1958	18" RC UD	150'	CRUM CREEK
22-93C M.H. Junct.	1588 22-94C M.H.	19-152C M.H. Junct 19-153C M.H.	19-153C M.H.	1967	8'x5' CONC. BOX	151'	CRUM CREEK
22-94C M.H.	1589 22-95C CONC. HD	19-153C M.H.	19-151C CONC. H	1967	8'x5' CONC. BOX	169′	CRUM CREEK
22-95C CONC. HD	1590 22-96C Conc. HDW 19-151C CONC. H	19-151C CONC. H	19-154C Conc. HD	1967	10'-12'x4' Stone Ma	97'	CRUM CREEK
22-96C Conc. HDW	1591 22-97C Junct. With 19-154C Conc. HD	19-154C Conc. HD	19-155C Junct. Wit	1961	12'x3' CONC. BOX	75'	CRUM CREEK
22-97C Junct With	1102 22-127C CONC HD 19-155C Junet With 24-7C CONC HDW 1963	19-155C Junct With	24-7C CONC HDW	1963	8'x5' CONC BOX C	738'	CRUM CREEK
22-98C 4' SQ GRA	1581 22-99C 4' SQ GRA 19-143C 4' SQ GR	19-143C 4' SQ GR	19-144C 4' SQ GR	1963	24" RCP PVT.	305'	CRUM CREEK
22-99C 4' SQ GRA	1583 22-100C 4' SQ GR	19-144C 4' SQ GR	19-145C 4' SQ GR	1963	24" RCP PVT.	341'	CRUM CREEK
23-10C 4' SPEC.	1376 23-11C 4' GRATE	20-102 4' SPEC.	20-103 4' GRATE	1958	18" RCP	.92	CRUM CREEK
23-11C 4' GRATE	1377 23-12C 4' GRATE	20-103 4' GRATE	20-104 4' GRATE	1958	18" RC UD	260'	CRUM CREEK
23-12C 4' GRATE	1454 22-115C 6' GRATE	20-104 4' GRATE	19-10 6' GRATE IN 1958	1958	18" RC UD	252'	CRUM CREEK
23-13C 6' GRATE	1369 23-15C 2-6' GRAT	20-95 6' GRATE	20-94 2-6' GRATES 1962	1962	18" RCP	224'	CRUM CREEK
23-14C 2-6' GRAT	1368 23-15C 2-6' GRAT	20-93 2-6' GRATES	20-94 2-6' GRATES	1962	18" RCP	223'	CRUM CREEK
23-15C 2-6' GRAT	1370 23-16C M.H. GRA	20-94 2-6' GRATES	20-100 M.H. GRAT 1962	1962	27" RCP	186'	CRUM CREEK
23-16C M.H. GRA	1371 23-17C M.H. GRA		20-100 M.H. GRAT 20-99 M.H. GRATE 1962	1962	27" RCP	111'	CRUM CREEK
23-17C M.H. GRA	1372 22-121C M.H. GRA	20-99 M.H. GRATE	20-98 M.H. GRATE 1962	1962	27" RCP	110'	CRUM CREEK
23-18C BEGIN ST	1346 23-19C STONE HD	20-7 BEGIN STOR	20-6 STONE HDW	1966	2'x3' STONE MAS	485'	CRUM CREEK.
23-19C STONE HD	1347 23-24C 2-4' GRAT	20-6 STONE HDW	20-6 STONE HDW 20-5 2-4' GRATES		24" RCP	+-75'	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
23-20C 4' GRATE	1350 23-23C 4' GRATE	20-9 4' GRATE	20-8 4' GRATE	1958	18" RCP	48,	CRUM CREEK
23-21C 4' GRATE	1348 23-22C 6' GRATE	20-11 4' GRATE	20-10 6' GRATE	1958	18" RCP UD	132'	CRUM CREEK
23-22C 6' GRATE	1349 23-23C 4' GRATE	20-10 6' GRATE	20-8 4' GRATE	1958	18" RCP UD	16'	CRUM CREEK
23-23C 4' GRATE	1351 23-24C 2- 4' GRAT	20-8 4' GRATE	20-5 2-4' GRATES	1958	24" RCP UD	48'	CRUM CREEK
23-24C (2) 4' GRA	1352 23-28C 4' PDH SPE	20-5 (2) 4' GRATES	20-4 4' PDH SPEC.	1958	30" RCP	64'	CRUM CREEK
23-25C 4' GRATE I	1342 23-26C 4' PDH SPE	20-1 4' GRATE INL	20-2 4' PDH SPEC.	1958	18" RCP	44'	CRUM CREEK
23-26C 4' PDH SPE	1343 23-27C 4' PDH SPE	20-2 4' PDH SPEC.	20-3 4' PDH SPEC.	1958	18" RCP	64'	CRUM CREEK
23-27C 4' PDH SPE	1344 23-28C 4' PDH SPE	20-3 4' PDH SPEC.	20-4 4' PDH SPEC.	1958	18" RCP UD	216'	CRUM CREEK
23-28C 4' PDH SPE	1353 23-33C 6' GRATE	20-4 4' PDH SPEC.	20-12 6' GRATE	1970	24" RCP	140'	CRUM CREEK
23-29C 3' GRATE	1356 23-30C 4' GRATE	20-14 3' GRATE	20-13 4' GRATE	1970	12" RCP	140'	CRUM CREEK
23-30C 4' GRATE	1357 23-33C 6' GRATE	20-13 4' GRATE	20-12 6' GRATE	1970	15" RCP	145'	CRUM CREEK
23-31C 3' GRATE	1354 23-32C 4' GRATE	20-16 3' GRATE	20-15 4' GRATE	1970	12" RCP	150'	CRUM CREEK
23-32C 4' GRATE	1355 23-33C 6' GRATE	20-15 4' GRATE	20-12 6' GRATE	1970	15" RCP	140'	CRUM CREEK
23-33C 6' GRATE	1358 23-36C 6' GRATE	20-12 6' GRATE	20-17 6' GRATE	1970	24" RCP	142'	CRUM CREEK
23-34C 3' GRATE	1360 23-36C 6' GRATE	20-18 3' GRATE	20-17 6' GRATE	1970	15" RCP	188′	CRUM CREEK
23-35C 3' GRATE	1359 23-36C 6' GRATE	20-19 3' GRATE	20-17 6' GRATE	1970	15" RCP	158'	CRUM CREEK
23-36C 6' GRATE	1361 23-37C SPEC GRA	20-17 6' GRATE	20-20 SPEC GRAT	1970	24" RCP	.8	CRUM CREEK
23-37C SPEC GRA	1362 23-38C 6' GRATE	20-20 SPEC GRAT	20-21 6' GRATE	1976		0	CRUM CREEK
23-38C 6' GRATE	1363 23-39C#1 OM & G	20-21 6' GRATE	20-22 #1 OM & GR	1976	24" / 30" RCPS	146'	CRUM CREEK
23-39C #1 OM & G	1364 23-40C#1 OM & G	20-22 #1 OM & 6'	20-23 #1 OM & GR	1976	2-30" RCPS	40,	CRUM CREEK
23-40C #1 OM & G	1365 23-41C CONC HD	20-23 #1 OM & 6'	20-24 CONC HDW 1992	1992	48" CORR. ALUM.	. 183'	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
23-42C M.H.	1414 23-43C 3' GRATE	20-41 M.H.	20-40 3' GRATE	1954	15" RCP	43'	CRUM CREEK
23-43C 3' GRATE	1415 23-44C M.H.	20-40 3' GRATE	20-39 M.H.	1954	15" RCP	185'	CRUM CREEK
23-44C M.H.	1416 23-45C M.H.	20-39 M.H.	20-38 M.H.	1954	15" RCP	146'	CRUM CREEK
23-45C M.H.	1417 23-49C JUNCT BO	20-38 M.H.	20-34 JUNCT BOX	1954	15" RCP	161'	CRUM CREEK
23-46C 4' PDH SPE	1434 23-47C 4' PDH SPE	20-35 4' PDH SPEC	20-36 4' PDH SPEC	1958	18" RCP	28'	CRUM CREEK
23-47C 4' PDH SPE	1435 23-48C JUNCT. BO	20-36 4' PDH SPEC	20-37 JUNCT. BO	1958	18" RCP	12'	CRUM CREEK
23-48C JUNCT. BO	1436 23-58C M.H.	20-37 JUNCT BOX	20-33 M.H.		18" RCP	30'	CRUM CREEK
23-50C 4' PDH SPE	1426 23-51C 4' PDH SPE	20-25 4' PDH SPEC	20-26 4' PDH SPEC 1958	1958	18" RCP	52'	CRUM CREEK
23-51C 4' PDH SPE	1427 23-52C 4' GRATE	20-26 4' PDH SPEC	20-27 4' GRATE	1958	18" RCP UD	104'	CRUM CREEK
23-52C 4' GRATE	1428 23-53C 4' PDH SPE	20-27 4' GRATE	20-28 4' PDH SPEC	1958	18" RCP	64'	CRUM CREEK
23-53C 4' PDH SPE	1429 23-55C 4' PDH SPE	20-28 4' PDH SPEC	20-29 4' PDH SPEC	1958	18" RCP UD	180'	CRUM CREEK
23-54C 4' PDH SPE	1430 23-55C 4' PDH SPE	20-30 4' PDH SPEC	20-29 4' PDH SPEC	1958	18" RCP	64'	CRUM CREEK
23-55C 4' PDH SPE	1431 23-56C 4' PDH SPE	20-29 4' PDH SPEC	20-31 4' PDH SPEC	1958	18" RCP UD	164'	CRUM CREEK
23-56C 4' PDH SPE	1432 23-57C 4' PDH SPE		20-31 4' PDH SPEC 20-32 4' PDH SPEC	1958	18" RCP UD	176'	CRUM CREEK
23-57C 4' PDH SPE	1433 23-58C M.H.	20-32 4' PDH SPEC	20-33 M.H.	1958	18" RCP	48,	CRUM CREEK
23-58C M.H.	1418 23-61C 4' GRATE	20-33 M.H.	20-43 4' GRATE	1952	30" RCP	100'	CRUM CREEK
23-59C 4' PDH SPE	1419 CONN. TO 30" RC	20-42 4' PDH SPEC	CONN. TO 30" RC	1958	18" RCP	46'	CRUM CREEK
23-60C #1 OM	1420 23-61C 4' GRATE	20-44 #1 OM	20-43 4' GRATE	1952	15" RCP	36'	CRUM CREEK
23-61C 4' GRATE	1421 23-62C #1 OM	20-43 4' GRATE	20-45 #1 OM	1952	36" RCP	200'	CRUM CREEK
23-62C #1 OM INL	1422 23-63C GRATE IN	20-45 #1 OM INLE	20-46 GRATE INL	1952	36" RCP	,99	CRUM CREEK
23-63C GRATE IN	1423 23-65C UNKNOW	20-46 GRATE INL	20-47 UNKNOWN		36" RCP	50,	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
23-64C END 30" R	1424 23-65C UNKNOW	20-55A END 30" R	20-47 UNKNOWN	1953	30" RCP	210'	CRUM CREEK
23-65C UNKNOW	1425 23-66C #1 OM INL	20-47 UNKNOWN	20-48 #1 OM INLE	1953	42" RCP	285'	CRUM CREEK
23-66C #1 OM INL	1402 23-71C #1 OM INL	20-48 #1 OM INLE	20-49 #1 OM INLE	1952	48" RCP	28'	CRUM CREEK
23-67C #1 OM INL	1403 23-68C #1 OM INL	20-53 #1 OM INLE	20-54 #1 OM INLE	1952	15" RCP	30'	CRUM CREEK
23-68C #1 OM INL	1404 23-69C #1 OM INL	20-54 #1 OM INLE	20-51 #1 OM INLE	1952	15" UNDER DRAI	310'	CRUM CREEK
23-69C #1 OM INL	1405 23-70C #1 OM INL	20-51 #1 OM INLE	20-52 #1 OM INLE	1952	15" UNDER DRAI	48,	CRUM CREEK
23-6C NO 1 OM	1438 23-7C NO 1 OM	20-105 NO 1 OM	20-106 NO 1 OM		30" CORR IRON PI	40,	CRUM CREEK
23-70C #1 OM INL	1406 23-71C#1 OM INL	20-52 #1 OM INLE	20-49 #1 OM INLE	1952	24" RCP	132'	CRUM CREEK
23-71C #1 OM INL	1407 23-72C STONE HD	20-49 #1 OM INLE	20-50 STONE HD	1952	48" RCP	133'	CRUM CREEK
23-73C #1 OM INL	1408 23-74C #1 OM INL	20-55 #1 OM INLE	20-56 #1 OM INLE	1952	18" RCP	28'	CRUM CREEK
23-74C #1 OM INL	1409 23-75C STONEY C	20-56 #1 OM INLE	20-57 STONEY CR 1952	1952	24" CORR. I.P.	140'	CRUM CREEK
23-76C STONE HD	1410 23-77C STONE HD	20-58 STONE HD	20-59 STONE HD	1952	3'x6' CONC BOX C	62'	CRUM CREEK
23-77C STONE HD	1411 23-78C END CHA	20-59 STONE HD	20-60 END CHAN	1970	6'x3' STONE CHA	167'	CRUM CREEK
23-79C HDW STO	1412 23-80C HDW STO	20-61 HDW STON	20-62 HDW STON		5'x9' STONE ARC		CRUM CREEK
23-7C NO 1 OM	1439 23-8C 4' GRATE	20-106 NO 1 OM	20-107 4' GRATE	1970	24" RCP	130'	CRUM CREEK
23-81C 2'x4' GRAT	1392 23-82C 2'x4' GRAT	20-67 2'x4' GRATE	20-68 2'x4' GRATE	1980	12" ACP	120'	CRUM CREEK
23-82C 2'x4' GRAT	1393 23-83C 2'x4' GRAT	20-68 2'x4' GRATE	20-69 2'x4' GRATE	1980	12" ACP	180'	CRUM CREEK
23-83C 2'x4' GRAT	1394 23-85C M.H.	20-69 2'x4' GRATE	20-71 M.H.	1980	12" ACP	109'	CRUM CREEK
23-84C 2'x4' GRAT	1395 23-85C M.H.	20-70 2'x4' GRATE	20-71 M.H.	1980	12" ACP	193'	CRUM CREEK
23-85C M.H.	1396 23-86C M.H.	20-71 M.H.	20-72 M.H.	1980	18" ACP	103'	CRUM CREEK
23-86C M.H.	1397 23-87C M.H.	20-72 M.H.	20-73 M.H.	1980	18" ACP	380'	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
23-87C M.H.	1398 24-15C CONC. HD	20-73 M.H.	20-74 CONC. HDW 1980	1980	18" ACP	446'	CRUM CREEK
23-88C 6' SPEC.	1385 23-89C 6' SPEC.	20-92 6' SPEC.	20-85 6' SPEC.	1970	18" RCP	,99	CRUM CREEK
23-89C 6' SPEC.	1386 24-26C 6' SPEC.	20-85 6' SPEC.	20-83 6' SPEC.	1970	24" RCP	164'	CRUM CREEK
23-8C 4' GRATE	1450 22-109C 4' GRATE	20-107 4' GRATE	19-7 4' GRATE	1964	24" RCP	190'	CRUM CREEK
23-90C 4' SPEC.	1388 23-91C 4' SPEC.	20-88 4' SPEC.	20-89 4' SPEC.	1970	18" RCP	38'	CRUM CREEK
23-91C 4' SPEC.	1389 23-92C 4' SPEC.	20-89 4' SPEC.	20-90 4' SPEC.	0261	18" RCP	215'	CRUM CREEK
23-92C 4' SPEC.	1366 23-93C 4' SPEC.	20-90 4' SPEC.	20-91 4' SPEC.	1970	21" RCP	212'	CRUM CREEK
23-93C 4' SPEC.	1367 24-26C 6' SPEC.	20-91 4' SPEC.	20-83 6' SPEC.	1970	21" RCP	269'	CRUM CREEK
23-94	2012 3'x6' CONC BOX C						CRUM CREEK
23-95	2013 3'x6' CONC BOX C						CRUM CREEK
23-9C 4' GRATE	1375 23-10C 4' SPEC.	20-101 4' GRATE	20-102 4' SPEC.	1958	18" RCP	48'	CRUM CREEK
24-11C 4' PDH SPE	1413 24-12C 4' PDH SPE	20-63 4' PDH SPEC	20-64 4' PDH SPEC	1961	18" RCP	28'	CRUM CREEK
24-12C 4' PDH SPE	1390 24-13C M.H.	20-64 4' PDH SPEC	20-65 M.H.	1961	18" RCP	100'	CRUM CREEK
24-13C M.H.	1391 24-14C STONE HD	20-65 M.H.	20-66 STONE HD	1961	18" RCP	,08	CRUM CREEK
24-16C CONC. HD	1399 24-20C M.H.	20-75 CONC. HDW 20-77 M.H.	20-77 M.H.	1980	42" RCP	,08	CRUM CREEK
24-17C 6' PDH SPE	1400 24-18C 6' PDH SPE	20-78 6' PDH SPEC	20-79 6' PDH SPEC	1980	15" RCP	74'	CRUM CREEK
24-18C 6' PDH SPE	1401 24-19C 6' PDH SPE	20-79 6' PDH SPEC	20-76 6' PDH SPEC	1980	18" RCP	28'	CRUM CREEK
24-19C 6' PDH SPE	1378 24-20C M.H.	20-76 6' PDH SPEC	20-77 M.H.	1980	21" RCP	113'	CRUM CREEK
24-20C M.H.	1379 24-22C 6' PDH GR	20-77 M.H.	20-81 6' PDH GRA	1980	42" RCP	120'	CRUM CREEK
24-21C 4' PDH GR	1380 24-22C 6' PDH GR	20-80 4' PDH GRA	20-81 6' PDH GRA	1980	15" RCP	16'	CRUM CREEK
24-22C 6' PDH GR	1381 24-27C 6' PDH GR	20-81 6' PDH GRA	20-84 6' PDH GRA	1970	42" RCP	370'	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
24-23C 6' SPEC.	1382 24-24C 4' SPEC.	20-86 6' SPEC.	20-87 4' SPEC.	1970	18" RCP	34'	CRUM CREEK
24-24C 4' SPEC.	1383 24-25C 6' SPEC.	20-87 4' SPEC.	20-82 6' SPEC.	1970	18" RCP	178'	CRUM CREEK
24-25C 6' SPEC.	1384 24-26C 6' SPEC.	20-82 6' SPEC.	20-83 6' SPEC.	1970	30" RCP	34'	CRUM CREEK
24-26C 6' SPEC.	1387 24-27C 6' PDH GR	20-83 6' SPEC.	20-84 6' PDH GRA	1970	30" RCP	117'	CRUM CREEK
25-10C 4' SPEC.	1286 25-11C 4' GRATE	22-11C 4' SPEC.	22-12C 4' GRATE		18" RCP	138'	CRUM CREEK
25-11C 4' GRATE	1287 25-12C 4' GRATE	22-12C 4' GRATE	22-13C 4' GRATE		18" RCP	138'	CRUM CREEK
25-12C 4' GRATE	2010 25-13C 4' GRATE	22-13C 4' GRATE	22-14C 4' GRATE		18" RCP	140'	CRUM CREEK
25-13C 4' GRATE	1289 25-15C 4' GRATE	22-14C 4' GRATE	22-15C 4' GRATE		18" RCP	82'	CRUM CREEK
25-14C 4' GRATE	1290 25-15C 4' GRATE	22-16C 4' GRATE	22-15C 4' GRATE		18" RCP	78,	CRUM CREEK
25-15C 4' GRATE	1291 25-16C 4' GRATE	22-15C 4' GRATE	22-9C 4' GRATE		18" RCP	36'	CRUM CREEK
25-16C 4' GRATE	1292 25-17C	22-9C 4' GRATE	22-17C				CRUM CREEK
25-18C CONC. HD	1294 25-19C CONC HD	22-18C CONC. HD	22-19C CONC HD		30" CMP		CRUM CREEK
25-1C 6' GRATE	1278 25-2C 6' GRATE	22-1C 6' GRATE	22-2C 6' GRATE	1958	18" RCP	,09	CRUM CREEK
25-20C END 12" CI	1295 25-21C TYPE C	22-20C END 12" CI 22-21C TYPE C	22-21C TYPE C	1986	12"-15" CIP to CM	204'	CRUM CREEK
25-21C TYPE C	1296 25-22C 4' GRATE	22-21C TYPE C	22-22C 4' GRATE	1986	15" CMP/PVT	116'	CRUM CREEK
25-22C 4' GRATE	1298 25-23C 4' GRATE	22-22C 4' GRATE	22-24C 4' GRATE	1986	21" CMP/PVT	132'	CRUM CREEK
25-23C 4' GRATE	1299 25-24C CONC HD	22-24C 4' GRATE	22-25C CONC HD	1986	21" CMP/PVT	32'	CRUM CREEK
25-25C 6' GRATE	1257 25-29C 6' GRATE	23-64C 6' GRATE	23-65C 6' GRATE	1958	18" RCP UD	224'	CRUM CREEK
25-26C 4' SPEC.	1258 25-28C M.H.	23-68C 4' SPEC.	23-67C M.H.	1972	18" RCP	36'	CRUM CREEK
25-27C 6' GRATE	1259 25-28C M.H.	23-66C 6' GRATE	23-67C M.H.	1972	18" RCP	22'	CRUM CREEK
25-28C M.H.	1260 25-29C 6' GRATE	23-67C M.H.	23-65C 6' GRATE	1958	18" RCP	84'	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
25-29C 6' GRATE	1261 25-30C 6' GRATE	23-65C 6' GRATE	23-69C 6' GRATE	1958	18" RCP UD	276'	CRUM CREEK
25-2C 6' GRATE	1279 25-3C M.H.	22-2C 6' GRATE	22-3C M.H.	1958	24" RCP	260'	CRUM CREEK
25-30C 6' GRATE	1262 25-31C 6' GRATE	23-69C 6' GRATE	23-70C 6' GRATE	1958	18" RCP UD	100'	CRUM CREEK
25-31C 6' GRATE	1263 25-35C M.H.	23-70C 6' GRATE	23-74C M.H.	1958	24" RCP	72'	CRUM CREEK
25-32C 6' GRATE	1264 25-33C 6' GRATE	23-71C 6' GRATE	23-72C 6' GRATE	1972	RCP	30'	CRUM CREEK
25-33C 6' GRATE	1265 25-34C 4' SPEC.	23-72C 6' GRATE	23-73C 4' SPEC.	1972	RCP	40,	CRUM CREEK
25-34C 4' SPEC.	1266 25-35C M.H.	23-73C 4' SPEC.	23-74C M.H.	1972	RCP	28'	CRUM CREEK
25-35C M.H.	1267 25-36C 6' GRATE	23-74C M.H.	23-75C 6' GRATE	1958	24" RCP UD	284'	CRUM CREEK
25-36C 6' GRATE	1277 25-2C 6' GRATE	23-75C 6' GRATE	22-2C 6' GRATE	1958	24" RCP UD	296'	CRUM CREEK
25-37C 4' SPEC.	1248 20-10C 6' GRATE	23-54C 4' SPEC.	23-53C 6' GRATE	1972	18" RCP/PVT	57'	CRUM CREEK
25-38C M.H.	1293 25-18C CONC HD	23-76C M.H.	22-18C CONC HD		30"/24" CMP	380'/92'	CRUM CREEK
25-39C 6' GRATE	1234 25-40C 4' SPEC IN	23-41C 6' GRATE	23-42C 4' SPEC IN	1958	18" RCP	112'	CRUM CREEK
25-40C 4' SPEC IN	1235 25-42C 4' SPEC. IN	23-42C 4' SPEC.	23-44C 4' SPEC. IN	1958	18" RCP	112	CRUM CREEK
25-41C 4' GRATE	1236 25-42C 4' SPEC. IN	23-43C 4' GRATE	23-44C 4' SPEC. IN	1958	18" RCP	24'	CRUM CREEK
25-42C 4' SPEC. IN	1237 25-43C M.H.	23-44C 4' SPEC. IN	23-39C M.H.	1958	18" RCP	,89	CRUM CREEK
25-43C M.H.	1238 25-44C 4' SPEC.	23-39C M.H.	23-40C 4' SPEC.	1972	36" RCP	16'	CRUM CREEK
25-44C 4' SPEC.	1239 20-6C 6' GRATE	23-40C 4' SPEC.	23-45C 6' GRATE	1972	36" RCP/PVT	180'	CRUM CREEK
25-4C CONC. HD	1280 25-3C M.H.	22-4C CONC. HD	22-3C M.H.	1958	24" RCP	128'	CRUM CREEK
25-5C 4' SPEC.	1281 25-6C 4' GRATE	22-5C 4' SPEC.	22-6C 4' GRATE		18" RCP	140'	CRUM CREEK
25-6C 4' GRATE	1282 25-7C 4' SPEC.	22-6C 4' GRATE	22-7C 4' SPEC.		18" RCP	136'	CRUM CREEK
25-7C 4' SPEC.	1283 25-8C 4' SPEC.	22-7C 4' SPEC.	22-8C 4' SPEC.		18" RCP	144'	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
25-8C 4' SPEC.	1284 25-16C 4' SPEC.	22-8C 4' SPEC.	22-9C 4' SPEC.		18" RCP	*88	CRUM CREEK
25-9C 4' SPEC.	1285 25-16C 4' SPEC.	22-10C 4' SPEC.	22-9C 4' SPEC.		18" RCP	.92	CRUM CREEK
26-10C 4' GRATE	1194 26-11C4'GRATE	24-110C 4' GRATE	24-115C 4' GRATE	1985	36" RCP/PVT	132'	CRUM CREEK
26-11C 4' GRATE	1195 26-12C 6' GRATE	24-115C 4' GRATE	24-116C 6' GRATE	1985	36" RCP/PVT	335'	CRUM CREEK
26-12C 6' GRATE	1197 26-13C CONC HD	24-116C 6' GRATE 24-117 CONC HD	24-117 CONC HD	1985	36" RCP/PVT	75'	CRUM CREEK
26-14C 4' SPEC.	1182 26-15C 4' SPEC.	24-101C 4' SPEC.	24-105C 4' SPEC.	1985	18" RCP	120'	CRUM CREEK
26-15C 4' SPEC.	1183 26-16C CONC HD	24-105C 4' SPEC.	24-102C CONC HD 1985	1985	18" RCP	37'	CRUM CREEK
26-17C	2011 26-18 HDW	24-103C	24-104C HDW		42" CMP		CRUM CREEK
26-19C 3' GRATE I	1180 26-20C 4' SPEC.	24-98C 3' GRATE I 24-99C 4' SPEC.	24-99C 4' SPEC.		12" CORR. I.P.	21'	CRUM CREEK
26-20C 4' SPEC.	1181 26-21C CONC HD	24-99C 4' SPEC.	24-100C CONC HD 1986	1986	15" RCP	180'	CRUM CREEK
26-22C CONC HD	1179 26-23C CONC HD	24-96C CONC HD	24-97C CONC HD	1981	24" RCP	,99	CRUM CREEK
26-24C 4' SPEC.	1171 26-25C 4' SPEC.	24-87C 4' SPEC.	24-88C 4' SPEC.	1980	18" RCP	34'	CRUM CREEK
26-25C 4' SPEC.	1172 26-26C 4' GRATE	24-88C 4' SPEC.	24-89C 4' GRATE	1980	18" RCP	196'	CRUM CREEK
26-26C 4' GRATE	1173 26-27C 4' SPEC.	24-89C 4' SPEC.	24-90C 4' SPEC.	1980	18" RCP	,9	CRUM CREEK
26-27C 4' SPEC.	1174 26-30C 4' SPEC.	24-90C 4' SPEC.	24-91C 4' SPEC.	1980	18" RCP	216'	CRUM CREEK
26-28C 4' SPEC.	1175 26-29C 4' SPEC.	24-92C 4' SPEC.	24-93C 4' SPEC.	1980	18" RCP	33'	CRUM CREEK
26-29C 4' SPEC.	1176 26-30C 4' SPEC.	24-93C 4' SPEC.	24-91C 4' SPEC.	1980	18" RCP	.98	CRUM CREEK
26-2C 4' GRATE	1231 26-3C CONN TO 3	23-37C 4' GRATE	23-38C CONN TO	1958	18" RCP	16'	CRUM CREEK
26-30C 4' SPEC.	1177 26-31C 2-6' SPEC. I	24-91C 4' SPEC.	24-94C 2-6' SPEC. I 1980	1980	21" RCP	236'	CRUM CREEK
26-31C 2-6' SPEC. I	1178 26-32C CONC HD	24-94C 2-6' SPEC. I	24-94C 2-6' SPEC. I 24-95C CONC HD	1980	18" 4-RCP	32'	CRUM CREEK
26-4C 6' GRATE	1233 25-43C M.H.	23-26C 6' GRATE	23-39C M.H.	1958	30" RC UD	307'	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
26-5C 4' SPEC.	1189 26-6C 4' SPEC.	24-114C 4' SPEC.	24-113C 4' SPEC.	1985	18" RCP	87'	CRUM CREEK
26-6C 4' SPEC.	1190 26-7C 4' GRATE	24-113C 4' SPEC.	24-112C 4' GRATE	1985	18" RCP	40,	CRUM CREEK
26-7C 4' GRATE	1191 26-8C 4' SPEC.	24-112C 4' GRATE	24-109C 4' SPEC.	1985	30" RCP	82'	CRUM CREEK
26-9C 4' SPEC.	1193 26-10C 4' GRATE	24-108C 4' SPEC.	24-110C 4' GRATE	1985	18" RCP/PVT	,09	CRUM CREEK
27-10C TYPE C IN	1109 27-11C TYPE M IN 24-13C TYPE C IN	24-13C TYPE C IN	24-16C TYPE M IN 1992	1992	18" RCP	19'	CRUM CREEK
27-11C TYPE M IN	1110 27-12C END WAL	24-16C TYPE M IN	24-17C END WAL	1992	18" RCP	32'	CRUM CREEK
27-13C BEGIN 8'x3	1126 27-14C BEGIN 2'x6 24-37C BEGIN 8'x3	24-37C BEGIN 8'x3	24-38C BEGIN 2'x6	1972	8'x3' STONE MAS	750'	CRUM CREEK
27-15C CONC HD	1112 27-19C END BOX	24-18C CONC HD	24-23C END BOX	1951	2'-8'x4' CONC BOX	815'	CRUM CREEK
27-16C 2- 2'x3' GR	1115 27-17C 2-2'x3' GRA 24-24C 2-2'x3' GR	24-24C 2-2'x3' GR	24-25C 2-2'x3' GRA 1951	1951			CRUM CREEK
27-19C BEGIN 10'x	1127 27-26C Begin 14'x5' 24-23C BEGIN 10'x	24-23C BEGIN 10'x	24-39C Begin 14'x5' 1964	1964	10'x32' Rip-Rap Tra	.958	CRUM CREEK
27-1C #1 OM INLE	1124 27-2C 2-#1 OM IN	24-34C #1 OM INL	24-35C 2#1 OM IN 1952	1952	18" RCP	27'	CRUM CREEK
27-20C #1 OM INL	1129 27-21C#1 OM INL	24-40C #1 OM INL	24-41C #1 OM INL	1953	12" RCP	28'	CRUM CREEK
27-21C #1 OM INL	1130 27-23C 2-#1 OM IN 24-41C #1 OM INL	1 24-41C #1 OM INL	24-42C 2#1 OM IN 1953	1953	24" RCP	230'	CRUM CREEK
27-22C #1 OM INL	1128 27-23C 2-#1 OM IN 24-44C #1 OM INL	1 24-44C #1 OM INL	24-42C 2-#1 OM IN 1953	1953	18" RCP	180'	CRUM CREEK
27-23C 2#1 OM IN	1131 27-24C 2#1 OM IN 24-42 2-#1 OM INL	1 24-42 2-#1 OM INL	24-43C 2#1 OM IN 1953	1953	36" RCP	28'	CRUM CREEK
27-24C 2-#1 OM IN	1132 27-25C END 36" R		24-43C 2.#1 OM IN 24-45C END 36" R	1953	36" RCP	200'	CRUM CREEK
27-27C 4' SPEC.	1135 27-28C 4' SPEC.	24-70C 4' SPEC.	24-71C 4' SPEC.	1957	15" RCP	40,	CRUM CREEK
27-28C 4' SPEC.	1136 27-29C 4' SPEC.	24-71C 4' SPEC.	24-72C 4' SPEC.	1957	18" RCP	,08	CRUM CREEK
27-29C 4' SPEC.	1137 27-32C 4' SPEC.	24-72C 4' SPEC.	24-73C 4' SPEC.	1957	24" RCP	110'	CRUM CREEK
27-2C 2-#1 OM IN	1125 27-3C END 18" PIP		24-35C 2#1 OM IN 24-36C END 18" PI	1952	18" RCP	160'	CRUM CREEK
27-30C 4' GRATE	1138 27-31C 4' GRATE	24-74C 4' GRATE	24-75C 4' GRATE	1957	12" RCP	108'	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
27-31C 4' GRATE	1139 27-32C 4' SPEC.	24-75C 4' GRATE	24-73C 4' SPEC.	1957	15" RCP	95'	CRUM CREEK
27-32C 4' SPEC.	1140 27-33C 4' SPEC.	24-73C 4' SPEC.	24-76C 4' SPEC.	1957	27" RCP	54'	CRUM CREEK
27-33C 4' SPEC.	1141 27-34C 4' SPEC.	24-76C 4' SPEC.	24-46C 4' SPEC.	1957	27" RCP	50,	CRUM CREEK
27-35C 4' SPEC.	1142 27-37C 6' GRATE	24-69C 4' SPEC.	24-47C 6' GRATE	1957	15" RCP	,89	CRUM CREEK
27-36C 4' PDH SPE	1134 27-37C 6' GRATE	24-48C 4' PDH SPE	24-47C 6' GRATE	1980	18" RCP	,99	CRUM CREEK
27-37C 6' GRATE	1143 27-38C JUNCT. BO	24-47C 6' GRATE	24-49C JUNCT. BO 1980	1980	30" RCP	205'	CRUM CREEK
27-38C JUNCT. BO	1144 27-39C M.H.	24-49C JUNCT. BO 24-50C M.H.	24-50C M.H.	1980	30" RCP	105'	CRUM CREEK
27-39C M.H.	1145 27-40C CONC HD	24-50C M.H.	24-51C CONC HD	1980	30" RCP	10'	CRUM CREEK
27-40C CONC HD	1146 27-41C CONC HD	24-51C CONC HD	24-52C CONC HD		CREEK	165'	CRUM CREEK
27-41C CONC HD	1147 27-42C M.H.	24-52C CONC HD	24-53C M.H.	1980	36" RCP	10'	CRUM CREEK
27-42C M.H.	1148 27-43C 4' GRATE	24-53C M.H.	24-54C 4' GRATE	1980	36" RCP	126'	CRUM CREEK
27-43C 4' GRATE	1149 27-44C M.H.	24-54C 4' GRATE	24-55C M.H.	1980	36" RCP	94'	CRUM CREEK
27-44C M.H.	1150 27-45C 4' SPEC.	24-55C M.H.	24-56C 4' SPEC.	1980	36" RCP	87'	CRUM CREEK
27-46C 4' GRATE	1153 27-47C 4' SPEC.	24-59C 4' GRATE	24-60C 4' SPEC.	1980	18" RCP	203	CRUM CREEK
27-47C 4' SPEC.	1154 27-48C 4' SPEC.	24-60C 4' SPEC.	24-61C 4' SPEC.	1980	18" RCP	40,	CRUM CREEK
27-48C 4' SPEC.	1155 27-49C 4' SPEC.	24-61C 4' SPEC.	24-62C 4' SPEC.	1980	18" RCP	46'	CRUM CREEK
27-49C 4' SPEC.	1156 27-50C 4' SPEC.	24-62C 4' SPEC.	24-63C 4' SPEC.	1980	18" RCP	28'	CRUM CREEK
27-4C TYPE C INL	1103 27-7C TYPE M INL	, 24-9C TYPE CINL	24-10C TYPE M IN 1992	1992	18" RCP	.26	CRUM CREEK
27-50C 4' SPEC.	1157 27-51C 4' SPEC.	24-63C 4' SPEC.	24-64C 4' SPEC.	1980	21" RCP	186'	CRUM CREEK
27-51C 4' SPEC.	1158 27-53C M.H.	24-64C 4' SPEC.	24-65C M.H.	1980	21" RCP	,89	CRUM CREEK
27-52C 4' SPEC.	1159 27-53C M.H.	24-66C 4' SPEC.	24-65C M.H.	1980	18" RCP	.09	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
27-53C M.H.	1160 27-55C 4' SPEC.	24-65C M.H.	24-67C 4' SPEC.	1980	24" RCP	296'	CRUM CREEK
27-55C 4' SPEC.	1162 27-56C 6' SPEC.	24-67C 4' SPEC.	24-57C 6' SPEC.	1980	24" RCP	306'	CRUM CREEK
27-56C 4' SPEC.	1161 27-57C 4' SPEC.	24-68C 4' SPEC.	24-67C 4' SPEC.	1980	18" RCP	32'	CRUM CREEK
27-56C 6' SPEC.	1152 27-57C CONC HD	24-57C 6' SPEC.	24-58C CONC HD	1980	36" RCP	78,	CRUM CREEK
27-58C 6' GRATE	1163 27-59C 6' GRATE	24-77C 6' GRATE	24-78C 6' GRATE	1980	18" RCP	34'	CRUM CREEK
27-59C 6' GRATE	1164 27-61C 4' SPEC.	24-78C 6' GRATE	24-80C 4' SPEC.	1980	18" RCP	238'	CRUM CREEK
27-5C TYPE C INL	1104 27-6C TYPE C INL	24-11C TYPE C IN	24-12C TYPE C IN	1992	18" RCP	38'	CRUM CREEK
27-60C 4' SPEC.	1165 27-61C 4' SPEC.	24-79C 4' SPEC.	24-80C 4' SPEC.	1980	18" RCP	32'	CRUM CREEK
27-61C 4' SPEC.	1166 27-63C 4' SPEC.	24-80C 4' SPEC.	24-81C 4' SPEC.	1980	18" RCP	215'	CRUM CREEK
27-62C 4' SPEC.	1167 27-63C 4' SPEC.	24-82C 4' SPEC.	24-81C 4' SPEC.	1980	18" RCP	33,	CRUM CREEK
27-63C 4' SPEC.	1168 27-64C CONC HD	24-81C 4' SPEC.	24-83C CONC HD	1980	18" RCP	112'	CRUM CREEK
27-65C 4' SPEC.	1169 27-66C 4' SPEC.	24-84C 4' SPEC.	24-85C 4' SPEC.	1980	18" RCP	40,	CRUM CREEK
27-66C 4' SPEC.	1170 27-67C CONC HD	24-85C 4' SPEC.	24-86C CONC HD	1980	18" RCP	50'	CRUM CREEK
27-68C END OPEN	1077 27-69C END 12" R	26-5C END OPEN	26-6C END 12" RC	1961	10'wide x12" deep	300,	CRUM CREEK
27-69C END 12" R	1078 27-73C #1 OM & G 26-6C END 12" RC	26-6C END 12" RC	26-4C #1 OM & GR 1961	1961	12" RCP	105'	CRUM CREEK
27-6C TYPE C INL	1105 27-7C TYPE M INL	24-12C TYPE C IN	24-10C TYPE M IN	1992	18" RCP	56'	CRUM CREEK
27-70C TYPE C IN	1074 27-71C M.H.	26-1C TYPE C INL	26-2 C M.H.	1993	8" CMP	5,	CRUM CREEK
27-71C M.H.	1075 27-72C #2 OM & G	& G 26-2C M.H.	26-3C #2 OM & GR		8" CMP	50'	CRUM CREEK
27-72C #2 OM & G	1076 27-73C#1 OM & G	& G 26-3C #2 OM & GR 26-4C #1 OM & GR	26-4C #1 OM & GR		8" RCP	137'	CRUM CREEK
27-73C #1 OM & G	1079 27-76C#1 OM & G		26-4C#1 OM & GR 26-8C#1 OM & GR 1961	1961	15" RCP	130'	CRUM CREEK
27-74C #2 OM	1082 27-75C #2 OM	26-13C #2 OM	26-7C #2 OM	1937	12" CIP	32'	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
27-75C #2 OM	1083 27-76C#1 OM & G 26-7C #2 OM	26-7C #2 OM	26-8C #1 OM & GR 1937	1937	12" 2-12" CORR.I.	45'	CRUM CREEK
27-76C #1 OM & G	1084 27-77C 6' SPEC.	26-8C #1 OM & GR 26-9C 6' SPEC.	26-9C 6' SPEC.	1960	21" RC PIPE	30,	CRUM CREEK
27-77C 6' SPEC.	1085 30-3C STONE HD	26-9 6' SPEC.	26-10 STONE HD	1960	21" RCP	167.	CRUM CREEK
27-7C TYPE M INL	1106 27-10C TYPE C IN	24-10C TYPE M IN	24-10C TYPE M IN 24-13C TYPE C IN	1992	18" RCP	36'	CRUM CREEK
27-8C TYPE C INL	1107 27-9C TYPE C INL	24-14C TYPE C IN	24-15C TYPE C IN	1992	18" RCP	38'	CRUM CREEK
27-9C TYPE C INL	1108 27-10C TYPE C IN	24-15C TYPE C IN	24-13C TYPE C IN	1992	18" RCP	,86	CRUM CREEK
29-1C CONC. HD	1058 29-4C STONE HD	26-54C CONC. HD	26-55C STONE HD 1952	1952	2-42" RCP	165'	CRUM CREEK
29-2C #1 OM & GR	1060 CONN. TO 42" RC		26-57C #1 OM & G CONN. TO 42" RC 1952	1952	15" RCP	30,	CRUM CREEK
29-3C #1 OM & GR	1059 CONN. TO 42" RC		26-56C #1 OM & G CONN. TO 42" RC	1952	15" RCP	20.	CRUM CREEK
29-5C 6' SPEC.	1057 29-6C STONE HD	26-52C 6' SPEC.	26-53C STONE HD	1958	18" RCP	146'	CRUM CREEK
30-10C 12" PVC C.	1091 30-12C 4' GRATE	26-20C 12" PVC C. 26-21C 4' GRATE	26-21C 4' GRATE	1997	8" POLY ETHYLE	120'	CRUM CREEK
30-11C 12" PVC C.	1090 30-12C 4' GRATE	26-22C 12" PVC C. 26-21C 4' GRATE	26-21C 4' GRATE	1997	8" POLY ETHELE	120'	CRUM CREEK
30-12C 4' GRATE	1092 30-13C 4' TYPE C	26-21C 4' GRATE	26-23C 4' TYPE C	1997	18" CMP	125'	CRUM CREEK
30-13C 4' TYPE C	1093 30-15C "T" CONN.	26-23C 4' TYPE C	26-19C "T" CONN.	1997	18" CMP	30,	CRUM CREEK
30-14C METAL FL	1089 30-18C METAL FL	26-18C METAL FL	26-29C METAL FL 1997	1997	66" CMP	260'	CRUM CREEK
30-16C 2 TYPE C	1094 30-17C "T" CONN.	26-25C 2 TYPE C	26-24C "T" CONN.	1997	18" CMP	53'	CRUM CREEK
30-19C 12" PVC C.	1095 30-20C 12" PVC C.	26-26C 12" PVC C.	26-27C 12" PVC C.	1997	8" POLY ETHELE	,08	CRUM CREEK
30-1C #2 OM	1080 30-2C #2 OM	26-11C #2 OM	26-12C #2 OM	1937	12" TCP	30'	CRUM CREEK
30-20C 12" PVC C.	1096 30-21C END 8" PO	26-27C 12" PVC C.	26-28C END 8" PO	1997	8" POLY ETHELE	30,	CRUM CREEK
30-22C 12" PVC C.	1061 30-23C 12" PVC C.		26-30C 12" PVC C. 26-31C 12" PVC C.	1997	8" POLY ETHYLE	260'	CRUM CREEK
30-23C 12" PVC C.	1062 30-24C 4' TYPE C		26-31C 12" PVC C. 26-32C 4' TYPE C	1997	8" POLY ETHYLE	110'	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD) TO (OLD)	TO (OLD)	CONST DATE PIPE	PIPE	LENGTH	BASIN
30-24C 4' TYPE C	1063 30-25C 4' TYPE C	26-32C 4' TYPE C	26-33C 4' TYPE C	1997	18" CMP	30,	CRUM CREEK
30-25C 4' TYPE C	1064 30-26C CONC HD	26-33C 4' TYPE C	26-34C CONC HD	1997	18" CMP	20,	CRUM CREEK
30-27C CONC HD	1065 30-33C & 30-34C 4'	26-35C CONC HD	26-41C & 26-44C	1997	46"x36" 2- CMPS	220'	CRUM CREEK
30-28C 4' TYPE C	1066 30-31C M.H.	26-36C 4' TYPE C	26-39C M.H.	1997	18" CMP	.02	CRUM CREEK
30-29C 4' TYPE C	1067 30-31C M.H.	26-37C 4' TYPE C	26-39C M.H.	1997	18" CMP	15'	CRUM CREEK
30-2C #2 OM	1081 27-74C #2 OM	26-12C #2 OM	26-13C #2 OM	1937	12" TCP	277'	CRUM CREEK
30-30C 4' TYPE C	1068 30-31C M.H.	26-38C 4' TYPE C	26-39C M.H.		12" CMP	78,	CRUM CREEK
30-31C M.H.	1069 30-32C 4' TYPE C	26-39C M.H.	26-40C 4' TYPE C	1997	18" CMP	25'	CRUM CREEK
30-34C #1 OM	1070 30-35C M.H.	26-44C #1 OM	26-45C M.H.	1964	48" RCP	170'	CRUM CREEK
30-35C M.H.	1071 30-36C STONE HD	26-45C M.H.	26-46C STONE HD 1964	1964	48" RCP	46'	CRUM CREEK
30-36C STONE HD	1072 30-37C CONC HD	26-46C STONE HD	26-47C CONC HD		CREEK	138'	CRUM CREEK
30-37C CONC HD	1054 30-41C CONC HD	26-47C CONC. HD	26-51C CONC HD	1998	2-42" CMP	70'	CRUM CREEK
30-38C 4' TYPE C	1055 30-39C 4' TYPE C	26-49C 4' TYPE C	26-48C 4' TYPE C	1998	18" PEP	30'	CRUM CREEK
30-39C 4' TYPE C	1056 30-40C JUNCT. 42"	26-48C 4' TYPE C	26-50C JUNCT. 42" 1998	8661	18" PEP	.59	CRUM CREEK
30-4C CONC HDW	1086 30-5C STONE HD	26-14C CONC HD	26-15C STONE HD 1994	1994	30"x48" CMP	27'	CRUM CREEK
30-6C END 8" CM	1087 30-7C END 8" CM	26-42C END 8" C	26-43C END 8" C	1994	8" CMP	55'	CRUM CREEK
30-8C CONC HDW	1088 30-9C CONC HDW	26-16C CONC HD	26-17C CONC HD	1994	18" CMP	22'	CRUM CREEK
31-10C 4' TYPE C	1042 31-11C 4' TYPE C	27-13C 4' TYPE C	27-14 C 4' TYPE C	1990	18" RC UD	165'	CRUM CREEK
31-11C 4' TYPE C	1044 31-12C 4' TYPE C	27-14C 4' TYPE C	27-16C 4' TYPE C	1990	21" RC UD	163'	CRUM CREEK
31-12C 4' TYPE C	1048 31-13C 4' TYPE C	27-16C 4' TYPE C	27-20C 4' TYPE C	1990	24" RCP	40,	CRUM CREEK
31-13C 4' TYPE C	1049 31-14C 4' TYPE M	27-20C 4' TYPE C	27-21C 4' TYPE M	1990	24" RCP	366'	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
31-15C 4' TYPE M	1050 31-16C 4' TYPE M	27-22C 4' TYPE M	27-23C 4' TYPE M	1990	18" RCP	,99	CRUM CREEK
31-16C 4' TYPE M	1051 31-17C 4' TYPE M	27-23C 4' TYPE M	27-24C 4' TYPE M	1990	18" RCP	39'	CRUM CREEK
31-17C 4' TYPE M	1052 31-18C 4' TYPE M	27-24C 4' TYPE M	27-25C 4' TYPE M	1990	18" RCP	30'	CRUM CREEK
31-18C 4' TYPE M	1053 31-19C END 24" (P	27-25C 4' TYPE M	27-26C END 24" (P	1990	24" RCP	78'	CRUM CREEK
31-1C 4' SPEC.	1031 31-2C 4' SPEC.	27-1C 4' SPEC.	27-2C 4' SPEC.	1961	18" RCP	34'	CRUM CREEK
31-2C 4' SPEC.	1032 31-3C 4' SPEC.	27-2C 4' SPEC.	27-3C 4' SPEC.	1961	18" RC UD	286'	CRUM CREEK
31-3C 4' SPEC.	1033 31-4C 4' SPEC.	27-3C 4' SPEC.	27-4C 4' SPEC.	1961	18" RCP	42'	CRUM CREEK
31-4C 4' SPEC.	1034 31-6C M.H.	27-4C 4' SPEC.	27-5C M.H.	1961	18" RCP	93'	CRUM CREEK
31-5C 4' GRATE	1035 31-6C M.H.	27-6C 4' GRATE	27-5C M.H.		18" RCP	100'	CRUM CREEK
31-7C 4' TYPE C	1045 31-8C 4' TYPE C	27-17C 4' TYPE C	27-18C 4' TYPE C	1990	18" RC UD	220'	CRUM CREEK
31-8C 4' TYPE C	1046 31-9C 4' TYPE C	27-18C 4' TYPE C	27-19C 4' TYPE C	1990	18" RC UD	161'	CRUM CREEK
31-9C 4' TYPE C	1047 31-12C 4' TYPE C	27-19C 4' TYPE C	27-16C 4' TYPE C	1990	18" RCP	39'	CRUM CREEK
32-1C 4' SPEC.	1036 32-2C 4' SPEC.	27-7C 4' SPEC.	27-8C 4' SPEC.	1961	18" RCP	34'	CRUM CREEK
7-(MARPLE TWP)	1681 13-2C 4' TYPE M	7-34 4' TYPE M	12-84 4' TYPE M	1990	24" or 30" RCP	400'	CRUM CREEK
8-10C 4' SPEC.	285 8-11C 4' SPEC.	7-19 C 4' SPEC.	7-22 C 4' SPEC.	1977	18" RC UD	218'	CRUM CREEK
8-11C 4' SPEC.	286 8-12C 4' SPEC.	7-22 C 4' SPEC.	7-23 C 4' SPEC.	1977	18" CMP	,96	CRUM CREEK
8-12C 4' SPEC.	1665 14-17C 4' SPEC	7-23 4' SPEC	12-38 4' SPEC	1977	24" RCP	224'	CRUM CREEK
8-13C 4' SPEC.	268 8-14C 4' SPEC.	7-1 C 4' SPEC.	7-2 C 4' SPEC.	1977	22"x13" CMP	35'	CRUM CREEK
8-14C 4' SPEC.	392 8-59C 4' SPEC.	7-2 C 4' SPEC.	8-106 C 4' SPEC.	1977	18"RC UD	200'	CRUM CREEK
8-15C GRATE INL	271 8-16C GRATE INL	7-5 C GRATE INLE	7-6 C GRATE INLE	1953	18" RCP	34'	CRUM CREEK
8-16C GRATE INL	272 8-17C #1 OM	7-6 C GRATE INLE 7-7 C #1 OM	7-7 C #1 OM	1953	18" RCP	100'	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE PIPE	PIPE	LENGTH	BASIN
8-17C#1 OM	273 8-18C #1 OM	7-7 C # 1 OM	7-8 C #1 OM	1953	24" RCP	34'	CRUM CREEK
8-18C#1 OM	274 8-19C M.H.	7-8 C #1 OM	7-9 C M.H.	1953	24" RCP	108'	CRUM CREEK
8-1C 4' SPEC.	276 8-2C 4' SPEC.	7-12 C 4' SPEC.	7-13 C 4' SPEC.	1977	18" RC UD	200'	CRUM CREEK
8-20C 6' SPEC.	269 8-21C 6' SPEC.	7-3 C 6' SPEC.	7-4 C 6' SPEC.	1964	18" RCP	35'	CRUM CREEK
8-21C 6' SPEC.	347 8-84C 4' GRATE	7-4 C 6' SPEC.	8-130 C 4' GRATE	1964	24" RCP	100'	CRUM CREEK
8-22C 4' SPEC.	275 8-23C 4' SPEC	7-10 C 4' SPEC.	7-11 C 4' SPEC	1964	15" RCP	110'	CRUM CREEK
8-23C 4' SPEC	1655 14-28C 4' SPEC	7-11 4' SPEC	12-26 4' SPEC	1964	18" RCP	170,	CRUM CREEK
8-24C TYPE J	317 8-25C TYPE J	8-175 C TYPE J	8-176 C TYPE J	1970	18" RCP	32,	CRUM CREEK
8-26C M.H.	318 8-27C M.H.	8-177 C M.H.	8-178 C M.H.	1960	12" RCP	153'	CRUM CREEK
8-27C M.H.	319 8-31C M.H.	8-178 C M.H.	8-179 C M.H.	1995	15" RCP	43,	CRUM CREEK
8-28C M.H.	321 8-31C M.H.	8-180 C M.H.	8-179 C M.H.	1960	30" CMP	.89	CRUM CREEK
8-29C TYPE C INL	320 Connect To 60" Hol		8-181 C TYPE C IN Connect To 60" Hol 1995	1995	24" CMP	33'	CRUM CREEK
8-2C 4' SPEC.	277 8-4C M.H.	7-13 C 4' SPEC.	7-15 C M.H.	1977	22"x13" CORR.I. U	1 58,	CRUM CREEK
8-30C Modified Ty	303 8-31C M.H.	8-182 C Modified T	8-179 C M.H.	1995	24" CMP	20'	CRUM CREEK
8-31C M.H.	304 8-32C TYPE M.	8-179 C M.H.	8-183 C TYPE M.	1967	24" RCP	20,	CRUM CREEK
8-32C TYPE M.	305 8-33C 4' GRATE	8-183 C TYPE M.	8-184 C 4' GRATE	1967	24" RCP	230'	CRUM CREEK
8-34C 4' GRATE	340 9-61C 4' GRATE	8-151 C 4' GRATE	8-148 C 4' GRATE	1970	18" RCP	44'	CRUM CREEK
8-35C 4' SPEC.	331 8-36C 4' SPEC.	8-167 C 4' SPEC.	8-168 C 4' SPEC.	1970	18" RCP	210'	CRUM CREEK
8-36C 4' SPEC.	332 8-37C 4' SPEC.	8-168 C 4' SPEC.	8-169 C 4' SPEC.	1970	18" RCP	293'	CRUM CREEK
8-37C 4' SPEC.	333 8-53C M.H.	8-169 C 4' SPEC.	8-165 C M.H.	1970	18" RCP	350'	CRUM CREEK
8-38C 4' INLET	326 8-40C M.H.	8-163 C 4' INLET	8-162 C M.H.	1970	18" RCP	33'	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
8-39C 4' INLET	327 8-40C M.H.	8-164 C 4' INLET	8-162 C M.H.	1970	18" RCP	33'	CRUM CREEK
8-3C 4' SPEC.	278 8-4C M.H.	7-14 C 4' SPEC.	7-15 C M.H.	1977	18" RC UD	50'	CRUM CREEK
8-40C M.H.	328 8-45C M.H.	8-162 C M.H.	8-160 C M.H.	1970	30" RCP	550'	CRUM CREEK
8-41C 4' INLET	345 8-42C M.H.	8-157 C 4' INLET	8-156 C M.H.	1970	18" RCP	33,	CRUM CREEK
8-42C M.H.	346 8-43C 4' SPEC.	8-156 C M.H.	8-158 C 4' SPEC.	1970	21" RC UD	334'	CRUM CREEK
8-43C 4' SPEC.	323 8-44C 4' SPEC.	8-158 C 4' SPEC.	8-159 C 4' SPEC.	1970	24" RC UD	358'	CRUM CREEK
8-44C 4' SPEC.	324 8-45C M.H.	8-159 C 4' SPEC.	8-160 C M.H.	1970	24" RCP	56'	CRUM CREEK
8-45C M.H.	329 8-46C 4' INLET	8-160 C M.H.	8-161 C 4' INLET	1970	30" RCP	37'	CRUM CREEK
8-46C 4' INLET	330 8-53C M.H.	8-161 C 4' INLET	8-165 C M.H.	1970	30" RCP	125'	CRUM CREEK
8-47C 4' SPEC.	334 8-53C M.H.	8-166 C 4' SPEC.	8-165 C M.H.	1970	24" RCP	42'	CRUM CREEK
8-48C 4' SPEC.	312 8-49C 4' SPEC.	8-170 C 4' SPEC.	8-171 C 4' SPEC.	1970	18" RCP	45'	CRUM CREEK
8-49C 4' SPEC.	313 8-50C TYPE J	8-171 C 4' SPEC.	8-172 C TYPE J	0261	18" RCP	44'	CRUM CREEK
8-4C M.H.	279 8-5C 4' SPEC.	7-15 C M.H.	7-16C 4' SPEC.	1977	18" RC UD	224'	CRUM CREEK
8-50C TYPE J	314 8-51C TYPE J	8-172 C TYPE J	8-173 C TYPE J	1970	18" RCP	44'	CRUM CREEK
8-51C TYPE J	315 8-52C TYPE J	8-173 C TYPE J	8-174 C TYPE J	1970	18" RCP	34'	CRUM CREEK
8-52C TYPE J	316 8-53C M.H.	8-174 C TYPE J	8-165 C M.H.	1970	18" RCP	22'	CRUM CREEK
8-53C M.H.	311 MARPLE TWP. 4'	8-165 C M.H.	MARPLE TWP. 4'	1970	36" RCP	170'	CRUM CREEK
8-54C #1 OM	306 8-55C 2- GRATE I	8-185 C #1 OM	8-186 C 2- GRATE	1953	15" RCP	,59	CRUM CREEK
8-55C 2- GRATE I	270 8-17C#1 OM	8-186 2 2- GRATE I 7-7 C #1 OM	I 7-7 C#1 OM	1953	18" RCP	292'	CRUM CREEK
8-56C 2-6' GRATE	449 8-57C 2-6' GRATE	8-22 C 2-6' GRATE	8-21 C 2-6' GRATE	1957	18" RCP	320'	CRUM CREEK
8-57C 2-6' GRATE	450 9-83C 2-6' GRATE	8-21 C 2-6' GRATE	8-21 C 2-6' GRATE 8-20 C 2-6' GRATE	1957	21" RCP	224'	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
8-58C 4' SPEC.	393 8-59C 4' SPEC.	8-107 C 4' SPEC.	8-106 C 4' SPEC.	1977	22"x13" CMP	35'	CRUM CREEK
8-59C 4' SPEC.	394 8-61C M.H.	8-106 C 4' SPEC.	8-108 C M.H.	1977	18" RC UD	230'	CRUM CREEK
8-5C 4' SPEC.	280 8-6C 4' SPEC.	7-16 C 4' SPEC.	7-17 C 4' SPEC.	1977	21" RC UD	248'	CRUM CREEK
8-60C 4' SPEC.	371 8-61C M.H.	8-109C 4' SPEC.	8-108 C M.H.	1977	22"x13" CMP	26'	CRUM CREEK
8-61C M.H.	372 8-63C 4' SPEC.	8-108 C M.H.	8-110 C 4' SPEC.	1977	18" RC UD	180'	CRUM CREEK
8-62C 4' SPEC.	373 8-63C 4' SPEC.	8-111 C 4' SPEC.	8-110 C 4' SPEC.	1977	22"x13" CMP	37*	CRUM CREEK
8-63C 4' SPEC.	374 8-65C 4' SPEC.	8-110 C 4' SPEC.	8-112 C 4' SPEC.	1977	18" RC UD	220'	CRUM CREEK
8-64C 4' SPEC.	375 8-65C 4' SPEC.	8-113 C 4' SPEC.	8-112 C 4' SPEC.	1977	22"x13" CMP	47'	CRUM CREEK
8-65C 4' SPEC.	376 8-66C 4' SPEC.	8-112 C 4' SPEC.	8-114 C 4' SPEC.	1977	18" CMP	53'	CRUM CREEK
8-66C 4' SPEC.	377 8-71 M.H.	8-114 C 4' SPEC.	8-115 C M.H.	1950	18" RCP	32'	CRUM CREEK
8-67C TYPE M	379 8-69C TYPE M	8-119 C TYPE M	8-117 C TYPE M	1950		48,	CRUM CREEK
8-68C 4' SPEC.	378 8-69C TYPE M	8-118 C 4' SPEC.	8-117 C TYPE M	1950	15" RCP	34'	CRUM CREEK
8-69C TYPE M	380 8-71C M.H.	8-117 C TYPE M	8-115 C M.H.	1950	22"x13" CPA	112'	CRUM CREEK
8-6C 4' SPEC.	281 8-7C 4' SPEC.	7-17 C 4' SPEC.	7-20 C 4' SPEC.	1977	21" RC UD	228'	CRUM CREEK
8-70C 4' SPEC.	381 8-71C M.H.	8-116 C 4' SPEC.	8-115 C M.H.	1950	18" RCP	32'	CRUM CREEK
8-71 M.H.	382 8-122 C JUNCT 15"		8-115 C JUNCT 15" 8-122 C JUNCT 15" 1950	1950	24" RCP	210'	CRUM CREEK
8-71C M.H.	361 8-78C TYPE M	8-115 C M.H.	8-124 C TYPE M	1950	24" RCP	395'	CRUM CREEK
8-72C 4' SPEC.	360 8-74C JUNCT 24"	8-121 C 4' SPEC.	8-122 C JUNCT 24" 1950	1950	15" RCP	34'	CRUM CREEK
8-73C TYPE M.	359 8-74C JUNCT 24"	8-120 C TYPE M.	8-122 C JUNCT 24" 1950	1950	15" RCP	3,	CRUM CREEK
8-75C GRATE INL	362 8-78C TYPE M	8-123 C GRATE IN	8-124 C TYPE M	1950	24" RCP	46'	CRUM CREEK
8-76C TYPE M	363 8-77C TYPE M	8-126 C TYPE M	8-127 C TYPE M	1957	18" RCP	28'	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
8-77C TYPE M	364 8-78C TYPE M	8-127 C TYPE M	8-124 C TYPE M	1950	24" RCP	140'	CRUM CREEK
8-78C TYPE M	365 8-79C 4' SPEC	8-124 C TYPE M	8-125 C 4' SPEC	1950	24" RCP	38,	CRUM CREEK
8-7C 4' SPEC.	282 8-8C 4' SPEC.	7-20 C 4' SPEC.	7-21 C 4' SPEC.	1977	21" RC UD	70,	CRUM CREEK
8-80C 4' SPEC.	366 8-81C End 24" RCP	8-128 C 4' SPEC.	8-133 C End 24" R	1957	24" RCP	43,	CRUM CREEK
8-81C BEGIN 78" 6	367 8-82C STONE HD	8-133 C BEGIN 78" 8-129 C STONE H	8-129 C STONE H	1977	78" WIDE	200'	CRUM CREEK
8-82C STONE HD	368 8-85C 4' GRATE	8-129 C STONE H	8-130 C 4' GRATE	1977	24" RCP	70,	CRUM CREEK
8-83C 4' GRATE	369 8-84C 4' GRATE	8-132 C 4' GRATE	8-131 C 4' GRATE	1977	12" RC UD	82'	CRUM CREEK
8-84C 4' GRATE	370 8-85C 4' GRATE	8-131 C 4' GRATE	8-130 C 4' GRATE	1977	12" RC UD	350'	CRUM CREEK
8-8C 4' SPEC.	283 8-12C 4' SPEC.	7-21 C 4' SPEC.	7-23 C 4' SPEC.	1977	18"x29" CMP	43,	CRUM CREEK
8-9C 4' SPEC.	284 8-10C 4' SPEC.	7-18 C 4' SPEC.	7-19 C 4' SPEC.	1977	18" RC UD	187'	CRUM CREEK
9-100C TYPE M. I	428 9-101C #10M & G	8-55 C TYPE M. IN	8-49 C #10M & GR	1983	12" CORRI. UD.	284'	CRUM CREEK
9-101C#10M & G	429 9-104C #10M & G	8-49 C #10M & GR	8-49 C #10M & GR 8-52 C #10M & GR 1955	1955	18" RCP	72'	CRUM CREEK
9-102C #10M & G	425 9-103C #10M & G	8-50 C #10M & GR	8-51 C #10M & GR 1955	1955	15" RCP	42'	CRUM CREEK
9-103C#10M & G	426 9-104C#10M & G	8-51 C #10M & GR	8-52 C #10M & GR 1955	1955	18" RCP	50'	CRUM CREEK
9-104C #10M & G	430 9-105C STONE HD	8-52 C #10M & GR	8-53 C STONE HD	1955	24" RCP	150'	CRUM CREEK
9-106C 2-6' SPEC.	432 9-107C M.H.	8-24 C 2-6' SPEC.	8-25 C M.H.	1957	18" RCP	72'	CRUM CREEK
9-107C M.H.	433 9-108C 2-#1 OM	8-25 C M.H.	8-32 C 2-#1 OM	1955	21" RCP	135'	CRUM CREEK
9-108C 2-#1 OM	434 9-110C#1 GRATE	8-32 C 2-#1 OM.	8-33 C #1 GRATE	1955	21" RCP	50'	CRUM CREEK
9-109C #1 OM	435 9-110C#1 GRATE	8-34 C #1 OM	8-33 C #1 GRATE	1955	15" RCP	75'	CRUM CREEK
9-110C#1 GRATE	436 9-112C 2-#1 OM	8-33 C #1 GRATE	8-36 C 2-#1 OM	1955	24" RCP	195'	CRUM CREEK
9-111C 2-#1 OM	437 9-112C 2-#1 OM	8-35 C 2-#1 OM	8-36 C 2-#1 OM	1955	18" RCP	36'	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
9-112C 2-#1 OM	438 9-113C JUNCT 48"	8-36 C 2-#1 OM	8-37 C JUNCT 48"	1955	30" RCP	140'	CRUM CREEK
9-114C STONE HD	407 9-115C STONE HD	8-56 C STONE HD	8-57 C STONE HD	1955	48" RCP	45'	CRUM CREEK
9-116C 2-#1 OM.	408 9-117C 2-#1 OM.	8-58 C 2-#1 OM.	8-59 C 2-#1 OM.	1955	24" RCP	36'	CRUM CREEK
9-117C 2-#1 OM.	409 9-118C STONE HD	8-59 C 2-#1 OM.	8-60 C STONE HD	1955	24" RCP	150'	CRUM CREEK
9-119C 4' SPEC.	411 9-120C 4' SPEC.	8-67 C 4' SPEC.	8-68 C 4' SPEC.	1959	15" RCP	32'	CRUM CREEK
9-120C 4' SPEC.	412 9-121C M.H.	8-68 C 4' SPEC.	8-69 C M.H.	1959	18" RCP	119'	CRUM CREEK
9-121C M.H.	413 9-122C STONE HD	8-69 C M.H.	8-70 C STONE HD	1959	18" RCP	126'	CRUM CREEK
9-123C 6' SPEC.	415 9-124C 4' SPEC.	8-73 C 6' SPEC.	8-74 C 4' SPEC.	1956	18" RCP	35'	CRUM CREEK
9-124C 4' SPEC.	416 9-125C 4' SPEC.	8-74 C 4' SPEC.	8-75 C 4' SPEC.	1956	21" RCP	50,	CRUM CREEK
9-125C 4' SPEC.	417 9-126C 4' SPEC.	8-75 C 4' SPEC.	8-76 C 4' SPEC.	1956	21" RCP	173'	CRUM CREEK
9-126C 4' SPEC.	418 9-127C#10M & G	8-76 C 4' SPEC	8-77 C #10M & GR 1954	1954	21" RCP	39'	CRUM CREEK
9-127C #10M & G	395 9-128C#10M & G	8-77 C#10M & GR	8-78 C #10M & GR 1954	1954	24"RCP	35'	CRUM CREEK
9-128C #10M & G	396 9-131C#10M&G	8-78 C #10M & GR	8-79 C #10M & GR 1954	1954	24" RCP	33'	CRUM CREEK
9-129C #10M & G	397 9-130C#1OM & G	8-80 C #10M & GR	8-81 C#10M & GR 1954	1954	18" RCP	33'	CRUM CREEK
9-130C #10M & G	398 9-131C#1OM & G		8-81 C#10M&GR 8-79 C#10M&GR 1954	1954	18" RCP	87'	CRUM CREEK
9-131C #10M & G	399 9-132C STONE HD	8-79 C #10M & GR	8-82 C STONE HD	1954	27" RCP	125'	CRUM CREEK
9-133C #10M & G	405 9-134C OM & GRA	8-90 C #10M & GR	. 8-86 C OM & GRA		12" RCP	28'	CRUM CREEK
9-134C OM & GRA	406 9-135C OM & GRA	8-86 C OM & GRA	8-87 C OM & GRA		12" RCP	130'	CRUM CREEK
9-135C OM & GRA	383 9-136C OM & GRA 8-87 C OM & GRA	8-87 C OM & GRA	8-88 C OM & GRA		12" RCP	28'	CRUM CREEK
9-136C OM & GRA	384 9-137C END 12" PI	8-88 C OM & GRA	8-89 C END 12" PI		12"		CRUM CREEK
9-138C #10M & G	401 9-139C #10M & G	8-85 C #10M & GR	8-91 C #10M & GR 1949	1949	15" RCP	20,	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
9-139C #10M & G	402 9-140C #10M & G	8-91 C #10M & GR	8-92 C #10M & GR 1949	1949	18" RCP	34'	CRUM CREEK
9-140C #10M & G	403 9-141C M. H.	8-92 C #10M & GR 8-93 C M. H.	8-93 C M. H.	1949	18" RCP	156'	CRUM CREEK
9-141C M. H.	404 9-142C STONE HD	8-93 C M. H.	8-94 C STONE HD	1949	20" RCP	300'	CRUM CREEK
9-143C STONE HD	388 9-144C #10M & G	8-100 C STONE H	8-101 C #10M & G	1953	54" RCP	29'	CRUM CREEK
9-144C #10M & G	389 9-145C #10M & G	8-101 C #10M & G	8-102 C #10M & G 1953	1953	54" RCP	26'	CRUM CREEK
9-145C #10M & G	390 9-146C STONE HD	8-102 C #10M & G	8-103 C STONE H	1960	54" RCP	138'	CRUM CREEK
9-146C STONE HD	1772 15-12C MATCH 4'x	8-103 STONE HD	13-69A MATCH 4'	1973	2'x5' Stone Masonry	366'	CRUM CREEK
9-147C 6' SPEC.	414 9-148C STONE HD	8-71 C 6' SPEC.	8-72 C STONE HD	1958	15" RCP	185'	CRUM CREEK
9-149C #10M & G	400 9-150C OM & GRA	8-83 C #10M & GR	8-84 C OM & GRA			56'	CRUM CREEK
9-151C OM & GRA	385 9-152C OM & GRA	8-95 C OM & GRA	8-96 C OM & GRA		12"		CRUM CREEK
9-1C 4' SPEC.	137 9-3C 4' SPEC.	3-68 C 4' SPEC.	3-70 C 4' SPEC.	1970	18" RCP	118'	CRUM CREEK
9-2C 4' GRATE	138 9-3C 4' SPEC.	3-69 C 4' GRATE	3-70 C 4' SPEC.	1970	18" RCP	72'	CRUM CREEK
9-3C 4' SPEC.	139 9-4C M.H.	3-70 C 4' SPEC.	3-71 C M.H.	1970	24" RCP	153'	CRUM CREEK
9-41C 4' SPEC.	348 9-42C 4' SPEC.	8-133 C 4' SPEC.	8-134 C 4' SPEC.	1970	18" RC UD	270'	CRUM CREEK
9-42C 4' SPEC.	349 9-44C 4' SPEC.	8-134 C 4' SPEC.	8-136 C 4' SPEC.	1970	18" RC UD	271'	CRUM CREEK
9-43C 4' GRATE	350 CONN TO 18" RC	8-135 C 4' GRATE	CONN TO 18" RC		18" RCP	24'	CRUM CREEK
9-44C 4' SPEC.	351 9-45C 4' SPEC.	8-136 C 4' SPEC.	8-137 C 4' SPEC.	1970	18" RC UD	228'	CRUM CREEK
9-45C 4' SPEC.	352 9-46C TYPE J	8-137 C 4' SPEC.	8-138 C TYPE J	1970	18" RCP	105'	CRUM CREEK
9-46C TYPE J	353 9-47C 4' SPEC.	8-138 C TYPE J	8-139 C 4' SPEC.	1970	18" RCP	58,	CRUM CREEK
9-47C 4' SPEC.	307 9-50C 4' SPEC.	8-139 C 4' SPEC.	8-187 C 4' SPEC.	1970	24" RCP	185'	CRUM CREEK
9-48C 4' GRATE	309 9-49C 4' SPEC	8-189 C 4' GRATE	8-188 C 4' SPEC	1970	18" RCP	58,	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
9-49C 4' SPEC	310 9-50C 4' SPEC.	8-188 C 4' SPEC.	8-187 C 4' SPEC.	1970	18" RCP	36'	CRUM CREEK
9-50C 4' SPEC.	136 9-3C 4' SPEC.	8-187 C 4' SPEC.	3-70 C 4' SPEC.	1970	24" RCP	232'	CRUM CREEK
9-51C 4' SPEC.	342 9-52C TYPE J	8-153 C 4' SPEC.	8-154 C TYPE J	1970	22"x13" CMP	,89	CRUM CREEK
9-52C TYPE J	343 8-42C M.H.	8-154 C TYPE J	8-156 C M.H.	1970	18" RCP	64'	CRUM CREEK
9-53C TYPE J	344 8-42C M.H.	8-155 C TYPE J	8-156 C M.H.	1970	18" RCP	45'	CRUM CREEK
9-54C 4' GRATE	354 9-56C M.H.	8-140 C 4' GRATE	8-142 C M.H.	1970	18" RCP	34'	CRUM CREEK
9-55C 4' GRATE	355 9-56C M.H.	8-141 C 4' GRATE	8-142 C M.H.	1970	18" RCP	34'	CRUM CREEK
9-56C M.H.	356 9-59C M.H.	8-142 C M.H.	8-143 C M.H.	1970	18" RCP	290'	CRUM CREEK
9-57C 4' GRATE	357 9-59C M.H.	8-144 C 4' GRATE	8-143 C M.H.	1970	18" RCP	34'	CRUM CREEK
9-58C 4' GRATE	358 9-59C M.H.	8-145 C 4' GRATE	8-143 C M.H.	1970	18" RCP	34'	CRUM CREEK
9-59C M.H.	335 9-65C M.H.	8-143 C M.H.	8-146 C M.H.	1970	18" RCP	292'	CRUM CREEK
9-60C 4' GRATE	339 9-61C 4' GRATE	8-149 C 4' GRATE	8-148 C 4' GRATE	1970	18" RCP	56'	CRUM CREEK
9-61C 4' GRATE	341 9-65C M.H.	8-148 C 4' GRATE	8-146 C M.H.	1970	18" RCP	34'	CRUM CREEK
9-62C 4' GRATE	336 9-64C 4' GRATE	8-150 C 4' GRATE	8-147 C 4' GRATE	1970	18" RCP	56'	CRUM CREEK
9-63C 4' GRATE	337 9-64C 4' GRATE	8-152 C 4' GRATE	8-147 C 4' GRATE	1970	18" RCP	44,	CRUM CREEK
9-64C 4' GRATE	338 9-65C M.H.	8-147 C 4' GRATE	8-146 C M.H.	1970	18" RCP	34'	CRUM CREEK
9-65C M.H.	325 8-40C M.H.	8-146 C M.H.	8-162 C M.H.	1970	30" RCP	274'	CRUM CREEK
9-66C 4' SPEC.	441 9-69C 4' SPEC.	8-41 C 4' SPEC.	8-40 C 4' SPEC.	1971	18" RCP UD	210'	CRUM CREEK
9-67C 4' SPEC.	439 9-68C 4' SPEC.	8-38 C 4' SPEC.	8-39 C 4' SPEC.	1971	18" RCP UD	403'	CRUM CREEK
9-68C 4' SPEC.	440 9-69C 4' SPEC.	8-39 C 4' SPEC.	8-40 C 4' SPEC.	1971	18" RCP UD	190'	CRUM CREEK
9-69C 4' SPEC.	442 9-70C 4' SPEC.	8-40 C 4' SPEC.	8-42 C 4' SPEC.	1957	24" RCP	180'	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	TO (OLD)	CONST DATE	PIPE	LENGTH	BASIN
9-6C 4' GRATE	308	3-67 C 4' GRATE	8-189 C 4' GRATE	1970	18" RCP	43,	CRUM CREEK
9-70C 4' SPEC.	419 9-71C 4' GRATE	8-42 C 4' SPEC.	8-43 C 4' GRATE	1957	24" RCP	132'	CRUM CREEK
9-71C 4' GRATE	420 9-72C 6' SPEC.	8-43 C 4' GRATE	8-44 6' SPEC.	1957	27" RCP	70,	CRUM CREEK
9-72C 6' SPEC.	421 9-73C M.H.	8-44 C 6' SPEC.	8-45 C M.H.	1957	27" RCP	32'	CRUM CREEK
9-73C M.H.	422 9-74C 2-#1 OM.	8-45 C M.H.	8-46 C 2-#1 OM.	1955	24" RCP	125'	CRUM CREEK
9-74C 2-#1 OM.	423 9-75C 2-#1 OM.	8-46 C 2-#1 OM.	8-47 C 2-#1 OM.	1955	24" RCP	36'	CRUM CREEK
9-75C 2-#1 OM.	424 9-76C STONE HD	8-47 C 2-#1 OM.	8-48 C STONE HD	1955	24" RCP	280'	CRUM CREEK
9-77C 2-6' GRATE	443 9-78C 6' GRATE	8-29 C 2-6' GRATE	8-28 C 6' GRATE	1957	21" RCP	342'	CRUM CREEK
9-78C 6' GRATE	444 9-80C 4' SPEC.	8-28 C 6' GRATE	8-27 C 4' SPEC.	1957	21" RCP	235'	CRUM CREEK
9-79C 6' SPEC.	445 9-80C 4' SPEC.	8-30 C 6' SPEC.	8-27 C 4' SPEC.	1957	21" RCP	270'	CRUM CREEK
9-80C 4' SPEC.	446 9-81C M.H.	8-27 C 4' SPEC.	8-26 C M.H.	1957	30" RCP	390'	CRUM CREEK
9-81C M.H.	447 9-82C 4' SPEC.	8-26 C M.H.	8-23 C 4' SPEC.	1957	30" RCP	350'	CRUM CREEK
9-82C 4' SPEC.	448 9-84C M.H.	8-23 C 4' SPEC.	8-19 C M.H.	1957	30" RCP	328'	CRUM CREEK
9-83C 2-6' GRATE	451 9-84C M.H.	8-20 C 2-6' GRATE	8-19 C M.H.	1957	21" RCP	32'	CRUM CREEK
9-84C M.H.	452 9-85C M.H.	8-19 C M.H.	8-18 C M.H.	1957	36" RCP	105'	CRUM CREEK
9-85C M.H.	453 9-86C 4' GRATE	8-18 C M.H.	8-17 C 4' GRATE	1957	30" RCP	148'	CRUM CREEK
9-86C 4' GRATE	454 9-87C M.H.	8-17 C 4' GRATE	8-31 C M.H.	1957	24" RCP	270'	CRUM CREEK
9-87C M.H.	431 9-90C 6' SPEC.	8-31C M.H.	8-12 C 6' SPEC.	1957	24" RCP	284'	CRUM CREEK
9-88C STONE HD	463 9-89C 6' SPEC.	8-16 C STONE HD	8-15 C 6' SPEC.	1968	24" RCP	40,	CRUM CREEK
9-89C 6' SPEC.	464 9-90C 6' SPEC.	8-15 C 6' SPEC.	8-12 C 6' SPEC.	1954	30" RCP	40,	CRUM CREEK.
9-90C 6' SPEC.	466 9-92C STONE HD	8-12 C 6' SPEC.	8-11 C STONE HD	1955	30" RCP	275'	CRUM CREEK

