SUBCATCHMENT 1 **Portion of site undetained toward RR Pond**

PEAK= .32 CFS @ 12.17 HRS, VOLUME= .03 AF

PERCENT	CN		
100.00	77	Residential 1/8 Acre lots (A)	SCS TR-20 METHOD
		TOTAL AREA = .49 AC	TYPE III 24-HOUR
			RAINFALL= 2.6 IN
			SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**only segment**	13.5
Grass: Dense n=.24 L=100' P2=2.6 in s=.03 '/'		

SUBCATCHMENT 2 **Entrance Section**

PEAK= .15 CFS @ 12.55 HRS, VOLUME= .03 AF

PERCENT	CN		
100.00	61	Residential 1/4 acre lots	SCS TR-20 METHOD
		TOTAL AREA = 1.95 AC	TYPE III 24-HOUR
			RAINFALL= 2.6 IN
			SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**start**	22.8
Grass: Dense n=.24 L=100' P2=2.6 in s=.008 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**middle**	.7
Unpaved Kv=16.1345 L=100' s=.02 '/' V=2.28 fps		
SHALLOW CONCENTRATED/UPLAND FLOW	**end**	1.6
Paved Kv=20.3282 L=190' s=.01 '/' V=2.03 fps		

	Total Length= 390 ft Total Tc=	25.1

SUBCATCHMENT 3 **End of Cul-de-sac**

PEAK= .09 CFS @ 12.54 HRS, VOLUME= .02 AF

PERCENT	CN		
14.91	72	Residential 1/3 acre lots (B)	SCS TR-20 METHOD
85.09	57	Residential 1/3 acre lots (A)	TYPE III 24-HOUR
100.00	59	TOTAL AREA = 1.64 AC	RAINFALL= 2.6 IN
			SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**start**	20.6
Grass: Dense n=.24 L=120' P2=2.6 in s=.015 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**middle**	.1
Unpaved Kv=16.1345 L=25' s=.12 '/' V=5.59 fps		
SHALLOW CONCENTRATED/UPLAND FLOW	**end**	.4
Paved Kv=20.3282 L=60' s=.0167 '/' V=2.63 fps		

	Total Length= 205 ft Total Tc=	21.1

SUBCATCHMENT 4 **Area Between Lassell & Mitton**

PEAK= 2.02 CFS @ 12.58 HRS, VOLUME= .29 AF

PERCENT	CN		
34.61	77	Residential 1/8 acre lots (A)	SCS TR-20 METHOD
65.39	85	Residential 1/8 acre lots (B)	TYPE III 24-HOUR
100.00	82	TOTAL AREA = 3.51 AC	RAINFALL= 2.6 IN
			SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
CURVE NUMBER (LAG) METHOD	**Only Segment**	43.9
L=970' s=.0044 '/'		

SUBCATCHMENT 5 **Area To Lassell Street**

PEAK= 1.37 CFS @ 12.35 HRS, VOLUME= .16 AF

PERCENT	CN		
100.00	85	Residential 1/8 acre lots (B)	SCS TR-20 METHOD
		TOTAL AREA = 1.62 AC	TYPE III 24-HOUR
			RAINFALL= 2.6 IN
			SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
CURVE NUMBER (LAG) METHOD	**Only segment**	28.1
L=630' s=.0044 '/'		

SUBCATCHMENT 6 **Church and area between Lassell & Westgate**

PEAK= .68 CFS @ 12.57 HRS, VOLUME= .10 AF

PERCENT	CN		
36.29	98	Impervious surfaces	SCS TR-20 METHOD
31.85	61	Lawn good (B)	TYPE III 24-HOUR
31.86	48	Woods/brush/grass good (B)	RAINFALL= 2.6 IN
100.00	70	TOTAL AREA = 2.81 AC	SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
CURVE NUMBER (LAG) METHOD	**Only segment**	37.2
L=550' s=.005 '/'		

SUBCATCHMENT 7 **Portion of Subject site @ end of Mitton**

PEAK= 0.00 CFS @ 12.26 HRS, VOLUME= 0.00 AF

PERCENT	CN		
100.00	61	Residential 1/4 Acre lots (A)	SCS TR-20 METHOD
		TOTAL AREA = .01 AC	TYPE III 24-HOUR
			RAINFALL= 2.6 IN
			SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
DIRECT ENTRY	Start	6.0

REACH 1 **Combine discharge to RR pond**

Qin = .84 CFS @ 13.90 HRS, VOLUME= .30 AF
Qout= .83 CFS @ 13.90 HRS, VOLUME= .30 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.2	.2	.85
.3	.5	2.72
.5	.9	5.47
.6	1.4	10.35
.9	2.2	19.09
1.2	3.2	33.04
1.5	4.5	51.35

1.5' x 1.5' CHANNEL
SIDE SLOPE= 1 '/'
n= .035
LENGTH= 10 FT
SLOPE= .1 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .15 FT
PEAK VELOCITY= 3.4 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 7 **Dummy to combine flows - end of Mitton**

Qin = 2.02 CFS @ 12.58 HRS, VOLUME= .29 AF
Qout= 2.02 CFS @ 12.59 HRS, VOLUME= .29 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.5	3.0	87.09
1.0	7.0	298.75
1.5	12.0	636.92
2.2	20.0	1286.60
3.0	33.0	2541.93
4.0	52.0	4692.13
5.0	75.0	7669.97

5' x 5' CHANNEL
SIDE SLOPE= .5 '/'
n= .009
LENGTH= 10 FT
SLOPE= .1 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .01 FT
PEAK VELOCITY= 29.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 10 **Dummy for total site discharge**

Qin = 2.43 CFS @ 12.69 HRS, VOLUME= .58 AF
Qout= 2.43 CFS @ 12.69 HRS, VOLUME= .58 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.5	3.0	1752.69
1.0	7.0	6012.23
1.5	12.0	12817.77
2.2	20.0	25892.37
3.0	33.0	51155.28
4.0	52.0	94427.24
5.0	75.0	154355.22

5' x 5' CHANNEL
SIDE SLOPE= .5 '/'
n= .001
LENGTH= 20 FT
SLOPE= .5 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY=584.2 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

POND 1 **Drop Structure**

Qin = .79 CFS @ 13.93 HRS, VOLUME= .27 AF
Qout= .80 CFS @ 13.90 HRS, VOLUME= .27 AF, ATTEN= 0%, LAG= 0.0 MIN

ELEVATION (FT)	CON.AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)	WET.AREA (SF)
26.5	13	0	0	13
33.0	13	82	82	94

STOR-IND METHOD
PEAK STORAGE = 6 CF
PEAK ELEVATION= 26.9 FT
FLOOD ELEVATION= 33.0 FT
START ELEVATION= 26.5 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= .2 MIN (.27 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	26.5'	**18" CULVERT**

n=.012 L=225' S=.0043'/' Ke=.5 Cc=.9 Cd=.6

POND 2 **CB#2 (lower end of island)**

Qin = .15 CFS @ 12.55 HRS, VOLUME= .03 AF
Qout= .18 CFS @ 12.59 HRS, VOLUME= .03 AF, ATTEN= 0%, LAG= 2.8 MIN

ELEVATION (FT)	CON.AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)	WET.AREA (SF)
27.8	13	0	0	13
33.0	13	65	65	78
34.0	5184	1817	1883	5251

STOR-IND METHOD
PEAK STORAGE = 22 CF
PEAK ELEVATION= 29.5 FT
FLOOD ELEVATION= 34.0 FT
START ELEVATION= 27.8 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 7.5 MIN (.03 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	27.8'	**12" CULVERT**

n=.012 L=20' S=.065'/' Ke=.5 Cc=.9 Cd=.6 TW=29.5'

POND 3 **CB#3 (high end of island)**

Qin = 2.02 CFS @ 12.43 HRS, VOLUME= .28 AF
Qout= 2.05 CFS @ 12.42 HRS, VOLUME= .28 AF, ATTEN= 0%, LAG= 0.0 MIN

ELEVATION (FT)	CON.AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)	WET.AREA (SF)
29.8	13	0	0	13
35.0	13	65	65	78
35.1	40	2	68	105

STOR-IND METHOD
PEAK STORAGE = 33 CF
PEAK ELEVATION= 32.4 FT
FLOOD ELEVATION= 35.1 FT
START ELEVATION= 29.8 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 1.4 MIN (.28 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	29.8'	**15" CULVERT**

n=.012 L=20' S=.065'/' Ke=.5 Cc=.9 Cd=.6 TW=32.3'

POND 4 **CB#1 (at Mitton St)**

Qin = 2.02 CFS @ 12.58 HRS, VOLUME= .29 AF
Qout= 2.02 CFS @ 12.59 HRS, VOLUME= .28 AF, ATTEN= 0%, LAG= .1 MIN

ELEVATION (FT)	CON.AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)	WET.AREA (SF)
29.0	13	0	0	13
33.5	13	57	57	69
33.6	50	3	59	107
33.7	100	7	67	157

STOR-IND METHOD
PEAK STORAGE = 10 CF
PEAK ELEVATION= 29.8 FT
FLOOD ELEVATION= 33.7 FT
START ELEVATION= 29.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= .2 MIN (.28 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	29.0'	15" CULVERT

n=.012 L=85' S=.0059'/' Ke=.5 Cc=.9 Cd=.6

POND 5 **CB#5 (end of Lassell St)**

Qin = 1.37 CFS @ 12.35 HRS, VOLUME= .16 AF
Qout= 1.39 CFS @ 12.34 HRS, VOLUME= .16 AF, ATTEN= 0%, LAG= 0.0 MIN

ELEVATION (FT)	CON.AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)	WET.AREA (SF)
34.8	13	0	0	13
39.8	13	63	63	75
40.0	200	18	80	263

STOR-IND METHOD
PEAK STORAGE = 22 CF
PEAK ELEVATION= 36.5 FT
FLOOD ELEVATION= 40.0 FT
START ELEVATION= 34.8 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 1.5 MIN (.15 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	34.8'	12" CULVERT

n=.012 L=133' S=.0045'/' Ke=.5 Cc=.9 Cd=.6 TW=36.3'

POND 6 **CB#4 (Ponded area behind Blake)**

Qin = 1.92 CFS @ 12.43 HRS, VOLUME= .26 AF
Qout= 1.94 CFS @ 12.42 HRS, VOLUME= .26 AF, ATTEN= 0%, LAG= 0.0 MIN

ELEVATION (FT)	CON.AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)	WET.AREA (SF)
32.0	13	0	0	13
38.0	13	75	75	88
40.0	8000	5553	5629	8082
41.0	10000	8981	14610	10110

STOR-IND METHOD
PEAK STORAGE = 10 CF
PEAK ELEVATION= 32.8 FT
FLOOD ELEVATION= 41.0 FT
START ELEVATION= 32.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= .2 MIN (.26 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	32.0'	12" CULVERT

n=.012 L=280' S=.0072'/' Ke=.5 Cc=.9 Cd=.6

POND 22 Lower detention structure

Qin = .99 CFS @ 12.80 HRS, VOLUME= .29 AF
Qout= .79 CFS @ 13.93 HRS, VOLUME= .27 AF, ATTEN= 20%, LAG= 67.6 MIN

ELEVATION (FT)	CON.AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)	WET.AREA (SF)
26.5	2400	0	0	2400
30.5	2400	9600	9600	3095

STOR-IND METHOD
PEAK STORAGE = 2280 CF
PEAK ELEVATION= 27.5 FT
FLOOD ELEVATION= 30.5 FT
START ELEVATION= 26.5 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 52.9 MIN (.27 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	29.0'	70 DEG V-NOTCH WEIR
			Q=2.52 TAN(Theta/2) H^2.5
2	P	26.5'	6" CULVERT
			n=.012 L=1' S=.001'/' Ke=.5 Cc=.9 Cd=.6 TW=26.9'
3	P	28.0'	6" CULVERT
			n=.012 L=1' S=.002'/' Ke=.5 Cc=.9 Cd=.6 TW=26.9'

POND 33 Upper detention structure

Qin = 2.05 CFS @ 12.42 HRS, VOLUME= .28 AF
Qout= .88 CFS @ 13.01 HRS, VOLUME= .26 AF, ATTEN= 57%, LAG= 35.7 MIN

ELEVATION (FT)	CON.AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)	WET.AREA (SF)
28.5	3200	0	0	3200
32.5	3200	12800	12800	4002

STOR-IND METHOD
PEAK STORAGE = 3549 CF
PEAK ELEVATION= 29.6 FT
FLOOD ELEVATION= 32.5 FT
START ELEVATION= 28.5 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 63 MIN (.26 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	28.5'	6" CULVERT
			n=.012 L=80' S=.025'/' Ke=.5 Cc=.9 Cd=.6 TW=27.5'
2	P	29.6'	12" CULVERT
			n=.012 L=80' S=.0388'/' Ke=.5 Cc=.9 Cd=.6 TW=27.5'

SUBCATCHMENT 1 **Portion of site undetained toward RR Pond**

PEAK= .96 CFS @ 12.14 HRS, VOLUME= .08 AF

PERCENT	CN		
100.00	77	Residential 1/8 Acre lots (A)	SCS TR-20 METHOD
		TOTAL AREA = .49 AC	TYPE III 24-HOUR
			RAINFALL= 4.5 IN
			SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**only segment**	13.5
Grass: Dense n=.24 L=100' P2=2.6 in s=.03 '/'		

SUBCATCHMENT 2 **Entrance Section**

PEAK= 1.30 CFS @ 12.36 HRS, VOLUME= .16 AF

PERCENT	CN		
100.00	61	Residential 1/4 acre lots	SCS TR-20 METHOD
		TOTAL AREA = 1.95 AC	TYPE III 24-HOUR
			RAINFALL= 4.5 IN
			SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**start**	22.8
Grass: Dense n=.24 L=100' P2=2.6 in s=.008 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**middle**	.7
Unpaved Kv=16.1345 L=100' s=.02 '/' V=2.28 fps		
SHALLOW CONCENTRATED/UPLAND FLOW	**end**	1.6
Paved Kv=20.3282 L=190' s=.01 '/' V=2.03 fps		
	Total Length= 390 ft Total Tc=	25.1

SUBCATCHMENT 3 **End of Cul-de-sac**

PEAK= 1.00 CFS @ 12.31 HRS, VOLUME= .12 AF

PERCENT	CN		
14.91	72	Residential 1/3 acre lots (B)	SCS TR-20 METHOD
85.09	57	Residential 1/3 acre lots (A)	TYPE III 24-HOUR
100.00	59	TOTAL AREA = 1.64 AC	RAINFALL= 4.5 IN
			SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**start**	20.6
Grass: Dense n=.24 L=120' P2=2.6 in s=.015 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**middle**	.1
Unpaved Kv=16.1345 L=25' s=.12 '/' V=5.59 fps		
SHALLOW CONCENTRATED/UPLAND FLOW	**end**	.4
Paved Kv=20.3282 L=60' s=.0167 '/' V=2.63 fps		
	Total Length= 205 ft Total Tc=	21.1

SUBCATCHMENT 4 **Area Between Lassell & Mitton**

PEAK= 5.07 CFS @ 12.56 HRS, VOLUME= .70 AF

PERCENT	CN		
34.61	77	Residential 1/8 acre lots (A)	SCS TR-20 METHOD
65.39	85	Residential 1/8 acre lots (B)	TYPE III 24-HOUR
100.00	82	TOTAL AREA = 3.51 AC	RAINFALL= 4.5 IN
			SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
CURVE NUMBER (LAG) METHOD	**Only Segment**	43.9
L=970' s=.0044 '/'		

SUBCATCHMENT 5 **Area To Lassell Street**

PEAK= 3.19 CFS @ 12.34 HRS, VOLUME= .36 AF

PERCENT	CN		
100.00	85	Residential 1/8 acre lots (B)	SCS TR-20 METHOD
		TOTAL AREA = 1.62 AC	TYPE III 24-HOUR
			RAINFALL= 4.5 IN
			SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
CURVE NUMBER (LAG) METHOD	**Only segment**	28.1
L=630' s=.0044 '/'		

SUBCATCHMENT 6 **Church and area between Lassell & Westgate**

PEAK= 2.71 CFS @ 12.50 HRS, VOLUME= .36 AF

PERCENT	CN		
36.29	98	Impervious surfaces	SCS TR-20 METHOD
31.85	61	Lawn good (B)	TYPE III 24-HOUR
31.86	48	Woods/brush/grass good (B)	RAINFALL= 4.5 IN
100.00	70	TOTAL AREA = 2.81 AC	SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
CURVE NUMBER (LAG) METHOD	**Only segment**	37.2
L=550' s=.005 '/'		

SUBCATCHMENT 7 **Portion of Subject site @ end of Mitton**

PEAK= .01 CFS @ 12.08 HRS, VOLUME= 0.00 AF

PERCENT	CN		
100.00	61	Residential 1/4 Acre lots (A)	SCS TR-20 METHOD
		TOTAL AREA = .01 AC	TYPE III 24-HOUR
			RAINFALL= 4.5 IN
			SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
DIRECT ENTRY	Start	6.0

REACH 1 **Combine discharge to RR pond**

Qin = 4.68 CFS @ 13.01 HRS, VOLUME= .88 AF
Qout= 4.68 CFS @ 13.01 HRS, VOLUME= .88 AF, ATTEN= 0%, LAG= .1 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.2	.2	.85
.3	.5	2.72
.5	.9	5.47
.6	1.4	10.35
.9	2.2	19.09
1.2	3.2	33.04
1.5	4.5	51.35

1.5' x 1.5' CHANNEL
SIDE SLOPE= 1 '/'
n= .035
LENGTH= 10 FT
SLOPE= .1 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .41 FT
PEAK VELOCITY= 6.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 7 **Dummy to combine flows - end of Mitton**

Qin = 5.07 CFS @ 12.55 HRS, VOLUME= .70 AF
Qout= 5.07 CFS @ 12.56 HRS, VOLUME= .70 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.5	3.0	87.09
1.0	7.0	298.75
1.5	12.0	636.92
2.2	20.0	1286.60
3.0	33.0	2541.93
4.0	52.0	4692.13
5.0	75.0	7669.97

5' x 5' CHANNEL
SIDE SLOPE= .5 '/'
n= .009
LENGTH= 10 FT
SLOPE= .1 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .03 FT
PEAK VELOCITY= 29.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 10 **Dummy for total site discharge**

Qin = 8.10 CFS @ 12.85 HRS, VOLUME= 1.59 AF
Qout= 8.10 CFS @ 12.85 HRS, VOLUME= 1.59 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.5	3.0	1752.69
1.0	7.0	6012.23
1.5	12.0	12817.77
2.2	20.0	25892.37
3.0	33.0	51155.28
4.0	52.0	94427.24
5.0	75.0	154355.22

5' x 5' CHANNEL
SIDE SLOPE= .5 '/'
n= .001
LENGTH= 20 FT
SLOPE= .5 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY=584.2 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

POND 1 **Drop Structure**

Qin = 4.55 CFS @ 13.02 HRS, VOLUME= .80 AF
Qout= 4.54 CFS @ 13.02 HRS, VOLUME= .80 AF, ATTEN= 0%, LAG= .2 MIN

ELEVATION (FT)	CON.AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)	WET.AREA (SF)
26.5	13	0	0	13
33.0	13	82	82	94

STOR-IND METHOD
PEAK STORAGE = 15 CF
PEAK ELEVATION= 27.7 FT
FLOOD ELEVATION= 33.0 FT
START ELEVATION= 26.5 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= .1 MIN (.79 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	26.5'	**18" CULVERT** n=.012 L=225' S=.0043'/' Ke=.5 Cc=.9 Cd=.6

POND 2 **CB#2 (lower end of island)**

Qin = 1.30 CFS @ 12.36 HRS, VOLUME= .16 AF
Qout= 1.32 CFS @ 12.34 HRS, VOLUME= .16 AF, ATTEN= 0%, LAG= 0.0 MIN

ELEVATION (FT)	CON.AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)	WET.AREA (SF)
27.8	13	0	0	13
33.0	13	65	65	78
34.0	5184	1817	1883	5251

STOR-IND METHOD
PEAK STORAGE = 23 CF
PEAK ELEVATION= 29.6 FT
FLOOD ELEVATION= 34.0 FT
START ELEVATION= 27.8 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 1.5 MIN (.15 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	27.8'	**12" CULVERT** n=.012 L=20' S=.065'/' Ke=.5 Cc=.9 Cd=.6 TW=29.5'

POND 3 **CB#3 (high end of island)**

Qin = 6.53 CFS @ 12.42 HRS, VOLUME= .83 AF
Qout= 6.67 CFS @ 12.41 HRS, VOLUME= .83 AF, ATTEN= 0%, LAG= 0.0 MIN

ELEVATION (FT)	CON.AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)	WET.AREA (SF)
29.8	13	0	0	13
35.0	13	65	65	78
35.1	40	2	68	105

STOR-IND METHOD
PEAK STORAGE = 42 CF
PEAK ELEVATION= 33.2 FT
FLOOD ELEVATION= 35.1 FT
START ELEVATION= 29.8 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= .6 MIN (.83 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	29.8'	**15" CULVERT** n=.012 L=20' S=.065'/' Ke=.5 Cc=.9 Cd=.6 TW=32.3'

POND 4 **CB#1 (at Mitton St)**

Qin = 5.07 CFS @ 12.56 HRS, VOLUME= .70 AF
Qout= 5.07 CFS @ 12.56 HRS, VOLUME= .70 AF, ATTEN= 0%, LAG= 0.0 MIN

ELEVATION (FT)	CON.AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)	WET.AREA (SF)
29.0	13	0	0	13
33.5	13	57	57	69
33.6	50	3	59	107
33.7	100	7	67	157

STOR-IND METHOD
PEAK STORAGE = 18 CF
PEAK ELEVATION= 30.4 FT
FLOOD ELEVATION= 33.7 FT
START ELEVATION= 29.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= .1 MIN (.7 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	29.0'	**15" CULVERT** n=.012 L=85' S=.0059'/' Ke=.5 Cc=.9 Cd=.6

POND 5 **CB#5 (end of Lassell St)**

Qin = 3.19 CFS @ 12.34 HRS, VOLUME= .36 AF
Qout= 3.24 CFS @ 12.33 HRS, VOLUME= .36 AF, ATTEN= 0%, LAG= 0.0 MIN

ELEVATION (FT)	CON.AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)	WET.AREA (SF)
34.8	13	0	0	13
39.8	13	63	63	75
40.0	200	18	80	263

STOR-IND METHOD
PEAK STORAGE = 35 CF
PEAK ELEVATION= 37.6 FT
FLOOD ELEVATION= 40.0 FT
START ELEVATION= 34.8 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= .8 MIN (.36 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	34.8'	**12" CULVERT** n=.012 L=133' S=.0045'/' Ke=.5 Cc=.9 Cd=.6 TW=36.3'

POND 6 **CB#4 (Ponded area behind Blake)**

Qin = 5.63 CFS @ 12.41 HRS, VOLUME= .71 AF
Qout= 5.63 CFS @ 12.45 HRS, VOLUME= .71 AF, ATTEN= 0%, LAG= 2.2 MIN

ELEVATION (FT)	CON.AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)	WET.AREA (SF)
32.0	13	0	0	13
38.0	13	75	75	88
40.0	8000	5553	5629	8082
41.0	10000	8981	14610	10110

STOR-IND METHOD
PEAK STORAGE = 94 CF
PEAK ELEVATION= 38.0 FT
FLOOD ELEVATION= 41.0 FT
START ELEVATION= 32.0 FT
SPAN= 10-20 HRS, dt=.1 HRS

#	ROUTE	INVERT	OUTLET DEVICES
1	P	32.0'	**12" CULVERT** n=.012 L=280' S=.0072'/' Ke=.5 Cc=.9 Cd=.6

POND 22 **Lower detention structure**

Qin = 5.55 CFS @ 12.60 HRS, VOLUME= .87 AF
Qout= 4.55 CFS @ 13.02 HRS, VOLUME= .80 AF, ATTEN= 18%, LAG= 25.0 MIN

ELEVATION (FT)	CON.AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)	WET.AREA (SF)
26.5	2400	0	0	2400
30.5	2400	9600	9600	3095

STOR-IND METHOD
PEAK STORAGE = 8313 CF
PEAK ELEVATION= 30.0 FT
FLOOD ELEVATION= 30.5 FT
START ELEVATION= 26.5 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 52.6 MIN (.8 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	29.0'	**70 DEG V-NOTCH WEIR** Q=2.52 TAN(Theta/2) H^2.5
2	P	26.5'	**6" CULVERT** n=.012 L=1' S=.001'/' Ke=.5 Cc=.9 Cd=.6 TW=27.7'
3	P	28.0'	**6" CULVERT** n=.012 L=1' S=.002'/' Ke=.5 Cc=.9 Cd=.6 TW=27.7'

POND 33 **Upper detention structure**

Qin = 6.67 CFS @ 12.41 HRS, VOLUME= .83 AF
Qout= 4.67 CFS @ 12.70 HRS, VOLUME= .71 AF, ATTEN= 30%, LAG= 17.4 MIN

ELEVATION (FT)	CON.AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)	WET.AREA (SF)
28.5	3200	0	0	3200
32.5	3200	12800	12800	4002

STOR-IND METHOD
PEAK STORAGE = 9357 CF
PEAK ELEVATION= 31.4 FT
FLOOD ELEVATION= 32.5 FT
START ELEVATION= 28.5 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 68.7 MIN (.71 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	28.5'	**6" CULVERT** n=.012 L=80' S=.025'/' Ke=.5 Cc=.9 Cd=.6 TW=30'
2	P	29.6'	**12" CULVERT** n=.012 L=80' S=.0388'/' Ke=.5 Cc=.9 Cd=.6 TW=30'

SUBCATCHMENT 1 **Portion of site undetained toward RR Pond**

PEAK= 1.30 CFS @ 12.14 HRS, VOLUME= .11 AF

PERCENT	CN		
100.00	77	Residential 1/8 Acre lots (A)	SCS TR-20 METHOD
		TOTAL AREA = .49 AC	TYPE III 24-HOUR
			RAINFALL= 5.4 IN
			SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**only segment**	13.5
Grass: Dense n=.24 L=100' P2=2.6 in s=.03 '/'		

SUBCATCHMENT 2 **Entrance Section**

PEAK= 2.09 CFS @ 12.34 HRS, VOLUME= .24 AF

PERCENT	CN		
100.00	61	Residential 1/4 acre lots	SCS TR-20 METHOD
		TOTAL AREA = 1.95 AC	TYPE III 24-HOUR
			RAINFALL= 5.4 IN
			SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**start**	22.8
Grass: Dense n=.24 L=100' P2=2.6 in s=.008 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**middle**	.7
Unpaved Kv=16.1345 L=100' s=.02 '/' V=2.28 fps		
SHALLOW CONCENTRATED/UPLAND FLOW	**end**	1.6
Paved Kv=20.3282 L=190' s=.01 '/' V=2.03 fps		
	Total Length= 390 ft Total Tc=	25.1

SUBCATCHMENT 3 **End of Cul-de-sac**

PEAK= 1.66 CFS @ 12.29 HRS, VOLUME= .18 AF

PERCENT	CN		
14.91	72	Residential 1/3 acre lots (B)	SCS TR-20 METHOD
85.09	57	Residential 1/3 acre lots (A)	TYPE III 24-HOUR
100.00	59	TOTAL AREA = 1.64 AC	RAINFALL= 5.4 IN
			SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	**start**	20.6
Grass: Dense n=.24 L=120' P2=2.6 in s=.015 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	**middle**	.1
Unpaved Kv=16.1345 L=25' s=.12 '/' V=5.59 fps		
SHALLOW CONCENTRATED/UPLAND FLOW	**end**	.4
Paved Kv=20.3282 L=60' s=.0167 '/' V=2.63 fps		
	Total Length= 205 ft Total Tc=	21.1

SUBCATCHMENT 4 **Area Between Lassell & Mitton**

PEAK= 6.61 CFS @ 12.55 HRS, VOLUME= .91 AF

PERCENT	CN		
34.61	77	Residential 1/8 acre lots (A)	SCS TR-20 METHOD
65.39	85	Residential 1/8 acre lots (B)	TYPE III 24-HOUR
100.00	82	TOTAL AREA = 3.51 AC	RAINFALL= 5.4 IN
			SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
CURVE NUMBER (LAG) METHOD	**Only Segment**	43.9
L=970' s=.0044 '/'		

SUBCATCHMENT 5 **Area To Lassell Street**

PEAK= 4.08 CFS @ 12.33 HRS, VOLUME= .45 AF

PERCENT	CN		
100.00	85	Residential 1/8 acre lots (B)	SCS TR-20 METHOD
		TOTAL AREA = 1.62 AC	TYPE III 24-HOUR
			RAINFALL= 5.4 IN
			SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
CURVE NUMBER (LAG) METHOD	**Only segment**	28.1
L=630' s=.0044 '/'		

SUBCATCHMENT 6 **Church and area between Lassell & Westgate**

PEAK= 3.86 CFS @ 12.49 HRS, VOLUME= .50 AF

PERCENT	CN		
36.29	98	Impervious surfaces	SCS TR-20 METHOD
31.85	61	Lawn good (B)	TYPE III 24-HOUR
31.86	48	Woods/brush/grass good (B)	RAINFALL= 5.4 IN
100.00	70	TOTAL AREA = 2.81 AC	SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
CURVE NUMBER (LAG) METHOD	**Only segment**	37.2
L=550' s=.005 '/'		

SUBCATCHMENT 7 **Portion of Subject site @ end of Mitton**

PEAK= .02 CFS @ 12.06 HRS, VOLUME= 0.00 AF

PERCENT	CN		
100.00	61	Residential 1/4 Acre lots (A)	SCS TR-20 METHOD
		TOTAL AREA = .01 AC	TYPE III 24-HOUR
			RAINFALL= 5.4 IN
			SPAN= 10-20 HRS, dt=.1 HRS

Method	Comment	Tc (min)
DIRECT ENTRY	**Start**	6.0

REACH 1 **Combine discharge to RR pond**

Qin = 6.67 CFS @ 12.93 HRS, VOLUME= 1.26 AF
Qout= 6.67 CFS @ 12.92 HRS, VOLUME= 1.26 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.2	.2	.85
.3	.5	2.72
.5	.9	5.47
.6	1.4	10.35
.9	2.2	19.09
1.2	3.2	33.04
1.5	4.5	51.35

1.5' x 1.5' CHANNEL
SIDE SLOPE= 1 '/'
n= .035
LENGTH= 10 FT
SLOPE= .1 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .50 FT
PEAK VELOCITY= 6.7 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 7 **Dummy to combine flows - end of Mitton**

Qin = 6.62 CFS @ 12.54 HRS, VOLUME= .91 AF
Qout= 6.62 CFS @ 12.55 HRS, VOLUME= .91 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.5	3.0	87.09
1.0	7.0	298.75
1.5	12.0	636.92
2.2	20.0	1286.60
3.0	33.0	2541.93
4.0	52.0	4692.13
5.0	75.0	7669.97

5' x 5' CHANNEL
SIDE SLOPE= .5 '/'
n= .009
LENGTH= 10 FT
SLOPE= .1 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .04 FT
PEAK VELOCITY= 29.0 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

REACH 10 **Dummy for total site discharge**

Qin = 12.14 CFS @ 12.73 HRS, VOLUME= 2.17 AF
Qout= 12.14 CFS @ 12.73 HRS, VOLUME= 2.17 AF, ATTEN= 0%, LAG= 0.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.5	3.0	1752.69
1.0	7.0	6012.23
1.5	12.0	12817.77
2.2	20.0	25892.37
3.0	33.0	51155.28
4.0	52.0	94427.24
5.0	75.0	154355.22

5' x 5' CHANNEL
SIDE SLOPE= .5 '/'
n= .001
LENGTH= 20 FT
SLOPE= .5 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= 0.00 FT
PEAK VELOCITY=584.2 FPS
TRAVEL TIME = 0.0 MIN
SPAN= 10-20 HRS, dt=.1 HRS

POND 1 **Drop Structure**

Qin = 6.47 CFS @ 12.95 HRS, VOLUME= 1.15 AF
Qout= 6.47 CFS @ 12.94 HRS, VOLUME= 1.15 AF, ATTEN= 0%, LAG= 0.0 MIN

ELEVATION (FT)	CON.AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)	WET.AREA (SF)
26.5	13	0	0	13
33.0	13	82	82	94

STOR-IND METHOD
PEAK STORAGE = 19 CF
PEAK ELEVATION= 28.0 FT
FLOOD ELEVATION= 33.0 FT
START ELEVATION= 26.5 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= .1 MIN (1.13 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	26.5'	**18" CULVERT** n=.012 L=225' S=.0043'/' Ke=.5 Cc=.9 Cd=.6

POND 2 **CB#2 (lower end of island)**

Qin = 2.09 CFS @ 12.34 HRS, VOLUME= .24 AF
Qout= 2.09 CFS @ 12.34 HRS, VOLUME= .24 AF, ATTEN= 0%, LAG= 0.0 MIN

ELEVATION (FT)	CON.AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)	WET.AREA (SF)
27.8	13	0	0	13
33.0	13	65	65	78
34.0	5184	1817	1883	5251

STOR-IND METHOD
PEAK STORAGE = 24 CF
PEAK ELEVATION= 29.7 FT
FLOOD ELEVATION= 34.0 FT
START ELEVATION= 27.8 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 1 MIN (.24 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	27.8'	**12" CULVERT** n=.012 L=20' S=.065'/' Ke=.5 Cc=.9 Cd=.6 TW=29.5'

POND 3 **CB#3 (high end of island)**

Qin = 7.29 CFS @ 12.32 HRS, VOLUME= 1.13 AF
Qout= 7.28 CFS @ 12.33 HRS, VOLUME= 1.13 AF, ATTEN= 0%, LAG= .4 MIN

ELEVATION (FT)	CON.AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)	WET.AREA (SF)
29.8	13	0	0	13
35.0	13	65	65	78
35.1	40	2	68	105

STOR-IND METHOD
PEAK STORAGE = 44 CF
PEAK ELEVATION= 33.3 FT
FLOOD ELEVATION= 35.1 FT
START ELEVATION= 29.8 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= .4 MIN (1.13 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	29.8'	**15" CULVERT** n=.012 L=20' S=.065'/' Ke=.5 Cc=.9 Cd=.6 TW=32.3'

POND 4 **CB#1 (at Mitton St)**

Qin = 6.61 CFS @ 12.55 HRS, VOLUME= .91 AF
Qout= 6.62 CFS @ 12.55 HRS, VOLUME= .91 AF, ATTEN= 0%, LAG= 0.0 MIN

ELEVATION (FT)	CON.AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)	WET.AREA (SF)
29.0	13	0	0	13
33.5	13	57	57	69
33.6	50	3	59	107
33.7	100	7	67	157

STOR-IND METHOD
PEAK STORAGE = 27 CF
PEAK ELEVATION= 31.2 FT
FLOOD ELEVATION= 33.7 FT
START ELEVATION= 29.0 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= .1 MIN (.91 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	29.0'	**15" CULVERT** n=.012 L=85' S=.0059'/' Ke=.5 Cc=.9 Cd=.6

POND 5 **CB#5 (end of Lassell St)**

Qin = 4.08 CFS @ 12.33 HRS, VOLUME= .45 AF
Qout= 4.12 CFS @ 12.33 HRS, VOLUME= .45 AF, ATTEN= 0%, LAG= 0.0 MIN

ELEVATION (FT)	CON.AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)	WET.AREA (SF)
34.8	13	0	0	13
39.8	13	63	63	75
40.0	200	18	80	263

STOR-IND METHOD
PEAK STORAGE = 45 CF
PEAK ELEVATION= 38.4 FT
FLOOD ELEVATION= 40.0 FT
START ELEVATION= 34.8 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= .6 MIN (.45 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	34.8'	**12" CULVERT** n=.012 L=133' S=.0045'/' Ke=.5 Cc=.9 Cd=.6 TW=36.3'

POND 6 **CB#4 (Ponded area behind Blake)**

Qin = 7.62 CFS @ 12.41 HRS, VOLUME= .95 AF
Qout= 5.87 CFS @ 12.66 HRS, VOLUME= .95 AF, ATTEN= 23%, LAG= 14.9 MIN

ELEVATION (FT)	CON.AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)	WET.AREA (SF)
32.0	13	0	0	13
38.0	13	75	75	88
40.0	8000	5553	5629	8082
41.0	10000	8981	14610	10110

STOR-IND METHOD
PEAK STORAGE = 2032 CF
PEAK ELEVATION= 38.7 FT
FLOOD ELEVATION= 41.0 FT
START ELEVATION= 32.0 FT
SPAN= 10-20 HRS, dt=.1 HRS

#	ROUTE	INVERT	OUTLET DEVICES
1	P	32.0'	**12" CULVERT** n=.012 L=280' S=.0072'/' Ke=.5 Cc=.9 Cd=.6

POND 22 **Lower detention structure**

Qin = 6.73 CFS @ 12.55 HRS, VOLUME= 1.23 AF
Qout= 6.47 CFS @ 12.95 HRS, VOLUME= 1.15 AF, ATTEN= 4%, LAG= 24.0 MIN

ELEVATION (FT)	CON.AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)	WET.AREA (SF)
26.5	2400	0	0	2400
30.5	2400	9600	9600	3095

STOR-IND METHOD
PEAK STORAGE = 9090 CF
PEAK ELEVATION= 30.3 FT
FLOOD ELEVATION= 30.5 FT
START ELEVATION= 26.5 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 44.7 MIN (1.15 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	29.0'	**70 DEG V-NOTCH WEIR**
			Q=2.52 TAN(Theta/2) H^2.5
2	P	26.5'	**6" CULVERT**
			n=.012 L=1' S=.001'/' Ke=.5 Cc=.9 Cd=.6 TW=28'
3	P	28.0'	**6" CULVERT**
			n=.012 L=1' S=.002'/' Ke=.5 Cc=.9 Cd=.6 TW=28'

POND 33 **Upper detention structure**

Qin = 7.28 CFS @ 12.33 HRS, VOLUME= 1.13 AF
Qout= 5.80 CFS @ 12.97 HRS, VOLUME= 1.00 AF, ATTEN= 20%, LAG= 38.4 MIN

ELEVATION (FT)	CON.AREA (SF)	INC.STOR (CF)	CUM.STOR (CF)	WET.AREA (SF)
28.5	3200	0	0	3200
32.5	3200	12800	12800	4002

STOR-IND METHOD
PEAK STORAGE = 12748 CF
PEAK ELEVATION= 32.5 FT
FLOOD ELEVATION= 32.5 FT
START ELEVATION= 28.5 FT
SPAN= 10-20 HRS, dt=.1 HRS
Tdet= 63.3 MIN (1 AF)

#	ROUTE	INVERT	OUTLET DEVICES
1	P	28.5'	**6" CULVERT**
			n=.012 L=80' S=.025'/' Ke=.5 Cc=.9 Cd=.6 TW=30.3'
2	P	29.6'	**12" CULVERT**
			n=.012 L=80' S=.0388'/' Ke=.5 Cc=.9 Cd=.6 TW=30.3'

Planning & Urban Development

Joseph E. Gray Jr.
Director

CITY OF PORTLAND

August 26, 1996

Michael Scarks
Neptune Properties
120 Exchange St.
Portland, ME 04101

RE: Fore River Place

Dear Mike:

The Planning Board will be reviewing the Fore River Place PRUD again at a workshop on September 10. At their last workshop, the Board requested the following:

- a connection between Mitton and Lassell Streets;
- a traffic study;
- additional information on the stormwater management plan with a presentation by your engineer;
- additional information on the sewer system you propose; and
- building elevations (We have elevations of one building. Do you have any others?).

