Flow (cfs)

0-

Ó

5

10

15

20

30

25

40

Time (hours)

35

45

50

55

60

65

70

75

80

HydroCAD® 10.00-26 s/n 01012 © 2020 HydroCAD Software Solutions LLC



Pond BAS 2-C: BAS 2-C

Summary for Pond BAS 2-D: BAS 2-D

Inflow Area	a =	8.783 ac, 3	3.03% Impervious,	Inflow Depth = 3.7	'6" for 100-Year event
Inflow	=	40.57 cfs @	12.13 hrs, Volume	e 2.754 af	
Outflow	=	1.76 cfs @	14.93 hrs, Volume	e= 2.754 af,	Atten= 96%, Lag= 168.1 min
Discarded	=	0.57 cfs @	14.93 hrs, Volume	e 2.331 af	-
Primary	=	1.19 cfs @	14.93 hrs, Volume	e 0.423 af	

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Peak Elev= 108.93' @ 14.93 hrs Surf.Area= 23,826 sf Storage= 76,417 cf

Plug-Flow detention time= 1,208.6 min calculated for 2.753 af (100% of inflow) Center-of-Mass det. time= 1,209.5 min (2,055.0 - 845.5)

Volume	Invert	Avail.Sto	rage Storage	e Description		
#1	105.00'	78,10	67 cf Custor	n Stage Data (Con	ic)Listed below	(Recalc)
Elevatior (feet	າ Su)	urf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft <u>)</u>	
105.00 109.00))	15,400 24,000	0 78,167	0 78,167	15,400 24,225	
Device	Routing	Invert	Outlet Device	es		
#1 #2	Discarded Primary	105.00' 108.80'	1.020 in/hr E 24.0" x 24.0 Limited to we	Exfiltration over We Horiz. Orifice/Gra eir flow at low heads	etted area ate C= 0.600 s	

Discarded OutFlow Max=0.57 cfs @ 14.93 hrs HW=108.93' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.57 cfs)

Primary OutFlow Max=1.18 cfs @ 14.93 hrs HW=108.93' (Free Discharge) 2=Orifice/Grate (Weir Controls 1.18 cfs @ 1.16 fps)





Summary for Pond BAS 2-E: BAS 2-E

Inflow Area	a =	2.574 ac, 4	4.91% Impervious,	Inflow Depth =	5.11" for	100-Year event
Inflow	=	15.79 cfs @	12.13 hrs, Volume	= 1.097 a	af	
Outflow	=	8.54 cfs @	12.23 hrs, Volume	= 1.097 a	af, Atten=	46%, Lag= 6.1 min
Discarded	=	0.21 cfs @	12.23 hrs, Volume	= 0.527 a	af	-
Primary	=	8.34 cfs @	12.23 hrs, Volume	= 0.570 a	af	

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Peak Elev= 100.99' @ 12.23 hrs Surf.Area= 16,982 sf Storage= 16,050 cf

Plug-Flow detention time= 300.2 min calculated for 1.097 af (100% of inflow) Center-of-Mass det. time= 300.1 min (1,116.8 - 816.7)

Volume	Invert	Avail.Sto	rage Storage I	Description		
#1	100.00'	16,24	44 cf Custom	Stage Data (Coni	c) Listed below (Reca	alc)
Elevatio (feet	n Si t)	urf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
100.0 101.0	0 0	15,500 17,000	0 16,244	0 16,244	15,500 17,067	
Device	Routing	Invert	Outlet Devices	;		
#1	Discarded	100.00'	0.520 in/hr Ex	filtration over We	etted area	
#2	Primary	100.70'	20.0' long x 2 Head (feet) 0. Coef. (English)	3.0' breadth Broa 20 0.40 0.60 0.8) 2.68 2.70 2.70	ad-Crested Rectang 0 1.00 1.20 1.40 1 2.64 2.63 2.64 2.6	ular Weir .60 4 2.63
101.0 <u>Device</u> #1 #2	0 <u>Routing</u> Discarded Primary	17,000 Invert 100.00' 100.70'	16,244 Outlet Devices 0.520 in/hr Ex 20.0' long x 2 Head (feet) 0. Coef. (English)	16,244 filtration over We 3.0' breadth Broa 20 0.40 0.60 0.8) 2.68 2.70 2.70	17,067 etted area ad-Crested Rectang 0 1.00 1.20 1.40 1 2.64 2.63 2.64 2.6	ular Wei .60 64 2.63

Discarded OutFlow Max=0.21 cfs @ 12.23 hrs HW=100.99' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.21 cfs)

Primary OutFlow Max=8.22 cfs @ 12.23 hrs HW=100.99' (Free Discharge) **2=Broad-Crested Rectangular Weir** (Weir Controls 8.22 cfs @ 1.44 fps) HydroCAD® 10.00-26 s/n 01012 © 2020 HydroCAD Software Solutions LLC





Summary for Pond BAS 2-F: BAS 2-F

Inflow Area = 3.255 ac, 41.28% Impervious, Inflow Depth = 4.89" for 100-Year event Inflow = 19.20 cfs @ 12.13 hrs, Volume= 1.325 af 1.76 cfs @ 13.15 hrs, Volume= Outflow = 1.325 af, Atten= 91%, Lag= 61.4 min 0.65 cfs @ 13.15 hrs, Volume= Discarded = 1.195 af Primary = 1.11 cfs @ 13.15 hrs, Volume= 0.130 af

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Peak Elev= 102.99' @ 13.15 hrs Surf.Area= 11,583 sf Storage= 28,454 cf

Plug-Flow detention time= 420.7 min calculated for 1.325 af (100% of inflow) Center-of-Mass det. time= 420.8 min (1,242.5 - 821.7)

Volume	Invert	Avail.Sto	orage Storage I	Description				
#1	100.00'	28,5	89 cf Custom	Stage Data (Coni	c) Listed below (Recal	c)		
Elevation (feet)	ı Sı	ırf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)			
100.00 103.00		7,600 11,600	0 28,589	0 28,589	7,600 11,732			
Device	Routing	Invert	Outlet Devices	i				
#1	Discarded	100.00'	2.410 in/hr Ex	filtration over We	etted area			
#2	Primary	102.85'	8.0' long x 23.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63					

Discarded OutFlow Max=0.65 cfs @ 13.15 hrs HW=102.99' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.65 cfs)

Primary OutFlow Max=1.10 cfs @ 13.15 hrs HW=102.99' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Weir Controls 1.10 cfs @ 1.00 fps) Pond BAS 2-F: BAS 2-F



Summary for Pond BAS 3-A: BAS 3-A

Inflow Area	a =	2.218 ac, 4	0.95% Imp	ervious,	Inflow Depth =	5.69"	for 100)-Year even	t
Inflow	=	14.81 cfs @	12.13 hrs,	Volume	= 1.052	af			
Outflow	=	3.74 cfs @	12.38 hrs,	Volume	= 1.052	af, Atte	en= 75%	, Lag= 14.8	3 min
Discarded	=	0.24 cfs @	12.38 hrs,	Volume	= 0.732	af			
Primary	=	3.50 cfs @	12.38 hrs,	Volume	= 0.319	af			

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Peak Elev= 103.96' @ 12.38 hrs Surf.Area= 10,017 sf Storage= 21,132 cf

Plug-Flow detention time= 684.2 min calculated for 1.051 af (100% of inflow) Center-of-Mass det. time= 685.0 min (1,488.3 - 803.3)

Volume	Invei	rt Avail.Sto	orage Storage	Description				
#1	101.00)' 21,5	516 cf Custom	Stage Data (Coni	c) Listed below (Reca	c)		
Elevatio (fee	on S et)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft <u>)</u>			
101.0 104.0	00 00	4,600 10,100	0 21,516	0 21,516	4,600 10,172			
Device	Routing	Invert	Outlet Devices	6				
#1	Discarded	I 101.00'	1.020 in/hr Ex	filtration over We	etted area			
#2	Primary	103.80'	20.0' long x 23.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63					
					- · · · ·			

Discarded OutFlow Max=0.24 cfs @ 12.38 hrs HW=103.96' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.24 cfs)

Primary OutFlow Max=3.46 cfs @ 12.38 hrs HW=103.96' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Weir Controls 3.46 cfs @ 1.07 fps) Pond BAS 3-A: BAS 3-A



Summary for Pond BAS 3-B: BAS 3-B

Inflow Area	a =	6.110 ac, 3	38.90% Impe	ervious, In	flow Depth =	4.66"	for 100-	Year event
Inflow	=	34.55 cfs @	12.13 hrs,	Volume=	2.372	af		
Outflow	=	3.91 cfs @	12.95 hrs,	Volume=	2.372	af, Atte	en= 89%,	Lag= 49.4 min
Discarded	=	0.43 cfs @	12.95 hrs,	Volume=	1.620	af		-
Primary	=	3.48 cfs @	12.95 hrs,	Volume=	0.752	af		

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Peak Elev= 101.00' @ 12.95 hrs Surf.Area= 17,892 sf Storage= 53,864 cf

Plug-Flow detention time= 916.2 min calculated for 2.370 af (100% of inflow) Center-of-Mass det. time= 917.3 min (1,743.9 - 826.6)

Volume	Inver	t Avail.Sto	orage Storage	ge Storage Description						
#1	97.00	' 53,9	20 cf Custom	Stage Data (Coni	c) Listed below (Recalc)				
Elevatio (fee	on S et)	urf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)					
97.0 101.0)0)0	9,500 17,900	0 53,920	0 53,920	9,500 18,059					
Device	Routing	Invert	Outlet Devices	;						
#1	Discarded	97.00'	1.020 in/hr Ex	filtration over We	etted area					
#2	Primary	100.70'	8.0' long x 23 Head (feet) 0. Coef. (English	3.0' breadth Broad 20 0.40 0.60 0.8) 2.68 2.70 2.70	d-Crested Rectangula 0 1.00 1.20 1.40 1.6 2.64 2.63 2.64 2.64	r Weir 0 2.63				

Discarded OutFlow Max=0.43 cfs @ 12.95 hrs HW=101.00' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.43 cfs)

Primary OutFlow Max=3.48 cfs @ 12.95 hrs HW=101.00' (Free Discharge) ←2=Broad-Crested Rectangular Weir (Weir Controls 3.48 cfs @ 1.47 fps) HydroCAD® 10.00-26 s/n 01012 © 2020 HydroCAD Software Solutions LLC





Summary for Pond BAS 6-A: BAS 6-A

 Inflow Area =
 3.389 ac, 43.46% Impervious, Inflow Depth =
 5.00" for 100-Year event

 Inflow =
 20.39 cfs @
 12.13 hrs, Volume=
 1.412 af

 Outflow =
 0.43 cfs @
 17.95 hrs, Volume=
 1.412 af, Atten= 98%, Lag= 349.0 min

 Discarded =
 0.43 cfs @
 17.95 hrs, Volume=
 1.412 af

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Peak Elev= 90.61' @ 17.95 hrs Surf.Area= 18,247 sf Storage= 40,627 cf

Plug-Flow detention time= 982.6 min calculated for 1.412 af (100% of inflow) Center-of-Mass det. time= 982.5 min (1,801.7 - 819.2)

Volume	Inver	t Avail.S	storage S	Storage D	escription		
#1	88.00	' 47	,858 cf C	Sustom S	Stage Data (Co	nic)Listed below	(Recalc)
Elevatio (fee	on S •t)	urf.Area (sq-ft)	Inc.S (cubic-f	tore eet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft <u>)</u>	
88.0 91.0	00 00	13,000 19,100	47,	0 858	0 47,858	13,000 19,246	
Device	Routing	Inve	rt Outlet	Devices			
#1	Discarded	88.00)' 1.020 i	in/hr Exf	iltration over V	Vetted area	

Discarded OutFlow Max=0.43 cfs @ 17.95 hrs HW=90.61' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.43 cfs)

Pond BAS 6-A: BAS 6-A



Summary for Pond BAS 7-A: BAS 7-A

Inflow Area = 4.980 ac, 47.17% Impervious, Inflow Depth = 4.55" for 100-Year event Inflow = 27.54 cfs @ 12.13 hrs, Volume= 1.886 af 2.82 cfs @ 13.06 hrs, Volume= Outflow = 1.886 af, Atten= 90%, Lag= 56.0 min 0.46 cfs @ 13.06 hrs, Volume= Discarded = 1.473 af Primary = 2.36 cfs @ 13.06 hrs, Volume= 0.413 af

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Peak Elev= 93.99' @ 13.06 hrs Surf.Area= 19,480 sf Storage= 43,693 cf

Plug-Flow detention time= 823.5 min calculated for 1.886 af (100% of inflow) Center-of-Mass det. time= 823.3 min (1,652.3 - 829.0)

Volume	Inv	/ert A	vail.Stor	age Storage [Description				
#1	91	.00'	43,80	3 cf Custom	cf Custom Stage Data (Conic)Listed below (Recalc)				
Elevatio (fee	on et)	Surf.Are (sq-f	a t)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft <u>)</u>			
91.0 94.0	00 00	10,20 19,50	0	0 43,803	0 43,803	10,200 19,588			
Device	Routing		Invert	Outlet Devices					
#1	Discard	ed	91.00'	1.020 in/hr Ex	filtration over We	tted area			
#2	Primary		93.87'	20.0' long x 2 Head (feet) 0.2 Coef. (English)	3.0' breadth Broa 20 0.40 0.60 0.8 2.68 2.70 2.70	d-Crested Rectang 0 1.00 1.20 1.40 2.64 2.63 2.64 2.0	jular Weir 1.60 64 2.63		

Discarded OutFlow Max=0.46 cfs @ 13.06 hrs HW=93.99' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.46 cfs)

Primary OutFlow Max=2.35 cfs @ 13.06 hrs HW=93.99' (Free Discharge) 2=Broad-Crested Rectangular Weir (Weir Controls 2.35 cfs @ 0.94 fps) Pond BAS 7-A: BAS 7-A



Summary for Pond BAS 9-A: BAS 9-A

 Inflow Area =
 1.494 ac, 25.66% Impervious, Inflow Depth = 2.27" for 100-Year event

 Inflow =
 4.01 cfs @ 12.14 hrs, Volume=
 0.283 af

 Outflow =
 0.19 cfs @ 15.63 hrs, Volume=
 0.283 af, Atten= 95%, Lag= 209.6 min

 Discarded =
 0.19 cfs @ 15.63 hrs, Volume=
 0.283 af

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Peak Elev= 63.55' @ 15.63 hrs Surf.Area= 3,272 sf Storage= 6,236 cf

Plug-Flow detention time= 416.7 min calculated for 0.283 af (100% of inflow) Center-of-Mass det. time= 416.9 min (1,298.2 - 881.3)

Volume	Invert	Avail.Sto	rage Sto	orage De	escription		
#1	61.00'	7,77	74 cf Cu	istom S	tage Data (Co	onic)Listed bel	ow (Recalc)
Elevation (feet)	Surf. (.Area sq-ft)	Inc.Sto (cubic-fee	ore et)	Cum.Store (cubic-feet)	Wet.Are (sq-	ea f <u>t)</u>
61.00 64.00	ć	1,700 3,600	7,7	0 74	0 7,774	1,70 3,67	00 75
Device Ro #1 Dis	uting carded	Invert 61.00'	Outlet D 2.410 in	evices /hr Exfil	tration over V	Netted area	

Discarded OutFlow Max=0.19 cfs @ 15.63 hrs HW=63.55' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.19 cfs)

Pond BAS 9-A: BAS 9-A



Summary for Pond BAS 9-B: BAS 9-B

Inflow Area	a =	5.910 ac, 5	8.27% Impervious,	Inflow Depth =	4.53" for	100-Year event
Inflow	=	32.32 cfs @	12.13 hrs, Volume	= 2.233 a	af	
Outflow	=	13.84 cfs @	12.27 hrs, Volume	= 2.233 a	af, Atten=	57%, Lag= 8.2 min
Discarded	=	0.51 cfs @	12.27 hrs, Volume	= 0.698 a	af	-
Primary	=	13.33 cfs @	12.27 hrs, Volume	= 1.534 a	af	

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Peak Elev= 64.98' @ 12.27 hrs Surf.Area= 8,971 sf Storage= 29,630 cf

Plug-Flow detention time= 146.1 min calculated for 2.233 af (100% of inflow) Center-of-Mass det. time= 146.0 min (972.1 - 826.1)

Volume	Invert	Avail.Sto	rage Storage	Description		
#1	60.00'	29,81	7 cf Custom	Stage Data (Coni	c) Listed below (Recalc)	
Elevation (feet)	Su	ırf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
60.00 61.00 65.00		3,300 4,300 9,000	0 3,789 26,028	0 3,789 29,817	3,300 4,323 9,159	
Device R	Routing	Invert	Outlet Devices	6		
#1 C #2 C #3 P	Discarded Device 3 Primary	60.00' 62.40' 60.00'	2.410 in/hr Ex 1.5' long Shat 18.0" Round L= 41.0' RCF Inlet / Outlet Ir n= 0.011 Con	filtration over We rp-Crested Rectar Culvert P, rounded edge he overt= 60.00' / 59.7 crete pipe, straight	tted area ngular Weir 2 End Contraction(adwall, Ke= 0.100 9' S= 0.0051 '/' Cc= 0.900 & clean, Flow Area= 1.77 sf	s)

Discarded OutFlow Max=0.51 cfs @ 12.27 hrs HW=64.97' (Free Discharge) **1=Exfiltration** (Exfiltration Controls 0.51 cfs)

Primary OutFlow Max=13.27 cfs @ 12.27 hrs HW=64.97' (Free Discharge) -3=Culvert (Passes 13.27 cfs of 21.26 cfs potential flow) —2=Sharp-Crested Rectangular Weir (Weir Controls 13.27 cfs @ 5.24 fps)

 NRCC 24-hr C
 100-Year Rainfall=7.70"

 Printed
 8/7/2023

 tions LLC
 Page 407

Pond BAS 9-B: BAS 9-B



Summary for Pond W-N: Wetland Series N

Page 408

Inflow Area	a =	30.869 ac, 2	27.45% Impe	ervious,	Inflow Depth >	2.29"	for 100)-Year even	ıt
Inflow	=	17.48 cfs @	12.22 hrs,	Volume	= 5.884	af			
Outflow	=	5.66 cfs @	12.60 hrs,	Volume	= 5.804	af, Atte	en= 68%	, Lag= 22.9	9 min
Primary	=	5.66 cfs @	12.60 hrs,	Volume	= 5.804	af		-	

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Peak Elev= 86.41' @ 12.60 hrs Surf.Area= 27,074 sf Storage= 23,286 cf

Plug-Flow detention time= 136.0 min calculated for 5.801 af (99% of inflow) Center-of-Mass det. time= 98.5 min (1,959.5 - 1,861.0)

Volume	Inv	vert Avail.Sto	rage Storage	Description		
#1	85.	50' 151,2	14 cf Custom	Stage Data (Coni	c) Listed below (Recald	;)
Elevatio (fee	on et)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
85.5 88.0 89.0 90.0	50 00 00 00	24,094 32,690 39,800 49,000	0 70,707 36,187 44,320	0 70,707 106,894 151,214	24,094 32,818 39,960 49,190	
Device	Routing	Invert	Outlet Devices	S		
#1	Primary	85.50'	24.0" Round L= 46.2' RCF Inlet / Outlet In n= 0.011 Cor	RCP_Round 24 " P, groove end proje nvert= 85.50' / 83.9 ncrete pipe, straight	ecting, Ke= 0.200 0' S= 0.0346 '/' Cc= t & clean, Flow Area=	0.900 3.14 sf

Primary OutFlow Max=5.65 cfs @ 12.60 hrs HW=86.41' (Free Discharge) **1=RCP_Round 24"** (Inlet Controls 5.65 cfs @ 4.06 fps)

Pond W-N: Wetland Series N

Page 409



Summary for Pond W-O: Wetland Series O

Inflow A	rea =	61.489 ac, 21.22% Impervious, Inflow	Depth > 2.26" for 100-Year event
Inflow	=	28.42 cfs @ 12.36 hrs, Volume=	11.580 af
Outflow	=	12.00 cfs @ 13.08 hrs, Volume=	11.448 af, Atten= 58%, Lag= 43.3 min
Primary	=	12.00 cfs @ 13.08 hrs, Volume=	11.448 af

Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Peak Elev= 81.05' @ 13.08 hrs Surf.Area= 38,474 sf Storage= 55,004 cf

Plug-Flow detention time= 160.4 min calculated for 11.441 af (99% of inflow) Center-of-Mass det. time= 126.6 min (1,861.1 - 1,734.5)

Volume	Inv	ert Avail.Sto	rage Storage	Description		
#1	78.	68' 102,5	29 cf Custom	Stage Data (Coni	c) Listed below (Red	calc)
Elevatio (fee	on et)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
78.0 80.0 81.0 82.0	68 00 00 00	16,400 20,844 37,500 62,000	0 24,523 28,767 49,239	0 24,523 53,290 102,529	16,400 20,889 37,556 62,069	
Device	Routing	Invert	Outlet Devices	S		
#1	Primary Primary	78.68' 80.80'	12.0" Round L= 172.0' CM Inlet / Outlet In n= 0.011 Cor 20.0' long Sh	Culvert /IP, projecting, no h nvert= 78.68' / 75.0 ncrete pipe, straight arp-Crested Recta	neadwall, Ke= 0.900 10' S= 0.0214 '/' C t & clean, Flow Are angular Weir 2 End) cc= 0.900 a= 0.79 sf I Contraction(s)
	- ·-·		<u> </u>			

Primary OutFlow Max=11.99 cfs @ 13.08 hrs HW=81.04' (Free Discharge) -1=Culvert (Inlet Controls 4.08 cfs @ 5.19 fps)

-2=Sharp-Crested Rectangular Weir (Weir Controls 7.91 cfs @ 1.62 fps)

Pond W-O: Wetland Series O



Summary for Pond W-QP: Wetland Series Q & P

Inflow Are	a =	42.589 ac, 2	3.35% Imp	ervious, l	nflow De	pth >	2.41"	for 100-	-Year ever	it		
Inflow	=	33.97 cfs @	12.23 hrs,	Volume=		8.571 a	af					
Outflow	=	2.69 cfs @	18.99 hrs,	Volume=		7.929 a	af, Atte	en= 92%,	Lag= 405	.3 min		
Primary	=	2.69 cfs @	18.99 hrs,	Volume=		7.929 a	af		-			
Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs Peak Elev= 80.08' @ 18.99 hrs Surf.Area= 89,447 sf Storage= 118,962 cf												
Plug-Flow detention time= 714.3 min calculated for 7.925 af (92% of inflow)												
Center-of-	Mass d	et. time= 525.3	3 min (2,12	Center-of-Mass det. time= 525.3 min (2,126.0 - 1,600.7)								

Volume	Inv	ert Avail.Sto	rage Storage	Description		
#1	78.	70' 402,15	54 cf Custom	Stage Data (Coni	i c) Listed below (R	ecalc)
Elevatio	on et)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)	
78.7 83.0	70)0	82,500 105,000	0 402,154	0 402,154	82,500 105,477	
Device	Routing	Invert	Outlet Devices	6		
#1	Primary	78.70'	12.0" Round L= 20.6' CMF Inlet / Outlet In n= 0.025 Corr	Culvert P, projecting, no he overt= 78.70' / 78.3 rugated metal, Flo	eadwall, Ke= 0.90 80' S= 0.0194 '/' w Area= 0.79 sf	10 Cc= 0.900

Primary OutFlow Max=2.69 cfs @ 18.99 hrs HW=80.08' (Free Discharge) ☐ 1=Culvert (Barrel Controls 2.69 cfs @ 3.43 fps)



Pond W-QP: Wetland Series Q & P

Summary for Pond W-R: Wetland Series R

Inflow Area	= 2	25.797 ac, 32	2.85% Impervious,	Inflow Depth =	3.12" for 100-	Year event		
Inflow	= 5	7.77 cfs @	12.30 hrs, Volume	= 6.710) af			
Outflow	=	1.27 cfs @ 2	24.10 hrs, Volume	= 4.340) af, Atten= 98%,	Lag= 708.1 min		
Primary	=	1.27 cfs @ 2	24.10 hrs, Volume	= 4.340) af	0		
Routing by Stor-Ind method, Time Span= 0.00-80.00 hrs, dt= 0.05 hrs								
Peak Elev=	89.13' (@ 24.10 hrs	Surf.Area= 90,882	st Storage=2	242,686 cf			
Plug-Flow of	detentior	n time= 1,468.	7 min calculated for	or 4.337 af (65%	6 of inflow)			
Center-of-N	/lass det	. time= 1,358.	.7 min (2,218.9 - 8	60.2)	,			
		A						
volume	Inver	t Avail.St	orage Storage De	escription				
#1	86.27	7' 521,6	61 cf Custom S	tage Data (Co	nic)Listed below (Recalc)		
Elevation	ç	Surf Area	Inc Store	Cum Store	Wet Area			
(feet)	-	(sa-ft)	(cubic-feet)	(cubic-feet)	(sa-ft)			
86.27		78.906	0	0	78.906			
92.00		103,740	521,661	521,661	104,484			
Device R	outing	Invert	Outlet Devices					
#1 Pi	rimary	87.30'	8.0" Round Cu	lvert				
	L= 240.0' CPP, projecting, no headwall, Ke= 0.900							
			Inlet / Outlet Inv	ert= 87.30' / 86	.50' S= 0.0033 '/'	Cc= 0.900		
n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf								

Primary OutFlow Max=1.27 cfs @ 24.10 hrs HW=89.13' (Free Discharge) —1=Culvert (Barrel Controls 1.27 cfs @ 3.64 fps)

Pond W-R: Wetland Series R

Page 415



SECTION 4 – STORMWATER MANAGEMENT CALCS

4.1 RECHARGE CALCULATIONS

The Required Recharge Volume is computed using the equation provided in the 2008 Massachusetts Stormwater Handbook. The volume is computed as an equivalent depth of rainfall over the proposed impervious areas in accordance with a Target Depth Factor based on the soil classifications. The Calculations is as follows:

Rv = (F) X (Impervious Area)

(Equation 1) Volume 3, Ch 1, page 15

- Rv = Required Recharge Volume, expressed in cubic feet, cubic yards, or acre-feet
- F = Target Depth Factor associated with each Hydrologic Soil Group (HSG)
- Impervious Area = new pavement, new rooftop area and courtyard areas
- The Target Depth Factor "F" per Table 2.3.2, Volume 3, Chapter 1 for each soil classification is as follows:
 - \circ A soils = 0.60 inches
 - B soils = 0.35 inches
 - C soils = 0.25 inches
 - D soils = 0.10 inches

The proposed impervious area (driveways, roofs, roads) within limit of work is 384,875 SF. Based on the above formula, the required recharge volume for the site is as follows:

Recharge Within "A" Soils:

- Impervious Area = 351,315SF
- 0.6 inches x 1/12 feet x 351,315 SF = 17,566 CUBIC FEET

Recharge Within "B" Soils:

- Impervious Area = 644,115 SF
- 0.35 inches x 1/12 feet x 25,629 SF = 18,787 CUBIC FEET

Recharge Within "D" Soils:

- Impervious Area = 79,455 SF
- 0.35 inches x 1/12 feet x 25,629 SF = 663 CUBIC FEET

TOTAL RECHARGE VOLUME REQUIRED = 37,016 CUBIC FEET

RECHARGE VOLUMES						
BASIN	Infiltration Rate (in/hr) (k)	Storage (Recharge) Volume (c.f.) (Rv)				
BASIN 1-A	2.41	42,522				
BASIN 1-B	1.02	9,520				
BASIN 1-C	1.02	438				
BASIN 2-B	0.52	2,346				
BASIN 2-C	1.02	7,373				
BASIN 2-D	1.02	73,414				
BASIN 2-E	0.52	11,213				
BASIN 2-F	2.41	26,299				
BASIN 3-A	1.02	19,540				
BASIN 3-B	1.02	48,659				
BASIN 6-A	1.02	40,394				
BASIN 7-A	1.02	39,975				
BASIN 9-A	2.41	6,066				
BASIN 9-B	2.41	10,799				
BASIN 10-B	2.41	8,477				
BASIN 11-B	1.02	11,760				
BASIN 12-A	2.41	31,215				
BASIN 12-B	1.02	64,180				
BASIN 15-A	1.02	755				
	TOTAL RECHARGE	454,945				

Rv = storage volume (c.f.) Volume 3, Chapter 1 of the MA Stormwater Handbook

Conclusion:

TOTAL RECHARGE VOLUME PROVIDED = 454,945 CF

The Storage Recharge volume numbers provided in the table above have been derived utilizing the HydroCAD output for stage storage.

Elevation	Surface	Storage	Elevation	Surface	Storage
(feet)	(sq-ft)	(cubic-feet)	(feet)	(sq-ft)	(cubic-feet)
78.00	5,723	0	80.60	8,987	19,123
78.05	5,786	288	80.65	9,050	19,574
78.10	5,849	579	80.70	9,113	20,028
78.15	5,911	873	80.75	9,175	20,485
78.20	5,974	1,170	80.80	9,238	20,946
78.25	6.037	1,470	80.85	9.301	21,409
78.30	6.100	1,773	80.90	9.364	21.876
78.35	6,162	2.080	80.95	9.426	22,345
78.40	6,225	2,390	81.00	9,489	22,818
78.45	6,288	2,702	81.05	9,552	23,294
78.50	6,351	3,018	81.10	9,615	23,773
78.55	6,413	3,338	81.15	9,678	24,256
78.60	6,476	3,660	81.20	9,740	24,741
78.65	6,539	3,985	81.25	9,803	25,230
78.70	6,602	4,314	81.30	9,866	25,722
78.75	6,665	4,645	81.35	9,929	26,216
78.80	6,727	4,980	81.40	9,991	26,714
78.85	6,790	5,318	81.45	10,054	27,216
78.90	6,853	5,659	81.50	10,117	27,720
78.95	6,916	6,003	81.55	10,180	28,227
79.00	6,978	6,351	81.60	10,242	28,738
79.05	7,041	6,701	81.65	10,305	29,251
79.10	7,104	7,055	81.70	10,368	29,768
79.15	7,167	7,412	81.75	10,431	30,288
79.20	7,229	7,771	81.80	10,494	30,811
79.25	7,292	8,135	81.85	10,556	31,338
79.30	7,355	8,501	81.90	10,619	31,867
79.35	7,418	8,870	81.95	10,682	32,400
79.40	7,481	9,242	82.00	10,745	32,935
79.45	7,543	9,618	82.05	10,807	33,474
79.50	7,606	9,997	82.10	10,870	34,016
79.55	7,669	10,379	82.15	10,933	34,561
79.60	7,732	10,764	82.20	10,996	35,109
79.65	7,794	11,152	82.25	11,058	35,661
79.70	7,857	11,543	82.30	11,121	36,215
79.75	7,920	11,938	82.35	11,184	36,773
79.80	7,983	12,335	82.40	11,247	37,333
79.85	8,045	12,736	82.45	11,310	37,897
79.90	8,108	13,140	82.50	11,372	38,464
79.95	8,171	13,547	82.55	11,435	39,035
80.00	8,234	13,957	82.60	11,498	39,608
80.05	8,297	14,370	82.65	11,561	40,184
80.10	8,359	14,786	82.70	11,623	40,764
80.15	8,422	15,206	82.75	11,686	41,347
80.20	8,485	15,629	82.80	11,749	41,933
80.25	8,548	16,054	82.85	11,812	42,522
80.30	8,610	16,483	82.90	11,874	43,114
80.35	8,673	16,916	82.95	11,937	43,709
80.40	8,736	17,351	83.00	12,000	44,308
80.45	8,799	17,789			
80.50	8,862	18,231			
80.55	8,924	18,675			

Stage-Area-Storage for Pond BAS 1-A: BAS 1-A

freet) $(sq-ft)$ (cubic-feet)(feet) $(sq-ft)$ (cubic-feet)80.003,170082.605,62311,43080.053,21716082.655,67011,71380.153,31244682.255,77411,29780.153,31244682.755,76412,28480.203,35965382.805,81112,57480.333,45399382.905,90613,16080.3403,5471,34382.955,95313,45680.403,5471,34383.006,00013,75580.553,6891,88680.603,7762,07280.653,7782,26055,55313,45680.703,8302,45055,67611,71380.853,9723,03580.904,0193,23580.954,0663,43713,364214081.154,2554,26914133,64281.154,2554,26914133,64281.154,2554,26914145,36281.154,5855,81614581.504,5855,81681.504,5855,81681.504,5855,81681.554,6326,04781.804,6867,23481.804,6867,23481.804,6867,23481.804,6827,72681.955,010 <th>Elevation</th> <th>Surface</th> <th>Storage</th> <th>Elevation</th> <th>Surface</th> <th>Storage</th>	Elevation	Surface	Storage	Elevation	Surface	Storage
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	(feet)	(sq-ft)	(cubic-feet)	(feet)	(sq-ft)	(cubic-feet)
80.05 3.217 160 82.65 5.670 11,713 80.10 3.264 322 82.70 5.717 11,997 80.15 3.312 486 82.75 5,764 12,284 80.20 3.359 653 82.80 5.811 12,284 80.25 3.406 822 82.85 5.858 12,286 80.30 3.453 993 82.90 5.906 13,160 80.35 3.500 1,167 82.95 5.953 13,456 80.44 3.547 1,343 83.00 6,000 13,755 80.45 3.595 1,522 80.50 3.642 1,703 80.55 3.689 1,886 80.00 3,972 3,035 80.80 3.925 2,838 80.85 3,972 3,035 80.95 4,066 3,437 81.00 4,113 3.642 81.15 4,264 4,699 81.10 4,208 4,689 81.15 4,255 4,269 81.50 4,443 5,139 <t< td=""><td>80.00</td><td>3,170</td><td>0</td><td>82.60</td><td>5,623</td><td>11,430</td></t<>	80.00	3,170	0	82.60	5,623	11,430
80.10 3.264 322 82.70 5,717 11.997 80.15 3.312 486 82.75 5,764 12.284 80.20 3.359 653 82.80 5,811 12.284 80.25 3.406 822 82.85 5,858 12.866 80.30 3.453 993 82.90 5,906 13,160 80.35 3.500 1.167 82.95 5,953 13,456 80.45 3.595 1.522 80.50 3.642 1,703 80.55 3.689 1.886 80.00 3.736 2.072 80.65 3.783 2.260 80.70 3.830 2.453 80.75 3.878 2.643 80.85 3.972 3.035 80.90 4.019 3.235 80.95 4.066 3.437 81.00 4.113 3.642 81.05 4.160 3.849 81.15 4.255 4.269 81.15 4.433 5.139 81.40 4.431 5.139 81.40 4.443 5.139	80.05	3,217	160	82.65	5,670	11,713
80.15 3,312 446 82.75 5,764 12,284 80.20 3,359 653 82.80 5,811 12,574 80.25 3,406 822 82.85 5,858 12,866 80.35 3,500 1,167 82.95 5,953 13,456 80.40 3,547 1,343 83.00 6,000 13,755 80.45 3,595 1,522 80.50 3,642 1,703 80.55 3,689 1,886 80.60 3,736 2,072 80.65 3,783 2,260 80.70 3,830 2,440 80.75 3,878 2,643 80.80 3,925 2,838 80.85 3,972 3,035 80.90 4,019 3,235 80.95 4,066 3,437 81.10 4,208 4,058 81.15 4,264 4,058 81.15 4,249 4,699 81.20 4,302 4,483 5,139 81.45 4,538 5,588 81.55 4,632 6,047 81.65 4,632 6,447	80.10	3,264	322	82.70	5,717	11,997
80.20 $3,359$ 653 82.80 $5,811$ $12,574$ 80.25 $3,406$ 822 82.85 $5,858$ $12,866$ 80.30 $3,453$ 993 82.90 $5,906$ $13,160$ 80.35 $3,500$ $1,167$ 82.95 $5,953$ $13,456$ 80.40 $3,547$ $1,343$ 83.00 $6,000$ $13,755$ 80.45 $3,595$ $1,522$ 80.50 $3,642$ $1,703$ 80.55 $3,689$ $1,886$ 80.60 $3,736$ $2,072$ 80.65 $3,783$ $2,260$ 80.70 $3,830$ $2,450$ 80.75 $3,878$ $2,643$ 80.85 $3,972$ $3,035$ 80.90 $4,019$ $3,235$ 80.95 $4,066$ $3,437$ 81.00 $4,113$ $3,642$ 81.05 $4,160$ $3,849$ 81.10 $4,208$ $4,058$ $4,164$ $3,494$ 81.25 $4,349$ $4,699$ 81.30 $4,396$ $4,918$ 81.55 $4,538$ $5,816$ 81.55 $4,632$ $6,474$ 81.65 $4,727$ $6,515$ 81.70 $4,774$ $6,752$ 81.75 $4,821$ $6,992$ 81.80 $4,962$ $7,726$ 81.85 $4,962$ $7,726$ 81.95 $5,010$ $7,975$ 82.20 $5,245$ $9,257$ $9,257$ 82.25 $5,293$ $9,520$ 82.35 $5,387$ $10,054$ 82.45 $5,481$ $10,325$ 82.45 <td< td=""><td>80.15</td><td>3,312</td><td>486</td><td>82.75</td><td>5,764</td><td>12,284</td></td<>	80.15	3,312	486	82.75	5,764	12,284
80.25 $3,406$ 82.2 82.85 $5,858$ $12,866$ 80.30 $3,453$ 993 82.90 $5,906$ $13,160$ 80.35 $3,500$ $1,167$ 82.95 $5,933$ $13,456$ 80.40 $3,547$ $1,343$ 83.00 $6,000$ $13,755$ 80.45 $3,595$ $1,522$ 83.00 $6,000$ $13,755$ 80.50 $3,642$ $1,703$ 80.55 $3,689$ $1,886$ 80.60 $3,736$ $2,072$ 80.65 $3,783$ $2,260$ 80.75 $3,878$ $2,643$ 80.80 $3,925$ $2,338$ 80.85 $3,972$ $3,035$ 80.990 $4,019$ $3,235$ 80.990 $4,066$ $3,437$ 81.100 $4,113$ $3,642$ 81.105 $4,160$ $3,849$ 81.100 $4,113$ $3,642$ 81.15 $4,225$ $4,269$ 81.20 $4,443$ $5,139$ 81.20 $4,066$ $4,918$ 81.35 $4,443$ $5,139$ 81.40 $4,431$ $5,139$ 81.40 $4,431$ $5,139$ 81.40 $4,689$ $6,279$ $6,515$ 81.70 $4,777$ 81.60 $4,679$ $6,279$ 81.80 $4,968$ $7,234$ 81.80 $4,968$ $7,234$ 81.80 $4,968$ $7,234$ 81.80 $4,966$ $7,276$ 81.97 $8,220$ $5,245$ $9,257$ 82.25 $5,276$ $9,257$ 82.26 $5,281$ $9,876$ 82.25 <td>80.20</td> <td>3,359</td> <td>653</td> <td>82.80</td> <td>5,811</td> <td>12,574</td>	80.20	3,359	653	82.80	5,811	12,574
80.30 3,453 993 82.90 5,906 13,160 80.35 3,500 1,167 82.95 5,953 13,456 80.44 3,547 1,343 83.00 6,000 13,755 80.55 3,689 1,886 80.00 3,736 2,072 80.65 3,783 2,260 80.70 3,830 2,480 80.70 3,830 2,480 80.85 3,972 3,035 80.86 3,925 2,338 80.85 3,972 3,035 80.99 4,019 3,235 80.95 4,066 3,437 81.00 4,113 3,642 1 1 81.05 4,160 3,849 1 1 4,208 4,058 81.15 4,243 5,139 1 4,433 1 1 1 1 81.25 4,396 4,918 81.35 4,443 5,139 1 1 1 1 81.45 4,538 5,588 81.65 81.65 1 1 1 1 1	80.25	3,406	822	82.85	5,858	12,866
80.353,5001,16782.955,95313,45680.403,5471,34383.00 $6,000$ 13,75580.453,5951,52280.503,6421,70380.553,6891,88680.603,7362,07280.653,7832,26080.753,8782,64380.803,9252,83880.803,9252,33580.904,0193,23580.904,0193,23580.954,0663,43781.004,1133,64281.154,2554,26981.204,3024,48381.254,3494,69981.304,3964,91881.354,4435,13981.404,69981.304,3867,2246,51581.754,6226,6155,81681.554,63281.654,7276,51581.754,8216,99281.804,9627,72681.814,9157,7481.904,9627,72682.055,10484.9982.055,10484.9982.055,10484.9982.055,10484.9982.055,3879,58282.255,2839,58282.255,2849,58282.255,284 <t< td=""><td>80.30</td><td>3,453</td><td>993</td><td>82.90</td><td>5,906</td><td>13,160</td></t<>	80.30	3,453	993	82.90	5,906	13,160
80.40 3,547 1,343 83.00 6,000 13,755 80.45 3,595 1,522 80.50 3,642 1,703 80.55 3,689 1,886 80.60 3,736 2,072 80.65 3,783 2,260 80.70 3,830 2,443 80.80 3,925 2,838 80.80 3,925 2,838 80.81 3,972 3,035 80.99 4,019 3,235 80.995 4,066 3,437 81.00 4,113 3,642 81.05 4,160 3,849 81.10 4,208 4,058 81.15 4,255 4,259 81.25 4,349 4,699 81.20 4,302 4,483 81.35 4,443 5,139 81.40 4,491 5,362 81.45 4,538 5,588 81.55 4,622 6,047 81.65 4,814 81.55 4,622 6,047 81.80 4,962 7,726 81.85 4,915 7,479 81.65 4,814 81.85 4,915 7,	80.35	3,500	1,167	82.95	5,953	13,456
80.453.5951.522 80.50 3.6421.703 80.55 3.6891.886 80.60 3.7362.072 80.65 3.7832.260 80.70 3.8302.450 80.75 3.8782.643 80.85 3.9252.838 80.85 3.9723.035 80.90 4.0193.235 80.95 4.0663.437 81.00 4.1133.642 81.05 4.1603.849 81.10 4.2084.058 81.15 4.2554.269 81.20 4.3024.483 81.25 4.3494.699 81.30 4.3964.918 81.35 4.4435.139 81.45 4.5385.588 81.50 4.5655.816 81.55 4.6326.047 81.60 4.6796.279 81.65 4.8687.234 81.80 4.9627.726 81.75 4.8216.992 81.80 4.9627.726 81.75 5.0107.975 82.05 5.1048.491 82.10 5.1518.737 82.25 5.2939.520 82.30 5.34710.054 82.45 5.48110.598 82.55 5.57511.151	80.40	3,547	1,343	83.00	6,000	13,755
80.50 $3,642$ $1,703$ 80.55 $3,689$ $1,886$ 80.60 $3,736$ $2,072$ 80.65 $3,783$ $2,260$ 80.70 $3,830$ $2,450$ 80.75 $3,878$ $2,643$ 80.80 $3,925$ $2,838$ 80.85 $3,972$ $3,035$ 80.99 $4,019$ $3,235$ 80.99 $4,066$ $3,437$ 81.00 $4,113$ $3,642$ 81.05 $4,160$ $3,849$ 81.10 $4,208$ $4,058$ 81.15 $4,255$ $4,269$ 81.20 $4,302$ $4,483$ 81.25 $4,349$ $4,699$ 81.30 $4,396$ $4,918$ 81.35 $4,443$ $5,139$ 81.40 $4,491$ $5,362$ 81.55 $4,632$ $6,047$ 81.65 $4,727$ $6,515$ 81.75 $4,622$ $6,279$ 81.65 $4,727$ $6,515$ 81.75 $4,821$ $6,992$ 81.85 $4,915$ $7,479$ 81.90 $4,962$ $7,726$ 81.95 $5,010$ $7,975$ 82.00 $5,057$ $8,227$ 82.05 $5,198$ $8,996$ 82.20 $5,245$ $9,257$ 82.25 $5,293$ $9,520$ 82.35 $5,387$ $10,054$ 82.45 $5,481$ $10,598$ 82.55 $5,575$ $11,151$	80.45	3,595	1,522			
80.55 $3,689$ $1,886$ 80.60 $3,736$ $2,072$ 80.65 $3,783$ $2,260$ 80.70 $3,830$ $2,450$ 80.75 $3,878$ $2,643$ 80.80 $3,925$ $2,638$ 80.85 $3,972$ $3,035$ 80.90 $4,019$ $3,235$ 80.95 $4,066$ $3,437$ 81.00 $4,113$ $3,642$ 81.05 $4,160$ $3,849$ 81.10 $4,208$ $4,058$ 81.15 $4,255$ $4,269$ 81.20 $4,302$ $4,483$ 81.25 $4,349$ $4,699$ 81.30 $4,396$ $4,918$ 81.35 $4,443$ $5,139$ 81.40 $4,699$ 81.55 $4,632$ $6,047$ 81.60 $4,679$ $6,279$ 81.65 $4,727$ $6,515$ 81.70 $4,774$ $6,752$ 81.75 $4,821$ $6,992$ 81.85 $4,915$ $7,479$ 81.90 $4,962$ $7,726$ 81.95 $5,010$ $7,975$ 82.00 $5,057$ $8,227$ 82.05 $5,104$ $8,481$ 82.15 $5,188$ $8,996$ 82.20 $5,245$ $9,257$ 82.25 $5,293$ $9,520$ 82.35 $5,387$ $10,054$ 82.45 $5,481$ $10,598$ 82.55 $5,575$ $11,151$	80.50	3,642	1,703			
80.60 $3,736$ $2,072$ 80.65 $3,783$ $2,260$ 80.70 $3,830$ $2,4450$ 80.75 $3,878$ $2,643$ 80.80 $3,925$ $2,838$ 80.85 $3,972$ $3,035$ 80.90 $4,019$ $3,235$ 80.90 $4,019$ $3,235$ 80.90 $4,019$ $3,235$ 80.90 $4,019$ $3,235$ 80.90 $4,019$ $3,247$ 81.00 $4,113$ $3,642$ 81.10 $4,160$ $3,849$ 81.10 $4,208$ $4,058$ 81.15 $4,255$ $4,269$ 81.20 $4,302$ $4,483$ 81.25 $4,349$ $4,699$ 81.35 $4,443$ $5,139$ 81.40 $4,491$ $5,362$ 81.45 $4,538$ $5,588$ 81.50 $4,585$ $5,816$ 81.55 $4,632$ $6,047$ 81.66 $4,727$ $6,515$ 81.70 $4,774$ $6,752$ 81.75 $4,821$ $6,992$ 81.85 $4,915$ $7,479$ 81.90 $4,962$ $7,726$ 81.95 $5,010$ $7,975$ 82.00 $5,057$ $8,227$ 82.25 $5,283$ $9,520$ 82.30 $5,340$ $9,786$ 82.45 $5,481$ $10,598$ 82.55 $5,575$ $11,151$	80.55	3,689	1,886			
80.65 $3,783$ $2,260$ 80.70 $3,830$ $2,450$ 80.75 $3,878$ $2,643$ 80.80 $3,925$ $2,838$ 80.80 $3,925$ $2,838$ 80.95 $4,066$ $3,437$ 81.00 $4,113$ $3,642$ 81.05 $4,160$ $3,849$ 81.10 $4,255$ $4,269$ 81.20 $4,302$ $4,483$ 81.25 $4,349$ $4,699$ 81.30 $4,396$ $4,918$ 81.35 $4,443$ $5,139$ 81.45 $4,538$ $5,588$ 81.55 $4,632$ $6,047$ 81.60 $4,679$ $6,279$ 81.65 $4,727$ $6,515$ 81.70 $4,774$ $6,752$ 81.75 $5,010$ $7,975$ 82.00 $5,057$ $8,227$ 82.05 $5,104$ $8,481$ 82.10 $5,151$ $8,737$ 82.25 $5,245$ $9,257$ 82.25 $5,245$ $9,257$ 82.25 $5,281$ $10,598$ 82.45 $5,481$ $10,598$ 82.55 $5,575$ $11,151$	80.60	3,736	2,072			
80.70 3.830 2.450 80.75 3.878 2.643 80.80 3.925 2.838 80.85 3.972 3.035 80.90 4.019 3.235 80.95 4.066 3.437 81.00 4.113 3.642 81.105 4.160 3.849 81.105 4.160 3.849 81.105 4.255 4.269 81.20 4.302 4.483 81.25 4.349 4.699 81.30 4.396 4.918 81.35 4.443 5.139 81.40 4.491 5.362 81.45 4.538 5.588 81.50 4.585 5.816 81.55 4.632 6.047 81.65 4.727 6.515 81.70 4.774 6.752 81.85 4.915 7.479 81.90 4.962 7.726 81.95 5.010 7.975 82.00 5.057 8.227 82.25 5.283 9.520 82.30 5.340 9.786 82.25 5.481 10.598 82.45 5.481 10.598 82.45 5.481 10.598 82.55 5.575 11.151	80.65	3,783	2,260			
80.75 $3,878$ $2,643$ 80.80 $3,925$ $2,838$ 80.85 $3,972$ $3,035$ 80.90 $4,019$ $3,235$ 80.95 $4,066$ $3,437$ 81.00 $4,113$ $3,642$ 81.05 $4,160$ $3,849$ 81.10 $4,208$ $4,058$ 81.15 $4,255$ $4,269$ 81.20 $4,302$ $4,483$ 81.25 $4,349$ $4,699$ 81.30 $4,396$ $4,918$ 81.35 $4,443$ $5,139$ 81.40 $4,491$ $5,362$ 81.45 $4,538$ $5,588$ 81.50 $4,585$ $5,816$ 81.55 $4,632$ $6,047$ 81.66 $4,727$ $6,752$ 81.75 $4,821$ $6,992$ 81.80 $4,868$ $7,234$ 81.85 $4,915$ $7,479$ 81.90 $4,962$ $7,726$ 81.95 $5,010$ $7,975$ 82.00 $5,057$ $8,227$ 82.25 $5,293$ $9,250$ 82.30 $5,340$ $9,786$ 82.30 $5,340$ $9,786$ 82.30 $5,387$ $10,054$ 82.45 $5,481$ $10,325$ 82.45 $5,575$ $11,151$	80.70	3,830	2,450			
80.80 3.925 2.838 80.85 3.972 3.035 80.90 4.019 3.235 80.95 4.066 3.437 81.00 4.113 3.642 81.05 4.160 3.849 81.10 4.208 4.058 81.15 4.255 4.269 81.20 4.302 4.483 81.25 4.349 4.699 81.30 4.396 4.918 81.35 4.443 5.139 81.40 4.491 5.362 81.45 4.538 5.588 81.55 4.632 6.047 81.65 4.727 6.515 81.70 4.774 6.752 81.75 4.821 6.992 81.80 4.868 7.234 81.85 4.915 7.479 81.90 4.962 7.726 81.95 5.010 7.975 82.00 5.057 8.227 82.25 5.293 9.520 82.30 5.347 10.325 82.45 5.481 10.325 82.45 5.481 10.598 82.55 5.575 11.151	80.75	3,878	2,643			
80.85 3.972 3.035 80.90 4.019 3.235 80.95 4.066 3.437 81.00 4.113 3.642 81.05 4.160 3.849 81.10 4.208 4.058 81.15 4.2255 4.269 81.20 4.302 4.483 81.25 4.349 4.699 81.30 4.396 4.918 81.35 4.443 5.139 81.40 4.491 5.362 81.45 4.585 5.816 81.55 4.632 6.047 81.65 4.727 6.515 81.70 4.774 6.752 81.75 4.821 6.992 81.80 4.962 7.726 81.95 5.010 7.975 82.00 5.057 8.227 82.15 5.198 8.996 82.20 5.245 9.257 82.25 5.293 9.520 82.30 5.387 10.054 82.45 5.481 10.598 82.55 5.575 11.151	80.80	3,925	2,838			
80.90 $4,019$ $3,235$ 80.95 $4,066$ $3,437$ 81.00 $4,113$ $3,642$ 81.05 $4,160$ $3,849$ 81.10 $4,208$ $4,058$ 81.20 $4,302$ $4,483$ 81.20 $4,302$ $4,483$ 81.25 $4,349$ $4,699$ 81.30 $4,396$ $4,918$ 81.35 $4,443$ $5,139$ 81.40 $4,491$ $5,362$ 81.45 $4,538$ $5,588$ 81.50 $4,679$ $6,279$ 81.65 $4,727$ $6,515$ 81.70 $4,774$ $6,752$ 81.75 $4,821$ $6,992$ 81.80 $4,868$ $7,234$ 81.85 $4,915$ $7,479$ 81.90 $4,962$ $7,726$ 81.95 $5,010$ $7,975$ 82.05 $5,104$ $8,481$ 82.10 $5,157$ $8,227$ 82.25 $5,293$ $9,520$ 82.35 $5,387$ $10,054$ 82.45 $5,481$ $10,325$ 82.45 $5,481$ $10,598$ 82.55 $5,575$ $11,151$	80.85	3,972	3,035			
80.95 $4,066$ $3,437$ 81.00 $4,113$ $3,642$ 81.05 $4,160$ $3,849$ 81.10 $4,208$ $4,058$ 81.15 $4,255$ $4,269$ 81.20 $4,302$ $4,483$ 81.25 $4,349$ $4,699$ 81.30 $4,396$ $4,918$ 81.35 $4,443$ $5,139$ 81.40 $4,491$ $5,362$ 81.45 $4,585$ $5,816$ 81.50 $4,585$ $5,816$ 81.55 $4,632$ $6,047$ 81.60 $4,679$ $6,279$ 81.65 $4,727$ $6,515$ 81.70 $4,774$ $6,752$ 81.75 $4,821$ $6,992$ 81.80 $4,868$ $7,234$ 81.85 $4,915$ $7,479$ 81.90 $4,962$ $7,726$ 81.95 $5,101$ $7,975$ 82.00 $5,057$ $8,227$ 82.20 $5,245$ $9,257$ 82.20 $5,340$ $9,786$ 82.35 $5,387$ $10,054$ 82.45 $5,481$ $10,325$ 82.45 $5,481$ $10,598$ 82.55 $5,575$ $11,151$	80.90	4,019	3,235			
81.00 $4,113$ $3,642$ 81.05 $4,160$ $3,849$ 81.10 $4,208$ $4,058$ 81.15 $4,255$ $4,269$ 81.20 $4,302$ $4,483$ 81.25 $4,349$ $4,699$ 81.30 $4,396$ $4,918$ 81.35 $4,443$ $5,139$ 81.40 $4,491$ $5,362$ 81.45 $4,538$ $5,588$ 81.50 $4,585$ $5,816$ 81.55 $4,632$ $6,047$ 81.60 $4,679$ $6,279$ 81.65 $4,727$ $6,515$ 81.70 $4,774$ $6,752$ 81.75 $4,821$ $6,992$ 81.80 $4,868$ $7,234$ 81.85 $4,915$ $7,479$ 81.90 $4,962$ $7,726$ 82.00 $5,057$ $8,227$ 82.05 $5,104$ $8,481$ 82.10 $5,151$ $8,737$ 82.15 $5,387$ $10,054$ 82.40 $5,434$ $10,325$ 82.45 $5,481$ $10,598$ 82.55 $5,575$ $11,151$	80.95	4,066	3,437			
81.05 $4,160$ $3,849$ 81.10 $4,208$ $4,058$ 81.15 $4,255$ $4,269$ 81.20 $4,302$ $4,483$ 81.25 $4,349$ $4,699$ 81.30 $4,396$ $4,918$ 81.35 $4,443$ $5,139$ 81.40 $4,491$ $5,362$ 81.45 $4,538$ $5,588$ 81.50 $4,585$ $5,816$ 81.55 $4,632$ $6,047$ 81.66 $4,679$ $6,279$ 81.65 $4,727$ $6,515$ 81.70 $4,774$ $6,752$ 81.75 $4,821$ $6,992$ 81.80 $4,868$ $7,234$ 81.85 $4,915$ $7,479$ 81.90 $4,962$ $7,726$ 81.95 $5,010$ $7,975$ 82.00 $5,057$ $8,227$ 82.15 $5,198$ $8,996$ 82.20 $5,245$ $9,257$ 82.25 $5,293$ $9,520$ 82.36 $5,387$ $10,054$ 82.45 $5,481$ $10,598$ 82.55 $5,575$ $11,151$	81.00	4,113	3,642			
81.10 $4,208$ $4,058$ 81.15 $4,255$ $4,269$ 81.20 $4,302$ $4,483$ 81.25 $4,349$ $4,699$ 81.30 $4,396$ $4,918$ 81.35 $4,443$ $5,139$ 81.40 $4,491$ $5,362$ 81.45 $4,538$ $5,588$ 81.50 $4,585$ $5,816$ 81.55 $4,632$ $6,047$ 81.60 $4,679$ $6,279$ 81.65 $4,727$ $6,515$ 81.70 $4,774$ $6,752$ 81.75 $4,821$ $6,992$ 81.80 $4,868$ $7,234$ 81.85 $4,915$ $7,479$ 81.90 $4,962$ $7,726$ 81.95 $5,010$ $7,975$ 82.00 $5,057$ $8,227$ 82.05 $5,104$ $8,481$ 82.15 $5,387$ $10,054$ 82.40 $5,434$ $10,325$ 82.45 $5,481$ $10,598$ 82.55 $5,575$ $11,151$	81.05	4,160	3,849			
81.15 $4,255$ $4,269$ 81.20 $4,302$ $4,483$ 81.25 $4,349$ $4,699$ 81.30 $4,396$ $4,918$ 81.35 $4,443$ $5,139$ 81.40 $4,491$ $5,362$ 81.45 $4,538$ $5,588$ 81.50 $4,585$ $5,816$ 81.55 $4,632$ $6,047$ 81.60 $4,679$ $6,279$ 81.65 $4,727$ $6,515$ 81.70 $4,774$ $6,752$ 81.75 $4,821$ $6,992$ 81.80 $4,962$ $7,726$ 81.95 $5,010$ $7,975$ 82.00 $5,057$ $8,227$ 82.15 $5,198$ $8,996$ 82.20 $5,245$ $9,257$ 82.35 $5,387$ $10,054$ 82.40 $5,434$ $10,325$ 82.45 $5,481$ $10,598$ 82.55 $5,575$ $11,151$	81.10	4,208	4,058			
81.20 $4,302$ $4,483$ 81.25 $4,349$ $4,699$ 81.30 $4,396$ $4,918$ 81.35 $4,443$ $5,139$ 81.40 $4,491$ $5,362$ 81.45 $4,538$ $5,588$ 81.50 $4,585$ $5,816$ 81.55 $4,632$ $6,047$ 81.66 $4,779$ $6,279$ 81.65 $4,727$ $6,515$ 81.70 $4,774$ $6,752$ 81.75 $4,821$ $6,992$ 81.80 $4,868$ $7,234$ 81.85 $4,915$ $7,479$ 81.95 $5,010$ $7,975$ 82.00 $5,057$ $8,227$ 82.05 $5,104$ $8,481$ 82.10 $5,151$ $8,737$ 82.15 $5,245$ $9,257$ 82.20 $5,245$ $9,257$ 82.30 $5,340$ $9,786$ 82.30 $5,340$ $9,786$ 82.35 $5,387$ $10,054$ 82.45 $5,481$ $10,325$ 82.45 $5,575$ $11,151$	81.15	4,255	4,269			
81.25 $4,349$ $4,699$ 81.30 $4,396$ $4,918$ 81.43 $5,139$ 81.40 $4,491$ $5,362$ 81.45 $4,538$ $5,588$ 81.50 $4,585$ 81.55 $4,632$ $6,047$ 81.60 $4,679$ $6,279$ 81.65 $4,727$ $6,515$ 81.75 $4,821$ $6,992$ 81.80 $4,868$ $7,234$ 81.85 $4,915$ $7,479$ 81.90 $4,962$ $7,726$ 81.95 $5,010$ $7,975$ 82.00 $5,057$ $8,227$ 82.05 $5,104$ $8,481$ 82.10 $5,151$ $8,737$ 82.25 $5,293$ $9,520$ 82.30 $5,340$ $9,786$ 82.35 $5,387$ 82.45 $5,481$ $10,598$ 82.50 $5,575$ $11,151$	81.20	4,302	4,483			
81.30 $4,396$ $4,918$ 81.35 $4,443$ $5,139$ 81.40 $4,491$ $5,362$ 81.45 $4,538$ $5,588$ 81.50 $4,585$ $5,816$ 81.55 $4,632$ $6,047$ 81.60 $4,679$ $6,279$ 81.65 $4,727$ $6,515$ 81.70 $4,774$ $6,752$ 81.75 $4,868$ $7,234$ 81.80 $4,868$ $7,234$ 81.85 $4,915$ $7,479$ 81.90 $4,962$ $7,726$ 81.95 $5,010$ $7,975$ 82.00 $5,057$ $8,227$ 82.05 $5,104$ $8,481$ 82.10 $5,151$ $8,737$ 82.15 $5,387$ $10,054$ 82.30 $5,340$ $9,786$ 82.35 $5,387$ $10,054$ 82.45 $5,481$ $10,598$ 82.50 $5,528$ $10,873$ 82.55 $5,575$ $11,151$	81.25	4,349	4,699			
81.35 $4,443$ $5,139$ 81.40 $4,491$ $5,362$ 81.45 $4,538$ $5,588$ 81.50 $4,585$ $5,816$ 81.55 $4,632$ $6,047$ 81.60 $4,679$ $6,279$ 81.65 $4,727$ $6,515$ 81.70 $4,774$ $6,752$ 81.75 $4,821$ $6,992$ 81.80 $4,868$ $7,234$ 81.85 $4,915$ $7,479$ 81.90 $4,962$ $7,726$ 81.95 $5,010$ $7,975$ 82.00 $5,057$ $8,227$ 82.05 $5,104$ $8,481$ 82.10 $5,151$ $8,737$ 82.15 $5,293$ $9,520$ 82.30 $5,340$ $9,786$ 82.35 $5,387$ $10,054$ 82.45 $5,481$ $10,598$ 82.50 $5,528$ $10,873$ 82.55 $5,575$ $11,151$	81.30	4,396	4,918			
81.40 $4,491$ $5,362$ 81.45 $4,538$ $5,588$ 81.50 $4,585$ $5,816$ 81.55 $4,632$ $6,047$ 81.60 $4,679$ $6,279$ 81.65 $4,727$ $6,515$ 81.70 $4,774$ $6,752$ 81.75 $4,821$ $6,992$ 81.80 $4,868$ $7,234$ 81.85 $4,915$ $7,479$ 81.90 $4,962$ $7,726$ 81.95 $5,010$ $7,975$ 82.00 $5,057$ $8,227$ 82.05 $5,104$ $8,481$ 82.10 $5,151$ $8,737$ 82.15 $5,198$ $8,996$ 82.20 $5,245$ $9,257$ 82.25 $5,293$ $9,520$ 82.30 $5,340$ $9,786$ 82.35 $5,387$ $10,054$ 82.45 $5,481$ $10,598$ 82.50 $5,528$ $10,873$ 82.55 $5,575$ $11,151$	81.35	4,443	5,139			
81.45 $4,538$ $5,588$ 81.50 $4,585$ $5,816$ 81.55 $4,632$ $6,047$ 81.60 $4,679$ $6,279$ 81.65 $4,727$ $6,515$ 81.70 $4,774$ $6,752$ 81.75 $4,821$ $6,992$ 81.80 $4,868$ $7,234$ 81.85 $4,915$ $7,479$ 81.90 $4,962$ $7,726$ 81.95 $5,010$ $7,975$ 82.00 $5,057$ $8,227$ 82.05 $5,104$ $8,481$ 82.10 $5,151$ $8,737$ 82.15 $5,198$ $8,996$ 82.20 $5,245$ $9,257$ 82.25 $5,293$ $9,520$ 82.30 $5,340$ $9,786$ 82.35 $5,387$ $10,054$ 82.45 $5,481$ $10,598$ 82.50 $5,528$ $10,873$ 82.55 $5,575$ $11,151$	81.40	4,491	5,362			
81.50 $4,585$ $5,816$ 81.55 $4,632$ $6,047$ 81.60 $4,679$ $6,279$ 81.65 $4,727$ $6,515$ 81.70 $4,774$ $6,752$ 81.75 $4,821$ $6,992$ 81.80 $4,868$ $7,234$ 81.85 $4,915$ $7,479$ 81.90 $4,962$ $7,726$ 81.95 $5,010$ $7,975$ 82.00 $5,057$ $8,227$ 82.05 $5,104$ $8,481$ 82.10 $5,151$ $8,737$ 82.15 $5,293$ $9,257$ 82.25 $5,293$ $9,520$ 82.35 $5,387$ $10,054$ 82.40 $5,434$ $10,325$ 82.45 $5,481$ $10,598$ 82.55 $5,575$ $11,151$	81.45	4,538	5,588			
81.55 $4,632$ $6,047$ 81.60 $4,679$ $6,279$ 81.65 $4,727$ $6,515$ 81.70 $4,774$ $6,752$ 81.75 $4,821$ $6,992$ 81.80 $4,868$ $7,234$ 81.85 $4,915$ $7,479$ 81.90 $4,962$ $7,726$ 81.95 $5,010$ $7,975$ 82.00 $5,057$ $8,227$ 82.05 $5,104$ $8,481$ 82.10 $5,151$ $8,737$ 82.15 $5,245$ $9,257$ 82.20 $5,245$ $9,257$ 82.25 $5,293$ $9,520$ 82.35 $5,387$ $10,054$ 82.40 $5,434$ $10,325$ 82.45 $5,481$ $10,598$ 82.50 $5,528$ $10,873$ 82.55 $5,575$ $11,151$	81.50	4,585	5,816			
81.60 $4,679$ $6,279$ 81.65 $4,727$ $6,515$ 81.70 $4,774$ $6,752$ 81.75 $4,821$ $6,992$ 81.80 $4,868$ $7,234$ 81.85 $4,915$ $7,479$ 81.90 $4,962$ $7,726$ 81.95 $5,010$ $7,975$ 82.00 $5,057$ $8,227$ 82.05 $5,104$ $8,481$ 82.10 $5,151$ $8,737$ 82.15 $5,198$ $8,996$ 82.20 $5,245$ $9,257$ 82.25 $5,293$ $9,520$ 82.35 $5,340$ $9,786$ 82.35 $5,387$ $10,054$ 82.45 $5,481$ $10,325$ 82.45 $5,481$ $10,598$ 82.55 $5,575$ $11,151$	81.55	4,632	6,047			
81.65 $4,727$ $6,515$ 81.70 $4,774$ $6,752$ 81.75 $4,821$ $6,992$ 81.80 $4,868$ $7,234$ 81.85 $4,915$ $7,479$ 81.90 $4,962$ $7,726$ 81.95 $5,010$ $7,975$ 82.00 $5,057$ $8,227$ 82.05 $5,104$ $8,481$ 82.10 $5,151$ $8,737$ 82.15 $5,198$ $8,996$ 82.20 $5,245$ $9,257$ 82.25 $5,293$ $9,520$ 82.30 $5,340$ $9,786$ 82.35 $5,387$ $10,054$ 82.40 $5,434$ $10,325$ 82.45 $5,481$ $10,598$ 82.50 $5,528$ $10,873$ 82.55 $5,575$ $11,151$	81.60	4,679	6,279			
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	81.65	4,727	6,515			
81.75 $4,821$ $6,992$ 81.80 $4,868$ $7,234$ 81.85 $4,915$ $7,479$ 81.90 $4,962$ $7,726$ 81.95 $5,010$ $7,975$ 82.00 $5,057$ $8,227$ 82.05 $5,104$ $8,481$ 82.10 $5,151$ $8,737$ 82.15 $5,198$ $8,996$ 82.20 $5,245$ $9,257$ 82.25 $5,293$ $9,520$ 82.30 $5,340$ $9,786$ 82.35 $5,387$ $10,054$ 82.40 $5,434$ $10,325$ 82.45 $5,481$ $10,598$ 82.50 $5,528$ $10,873$ 82.55 $5,575$ $11,151$	81.70	4,774	6,752			
81.80 $4,868$ $7,234$ 81.85 $4,915$ $7,479$ 81.90 $4,962$ $7,726$ 81.95 $5,010$ $7,975$ 82.00 $5,057$ $8,227$ 82.05 $5,104$ $8,481$ 82.10 $5,151$ $8,737$ 82.15 $5,198$ $8,996$ 82.20 $5,245$ $9,257$ 82.30 $5,340$ $9,786$ 82.35 $5,387$ $10,054$ 82.40 $5,434$ $10,325$ 82.45 $5,481$ $10,598$ 82.50 $5,528$ $10,873$ 82.55 $5,575$ $11,151$	81.75	4,821	6,992			
81.85 $4,915$ $7,479$ 81.90 $4,962$ $7,726$ 81.95 $5,010$ $7,975$ 82.00 $5,057$ $8,227$ 82.05 $5,104$ $8,481$ 82.10 $5,151$ $8,737$ 82.15 $5,198$ $8,996$ 82.20 $5,245$ $9,257$ 82.30 $5,340$ $9,786$ 82.35 $5,387$ $10,054$ 82.40 $5,434$ $10,325$ 82.45 $5,481$ $10,598$ 82.50 $5,528$ $10,873$ 82.55 $5,575$ $11,151$	81.80	4,868	7,234			
81.90 $4,962$ $7,726$ 81.95 $5,010$ $7,975$ 82.00 $5,057$ $8,227$ 82.05 $5,104$ $8,481$ 82.10 $5,151$ $8,737$ 82.15 $5,198$ $8,996$ 82.20 $5,245$ $9,257$ 82.30 $5,340$ $9,786$ 82.35 $5,387$ $10,054$ 82.40 $5,434$ $10,325$ 82.45 $5,528$ $10,873$ 82.55 $5,575$ $11,151$	81.85	4,915	7,479			
81.95 $5,010$ $7,975$ 82.00 $5,057$ $8,227$ 82.05 $5,104$ $8,481$ 82.10 $5,151$ $8,737$ 82.15 $5,198$ $8,996$ 82.20 $5,245$ $9,257$ 82.30 $5,340$ $9,786$ 82.35 $5,387$ $10,054$ 82.40 $5,434$ $10,325$ 82.45 $5,481$ $10,598$ 82.50 $5,528$ $10,873$ 82.55 $5,575$ $11,151$	81.90	4,962	7,726			
82.00 $5,057$ $8,227$ 82.05 $5,104$ $8,481$ 82.10 $5,151$ $8,737$ 82.15 $5,198$ $8,996$ 82.20 $5,245$ $9,257$ 82.25 $5,293$ $9,520$ 82.30 $5,340$ $9,786$ 82.35 $5,387$ $10,054$ 82.40 $5,434$ $10,325$ 82.45 $5,481$ $10,598$ 82.50 $5,528$ $10,873$ 82.55 $5,575$ $11,151$	81.95	5,010	7,975			
82.05 $5,104$ $6,461$ 82.10 $5,151$ $8,737$ 82.15 $5,198$ $8,996$ 82.20 $5,245$ $9,257$ 82.25 $5,293$ $9,520$ 82.30 $5,340$ $9,786$ 82.35 $5,387$ $10,054$ 82.40 $5,434$ $10,325$ 82.45 $5,481$ $10,598$ 82.50 $5,528$ $10,873$ 82.55 $5,575$ $11,151$	82.00	5,057	8,ZZ7 9,494			
82.10 $5,151$ $6,737$ 82.15 $5,198$ $8,996$ 82.20 $5,245$ $9,257$ 82.25 $5,293$ $9,520$ 82.30 $5,340$ $9,786$ 82.35 $5,387$ $10,054$ 82.40 $5,434$ $10,325$ 82.45 $5,481$ $10,598$ 82.50 $5,528$ $10,873$ 82.55 $5,575$ $11,151$	02.00	5,104 5,151	0,401			
62.15 $5,196$ $6,996$ 82.20 $5,245$ $9,257$ 82.25 $5,293$ $9,520$ 82.30 $5,340$ $9,786$ 82.35 $5,387$ $10,054$ 82.40 $5,434$ $10,325$ 82.45 $5,481$ $10,598$ 82.50 $5,528$ $10,873$ 82.55 $5,575$ $11,151$	02.10	5,151	0,131			
82.20 5,243 9,257 82.25 5,293 9,520 82.30 5,340 9,786 82.35 5,387 10,054 82.40 5,434 10,325 82.45 5,481 10,598 82.50 5,528 10,873 82.55 5,575 11,151	02.10 92.20	5,190	0,990			
82.30 5,340 9,786 82.35 5,387 10,054 82.40 5,434 10,325 82.45 5,481 10,598 82.50 5,528 10,873 82.55 5,575 11,151	82.20	5 203	9,237			
82.35 5,387 10,054 82.40 5,434 10,325 82.45 5,481 10,598 82.50 5,528 10,873 82.55 5,575 11,151	82 30	5 340	9,520 0 786			
82.40 5,434 10,325 82.45 5,481 10,598 82.50 5,528 10,873 82.55 5.575 11,151	82.35	5 227	10 05/			
82.45 5,481 10,598 82.50 5,528 10,873 82.55 5,575 11,151	82 /0	5,307	10,004			
82.50 5,528 10,873 82.55 5.575 11.151	82.45	5 481	10,525			
82.55 5.575 11.151	82 50	5 528	10,000			
	82.55	5,575	11,151			

