CERTIFICATE OF AUTHENTICITY

THIS IS TO CERTIFY THAT THE FOLLOWING ELECTRONIC RECORDS ARE TRUE AND ACCURATE REPRODUCTIONS OF THE ORIGINAL RECORDS OF JAMES CITY COUNTY GENERAL SERVICES DEPARTMENT- STORMWATER DIVISION; WERE SCANNED IN THE REGULAR COURSE OF BUSINESS PURSUANT TO GUIDELINES ESTABLISHED BY THE LIBRARY OF VIRGINIA AND ARCHIVES; AND HAVE BEEN VERIFIED IN THE CUSTODY OF THE INDIVIDUAL LISTED BELOW.

BMP NUMBER: **99120**

DATE VERIFIED: **June 20, 2012**

QUALITY ASSURANCE TECHNICIAN: **Leah Hardenbergh**

Leah Hardenbergh

LOCATION: WILLIAMSBURG, VIRGINIA

Stormwater Division

MEMORANDUM

DATE: March 11, 2010

TO: Michael J. Gillis, Virginia Correctional Enterprises Document Management Services

FROM: Jo Anna Ripley, Stormwater

PO: 270712

RE: Files Approved for Scanning

General File ID or BMP ID: 99120

PIN:

Subdivision, Tract, Business or Owner Name (if known): Kingsmill

Property Description: General Files

Site Address:

(For internal use only) **Box** 12 **Drawer:** 7

Agreements: (in file as of scan date) **N** **Book or Doc#:** **Page:**

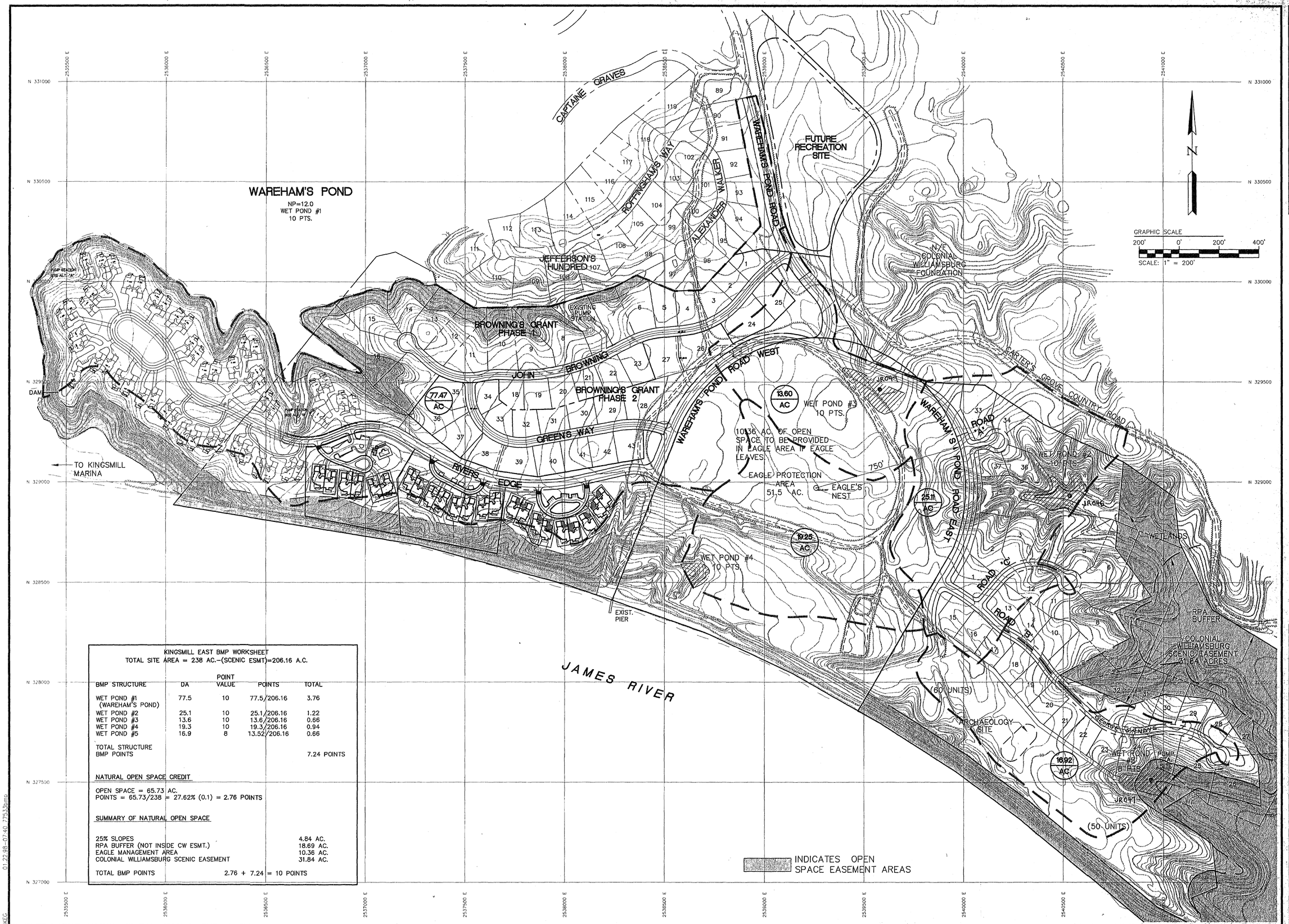
Comments

Includes data on JR046, JR047, JR049 - Kingsmill East area Brownings Grant, Warehams Pond and George Sandys

Contents for Stormwater Management Facilities As-built Files

Each File is to contain:

- ☐ 1. Maintenance Agreement
- ☐ 2. Construction certification
- ☐ 3. As-Built plan
- ☐ 4. Design Calculations
- ☐ 6. Correspondence
- ☐ 7. Inspection records
- ☐ 8. Miscellaneous



KINGSMILL EAST BMP WORKSHEET
TOTAL SITE AREA = 238 AC.–(SCENIC ESMT)=206.16 A.C.

BMP STRUCTURE	DA	POINT VALUE	POINTS	TOTAL
WET POND #1 (WAREHAM'S POND)	77.5	10	77.5/206.16	3.76
WET POND #2	25.1	10	25.1/206.16	1.22
WET POND #3	13.6	10	13.6/206.16	0.66
WET POND #4	19.3	10	19.3/206.16	0.94
WET POND #5	16.9	8	13.52/206.16	0.66
TOTAL STRUCTURE BMP POINTS				7.24 POINTS

NATURAL OPEN SPACE CREDIT

OPEN SPACE = 65.73 AC.
POINTS = 65.73/238 = 27.62% (0.1) = 2.76 POINTS

SUMMARY OF NATURAL OPEN SPACE

25% SLOPES	4.84 AC.
RPA BUFFER (NOT INSIDE CW ESMT.)	18.69 AC.
EAGLE MANAGEMENT AREA	10.36 AC.
COLONIAL WILLIAMSBURG SCENIC EASEMENT	31.84 AC.
TOTAL BMP POINTS	2.76 + 7.24 = 10 POINTS