Staff also requested the following information:

- resolution on the pavement material;
- requests for waivers of width, sidewalk on Mitton and Lassell Streets;
- condo docs information on responsibility of rubbish removal;
- easement language for snow plow turnaround; and
- reciprocal easements between the lots.

We will need this information two weeks before the workshop so the City staff will have a chance to review the submission prior to the meeting. I will be on vacation from August 29-September 6, so anything that comes in after the two week period should be forwarded directly to Alex Jaegerman. You may also wish to talk to Steve Bushey directly.

Please call if you have any questions.

Sincerely,

Sarah Hopkins
Senior Planner

cc.: Alex Jaegerman, Chief Planner
Stephen Bushey, DH
Bill Bray, Public Works
Tony Lombardo, Public Works
Natalie Burns, Associate Corporation Counsel

DeLUCA HOFFMAN ASSOCIATES, INC.
CONSULTING ENGINEERS

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- ROADWAY DESIGN
- ENVIRONMENTAL ENGINEERING
- TRAFFIC STUDIES AND MANAGEMENT
- PERMITTING
- AIRPORT ENGINEERING
- SITE PLANNING
- CONSTRUCTION ADMINISTRATION

September 9, 1996

Ms. Sarah Hopkins
Planning Department, 4th Floor
City of Portland
389 Congress Street
Portland, Maine 04101

Subject: "Fore River Place"
Engineering Review Letter #3

Dear Ms. Hopkins:

I have completed a third review of submission materials for the proposed "Fore River Place" Subdivision. These materials include the following:

- Letter with supporting materials dated September 2, 1996, from Neptune Properties, Inc. to Alex Jaegerman.
- Revised development plans outlined as follows:
  - Lot Configuration Plan - Last Revised 8/22/96
  - Site Development Plan - Last Revised 8/22/96
  - Soils and Test Pits - Last Revised 8/22/96
  - Drainage & Erosion Control - Last Revised 8/22/96
  - Profiles and Construction Details - Last Revised 8/22/96
  - Island Details
  - Landscaping and Lighting Plan

Based on my review of the plans, I provide the following comments:

Sheet 1

1. A proposed street name should be identified.
2. Identify common areas and areas that are the responsibility of lot owners.
3. Surveyors stamp for perimeter boundary and closure for all lots.
4. Reference the site plan for all road data. Should the site plan also have a signature block for recording?
5. Dimensions, metes and bounds for snow plow easements should be provided.
6. Is common open space behind lots 17 and 18 to be accessed by all? Will an easement be required?

DeLUCA HOFFMAN ASSOCIATES, INC.
CONSULTING ENGINEERS

If you have any questions regarding these comments, please call this office.

Sincerely,

DeLUCA-HOFFMAN ASSOCIATES, INC.

Stephen R. Bushey, P.E.
Project Engineer

SRB/dsd/JN1350.02/hop9-9

c: Tony Lombardo, Public Works
Alex Jaegerman, Planning Department

DeLUCA HOFFMAN ASSOCIATES, INC
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- PERMITTING
- AIRPORT ENGINEERING
- SITE PLANNING
- CONSTRUCTION ADMINISTRATION

September 4, 1996

Ms. Sarah Hopkins
Planning Department, 4th Floor
City of Portland
389 Congress Street
Portland, Maine 04101

Subject: "Fore River Place"
Engineering Review Letter #2

Dear Ms. Hopkins:

DeLuca-Hoffman Associates, Inc. has completed a review of revised submission materials for the proposed "Fore River Place" subdivision. These materials include the following:

- Surface Water Runoff Report dated August 5, 1996 by Civil Consultants.

- Site Development Plans outlined as follows:
  - Lot Configuration Plan dated August 6, 1996.
  - Site Development Plan dated August 6, 1996.
  - Soils and Test Pits dated August 6, 1996.
  - Drainage and Erosion Control dated August 6, 1996.
  - Profiles and Construction Details dated August 6, 1996.

This office has also reviewed a letter from the Boston and Maine Corporation dated August 20, 1996 which discusses the impounded water adjacent the railroad tracks. Based on our review of the above materials the following comments and concerns are provided.

Stormwater Management

General Comments

1. The Boston and Maine Corporation letter indicates a significant concern for the project's stormwater flows and impacts to the existing railroad embankment. Based on this letter, the Applicant's engineer should provide a written response and plan of action to address the railroad's concerns. This may include a new culvert installation across the railroad.

2. Individual lot grading plans, finish floor elevations and drainage patterns are not provided as requested.

3. The plan continues to show a landscape berm and drainage swale along the northern boundary. The plan lacks sufficient detail to determine the impacts and drainage effects on the abutting properties.

The Applicant should provide a statement regarding the drainage swale capacity. It is also our understanding that the Planning Department has concerns about the use of the landscaped berm.

4. The Developer should provide a statement regarding any agreements with Central Maine Power Co. to locate a drainage system within the 40' CMP easement.

Specifics

1. Considering the importance of the railroad's concerns regarding stormwater management, it is critical that the stormwater management analysis and proposed mitigation measures be as well defined as possible and accurate as possible. The selection of curve number data including A soils for Subcatchment 4 should be explained. The Medium Intensity Soil Survey for the area shows only Deerfield and Belgrade soil types, both of which are Hydrologic Soil Group B soils.

2. The computations indicate a ponding area adjacent the Blake property is both the Predevelopment and Postdevelopment Conditions. The input data for this pond (#6) cannot be recreated from the drawings. For example the input data indicates elevations 37.8 and 41.0 used for computing storage yet, only a single 40.0 contour appears on the plan in this area. The Applicant's Engineer should provide a basis for these computations. The use of a 1" culvert and 10' x 1' culvert in Pond 6 is also not understood.

3. Subcatchment #7 for the postdevelopment appears as 0.01 acres. Should this be 0.20 acres?

4. The proposed control structure is labeled as within catch basin #5 on Sheet 5 of 5. This should be in catch basin #2. The outlet control structure should also be reviewed for constructability since the weir and baffle top elevations are very close, if not, into the bottom of the structure's cover.

5. The plans do not provide any details as to the detention chamber construction. Specific details including the type of chambers and long term maintenance procedures should be provided. How will long term sediment removal from the chambers be facilitated?

6. The Applicant should examine the use of the shotcrete swale and provide a basis for its use. Is it possible to connect the existing 24" pipe via a structure?

Erosion and Sediment Control

1. The Erosion Control Plan does not depict any silt fence or hay bale barrier locations.

2. The stone outlet sizing computations have not be submitted. The stone lined pipe outlet detail should show a minimum depth of 14" for D50 = 6" stone size. The minimum depth for the riprap swale should also be 14".

Utilities

1. The Developer should provide all sizing and construction details for the proposed force main sewer which is proposed for this development. It is apparent the Developer continues to propose a force main system to serve each lot therefore the system design including pump specifications, holding capacity, pump rates and construction layout for each lot should be provided. How will Lots 2, 3 and 4 be connected to the force main?

2. What size will the water main be? The water main and force main sewer must be installed to meet all state separation and installation requirements. How will crossings for the water and sewer main be handled along the main lines as well as along service lines?

3. Where will underground electric and telephone service be extended to the site. Will it require excavation in the public right of way?

4. The 2" blowoff appears to conflict with the proposed 15" culvert at the corner of Lot 19.

5. The Developer continues to show chipseal pavement for a roadway surface treatment. Is this acceptable to the City?

If you have any questions regarding these comments, please call this office. I plan on attending the September 10, 1996 workshop meeting for this project.

Sincerely,

DeLUCA-HOFFMAN ASSOCIATES, INC.

Stephen R. Bushey, P.E.
Project Engineer

SRB/ajm/JN1350.02/hop9-4

c: Tony Lombardo, Public Works
Alex Jaegerman, Planning Department

DeLUCA HOFFMAN ASSOCIATES, INC.
CONSULTING ENGINEERS

778 MAIN STREET
SUITE 8
SOUTH PORTLAND, MAINE 04106
TEL 207 775 1121
FAX 207 879 0896

- ROADWAY DESIGN
- ENVIRONMENTAL ENGINEERING
- TRAFFIC STUDIES AND MANAGEMENT
- PERMITTING
- AIRPORT ENGINEERING
- SITE PLANNING
- CONSTRUCTION ADMINISTRATION

September 4, 1996

Ms. Sarah Hopkins
Planning Department, 4th Floor
City of Portland
389 Congress Street
Portland, Maine 04101

Subject: "Fore River Place"
Engineering Review Letter #2

Dear Ms. Hopkins:

DeLuca-Hoffman Associates, Inc. has completed a review of revised submission materials for the proposed "Fore River Place" subdivision. These materials include the following:

- Surface Water Runoff Report dated August 5, 1996 by Civil Consultants.

- Site Development Plans outlined as follows:
  - Lot Configuration Plan dated August 6, 1996.
  - Site Development Plan dated August 6, 1996.
  - Soils and Test Pits dated August 6, 1996.
  - Drainage and Erosion Control dated August 6, 1996.
  - Profiles and Construction Details dated August 6, 1996.

This office has also reviewed a letter from the Boston and Maine Corporation dated August 20, 1996 which discusses the impounded water adjacent the railroad tracks. Based on our review of the above materials the following comments and concerns are provided.

Stormwater Management

General Comments

1. The Boston and Maine Corporation letter indicates a significant concern for the project's stormwater flows and impacts to the existing railroad embankment. Based on this letter, the Applicant's engineer should provide a written response and plan of action to address the railroad's concerns. This may include a new culvert installation across the railroad.

2. Individual lot grading plans, finish floor elevations and drainage patterns are not provided as requested.

3. The plan continues to show a landscape berm and drainage swale along the northern boundary. The plan lacks sufficient detail to determine the impacts and drainage effects on the abutting properties.

The Applicant should provide a statement regarding the drainage swale capacity. It is also our understanding that the Planning Department has concerns about the use of the landscaped berm.

4. The Developer should provide a statement regarding any agreements with Central Maine Power Co. to locate a drainage system within the 40' CMP easement.

Specifics

1. Considering the importance of the railroad's concerns regarding stormwater management, it is critical that the stormwater management analysis and proposed mitigation measures be as well defined as possible and accurate as possible. The selection of curve number data including A soils for Subcatchment 4 should be explained. The Medium Intensity Soil Survey for the area shows only Deerfield and Belgrade soil types, both of which are Hydrologic Soil Group B soils.

2. The computations indicate a ponding area adjacent the Blake property is both the Predevelopment and Postdevelopment Conditions. The input data for this pond (#6) cannot be recreated from the drawings. For example the input data indicates elevations 37.8 and 41.0 used for computing storage yet, only a single 40.0 contour appears on the plan in this area. The Applicant's Engineer should provide a basis for these computations. The use of a 1" culvert and 10' x 1' culvert in Pond 6 is also not understood.

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5. The plans do not provide any details as to the detention chamber construction. Specific details including the type of chambers and long term maintenance procedures should be provided. How will long term sediment removal from the chambers be facilitated?

6. The Applicant should examine the use of the shotcrete swale and provide a basis for its use. Is it possible to connect the existing 24" pipe via a structure?

Erosion and Sediment Control

1. The Erosion Control Plan does not depict any silt fence or hay bale barrier locations.

2. The stone outlet sizing computations have not be submitted. The stone lined pipe outlet detail should show a minimum depth of 14" for D50 = 6" stone size. The minimum depth for the riprap swale should also be 14".

Utilities

1. The Developer should provide all sizing and construction details for the proposed force main sewer which is proposed for this development. It is apparent the Developer continues to propose a force main system to serve each lot therefore the system design including pump specifications, holding capacity, pump rates and construction layout for each lot should be provided. How will Lots 2, 3 and 4 be connected to the force main?

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5. The Developer continues to show chipseal pavement for a roadway surface treatment. Is this acceptable to the City?

If you have any questions regarding these comments, please call this office. I plan on attending the September 10, 1996 workshop meeting for this project.

Sincerely,

DeLUCA-HOFFMAN ASSOCIATES, INC.

Stephen R. Bushey, P.E.
Project Engineer

SRB/ajm/JN1350.02/hop9-4

c: Tony Lombardo, Public Works
Alex Jaegerman, Planning Department

City of Portland

Planning Department, 4th Floor, 389 Congress Street
Portland, ME 04101
(207)874-8721
Fax: (207)756-8258

FAX TRANSMISSION COVER SHEET

Date: 8/23/96

To: Mike Scarks

Fax: 874-6988

Re:

Sender: Sarah

YOU SHOULD RECEIVE ____ PAGE(S), INCLUDING THIS COVER SHEET.
IF YOU DO NOT RECEIVE ALL THE PAGES, PLEASE CALL (207)874-8721.

Workshop #2 is scheduled for Sept. 10.
Can your engineer come?
We'll have Steve Bushey from DeLuca there.
How about if we concentrate on
- overall engineering
- sewer pumps, etc
- roadways
- building design ?

Then we'll aim for a public hearing on Sept. 24.

OK?

Sarah

402 Amherst Street - Suite 300
Nashua, NH 03063-4228
603 595 1614
603 595 2414 FAX

GUILFORD TRANSPORTATION INDUSTRIES, INC.

August 13, 1996

City of Portland, Maine
Department of Planning & Urban Development
389 Congress Street, 4th Floor
Portland, Maine 04101

Dear Sir:

Enclosed is a copy of a notice I recently received pertaining to a proposed land use in the City of Portland. Please be advised that Guilford Transportation Industries, Inc. manages real estate matters for several corporations. This response is sent on behalf of the following corporations in reply to your notice:

- Boston and Maine Corporation;
- Maine Central Railroad Company;
- Springfield Terminal Railway Company;
- Hudson River Estates, Inc.;
- Delaware River Estates, Inc.; or
- DH Estates, Inc. (formerly Delaware and Hudson Railroad).

As you may well be aware, the railroads listed above receive numerous notices on a daily basis. Based upon the limited time frame existing between the date on which the notice is received and the scheduled hearing date, I respectfully request your cooperation regarding this matter.

Although the railroads are concerned with each and every notice, there are certain instances which are of particular concern to the railroads. You may be able to advise me if the petition involves land plans showing a crossing of railroad property. Specifically the railroads' concern exists even in the event that your petitioner indicates that it is the holder of a valid railroad crossing. Also, the railroads must be advised if the petition proposes any development within 25' from the centerline of an existing railroad track, even if such development occurs on non-railroad property. As such, petitions for variances from set back requirements can be particularly troublesome.

Please be advised that this letter should not be construed as a waiver of any other objections which the railroads may have to a proponent's plan. However, the railroads respectfully request your assistance in bringing their attention to any such matters.

Thank you for your anticipated cooperation in this regard.

Sincerely,

Kellie A Dunn

Kellie A. Dunn
Vice President, Real Estate

KAD:img
c: Stephen F. Nevero
Vice President-Engineering
Timothy W. Cobb
(above w/enc.)

TO RESIDENTS AND PROPERTY OWNERS IN THE VICINITY OF
MITTON AND LASSELL STREETS

On Tuesday, August 13, 1996, the Portland Planning Board will consider a proposal by Neptune Properties for the development of a 19 lot Planned Residential Unit Development at the end of Mitton and Lassell Streets. The parcel is 5.72 acres and zoned I-2 and R-5.

The meeting is a workshop session and is scheduled to begin at 3:30 p.m. in Room 209, City Hall, 389 Congress Street, Portland, Maine. The workshop is an opportunity for the applicant to present a plan to the Planning Board in an informal session, which is open to the public. Public comments are not generally received at the workshop meeting. A public hearing will be scheduled at a later date. If you wish to submit written comments on the proposal, please address your comments to Joseph E. Gray, Jr., Director of Planning and Urban Development, City Hall, 4th Floor, 389 Congress Street, Portland, Maine 04101.

NOTE
In July, the Planning Board made a recommendation to the City Council for the rezoning of a portion of this parcel from the I-2 Industrial to the R-5 Residential zone. The City Council will hold a public hearing in September on the rezoning. Abutters will receive legal notice of the public hearing.
/SH

Alexander Jaegerman
Chief Planner

City of Portland

Planning Department, 4th Floor, 389 Congress Street
Portland, ME 04101
(207)874-8721
Fax: (207)756-8258

FAX TRANSMISSION COVER SHEET

Date: 8/6/96

To: Mike Scarks

Fax: 874-6988

Re:

Sender: Sarah Hopkins

YOU SHOULD RECEIVE ____ PAGE(S), INCLUDING THIS COVER SHEET.
IF YOU DO NOT RECEIVE ALL THE PAGES, PLEASE CALL (207)874-8721.

Mike.
Here are the comments I received from the Public Works Department.
I don't think there are any surprises here.
Bill Bray can't make it on Wednesday but lets meet with the engineers anyway.
Are you free to meet Bill Bray 'in the field' Monday at 1:00pm at the end of Lassell?
I want him to indicate the ~~width~~ end of pavement and we can also figure out which waivers you will need.
Give me a call if that date/time works for you.
Sarah.

CITY OF PORTLAND, MAINE
DEPARTMENT OF PUBLIC WORKS
OPERATIONS/ENGINEERING - INSPECTIONS
MEMORANDUM

TO: Sarah Hopkins, Senior Planner
FROM: Tony Lombardo, Project Engineer
DATE: August 1, 1996
SUBJECT: ~~Great Lost Bear~~ Fore River Place

The site plan submitted by Neptune Properties dated June 28, 1996 was received by Public Works/ Engineering on July 15, 1996. The following comments were generated during Engineering Review:

- applicant should provide a collector road that connects with both Mitton and Lassel.
- applicant proposes a large drainage ditch through a CMP easement. A letter should be submitted by the applicant indicating C.M.P.'s approval of this use of their easement.
- variances need to be obtained if applicant proposes only 22 feet of pavement width. In addition, short sections of Lassel and Mitton must be built by the applicant to tie into the proposed development. These sections of road must be built to City of Portland design standards and details provided.
- applicant should provide a plan and profile drawing for the proposed street, including utilities and structures.
- no invert elevations have been provided for sanitary sewer or stormwater systems.
- chipseal is not an acceptable finish surface course for a street.
- the existing 24" RCP storm drain entering the site westerly should connect into a drain manhole and stormwater pipe system should be proposed to transport runoff to the southeasterly outlet.
- applicant does not provide source or reference for site topo. A site walk indicated that existing site conditions are not accurate. Applicant should provide accurate and recent topographic information stamped by a P.L.S.
- A recent site walk also indicated that the existing wetlands are much more substantial than what is depicted on the plans. Wetlands should be identified and flagged in the field by a wetlands specialist.

- 2-foot contours are shown on the plan, however, 1-foot contours would be more appropriate in the area of proposed lots.

- applicant needs to provide pump station and force main design and provide adequate storage in pipes and pump station well in the event of power outages.

- applicant needs to provide drainage easements for all proposed stormwater systems crossing lots.

- how does the proposed berming along the property boundaries affect abutting land? Applicant must provide methods to avoid drainage problems on abutting properties as a result of this development.

- applicant should provide calculations for sizing stormwater pipes, ditches and riprap.

DeLUCA HOFFMAN ASSOCIATES, INC.
CONSULTING ENGINEERS

778 MAIN STREET
SUITE 8
SOUTH PORTLAND, MAINE 04106
TEL. 207 775 1121
FAX 207 879 0896

- ROADWAY DESIGN
- ENVIRONMENTAL ENGINEERING
- TRAFFIC STUDIES AND MANAGEMENT
- PERMITTING
- AIRPORT ENGINEERING
- SITE PLANNING
- CONSTRUCTION ADMINISTRATION

July 31, 1996

Ms. Sarah Hopkins
Planning Department
City of Portland, City Hall
389 Congress Street
Portland, ME 04101

Subject: Professional Services Fees
Engineering Review for "Fore River Place"

Dear Ms. Hopkins:

DeLuca-Hoffman Associates, Inc. is pleased to provide the following estimate of professional service fees associated with the above project. It is our understanding that this estimate is required for Alex Jaegerman in order that the account for engineering review and inspection fee can be established.

1. DeLuca-Hoffman Associates, Inc. will review the surface water runoff report, drainage and erosion control, and site plans for the "Fore River Place" project. This review will include a site visit, computational review, attendance at two staff meetings, an initial letter report and follow-up review after the initial comments have been addressed, to the City of Portland Planning Department, two meetings with the Developer's Engineer and attendance at one Planning Board meeting. DeLuca-Hoffman Associates, Inc. proposes to complete this work at a budget of $2,000.00. Actual costs will be recorded and submitted via invoicing for the project in accordance with the rates established by our pending engineering contract with the City of Portland.

If you have any questions regarding this proposal, please call this office.

Sincerely,

DeLUCA-HOFFMAN ASSOCIATES, INC.

Stephen R. Bushey, P.E.
Project Engineer

SRB/ajm/JN1350.01/hop7-31

DeLUCA HOFFMAN ASSOCIATES, INC.
CONSULTING ENGINEERS

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July 31, 1996

Ms. Sarah Hopkins
Planning Department
City of Portland, City Hall
389 Congress Street
Portland, ME 04101

Subject: Professional Services Fees
Engineering Review for "Fore River Place"

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If you have any questions regarding this proposal, please call this office.

Sincerely,

DeLUCA-HOFFMAN ASSOCIATES, INC.

Stephen R. Bushey, P.E.
Project Engineer

SRB/ajm/JN1350.01/hop7-31

DeLUCA HOFFMAN ASSOCIATES, INC.
CONSULTING ENGINEERS

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July 24, 1996

Ms. Sarah Hopkins
Planning Department - 4th Floor
City of Portland
389 Congress Street
Portland, ME 04101

Subject: "Fore River Place"
Engineering Review Letter #1

Dear Ms. Hopkins:

DeLuca-Hoffman Associates, Inc. has completed an initial review of the submission materials for the proposed "Fore River Place" subdivision. These materials included the following:

- Surface Water Runoff Report dated July 5, 1996 by Civil Consultants.
- Site Development Plans entitled as follows:
  - Lot Configuration Plan - Sheet 1 of 5, June 28, 1996
  - Site Development Plan - Sheet 2 of 5, June 28, 1996
  - Drainage and Erosion Control Plan - Sheet 4 of 5, June 28, 1996

Based on our initial review of the Stormwater Management, Erosion Control and Utility Plans, DeLuca-Hoffman Associates, Inc. provides the following comments and concerns for presentation to the Project Developer:

STORMWATER MANAGEMENT

General Comments

1. Results of a high intensity soil survey including soils boundaries, test pit locations and soils descriptions sealed by a licensed soils scientist should be provided for review.
2. The Developer's Consultant should provide a statement explaining the basis for using Hydrologic Soils Group A and B for Lamoine and filled land soils. These type of soils are more usually classified as HSG C and D.
3. The use of the "HydroCAD" routing program is acceptable. However, a modeling diagram from the program should be provided to adequately review the computations.
4. The 2 foot contours representing existing topography on the plans do not accurately depict several important drainage features. Specifically, a shallow drainageway appears to exist along the site's eastern boundary, between Lassell Street and Mitton Street. The proposed landscaped berm along the border will impact the existing drainage characteristics and will likely impact drainage along abutting properties from the Westgate Plaza to Mitton Street. The Stormwater Report should address how impacts to these drainage patterns will be mitigated. Above all, the drainage features on the project must avoid negative impacts to those bordering property owners. The plans should show the existing topography on all surrounding abutting properties.

5. The contours do not accurately depict the topography adjacent the existing paved surface along the site's southwest side.
6. The Grading Plans should include some form of individual lot grading so that an assessment of the proposed lot drainage systems can be made. This should include preliminary building siting, driveway layout and flow paths for drainage.
7. The Developer should provide a statement regarding any agreements with Central Maine Power Co. to locate a drainage system, either an open channel or pipe, within the existing 40' CMP easement along the southwest lot line.

Specifics

1. The predevelopment and postdevelopment diagrams should include Tc flow paths.
2. The soils survey will have significant effect on the curve number computations. The Consultant should provide a specific basis for the selection of curve numbers.
3. The plans should include all drainage structure information including catch basin sizes, inverts, rim elevation and pipe lengths, sizes and slopes.
4. The plans should detail the stormwater detention chambers including dimensions, size, layout, etc.
5. The roadway layout should include a profile to evaluate gutter line drainage. Spot grading should be provided, particularly around the center common area.
6. Design details and computations should be provided for the stormwater detention chambers including flotation computations.
7. A detail should be provided for the discharge of the existing 24" pipe behind the Italian Heritage Center to the proposed catch basin. Will the pipe discharge to a structure or to the grate?
8. The Stormwater Report should contain information on the existing detention basins including, approximate drainage area, discharge location, approximate volumes and drainage rights of the proposed development site.

EROSION AND SEDIMENT CONTROL

1. The Developer should provide a written Erosion Control Report which provides the following information:
   - Existing soils erosion characteristics.
   - Proposed temporary erosion control measures.
   - Proposed permanent erosion control measures.
   - Timing and sequencing of construction.
   - Maintenance and reporting of erosion control measures.

2. The erosion control report should include all computations for sizing of inlet and outlet protection measures. Sizing computations should be provided for all swales/channels.
3. Approximate locations of silt fence and other erosion control measures should be identified for individual lot developments.

4. An erosion control timing and maintenance narrative should be placed on a site plan.

UTILITIES

1. The developer should provide ability to serve letters from the water, sewer and power companies. The developer should provide anticipated water and sewer consumption rates.
2. The proposed sewer main should be detailed including pipe size, length and slope. Will the development be served by a gravity sewer or force main? What provisions will be made for each lot connection.
3. The proposed sewer should not be located beneath the proposed stormwater detention chambers.
4. What size will the proposed water main be? Where will hydrants be located? Why doesn't the system loop to Mitton Street?
5. How will electric and telephone service be provided and will service be underground or overhead?

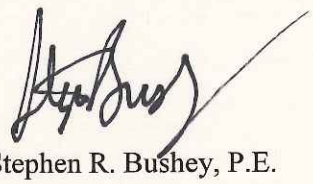
GENERAL COMMENTS

1. A brief field visit was conducted on July 24, 1996. It was observed that wetland vegetation including reed canary grass and alder were located on the site outside of the wetland limits identified on the plan. Specifically along the southwest side of the paved area on the site's southwest side and along the eastern border. Also, wetland pockets appeared to be within the proposed lots 6 and 7. The Developer should submit a signed wetlands investigation report and also submit written confirmation from the state or federal agencies regarding the wetland's regulatory status.
2. What is the history of the paved area along the sites southwest side? Was this a former street?

If you have any questions regarding the above comments please contact this office.

Sincerely,

DeLUCA-HOFFMAN ASSOCIATES, INC.



Stephen R. Bushey, P.E.

Project Engineer

SRB/dsd/JN1350.02/hop7-24

Planning & Urban Development

Joseph E. Gray Jr.
Director

CITY OF PORTLAND

July 24, 1996

Michael Scarks
A & M Partners
120 Exchange Street
Portland, ME 04101

RE: Fore River Place, Mitton/Lassell Streets

Dear Mr. Scarks:

An engineering fee has been assessed in the amount of $2,000 for the review of your project located at Mitton And Lassell Streets. The review fee has been determined by the Development Review Coordinator, Stephen Bushey, from DeLuca-Hoffman.

Please make your check payable to the City of Portland. The check should be submitted to the Portland Planning Department, City of Portland, 4th Floor, 389 Congress Street, Portland, Maine 04101.

If you have any questions, please do not hesitate to contact this office at 874-8721.

Sincerely,

Joseph E. Gray, Jr.
Director of Planning and Urban Development

cc: Stephen Bushey, DeLuca-Hoffman
✓ Sarah Hopkins, Senior Planner

NEPTUNE PROPERTIES, INC.

120 EXCHANGE STREET PORTLAND, MAINE 04101

July 10, 1996

Ms. Sarah Greene
Planning Dept., City Hall
389 Congress Street
Portland, Maine 04101

Dear Sarah:

Please accept the following as the written statement for the site review submission for "Fore River Place" off Mitton Street. I have already submitted seven sets of plans, a survey, a drainage and erosion control report, and the traffic study that Mary Conroy requested for this project.

This project is to be developed on a 5.72 acre parcel of land located at the end of Mitton and Lassell Streets. We will do this project in conjunction with Ric Weinschenk to construct a "PRUD" containing 19 single family dwellings. The designs will be targeted to a senior community, being single level, on grade, and generally having two bedrooms and 1200-1400 SF per unit. These cottage or bungalow style dwellings will be served by a private road owned and maintained by an association. Based on an average floor print of 1300 SF per unit, the total floor area/ground coverage would be approximately 24,700 SF (19 units x 1300 SF/unit).

The parcel currently has easements in favor of CMP which parallel the railroad right of way, which forms the southwesterly border of the property. Future easements would include drainage and snow plow turn-arounds as shown on the plan.

Solid waste generation should be less than for an average single family dwelling because of the reduced size of the house and the age of the occupants/owners. It will be handled by a private contractor hired by the association.

The parcel is served by two City streets (Lassell and Mitton) and access is planned via Mitton. As per the traffic reports submitted, volume for a typical 19-unit project would have an insignificant impact, reduced even further by the high average age of the occupants/owners. Municipal sewer and water is available in Lassell Street, as well as electric, telephone, and cable. Storm water will be detained on-site and then

OFFICE: 207-775-2100 FAX: 207-874-6988

discharged into the existing drainage course that flows from the southerly end of the property. We have provided drainage for the abutting areas via piped systems or open swales as shown on the development plan. We have designed a system that eliminates any post development impact off-site. Because of the screening/ landscaping berms surrounding the parcel perimeter, no on-site water can flow off-site to existing abutters except for the existing drainage course at the southerly corner.

The construction is anticipated to start immediately upon receipt of required approvals. Starting with erosion control measures, followed by subsurface utilities and rough grading; at least one model home will be built concurrently with the site work. We hope to complete the buildout within nine months of the start of construction, depending on market conditions.

Other than permits required at the municipal level, Albert Frick Associates is working with "MDEP" to map and permit wetlands alteration as appropriate to the site development plan.

We will, prior to workshop, provide letters of financial capability for this project.

Attached please find a deed showing our interest in the property which "Neptune" purchased from Mrs. Irma Blake. We are unaware of any natural features such as unique wildlife habitats or archeological sites that require any special attention.

If you require any additional information, please don't hesitate to call.

Sincerely,

Michael Scarks

Michael Scarks, President
Neptune Properties, Inc.

MS:mc
Encs.

NEPTUNE PROPERTIES, INC.

120 EXCHANGE STREET PORTLAND, MAINE 04101

2/3/16

TO: MARY THERIAULT/CONROY

FROM: MIKE SCARKS

RE: LASSELL ST. PROJECT

MARY: AS PER OUR PREVIOUS PHONE CONVERSATIONS AND YOUR REQUEST HERE IS A LETTER REPORT FROM JACK MURPHY REGARDING THE TRAFFIC ISSUES. I ALSO ASKED JACK TO DO AN ANALYSIS ON THE TURNING MOVEMENTS WHICH IS ALSO INCLUDED. AS WE DISCUSSED THE VOLUME IS VIRTUALLY INSIGNIFICANT HOWEVER WE WOULD WORK WITH YOU ON THE CROSSWALK PROJECT YOU MENTIONED. CALL WITH ANY QUESTIONS.

THANKS,
MIKE S.

OFFICE: 207-775-2100 FAX: 207-874-6988

A & M PARTNERS, INC.
REAL ESTATE DEVELOPMENT/MANAGEMENT

120 EXCHANGE STREET PORTLAND, MAINE 04101 (207) 879-1358

June 6, 1996

Mr. Joseph Gray
Director of Planning & Urban Development
City Hall
389 Congress St.
Portland, Maine. 04101

Dear Mr. Gray:

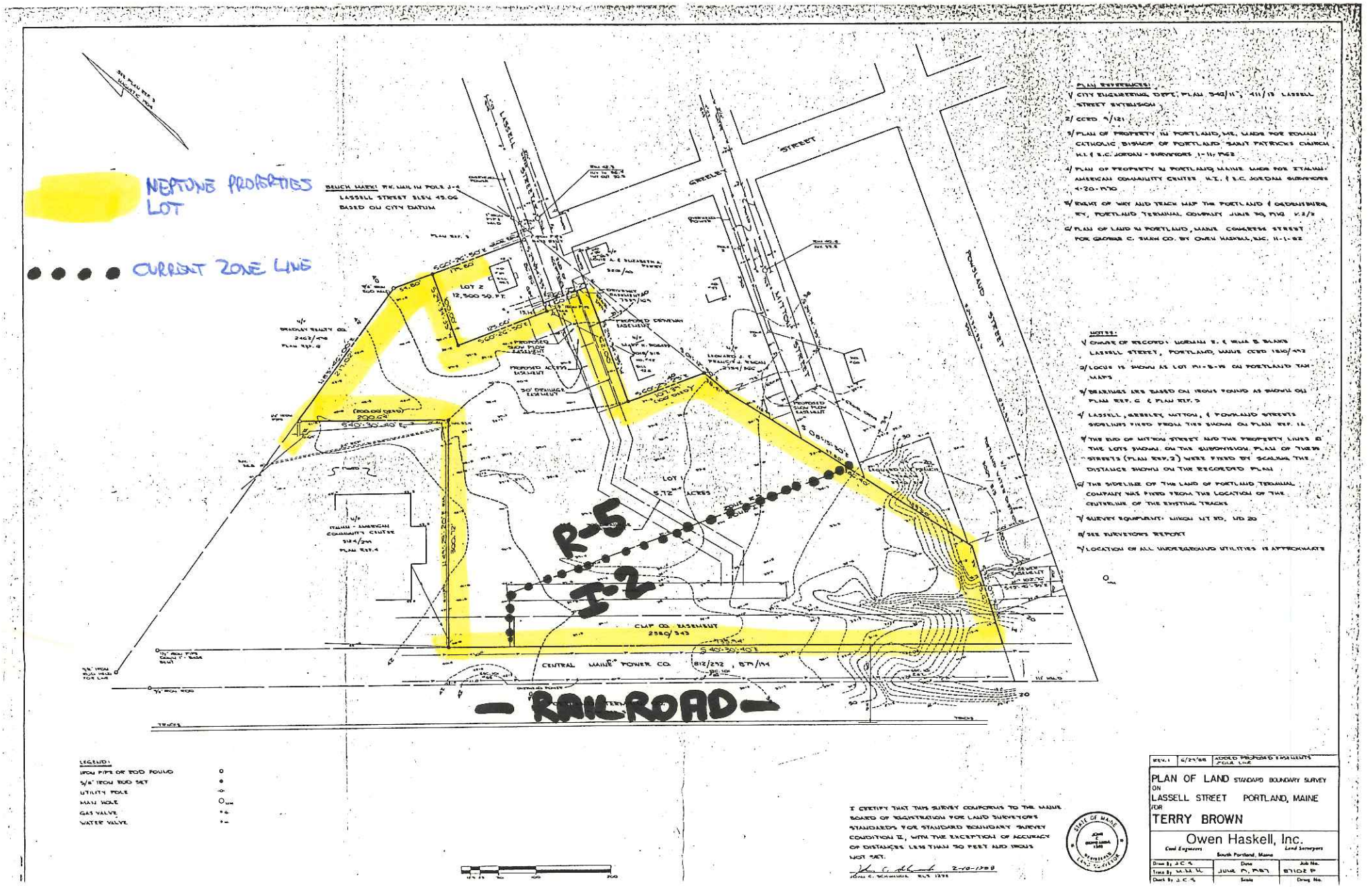
I am writing to confirm my previous request at our last meeting, that the portion of my land on Lassell St. (see attached Map) be rezoned as part of the current city wide changes. As we discussed, the property is primarily in the R-5 zone with the southern one - third +/- in the I-2 zone. I am requesting that the entire parcel be zoned R-5 with the zone line moved to either the CMP easement along the railroad land or the railroad itself. As you are aware, we will be submitting a site review application within the next week or two for a residential use which would be consistent with the zone change request; however, even if this project is delayed the I-2 zone is obviously inappropriate and land locked between the railroad and residential abutters. Please advise if you need any more from me regarding this matter.

Thank you for your cooperation on this matter.

Sincerely,

Michael Scarks

cc: Sarah Greene
Martin Foley


NEPTUNE PROPERTIES LOT
CURRENT ZONE LINE
LASSELL STREET
GREELEY STREET
HUTTON STREET
PORTLAND STREET
BENCH MARK: PK NAIL IN POLE J-4
LASSELL STREET ELEV. 49.06
BASED ON CITY DATUM
LOT 2
12,500 SQ. FT.
PROPOSED ACCESS EASEMENT
30' DRAINAGE EASEMENT
PROPOSED SLOPE EASEMENT
LOT 1
5.72 ACRES
CLIFF CO. EASEMENT
2886/343
CENTRAL MAINE POWER CO.
812/272, 871/194
R-5
I-2
RAILROAD
PLAN REFERENCES:
NOTES:
LEGEND:
IRON PIPE OR ROD FOUND
5/8" IRON ROD SET
UTILITY POLE
MAN HOLE
GAS VALVE
WATER VALVE
I CERTIFY THAT THIS SURVEY CONFORMS TO THE MAINE BOARD OF REGISTRATION FOR LAND SURVEYORS STANDARDS FOR STANDARD BOUNDARY SURVEY CONDITION II, WITH THE EXCEPTION OF ACCURACY OF DISTANCES LESS THAN 30 FEET AND IRONS NOT SET.
2-10-1988
STATE OF MAINE
REGISTERED LAND SURVEYOR
REV. 1 6/23/88 ADDED PROPOSED EASEMENTS & SLOPE LINE
PLAN OF LAND STANDARD BOUNDARY SURVEY
ON
LASSELL STREET PORTLAND, MAINE
FOR
TERRY BROWN
Owen Haskell, Inc.
Civil Engineers Land Surveyors
South Portland, Maine
Drawn By J.C.S.
Traced By M.L.L.L.
Checked By J.C.S.
Date JUNE 11, 1987
Scale
Job No. 87102 P
Drwg. No.

DeLUCA HOFFMAN ASSOCIATES, INC.
CONSULTING ENGINEERS

778 MAIN STREET
SUITE 8
SOUTH PORTLAND, MAINE 04106
TEL. 207 775 1121
FAX 207 879 0896

- ROADWAY DESIGN
- ENVIRONMENTAL ENGINEERING
- TRAFFIC STUDIES AND MANAGEMENT
- PERMITTING
- AIRPORT ENGINEERING
- SITE PLANNING
- CONSTRUCTION ADMINISTRATION

MEMORANDUM

TO: Code Enforcement

FROM: Jim Wendel, Development Review Coordinator

DATE: January 20, 1997

RE: House site plan review
23 Willow Lane(lot 1)

A review of the site plan for 23 Willow Lane has been completed. The site plan is incomplete and requires the following revisions/additions:

1. Some of the contouring is confusing; proposed contours go through the house and some contours cross or touch other contours and some contours are labeled the same but one of them may not be needed. These problems should be cleared up.