FROM (NEW)	ID TO (NEW)	FROM (OLD)	FROM (OLD) TO (OLD) CONST DATE PIPE	CONST DATE	PIPE	LENGTH	BASIN
9-90C 6' SPEC.	465 9-91C STONE HD	8-12 C 6' SPEC.	8-10 C STONE HD 1954	1954	30" RCP	355'	CRUM CREEK
9-91C STONE HD	459 9-98C JUNCT. BO	8-10 C STONE HD	8-10 C STONE HD 8-8 C JUNCT. BOX 1956	1956	36" RCP	75'	CRUM CREEK
9-91C STONE HD	458 9-98C JUNCT. BO		8-10 C STONE HD 8-8 C JUNCT. BOX 1955	1955	4'x4' 54" BOX CUL 78'	78,	CRUM CREEK
9-93C STONE HD	410 9-94C STONE HD		8-61 C STONE HD 8-62 C STONE HD 1955	1955			CRUM CREEK
9-95C 4' SPEC.	457 JUNCT 54" RCP	8-9 C 4' SPEC.	JUNCT 54" RCP	1955	18" RCP	191	CRUM CREEK
9-96C 4' SPEC.	455 9-97C 4' SPEC.	8-6 C 4' SPEC.	8-7 C 4' SPEC.	1955	15" RCP	34'	CRUM CREEK
9-97C 4' SPEC.	456 9-98C JUNCT BOX	BOX 8-7 C 4' SPEC.	8-8 C JUNCT BOX 1955	1955	18" RCP	28'	CRUM CREEK
9-98C JUNCT. BO	460 15-1C JUNCT BOX 8-8 C JUNCT. BOX 8-13 C JUNCT BO 1965	8-8 C JUNCT. BOX	8-13 C JUNCT BO	1965	60" RCP	200,	CRUM CREEK
9-99C TYPE M. IN	427 9-100C TYPE M. I 8-54 C TYPE M. IN 8-55 C TYPE M. IN 1983	8-54 C TYPE M. IN	8-55 C TYPE M. IN	1983	12" CORRI. UD.	145'	CRUM CREEK