No.	DATE	REVISION / COMMENT / NOTE	BY

5248 Olde Towne Road, Suite 1
Williamsburg, Virginia 23188
(757) 253-0040
Fax (757) 220-8994
CONSULTING ENGINEERS

BMP MASTER PLAN
FOR
KINGSMILL EAST

OWNER/DEVELOPER: BUSCH PROPERTIES, INC.
JAMES CITY COUNTY VIRGINIA

Designed	Drawn
CAH	GG
Scale	Date
1"=200'	6/8/97

Project No. 7753-3
Drawing No. 1

01.22.98-07:40 7753bmp
KEG
99120_KINGSMILL_EAST_GENERAL_FILE - 003

HYDRAULIC REPORT FOR

OK
4/28/98

KINGSMILL EAST

AREA B

SYSTEM A

AES JOB #7753-6

AES CONSULTING ENGINEERS

5248 OLDE TOWNE ROAD

WILLIAMSBURG, VA. 23188

9/11/97

REVISED 3/20/98

Return Period = 10 Yrs
Rainfall file: JCC

Run Date: 03-20-1998
File: 7753-6A.ST3

LINE 1 / Q = 7.36 / HT = 15 / WID = 15 / N = .013 / L = 140 / JLC = 1

SS#2A TO SS#1A / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	30.00	15.00	25.50	6.00	30.56	0.00	-1.75	1.23
UPSTRM	46.11	13.28	45.00	6.41	46.74	9.57	14.75	1.15

Drainage area (ac) =	0.00	Slope of invert (%)	=13.9286
Runoff coefficient =	0.00	Slope energy grade line (%)	=11.5607
Time of conc (min) =	10.93	Critical depth (in)	= 13.28
Inlet time (min) =	0.00	Natural ground elev. (ft)	= 61.00
Intensity (in/hr) =	5.63	Upstream surcharge (ft)	= 0.00
Cumulative C*A =	1.31	Additional Q (cfs)	= 0.00
Q = CA * I (cfs) =	7.36	Line capacity (cfs)	= 24.10
Q catchment (cfs) =	0.00	Inlet length (ft)	= 0.00
Q carryover (cfs) =	8.70	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs) =	8.70	Ponding width (ft)	= N/A

LINE 2 / Q = 7.41 / HT = 15 / WID = 15 / N = .013 / L = 150 / JLC = 1

SS#3A TO SS#2A / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	55.66	7.91	55.00	11.30	57.64	14.98	4.75	0.66
UPSTRM	62.66	7.91	62.00	11.30	64.64	14.98	6.25	0.66

Drainage area (ac) =	0.33	Slope of invert (%)	= 4.6667
Runoff coefficient =	0.70	Slope energy grade line (%)	= 4.6667
Time of conc (min) =	10.71	Critical depth (in)	= 13.28
Inlet time (min) =	5.00	Natural ground elev. (ft)	= 69.50
Intensity (in/hr) =	5.67	Upstream surcharge (ft)	= 0.00
Cumulative C*A =	1.31	Additional Q (cfs)	= 0.00
Q = CA * I (cfs) =	7.41	Line capacity (cfs)	= 13.95
Q catchment (cfs) =	1.62	Inlet length (ft)	= 0.00
Q carryover (cfs) =	7.08	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs) =	8.70	Ponding width (ft)	= N/A

Note: Normal depth assumed

LINE 3 / Q = 6.13 / HT = 15 / WID = 15 / N = .013 / L = 40 / JLC = 1

SS#4A TO SS#3A / DNLN = 2

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	64.64	15.00	62.00	5.00	65.03	0.00	6.25	1.23
UPSTRM	65.00	15.00	62.50	5.00	65.39	0.00	5.75	1.23

Drainage area (ac) =	0.50	Slope of invert (%) =	1.2500
Runoff coefficient =	0.70	Slope energy grade line (%) =	0.9014
Time of conc (min) =	10.58	Critical depth (in) =	11.89
Inlet time (min) =	5.00	Natural ground elev. (ft) =	69.50
Intensity (in/hr) =	5.70	Upstream surcharge (ft) =	1.25
Cumulative C*A =	1.08	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	6.13	Line capacity (cfs) =	7.22
Q catchment (cfs) =	2.45	Inlet length (ft) =	0.00
Q carryover (cfs) =	4.63	Gutter slope (ft/ft) =	0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft) =	0.0000
Q bypassed (cfs) =	7.08	Ponding width (ft) =	N/A

LINE 4 / Q = 4.19 / HT = 15 / WID = 15 / N = .013 / L = 80 / JLC = 1

SS#5A TO SS#4A / DNLN = 3

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	65.39	15.00	62.50	3.41	65.57	0.00	5.75	1.23
UPSTRM	65.73	15.00	63.50	3.41	65.91	0.00	1.75	1.23

Drainage area (ac) =	0.20	Slope of invert (%) =	1.2500
Runoff coefficient =	0.70	Slope energy grade line (%) =	0.4210
Time of conc (min) =	10.19	Critical depth (in) =	9.83
Inlet time (min) =	5.00	Natural ground elev. (ft) =	66.50
Intensity (in/hr) =	5.77	Upstream surcharge (ft) =	0.98
Cumulative C*A =	0.73	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	4.19	Line capacity (cfs) =	7.22
Q catchment (cfs) =	0.98	Inlet length (ft) =	0.00
Q carryover (cfs) =	3.65	Gutter slope (ft/ft) =	0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft) =	0.0000
Q bypassed (cfs) =	4.63	Ponding width (ft) =	N/A

LINE 5 / Q = 1.47 / HT = 15 / WID = 15 / N = .013 / L = 45 / JLC = .9

SS#5A-1 TO SS#5A / DNLN = 4

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	65.91	15.00	63.50	1.20	65.93	0.00	1.75	1.23
UPSTRM	65.95	15.00	64.00	1.20	65.97	0.00	1.25	1.23

Drainage area (ac) =	0.30	Slope of invert (%) =	1.1111
Runoff coefficient =	0.70	Slope energy grade line (%) =	0.0963
Time of conc (min) =	5.00	Critical depth (in) =	5.82
Inlet time (min) =	5.00	Natural ground elev. (ft) =	66.50
Intensity (in/hr) =	7.00	Upstream surcharge (ft) =	0.70
Cumulative C*A =	0.21	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	1.47	Line capacity (cfs) =	6.81
Q catchment (cfs) =	1.47	Inlet length (ft) =	0.00
Q carryover (cfs) =	0.00	Gutter slope (ft/ft) =	0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft) =	0.0000
Q bypassed (cfs) =	1.47	Ponding width (ft) =	N/A

LINE 6 / Q = 2.18 / HT = 15 / WID = 15 / N = .013 / L = 20 / JLC = 1

SS#6A TO SS#5A / DNLN = 4

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	65.91	15.00	63.50	1.78	65.96	0.00	1.75	1.23
UPSTRM	65.98	15.00	64.00	1.78	66.03	0.00	-1.25	1.23

Drainage area (ac) =	0.94	Slope of invert (%) =	2.5000
Runoff coefficient =	0.40	Slope energy grade line (%) =	0.1143
Time of conc (min) =	10.00	Critical depth (in) =	7.09
Inlet time (min) =	10.00	Natural ground elev. (ft) =	64.00
Intensity (in/hr) =	5.81	Upstream surcharge (ft) =	0.73
Cumulative C*A =	0.38	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	2.18	Line capacity (cfs) =	10.21
Q catchment (cfs) =	2.18	Inlet length (ft) =	0.00
Q carryover (cfs) =	0.00	Gutter slope (ft/ft) =	0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft) =	0.0000
Q bypassed (cfs) =	2.18	Ponding width (ft) =	N/A