Stage-Area-Storage for Pond BAS 1-B: BAS 1-B

Elevation	Surface	Storage	Elevation	Surface	Storage
(feet)	(sq-ft)	(cubic-feet)	(feet)	(sq-ft)	(cubic-feet)
81.00	70	0	82.04	270	177
81.02	74	1	82.06	274	182
81.04	78	3	82.08	278	188
81.06	82	5	82.10	282	193
81.08	85	6	82.12	286	199
81.10	89	8	82.14	289	205
81.12	93	10	82.16	293	211
81.14	97	12	82.18	297	217
81.16	101	14	82.20	301	223
81.18	105	16	82.22	305	229
81.20	109	18	82.24	309	235
81.22	112	20	82.26	313	241
81.24	116	22	82.28	316	247
81.26	120	25	82.30	320	254
81.28	124	27	82.32	324	260
81.30	128	30	82.34	328	267
81.32	132	32	82.36	332	273
81.34	135	35	82.38	336	280
81.36	139	38	82.40	340	287
81.38	143	40	82.42	343	293
81.40	147	43	82.44	347	300
81.42	151	46	82.46	351	307
81.44	155	49	82.48	355	314
81.40	159	53	82.50	359	322
01.40	102	50 50	82.52	303	329
01.00	100	59	02.04	300	242
01.02	170	02	02.00	370	343
01.04 91.56	174	00	02.00 92.60	279	359
81 58	182	73	82.60	382	366
81.60	185	73	82.64	386	374
81.62	180	80	82.66	300	381
81.64	103	84	82.68	393	389
81.66	197	88	82 70	397	397
81.68	201	92	82 72	401	405
81.70	205	96	82.74	405	413
81.72	209	100	82.76	409	421
81.74	212	105	82.78	413	430
81.76	216	109	82.80	416	438
81.78	220	113	82.82	420	446
81.80	224	118	82.84	424	455
81.82	228	122	82.86	428	463
81.84	232	127	82.88	432	472
81.86	236	131	82.90	436	480
81.88	239	136	82.92	440	489
81.90	243	141	82.94	443	498
81.92	247	146	82.96	447	507
81.94	251	151	82.98	451	516
81.96	255	156	83.00	455	525
81.98	259	161			
82.00	263	166			
82.02	266	172			

Stage-Area-Storage for Pond BAS 1-C: BAS 1-C

Stage-Area-Storage for Pond BAS 10-A: EXIST BAS 10-A

Elevation	Surface	Wetted	Storage
(feet)	(sq-ft)	(sq-ft)	(cubic-feet)
54.00	220	220	0
54.20	359	359	57
54.40	531	532	146
54.60	737	739	272
54.80	977	979	443
55.00	1,250	1,254	665
55.20	1,420	1,426	932
<mark>55.40</mark>	1,601	1,609	1,234
55.60	1,793	1,803	1,573
55.80	1,996	2,009	1,952
56.00	2,210	2,225	2,372
56.20	2,313	2,333	2,824
56.40	2,418	2,444	3,297
56.60	2,526	2,557	3,792
56.80	2,636	2,673	4,308
57.00	2,748	2,791	4,846
57.20	2,863	2,912	5,407
57.40	2,980	3,035	5,992
57.60	3,099	3,160	6,599
57.80	3,221	3,288	7,231
58.00	3,345	3,419	7,888
58.20	3,471	3,552	8,569
58.40	3,600	3,687	9,276
58.60	3,731	3,825	10,010
58.80	3,864	3,966	10,769
59.00	4,000	4,108	11,555
59.20	4,140	4,256	12,369
59.40	4,282	4,405	13,212
59.60	4,427	4,558	14,082
59.80	4,575	4,712	14,983
60.00	4,724	4,870	15,912

Elevation	Surface	Wetted	Storage
(feet)	(sq-ft)	(sq-ft)	(cubic-feet)
77.00	2,050	2,050	0
77.10	2,112	2,114	208
77.20	2,174	2,179	422
77.30	2,238	2,244	643
77.40	2,302	2,311	870
77.50	2,368	2,379	1,103
77.60	2,434	2,447	1,344
77.70	2,501	2,517	1,590
77.80	2,569	2,587	1,844
77.90	2,638	2,658	2,104
78.00	2,708	2,731	2,372
78.10	2,779	2,804	2,646
78.20	2,851	2,878	2,927
78.30	2,924	2,953	3,216
78.40	2,997	3,029	3,512
78.50	3,072	3,106	3,816
78.60	3,147	3,184	4,127
78.70	3,224	3,263	4,445
78.80	3,301	3,343	4,772
78.90	3,379	3,424	5,106
79.00	3,458	3,506	5,447
79.10	3,538	3,589	5,797
79.20	3,619	3,672	6,155
79.30	3,701	3,757	6,521
79.40	3,784	3,843	6,895
79.50	3,868	3,929	7,278
79.60	3,952	4,017	7,669
79.70	4,038	4,105	8,069
79.80	4,124	4,194	8,477
79.90	4,212	4,285	8,893
80.00	4,300	4,376	9,319

Stage-Area-Storage for Pond BAS 10-B: BAS 10-B

Elevation Surface Wetted Storage (feet) (cubic-feet) (sq-ft) (sq-ft) 44.00 30,000 30,000 0 44.02 30,000 30,012 240 44.04 30,000 30,025 480 44.06 30,000 30,037 720 30,049 44.08 30,000 960 44.10 30,000 30,061 1,200 44.12 30,000 30,074 1,440 44.14 30,000 30,086 1,680 44.16 30,000 30,098 1,920 44.18 30,111 30,000 2,160 44.20 30,000 30,123 2,400 44.22 30,000 30,135 2,640 44.24 30,000 30,147 2,880 30,160 44.26 30,000 3,120 44.28 30,000 30,172 3,360 44.30 30,000 30,184 3,600 44.32 30,000 30,196 3,840 44.34 30,209 4,080 30,000 44.36 30,221 4,320 30,000 44.38 30,233 30,000 4,560 44.40 30,246 4,800 30,000 44.42 30,000 30,258 5,040 44.44 30,000 30,270 5,280 5,520 44.46 30,000 30,282 44.48 30,000 30,295 5,760 44.50 30,000 30,307 6,000 44.52 30,000 30,319 6,240 44.54 30,000 30,332 6,480 44.56 30,344 6,720 30,000 44.58 30,356 30,000 6,960 44.60 30,368 7,200 30,000 30,381 7,440 44.62 30,000 30,000 30,393 44.64 7,680 44.66 30,000 30,405 7,920 30,418 44.68 30,000 8,160 30,000 30,430 8,400 44.70 44.72 30,000 30,442 8,640 44.74 30,000 30,454 8,880 44.76 30,000 30,467 9,120 44.78 30,000 30,479 9,360 44.80 30,491 30,000 9,600 44.82 30,503 30,000 9,840 44.84 30,516 10,080 30,000 44.86 30.000 30.528 10.320 44.88 30,000 30,540 10,560 44.90 30,000 30,553 10,800 44.92 30,000 30,565 11,040 44.94 30,000 30.577 11,280 30,589 44.96 30,000 11,520 30,000 44.98 30.602 11.760 45.00 30,000 30,614 12,000

Stage-Area-Storage for Pond BAS 11-B: BAS 11-B

Elevation Surface Wetted Storage (feet) (sq-ft) (cubic-feet) (sq-ft) 93.00 9,500 9,500 0 93.10 9,679 9,682 959 93.20 9,860 9,867 1,936 93.30 10,042 10,052 2,931 93.40 10,226 10,240 3,944 93.50 10,412 10,429 4,976 10,600 93.60 10,620 6,027 93.70 10,789 10,813 7,096 11,007 93.80 10,980 8,185 11,203 93.90 11,172 9,292 11,366 94.00 11,401 10,419 94.10 11,562 11,600 11,566 94.20 11,759 11,801 12,732 12,004 94.30 11,959 13,917 94.40 12,159 12,209 15,123 94.50 12,362 12,415 16,349 94.60 12,566 12,623 17,596 94.70 12,833 12,772 18,863 94.80 13,044 12,979 20,150 13,257 21,459 94.90 13,189 13,472 22,788 95.00 13,399 95.10 13,612 13,689 24,139 13,826 13,907 25,510 95.20 95.30 14,042 14,127 26,904 95.40 14,260 14,348 28,319 95.50 14,479 14,571 29,756 95.60 14,700 14,796 31,215 95.70 14,922 15,023 32,696 95.80 15,147 15,252 34,199 95.90 15,482 15,372 35,725 15,714 15,600 37,274 96.00

Stage-Area-Storage for Pond BAS 12-A: BAS 12-A

Elevation Surface Wetted Storage (feet) (sq-ft) (sq-ft) (cubic-feet) 91.00 24,250 24,250 0 91.10 24,554 24,559 2,440 4,911 91.20 24,860 24,870 91.30 25,168 25,183 7,412 91.40 25,478 25,498 9,945 91.50 25,790 25,815 12,508 91.60 26,103 26,134 15,103 91.70 26,419 26,455 17,729 91.80 26,777 26,736 20,387 27,102 91.90 27,056 23,076 92.00 27,377 27,428 25,798 92.10 27,700 27,757 28,552 92.20 28,025 28,087 31,338 28,420 28,352 34,157 92.30 28,681 28,754 37,008 92.40 92.50 29,012 29,090 39,893 92.60 29,344 29,428 42,811 29,768 92.70 29,679 45,762 92.80 30,110 48,747 30,015 51,765 92.90 30,354 30,454 30,800 54,817 93.00 30,694 93.10 31,036 31,147 57,904 31,497 61,025 93.20 31,380 64,180 93.30 31,849 31,726 93.40 32,073 32,202 67,370 93.50 32,558 70,595 32,423 93.60 32,775 32,915 73,854 93.70 33,128 33,274 77,150 93.80 33,484 33,635 80,480 93.90 33,841 33,998 83,846 34,364 34,200 87,248 94.00

Stage-Area-Storage for Pond BAS 12-B: BAS 12-B
Elevation Surface Storage Elevation Surface Storage (feet) (cubic-feet) (feet) (cubic-feet) (sq-ft) (sq-ft) 82.00 800 82.52 0 987 465 82.01 804 8 82.53 991 475 82.02 807 16 82.54 994 484 82.03 811 24 82.55 998 494 82.04 814 32 82.56 1,002 504 82.05 818 40 82.57 1,005 514 82.06 822 49 82.58 1,009 525 82.07 825 57 82.59 1,012 535 82.08 829 65 82.60 1,016 545 832 1,020 82.09 73 82.61 555 836 82 1,023 82.10 82.62 565 840 90 82.63 1,027 82.11 575 1,030 82.12 843 99 82.64 586 1,034 82.13 847 82.65 596 107 1,038 82.14 850 116 82.66 606 82.15 854 124 82.67 1,041 617 82.16 858 133 82.68 1,045 627 82.17 1,048 861 141 82.69 638 82.18 150 82.70 1,052 865 648 82.19 158 82.71 1,056 868 659 82.20 872 167 82.72 1,059 669 1,063 82.21 876 176 82.73 680 1,066 82.22 879 185 82.74 691 82.23 883 82.75 1,070 701 194 82.24 886 202 82.76 1,074 712 82.25 890 82.77 1,077 723 211 82.26 894 220 82.78 1,081 734 82.27 897 229 82.79 1,084 744 82.28 1,088 755 901 238 82.80 82.29 904 247 82.81 1,092 766 82.30 256 82.82 1,095 908 777 82.31 912 265 82.83 1,099 788 1,102 82.32 915 274 82.84 799 82.33 919 284 82.85 1,106 810 82.34 922 293 82.86 1,110 821 1,113 82.35 926 302 82.87 832 82.36 930 311 82.88 1,117 843 82.37 933 321 82.89 1,120 855 82.38 937 330 82.90 1,124 866 339 82.39 940 82.91 1,128 877 82.40 944 349 82.92 1,131 888 948 358 1,135 82.41 82.93 900 951 368 82.94 1,138 911 82.42 82.43 955 377 82.95 1,142 922 82.44 958 387 82.96 1,146 934 82.45 962 396 82.97 1,149 945 82.46 966 406 82.98 1,153 957 82.47 969 416 82.99 1.156 968 82.48 973 425 83.00 1,160 980 82.49 976 435 82.50 980 445 82.51 455 984

Stage-Area-Storage for Pond BAS 15-A: BAS 15-A

Elevation	Surface	Storage	Elevation	Surface	Storage
(feet)	(sq-ft)	(cubic-feet)	(feet)	(sq-ft)	(cubic-feet)
99.00	3,000	0	99.52	3,305	1,639
99.01	3,006	30	99.53	3,311	1,672
99.02	3,011	60	99.54	3,317	1,705
99.03	3,017	90	99.55	3,323	1,738
99.04	3,023	120	99.56	3,329	1,771
99.05	3,029	151	99.57	3,335	1,805
99.06	3,034	181	99.58	3,341	1,838
99.07	3,040	211	99.59	3,347	1,872
99.08	3,046	242	99.60	3,353	1,905
99.09	3,052	272	99.61	3,359	1,939
99.10	3,058	303	99.62	3,366	1,972
99.11	3,063	333	99.63	3,372	2,006
99.12	3,069	364	99.64	3,378	2,040
99.13	3,075	395	99.65	3,384	2,073
99.14	3,081	426	99.66	3,390	2,107
99.15	3,087	456	99.67	3,396	2,141
99.16	3,092	487	99.68	3,402	2,175
99.17	3,098	518	99.69	3,408	2,209
99.18	3,104	549	99.70	3,414	2,243
99.19	3,110	580	99.71	3,420	2,278
99.20	3,116	612	99.72	3,426	2,312
99.21	3,121	643	<mark>99.73</mark>	3,433	2,346
99.22	3,127	674	99.74	3,439	2,380
99.23	3,133	705	99.75	3,445	2,415
99.24	3,139	737	99.76	3,451	2,449
99.25	3,145	768	99.77	3,457	2,484
99.26	3,151	800	99.78	3,463	2,519
99.27	3,157	831	99.79	3,469	2,553
99.28	3,162	863	99.80	3,476	2,588
99.29	3,168	894	99.81	3,482	2,623
99.30	3,174	926	99.82	3,488	2,658
99.31	3,180	958	99.83	3,494	2,692
99.32	3,186	990	99.84	3,500	2,727
99.33	3,192	1,022	99.85	3,507	2,762
99.34	3,198	1,053	99.86	3,513	2,798
99.35	3,204	1,085	99.87	3,519	2,833
99.36	3,210	1,118	99.88	3,525	2,868
99.37	3,216	1,150	99.89	3,531	2,903
99.38	3,222	1,182	99.90	3,538	2,939
99.39	3,227	1,214	99.91	3,544	2,974
99.40	3,233	1,246	99.92	3,550	3,009
99.41	3,239	1,279	99.93	3,556	3,045
99.42	3,245	1,311	99.94	3,562	3,081
99.43	3,251	1,344	99.95	3,569	3,116
99.44	3,257	1,376	99.96	3,575	3,152
99.45	3,263	1,409	99.97	3,581	3,188
99.46	3,269	1,441	99.98	3,587	3,224
99.47	3,275	1,474	99.99	3,594	3,259
99.48	3,281	1,507	100.00	3,600	3,295
99.49	3,287	1,540			
99.50	3,293	1,573			
99.51	3,299	1,606			

Stage-Area-Storage for Pond BAS 2-B: BAS 2-B

Elevation	Surface	Storage	Elevation	Surface	Storage
(feet)	(sq-ft)	(cubic-feet)	(feet)	(sq-ft)	(cubic-feet)
100.00	2,000	0	102.60	3,610	7,191
100.05	2,027	101	102.65	3,646	7,373
100.10	2,053	203	102.70	3,682	7,556
100.15	2,080	306	102.75	3,718	7,741
100.20	2,107	411	102.80	3,754	7,928
100.25	2,134	517	102.85	3,790	8,116
100.30	2,162	624	102.90	3,827	8,307
100.35	2,189	733	102.95	3,863	8,499
100.40	2,217	843	103.00	3,900	8,693
100.45	2,245	955			
100.50	2,273	1,068			
100.55	2,301	1,182			
100.60	2,330	1,298			
100.65	2,358	1,415			
100.70	2,387	1,533			
100.75	2,416	1,654			
100.80	2,445	1,775			
100.85	2,475	1,898			
100.90	2,504	2,023			
100.95	2,534	2,148			
101.00	2,563	2,276			
101.05	2,593	2,405			
101.10	2,624	2,535			
101.15	2,654	2,667			
101.20	2,685	2,801			
101.25	2,715	2,936			
101.30	2,746	3,072			
101.35	2.777	3,210			
101.40	2.808	3,350			
101.45	2.840	3,491			
101.50	2,871	3,634			
101.55	2,903	3.778			
101.60	2,935	3,924			
101.65	2,967	4.072			
101.70	2,999	4,221			
101.75	3.032	4.372			
101.80	3.065	4,524			
101.85	3.097	4,678			
101.90	3,130	4,834			
101.95	3,163	4,991			
102.00	3,197	5,150			
102.05	3.230	5.311			
102.10	3.264	5.473			
102.15	3.298	5.637			
102.20	3,332	5.803			
102.25	3,366	5.971			
102.30	3.400	6.140			
102.35	3,435	6.311			
102.40	3.470	6.483			
102.45	3.505	6.658			
102.50	3,540	6,834			
102.55	3,575	7,012			

Stage-Area-Storage for Pond BAS 2-C: BAS 2-C

Elevation Surface Wetted Storage (feet) (sq-ft) (sq-ft) (cubic-feet) 105.00 15,400 15,400 0 105.10 15,592 15,597 1,550 3,118 105.20 15,785 15,795 4,707 105.30 15,979 15,994 6,314 105.40 16,174 16,195 105.50 16,371 16,396 7,942 105.60 16,569 16,599 9,589 105.70 16,768 16,804 11,255 105.80 16,968 17,009 12,942 105.90 17,216 14,649 17,169 106.00 17,372 17,423 16,376 106.10 17,576 17,632 18,123 106.20 17,780 17,843 19,891 18,054 106.30 17,987 21,680 106.40 18,194 18,267 23,489 106.50 18,402 18,481 25,318 106.60 18,612 18,696 27,169 29,041 18,912 106.70 18,823 19,130 30,934 106.80 19,035 19,349 106.90 19,248 32,848 19,569 107.00 34,783 19,462 107.10 19,678 19,790 36,740 107.20 20,012 38,719 19,895 107.30 20,113 20,236 40,719 107.40 20,332 20,461 42,742 107.50 20,552 20,687 44,786 107.60 20,774 20,914 46,852 107.70 20,997 21,143 48,941 107.80 21,372 51,051 21,220 107.90 21,446 21,603 53,185 108.00 21,836 55,341 21,672 108.10 22,069 57,519 21,899 108.20 22,128 22,304 59,721 108.30 22,358 22,540 61,945 108.40 22,589 22,777 64,192 108.50 23,015 66,463 22,821 23,054 23,254 68,756 108.60 108.70 23,289 23,495 71,074 108.80 23,525 23,737 73,414 108.90 23,762 23,980 75,779 24,225 109.00 24,000 78,167

Stage-Area-Storage for Pond BAS 2-D: BAS 2-D

Elevation Surface Wetted Storage (feet) (sq-ft) (cubic-feet) (sq-ft) 100.00 15,500 15,500 0 100.02 15,529 15,531 310 100.04 15,559 621 15,561 100.06 15,588 15,592 933 100.08 15,617 15,623 1,245 100.10 15,647 15,653 1,557 100.12 15,676 15,684 1,871 100.14 15,706 15,715 2,184 100.16 15,746 15,735 2,499 100.18 15,777 15,765 2,814 100.20 15,794 15,808 3,129 100.22 15,824 15,838 3,446 100.24 15,854 15,869 3,762 15,900 4,080 100.26 15,883 4,398 100.28 15,913 15,931 100.30 15,943 15,962 4,716 100.32 15,972 15,993 5.035 16,025 5,355 100.34 16,002 100.36 16,056 5,675 16,032 100.38 16,087 16,062 5,996 16,118 100.40 16,092 6,318 16,149 100.42 16,122 6,640 100.44 16,151 16,180 6,963 100.46 16,181 16,212 7,286 100.48 16,211 16,243 7,610 100.50 16,241 16,274 7,935 100.52 16,271 16,306 8,260 100.54 16,301 16,337 8,585 100.56 16,368 8,912 16,331 100.58 16,400 9,239 16,362 16,431 100.60 16,392 9,566 9,894 100.62 16,422 16,463 100.64 16,452 16,494 10,223 100.66 16,482 16,526 10,552 100.68 16,512 16,557 10,882 100.70 16,543 16,589 11,213 100.72 16,573 16,621 11,544 100.74 16,603 16.652 11,876 100.76 16,634 16,684 12,208 100.78 16,664 16,716 12,541 16,747 12.875 100.80 16,694 16,779 13,209 100.82 16,725 100.84 16,755 16,811 13,544 100.86 16,786 16.843 13.879 100.88 16,816 16.875 14,215 100.90 16,847 16,907 14,552 16,939 100.92 16,877 14,889 100.94 16.908 16.971 15.227 17,003 100.96 16,939 15,565 100.98 16,969 17,035 15,905

17,000

101.00

17,067

16,244

Stage-Area-Storage for Pond BAS 2-E: BAS 2-E

Elevation Surface Wetted Storage (feet) (sq-ft) (sq-ft) (cubic-feet) 100.00 7,600 7,600 0 100.10 7,720 7,724 766 7,840 100.20 7,848 1,544 100.30 7,962 7,974 2,334 100.40 8,085 8,101 3,136 100.50 8,208 8,228 3,951 100.60 8,333 8,357 4,778 100.70 8,458 8,486 5,618 100.80 8,584 8,617 6,470 100.90 8,712 8,748 7,335 101.00 8,840 8,881 8,212 101.10 8,969 9,014 9,102 9,099 9,148 10,006 101.20 9,230 9,284 10,922 101.30 9,420 101.40 9,362 11,852 12,795 101.50 9,495 9,557 101.60 9,628 9,695 13,751 101.70 9,835 14,720 9,763 101.80 9,975 15,704 9,899 10,116 16,700 101.90 10,036 10,173 10,258 17,711 102.00 18,735 102.10 10,312 10,401 102.20 10,451 10,545 19,773 102.30 10,591 10,690 20,825 102.40 10,733 10,836 21,891 102.50 10,875 10,983 22,972 102.60 11,018 11,131 24,066 102.70 11,162 11,280 25,175 102.80 11,307 11,429 26,299 102.90 11,453 11,580 27,437 11,732 103.00 11,600 28,589

Stage-Area-Storage for Pond BAS 2-F: BAS 2-F

Elevation	Surface	Wetted	Storage
(feet)	(sq-ft)	(sq-ft)	(cubic-feet)
101.00	4,600	4,600	0
101.10	4,749	4,751	467
101.20	4,900	4,904	950
101.30	5,054	5,060	1,448
101.40	5,210	5,218	1,961
101.50	5,368	5,378	2,490
101.60	5,529	5,541	3,034
101.70	5,692	5,707	3,596
101.80	5,858	5,874	4,173
101.90	6,026	6,045	4,767
102.00	6,196	6,217	5,378
102.10	6,369	6,392	6,006
102.20	6,544	6,569	6,652
102.30	6,721	6,749	7,315
102.40	6,901	6,931	7,996
102.50	7,083	7,116	8,696
102.60	7,268	7,303	9,413
102.70	7,454	7,492	10,149
102.80	7,644	7,684	10,904
102.90	7,835	7,878	11,678
103.00	8,029	8,075	12,471
103.10	8,226	8,273	13,284
103.20	8,425	8,475	14,116
103.30	8,626	8,679	14,969
103.40	8,829	8,885	15,842
103.50	9,035	9,093	16,735
103.60	9,243	9,304	17,649
103.70	9,454	9,518	18,584
103.80	9,667	9,734	19,540
103.90	9,882	9,952	20,517
104.00	10,100	10,172	21,516

Stage-Area-Storage for Pond BAS 3-A: BAS 3-A

Elevation Surface Wetted Storage (feet) (cubic-feet) (sq-ft) (sq-ft) 97.00 9,500 9,500 0 97.10 9,678 9,681 959 9,864 1,936 97.20 9,857 97.30 10,038 10,049 2,930 97.40 10,221 10,235 3,943 97.50 10,406 10,423 4,975 97.60 10,592 10,612 6,025 97.70 10,780 10,804 7,093 97.80 10,997 10,969 8,181 11,191 97.90 11,160 9,287 11,388 98.00 11,353 10,413 98.10 11,547 11,586 11,558 98.20 11,743 11,785 12,722 11,941 11,987 13,906 98.30 98.40 12,140 12,190 15,110 98.50 12,341 12,394 16,334 98.60 12,543 12,601 17,578 12,748 12,809 98.70 18,843 12,953 13,019 98.80 20,128 13,230 21,434 98.90 13,161 13,370 13,443 22,760 99.00 99.10 13,581 13,658 24,108 13,874 25,476 99.20 13,793 99.30 14,008 14,093 26,867 99.40 14,223 14,312 28,278 99.50 14,441 14,534 29,711 99.60 14,660 14,757 31,166 99.70 14,881 14,982 32,643 99.80 15,209 34,142 15,103 99.90 15,437 35,664 15,327 100.00 15,553 15,667 37,208 38,774 100.10 15,780 15,898 16,009 16,132 100.20 40,364 100.30 16,240 16,367 41,976 16,472 16,603 100.40 43,612 16,706 16,842 100.50 45,271 100.60 16,941 17,082 46,953 100.70 17,178 17,323 48,659 100.80 17,417 17,567 50,389 100.90 17,658 17,812 52,143 18,059 17,900 53,920 101.00

Stage-Area-Storage for Pond BAS 3-B: BAS 3-B

Elevation Surface Wetted Storage (feet) (sq-ft) (sq-ft) (cubic-feet) 88.00 13,000 13,000 0 88.10 13,184 13,189 1,309 88.20 13,370 13,379 2,637 88.30 13,557 13,571 3,983 88.40 13,746 13,764 5,348 88.50 13,935 13,958 6,733 8,136 88.60 14,126 14,153 88.70 14,319 14,350 9,558 14,512 14,548 10,999 88.80 14,707 14,748 88.90 12,460 14,949 89.00 14,903 13,941 89.10 15,101 15,151 15,441 15,300 16,961 89.20 15,355 15,500 89.30 15,559 18,501 89.40 15,701 15,766 20,061 89.50 15,904 15,973 21,641 89.60 16,108 16,182 23,242 16,392 89.70 16,313 24,863 16,604 89.80 16,520 26,504 16,817 89.90 16,728 28,167 17,031 90.00 16,937 29,850 17,246 90.10 17,147 31,554 90.20 17,359 17,463 33,280 90.30 17,572 17,681 35,026 90.40 17,786 17,901 36,794 90.50 18,002 18,122 38,583 90.60 18,219 18,344 40,394 90.70 18,437 18,567 42,227 90.80 18,792 44,082 18,657 90.90 19,018 45,959 18,878 19,246 19,100 47,858 91.00

Stage-Area-Storage for Pond BAS 6-A: BAS 6-A

Elevation Surface Wetted Storage (feet) (sq-ft) (sq-ft) (cubic-feet) 91.00 10,200 10,200 0 91.10 10,462 10,464 1,033 2,092 91.20 10,727 10,732 91.30 10,996 11,003 3,179 91.40 11,267 11,277 4,292 91.50 11,543 11,555 5,432 91.60 11,821 11,836 6,600 91.70 12,103 12,121 7,796 91.80 12,409 12,388 9,021 91.90 12,700 12,676 10,274 92.00 12,968 12,994 11,556 92.10 13,263 13,292 12,868 92.20 13,562 13,593 14,209 13,898 92.30 13,863 15,580 92.40 14,168 14,206 16,982 92.50 14,477 14,517 18,414 92.60 14,788 14,831 19,877 92.70 15,149 15,103 21,372 92.80 15,422 15,471 22,898 15,795 92.90 24,456 15,743 16,123 16,068 26,047 93.00 93.10 16,396 16,455 27,670 16,728 16,789 29,326 93.20 93.30 17,063 17,127 31,016 93.40 17,401 17,469 32,739 93.50 17,743 17,814 34,496 93.60 18,087 18,162 36,287 93.70 18,436 18,513 38,114 93.80 18,787 18,868 39,975 93.90 19,142 19,226 41,871 19,588 19,500 94.00 43,803

Stage-Area-Storage for Pond BAS 7-A: BAS 7-A

Elevation	Surface	Wetted	Storage
(feet)	(sq-ft)	(sq-ft)	(cubic-feet)
61.00	1,700	1,700	0
61.10	1,752	1,754	173
61.20	1,805	1,809	350
61.30	1,858	1,865	534
61.40	1,913	1,921	722
61.50	1,968	1,978	916
61.60	2,024	2,036	1,116
61.70	2,080	2,095	1,321
61.80	2,138	2,155	1,532
61.90	2,196	2,216	1,748
62.00	2,255	2,277	1,971
62.10	2,315	2,339	2,199
62.20	2,375	2,402	2,434
62.30	2,437	2,466	2,675
62.40	2,499	2,530	2,921
62.50	2,562	2,596	3,174
62.60	2,626	2,662	3,434
62.70	2,690	2,729	3,700
62.80	2,755	2,797	3,972
62.90	2,822	2,866	4,251
63.00	2,888	2,935	4,536
63.10	2,956	3,005	4,828
63.20	3,024	3,077	5,127
63.30	3,094	3,148	5,433
63.40	3,164	3,221	5,746
<mark>63.50</mark>	3,234	3,295	6,066
63.60	3,306	3,369	6,393
63.70	3,378	3,444	6,727
63.80	3,451	3,520	7,069
63.90	3,525	3,597	7,418
64.00	3,600	3,675	7,774

Stage-Area-Storage for Pond BAS 9-A: BAS 9-A

Elevation Surface Wetted Storage (feet) (cubic-feet) (sq-ft) (sq-ft) 60.00 3,300 3,300 0 60.10 3,394 3,396 335 60.20 3,489 3,494 679 3,586 60.30 3,593 1,033 60.40 3,684 3,693 1,396 60.50 3,783 3,795 1,769 60.60 3,884 3,898 2,153 60.70 3,986 4,002 2,546 60.80 4,089 4,108 2,950 60.90 4,194 4,215 3,364 61.00 4,300 4,323 3,789 4,397 4,423 4,224 61.10 61.20 4,494 4,523 4,668 4,593 4,625 5,123 61.30 61.40 4,693 4,728 5,587 61.50 4,794 4,831 6,061 61.60 4,896 4,936 6,546 7,040 61.70 4,999 5,042 61.80 5,149 7,545 5,103 61.90 5,258 5,208 8,061 5,367 62.00 5,314 8,587 62.10 5,421 5,477 9,124 5,589 62.20 5,530 9,671 62.30 10,230 5,639 5,701 62.40 5,750 5,815 10,799 62.50 5,861 5,930 11,380 62.60 5,974 6,046 11,972 62.70 6,088 6,163 12,575 62.80 6,203 6,281 13,189 62.90 6,319 6,400 13,815 63.00 14,453 6,435 6,521 6,554 6.642 15,102 63.10 63.20 6,673 6,765 15,764 63.30 6,793 6,888 16,437 63.40 6,914 7,013 17,122 7,036 63.50 7,139 17,820 7,160 63.60 7,266 18,530 63.70 7,284 7,394 19,252 63.80 7,410 7,523 19,986 63.90 7,536 7,653 20,734 21,494 64.00 7,664 7,785 22,267 64.10 7,793 7,917 64.20 7,923 8,051 23,052 64.30 8.054 8,185 23.851 8,186 64.40 8,321 24,663 8,319 8,458 64.50 25,488 64.60 8,453 8,596 26,327 64.70 8,588 8,735 27.179 64.80 8,724 8.875 28,045 64.90 8,862 9,017 28,924

65.00

9,000

9,159

29,817

Stage-Area-Storage for Pond BAS 9-B: BAS 9-B

4.2 DRAWDOWN TIME

Below are the drawdown time calculations for the infiltration systems proposed on the site. The calculation uses estimated hydraulic conductivity values "K" in accordance with the Rawls Rates table. The formula below utilized the recommended formula per the MA Stormwater Handbook as follows:

Drawdown Time = Rv / [(K*Bottom Area)*(1FT/12IN)]

- Rv = Storage Volume (CF)
- K = Saturated Hydraulic Conductivity per Rawls Rate Table (IN/HR)
- Bottom Area = Area of Bottom of Proposed Recharge Structure (SF) •

Drawdown Calculations							
Infiltration BMP	Infiltration Rate (in/hr) (k)	Storage (Recharge) Volume (c.f.) (Rv)	Bottom Area	Draw Down Time (hours)			
BASIN 1-A	2.41	42,522	5,723	37.0			
BASIN 1-B	1.02	9,520	3,170	35.3			
BASIN 1-C	1.02	438	72	71.6			
BASIN 2-B	0.52	2,346	3,000	18.0			
BASIN 2-C	1.02	7,373	2,000	43.4			
BASIN 2-D	1.02	73,414	15,400	56.1			
BASIN 2-E	0.52	11,213	15,500	16.7			
BASIN 2-F	2.41	26,299	7,600	17.2			
BASIN 3-A	1.02	19,540	4,600	50.0			
BASIN 3-B	1.02	48,659	9,500	60.3			
BASIN 6-A	1.02	40,394	13,000	36.6			
BASIN 7-A	1.02	39,975	10,200	46.1			
BASIN 9-A	2.41	6,066	1,700	17.8			
BASIN 9-B	2.41	10,799	3,300	16.3			
BASIN 10-B	2.41	8,477	2,050	20.6			
BASIN 11-B	1.02	11,760	30,000	4.6			
BASIN 12-A	2.41	31,215	9,500	16.4			
BASIN 12-B	1.02	64,180	24,250	31.1			
BASIN 15-A	1.02	755	800	11.1			
k = saturated hydraul	lic conductivity (i	in/hr)					

Below is a summary table of the drawdown calculations:

Rv = storage volume (c.f.) Bottom Area (s.f.) Volume 3, Chapter 1 of the MA Stormwater Handbook

Conclusion:

The calculations above show that the infiltration BMPs draw down in less than 72 hours, as required by Standard 3.

4.3 WATER QUALITY

This majority of the site qualifies for the treatment of 0.5" of Rainfall under the MA Stormwater Regulations. However, BMPs 1-A and 1-C fall within an Outstanding Resource Water and requires a treatment of 1.0". The tables below provide the sizing of the proprietary water quality units, and the sediment forebays.

