Prepared for:

CITY OF BANGOR, MAINE

PHASE 2 SEWER SYSTEM EVALUATION SURVEY REPORT

January 31, 2017

Prepared By:

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1.0 Background

This Phase 2 Sewer System Evaluation Survey (SSES) Report is provided to comply with Item VI.9.c (6) of the Consent Decree No. 1:15-cv-00350-NT (CD) between the United States District Court District of Maine and the City of Bangor, Maine. The scope of work for field investigations in the Airport and Dow sewer subsections was approved by EPA and MEDEP on March 24, 2015.

2.0 CD Item VI.9.c (6) i: Listing Of Public And Private Sources Of I/I Identified During SSES

Presented in Table 1 is a listing of public and private sources of I/I (infiltration/inflow) and estimated I/I amounts identified during the field work. I/I is further defined in the CD. In summary, an estimated 161,300 gpd of I/I was identified from public sources and an estimated 218,850 gpd of I/I was identified from private sources.

Table 1. Listing of Public and Private Sources of I/I

Sewer Subsection	Source	Public I/I (gpd)	Private I/I (gpd)
Airport	Manholes	51,700	13,900
Airport	Mainline Sewer	82,500	25,100
Airport	Service Connections	-	52,750
Subtotal Airport		**134,200**	**91,750**
Dow	Manholes	17,900	400
Dow	Mainline Sewer	9,200	-
Dow	Service Connections	-	126,700
Subtotal Dow		**27,100**	**127,100**
Total		**161,300**	**218,850**

Because the amount of I/I emanating from private sources is significantly greater than from public sources, this will ultimately have an impact on the projected overall effectiveness of corrective programs that primarily focus on the latter, such as mainline rehabilitation.

The I/I sources were found in manholes, mainline pipe and lateral service connections. A detailed listing of the I/I sources and estimated I/I amounts found in manholes for each sewer subsection is presented in Table 2. A detailed listing of the I/I sources and estimated I/I amounts found in mainline pipe and service connections for each sewer subsection is presented in Table 3.

The below is a complete set of findings during the field inspections. The City has addressed some of these defects during the current Compliance Reporting period. Those defects that have been addressed have been denoted in the Tables 2 and 4 below with an asterisk and are described in the Compliance Report. In Table 2, this results in approximately 11,600 gpd of I/I removal.

Table 2. Summary Of Manhole Defects Found During Flow Isolation Work

Manhole Number	Street Name	Observed Defect	Estimated Infiltration (gpd)
AP009	Union St.	Wall Joints (WJ) and Pipe Connections (PC)	4,300
AP012	Union St.	PC	2,900
AP014	Union St.	Open pick hole in cover (*)	-
AP016	Godfrey Blvd	PC & Walls	2,300
AP018	Maine Ave.	Walls	700
AP019	Maine Ave.	PC & open pick holes in cover (*)	100
AP020	Godfrey Blvd	WJ	100
AP021	Godfrey Blvd	PC	2,900
AP022	Godfrey Blvd	Walls	100
AP300	Godfrey Blvd	PC	400
AP307	Union St.	PC	500
AP400	Maine Ave.	WJ	1,400
AP402	Cross Country	PC & WJ & Walls	1,600
AP403	Cross Country	PC & Walls	900
AP407	Johnson Dr.	Bottom of Structure (BS)	2,900
AP416	University Dr.	Walls	100
AP420	Cleveland St.	Walls	1,800
AP470	Maine Ave.	WJ	700
AP471	Taft St.	Walls & WJ	400
AP480	Taft St.	Walls	400
AP481	Taft St.	Walls	400
AP500	Maine Ave.	WJ	300

AP504	Maine Ave.	PC	400
AP506	Maine Ave.	WJ	400
AP600	Godfrey Blvd	WJ	400
AP601*	Cross Country	Walls	700
AP602*	Cross Country	Walls	700
Manhole Number	**Street Name**	**Observed Defect**	**Estimated Infiltration (gpd)**
AP603	Polk Rd	PC & WJ & Walls	400
AP605	Griffin Rd	Walls & WJ	7,200
AP606	Griffin Rd	Walls	400
AP607	Cross Country	WJ	100
AP622	Griffin Rd	Walls & WJ	4,300
AP630	Mainiac Ave.	Walls & WJ	700
AP650	Griffin Rd	Walls & WJ	2,900
AP652	Illinois Ave.	Walls & WJ	400
AP653	Illinois Ave.	Walls & WJ	2900
AP661	Cross Country	PC	700
AP700	Cross Country	PC	400
AP709	Utah Ave.	WJ	100
AP740A	Utah Ave.	Walls	2,200
AP742	Polk St.	WJ	100
AP743	Polk St.	WJ	700
AP750	Polk St	Open pick holes in cover (*)	-
AP751	Polk St	Open pick holes in cover (*)	-
AP752	Polk St	Open pick holes in cover (*)	-
AP757	Griffin Rd	Walls	400
Total AP (Public)	**46 Manholes**		**51,700**
Total AP (Private)	**15 Manholes**		**13,900**
DW004	Odlin Rd.	PC	100
DW010	Odlin Rd.	BS	100
DW016	Maine Ave.	Walls	100
DW019	Maine Ave.	Walls	400
DW022	Maine Ave.	Walls	2,900
DW100	Odlin Rd.	BS	700
DW100A	Odlin Rd.	BS	700
DW201	Hammond St.	Walls	1,400
DW202	Hammond St.	Walls	700
DW206	Silver Rd.	Walls	100
DW207	Silver Rd.	Walls	400
DW208	Silver Rd.	PC	700

DW209	Silver Rd.	PC	2,900
DW240	Hammond St.	PC	700
Manhole Number	**Street Name**	**Observed Defect**	**Estimated Infiltration (gpd)**
DW280	Silver Rd.	PC	100
DW400	Arthur St.	Walls	700
DW401	Arthur St.	Walls	1,400
DW602	Maine Ave.	PC	2,900
DW604	Maine Ave.	PC	400
DW610	University Dr.	Walls	400
DW611	Venture Way	PC	100
Total DW (Public)	**22 Manholes**		**17,900**
Total DW (Private)	**1 Manholes**		**400**

Notes:
Estimated Infiltration is based on a visual assessment of each infiltration source.
AP = Airport sewer subsection; DW = Dow Sewer Subsection.

(*)Potential Inflow Source observed during a Rainfall Event.

Table 3. Summary of Sewer Pipeline Defects

Location				Pipe Information			Pipeline Defects									Comments
							Mainline Pipe(1)						Service Connections (Private)			
Sewer Subsection	From MH	To MH	Street Name	Length (ft)	Type	Dia. (in)	Leak in Joint (2)	Roots	Separated or Offset Joint(2)	Cracked Pipe(2)	Broken or Fractured Pipe(2)	Estimated Infiltration (gpd)(3)	Service Connection Connected to Mainline Pipe (Station/ Orientation)(4)	Service Connection Connected to Manhole	Estimated Infiltration (gpd)(3)	
Airport	AP017	AP016	Godfrey Blvd	492	ACP/ DI	16										
Airport	AP016B	AP016A	Godfrey Blvd	266	PVC	8										
Airport	-	AP020		-	-	?								AP020	5,800	
Airport	AP024	AP023	Godfrey Blvd Cross Country	297	VCP	8	4	X	2	65; 152; 200; 225	47; 237	100				
Airport	AP025	AP024	Godfrey Blvd	303	VCP	8	22; 151	X		22; 29; 70; 97; 105; 111; 114; 118; 158; 190; 232	3-7; 10-16; 25; 34; 47; 55; 74; 84; 90; 96; 117; 145-148; 299	300	77/L		700	
Airport	AP058	AP010	Mitchell St. @ Griffin	72	RCP/PVC	8	21	X	21	64		700				
Airport	AP058	AP057	Griffin	197	VCP	8	Almost All			35, 184, 187		2,000	54/L, 132/L		150	
Airport	AP202	AP203	Mitchell St Cross Country	165	VCP	8	155					10,000				
Airport	AP204	AP203	Mitchell St	39	VCP	8										
Airport	AP209A	AP209	Behind 1094 Ohio St	113	PVC	8										
Airport	AP309	AP308	Union Street	88	RCP	10					33-70	700				hinge fractures, large sag, & H2S damage
Airport		AP307	Union Street	-	-	6								AP307	400	
Airport	AP230	AP203	Mitchell St.	32	PVC	8										

Table 3. Summary of Sewer Pipeline Defects (Continued)

Location				Pipe Information			Pipeline Defects									Comments
							Mainline Pipe(1)						Service Connections (Private)			
Sewer Subsection	From MH	To MH	Street Name	Length (ft)	Type	Dia. (in)	Leak in Joint (2)	Roots	Separated or Offset Joint(2)	Cracked Pipe(2)	Broken or Fractured Pipe(2)	Estimated Infiltration (gpd)(3)	Service Connection Connected to Mainline Pipe (Station/ Orientation)(4)	Service Connection Connected to Manhole	Estimated Infiltration (gpd)(3)	
Airport	AP231	AP230	Griffin Rd.	197	RCP/PVC	8		X			62; 65; 68		42/L, 93/L			Severe root problem
Airport	AP232	AP231	Griffin Rd.	195	RCP	8		X		34; 145; 184	5	500	53/L; 131/L		200	
Airport	AP233	AP232	Griffin Rd.	295	RCP	8		X		58; 60; 64; 129; 218; 229; 245; 271; 283	3; 117; 157; 253, 277; 282	200	85/L; 218/L			
Airport	AP310	AP309	Off Griffin Rd	176	RCP/VCP	8		X		126	176					
Airport	AP311	AP310	Bolling Dr	???	RCP	8				1; 13; 32; 104; 116	2; 14		69/R			Incomplete inspection
Airport	AP312	AP311	Bolling Dr	227	RCP	8					1					Total collapse near AP311
Airport	AP351	AP350	Union Street	159	VCP	8		X		14; 32						
Airport	AP352	AP351	Union Street	319	VCP/PVC	8				148						
Airport	AP352	AP353	Union Street	260	VCP	8		X	42	43	1; 42					
Airport	AP353	AP354	Union Street	46	PVC	8										No defects

Table 3. Summary of Sewer Pipeline Defects (Continued)

Location				Pipe Information			Pipeline Defects									Comments
							Mainline Pipe(1)						Service Connections (Private)			
Sewer Subsection	From MH	To MH	Street Name	Length (ft)	Type	Dia. (in)	Leak in Joint (2)	Roots	Separated or Offset Joint(2)	Cracked Pipe(2)	Broken or Fractured Pipe(2)	Estimated Infiltration (gpd)(3)	Service Connection Connected to Mainline Pipe (Station/ Orientation)(4)	Service Connection Connected to Manhole	Estimated Infiltration (gpd)(3)	
Airport	AP352	AP355	Union Street	342	VCP	8		X		15; 18; 75; 93; 96; 103; 109; 171; 197; 223; 337	75		167/R			
Airport	AP356	AP355	Union Street	349	VCP	8		X		30			166/R			Incomplete inspection; protruding service
Airport	AP355	AP356	Union Street	349	VCP	8			X							Incomplete inspection; large offset joint
Airport	AP311	AP370	Bolling Dr	205	RCP/VCP	8		X		1	110	150				
Airport	AP370	AP311	Bolling Dr	205	RCP/VCP	8		X		10, 74			52/L			

Table 3. Summary of Sewer Pipeline Defects (Continued)

Location				Pipe Information			Pipeline Defects									Comments
							Mainline Pipe(1)						Service Connections (Private)			
Sewer Subsection	From MH	To MH	Street Name	Length (ft)	Type	Dia. (in)	Leak in Joint (2)	Roots	Separated or Offset Joint(2)	Cracked Pipe(2)	Broken or Fractured Pipe(2)	Estimated Infiltration (gpd)(3)	Service Connection Connected to Mainline Pipe (Station/ Orientation)(4)	Service Connection Connected to Manhole	Estimated Infiltration (gpd)(3)	
Airport	AP371	AP370	Bolling Dr	183	VCP	8		X		11; 107	1; 30; 32; 138		31/R; 74/L			
Airport	AP371	AP372	Bolling Dr	165	VCP	8		X		1; 3	22					
Airport	AP372	AP373	Bolling Dr	288	VCP	8		X		1	20; 38; 42; 276; 42; 58; 141; 213; 253	300	90/L; 141/R; 207/L; 255/L			
Airport	AP373	No MH	Bolling Dr	248	VCP	8		X			1					
Airport	AP373	AP390	Bolling Dr	212	VCP	8		X	3; 18		3; 8; 17		158/R			
Airport	AP420	AP421	Venture Way	374	VCP/PVC	8					1		220/L			
Airport	AP400	AP019	Maine Ave	60	ACP	10										

Table 3. Summary of Sewer Pipeline Defects (Continued)