HYDRAULIC REPORT FOR

KINGSMILL EAST

OK 4/28/98

AREA B

SYSTEM B

AES JOB #7753-6

AES CONSULTING ENGINEERS

5248 OLDE TOWNE ROAD

WILLIAMSBURG, VA. 23188

9/11/97

REVISED 3/20/98

Return Period = 10 Yrs
Rainfall file: JCC

Run Date: 03-24-1998
File: 7753-6B.ST3

LINE 1 / Q = 12.50 / HT = 15 / WID = 15 / N = .013 / L = 150 / JLC = 0

SS#2B TO SS#1B / Outfall

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	30.00	15.00	24.50	10.19	31.61	0.00	-3.25	1.23
UPSTRM	52.53	14.78	51.30	10.22	54.15	3.59	5.45	1.22

Drainage area (ac) =	0.00	Slope of invert (%)	=17.8667
Runoff coefficient =	0.00	Slope energy grade line (%)	=15.0272
Time of conc (min) =	16.74	Critical depth (in)	= 14.78
Inlet time (min) =	0.00	Natural ground elev. (ft)	= 58.00
Intensity (in/hr) =	4.77	Upstream surcharge (ft)	= 0.00
Cumulative C*A =	2.62	Additional Q (cfs)	= 0.00
Q = CA * I (cfs) =	12.50	Line capacity (cfs)	= 27.30
Q catchment (cfs) =	0.00	Inlet length (ft)	= 0.00
Q carryover (cfs) =	15.57	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs) =	15.57	Ponding width (ft)	= N/A

.38
.47
1.77
2.62

LINE 2 / Q = 8.53 / HT = 15 / WID = 15 / N = .013 / L = 115 / JLC = 1

SS#3B TO SS#2B / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	52.53	14.78	51.30	6.97	53.29	14.89	5.45	1.22
UPSTRM	62.96	13.93	61.80	7.18	63.76	7.73	.95	1.19

Drainage area (ac) =	1.10	Slope of invert (%)	= 9.1304
Runoff coefficient =	0.50	Slope energy grade line (%)	= 9.1081
Time of conc (min) =	16.46	Critical depth (in)	= 13.93
Inlet time (min) =	10.00	Natural ground elev. (ft)	= 64.00
Intensity (in/hr) =	4.81	Upstream surcharge (ft)	= 0.00
Cumulative C*A =	1.77	Additional Q (cfs)	= 0.00
Q = CA * I (cfs) =	8.53	Line capacity (cfs)	= 19.51
Q catchment (cfs) =	3.19	Inlet length (ft)	= 0.00
Q carryover (cfs) =	6.47	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs) =	9.66	Ponding width (ft)	= N/A

LINE 3 / Q = 6.00 / HT = 15 / WID = 15 / N = .013 / L = 205 / JLC = 1

SS#4B TO SS#3B / DNLN = 2

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	63.76	15.00	61.80	4.89	64.13	0.00	.95	1.23
UPSTRM	65.41	14.53	64.20	4.93	65.79	5.25	7.55	1.22

Drainage area (ac) =	0.00	Slope of invert (%) =	1.1707
Runoff coefficient =	0.00	Slope energy grade line (%) =	0.8080
Time of conc (min) =	15.77	Critical depth (in) =	11.76
Inlet time (min) =	0.00	Natural ground elev. (ft) =	73.00
Intensity (in/hr) =	4.89	Upstream surcharge (ft) =	0.00
Cumulative C*A =	1.22	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	6.00	Line capacity (cfs) =	6.99
Q catchment (cfs) =	0.00	Inlet length (ft) =	0.00
Q carryover (cfs) =	6.47	Gutter slope (ft/ft) =	0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft) =	0.0000
Q bypassed (cfs) =	6.47	Ponding width (ft) =	N/A

LINE 4 / Q = 6.12 / HT = 15 / WID = 15 / N = .013 / L = 230 / JLC = 1

SS#5B TO SS#4B / DNLN = 3

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	65.79	15.00	64.20	4.99	66.17	0.00	7.55	1.23
UPSTRM	67.86	15.00	66.30	4.99	68.24	0.00	1.04	1.23

Drainage area (ac) =	2.10	Slope of invert (%) =	0.9130
Runoff coefficient =	0.50	Slope energy grade line (%) =	0.8988
Time of conc (min) =	15.00	Critical depth (in) =	11.88
Inlet time (min) =	15.00	Natural ground elev. (ft) =	68.60
Intensity (in/hr) =	5.00	Upstream surcharge (ft) =	0.31
Cumulative C*A =	1.22	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	6.12	Line capacity (cfs) =	6.17
Q catchment (cfs) =	5.25	Inlet length (ft) =	0.00
Q carryover (cfs) =	1.22	Gutter slope (ft/ft) =	0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft) =	0.0000
Q bypassed (cfs) =	6.47	Ponding width (ft) =	N/A

LINE 5 / Q = 1.22 / HT = 15 / WID = 15 / N = .013 / L = 45 / JLC = .9

SS#5B-1 - SS#5B / DNLN = 4

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	68.24	15.00	66.30	1.00	68.26	0.00	1.04	1.23
UPSTRM	68.27	15.00	66.50	1.00	68.29	0.00	1.25	1.23

Drainage area (ac) =	0.25	Slope of invert (%) =	0.4444
Runoff coefficient =	0.70	Slope energy grade line (%) =	0.0669
Time of conc (min) =	5.00	Critical depth (in) =	5.31
Inlet time (min) =	5.00	Natural ground elev. (ft) =	69.00
Intensity (in/hr) =	7.00	Upstream surcharge (ft) =	0.52
Cumulative C*A =	0.17	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	1.22	Line capacity (cfs) =	4.30
Q catchment (cfs) =	1.22	Inlet length (ft) =	0.00
Q carryover (cfs) =	0.00	Gutter slope (ft/ft) =	0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft) =	0.0000
Q bypassed (cfs) =	1.22	Ponding width (ft) =	N/A

LINE 6 / Q = 2.62 / HT = 15 / WID = 15 / N = .013 / L = 75 / JLC = 1

SS#2B-A TO SS#2-B / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	52.53	14.78	51.30	2.14	52.60	14.89	5.45	1.22
UPSTRM	60.21	7.78	59.30	4.08	60.47	14.99	2.75	0.64

Drainage area (ac) =	0.75	Slope of invert (%) =	10.6667
Runoff coefficient =	0.50	Slope energy grade line (%) =	10.4839
Time of conc (min) =	5.00	Critical depth (in) =	7.78
Inlet time (min) =	5.00	Natural ground elev. (ft) =	63.30
Intensity (in/hr) =	7.00	Upstream surcharge (ft) =	0.00
Cumulative C*A =	0.38	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	2.62	Line capacity (cfs) =	21.09
Q catchment (cfs) =	2.62	Inlet length (ft) =	0.00
Q carryover (cfs) =	0.00	Gutter slope (ft/ft) =	0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft) =	0.0000
Q bypassed (cfs) =	2.62	Ponding width (ft) =	N/A

LINE 7 / Q = 3.05 / HT = 15 / WID = 15 / N = .013 / L = 80 / JLC = 1

SS#2B-1 TO SS#2B / DNLN = 1

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	52.53	14.78	51.30	2.50	52.63	14.89	5.45	1.22
UPSTRM	52.71	8.46	52.00	4.28	52.99	14.88	11.55	0.71

Drainage area (ac)	= 0.10	Slope of invert (%)	= 0.8750
Runoff coefficient	= 0.70	Slope energy grade line (%)	= 0.4512
Time of conc (min)	= 6.79	Critical depth (in)	= 8.39
Inlet time (min)	= 5.00	Natural ground elev. (ft)	= 64.80
Intensity (in/hr)	= 6.51	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.47	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 3.05	Line capacity (cfs)	= 6.04
Q catchment (cfs)	= 0.49	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 2.79	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 3.28	Ponding width (ft)	= N/A

