CALCULATIONS FOR RETENTION/DETENTION LAKE

10 YEAR PREDEVELOPMENT

TOTAL DRAINAGE AREA = 105.8 AC.
SOIL SERIES = APPLING
HYDROLOGIC CLASSIFICATION = B
AVE. SLOPES = 5 % (MODERATE SLOPE CLASSIFICATION)
SLOPE FACTOR = 1.05
10 YR. RAINFALL = 5.6 IN.
WATERSHED ZONING : R-40W
EXISTING USE: FARMLAND, PASTURE, WOODS
AVE. SCS CURVE NUMBER = 65
Q10 PREDEVELOPED = 95 CFS x 1.05 = 99.8 CFS

STAGE-STORAGE COMPUTATIONS FOR LAKE

BASS,NIXON AND KENNEDY, INC.
CONSULTING ENGINEERS
7416 CHAPEL HILL ROAD
RALEIGH, N.C. 27606

JOB NAME : LANGSTON
JOB NUMBER : 88003
DATE : 05/09/90
OPERATOR : KRBELL

ELEVATION	AREA	STORAGE	STAGE
395	0	0	0
396	26907	13453.5	1
398	44473	84833.5	3
400	57736	187043	5
402	70119	314898	7
404	88027	467044	9
406	95344	644415	11
408	109985	849744	13
409	119547	964510	14

KS : 13851.3974609375 B : 1.60711

10 YEAR POST DEVELOPMENT

TOTAL DRAINAGE AREA = 105.8 AC.
SOIL SERIES = APPLING
HYDROLOGIC CLASSIFICATION = B
AVE. SLOPES = 5 % (MODERATE SLOPE CLASSIFICATION)
SLOPE FACTOR = 1.05
10 YR. RAINFALL = 5.6 IN.
WATERSHED ZONING: R-40W AND R-8CU (AVE. 3 UNITS/AC. FOR R-8CU)
AVE. SCS CURVE NUMBER = 70
Q10 = 130 CFS x 1.05 = 136.5 CFS
15 MIN. CONCENTRATION
ROUTING DATA:
MAX. STAGE = 406.43 MSL
MAX. OUTFLOW = 110.88 CFS AC. FT.
MAX. STORAGE = 0.91 AC. FT.

BASS,NIXON AND KENNEDY, INC.
CONSULTING ENGINEERS
7416 CHAPEL HILL ROAD
RALEIGH, N.C. 27607

JOB NAME : LANGSTON
JOB NUMBER : 88003
DATE : 05/09/90
OPERATOR : KRBELL

DRAINAGE AREA : 105.8 AC CN : 70 DESIGN STORM : 10
STORAGE CONSTANTS KS : 13851.3974 B : 1.6071

OUTLET INFORMATION

TYPE	SIZE	COEFFICIENT	INVERT
RISER	48IN.	3.30	404.50FT.
BARREL	1 - 36IN.	0.60	400.00FT.
WEIR	30.00FT.	3.00	407.00FT.

TIME MIN	INFLOW CFS	OUTFLOW CFS	STORAGE AC FT	W.S. ELEVATION FT
0.000	0.00	0.00	0.00	404.50
0.750	0.84	0.17	0.00	404.53
1.500	3.34	0.72	0.00	404.57
2.250	7.44	1.81	0.01	404.62
3.000	13.03	3.53	0.02	404.69
3.750	19.99	5.95	0.04	404.77
4.500	28.13	9.10	0.06	404.86
5.250	37.27	12.99	0.09	404.96
6.000	47.16	17.61	0.13	405.06
6.750	57.57	22.90	0.17	405.17
7.500	68.25	28.80	0.22	405.28
8.250	78.93	35.22	0.27	405.40
9.000	89.34	42.06	0.32	405.51
9.750	99.23	49.20	0.38	405.62
10.500	108.37	56.51	0.44	405.73
11.250	116.51	63.86	0.51	405.83
12.000	123.47	71.10	0.57	405.93
12.750	129.06	78.09	0.63	406.02
13.500	133.16	84.69	0.68	406.11
14.250	135.66	90.76	0.74	406.19
15.000	136.50 MAX.	96.19	0.78	406.25
15.750	135.66	100.85	0.82	406.31
16.500	133.16	104.66	0.86	406.35
17.250	129.06	107.53	0.88	406.38
18.000	123.47	109.40	0.90	406.41
18.750	116.51	110.24	0.91	406.42
19.500	115.72	110.88	0.91	406.43
20.250	107.79	110.52	0.91	406.42
21.000	100.40	109.33	0.90	406.41
21.750	93.52	107.47	0.88	406.39