FORM H (Front)

	-		 		DDODOSEI	FLOOD	ONTROLE	PROJECT FO	DRM H				SHEE	Г 1	OF 1	
	<u> </u>	-	T 50014 600			J FLOOD C	THIRDLE	ROJECTIC	INSTRUCTIO	NS	1					
VATER	SHED		FORM CO	MPLETED BY			J					t to show sh	anges in su	stem elements nine size	nine direction and	connections
					conversions and the	On the map for p	roposed storm wat	er collection systems	diagram each propos	ed system, indicate	a map poin	intinto	the eviction	stem elements, pipe size	arate form for each	proposed
The state of the s	Crum Cre			Joseph Mast		to existing system	ns. For proposed a	idditions to existing s	ystems, diagram only ti	ne additions and th	eir connectio	on point into	uie existing	system. Complete a sep	at the first point in a	ach .
Municipa	ality: Sprin	gfield Twp		(215) 222-30	00	new system and	one for each existi	ng system having on	e or more proposed ad	ditions. Identity the	points withir	n a system c	onsecutively	(ex. H-1, H-2, H-3). Sta	alian auntama using	the man
County:	Delaware	Cty	Date:	7/18/2005								point where	proposed a	dditions connect into ex	sting systems, using	the map
			1					em form and map. Se	ee Sample Diagrams a	nd Form on Revers	e.		Desire	Contact Person	Name	of Final
Ma	ap I.D.	Sys	tem's Elemen	ts (x)		Measure				Map I.D.	-	osed				ship and
	No.				Pipe		n Channel /		Material	Nos.**		. Dates		Name and		
From	То	Pipe	Open Channel	Swale	D	TW	В	Depth		Form A	Start	End	Avail.	Phone		Responsibility
															Carinefield	Subdivision
H-1		Sewer							As Noted	<u> </u>					Springfield	Township
-															-	
H-																
															-	
H-						1										
H-																
H-													<u> </u>			
H-																
***************************************	1					W. T. C. C. C. C. C. C. C. C. C. C. C. C. C.										
H-	1															_
																
H-																
•	-															
H-								J								
0.54	+	1	1													
H-	1	1												ne drainage pr		

	DDECENT	L & DRO IECTE	D DEVELOPMENT II	N THE ELOOD I	HAZARD ARFA	(FORM 1)		SHEET	OF	
ATERS		FORM CO	MPLETED BY	THE TEODS		(,	DEFINITION			
AILING	JILED	T GI KIM GG			FLOOD HAZA	RD AREA:				
ame:	Crum Creek	Name:	Joseph Mastronard)		A NOR	MALLY DRY LAND A	REA THAT HAS BE	EN OR IS	
	lity: Springfield Twp	Telephone:				SUSCE	PTABLE TO BEING	INUNDATED BY TH	HE	
	Delaware Cty	Date:	7/18/2005			100-YE	AR FLOOD.			
ounty.										
or Cour	nty Use:									
					- 1 D			Comments		
Map ID	TYPE OF DEV	ELOPMENT	Year		ntact Person			Comments		
No.			Built	Name, Ad	ddress and Phor	ie				
-										
			ļ							
-										
							BLE			
_										
-										
-										

		1,,,,,			OB! 514	ADE (C	LOD!	1 0	ICCT	4	OF	1	-	_
		WATER	R QUAL	ITY PRO	OBLEM	AREAS	FORM	J. SF	HEET_	1_				-
WATERSHED				-	FOF	RM CO	MPL	ETEDI	BY					_
	Owner Canals			-	Name		loce	eph Ma	etron	ardo				_
Name:	Crum Creek	a alain	+	+		hone:				aruo	-		-	
	Springfield Tow	nsnip			Date			/2005	3000				+-+	-
County:	Delaware Coun	τy		-	Date.	T	1/10	12005	_		_		-	_
SITE		J-1	J-2	J-	J-	J-	J-	J-	J-	J-	J-	J-	J	
	unlitu Droblomo	13-1	0-2	J-	-		1	-				Ī	1	
Types of Water Q			-	-	-		-	1						
High Community T	1	_	-	1	+	-	1	1						
High Temperature			-				-	1						
High Turbidity	Al		-	-				+						
Hydrocarbon Pollu									1					-
Low Community D		-	-	-	-		1	1	1	1				
Low Dissolved Ox	ygen	-			-	1	-						1	
Low pH		_	-		-	-	-	-						
Nutrient Enrichme	nt 					-	+				1		1	
Poor Habitat	I No. Ma					+	-	+		-				-
Other/Explanation			-		-			-		+	1	1	1	
Potential Cause(s	<u>s)</u>	_	-	-	-	-	+		-	+	1			-
Agriculture			- v		-	-	+		-	+		1	-	
Construction Site		X	X		-	-	-	+	-	+	-	-		\vdash
Erosion			-	-		_	-	+	+	-	-		-	-
Lake Discharge				-	-	-	-		-	-	-	-	-	-
STP Outfall			-		-	-	-	-		-		-		H
Other/Explanation	Line No.				_	-	+						-	-
Frequency			4	_	_	-	+		-	+	-	-	-	-
Year Most Recent				-	-	-	-		-	-	+	-	-	┝
Year First Known				-		-	-	-	-	-	-	-		H
Source of Inform				-	_		4	_	-	-		-	-	-
County Water Qua	ality Study						-		+	+	-	-	-	⊦
Driveby				_		_	-		-	-	-	-	-	-
Other/Explanation	Line No.		1			-	-		-	+	+	-		+
				ION L	INES		4-		-	-	+	-	+	+
1	Willow Bay Su		1						-	-			+	+
2	AQUA Pennsy	Ivania			_		_	-		-	+-	-		-
3							-				-	+		+
4										-	-	-	-	+
5										-		-		-
6										-	-			+
7											-	-		+
8													-	1
9														1
10							4							1

Form O - Outfall Data

Time since Last Rain was >= 72 Hours :	Days since Last Rain :	Crum Creek
Date : 7/28/2005 Time	thes: > 0.1 inches	Name of receiving water: Crum Creek
	Quantity of Last Rain: < 0.1 inches: > 0.1 inches	Springfield Township
Person : Joe Rodo		Municipality:

	Storm	Time	Pipe	Depth of	Channel	Depth of Channel Channel Channel Flow	Channel	Flow	Water Color/Odor (specify if floatalbes,	Descrive land Rating	Rating (0-2)
	Drain?	(00:00)	Diameter	flow in	Depth	Bottom	side	Costved	algae or sediment	io asn	(2-0)
	Yes/No/	am/pm	(inches)	pipe	(feet)	Width	siopes	(Yes or	present	upstream	
	Not sure			(inches)		(feet)	(H:V)	No)		drainage area	0
Г	Yes		44	œ	10	25	2:1	Yes	Good	Ins	0
Г	Yes		8	0	12	15	Vertical	Yes	Good	sul	0
Т	Yes		80	0	N/A	35	2:1	Yes	Good	Rec	0
Τ	Yes		swale	0	-	35	4:1	Yes	Good	Rec	0
T	Yes		24	0	N/A	35	1:2	Yes	Good	Rec	0
T	Yes		swale	0	0.5	15	7:1	%	Good	adna	0
Т	Yes		swale	0	x-	10	1:3	8	Good	adna	0
	Yes		24	0	2	2	2:1	SN N	Good	R	0
Τ	Yes		18 (at inlet)	0	e	10	2:2	Yes	Collapsed	æ	2
	Yes		18	trickle	9	5	1:1	Yes	Orange in color	α.	2
T	Yes		24	0	2	2	1	Yes	Good	Z.	0
	Yes		24	-	7	5-10	2:1	Yes	Good	ď	0
	Yes		30	0	4	10	1:1	Yes	Good	R	0
	Yes		30	-	က	œ	1:5	Yes	Some algae	Rec	-
	Yes		24	0	4	∞	2:1	Yes	Good	œ	0
21/22/23/24	Yes		18	0	A/N	15	1:1	Yes	Detatched	œ	2
	Vac		30	trickle	e	7	Vertical	Yes	Brownish	œ	-

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)
1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition
2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment deposition, algae or

debris, pipe collapsed or crumbling, blocked catch basins or drain

H/V = Horizontal to vertical ratio

Notes:

- M2 Cluster of approx 7 8" pipes along 50 stretch of retaining wall.
 - a Baltimore Pike overpass, 8-12" roof drains.
 - M3 No access, bad picture, approx. 24".
- M4 Possible location directly behind batting cage in park. Dense cover and cliff, Rip-Rap visible only.
 - B2 Collapsed Outlet. Data collected from inlet.
- B5 orange deposit clearly visible on riprap and outlet, no apparent odor.
 - B7 No one home / no access.
- B4 Heavily damaged pipe/tree down / pictures 21-24 / 4 feet from pipe totally disconnected.
 - A23 Brownish deposits on pipe.

Kating (0-2)		-	0	0	0	0	N/A	0	0	C		N/A	0	0	0	0		·	C	,
Descrive land Kating use of (0-2)	drainage area	ĸ	œ	Funeral Home	œ	α.	A/A	œ	œ	RAC	2001	N/A	School	œ	ď	œ	R	M.	2	
olor/Odor if floatalbes, sediment	present	Brownish	Good	poog	Good	Good	N/A	Good	Good	5005	noos	N/A	Good	Debris	Algae Present	Good	Orange on Rip-Rap	3/4 blocked w/ rocks	5000	Occur
Flow Obsrved (Yes or	No)	Yes	Yes	Yes	Yes	Yes	A/N	Yes	Yes	24	ON	A/N	No	oN No	S N	Yes	Yes	92	O IA	ON
Channel side	Siopos (Y.H.)	1:4	Vertical	1:3	Vertical	1:3	A/N	Vertical	1.10	4.5	5:1	A/N	A/A	1:1	1:1	stone wall	stone wall	2:1		3:1
Channel Bottom	(feet)	10	9	10	4	9	A/N	10	10-20	2 2	15	N/A	N/A	10	25	15	2	10	2	01
Channel Depth	(1661)	10	2	9	4	c.	000	N/N	10	2 (12	2	N/A	10	15	2	m	4	-	.ro
n of n	pipe (inches)	trickle	0	2	-		A/N				0	A/N	0	-	trickle	1	-			0
<u>_</u>	(lucnes)	24	18	60	48" Wide		0/2	24	100	47	48	A/N	15	24	24	48	24	- 1 α	2	swale
Time (00:00)	ат/рт													8/23	8773	8/23	8/73	0/03	67/0	8/23
n Drain? No/ Not	sure	Yes	Nay Nay	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	20-	Storie Criainia	202	200	50-	res	Yes	Yes	Yes	Yes	So. Y	20 >	200>	200	res	Yes
Photo #		26	270	36	0 00	67	30	10	4/2	32	33	34	3,5	8 8	37	000	200	03/40	4.1	42
Pipe Swale #		200	A24	- 20 0	AZO	2 7	0 4	Ala	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	A14	A15	47	A16	700	2 000	250	A13	AIZ	A11	00

Rating System:

0-No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition 2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment deposition, algae or debris, pipe

collapsed or crumbling, blocked catch basins or drain H/V = Horizontal to vertical ratio

Notes:

A22 - Brownish and orange deposits on pipe.

B1 - Pipe slightly disconnected / skewed 4-5 feet from opening.

A8 - inaccessible (fences/overgrowth)

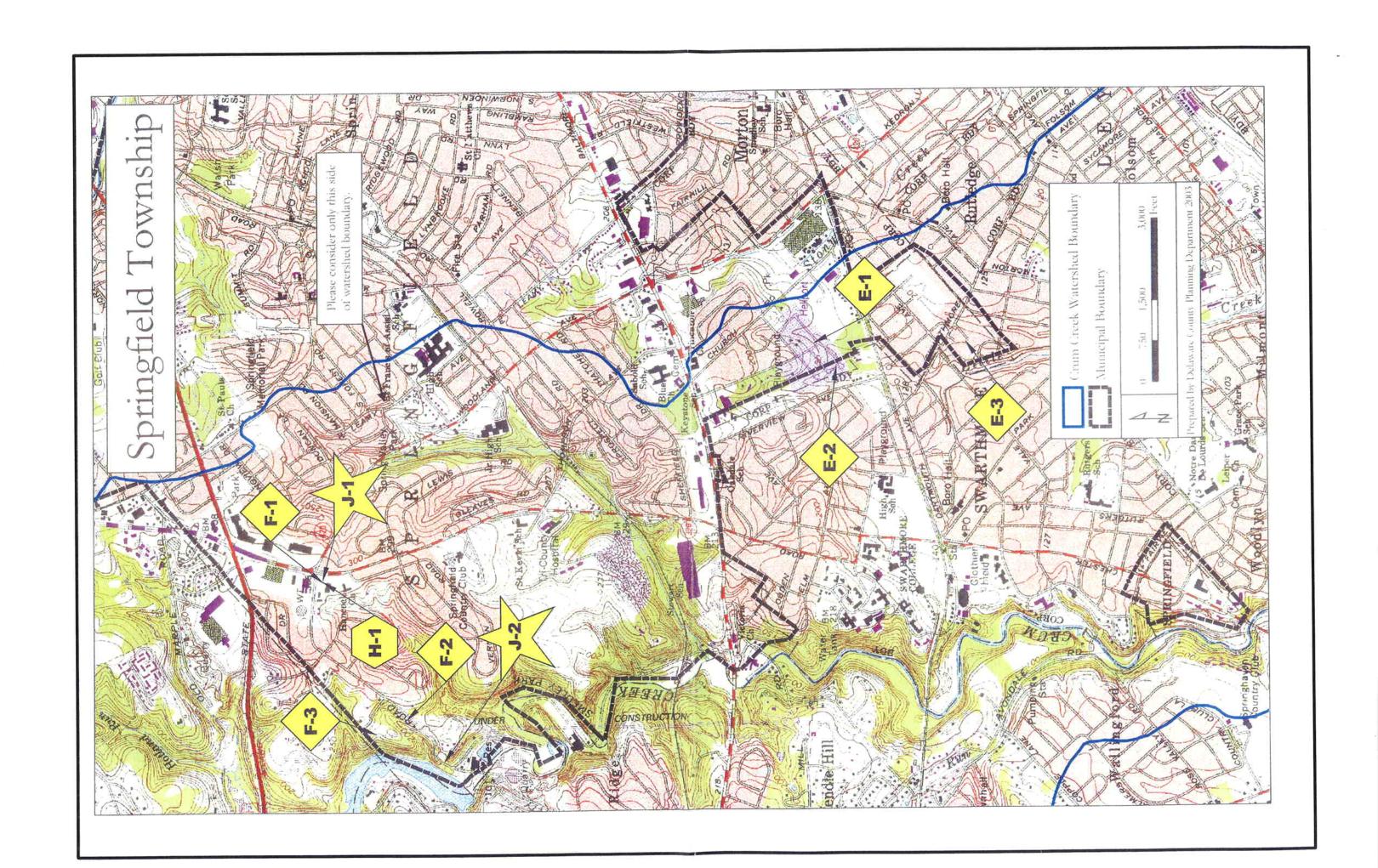
A5 - inaccessible (white fence along entire back PL of Country Club Houses)

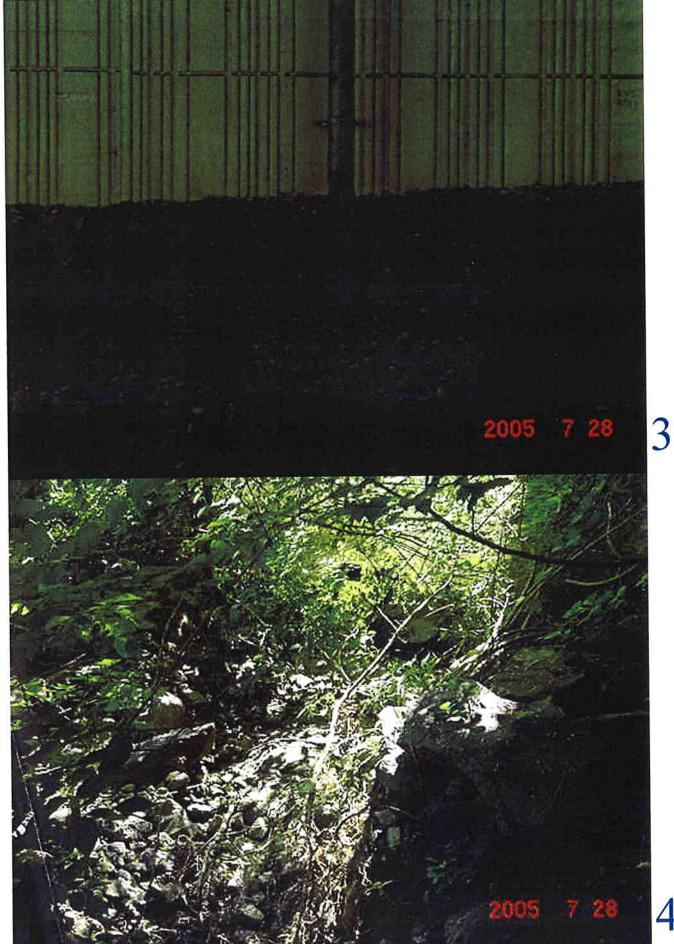
A2 - inaccessible (overgrowth/steep ravine)

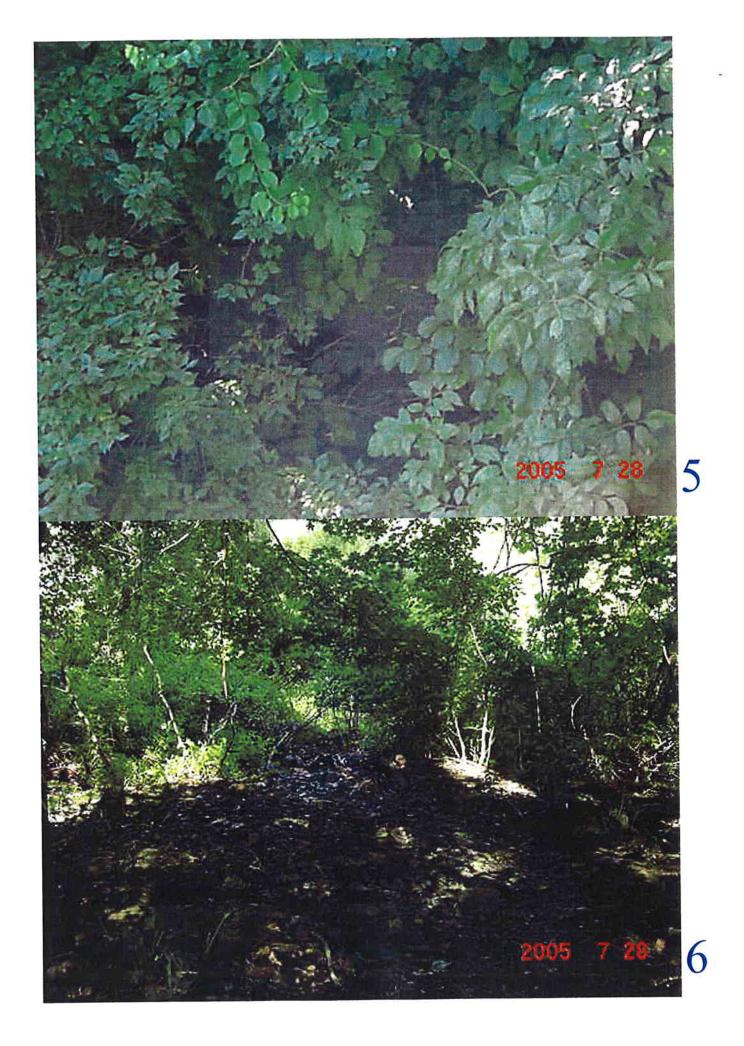
A3 - inaccessible (overgrowth/steep ravine)

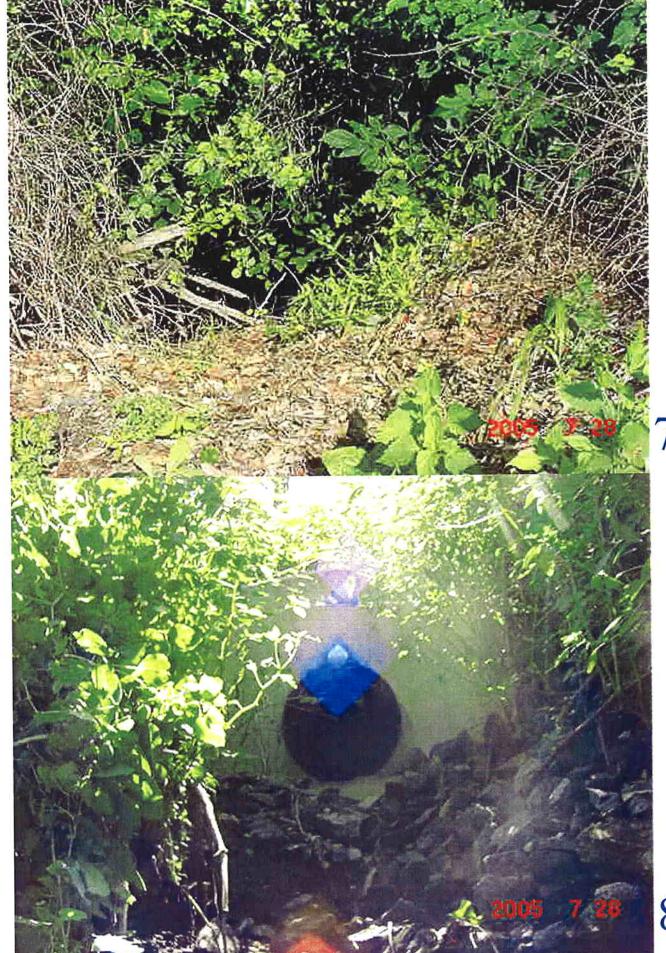
A4 - inaccessible (overgrowth)

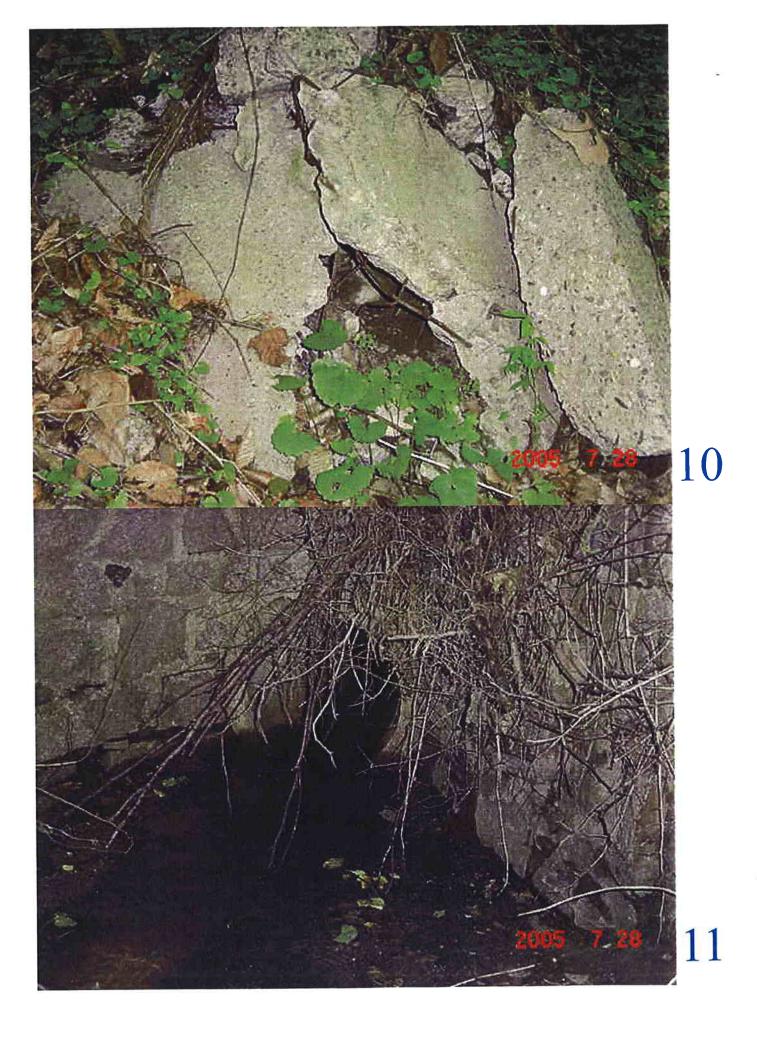
A9 - Outlet structure unable to be located. Swale is defined as a result of the outfall, but overgrowth prevents finding the outfall.

