Appendix D

List of Current CSO Permits

List of Current CSO Permits, Sorted by Region and State

EPA Region	State	NPDES Permit No.	Facility Name	Number of Outfalls
1	Connecticut	CT0100366	New Haven East Shore WPCF	19
1	Connecticut	CT0100412	Norwich WPCF	15
1	Connecticut	CT0100056	Bridgeport-West WPCF	32
1	Connecticut	CT0100251	Hartford MDC WPCF	44
1	Connecticut	CT0101010	Bridgeport-East WPCF	12
1	Maine	ME0100561	Presque Isle Sewer District	1
1	Maine	ME0102423	Randolph WWTF	1
1	Maine	ME0102369	Fort Kent Utility District	4
1	Maine	ME0102075	Portland Water District	35
1	Maine	ME0101796	Lincoln Sanitary District	1
1	Maine	ME0101702	City of Gardiner	2
1	Maine	ME0101681	Madawaska PCF	2
1	Maine	ME0101532	Belfast WWTF	2
1	Maine	ME0101478	Lewiston-Auburn WPCA	1
1	Maine	ME0101214	Bar Harbor WWTF	4
1	Maine	ME0100072	City of Brewer	7
1	Maine	ME0100439	Milo Water District	3
1	Maine	ME0100391	Mechanic Falls Sanitary District	2
1	Maine	ME0100323	Machias WWTP	2
1	Maine	ME0100307	Lisbon WWTF	2
1	Maine	ME0100285	Town of Kittery	3
1	Maine	ME0100153	Corrina Sewer District	3
1	Maine	ME0100111	Bucksport WWTF	2
1	Maine	ME0100501	Town of Dover-Foxcroft Wastewater Department	4
1	Maine	ME0100048	Biddeford Wastewater Department	13
1	Maine	ME0100021	Bath WWTP	6
1	Maine	ME0100013	Augusta Sanitary District	23
1	Maine	ME0100129	Calais	1
1	Maine	ME0100617	Sanford Sewerage District	2
1	Maine	ME0100951	Paris WWTP	1
1	Maine	ME0100854	Kennebec Sanitary District	3
1	Maine	ME0100781	Bangor WWTP	12
1	Maine	ME0100765	Yarmouth	
1	Maine	ME0100749	Winterport Sewerage District	1
1	Maine	ME0100471	Old Town PCF	3
1	Maine	ME0100625	Skowhegan WPCP	9
1	Maine	ME0100498	Orono Water Pollution Control Facility	1
1	Maine	ME0100595	Rockland WWTF	3
1	Maine	ME0100633	City of South Portland	10
1	Maine	ME0101117	Saco WWTP	6

EPA Region	State	NPDES Permit No.	Facility Name	Number of Outfalls
1	Maine	ME0101265	Cape Elizabeth-Portland Water District	1
1	Maine	ME0100005	Auburn Sewerage District	11
1	Maine	ME0100196	Town of East Millinocket	1
1	Maine	ME0100722	Winslow Sanitary District	2
1	Maine	ME0100846	Westbrook/Portland Water District	5
1	Maine	ME0100897	Hamden	1
1	Maine	ME0101010	Hallowell Water District	1
1	Maine	ME0101494	Fairfield	2
1	Maine	ME0100994	Lewiston	30
1	Massachusetts	MA0100137	Montague WPCF	3
1	Massachusetts	MA0100455	South Hadley WWT	3
1	Massachusetts	MA0102351	MWRA, Deer Island WWTP	12
1	Massachusetts	MA0101630	Holyoke WPCF	15
1	Massachusetts	MA0101621	Haverhill WWTF	23
1	Massachusetts	MA0101508	Chicopee WPCF	40
1	Massachusetts	MA0101389	West Springfield	1
1	Massachusetts	MA0100382	Fall River WWTP	19
1	Massachusetts	MA0100986	Fitchburg WWTF	27
1	Massachusetts	MA0100447	Greater Lawrence Sanitary District	4
1	Massachusetts	MA0100897	Taunton WWTP	1
1	Massachusetts	MA0100781	New Bedford WWTF	35
1	Massachusetts	MA0100633	Lowell Regional WWU	9
1	Massachusetts	MA0100625	Gloucester WPCF	5
1	Massachusetts	MA0100552	Lynn WWTF	4
1	Massachusetts	MA0101168	Palmer WPCF	21
1	Massachusetts	MA0101338	Town of Ludlow CSOs	1
1	Massachusetts	MA0101192	Boston Water and Sewer Commission	37
1	Massachusetts	MA0101877	Chelsea	4
1	Massachusetts	MA0101974	City of Cambridge	11
1	Massachusetts	MA0101982	Somerville DPW	3
1	Massachusetts	MA0102997	Worcester Combined Overflow Facility	1
1	Massachusetts	MA0103331	Springfield CSOs	32
1	New Hampshire	NH0100447	City of Manchester WWTF	26
1	New Hampshire	NH0100366	City of Lebanon WWTF	7
1	New Hampshire	NH0100234	City of Portsmouth	2
1	New Hampshire	NH0100170	Nashua WWTF	8
1	New Hampshire	NH0100013	Berlin PCF	1
1	Rhode Island	RI0100293	Newport City Hall	3

EPA Region	State	NPDES Permit No.	Facility Name	Number of Outfalls
1	Rhode Island	RI0100072	Narragansett Bay-Pawtucket	28
1	Rhode Island	RI0100315	Narragansett Bay	56
1	Vermont	VT0100196	Montpelier WWTF	16
1	Vermont	VT0100871	Rutland WWTP	3
1	Vermont	VT0100579	St. Johnsbury WWTF	20
1	Vermont	VT0100404	Vergennes WWTF	0
1	Vermont	VT0100285	Randolph WWTF	3
1	Vermont	VT0100153	Burlington Main WWTF	1
1	Vermont	VT0100374	Springfield WWTF	21
2	New Jersey	NJ0020028	Bergen County WWTP	0
2	New Jersey	NJ0020591	Edgewater MUA	7
2	New Jersey	NJ0020141	Middlesex County Utility Authority	0
2	New Jersey	NJ0108707	Passaic Valley	0
2	New Jersey	NJ0034339	North Bergen MUA	0
2	New Jersey	NJ0029084	Woodcliff	1
2	New Jersey	NJ0026182	Camden County MUA	0
2	New Jersey	NJ0026085	North Hudson-Adam Street	11
2	New Jersey	NJ0025321	West New York MUA	2
2	New Jersey	NJ0024741	Joint Meeting Sewage Treatment	0
2	New Jersey	NJ0024643	Rahway Valley Sewerage Authority	0
2	New Jersey	NJ0021016	Passaic Valley Sewerage Commission	0
2	New Jersey	NJ0020923	Trenton Sewer Utility	1
2	New Jersey	NJ0108898	North Bergen	9
2	New Jersey	NJ0034517	Bluff Road	2
2	New Jersey	NJ0109240	City of Bayonne CSOs	32
2	New Jersey	NJ0111244	Town of Kearny	10
2	New Jersey	NJ0117846	East Newark	1
2	New Jersey	NJ0108880	City of Patterson	31
2	New Jersey	NJ0109118	Ridgefield Park Village	6
2	New Jersey	NJ0108758	Newark	30
2	New Jersey	NJ0020141a	Perth Amboy	18
2	New Jersey	NJ0108715	Guttenberg Town	1
2	New Jersey	NJ0108731	City of Rahway	3
2	New Jersey	NJ0108766	City of Hackensack	2
2	New Jersey	NJ0108782	City of Elizabeth	34
2	New Jersey	NJ0108791	Camden County MUA	1
2	New Jersey	NJ0108812	City of Camden	31
2	New Jersey	NJ0108847	Gloucester City	7
2	New Jersey	NJ0108871	Town of Harrison	7
2	New Jersey	NJ0108723	Jersey City MUA	27

EPA Region	State	NPDES Permit No.	Facility Name	Number of Outfalls
2	New York	NY0026131	Ward Island WPCP	77
2	New York	NY0026221	NYCDEP Rockaway WWTP	27
2	New York	NY0026212	NYCDEP 26th Ward	3
2	New York	NY0026204	Newtown Creek WPCP	83
2	New York	NY0026191	NYCDEP-Hunt's Point WPCP	28
2	New York	NY0026182	NYCDEP Coney Island WPCP	4
2	New York	NY0026174	NYCDEP Oakwood Beach WPCP	57
2	New York	NY0026247	North River WPCF	50
2	New York	NY0026158	NYCDEP Bowery Bay WPCP	52
2	New York	NY0026255	Poughkeepsie WPCP	6
2	New York	NY0026115	NYCDEP Jamaica WPCP	7
2	New York	NY0026107	Port Richmond WPCF	36
2	New York	NY0026018	Plattsburgh WPCP	14
2	New York	NY0025984	Watertown WPCP	17
2	New York	NY0025780	Oneida County WPCP	1
2	New York	NY0025151	Carthage West WPCF	0
2	New York	NY0026166	NYCDEP Owls Head WPCP	16
2	New York	NY0027081	Syracuse Metro WWTP	62
2	New York	NY0029173	Waterford WWTP	4
2	New York	NY0029114	City of Oswego, East Side STP	6
2	New York	NY0029050	Glens Falls WWTP	1
2	New York	NY0028339	Frank E. VanLare STP	6
2	New York	NY0028240	Saratoga County Sewer District 1	0
2	New York	NY0027961	Dunkirk WWTP	1
2	New York	NY0026239	Tallman Island WPCP	20
2	New York	NY0027545	Clayton Village WTF	2
2	New York	NY0027073	Red Hook WPCP	34
2	New York	NY0027057	Lockport WWTP	29
2	New York	NY0026875	Albany North WWTP	0
2	New York	NY0026867	Albany South WWTP	0
2	New York	NY0026689	Yonkers Joint WWTP	26
2	New York	NY0026336	Niagara Falls WWTP	9
2	New York	NY0026310	Newburgh WPCP	12
2	New York	NY0026280	North Tonawanda WWTP	13
2	New York	NY0027766	Lewiston Master S.D.	1
2	New York	NY0020494	Boonville WWTP	1
2	New York	NY0023256	Village of Holley STP	1
2	New York	NY0022403	Little Falls WWTP	3
2	New York	NY0022136	Erie County S.D. #6	1
2	New York	NY0022039	Hudson STP	10

EPA Region	State	NPDES Permit No.	Facility Name	Number of Outfalls
2	New York	NY0021903	Auburn STP	16
2	New York	NY0021873	Medina WWTP	13
2	New York	NY0020818	Potsdam WPCP	1
2	New York	NY0020516	Schenectady WPCP	2
2	New York	NY0020389	Catskill WWTP	5
2	New York	NY0020290	Amsterdam WWTP	3
2	New York	NY0020117	Gouverneur STP	1
2	New York	NY0024414	Binghamton-Johnson City Joint WWTF	0
2	New York	NY0020621	Wellsville WWTP	3
2	New York	NY0029262	Owego STP	8
2	New York	NY0029106	Oswego-West Side STP	1
2	New York	NY0028410	Bird Island WWTF	65
2	New York	NY0183695	Washington County S.D. 2	11
2	New York	NY0087971	Rensselaer County	0
2	New York	NY0036706	Ticonderoga S.D. #5 WPCP	2
2	New York	NY0033545	Village of Coxsackie STP	3
2	New York	NY0031208	Dock Street STP	0
2	New York	NY0031194	Massena WWTP	10
2	New York	NY0029939	Tupper Lake WPCP	3
2	New York	NY0029831	Ogdensburg WWTP	17
2	New York	NY0029807	Canastota WPCF	7
2	New York	NY0029351	Kingston WWTF	7
2	New York	NY0035742	Chemung County-Elmira S.D. STP	11
2	New York	NY0029297	Owasco S.D. #1 Overflows	3
2	New York	NY0024406	Binghamton CSO	7
2	New York	NY0024481	Lewiston ORF	1
2	New York	NY0026026	Rensselaer CSO	8
2	New York	NY0030899	Watervliet CSO	5
2	New York	NY0031046	Cohoes CSO	16
2	New York	NY0031429	Utica CSO	82
2	New York	NY0033031	Green Island CSO	3
2	New York	NY0099309	Troy CSO	49
2	New York	NY0248941	City of Mechanicville CSO	3
2	New York	NY0025747	Albany CSO	12
3	Delaware	DE0020320	Wilmington	38
3	Delaware	DE0020265	Seaford WWTF	1
3	District of Columbia	DC0021199	District of Columbia WWTP	60
3	Maryland	MD0021601	Patapsco WWTP	2
3	Maryland	MD0021636	Cambridge WWTP	14
3	Maryland	MD0021598	Cumberland WWTP	16

EPA Region	State	NPDES Permit No.	Facility Name	Number of Outfalls
3	Maryland	MD0021571	Salisbury WWTP	2
3	Maryland	MD0067423	Frostburg CSOs	15
3	Maryland	MD0067407	Allegany County CSOs	3
3	Maryland	MD0067547	LaVale CSOs	3
3	Maryland	MD0067384	Westernport Town	3
3	Pennsylvania	PA0028223	Corry City Municipal Authority	3
3	Pennsylvania	PA0027014	Altoona City Authority-East	1
3	Pennsylvania	PA0027120	Warren City	4
3	Pennsylvania	PA0027197	Harrisburg Authority	61
3	Pennsylvania	PA0027227	Farrell City	6
3	Pennsylvania	PA0026689	Philadelphia Water Department - Northeast	59
3	Pennsylvania	PA0028207	Reynoldsville Sewer Authority	6
3	Pennsylvania	PA0026671	Philadelphia Water Department - Southwest	83
3	Pennsylvania	PA0036650	Titusville City	5
3	Pennsylvania	PA0037711	Everett Borough Municipal Authority	5
3	Pennsylvania	PA0038920	Burnham Borough	7
3	Pennsylvania	PAG066134	Township of Lett	
3	Pennsylvania	PA0027421	Norristown MWA	2
3	Pennsylvania	PA0021571	Marysville Municipal Authority	3
3	Pennsylvania	PA0020346	Punxsutawney Sewer Authority STP	4
3	Pennsylvania	PA0020397	Bridgeport Borough	6
3	Pennsylvania	PA0021237	Newport Borough Municipal Authority	3
3	Pennsylvania	PA0026832	Ellwood City Borough	1
3	Pennsylvania	PA0021539	Williamsburg Borough	1
3	Pennsylvania	PA0026743	Lancaster City	4
3	Pennsylvania	PA0022209	Bedford Borough Municipal Authority	2
3	Pennsylvania	PA0023175	Kane Borough	1
3	Pennsylvania	PA0026174	Franklin City General Authority	4
3	Pennsylvania	PA0026182	Lansdale Borough	2
3	Pennsylvania	PA0026191	Huntington Borough	6
3	Pennsylvania	PA0026662	Philadelphia Water Department - Southeast	35
3	Pennsylvania	PA0021521	Smethport Borough	1
3	Pennsylvania	PA0070386	Shenandoah STP	13
3	Pennsylvania	PA0037818	Saltsburg Borough STP	6
3	Pennsylvania	PA0092355	North Belle Vernon WPCP	16
3	Pennsylvania	PA0070041	Mahanoy City (MCSA) STP	1
3	Pennsylvania	PA0046159	MSA of Houtzdale Borough	1
3	Pennsylvania	PA0043885	Greater Pottsville Area Sewer Authority	54
3	Pennsylvania	PA0043877	Greater Pottsville Area Sewer Authority (West End)	4
3	Pennsylvania	PA0043273	Hollidaysburg Regional WWTP	4

EPA Region	State	NPDES Permit No.	Facility Name	Number of Outfalls
3	Pennsylvania	PA0042234	Kittanning Borough STP	9
3	Pennsylvania	PA0039489	Garrett Boro SIP	2
3	Pennsylvania	PA0026107	Wyoming Valley Sewer Authority	54
3	Pennsylvania	PA0096229	Marianna-West Bethlehem STP	1
3	Pennsylvania	PA0037044	Ford City WTP	3
3	Pennsylvania	PA0026492	Scranton WWTF	69
3	Pennsylvania	PA0027006	Tamaqua Borough Sewer Authority	16
3	Pennsylvania	PA0026981	City of Duquesne STP	4
3	Pennsylvania	PA0026921	Hazelton WTP	14
3	Pennsylvania	PA0026913	McKeesart WPCP	28
3	Pennsylvania	PA0026905	Connellsville STP	16
3	Pennsylvania	PA0026891	Charleroi STP	12
3	Pennsylvania	PA0038164	Borough of Confluence	2
3	Pennsylvania	PA0027057	Williamsport Sanitary Authority Central	3
3	Pennsylvania	PA0026476	Coaldale Landsford-Summitt Hill TP	6
3	Pennsylvania	PA0026361	Lower Lackawanna Valley Sanitary Authority	24
3	Pennsylvania	PA0026352	Coraopolis WPCF	6
3	Pennsylvania	PA0026310	Clearfield Municipal Authority	9
3	Pennsylvania	PA0026301	Erie City STP	20
3	Pennsylvania	PA0026204	Oil City STP	16
3	Pennsylvania	PA0026158	Monongahela Valley WWTP	21
3	Pennsylvania	PA0026140	Rochester Area Joint Sewer Authority WTP	3
3	Pennsylvania	PA0026581	Scottsdale STP	8
3	Pennsylvania	PA0027430	Jeannette WWTP	5
3	Pennsylvania	PA0036820	Galeton Borough Authority	4
3	Pennsylvania	PA0028673	Borough of Gallitzin WWTP	6
3	Pennsylvania	PA0028631	Mid-Cameron Authority	1
3	Pennsylvania	PA0028436	Elizabeth Borough STP	6
3	Pennsylvania	PA0028401	Dravosburg Borough STP	1
3	Pennsylvania	PA0027693	Minersville Sewer Authority	10
3	Pennsylvania	PA0027651	West Newton Borough STP	13
3	Pennsylvania	PA0027626	Kiski Valley STP	32
3	Pennsylvania	PA0027022	Altoona West STP	1
3	Pennsylvania	PA0027456	Greater Greensboro STP	39
3	Pennsylvania	PA0027049	Williamsport Sanitary Authority West Plant	1
3	Pennsylvania	PA0027391	Upper Allegheny Joint Sanitary Authority STP	19
3	Pennsylvania	PA0027324	Shamokin-Coal Township Joint Sewer Authority	5
3	Pennsylvania	PA0027111	New Kensington STP	5
3	Pennsylvania	PA0027103	DELCORA Chester STP	26
3	Pennsylvania	PA0027090	Lackawanna River Basin Sewer Authority-Throop	25

EPA Region	State	NPDES Permit No.	Facility Name	Number of Outfalls
3	Pennsylvania	PA0027081	Lackawanna River Basin Sewer Authority-Clinton	9
3	Pennsylvania	PA0027065	Lackawanna River Basin Sewer Authority-Archbald	16
3	Pennsylvania	PA0027570	Brush Creek STP	3
3	Pennsylvania	PA0026557	Municipal Authority of the City of Sunbury	6
3	Pennsylvania	PA0026824	Clairton STP	5
3	Pennsylvania	PA0025755	Borough of Freeport STP	6
3	Pennsylvania	PA0021610	Blairsville Borough STP	16
3	Pennsylvania	PA0024686	Mid Mon Valley WPCP	8
3	Pennsylvania	PA0024716	Freeland WWTP	1
3	Pennsylvania	PA0024864	Ligonier Boro STP	2
3	Pennsylvania	PA0021407	Point Mariah WWTP	6
3	Pennsylvania	PA0024511	Redbank Valley Municipal Authority	2
3	Pennsylvania	PA0025224	St. Clair S.A. WWTP	7
3	Pennsylvania	PA0024490	Rockwood Boro STP	5
3	Pennsylvania	PA0021113	Glassport STP	5
3	Pennsylvania	PA0025810	Shade-Central City STP	3
3	Pennsylvania	PA0020940	Tunkhannock Borough Municipal Authority	2
3	Pennsylvania	PA0020702	Fayette City WWTP	2
3	Pennsylvania	PA0023469	Honesdale STP	20
3	Pennsylvania	PA0025950	City of Monongahela	1
3	Pennsylvania	PA0021148	Mt. Pleasant STP	6
3	Pennsylvania	PA0023736	Tri-Borough Municipal Authority WWTP	2
3	Pennsylvania	PA0023248	Berwick Area Joint Sewer Authority	4
3	Pennsylvania	PA0022331	West Elizabeth WWTP	1
3	Pennsylvania	PA0022306	Brownsville Municipal Authority-Shady Avenue STP	4
3	Pennsylvania	PA0022292	Ebensburg WWTP	2
3	Pennsylvania	PA0022241	California Borough STP	3
3	Pennsylvania	PA0021814	Mansfield WWTP	4
3	Pennsylvania	PA0024589	Leetsdale STP	6
3	Pennsylvania	PA0023701	Midland Borough Municipal Authority STP	1
3	Pennsylvania	PA0020681	Sewickley WWTP	4
3	Pennsylvania	PA0024163	Cambria Township Sewer Authority (Revloc STP)	1
3	Pennsylvania	PA0024341	Canton Borough Authority	1
3	Pennsylvania	PA0024406	Mt. Carmel Municipal Authority	19
3	Pennsylvania	PA0024449	Youngwood Borough STP	2
3	Pennsylvania	PA0024481	Meyersdale STP	5
3	Pennsylvania	PA0021687	Wellsboro Municipal Authority	2
3	Pennsylvania	PA0023558	Ashland Borough	9
3	Pennsylvania	PA0025984	Allegheny County Sanitary Authority	21
3	Pennsylvania	PA0026069	Latrobe Borough	18

EPA Region	State	NPDES Permit No.	Facility Name	Number of Outfalls
3	Pennsylvania	PA0026042	Bethlehem WWTP	3
3	Pennsylvania	PA0020613	Waynesbug STP	2
3	Pennsylvania	PA0020125	Boro of Monaca STP	6
3	Pennsylvania	PAG066102	Braddock Borough	8
3	Pennsylvania	PAG066109	McDonald Sewage Authority	20
3	Pennsylvania	PA0217611	City of Pittsburgh	217
3	Pennsylvania	PAG062201	Easton City	2
3	Pennsylvania	PAG062202	Lackawanna River Basin Authority-Moosic	4
3	Pennsylvania	PAG064801	Shamokin City	33
3	Pennsylvania	PAG066101	Pitcairn Borough	1
3	Pennsylvania	PAG066103	Borough of Homestead	1
3	Pennsylvania	PAG066104	Bureau of Wilmerding	9
3	Pennsylvania	PAG066105	Borough of Rankin	2
3	Pennsylvania	PAG066106	Girty's Run JSA, Millvale	9
3	Pennsylvania	PAG066107	Township of Stowe	7
3	Pennsylvania	PAG064802	Coal Township	33
3	Pennsylvania	PAG066110	Borough of Crafton	4
3	Pennsylvania	PAG066108	Larimer Avenue CSO	2
3	Pennsylvania	PAG066129	Mayview State Hospital	2
3	Pennsylvania	PAG066130	Export Borough	5
3	Pennsylvania	PAG066131	Freedom Borough	3
3	Pennsylvania	PAG066132	East Rochester Borough	1
3	Pennsylvania	PAG066127	Munhall Boro	4
3	Pennsylvania	PAG066126	Carnegie Borough	1
3	Pennsylvania	PAG066119	Borough of Etna	8
3	Pennsylvania	PAG066111	Emsworth Borough	1
3	Pennsylvania	PAG066112	Borough of McKee Rocks	3
3	Pennsylvania	PAG066113	Borough of Aspinwall	3
3	Pennsylvania	PAG066114	Borough of North Braddock	1
3	Pennsylvania	PAG066115	Ferndale Borough	5
3	Pennsylvania	PAG066116	West View Borough	2
3	Pennsylvania	PAG066128	Borough of Swissvale	1
3	Pennsylvania	PAG066118	Borough of Turtle Creek	10
3	Pennsylvania	PAG066120	Borough of East Pittsburgh	3
3	Pennsylvania	PAG066121	City of Arnold	2
3	Pennsylvania	PAG066122	East Conemaugh Borough	2
3	Pennsylvania	PAG066123	Borough of West Homestead	2
3	Pennsylvania	PAG066124	Dale Borough	7
3	Pennsylvania	PAG066125	Sharpsburg Borough	6
3	Pennsylvania	PAG066117	City of Uniontown	28

EPA Region	State	NPDES Permit No.	Facility Name	Number of Outfalls
3	Virginia	VA0063177	Richmond WWTW	31
3	Virginia	VA0024970	Lynchburg STP	64
3	Virginia	VA0087068	Alexandria CSOs	4
3	West Virginia	WV0105279	City of Piedmont	
3	West Virginia	WV0023205	Charleston	58
3	West Virginia	WV0024473	Marlington	1
3	West Virginia	WV0024392	Keyser	1
3	West Virginia	WV0023353	Fairmont	43
3	West Virginia	WV0023302	City of Clarksburg	84
3	West Virginia	WV0023299	Nitro	7
3	West Virginia	WV0023264	City of Moundsville	5
3	West Virginia	WV0024732	City of Hinton	6
3	West Virginia	WV0023183	Beckley	2
3	West Virginia	WV0023175	St. Albans	12
3	West Virginia	WV0023167	Martinsburg	1
3	West Virginia	WV0023159	Huntington	23
3	West Virginia	WV0023124	City of Morgantown	33
3	West Virginia	WV0023094	Princeton	1
3	West Virginia	WV0022080	Town of Bethany	3
3	West Virginia	WV0022063	City of Parsons	4
3	West Virginia	WV0023230	Wheeling	211
3	West Virginia	WV0029289	City of Belington	7
3	West Virginia	WV0084042	Flatwoods-Canoe Run PSD	6
3	West Virginia	WV0054500	City of Shinnston	12
3	West Virginia	WV0035939	Boone County PSD	1
3	West Virginia	WV0033821	City of Logan	12
3	West Virginia	WV0024562	City of Wayne	3
3	West Virginia	WV0032336	Buckhannon	6
3	West Virginia	WV0024589	Welch	28
3	West Virginia	WV0028118	Dunbar	16
3	West Virginia	WV0028088	Weston	5
3	West Virginia	WV0027472	New Martinsville	4
3	West Virginia	WV0027324	Monongah	6
3	West Virginia	WV0026832	Wellsburg	10
3	West Virginia	WV0025461	City of Bridgeport	11
3	West Virginia	WV0024848	Town of Davis	3
3	West Virginia	WV0021881	Kingwood	3
3	West Virginia	WV0033804	Terra Alta	
3	West Virginia	WV0022039	Point Pleasant	2
3	West Virginia	WV0020273	City of Follansbee	5

EPA Region	State	NPDES Permit No.	Facility Name	Number of Outfalls
3	West Virginia	WV0021865	Town of Farmington	3
3	West Virginia	WV0021857	City of Philippi	13
3	West Virginia	WV0021822	Grafton	35
3	West Virginia	WV0021792	Petersburg	2
3	West Virginia	WV0021750	Marmet	3
3	West Virginia	WV0021741	Smithers	3
3	West Virginia	WV0020681	Mullens	3
3	West Virginia	WV0020621	Montgomery	5
3	West Virginia	WV0022004	Richwood	2
3	West Virginia	WV0020150	Moorefield	3
3	West Virginia	WV0020141	McMechen	3
3	West Virginia	WV0020109	Town of West Union	7
3	West Virginia	WV0020028	City of Elkins	19
3	West Virginia	WV0020648	City of Benwood	9
3	West Virginia	WV0023221	Vienna	2
3	West Virginia	WV0024449	City of Westover	5
3	West Virginia	WV0035637	Cedar Grove	1
3	West Virginia	WV0035912	City of Kenova	2
3	West Virginia	WV0081434	City of Barrackville	9
3	West Virginia	WV0084310	Greater Paw Paw Sanitary District	10
3	West Virginia	WV0100901	Nutter Fort	2
4	Georgia	GA0036854	City of Albany CSOs	10
4	Georgia	GA0036838	Columbus CSO	2
4	Georgia	GA0036871	Atlanta-Clear Creek	1
4	Georgia	GA0037109	Atlanta-Tanyard Creek	1
4	Georgia	GA0037117	Atlanta-Proctor Creek/North	1
4	Georgia	GA0037125	Atlanta-Proctor Creek/Greenferry	1
4	Georgia	GA0037133	Atlanta-McDaniel Street	1
4	Georgia	GA0037168	Atlanta-Intrenchment and Custer Avenue	2
4	Kentucky	KY0020095	Owensboro-West	7
4	Kentucky	KY0022799	Paducah WWTP	10
4	Kentucky	KY0035467	Catlettsburg WWTP	17
4	Kentucky	KY0027413	Prestonsburg WWTP	1
4	Kentucky	KY0026115	Loyall WWTP	6
4	Kentucky	KY0026093	Harlan WWTP	1
4	Kentucky	KY0025291	Pikeville WWTP	3
4	Kentucky	KY0024058	Pinesville STP	6
4	Kentucky	KY0022861	E.C. McManis WWTP	15
4	Kentucky	KY0022411	Morris Forman WWTF	115
4	Kentucky	KY0022373	Ashland WWTP	8

EPA Region	State	NPDES Permit No.	Facility Name	Number of Outfalls
4	Kentucky	KY0021512	Vanceburg WWTP	5
4	Kentucky	KY0021466	Northern Kentucky S.D. #1	74
4	Kentucky	KY0021440	Morganfield WWTP	2
4	Kentucky	KY0020711	Henderson WWTP	15
4	Kentucky	KY0020257	Maysville WWTP	11
4	Kentucky	KY0022926	Worthington WWTP	3
4	Tennessee	TN0024210	Chattanooga	18
4	Tennessee	TN0020656	Clarksville	2
4	Tennessee	TN0020575	Nashville	30
5	Illinois	IL0030660	City of Peru STP	23
5	Illinois	IL0029424	LaSalle WWTP	3
5	Illinois	IL0029467	Lawrenceville STP	4
5	Illinois	IL0029564	Lincoln STP	3
5	Illinois	IL0029831	Mattoon WWTP	5
5	Illinois	IL0029874	City of Metropolis STP	1
5	Illinois	IL0030015	Morton STP 2	2
5	Illinois	IL0030384	Ottawa STP	14
5	Illinois	IL0030503	Quincy STP	7
5	Illinois	IL0030783	Rock Island	5
5	Illinois	IL0031216	Spring Valley WWTP	9
5	Illinois	IL0031356	Taylorville S.D. STP	2
5	Illinois	IL0031852	Wood River STP	1
5	Illinois	IL0033472	East St. Louis CSOs	2
5	Illinois	IL0034495	Pekin STP 1	4
5	Illinois	IL0030457	Pontiac STP	5
5	Illinois	IL0068365	Marshall STP	3
5	Illinois	IL0035084	City of Casey STP	1
5	Illinois	IL0043061	Prophetstown STP	3
5	Illinois	IL0037818	Minonk STP	3
5	Illinois	IL0023272	Milford STP	4
5	Illinois	IL0023281	Gibson City STP	3
5	Illinois	IL0023825	Cairo STP	3
5	Illinois	IL0028053	MWRDGC Stickney, West-Southwest STP	19
5	Illinois	IL0028061	MWRDGC Calumet Water Reclamation Plant	15
5	Illinois	IL0028088	MWRDGC-Northside Water Reclamation Plant	9
5	Illinois	IL0028231	Cowden STP	2
5	Illinois	IL0028321	S.D. of Decatur Main STP	4
5	Illinois	IL0028622	Effingham STP	4
5	Illinois	IL0028657	Fox River WRD-South STP	16
5	Illinois	IL0023388	Havana STP	2

EPA Region	State	NPDES Permit No.	Facility Name	Number of Outfalls
5	Illinois	IL0027464	City of Alton STP	6
5	Illinois	IL0027839	Canton-West STP	4
5	Illinois	IL0027731	Bloomington/Normal WRD/STP	11
5	Illinois	IL0024996	City of Oglesby STP	7
5	Illinois	IL0025135	Beardstown S.D.	1
5	Illinois	IL0026450	Dixon STP	9
5	Illinois	IL0027367	Addison	3
5	Illinois	IL0047741	MWRDGC James C. Kire WRP	1
5	Illinois	IL0021253	Monmouth Main WWTP	7
5	Illinois	IL0021377	Paris STP	2
5	Illinois	IL0021601	Fairbury STP	12
5	Illinois	IL0021661	Jacksonville STP	3
5	Illinois	IL0021792	Wenona WWTP	2
5	Illinois	IL0021873	City of Belleville STP #1	18
5	Illinois	IL0021890	Shelbyville STP	3
5	Illinois	IL0020818	Fox Metro Water Reclamation District	1
5	Illinois	IL0021113	City of Morris STP	6
5	Illinois	IL0021059	Marseilles STP	2
5	Illinois	IL0020184	City of Oregon STP	10
5	Illinois	IL0020621	Litchfield STP	2
5	Illinois	IL0023141	Galesburg Sanitary District	41
5	Illinois	IL0022462	Farmer City STP	3
5	Illinois	IL0022322	City of Georgetown STP	1
5	Illinois	IL0022331	Granville STP	4
5	Illinois	IL0022519	City of Joliet-Eastside STP	12
5	Illinois	IL0022543	City of Batavia WWTF	1
5	Illinois	IL0022675	Carlinville STP	2
5	Illinois	IL0022161	Watseka STP	7
5	Illinois	IL0021971	Sugar Creek STP	3
5	Illinois	IL0021989	Spring Creek STP	7
5	Illinois	IL0022004	City of Streator STP	17
5	Illinois	IL0052426	Village of Dolton CSOs	3
5	Illinois	IL0052469	Village of Melrose Park CSO	1
5	Illinois	IL0044920	Village of River Grove CSO	6
5	Illinois	IL0044890	Brookfield CSOs	7
5	Illinois	IL0052451	Lincolnwood CSOs	2
5	Illinois	IL0052434	Skokie CSOs	2
5	Illinois	IL0044881	City of Calumet City CSOs	7
5	Illinois	IL0052418	Summit CSOs	4
5	Illinois	IL0044954	Village of Lyons CSOs	3