LINE 8 / Q = 2.67 / HT = 15 / WID = 15 / N = .013 / L = 135 / JLC = .9

SS#2B-2 - SS#2B-1 / DNLN = 7

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	52.99	11.87	52.00	2.56	53.09	13.35	11.55	1.04
UPSTRM	54.35	7.84	53.70	4.11	54.62	14.98	9.95	0.65

Drainage area (ac)	= 0.00	Slope of invert (%)	= 1.2593
Runoff coefficient	= 0.00	Slope energy grade line (%)	= 1.1291
Time of conc (min)	= 6.12	Critical depth (in)	= 7.84
Inlet time (min)	= 0.00	Natural ground elev. (ft)	= 64.90
Intensity (in/hr)	= 6.68	Upstream surcharge (ft)	= 0.00
Cumulative C*A	= 0.40	Additional Q (cfs)	= 0.00
Q = CA * I (cfs)	= 2.67	Line capacity (cfs)	= 7.25
Q catchment (cfs)	= 0.00	Inlet length (ft)	= 0.00
Q carryover (cfs)	= 2.79	Gutter slope (ft/ft)	= 0.0000
Q captured (cfs)	= 0.00	Cross slope (ft/ft)	= 0.0000
Q bypassed (cfs)	= 2.79	Ponding width (ft)	= N/A

LINE 9 / Q = 2.71 / HT = 15 / WID = 15 / N = .013 / L = 90 / JLC = 1

SS#2B-3-SS#2B-2 / DNLN = 8

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	54.59	10.67	53.70	2.91	54.72	12.65	9.95	0.93
UPSTRM	54.96	7.91	54.30	4.14	55.22	14.98	1.45	0.66

Drainage area (ac) =	0.30	Slope of invert (%) =	0.6667
Runoff coefficient =	0.70	Slope energy grade line (%) =	0.5602
Time of conc (min) =	5.69	Critical depth (in) =	7.91
Inlet time (min) =	5.00	Natural ground elev. (ft) =	57.00
Intensity (in/hr) =	6.80	Upstream surcharge (ft) =	0.00
Cumulative C*A =	0.40	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	2.71	Line capacity (cfs) =	5.27
Q catchment (cfs) =	1.47	Inlet length (ft) =	0.00
Q carryover (cfs) =	1.32	Gutter slope (ft/ft) =	0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft) =	0.0000
Q bypassed (cfs) =	2.79	Ponding width (ft) =	N/A

LINE 10 / Q = 1.32 / HT = 15 / WID = 15 / N = .013 / L = 95 / JLC = 1

SS#2B-4-SS#2B-3 / DNLN = 9

	HGL	DEPTH	INVERT	VEL	EGL	T WID	COVER	AREA
DNSTRM	55.22	11.09	54.30	1.36	55.25	12.90	1.45	0.97
UPSTRM	55.62	5.52	55.00	3.23	55.78	14.47	1.25	0.41

Drainage area (ac) =	0.27	Slope of invert (%) =	0.7368
Runoff coefficient =	0.70	Slope energy grade line (%) =	0.3879
Time of conc (min) =	5.00	Critical depth (in) =	5.52
Inlet time (min) =	5.00	Natural ground elev. (ft) =	57.50
Intensity (in/hr) =	7.00	Upstream surcharge (ft) =	0.00
Cumulative C*A =	0.19	Additional Q (cfs) =	0.00
Q = CA * I (cfs) =	1.32	Line capacity (cfs) =	5.54
Q catchment (cfs) =	1.32	Inlet length (ft) =	0.00
Q carryover (cfs) =	0.00	Gutter slope (ft/ft) =	0.0000
Q captured (cfs) =	0.00	Cross slope (ft/ft) =	0.0000
Q bypassed (cfs) =	1.32	Ponding width (ft) =	N/A

ROADSIDE DITCH DESIGN

PROJECT KM AREA "B"
DATE 9-11-97
PROJ# 7753-6

TC = 10min

I_{10} = 5.5 in/hr
I_2 = 4.0 in/hr

c = 0.4

NAME OF STREET WAREHAMS POND ROAD EAST

FROM STATION (DIRECTION	TO STATION OF FLOW)	LEFT OR RIGHT	A AC	Q_2= CI_2A CFS	CUMULA Q_2 CFS	AVG SLOPE FT/FT	ACTUAL VEL_2 FPS	ALLOW VEL_2 FPS	LINING TYPE	Q_{10}= $CI_{10}A$ CFS	CUM Q_{10} CFS	ACT VEL_{10} FPS	DEPTH OF $FLOW_{10}$ IN.	REMARKS
37+50	34+50	R	0.7	1.2	1.2	0.05	2.6	3.5	GRASS	1.5	1.5	2.8	5.2"	1.5' DEPTH OK
37+50	34+50	L	3.3	5.3	5.3	0.05	4	3.5	EC-3	7.3	7.3	4.5	9"	1.5' DEPTH OK
34+50	33+50	L	—	—	5.3	0.2	13.0	3.5	PAVED	—	7.3	16	6"	8" DEPTH
27+50	33+00	L	1.3	2.1	2.1	0.2	11.0	3.5	PAVED	2.9	2.9	13	4"	6" DEPTH

NOTE: SEE WAREHAMS POND ROAD EXT. PLANS AND CALCS. AES # 7753-4 DATED 7/95 FOR CALCS FOR REMAINDER OF WAREHAMS POND ROAD EAST. REQUIRED DITCH IMPROVEMENTS BEYOND CALCS ON THIS SHEET ARE IN PLACE.

ROADSIDE DITCH DESIGN

PROJECT KINGSMILL-SANDYS FORT
DATE 11/20/97
PROJ# 7753-6

TC = 20 min

I_{10} = 4.0 in/hr
I_2 = 3.0 in/hr

C = 0.3

NAME OF STREET OUTFALL DITCH FROM ROAD "A"

FROM STATION (DIRECTION	TO STATION OF FLOW)	LEFT OR RIGHT	A AC	Q_2= CI_2A CFS	CUMULA Q_2 CFS	AVG SLOPE FT/FT	ACTUAL VEL_2 FPS	ALLOW VEL_2 FPS	LINING TYPE	Q_{10}= $CI_{10}A$ CFS	CUM Q_{10} CFS	ACT VEL_{10} FPS	DEPTH OF $FLOW_{10}$ IN.	REMARKS
OUTFALL (	NATURAL RAVINE)		4.5	4.0	4.0	0.12	3.2	3.5	NATURAL	5.4	5.4	3.5	4.8"	✓
TC - 10 min =0.35 10+42	12+00	L	0.87	1.4	1.4	0.03	2.2	3.5	GRASS	1.8	1.8	2.4	6"	✓
I_2 = 4.5 in/hr	I_{10} = 6.0 in/hr													
TC - 5 min =0.6 10+42	12+00	R	0.17	0.56	0.56	0.03	1.8	3.5	GRASS	0.7	0.7	2.0	4.2"	✓
I_2 = 5.5 in/hr	I_{10} = 7 in/hr													
TC = 10 min 12+00	NAT. RAVINE	—	—	—	2.0	0.015	2.1	3.5	GRASS	—	2.5	2.3	7.2"	✓