50 YEAR POST DEVELOPMENT

TOTAL DRAINAGE AREA = 105.8 AC.
SOIL SERIES = APPLING
HYDROLOGIC CLASSIFICATION = B
AVE. SLOPES = 5 % (MODERATE SLOPE CLASSIFICATION)
SLOPE FACTOR = 1.05
50 YEAR RAINFALL = 7.2 IN.
WATERSHED ZONING: R-40W AND R-8CU (AVE. 3 UNITS/AC. FOR R-8CU)
AVE. SCS CURVE NUMBER = 70
Q10 = 210 CFS x 1.05 = 220.5 CFS
15 MIN. CONCENTRATION
ROUTING DATA:
MAX. STAGE = 407.76 MSL
MAX. OUTFLOW = 144.64 CFS
MAX. STORAGE = 2.12 AC. FT.

BASS,NIXON AND KENNEDY, INC.
CONSULTING ENGINEERS
7416 CHAPEL HILL ROAD
RALEIGH, N.C. 27607

JOB NAME : LANGSTON
JOB NUMBER : 88003
DATE : 05/09/90
OPERATOR : KRBELL

DRAINAGE AREA : 105.8 AC CN : 70 DESIGN STORM : 50
STORAGE CONSTANTS KS : 13851.3974 B : 1.6071

OUTLET INFORMATION

TYPE	SIZE	COEFFICIENT	INVERT
RISER	48IN.	3.30	404.50FT.
BARREL	1 - 36IN.	0.60	400.00FT.
WEIR	30.00FT.	3.00	407.00FT.

TIME MIN	INFLOW CFS	OUTFLOW CFS	STORAGE AC FT	W.S. ELEVATION FT
0.000	0.00	0.00	0.00	404.50
0.750	1.36	0.26	0.00	404.53
1.500	5.40	1.13	0.01	404.59
2.250	12.02	2.84	0.02	404.67
3.000	21.06	5.54	0.04	404.76
3.750	32.29	9.34	0.06	404.87
4.500	45.45	14.31	0.10	404.99
5.250	60.20	20.45	0.15	405.12
6.000	76.18	27.74	0.21	405.26
6.750	93.00	36.10	0.27	405.41
7.500	110.25	45.44	0.35	405.56
8.250	127.53	55.61	0.44	405.72
9.000	144.32	66.47	0.53	405.87
9.750	160.30	77.81	0.62	406.02
10.500	175.35	89.44	0.72	406.17
11.250	188.21	101.14	0.83	406.31
12.000	199.44	112.70	0.93	406.45
12.750	208.48	76.63	1.03	406.57
13.500	215.10	77.95	1.17	406.75
14.250	219.14	79.20	1.32	406.92
15.000	220.50 MAX	82.57	1.46	407.08
15.750	219.14	91.81	1.60	407.24
16.500	215.10	102.63	1.73	407.37
17.250	208.48	113.23	1.84	407.48
18.000	199.44	122.55	1.93	407.57
18.750	188.21	130.01	2.00	407.64
19.500	186.93	136.69	2.06	407.69
20.250	174.12	141.19	2.09	407.73
21.000	162.18	143.75	2.12	407.75
21.750	151.07	144.64 MAX.	2.12	407.76 MAX.
22.500	140.71	144.16	2.12	407.76
23.250	131.07	142.56	2.11	407.74
24.000	122.09	140.08	2.08	407.72
24.750	113.72	136.91	2.06	407.70