Location				Pipe Information			Pipeline Defects									Comments
							Mainline Pipe(1)						Service Connections (Private)			
Sewer Subsection	From MH	To MH	Street Name	Length (ft)	Type	Dia. (in)	Leak in Joint (2)	Roots	Separated or Offset Joint(2)	Cracked Pipe(2)	Broken or Fractured Pipe(2)	Estimated Infiltration (gpd)(3)	Service Connection Connected to Mainline Pipe (Station/ Orientation)(4)	Service Connection Connected to Manhole	Estimated Infiltration (gpd)(3)	
Airport	AP406	AP405	Johnson St Cross Country	203	VCP	8					47; 61; 171					
Airport	AP407	AP406	Johnson St Cross Country	118	VCP	8										
Airport	AP408	AP407	Johnson St	66	VCP	8	34; 40; 43; 46; 66			3		4,200				
Airport	AP409	AP408	Johnson St	277	VCP	8	26; 42; 46; 59; 71; 245		26	57; 77-86	10; 26; 42-49; 52; 59; 79; 90; 95; 264	1,200	125/R(5)			
Airport	AP412	AP411	Texas Ave Cross Country	176	VCP	8	62; 90			64	2	900				
Airport	AP413	AP412	Texas Ave Cross Country	185	VCP	8				62; 178	11		93/L		400	
Airport	AP414	AP413	Texas Ave Cross Country	249	VCP	8					1		74/L		700	
Airport	-	AP413	University Drive	-	VCP	6								AP413	12,200	
Airport	AP414A	AP414	Texas Ave Cross Country	310	VCP	8	1; 214; 226			172; 232; 280; 296; 307	1; 13; 19-26; 31; 46; 172; 190; 214; 217; 223; 226	1,300	113/L		700	
Airport	AP415	AP414A	Texas Ave Cross Country	159	VCP	8	44				23; 35-46; 57; 105; 126; 136	3,000				

Table 3. Summary of Sewer Pipeline Defects (Continued)

Location				Pipe Information			Pipeline Defects									Comments
							Mainline Pipe(1)						Service Connections (Private)			
Sewer Subsection	From MH	To MH	Street Name	Length (ft)	Type	Dia. (in)	Leak in Joint (2)	Roots	Separated or Offset Joint(2)	Cracked Pipe(2)	Broken or Fractured Pipe(2)	Estimated Infiltration (gpd)(3)	Service Connection Connected to Mainline Pipe (Station/ Orientation)(4)	Service Connection Connected to Manhole	Estimated Infiltration (gpd)(3)	
Airport	-	AP415A	University Drive	-	PVC	6								MH415A	1,400	S side of MH
Airport	AP416	AP415	Texas Ave Cross Country	151	VCP	8	118				118	700				
Airport	AP430	AP405	Florida Ave Cross Country	325	VCP	8				14	52-54		51/T		400	
Airport		AP346	Randolph Lane	-	-	6								AP346	400	
Airport	AP440	AP408	Florida Ave	322	VCP	8	33; 67; 92; 125			2; 165	64; 243	2,600	148/T		400	
Airport	AP441	AP440	Florida Ave	276	VCP	8	55; 81; 96; 108; 272			126; 271	64; 179; 273	1,300				
Airport	AP442	AP441	Florida Ave	178	VCP	8	12; 42					400				
Airport	AP442	AP443	Florida Ave	262	VCP	8	18; 198	X				3,000				
Airport	-	AP442	Florida Avenue	-	VCP	6								AP442	700	
Airport	AP450	AP443	Hayes St	276	VCP	8	150	X		83		100				Abandoned, offset joint
Airport	AP450	AP443	Hayes St	276	VCP	8	150	X		83		100				-7
Airport	AP451	AP450	Maine Ave.	182	VCP	8			5		5	400				
Airport	AP470	AP411	Maine Ave	228	VCP	8			62		56-60					Abandoned, offset joint
Airport	AP481	AP480	Taft St	279	VCP	8	40; 51		245; 266;	0; 35; 58; 90; 167-182; 209	210	400				

Table 3. Summary of Sewer Pipeline Defects (Continued)

Location				Pipe Information			Pipeline Defects									Comments
							Mainline Pipe(1)						Service Connections (Private)			
Sewer Subsection	From MH	To MH	Street Name	Length (ft)	Type	Dia. (in)	Leak in Joint (2)	Roots	Separated or Offset Joint(2)	Cracked Pipe(2)	Broken or Fractured Pipe(2)	Estimated Infiltration (gpd)(3)	Service Connection Connected to Mainline Pipe (Station/ Orientation)(4)	Service Connection Connected to Manhole	Estimated Infiltration (gpd)(3)	
Airport	AP481	AP482	Taft St	373	VCP	8	41; 99; 115; 122; 159; 176; 276; 361		328	68; 263; 329		3,000				
Airport	AP500	AP400	Maine Ave	104	VCP	8	9; 10; 24; 95					5,600				
Airport	-	AP451	Maine Avenue	-	-	6								AP451	700	
Airport	-	AP451	Maine Avenue	-	-	8								AP451	400	
Airport	AP530	AP507	Maine Ave	242	VCP	8			17; 28; 145	35; 36; 119; 133; 137	118		99/L 119/R		2,900 2,900	
Airport	-	AP508	Union Street	-	VCP	6								APR508	700	
Airport	-	AP541	Union Street	-	ACP	6								AP541	700	NW side of MH
Airport	-	AP541	Union Street	-	PVC	6								AP541	900	N side of MH
Airport	-	AP541A	Union Street	-	PVC	8								AP541A	300	
Airport	AP602	AP601	LL Bean Parking Lot	181	VCP	10	71			86; 95		100				Pipe Replaced

Table 3. Summary of Sewer Pipeline Defects (Continued)

Location				Pipe Information			Pipeline Defects									Comments
							Mainline Pipe(1)						Service Connections (Private)			
Sewer Subsection	From MH	To MH	Street Name	Length (ft)	Type	Dia. (in)	Leak in Joint (2)	Roots	Separated or Offset Joint(2)	Cracked Pipe(2)	Broken or Fractured Pipe(2)	Estimated Infiltration (gpd)(3)	Service Connection Connected to Mainline Pipe (Station/ Orientation)(4)	Service Connection Connected to Manhole	Estimated Infiltration (gpd)(3)	
Airport	AP603	AP602	Maine Ave Parking Lot	353	VCP	10	39; 41; 50; 56; 118; 135; 166; 188; 194; 201; 212; 218; 303; 309; 315			342; 345	146; 270; 282	2,500	257/T		5,800	
Airport	AP604	AP603	Polk St Cross Country	355	VCP	10	272					100				Pipe replaced
Airport	AP605	AP604	Polk St Cross Country	561	VCP	10	17; 21; 33; 45; 107; 208; 212; 219; 263; 278; 284			11; 115		1,800				Pipe replaced
Airport	AP606	AP607	LL Bean Parking Lot	196	PVC/VCP	10						700				
Airport	AP607	AP608	Utah Ave.	567.5	PVC/VCP	10	Almost all					5,000	217/R			

Table 3. Summary of Sewer Pipeline Defects (Continued)

Location				Pipe Information			Pipeline Defects									Comments
							Mainline Pipe(1)						Service Connections (Private)			
Sewer Subsection	From MH	To MH	Street Name	Length (ft)	Type	Dia. (in)	Leak in Joint (2)	Roots	Separated or Offset Joint(2)	Cracked Pipe(2)	Broken or Fractured Pipe(2)	Estimated Infiltration (gpd)(3)	Service Connection Connected to Mainline Pipe (Station/ Orientation)(4)	Service Connection Connected to Manhole	Estimated Infiltration (gpd)(3)	
Airport	AP609	AP610	Maine Ave	257	VCP/PVC	10	4; 35; 54; 90; 99; 103; 105; 107; 121; 134; 137; 143; 206; 223; 227; 250					3,000				
Airport	AP609	AP610	Maine Ave	213	VCP	10										
Airport	AP622	AP621	Griffin Rd	306	VCP	8										
Airport	AP651	AP650	Griffin Rd	337	VCP	8	59; 98; 103; 203; 315; 328			125		2,500				
Airport	-	AP652	Illinois Avenue	-	-	4								AP652	1,400	
Airport	AP660	AP607	Griffin Rd	339	VCP/ PVC	10	8	X				1,400				
Airport	AP661	AP660	Griffin Rd	415	VCP/ PVC	10	150; 202; 215; 263	X				1,900	221/L		100	
Airport	AP661	AP662	Griffin Rd	408	VCP/ PVC	10	30; 33; 39; 204; 206	X				9,200				
Airport	AP700	AP603	Utah Ave Cross Country	352	VCP	8	183	X				100				Partially replaced

Table 3. Summary of Sewer Pipeline Defects (Continued)

Location				Pipe Information			Pipeline Defects									Comments
							Mainline Pipe(1)						Service Connections (Private)			
Sewer Subsection	From MH	To MH	Street Name	Length (ft)	Type	Dia. (in)	Leak in Joint (2)	Roots	Separated or Offset Joint(2)	Cracked Pipe(2)	Broken or Fractured Pipe(2)	Estimated Infiltration (gpd)(3)	Service Connection Connected to Mainline Pipe (Station/ Orientation)(4)	Service Connection Connected to Manhole	Estimated Infiltration (gpd)(3)	
Airport	AP701	AP700	Utah Ave Cross Country	165	VCP	8		X		30						
Airport	AP702	AP701	Utah Ave Cross Country	33	VCP	8			23							
Airport	AP703	AP702	Utah Ave	77	VCP	8			71							
Airport	AP704	AP703	Utah Ave	292	VCP/ PVC	8			286		77	900				
Airport	AP720	AP721	Hanger 464	237.6	VCP	8										Large offset joints prevent inspection
Airport	AP721	AP720	Hanger 464	237.6	VCP	8										Large offset joints prevent inspection
Airport	AP722	AP723	Wyoming St	167	VCP/ PVC	8	2; 76; 79				167	7,200				
Airport	-	AP722	Utah Avenue	-	HDPE	8								AP722	1,400	
Airport	-	AP723	Utah Avenue	-	-	8								AP723	1,400	
Airport	-	AP730	Airport	-	-	8								AP730	1,400	
Airport	-	AP736	Utah Avenue	-	-	8								AP736	2,900	S side of MH
Airport	-	AP736	Utah Avenue	-	-	8								AP736	1,400	W side of MH
Airport	-	AP740	Utah Avenue	-	VCP	6								AP740	300	
Airport	AP741	AP740	Utah Ave	103	AC/ VCP	8	4			11		100				Multiple sags, camera underwater
Airport	AP740A	AP700	Utah Ave Cross Country	130	VCP	8		X	129		5	700				

Table 3. Summary of Sewer Pipeline Defects (Continued)

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							Mainline Pipe(1)						Service Connections (Private)			
Sewer Subsection	From MH	To MH	Street Name	Length (ft)	Type	Dia. (in)	Leak in Joint (2)	Roots	Separated or Offset Joint(2)	Cracked Pipe(2)	Broken or Fractured Pipe(2)	Estimated Infiltration (gpd)(3)	Service Connection Connected to Mainline Pipe (Station/ Orientation)(4)	Service Connection Connected to Manhole	Estimated Infiltration (gpd)(3)	
Airport	AP743	AP744	Polk St	242	AC/PVC	6						1,500				
Airport	AP754	AP753	Griffin Rd Cross Country	40	VCP	8			20							
Airport	AP755	AP754	Griffin Rd Cross Country	119	VCP	8				112						
Airport	AP756	AP755	Griffin Rd Cross Country	76	VCP	8	68	X				700				
Airport	AP757	AP756	Griffin Rd Cross Country	252	VCP	8				15; 244						
Airport	-	AP756	Griffin Rd	-	VCP	8								AP756	2,200	
Airport	AP758	AP757	Griffin Rd	163	VCP	8	41; 42					300				
Total Airport (Public)												**82,550**				
Airport (Private)	AP631	Upstream(8)	Maineac Avenue									14,300			400	
Airport (Private)	AP759	Upstream(8)	Fuller Road									10,800				
Total Airport (Private)												**25,100**			**52,750**	
Dow	DW010	DW009	Off Odlin Road	257	PVC	15										

Table 3. Summary of Sewer Pipeline Defects (Continued)

Location				Pipe Information			Pipeline Defects									Comments
							Mainline Pipe(1)						Service Connections (Private)			
Sewer Subsection	From MH	To MH	Street Name	Length (ft)	Type	Dia. (in)	Leak in Joint (2)	Roots	Separated or Offset Joint(2)	Cracked Pipe(2)	Broken or Fractured Pipe(2)	Estimated Infiltration (gpd)(3)	Service Connection Connected to Mainline Pipe (Station/ Orientation)(4)	Service Connection Connected to Manhole	Estimated Infiltration (gpd)(3)	
Dow	DW016A	DW016	Off Maine Ave	169	VCP	15	35			7; 160		300	143/L		100	
Dow	DW018	DW017	Maine Ave	270	VCP	15		X		136; 160	86-103; 114-118; 130-135; 141-144; 163; 175-185; 243(6); 252					
Dow	-	DW018	Maine Avenue	-	PVC	4								DW018	400	
Dow	DW022	DW021	General Aviation Parking Lot	353	VCP	15					54					
Dow	DW102	DW101	Odlin Road	417	VC	8		X	145;215	5						
Dow	DW201	DW200	Mason Ave Cross Country	223	PCV	12							55/R 133/L		700 400	
Dow	DW202	DW201	Mason Ave Cross Country	83	PVC	12										
Dow	DW203	DW202	Mason Ave Cross Country	333	PVC	12							46/R 244/R 267/L		9,000 400 400	
Dow	-	DW202	Hammond St	-	-	4								DW202	400	
Dow	DW204	DW203	Mason Ave Cross Country	270	ACP	8							78/T 146/L		700 700	
Dow	DW214	DW213	Silver Rd	266	VCP/ PVC	8	243	X		14; 77	1	3,600				

Table 3. Summary of Sewer Pipeline Defects (Continued)