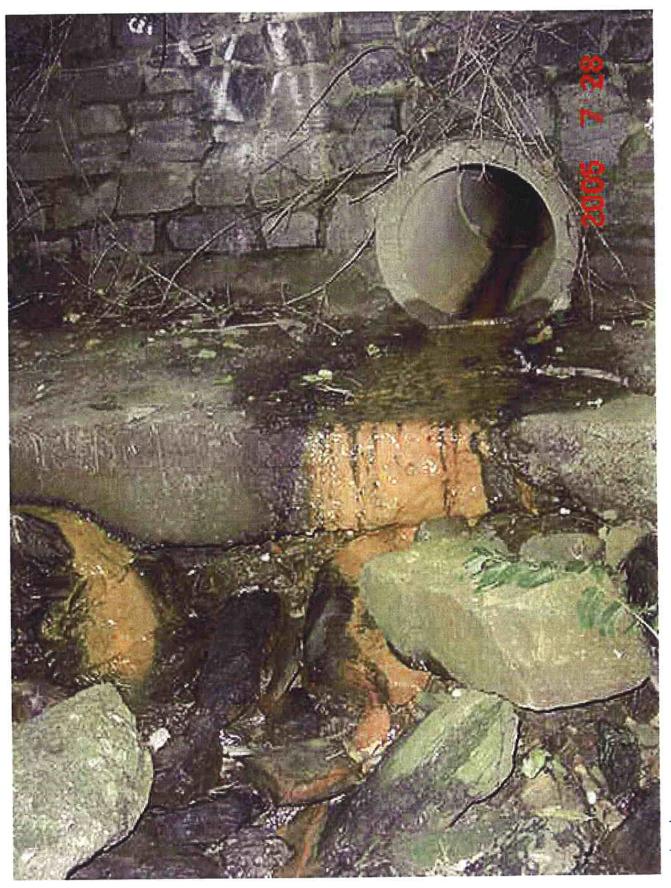




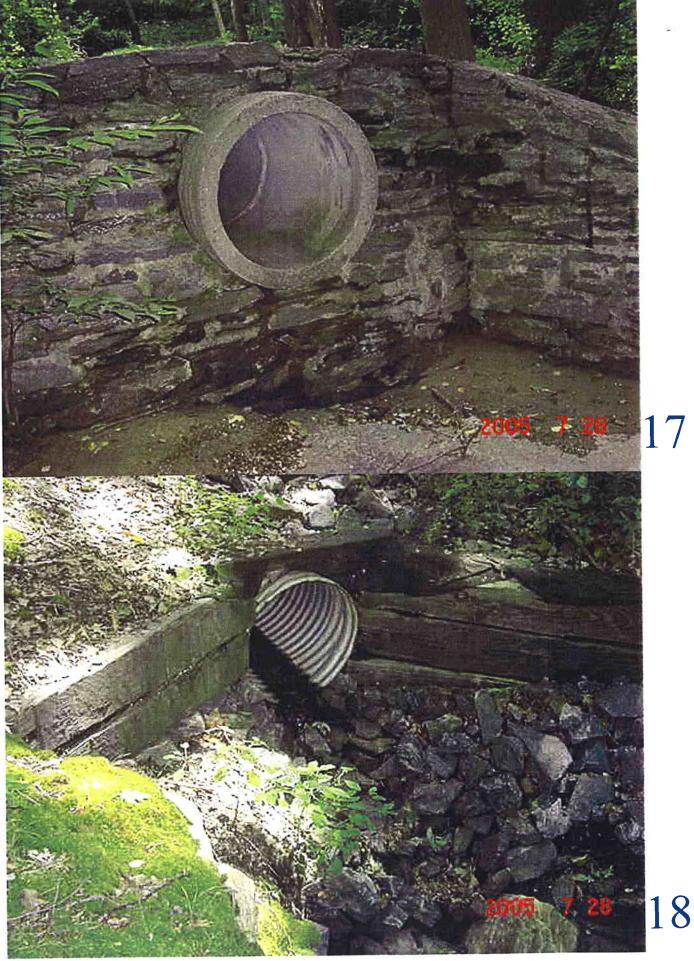


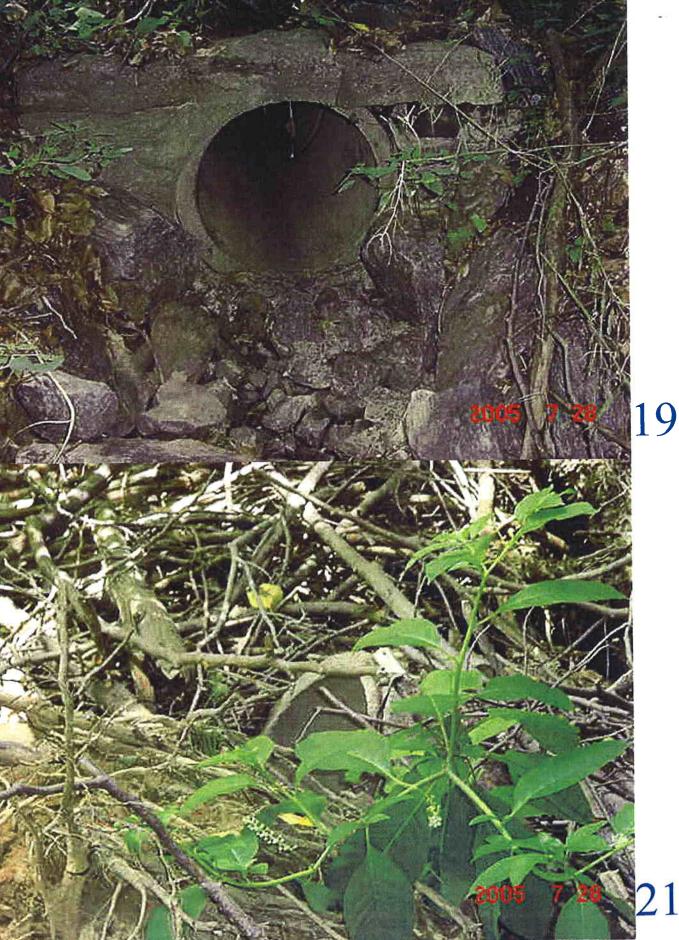


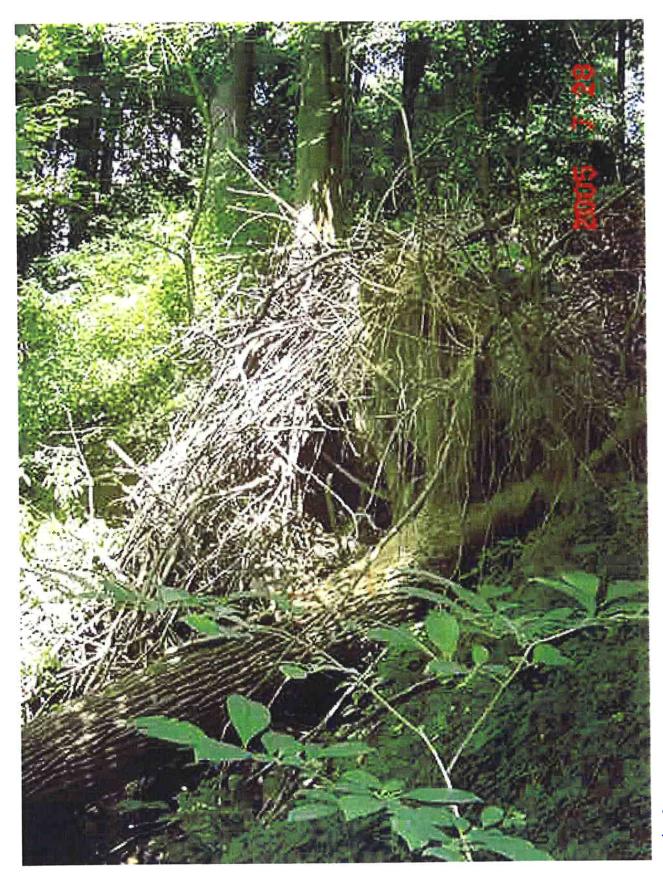




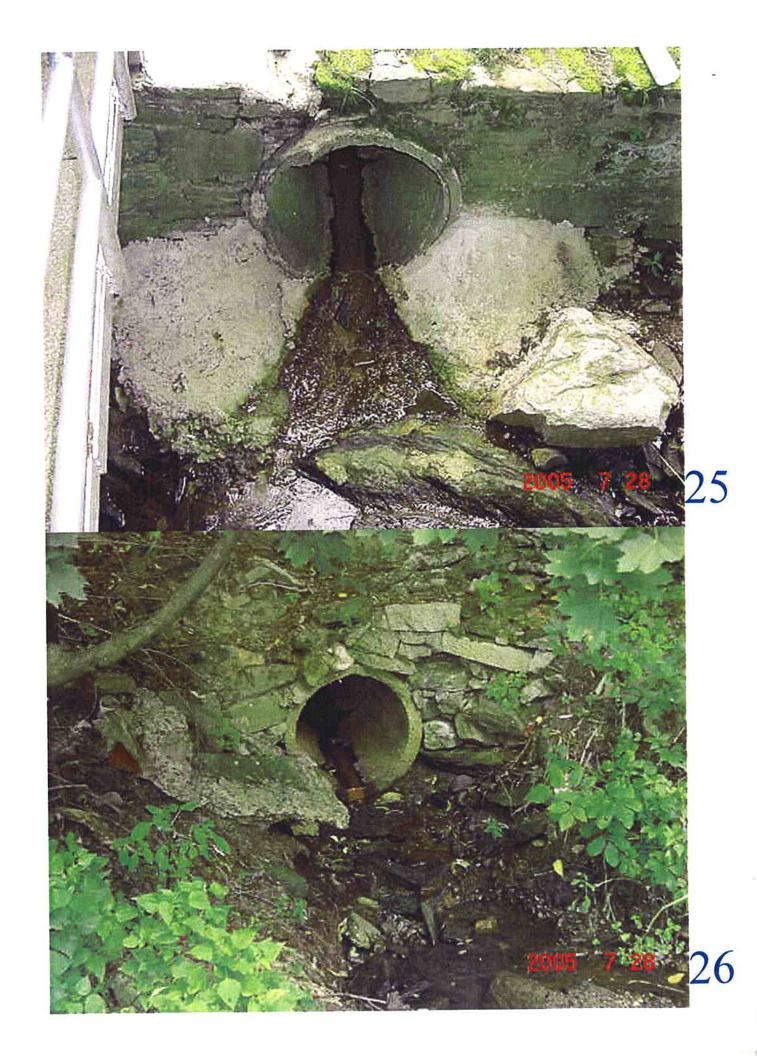


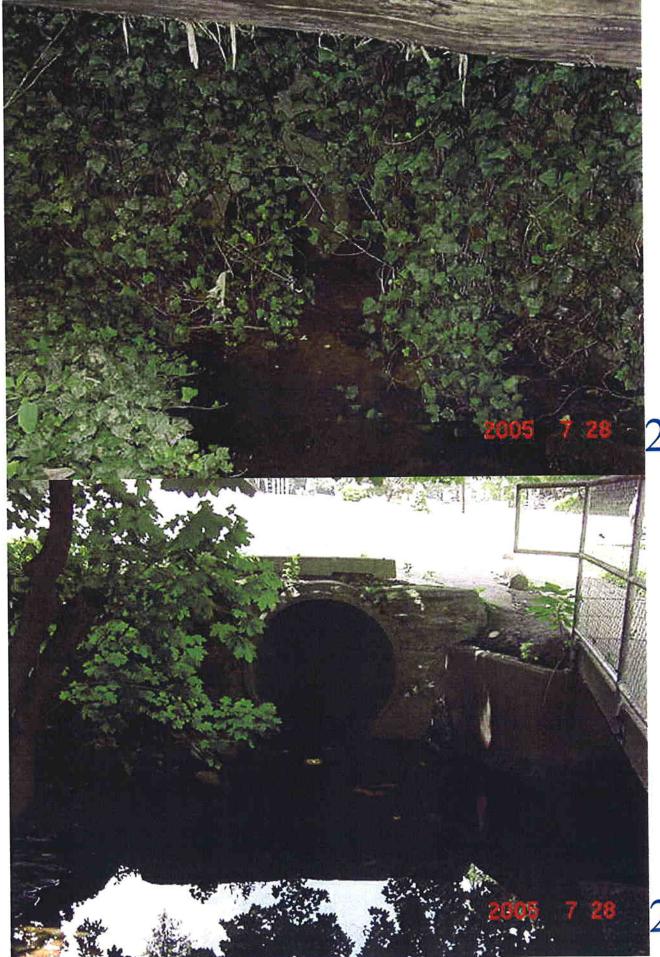


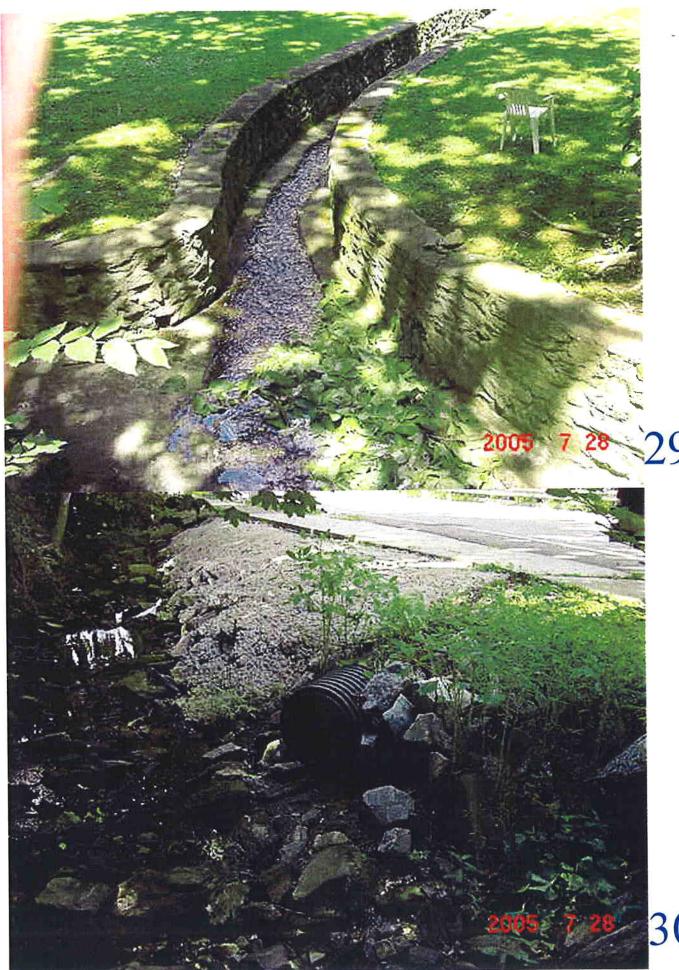


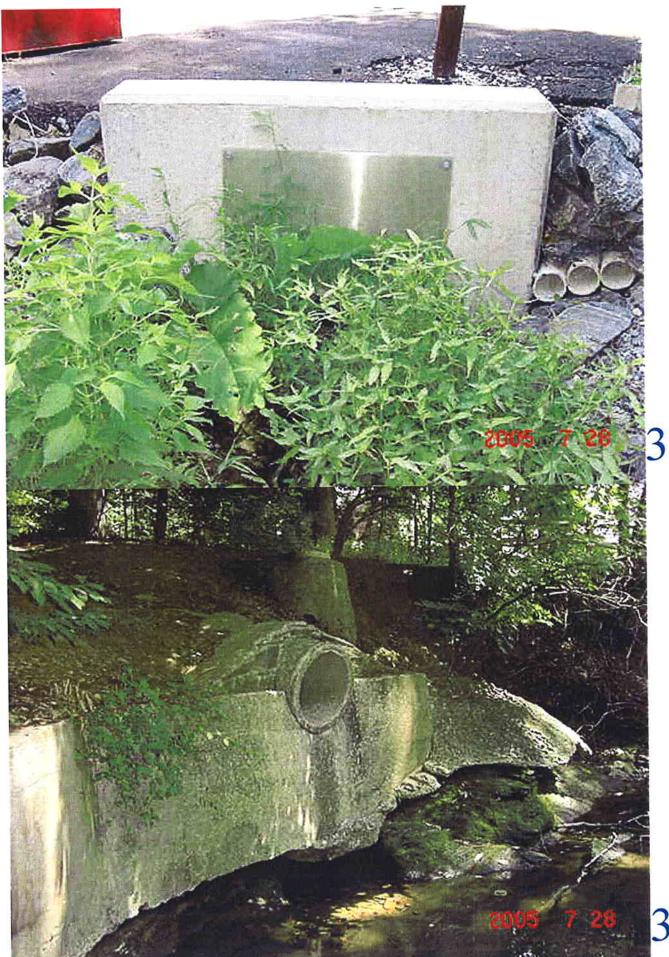


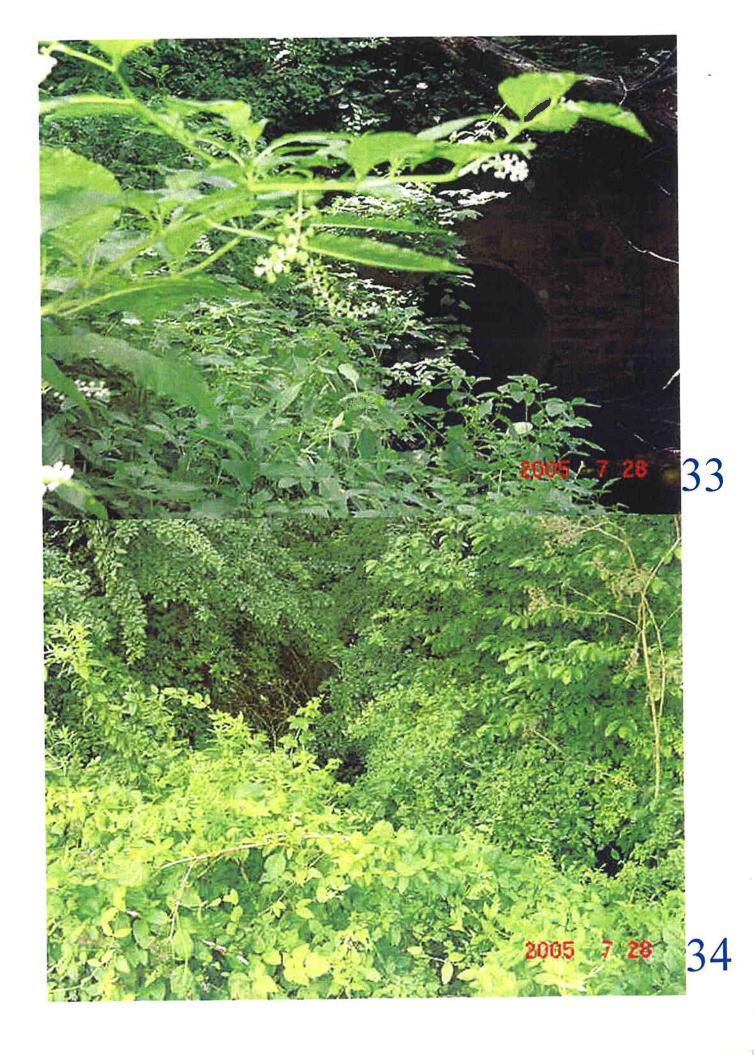


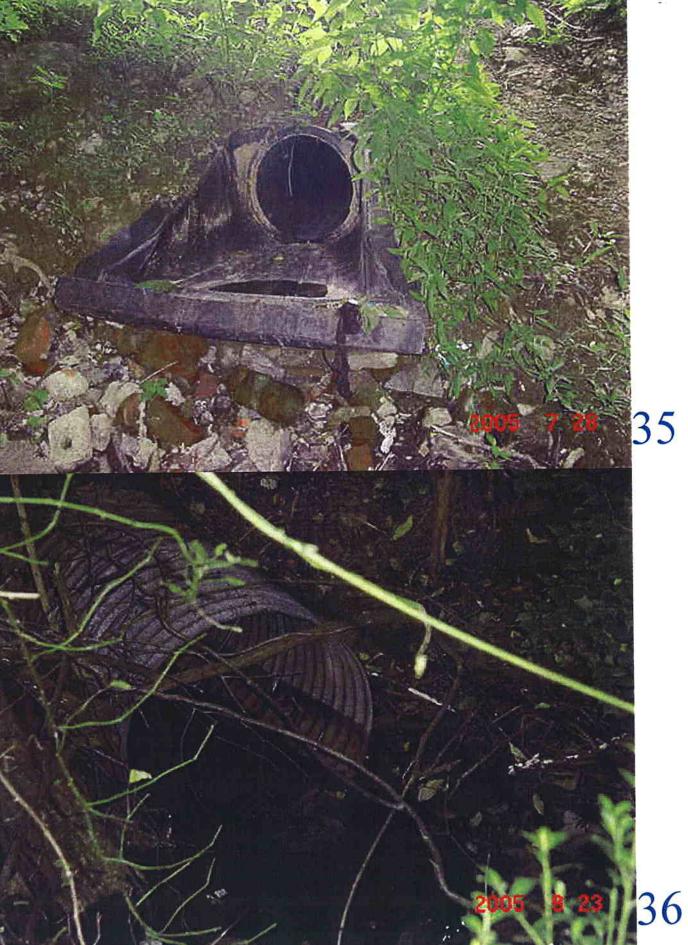


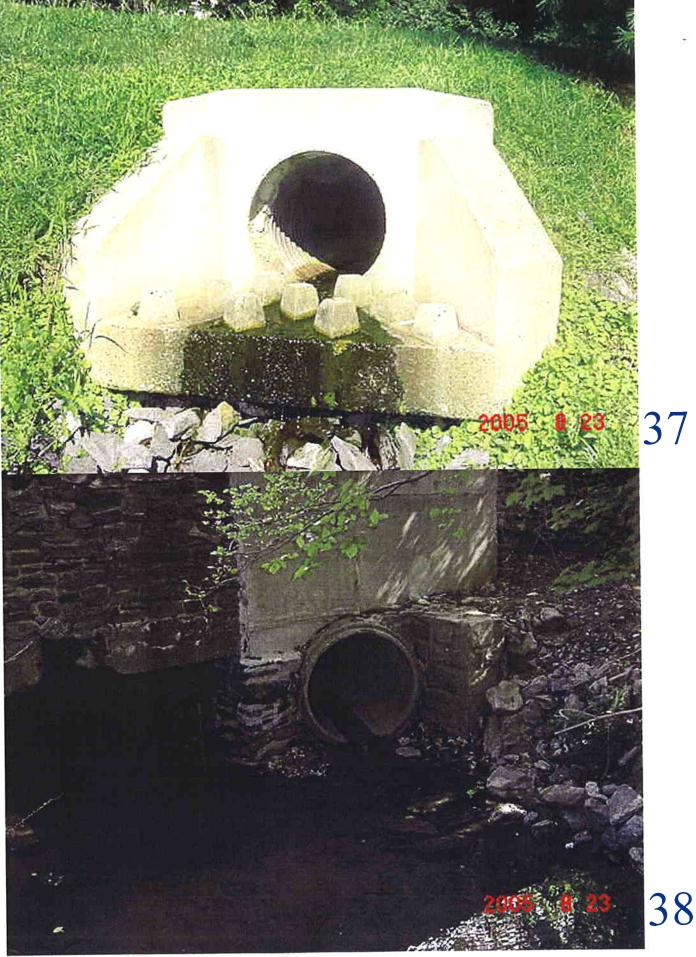


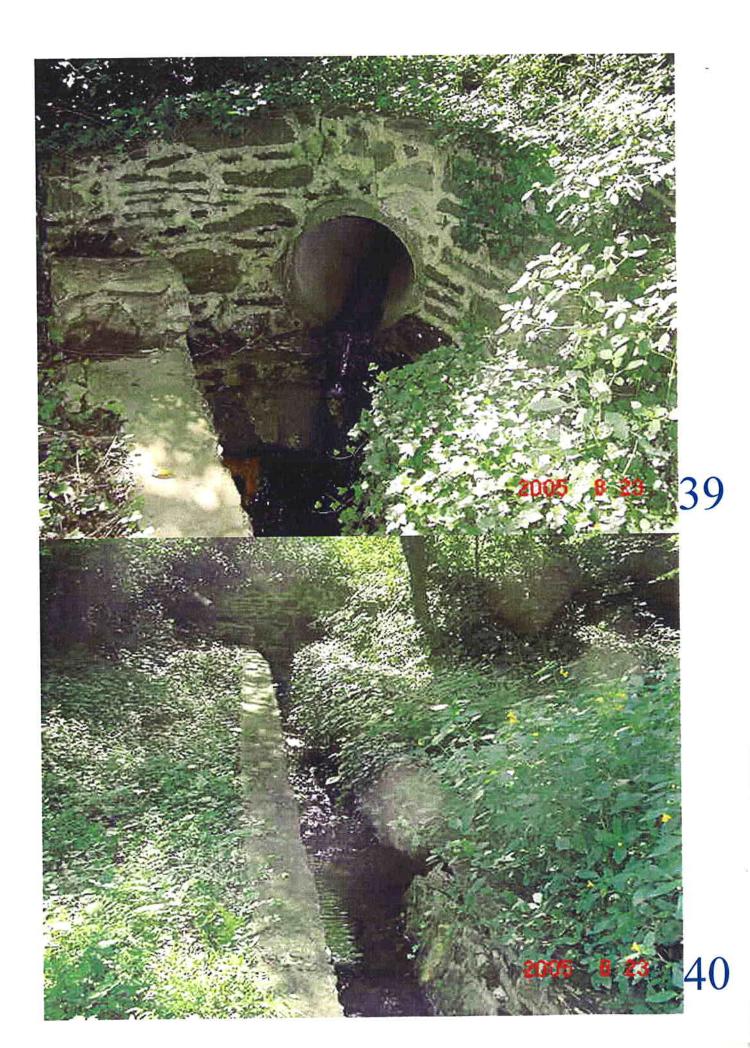


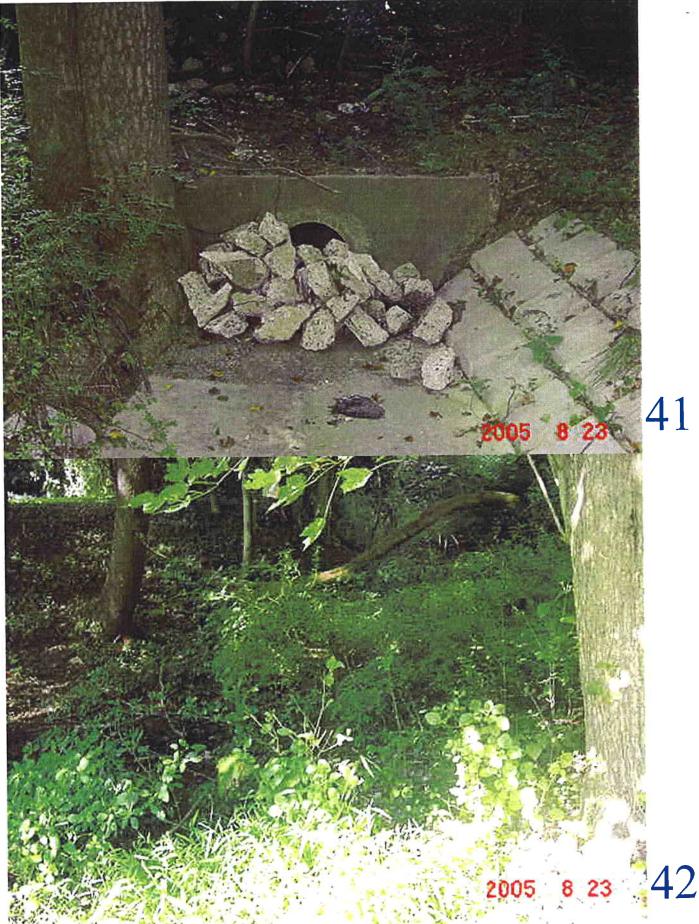


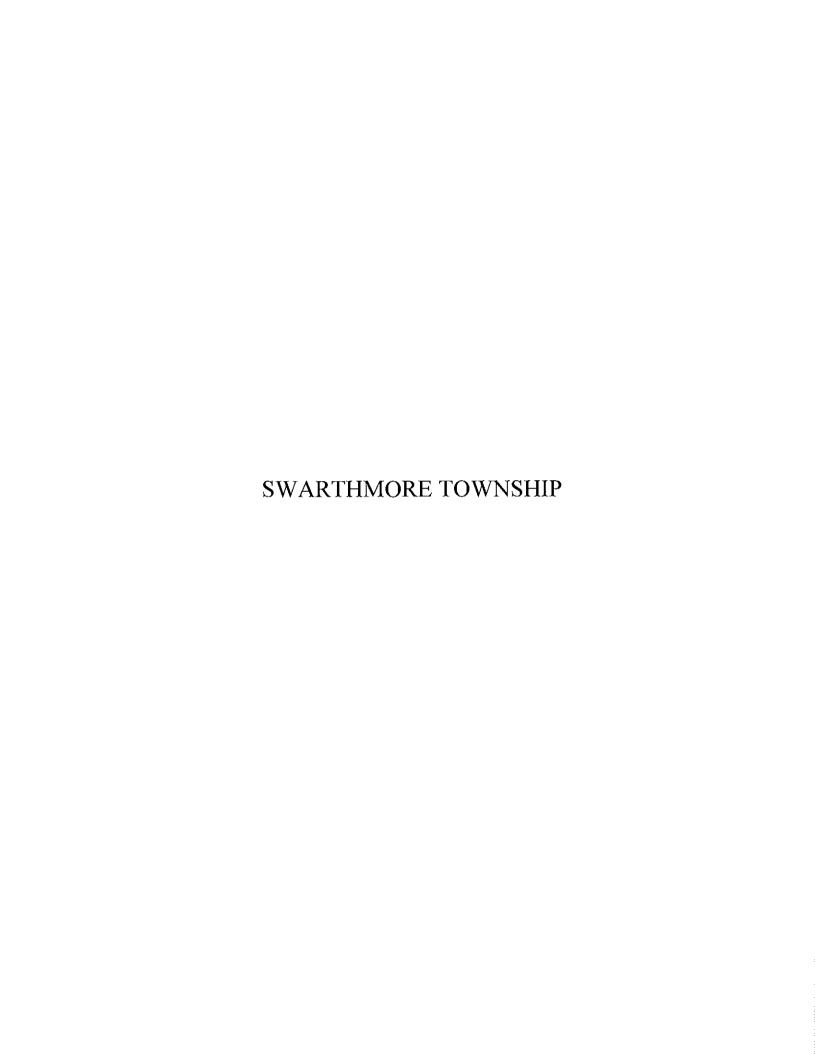












Cover	Page
Heer.	

OSCI.

NSmith

Document:

municipalities.pdf

Server:

Z5400

Time:

09/09/05 14:10:38

Pages requested:

100

Page size:

Letter

Status:

OK

Group Name:

Notes:

Instructions:

Shathmor (SWA)

Commission Com	\bigcup				FOR	FORM B - OBST	RUCTION	RUCTION DATA COLLECTION	LLECTION	7					SHEET 9	or <u>(</u>
Name of Actions Of October Control of Actions	Municip	al Stream Obstruction Data			Records co	npleted by.	70		Ø.	Ψ=	imount of fill			Material		inlet Candillans
Municipality/County Character Date (a) (27) / 2 / 2 / 2 / 2 / 2 / 2 / 2 / 2 / 2 /	Watershed				Field work p		7	ď.		3 E	Diameter : Helght		mary = CMP =	g.	HW = Headwalf W/W = Winowall	
Main D. Commerce Address Of Chemical Control Chemical Control	Municipali	\	7		Date(s):		2/2	401	ï	W± PW:	-Wrdth = Pier Width		CPP= BCCMF		SW = Sidewall	
Mode Control of Address of Octated of Control of Address of Octated of Control of Address of Octated of Control of Control of Address of Octated of Control of Control of Address of Octated of Control of Co					Ope	- 1		-					ACP =	Reinforced Concrete Pipe Reel Pipe		
Name of Address of Operational Cospects Name		-		1	Н		e (Y)			Weasureme	ents	-	Н			
Substitution Subs	Map ID.	Owner or Address Of Obstruction	Nos.	Part of Bridge?		Culver		- €	Ω €	노	+	+		ATERIAL / INLET CONDITION	_	NOTES
Substitution for the first first for the fir	7	DIA TOTAL BY BYONDER	19	7	-			m,	i	4	Н	H		MS.E.W./ HEW	S-60 17:0	6 Q v m 11.7
Substitution of the state of th		W 14		7			>	7.5	1	×	14	1	2	SRY 1 N.J.	1	5
Subject Remark In the second of the second o				1		>	-	0	01	I (v	10	100		7.00		
Strike S	d	S. C. (5), 100	-	,			12	1	1	1	j	0	1			
Subsection of the control of the con	A1.1A	R. 1000	10			3	-	6	37.			C/5 -4	Bec	46 KB/D CD	Dispid of	2.72
Market Appl	Share	Doc book		18			2		1	19	lo	7		がスイン・レム・		
History of the following the f	WINE K	Millians - Aire / 1250 Course					^	7.2	ſ	67	5	0 0	9	4 J SV		
	SURA	howard in / "				1		105	1		20			10		
	SWA ?	10 00	en.	7			2))	9.5	0			15 / SW		
	AL VIEW	TANK OF THE PERSON OF THE PERS		1			>	10	1	4,5	5.5	0.5		1		
		TO THINK GARCON													140 Receive	Ü
	1															
																- Services
						+	+			1	1	-	-			
						1				+	+	+	+			
										-	-		+			
							-					l	-			
													L			
													_			
													-	The second secon		
													-			
											1	-	+			
							+				1	+	-			
							-						1			
							+			1	+	+	1			
							+			1	+	+	+			
							+				+	-				
							-			1	\dagger	-	ł			
													-			
											200		H			
							1									

THE SPHOTOPIELLE SPOKEN

Form O - Outfall Data

Name of receiving water: LITLE CRUM CREEK 7 Time Since Last Rain was > 72 Hours: Yes Days Since Last Rain 3/23/04 Quantity of Last Rain: < 0.1 inches: |> 0.1 inches Date: Municipality: SWARTHMORE C022 Y Person:

SCHOOL STATE	Healwall	Ves/No			A STANDARD CONTRACTOR	<i>₽0</i>	VES	165	YES	1/0	1555	185	100	WO .
CYCON IN THE	Rating	(0-2)					0	0	\mathcal{Q}	0	0	0	1	0
	Describe land use of	upstream drainage	area.			RES10	H	- 77	F 1	\$ 医一次 17 mm	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	" "	12	70
	Water	Color/Odor	(Yes or no) (specify if floatables,	algae or sediment	present)	CLEAR	CLEAR	W/A	WIA	WIN	N/A	Y 97 2	١٤٠	NA
		Observed	(Yes or no)			MINIMAC	53/	٥	0	0	0	Marghan	1/9	Ð
		opes*	(V:II)			FLAT	7:1	11.2	1:2	7:7	1:1:5	5.7.1	2.1.1	1:2
	Channel	Bottom	Width	(feet)		, <u>,</u> ,	00	8	.00	- 4	هر	1-9	14	8
	Channel	Depth	-3.			119	11	j	2,	~	701		1.1	- 9
	Depth of	flow in pipe	(lect).			1/2/1	12.11	0	0	0	0	0	C	ପ
	Pipe	Diameter	(inches)			APRITOX 1.5	3011	15"	,,81	181	120	18,	PROBABLY	151
	Time	(00:00)	am/pm			8 A		1	/ 1	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	102 6	000	940	950
	Storm	Drain?	Yes/No	Not	sure	S 3/	1.6	11		1.1		5	۲.	-
	Photo .	**			-	-110	+	1.9	1	-0	10	DISK 2	-01	W
SE Land	Pipe	Swale	3	K/	7	13	14	135	14	12	81	6/	20	77

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no crosion or sediment, pipe in good repair)

- UNDER WATER

1-Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling,

blocked catch basins or drain)

IH/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

Form O - Outfall Data

st Rain was > 72 Hours: Yes	Days Since Last Rain	LITTLE ERUM
Date: $3/23/6$ \mathcal{G} Time Since Last Rain was \geq 72 Hours: Yes	ches: > 0.1 inches	Name of receiving water:
BRIEN/CUZZY	Quantity of Last Rain: < 0.1 inch	SWARTHMORE
Person: 0'8R		Municipality:

I. Si	848	600	TES	531	00	YES	165	76	7
Rating (0-2)		И	0	0	0	Ö	I BLACKE	0	Þ
Describe land use of upstream drainage area.	RESID	19	//)J	11	1 /	11	-	1/
Water Color/Odor (specify if floatables, algae or sediment present)	QUEAK	0	LEAR	.))	20518	/ / .	11/10	NIA	CLEAR
Flow Observed (Yes or no)	YES	No	SYK	0.	59%	0	0	0	0
Channel Side Slopes* (II:V)	1:2	NA	1/2	1,12	1,2	1.2	1:1.5	7:5	1;2
Channel Bottom Bottom Width (feet)	121	W/4	, 8	,01	.,0/	8.	Ž	10'	, 8
Channel	, 9	0	31	31	12	3(1,1	17	1,1
Depth of flow in pipe (fect).	<i>, , I</i>	0	311	112	1,11	W/M	0	0	N/A
Pipe Diameter (inches)	3011	1,8	1,84	530186	181	5 QUARIC	1511	18,,	DUMP INTO
Time (00:00) anv/pm	10/AM	10/AM	10 pt 01	10 1/4	10 20	10 30	10 40	10 45	11 957
Storm Drain? (Yes/No a Not sure	7,65	165	165	YES	VES	165	165	465	STREET PUFRPASE
Photo .	†	5	9	7 ×	9	0/	D16R 3	7	3
Pipc Swate	22	23	あて	25	72	127	28	29	- 68

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

-Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling,

blocked catch basins or drain)

II/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

Form O - Outfall Data

			_ <i>HW</i> _				T	ZZ ZZ	22%
		NA ST	535) 835	Rating	(5-0)		of a	0	\$
e e			. 8	٠,	a Rc			ğ.,	
13.				Describe land use of	area.			NES	7.
urs: Yes	st Rain			Water	(Yes or no) (specify if floatables,	algae or sediment	present)	CAR!	M/M
as ≥ 72 Hoo	Days Since Last Rain			Flow	(Yes or no)			0	0
23/64 Time Since Last Rain was > 72 Hours: Yes_	Day			Channel Channel	(II:V)			2	1.7
ime Since]		iving water:		22.00	Width	(feet)		141	- 00
3/04 1		Name of receiving water:		Channel	nebru			ή,	, /
18	• 0.1 inches	ž	-		(feet)	···		N/0	-0
V Date:	Quantity of Last Rain: < 0.1 inches: > 0.1 inches	Z'			(inches)	5 90 ARK	1 X (2.7)	ABOVE RUN	18 " Habber
0, BRIFU & CUZZY	Last Rain: <	Municipality: SWARTHMORE			(00:00)			10 5/5	200
KIEU 4	Quantity of	SWAR			Ves/No		sure	PISK 3 STREALFULL 4 MOER ST.	165
0'8		ality:		Photo '	*			77 5 4 31 d	か
Person:		Municipa	ř	Pipe	Swale			25 55	18 32

Ne.