EPA Region	State	NPDES Permit No.	Facility Name	Number of Outfalls
5	Illinois	IL0044911	Village of Schiller Park CSO	1
5	Illinois	IL0045012	Chicago CSOs	231
5	Illinois	IL0052442	City of Blue Island CSOs	4
5	Illinois	IL0045080	City of Harvey CSOs	7
5	Illinois	IL0037800	City of Peoria CSOs	18
5	Illinois	IL0036536	City of Evanston CSOs	14
5	Illinois	IL0033618	Village of Villa Park CSOs	4
5	Illinois	IL0033588	LaGrange Park CSOs	3
5	Illinois	IL0028592	Metro East S.D. CSOs	4
5	Illinois	IL0047147	Village of Maywood CSOs	8
5	Illinois	IL0021423	Village of Hartford CSO	1
5	Illinois	IL0046795	Village of River Forest CSOs	4
5	Illinois	IL0044733	Park Ridge CSOs	4
5	Illinois	IL0029416	Lansing CSO	1
5	Illinois	IL0048518	Aurora CSOs	15
5	Illinois	IL0045039	Village of Western Springs CSOs	3
5	Illinois	IL0045047	Village of Arlington Heights CSO	1
5	Illinois	IL0045055	Village of South Holland CSOs	4
5	Illinois	IL0045063	Village of Calumet Park CSO	1
5	Illinois	IL0045071	Village of North Riverside CSOs	2
5	Illinois	IL0044725	Dixmoor CSO	1
5	Illinois	IL0037885	City of Markham CSO	1
5	Illinois	IL0043133	Posen CSO	1
5	Illinois	IL0045021	Riverside CSOs	5
5	Illinois	IL0045098	Village of Riverdale CSOs	4
5	Illinois	IL0045101	Village of Forest Park CSOs	2
5	Illinois	IL0046175	Village of Morton Grove CSOs	2
5	Illinois	IL0046418	Franklin Park CSOs	4
5	Illinois	IL0042901	Village of Burnham CSOs	3
5	Illinois	IL0039551	Village of Lemont CSOs	2
5	Illinois	IL0044717	Des Plaines CSO	1
5	Illinois	IL0066818	Hinsdale CSOs	4
5	Illinois	IL0069981	Wilmette CSO	1
5	Illinois	IL0070505	City of Elgin CSOs	12
5	Illinois	IL0072001	Bloomington CSOs	6
5	Illinois	IL0052477	Village of Niles CSOs	10
5	Indiana	IN0020044	City of Alexandria WPCP	4
5	Indiana	IN0020095	Portland Municipal STP	16
5	Indiana	IN0020001	Ridgeville WWTP	3
5	Indiana	IN0020109	Greenfield	0

EPA Region	State	NPDES Permit No.	Facility Name	Number of Outfalls
5	Indiana	IN0020117	Montpelier WWTP	4
5	Indiana	IN0020125	Royal Center WWTP	2
5	Indiana	IN0020133	Greensburg WWTP	3
5	Indiana	IN0020168	City of Noblesville WWTP	7
5	Indiana	IN0020176	Monticello Municipal STP	5
5	Indiana	IN0020222	Attica	2
5	Indiana	IN0025585	City of Marion WWTP	8
5	Indiana	IN0025666	City of Madison WWTP	7
5	Indiana	IN0025658	Washington Municipal STP	6
5	Indiana	IN0021016	Tell City WWTP	5
5	Indiana	IN0025640	City of Mishawaka WWTP	18
5	Indiana	IN0021067	Rockport WWTP	1
5	Indiana	IN0025631	Muncie Sanitary District	25
5	Indiana	IN0025755	City of Goshen WWTP	6
5	Indiana	IN0025607	City of Terre Haute POTW	10
5	Indiana	IN0025763	City of Crownpoint WWTP	5
5	Indiana	IN0025577	LaPorte Municipal STP	1
5	Indiana	IN0025232	Town of Akron WWTP	3
5	Indiana	IN0024821	West Lafayette WWTP	5
5	Indiana	IN0024805	Warsaw WWTP	1
5	Indiana	IN0024791	Warren	4
5	Indiana	IN0024775	Wakarusa WWTP	6
5	Indiana	IN0024741	City of Wabash WWTP	7
5	Indiana	IN0024716	Veedersburg WWTP	4
5	Indiana	IN0025615	William Edwin Ross WWTP	5
5	Indiana	IN0032875	City of Kokomo Municipal Sanitation Utility	30
5	Indiana	IN0039314	City of Decatur WWTP	4
5	Indiana	IN0038318	Milford	1
5	Indiana	IN0035696	Mt. Vernon WWTP	3
5	Indiana	IN0033073	Evansville East WWTP	8
5	Indiana	IN0032972	Civil Town of Speedway WWTP	3
5	Indiana	IN0025674	City of Elkhart WWTP	39
5	Indiana	IN0032956	Evansville Westside WWTP	15
5	Indiana	IN0024554	City of Sullivan WWTP	5
5	Indiana	IN0032719	Elwood	15
5	Indiana	IN0032573	City of Columbus POTW	3
5	Indiana	IN0032476	Anderson WWTP	19
5	Indiana	IN0032468	Lafayette	13
5	Indiana	IN0032336	Connersville	5
5	Indiana	IN0032328	City of Peru WWTP	16

EPA Region	State	NPDES Permit No.	Facility Name	Number of Outfalls
5	Indiana	IN0032191	City of Fort Wayne WWTP	41
5	Indiana	IN0031950	Indianapolis-South Port	0
5	Indiana	IN0032964	City of Crawfordsville WWTP	2
5	Indiana	IN0021628	Hartford City	17
5	Indiana	IN0022683	Town of Crothersville WWTP	4
5	Indiana	IN0022624	Columbia City WWTP	16
5	Indiana	IN0022608	City of Clinton POTW	6
5	Indiana	IN0022578	Chesterton Municipal STP	1
5	Indiana	IN0022462	Butler	1
5	Indiana	IN0022420	Boonville	1
5	Indiana	IN0022411	City of Bluffton WWTP	1
5	Indiana	IN0024660	Elden Kuehl Pollution Control Facility	2
5	Indiana	IN0021652	Eaton	2
5	Indiana	IN0022977	Gary WWTP	13
5	Indiana	IN0021474	Tipton Municipal STP	8
5	Indiana	IN0021466	Nappanee	13
5	Indiana	IN0021385	City of Knox WWTP	1
5	Indiana	IN0021369	Berne	3
5	Indiana	IN0021342	Oxford WWTP	3
5	Indiana	IN0021296	City of Angola WWTP	3
5	Indiana	IN0021270	Rushville	3
5	Indiana	IN0021245	Town of Brownsburg WWTP	2
5	Indiana	IN0022144	Albion	2
5	Indiana	IN0023604	City of Logansport WWTP	16
5	Indiana	IN0024520	City of South Bend WWTP	42
5	Indiana	IN0024473	City of Seymour WWTP	1
5	Indiana	IN0024414	Rensselaer	16
5	Indiana	IN0024406	Town of Redkey POTW	6
5	Indiana	IN0024023	Paoli Municipal STP	8
5	Indiana	IN0023914	City of New Castle WWTP	8
5	Indiana	IN0023752	Michigan City	2
5	Indiana	IN0022829	East Chicago S.D.	2
5	Indiana	IN0023621	Lowell Municipal STP	1
5	Indiana	IN0022934	Frankfort	1
5	Indiana	IN0023582	Ligonier WWTP	6
5	Indiana	IN0021105	Fairmount	16
5	Indiana	IN0021202	Plainfield Municipal STP	5
5	Indiana	IN0023302	Jeffersonville	16
5	Indiana	IN0023183	Indianapolis-Belmont	133
5	Indiana	IN0023132	City of Huntington WWTP	14

EPA Region	State	NPDES Permit No.	Facility Name	Number of Outfalls
5	Indiana	IN0023060	Hammond WWTP	20
5	Indiana	IN0024562	Summitville	3
5	Indiana	IN0023736	Markle WWTP	2
5	Indiana	IN0020664	Avilla WWTP	4
5	Indiana	IN0020672	Auburn WWTP	4
5	Indiana	IN0020711	Waterloo Municipal STP	3
5	Indiana	IN0020745	Ossian WWTP	6
5	Indiana	IN0021211	Brazil Municipal STP	4
5	Indiana	IN0020362	North Manchester STP	8
5	Indiana	IN0020427	Bremen WWTP	4
5	Indiana	IN0020451	North Vernon WWTP	2
5	Indiana	IN0020516	Winamac Municipal STP	5
5	Indiana	IN0020567	South Whitley Municipal STP	2
5	Indiana	IN0020656	City of Kendallville WWTP	1
5	Indiana	IN0020770	Middletown	4
5	Indiana	IN0020940	Remington Municipal STP	1
5	Indiana	IN0020877	North Judson Municipal STP	2
5	Indiana	IN0020907	Rossville	2
5	Indiana	IN0020958	Fortville WWTP	12
5	Indiana	IN0020991	Plymouth Municipal STP	10
5	Indiana	IN0020346	New Haven STP	4
5	Indiana	IN0022560	Chesterfield WWTP	3
5	Indiana	IN0050903	City of Aurora WW Collection System	2
5	Michigan	MI0026069	Grand Rapids WWTP	19
5	Michigan	MI0020214	Norway WWTP	1
5	Michigan	MI0022802	Detroit WWTP	86
5	Michigan	MI0022284	Bay City WWTP	5
5	Michigan	MI0022152	Adrian WWTP	2
5	Michigan	MI0021695	Blissfield WWTP	2
5	Michigan	MI0021440	Wakefield WWSL	1
5	Michigan	MI0021083	Croswell WWTP	1
5	Michigan	MI0020656	Marysville WWTP	1
5	Michigan	MI0020362	Manistee WWTP	4
5	Michigan	MI0023001	Gladwin WWTP	1
5	Michigan	MI0020591	St. Clair WWTP	1
5	Michigan	MI0023973	Saginaw Township WWTP	1
5	Michigan	MI0025631	Menominee WWTP	1
5	Michigan	MI0025577	Saginaw WWTP	15
5	Michigan	MI0022853	East Lansing WWTP	2
5	Michigan	MI0022918	Essexville WWTP	1

EPA Region	State	NPDES Permit No.	Facility Name	Number of Outfalls
5	Michigan	MI0023833	Port Huron WWTP	19
5	Michigan	MI0023701	Niles WWTP	8
5	Michigan	MI0023647	Mt. Clemens WWTP	1
5	Michigan	MI0023515	Manistique WWTP	1
5	Michigan	MI0023400	Lansing WWTP	32
5	Michigan	MI0023205	Iron Mountain-Kingsford WWTP	1
5	Michigan	MI0024058	Sault Ste Marie WWTP	7
5	Michigan	MI0026077	Grosse Pointe Farms CSO	7
5	Michigan	MI0025453	Martin RTB	2
5	Michigan	MI0025500	Milk River CSO	1
5	Michigan	MI0025534	Birmingham CSO	1
5	Michigan	MI0025542	Dearborn CSO	20
5	Michigan	MI0026085	Grosse Pointe Shores CSO	0
5	Michigan	MI0025585	Chapaton RTB	2
5	Michigan	MI0051811	Dearborn Heights CSO	1
5	Michigan	MI0051829	Redford Township CSO	1
5	Michigan	MI0051837	Inkster/Dearborn Heights CSO	1
5	Michigan	MI0051560	Wayne County/Livonia/Westland CSO	1
5	Michigan	MI0051551	Wayne County/ Livonia CSO	3
5	Michigan	MI0051462	Wayne County/ Inkster/Dearborn Heights CSO	2
5	Michigan	MI0026115	Oakland County SOCSDS 12 Towns RTF	1
5	Michigan	MI0026735	St. Joseph CSO	5
5	Michigan	MI0028819	River Rouge CSO	1
5	Michigan	MI0036072	Southgate/Wyandotte CSO RTF	2
5	Michigan	MI0037427	Oakland County-Acacia Park CSO	1
5	Michigan	MI0043982	North Houghton County W&SA CSO	2
5	Michigan	MI0051802	Livonia CSO	1
5	Michigan	MI0048879	Crystal Falls CSO	2
5	Michigan	MI0051471	Wayne County/Inkster CSO	10
5	Michigan	MI0051489	Wayne County/Dearborn Heights CSO	7
5	Michigan	MI0051497	Wayne County/Westland CSO	1
5	Michigan	MI0051501	Wayne County/Westland/Wayne CSO	0
5	Michigan	MI0051535	Wayne County/Redford/ Livonia CSO	8
5	Michigan	MI0051543	Wayne County/Garden City/Westland CSO	0
5	Michigan	MI0048046	Bloomfield Village CSO	1
5	Minnesota	MN0024571	Red Wing	1
5	Minnesota	MN0025470	MCWS-St. Paul	2
5	Minnesota	MN0046744	MCWS-Minneapolis	6
5	Ohio	OH0024139	City of Bowling Green	1
5	Ohio	OH0022471	Deshler WWTP	14

EPA Region	State	NPDES Permit No.	Facility Name	Number of Outfalls
5	Ohio	OH0025151	Forest WWTP	3
5	Ohio	OH0025135	Findlay Water Pollution Control Center	18
5	Ohio	OH0025127	Fayette WWTP	15
5	Ohio	OH0025003	City of Elyria WWTP	27
5	Ohio	OH0024929	Delphos WWTP	7
5	Ohio	OH0024899	Defiance	43
5	Ohio	OH0024759	Columbus Grove	4
5	Ohio	OH0024741	Columbus-Southerly	2
5	Ohio	OH0025291	Fremont WWTP	13
5	Ohio	OH0024686	City of Clyde WWTP	4
5	Ohio	OH0025364	City of Girard WWTP	5
5	Ohio	OH0023981	City of Avon Lake	14
5	Ohio	OH0023957	Village of Attica	12
5	Ohio	OH0023914	Ashtabula	3
5	Ohio	OH0023884	Village of Ansonia WWTP	3
5	Ohio	OH0023833	City of Akron	38
5	Ohio	OH0023400	City of Wauseon	7
5	Ohio	OH0023396	Ohio City	5
5	Ohio	OH0022624	Marshallville WWTP	1
5	Ohio	OH0028118	City of Willard	2
5	Ohio	OH0024732	Columbus-Jackson Pike	29
5	Ohio	OH0026565	Village of Mingo Junction	6
5	Ohio	OH0027987	Warren	4
5	Ohio	OH0027952	Wapakoneta WWTP	4
5	Ohio	OH0027910	Van Wert	6
5	Ohio	OH0027898	Utica	1
5	Ohio	OH0027740	Toledo	38
5	Ohio	OH0027511	Steubenville	16
5	Ohio	OH0027332	City of Sandusky	17
5	Ohio	OH0027197	Portsmouth	10
5	Ohio	OH0025160	Fort Recovery WWTP	3
5	Ohio	OH0026671	Newark WWTP	26
5	Ohio	OH0022322	Put-In-Bay WWTP	3
5	Ohio	OH0026522	Middletown WWTP	8
5	Ohio	OH0026514	Middleport WWTP	13
5	Ohio	OH0026352	Marion Water Pollution Control	3
5	Ohio	OH0026263	City of McComb WWTP	3
5	Ohio	OH0026069	City of Lima WWTP	19
5	Ohio	OH0026026	Lancaster WWTP	31
5	Ohio	OH0026018	Lakewood WWTP	9

EPA Region	State	NPDES Permit No.	Facility Name	Number of Outfalls
5	Ohio	OH0025852	Ironton WWTP	9
5	Ohio	OH0025771	Hicksville	3
5	Ohio	OH0026841	Oak Harbor	9
5	Ohio	OH0022578	Green Springs WWTP	1
5	Ohio	OH0020192	Village of Bradford	9
5	Ohio	OH0020117	North Baltimore	2
5	Ohio	OH0020001	Upper Sandusky	7
5	Ohio	OH0020338	Village of Paulding	2
5	Ohio	OH0020451	City of Milford WWTP	2
5	Ohio	OH0020974	Delta WWTP	11
5	Ohio	OH0022110	Newton Falls WWTP	28
5	Ohio	OH0021831	Montpelier WWTP	4
5	Ohio	OH0021725	Pomeroy	13
5	Ohio	OH0021491	Bremen	1
5	Ohio	OH0021466	McConnelsville	9
5	Ohio	OH0021326	Village of Payne WWTP	2
5	Ohio	OH0021261	Elmore WWTP	5
5	Ohio	OH0021148	Village of Pandora WWTP	10
5	Ohio	OH0021105	Hamler WWTP	6
5	Ohio	OH0020214	Toronto WWTP	7
5	Ohio	OH0021008	Perrysburg Water Pollution Control	4
5	Ohio	OH0027481	Springfield STP	58
5	Ohio	OH0020940	Arcanum WWTP	14
5	Ohio	OH0020893	Napoleon WWTP	3
5	Ohio	OH0020851	Bluffton WWTP	20
5	Ohio	OH0020664	Crestline WWTP	1
5	Ohio	OH0020591	Woodville	18
5	Ohio	OH0020559	Village of Caldwell WWTP	23
5	Ohio	OH0020524	Village of Swanton	27
5	Ohio	OH0020486	Village of Greenwich WWTP	14
5	Ohio	OH0021016	Village of Genoa	6
5	Ohio	OH0028177	Woodsfield WWTP	5
5	Ohio	OH0028185	Wooster	3
5	Ohio	OH0028223	City of Youngstown WTP	80
5	Ohio	OH0028240	Zanesville WWTP	25
5	Ohio	OH0029122	Village of Gibsonburg	3
5	Ohio	OH0031062	Euclid	18
5	Ohio	OH0043991	Northeast Ohio Regional Sewer District	126
5	Ohio	OH0048321	Dunkirk	6
5	Ohio	OH0049999	Eastern Ohio Regional Wastewater Authority	47

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5	Ohio	OH0052604	City of Norwalk	3
5	Ohio	OH0052876	Port Clinton	2
5	Ohio	OH0052922	City of Bucyrus	22
5	Ohio	OH0052744	City of Fostoria	5
5	Ohio	OH0052949	Tiffin	39
5	Ohio	OH0058971	Luckey STP	4
5	Ohio	OH0058408	Metamora	12
5	Ohio	OH0126268	Lisbon WWTP	9
5	Ohio	OH0094528	Village of Malta	10
5	Ohio	OH0020613	Village of New Boston	2
5	Ohio	OH0105457	Hamilton County Commissioners	182
5	Wisconsin	WIL024767	Milwaukee MSD-Jones Island	120
5	Wisconsin	WI0025593	Superior Sewage Disposal System	3
7	Iowa	IA0042609	City of Keokuk STP	9
7	Iowa	IA0020842	City of Lake City STP	1
7	Iowa	IA0021059	City of Spencer STP	4
7	Iowa	IA0023434	City of Muscatine STP	5
7	Iowa	IA0025917	City of Mediapolis STP	1
7	Iowa	IA0027219	City of Ft. Madison STP	9
7	Iowa	IA0032433	City of Washington WWTP	8
7	Iowa	IA0036641	City of Council Bluffs STP	5
7	Iowa	IA0042650	City of Waterloo STP	7
7	Iowa	IA0043079	City of Burlington STP	12
7	Iowa	IA0047961	City of Wapello STP	2
7	Iowa	IA0058483	City of Williams STP	1
7	Iowa	IA0058611	Ottumwa STP	10
7	Iowa	IA0035947	City of Clinton STP	10
7	Iowa	IA0076601	Des Moines CSOs	18
7	Kansas	KS0038563	Kansas City WWTP	58
7	Kansas	KS0039128	Atchison City WWTP	7
7	Kansas	KS0042722	Topeka City of Oakland STP	6
7	Missouri	MO0024911	Kansas City, Blue River STP	5
7	Missouri	MO0117960	Moberly East WWTP	8
7	Missouri	MO0050580	Cape Girardeau WWTP	3
7	Missouri	MO0025178	MSD, Bissell Point WWTP	3
7	Missouri	MO0025151	MSD, Lemay WWTP	12
7	Missouri	MO0024929	Kansas City, Westside STP	2
7	Missouri	MO0023221	Macon WWTF	6
7	Missouri	MO0023043	St. Joseph WWTP	2
7	Missouri	MO0023027	Sedalia North WWTP	8

EPA Region	State	NPDES Permit No.	Facility Name	Number of Outfalls
7	Nebraska	NE0021121	Plattsmouth WWTF	1
7	Nebraska	NE0036358	Omaha Missouri River WWTF	25
8	South Dakota	SD0027481	City of Lead	1
9	California	CA0037681	Oceanside WPCP and Westside Wet Weather CSO System	7
9	California	CA0038610	Bayside Wet Weather Facilities WPCP	28
9	California	CA0079111	Sacramento Regional County S.D.	6
10	Alaska	AK0023213	Juneau-Douglas WWTP	3
10	Oregon	OR0027561	City of Astoria WWTP	38
10	Oregon	OR0026361	City of Corvallis WWRP	6
10	Oregon	OR0026905	City of Portland Columbia Blvd WWTP	55
10	Washington	WA0024074	City of Mt. Vernon WWTP	2
10	Washington	WA0023973	City of Port Angeles WWTP	5
10	Washington	WA0023744	City of Bellingham WWTP	2
10	Washington	WA0020257	City of Anacortes WWTP	3
10	Washington	WA0024490	Everett WPCF	18
10	Washington	WA0029181	West Point STP	34
10	Washington	WA0024473	Spokane WWTP and CSOs	24
10	Washington	WA0037061	City of Olympia	3
10	Washington	WA0029548	Snohomish WWTP	2
10	Washington	WA0029289	Bremerton WWTP	16
10	Washington	WA0031682	City of Seattle Collection System	110

Appendix E

Summary of CSO-Related Civil Judicial Actions Taken By EPA Prior to Issuance of the CSO Control Policy

Civil Judicial Actions Taken by EPA Under the National Municipal Policy

Region	State	Case Name/City Name	CSO Violation	Outcome
1	MA	Boston	CSOs causing impairment to Boston Harbor.	Went to trial resulting in court order for CSO abatement schedule; $425,000 penalty.
1	MA	City of New Bedford	Violation of CWA, and later consent decree.	Modified judicially ordered consent decree (filed 12/07/87, amended 04/28/95) modified schedule for CSO abatement; $150,000 penalty.
1	MA	Lowell	CSO bypasses, dry weather overflows in violation of permit.	Operation and maintenance improvements, elimination of dry weather overflows, submittal of CSO facility plan; $180,000 Civil Judicial penalty. Amended 6/29/01 to require separation.
1	MA	Lynn	Violation of CWA and later consent decree.	Judicially ordered consent decree (filed 11/02/89, amended 11/15/94) required CSO facility plan and schedule for CSO abatement; $95,000 penalty.
1	ME	City of Bangor	CSOs in violation of NPDES permit and three administrative actions.	Judicially ordered consent decree (issued 04/09/91, modified 06/28/91) required facilities plan and CSO abatement projects implementation; $20,000 penalty.
1	ME	City of South Portland	CSOs in violation of NPDES permit.	Judicially ordered consent decree (filed 04/16/92, amended 08/18/94) required POTW upgrade and CSO abatement program for NPDES permit compliance; $30,000 penalty.
2	NJ	North Bergen Township	Failure to meet construction schedule for CSO abatement.	Judicially ordered consent decree required schedule to achieve compliance; $56,000 penalty.
3	PA	City of Philadelphia	CSOs from prison facility.	Judicially ordered consent decree; $225,000 penalty.
5	IL	Metropolis	Failure to meet construction schedule in administrative order.	Judicially ordered consent decree required correction of CSO overflow structure; $17,500 penalty.

Civil Judicial Actions Taken by EPA Under the National Municipal Policy—Continued

Region	State	Case Name/City Name	CSO Violation	Outcome
5	IL	Paris	CSOs causing water quality problems.	CSO separation, testing, and first flush treatment; $20,000 penalty.
5	IN	Boonville	Wet weather untreated discharge from CSOs; dry weather overflows.	Judicially ordered 1987 consent decree required City to adequately maintain the CSS and improve plant operations; $26,000 penalty.
5	IN	Hammond	Violation of judicially ordered consent decree; dry weather CSOs.	Judicially ordered consent decree required implementation of plan to eliminate CSOs and dry weather overflows; $1,272,604 penalty.
5	IN	Madison	CSOs, inadequate O&M, and effluent limit violations.	Judicially ordered consent decree required development of CSO management plan; $30,000 penalty.
5	MI	Wayne County	CSOs contributing to public health advisories against swimming and nutrient loadings stimulate plant and algae growth in downstream water bodies including Lake Erie.	Judicially ordered 1994 consent decree; $413,000 penalty.
5	OH	Cincinnati Metropolitan Sewer District	Unauthorized dry weather discharges from CSOs.	Judicially ordered consent decree; $750,000 penalty.
5	OH	Portsmouth	CSOs causing water quality standards exceedances in the Scioto and Ohio Rivers.	Judicially ordered 1992 consent decree; $32,000 penalty.

Other Civil Judicial Actions Taken by EPA Prior to 1994

Region	State	Case Name/City Name	CSO Violation	Outcome
1	MA	Fall River	Unauthorized CSO discharges.	Administrative order, filed 1987.
1	MA	Fall River	Unauthorized CSO discharges.	Administrative order, filed 1989.
1	MA	Gloucester	Failure to complete CSO study and treatment plan as required by administrative order.	Consent Decree (filed 11/30/88).
1	MA	Swampscott	Failure to construct a secondary facility; failure to meet construction schedule; exceedance of effluent limits.	Judicial enforcement action filed 5/5/88 requiring completion of CSO analysis and development of a schedule for construction of CSO facilities.
1	ME	Portland	Unauthorized CSO discharges.	Administrative consent order for CSO abatement schedule.
1	NH	Portsmouth	Unauthorized CSO discharges.	Consent decree required LTCP.
2	NY	Niagara Falls	Dry weather overflows; inadequate O&M of CSS.	Consent decree (issued 3/13/87) required City to eliminate all dry weather overflows and submit final plans for repairs necessary to the CSS.
2	NY	Poughkeepsie	Dry weather overflows; discharging raw sewage into Hudson River.	Consent decree (signed 3/31/88) required City to eliminate all dry weather overflows; $55,000 penalty.
2	NY	Utica	Violation of effluent limits for BOD and TSS; dry weather overflows; O&M violations.	Consent Decree (filed 6/2/77) required City to eliminate dry weather overflows and conduct an SSES; $5,000 penalty.
5	OH	Bedford	CSOs exceeding discharge limits; inflow and infiltration deficiencies in collection system.	Consent Decree (filed 9/30/85) required the City to conduct a CSO facility study and implement a plan for appropriate treatment of CSOs; $27,500 penalty.
5	OH	Wellston	CSO discharges due to improper O&M; unpermitted bypass.	Consent Decree (filed 10/13/87).
5	MI	Menominee	Unauthorized CSO discharges.	Consent Decree (filed 4/21/88).
10	WA	Centralia	Infiltration and inflow into collection and treatment systems; inadequate O&M.	Consent Decree (filed 9/28/88).

Appendix F

Data Base Documentation

Data Base Documentation

1.0 Introduction

The purpose of this appendix is to document the onsite data collection effort for the CSO Report to Congress. The goal was to collect as much information on CSO communities as was available at the state and regional NPDES authorities(see Chapter 3 of this report for overall report methodology) . Teams were deployed to review NPDES authority files and to conduct introductory interviews with the state CSO coordinator, a representative from enforcement, and a representative from water quality standards. The data collection strategy focused on obtaining information necessary to comply with the requirements in the 2001 CSO Report to Congress. Data emphasized were the facility name, NPDES permit number, number of CSO outfalls, permit requirements for documentation of the NMC and development of an LTCP, and implementation of the NMC and LTCP. Other data, such as population and service area demographics, collection system characteristics, type of CSO controls being implemented, etc. were recorded as available during the file reviews. After collection, all data were processed into a relational Data Collection System (DCS) that serves as the basis for a comprehensive national database for the CSO program (currently under development).

The following sections of this appendix further describe the data collection effort:

- Section 2.0 documents the data collection and data entry processes.
- Section 3.0 describes the relational data base structure and content (i.e., data elements).
- Section 4.0 explains the QA/QC process to ensure data quality and completeness.

2.0 Data Collection

The data collection effort consisted of onsite NPDES authority interviews and file reviews. EPA data collection teams visited permitting authorities for nearly 90 percent of the CSO communities in the nation. During these visits, CSO coordinators and enforcement and water quality standards representatives were interviewed to characterize each state's approach and perspective towards implementing the CSO Control Policy. Following the interviews, collection teams reviewed permits and related files for each of the NPDES authority's CSO permittees.

Teams used two types of data collection forms to guide staff interviews and record file data. The first form was developed to facilitate discussions with the state CSO coordinator, a state water quality standards representative, and a state enforcement representative. A second form was developed to capture data collected during the file review for each CSO permit. The interview and data collection orms are included as Appendix F-1. Upon leaving the site, forms were processed, information was entered into the DCS (further discussed in Section 3 of this appendix), and copies were then filed for future reference. Details about the data collection teams, onsite interviews, and file review processes are described in the sections following.

2.1 Collection Teams

Collection teams consisted of a team leader and one to three team members. The team leader's responsibilities included coordinating site visits, serving as advisor to the data collection team, developing state fact sheets, and reporting on state programs, protocols, and findings. Team leaders were generally engineers who were well-versed in wastewater engineering; planning and technologies; CSO controls and the CSO Control Policy; and overall federal, state, and local roles in the NPDES permitting process.

A one-day training session for all data collection team members included an overview of the CSO Control Policy, explanation of CSO systems and control technologies, and mock training exercises. The exercises consisted of reviewing information that would typically be found onsite and completing sample data collection forms. Team members were able to interact and pose questions to aid in understanding the collection materials as well as CSO concepts and terminology. Team member responses and rationale were reviewed/critiqued at the end of the class. Feedback and further direction was provided. Data collection forms were revised based on feedback from the trainees.

2.2 Site Visits

2.2.1 Interviews

Collection teams requested interviews with the CSO coordinator and representatives from enforcement and water quality standards. The interviews served to establish an understanding of how states implemented the CSO Control Policy within the context of existing programs.

The state CSO coordinators served as the central point of contact, and acquainted the teams with state protocols and the types of information that might be available during the file review. The CSO coordinators were asked to estimate the number of communities with NMC or LTCP permit requirements; the number of NMC documents or LTCPs that have been received; and the number of these documents that had been approved to date. Other state CSO requirements, reporting and protocols were also discussed. This interview was generally conducted prior to or upon arrival at the site, and provided insight in to subsequent interactions with the enforcement and water quality standards staff in the area of CSO control.

State enforcement staff were interviewed to determine the state's approach for enforcing the CSO Control Policy, interaction with the regions on enforcement, primary types of enforcement actions taken for CSO-related permits, and any specific enforcement actions taken to date primarily because of CSOs. Water quality standards representatives were interviewed to understand the state's approach to considering CSO-impacted waters in relation to water quality standards reviews and revisions.

2.2.2 NPDES File Reviews

The file review process followed the introductory interview. Team members reviewed each CSO permit. The amount of time spent for review and data compilation ranged from 15 to 60 minutes per permit file. Types of documents considered in the file review process included:

- NPDES files (individual and general permits and permit applications)
- Report files (NMC documentation, LTCPs, annual reports, etc.)
- Inspection reports (especially those discussing the collection system, CSO outfalls, or implementation of either the NMC or LTCP)
- Enforcement and compliance files
- Correspondence files
- State policy or regulation specifically targeting CSOs and/or wet-weather water quality standards
- Others (O&M reports discussing WWTP implementation of the NMC, engineering studies on the WWTP or collection system, and watershed studies discussing CSO impacts on receiving water quality)

Team members recorded data and supplemental notes for the CSO permittee on the data collection form.

2.2.3 Data Collection Form

The data collection form was developed to simplify and standardize the data collection process. Form data elements were initially based on data needs identified for this report and on types of data typically maintained in NPDES permits, permit applications, NMC reports and LTCPs. The data collection form was first applied during a review of Maine's files. Adjustments to the form were made. The revised form was re-evaluated during the onsite review of Illinois' files. Final adjustments were made and this refined form was used for all subsequent reviews. The form design used proven form techniques to promote consistency. Subjective data elements were eliminated or avoided, and a limited number of carefully considered responses to each question were provided as check boxes or yes/no responses when possible. The form consists of 11 sections and is provided as Appendix F-1. Descriptions of each of the 11 sections follow.

Facility Information. The facility information section documents identifying characteristics for each permittee including facility name, mailing and facility addresses, NPDES permit number, contact persons, type of permitted facility, and other permittee characterization.

Development and Evaluation of Alternatives. The development and evaluation of alternatives section captures information regarding NMC and LTCP requirements and implementation. Team members were asked to determine whether each permittee was required to implement the NMC, whether that requirement was established in a permit or some other type of enforceable action, which controls were being implemented, and whether documentation had been submitted to the NPDES permitting authority. Similar data were collected for LTCPs, along with the overall status of LTCP implementation and types of approaches taken. Documented CSO controls completed apart from a formal LTCP requirement were also noted. When possible, data collected were supplemented with narrative notes.

Selection and Implementation of Controls. The selection and implementation of controls section collects data the characterizating CSO controls implemented or being implemented. A look-up table of categorized, CSO controls technologies (further discussed in section 3.2 of this appendix) was provided. Controls were broadly categorized as being either a source or in-system control. Source controls keep storm water or pollutants out of the CSS; whereas in-system controls require modification of the CSS to treat combined flow. Control implementation date and estimated capital costs were recorded where available. Control data was supplemented with notes on control implementation issues (including types of controls considered, financial considerations, etc.).

Effectiveness of Structural Controls. The effectiveness of structural controls section contains monitoring data and/or pollutant removal efficiencies for CSO control technologies. Data areas include pilot tests performed, pre-construction or post-construction monitoring data collected, and ambient receiving water data compiled.

Collection System Information. The collection system information section contains data that characterizes entities served by the CSO permit. An entity could be a town, region, or municipal district. Data elements include the physical service area, system attributes, and demographic data on populations served.

Flow and Treatment Information. The flow and treatment information section contains data elements for average daily flow to the WWTP, design and peak flow capacity, and additional CSO treatment types that might be unique to the permittee.