2. Spot grades should be added at the corners of the house.

3. The car port should have proposed spot grades at the corners; the drive grading is not clear.

4. The finished floor elevation should be noted and the front steps should be shown.

5. Where is the transformer that feeds this house? It should be shown.

6. The site plan does not show the edge of pavement of the snow plow turnaround. Also there is insufficient detail of the grading of the turnaround.

7. The site plan does not show how the grading for the berm and swale at the property line matches with the grading of the turnaround. This is critical to prevent ponding water on adjacent property. The grading should take into account the possibility of stockpiled snow.

No further review can occur with this application until a revised site plan is submitted.

James T. Wendel, P.E.

c: Sarah Hopkins, Senior Planner
Kandi Talbot, Planner

JN1350.1023willow

C h a r l e s M. G o u l d
39 Mitton Street ~ Portland, ME

Mr. Alexander Jaegerman, Chief Planner
Portland Planning Board
Dep't of Planning & Urban Development
389 Congress Street, 4th Floor
Portland, ME 04101

Re: Fore River Place, Mitton & Lassell Streets

Dear Mr. Jaegerman:

I own property on 39 Mitton street. In that capacity I would like to comment on the above-mentioned proposed project. Let me say that, in general, I support the project as it appears on plans submitted to the Board. I do, however have some concerns.

The cellar does get water coming in now after a long period of wet weather. This water comes in from below the floor, a consequence of rising ground water levels. My concern with the project is what impact it may have on reducing ground water flow to the river due to compaction of the subsoil during construction. I have spoken to the developer on this. He assures me it will have no impact. Since I am in no way able to judge the veracity of his claim, I feel I would be remiss if I did not mention my concern to the Board at this time.

Another concern of mine is the impact of the construction equipment on the newly rebuilt Mitton Street. The City has just completely rebuilt Mitton. I've seen some terrible impact of construction equipment on streets. I will be very upset, as I am sure the rest of the homeowners will be, if the street is not in the same condition after the project is built. Again, I have spoken to the developer on this, but am raising the issue to allow those who know more about it to assess the impact and to determine what the developer should do to either prevent any damage at all, or to repair damage done due to construction activities.

I would also add that I hope that no noise-making construction activities would occur before 7 am weekdays and 8 am Saturdays, 9 am Sundays. Noise should cease by 8 pm on all evenings to allow the residents needed rest.

I have comments and questions on the traffic study. I notice that the 7 am - 9 am Mitton Street study and both Lassell Street studies were performed on the two days prior to the long Labor Day weekend. I believe the traffic counts are normally higher than the study indicates. This is for two reasons. First, school was not in session. Parents, teachers, and staff at St. Patrick's were not on the roads during that week. Second, many people were on vacation

that week and would not be either coming in to town to work or in-town residents not going out Congress Street to work. Both of these items force me to conclude that the traffic counts are actually higher than the study indicates.

The impact on Mitton and Lassell are arguably small. However the impact on Congress Street traffic may be large. Traffic on Congress in limited to one lane westbound when someone is attempting to turn left onto either Mitton or Lassell. Higher traffic volumes can mean traffic snarls on Congress westbound.

Another traffic-related issue is the times of the study. While I appreciate that city-wide traffic volumes are highest in the morning and afternoon rush hours, high traffic on Congress also occurs outside of those hours. In-bound traffic is quite high from 2 pm onwards. Taking a left from Mitton or Lassell during those times can be quite frustrating. Taking a left onto those streets can be dangerous. The lights at Stevens & Congress do not allow much time. That is, in-bound Congress traffic is very quickly followed by left-turning traffic from Stevens. One can be stopped on Congress for quite sometime while waiting for a safe opportunity to turn onto Mitton or Lassell (slowing Congress out-bound all the while). An alert driver with a quick vehicle can scoot left before on-coming cars. Slower drivers or drivers with slower vehicles must wait longer for a wider, therefore safer, window of opportunity to turn left.

Finally, I wonder what the accident count is on Congress between Stevens Ave. and Thompson's Point. To what extent, if any, are those accidents due to left turning traffic onto Mitton or Lassell?

I do support the general idea of the project. The developer seems to have a reputation for doing quality work. I bring my concerns to the Board that they may be evaluated and solutions found that satisfy the City and the developer so that we continue to have an attractive, accessible, and safe neighborhood.

Sincerely,

Charles M. Gould

cc: Cyrus Hagge, Board Chair

City of Portland
Planning Department

City Hall
389 Congress Street, 4th Floor
Portland, Maine 04101
FAX NUMBER: 756-8258

FAX TRANSMISSION COVER SHEET

To: Mike Scanlon

Fax #: 874-0988

# of Pages: 2

From: Sarah Hopkins

Date: 9/30

RE:

Mike! I screwed up! I was looking for comments from Bill when I had comments from his stand-in right under my nose!

Your traffic study is A-OK. Sorry again.

Sarah

If you do not receive all of the pages, please call 874-8721.

NEPTUNE PROPERTIES, INC.

120 EXCHANGE STREET PORTLAND, MAINE 04101

ALEX JAEGERMAN PAGE 1 OF 3 9/2/96

DEAR ALEX:

IN RESPONSE TO JARAN'S LETTER TO ME DATED 8/26 AND RECIEVED 8/28 REGARDING THE "FORE RIVER PLACE" PROJECT I AM SUBMITTING THE ATTACHED REVISED ITEMS:

- PLANS SHOWING A CONNECTION BETWEEN LASSELL AND MITTON STREETS AND A REVISED SHAPE TO THE STORMWATER POND (WHICH IS NOW OPEN)
- REVISED FIGURES TO SUPPLEMENT THE EXISTING DRAINAGE STUDY WHICH INCLUDES THE RE-DESIGN OF THE DETENTION POND.
- A SPECIFIC DESIGN FOR THE PRESSURE SEWER SYSTEM ALONG WITH EXAMPLES AND REFERENCES ON NUMEROUS INSTALLATIONS OF LIKE SYSTEMS.
- THE TRAFFIC STUDY HAS BEEN COMPLETED AND IS BEING DELIVERED BY JACK MURRAY (IT WILL BE AVAILABLE PRIOR TO THURSDAY MORNINGS STAFF MEETING ACCORDING TO JACK)

IN RESPONSE TO OTHER ITEMS OF CONCERN ON JARAN'S LETTER:

1) DONE
2) DONE
3) EITHER JAY STEVENS OR I WILL BE AVAILABLE AT THE WORKSHOP TO DISCUSS DRAINAGE.

OFFICE: 207-775-2100 FAX: 207-874-6988

8) CONDO DOCUMENTS HAVE BEEN AMENDED TO MAKE IT CLEAR RUBBISH PICK UP IS NOT A CITY RESPONSIBILITY. (REVISION SHEET INCLUDED)

9) DO YOU HAVE SNOW FLOW EASEMENT LANGUAGE THE CITY HAS APPROVED BEFORE? WE WOULD BE HAPPY TO REVIEW + USE IT.

10) I DON'T UNDERSTAND THIS COMMENT, IF IT RELATES TO DRAINAGE THEN EASEMENT IS REQUIRED THRU THE INDIVIDUAL LOT DESIGN REVIEWS WILL BE INCORPORATED INTO THE DEEDS PRIOR TO TRANSFER.

WE ARE DESIGNING FOR AN OLDER POPULATION IN THIS PROJECT AND WE PROPOSE TO MEET THE RECREATION REQUIREMENT WITH THE PASSIVE AMENITIES PROVIDED BY THE LANDSCAPED POND WITH FOUNTAIN, CENTER ISLAND GAZEBO, AND ASSOCIATED SEATING.

AS I INDICATED TO SARAH, WE ARE REQUESTING THE EARLIEST POSSIBLE SCHEDULING ON THE PUBLIC HEARING AS WE ARE READY TO START CONSTRUCTION IMMEDIATELY AND WOULD LIKE TO COMPLETE THE SITE WORK PRIOR TO WINTER. YOUR COOPERATION IN THIS REGARD WOULD BE GREATLY APPRECIATED.

I BELIEVE WE HAVE ADDRESSED ALL PREVIOUS COMMENTS AND QUESTIONS AND LOOK FORWARD TO OUR WORKSHOP ON 9/10/96. IF YOU NEED ANY ADDITIONAL INFORMATION PLEASE CONTACT ME AT YOUR EARLIEST CONVENIENCE.

SINCERELY,

MIKE SORRIS

P.S. TRAFFIC STUDY IS INCLUDED IN THIS SUBMISSION.

NEPTUNE PROPERTIES, INC.

120 EXCHANGE STREET PORTLAND, MAINE 04101

8/7/96

TO: SARAH HOPKINS

FROM: MIKE SCARKS

RE: FORE RIVER PLACE

DEAR SARAH:

THE FOLLOWING IS A CONSOLIDATION OF RESPONSES AND ADDITIONAL SUBMISSIONS TO THE 3 LETTERS I HAVE RECEIVED FROM YOU REGARDING THIS PROJECT.

JULY 12 LETTER:

1) WE ARE SEEKING TO IMPROVE ONLY THAT SECTION OF MILTON ST. THAT REMAINS UNBUILT (ABOUT 60-80'+/-) TO A PRACTICAL CROSS-SECTION TO TRANSITION FROM THE EXISTING CITY STREET TO OUR PROJECT ROADWAY.

2) WE DEFINITELY DO NOT WANT TO INTERCONNECT LASSELL + MILTON STS.

3) ROADWAY DETAILS HAVE BEEN SUBMITTED.

4) ORDINANCE REQUIREMENTS HAVE BEEN MET FOR THE FIRE DEPARTMENT

5) A LETTER REPORT ON TRAFFIC HAS BEEN PROVIDED AS PER OUR PREVIOUS AGREEMENT WITH THE TRAFFIC ENGINEER (MARK CONLEY). WILL MEET W/ BILL BRAY ON MONDAY TO DISCUSS.

6) WETLANDS APPLICATION HAS BEEN SUBMITTED TO DEP 2-3 WEEKS AGO, STAN WOFFES HAS COPY.

7) BUILDING DESIGNS, LANDSCAPE PLANS, AND LOT GRADING PLANS WILL BE SUBMITTED ON MONDAY.

8) HYDRANT IS SHOWN ON PLANS (AT END OF LASSELL ST.)

9) UTILITY LETTERS ATTACHED FOR SEWER, WATER, ELECTRIC.

10) NET LAND AREA = 159,000+ SF, AREA REQ'D = 3000 SF/LOT x 19 LOTS = 57,000 SF
REC LAND REQ'D = 300 SF/LOT x 19 = 5700 SF, AREA PROVIDED = 9000+/- SF (SEE PLAN)

OFFICE: 207-775-2100 FAX: 207-874-6988

JULY 29 LETTER:

1) SEE PREVIOUS LETTER, RE: LOT GRADING.
2) DRAINAGE MAINTENANCE AGREEMENT ATTACHED
3) SEE PREVIOUS RESPONSE, RE: DEP
4) I WILL REVIEW CHIPSEAL OPTION
5) CONDO DOCUMENTS ATTACHED
6) SEE PREVIOUS RESPONSE, RE: DENSITY CALCULATIONS
7) 8, 9) BUILDING ELEVATIONS, LANDSCAPING, AND LIGHTING PLANS TO BE SUBMITTED MONDAY.
10) STEVE BUSHEY'S LETTER HAS BEEN ADDRESSED DIRECTLY BY JAY STEVENS (OUR ENGINEER) UPDATED PLANS AND DRAINAGE REPORTS ARE ATTACHED. WE DEFINITELY PLAN TO USE INDIVIDUAL HOUSE PUMPS FOR THE SANITARY SEWER VS. A COMMON PUMP STATION. THIS IS A PRIVATE DEVELOPMENT THAT WILL NOT BE MAINTAINED BY THE CITY.

AUGUST 1 LETTER (FROM TONY LOMBARDO)

1) SEE PREVIOUS RESPONSE, RE: CONNECTING LASSEN + MILTON.
2) ± WILL PROVIDE COPY OF CMP EASEMENT) I DO NOT INTEND TO ASK CMP FOR APPROVAL TO USE MY OWN LAND.
3) SEE PREVIOUS RESPONSE, RE. MILTON ST. IMPROVEMENTS
4) PLAN + PROFILE SUBMITTED
5) ELEVATIONS FOR UTILITIES HAS BEEN ADDED
6) SEE PREVIOUS RESPONSE: RE, CHIPSEAL
7) SEE PLAN: RE 24" DRAIN PIPE
8) A SURVEY W/ TOPO WAS PROVIDED (DONE BY JOHN JURMOR)
9) SEE PREVIOUS RESPONSE: RE WETLANDS.
10) INDIVIDUAL LOTS WILL GO THRU MINOR/MINOR REVIEW SO 2' CONTOURS ARE VERY ADEQUATE FOR THIS ROAD + DRAINAGE LAYOUT FOR SITE REVIEW, WE WILL INCLUDE SPOT GRADES AS REQUIRED TO ASSURE PROPER ROAD DRAINAGE.

11) FORCE MAIN IS SHOWN ON UTILITY PLAN, WE INTEND TO USE INDIVIDUAL PUMPS FOR EACH BUILDING.

12) EASEMENTS WILL BE PROVIDED AS REQUIRED UPON FINAL APPROVAL.

13) BERMING ALONG BOUNDARIES WILL PREVENT ONSITE DRAINAGE FROM LEAVING THE SITE EXCEPT THRU OUR SYSTEM. EXISTING DRAINAGE SWALES WILL BE MAINTAINED OUTSIDE THESE BERMS TO MAINTAIN THE EXISTING DRAINAGE FLOW PATHS FROM ABUTTORS.

14) THIS IS PROVIDED IN STORMWATER REPORT, DRAWINGS WILL BE STAMPED BY A P.E. TO ASSURE REQUIRED/PROFESSIONAL DESIGN.

I WILL BE GLAD TO GO OVER THIS LIST ON MONDAY AT OUR MEETING TO CONSOLIDATE IT AND/OR CLARIFY ANY ADDITIONAL ITEMS.

PLEASE SCHEDULE OUR HEARINGS AT YOUR EARLIEST POSSIBLE DATES AS WE WANT TO BE DONE WITH SITE WORK BY COLD ~~WEATHER~~ WEATHER

SINCERELY,

MIKE SCARKS

ENCLS.

NEPTUNE PROPERTIES, INC.

120 EXCHANGE STREET PORTLAND, MAINE 04101

TO: SARAH HOPKINS 7568258 FAX 9/20/96

FROM: MIKE SCARKS 1 PAGE

RE: FORE RIVER PLACE

DEAR SARAH:

I AM CURIOUS THAT IT HAS BEEN OVER 2 WEEKS SINCE WE PROVIDED THE TRAFFIC STUDY BILL BASH REQUIRED FOR THIS PROJECT AND NOW WE ARE 1½ WEEKS FROM THE PUBLIC HEARING AND HAVE RECEIVED NO COMMENTS DESPITE REQUESTING SAME SEVERAL TIMES. I'VE BEEN LED TO BELIEVE THAT ALL APPROVAL ISSUES (INCLUDING TRAFFIC) HAVE BEEN RESOLVED EXCEPT FOR MINOR DETAILS. PLEASE ADVISE

THANK YOU,

MIKE S.

9/20/96

P.S. SARAH, I HELD OFF SENDING THIS ON FRIDAY BASED ON YOUR USUAL STATEMENT THAT ALL TRAFFIC ISSUES WERE SIGNED OFF ON AND YOU WOULD INCLUDE WRITTEN CONFIRMATION IN YOUR FRI P.M. [redacted] MEMO, AS THIS WASN'T INCLUDED I'M SENDING IT FOR THE FILE.

MIKE S.

OFFICE: 207-775-2100 FAX: 207-874-6988

10/1/96 2:25pm

Mike – Here's Natalie's note:

It shall be the sole responsibility of the homeowner's association to ensure that the drainage system throughout the Willow development is not blocked or obstructed by any property owners.
The City shall have no responsibility for overseeing and enforcing this provision

- Sarah

Planning & Urban Development

Joseph E. Gray Jr.
Director

CITY OF PORTLAND

- CMP/RR
- Swales → easements? language? meets hours?
- permit depth.
- no ponding....
- Snow plow easement

September 27, 1996

Mike Scarks
Neptune Properties
120 Exchange St
Portland, Me 04101

Dear Mike:

Thank you for submitting the revised plans for the PRUD project. We were able to go over the plans during yesterday's staff review meeting. The comments raised are listed below and any subsequent staff comments are attached.

- Two specimen street trees (2-2 1/2" caliper) must be planted for each lot.

how about just the note? ←

- Contours should be shown for shared drainage courses between lots or have a typical swale detail referenced on the plan for the grading between lots.

centerline to/ft either side? OK?

- A note should be placed on the subdivision and site plan stating that "Actual grading of individual lots shall comply with sill elevations and flow directions as shown on the lot grading plan and shall be in accordance with the stormwater management plan." This note should replace note # which appears on the lot grading plan.

- A clarifying note should also be added stating that "all single family house plans and their associated grading and sedimentation/erosion control plans shall be reviewed administratively (minor-minor) by the Planning Office".

- The grading plans indicate that the houses in the back, along the CMP r.o.w. will grade to the rear swale. The stormwater report indicates that all lots will be grade towards the center of the parcel.

- Reciprocal easements should be shown where lots share drainage swales. These easements should be shown on the recording plat.

- Could you please add three more spot grades around the neighbor located adjacent to the break in the privacy berm. We want to make sure that runoff will continue through the break in the berm.

- Likewise, we request that a note be added to the plan stating "that field grading shall be sufficient to ensure that there is no blockage, ponding, or detention of water on adjacent properties caused by the Willow development".

- As mentioned during our meeting on September 13 and during the last Planning Board workshop, we continue to be concerned about the railroad drainage impact issue. First, we are not sure whether you meet the standards for stormwater management and second, we are not convinced that you have a legal right to place your drainage in this area.

  Ultimately, we wonder whether fixing the railroad culvert and passing all water from the development through the pipe to the Fore River might in fact negate the need for the stormwater detention pond, provide more common green area, and guarantee the lack of impact on the railroad property.

- Due to our ongoing concerns about stormwater, we would suggest a separate extended 5 year performance guarantee covering drainage improvements.

- We will still need to see calculations on the outside swale capacity. As for the swale, the detail should indicate a minimum pitch and surface treatment. The swale system should also be included with the other drainage maintenance agreements and included as a common element and maintenance item in the condo docs.

- After speaking with the sewer grinder pump manufacturer, Steve would suggest that the condo docs be revised to give a description of the sewer system and an explanation of its maintenance and emergency procedures. Also, since the tanks do not have a 24 hour capacity, we would require that the association keep a common pump as a back up.

- Tony Lombardo was going to fax over a detail for the sewer connection/wye/cleanout.

- The City Engineer reviewed your proposal for the road pavement and finds it to be unacceptable. She would recommend using the City standard of 2" hot bit pvmnt grade B and 1 1/2" hot bit pvmnt grade C.

- An access easement for the public water blow off on lot #18 will have to be shown on the plan and submitted.

- In order for your submission to be considered complete, a surveyor must stamp the plans.

- As we discussed earlier, Natalie Burns has requested proof of right or permission from CMP for any work in the easement.

Enclosed is a memo from Steve Bushey regarding his engineering concerns.

Please call if you have any questions.

Sincerely,

Sarah Hopkins
Senior Planner

cc.: Alex Jaegerman, Chief Planner
Steve Bushey, Development Review Coordinator
Natalie Burns, Assistant Corporation Counsel
Kathi Staples, City Engineer

DeLUCA HOFFMAN ASSOCIATES, INC.
CONSULTING ENGINEERS

778 MAIN STREET
SUITE 8
SOUTH PORTLAND, MAINE 04106
TEL 207 775 1121
FAX 207 879 0896

- ROADWAY DESIGN
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- SITE PLANNING
- CONSTRUCTION ADMINISTRATION

September 27, 1996

Post-it® Fax Note 7671	Date 9/27/96	# of pages ▶ 2
To Sarah/Alex	From Jeff Bushy	
Co./Dept.	Co.	
Phone #	Phone #	
Fax #	Fax #	

Ms. Sarah Hopkins
Planning Department, 4th Floor
City of Portland
389 Congress Street
Portland, Maine 04101

Subject: "Fore River Place"
Engineering Review Letter #4

Dear Ms. Hopkins:

DeLuca-Hoffman Associates, Inc. has completed a review of revised submission materials for the proposed "Fore River Place" subdivision. These materials include the following:

- Surface water runoff memorandum dated September 23, 1996.
- Letter from Neptune Properties, Inc. to Sarah Hopkins dated September 19, 1996.
- Revised Development Plans outlined as follows:
  - Lot Configuration Plan last revised September 23, 1996.
  - Site Development Plan last revised September 23, 1996.
  - Soils and Test Pits last revised September 23, 1996.
  - Drainage and Erosion Control Plan last revised September 23, 1996.
  - Profiles and Construction Details last revised September 23, 1996.
  - Landscaping and Lot Grading (assumed last revision was September 16, 1996).
  - Island Details.

The following comments are provided based on the latest submission materials:

1. The Applicant proposes stormwater management measures including an onsite detention pond that will detain stormwater runoff from the development and allow postdevelopment peak discharge rates to be at or below predevelopment levels. Aside from several technical comments to follow, the proposed system appears to satisfy the goal of stormwater management for the site. However, the Applicant has not provided supporting computations for their claim of minimal impact to the existing ponded area adjacent the railroad. Also, the Applicant has not provided sufficient evidence regarding their rights to discharge into the existing swale/ponded area located within the Central Maine Power and Portland Terminal Company properties. As has been discussed with the Applicant on previous occasions, this existing ponded area is a current problem area as identified by the Portland Terminal Company in correspondence to the City. Based on the past filling and land activity in that vicinity, it is not clear that the pond could be considered a natural drainage feature, therefore, any new drainage patterns to the pond could be considered as detrimental to an already poor condition. Until the Applicant can provide this evidence of drainage rights to discharge stormwater into the CMP and Portland Terminal Company property, the stormwater management program for the development is still considered to be incomplete.

DeLUCA HOFFMAN ASSOCIATES, INC.
CONSULTING ENGINEERS

2. The Applicant's latest stormwater management computations continue to include the use of ponding in the vicinity of the Blake property in the predevelopment condition. The input data cannot be recreated from the present plans, therefore, the Applicant should provide an explanation of these computational assumptions.
3. The detention pond computations indicate a peak elevation of 32.6 feet during a 25 year storm. This level is only 0.4 feet below the proposed street elevation at the inlet swale located next to catch basin #2. At a minimum, the free board elevation between the peak and spillover should be 1.0 feet. In addition, only 0.2 feet of elevation differential exists between catch basin #2 and the pond inlet next to it. This appears to be insufficient to insure that runoff from the surrounding subcatchment will enter into the pond via the swale instead of entering the catch basin and then bypassing the pond. Perhaps the swale can be relocated slightly and sufficient spot grades provided to prevent this.
4. The subdivision plat must be signed and stamped by a licensed surveyor.
5. The typical road section should be revised to reflect the roadway section required by the Portland Public Works Department. The section should also contain a note provided acceptable gradation for "suitable backfill". The attached specification from the City would be acceptable. → FAX to Mike
6. The lot grading plans should include a specific example of grading between lots to act as a reference when each lot will be reviewed on an individual basis. The lot grading plan should also correspond to the assumptions used in the stormwater management computations. Mainly, drainage behind Lots 12 through 16 should be directed into the detention basin and not into the drainage swale in the CMP easement area.
7. An easement should be provided for the water main which ends on Lot 18.
8. The site development plan should include the necessary layout and detail information for the force main sewer connection to the public sewer. This appears still not to reflect Portland Water District standards. → tony.
9. The plan should include a detail for the flushing connections for the proposed sewer.
10. The Applicant should provide computations for sizing the drainage swale along the perimeter berm so that capacity can be confirmed. A detail for the swale treatment, i.e. grass or riprap, should also be provided.
11. The Applicant should be required as a condition of approval to insure that responsibility is established with the Homeowners Association for providing wastewater disposal pump replacement equipment.

If you have any questions regarding these comments, please call this office.

Sincerely,

DeLUCA-HOFFMAN ASSOCIATES, INC.

Stephen R. Bushey, P.E.
Project Engineer

SRB/dsd/JN1350.02/hop9-27

c: Alex Jaegerman, Planning Department

Planning & Urban Development

Joseph E. Gray Jr.
Director

CITY OF PORTLAND

August 13, 1996

Michael Scarks
Neptune Properties
120 Exchange St.
Portland, ME
04101

Any progress on drainage plans?
Can I review Bushay's comments?
Alex

RE: Fore River Place

Dear Mike:

Bill Bray and I went out to the development site yesterday afternoon to get an idea of existing conditions of both Mitton and Lassell Streets. Based on the measurements of the streets, Bill suggests the following:

→ Are we (Plng & Pub Wks) advising the Board to require this? How are we proceeding on this issue?

Mitton St.: If the Planning Board insists on a connected street, we would require building the City portion of the street to a pavement width of 29 ft, to match existing, with granite curb and a sidewalk connnecting to the existing bituminous sidewalk on the west side of Mitton Street.

Lassell St.: Similarly, Mr. Bray will require a pavement width to match the existing 28 ft, as well as granite curb. Sidewalk should also be constructed to connect to the existing bituminous sidewalk further down Lassell Street.

Therefore, the following waivers will be required from the Planning Board and supported by Public Works:

- Pavement width (from 32 to 28 and/or 29 ft); and
- sidewalks on only the east side of Mitton St and/or west side of Lassell Street.

This request should be made in writing and should list the above waivers and any other waivers that you would like to be considered.

Also, Natalie Burns has been reviewing your condominium documents and has requested that you clarify who's responsibility it is to remove garbage.

Please do not hesitate to call if you have any questions.

Sincerely,

Sarah

Sarah Hopkins

CC.: Alex Jaegerman, Chief Planner
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Attachment 3

FORE RIVER PLACE

BYLAWS

of

FORE RIVER PLACE ASSOCIATION

ARTICLE I. CREATION AND APPLICATION

Section 1.01 Creation.

This corporation is organized under the Maine Nonprofit Corporation Act in connection with the submission of premises known as Fore River Place located on Mitton Street, Portland, Maine as shown on a Plan dated June 28, 1996 by Civil Consultants Inc., recorded in the Cumberland County Registry of Deeds in Plan Book ___, Page ___ including easements, rights and appurtenances belong thereto (the "Property") to the Declaration of Covenants and Restrictions dated _____as recorded or to be recorded in the Cumberland County Registry of Deeds (the "Declaration") . The name of the corporation is "Fore River Place Association" (the "Association").

The term "Property" as used herein shall include lots 1 through 19 inclusive, together with common areas and road ways submitted to the declaration by Neptune Properties, Inc., a Maine corporation (the "Grantor") including easements, rights and appurtenances belonging thereto and all other property intended for use in connection therewith submitted to or governed by the Declaration. The term "Lot" or "Lots" shall mean the single family residential lots now or hereafter composing the Property. Owner shall mean the owner of a Lot on the Property.

Section 1.02 Application.

All present and future Lot owners, mortgagees, lessees, licensees and occupants of the Lots, their employees, agents and customers, and any other persons who may use the Property in any manner are subject to these Bylaws and to the Rules and Regulations, all as adopted, amended or altered from time to time by the Board of Directors of the Association (the "Board of Directors").

Section 1.04 Office.

The principal office of the Association shall be located at the Property.

ARTICLE II. PURPOSES AND POWERS OF THE ASSOCIATION

Section 2.1 Purposes.

The purposes of the Association are to establish an association of Lot owners for the government, operation and maintenance of the Property under the Declaration; and

Section 2.2 Powers.

In addition to all the powers, authority and responsibilities granted to or impose upon this Association by the laws of the State of Maine, specifically including those set forth or referred to in the Maine Non-Profit Corporation Act (the "Act") all of which the Association shall have to the extent permitted by law and by the Declaration, the Association shall have the specific powers to:

A. Adopt and amend Bylaws and Rules and Regulations;

B. Adopt and amend budgets for revenues, expenditures and reserves, and to collect assessments for common expenses and service charges from owners;

C. Hire and terminate managers and other employees, agents, and independent contractors;

D. Institute, defend, or intervene in litigation or administrative proceedings in its own name on behalf of itself or two (2) or more owners on matters affecting the Property (including without limitation the power to enforce the Declaration, the Plan and these Bylaws) and the Association shall be deemed to be the attorney in fact of each owner for such purposes;

E. Make contracts and incur liabilities;

F. Regulate the use, maintenance, repair, replacement and modification of the Property under common use and/or control, including without limitation the roads, pathways, ponds, recreational area, drainage systems etc.;

G. Cause additional improvements to be made as a part of the Property subject to the restrictions set forth herein;

H. Acquire, hold, encumber and convey in its own name any right, title, or interest to real or personal property; Grant easements, leases and licenses for public utilities servicing or benefiting the Property through or over the premises owned by the Association or as provided by the Declaration or as now or hereafter duly granted to the Association by recorded instrument;

J. Impose and receive payments, fees, or charges for the use, rental, or operation of common facilities and easements located on the Property, including without limitation those shown on the Plan and/or as established under the Declaration;

K. Impose charges and interest for late payment of assessments and service charges and, after notice and an opportunity to be heard, impose reasonable

penalties for violations of the Declaration, Bylaws, and Rules and Regulations of the Association;

L. Impose reasonable charges for the preparation and recording of amendments to the Declaration or statements of unpaid common charges and assessments;

M. Provide for the indemnification of its officers and directors and maintain directors' and officers' liability insurance;

N. Exercise any other powers, rights and authority conferred by Declaration or Bylaws;

O. Exercise all other powers that may be exercised pursuant to the Maine Nonprofit Corporation Act. The Board of Directors of the Association shall manage the Property and exercise such powers on behalf of the Association, subject to the terms of these Bylaws and the Declaration.

Section 2.3 Non-Profit Status.
The Association is not organized for profit and no property or profit thereof shall inure to the benefit of any person except in furtherance of the nonprofit making purposes of the Association or in the course of acquiring, constructing or providing management, maintenance and care of the Property, or by virtue of a rebate of excess membership dues, fees, assessments, or common charges.

ARTICLE III. ASSOCIATION OF OWNERS.

Section 3.1 Membership.
The members shall consist exclusively of all owners of Lots and Units in the Property now or hereafter created in accordance with the Declaration. Membership is transferable only as provided in the Declaration or these Bylaws. The membership of an owner shall terminate upon the conveyance, transfer or other disposition of his interest in the Lot accomplished in accordance with the Declaration, whereupon his membership and any interest in the assets of the Association shall automatically transfer to and be vested in the successor in ownership. Membership is otherwise non-transferable. A mortgage of a Lot or the grant of a security interest not therein as security for an obligation shall not operate to transfer membership until a foreclosure of the mortgage or security agreement.

Section 3.2 Annual Meeting.
Meetings of the members shall be held annually each successive year on the date set by the Directors of the Association. The annual meeting and any

special meetings shall be held at the principal office or such other place as may be designated in the Notice of Meeting.

Section 3.3 Special Meetings.
Special meetings of the members may be held at any time upon the call of the Board of Directors, or upon the call of Fifty percent (50%) or more in interest of the owners, which call shall state the purpose of the meeting. Upon receipt of such call, the Secretary shall promptly send out notices of the meeting to all members of the Association.

Section 3.4 Notice of Meetings.
A written notice of each meeting of the Association, stating whether it is an annual meeting or special meeting, the authority for the call of the meeting, the place and time of the meeting, and the items on the agenda (including the general nature of a proposed declaration or bylaw amendment, any budget charges and any proposal to remove an officer or director) shall be sent by the President or Secretary or Assistant Secretary, if any, at least Ten (10) days, but not more than Sixty (60) days, before the date set for the meeting. Such notice shall be given to each member listed with the records of the Association as set forth below and to each Eligible Mortgage Holders if and as required by the Declaration:

A. By hand delivering it to him, or

B. By mailing it, postage prepaid, addressed to the member at the address of the Lot/Unit or any other address designated in writing by that member with the records of the Association. The notice of any meeting shall state the time and place of the meeting, and the items on the agenda, including the general nature of any proposed Declaration or Bylaw amendments, any budget changes and any proposal to remove an officer or director. If notice is given pursuant to the provisions of this section, the failure of any member to receive actual notice of the meeting shall not invalidate the meeting.

Section 3.5 Waiver of Notice.
The presence of all the members in person or by proxy, at any meeting shall conclusively establish the meeting's validity, unless any member shall object at the meeting to the noncompliance with this Article. Any meeting so held without objection shall be valid for all purposes, and at any annual meeting any general business may be transacted and any action may be taken.

Section 3.6 Order of Business. The order of business at all meetings of the members shall be generally as follows, if applicable:

A. Roll call.

B. Proof of notice of meeting or waiver of notice.
C. Reading of minutes of preceding meeting.
D. Reports of Officers.
E. Report of Board of Directors.
F. Report of committees.
G. Election of the Board of Directors.
H. Unfinished business.
I. New business.
J. Adjournment.

Section 3.7 Parliamentary Procedure.
At all meetings of the members or of the Board of Directors, Roberts' Rules of Order as then amended shall be followed, except in the event of conflict these Bylaws or Declaration as the case may be shall prevail.

Section 3.8 Quorum.
The presence at the beginning of any meeting of the Association, in person or by proxy of owners whose aggregate voting interest constitutes more than Forty percent (40%) of the total interest therein shall constitute a quorum for the transaction of all

Section 3.9 Voting.
A. Any person, partnership, corporation, trust, or other legal entity or a combination thereof, owning any Lot (other than an interest held as security for an obligation) duly recorded in his or its name, which ownership shall be determined from the records of the Cumberland County Registry of Deeds, shall be a member of the Association, and either, in person or by proxy.

B. Multiple owners of a Lot shall be deemed one owner. If only one of the multiple owners of a Lot is present in person or by proxy at a meeting of the Association, he is entitled to cast all the vote allocated to that Lot. If more than one of the multiple owners are present, the vote allocated to that Lot may be cast only in accordance with the agreement of a majority in interest of the owners. There is presumed to be a majority agreement if any one of the multiple owners present casts the votes allocated to that Lot unless any of the other owners of the Lot promptly protests to the person presiding over the meeting.

C. Each Lot shall have one vote in the Association.

D. Votes may be cast pursuant to a proxy duly executed by an owner. If a Lot is owned by more than one person, each owner may vote or register protest to the casting of votes by the other owners of the Lot through a duly executed proxy. An owner may not revoke a proxy given pursuant to this section except

by actual notice of revocation to the person residing over a meeting of the Association. A proxy is void if it is not dated or purports to be revocable without notice. A proxy shall automatically terminate Eleven (11) months after its date, unless it specifies a shorter term.

E. An executor, administrator, personal representative, guardian, or trustee may vote in person or by proxy at any meeting of the Association with respect to any Lot owned or held by him in such a capacity, whether or not the same shall have been transferred of record by a duly recorded conveyance. If the Lot has not been so transferred, he shall satisfy the secretary that he so holds the Lot.

E. The Grantor may exercise the voting rights pertaining to any Lot to which it retains title. No vote pertaining to a Lot owned by the Association may be cast, and the voting interest of such a Lot shall not be deemed to be outstanding in determining the presence of a quorum or the percentage of approval needed to act.

F. Each Lot and each Unit shall have a single vote. Any specified percentage vote refers to the aggregate percentage of such votes.

G. At any meeting at which a quorum is present, the affirmative vote of a majority of the voting interest of those present shall determine any question except the election of Directors, unless a greater percentage vote is required by law, by the Declaration or by these Bylaws. In the election of Directors, those receiving the greatest number of votes, though less than a majority, shall be elected.

Section 3.10 Adjournment.
Any meeting of the Association may be adjourned from time to time to such place and time as may be determined by majority vote of the members present, whether a quorum be present or not, without further notice of the time and place of adjournment beyond that given at the meeting. At any adjourned meeting at which a quorum is present, any business may be transacted which might have been transacted by a quorum at the meeting as originally called.

Section 3.11 Unanimous Action by Members Without a Meeting.
Any action required or permitted to be taken at a meeting of the members (to the extent not otherwise precluded by law) may be taken without a meeting if written consents, setting forth the action so taken, are signed by all the members entitled to vote on such action and are filed with the Secretary of the Association as part of the corporate records. Such written consents shall have the same effect as a unanimous vote of the members.

ARTICLE IV. BOARD OF DIRECTORS.

Section 4.1 Number and Qualifications.

The affairs of the Association shall be governed by a Board of Directors initially composed of three (3) directors appointed by the Grantor. Upon the sale of 14 of the 19 Lots (being all the Lots which Grantor may create) the Lot owner members shall elect three (3) directors, all of which one shall have a term of one (1) year; such directors shall be the owner of a lot, or if a Lot owner is a corporation, partnership, trust or estate, then a designated agent thereof. The number of directors may be changed by amendment to the Bylaws with the consent of 75% of the Lot owner members, each voting as a class.

Section 4.2 Election and Term of Office.

All directors shall be elected for a term of one year each. At the expiration of the initial term of office of each director, his successor shall be elected to serve a term of One (1) year; provided, however, that a director shall hold office until his successor has been elected.

Section 4.3 Powers and Duties.

The Board of Directors shall generally act on behalf of the Association, shall have all powers and duties necessary or appropriate for the administration of the affairs of the Association, and shall have all powers referred to in the Declaration, the Bylaws or otherwise provided under the Maine Nonprofit Corporation Act, as either may be amended from time to time, except those matters which by law, by the Declaration or by these Bylaws specifically reserved to the members.

Section 4.4 Other Duties. In addition to other duties imposed by these Bylaws or by duly adopted resolutions of the members of the Association, the Board of Directors shall be responsible for the following:

A. Election of the officers of the Association;

B. Management and administration of the Property, the Association's property and the common facilities, including the maintenance, repair and replacement thereof;

C. Determination and collection of assessments, and service charges from the owners and the regulation of its fiscal affairs;

D. Establishment of reserves for the maintenance, repair and replacement of common areas and facilities and for contingencies, including without limitation those reserves required by the Declaration.

E. Appointment and dismissal of the personnel and agents for the maintenance and operation of the Property, including without limitation the common areas, and to fix the terms of their engagement and their compensation and authority; and

F. Designation of executive and other committees.

Section 4.5 Manager or Management Agent, Employees, Generally.
The Board of Directors may employ on behalf of the Association a management agent or manager at a compensation established by the Board to perform such duties and services as the Board shall authorize including, but not limited to, the duties listed in Sections 4.4 and 6.2 of these Bylaws.

Section 4.6 Appointment and Vacancies.
A vacancy caused by the expiration of a Director's term, the removal of a Director by a vote of the members, or by the expiration of the Grantor Control Period shall be filled by vote of the members. Vacancies in the Board of Directors prior to the expiration of the term of a director caused by any other reason shall be filled by vote of the other directors. A director elected to fill a vacancy shall be elected for the unexpired term of his predecessor in office.

Section 4.7 Removal of Directors. At any regular meeting or special meeting duly called, any one or more of the Directors may be removed with or without cause by the members who elected the director with or without cause. Any director whose removal has been proposed shall be given an opportunity to be heard at the meeting, but the members' decision shall be final. Any director elected by the Grantor may be removed by the Grantor at any time, with or without cause.