0

0

0

11110 INTO

m

0

, PIPES 32

34

12

(>c 3 M

13

Z

20

Rating System:

C. ABBUE

DISKY

SOURKE

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling,

blocked catch basins or drain)

II/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

Form O - Outfall Data

Quantity of Last Rain: < 0.1 inches: > 0.1 inches: > 0.1 inches: Municipality:	1 melie	Days Since Last Rain
		me of receiving water:

The state of the s	eti i	5	NAC			PIPE	7/1/2	80	NO	, 0N	2770	X	80	765(KOHL
	Rating	(0-2)					0	0		0	N	0	0	0	NIKSUESII V
A. A. M. 104. A.	Describe land use of Rating	upstream drainage	area.			SIRS	16	RES	RES	PES	res	RES	11	RES	
	Water	Color/Odor ·	(specify if floatables,	algae or sediment	present)	NA	NA	CLEAR	CLEAR	NA	NIA	TRICKLF	41/12	NA	37
	Flow	Observed	(Yes or no)			0	0	TRICKLE	165	40	NO	. S PRICKE	NO	NO	
3.0	Channel	Side Slopes*	(TI:V)			1:1.5	1:1.5	1:1:5	1:1:5	1:15	1:1.5	1:1.5	1:1.5	1:1.5	
1.74	Channel		Width	(feet)		STREAM	1753 Seal	9	61	, 9	,9	7'	1/	151	
	Channel	Depth				27/26/1921	1.1	119-	11	1, 9	119	119	1,1	6 5788AM	
=	Depth of	Now in pipe	(feet)			9	-0	TRICKLE	1211	_0_	- <u>Q</u>	TRICKETTE	No	04	
	Pipe	Diameter	(inches)			1,42	1.81	, 72	24'	, , 8 /	15"	30 "	,,08	7.72	11.1.10
	Time	(00:00)	am/pm			11 50	1200	12 20	12 30	12 40	1245	1727	12,50	ORA /	
	Storm	Drain?	Yes/No	Not	sure	765	YFC	YRS	465	Y65	ANT EX SCHOOL	898	755	765	
	Photo .	#				y X T	70		7	00	6	0.1	PYSK5	N	
24	Pipe	Swale	11	1		40	- -	42	43	44	45	2/1	47	87 00	

Rating System:

9'X15'

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

I=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2=impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling,

blocked catch basins or drain)

II/V = Horizontal to vertical ratio

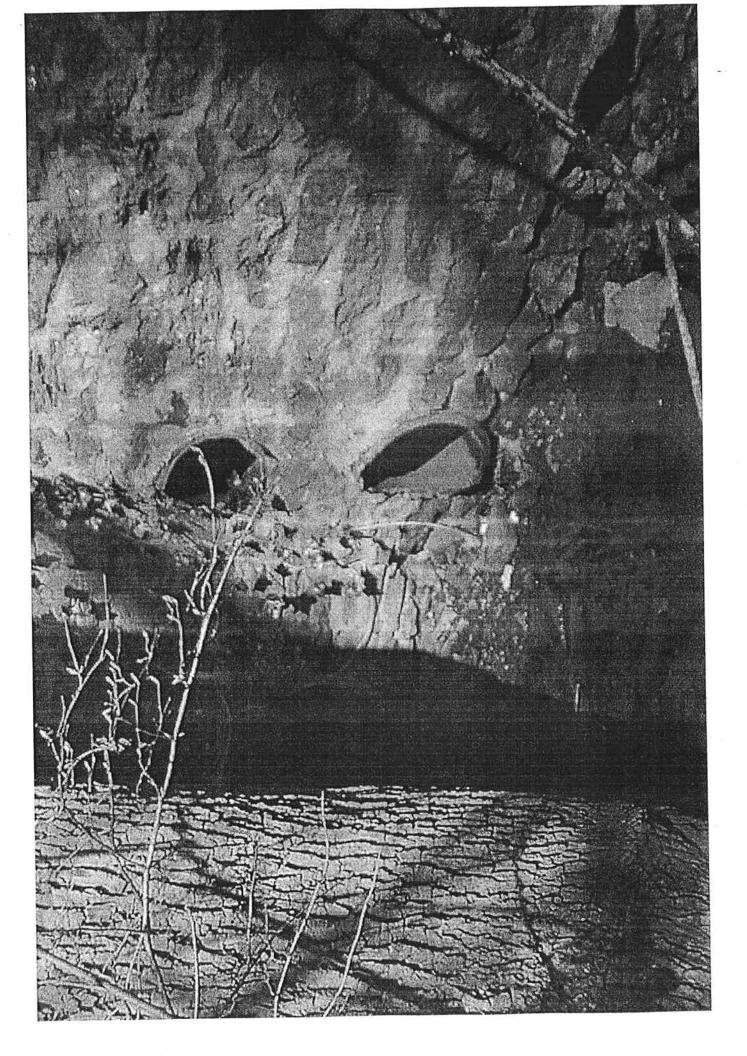
*1:1 = Vertical - rectangular channel

PIPESUALE # 13 LITTLE CALLA CALCIE PHOTO # 1

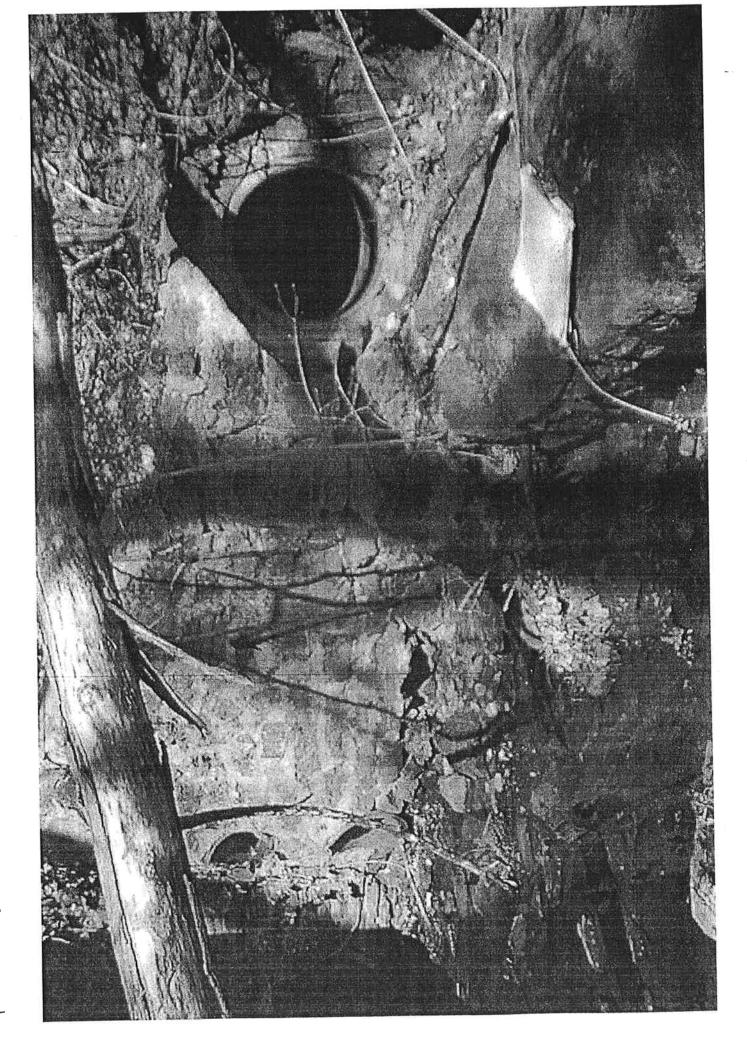


Protost 3 LITTLE CRUM CRECK PipE Swale #13

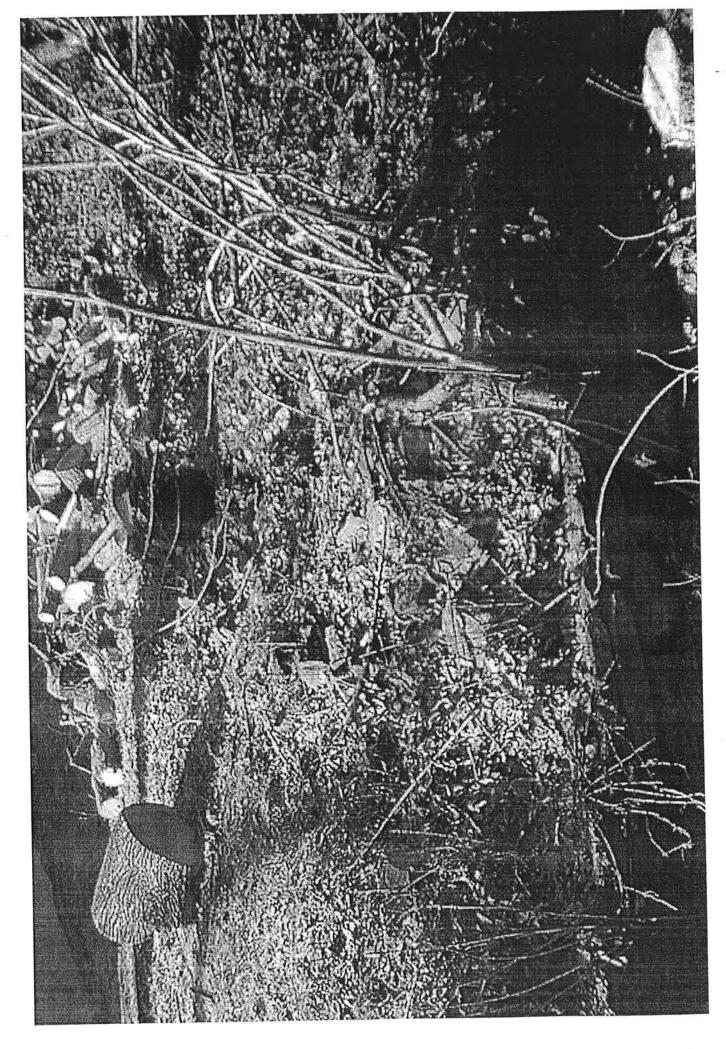
Pipe Swale 4 LITTLE GRUM GREEK PHOTO#4



PIPE SUMPE IN 15 LITTLE CRUM CREEK PROTOMIC



PIDE SWALE 4 10 LITTLE CAUM (REEK PHOTO-4-7



PyE SUALE 4 B LITTLE CRUM CREEK PHOTO # 10

Pipe Surre # M LITTLE CRUM CREEL DISK 2 - PHOTO # 1

Pipe Swale #20 - Swarthmore, Little Crum Creek Disk #2 - Photo #2

Pipe Swale #21 - Swarthmore, Little Crum Creek Disk #2 - Photo #3

ripe Swaie #22 - Swarthmore, Little Crum Creek Disk #2 - Photo #4

Pipe Swale #23 - Swarthmore, Little Crum Creek Disk #2 - Photo #5

Pipe Swale #24 - Swarthmore, Little Crum Creek Disk #2 - Photo #6

Pipe Swale #25 - Swarthmore, Little Crum Creek Disk #2 - Photo #7

Pipe Swale #25 - Swarthmore, Little Crum Creek Disk #2 - Photo #8

Pipe Swale #26 - Swarthmore, Little Crum Creek Disk #2 - Photo #9

Pipe Swale #27 - Swarthmore, Little Crum Creek Disk #2 - Photo #10

Pipe Swale #28 - Swarthmore, Little Crum Creek Disk #3 - Photo #1

Pipe Swale #29 - Swarthmore, Little Crum Creek Disk #3 - Photo #2

Pipe Swale #30 - Swarthmore, Little Crum Creek Disk #3 - Phot
o#3

Pipe Swale #31 - Swarthmore, Little Crum Creek Disk #3 - Photo #4

le://A:\/MVC-004F.JPG

Pipe Swale #32 - Swarthmore, Little Crum Creek Disk #3 - Photo #5

Pipe Swale #33 - Swarthmore, Little Crum Creek Disk #3 - Photo #6

file://A:\MVC-006F.JPG

Pipe Swale #35 - Swarthmore, Little Crum Creek Disk #3 - Photo #8

Pipe Swale #36 - Swarthmore, Little Crum Creek Disk #3 - Photo #9

Pipe Swale #37 - Swarthmore, Little Crum Creek Disk #3 - Photo #10

Pipe Swale #38 - Swarthmore, Little Crum Creek Disk #4 - Photo #14

Pipe Swale #39 - Swarthmore, Little Crum Creek Disk #4 - Photo #2

Pipe Swale #39 - Swarthmore, Little Crum Creek Disk #4 - Photo #3

Pipe Swale #40 - Swarthmore, Little Crum Creek Disk #4 - Photo #4

Pipe Swale #41 - Swarthmore, Little Crum Crcek Disk #4 - Photo #5

Pipe Swale #42 - Swarthmore, Little Crum Creek Disk #4 - Photo #6

Pipe Swale #43 - Swarthmore, Little Crum Creek Disk #4 - Photo #7

Pipe Swale #45 - Swarthmore, Little Crum Creek Disk #4 - Photo #9

Pipe Swale #46 - Swarthmore, Little Crum Creek Disk #4 - Photo #10

Pipe Swale #47 - Swarthmore, Little Crum Creek Disk #5 - Photo #1



file://A:\/MVC-002F.JPG

Form O - Outfall Data

Days Since Last Rain 3 /9/04 (204) Time Since Last Rain was > 72 Hours: Yes Name of receiving water: CRUM CREEK Date: 3/9/04 Quantity of Last Rain: < 0.1 inches: | > 0.1 inches Municipality: SWARTHMORE

Healwoll yus/No	TIMBER	ノ差で	Pity Setim Wood	MO	NO	NO	YES	プル	No
Rating (0-2)	0	2	PIP SEPONA	O	0	0	0	Ö	516
Describe land use of upstream drainage area.	RESIDENTIAL	41				7			
dor,— if floatables, sediment	CLERA	N/4	CLEAR	LEAVES	CLEAR	NA	CLEAR	W/9	N/A
Flow Observed (Yes or no)	100 100 100	, or	YES	NO	NES	No	YES	. No	ON
Channel Side Slopes* (H:V)	1:2	7:1	NA	1:1	1:2	1:1.5	7,1	h; /	MA
Channel Bottom Width (feet)	101	201	N/A	NA	1,5	1 7	101	THE STATE OF THE S	N/M
Channel Depth	<u>r</u>		DUPTPS 11170 STREAM	N/a	1,6	-23	TAC.	12/1	N/A
Depth of flow in pipe (feet).	0/1/21/	0 27	- M	0	1-1-	0	≈ t= 	. 0	0
Pipe Diameter (inches)	2 411	808/60	241	1.01	1 & +	1.51			11211
Time (00:00) am/pm	848		0 15 15 15	950	2 7 27	1000	5 AN	10 25	10 45
Storm Drain? Yes/No Not	yes Yes	=	=	. =	=	-	9ES	ンツス	1/ES
Photo S	-	243	サ	15	۷	7	8	0	2
Pipe Swale	41 1000	W.E.	m	1	\v	1	1	0	0

Rating System:

3=No observed impairment (No dry weather flow, no solids, floatables or debris, no crosion or sediment, pipe in good repair)

=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling

blocked catch basins or drain)

YI/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

NOTES:

Form O - Outfall Data

	Healwal Yes No	ハディ	YES	新沙 斯		100 to 100			
Time Since Last Rain was \geq 72 Hours: Yes as Days Since Last Rain Name of receiving water: CRUM CREEK	Rating (0-2)	0	۵	Q				175	- 8
	Describe land use of Rating upstream drainage (0-2) area.	COLUEGE	PES10						
	Water Color/Odor (specify if floatables, algae or sediment present)	CLEAR	NA	SUENK		3	X		81
	•	No.	No	NO	-		6		4
	Channel Side Slopes* (II:V)	1,7.5	1:1.5	1:2	=				2.3
	Channel Bottom Width (feet)	- O-	-2	121					
ort of rec	Channel Depth	Ü	-	, 1					,
Date: 3/9/ nes: > 0.1 inches	Depth of Now in pipe (feet).	30°	8	0		 			
Person: 0'881EV/CUZZY Date: 3/9/ Quantity of Last Rain: < 0.1 inches: > 0.1 inches Municipality: SWARTH MORE Na	Pipe Diameter (inches)	28.	alias.	1,81				4	3.
	Time (00 <u>::00)</u> am/pm	11.9%	1103	1120					
	1/ 1	YES	YES	125	•				
	Photo Storm Drain?	_	N	3				0	
Person: Municipa	DWALL Swate	2		12 12	/			-2	

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling,

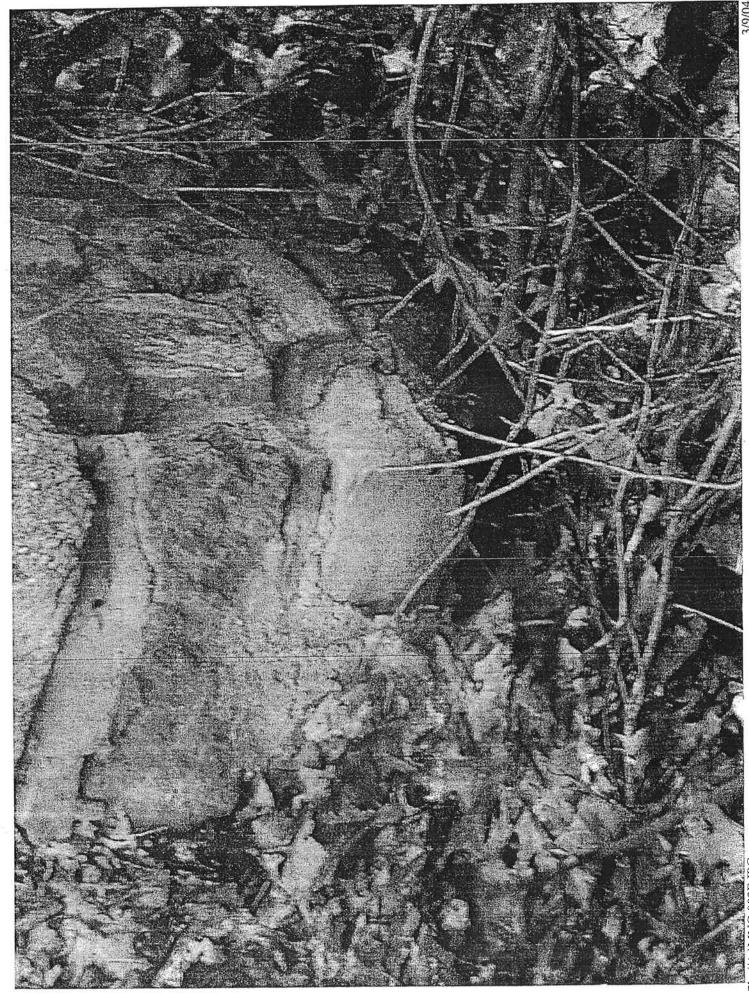
blocked catch basins or drain)

IHV = Horizontal to vertical ratio

*1:1 - Vertical - rectangular channel

NOTES:

Swarthmore - Pipe swale 1 - Disk 1 - Photo 1 CRUM CREEK



:://A:\MVC-002F.JPG

Swarthmore - Pipe swale 2 - Disk 1 - Photo 3 CRUM CREEK

Swarthmore - Pipe swale 3 - Disk 1 - Photo 4 CLUM CAGEK

Swarthmore - Pipe swale 4 - Disk 1 - Photo 5 てんしょく くんこう

Swarthmore - Pipe swale 5 - Disk 1 - Photo 6 くんいい くんぜん

Swarthmore - Pipe swale 6 - Disk 1 - Photo 7 くんしい にんごとん

Swarthmore - Pipe swale 7 - Disk 1 - Photo 8 CLUM CREEK

Swarthmore - Pipe swale 8 - Disk 1 - Photo 9 CALLM CREEK

Swarthmore - Pipe swale 9- Disk I - Photo 10 C. PLUA CAEER

file://A:\MVC-001F.JPG

Swarthmore - Pipe swale 🐌 - Disk 2 - Photo 2 Chura CRECK

Swarthmore - Pipe swale M. Disk 2 - Photo 3 Chur CREEK





HE COUNTY OF CHESTER

COMMISSIONERS: Colin A. Hanna, Chairman Karen L. Martynick Andrew E. Dinniman

WILLIAM H. FULTON, AICP **Executive Director**

PLANNING COMMISSION Government Services Center, Suite 270 601 Westtown Road P.O. Box 2747 West Chester, PA 19380-0990

(610) 344-6285

FAX: (610) 344-6515 BORTON LAWSON LEHIGH VALLEY OFFICE

MEMORANDUM

JULY 28, 2003

ZPAD ___ **CORRESPONDENCE** MJW___ AGREEMENT WSB. n CONTRACT PAR ADMIN__

TO:

Paul DeBarry, Borton Lawson Engineering

FROM:

Christina Duff

RE:

Crum Creek Act 167 Outfall Mapping

Enclosed please find the outfall mapping for Tredyffrin Township. The Township has provided both a hard copy of the map and the electronic files on CD-Rom. They have not yet completed the Form O; it appears this information will follow later.

Today I spoke with the consultant from Yerkes who is working with Willistown Township to complete their outfall mapping. They are just beginning the process and will not have it completed by July 31st, 2003. Willistown is going to try to complete it as quickly as possible, but does not anticipate being done for at least another month. I have yet to hear from Easttown Township, or Malvern Borough. If we receive any additional mapping or information, we will pass it along to you.

Thanks!

CD/kp Enclosure

610-644-1400 - STEVE NORCINI -- PUBLIC WORKS DIRECTOR -

Well be receiving data for the Crum Geel More II - Twe those I is now over, Please just make a spreadsheet on munic (from short report) and what data we received (from corer letter) Hen put in Red file for future reference. No need to put on GT3 or server el. Therese and the second of Lo UNE DANSON LO LANDON THERE IS NOTHING OW TIHIS CD-ROM EXCEPT AN EMPTY APR CALED STORMWATER FACILITIES APR" THEY FORGOT ALC THE DATA

BOARD OF SUPERVISORS TREDYFFRIN TOWNSHIP

Supervisors:

Robert W. Lamina, *Chairman*Judy L. DiFilippo, *Vice Chairman*Guy L. Ciarrocchi
Bill DeHaven
Warren E. Kampf
E. Brooks Keffer

Paul W. Olson

CHESTER COUNTY 1100 DuPortail Road Berwyn, PA 19312-1079

tail Road 9312-1079

(610) 644-1400 FAX (610) 993-9186 Email: <u>tredyffrin@tredyffrin.org</u> Website: <u>www.tredyffrin.org</u> Joseph A. Janasik Township Manager

Lamb McErlane PC Solicitor

Agreement

	Agreement
Under the Township's licensing agreement with Cheste from its Geographic Information System (GIS), with the Township and purged from the Consultant's systems at	r County, the Township may provide a third party consultant with layers e express condition that all data given to the Consultant is returned to the t the completion of the project.
On this day, the day of containing the following six Tredyffrin Township GIS	, 2004, Delaware County Planning Commission received one CD layers:
 Tax Parcels Township Boundaries Watershed Boundaries 	Stormwater SystemsStormwater PipesStreams
I understand and agree to the terms and conditions for purge the information from all of my equipment and s	using Tredyffrin Township's GIS layers and agree to return the CD and ystems at the conclusion of the project.
Delaware County Planning Commission Stephen F. Norcini Director of Authority Operations/Asst. Direct	tor of Public Works
On this day, the day of Township's GIS information and affirm that all data h	, 2004, Delaware County Planning Commission returned Tredyffrin as been purged from its systems.
Delaware County Planning Commission	
Stephen F. Norcini Director of Authority Operations/Asst. Director	etor of Public Works

CRUM CREEK WATERSHED ACT 167 STORMWATER MANAGEMENT PLAN

MUNICIPALITY QUESTIONNAIRE

Please fill out the following questionnaire and return it to Karen Holm at the Delaware County Planning Department, Court House and Government Center Building, 201 West Front St. Media, PA 19063 as soon as possible. If you have any questions or comments, or if you would like these forms in digital format, please call Karen at 610-891-5213 or e-mail her at holmk@co.delaware.pa.us.

PART I - GENERAL INFORMATION Tredyffin Township Municipality: Stephen F. Norcini Contact Person: WPAC Designee: Director of Munkipal Authority Operations Title: 1100 Du Portail Road Address: 610 408 3612 Phone: 610-993-9186 e-mail snorcini Otredyffrin.org Fax: Person Completing form (if different from Contact Person): Name: Address: Phone: Fax:

E-mail:

PART II - REGULATORY ACTIVITIES

A. Please indicate the regulations you currently use to manage development.

REGULATION	MUNICIPAL ORDINANCE	COUNTY ORDINANCE
Zoning Ordinance		
Subdivision/Land Development Ordinance		
Separate Stormwater Ordinance		
Separate Floodplain Ordinance		

B. Please indicate the agencies/individuals who review and approve land development plans and zoning variance/waiver requests.

	LAND DEVELOI	PMENT PLANS	ZONING VARIANCE/	
ENTITY	REVIEW	APPROVE	REVIEW	APPROVE
Supervisors				
Municipal				
Engineering				
Department				
Municipal				
Planning				
Department				
County Planning				
Department	V			
County				
Conservation				
District				
Zoning Hearing		,		
Board				V
Consulting				
Engineer	V			
Others (List				
Below				

C.	Please provide copies of your zoning, subdivision/land development, and separate stormwater
	management and floodplain ordinances and your current zoning map when you return this
	questionnaire. Please list these documents below.

Subdivision and hand Development - Chapter	(181) From the code of
Zoning, Chapter 208	3 the Township of Tredutifin
Boning mep	

PART III - MUNICIPAL AND LOCAL PLANNING ACTIVITIES

Please indicate below whether your community has approved the following plans and maps and the date of the most recent update.

ITEM	APPROVED/DATE	IN PROGRESS	PLANNED WITHIN NEXT YEAR
PA Act 537 Sewage Facilities Plan	15 43	updata	
Comprehensive Land Use Plan			
Existing Land Use Maps			
Proposed Land Use Maps			
Zoning Maps			

PART IV - FLOOD INSURANCE PROGRAM AND COMPREHENSIVE LAND USE PLAN

Please indicate below whether your community participates in the National Flood Insurance Program:

ITEM	PARTICIPATES (Y/N)
Flood Hazard Boundary Map (FHBM)	
Participates in FEMA Emergency Program	
Participates in FEMA Regular Program	

PART V - EXISTING STORMWATER RELATED PROBLEMS AND STRUCTURES

Please complete the matrices on the following pages (Forms A and C-J) to describe any significant stormwater-related problems (Form A), Existing or Proposed Flood Control Projects (Forms C & D), Existing or Proposed Storm Water Control Facilities (Forms E and F), Existing or Proposed Stormwater Collection Systems (Forms G & H), Present and Projected Development in the Flood Hazard Area (Form I), and Water Quality Problem Areas (Form J) that you are aware of in your municipality.

What we would like to ask of you is that you complete as much of the attached data collection forms as possible. There is a different form for each item of information as summarized in the attached 'FORM DESCRIPTION SUMMARY. The process would be as follows starting with the problem areas (Form A):

- Place the location of the problem area on the map as shown in the attached example map.
- Draw a box on the map with the problem area identifier starting with A-1 with an arrow leading from the problem area identifier to the problem area.
- Place an A-1 in the first column of FORM A.
- Put a check in each box in the A-1 column that represents the problems associated with that particular problem area.
- Repeat with the next problem area (A-2) and so on.

- Repeat for existing flood control projects (FORM C) placing a triangle on the maps and starting the labeling with C-1.
- Repeat for all forms.

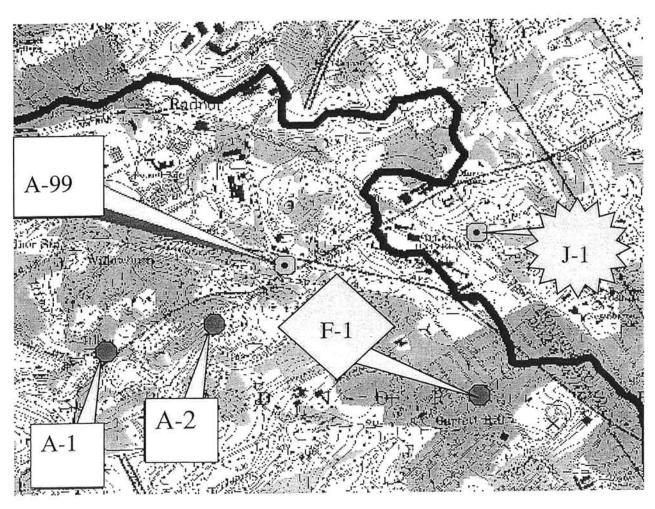
The sample map attached shows three problem areas (A99- A1 and A-2), one proposed flood control project (F-1) and one water quality problem (J1).

Use additional paper to provide <u>detailed</u> descriptions of your most serious problems and attach a map to show the location of the problem. Attach photographs, if available.

If you have any storm or combined sewers, please provide maps showing the collection system and overflow discharge locations and an estimate of the average annual discharge at each overflow point.

The more detail you provide, the better we will be able to evaluate the situation for your municipality. We appreciate your help.

Sample Location of Information from Data Collection Forms on the Municipal Map



J:\Environmental\Crum Creek Stormwater Plan\Survey Forms\Questionnaire.doc

WATERSHED COUM COLL

Name:

Municipality: Tresufficia Two

County: Chester

FORM COMPLETED BY
Name: Stephen F. Nototal
Telephone: 610 408 3633
Date: 91104

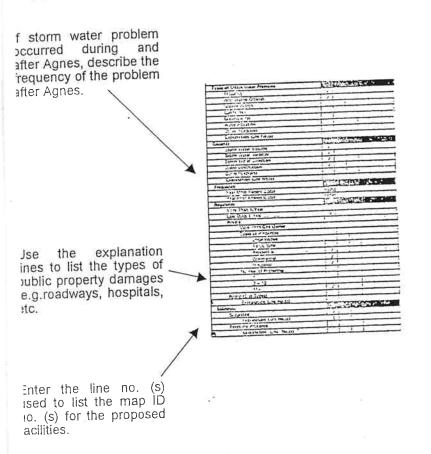
Chipath	sample	1									14	Ta	Ι_Λ
MAP NO.	A-99	A-	A-	A-	A-		A-	A-	A-	A-	A-	A-	A-
Types of Storm Water Problems		ille III				No Tari		1 147	April 1			# 1 3 c	Toke to
Flooding	X												
Accelerated Erosion	X												
Sedimentation													
Landslide													
Groundwater													
Water Pollution	X												
Other (Explain)													
Explanation Line No.(s)													
Cause(s)	1										湖 市山	V 38	0/4
Storm Water Volume	X												
Storm Water Velocity	×												
Storm Water Direction	X												
Water Obstruction	×												
Other (Explain)													
Explanation Line No.(s)													
Frequency:	The state of		102										
Year Most Recent Occurred													
Year First Known to Occur													-
Regularity	100 mg									100	4.104		
More Than 1/Year	X												_
Less Than 1/Year									100				
Only During Agnes of Floyd													-
Duration (If Applicable)			Fa offer	OF NOR	· Pro			100 T					10
Less Than One Day	X	1											
One Day + (Enter Days)													The second second
Property Damages					The state of	was at a						Service Control	
Loss of Life / Vital Services												-	4
Private												-	-
More Than One Owner											-	-	-
Types of Properties										-			-
Undeveloped											4	-	
Agricultural											-	-	-
Residential							1				-	-	-
Commercial	×								-	-	-		-
Industrial								-	-	-	-	-	-
Number of Properties	-								-	-	-	-	
1							-	-	-		-	-	-
2-10	X							-		-		-	-
11+								-	-	-	-	-	-
Public (List Types)						-		-	-	-	-	-	-
Explanation Line No.(s)									CHU CHE C		× 1	A	
Solutions						Sen (and			nd FUS				
Suggested								-		-	-	-	+
Explanation Line No.(s)	1							-	-	-	-	-	-
Formally Proposed										-	-	-	+
Explanation Line No.(s)											1		

		EXP	LANATION LINES	, (, ,
1	T GA UNQUARE	of any SWM	1 issues in this	basin (1.e. Flooding,
2	and the second s			
3_	erosim, etc.)	1,0thor then a	wring toud.	
4		NI	7 (

Begin with A.1 as the first map number to identify the first storm water problem area. Illustrate the defined problem on the watershed map provided, and identify it with its map number.

For each storm water problem area within your municipality, enter the map identification number at the head of the column. Describe the problem by placing a check (4 in the appropriate blocks of the column under this map identification number.

When an additional explanation is required, write the line number(s) used in the column marked "Explanation Line No. (s)".Example 1, 2-3, etc.



Definitions

Storm Water Problem Area

An area that defines the farthest extent of a storm water problem, including any area that experiences property damage, inundation, accelerated erosion, surface water pollution, groundwater pollution, landslides, or any other problem as a result of storm water runoff.

Groundwater

Water in the ground below the water table.

Accelerated Erosion

The removal of the surface of the land through the combined action of man's activities and the natural processes at a rate greater than would occur because of the natural process alone.

Sedimentation

The process by which soil or other surface materials, transported by surface water, is deposited on stream bottoms.

Water Obstruction

Any dike, bridge, culvert, wall, wingwall, fill, pier, wharf, embankment, abutment, or other structure located in, along, across, or projecting into any watercourse, floodway, or body of water.