Location				Pipe Information			Pipeline Defects									Comments
							Mainline Pipe(1)						Service Connections (Private)			
Sewer Subsection	From MH	To MH	Street Name	Length (ft)	Type	Dia. (in)	Leak in Joint (2)	Roots	Separated or Offset Joint(2)	Cracked Pipe(2)	Broken or Fractured Pipe(2)	Estimated Infiltration (gpd)(3)	Service Connection Connected to Mainline Pipe (Station/ Orientation)(4)	Service Connection Connected to Manhole	Estimated Infiltration (gpd)(3)	
Dow	-	DW213	Silver Rd	-	-	4								DW213	100	
Dow	DW250	DW203	Mildred Ave	228	PVC	8							39/L(7)			
Dow	DW251	DW250	Mildred Ave	262	PVC	8							234/L		700	
Dow	DW252	DW251	Mildred Ave	386	PVC	8	79					1,400	77/R 113/T 184/T 259/R(7) 263/T 273/L	700 1,100 400 1,100 700		
Dow	DW252A	DW252	Mildred Ave	75	PVC	8										
Dow	DW255	DW203	Mildred Ave	262	PVC	8			256				138/L		700	
Dow	DW255A	DW255	Mildred Ave	44	PVC	8										
Dow	DW256	DW255	Hammond St	101	ACP	8										
Dow	DW259	DW251	Mildred Ave	185	PVC	8										
Dow	DW270	DW209	Silver Rd	400	PVC	8										
Dow	-	DW300	Corporate Dr	-	-	8								DW300	3,600	
Dow	DW301	DW302	Corporate Dr	243	PVC	8										
Dow	DW350	DW304	Northeast Dr	177	PVC	8										
Dow	-	DW350	Northeast Dr	-	-	6								DW350	700	
Dow	DW017	DW450	Maine Ave	315	VCP	8					167		173/T		700	
Dow	DW400	DW017	Arthur Ave	362	VCP	8	294	X	75		66	300				
Dow	DW451	DW450	Equipment Maintenance Parking Lot	176	VCP	8	44; 98; 135; 137				20	600	122/L		1,400	
Dow	DW452	DW451	Equipment Maintenance Parking Lot	135	PVC	8										

Table 3. Summary of Sewer Pipeline Defects (Continued)

Location				Pipe Information			Pipeline Defects									Comments
							Mainline Pipe(1)						Service Connections (Private)			
Sewer Subsection	From MH	To MH	Street Name	Length (ft)	Type	Dia. (in)	Leak in Joint (2)	Roots	Separated or Offset Joint(2)	Cracked Pipe(2)	Broken or Fractured Pipe(2)	Estimated Infiltration (gpd)(3)	Service Connection Connected to Mainline Pipe (Station/ Orientation)(4)	Service Connection Connected to Manhole	Estimated Infiltration (gpd)(3)	
Dow	-	DW453	Maine Avenue	-	VCP	6								DW453	1,400	E side of MH
Dow	-	DW453	Maine Avenue	-	VCP	6								DW453	1,400	N side of MH
Dow	DW500	DW020	Aviator Dr	195	VCP	8	48; 60; 63; 165; 174				111	1,200	39//T 76/L 111/R	100 100		
Dow	DW022	DW600	General Aviation Parking Lot	175	VCP	10		X			140-143					Broken pipe replaced
Dow	DW601A	DW601	Texas Ave	168	VCP	10										
Dow	-	DW601B	Off Maine Ave	-	-	?								DW601B	67,700	Water Line bleeder, in process of removal from the system
Dow	-	DW604	Maine Ave	-	-	?								DW604	400	
Dow	-	DW607	Texas Ave	-	-	8								DW607	4,200	
Dow	DW606	DW605	Texas Ave Cross Country	122	VCP	8				3						
Dow	DW607	DW606	Texas Ave Cross Country	241	VCP	8		X			205					
Dow	DW608	DW607	Texas Ave	464	VCP	8										
Dow	DW609	DW608	University Dr	344	VCP	8	65; 183	X		26	8; 291-294	900				
Dow	DW610	DW609	University Dr	208	VCP	8		X		4						
Dow	DW611	DW610	Venture Way Cross Country	250	VCP	8		X		36; 80	42; 61; 74; 143; 249		227/R		700	
Dow	-	DW610	University Dr	-	CMP	8								DW610	100	

Table 3. Summary of Sewer Pipeline Defects (Continued)

Location				Pipe Information			Pipeline Defects									Comments
							Mainline Pipe(1)						Service Connections (Private)			
Sewer Subsection	From MH	To MH	Street Name	Length (ft)	Type	Dia. (in)	Leak in Joint (2)	Roots	Separated or Offset Joint(2)	Cracked Pipe(2)	Broken or Fractured Pipe(2)	Estimated Infiltration (gpd)(3)	Service Connection Connected to Mainline Pipe (Station/ Orientation)(4)	Service Connection Connected to Manhole	Estimated Infiltration (gpd)(3)	
Dow	-	DW610	University Dr	-	VCP	8								DW610	13,500	W side of MH
Dow	-	DW610	University Dr	-	VCP	8								DW610	1,400	E side of MH
Dow	DW612	DW611	Venture Way Cross Country	351	VCP	8		X		184; 292; 301	54; 292					
Dow	-	DW611	Venture Way	-	VCP	6								DW611	1,900	
Dow	-	DW612	Fillmore St	-	VCP	6								DW612	400	S side of MH
Dow	-	DW612	Fillmore St	-	VCP	6								DW612	100	E side of MH
Dow	-	DW613	Venture Way	-	-	?								DW613	6,500	
Dow	DW650	DW022	General Aviation Parking Lot	369	VCP	8	23; 49; 67; 221	X			23; 221; 237	800	230/T		2,200	
Dow	DW660	DW600	General Aviation Parking Lot	198	VCP	8				20; 173	5; 20-26					Broken pipe replaced
Dow	DW661	DW660	General Aviation Parking Lot	201	VCP	8	62					100				
Dow	-	DW660	Maine Avenue	-	-	6								DW660	3,700	

Table 3. Summary of Sewer Pipeline Defects (Continued)

Location				Pipe Information			Pipeline Defects									Comments
							Mainline Pipe(1)						Service Connections (Private)			
Sewer Subsection	From MH	To MH	Street Name	Length (ft)	Type	Dia. (in)	Leak in Joint (2)	Roots	Separated or Offset Joint(2)	Cracked Pipe(2)	Broken or Fractured Pipe(2)	Estimated Infiltration (gpd)(3)	Service Connection Connected to Mainline Pipe (Station/ Orientation)(4)	Service Connection Connected to Manhole	Estimated Infiltration (gpd)(3)	
TOTAL Dow (Public)												**9,200**				
TOTAL Dow (Private)															**126,700**	

Notes:

(1) Public sewer, except for items labeled with footnote (8) at end of Airport sewer subsection portion of table.

(2) The number in this column is distance in feet from the first manhole identified in the "Location" column, and represents the approximate location of the defect.

(3) Estimated infiltration is based upon a visual assessment of each infiltration source (pipeline defect).

(4) The station is distance in feet from the first manhole identified in the "Location" column. For orientation, when advancing from the first manhole identified in the "Location" column toward the second manhole, L=left side; R=right side; T=top

(5) Broken private lateral pipe at service connection to main pipe

(6) Approximately 2” diameter pipe extends through middle of pipe, with roots, creating obstacle.

(7) Earthen voids around pipe connection.

(8) Sewer upstream of AP631 and upstream of AP759 is private (Air National Guard).

In some cases, pipe defects on public mainline pipe were identified during the field investigations, including television inspection work, that were later found to have no visible infiltration emanating from them. These are listed in Table 4. The defects, such as separated pipe joints, or fractured pipe or broken pipe, have the potential to be infiltration sources when groundwater levels are higher than the level of groundwater that existed when the television inspection work was performed. It is recommended that these defects be considered for rehabilitation as part of the Long Term Control Plan (LTCP).

3.0 CD Item VI.9.c.(6)ii: For Each Sewer Subsection, Describe The Scope Of The City's SSES Investigations

Field investigations (field work) performed for this project consisted of flow isolation, internal preparatory cleaning and closed circuit television inspection (CCTV) of sewer pipelines to identify infiltration sources. The field work was performed in two separate phases. The first phase was performed during the spring high groundwater period of 2015 and the second phase was performed during the spring high groundwater period of 2016. The 2015 field work was performed by Ted Berry Company Inc. (TBC) under subcontract to AECOM. The 2016 flow isolation work was performed by TBC while the CCTV inspection work was performed by the City of Bangor. The field work for each phase is described below. In summary, a total of 75,658 linear feet of pipe received flow isolation and approximately 22,600 linear feet of pipe received closed circuit television inspection; some portions of pipe were not accessible for CCTV.

3.1 Flow Isolation Spring 2015 and Spring 2016

A total of 65,424 linear feet of mainline sewer received flow isolation work between April 14 and May 19, 2015. A total of 10,234 linear feet of mainline sewer received flow isolation work between March 22 and March 31, 2016. The flow isolation work was performed generally between the hours of midnight and 5:00 a.m. In most locations, the upstream manhole of each manhole-to-manhole pipe segment was plugged. After installation of the plug, the flow was measured in the downstream manhole using precalibrated weirs. The measured flow during the early morning hours is considered to be infiltration.

Table 4. Potential Infiltration Sources

Location				Pipe Information			Potential Infiltration Source [1]
Sewer Subsection	From MH	To MH	Street Name	Length (ft)	Type	Dia. (in)	
Airport	AP409	AP408	Johnson St	277	VCP	8	Broken pipe at 26, 42, 52, 59, 125, and 264
Airport	AP406	AP405	Johnson St Cross Country	203	VCP	8	Broken pipe at 47, 61, and 171
Airport	AP430	AP405	Florida Ave Cross Country	55	VCP	8	Broken pipe at 52
Airport	AP440	AP408	Florida Ave	322	VCP	8	Broken pipe at 243
Airport	AP416	AP415	Texas Ave Cross Country	151	VCP	8	Broken pipe at 118
Airport	AP415	AP414A	Texas Ave Cross Country	159	VCP	8	Fractured and broken pipe from 35 to 46, 105, 126, and 136 (initial signs of pipe deformation at 39)
Airport	AP414A	AP414	Texas Ave Cross Country	310	VCP	8	Fractured pipe at 226
Airport	AP413	AP412	Texas Ave Cross Country	185	VCP	8	Broken pipe at 11
Airport	AP481	AP480	Taft St	279	VCP	8	Broken pipe at 210
Airport	AP025	AP024	Godfrey Blvd	303	VCP	8	Fractured/broken pipe from 3-7, 13, 35, 74, 98, 148
Airport	AP024	AP023	Godfrey Blvd Cross Country	297	VCP	8	Broken pipe at 47 and 237; separated joint at 2
Airport	AP740A	AP700	Utah Ave Cross Country	130	VCP	8	Separated joint at 129
Airport	AP702	AP701	Utah Ave Cross Country	33	VCP	8	Joint offset at 23
Airport	AP722	AP723	Wyoming St	167	VCP	8	Broken pipe, bottom half of pipe missing at 167
Airport	AP754	AP753	Griffin Rd Cross Country	40	VCP	8	Joint offset at 20
Dow	DW214	DW213	Silver Rd	266	VCP	8	Broken pipe at 1
Dow	DW400	DW017	Arthur Ave	362	VCP	8	Broken pipe at 66
Dow	DW611	DW610	Venture Way Cross Country	250	VCP	8	Fractured and broken pipe at 42, 74, and 143
Dow	DW609	DW608	University Dr	344	VCP	8	Broken pipe at 8 and 291-294 (indications of potential pipe collapse at 291-294)
Dow	DW607	DW606	Texas Ave Cross Country	241	VCP	8	Fractured pipe at 205
Dow	DW650	DW022	General Aviation Parking Lot	369	VCP	8	Fractured and broken pipe at 206, 221, and 237

Table 4 (Continued). Potential Infiltration Sources

Location				Pipe Information			Potential Infiltration Source [1]
Sewer Subsection	From MH	To MH	Street Name	Length (ft)	Type	Dia. (in)	
Dow*	DW660	DW600	General Aviation Parking Lot	198	VCP	8	Fractured and broken pipe at 5 and 20 (initial signs of pipe deformation at 20)
Dow*	DW022	DW600	General Aviation Parking Lot	175	VCP	10	Collapsed pipe at 140-143 (most of 3' section missing)
Dow	DW017	DW450	Maine Ave	315	VCP	8	Broken pipe at 167 (pipe collapse)

Note:

(1) Distance in feet from the first manhole identified in the "Location" column.

A detailed breakdown of the results of the flow isolation work is presented in the flow isolation summary tables included in Attachment A. The results of the flow isolation work were analyzed in terms of inch-miles and gpd/inch-miles as defined on the first page of the flow isolation summary tables.

A typical industry standard for pipe segments that qualify for follow-up television inspection are those pipe segments that exhibit infiltration rates above 4,000 gpd/inch-mile. A list of the pipe segments that qualified for television inspection is presented in Table 5. A majority of these pipe segments were scheduled for follow-up preparatory cleaning and internal television inspection as described below.

The Odlin Road Interceptor, an 18-inch diameter pipe extending approximately 6,620 linear feet from the Odlin Road Pump Station to manhole BV203, was also flow isolated by the taking of one measurement at the downstream manhole BV203. The flow isolation results for the Odlin Road interceptor are presented in Attachment A and are 6,055 gpd/in-mile. Because this pipe is scheduled for eventual abandonment, follow-up investigative work for this pipe was not performed.

3.2 Manhole Defects Observed During Flow Isolation

During the flow isolation work, a total of approximately 404 sewer manholes were accessed and inspected for infiltration sources. The rate of infiltration observed entering the sewer system through each manhole was estimated, and the location of each manhole infiltration source was noted in the “Downstream MH Observations” column of the Flow Isolation Summary Tables included in Attachment A. Table 2 presented a summary of the manhole defects and estimated infiltration amounts from the manholes observed to have infiltration sources during the spring 2015 and spring 2016 flow isolation work. A total of 79 manholes were found to have infiltration sources (67 public and 12 private). In addition, 33 manholes in Airport and seven manholes in Dow subsections were identified as potential inflow sources due to open pick holes in manhole cover or observations during a rain event.