<u>v</u>	Vater Qu	ality Vol	ume (WQ	<u>.</u> V)	 V	Vater Qua	ality Volu	ume (W	QV)
Subcatchment	Non-Roof Impervious Area	0.5" or 1" Treatment Required	WQV Required	WQV Provided	Subcatchment	Non-Roof Impervious Area	0.5" or 1" Treatment Required	WQV Required	WQV Provided
P-1U	-	0.5	-	-	P-7A	87,620	0.5	3,651	39,975
P-1A	42,030	1.0	3,503	42,522	P-8U	-	0.5	-	-
P-1B	-	1.0	-	-	P-9U	12,000	0.5	500	*
P-1C	4,524	1.0	377	438	P-9A	15,000	0.5	625	6,066
P-2U	-	0.5	-	-	P-9B	33,850	0.5	1,410	10,799
P-2A	-	0.5	-	-	P-9C	104,000	0.5	4,333	Directed to 9-B
P-2B	19,218	0.5	801	2,346	P-10U	4,986	0.5	208	*
P-2C	-	0.5	-	-	P-10A	-	0.5	-	1,234
P-2D	110,984	0.5	4,624	73,414	P-10B	21,301	0.5	888	8,477
P-2E	37,861	0.5	1,578	11,213	P-11U	-	0.5	-	-
P-2F	51,034	0.5	2,126	26,299	P-11A	11,889	0.5	495	Directed to 11-B
P-3U	-	0.5	-	*	P-11B	-	0.5	-	11,760
P-3A	34,960	0.5	1,457	19,540	P-12U	-	0.5	-	-
P-3B	94,029	0.5	3,918	48,659	P-12A	65,132	0.5	2,714	31,215
P-4	-	0.5	-	-	P-12B	42,104	0.5	1,754	64,180
P-5U	-	0.5	-	-	P-13	-	0.5	-	-
P-6U	-	0.5	-	-	P-14	-	0.5	-	-
P-6A	51,153	0.5	2,131	40,394	P-15U	-	0.5	-	-
P-7U	32,738	0.5	1,364	*	P-15A	-	0.5	-	755
* Consists of ex	isting untrea	ated pavem	ent		* Consists of ex	isting untrea	ted paveme	ent	

4.4 RIP RAP SPLASH PAD

Rip rap splash pads are designed to dissipate energy, prevent scour at the stormwater outlet, and minimize the potential for downstream erosion. A LEVEL SPREADER / PLUNGE POOLE was sized for each of the outlets of the drainage system. The calculations below are in accordance with the methodology of the "2002 Connecticut Guidelines for Soil Erosion and Sediment Control" produced by The Connecticut Council on Soil and Water Conservation.

Preformed Scour Hole										
	Preformed Scour Hole Calculations									
	Q	Do	TW	Depression	С	3Sp	В	2Sp	d50	
	(cfs)	(ft.)	(ft.)	(ft.)	(ft.)	(ft.)	(ft.)	(ft.)	(ft.)	(in.)
FES 2-A	0.2	1.0	0.30	0.50	6.00	3.00	5.00	2.00	0.00	0.06
FES 9-B	8.1	1.5	0.30	0.75	9.00	4.50	7.50	3.00	0.39	4.72

Conclusion:

As identified above, the discharge points have been designed to accommodate and exceed the required minimum Preformed scour hole sizing.



4.5 TSS REMOVAL

The project has been designed to comply with the required 80% TSS (minimum) removal per the Massachusetts Stormwater Regulations. Various combinations of stormwater BMPs including deep sump hooded catch basins, oil grit separators, proprietary water quality units and subsurface infiltration or detention basins are utilized.

We note that the TSS train leading to Basin 1-A and 1-C need to meet the 44% TSS pretreatment requirement prior to discharging to an Infiltration BMP. Both of these systems have Deep Sump Hooded Catch Basins that discharge to a Sediment Forebay which results in 44% TSS removal, satisfying this requirement.

Please refer to the attached TSS calculation sheets that follow:

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table

2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings

3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row

4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row

	Location:	BASIN 1-A			
	А	В	С	D	E
leet	4	TSS Removal	Starting TSS	Amount	Remaining
	BMP'	Rate'	Load*	Removed (B*C)	Load (C-D)
	Deep Sump and Hooded Catch Basin	0.25	1.00	0.25	0.75
oval orksł	Infiltration Basin w/Sediment Forebay Pretreatment	0.80	0.75	0.60	0.15
Remo		0.00	0.00	0.00	0.00
TSS culati		0.00	0.04	0.00	0.00
Calc		0.00	0.40	0.00	0.00
		Total	rss Removal =	85%	Separate Form Needs to be Completed for Each Outlet or BMP Train
	Project:	PCC			-
	Prepared By:	JG		*Equals remaining load from	n previous BMP (E)
	Date:	8/4/2023		which enters the BMP	

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table

2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings

3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row

4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row

	Location:	BASIN 1-C			
	А	В	С	D	E
leet	4	TSS Removal	Starting TSS	Amount	Remaining
	BMP'	Rate'	Load*	Removed (B*C)	Load (C-D)
	Deep Sump and Hooded Catch Basin	0.25	1.00	0.25	0.75
oval orksł	Infiltration Basin w/Sediment Forebay Pretreatment	0.80	0.75	0.60	0.15
Remo		0.00	0.00	0.00	0.00
TSS culati		0.00	0.04	0.00	0.00
Calc		0.00	0.40	0.00	0.00
		Total	rss Removal =	85%	Separate Form Needs to be Completed for Each Outlet or BMP Train
	Project:	PCC			-
	Prepared By:	JG		*Equals remaining load from	n previous BMP (E)
	Date:	8/4/2023		which enters the BMP	

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table

2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings

3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row

4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row

5. Total TSS Removal = Sum All Values in Column D

	Location:	BASIN 2-B			
	А	В	С	D	E
leet	1	TSS Removal	Starting TSS	Amount	Remaining
	BMP'	Rate'	Load*	Removed (B*C)	Load (C-D)
	Deep Sump and Hooded Catch Basin	0.25	1.00	0.25	0.75
oval orksł	Infiltration Basin w/Sediment Forebay Pretreatment	0.80	0.75	0.60	0.15
Remo		0.00	0.00	0.00	0.00
TSS culati		0.00	0.04	0.00	0.00
Calc		0.00	0.40	0.00	0.00
		Total	rss Removal =	85%	Separate Form Needs to be Completed for Each Outlet or BMP Train
	Project:	PCC			-
	Prepared By:	JG		*Equals remaining load from	n previous BMP (E)
	Date:	8/4/2023		which enters the BMP	

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table

2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings

3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row

4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row

	Location:	BASIN 2-D			
	А	В	С	D	Е
Removal on Worksheet	4	TSS Removal	Starting TSS	Amount	Remaining
		Rate	Load*	Removed (B*C)	Load (C-D)
	Deep Sump and Hooded Catch Basin	0.25	1.00	0.25	0.75
	Infiltration Basin w/Sediment Forebay Pretreatment	0.80	0.75	0.60	0.15
	0.00		0.00	0.00	0.00
TSS culati		0.00	0.04	0.00	0.00
Calc		0.00	0.40	0.00	0.00
		Total 1	rss Removal =	85%	Separate Form Needs to be Completed for Each Outlet or BMP Train
	Project:	PCC			-
	Prepared By:	JG		*Equals remaining load from	n previous BMP (E)
	Date:	8/4/2023		which enters the BMP	

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table

2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings

3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row

4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row

	Location:	BASIN 2-E			
	А	В	С	D	Е
leet	4	TSS Removal	Starting TSS	Amount	Remaining
		Rate	Load*	Removed (B*C)	Load (C-D)
	Deep Sump and Hooded Catch Basin	0.25	1.00	0.25	0.75
oval orksł	Infiltration Basin w/Sediment Forebay Pretreatment	0.80	0.75	0.60	0.15
Rem on W	0.00		0.00	0.00	0.00
TSS culati		0.00	0.04	0.00	0.00
Calc		0.00	0.40	0.00	0.00
		Total 1	rss Removal =	85%	Separate Form Needs to be Completed for Each Outlet or BMP Train
	Project:	PCC			-
	Prepared By:	JG		*Equals remaining load from	n previous BMP (E)
	Date:	8/4/2023		which enters the BMP	

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table

2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings

3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row

4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row

	Location:	BASIN 2-F			
	А	В	С	D	E
	4	TSS Removal	Starting TSS	Amount	Remaining
	BMP'	Rate'	Load*	Removed (B*C)	Load (C-D)
TSS Removal Calculation Worksheet	Deep Sump and Hooded Catch Basin	0.25	1.00	0.25	0.75
	Infiltration Basin w/Sediment Forebay Pretreatment	0.80	0.75	0.60	0.15
		0.00	0.00	0.00	0.00
		0.00	0.04	0.00	0.00
		0.00	0.40	0.00	0.00
	Total		rss Removal =	85%	Separate Form Needs to be Completed for Each Outlet or BMP Train
	Project:	PCC			-
	Prepared By:	JG		*Equals remaining load from	n previous BMP (E)
	Date:	8/4/2023		which enters the BMP	

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table

2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings

3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row

4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row

	Location:	BASIN 3-A			
	А	В	С	D	E
	4	TSS Removal	Starting TSS	Amount	Remaining
	BMP'	Rate'	Load*	Removed (B*C)	Load (C-D)
TSS Removal Calculation Worksheet	Deep Sump and Hooded Catch Basin	0.25	1.00	0.25	0.75
	Infiltration Basin w/Sediment Forebay Pretreatment	0.80	0.75	0.60	0.15
		0.00	0.00	0.00	0.00
		0.00	0.04	0.00	0.00
		0.00	0.40	0.00	0.00
	Total 1		rss Removal =	85%	Separate Form Needs to be Completed for Each Outlet or BMP Train
	Project:	PCC			-
	Prepared By:	JG		*Equals remaining load from	n previous BMP (E)
	Date:	8/4/2023		which enters the BMP	

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table

2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings

3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row

4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row

	Location:	BASIN 3-B			
	А	В	С	D	E
	4	TSS Removal	Starting TSS	Amount	Remaining
		Rate	Load*	Removed (B*C)	Load (C-D)
TSS Removal Calculation Worksheet	Deep Sump and Hooded Catch Basin	0.25	1.00	0.25	0.75
	Infiltration Basin w/Sediment Forebay Pretreatment	0.80	0.75	0.60	0.15
		0.00	0.00	0.00	0.00
		0.00	0.04	0.00	0.00
		0.00	0.40	0.00	0.00
	Total 1		rss Removal =	85%	Separate Form Needs to be Completed for Each Outlet or BMP Train
	Project:	PCC			-
	Prepared By:	JG		*Equals remaining load from	n previous BMP (E)
	Date:	8/4/2023		which enters the BMP	

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table

2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings

3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row

4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row

	Location:	BASIN 6-A			
	А	В	С	D	Е
	4	TSS Removal	Starting TSS	Amount	Remaining
		Rate	Load*	Removed (B*C)	Load (C-D)
TSS Removal Calculation Worksheet	Deep Sump and Hooded Catch Basin	0.25	1.00	0.25	0.75
	Infiltration Basin w/Sediment Forebay Pretreatment	0.80	0.75	0.60	0.15
		0.00	0.00	0.00	0.00
		0.00	0.04	0.00	0.00
		0.00	0.40	0.00	0.00
	Total		rss Removal =	85%	Separate Form Needs to be Completed for Each Outlet or BMP Train
	Project:	PCC			-
	Prepared By:	JG		*Equals remaining load from	n previous BMP (E)
	Date:	8/4/2023		which enters the BMP	

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table

2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings

3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row

4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row

	Location:	BASIN 7-A			
	А	В	С	D	E
	4	TSS Removal	Starting TSS	Amount	Remaining
	BMP'	Rate'	Load*	Removed (B*C)	Load (C-D)
TSS Removal Calculation Worksheet	Deep Sump and Hooded Catch Basin	0.25	1.00	0.25	0.75
	Infiltration Basin w/Sediment Forebay Pretreatment	0.80	0.75	0.60	0.15
		0.00	0.00	0.00	0.00
		0.00	0.04	0.00	0.00
		0.00	0.40	0.00	0.00
	Total		rss Removal =	85%	Separate Form Needs to be Completed for Each Outlet or BMP Train
	Project:	PCC			-
	Prepared By:	JG		*Equals remaining load from	n previous BMP (E)
	Date:	8/4/2023		which enters the BMP	

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table

2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings

3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row

4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row

	Location:	BASIN 9-A			
	А	В	С	D	E
	4	TSS Removal	Starting TSS	Amount	Remaining
	BMP'	Rate'	Load*	Removed (B*C)	Load (C-D)
TSS Removal Calculation Worksheet	Deep Sump and Hooded Catch Basin	0.25	1.00	0.25	0.75
	Infiltration Basin w/Sediment Forebay Pretreatment	0.80	0.75	0.60	0.15
		0.00	0.00	0.00	0.00
		0.00	0.04	0.00	0.00
		0.00	0.40	0.00	0.00
	Total 1		rss Removal =	85%	Separate Form Needs to be Completed for Each Outlet or BMP Train
	Project:	PCC			-
	Prepared By:	JG		*Equals remaining load from	n previous BMP (E)
	Date:	8/4/2023		which enters the BMP	

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table

2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings

3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row

4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row

	Location:	BASIN 9-B			
	А	В	С	D	E
	4	TSS Removal	Starting TSS	Amount	Remaining
	BMP'	Rate'	Load*	Removed (B*C)	Load (C-D)
TSS Removal Calculation Worksheet	Deep Sump and Hooded Catch Basin	0.25	1.00	0.25	0.75
	Infiltration Basin w/Sediment Forebay Pretreatment	0.80	0.75	0.60	0.15
		0.00	0.00	0.00	0.00
		0.00	0.04	0.00	0.00
		0.00	0.40	0.00	0.00
	Total		rss Removal =	85%	Separate Form Needs to be Completed for Each Outlet or BMP Train
	Project:	PCC			-
	Prepared By:	JG		*Equals remaining load from	n previous BMP (E)
	Date:	8/4/2023		which enters the BMP	

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table

2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings

3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row

4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row

	Location: BASIN 10-B				
	А	В	С	D	Е
	4	TSS Removal	Starting TSS	Amount	Remaining
	BMP ¹	Rate	Load*	Removed (B*C)	Load (C-D)
TSS Removal Calculation Worksheet	Deep Sump and Hooded Catch Basin	0.25	1.00	0.25	0.75
	Infiltration Basin w/Sediment Forebay Pretreatment	0.80	0.75	0.60	0.15
		0.00	0.00	0.00	0.00
		0.00	0.04	0.00	0.00
		0.00	0.40	0.00	0.00
		Total 1	rss Removal =	85%	Separate Form Needs to be Completed for Each Outlet or BMP Train
	Project:	PCC			-
	Prepared By:	JG		*Equals remaining load from	n previous BMP (E)
	Date:	8/4/2023		which enters the BMP	

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table

2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings

3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row

4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row

5. Total TSS Removal = Sum All Values in Column D

	Location: BASIN 11-B				
	А	В	С	D	E
	1	TSS Removal	Starting TSS	Amount	Remaining
	BMP'	Rate'	Load*	Removed (B*C)	Load (C-D)
TSS Removal culation Worksheet	Deep Sump and Hooded Catch Basin	0.25	1.00	0.25	0.75
	CDS2014 WQU	0.65	0.75	0.49	0.26
	Subsurface Infiltration System	0.80	0.26	0.21	0.05
		0.00	0.04	0.00	0.05
Cal		0.00	0.40	0.00	0.05
	Total]		TSS Removal =	95%	Separate Form Needs to be Completed for Each Outlet or BMP Train
	Project: PCC				
	Prepared By:	JG		*Equals remaining load from	n previous BMP (E)
	Date:	8/4/2023		which enters the BMP	

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table

2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings

3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row

4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row

	Location:	BASIN 12-A			
	А	В	С	D	Е
		TSS Removal	Starting TSS	Amount	Remaining
		Rate	Load*	Removed (B*C)	Load (C-D)
TSS Removal Calculation Worksheet	Deep Sump and Hooded Catch Basin	0.25	1.00	0.25	0.75
	Infiltration Basin w/Sediment Forebay Pretreatment	0.80	0.75	0.60	0.15
		0.00	0.00	0.00	0.00
		0.00	0.04	0.00	0.00
		0.00	0.40	0.00	0.00
		Total	rss Removal =	85%	Separate Form Needs to be Completed for Each Outlet or BMP Train
	Project:	PCC			-
	Prepared By:	JG		*Equals remaining load from	previous BMP (E)
	Date:	8/4/2023		which enters the BMP	

1. Sheet is nonautomated. Print sheet and complete using hand calculations. Column A and B: See MassDEP Structural BMP Table

2. The calculations must be completed using the Column Headings specified in Chart and Not the Excel Column Headings

3. To complete Chart Column D, multiple Column B value within Row x Column C value within Row

4. To complete Chart Column E value, subtract Column D value within Row from Column C within Row

	Location: BASIN 12-B				
	А	В	С	D	E
		TSS Removal	Starting TSS	Amount	Remaining
		Rate ¹	Load*	Removed (B*C)	Load (C-D)
TSS Removal Calculation Worksheet	Deep Sump and Hooded Catch Basin	0.25	1.00	0.25	0.75
	Infiltration Basin w/Sediment Forebay Pretreatment	0.80	0.75	0.60	0.15
		0.00	0.00	0.00	0.00
		0.00	0.04	0.00	0.00
		0.00	0.40	0.00	0.00
	Total 1		rss Removal =	85%	Separate Form Needs to be Completed for Each Outlet or BMP Train
	Project:	PCC			-
	Prepared By:	JG		*Equals remaining load from	previous BMP (E)
	Date:	8/4/2023		which enters the BMP	

SECTION 5 – LONG TERM OPERATION & MAINTENANCE

LONG-TERM STORMWATER OPERATION & MAINTENANCE PLAN

WEATHERVANE AT PEMBROKE COUNTRY CLUB

8/8/2023

PROJECT OVERVIEW:

The proposed project consists of 162 single-family residential detached condominiums, a 8-unit multifamily building, 2 existing residential homes, a clubhouse/function/property and a maintenance facility. The project has been designed to comply with the Massachusetts Stormwater Management Regulations.

Appended to this document is a sample maintenance form and a chart describing the anticipated frequency of tasks.

OWNER AND RESPONSIBLE PARTY:

Current Land Owners:

Weathervane at Pembroke Country Club 190 Old Derby Street, Suite 311 Hingham, MA 02043

Proposed Site Contractor:

J.F. Price Co. 611 Pleasant Street Weymouth, MA 02189

Proposed Owner (Once project is approved)*:

Weathervane At Pembroke Country Club 190 Old Derby Street, Suite 311 Hingham, MA 02043

*Should the property be transferred to new ownership, the approved and permitted Operation and Maintenance plan shall be adhered to in perpetuity.

Weathervane at Pembroke Country Club has facilities maintenance personnel on-staff. For any service beyond their service ability, they subcontract to the appropriate vendors such as street sweeping, catch basin and water quality unit cleaning, etc.

Ultimately, a Condominium Association will be established that will take over long-term O&M Responsibilities for the residential portion of this project upon project completion and turnover from Weathervane at Pembroke Country Club to the Condominium Association.

CONSTRUCTION MANAGEMENT:

A construction manager with adequate knowledge and experience on projects of similar size and scope shall be employed to oversee all site work related construction. The contractor shall incorporate the appropriate techniques to control sediment and erosion pollution during construction in accordance with the *Massachusetts Erosion and Sediment Control Guidelines for Urban and Suburban Areas* and any conditions of approval from the local conservation commission.

Care should be taken when constructing stormwater control structures. Light earth-moving equipment shall be used to excavate in the vicinity of the infiltration areas. Use of heavy equipment causes excessive compaction of the soils beneath the basin resulting in reduced infiltration capacity. At no time shall temporary infiltration areas or settling basins be constructed in the vicinity of the proposed infiltration basins in order to prevent the soils from becoming clogged with sediment.

ON-GOING MAINTENANCE CONTRACT

The non-structural and structural approaches recommended below, as well as the required BMP maintenance, will be completed by Weathervane at Pembroke Country Club contractor, JF Price Co. Adequate personnel with appropriate training and access to proper equipment will be available to complete the tasks. Future responsible parties must be notified of their responsibility to operate and maintain the system in perpetuity.

MAINTENANCE LOG

The Responsible Party shall develop and maintain a log of inspections, maintenance, repairs, and disposal (including location of disposal) during the life of the project. Records will be maintained for at least 3 years and be made available to the Massachusetts Department of Environmental Protection or the Town of Pembroke in accordance with the provisions of the Massachusetts Stormwater Handbook. A sample of such a maintenance log is provided.

STORMWATER BMP MAINTENANCE

The proposed stormwater management system has been designed with appropriate BMPs aimed at reducing the pollutants discharge based upon the intended use of the property. All BMPs require regular maintenance to function as intended. Some management measures have simple maintenance requirements; others are more involved. The Responsible Party must have all BMPs regularly inspected to ensure they are operating properly on an as needed basis, including during runoff events exceeding 0.5 inches of rainfall.

A description of the non-structural and structural approaches to be incorporated is indicated below. The following best management practices are proposed to be incorporated into the stormwater management design to reduce source runoff and improve stormwater runoff discharge quality. The Responsible Party will regularly inspect all BMPs to ensure they are operating properly. If any deficiencies are identified during these inspections, action to resolve it will be initiated and documented on the maintenance log.

STRUCTURAL BMPs

Deep Sump Hooded Catch Basins

Catch basins shall be labeled with "Do Not Dump, Drains to local Waterway" markers and repair/replace markers as necessary. On a regular basis the inlet pipe and outlet pipe shall be checked for debris and removed as necessary to ensure unobstructed flow of water. Inspections shall occur at least twice annually, once in the fall and then in the spring after the snow melts. Inspections shall verify the tees are secure and free flowing. Depth of sediment below water line. Basins are to be cleaned whenever sediment and hydrocarbons are observed. Basins shall be cleaned using a vacuum pump. All liquid shall be pumped from the sump of each basin at least once per year. All sediments and hydrocarbons should be properly handled and disposed of in accordance with local, state, and federal guidelines and regulations.

Water Quality Units

The water quality units (Contech) have been designed with drain manholes at grade to aid in the removal of sediment and debris accumulating in the structure and inspection ports to monitor the accumulation of sediment. Preventative maintenance shall be performed in accordance with manufacturer's instructions, which is enclosed in this section. Cleaning will take place at the completion of construction and as deemed necessary based on the inspections. Refer to the enclosed "CDS Inspection and Maintenance Guide".

Subsurface Infiltration Stone System

Inspect and clean pretreatment BMP's every six months and after every major storm event (2-year return frequency). Check inlet/outlet pipes to determine if they are clogged. Inspect trench after the first several rainfall events, after all major storms, and on regularly scheduled dates every 6-months. Remove accumulated sediment trash, debris, leaves, and grass clippings.

Infiltration Basins

Remove debris and sediment on an as needed basis. Sediment shall be removed using light equipment so as not to compact the underlying soil. Sediment transported off site and disposed of in accordance with applicable local, state, and federal guidelines and regulations. Vegetated surfaces shall be repaired to ensure stable surfaces exist. Maintenance shall be done using a "gator" or golf cart sized vehicle to access the basins. Any debris or landscape growth extending within the identified maintenance access paths shall be trimmed/removed accordingly to maintain a clear and open pathway. At least twice a year, mow the vegetated berms, side slopes and basin bottom (if applicable).
Remove grass clippings and organic matter to prevent an impervious mat from forming. Inspection should occur twice annually, once in the fall and then in the spring after the snow melts.

Sediment Forebay

Frequently remove accumulated sediment. At a minimum, inspect forebay monthly and clean them out at least four times a year. Stabilize the floor and sidewalls of the forebay before making it operational. Grass height shall be no higher than 6-inches, and no lower than 3-inches. Check for signs of riling and gullying and repair as needed.

Stone Check Dams

Inspect at least once a month or after every rainfall event. Remove sediment accumulations. Check structure and abutments for erosion, piping, or rock displacement. Repair immediately.

Grass Swale

Inspect swales after the first few months to ensure there is no riling or gullying and that vegetation is adequate. Thereafter, inspect twice a year for slope integrity, vegetative health, soil erosion, ponding, and sediment accumulation. Remove sediment and debris manually at least once per year.

NON-STRUCTURAL BMPs

Pavement Sweeping

As street sweeping is a BMP under DEP guidelines, this non-structural BMP is an effective removal of Total Suspended Solids (TSS) in a comprehensive stormwater management program. Litter and debris are to be regularly picked up and removed from the pavement. Paved areas are to be swept a minimum of two times per year, at least once during April and again in September. This BMP is not needed to meet the 80% TSS removal requirement.

Detention Basin

Inspect Wet Basin at least once per year to ensure it is working as designed. Inspect the outlet structures for evidence of clogging or excessive outflow releases. At least twice a year, mow the upper stage, side slopes, embankment, and emergency spillway. At this time, also check the sediment forebay for accumulated material., sediment, trash and debris and remove it. Remove sediment from the basin at least once every 10 years.

Pervious Areas and Slopes

Wherever possible, runoff from paved areas and snowmelt shall be directed over vegetated areas to promote settlement of suspended solids before entering a wetland or resource area. Steep pervious slopes will be permanently vegetated to dissipate energy

and reduce potential erosion. No constructed vegetated slopes should exceed 2H:1V. Slopes exceeding 2:1 shall be stabilized with riprap or other similar measures to minimize the potential for future erosion. Irrigation system(s) shall be designed and maintained such that water is not applied to/or allowed to run off onto any impervious surfaces. Although overspray or runoff may be unavoidable during periods of high winds. In the event of accidental damage to system components or other unusual circumstances the system components shall be promptly corrected. Maximum of 1 inch of irrigation water will be applied to irrigated areas per week.

Drainage Control Structures, Flared End Sections, Trash Racks, Riprap Pads, Swales, and Level Spreader Splash Pads

Basin control structures, flared end sections, trash racks, riprap pads and level spreader splash pads shall be inspected and any debris or growth surrounding or within these structures shall be removed. Any/all debris or vegetation encroaching on the control structures or outfall components shall be removed or appropriately trimmed back to maintain the designed control elevation and flow patterns/cross section without impediment. Inspection should occur twice annually, once in the fall and then in the spring after the snow melts. Cleaning will take place at the completion of construction and as deemed necessary based on the inspections and manufacturer's requirements.

<u>Fertilizers</u>

Use of fertilizers shall follow the requirements of 330 CMR 31.0 including but not limited to:

- No fertilizers containing phosphorous shall be applied in the absence of a current soil test indicating that supplemental phosphorous is required.
- No fertilizer shall be applied intentionally or otherwise to impervious surfaces and if so applied, shall be immediately cleaned up.
- All record keeping requirements shall be followed.
- All time of application requirements including prohibition of applications when heavy rain is forecast within 24 hours shall be followed.
- Lawn clippings: No lawn clippings shall be disposed of onsite.

Pest and Insect Control

 As a first-line defense against pests/insects and weeds (the "First-Line Defense"), the party responsible for maintenance shall avoid the use of nonorganic pesticides, herbicides, fungicides and insecticides unless spot treatment is required for a specific control application. The owner shall not be required to undertake extraordinary measures or incur unreasonable cost to locate, purchase or apply non-organic products. If the First-Line Defense fails, as determined by the owner or party responsible for maintenance, in its sole but reasonable discretion, nonorganic approaches to pest/insect control may be used, the same to be applied by a professional licensed in the Commonwealth of Massachusetts, where required. But in no event shall such non-organic approaches be used within the 25ft buffer zone to the wetlands.

Waste Management

Solid waste and recycling will be contained in garbage cans maintained at each residence for routine and regular trash pickup. Waste deposition in the receptacles will be consistent with state and local regulations. Solid waste and recycling for the Clubhouse and Function will be contained in dumpsters maintained by the restaurant for routine and regular trash pickup. Waste deposition in the dumpsters will be consistent with state and local regulations.

Snow Removal

There shall be no plowing of stockpiling of snow within any resource areas. Typically, a combination of plowing and/or snow blowing is utilized on the individual driveways and a snow blowing "bobcat" is used to clear the sidewalks. No sodium chloride shall be used for ice removal. Alternatively, sand or formulations without chloride may be used. Calcium magnesium acetate (CMA) is preferred. Deicing compounds must be stored or sheltered on impervious pads (i.e. in residential garages and the maintenance facility). No de-icing compounds shall be stored or utilized in wetland resource areas nor the 25ft buffer. Snow that is plowed from the paved driveway surfaces shall be plowed to the edges of the pavement. When capacity of these areas is exceeded, accumulated snow shall be removed. Refer to the attached 11x17 O&M Map which identifies the location of BMPs and provides additional Snow Removal information.

Trash Pickup

Trash will be picked up at each individual home in the standard containers required by the local or private trash company.

Hazardous Waste and Spill Control Containment

In the event of a discharge or spill of oil or another hazardous material, outlets to stormwater management facilities immediately downstream of the spill shall be plugged so that hazardous materials do not enter the system. In the event of a discharge of oil or other hazardous material, responsible facility personnel shall notify the appropriate state agencies, the Town of Pembroke DPW and the EPA National Response Center 1-800-424-8802 shall be notified. All hazardous waste materials will be disposed of in a manner specified by local, state and/or federal regulations and by the manufacturer of such products.

Pet Waste Management

Pooper scooper laws for pets shall be followed. Residents shall not dump pet waste into storm drains, catch basins, stormwater basins, or any other drainage system components. Pet waste shall be scooped up and disposed of properly.

Other Miscellaneous Maintenance Items

Washing or pressure washing of impervious areas will not be part of routine maintenance procedures, though it may be used on occasion in small areas to treat specific problems. No coal tar-based driveway sealer products shall be used on the paved surfaces throughout the site. Asphalt binder sealers shall be used instead.

Stormwater BMP Inspection and Maintenance Log

Facility Name	
Address	
Begin Date	End Date

Date	BMP ID#	BMP Description	Inspected by:	Cause for Inspection	Exceptions Noted	Comments and Actions Taken

Instructions: Record all inspections and maintenance for all treatment BMPs on this form. Use additional log sheets and/or attach extended comments or documentation as necessary. Submit a copy of the completed log with the annual independent inspectors' report to the municipality and start a new log at that time.

BMP ID# — Always use ID# from the Operation and Maintenance Manual.

Inspected by — Note all inspections and maintenance on this form, including the required independent annual inspection.

Cause for inspection — Note if the inspection is routine, pre-rainy-season, post-storm, annual, or in response to a noted problem or complaint.

Exceptions noted — Note any condition that requires correction or indicates a need for maintenance. Comments and actions taken — Describe any maintenance done and need for follow-up.

Stormwater BMP Inspection Matrix

Conventional & LID Best Management Practices	Inspection & Maint. Frequency	Erosion& Scour	Obstructions	Trash & Debris	Sediment Build- Up Removal	Vegetation Cover	Remove/Reset Filter Fabric & Stone As Required	Vac Truck Sediment & Contaminants	Remove/Reset Riprap as Required
	Twice-								
Catab	Annually								
Calch Basins/Area	(Spring and Fall)								
Dasins/Area	Twice-								
Subsurface	Annually								
Infiltration	(Spring								
System	and Fall)								
	Twice-								
	Annually								
Grass	(Spring								
Swales	and Fall)								
	Twice-								
	Annually								
Outlet	(Spring								
Structure	and Fall)								
	Twice-								
	Annually								
Water Quality	(Spring								
Units	and Fall)								
Infiltration	Appually								
Pacin Sodimont	Annually (Spring								
Eorobays	(Spring and Fall)								
TOTEDays,	Twice-								
	Annually								
Emergency	(Spring								
Overflows	and Fall)								
	Twice-								
	Annually								
Street	(Spring								
Sweeping	and Fall)								
Outlets (FES,	Twice-								
Rip Rap Pad,	Annually								
Level	(Spring								
Spreaders)	and Fall)								









CDS® Inspection and Maintenance Guide





Maintenance

The CDS system should be inspected at regular intervals and maintained when necessary to ensure optimum performance. The rate at which the system collects pollutants will depend more heavily on site activities than the size of the unit. For example, unstable soils or heavy winter sanding will cause the grit chamber to fill more quickly but regular sweeping of paved surfaces will slow accumulation.

Inspection

Inspection is the key to effective maintenance and is easily performed. Pollutant transport and deposition may vary from year to year and regular inspections will help ensure that the system is cleaned out at the appropriate time. At a minimum, inspections should be performed twice per year (e.g. spring and fall) however more frequent inspections may be necessary in climates where winter sanding operations may lead to rapid accumulations, or in equipment washdown areas. Installations should also be inspected more frequently where excessive amounts of trash are expected.

The visual inspection should ascertain that the system components are in working order and that there are no blockages or obstructions in the inlet and separation screen. The inspection should also quantify the accumulation of hydrocarbons, trash, and sediment in the system. Measuring pollutant accumulation can be done with a calibrated dipstick, tape measure or other measuring instrument. If absorbent material is used for enhanced removal of hydrocarbons, the level of discoloration of the sorbent material should also be identified during inspection. It is useful and often required as part of an operating permit to keep a record of each inspection. A simple form for doing so is provided.

Access to the CDS unit is typically achieved through two manhole access covers. One opening allows for inspection and cleanout of the separation chamber (cylinder and screen) and isolated sump. The other allows for inspection and cleanout of sediment captured and retained outside the screen. For deep units, a single manhole access point would allows both sump cleanout and access outside the screen.

The CDS system should be cleaned when the level of sediment has reached 75% of capacity in the isolated sump or when an appreciable level of hydrocarbons and trash has accumulated. If absorbent material is used, it should be replaced when significant discoloration has occurred. Performance will not be impacted until 100% of the sump capacity is exceeded however it is recommended that the system be cleaned prior to that for easier removal of sediment. The level of sediment is easily determined by measuring from finished grade down to the top of the sediment pile. To avoid underestimating the level of sediment in the chamber, the measuring device must be lowered to the top of the sediment pile carefully. Particles at the top of the pile typically offer less resistance to the end of the rod than consolidated particles toward the bottom of the pile. Once this measurement is recorded, it should be compared to the as-built drawing for the unit to determine weather the height of the sediment pile off the bottom of the sump floor exceeds 75% of the total height of isolated sump.

Cleaning

Cleaning of a CDS systems should be done during dry weather conditions when no flow is entering the system. The use of a vacuum truck is generally the most effective and convenient method of removing pollutants from the system. Simply remove the manhole covers and insert the vacuum hose into the sump. The system should be completely drained down and the sump fully evacuated of sediment. The area outside the screen should also be cleaned out if pollutant build-up exists in this area.

In installations where the risk of petroleum spills is small, liquid contaminants may not accumulate as quickly as sediment. However, the system should be cleaned out immediately in the event of an oil or gasoline spill should be cleaned out immediately. Motor oil and other hydrocarbons that accumulate on a more routine basis should be removed when an appreciable layer has been captured. To remove these pollutants, it may be preferable to use absorbent pads since they are usually less expensive to dispose than the oil/water emulsion that may be created by vacuuming the oily layer. Trash and debris can be netted out to separate it from the other pollutants. The screen should be power washed to ensure it is free of trash and debris.

Manhole covers should be securely seated following cleaning activities to prevent leakage of runoff into the system from above and also to ensure that proper safety precautions have been followed. Confined space entry procedures need to be followed if physical access is required. Disposal of all material removed from the CDS system should be done in accordance with local regulations. In many jurisdictions, disposal of the sediments may be handled in the same manner as the disposal of sediments removed from catch basins or deep sump manholes.



CDS Model	Diar	neter	Distance from to Top of S	Water Su ediment F	rface Sedi Pile Storage	ment Capacity
	ft	m	ft	m	yd3	m3
CDS2015-4	4	1.2	3.0	0.9	0.9	0.7
CDS2015	5	1.5	3.0	0.9	1.3	1.0
CDS2020	5	1.5	3.5	1.1	1.3	1.0
CDS2025	5	1.5	4.0	1.2	1.3	1.0
CDS3020	6	1.8	4.0	1.2	2.1	1.6
CDS3030	6	1.8	4.6	1.4	2.1	1.6
CDS3035	6	1.8	5.0	1.5	2.1	1.6
CDS4030	8	2.4	4.6	1.4	5.6	4.3
CDS4040	8	2.4	5.7	1.7	5.6	4.3
CDS4045	8	2.4	6.2	1.9	5.6	4.3
CDS5640	10	3.0	6.3	1.9	8.7	6.7
CDS5653	10	3.0	7.7	2.3	8.7	6.7
CDS5668	10	3.0	9.3	2.8	8.7	6.7
CDS5678	10	3.0	10.3	3.1	8.7	6.7

Table 1: CDS Maintenance Indicators and Sediment Storage Capacities



Support

- Drawings and specifications are available at www.contechstormwater.com.
- Site-specific design support is available from our engineers.

©2014 Contech Engineered Solutions LLC

Contech Engineered Solutions LLC provides site solutions for the civil engineering industry. Contech's portfolio includes bridges, drainage, sanitary sewer, stormwater, earth stabilization and wastewater treament products. For information, visit www.ContechES.com or call 800.338.1122

NOTHING IN THIS CATALOG SHOULD BE CONSTRUED AS AN EXPRESSED WARRANTY OR AN IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. SEE THE CONTECH STANDARD CONDITION OF SALES (VIEWABLE AT WWW.CONTECHES.COM/COS) FOR MORE INFORMATION.

The product(s) described may be protected by one or more of the following US patents: 5,322,629; 5,624,576; 5,707,527; 5,759,415; 5,788,848; 5,985,157; 6,027,639; 6,350,374; 6,406,218; 6,641,720; 6,511,595; 6,649,048; 6,991,114; 6,998,038; 7,186,058; 7,296,692; 7,297,266; 7,517,450 related foreign patents or other patents pending.



CDS Inspection & Maintenance Log

			ocation:				
Water depth to sediment ¹	Floatable Layer Thickness ²	Describe Maintenance Performed	Maintenance Personnel	Comments			
	Water depth to sediment ¹	Water Floatable Layer Thickness ²	Water depth to sediment ¹ Floatable Layer Thickness ² Describe Maintenance Performed Image: Sediment ¹	Water depth to sediment! Floatable Layer Thickness2 Describe Maintenance Performed Maintenance Personnel Image: Sediment! Image: Sediment! Image: Sediment! Image: Sediment! Image: Sediment! Image: Sediment! Image: Sediment! Image: Sediment! Image: Sediment! Image:			

1. The water depth to sediment is determined by taking two measurements with a stadia rod: one measurement from the manhole opening to the top of the sediment pile and the other from the manhole opening to the water surface. If the difference between these measurements is less than the values listed in table 1 the system should be cleaned out. Note: to avoid underestimating the volume of sediment in the chamber, the measuring device must be carefully lowered to the top of the sediment pile.

2. For optimum performance, the system should be cleaned out when the floating hydrocarbon layer accumulates to an appreciable thickness. In the event of an oil spill, the system should be cleaned immediately.

SECTION 6 – SOILS TESTING DATA

26 Union St 508-746-606	neers-Land Dia Rd., Han D0 L, Plymouth 50	I Surveyors over, MA. 02339 , MA. 02360			FORMS 11 SOIL EVALUATOR
ON-SITE DEEP HOLE SITE ADDRI OWNER:	REVIEW	DATE: //	6/23 noroke (TIME: 11:40	Weather: 35° Rainy 5-Hazelwood BNO.:
LOCATION	(Identify on F	Plan):	GRO	OUND ELEVATION	AT SURFACE OF HOLE:
LAND USE:	_	SUR	FACE STONES:	Yes: No:	SLOPE (%):
VEGETATIC	DN:			LANDFORM:	
DISTANCES OPEN WAT DRINKING V	S FROM: ER BODY: WATER WEI	t PROPERT	Y LINE:1 ER:	ft POSSIBLE WE	T AREA:ft DRAINAGEWAY:ft
Depth (inches)	Soil Hor./ Layer	Soil Texture (USDA)	Soil Color (Munseil)	Redoximorphic Features	Other (Structure, Consistency,% Gravels, Stones, Boulders
0-7	Ap	SudyLonn	104R3/2		M-F (Massin, Fr. able)
7.24	Bw	Sandy Loam	104R 5/4		M-P
24-73	C	Loany Sond	2.546/3	2	M-F= 3% Gravel
73-124	Cz	Sand	254613	1	4.5.6. (Loose Single Grain) 5% Gravel
PARENT M Disturb GROUNDW Standing	ATERIAL: Ded Soil:	Fill Mat'l:	Impervious Layer No:	Unsuitable Material (s): W If Yes: What is the Saturating t	Present? Yes: No: If Yes: eathered/Fractured Rock: Bedrock: Bedrock: he Face: Mottling:
PARENT M Disturt GROUNDW Standing Estimated I	ATERIAL: Ded Soil: ATER OBSE in Hole: Depth to Sea	Fill Mat'l:	Impervious Layer No: m Face: er ;	Unsuitable Material (s): W If Yes: What is the Saturating t	Present? Yes: No: If Yes: /eathered/Fractured Rock: Bedrock: Bedrock: he Face: Mottling:
PARENT M Disturb GROUNDW Standing Estimated I PERCOL	ATERIAL: Ded Soil: ATER OBSE in Hole: 17 Depth to See ATION TE Hole #	Fill Mat'l:	Impervious Layer No: m Face: er ;	Unsuitable Material (s): W If Yes: What is the Saturating t	Present? Yes: No: If Yes: leathered/Fractured Rock: Bedrock: Bedrock: Bedrock: Bedrock: Bedrock: Bedrock: Bedrock: If Yes: depth of Groundwater: the Face: Mottling:
PARENT M/ Disturb GROUNDW Standing Estimated I PERCOL Percolation Test Date:	ATERIAL: bed Soil: ATER OBSE in Hole: Depth to Sea ATION TE Hole #:	Fill Mat'l:	Impervious Layer No: m Face: er :	Unsuitable Material (s): W If Yes: What is the Saturating t Percolation Hol Test Date:	Present? Yes: No: If Yes; /eathered/Fractured Rock: Bedrock: Bedrock: he Face: Mottling:
PARENT M/ Disturb GROUNDW Standing Estimated I PERCOL/ Percolation Test Date: Depth of Per	ATERIAL: bed Soil: ATER OBSE in Hole: 12 Depth to See ATION TE Hole #: rc:	Fill Mat'l: ERVED: Yes: 20 ^{1/} Weeping fro asonal High Ground Wat ST	Impervious Layer No: m Face: er ;	Unsuitable Material (s): W If Yes: What is the Saturating t Percolation Hol Test Date: Depth of Perc:	Present? Yes: No: If Yes: /eathered/Fractured Rock: Bedrock: Bedrock: Bedrock: Bedrock: Bedrock: Bedrock: Bedrock: If Yes: /e depth of Groundwater: /he Face: Mottling:
PARENT M Disturt GROUNDW Standing Estimated I PERCOL Percolation Test Date: Depth of Per Start of Pres	ATERIAL: Ded Soil: ATER OBSE in Hole: 17 Depth to Sea ATION TE Hole #: rc: soak:	Fill Mat'l: ERVED: Yes: 20 ^{1/} Weeping fro asonal High Ground Wat ST	Impervious Layer No: The second secon	Unsuitable Material (s): W If Yes: What is the Saturating t Percolation Hol Test Date: Depth of Perc: Start of Presoal	Present? Yes: No: If Yes: // No: If Yes: // Bedrock: Bedrock: Bedrock: Bedrock: Bedrock: Bedrock: Bedrock: No: If Yes: // Bedrock: Bedrock: If Yes: // Bedrock: Bedrock: Bedrock: If Yes: // Bedrock: Bedrock: If Yes: // Bedrock: Bedrock: If Yes: // Bedrock: Bedrock: If Yes: // Bedrock: If Yes: /
PARENT M/ Disturb GROUNDW Standing Estimated I PERCOL/ Percolation i Test Date: Depth of Peis Start of Press End of Press	ATERIAL: Ded Soil: ATER OBSE in Hole: <u>}</u> Depth to See ATION TE Hole #: rc: soak: pak:	Fill Mat'l:	Impervious Layer No: m Face: er :	Unsuitable Material (s): What is the Saturating t Percolation Hol Test Date: Depth of Perc: Start of Presoal End of Presoak	Present? Yes: No: If Yes: leathered/Fractured Rock: Bedrock: Bedrock: Bedrock: Bedrock: Bedrock: Bedrock: Bedrock: If Yes: leathered/Fractured Rock: Bedrock: Bedrock: If Yes: leathered/Fractured Rock: If Yes: If Yes: leathered/Fractured Rock: If Yes: If Yes: leathered/Fractured Rock: If Yes:
PARENT M/ Disturb GROUNDW Standing Estimated I PERCOL Percolation i Test Date: Depth of Person Start of Preson End of Preson End of Preson Time @ 12":	ATERIAL: bed Soil: TATER OBSE in Hole: Depth to Sea ATION TE Hole #: rc: soak: coak: coak: coak:	Fill Mat'l: ERVED: Yes: 20 ¹⁴ Weeping fro asonal High Ground Wat ST	Impervious Layer No:	Unsuitable Material (s): What is the Saturating t Percolation Hol Test Date: Depth of Perc: Start of Presoak End of Presoak Time @ 12":	Present? Yes: No: If Yes: leathered/Fractured Rock: Bedrock: Bedrock: o depth of Groundwater: he Face: Mottling: he Face: Mottling:
PARENT M. Disturb GROUNDW Standing Estimated I PERCOL. Percolation Test Date: Depth of Pes Start of Press End of Press Time @ 12": Time @ 9":	ATERIAL: bed Soil: ATER OBSE in Hole: Depth to Sea ATION TE Hole #: rc: soak: coak: :	Fill Mat'l:	Impervious Layer No:	Unsuitable Material (s): What is the Saturating t Percolation Hol Test Date: Depth of Perc: Start of Presoal End of Presoal End of Presoal Time @ 12": Time @ 9":	Present? Yes: No: If Yes: leathered/Fractured Rock: Bedrock: Bedrock: Bedrock: Bedrock: Bedrock: Bedrock: Bedrock: If Yes: leathered/Fractured Rock: Bedrock: Bedrock: If Yes: leathered/Fractured Rock: Bedrock: If Yes: depth of Groundwater: If Yes: depth of
PARENT M. Disturb GROUNDW Standing Estimated I PERCOL Percolation Test Date: Depth of Pers Start of Press End of Press Time @ 12": Time @ 9": Time Elapse	ATERIAL: bed Soil: in Hole: 12 Depth to Sea ATION TE Hole #: rc: soak: oak: : :	Fill Mat'l: ERVED: Yes: 20 ^{1/} Weeping fro assonal High Ground Wat ST	Impervious Layer No:	Unsuitable Material (s): What is the Saturating t Percolation Hol Test Date: Depth of Perc: Start of Presoak End of Presoak Time @ 12": Time @ 9": Time Elapse: (1)	Present? Yes: No: If Yes: reathered/Fractured Rock: Bedrock: Bedrock: reathered/Fractured Rock: Mottling:
PARENT M. Disturb GROUNDW Standing Estimated I PERCOL. Percolation Test Date: Depth of Person Start of Preso End of Preso End of Preso Time @ 12". Time @ 9": Time Elapse Time AT 6":	ATERIAL: bed Soil: ATER OBSE in Hole: 12 Depth to See ATION TE Hole #: rc: soak: oak: : : : : : : : : : : : : :	Fill Mat'l:	Impervious Layer No:	Unsuitable Material (s): W If Yes: What is the Saturating t Percolation Hol Test Date: Depth of Perc: Start of Presoak End of Presoak Time @ 12": Time @ 9": Time Elapse: (1) Time AT 6":	Present? Yes: No: If Yes: reathered/Fractured Rock: Bedrock: Bedrock: reathered/Fractured Rock: Mottling:
PARENT M. Disturb GROUNDW Standing Estimated I PERCOL. Percolation i Test Date: Depth of Person Start of Preso End of Preso Time @ 12". Time @ 9": Time Elapse Time AT 6": Time Elapse Rate: (min/	ATERIAL: Ded Soil: ATER OBSE in Hole: <u>}</u> Depth to See ATION TE Hole #: rc: soak: c: 2:(12"-9") 2:(9"-6"): b:	Fill Mat'l: ERVED: Yes: 20 ^{1/} Weeping fro asonal High Ground Wat ST	Impervious Layer No: m Face: er ;	Unsuitable Material (s): What is the Saturating t Percolation Hol Test Date: Depth of Perc: Start of Presoal End of Presoal End of Presoal Time @ 12": Time @ 9": Time Elapse: (1) Time Elapse: (9) Rate: (min)	Present? Yes: No: If Yes: teathered/Fractured Rock: Bedrock: Bedrock: a depth of Groundwater: Mottling:
PARENT M. Disturb GROUNDW Standing Estimated I PERCOL. Percolation i Test Date: Depth of Pes Start of Press End of Press Time @ 12": Time @ 9": Time Elapse Time AT 6": Time Elapse Rate: (min/in Test Passed Discon/ Add	ATERIAL: bed Soil: TATER OBSE in Hole: Depth to Sea ATION TE Hole #: rc: soak: cak: cak: cak: (12"-9") (9"-6"): h): / Failed/ . Test Reg'd:	Fill Mat'l:	Impervious Layer No: m Face: er :	Unsuitable Material (s): What is the Saturating t Percolation Hol Test Date: Depth of Perc: Start of Presoak End of Presoak Time @ 12": Time @ 9": Time Elapse: (1) Time Elapse: (2) Rate: (min/in.): Test Passed/ Fa Add. Testing Re	Present? Yes: No: If Yes: leathered/Fractured Rock: Bedrock: Bedrock: o depth of Groundwater: he Face: Mottling: he Face: Mottling:

An indication that the "site passed" indicates only that the basic criteria for a soil evaluation and percolation test under Title 5 have been met in the area tested. Further soil evaluations and design work are necessary to determine whether a septic system for a particular use, meeting the requirements of Title5 and applicable local bylaws, will in fact be feasible on this site.

An indication that the "site failed" indicates only that the area tested did not meet the minimum criteria (at the time of testing) for a successful soil evaluation and/or percolation test in the area tested. Additional testing at another depth or other areas may result in passing results.