Section 4.8 Compensation.
No compensation shall be paid to Directors for their services as Directors or in any other capacity, unless a resolution authorizing such remuneration shall have been adopted by the members before or after the services are undertaken.

Section 4.9 Annual Meeting.
The annual meeting of the Board of Directors shall be held immediately following the annual meeting of the Association and at the same place; no further notice shall be necessary in order legally to constitute such meeting.

Section 4.10 Regular Meetings.
Regular meetings of the Board of Directors (other than the annual meeting) may be held at such time and place as shall be determined, from time to time, by the Board. Notice of regular meetings of the Board of Directors shall be given

to each Director, personally or by delivery to his Lot or Unit, or by telephone, at least Ten(10) days prior to the day named for such meeting.

Section 4.11 Special Meetings.
Special meetings of the Board of Directors may be called by the President on Ten (10) days' notice to each Director, given personally or by delivery to his Lot or Unit, or by telephone, which notice shall state the time, place and purpose of the meeting. Special meetings of the Board of Directors shall be called by the President or Secretary in like manner and on like notice upon the written request of Two (2) or more Directors.

Section 4.12 Waiver of Notice. Before or after any meeting of the Board of Directors, any Director may, in writing, waive notice of such meeting and such waiver shall be deemed equivalent to the giving of such notice. Attendance by a Director at any meeting of the Board shall be a waiver of notice by him of the time and place thereof. If all the Directors are present at any meeting of the Board, no notice shall be required and any business may be transacted at such meeting.

Section 4.13 Board of Directors' Quorum.
At all meetings of the Board of Directors, at the presence of at l
least three directors, at the beginning of a meeting shall constitute a quorum for the transaction of business. The acts of the majority of the Directors present shall be the acts of the Board of Directors. If, at any meeting of the Board of Directors,a quorum is not present, the majority of those present may adjourn the meeting from time to time. At any such adjourned meeting, any business which might have been transacted at the meeting as originally called may be transacted without further notice.

Section 4.14 Unanimous Action.
Unless otherwise expressly provided by law, any action which maybe taken at a meeting of the Directors may be taken without a meeting if all of the Directors sign written consents, setting forth the action taken or to be taken, at any time before or after the intended effective date of such action. Such consents shall be filed with the minutes of Directors' meetings and shall have the same effect as a unanimous vote.

ARTICLE V. OFFICERS.

Section 5.1 Designation.
The principal officers of the Association shall be a President, a Secretary and a Treasurer, of whom only the President need be elected from among the Directors. The Directors may in their discretion appoint a Vice President,

Assistant Treasurer, and an Assistant Secretary, and such other officers, none of whom need be Directors, as in their judgment may be necessary.

Section 5.2 Election of Officers.
The principal officers of the Association shall be elected annually by the Board of Directors at the annual meeting and shall hold office at the pleasure of the Board.

Section 5.3 Removal of Officers. Upon a majority vote of the Board of Directors, any officer maybe removed, either with or without cause, and his successor elected at any regular meeting of the Board of Directors, or at any special meeting of the Board of Directors called for such purpose. Any officer whose removal has been proposed, shall be given an opportunity to be heard at the meeting, but the Board's decision shall be final.

Section 5.4 President.
The President shall be the chief executive officer of the Association and shall be a Director. He shall preside at all meetings of the Association and of the Board of Directors.

Section 5.5 Treasurer.
The Treasurer shall be responsible for keeping financial records and accounts of all receipts and disbursements in books belonging to the Association. The Treasurer shall also, in the absence of the President, exercise the powers and perform the duties of the President. He shall be responsible, subject to the direction of the Board of Directors, for the preparation and dissemination to the members of all financial reports, budgets and notices required, and for the preparation and signing, if necessary, of all financial reports or tax returns required to be filed by the Association.

Section 5.6 Secretary.
The Secretary shall keep and certify the minutes of all meetings of the Board of Directors or of the Association, shall give all notices as provided by these Bylaws, and shall have other powers and duties as may be incidental to the offices of Secretary, given him by these Bylaws or assigned to him from time to time by the Directors. If the Secretary or any assistant secretary shall not be present at any meeting, the presiding officer shall appoint a secretary pro tempore who shall keep the minutes of such meeting and record them in the books provided for that purpose. The Secretary shall be responsible for the filing of all reports and documents required to be filed by the Association with any governmental agency.

Section 5.7 Auditor.

The members may at any meeting appoint some person, firm or corporation engaged in the business of auditing to act as auditor of the Association and to perform such audits and fiscal duties as may be requested by the Association.

Section 5.8 Amendments to Declaration.
The Secretary shall prepare amendments to the Declaration and the President and Secretary shall execute the certificate for recording on behalf of the Association.

ARTICLE VI. FISCAL AFFAIRS AND ADMINISTRATION.

Section 6.1 Accounting.

Books and accounts of the Association shall be kept under the direction of the Treasurer and in accordance with customary accounting principles and practices. Within Ninety (90) days after the close of each fiscal year, the Association shall furnish its members with a statement of the income and disbursements for such prior fiscal year and a balance sheet as of the close of that year. All financial records shall be available for examination by owners, mortgagees and their duly authorized agents and accountants at reasonable times.

Section 6.2 Budget and Common Charges.

A. The Board shall cause a proposed annual budget to be prepared based on its estimate of annual income and expenses. Within Thirty (30) days of the adoption of the proposed budget, the Board shall send a summary of such budget to each member.

B. The budget shall include the amount required by the Association to meet its expenses for each fiscal year or such other fiscal period as it deems appropriate, including but not limited to the following items:

1) Management and administration expenses;
2) The cost of operation, repairs, maintenance, replacement, and improvements of common areas and facilities benefiting the Property;
3) The cost of such insurance, bonds, services and utilities as may be furnished by the Association, other than such items for which a service charge is assessed;
4) The establishment and maintenance of adequate working capital and reserves including general operating reserves, reserves for contingencies, for losses not covered due to insurance deductibles, and reserves for periodic maintenance, repair and replacement of the common areas and facilities the Association maintains, all to be held in a segregated fund in a Maine financial institution; and

5) Such other expenses of the Association as may approved by the Board of Directors including operating deficiencies, if any, for prior periods.

C. Until an annual budget is adopted, the members shall continue to pay that monthly amount which had been previously established; any delay or failure to estimate, to deliver or to adopt such budget shall not waive or release such obligation. The Association may send periodic statements to members showing the amount of assessments due, but each member shall pay his assessment promptly when due regardless of whether such a statement is sent.

D. Each member shall pay his share of assessments without setoff or deduction in an amount equal to the total Association budget, net of other income and service charges as defined herein, times a fraction equal to one divided by the number of all Lots subject to the Declaration which are members of the Association. Each member shall become liable to the Association, and a lien shall arise against his Lot and/or Unit for his entire fractional share of the assessments at the commencement of the pertinent fiscal period. Each member may pay his share of the common charges in monthly installments on or before the first day of each and every month during such period, provided, however, that if any such installment is not paid when due, then if not paid upon Twenty (20) days written notice of default, the entire remaining balance thereof shall immediately become due and payable in full.

Section 6.3 Revised and Special Assessments.

If at any time the Board shall determine the amount of the common charges to be inadequate, whether by reason of a revision in its estimate of expenses or income, the Board may adopt and deliver to the members at least thirty days prior to the date on which it becomes effective, a revised estimated annual budget for the balance of such fiscal year and thereafter monthly common charges shall be determined and paid on the basis of such revision.

The Board may, upon determining that circumstances exist which requires immediate assessment of the members, make special assessments, not to exceed an amount equal to one current monthly assessment for each Lot and Unit unless approved by the members, which shall be due and payable when delivered to the members.

Section 6.4 Fiscal Year.

The fiscal year of the Association shall be such as may from time to time be established by the Board of Directors.

Section 6.5 Capital Improvements.

The approval of 2/3 of the members collectively, either directly or through the approval of the Board of Directors may determine, shall be required to make a

capital improvement to the common facilities in an amount in excess of Thirty Five (35%) of the aggregate assessments against all the members over the prior fiscal year, exclusive of service charges and user fees, and in such event the cost thereof shall be assessed to all owners as an assessment.

Section 6.6 Use. All Lots shall be utilized in accordance with the provisions of the Bylaws, Declaration, and Rules and Regulations.

Section 6.7 Enforcement of Declaration and Bylaws. Every owner shall pay to the Association promptly on demand all costs and expenses, including reasonable attorneys' fees and expenses incurred by or on behalf of the Association, in collecting any delinquent assessments, service charges or fees due from such Lot, foreclosing its lien for assessments, collecting any penalties imposed hereunder, or enforcing any provisions of the Declaration, these Bylaws, or the Rules and Regulations against such owner or any occupant of such Lot.

Section 6.8 Rules and Regulations.
In order to assist the peaceful and orderly use and enjoyment of the buildings and common facilities of the Property, the Board of Directors may from time to time adopt, modify, and revoke, in whole or in part, such further reasonable rules and regulations governing the Property as it may deem necessary, including, but not limited to methods and procedures for enforcing compliance with the Declaration and Bylaws. Such Rules and Regulations upon adoption, and every amendment, modification, and revocation thereof, shall be sent promptly to each Lot and shall be binding upon all members of the Association and all persons present on the Property.

Section 6.9 Restrictions.
As an amendment to these Bylaws and subject to the Declaration(which shall control in event of any conflict), the members may from time to time adopt, modify and amend such further restrictions on and requirements respecting the use and maintenance of Lots and the use of common facilities designed to prevent unreasonable interference with the use and enjoyment of the Property.

Section 6.10 Title.
Every owner shall promptly record in the Cumberland County Registry of Deeds the deed, assignment, or other conveyance to him of his Lot or other evidence of his title thereto and file such evidence of his title with the Association, and the Secretary shall maintain such information in the records of the Association.

Section 6.11 Insurance.
A. The Association shall maintain, to the extent reasonably available:

1) Property insurance on the common areas and facilities insuring against fire, extended coverage perils and all other risks customarily covered for similar types of properties, including those covered by the standard "all risk" endorsement. The total amount of insurance after application of any deductibles shall as near as is practicable to 100% of the replacement cost (unless the Board of Directors elect a higher level of coverage), exclusive of land, excavations, foundations and other items normally excluded from property policies, but with such deductible as determined by the Board of Directors but not to exceed the lesser of $10,000 or 1% of the policy face amount;

2) Comprehensive general liability insurance including bodily injury, property damage and medical payments insurance and for claims related to employment contracts to which the Association is a party, in an amount determined by the Board of Directors but at least $1,000,000.00 for any single occurrence covering all occurrences commonly insured against arising out of or in connection with the use, ownership, or maintenance of the common facilities and all other areas under the supervision or control of the Association;

3) Such other insurance as the Board of Directors of the Association may determine is appropriate. The Board of Directors shall require all officers and employees of the Association handling or responsible for corporate funds to furnish adequate fidelity bonds in the amount of the maximum funds that will be in the custody of the Association or any management agent at any time but not less than 3 months common charges plus the amount of the Association's reserve account balance. The premiums on such bonds shall be paid by the Association.

B. Insurance policies carried pursuant to Subsection (A) shall provide:

1) An owner is an insured person under the policy with respect to liability arising out of his ownership of an undivided interest in the common facilities or membership in the Association;

2) The insurer waives its right to subrogation under the policy against any owner or members of his household;

3) No act or omission by any insured will be a defense to recovery under the policy; and

4) If, at the time of a loss under the policy, there is other insurance in the name of an owner covering the same property covered by the Association's policy, the Association's policy is primary insurance not contributing with the other insurance.

C. All insurance policies shall provide that the named insured is "Association of the Owners of Summer Place Association, for the use and benefit of the individual owners." Any loss covered by the property policy under subsection (A) shall be adjusted with the Association, but the insurance proceeds for that loss shall be payable to the Association in trust for Lot owners, mortgagees and lien holders.

D. Lot owners shall not be prohibited from obtaining insurance for their own benefit; provided nonetheless that all such insurance shall contain waivers of subrogation and further provide that the insurance obtained by the Board of Directors shall not be affected or diminished by such additional insurance obtained by any owner.

F. Any portion of the Property damaged or destroyed shall be repaired or replaced promptly by the Association unless:

(i) Repair or replacement would be illegal under any state or local health or safety statute or ordinance; or

(ii) Eighty (80%) of the members vote not to rebuild. The cost of repair or replacement in excess of insurance proceeds and reserves shall be a common expense; funds to cover the deductible amount shall be included in the Association's reserve account budget.

In the event of a claim under any insurance maintained by the Association, the Board of Directors shall designate one or more persons to adjust the loss or otherwise negotiate with the insurer. It shall be the responsibility of each Lot owner to procure adequate insurance covering the buildings and improvements on his Lot.

ARTICLE VII. SALE OR OTHER TRANSFERS

Section 7.1 Binding Effect.

All subsequent sales, leases or other transfers of a Lot by an owner shall be subject in all respects to the Declaration, Bylaws, and Rules and Regulations of the Association.

Section 7.2 Liability for Assessments, Etc.

In the transfer of a Lot, the grantee of the Lot shall be jointly and severally liable with the grantor for all unpaid assessments and service charges, interest and costs of collection outstanding at the time of the grantor's transfer, without prejudice to the grantee's right to recover from the grantor the amounts paid by the grantee therefor. However, any such grantee or proposed purchaser under a purchase and sale contract upon written request and upon payment of such fee as may be set by the Directors may obtain a statement

from the Board of Directors setting forth the amount of unpaid, assessments, and service charges against the Lot, and the grantee shall not be liable for, nor shall the Lot conveyed be subject to a lien for any, assessments, and service charges arising before the statement date in excess of the amount therein set forth.

ARTICLE VIII. EXECUTION OF INSTRUMENTS.

Section 8.1 Instruments Generally.

All checks, drafts, notes, vouchers, bonds, acceptances, contracts, deeds, lien notices, certificates, and all other instruments shall be signed or approved by the President or the Secretary or Treasurer, and in addition by any one or more officer(s), agent(s) or employee(s), all as the Board of Directors may designate, unless otherwise unanimously voted by the Board of Directors.

ARTICLE IX. GENERAL ADMINISTRATION.

Section 9.1 Easements, Etc.

The Association is authorized and empowered to grant such easements, rights-of-way, leases and licenses for sewer lines, water lines, electrical cables, telephone cables, television cables and antennas, gas lines, storm drains, underground conduits, fire escapes and alarms and such other purposes related to the provision of public services and utilities to the Property owned by the Association and under the roads and reserved easements as shown on the Plans pursuant to the Declaration as may be considered desirable, necessary or appropriate by the Board of Directors for the orderly maintenance, improvement and preservation and enjoyment of the common facilities, the Lots or for the preservation of the health, safety, convenience and welfare of the owners of the individual Lots upon at least Thirty (30) days' notice to the members unless a special meeting of the members is called within such period and the members vote to reject such grant. No such rights may be created through any Lot without the written consent of the owners thereof except as provided in the Declaration or reserved in the deed for such Lot and that no such easement shall materially impair the use and enjoyment of the Property.

Section 9.2 Utility Services.

The Association shall not be liable for the failure of electricity, telephone, water supply, sewage disposal systems, or other services to be obtained by the Association or paid for out of the common expense or service charge funds, or for injury or damages to persons or property caused by the elements or by the owner of any Lot or by any other person, or resulting from electricity, water, snow or ice which may leak, fall or flow from or settle on any portion of the common facilities or from any sewer, drain, ditch, pond, stream, wire, pipe, drain, conduit, appliance or equipment. The Association shall not be liable to the owner of any Lot for loss or damage, by theft, or otherwise, of property which may be

stored upon or in any individual Lot or in any of the common facilities. No set-off, diminution or abatement of assessments for common expenses or service charges, shall be claimed or allowed for the expense, damage or discomfort arising from the making of repairs or improvements to the common facilities or to any Lot, or from any action taken by the Association to comply with any law, ordinance, or order of any other governmental authority.

ARTICLE X. LIABILITY OF DIRECTORS AND OFFICERS.

Section 10.1 Exculpation.

No director or officer of the Association shall be liable for acts or defaults of himself or any other officer or member, or for any loss sustained by the Association or any member thereof, unless the same has resulted from his own willful misconduct or gross negligence.

Section 10.2 Indemnification.

The Association shall indemnify any person who was or is threatened to be made a party against any actual, threatened, or completed action, or proceeding, whether civil, criminal, administrative or investigative, by reason of the fact he is or was an officer, director, agent or employee of the Association against all expenses including reasonable counsel fees, judgments, fines and amounts paid in settlement actually and reasonably incurred by him in connection therewith, excepting, however, such matters in which such person is finally adjudged to have acted with willful misconduct or gross negligence towards the Association or absent a final adjudication thereof, excepting such matters in which the Board of Directors (excluding any interested Director) determines any such person acted with willful misconduct or gross negligence. This right to indemnification shall be in addition to any other power of the Association to indemnify as permitted by law. The Association may also maintain insurance on behalf of any person who is or was a director, officer, agent or employee of the Association against any liability asserted against him and incurred by him in such capacity or arising out of his status as such, whether or not the Association would otherwise have the power or duty to indemnify him.

ARTICLE XI. BYLAWS.

Section 11.1 Amendment.

These Bylaws may be amended, modified, or revoked in any respect from time to time by vote of Seventy Five percent (75%) or more of the members of the Association at a meeting duly called for the purpose, PROVIDED, HOWEVER, that these Bylaws shall always contain those particulars which are required by the Declaration.

Section 11.2 Conflict.
In the event of any conflict between these Bylaws and the provisions of the Declaration, the latter shall govern and apply.

Attachment 4

DECLARATION OF COVENANTS AND RESTRICTIONS

FORE RIVER PLACE

PORTLAND , MAINE

KNOW ALL MEN BY THESE PRESENTS, that It, Neptune Properties, Inc., a Maine corporation with a place of business in Portland , Maine (hereinafter called "Grantor"), is the owner of certain real estate located in Portland, Maine and known as "Fore River Place" as shown on a Plan dated June 28, 1996 by Civil Consultants , Inc. recorded in the Cumberland County Registry of Deeds in Plan Book ____, Page ____ (the "Property");

WHEREAS, the Grantor desires to create and maintain a residential area consisting of house lots and detached residential dwellings preserving the natural and residential features of the Property which are of unusual value;

WHEREAS, Grantor proposes to establish Fore River Place Association, a Maine nonstock corporation (the "Association") the members of which will consist of the owners of lots in Fore River Place;

WHEREAS, Grantor desires to ensure the use and enjoyment of the Property as a residential community;

WHEREAS, Grantor desires to bind the purchasers of Lots and their successors and assigns to properly maintain and operate the common amenities consisting of private roadways, sidewalks, arbor and garden and other facilities useful or essential to the residential use and enjoyment of the Property; and

WHEREAS, the Grantor desires to assist its Grantees in providing the necessary means to enable them and their Grantees to accomplish these purposes;

NOW THEREFORE, in consideration of the premises, the Grantor for itself and its successors and assigns, hereby subject the Property including all the Lots on said Plan numbered 1 through 19 inclusive, (collectively the "Property) to the following restrictions, covenants, agreements and liens as covenants running with the land which shall be binding upon and enforceable by the Grantor, its successors and assigns, the association, its successors and assigns, or by the then owner of any parcel or lot subject to this Declaration to wit:

1. Residence.

The Property shall be used for single family residences only.

A. Lots.

The Lots shall be occupied by not more than one single family residential unit per lot, a residential unit shall include no buildings or structures of any nature other than the following, viz:

i. one detached dwelling house designed as a residence for one family;

ii. one garage for private use constructed either as an integral part of the dwelling or as a detached building and adapted for storage of not more than three automobiles; and,

iii. suitable garden structures ordinarily appurtenant to single-family dwelling houses.

B. All structures shall be subject to to Design Reveiw pursuant to the provisions of Exhibit B attached hereto.

1B. Design Reveiw Board

The Design Reveiw Board shall consist of solely the Grantor until the transfer of the responsibility of Design Reveiw is made to the Association by the Grantor or pursuant to article 10 of this declaration.

2. Business and Trade.

No business or trade of any kind shall be operated on the property, provided, nonetheless, that:

(i) a residence may be used for personal or professional work by a resident but may be used neither for meeting clients or patients nor held out as an office to such persons or the public; and,

(ii) a lot or unit may be used for the construction of the residential structures permitted thereunder. Grantor may maintain sales, leasing and management office (s), may use unsold lots and the improvements thereon for display and marketing purposes, and a Lot Owner may use the Property for the construction of buildings and improvements as provided in this Declaration. The Grantor and the Association may upon request and upon the payment of a reasonable fee issue a certificate indicating whether any apparent violation(s) of this Section or known violation(s) of this Declaration exist, which shall be conclusive and binding with respect to the matters stated therein. Neither the Grantor, the Association nor any officer, director, employee or agent of the foregoing shall be liable to any person for any action in connection with the administration, enforcement or nonenforcement of this Section, including without limitation, mistakes in judgment, negligence or misfeasance.

3. Pets and Animals.

Nothing shall be done which may be or become an annoyance or nuisance; the keeping of poultry, swine, or livestock other than personal household pets housed in a residence shall not be permitted. No boarding or breeding kennels shall kept or maintained on the property. The Association shall have the power

to regulate the keeping of pets under the bylaws or rules and regulations of the Association as promulgated or amended from time to time. In any event, all animals shall be restrained so as not to become noisome or offensive to the occupants of any units; pets shall not be permitted off the owner's Lot except on a leash attended by a responsible person.

4. Motor Vehicles.

Outside parking areas, roads and driveways may be used for the parking of private passenger motor vehicles only. The Lots shall not be used for outside parking of camping trailers, recreational vehicles, motor homes, trucks rated for a gross vehicle weight of over 10,000 pounds or unlicensed or inoperable vehicles except with the prior written approval of the Association's Board of Directors or within a fully enclosed garage. No person shall park or leave any motor vehicle or other personal property overnight on any of the private roads; breach of this restriction shall subject the vehicle or property to removal at the risk and expense of the owner thereof. The Board of Directors of the Association shall have the power to adopt such reasonable rules and regulations as it deems appropriate regulating the use of motor vehicles on the Property. Snowmobiles, all-terrain vehicles, trail bikes and any similar vehicles shall not be operated on the Property.

5. Signs.

Lot owners shall have the right to install a sign of not more than two (2) square feet showing the name of the owner or occupant and the name(s) or number of the premises. All signs shall be compatible with the environment, approved by the Design Review Board and under no circumstances shall projecting signs, be brightly lighted or internally lighted signs be permitted on any parcel.

6. Completion of Construction.

Within twelve (12) months from the start of any construction (or upon the partial or complete destruction of any residence), a Lot owner shall erect ,build and have the exterior of the building completely finished in a manner consistent with the conditions set forth herein including the revegetation of all disturbed areas and approved driveway surfacing.

7A. Association maintenance of Common Areas and Facilities.

The Association and its Board of Directors and their designees shall also have and are hereby granted the right and obligation to maintain, repair, replace, add to and alter the common roads, utility and service lines, drainage system, recreational facilities and other common facilities, and make excavations for said purposes. No owner shall do any of the foregoing without the prior permission of said Board of Directors in each instance. The Association shall inspect and maintain the surface water systems on the Property at least annually or more frequently if required as follows:

A. Inspection of all/any septic tanks,chambers, and pumps.

B. Inpection of all sanitary manholes and clean as necessary or more frequently if required.

C. Inspection of all/any pumps, pump controls, and pump station alarm systems. Association shall own 1 (one) replacement sewer grinder pump (Environment One #2010-44) for emergency use and repair by individual homeowners. Should a homeowners pump need service or repair, the Association has no responsibility for said repair. Homeowner shall return Association's pump as soon as possible in new condition. Pump along with operating maintenance and repair manuals shall be stored at the residence of the presiding President of the Association.

D. Removal of any accumulated silt or debris from culverts and ponds;

E. Inspection of the rip-rap at the outlet end of the culverts and reset any dislocated stones, to be performed by Lot owners as part of their land maintenance;

F. Other maintenance as it becomes necessary to enable storm drain systems and any/ all other systems installed to function as designed.

The expense thereof, except as otherwise indicated herein, shall be charged as a common expense, provided however that the Association may charge the responsible owners for the replacement and repair of damage due to the negligence or misuse of such facilities. The Association shall also establish a reserve account for the replacement and repair of the common roads and other facilities based on regular assessments determined by calculating the estimated life expectancy of each such amenity. The reserve account need not be established for a facility until one year after the facility is actually constructed. The charge shall be based on the replacement cost divided by three-quarters of the life expectancy as determined by the design engineer, which assessment reserves shall be charged until 125% of the then replacement cost of the facilities is accumulated and maintained. Such reserves shall be deposited in a separate escrow account in the name of the Association in a bank or other financial institution insured by the United States of America, and shall only be used for the purposes specified in this Section unless specifically otherwise approved by 80% of all members of the Association.

7B.Lot Owners Maintenance Responsibilities.

A Periodic mowing of grass on the road right of ways to be performed by Lot owners in conjunction with lawn work on their own grass areas.

B. Removal of debris that may collect in the grass swales, culverts and dam(s), to be performed by Lot owners as part of their land maintenance.

C.Each Lot owner shall avoid interfering with the natural course of surface water across a neighbor's parcel or any land abutting the Property or altering its intended flow to the storm drainage, streams and ponds.

8. Membership.

For the purpose of maintaining roads, utility and other easements, traffic control, maintaining the common storm water drainage system, general planting and landscaping, and all common services of every kind and nature required or desired within or adjoining the Property, for the general use and benefit of all owners, each and every owner, in accepting a deed or contract for

any Lot of the Property, agrees to and shall automatically become a member of and be subject to and comply with this Declaration, the Bylaws and rules of the Association, as amended from time to time. The members shall consist of all the owners of Lots of the Property. The membership of each such lot owner shall terminate upon the sale, transfer or other disposition of their ownership interest in the lot, whereupon membership shall automatically transfer to and be vested in the successor in ownership. The mortgage of a lot shall not operate to transfer membership until foreclosure of the mortgage. Each Lot shall have one vote in the Association. Until 14 of the 19 Lots have been sold, there shall be three (3) directors of the Association and only the Grantor, as the initial member shall be entitled to vote for the election of directors; provided however, that Grantor may assign such rights to any successive developer of the lots, may waive such rights in whole or in part or may exercise its rights under the articles of incorporation or bylaws of the Association.

9. Assessments.

Commencing with the sale of a lot to a purchaser (other than a successor Grantor), each owner shall pay the Association or its authorized representative, monthly or as otherwise required by the association, their (its) share of the expenses of and reserves of the Association in carrying out its function, all as determined by the Association's Board of Directors, allocated equally among all such Lots and such Units. Such obligation (including such interest as may be established by the Association and costs of collection and reasonable attorney's fees) shall be the personal responsibility of the owner of each Lot and shall constitute a lien on a Lot , SUBJECT HOWEVER, to any mortgage held by an institutional lender, to which mortgage the lien shall be subordinate. The recording of this Declaration constitutes record notice of the lien, which may be foreclosed in the same manner as a mortgage on real estate or by any other method now or hereafter permitted by law. Until the later of one (1) year from the sale of the first Lot or until the owners of Lots, subject to this Declaration have assumed self-government of the Association, the Grantor may charge owners for their proportionate share of the assessments and may pay the expenses of the Association directly.

A. The Association shall notify the owners at the addresses maintained by the Association within thirty (30) days after said assessment has been fixed and levied, notifying such owners of the amount of the charge or assessment for such year, when the same shall be due and payable, and the amount due on each lot, owned by each such owner, and the interest rate on past due assessments provided that failure to send such notice shall not relieve the Owner of their obligation hereunder. Unless otherwise provided by the directors of the Association, the interest rate on all past due assessments shall be Eighteen percent (18%) per annum. It shall be the duty of each owner to list their address with the Association, failing which the Association may send such notices to such address as reasonably appears to be a permanent

address of such owner. Failure of the Association to levy the assessment or charge for any one year or send such notice or to charge interest shall not affect the right of said Association to do so for any subsequent year or for such prior year(s) in arrears. A written or printed notice thereof deposited in the United State mails, with postage prepaid, and addressed to the respective owners as aforesaid shall be deemed to be sufficient and proper notice for this purpose or for any other purpose of this Declaration, wherever notice may be required.

B. The Association shall have all legally permissible powers of collection of assessments made on said real estate including, without limitation, those powers set forth in Maine Revised Statutes Annotated, Title 13, Chapter 91 and shall generally have all powers established under Title 13-B M.R.S.A.

C. Such charges of assessments shall be applied by said Association in its discretion toward payment of the following costs:

(1) To enforce, either in its own name or in the name of the owners of the property above described any or all covenants which may have been heretofore, or may hereinafter be, imposed upon any of the Property, either in the form as originally placed thereon or as subsequently modified; provided, however, that this right of enforcement shall not serve to prevent the right of any owner or owners of any Lot, to enforce said restrictive covenants in the event they or any one of them elects to do so. The expenses and costs of any such proceedings instituted by the Association shall be paid out of the general fund of the Association.

(2) To preserve the natural beauty of the Property and pick up and remove therefrom trash and rubbish of all kinds; and to do any and all other things necessary and desirable in the judgment of the Board of Directors of said Association to keep the Property clean and in good order.

(3) To provide for the maintenance, snowplowing, sanding, repair and replacement of all common area roads and ways within or adjoining the Property, including the roads leading through the Property, and for the creation of reserves for the foregoing purposes.

(4) To provide for the maintenance, repair, and replacement of the recreational and all other facilities and for the creation of reserves for the foregoing purposes.

(5) To provide for the removal of solid waste from each lot and all/ any accumulated solid waste from other Association property for the creation of reserves for the foregoing purposes.

6) To pay real estate and other taxes, to establish reserves, to administer the Association and enforce this Declaration.

(7) To administer, observe and perform the Bylaws and exercise the powers of the Association thereunder.

(8) Such other items as the Board of Directors of the Association may determine in their discretion.

D. To provide any other neighborhood services not provided by local governmental authorities.

E. To carry hazard, and general liability insurance coverage on any premises owned, maintained or repaired by the Association to provide directors and officers insurance and to indemnify the Association's officers and directors.

10. Association Administration.

The Grantor shall control and manage the Association until transfer of this responsibility to the Association membership by the Grantor or pursuant to provisions below and consistent with the Bylaws attached hereto.

A. The initial Bylaws of the Association are attached hereto as Exhibit A.

B. The Association shall notify by mail all owners at the address listed with the Association, of the time and place of regular or special meetings of the Association. Such notices shall be mailed at least ten (10) days to advance of such meetings.

C. By written consent of four fifths (4/5) of all members, the Association may be given additional powers and this Declaration may otherwise be amended or modified, provided however that any amendments affecting the maintenance and repair of the common shall, at all times, observe all the laws of the State of Maine and the United States of America, and if at any time any of the provisions of this Declaration shall be in conflict therewith, then such parts of this Declaration as are in conflict with such laws shall become null and void, but no other part of this Declaration shall be affected thereby. So long as Grantor owns any portion of the Property, any amendment or modification of this Declaration shall require the written approval of Grantor duly recorded.

D. The Association shall, at all times, observe all the laws of the State of Maine and the United States of America, and if at any time any of the provisions of this Declaration shall be in conflict therewith, then such parts of this Declaration as are in conflict with such laws shall become null and void, but no other part of this Declaration shall be affected thereby.

E. The Association shall have the right to make such reasonable rules and regulations and provide such means and employ such agents as will enable it adequately and properly to carry out the purposes and provisions of this Declaration, subject to the limitations hereinabove and hereinabove set forth; provided that so long as Grantor owns any portion of the Property, the adoption of such rules and regulations or any amendments thereof shall require the written approval of the Grantor duly recorded.

F. This Declaration may be terminated and all the land now or hereafter affected may be released from all of the terms and provisions thereof by the owners of four-fifths 4/5) of the members subject thereto at the time it is proposed to terminate this said Declaration.

11. Compliance with Laws.
All siting, construction, excavation, water supply, and storm water drainage, shall be in accordance with all applicable local and state laws, codes, ordinances and regulations.

12. Nuisance.
Noxious, dangerous, offensive or unduly noisy activities of any nature shall not be carried on upon any Lot.

13. Refuse Disposal.
Trash, garbage and other waste shall be kept in sanitary containers within the residential structures where they are not visible from any road or from any other Lot. The Association or its authorized Designates shall be responsible for the removal and disposal of same.

14. Subdivision.
The lots as shown on the plan may not be subdivided, except with the consent of the Grantor and with the approval of the City of Portland if required.

15. Access To Amenities.
The Association or its authorized Designates shall have the irrevocable right, to have access to each parcel from time to time during reasonable hours, as may be necessary for the maintenance, repair or replacement of any of the common areas and facilities therein or accessible therefrom, including pedestrian, utility and drainage easements, to prevent damage to the common areas and facilities, or to any other parcel(s).

16. Enforcement.
The provisions of the Declaration have been adopted for the benefit of the owners of the Property and shall run with the Land. Therefore, the violation or attempted violations of any covenant or restriction in this Declaration is hereby declared a nuisance which may be remedied by any appropriate legal proceeding. If any owner shall attempt, violate or permit any violation of any of the covenants, restrictions or reservations described in this Declaration or in the Bylaws and the rules and regulations of the Association, the Grantor, the Association or any Lot owner may commence proceedings at law or in equity to recover damages or other awards for such attempts, violations or permitting of the same, or to enjoin the furtherance or continuation of such attempts or violations, or both.
The violator shall pay all reasonable costs, including attorney's fees, incurred in the enforcement of this Declaration the Bylaws and the rules and regulations of the. Association which shall constitute a lien on the Lot or Unit in the same manner as Association assessments. Proceedings may be maintained irrespective of the waiver of any prior violation or attempt by the same or

other owners, and the failure to enforce any one (1) occasion shall in no event be deemed to be a waiver of the right to do so thereafter as to the original breach or a breach subsequent thereto.

17. Termination of Restrictions.
At a meeting duly held not earlier than January 1, 2018, the then current Members of the Association may terminate the provisions set forth in this Declaration by a 80% vote, which amendment or termination shall become effective upon the recording therefore. If no such amendment or termination is recorded by February 1, 2018, this Declaration shall automatically renew for another 25-year period, and in like manner for each 25-year period thereafter.

18. Grantors Right to Assign.
All references in the Declaration to the Grantor shall mean and include the Grantor's successors and assigns. The Grantor shall have the power to assign its rights under this Declaration to any successor Grantor by instrument duly recorded which has been executed by Grantor and Grantor's successor.

19. Severability.
If any provisions of this Declaration, or its application to any persons or circumstances, is invalid or unenforceable, then the remainder of this Declaration, or the application of such provisions to other persons or circumstances, shall not be affected thereby.

IN WITNESS WHEREOF, Neptune Properties, Inc has caused the corporate seal to be affixed hereto and these presents to be signed, acknowledged and delivered as of _____, 1996.

Neptune Properties, Inc. (a corporation)

_____ _____

Witness By: its President

STATE OF MAINE
CUMBERLAND, SS.
Personally appeared _____ in his said capacity and acknowledged the foregoing instrument as his free act and deed and the free act and deed of said corporation,

Notary public/Attorney at Law

name: _____
forrpdec.sam

Attachment 5

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
STATE HOUSE STATION 17 AUGUSTA, MAINE 04333

Tier 1 / Tier 2 Decision

Applicant Name & Address: Neptune Properties
ATTN: Mike Scarks
120 Exchange Street
Portland, ME 04101

DEP Project Number: **96-96-S**
CORPS Number: **199601932**

Description of Work: Fill approximately 17,920 square feet of freshwater wetland for the construction of an access road and lot development for a 19 lot subdivision.

Permit for:	[ ] Tier 1	[X] Tier 2
Date of Joint Review:		
DEP Decision:	[X] Approved	[ ] Denied (see attached letter)
CORPS Action:	[X] Approved	[ ] Ineligible (see attached letter)
	[ ] enclosed [X] pending (see below)	

[X] Approval Pending: The Corps, Maine Project office, has recommended approval of your project, however, the final decision will be forthcoming directly from their regional office headquarters.

[ ] Special Conditions:

Standard Conditions:

- If approved, this permit is good for two (2) years from the date signed and is transferable only with prior approval from the Department.
- The project must be completed according to the plans in the application. Any change in the project plans must be reviewed and approved by the Department.
- Erosion control measures must be installed prior to beginning the project, and all disturbed soil should be stabilized immediately upon project completion.
- A copy of this approval will be sent to the City of PORTLAND. Department approval of your activity does not supersede or substitute the need for any necessary local approvals.

This decision satisfies the Water Quality Certification requirement.

Please note the attached sheet for guidance on appeal procedures. If you have any questions regarding this, please contact Doug Burdick at 207-822-6300.

FOR EDWARD O. SULLIVAN, COMMISSIONER

SEPTEMBER 17, 1996
DATE

cc: file
City of Portland
Albert Frick, Albert Frick Associates

DEP APPROVAL

DRAINAGE MAINTENANCE AGREEMENT

IN CONSIDERATION OF Site Preview and Subdivision / Willow approval granted by the Planning Board of the City of Portland to a plan entitled Willow, dated 6 Aug. , 1996 and filed with the City of Portland, Department of Planning and Urban Development, 389 Congress Street, Portland, Maine, a copy of which is attached hereto as Exhibit 1, and pursuant to a condition thereof, Cottage Park Inc., a Maine corporation, the owner of the subject premises, does hereby agree, for itself its successors and assigns (the "Owner"), as follows:

That it will, at its own cost and expense and at all times in perpetuity, maintain in good repair and in proper working order the surface water drainage system as shown on said plan, including but not limited to the storm water detention chambers and the outlet or outlets therefrom, for the benefit of the said City of Portland, said persons in lawful possession of said premises and abutters thereto; further, that the said City of Portland, said persons in lawful possession and said abutters or any of them, may enforced this Agreement by an action at law or in equity in any court of competent jurisdiction; further, that after giving the OWNER written notice and a reasonable time to perform, the City of Portland may , by its authorized agents or representatives, enter upon said premises or any portion thereof for the purpose of performing the aforementioned maintenance of said surface water drainage system in the event of any failure or neglect thereof, the cost and expense thereof to be reimbursed in full to the said City of Portland by the OWNER on demand.

This agreement shall not confer upon the said City of Portland or any other person the right to utilize said surface water drainage system for public use or for the development of any other property, and the OWNER shall bear no financial responsibility by this Agreement for enlarging the capacity of said surface water drainage system for any reason whatsoever.

This Agreement shall bind the undersigned only so long as it retains interest in said premises, and shall run with the land and be binding upon its successors and assigns as their interest may from time to time appear.

Dated at Portland, Maine this 7th day of January , 1997

Ric Wemschenk
By Cottage Park, Inc.
Its President

EASEMENT DEED

KNOW ALL MEN BY THESE PRESENTS, that COTTAGE PARK, INC., a Maine corporation, for consideration paid by the CITY OF PORTLAND, a body politic and corporate, whose mailing address is Portland City Hall, 389 Congress Street, Portland, Maine, 04101, does hereby remise, release, bargain, sell and convey, and forever quitclaim unto the said City of Portland, its successors and assigns, a perpetual right and easement to enter at any and all times upon certain property situated in the City of Portland, County of Cumberland and State of Maine, at the terminus of Lassell and Mitton Streets, said property being more particularly described in Exhibit "A" attached hereto and made a part hereof, for the following purposes:

> To plow and remove snow from Lassell and Mitton Streets with such heavy duty vehicles as shall be necessary for said purpose; to store accumulations of snow plowed and removed from said Grove Street; and to turn said vehicles around or otherwise reverse their direction for their return to said Lassell and Mitton Streets after the plowing and removal of snow therefrom.