* NOTE: INCREASE IN DRAINAGE AREA TO OUTFALL IS 0.2 AC.
APPROX. CHANNEL AS TRAPEZODIAL W/ 5' BOTTOM W/ 2:1 SS, 6' DEEP, n = 0.05

LD-269
Rev. 3-83

CULVERT #1

Project: KINGSMILL AREA "B" #7753-6

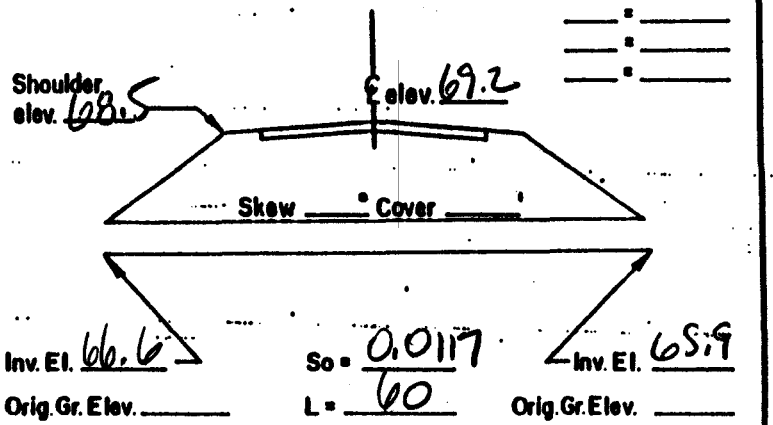
Plan Sheet No. ____ Designer ____ Sheet ____ of ____
Rev. Date: ____ Date ____

HYDROLOGICAL DATA:
D.A. = 0.93 AC.

$t_c = 10$ min
$Q_{10} = CIA$ $C = 0.5$
$I_{10} = 5.5$ in/hr
$Q_{10} = 2.6$ CFS

AHW Controls STATION ____
100 yr. Flood plain ____ elev. ____
Design AHW depth ____ elev. ____
Structures ____ elev. ____

freq. TW elev.



DISCHARGES USED
Q 10 = 2.6 CFS
Q ____ = ____ CFS
Q ____ = ____ CFS
Q ____ = ____ CFS
Q ____ = ____ CFS

RISK ASSESSMENT ADT ____
Detours Available ____, Length ____
Overtopping Stage ____
Flood Plain Management ____
Criteria and Significant Impact ____

240 A

CULVERT TYPE & SIZE	Q	Q/B	HEADWATER COMPUTATIONS: INLET CONT. HW/D	INLET CONT. HW	OUTLET CONTROL Ke	dc	(dc+D)/2	ho	H	LSo	HW	CONT. HW. ELEV.	OUTLET VELOCITY C.M.	OUTLET VELOCITY Smooth	End Treat.	COMMENTS
15" RCP	2.6		0.75	0.94	0.5	0.7	0.975	0.975	0.3	0.7	0.6	0.94				Inlet Controls HW Elev OK ✓

$HW = H + h_o - LS_o$

Design Flood Exceed. Prob. ____ Elev. ____
Overtop Flood Exceed Prob. ____ Elev ____

LD-269
Rev. 3-83

CULVERT #2

Project KINGSMILL
AREA "B" #7753-6

Plan Sheet No. ____ Designer ____
Rev. Date ____ Date ____

Sheet ____ of ____

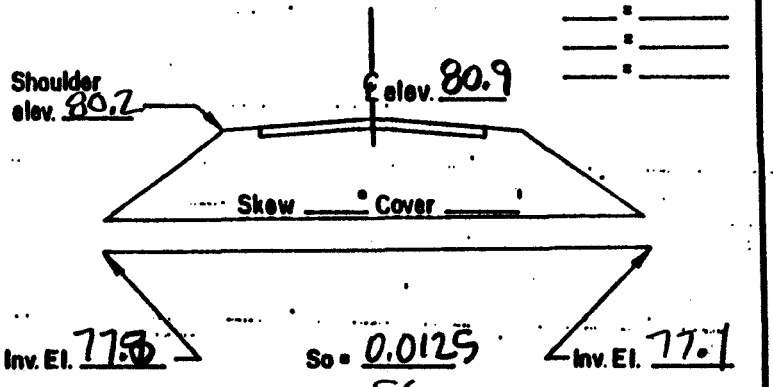
HYDROLOGICAL DATA:
D.A. = 2.5 AC.

T_c = 10 min
C = 0.5
Q_{10} = CIA
I_{10} = 5.5 in/hr
Q_{10} = 6.9 CFS

AHW Controls
100 yr. Flood plain ____ elev. ____
Design AHW depth ____ elev. ____
Structures ____ elev. ____

STATION ____

freq. TWelev.
____ = ____
____ = ____
____ = ____
____ = ____
____ = ____



DISCHARGES USED
Q 10 = 6.9 CFS
Q ____ = ____ CFS
Q ____ = ____ CFS
Q ____ = ____ CFS
Q ____ = ____ CFS
Q ____ = ____ CFS

RISK ASSESSMENT
ADT ____
Detours Available ____, Length ____
Overtopping Stage ____
Flood Plain Management ____
Criteria and Significant Impact ____

240 A

CULVERT TYPE & SIZE	Q	Q/B	HEADWATER COMPUTATIONS: INLET CONT. HW/D	INLET CONT. HW	OUTLET CONTROL Ke	dc	(dc+D)/2	ho	H	LSo	HW	CONT. HW. ELEV.	OUTLET VELOCITY C.M.	OUTLET VELOCITY Smooth	End Treat.	COMMENTS
18" RCP	6.9		1	1.5	0.5	1	1.25	1.25	0.55	0.7	1.1	1.5				INLET CONTROLS HW ELEV OK ✓

HW = H + ho − LSo

Design Flood Exceed. Prob. ____ Elev. ____
Overtop Flood Exceed Prob. ____ Elev ____

Kingsmill - Sandy's Fort

JAMES CITY COUNTY
STORMWATER DETENTION BASIN DESIGN CHECKLIST

I. STORMWATER MANAGEMENT COMPUTATIONS

A. HYDROLOGY - An SCS-based methodology is required for stormwater detention structures with watersheds exceeding 20 acres. Under 20 acres, other generally accepted methodologies such as the modified rational, critical storm are allowable. See Chapter 5, VESCH for more information.

#2	#5	
revise	used C ✓	RCN determinations: predeveloped and ultimate development land use scenarios.
need calcs	—	Time of concentration: predeveloped and ultimate development indicating overland, shallow concentrated, and channel flow components.
✓	✓	Hydrograph generation: predevelopment and ultimate development peak flows for 2-, 10-, and 100-year design storms.

B. RESERVOIR ROUTING

✓		Storage indication routing of ultimate development hydrographs for 2-, 10-, and 100-year design storms. Structure must discharge up to 10-year storm through principal spillway and pass the 100-year storm with 1 foot of freeboard through a combination of the principal and emergency spillways.
NA	NA	Downstream hydrographs at established study points (if required).

C. HYDRAULIC COMPUTATIONS

✓	✓	Elevation-Storage (curve)
NA	NA	Weir/Orifice control - extended detention control.
✓	✓	Weir/Orifice control - riser 2 year control.
✓	✓	Weir/Orifice control - riser 10 year control.
barrel not modeled prop.	✓	Inlet/Outlet (barrel) control - (all storms).
✓	✓	Check for barrel control prior to riser orifice flow to prevent slug flow-water hammer conditions.
✓	✓	Emergency spillway capacity.
✓	✓	Elevation-Discharge (provide supporting calculations and/or design assumptions).