8-746-6060	n, MA. 02360				
N-SITE REVIEW			TIME: 11-1		
EP HOLE #:	DATE:		1IME;		···
LE ADDRESS OF MAI	-/LOT #:				
VNER:	Diama	CB			
CATION (Identity on	man).	GR	OUND LEEVATION .		
ND USE:	SURI	FACE STONES:	Yes: No:		SLOPE (%):
GETATION			LANDFORM:		
STANCES FROM:					
PEN WATER BODY:	ft PROPERT	Y LINE:	ft POSSIBLE WE	T AREA:	ft DRAINAGEWAY:
RINKING WATER WE	ELL: ft OTH	ER:	••••••		
EP OBSERVATION	HOLE LOG				
Depth Soil Hor./	Call Tarthurs (110D4)	Soil Color	Redoximorphic	Other (Struct	ure, Consistency,% Gravels, Ston
inches) Layer	Son rexture (USDA)	(Munseli)	Features		Boulders
A	C 11	100026		ME	
1-2 11	Davey Loan	1011 72		11-1-1	Ex Cl
- 20 C	≤ 1	2546/2	42	LSL	SY Stone
	June	651915		0.016.	15 2 Grant
	-				
1	1				Voci Noi If
				Dreeset2	
ARENT MATERIAL:			Unsuitable Material	Present?	
ARENT MATERIAL: Disturbed Soil:	Fill Mat'l:	Impervious Laye	Unsuitable Material er(s): W	Present? /eathered/Fractu	red Rock: Bedrock:
ARENT MATERIAL: Disturbed Soil:	Fill Mat'l:	Impervious Laye	Insuitable Material (s): W If Yes: What is the	Present? /eathered/Fractu e depth of Groun	red Rock: Bedrock:
ARENT MATERIAL: Disturbed Soil:	Fill Mat'l:	Impervious Laye	Unsuitable Material r(s): W If Yes: What is the Saturating I	Present? /eathered/Fractu e depth of Groun the Face:	red Rock: Bedrock: dwater:
ARENT MATERIAL: Disturbed Soil: ROUNDWATER OBS Standing in Hole:	Fill Mat'l:	Impervious Laye No: m Face: er :	Unsuitable Material r(s): What is the If Yes: What is the Saturating t	Present? /eathered/Fractu e depth of Groun .he Face:	red Rock: Bedrock: dwater:
ARENT MATERIAL: Disturbed Soil: ROUNDWATER OBS Standing in Hole: stimated Depth to Se ERCOLATION T	Fill Mat'l: ERVED: Yes: B Weeping fro pasonal High Ground Wat EST	Impervious Laye No: m Face: er :	Unsuitable Material r(s): What is the Saturating t	Present? /eathered/Fractu e depth of Groun (he Face:	red Rock: Bedrock: dwater: <u>42</u>
ARENT MATERIAL: Disturbed Soil: ROUNDWATER OBS Standing in Hole: stimated Depth to Se ERCOLATION T	Fill Mat'l: ERVED: Yes: B Weeping fro pasonal High Ground Wat EST	Impervious Laye No: m Face: er :	Unsuitable Material (s): What is the Saturating the Percolation Hol	Present? /eathered/Fractu e depth of Groun the Face:	red Rock: Bedrock: dwater: 42
ARENT MATERIAL: Disturbed Soil: COUNDWATER OBS Standing in Hole: Stimated Depth to Se ERCOLATION T ercolation Hole #:	Fill Mat'l: ERVED: Yes: 68 Weeping fro basonal High Ground Wat EST	Impervious Laye	Unsuitable Material r(s): What is the Saturating the Percolation Hol Test Date:	Present? /eathered/Fractu e depth of Groun ine Face: e #:	red Rock: Bedrock: dwater: <u>42</u>
ARENT MATERIAL: Disturbed Soil: COUNDWATER OBS Standing in Hole: Stimated Depth to Se ERCOLATION T ercolation Hole #: st Date: apth of Perc:	Fill Mat'l: ERVED: Yes: B Weeping fro B B Comparison S S S S S S S S S S S S S	Impervious Laye	Unsuitable Material r(s): What is the Saturating the Percolation Hol Test Date: Deoth of Perc	Present? leathered/Fractu e depth of Groun the Face: e #:	red Rock: Bedrock: dwater: <u>42</u>
ARENT MATERIAL: Disturbed Soil: ROUNDWATER OBS Standing in Hole: stimated Depth to Se ERCOLATION T ercolation Hole #: st Date: spth of Perc: art of Persoak:	Fill Mat [*] I: ERVED: Yes: 68 Weeping fro Pasonal High Ground Wat EST	Impervious Laye	Unsuitable Material r(s): What is the Saturating the Percolation Hol Test Date: Depth of Perc: Start of Presoa	Present? leathered/Fractu e depth of Groun the Face: e #:	dwater: Mottling: 4 2 '
ARENT MATERIAL: Disturbed Soil: COUNDWATER OBS Standing in Hole: Standing in Hole: Stimated Depth to Se ERCOLATION T ercolation Hole #: st Date: spth of Perc: art of Presoak: of Oresoak:	Fill Mat'l: ERVED: Yes:	Impervious Laye	Unsuitable Material r(s): What is the Saturating f Percolation Hol Test Date: Depth of Perco Start of Presoak	Present? /eathered/Fractu e depth of Groun the Face: e #: k:	dwater: Mottling: 4 2 '
ARENT MATERIAL: Disturbed Soil: COUNDWATER OBS Standing in Hole: Stimated Depth to Se ERCOLATION T ercolation Hole #: est Date: epth of Perc: art of Presoak: id of Presoak: me @ 12"	Fill Mat'l:	Impervious Laye	Unsuitable Material r(s): What is the Saturating f Percolation Hol Test Date: Depth of Perc: Start of Presoal End of Presoal Time @ 12"	Present? /eathered/Fractu e depth of Groun /he Face: e #: k:	res. no. no. red Rock: Bedrock:
ARENT MATERIAL: Disturbed Soil: Coundwater Obs Standing in Hole: Standing in Hole: Stimated Depth to Se ERCOLATION T ercolation Hole #: est Date: epth of Perc: art of Presoak: ind of Presoak: me @ 12": me @ 9":	Fill Mat'l:	Impervious Laye	Unsuitable Material r(s): What is the Saturating f Percolation Hol Test Date: Depth of Perc: Start of Presoal End of Presoal Time @ 12": Time @ 9"	Present? /eathered/Fractu e depth of Groun fhe Face: e #: k:	res. no. no. red Rock: Bedrock:
ARENT MATERIAL: Disturbed Soil: ROUNDWATER OBS Standing in Hole: stimated Depth to Se ERCOLATION T ercolation Hole #: est Date: epth of Perc: art of Presoak: ind of P	Fill Mat'l: ERVED: Yes: B Weeping fro Passonal High Ground Wat EST	Impervious Laye	Unsuitable Material r(s): W If Yes: What is the Saturating f Percolation Hol Test Date: Depth of Perc: Start of Presoa End of Presoa Time @ 12": Time @ 9": Time Elance:/1	Present? /eathered/Fractu e depth of Groun fhe Face: e #: k: :: 2"-9")	res. no. no. red Rock: Bedrock:
ARENT MATERIAL: Disturbed Soil: COUNDWATER OBSE Standing in Hole: stimated Depth to Se ERCOLATION T ercolation Hole #: ast Date: apth of Perc: art of Presoak: me @ 12": me @ 12": me @ 9": me Elapse:(12"-9") me AT 6"-	Fill Mat'l: ERVED: Yes: B Weeping fro easonal High Ground Wat EST	Impervious Laye	Unsuitable Material r(s): What is the Saturating f Percolation Hol Test Date: Depth of Perc: Start of Presoa End of Presoa Time @ 12": Time @ 9": Time Elapse:(1 Time AT 6":	Present? /eathered/Fractu e depth of Groun /he Face: e #: k: :: 2"-9")	res. Ito. Ito. red Rock: Bedrock: Ito. dwater: Mottling: 42'
ARENT MATERIAL: Disturbed Soil: COUNDWATER OBSE Standing in Hole: Standing in Hole:	Fill Mat'l: ERVED: Yes: Weeping fro basonal High Ground Wate EST	Impervious Laye	Unsuitable Material r(s): What is the Saturating f Percolation Hol Test Date: Depth of Perc: Start of Presoa End of Presoa End of Presoa Time @ 12": Time @ 9": Time Elapse: (1 Time Flapse: (2)	Present? /eathered/Fractu e depth of Groun the Face: e #: k: 2"-9") a"-6"):	res. no. red Rock: Bedrock: dwater:
ARENT MATERIAL: Disturbed Soil: COUNDWATER OBSE Standing in Hole: Standing in Hole:	Fill Mat'l: ERVED: Yes: Weeping fro assonal High Ground Wate EST	Impervious Laye	Unsuitable Material r(s): What is the Saturating f Percolation Hol Test Date: Depth of Perc: Start of Presoa End of Presoa End of Presoa Time @ 12": Time @ 9": Time Elapse: (1 Pate: (min/in)	Present? /eathered/Fractu e depth of Groun the Face: e #: c #: 2"-9") 2"-9")	res. no. no. red Rock: Bedrock: Gedrock: dwater: Mottling: 4.2 '
ARENT MATERIAL: Disturbed Soil: ROUNDWATER OBS Standing in Hole: Standing in Hole: Standin: Standin: Standing in Hole: Standing in Hole:	Fill Mat'l: ERVED: Yes: Weeping fro assonal High Ground Wat EST	Impervious Laye	Unsuitable Material r(s): What is the Saturating f Percolation Hol Test Date: Depth of Perc: Start of Presoal End of Presoal Time @ 12": Time @ 9": Time Elapse: (1 Rate: (min/in.): Test Passed/ E	Present? /eathered/Fractu e depth of Groun the Face: e #: k: 2"-9") 9"-6"): ailed/ Discon/	res. no. no. red Rock: Bedrock: Gedrock: dwater: Mottling: 4.2 '
ARENT MATERIAL: Disturbed Soil: ROUNDWATER OBS Standing in Hole: stimated Depth to Se ERCOLATION T ercolation Hole #: est Date: epth of Perc: art of Presoak: nd of Presoak: nd of Presoak: me @ 12": me @ 9": me Elapse: (12"-9") me AT 6": me Elapse: (9"-6"): ate: (min/in.): est Passed/ Failed/ scon/ Add. Test Red'	Fill Mat'l: ERVED: Yes: Weeping fro assonal High Ground Wat EST	Impervious Laye	Unsuitable Material r(s): What is the Saturating f Percolation Hol Test Date: Depth of Perc: Start of Presoal End of Presoal End of Presoal Time @ 12": Time @ 9": Time Elapse: (1 Time Elapse: (2 Rate: (min/in.): Test Passed/ F Add. Testing R	Present? /eathered/Fractu e depth of Groun the Face: e #: k: 2"-9") 2"-6"): ailed/ Discon/ eq'd:	res. No. Intervention red Rock: Bedrock: Gedrock: dwater: Mottling: 42'
ARENT MATERIAL: Disturbed Soil: ROUNDWATER OBS Standing in Hole: stimated Depth to Se ERCOLATION T ercolation Hole #: est Date: epth of Perc: art of Presoak: id of Presoak: id of Presoak: id of Presoak: me @ 12": me @ 9": me Elapse: (12"-9") me AT 6": me Elapse: (9"-6"): ite: (min/in.): ist Passed/ Failed/ scon/ Add. Test Regin	Fill Mat'l: Fill M	Impervious Laye	Unsuitable Material r(s): What is the Saturating the Percolation Hol Test Date: Depth of Perc: Start of Presoal End of Presoal End of Presoal Time @ 12": Time @ 9": Time Elapse: (1 Time Elapse: (1 Time Elapse: (2 Rate: (min/in.): Test Passed/ F Add. Testing Re	Present? /eathered/Fractu e depth of Groun the Face: e #: k: 2"-9") 2"-6"): ailed/ Discon/ eq'd:	res. No. Intervention red Rock: Bedrock: Intervention dwater: Mottling: 42 '
ARENT MATERIAL: Disturbed Soil: ROUNDWATER OBS Standing in Hole: stimated Depth to Se ERCOLATION T ercolation Hole #: est Date: epth of Perc: art of Presoak: nd of Presoak: nd of Presoak: me @ 12": me @ 12": me Elapse: (12"-9") me AT 6": me Elapse: (9"-6"): ate: (min/in.): est Passed/ Failed/ scon/ Add. Test Req ¹	Fill Mat'l: Fill M	Impervious Laye	Unsuitable Material r(s): What is the Saturating the Percolation Hol Test Date: Depth of Perc: Start of Presoal End of Presoal End of Presoal Time @ 12": Time @ 9": Time Elapse: (1 Time Elapse: (1 Time Elapse: (2 Rate: (min/in.)): Test Passed/ F Add. Testing Re	Present? /eathered/Fractu e depth of Groun the Face: e #: k: 2"-9") 2"-6"): ailed/ Discon/ eq'd: Mach./Oper.:	res. No. Intersection red Rock: Bedrock: Intersection dwater: Mottling: 42 '

An indication that the "site passed" indicates only that the basic criteria for a soil evaluation and percolation test under Title 5 have been met in the area tested. Further soil evaluations and design work are necessary to determine whether a septic system for a particular use, meeting the requirements of Title5 and applicable local bylaws, will in fact be feasible on this site.

An indication that the "site failed" indicates only that the area tested did not meet the minimum criteria (at the time of testing) for a successful soil evaluation and/or percolation test in the area tested. Additional testing at another depth or other areas may result in passing results. mund 5051 of f path shown on plan (105) per f orient ching

143

Test Hole: 19-01

Merrill Engineers- Land Surveyors
427 Columbia Rd., Hanover, MA. 02339
781-826-9200
26 Union St., Plymouth, MA. 02360
508-746-6060

ON-SITE REVIEW	
-----------------------	--

14. %

		$T_{L} \cup T_{\pi}$				
ANNER.				JO	3 NO.:	mer
OCATION	(Identify on	Plan):	GF	ROUND ELEVATION	AT SURFACE OF HOLE:	80.2
AND USE:		SUR	FACE STONES:	Yes: No:	SLO	PE (%):
EGETATIO	ON: S FROM:			LANDFORM:		
RINKING	ER BODY: WATER WE ERVATION I	LL: t PROPERT	Y LINE: ER:	t POSSIBLE WE	r AREA:ft DRAII	NAGEWAY:ft
Depth (inches)	Soil Hor./ Layer	Soil Texture (USDA)	Soil Color (Munsell)	Redoximorphic Features	Other (Structure, Consister Boulde	icy,% Gravels, Stones, rs
0-6	Ap	Surdy Loan	104A 3/2		M-r	
0.28	Bw	Sad, Low	WYR514		M-F	
105112	C	Sad	2.59 6/3		LSG. 10% Gr	ent
Y.			1			1 . J
ARENT M	ATERIAL:	Fill Mat'l:	Impervious Laye	Unsuitable Material	Present? Yes:	No: If Yes: Bedrock:
ARENT M. Disturt ROUNDW	ATERIAL: Ded Soil:	Fill Mat'l:	Impervious Laye	Unsuitable Material r(s): Wi If Yes: What is the	Present? Yes:	No: If Yes: Bedrock:
ARENT M. Disturt ROUNDW Standing	ATERIAL: bed Soil:	Fill Mat'l:	Impervious Laye No:	Unsuitable Material er(s): Wo If Yes: What is the Saturating th	Present? Yes: eathered/Fractured Rock: depth of Groundwater: he Face: M	No: If Yes; Bedrock: If Iottling: 90 11 (a
ARENT M. Disturt ROUNDW Standing stimated I FRCOL	ATERIAL: bed Soil: ATER OBSE in Hole: Depth to Sea ATION TE	Fill Mat'l:	Impervious Laye No: n Face: ər :	Unsuitable Material r(s): Wi If Yes: What is the Saturating the	Present? Yes:	No: If Yes: Bedrock: If Tottling: <u>90⁻¹¹ (8</u>
ARENT M. Disturt ROUNDW Standing stimated I ERCOL	ATERIAL: Ded Soil: ATER OBSE in Hole: Depth to Sea ATION TE Hole #:	Fill Mat'l:	Impervious Laye No: n Face: er :	Unsuitable Material r(s): What is the If Yes: What is the Saturating the Percolation Hole	Present? Yes:	No: If Yes: Bedrock: If Iottling: 90 11 (e
ARENT M. Disturt ROUNDW Standing stimated I 'ERCOL ercolation est Date:	ATERIAL: bed Soil: ATER OBSE in Hole: Depth to Sea ATION TE Hole #:	Fill Mat'l:	Impervious Laye No: m Face: er :	Unsuitable Material (s): What is the Saturating the Percolation Hole Test Date:	Present? Yes:	No: If Yes; Bedrock: If Iottling: <u>90'' (18</u>
ARENT M. Disturt ROUNDW Standing stimated I 'ERCOL ercolation est Date: epth of Per	ATERIAL: bed Soil: ATER OBSE in Hole: Depth to Sea ATION TE Hole #: rc:	Fill Mat'l:	Impervious Laye No: n Face: er :	Unsuitable Material (s): What is the Saturating the Percolation Hole Test Date: Depth of Perc:	Present? Yes:	No: If Yes: Bedrock: I Nottling: <u>90'' (6</u>
ARENT M. Disturt ROUNDW Standing stimated I ERCOL. ercolation est Date: epth of Pers	ATERIAL: Ded Soil: ATER OBSE in Hole: Depth to Ser ATION TE Hole #: rc: soak:	Fill Mat'l:	Impervious Laye No: n Face: ər :	Unsuitable Material r(s): What is the Saturating the Percolation Hole Test Date: Depth of Perc: Start of Presoak	Present? Yes: Present? Yes: Present? Yes: Present? Yes: Present? Nest Note: Present? Nest Note: Prese:	No: If Yes: Bedrock: I
ARENT M. Disturt ROUNDW Standing stimated I ERCOL. ercolation est Date: epth of Pel art of Pres nd of Pres	ATERIAL: Deed Soil: ATER OBSE in Hole: Depth to See ATION TE Hole #: rc: soak: Deak:	Fill Mat'l:	Impervious Laye No: n Face: er :	Unsuitable Material r(s): What is the Saturating the Percolation Hole Test Date: Depth of Perc: Start of Presoak End of Presoak:	Present? Yes:	No: If Yes: Bedrock: fottling:(
ARENT M Disturt ROUNDW Standing stimated I ERCOL ercolation ast Date: epth of Per art of Press nd of Press me @ 12";	ATERIAL: Deed Soil: ATER OBSE in Hole: Depth to Sea ATION TE Hole #: rc: soak: pak:	Fill Mat'l:	Impervious Laye No: n Face: er :	Unsuitable Material r(s): What is the Saturating the Percolation Hole Test Date: Depth of Perc: Start of Presoak End of Presoak: Time @ 12":	Present? Yes:	No: If Yes; Bedrock: fottling:(
ARENT M Disturt ROUNDW Standing stimated I 'ERCOL ercolation ast Date: epth of Pee art of Press nd of Press me @ 12": me @ 9":	ATERIAL: Deed Soil: ATER OBSE in Hole: Depth to Sea ATION TE Hole #: rc: soak: book:	Fill Mat'l:	Impervious Laye No: m Face: er :	Unsuitable Material r(s): What is the Saturating the Percolation Hole Test Date: Depth of Perc: Start of Presoak: End of Presoak: Time @ 12": Time @ 9":	Present? Yes:	No: If Yes; Bedrock: tottling:(_e
ARENT M Disturt ROUNDW Standing stimated I 'ERCOL ercolation ast Date: epth of Prese tart of Prese me @ 12"; me @ 9"; me Elapse	ATERIAL: bed Soil: ATER OBSE in Hole: Depth to Sea ATION TE Hole #: rc: boak:	Fill Mat'l:	Impervious Laye No: m Face: er :	Unsuitable Material r(s): What is the Saturating the Percolation Hole Test Date: Depth of Perc: Start of Presoak: End of Presoak: Time @ 12": Time @ 9": Time Elapse: (12	Present? Yes:	No: If Yes; Bedrock: Tottling: (e
ARENT M Disturt ROUNDW Standing stimated I 'ERCOL. ercolation est Date: epth of Person that of Preson me @ 12": me @ 9": me Elapse me AT 6":	ATERIAL: Ded Soil: ATER OBSE in Hole: Depth to Sec ATION TE Hole #: rc: soak: bak: c: (12"-9") or (0" 6"b-	Fill Mat'l:	Impervious Laye	Unsuitable Material (Insuitable Material) (Insuitable Material (Insuitable Material) (Insuitable Material) (Present? Yes: Present? Yes: Present? Yes: Present? Yes: Present? Presen	No: If Yes Bedrock: I
ARENT M Disturt ROUNDW Standing stimated I ERCOL ercolation est Date: epth of Person tart of Preson me @ 12": me @ 9": me Elapse me AT 6": me Elapse	ATERIAL: bed Soil: ATER OBSE in Hole: Depth to Sec ATION TE Hole #: rc: soak: bak: : : : : : : : : : : : : :	Fill Mat'l:	Impervious Laye	Unsuitable Material r(s): With the Saturating the Saturation Hole Test Date: Depth of Perc: Start of Presoak: End of Presoak: End of Presoak: Time @ 12": Time @ 12": Time Elapse: (12) Time Elapse: (9) Patter (minicipation)	Present? Yes: Present? Yes: Present? Yes: Present? Yes: Present? Presen	No: If Yes Bedrock: I
ARENT M Disturt ROUNDW Standing stimated I ERCOL ercolation ast Date: epth of Pel tart of Press nd of Press me @ 12": me @ 9": me Elapse me AT 6": me Elapse ate: (min/ir st Passed	ATERIAL: bed Soil: ATER OBSE in Hole: Depth to Sea ATION TE Hole #: rc: soak: : : : : : : : : : : : : :	Fill Mat'l:	Impervious Laye	Unsuitable Material Ir(s): What is the Saturating the Percolation Hole Test Date: Depth of Perc: Start of Presoak: Time @ 12": Time @ 9": Time Elapse: (12 Time Elapse: (29) Rate: (min/in.): Test Passed/ Fa	Present? Yes: Present? Yes: Present? Yes: Present? Yes: Present? Yes: Present? P	No: If Yes: Bedrock: I
ARENT M Disturt ROUNDW Standing stimated I 'ERCOL ercolation ast Date: epth of Pest att of Prest me @ 12": me @ 9": me Elapse me AT 6": me Elapse ate: (min/ir :st Passed scon/ Add	ATERIAL: ped Soil: ATER OBSE in Hole: Depth to Sea ATION TE Hole #: rc: soak: ped(12"-9") e: (9"-6"): h.): // Failed/ , Test Req'd:	Fill Mat'l:	Impervious Laye	Unsuitable Material r(s): What is the Saturating the Percolation Hole Test Date: Depth of Perc: Start of Presoak: Time @ 12": Time @ 9": Time Elapse: (12 Time Elapse: (12 Time Elapse: (12 Time Elapse: (12 Time Elapse: (12) Time	Present? Yes: Present? Yes: sathered/Fractured Rock: Image: Constraint of Groundwater: depth of Groundwater: Mage: Constraint of Groundwater: ne Face: Mage: Constrain	No: If Yes; Bedrock: I
ARENT M Disturt ROUNDW Standing stimated I "ERCOL ercolation ast Date: epth of Pe tart of Press nd of Press me @ 12": me Elapse me AT 6": me Elapse ate: (min/ir ist Passed scon/ Add	ATERIAL: bed Soil: ATER OBSE in Hole: Depth to Sec ATION TE Hole #: rc: book: c: (12"-9") c: (9"-6"): h.): // Failed/ , Test Req'd: by:	Fill Mat'l:	Impervious Laye	Unsuitable Material r(s): With the Saturating the	Present? Yes: Present? Yes: pathered/Fractured Rock: Image: Constraint of Groundwater: depth of Groundwater: Mage: Constraint of Groundwater: ne Face: Mage: Constrain	No: If Yes: Bedrock: I

An indication that the "site passed" indicates only that the basic criteria for a soil evaluation and percolation test under Title 5 have been met in the area tested. Further soil evaluations and design work are necessary to determine whether a septic system for a particular use, meeting the requirements of Title5 and applicable local bylaws, will in fact be feasible on this site.

An indication that the "site failed" indicates only that the area tested did not meet the minimum criteria (at the time of testing) for a successful soil evaluation and/or percolation test in the area tested. Additional testing at another depth or other areas may result in passing results.

01-020-9200				SOIL EVALU
:6 Union St., Plymouth i08-746-6060	, MA. 02360			SOIL EVALU
N-SITE REVIEW				
	4			
	DATE:		TIME: 10:3	0 WEATHER
	/LOT #:			
OCATION (Identify and			JC	BNO.:
JUATION (Identity on P	'lan):	GF	OUND ELEVATION	AT SURFACE OF HOLE:
AND USE:	sui	RFACE STONES:	Yes: No	SLOPE (%);
EGETATION:				
STANCES FROM:			LANDFORM:	
PEN WATER BODY		T) () II ()		
RINKING WATER WEL		1Y LINE:	ft POSSIBLE WE	TAREA:ft DRAINAGEWAY:ft
EP OBSERVATION H		1ER:		
Depth Soil Hor /	012 100			
nches) Layer	Soil Texture (USDA)	Soil Color (Munsell)	Redoximorphic Features	Other (Structure, Consistency,% Gravels, Stone Boulders
<u>2-8 Ap</u>	Sendy Loon	10YR 3/2		AF
-29 BW	Sendy Loan	10PR SM		Jon - P
1-40 C,	Louny Sond	251 3	1	21. She 5to grand M-F
P-HE CZ	Sad	254 413	Parente	1.5.6. 2% she 5% 6m
		3		Film in place, V. lacke in he
	11			
ENT MATERIAL:		Ľ	Insuitable Material P	resent? Very
Disturbed Soil:	Fill Mat'l:	mpervious Layer(:	s): We	athered/Fractured Real
UNDWATER OBSERV				Bedrock: Bedrock:
		100:	f Yes: What is the d	epth of Groundwater:
tanding in Hole	vveeping from nal High Group Altri	Hace:	Saturating the	Face: Mottling:
tanding in Hole:	war migh Ground Wate	r:		
anding in Hole:	-			
anding in Hole:(nated Depth to Seaso COLATION TEST				
anding in Hole:(nated Depth to Seaso RCOLATION TEST plation Hole #:			Percolation Hole #	
tanding in Hole: mated Depth to Seaso RCOLATION TEST Diation Hole #: Date: Dof Bare:			Percolation Hole # Test Date:	<u></u>
tanding in Hole: mated Depth to Seaso RCOLATION TEST Dation Hole #: Date: 1 of Perc: of Prence:			Percolation Hole # Test Date: Depth of Perc:	· · · · · · · · · · · · · · · · · · ·
tanding in Hole: mated Depth to Seaso COLATION TEST plation Hole #: Date: 1 of Perc: of Presoak: 6 Presoak:			Percolation Hole # Test Date: Depth of Perc: Start of Presoak:	Li
tanding in Hole: mated Depth to Seaso COLATION TEST blation Hole #: Date: 1 of Perc: of Presoak: if Presoak: 0 0 10!			Percolation Hole # Test Date: Depth of Perc: Start of Presoak: End of Presoak:	<u> </u>
tanding in Hole: nated Depth to Seaso RCOLATION TEST Olation Hole #: Date: 1 of Perc: of Presoak: # Presoak: @ 12":			Percolation Hole # Test Date: Depth of Perc: Start of Presoak: End of Presoak: Time @ 12":	
tanding in Hole: mated Depth to Seaso RCOLATION TEST olation Hole #: Date: 1 of Perc: of Presoak: if Presoak: @ 12": @ 9":			Percolation Hole # Test Date: Depth of Perc: Start of Presoak: End of Presoak: Time @ 12": Time @ 9":	
anding in Hole: nated Depth to Seaso RCOLATION TEST Dation Hole #: Date: of Presoak: of Presoak: @ 12": @ 9": Elapse:(12"-9")			Percolation Hole # Test Date: Depth of Perc: Start of Presoak: End of Presoak: Time @ 12": Time @ 9": Time Elense:(12" of	
anding in Hole: nated Depth to Seaso RCOLATION TEST blation Hole #: Date: of Presoak: of Presoak: @ 12": @ 9": Elapse:(12"-9") AT 6":			Percolation Hole # Test Date: Depth of Perc: Start of Presoak: End of Presoak: Time @ 12": Time @ 9": Time Elapse:(12"-5 Time AT 6"-	e
tanding in Hole: mated Depth to Seaso COLATION TEST olation Hole #: Date: of Presoak: of Presoak: @ 12": @ 9": Elapse:(12"-9") AT 6": Elapse: (9"-6");			Percolation Hole # Test Date: Depth of Perc: Start of Presoak: End of Presoak: Time @ 12": Time @ 9": Time Elapse: (12"-5 Time AT 6":	۲ ⁽¹⁾
tanding in Hole: mated Depth to Seaso RCOLATION TEST olation Hole #: Date: n of Perc: of Presoak: of Presoak: @ 12": @ 9": Elapse:(12"-9") AT 6": Elapse: (9"-6"): (min/in.):			Percolation Hole # Test Date: Depth of Perc: Start of Presoak: End of Presoak: Time @ 12": Time @ 9": Time Elapse: (12"-5 Time AT 6": Time Elapse: (9"-6"	
tanding in Hole: mated Depth to Seaso RCOLATION TEST olation Hole #: Date: of Presoak: of Presoak: @ 12": @ 9": Elapse:(12"-9") AT 6": Elapse: (9"-6"): (min/in.): assed/ Failed/			Percolation Hole # Test Date: Depth of Perc: Start of Presoak: End of Presoak: Time @ 12": Time @ 9": Time Elapse:(12"-5 Time AT 6": Time Elapse: (9"-6" Rate: (min/in.): Test Passed/ Ecilio	
anding in Hole: nated Depth to Seaso COLATION TEST blation Hole #: Date: of Perc: of Presoak: f Presoak: @ 12": @ 9": Elapse:(12"-9") AT 6": Elapse: (9"-6"): min/in.): assed/ Failed/ / Add. Test Reg'd:			Percolation Hole # Test Date: Depth of Perc: Start of Presoak: End of Presoak: Time @ 12": Time @ 9": Time Elapse: (12"-5 Time AT 6": Time Elapse: (9"-6' Rate: (min/in.): Test Passed/ Failed Add, Testing Ren/d	/") // Discon/
anding in Hole: nated Depth to Seaso COLATION TEST vlation Hole #: Date: of Perc: of Presoak: f Presoak: @ 12": @ 9": Elapse:(12"-9") VT 6": "lapse: (9"-6"): min/in.): assed/ Failed/ ' Add. Test Req'd: and By:			Percolation Hole # Test Date: Depth of Perc: Start of Presoak: End of Presoak: Time @ 12": Time @ 9": Time Elapse: (12"-5 Time AT 6": Time Elapse: (9"-6" Rate: (min/in.): Test Passed/ Failed Add. Testing Regid	():

An indication that the "site passed" indicates only that the basic criteria for a soil evaluation and percolation test under Title 5 have been met in the area tested. Further soil evaluations and design work are necessary to determine whether a septic system for a particular use, meeting the requirements of Title5 and applicable local bylaws, will in fact be feasible on this site.

An indication that the "site failed" indicates only that the area tested did not meet the minimum criteria (at the time of testing) for a successful soil evaluation and/or percolation test in the area tested. Additional testing at another depth or other areas may result in passing results.

14,3

_

43.5

Merrill Engi 427 Columb 781-826-920 26 Union St 508-746-606	neers- Land bia Rd., Hand 00 2., Plymouth 30	l Surveyors over, MA. 02339 MA. 02360			FORMS 1 SOIL EVALUATO	1 AND 12 DR FORM
ON-SITE	REVIEW ^{≝ #:} _ <u>↓</u>	BDATE:		TIME: (0:4	∂ WEATHER:	
SITE ADDR	ESS or MAP	/LOT #:				
OWNER:				JO		
LOCATION	(Identify on F	2(an):	GRO	DUND ELEVATION	AT SURFACE OF HOLE:	
LAND USE:	•	SUR	FACE STONES:	Yes: No:	SLOPE (%):	
VEGETATIO	DN:			LANDFORM:		
DISTANCES OPEN WAT DRINKING V DEEP OBSI	FROM: ER BODY: NATER WEI	ft PROPERI	TY LINE:	ft POSSIBLE WE	TAREA:ft DRAINAGEWAY:ft	-
Depth (inches)	Soil Hor./ Layer	Soil Texture (USDA)	Soii Color (Munsell)	Redoximorphic Features	Other (Structure, Consistency,% Gravels, Stones, Boulders	
6-6	Ap	Sundy Loon	IdyA 3/2		M-F	
6-23	BU	Sady Loom	10YR 5/4		M-F DX-SK-	DI OCU
20-94	0,	Fine Sudy hum	2.544/3		A-F BY. Grad 1 Sto cruel 210 str	BUR Sold of
96-12	62	Sad	2.54013		saturated, di third to tish	face
						H.
						this
PARENT M	ATERIAL:			Unsuitable Material	Present? Yes: No: If Yes:	come
Disturb	ed Soil:	Fill Mat'l:	Impervious Layer	(s): 🚺 W	eathered/Fractured Rock: Bedrock:	
GROUNDW Standing	ATER OBSE	RVED: Yes:	No:	If Yes: What is the Saturating t	he Face: Mottling:	_
Estimated I PERCOL	Depth to Sea	sonal High Ground Wa	ter :			-
Percolation	Hole #:			Percolation Hol	e#:	-
Test Date:				Test Date:		-
Depth of Per	rc:			Depth of Perc:		-
Start of Pres	soak:	·		End of Presoak	· · ·	-
Time @ 12"	Jan.	<u> </u>		Time @ 12":	· · · · · · · · · · · · · · · · · · ·	- C
Time @ 9":				Time @ 9":		
Time Elapse	:(12"-9")			Time Elapse:(1	2"-9")	
Time AT 6":		······		Time AT 6":		-
Time Elapse	e: (9"-6"):			Time Elapse: (9)"-6"):	-
Rate: (min/in	n.):			Rate: (min/in.):		-
Test Passed Discon/ Add	l/ Failed/ . Test Req'd:			Test Passed/ Fa Add. Testing Re	ailed/ Discon/ eq'd:	
Performed B	ly:	Witne	ssed By:		Mach./Oper.:	-
				·····		-

An indication that the "site passed" indicates only that the basic criteria for a soil evaluation and percolation test under Title 5 have been met in the area tested. Further soil evaluations and design work are necessary to determine whether a septic system for a particular use, meeting the requirements of Title5 and applicable local bylaws, will in fact be feasible on this site.

An indication that the "site failed" indicates only that the area tested did not meet the minimum criteria (at the time of testing) for a successful soil evaluation and/or percolation test in the area tested. Additional testing at another depth or other 11-B 30 () South of 11A areas may result in passing results.

Redux asy up 7.5YR 6/9

File:Copy of Soil Evaluation Form.xls

Test	Hole:	19-01
1000		1001



Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

LS with some restructure clay Slope (%) feet feet Longitude Other Z2Depth Standing Water in Hole Position on Landscape (SU, SH, BS, FS, TS, Plain) Wetlands Other Surface Stones (e.g., cobbles, stones, boulders, etc.) Bedrock Soil Consistence (Moist) C. On-Site Review (minimum of two holes required at every proposed primary and reserve disposal area) Latitude Weathered/Fractured Rock Soil Structure Cobbles & Stones If yes: ___ Depth to Weeping in Hole feet Coarse Fragments % by Volume feet Weather Gravel Drinking Water Well **Drainage Way** 00: 11 4. Unsuitable Materials Present: 🗌 Yes 🔲 No 🤉 If Yes: 🔲 Disturbed Soil/Fill Material Percent Soil Log Time Redoximorphic Features Landform 7/13/23 Vegetation Color Cnc: Cnc : Cnc Cnc : Cnc : Cnc Dpl: Dpl: Date ë Dpl: Dpl: Dpl: feet feet Depth (e.g., woodland, agricultural field, vacant lot, etc.) HH Soil Matrix: Color-Moist (Munsell) Property Line Open Water Body ² □ Hole # Deep Observation Hole Number: 3/ Groundwater Observed: [1] Υes Soil Texture (USDA) Commercial LN S Description of Location: Soil Parent Material: Soil Horizon Distances from: /Layer T.C しん 2 1. Land Use: 5-30 20-26 Depth (in) 36. 96 0-2 *с*і. ഗ് N

MassDEP Form11.docx

Additional Notes:

Commonwealth of Massachusetts

4



Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

	SITE KEV	' iew (minin	num of two ho.	les requ	uired at every p	roposed p	nimary	and reserv	re dispo	sal area)		
Deep	Observatio	n Hole Numt	ber:	1 1	37/13/23	1:30						
Land	Use: Cor	mmercial	H016 #	Date	-	lime	5	Veather		Latitude	Longitude	
Desci	e.g. ription of Loc;	l., woodland, agri ation:	icultural field, vacant	lot, etc.)	Vegetation		Surface	e Stones (e.g.,	cobbles, sto	nes, boulders, etc.)	Slope (%)	
Soil F	arent Materia	al:										
i	•				Landfor	ε		Position on	Landscape	(SU, SH, BS, FS, TS,	Plain)	
Distal	nces from:	Oper	n Water Body _	ŢĘ,	ž	Drainage	, Way _	feet		Wetlands	feet	
			Property Line	fee	Ľ.	inking Wateı	r Well	feet		Other	feet	
Jnsuite	tble Materials	s Present:] Yes 🗌 No	lf Yes: [Disturbed Soil/Fi	ll Material		Veathered/Frs	ictured Ro	ck 🗌 Bedrock		
Grour	ldwater Obse	∋rved: 🗌 Yes	s 🕅 No		ĮĮ	'yes: ^{De}	pth to Wee	ping in Hole	1	Depth Standing Wa	ter in Hole	
					Sol	il Log						
epth (in)	Soil Horizon	Soil Texture	Soil Matrix: Color-		Redoximorphic Feat	ures	Coarse % by	Fragments Volume	Soil	Soil		
	iLayer	(MUSUA)	Moist (Munsell)	Depth	Color	Percent	Gravel	Cobbles & Stones	Structure	Consistence (Moist)	Other	
Ŷ	0-12				Cnc :							
	10-50				Upi: Cnc :					-		
22	1				Dpl:							_
	Ec1-52			1/22	Cnc :							
	5- 5			2	Dpl:							_
					Cnc:							
					Dpl:							
		_		- - -	Cnc :							T
					Dpl:							
					Cnc :							
					ido							-

Additional Notes:

Q



Ċ Form 11 - Soil Suitability Assessment for On-Site Se

7							010	sewag	e uisp	osal		
ວົ ບ່	n-Site Rev	riew (minin	num of two ho	les requ	ired at every	proposed p	rimarv	and reser	ve disno	(salaraa)		
De	ep Observatio	n Hole Numł	ber: 33	1//1	(+)	. 5						
1. Lar	ld Use: Co	mmercial	1016 #	Date		Time	N	eather		Latitude	Longitude	
Des	(e.g scription of Loc	J., woodland, agn ation:	icultural field, vacant	lot, etc.)	Vegetation		Surface	Stones (e.g.,	cobbles, sto	nes, boulders, etc.)	Slope (%)	
2. Soil	Parent Materi	al:			1							
3. Dist	ances from:	Ope	n Water Body	feet	Landfo	rm Drainage	Way	Position on feet	Landscape	(SU, SH, BS, FS, TS, Wetlands	Plain) feet	
			Property Line	feet	Q	rinking Water	Well	feet		Other	faat	
4. Unsu	itable Materials	s Present:	Yes 🗌 No	lf Yes:	Disturbed Soil/	ili Material	>	eathered/Fn	actured Ro	ck 🗌 Bedrock		
5. Gro	undwater Obse	erved: 🕅 Yes	° D			lf yes: Del	oth to Weep	ing in Hole	10	Depth Standing Wat	er in Hole	
					š	oil Log						
Depth (ir	n) Soil Horizon	Soil Texture	Soil Matrix: Color-	E2	ledoximorphic Fea	tures	Coarse F % by	ragments Volume	lios,	Soil		
	1-rayer	(Muleu)	Moist (Munsell)	Depth	Color	Percent	Gravel	Cobbles &	Structure	Consistence (Moist)	Other	
1-0-M	Ap	SL			nc : Di:			200168				
14-3.	2 Bu	SL			: 21							
32-10	B C	57						-				-
41-801	4 62	S		26			53	5%				
				515	: 2							

Form 11 – Soil Suitability Assessment for On-Site Sewage Disposal • Page 2 of 21

Additional Notes:



Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

.

	view (minimum of tw	o holes rec	nuired at every	proposed r	rimeru	accor pre	coolio o			
Deep Observati	on Hole Number: 34	1464	29-7/13/23	10:30	<i>f</i> ipinit		ve uispo	sal area)		
1. Land Use: <u>C</u>	ommercial	Date		Time	S	/eather		Latitude	Longitude	
e Description of Lo	.g., woodland, agricultural field, cation:	acant lot, etc.)	Vegetation		Surface	e Stones (e.g.,	cobbles, sto	nes, boulders, etc.)	Slope (%)	
2. Soil Parent Mate	rial:	3								
3 Dictorocco from			Landfo	E		Position on	Landscape	(SU, SH, BS, FS, TS,	Plain)	
o. DISTAILCES ITOM:	Open Water Bo	dy 	et .	Drainage	Way _	feet		Wetlands	feet	
	Property Li	Tefe	ēt	rinking Water	. Well	feet		Other	feet	
4. Unsuitable Materia	ls Present: 🔲 Yes 🗍 I	lo If Yes:	Disturbed Soil/F	ill Material		/eathered/Fra	actured Roo	k 🗆 Bedrock	5	
5. Groundwater Obs	served: 🗌 Yes 🛛 🕅 No	_	_	lf yes: ^{De}	pth to Wee	pìng in Hole	ł		er in Hole	
			S	oil Log						
Depth (in) Soil Horizoi	Soil Texture Soil Matrix:	Color-	Redoximorphic Fea	tures	Coarse % by	Fragments Volume	Soil	Soil		
Irayer	(Multi Moist (Multi	Isell) Depth	Color	Percent	Gravel	Cobbles &	Structure	Consistence (Moist)	Other	
0-13 AP	:75		Cnc :			SHIDE				
13-30 Bru	56									
30 137 6	12	115"								
			Cho :							
			Chc .							-
			Cnc :		+-			-		T
Additional Notes:		-	Dpl:							



4

5

Commonwealth of Massachusetts City/Town of Pembroke Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

	Cito Dovi											
5	Aav alle	minim) wer	num of two ho	les requ	iired at every pi	roposed µ	orimary	and reser	ve dispos	ial area)		
Deep	Observatio	n Hole Numb	ber: 35	495	37/13/23 1	1:00						
1. Land	Use: Cor	mmercial	H0le #	Date	Ĩ	ime	>	Veather		Latitude	Longitude	
Descr	e.g Tiption of Loci	l., woodland, agric ation:	cultural field, vacant	lot, etc.)	Vegetation		Surfac	e Stones (e.g.,	cobbles, stor	ies, boulders, etc.)	Slope (%)	
2. Soil P	arent Materi	al:										
i	·				Landforn	L		Position on	Landscape (SU, SH, BS, FS, TS,	, Plain)	
3. Distar	nces from:	Oper	n Water Body	fee	at	Drainag	e Way _	feet		Wetlands	feet	
		-	Property Line	fee	t Dri	nking Wate	r Well _	feet		Other	feet	
4. Unsuita	ıble Materials	s Present:	Yes 🗌 No	lf Yes: [Disturbed Soil/Fil	ll Material		Neathered/F n	actured Roc	k 🔲 Bedrock		
5. Groun	ldwater Obs∈	srved: []_Yes	°N D		Ŧ	yes: /⊡&b∉	spth to Wee	eping in Hole	21	_Depth Standing We	ater in Hole	
					Soi	il Log						
Depth (in)	Soil Horizon	Soil Texture	Soil Matrix: Color-		Redoximorphic Featu	ures	Coarse % by	Fragments v Volume	Soil	Soil		
	/Layer	(Naba)	Moist (Munsell)	Depth	Color	Percent	Gravel	Cobbles & Stones	Structure	Consistence (Moist)	Other	
0-17	42	SL			Cnc : Dol:	 						
4C.CI	B	SL			Che :							1
92-4C	5	57			Che :		123	1001				T
611-110					Dpl: Cnc :		11	1010				
11 01	5	1		3	Dpt:							-
					Cnc :							
					Upi: Cine ·							-
					. por							
Additic	nal Notes:											

4



Commonwealth of Massachusetts City/Town of Pembroke Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C On-Sito Do

: د	-Site KeV	Iew (minim	num of two ho	les requi	red at every pr	d posed b	rimarv	and resen	re dispos	al area)		
Deep	Observation	n Hole Numb	oer: 36	1/5/23								
1. Land	Use: Con	nmercial	Hole #	Date	LI LI	e	>	Veather		Latitude	Longitude	
Desc	e.g. ription of Loca	. woodland, agri ation:	cultural field, yacant	lot, etc.)	Vegetation た Sチルc		Surfao	e Stones (e.g.,	cobbles, stone	ss, boulders, etc.)	Slope (%)	
2. Soil F	^{>} arent Materia	-ie -ie										
3. Dista	nces from:	Oper	n Water Bodv	feet	Landform			Position on	Landscape (S	U, SH, BS, FS, T	S, Plain)	
		•	- (500 00000			urainage	way	feet		Wetland	s feet	
		-	Property Line	feet	Drin	king Water	- Well	feet		Other	feet	
4. Unsuita	able Materials	: Present:	Yes 🗌 No	lf Yes:	Disturbed Soil/Fill	Material		Veathered/Fra	ictured Rock	Bedrock		
5. Grour	ndwater Obse	erved: 🗌 Yes	s No		lf y	es: De	pth to Wee	ping in Hole	-	Depth Standing V	Vater in Hole	
					Soil	Log						
Depth (in)	Soil Horizon	Soil Texture	Soil Matrix: Color-	œ	edoximorphic Featur	es	Coarse % by	Fragments Volume	Soil	Soil		
	ILAYEL	(MUSU)	Moist (Munsell)	Depth	Color	Percent	Gravel	Cobbles & Stones	Structure	Consistence (Moist)	Other	-
0-7				Ō	1c:			10/1				T
2				ā	. .		-	P) (1				
2-12	U	1.5		Ö	: 2							T
0.4		121			: 25	-					,	
11-201	4	5		Q 01			_				Deplehed	
_				<u>ŏ</u>	: 2							
				ă						-		
				<u>ତ</u>	10 :							
					N:							-
				נוס			·					
Additic	vnal Notas:			ä								
100000]



Ï Form 11 - Soil Suitability Assessment for On-Site Se

ī

				~~~ ~			-016	oewag	e uisp	osal		
	e Kev	Tew (minin	num of two ho	les require	ed at every p	roposed t	Drimarv	and rese	nie dien			
Deep Obs	servatio	n Hole Numt	ber: 42 Hole #	1/5/23		. 30			ndein an	ାରଣା ଶାଟଣ)		
. Land Use:	õ	mmercial		Uate	F	ime		Veather		Latitude	Longitude	
Descriptior	e.g n of Loc;	., woodland, agri ation:	icultural field, vacant	lot, etc.)	Vegetation		Surfac	e Stones (e.g.	, cobbles, stc	mes, boulders, etc.	) Slope (%)	
. Soil Parent	t Materia	ai:									-	
. Distances t	from:	Oper	n Water Body	feet	Landforn	Drainage	e Way	Position or feet	ı Landscape	(SU, SH, BS, FS, T Wetland	S, Plain) S feet	
		-	Property Line _	feet	Dri	nking Wateı	r Well	feet		Otho		
Unsuitable N	/lateriais	Present: 📋	Yes 🗌 No 🧃	f Yes: 🛛 I	Disturbed Soil/Fil	l Material		Veathered/Fr	actured Ro		feet	
Groundwat	er Obse	irved: X Yes	°2		Η	yes: 遙 De	pth to Wee	sping in Hole	6	Depth Standing V	Vater in Hole	
					Soi	Log						
Depth (in) Soil	Horizon	Soil Texture	Soil Matrix: Color-	Red	loximorphic Featu	res	Coarse % bv	Fragments Volume	C.C.	Soil		
			(Illesunius) (Munsell)	Depth	Color	Percent	Gravel	Cobbles &	Structure	Consistence (Moist)	Other	
+ 6-0	D D	SL		ů S				otones		(m)		
2-36	C.			Cnc Cnc Cnc								
	20	2		ä								
6-90 1	(	V		е О								
1	V	)		:Dpl								
		_	-									Τ
												·
	-					-						Τ
				C C C C								T
Additional N	otes:			Dpi:								

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal • Page 2 of 21

MassDEP Form11.docx



## Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

ĺ

C	0 . 1:0 -0	-					)	アンドン	נוסב			
ز	On-bite Kev	riew (minin	num of two hc	oles req	uired at every	proposed i	Jrimary	and rocor				
	Deep Observatic	n Hole Num	ber: 43	4151	80-52	0:00	ſ		ndein an	isal areaj		
<del>,</del>	Land Use: Co	mmercial	106#	Date		Time	>	Veather		Latitude	Longitude	
_	(e.ç Description of Loc	9., woodland, agr tation:	ricultural field, vacant	t lot, etc.) ハビンナ	Vegetation		Surfac	e Stones (e.g.,	cobbles, sto	nes, boulders, etc.)	Slope (%)	
сi	Soil Parent Materi	al:				/						
3.	Distances from:	Ope	in Water Body	<u>e</u>	Landfo	um Drainage	e Way	Position on feet	Landscape	(SU, SH, BS, FS, TS, Wetlands	, Plain) feet	×
:			Property Line	ē	et D	rinking Water	r Well	feet		Other	feet	
4. 2	ısuitable Materials	s Present:	] Yes 🗌 No	lf Yes:	Disturbed Soil/F	Fill Material		Veathered/Fr	actured Ro	ck	<u>3</u>	
5.	Broundwater Obse	erved: 🗌 Yes	о Ио			If yes: ILU De	pth to Wee	sping in Hole	ñ	Depth Standing Wa	tter in Hole	
					ÿ	oil Log						
Dept	h (in) Soil Horizon	Soil Texture	Soil Matrix: Color-		Redoximorphic Fea	itures	Coarse % bv	Fragments	unit of the second seco	Soil		
		(Maco)	Moist (Munsell)	Depth	Color	Percent	Gravel	Cobbles &	Structure	Consistence (Moist)	Other	
Ċ	-6 A.				Cnc :		3.12	Sellos		-		
	J.C.				Dpl:			20				}
0	18 Bre				Cnc .							
á	a l				Chc.							
0	1 0				Dpl:							
2	50 65				Cnc :		1					1
Q				20	Dpl:							
64	120 (10)			1001	Cnc :							
Ca	0 - 01			ŧ	.pdl:	4				2	to late I	
					Chc :					~	op are	Τ
	Iditional Natao				Dpl:							
ć	UNINUM INDIES.											