EXPLANATION LINES (continued)
- And - con , con a sail to see , and to you so the sail to

		FXISTING	STORM WATER CONTROL FACILITIES FORM E. SHEET OFOF
WATERSHED Name: Municipality: County:	Stare Narciai Name: Tradicifica Telepho Chester Date:	COMPLETED BY	Storm Water Control Facility A natural / man-made device or structure specifically designed and / or utilized to reduce the rate and / or volume of storm water runoff from a site or sites.
For County U	Jse:		•
Map ID No.	Type of Storm Water Control Facility	Year Built	Contact Person Name, Address and Phone Comments
E-	Please see	affacted GI	S mup.
E-			
Detention / R	TYPIC Retention Basin	AL TYPES OF STORM WAT	TER CONTROL FACILITIES Roof-Top Storage
Natural Pond	d or Wetland		Semi-Pervious Paving
Parking Lot F	Pandling)	Infiltration Device (Seepage /

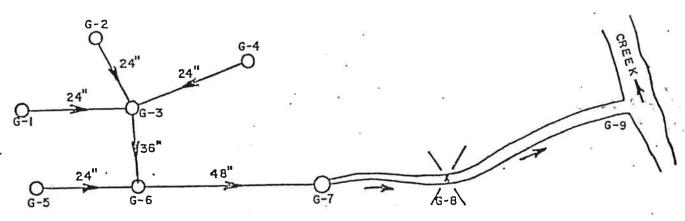
							ED OOL E	TION FACE	LITIES ESPA	0	 	CUEET)E			
				1		STORM WAT	ER COLLE		LITIES FORM		SHEET OF						
VATERS	SHED		FORM CO	MPLETED B	<u> </u>	Diagram each system on the appropriate map. Establish map points to show changes in system elements,											
						Diagram ea	ich system (on the appro	priate map. Es	stabiish map	points to sno	ow changes	in system	stem elements,			
ame:	Store No	SCIAL		sug		pipe size, c	pipe size, or pipe direction. (If unknown, outline the system extinformation on construction is available. Use a separate form for					ete this form	only when	e specific			
lunicipa	lity: T			610 408	5623	information	on construc	tion is availa	able. Use a sep	parate form t	or each syste	em. Identity	tne points	within a			
ounty:	Chosler		Date:	9/1/04		system cor	secutively (ex. G-1,G-2,	G-3). Start the	first point in	each additio	nai system i	20 number	s nigner.			
					40000			one system	, so G-23 begi	ns the next.		Diagrams &	Form on F	Reverse.	6 pm; (
Ma	Map I.D. System's Elements (x)			Measurem					Design		<u></u>	Name o					
	No.				Pipe		nannel / Swa		Material	Year	Data	Contact		Owners			
From	То	Pipe	Open Channel	Swale	D	TW	В	Depth		Constr.	Available	Name an	d Phone	Maintenance	Responsibility		
}-	G-	<			,,,,												
			House	500	alledo	d 61	Sm										
}_	G-		lesso					1									
													<u> </u>				
} -	G-																
									Access to the second								
3-	G-											D		_			
										<u> </u>							
3-	G-																
															<u></u>		
}-	G-																
															ļ		
}-	G-														ļ		
	()																
-	G-																
j-	G-																
} -	G-																
3-	G-																

Measurement . Key

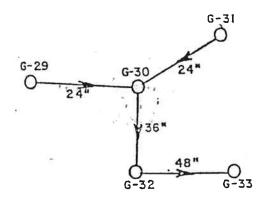
D = Diameter

TW = Top Width

B = Bottom Width



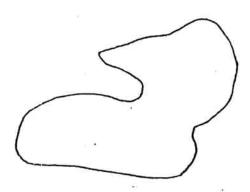
SAMPLE DIAGRAM FOR SYSTEM ONE



SAMPLE DIAGRAM FOR SYSTEM TWO

SAMPLE FORM (System One Only)

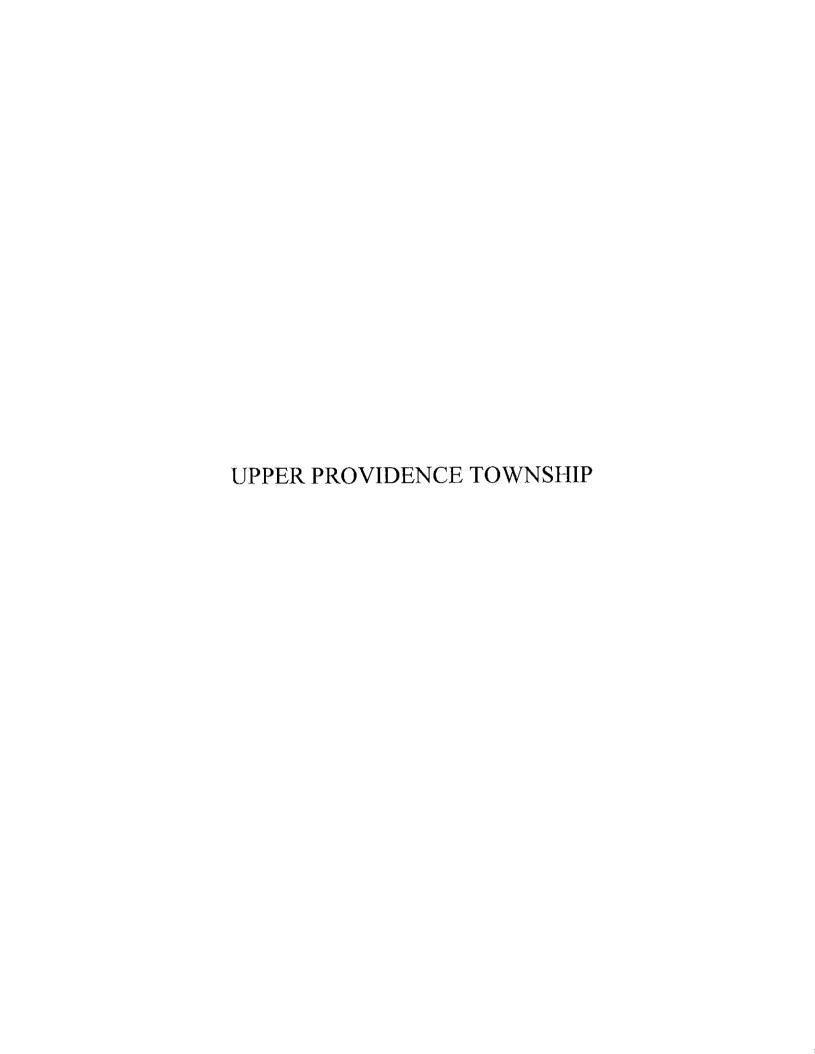
	_	_					741	FD140 1	-	COLLICINO	A LASTIN	10+4	PHIL
-	CD*CS				To		*LETTE	_	_				the safety of the state of the safety of the
=	ia.			וע	-	-	=	_	-	~	H		Plant of Plant December and Deleterant Property
_	`	~	0-0-	-	-	1	-	044		-			T.
B-1	63	,			H-				CMP	1071	Yes	John Don 123-4687	Europh of ABC
C 1	63	,			24"				Char	1975	Yes	Julya Dare 123-4647	Bounds of ARC
64	63	,			74"				00	1075	Yes	Jan Day 1224147	Boranh of ASC
6.3	G4	,			35"	1.0			Crae	1071	Yes	344 Dec 123-4967	Surrey of ASC
64	64	1,			м-				CMP .	1076	Yes	Jon Des 123-4967	Bursoph of ASC
61	67	,			44"				04	1971	Yes	ا 123-4347 مين _{ال} خيل	Borarch of ASC
C1	64		,			ы-	ж-	и•	Commis	1900	Yes	July Date 123-4147 •	Burneyh of ASC
ы	04			,		M.	36"	м,	Named or	-			Baraugh of ARC
	6	T		Γ									
6		\vdash								ļ			
	-	1	1		\vdash		1	T	1.				



Outline known areas where construction exists but construction data is unavailable.

WATER QUALITY PROBLEM AREAS (FORM J)

Watershed Name Municipality County County			-	Na Te	rm Comp ime lephone ite	5te	y chen F. 5 4 0 8	Nos-1111 3623	
Site:	J-	1	J-	J-	J-	J-	J-	J-	J-
Types of Water Quality Problems		198							
High Community Tolerance									
High Temperature								_	
High Turbidity									
Hydrocarbon Pollution						4			
Low Community Diversity									
Low Dissolved Oxygen									
Low pH									
Nutrient Enrichment									
Poor Habitat									
Other / Explanation Line No.	1								
Potential Causes(s)		.0		-					
Agriculture								_	
Construction Site						4			
Erosion									
Lake Discharge									
STP Outfall									
Other / Explanation Line No.									
Frequency									
Year Most Recent Occurrence									
Year First Known Occurrence									
Source of Information								_	
Streamwatch									
County Water Quality Study							T.		
Driveby									-
CCD Complaint Investigation						-			
Other / Explanation Line No.									
Explanation Lines 1. Resident emplaint. 2.	."F	zam	`;a .	crek	- DEP+	دددک	nolifie	ι	



DELAWARE COUNTY PLANNING DEPARTMENT

DCPD

Court House/ Government Center, 201 W. Front St., Media, PA 19063

Office Location: Toal Building, 2nd & Orange Sts., Media, PA 19063

Phone: (610) 891-5200

FAX: (610) 891-5203

E-mail: planning_department@co.delaware.pa.us

TO:

Bill Brokaw

FROM:

Christopher Gallagher

DATE:

11/1/05

RE:

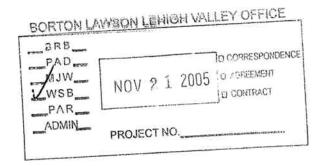
Crum Creek Stormwater Management Plan

Upper Providence and Nether Providence Forms

Bill,

Please find attached Forms A and C and map from Upper Providence Township and Form O and Storm Sewer Map from Nether Providence Township.

If you require any additional information, please do not hesitate to contact me at (610)-891-5130.





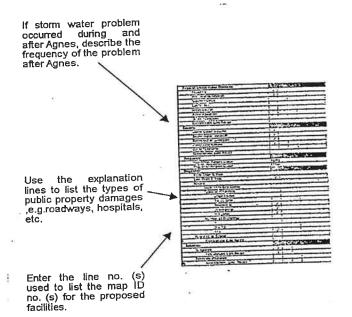
							_		T			Ī	T	
		070011			LEMAR	EAO EC	DA4 A	SHE	ET /		OF			
		STORM							e Filli			m	+	
WATERSHED			FOR	M CO	MPLE"	IEDB	<u> </u>		nstru				+	
	A- A ak		N1		N=11	11			IIISIIU	LIUIIS	OIIL	Tack		
Name:	Deiny Well		Name		Antho	JA HO	WHY.	Forc	County	/ Llco:		+	+	
Municipality:	Down Proupe	NCE	relep	none:	610:56	5-19	44	IFOI C	Journey	USE.		-	-	
County:	BRUMON		Date:		6/	15/0	}	-				-		1
		Α	1 0	A-3	ΙΛ	A-	A-	A-	A-	A-	A-	A-	A-	
MAP NO. *		A- <i>i</i>	A-'L	A-)	M-	/	A-			The state of		28300	Throng to	
Types of Storm W	ater Problems				H-9-19-	OPEN ASSES	100000	SOL DARLES		Markett 2	The same			
Flooding		V	\ <u>\</u>	V	-		-	-	-					
Accelerated Erosio	n		V		-							-		
Sedimentation			-	-			-	-				+	_	
Landslide				_		-	-	-				+-	-	
Groundwater					-	-	-		-	-		-		
Water Pollution					-	-	-				-	-	-	
Other (Explain)	L								-		-	-	-	_
Explanation Line N	lo. (On Back)	for a military		10 m 10 m 10 m	- Marine		2.4.5.	A Control		ever a	EASONS			_
Cause (s)				Section 2					1977 MH					
Storm Water Volun		V	V	V	-	-	-	-	-		-	+	-	-
Storm Water Veloc	city					_	-	-	-			-		
Storm Water Direc	tion		_/			-	-	-		-		-	-	-
Water Obstruction			V						-	-	-	-	-	\vdash
Other (Explain)								-	-	-		-		-
Explanation Line N	lo. (On Back)				Aller Service	CONTRACTOR OF THE PARTY OF THE	No contract				a cik	S ISUN	and the same	_
Frequency		25 Time						A TANK						<u> </u>
Year Most Recent	Occurred	2005	2005	2005	,	-	-		-			+	-	-
Year First Known (Occurred	3	1		-	enuevimei			SEMESSON III	2510		NAME OF TAXABLE	H& 4550	-
Regularity											CHES			-
More Than 1 Year		V	V	V				-	-			-		-
Less Than 1 Year				-					-	-	-		-	-
Only During Agnes	3						THE REAL PROPERTY.			NASTRONOUS S		E 8760	IIX WILLIAM STREET	_
Duration (If Appli	cable)				Water III								the chart	
Less Than 1 Day		V		/_,	/				-	-	-		-	-
1 Day + (Enter Day	ys)		V	V						PERSONNELL	71 384	THE REAL PROPERTY.		_
Property Damage										200 M		일본인		4
Loss of Life/Vital S	Services		/								-	-	_	_
Private		V	1 V	VV	1					-			-	-
More Than One O	wner		V	/					-					-
Types of Propertie	s		V									_		-
Number of Propert	ties		3	/								-		_
Public (List Types)		V	V						-	_	-			
Explanation Line N												THE PARTY OF	CHINA COLOR	
Solutions		NEW ST									動機			-
Suggested														-
Explanation Line N	No. (On Back)													
Formally Proposed														
Explanation Line N	No. (On Back)	1												
* Include Man	ID No. if found o	n anv o	ther fo	rm list	ing pro	posec	I facili	ties						

INSTRUCTIONS

Begin with A.1 as the first map number to identify the first' storm water problem area. Illustrate the defined problem on the watershed map provided, and identify it with its map number.

For each storm water problem area within your municipality, enter the map identification number at the head of the column. Describe the problem by placing a check (4 in the appropriate blocks of the column under this map identification

When an additional explanation is required, write the line number(s) used in the column marked "Explanation Line No. (s)".Example 1, 2-3, etc.



Definitions

An area that defines the farthest extent of a storm water problem, including any area that experiences property damage, inundation, accelerated erosion, surface water pollution, groundwater pollution, landslides, or any other problem as a result of storm water runoff.

Groundwater
Water in the ground below the water table. .-

Accelerated Erosion

The removal of the surface of the land through the combined action of man's activities and the natural processes at a rate greater than would occur because of the natural process alone.

Sedimentation

The process by which soil or other surface materials, transported by surface water, is deposited on stream bottoms.

Water Obstruction

Any dike, bridge, culvert, wall, wingwall, fill, pier, wharf, embankment, abutment, or other structure located in, along, across, or projecting into any watercourse, floodway, or body of water.

EXPLANATION LINES (continued)	
	- Kr Mark Co.

Upper Providence (UPP)

Р

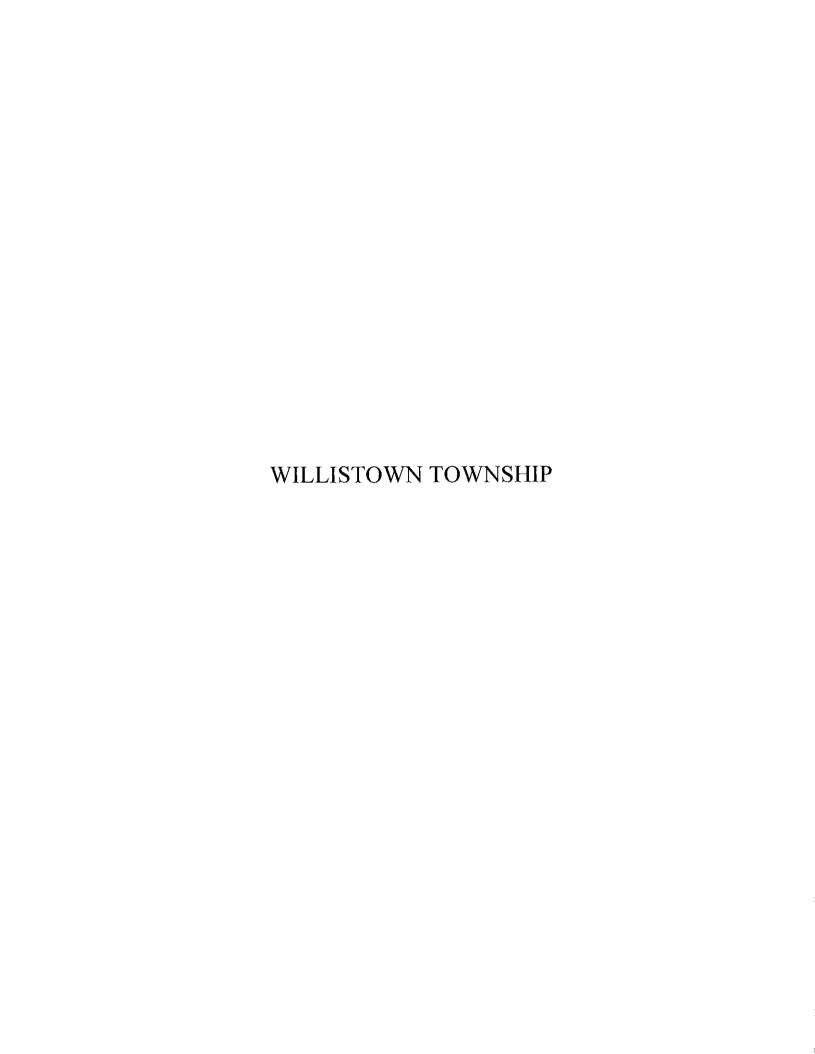
SHEET

								1	1					1	
							ON TAC	NOITS I IOS ATA COLL						Inlet Conditions	haz
				FORM	B-085	RUCTION	DAIAC	1	1				Material		
							12	K 5		T= Amount of fill		OTTO STATE OF STATE O	Sec. of Sec.	HW = Headwall	
_				Records completed by:	pleted by:	13 / 401	2000	3	D-O	D. Dismoter		msry = Stone	mary = Stone Masonly Success	WW = Wingwall	
):	change Obstruction Data					1			Ė	HT = Height		CMP = Com	CMP = Corrupated Mean Pipe	SW = Sidewall	
Municip	al Sireani Open			ciald work personnel:	ersonnel:		1		× ×	W=Width		CPP a Com	Opp a Comugated PolyetyMens Pro-		
	75 CE. F.			Lield work		-	1/374		36	DAV - Pler Width		BCCMP = B	BCCMP = Biturinous Coated Care		
Watershe	Watershed:			Date(e) 12/1	2/1-	0017	- 1	1				RCP = Rein	RCP = Reinforced Concrete Pipe		
	The Perusting	/ CWS	100	Date(s):			r					SP = Steel Pipe	200		
Municipal	Municipality/County:			11	Opening	5,00	1		Measurements	ents	+	T	MATERIAL / INI ET CONDITION	NOTES	10
		-		Type	OUR	Suape (.)			1	+	w skew	_	באוער וווייים		
			1	Cobract	Culvert	Н	Ц	0	FE	(H)	П	le	(ME)	2	7
Map ID.	Owner or Address Of Obstruction Capacity (CFS)	Ary Nos.	Bridge?	Purpose	0 >		2.3	2.5		i i	900	C2-	2 2	15 Wall 194	8
4	1		1	-	,		1.5	3 3	1	1	0.60	+	2 77 F		SAN SAN
2	Ster Apple 6 and Print Se D A	-	-	+	>	-	0		1		90	+		GPS NO.	
2 AHC		-	1	-	>	1	-	6	1	ì		1	4 W /	- 1	1
2 080	4	-	+	-	>	1	1	0.0	¥	1	1	1	MO 140.41.	1, pc, 1, 5M1	
	14.30	+	+		>	1	15	1	7	12.5	+	1			
100	ā	+	+			>	1	1	1	1	3	2	ALL NO ME COT PAGE .		
	312 1384	1	1	>	1			1	6.10	9.			NO / 1910 / NO		
	The state of the s		1		NA PARTY		No.	1	245	6,5		1		8	() 20.00
1	10 10 10 10 10 10 10 10 10 10 10 10 10 1		1	-		1	*		I	642	2	+	200	LUZACE COLLEGE	NEW PARKS AND ADDRESS OF THE PARKS AND ADDRESS
ODD	18			-	-		2		2	04	1	90	MSK The Tenton		
DOD!	CONTRACTOR OF THE PARTY OF THE		A	1.	-		>					0	The state of the s	300 CIOSI MEN	
L'Clay	0000		1		>			1				7			
100 100	Dexon Hollow Con Con			1	F		17	5		i)	00	D'D TEN		
2000	Do You was by work	7			7	~	7	+	1)		70 8		Section Designation	Key.
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			1	+	1		-	*				200			
1	100			1	14		0	3				10			
202	15 Doc Kanaki ta		-	1	+		7	A	1		0	CIO EN	一月 (女子)のとし		
1000	THE WAY					.>	7	7.5	1	C.	1	30	Joseph J. H.		
					+	+	0 1	7	1		1	10	STATE OF THE STATE		
1	NO TENENTINO RA			7	+	+		5 3	1	1)	JU UF	THE LATE WAY		
1	0					1		1	D		1	0 73	Car day	1	55.50
140	MONTH TOWNERS LAN					7		7 1	1)	1	1	Contraction (Account		1 species
	STATE OF THE PARTY					\ \	1		1	J		1		TON WON	
1000	M .		1	1		27	1	1							
CAC N	27 Combis by		(7)	1											
CALL TO	23 (CONTO CA 150 NOTE A		The second second			-		1	1	-					
d'in	DATE OF CONTRACT			1	+	-	_	+	+	+					
		-		1	1	+	-		1	+					
		+			1	+	-		-	1	I				
1		+	-			†	+	-		1					
1		+	1	-		1	+	-	-			1			
		-	+	-		1	+	1	-			1			
			+	+	-		1	+		-					
			+	1	-			+	1	-	_				
				+	+			1	+	+	-				
1		-		1	+	-	-		1	+	1	-			
1_		-		1	+				+	1	-			-	
1_		-			+	1	-	-	-	1	1			The last	الما
1_		+		+	1	1					110	11,	W P.C. O' 11, 121 00	0000 " DOW	0000
L							v	S. S. S.	MANOLL.					7	しること
ļ			?	57991 60		ナスマスコ	ξ)	_)	6	
		20	77.0	-3		l l									

+ Upp 12, UPP 13 were in many

				EXISTING F	FLOOD CON	NTROL PRO	JECT FORM C.	SHEET	/ OF	
WATERSHE	D	FORM CO	MPLETED B				TYPICAL TYPES OF FLOOD	CONTROL PROJECTS	·	
Name: Municipality: County:	Crum (Ull V O Prose Prosponse Dolony Marco	Name: Telephone: Date:	Anthony	Hammaai		Channel Ex Channel Re Rock Ripra		Levee Gabions Pipe Channel	Dams Floodwall Concrete Lining	
For County (Jse:	d.			The second second					
Map ID No.	Type of Flood Contro	ol Project	Year Constr Built	Expected Life Yrs.	Design Frequency Yrs.	Flood Discharge C.F.S. (if known)		Name, Address, and Ph	one	
c-	HANSER BRIDGE	3E M	?	?	?		Delaurapo (con:	ty	*	
C-										
C-										
C-									7	
C-								;		211





UMP+5 MIN

Inteligible	ر				POR	FORM B - OBSTRUCTION DATA COLLECTION	COLICIAL	AIACOL	1000					SHEET C OF (2)
Field Work personner Field Work personner	1	O moison Obodon De	990		Donney or	majotod hur		50100	3		1071		Manada	tolet Conflices
Mail	Munic	ipai stream Obstruction Da	E E		Hecords co	mpiered by:		1		Ta Amot	III 00 IIII		BRIGGIEW	
May 10 M	Mataret				Field work	lersonnel:				H = Hel	otte.		CMP = Corrugated Metal Pipe	WW e Wingwall
March Control Contro	A roining	allty/County		i	Date(s):		12/2	104		W = WG	- Wa		CPP = Corrugated Polysthylene Pipe BCCMP = Bituminous Coated CMP	SW = Sidewall
March Control of Address Of Chairman Current Cur	2)											RCP = Reinforced Concrete Pipe	
Note Control of Address of Control of Co					5		Σ		W	asurement	S		P.L. George	
A Comment of the control A A A A A A A A A	Map IC		Capacity		Culvert	Culvert	Bridge (⊢ €	+	+	+	+	MATERIAL / INLET CONDITION	NOTES
	X	200		+	Luibose)		100	J	╁	+	1	m# / 95	
	NIN	15.5		-		>		2,5)	Н	Н	00	5/ HW.	6
This can be discussed by the control of the contr	N-3	A section Senta-		~7			/>	C	T	4	+	-	5.5	1476
	1-1	m 2d /Wascers				>		232	\forall	-	+	000		1 3
A A A A A A A A A A	N-C	F whome is Very in				> .	1	S	+	1	+	200	1000 CO.	Slow Co
A	-1-	20 /2 million 20 0		+		,	-	-	T	+	ı	000	REP FILL UL	
A	1	12 00		+		>			T	ŀ	ł	00	5.82	
Applied (2)	7	46				>		তে	L	1	1	06	21P / HW.	
	-	Ahhu	-			^		6.3	j		-	06	175	
1.	-	O'm's	_	7			7		١	7	1	00	41/2	
Control Cont	1	6 R O M .		>			>	5/0	١	+	1	S	ME.	
Sign instruction	11-13	127				1		1	+	+	1	200	HW.	
Manual Manual Control	7	Ft weekedm		7		1	>	000	1	1	1	WO	377	
Maluta See Some	1	3 0K		> 	-	1	>	- 0	1	7	+	00	1 2 19	
Marker And Mar	1-1	MANN DUER				1				1	0	1	1	
State Colored Colore	1-17	Matter ces management				7		7 .00	1	\vdash	H	S	2	
		Water Comment				+		0	sin.)	1	36	KCP	
Long Long Annew		The transmitter has a				7		0	10			0	608	
C	113	0.88.0				/		67	1	Ц		П	4	6
1 1 2 2 2 2 2 2 2 2	-	マナイン	(1)			2		0,1	\dashv	1	+	1	1	C 200 1
24 (Septimental tone) 25 (Septimental tone) 26 (Septimental tone) 27 (Septimental tone) 28 (Septimental tone) 29 (Septimental tone) 20 (Septimental tone)	13	NON				>		7.	42.5	1		200	1	
NUMBER GENERAL CHART CHA	2-19					>	1	5	4.5	+	+	Т	2	
Superchanding Part	7772	S Remiserson S.				7	1	1	\dagger	-	1	+	1	
Superioration of the control of th	7	C. Bramchen Chose DW.		+	+	1	1		†	r		200	AND THE STATE OF T	1
South Ted South	-	J Suprishburn RE		-			-	1	36.		9.	000	200	U
Solution Edition Edi	17 - 17	Le Carry			-	> >		7.75	100	,	1	T	O.8.0	
10-21 Living Circle Big 3 1 1 6 2 40 CAP Inhabs of card but a card	3	Sport Sport	C				5	U	ı	2.5	1		H	2 DIGES 10 to 1 che
List Salver Red Red Red Red Red Red Red Red Red Red	3 -	Sig (122)	1				1	6.5	命	J*	,	9	50	0
White the control of		1.1455136				7		- ^-	6	,	,	000	C W C	
10 Caltering 10 10 10 10 10 10 10 10 10 10 10 10 10	-17	12 Lang Girle (800)						10	,	3-	3	7	7 10 1	Jan (1971)
1).				>			N.	-		7	7	0 447 + 1941
		Takera no		7			>	7	Ę	-		1	7	
		`					1			1		+		
							_					_		

* WIL I was shipped, WIL 2-76 way mount to WIL!

Willistown (WIL)

Municip	Municipal Stream Obstruction Data	œ			Records co	Records completed by: 150000	ISCA	Sano	0		T= Amount of fill					Inlet Conditions
, dozotow	X 020 CY CY CY CHANGE				Field work personnel:	personnel:		1			D= Diameter HT = Height		ËÖ	msry = Stone Masonry Structure CMP = Corrugated Melal Pipe	HW = Headwall WW = Wingwall	
Valershe	Municipality/County: Will Stock Co.	7	<u> </u>		Date(s):	- 1/21	12/20	0	3		W = Width PW = Pier Width	9	2 2 2	e Pipe SMP	SW = Sidewall	
		,			Ö	Opening		Г					E Ko	SP = Steel Pipe		
				Ty	Туре		Shape (✓)			Measurements	ments					
Map ID.	Owner or Address Of Obstruction	Capacity (CFS)	Nos.	Part of Bridge?	Culvert	Culvert	O Bridge	± (a)	o (£)	日旬	(ii)	MA (ii)	skew	MATERIAL / INLET CONDITION		NOTES
V/106.3"	Andreasto dunicion					>		57.9	1	3 6	10	1	000	SCCMP/ The		
5	A MAN TOO BEEN BEEN	THE PARTY OF		,			7	0/1	1	ou or	16.3		Y S	M ST 100		
CHE 30	And the state of t		Cr			1		1.2		1. 1.4.			0	MSRY/HJ	600	
200	THE PROPERTY OF A STATE OF THE PARTY OF THE		Nex					0	100	2,3	2013		00	BILL MAY S. S. S. S. S. S. S. S. S. S. S. S. S.	1 1 20	IM TOURS
1.44 A AG	Paul Courtee Court A					7	AV	C	7	ı	ı	1	5	RCD	oner Hay	the had to
U/FEFFO	6		-				_	45	į	c6	r.	1	5	0	(00 TY TO 0/0)	5.7
J. J.	Lindowsky R.D. off World		-					0	1	7	9	1-	000	7		
WILM?	Warren Ave South		-	>			7	2:5	t	500	7.5		20	(B) C C. 46	- 1	CH AND
WIL 43	1.546 TRIMATON		_	7		4	>	-	1	7	-	Ī	400	000	NO OF	
HE HI	TO HONTCHUS COME							-	c		0		316	100000		
died to	S & Runtel Up lane					>		5 1	7	26	2	1	000	CAN		
	No.			1000			1	100	1	100	u	í	200	PV 5 V W		
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	CAN TO TO TO THE TOTAL OF THE T		-	,			7	000	1		1)	8	90	MS.R.J	Caja 1	in Conter
100	A COURT OF THE PARTY OF THE PAR					7		1. 3	1		d	1	36	Stene	1,30 ter 300	60,0 ed 2 horr AU
THE PERSON NAMED IN	S 71 Control					_		a a	į	5	3		8	CMD	5 Mic 2	
1	The Blue of		STOCKED TO		The Park of	10			7	٧	1		00	5.2		
	Contraction of the													FAME See STOP	さいかく かいかく	N. S. S. S. S. S. S. S. S. S. S. S. S. S.
1	(a) (a) Shared All			7			>	0	ı	*	74		06	MSRUIN		-
1				7				3	1	9.6	30	1	9.5	Concrete Level		
	大学 のできた					7			4	(Ì	V	OLV .	CMD		
1 1	G K RIGHKP IN					Security Security				9	1	N	06	CAN STATE OF THE S		
	17 3 32 60 KF		-			>		-	2.5	()	î	1	0,0	Contract		
L. H.	Se Date of m California			>			>	B 2.1	I	,d	17	1	0	ASKO / HELLING		
STATE OF	The standard of the standard o			N. C.		The second		1		THE PERSON NAMED IN	8		000	D DOCK		
APPLIED A	The state of the s					7		-	-7	t)	J	5			
AT LA	Take Photos 2 d			7				12	1	2	V	2	00	しょういか ナウー まりしいし	17165	
Section 1	CHO STANDER OF THE SALE	The state of the s			The state of the s	The second		1	0		S. Carlotte		0	The Control of the Co		
177	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			7				7	1	7.	X.	1	0	MSK / SIN		
19	2. 12. 155 Mall 5 Part & Valle &			7				N	1	3	C	1	9	Canton 18 / How will		
Valle L		Section 1	Market	1			>			1000			2		4	10.000
ME	o broke - Rose but Talvarit					>		7)	5	J.	ì		W.S.K.V.	1387.05	Dalat o
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		-	7				9	(9	5.7	(200	1000		3
1	8 - in- (repl. Re) Series			7			1	137)	0				100 / OBLA & WW		
AN MAN	The Lit Hall Ca					7		7	. 5	1	1	/	40	CAN		

S

MITI

•

0			FORM	FORM B - OBSTRUCTION DATA COLLECTION	UCTION D	ATA COLLE	CTION					SHEET 13 OF
Municipal Stream Obstruction Data Watershed: (FUM CAUK			Records completed by: Field work personnel:	pleted by:	Scion	3000	0	T.= Amount of fill D.= Diameter HT = Heloht	2	- E 8	Material mary = Stone Masonry Structure CAP = Contrained Metal Plos	Inlet Conditions FW = Headwal WW = Whrowal
	Chok		Date(s):	,	12/20/04	104		W = Width PW = Pier Width	6	2 2 2	PP SAMP	SW = Sidewall
			Opening	ing			1			. B	SP = Steel Pipe	
Map ID. Owner or Address Of Obstruction Ca	Capadity Nos.	Part of Bridge?	1 ype Culvert Purpose	Culvert 0 0	Bridge	⊢ £	Measing D HT	HT W (ft)	Md.	skew	MATERIAL / INLET CONDITION	NOTES
Hersc 24	Ц			>		H		1	+	000	Jan 7 17 18	NO 600
The state of the s				1/4			1	1	1	100	San San San San San San San San San San	III.
Maria and Committee Town		>		>	>	10	1	2 1 X		000	Control OU	
with 15 1 Covered decided		7			7	200	21	[0]	1	00	(NOCK)	RA LUGE C
1												ш
W.S.						\parallel	\parallel	\parallel		\parallel		
						+	\parallel					
						\parallel	\parallel					
							\parallel	\prod				
							+	+		1		
							\parallel	\prod				
		\parallel		\parallel			\parallel			\parallel		
	+			+			-	-				
	-			+			+	-				
							\parallel					
	-	-					+	-				
				+			+	-				
							$\ $					
							-	+				
								$\ $				
					-							

7 Date: 13-32 - 03 Time Since Last Rain was > 72 Hours: Yes Days Since Last Rain Name of receiving water: Quantity of Last Rain: < 0.1 inches: > 0.1 inches Municipality: WIllesTown Twy Person:

-	1 	_		_	- -	т-	_					
	Rating (0-2)		Ø	0	0			2	2 4	0	0	C
	Describe land use of upstream drainage area.		Res	acs.	Res	125	12.5			0 0	\$ 000 C	S S S
	Water Colon/Odor (specify if floatables,	present)	20	000	DO	907	A)	No	22		2 2	5
	Flow Observed (Yes or no)	T	\$	162	785	200	900	300	202	4%	2027	
	Channel Side Slopes* (H:V)						-					
	Channel Bottom Width (feet)	197		2 2	9 5	4	\$	36	46	48	25	
	Channel Depth	53	F	2 -	5 2	- S	30	36	are or	733	26	
	Depth of flow in pipe (feet)	0	1/2	6	0	2	0	0	٥	0	٥	
	Pipe Djameter (inches)	8	2	00	0	1	20 M/C	Swale	8	אפאח)	8	
	Trine (00:00) em/pm	व स्पड	00:01	18:15	(0:30			00130	10:33	16:48	10:50	
04-	Mot	765	yes	755	725	yes	Yes	7	7 4	2001	765	
Photo	#	-	ىر	3	۳.	1.5	, -	3 5	-0	0	7	
Pine	Swale #		56	3	7	55	75	120	00	00		

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no crosion or sediment, pipe in good repair)

2=Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling, 1-Needs rechecking (some dry weather flow, moderate scouring orsediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

H/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

		8	
it Rain was >72 Hours: Yes	Days Since Last Rain	Clock	The state of the s
Date: 13-33-63 Time Since Last Rain was >72 Hours: Yes	inches; > 0.1 inches	Name of receiving water:	
Person: Digree Flyge	Quantity of Last Rain: < 0.1 inches: > 0.1 inches	Municipality: WilhsTown Twp	

_				_		_	_			, _			
Rating	(0-2)	<u></u>			C	0	-	-	0		2	0	0
Describe land use of		arca.	tř.	~	Pers	Res	Pess	Rec	Atr.s	Con	- A		12.5
Water	Color/Odor	(specify if floatsbles,	algae or sediment	present)	0	0	C	0	0		0		4
Flow	Observed	(Yes or no)			00%	6004	20	92	No	WB	an.	2001	92
Channel	Side Slopes*	(H:V)											
Channel	Bottom	Width	(feet)		891	801	9	36	3	3		3	36
Channel	Depth	•	S.T.		13	42	9	ھ	ڡ	د		10.	0]
Depth of	flow in pipe	(feet)	9		0	0	٥	9	0.	0			
Pipe	Diameter	(inches)			Bexal	38x31	SOME	Swale	Scuele	Swale	LOXIE	Swalk	Sun/e
Time	(00:00)	am/pm	4		11,50	0011	11,15	11:15	11:20	11:20	11.30	11:30	11:30
		Ş.	Not	sure	ğ	Yes	Yess	yes	7005	yer	yes	723	· yes
Photo	₽Ł.				10	=	4	13	土	5	-0	-	00
Pipe	Swale	- 24-			0	0.1	=	=	7	T.	5		

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, plpe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

blocked catch basins or drain)

H/V = Horlzontal to vertical ratio

*1:1 = Vertical - rectangular channel

²⁻Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling,

				Rating	(7-h)			0			0 6	
				يو ا	arca	·		Crs	Kes	20 A	1603	640
urs: Yes	st Rain 4			Water	(Yes or no) (specify if floatables,	algae or sediment	present)		Q	0 0	2	
as <u>></u> 72 Ho	Days Since Last Rain	down		Flow	(Yes or no)		4) 4	⊅ €	0 0	S	Y
Time Since Last Rain was > 72 Hours. Yes	Da			Channel Side Slones*	(H:V)							
lime Since		iving water		Chame! Bottom		(feet)			,	34 xb	311X6	
	ED.	Name of receiving water:		Channel Depth			١	. 4	1	1	1	
Date: 19-39-103	> 0.1 inche	7		Depth of flow in pipe	(feet)		0	0	6	0	0	
Da	< 0.1 inches:	Twp		Pipe Djameter	(inches)	Ÿ	18×21	19 x 20	19 xan	Swale	Swake	11:45 10xx4
2	Quantity of Last Rain: < 0.1 inches: > 0.1 inches	UNE .		Time (00:00)	anvpm		11:30	11:40	H Me			Sh, II
Person: DANC Edge	Quantity o	Municipality: 4)1/1/5 form		Storm Drain?	Yes/No	aure	426	753	Xes			`
DAM	v	ality: 4	٠.	Photo #			<u>5</u>	20	22			22
Person:		Municip		Pipe Swale	*		(3	14.				5

Raling System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

3th

ろびまで

11:45

7xh2

Sunle

11:45

35,023

11:45 10x24

1-Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debils, odor, algae, pipe in poor condition)

2=Impatiment - needs investigation (flow exhibiting odors, fosm, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling,

blocked catch basins of drain)

H/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

			÷		nd use of Bathag	4			_	-	2
			8		Describe land use of	upstream drainage				3	1)/
	ours: Yes	ast Rain 4.			Water	Color/Odor	(Yes or no) (specify if floatables,	algae or sediment	present)	()
	was > 72 H	Days Since Last Rain	CRUH		Flow	Observed	(Yes or no)			ou	
	Last Rain	Q			Channel	Side Slopes*	(H:V)	89			
	Time Since		siving wate		Channel Channel	Bottom	Width	(feet)		130	
	2-03	97	Name of receiving water:		Channel	Depth	-188 80	, K.		١	
	Date: 12-32-63 Time Since Last Rain was > 72 Hours: Yes	> 0.1 inche	a d		Depth of	flow in pipe	(feet)	•		9	
	Di	Quantity of Last Rain: < 0.1 inches: > 0.1 inches	1/2		Pipe		(inches)			9x34	
,	dige	of Last Rain:	JOUN		Time	(00:00)	am/pm			110	
!	Person: Clause Flage	Quantity o	unicipality: 1824/15 100.16		Storm	Drain?	YearNo	1001	sure	sa /	
Ç	Clau		ality: L	- 1	hoto	杜				36	
	Person:		Municit			Swale	ŧ			٥	

							S .	^ - ≔	5	
Rating (0-2)		0	5		3 4) 4	9 4	0 4	8 0	0
Describe land use of upstream drainage area.		Pes	22.5	Res	\$ 8 S		res	Pac	Pess	Res
Water Colon/Odor (specify if floatables,	argae or secument present)	0	0	0	0	5		0	, Ç	0
Flow Observed (Yes or no)		OU	47	yes	/es	465	Yes	753	an	NO
# SO	9 -								١	
Charmel Charmel Bottom Side Slop Width (H:V)		130	130	sh	no	29	700	716	١	50'
Channel Depth		\	٠,	4	L C	33	48	43	39	30'
Depth of flow in pipe (feet)	•	0	0	ح	9	8	76	30	0	0
Pipe Djameter (inches)		gkay	Bxay	<i>a1</i>	3/15	15	74 x34		3	15
Time (00:00) am/pm		61.10	11.10	1:18	1:30	1:35	1145	1:50	21.60	2:05
Storm Drain? Yes/No Not	sure	sa k	Ž.	Yes	765	yes	766	463	yes	34 . Yes
l'hoto #		97	120	*	3000	38	क्रिक	Myb	33	34
ripe Swale #		_ġ		176	6	19	36	عاد	16 9,	33.