TO HAVE AND TO HOLD the easement hereby granted, together with all of the privileges and appurtenances thereunto belonging, to the said City of Portland, its successors and assigns forever.

IN WITNESS WHEREOF, Cottage Park, Inc. has hereunto set its hand and seal this 7th day of Jan, 1998.

Signed, Sealed and Delivered
in the Presence of

COTTAGE PARK, INC.

Ric Weinschenk, President

STATE OF MAINE
CUMBERLAND, SS.

January 7, 1997

Personally appeared the above named Ric Weinschenk, President of Cottage Park, Inc., and acknowledged the foregoing Easement Deed to be his free act and deed in said capacity and the free act and deed of said corporation.

Before me,

Kenneth E. Sutgot
Attorney at Law/~~Notary~~ Public

Kenneth E. Sutgot
Printed Name

EXHIBIT "A"

WILLOW SNOW PLOW EASEMENT

Two parcels of land in the Willow Association at the end of Lassell and Mitton Streets in the City of Portland, Maine, described as follows:

Parcel 1: Beginning at a point, said point being the southwesterly corner of Mitton Street; thence running S 08°15'50" E along the end of Mitton Street for a distance of 35.25'; thence turning and running N 62°30'12" W for a distance of 40.28'; thence turning and running N 27°29'48" E for a distance of 26.26'; thence turning and running S 62°30'12" E for a distance of 15.62' to the point of beginning.

Parcel 2: Beginning at a point 11.07' easterly from the southwesterly corner of Lassell Street along its end line, thence running 24.32' along a curve to the right having a 51.0' radius to a point; thence turning and running N 60°26'50" W for a distance of 60.16'; thence turning and running S 29°33'10" W for a distance of 27.75'; thence turning and running S 57°38'07" E for a distance of 72.40'; thence turning and running S 21°01'30" E for a distance of 31.24'; thence turning and running N 68°58'30" E for a distance of 30.0'; thence turning and running N 21°01'30" W for a distance of 31.24'; thence turning and running along a curve to the left having a radius of 91.18' a distance of 31.33' to the end of Lassell Street; thence turning and running N 60°25'25"W along the end of Lassell Street for a distance of 35.83' to the point of beginning.

Both parcels are shown on a plan of land entitled "Lot Configuration Plan - Willow" by Civil Consultants dated December 2, 1996, and recorded in the Cumberland County Registry of Deeds in Book 197, Plan 1.

EASEMENT DEED

KNOW ALL MEN BY THESE PRESENTS, that COTTAGE PARK, INC., a Maine corporation, for consideration paid by WILLOW HOME OWNERS ASSOCIATION, a Maine corporation, does hereby remise, release, bargain, sell and convey, and forever quitclaim unto the said Association, its successors and assigns, a perpetual right and easement to enter at any and all times upon certain property situated in the City of Portland, County of Cumberland and State of Maine, at the end of Lassell and Mitton Streets, said property being more particularly described in Exhibit "A" attached hereto and made a part hereof, for the following purposes:

> To install, maintain, and use underground and overland drainage systems together with all their appurtenances. Said Association shall maintain and/or restore all improvements made by individual lot owners if disturbed by their use and maintenance of drainage systems, and shall minimize its impact and use of these areas as much as practical to insure the privacy of said lot owners. Lot owners' improvements to their land shall not unreasonably interfere with drainage rights granted to said Association. There shall be no permanent structures allowed within the easement.

TO HAVE AND TO HOLD the easement hereby granted, together with all of the privileges and appurtenances thereunto belonging, to the said Willow Homeowners Association, its successors and assigns forever.

IN WITNESS WHEREOF, Cottage Park, Inc. has hereunto set its hand and seal this 7th day of Jan, 1997.

Signed, Sealed and Delivered
in the Presence of

COTTAGE PARK, INC.

Ric Weinschenk, President

STATE OF MAINE
CUMBERLAND, SS.

January 7, 1997

Personally appeared the above named Ric Weinschenk, President of Cottage Park, Inc., and acknowledged the foregoing Easement Deed to be his free act and deed in said capacity and the free act and deed of said corporation.

Before me,

Kenneth E. Switzer
Attorney at Law/~~Notary Public~~

KENNETH E. Switzer
Printed Name

EXHIBIT "A"

WILLOW DRAINAGE EASEMENTS

Five parcels of land in the City of Portland, Maine, on land now or formerly of Neptune Properties, Inc., described as follows:

Parcel 1: Beginning at a point 10.0' westerly of the eastern corner of land now or formerly of the Italian-American Community Center along the property line; thence running S 40°30'40" E for a distance of 82.78', said parcel being a strip of land 20.0' wide centered on said line and running its full length.

Parcel 2: Beginning at a point at the westerly corner of land now or formerly of Rogers; thence running S 60°25'25" E for a distance of 107.39' to a point; thence turning and running S 01°12'30" E for a distance of 38.41'; thence turning and running S 08°15'50" E for a distance of 106.23'. Said parcel being a strip of land 10' wide to the south and west of said line and running its full length.

Parcel 3: Beginning at a point 12.74' southwesterly along the easterly sideline of Willow Lane from the end of Mitton Street; thence running S 01°18'57" E for a distance of 38.85'; thence turning and running S 03°04'58" E for a distance of 22.08'; thence turning and running S 36°53'03" E for a distance of 13.87'; thence turning and running S 56°30'00" E for a distance of 10.54'. Said parcel being a strip of land 20.0' wide centered on said line and running its full length.

Parcel 4: Beginning at a point along the southerly sideline of Willow Lane at the northwesterly corner of Lot #17; thence running S 20°19'22" W for a distance of 69.0'; thence turning and running S 40°18'24" E for a distance of 56.13'; thence turning and running S 41°02'50" E for a distance of 79.38'; thence turning and running S 23°39'13" E for a distance of 36.78'. Said parcel being a strip of land 20' wide centered on said line and running its full length.

Parcel 5: Beginning at a point 7.09' easterly along the northerly sideline of Willow Lane from the easterly corner of Lot #8; thence running N 28°30'56"E for a distance of 25.46'; thence turning and running S 72°07'21" E for a distance of 48.56'. Said parcel being a strip of land 20' wide centered on said line and running its full length, excepting that portion that lies within Willow Lane.

All five (5) parcels are shown on a plan of land entitled "Lot Configuration Plan - Willow" by Civil Consultants dated December 2, 1996, and recorded in the Cumberland County Registry of Deeds in Book 197, Plan 1.

EASEMENT DEED

KNOW ALL MEN BY THESE PRESENTS, that COTTAGE PARK, INC., a Maine corporation, for consideration paid by the CITY OF PORTLAND, a body politic and corporate, whose mailing address is Portland City Hall, 389 Congress Street, Portland, Maine, 04101, does hereby remise, release, bargain, sell and convey, and forever quitclaim unto the said City of Portland, its successors and assigns, a perpetual right and easement to enter at any and all times upon certain property situated in the City of Portland, County of Cumberland and State of Maine, at the terminus of Lassell and Mitton Streets, said property being more particularly described in Exhibit "A" attached hereto and made a part hereof, for the following purposes:

> To plow and remove snow from Lassell and Mitton Streets with such heavy duty vehicles as shall be necessary for said purpose; to store accumulations of snow plowed and removed from said Grove Street; and to turn said vehicles around or otherwise reverse their direction for their return to said Lassell and Mitton Streets after the plowing and removal of snow therefrom.

TO HAVE AND TO HOLD the easement hereby granted, together with all of the privileges and appurtenances thereunto belonging, to the said City of Portland, its successors and assigns forever.

IN WITNESS WHEREOF, Cottage Park, Inc. has hereunto set its hand and seal this 7th day of Jan, 1998.

Signed, Sealed and Delivered in the Presence of

COTTAGE PARK, INC.

Ric Weinschenk, President

STATE OF MAINE
CUMBERLAND, SS.

January 7, 1997

Personally appeared the above named Ric Weinschenk, President of Cottage Park, Inc., and acknowledged the foregoing Easement Deed to be his free act and deed in said capacity and the free act and deed of said corporation.

Before me,

Kenneth E. Snitger
Attorney at Law/~~Notary~~ Public

Kenneth E. Snitger
Printed Name

EXHIBIT "A"

WILLOW SNOW PLOW EASEMENT

Two parcels of land in the Willow Association at the end of Lassell and Mitton Streets in the City of Portland, Maine, described as follows:

Parcel 1: Beginning at a point, said point being the southwesterly corner of Mitton Street; thence running S 08°15'50" E along the end of Mitton Street for a distance of 35.25'; thence turning and running N 62°30'12" W for a distance of 40.28'; thence turning and running N 27°29'48" E for a distance of 26.26'; thence turning and running S 62°30'12" E for a distance of 15.62' to the point of beginning.

Parcel 2: Beginning at a point 11.07' easterly from the southwesterly corner of Lassell Street along its end line, thence running 24.32' along a curve to the right having a 51.0' radius to a point; thence turning and running N 60°26'50" W for a distance of 60.16'; thence turning and running S 29°33'10" W for a distance of 27.75'; thence turning and running S 57°38'07" E for a distance of 72.40'; thence turning and running S 21°01'30" E for a distance of 31.24'; thence turning and running N 68°58'30" E for a distance of 30.0'; thence turning and running N 21°01'30" W for a distance of 31.24'; thence turning and running along a curve to the left having a radius of 91.18' a distance of 31.33' to the end of Lassell Street; thence turning and running N 60°25'25"W along the end of Lassell Street for a distance of 35.83' to the point of beginning.

Both parcels are shown on a plan of land entitled "Lot Configuration Plan - Willow" by Civil Consultants dated December 2, 1996, and recorded in the Cumberland County Registry of Deeds in Book 197, Plan 1.

CITY OF PORTLAND, MAINE
MEMORANDUM

TO: Chair Caron and Members of the Portland Planning Board

FROM: Sarah Hopkins, Development Review Services Manager

DATE: July 23, 2002

RE: Willow PRUD Center Island Revision

Introduction

The Willow Homeowners Association has requested review by the Planning Board for a revision to the Willow site plan. The amendment has been proposed by the Association to correct defects in the construction of improvements at Willow.

History

The Willow PRUD was approved in September of 1996. As the Planning Board is aware, the City has been involved in a series of enforcement actions against Mr. Weinschenk for noncompletion of the improvements and defects in construction at Willow. Throughout the Fall of 2000, the City issued a number of orders to Mr. Weinschenk requiring the work to be completed and repaired at Willow. Finally, in late November of 2000, the City called the defect guarantee for the Willow development. At that time, defective landscaping, light installation, and the failure of the center island pond/grass feature were the major defects.

The City used defect funds in the Spring of 2001 to repair the lights at Willow. From the Fall of 2001 through the Spring of 2002, the City was in court defending its calling of the defect guarantee funds. In the Spring of 2002, Judge Warren decided that the City was correct in its calling of the guarantee and gave the City a limited time in which to correct the defects.

The City Staff and Homeowners Association are in agreement that, after the repair of the lights, the repair of the center island feature is the priority. The Association has lined up a contractor to complete the work this season.

The Pond

In 1996, the Planning Board approved the Willow PRUD with a central island feature designed to hold stormwater to create a low reflecting pool. A gazebo and bridges were constructed over the pond area. Mr. Weinschenk constructed the pond but the pond failed to hold a substantial amount of water. Only during an especially heavy storm event, would water be contained in the pond.

First Pond Revision

In the Fall of 2000, the Planning Board approved a revision to the site plan that proposed changing the pond to a grassed feature. The plan included regrading the slopes, removing retaining wall timbers, loaming and seeding, and the installation of inlets in the existing concrete drainage structure to drain the area.

After the Planning Board's approval of the grassed center feature, Mr. Weinschenk completed the work proposed, but the construction was deemed by the City (and upheld by the Court) to be defective. The center area does not drain adequately, the grass has not caught sufficiently, the drainage structure in the center of the area has become clogged, and the inlets allowing the roadway to drain into the center area have heaved so that there is no positive drainage.

Proposed Revision

Given the defects at the site, the Association has designed an amendment that will meet the intent of the plan, while providing an attractive and maintainable amenity.

The proposed plan includes the following:

- removal of inside radius sidewalk around the center island;
- relocation of landscape material away from outside edge of island;
- replacement of sidewalk with a 3 ft gravel shoulder;
- regrading of center side slope to a 10:1 pitch;
- application of 4 inches loam and seed;
- construction of a 5 x 5 hatch to access the drainage structure beneath the gazebo; and
- removal of silt and debris from drainage structure as needed.

Planning Board Review of the Center Island

The center island pond feature was originally designed to meet two needs of the development: recreation and stormwater retention. The pond was designed to accept and hold and release stormwater collected from the roadway of the development. The pond was also designed as a passive recreation space as required of PRUDs in 1996, before the City instituted the requirement of a 6,000 sq ft level, graded area.

In the Fall of 2000, the Planning Board did approve the change to the center island feature that allowed the pond to be drained, regraded, loamed, and seeded.

The proposal before the Board does not differ substantially from the previous change, rather it is intended to correct defects and improve drainage within the site. The sidewalk around the interior that the Association plans to remove is redundant, since there is a continuous sidewalk along all lot frontages of the development.

Staff Review and Recommendation

Our reviewing Engineer, Jim Seymour, has reviewed the proposal as submitted by the Association and recommends approval by the Planning Board with conditions. Mr. Seymour's comments are included as Attachment 4. In summary, Mr. Seymour recommends the following conditions of approval.

1. That prior to start of work, the applicant submit the following details:
   - the hatch shown over the drainage structure;
   - the transition between the wood walk from the gazebo and the grassed/gravel shoulder; and
   - The pavement cut and gravel shoulder slope.

2. That the plan be revised to include a break in landscaping to allow for snow storage.

Mr. Seymour also recommends that the work be completed no later than September 30, 2002, to provide sufficient time for grass catch.

Motion for the Board to Consider

On the basis of plans and materials contained in Planning Board memo dated July 23, 2002 regarding the Willow PRUD, the Planning Board finds:

- That the proposed revision to the center island feature at Willow **(is/is not)** in conformance with the Site Plan Ordinance of the Land Use Code.

  potential condition of approval:

  That the applicant revise the plans to meet the requirements included in Mr. Seymour's memo of July 18, 2002.

Attachments:

1. Letter from the Willow Homeowners Association
2. Description of Proposed Improvements
3. Correspondence from Dearborn Construction
4. Memo from Jim Seymour, PE., Reviewing Engineer
5. Subdivision Plan
6. Previous Revision
7. Proposed Revision by the Homowners Association

Attachment 1

Willow Homeowners Association

16 Willow Lane
Portland, Maine 04102-2629
June 12, 2002

Sarah G. Hopkins
Development Review Services Manager
Planning & Urban Development Department
City of Portland

Dear Sarah:

The Willow Homeowners Association requests an amendment to the Willow Neighborhood development site plan to reflect the changes specified in the attached description and the accompanying drawing, both prepared by Walter Pelkey, a civil engineer and vice president of the Association.

The proposal has been approved in writing by 11 of the 14 resident members of the Association. One resident member voted for an alternative proposal whose only difference is removal of the gazebo and footbridge now on the site. We have reason to believe the two nonvoting resident members favor the majority.

Ric Weinschenk, the developer who owns four undeveloped lots in the development and in the past has participated as an Association member, has not responded. Mr. Weinschenk does not live in the neighborhood.

All Association members received ballots describing the two alternatives and offering the option of proposing original solutions. You were provided copies of that material last week.

We would like the matter to progress as quickly as possible to a City of Portland agreement with Dearborn Construction leading to a speedy completion of the improvements. We also have sent you a copy of Dearborn's proposal.

If the Planning Department staff would like to meet with us to discuss the matter, we will be happy to do so. If an appearance by us before the Planning Board is required, we will be happy to do that, too.

Thanks again for your help throughout this process.

Regards,

James M. Milliken
President

Attachment 2

Description of Proposed Improvements
Center Island area, Willow Neighborhood

The accompanying drawing shows the planned improvements of the center area.

The plans call for the removal of the existing concrete sidewalk, installation of a 10' shoulder (3' gravel & 7' grassed) and a gradual grading to the existing wooden structure. Trees would be relocated along the top of the grassed shoulder, and all landscaped areas would be loamed and seeded.

The removal of the sidewalk and installation of the gravel shoulder should address the existing drainage problems as well as create a more "forgiving" center turning area. These improvements, along with tree relocation, should also help with our need for additional snow storage.

Walter Pelkey
Vice President
Willow Homeowners Association

Attachment 3

DB DEARBORN BROS. CONSTRUCTION INC

999 NARRAGANSETT TRAIL
BUXTON, MAINE 04093
(207) 839-2272
FAX: (207) 929-8560

766

6257
1463

May 24, 2002

Willow Home Owners Association
C/O BH2M Engineers
Main Street
Gorham, Maine

Walter
Restoration of Cul De Sac area

Dearborn Brothers Construction, Inc. is pleased to offer the following scope of services and quotation for your review.

Dearborn Brothers Construction, Inc. proposes to:

- Obtain a Dig Safe authorization number
- Prep work area
- Remove and dispose of existing concrete walkway
- Common excavation and placement as required
- Supply and place loam on cul de sac area and all areas disturbed
- Final rake, seed and mulch all loamed areas
- Clean up of project debris

PRICE INCLUDES REPLANTING OF TREES. ADD $100 ± FOR C.B. CLEAN OUT

For The Sum Of $ 6157.50

Please note the following exclusions:
NO:

- Removal of existing gazebo
- Any permits of fees
- Pavement or concrete placement
- Tree removal

Respectfully submitted:

Justin Dearborn
Vice President Dearborn Brothers Construction, Inc.

Attachment 4

Sebago Technics
Engineering & Planning for the Future

01P115

TO: **Sarah Hopkins: City of Portland-Development Review Program Manager**

FROM: **Jim Seymour: Development Review Coordinator, Sebago Technics, Inc.**

RE: **Willow PRUD - Center Island Improvements**

DATE: **July 19, 2002**

I have reviewed the July 15, 2002 revised Site Plan, and associated details for the Willow Center Island Improvement Project located within the Willow PRUD Subdivision and provided the following comments:

1.) Stormwater Management

The plan indicates by drainage arrows, that the drainage is intended to runoff towards the inner island, where it will be collected and discharged by the subdivisions storm drain system. Either spot grades or slopes should be indicated on the plan for construction purposes so as to indicate how to grade the circle to establish the drainage pattern.

The plan needs to also look at the transition grades around the walkway approaches or landings. The circle's grades need to sheet flow away from the pedestrian ramps. A small gutter flow or channel may be needed to accommodate this drainage redirection.

A siltation fence shall be shown on the plan surrounding the Gazebo to assure that sediment transport during construction does not enter into the drainage structure under the Gazebo. Also a note should be added stating that the project shall be completed prior to September 30th, to assure that vegetation will have ample time to establish prior to winter conditions.

Previous inspections on the site indicated that the entire storm drain system leading to the middle of the circle needs cleaning. It appears that sediment has entered the storm drain system and has accumulated to the point where it is blocking normal pipe flow. All basins and pipes shall be cleaned of sediment and debris with this project.

2.) **Road Access/Circulation**

The 3' wide gravel shoulder detail shall show the proposed slope and also specify the type of gravel to be installed.

Currently there are several low points within the paved section of the circle that should be shimmed to adequately direct runoff, prevent winter icing and protect the road surface from ponding/water damage.

The pavement will require some cutting to remove the concrete sidewalk. The cutting will provide a clean face adjacent to the proposed shoulder. If the sidewalk is ripped out the pavement will separate and create more pavement damage in the near future. A detail or note of the pavement cut should be included.

The winter plowing operations appear to push snow into the circle, hence the need for the original riprap aprons within the circle opposite of the road intersections. At a minimum landscaping will get disturbed or damaged at these locations. A break should be left in the landscaping to allow for snow storage or dumping at the end of the incoming streets. The engineer shall also review if riprap is needed for slope protection from snow melt.

Either a placing of a warning sign or crosswalk marking on the pavement should be included to warn vehicles of possible pedestrian crossings at the road to access the walkway on the inner island.

3.) Gazebo/ Drainage Structure Details.

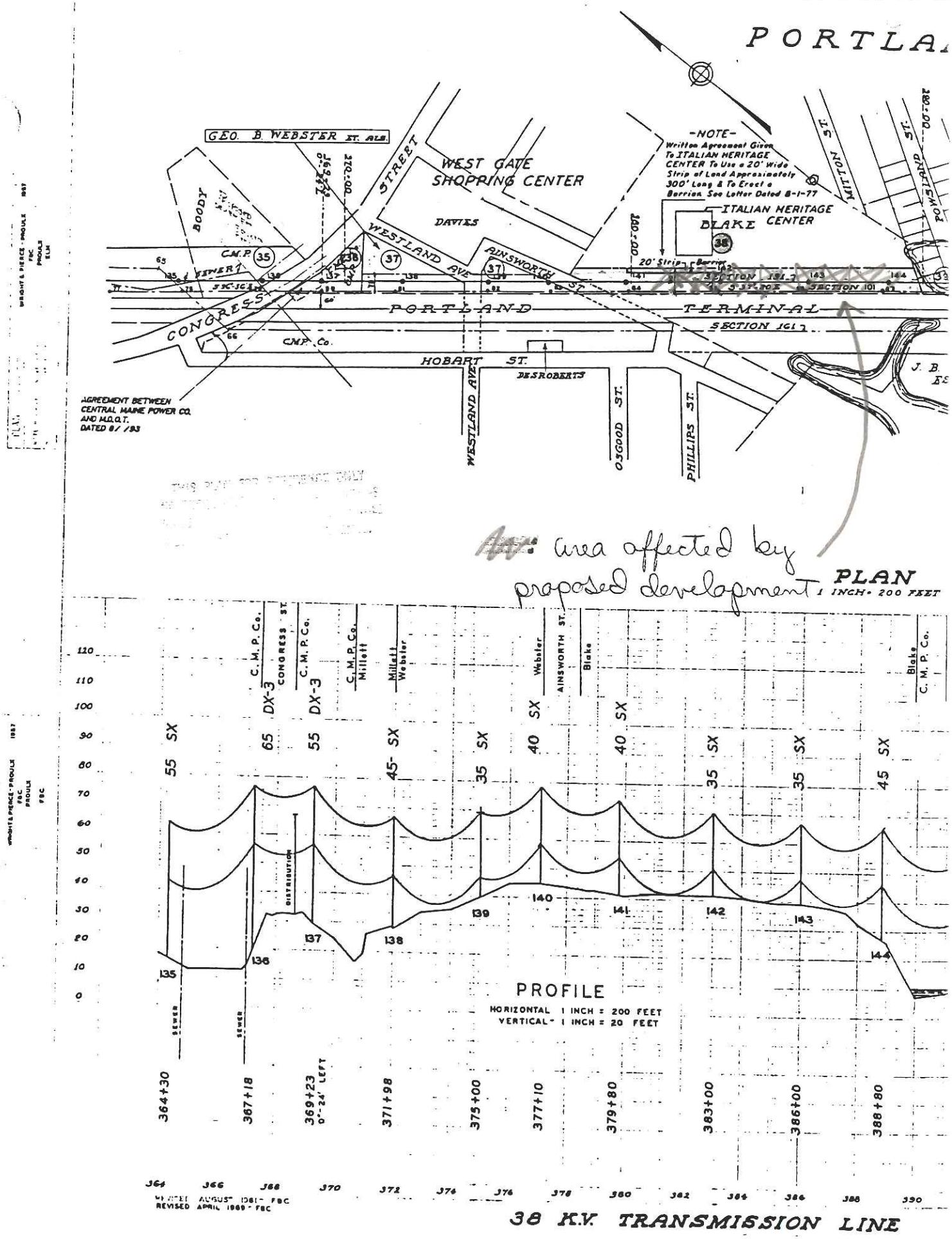
Since there are some uncertainties, with regards to the construction of the drainage structure under the Gazebo, a written report and as-built detail shall be provided upon project completion for City of Portland records.

The hatch to be installed on the deck of the Gazebo needs to be submitted and reviewed to assure that the structural integrity of the Gazebo is maintained, that safety and security is maintained, and that if access is needed, a tripod or mechanism can be installed to allow safe entry into the drainage structure.

The current state of the inner landscaped circle, concrete sidewalk and paved circle are in poor condition and are increasingly deteriorating. The planned improvements will increase the pavements longevity and improve surface drainage. If correctly installed it can alleviate ponding and icing problems. Installing loam and re-grading the inner circle should promote a more pleasant appearance and can offer some pollutant removal from the proposed road runoff. Based on my recent visits these modifications, revisions, and conditions attached are needed to better serve the needs of the residents with regards to their current circle road drainage and sidewalk dilemmas. Since the outer perimeter of the road circle already has a sidewalk, and based on observations that very few people use a

sidewalk on an inner island, removal of the inner island sidewalk will have no effect on pedestrian access.

As always please feel free to call me with any questions.


PORTLA
GEO. B. WEBSTER ST. ALS.
WEST GATE SHOPPING CENTER
STREET
DAVIES
-NOTE-
Written Agreement Given To ITALIAN HERITAGE CENTER To Use a 20' Wide Strip of Land Approximately 300' Long & To Erect a Barrier. See Letter Dated 8-1-77
ITALIAN HERITAGE
BLAKE CENTER
WESTLAND AVE.
AINSWORTH ST.
CONGRESS ST.
CMP. Co.
PORTLAND TERMINAL
SECTION 101
HOBART ST.
DESROBERTS
WESTLAND AVE.
OSGOOD ST.
PHILLIPS ST.
MILTON ST.
POWELAND ST.
AGREEMENT BETWEEN CENTRAL MAINE POWER CO. AND M.D.O.T. DATED 8/ /83
Area affected by proposed development
PLAN
1 INCH = 200 FEET
C.M.P.Co.
CONGRESS ST.
Millett
Webster
AINSWORTH ST.
Blake
DX-3
55 SX
65
45 SX
35 SX
40 SX
DISTRIBUTION
SEWER
PROFILE
HORIZONTAL 1 INCH = 200 FEET
VERTICAL 1 INCH = 20 FEET
364+30
367+18
369+23
0'-24' LEFT
371+98
375+00
377+10
379+80
383+00
386+00
388+80
135
136
137
138
139
140
141
142
143
144
38 K.V. TRANSMISSION LINE

Portland
Water District

225 Douglass St. • P.O. Box 3553 • Portland, ME 04104-3553

(207) 774-5961
FAX (207) 761-8307

Joseph E. Gray Jr.
Director of Planning and Urban Development
4th Floor City Hall
389 Congress Street
Portland, Maine 04101

Re: Neptune Properties - Mitten & Lasseil Street

Dear Mr. Gray:

I have recently become aware of this new development project on Mitten and Lassell Street. The Portland Water District owns abutting property on Powsland Street, of which most is a pond that the District utilizes as a snow dump in the winter months. Past projects proposed for this site were required to cross our property with an access road to provide access to Sewall Street. I understand that in this project, this is not the case.

My only other concern is whether this project is planning to run stormwater and surface drainage into the pond. It is my understanding that the culvert crossing under the railroad is only 10" in diameter and is partially plugged. If drainage from this site causes the water to back up to the point that we will be unable to dump snow in the winter and spring, the District would have serious problems with this additional drainage. I also understand that the railroad has offered to participate in the cost of a new culvert crossing the railroad to solve this problem. I would request that consideration be given to requiring the developer to replace the railroad culvert as part of the planning approval for the project.

Thank you for your consideration in this matter.

Sincerely yours,

PORTLAND WATER DISTRICT

Norman V. Twaddel

Norman V. Twaddel
Right of Way Agent

C:\MSOFFICE\WINWORD\SNODMPLT.DOC

Central Maine Power Company
83 Edison Drive, Augusta, Maine 04336
(207) 623-3521

Real Estate Services

October 7, 1996

Mr. Cyrus Y. Hagge, Chair
Portland Planning Board
Dept. of Planning & Urban Development
389 Congress Street, 4th Floor
Portland, ME 04101

RE: Mitton and Lassell Street Proposed Development

Dear Mr. Hagge:

The above mentioned development by Neptune Properties appears to include portions of Central Maine Power Company's transmission line right-of-way. CMP has not been contacted by Neptune Properties and cannot determine at this time if the proposed development is in conflict with our easement rights or if it creates safety and/or operating problems for our customers.

We look forward to working with Neptune Properties and will accommodate their development to the extent possible. The source deeds into Central Maine Power Company are enclosed for your review.

Sincerely,

Kenneth Freye

Kenneth Freye
Principle Real Estate Specialist

enclosures

PLANNING BOARD REPORT #51-96

WILLOW P.R.U.D.
SITE PLAN, SUBDIVISION, P.R.U.D. REVIEW
NEPTUNE PROPERTIES, APPLICANT

Submitted to:

Portland Planning Board
Portland, Maine

October 8, 1996

I. INTRODUCTION

Neptune Properties has requested review by the Planning Board of a proposed 18 lot Planned Residential Unit Development to be constructed at the end of Mitton and Lassell Streets to the southeast of the Italian Heritage Center.

A portion of the five acre parcel was recently rezoned from the I-2 to the R-5 zone by the City Council as a separate action from the Planning Board's industrial zoning recommendations.

The applicant and his builder, Ric Weinschenk, propose to create a community for "empty nesters" by constructing bungalow and cottage-styled homes, similar but smaller than those of the Summer Place development on Ocean Avenue. The houses will be located along a private roadway which wraps around a central common area. This common area features a gazebo and bridges located above a decorative stormwater detention pond.

Similar to the design of Summer Place, the plantings will be low Rosa Rugosa and white pines and picket fencing will be placed around the central rotary.

At the request of the Planning Board, the private road will connect Mitton and Lassell Streets, giving residents two options for accessing Congress Street.

Currently, the site is undeveloped and serves as a receiving area for drainage from the surrounding area. The site is vegetated with low bushes and grasses and contains various fill and debris. The site drains towards a detention area that has been formed over the years by a failed culvert under the railroad embankment which leads to the Fore River.

The applicant proposes to cut away a large portion of the filled land of the site for the central roadway system. The house sites will be elevated above the road system and will drain to the central stormwater detention pond in the middle of the site.

The applicant has submitted individual lot drainage plans showing intended flow directions and sill elevations for the development which will be the basis for the administratively reviewed single-family site plans. Single lots will be required to submit more detailed site grading plans.

During the review of this project, stormwater management within the site and its impact on neighboring properties has been the greatest concern of the reviewing staff. Also, of great concern are the proposed mechanisms and methods for maintaining drainage courses within the site--courses which are often shared between building lots.

These questions are raised in response to standards for site plan and subdivision review but they also arise out of problems associated with similar recently approved projects which have had down- and up-stream impacts on neighbors.

This Willow project presents three major issues which will be discussed in more detail later in this report and during the public hearing. Staff and the applicant have worked together to resolve many other issues, however, these items have not yet been resolved to the staff's or applicant's satisfaction.

These issues include:

1. The applicant's right to place stormwater on a neighboring property (Guilford and CMP) and the applicant's potential impact on the property, and the adequacy of the downstream conveyance to accommodate any additional drainage flows.

2. The applicant's proposal to construct a berm along the outside edge of the property (with breaks) and the potential of this design to create ponding on abutter's property.

3. The applicant has proposed chipseal as a final coat for the private roadway. The Public Works Department has required two hot bituminous pavement layers totalling 3 1/2 inches for this final coat, instead.

The conditions of approval proposed for this project relates to these items and to other details (notes on the plans, etc.) pertaining to these same issues.

II. SUMMARY OF FINDINGS

Zoning:	R-5
Parcel Size:	5.7 acres
Number of House Lots:	18
House Lot Size:	8,000 - 17,000 sq. ft.
Adjacent Land Uses:	Residential, Commercial, Medical Office

III. STAFF REVIEW

The development proposal has been reviewed for compliance with the Subdivision and Site Plan Ordinances of the Land Use Code. Review of this proposal has been completed by the departments of Planning, Public Works, and Fire. The comments of these departments are contained in this report.

IV. SUBDIVISION REVIEW

1. Water and Air Pollution

The Willow development will not result in undue water or air pollution.

2/3. Water

The development will have sufficient water available for the reasonably foreseeable needs of the subdivision and will not cause an unreasonable burden on the existing water supply.

The applicant proposes to extend a 4" main line into the development from Lassell Street which the Portland Water District finds to be acceptable (see Attachment 7c).

4. **Soil Erosion**

The applicant has included a sedimentation and erosion control plan with their submission (see Attachment 13d).

The sedimentation control includes the following measures:

- installation of silt fence around the perimeter of the property;
- installation of construction entrances on both Mitton and Lassell Streets;
- installation of stone check dams along the swale within the CMP easement;
- construction of stone inlets, outlets and rip-rap swales at main outlet areas; and
- mulching, haying, seeding of all disturbed areas.

Erosion and sedimentation control plans for the individual lots will be submitted during the administrative minor-minor review.

5. **Traffic**

According to the traffic study submitted by the applicant (see Attachment 2), the Willow development will cause no significant traffic impact on the intersections in the immediate vicinity of the project. Tom Errico, the reviewing traffic engineer, concludes that the additional vehicular turns from the project onto Congress may minimally increase congestion on westbound Congress (see Attachment 11b).

The applicant is constructing a private roadway which will connect Mitton and Lassell Streets. Included on Attachment 13b is a street section as proposed by the applicant. The applicant proposes a pavement width of 22 ft. with a concrete 6" curb and 3 ft. wide concrete sidewalk.

The applicant is also proposing to use "chipseal" as the finish pavement. Public Works has required that the applicant instead use 2" hot bituminous pavement (Grade B) and 1 1/2" hot bituminous pavement (Grade C) for the top coats. These top layers are required for city standard streets due to their strength and durability. The City is not requiring the aggregate base materials and depth, beneath the finish layer to be of city standard, as the proposed aggregate base will be sufficient for the long term stability of the road.

The Public Works Department makes this requirement with the authority stipulated in the Technical and Design Standards of the Subdivision Ordinance which states:

> Section 14-198(e). . . "Private streets within a PRUD or a manufactured housing park shall meet specifications established by the Public Works department. All private streets shall be designed by a professional engineer and shall be built according to accepted engineering standards."

A durable roadway surface is important to ensure adequate vehicular circulation on the site and onto adjacent sheets for residents, visitors, and services to the development. Further, adequate paved roadway surfaces are needed to facilitate adequate access to the site and to buildings on

the site for emergency vehicles. These factors are related to site plan standards 14-526(a)(1) and (10). Chipseal pavement might be adequate to serve one or two dwellings as a driveway, but does not have the durability and longevity in this climate for a roadway serving multiple units, here 18 single family houses and the associated traffic. An examination of recently built chipseal paved roadways in other projects already shows significant deterioration.

The Public Works Department would therefore suggest the following condition of approval:

> -that the roadway profile be revised to include 2" hot bituminous pavement (Grade B) and 1 1/2" hot bituminous pavement (Grade C) for the two final pavement layers of the Willow roadway.

6. **Sanitary Sewer/Soils**

The applicant proposes to install sewer grinder pumps in each house of the development in order to force sewage up hill to the existing sewer line in Lassell Street. According to the City's Sewer Division, there is adequate capacity to serve the development (see Attachment 7a).

As discussed during previous workshops on the proposal, these grinder pressure pumps have been used in other areas throughout the region.

Staff's main concern regarding the pumps relates to their storage capacity and maintenance. These pumps do not have a 24 hour storage capacity in the case of failure. Instead, they have a built-in tank within each dwelling with 60 gallon storage capacity for waste. Additionally, the firm that installs and provides maintenance on this type of sewer pump is located in Massachusetts. We are not aware of any service providers familiar with and stocking parts for this system locally.

Given the limited capacity of the tanks and distance of service, staff has suggested that the development association maintain an extra back-up pump for emergencies and that the condominium documents be revised to include a description of the sewer system and explanation of any maintenance and emergency procedures. These requirements have been included in the condominium documents.

Soils

The development proposal includes the filling of approximately 17,920 sq. ft. of wetlands in order to construct the access road into the property.

Albert Frick Associates completed a soil survey and wetland appraisal for the development. The Department of Environmental Protection has approved the proposed wetland filling pending the final approval from the regional office (see Attachment 5).

7. **Stormwater**

Existing Conditions

There is currently one defined water channel traversing the site which begins at the outlet of the Italian Heritage Center RCP pipe and carries water across the site in a southeasterly direction towards a detention area in the southeast corner of the site.

Other water from north of the site travels in a southeasterly direction along the northern property line where it also enters the northern section of the detention area. This detention area which currently exists (and is proposed to be used by the applicant) is a pond area which appears to have been formed by the failure of a culvert under the railroad embankment to the south of the development property. The Guilford Railroad Company believes that the failure of the pipe through the railroad embankment was caused over the years by sedimentation and erosion of the development parcel.

Proposed Stormwater Management Plan

The applicant's stormwater management plan proposes to:

1) Collect runoff from the Italian Heritage Center in a catchbasin and pipe it underground along the western property line. The runoff will then be outletted into a swale proposed within the CMP easement where it will run overland to the detention pond in the southeast corner of the site.

2) Runoff from the front portions of house lots and roadway will be collected by catchbasins and inlets and directed toward the central stormwater detention area.

3) Drainage from the northwest side of Lassell Street will be collected in a catchbasin and routed into the central stormwater detention pond.

4) The applicant also proposes to construct a series of berms along the northern property line of the site to provide privacy to the proposed development.

   The applicant will create a swale on the 'out' side of this berm to carry and direct water down the side of berm system where it will sheet flow into the detention basin in the southeast corner of the site.

   To address the staff's concern of water ponding on the 'out' side of the berm in neighbors' yards, the applicant has created a break in the berm system which will allow any standing water a way down to the central pond.

Lot Grading Plan

The applicant has also submitted a drainage plan for the individual lots. While the plan may change slightly depending on the house design chosen by the applicant, the grading plan will be the basis for review when the single family building applications are made. This drainage plan

includes proposed

sill elevations and building locations, and flow arrows showing the intended direction of stormwater flows.

This type of grading plan for an entire development is crucial to the success of a stormwater management system. Often, when single family houses are constructed after the approval of a subdivision, their grading may be done in such was as to jeopardize the entire stormwater plan of the development. This plan will allow us to ensure that each building lot is graded according to plan.

In this project, most of the lots are to be graded to drain along shared property lines. We have requested a typical grading detail for the joint property line swale showing the proposed width, surface, cross slopes and minimum slopes to convey stormwater to the street or (rear) drainage ways. This typical detail will be used for single family reviews. Unless this detail is submitted before Tuesday, this would be an additional condition of approval. It should be noted also that these joint drainage swales are not proposed to be protected by reciprocal easements to adjoining lot owners. Therefore, notes on the recording plat and in the association documents to this effect have been required.

Staff Review of Stormwater Management Plan

The main concern raised by reviewing staff regarding this proposal pertains to the discharge of stormwater into the CMP easement and Guilford property.