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal • Page 2 of 21

MassDEP Form11.docx



## Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

Deep	Observatior	n Hole Numb	<b>er:</b> <u>TP-44</u>	7/14/2	3	11:30am	0	Overcast			
			Hole #	Date		Time	V	leather		Latitude	Longitude
1. La	and Use: <u>Con</u>	nmercial			Wooded						0-3
	(e.g.	, woodland, agric	ultural field, vacant lo	ot, etc.)	Vegetation		Surface	e Stones (e.g.,	cobbles, stor	nes, boulders, etc.	) Slope (%)
Descri	iption of Loca	ation:	Wooded area betwe	een driving	range and fairway	<i>.</i>					
2. Soil Pa	arent Materia	al:									
					Land	form		Position on	Landscape	(SU, SH, BS, FS, ⁻	ΓS, Plain)
3. Distan	ces from:	Oper	Water Body	feet		Drainage	e Way _	feet		Wetland	IS feet
		F	Property Line _	feet		Drinking Wate	r Well	feet		Othe	r feet
4. Unsuital	ble Materials	Present: 🛛	Yes 🗌 No 🛛	f Yes: 🛛	Disturbed Soi	I/Fill Material		Neathered/Fr	actured Ro	ck 🗌 Bedroo	k
5 Groun	dwater Obse	erved: 🕅	Yes 🗌	No		lf ves: D	epth to We	eping in Hole	1:	32" Denth Standi	ng Water in Hole
								1 0	<u></u>		
	T	1		r		Soil Log		_	1	1	
Dopth (in)	Soil Horizon	Soil Texture	Soil Matrix: Color-		Redoximorphic F	eatures	Coarse % b	e Fragments y Volume	Soil	Soil	Other
Deptil (III)	/Layer	(USDA)	Moist (Munsell)	Depth	Color	Percent	Gravel	Cobbles & Stones	Structure	(Moist)	Other
0-5	Ap	SL		-	Cnc :						
					Spr. Spr.:						
5-21	Bw	SL			Dpl:						
21-31	Fill				Cnc :						
					Dpl:						
31-132	С	FS			Cnc: Dpl:						Mottling starts at 7.5
					Cnc :						
					Dpl:						
					Cnc :						
					Dpl:						
Additic	onal Notes:										



## Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

Dee	o Observation	n Hole Numbe	er: <u>TP-45</u>	7/14/2	23	11:30am	C	Overcast			
			Hole #	Date		Time	V	/eather		Latitude	Longitude
1. I	and Use: <u>Con</u>	nmercial			Wooded						0-3
	(e.g.	, woodland, agric	ultural field, vacant lo	ot, etc.)	Vegetation		Surfac	e Stones (e.g.,	cobbles, stor	nes, boulders, etc.)	Slope (%)
Desc	ription of Loca	ation:	Near the center of t	he driving	range.						_
2. Soil	Parent Materia	al:									
					Land	form		Position on	Landscape	(SU, SH, BS, FS, T	S, Plain)
3. Dista	inces from:	Oper	Water Body	fee	et	Drainage	way _	feet		Wetlands	s feet
		F	Property Line _	fee	t	Drinking Water	r Well	feet		Other	feet
4. Unsui	able Materials	Present:	Yes 🛛 No 🛛	f Yes:	Disturbed Soi	I/Fill Material		Neathered/Fr	actured Ro	ck 🗌 Bedrock	
5 Grou	ndwater Obse	arved:		No		lfves D	epth to We	epina in Hole		Depth Standing	water in Hole
0. 0100						m yes		5	_		
			•			Soil Log					
Denth (ir	Soil Horizon	Soil Texture	Soil Matrix: Color-		Redoximorphic F	eatures	Coarso % b	e Fragments y Volume	Soil	Soil Consistence	Other
Deptil (il	/ /Layer	(USDA)	Moist (Munsell)	Depth	Color	Percent	Gravel	Cobbles & Stones	Structure	(Moist)	Other
0-3	AP	LS			Cnc: Dpl:						
2.25	<u> </u>	6			Cnc :						
3-30	<b>U</b> 1	3			Dpl:						
35-144	C ₂	FS		124"	Cnc: Dpl:						Banding at 6'
					Cnc :						
					Dpl:						
					Cnc:						
					Dpl:						
ibbA	tional Notes:	1	1		Dpi.	I	1	1	1	II	



## Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

Deep	Observation	n Hole Numb	er: <u>TP-46</u>	7/14/2	23	11:30am	С	vercast			
			Hole #	Date		Time	N	/eather		Latitude	Longitude
1. L	and Use: Con	nmercial			Wooded						0-3
	(e.g.	, woodland, agric	ultural field, vacant lo	ot, etc.)	Vegetation		Surface	e Stones (e.g.,	cobbles, sto	nes, boulders, etc	c.) Slope (%)
Desc	ription of Loca	ation:	Southern part of the	e driving ra	ange.						
2. Soil F	arent Materia	al:									
					Land	form		Position on	Landscape	(SU, SH, BS, FS,	TS, Plain)
3. Dista	nces from:	Oper	Water Body	fee	t	Drainage	Way _	feet		Wetlan	ds feet
		F	Property Line _	fee	t	Drinking Water	·Well	feet		Oth	er feet
4. Unsuita	able Materials	Present:	Yes 🛛 No 🛛	lf Yes: [	Disturbed Soi	il/Fill Material	□ V	Veathered/Fr	actured Ro	ck 🗌 Bedro	ck
5. Grou	ndwater Obse	erved:	Yes 🛛	No		If ves:D	epth to We	eping in Hole		Depth Stand	ing Water in Hole
0.000											-
				T		Soil Log					
Depth (in)	Soil Horizon	Soil Texture	Soil Matrix: Color-		Redoximorphic F	eatures	Coarse % by	Fragments Volume	Soil	Soil Consistence	Other
Depth (iii)	/Layer	(USDA)	Moist (Munsell)	Depth	Color	Percent	Gravel	Cobbles & Stones	Structure	(Moist)	Otter
0-10	Ap	SL			Cnc : Dol:						
10-96	C ₁	s			Cnc:						
		-			Dpl:						
96-120	C ₂	LS			Cnc: Dpl:						Signs of mottling at 8.4'. Might be trapped water in
400.444				400"	Cnc :						new layer.
120-144	C ₃	S		126	Dpl:						
					Cnc:						
					Cnc:						
					Dpl:						
Addit	onal Notes:	1	<u>I</u>	I	1 '		1		1	1	



## Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

Deep	Observation	n Hole Numbe	er: <u>TP-47</u>	7/14/2	23	11:30am	С	vercast			
			Hole #	Date		Time	N	/eather		Latitude	Longitude
1. La	and Use: <u>Con</u>	nmercial			Wooded						0-3
	(e.g.	, woodland, agric	ultural field, vacant lo	ot, etc.)	Vegetation		Surface	e Stones (e.g.,	cobbles, stor	nes, boulders, etc.	) Slope (%)
Descr	iption of Loca	ation:	Northeast corner of	driving ra	nge.						_
2. Soil P	arent Materia	al:									
					Landfo	orm		Position on	Landscape	(SU, SH, BS, FS, ⁻	ΓS, Plain)
3. Distan	ices from:	Open	Water Body	fee	t	Drainage	Way _	feet		Wetland	Is feet
		F	Property Line _	fee	t [	Drinking Wate	r Well	feet		Othe	r feet
4. Unsuita	ble Materials	Present:	Yes 🗌 No 🛛	f Yes: [	Disturbed Soil	/Fill Material	□ v	Veathered/Fra	actured Ro	ck 🗌 Bedroo	k
5 Group	dwater Obse	arved: 🕅		No		lf ves: D	epth to We	eping in Hole	1	18" Donth Standi	a Watar in Hala
J. Croun						ii yes			<u></u>	<u>oo</u> Deptil Stalidii	
	-	1			5	Soil Log			•		
Dopth (in)	Soil Horizon	Soil Texture	Soil Matrix: Color-		Redoximorphic Fe	eatures	Coarse % by	e Fragments y Volume	Soil	Soil Consistence	Othor
Depth (III)	/Layer	(USDA)	Moist (Munsell)	Depth	Color	Percent	Gravel	Cobbles & Stones	Structure	(Moist)	Other
0-7	AP	SL			Cnc: Dpl:						
7-36	Bw	SL			Cnc :						
		_			Dpl:						
36-58	C1	LS			Cnc : Dpl:						
58-108	C ₂	S		90"	Cnc :						
					Cnc:						
					Dpl:						
					Cnc :						
					Dpl:						
Additio	onal Notes:										



## Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

Deep Observation Hole Number: <u>TP-48</u>				7/14/23		11:30am	0	Overcast			
			Hole #	Date		Time	W	eather		Latitude	Longitude
1. L	and Use: <u>Con</u>	nmercial			Wooded						0-3
	(e.g.	, woodland, agric	ultural field, vacant lo	ot, etc.)	Vegetation	Vegetation Surface Stones (e.g., cobbles, stones, boulders, etc.)					
Desc	ription of Loca	ation:	Northeast corner of	driving rai	nge.						
2. Soil F	Parent Materia	al:									
Landform									Landscape	(SU, SH, BS, FS,	TS, Plain)
3. Dista	nces from:	Oper	Water Body	fee	t	Drainage	Way _	feet		Wetlan	ds feet
		F	Property Line _	feet	t	Drinking Water	Well	feet		Oth	er feet
4. Unsuit	able Materials	Present:	Yes 🛛 No 🛛 I	fYes: [	Disturbed Soi	il/Fill Material	□ V	Veathered/Fr	actured Ro	ck 🗌 Bedro	ck
5. Grou	ndwater Obse	erved:	Yes 🛛	No		If yes: ^{Do}	epth to We	eping in Hole		Depth Stand	ing Water in Hole
						Soil Log					
Denth (in	Soil Horizon	Soil Texture	Soil Matrix: Color-		Redoximorphic F	Features	Coarse Fragments % by Volume		Soil	Soil Consistence	Other
Deptil (III	/Layer	(USDA)	Moist (Munsell)	Depth	Color	Percent	Gravel	Cobbles & Stones	Structure	(Moist)	Otter
0-7	AP	SL			Cnc: Dpl:						
7-36	Bw	SL			Cnc :						
					Dpi. Cnc :						
36-54	C ₁	LS			Dpl:						Signs of mottling at 4.5'. Might be trapped water.
54-108	C ₂	S			Cnc :						
					Dpi:						
					Cnc ·						
					Dol:	—					
Addit	ional Notes	1	I	1	- F ··	I	11		1	1	



## Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

Deep	Observation	n Hole Numbe	er: <u>TP-49</u>	7/14/2	23	11:30am	C	Vercast			
			Hole #	Date		Time	W	/eather		Latitude	Longitude
1. L	and Use: <u>Cor</u>	nmercial			Wooded						0-3
	(e.g.	, woodland, agric	ultural field, vacant lo	ot, etc.)VegetationSurface Stones (e.g., cobbles, stones, boulders, etc.)					Slope (%)		
Desc	ription of Loca	ation:	West side of west e	elm street e	entrance driveway.						_
2. Soil F	arent Materia	al:									
Landform     Position on Landscape (SU, SH, BS, FS, TS, Plain)											S, Plain)
3. Dista	nces from:	Oper	Water Body	fee	t	Drainage	e Way _	feet		Wetland	s feet
		F	Property Line	fee	t	Drinking Wate	r Well _	feet		Othe	feet
4. Unsuita	able Materials	Present: 🛛	Yes 🗌 No 🛛 I	f Yes: [	Disturbed Soil	I/Fill Material	□ V	Veathered/Fra	actured Ro	ck 🗌 Bedrocl	K
5. Grou	ndwater Obse	erved:	Yes 🛛	No		If yes:D	epth to We	eping in Hole	_	Depth Standin	g Water in Hole
					:	Soil Log					
Donth (in)	Soil Horizon	Soil Texture	Soil Matrix: Color-	Redoximorphic Features		eatures	Coarse Fragments % by Volume		Soil	Soil	Other
Depth (in)	/Layer	(USDA)	Moist (Munsell)	Depth	Color	Percent	Gravel	Cobbles & Stones	Structure	(Moist)	Other
0-24	Fill				Cnc: Dpl:						
24-28	Ap	SL			Cnc :						
28-32	Bw	SL			Cnc:						
32-120	с	S			Cnc :						
	-	-			Dpl: Cnc:						
					Dpl:						
					Cnc :						
					Dpl:						
Additi	onal Notes:										



## Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

Dee	o Observation	n Hole Numbe	er: <u>TP-50</u>	7/14/2	23	11:30am	C	Vercast			
			Hole #	Date		Time	W	/eather		Latitude	Longitude
1. I	_and Use: <u>Cor</u>	nmercial			Wooded						0-3
	(e.g.	, woodland, agric	ultural field, vacant lo	ot, etc.)	Vegetation		Surface	e Stones (e.g.,	cobbles, stor	nes, boulders, etc.)	Slope (%)
Desc	cription of Loca	ation:	East side of west el	m street e	ntrance driveway.						_
2. Soil	Parent Materia	al:									
Landform Position on Landscape (SU, SH, BS, FS, TS, Plair											S, Plain)
3. Dista	ances from:	Oper	Water Body	fee	t	Drainage	Way _	feet		Wetland	s feet
		F	Property Line _	fee	t	Drinking Wate	r Well	feet		Othe	feet
4. Unsui	able Materials	Present: 🛛	Yes 🗌 No 🛛 I	f Yes: [	Disturbed Soi	I/Fill Material	□ V	Veathered/Fra	actured Ro	ck 🗌 Bedrocl	κ
5. Grou	Indwater Obse	erved:	Yes 🛛	No		If yes:D	epth to We	eping in Hole	_	Depth Standin	g Water in Hole
						Soil Loa					
Donth (ir	Soil Horizon	Soil Texture	Soil Matrix: Color-	Redoximorphic Featur		eatures	Coarse Fragments % by Volume		Soil	Soil	Othor
Depth (ii	/Layer	(USDA)	Moist (Munsell)	Depth	Color	Percent	Gravel	Cobbles & Stones	Structure	(Moist)	Other
0-5	AP	SL			Cnc: Dol:						
5-12	Bw	SL			Cnc :						
10.40	<b></b> ;;;				Dpi: Cnc:						
12-18	FIII				Dpl:						
18-126	С	S			Cnc : Dol:						
					Cnc :						
					Dpl:						
					Dol:						
Addi	tional Notes:	1	1	I	PP''	I	1	1	1		



## Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

Deep	Observatior	h Hole Numbe	er: <u>TP-51</u>	7/14/2	3	11:30am	C	Overcast			
			Hole #	Date		Time	V	/eather		Latitude	Longitude
1. La	and Use: Con	nmercial			Wooded						0-3
	(e.g.	woodland, agric	ultural field, vacant lo	ot, etc.)	Vegetation		Surface	e Stones (e.g.,	cobbles, sto	nes, boulders, etc.)	Slope (%)
Descr	iption of Loca	ation:	East side of west el	m street en	trance driveway.						_
2. Soil P	arent Materia	al:									
					Land	form		Position on	Landscape	(SU, SH, BS, FS, 1	S, Plain)
3. Distar	ices from:	Oper	Water Body _	feet		Drainage	e Way _	feet		Wetland	S feet
		F	Property Line _	feet		Drinking Wate	r Well	feet		Othe	r feet
4. Unsuita	ble Materials	Present:	Yes 🗌 No 🛛	f Yes: 🛛	Disturbed Soi	I/Fill Material	L ۱	Neathered/Fr	actured Ro	ck 🗌 Bedroc	k
5. Grour	dwater Obse	erved:	Yes 🛛	No		If yes:D	epth to We	eping in Hole	—	Depth Standir	g Water in Hole
						Soil Log					
Donth (in)	Soil Horizon	Soil Texture	Soil Matrix: Color-	Redoximorphic F		eatures	Coarse Fragments % by Volume		Soil	Soil	Other
Depth (in)	/Layer	(USDA)	Moist (Munsell)	Depth	Color	Percent	Gravel	Cobbles & Stones	Structure	(Moist)	Other
0-4	AP	SL		C	Cnc: Dol:						
4.40		0		0	Cnc :						
4-16	Bw	SL		[	Dpl:						
16-24	Fill			C	Cnc :						
		-			Dnc :						
24-120	C	S			Dpl:						
				C	Cnc :						
	ļ			[	Dpl:						
					Cnc:						
 ۸ ما دا:۰:					וקע:						



## Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

Deep	Observatior	n Hole Numb	er: <u>TP-25</u>	7/14/23	5	11:30am	C	Overcast			
			Hole #	Date		Time	V	/eather		Latitude	Longitude
1. La	and Use: Con	nmercial			Wooded						0-3
	(e.g.	, woodland, agric	ultural field, vacant lo	ot, etc.)	Vegetation		Surfac	e Stones (e.g.,	cobbles, stor	nes, boulders, etc.)	Slope (%)
Descr	iption of Loca	ation:	Wooded area betwe	een 78 and 8	35 Hazelwood Dr	ive.					_
2. Soil Pa	arent Materia	al:									
					Land	form		Position on	Landscape	(SU, SH, BS, FS, T	S, Plain)
3. Distan	ces from:	Oper	Water Body	feet		Drainage	Way _	feet		Wetlands	6 feet
		F	Property Line _	feet		Drinking Water	r Well	feet		Other	feet
4. Unsuita	ble Materials	Present:	Yes 🛛 No 🛛	f Yes:	Disturbed Soi	il/Fill Material		Neathered/Fr	actured Ro	ck 🗌 Bedrock	
E Cravia	duratar Ohaa	m va du 🗖	Vaa 🕅	Nia			onth to Ma	oping in Holo		Donth Standing	Water in Hele
5. Groun	dwater Obse		res 🖂	INO		II yes		eping in noie	—		
						Soil Log					
Donth (in)	Soil Horizon	Soil Texture	Soil Matrix: Color	Redoximorphic F		Features	Coarse Fragments % by Volume		Soil	Soil	Other
Depth (In)	/Layer	(USDA)	Moist (Munsell)	Depth	Color	Percent	Gravel	Cobbles & Stones	Structure	(Moist)	Other
0-6	AP	SL		C	nc : pl [.]						
		<u></u>		C	nc :						
6-20	Bw	SL		D	pl:						
20-120	С	FS		С	nc :						
					nic.						
				C	nc:						
				D	pl:						
	1			С	nc :						
				D	pl:						
Additio	onal Notes										


Commonwealth of Massachusetts City/Town of Pembroke

## Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## C. On-Site Review (minimum of two holes required at every proposed primary and reserve disposal area)

Deep	Observatior	h Hole Numbe	er: <u>TP-26</u>	7/14/2	23	11:30am	C	Vercast			
			Hole #	Date		Time	W	/eather		Latitude	Longitude
1. La	and Use: <u>Con</u>	nmercial			Wooded						0-3
	(e.g.	, woodland, agric	ultural field, vacant lo	ot, etc.)	Vegetation		Surface	e Stones (e.g.,	cobbles, stor	nes, boulders, etc.)	Slope (%)
Descri	iption of Loca	ation:	Wooded area to the	e west of th	ne water line easen	nent.					_
2. Soil Pa	arent Materia	al:									
					Land	lform		Position on	Landscape	(SU, SH, BS, FS, T	S, Plain)
3. Distan	ces from:	Oper	Water Body	fee	ıt	Drainage	e Way _	feet		Wetlands	6 feet
		F	Property Line _	fee	t	Drinking Wate	r Well	feet		Other	feet
4. Unsuita	ble Materials	Present:	Yes 🛛 No 🛛	f Yes: [	Disturbed Soi	il/Fill Material		Veathered/Fr	actured Ro	ck 🗌 Bedrock	
_		. —									
5. Groun	dwater Obse	erved:	Yes 🖂	No		If yes:D	epth to We	eping in Hole		Depth Standing	g Water in Hole
						Soil Log					
Donth (in)	Soil Horizon	Soil Texture	Soil Matrix: Color-		Redoximorphic F	eatures	Coarse % b	e Fragments y Volume	Soil	Soil	Other
Depth (In)	/Layer	(USDA)	Moist (Munsell)	Depth	Color	Percent	Gravel	Cobbles & Stones	Structure	(Moist)	Other
0-3	AP	SL			Cnc: Dpl:						
3-11	Bw	SL			Cnc :						
11-126	с	S		114"	Cnc:						Mottling at 9.5"
		_			Dpl:						3
					Cnc:						
					Dpl:						
					Cnc :						
					Dpl:						
Additio	onal Notes:										



Commonwealth of Massachusetts City/Town of Pembroke

## Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## C. On-Site Review (minimum of two holes required at every proposed primary and reserve disposal area)

Deep	Observation	n Hole Numbe	er: <u>TP-27</u>	7/14/2	23	11:30am	C	vercast			
			Hole #	Date		Time	W	/eather		Latitude	Longitude
1. La	and Use: <u>Con</u>	nmercial			Wooded						0-3
	(e.g.	, woodland, agric	ultural field, vacant lo	ot, etc.)	Vegetation		Surface	e Stones (e.g.,	cobbles, stor	nes, boulders, etc.	) Slope (%)
Desci	iption of Loca	ation:	Wooded area to the	e east of the	e water line easem	ient.					_
2. Soil P	arent Materia	al:									
					Land	form		Position on	Landscape	(SU, SH, BS, FS, ⁻	TS, Plain)
3. Distar	nces from:	Oper	Water Body	feet	t	Drainage	e Way _	feet		Wetland	ls feet
		F	Property Line _	feet	t	Drinking Wate	r Well	feet		Othe	r feet
4. Unsuita	ble Materials	Present:	Yes 🛛 No 🛛	f Yes:	Disturbed Soi	I/Fill Material	□ \	Veathered/Fr	actured Ro	ck 🗌 Bedroc	k
5. Grour	ndwater Obse	erved:	Yes 🗌	No		If yes:D	epth to We	eping in Hole	_1	32 Depth Stan	ding Water in Hole
						Soillog					
					Redovimorphic F		Coarse	Fragments		Soil	
Depth (in)	Soil Horizon	Soil Texture	Soil Matrix: Color-				% b	y Volume	Soil	Consistence	Other
	/Layer	(030A)	Moist (Mulisell)	Depth	Color	Percent	Gravel	Stones	Structure	(Moist)	
0-3	AP	SL			Cnc :						
					Dpi. Cnc ·						
3-12	Bw	SL			Dpl:						
12-132	С	S			Cnc:						
					Dpi:						
					Chc: Dpl:						
					Cnc :						
					Dpl:						
					Cnc :						
					Dpl:						
Additi	onal Notes:										



Commonwealth of Massachusetts City/Town of Pembroke

## Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## C. On-Site Review (minimum of two holes required at every proposed primary and reserve disposal area)

Deep	Observatior	n Hole Numb	er: <u>38-39</u>	7/14/2	3	4:30pm	С	vercast			
			Hole #	Date		Time	W	eather		Latitude	Longitude
1. La	ind Use: <u>Con</u>	nmercial			Wooded						0-3
	(e.g.,	, woodland, agric	ultural field, vacant lo	ot, etc.)	Vegetation		Surface	e Stones (e.g.,	cobbles, stor	nes, boulders, etc.	) Slope (%)
Descri	ption of Loca	ation:	Wooded area behin	d 37 Antho	ony Drive.						
2. Soil Pa	arent Materia	al:									
					Land	lform		Position on	Landscape	(SU, SH, BS, FS,	TS, Plain)
3. Distan	ces from:	Oper	Water Body _	feet		Drainage	Way _	feet		Wetland	ds feet
		F	Property Line	feet		Drinking Water	Well	feet		Othe	er feet
4. Unsuital	ble Materials	Present:	Yes 🛛 No 🛛 I	f Yes:	Disturbed So	il/Fill Material	□ V	Veathered/Fra	actured Ro	ck 🗌 Bedroo	k
5. Groun	dwater Obse	erved:	Yes 🗌	No		If yes: ^D	epth to We	eping in Hole		136"_Depth Star	ding Water in Hole
						Soil Log					
Donth (in)	Soil Horizon	Soil Texture	Soil Matrix: Color-		Redoximorphic F	Features	Coarse % by	Fragments Volume	Soil	Soil	Other
Depth (in)	/Layer	(USDA)	Moist (Munsell)	Depth	Color	Percent	Gravel	Cobbles & Stones	Structure	(Moist)	Other
0-2	0				Cnc: Dol:						
2-6	AP	SL			Cnc :						
					Dpl:						
6-22	Bw	SL			Dpl:						
22-136	С	LS		102"	Cnc:						
					Cnc:						
					Dpl:						
					Cnc:						
Additic	nal Notes:				Upi:						



## Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal A Facility Information

Weather Vane at Pembrok Owner Name	a country Club			
94 West Elm Street				
Street Address		BI1-33		
City	MA	Map/Lot #		
	State	Zip Code		
. Site Information				
(Check one)	Upgrade 🗌 Repair			
Soil Survey Available?  Yes  No	lf voor			
Plumouth Consan Land complex-0	-8%,	Webs	oilSunar	6768 HAIR
SoilName Baulda		Source	0	Soil Map Unit
Sandy and grandly supragia cial milto	Soil Limitations			
Soil Parent material	Landform Landform	moraines, pitted out	warh De	Lat Kausa -
Ves 1	No If yes: 2018 39	onstone lanetstone,	he più	Ind, Fames, Est
COAKE Deposity - poorly sorted to	Year Publis	hed/Source Map Unit	102 - 152	(Hunover)
Description of Geologic Map Unit	worrisorfia, ghave	& sand Aner June	KI contain	2 VIM Francis
Flood Rate Insurance Map Within a regula	tory floodway?	0		1 vary 11rd saria
Within a velocity zone?  Ves K No	, localitation (A	No		
Within a Mapped Wetland Area?	the Ifvor Ma	- 010 111 -		
Current Water Resource Conditions (USCO)	No i yes, ivia	ssGIS Wetland Data Layer:		
000000000000000000000000000000000000000	01 129 2020 Month/Day/ Year	Range: 🔲 Above Normal	Wetland Type	

t5form11.doc • rev. 3/15/18

١.

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-	Site Rev	view (min	imum of two	o holes	required	atovor	040 0 0 0 0		onage D	ispusai	
Deep	Observatio	on Hole Nur	nber: <u>TP-1</u>		1/20/20	8:31	proposed	primary ar	nd reserve di •	sposal area)	
1. Land	Use: (e.g	lood lan	gricultural field, va	acant lot, e	Date /	Time	deciduars	/eather	Latitude	9	Longitude:
Descr	ription of Loc	ation:	wooded	area	nuxt to	resider	Itial Ho	Surface S	tones (e.g., cobble	s, stones, boulders	, etc.) Slope (%)
2. Soil P	arent Materi	al: San	dy glacia	1 FW	oldeposit	J	Out val	n plain.	1	Summit	-
3. Distar	nces from:	Open Wate	er Body	feet		Drai	nage Way	for all		Position on Land	lscape (SU, SH, BS, FS, TS)
. Unsuita	ble	Prope	rty Line	feet		Drinking V	Vater Well	feet	Vveti O	ands fe ther fe	eet
Groun	dwater Obse	_] Yes 🚺 erved: 🗌 Ye	No If Yes: es 🖄 No	Distu	urbed Soil	🗋 Fill Ma	terial If yes:	Weathered     Depth Weepi	I/Fractured Rock	Bedrock	Désemble :: Nét de la comp
				_		So	il Log		<b>0</b>	Depth 3	standing Water in Hole
Depth (in)	Soil Horizon /Laver	Soil Texture	Soil Matrix: Color-Moist	Redo	ximorphic Fe	atures	Coarse % by	Fragments Volume		Soil	
4 . f . p	A	100.0	(Munsell)	Depth	Color	Percent	Gravel	Cobbles & Stones	Soil Structure	Consistence (Moist)	Other
	A	Sandy	1.54/25/2			-	-	-	massive	mable	
1-20	D	loam	1.3Y25/8	-	Proget	-		25%	massive	Veryabu	_
10-156	C	Sand	1,54K5/6	-		-	22%	25%	massive	Vinghe	
											đ
									<u>.</u>		
Addition	al Notes:										

**Commonwealth of Massachusetts City/Town of** 

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-	Site Rev	view (min	imum of two	o holes	required	atovon	Dropost		enage D	ispusai	
Deep	Observatio	on Hole Nur	nher m-1	7	bolo	al every	proposed	primary an	nd reserve di	isposal area	l)
Land Descr	Use: $\int_{(e,c)}^{b}$	Nod land, ag	d gricultural field, va Wooded	acant lot, e	Date Date dtc.) V V	Time <u>a cī duo</u> egetation <u>r c</u> s i d	o with al	eather a few Surface St Nov 161	Latitud boylder tones (e.g., cobble	e 5 s, stones, boulde	Longitude: 3-5 7. rs, etc.) Slope (%)
Soil P	arent Materi	al: Sand	l/gravel	y gl	acrofler	al	outur	ish Plan	n	Stt	
Distan	ces from:	Open Wate	er Body	feet		Drai Drai				Position on La	ndscape (SU, SH, BS, FS, TS)
[]		Prope	rty Line	feet		Drinking V	Mater Well	feet	Wet	ands	feet
Ground	dwater Obse	erved:	es No	⊔ Distu	urbed Soil	Fill Ma	iterial If yes: bil Loa	Weathered Depth Weepin	d/Fractured Rock	Bedrock	s n Standing Water in Hole
pth (in)	Soil Horizon /Layer	Soil Texture	Soil Matrix: Color-Moist	Redo	ximorphic Fe	atures	Coarse % by	Fragments Volume		Soil	
	0		(Munsell)	Depth	Color	Percent	Gravel	Cobbles & Stones	Soil Structure	Consistence (Moist)	Other
<u> </u>	0	loom	7.546291		-	-	-	_	massive	Very	
-0	A	Found	1.01/4	-		-	-	-	massive	very Brake	-
19	B	loam	1.54101/8	-	-	-			massive	venj	
-12	C	rang and	7.54124/3	-		-		-	massive	hape	remove
-168	62	Sand	7.5416 5/4	-		-	25%	-	Strate	loor	
Addition	al Notes: in	0.0									

11

		monwealt Fown of	h of Massa	achuse	tts		Ì				
C. On	-Site Po		on Suita	ability	/ Asse	ssmer	nt for O	n-Site S	Sewage D	lisnosal	
Deep 1. Land Desc 2. Soil F	p Observation	ion Hole Nu 2000 Lang 9., woodland, a cation:	mber: TP Hole Igricultural field, Woode d	vacant lot,	$\frac{1/30/202}{Date}$	d at every Jo 10:3 Time decidua Vegetation USL to p	strus	Sunny 2 Veather Surface S	S* Latitud Mars Stones (e.g., cobble	disposal are	Longitude: 3-S°/s ers, etc.) Slope (%)
<ol> <li>Distar</li> <li>Unsuita Materia</li> <li>Groun</li> </ol>	nces from: able Is Present: adwater Obs	Open Wat Prope	er Body rty Line No If Yes: es No	feet feet Dist	urbed Soil	Dra Dra Drinking \ Drinking \	Landform inage Way Water Well Iterial If yes:	feet feet Weathered Depth Weepi	Wet C d/Fractured Rock	SV/MM Position on La ilands Other Conter Dther Dther Depti	feet feet foot Standing Water in Hole
Depth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist	Redo	ximorphic F	eatures	Coarse	ragmente			
D-4"	A	1	(Munsoli)	Depth	Color		10 09	Volume		Soil	
- 1		10 am	7.5Vn2.2.			Percent	Gravel	Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	Other
4"-16"	A	loam	7.54 R 2.91 7.54 R 2.91 7.54 R 3/2			Percent	Gravel	Volume Cobbles & Stones	Soil Structure	Soil Consistence (Moist) VMY Mable	Other
4"-16" 6"-24"	ß	loam loam loamay	7.54 12.241 7.54 12.343 7.54 12.343	-		Percent	Grave!	Volume Cobbles & Stones	Soil Structure Massive Massive	Soil Consistence (Moist) V(My fn abu fn abu	Other
4"-16" 16"-24" 24"-17"	B C	Ibam Ibam Ibam Ibamy Sand	7.54 p. 2.9, 7.54 p. 2.9, 7.54 p. 3,3 7.54 p. 4,4 7.54 p. 4,4			Percent	Gravel	Volume Cobbles & Stones	Soil Structure MASSIVC MASSIVC MASSIVC	Soil Consistence (Moist) VMY Mable VMA Mable VMY Maple	Other
4"-16" 16"-24" 24"-67" 7"-180"	B C C2	loam loam loamy sand fire-Med Sand	7.54 12.29, 7.54 12.3/3 7.54 12.3/3 7.54 1/4 7.54 516			Percent	Gravel 	Volume Cobbles & Stones	Soil Structure Massive Massive Massive Massive	Soil Consistence (Moist) V(My fnable YMA Mable VMy tnable	Other
4"-16" 6"-24" 24"-67" 1'-180"	B C. C2	Ibam Ibam Ibam Ibamy Sand Fine-Mid Sand	7.54 R 2.9,1 7.54 R 2.3,3 7.54 R 3,3 7.54 R 4,4 7.54 R 4,4			Percent		Volume Cobbles & Stones	Soil Structure MASSIVE MASSIVE MASSIVE MASSIVE SINGLE Grain	Soil Consistence (Moist) YM Mabu YM Mabu YM Mabu YM Mabu YM Mabu YM Mabu YM YM Mabu	Other

t5form11.doc • rev. 3/15/18

C. On Dee 1. Lanc	City/T Forr -Site Re p Observation Use:	nonwealt Fown of n 11 - S view ( <i>mir</i> ion Hole Nu <u>UOG</u> ( <u>A</u> .9., woodland, a	b of Massa oil Suita nimum of two mber: TP- Hole	achused ability vo holes 4 #	tts Asse required 1 30 20 Date etc.)	d at every	propose AM	on-Site S d primary a Weather Surface S	Sewage D and reserve a 30° fund the hould	<b>Disposal</b> lisposal area) le WK	Longitude:
2. Soil F 3. Distar	Parent Mater	ial: <u>gla</u> Open Wat	Uofu Ina	l depa	sets	4 to 1.	Landform	lot lash pla	(H3), 0000	Summit	etc.) Slope (%)
. Unsuita Materia . Groun	ible Is Present: idwater Obse	Prope	No If Yes:	feet	urbed Soil	Drai Drinking V	inage Way Vater Well terial	feet	Wet C d/Fractured Rock	lands feet	ape (SU, SH, BS, FS, TS) t
						Se		Depth Weep	ing from Pit	Depth Sta	Inding Water in Hole
epth (in)	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist	Redo	ximorphic F	So Features	il Log Coarse % by	Depth Weep.	ing from Pit	Depth Sta	nding Water in Hole
epth (in) '-8"	Soil Horizon /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redo Depth	ximorphic F Color	So Features Percent	Dil Log Coarse % by Gravel	Fragments Volume Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	nding Water in Hole Other
*pth (in) -8" '-24"	Soil Horizon /Layer A BC	Soil Texture (USDA) Loam Loamy	Soil Matrix: Color-Moist (Munsell) 159 P_3/4	Redo Depth	ximorphic F Color	Features Percent	il Log Coarse % by Gravel	Depth Weep Fragments Volume Cobbles & Stones	Soil Structure	Soil Consistence (Moist)	onding Water in Hole Other
-8" -24" 1"180"	Soil Horizon /Layer A BC C	Soil Texture (USDA) Loam Loamy Sand Loamy	Soil Matrix: Color-Moist (Munsell) 137 123/4 107 123/4 107 129/4 07 125/2	Redo Depth	ximorphic F Color	So Features Percent	bil Log Coarse % by Gravel	Pepth Weep Fragments Volume Cobbles & Stones	Soil Structure Massive Massive	Soil Consistence (Moist) Ymable Wymable	Other
-8" -24" 1"(85)	Soil Horizon /Layer A BC C	Soil Texture (USDA) LOAM LOAMY Sand LOAMY Sand	Soil Matrix: Color-Moist (Munsell) $1^{1}$ $\mathbb{R}^{3}/4$ $1^{1}$ $\mathbb{R}^{3}/4$ $1^{1}$ $\mathbb{R}^{3}/4$ $1^{1}$ $\mathbb{R}^{3}/3$	Redo Depth	ximorphic F Color	So Features Percent	Il yes. Dil Log Coarse % by Gravel 	Depth Weep Fragments Volume Cobbles & Stones ↓ ↓ ↓ ↓ ↓ ↓ ↓	Soil Structure Massive Massive Massive Massive	Depth Sta Soil Consistence (Moist) YMABLE YMABLE YMABLE YMABLE YMABLE YMABLE YMABLE YMABLE	Other
-8" "-24" 1" <b>.26</b> "	Soil Horizon /Layer A BC C	Soil Texture (USDA) Loamy Sand Loamy Sand	Soil Matrix: Color-Moist (Munsell) 159 p23/4 109 p23/4 109 p23/4 09 p23/3	Redo Depth	ximorphic F Color	So Features Percent	il Log Coarse % by Gravel	Depth Weep Fragments Volume Cobbles & Stones $4.5^{\circ}/_{b}$ $4.5^{\circ}/_{b}$	Soil Structure Massive Massive Massive Massive	Depth Sta Soil Consistence (Moist) Ymable Ymable Ymable Ymable Ymable	Other
-8" -24" 1" <b>.2</b> 65"	Soil Horizon /Layer A BC C	Soil Texture (USDA) LOAM LOAMY Sand LOAMY Sand	Soil Matrix: Color-Moist (Munsell) 184 R_3/4 107 R_4/u 07 R_5/3	Redo Depth	ximorphic F Color	So Features Percent	il Log Coarse % by Gravel	Depth Weep Fragments Volume Cobbles & Stones ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓	Soil Structure Massive Massive Massive Massive	Depth Sta Soil Consistence (Moist) Ymable Ymable Ymable Ymable	Other

*5form11.doc • rev. 3/15/18

# Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-	Site Rev	<b>iew</b> (minin	num of two ho	les requ	uired at eve	ery prop	osed prir	nary and	reserve dia	-	
Deep	Observatio	n Hole Num	ber: <u>TP-S</u> _{Hole #}	1/2 c	12020		-15	Sun	ny 30°	pusai alee	1 <i>)</i>
1. Land (	Use (e.g., w	oodland, agricul	tural field, vacant lot,	etc.)	<u>Alciden</u> Vegetation	1 pree	5	Surface Stor	Small k	Latitude	Longitude:
Des	cription of L	ocation:	woods wit	h m	edium	Sized	trees	6"-2	1	, stones, bould	ers, etc.) Slope (%)
Soli Pa	arent Materia	al: Jahou	f glaciofili	stal d	cports I	outwo andform	ash plo	un fi	Sition on Landsca		
. Distan	ces from:	Ope	n Water Body	fe	et	C	)rainage W	/ay	, feet	We	etlands feet
. Unsuitat	ble Material	s Present:	Yes No	fe If Yes:	et Disturbed \$	Drinkin Soil 🔲	ig Water W Fill Material	/eli	feet Weathered/Er	oturod Reals	Other feet
. Ground	dwater Obse	erved: 🗌 Yes	s 💟 No		If yes	s:	Depth Wee	ning from Dit		ACINI EO KOCK	L Bedrock
						Soil Log		ping nom Pit	-	Depth S	Standing Water in Hole
epth (in)	Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color- Moist (Munseli)	Red	oximorphic Fea	itures	Coarse F % by	ragments Volume	Soil Structure	Soil	
1 2.1	^	10010		Depth	Color	Percent	Gravel	Cobbles & Stones	Son Structure	(Moist)	Other
-0.	A	Sandy	1,54/2 2/1	-	~	-	-	_	massim	Frabu	
··- 10"	В	loan	7.5 YR 4/6	-	-		12%	-	massive	habi	concentrations on eus
0"-17-4"	< ∠	sand	7.57693	-	-	-	2%	10%.	massive	ung Frable	24" - 31" Keines for
										11-0011-0	thereset
		, I									
Addition	al Notes:										

For C. On-Site P	nmonweal /Town of Tm 11 - S	th of Mass Soil Suit	^{achuse} ability	^{tts} / Asse	ssmei	nt for C	)n-Site S	Sewago (		
Deep Observa	tion Hole Nu	nimum of ty Imber: TV	NO holes	s required	d at ever	y propose	d primary a	and reserve	disposal or	
1. Land Use	Edgent	Hole	#	] <u>30/20</u> Date	I 1.60 Time		Shny ;	300	anoposar are	a)
( Description of I	e.g., woodland, a	agricultural field,	Vacant lot,	etc.)	Vegetation	edge		Latitu	de	Longitude:
2. Soil Parent Mate	erial: 010	LUOFULV	ial d	envie	t lot	\$ wood	land	stories (e.g., cobbi	es, stones, bould	ders, etc.) Slope (%)
3. Distances from:	Open Wat	ter Body	feet	<u>apor 11</u>	7	Landform	ash pla	In	Sum	nit
. Unsuitable Matoriala Day	Prope	erty Line	feet		Dra Drinking \	iinage Way Water Well	feet	Wet	Position on La	andscape (SU, SH, BS, FS, TS) _ feet
Groundwater Ob	Served:	No If Yes: es 🔽 No	🗋 Distu	urbed Soil	🗍 Fill Ma	aterial	/eet	(	Other	feet
		4.10	)			If ves:	L Weathered	d/Fractured Rocl	k 🛛 Bedroc	k
)epth (in) Soil Horizon	n Soil Texture	Soil Matrix:	Redo	ximorphic Fe	Sc	If yes:	Depth Weepi	d/Fractured Rock	Bedroc	k h Standing Water in Hole
Pepth (in) Soil Horizor /Layer	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell)	Redo Depth	ximorphic Fe Color	So Patures Percent	If yes: Dil Log Coarse % by Gravel	Depth Weepi      Tragments Volume      Cobbles &     Stones	d/Fractured Rocl ing from Pit Soil Structure	Soil Consistence (Moist)	k h Standing Water in Hole <b>Other</b>
Pepth (in) Soil Horizor /Layer 	Soil Texture (USDA)	Soil Matrix: Color-Moist (Munsell) 7: SY 123/1 7: SY 123/1 7: SY 12/10	Redo: Depth	ximorphic Fe Color	Sc eatures Percent	If yes: Dil Log Coarse % by Gravel	L Weathered     Depth Weepi  Fragments Volume Cobbles & Stones	d/Fractured Rock ing from Pit Soil Structure Massive	Soil Consistence (Moist)	k h Standing Water in Hole Other
Pepth (in) Soil Horizor /Layer - S ^M A _p - 30 ⁴ B ₄ D'-44 ^W BC	Soil Texture (USDA) USUM Sandy Loum Daamy	Soil Matrix: Color-Moist (Munsell) 7:57123/1 7:57123/1 7:57124/10 7:57124/10	Redo: Depth	ximorphic Fe Color	Percent	If yes: Dil Log Coarse % by Gravel 5%	L Weathered Depth Weepi Fragments Volume Cobbles & Stones	d/Fractured Rock ing from Pit Soil Structure MASSIM MASSIM	Soil Consistence (Moist)	k h Standing Water in Hole Other
Pepth (in) Soil Horizor $^{H}-S^{H}$ A $_{\mu}$ $-30^{H}$ B $_{\mu}$ $0^{\mu}-44^{\mu}$ B C $1^{\mu}-141^{\mu}$ C	Soil Texture (USDA) ISUM Sandy ISUM Sandy ISUM Sandy ISUM	Soil Matrix: Color-Moist (Munsell) 7: SY 123/1 7: SY 123/1 7: SY 124/14 7: SY 125/3 7: SY 124/14	Redo: Depth	ximorphic Fe	Sc Percent	If yes: Dil Log Coarse % by Gravel 5%/0 5%/0	L] Weathered Depth Weepi Fragments Volume Cobbles & Stones	d/Fractured Rock ing from Pit Soil Structure Massive Massive Massive	Soil Consistence (Moist) Very Frage Soil Consistence (Moist)	k h Standing Water in Hole Other
Depth (in) Soil Horizor $^{H}-S^{H}$ A $_{P}$ $^{H}-30^{H}$ B $_{L}$ $0^{H}-441^{H}$ C	Soil Texture (USDA) ISUM Sandy Journ Sand Journy Sand	Soil Matrix: Color-Moist (Munsell) 7:57123/1 7:57124/14 7:57125/3 7:57125/3	Redo: Depth	ximorphic Fe	Percent	If yes: Dil Log Coarse % by Gravel 5% 5% 10%	L] Weathered Depth Weepi Fragments Volume Cobbles & Stones 	d/Fractured Rock ing from Pit Soil Structure Massive Massive Massive Massive Massive	Soil Consistence (Moist) VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACM	k h Standing Water in Hole Other
Soil Horizoi       "-S"       Ap       -30"       Bu       "-44"       BC       1"-f41"	Soil Texture (USDA) ISUM Sandy Journ Sandy Journ Sand Journy Sand	Soil Matrix: Color-Moist (Munsell) 7:57123/1 7:57124/10 7:57125/3 7:57125/3	Redo: Depth	ximorphic Fe	Sc eatures Percent	If yes: Dil Log Coarse % by Gravel 5%/0 5%/0 10%	L Weathered Depth Weepi Fragments Volume Cobbles & Stones 	d/Fractured Rock ing from Pit Soil Structure Massive Massive Massive Massive	Soil Consistence (Moist) VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACME VMACM	k h Standing Water in Hole Other 

t5form11.doc • rev. 3/15/18

All and a second se	Com City/	monweah Town of M 11 - S	th of Mass Soil Suit	^{achuse}	etts V Asso	Seme					
C. Or	n-Site Re	view (mi		NO hale		.551116	int for O	n-Site	Sewage [	Disposal	
Dee	p Observat	ion Hole Nu	mber: TD		s require	d at eve	ry propose	d primary a	and reserve	dianaad	
1. Land	d Use:	g., woodland,		#	Date	Time	<u>opn</u>	Sunny Weather	30° Latitu	ide	
Desc	cription of Lo	cation:	panc	ing	etc.)	Vegetation	in h	Surface	Stones (e.g. cobb		Longitude:
. Soil F	Parent Mater	ial: a)	acrofin	Ind	10000		iny a	Ub		es, stones, boulders,	etc.) Slope (%)
Dista	nces from			1001	reposi	+3	outw	ash p	laini	human	
		Open was Prope	ter Body	feet		Dr		1-		Position on Lands	nit
Unsuita	shla					010				err contabl	Cape ISU SH BC FC TO
Materia	S Present		ity Line	feet		Drinking	Water Well	feet	We	tlands fee	et (SU, SH, BS, FS, TS)
Materia Groun	ils Present: Idwater Obse		No If Yes:	feet	urbed Soil	Drinking	Water Well	feet	We	tlands fee Dther fee	cape (SU, SH, BS, FS, TS) et t
Materia Groun	able Ils Present: Idwater Obse	Yes 🗍	NO If Yes: es 🗌 No	feet	urbed Soil	Drinking	Water Well laterial If yes:	feet feet Depth Weathere	We ( d/Fractured Roc	tlands fee Dther fee k Bedrock	cape (SU, SH, BS, FS, TS) et t
Materia Groun	soil Horizon	Yes D	No If Yes: es INO	feet	urbed Soil	Drinking	Water Well laterial If yes:	feet feet Weathere Depth Weep	We ( d/Fractured Roc ing from Pit	tlands fee Dther fee k Bedrock Depth Sta	cape (SU, SH, BS, FS, TS) at t anding Water in Hole
Materia Groun	soie dwater Obse Soil Horizon /Layer	Soil Texture (USDA)	No If Yes: es INO Soil Matrix: Color-Moist	feet	urbed Soil ximorphic F	Drinking	Water Well laterial If yes: coil Log Coarse   % by	feet feet Weathere Depth Weep Fragments Volume	We ( d/Fractured Roc ing from Pit	tlands fee Dther fee k  Bedrock Depth Sta	cape (SU, SH, BS, FS, TS) at t anding Water in Hole
Materia Groun epth (in)	Soil Horizon	Soil Texture	No If Yes: es No Soil Matrix: Color-Moist (Munsell)	feet Diste Redo Depth	urbed Soil ximorphic F Color	Drinking	Water Well laterial If yes: <b>coil Log</b> Coarse 1 % by Gravel	feet feet Depth Weep Fragments Volume Cobbles & Stones	We d/Fractured Roc ing from Pit Soil Structure	tlands fee Dther fee k Bedrock Depth Sta	cape (SU, SH, BS, FS, TS) et anding Water in Hole <b>Other</b>
Materia Groun epth (in) -10 "	Soil Horizon	Soil Texture (USDA)	No If Yes: es No Soil Matrix: Color-Moist (Munsell)	feet Diste Redo Depth	urbed Soil ximorphic F Color	Drinking Drinking Fill M S eatures Percent	Water Well laterial If yes: <b>foil Log</b> Gravel	feetfeetDepth WeepDepth Weep Fragments Volume Cobbles & StonesStones	We d/Fractured Roc ing from Pit Soil Structure	tlands fee Dther fee k Bedrock Depth Sta Consistence (Moist)	cape (SU, SH, BS, FS, TS) et anding Water in Hole <b>Other</b>
Materia Groun Pepth (in) -10 " -102"	Soil Horizon /Layer	Soil Texture (USDA)	No If Yes: es No Soil Matrix: Color-Moist (Munsell) 7. SYR S/6	Feet Dist	urbed Soil ximorphic F Color	Drinking Drinking Fill M S eatures Percent	Water Well laterial If yes: foil Log Coarse   % by Gravel S-110°/	feet feet Ueathere Depth Weep Fragments Volume Cobbles & Stones	We d/Fractured Roc ing from Pit Soil Structure	tlands fee Dther fee k  Bedrock Depth Sta Consistence (Moist)	cape (SU, SH, BS, FS, TS) et t anding Water in Hole <b>Other</b>
Materia Groun ³ pth (in) -10 " -142"	Soil Horizon /Layer	Soil Texture (USDA)	No If Yes: es No Soil Matrix: Color-Moist (Munsell) 7. SYRS/6	reet Diste Redo Depth	urbed Soil ximorphic F Color	Drinking Drinking Fill M S eatures Percent	Water Well laterial If yes: foil Log Coarse   % by Gravel 5-/\0°/.	feet feet Weathere Depth Weep Fragments Volume Cobbles & Stones Stones	We d/Fractured Roc ing from Pit Soil Structure Massim	tlands fee Dther fee k Bedrock Depth Sta Consistence (Moist)	cape (SU, SH, BS, FS, TS) et t anding Water in Hole <b>Other</b>
Materia Groun *pth (in) -10 * -162*	Soil Horizon /Layer	Soil Texture (USDA)	No If Yes: es No Soil Matrix: Color-Moist (Munsell) 7.5Y/25/6	reet Dista Redo Depth	urbed Soil ximorphic F Color	Drinking Drinking Fill M S eatures Percent	Water Well laterial If yes: foil Log Coarse % by Gravel 5-/\0°/.	feet feet Weathere Depth Weep Fragments Volume Cobbles & Stones Stones	We d/Fractured Roca ing from Pit Soil Structure MASSIM	tlands fee Dther fee k Bedrock Depth Sta Consistence (Moist)	cape (SU, SH, BS, FS, TS) et t anding Water in Hole <b>Other</b>
Materia Groun epth (in) -10 * -142*	Soil Horizon /Layer	Soil Texture (USDA)	No If Yes: es No Soil Matrix: Color-Moist (Munsell)	reet Diste Redo Depth	urbed Soil ximorphic F Color	Drinking Drinking Fill M S eatures Percent	Water Well Vater Well In the set of the se	feet feet Weathere Depth Weep Fragments Volume Cobbles & Stones So?/c	We ed/Fractured Roc ing from Pit Soil Structure Massim	tlands fee Dther fee k Bedrock Depth Sta Consistence (Moist)	cape (SU, SH, BS, FS, TS) et t anding Water in Hole <b>Other</b>
Materia Groun epth (in) -10 " -162"	Soil Horizon /Layer	Soil Texture (USDA)	No If Yes: es No Soil Matrix: Color-Moist (Munsell) 7, SY/2S/6	reet Total T	ximorphic F	Drinking Drinking Fill M S eatures Percent	Water Well Vater Well Interial If yes: Soil Log Gravel S-/\0°/.	feet feet Depth Weep Depth Weep Fragments Volume Cobbles & Stones Stones S0%	We ed/Fractured Roc ing from Pit Soil Structure MASSIM	tlands fee Dther fee k  Bedrock Depth Sta Consistence (Moist)	cape (SU, SH, BS, FS, TS) et t anding Water in Hole Other
Materia Groun epth (in) -101" -102"	Soil Horizon /Layer	Soil Texture (USDA)	No If Yes: es No Soil Matrix: Color-Moist (Munsell)	reet Total T	urbed Soil ximorphic F Color	Drinking Drinking Fill M S eatures Percent	Water Well Vater Well Interial If yes: Soil Log Gravel S-/\0°/.	feet feet Depth Weep Depth Weep Fragments Volume Cobbles & Stones Stones S0%	We ad/Fractured Roc ing from Pit Soil Structure Massim	tlands fee Dther fee k  Bedrock Depth Sta Consistence (Moist)	cape (SU, SH, BS, FS, TS) et t anding Water in Hole Other
Materia Groun epth (in) -101 " -142"	Soil Horizon /Layer	Soil Texture (USDA)	No If Yes: es No Soil Matrix: Color-Moist (Munsell) 7.5Y/25/6	reet Teet Teet Redo Depth	urbed Soil ximorphic F Color	Drinking Drinking Fill M S eatures Percent	Water Well Vater Well In yes: Soil Log Gravel S-/\0°/.	feet feet Depth Weep Cobbles & Stones So//c So//c	We ad/Fractured Roc ing from Pit Soil Structure Massim	tlands fee Dther fee k Bedrock Depth Sta Consistence (Moist)	cape (SU, SH, BS, FS, TS) et t anding Water in Hole Other
Materia Groun Ppth (in) -10 " -142" ditional	Soil Horizon /Layer	Soil Texture (USDA)	No If Yes: es No Soil Matrix: Color-Moist (Munsell) 7.5YRS/6	feet Dist	urbed Soil ximorphic F Color	Drinking Drinking Fill M S eatures Percent	Water Well Vater Well If yes: Foil Log Gravel S-/\0°/.	feet feet Depth Weep Depth Weep Fragments Volume Cobbles & Stones So/	We ad/Fractured Rock ing from Pit Soil Structure Massim	tlands fee Dther fee k Bedrock Depth Sta Consistence (Moist) YANYU	cape (SU, SH, BS, FS, TS) et t anding Water in Hole Other

t5form11.doc • rev. 3/15/18



#### Commonwealth of Massachusetts City/Town of

## Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

## D. Determination of High Groundwater Elevation

1. 1	Aethod Used:		Obs. Hole #		Obs. Hole #	
[	Depth observed standing water in observation ho	ble	inches		inches	
[	Depth weeping from side of observation hole		inches		inches	
[	Depth to soil redoximorphic features (mottles)		inches		inches	
[	Depth to adjusted seasonal high groundwater (Sr (USGS methodology)	n)	inches		inches	
	Index Well Number Re	eading Date			=	
	$S_h = S_c - [S_r \times (OW_c - OW_{max})/OW_r]$					
	Obs. Hole/Well# S _c	S _r	OW _c	OW _{max}	OW,	S _h
2. Es	imated Depth to High Groundwater: inches					

### E. Depth of Pervious Material

1. Depth of Naturally Occurring Pervious Material

a.	Does at least four feet of naturally occurring pervious material exist in all areas observed throughout the area proposed for the soil	absorption
sys	stem?	absorption

Yes No

b. If yes, at what depth was it observed (exclude A and O Horizons)?

c. If no, at what depth was impervious material observed?

Upper boundary:

Upper boundary:

Lower boundary: Lower boundary:

inches

inches

inches

190'



### F. Certification

I certify that I am currently approved by the Department of Environmental Protection pursuant to 310 CMR 15.017 to conduct soil evaluations and that the above analysis has been performed by me consistent with the required training, expertise and experience described in 310 CMR 15.017. I further certify that the results of my soil evaluation, as indicated in the attached Soil Evaluation Form, are accurate and in accordance with 310 CMR 15.100 through

Jaiph Orsen	1/20/2020	
Signature of Soil Evaluator	Deta	
Taylor Corsano SE14263	17/1/2021	
Typed or Printed Name of Soil Evaluator / License #	Expitation Data of Linguage	
Martha Dillivari, Bruce BOUCK		
Name of Approving Authority Witness	Approving Authority	

Note: In accordance with 310 CMR 15.018(2) this form must be submitted to the approving authority within 60 days of the date of field testing, and to the designer and the property owner with Percolation Test Form 12.

Field Diagrams: Use this area for field diagrams:



### Commonwealth of Massachusetts City/Town of **Percolation Test** Form 12

Percolation test results must be submitted with the Soil Suitability Assessment for On-site Sewage Disposal. DEP has provided this form for use by local Boards of Health. Other forms may be used, but the information must be substantially the same as that provided here. Before using this form, check with the local Board of Health to determine the form they use.

#### A

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Aught adult	
KI CONTRY CUD	
0	
112	7359
State	o Code
701-740-8660	
Telephone Number	
)	MA 0 State <u>781-740-8660</u> Telephone Number

Test results	1/30/1020 9:28 AM Date Time	1 30 2020 11:38 AM Date TP-4
Observation Hole #	65" -> 83"	69"→88"
Depth of Perc	0:28 AM	1:39 AM
Start Pre-Soak	9:43 AM	IM SY AM
End Pre-Soak	9:43 AM	11: SYAM
Time at 12"	9:55 AM	12:14PM
Time at 9"	10:07 AM	12:36PM
Time at 6"	14 min	22min
Time (9"-6")	4.67 midinch	7.33 min/inch
Rate (Min./Inch)	Test Passed:	Test Passed: Test Failed:
I autor Corsanto		

Test Performed By: Ilvan Marthal UI

Board of Health Witness

Comments:

t5form12.doc+ 08/15

Perc Test • Page 1 of 1



Commonwealth of Massachusetts City/Town of **Percolation Test** Form 12

Percolation test results must be submitted with the Soil Suitability Assessment for On-site Sewage Disposal. DEP has provided this form for use by local Boards of Health. Other forms may be used, but the information must be substantially the same as that provided here. Before using this form, check with the local Board of Health to determine the form they use.