Table 5. Rank of Pipe Segments with Infiltration Greater than 4,000 gpd/in-mi

Rank	MH to	MH	Pipe Dia. (inches)	Pipe Material	Pipe Length (ft.)	Infiltration (gpd/in-mi.)	Cumulative Pipe Total (ft.)
1*	AP204	AP202	8	AC	205	240,675	205
2	AP703	AP701	8	VC/PVC	108	50,511	313
3	DW201	DW200	12	VC	223	46,407	536
4	DW609	DW608	8	VC	336	45,513	872
5	AP409	AP407	8	VC	336	42,979	1,208
6	AP414A	AP414	8	VC	308	41,464	1,516
7	AP400	AP019	12	AC	66	41,350	1,582
8	AP407	AP406	8	VC	117	36,029	1,699
9	AP605	AP604	10	PVC	560	34,598	2,259
10	DW209	DW208	12	PVC	107	33,716	2,366
11	AP414	AP413	8	VC	246	33,201	2,612
12	DW203	DW202	12	PVC	358	28,907	2,970
13	AP416	AP414A	8	VC	310	26,347	3,280
14*	DW600	DW022	10	VC	175	25,432	3,455
15	DW250	DW203	8	PVC	223	24,482	3,678
16	DW214	DW212	8	PVC	299	24,126	3,977
17	DW601A	DW601	10	VC	167	22,758	4,144
18	AP025	AP024	8	VC	302	22,437	4,446
19	DW608	DW607	8	VC	474	21,903	4,920
20	AP441	AP440	8	VC	263	20,759	5,183
21	AP740A	AP700	8	VC	135	20,482	5,318
22	DW452	DW017	8	VC	532	19,515	5,850
23	AP662	AP661	10	PVC/VC	418	18,985	6,268
24	DW202	DW201	12	PVC	283	17,382	6,551
25	AP440	AP408	8	VC	315	17,332	6,866
26	DW018	DW017	15	VC	278	16,087	7,144
27	AP754	AP753	8	VC	39	15,222	7,183
28	AP756	AP755	8	VC	74	15,046	7,257
29	AP470	AP411	8	VC	228	15,040	7,485
30	AP758	AP757	8	VC	137	14,607	7,622
31	AP406	AP405	8	VC	194	14,253	7,816
32	DW252	DW251	8	PVC	386	14,144	8,202
33	AP017	AP016	16	AC	559	13,977	8,761
34	DW612	DW611	8	VC	355	13,574	9,116
35	DW270	DW209	8	PVC	403	13,547	9,519
36	DW611	DW609	8	VC	455	13,396	9,974
37	DW252A	DW252	8	PVC	74	13,004	10,048
38	AP430	AP405	8	VC	325	12,971	10,373
39	DW255A	DW203	8	PVC	263	12,752	10,636
40	AP450	AP443	8	VC	264	12,704	10,900
41	AP420	AP419	8	VC	277	12,108	11,177
42	DW204	DW203	12	HDPE	270	11,733	11,447
43	DW500	DW020	8	VC	200	11,090	11,647
44	AP660	AP607	10	VC	343	11,080	11,990
45	AP419	AP418	8	VC	312	10,749	12,302
46	AP603	AP602	10	VC	360	10,557	12,662
47	DW256	DW255	8	AC	111	10,031	12,773
48	DW211	DW209	8	PVC	280	9,875	13,053
49	DW650	DW022	8	VC	373	9,684	13,426
50	DW022	DW021	15	VC	355	9,177	13,781
51	AP755	AP754	8	VC	123	9,052	13,904
52	DW302	DW301	8	PVC	249	8,925	14,153
53	DW251	DW250	8	PVC	263	8,433	14,416
54	AP024	AP023	8	VC	290	8,396	14,706
55	AP412	AP411	8	VC	176	8,168	14,882
56*	DW660	DW600	8	VC	199	8,139	15,081
57	DW661	DW660	8	VC	204	7,894	15,285
58	DW606	DW605	8	VC	122	7,888	15,407
59	AP413	AP412	8	VC	186	7,728	15,593
60	DW016A	DW016	15	VC	176	7,378	15,769
61	AP541	AP540	8	AC	115	7,237	15,884
62	AP500	AP400	8	VC	114	7,162	15,998

Table 5. Rank of Pipe Segments with Infiltration Greater than 4,000 gpd/in-mi

Rank	MH to	MH	Pipe Dia. (inches)	Pipe Material	Pipe Length (ft.)	Infiltration (gpd/in-mi.)	Cumulative Pipe Total (ft.)
63	DW016	DW015	15	VC	242	7,102	16,240
64	AP445	AP443	8	VC	364	7,052	16,604
65	AP661	AP660	10	PVC/VC	415	7,006	17,019
66	AP700	AP603	8	VC	360	6,763	17,379
67	DW010	DW009	15	PVC	257	6,688	17,636
68	AP651	AP650	8	VC	340	6,523	17,976
69	AP723	AP722	8	PVC	175	6,362	18,151
70	AP513	AP512	8	AC	355	6,248	18,506
71	DW400	DW017	8	VC	359	6,132	18,865
72	AP050	AP014	8	AC	209	6,065	19,074
73	AP530	AP507	8	VC	247	5,820	19,321
74	AP663	AP662	10	PVC/VC	285	5,617	19,606
75	AP443	AP442	8	VC	258	5,572	19,864
76	AP701	AP700	8	VC	175	5,498	20,039
77	AP741	AP740	8	VC	108	5,497	20,147
78	AP482	AP481	8	VC	370	5,408	20,517
79	DW102	DW101	8	VC	417	5,334	20,934
80	AP451	AP450	8	VC	182	5,287	21,116
81	AP481	AP480	8	VC	280	5,134	21,396
82	DW607	DW606	8	VC	250	5,058	21,646
83	AP745	AP744	6	AC	160	4,947	21,806
84	AP631	AP630	8	VC	300	4,792	22,106
85	AP442	AP441	8	VC	175	4,748	22,281
86	AP602	AP601	10	VC	189	4,713	22,470
87	DW350	DW304	8	PVC	180	4,637	22,650
88	AP744	AP743	6	AC	243	4,567	22,893
89	AP757	AP756	8	VC	248	4,490	23,141
90	AP630	AP607	8	VC	250	4,454	23,391
91	DW259	DW251	8	PVC	187	4,451	23,578
92	AP622	AP620	8	VC	520	4,265	24,098
93	AP704	AP703	8	VC/PVC	277	4,020	24,375
94	AP604	AP603	10	VC	360	4,013	24,735

3.3 Preparatory Cleaning and Internal Television Inspection Spring 2015 and Spring 2016

The internal television inspection work was performed to identify specific pipeline defects or infiltration sources within a length of sewer from one manhole to another (pipe segment). Where necessary to perform the work, pipe segments were cleaned by a high pressure jet to remove minor obstructions and to clean the pipe walls so that if defects are present they can be visually detected. Subsequently, a CCTV camera was used to inspect and record the condition of the pipe segment. The location, type and magnitude of each pipe defect or infiltration source was documented.

From May 18 to May 27, 2015, a total of 12,592 linear feet of municipal sewer mainline pipe received internal television inspection. The work was performed by TBC. The results of the internal television inspections are documented in ten DVDs and corresponding television inspection logs which are included in a report prepared by TBC entitled "AECOM – City of Bangor ME Phase 2 Sewer System Evaluation Survey – Part 1", dated June 2015. The report that was prepared by TBC, and the related DVDs, are made a part of this report by reference.

From February 19, 2016 though the fall of 2016, a total of approximately 10,000 linear feet of municipal sewer mainline pipe received internal television inspection by the City. The results of the internal television inspections are documented in CCTV videos and log reports prepared by the City and included in the City's database.

3.4 Pipe Defects Observed During Television Inspection

AECOM performed a review of the television inspection DVDs, videos and corresponding logs in order to identify the locations and types of pipe defects and to estimate infiltration amounts associated with each defect. A summary of the pipe defects identified from this study and an estimate of infiltration entering the sewer system from each defect were presented in Tables 3 and 4.

3.5 Plan

A plan showing the Airport and Dow sewer subsection and locations of areas that were flow isolated as part of this study is presented as Figure 1 in Attachment B.

4.0 CD Item VI.9.c (6) iii: Identification Of Each Sewer Subsection That Is Tributary To Or Contributes To Any SSO Or CSO In Which Identified I/I Is Determined To Exist

A plan showing the Airport and Dow sewer subsection and locations of areas that were flow isolated part of this study is presented as Figure 1 in Attachment B. The Dow and Airport Subsections are tributary to Barkersville CSO 002.

5.0 CD Item VI.9.c (6) iv (a): Where Private Sources Of Excessive I/I Are Identified, Include A Listing Of All Private Sources Of Excessive I/I Identified During The SSES

Private sources of excessive I/I are identified in Section 8 of the LTCP.

6.0 CD Item VI.9.c. (6) iv (b): Where Private Sources Of Excessive I/I Are Identified, Include Actions Planned Or Taken By The City To Remove Private Sources Of I/I From The Collection System For All Sources Listed In Subparagraph I. Above By Enforcing The Sewer Use Ordinance Or Otherwise

The City has identified relatively few private sources of excessive I/I. Those sources have been placed on the City's overall working list of issues to address. For now, public sources of I/I are taking priority, but once these public sources have been addressed, the City will address private sources in turn. As the City moves into addressing private sources, the City will implement enforcing ordinances and regulations and then move forward with enforcement activities. The City currently anticipates this process occurring once Phase III of the SSES is completed.

7.0 CD Item VI.9.c (6) iv (c): Where Private Sources Of Excessive I/I Are Identified, Include The Framework Of A Public Education Plan To Promote The Elimination Of Private Sources Of

Excessive I/I, And A Schedule For Implementation Of The Plan

To promote the identification and removal of sump pumps that may be connected to the sewer system, the City initiated a sump pump removal program. The document entitled, "Sump Pump Identification Program", presented in Attachment C, was issued by press release, by legal advertisement, and mailed to all sewer bill recipients (residents and businesses).

8.0 CD Item VI.9.c.(6) iv(d): Where Private Sources Of Excessive I/I Are Identified, Include An Evaluation Of Whether Any Changes In The City's Ordinances Or By-Laws Are Necessary To Implement Or Facilitate The Planned Remedial Measures, And A Proposed Schedule For Implementing And Enforcing Any Necessary City Ordinances Or By-Laws

The City has identified relatively few private sources of excessive I/I. Those sources have been placed on the City's overall working list of issues to address. For now, public sources of I/I are taking priority, but once these public sources have been addressed, the City will address private sources in turn. As the City moves into addressing private sources, the City will implement enforcing ordinances and regulations and then move forward with enforcement activities. The City currently anticipates this process occurring once Phase III of the SSES is completed.

9.0 CD Item VI9.c. (6) iv (e): Where Private Sources Of Excessive I/I Are Identified, Include Provisions For Follow-Up Verification To Be Conducted By The City Through Various Means, Such As Building Inspections, To Ensure That Identified Private Sources Of I/I Have Been Removed Or Reduced. Results Of Such Verifications Shall Be Included In The Annual Reports On Compliance (Required By Section VII).

As part of the sump pump identification process, a basement inspection plan will be implemented to allow the City to monitor the status of a sump pump confirmed to be connected to the sewer system and the progress of its subsequent removal. When a sump pump is identified, the plumbing inspector (or other entity designated by the City) will perform a follow-up visit to the house to verify whether or not the connection is illegal and if there are any viable

options to reroute or disconnect from the separated sewer system. After securing permission from the owner and tenant, the inspector may perform the following tasks as applicable:

1. Take photographs of the sump pump and its discharge location and related basement internal plumbing.
2. Complete a basement inspection form (to be developed). During the basement inspection, the inspector will also inspect the general premises to determine a proposed sump pump discharge location.
3. Confirm the discharge location, introduce dye water, if necessary, into the sump pump system and then observe the public sewer through the first downstream sewer manhole for evidence of dye water.
4. If a sump pump redirection is completed, perform a follow-up inspection of the premises to confirm that the redirection work was performed in accordance with the approved plan.

The City will maintain a list of the status of each sump pump extending from the initial identification to the final redirection.

10.0 CD Item VI.9.c(6)v: List Portions Of Collection System, If Any, From Which Exfiltration To The City's MS4 Or Surface Waters Is Known Or Suspected To Occur.

The City is not aware of any areas where exfiltration to the MS4 or surface waters is known or suspected. We have an active IDDE program, and any suspected exfiltration will be immediately scheduled for sampling and remediation.

11.0 CD Item VI.9.c (6) vi: An Assessment Of Whether The Remedial Measures Proposed To Eliminate Sources Of I/I In Each Of The Evaluated Sewer Subsections Are Expected To Remedy Known Or Suspected Exfiltration.

Not applicable. The City is not aware of any areas where exfiltration to the MS4 or surface waters is known or suspected.

12.0 CD Item VI.9.c (6) vii: For Those Sections Of The Collection System Where Exfiltration Is The Apparent Cause Of Violations Of Water Quality Standards In Surface Waters Within Or Adjacent To The City, The City Shall Propose Remedial Measures. Such Measures Are To Be Schedule For Implementation In The LTCP.

Not applicable. The City is not aware of any areas where exfiltration to the MS4 or surface waters is known or suspected.