While the swale design along the CMP easement is a good engineering solution, the applicant has not shown that he has permission from CMP to perform the grading work as required.

Likewise, the applicant has not shown right, title, or interest to discharge stormwater onto the Guilford property to the south of the development parcel. Added to the lack of right to discharge on the property is the railroad's concern regarding the potential impact of the additional volume of stormwater on the railroad embankment.

The applicant's engineer has studied the detention area and finds that the impact of the project to be minimal and that any remediation of the problem by the applicant would be barely noticeable (see Attachment 1a).

Reviewing staff remains concerned about his design solution and questions whether the proposal meets the following standard of the subdivision ordinance:

14-497(a)(1)

Will not result in undue water or air pollution. In making this determination it shall at least consider the elevation of land above sea level and its relation to the flood plains, the nature of soils and subsoils and their ability to adequately support waste disposal; the slope of the land and its effect on effluent; the availability of streams for disposal of effluent; the conformity to the applicable state and local health and water resources

regulations;

and 14-497(a)(b) *will provide for adequate. . . storm water disposal. . .*

and, under subdivision Technical and Design Standards (14-498(f)(3) Sewers and Storm Drains:

(3) any natural or manmade areas, systems, or facilities designated for stormwater control purposes and intended for city maintenance . . . shall be dedicated with sufficient land for maintenance purposes. . . All such areas as are not intended for city maintenance shall be permanently protected and maintained by private agreement, deed covenant or restrictions, as appropriate, in form approved by the Corporation Counsel.

or the following standard of the Site Plan Ordinance:

14-526(8)

The site plan does not create any significant soil and drainage problems, whether on- or off-site, and adequately provides for control of erosion and sedimentation during construction and afterward;

Lastly, the stormwater standards of the City Technical Standards require:

A narrative describing how the proposed site is oriented within the watershed. The narrative should address how the runoff from the site will affect the watershed hydrograph and nearby properties. It should include all supporting calculations and indicate whether it is possible to reduce the watershed peak flow be detaining stormwater runoff on-site. The narrative should identify areas and structures that historically flood or may be affected by increased flows. The narrative should include any down stream ponds, lakes, or mapped wetland areas.

The downstream impacts and the adequacy of the downstream conveyance to handle any increase in stormwater volumes is a central issue of stormwater arrangement for this development. The railroad's engineer has provided testimony that the existing downstream condition is unable to handle additional flows without risk of failure. The applicant believes that limiting the rate of flow is all that is required, and that the impact on the railroad embankment will be minimal.

The standards require that the adequacy of downstream conveyances to handle storm water flows be documented and private legal protection be provided for drainage facilities not to be serviced by the city. The City's engineer recommends that the on-site retention facilities could be eliminated if a suitable conveyance of stormwater to the Fore River is provided. (i.e. a new pipe and channel) No retention is required when stormwater can be conveyed directly to the bottom of the watershed with no flood hazard. (This would have the incidental benefit of opening the circle for green space for recreation instead of the pond.)

The applicant's engineer argues that the increase in volume will have minimal impact on the pond. The volumetric increase of stormwater off the development site ranges from a 65% increase of 7,353 cu. ft. (55,000 gallons) for a two year event, to a 28% increase of 11,391 cu. ft. (85,400 gallons) for a 25 year storm. While this might not substantially increase the water level in the pond, there remains a significant concern that the existing structural condition cannot safely accommodate this increase in volume. The city's engineer recommends against putting this additional volume into the exiting downstream condition. The proposal deals only with pre and post development rates, which are less an issue this far down the watershed. Pre and post development volumes will increase, which in this location could have a negative impact on the downstream conditions.

The grading plan for the development also indicates the grading and use of swales between the house lots. Staff is concerned with the maintenance and potential obstruction of these swales, as discussed above.

The applicant has added notes to the lot grading plan and the condominium documents stating that these areas may not be obstructed or filled to divert runoff from its designed direction. Staff would recommend the following conditions of approval:

> That the notes on the Site Development Plan regarding the responsibility of the homeowner's association to maintain the drainage system as designed and the required consistency between the single family development applications and the lot grading plan/stormwater management plan be added to the recording plat.

Staff has also requested that the applicant place the following note on the grading plan:

> Field grading shall be sufficient to ensure that there is no blockage, ponding, or detention of water on adjacent properties caused by the Willow development.

The applicant objects to this note, suggesting that the proposed grading plan be relied upon to ensure no ill effects. Because there are locations where the precision of the plans do not provide 100% guarantee, the proposed note is requested. As a compromise, specific locations can be marked with "grade to drain" with flow arrows to guarantee final field grading will achieve the intended result.

> and
>
> That the applicant should revise the grading plan to include a specific grading design behind lots 2 and 3 that will ensure drainage to CB #1 and not ponding on the neighboring property.

8. **Solid Waste Disposal**

The Homeowner's Association will be required to contract with a private hauler for the removal of solid waste.

9. **Scenic Beauty**

The proposed development will not cause an undue adverse effect on the scenic or natural beauty of the area, aesthetics, historic sites, significant wildlife habitat or rare and irreplaceable natural areas.

10. **Comprehensive Plan**

At the request of the applicant, the City Council voted to approve the rezoning of a portion of this property from the I-2 to the R-5 zone. This rezoning is consistent with the recommendations set forth by the Planning Board as part of the industrial rezoning considerations.

The Transportation Plan recommends connecting new developments to existing neighborhoods and recommends against the creation of dead-end roads and cul de sacs. The applicant has revised the plans accordingly to connect the private road to both Mitton and Lassell Streets.

11. **Financial Capability**

Included as Attachment 7d is a letter of financial capability from Key Bank.

12. **Groundwater**

As determined by test pits, the groundwater level is greater than 6 ft. below existing grade. The applicant therefore believes that the development will not adversely effect the quality or quantity or groundwater.

13. **Flood Hazard/Shoreland**

The project site is not located in the flood hazard or shoreland zones.

14. **Wetlands**

As discussed previously, the applicant proposes to fill approximately 17,920 sq. ft. of wetlands. The filling of these man-made wetlands has been approved by the DEP.

V. SITE PLAN REVIEW

1/2. **Traffic**

Traffic comments have been consolidated in subdivision review section #5.

3. **Bulk, Location, Health, Safety, Air**

The proposal is a low intensity development for this site with 18 dwellings proposed for 5.7 acres. Given the size of the lots, there should not be any reduction in light, air, or safety for adjacent property owners.

4. **Bulk, Location, Height or Proposed Buildings**

The one- and two-story buildings proposed for the Willow development will be bungalow or cottage-style homes, similar to those constructed at Summer Place.

5. **Sewers, Stormdrains, Water**

Please refer to Subdivision Review, Section # 2, 6, and 7 for a discussion of sewer, stormwater, and water supply for the proposed development.

6. **Landscaping and Existing Vegetation**

The development site is a low area below Mitton and Lassell Streets. There are low-lying shrubs and bushes throughout the site with few existing trees.

The applicant proposes to construct an earthen berm along the northern property line of the site. The berm will be planted with White Pines and Rosa Rugosa to provide privacy to the development and a buffer to the neighbors.

The main entrance to the site will be on Mitton Street and will feature a 10' x 10' x 4' tall white picket fence on either side of the roadway planted with 10 2" - 2 1/2" caliper Weeping Willows. Rosa Rugosa will also be planted along the entrance drive on Mitton Street.

The edge of the rear drainage swale running within the CMP easement will be planted with 16 5' - 6' Hemlocks placed 20 ft on center to provide a buffer from the drainage area to the south.

The central circle area will be planted with Rosa Rugosa in staggered rows and will be protected from vehicles by a low picket fence. 22 Crabtrees will be planted along the outside of the circle and four Willow trees will be planted in the center island around the gazebo.

A 6 ft. stockade fence will be placed along the western property line of the parcel where the parcel abuts the Italian Heritage Center. Due to the proximity of the large building, the applicant and City Arborist agree that a fence will provide a more adequate buffer than plantings.

7. **Soils and Drainage**

See subdivision review, section #4

8. **Exterior Lighting**

The applicant proposes to install 6 "Cottage Park" style street light fixtures along the private roadways. The 100 watt lights will be mounted on 16 ft posts.

9. **Fire**

The Fire Department's main concern regarding this development pertained to the need to access the site from both Mitton and Lassell Streets. This connection between the streets has been made to the satisfaction of Fire Department.

10. **City Infrastructure**

The proposal does not interfere with any existing or proposed infrastructure planned by the City. As mentioned earlier, the roadway design which connects Mitton and Lassell Streets preserves the roadway network of this region of the City.

11. **Planned Residential Unit Development Review**

a. Design Relationship to Site

The main design theme of the proposed development is the common area including a bridge over a pond with a central gazebo. A plan and section of this central island is included as Attachment 13g.

The site is currently undeveloped and provides little context for design.

b. Internal Design Character and Relationship to Surrounding Neighborhoods

The surrounding neighborhood includes a mixture of residential, commercial, and medical office uses. The residential developments range from modest single family homes to multi-unit apartments. There is no single prominent architectural style in the vicinity of the proposed development.

c. Recreation and Open Space

1. External Buffers

The applicant proposes to plant a number of trees and bushes along the property lines of the property to provide a buffer from adjacent properties. Where the Italian Heritage Center is a more prominent structure, the applicant proposes to construct a 6 ft. stockade fence along the west property line.

2. Internal Buffers

The applicant proposes to install landscaping including Rosa Rugosa and Willow trees around the central island. Otherwise, internal landscaping will be left to the homeowners as they design their lots.

The required 2 trees per lot have been shown on the plans throughout the property.

3. Passive/Active Recreational Open Space

The passive and active open space of the development will be combined within the central rotary area. The gazebo, bridges and decorative pond area are proposed for the 9,500 sq. ft. area, thereby meeting the open space requirements. While this area is hard

to classify as active recreation, similar single family PRUD's such as Cottage Park and Summer Place have been accepted with less active resources than attached ones.

4. Private Open Space

The lots range in size from 8,000 - 17,000 square feet. Footprints of the buildings will generally be kept below 1,000, leaving a major portion of each lot available to open space after a garage and driveway are installed.

12. **Condominium Documents**

Natalie Burns, Associate Corporation Counsel, has reviewed the condominium documents and finds them to be satisfactory. Ms. Burns had requested that clarifications be made in the documents and on the recording plat regarding rubbish removal, grading of lots, and maintenance of drainage courses. These clarifications have been made.

13. **Easements**

There is one 40 ft. CMP easement along the southern portion of the property. This easement is located adjacent to CMP property which contains power lines. The applicant proposes to construct a drainage swale in this area which will accept drainage from the Italian Heritage Center and direct the flows around the site toward the detention area in the southeast corner of the site.

Natalie Burns, Associate Corporation Counsel, has requested that the applicant submit a letter from CMP granting permission to regrade this area. The applicant has instead submitted the easement language.

The proposed recording plat includes a number of drainage and access easements throughout the site these include snowplow, drainage course maintenance drainage access and utility access easements. A potential condition of approval may be:

- that prior to recording of the subdivision plat, the applicant submit for Corporation Counsel review and approval all executed easements as referred to on the plan.

IV. MOTIONS FOR THE BOARD TO CONSIDER

On the basis of plans and materials submitted by the applicant and on the basis of information contained in Planning Report #51-96, the Planning Board finds:

A-1. That the Willow P.R.U.D. is in conformance with the Subdivision Ordinance of the Land Use Code.

Conditions of approval: [Note: the proposed conditions do not address the overall stormwater management approach, which could be constituted as an alternate motions or

conditions.]

1. That the roadway profile be revised to include 2" hot bituminous pavement (Grade B) and 1 1/2" hot bituminous pavement (Grade C) for the two final pavement layers of the Willow roadway.

2. That the notes on the Site Development Plan regarding the responsibility of the homeowner's association to maintain the drainage system as designed and the required consistency between the single family development applications and the lot grading plan/stormwater management plan be added to the recording plat.

3. Field grading shall be sufficient to ensure that there is no blockage, ponding, or detention of water on adjacent properties caused by the Willow development.

4. That prior to the recording of the subdivision plat, the applicant submit for Corporation Counsel review and approval all executed easements as referred to on the plan.

5. That a typical side lot line joint swale detail acceptable to the planning engineer be provided and included on the recording plat showing width, surface, and design slopes.

6. That the applicant should revise the grading plan to include a specific grading design behind lots 2 and 3 that will ensure drainage to CB #1 and not ponding on the neighboring property.

A-2. Alternate Motion

That the willow PRUD subdivision and site plan application be tabled until the stormwater management plan issues of rights to utilize the off-site downstream conveyance, and capacity and impacts on the downstream conveyance are resolved; [and/or other matters be resolved]

B. That the Willow P.R.U.D. is in conformance with the Site Plan and P.R.U.D. Standards of the Land Use Code.

Attachments:

1. Stormwater Management Plan
   a. Additional Supporting Data (10/2/96)
   b. Original Narrative
2. Traffic Study
3. Association By-Laws
4. Association Covenants and Restrictions
5. DEP Wetlands Filling Approval
6. Sewer Grinder Pump Information
7. Capacity Letters
   a. Sewer

b. CMP
c. P.W.D
d. Financial

8. CMP Easement
9. Property Warranty Deed
10. Drainage Maintenance Language
11. Staff Comments
    a. City Arborist
    b. Traffic Engineer
    c. City Engineer
    d. Reviewing Engineer with Prior Correspondence (9/27, 9/9, 9/4)
    e. Planning Letter to Applicant (9/27)

12. Letters from Neighbors
    a. Guilford
    b. Charles Gould - 39 Mitton Street
13. Plans
    a. Recording Plat
    b. Site Development Plan
    c. Soils
    d. Drainage/Erosion Control
    e. Profiles
    f. Landscaping & Lot Grading
    g. Center Island Details
    h. Building Elevations
    i. Applicant Response to Engineer's Comments (9/30, 9/19)

CITY OF PORTLAND, MAINE
MEMORANDUM

TO: Chair Hagge and Members of the Portland Planning Board

FROM: Sarah Hopkins, Senior Planner

DATE: October 22, 1996

SUBJECT: Willow P.R.U.D. at Mitton and Lassell Streets

At the last public hearing on October 8, the Board voted unanimously to table action on the Willow P.R.U.D. pending the receipt of additional information regarding the stormwater management plan and its effect of the Guilford railroad and CMP property.

Since the public hearing, the applicant was able to design a solution which has satisfied both abutters.

Revised Plan

The amended plans (see Attachment 5) show an underground pipe collecting the runoff from the Italian Heritage Center, routing it beneath the central pond with an outlet, and continuing it down to a rip-rapped channel leading to the existing detention basin adjacent to the Guilford railroad embankment. The central pond now only an ornamental feature, will receive drainage from the roadway only and the underground pipe outlet. No regrading will be required in the CMP easement.

Since the pond now serves only as a site feature, not a detention basin, staff has suggested that the pond area be reduced and some additional grass area be provided around the circle. The applicant has indicated a willingness to increase the green portion of the circle.

Also included as Attachment 2 is a schematic design solution proposed for the railroad embankment.

The applicant proposes to install a 27 inch culvert at the same elevation as the top of the existing standpipe which connects to the lower (failing) culvert. This added culvert will preserve the existing water level of the pond while removing any additional volume created by the proposed development or major storm event.

This solution appears to answer the concerns raised by the Railroad and Portland Water District (see Attachments 3 and 4). Steve Bushey, Reviewing Engineer is currently reviewing the plans and will have comments available for the Board at the public hearing.

The applicant has also added two notes to the plan as requested by reviewing staff which state:

- "it shall be the responsibility of the homeowner's association to ensure that the drainage system is not blocked or obstructed by any property owner. The City shall have no responsibility for enforcing or overseeing this provision"; and

- "actual grading of lots shall comply with sill elevations and flow directions as shown on the lot grading plan (final plans for each lot [will be] submitted for minor-minor site review.) Grading shall be in accordance with stormwater management plan."

These notes have addressed two recommended conditions of approval.

The outstanding issues which remain for the Board to discuss are:

1. Pavement Treatment

   The applicant has indicated chipseal as a top pavement coat for the roadway. The applicant has also suggested an alternative of a cold recycled mix under a hot bituminous layer. Public Works, under the authority granted in Section 14-198(e) (see report page 4), would prefer two hot layers of bituminous.

2. Privacy Berm

   There is concern among review staff that the berm proposed along the north property line may cause ponding on abutters' property. The condition proposed by staff requires specific grading design behind lots 2 and 3 that will ensure drainage to CB#1 and not ponding on the neighboring property.

3. Joint Swales

   Reviewing staff has asked for a joint swale detail (instead of drainage maintenance easement) for areas between the lots showing width, surface treatment, and design slopes.

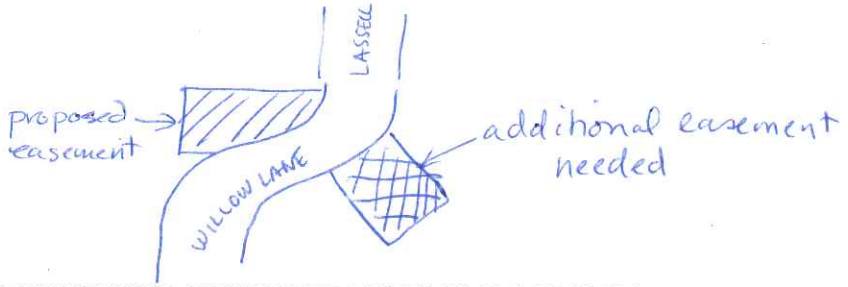
4. Easements

   We will still need to see executed easements prior to recording of the subdivision plat.

5. Snow Plow Easements

   The applicant and City staff are working to find a solution for a problem with the Lassell Street snow plow easements. These easements are needed when a public street connects with a private street in order to provide an area on the private property for the snow plow to turn around.

   The usual 30 ft. deep easement is placed perpendicular and to the right of the centerline of the road. Due to the configuration of the roadway, this placement is difficult. The applicant has created an easement alongside the roadway which makes it difficult for snow plows to back out. Staff has suggested a backing easement on the other side of the street as well:



Based on the information submitted by the applicant and on the basis of information contained in Planning Report #51-96 and Planning memo dated October 22, the Planning Board finds:

1. That the Willow P.R.U.D. is in conformance with the Subdivision Ordinance of the Land Use Code.

    a. That the roadway profile be revised to include 2" hot bituminous pavement (Grade B) and 1 1/2" hot bituminous pavement (Grade C) for the two final pavement layers of the Willow roadway.

    b. That prior to the recording of the subdivision plat, the applicant submit for Corporation Counsel review and approval all executed easements as referred to on the plan.

    c. That a typical side lot line joint swale detail acceptable to the planning engineer be provided and included on the recording plat showing width, surface, and design slopes.

    d. That the applicant should revise the grading plan to include a specific grading design behind lots 2 and 3 that will ensure drainage to CB#1 and not ponding on the neighboring property.

2. That the Willow P.R.U.D. is in conformance with the Site Plan and P.R.U.D. Standards of the Land Use Code.

PLEASE BRING YOUR PACKET TO THE PUBLIC HEARING.

Attachments:

1. Letter from the Applicant
2. Railroad Culvert Design
3. Letter from Guilford
4. Letter from Portland Water District
5. Revised Plans

Attachment 1
it

back - 30'

NEPTUNE PROPERTIES, INC.

120 EXCHANGE STREET PORTLAND, MAINE 04101

10/16/96

TO: ALEX JAEGERMAN 756.8258

FROM: MIKE SCARKS

RE: FORE RIVER PLACE

PAGE 1 OF 3

ALEX: FOLLOWING PLEASE FIND A REDUCED PLAN SHOWING HOW OUR DESIGN HAS BEEN MODIFIED BASED ON OUR AGREEMENT WITH THE RAILROAD TO INSTALL A NEW CULVERT UNDER THE TRACKS THIS WILL ACCOMPLISH THE FOLLOWING:

1) PROVIDE A NEW CULVERT UNDER THE RAILROAD TO PASS ALL OUR FLOWS DIRECTLY TO THE RECEIVING WATERS.

2) PIPE THE FLOW FROM THE ITALIAN HERITAGE CLUB THRU OUR SITE AND ELIMINATE ANY OVERLAND FLOW ON CMP EASEMENT.

3) RETAIN THE FORMER DETENTION POND (MUCH SMALLER) AS AESTHETIC AMENITY USED FOR PASSIVE RECREATION.

FULL SIZE PLANS WILL BE AVAILABLE FOR THURSDAY'S MEETING.

I ALSO WOULD LIKE TO REITERATE OUR REQUEST TO USE CORE PRODUCT AS INSTALLED AT BLUE ROCK INDUSTRIES MANSFIELD YARD WHICH HAS BEEN IN SERVICE UNDER EXTREMELY HEAVY LOADS FOR 5+ YEARS AND IS IN EXCELLENT CONDITION.

I AM ALSO WAITING FOR FEED BACK FROM YOU ON THE

LOCATION OF THE SNOW PLOW EASEMENT AT THE LASSELL ST. END IN A LOCATION THAT MAKES PRACTICAL SENSE.

PLEASE ADVISE OF ANYTHING YOU NEED AS IT IS CRITICAL TO US THE REACH A DECISION AT THE 10/22 PLANNING BOARD MEETING.

SINCERELY,

MIKE SCARKS

Attachment 2

NEPTUNE PROPERTIES, INC.

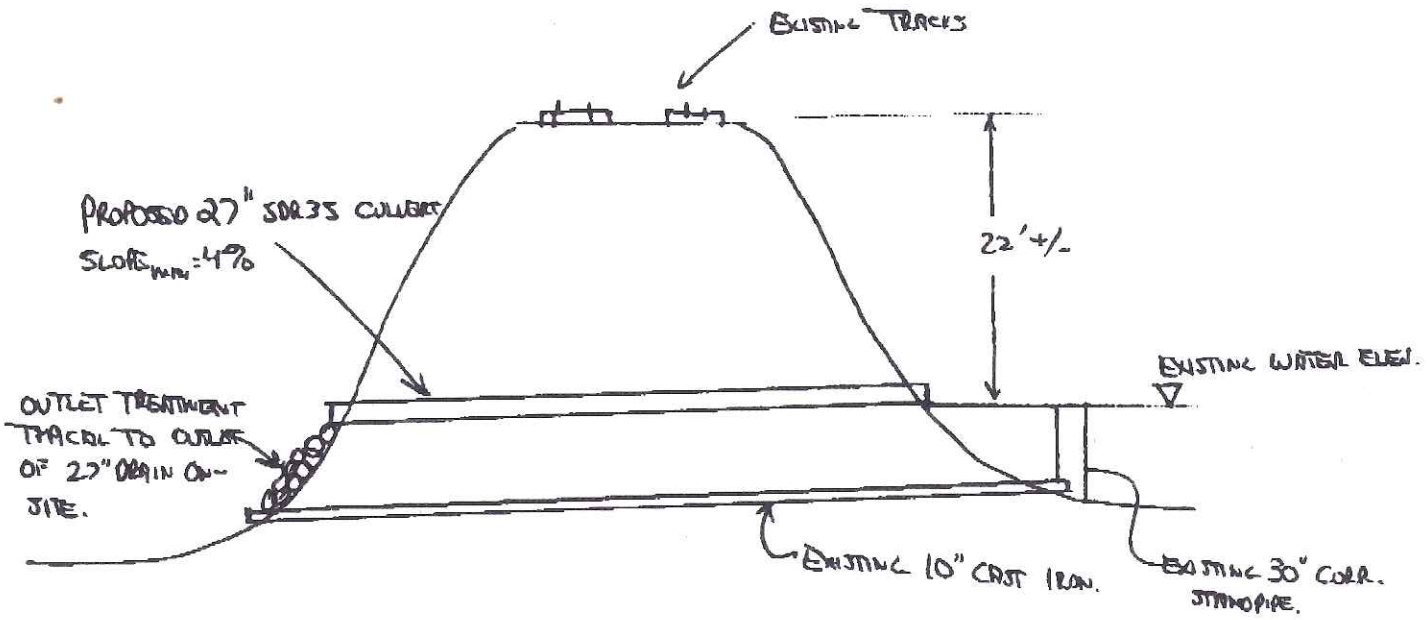
120 EXCHANGE STREET PORTLAND, MAINE 04101

TO: ALEX JAEGERMAN FAX: 7568258 10/17/96

FROM: MIKE SPARKS

RE: FORE RIVER PLACE

ALEX. AS PER OUR PHONECON THIS AFTERNOON PLEASE ACCEPT THIS FOLLOWING DETAIL ON THE RAILROAD CULVERT. RAILROAD WILL CHOOSE EXACT ALIGNMENT IN THE FIELD.



X-SECTION OF RAILROAD EMBANKMENT

N.T.S.

OFFICE: 207-775-2100 FAX: 207-874-6988

Attachment 3

BOSTON & MAINE CORPORATION
MAINE CENTRAL RAILROAD COMPANY
SPRINGFIELD TERMINAL RAILWAY COMPANY

IRON HORSE PARK
NO. BILLERICA, MASS. 01862

20 Rigby Road
So. Portland, Me. 04106
207-828-6419
October 16, 1996

Mr. Joseph E. Gray, Jr.
Director of Planning and Urban Development
City Hall - 4th Floor
389 Congress Street
Portland, Maine 04101

Ref: Proposal by Neptune Properties for a development of a 19 lot Planned Residential Development at the end of Mitton and Lassell Streets.

Dear Mr. Gray,

Since the October 8, 1996 Planning Board meeting the Portland Terminal Co./Springfield Terminal Railway have reached agreement with Neptune Properties, Inc. on a solution to our drainage concerns with this project.

An additional culvert will be installed under the railroad to ease the long-standing drainage problem as well as providing drainage for the proposed development.

At this time I hope that the city staff and Planning Board will approve the project, so that we may procede with this betterment to all concerned.

Yours truly,

Mathew T. Rines
Engineer Design and Const

Attachment 4

Portland Water District

225 Douglass St. • P.O. Box 3553 • Portland, ME 04104-3553

(207) 774-5961
FAX (207) 761-8307

October 16, 1996

Joseph E. Gray Jr.
Director of Planning and Urban Development
4th Floor City Hall
389 Congress Street
Portland, Maine 04101

Re: Neptune Properties - Mitten & Lassell Street

Dear Mr. Gray:

To follow up on my original letter, I have recently been informed by Neptune Properties that they have reached agreement with the Maine Central railroad for the installation of a new 24" culvert under the railroad to drain the pond that we now use for our snow dump.

Provided that this culvert be replaced as part of this project as indicated, the District has no objections to the proposed development by Neptune Properties. Thank you for your consideration in this matter.

Sincerely yours,

PORTLAND WATER DISTRICT

Norman V. Twaddel

Norman V. Twaddel
Right of Way Agent

C:\MSOFFICE\WINWORD\SNOWDMPL.DOC

CITY OF PORTLAND, MAINE
MEMORANDUM

TO: Chair Hagge and Members of the Portland Planning Board

FROM: Sarah Hopkins, Senior Planner

DATE: September 10, 1996

SUBJECT: Fore River Place

At the last workshop on Fore River Place, the Planning Board suggested that we hold another workshop on this item in order to spend more time on the stormwater management plan, design issues and other items related to the review of the proposal.

We have asked the applicant to bring their engineer to the meeting. The City's contracted review engineer, Steve Bushey, will also be at the meeting to discuss the plans with the Board.

At the last meeting, the Planning Board and review staff requested the following information:

- connection of Mitton and Lassell Streets;
- traffic study;
- additional information of stormwater management plan;
- additional information on proposed sewer system;
- building elevations;
- clarification of responsibility in condo docs for rubbish removal;
- resolution on pavement material;
- applicable waiver requests; and
- easement language for snow plows, drainage, etc.

As of this writing, we have received several items from the applicant which are briefly listed below. Staff from Public Works and DeLuca-Hoffman were not able to provide written comments to the Planning Board prior to this workshop but they will be available at the workshop to discuss any outstanding issues to be resolved prior to public hearing.

1. Connection of Mitton and Lassell Streets

   The applicant has provided the connection between the two streets at the request of the Planning Board and City Staff.

2. Traffic Study

Included as Attachment 3 is a traffic study submitted by Jack Murphy. The study concludes:

a) There is no accident problem on either Mitton or Lassell.
b) Cars from Mitton and Lassell can only enter Congress Street traffic during the PM peak hours during gaps created by signals at Stevens and Sewall.
c) There is little delay during the AM peak hours.
d) The development will most likely use Mitton Street where there may be less delay.

⇒ no comment yet from Bill Bray

3. Stormwater Management Plan

Steve

1) railroad letter attachment 5 Matthew Rhines ⇒ downstream impacts
2) lot grading plans
3) berm/swale not shown need capacity, details on swale - Steve's letter

Due to the reconfiguration of the site, the stormwater management plan has changed to retain drainage in a pond located in the center of the site.

The applicant's engineer, as well as the reviewing engineer from DeLuca-Hoffman and Public Works will be present at the workshop to discuss the stormwater management plan with the Board.

Included as Attachment 5 is a letter from Guilford Industries regarding drainage problems associated with the adjacent railroad right-of-way. This letter has been forwarded to the applicant and the issues should be resolved prior to the public hearing.

4. Sewer Design

4) need more info on detention pond.

The applicant has submitted the requested background information on the proposed pressure sewer system. This material is included as Attachment 4. - See specs.

5. Building Elevations

5) Would not at this point be able to meet the stds of subd. site plan tech stands.

Included as Attachment 7 is one set of building elevations for a proposed building. The applicant will create variations on this basic theme for the other buildings. Design criteria for the buildings is also included as Attachment 6 which regulates the size, materials and design of the homes.

Typically, the Planning Board is presented with a number of different designs (usually four) in order to determine how the project meets the design standards of the Site Plan Ordinance.

- Ric has them.

6. Condominium Documents

The applicant has clarified that rubbish removal is the responsibility of the individual homeowners.

Natalie has a problem w/ indiv. resp - needs to be assoc. resp

7. Pavement Material

The applicant is proposing to use chipseal as the pavement material for the project. The Public Works department has advised strongly against the use of chipseal and will not approve it. Public Works must approve the materials and depth of pavement as part of the Subdivision Ordinance.

8. Waiver Requests

In his letter, included as Attachment 1, the applicant has requested the waivers to transition the pavement width from the end of the existing streets to the private street. Public Works would prefer the continuation of the existing widths (28, 29 ft.) to the private street.

The applicant has also proposed constructing the sidewalk on one side of both streets.

The Public Works Department has requested the installation of granite curb along the City section of Mitton Street.

9. Easements

Staff will work with the applicant to finalize the easement language for the snow plow and drainage concerns.

10. Passive/Active Recreation Space

The applicant should resubmit calculations for open space based on the reconfigured site design.

Any exceptions from these requirements would have to be approved by ZBA.

Attachments:

1. Letter from the Applicant
2. Revised Stormwater Plan
3. Traffic Study
4. Sewer System Information
5. Letter from Guilford
6. Design Guidelines
7. Building Elevations
8. Site Plans

Attachment 1

NEPTUNE PROPERTIES, INC.

120 EXCHANGE STREET PORTLAND, MAINE 04101

ALEX JAEGERMAN PAGE 1 OF 3 9/2/96

DEAR ALEX:

IN RESPONSE TO JARAN'S LETTER TO ME DATED 8/26 AND RECIEVED 8/28 REGARDING THE "FORE RIVER PLACE" PROJECT I AM SUBMITTING THE ATTACHED REVISED ITEMS:

- PLANS SHOWING A CONNECTION BETWEEN LASSEL AND MITTON STREETS. AND A REVISED SHAPE TO THE STORMWATER POND (WHICH IS NOW OPEN)
- REVISED FIGURES TO SUPPLEMENT THE EXISTING DRAINAGE STUDY WHICH INCLUDES THE RE-DESIGN OF THE DETENTION POND.
- A SPECIFIC DESIGN FOR THE PRESSURE SEWER SYSTEM ALONG WITH EXAMPLES AND REFERENCES ON NUMEROUS INSTALLATIONS OF LIKE SYSTEMS.
- THE TRAFFIC STUDY HAS BEEN COMPLETED AND IS BEING DELIVERED BY JACK MURAY (IT WILL BE AVAILABLE PRIOR TO THURSDAY MORNINGS STAFF MEETING ACCORDING TO JACK)

IN RESPONSE TO OTHER ITEMS OF CONCERN ON JARAN'S LETTER:

1) DONE
2) DONE
3) EITHER JAY STEVENS OR I WILL BE AVAILABLE AT THE WORKSHOP TO DISCUSS DRAINAGE.

OFFICE: 207-775-2100 FAX: 207-874-6988

4) INCLUDED HERE

5) WITH RESPECT TO BUILDING DESIGN WE ARE USING VARIATIONS OF THE DESIGN ALREADY SUBMITTED. THE HOUSES WILL BE CUSTOM BUILT AND WE PROPOSE TO SUBMIT SPECIFIC PLANS AND PLOT PLANS FOR EACH HOUSE THRU A MINOR/MINOR SITE REVIEW.

WE BELIEVE THIS ONE DESIGN SHOWS THE INTENT OF THE ARCHITECTURAL DESIGN STANDARDS REQUIRED FOR THE PROJECT, BUT WORKSHOP WILL BE AVAILABLE AT THE WORKSHOP TO ANSWER QUESTIONS.

6) WE FIND NO TECHNICAL PROBLEM WITH THE CHIP SEAL PAVEMENT. BECAUSE WE HAVE CONNECTED THE TWO CITY STREETS TO THE PROJECT AND REDUCED THE NUMBER OF LOTS TO 18 THERE WILL BE EVEN LESS WEAR + TEAR THAN ORIGINALLY EXPECTED. THIS WILL NOT BE A CITY STREET AND CONSEQUENTLY NOT A CITY RESPONSIBILITY.

7) WE DO REQUEST WAIVERS FOR THE WIDTH OF THE UNIMPROVED SECTION OF MILTON ST. (APPROX. 60'+/-) FROM THE END OF THE EXISTING PAVEMENT TO THE PROPOSED SNOW PLOW TURN-AROUND WHICH IS THE OBVIOUS PLACE TO TRANSITION TO OUR ROAD CROSS-SECTION. WE WOULD PROPOSE TO INSTALL SIDEWALK ON THE EAST SIDE WITHIN THIS SHORT SECTION. THE LOCUST ST. CONNECTION IS BASICALLY IMPROVED TO THE END OF THE RIGHT-OF-WAY AND WE PROPOSE TO TRANSITION TO OUR CROSS-SECTION AT THE EXISTING PAVEMENT'S END + CONNECT THE SIDEWALK (EXISTING) ON THE WESTERLY SIDE.

8) CONDO DOCUMENTS HAVE BEEN AMENDED TO MAKE IT CLEAR RUBBISH PICK-UP IS NOT A CITY RESPONSIBILITY. (REVISION SHEET INCLUDED)

9) DO YOU HAVE SNOW PLOW EASEMENT LANGUAGE THE CITY HAS APPROVED BEFORE? WE WOULD BE HAPPY TO REVIEW + USE IT.

10) I DON'T UNDERSTAND THIS COMMENT, IF IT RELATES TO DRAINAGE THEN WHATEVER IS REQUIRED THRU THE INDIVIDUAL LOT DESIGN REVIEWS WILL BE INCORPORATED INTO THE DEEDS PRIOR TO TRANSFER.

WE ARE DESIGNING FOR AN OLDER POPULATION IN THIS PROJECT AND WE PROPOSE TO MEET THE RECREATION REQUIREMENT WITH THE PASSIVE AMENITIES PROVIDED BY THE LANDSCAPED POND WITH FOUNTAIN, CENTER ISLAND GAZEBO, AND ASSOCIATED SEATING.

AS I INDICATED TO SARAH, WE ARE REQUESTING THE EARLIEST POSSIBLE SCHEDULING ON THE PUBLIC HEARING AS WE ARE READY TO START CONSTRUCTION IMMEDIATELY AND WOULD LIKE TO COMPLETE THE SITE WORK PRIOR TO WINTER. YOUR COOPERATION IN THIS REGARD WOULD BE GREATLY APPRECIATED.

I BELIEVE WE HAVE ADDRESSED ALL PREVIOUS COMMENTS AND QUESTIONS AND LOOK FORWARD TO OUR WORKSHOP ON 9/10/96. IF YOU NEED ANY ADDITIONAL INFORMATION PLEASE CONTACT ME AT YOUR EARLIEST CONVENIENCE.

SINCERELY,

MIKE SORRIS

P.S. TRAFFIC STUDY IS INCLUDED IN THIS SUBMISSION.

Attachment 2

MEMORANDUM TO: Mr. Michael Scarks, NEPTUNE PROPERTIES
FROM: Jay E. Stephens, P.E.
DATE: 23 August 1996
RE: **Fore River Place, Lassell Street, Portland, Maine**

The attached plans reflect changes pursuant to our conversations on 19 August 1996.

The most significant change involves a connection to Lassell Street. We have also changed the stormwater detention system from underground chambers to an open basin.

While we have not published another drainage report, the following charts show how the storm events compare:

TWO YEAR EVENT -

Drainage Area Designations Pre(E)	Post(F)	Site Runoff Rates* Pre	Held Post	Change (+/-)
1	1	2.03	1.37	-0.66
7	7	2.25	2.02	-0.23
TOTAL SITE		3.72	3.20	-0.52

TEN YEAR EVENT -

Drainage Area Designations Pre(E)	Post(F)	Site Runoff Rates* Pre	Held Post	Change (+/-)
1	1	5.74	5.45	-0.29
7	7	5.74	5.07	-0.67
TOTAL SITE		10.46	10.22	-0.24

TWENTY FIVE YEAR EVENT -

Drainage Area Designations Pre(E)	Post(F)	Site Runoff Rates* Pre	Held Post	Change (+/-)
1	1	8.42	7.45	-0.97
7	7	7.50	6.62	-0.88
TOTAL SITE		15.43	13.70	-1.73

* Figures are in CFS.

If you need any more information, please call.

f:\96444\64448236

CIVIL CONSULTANTS
P.O. Box 100 South Berwick, Maine 03908 207-384-2550

Attachment 3

JOHN L. MURPHY, P.E.

Civil Engineer
Traffic Engineer

RR1, BOX 6300
WEST BALDWIN, MAINE 04091-9745
207-625-8222

Traffic Impact

Mitton Street, Lassell Street

Portland, Maine

General

The developer proposes construction of 19 single family units with access to Mitton Street and Lassell Street. Originally, the project included 20 units with access to Mitton Street only. However, as a result of a request from the Planning Board at a workshop session, the developer is now willing to construct a loop road through the project.

Trip Generation - Data Collection

The 19 proposed units are expected to generate 19 trips during the PM peak hour, with 12 entering and 7 exiting the project. A total of 14 trips are expected during the AM peak hour, 10 exiting and 4 entering. These estimates are based upon the Institute of Transportation Engineers' 1991 report "Trip Generation" revised to 1995.

Such a low trip generator does not usually require a traffic study, as actual impact can not be accurately determined. However, at the request of the City Traffic Engineer, I have counted the Lassell Street and Mitton Street intersections during the AM and PM peak hours and have observed corridor flow on Congress Street. I have also recorded delays for Mitton Street and Lassell Street traffic making exiting right and left turns and entering left turns. The Maine Department of Transportation had also provided a three year accident summary printout for 1993, 1994 and 1995 reported accidents from Sewall Street to Bradley Street.