Discharges and Other Disposal Methods. The discharges and other disposal methods section includes the number of CSO permitted outfall points, yearly dry weather overflows, and discharge points with effluent receiving full or partial treatment. The details of specific outfalls, if available, are characterized in a later section.

System Characterization. The system characterization section contains data that describes the entire sewer system. Percentages of the sewer network consisting of each type (combined or separate), as well as sewer length and service area (acreage) are the key data elements. Where available, data reflecting changes in the system throughout time are recorded. CSO discharges to sensitive areas are also characterized in this section.

Receiving Water Description. The receiving water description section contains lists each water body that receives discharge from either the WWTP or CSO outfall. Data elements include the receiving water name, watershed, and data on whether or not a CSO-related water quality standards review had been conducted.

Water Quality Data. The water quality data section records any water quality data being collected as part of a CSO study. If available, documents reporting data for typical parameters were photocopied and attached to the data collection form.

Outfall Description. The outfall description section records information on each of the CSO outfalls, including location (both street address and longitudinal/latitudinal coordinates, if available), number of annual CSO events, estimated annual CSO volume, and whether the outfall is treated or untreated.

2.3 Data Entry

After data collection teams gathered the necessary information during site visits, completed data collection forms were transmitted to the data management team. The data management team was comprised of a data team leader, a data manager, and the data entry team. The data manager and data entry team reviewed the collection form, resolvedissues of missing or indecipherable information, and performed data entry and data QA/QC.

Figure F-1. DCS Data Entry Form

The data manager evaluated all incoming data forms for completeness and consistency. Prior to form review, the data manager met with the data collection team leader to gain a better understanding of the NPDES authority's protocols for implementing the CSO policy, and to ensure that permittees in different states were characterized similarly. All data collection forms were reviewed and annotated to facilitate data entry. Incomplete and questionable field entries were flagged for follow up with the data team leader, the state, or the region. After this review and follow-up procedure was completed, the data collection forms were initialed by the data manager and distributed to a data entry team (see section 3 of this appendix). The data entry team used an electronic data entry form designed in Microsoft Access to transfer information from the collection forms into the DCS. Figure F-1 shows a screen capture of the Access data entry form. Data entry staff completed this process by initialing and placing a copy of the form in a filing system dedicated for this purpose. Additional QA/QC steps taken with regard to the data are described in Section 4 of this appendix.

3.0 CSO Report to Congress Data Collection System

Microsoft Access 2000 was used to develop the CSO Report to Congress DCS to facilitate logging data gathered from NPDES authority file reviews into an electronic, relationally-linked, queriable, flexible platform. Flexibility was considered essential to accommodate new demands as results of the data collection effort were tested, and to allow future expansion and data transfer. Data contained in the DCS will serve as the basis for a more comprehensive, national relational data base system for the CSO program.

The primary structure of the DCS is described in detail in Section 3.1 of this appendix. Next, Section 3.2, discusses the peripheral components of the DCS that were added to facilitate data entry, aid in data queries, and to assist with QA/QC.

3.1 Primary Structure of the DCS

The DCS consists of 36 linked tables whose organizational structures are loosely based upon the outline established in the CSO Data Collection Form. Figure F-2 diagrams the tables, relationships, and key fields of the DCS.

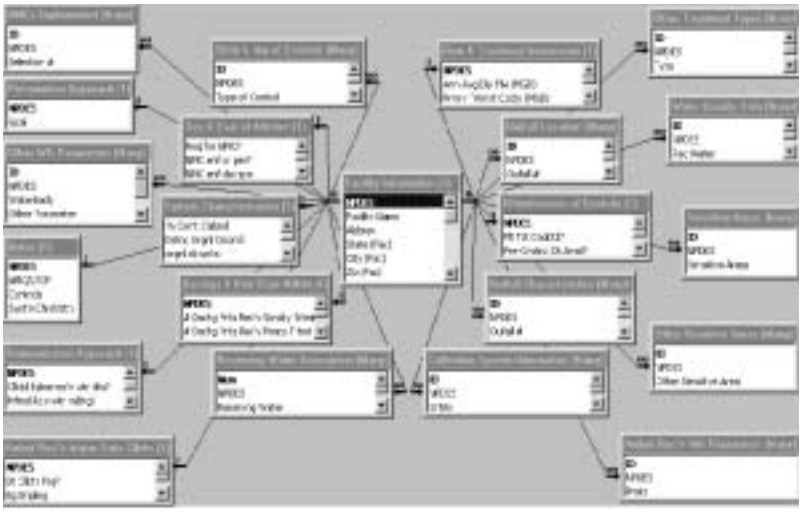

Figure F-2. DCS Tables, Relationships and Key Fields

Tables are named according to the data contained (from the data collection form) and their relationship to the NPDES permit number (a unique identifier for permits). For example, if a table contains data that has a one-to-one relationship with the NPDES permit number (a single entry for each permittee), "(1)" follows the table name. If a table contains information having a one-to-many relationship with the NPDES permit number (several entries for each permittee), "(Many)" is appended to the table name. Descriptions for each table (including field names, formats, and descriptions) are listed in the following sections. The title for each section corresponds to the related subdivision on the data collection form. As displayed in this figure, fields highlighted in bold text are primary key fields, which contain values that uniquely identify the data. Fields formatted in italic text are linked to primary key fields of another table. Field descriptions followed by "(Lookup)" restrict data entries to a predefined list from a lookup table. Lookup tables are discussed section 3.2 of this appendix.

3.1.1 Facility Information

"Facility Information (1)" is the main table from which all other tables are referenced. It contains basic information about each permittee such as NPDES number, facility name, location, and contact information. The primary key field for this table is the NPDES permit number, which is linked to all of the tables in DCS. This link ensures that data relating to each permittee can be appropriately identified. Table attributes of "Facility Information (1)" are listed in Table F-1.

3.1.2 Development and Evaluation of Alternatives

Table "Dev & Eval of Altrntvs (1)" contains data regarding NMC and LTCP implementation. NPDES permit number is the primary key field. Table F-2 attributes are detailed in Table F-2.

Demonstrated implementation of the NMC is captured in a separate table entitled "NMC Implemented (Many)". The primary key field for this table (and all other tables having a one-to-many relationship) is ID: a unique, sequential number generated by Access. By formatting this table with a one-to-many relationship, each permittee can be associated with several NMCs, as demonstrated in Table F-3.

Each entry in this table has a corresponding NPDES permit number and a selection number that describes the NMC (1-9). To indicate which of the NMCs were implemented, either the applicable NMC corresponding numbers, or one of the additional options, were selected. Additional options include "All 9 controls have been implemented" (111), "None of the NMC have been implemented" (999), and "Cannot determine" (888). Table attributes of "NMC Implemented (Many)" are listed in Table F-4.

Table F-1: Facility Attributes of Facility Information (1)

Field Name	Format	Description
NPDES	Text	The National Pollutant Discharge Elimination System permit number
Facility name	Text	Name of the facility, town, or sanitary authority holding the NPDES permit
Abbrev	Text	Common abbreviation of the permittee's name
State (Fac)	Text	State where the facility is located (Lookup)
City (Fac)	Text	City where the facility is located
Zip (Fac)	Text	Zip code for the facility
Street (Fac)	Text	Address for the facility
City (Mail)	Text	City in the facility's mailing address
State (Mail)	Text	State in the facility's mailing address (Lookup)
Zip (Mail)	Text	Zip code in the facility's mailing address
Street (Mail)	Text	Mailing address
County	Text	County in which the facility is located
Contact Person	Text	Cognizant official for the facility
Title	Text	Title of cognizant official
Phone number	Text	Contact number for cognizant official
Fax number	Text	Fax number for cognizant official
Permit Issue	Date/Time	NPDES permit issuance date
Permits Exp	Date/Time	NPDES permit expiration date
Permit Eff	Date/Time	NPDES permit effective date
Permittee Type	Number	The permittee may be classified as owning both a WWTP and collection system (WWTP), or a satellite collection system only (SCS). (Lookup)
Website	Text	Permittee's website
Total Pop	Number	Population served by the permittee
Trtmnt Fac	Text	Facility that treats sanitary flow if the permittee is a satellite collection system
Status	Text	A flag signaling that the permittee has completely separated (S) or eliminated (E) its discharge points
Category	Text	The permittee may be classified as a MAJOR or MINOR depending on WWTP flow (classification from EPA's PES data base)

Table F-2: "Dev & Eval of Altrntvs (1)" Table Attributes

Field Name	Format	Description
NPDES	Text	The National Pollutant Discharge Elimination System permit number
Req for NMC?	Number	Is the permittee required to implement the NMC? (Lookup)
NMC enf or per?	Number	If so, are the NMC being required via and ENFORCEABLE mechanism or a PERMIT? (Lookup)
NMC enf dscrptn	Text	Description of the enforceable mechanism, if applicable
NMC Docu Submitted	Number	Has NMC documentation been submitted to NPDES authority? (Lookup)
NMC sub date	Date/Time	Date NMC documentation was submitted to NPDES authority
Req to develop LTCP?	Number	Is the permittee required to develop a LTCP? (Lookup)
LTCP Req date	Date/Time	Date the LTCP is required to be submitted to the NPDES authority
LTCP enf or per	Number	Is the LTCP being required via an ENFORCEABLE mechanism or a PERMIT? (Lookup)
LTCP enf descrptn	Text	Description of the enforceable mechanism, if applicable
LTCP Submitted to State?	Number	Has the LTCP been submitted to the NPDES authority? (Lookup)
LTCP submit date	Date/Time	Date LTCP was submitted to NPDES authority
LTCP approved by State	Number	Has the LTCP been approved by the NPDES authority? (Lookup)
LTCP appr date	Date/Time	Date the LTCP was approved by the NPDES authority
LTCP pred compl w/ WQS	Number	Does the LTCP predict compliance with current water quality standards? (Lookup)
LTCP imp initiated?	Number	Has LTCP implementation begun? (Lookup)
LTCP init Date	Date/Time	Date LTCP implementation began
LTCP imp complete?	Number	Has the permittee completed LTCP implementation? (Lookup)
LTCP compl date	Date/Time	Date LTCP implementation was completed
Coll Sys Mdl Dvlpd	Number	Has the permittee developed a collection system model? (Lookup)
LTCP approach	Number	The LTCP approach may be either 1) PRESUMPTION or 2) DEMONSTRATION. (Lookup)
Target Date for LTCP imp	Date/Time	Target date for completing LTCP implementation
Capital Cost of LTCP controls	Number	Capital cost of implementing all controls outlined in LTCP
Current Trtmnt %	Number	% Volume of combined sewage in collection system which is captured for treatment
CSO cntrls outside LTCP?	Number	Has the community implemented CSO controls outside of a LTCP? (Lookup)
NMC impcts in LTCP?	Number	Were the impacts of the NMC considered in the LTCP? (Lookup)

Table F-3: Example of One-to-Many Data Relationship

ID	NPDES	Selection #	Description
40	ST0000001	1	Proper O&M programs for the sewer system and the CSOs
41	ST0000001	2	Maximum use of the collection system for storage
42	ST0000001	4	Maximization of flow to the POTW for treatment

Table F-4: "NMC Implemented (Many)" Table Attributes

Field Name	Format	Description
ID	AutoNumber	A unique sequential number generated by ACCESS
NPDES	Text	The National Pollutant Discharge Elimination System permit number
Selection #	Number	NMC that were implemented by the permittee. (Lookup)

LTCP methodology (presumption or demonstration) data is maintained separately from the table "Dev & Eval of Altrntvs (1)". Permittees choosing the presumption approach are noted as having one of three primary goals (as defined in EPA's LTCP Guidance). "Presumption Approach (1)" contains information on whether an LTCP is based on average number of overflows, a 85 percent capture by volume or an 85 percent reduction in the pollutant mass. The demonstration approach data includes whether the permittee has collected baseline water quality data, developed a systems model, and demonstrated compliance with effluent limitations. This data is contained in "Demonstration Approach (1)" table. The attributes for these tables are listed in Tables F-5 and F-6, respectively.

Table F-5: "Presumption Approach (1)" Table Attributes

Field Name	Format	Description
ID	AutoNumber	A unique sequential number generated by ACCESS
NPDES	Text	The National Pollutant Discharge Elimination System permit number
Selection #	Number	NMC that were implemented by the permittee. (Lookup)

Table F-6: "Demonstration Approach (1)" Table Attributes

Field Name	Format	Description
NPDES	Text	The National Pollutant Discharge Elimination System permit number
Cllctd bslne rec'v wtr dta?	Number	Has the permittee collected data for baseline conditions in the receiving waters? (Lookup)
Prfmd Rc'v wtr mdlng?	Number	Has the permittee performed receiving water modeling? (Lookup)
Dmstrte compl w/ eff lmts?	Number	Has the permittee demonstrated compliance with effluent limits? (Lookup)

3.1.3 Selection and Implementation of Controls

Table "Slctn & Imp of Controls (Many)" includes data on CSO control technologies that were or are being implemented. The Number field in this table relates to a "lookup table:" a predefined list of common control technologies that can be referenced by number (similar to the way that the NMC are referenced by a unique number). Lookup tables are described in more detail in Section 3.2 of this appendix. "Slctn & Imp of Controls (Many)" also lists estimated completion dates and capital costs for each control. Table attributes are detailed in Table F-7.

Table F-7: "Slctn & Imp of Controls (Many)" Table Attributes

Field Name	Format	Description
ID	AutoNumber	A unique sequential number generated by ACCESS
NPDES	Text	The National Pollutant Discharge Elimination System permit number
Type of Control	Number	CSO controls may be either source or in-system controls. (Lookup)
Number	Text	A LTI predefined list of common CSO control technologies. (Lookup)
Date	Date/Time	Date the selected controls were implemented
Cost	Number	Estimated capital cost of specified CSO controls

3.1.4 Effectiveness of Structural Controls

Table "Effectiveness of Controls (1)" contains data regarding pilot tests and monitoring data for structural controls that have been implemented. The primary key field for this table is the NPDES permit number. Table attributes are listed in Table F-8.

Table F-8: "Effectiveness of Controls (1)" Table Attributes

Field Name	Format	Description
ID	AutoNumber	A unique sequential number generated by ACCESS
NPDES	Text	The National Pollutant Discharge Elimination System permit number
Type of Control	Number	CSO controls may be either source or in-system controls. (Lookup)
Number	Text	A LTI predefined list of common CSO control technologies. (Lookup)
Date	Date/Time	Date the selected controls were implemented
Cost	Number	Estimated capital cost of specified CSO controls

Data for ambient receiving water monitoring that was available at the NPDES authority is included in the "Ambnt Rec'v Water Data Cllctn (1)" table. If a list of specific monitored parameters was available, the data was captured separately in "Ambnt Rec'v Wtr Parameters (Many)" table. Table attributes are shown in Tables F-9 and F-10, respectively.

Table F-9: "Ambnt Rec'v Wtr Data Cllctn (1)" Table Attributes

Field Name	Format	Description
ID	AutoNumber	A unique sequential number generated by ACCESS
NPDES	Text	The National Pollutant Discharge Elimination System permit number
Type of Control	Number	CSO controls may be either source or in-system controls. (Lookup)
Number	Text	A LTI predefined list of common CSO control technologies. (Lookup)
Date	Date/Time	Date the selected controls were implemented
Cost	Number	Estimated capital cost of specified CSO controls

Table F-10: "Abnt Rec'v Wtr Parameters (Many)" Table Attributes

Field Name	Format	Description
ID	AutoNumber	A unique sequential number generated by ACCESS
NPDES	Text	The National Pollutant Discharge Elimination System permit number
Prmtr	Text	The ambient receiving water parameter that was studied

3.1.5 Collection System Information

CSO permittees might treat wastewater, or own or maintain collection systems for several towns, regions, or municipal districts. Data about these "entities" such as population and collection system type (combined or separate) are stored in the "Collection System Information (Many)" table. Table attributes are listed in Table F-11.

Table F-11: "Collection System Information (Many)" Table Attributes

Field Name	Format	Description
ID	AutoNumber	A unique sequential number generated by ACCESS
NPDES	Text	The National Pollutant Discharge Elimination System permit number
Prmtr	Text	The ambient receiving water parameter that was studied

3.1.6 Flow and Treatment Information

WWTP capacity and average daily flow are stored in the "Flow and Treatment Information (1)" table. When available, data includes design and peak flow capacities. Table attributes are listed in Table F-12.

Table F-12: "Flow and Treatment Information (1)" Table Attributes

Field Name	Format	Description
NPDES	Text	The National Pollutant Discharge Elimination System permit number
Ann Avg Dly Flw (MGD)	Number	Annual average daily flow
Prmry Trtmnt Cpcty (MGD)	Number	Design primary treatment capacity
Scndry Trtmnt Cpcty (MGD)	Number	Design secondary treatment capacity
Pk Flw Prmry Trtmnt Cpcty (MGD)	Number	Peak flow primary treatment capacity
Pf Flw Scndry Trtmnt Cpcty (MGD)	Number	Peak flow secondary treatment capacity
CSO bypasses?	Number	Are CSO-related bypasses authorized? (Lookup)
Partly Trtd Eff & Trtd Flws Cmbnd?	Number	Are partially treated effluents combined with fully treated flows prior to discharge? (Lookup)

When available, additional data for CSO treatment at (or before) the WWTP (other than secondary treatment) was collected. Common treatment types include lagoons, storm water retention basins, and swirl concentrators. These data are stored in the "Other Treatment Types (Many)" table. This table was established with a one-to-many relationship because a particular permittee might utilize several different treatment technologies. Table attributes for "Other Treatment Types (Many)" are listed in Table F-13.

Table F-13: "Other Treatment Types (Many)" Table Attributes

Field Name	Format	Description
ID	AutoNumber	A unique sequential number generated by ACCESS
NPDES	Text	The National Pollutant Discharge Elimination System permit number
Type	Text	Alternative or additional CSO treatment (other than primary or secondary)
Capacity (MGD)	Number	Capacity provided by the alternative treatment

3.1.7 Discharges and Other Disposal Methods

Table "Dischrgs & Othr Displ Mthds (1)" contains data for permitted CSO outfalls, emergency overflow points, and dry weather overflows to waters of the U.S. The primary key field is NPDES number, which associates this information with other details about each permittee. See Table F-14 for the structure of "Dischrgs & Othr Displ Mthds (1)" table.

Table F-14: "Dischrgs & Othr Displ Mthds (1)" Table Attributes

Field Name	Format	Description
NPDES	Text	The National Pollutant Discharge Elimination System permit number
# Dschg Pnts Rec'v Scndry Trtmt	Number	Number of discharge points with effluent receiving full (secondary) treatment
# Dschg Pnts Rec'v Prmry Trtmt	Number	Number of discharge points with effluent receiving partial (secondary) treatment ONLY
# Orgnl CSP Points	Number	Original number of CSO permitted outfall points
# Crrnt CSO Points	Number	Current number of CSO permitted outfall points
CSO Pnts Chng Date	Date/Time	Date CURRENT number of CSO points was/is effective
# Emergency Ovrflws	Number	Number of constructed emergency overflows prior to the WWTP
Avg DWO/yr	Number	Average number of dry weather overflows per year

3.1.8 System Characterization

The "System Characterization (1)" table contains data about the make-up of the collection system. The percentage of the collection system consisting of combined sewers, the length of the pipes in the combined sewer system, and the total number of acres served by the collection system as a whole are all included. The properties of "System Characterization (1)" are shown in Table F-15.

Table F-15: "System Characterization (1)" Table Attributes

Field Name	Format	Description
NPDES	Text	The National Pollutant Discharge Elimination System permit number
% Orgnl Cmbnd	Number	Original percentage of the collections system that was comprised of combined sewers
% Crrnt Cmbnd	Number	Current percentage of the collection system that is comprised of combined sewers
Dstnc Orgnl Cmbnd	Number	Original combined collection system length
Orgnl cb units	Text	Unit for the original CSS length measurement
Dstnc Crrnt Cmbnd	Number	Current combined collection system length
Crrnt cb units	Text	Unit for the current CSS length measurement
Ttl Length Srvd	Number	Total (CSS+SSS) collection system length
Ttl Length Units	Text	Units for the total collection system length measurement
Acres Orgnl Cmbnd	Number	Acres originally served by the combined collection system
Acres Crrnt Cmbnd	Number	Acres currently served by the combined collections system
% Orgnl Sprt	Number	Original percentage of the collection system that was comprised of separate sanitary sewers
% Crrnt Sprt	Number	Current percentage of the collection system that is comprised of separate sanitary sewers
Dstnc Orgnl Sprt	Number	Original separate sanitary system length
Orgnl sp units	Text	Unit for the original SSS length measurement
Dstnc Crrnt Sprt	Number	Current separate sanitary system length
Crrnt sp units	Text	Unit for the current SSS length measurement
Acres Orgnl Sprt	Number	Acres originally served by the separate sanitary collection system
Acres Crrnt Sprt	Number	Acres currently served by the separate sanitary collection system
Ttl Acrs Srvd	Number	Total acres served by the collection system
Senstv Areas?	Number	Are there any CSO discharges to sensitive areas? (Lookup)

If a permittee has CSO discharges to sensitive areas, relevant data are located in the "Sensitive Areas (Many)" Table. The table references a lookup table: a pre-defined list of common sensitive areas. Lookup tables are described in detail in Section 3.2 of this appendix. Any receiving water sensitive area designations that are not on the pre-defined list must be recorded in the "Other Sensitive Areas (Many)" table. Table attributes are listed in Tables F-16 and F-17, respectively.

Table F-16: "Sensitive Areas (Many)" Table Attributes

Field Name	Format	Description
ID	AutoNumber	A unique sequential number generated by ACCESS
NPDES	Text	The National Pollutant Discharge Elimination System permit number
Sensitive Areas	Number	A predefined list of sensitive area classifications for the waterbody. (Lookup)

Table F-17: "Other Sensitive Areas (Many)" Table Attributes

Field Name	Format	Description
ID	AutoNumber	A unique sequential number generated by ACCESS
NPDES	Text	The National Pollutant Discharge Elimination System permit number
Other Sensitive Area	Text	Receiving water sensitive area categories that were not on LTCP predefined list

3.1.9 Receiving Water Description

Water bodies that receive discharge from either the WWTP or CSO outfalls are listed in the "Receiving Water Description (Many)" table. Data captured in this table include the watershed effected by the discharge and whether a CSO water quality standards review has been completed. Table attributes are listed in Table F-18.

Table F-18: "Receiving Water Description (Many)" Table Attributes

Field Name	Format	Description
Num	AutoNumber	A unique sequential number generated by ACCESS
NPDES	Text	The National Pollutant Discharge Elimination System permit number
Receiving Water	Text	Receiving waters for the WWTP discharge and CSO discharge points
Watershed	Text	Watershed influenced by the permittee's discharges
CSO WQS Review Complete?	Number	Has a CSO-related water quality standards review been performed for the receiving water? (Lookup)

3.1.10 Water Quality Data

Where available from the NPDES authority, wet weather monitoring data were recorded in the "Water Quality Data (Many)" table. The most commonly measured water quality parameters are listed. Other water quality parameters monitored were recorded in the "Other WQ Parameters (Many)". To allow maximum flexibility, both of these tables were formatted with a one-to-many relationship. Table attributes are listed in Tables F-19 and F-20, respectively.

Table F-19: "Water Quality Data (Many)" Table Attributes

Field Name	Format	Description
ID	AutoNumber	A unique sequential number generated by ACCESS
NPDES	Text	The National Pollutant Discharge Elimination System permit number
Rec Water	Text	Receiving waters on which wet weather or CSO studies were performed
BOD	Text	Measured BOD value
BOD units	Text	Units of BOD measurement
CBOD	Text	Measured CBOD value
CBOD units	Text	Units of CBOD measurement
DO (mg/L)	Text	Measured DO value
TSS	Text	Measured TSS value
TSS units	Text	Units of TSS measurement
Fecal (MPN/100mL)	Text	Measured fecal coliform value
E. Coli (MPN/100mL)	Text	Measured E. Coli value
Enterrococci (MPN/100mL)	Text	Measured enterroccoci value

Table F-20: "Other WQ Parameters (Many)" Table Attributes

Field Name	Format	Description
ID	AutoNumber	A unique sequential number generated by ACCESS
NPDES	Text	The National Pollutant Discharge Elimination System permit number
Waterbody	Text	Waterbody for which water quality data was collected
Other Parameter	Text	Water quality parameter studied that was not on LTI predefined list
Unit	Text	Units for the water quality parameter
Value	Text	Measured value for the water quality parameter

3.1.11 Outfall Description

Outfall data is maintained in two tables: one that lists outfall locations (longitude, latitude, and street addresses, if available), and another that contains CSO discharge characteristics (number of annual CSO events, average annual discharge volume). Data is recorded for multiple outfalls and years. To accommodate these variables, the tables "Outfall Location (Many)" and "Outfall Characteristics (Many)" both have one-to-many relationships. An NPDES number and a permittee assigned outfall number identify each outfall. Table attributes are listed in Tables F-21 and F-22, respectively.

Table F-21: "Outfall Location (Many)" Table Attributes

Field Name	Format	Description
ID	AutoNumber	A unique sequential number generated by ACCESS
NPDES	Text	The National Pollutant Discharge Elimination System permit number
Waterbody	Text	Waterbody for which water quality data was collected
Other Parameter	Text	Water quality parameter studied that was not on LTI predefined list
Unit	Text	Units for the water quality parameter
Value	Text	Measured value for the water quality parameter

Table F-22: "Outfall Characteristics (Many)" Table Attributes

Field Name	Format	Description
ID	AutoNumber	A unique sequential number generated by ACCESS
NPDES	Text	The National Pollutant Discharge Elimination System permit number
Waterbody	Text	Waterbody for which water quality data was collected
Other Parameter	Text	Water quality parameter studied that was not on LTI predefined list
Unit	Text	Units for the water quality parameter
Value	Text	Measured value for the water quality parameter

3.1.12 Notes

During the onsite NPDES authority file review, supplemental narratives were included to clarify implementation of the NMC and LTCP, to adequately describe types of controls implemented, and to provide necessary system characterization data. These supplemental data are recorded in the "Notes (1)" tsable, the attributes of which are listed in Table F-23.

Table F-23: "Notes (1)" Table Attributes

Field Name	Format	Description
ID	AutoNumber	A unique sequential number generated by ACCESS
NPDES	Text	The National Pollutant Discharge Elimination System permit number
Waterbody	Text	Waterbody for which water quality data was collected
Other Parameter	Text	Water quality parameter studied that was not on LTI predefined list
Unit	Text	Units for the water quality parameter
Value	Text	Measured value for the water quality parameter

3.2 Additional Components of the DCS

Lookup tables simplify data entry, add a built-in level of quality control, and facilitate DCS queries by providing a predefined list of commonly used values for a user to choose from. These items can each be referenced by a unique numerical value. In the DCS, lookup tables are used to provide Yes/No answers, a list of state abbreviations, lists of CSO control technologies and other information that is generally more static or predefined. The following are the key lookup tables for the DCS.

"Permittee Type (Lookup)" (Table F-24) was created for the Facility Information table. All CSO permittees fall into one of the following two categories: Publicly Owned Treatment Works - POTW (WWTP) or satellite collection system (SCS). CSO permittees that operate a POTW connected to a combined sewer area were categorized as WWTP, while permittees that only operate a combined sewer collection system and transfer flow to a POTW were categorized as an SCS.

Table F-24: "Permitee Type (Lookup)" Table

ID	Permittee Type	Description
1	WWTP	Permittee owns a WWTP and a collection system
2	SCS	Permittee owns a satellite collection system ONLY

"Enf or Per (Lookup)" (Table F-25) was developed to describe NMC and LTCP implementation in the "Dev and Eval of Altrntvs (1)" table. During data collection, team members were required to complete fields noting how the NMC and LTCP were being required (or not being required). If this could not be determined, a question mark was chosen. This methodology was continued throughout the data entry process; however most of these uncertainties were resolved during the QA/QC process.

Table F-25: "Enf or Per (Lookup)" Table

ID	Response	Description
1	ENF	The requirement is being implemented through an enforcement action
2	PER	The requirement is being implemented through a permit
3	?	The requirement is being implemented through an unknown method

Table F-26: "NMC Implemented (Lookup)" Table

Selection #	Controls Implemented
1	Proper O&M programs for the sewer system and the CSOs
2	Maximum use of the collection system for storage
3	Review of pretreatment requirements to minimize CSO impacts
4	Maximization of flow to the POTW for treatment
5	Prohibition of CSOs during dry weather
6	Control of solid and floatable materials in CSOs
7	Pollution Prevention
8	Public Notification
9	Monitoring
111	All 9 controls have been implemented
888	Cannot determine which controls have been implemented
999	No controls have been implemented

"NMC Implemented (Lookup)" (Table F-26) was developed for the "Dev and Eval of Altrntvs (1)" table to allow only the selection number to be recorded and stored in the DCS (the textual description could be relationally-linked and accessed via the lookup table).

"LTCP Approach (Lookup)" (Table F-27) and "Presumption (Lookup)" (Table F-28) were developed to describe LTCP development. According to EPA's LTCP guidance document, permittees must use either a presumption or demonstration approach in developing their LTCP. If the presumption approach is chosen, implementation must satisfy one of three goals listed in the "Presumption (Lookup)" table.

Table F-27: "LTCP Approach (Lookup)" Table

ID	Approach	Description
1	PRESUMPTION	"Presumption approach" as defined by US EPA's LTCP guidance document
2	DEMONSTRATION	"Demonstration approach" as defined by US EPA's LTCP guidance document

Table F-28: "Presumption (Lookup)" Table

ID	Goal
1	Limit # overflow events per year
2	Capture at least 85% wet weather combined sewage volume per year
3	Eliminate or reduce mass of pollutants to 85% capture requirement

"Selection and Implementation of Controls (Many)" stores the control ID from a list of commonly used CSO control technologies: "Source N In System Controls (Lookup)" (Table F-30). Controls fall under one of two categories: source or in-system ("Control Types (Lookup)" in Table F-29).

Table F-29: "Control Types (Lookup)" Table

ID	Control Type	Description
3	Source	Source controls prevent storm water from entering the collection system
4	In System	In System controls require some type of modification to the collection system

Table F-30: "Source N In System (Lookup)" Table

Number	Description	Number	Description
1.1	Animal waste removal	4.20	Outfall Elimination
1.10	Solid waste reduction and recycling	4.3	Combined sewer flushing
1.11	Storm drain stenciling	4.4	Tidegates
1.12	Street sweeping/cleaning	4.5	Flow diversion
1.13	Water conservation	4.6	Flow throttling devices
1.2	Catch basin cleaning	4.7	Hydroslide™ flow regulator
1.3	Commercial/industrial pollution prevention	4.8	Infiltration/inflow control
1.4	Enforcement of litter laws	4.9	Inflatable dams
1.5	Fertilizer and pesticide management	5.1	Abandoned pipelines
1.6	Industrial pretreatment	5.10	Storage tunnels and conduits
1.7	Public education programs	5.11	Upgraded pump station capacity
1.8	Sediment and erosion control	5.12	Upgraded WWTP capacity
1.9	Snow removal and deicing control	5.2	Catch basin storage tanks
2.1	Area drain, foundation drain, and roof leader disconnection	5.3	Earthen basins
2.10	Stormwater infiltration sumps	5.4	First flush tanks
2.11	Constructed wetlands	5.5	In-receiving water flow balance
2.2	Basement sump pump redirection	5.6	In-sewer storage
2.3	Flow restrictions and catch basin inlet modification	5.7	Lagoons
2.4	Flow slipping	5.8	Concrete retention tanks
2.5	Grassed swales and infiltration trenches (new construction)	5.9	Closed concrete retention tanks
2.6	Infiltration basins (new construction)	6.1	Abandoned primary facilities
2.7	On-street surface storage	6.10	Primary sedimentation
2.8	Porous pavements	6.11	Swirl concentrators and vortex separators
2.9	Storm water detention basins	6.2	Carbon adsorption
3.1	Baffles (only certain locations)	6.3	Carrier-enhanced settling
3.2	Catch basin hoods	6.4	Compressed media filters

Table F-30: "Source N In System (Lookup)" Table Continued

Number	Description	Number	Description
3.3	Catch basin trash buckets	6.5	Dissolved air flotation
3.4	Containment booms and barrier curtains	6.6	Fine screens and microstrainers
3.5	Continuous deflective separation systems	6.7	Flocculation (w/ chemical treatment for removal at the WWTP)
3.6	Floating netting units	6.8	Helical bend regulator/concentrator
3.7	In-line netting	6.9	High rate filtration
3.8	Skimmer vessels	7.1	Biological aerated filters
3.9	Screens and trash racks	7.2	Contact stabilization
4.1	Air-regulated siphons	7.3	Fluidized bed filtration
4.10	Manhole maintenance	7.4	Rotating biological contactors
4.11	Motor- or hydraulically operated sluice gates	7.5	Treatment lagoons
4.12	Polymer injection	7.6	Trickling filtration
4.13	Real-time flow control	8.1	Calcium hypochlorite
4.14	Sewer rehabilitation	8.2	Chlorine gas
4.15	Sewer separation (in limited areas)	8.3	Chlorine dioxide
4.16	Static flow control	8.4	Ozone
4.17	Submerged catch basin outlets and siphons	8.5	Peracetic acid
4.18	Turbo™ vortex valves	8.6	Sodium hypochlorite (high rate addition)
4.19	Variable flow control	8.7	Ultraviolet radiation
4.2	Bending weirs	8.8	Disinfection (unspecified type)

The "System Type (Lookup)" table (Table F-31) lists the three collection system types. This lookup table was used in conjunction with the "Collection System Information (Many)" table.

Table F-31: "System Type (Lookup)" Table

ID	*System Type*	*Description*
1	Combined	Collection system is comprised of combined sewers
2	Separate	Collection system is comprised of sanitary sewers
3	Mixed	Collection system is comprised of a combination of combined and sanitary sewers

"Sensitive Areas (Lookup)" table (Table F-32) was developed to provide a list of the most common receiving water sensitive area designations. If a permittee discharged to a sensitive area other than one given, the data entry team selected option #7 and then described the classification in another table.