ATTACHMENT A

- Flow Isolation Summary Tables

Ted Berry Co. - Bangor SSES - Night Flow Isolation - DOW Subsection

Date : 4/14/15-4/15/15

Time	Street	Up MH	Down MH	Pipe Dia.	Pipe Mat'l	Length LF.	Inch-Miles	Hi Weir Reading	Lo Weir Reading	Avg Flow GPD	GPD/ In-Mi	Downstream Manhole Observations	Depth	Velocity
11:26p	Venture Way	DW613A	DW613	8	Clay	205	0.31	260	260	260	837.1	4-5gpm Daycare lateral No infiltration in structure		
	Fillmore St.		DW612A	8	Clay							MH buried under road		
12:15a	Fillmore St.	DW613	DW612	8	Clay	417	0.63	735	464	599.5	948.8	Laterals-6" claySouth-.25gpm 6" clay East-.1gpm		
12:45a	Venture Way	DW612	DW611	8	Clay	355	0.54	7301	7301	7301	13,573.7	Lateral 6" clay-1.33 gpm Downstream main-.1gpm		
1:30a	University Dr.	DW611	DW610	8	Clay	250	0.38	9243	9243	9243	13,396.0	Laterals-8" corrigated culvert-.1gpm 8" clay west bottom-13460gpd 8" clay East 1gpm DW610 leaking .25gpm		
2:00a	University Dr.	DW610	DW609	8	Clay	204.5	0.31					Unable to plug at DW610 combined flows from DW611to DW609	.3ft	.4FPS
2:46a	Texas Ave.	DW609	DW608	8	Clay	336	0.51	23170	23170	23170	45,512.5			
3:54a	Texas Ave.	DW608	DW607	8	Clay	474	0.72	15730	15730	15730	21,902.5	Lateral-8" east side-high-4690 low-3689		
4:25a	Corporate Dr.	DW607	DW606	8	Clay	250	0.38	1916	1916	1916	5,058.2			
4:55a	Corporate Dr.	DW606	DW605	8	Clay	122	0.18	1458	1458	1458	7,887.5	Infilration from pipe towards DW670 pipe plugged both ends		
5:15a	Corporate Dr.	DW670	DW605	8	Clay	268	0.41					No reading pipe plugged. Mh DW670 has 1' of standing water no open exits		
				Total LF:		2881.5								

Definitions:

- ⇨ Inch-Miles: The product of the length of the pipe in miles times the diameter of the pipe in inches.
- ⇨ Avg Flow (gpd): The average of the columns identified as high and low weir readings.
- ⇨ GPD/In-Mi: This column represents the average flow (gpd) divided by the inch-miles.

Ted Berry Co. - Bangor SSES - Night Flow Isolation - DOW Subsection

Date : April 15-16, 2015

Time	Street	Up MH	Down MH	Pipe Dia.	Pipe Mat'l	Length LF.	Inch-Miles	Hi Weir Reading	Lo Weir Reading	Avg Flow GPD	GDP/ In-Mi	Down Stream Manhole Observations	Depth	Velocity
10:35p	Maine Ave.	DW605	DW604	10	CLAY	230	0.44	1604	1604	1604	3,682.2	.25 Leakingby capped service		
11:00p	Maine Ave.	DW604	DW603	10	CLAY	103	0.20			0	0.0	Unable to use weirs or velocity meter to get flow. Out going pipe is higher than in coming pipe.		
11:35p	Maine Ave.	DW603	DW602	10	PVC	120	0.23	0	0	0	0.0	2 gpm from around upstream pipe connection		
12:10a	Maine Ave.	DW602	DW601A	10	PVC	215.5	0.41	0	0	0	0.0			
12:15a	Maine Ave.	DW601B	DW601A	10	PVC	69	0.13	0	0	0	0.0	Lateral Flow into DW601B 47 gpm		
12:40a	Maine Ave.	DW601A	DW601	10	CLAY	167	0.32	8429	5967	7198	22,757.7			
1:10a	Maine Ave.	DW601	DW600	10	CLAY	96	0.18			0	0.0	Water level to high for flow reading. Movement to slow for reading.		
1:40a	Maine Ave.	DW661	DW660	8	CLAY	204	0.31	2440	2440	2440	7,894.1	6" lateral 3689gpd		
2:05a	Maine Ave.	DW660	DW600	8	CLAY	198.5	0.30			2448	8,139.4	unable to use weir Est. 1.7 gpm		
2:25a	Maine Ave.	DW600	DW022	10	CLAY	175	0.33	8429	8429	8429	25,431.5	2gpm from structure		
2:50a	Aviation Dr.	DW650	DW022	8	CLAY	373	0.57	5473	5473	5473	9,684.1	see above for DW022		
3:40a	Aviation Dr.	DW501	DW500	8	CLAY	155	0.23	115	57	86	366.2			
4:15a	Aviation Dr.	DW500	DW020	8	CLAY	200	0.30	3689	3032	3360.5	11,089.7			
4:40a	Maine Ave.	DW022	DW021	15	CLAY	354.5	1.01	11030	7455	9242.5	9,177.3			
5:05a	Venture Way	DW554	DW553	8	PVC	60	0.09	0	0	0	0.0			
5:15a	Venture Way	DW553	DW552	8	PVC	327	0.50	0	0	0	0.0			
5:26a	Venture Way	DW552	DW551	8	PVC	274	0.42	0	0	0	0.0			
5:35a	Venture Way	DW551	DW550	8	PVC	60	0.09	0	0	0	0.0			
					Total:	3,381.5								

Ted Berry Co. - Bangor SSES - Night Flow Isolation - DOW Subsection

Date : 4/16-4/17/2015

Time	Street	Up MH	Down MH	Pipe Dia.	Pipe Mat'l	Length LF.	Inch-Miles	Hi Weir Reading	Lo Weir Reading	Avg Flow GPD	GPD/ In-Mi	Downstream MH Observations	Depth	Velocity
10:30p	Corporate Dr.	DW308	DW307	8	PVC	341.25	0.52	0	0	0	0			
10:40p	Corporate Dr.	DW307	DW306	8	PVC	341.5	0.52	0	0	0	0.0	6" Lateral east side no flow		
10:50p	Corporate Dr.	DW306	DW305	8	PVC	251.25	0.38	0	0	0	0			
10:55p	Northeast Dr.	DW351	DW350	8	PVC	170.5	0.26	0	0	0	0.0	DW351 6" lateral debris in invert/6" lateral east .5gpm		
11:20p	Northeast Dr.	DW350	DW304	8	PVC	179.5	0.27	1458	1064	1261	4636.55			
11:25p	Corporate Dr.	DW305	DW304	8	PVC	256.75	0.39	0	0	1296	3,331.5			
12:00a	Corporate Dr.	DW304	DW303	8	PVC	210.5	0.32	115	57	86	269.644	8" Capped service south side		
12:45a	Corporate Dr.	DW303	DW302	8	PVC	201.5	0.31	0	0	0	0.0	MH seeping around top concrete ring		
1:00a	Corporate Dr.	DW302	DW301	8	PVC	248.5	0.38	3689	3032	3360.5	8925.27	waterline into MH		
1:30a	Corporate Dr.	DW301	DW300	8	PVC	20.5	0.03	0	0	0	0.0	8" lateral east 2-3gpm/15" pvc capped north no infiltration		
2:00a	Venture Way	DW550	DW021	8	PVC	84	0.13	0	0	0	0	No infiltration		
2:45a	Maine Ave	DW021	DW020	15	Clay	124	0.35	164	260	212	601.8			
3:50a	Maine Ave	DW020	DW019	15	Clay	237.5	0.67	0	0	0	0	MH walls seeping .25gpm visual		
4:30a	Maine Ave	DW019	DW018	15	Clay	277	0.79	260	115	187.5	238.3	4" pvc lateral/6" Clay west .25gpm		
4:45a	Maine Ave	DW401	DW400	?		228.5	#VALUE!					Unable to monitor pipe needs flushing		
4:50a	Maine Ave	DW400	DW017	?		366.5	#VALUE!					Unable to monitor pipe needs flushing		
5:20a	Maine Ave	DW018	DW017	15	Clay	278	0.79	14380	11030	12705	16086.9			
					Total:	3817.25								

Ted Berry Co. - Bangor SSES - Night Flow Isolation - Dow Subsection

Date : April 19-20, 2015

Time	Street	Up MH	Down MH	Pipe Dia.	Pipe Mat'l	Length LF.	Inch-Miles	Hi Weir Reading	Lo Weir Reading	Avg Flow GPD	GPD/In-Miles	Downstream Manhole Observations	Depth	Velocity
11:10p	Maine Ave.	DW017	DW016A	14	PVC	167	0.44	0	0	0	0.00			
11:26p	Maine Ave.	DW016A	DW016	15	CLAY	176	0.50	3689	3689	3689	7,378.00	DW016A pipe missing pcs./ .1 structure leakage , includes DW017 to DW016 Flow		
11:56p	Maine Ave.	DW016	DW015	15	CLAY	242	0.69	6076	3689	4882.5	7,101.82			
12:17a	Maine Ave.	DW015	DW014	14	PVC	80	0.21	0	0	360	1,697.14			
12:42a	Maine Ave.	DW014	DW013	14	PVC	237	0.63	0	0	144	229.15			
1:05a	Maine Ave.	DW013	DW012	14	PVC	301	0.80	0	0	144	180.43			
	Maine Ave.	DW012	DW011	14	PVC	296	0.78					unable to read at this time flow from DW200 to high		
1:50a	Fairways	DW287	DW286	8	PVC	125	0.19	0	0	0	0.00	DW287 invert and shelf dirty		
1:55a	Fairways	DW286	DW285	8	PVC	166	0.25	0	0	0	0.00			
1:59a	Fairways	DW285	DW284	8	PVC	170	0.26	0	0	0	0.00			
2:01a	Fairways	DW290	DW284	8	PVC	77	0.12	0	0	0	0.00			
2:02a	Fairways	DW291	DW290	8	PVC	134	0.20	0	0	0	0.00			
2:04a	Fairways	DW292	DW291	8	PVC	237.5	0.36	0	0	0	0.00			
2:09a	Fairways	DW284	DW283	8	CLAY	183	0.28	0	0	0	0.00	DW283 wood chips on shelf and invert		
2:30a	Silver Rd.	DW214	DW213	8	PVC			0	0	0	0.00	.1 from 4" service/ Invert full of dirt Combined with DW213 to 212		
2:35a	Silver Rd.	DW283	DW282	8	PVC	170	0.26	0	0	0	0.00			
2:45a	Silver Rd.	DW282	DW281	8	PVC	35	0.05	0	0	144	2,715.43			
2:49a	Silver Rd.	DW281	DW280	8	PVC	142	0.22	0	0	144	669.30	.1 gpm around end of pipe in MH. Estimate		
2:52a	Silver Rd.	DW280	DW213	8	PVC	34	0.05	0	0	0	0.00			
3:34a	Norway Rd	DW276	DW275	8	PVC	274	0.42	0	0	0	0.00			
3:35a	Graham Ave	DW275	DW212	8	PVC	323	0.49	0	0	0	0.00			
3:59a	Silver Rd.	DW214	DW212	8	PVC	299	0.45	10930	10930	10930	24,126.42	combined flows from DW214-DW212		
4:08a	Silver Rd.	DW212	DW211	8	PVC	226	0.34	464	464	464	1,355.04			
4:40a	Silver Rd.	DW211	DW209	8	PVC	280	0.42	4690	3689	4189.5	9,875.25			
4:45a	Silver Rd.	DW270	DW209	8	PVC	403	0.61	9243	7301	8272	13,547.20	Standing water in DW270		
					Total	4777.5								

Ted Berry Co. - Bangor SSES - Night Flow Isolation - DOW Subsection

Date : April 20-21, 2015

Time	Street	Up MH	Down MH	Pipe Dia.	Pipe Mat'l	Length LF.	Inch-Miles	Hi Weir Reading	Lo Weir Reading	Avg Flow GPD	GPD/ In-Mi	Downstream Manhole Observations	Depth	Velocity
10:50P	Silver	DW208	DW207	12	PVC	80	0.18	0	0	0	0.0	.25 MH INFILTRATION		
11:30P	Silver to Nason	DW207	DW206	12	CLAY	292	0.66	0	0	0	0.0	0.1 MH INFILTRATION		
12:05A	Nason Ave	DW265	DW204	8	PVC	110	0.17	0	0	0	0.0			
12:40A	Nason Ave	DW206	DW204	12	PVC	530	1.20	1459	1064	1261.5	1,047.3	combined flow with infiltration from DW207 and DW206		
1:35A	Silver	DW209	DW208	12	PVC	107	0.24	9609	6789	8199	33,715.5	DW209- 2 Gpm leak around upstream Pipe/ DW208.5 gpm leak around down stream pipe		
2:00A	Nason Ave	DW262	DW261	8	ACP	394	0.60	2440	1916	2178	3,648.4	DW262=.25 infiltration at MH		
2:20A	Nason Ave	DW261	DW260	8	ACP	307	0.47					combined flow from DW261 to DW204		
2:30A	Nason Ave	DW260	DW204	8	HDPE	294	0.45	1916	1458	1687	3,787.1			
2:40A	Mildred	DW253	DW252B	8	PVC	105	0.16	0	0	0	0.0			
2:50A	Mildred	DW252B	DW252A	8	PVC	84	0.13	0	0	0	0.0			
3:00A	Mildred	DW252A	DW252	8	PVC	74	0.11	1458	1458	1458	13,003.8			
3:25A	Mildred	DW252	DW251	8	PPVC	386	0.58	9243	7301	8272	14,143.8			
3:45A	Leonard	DW259	DW251	8	PVC	187	0.28	1458	1064	1261	4,450.6			
4:20A	Mildred	DW251	DW250	8	PVC	263	0.40	3689	3032	3360.5	8,433.2			
				TOTAL LF:		3213								