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Weathervane at ] Owner Name	Pembroke Co	untry cli	JP	
Street Address or Lot #		MA	Λ-	250
Contract Proven		State	Zip	Code
B. Test Results		Telephone Numb	er	
	1/20/2020 Date	<u>9:S2AM</u> Time	Date	Time
Observation Hole #	[F=4 [C() > 2.24			
Depth of Perc	55" 7 13"			
Start Pre-Soak	9:54AM			
End Pre-Soak	10:09 AM			
Time at 12"	10:09 AM			
Time at 9"	10:16 AM			
Time at 6"	10:23 M	1		
Time (9"-6")	7 min			
Rate (Min./Inch)	2.33 min	linch		
Taylor Cortano Test Renformed By: Martha Sullivan	Test Passed: Test Failed:		Test Passed: Test Failed:	
Board of Health Witness				
Comments:				

t5form12.doc• 08/15

Perc Test • Page 1 of 1

## Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

			Hole #	Date		Time		Weather		Latitude		Longitude:
Land	Use (e.g., wo	odland, agricult	ural field, vacant lot, e	etc.)	Vegetation			Surface Stone	s (e.g., cobbles,	stones, boulder	rs, etc.)	Slope (%)
Des	scription of Lo	ocation:										
. Soil P	arent Materia	al:										
					La	andform		Posi	tion on Landscap	e (SU, SH, BS,	FS, TS)	
. Distar	ices from:	Ope	n Water Body	fee	t	D	rainage W	/ay	feet	We	tlands	feet
			Property Line	fee	t	Drinking	g Water V	Vell	feet		Other	feet
. Unsuita	ble Material	s Present:	Yes 🗌 No	lf Yes:	] Disturbed S	Soil 🔲 I	Fill Materia	I 🗆 V	Neathered/Fra	ctured Rock	🗌 Bec	Irock
Grour	idwater Obse	erved: 🗌 Yes	s 🗌 No		If ye	s:	Depth Wee	ping from Pit	_	Depth S	tanding W	ater in Hole
						Soil Log	ľ.					
anth (in)	Soil Horizon /Layer	Soil Texture	Soit Matrix: Color-	Redo	ximorphic Fea	atures	Coarse % by	Fragments Volume	0	Soil		04
eptin (ini)	/Layer	(USDA	Moist (Munsell)	Depth	Color	Percent	Gravel	Cobbles & Stones	Soli Structure	(Moist)		Other
1-5"	ኽ॥	loam										
5"-22	B	Sand	T for									
4-120	0	sand							-			
		4										
				-1. I								

**City/Town of** 

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

C. On-	Site Revi	ew ( <i>minim</i>	tum of two hole $\mathbb{TP}^{-2}$	es requi	ired at eve	ery propo	sed prin	nary and r	eserve disp	osal area)		
реер	Observation		Hole #	Date		Time		Weather		Latitude		Longitude:
Land Des	Use (e.g., wo	oodland, agriculto	ural field, vacant lot, e	tc.)	Vegetation			Surface Stone	es (e.g., cobbles,	stones, boulder	rs, etc.)	Slope (%)
Soil P	arent Materia	al:			<u>-</u>	andform		Posi	tion on Landscar	e (SIL SH BS	FS TS)	
Distar	nces from:	Oper	n Water Body	fee	et .	D	rainage W	/ay	feet	We	tlands	feet
Unsuita	ble Material	s Present:	Property Line _ ] Yes [] No	fee If Yes: [	Disturbed	Drinking Soil 🔲 I	g vvater v Fill Materia	vell	feet Weathered/Fra	ctured Rock	Other	drock
Grour	ndwater Obse	erved: 🚺 Yes	B 🗌 No		lf ye	s: Soil Log	Depth Wee	eping from Pit	-	Depth S	tanding V	Vater in Hole
enth (in)	Soil Horizon	Soil Texture	Soil Matrix: Color-	Redo	ximorphic Fe	atures	Coarse % by	Fragments Volume	Soil Structure	Soil		Other
eptar (m)	/Layer	(USDA	Moist (Munsell)	Depth	Color	Percent	Gravel	Cobbles & Stones	Son Structure	e Consistence (Moist)		Outer
^ب و) - ا	Topully	loam										
-30	В	burnd										
1-100	с, С	sand										
						i						
								-				

City/Town of

**~** • •

## Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

Deeb O	bservation		Hôle #	Date		Time		Weather		Latitude		Longitude:	
Land Us	se (e.g., wo	odland, agricultu	ural field, vacant lot, e	tc.)	Vegetation	<u> </u>		Surface Stone	s (e.g., cobbles,	stones, boulder	s, etc.)	Slope (%)	
Desci	ription of Lo	cation:	• •										
. Soil Par	ent Materia	4:											
					La	Indform		Posi	tion on Landscap	be (SU, SH, BS,	FS, TS)		
. Distance	es from:	Oper	n Water Body _	fee	t	D	rainage W	/ay	feet	Wet	lands	feet	
		F	Property Line	fee	t	Drinking	g Water W	Vell	feet	(	Other	feet	
. Unsuitabl	le Materials	s Present:	] Yes 🗌 No	If Yes:	Disturbed	Soil 🗌 l	Fill Materia	I 🗆 Y	Neathered/Fra	ctured Rock	🗌 Be	drock	
Cround	water Ohee	nundi 🗖 Van			lf vo	<b>.</b> .							
. Ground	water Obse	rved. 🔄 Tes			n ye	s	Depth Wee	eping from Pit	-	Depth S	tanding V	Vater in Hole	
						Soil Log	Coord	Francista		· · · · · ·			
Jonth (in)	Soil Horizon	Soil Texture	exture Soil Matrix: Color-	Redo	ximorphic Fe	atures	Coarse % by	Volume	Soil Structure	Soil		Other	
vebui (iii)	/Layer	(USDA	Moist (Munsell)	Depth	Color	Percent	Gravel	Cobbles & Stones	oon ou ucture	(Moist)		Vulei	
1-5" 1	ALIA	Loam											
5-12	в	savia											
2"-60"	C,	course											
00-114	G	Fand											
										e.			

Additional Notes:

.

**Commonwealth of Massachusetts City/Town of** 

## Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

							_			
		Hole #	Date		Time		Weather		Latitude	Longitude:
Jse (e.g., wo	odland, agricultu	ıral field, vacant lot, e	tc.)	Vegetation			Surface Stone	s (e.g., cobbles,	stones, boulders, e	etc.) Slope (%)
cription of Lo	cation:									
arent Materia	l:			<u>_</u>	andform		Posi	tion on Landscan	e (SU SH BS ES	(TS)
ces from:	Oner	water Body	fee	t E	Di	rainage V	Vav	feet	Wetlar	nds feet
Jog Holli.	opol	Proportul inc	100		Drinking	n Motor V	Noll	faat		Nor foot
olo Motoriok	Brocont:			l Dioturbod		j vval <del>c</del> i v Tili Matarir		Neathorod/Ero		
Je wateriais	s Present.		li res. L			-m materia		weathered/Fra		
dwater Obse	rved: 🗹 Yes	🗌 No		lf ye	s: 174"	Depth We	eping from Pit		Depth Stan	ding Water in Hole
					Soil Loa					-
			Redo	ximorphic Fe	atures	Coarse	Fragments		Soil	
Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color- Moist (Munsell)	Denth	Color	Percent	% Dy Gravel	Cobbles &	Soil Structure	Consistence (Moist)	Other
	1. 1 4.		Depai			Giarci	Stones		(inolocy	
A	Ver Me				1.000					
1	sangelina					-	40%			
6	un sa	~~					101-			
C.	cound		108.		40-20	6 5	16%			
<u> </u>	Saver				•	- J				
	Ise (e.g., wo cription of Lo arent Materia ces from: ole Materials dwater Obse Soil Horizon /Layer A B C	Se       (e.g., woodland, agriculture in the construction:         cription of Location:	Se (e.g., woodland, agricultural field, vacant lot, e cription of Location:	Se     (e.g., woodland, agricultural field, vacant lot, etc.)       cription of Location:       arrent Material:       coss from:     Open Water Body       property Line     fee       Property Line     fee       place     Property Line       place     fee       property Line     fee       property Line     fee       place     Property Line       place     fee       place     No       dwater Observed:     Yes       Soil Horizon     Soil Texture       (USDA     Moist (Munsell)       Path     No       B     Yawawawa       C     Coawa       Sourd     No	Inde #     Date       See     (e.g., woodland, agricultural field, vacant lot, etc.)     Vegetation       cription of Location:	Index     Date     Ime       Ime     Ime       <	Index     Date     Imme       Imme     Imme     Imme       Imme     Vegetation       pription of Location:	Note #       Date       Ime       Weather         See       (e.g., woodland, agricultural field, vacant lot, etc.)       Vegetation       Surface Stone         cription of Location:	Index       Date       Inte       Weather         See       (e.g., woodland, agricultural field, vacant lot, etc.)       Vegetation       Surface Stones (e.g., cobbles, or point of Location:         irrent Material:	See       (e.g., woodland, agricultural field, vacant lot, etc.)       Vegetation       Surface Stones (e.g., cobbles, stones, boulders, of stores)         sees from:

City/Town of

## Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

			Hole #	Date		Time		Weather		Latitude		Longitude:
Land (	Use (e.g., wo	odland, agricultu	ural field, vacant lot, e	etc.)	Vegetation			Surface Stone	s (e.g., cobbles,	stones, boulde	rs, etc.)	Slope (%)
Des	cription of Lo	ocation:										
Soil Pa	arent Materia	ıl:				a dfanas			6			
Dictor	oos from:	Oper	Mator Body	fac	La	inatorm n	roinago M	POSI	tion on Landscap	De (SU, SH, BS	, FS, IS)	6
Distail	ices nom.	Uper I	Property Line	100		Drinkin	a Mater M		feet	vve	Othor	
Linsuita	hie Materials	Present:		if Vee:	Dieturbod 9		y waler vi Sill Materia		Neathered/Fra	ctured Pock		teet
epth (in)	Soil Horizon S /Layer	Soil Texture	Soil Matrix: Color- Moist (Munsell)	Redo	ximorphic Fea	atures	Coarse % by	Fragments Volume	Soil Structure	Soil Consistence		Other
open (m)	/Layer	(USDA	Moist (Munseli)	Depth	Color	Percent	Gravel	Cobbles & Stones	Son Structure	(Moist)		Other
104	A	waw.										
0"-24"	В	Loums of										
4"-ny	ч С	Fund		72"	- L.				1		line	of well
		The second										
					· · • • • • • • •							
				1								

Commonwea City/Town of

### Commonwealth of Massachusetts

## Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

			Hole #	Date		Time		Weather		Latitude		Longitude:
Land U Des	Use (e.g., wo	oodland, agricultu	ural field, vacant lot, e	etc.)	Vegetation		· ·	Surface Stone	es (e.g., cobbles,	stones, boulder	rs, etc.)	Slope (%)
Soil Pa	arent Materia	al:			La	andform		Posi	tion on Landscap	e (SU, SH, BS,	FS, TS)	
Distan	ices from:	Oper F	Water Body _ Property Line _	fee	t t	Di Drinking	rainage W g Water W	/ay /ell	feet feet	We	tlands Other	feet
Unsuita Groun	ble Materials	s Present: 🖵 erved: 💟 Yes	Yes 🗌 No	If Yes:	Disturbed S	Soil 🗌 f s: <u>(62 "</u> Soil Log	Fill Materia	ping from Pit	Weathered/Fra -	ctured Rock	Bec	Irock /ater in Hole
epth (in)	Soil Horizon /Layer	Soil Texture (USDA	Soil Matrix: Color- Moist (Munseil)	Redo Depth	ximorphic Fea	atures Percent	Coarse % by Gravel	Fragments Volume Cobbles & Stones	Soil Structure	Soil Consistence (Moist)		Other
"-12"	A	FIII										
¹⁴ -24	B	sang										u d worke
4 ⁴ -10	<u>, C</u>	Sand (coarre)		48'' 54'		16-20%. -thu	ughou-	<b>}</b> -			22.	51

**C. On-Site Review** (minimum of two holes required at every proposed primary and reserve disposal area)

Form 11 - Soil Suitability Assessment for On-Site Sewage Disposal

			Hole #	Date		Time		Weather		Latitude		ongitude:
. Land	Use (e.g., wo	odland, agricult	ural field, vacant lot, e	tc.)	Vegetation			Surface Stone	es (e.g., cobbles,	stones, boulde	ers, etc.)	Slope (%)
Des	scription of Lo	ocation:										
. Soil F	arent Materia	al:										
Dist		<u>^</u>			La	andform		Posi	tion on Landscap	be (SU, SH, BS	, FS, TS)	
. Distai	ices from:	Oper	n Water Body	fee	t	Di	rainage W	/ay	feet	We	etlands _	feet
			Property Line	fee	t	Drinking	g Water V	Vell	feet		Other _	feet
. Unsuita	ible Material	s Present:	Yes 🗋 No	lf Yes:	Disturbed	Soil 📙 F	Fill Materia		Weathered/Fra	ctured Rock	🗌 Bedro	ck
. Grour	idwater Obse	erved: 🗹 Yes			lf ye	s: <u>Ø'</u>	Depth Wee	ping from Pit	-	Depth S	Standing Wat	er in Hole
		r				Soil Log						
Donth (in)	Soil Horizon	Soil Texture	Soil Matrix: Color-	Redoximorphic Features			Coarse % bv	Fragments Volume		Soil		
Deptin (iii)	/Layer	(USDA	Moist (Munsell)	Depth	Color	Percent	Gravel	Cobbles & Stones	Soil Structure	(Moist)		Other
"-2"	A	Jour,										
2"-19"	B	Sand										
Q"-C11	" C.	hamy		8f"		101/2					Reday	0
91-9	l'Cr	coard	coarsina C	Botto	n of pi	4					<u> </u>	
					2							
								<u> </u>				

ON-SITE REVIEW       1/5/23       TIME: 5/24       WEATHER:	CROCKER DESIGN GR 2 SHARP STREET UNIT HINGHAM, MA 02043 781-919-0808 CROCKERDESIGNGRO	COUP T B DUP.COM		·			FORMS 11 AN SOIL EVALUATOR F
ON-DITE NET NEW 23-19       DATE: 491771       TIME: 374 MWEATHER: CWPY 4/2         SITE ADDRESS or MAPLOT #:       00 NO: 100 NO:		¥.	1-123				
Deter Models *	DEED HALE 4 72-	19	57	9:00 A	M	<b>A</b>	•
SILE-DATION LOG IN MARCH 2017.		UATE: -12	74/21	TIME:/	WEATHER:_	Claup 7	40
LOCATION (Identify on Plan):	OWNER:		~~ n\(SP	one ic		-0.00	
LAND USE:         Commercial         SURFACE STONES:         Yes:         Not         SLOPE (%):         G3           VEGETATION:         LANDFORM:	LOCATION (Identify on F	Plan):			B NO.: <u>Kator</u>	Oll	
LAND USE:       Commercial       SURFACE STONES:       Yest       No       SLOPE (%):       G3         VEGETATION:       LANDFORM:	LOOMION (Identity off)	-idit).	GR	OUND ELEVATION	AT SURFACE OF	HOLE:	
VEGETATION:       LANDFORM:         DISTANCES FROM:	LAND USE: Comme	rcial SUR	FACE STONES:	Yes: 📈 No	:	SLOPE (%	6-3
DISTANCES FROM:       Image: Constraints of the constands of the constraints of the constraints of the con	VEGETATION:	LUCOPERS		LANDFORM:			
OPEN WATER BODY:       1       PROPERTY LINE:       1       DOSSIBLE WET AREA:       1       DRAINAGEWAY:       1         DEPNONE WATER WELL:       ft       OTHER:	DISTANCES FROM:		-				
DRINKING WATER WELL:       #       OTHER:         Depth       Soil Mor./       Soil Texture       (USDA)       Soil Color       Redoximorphic       Other (Structure, Consistency,% Gravels, Stones, Boulders         0-11       A       L-5       IOYE3/2       Boulders       Boulders         12.12       A       Simptorula       Simptorula       Simptorula       Simptorula         12.12       Boulders       Simptorula       Simptorula       Simptorula       Boulders         Parent MATERIAL:       Unsultable Material Present?       Yes:       Not Maters       Bedrock:       Bedrock: <td>OPEN WATER BODY:</td> <td>ft PROPERT</td> <td>Y LINE:</td> <td>ft POSSIBLE WE</td> <td>TAREA: f</td> <td></td> <td>WAY: ft</td>	OPEN WATER BODY:	ft PROPERT	Y LINE:	ft POSSIBLE WE	TAREA: f		WAY: ft
DEEP OBSERVATION HOLE LOG         inches)       Soil Texture         Layer       Soil Texture         (Unches)       (Unches)         (Unches)       Soil Texture         (Unches)       (Unches)         (Unches)       (Unches)     <	DRINKING WATER WEL	.L:ft OTH	ER:				
Depth       Soil Hor:       Soil Texture       (USDA)       Soil Color       Redoximorphic       Other (Structure, Consistency,% Gravels, Stones, Boulders)         4-12       A       L-5       (VL 3/2)       Boulders       Boulders         2-13       4       L-5       (VL 3/2)       Boulders       Boulders         23-43       L-5       (VP 3/4)       Boulders       Boulders         24       Data       S0/4       (Velocital and the soil and the soil and the soil andepth of Groundwater:       Boulders	DEEP OBSERVATION H	IOLE LOG					
6-1       6       1-5       10 Y F 3/6         23-13       3       1-5       10 Y F 3/6       1         23-13       3       1-5       10 Y F 3/6       1         23-13       3       1-5       10 Y F 3/6       1         23-13       4       50 Y F 3/6       1       1         23-13       1       1       1       1       1         23-14       1       1       1       1       1         23-14       1       1       1       1       1       1         1       1       1       1       1       1       1       1       1         1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1	Depth Soil Hor./ (inches) Layer	Soil Texture (USDA)	Soil Color (Munseli)	Redoximorphic Features	Other (Structure	, Consistency,% Boulders	Gravels, Stones,
PARENT MATERIAL:       Unsuitable Material Present?       Yes:         PARENT MATERIAL:       Unsuitable Material Present?       Yes:         Disturbed Soil:       Fill Mattl:       Impervious Layer(s):       Weathered/Fractured Rock:       Bedrock:         GROUNDWATER OBSERVED:       Yes:       No:       If Yes:       Saturating the Face:       Motiling:         Standing in Hole:       Yes:       No:       If Yes:       Saturating the Face:       Motiling:         Percolatin Hole #:       Test Date:       Depth of Perc:       Saturating the Face:       Motiling:         Percolatin Hole #:       Test Date:       Depth of Perc:       Start of Presoak:       End of Presoak:         Chine @ 12*:       Time @ 12*:       Time @ 9*:       Time @ 9*:       Time @ 9*:         Time @ 12*:       Time @ 9*:       Time @ 12*:       Time @ 12*:       Time & 16*:         Time & 16*:       Time @ 9*:       Time & 16*:       Time & 16*:       Time & 16*:         Time Elapse: (12*-9*)       Time & 16*:       Time & 16*:       Time & 16*:       Time & 16*:         Time & 16*:       Time & 16*:       Time & 16*:       Time & 16*:       Time & 16*:       Time & 16*:         Time & 16*:       Time & 16*:       Time & 16*:       Time & 16*: <td< td=""><td>6-12 b</td><td>L-S</td><td>10YE3/2</td><td></td><td></td><td></td><td></td></td<>	6-12 b	L-S	10YE3/2				
23-43       C	12.28 3	1-5	10YR3/6			12	1211
Steps DT N 6         PARENT MATERIAL:         Unsuitable Material Present?         Vestign from Face:         Disturbed Soil:         Fill Mattri:         Impervious Layer(s):         Weathered/Fractured Rock:         Bedrock:         Bedrock:         Standing in Hole:         Weeping from Face:         Standing in Hole:         Weeping from Face:         Standing in Hole:         Weeping from Face:         Starding the Beace:         Mottling:         Percolation Hole #:         Percolation Hole #:         Depth of Perco:         Start of Presoak:         End of Presoak:	28-48 CI	FILE - SAND	2545/4				
PARENT MATERIAL:       Unsuitable Material Present?       Yes:       No:       If Yes:         Disturbed Soil:       Fill Matt:       Impervious Layer(s):       Weathered/Fractured Rock:       Bedrock:         GROUNDWATER OBSERVED:       Yes:       No:       If Yes:       Wathered/Fractured Rock:       Bedrock:         Standing in Hole:       Meeping from Face:       Saturating the Face:       Mottling:         Percolation Hole #:       Meeping from Face:       Saturating the Face:       Mottling:         Percolation Hole #:       Meeping from Face:       Depth of Perc:       Mottling:         Depth of Perc:       Depth of Perc:       Depth of Perc:       Depth of Perco:         Start of Presoak:       End of Presoak:       End of Presoak:       End of Presoak:         Ime @ 12*:       Time @ 12*:       Time @ 12*:       Time @ 9*:         Time @ 12*:       Time @ 12*:       Time @ 12*:       Ime Elapse: (12*-9*)       Ime Elapse: (9*-6*);         Rate: (min/n.):       Rate: (min/n.):       Rate: (min/n.);       Ime Elapse: 10*-6*;       Ime Elapse: 10*-6*;         Time Elapse: (9*-6*);       Rate: (min/n.);       Rate: (min/n.);       Ime Elapse: 10*-6*;       Ime Elapse: 10*-6*;         Time Elapse: 10*-6*;       Time Elapse: 10*-6*;       Time Elapse: 10*-6*;				STANDTNG		- C 10	
PARENT MATERIAL:       Unsuitable Material Present?       Yes:       No:       If Yes:         Disturbed Soil:       Fill Mat'!:       Impervious Layer(s):       Weathered/Fractured Rock:       Bedrock:       If Yes:         GROUNDWATER OBSERVED:       Yes:       No:       If Yes:       Weeping from Face:       Saturating the Face:       Motiling:         Standing in Hole:       Weeping from Face:       Saturating the Face:       Motiling:       Motiling:         Percolation Hole #:       Test Date:       Percolation Hole #:       Test Date:       Motiling:         Percolation Hole #:       Test Date:       Depth of Perc:       Start of Presoak:       Motiling:         End of Presoak:         Time @ 12*:         Time @ 9*:       Time Elapse: (9*-6*):       Time Elapse: (9*-6*):       Motiling:       Motiling:         Yest Passed/ Failed/       Time Elapse: Bassed/ Failed/ Discon/       Add. Testing Req'd:       Motiling:       Motiling:         Performed By:       David Newhall       Witnessed By: Lise Gettery       Mach./Oper.: JF Price       Motiling:				@ 6)"		-	
PARENT MATERIAL:       Unsuitable Material Present?       Yes:       No:       If Yes:         Disturbed Soil:       Fill Mat?l:       Impervious Layer(s):       Weathered/Fractured Rock:       Bedrock:	7			52" DAMP	Weepsi-3	POSSTBLE	Report
Disturbed Soil:       Fill Mat'l:       Impervious Layer(s):       Weathered/Fractured Rock:       Bedrock:         GROUNDWATER OBSERVED:       Yes:       No:       If Yes: What is the depth of Groundwater:         Standing in Hole:       Weeping from Face:       Saturating the Face:       Mottling:         Estimated Depth to Seasonal High Ground Water :       Percolation Hole #:       Mottling:         Percolation Hole #:       Percolation Hole #:       Test Date:         Depth of Perc:       Depth of Perco:       Depth of Perco:         Start of Presoak:       End of Presoak:       End of Presoak:         Filme @ 12*:       Time @ 12*:       Time @ 12*:         Time @ 9*:       Time @ 9*:       Time @ 9*:         Time Elapse:(12*.9")       Time AT 6*:       Time AT 6*:         Time Elapse: (9*-6*):       Rate: (min/in.):       Rate: (min/in.):         Fest Passed/ Failed/       Test Passed/ Failed/       Discon/         Add. Test Req'd:       Witnessed By: Line Getty       Mach./Oper.: JF Price	PARENT MATERIAL			Lineviteble Réstautet	<b>D</b>		
GROUNDWATER OBSERVED:       Yes:       No:       If Yes: What is the depth of Groundwater:         Standing in Hole:       Weeping from Face:       Saturating the Face:       Mottling:         Estimated Depth to Seasonal High Ground Water :       Percolation Hole #:	Disturbed Soil:	Fill Mat't:	moenvious Laver		Present?	Yes: No	If Yes:
Standing in Hole:       Yes:       No:       If Yes: What is the depth of Groundwater:         Standing in Hole:       Weeping from Face:       Saturating the Face:       Mottling:         Estimated Depth to Seasonal High Ground Water :       Percolation Hole #:       Mottling:         PERCOLATION TEST       Percolation Hole #:       Test Date:       Percolation Hole #:         Depth of Perc:       Depth of Perc:       Depth of Perc:       Start of Presoak:         End of Presoak:       End of Presoak:       End of Presoak:       End of Presoak:         Fine @ 12":       Time @ 12":       Time @ 9":       Time @ 9":         Fine Elapse:(12"-9")       Time Elapse:(12"-9")       Time Elapse:(12"-9")       Image: Elapse:(12"-9")         Fine Elapse: (9"-6"):       Time Elapse: (9"-6"):       Time Elapse: (9"-6"):       Test Passed/ Failed/         Oiscon/ Add. Test Reg'd:       Witnessed By: Lise Cutting       Mach./Oper.: JF Price					amereu/Fractureu	ROCK:	Bedrock:
Standing in Hole:       Weeping from Face:       Saturating the Face:       Mottling:         Estimated Depth to Seasonal High Ground Water :       Percolation Hole #:       Percolation Hole #:         Percolation Hole #:       Note       Percolation Hole #:       Percolation Hole #:         Test Date:       Depth of Perc:       Depth of Perc:       Depth of Perc:         Start of Presoak:       Start of Presoak:       End of Presoak:       End of Presoak:         Filme @ 12":       Time @ 12":       Time @ 9":       Time @ 9":         Filme Elapse:(12"-9")       Time Elapse:(12"-9")       Time Elapse:(12"-9")         Filme Elapse: (9"-6"):       Time Elapse: (9"-6"):       Time Elapse: (9"-6"):         Rate: (min/in.):       Rate: (min/in.):       Test Passed/ Failed/ Discon/         Discon/ Add. Test Req'd:       Witnessed By: Lise Outliny       Mach./Oper.: JF Price	Oto-dia to the	VED: Yes:	No:	If Yes: What is the	depth of Groundwa	ater:	
Percolation Hole #:	Standing in Hole:	Weeping from	n Face:	Saturating the	e Face:	Mottling	- 10- de -
Percolation Hole #:       Aff       Percolation Hole #:         Test Date:       Depth of Perc:         Depth of Perc:       Depth of Perc:         Start of Presoak:       End of Presoak:         End of Presoak:       End of Presoak:         Fine @ 12":       Time @ 12":         Fine @ 9":       Time @ 12":         Time @ 9":       Time @ 9":         Time Elapse:(12"-9")       Time Elapse:(12"-9")         Time Elapse: (9"-6"):       Rate: (min/in.):         Rate: (min/in.):       Rate: (min/in.):         Test Passed/ Failed/       Test Passed By: Lise Outling         Discon/ Add. Test Reg'd:       Mach./Oper.: JF Price	PERCOLATION TE	sonal High Ground Wat	ter :				
Test Date:	Percolation Hole #	XIII T	A				
Instruction       Instruction         Depth of Perc:       Depth of Perc:         Start of Presoak:       Start of Presoak:         End of Presoak:       End of Presoak:         Filme @ 12":       Time @ 12":         Time @ 9":       Time @ 9":         Filme @ 9":       Time @ 9":         Time Elapse:(12"-9")       Time Elapse:(12"-9")         Filme Elapse: (9"-6"):       Time Elapse: (9"-6"):         Rate: (min/in.):       Rate: (min/in.):         Test Passed/ Failed/       Test Passed/ Failed/ Discon/         Discon/ Add. Test Reg'd:       Add. Testing Reg'd:         Performed By:       David Newhall         Witnessed By:       Lise Outliny	Test Date:		AL	Percolation Hole	[,] #:		
Start of Presoak:	Depth of Perc:		·····	Test Date:	_		
End of Presoak:       End of Presoak:         End of Presoak:       End of Presoak:         Fime @ 12":       Time @ 12":         Time @ 9":       Time @ 9":         Fime Elapse:(12"-9")       Time Elapse:(12"-9")         Fime Elapse: (9"-6"):       Time AT 6":         Fime Elapse: (9"-6"):       Time Elapse: (9"-6"):         Rate: (min/in.):       Rate: (min/in.):         Fest Passed/ Failed/       Test Passed/ Failed/ Discon/         Discon/ Add. Test Reg'd:       Add. Testing Reg'd:         Performed By:       David Newhall         Witnessed By:       Lise Outliny	Start of Presoak:	<u> </u>		Depth of Perc:			
Fine @ 12":       Time @ 12":         Fine @ 9":       Time @ 9":         Fine Elapse:(12"-9")       Time Elapse:(12"-9")         Fine Elapse: (9"-6"):       Time Elapse: (9"-6"):         Rate: (min/in.):       Rate: (min/in.):         Fest Passed/ Failed/       Test Passed/ Failed/ Discon/         Discon/ Add. Test Reg'd:       Mach./Oper.: JF Price	End of Presoak:	<u> </u>		End of Presoak	<del>.</del>		
Fine @ 9":       Time @ 9":         Fine Elapse:(12"-9")       Time Elapse:(12"-9")         Fine Elapse: (9"-6"):       Time Elapse: (9"-6"):         Rate: (min/in.):       Rate: (min/in.):         Fest Passed/ Failed/       Test Passed/ Failed/ Discon/         Discon/ Add. Test Req'd:       Add. Testing Req'd:         Performed By:       David Newhall         Witnessed By:       Lisa Outliny         Mach./Oper.:       JF Price	Time @ 12":			Time @ 40%			
Fine Elapse: (12"-9")       Time Elapse: (12"-9")         Fine AT 6":       Time AT 6":         Fine Elapse: (9"-6"):       Time Elapse: (9"-6"):         Rate: (min/in.):       Rate: (min/in.):         Fest Passed/ Failed/       Test Passed/ Failed/ Discon/         Discon/ Add. Test Req'd:       Add. Testing Req'd:         Performed By:       David Newhall         Witnessed By:       Lisa Outliny         Mach./Oper.:       JF Price	Time @ 9":			Time @ 0"·			
Fime AT 6":       Time AT 6":         Fime Elapse: (9"-6"):       Time Elapse: (9"-6"):         Rate: (min/in.):       Rate: (min/in.):         Fest Passed/ Failed/       Test Passed/ Failed/ Discon/         Discon/ Add. Test Req'd:       Add. Testing Req'd:         Performed By:       David Newhall         Witnessed By:       Lisa Outliny         Mach./Oper.:       JF Price	Time Elapse:(12"-9")			Time Flance/42			
Fime Elapse: (9"-6"):       Time Elapse: (9"-6"):         Rate: (min/in.):       Rate: (min/in.):         Fest Passed/ Failed/       Test Passed/ Failed/ Discon/         Discon/ Add. Test Req'd:       Add. Testing Req'd:         Performed By:       David Newhall         Witnessed By:       Lisa Guility         Mach./Oper.:       JF Price	Time AT 6":			Time AT 6"			
Rate: (min/in.):     Rate: (min/in.):       Fest Passed/ Failed/     Test Passed/ Failed/ Discon/       Discon/ Add. Test Req'd:     Add. Testing Req'd:       Performed By:     David Newhall       Witnessed By:     Lise Cullity	Time Elapse: (9"-6"):			Time Flance: (0)	<u> </u>		
Fest Passed/ Failed/     Test Passed/ Failed/ Discon/       Discon/ Add. Test Reg'd:     Add. Testing Reg'd:       Performed By:     David Newhall       Witnessed By:     Lise Cullity       Mach./Oper.:     JF Price	Rate: (min/in.):			Rate: (min/in):			
Performed By: David Newhall Witnessed By: Lisa Cullity Mach./Oper.: JF Price	Test Passed/ Failed/ Discon/ Add. Test Reg'd:		<u> </u>	Test Passed/ Fa	iled/ Discon/	<u> </u>	
	Performed By: David Net	whall Witness	sed By: <u>انام Out</u>	ityN	a <mark>ch./O</mark> per.: <u>JF</u> Pri	ce	

An indication that the "site failed" indicates only that the area tested did not meet the minimum criteria (at the time of testing) for a successful soil evaluation and/or percolation test in the area tested. Additional testing at another depth or other areas may result in passing results.

. ----

CROCKER DESIGN GROUP 2 SHARP STREET UNIT B HINGHAM, MA 02043 781-919-0808 CROCKERDESIGNGROUP.COM		Ţ	FORMS 11 AN SOIL EVALUATOR F	ND 12 FORM
ON-SITE REVIEW DEEP HOLE #: 18- A DA SITE ADDRESS OF MAP/LOT #:	16/23 TE: 12/14/21 POMBES	тіме: 9:36	WEATHER: Count 450	
OWNER:		JC	DB NO.:	
LOCATION (Identify on Plan):	GR	OUND ELEVATION	AT SURFACE OF HOLE:	
LAND USE: Commercial	SURFACE STONES	: Yes: No	SLOPE (%):	
VEGETATION: CPAS		LANDFORM:		
DISTANCES FROM:				
OPEN WATER BODY:ft PF	OPERTY LINE:	ft POSSIBLE WE	T AREA:ft DRAINAGEWAY:ft	
DRINKING WATER WELL: ft	OTHER:			
Deeth Soil Hor /	0.101		,	
(inches) Layer Soil Texture	USDA) (Munsell)	Features	Other (Structure, Consistency,% Gravels, Stones, Boulders	
0-72 FILL				
72-94 8 6-5				
94-108 G SOND				
PARENT MATERIAL:		Unsuitable Material	Present? Vest Not If Vest	
Disturbed Soil: Fill Mat'l:	Impervious Laye	r(s): We	eathered/Fractured Rock: Bedrock:	
GROUNDWATER OBSERVED: Y	'es: No:	If Yes: What is the	depth of Groundwater:	
Standing in Hole: Wee Estimated Depth to Seasonal High Gro	ping from Face: und Water :	Saturating ti	he Face: Mottling:	
PERCOLATION TEST				
Test Date:		Percolation Hold	e#:	
Depth of Perc		Test Date:		
Start of Presoak:		Depth of Perc:	·····	
End of Presoak:		End of Presoak	· · · · · · · · · · · · · · · · · · ·	
Time @ 12":		Time @ 12*	·	
Time @ 9":		Time @ 9**		
Time Elapse:(12"-9")	<u> </u>	Time Elapse:(12	2"-9")	
Time AT 6":		Time AT 6":		
Time Elapse: (9"-6"):	<u></u>	Time Elapse: (9		
Rate: (min/in.):		Rate: (min/in.):	· · · · · · · · · · · · · · · · · · ·	
Test Passed/ Failed/ Discon/ Add. Test Reg'd:		Test Passed/ Fa Add. Testing Re	ailed/ Discon/	
Performed By: David Newhall Comments:	Witnessed By: Lisa Cul	lity N	Mach./Oper.: JF Price	
······································			· · · · · · · · · · · · · · · · · · ·	

CROCKER 2 SHARP HINGHAM 781-919-08 CROCKER	R DESIGN G STREET UN , MA 02043 308 RDESIGNGR	Roup It b Oup.com					SOIL	FORMS 11 AND 1 EVALUATOR FOR
ON-SITE DEEP HOL SITE ADD	E #: RESS or MA	<u>123</u> P/LOT#:	ATE: <u>12/</u>	14/21	TIME:	~WEATHER:		
OWNER:				·	JO	B NO.:		
LOCATION	I (Identify on	Plan):		GR	OUND ELEVATION	AT SURFACE OF H	OLE:	
LAND USE	: Comm	ercial	SURI	ACE STONES:	Yes: No		SLOPE (%):	
	ÓN [,]	In SI			LANDEODM			
DISTANCE	S FROM:	UV.P						
OPEN WAT	TER BODY: WATER WE	ft   iLL:ft	PROPERT OTH	Y LINE: ER:	ft POSSIBLE WE	r AREA:ft	DRAINAGEWAY:	ft
Deep Obs	Soil Hor (	HOLELOG		Soil Color	Dedaudus ans bis			
(inches)	Laver	Soil Texture	(USDA)	(Munsell)	Features	Other (Structure, C	Consistency,% Gravel	s, Stones,
0-48	Ko F	W		(indiricent)	T Cutatos		Boulders	_
48160	-115"	SAND		2.5444	@ 88" 1	eren / Rep	0	
					and of	ACH		
				557	PBCNG (	2 96 "		
		1						
	·							
PARENT M	IATERIAL:				Unsuitable Material	Present?	Yes: No:	If Yes:
Disturt	oed Soil:	Fill Mat'l:	] '	mpervious Laye	r(s): 🚺 🛛 We	athered/Fractured R	ock: Bedroc	k:
GROUNDW	ATER OBS	ERVED:	Yes:	No:	If Yes: What is the	depth of Groundwate		
Standing	in Hole:	We	eping fror	n Face:	Saturating th	e Face:	Mottlina: 8	ţ
Estimated	Depth to Se	asonal High Gr	ound Wat	er:				
PERCOL	ATION TE	EST						
Percolation	Hole #:	-XVD			Percolation Hole	e #:		
Test Date:		1211			Test Date:			
Depth of Pe	erc:				Depth of Perc:			
Start of Pres	soak:				Start of Presoak			
End of Pres	oak:				End of Presoak:			
Time @ 12"	•				Time @ 12":	<u> </u>		
Time @ 9":					Time @ 9":		<del></del>	
Time Elapse	9:(12"-9")				Time Elapse:(12	9")	<u></u>	
Time Elano	5. (Q"_6").				Time AT 6":			
Rate: (min/i	⊭.(ອ-ອ`): n.\•				Lime Elapse: (9	-6"):		
Test Passer	i). d/ Failed/	••			Kate: (min/in.):	iled/ Discon/	·······	
Discon/ Add	I. Test Reg'd	:			Add, Testing Re	a'd:		
D. (				o				
Performed E	sy: David N	lewhall	Witness	ed By: Lies-Cul	Tity N	lach./Oper.: <u>JF Price</u>		
comments:								

CROCKER 2 SHARP 5 HINGHAM, 781-919-08 CROCKER	R DESIGN GI STREET UN MA 02043 08 DESIGNGR	ROUP T B OUP.COM		ŝ	FORMS 11 AND 12 SOIL EVALUATOR FORM
<b>ON-SITE</b> <b>DEEP HOL</b> SITE ADDR OWNER:	E #: 23 RESS or MA	- 17 DATE: <u>12</u> 7/LOT #:	1-5-2 114721 Perma		WEATHER: (carry 450)
LOCATION	(Identify on	Plan):	GR	OUND ELEVATION	AT SURFACE OF HOLE:
LAND USE:	: <u>Comme</u>	ercial SUR	FACE STONES:	Yes: 📈 No	SLOPE (%):
VEGETATIO	ON:	hpss.		LANDFORM:	
DISTANCE OPEN WAT DRINKING DEEP OBS	<b>S FROM:</b> TER BODY: WATER WE <b>ERVATION</b>	t proper LL: t oth <b>HOLE LOG</b>	TY LINE:	ft POSSIBLE WE	T AREA:ft DRAINAGEWAY:ft
Depth (inches)	Soil Hor./ Layer	Soil Texture (USDA)	Soil Color (Munsell)	Redoximorphic	Other (Structure, Consistency,% Gravels, Stones,
0.6	A	6.5	15 - (4)/2		GR RG
6-16	R	L-5	16 VAS/Q		MASSING FR
16-170		L-5	2.545/2	Nork	MASSEVE EL
			16		
		<u></u>	-	<u></u>	
PARENT M	ATERIAL:			Unsuitable Material	Present? Vest No. 7 KYas
Disturb	ed Soil:	Fill Mat'l:	Impervious Layer	(s): We	eathered/Fractured Rock: Bedrock:
GROUNDW	ATER OBSE	RVED: Yes:	No: 7	If Yes: What is the	depth of Groupdwater:
Standing i	in Hole:	Weeping fro	n Face:	Saturating th	ne Face: Mottling:
Estimated D PERCOL/	Depth to Sea ATION TE	isonal High Ground Wa	ter:		
Percolation I	Hole #:		<u></u>	Percolation Hole	e #:
Test Date:				Test Date:	
Start of Prop				Depth of Perc:	
End of Prese	nak:	V		Start of Presoak	
Time @ 12":		·		End of Presoak:	
Time @ 9":		<del></del>		Time @ 12 :	
Time Elapse	:(12"-9")			Time Elanse:/12	5 ⁴ _0 ⁴ }
Time AT 6":	i i			Time AT 6":	
Time Elapse:	: (9"-6"):			Time Elapse ⁻ (9)	"-6"):
Rate: (min/in	.):		<u> </u>	Rate: (min/in.):	- <i>p</i>
Test Passed/ Discon/ Add.	/ Failed/ Test Req'd:			Test Passed/ Fa	iled/ Discon/ q'd:
Performed By Comments:	y: David Ne	whail Witnes	sed By: Lisa Cull	ityN	lach./Oper.: JF Price

CROCKER 2 SHARP S HINGHAM, 781-919-08 CROCKER	DESIGN G TREET UN MA 02043 08 DESIGNGR	ROUP IT B OUP.COM		. 5	FORMS 11 SOIL EVALUATOR
ON-SITE DEEP HOLI SITE ADDR OWNER:	REVIEW E #: <u>23 -</u> ESS or MA	۷ <u>الا</u> DATE: <u>19</u> P/LOT #:	15/23 14/21 P9/1	TIME: M: S Bladhe Ca	^С WEATHER: <u>Стоини</u>
LOCATION	Comme	Plan): ercial SUR	GF	COUND ELEVATION	AT SURFACE OF HOLE:
VEGETATIC	DN:GA	ASS		LANDFORM:	
DISTANCES OPEN WAT DRINKING V DEEP OBSI	<b>S FROM:</b> ER BODY: WATER WE ERVATION	t PROPERT	Y LINE: ER:	ft POSSIBLE WE	T AREA:ft DRAINAGEWAY:ft
Depth (inches)	Soil Hor./ Layer	Soil Texture (USDA)	Soil Color (Munsell)	Redoximorphic Features	Other (Structure, Consistency,% Gravels, Stones, Boulders
0-23	Fac	-	~	-	FRAPPOD WAPPA
78.20	R	1.5			(invites white
$\frac{\omega}{\omega}$	<u> </u>				
38- ~~	<u> </u>	L·S			
	TERIAL:			Lincuitable Motoriel	
Disturbe	ed Soil:	Fill Mat'l:	mpervious Lave	r(s): We	athered/Fractured Rock Bedrock
GROUNDWA	TER OBSI	RVED: Yes:	No:	If Yes: What is the	depth of Groundwater
Standing in	Hole:	Weeping from	n Face:	Saturating t	ne Face: Mottling: <u>36</u>
PERCOLA		ST	er:		
Percolation H	lole #:	<u> </u>		Percolation Hole	∋#:
Test Date:		A		Test Date:	
Depth of Perc	2: 	AHA -		Depth of Perc:	
End of Preso	ak:			Start of Presoak	· · · · · · · · · · · · · · · · · · ·
Time @ 12":				End of Presoak:	
Time @ 9":				Time @ 12 :	
Time Elapse:	(12"-9")			Time Elapse:(12	···-9")
Time AT 6":				Time AT 6":	- /
Time Elapse:	(9"-6"):	·····		Time Elapse: (9	'-6"):
Rate: (min/in.	):			Rate: (min/in.):	· · · · · · · · · · · · · · · · · · ·
Discon/ Add.	⊢ailed/ Test Req'd:			Test Passed/ Fa Add. Testing Re	iled/ Discon/
Performed By Comments:	David No	whall Witness	ed By: Lisa Cul	lity N	lach./Oper.: JF Price

CROCKER E 2 SHARP ST HINGHAM, N 781-919-0804 CROCKERD	DESIGN GI REET UNI MA 02043 8 ESIGNGR	ROUP T B DUP.COM	ж.	к.	FORMS 11 AN SOIL EVALUATOR F
ON-SITE F	REVIEW		1-5-23		
DEEP HOLE	#: 23	- 14 DATE: 14	¥14/21	TIME: D	S WEATHER: CLOUDY
SITE ADDRE	SS or MAF	P/LOT #:	Pemse	oka cc	
OWNER:				JC	DB NO.:
LOCATION (I	dentify on	Pian):	GR	OUND ELEVATION	AT SURFACE OF HOLE:
LAND USE:	Comme	strcial SUI	RFACE STONES	: Yes: No	SLOPE (%):
VEGETATION	N: <u>6r</u>	ASS		LANDFORM:	
OPEN WATE DRINKING W DEEP OBSEI	R BODY: Ater We <b>Rvation</b> (	ft PROPER LL:ft OTI HOLE LOG	TY LINE:	ft POSSIBLE WE	T AREA:ft DRAINAGEWAY:ft
Depth (inches)	Soil Hor./ Layer	Soil Texture (USDA)	Soil Color (Munseil)	Redoximorphic Features	Other (Structure, Consistency,% Gravels, Stones, Boulders
0.32	FELL				
37-44	AB	10 YR 2/2	1-5	Weeptno	GR TIZ
44.76	G	SAND	2.516/2	(a 344	SC LODS-C -
		211017			
		······································	·····		
				· · · · · · · · · · · · · · · · · · ·	
PARENT MAT	TERIAL:		<u> </u>	Unsuitable Material	Present? Yes: No: If Yes:
Disturbed	d Soil:	Fill Mat'l:	Impervious Laye	er(s): 🚺 🛛 We	eathered/Fractured Rock: Bedrock:
GROUNDWAT	TER OBSE	RVED: Yes:	No:	If Yes: What is the	e depth of Groundwater:
Standing in	Hole:	Weeping fro	m Face: 34	Saturating t	he Face: Mottling:
PERCOLA	TION TE	isonal High Ground Wa ST	ater :		
Percolation Ho	ole #:	h. La		Percolation Hot	e #:
Test Date:		IVIP		Test Date:	
Depth of Perc:	5			Depth of Perc:	······································
Start of Presoa	ak:			Start of Presoal	k:
End of Presoal	k:			End of Presoak	
Time @ 12":		<u> </u>		Time @ 12":	
1 ime @ 9": Time Electronic	101 01			. Time @ 9":	
ume ⊨lapse:(1 Time AT C"	12"-9")	<u> </u>		Time Elapse:(1)	2"-9")
Time AF 5"; Time Eferrer 4				Time AT 6":	
nine clapse: (	9-6):			Time Elapse: (9	M-6"):
Test Passed/ F	ailed/		<u> </u>	Rate: (min/in.): Test Passed/ Fa	ailed/ Discon/
Discon/ Add. T	est Req'd:			Add. Testing Re	eq'd:

.#

An indication that the "site passed" indicates only that the basic criteria for a soil evaluation and percolation test under Title 5 have been met in the area tested. Further soil evaluations and design work are necessary to determine whether a septic system for a particular use, meeting the requirements of Title5 and applicable local bylaws, will in fact be feasible on this site.

ON-SITE REVIEW 1-5-23										
DEEP HOLE #: 23-15 DATE: 42/14/21 TIME: C WEATHER: 616401/										
SITE ADD	RESS or MA	P/LOT #:	20, 11	Fi de						
OWNER:			_	JC	B NO.:					
LUCATION	i (identity on	Plan):	GR	OUND ELEVATION	AT SURFACE OF HOLE:					
LAND USE: Commercial SURFACE STONES: Yes: No: SLOPE (%):										
VEGETATI	ON:	14000 RA								
DISTANCE	S FROM:	CALONE ~~W								
OPEN WAT	TER BODY:	ft PROPERT	Y LINE:	ft POSSIBLE WE	TAREA: ft DRAINAGEWAY #					
DRINKING	WATER WE	LL:ft OTH	ER:							
DEEP OBS	ERVATION	HOLE LOG								
(inches)	Soil Hor./	Soil Texture (USDA)	Soil Color	Redoximorphic	Other (Structure, Consistency,% Gravels, Stone					
(inches)	Layer		(Munsell)	Features	Boulders					
0-18	A	65	104RUL							
18:20	B	6.5	10 MARS/6							
30 5%	С	1.5	2.54 /2	REDOK (O)	werence is 11."					
		/	÷	coll						
				-0	Mon RATU?					
		COULD BC								
		SAIN	<u> </u>							
				1						
PARENIM	Disturbed Soil: Unsuitable Material Present? Yes: No: If Yes:									
PARENI M	Ind Soil:	Disturbed Soil: Fill Mat'l: Impervious Layer(s): Weathered/Fractured Rock: Bedrock:								
Disturb	bed Soil:	Fill Mat'l:								
Disturb GROUNDW	oed Soil:	Fill Mat'l:	No:	If Yes: What is the	depth of Groundwater:					
Disturb GROUNDW Standing	VATER OBSI In Hole:	Fill Mat'l: ERVED: Yes: Weeping from	No:	If Yes: What is the Saturating ti	depth of Groundwater: ne Face: Mottling:					
GROUNDW Standing Estimated I	ATER OBSI in Hole: Depth to Sec ATION TE	ERVED: Yes: Weeping from asonal High Ground Wat	No:	If Yes: What is the Saturating the	depth of Groundwater: ne Face: Mottling:					
Disturt GROUNDW Standing Estimated I PERCOL	ATER OBSI In Hole: Depth to Sea ATION TE	Fill MatT: ERVED: Yes: Weeping from asonal High Ground Wat ST	No: n Face: ter :	If Yes: What is the Saturating the	depth of Groundwater: ne Face: Mottling:					
GROUNDW Standing Estimated I PERCOL Percolation Test Date:	ATER OBSI in Hole: Depth to Sea ATION TE Hole #:	Fill MatY: ERVED: Yes: Weeping fror asonal High Ground Wat ST	No:	If Yes: What is the Saturating the Percolation Hole	depth of Groundwater: ne Face: Mottling: e #:					
GROUNDW Standing Estimated I PERCOL Percolation Test Date: Depth of Pe	ATER OBSI in Hole: Depth to Sea ATION TE Hole #:	Fill MatY: ERVED: Yes: Weeping fror asonal High Ground Wat ST	No:	If Yes: What is the Saturating the Percolation Hol- Test Date:	depth of Groundwater: ne Face: Mottling: e #:					
GROUNDW Standing Estimated I PERCOL Percolation Test Date: Depth of Pe Start of Pres	and Soil: ATER OBSI in Hole: Depth to Sec ATION TE Hole #: rc: soak:	Fill MatT: ERVED: Yes: weeping fror asonal High Ground Wat ST	No:	If Yes: What is the Saturating the Percolation Hol Test Date: Depth of Perc: Start of Percond	depth of Groundwater: ne Face: Mottling: e #:					
Contemporation of Press Contemporation of Press	ATER OBSI in Hole: Depth to Ser ATION TE Hole #: rc: soak: oak:	Fill Matt: ERVED: Yes: weeping fror asonal High Ground Wat ST	No:	If Yes: What is the Saturating the Percolation Hole Test Date: Depth of Presoal End of Presoal	depth of Groundwater:         ne Face:					
Contemporation of the second s	ATER OBSI in Hole: Depth to Ser ATION TE Hole #: rc: soak: oak:	Fill MatT:	No:	Percolation Hol Test Date: Depth of Presoal End of Presoak	depth of Groundwater:         ne Face:					
Disturt Disturt GROUNDW Standing Estimated I PERCOL Percolation Test Date: Depth of Pes Start of Press End of Press End of Press Time @ 12": Time @ 9":	ATER OBSI In Hole: Depth to Sec ATION TE Hole #: rc: soak: boak: c:	Fill MatT:	No:	If Yes: What is the Saturating the Percolation Hole Test Date: Depth of Perc: Start of Presoal End of Presoal Time @ 12": Time @ 9":	depth of Groundwater:           ne Face:         Mottling:           e #:					
GROUNDW Standing Estimated I PERCOL Percolation Test Date: Depth of Pes Start of Press End of Press End of Press Time @ 12": Time @ 9":	bed Soil: ATER OBSI in Hole: Depth to Sec ATION TE Hole #: rc: soak: boak: : : : : : : : : : : : : :	Fill MatT:	No:	If Yes: What is the Saturating the Percolation Hole Test Date: Depth of Perc: Start of Presoal End of Presoal Time @ 12": Time @ 9": Time Elapse (12)	depth of Groundwater:           ne Face:         Mottling:           e #:					
GROUNDW Standing Estimated I PERCOL Percolation Test Date: Depth of Pes Start of Press End of Press Time @ 12": Time @ 9": Time Elapse Time AT 6":	ed Soil: In Hole: Depth to Se: ATION TE Hole #: rc: soak: coak: coak: coak:	Fill MatT:	No:	If Yes: What is the Saturating the Percolation Hole Test Date: Depth of Perc: Start of Presoal End of Presoal End of Presoal Time @ 12": Time Elapse:(12 Time Elapse:(12)	depth of Groundwater:         ne Face:       Mottling:         e #:					
GROUNDW Standing Estimated I PERCOL Percolation Test Date: Depth of Press End of Press End of Press Time @ 12": Time @ 9": Time Elapse Time AT 6":	ATER OBSI in Hole: Depth to Sec ATION TE Hole #: rc: soak: bak: e:(12"-9") e: (9"-6"):	Fill MatT:	No:	If Yes: What is the Saturating the Percolation Hole Test Date: Depth of Perc: Start of Presoal End of Presoal End of Presoal Time @ 12": Time @ 9": Time Elapse: (12) Time Elapse: (9)	depth of Groundwater:         ne Face:       Mottling:         e #:					
Carlow Content of the second s	bed Soil:           IATER OBSI           in Hole:           Depth to Ser           ATION TE           Hole #:           soak:           bak:           :           ::           ::           ::           ::           ::           ::           ::           ::	Fill MatT:	No:	If Yes: What is the Saturating the Percolation Hole Test Date: Depth of Perc: Start of Presoal End of Presoal End of Presoal Time @ 12": Time @ 9": Time Elapse: (12 Time AT 6": Time Elapse: (9 Rate: (min/in.):	depth of Groundwater:         ne Face:       Mottling:         e #:					
GROUNDW Standing Estimated I PERCOL Percolation Test Date: Depth of Pe Start of Press End of Press Time @ 12": Time @ 9": Time Elapsee Rate: (min/ir Fest Passed	bed Soil:           /ATER OBSI           in Hole:           Depth to Ser           ATION TE           Hole #:           soak:           back:           ::           ::           ::           ::           ::           ::           ::           ::           ::           ::           ::           ::           ::           ::           ::           ::           ::           ::           ::           ::           ::           ::           ::           ::           ::           ::           ::           ::           ::           :: <td::< td=""> <td::< td="">           ::           ::           ::           ::           ::           ::           ::           ::           ::           <td::< td=""> <td::< td=""></td::<></td::<></td::<></td::<>	Fill MatT:	No:	If Yes: What is the Saturating the Percolation Hole Test Date: Depth of Perc: Start of Presoak End of Presoak Time @ 12": Time @ 9": Time Elapse: (12 Time AT 6": Time Elapse: (9) Rate: (min/in.): Test Passed/ Fa	depth of Groundwater:         ne Face:       Mottling:         e #:					

An indication that the "site failed" indicates only that the area tested did not meet the minimum criteria (at the time of testing) for a successful soil evaluation and/or percolation test in the area tested. Additional testing at another depth or other areas may result in passing results.