D. MISCELLANEOUS COMPUTATIONS

✓	✓	Water quality volume for permanent pool.
NA	NA	Water quality volume for extended detention with drawdown computations.

99120_KINGSMILL_EAST_GENERAL_FILE - 018

#2	#5	
–	✓	Anti-seep collar design.
NA	NA	Filter diaphragm design (or alternative method of controlling seepage).
NA	NA	Riser structure flotation analysis (factor of safety = 1.2 min.).
NA	"	Danger reach study (if required).
NA	"	100 year floodplain impacts (if required).

II. SOILS INVESTIGATION

–	–	Geotechnical report.
–	–	Minimum boring locations: borrow area; pool area; principal spillway; top of dam near one abutment or emergency spillway if provided.
–	–	Boring logs with Unified Soil Classification, and soil description, with depth to bedrock, seasonal water table.

III. STORMWATER MANAGEMENT PLAN

A. PLAN VIEW 1"=50' or less (40', 30', etc.)

1. GENERAL TERMS

✓	✓	North arrow.
✓	✓	Sealed by P.E.
✓	✓	Existing and proposed contours (1' or 2' interval).
✓	✓	Existing and proposed improvements.
✓	✓	Delineation of permanent/extended detention, 2, 10, and 100-year pools.
–	–	Locations of test borings.
–	✓	Outflow pipe, outlet protection (detail required), and outfall channel.
✓	✓	Emergency spillway level section and outlet channel.
NA	NA	Existing and proposed utility location/protection.

B. MAINTENANCE ITEMS

–	–	Person or organization responsible for maintenance.
–	–	Inspection and maintenance agreement.
✓	✓	Maintenance access from public right-of-way or publicly traveled road.
✓	✓	Maintenance easement, minimum 15 feet around 100-year pool elevation.
NA	NA	Forebay (if proposed).
✓	✓	Temporary erosion and sediment control measures for pond construction.
–	–	Fence, or minimum 6' wide safety shelf for public safety.
✓	✓	Provisions for use as a temporary sediment basin with cleanout schedule and instructions for conversion to permanent facility.

C. PRINCIPAL SPILLWAY PROFILE AND ASSOCIATED DETAILS

1. EXISTING GROUND AND PROPOSED GRADE

✓ ✓ Dam side slopes labeled.
✓ ✓ Top width labeled (per VESCH).
✓ ✓ Removal of unsuitable material under proposed dam (per geotechnical report).

2. CORE TRENCH

✓ ✓ Materials (per construction specifications)
✓ ✓ Bottom width (4' minimum or greater as dictated by geotechnical report)
✓ ✓ Side slopes (1:1 maximum steepness)
✓ ✓ Depth (4' minimum or greater as dictated by the geotechnical report)

3. RISER OR SIMILAR STRUCTURE (DETAIL REQUIRED)

✓ ✓ Materials (as required)
✓ ✓ All structure dimensions
✓ NA Control orifice dimensions
✓ — Trash rack - removable - for each release (detail as required for construction)
✓ ✓ Anti-vortex device (detail as required for construction)
✓ ✓ Proper structure footing
✓ ✓ Maintenance access

4. BARREL

✓ ✓ Materials (ASTM C-361 or as required)
✓ NA Support for concrete barrels-concrete cradles, etc. (detail required)
✓ ✓ Gauge and corrugation size for metal barrels

5. SEEPAGE CONTROL

— — Phreatic line (4:1 slope measured from the intersection of the dam and the principal spillway design high water.

a. ANTI-SEEP COLLAR

✓ — Anti-seep collar (detail required)
— ✓ Size - 15% increase in length of saturation using outside pipe diameter

✓	✓	Spacing and location on barrel (located at least 2' from a pipe joint)

b. FILTER DIAPHRAGM

NA	NA	Design based on latest SCS methods and certified by a professional geotechnical engineer

6. OUTFALL PROTECTION

✓	✓	Size for maximum barrel release (but not greater than 10 year storm)
✓	✓	Cross-section at end of barrel in accordance with receiving channel section
✓	✓	Endsection with footer
—	✓	Outfall dimensions
✓	✓	Slope - 0%
—	✓	Rip-rap size, VDOT Classification
✓	✓	Thickness (1.5 Times Maximum Stone Diameter)
—	—	Approved filter fabric (nonwoven)

7. ELEVATIONS

✓	✓	Top of dam - construction height and settled height (10% settlement)
✓	✓	Crest of emergency spillway
✓	✓	Crest of riser structure
—	✓	Inverts of control release orifice/weirs
✓	✓	Pools: permanent; extended detention; 2-year; 10-year; 100-year; and appropriate safety storms
✓	✓	Appropriate freeboard per SCS National Engineering Handbook, provide minimum one foot of free board above the 100-year design highwater.
✓	✓	Inlet and outlet inverts of pipes (with slopes in %)

D. CROSS SECTION THROUGH DAM ALONG CENTERLINE

✓	✓	Existing ground
✓	✓	Proposed grade
✓	✓	Top of dam - constructed and settled
✓	✓	Location of emergency spillway with side slopes labeled (emergency spillway in cut)
✓	✓	Bottom of core trench (4' minimum)
✓	✓	Location of each soil boring
✓	✓	Barrel location
NA	NA	Existing and proposed utility location/protection

E. EMERGENCY SPILLWAY PROFILE

✓	✓	Existing ground
✓	✓	Inlet, level (control), and outlet sections per SCS
✓	✓	Spillway and crest elevations

F. CONSTRUCTION SPECIFICATIONS

–	–	Sequence of construction (generally by contractor)
		Care of base flow during construction (if necessary)
		Site preparation
		Earthfill: _____ Material, _____ Placement, _____ Compaction, _____ Core trench
		Structural backfill
		Pipe conduits
		Concrete
✓	✓	Rip-Rap and slope protection
–	–	Fencing
✓	✓	Stabilization
–	–	Inspection and Certification by Engineer

COMMENTS:

BY: _____

DATE: _____

sdbdc.txt

GEORGE NICE & SONS, INC.
• Road & Utility Construction
• Site Development

May 7, 1998

Mark Ebersole
JAMES CITY COUNTY CODES COMPLIANCE
P.O. Box JC
Williamsburg, Virginia 23185

Re: SANDY'S FORT
Kingsmill on the James
James City County, Virginia

Mark:

The following represents our proposed construction sequence for the above referenced project.

PHASE I:

1. Preliminary field layout; clearing limits:
   - Limits to be marked with pink ribbon.
   - Ribbon to serve dual purpose of tree protection.
2. Initial E&S measures:
   - Construction entrance.
   - Silt fencing.
   - Remaining E&S measures to be installed as construction sequence dictates.
3. Clear and grub Wareham's Pond Road, Road 'B', and Wet Pond #5 areas.
4. Wet Pond #5 construction:
   - Dam fills to be obtained from road cuts.
   - Construct facility in its entirety including riprap outfall channel, riser structure, etc.
   - Stabilize basin area.
5. Rough grade Road 'B':
   - Topsoil stripping/stockpiling.
   - Cut/fill to subgrade elevations.
6. Utility installations:
   - Storm drainage.
   - Sanitary sewer.
   - Water distribution.
7. Fine grade Road 'B' ROW areas.
8. Aggregate base placement.
9. Paved swale installation.
10. Asphalt paving.
11. Final stabilization.