Ted Berry Co. - Bangor SSES - Night Flow Isolation - DOW Subsection

Date : April 21-22, 2015

Time	Street	Up MH	Down MH	Pipe Dia.	Pipe Mat'l	Length LF.	Inch-Miles	Hi Weir Reading	Lo Weir Reading	Avg Flow GPD	GPD/ In-Mi	Downstream Manhole Observations	Depth	Velocity
11:00P	Hammond St.	DW256	DW255	8	ACP	111	0.17	1,916	1,458	1687	10,030.8			
11:30P	Hammond St.	DW255	DW255A	8	PVC	46	0.07	119	57	88	1,262.6			
11:55P	Hammond St.	#######	DW240									4" Service- Dentist office Sump pump hooked to this line/.5 leaking around 2" F.M. from Bank Building		
11:55P	Hammond St.	DW240	DW202	8	PVC	269	0.41	0	0	0	0.0	.25-.5 gpm from MH structure		
12:35A	Mildred	DW204	DW203	12	HDPE	270	0.61			7200	11,733.3	HDPE pipe Weir won't fit. Pipe Est. 5gpm		
1:00A	Mildred	DW250	DW203	8	PVC	223	0.34	9,243	7,301	8272	24,482.2			
1:25A	Mildred	DW255A	DW203	8	PVC	263	0.40	5,473	4,690	5081.5	12,752.1			
1:45A	Hammond St.	DW203	DW202	12	PVC	358	0.81	25,160	21,880	23520	28,907.3	4" Service north side-.25gpm Manhole Top Ring collapsed into structure. Email sent to Sean Currier to Address for safety concern		
2:00A	Hammond St.	DW202	DW201	12	PVC	283	0.64	12,750	9,609	11179.5	17,381.6	1 gpm structure		
2:30A	Hammond St.	DW201	DW200	12	CLAY	223	0.51	25,160	21,880	23520	46,407.2			
3:05A	Maine Ave.	DW200	DW011	12	PVC	333	0.76	0	0	0	0.0			
3:36A	Arthur St.	DW401	DW400	8	CLAY	226	0.34					DW401: 1gpm , DW400: .5gpm		
3:50A	Arthur St.	DW400	DW017	8	CLAY	359	0.54 ~~0.88~~	3,639	3,032	3335.5	3,790.3	combined flow DW401-DW400-DW017		
4:26A	Maine Ave.	DW452	DW017	8	CLAY	532	0.81	15,730	15,730	15730	19,514.7			
4:40A	Maine Ave.	DW453	DW452	8	PVC	129	0.20	0	0	0	0.0	8" PVC Service East- No Flow 6" PVC Service West-No Flow		
4:45A	Maine Ave.	#######	DW453									6" Clay Service East-1 gpm 6" Clay Service North-1 gpm		
5:30A	Maine Ave.	DW012	DW011	15	PVC	233	0.66	0	0	0	0.0			
				TOTAL LF:		3858								

Ted Berry Co. - Bangor SSES - Night Flow Isolation - Airport Subsection

Date : 4/22/15-4/23/15

Time	Street	Up MH	Down MH	Pipe Dia.	Pipe Mat'l	Length LF.	Inch-Miles	Hi Weir Reading	Lo Weir Reading	Avg Flow GPD	GPD/ In-Mi	Downstream Manhole Observations	Depth	Velocity
10:00p	Cleveland St.		AP420A									1-4" 1-6" East 1-8" south capped root ball		
10:15p	Cleveland St.	AP420A	AP420	8	Clay	580	0.88	57	0	28.5	32.43	DW420: 1.25 gpm leakage 2-6" laterals on East broken		
10:45p	University Dr.	AP420	AP419	8	Clay	277	0.42	5,473	4,690	5081.5	12,107.55	6" PVC east 8" clay west		
12:30a	University Dr.	AP418	AP417	8	Clay	286	0.43	1,458	1,458	1458	3,364.62			
12:55a	University Dr.	AP417	AP416	8	Clay	91	0.14	0	0	0	0.00	.1 structure leakage		
12:40a	University Dr.		AP415A									4" PVC east 6" PVC south 1-GPM		
1:00a	University Dr.	AP415A	AP415	6	PVC	166	0.19	0	0	0	0.00	4" service no flow		
1:24a	University Dr.	AP416	AP414A	8	Clay	310	0.47	13,460	11,290	12375	26,346.77	Combined AP416 to AP414A		
4:45a	University Dr.	AP414A	AP414	8	Clay	308	0.47	20,590	18,110	19350	41,464.29			
2:34a	University Dr.	AP414	AP413	8	Clay	246	0.37	13,460	11,290	12375	33,201.22	6" Clay Service North 8.5gpm		
3:00a	University Dr.	AP413	AP412	8	Clay	186	0.28	2,440	1,916	2178	7,728.39	4"PVC service south 0gpm		
5:30a	Taft St.	AP482	AP481	8	Clay	370	0.56	3,032	3,032	3032	5,408.43	.25 Structure leakage		
5:50a	Taft St.	AP481	AP480	8	Clay	280	0.42	2,440	1,916	2178	5,133.86	.25 Structure leakage		
				TOTAL LF:		3100								

Ted Berry Co. - Bangor SSES - Night Flow Isolation - Airport Subsection

Date : April 23-24, 2015

Time	Street	Up MH	Down MH	Pipe Dia.	Pipe Mat'l	Length LF.	Inch-Miles	High Weir Reading	Low Weir Reading	Avg Flow GPD	GPD/In-Miles	Downstream Manhole Observation	Depth	Velocity
10:30p	University Dr.	AP419	AP418	8	Clay	312	0.47	5473	4690	5081.5	10,749.3			
11:00p	Taft St.	AP480	AP471	8	Clay	222	0.34	464	260	362	1,076.2	.25 Complete structure seeping		
11:30p	Maine Ave.		AP472											
11:30p	Maine Ave.	AP472	AP471	8	Clay	172	0.26	1064	735	899.5	3,451.6	2-6" laterals 1-east 1-south		
12:15a	Maine Ave.	AP471	AP470	8	Clay	133	0.20	Combined flows with AP411 results				Combined flow with AP470-AP411. .5GPM base of brick riser		
12:15a	Maine Ave.	AP470	AP411	8	Clay	228	0.35	9243	7301	8272	15,040.0			
12:30a	University Dr.	AP412	AP411	8	Clay	176	0.27	2440	1916	2178	8,167.5			
1:20a	Johnson St.	AP411	AP410	8	Clay	153	0.23	735	735	735	3,170.6			
1:25a	GE Building	AP461	AP460	8	PVC	215	0.33	0	0	0	0.0	6" Sevice Towards building 8" service towards Parking lot		
1:30a	Johnson St.	AP460	AP409	8	PVC	83	0.13	0	0	0	0.0			
2:10a	Maine Ave.		AP451		Clay							6" Service-.5GPM 8" service-.25GPM		
2:45a	Hayes St.	AP451	AP450	8	Clay	182	0.28	1458	1458	1458	5,287.3	8" Lateral South side		
3:00a	Hayes St.	AP450	AP443	8	Clay	264	0.40	5473	4690	5081.5	12,703.8			
3:20a	Florida Ave.	AP445	AP443	8	Clay	364	0.55	4690	3089	3889.5	7,052.4	No infiltration in MH Combined flows from AP445 to AP443		
3:45a	Florida Ave.	AP443	AP442	8	Clay	258	0.39	2440	1916	2178	5,571.6	6" Clay service south side .5gpm @service connection		
4:10a	Florida Ave.	AP442	AP441	8	Clay	175	0.27	1454	1064	1259	4,748.2			
4:30a	Florida Ave.	AP441	AP440	8	Clay	263	0.40	9243	7301	8272	20,758.6	6" Clay service east side No infiltration		
				TOTAL LF:		3200								

Ted Berry Co. - Bangor SSES - Night Flow Isolation - Airport Subsection

Date : 4/26/15-4/27/15

Time	Street	Up MH	Down MH	Pipe Dia.	Pipe Mat'l	Length LF.	Inch-Miles	Hi Weir Reading	Lo Weir Reading	Avg Flow GPD	GPD/ In-Mi	Downstream Manhole Observations	Depth	Velocity
10:45p	Johnson Dr.	AP410	AP409	8	CLAY	292	0.44	1458	1064	1261	2,850.21			
11:10p	Florida St.	AP440	AP408	8	CLAY	315	0.48	9243	7301	8272	17,331.81			
12:00a	Johnson Dr.	AP409	AP407	8	CLAY	336	0.51	23170	20590	21880	42,978.57	Damaged bottom Northside-2GPM/	Combined MH 409,408,407	
12:35a	Cross Country	AP407	AP406	8	CLAY	117	0.18	7301	5473	6387	36,029.23	6" Lateral Outside drop plugged		
1:15a	Cross Country	AP430	AP405	8	CLAY	325	0.49	7301	5473	6387	12,970.52			
1:25a	Cross Country	AP406	AP405	8	CLAY	194	0.29	4690	3689	4189.5	14,252.94			
1:55a	Florida St.		AP522	8								8" Service East/8" Service South		
2:15a	Maine Ave	AP522	AP521	8	CLAY	256	0.39	0	0	0	0.00			
2:30a	Maine Ave	AP521	AP520	8	PVC	182	0.28	1064	735	899.5	3,261.92			
3:00a	Maine Ave	AP534A	AP534	8	PVC	80	0.12	0	0	0	0.00			
3:05a	Maine Ave	AP534	AP533	8	PVC	167	0.25	0	0	0	0.00	4" Service North		
3:10a	Maine Ave	AP533	AP532	8	PVC	146	0.22	0	0	0	0.00	4" Service East Capped		
3:15a	Maine Ave	AP545	AP532	8	PVC	70	0.11	0	0	0	0.00	AP545-6" service West		
3:25a	Maine Ave	AP532	AP531	8	PVC	69	0.10	0	0	0	0.00			
				TOTAL LF:		2549								

Ted Berry Co. - Bangor SSES - Night Flow Isolation - Airport Subsection

Date : 4/27/15-4/28/15

Time	Street	Up MH	Down MH	Pipe Dia.	Pipe Mat'l	Length LF.	Inch-Miles	Hi Weir Reading	Lo Weir Reading	Avg Flow GPD	GPD/ In-Mi	Downstream Manhole Observations	Depth	Velocity
11:00p	Cross Country	AP405	AP404	8	C.I.	305	0.46	57	0	28.5	61.67			
11:45p	Cross Country	AP404	AP403	8	C.I.	286.5	0.43	1916	1458	1687	3,886.28	.5 GPMAround Downstream Pipe .1 GPM Sides of Structure		
12:15a	Cross Country	AP403	AP402	12	ACP	292	0.66	1458	1064	1261	1,900.14	1GPM around upstream pipe .1GPM at Northside Base/Wall		
12:46a	Cross Country	AP402	AP401	12	ACP	155	0.35	0	0	0	0.00			
2:30a	Godfrey BLVD	AP072	AP071	8	ACP	240	0.36	0	0	0	0.00			
2:35a	Godfrey BLVD	AP071	AP070	8	ACP	121	0.18	0	0	0	0.00			
2:45a	Godfrey BLVD	AP070	AP026	8	ACP	280	0.42	0	0	0	0.00			
2:58a	Godfrey BLVD	AP027	AP026	8	ACP	300	0.45	0	0	0	0.00			
3:20a	Godfrey BLVD	AP026	AP025	8	Clay	296	0.45	0	0	0	0.00			
3:40a	Godfrey BLVD	AP025	AP024	8	Clay	302	0.46	11290	9243	10266.5	22,436.72			
4:20A	Godfrey BLVD	AP024	AP023	8	Clay	290	0.44	3689	3689	3689	8,395.66			
4:55a	Godfrey BLVD	AP023	AP022	8	Clay	292	0.44	1916	1458	1687	3,813.08	Concrete plug half way up MH is leaking less then .1GPM		
5:43a	Godfrey BLVD	AP022	AP021	8	Clay	295	0.45	1916	1458	1687	3,774.31	2-GPM around Downstream Pipe		
				TOTAL LF:		3454.5								

Ted Berry Co. - Bangor SSES - Night Flow Isolation - Airport Subsection

Date : 4/28/15-4/29/15

Time	Street	Up MH	Down MH	Pipe Dia.	Pipe Mat'l	Length LF.	Inch-Miles	Hi Wier Reading	Lo Weir Reading	Avg.Flow GPD	GPD/ In-Mi	Downstream Manhole Observations	Depth	Velocity
10:50p	Illinios Ave.	AP663	AP662	10	PVC/VCP	285	0.54	3032	3032	3032	5,617.2			
11:15p	Cross Country	AP662	AP661	10	PVC/VCP	418	0.79	16280	13780	15030	18,985.3	.5GPM around U.S pipe		
11:45p	Cross Country	AP661	AP660	10	PVC/VCP	415	0.79	5967	5046	5506.5	7,005.9			
12:00a	Illinios Ave.		AP653									4" Service NW corner 2GPM all over Structure		
12:20a	Illinios Ave.	AP653	AP652	8	VCP	447	0.68	1916	1458	1687	2,490.9	2-4" Service 1-GPM from 1 service .25GPM All over structure		
1:00a	Griffin Rd	AP652	AP651	8	VCP	316	0.48	1916	1458	1687	3,523.5	6" Service West-.25GPM around pipe 4" service East		
1:30a	Griffin Rd	AP651	AP650	8	VCP	340	0.52	3689	3032	3360.5	6,523.3	2GPM all over structure 4" Service East		
1:50a	Mainiac Ave.		AP631									3-8" Service 1-South 2-West		
2:15a	Mainiac Ave.	AP631	AP630	8	VCP	300	0.45	2440	1916	2178	4,791.6	.5GPM all over structure		
2:45a	Mainiac Ave.	AP630	AP607	8	VCP	250	0.38	1916	1458	1687	4,453.7			
3:30a	Cross Country	AP660	AP607	10	VCP	343	0.65	8429	5967	7198	11,080.3	.1gpm Seeping around Base		
4:05a	Griffin Rd	AP650	AP607	8	VCP	402	0.61	1458	1458	1458	2,393.7			
4:30a	Griffin Rd		AP622									3GPM leaking from all over structure. Structure is in rough shape		
5:40a	Griffin Rd	AP622	AP620	8	VCP	520	0.79	3689	3032	3360.5	4,265.3	MH-AP621 not located talked to Sean at Bangor and he believes it doesn't exist Storm sewer marked as AP621		
				TOTAL LF:		4036								