Analysis

As can be seen from the attached peak hour turning movement counts, Lassell Street has roughly twice as much traffic as Mitton Street at the respective Congress Street intersections. This is

because of the office building at 1330 Congress Street which has a driveway on Lassell Street. My observations for the peak periods indicated that at least 46% of the 4 PM to 6 PM traffic and 74% of the 7 AM to 9 AM traffic on Lassell Street was traffic from the 1330 Congress Street building.

The existing traffic volumes (see count data) on Lassell Street during the PM peak one hour was 24 vehicles, with 11 exiting and 13 entering. On Mitton Street the total PM peak hour volume was 13 vehicles, with 8 entering and 5 exiting. During the AM peak hour the respective volumes were 29 vehicles, 16 entering and 13 exiting on Lassell Street, and 15 vehicles on Mitton Street, 9 exiting and 6 entering. All these volumes are extremely low and no signal warrants can be met, even with the 19 additional houses.

The existing delays on both Mitton Street and Lassell Street are higher during the heavier PM peak periods. The PM left turn exit movement experienced the greatest difficulty, with delay of 40 to 50 seconds at Lassell Street and approximately the same at Mitton Street. The right turn from Lassell Street during the PM peak period ranged in delay from as little as 2 seconds to 40 seconds, again with similar delays at Mitton Street. Left turns from Congress Street at both Mitton Street and Lassell Street all took less than 40 seconds, with most delays 10 seconds or less.

Traffic from both Mitton Street and Lassell Street can only enter Congress Street during gaps created by the traffic signals at Stevens Avenue and Sewall Street. Thus the unsignalized intersection capacity analysis can not be used to determine capacity at either Mitton Street or Lassell Street. This analysis methodology assumes free flow of through street traffic which does not occur on Congress Street between Sewall Street and Stevens Avenue.

The accident data indicated 40 intersection accidents and 8 mid-block accidents on Congress Street from Sewall Street to Bradley Street for three years. Of these accidents, one occurred at Mitton Street and two occurred at Lassell Street. Since the volumes on these streets are roughly in the same ratio, the respective accident numbers do not present any surprise. The low number of accidents, i.e., 1 and 2, can't be used to draw any conclusions.

Conclusions

1. Neither Mitton Street nor Lassell Street has any accident problems.

2. During the PM peak hour, traffic from either Mitton Street or Lassell Street can only enter Congress Street during gaps created by the signals at Stevens Avenue and Sewall Street.

3. Traffic from either Mitton Street or Lassell Street experiences little delay during the AM peak hours.

4. Since traffic on Lassell Street is roughly twice the volume of Mitton Street due to the driveway from 1330 Congress Street, the traffic from the proposed 19 houses will use Mitton Street.

5. Observations indicate that turns may be consistently executed with slightly less delay at Mitton Street, which is 765 feet from the Sewall Street signals, than from Lassell Street, which is 620 feet from the Stevens Avenue signals, as back up from Stevens Avenue sometimes reaches Lassell Street. (Distance between Mitton Street and Lassell Street is 260 feet.)

6. Lassell Street has 13 existing housing units and Mitton Street has 19 existing housing units (one or more may be duplex). It is expected that the project traffic from the 19 proposed units will use Mitton Street and not Lassell Street, equalizing flow on both streets at the respective Congress Street intersection.

7. Due to the higher volume on Lassell Street as compared with Mitton Street at Congress Street, there is no traffic flow reason to connect Lassell Street to the project roadway.

John L. Murphy
9/1/96

ALL ENTRIES IN SEC/VEH	LEFT OUT ↰	LEFT IN ↱	RIGHT OUT ↱
MITTON ST 8/29/96 7AM-9AM	11, 10, 60 11 2 10	8, 9, 2, 2, 2 2, 10, 11	2, 2, 40 2, 2, 11, 2 28, 2, 7, 2 2, 15
MITTON ST 6/10/96 4PM-5:30PM	48, 50, 7 45, 32	2, 2, 2, 12 17, 37, 3	3, 25 2, 35
LASSELL ST (X) = VEHICLES FROM BUSINESS @ 1330 Congress X = LASSELL ST VEH 8/30/96 7AM-9AM	(13) (5) (4) (40) (40)	(2) (2) 2 (8) 2 (10) (2) (7) (2) (2) (6) (2) 2 (2) (35) (2) 2 (2) (2) 2 (6) (2) (15) (2) 2	8, 18, 8 (2) (10) (2) (2) (4) (16) 2 2 2 (2) (2) (2) (2) (30) (JUST PAST 9AM)
LASSELL ST (X) VEHICLES FROM BUSINESS @ 1330 Congress X = LASSELL ST VEH 8/29/96 4PM-6PM	50, 9, 50, (8) (40), 45	24, (2) (2), 5, (21) 10, (10) 38, 8, 25 10, (10) 2, (2) (2) 2, (2), (2)	(8) 28, 32, 38 12, 4, 5, (12) 40 (34) (16) (15) 30 (35) (25) 13 (2)

Attachment 4

TWO DECADES OF EXPERIENCE WITH PRESSURE SEWER SYSTEMS

By- R. Paul Farrell, P.E.
Senior Consultant
Environment/One Corp.

for presentation at the winter meeting
of the
New England Water Pollution Control Association
Boston, Massachusetts
January 28, 1992

I. INTRODUCTION

It is always a pleasure to address the New England Water Pollution Control Association because you are the heirs of a proud sanitary engineering tradition which goes back to the Lawrence Experiment Station and such giants as the late Gordon Maskew Fair. It is no exaggeration to say that American sanitary engineering had its beginning here in New England. This region continues to the present day to make material contributions to the science and practice of what we now call environmental engineering.

Through a fortuitous series of events, I became deeply involved in the development of grinder pumps and the pressure sewers which they make possible. This, now mature, technology was in its infancy when first I spoke to this Association at your 1971 meeting (ref 1).

The idea of pressure sewers was the brainchild of Dr. Gordon M. Fair, then professor emeritus of Sanitary Engineering at Harvard. His vision and the clarity of his thought process is obvious in Figure 1, a 1965 drawing from his United States patent for "a sewer within a sewer" (ref 2). It was hoped this would offer one solution to the Combined Sewer Overflow problem. This conceptual drawing includes the following elements:

1. inlet connection to standard gravity household plumbing
2. storage tank
3. sewage grinder on inlet side ahead of pump
4. pump (sketch shows conceptually a positive displacement type pump such as a gear pump)
5. a tank vent to atmosphere
6. discharge under pressure
7. discharge through small diameter plastic tubing
8. backflow prevention (in this sketch the positive displacement pump provides the function)

Each of the above functional elements, along with many subtle refinements, have been incorporated into today's commercially available grinder pumps as is evident in figure 2.

The development of early prototype grinder pumps was done under sponsorship of the American Society of Civil Engineers (ASCE) and the Federal Water Pollution Control Administration (now EPA). Dr. Fair visited our engineering laboratory at the, then fledgling, Environment One Corporation near Schenectady, NY at about that time, and is pictured with the author and an early development grinder pump in figure 3. This was a memorable experience for me, both personally and professionally, because Dr. Fair had been my father's revered mentor and teacher at Harvard years earlier when I was a mere lad of ten. He was highly complimentary of our pioneering work and predicted that the use of pressure sewers would someday become commonplace.

II. GROWTH 1971 to 1991

Twenty years ago a thirteen month long, highly successful field demonstration of pressure sewers had just been completed under sponsorship of the New York State Department of Environmental Conservation. The number of commercial units sold at that time numbered a few dozen at most. The substance of my paper to this group then was that pressure sewers was a viable concept that had been thoroughly developed and demonstrated and was about to become a commercial reality.

From an estimated 50 units in 1971, the cumulative number of grinder pumps produced and shipped by Environment One grew, slowly at first and more rapidly in recent years, so that about a year ago we shipped pump number fifty thousand! This growth in installed base is shown graphically in figure 4. In the meantime, several domestic pump companies including Hydr-O-Matic, Peabody Barnes and F.E. Myers joined in, offering their variations on the basic theme. By 1991 annual industry shipments were estimated (ref 3) to be almost 19,000 units.

From a single grinder pump at a marina on Lake George in 1970, the industry has grown to the point where projects using hundreds of pumps are commonplace, and systems with a thousand pumps or more are no longer unusual. This data, partly from our own records and partly from a newly released EPA manual on alternative collection systems (ref 4), illustrates this point:

SOME LARGE SCALE PRESSURE SEWER SYSTEMS
Existing in 1991

Location	Homes Served
Port St. Lucie, FL	3,000
Saw Creek, PA	1,800
Horseshoe Bay TX	1,700
Kingsland, TX	1,600
Anne Arundel County, MD	1,500
Buckeye Lake, OH	1,500
Ottawa County, OH	1,000
Bloomingdale/Pooler, GA	1,000
Pierce County, WA	850
Palm Coast, FL	650

III. CAPITAL COST

A few pressure sewer jobs installed in New England during recent years are shown in the following table:

PRICES FOR PRESSURE SEWER SYSTEM COMPONENTS
(low bid - to furnish and install)

NAME-DATE-SIZE	DESCRIPTION	BID PRICE
Bourne, Mass Feb '90 >200 pumps	Simplex GP* 60 gal-1 1/2 to 8 1/2' 1 1/4" PVC service line 1 1/2" PVC pressure main	$3800-4300 $12/lin ft $12/lin ft
Town of Derry, NH Beaver Lake area Nov '89, 50 pumps	Simplex GP* 120 gal- 4' a'way Duplex GP* 120 gal - 4' a'way 1 1/2" PE pressure main 2" PE pressure main Auto air & vac release valve	$5000 $12500 $14/lin ft $14/lin ft $3500
Palmer, Mass Nov '86, 50 pumps	Simplex GP* 60 gal & svc conn 3" PVC press main in pav'mt	$6940 $14.30/lin ft
National (Typical) US EPA (ref 4) October '91	Simplex GP - 30" a'way 1 1/4" PVC service line 2" PVC pressure main in pav'mt 3" PVC pressure main in pav'mt 4" PVC pressure main in pav'mt 6" PVC pressure main in pav'mt Auto vac & air release valve	$2300-5600 $6/lin ft $7-12/lin ft $8-13/lin ft $9-14/lin ft $11-16/lin ft $1500

* Simplex grinder pump (GP) includes: 1 hp 1725 rpm thermally protected, capacitor start motor; integral level controls and check valve, separate control panel with alarm and custom features as specified by engineer, redundant check valve, heavy duty custom molded reinforced fiberglass tank, accessway length as specified, lid and lock, integral shut-off valve and tank vent. No field assembly or tank wall penetrations required.

These prices, as would be expected, tend to reflect the size of the job as well as the competitive situation in the construction industry at the time of bid. These are all systems using positive displacement grinder pumps by the author's company, but are believed to be representative of competitively bid prices for high quality equipment from any of several active manufacturers. The range of prices compares well with some "typical national" cost estimates, contained in the recently published EPA manual of "Alternative Collection Systems", which are also shown in the table.

IV. OPERATING AND MAINTENANCE EXPERIENCE

A. Equipment Maintenance Requirements

From the beginning, most engineers had little difficulty accepting the idea that a pressure collection system would work, and that under the right circumstances it offered the opportunity for dramatic savings in capital cost. Most reservations were based on uncertainty about the long term reliability and operating cost of a technology which in 1971 had literally no "track record".

Let's see what we have learned since then. From the beginning we have kept track of the Mean Time Between Service Calls (MTBSC) on as many projects as possible. This number is an accurate measure of the overall service call rate on a group of pumps and is very useful for staffing and cost estimating purposes. It is calculated as follows:

$$\text{MTBSC (yrs)} = \frac{\text{\# pumps in service (P) x years in service (T)}}{\text{total \# of service calls in T yrs (S)}}$$

EXAMPLE - from Pierce County, WA

System contains 836 pumps :	P = 836 pumps
Data is for a 14 month period 1988-89:	T = 14/12=1.1667 yrs
During this period there were 96 pump related service calls:	S = 96 calls

$$\text{MTBSC} = \frac{836 \times 1.6667}{96} = 10.2 \text{ years}$$

Here are some other MTBSC data collected and published in various places over the years:

Date	Project	MTBSC- yrs
1971	Albany, NY Demonstration Project	0.9
1978	Country Knolls South, NY	2.8
1978	Weatherby Lake, MO	3.0
1978	Lake Mohawk, OH	3.0
1980	Cuyler, NY	4.3
1980	Weatherby Lake, MO	4.3
1989	Pierce County, WA	10.2
1991	Groton (Noank), CT	4.4
1991	Fairfield Bay, AK	11.1
1991	Quaker Lake, PA10.7	

Figure 5 shows that this reliability measure has improved by an order of magnitude since 1970. The current figure at Groton, reflects reliability levels when the project was built and is reasonable since the occasional pumps still being installed there are from the original stock shipped over ten years ago (ref 5).

B. Operating and Maintenance Costs

Another measure of reliability is the annual O&M costs expended. Fairfield Glade, Tennessee offers an excellent example because they have done their own maintenance with a dedicated crew and have kept accurate and detailed records. This project has grown from 20 pumps in 1978 to 821 in 1990. The average annual cost for O&M currently is running about $30 per pump (ref 6). Further, as shown in figure 6, the average cost has been declining for the past eight years; even as the average age of the entire pump population is increasing. This is attributed to numerous small but continual improvements made in the pump, along with the fact that the maintenance force has become more efficient with experience. When this project was in the planning stage during the middle seventies, my company estimated $40 to $50 per year for pump O&M. It is gratifying to have the owner tell us, thirteen years later, that our estimate was reliable and on the conservative side.

Quaker Lake, Pennsylvania, a beautiful community of older summer homes, was experiencing serious degradation of water quality as a result of failing septic tanks. A pressure sewer system, built in 1976 and serving 118 homes, has restored the lake water quality and increased property values (ref 7). A sinking fund of $42 per pump per year was originally established for O&M. Because actual O&M costs were far lower than predicted, a significant surplus accumulated in this maintenance and replacement fund and the capital debt was retired several years early.

V. EFFECTS ON TREATMENT WORKS

Pressure sewers are primarily a transport system, and accomplish little in the way of treatment. However, another legitimate question properly asked by every engineer considering this technology is, "How will this pressure transported wastewater effect the treatment works?" By now there are numerous examples of pressure collected wastewater being successfully treated by all normal processes. These include all those shown in the following table:

TYPES OF DISCHARGE POINTS FOR PRESSURE SEWERS
In Current Use - 1991

gravity manhole
pumping station wetwell
force main
community septic tank and soil absorption system
aerated lagoon
secondary treatment of all types
    surface aerators
    rotating biological contactors
    diffused air

Many Low Pressure Sewers discharge into larger systems where the effect is not measurable because of dilution. A lesser number either pump into a dedicated treatment facility or represent a significant fraction of the total flow arriving at the plant.

Pressure collected wastewater differs from that delivered by a conventional gravity system in two principal ways; namely,
1) gross solids have been ground prior to transport to a particle size which generally is in the range of 1/4 to 1/2" maximum dimension and
2) because of the watertight joints and absence of manholes, there is the potential for dramatic reduction in extraneous flows, or Infiltration and Inflow (I/I).

It was shown early on that the grinding had no deleterious effect on settleability as compared to wastewater transported by conventional gravity (ref 8). An excellent example of elimination of extraneous flows was brought to my attention this past summer during a visit to a new plant serving the towns of Sharpsburg and Keedysville, Maryland. Historic Antietam Creek, site of the bloody civil war battle, flows through the area and was plagued by raw sewage overflows and failing septic tanks. A completely pressurized collection system using grinder pumps was constructed two and one-half years ago and has restored the area to a semi-rural beauty and serenity appropriate to such an historic site. There are 731 connections presently on the system, with a few more scheduled for the future. The pressure collection system consists of 60,690 lineal feet of SDR-21 PVC pipe varying in diameter from 1 1/2 to 6 inch and buried at an average depth of four (4) feet. All the wastewater is delivered to a new treatment works through the 100% pressure system. Both the plant operator and Executive Director of the sewer district have stated that wet and dry weather flows are identical. Metered water flow averages between 124 and 150 gpd/DU. Measured wastewater flow is about 2% less than water consumption in winter, and 10% less in summer. There is no infiltration/inflow!!

Similar findings were made at the original Albany Demonstration project where sewage and water flow were essentially identical and averaged about 35 gpcd (ref 8). It is always comforting to have research conclusions confirmed by real world operating experience. Any operator who has suffered through the shock hydraulic loads caused by storm flows into an old leaky collection system can appreciate the significance of predictably lower, nearly steady flows on both removal efficiencies and operating costs. Most operators would consider it a dream come true.

VI. EQUIPMENT REVIEW

Grinder pumps are available from a number of reputable companies. Each manufacturer has executed a product design in his own particular way, and any brand on the market today has the generic features envisioned by Dr. Fair. My company's product has several unique and significant features which I sincerely believe have contributed to its widespread use and our dominant market position. However, rather than discuss those details at this time, I'm sure that you will review the available equipment, its' features and performance record, and make an informed choice. There are several well qualified manufacturer's representatives participating in this conference who are surely eager and able to answer your questions.

VII. CONCLUSIONS

A. In the twenty five years since Gordon Fair's conceptual description of "a sewer within a sewer", grinder pumps and pressure sewers have:

...been custom developed and thoroughly demonstrated
...become eligible for construction loans and grants
...been accepted by nearly all government jurisdictions
...become a routine alternative considered by most engineering firms
...formed the basis for a viable, mature industry with its' own association
...solved difficult technical and economic problems throughout the United States, Canada and Scandinavia
...begun spreading rapidly around the globe.

B. Capital cost savings are significant in the right situations including: shoreline properties, rocky areas, high water tables, low density housing, and a variety of sites sensitive to the environmental trauma so often necessitated by conventional deep gravity sewer construction.

C. There have been few serious operating problems with pumps, pressure lines or treatment works. The complete elimination of infiltration/inflow has been demonstrated in several locations served exclusively by pressure sewers.

D. Highly reliable equipment and systems are operating routinely in New England and all over the country. Operating and maintenance procedures and histories are available from a variety of installations with years of satisfactory experience. Those now considering this technology for the first time can benefit from the collective experience of many fellow operators and engineers. Pressure sewer systems can be planned which will operate reliably into the foreseeable future, within budget, and with few surprises.

REFERENCES

1. Farrell, R. Paul, Jr., "Pressure Sewers and the Grinder Pump Which Makes them Possible", Journal of the New England Water Pollution Control Association, vol. 6, no. 2, November 1972

2. Fair, G. M., US Patent 3,366,339, "Converted Sewer System", filed Nov 26,. 1965, issued June 30, 1968 - assigned by the inventor to the public

3. Submersible Wastewater Pump Association - industry data for 1990 (unpublished)

4. Bowne, William C. et al, "Alternative Wastewater Collection Systems", EPA/625/1-91/024; US Environmental Protection Agency; October 1991

5. Almquist, Carl; Chief Operator, Town of Groton, CT; December, 1991 - personal communication

6. Gray, Donald D., "TN Community's Grinder Pumps Provide Positive O&M Statistics"; in "Small Flows", published by Small Flows Clearing House, West Virginia University; October 1991

7. Milnes, Thomas R. et al, "Community Action at Quaker Lake - A Low Pressure Sewer System with Aerated Lagoons", Water Pollution Control Association of Pennsylvania Magazine, November-December 1978

8. Carcich, Italo G. et al, "A Pressure Sewer System Demonstration", EPA-R2-72-091; November 1972

--END--

Figure 1.

Jan. 30, 1968

G. M. FAIR

3,366,339

CONVERTED SEWER SYSTEM

Filed Nov. 26, 1965

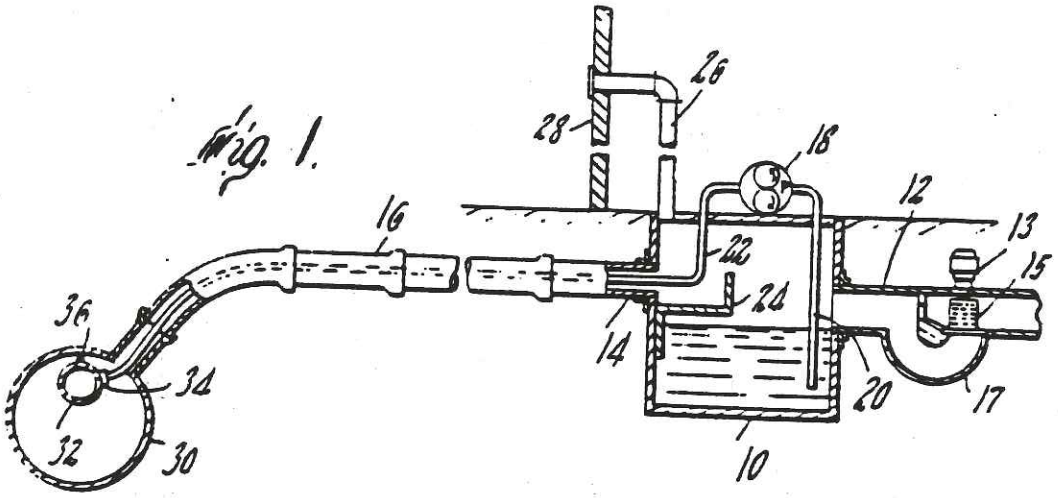


Fig. 1.

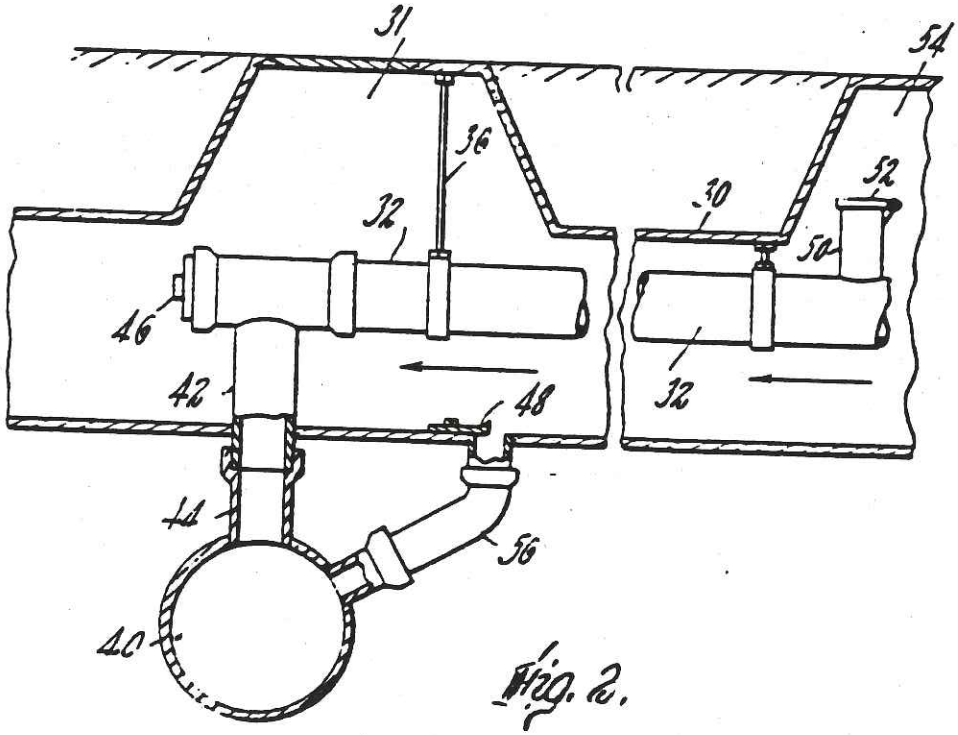


Fig. 2.

Figure 2.

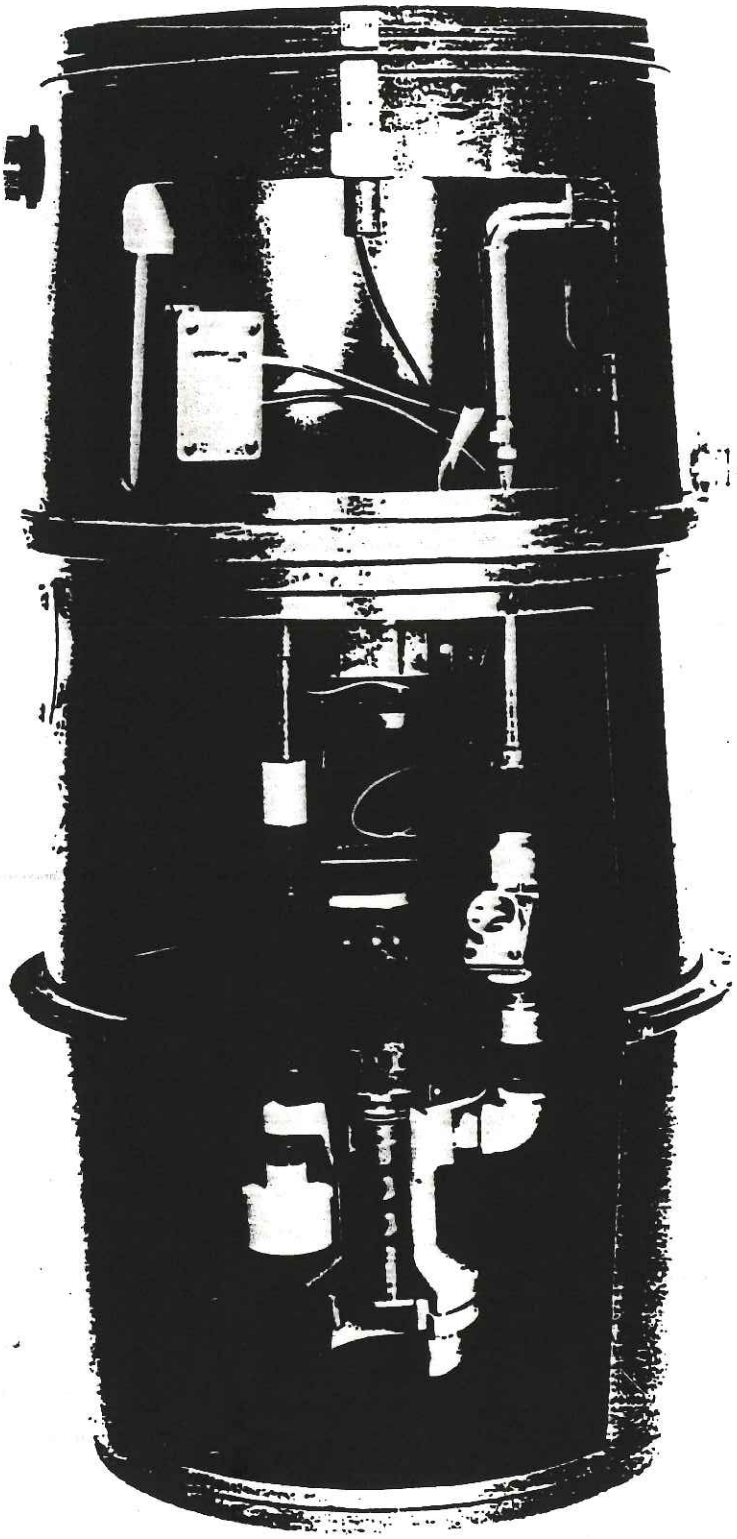
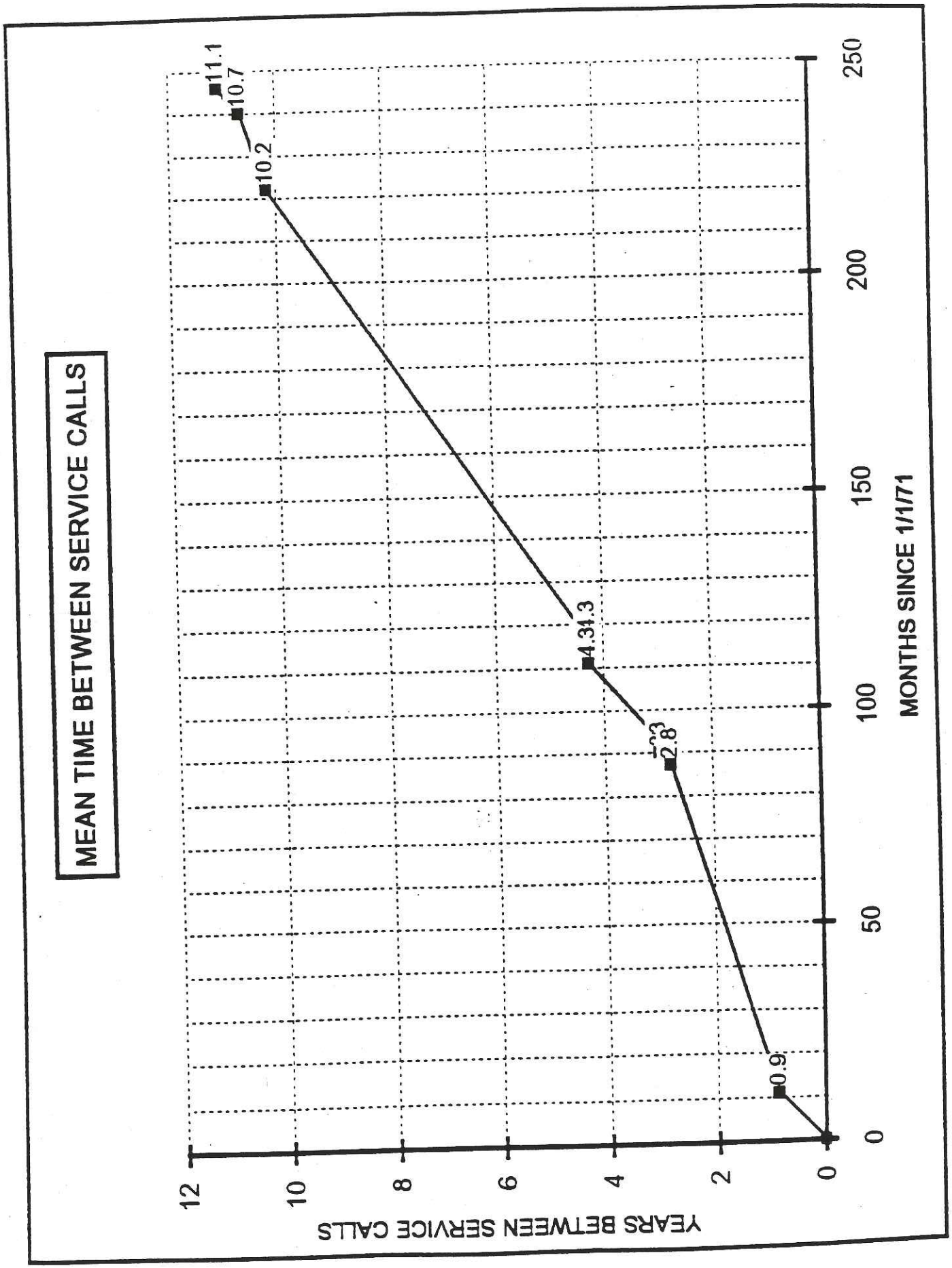


Figure 5


MEAN TIME BETWEEN SERVICE CALLS
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MONTHS SINCE 1/1/71
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gure 4.

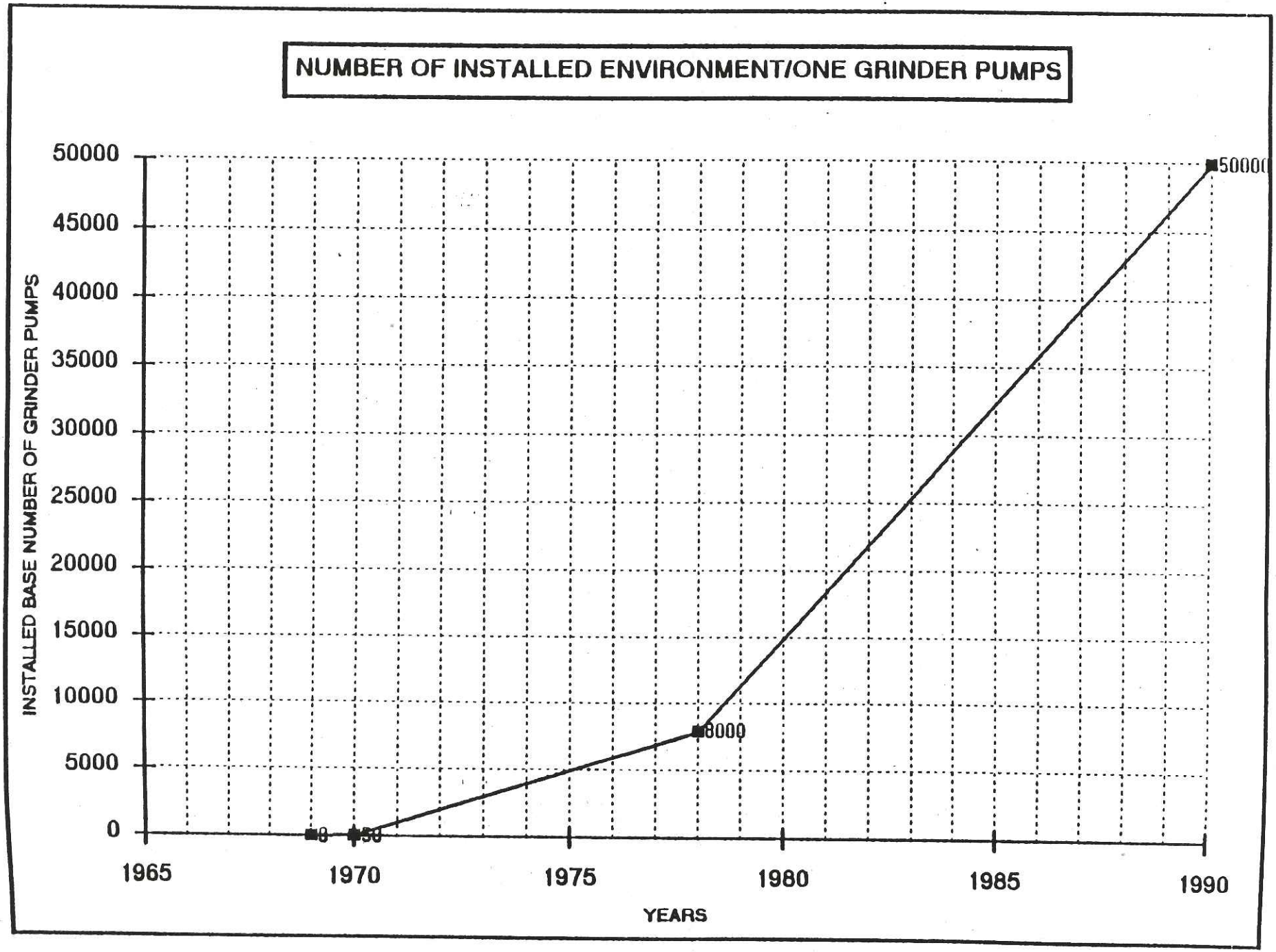
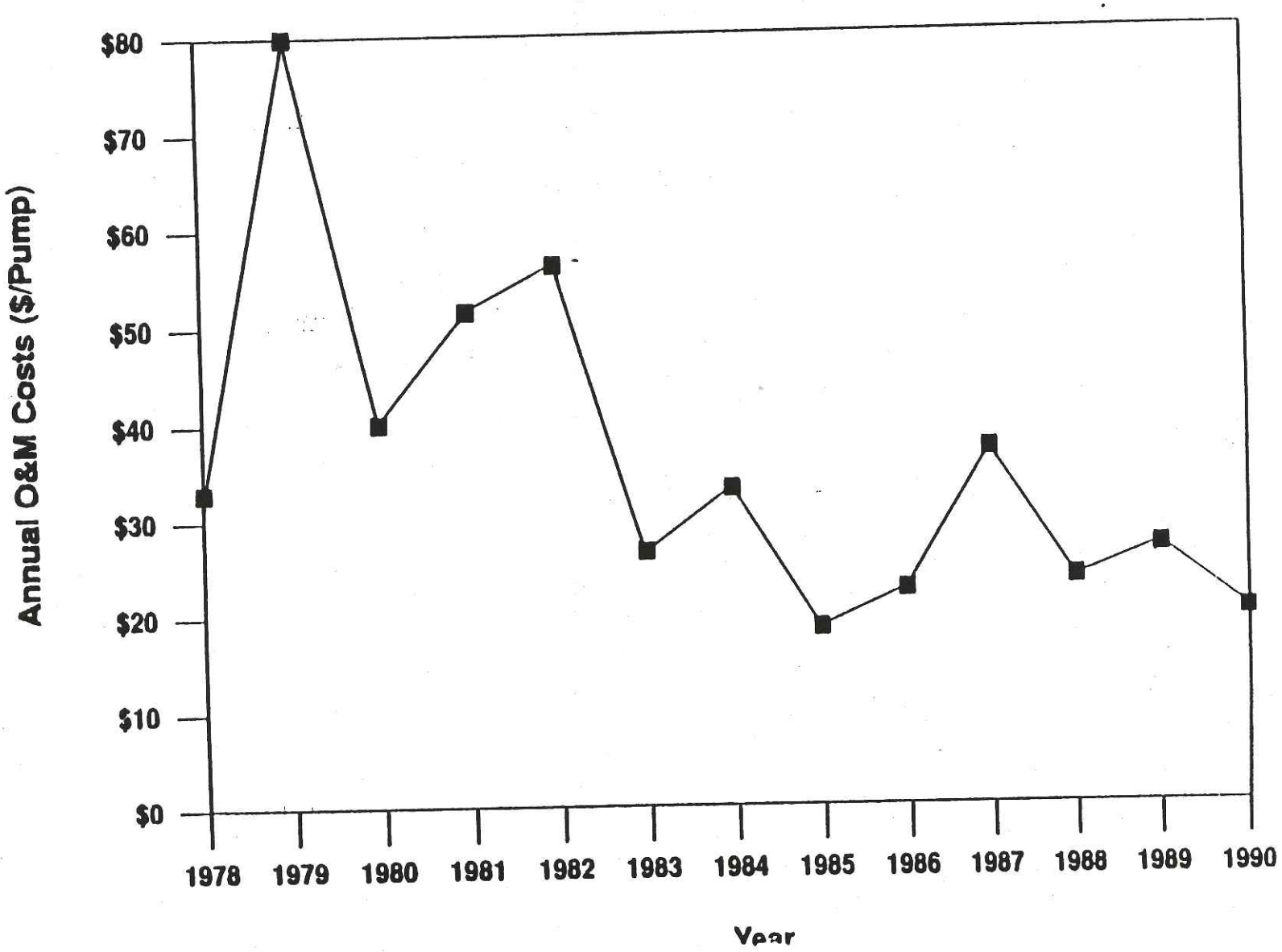


Figure 4

Fairfield Glade, Tennessee
Grinder Pump O & M Statistics

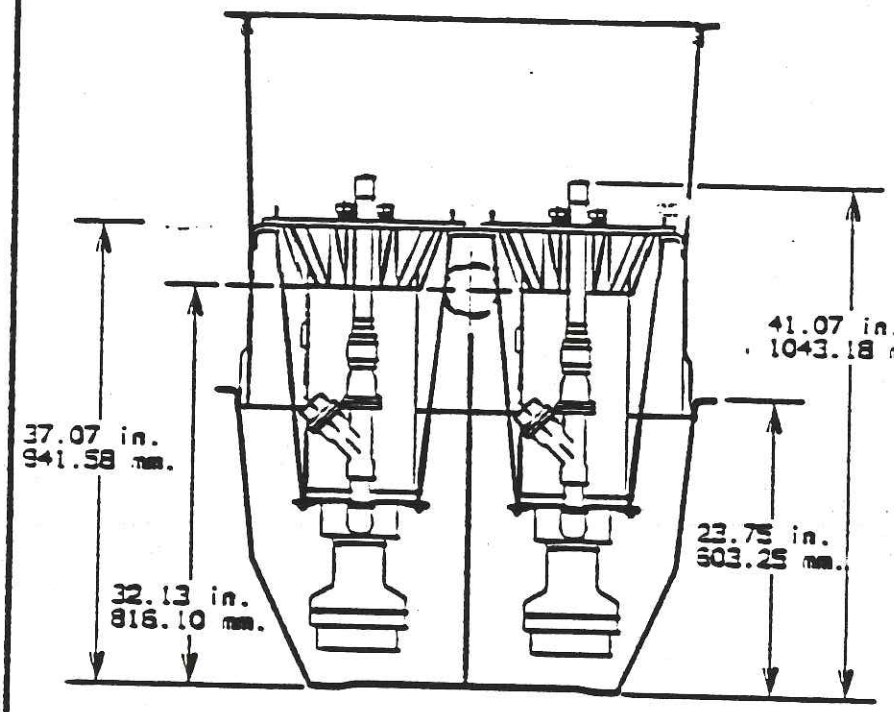
Figure 6.