1.1.1

CROCKER 2 SHARP S HINGHAM, 781-919-08 CROCKER	E DESIGN G STREET UN , MA 02043 308 2DESIGNGR	ROUP IT B ROUP.COM				FORMS 11 AND 12 SOIL EVALUATOR FORM
ON-SITE	REVIEW		1/	5/23		PM
DEEP HOL	E#: 22	-21 D	`/ \TE· 1244	101-	TIME.	WEATHER MARKER PARK
SITE ADDR	RESS or MA			Va		WEATHER:
OWNER:	P	Ca		0.4	10	NO: Vo cut
LOCATION	(Identify on	Plan):		GR		
						AT SURFACE OF HOLE:
LAND USE	: Comm	ercial	- SURF	ACE STONES	Yes: No	SLOPE (%):
VEGETATI	ON: (	Ass I I.a.	e Wi	2013	LANDFORM:	
DISTANCE	S FROM:	1200				
OPEN WAT	ER BODY:	ft F	ROPERT	LINE:	ft POSSIBLE WE	TAREA: ft DRAINAGEWAY ft
DRINKING	WATER WE	ELL: ft	OTHE	R:	-	
DEEP OBS	ERVATION	HOLE LOG				
Depth (inches)	Soil Hor./ Layer	Soil Texture	(USDA)	Soil Color (Munsell)	Redoximorphic Features	Other (Structure, Consistency,% Gravels, Stones, Boulders
0-22	FILL					
22.30	AB	LS		5412312	@ 48"	
30-42	B	L-5		oyr516		
42-80	Ci	1-5		2515/2		
1	<u>-</u>			0.0112		
		ptr III -				
PARENT M	ATERIAL:				Unsuitable Material	Present? Yes:
Disturb	ed Soil:	Fill Mat'l:	] Ir	npervious Laye	r(s): We	athered/Fractured Rock: Bedrock:
GROUNDW	ATER OBSI		Vacit	No:	If Voo: W/bot is the	
Standing	in Hole [.]		aning from		n res: what is the	depth of Groundwater:
Estimated I	Depth to Se	asonal High Gr	eping from bund Wate	race	Saturating ti	he Face: Mottling:
PERCOL	ATION TE	EST				
Percolation I	Hole #:				Percolation Hol	<b>*</b> #•
Test Date:					Test Date:	
Depth of Per	rc:		1		Depth of Perc:	
Start of Pres	oak:		TAX	/	Start of Presoal	
End of Prese	oak:	N	TR	1	End of Presoak	······································
Time @ 12":			T		Time @ 12";	
Time @ 9":			V		Time @ 9":	
Time Elapse	:(12"-9")				Time Elapse:(12	⁽ⁿ -9 ⁿ )
Time AT 6":					Time AT 6":	·
Time Elapse	: (9"-6"):				Time Elapse: (9	"-6"):
Rate: (min/in	ı.):				Rate: (min/in.):	· · · · · · · · · · · · · · · · · · ·
Test Passed	/ Failed/				Test Passed/ Fa	iled/ Discon/
Discon/ Add.	lest Req'd:	:			Add. Testing Re	q'd:
Performed B Comments:	y: David N	ewhali	Witness	ed By: Lise Cut	HT N	lach./Oper.: JF Price

An indication that the "site failed" indicates only that the area tested did not meet the minimum criteria (at the time of testing) for a successful soil evaluation and/or percolation test in the area tested. Additional testing at another depth or other areas may result in passing results.

'n,

2 SHARP STREET U HINGHAM, MA 0204	ROUP NIT B			FC SOIL EV	ALUATOR
781-919-0808 CROCKERDESIGNG	ROUP.COM				
ON-SITE REVIE	/				
DEEP HOLE #:	DATE: <u>12/</u>	14/21	TIME:	WEATHER:	
SITE ADDRESS or M	\P/LOT #:				
OWNER:					
LOCATION (Identify o	n Plan):	GRO	OUND ELEVATION	AT SURFACE OF HOLE:	
LAND USE: Com	nercial SURI	FACE STONES:	Yes: No	SLOPE (%):	
VEGETATION:			LANDFORM:		
DISTANCES FROM:	*****				
OPEN WATER BODY	:ft PROPERT	Y LINE:	ft POSSIBLE WE	TAREA:ft DRAINAGEWAY:	ft
DRINKING WATER V	'ELL:ft OTH	ER:			
DEEP OBSERVATIO	HOLE LOG				_
Depth Soil Hor (inches) Layer	¹ Soil Texture (USDA)	Soil Color (Munsell)	Redoximorphic Features	Other (Structure, Consistency,% Gravels, S Boulders	itones,
Ou Bu A	Joan				
8"-16" B	wangand				
11e=110" (.	sand				
VAL C			1	<u> </u>	
		ĺ			
				·	
			Unsuitable Material	Present? Yes: No: Present? Present	If Yes:
PARENT MATERIAL Disturbed Soil:	Fill Mat'l:	Impervious Laye	_Unsuitable Material er(s):	Present? Yes: No: Sedrock: Bedrock:	lf Yes:
PARENT MATERIAL Disturbed Soil:	Fill Mat'l:	Impervious Laye	Unsuitable Material er(s): With With With With With With With With	Present? Yes: No: Sedrock: Bedrock: Bedrock:	lf Yes:
PARENT MATERIAL Disturbed Soil: GROUNDWATER OF Standing in Hole:	Fill Mat'l:	Impervious Laye No: m Face:	Unsuitable Material er(s): Wo If Yes: What is the Saturating t	Present? Yes: No: Bedrock: Bedrock: Bedrock: he Face: Mottling:	If Yes:
PARENT MATERIAL Disturbed Soil: GROUNDWATER OF Standing in Hole: Estimated Depth to DEPCOL ATION	Fill Mat'l: SERVED: Yes: Weeping fro Beasonal High Ground Wa	Impervious Laye No: m Face:	Unsuitable Material er(s): With With the With the What is the it Saturating the	Present? Yes: No: Present? Yes: No: Present? Yes: No: Present? Present? No: Present?	If Yes:
PARENT MATERIAL Disturbed Soil: GROUNDWATER OF Standing in Hole: Estimated Depth to PERCOLATION Percolation Hole #	Fill Mat'l: SERVED: Yes: Weeping fro Geasonal High Ground Wa	Impervious Laye No: m Face: ter :	Unsuitable Material er(s): What is the If Yes: What is the Saturating to Percolation Ho	Present? Yes: No: Bedrock: Bed	If Yes:
PARENT MATERIAL Disturbed Soil: GROUNDWATER OF Standing in Hole: Estimated Depth to PERCOLATION Percolation Hole #: Test Date:	Fill Mat'l: SERVED: Yes: Weeping fro Weeping fro Geasonal High Ground Wa FEST	Impervious Laye No: m Face: ter :	Unsuitable Material er(s): Wi If Yes: What is the Saturating t Percolation Ho Test Date:	Present? Yes: No: Bedrock: Bed	If Yes:
PARENT MATERIAL Disturbed Soil: GROUNDWATER OF Standing in Hole: Estimated Depth to PERCOLATION Percolation Hole #: Test Date: Depth of Perc:	Fill Mat'l: SERVED: Yes: Weeping fro Seasonal High Ground Wa FEST	Impervious Laye No: m Face:	Unsuitable Material er(s): With the Wit	Present? Yes: No: Bedrock: No: No: Bedrock: Bedrock: No: No: Bedrock: Bedro	If Yes:
PARENT MATERIAL Disturbed Soil: GROUNDWATER OF Standing in Hole: Estimated Depth to PERCOLATION Percolation Hole #: Test Date: Depth of Perc: Start of Presoak:	Fill Mat'l: SERVED: Yes: Weeping fro weeping fro ieasonal High Ground Wa FEST	Impervious Laye No: m Face:	Unsuitable Material er(s): What is the star Saturating t Percolation Ho Test Date: Depth of Perc: Start of Presoa	Present? Yes: No: Bedrock: Bedrock: Bedrock: Comparison of Groundwater: he Face: Mottling:	If Yes:
PARENT MATERIAL Disturbed Soil: GROUNDWATER OF Standing in Hole: Estimated Depth to PERCOLATION Percolation Hole #: Test Date: Depth of Perc: Start of Presoak: End of Presoak:	Fill Mat'l: SERVED: Yes: Seasonal High Ground Wa	Impervious Laye No: 8 m Face: 8 tter : 8	Unsuitable Material er(s): What is the state of the state of the state percolation Hole Test Date: Depth of Perc: Start of Presoal End of Presoal	Present?       Yes:       No:         pathered/Fractured Rock:       Bedrock:         depth of Groundwater:       Bedrock:         he Face:       Mottling:         e #:	If Yes:
PARENT MATERIAL Disturbed Soil: GROUNDWATER OF Standing in Hole: Estimated Depth to PERCOLATION Percolation Hole #: Test Date: Depth of Perc: Start of Presoak: End of Presoak: Time @ 12":	Fill Mat'l: SERVED: Yes: Weeping fro Weeping fro Seasonal High Ground Wa FEST	Impervious Laye No: 8 m Face: 8 tter : 8	Unsuitable Material er(s): What is the staturating t Percolation Ho Test Date: Depth of Perc: Start of Presoal End of Presoal Time @ 12":	Present?       Yes:       No:       Description         beathered/Fractured Rock:       Bedrock:       Bedrock:         depth of Groundwater:       Mottling:	If Yes:
PARENT MATERIAL Disturbed Soil: GROUNDWATER OF Standing in Hole: Estimated Depth to PERCOLATION Percolation Hole #: Test Date: Depth of Perc: Start of Presoak: End of Presoak: End of Presoak: Time @ 12": Time @ 9":	Fill Mat'l: SERVED: Yes: Served	Impervious Laye	Unsuitable Material er(s): What is the if Yes: What is the Saturating t Percolation Ho. Test Date: Depth of Perc: Start of Presoa End of Presoa Time @ 12": Time @ 9":	Present?       Yes:       No:       Description         seathered/Fractured Rock:       Bedrock:       Bedrock:         depth of Groundwater:       he Face:       Mottling:         he Face:       Mottling:	If Yes:
PARENT MATERIAL Disturbed Soil: GROUNDWATER OF Standing in Hole: Estimated Depth to PERCOLATION Percolation Hole #: Test Date: Depth of Perc: Start of Presoak: End of Presoak: Time @ 12": Time @ 9": Time Elapse:(12"-9")	Fill Mat'l: SERVED: Yes: Weeping fro Weeping fro Geasonal High Ground Wa FEST	Impervious Laye	Unsuitable Material er(s): What is the staturating to Percolation Ho Test Date: Depth of Perc: Start of Presoal End of Presoal Time @ 12": Time @ 9": Time Elapse:(1	Present?       Yes:       No:         Bedrock:       Bedrock:         aepth of Groundwater:       Bedrock:         he Face:       Mottling:         e #:	If Yes:
PARENT MATERIAL Disturbed Soil: GROUNDWATER OF Standing in Hole: Estimated Depth to PERCOLATION Percolation Hole #: Test Date: Depth of Perc: Start of Presoak: End of Presoak: Time @ 12": Time @ 9": Time Elapse:(12"-9") Time AT 6":	Fill Mat'l: SERVED: Yes: Weeping fro Weeping fro Geasonal High Ground Wa FEST	Impervious Laye	Unsuitable Material er(s): What is the staturating to vercolation Ho Test Date: Depth of Perc: Start of Presoal End of Presoal Time @ 12": Time @ 9": Time Elapse:(1 Time AT 6":	Present?       Yes:       No:       Description         peathered/Fractured Rock:       Bedrock:       Bedrock:         depth of Groundwater:       Mottling:	If Yes:
PARENT MATERIAL Disturbed Soil: GROUNDWATER OF Standing in Hole: Estimated Depth to PERCOLATION Percolation Hole #: Test Date: Depth of Perc: Start of Presoak: End of Presoak: Time @ 12": Time @ 9": Time Elapse:(12"-9") Time AT 6": Time Elapse: (9"-6"):	Fill Mat'l: SERVED: Yes: Weeping fro Weeping fro Seasonal High Ground Wa FEST	Impervious Laye	Unsuitable Material er(s): What is the st Saturating to Percolation Ho Test Date: Depth of Perc: Start of Presoal End of Presoal Time @ 12": Time @ 9": Time Elapse: (1 Time AT 6": Time Elapse: (1)	Present?       Yes:       No:       Description         peathered/Fractured Rock:       Bedrock:       Bedrock:         depth of Groundwater:       he Face:       Mottling:         he Face:       Mottling:	If Yes:
PARENT MATERIAL Disturbed Soil: GROUNDWATER OF Standing in Hole: Estimated Depth to PERCOLATION Percolation Hole #: Test Date: Depth of Perc: Start of Presoak: End of Presoak: End of Presoak: Time @ 12": Time @ 9": Time Elapse: (12"-9") Time AT 6": Time Elapse: (9"-6"): Rate: (min/in.):	Fill Mat'l: SERVED: Yes: Weeping fro Weeping fro Seasonal High Ground Wa FEST	Impervious Laye	Unsuitable Material er(s): What is the staturating the staturating the staturating the staturating the staturating the staturating the Depth of Perc: Start of Presoal Time @ 12": Time @ 9": Time Elapse: (1 Time AT 6": Time Elapse: (2) Rate: (min/in.):	Present?       Yes:       No:         seathered/Fractured Rock:       Bedrock:         depth of Groundwater:       he Face:       Mottling:         he Face:       Mottling:	If Yes:
PARENT MATERIAL Disturbed Soil: GROUNDWATER OF Standing in Hole: Estimated Depth to PERCOLATION Percolation Hole #: Test Date: Depth of Perc: Start of Presoak: End of Presoak: End of Presoak: Time @ 12": Time @ 9": Time Elapse: (12"-9") Time AT 6": Time Elapse: (9"-6"): Rate: (min/in.): Test Passed/ Failed/	Fill Mat'l: SERVED: Yes: Weeping fro Weeping fro Seasonal High Ground Wa FEST	Impervious Laye	Unsuitable Material er(s): What is the staturating the staturating the percolation Hol Test Date: Depth of Perc: Start of Presoal Time @ 12": Time @ 9": Time Elapse:(1 Time AT 6": Time Elapse: (1 Rate: (min/in.): Test Passed/ F	Present?       Yes:       No:         pathered/Fractured Rock:       Bedrock:         depth of Groundwater:       Bedrock:         he Face:       Mottling:         e #:	If Yes:

An indication that the "site failed" indicates only that the area tested did not meet the minimum criteria (at the time of testing) for a successful soil evaluation and/or percolation test in the area tested. Additional testing at another depth or other areas may result in passing results.

An indication that the "site passed" indicates only that the basic criteria for a soil evaluation and percolation test under Title 5 have

been met in the area tested. Further soil evaluations and design work are necessary to determine whether a septic system for a particular use, meeting the requirements of Title5 and applicable local bylaws, will in fact be feasible on this site.

#### CROCKER DESIGN GROUP 2 SHARP STREET UNIT B HINGHAM, MA 02043 781-919-0808 CROCKERDESIGNGROUP.COM

ON-SITE	REVIEW	0.1					
DEEP HOLE	E#: <u>  / -</u>	24D/	ATE: <u>12/1</u>	4/21	TIME:	WEATHER:	
SITE ADDR	ESS or MAP	P/LOT'#:					
OWNER:					Ji	OB NO.:	
LOCATION	(Identify on	Plan):		GR	OUND ELEVATION	AT SURFACE OF HO	LE:
LAND USE:	Comme	ercial	SURF	ACE STONES:	Yes: N	D:	SLOPE (%):
VEOETATIO	NH.						
						· ·	
OPEN WAT		ft F	ROPERT		ft POSSIBLE W	ET AREA: ft	DRAINAGEWAY: ft
DRINKING	MATER WE	 11.• ft	OTHE		-		
DEEP OBSI	ERVATION	HOLE LOG	•••••				
Depth	Soil Hor./			Soil Color	Redoximorphic	Other (Structure, Co	onsistency.% Gravels, Stones.
(inches)	Layer	Soil Texture	(USDA)	(Munsell)	Features		Boulders
0'-8"	A	Lad	WY -				
8" - 240"	В	leamo	nd				
7:- 00	5" C	sano	t.				
							•
PARENT M	ATERIAL:				Unsuitable Materia	al Present? Y	es: No: If Yes:
Disturb	ed Soil:	Fill Mat'l:	<b>]</b> "	mpervious Laye	er(s): V	Veathered/Fractured Ro	ck: Bedrock:
GROUNDW	ATER OBS	ERVED:	Yes: 🗸	No:	If Yes: What is th	e depth of Groundwate	r.
Standing	in Hole:	W	eeping from	n Face: (()()	4 Saturating	the Face:	Mottling:
Estimated I	Depth to Se	asonal High G	round Wat	er:			
PERCOL	ATION TE	EST					
Percolation	Hole #:				Percolation H	ole #:	
Test Date:					Test Date:		
Depth of Pe	rc:				<ul> <li>Depth of Perc</li> </ul>	:	
Start of Pres	soak:				Start of Preso	ak:	
End of Pres	oak:				- End of Presoa	ık:	
Time @ 12"					- Time @ 12":		
Time @ 9":					Time @ 9":		
Time Elapse	e:(12"-9")				Time Elapse:(	12"-9")	
Time AT 6"					Time AT 6":	,	
Time Flanse	e: (9"-6")·				- Time Elapse:	(9"-6"):	
Rate: (min/i	n.):				- Rate: (min/in.)		
Test Passed	d/ Failed/				Test Passed/	Failed/ Discon/	
Discon/ Add	. Test Req'o	d:			Add. Testing I	Req'd:	
Performed E Comments:	By: David N	Newhall	Witness	sed By: <u>Lisa C</u> i	Allity	Mach./Oper.: JF Price	

An indication that the "site passed" indicates only that the basic criteria for a soil evaluation and percolation test under Title 5 have been met in the area tested. Further soil evaluations and design work are necessary to determine whether a septic system for a particular use, meeting the requirements of Title5 and applicable local bylaws, will in fact be feasible on this site.

2 SHARP STREET UN HINGHAM, MA 02043 781-919-0808 CROCKERDESIGNGI	iroup IIT B ROUP.COM			FORMS 11 A SOIL EVALUATOR I			
ON-SITE REVIEW	1 1-	$\subset$					
DEEP HOLE # 13-	20 DATE: 12	4.4.107	311				
SITE ADDRESS or MA	DATE <u>12</u> P/I OT #:	<u>714/21</u>	1IME:	WEATHER:			
OWNER:	12mm	er-your	10	D.NO.			
LOCATION (Identify or	Plan):	GE					
			COULD ELEVATION	AT SURFACE OF HOLE:			
LAND USE: Comm	ercial SUR	FACE STONES	: Yes: No	SLOPE (%):			
VEGETATION:	600012		LANDFORM:				
OPEN WATER BODY: DRINKING WATER WI	tt PROPERT	TY LINE:	_ft POSSIBLE WE	T AREA:ft DRAINAGEWAY:ft			
DEEP OBSERVATION	HOLELOG						
(inches) Layer	Soil Texture (USDA)	Soil Color (Munsell)	Redoximorphic Features	Other (Structure, Consistency,% Gravels, Stones, Boulders			
0.12 A	LS	10:11 3/2		GR IL			
1.38 B	6-5	10YR 5/B		MASTUC FR			
38-90 C1	SAND	2585/4	@ 17011	5.6. 2003 -			
			weep/no	1280			
······			101	(/iq)			
PARENT MATERIAL:			Linsuitable Material				
Disturbed Soil:	Fill Mat'l:	mpervious Lave		othered/Exception of Dayl			
SROUNDWATER OBS Standing in Hole:	ERVED: Yes: Weeping fror asonal High Ground Wa	No:	If Yes: What is the Saturating th	depth of Groundwater: e Face: Mottling:			
PERCOLATION TE	EST						
'ercolation Hole #:	- 1100		Percolation Hole	· #:			
			Test Date:				
est Date:			Depth of Perc:				
est Date: Depth of Perc:			Start of Presoak:				
est Date: Pepth of Perc: tart of Presoak:			Start of Presoak				
est Date: Pepth of Perc: tart of Presoak: nd of Presoak;			Start of Presoak End of Presoak:				
est Date: Pepth of Perc: tart of Presoak: nd of Presoak: ime @ 12":			Start of Presoak End of Presoak: Time @ 12":				
est Date: lepth of Perc: tart of Presoak: nd of Presoak: ime @ 12": ime @ 9":			Start of Presoak End of Presoak: Time @ 12": Time @ 9":				
est Date: Pepth of Perc: tart of Presoak: nd of Presoak: ime @ 12": ime @ 9": ime Elapse:(12"-9") ime AT 6"-			Start of Presoak End of Presoak: Time @ 12": Time @ 9": Time Elapse:(12	9")			
Test Date: Depth of Perc: Start of Presoak: Start of Presoak: Time @ 12": Time @ 9": Time Elapse:(12"-9") Time Elapse: (9"-6"):			Start of Presoak End of Presoak: Time @ 12": Time @ 9": Time Elapse:(12 Time AT 6":	"-9")			
Test Date: Depth of Perc: Start of Presoak: Start of Presoak: Star			Start of Presoak End of Presoak: Time @ 12": Time @ 9": Time Elapse:(12' Time AT 6": Time Elapse: (9"				
Fest Date: Depth of Perc: Start of Presoak: Time @ 12": Time @ 9": Time Elapse:(12"-9") Time Elapse: (9"-6"): tate: (min/in.): est Passed/ Failed/ iscon/ Add. Test Req'd;			Start of Presoak End of Presoak: Time @ 12"; Time @ 9": Time Elapse:(12' Time AT 6"; Time Elapse: (9" Rate: (min/in.); Test Passed/ Fai Add, Testing Rec	"-9")			

An indication that the "site failed" indicates only that the area tested did not meet the minimum criteria (at the time of testing) for a successful soil evaluation and/or percolation test in the area tested. Additional testing at another depth or other areas may result in passing results.

.



**SECTION 7 – HYDRAULIC PIPE SIZING** 

## Hydraflow Storm Sewers Extension for Autodesk® Civil 3D® Plan



Project File: Storm-DW1.stm	Number of lines: 17	Date: 7/31/2023																				
-----------------------------	---------------------	-----------------																				
Statio	n	Len	Drng A	rea	Rnoff	Area x	C	Тс		Rain	Total	Сар	Vel	Pipe		Invert Ele	ev	HGL Ele	v	Grnd / Ri	m Elev	Line ID
--------	-----------	-----------	------------	-----------	---------	-----------	--------	----------	----------	-----------	----------	-----------	--------	------	-------	------------	-------------	---------	--------	-----------	------------------	---------------------
Line	То		Incr	Total	coen	Incr	Total	Inlet	Syst	-(1)	now	run		Size	Slope	Dn	Up	Dn	Up	Dn	Up	-
	Line	(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	End	25.030	0.00	2.46	0.00	0.00	0.78	0.0	10.9	5.9	4.56	17.33	4.23	24	0.50	97.00	97.13	97.75	97.88	99.18	102.33	Pipe - (41) (1)
2	1	180.982	0.00	2.46	0.00	0.00	0.78	0.0	10.2	6.0	4.66	17.33	4.32	24	0.50	97.13	98.03	97.88	98.79	102.33	108.00	Pipe - (41)
3	2	46.230	0.00	2.46	0.00	0.00	0.78	0.0	10.0	6.0	4.69	17.33	4.26	24	0.50	98.03	98.26	98.79	99.02	108.00	107.91	Pipe - (40) (1)
4	3	189.442	0.00	0.94	0.00	0.00	0.53	0.0	9.1	6.2	3.31	17.33	3.44	24	0.50	98.26	99.21	99.02	99.84	107.91	108.08	Pipe - (40)
5	4	10.029	0.09	0.09	0.82	0.07	0.07	6.0	6.0	7.0	0.49	2.72	2.61	12	0.50	103.90	103.95	104.19	104.24	108.08	107.91	Pipe - (49)
6	4	11.153	0.06	0.06	0.79	0.05	0.05	6.0	6.0	7.0	0.34	2.83	2.38	12	0.54	103.89	103.95	104.12	104.19	108.08	107.93	Pipe - (50)
7	4	42.507	0.00	0.79	0.00	0.00	0.41	0.0	8.9	6.3	2.59	4.94	4.07	15	0.50	99.54	99.75	100.18	100.39	108.08	108.51	Pipe - (59) (1) (1)
8	7	95.975	0.00	0.79	0.00	0.00	0.41	0.0	8.5	6.4	2.62	4.94	4.08	15	0.50	99.75	100.23	100.40	100.88	108.51	109.35	Pipe - (59) (1)
9	8	170.807	0.00	0.79	0.00	0.00	0.41	0.0	7.8	6.5	2.69	4.94	4.10	15	0.50	100.23	101.08	100.88	101.74	109.35	108.87	Pipe - (59)
10	9	121.336	0.00	0.79	0.00	0.00	0.41	0.0	7.3	6.6	2.74	4.94	4.01	15	0.50	101.08	101.69	101.78	102.36	108.87	107.66	Pipe - (61)
11	10	11.925	0.16	0.16	0.66	0.11	0.11	6.0	6.0	7.0	0.74	3.87	3.36	12	1.01	103.26	103.38	103.56	103.74	107.66	107.43	Pipe - (70)
12	10	10.477	0.08	0.08	0.78	0.06	0.06	6.0	6.0	7.0	0.43	3.77	2.84	12	0.95	103.26	103.36	103.49	103.63	107.66	107.43	Pipe - (69)
13	10	181.105	0.00	0.55	0.00	0.00	0.24	0.0	6.3	6.9	1.68	2.52	2.93	12	0.50	101.69	102.60	102.60	103.17	107.66	105.89	Pipe - (58)
14	13	15.678	0.20	0.20	0.38	0.07	0.07	6.0	6.0	7.0	0.52	2.54	0.91	12	0.51	102.60	102.68	103.32	103.33	105.89	105.65	Pipe - (54)
15	13	15.322	0.35	0.35	0.48	0.17	0.17	6.0	6.0	7.0	1.18	2.57	2.06	12	0.52	102.60	102.68	103.32	103.34	105.89	105.65	Pipe - (55)
16	3	37.759	0.00	1.52	0.00	0.00	0.24	0.0	6.1	6.9	1.69	2.73	3.66	12	0.50	101.65	101.84	102.22	102.41	107.91	108.44	Pipe - (63) (1)
17	16	12.917	1.52	1.52	0.16	0.24	0.24	6.0	6.0	7.0	1.70	2.73	3.34	12	0.50	101.94	102.00	102.57	102.60	108.44	104.06	Pipe - (63)
Proie	ect File:	Storm-I	DW1.stm	n			1	1								Number	of lines: 1	7		Run Da	⊥ te: 7/31/20	D23
		noity - 0	06 70 //l		15.00		Dation	norial -	-Vro 10			5 h - 4 -	~									
NOT	ES:Inte	nsity = 8	6.72 / (li	nlet time	+ 15.30	) ^ 0.82;	Return	period :	=Yrs. 10	; c = cir	e = elli	p b = bo	х									

	tfall		-		J: 2		n: 3		n: 4		n: 7		n: 8	ŧ	n: 9	Ŧ	n: 10	Ħ	Ln: 13	Ŧ	rt Ln: 14
lev. (ft)	Sta 0+00.00 - Ou	omu, El. 97.00 In	Sta 0+25.03 - Ln:	Rim El. 102.33 Inv. El. 97.13 Out Inv. El. 97.13 In	Sta 2+06.012 - Li	Rim El. 108.00 Inv. El. 98.03 Out Inv. El. 98.03 In	Sta 2+52.242 - LI	Rim El. 107.91 Inv. El. 98.26 Out Inv. El. 98.26 In	Sta 4+41.684 - Lı	Rim El. 108.08 Inv. El. 99.21 Out Inv. El. 99.54 In	Sta 4+84.191 - Lı	Rim El. 108.51 Inv. El. 99.75 Out Inv. El. 99.75 In	Sta 5+80.166 - LI	Rim El. 109.35 Inv. El. 100.23 Ol Inv. El. 100.23 In	Sta 7+50.973 - Lı	Rim El. 108.87 Inv. El. 101.08 Ol Inv. El. 101.08 In	Sta 8+72.309 - Li	Rim El. 107.66 Inv. El. 101.69 Ol Inv. El. 101.69 In	Sta 10+53.414 - I	Rim El. 105.89 Inv. El. 102.60 Ou Inv. El. 102.60 In	Sta 10+69.093 - 1 Rim El. 105.65 Inv. El. 102.68 Ol
118.00 -																					118.00
113.00 -																					113.00
108.00 -																					108.00
103.00 -																					103.00
98.00 -						46.23	3011	18	9.442I 50%	f - 24" @	2.507 ) 0.50	Lf - 15" %	@ 0.5	0%	20.007		- 121.3	336Lf - 15	" @ 0.	181.105L1 50%	
93.00 -		25.030	Lf - 2	— 180.98 24" @ 0.50	2Lf )%	- 24" @ 0.	50%					- 95.97	′5Lf - ′	— 17 15" @ 0.50	0.807	/ LT - 15" (	g 0.50%				93.00





Project File: Storm-DW1.stm	Number of lines: 17	Date: 7/31/2023
-----------------------------	---------------------	-----------------

Statio	n	Len	Drng A	rea	Rnoff	Area x	C	Тс		Rain	Total	Cap	Vel	Pipe		Invert Ele	ev	HGL Ele	v	Grnd / Ri	m Elev	Line ID
Line	To		Incr	Total	coen	Incr	Total	Inlet	Syst	-(1)	now	iun		Size	Slope	Dn	Up	Dn	Up	Dn	Up	
	Line	(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	End	25.030	0.00	2.46	0.00	0.00	0.78	0.0	10.6	8.2	6.37	17.33	4.70	24	0.50	97.00	97.13	97.89	98.02	99.18	102.33	Pipe - (41) (1)
2	1	180.982	0.00	2.46	0.00	0.00	0.78	0.0	9.9	8.4	6.49	17.33	4.77	24	0.50	97.13	98.03	98.02	98.94	102.33	108.00	Pipe - (41)
3	2	46.230	0.00	2.46	0.00	0.00	0.78	0.0	9.8	8.4	6.52	17.33	4.72	24	0.50	98.03	98.26	98.94	99.16	108.00	107.91	Pipe - (40) (1)
4	3	189.442	0.00	0.94	0.00	0.00	0.53	0.0	8.9	8.6	4.59	17.33	3.78	24	0.50	98.26	99.21	99.16	99.96	107.91	108.08	Pipe - (40)
5	4	10.029	0.09	0.09	0.82	0.07	0.07	6.0	6.0	9.5	0.67	2.72	2.85	12	0.50	103.90	103.95	104.24	104.29	108.08	107.91	Pipe - (49)
6	4	11.153	0.06	0.06	0.79	0.05	0.05	6.0	6.0	9.5	0.46	2.83	2.59	12	0.54	103.89	103.95	104.16	104.23	108.08	107.93	Pipe - (50)
7	4	42.507	0.00	0.79	0.00	0.00	0.41	0.0	8.8	8.7	3.58	4.94	4.39	15	0.50	99.54	99.75	100.33	100.54	108.08	108.51	Pipe - (59) (1) (1)
8	7	95.975	0.00	0.79	0.00	0.00	0.41	0.0	8.4	8.8	3.62	4.94	4.23	15	0.50	99.75	100.23	100.64	101.00	108.51	109.35	Pipe - (59) (1)
9	8	170.807	0.00	0.79	0.00	0.00	0.41	0.0	7.7	9.0	3.70	4.94	4.41	15	0.50	100.23	101.08	101.05	101.87	109.35	108.87	Pipe - (59)
10	9	121.336	0.00	0.79	0.00	0.00	0.41	0.0	7.3	9.1	3.75	4.94	4.42	15	0.50	101.08	101.69	101.92	102.49	108.87	107.66	Pipe - (61)
11	10	11.925	0.16	0.16	0.66	0.11	0.11	6.0	6.0	9.5	1.01	3.87	3.68	12	1.01	103.26	103.38	103.61	103.80	107.66	107.43	Pipe - (70)
12	10	10.477	0.08	0.08	0.78	0.06	0.06	6.0	6.0	9.5	0.58	3.77	3.11	12	0.95	103.26	103.36	103.53	103.68	107.66	107.43	Pipe - (69)
13	10	181.105	0.00	0.55	0.00	0.00	0.24	0.0	6.3	9.4	2.30	2.52	3.03	12	0.50	101.69	102.60	102.79	103.48	107.66	105.89	Pipe - (58)
14	13	15.678	0.20	0.20	0.38	0.07	0.07	6.0	6.0	9.5	0.71	2.54	0.92	12	0.51	102.60	102.68	103.60	103.60	105.89	105.65	Pipe - (54)
15	13	15.322	0.35	0.35	0.48	0.17	0.17	6.0	6.0	9.5	1.61	2.57	2.08	12	0.52	102.60	102.68	103.60	103.62	105.89	105.65	Pipe - (55)
16	3	37.759	0.00	1.52	0.00	0.00	0.24	0.0	6.1	9.5	2.31	2.73	3.89	12	0.50	101.65	101.84	102.36	102.55	107.91	108.44	Pipe - (63) (1)
17	16	12.917	1.52	1.52	0.16	0.24	0.24	6.0	6.0	9.5	2.31	2.73	3.51	12	0.50	101.94	102.00	102.73	102.77	108.44	104.06	Pipe - (63)
Proie	L	Storm-I	) DW1 stn	⊥ n												Number	of lines [.] 1	7		Run Date: 7/31/2		023
		5.0111-1	2001.301																			
NOT	ES:Inte	nsity = 1	24.57 / (	(Inlet tim	ie + 17.6	0) ^ 0.81	l; Returi	n period	=Yrs. 10	00 ; c =	cire=e	ellip b =	box									

	tfall	<del>.</del>		2.2		n: 3		n: 14		n: 7		0: 8	ŧ	rt 5	10	4	Ln: 13	ŗ	ut Ln: 14
ev. (ft)	Sta 0+00.00 - Ou Grnd. El. 99.18 Inv El 97 00 In	Sta 0+25 03 - I n	Rim El. 102.33 Inv. El. 97.13 Out Inv. El. 97.13 In	Sta 2+06.012 - Lı	Rim El. 108.00 Inv. El. 98.03 Out Inv. El. 98.03 In	Sta 2+52.242 - Li	Rim El. 107.91 Inv. El. 98.26 Out Inv. El. 98.26 In	Sta 4+41.684 - Lı	Rim El. 108.08 Inv. El. 99.21 Out Inv. El. 99.54 In	Sta 4+84.191 - Lı	Rim El. 108.51 Inv. El. 99.75 Out Inv. El. 99.75 In	Sta 5+80.166 - Li Bim EI 100 35	Inv. El. 100.23 Du Inv. El. 100.23 In	Sta 7+50.973 - Lı Rim El. 108.87 Inv. El. 101.08 Ou	іпу. Е. 101.06 іп Sta 8+72.309 - Li	Rim El. 107.66 Inv. El. 101.69 Ou	Sta 10+53.414 - I	Rim El. 105.89 Inv. El. 102.60 Ol Inv. El. 102.60 In	Sta 10+69.093 - I Rim El. 105.65 Inv. El. 102.68 Ol
118.00 -																			118.00
113.00 -																			113.00
108.00 -																			108.00
103.00 -																			103.00
98.00 -								9.4421	f - 24" @	2.507	Lf - 15" ( %	@ 0.509	6		121	.336Lf	- 15" @ 0	181.105L	15.678Lf - 12" @ 0.51 15.678Lf - 12" @ 0.51
			180.9	82Lf	└─── 46.2 - 24" @ 0	230L ).50%	f - 24" @ 0. 6	50%					170.8	807Lf - 1	5" @ 0.50%	6			





Statio	'n	Len	Drng A	rea	Rnoff	Area x	C	Тс		Rain	Total	Сар	Vel	Pipe		Invert Ele	ev	HGL Ele	v	Grnd / Ri	m Elev	Line ID
Line	To		Incr	Total	-coen	Incr	Total	Inlet	Syst	-(1)	now	run		Size	Slope	Dn	Up	Dn	Up	Dn	Up	
	LIIIE	(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	End	22.968	0.00	1.83	0.00	0.00	0.92	0.0	7.2	6.7	6.13	16.96	4.64	24	0.48	97.00	97.11	97.88	97.99	98.64	102.60	Pipe - (44) (1)
2	1	147.584	0.00	1.83	0.00	0.00	0.92	0.0	6.7	6.8	6.24	17.35	4.87	24	0.50	97.21	97.95	98.04	98.83	102.60	104.76	Pipe - (44)
3	2	90.201	0.00	0.38	0.00	0.00	0.21	0.0	6.1	6.9	1.44	6.33	5.07	12	2.69	98.95	101.38	99.27	101.89	104.76	105.67	Pipe - (68)
4	3	24.457	0.18	0.18	0.64	0.11	0.11	6.0	6.0	7.0	0.79	2.73	2.80	12	0.50	101.48	101.60	101.89	101.97	105.67	105.69	Pipe - (48)
5	3	21.489	0.20	0.20	0.48	0.09	0.09	6.0	6.0	7.0	0.66	2.73	2.51	12	0.50	101.48	101.59	101.89	101.93	105.67	105.67	Pipe - (47)
6	2	53.500	0.00	1.45	0.00	0.00	0.71	0.0	6.5	6.8	4.86	8.08	4.75	18	0.50	98.45	98.72	99.29	99.57	104.76	104.90	Pipe - (45) (2)
7	6	78.331	0.00	0.75	0.00	0.00	0.34	0.0	6.2	6.9	2.32	2.73	3.83	12	0.50	98.82	99.21	99.57	99.91	104.90	103.71	Pipe - (45)
8	7	32.847	0.75	0.75	0.45	0.34	0.34	6.0	6.0	7.0	2.34	2.49	3.60	12	0.49	99.31	99.47	100.08	100.24	103.71	102.83	Pipe - (46)
9	6	73.372	0.29	0.29	0.55	0.16	0.16	6.0	6.0	7.0	1.14	3.86	2.57	12	1.00	98.82	99.55	99.57	100.00	104.90	103.70	Pipe - (67)
10	6	66.722	0.40	0.40	0.53	0.21	0.21	6.0	6.0	7.0	1.48	3.86	2.99	12	1.00	98.82	99.49	99.57	100.00	104.90	103.63	Pipe - (66)
Proje	ect File:	Storm-I	DW2.stn	1 n				ļ				<u> </u>				Number	of lines: 1	0	<u> </u>	Run Da	) 23	
	FSInto	neitv = 9	6 72 / //	nlet time	a + 15 30	0.82.	Return	neriod -	Vre 10		نالہ ہے م	$\mathbf{n} \mathbf{h} = \mathbf{h} \mathbf{a}$	v									







Static	'n	Len	Drng A	rea	Rnoff	Area x	C	Тс		Rain	Total	Сар	Vel	Pipe		Invert Ele	ev	HGL Ele	v	Grnd / Ri	m Elev	Line ID
Line	To		Incr	Total	COen	Incr	Total	Inlet	Syst	-(1)	now	run		Size	Slope	Dn	Up	Dn	Up	Dn	Up	
	Lille	(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	End	22.968	0.00	1.83	0.00	0.00	0.92	0.0	7.2	9.1	8.39	16.96	5.14	24	0.48	97.00	97.11	98.03	98.14	98.64	102.60	Pipe - (44) (1)
2	1	147.584	0.00	1.83	0.00	0.00	0.92	0.0	6.7	9.3	8.52	17.35	5.33	24	0.50	97.21	97.95	98.20	98.99	102.60	104.76	Pipe - (44)
3	2	90.201	0.00	0.38	0.00	0.00	0.21	0.0	6.1	9.4	1.97	6.33	5.57	12	2.69	98.95	101.38	99.33	101.98	104.76	105.67	Pipe - (68)
4	3	24.457	0.18	0.18	0.64	0.11	0.11	6.0	6.0	9.5	1.08	2.73	3.01	12	0.50	101.48	101.60	101.98	102.04	105.67	105.69	Pipe - (48)
5	3	21.489	0.20	0.20	0.48	0.09	0.09	6.0	6.0	9.5	0.90	2.73	2.70	12	0.50	101.48	101.59	101.98	101.98	105.67	105.67	Pipe - (47)
6	2	53.500	0.00	1.45	0.00	0.00	0.71	0.0	6.5	9.3	6.63	8.08	5.10	18	0.50	98.45	98.72	99.48	99.75	104.76	104.90	Pipe - (45) (2)
7	6	78.331	0.00	0.75	0.00	0.00	0.34	0.0	6.1	9.4	3.17	2.73	4.03	12	0.50	98.82	99.21	100.15	100.68	104.90	103.71	Pipe - (45)
8	7	32.847	0.75	0.75	0.45	0.34	0.34	6.0	6.0	9.5	3.18	2.49	4.05	12	0.49	99.31	99.47	100.82	101.08	103.71	102.83	Pipe - (46)
9	6	73.372	0.29	0.29	0.55	0.16	0.16	6.0	6.0	9.5	1.55	3.86	2.31	12	1.00	98.82	99.55	100.15	100.25	104.90	103.70	Pipe - (67)
10	6	66.722	0.40	0.40	0.53	0.21	0.21	6.0	6.0	9.5	2.02	3.86	2.75	12	1.00	98.82	99.49	100.15	100.31	104.90	103.63	Pipe - (66)
Proj	ect File:	Storm-I	DW2.stn	n					1					I		Number	of lines: 1	0	1	Run Da	te: 7/31/20	D23
NOT	ES:Inte	nsity = 1	24.57 / (	(Inlet tin	ne + 17.6	0) ^ 0.81	l: Returi	n period	=Yrs. 10	0 ; c =	cire=e	ellip b =	box									







Statio	n	Len	Drng A	rea	Rnoff	Area x	C	Тс		Rain	Total	Сар	Vel	Pipe		Invert Ele	ev	HGL Ele	v	Grnd / Ri	m Elev	Line ID
Line	То		Incr	Total	-coen	Incr	Total	Inlet	Syst	-(1)	now	iun		Size	Slope	Dn	Up	Dn	Up	Dn	Up	
	Line	(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	End	19.157	0.00	0.17	0.00	0.00	0.13	0.0	6.1	6.9	0.88	2.73	3.08	12	0.50	81.00	81.10	81.39	81.49	82.13	84.81	Pipe - (36)
2	1	14.387	0.08	0.08	0.69	0.06	0.06	6.0	6.0	7.0	0.39	4.36	2.25	12	1.50	81.20	81.42	81.49	81.67	84.81	84.71	Pipe - (37)
3	1	21.326	0.09	0.09	0.82	0.07	0.07	6.0	6.0	7.0	0.50	3.56	2.62	12	1.00	81.20	81.41	81.49	81.70	84.81	84.66	Pipe - (38)
Proje	ect File:	Storm-I	HZ1.stm													Number	r of lines:	3		Run Da	23	
NOT	ES:Inte	nsity = 8	86.72 / (I	nlet time	ə + 15.30	) ^ 0.82;	Return	period =	=Yrs. 10	; c = cir	e = elli	p b = bc	x			,						





Statio	on	Len	Drng A	rea	Rnoff	Area x	C	Тс		Rain	Total	Сар	Vel	Pipe		Invert Ele	ev	HGL Ele	v	Grnd / Ri	m Elev	Line ID	
Line	To		Incr	Total	-соеп	Incr	Total	Inlet	Syst	-(1)	now	TUII		Size	Slope	Dn	Up	Dn	Up	Dn	Up		
	Lille	(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)		
1	End	19.157	0.00	0.17	0.00	0.00	0.13	0.0	6.2	9.4	1.20	2.73	3.36	12	0.50	81.00	81.10	81.46	81.56	82.13	84.81	Pipe - (36)	
2	1	14.387	0.08	0.08	0.69	0.06	0.06	6.0	6.0	9.5	0.53	4.36	1.95	12	1.50	81.20	81.42	81.74	81.72	84.81	84.71	Pipe - (37)	
3	1	21.326	0.09	0.09	0.82	0.07	0.07	6.0	6.0	9.5	0.68	3.56	2.21	12	1.00	81.20	81.41	81.74	81.76	84.81	84.66	Pipe - (38)	
Proje	ect File:	Storm-I	HZ1.stm													Number	r of lines:	3		Run Date: 8/1/2023			
NOT	ES:Inte	nsity = 1	24.57 /	(Inlet tin	ne + 17.6	0) ^ 0.81	; Returi	n period	=Yrs. 10	00 ; c =	cire=	ellip b =	box										





Statio	on	Len	Drng A	rea	Rnoff	Area x	C	Тс		Rain	Total	Сар	Vel	Pipe		Invert E	lev	HGL Ele	v	Grnd / Ri	im Elev	Line ID
Line	То		Incr	Total	coerr	Incr	Total	Inlet	Syst	-(1)	now	TUII		Size	Slope	Dn	Up	Dn	Up	Dn	Up	
	Line	(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	End	29.989	0.00	3.29	0.00	0.00	1.52	0.0	7.1	6.7	10.17	17.33	5.50	24	0.50	78.00	78.15	79.14	79.29	79.65	85.06	Pipe - (60)
2	1	42.744	0.00	2.47	0.00	0.00	1.12	0.0	6.5	6.8	7.65	34.65	4.80	24	2.00	78.25	79.10	79.29	80.09	85.06	86.38	Pipe - (59) (1)
3	2	58.961	0.00	2.38	0.00	0.00	1.07	0.0	6.4	6.9	7.33	11.38	6.20	18	1.00	79.60	80.19	80.48	81.24	86.38	85.96	Pipe - (59)
4	3	32.853	0.00	1.40	0.00	0.00	0.62	0.0	6.1	6.9	4.29	5.46	6.80	12	2.00	80.69	81.35	81.36	82.22	85.96	85.90	Pipe - (53)
5	4	13.231	0.75	0.75	0.43	0.32	0.32	6.0	6.0	7.0	2.25	3.86	3.86	12	1.00	81.45	81.58	82.22	82.22	85.90	85.70	Pipe - (64)
6	4	14.016	0.65	0.65	0.45	0.29	0.29	6.0	6.0	7.0	2.05	3.86	3.62	12	1.00	81.45	81.59	82.22	82.20	85.90	85.69	Pipe - (65)
7	2	14.276	0.05	0.05	0.58	0.03	0.03	6.0	6.0	7.0	0.20	3.86	2.30	12	1.00	81.15	81.29	81.30	81.48	86.38	85.53	Pipe - (66)
8	2	7.474	0.03	0.03	0.75	0.03	0.03	6.0	6.0	7.0	0.17	6.68	2.80	12	3.00	81.15	81.37	81.26	81.55	86.38	85.52	Pipe - (67)
9	3	62.819	0.00	0.98	0.00	0.00	0.45	0.0	6.1	6.9	3.12	7.01	4.05	15	1.00	80.44	81.07	81.24	81.78	85.96	85.84	Pipe - (55)
10	9	24.082	0.46	0.46	0.46	0.21	0.21	6.0	6.0	7.0	1.46	3.85	3.88	12	1.00	81.32	81.56	81.78	82.07	85.84	85.63	Pipe - (62)
11	9	17.509	0.52	0.52	0.46	0.24	0.24	6.0	6.0	7.0	1.67	4.70	4.25	12	1.48	81.32	81.58	81.78	82.13	85.84	85.64	Pipe - (63)
12	1	126.078	8 0.00	0.82	0.00	0.00	0.40	0.0	6.4	6.9	2.75	8.04	3.01	18	0.50	78.25	78.88	79.29	79.51	85.06	83.79	Pipe - (69)
13	12	75.770	0.00	0.82	0.00	0.00	0.40	0.0	6.1	6.9	2.79	7.43	3.90	18	0.50	78.88	79.26	79.52	79.90	83.79	82.95	Pipe - (58)
14	13	13.523	0.20	0.20	0.79	0.15	0.15	6.0	6.0	7.0	1.07	3.57	3.23	12	1.00	79.66	79.80	80.11	80.23	82.95	82.80	Pipe - (42)
15	13	17.637	0.63	0.63	0.40	0.25	0.25	6.0	6.0	7.0	1.73	3.55	4.16	12	1.00	79.66	79.84	80.15	80.39	82.95	82.80	Pipe - (44)
Proj	ect File:	Storm-	HZ2.stm	·											-	Numbe	er of lines: 1	5	1	Run Da	te: 8/2/202	23
NOT	ES:Inte	nsity = 8	86.72 / (I	nlet time	+ 15.30	) ^ 0.82;	Return	period =	Yrs. 10	; c = cir	e = elli	p b = bc	x			1				1		











Statio	on	Len	Drng A	rea	Rnoff	Area x	C	Тс		Rain	Total	Сар	Vel	Pipe		Invert E	lev	HGL Ele	v	Grnd / Ri	im Elev	Line ID
Line	To		Incr	Total	coen	Incr	Total	Inlet	Syst	(1)	now	Iun		Size	Slope	Dn	Up	Dn	Up	Dn	Up	
	Line	(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	End	29.989	0.00	3.29	0.00	0.00	1.52	0.0	7.5	9.0	13.72	17.33	6.12	24	0.50	78.00	78.15	79.33	79.50	79.65	85.06	Pipe - (60)
2	1	42.744	0.00	2.47	0.00	0.00	1.12	0.0	6.5	9.3	10.46	34.65	4.52	24	2.00	78.25	79.10	80.07	80.26	85.06	86.38	Pipe - (59) (1)
3	2	58.961	0.00	2.38	0.00	0.00	1.07	0.0	6.3	9.4	10.01	11.38	6.89	18	1.00	79.60	80.19	80.69	81.41	86.38	85.96	Pipe - (59)
4	3	32.853	0.00	1.40	0.00	0.00	0.62	0.0	6.1	9.5	5.85	5.46	7.67	12	2.00	80.69	81.35	81.61	82.30	85.96	85.90	Pipe - (53)
5	4	13.231	0.75	0.75	0.43	0.32	0.32	6.0	6.0	9.5	3.07	3.86	4.59	12	1.00	81.45	81.58	82.30	82.33	85.90	85.70	Pipe - (64)
6	4	14.016	0.65	0.65	0.45	0.29	0.29	6.0	6.0	9.5	2.79	3.86	4.29	12	1.00	81.45	81.59	82.30	82.31	85.90	85.69	Pipe - (65)
7	2	14.276	0.05	0.05	0.58	0.03	0.03	6.0	6.0	9.5	0.27	3.86	2.52	12	1.00	81.15	81.29	81.33	81.51	86.38	85.53	Pipe - (66)
8	2	7.474	0.03	0.03	0.75	0.03	0.03	6.0	6.0	9.5	0.24	6.68	3.07	12	3.00	81.15	81.37	81.28	81.57	86.38	85.52	Pipe - (67)
9	3	62.819	0.00	0.98	0.00	0.00	0.45	0.0	6.1	9.5	4.25	7.01	4.52	15	1.00	80.44	81.07	81.41	81.90	85.96	85.84	Pipe - (55)
10	9	24.082	0.46	0.46	0.46	0.21	0.21	6.0	6.0	9.5	1.99	3.85	4.11	12	1.00	81.32	81.56	81.90	82.16	85.84	85.63	Pipe - (62)
11	9	17.509	0.52	0.52	0.46	0.24	0.24	6.0	6.0	9.5	2.27	4.70	4.51	12	1.48	81.32	81.58	81.90	82.22	85.84	85.64	Pipe - (63)
12	1	126.078	8 0.00	0.82	0.00	0.00	0.40	0.0	6.6	9.3	3.74	8.04	2.20	18	0.50	78.25	78.88	80.07	80.19	85.06	83.79	Pipe - (69)
13	12	75.770	0.00	0.82	0.00	0.00	0.40	0.0	6.1	9.5	3.80	7.43	2.60	18	0.50	78.88	79.26	80.23	80.29	83.79	82.95	Pipe - (58)
14	13	13.523	0.20	0.20	0.79	0.15	0.15	6.0	6.0	9.5	1.46	3.57	2.97	12	1.00	79.66	79.80	80.41	80.31	82.95	82.80	Pipe - (42)
15	13	17.637	0.63	0.63	0.40	0.25	0.25	6.0	6.0	9.5	2.35	3.55	4.02	12	1.00	79.66	79.84	80.41	80.49	82.95	82.80	Pipe - (44)
Proj	ect File:	Storm-	HZ2.stm	1		1		1				1				Numbe	er of lines: 1	5	1	Run Da	te: 8/2/202	23
NOT	ES:Inte	nsity = 1	24.57 /	(Inlet tim	ne + 17.6	0) ^ 0.81	I; Retur	n period	=Yrs. 10	0 ; c =	cire=e	ellip b =	box							1		











Statio	n	Len	Drng A	rea	Rnoff	Area x	C	Тс		Rain	Total	Сар	Vel	Pipe		Invert Ele	ev	HGL Ele	v	Grnd / Ri	m Elev	Line ID
Line	To		Incr	Total	-coen	Incr	Total	Inlet	Syst	-(1)	now	Tun		Size	Slope	Dn	Up	Dn	Up	Dn	Up	
	Lille	(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	End	104.695	0.00	2.66	0.00	0.00	1.51	0.0	8.8	6.3	9.50	15.99	5.32	24	0.50	105.00	105.52	106.10	106.64	106.80	109.32	Pipe - (324)
2	1	85.028	0.00	1.58	0.00	0.00	0.93	0.0	8.4	6.4	5.96	7.43	3.45	18	0.50	105.52	105.95	107.07	107.31	109.32	110.13	Pipe - (327)
3	2	71.417	0.00	1.58	0.00	0.00	0.93	0.0	8.0	6.5	6.03	7.43	3.78	18	0.50	106.05	106.41	107.43	107.60	110.13	111.28	Pipe - (326)
4	3	80.618	0.00	1.58	0.00	0.00	0.93	0.0	7.7	6.5	6.09	12.60	4.56	18	1.44	106.51	107.67	107.72	108.62	111.28	112.63	Pipe - (325)
5	4	30.807	0.00	1.24	0.00	0.00	0.73	0.0	7.7	6.6	4.80	9.94	5.26	15	2.37	107.77	108.50	108.62	109.39	112.63	113.14	Pipe - (228)
6	5	89.525	0.00	0.65	0.00	0.00	0.43	0.0	7.4	6.6	2.84	4.31	5.27	12	1.25	109.00	110.12	109.59	110.84	113.14	114.62	Pipe - (315)
7	6	85.215	0.00	0.65	0.00	0.00	0.43	0.0	7.1	6.7	2.87	4.96	5.16	12	1.65	110.22	111.63	110.84	112.36	114.62	116.03	Pipe - (314)
8	7	89.524	0.00	0.21	0.00	0.00	0.18	0.0	6.6	6.8	1.25	5.27	2.92	12	1.87	111.73	113.40	112.36	113.87	116.03	117.80	Pipe - (311)
9	8	121.958	0.00	0.21	0.00	0.00	0.18	0.0	6.1	6.9	1.27	7.74	4.10	12	4.02	113.50	118.40	113.87	118.88	117.80	122.64	Pipe - (308)
10	9	11.837	0.12	0.12	0.90	0.11	0.11	6.0	6.0	7.0	0.75	3.86	2.86	12	1.00	118.50	118.62	118.88	118.98	122.64	122.71	Pipe - (309)
11	9	11.886	0.09	0.09	0.85	0.08	0.08	6.0	6.0	7.0	0.52	3.86	2.29	12	1.00	118.50	118.62	118.88	118.92	122.64	122.71	Pipe - (310)
12	7	10.655	0.17	0.17	0.67	0.11	0.11	6.0	6.0	7.0	0.79	3.86	2.26	12	1.00	111.73	111.84	112.36	112.21	116.03	115.89	Pipe - (312)
13	7	10.630	0.28	0.28	0.48	0.13	0.13	6.0	6.0	7.0	0.92	3.86	2.45	12	1.00	111.73	111.84	112.36	112.24	116.03	115.89	Pipe - (313)
14	5	28.029	0.00	0.58	0.00	0.00	0.30	0.0	7.4	6.6	2.01	4.80	4.94	12	1.82	109.00	109.51	109.45	110.11	113.14	113.11	Pipe - (615)
15	14	63.828	0.00	0.29	0.00	0.00	0.15	0.0	7.0	6.7	1.01	3.21	2.87	12	0.81	109.61	110.13	110.11	110.55	113.11	113.74	Pipe - (614)
16	15	91.610	0.00	0.29	0.00	0.00	0.15	0.0	6.5	6.8	1.03	2.73	3.22	12	0.50	110.33	110.79	110.76	111.22	113.74	114.66	Pipe - (613)
17	16	37.458	0.13	0.13	0.50	0.07	0.07	6.0	6.0	7.0	0.47	2.52	1.95	12	0.50	110.79	110.98	111.22	111.27	114.66	114.30	Pipe - (611)
18	16	53.046	0.15	0.15	0.55	0.08	0.08	6.0	6.0	7.0	0.58	2.52	2.25	12	0.50	110.79	111.05	111.22	111.37	114.66	114.32	Pipe - (612)
19	14	11.285	0.16	0.16	0.51	0.08	0.08	6.0	6.0	7.0	0.57	2.52	1.55	12	0.50	109.61	109.67	110.11	110.12	113.11	112.97	Pipe - (617)
20	14	10.225	0.13	0.13	0.53	0.07	0.07	6.0	6.0	7.0	0.50	2.52	1.33	12	0.50	109.61	109.66	110.11	110.12	113.11	112.92	Pipe - (616)
21	4	10.307	0.20	0.20	0.54	0.11	0.11	6.0	6.0	7.0	0.76	5.46	2.58	12	2.00	108.17	108.38	108.62	108.74	112.63	112.47	Pipe - (238)
22	4	10.421	0.15	0.15	0.63	0.09	0.09	6.0	6.0	7.0	0.63	5.46	2.31	12	2.00	108.17	108.38	108.62	108.71	112.63	112.47	Pipe - (239)
Proje	ect File:	Storm-	W1.stm			1							1	1		Numbe	r of lines: 2	24	1	Run Da	te: 7/27/20	)23
			/ //													I				1		