Table F-32: "Sensitive Areas (Lookup)" Table

ID	Sensitive Areas
1	Outstanding National Resource Waters
2	National Marine Sanctuaries
3	Waters with threatened or endangered species
4	Primary contact recreation waters
5	Public drinking water intakes
6	Shellfish beds
7	Other

CSO outfall data was often given as an average of several years or a modeled estimate. "Outfall Data Type (Lookup)" (Table F-33) lists the most common data types. All outfalls can be described as being either treated or untreated, as defined in "Trtd or Untrtd (Lookup)" (Table F-34).

Table F-33: "Outfall Data Type (Lookup)" Table

ID	Data Type	Description
1	AVG	Signals that the data collected is an average of several values
2	AVG2	Signals that the data collected is a 2-year average
3	AVG3	Signals that the data collected is a 3-year average
4	EST	Signals that the data collected is a modeled estimate
5	?	The data type is unknown

Table F-34: "Trtd or Untrtd (Lookup)" Table

ID	T & U	Description
1	T	CSO discharge point is treated
2	U	CSO discharge point is untreated

4.0 Quality Assurance And Control Protocol For The Data Collection System

The data collection effort for the CSO Report to Congress involved several stages of QA/QC. As previously mentioned, the first stage began onsite where team leaders reviewed completed data collection forms, clarified details as necessary, and initialed the forms indicating approval. Upon transmittal of the forms from the data collection team to the data management team, the data manager reviewed the forms for consistency and completeness. Data inconsistencies and anomalies were flagged by the data manager and resolved based on discussions with the data team leader or, if necessary, the permitting authority. The data manager and data team leader performed random reviews of the CSO permit files, in comparing data on the completed forms with the data entered in the DCS. Data entry patterns causing errors were brought to the attention of data entry team members' in order to limit propagation of erroneous data into the DCS. Several data base queries were developed to detect illogical responses, data entry errors, and missing data. These queries were applied continuously as new data was entered into the DCS. Summaries of the data stored in the DCS were sent to the state and regional CSO Coordinators for review and correction. Updates to the DCS were made based on state and regional responses, and revised summaries were resent for a final verification. These QA/QC levels helped not only to verify data accuracy, but also to ensure that different state CSO programs were characterized in a consistent manner.

This section focuses on the DCS QA/QC process, which consisted of both automated and manual components.

4.1 DCS Automated Queries

Automated queries for the DCS were developed to provide a level of efficiency in QA/QC that could not be accomplished through manual review. Manual file review could be biased because no two auditors are alike and identical reviews from one data collection form to the next could not be guaranteed. Automated queries would allow global DCS reviews without human review bias or error, and could be performed very quickly, affording more time for the development and application of additional QA/QC queries. Automated queries also provided a means to compare expected responses with actual query results to further screen out impossible or improbable data.

The most basic type of automated query sorted and compared actual data with expected values in order to reveal errors (e.g., "null" (i.e., missing) values - fields for which values were required but none recorded.) The following types of QA/QC steps applied used this methodology:

- Typographic errors for data with specific numeric formats such as phone numbers and outfall latitudinal and longitudinal coordinates were detected and corrected.
- NPDES numbers and permit issuance and expiration dates were screened for formatting errors and then matched against a prior EPA data base of CSO permittees. Results were verified using PCS.
- Current and original outfall counts were compared-when the current number was greater than the original, results were verified using the data collection forms and through contacting the state or regional CSO Coordinator.
- Null values for NMC and LTCP requirements were detected and corrected.
- Any "?", blank, or N/A responses for LTCP and NMC implementation was verified with the data collection form and, if necessary, the permitting authority.

A second type of automated query was developed based on logical response progressions to groups of questions. For example, if "no" was recorded for the requirement to implement the NMC, then there should be no response recorded for a follow-up question. The reverse is also true-if there was a requirement to implement the NMC then there must also be data listed describing implementation. This method was used to filter nonsense or unlikely responses for permittees meeting the following conditions:

- Permittees that were required to implement NMC and complete LTCPs, but data did not indicate how that requirement was executed (permit or enforcement action).
- Permittees that were required to implement the NMC, but did not have accompanying data describing which controls were implemented. This query also helped reveal permittees incorrectly marked as not having a NMC requirement.
- Communities that were not required to develop LTCPs, but were not recorded as having implemented CSO controls outside of an LTCP.
- Permittees that were required to develop an LTCP, but had null values for submittal status.

- Permittees that have submitted LTCPs, but had null values for approval status.
- Communities that were required to develop an LTCP but not implement the NMC.
- Permittees that were defined as being Satellite Collection Systems (SCSs), but listed no facilities where sanitary flow was being treated. This query also helped identify permittees that were incorrectly recorded as being SCS.

It is possible that permittees might meet any of the conditions listed above, however these situations were uncommon enough to warrant confirmation with the data collection form, and if necessary, the NPDES permitting authority.

4.2 DCS Manual Queries

While automated queries provide a reliable method of QA/QC, many tasks were still be performed manually. One example of a data type best verified via a manual assessment is WWTP flow information. For example, there are facilities with 1.0 mgd flow capacities and facilities with 100 mgd capacities. It would be difficult to develop a query that could reliably conclude which of these entries might be a typographic error. It is much simpler to visually compare service population statistics or average daily flow to design treatment capacity in order to uncover inconsistencies. The technique used for these manual queries often started with a computer-based query. Data was further analyzed by referring to the data collection forms and through conversations with state and regional CSO Coordinators. The following types of data were best suited to manual verification:

- WWTP flow data
- CSO control technologies
- LTCP cost estimates
- Service populations
- Estimated annual CSO discharge volume
- Estimated number of annual CSO events

4.3 Data Validation/Verification

The DCS QA/QC process concluded with data validation and verification. Each state was provided with a narrative fact sheet describing the state's permitting, enforcement and water quality standards programs as relative to CSOs. As is evident from the data collection form (see Appendix F-1), more data was collected and input into the DCS (where available) than was utilized. For review purposes, a summary of specific DCS data used in this first CSO Report to Congress was distributed with the fact sheets (see example in Appendix F-2). The data summary contained the facility name, location , NPDES permit number, permit issuance and expiration dates, NMC and LTCP requirements, LTCP submittal and approval details, and outfall counts for each CSO permittee. Comments/corrections received from both the EPA region and the permitting authority were then incorporated into the DCS.

Appendix F-1: Data Collection Forms

PART I: INTERVIEW WITH STATE CSO COORDINATOR

Contact Person:					
Mailing Address:					
Web Site:					
Email Address:					
Telephone Number:					
Fax Number:					
Number of current permits requiring NMCs					
Number of enforceable mechanisms requiring NMCs					
Communities having implemented NMCs	0%	25%	50%	75%	100%
Communities submitting NMC documentation	0%	25%	50%	75%	100%
NMC documentation reviewed/approved by State	0%	25%	50%	75%	100%
Permits requiring LTCP development	0%	25%	50%	75%	100%
Are there any CSO control requirements for communities too small to develop LTCPs?				YES	NO
If yes, communities implementing CSO controls outside LTCP	0%	25%	50%	75%	100%
Number of LTCPs received, to date:					
Number of LTCPs approved, to date:					
For completed LTCPs, is permittee in compliance with WQS?			YES	NO	?
Have WQS staff been involved in LTCP reviews?			YES	NO	?
Has a coordination team of CSO stakeholders been formed?			YES	NO	?
Number of requests for CSO-related water quality standards reviews:					
WQ data collected sufficient to perform a standards review?			YES	NO	?
CSO-related enforcement actions undertaken by the State for failure to implement NMCs:					
CSO-related enforcement actions undertaken by the State for failure to implement LTCPs:					
Where are these enforcement actions documented?					
Estimated dollars spent state-wide on CSO controls					
Estimated needs for additional CSO controls					

NOTES:

PART Ia: INTERVIEW WITH STATE WQS COORDINATOR

Contact Person:			
Mailing Address:			
Web Site:			
Email Address:			
Telephone Number:			
Fax Number:			
Have WQS staff been involved in the LTCP reviews?	YES	NO	?
To your knowledge, have any CSO communities requested WQS reviews as part of the LTCP process?			
	YES	NO	?
If so, have the communities submitted sufficient data to support a WQS review?			
	YES	NO	?
Have any WQS reviews for CSO receiving waters been initiated?	YES	NO	?
Have any communities received variances for CSO discharges?	YES	NO	?
Have any CSO-related WQS revisions been completed?	YES	NO	?
Does the State have a formal process for reviewing WQS for CSO-impacted waters?			
	YES	NO	?
Are all CSO impacted waters on the States list of impaired waters?	YES	NO	?
Are CSO impacted waters given special consideration during your triennial review process?			
	YES	NO	?
Post implementation of LTCPs, will the permit meet WQS?	YES	NO	?

NOTES:

PART Ib: INTERVIEW WITH STATE ENFORCEMENT COORDINATOR

Contact Person:
Mailing Address:
Web Site:
Email Address:
Telephone Number:
Fax Number:
Have enforcement staff been involved in the LTCP reviews? YES NO ?
What types of enforcement orders has the State used for CSO compliance?
Judicial Order Administrative Order
Consent Decree
How many enforcement orders has the State issued related to NMC implementation?
Of these, how many were for noncompliance with a permit requirements?
How many were to keep NMC requirements out of the permit?
How many enforcement orders has the State issued related to LTCP development?
Of these, how many were for noncompliance with a permit requirements?
How many were to keep the requirement to develop an LTCP out of the permit?
How many enforcement orders has the State issued related to LTCP implementation?
Of these, how many were for noncompliance with a permit requirements?
How many were to keep LTCP implementation schedules out of the permit?
What is the role of the EPA Regional office in enforcement actions in the State?

NOTES:

Onsite Review _____
Office Review _____
Data Entry _____

PART II: CSO COMMUNITY/FACILITY INFORMATION

A. FACILITY INFORMATION				Source*
Facility Name:		**Abbreviation:**		
Mailing Address:				
Facility Address: (NOT P.O. Box)				
NPDES Permit #:		**County:**		
Iss. Date: ___ / ____ / _____	**Exp. Date:** ___ / ____ / _____		**Effect. Date:** ___ / ____ / _____	
Permittee Type (Circle One):	WWTP and CSOs		CSO outfalls only	
Website:				
Contact Person:				
Title:				
Telephone Number: _____ - _____ - _____		**FAX:** _____ - _____ - _____		

B. DEVELOPMENT AND EVALUATION OF ALTERNATIVES				
Requirement to implement nine minimum controls?	YES	NO	?	
Being implemented through an ENFORCEABLE mechanism or a PERMIT?	E	P	?	
Controls Implemented (Check all that apply)				
☐ All 9 required controls have been implemented.				
☐ 1. Proper O&M programs for the sewer system and the CSOs				
☐ 2. Maximum use of the collection system for storage				
☐ 3. Review of pretreatment requirements to minimize CSO impacts				
☐ 4. Maximization of flow to the POTW for treatment				
☐ 5. Prohibition of CSOs during dry weather				
☐ 6. Control of solid and floatable materials in CSOs				
☐ 7. Pollution prevention				
☐ 8. Public notification				
☐ 9. Monitoring				
☐ None of the NMC have been implemented.				
☐ Cannot determine which controls have been implemented.				
NMC Documentation submitted to State?	YES (Date:___ / ___ / _____)	NO	?	

IF YES -- THEN COMPLETE

*Use the following codes in the source column: (P) Permit; (A) Permit Application; (L) LTCP; (AR) Annual Report; (O) Other

Onsite Review _____
Office Review _____
Data Entry _____

Requirement to develop LTCP?		YES	NO	?	
IF YES -- THEN COMPLETE	**Being implemented through an ENFORCEABLE mechanism or a PERMIT?**	E	P	?	
	LTCP submitted to the State?	YES (Date:___ / ___ / _____)	NO	?	
	LTCP approved by the State?	YES (Date:___ / ___ / _____)	NO	?	
	LTCP predict compliance with current WQS?	YES	NO	?	
	LTCP implementation initiated?	YES (Date:___ / ___ / _____)	NO	?	
	LTCP implementation completed?	YES (Date:___ / ___ / _____)	NO	?	
	Was a collection systems model developed?	YES	NO	?	
	Were the impacts of the NMCs considered in the LTCP?	YES	NO	?	
	Current treatment (% of vol of combined sewage collected in the CSS captured for treatment): _____				
	LTCP APPROACH (Choose one and complete the appropriate sections)				
	PRESUMPTION	**OR**	**DEMONSTRATIVE**		
	check one to describe approach: □ limit # of overflow events per year □ capture at least 85% of wet weather combined sewage vol per year □ eliminate or reduce mass of pollutants equiv to 85% capture		answer each of the following questions: Has the permittee collected data for the baseline conditions in the rec waters? Y N ? Has the permittee performed rec water modeling? Y N ? Has the permittee demonstrated compliance with effluent limitations? Y N ?		
NO	**Has the community implemented CSO controls outside of a LTCP (e.g., SSES, TMDLs, Watershed Management Plans?)**	YES	NO	?	
	NOTES FOR SECTION B -- NMC and LTCP or other Narrative Information on Implementation				

*Use the following codes in the source column: (P) Permit; (A) Permit Application; (L) LTCP; (AR) Annual Report; (O) Other

Onsite Review _____
Office Review _____
Data Entry _____

C. SELECTION AND IMPLEMENTATION OF CONTROLS - Please refer to Appendix A, CSO Control Technologies, and list controls according to their reference numbers.			
Source controls (controls to keep storm water or pollutants out of the CSS)	**Date Completed**	**Estimated capital cost**	
	__ / ___ / _____	$	
	__ / ___ / _____	$	
	__ / ___ / _____	$	
	__ / ___ / _____	$	
	__ / ___ / _____	$	
	__ / ___ / _____	$	
In-System controls (controls that require modification of the CSS)	**Date Completed**	**Estimated capital cost**	
	__ / ___ / _____	$	
	__ / ___ / _____	$	
	__ / ___ / _____	$	
	__ / ___ / _____	$	
	__ / ___ / _____	$	
	__ / ___ / _____	$	
Target date for completing LTCP implementation:	__ / ___ / _____		
Capital cost of implementing all controls outlined in LTCP:		$	
NOTES FOR SECTION C -- Controls Solutions/alternatives considered/financial hardships; possible case study elements - use reverse if needed			

D. EFFECTIVENESS OF STRUCTURAL CONTROLS					
Were any pilot tests conducted?		YES	NO	?	
Is pre-construction monitoring data available?		YES	NO	?	
Is post-construction monitoring data available?		YES	NO	?	
Has the permittee documented pollutant removal efficiencies?		YES	NO	?	
Has ambient receiving water data been collected?		YES	NO	?	
IF YES	If yes, what parameters were monitored?	_____			
	How frequently was data collected?	_____			
	What were the beginning and ending sampling dates?	__ / ___ / _____	__ / ___ / _____		
	Is the data adequate to support a WQS review?	YES	NO	?	

*Use the following codes in the source column: (P) Permit; (A) Permit Application; (L) LTCP; (AR) Annual Report; (O) Other

Onsite Review _____
Office Review _____
Data Entry _____

E. COLLECTION SYSTEM INFORMATION - Provide information on entities served by the WWTP (name, estimated population, and whether the collection system is comprised of combined or separate sanitary sewers. If the entity is comprised of both system types, list each type separately)

ENTITY	POPULATION	TYPE OF SYSTEM	
TOTAL POPULATION SERVED:	_____		
If permitted for OUTFALLS ONLY (no treatment fac.), list treatment facility and/or town receiving flow:	_____		

F. FLOW AND TREATMENT INFORMATION

Annual average daily flow (MGD otherwise LIST UNITS):	_____			
Design primary treatment capacity (MGD):	_____			
Design secondary treatment capacity (MAD):	_____			
Peak flow primary treatment capacity (MGD):	_____			
Peak flow secondary treatment capacity (MGD):	_____			
Other available treatment types (list treatment type and maximum daily flow allowed)**:**	_____ _____			
Are CSO-related bypasses authorized?		YES	NO	?
Are partially treated effluents combined with fully treated flows prior to discharge?		YES	NO	?

G. DISCHARGES & OTHER DISPOSAL METHODS - This section is ONLY concerned with discharges to waters of the U.S. List how many of each of the following types of discharge points are within the municipal collection system.

Original number of CSO PERMITTED outfall points:	_____	
Current number of CSO PERMITTED outfall points:	_____	Date: __ / ___ / _____
Number of constructed emergency overflows prior to the WWTP (e.g. relief at pump stations):	_____	
Average number of dry weather overflows per year:	_____	
Number of discharge points with effluent receiving full (secondary) treatment:	_____	
Number of discharge points with effluent receiving partial (primary) treatment ONLY:	_____	

*Use the following codes in the source column: (P) Permit; (A) Permit Application; (L) LTCP; (AR) Annual Report; (O) Other

Onsite Review _____
Office Review _____
Data Entry _____

H. SYSTEM CHARACTERIZATION

SYSTEM TYPE		% of Sewer Network	Sewer Length (indicate units)	Acres Served	
Combined Sewer	Original				
	Current				
Separate Sewer	Original				
	Current				
TOTALS (if not broken out - length and acres):					

Are there any CSO discharges to sensitive areas? YES NO ?

YES CHK APPLICABLE

- □ Outstanding National Resource Waters
- □ National Marine Sanctuaries
- □ Waters with threatened or endangered species
- □ Primary contact recreation waters, such as bathing beaches
- □ Public drinking water intakes or their designated protection areas
- □ Shellfish beds
- □ Other (specify): _____

NOTES FOR SECTION H -- System Characterization
Note information on land-use, area rainfall/precipitation; special information about the area/system

I. RECEIVING WATER DESCRIPTION - Complete this section for each receiving water that receives discharge from either the WWTP or CSO point(s). Try to determine if these bodies are listed on the 303(d) list as impaired waterbodies and why.

Receiving Water Name	Name of Watershed	CSO-related WQS review completed?			
		YES	NO	?	
		YES	NO	?	
		YES	NO	?	
		YES	NO	?	
		YES	NO	?	

J. WATER QUALITY DATA - Photocopy and attach data collected for wet weather or CSO studies.

- □ BOD/CBOD _____
- □ TSS _____
- □ DO _____
- □ Fecal Coliforms _____
- □ E. coli _____
- □ Enterrococci _____
- □ Metals _____
- □ Other (specify) _____

*Use the following codes in the source column: (P) Permit; (A) Permit Application; (L) LTCP; (AR) Annual Report; (O) Other

Data Collection Form Appendix A: CSO Control Technologies

Source Controls

1.0 Pollution Prevention	
1.1	Animal waste removal
1.2	Catch basin cleaning
1.3	Commercial/industrial pollution prevention
1.4	Enforcement of litter laws
1.5	Fertilizer and pesticide management
1.6	Industrial pretreatment
1.7	Public education programs
1.8	Sediment and erosion control
1.9	Snow removal and deicing control
1.10	Solid waste reduction and recycling
1.11	Storm drain stenciling
1.12	Street sweeping/cleaning
1.13	Water conservation

2.0 Stormwater Inflow Reduction	
2.1	Area drain, foundation drain, and roof leader disconnection
2.2	Basement sump pump redirection
2.3	Flow restrictions and catch basin inlet modification
2.4	Flow slipping
2.5	Grassed swales and infiltration trenches (new construction)
2.6	Infiltration basins (new construction)
2.7	On-street surface storage
2.8	Porous pavements
2.9	Stormwater detention basins
2.10	Stormwater infiltration sumps

In System Controls

3.0 Floatables Control	
3.1	Baffles (only certain locations)
3.2	Catch basin hoods
3.3	Catch basin trash buckets
3.4	Containment booms and barrier curtains
3.5	Continuous deflective separation systems
3.6	Floating netting units
3.7	In-line netting
3.8	Skimmer vessels
3.9	Screens and trash racks
4.0 Collection System Optimization and Control	
4.1	Air-regulated siphons
4.2	Bending weirs
4.3	Combined sewer flushing
4.4	Elastomeric tidegates
4.5	Flow diversion
4.6	Flow throttling devices
4.7	Hydroslide™ flow regulator
4.8	Infiltration/inflow control
4.9	Inflatable dams
4.10	Manhole maintenance
4.11	Motor- or hydraulically operated sluice gates
4.12	Polymer injection
4.13	Real-time flow control
4.14	Sewer rehabilitation
4.15	Sewer separation (in limited areas)
4.16	Static flow control
4.17	Submerged catch basin outlets and siphons
4.18	Turbo™ vortex valves
4.19	Variable flow control
4.20	Outfall Elimination
5.0 Storage (In-Line and Off-Line)	
5.1	Abandoned pipelines
5.2	Catch basin storage tanks
5.3	Earthen basins
5.4	First flush tanks
5.5	In-receiving water flow balance
5.6	In-sewer storage
5.7	Lagoons
5.8	Open concrete retention tanks
5.9	Closed concrete retention tanks
5.10	Storage tunnels and conduits
5.11	Upgraded pump station capacity
5.12	Upgraded WWTP capacity

6.0 Physical Treatment	
6.1	Abandoned primary facilities (see comment)
6.2	Carbon adsorption
6.3	Carrier-enhanced settling
6.4	Compressed media filters
6.5	Dissolved air flotation
6.6	Fine screens and microstrainers
6.7	Flocculation (w/ chemical treatment for removal at the WWTP)
6.8	Helical bend regulator/concentrator
6.9	High rate filtration
6.10	Primary sedimentation
6.11	Swirl concentrators and vortex separators
7.0 Biological Treatment	
7.1	Biological aerated filters
7.2	Contact stabilization
7.3	Fluidized bed filtration
7.4	Rotating biological contactors
7.5	Treatment lagoons
7.6	Trickling filtration
8.0 Chemical Treatment	
8.1	Calcium hypochlorite
8.2	Chlorine gas
8.3	Chlorine dioxide
8.4	Ozone
8.5	Peracetic acid
8.6	Sodium hypochlorite (high rate addition)
8.7	Ultraviolet radiation

Appendix F-2: Examples DCS Summary Report

(for state and regional review and validation of data)

CSO PERMITTEE SUMMARY REPORT ATTACHED

Please review the attached summary of CSO permittees. Make corrections andannotations directly on the report. Limno-Tech, Inc. staff (contractor support) will be contacting you to discuss your questions and changes.

The following is an explanation of the headers/fields in the report (FIELD - DESCRIPTION/NOTES):

1. Status - S (separated), E (eliminated), null/blank (active)
2. NPDES - NPDES Permit Number
3. Facility Name - Facility Name
4. City - Facility City
5. Permit Issue - Permit Issuance Date
6. Permit Exp. - Permit Expiration Date
7. Req for NMC? - Does this facility have a requirement to implement the NMC?
8. Req to Develop LTCP? - Does this facility have a requirement to develop an LTCP as defined in the CSO Control Policy
9. LTCP Permit or Enfor - If LTCP required (8=Yes), is it required in the NPDES permit or some other enforcable mechanism?
10. LTCP -Submitted? - Has the LTCP been submitted?
11. LTCP - State Approv.? - Has the LTCP been approved by the state (or permitting authority)?
12. LTCP - Approach - presumption or demonstration approach
13. CSO Controls Outside LTCP? - Have their been any CSO controls implemented outside of a LTCP (e.g., hydraulic upgrades, separation not through LTCP, pre-Policy CSO planning and control efforts, etc.)
14. Org CSO Outfalls - Original number of CSO outfalls (original or previously documented)
15. Curr CSO Outfalls - Current number of CSO outfalls (as currently permitted)

WA - CSO PERMITTEE SUMMARY

CSO PERMITTEE SUMMARY - WA

Status	NPDES	Facility Name	City	Permit Issue	Permit Exp	Req for NMC?	Req to Develop LTCP?	LTCP-Permit or Enfor.	LTCP - Submitted?	LTCP - State Approv.?	LTCP - Approach	CSO Controls Outside	Org. CSO Outfalls	Curr CSO Outfalls
	WA0020257	City of Anacortes WWTP	Anacortes	6/30/98	6/30/03	YES	YES	PER	YES	YES	PRESUMPTION			3
	WA0023744	City of Bellingham WWTP	Bellingham	9/15/00	6/30/05	YES	YES	PER	YES	YES	PRESUMPTION			2
	WA0023973	City of Port Angeles WWTP	Port Angeles	11/30/93	6/30/97	YES	YES	PER	YES	YES	PRESUMPTION		7	5
	WA0024074	City of Mt. Vernon WWTP	Mt. Vernon	6/16/93	6/16/98	YES	YES	PER	YES	YES	PRESUMPTION			2
	WA0024473	Spokane WWTP and CSOs	Spokane	3/30/00	3/29/05	YES	YES	PER	YES	YES	PRESUMPTION	YES		24
	WA0024490	Everett WPCF	Everett	10/30/92	5/15/97	YES	YES	PER	YES	YES	PRESUMPTION			18
	WA0029181	West Point STP	Seattle	1/1/96	12/31/00	YES	YES	PER	YES	YES	PRESUMPTION			34
	WA0029289	Bremerton WWTP	Bremerton	6/21/96	6/21/01	YES	YES	PER	YES	YES	PRESUMPTION			16
	WA0029548	Snohomish WWTP	Snohomish	4/14/00	6/30/04	YES	YES	PER	YES	YES	PRESUMPTION			2
	WA0031682	City of Seattle Collection System	Seattle	4/30/98	6/30/02	YES	YES	PER	NO				113	110
	WA0037061	City of Olympia	Olympia	12/11/93	6/30/97	YES	YES	PER	YES	?	PRESUMPTION			3

Appendix G

AMSA and CSO Partnership
CSO Survey Summary

Summary of AMSA and CSO Partnership Surveys

1.0 Purpose of the AMSA and CSO Partnership Surveys

The Association of Metropolitan Sewerage Agencies (AMSA) and the CSO Partnership conducted independent, confidential surveys of their respective CSO community members during Spring 2001 to assess the status of CSO control programs. The survey forms used by AMSA and the CSO Partnership are attached in Appendix G-1. The respondents to these surveys represent regulated entities that own and operate combined sewer systems. AMSA members tend to be large- to medium-sized communities. CSO Partnership members tend to be small- to medium-sized communities.

Twenty-three of the approximately 85 member communities responded to the CSO Partnership survey. Twenty-seven of the estimated 58 AMSA CSO communities participated. While there was some overlap in the questions posed in each survey, the results are, for the most part, survey-specific. Where applicable, EPA combined responses from both surveys and summarized in this appendix. The number of respondents (n) is noted with each survey result.

2.0 Program Implementation Status

The AMSA and CSO Partnership surveys included questions pertaining to implementation status of CSO control programs. Specifically, survey questions addressed the implementation of the CSO Control Policy with respect to the NMC, development and implementation of LTCPs, and reduction of CSOs since 1994.

Seventy percent of respondents to both surveys indicated full implementation of the NMC (n=47). The CSO Partnership also asked its members, "Of the NMC, which was the most effective in reducing CSO volume, frequency and/or duration?" Maximization of flow to the POTW for treatment and proper operation and regular maintenance programs were identified as the most effective NMC. The ranked results from the CSO Partnership survey are shown in Table G-1.

Table G-1: Effectiveness of NMC in reducing CSO volume, frequency, and duration (n=18) (CSO Partnership survey, 2001)

Rank	NMC Description
1	Maximization of flow to the POTW for treatment
2	Proper operation and regular maintenance programs
3	Review and Modify Pretreatment Requirements
3	Elimination of CSOs during dry weather
5	Maximization of storage in the collection system
5	Control of solid and floatable material in CSOs
5	Pollution prevention programs to reduce contaminants in CSOs
8	Public notification
8	Monitoring to characterize CSO impacts and the efficacy of controls

AMSA respondents were also surveyed about the status of LTCPs. Eighty percent of the AMSA respondents had developed an LTCP (n=25). Of those with LTCPs, 48 percent had been approved. An additional AMSA question focused on the choice of LTCP approach. Of the 21 AMSA respondents, 50 percent of the LTCPs were based upon the demonstration approach, 43 percent were based upon the presumption approach, and 19 percent were based on both approaches or were unspecified. The extent to which LTCPs have been implemented among AMSA survey respondents is given in Table G-2.

Table G-2: Status of LTCP Implementation
(AMSA survey, 2001)

Level of LTCP Implementation	Number of Respondents (n=22)
0-25 percent	11
25-50 percent	3
50-75 percent	4
75-100 percent	4

As can be seen in Table G-2, half of the AMSA respondents (n=22) have implemented at least 25 percent of CSO controls outlined in an LTCP.

The CSO Partnership requested data on the implementation of CSO controls in its survey. Specifically, the survey asked, "How does your NPDES authority require implementation of CSO controls?" Of the 22 respondents, 61 percent indicated that implementation of controls was required through a permit, 23 percent were required through an enforceable order, and 16 percent were required via other methods. In addition, the CSO Partnership asked its members about monitoring: if they engage in regular, periodic flow monitoring of the combined sewer system. Fifty-nine percent of CSO Partnership respondents conduct such monitoring (n=22). Furthermore, 45 percent of CSO Partnership respondents indicated that they monitor receiving water quality during wet weather conditions (n=22).

The majority of all survey respondents indicated that they have recognized reductions in CSOs, including dry weather overflows. Seventy-nine percent of respondents to both surveys (n=43) indicated that they had reduced CSOs since 1994. The percent reduction in CSO frequency (n=23) and volume (n=29) submitted by respondents to both surveys is presented in Table G-3.

Table G-3: Percent reduction in CSO frequency and volume
(AMSA sruvey, 2001; CSO Partnership survey, 2001)

Level of Reduction	Reduction in CSO Frequency Number of Respondents (n=23)	Reduction in CSO Volume Number of Respondents (n=29)
0 - 25 percent	7	8
25-50 percent	5	9
50-75 percent	2	3
75-100 percent	9	9

With regard to dry weather overflows, 62 percent of CSO Partnership respondents stated that they had dry weather overflows before 1994 (n=20). A follow-up question found 67 percent of the respondents had reduced dry weather overflows by 75 percent to 100 percent since 1994 (n=9). CSO Partnership members were also asked to quantify the percentage of CSO outfalls that have been totally eliminated. Twenty-two members responded and of these, 41 percent of the respondents indicated that they had eliminated at least 35 percent of CSO outfalls. In total, respondents had eliminated 132 (of a total of 395) CSO outfalls.

3.0 Benefits

The CSO Partnership survey addressed benefits associated with CSO control and abatement measures by requesting its members to identify environmental benefits specifically attributed to the implementation of CSO control measures. The majority of respondents identified some benefits directly attributable to CSO controls (n= 22). Only six of 25 AMSA respondents indicated that full implementation of the LTCP will result in attainment of water quality standards. Benefits identified in the CSO Partnership survey are presented in Table G-4.

Table G-4: Benefits identified as specifically attributable to CSO controls
(CSO Partnership survey, 2001)

Benefit	Percent of respondents (n=22)
Improved aesthetics	83 percent
Improvement in ambient water quality	78 percent
Drinking water source protection	6 percent
Prevention of beach closures	0 percent
Improvement in public health	39 percent
Shellfish bed re-openings	6 percent
Improved recreational use	50 percent
Protection of sensitive areas	56 percent

4.0 Costs and Financing of CSO Control

Costs and financing for CSO control were investigated in both the AMSA and CSO Partnership Surveys. AMSA surveyed its members about how much of capital improvement plan (CIP) budgets are dedicated to LTCP implementation. Fifteen members responded: seven respondents dedicate between 0-25 percent, five respondents dedicate 25-50 percent, and three respondents dedicate more than 50-70 percent of the CIP to the LTCP. None of the 15 respondents dedicate more than 75 percent of the CIP to the LTCP.

The CSO Partnership survey also asked two questions related to capital costs of CSO control. The first was, "What is your estimate of the investment in capital costs that your community has made to date?" The second question was, "What is your estimate of the additional capital costs that is necessary to comply with the CSO Control Policy?" Capital investments made to date and additional investments needs ranged from less that $100,000 to greater than $1 million. A breakdown of the survey results related to capital costs is shown in Table G-5.

Table G-5: Capital costs related to CSO control
(CSO Partnership survey, 2001)

Capital Costs	Investment Made to Date (n=20)	Additional Investment to Comply with CSO Control Policy (n=18)
< $100,000	4	1
$100,000 to $1 million	4	4
$1 million to $10 million	4	8
$10 million to $100 million	7	3
> $100 million	1	2

In addition, the CSO Partnership surveyed its members about operation and maintenance (O&M) costs. The CSO Partnership first requested an estimate by the CSO community of the investment in annual O&M costs that the community has made to date. Ten of the 18 respondents indicated that annual O&M costs to date were less than $100,000. The second question was, "What is your estimate of the additional annual O&M costs that is necessary to comply with the CSO Control Policy?" The O&M cost estimates are given in Table G-6.

Table G-6: O&M costs related to CSO control
(CSO Partnership survey, 2001)

O&M Costs	Annual O&M Costs to Date (n=18)	Additional Annual O&M to Comply with CSO Control Policy (n=15)
< $100,000	10	6
$100,000 to $1 million	7	5
$1 million to $10 million	1	4

Financing was also considered in the CSO Partnership survey. The survey asked how member communities have funded CSO controls to date. Among the 22 respondents, self-financing was the most prevalent form of funding; 82 percent of the respondents use this funding source. Other funding sources include SRF loans (55 percent), state grants (32 percent), federal grants (18 percent), and other funding sources (5 percent).

5.0 Obstacles to Full Attainment of CSO Control

Lastly, the CSO Partnership survey asked respondents to rate factors as obstacles to full attainment of CSO control. Among the 19 respondents, financial resources was recognized as the most important obstacle; data and guidance to support LTCP development were found to be less significant obstacles. The ranked results are presented in Table G-7.