PHASE II: (work this phase to begin no earlier than completion of step 4. of Phase I)

1. Preliminary field layout; clearing limits:
   - Limits to be marked with pink ribbon.
   - Ribbon to serve dual purpose of tree protection.
2. Initial E&S measures:
   - Silt fencing.

143 Skimino Road • Williamsburg, Virginia 23188

- Remaining E&S measures to be installed as construction sequence dictates.

3. Clear and grub Roads 'A' & 'C' and Wet Pond #2 areas.
4. Wet Pond #2 construction:
   - Dam fills to be obtained from road cuts.
   - Construct facility in its entirety including riprap outfall channel, riser structure, etc.
   - Stabilize basin area's.
5. Rough grade roads:
   - Topsoil stripping/stockpiling.
   - Cut/fill to subgrade elevations.
6. Utility installations:
   - Storm drainage.
   - Sanitary sewer.
   - Water distribution.
7. Fine grade road ROW areas.
8. Aggregate base placement.
9. Paved swale installation.
10. Asphalt paving.
11. Final stabilization.

If you should require additional information concerning the above referenced project, please feel free to call me at 565-2885.

Sincerely,

GEORGE NICE & SONS, INC.

S. Ray Nice, P.E.
Vice President

SRN/kch

Cc: Tom Dunn; Busch Properties, Inc.
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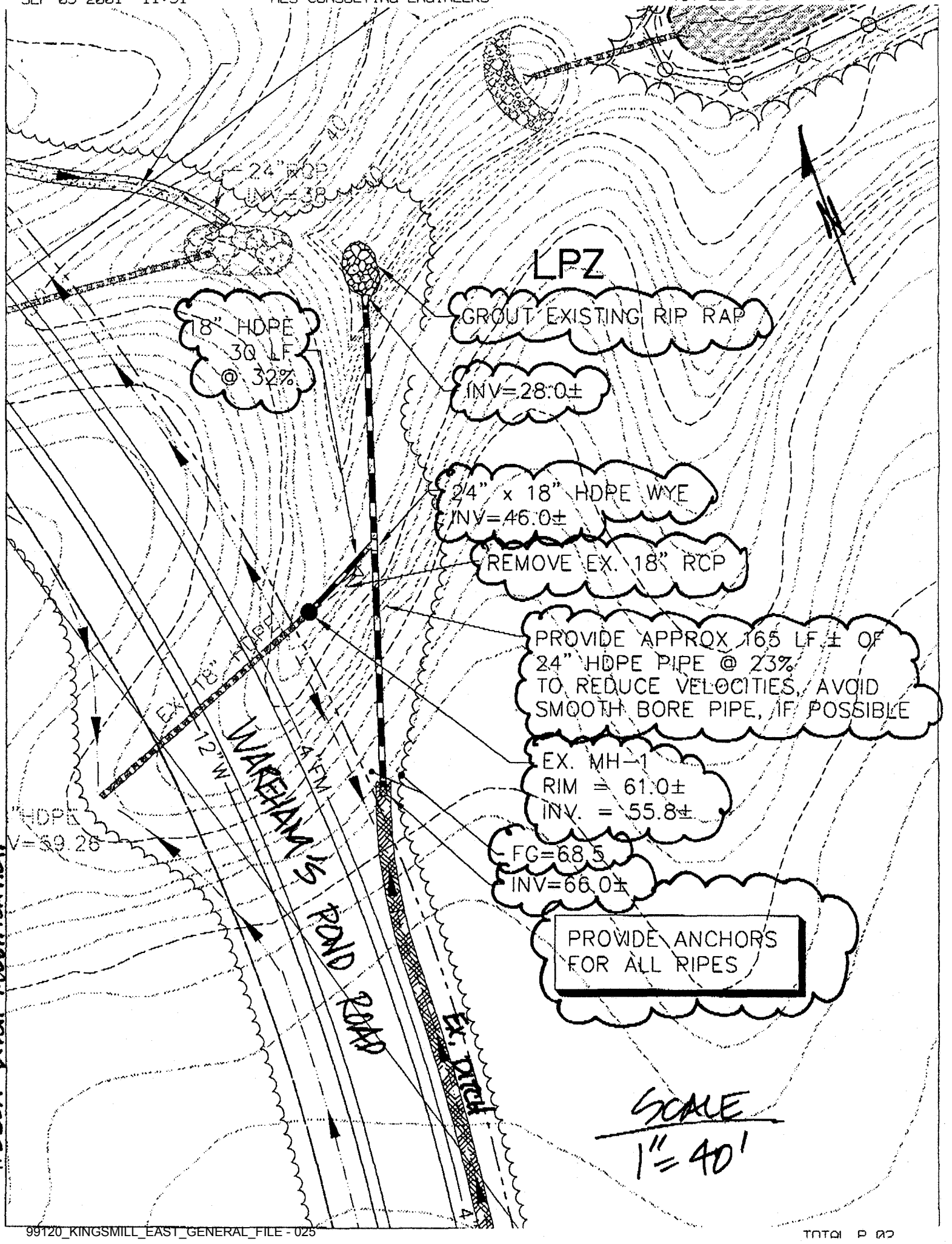

77536A DITCH MODIFICATION

Fran Geissler

From: Fran Geissler
Sent: Friday, June 15, 2012 10:50 AM
To: 'Douglas L. Haller P. E. (dhaller26@cox.net)'
Cc: Pat Menichino
Subject: RE: Kingsmill Master Stormwater

Doug: We checked Scott's list against our files and the only BMPs that we know about that aren't on his list are JR011 (Kingsmill Golf Course) and JR051 (Kingsmill Laundry Bldg). Maybe these aren't the responsibility of the KCSA? Anyway, I continue to be embarrassed for dropping the ball...!

From: Fran Geissler
Sent: Thursday, June 14, 2012 9:48 AM
To: Douglas L. Haller P. E. (dhaller26@cox.net)
Cc: Pat Menichino
Subject: FW: Kingsmill Master Stormwater

Doug: I am embarrassed to forward this to you at this late date but you should know that I dropped the ball. We are also double checking this list with our data – will send you something tomorrow.

This oversight is truly the result of too much on our plates and I'm really sorry for the delay.

Fran Geissler
Stormwater Director

James City County
VIRGINIA
Jamestown 1607

General Services Department
5320 Palmer Lane, Suite 2A
Williamsburg, VA 23188
P: 757-259-1440
NEW EMAIL: fran.geissler@jamescitycountyva.gov
jamescitycountyva.gov

From: Scott Thomas
Sent: Friday, April 06, 2012 11:22 AM
To: Fran Geissler
Cc: William Cain; Barry Moses
Subject: Kingsmill Master Stormwater

Fran – as we discussed a bit on our trip, we got a master stormwater management plan (MSWMP) for Kingsmill as part of the submittals for the Pool Amenities plan. Our Division reviewed and commented on that plan. The comments are pretty major and I am not certain that the effort to try and master plan the existing Kingsmill will proceed. However, I am passing along some of the materials that came out of that review as it's good inventory information for your Division to have and to pass along to Doug Haller as you had mentioned he had some questions about the I/M agreements

General

The submittal shows 20 structural stormwater management facilities which serves a treatment (drainage) area of about 1725 acres within Kingsmill. The review of this proposed MSWMP was a very difficult exercise, not only in reviewing the content of what was submitted but the need to research back through 20 years of file history, some in records and some active.