Ted Berry Co. - Bangor SSES - Night Flow Isolation - Airport Subsection

Date : 4/29/15-4/30/15

Time	Street	Up MH	Down MH	Pipe Dia.	Pipe Material	Length LF.	Inch-Miles	High Weir Reading	Low Weir Reading	Avg. Flow	GPD/ In-Mi	Downstream Manhole Observations	Depth	Velocity
10:35p	Polk St.	AP745	AP744	6	ACP	160	0.18	1064	735	899.5	4,947.25			
11:00p	Polk St.	AP744	AP743	6	ACP	243	0.28	1458	1064	1261	4,566.58	.5 GPM around base		
11:30p	Utah Ave		AP736									8" Service South 2gpm 8"service west 1gpm		
11:35p	Utah Ave	AP736	AP735	8	PVC	290	0.44	0	0	0	0.00			
11:45p	Airport		AP731									3-8" Services on bottom		
11:45p	Airport	AP731	AP730	8	PVC	277	0.42	0	0	0	0.00	8" service 1gpm		
12:00a	Utah Ave	AP730	AP703	8	PVC	354	0.54	0	0	0	0.00			
12:50a	Utah Ave		AP715									Structure good condition		
12:50a	Utah Ave	AP715	AP709	10	DI	68	0.13	0	0	0	0.00	4" service middle south .1 gpm aroundconnection of bricks and concrete		
12:50A	Utah Ave	AP711	AP709	8	ACP	250	0.38	0	0	0	0.00	Unable to locate AP711 And AP710		
1:05a	Utah Ave	AP709	AP707	8	ACP	363	0.55	0	0	0	0.00			
1:30a	Utah Ave	AP707	AP706	8	ACP	233	0.35	0	0	0	0.00	4" Service South East Shelf broken and seperated from structure		
1:55a	Utah Ave	AP706	AP705	8	ACP	300	0.45	0	0	0	0.00			
2:05a	Utah Ave		AP723									8" Service South West Bottom-1 gpm		
2:20a	Utah Ave	AP723	AP722	8	PVC	175	0.27	1916	1458	1687	6,362.40	8" HDPE service West Bottom-1 gpm		
2:50a	Utah Ave	AP722	AP721	8	VCP	108	0.16	0	0	0	0.00			
4:15a	Utah Ave	AP705	AP704	8	VCP	117	0.18	0	0	0	0.00			
4:30a	Utah Ave	AP721	AP704	8	VCP	484	0.73	3032	2440	2736	3,730.91			
5:00a	Utah Ave	AP704	AP703	8	VCP/PVC	277	0.42	1916	1458	1687	4,019.57			
5:30a	Utah Ave	AP703	AP701	8	VCP/PVC	108	0.16	9243	7301	8272	50,551.11	Combined 701, 702,703 Water level in AP702 to high to weir/		
5:50a	Utah Ave	AP735	AP701	8	PVC	166	0.25	0	0	0	0	NO inflitration structure new		
				TOTAL LF:		3973								

Ted Berry Co. - Bangor SSES - Night Flow Isolation - Airport Subsection

Date : 4/30/15-5/1/15

Time	Street	Up MH	Down MH	Pipe Dia.	Pipe Mat'l	Length LF.	Inch-Miles	Hi Weir Reading	Lo Weir Reading	Avg Flow GPD	GPD/ In-Mi	Downstream Manhole Observations	Depth	Velocity
10:25p	Polk St	AP743	AP742	8	VCP	284	0.43	735	464	599.5	1,393.20	4" Service South .1gpm west base		
10:45p	Polk St	AP742	AP741	8	VCP	364	0.55	0	0	0	0.00			
10:58p	Polk St	AP750	AP741	8	D.I	60	0.09	0	0	0	0.00			
11:15p	Polk St	AP751	AP750	12	PVC	153	0.35	0	0	0	0.00	Pick Holes not plugged 1.5gpm total both holes		
11:25p	Polk St	AP752	AP751	12	PVC	54	0.12	0	0	0	0.00	Pick holes not plugged 1-1.5gpm other .1gpm		
11:45p	Polk St	AP753	AP752	12	PVC	95	0.22	0	0	0	0.00	6" PVC South 2 gpm around pipe Pick holes-.1 Each hole		
12:05a	Polk St	AP754	AP753	8	VCP	39	0.06	1064	735	899.5	15,222.31			
12:25a	Polk St	AP755	AP754	8	VCP	123	0.19	1916	1458	1687	9,052.20			
12:45a	Polk St	AP756	AP755	8	VCP	74	0.11	1916	1458	1687	15,046.22	6" PVC South /8" PVC South 6" PVC North /6" PVC North All Bottom No infiltration		
1:05a	Griffin Rd	AP757	AP756	8	VCP	248	0.38	1916	1458	1687	4,489.60	8" VCP South Middle Capped leaking at 1-2 GPD		
1:20a	Griffin Rd	AP758	AP757	8	VCP	137	0.21	3032	3032	3032	14,606.72	>.25gpm total around walls		
1:35a	Griffin Rd	AP759	AP758	8	VCP	64	0.10	0	0	0	0.00			
1:45a	Griffin Rd		AP759	8	VCP			47280	43950	45615		8" VCP West Not on Maps Heavy Flows/ 6" PVC South no flow		
2:10a	Griffin Rd	AP620	AP606	8	VCP	135	0.20	735	464	599.5	2,930.89	.25 gpm walls- mid to bottom		
2:35a	Griffin Rd	AP607	AP606	10	VCP	210	0.40	735	735	735	1,848.00			
3:10a	Griffin Rd	AP606	AP605	10	VCP	262	0.50	1064	735	899.5	1,812.73	3-5gpm all over structure- with rain flows will be high		
3:49a	Polk St	AP605	AP604	10	PVC	560	1.06	38450	34940	36695	34,598.14			
4:20a	Utah Ave	AP741	AP740	8	VCP	108	0.16	1064	735	899.5	5,496.94	6" VCP East-260gpd 8" West .5gpm around pipe		
4:50a	Utah Ave	AP740	AP740A	8	VCP	115	0.17	464	240	352	2,020.17	1.5gpm from M.H.		
5:26a	Cross Country	AP740A	AP700	8	VCP	135	0.20	4690	3689	4189.5	20,482.0	.25 Around pipe towards AP701		
				TOTAL LF:		3220								

4 laterals total

Ted Berry Co. - Bangor SSES - Night Flow Isolation - Airport Subsection

Date : 5/3/15-5/4/15

Time	Street	Up MH	Down MH	Pipe Dia.	Pipe Mat'l	Length LF.	Inch-Miles	Hi Weir Reading	Lo Weir Reading	Avg Flow GPD	GPD/ In-Mi	Downstream Manhole Observations	Depth	Velocity
11:10p	Cross Country	AP701	AP700	8	VCP	175	0.27	1458	1458	1458	5498.743	Observations on 5/1/15 AP740A-AP700		
11:25p	Pulk Rd	AP604	AP603	10	VCP	360	0.68	3032	2440	2736	4,012.8	.25 GPM total in 5 different locations-1)around 10" pipe 2)1' off bottom around basinin 4 locations		
11:55p	Cross Country	AP700	AP603	8	VCP	360	0.55	3689	3689	3689	6763.167			
12:25a	Cross Country	AP603	AP602	10	VCP	360	0.68	8429	5967	7198	10,557.1	.5 gpm around top of barrel		
12:55a	Cross Country	AP602	AP601	10	VCP	189	0.36	1916	1458	1687	4712.889	.5 gpm around top of barrel		
1:30a	Godfrey Blvd	AP601	AP600	10	VCP	292	0.55	1458	1458	1458	2,636.4	0.25 around bottom of barrel		
1:45a	Godfrey Blvd	AP600	AP020	8	ACP	43	0.07	0	0	0	0	Pick Holes seeping <.1 gpm Wall South East-.1 between joints 4gpm from capped pipe south side		
2:35a	Godfrey Blvd	AP021	AP020	8	ACP	247	0.37	260	115	187.5	501.0			
3:05a	Maine Ave	AP020	AP019	12	ACP	180	0.41	0	0			3-Pick holes above 12" ACP-.25 .1 around 12"ACP		
3:30a	Union St.		AP516									Structure good		
4:00a	Union St.	AP516	AP513	8	ACP	997	1.51	1916	1458	1687	1116.77	AP515 Buried AP514 water level to high to weir to slow for flow velosity 8" service north PVC		
4:16a	Union St.	AP513	AP512	8	ACP	355	0.54	3689	3032	3360.5	6,247.7			
4:43a	Union St.	AP512	AP511	8	ACP	165	0.25	0	0			8" VCP Service East Bottom 8" VCP Service North Bottom		
5:04a	Union St.	AP511	AP510	8	VCP	75	0.11	57	57	57	501.6	4" ACP Service East top		
5:35a	Union St.	AP510	AP509	8	VCP	295	0.45	1916	1458	1687	3774.305	8" VCP Service North Bottom		
				TOTAL LF:		4093								

Ted Berry Co. - Bangor SSES - Night Flow Isolation - Airport Subsection

Date : 5/4/15-5/5/15

Time	Street	Up MH	Down MH	Pipe Dia.	Pipe Mat'l	Length LF.	Inch-Miles	Hi Weir Reading	Lo Weir Reading	Avg Flow GPD	GPD/ In-Mi	Downstream Manhole Observations	Depth	Velocity
10:25p	Union St		AP542									6" Service NW Bottom		
10:35p	Union St	AP542	AP541A	8	ACP	184	0.28	735	464	599.5	2,150.38	8" PVC N bottom 260gpd		
11:18p	Union St	AP541A	AP541	8	ACP	159	0.24	735	464	599.5	2,488.49	6" ACP NW Bottom-735gpd 6" PVC n Bottom -1064-735 gpd		
11:31p	Union St	AP541	AP540	8	ACP	115	0.17	1458	1064	1261	7,237.04	4" PVC Service North		
11:50p	Union St	AP540	AP508	10	ACP	156	0.30	0	0			6"VCP .5gpm West bottom		
12:20a	Union St	AP509	AP508	8	VCP	103	0.16	0	0					
12:40a	Union St	AP508	AP507	8	VCP	205	0.31	57	0	28.5	91.76			
1:00a	Union St	AP530	AP507	8	VCP	247	0.37	2440	1916	2178	5,819.76	4" Pvc North Bottom		
1:27a	Union St	AP531	AP530	8	VCP	210	0.32	0	0					
1:50a	Union St	AP531A	AP531	8	VCP	56	0.08	260	115	187.5	2,209.82			
2:10a	Union St		AP531A	8	VCP			260	115	187.5		MH towards Building		
2:40a	Maine Ave.	AP507	AP506A	8	VCP	120	0.18	735	464	599.5	3,297.25	4" PVC West bottom		
3:10a	Maine Ave.	AP506A	AP506	8	VCP	33	0.05	57	0	28.5	570.00	.25gpm Around bottomat shelf		
3:40a	Maine Ave.	AP506	AP505A	8	VCP	125	0.19	115	57	86	454.08			
4:00a	Maine Ave.	AP505A	AP505	8	VCP	50	0.08	57	0	28.5	376.20			
4:30a	Maine Ave.	AP505	AP504	8	VCP	391	0.59	1916	1458	1687	2,847.62	.25 Around 4" Lateral North Bottom		
4:50a	Maine Ave.	AP504	AP503	8	VCP	452	0.68	2440	1916	2178	3,180.27	8" PVC in and out of structure VCP after New structure		
5:33a	Maine Ave.	AP503	AP500	8	VCP	555	0.84	3032	2440	2736	3,253.62	MH-AP502 Buried unable to access 2 locations .1gpm east on bottom west side bottom seeping less then .1 gpm		
				TOTAL LF:		3161								

Ted Berry Co. - Bangor SSES - Night Flow Isolation - Airport Subsection

Date : 5/5/15-5/6/15

Time	Street	Up MH	Down MH	Pipe Dia.	Pipe Mat'l	Length LF.	Inch-Miles	Hi Weir Reading	Lo Weir Reading	Avg Flow GPD	GPD/ In-Mi	Downstream Manhole Observations	Depth	Velocity
10:35p	Maine Ave.	AP401	AP400	12	ACP	172	0.39	1458	1016	1237	3164.419	1gpm south side bottom		
10:55p	Maine Ave.	AP500	AP400	8	VCP	114	0.17	1458	1016	1237	7,161.6			
11:35p	Maine Ave.	AP400	AP019	12	ACP	66	0.15	6789	5616	6202.5	41350			
12:13a	Maine Ave.	AP019	AP018	16	ACP	249	0.75	464	260	362	479.8	.5gpm West side to South Side		
12:48a	Godfrey Blvd	AP018	AP017	16	ACP	260	0.79	0	0	0	0			
1:20a	Godfrey Blvd	AP017	AP016	16	ACP	558.5	1.69	25600	21710	23655	13,977.0	1.5gpm around upstream 16" pipe .1 gpm-8" hole Seeping around structure midway 8" line from AP300 heavy sediment under pipr		
1:50a	Godfrey Blvd	AP016	AP015	16	ACP	320	0.97	0	0	0	0			
2:35a	Union St	AP015	AP014	16	ACP	290	0.88	260	115	187.5	213.4	.5gpm at pick hole East Middle		
2:55a	Union St		AP052									4" Service west		
3:10a	Union St	AP052	AP051	8	ACP	324	0.49	0	0	0	0.0	6" Service north Middle		
3:30a	Union St	AP051	AP050	8	ACP	300	0.45	464	464	464	1020.8			
4:00a	Union St	AP050	AP014	8	ACP	208.5	0.32	1916	1916	1916	6,065.0	See above at AP014		
4:30a	Union St	AP014	AP012	16	ACP	169	0.51	0	0	0	0	2gpm under Upstream Pipe		
5:25a	Union St	AP012	AP009	16	ACP	1152	3.49	11030	11030	11030	3,159.6	AP011 and AP010 are Buried under asphalt 1 gpm between bricks and new structure 2gpm around downsream pipe		
				TOTAL LF:		4183								