Table G-7: Obstacles to full attainment of CSO control (n=19)
(CSO Partnership survey, 2001)

Rank	Obstacle
1	Financial resources
2	Complexity of water quality standards review process
3- Tie	Other priorities within water programs
3- Tie	Uncertainty about the roles of EPA and State regulatory authorities
5	Sufficient time
6	Data to support LTCP development and implementation
7	Guidance to support LTCP development and implementation

Appendix G-1: AMSA and CSO Partnership Survey Instruments

amsa

Action Please By:
May 7, 2001

To: *CSO Members*
From: *National Office*
Date: *April 18, 2001*
Subject: *AMSA CSO SURVEY*

The U.S. Environmental Protection Agency (EPA) is required to submit by September 2001 a Report to Congress on the progress made in implementing the *National CSO Control Policy*. EPA has requested assistance from AMSA in the form of data on the status of CSO Policy implementation, noteworthy achievements, and impediments to progress. In response to this request, the National Office agreed to conduct a survey of its CSO members. The enclosed *AMSA CSO Survey Form* was developed by the National Office, with input from members of an ad-hoc CSO Working Group. ***Please review and complete the enclosed survey form, and return it to AMSA by Monday, May 7.***

The Report to Congress presents the membership with an opportunity to demonstrate where progress has been made and to highlight areas of particular concern. To the extent possible, AMSA will tabulate data to exhibit status and trends. We appreciate your time and contribution to this effort.

Please use the following instructions as a guide to completing the enclosed form:

1. ***Where to send forms:*** Complete the survey form and return to AMSA c/o Greg Schaner by ***Monday, May 7.*** Completed forms can be faxed to 202/833-4657 or emailed to *gschaner@amsa-cleanwater.org*.

2. ***Questions:*** Feel free to call Greg with any questions regarding the survey at 202/296-9836.

3. ***If you have additional information:*** Include narrative explanations wherever you believe that the "yes" or "no" response does not sufficiently explain your situation. Feel free to attach separate sheets, or to add text after the question if you are accessing this form electronically.

4. ***Suggested performance measures:*** AMSA suggested the use of a number of CSO performance measures to track progress in its 1996 report, *Performance Measures for the National CSO Program*. For your reference in answering # 27 on the survey form, the recommended measures are included as an attachment. A web link to a .pdf version of the report has also been added: *http://www.amsa-cleanwater.org/temp/96pmeasures.pdf* You can either click on the link or cut-and-paste into your web browser to access this file.

5. ***Private information:*** Please indicate if there is any specific information relating to your CSO program which you would like to remain private and confidential. Information submitted to EPA on program status, particularly questions # 1 - 8 will be presented cumulatively, and will not identify specific facilities.

Thank you again for your assistance.

ENCLOSURE

AMSA CSO Survey Form

Contact Information

Name: _____
Agency: _____
Phone/Fax/email: _____

Program Status

1. Have you fully implemented the **Nine Minimum Controls** that were part of EPA's *National CSO Control Policy*, or the equivalent minimum measures required in your state? If you answered "no", please check those measures that have been completed (see below). ☐ Yes ☐ No

   - ☐ Proper operation and regular maintenance programs
   - ☐ Maximum use of the collection system for storage
   - ☐ Modify pretreatment requirements to minimize CSO impacts
   - ☐ Maximization of flow to POTW for treatment
   - ☐ Prohibition of CSOs during dry weather
   - ☐ Control of solid and floatable materials in CSOs
   - ☐ Pollution prevention
   - ☐ Public notification of CSO occurrences and CSO impacts
   - ☐ CSO Monitoring to characterize CSO impacts/controls

2. If you have not implemented all nine minimum controls, what are the primary reasons? To the extent possible, please highlight cost, affordability, legal, or administrative issues.

   _____
   _____
   _____
   _____

3. Have you developed a Long Term Control Plan (LTCP)? ☐ Yes ☐ No

4. Has your LTCP been approved? ☐ Yes ☐ No

5. If you answered "no" to # 4, please provide some background on the primary reasons why the LTCP has not yet been approved?

   _____
   _____
   _____
   _____

6. Is your LTCP based on EPA's "presumption approach" or "demonstration approach"?

   - ☐ Presumption approach
   - ☐ Demonstration approach
   - ☐ Neither

7. To what extent have you implemented your LTCP? _____ %

8. What are the primary reasons for not fully implementing your LTCP? To the extent possible, please highlight cost, affordability, legal, or administrative issues.

_____
_____
_____
_____

Cost / Affordability Issues

9. What are the estimated capital and O & M costs for your LTCP when fully implemented? What is the estimated capital and O & M costs of your implemented nine minimum controls (NMCs)?

LTCP Capital: _____ NMC Capital: _____

LTCP O & M: _____ NMC O & M: _____

10. What is your estimate of the amount invested to date on implementing the LTCP? What is your estimate of the amount invested to date on your implemented nine minimum controls (NMCs)?

LTCP Capital: _____ NMC Capital: _____

NMC O & M: _____ NMC Capital: _____

11. Over what time period will your investment in the LTCP occur? _____

12. What percentage of your capital improvement plan budget (CIP) is dedicated to your LTCP? _____ %

13. What is the ratio of your community's current annual median household income to your current average annual sewer service rates (if known)? (**Note**: EPA considers 2% as the cutoff for affordability.)

Worsheet for current rates/income:

a. Average annual sewer rates = _____
b. Annual medium income = _____
c. "a" ÷ "b" = _____

14. What is the ratio of your community's annual median household income to your projected future average annual sewer service rates after full implementation of your LTCP (if known)?

Worsheet for rates/income following LTCP implementation:

a. Average annual sewer rates = _____
b. Annual medium income = _____
c. "a" ÷ "b" = _____

15. If you are funding your LTCP through alternative mechanisms (i.e., other than sewer rates), please describe:

_____
_____
_____
_____

Compliance with State Water Quality Standards

16. When your LTCP has been fully implemented, will water quality standards be attained? ☐ Yes ☐ No

17.	If you answered "no" to # 16, will remaining exceedances be attributed to CSOs?	☐ Yes	☐ No
18.	If you answered "no" to # 17, will remaining exceedances be attributed to other sources?	☐ Yes	☐ No
19.	If you answered "yes" to # 18, please specify which sources will cause continued exceedances and their relative contribution if known. _____ _____		
20.	If you answered "no" to # 17, is your state reviewing and/or revising the applicable water quality standards to account for wet weather conditions?	☐ Yes	☐ No
21.	If you answered "yes" to # 20, please provide brief description of the revised standard or the options being explored? _____ _____ _____ _____		
22.	If continuing water quality standards exceedances are expected after implementation of your CSO LTCP, what other programs are under way that will address those problems? _____ _____ _____ _____		
Performance Measurement / Monitoring			
23.	Have you reduced CSOs in your system since 1994?	☐ Yes	☐ No
24.	If you answered "yes" to # 23, please specify: Percentage reduction in frequency: _____ Percentage reduction in volume: _____		
25.	If you answered "yes" to #23, please specify which control measures resulted in the greatest reduction? _____ _____ _____ _____		
26.	What accomplishments did your CSO control program make prior to 1994? _____ _____ _____ _____		

27. To the extent you have tracked other anecdotal improvements resulting from your CSO control program, please specify below. For reference to suggested performance measures, see the attached January 1996 AMSA document, *Performance Measures for the National CSO Control Program*, or access the document via the web at http://www.amsa-cleanwater.org/temp/96pmeasures.pdf

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Please fax the completed form to Greg Schaner by ***Monday, May 7*** at 202/833-4657 or by email (*gschaner@amsa-cleanwater.org*). If you have any questions about the survey form, please feel free to call Greg at 202/296-9836 or contact him by email

http://www.csop.com/partnership/survey_april_2001.htm

The CSO Partnership has developed the following confidential survey to obtain information on the status and effectiveness of CSO control efforts nationwide. Please take a moment to complete and return the survey to us as we will use the results to support our grant funding efforts before Congress as well as our CSO control implemenation efforts with U.S. EPA.

Please contact Paul Calamita (804/775-1099) with any questions.

CSO PARTNERSHIP

Combined Sewer Overflow (CSO) Policy Survey

RETURN BY E-MAIL (pcalamita@mcguirewoods.com) OR FAX (804-698-2026)

Please Return By April 30, 2001

Municipal Data

Population _____

Total sewer service area (acres) _____

Combined sewer service area (acres) _____

The Policy

1. How does your NPDES authority require the implementation of CSO controls?

Through permit _____

Enforceable order _____

Other, please describe _____

_____

Nine Minimum Controls

2a. When did you first fully implement the Nine Minimum Controls?

(month/year) _____/ _____

2b. Of the Nine Minimum Controls, which was the most effective in reducing CSO volume frequency, duration or pollutant loadings?

_____

2c. In addition to the Nine Minimum Controls, please describe any other types of low-tech, low cost measures you have implemented that have been effective in reducing CSO volume frequency, duration or pollutant loadings?

_____

Dry Weather Overflows

3a. Did you have Dry Weather Overflows before 1994?

Yes ____ No ____

3b. If yes, by what percentage have you reduced Dry Weather Overflows since 1994?

_____

_____

_____

Monitoring

4a. Do you engage in regular, periodic flow monitoring of your Combined Sewer System?

Yes ____ No ____

4b. If yes, what types of monitoring is conducted?

In-system electronic flow meters ____

End-of-pipe electronic flow meters ____

End-of-pipe block testing ____

Ambient receiving water ____

Other, please describe _____

_____

4c. Do you monitor receiving water quality during wet weather conditions?

Yes ____ No ____

Financing CSO Controls

5. How have you funded CSO control measures in your community to date? (Check all that

apply)

Self-financed ____ SRF loans ____

State grant ____ Federal grant ____

Other, please describe _____

_____

_____

6a. What is your estimate of the investment your community has made to date in CSO control?

Capital costs _____

Annual O&M _____

6b. What is your estimate of the additional investment necessary to comply with the CSO Policy?

Capital costs _____

Annual O&M _____

Environmental Benefits

7a. Have you reduced CSOs in your system since 1994?

Yes ____ No ____

7b. If yes, what is your estimate of the reduction in frequency, volume, and duration of the CSOs?

Percentage reduction in frequency _____

Percentage reduction in volume _____

Percentage reduction in duration _____

8a. How many CSO outfalls been totally eliminated in your system?

Number of outfalls eliminated _____

Number of outfalls remaining _____

8b. Why did you chose to eliminate these outfalls?

_____

_____

_____

9. What environmental benefits can you specifically attribute to CSO control measures you have

implemented? (Check all that apply)

Protection of sensitive areas____ Prevention of beach closures _____

Improved recreational uses ____ Drinking water source protection ____

Shellfish bed re-openings ____ Improvement in ambient water quality ____

Improvement in public health ____ Improved aesthetics (sight and smell) ____

Other, please describe_____

_____

_____

Challenges

10. Please individually rate the following factors as obstacles to your full attainment of CSO

controls on a scale of 1 to 5, with 1 being the least problematic and 5 being the greatest

challenge:

Guidance to support LTCP development and implementation _____

Data to support LTCP development and implementation _____

Sufficient time _____

Financial resources _____

Complexity of water quality standards review process _____

Other priorities within water programs _____

Uncertainty about roles of EPA and State regulatory agencies_____

Other, please describe_____

_____

Please add any other comments you have about CSOs or the Federal CSO Policy of 1994 (e.g., overall strengths of the policy, weaknesses of the policy, etc.).

Appendix H

Forms Used to Guide
Data Collection Effort

Forms Used to Guide Data Collection Effort

PART I: INTERVIEW WITH STATE CSO COORDINATOR

Contact Person:					
Mailing Address:					
Web Site:					
Email Address:					
Telephone Number:					
Fax Number:					
Number of current permits requiring NMCs					
Number of enforceable mechanisms requiring NMCs					
Communities having implemented NMCs	0%	25%	50%	75%	100%
Communities submitting NMC documentation	0%	25%	50%	75%	100%
NMC documentation reviewed/approved by State	0%	25%	50%	75%	100%
Permits requiring LTCP development	0%	25%	50%	75%	100%
Are there any CSO control requirements for communities too small to develop LTCPs?				YES	NO
If yes, communities implementing CSO controls outside LTCP	0%	25%	50%	75%	100%
Number of LTCPs received, to date:					
Number of LTCPs approved, to date:					
For completed LTCPs, is permittee in compliance with WQS?			YES	NO	?
Have WQS staff been involved in LTCP reviews?			YES	NO	?
Has a coordination team of CSO stakeholders been formed?			YES	NO	?
Number of requests for CSO-related water quality standards reviews:					
WQ data collected sufficient to perform a standards review?			YES	NO	?
CSO-related enforcement actions undertaken by the State for failure to implement NMCs:					
CSO-related enforcement actions undertaken by the State for failure to implement LTCPs:					
Where are these enforcement actions documented?					
Estimated dollars spent state-wide on CSO controls					
Estimated needs for additional CSO controls					

NOTES:

PART Ia: INTERVIEW WITH STATE WQS COORDINATOR

Contact Person:			
Mailing Address:			
Web Site:			
Email Address:			
Telephone Number:			
Fax Number:			
Have WQS staff been involved in the LTCP reviews?	YES	NO	?
To your knowledge, have any CSO communities requested WQS reviews as part of the LTCP process?			
	YES	NO	?
If so, have the communities submitted sufficient data to support a WQS review?			
	YES	NO	?
Have any WQS reviews for CSO receiving waters been initiated?	YES	NO	?
Have any communities received variances for CSO discharges?	YES	NO	?
Have any CSO-related WQS revisions been completed?	YES	NO	?
Does the State have a formal process for reviewing WQS for CSO-impacted waters?			
	YES	NO	?
Are all CSO impacted waters on the States list of impaired waters?	YES	NO	?
Are CSO impacted waters given special consideration during your triennial review process?			
	YES	NO	?
Post implementation of LTCPs, will the permit meet WQS?	YES	NO	?

NOTES:

PART Ib: INTERVIEW WITH STATE ENFORCEMENT COORDINATOR

Contact Person:
Mailing Address:
Web Site:
Email Address:
Telephone Number:
Fax Number:
Have enforcement staff been involved in the LTCP reviews? YES NO ?
What types of enforcement orders has the State used for CSO compliance?
Judicial Order **Administrative Order**
Consent Decree
How many enforcement orders has the State issued related to NMC implementation?
Of these, how many were for noncompliance with a permit requirements?
How many were to keep NMC requirements out of the permit?
How many enforcement orders has the State issued related to LTCP development?
Of these, how many were for noncompliance with a permit requirements?
How many were to keep the requirement to develop an LTCP out of the permit?
How many enforcement orders has the State issued related to LTCP implementation?
Of these, how many were for noncompliance with a permit requirements?
How many were to keep LTCP implementation schedules out of the permit?
What is the role of the EPA Regional office in enforcement actions in the State?

NOTES:

ONSITE REVIEW _____
OFFICE REVIEW _____
DATA ENTRY _____

PART II: CSO COMMUNITY/FACILITY INFORMATION

A. FACILITY INFORMATION				Source*
Facility Name:		**Abbreviation:**		
Mailing Address:				
Facility Address: (NOT P.O. Box)				
NPDES Permit #:		**County:**		
Iss. Date: ___ / ____ / _____	**Exp. Date:** ___ / ____ / _____		**Effect. Date:** ___ / ____ / _____	
Permittee Type (Circle One):	WWTP and CSOs		CSO outfalls only	
Website:				
Contact Person:				
Title:				
Telephone Number: _____ - _____ - _____		**FAX:** _____ - _____ - _____		

B. DEVELOPMENT AND EVALUATION OF ALTERNATIVES				
Requirement to implement nine minimum controls?	YES	NO	?	
Being implemented through an ENFORCEABLE mechanism or a PERMIT?	E	P	?	
Controls Implemented (Check all that apply)				
☐ All 9 required controls have been implemented.				
☐ 1. Proper O&M programs for the sewer system and the CSOs				
☐ 2. Maximum use of the collection system for storage				
☐ 3. Review of pretreatment requirements to minimize CSO impacts				
☐ 4. Maximization of flow to the POTW for treatment				
☐ 5. Prohibition of CSOs during dry weather				
☐ 6. Control of solid and floatable materials in CSOs				
☐ 7. Pollution prevention				
☐ 8. Public notification				
☐ 9. Monitoring				
☐ None of the NMC have been implemented.				
☐ Cannot determine which controls have been implemented.				
NMC Documentation submitted to State?	YES (Date:___ / ___ / _____)	NO	?	

IF YES -- THEN COMPLETE

* Use the following codes in the source column: (P) Permit; (A) Permit Application; (L) LTCP; (AR) Annual Report; (O) Other

ONSITE REVIEW _____
OFFICE REVIEW _____
DATA ENTRY _____

Requirement to develop LTCP?		YES	NO	?	
IF YES -- THEN COMPLETE	**Being implemented through an ENFORCEABLE mechanism or a PERMIT?**	E	P	?	
	LTCP submitted to the State?	YES (Date:___ / ___ / _____)	NO	?	
	LTCP approved by the State?	YES (Date:___ / ___ / _____)	NO	?	
	LTCP predict compliance with current WQS?	YES	NO	?	
	LTCP implementation initiated?	YES (Date:___ / ___ / _____)	NO	?	
	LTCP implementation completed?	YES (Date:___ / ___ / _____)	NO	?	
	Was a collection systems model developed?	YES	NO	?	
	Were the impacts of the NMCs considered in the LTCP?	YES	NO	?	
	Current treatment (% of vol of combined sewage collected in the CSS captured for treatment): _____				
	LTCP APPROACH (Choose one and complete the appropriate sections)				
	PRESUMPTION check one to describe approach: □ limit # of overflow events per year □ capture at least 85% of wet weather combined sewage vol per year □ eliminate or reduce mass of pollutants equiv to 85% capture	**OR**	**DEMONSTRATIVE** answer each of the following questions: Has the permittee collected data for the baseline conditions in the rec waters? Y N ? Has the permittee performed rec water modeling? Y N ? Has the permittee demonstrated compliance with effluent limitations? Y N ?		
NO	**Has the community implemented CSO controls outside of a LTCP (e.g., SSES, TMDLs, Watershed Management Plans?)**	YES	NO	?	
NOTES FOR SECTION B -- NMC and LTCP or other Narrative Information on Implementation					

* Use the following codes in the source column: (P) Permit; (A) Permit Application; (L) LTCP; (AR) Annual Report; (O) Other

ONSITE REVIEW _____
OFFICE REVIEW _____
DATA ENTRY _____

C. SELECTION AND IMPLEMENTATION OF CONTROLS - Please refer to Appendix A, CSO Control Technologies, and list controls according to their reference numbers.			
Source controls (controls to keep storm water or pollutants out of the CSS)	**Date Completed**	**Estimated capital cost**	
	__ / ___ / _____	$	
	__ / ___ / _____	$	
	__ / ___ / _____	$	
	__ / ___ / _____	$	
	__ / ___ / _____	$	
	__ / ___ / _____	$	
In-System controls (controls that require modification of the CSS)	**Date Completed**	**Estimated capital cost**	
	__ / ___ / _____	$	
	__ / ___ / _____	$	
	__ / ___ / _____	$	
	__ / ___ / _____	$	
	__ / ___ / _____	$	
	__ / ___ / _____	$	
Target date for completing LTCP implementation:	__ / ___ / _____		
Capital cost of implementing all controls outlined in LTCP:		$	

NOTES FOR SECTION C -- Controls

Solutions/alternatives considered/financial hardships; possible case study elements - use reverse if needed

D. EFFECTIVENESS OF STRUCTURAL CONTROLS					
Were any pilot tests conducted?		YES	NO	?	
Is pre-construction monitoring data available?		YES	NO	?	
Is post-construction monitoring data available?		YES	NO	?	
Has the permittee documented pollutant removal efficiencies?		YES	NO	?	
Has ambient receiving water data been collected?		YES	NO	?	
IF YES	If yes, what parameters were monitored?	_____			
	How frequently was data collected?	_____			
	What were the beginning and ending sampling dates?	__ / ___ / _____	__ / ___ / _____		
	Is the data adequate to support a WQS review?	YES	NO	?	

* Use the following codes in the source column: (P) Permit; (A) Permit Application; (L) LTCP; (AR) Annual Report; (O) Other

ONSITE REVIEW _____
OFFICE REVIEW _____
DATA ENTRY _____

E. COLLECTION SYSTEM INFORMATION - Provide information on entities served by the WWTP (name, estimated population, and whether the collection system is comprised of combined or separate sanitary sewers. If the entity is comprised of both system types, li

ENTITY	POPULATION	TYPE OF SYSTEM	
TOTAL POPULATION SERVED:	_____		
If permitted for OUTFALLS ONLY (no treatment fac.), list treatment facility and/or town receiving flow: _____			

F. FLOW AND TREATMENT INFORMATION

Annual average daily flow (MGD otherwise LIST UNITS):	_____			
Design primary treatment capacity (MGD):	_____			
Design secondary treatment capacity (MAD):	_____			
Peak flow primary treatment capacity (MGD):	_____			
Peak flow secondary treatment capacity (MGD):	_____			
Other available treatment types (list treatment type and maximum daily flow allowed)**:** _____ _____				
Are CSO-related bypasses authorized?		YES	NO	?
Are partially treated effluents combined with fully treated flows prior to discharge?		YES	NO	?

G. DISCHARGES & OTHER DISPOSAL METHODS - This section is ONLY concerned with discharges to waters of the U.S. List how many of each of the following types of discharge points are within the municipal collection system.

Original number of CSO PERMITTED outfall points:	_____		
Current number of CSO PERMITTED outfall points:	_____	Date: __ / ___ / _____	
Number of constructed emergency overflows prior to the WWTP (e.g. relief at pump stations):	_____		
Average number of dry weather overflows per year:	_____		
Number of discharge points with effluent receiving full (secondary) treatment:	_____		
Number of discharge points with effluent receiving partial (primary) treatment ONLY:	_____		

* Use the following codes in the source column: (P) Permit; (A) Permit Application; (L) LTCP; (AR) Annual Report; (O) Other

ONSITE REVIEW _____
OFFICE REVIEW _____
DATA ENTRY _____

H. SYSTEM CHARACTERIZATION

SYSTEM TYPE		% of Sewer Network	Sewer Length (indicate units)	Acres Served	
Combined Sewer	Original				
	Current				
Separate Sewer	Original				
	Current				
TOTALS (if not broken out - length and acres):					

Are there any CSO discharges to sensitive areas? YES NO ?

YES CHK APPLICABLE

- ☐ Outstanding National Resource Waters
- ☐ National Marine Sanctuaries
- ☐ Waters with threatened or endangered species
- ☐ Primary contact recreation waters, such as bathing beaches
- ☐ Public drinking water intakes or their designated protection areas
- ☐ Shellfish beds
- ☐ Other (specify): _____

NOTES FOR SECTION H -- System Characterization
Note information on land-use, area rainfall/precipitation; special information about the area/system

I. RECEIVING WATER DESCRIPTION - Complete this section for each receiving water that receives discharge from either the WWTP or CSO point(s). Try to determine if these bodies are listed on the 303(d) list as impaired waterbodies and why.

Receiving Water Name	Name of Watershed	CSO-related WQS review completed?	
		YES NO ?	
		YES NO ?	
		YES NO ?	
		YES NO ?	
		YES NO ?	

J. WATER QUALITY DATA - Photocopy and attach data collected for wet weather or CSO studies.

- ☐ BOD/CBOD _____
- ☐ TSS _____
- ☐ DO _____
- ☐ Fecal Coliforms _____
- ☐ E. coli _____
- ☐ Enterrococci _____
- ☐ Metals _____
- ☐ Other (specify) _____

* Use the following codes in the source column: (P) Permit; (A) Permit Application; (L) LTCP; (AR) Annual Report; (O) Other

Appendix I

Stakeholder Meeting Summary
July 12-13, 2001
Chicago, Illinois

Summary of EPA Stakeholder Meeting, Chicago, Illinois July 12-13, 2001

Introduction

On July 12-13, 2001, the U.S. EPA Office of Water held a meeting in Chicago at the Palmer House Hilton Hotel to discuss the upcoming Report to Congress on Combined Sewer Overflows (CSOs). The meeting provided an invaluable opportunity for the Agency to hear directly from the most experienced CSO stakeholders from across the country about the state of CSO Policy implementation. It also was an opportunity for participants to discuss the initial findings of the draft Report to Congress that will be completed in September 2001.

The main goals of the meeting were to:

- Present and discuss the data, report methodology, and analysis of the Report to Congress.
- Discuss the implications of the major findings of the Report.
- Discuss participants' experiences under the CSO Policy.
- Discuss future directions, including activities related to the Wet Weather Quality Act of 2000.

Appendix I-1 includes a list of attendees from the meeting, and the Agenda is included as Appendix I-2. This summary below recaps the presentations that were given that outline the contents of the report and the resulting discussions. This summary is organized into the following major sections:

- Opening Remarks
- CSO Policy Overview
- Module 1: Methodology
- Module 2: CSO Policy Activities by EPA
- Module 3: Describing CSOs and CSO Communities
- Module 4: National Pollutant Discharge Elimination System (NPDES) Authorities and Other State Programs
- Module 5: CSO Activities by Permittees
- Summary of Day 1
- Opening Remarks for Day 2
- Preliminary Findings Discussion
- Additional Findings Suggested by Participants
- Additional Comments from Stakeholders
- Closing Remarks

Opening Remarks by Tom McSwiggin, Illinois Environmental Protection Agency

Tom McSwiggin, Director of Permits for the Illinois Environmental Protection Agency opened the meeting by welcoming participants to Chicago and providing background on CSO activities in the Chicago area during the past 30 years. From the 1970s until today, Chicago has spent more than $5 billion on CSO control. Mr. McSwiggin explained that development and other land use projects resulted in a decision by the city to reverse the flow of the Chicago River, and that this reversal exacerbated flooding in the city and made CSOs a more important and visible problem. In 1972, Chicago required that all dry weather overflows and first flush have primary treatment and disinfection, and all other flows must have solids removal. In implementing this requirement, the city realized that wet weather overflows were a bigger problem than originally thought, and that their handling would require looking at sewer redesign, expansion and treatment capacity. Mr. McSwiggin stressed that an important issue in moving forward was the philosophy that the costs of treatment should be weighed against environmental benefits.

Mr. McSwiggin noted that since the early 1970s, there have been success stories related to Chicago's CSO program. Although Chicago has not implemented all aspects of the CSO Policy, Mr. McSwiggin believes the Chicago area is fulfilling all federal requirements for CSO controls. Since Chicago began so early, Mr. McSwiggin felt that when the CSO Control Policy was released in 1994, they were already ahead of the curve. Mr. McSwiggin stated that, as with many cities, some think that the city has made significant achievement, while others feel that current controls have not gone far enough.

CSO Policy Overview—Jeff Lape, Acting Director, Water Permits Division, Office of Wastewater Management, U.S. EPA Headquarters

Mr. Lape thanked the participants for coming and explained that the main goals of the meeting were to:

(1) Share with participants what the research on the status of CSO control has yielded so far and what story it might tell (day 1).

(2) Discuss the implications of this information (day 2).

(3) Solicit comments on the CSO program (day 2).

Mr. Lape explained that the nation's sewers were built largely between the 1850s and 1950s for the purpose of transporting waste away from human population centers. This original infrastructure has a single set of pipes in which stormwater and sewage are combined and designed to overflow when capacity is exceeded during storm events.

He discussed the history of CSO controls at EPA and the development of the 1994 CSO Control Policy. In 1989, EPA released the National CSO Strategy. At that time, EPA felt that CSOs needed to be addressed as point sources, but the question of what control would be enough was unanswered. In order to address that question, EPA sought advice from experienced stakeholders, municipalities, states, associations, and environmental groups through a Management Advisory Group (MAG) created in 1992. A subset of the MAG developed a recommendations paper called the Consolidated CSO Framework that formed the basis for the 1994 CSO Control Policy. He reminded the participants that, at the time, the CSO Control Policy was endorsed by all members of the MAG as a thoughtful and progressive policy. The MAG included representatives from the following organizations:

- American Public Works Association
- Association of Metropolitan Sewerage Agencies (AMSA)
- Association of State and Interstate Water Pollution Control Administrators (ASIWPCA)
- Center for Marine Conservation
- CSO Partnership
- Environmental Defense Fund
- Lower James River Association
- National Association of Flood and Stormwater Management Agencies
- National League of Cities
- Natural Resources Defense Council
- Sewage Treatment Out of the Park
- Southern Environmental Law Center
- Water Environment Federation

When the CSO Control Policy was released, EPA and some stakeholders (most prominently Senator Max Baucus) recommended that Congress endorse this Policy. In December 2000, Congress passed an appropriations bill that makes the CSO Control Policy mandatory.

Key principles of the CSO Control Policy that set it up for success are the following:

- Establishes clear levels of control for achieving water quality requirements.
- Provides sufficient flexibility (especially financial) to municipalities.
- Allows for a phased approach to implementation.
- Calls for the review and revision (as necessary) of water quality standards.

Key elements of the Policy include:

- Nine Minimum Controls (NMC)
- Long-Term Control Plans (LTCPs)
- Coordination with review and revision of water quality standards
- Implementation
- Monitoring

Mr. Lape explained that in Phase I of CSO implementation, the NPDES permit should include implementation of the NMC and development and submittal of an LTCP. Municipalities should also prepare a report documenting implementation of the NMC within two years and comply with the water quality standards by the state's due date. Phase II NPDES permits should contain:

- Requirements to implement technology-based controls.
- Narrative requirements for CSO controls.
- Water quality-based effluent limits under Section 122.44(d)(1).
- Compliance with the state's Water Quality Standards numeric performance standards.
- A reopener clause for failures.
- Implementation assessment and monitoring to assess effectiveness.
- Assessment of overflows to sensitive areas.
- Requirements for maximizing treatment for wet weather.

Mr. Lape characterized the CSO Control Policy as a unique approach to a challenging problem. First, the Policy was designed to have stakeholder input from the beginning. Secondly, it describes a process rather than a level of control. This process was designed to maximize environmental benefits while considering affordability. While the CSO Control Policy is process-based, it provides a clear framework for deciding on a level of control that will comply with the Clean Water Act.

The Wet Weather Water Quality Act (WWWQA) of December 2000 amended the Clean Water Act. The WWWQA called for this Report to Congress, due September 1, 2001 (focused on implementation and enforcement), and a second Report to Congress (focused on environmental water quality impacts), due in 2003. The WWWQA also effectively made the CSO Control Policy mandatory. Finally, the WWWQA sets a completion date of July 31, 2001, for guidance on water quality standards as related to LTCP development. This guidance is one that EPA has been working on for several years but has only recently completed for Office of Management and Budget (OMB) review. It will reinforce the notion of coordination and ensure that the data will support the review of water quality standards.

The 2001 Report to Congress will be primarily descriptive and focus on answering following questions:

- What activities has EPA undertaken to implement provisions of the CSO Control Policy?
- What activities have states/NPDES authorities undertaken to control CSOs?
- What approaches have communities undertaken to control CSOs?
- What controls and CSO abatement measures have been successful?
- How successful has the CSO Control Policy been in controlling and abating CSOs?

Although the new Administration's appointees have yet to be confirmed, Mr. Lape gave participants some sense of what major areas of emphasis the current Office of Water leaders have identified:

(1) Watersheds—identify problems "on-the-ground" and tailor solutions (Mr. Lape called participants' attention to a new book called Regulatory Craft by Malcolm Sparrow, which many managers in EPA were reading and using to think about a new paradigm for improving the functioning of regulatory agencies)

(2) Infrastructure improvements

(3) Sound data and information

(4) Performance measures/outcomes

(5) Brownfields

(6) Invasive/nuisance species

Mr. Lape then pointed out that a copy of the strategic plan for NPDES permits was included in the meeting materials if participants wanted additional detail.

Mr. Lape introduced members of his staff and personnel from the Regions that were present: Beverly Bannister (EPA, Region 4 Water Management Division Director), Linda Murphy (EPA, Region 1 Water Management Division Director), Pat Bradley and Tim Dwyer (program managers in charge of the Report to Congress), and Kevin DeBell.

Mr. Lape said he hoped that participants at this meeting could assist EPA in validating its current findings, discuss the implications of these findings, provide insight regarding CSO implementation, discuss directions for the CSO Policy, and provide suggestions on methodology for the next report. He told the group that a summary of the discussion at this meeting would be created, shared with the group, and included as an appendix to the report. In addition, he explained that he was confident that this dialogue would be helpful to EPA in honing the report.

Module 1: Methodology—Kevin DeBell, U.S. EPA Headquarters, Office of Water

Mr. DeBell explained that EPA is preparing the report in response to the charge from Congress to review and report on the implementation and enforcement of the CSO Control Policy. He explained that until last December the Policy was not mandatory, which meant that there was likely to be a variety of interpretations of what the Policy intended and various levels of adoption. As a result of that variety, EPA decided to try to collect primary and secondary information from federal, state, and local data sources rather than rely on a projection of the whole based on partial data.

EPA also based this Report to Congress on information gathered from existing sources, rather than modeling results. These are also recognized as imperfect sources because recording of CSO activities varies widely among implementors. This Report to Congress is the first comprehensive look at the implementation of the CSO Policy. The steps used to collect information for the report included:

- Culling information from existing national programmatic databases (SRF; 104(b)(3); PCS; etc.) and headquarters programmatic files.
- Conducting state visits and reviewed 790 permit, inspection, and enforcement files.
- Interviewing NPDES and water quality standards authorities.
- Developing a state profile for each CSO state describing CSO implementation activities.
- Supplementing programmatic data with 15 to 20 municipal case studies. These municipal case studies will serve to illustrate a cross section of implementation activities and help Congress understand important challenges and successes in CSO control.
- Identifying and documented data gaps.
- Supplementing programmatic data with modeling results.
- Performing a comprehensive literature search.

This report will not address the costs of implementation and the associated environmental benefits in a comprehensive manner. That information has been called for in the 2003 Report to Congress.

Independent information generated by CSO stakeholders will be used to verify or contrast data collected by EPA. It will not be included as independent data. Sources included in the Report to Congress are:

- Natural Resources Defense Council Testing the Waters Report
- Water Environment Federation Water Quality Standards Experts' Conference
- Association of Metropolitan Sewerage Agencies Case Studies and Survey of Members
- Association of Metropolitan Sewerage Agencies Performance Measures Report
- CSO Partnership Survey
- Center for Marine Conservation information

Question: Did EPA consider the Inspector General's (IG's) Report?