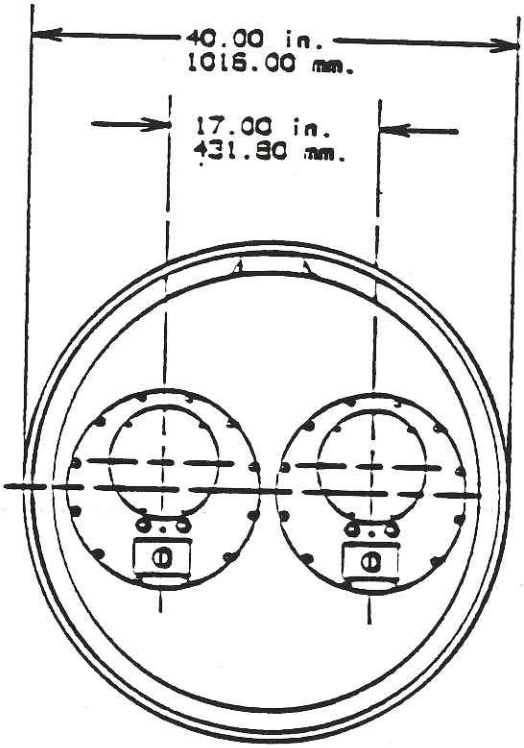
Annual Operation and Maintenance Costs
(in 1990 dollars)



MODEL 214 -

FOR INCCOR INSTALLATION





NOTE: A CONCRETE ANCHOR OF BETWEEN 1500 - 1800 LBS. (10 - 12 cuf.) MAY BE REQUIRED TO PREVENT TANK FROM FLOATING. (DETAILS AVAILABLE)

APP'D	SPA	11/01/91	A	1/16
DR BY	CHK'D	DATE	ISSUE	SCALE

environment | one
CORPORATION

ASSEMELY, GRINDER PUMP
MODEL 214 - 37

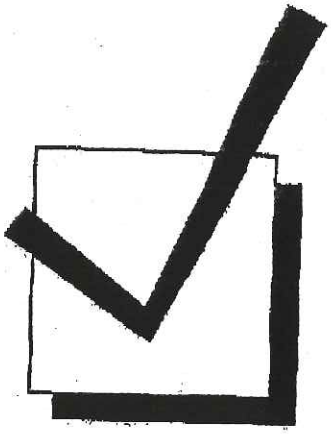
PA 0887 P01

Partial Installation List

ENVIRONMENT/ONE GRINDER PUMP LOW PRESSURE SEWER SYSTEMS

8/23/96

Project Name	Location	Pumps	Year	Contact	Phone
Arrowhead	Norwell, MA	10	1985	Jack Antoine	617-871-6900
Augusta Sanitary District	Augusta, ME	14	1982	Dale Glidden, Supt	207-622-6184
Bristol, RI	Bristol, RI	22	1994	Tony Silva	401-253-7000
Burrillville Sewer Dept.	Burrillville, RI	33	1989	John Martin, Supt	401-568-6296
Buzzards Bay	Bourne, MA	204	1991	Tim Young	508-759-0642
City of Gloucester	Gloucester, MA	30	1990	Tony Gross	617-281-9785
Crabtree Development	Ayer, MA	8	1995	John Walantis	508-772-5881
Durkin Cottages	Narragansett, RI	25	1979	James Durkin	401-789-6659
Eagle Lake Sewer Dist	Eagle Lake, ME	3	1982	Jerry Ramon, Supt	207-444-5441
Fairhaven Sewer Dept	Fairhaven, MA	4	1989	Fred Raphael	508-993-8531
James Landing	Scituate, MA	13	1987	Rick Wiley	617-545-7301
Lake Attitash Sewer Proj	Amesbury, MA	44	1986	John Coskrey	508-388-1912
Lowell Sewer Dept	Lowell, MA	18	1984	Steve Faxon	508-970-4249
Marshfield Subdivision	Marshfield, MA	18	1987	Brian Taylor	617-384-0591
MDC - Blue Hills	Milton, MA	6	1994	Paul DiPietro	617-727-5264
Merrill Rd Subdivision	Sutton, MA	12	1987	Richard Wunschell	508-234-3649
Milford Residential Dev	Milford, NH	24	1984	Ed Fillmore	603-430-8323
Palmer Sewer Dept	Palmer MA	52	1981	John Gladkowski	403-283-5730
Pawtucket Sewer Dept	Pawtucket, RI	44	1987	William Skerpan, PE	401-333-2382
Pineview Condominiums	Rockland, MA	22	1991	Jack Antoine	617-871-6900
Pond View Estates	Narraganset, RI	30	1979	James R. Briggs	401-783-8855
Stockbridge DPW	Stockbridge, MA	30	1986	Clinton Schneir, Supt	413-298-5506
Summer Place	Portland, ME	10	1995	Rick Wienshenk	207-767-3800
Town of Dartmouth	Dartmouth, MA	40	1995	Dave Hickox	508-999-0740
Town of Derry	Derry NH	44	1990	Thomas Carrier, Supt	603-432-6124
Town of Eliot	Eliot, ME	7	1985	Don Sylvester	207-439-9451
Town of Groton	Groton, CT	100	1978	Carl G Almquist	203-445-8551
Town of Hopkinton	Hopkinton, MA	40	1995	Steve Fant	508-497-9760
Warwick Sewer Authority	Warwick, RI	155	1985	Dennis Vinhateiro	401-739-4949
Waterford Sewer Department	Waterford, CT	240	1981	Spencer Williams,Supt	203-444-2293
Saw Creek	Saw Creek, PA	1700	1975	Anthony Trezza, Manager	717-588-9329
Pierce County	Pierce County, WA	835	1984	Larry Butner, Supervisor	206-565-3440
Jameson Farms	Mansfield, MA	4	1996	Rick Bodio	508-238-4484
Acorn Homes	Acton, MA	40	1995	Peter DeGeorge	508-266-1071
Walden Woods	Cranston, RI	60	1995	Dennis Blanchette	401-738-6452
Lake Sunapee	Sunapee, NH	11	1995	Dave Brennan	503-763-2121
Nantucket, MA	Nantucket, MA	4	1996	Mark Aguiair	508-228-3361



Installation References

On these pages, you will be introduced to developers and municipalities who have turned to a gravity-independent, low-pressure (LPS) sewer system, powered by Environment One Grinder Pumps, as a better alternative to conventional gravity sewers.

Whether you are a developer building a new community, or a municipal engineer looking for a low-cost solution to a failed septic system, the E/ONE grinder pump station should be at the heart of your low pressure sewer system. As these references will attest, E/ONE grinder pumps deliver safe, reliable performance over a wide variety of operating conditions.

500+ Unit Sites

Environment One has a long list of successful installations of systems with more than 500 units. The following list includes new developments that have chosen LPS systems, municipalities using E/ONE stations to retrofit an existing system, and combinations of both.

New Development 

Municipality 

Weatherby Lake, MO

Tel: (816)741-5545

Contact: George Lowman, Director of Public Works

Units installed: **600**

Installation start date: 1977

Weatherby Lake is home to one of the oldest, and most outstanding, low pressure sewer systems in the country. The yearly operating and maintenance cost averages $34.10 per pump. The city adds $3.00 per month to each sewer bill to cover all operating and maintenance costs relating to the pumps and pressure sewer system.

Quaker Lake, PA

Silver Lake Township
Brackney, (Susquehanna County), PA 18812
Tel: (717)663-2625
Contact: Mike Hester
Units installed: 450+
Installation start date: 1976

Faced with failing septic tanks, this small lakefront community in northeastern Pennsylvania turned to a low pressure sewer system along with an aerated lagoon for treatment. Originally, $42 per grinder pump was set aside each year for maintenance; within 10 years the rarely-used maintenance fund had grown large enough for the community to retire its FMHA loan early.

Greenfield, PA

Greenfield Township, PA
Tel: (717)282-1200
Contact: Richard Julia
Units installed: 400+
Installation start date: 1989

Greenfield is a township located around a small lake in northeastern Pennsylvania. Designing engineer for the project was David D. Klepadlo & Associates, 932 Springbrook Ave., Moosic, PA.

Saw Creek, PA

Bushkill, PA
Tel: (717)588-6661
Contact person: Anthony or Steve Dewitt
Units Installed: 2500+
Installation start date: 1972

Carved out of mountain forest, Saw Creek is a resort community of both primary and second homes. The system was designed with a single E/ONE progressing cavity pump for each home, usually installed in the basement. Townhouses are grouped together and go to a duplex unit. Because of the rolling terrain, the system sees some high heads.

Holiday Shores, IL

Tel: (618)656-4933
Contact: Mike Smith
Units installed: 800+
Installation start date: 1990

Begun in 1990, the Holiday Shores project was installed in four sections, starting with the area nearest to the treatment lagoon. The project called for 683 stations originally, but by the time start-up was complete had grown to approximately 735. An estimated 30 to 40 new homes are added to the system each year.

Clark Township, MI

P.O. Box 367
Cederville, MI 49719
Tel: (906)484-2672
Contact person: Alan Boike
Units installed: 690
Installation start date: 1991

Clark Township is located in Michigan's upper peninsula. A low pressure sewer system was installed to serve a portion of the township bordering on Lake Huron. The area is rather remote and equipment reliability and low maintenance was a major factor in the selection of E/ ONE. Extreme cold and a deep frost during the winter of 1993 created some problems with improperly buried sewer lines, but the grinder station installation was relatively unaffected.

Clark Lake, MI

Jackson County Drain Com.
Tel: (517)780-4728
Contact: Geoff Snyder
Units Installed: 648
Installation start date: 1994

The installation of the Clark Lake system has been well ahead of schedule and on budget. Most of the pumps were installed during the winter months in partially frozen ground, with high groundwater encountered in a large number of locations. With several installation crews working, using both auger and backhoe techniques, the contractor was able to install between 10 and 12 stations a day.

Bloomingdale, GA

Tel: (912)748-0268
Contact person: Ed Smith
Units Installed: 1,000+
Installation start date: 1983

High ground water and close proximity to the Atlantic Ocean make a gravity system too costly for this middle- and low-income community. After 12 years of operating with E/ONE units, the mean time between service calls in Bloomingdale is 10.4 years; the yearly operating and maintenance cost is less than $14 per pump.

Strawberry Lake, MI

Hamburg Township
10405 Merrill Road
Hamburg, MI 48139
Tel: (810)231-1000
Contact: Harry Bater
Units Installed: 615
Installation start date: 1995

This project includes grinder pump installations on both Strawberry Lake and nearby Zuki Lake. Despite high groundwater conditions and difficult soil conditions, the station installation went very smoothly. Because of environmental concerns and a strong interest in minimizing yard and landscape destruction, many stations and much of the low pressure sewer were installed using horizontal, directional boring technology.

Fairfield Bay, AR

Tel: (501)884-3333
Contact person: Mike Goodnight
Units Installed: 400+
Installation start date: 1977

Dramatic elevation changes, several lakes and a rocky terrain are highlights of this golf course community. Total buildout for the development is in the 1,000 range.

Catawba Island, OH

Ottawa County
5783 Von Glahn Road
Lakeside/Marblehead, OH 43440
Tel: (419)797-9645
Contact: Doug Perkins
Units installed: 830+
Installation start date: 1989

The Catawba Island project serves the townships of Portage and Catawba Island on the Catawba Island peninsula of Lake Erie. This resort community was ranked the number one priority on the state of Ohio's list of unsewered area pollution problems.

Fairfield Glade, TN

Tel: (615)484-3780
Contact person: Barry Field
Units Installed: 1,300+
Installation start date: 1975

Twenty years ago, the developers of this lakefront/golf course community chose E/ONE as their low pressure sewer system solution to a hilly terrain. Fairfield Glade is being operated at a running average of $36 per pump per year.

Monticello, VA

Tel: (804)589-8264
Contact: Otis Collier, Operations Director
Units Installed: 400+
Installation start date: 1975

This ongoing development in the Virginia mountains features both primary and secondary residences. The terrain is rolling and very rocky.

Pierce County, WA

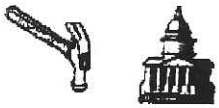
Pierce County Utilities Dept.
10311 Chambers Creek Rd.
Tacoma, WA 98467
Tel: (206)565-3440
Contact person: Bill Murphy
Units Installed: 900+
Installation start date: 1983

In addition to 900 E/ONE grinder pumps, Pierce County also maintains 46 FE Myers pumps. The disparity in operating and maintenance costs between the two brands highlights the economical nature of the E/ONE pump.

Each Myers pump costs the county $265 per year to maintain. Routine maintenance on the Myers pumps includes cleaning the floats every three months, as well as replacing the grinder teeth every three years.

By contrast, Pierce County's yearly O& M cost for each E/ONE pump is only $37. The county's routine maintenance schedule calls for an amperage check every three years; remove the dollar value for this "routine maintenance" (which we say is not required), and the O& M cost is $24 per pump per year.

In 1995, Pierce County ordered nine E/ONE AMPG pumps to begin a program of replacing the FE Myers pumps within the next two years.



Anne Arundel County, MD

Tel: (410)222-6013
Contact person: Larry Kiessling
Units installed: 3,500
Installation start date: 1975

The engineering department of Anne Arundel County is in the process of changing its standards on grinder pumps from the E/ONE 200 Series to the E/ONE 2000 Series.

Deficient Sites

Forest Highlands, Az

658 Forest Highlands
Flagstaff, AZ 86001
Tel: (602)525-1139
Contact: Bill Strauss

Forest Highlands is an upscale golf course community started in 1987. The 400 E/ONE stations currently installed will grow to about 650 when buildout is complete.

The community, which is made up primarily of part-time residences, remains very pro-E/ONE and has had very few problems with the grinder pumps. However, some pumps in the homes of part-time residents have experienced problems with a loss of air charge in the sensing bell.

When a homeowner returns after an extended period of time, the pump indicates a high water alarm. E/ONE worked with Forest Highlands to develop a simple, above ground technique that a maintenance person can use to remedy the situtation.

This issue was one of the key influences on the development of the GP2010 grinder pump. With the GP2010, this problem no longer occurs.

Holiday Shores, IL

Tel: (618)656-4933
Contact: Mike Smith, Superintendent

During the first two years of operation, this project experienced a relay failure rate of approximately 10% per year (E/ONE was using mechanical relays at this time). Although typical of the industry, this rate is considered extremely high by our standards. These were all 120 volt cores and we had never experienced this situation in 240 volt units.

Neither Holiday Shores nor E/ONE could identify the cause of these failures. E/ONE placed chart recorders in stations throughout the system to see if irregularities in the starting and running voltage were to blame. Based on the findings of these chart readings and input from electrical engineers in E/ONE's instruments division, it was determined that the relays should be replaced with a heavy duty contactor. At E/ONE's sole expense, every relay was replaced and an additional two year warranty was extended to the sanitary district. The system is now operating up to E/ONE's standards.

This new, improved relay has been incorporated into the design of the GP2010 operating system.

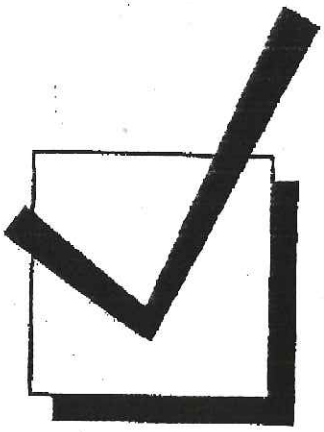
Horseshoe Bay, TX

Lake LBJ M.U.D.
Tel: (210)598-8741
Contact person: Jim Jones, District Utilities Inspector

In the early seventies, E/ONE supplied the grinder pump stations for the initial phase of the Horseshoe Bay low pressure sewer system. During project start-up, E/ONE learned that the contractor had installed the units improperly—indoor units were installed outdoors without proper consideration for venting of the pressure switch controls, resulting in unit failures. Attempts to resolve this issue were unsuccessful and E/ONE suffered from the negative publicity.

Carl Gouker, E/ONE's District Manager for the Texas region, began the difficult task of rebuilding this relationship in 1993. His task was made somewhat easier by the fact that Lake LBJ MUD was looking for help in reducing the extremely high O&M costs associated with centrifugal (Hydr-O-Matic) grinder pumps. Problems experienced by the district were consistant with centrifugal systems—burned-out motors, jamming and air binding, start and run capacitor failure within the control panels, grease build-up on floats, and float switch failure.

In February of 1995, the Lake LBJ MUD Board of Directors approved the recommendations submitted by Dick Cook, General Mgr. Lake LBJ MUD, and Jim Jones, Utilities Supervisor Lake LBJ MUD, to replace the unrepairable centrifugal units with the E/ONE AMGP unit. The board also approved the recommendation that as of June 1, 1995, the district would standardize on the E/ONE GP2010-58 unit for all new construction.



Engineers References

Archer Engineers

Mission, KS

Tel: (913)362-9753

Contact person: Jeff Allen

Archer Engineers began designing low pressure sewer systems about four years ago. Over the next two to three years, E/ONE and Archer will work together on design or construction projects totalling well over 3,000 grinder pump stations.

Davy Engineering

La Crosse, WI

Tel: (608)782-3130

Contact person: Jim Liss

Davy Engineering has been specifying E/ONE grinder pumps for more than 15 years. These projects have varied in size from ten stations up to several hundred.

Anne Arundel County, MD

Tel: (410)222-6013

Contact person: Larry Kiessling

The engineering department of Anne Arundel County is in the process of changing its standards on grinder pumps from the E/ONE 200 Series to the E/ONE 2000 Series.

Strand Associates

Madison, WI

Tel: (608)782-4843

Contact person: Paul Dreis

E/ONE has supplied nearly 1,000 grinder pump stations to projects engineered by Strand Associates. Strand has been specifying E/ONE for well over 10 years.

Baltimore County Engineer

Baltimore County Bureau of Engineering and Construction

111 W. Chesapeake Ave., Room 200

Towson, MD 21204-4604

Tel: (410)887-3765

Contact person: Glenn Keller, Chief Engineer

After extensive research, Baltimore County has chosen E/ONE as their supplier for upcoming projects that will total between 3,000–5,000 pumps.

Williams, Osminski and Associates

225 E. Huron

Bad Axe, MI 48413

Tel: (517)269-7465

Contact person: Gary Osminski

In 1991, Williams, Osminski and Associates designed and installed a 350-station low pressure sewer system using E/ONE stations for Bay Port, MI, a community on Saginaw Bay. Although there is no central utility district to provide operation and maintenance service, system service is being handled by a local plumbing and heating company with no difficulty.

McNamee, Porter, and Seeley

3131 S. State Street

Ann Arbor, MI 48108

Tel: (313)665-6000

Contact person: John Adams

One of the major design firms in Michigan, McNamee, Porter, and Seeley has broad experience in the design, installation supervision and operation and maintenance of grinder pump stations. The firm has designed systems using E/ONE components for the Michigan communities of Winans Lake, Lake Chemung, Thompson Lake, Portage and Base lakes, Tri Lakes, Clark Lake, Strawberrry Lake, Multi Lakes and Hartland.

Capital Consultants

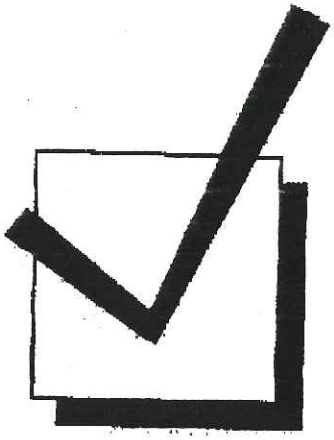
820 N. Washington

Lansing, MI 48906

Tel: (517)371-1200

Contact person: Ken Coulston

Capital Consultants specified E/ONE grinder pumps for a 690-station low pressure sewer system it designed for Clark Township on Lake Huron in 1991.



Municipal References

Oakland County, MI

Oakland County Drain Commission

1 Public Works Drive

Waterford, MI 48328

Tel: (810)858-1089

Contact: Gerald Sweetland

The Oakland County DPW provides installation inspection and operational services for numerous low pressure sewer grinder pump stations throughout the county. The commission is responsible for current installations in Franklin Village and Orchard Lake and are looking at the potential of having several thousand E/ONE stations under its juridiction within the next five years.

Lake Tapawingo, MO

Tel: (816)229-3722

Contact: Harry Henderson, Superintendent

Before Lake Tapawingo began using E/ONE pumps, it suffered from the expensive problems typical to all centrifugal pumps: grease buildup on floats, jammed and worn grinders, worn-out motors and major corrosion problems with galvanized guide rails, valves and exposed hardware.

Additionally, Tapawingo's low pressure sewer system reused part of the old gravity main as a building sewer. This resulted in major I&I problems during rainfalls, as all the pumps would try to run at once and every high water alarm would operate.

To correct these problems, Tapawingo voted to repair the I&I problem and replace the centrifugal pumps with the E/ONE AMGP grinder pump. They have also standardized on the E/ONE 2000 series for all new construction.

Bonner Springs, KS

Tel: (913)422-7242

Contact person: Gary Saunders or Jim Morasch

Bonner Springs has been using E/ONE grinder pumps for almost 20 years. Over the years, they had allowed centrifugal pumps to be installed. But due to the significantly higher operating and maintenance costs of the centrifugal pumps, Bonner Springs has standardized on E/ONE for several years.

Lake Waubansee, KS

Tel: (913)449-7271

Contact person: Dave Niedfeldt

Waubansee has had 220 Barnes centrifugal pumps in a LPSS that is five years old. The municipality has experienced problems with jamming, basin flooding and major problems with the seal failure sensor. Barnes had to replace all the sensors and extend the warranty on them for five years. Waubansee has also had to replace approximately half of the discharge nipples, which shear off when stations settle. The sewer board has recently approved using the E/ONE AMGP in place of the Barnes pumps.

Marcy, NY

Tel: (315)736-0205

Contact: George Russell, Public Works Director

Marcy installed approximately 50 ABS grinder pumps in 1985. However, grease-coated tanks and float switches, along with failing stations, caused the town's sewer authority to undertake a maintenance program of totally degreasing and washing down each station three times a year.

At the same time, Marcy was enjoying problem-free performance of a couple of E/ONE pumps. Unhappy with the ABS pumps, Marcy replaced two ABS pumps with E/ONE AMGP units in early 1994, and has since purchased six more.

Horseshoe Bay, TX

Tel: (210)598-8741

Contact: Dick Cook, Utilities General Manager

Last February, the Lake LBJ MUD Board of Directors approved a recommendation by Horseshoe Bay utilities officials that E/ONE grinder pump stations be used on all new construction after June 1, 1995. Annual installation should be approximately 60 units per year.

Santa Fe, NM

Tel: (505)474-0623

Contact person: Jennifer Nelson

The city of Santa Fe has, in the past 3 years, realized the benefits of LPSS in place of conventional gravity. Due to the dramatic static conditions that exist in the hills surrounding the city, the cost of gravity and lift stations was proving to be economically prohibitive for new development. Santa Fe has been recommending E/ONE pressure sewer systems to both engineers and developers. There are now several on-going new developments that the city required the use of E/ONE pressure sewers.

City of Parkville, MO

Tel: (816)741-7676

Contact person: Dave Niedfeldt

Riss Lake is an upper bracket development that is an exclusive E/One system. There are 300+ homes at present, with total build-out of 1,500 homes. The city is the operating authority. E/One also has another new subdivision, River Chase, as well as a small industrial complex in Parkville.

Pierce County, WA

Pierce County Utilities Dept.
10311 Chambers Creek Road
Tacoma, WA 98467
Tel: (206)565-3440
Contact person: Bill Murphy

In addition to 900 E/ONE grinder pumps, Pierce County also maintains 46 FE Myers pumps. The disparity in operating and maintenance costs between the two brands highlights the economical nature of the E/ONE pump.

Each Myers pump costs the county $265 per year to maintain. Routine maintenance on the Myers pumps includes cleaning the floats every three months, as well as replacing the grinder teeth every three years.

By contrast, Pierce County's yearly O& M cost for each E/ONE pump is only $37. The county's routine maintenance schedule calls for an amperage check every three years; remove the dollar value for this "routine maintenance" (which we say is not required), and the O& M cost is $24 per pump per year.

In 1995, Pierce County ordered nine E/ONE AMPG pumps to begin a program of replacing the FE Myers pumps within the next two years.

Baldwin Lake, MI

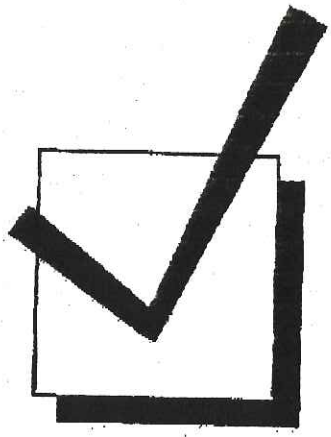
City of Greenville
411 S. Lafayette Street
Greenville, MI 48838
Tel: (616)754-5645
Contact person: Tom Ledger

Greenville is responsible for the operation and maintenance of the low pressure sewer system at Baldwin Lake. The project was designed and bid with both STEP and Grinder Pump alternatives. The E/ONE Grinder Pump Station was the lowest cost bid. The first 80 stations were installed in 1987 and today there are approximately 100 stations on line.

Indian Lake, OH

Indian Lake W.P.C. District
1015 S. Orchard Island Road
Russells Point, OH 43348
Tel: (513)843-3328
Contact person: Garis Pugh

Indian Lake is a resort community development in Logan County, Ohio. The low pressure system includes 164 E/ONE grinder pump stations installed in 1992.



Contractor References

Mid-West Environmental Systems

Grandview, MO

Tel: (816)537-8989

Contact person: Greg Lee

Mid-West is E/ONE's distributor in MO, IL, KS and OK. They have been installing and maintaining E/ONE grinder pumps and pressure sewer systems for nine years. Mid-West has experience installing stations in rock, high water and very flat terrain.

Lujan Trenching

Santa Fe, NM

Tel: (505)471-4022

Contact person: Larry Lujan

Lujan Trenching has been the primary installing contractor for the E/ONE stations and systems that have been installed in Santa Fe. This contactor has been a great resource for E/ONE and our New Mexico distributor, Goble Sampson.

JLW & Associates

Leonardtown, MD

Tel: (301)475-5747

Contact person: John Wathen

This contractor has installed E/ONE pumps in several projects in Maryland, including Anne Arundel County, St. Mary's County and Charles County. JLW & Associates is skilled in the use of directional boring for the installation of the entire piping system.

D. H. Higgins

900 Victors Way, Suite 290

Ann Arbor, MI 48108

Tel: (313)996-9500

Contact person: Bill Higgins

D. H. Higgins installed the 610-station Strawberry Lake project near Hamburg, MI. Many of the grinder station service connections and much of the low pressure sewer were installed using horizontal, directional boring technology. Stations were installed using both auger and back hoe methods.

Because of the high ground water conditions, the contractor used a poured concrete ballast, which was installed on the units in the staging yard, prior to installation. Some station installations in very difficult soil required the use of a cylindrical steel shield to maintain the integrity of the excavation.

Dunigan Bros.

911 E. South Street

Jackson, MI 49203

Tel: (517)787-3023

Contact person: Joe Dunigan

Dunigan Brothers installed the 650-station Clark Lake project in Jackson County, MI. The contractor used both auger and back hoe techniques to install the stations. Much of the installation work was done during winter months in frozen ground, and high ground water conditions were a major factor. Dunigan Brothers used a dry concrete mix to provide ballast on most of the stations.

Santa Fe Corporation

121 S. Barnard

Howell, MI 48843

Tel: (517)548-3410

Contact person: Joe Lupton

The Santa Fe Corporation installed a 40-station system in Genoa Township, MI and a 350-station system in Bay Port, MI. The Bay Port project was complicated because of extensive rock. Ballasting was done using poured concrete from balloon-tired mix trucks.

Maasdam Construction

Ft. Dodge, IA

Tel: (515)532-2396

Contact person: Larry Maasdam

Maasdam Construction installed 320 stations at Twin Lakes, Iowa, using an auger to drill out 36" diameter holes. The stations had the ballast precast. The stations were set off in each yard and then a two-man crew would drill the hole and set the stations. They were able to setup to 10 stations per day.

Attachment 6

FORE RIVER PLACE

Exhibit B

DESIGN REVIEW

I. STATEMENT OF INTENT

The design review approval process for Fore River Place is intended to among other things:

A. Preserve the beauty, integrity and value of the ForeRiver Place home site including improvements thereon and the Fore River Place neighborhood;

B. Assure the City of Portland, and members of the Fore River Place Association that each home and accessory structure shall be constructed according to the guidelines, standards and intention of Fore River Place as set forth herein ;

C. Require any dwelling or accessory, erected, placed, improved, or altered on any lot to obtain the prior written approval of the Fore River Place Design Review Board before any construction is commenced. The Board shall consider such factors as the location of a structure, the style of architecture, the type of materials, the quality of materials and any other factor necessary to effectuate the intent of the Design Review Process .

II. PROCESS FOR REVIEW

A Submission Requirements

1. A written statement attached to a copy of this document signed by the designer of the project for which approval is requested stating; said designer has read, understood and is in compliance with the standards set forth herein and that said designer has visited and is familiar with the site in at least the winter and one other season of the year;

2. Plans shall be prepared by an individual having previous experience in the preparation of plans for the construction of single family residences including specifically in the Shingle, Cottage, or Bungalow styles.

3. Site plan or plans :scale = 1"=10', 20', 30' or 40' with the following at minimum :

a. Locations and/or footprints of all buildings, driveways, walks, utilities, fencing, walls for retaining soil any other "hardscaping" or site amenities ;

b. Limits of clearing, thinning and areas to be disturbed from their existing condition.

c. Landscape plan with description or legend of materials including sizes.

d. Exterior lighting plan showing the direction and range of lighting.

4. Floor plans : scale 1/8" or 1/4" = 1'-0'

5. Elevations: Scale 1/8" or 1/4" = 1'-0" including a minimum of all materials and three dimensional effects not apparent.

6. Submit color samples for all materials except clear glass and wood materials left natural or treated with a clear finish.

7. Complete specifications listing all materials, products, performance standards, and process, including time tables for the start to completion of the proposed project.

B. The decision by the Design Review Board shall be made within 14 days of receipt of a complete application.

C. Waiver Process:
If for reason of hardships as defined by the Zoning Ordinance of the City of Portland, as amended, the applicant is unable to comply with one or more of the submission standards; the applicant may request a waiver of the specific submission standard(s). The Design Review Board will consider the request and determine in its sole discretion if the waiver will be granted.

III. SITE STANDARDS

A. The street orientation within Fore River Place should not be the predominate issue when siting the main structure. The designer must demonstrate the siting rational by at least one of the following criteria:

1. Solar gain

2. View of:
a. Open space between other homes on or off site; or

b. On site features such as trees or water; or

c. On site planned features such as garden areas.

3. Avoidance of:

a. Other homes; or

b. Off site features developed or undeveloped that may require screening now or later if developed.

B. Fencing - Other than the fencing provided by the Grantor, the following shall be strictly followed;

1. No fencing shall be taller than six feet.

2. No fencing taller than four feet shall be permitted in continuous or joined sections longer than thirty feet unless on Fore River Place boundaries.

3. All fencing must be wood or wooden in appearance. Chainlink, woven or wire fences shall not be permitted , white painted picket is preferred.

4. Fencing of any type shall not delineate property bounds but, rather, should be designed to provide privacy and/or interest to the land or home.

5. All fencing must be installed "good-side out" when within twenty feet of any property line.

E. Landscaping and Exterior Lighting

1. All areas disturbed by construction shall be either replanted to their natural state or landscaped.

2. Planting for screens is preferred to fencing.

3. Exterior lighting shall be designed to be primarily contained within the site, directed up or down in a vertical or near vertical direction. No fixture shall be located more than 5' above grade unless attached to the structure it is intended to light.

4. Christmas or other seasonal lights shall be unrestricted provided they are not in place longer than 90 consecutive days.

IV. ARCHITECTURAL STANDARDS

A. Size: The dwelling unit shall be at least 800 ft2 of enclosed heated living space exclusive of garages, porches. No dwelling unit larger than 2500 ft2 shall be permitted including all enclosed, habitable heated living space completely above grade.

B. Height: In general the height limitation shall conform to the standards established by the City of Portland as amended and no single wall of any structure shall be taller than 20' except if the wall is broken by a design detail or element including but not limited to bays, bows, balconies, bumps, bands, recesses, roofs, overhangs whether angular, arched or curved.

C. Setbacks: The setback standards for all structures except landscaping shall be not less than the following:

Internal setbacks (within the P.R.U.D.).....16' between buildings
External setbacks(to Project boundaries).....25'

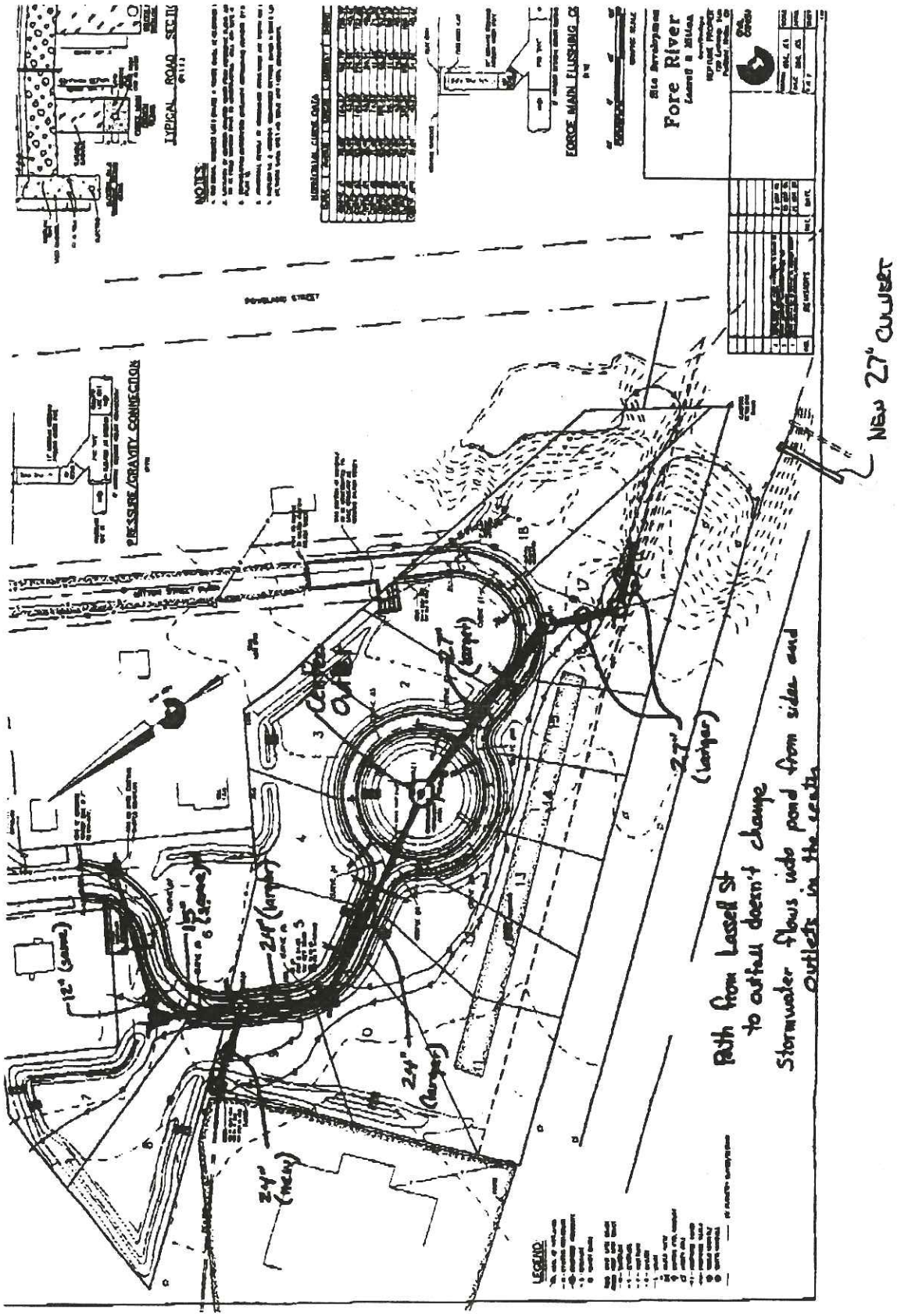
D. Paving and Driveways: The street entrance to garage(s) shall be oriented in such a way that hard surfaces are minimized. Driveways shall be paved. The use of stonedust, loose stones (1-1/2" max) and/or chipseal are encouraged, but not required. Black top areas shall not extend from the garage door to the street uninterrupted. Black top walks are prohibited except as a base for brick or some other cover surface.

E. Recreational Items: Recreational items including without limitation, boats, pools, outside games, swing sets, permitted trailers, etc., shall not be visually prominent from the road or from the interior of adjacent homes. Mature plant screening may be required to minimize visual impact.

F. Foundation Walls: Foundation walls should be covered if more than 18" above finish grade.

G. Siding: Exterior siding shall be wood, brick or stone or a combination thereof. Painting and staining of siding shall be limited to white, light shades of off white, gray, gray-blue, or gray-green or as may be approved by the Design Review Board. Exterior doors, windows, and trim shall be solid colors only, in harmony with the siding and only as may be approved by the Design Review Board.

H. Roofs: Roofs shall be predominantly sloped. Main roofs shall be at least 8:12 pitch, minor roofs and porches shall be at least 4:12 or flat pitch. Roofing materials shall be darker in color than the siding unless natural slate, cedar or copper is used.


Pore River
NEW 27" CULVERT
Path from Lassell St to outfall doesn't change
Stormwater flows into pond from sides and outlets in the center
LEGEND