BMP List

I've attached to overall BMP inventory list provided by the consultant (file: BMP_list)

Declaration of Covenants, Inspection-Maintenance Agreements

I researched all the DOC-I/M agreements that I could find both in the scanned BMP asbuilt/construction files and in our active project files. There are 14 that exist as follows:

Anheuser Busch Brewery (Transportation Advantage project) DB 27/Page 59
Armistead Point Instrument # 040003727 dated February 4, 2004
James Longstreet Drainage Improvements, 112 and 116 James Longstreet, Instrument # 120005851 dated March 16, 2012
Kingsmill Village North Quarter DB 732/Page 986
Kingsmill Pool Amenities Instrument # 120002567 dated January 31, 2012
Mounts Bay Recreation Center Improvements SP-26-08 Instrument # 080021746
Southall Recreation Center SP-27-08 Instrument # 100012503 dated June 21, 2010
Kingsmill Resorts Operations Building Instrument # 000017116 dated September 11, 2000
Kingsmill Marina SP-90-11 Instrument # 110022796 dated November 1, 2011
Spencers Grant Deed book 714/Page 471
Southall Road Channel Maintenance & Slope Stabilization Instrument # 120005209 dated March 5, 2012
Kingsmill Laundry Facility SP-116-00 Instrument # 000022313 dated November 29, 2000
Warehams Pond Recreation Center Instrument # 010022878 dated December 11, 2001
Warehams Pond Road Extension SP-111-94 Instrument # 070033180 dated December 5, 2007

BMP 10-point Worksheets

Certain plans of development within Kingsmill have individual BMP worksheets. They include:

Warehams Pond Road Extension
Community Center
Kingsmill Village, North Quarter
Armistead Point
Spencers Grant

Please note that County e-mail addresses have changed.
Please use: Scott.Thomas@jamescitycountyva.gov ***for all future correspondence***

Scott J. Thomas
Director of Engineering and Resource Protection

James City County VIRGINIA Jamestown 1607

101-E Mounts Bay Road
Williamsburg, VA 23185
P: 757-253-6639
F: 757-259-4032

99120_KINGSMILL_EAST_GENERAL_FILE - 027

– we have A FILE

= ERP

= not marked in Scott's D/B

M.A.?
A B ?

	BMP ID	TYPE OF BMP	JCC POINTS	SITE AREA (Ac)	DA SERVED (Ac)	IMP ARE (Ac)	WQ VOLUME (Ac-ft)	REC STREAM	FLOOD CONTROL	Construction Date	Plan No	
	CC 002	F2 Dry ED with Forebay	9	68	73.3	14	0.634	UT of Halfway Creek	Yes	10/22/1991	SP-62-91	– NO M.A.
	CC 006	C2 Infiltration Trench 1.0	10	1.14	1		0.02		No	6/1/1993		– NO M.A.
	CC 015	A3 Wet Pond	10	23.18	3.95	3	0.126	UT of Halfway Creek	Yes	12/28/2000	SP-121-99	
NOTHING	CC 016	A3 Wet ED Pond	10	17.04	44.9	17	1.43	UT of Halfway Creek	Yes	1/31/2000	SP-13-00	
	CC 017	F2 Dry ED with Forebay	6	34	40.95	12.86	0.153	UT of Halfway Creek	Yes	7/1/1995	S-70-94	
	CC 018	F2 Dry ED with Forebay	4	9.7	18.7	0	0.94	UT of Halfway Creek	Yes		SP-21-98	
	CC 019	Private Lake Kingsmill Pond	8	22.88	900							– NO M.A.
NOTHING	CC 040	ZI Manuf BMP Systems	6	5.37	4.25	1.87			No	5/1/2009	SP-26-08	
	CC 041	ZI Manuf BMP Systems	6	3.56	3.56				No	5/1/2099	SP-27-08	– NO A.B.
	JR 008	Private Lake Warehams Pond	8	75	425							NO A.B
NOTHING	JR 009	A2 Wet Pond	8	23.4	25							
NOTHING	JR 010	A2 Wet Pond	8	25.8	30							
	JR 012	A2 Wet Pond Moody Pond	8		90							NO A.B
NOTHING	JR 039	D1 Bioretention	10	8.96	0.256	1			No	6/1/1999	SP-87-99	
	JR 044	C2 Infiltration Trench 1.0	10	0.6	0.31	0.16	0.0135		Yes	12/1/2000	SP-91-00	
	JR 046	A2 Wet Pond	10	61.375	25.7	9.8	4.17	UT of James River	Yes	6/1/1998	S-85-97	NO - M.A
	JR 047	A2 Wet Pond	8	61.375	16.92	8.5	0.88	UT of James River	Yes	6/1/1998	S-85-97	NO - M.A
	JR 049	A2 Wet Pond	6	7.9	12.7	8.1	0.6369	UT of James River	Yes	6/1/1999	SP-92-98	
	JR 050	F1 Timber Walls	6	10.89	7.27	0.96	0.1817	UT of James River	Yes	1/1/1999	SP-17-99	
	JR 067	C2 Infiltration Trench 1.0	10		1						SP-116-03	NO. A.B

HAS MA

– JR051 Kingsmill Laundry Bldg
JR011 Kingsmill Golf Course 3

CC 006
~~017~~
~~019~~
~~041~~
JR 011
~~044~~
~~046~~
047
049
050

99120
99142

~~008~~
060
~~067~~
~~012~~
044
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TABLE 2

WORKSHEET FOR BMP POINT SYSTEM

A. STRUCTURAL BMP POINT ALLOCATION Previously Developed

Total Site Area 2924 Ac
Areas Developed After Chesapeak Bay Act Regulations Implementation Date 506 Ac
Total Site Area Grandfather From Requirements of the Chesepeak Bay Act 2418 Ac

	BMP	BMP POINTS		FRACTION OF SITE SERVED BY BMP				WEIGHTED BMP POINTS
CC 002	F2 Dry ED with Forebay	9	x	73.3	/	506	=	1.30
CC 006	C2 Infiltration Trench 1.0	10	x	1	/	506	=	0.02
CC 015	A3 Wet Pond	10	x	3.95	/	506	=	0.08
CC 016	A3 Wet ED Pond	10	x	44.9	/	506	=	0.89
CC 017	F2 Dry ED with Forebay	6	x	40.95	/	506	=	0.49
CC 018	F2 Dry ED with Forebay	4	x	18.7	/	506	=	0.15
CC 019	Private Lake Kingsmill Pond	8	x	900	/	506	=	14.23
CC 040	ZI Manufactured BMP Systems	6	x	4.25	/	506	=	0.05
CC 041	ZI Manufactured BMP Systems	6	x	3.56	/	506	=	0.04
JR 008	Private Lake Warehams Pond	8	x	425	/	506	=	6.72
JR 009	A2 Wet Pond	8	x	25	/	506	=	0.40
JR 010	A2 Wet Pond	8	x.	30	/	506	=	0.47
JR 012	A2 Wet Pond Moody Pond	8	x	90	/	506	=	1.42
JR 039	D1 Bioretention	10	x	0.256	/	506	=	0.01
JR 044	C2 Infiltration Trench 1.0	10	x	0.31	/	506	=	0.01
JR 046	A2 Wet Pond	10	x	25.7	/	506	=	0.51
JR 047	A2 Wet Pond	8	x	16.92	/	506	=	0.27
JR 049	A2 Wet Pond	6	x	12.7	/	506	=	0.15
JR 050	F1 Timber Walls	6	x	7.27	/	506	=	0.09
JR 067	C2 Infiltration Trench 1.0	10	x	1	/	506	=	0.02
				TOTAL WEIGHTED STRUCTURAL BMP POINTS:				27.30