NOTES:Intensity = 86.72 / (Inlet time + 15.30) ^ 0.82; Return period =Yrs. 10 ; c = cir e = ellip b = box

Station		Len	Drng A	rea	Rnoff	Area x C		Тс		Rain	Total	Cap	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID		
Line	To		Incr	Total	COETT	Incr	Total	Inlet	Syst		now	iun		Size	Slope	Dn	Up	Dn	Up	Dn	Up			
	Line	(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)			
23	1	7.357	0.43	0.43	0.63	0.27	0.27	6.0	6.0	7.0	1.88	2.63	2.39	12	0.54	106.00	106.04	107.07	107.09	109.32	109.31	Pipe - (322)		
24	1	21.246	0.65	0.65	0.47	0.31	0.31	6.0	6.0	7.0	2.13	2.56	2.71	12	0.52	106.00	106.11	107.07	107.11	109.32	109.31	Pipe - (323)		
Proj	ect File:	Storm-	W1.stm													Number	r of lines: 2	24		Run Da	Run Date: 7/27/2023			
NOT	NOTES:Intensity = 86.72 / (Inlet time + 15.30) ^ 0.82; Return period =Yrs. 10 ; c = cir e = ellip b = box												,											

	fall	<u>.</u>		2	÷	e	4	4	Ŧ	5	+	9	ц.	2		80	÷	σ		
ev. (ft)	Sta 0+00.00 - Out Grnd. El. 106.80 Inv. El. 105.00 In	Sta 1+04.695 - Ln	Rim El. 109.32 Inv. El. 105.52 Ou Inv. El. 105.52 In	Sta 1+89.723 - Ln	Rim El. 110.13 Inv. El. 105.95 Ou Inv. El. 106.05 In	Sta 2+61.14 - Ln:	Rim El. 111.28 Inv. El. 106.41 Ou Inv. El. 106.51 In	Sta 3+41.758 - Ln	Rim El. 112.63 Inv. El. 107.67 Ou Inv. El. 107.77 In	Sta 3+72.565 - Ln	Rim El. 113.14 Inv. El. 108.50 Ou Inv. El. 109.00 In	Sta 4+62.09 - Ln:	Rim El. 114.62 Inv. El. 110.12 Ou Inv. El. 110.22 In	Sta 5+47.305 - Ln	Rim El. 116.03 Inv. El. 111.63 Oui Inv. El. 111.73 In	Sta 6+36.829 - Ln	Rim El. 117.80 Inv. El. 113.40 Ou Inv. El. 113.50 In	Sta 7+58 787 - 1 n	Rim El. 122.64 Inv. El. 118.40 Ou	
139.00 -																				139.00
131.00 -																				— 131.00
123.00 -																				- 123.00
115.00 -																				- 115.00
107.00 -								80.6	518Lf - 18		1.44%	#				89.5	24Lf - 12" (	— 121.95 @ 1.87%	8Lf - 12"	@ 487.%
		104.6	95Lf - 24'	85.0 @ 0.50	28Lf - 18 %	- 71. "@0	417Lf - ′ .50%	18" @ 0.	50%	).807	89 'Lf - 15"	.525L @ 2.3	f - 12" @ 1	5.21 .25%	15Lf - 12" %	@ 1.65'	%			




Statio	n	Len	Drng A	rea	Rnoff	Area x	C	Тс		Rain	Total	Сар	Vel	Pipe		Invert El	ev	HGL Ele	v	Grnd / Ri	m Elev	Line ID
Line	To		Incr	Total	-coen	Incr	Total	Inlet	Syst	-(1)	now	Tun		Size	Slope	Dn	Up	Dn	Up	Dn	Up	
	Lille	(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	End	104.695	0.00	2.66	0.00	0.00	1.51	0.0	8.5	8.7	13.18	15.99	5.77	24	0.50	105.00	105.52	106.31	106.96	106.80	109.32	Pipe - (324)
2	1	85.028	0.00	1.58	0.00	0.00	0.93	0.0	8.2	8.8	8.23	7.43	4.66	18	0.50	105.52	105.95	107.42	107.95	109.32	110.13	Pipe - (327)
3	2	71.417	0.00	1.58	0.00	0.00	0.93	0.0	7.9	8.9	8.30	7.43	4.70	18	0.50	106.05	106.41	108.14	108.59	110.13	111.28	Pipe - (326)
4	3	80.618	0.00	1.58	0.00	0.00	0.93	0.0	7.7	9.0	8.38	12.60	4.74	18	1.44	106.51	107.67	108.76	109.28	111.28	112.63	Pipe - (325)
5	4	30.807	0.00	1.24	0.00	0.00	0.73	0.0	7.6	9.0	6.59	9.94	5.37	15	2.37	107.77	108.50	109.63	109.95	112.63	113.14	Pipe - (228)
6	5	89.525	0.00	0.65	0.00	0.00	0.43	0.0	7.3	9.1	3.90	4.31	4.97	12	1.25	109.00	110.12	110.39	111.30	113.14	114.62	Pipe - (315)
7	6	85.215	0.00	0.65	0.00	0.00	0.43	0.0	7.0	9.2	3.94	4.96	5.30	12	1.65	110.22	111.63	111.40	112.47	114.62	116.03	Pipe - (314)
8	7	89.524	0.00	0.21	0.00	0.00	0.18	0.0	6.5	9.3	1.71	5.27	3.27	12	1.87	111.73	113.40	112.47	113.96	116.03	117.80	Pipe - (311)
9	8	121.958	0.00	0.21	0.00	0.00	0.18	0.0	6.1	9.5	1.73	7.74	4.39	12	4.02	113.50	118.40	113.96	118.96	117.80	122.64	Pipe - (308)
10	9	11.837	0.12	0.12	0.90	0.11	0.11	6.0	6.0	9.5	1.03	3.86	3.07	12	1.00	118.50	118.62	118.96	119.04	122.64	122.71	Pipe - (309)
11	9	11.886	0.09	0.09	0.85	0.08	0.08	6.0	6.0	9.5	0.71	3.86	2.46	12	1.00	118.50	118.62	118.96	118.97	122.64	122.71	Pipe - (310)
12	7	10.655	0.17	0.17	0.67	0.11	0.11	6.0	6.0	9.5	1.08	3.86	2.51	12	1.00	111.73	111.84	112.47	112.28	116.03	115.89	Pipe - (312)
13	7	10.630	0.28	0.28	0.48	0.13	0.13	6.0	6.0	9.5	1.25	3.86	2.72	12	1.00	111.73	111.84	112.47	112.31	116.03	115.89	Pipe - (313)
14	5	28.029	0.00	0.58	0.00	0.00	0.30	0.0	7.4	9.0	2.74	4.80	3.49	12	1.82	109.00	109.51	110.39	110.51	113.14	113.11	Pipe - (615)
15	14	63.828	0.00	0.29	0.00	0.00	0.15	0.0	6.9	9.2	1.38	3.21	2.16	12	0.81	109.61	110.13	110.70	110.78	113.11	113.74	Pipe - (614)
16	15	91.610	0.00	0.29	0.00	0.00	0.15	0.0	6.5	9.3	1.40	2.73	3.50	12	0.50	110.33	110.79	110.84	111.30	113.74	114.66	Pipe - (613)
17	16	37.458	0.13	0.13	0.50	0.07	0.07	6.0	6.0	9.5	0.64	2.52	1.33	12	0.50	110.79	110.98	111.48	111.49	114.66	114.30	Pipe - (611)
18	16	53.046	0.15	0.15	0.55	0.08	0.08	6.0	6.0	9.5	0.79	2.52	1.77	12	0.50	110.79	111.05	111.48	111.52	114.66	114.32	Pipe - (612)
19	14	11.285	0.16	0.16	0.51	0.08	0.08	6.0	6.0	9.5	0.78	2.52	0.99	12	0.50	109.61	109.67	110.70	110.70	113.11	112.97	Pipe - (617)
20	14	10.225	0.13	0.13	0.53	0.07	0.07	6.0	6.0	9.5	0.68	2.52	0.86	12	0.50	109.61	109.66	110.70	110.70	113.11	112.92	Pipe - (616)
21	4	10.307	0.20	0.20	0.54	0.11	0.11	6.0	6.0	9.5	1.04	5.46	1.33	12	2.00	108.17	108.38	109.63	109.63	112.63	112.47	Pipe - (238)
22	4	10.421	0.15	0.15	0.63	0.09	0.09	6.0	6.0	9.5	0.86	5.46	1.10	12	2.00	108.17	108.38	109.63	109.63	112.63	112.47	Pipe - (239)
Proje	ect File:	Storm-	N1.stm	I			1	<u> </u>		1	I	1		1		Numbe	r of lines: 2	24	1	Run Da	⊥ te: 7/27/20	)23
																				1		

NOTES:Intensity = 124.57 / (Inlet time + 17.60) ^ 0.81; Return period =Yrs. 100 ; c = cir e = ellip b = box

Static	on	Len	Drng A	rea	Rnoff	Area x	C	Тс		Rain	Total	Сар	Vel	Pipe		Invert Ele	ev	HGL Ele	v	Grnd / Ri	m Elev	Line ID
Line	To		Incr	Total	coen	Incr	Total	Inlet	Syst	(1)	now	iun		Size	Slope	Dn	Up	Dn	Up	Dn	Up	
	Line	(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
23	1	7.357	0.43	0.43	0.63	0.27	0.27	6.0	6.0	9.5	2.55	2.63	3.25	12	0.54	106.00	106.04	107.42	107.46	109.32	109.31	Pipe - (322)
24	1	21.246	0.65	0.65	0.47	0.31	0.31	6.0	6.0	9.5	2.90	2.56	3.69	12	0.52	106.00	106.11	107.42	107.56	109.32	109.31	Pipe - (323)
Proj	ect File:	Storm-	W1.stm													Number	of lines: 2	24		Run Da	te: 7/27/20	023
NOT	ES:Inte	nsity = 1	24.57 /	(Inlet tim	ne + 17.6	0) ^ 0.81	; Retur	n period	=Yrs. 10	0 ; c =	cire=e	ellip b =	box			1				1		

	<u>) - Outfall</u> <u>6.8</u> 0 00 In	15 - Ln: 1	.32 52 Out 52 In	:3 - Ln: 2	13 95 Out 05 In	- Ln: 3	28 51 In	8 - Ln: 4	63 67 Out 77 In	<u>14</u> 14	50 Out 00 In	) - Ln: 6	62 12 Out 22 In	)5 - Ln: 7	03 33 Out 73 In	:9 - Ln: 8	80 50 In 50 In		17 - Ln: 9 .64 40 Out	
ev. (ft)	Sta 0+00.00 Grnd. El. 10 Inv. El. 105.	Sta 1+04.65	Rim El. 109 Inv. El. 105. Inv. El. 105.	Sta 1+89.72	Rim El. 110. Inv. El. 105. Inv. El. 106.	Sta 2+61.14	Rim El. 111. Inv. El. 106. Inv. El. 106.	Sta 3+41.75	Rim El. 112. Inv. El. 107. Inv. El. 107.	Sta 3+72.56 Rim FI 113	Inv. El. 108. Inv. El. 109.	Sta 4+62.09	Rim El. 114. Inv. El. 110. Inv. El. 110.	Sta 5+47.30	Rim El. 116. Inv. El. 111.( Inv. El. 111.	Sta 6+36.82	Rim El. 117. Inv. El. 113. Inv. El. 113.		Sta 7+58.78 Rim El. 122 Inv. El. 118.	
139.00 —																				139.00
131.00 —																				- 131.00
123.00 —																				- 123.00
115.00 —																				- 115.00
107.00 —								80.6	18Lf - 18"	@1.4	4%					89.5	24Lf - 12" (	- 121.9 2 1.87%	958Lf - 12"	@ 4:87.%





Statio	n	Len	Drng A	rea	Rnoff	Area x	C	Тс		Rain	Total	Сар	Vel	Pipe		Invert Ele	ev	HGL Ele	v	Grnd / Ri	m Elev	Line ID
Line	To		Incr	Total	_соеп	Incr	Total	Inlet	Syst	(1)	now	TUII		Size	Slope	Dn	Up	Dn	Up	Dn	Up	
	Line	(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	End	20.001	0.00	1.09	0.00	0.00	0.57	0.0	6.8	6.8	3.83	8.04	4.35	18	0.50	102.00	102.10	102.75	102.85	103.64	106.60	Pipe - (255) (1)
2	1	139.817	0.00	1.09	0.00	0.00	0.57	0.0	6.3	6.9	3.90	14.55	4.86	18	1.64	102.20	104.49	102.85	105.24	106.60	110.00	Pipe - (255)
3	2	63.350	0.00	1.09	0.00	0.00	0.57	0.0	6.1	6.9	3.93	12.34	4.86	18	1.38	104.59	105.47	105.24	106.22	110.00	110.01	Pipe - (254)
4	3	15.255	0.71	0.71	0.54	0.38	0.38	6.0	6.0	7.0	2.64	2.52	3.63	12	0.50	105.97	106.05	106.84	106.92	110.01	110.05	Pipe - (252)
5	3	14.851	0.38	0.38	0.49	0.19	0.19	6.0	6.0	7.0	1.30	2.52	3.24	12	0.50	105.97	106.04	106.48	106.55	110.01	110.04	Pipe - (253)
Proje	ect File:	Storm-	W2.stm			1	1			1					<u> </u>	Number	r of lines: 5	;		Run Da	te: 7/27/20	)23
NOT	ES:Inte	nsity = 8	6.72 / (I	nlet time	∍ + 15.30	) ^ 0.82;	Return	period =	Yrs. 10	; c = cir	e = elli	p b = bo	x			1				1		





Statio	n	Len	Drng A	rea	Rnoff	Area x	C	Тс		Rain	Total	Сар	Vel	Pipe		Invert Ele	ev	HGL Ele	v	Grnd / Ri	m Elev	Line ID
Line	To		Incr	Total	coen	Incr	Total	Inlet	Syst	(1)	now	Tun		Size	Slope	Dn	Up	Dn	Up	Dn	Up	
	Line	(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	End	20.001	0.00	1.09	0.00	0.00	0.57	0.0	6.7	9.3	5.24	8.04	4.84	18	0.50	102.00	102.10	102.88	102.98	103.64	106.60	Pipe - (255) (1)
2	1	139.817	0.00	1.09	0.00	0.00	0.57	0.0	6.3	9.4	5.32	14.55	5.06	18	1.64	102.20	104.49	103.04	105.38	106.60	110.00	Pipe - (255)
3	2	63.350	0.00	1.09	0.00	0.00	0.57	0.0	6.1	9.5	5.36	12.34	5.31	18	1.38	104.59	105.47	105.38	106.36	110.00	110.01	Pipe - (254)
4	3	15.255	0.71	0.71	0.54	0.38	0.38	6.0	6.0	9.5	3.60	2.52	4.58	12	0.50	105.97	106.05	106.97	107.13	110.01	110.05	Pipe - (252)
5	3	14.851	0.38	0.38	0.49	0.19	0.19	6.0	6.0	9.5	1.77	2.52	3.48	12	0.50	105.97	106.04	106.59	106.66	110.01	110.04	Pipe - (253)
Proje	ect File:	Storm-	W2.stm													Number	r of lines: 5	i		Run Da	te: 7/27/20	)23
NOT	ES:Inte	nsity = 1	24.57 /	(Inlet tin	ne + 17.6	50) ^ 0.81	; Returi	n period	=Yrs. 10	0 ; c =	cir e = e	ellip b =	box									





Statio	n	Len	Drng A	rea	Rnoff	Area x	C	Тс		Rain	Total	Сар	Vel	Pipe		Invert Ele	ev	HGL Ele	v	Grnd / Ri	m Elev	Line ID
Line	To		Incr	Total	COen	Incr	Total	Inlet	Syst		now	Iun		Size	Slope	Dn	Up	Dn	Up	Dn	Up	
	Lille	(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	End	46.656	0.00	1.47	0.00	0.00	0.75	0.0	8.4	6.4	4.79	8.04	4.70	18	0.50	100.00	100.23	100.84	101.07	101.11	104.58	Pipe - (271)
2	1	83.897	0.00	1.47	0.00	0.00	0.75	0.0	8.1	6.4	4.83	21.28	5.12	18	3.50	100.33	103.27	101.07	104.11	104.58	108.29	Pipe - (270)
3	2	69.993	0.00	0.42	0.00	0.00	0.27	0.0	7.9	6.5	1.74	4.76	4.72	12	1.53	103.77	104.84	104.19	105.40	108.29	108.99	Pipe - (269)
4	3	111.905	0.00	0.42	0.00	0.00	0.27	0.0	7.5	6.6	1.77	3.46	4.15	12	0.81	104.94	105.84	105.44	106.41	108.99	110.29	Pipe - (268)
5	4	88.824	0.00	0.42	0.00	0.00	0.27	0.0	7.1	6.7	1.80	3.86	4.35	12	1.00	105.94	106.83	106.42	107.40	110.29	111.25	Pipe - (267)
6	5	71.574	0.00	0.08	0.00	0.00	0.07	0.0	6.5	6.8	0.47	4.05	1.92	12	1.10	106.93	107.72	107.40	108.00	111.25	111.96	Pipe - (604) (1)
7	6	87.191	0.08	0.08	0.83	0.07	0.07	6.0	6.0	7.0	0.48	3.86	2.95	12	1.00	107.82	108.69	108.06	108.98	111.96	112.74	Pipe - (604)
8	5	10.439	0.24	0.24	0.53	0.13	0.13	6.0	6.0	7.0	0.89	3.86	2.78	12	1.00	106.93	107.04	107.40	107.43	111.25	111.09	Pipe - (266)
9	5	14.655	0.10	0.10	0.72	0.07	0.07	6.0	6.0	7.0	0.51	3.86	2.01	12	1.00	106.93	107.08	107.40	107.37	111.25	111.16	Pipe - (265)
10	2	15.014	0.00	1.05	0.00	0.00	0.48	0.0	6.1	7.0	3.35	3.59	5.14	12	0.87	103.77	103.90	104.54	104.68	108.29	108.34	Pipe - (261)
11	10	9.760	0.59	0.59	0.48	0.28	0.28	6.0	6.0	7.0	1.97	3.86	3.73	12	1.00	104.00	104.10	104.68	104.70	108.34	108.15	Pipe - (258)
12	10	11.165	0.45	0.45	0.44	0.20	0.20	6.0	6.0	7.0	1.39	3.86	3.00	12	1.00	104.00	104.11	104.68	104.61	108.34	108.15	Pipe - (259)
	. =																					
Proje	ect File:	Storm-	W3.stm													Number	r of lines: 1	2		Run Da	te: 7/27/20	)23
NOT	ES:Inte	nsity = 8	6.72 / (I	nlet time	ə + 15.30	) ^ 0.82;	Return	period =	Yrs. 10	; c = cir	e = elli	p b=bo	x									

	utfall	_	ü.	ti c	n: 2	rt		, rt		4	t,		-n: 5	, et	n: 6	, tt		-n: 7 but	
	0-00	01.11 0.00 lr	356 - 1	4.58 0.23 C 0.33 Ir	553 - L	8.29 3.27 C		8.99 4.94 C		45 - Lr	0.29 5.84 C 5.94 Ir		274 - 1	1.25 6.93 I 6.93 I	348 - I	1.96 7.72 C 7.82 Ir		239 - 1 2.74 8.69 C	
ft)	00+0	я. ЕІ. ЕІ. 10	0+46.(	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1+30.	1 1 2 1 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	2+00 ⁻¹	ЩЩЩ 2000		3+12.	山 町 日 日 日 日 日 日 日 日 日 日 日 日 日 日 日 日 日 日		4+01.3	⊡ ₩ ₩ ₩	4+72.4	□ □ 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		5+60. EI. 11 EI. 10	
	Sta (	Grno Inv. I	Sta (	Rim In Sr In Sr In Sr	Sta ,	بة R ۲	Sta Sta	n N N N N N		Sta (	Rim Inv.   Inv.		Sta /	Rim Inv. I I	Sta /	Rim S S S S S		Sta ( Inv. I	
.00 —																			126.0
00 —																			120.0
00 —																			
00													_						109 (
.00 —																			100.0
		( /						111.905L	f - 12" @ 0.8	1%									
	Ţ	$\square$															87.1	91Lf - 12" @	1.00%
00 —	4											00.0	20.41	£ 40% © 4.0	71.57	'4Lf - 12'	'@1.10%		102.0 
							69.9	93Lf - 12" @	1.53%				524L	.r - 12° @ 1.0	0%				
			656		83.897	′Lf - 18	" @ 3.50%												
			656	Lt - 18" @	v 0.50%														





Static	n	Len	Drng A	rea	Rnoff	Area x	C	Тс		Rain	Total	Сар	Vel	Pipe		Invert Ele	ev	HGL Ele	v	Grnd / Ri	m Elev	Line ID
Line	To		Incr	Total	coen	Incr	Total	Inlet	Syst	-(1)	now	Iun		Size	Slope	Dn	Up	Dn	Up	Dn	Up	
	LIIIE	(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	End	46.656	0.00	1.47	0.00	0.00	0.75	0.0	8.2	8.8	6.62	8.04	5.14	18	0.50	100.00	100.23	100.99	101.29	101.11	104.58	Pipe - (271)
2	1	83.897	0.00	1.47	0.00	0.00	0.75	0.0	8.0	8.9	6.68	21.28	5.24	18	3.50	100.33	103.27	101.36	104.27	104.58	108.29	Pipe - (270)
3	2	69.993	0.00	0.42	0.00	0.00	0.27	0.0	7.7	9.0	2.41	4.76	5.21	12	1.53	103.77	104.84	104.27	105.50	108.29	108.99	Pipe - (269)
4	3	111.905	0.00	0.42	0.00	0.00	0.27	0.0	7.3	9.1	2.44	3.46	4.58	12	0.81	104.94	105.84	105.56	106.51	108.99	110.29	Pipe - (268)
5	4	88.824	0.00	0.42	0.00	0.00	0.27	0.0	7.0	9.2	2.46	3.86	4.80	12	1.00	105.94	106.83	106.52	107.50	110.29	111.25	Pipe - (267)
6	5	71.574	0.00	0.08	0.00	0.00	0.07	0.0	6.5	9.3	0.64	4.05	2.08	12	1.10	106.93	107.72	107.50	108.05	111.25	111.96	Pipe - (604) (1)
7	6	87.191	0.08	0.08	0.83	0.07	0.07	6.0	6.0	9.5	0.65	3.86	3.23	12	1.00	107.82	108.69	108.10	109.03	111.96	112.74	Pipe - (604)
8	5	10.439	0.24	0.24	0.53	0.13	0.13	6.0	6.0	9.5	1.21	3.86	3.01	12	1.00	106.93	107.04	107.50	107.50	111.25	111.09	Pipe - (266)
9	5	14.655	0.10	0.10	0.72	0.07	0.07	6.0	6.0	9.5	0.69	3.86	2.18	12	1.00	106.93	107.08	107.50	107.42	111.25	111.16	Pipe - (265)
10	2	15.014	0.00	1.05	0.00	0.00	0.48	0.0	6.1	9.5	4.57	3.59	5.81	12	0.87	103.77	103.90	104.77	104.98	108.29	108.34	Pipe - (261)
11	10	9.760	0.59	0.59	0.48	0.28	0.28	6.0	6.0	9.5	2.68	3.86	3.42	12	1.00	104.00	104.10	105.51	105.55	108.34	108.15	Pipe - (258)
12	10	11.165	0.45	0.45	0.44	0.20	0.20	6.0	6.0	9.5	1.90	3.86	2.41	12	1.00	104.00	104.11	105.51	105.53	108.34	108.15	Pipe - (259)
Proi		Storm-	W3 stm													Number	of lines: 1	12		Run Da	 te [.] 7/27/2/	123
		5.0111-	w													Trumbe	or intes.	12				J20
NOT	ES:Inte	nsity = 1	24.57 /	(Inlet tim	ie + 17.6	0) ^ 0.81	; Retur	n period	=Yrs. 10	00 ; c =	cire=e	ellip b =	box									

	utfall	-	-n: 1	, et	-n: 2	ort		, T		4	ti c		-n: 5	٦, c	-n: 6	ort c		-n: 7	nt	
	0 - 00	11.11 100.0	656 - 1	0.23 C 0.23 C 0.33 Ir	553 - I	3.27 C	3.77 lr 545 - l	08.99 4.84 C 4.94 Ir		45 - Lı	0.29 5.84 C 5.94 Ir		274 - 1	1.25 6.83 C 6.93 Ir	848 - 1	1.96 7.72 C 7.82 Ir		039 - 1	2.74 8.69 C	
ft)	0+00.	d. El. El. 10	0+46.		1+30.	Щ 1,2	EI. 10 2+00.			3+12.	山 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		4+01.	三 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	4+72.	三 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		5+60.	⊟	
	Sta	Ë. S	Sta	Rim In V. V.	Sta	ы Б	Sta Sta	빌 ^드 드		Sta	Rim N N N N		Sta	Rim Inv. Inv.	Sta	Rin Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finite Finit		Sta	Rin I	
.00 —																				— 126.0
00 —																				— 120.0
										-										
00 —										+										— 114.(
00 —																				— 108.0
		ſ						111 905	f - 12" @ 0.8	1%										
	Ħ	$\square$				F		11100									87.2	191L	f - 12" @ 1	.00%
00 —	4											000	2241	f 12" @ 1.0	71.57	'4Lf - 12'	"@1.10%	-		— 102.0
					00.007	1.5	<u> </u>	93Lf - 12" @	21.53%			00.0	JZ4L	<u>- 12 (00</u> 1.0	0 70			-		
			656		83.897	LT - 1	5° @ 3.50%													





Statio	n	Len	Drng A	rea	Rnoff	Area x	C	Тс		Rain	Total	Сар	Vel	Pipe		Invert Ele	ev	HGL Ele	v	Grnd / Ri	m Elev	Line ID
Line	To		Incr	Total	coen	Incr	Total	Inlet	Syst		now	Tun		Size	Slope	Dn	Up	Dn	Up	Dn	Up	
	Line	(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	End	17.970	0.00	1.53	0.00	0.00	0.81	0.0	7.2	6.7	5.39	8.04	4.88	18	0.50	94.00	94.09	94.89	94.99	95.43	98.78	Pipe - (337) (1)
2	1	84.354	0.00	1.53	0.00	0.00	0.81	0.0	6.9	6.7	5.44	31.70	5.07	18	7.76	94.19	100.74	95.05	101.64	98.78	107.46	Pipe - (337)
3	2	126.345	0.00	0.75	0.00	0.00	0.40	0.0	6.6	6.8	2.73	6.47	6.24	12	2.81	101.24	104.79	101.69	105.50	107.46	109.29	Pipe - (336)
4	3	148.050	0.00	0.75	0.00	0.00	0.40	0.0	6.1	6.9	2.78	3.86	4.99	12	1.00	104.89	106.37	105.52	107.08	109.29	110.81	Pipe - (335)
5	4	15.262	0.30	0.30	0.54	0.16	0.16	6.0	6.0	7.0	1.13	3.86	2.78	12	1.00	106.47	106.62	107.08	107.07	110.81	110.79	Pipe - (330)
6	4	14.632	0.45	0.45	0.53	0.24	0.24	6.0	6.0	7.0	1.66	3.86	3.53	12	1.00	106.47	106.61	107.08	107.16	110.81	110.66	Pipe - (331)
7	2	14.656	0.35	0.35	0.51	0.18	0.18	6.0	6.0	7.0	1.23	5.46	3.82	12	2.00	101.24	101.53	101.64	102.00	107.46	107.29	Pipe - (332)
8	2	55.741	0.43	0.43	0.54	0.23	0.23	6.0	6.0	7.0	1.61	3.86	4.21	12	1.00	101.24	101.80	101.69	102.34	107.46	107.35	Pipe - (333)
Proie	ect File	Storm-V	N4.stm									<u> </u>				Number	of lines: 8		<u> </u>	Run Dat	te: 7/27/20	)23
	=0							<u> </u>														
NOT	ES:Inte	nsity = 8	6.72 / (I	nlet time	+ 15.30	) ^ 0.82;	Return	period =	Yrs. 10	; c = cir	e = elli	p b = bo	x									

Page 1







Statio	า	Len	Drng A	rea	Rnoff	Area x	C	Тс		Rain	Total	Сар	Vel	Pipe		Invert Ele	ev	HGL Ele	v	Grnd / Ri	m Elev	Line ID
Line	To		Incr	Total	-coerr	Incr	Total	Inlet	Syst	-(1)	now	TUII		Size	Slope	Dn	Up	Dn	Up	Dn	Up	-
	Line	(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	End	17.970	0.00	1.53	0.00	0.00	0.81	0.0	7.1	9.1	7.40	8.04	5.38	18	0.50	94.00	94.09	95.05	95.22	95.43	98.78	Pipe - (337) (1)
2	1	84.354	0.00	1.53	0.00	0.00	0.81	0.0	6.8	9.2	7.47	31.70	5.51	18	7.76	94.19	100.74	95.28	101.80	98.78	107.46	Pipe - (337)
3	2	126.345	0.00	0.75	0.00	0.00	0.40	0.0	6.5	9.3	3.74	6.47	6.85	12	2.81	101.24	104.79	101.80	105.61	107.46	109.29	Pipe - (336)
4	3	148.050	0.00	0.75	0.00	0.00	0.40	0.0	6.1	9.5	3.79	3.86	5.53	12	1.00	104.89	106.37	105.69	107.20	109.29	110.81	Pipe - (335)
5	4	15.262	0.30	0.30	0.54	0.16	0.16	6.0	6.0	9.5	1.54	3.86	3.10	12	1.00	106.47	106.62	107.20	107.15	110.81	110.79	Pipe - (330)
6	4	14.632	0.45	0.45	0.53	0.24	0.24	6.0	6.0	9.5	2.26	3.86	3.97	12	1.00	106.47	106.61	107.20	107.26	110.81	110.66	Pipe - (331)
7	2	14.656	0.35	0.35	0.51	0.18	0.18	6.0	6.0	9.5	1.68	5.46	3.76	12	2.00	101.24	101.53	101.80	102.08	107.46	107.29	Pipe - (332)
8	2	55.741	0.43	0.43	0.54	0.23	0.23	6.0	6.0	9.5	2.20	3.86	4.53	12	1.00	101.24	101.80	101.80	102.43	107.46	107.35	Pipe - (333)
Proje	ct File: ES:Inte	Storm-\	N4.stm	(Inlet tim	ne + 17.6	0) ^ 0.81	; Retur	n period	=Yrs. 10	0; c =	cir e = e	ellip b =	box			Number	of lines: 8	3		Run Da	te: 7/27/20	)23







Statio	n	Len	Drng A	rea	Rnoff	Area x	C	Тс		Rain	Total	Сар	Vel	Pipe		Invert El	ev	HGL Ele	v	Grnd / Ri	m Elev	Line ID
Line	To		Incr	Total	coen	Incr	Total	Inlet	Syst	-(1)	now	run		Size	Slope	Dn	Up	Dn	Up	Dn	Up	
	Line	(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	End	23.278	0.00	0.92	0.00	0.00	0.43	0.0	7.0	6.7	2.87	8.04	3.97	18	0.50	93.00	93.12	93.64	93.76	94.11	98.62	Pipe - (356) (1) (1)
2	1	84.567	0.00	0.92	0.00	0.00	0.43	0.0	6.7	6.8	2.91	29.12	4.53	18	6.55	93.22	98.76	93.76	99.41	98.62	105.05	Pipe - (356) (1)
3	2	71.531	0.00	0.92	0.00	0.00	0.43	0.0	6.4	6.9	2.94	2.73	3.75	12	0.50	99.26	99.61	100.26	100.67	105.05	104.38	Pipe - (355)
4	3	51.222	0.49	0.49	0.48	0.24	0.24	6.0	6.0	7.0	1.64	3.86	2.21	12	1.00	99.71	100.22	101.00	101.07	104.38	104.27	Pipe - (340)
5	3	8.293	0.42	0.42	0.46	0.19	0.19	6.0	6.0	7.0	1.34	5.46	1.71	12	2.00	99.71	99.88	101.00	101.01	104.38	104.29	Pipe - (339)
Proje	ect File:	Storm-V	W5.stm													Number	r of lines: 5	5		Run Da	te: 7/27/20	023
Proje		Storm-V	พร่อ.รแก														or intest t	)			ιe. <i>1/21/2</i> 0	JZJ
NOT	ES:Inte	nsity = 8	88.24 / (I	nlet time	+ 15.50	) ^ 0.83;	Return	period =	•Yrs. 10	; c = cir	e = elli	p b = bo	х									

Page 1





Station		Len	Drng Area		Rnoff	Area x	Area x C		Тс		Total	Сар	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To		Incr	Total	coen	Incr	Total	Inlet	Syst	(1)	now	run		Size	Slope	Dn	Up	Dn	Up	Dn	Up	
	Line	(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	End	23.278	0.00	0.92	0.00	0.00	0.43	0.0	6.8	9.2	3.96	8.04	4.47	18	0.50	93.00	93.12	93.74	93.88	94.11	98.62	Pipe - (356) (1) (1)
2	1	84.567	0.00	0.92	0.00	0.00	0.43	0.0	6.5	9.3	4.00	29.12	4.89	18	6.55	93.22	98.76	93.88	99.52	98.62	105.05	Pipe - (356) (1)
3	2	71.531	0.00	0.92	0.00	0.00	0.43	0.0	6.3	9.4	4.03	2.73	5.13	12	0.50	99.26	99.61	100.26	101.04	105.05	104.38	Pipe - (355)
4	3	51.222	0.49	0.49	0.48	0.24	0.24	6.0	6.0	9.5	2.24	3.86	2.86	12	1.00	99.71	100.22	101.44	101.62	104.38	104.27	Pipe - (340)
5	3	8.293	0.42	0.42	0.46	0.19	0.19	6.0	6.0	9.5	1.83	5.46	2.33	12	2.00	99.71	99.88	101.44	101.46	104.38	104.29	Pipe - (339)
Project File: Storm-W5.stm												Number	of lines: 5	5	1	Run Da	te: 7/27/20	)23				
NOT	ES:Inte	nsity = 1	27.16/	(Inlet tim	ne + 17.8	0) ^ 0.82	; Returr	n period	=Yrs. 10	0;c=	cire=(	ellip b =	box									





Storm Sewers v2021.00

Station		Len	Drng A	rea	Rnoff	Area x C		Тс		Rain	Total	Сар	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To		Incr	Total	соеп	Incr	Total	Inlet	Syst	-(1)	now	TUII		Size	Slope	Dn	Up	Dn	Up	Dn	Up	
	Line	(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	End	27.812	0.00	0.52	0.00	0.00	0.26	0.0	6.5	6.8	1.76	2.73	3.73	12	0.50	92.00	92.14	92.56	92.74	93.11	97.40	Pipe - (360) (1)
2	1	70.712	0.00	0.52	0.00	0.00	0.26	0.0	6.3	6.9	1.78	9.78	6.66	12	6.42	93.35	97.89	93.64	98.46	97.40	103.43	Pipe - (360)
3	2	42.499	0.00	0.52	0.00	0.00	0.26	0.0	6.1	6.9	1.79	2.73	3.70	12	0.50	97.99	98.20	98.58	98.79	103.43	102.85	Pipe - (359)
4	3	15.351	0.32	0.32	0.50	0.16	0.16	6.0	6.0	7.0	1.09	3.86	2.45	12	1.00	98.30	98.46	99.11	98.90	102.85	102.51	Pipe - (358)
5	3	13.660	0.20	0.20	0.50	0.10	0.10	6.0	6.0	7.0	0.71	3.86	1.96	12	1.00	98.30	98.44	99.11	98.79	102.85	102.56	Pipe - (357)
																				<u> </u>		
Project File: Storm-W6.stm Number of lines: 5 Run Date: 7/27/2023													)23									
NOT	ES:Inte	nsity = 8	86.72 / (I	nlet time	ə + 15.30	) ^ 0.82;	Return	period =	Yrs. 10	; c = cir	e = ellij	p b = bo	x									




Storm Sewers v2021.00

Station		Len	Drng A	rea	Rnoff	Area x C		Тс		Rain	Total	al Cap v full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID	
Line	To		Incr	Total	_соеп	Incr	Total	Inlet	Syst	-(1)	now	TUII		Size	Slope	Dn	Up	Dn	Up	Dn	Up	-	
	Line	(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)		
1	End	27.812	0.00	0.52	0.00	0.00	0.26	0.0	6.4	9.3	2.41	2.73	4.09	12	0.50	92.00	92.14	92.66	92.89	93.11	97.40	Pipe - (360) (1)	
2	1	70.712	0.00	0.52	0.00	0.00	0.26	0.0	6.3	9.4	2.43	9.78	7.34	12	6.42	93.35	97.89	93.69	98.56	97.40	103.43	Pipe - (360)	
3	2	42.499	0.00	0.52	0.00	0.00	0.26	0.0	6.1	9.5	2.44	2.73	3.93	12	0.50	97.99	98.20	98.73	98.94	103.43	102.85	Pipe - (359)	
4	3	15.351	0.32	0.32	0.50	0.16	0.16	6.0	6.0	9.5	1.49	3.86	2.84	12	1.00	98.30	98.46	99.18	98.97	102.85	102.51	Pipe - (358)	
5	3	13.660	0.20	0.20	0.50	0.10	0.10	6.0	6.0	9.5	0.96	3.86	2.24	12	1.00	98.30	98.44	99.18	98.85	102.85	102.56	Pipe - (357)	
Proje	ect File:	Storm-	W6.stm													Numbe	r of lines: 5	5		Run Da	un Date: 7/27/2023		
NOT	ES:Inte	nsity = 1	24.57 /	(Inlet tir	ne + 17.6	<b>60) ^ 0.8</b> 1	l; Returi	n period	=Yrs. 10	0 ; c =	cire=e	ellip b =	box										





Station		Len	Drng Area		Rnoff	Area x C		Тс		Rain	Total Cap		Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID	
Line	То		Incr	Total	coen	Incr	Total	Inlet	Syst	(1)	now	run		Size	Slope	Dn	Up	Dn	Up	Dn	Up	-	
	Line	(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)		
1	End	49.036	0.00	1.15	0.00	0.00	0.66	0.0	8.2	6.4	4.26	7.99	4.51	18	0.49	91.00	91.24	91.79	92.03	92.64	96.04	Pipe - (329)	
2	1	146.465	0.00	0.66	0.00	0.00	0.40	0.0	7.6	6.6	2.62	2.73	3.96	12	0.50	91.34	92.07	92.13	92.86	96.04	99.78	Pipe - (302)	
3	2	29.889	0.00	0.66	0.00	0.00	0.40	0.0	7.4	6.6	2.63	2.73	3.76	12	0.50	92.17	92.32	93.02	93.14	99.78	100.38	Pipe - (300)	
4	3	34.031	0.00	0.29	0.00	0.00	0.16	0.0	6.1	6.9	1.12	4.34	3.98	12	1.27	95.92	96.35	96.27	96.80	100.38	100.74	Pipe - (298)	
5	4	14.133	0.24	0.24	0.49	0.12	0.12	6.0	6.0	7.0	0.81	3.86	3.19	12	1.00	96.45	96.59	96.80	96.97	100.74	100.64	Pipe - (297)	
6	4	14.329	0.05	0.05	0.90	0.05	0.05	6.0	6.0	7.0	0.32	3.86	1.82	12	1.00	96.45	96.59	96.80	96.83	100.74	100.64	Pipe - (296)	
7	1	59.442	0.00	0.49	0.00	0.00	0.26	0.0	6.7	6.8	1.80	9.87	6.71	12	6.54	91.99	95.87	92.28	96.44	96.04	100.84	Pipe - (305)	
8	7	19.285	0.00	0.49	0.00	0.00	0.26	0.0	6.6	6.8	1.80	2.73	3.71	12	0.50	95.96	96.06	96.56	96.65	100.84	100.12	Pipe - (596)	
9	8	12.155	0.21	0.21	0.53	0.11	0.11	6.0	6.0	7.0	0.77	2.52	2.48	12	0.50	96.40	96.46	96.84	96.86	100.12	99.72	Pipe - (597)	
10	8	79.636	0.28	0.28	0.54	0.15	0.15	6.0	6.0	7.0	1.07	2.52	2.20	12	0.50	96.06	96.46	96.84	96.95	100.12	99.72	Pipe - (598)	
11	3	146.134	0.00	0.37	0.00	0.00	0.24	0.0	6.6	6.8	1.61	2.73	2.85	12	0.50	92.42	93.15	93.37	93.71	100.38	98.86	Pipe - (299)	
12	11	101.258	0.00	0.37	0.00	0.00	0.24	0.0	6.1	6.9	1.64	2.73	3.63	12	0.50	93.25	93.76	93.81	94.32	98.86	97.81	Pipe - (293)	
13	12	14.966	0.18	0.18	0.59	0.10	0.10	6.0	6.0	7.0	0.72	3.56	2.16	12	1.00	93.86	94.01	94.47	94.36	97.81	97.50	Pipe - (291)	
14	12	14.952	0.20	0.20	0.68	0.13	0.13	6.0	6.0	7.0	0.93	3.56	2.48	12	1.00	93.86	94.01	94.47	94.41	97.81	97.50	Pipe - (292)	
Proj	ect File:	Storm-	W7.stm	1	1	1	1	1			1	1			I	Numbe	er of lines: 1	4	1	Run Date: 7/27/2023			
	ES:Inte	nsity = 8	86.72 / (I	nlet time	+ 15.30	) ^ 0.82;	Return	period =	Yrs. 10	; c = cir	e = elli	p b = bo	x										









Station		Len	Drng Area		Rnoff	Area x C		Тс		Rain Total (I) flow	Total	l Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID		
Line	To		Incr	Total	coen	Incr	Total	Inlet	Syst		now	run		Size	Slope	Dn	Up	Dn	Up	Dn	Up			
	Lille	(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)			
1	End	49.036	0.00	1.15	0.00	0.00	0.66	0.0	8.3	8.8	5.83	7.99	4.95	18	0.49	91.00	91.24	91.93	92.21	92.64	96.04	Pipe - (329)		
2	1	146.465	0.00	0.66	0.00	0.00	0.40	0.0	7.8	8.9	3.56	2.73	4.54	12	0.50	91.34	92.07	92.54	93.79	96.04	99.78	Pipe - (302)		
3	2	29.889	0.00	0.66	0.00	0.00	0.40	0.0	7.7	9.0	3.58	2.73	4.55	12	0.50	92.17	92.32	94.00	94.26	99.78	100.38	Pipe - (300)		
4	3	34.031	0.00	0.29	0.00	0.00	0.16	0.0	6.1	9.5	1.53	4.34	4.36	12	1.27	95.92	96.35	96.33	96.88	100.38	100.74	Pipe - (298)		
5	4	14.133	0.24	0.24	0.49	0.12	0.12	6.0	6.0	9.5	1.10	3.86	3.39	12	1.00	96.45	96.59	96.88	97.04	100.74	100.64	Pipe - (297)		
6	4	14.329	0.05	0.05	0.90	0.05	0.05	6.0	6.0	9.5	0.44	3.86	1.94	12	1.00	96.45	96.59	96.88	96.87	100.74	100.64	Pipe - (296)		
7	1	59.442	0.00	0.49	0.00	0.00	0.26	0.0	6.7	9.3	2.46	9.87	4.96	12	6.54	91.99	95.87	92.54	96.54	96.04	100.84	Pipe - (305)		
8	7	19.285	0.00	0.49	0.00	0.00	0.26	0.0	6.6	9.3	2.46	2.73	3.93	12	0.50	95.96	96.06	96.71	96.80	100.84	100.12	Pipe - (596)		
9	8	12.155	0.21	0.21	0.53	0.11	0.11	6.0	6.0	9.5	1.05	2.52	2.19	12	0.50	96.40	96.46	97.01	97.02	100.12	99.72	Pipe - (597)		
10	8	79.636	0.28	0.28	0.54	0.15	0.15	6.0	6.0	9.5	1.46	2.52	2.25	12	0.50	96.06	96.46	97.01	97.13	100.12	99.72	Pipe - (598)		
11	3	146.134	0.00	0.37	0.00	0.00	0.24	0.0	6.8	9.2	2.18	2.73	2.78	12	0.50	92.42	93.15	94.58	95.05	100.38	98.86	Pipe - (299)		
12	11	101.258	0.00	0.37	0.00	0.00	0.24	0.0	6.2	9.4	2.23	2.73	2.83	12	0.50	93.25	93.76	95.08	95.42	98.86	97.81	Pipe - (293)		
13	12	14.966	0.18	0.18	0.59	0.10	0.10	6.0	6.0	9.5	0.98	3.56	1.24	12	1.00	93.86	94.01	95.51	95.53	97.81	97.50	Pipe - (291)		
14	12	14.952	0.20	0.20	0.68	0.13	0.13	6.0	6.0	9.5	1.26	3.56	1.61	12	1.00	93.86	94.01	95.51	95.53	97.81	97.50	Pipe - (292)		
Desi	L Det File:	Charma 1														Nu una la a								
Proj	ect File:	Storm-	/v/.stm													Numbe	er of lines: 1	4		Kun Da	Run Date: 7/27/2023			
NOT	ES:Inte	ensity = 1	24.57 / (	(Inlet tim	ne + 17.6	60) ^ 0.81	; Returi	n period	=Yrs. 10	0 ; c =	cire=e	ellip b =	box											









Station		Len Drng Area		rea	Rnoff	Area x C		Тс		Rain	Rain Total (I) flow		Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To		Incr	Total	COEII	Incr	Total	Inlet	Syst	(1)	now	Tun		Size	Slope	Dn	Up	Dn	Up	Dn	Up	
	LIIIE	(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	End	35.578	0.00	1.10	0.00	0.00	0.46	0.0	6.8	6.8	3.10	4.94	4.26	15	0.50	62.00	62.18	62.71	62.90	63.43	72.56	Pipe - (369)
2	1	32.427	0.00	0.53	0.00	0.00	0.28	0.0	6.7	6.8	1.88	10.03	6.87	12	6.75	67.35	69.54	67.64	70.12	72.56	73.71	Pipe - (367) (1)
3	2	44.400	0.00	0.53	0.00	0.00	0.28	0.0	6.5	6.8	1.89	9.84	4.52	12	6.50	69.64	72.53	70.12	73.12	73.71	77.17	Pipe - (367)
4	3	78.262	0.00	0.24	0.00	0.00	0.13	0.0	6.1	7.0	0.90	10.39	2.73	12	7.26	72.63	78.31	73.12	78.71	77.17	85.36	Pipe - (601)
5	4	11.214	0.23	0.23	0.50	0.11	0.11	6.0	6.0	7.0	0.78	6.59	4.31	12	2.92	81.31	81.64	81.54	82.01	85.36	85.69	Pipe - (605)
6	4	8.376	0.02	0.02	0.90	0.02	0.02	6.0	6.0	7.0	0.11	7.49	2.61	12	3.77	81.31	81.63	81.40	81.76	85.36	85.68	Pipe - (606)
7	3	57.304	0.00	0.28	0.00	0.00	0.15	0.0	6.0	7.0	1.03	10.43	2.97	12	7.31	72.63	76.82	73.12	77.25	77.17	81.90	Pipe - (364) (1)
8	7	9.315	0.12	0.12	0.59	0.07	0.07	6.0	6.0	7.0	0.48	7.78	4.02	12	4.06	77.82	78.20	77.99	78.48	81.90	82.25	Pipe - (364)
9	7	9.514	0.17	0.17	0.47	0.08	0.08	6.0	6.0	7.0	0.56	8.38	4.37	12	4.72	77.82	78.27	77.99	78.58	81.90	82.32	Pipe - (602)
10	1	58.217	0.33	0.33	0.30	0.10	0.10	6.0	6.0	7.0	0.69	9.45	4.94	12	6.00	67.35	70.84	67.53	71.19	72.56	77.93	Pipe - (365)
11	1	21.378	0.24	0.24	0.34	0.08	0.08	6.0	6.0	7.0	0.57	5.46	3.60	12	2.00	67.35	67.78	67.57	68.09	72.56	72.13	Pipe - (366)
Broid															Number of lines: 11				Bun Data: 7/27/2022		<u> </u>	
Proje		Storm-	vvo.stm													edition	i or imes:				ιe. //2//20	JZƏ
NOT	ES:Inte	nsity = 8	86.72 / (I	nlet time	+ 15.30	) ^ 0.82;	Return	period =	Yrs. 10	; c = cir	e = elli	ip b = bo	х									









Station		Len	Drng Area		Rnoff	Area x	Area x C		Тс		Total flow	Сар	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To		Incr	Total	COEII	Incr	Total	Inlet	Syst	(1)	now	Tun		Size	Slope	Dn	Up	Dn	Up	Dn	Up	
	Line	(ft)	(ac)	(ac)	(C)			(min)	(min)	(in/hr)	(cfs)	(cfs)	(ft/s)	(in)	(%)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	
1	End	35.578	0.00	1.10	0.00	0.00	0.46	0.0	6.7	9.3	4.24	4.94	4.65	15	0.50	62.00	62.18	62.83	63.09	63.43	72.56	Pipe - (369)
2	1	32.427	0.00	0.53	0.00	0.00	0.28	0.0	6.6	9.3	2.57	10.03	7.58	12	6.75	67.35	69.54	67.70	70.23	72.56	73.71	Pipe - (367) (1)
3	2	44.400	0.00	0.53	0.00	0.00	0.28	0.0	6.5	9.3	2.59	9.84	4.97	12	6.50	69.64	72.53	70.23	73.22	73.71	77.17	Pipe - (367)
4	3	78.262	0.00	0.24	0.00	0.00	0.13	0.0	6.0	9.5	1.22	10.39	2.97	12	7.26	72.63	78.31	73.22	78.78	77.17	85.36	Pipe - (601)
5	4	11.214	0.23	0.23	0.50	0.11	0.11	6.0	6.0	9.5	1.07	6.59	4.72	12	2.92	81.31	81.64	81.58	82.07	85.36	85.69	Pipe - (605)
6	4	8.376	0.02	0.02	0.90	0.02	0.02	6.0	6.0	9.5	0.16	7.49	2.85	12	3.77	81.31	81.63	81.41	81.79	85.36	85.68	Pipe - (606)
7	3	57.304	0.00	0.28	0.00	0.00	0.15	0.0	6.0	9.5	1.40	10.43	3.24	12	7.31	72.63	76.82	73.22	77.32	77.17	81.90	Pipe - (364) (1)
8	7	9.315	0.12	0.12	0.59	0.07	0.07	6.0	6.0	9.5	0.65	7.78	4.40	12	4.06	77.82	78.20	78.02	78.53	81.90	82.25	Pipe - (364)
9	7	9.514	0.17	0.17	0.47	0.08	0.08	6.0	6.0	9.5	0.76	8.38	4.78	12	4.72	77.82	78.27	78.02	78.63	81.90	82.32	Pipe - (602)
10	1	58.217	0.33	0.33	0.30	0.10	0.10	6.0	6.0	9.5	0.94	9.45	5.41	12	6.00	67.35	70.84	67.56	71.25	72.56	77.93	Pipe - (365)
11	1	21.378	0.24	0.24	0.34	0.08	0.08	6.0	6.0	9.5	0.78	5.46	3.94	12	2.00	67.35	67.78	67.61	68.15	72.56	72.13	Pipe - (366)
Decis																						
Proje	ect File:	Storm-	vvð.stm																			
NOT	ES:Inte	nsity = 1	24.57 /	(Inlet tim	e + 17.6	0) ^ 0.81	; Returi	n period	=Yrs. 10	0 ; c =	cir e =	ellip b =	box									







## **Storm Sewer IDF Curves**