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no crosion or sediment, pipe in good repair)

1-Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

blocked catch basins or drain)

EVV = Horizontal to vertical ratio

*1:1 = Vertical - rectangular charmel

²⁼Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositofn, algae or debris, pipe collapsed or crumbling,

		*0
	H.	
Date: 12-23-63 Time Since Last Rain was > 72 Hours: Yes	Days Since Last Rain	CRUM
Time Since Last R		Name of receiving water:
Date: 12-23-6	inches: > 0.1 inches	Wp Name
Dave Enge	Quantity of Last Rain: < 0.1 inches: > 0.1 inche	Municipality: Willes Town Te
Person: Jack		Municipality: 1

Rating	2)		T	0	o	o	6		0	0		T	
بيا	(0-2)			+	+			+	+	+	_	-	+
Describe land use of	upstream drainage area.		7	MAN	TORY	FARM	Br.s		40 K	522			
Water	(Yes or no) (specify if floatsbles,	algae or sediment	present)	9	0	0	0	1	9			W	
Flow	(Ves or no)		No	45	3 3	20	201	2	767	3	•		
Channel Side Simes*	(H:V)	*									*		
Channel	Width	(feat)	877	1	I		64	73	00	000			
Channel Depth		•	Ø	1	לב	-	38	30	50			•	
Depth of Low in pipe		œ.	0	0	-0		a	Ø	_				
Ptpe Diameter			Swale	SWALE	Sxte	-1	9	1	2:50 19x3b				
Time (00:00)			מו;ד	2115	श्रुं यह		20.00	21,30		1			•
	Yes/No Not	aure	103	Ye \$	Ye \$	55.5	2	Ye 5	1/65				
Photo			30,	36	37	1	C	39	40				
ipe wale	**		#S	25	26	P	_		38				

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no crosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring orisediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

2-Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling,

blocked catch basins or drain)

H/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

	10.0		
		ï	
	1	*	
	Date: 13 - 32 - 7 Time Since Last Rain was > 72 Hours: Yes	Days Since Last Rain	200
	Time Since Last Rain v	Ä,	Name of receiving water:
	12-32-03	l inches: > 0.1 inches	Name of rec
		Rain: < 0.1 inches: >	Twp
	DAVE FLAGE	Quantity of Last Rain: < 0.1	Willistown Twp
***	DAVE	٥	icipality: [U]
	Person:		Municipa

Rating	(0-2)	`		*	£	0	0				3	C	0
Describe land use of	upstream diainage	area.	weg.		Set.	300	200	200	100	1 N	1 C	500	Re S
Water	Color/Odor	(specify if floatables,	algae or sediment	present)	ON	900	000	900	an	NO	20	00	02
Flow	Observed	(Yes or no)			Ş	764	705	202	an	907	200	Wb.	900
Channel	Side Slopes*	(H:V)	*										
Channel	Bottom	Width	(feet)		-1 5-1	72	36	L K H	₽ 0-1	36	100	hB	84
Channel	Depth		94		45	14.0	31	表	8h	36	30	72	36
Depth of	flow in pipe	(feet)			0	7/2	٥	0	0	0	٥	0	O
	Djameter	(inches)			18	19	6)	8	3) Mm5	Simple	18	15:45 (4x24	81
	(00:00)	ат/рт	*		9:45	90:0)	10:15	(0:30	10:30	10:30	10:35	(6:45	10:50
		S.	Not	Sure	765	705	%	<i>yes</i>	yes	Yes	ye 5	765	186
hoto	#=				-	دو	3	ב	12	ہ۔	7	OO	6
Pipe	Swale	*			~	56	3	1	55	98	7	00	5

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

blocked catch basins or drain)

H/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

²⁼Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling,

			*5
	ast Rain was ≥ 72 Hours: Yes	Days Since Last Rain	Clark
	Date: 13-33-63 Time Since Last Rain was > 72 Hours: Yes	nantity of Last Rain: < 0.1 inches: > 0.1 inches	wed Two Name of receiving water:
0	Person: Jave Ed	Quantity of 1	Municipality: Willis 700

			Ť	T	T	T	T	T		Т	T
Rating	(0-2)			3 0) -	-		0 4	2 0	0 6	C
Describe land use of	upstream drainage area,		20	1000	570	1			000		522
Water	Observed Color/Odor (Yes or no) (specify if floatables,	algae or sediment	Company	0	C						0
Flow	Observed (Yes or no)		700	400	200	an	100	AU	an.	200	92
	(H:V)	96:									
Channel	Bottom	(feet)	801	801	3	36	3	0		9	36
Channel	Depui	ži	را	I I	9	و	0	_9		9	0]
Depth of	now in pipe (feet)	Æ.	0	0	٥	9	Ö	0			
Pipe Diameter	(inches)		38x21	38x31	SOME	Swale	Scuple	Seunle	20215	Swalk	11:30 Sunle
Time (00:00)			09;11	00:11	11,15	11:15	11:20	0K:11	11130	11:30	11:30
Storm Drain?		Not sure	XCS	469	yes	yes	1006	yes	yes	yes	/e.5
Photo #			01	=	4	13	14	73	-0:	_	00
Pipe Swale	#		0	01	=	=	7	18	-3		

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

²⁼Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling,

blocked catch basins or drain)

II/V = Horizontal to vertical ratio

^{*1:1 =} Vertical - rectangular channel

NOTES:

		92	Rating	(0-2)		_		(9	0	0		9 6	
1 [1		Describe land use of	upstream drainage	агеа.) re	3	1600		Mr. S		
urs: Yes	st Rain 4		Water	Color/Odor	(specify if floatables,	algae or sediment	present)		3	Q	0	0	2	
as <u>></u> 72 Ho	Days Since Last Rain	COUN	Flow	Observed	(Yes or no)			40) 5)	Q	Ð	10	
Last Rain w	Da		Channel	lopes*	(H:V)	: 53								
Time Since		iving water	Channel	Bottom	Width	(feet)						3x pc	SULX	
1.03	Σ2	Name of receiving water:	Channel	Depth .		Ŕ		1	* 1	,	1		1	
Date: 19-32 5 Time Since Last Rain was > 72 Hours: Yes	> 0.1 inche	Z	Depth of	flow in pipe	(feet)	R		0	Q		B	0	0	
Da	< 0.1 inches:	Twp	Pipe		(inches)			(8xx)	19 x 20		19 200	Swale.	Swale	11,42 55,11
3	Quantity of Last Rain: < 0.1 inches: > 0.1 inches	Jan			am/pm			11:30	oh ill		ah: II			50,11
Person: DANC Edyc	Quantity or	Municipality: 4) c/115 forse			o N	Not	sure	426	128	6.73	163			
DAVE		ality: 🎣	 hoto	*				<u>o</u>	20	2	16			28
erson:		Aunicip	ipe	wale				(3	<u>H</u>			č		72

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

24x6

5.74 P

11:45

35,

he

10x 24

Jux L

Swale

le Li 1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

blocked catch basins or drain)

II/V = Horizontal to vertical ratio

*1:1 = Vertical - rectangular channel

²⁼Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling,

			(4)
	st Rain was \geq 72 Hours: Yes	Days Since Last Rain #	CRUH
	Date: 13-33-63 Time Since Last Rain was > 72 Hours: Yes	1 incl	Name of receiving water:
(rson: Dave Floge	Quantity of Last Rain: < 0.	unicipality: 121/15 Jank

Rating	(0-2)) (o n	3 0	0
Describe land use of	upstream drainage	area.	•		Res	€ 1	8 2 8	\ \tag{2}	500	77	Pes	Se s	Res
Water	Color/Odor	(specify if floatables,	algae or sediment	present)	0	0	0	0	3	0	0	0	0
		(Yes or no)			aní	2	785	/es	465	yes	765	200	NO
Channel	Side Slopes*	(H:V)	48						81			1	
	Bottom	Width	(feet)		130	120	54	48	99	118	hô	١	50'
Channel	Depth				١	. \	12	67	32	48	87	39	30'
	flow in pipe	(reet)			. 0	0	ಇ	9	6	16	30	0	0
		(menes)			9234	12×24	91	3/15	15	1145 24x34		15)	12
	(00:00)	annpin			11.10	11.10	1:15	1:30	1:35	1145	1:50	21.60	20.00
Storm	Vector	1 53/140	10N	sure	7 25	Z Ž	ye 5	465	yes	yes	725	yes	34 765
l'hoto	Ł				25	27	98	39	30	31	8	33	34
ripe Swele					و	10.	17	6)	5	36	JR SI	45	33

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

²⁼Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling,

blocked catch basins or drain)

II/V = Horizontal to vertical ratio

^{*1:1 =} Vertical - rectangular channel

Form O - Outfall Data

		×
	H.	
Date: 12-23-63 Time Since Last Rain was > 72 Hours: Yes	Days Since Last Rain	CRUH
Time Since Last R		Name of receiving water:
Date: 12-23-6	nches: > 0.1 inches	Name
ave Edge	Quantity of Last Rain: < 0.1 inches: > 0.1 inches	Alles Town Tow
Person: Dave	¥	Municipality: A

Rating (0-2)	(0 0) 6		0 (3		
Describe land use of upstream drainage area.	THRM	THRE	FARM	Res	2	622			
Flow Water Observed Color/Odor (Yes or no) (specify if floatables, algae or sediment	present)	0	0	0					
Flow Observed (Yes or no)	No	00	20	an	2	yes			
Channel Flow Side Slopes* Observed (H:V) (Yes or no)									
Channel Bottom Width (feet)	8/7	ì	\	Pot 1	72	80			
Channel Depth	00	1	44	32	30	20		3	
Depth of flow in pipe (feet)	0	٥	0	٥	ď	_			
Pipe Diameter (inches)	Swale	Swale	15×19	9	Swale	2:50 19x3b			
Time (00:00) am/pm	27:10		_	23.30	2,30	2:30			
Storm Drain? Yes/No Not	705			202	ye 5	\es			
Photo #	36.			30	34	40	250		
Pipe Swale #	34	25	200	27		300			

Rating System:

0=No observed impairment (No dry weather flow, no solids, floatables or debris, no erosion or sediment, pipe in good repair)

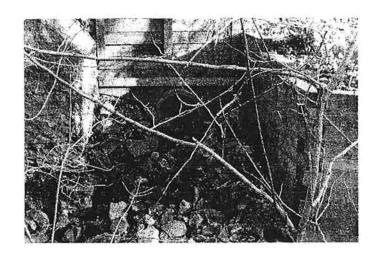
1=Needs rechecking (some dry weather flow, moderate scouring or sediment deposition, some floatables or debris, odor, algae, pipe in poor condition)

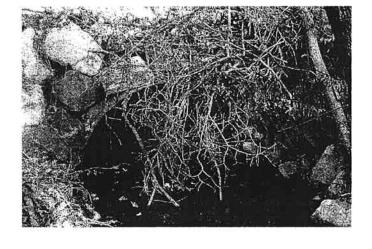
blocked catch basins or drain) H/V = Horizontal to vertical ratio

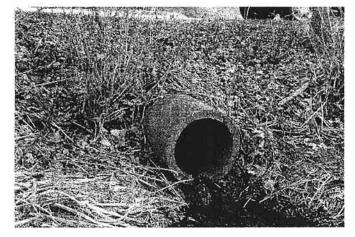
*1:1 = Vertical - rectangular channel

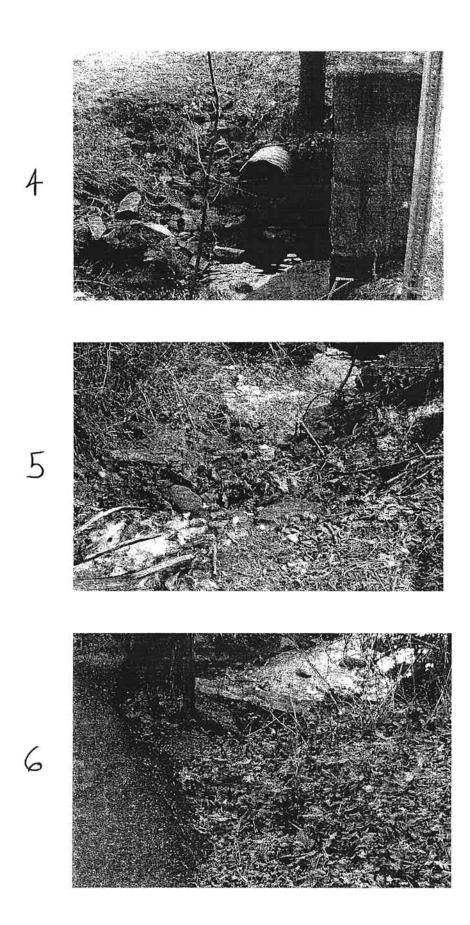
NOTES:

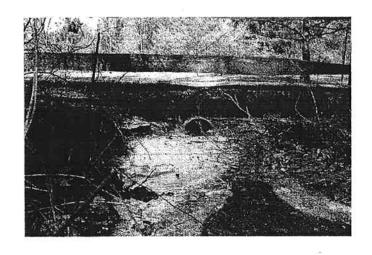
²⁼Impairment - needs investigation (flow exhibiting odors, foam, solids, turbidity or oil sheen, considerable sediment depositoin, algae or debris, pipe collapsed or crumbling,

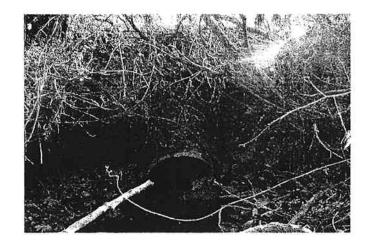






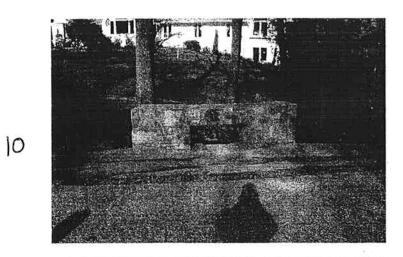




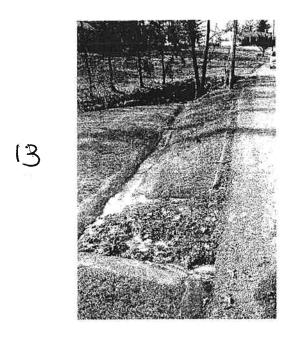


(

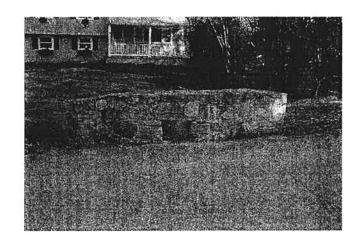






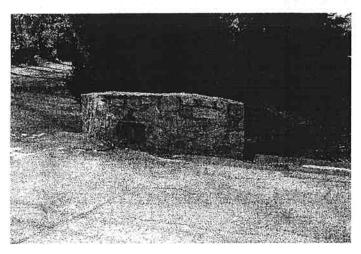




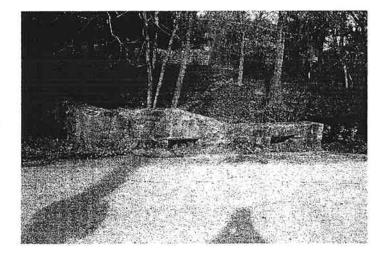


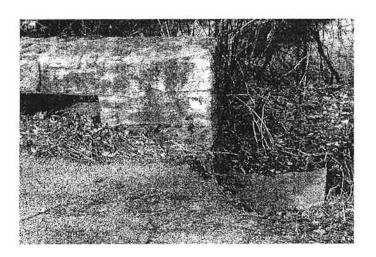


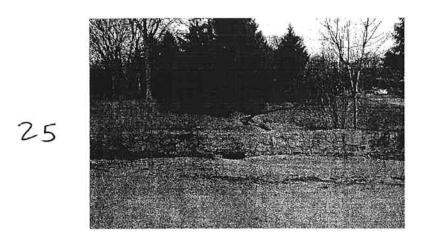


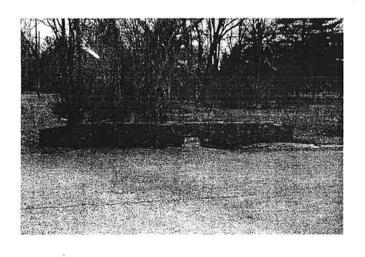




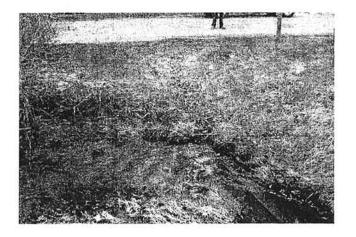


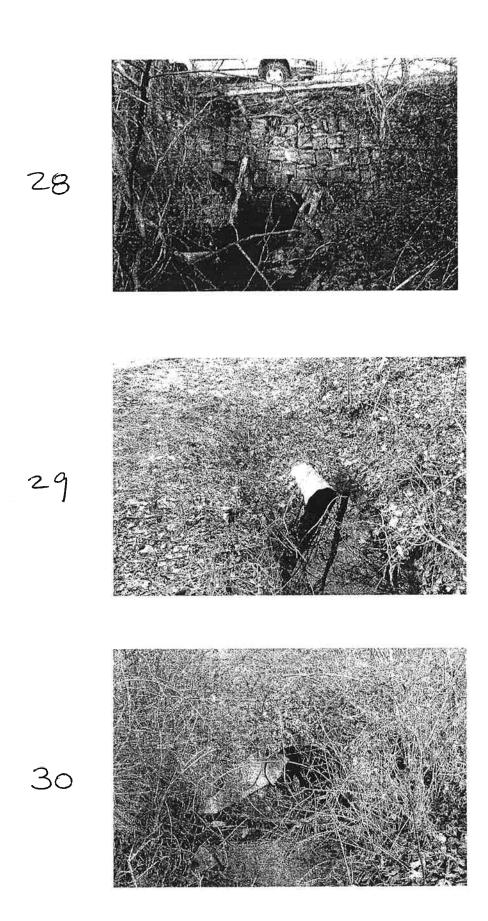


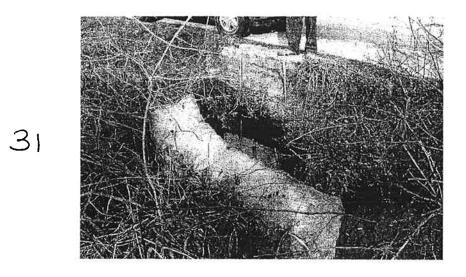




2-

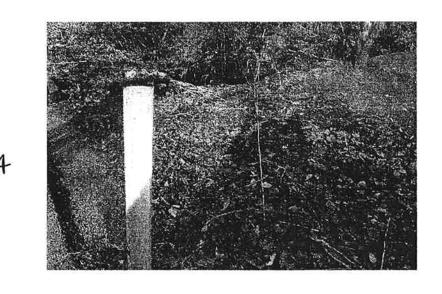




















WATERSHED		FORM COMPLETED BY	ETED BY		
Name:	Crum Creek	Name:	Brian Bruno	Definition of Storm Water Control Facility A natural / man-made device or structure specifically designed and / or	esigned and / or
Municipality: County:	Delaulan Chack	Telephone: Date:	12/104-12/20104	utilized to reduce the rate and / or volume of storm wate from a site or sites.	er runott
For County Use:	6				
Map ID No.	Type of Storm Water Control Facility	Γ	Contact Person	Address and Phone	Comments
E- II	Parition Real	2003	(MURPHE)	Spille, lake Village	
TRE 003 E- 3	50	Newer boking	MEDIEN -	Karinen Communities	Gales, on Terraine Hill
E. 2	8	VV 10	(White is made	Medan Grade. Farm	" cosca
411.302 E. F	Non Panc	W 12	Lung Start)	The village of Denn Work	Housing off Sugartoun Rd
L L		17. 5	7 ASTAUM	The breaks () thurstonion of The	Development of Course Mills R
45M005 E.	11	1 1	S B COLD COLD CO.	Winding War off 252 Mar 123	-
JENASON E.	2	11. 4	+ WOUNTWOOD +	Sign Brook Lang	Spiroday Asint Profuder
- Digos) E-	N 12	1 1/1	(per Color with	Paisle will / Sodil o Run	
1.ff sol E	77 77	3	PPPCK PROJULING	Unlocal off RI	Indian Springe Relater
State		2	MORNEL PROVIDENCE	Phy TP. aden Oicher Run-NP	7
CON E-	27 2	Next Cok M	FMIL WILL	DUNDONDE CONDIDE OF RTS	
ZEWMLE-	DOJENTON / SOBINITATION DOZIN	5 HOOZ	Mostrial	Excellent Mine / Troop formal off 252	New Deminorment / Special
VENNOT E. E	() o c () ;	M317	(AUTO 3000 At	Convolot Law of 252	11 1 13
MIR.002 E-	DEFINE ON DONG	V k 15	198 1187	Buck Hilld Harward Lon	1.0
SPR301 E- 15	3.7	51 1/2	Panalona	Counting (1651) off 320	News Hospitan
أ ٺ					
ú					
ம்					
ú					
Ē.					
ú					
ú					
TYPICAL TYPES OF STO Detention / Retention Bas Natural Pond or Wetland Parking Lot Pondling	TYPICAL TYPES OF STORM WATER CONTROL FACILITIES Detention / Retention Basin Natural Pond or Wetland Parking Lot Pondling	.ITIES Roof-Top Storage Semi-Pervious Paving Infiltration Device (See	IES Roof-Top Storage Semi-Pervious Paving Infiltration Device (Seepage /Recharge Basin or Underground Tank)	round Tank)	

Upper Prisonner (1) TANGER (1) (SPRING FRED (D)

E.	INFILL - REDEVELOPMENT CRITERIA

APPENDIX E

INFILL - REDEVELOPMENT CRITERIA

Table of Contents

INTRODUCTION	
SUMMARY	2
CONCLUSIONS	4
1 Maryland	.,,,
2. CITY OF SEATTLE	9
3 CITY OF PORTLAND	15
4 GEORGIA	18
5 CENTER FOR WATERSHED PROTECTION (CWP)	24
6 GREEN ROOFS FOR HEALTHY CITIES	26
7 CHESTER	
	SUMMARY

I. INTRODUCTION

The following is an investigation into methods employed by various municipalities across the nation to address the issue of stormwater management in areas of redevelopment or infill. Ordinances were reviewed from the states of Maryland and Georgia as well as ordinances from the cities of Seattle, WA and Portland, OR and the Chester Creek Watershed in Delaware County, PA. These ordinances were reviewed to determine if there is a consensus on how stormwater runoff from redeveloping areas should be addressed from a water quantity and quality perspective.

II. SUMMARY

The five ordinances reviewed varied significantly in the way stormwater issues were addressed. A brief summary of the stormwater quantity and quality criteria from each ordinance is included in the paragraphs below.

1. Maryland

Runoff Quantity Controls

There are no specific criteria to be met within the ordinance to address recharge, channel protection storage volumes or overbank flood protection volumes unless specified by the approving agency.

Runoff Quality Controls

In areas of redevelopment, there are three options to address stormwater runoff quality:

Reduce existing site impervious areas by 20%

If site conditions prevent a reduction in impervious areas, provide water quality control for at least 20% of the sites impervious area.

A combinations of 1 & 2 can be employed for impervious reductions between 0% and 20%. The combination of impervious area reduction and area control by a stormwater management practice must equal or exceed 20%.

Notes: No explanation is provided as to where the 20% impervious area reduction was determined.

2. City of Seattle, WA

Runoff Quantity Controls

For redevelopment sites less than 9,000 sq. feet, the peak discharge rate from pervious and impervious surfaces shall not exceed 0.2 cfs per acre under the 25- year design storm. For redevelopment sites greater than 9,000 sq. feet, the peak discharge rate from pervious and impervious surface shall not exceed 0.15 cfs per acres under the 2- year design storm AND shall not exceed 0.2 cfs per acre under the 25- year design storm.

Runoff Quality Controls

No specific criteria is sited for runoff quality control, however is required to "control the sources of sediment and other contaminants and pollutants that could enter drainage water" by use of temporary and permanent best management practices.

Notes: No explanation is provided as to where the 9,000 sq. foot area limit was determined, or where peak allowable flow rates were developed.

3. City of Portland, OR

Runoff Quantity Controls

Control of on site flows to maintain peak flows at the pre- development (defined as a site's ground cover prior to development, "i.e. Lewis & Clark days") for the 2-, 5-, and 10- year storm events.

Runoff Quality Controls

Criteria requires a 70% reduction of TSS from runoff generated by a design storm up to and including 0.83 inches of rainfall over a 24- hour period.

4. Georgia

Minimum standards for redevelopment sites are same as standards for new development, as follows:

Runoff Quantity Controls

24- hour extended detention of the 1- year, 24- hour storm event; post development to pre development rate control for the 25- year, 24- hour storm event.

Runoff Quality Controls

Stormwater management systems must be designed to remove 80% of the average post-development TSS load. If facility is designed to capture and treat the water quality volume (defined as the first 1.2 inches of rainfall from a site), the facility is considered adequate. Notes

"Pre- development conditions" is not defined in the case of redevelopment, therefore it could not be determined if existing impervious areas are included in the runoff calculations.

5. Chester Creek

Runoff Quantity Controls

Runoff quantity control is accomplished by determining the pre-development RCN value or Rational "C" value from a provided chart to reflect existing conditions less restrictive than "meadow on B

class soils" (Chester Creek soils are primarily HSG 'B') based on the percentage of exiting impervious cover. Post-development runoff must then meet pre-development rates based upon the given release rate criteria for the site.

Runoff Quality Controls

Water quality must be addressed using the following:

- a. Infiltration
- b. Extended detention
- c. Implementation of additional design control

Riparian buffers are required where applicable (404.A.2).

Notes: Chart developed for "Adjusted" RCN or C values is based on the composite value of the impervious and pervious sections as follows:

for RCN Method: %imperv * 98 + %perv * 58 (meadow "B" soils)

for Rational Method: %imperv * 0.95 + %perv * 0.12 (Lawn, sandy soil, avg slope)

III. CONCLUSIONS

An ordinance which addresses development in an area where redevelopment is encouraged should provide the developer with some credit to consider on site exiting impervious conditions when determining the amount of stormwater runoff which should be stored or treated. If no credit is given, and the developer must design to meet pre- existing (i.e. no impervious cover) rates, the standards may discourage the use of redevelopment sites. However, this must be balanced with the desire to improve existing conditions as it relates to improving water quality and reducing potential flood damages to downstream areas.

Of the five ordinances reviewed, the Portland, OR criteria appears to present the most stringent standards to meet by requiring onsite flows for redevelopment sites to be limited to pre-existing (i.e. undeveloped) rates and no credit is given for existing on site impervious cover. The Seattle, WA criteria specifies target flow values which are site independent and again do not consider existing impervious cover. Both of these ordinances are considered to be strict criteria which may discourage redevelopment projects in areas where the developer has an option to use undeveloped sites. In areas where there are little undeveloped available lands and development pressures are high, these ordinances may be considered to reduce downstream flooding and water quality impacts.

Of the remaining ordinances, Georgia, Maryland & Chester Creek, the Georgia and Maryland criteria were not specific enough to determine if existing impervious cover was considered to be part of the pre- development conditions. However, the Chester Creek ordinance clearly considers existing impervious cover in the determination of pre development conditions. The charts developed for the Chester Creek ordinance are based upon assuming that the pre development site is underlain by "B" soils, which is somewhat conservative when determining the storage / treatment volumes for post development runoff, if the site were actually underlain by a "C" or "D" soil. The Chester Creek

ordinance also requires that water quality issues be addressed in the form of TSS reductions and groundwater recharge. The approach of this ordinance is more suitable for areas where developer have the option of choosing undeveloped sites for development, rather than redevelopment sites. The water quantity criteria coupled with then currently promoted water quality criteria should both encourage redevelopment projects while improving existing water quality concerns and flooding concerns, to a lesser degree. In areas where downstream flooding is a current problem, additional credits (i.e. exemption from water quantity criteria as in the MD ordinance) may be given to the developer is a reduction in total impervious area can be attained.



1. Maryland

A. Definition

"Redevelopment" means any construction, alteration, or improvement <u>exceeding 5,000 square</u> feet of land disturbance performed on sites where existing land use is commercial, industrial, institutional, or multifamily residential.

B. When Stormwater Management Is Required

Redevelopment

- 1. An approving agency shall require that stormwater management be addressed for redevelopment. Proposed redevelopment project designs shall include:
 - a. A reduction in impervious area;
 - b. The implementation of stormwater management practices; or
 - e. A combination of both §D (1) (a) and (b) of this regulation to result in an improvement to water quality.
- 2. Unless otherwise specified by watershed management plans developed according to §E of this regulation, all redevelopment projects shall reduce existing site impervious area by at least 20 percent.
- 3. Where site conditions prevent the reduction of impervious area, stormwater management practices shall be implemented to provide water quality control for at least 20 percent of the site's impervious area.
- 4. When a combination of impervious area reduction and stormwater management practice implementation is used for redevelopment projects, the combination of impervious area reduction and the area controlled by a stormwater management practice shall equal or exceed 20 percent.
- 5. An approval authority may allow practical alternatives where conditions prevent impervious area reduction or on-site stormwater management. Practical alternatives include, but are not limited to:
 - a. Fees paid in an amount specified by the approving agency;
 - b. Off-site BMP implementation for a drainage area comparable in size and percent imperviousness to that of the project;
 - c. Watershed or stream restoration;
 - d. Retrofitting; or
 - e. Other practices approved by the appropriate authority.
- 6. The recharge, channel protection storage volume, and overbank flood protection volume requirements specified in the Design Manual do not apply to redevelopment projects unless specified by the approving agency.

- 7. On-site or off-site channel protection storage volume requirements as specified in the Design Manual may be imposed if watershed management plans developed according to §E of this regulation indicate that downstream flooding or crosion need to be addressed.
- 8. Variations of this redevelopment policy shall be approved by the Administration.

C. Redevelopment Provisions That Different From Requirement

An approving agency may develop quantitative waiver and redevelopment provisions for stormwater management that differ from the requirements of this chapter. These provisions shall be developed only as part of an overall watershed management plan. Watershed management plans developed for the purposes of implementing different stormwater management policies for waivers and redevelopment shall:

- 1. Include detailed hydrologic and hydraulic analyses to determine hydrograph timing;
- 2. Evaluate both quantity and quality management;
- 3. Include cumulative impact assessment of watershed development;
- 4. Identify existing flooding and receiving stream channel conditions;
- 5. Be conducted at a scale determined by the approving agency; and
- 6. Specify where on-site or off-site quantitative and qualitative stormwater management practices are to be implemented.

D. References

Title 26 DEPARTMENT OF THE ENVIRONMENT. Subtitle 17 WATER MANAGEMENT. Chapter 02 Stormwater Management. Authority: Environment Article, §4-203, Annotated Code of Maryland. 26.17.02.00.

E. URLs

https://constmail.gov.state.md.us/comar/dsd_web/comar_web/subtitle_chapters/26_Chapters.htm #Subtitle17

2. City of Seattle

A. Definition

All land disturbing activities or addition or replacement of impervious surface are required to comply with this section, even where drainage control review is not required. Exception: Maintenance, repair, or installation of underground or overhead utility facilities, such as, but not limited to, pipes, conduits and vaults, is not required to comply with the provisions of this section.

"Replaced impervious surface" or "replacement of impervious surface" means impervious surface that is removed down to earth material and a new impervious surface is installed.

"New development" means any of the following activities: Structural development, including construction of a new building or other structure; Expansion or alteration of an existing structure that results in an increase in the footprint of the building or structure; Land disturbing activities; Creation or expansion of impervious surface; Demolition; Subdivision and short subdivision of land as defined in RCW58.17.020.

B. When Compliance Is Required

Redevelopment

The portion of the site being redeveloped shall at least comply with the minimum requirements below. Projects exceeding 9,000 square feet of developmental coverage must also comply with the additional requirements. Compliance is required regardless of the type of redevelopment, and regardless of whether or not a permit is required. However, only those projects meeting the review thresholds set forth in Subsection B below must prepare and submit the required plans.

C. Minimum Requirements for All Projects

All projects must comply with the requirements of this subsection. Projects with more than 9,000 square feet of developmental coverage shall also comply with the requirements of additional requirement for larger project below. The Director of Construction and Land Use may also require projects with 9,000 square feet or less of developmental coverage to comply with the requirements set forth in additional requirement for larger project when necessary to accomplish the purposes of this Subtitle. In making this determination, the Director of Construction and Land Use may consider, but not be limited to, the following attributes of the site: location within an Environmentally Critical Area; proximity and tributary to an Environmentally Critical Area; proximity and tributary to an area with known erosion or flooding problems.

1. Discharge Point: The discharge point for drainage water from each site shall be selected as set forth in rules promulgated jointly by the Director of Seattle Public Utilities and the Director of Construction and Land specifying criteria, guidelines and standards for determining drainage discharge points to meet the purposes of this Subtitle. The criteria

shall include, but not be limited to, preservation of natural drainage patterns and whether the capacity of the drainage control system is adequate for the additional volume. For those projects meeting the review threshold, the proposed discharge point shall be identified in the drainage control plan required by paragraph C4 below, for review and approval or disapproval by the Director of Construction and Land Use.

- Discharge Rate. To the extent practical, the peak drainage water discharge rate from 2. pervious and impervious surfaces on the site shall not exceed 0.2 cubic feet per second per acre under design storm conditions. The Director of Construction and Land Use and the Director of Seattle Public Utilities may jointly promulgate rules modifying the discharge rate requirement for projects which will result in less than 2,000 square feet of new impervious surface. The Director of Construction and Land Use and the Director of Seattle Public Utilities may jointly promulgate rules allowing exceptions to the permissible peak discharge rate for property which discharges water directly to a designated receiving water or directly to a public storm drain which the Director of Seattle Public Utilities determines has sufficient capacity to carry existing and anticipated loads from the point of connection to a receiving water. The design storm used to determine detention volume necessary to obtain the required discharge rate shall be a storm with a statistical probability of occurrence of one in 25 in any given year. If the project is within an environmentally critical area, the design storm requirements of SMC Chapter 25.09, Regulations for Environmentally Critical Areas, shall be applied. The Director of Seattle Public Utilities and the Director of Construction and Land Use shall jointly adopt rules specifying the methods of calculation to determine the discharge rate. Where laws or regulations of the federal government or the State of Washington impose a more stringent requirement, the more stringent requirement shall apply.
- 3. Control Measures. During new development, redevelopment and land-disturbing activities, best management practices, as further specific din rules promulgated jointly by the Director of Seattle Public Utilities and the Director of Construction and Land Use, shall be used to accomplish the following:
 - a. Control erosion and the transport of sediment from the site through measures such as mulching, matting, covering, silt fences, sediment traps and catch basins, settling ponds and protective berms;
 - b. Permanently stabilize exposed soils that are not being actively worked, through such methods as the installation of permanent vegetative cover and installation of slope protective materials; and
 - c. Control the introduction of contaminants and pollutants into, and reduce and treat contaminants in drainage water, drainage control facilities, surface water and groundwater, and the public drainage control system by methods such as covering of material stockpiles; proper disposal of hazardous materials; regular cleaning of catch basins, gravel truck loading and heavy equipment areas; spill control for fueling operations; sweeping; and maintaining erosion control protective features described above.