Response: EPA has looked at the report and meets regularly with the IG. EPA does not intend to fold data from the IG's report into this report but will use some of the case study information. The IG's report was fairly restrictive in that it focused on only three of the NMC.

Suggestion: Include the information from the New York case study because several critical issues regarding CSO control are highlighted, namely the difficulty of siting CSO outfalls on public land (need an act of the legislature).

Question: What type of data will be culled from the stakeholder sources?

Response: The stakeholder information will be used across the results from the analysis of primary EPA, state, and municipal sources.

Suggestion: Include information from the Natural Resources Defense Council Testing the Waters report, which includes reasons cited for beach closings and documentation of environmental impacts. The next update of the annual report is due in August.

Question: Did EPA look at the 303(d) list?

Response: Yes. That list, along with the 305(b) list, was included in the EPA data.

Module 2: CSO Policy Activities by EPA—Ross Brennan, U.S. EPA Headquarters, Office of Water

Mr. Brennan began his presentation by explaining that after the release of the CSO Control Policy in 1994, everyone had high hopes. EPA poured a lot of resources into implementation of the Policy, which continues today. The challenge that EPA faces is moving forward with the most effective mix of activities. Because the CSO Policy was not a regulation, EPA spent considerable effort clarifying and interpreting what the Policy meant, including the following memoranda:

- CSO Deadline Memorandum (1997)—reiterated the deadline for LTCPs
- CSO Implementation Memorandum (mid-1988)—explained who is out there and what they are doing
- Water Quality-based and Technology-based CSO Requirements Memorandum

In addition, EPA developed a Compliance and Enforcement Strategy for CSOs and SSOs that stated the Agency was following a strong enforcement stance for both of these issues. The Agency was also holding itself accountable by including performance measures for CSOs under the Government Performance and Results Act (GPRA) measures.

In addition to the clarification of the Policy, EPA developed seven separate permitting guidance documents that addressed implementation of NMC, development of LTCPs, permitting, monitoring and modeling, funding, and schedule development. An eighth guidance on the integration of LTCPs and water quality standards was never completed, but is now being finalized to meet Congress' July 31, 2001, deadline.

Mr. Brennan pointed out that the two components of successful CSO implementation involve permitting and enforcement. These two components are interrelated. To help ensure that CSOs are incorporated into the NPDES program, EPA has conducted many permit writing training courses. In addition, it has developed fact sheets on technologies to help inform permit writers and the regulated communities about the latest technology. The Agency also has developed Memoranda of Agreements with Regions that outline enforcement plans.

Mr. Brennan emphasized the importance of communication and coordination in carrying out the CSO program. He noted that stakeholders have been involved heavily in the process. EPA holds frequent conference calls with the CSO coordinators in the 32 states implementing programs, and they have held listening sessions that have involved a wider array of stakeholders.

Mr. Brennan noted that the Agency uses a number of tools to solicit and maintain the volume of information being tracked about the CSO program, including the Local Government Environmental Assistance Network (LGEAN), which helps with information distribution to local governments; the EPA Needs Survey, which helps to identify the cost of controls; the Permit Compliance System database, which helps to identify the universe of facilities; and the water quality inventory, which can help to identify impaired water bodies.

Finally, Mr. Brennan reviewed the status of financial assistance efforts to date for CSO projects. He highlighted that in 2000, over $400 million was made available for CSO projects through the State Revolving Fund (SRF). Since 1994, six entities have been issued cooperative agreements under CWA Section 104(b)(3) for innovative CSO projects. Although the Agency is aware that some money provided to states under Section 106 Water Pollution Program Support Grants is used for CSO activities, grants are not program specific and states are not required to report on how the grant was used, so no specific funding information is available.

At the end of his presentation, Mr. Brennan acknowledged that it is still a challenge to move forward in an environment of limited funding and a need to achieve water quality standards. He observed that EPA now better understands the challenges faced by regulated entities than in the early 1990s, when the Policy was developed.

Question: Has anyone revised their water quality standards?

Response: Some states have moved ahead in this arena, such as Massachusetts and Indiana, but lack of movement is an issue overall.

Comment: NPDES permitting process provides an inadequate vehicle for public participation. Since so many lawsuits are being filed against permits, the public participation activities have focused largely on preparing for litigation.

Comment: EPA has much guidance, but leadership is lacking. Leaving water quality standards revision to the states and municipalities is a political nightmare. The costs are high to implement controls, yet few politicians want to look "ungreen." This is an arena where federal leadership is needed.

Comment: EPA should intervene and take over the programs where necessary when permit backlogs are a big issue.

Comments: Some participants expressed that some stakeholders were making it difficult to revise water quality standards downward and that was a problem. Others felt that there was a need to address water quality standards, but not necessarily revise them downward.

Question: What is the nature of the enforcement actions?

Response: The Agency is still collecting these numbers, but initial estimates are that EPA has taken approximately 20 civil judicial actions and 23 administrative actions and the states have taken about 110 administrative actions. EPA also acknowledged that current systems, including PCS, are incomplete, inaccurate, and obsolete.

Module 3: Describing CSOs and CSO Communities—Ross Brennan, U.S. EPA Headquarters, Office of Water

Mr. Brennan explained that this section of the report attempts to summarize the current CSO universe. The summary data are as follows:

- There are CSOs in nine of the 10 EPA Regions (none in Region 6).
- There are CSOs in 32 states, concentrated in the Northeast and Midwest. Many of these are along river valleys, which reinforces the need for a watershed approach.
- There are 860 permits that include CSOs (some municipalities have multiple permits and some permits cover multiple municipalities).
- There are 9,520 CSO outfalls.
- Four states (Illinois, Ohio, Indiana, Pennsylvania) have over 50 percent of the CSOs nationally.
- Ten states comprise 85 percent of the CSO universe.
- Fourteen states have fewer than 10 CSOs each.
- Nineteen states have no CSOs.

Further detail about the distribution of the permits is as follows:

- Of the 860 permits, 670 of these permits are with POTWs.
- 70-percent of the permits are with majors (more than 1.0 mgd or greater than 10,000 population).
- There are 193 with satellite collection systems.
- 40 of the 860 are unknown.

Question: What was the cause for the decrease in the numbers of CSSs from 1976, when there were thought to be 1,300 CSSs, to 860 now?

Discussion from EPA and participants: There could be several causes for the change in the number. One explanation is that a percentage of these communities have separated their sewers. Another explanation is that the definition being used in 1976 is not the same is it is now, meaning that many communities with separate sewer systems with storm drains are not called CSSs now, but may have been counted previously. Another possible explanation is that the satellite systems may be counted differently. EPA also explained that this is really the first time that they feel they have a good handle on the number of CSSs. The original number of between 1,300 and 1,400 was based on the Needs Survey, which had a discrepancy when compared to the CSO coordinator information. Participants suggested that EPA explain carefully the definition currently being used and possible explanations for the dramatic change in number. EPA should take credit for improvements where appropriate, including systems that have been separated, and then explain the remaining gaps where possible.

Question: Are you using the same definition of satellite systems as used in the SSO discussion?

Response: Yes.

Comment: Tell Congress that, while there are 860 permits, this represents many more political jurisdictions.

Comment: The definition of CSO should be clarified from an enforcement perspective and the new SSO rules; communities would rather fall under the more flexible CSO umbrella.

Question: Is the old estimate of cost for CSO controls $43 million?

Response: Yes.

Question: How was the 70/30 major versus minor split determined?

Response: Major or minor is not always population or flow based. Many of these communities are under 10,000, but we used the major/minor field in PCS.

Module 4: NPDES Authorities and Other State Programs—Pat Bradley, U.S. EPA Headquarters, Office of Water

Mr. Bradley began his presentation by explaining that states and NPDES authorities have two major roles: (1) issuing permits and (2) taking enforcement actions and providing compliance assistance. State water quality authorities are responsible for assisting in conducting water quality standards reviews and revisions. These staff do not often closely coordinate their efforts. Indiana, Massachusetts, and Maine have formal processes for establishing water quality standards, and at least one state has announced that they will not do reviews or revisions.

Currently, 28 of the 32 states are NPDES authorized. Alaska, the District of Columbia, Massachusetts, and New Hampshire have their respective EPA Regional offices as their NPDES authority.

The 1989 CSO Control Strategy (precursor to the 1994 Policy) called for the elimination of dry weather overflows (DWOs), minimizing the impacts of CSOs through the adoption of the six minimum measures and development of a CSO control strategy (or certification of no CSOs) by 1990. A majority of the states met the 1990 deadline for development of a control strategy. All but one developed a strategy by 1991.

States took one of four major approaches to control CSOs. They are as follows:

(1) Revised existing state strategy to match federal CSO Control Policy (CT, GA, IN, KY, ME, MD, MA, NH, OH, WV).

(2) Continued using existing state strategy (IL, IA, MI, MO, VT).

(3) Adopted state requirements either beyond (more stringent than) or outside (aside from) the federal CSO Control Policy; such as:

- New Jersey—watershed approach
- New York—15 best management practices (BMPs)
- Pennsylvania—requires system characterization and water quality reports
- Washington—limits to one overflow per year.

(4) Developed CSO control programs on a site-specific or community-by-community basis (AK, CA, DE, DC, KS, MN, NB, OR, RI, SD, TN, VA, WI; this approach was generally taken by states with less than 4 or 5 CSSs).

Data on Implementation of the NMC:

- Requirements for the NMC were included in 87 percent of permits.
- NMC were adopted by 22 of the 32 states.
- Four states continue to require the Six Minimum Controls (1989 CSO Strategy).
- Two states developed BMPs that exceed requirements of the CSO Policy.
- Four states do not do not require implementation of the NMC.

Data on Implementation of LTCP:

- LTCP development is required with 64 percent of permits.
- Twenty-five states established framework for long-term control planning to meet water quality standards.

- Less than half of the 25 states have enforceable requirements for all CSO permittees to develop LTCPs, due to different priorities, permit backlog issues, and cost.
- Seven states do not require LTCPs.

Mr. Bradley explained that states have two primary financial obligations: (1) funding the state's CSO program and (2) assisting permittees in securing funds necessary for CSO controls. The following statistics are from the State Revolving Fund (SRF):

- 1988 – 1994, $700 million spent on CSO controls.
- 1994 – 2000, $1.3 billion spent on CSO controls.
- Illinois, Michigan, and New York spend the most SRF monies on CSO projects.
- 17 states have additional state financial assistance of some kind (loans, bonds, grants).

Question: How much of this problem of permits not having NMC and LTCPs is due to a permit backlog issue?

Response: About 34 of the 112 permits that do not require the NMC are a result of backlog issues.

Comment: Some states have asked for NMC reports as part of the permit process, but they do not show up in the permit themselves. The compliance may be higher than is indicated by these numbers.

Question: What does enforcement mean given the "shall conform" language of the WWWQA?

Response: Now that the law has changed, and depending on how you interpret "shall conform," states that are issuing permits (after December 2000) that do not include NMC and LTCPs could be inconsistent with the law and vulnerable to legal challenge.

Question: Since 1994, we have had a non-binding policy and states and communities have chosen a variety of approaches to respond to the Policy. How do we reconcile that with the fact that the Policy is now law?

Comment: EPA should require that all communities do the NMC. If some want to do more, that is OK, but at a minimum you must do the NMC. The thrust of the report should be that we have a policy, not much has been done and we need to get moving on it.

Comment: The report should convey the other challenges that states face, such as competing water programs [i.e., storm water, concentrated animal feedlots (CAFOs)]. CSOs have suffered because the CSO Control Policy was not a regulation.

Comment: Before the Policy, many states were doing nothing. These results actually show tremendous progress. Communities deserve a lot of credit for the progress that has been made in CSO controls, particularly since communities are challenged with old infrastructure. Flexibility has helped, but much more funding in the form of grants is needed. Please show financial burden on states of CSO control in the Report to Congress. The communities have the financial data. Without federal assistance, rate payers are being stressed.

Response: EPA said they would address financial burden and related environmental benefits in the 2003 report.

Comment: Several stakeholders stressed that the SRF monies are not a complete solution to CSO controls. Some states add points to these loan dollars, in some cases making them less desirable than private loans. Others reminded EPA that these are loans, and some communities, especially small ones, really need grants to be able to do the work they need to do to comply with the Policy. Simply pouring more money into the SRF will not help everyone.

Module 5: CSO Activities by Permittees—Pat Bradley, U.S. EPA Headquarters, Office of Water

Mr. Bradley explained that EPA estimates that there are 860 CSO permits that cover 777 communities located in 32 different states. Of 860 permits, 765 had data available on the type of receiving water body as summarized below:

- Streams (38 percent)
- Rivers (43 percent)
- Ponds/lakes (2 percent)
- Oceans/estuaries/bays (5 percent)
- Other (12 percent)

The following data were shared with the group on CSO control priorities:

- 301 of the 765 permit files reviewed had information about dry weather overflows; of these 301, 278 permittees noted no dry weather overflows.
- 452 of the 765 permit files reviewed had information on the miles of sewer maintained or acres served.
- 255 of the 765 permit files reviewed have documented the frequency of CSO events, by outfall, for one or more years.
- 195 of the 765 permit files reviewed document annual CSO discharge volumes by outfall, for one or more years.
- 47 of the 765 permit files reviewed have received water monitoring data.

Implementation of the NMC varied greatly. Below are data on the percentage of permits that had documentation on the various types of NMC implemented:

1. Proper operation and maintenance (O&M)—75 percent
2. Maximize use of collection system for storage—75 percent
3. Pretreatment program review and modification—68 percent
4. Maximize flow to the POTW—74 percent
5. Eliminate dry weather overflows—76 percent
6. Floatables control—62 percent
7. Pollution prevention—59 percent
8. Public notification—59 percent
9. Monitoring—56 percent

The following is a list compiled of the most common activities employed to implement the NMC.

NMC Activity	NMC	Number of Permits
Street cleaning	6	182
Catch basin cleaning	6	159
Public education	8	102
Sewer flushing	1	91
Screens and trash racks	6	84
In-sewer storage	2	76
Solid waste reduction and recycling	7	68
Infiltration and inflow control	2	67
Industrial pretreatment	3	61
Area drain, foundation drain and roof leader disconnection	3	58

Implementation of LTCPs:

- 282 of the 786 permits have submitted LTCPs.
  - 28 percent followed the demonstration approach.
  - 36 percent followed the presumption approach.
  - 36 percent followed a combination of demonstration and presumption or different approach altogether.
- 180 of the 282 LTCPs submitted have been approved.
- 232 of the 786 have submitted documentation for project-specific CSO controls that do not meet all the requirements for an LTCP, but go beyond minimal capital investment expectations of the NMC.

The following is a list compiled of the most common activities employed to implement LTCPs.

LTCP Control	CSO Control Category	Number of Permits
Sewer separation	Collection system	223
Sewer rehabilitation	Collection system	72
Retention basins	Storage	71
Primary sedimentation	Storage	69
Disinfection	Treatment	67
Storage tunnels and conduits	Storage	66
Upgraded wastewater treatment plant capacity	Treatment	64
Outfall elimination	Collection system	62
Upgraded pump station capacity	Collection system	53
Swirl concentrators and vortex separator	Treatment	31

Of the 786 permit files, 254 contained information on sensitive areas. Primary contact recreation waters was by far the most often cited type of sensitive use cited by communities. Some states, such as Indiana, have categorized all of their waters as primary contact recreation waters. The following is the breakdown of reported sensitive areas where CSOs are located or are impacting sensitive areas.

- Waters with threatened or endangered species—9
- Shellfish beds— 8
- Public drinking water intake—10
- Primary contact recreation waters—179
- Outstanding National Resource Waters—1
- Other/unspecified—47

According to the CSO Partnership, the large majority of CSO program improvements are self funded (82 percent). Fifty-five of the projects employ the SRF. Thirty-two percent utilize state grants, 18 percent federal grants, and five percent other sources.

Question: Does the definition of oceans/estuaries/bays match the definition in the Beaches Act? If so, five percent seems low since a major impetus pushing CSO control in the early 1990s were the concern over coastal impacts. Perhaps focusing on this five percent would give us the biggest bang for the buck.

Response: These categories were based on what the permit language said, not any standard definition. It is possible that more are oceans/estuaries/bays if the Beaches Act definition is used.

Question: Did you ask communities for receiving water data?

Response: We checked the permit files, but did not contact communities. We will go directly out to communities for the 2003 report.

Comment: Collecting data is a good start, but telling an accurate story is important as well. For example, while five percent of receiving waters may be coastal, if measured by population, the impact goes up dramatically.

Comment: It is important to note that before the CSO Policy, two-thirds of communities had dry weather overflow, now 278 of 301 report no dry weather overflows.

Question: The dry weather overflow number seems low. What could account for that?

Response: People do not like to report dry weather overflows. Also, there is a different interpretation of what dry weather overflow means.

Question: How many permit files were reviewed?

Response: 786 files were reviewed in 16 states.

Comment: It seems as if the ninth minimum control (monitoring) is not being implemented. Is anyone monitoring to see if they need an LTCP?

Response: Generally, they are doing monitoring to characterize their system, they are not conducting stream monitoring.

Comment: The Report to Congress should convey that environmental impact monitoring is not being conducted as intended in the CSO Control Policy to determine if LTCPs are warranted.

Comment: Include the percentage of communities that have completed their LTCPs.

Comment: It would be nice to have information broken out by size of community, flow, and rainfall as well.

Question: Will enforcement data be in the report?

Response: Yes.

Comment: Participants emphasized that the report should be useful to Congress. For example, point out progress and ensure that Congress understands that without additional funding it will be difficult to make more progress. We need to send the message to Congress that we need to spend the $40 billion necessary to repair this problem.

Summary of Day 1— Jeff Lape, Acting Director, Water Permits Division, Office of Wastewater Management, U.S. EPA Headquarters

We received a mandate for this report seven months ago. We realized that we did not have data, information, or analyses on which to base a progress report. Since that time, we have tried to define the universe, document progress, and list results but have encountered a paucity of data from previous analysis. Many of the necessary data collection tools are not in place for CSOs, let alone the entire NPDES program. Data system management (electronic, geo-referenced, and available systems) will be a priority for the NPDES program in the future.

Opening Remarks, Day 2—Mike Cook, Director, Office of Wastewater Management, U.S. EPA Headquarters

Mr. Cook discussed the political context, the state of water quality, and infrastructure issues as they affect CSOs. He told the group that EPA's Administrator is putting greater focus on wet weather issues, particularly as they feed into a larger context of having a holistic watershed approach for dealing with water quality problems. EPA's budget request for CSOs was $450 million.

Mr. Cook explained that there is a paucity of good water quality data. The state 305(b) lists are the primary source of data in this area. According to this source, 40 percent of the nation's water bodies have been characterized, but some have limited data. We do have good data on a few sources, such as in Boston and Chicago. We do know that many waters are impaired and that many of these impaired waters are targeted by TMDLs. Also, many of these impaired waters are in urban areas. These urban areas should remain the focus. EPA has court orders in 19 states to review TMDLs, some of which deal with point sources such as CSOs.

The new Administration has been influenced by a report from the National Academy of Sciences, which places an emphasis on biomonitoring and suggests keeping the TMDL program moving using an adaptive management approach. The report states that many water quality standards were put in place 25 or more years ago and are no longer appropriate. Before initiating work on TMDLs, EPA should look at the water quality standards and determine if they are appropriate.

Mr. Cook reminded the group of the frequent discussions at the federal and state levels about the cost of new regulatory requirements and unfunded mandates (e.g., arsenic standards, effluent guidelines), but explained that these discussions paled in comparison to the cost of replacing an aging wastewater infrastructure, which is estimated at $1–2 trillion, not including the cost of private connections. EPA estimates the cost of SSOs control to be $80–90 billion alone. These costs will only rise, so Mr. Cook believes that the time to act is now, but reminded the group to realize that progress will be incremental. Long-term strategies will be successful only when measured in decades.

He also commented that the social costs associated with future infrastructure needs are significant. Affordability will take on more importance as costs for these improvements rise. Mr. Cook explained that because the income of 60 percent of the nation's poorest citizens has remained steady, but sewerage rates have increased steadily, wastewater costs take a larger percentage of overall household costs. This causes two main problems for communities faced with significant infrastructure improvement needs: (1) poorer communities will not be able to afford improvements at all and (2) large communities may still be able to afford the user fees overall, but within the larger community there will be an increasing population that cannot afford the fees.

He reminded the group that this problem will be felt most severely at the local level, since local communities will bear most of the cost of infrastructure improvements. There will be political problems associated with this issue. For example, political difficulties have already been felt by politicians in California due to beach closures.

Preliminary Findings Discussion

The group then reviewed six preliminary findings designed to stimulate discussion and refine thoughts on how to interpret the data presented on Day 1.

Finding #1: The CSO universe is small (compared to the total POTW universe), regionally concentrated, diverse, and dynamic. EPA estimates that today the total number of permits covering CSSs is 860.

Reactions:

- The participants generally agreed that first finding has nothing to do with what was asked for by Congress (i.e., what EPA has done to enforce the Policy) and therefore does not warrant a finding. Findings should really be more punchy and tell the story better.

Recommendations:

- Should delete the word "small" because it diminishes the importance of the CSO problem. Instead, the report might want to state that 43 million people are served by CSSs and which Congressional districts are affected.
- Focus the report on how EPA, the states, and municipalities have implemented and enforced the CSO Control Policy.
- Incorporate downstream miles of waters impacted, beach closings, and lost recreational opportunities.

Finding #2: Issuance of the CSO Control Policy focused attention on the CSO problem and gave momentum to EPA development and implementation activities.

Reactions:

- For the most part, participants agreed that the Policy was a catalyst for action by EPA and all stakeholders. One asked that the sub-topics present more information. Another asked that the report focus on impacts on people and the environment, not on "administrative bean counting" and paperwork.
- In disagreement with the finding, one stakeholder suggested that public attention gave momentum to create the Policy, not that the Policy created attention and momentum.

Recommendations:

- Change the bullet that says "EPA has inspected." States have also done inspections.
- Put it all in the context of need. How much money has been spent? Say what the needs are today. Do not assume that data from the 1996 Needs Survey is current.
- Convey that there was an immediate benefit from the Policy. The NMC were immediately implemented (in some places).
- EPA does not implement this program, states and municipalities do.
- Point out that the general population is benefitting from CSO controls that the Policy catalyzed. The cities are now focusing on other issues—they look at all aspects of wet weather control. There is an additional private sector economic benefit.

Finding #3: The vast majority of states have incorporated some CSO Control Policy provisions into state permitting and/or enforcement approaches. State CSO programs remain highly diverse, and some aspects of state implementation of CSO Control Policy provisions have differed from the framer's expectations.

Reactions:

- Participants were concerned that there is a lack of consistency in implementation and enforcement.
- One stakeholder commented that these data are taken from enforceable documents only. Due to the permit backlog, voluntary activities would not be reflected in this analysis.
- Another pointed out that a state with 76 permittees can only negotiate one to two new permits each year. These constraints account for the diversity in CSO Control implementation.
- Tim Dwyer, EPA Headquarters Office of Water, noted that EPA had not provided guidance on water quality standards review until mandated in FY 1999. Also, no metrics exist to evaluate the success of NMC and LTCPs (e.g., reduction in volume, flow, and duration of CSO discharges). Please see the section on water quality standards review for more detail.

Recommendations:

- Mention that more water quality reviews have occurred, but they are not all documented. Please see the section on water quality standards review.

Finding #4: Most municipalities have a clearer understanding of CSO control requirements as a result of CSO Control Policy. Adoption of BMPs to reduce CSO discharges is widespread. Progress in long-term, capital-intensive projects has been slower. Nationwide there are success stories in communities where CSO discharges have been eliminated or substantially controlled.

Recommendations:

- One stakeholder asked for discussion of water quality standards reviews in this section.
- Explain what the federal government, states, and municipalities have done to enforce the NMC.

Finding #5: The CSO Control Policy is unique with respect to its genesis, content, coordination, and flexibility. These qualities make its implementation different from other water pollution control efforts and make objective assessment of progress more difficult.

Reactions:

- Participants generally agreed that this finding was unimportant and could either be noted as a footnote or be cut completely. They did not want the findings to state that the Policy was unique, rather that the CSO problem is. They also wished to note that the flexibility built into the Policy cannot be utilized to its full degree if water quality standards revisions are not occurring.
- Another criticism was that the only flexibility in the Policy to date is in NMC implementation.
- Meeting water quality standards, as opposed to technology-based standards, is a primary difficulty in CSO Policy implementation.

Recommendations:

- The Policy needs tinkering. There are many components to the water quality equation, and this needs to be made clear.

Finding #6: States and communities have accomplished important environmental objectives as part of their CSO control efforts to date. However, despite the CSO control efforts on the part of EPA, states, and municipalities, much more needs to be done. More environmental data are needed to fully assess effectiveness of CSO controls and the attainment of environmental outcomes, including water quality standards. Information reporting and management, as it currently exists in most cases, is inadequate to determine accomplishments.

Reactions:

- The general consensus of the group was that much more needs to be done on collecting and monitoring information.

Recommendations:

- Finding number two is misleading because only state permit files were addressed. Should either drop or make more explicit.
- One stakeholder requested that cost information be included in this finding.
- Point out that once CSO work has been done, a stream still may not be clean.
- Another stakeholder pointed out that wet weather monitoring is complicated and that many municipalities lack the technical expertise to design and implement a monitoring program. It was requested that the finding convey this difficulty.

Additional Findings Suggested by Participants

Water Quality Standards

EPA should put everything in the context of greater watershed management. Explain how CSOs are one of the things that impact water quality and that CSO control is a step towards overall watershed improvement. Describe what water quality is, what revisions entail, and the details of the one existing water quality standards review. Mention that other water quality reviews have occurred, but they are not all documented. Say that revisions are not occurring. Explain use attainability analysis and explain that if revisions do not occur, the cost of control is going to rise (the cost of control is based on the assumptions of the presumptive approach, 4-6 overflows/year). Explain that the Policy was intended to encourage permitting people to meet with water quality standards people, but these meetings are not occurring. Water quality standards people need to be engaged more.

EPA Leadership

EPA needs to exercise more leadership regarding water quality standards revisions. Start by talking about it more in the report. Perhaps the review can be incorporated more with the LTCP process. The public consultation process is not occurring and that is an area where EPA can have some impact.

Enforcement

Since 1994, the CSO Control Policy has been non-binding, so the regulated community has developed varied levels of response. The role of NPDES authorities in the CSO issue has been less forceful than in other EPA policies. Now, with the addition of the "shall conform" language, stakeholders want more guidance from EPA to enforce the Policy in a consistent manner. Some NPDES authorities have actively enforced the CSO Policy and encouraged EPA to report details on enforcement actions.

Funding

There needs to be better public education about the costs and consequences of CSO control. Action has been spurred in some cases because of sewer crises, which dissolves opposition, but some communities have approved sewer improvements without understanding what that would actually entail. They are now having trouble making payments. The lack of grant money places much of the financial burden on municipalities. Long-term schedules must be reasonable in light of funding capabilities. Involvement by Congressional and state representatives increases funding options and decreases local share.

Elaboration on funding options was requested by some participants. It was requested that EPA make some mention that some states issue SRF loans with additional interest that may deter use of these funds. Many stressed that grants would be more helpful to small communities than loans. Many participants were concerned about the funding burden to local communities and requested that this report illuminate the costs of CSO abatement. There was agreement that the flexibility inherent in the CSO Control Policy eased some of the burden, but that additional state and federal assistance was needed. The schedule of payments should be long-term, not short-term, and be tailored to the public's ability to pay. Extending schedules for implementation and payment would help defer costs. The SRF infrastructure is in place, but may need to be adapted for CSO control. The possibility of providing grants through Clean Water SRF programs was noted. A good model for this is the Drinking Water SRF.

Some stakeholders questioned the equity of CSO funding. Distribution of income in urban areas and regional economics make some less able to pay. One stakeholder claimed that in Saginaw, Michigan, a city which undertook expensive CSO controls, 25 percent of the ratepayers cannot pay their bills and that bond payments on detention basins will bankrupt the city within five years. Assistance to economically disadvantaged communities will not necessarily help large, urban areas, which might require financial assistance but do not meet the criteria. Some suggested making zero or negative interest loans through the SRF or providing an equivalent tax incentive for users. Perhaps SRF could be changed to make grants available to poor communities, though safeguards would be necessary to prevent abuse. There was some disagreement of the viability of loans versus grants. Some suggested that grants would encourage regulators to give to those who can show environmental benefits and for municipalities to better quantify those benefits in order to get funding.

Additional Comments from Stakeholders

Definitions

- Many participants felt that the distinction between CSOs and SSOs was not clear. Another wondered if the number of communities that reported CSOs would rise again, as SSO controls become more stringent. An EPA representative noted that many SSO communities would like to be treated like CSO communities when under enforcement actions.
- Clarify terminology: permittee versus CSO community; major/minor distinction; and definitions of SSO versus CSO. The definition and inclusion of satellite communities should also be made explicit. Incentives for reporting CSOs versus SSOs should be investigated.
- Make clear the distinctions between EPA, NPDES permitting authority, and states.
- Should convey that LTCPs are only plans and that actual spending has not happened yet.
- Define and explain urban wet weather problems.
- Distinguish between small, urban tributaries and complex river systems.
- Do not use the term "Best Management Practice."
- One stakeholder requested that local governments be given credit for implementation and that EPA claim to create only policy and guidance.

Data

- Note that the only monitoring data reviewed was at state or EPA level, not each permittee's data.
- report should describe enforcement processes and enumerate enforcement actions for CSO violations.
- Include a more detailed discussion of information management related to CSOs ("incomplete, inaccurate, obsolete").
- Identify the number of political jurisdictions (communities) in the 860 permittees. Try to incorporate 2000 Census data.
- Look beyond the permit files for NMC data. Some states have asked for NMC reports as part of the permit process—these would not be reflected in actual permit files. Also, should look at permits issued prior to 1994 that have not been reissued.

- Report should have more detail of which CSO controls are being implemented.
- Report should list and discuss the number of communities that have completed LTCPs.
- Report should mention initial estimates of the size of the CSO community (1300) and the reason for the apparent decline in that number to 860. The report should include the number of communities that have separated their systems.
- Answer the question of how many CSO discharges were in violation of water quality standards at the time of the Policy and how many discharges are in violation today (hopefully the former is greater than the latter).
- Mention that some water quality reviews have occurred, but they are not all documented.
- Need standard metrics for permittees to quantify compliance (frequency of CSOs, volume, duration). What about biological indicators? Many of the success stories are anecdotal, not based on documented and technical data.
- Explain what the federal government, states, and municipalities have done to enforce the NMC.

Report Format

- Some participants felt that this format does not answer the questions asked by Congress.
- There is a need to address the context and intended audience of this report. This report is not intended to make recommendations; it is to present what has been done to implement and enforce the Policy. The report should state progress, needs, and how Congress can help.
- Tell Congress that 43 million people are served by CSOs (how many Congressional districts?). Also, bring in regional and downstream miles impacted, lost recreational opportunities, and beach closings.
- The differences between the four approaches to the Policy taken by NPDES authorities should be made clear, as well as the legal implications of the various approaches. Another participant wanted to simply state whether or not the NMC are required.
- Include mention of other activities being performed by states that may compete with CSOs as a priority (e.g., CAFOs, storm water, etc.). CSO enforcement has not been a priority because it has been just a policy for so long. One participant recommended looking at the Inspector General's Report, with particular attention to siting concerns for water pollution control projects in New York.
- Report should discuss the obstacles to NPDES programs (CAFOs, storm water, etc.) as reason for flexibility in the CSO Policy.
- Determine what goals and objectives EPA wants the report to accomplish. Then go back and write findings that focus on those.
- Report should be structured around the three "legs" of the Policy: (1) NMC; (2) LTCP to meet water quality standards; and (3) reviews and revisions of water quality standards. The third leg has not happened. NMC #9 ("monitoring to effectively characterize CSO impacts and the efficacy of CSO controls") is not being faithfully implemented. Describe water quality standards review process for Congress. Participants wanted more discussion on water quality standards review and revision and a clear standard from EPA on how to conduct reviews of water quality standards.
- Enforcement of the Policy should have a separate finding that includes actual data on enforcement actions.
- Do not be shy in saying that the states have not done their jobs.
- State what EPA is planning to do in the future.
- EPA should tell Congress that there are long-term social issues associated with CSOs related to the distribution of income in cities. This is a social problem that resulted from the development of the country.

Closing Comments—Mike Cook, Director, Office of Wastewater Management, U.S. EPA Headquarters

Mr. Cook thanked the participants for coming and reminded them that EPA does not have time to gather all the information requested, but they will do what is possible for the September 2001 Report and consider all of the comments for the 2003 Report. He reminded participants that a summary of the meeting that reflects all of the group discussion will be sent out to the participants. EPA still needs to do some thinking about what Congress will do with this report. There may be hearings based on the findings of the report. They may respond legislatively. They may set aside some funding to address the problem, hopefully in a larger watershed context.