100 YEAR POST DEVELOPMENT

TOTAL DRAINAGE AERA = 105.8 AC.
SOIL SERIES = APPLING
HYDROLOGIC CLASSIFICATION = B
AVE. SLOPES = 5 % (MODERATE SLOPE CLASSIFICATION)
SLOPE FACTOR = 1.05
100 YR. RAINFALL = 8.1 IN.
WATERSHED ZONING: R-40W AND R-8CU (AVE. 3 UNITS/AC. FOR R-8CU)
AVE. SCS CURVE NUMBER = 70
Q100 = 250 CFS x 1.05 = 262.5 CFS
15 MIN. CONCENTRATION
ROUTING DATA:
MAX. STAGE = 408.07 MSL
MAX. OUTFLOW = 187.31 CFS
MAX. STORAGE = 2.46 AC. FT.

BASS,NIXON AND KENNEDY, INC.
CONSULTING ENGINEERS
7416 CHAPEL HILL ROAD
RALEIGH, N.C. 27607

JOB NAME : LANGSTON
JOB NUMBER : 88003
DATE : 05/09/90
OPERATOR : KRBELL

DRAINAGE AREA : 105.8 AC CN : 70 DESIGN STORM : 100
STORAGE CONSTANTS KS : 13851.3974 B : 1.6071

OUTLET INFORMATION

TYPE	SIZE	COEFFICIENT	INVERT
RISER	48IN.	3.30	404.50FT.
BARREL	1 - 36IN.	0.60	400.00FT.
WEIR	30.00FT.	3.00	407.00FT.

TIME MIN	INFLOW CFS	OUTFLOW CFS	STORAGE AC FT	W.S. ELEVATION FT
0.000	0.00	0.00	0.00	404.50
0.750	1.62	0.31	0.00	404.54
1.500	6.42	1.33	0.01	404.60
2.250	14.31	3.34	0.02	404.69
3.000	25.07	6.52	0.04	404.79
3.750	38.44	11.01	0.08	404.91
4.500	54.10	16.87	0.12	405.05
5.250	71.66	24.12	0.18	405.20
6.000	90.69	32.72	0.25	405.35
6.750	110.72	42.60	0.33	405.52
7.500	131.25	53.63	0.42	405.69
8.250	151.78	65.66	0.52	405.86
9.000	171.81	78.49	0.63	406.03
9.750	190.84	91.91	0.75	406.20
10.500	208.40	105.68	0.87	406.37
11.250	224.06	76.27	0.99	406.53
12.000	237.43	77.81	1.16	406.73
12.750	248.19	79.33	1.33	406.94
13.500	256.08	85.53	1.51	407.14
14.250	260.88	99.43	1.69	407.33
15.000	262.50	115.64	1.86	407.50
15.750	260.88	131.89	2.01	407.65
16.500	256.08	146.83	2.14	407.78
17.250	248.19	159.62	2.25	407.88
18.000	237.43	169.75	2.33	407.95
18.750	224.06	176.96	2.38	408.00
19.500	222.53	183.11	2.43	408.04
20.250	207.28	186.40	2.45	408.07
21.000	193.08	187.31	2.46	408.07
21.750	179.84	186.29	2.45	408.07
22.500	167.52	183.73	2.43	408.05

BASS, NIXON & KENNEDY, INC., CONSULTING ENGINEERS
919/851-4422/7416 CHAPEL HILL ROAD, RALEIGH, N. C. 27607

NO.	REVISIONS	DATE

DRAWN BY: DJC
DATE: 5/10/90
JOB NO: 88003
SCALE: 1"=1'

LAKE CALCULATIONS

PHASE ONE
OZELLE LANGSTON SUBDIVISION
SWIFT CREEK TOWNSHIP, WAKE COUNTY, N. C.
DEVELOPER: COMMUNITY PROPERTIES, INC.

SHEET 12 OF 15

Job Number _____ Book Number _____