Ted Berry Co. - Bangor SSES - Night Flow Isolation - Airport Subsection

Date : May 6&7, 2015

Time	Street	Up MH	Down MH	Pipe Dia.	Pipe Mat'l	Length LF.	Inch-Miles	Hi Weir Reading	Lo Weir Reading	Avg Flow GPD	GPD/ In-Mi	Downstream Manhole Observations	Depth	Velocity
11:03p	Cross Country	AP009	AP008	16	ACP	280	0.85	464	260	362	426.64	6" HDPE West Middle		
12:20a	Cross Country		AP356									6" PVC service West Middle 6" PVC service North Middle		
12:30a	Cross Country	AP356	AP352	6	VCP	740	0.84	1064	735	899.5	1,069.68	AP355 buried in Baseball Field Unable to Access		
12:45a	Cross Country	AP354	AP353	8	PVC	50	0.08	0	0	0	0.00			
1:10a	Cross Country	AP353	AP352	8	VCP	263	0.40	1458	1064	1261	3,164.49			
1:40a	Cross Country	AP352	AP351	8	VCP	328	0.50	260	115	187.5	377.29			
2:10a	Randolf ln	AP351	AP350	8	VCP	180	0.27	0	0	0	0.00	8"VCP South bottom 8" VCP North 1' off bottom		
2:20a	March Circle	Clean out	AP332	8	VCP	160	0.24	0	0	0	0.00	6"VCP Northeast Bottom 4" PVC Northeast Middle		
3:52a	Griffin Rd		AP233									8" VCP Southwest bottom		
4:05a	Griffin Rd	AP233	AP232	8	VCP	296	0.45	1064	735	899.5	2,005.64			
4:23a	Griffin Rd	AP232	AP231	8	VCP	197	0.30	735	464	599.5	2,008.48			
4:50a	Griffin Rd	AP231	AP230	8	VCP	201	0.30	464	260	362	1,188.66			
5:45a	Griffin Rd	AP204	AP202	8	ACP	205	0.31	76700	72810	74755	240,674.63	4"PVC lateral Northwest Bottom 4"PVC Lateral South Bottom	Possible infiltration of water main leak	
				TOTAL LF:		2900								

Ted Berry Co. - Bangor SSES - Night Flow Isolation - Airport Subarea

Date : 5/17/15-5/18/15

Time	Street	Up MH	Down MH	Pipe Dia.	Pipe Mat'l	Length LF.	Inch-Miles	Hi Weir Reading	Lo Weir Reading	Avg Flow GPD	GPD/ In-Mi	Downstream Manhole Observations	Depth	Velocity
11:45p	Union St.	AP308	AP307	10	VCP	271.5	0.51	464	260	362	704.00	8" Service north-.1 gpm around pipe 6" service south-.25 gpm from pipe 4" service middle		
12:30a	Randolph Ln	AP332	AP331	8	VCP	305	0.46	464	464	464	1,004.07			
12:53a	Randolph Ln	AP331	AP330	8	VCP	247	0.37	1064	735	899.5	2,403.52	8" East		
1:10a	Randolph Ln	AP330	AP329	8	VCP	238	0.36	0	0	0	0.00			
1:35a	Randolph Ln	AP329	AP328	8	VCP	245	0.37	464	260	362	975.18	6" Lateral East Bottom		
1:55a	Randolph Ln	AP328	AP327	8	VCP	313	0.47	1064	735	899.5	1,896.71	8" Lateral South Bottom		
2:15a	Maxwell Ln		AP360	8	VCP							6" service bottom west	Upstream Manhole	
2:25a	Randolph Ln	AP360	AP327	8	VCP	342	0.52	1064	735	899.5	1,735.88			
3:15a	Randolph Ln	AP327	AP326	8	VCP	72	0.11	57	0	28.5	261.25			
3:40a	Randolph Ln	AP350	AP326	8	VCP	62	0.09	57	0	28.5	303.39			
4:10a	Randolph Ln	AP326	AP325	8	PVC	150	0.23	0	0	0	0.00	6" Service Bottom south		
4:40a	Union St	AP325	AP324	8	PVC	240	0.36	735	464	599.5	1,648.63			
5:00a	Randolph Ln		AP346									6" North Bottom-.25 from pipe itself 6" west	Upstream Manhole	
5:15a	Randolph Ln	AP346	AP345	8	VCP	303	0.46	57	0	28.5	62.08	Inside Drop w/chimney		
				TOTAL LF:		2788.5								

Ted Berry Co. - Bangor SSES - Night Flow Isolation - Airport Subarea

Date : 5/18/15-5/19/15

Time	Street	Up MH	Down MH	Pipe Dia.	Pipe Mat'l	Length LF.	Inch-Miles	Hi Weir Reading	Lo Weir Reading	Avg Flow GPD	GPD/ In-Mi	Downstream Manhole Observations	Depth	Velocity
11:15p	Union St.	AP307	AP306	10	VCP	85	0.16	260	260	260	1,615.06			
11:45p	Union St.	AP306	AP305B	10	PVC	195	0.37	0	0	0	0.00			
12:00a	Telcomm Dr.	AP305B	AP305A	10	PVC	141	0.27	0	0	0	0.00			
12:20a	Telcomm Dr.	AP305A	AP305	10	VCP	37	0.07	735	464	599.5	8,555.03	6" Service South Middle		
12:50a	Telcomm Dr.	AP305	AP304	10	VCP	273	0.52	735	464	599.5	1,159.47	6" Lateral North Bottom		
1:27a	Telcomm Dr.	AP304	AP303	10	Con/PVC	146	0.28	1064	735	899.5	3,252.99			
1:54a	Godfrey Blvd	AP303	AP302	10	Con/VCP	275	0.52	1458	1064	1261	2,421.12			
2:20a	Godfrey Blvd	AP302	AP301	10	VCP	296.5	0.56	1916	145	1030.5	1,835.09			
2:45a	Godfrey Blvd	AP301	AP300	8	PVC	106	0.16	0	0	0	0.00	.25 gpm around Downstream pipe		
3:05a	Godfrey Blvd	AP300	AP016	8	PVC	41.5	0.06	735	464	599.5	9,534.22			
3:40a	Randolf Ln	AP345	AP344	8	VCP	300	0.45	0	0	0	0.00	6" Service West Middle		
4:24a	Randolf Ln	AP344	AP343	8	VCP	204	0.31	464	260	362	1,171.18			
4:40a	Randolf Ln	AP343	AP342	8	VCP	281	0.43	0	0	0	0.00	6" Service West Bottom		
4:50a	Randolf Ln	AP342	AP341	8	VCP	241	0.37	0	0	0	0.00			
5:25a	Randolf Ln	AP341	AP340	8	VCP	215	0.33	57	0	28.5	87.49	6" Service West Bottom		
				TOTAL LF:		2837								

Ted Berry Co. - Bangor SSES - Night Flow Isolation

Date : March 22/23, 2016

Time	Street	Up MH	Down MH	Pipe Dia.	Pipe Mat'l	Length LF.	Inch-Miles	Hi Wier Reading	Lo Weir Reading	Avg Flow GPD	GPD/ In-Mi	Downstream Manhole Observations	Depth	Velocity
12:30a	Odlin Rd		DW102									6" service bottom North bottom 8" line west bottom,no infiltration		
12:30a	Odlin Rd	DW102	DW101	8	VCP	416.5	0.63	3689	3032	3360.5	5334.1	no infiltration		
12:58a	Odlin Rd	DW101	DW100	8	VCP	455.5	0.69	3032	2440	2736	3,965.2	6" capped pipe south plugged leaking 1 gpm .5 GPM all around bottom		
1:29a	Odlin Rd	DW100	DW100A	6	VCP	154	0.18					.5 GPM All around bottom		
2:35a	Odlin Rd	DW100A	DW006	8	PVC	228	0.35	1458	1064	1261	3,602.9	Changes from 6" VCP to 8" PVC		
3:00a	Odlin Rd	DW002										Force Main access MH		
3:00a	Odlin Rd	DW001										Force Main access MH		
3:30a	Odlin Rd		DW091									8" service bottom north		
3:59a	Odlin Rd	DW091	DW090	8	PVC	383	0.58	1458	1064	1261	2,174.1	no infiltration		
				TOTAL LF:		1637								

Ted Berry Co. - Bangor SSES - Night Flow Isolation

Date : 3/23/16-3/24/16

Time	Street	Up MH	Down MH	Pipe Dia.	Pipe Mat'l	Length LF.	Inch-Miles	Hi Wier Reading	Lo Weir Reading	Avg Flow GPD	GPD/ In-Mi	Downstream Manhole Observations	Depth	Velocity
	Odlin Road Interceptor:													
12:45a	Perry St.	N/A	*BV203	18"	Steel	6,620	22.57	139940	133420	136680	6,055.8	4" service middle NE Leaking water 1gpm 4" service middle NW .25gpm		
				TOTAL LF:		6,620								

* Manhole number provided by City of Bangor Representative

Ted Berry Co. - Bangor SSES - Night Flow Isolation

Date : 3/30/16-3/31/16

Time	Street	Up MH	Down MH	Pipe Dia.	Pipe Mat'l	Length LF.	Inch-Miles	Hi Wier Reading	Lo Weir Reading	Avg Flow	GPD/ In-Mi	Downstream Manhole Observations	Depth	Velocity
11:50p	Odlin Rd	DW011	DW010	15	PVC	157	0.45	1064	735	899.5	1998.9	.1gpm east bottom		
12:20a	Odlin Rd	DW010	DW009	15	PVC	257	0.73	6076	3689	4882.5	6,688.4	No Infiltration		
1:20a	Odlin Rd	DW009	DW008	15	PVC	259	0.74	0	0			No Infiltration		
2:00a	Odlin Rd	DW008	DW007	15	PVC	351	1.00	464	260	362	362.0	No Infiltration		
2:35a	Odlin Rd	DW007	DW006	15	PVC	343	0.97	1064	735	899.5	927.3	No Infiltration		
3:05a	Odlin Rd	DW006	DW004	15	PVC	300	0.85	1064	735	899.5	1,058.2	.1gpm over 15" inlet		
3:30a	Odlin Rd	DW090	DW004	8	PVC	310	0.47	1916	1458	1687	3589.4			
				TOTAL LF:		1977								

ATTACHMENT B

- Figure 1, Airport and Dow Sewer Subsections, Field Investigation Locations, Spring 2015 and 2016

Capehart area not flow isolated (proposed sewer rehabilitation project area)

Air National Guard Area Sewers (Private)

Airport Subsection

Dow Subsection

Odlin Road Interceptor (Dow trunkline) flow isolated PS to manhole BV203 (not shown)

Kenduskeag Stream

Bangor

Bangor Maine Phase 2 SSES

Figure 1
Airport and Dow Sewer Subsections Pipe Segments Flow Isolated in Spring 2015 & 2016

Legend

- Sewer Subsection Boundary
- Sewer Pump Station
- Sewer Manholes
- Sewer Pipe
- Roads
- Waterways

AECOM
October 2016

0 500 1,000
Feet

N

Document Path: L:\work\60336883 - Bangor LTCP\400 TECHNICAL INFOR\403 GIS\Maps\Figure 1- Airport and Dow Flow Iso.mxd

ATTACHMENT C

- Sump Pump Identification Program

WATER QUALITY MANAGEMENT

Andrew F. Rudzinski
Director
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Sump Pump Identification Program

The Bangor Wastewater Treatment Plant (WWTP) shows large increases in flow during wet weather, indicating that a significant amount of infiltration and inflow (I/I) exists. I/I is clean water, such as groundwater and stormwater, which enters the sanitary sewer system. Excessive amounts of I/I can contribute to basement sewer backups and combined sewer overflows. I/I also results in higher costs paid by residents for the operation and maintenance of the sewer system.

A large portion of I/I may be from sump pumps improperly connected to the sewer system. State and local regulations prohibit the discharge of sump pumps into the sanitary sewer. A sump pump is properly connected if it discharges to a stormwater drain pipe, to a drywell or to an overland discharge location in your yard or driveway. A sump pump is improperly connected if it discharges to a sanitary sewer when other viable discharge alternatives exist.

The City of Bangor is initiating a program for the identification of improper connections to the sanitary sewer. If you suspect that your sump pump (or basement drain) may be connected to the sanitary sewer, please contact the City of Bangor Sewer Maintenance Department at (207) 992-4513. The City will then arrange for an inspection at a time convenient for you to confirm the discharge location of the sump pump.

During the basement inspection by City employees, the inspector may need to temporarily introduce dye water into the sump pump system to determine the discharge location. The inspector may also take notes and photographs of the basement's internal plumbing and related appurtenances.

Please help Bangor remove extraneous water from the sewer system and thereby minimize the sewer use charges to the residents for wastewater treatment.

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