Appendix I-1—Attendees

Name	Affiliation
Shadab Ahmad	New Jersey Department of Environmental Protection
Beverly Banister	US EPA Region 4
Emily Bergner	Prairie Rivers Network
Andre Borrello	City of Saginaw, Michigan
Pat Bradley	US EPA Headquarters, Office of Water
Ross Brennan	US EPA Headquarters, Office of Water
Robert Chominski	US EPA Region 3
Mike Cook	US EPA Headquarters, Office of Water
Robert Coontz	West Virginia Department of Environmental Protection
Fred Cowles	Michigan Department of Environmental Quality
Kevin DeBell	US EPA Headquarters, Office of Water
Joseph DiMura, PE	New York State Department of Environmental Conservation
Tim Dwyer	US EPA Headquarters, Office of Water
Atal Eralp	US EPA Headquarters, Office of Enforcement and Compliance Assurance
Albert Ettinger	Environmental Law & Policy Center (ELPC)
David Evans	McGuireWoods LLP
Jim Filippini	US EPA Region 5
Gordon Garner	Louisville/Jefferson County Metropolitan Sewer District, Kentucky
Frank Greenland	Northeast Ohio Regional Sewer District
Michael Irwin	Missouri Department of Natural Resources
Stephen John	Environmental Planning and Economics, Inc.
Jeffrey Jordan	City of South Portland, Maine
Carol Kocheisen	National League of Cities (NLC)
Louis Kollias	Metropolitan Water Reclamation District of Greater Chicago
Richard Lanyon	Metropolitan Water Reclamation District of Greater Chicago
Jeff Lape	US EPA Headquarters, Office of Water
Walter Brodtman	US EPA Headquarters, Office of Enforcement and Compliance Assurance
Dean Marriott	City of Portland, Oregon
Tom McSwiggin	Illinois Environmental Protection Agency
Rob Moore	Prairie Rivers Network
John Murphy	City of Bangor, Maine
Linda Murphy	US EPA Region 1
Paul Novak	Ohio Environmental Protection Agency
Jim Novak	US EPA Region 5
Tim Oppenheim	Friends of the Chicago River
Laurel O'Sullivan	Lake Michigan Federation
Reed Phillips	City of Saginaw, Michigan
Mark Poland	CSO Partnership
Joseph Rakoczy	Metropolitan Water Reclamation District of Greater Chicago
Greg Schaner	Association of Metropolitan Sewerage Agencies
Eric Seaman	Missouri Department of Natural Resources
Nancy Stoner	Natural Resources Defense Council
Phil Sweeney	US EPA Region 2
Peter Swenson	US EPA Region 5
Sharon Thomas	Water Environment Federation
Edward Wagner	CH2M Hill
Mike Wagner	US EPA Region 1
Clyde Wilber	Greeley and Hansen, LLP
LaJuana Wilcher	LeBoeuf, Lamb, Greene and MacRae, LLP

Appendix I-2—Agenda

Agenda for Stakeholders Meeting on the Report to Congress on Combined Sewer Overflows

July 12 – 13, 2001—Palmer House Hilton, Chicago, Illinois

Purpose

CSO experts from around the country will gather to:

- Discuss the data, report methodology, and analysis of the Report to Congress;
- Discuss the implications of the major findings of the report;
- Discuss participants' experiences under the CSO Policy; and
- Discuss future directions, including activities related to the Wet Weather Quality Act of 2000.

Thursday, July 12, 2001

12:00–1:30 Lunch and Opening Remarks: Progress in Controlling CSOs

Opening Remarks—Tom McSwiggin, Bureau of Water, Permits Office, State of Illinois

Mr. McSwiggin is a long-time expert in the CSO field and was one of the founders of the 1994 CSO Policy. Mr. McSwiggin will welcome participants to Chicago and offer views on his State's experiences in CSO control.

Progress in Controlling CSOs—Jeff Lape, Acting Director, Water Permits Division, U.S. EPA

Mr. Lape played an active role in the formation of the 1994 CSO Policy. He will provide an overview of the 1994 CSO Policy and subsequent milestones.

1:30–1:45 Break

1:45–5:00 Briefing and Discussion of Major Elements of the 2001 Report to Congress

Using a briefing-discussion format, the group will participate in focused discussions of the major elements of the Report to Congress, including methodology and scope, data gathered, and findings.

Evening Social event, to be determined

Friday, July 13, 2001

8:30– 8:45 CSO Policy and Future Directions

Michael B. Cook, Director, Office of Wastewater Management, U.S. EPA

Mr. Cook has been the Director of U.S. EPA's Office of Wastewater Management since 1991. Among his many duties, he is responsible for managing the national NPDES program and is a noted leader in the environmental field. Mr. Cook will offer his views of the CSO Policy and its future.

8:45–10:00 Interpreting the Data and Findings of the 2001 Report to Congress

Participants will discuss the major findings of the report as a whole. Key questions may include:

(1) Are the wide variety of approaches that currently exist for CSO control a negative or positive outcome of the CSO Policy?

(2) How does this flexible approach impact regulators? Municipalities?

10:00–10:15 Break

10:15– 11:45 The Future Directions in CSO Control

In smaller discussion groups participants will discuss the CSO Policy in a broader context. Key topics will be determined based on conversation from Day 1.

11:45–12:00 Closing Remarks and Next Steps

Appendix J

Summary of CSO-Related Enforcement Actions Initiated by EPA After Issuance of the CSO Control Policy

Civil Judicial Actions Taken by EPA Under the CSO Control Policy

Region	State	Case Name/City Name	Description
3	PA	Erie	Action taken to address failure to comply with effluent limits. Judicially ordered consent decree required separation of 5,000 feet of sewer.
4	GA	City of Atlanta	Action taken to address non-attainment of water quality standards resulting from CSOs. Judicially ordered consent decree required evaluation of CSO discharges and remedial action plan completion by 07/01/07; $3.2 million penalty; and $27,500,000 supplemental environmental project.
5	IN	Hammond Sanitary District	Action taken to address 19,000 violations of the CWA; judicially ordered consent decree; $225,000 penalty; $2.1 million to restoration; and $34 million in system improvements.
5	OH	City of Akron	Action taken to address CSOs causing violation of effluent limits and failure to meet schedule for elimination of CSOs. Judicially ordered consent decree: $290,000 penalty.
5	OH	City of Port Clinton	Action taken to address violation of NPDES permit. Judicially ordered consent decree required monitoring, scheduled CSO abatement: $60,000 penalty.

Administrative Actions Taken by EPA Under the CSO Control Policy

Region	State	Case Name/City Name	Description
1	MA	Agawam	Administrative compliance order (9/95) required abatement schedule for CSOs to Connecticut River.
1	MA	Agawam WWTP	Action taken to address CSO discharges in violation of permit. Administrative compliance order issued 12/30/96.
1	MA	Chicopee	Administrative compliance order (9/95) required abatement schedule for CSOs to Connecticut River.
1	MA	Chicopee WPCF	Action taken to address CSO violations. Administrative compliance order issued 06/06/97 required LTCP.
1	MA	Chicopee WPCF	Action taken to address violation of permit requirements and discharge without permit. Administrative compliance order (06/03/99) to eliminate dry weather overflows and develop an LTCP.
1	MA	Gloucester	Action taken to address violation of permit. 1989 Consent Decree required LTCP development; LTCP received 4/01.
1	MA	Greater Lawrence SD	Action taken to address violation of permit requirements. Administrative compliance order (06/24/99) ordered District to develop an LTCP.
1	MA	Holyoke	Administrative compliance order (9/95) required abatement schedule for CSOs to Connecticut River.
1	MA	Holyoke WPCF	Action taken to address CSO discharges in violation of permit. Administrative compliance order issued 03/21/97.
1	MA	Ludlow	Administrative compliance order (9/95) required abatement schedule for CSOs to Connecticut River.
1	MA	Ludlow WTP	Action taken to address CSO discharges in violation of permit. Administrative compliance order (issued 12/30/96) required NMC.
1	MA	Massachusetts Water Resources Authority	Administrative compliance order (05/13/96) required plan and enforcement actions to attain WQS.
1	MA	South Hadley	Administrative compliance order (9/95) required abatement schedule for CSOs to Connecticut River.

Administrative Actions Taken by EPA Under the CSO Control Policy—Continued

Region	State	Case Name/City Name	Description
1	MA	South Hadley WTP	Action taken to address CSO discharges in violation of permit. Administrative compliance order issued 03/14/97.
1	MA	Springfield	Administrative compliance order (9/95) required abatement schedule for CSOs to Connecticut River.
1	MA	Springfield Regional WWTP	Action taken to address CSO discharges in violation of permit. Administrative compliance order issued 03/21/97.
1	MA	Springfield Water & Sewer Commission	Action taken to address CSOs. Administrative compliance order for abatement of CSOs filed 11/14/00.
1	MA	Taunton	Action taken to address permit violations. Administrative compliance order (9/24/94).
1	MA	Town of Fitchburg	Action taken to address permit violations. Administrative compliance order issued 07/96 required NMC and LTCP; Town is proposing separation.
1	MA	Town of Haverhill	Action taken to address CSO discharges in violation of permit. Administrative compliance order (08/09/99) to complete Phase II of the LTCP by January 15, 2001.
1	MA	Town of Palmer	Action taken to address CSO discharges in violation of permit. Administrative compliance order issued 01/06/97; penalty payment of $5,000.
1	MA	West Springfield	Action taken to address CSO discharges in violation of permit. Administrative compliance order (9/95) required CSO abatement schedule.
1	MA	Worcester	Action taken to address permit violations. Administrative consent order for NMC and LTCP.
1	ME	Augusta	Administrative compliance order for CSO abatement schedule.
1	ME	Biddeford	Administrative compliance order 04/22/94 required CSO abatement schedule.

Administrative Actions Taken by EPA Under the CSO Control Policy—Continued

Region	State	Case Name/City Name	Description
1	NH	Lebanon WWTP & City STP	Action taken to address CSO discharges in violation of permit. Administrative order (6/6/00) requires City to eliminate six CSOs by 12/31/08 and to submit a plan to EPA by 12/31/05 to eliminate the seventh CSO by 12/31/12.
1	NH	Manchester STP	Action taken to address non-attainment of water quality standards caused by CSOs. Administrative compliance order (03/08/99) requiring CSO abatement and $5.6 million supplemental environmental project (SEP).
1	NH	Nashua	Administrative compliance order required CSO abatement by 12/31/19.
5	IL	City of Rock Island	Action taken to address CSOs to environmentally sensitive area and failure to implement the NMC. Administrative compliance order filed 02/13/98 requires plant and sewer improvements to reduce CSOs.
5	IN	Bluffton POTW	Action taken to address violation of permit by failure to submit CSO plan. CSO plan received. Administrative penalty order filed 6/6/00 requiring SEP and $30,000 penalty.
5	IN	Fort Wayne	CSOs in violation of permit and SSO violations resulted in the issuance of two administrative orders in 1995 and 1996.
5	OH	Port Clinton	CSOs in violation of permit resulted in a 1995 administrative order and subsequently a judicial referral.

Appendix K

Summary of Planned Research by EPA's Office of Research and Development

Summary of Planned CSO-Related Research

Research Need	Study Name	Description
Develop monitoring methodologies to measure the characteristics and impacts of wet weather flows.	CSO Monitoring	Provide a methodology with widespread applicability for statistically calculating CSO quality data based on historical rainfall and WWTP quality data. Examine wet weather monitoring programs nationwide to identify the wet weather monitoring provisions of a NPDES permit and the relationship of monitoring to the effectiveness of the storm water management program.
Determine wet weather flow receiving-water impacts and impaired beneficial uses that can be attributed to chemical, biological, and especially physical stressors.	Large River Pollution	Develop a methodology to assess the wet weather impacts of CSOs and other point and NPSs of pollution within a watershed on a large river (the Ohio River) and for evaluating the effectiveness of alternative CSO control measures.
	Water Body Impacts Model	Develop a baseline assessment of the risks to aquatic life, and human health in the Duwamish River and Elliott Bay in King County, Seattle, WA. This effort will assess the following: (1) the baseline risk to aquatic life and humans who use the River and Bay; (2) the benefits to be gained by various levels of CSO control; and (3) the risks resulting from discharge of effluent to the Duwamish during peak flows.
To assess the effectiveness of disinfection techniques.	CSO Disinfection	Assess the effectiveness of various disinfection techniques for CSOs, including rapid oxidants and UV disinfection. Techniques for measuring microorganism population that accounts for microorganisms that survive in the interstices of the larger organic particles and in the micro-fractures of soil grains (e.g., blending the samples, sonification) will be used in assessing disinfection effectiveness.
To address the goals of watershed management projects.	Watershed Modeling	Review existing computer models related to urban wet weather flows, to determine which models are compatible with the watershed approach. The models will then be studied to determine how they can be integrated to include all drainage (SW, CSOs, SSOs, and NPSs) and receiving waters; and other watershed relationships, such as: storm water-groundwater interactions; sediment migration patterns; human and ecological risk from toxic substances; control practices and pollution prevention effects; and atmospheric deposition.
	Storm water-Groundwater Interactions	This project will interface storm water runoff with groundwater, to gain a better understanding of the groundwater connections to surface water. Naturally occurring water isotopes during storm events will determine the components, pathways, and residence time of subsurface WWF discharging into surface receiving waters. These objectives will attempt to determine if isotopic techniques can help performance evaluation of source controls and collection system controls for abating CSOs.
	Mill Creek Watershed Plan	Develop an integrated watershed management plan to assess and control CSOs and other pollution sources within the Mill Creek Watershed (Ohio). Establish a process and develop decision criteria for selecting appropriate and cost effective wet weather flow controls. Identify and resolve plan implementation barriers. The ultimate goal of the project is to achieve community wide consensus on an integrated implementation plan for the attainment of water quality and ecosystem goals.

Research Need	Study Name	Description
	Rouge River Restoration	Demonstrate effective solutions to water quality problems facing an urban watershed highly impacted by wet weather flows and develop potential solutions and implement projects to restore water quality in the Rouge River, Wayne County, Michigan. Develop tools for watershed analysis and planning. Evaluate various wet weather flows control prototypes, including designs of CSO detention basins and storm water runoff quality control BMPs.
To develop and demonstrate advanced collection system design alternatives to reduce wet weather overflows.	CSO Measures of Success	The Association of Metropolitan Sewerage Agencies (AMSA) is working with CSO stakeholders to determine the effectiveness of their CSO control programs in achieving the objectives of the CSO Policy. The project will identify indicators that stakeholders can use to effectively measure the success of CSO control programs, that include: (1)programmatic, (2) in-stream, (3) end-of-pipe controls, and (4) ecological and use attainability.
	Flow Balance Method (FBM)	The project is an expansion of the original pilot-scale project initiated in 1987 and will evaluate CSO capture effectiveness for WWTP pumpback. The earlier phase of the project demonstrated that effective CSO control is achieved by the FBM and its principals of operation and sea-worthiness.
	Storage Facilities Design	The scope of this project includes: (1) compiling existing data on the effectiveness of CSO, storm water, and SSO storage, sedimentation, and treatment methods; (2) verifying recommended storage/treatment approaches through computer modeling; (3) finalizing a 1981 EPA report currently in the draft final form entitled Storage/Sedimentation Facilities for Control of Storm and Combined Sewer Overflows Design Manual; and (4) developing a second volume to this document as a more detailed engineering manual for storage/treatment optimization.
	Real-Time Control by Radar	Demonstrate application of a radar-based rainfall monitoring system, CALAMAR, to maximize the in-line CSO storage capacity. CALAMAR will provide the sewerage operators with advanced warning of storm water accumulation in different catchments at a given time. This will allow the operators to store and route the flow in the most efficient manner, optimizing the CSO in-line storage capacity. It also prevents releases of untreated CSO during a rain event.
Develop and demonstrate high-rate and high-efficiency treatment technologies suitable for retrofitting existing WWTPs as well as for new installations.	CSO Vortex Controls	A side-by-side, full-scale demonstration of three different types of vortex units primarily for floatables removal and secondarily for other pollutant removals; using three 43-foot diameter vortex units of varying depths. The results obtained from this facility will have potential application to over 400 outfalls in New York City. The sampling and analysis program includes: floatables (sampled with small aperture mechanical screens at strategic points throughout the facility), suspended solids, BOD, nutrients, and bacteria (sampled from multi-port continuous flow stream sampling devices connected to automated samplers).

Research Need	Study Name	Description
	Retrofitting Control Facilities	Investigate the retrofitting of existing sewerage systems to handle additional wet weather flow (SSO, storm water and CSO) by: (1) increasing the hydraulic loadings at the control facilities, and (2) increasing the amount of storage in the conveyance system. It will investigate: (1) converting existing "dry-ponds" (ponds that drain and go dry between storm events) to "wet-ponds" for separate storm water systems to enable treatment through sedimentation, and (2) converting or retrofitting primary settling tanks to dissolved air flotation and lamellae and/or microsand-enhanced plate or tube settling. Retrofitting processes will better enable communities to meet the CSO Policy.
	CSO Concepts for Stormwater	Produce methodologies for applying CSO control and treatment methods to improve separate storm water systems. Examine applicable storage, treatment and flow-control techniques currently practiced in CSO systems. The goal will be to maximize the treatment capacity of the existing systems.
	Vortex/ Disinfection Treatment	Demonstrate on a full scale, the applicability of new processes for the treatment of CSOs. Specific goals of this project include: providing comparative process results for various treatment technologies; providing design criteria and capital and O&M costs; determining efficient and appropriate control techniques thereby reducing overall CSO control costs and more effectively solving the pollution problem at its source; and determining cost-effective methods to minimize hydraulic load impacts on the wastewater treatment plant, thereby providing more capacity for handling wet weather flows, such as infiltration/inflow, and preventing SSOs.
	Crossflow Plate Settlers	This project will demonstrate CSO treatment using an existing WWTP primary settling tanks retrofitted with crossflow plate settlers. The successful application of plate settling technology will provide a way to decrease cost of CSO control and will decrease the need for newly constructed storage and treatment facilities and additional land requirements.
	High-Rate Ozonation	Ozonation will be evaluated as an alternative disinfection process for CSO; as conventional disinfection technologies cannot be readily applied to CSOs (due to varying flow rates and resulting water quality). Ozonation is known to have the highest oxidizing power, and due to its high reactivity with water, does not carry residual. A one million gallon/day pilot project is proposed that will provide for the design, construction, operation, and maintenance of a full-scale ozone CSO disinfection system in Fresh Creek with the goal of reducing microbial pollution to Jamaica Bay, New York.

Research Need	Study Name	Description
	Triple Purpose Storage	Demonstrate the successful CSO storage concept as applied to separate storm drainage, sanitary sewer, and combined sewer system discharges. Multipurpose storage should include: storm water and inappropriate non-storm water discharges from storm-drainage; CSO; and dry weather flows from combined or sanitary sewers. Auxiliary storage functions may include sedimentation treatment, flood protection, flow attenuation, dry weather flows capture and attenuation, sewer relief, and low-flow augmentation.
	Constructed Vegetative Treatment Cells (CVTC)	This project supports the development and implementation of Constructed Vegetative Treatment Cells (CVTC) for CSO remediation. CVTCs function as a physical/biological treatment system. This demonstration will generate monitoring, process control, and O&M data necessary to facilitate widespread implementation of CVTC technology for CSO remediation.
	CSO Optimization Paper	Describes a strategy to optimize a CSO control system. This optimized system maximizes the use of the existing system before new construction and sizes the storage volume in concert with the WWTP treatment rate to obtain the lowest cost storage and treatment system. The paper was peer reviewed by the Journal of the Environmental Engineering Division, ASCE and was published in March 1997.

Appendix L

List of Recipients of
National Combined Sewer Overflow
Control Policy Excellence Awards

CSO Control Program Award Recipients

Year	Award	City	Description of CSO Program
2000	1st Place	City of Saco, ME	Eight CSO construction and BMP projects including sewer separation, I/I reduction, and constructing a new secondary clarifier. In 1997, the city enacted a CSO impact fee to fund the CSO Capital Abatement Plans.
	2nd Place	City of Corvallis, OR	CSO remediation program that include storage (including a 10 MG storage lagoon), transport, and treatment (a 35 mgd Wet Weather treatment facility and a 3 mgd wastewater treatment plant expansion.
1999	1st Place	Richmond, VA	Phased CSO control program to protect the James River; components include wastewater treatment plant improvements, disinfection, swirl concentrators and storage basins. City's program will eliminate overflows to the major park area along the James River during the summer and significantly enhance recreational activities.
	2nd Place - tie	Auburn, NY	Program uses a centralized high-rate treatment facility, in-line and off-line storage of wet weather flows, and four regional high-rate treatment facilities to eliminate overflows from its CSO and separate sewer system. Program eliminated 31 of 35 CSOs and SSOs with remaining four CSOs receiving high-rate treatment for floatables and setteable solids removal and disinfection.
	2nd Place - tie	Columbus, GA	Program includes sewer separation, diversion with floatables control, and transport and treatment for solids removal and disinfection. Long-term program integrated community development projects with public inputs throughout process.
1998	1st Place	Saginaw, MI	Implemented a three-phased program based on six retention/treatment basins (RTBs), two of which include vortex separators. Program added over 60 MG of storage.
1997	1st Place	Augusta, ME	Implemented First Phase of four-phase, 15-year CSO Control Program; major components of program are a high flow management facilities at the WWTP and elimination of 13 CSOs through BMPs, regulator adjustments, and selected sewer seperations.
	2nd Place	West Lafayette, IN	Construction of a new interceptor sewer in conjunction with a new highway bypass, saving ratepayers $1 million; construction of new wet weather treatment facility to treat wet weather flows in excess of 22.5 mgd. Wastewater treatment plant improvements allows West Lafayette to treat nearly 83 percent of its annual wet weather volume; implementation of full CSO Control Program will reduce annual untreated CSO volume by approximately 95 percent an the duration of untreated CSO discharge by nearly 96 percent.

Year	Award	City	Description of CSO Program
1996	1st Place	Bangor, ME	Program focused on elimination of CSOs in two sensitive areas. Eliminated eight of the city's 22 CSOs and reduced overflow occurrences for several others; LTCP contains 23 projects including several multi-year sewer separation projects, and upgrading of the treatment plant to handle 13 mgd of combined sewage.
	2nd Place	Bath, ME	Developed CSO abatement program to address its 10 CSO outfalls to the Kennebac River. Bath's LTCP consists of implementing creative and practical BMPs, optimizing existing facility capacities, and developing systematic and cost-effective capital improvement projects.
1994	1st Place	Metropolitan Water Reclamation District of Greater Chicago, Chicago, IL	Developed two-phased $3.6 billion Tunnel and Reservoir Plan (TARP) project designed to eliminate CSOs and significantly reduce basement flooding. The completion of both phases was designed to reduce BOD loads to area's waterways from CSOs by 99 percent and will reduce flood damage by nearly 65 percent.
	2nd Place	City of Lansing, MI	Received Federal Construction Grant Program to improve the wastewater collection and treatment system; improvement took the form of relocating regulators out of the influence of the Grand River up the ten-year flood elevation to prevent river back flow into the collection system. The City replaced mechanical regulators with leaping orifice regulators designed to discharge to the interceptor all dry weather flows.
1993	1st place	City of San Francisco, CA	$1.4 million in construction cost program to eliminate discharge of CSO to the city's shoreline. The program constructed storage/treatment facilities to hold combined stormwater at the wastewater treatment plant, and to provide treatment for peak wastewater flows.
	2nd place	Decatur, Illinois	Constructed four satellite CSO treatment facilities and capture of first flush of each storm event in tanks for later treatment at the treatment facility. As a result, the odors and fish kills in the Sangamon River that were prevalent before the CSO program were eliminated. Results of a July 1991 biological and water quality survey indicated significant improvement in aquatic habitat over 40 miles of the river.
1992	1st place	New York, NY	Innovative approach to CSO abatement and floatable capture; while proceeding on plans on a large scale facility, operations-based projects provided some CSO abatement at a major four-barrel outfall at a low-cost (approx $1/gallon).
	2nd place	Minneapolis-Saint Paul - South Saint Paul, MN	Implemented 10-year program to eliminate CSO system. Achieved goal of 60 percent volume removal after the fifth year.
1991	1st place	Monroe County/City of Rochester, NY	Program included BMP improvements to existing facilities, deep-rock storage and conveyance tunnels, and wet weather preliminary treatment facilities; cleaned and relined existing trunk sewers to handle increased flows; program increased recreational use of the area's waterways, increased public awareness of environmental issues and increased land-based recreation.

Appendix M

Summary of Outcomes of
104(b)(3) Grants

Summary of Outcomes of 104(b)(3) Grants

Grantee	Description	Federal Contribution	Years	Results
AMSA	Performance Measures for CSO Control; Grant Number CX823736-01	$294,000	9/1/94 - 1/31/97	AMSA developed a series of performance measures for utilities and local government agencies to use to track benefits associated with CSO control. The study received input from a CSO stakeholder workgroup, focus group meetings, environmental groups, and state and federal permitting authorities. All 24 identified performance measures were considered to be appropriate for general use by CSO communities; four of these were also found to be appropriate for national tracking.
City of Indianapolis	Wet Weather Public Education Program; Grant Number GX825886-01	$112,000	7/24/97 - 7/31/99	Indianapolis designed an educational program to inspire its residents to take action to improve water quality during wet weather events. A video and slide presentation was created to explain current wet weather issues facing Indianapolis and the actions being taken by the city to address those issues. The City of Indianapolis also established a Citizen Advisory Committee (CAC) to assist city officials in selecting media campaign messages and materials and to provide input regarding cost/benefit decisions for water quality improvement projects. Other components of the educational program include a campaign plan, five brochures, media kits and surveys to gauge needs/knowledge base of the public.
Low Impact Development (LID) Center	Feasibility of Applying LID Stormwater Micro-Scale Techniques to Highly Urbanized Areas in Order to Control the Effects of Urban Runoff in CSOs	$110,000	4/99 - 4/00	A literature review was conducted to determine the availability and reliability of data to assess the effectiveness of LID practices for controlling stormwater runoff and reducing pollutant loadings to receiving waters. Background information concerning the uses, ownership and associated costs for LID measures was also compiled.
ORSANCO	Wet Weather Study of Ohio River; Grant Numbers CX825699-01 and CX824105-01	$1,383,000	7/1/97 - 12/31/01	ORSANCO developed a water quality model of the Ohio River capable of assessing CSO impacts and evaluating CSO controls on the river. The goal was to develop a model not only for the Ohio River but one that was suitable for evaluating other large rivers systems. In addition to CSO loads, stormwater and non-point source load estimates were included in the model to demonstrate the effect other wet weather pollutant sources have on large river systems. Watershed planning and wet weather monitoring protocols were also included in the model approach as a demonstration on how to incorporate these concepts in a large river system model.

Grantee	Description	Federal Contribution	Years	Results
CSO Partnership	Development of an Outreach Mechanism and Materials for CSO Communities; Grant Number CX823975-01	$176,500	10/94 - 2/99	This assistance project was designed to provide informational outreach to CSO communities nationwide. To reach this goal, the CSO Partnership developed two newsletters: the CSO Update and its supplement, CSO Bulletins. These publications reported on regulatory, financial, technological, and legislative changes in CSO controls. The CSO Partnership also used the publications to distribute surveys to municipal officials and other interested parities involved in CSO control. The information gathered from the surveys on municipal concerns, questions, experiences, and insights were made available to EPA and published in subsequent newsletters by the Partnership. The mailing list for these publications include CSO coordinators and stakeholders for over 1000 CSO communities nationwide.
California State University	Training Video	$245,000	7/96 - 7/98	California State University developed a video training program on how to effectively operate and maintain collections systems. The video course was presented in the form of six 30-minute sessions that were meant to compliment the two volume EPA guide on Operation and Maintenance of Wastewater Collections Systems. A user survey was developed to be distributed with the video training program. Survey results were shared with EPA officials to provide comments on recommended improvements for the training program and the need for additional videotapes.
CSO Partnership	Development of CSO Handbook for Small Communities; Grant Number X825552-01	$181,000	4/97 - 4/99	Between November 1997 and September 1998, the CSO Partnership presented a series of six workshops on CSO planning methodologies and control technologies for small communities. The workshops were held in six different states, with each presentation specifically tailored to the needs of the small CSO communities of the area. Special emphasis was placed on CSO control approaches for communities with a population of less than 10,000 residents.

Appendix N

Summary, by State, of CSO Impacted Water Body Segments from 303(d) Lists

Summary, by State, of CSO Impacted Water Body Segments from 1996 303(d) Lists

State	# Waterbodies Listed	Source Information Reported?	# Waterbodies listed as impaired due to: CSO impacts	# Waterbodies listed as impaired due to: Urban Runoff/Storm Sewer impacts
ALASKA	48	Yes		21
CALIFORNIA	540	Yes		64
CONNECTICUT	177	Yes	26	68
DELAWARE	159	Yes		
DISTRICT OF COLUMBIA (DC)	37	Yes	10	
GEORGIA	588	Yes	21	245
ILLINOIS	111	Yes	8	34
INDIANA	333	No		
IOWA	157	Yes		3
KANSAS	1,292	Yes		
KENTUCKY	153	No		
MAINE	241	Yes	16	19
MARYLAND	139	Yes		
MASSACHUSETTS	706	No		
MICHIGAN	34	Yes	4	1
MINNESOTA	152	No		
MISSOURI	53	Yes		1
NEBRASKA	45	Yes		
NEW HAMPSHIRE	91	Yes	8	6
NEW JERSEY	945	No		
NEW YORK	128	Yes	21	46
OHIO	727	No		
OREGON	869	No		
PENNSYLVANIA	565	Yes	7	23
RHODE ISLAND	78	No		
SOUTH DAKOTA	137	No		
TENNESSEE	328	Yes	10	89
VERMONT	315	Yes	4	2
VIRGINIA	113	Yes	5	26
WASHINGTON	672	No		
WEST VIRGINIA	518	Yes		4
WISCONSIN	101	No		
TOTAL	**10,552**	**21 states**	**140**	**652**

Summary, by State, of CSO Impacted Water Body Segments from 1998 303(d) Lists

State	# Waterbodies Listed	Source Information Reported?	# Waterbodies listed as impaired due to:	
			CSO impacts	Sewer impacts
ALASKA	58	Yes	1	25
CALIFORNIA	509	Yes		95
CONNECTICUT	224	Yes	20	75
DELAWARE	377	Yes		
DISTRICT OF COLUMBIA (DC)	36	Yes	11	
GEORGIA	584	Yes	17	224
ILLINOIS	738	Yes		217
INDIANA	209	No		
IOWA	157	Yes		5
KANSAS	1,107	No		
KENTUCKY	231	No		
MAINE	228	Yes	1	
MARYLAND	196	Yes		
MASSACHUSETTS	907	No		
MICHIGAN	272	No		
MINNESOTA	144	No		
MISSOURI	180	Yes		12
NEBRASKA	114	Yes		13
NEW HAMPSHIRE	226	Yes	17	8
NEW JERSEY	1,059	No		
NEW YORK	627	Yes	30	93
OHIO	882	Yes		176
OREGON	1,183	No		
PENNSYLVANIA	1,039	Yes	10	120
RHODE ISLAND	127	No		
SOUTH DAKOTA	161	No		
TENNESSEE	352	Yes	36	85
VERMONT	197	No		
VIRGINIA	883	Yes	7	56
WASHINGTON	1,317	No		
WEST VIRGINIA	722	Yes		5
WISCONSIN	552	Yes		24
TOTAL	**15,598**	**32 states**	**150**	**1,233**

Appendix O

Summary of State Inspection Programs

Summary of State Inspection Programs

State	Number of Facilities Inspected	Frequency of Inspections	Cause of Inspection	Contact with Region	Guidance	Checklist	Tracking	Training
AK	1 CSO-Inspections are conducted by Region 10							
CA	Not Documented	Annual	Planned	Not scheduled, but regular	Protocol	No	PCS	State inspector and operator training
CT	Not Documented							
DE	1 CSO (Region 3)	No information	NPDES	Monthly	No	No	PCS	Developing inspector training
GA	Not Documented	Annual	CSO, scheduled plan, citizen complaint	Quarterly, some emergency meetings	Permit outline	No	PCS	State inspector training
IA	3 CSOs (by Region 7)	Annual for majors	NPDES scheduled plan, citizen complaint	Annual audit	No	No	State matrix and PCS	EPA inspector training, State operator certification
IL	36 CSOs	3 to 4 years for majors	DWO, citizen complaints, monthly report discrepancy	Quarterly	State plan	Regional and State CSO checklists	PCS	Coordinating with Region 5 for inspector training, State operator training
IN	Must inspect 90 facilities per year	Annual	Annual review, DWO, schedule	Quarterly	Indiana uses the checklist as guidance	State CSO checklists	PCS	No
KS	Not Documented							
KY	4 CSOs (by Region 4)	Annual	NPDES, schedule, citizen complaint	Annually	No	No	PCS	Operator training
ME	Not Documented	No recent Maine inspections	Annual permittee report	Quarterly	Forms for annual report, Guidance in development	No	PCS and state matrix	State inspector training
MD	Not Documented							
MA	4 CSOs	Annual	NPDES, citizen complaint, DWO	Quarterly	No	No	PCS and State matrix and tracking sheet	State operator certification
MI	Not Documented	Annual for majors	NPDES, response to a problem	Quarterly	State Guidance	No	PCS and State database	State operator training
MN	Not documented	Annual for majors, 5 years for minors	In the process of separating	Quarterly	No	Being redeveloped	PCS and State database	On-the-job inspector training, internal
MO	4 CSOs (by Region 7)	Not Documented						
NE	Not documented	Annual for majors, 5 years for minors	NPDES (CSOs are not yet permitted)	Quarterly	Under development	Under development	PCS	EPA training of inspectors

State	Number of Facilities Inspected	Frequency of Inspections	Cause of Inspection	Contact with Region	Guidance	Checklist	Tracking	Training
NH	Not documented	Annual to biannual	NPDES	Quarterly	Under development	No	PCS	State operator training
NJ	Not Documented	Annual	NPDES, citizen complaint, enforcement support, non-compliance	Quarterly	National manual, developing State manual	Redeveloping CSO checklist	PCS	On-the-job inspector training, State operator certification
NY	3 CSOs	Annual	NPDES, enforcement support, part of a wet weather plan	Quarterly	State Technical and Operational Guidance Series (TOGS)	No	PCS and state matrix	State training for operators and inspectors
OH	2 CSOs (by Region 5)	Annual for majors, 3 years for minors	NPDES, protocol for response to violation	Quarterly	State protocol	Regional CSO checklists	PCS	Coordinating with Region 5 for inspector training
OR	Not Documented	Annual	NPDES, monitors in outfalls	As needed	Not Documented	No	PCS	State inspector training and operator certification
PA	Not Documented	Annual for majors, 3 years for minors	Schedule, citizen complaint, DWO	Quarterly	State Compliance & Enforcement Strategy, State manual	No	PCS and State matrix: eFACTS	State training for inspectors, may join Region 3 inspector training
RI	Not Documented							
SD	Not Documented	Biannual	NPDES, schedule, citizen complaint	Not scheduled, but regular contact	Not Documented	Checklist for NPDES inspection	PCS	EPA inspector training and on-the-job inspector training
TN	Not documented	Annual for majors, biannual for minors	CSO		No	No	PCS	State operator training
VT	Not documented	Annual	NPDES, schedule	Quarterly	National Manual	No	PCS	On-the-job inspector training
VA	Not documented	Annual for majors	NPDES	Quarterly	Strategy	No	PCS	Annual State inspector training, operator training
WA	Not documented	Biannual	NPDES, enforcement action	Infrequent	EPA manual	No	PCS and State matrix	State operator certification
WI	5 CSOs (by Region 5)	Not documented						
WV	2 CSOs (joint Region and State)	Not documented	CSO, knowledge of problem	Quarterly	Region 3 Guidance on CSOs	No	PCS and state matrix	State inspector training and operator certification

Appendix P

Summary of CSO-Related Enforcement Actions Initiated By States After Issuance of the CSO Control Policy

Appendix P–1. Summary of State Enforcement Activities Through June 2001

State	Number of CSO Enforcement Actions to Date	CSO Enforcement Action(s)	Reasons for CSO Enforcement Actions	Remarks
AK	Not Documented			
CA	1	Cease and Desist Order (CDO) to Sacramento	Violations of state water quality provisions due directly to combined sewer overflows.	RWQCB has initiated Sacramento's pre CSO Policy planning efforts and eventually led to the development and implementation of its LTCP.
CT	Not Documented			
DE	Not Documented			Two CSO communities in the state: one is using sewer separation; the other is scheduled to be completed during 2001.
DC	Not Documented			
GA	Not Documented	City of Atlanta is under a CSO-related Federal Consent Decree	Lawsuit in district court.	State of Georgia, Region 4, and Federal District Judge all have some degree of authority over the Atlanta CSO program. GAEPD and Region 4 have joint review authority for Atlanta's LTCP.
IL	1			IEPA does not have authority to administer Administrative Orders .
IN	14	Seven communities received warnings for noncompliance in 2000	Failure to develop their Operational Plan, Stream Reach Characterization and Evaluation Report, or both.	Two communities expected to be referred in 2001; five others already have been referred to enforcement .
IA	Not Documented			
KS	Not Documented			
KY	Not Documented			Only NPDES permits are used to enforce NMC and LTCP
ME	3 initiated by DEP; 9 initiated by Region 1	Consent Decrees (DEP)	Failure to comply with terms of state water-discharge licenses.	Region 1 maintained CSO Control Policy Enforcement Authority through December 2000; Consent decrees are CSO related (DEP).
MD	Not Documented			MDE is attempting to negotiate consent decrees with five communities currently under administrative orders for failing to develop an LTCP.
MA	Not Documented	Consent Degrees, Executive Orders, or Administrative Orders	Noncompliance with the water-quality standards in NPDES permit resulting from failure to implement NMC.	The Region 1 Water Enforcement Program coordinates with CSO communities to develop a program for developing and implementing an LTCP; the program is formalized in a schedule within an Order.