- 4. Drainage Control Plan. For those projects meeting the review thresholds set forth in Subsection B above and which are less than 9,000 square feet, the applicant shall submit a drainage control plan as set forth in rules promulgated jointly by the Director of Seattle Public Utilities and the Director of Construction and Land Use. Standard designs for drainage control facilities as set forth in the rules may be used. Projects exceeding 9,000 square feet must submit a comprehensive drainage control plan as set forth in Subsection D below. The Director of Construction and Land Use may impose additional requirements, including a comprehensive drainage control plan prepared by a licensed civil engineer, when the project has complex or unusual drainage, or when additional requirements are otherwise necessary to accomplish the purposes of this Subtitle.
- 5. Memorandum of Drainage Control. The owner(s) of the site shall sign a "memorandum of drainage control" that has been prepared by the Director of Seattle Public Utilities. Completion of the memorandum shall be a condition precedent to issuance of any permit or approval for which a drainage control plan is required. The memorandum shall not be required when the drainage control facility will be owned and operated by the City. A memorandum of drainage control shall include:
 - a. The legal description of the site;
 - b. A summary of the terms of the drainage control plan, including any known limitations of the drainage control facilities, and an agreement by the owners to implement those terms;
 - c. An agreement that the owner(s) shall inform future purchasers and other successors and assignees of the existence of the drainage control facilities and other elements of the drainage control plan, the limitations of the drainage control facilities, and of the requirements for continued inspection and maintenance of the drainage control facilities;
 - d. The side sewer permit number and the date and name of the permit or approval for which the drainage control plan is required;
 - e. Permission for the City to enter the property for inspection, monitoring, correction, and abatement purposes;
 - f. An acknowledgment by the owner(s) that the City is not responsible for the adequacy or performance of the drainage control plan, and a waiver of any and all claims against the City for any harm, loss, or damage related to the plan, or to drainage or erosion on the property, except for claims arising from the City's sole negligence; and
 - g. The owner(s)' signatures acknowledged by a notary public. The applicant shall file the memorandum of drainage control with the King County Department of Records and Elections so as to become part of the King County real property

records. The applicant shall give the Director of Seattle Public Utilities proof of filing of the memorandum.

- 6. Flood-Prone Areas. Sites within flood prone areas must employ measures to minimize the potential for flooding on the site and for the project to increase the risk of floods on adjacent or nearby properties. Flood control measures shall include those set forth in other titles of the Seattle Municipal Code and rules promulgated there under, including but not limited to, SMC Chapter 25.06 (Floodplain Development) and Chapter 25.09 (Environmentally Critical Areas), and in rules promulgated jointly by the Director of Seattle Public Utilities and the Director of Construction and Land Use to meet the purposes of this subsection.
- 7. Natural Drainage Patterns. Natural drainage patterns shall be maintained.
- 8. Obstruction of Watercourses. Watercourses shall not be obstructed.

D. Additional Requirements for Large Projects

All projects exceeding 9,000 square feet of developmental coverage and those small projects identified by the Director according to subsection C above must comply with the requirements set forth in this subsection. These requirements are in addition to the requirements set forth in Subsection C above. When the Directors develop rules prescribing best management practices for particular purposes, whether or not those rules are adopted by ordinance, BMPs prescribed in the rules shall be the BMPs required for compliance with this Subsection. Best management practices shall include, but not be limited to: maintenance and housekeeping practices such as proper storage of oil barrels and other contaminant sources, covering material stockpiles, proper use and storage of hazardous materials, as well as constructed facilities such as detention tanks, wet ponds, extended detention dry ponds, infiltration, vegetated streambank stabilization, structural stabilization, catch basins, oil/water separators, grassed swales, and constructed wetlands.

- 1. In addition to detaining a 25-year storm to a release rate of 0.2 cubic feet per second per acre, the peak drainage water discharge rate from projects of more than 9,000 square feet of developmental coverage shall not exceed 0.15 cubic feet per second per acre in a two-year storm;
- 2. Control the sources of sediment and other contaminants and pollutants that could enter drainage water, including the selection, design and maintenance of temporary and permanent best management practices;
- 3. Minimize streambank erosion and effects on water quality in streams, including the selection, design and maintenance of temporary and permanent best management practices, where stormwater is discharged directly to a stream or to a conveyance system that discharges to a stream;

- 4. Minimize the introduction of sediment, heat and other pollutants and contaminants into wetlands, including the selection, design and maintenance of temporary and permanent best management practices, where stormwater discharges directly to a wetland or to a conveyance system that discharges into a wetland;
- 5. Analyze impacts to off-site water quality resulting from the project. The analysis shall comply with this Subsection and rules promulgated pursuant to this Subsection. The analysis shall provide for mitigation of all surface water quality or sediment quality impacts. The impacts to be evaluated and mitigated shall include at least the following:
 - a. Amount of sedimentation;
 - b. Streambank erosion;
 - c. Discharges to groundwater contributing to recharge zones;
 - d. Violations of state or federal surface water, groundwater, or sediment quality standards; and
 - e. Spills and other accidental illicit discharges;
- 6. A schedule shall be provided for inspection and maintenance of proposed temporary and permanent drainage control facilities and other best management practices. The schedule shall meet the requirements of this Subtitle and rules promulgated under this Subtitle.
- 7. In addition to the requirements described above, for land- disturbing activities and demolition of structures, an erosion/sediment control plan designed to comply with the requirements and purposes of this Subtitle and rules promulgated hereunder shall be submitted and implemented. The erosion/sediment control plan shall be designed to accomplish the following:
 - a. Stabilization of exposed soils and sediment trapping;
 - b. Delineation of limits on clearing and easements;
 - c. Protection of adjacent property:
 - d. Appropriate timing and stabilization of sediment trapping measures;
 - e. Minimization of erosion on cut-and-fill slopes;
 - f. Control of off-site erosion:
 - g. Stabilization of temporary conveyance channels and outlets;
 - h. Protection of storm drain inlets:
 - i. Minimization of transport of sediment by construction vehicles;
 - i. Appropriate timing for removal of temporary best management practices;
 - k. Control of discharges from construction site dewatering devices to minimize contamination of drainage water; and
 - 1. Inspection and maintenance of best management practices for erosion/sediment control to insure functioning at design capacity.
- 8. Comprehensive Drainage Control Plan. A comprehensive drainage control plan to comply with the requirements of this Subtitle and rules promulgated hereunder and to accomplish the purposes of this Subtitle shall be submitted with the permit application. It

shall be prepared by a licensed civil engineer in accordance with standards adopted by the Director of Construction and Land Use.

E. References

Seattle Municipal Code (SMC) SMC 22.800.010- Stormwater, Grading and Drainage Control Code

An ordinance Relating to the Stormwater, Grading, and Drainage Control Code, as adopted by Ordinance 116425 and amended by Ordinances 117432, 117697, 117789, and 118396; amending Chapter 22.800, entitled "Title, Purpose, Scope, and Authority"; amending Chapter 22.801, entitled "Definitions"; amending Chapter 22.802, entitled "Stormwater, Drainage, and Erosion Control"; amending Chapter 22.804, entitled "Grading"; and amending Chapter 22.808, entitled "Administration and Enforcement."

F. URLs

http://clerk.ci.seattle.wa.us/~scripts/nph-

brs.exe?s1=22.800&s2=&S3=&Sect4=AND&l=20&Sect1=IMAGE&Sect3=PLURON&Sect5=CODE1&d=CODE&p=1&u=/~public/code1.htm&r=1&Sect6=HITOFF&f=G

http://clerk.ci.seattle.wa.us/~scripts/nph-

 $\frac{brs.exe?d=CBOR\&s1=119965.ordn.\&Sect6=HITOFF\&l=20\&p=1\&u=/\sim public/cbor2.htm\&r=120\&p=1\&u=/\sim public/cbor2.htm\&r=120\&p=120$

3. City of Portland

G. Definition

Redevelopment: Any development that requires demolition or complete removal of existing structures or impervious surfaces at a site and replacement with new impervious surfaces. Maintenance activities such as top-layer grinding and re-paving are not considered to be redevelopment. Interior remodeling projects and tenant improvements are also not considered to be redevelopment. Utility trenches in streets are not considered redevelopment unless more than 50% of the street width is removed and re-paved.

H. Requirements

Pollution Reduction Requirements

The City of Portland has a citywide pollution reduction requirement for all new development projects with over 500 square feet of impervious development footprint area, and all redevelopment projects redeveloping over 500 square feet of impervious surface. This requirement is 70 percent removal of total suspended solids (TSS) from runoff generated by a design storm up to and including 0.83 inches of rainfall over a 24-hour period (NRCS Type 1A distribution). Appendix B provides a more detailed definition of "70 percent removal of TSS", which is actually a function of influent TSS concentration.

Flow Control Requirements

Flow control requirements are intended to maintain post-development peak flows at their pre-development levels and to maintain peak flows within the capacity of the conveyance system for most storm events. Specifically, on-site flow control shall be sufficient to maintain peak flows at their pre-development levels for the 2-year, 5-year, and 10-year runoff events. (Note that for redevelopment projects, pre-development conditions are defined as undeveloped land- See definition in Section 1.3). Surface retention facilities are required to the maximum extent practicable to control stormwater volumes (see exceptions in Section 1.6).

I. Parking Lots

Surface Parking Lot Requirements

Parking and Loading describes dimensions, landscaping and other requirements for parking lots. Title 33.248: Landscaping and Screening describes planting requirements for parking lots and other site uses. (Also see Chapter 5.0 for a list of approved parking lot trees.) Any new parking lot that creates more than 500 square feet of impervious surface, or any redeveloped parking lot (see definition of redevelopment in Section 1.3) that redevelops more than 500 square feet of impervious surface, must use the landscape area required by the zoning code to manage stormwater from the new or redeveloped area. Existing parking lots required to meet the non-conforming use landscaping requirements under Title 33.258.070, must use simplified

approaches where practicable in the newly required landscaped areas. Where it is not practical for runoff to flow into landscaped areas this requirement does not apply. The following exceptions and/or conditions to these requirements may apply. If an exception is claimed, the applicant must still fulfill all other relevant requirements of Chapters 1.0 through 7.0 of this manual.

- 1. The parking lot or a portion of it is designated as a high-use (see Chapter 4.0, Section 4.11) and is subject to requirements that may conflict with the use of landscaping for stormwater management.
- 2. Contaminated soil conditions on the site preclude the use of landscape infiltration. In this situation, landscape facilities may be used for stormwater management, but must be lined to prevent infiltration.
- 3. The parking lot has been approved without landscaping, or has landscaping conditions that conflict with the use of the landscaping for stormwater management. (For example, if landscaping is required in a location that cannot receive stormwater as gravity flow, that portion of the landscaping would not have to be used for stormwater management.) The following simplified approaches from this chapter may be used to meet these requirements:
 - a. Vegetated swales
 - b. Grassy swales
 - c. Vegetated filters
 - d. Planter boxes
 - e. Vegetated infiltration basins
 - f. Sand filters
 - g. Soakage trenches (if site soil conditions support their use, and the surface of the trench is not paved over). The appropriate sizing requirements shown on Form SIM shall be used to calculate the area needed for the applied measures. If the landscaped area(s) within the parking lot are not adequately sized to meet the requirements of this chapter, the applicant has the following options:
 - h. Increase the landscaped area(s) within the parking lot to accommodate the required stormwater facility size, or
 - i. Use additional stormwater management facilities (which can include non-landscaped approaches) to obtain the required level of management.
 - j. Additional disposal measures (e.g., drywells, soakage trenches, off-site storm sewers, drainage ways, or ditches) may be required through building and plumbing codes, as approved by BES and OPDR.

Tips for Parking Lot Design

- 1. Design the grading to direct stormwater runoff into landscape areas. Depress the landscape areas adjacent to the parking surfaces to allow runoff to enter. See the vegetated swale detail in this chapter for a typical cross-section.
- 2. Maximize sheet flow opportunities and, if possible, avoid piping that drives the water level down, making it difficult to manage in surface facilities.
- 3. Provide numerous curb cuts (one every 10 feet) or use tire stops or other means to protect the landscape areas and allow maximum dispersal of the flows.
- 4. Consider design elements such as berms or trench drains.
- 5. When possible, situate buildings or fill areas on the high elevations of the site.
- 6. Make certain the design includes overflow and appropriate disposal methods. Overflow routes must show a safe escape route for the 100-year storm event.
- 7. Note that the parking lot tree standard is 3 caliper inches, unless the tree is chosen from the approved parking lot tree list, when it can be 2 caliper inches.

J. References

2002 Stormwater Management Manual, Adopted July 1, 1999, Revised September 1, 2002, Environmental Services, City of Portland Clean River Works.

K. URLs

http://www.cleanrivers-pdx.org/tech_resources/2002_swmm.htm

4. Georgia

A. Definitions

Redevelopment is defined as structural development (construction, installation or expansion of a building or other structure), creation or addition of impervious surfaces (creating an additional 5,000 s.f. of impervious area), replacement of impervious surface not part of routine maintenance, and land disturbing activities associated with structural or impervious development. Redevelopment does not include such activities as exterior remodeling.

B. Stormwater Management for Area of New Development and Redevelopment

The focus of this Manual is how to effectively deal with the impacts of urban stormwater runoff through effective and comprehensive stormwater management. Stormwater management involves both the prevention and mitigation of stormwater runoff quantity and quality impacts as described in this chapter through a variety of methods and mechanisms. Volume 2 of this Manual deals with ways that developers in Georgia can effectively implement stormwater management to address the impacts of new development and redevelopment, and both prevent and mitigate problems associated with stormwater runoff. This is accomplished by:

- 1. Developing land in a way that minimizes its impact on a watershed, and reduces both the amount of runoff and pollutants generated
- 2. Using the most current and effective erosion and sedimentation control practices during the construction phase of development
- 3. Controlling stormwater runoff peaks, volumes and velocities to prevent both downstream flooding and streambank channel erosion
- 4. Treating post-construction stormwater runoff before it is discharged to a waterway Implementing pollution prevention practices to prevent stormwater from becoming contaminated in the first place
- 5. Using various techniques to maintain groundwater recharge

The goal of a set of minimum stormwater management standards for areas of new development and significant redevelopment is to reduce the impact of post-construction stormwater runoff on the watershed. This can be achieved by (1) maximizing the use of site design and nonstructural methods to reduce the generation of runoff and pollutants; (2) managing and treating stormwater runoff though the use of structural stormwater controls; and (3) implementing pollution prevention practices to limit potential stormwater contaminants.

It should be noted that the standards presented here are recommended for all communities in Georgia. They may be adopted by local jurisdictions as stormwater management development requirements and/or may be modified to meet local or watershed-specific stormwater

management goals and objectives. Please consult your local review authority for more information.

The minimum standards for development are designed to assist local governments in complying with regulatory and programmatic requirements for various state and Federal programs including the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit program and the National Flood Insurance Program under FEMA.

C. Additional Requirements

New development or redevelopment in critical or sensitive areas, or as identified through a watershed study or plan, may be subject to additional performance and/or regulatory criteria. Furthermore, these sites may need to utilize or restrict certain structural controls in order to protect a special resource or address certain water quality or drainage problems identified for a drainage area.

D. Georgia Stormwater Management Manual Volume 2 (Technical Handbook)

The following standards are the recommended minimum stormwater management performance requirements for new development or redevelopment sites falling under the applicability criteria in subsection 1.2.2.1. (The word "shall" in brackets is provided for local jurisdictions that wish to adopt these standards as part of their stormwater management ordinances) A more detailed explanation of each minimum standard is provided in the next subsection.

Minimum Standard #1 – Use of Better Site Design Practices for Stormwater Management Site designs should preserve the natural drainage and treatment systems and reduce the generation of additional stormwater runoff and pollutants to the fullest extent practicable.

Minimum Standard #2 – Stormwater Runoff Quality

All stormwater runoff generated from a site should [shall] be adequately treated before discharge. Stormwater management systems (which can include both structural stormwater controls and better site design practices) should [must] be designed to remove 80% of the average annual post-development total suspended solids (TSS) load and be able to meet any other additional watershed- or site-specific water quality requirements.

It is presumed that a stormwater management system complies with this performance standard if: It is sized to capture and treat the prescribed water quality treatment volume, which is defined as the runoff volume resulting from the first 1.2 inches of rainfall from a site; and appropriate structural stormwater controls are selected, designed, constructed, and maintained according to the specific criteria in this Manual. Runoff from hotspot land uses and activities is adequately treated and addressed through the use of appropriate structural stormwater controls and pollution prevention practices.

Minimum Standard #3 – Stream Channel Protection

Stream channel protection should [shall] be provided by using all of the following three approaches: 24-hour extended detention storage of the 1-year, 24-hour return frequency storm event; erosion prevention measures such as energy dissipation and velocity control; and preservation of the applicable stream buffer.

Minimum Standard #4 – Overbank Flood Protection

Downstream overbank flood protection should [shall] be provided by controlling the post-development peak discharge rate to the predevelopment rate for the 25-year, 24-hour return frequency storm event. If control of the 1-year, 24-hour storm (Minimum Standard #3) is exempted, then overbank flood protection should [shall] be provided by controlling the post-development peak discharge rate to the predevelopment rate for the 2-year through the 25- year return frequency storm events.

Minimum Standard #5 - Extreme Flood Protection

Extreme flood protection should [shall] be provided by controlling and/or safely conveying the 100-year, 24-hour return frequency storm event such that flooding is not exacerbated. Existing and future floodplain areas should be preserved as possible.

Minimum Standard #6 – Downstream Analysis

A downstream hydrologic analysis should [shall] be performed to determine if there are any additional impacts in terms of peak flow increase or downstream flooding while meeting Minimum Standards #1 through 5. This analysis should [shall] be performed at the outlet(s) of the site, and downstream at each tributary junction to the point(s) in the conveyance system where the area of the portion of the site draining into the system is less than or equal to 10% of the total drainage area above that point.

Minimum Standard #7 - Groundwater Recharge

Annual groundwater recharge rates should be maintained to the extent practicable through the use of nonstructural methods.

Minimum Standard #8 - Construction Erosion and Sedimentation Control

Erosion and sedimentation control practices shall be utilized during the construction phase or during any land disturbing activities.

Minimum Standard #9 – Stormwater Management System Operation and Maintenance

The stormwater management system, including all structural stormwater controls and conveyances, should [shall] have an operation and maintenance plan to ensure that it continues to function as designed.

Minimum Standard #I0 - Pollution Prevention

To the maximum extent practicable, the development project should [shall] implement pollutant prevention practices and have a stormwater pollution prevention plan.

Minimum Standard #1 I - Stormwater Management Site Plan

The development project should [shall] prepare a stormwater management site plan for local government review that addresses Minimum Standards #1 through 10.

E. Better Site Design Practice

Reduce the Parking Footprint- Reduction of Impervious Cover

Description: Reduce the overall imperviousness associated with parking lots by providing compact car spaces, minimizing stall dimensions, incorporating efficient parking lanes, parking decks, and using porous paver surfaces or porous concrete in overflow parking areas where feasible and possible.

Key Benefits

Reduces the amount of impervious cover and associated runoff and pollutants generated

Using this practice

Reduce the number of parking spaces
Minimize stall dimensions
Consider parking structures and shared parking
Use alternative porous surface for overflow areas

Discussion

Setting maximums for parking spaces, minimizing stall dimensions, using structured parking, encouraging shared parking and using alternative porous surfaces can all reduce the overall parking footprint and site imperviousness.

Many parking lot designs result in far more spaces than actually required. This problem is exacerbated by a common practice of setting parking ratios to accommodate the highest hourly parking during the peak season. By determining average parking demand instead, a lower maximum number of parking spaces can be set to accommodate most of the demand. Table 1.4.2-2 provides examples of conventional parking requirements and compares them to average parking demand.

TABLE CONVENTIONAL MINIMUM PARKING RATIOS (SOURCE: ITE, 1987; SMITH, 1984; WELLS, 1994)

Land Use	Parking Requirement		Actual Average
	Parking Ratio	Typical Range	Parking Demand
Single family homes	2 spaces per dwelling unit	1.5–2.5	1.11 spaces per dwelling unit
Shopping center	5 spaces per 1000 ft ² GFA	4.0-6.5	3.97 per 1000 ft 2 GFA
Convenience store	3.3 spaces per 1000 ft ² GFA	2.0-10.0	
Industrial	1 space per 1000 ft ² GFA	0.5–2.0	1.48 per 1000 ft 2 GFA
Medical/ dental office	5.7 spaces per 1000 t ² GFA	4.5–10.0	4.11 per 1000 ft ² GFA

Another technique to reduce the parking footprint is to minimize the dimensions of the parking spaces. This can be accomplished by reducing both the length and width of the parking stall.

Parking stall dimensions can be further reduced if compact spaces are provided. While the trend toward larger sport utility vehicles (SUVs) is often cited as a barrier to implementing stall minimization techniques, stall width requirements in most local parking codes are much larger than the widest SUV structured parking decks are one method to significantly reduce the overall parking footprint by minimizing surface parking. Figure 1.4.2-20 shows a parking deck used for a commercial development.

Shared parking in mixed-use areas and structured parking are techniques that can further reduce the conversion of land to impervious cover. A shared parking arrangement could include usage of the same parking lot by an office space that experiences peak parking demand during the weekday with a church that experiences parking demands during the weekends and evenings.

Utilizing alternative surfaces such as porous pavers or porous concert is an effective way to reduce the amount of runoff generated by parking lots. They can replace conventional asphalt or concrete in both new developments and redevelopment projects. However, porous pavement surfaces generally require proper installation and more maintenance than conventional asphalt or concrete.

F. References

Georgia Stormwater Management Manual Volume 1: Stormwater Policy guidebook First Edition August 2001, Atlanta Regional Commission

G. URLs

http://www.georgiastormwater.com

5. Center for Watershed Protection (CWP)

H. Definition

"Redevelopment" is the process in which an existing developed area is adaptively reused, rehabilitated, renovated or expanded.

"Infill" is development that occurs on smaller parcels that remain undeveloped but are within or very close to existing urban areas.

I. What Are The Best Incentives To Encourage Redevelopment?

- 1. Resolving the transportation problems, particularly for suburban commuters.
- 2. Waterfront development.
- 3. Shortening/ simplifying the approval process.
- 4. Unifying codes and ordinances.

J. Other Suggestions

- 1. Don't forget the temporal scale, e.g. over time redevelopment is very beneficial at the site level.
- 2. Don't forget the neighborhood based framework. Don't forget environmentally sensitive techniques inside the building.
- 3. Make it applicable to all areas of different climate, politics and technical expertise.
- 4. Use a word other than principle.

K. Tools and Techniques for Redevelopment and Infill

Practice Oriented

- 1. Maintain natural features as part of the landscape at a site and encourage tree planting and other revegetation practices.
- 2. Manage rooftop runoff through storage, reuse, and/or redirection to pervious surfaces for stormwater management.
- 3. Use alternative paving materials for parking and other pathways whenever possible and feasible.
- 4. Provide long term management plans for natural areas, public spaces, stormwater management facilities and lighting.

Program Oriented

- 1. Promote the rehabilitation of urban streams and the creation and restoration of aquatic corridors.
- 2. Encourage the use of green parking techniques by providing incentives whenever possible.

- 3. Monitor and eliminate illicit or unmanaged discharges into streams, lakes and estuaries and foster operation and maintenance practices that prevent or reduce pollutants entering the municipal or natural drainage system.
- 4. Promote environmental stewardship through outreach and education for the present and the future.
- 5. Encourage pollution prevention practices for businesses and municipalities to reduce pollutant loads and foster an environmental ethic.

Shared Principles

- 1. Use appropriate, effective, and economical stormwater management where possible.*
- 2. Encourage the incorporation of natural features as part of the streetscape.*
- 3. Master plan redevelopment areas to promote planting practices and provide green spaces (trees, urban parks, and community gardens) in the urban environment.*
- 4. Encourage the use of open space designs, including reduction of building footprints, preservation of natural areas, and innovative building techniques to reduce the amount of new impervious cover created.*
- 5. Encourage development designs that integrate new paths, open spaces, and architecture with the existing community.*

*Indicates principles that can be organized under both the Practice and Program.

L. URLs

http://www.cwp.org/index.html

6. Green Roofs for Healthy Cities

Water Benefit (other benefits are not list here)

In summer, green roofs retain 70-100% of the precipitation that falls on them; in winter they retain between 40-50%. A grass roof with a 4-20 cm layer of substrate can hold between 10-15 cm of water.

A. Stormwater Retention

Water is stored by the substrate and then taken up by the plants from where it is returned to the atmosphere through transpiration and evaporation.

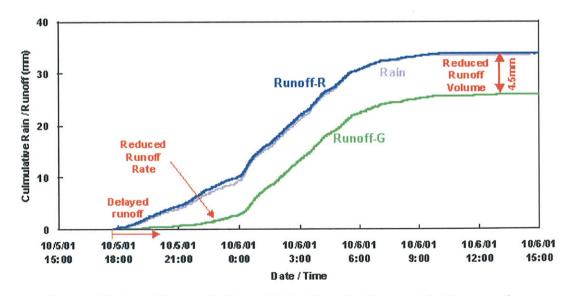
In summer, depending on the plants and growing medium, green roofs retain 70-80% of the precipitation that falls on them; in winter they retain between 25-40%. For example, a grass roof with a 4-20 cm (1.6 - 7.9 inches) layer of growing medium can hold 10-15 cm (3.9 - 5.9 inches) of water.

B. Water Filtration

Green roofs not only retain the rainwater, but also moderate the temperature of the water and act as natural filters for any of the water that happens to run off.

C. Temporal Delay of Stormwater Runoff and Reduced Runoff Volume

Green roofs reduce the amount of stormwater runoff and also delay the time at which runoff occurs, resulting in decreased stress on sewer systems at peak flow periods.



Source: National Research Council's Institute for Research in Construction

The graph above records the cumulative rainfall and runoff from the Green Roof and the Reference Roof during a 34mm (1.3 inches) rain event over a 15h period in October 2001. The green roof delayed runoff and reduced the runoff rate and volume. For more details on this research conducted by the National Research Council's Institute for Research in Construction, see the article on page 7 of the Winter 2002 issue of the Green Roof Infrastructure Monitor.

D. Regulatory/Policy Initiatives

The U.S. Clean Water Act promises to become an important regulatory driver of green roof implementation in the United States. The **Clean Water Act, Section 319 Grant**, addresses non-point source pollution and can provide a source of funding for green roofs.

To inquire about receiving Section 319 grant funding for green roof projects contact your **state nonpoint source coordinator**. Green roofs can be funded as demonstration projects throughout most states and can be used to mitigate the impacts of stormwater and combined sewer overflows in developed areas.

Two projects funded by this grant include:

Maryland: Montgomery Park, Grant Award: \$92, 000.00

Arizona: Riverfront Residence, Grant Award: \$33, 875.00

The **City of Seattle** requires that all new municipal buildings be LEEDTM certified and green roofs provide an opportunity to gain as many as 5 points under this system. A number of LEEDTM certified buildings have green roofs.

The City of Toronto's "Environmental Plan" and draft "Official Plan" both contain policies that encourage the implementation of green roof infrastructure

The City of Chicago passed an **Energy Conservation Ordinance** on June 3, 2001 requiring all new and replaced roofs to meet minimum standards of solar reflectance and emissivity using ASTM testing methods. This requirement, which is being phased in, can be met by installing a green roof system.

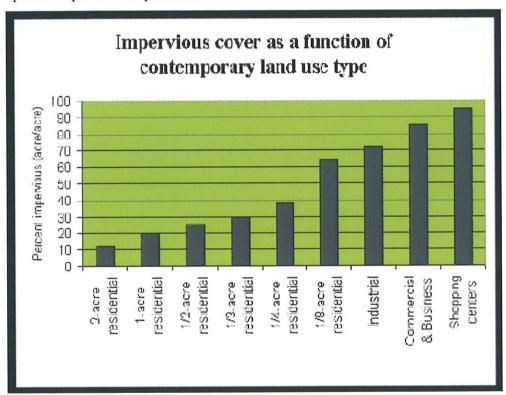
E. GreenRoof

Greenroofs reduce the volume of stormwater flowing into streams and drainage channels, resulting in the control of sediment transport and overall soil erosion. According to an article in the November/December 1998 issue of Erosion Control Magazine, the natural carpets provided by greenroofs protect both roofs and the soil below. Nitrogen, phosphorus and toxins can enter a vegetated stream as dissolved substances. Greenroofs' vegetated cover properties of friction, root absorption, clay, and soil organic matter can control these substances from entering a stream corridor (Dramstad, et al, 1996). In February of 1999, the International Erosion Control Association's Conference & Trade Exposition was held in Nashville, TN, and featured a training workshop and special section regarding the benefits and applications of roof greening systems. Thomas Roess of Strodthoff and Behrens GMBH of Germany presented on this subject, and is a frequent lecturer worldwide on greenroof technology.

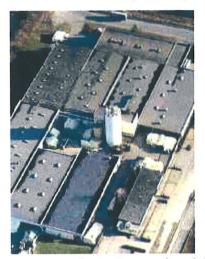
Vegetation absorbs pollutants from rainwater, and greenroofs provide this same amenity. Heavy metals and nutrients found in stormwater are bound in the soil instead of being discharged into

the groundwater or streams or rivers. Over 95% of cadmium, copper and lead and 16% of zinc can be taken out of rainwater. Nitrogen levels can also substantially fall (The London Ecology Unit, 1993).

Perhaps the greatest ecological function a greenroof can provide is its stormwater management capacity. Impervious cover has become a function of contemporary land uses. As a result of new land use practices, cities across the nation have developed over-stressed sewer systems with urgent stormwater management problems. According to analysis of Lansat Satellite data by NASA climate scientists, University of Georgia researchers and others, metro Atlanta is losing 50 acres of tree cover per day. From 1988 to 1998 the 13-county metro area lost approximately 190,000 acres of tree cover to development (Charles Seabrook, 1999). Lost green space is then a by-product of the proverbial asphalt jungle, and the inherent natural processes associated with natural areas are also lost. The chart below from Bruce Ferguson's *Introduction to Stormwater: Concept, Purpose, Design* (1998), shows the amount of impervious cover that development and the new impervious pavements produce.



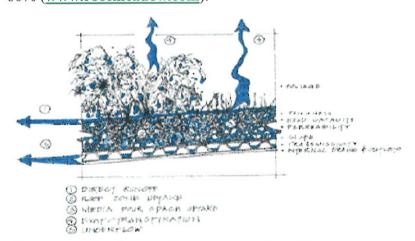
"We are obligated to restore the mechanisms of the earth's self-maintaining balance. Runoff must be moderated, treated, and returned to its restorative path in the soil," (Ferguson, 1998).



Source: ZinCo International 3/98 Brochure

On-site stormwater retention and runoff control from expansive roof surface areas of buildings can be accomplished through greenroofs. According to civil engineer Charlie Miller, Principal, of Roofscapes, Inc., "Vegetated roof covers may offer the only practical 'at-source' technique for controlling runoff in areas that already are highly urbanized." The reversal of damage caused by uncontrolled storm water runoff and non-point source pollution is possible within our urbanized watersheds. He believes that the intelligent use of best management practices (BMPs) can result in significant improvements, as well as long-term individuals municipalities savings to and (www.roofmeadow.com).

Depending on rain intensity and greenroof soil depths, runoff can be absorbed between 15 to 90 %, thereby considerably reducing runoff and potential pollutants from traditional impervious roofing surfaces. Plants intercept and delay rainfall runoff and the peak flow rate, alleviating combined sewer overflows, and eventually return water to the surrounding atmosphere by evaporation and transpiration. Average runoff absorption rates are between 50 to 60% (www.roofmeadow.com).



Courtesy of Roofscapes, Inc.; www.roofmeadow.com

control of stormwater The runoff is achieved by mimicking natural processes by intercepting and delaying rainfall runoff. Greater grass & plant diversity provides better plant uptake and simple friction, which creates less erosion, and more water is retained on the greenroof surface. Stormwater Natural Detail from Processes www.roofmeadow.com.

According to Charlie Miller, the installation of greenroofs is "a

potential technique for relieving nuisance flooding and reducing hydraulic loads on combined storm sewer systems." He contends that, "In addition to providing immediate relief for overburdened stormwater management facilities, the deployment of vegetated roof covers can help reduce the overall costs of infrastructure rehabilitation in our older cities."

Possible impervious coverage restrictions may be reduced for developers who incorporate greenroofs into their site plan. Depending on local ordinances, greenroofs may be installed in

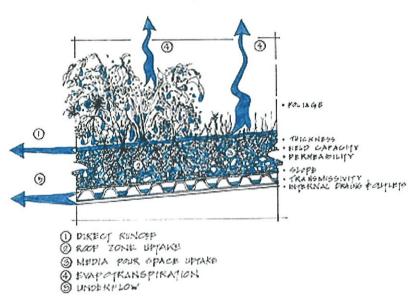
lieu of conventional stormwater practices. They can significantly reduce the size, or even completely eliminate the necessity for unsightly, space-wasting, and expensive detention ponds or underground galleries (Roofscapes, Inc., 1998). Although hard to quantify, there is also potential for downstream stormwater treatment savings.

Water Benefit

Control of stormwater runoff is achieved by mimicking the processes that occur in nature, intercepting and delaying rainfall runoff by:

- Capturing and holding precipitation in the plant foliage
- Absorbing water in the root zone
- Slowing the velocity of direct runoff as it infiltrates through the layers of vegetated cover

For small rainfall events, little runoff will occur and most of the precipitation will eventually



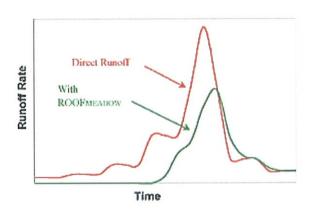
return to the atmosphere by evaporation and transpiration. For larger storms, vegetated roof covers can significantly delay and attenuate the discharge of runoff from roofs.

Vegetated roof covers are effective methods of retarding runoff from roof surfaces during storms:

Compared to many other stormwater management practices, vegetated roof covers are unobtrusive, low maintenance, and reliable management systems.

Vegetated roof covers are particularly effective when applied to extensive roofs, such as those that typify commercial and institutional buildings. They can be designed to achieve specified levels of stormwater runoff control, including reductions in:

Total annual runoff volume (reductions of **50 to 60 percent** are common place for vegetated roof covers) Peak runoff rates for selected design storm events



F. URLs

http://peck.ca/grhcc/ http://greenroofs.com/ http://roofscapes.com

7. Chester

A. Definition (ordinance language)

Redevelopment (in Article II)

Reconstruction of an existing improved, developed property, as of the data of adoption of this Ordinance. This includes all projects creating over 2,000 s.f. of additional impervious cover.

B. Water Quality and Quantity Control Drainage Plan preparation Procedure (Ordinance language)

- 1. Applicant determines if development meet definition of "Redevelopment" per Article II.
- 2. If yes, applicant adjust pre-development RCN or C value based on curves present in Section 401 C and Appendix B.

C. Section 401 C (ordinance language)

The Chester Creek Stormwater Management Plan requires water quality and water quantity controls as illustrated on the flow chart shown in Figure 4-I and detailed in Section 404. The flow chart illustrates a three-step hierarchical process.

- 1. Infiltration
- 2. Extended detention
- 3. Implementation of additional design control

Must evaluate the outcome of each step before processing to next. Riparian buffers are required where applicable (404.A.2).

D. Appendix B (report)

Figure B-3 Redevelopment project runoff criteria adjustment for pre-development conditions

Concern was expressed that imposing the release rate criteria on redevelopment projects might serve as a disincentive for developers. Therefore, an approach was proposed that would reduce the level of control required on redevelopment projects. This was accomplished by developing a chart which allows modification of pre-development conditions for which the stormwater management plan would be prepared. This chart adjusts the pre-development RCN value or "C" value to reflect conditions less restrictive than "meadow on B class soils" based on the percentage of exiting impervious cover.

Comment: The figure development is ok. But the goal of "Back to the natural condition" will not be reached.

E. Section 403 C (ordinance language)

Redevelopment projects shall meet peak discharge requirements based on the adjusted runoff control number (RCN) or "C" value illustrated by Figure B-3 in Appendix B.

F. Section 405 B (ordinance language)

For the purpose of pre-development flow rate determination, undeveloped land shall be considered as "meadow" good condition, type "B" soils, (RCN=58, Rational "C"=0.12) unless the natural ground cover generates a lower curve number or Rational "C" value (i.e., forest). If a proposed development meets the definition of redevelopment as defined in Article II of this Ordinance, the applicant may adjust the pre-development RCN or "C" value based on the curves presented in Figure B-3.