Summary of State Enforcement Activities Through June 2001— Continued

State	Number of CSO Enforcement Actions to Date	CSO Enforcement Action(s)	Reasons for CSO Enforcement Actions	Remarks
MI	Not Documented	Director's Final Orders (DFO); litigation and Consent Orders	To develop and implement an LTCP (DFO); Rouge River Watershed (Litigation and Consent Orders).	Region 5 and the federal district court also actively review progress in the Rouge River CSO program.
MN	Not Documented			Minnesota is actively involved in a sewer-separation program for CSO control.
MO	Not Documented			
NE	Not Documented			
NH	Not Documented			Many of the enforcement actions require submission of the required
NY	Not Documented	NPDES permits (September 27, 1988); Order on Consent (June 25, 1992); Amended Consent Judgement (ACJ) for Onondaga County; Enforcement Orders	Address CSO abatement through Facility Planning Programs for nine segments in New York City (NPDES permit); Noncompliance with 1988 NPDES permit (Order on Consent); require the implementation of an LTCP (ACJ); POTW violations (Enforcement Orders)	The 1992 Order on Consent established a 14-year compliance schedule intended to facilitate the planning, design, and construction of CSO abatement and storage facilities; POTW violations traced to the wet weather impacts the CSO is having on the operation of the POTW.
OH	Not documented	Judicial Consent Orders; Administrative Orders	Not Documented	When an enforcement action is brought in Ohio, the complete NPDES permit, including CSO provisions, is examined; Region 5 has joined OEPA in initiating enforcement actions against Youngstown and Toledo.
OR	3	Not Documented	Reduce CSOs.	Enforcement Responses: One CSO community has constructed additional treatment facilities; two communities are in the process of constructing additional treatment facilities.
PA	Not Documented	Informal enforcement notices of violation and noncompliance issued by the Southwest Regional PADEP	Not Documented	Region 3 indicates that permits that are not in compliance, as per the schedule listed in an expiring NPDES permit, should be brought into compliance through an enforcement action, rather than reissued with a new or revised schedule.
RI	Not Documented			
SD	Not Documented			South Dakota's one CSO community has chosen sewer separation as its primary CSO control tool.

Summary of State Enforcement Activities Through June 2001— Continued

State	Number of CSO Enforcement Actions to Date	CSO Enforcement Action(s)	Reasons for CSO Enforcement Actions	Remarks
TN	Not Documented			
VT	Not Documented	Administrative orders; Consent orders	To facilitate implementation of CSO controls (Administrative Orders); violation of the Administrative Order (Consent Order).	The town of Randolph has been issued a second administrative order because sewer separation project did not completely eliminated all CSO discharges for the design flow.
VA	Not Documented			
WA	Not Documented			Region 10 has administrative oversight.
WI	Not Documented			
WV	Not Documented			

Appendix P–2. Civil Judicial Actions Taken by States After the Issuance of the CSO Control Policy

Region	State	Case Name/City Name	Outcome
2	NY	Syracuse Metro WWTP	Amended consent judgement requires LTCP; NYSDEC BMPs 8-12.

Appendix P–3. Administrative Actions Taken by State After the Issuance of the CSO Control Policy

Region	State	Case Name/City Name	Outcome
1	CT	Bridgeport (East)	Administrative order by state to develop LTCP.
1	CT	Bridgeport (West)	Administrative order by state to develop LTCP.
1	CT	Derby	Administrative order by state to develop LTCP.
1	CT	Enfield WPCF	Administrative consent order required NMC.
1	CT	Hartford	Administrative order by state to develop LTCP.
1	CT	Jewett City	Administrative order by state to develop LTCP.
1	CT	Middletown WPCF	Administrative consent order required NMC.
1	CT	New Haven East Shore WPCF	Administrative order by state to develop LTCP.
1	CT	Norwalk	Administrative order by state to develop LTCP.
1	CT	Norwich	Administrative order by state to develop LTCP.
1	CT	Portland	Administrative order by state to develop LTCP.
1	CT	Shelton	Administrative order by state to develop LTCP.
1	CT	Waterbury WPCF	Administrative consent order required NMC.
1	ME	Augusta	Administrative order for CSO abatement schedule.
1	ME	Bath	Administrative order to develop LTCP.
1	ME	Biddeford	Administrative order 04/22/94 required CSO abatement schedule.
1	ME	Boothbay Harbor	Administrative consent order.
1	ME	Brewer	Administrative consent order.
1	ME	Bucksport	Administrative order to develop LTCP.
1	ME	Saco	Administrative order to develop LTCP.

Administrative Actions Taken by State After the Issuance of the CSO Control Policy—Continued

Region	State	Case Name/City Name	Outcome
1	ME	Westbrook	Administrative order to develop LTCP.
1	RI	Narragansett Bay Commission	Administrative consent order.
1	VT	Burlington Main WWTF	Administrative consent order required LTCP and compliance schedule.
1	VT	Burlington North End WWTP	Administrative consent order required LTCP and compliance schedule.
1	VT	Enosburg Falls WWTF	Administrative consent order required LTCP.
1	VT	Ludlow	Administrative order required LTCP and compliance schedule.
1	VT	Lyndon	State administrative order required NMC and LTCP.
1	VT	Newport	Administrative order required LTCP and compliance schedule.
1	VT	Richford WWTF	Administrative consent order for NMC and LTCP.
1	VT	Rutland City	Administrative compliance order (8/8/94) required NMC and LTCP.
1	VT	St. Johnsbury	Administrative order required NMC and LTCP.
1	VT	Swanton	Administrative order required NMC and LTCP.
1	VT	Winooski	Administrative consent order.
2	NY	NYCDEP	1995 amendment to 06/24/92 consent order required mapping, inspection, & O&M of CSOs.
2	NJ	Perth Amboy	Administrative consent order for NMC.
2	NY	Auburn STP	Administrative order required NYSDEC BMPs 8-10.
2	NY	Binghamton CSO	Consent order.
2	NY	Binghamton-Johnson City Joint WWTF	Consent order.
2	NY	Newtown Creek WPCP	Consent order.
2	NY	North River WPCF	Consent order for NYSDEC BMPs 8 and 9.

Administrative Actions Taken by State After the Issuance of the CSO Control Policy—Continued

Region	State	Case Name/City Name	Outcome
2	NY	NYCDEP 26th Ward	Consent order.
2	NY	NYCDEP Bowery Bay WPCP	Consent order for NYSDEC BMPs 8 and 9.
2	NY	NYCDEP Coney Island WPCP	Consent order for NYSDEC BMPs 8 and 9.
2	NY	NYCDEP Jamaica WPCP	Consent order for NYSDEC BMPs 8-12.
2	NY	NYCDEP Oakwood Beach WPCP	Consent order for NYSDEC BMPs 8 and 9.
2	NY	NYCDEP Owls Head WPCP	Consent order for NYSDEC BMPs 8 and 9.
2	NY	NYCDEP Rockaway WWTP	Consent order for NYSDEC BMPs 8 and 9.
2	NY	NYCDEP-Hunt's Point WPCP	Consent order for NYSDEC BMPs 8 and 9.
2	NY	Port Richmond WPCF	Consent order for NYSDEC BMPs 8 and 9.
2	NY	Red Hook WPCP	Consent order for NYSDEC BMPs 8 and 9.
2	NY	Tallman Island WPCP	Consent order for NYSDEC BMPs 8 and 9.
2	NY	Village of Johnson City CSO	Consent order.
2	NY	Ward Island WPCP	Consent order for NYSDEC BMPs 8-12 and floatables control.
3	PA	City of Monongahela	PADEP consent order 01/31/00 required separation/construction of new sewer and planning.
3	VA	City of Lynchburg	Administrative order requiring NMC and LTCP.
3	VA	City of Richmond	Administrative order requiring NMC and LTCP.
3	WV	City of Belington	Administrative order (4/30/99) required LTCP by 1/1/2002.
3	WV	City of Benwood	Administrative order (4/30/99) required LTCP by 1/1/2002.
3	WV	City of Farmington	Administrative order (4/30/99) required LTCP by 1/1/2002.
3	WV	City of Follansbee	Administrative order (4/30/99) required LTCP by 1/1/2002.

Administrative Actions Taken by State After the Issuance of the CSO Control Policy—Continued

Region	State	Case Name/City Name	Outcome
3	WV	City of Hinton	Administrative order (4/30/99) required LTCP by 1/1/2002.
3	WV	City of Kenova	Administrative order (4/30/99) required LTCP by 1/1/2002.
3	WV	City of Kingwood	Administrative order (4/30/99) required LTCP by 1/1/2002.
3	WV	City of Logan	Administrative order (4/30/99) required LTCP by 1/1/2002.
3	WV	City of Marlinton	Administrative order (4/30/99) required LTCP by 1/1/2002.
3	WV	City of McMechen	Administrative order (4/30/99) required LTCP by 1/1/2002.
3	WV	City of Montgomery	Administrative order (4/30/99) required LTCP by 1/1/2002.
3	WV	City of Moorefield	Administrative order (4/30/99) required LTCP by 1/1/2002.
3	WV	City of Mullens	Administrative order (4/30/99) required LTCP by 1/1/2002.
3	WV	City of Nutter Fort	Administrative order (4/30/99) required LTCP by 1/1/2002.
3	WV	City of Parsons	Administrative order (4/30/99) required LTCP by 1/1/2002.
3	WV	City of Philippi	Administrative order (4/30/99) required LTCP by 1/1/2002.
3	WV	City of Point Pleasant	Administrative order (4/30/99) required LTCP by 1/1/2002.
3	WV	City of Richwood	Administrative order (4/30/99) required LTCP by 1/1/2002.
3	WV	City of Shinnston	Administrative order (4/30/99) required LTCP by 1/1/2002.
3	WV	City of Sistersville	Administrative order (4/30/99) required LTCP by 1/1/2002.
3	WV	City of Smithers	Administrative order (4/30/99) required LTCP by 1/1/2002.
3	WV	City of Thomas	Administrative order (4/30/99) required LTCP by 1/1/2002.
3	WV	City of Westover	Administrative order (4/30/99) required LTCP by 1/1/2002.
3	WV	Danville Public Service District	Administrative order (4/30/99) required LTCP by 1/1/2002.

Administrative Actions Taken by State After the Issuance of the CSO Control Policy—Continued

Region	State	Case Name/City Name	Outcome
3	WV	Flatwoods-Canoe Run Public Service District	Administrative order (4/30/99) required LTCP by 1/1/2002.
3	WV	Greater Paw Paw Sanitary District	Administrative order (4/30/99) required LTCP by 1/1/2002.
3	WV	Town of Barrackville	Administrative order (4/30/99) required LTCP by 1/1/2002.
3	WV	Town of Bethany	Administrative order (4/30/99) required LTCP by 1/1/2002.
3	WV	Town of Cedar Grove	Administrative order (4/30/99) required LTCP by 1/1/2002.
3	WV	Town of Davis	Administrative order (4/30/99) required LTCP by 1/1/2002.
3	WV	Town of Marmet	Administrative order (4/30/99) required LTCP by 1/1/2002.
3	WV	Town of Monongah	Administrative order (4/30/99) required LTCP by 1/1/2002.
3	WV	Town of Petersburg	Administrative order (4/30/99) required LTCP by 1/1/2002.
3	WV	Town of Terra Alta	Administrative order (4/30/99) required LTCP by 1/1/2002.
3	WV	Town of West Union	Administrative order (4/30/99) required LTCP by 1/1/2002.
3	WV	Town of Winfield	Administrative order (4/30/99) required LTCP by 1/1/2002.

Appendix P–4. Other Actions Taken by States

Region	State	Case Name/City Name	Outcome
1	VT	Barton WWTF	Administrative consent order required LTCP and compliance schedule.
1	VT	Brandon WWTP	Administrative consent order required LTCP and compliance schedule.
1	VT	Hardwick WWTP	Administrative consent order required LTCP and compliance schedule.
1	VT	Lundenburg Five District #2 WWTF	Administrative consent order required LTCP and compliance schedule.
1	VT	Montpelier WWTF	Administrative consent order required LTCP, separation, and schedule.
1	VT	Northfield WWTF	Administrative consent order required LTCP and compliance schedule.
1	VT	Randolph WWTF	Administrative consent order for NMC and LTCP.
1	VT	Springfield WWTF	Administrative consent order required LTCP and compliance schedule.
1	VT	St. Albans WWTF	Administrative consent order required LTCP.
1	VT	Vergennes WWTF	Administrative consent order for elimination of CSOs.
1	VT	Wilmington WWTF	Administrative consent order required LTCP and compliance schedule.
1	VT	Windsor Main WWTF	Administrative consent order required LTCP and compliance schedule.
3	MD	Allegany County CSOs	Administrative consent order required LTCP; will separate.
3	MD	Cambridge WWTP	Administrative consent order required LTCP; will separate.
3	MD	Cumberland WWTP	Administrative consent order required LTCP.
3	MD	Frostburg CSOs	Administrative consent order required LTCP; will separate.
3	MD	LaVale CSOs	Administrative consent order required LTCP; will separate.
3	MD	Patapsco WWTP	Administrative consent order required LTCP; will separate.
3	MD	Salisbury WWTP	Compliance order (5/15/97) required NMC and LTCP.
3	MD	Westernport Town	Administrative consent order required LTCP.

Other Actions Taken by States—Continued

Region	State	Case Name/City Name	Outcome
3	PA	Berwick Area Joint Sewer Authority	Compliance order required NMC and LTCP.
3	PA	Coal Township	Compliance order required NMC and LTCP.
3	PA	Harrisburg Authority	Action required NMC.
3	PA	Shamokin City	Compliance order required NMC and LTCP.
4	GA	Columbus CSO	Administrative consent order required LTCP.
4	TN	Chattanooga	Administrative consent order for elimination of CSOs.
4	TN	Clarksville	Administrative consent order (3/22/1990) required LTCP.
4	TN	Nashville	ACO (3/30/1990) required CSO abatement measures by 2001.
5	IN	City of Fort Wayne WWTP	Administrative order for NMC and LTCP.
5	IN	City of Madison WWTP	Consent decree for NMC and LTCP.
5	IN	Hammond WWTP	Consent decree for NMC and LTCP.
5	MI	Grosse Pointe Farms CSO	Required LTCP and sewer separation.
5	MI	Grosse Pointe Park CSO	Compliance order required LTCP and outfall removal.
5	MI	River Rouge CSO	1994 CO required LTCP.
5	OH	City of Fostoria	Compliance order (8/24/93) required LTCP.
5	OH	City of Girard WWTP	Compliance order required NMC and LTCP.
5	OH	City of Sandusky	Compliance order required NMC and LTCP.
5	OH	Eastern Ohio Regional Wastewater Authority	Compliance Order required NMC and LTCP.
5	OH	Port Clinton	Consent Decree for NMC and LTCP.

Other Actions Taken by States—Continued

Region	State	Case Name/City Name	Outcome
5	OH	Steubenville	Compliance order required NMC and LTCP.
5	OH	Toledo	Administrative consent order (6/28/99) required LTCP.
5	OH	Van Wert	Consent Decree for NMC and LTCP.
5	OH	Village of Continental	Compliance order required LTCP.
7	MO	Sedalia North WWTP	Compliance order for NMC; will eliminate or treat CSOs.
10	OR	City of Astoria WWTP	S&FO (1/7/93) eliminated CSOs that violate WQS.
10	OR	City of Corvallis WWRP	S&FO required LTCP.
10	OR	City of Portland Columbia Blvd WWTP	S&FO (8/91) with penalties; Amended S&FO (8/94).

Appendix Q

Sample State Information Management Systems Used to Track Requirements for CSO Control

Sample Information Management System:
Indiana Department of Environmental Management CSO Website

Sample Information Management System: Massachusetts

CSO Permittee	Number	Permit Date	Outfalls	Receiving Waters	NMC Submitted	Enforc. Type	Date	Long-Term Submitted	Plan Approved	Comments/Status	DEP Contact
Agawam	MA0101320	9/29/1995	12	Westfield River Connecticut River	12/23/1997	AO	12/30/1996			Proceeding with separation. Inspections needed to confirm status	Kurt Boisjolie (413) 755-2284
BWSC (MWRA)	MA010119	9/29/1987	53	Boston Harbor & tributaries	Jan-97	CO	(MWRA)	MWRA Plan		Proceeding with Separation, storage throughout CSO area pursuant to MWRA CSO Facilities Plan	Kevin Brander (978) 661-7770
Cambridge	MA010197	3/26/1993	13	Charles River Alewife Brook	1/30/1997	CO	(MWRA)	MWRA Plan		Proceeding with Separation pursuant to MWRA CSO Facilities Plan re-evaluating CSO alternatives in Alewife area	Kevin Brander (978) 661-7770
Chelsea	MA010187	3/23/1993	5	Mystic River Chelsea Creek	Jan-97	CO	(MWRA)	MWRA Plan		Proceeding with Separation and Hydraulic Relief pursuant to MWRA CSO Facilities Plan	Kevin Brander (978) 661-7770
Chicopee	MA0101508	9/29/1995	40	Chicopee River Connecticut River	12/17/1996	AO	6/3/1999			in planning phase -Scope approved DLTCP now due June 30, 2001	Kurt Boisjolie (413) 755-2284
Fall River	MA010038	12/7/2000	19	Mount Hope Bay Taunton River Quequechan River	?	CO	?	Jul-99 (LTCP Revision)		Deep Tunnel Storage moving forward July 1999 report recommends revision to 1992 plan (under review)	Dave Burns (508) 946-2738
Fitchburg	MA010098	9/30/1992	27	Nashua River	11/20/1996	AO	7/9/1996	Jan-99 DLTCP		Draft Plan and Sewer Separation Study submitted. More work needed	Bob Kimball (508) 792-7650
Gloucester	MA010062	6/26/1985	4	Gloucester Harbor	2/1/2000	CD	10/8/1991	5/1/1992 CSO FP	9/28/1992	City re-evaluation sewer separation Report Due 4/2001	Kevin Brander (978) 661-7770
GLSD	MA010044		4	Merrimack River Spicket River	Nov-98	AO	6/25/1999			Planning underway Draft LTCP due 7/31/01	Kevin Brander (978) 661-7770
Haverhill	MA010162		23	Merrimack River Little River	Sep-96	AO	8/9/1999	Sep-00 DLTCP		Phase II Planning underway DLTCP due 1/15/01	Kevin Brander (978) 661-7770
Holyoke	MA0101630	9/29/1995	15	Connecticut River	1/10/1997	AO	12/12/2000	5/31/2000 DLTCP		Planning extension granted City evaluating DBO procurement DLTCP submitted 5/31/00	Kurt Boisjolie (413) 755-2284
Lowell	MA010063	8/14/1997	9	Merrimack River Concord River	Apr-98	CD	11/10/1988	1990 CSO FP		Schedule modification requested to establish date for DLTCP of 7/1/01	Kevin Brander (978) 661-7770
Ludlow	MA0101338	8/26/1985	5	Chicopee River	?	AO	12/30/1996			Separation moving forward. One outfall remaining. City received SRF loan to complete planning.	Kurt Boisjolie (413) 755-2284
Lynn	MA010055		4	Lynn Harbor Stacy Brook, Saugus River	?	CD	2/1/2001	10/2/2000 NPC/FP		City to implement complete sewer separation. Discharges to King's Beach will be eliminated by 12/04, all CSOs eliminated by 12/09	Kevin Brander (978) 661-7770
Montague	MA010013	9/29/1995	3	Connecticut River	?	?	?			Sewer separation work done. Town has received SRF loan for further LTCP work.	Kurt Boisjolie (413) 755-2284
MWRA	MA010235	7/5/2000	7	Boston Harbor Charles, Mystic Rivers	Jan-97	CO	8/31/1998 (schedule six)	7/31/1997	10/31/1997	Plan being implemented. Variances issued in the Charles and Mystic Basins. Work will continue to 2010.	Kevin Brander (978) 661-7770
New Bedford	MA0100781	11/2/2000	38	Buzzard's Bay Clark's Cove Acushnet River	Jan-97	CD	?	1991 CSO FP		much separation work done. City to submit scope for reassessment of 1991 plan.	Jeff Gould (508) 946-2757
Palmer	MA0101168	11/29/2000	21	Quabog River Swift River Ware River	Dec-98	AO	12/30/1996	7/6/1999 FLTCP		Plan for Sewer Separation approved and being implemented. SRF funding obtained.	Kurt Boisjolie (413) 755-2284
Somerville	MA010198	9/29/1992	12	Mystic River Alewife Brook	12/31/1996	CO	(MWRA)	MWRA Plan		partial sewer separation being implemented pursuant to MWRA plan	Kevin Brander (978) 661-7770
South Hadley	MA0100455	10/10/1995	11	Connecticut River Buttery Brook Stony Brook	12/31/1996	AO	?			implementing sewer separation. 4 outfalls remain. AO schedule needs modification.	Kurt Boisjolie (413) 755-2284
Springfield	MA0103331	4/14/1997	32	Connecticut River Chicopee River & Mill River	Apr-97	AO	11/15/2000	3/31/2000 DLTCP		DLTCP submitted 3/31/00 Phase I program moving forward. FLTCP due March 2002	Kurt Boisjolie (413) 755-2284
Taunton	MA0100897	1/9/2001	1	Taunton River	12/26/1996	AO	?			Assessment Report needed.	Jeff Gould (508) 946-2757
West Springfield	MA0101389	9/28/1995	6	Connecticut River Westfield River	12/23/1996	AO	9/8/1995			Separation being implemented. One CSO remaining.	Kurt Boisjolie (413) 755-2284
Worcester	MA0102997	11/8/1990	1	Mill Brook	2/3/1997	AO	9/19/2000 ?			Scope approved for final planning work. $54 million in CSO abatement work already completed	Ning Chen (508) 792-7650

Appendix S

GPRACSO Model Documentation

Documentation for the GPRACSO Model and Database

How the GPRACSO Model and Data Base Work

The GPRACSO model estimates the volume of overflow and pollutant loadings for communities with combined sewer systems. To accomplish this, the model estimates the amount of wet weather flows that would be directed to a publically owned treatment works (POTWs), and based on existing dry weather flows, estimates the volumes that become combined sewer overflows (CSOs). Hour-by-hour estimates of biochemical oxygen demand (BOD) concentration within the combined sewer system are used to estimate the pollutant loadings in overflows and treated effluent from POTWs.

Wet-weather management algorithms within the model permit the user to estimate the management levels necessary to reach a specified system-wide treatment level (e.g., 85 percent treatment of wet-weather flows). The management target may be reached through a combination of POTW and end-of-pipe treatment, or through wet-weather storage. The GPRACSO model will also estimate the effectiveness of secondary treatment bypass at POTWs with recombination of bypass flows, optimizing the system such that the target monthly discharge concentration in effluent does not exceed a permit level (e.g., 30 mg/L of BOD).

The key model outputs include wet-weather and dry weather BOD loadings (or other pollutants) and discharge for each hour in the typical rainfall year. The model output can be summarized weekly, monthly, or annually for individual sewersheds or individual communities. The algorithms in the GPRACSO model can operate at multiple system scales. The only thing that establishes the scale of the application is the data that is used to drive the GPRACSO model. Example system scales are the following:

- Simulating multiple separate sewersheds served by a single conveyance/treatment system
- Simulating multiple combined sewers communities within a single watershed that have separate conveyance/treatment systems
- Simulating all combined sewer communities in the nation

In estimating overflow volume, each individual combined sewer community is represented as a specified land acreage generating a known quantity of dry weather flow and served by a known quantity of treatment (wet- and dry weather) and wet-weather storage. For the "typical" rainfall year (pulled from long-term meteorologic records for each combined sewer community in the nation) each hour's rainfall and temperature is evaluated to determine if runoff occurs and then if overflow occurs.

The interaction between the GPRACSO model and data base is analogous to an automobile where the model is the engine and the data base provides the fuel. The GPRACSO data base was constructed by EPA to facilitate national assessment of CSO issues, and as such contains National data on combined sewer systems. The GPRACSO data base contains system data that represents:

- Individual combined sewer communities, where individual systems are stand alone elements and do not exist as a part of a larger regional sewer system
- Regional combined sewer communities, commonly encountered near large and well-established cities.

Wherever multiple combined sewer communities comprise a single regional system, the individual combined sewer communities are condensed into a single data record within the GPRACSO data base representing the combination of related combined sewer communities-totaling treatment capacity, wet-weather storage, and combined sewer service area. A "combined sewer community" is used to generically refer to the entity (or data record in the GPRACSO data base) analyzed, whether it is an individual sewer system or a totaled regional system. The GPRACSO model can evaluate all data records (approximately 700 combined sewer communities) in the GPRACSO data base every time the model is "run," or analyze a single combined sewer community.

The GPRACSO data base consists of data from EPA Clean Water Needs Survey from 1992 and 1996, EPA's CSO data base, long-term control plans (LTCPs), and Internet searches to identify most combined sewer community systems and identify interconnected combined sewer community networks served by regional POTWs. In addition, for approximately 15 percent of the combined sewer communities recent data has been obtained through a review of state NPDES permit records performed in the summer of 2001. The GPRACSO data base contains information on how the Clean Water Needs Facility numbers relate to combined sewer community names and NPDES numbers, and how complex combined sewer community systems connect to discharge into single regional POTWs. For highly detailed assessments of the impacts of a single combined sewer community, the GPRACSO data base may not have accurate information, but for EPA's efforts to summarize national conditions and assess policy options, the combination of the GPRACSO data base and the GPRACSO model is sufficiently accurate.

The following sections provide a brief overview of the GPRACSO model algorithms and the key assumptions it makes.

Simulating Dry weather Sanitary Flows

Average daily combined sewer community sanitary flows are based on discharge monitoring reports submitted to the Permit Compliance System (PCS). Flow peaking factors are used to represent the hourly variation of sanitary flows about the average flow rate, within the combined sewer system and then entering the POTW (Metcalf & Eddy, 1991). For example, the typical minimum and maximum inflows are 32 percent and 141 percent of the average reported POTW inflow. Wherever data is available for a combined sewer community on both average and maximum POTW capacity, peaking factors were modified to account for this data.

Regardless of the conditions encountered, simulated average dry weather inflow into a POTW always matches the average inflow obtained from the best available source for each combined sewer community. In addition, the maximum daily inflow never exceeds the reported maximum POTW treatment capacity.

Hourly Dry weather Sanitary BOD Concentration Variation

In its current form, the GPRACSO model only analyses BOD pollutant loadings for dry weather and wet-weather conditions. While the algorithm can be used to evaluate any pollutant, EPA established that BOD should be used as the indicator pollutant in assessing national impacts of CSO management.

The GPRACSO model assumes that the average dry weather BOD concentration entering the POTW is 158 mg/L, with minimum and maximum hourly values of 40 and 290 (mg/L) respectively. The diurnal variation in BOD concentration mimics typical system trend reported by Metcalf & Eddy (1991). There were no other influences on hourly dry weather sewage concentration of BOD unless there are additions to sanitary inflows from snowmelt or from discharge from wet-weather storage facilities.

Flow source #1: GPRACSO identifies that there is a snow pack present in the combined sewer community and that hourly air temperature is above 32 degrees.

Model Response	*Assumptions*
From the calculated melt rate, an estimate of the snowmelt is made, all of which is assumed to flow in to the combined sewer system. The relative volumes of dry weather sewage and snowmelt is used to calculate a reduction in t he BOD concentration entering the POTW.	It is assumed that snowmelt contains zero pollutant and as a result dilutes the inflow entering the POTW.

Flow source #2: A combined sewer community has dedicated wet-weather storage available to capture any wet-weather flows in excess of the POTW maximum treatment capacity.

Model Response	*Assumptions*
The GPRACSO model tracks on an hourly basis all of the storage volume along with the amount of pollutant (BOD) it contains.	GPRACSO assumes that the stored flow is discharged to the POTW as soon as there is available treatment capacity (i.e., the hourly POTW inflow is less than the reported maximum POTW treatment capacity).

Estimation of Overflow Volume

The GPRACSO model performs many hydrologic computations as it evaluates the potential and actual wet-weather inflow into the combined sewer community system. The data sources used and the computations performed are as follows.

Typical meteorologic data was obtained for each combined sewer community based on a review of long-term data from the National Weather Service (NWS). First, the combined sewer communities were geographically grouped based on hydrology into 84 common zones. Next, a typical rainfall year was identified for each zone. As a rule, the typical year contained within +/-10 percent of the annual average precipitation and has no single rainfall event larger than the two-year return period rainfall. Depending on zone evaluated, the typical rainfall year presents between 30 and 80 possible overflow events for combined sewer communities within the zone. The associated hourly temperature record was also retrieved from NWS records such that snow generation and melting could be assessed during the GPRACSO simulation.

Runoff Estimation was performed using the rational method, which multiplies hourly rainfall by a single coefficient to calculate the runoff depth. The coefficient was set to equal the overall impervious fraction of each combined sewer community. Land use/land

cover GIS layers from USGS were used to help estimate the geographically weighted imperviousness for the land area found within the political boundaries of the CSS communities (EPA, 1998).

Snowfall accumulation and melting was calculated using a degree-day approach applied on a hourly basis (McCuen, 1989). Each hour's temperature was evaluated to establish the potential snowmelt, and then snowmelt was simulated if a snowpack existed. The GPRACSO model monitors the conditions in each combined sewer community to determine if snowpack is present and if it is aggregating or shrinking in any simulated hour.

POTW wet-weather treatment estimation. The GPRACSO simulation assumes POTW secondary treatment capacity above the simulated hourly dry weather inflow (the average POTW inflow multiplied by the appropriate hourly peaking factor) is available for treating potential overflows. The GPRACSO model assumes that ***any*** inflow, up to the POTW's maximum treatment rate, is discharged from the POTW at a concentration 87 percent less than the inflow concentration. The assumption is that POTWs provide a secondary level of treatment for all flows treated during either wet- or dry-conditions. This treatment assumption works out to an average discharge concentration under dry weather conditions of approximately 26 mg/L BOD, post-POTW treatment.

Information is available on the average and maximum flows for many POTWs in discharge monitoring reports found in PCS. Using monthly reported values, the GPRACSO model sets the simulated average POTW inflow to the average reported inflow rate, and sets the maximum (simulated) wet weather treatment capacity to the peak or maximum reported POTW discharge. When examining future conditions, the year 2000 flows are used. For historic conditions, the appropriate discharge monitoring report (DMR) reports are accessed and used to look back at management performance.

POTW secondary treatment bypass provides partial treatment (to a primary treatment level) for any flows in excess of the POTW's maximum secondary capacity. Actual combined sewer community bypass can be evaluated using the GPRACSO model if facility-specific information is added to the GPRACSO data base. For bypass flows, BOD inflow concentrations are assumed to be reduced 25 percent by the primary treatment. Bypass is only possible after all wet weather storage has been used during a wet weather event.

Wet weather end-of-pipe (EOP) treatment estimation. EOP treatment occurs only after both the maximum capacity of the POTW and the wet weather storage is fully utilized during an overflow period. The GPRACSO model uses EOP as a last resort treatment, and it cannot be used to drain stored overflows. EOP treatment is assumed to reduce influent BOD concentrations by 25 percent.

Wet weather storage simulation. The GPRACSO model has built-in algorithms for assessing the operations of wet weather storage facilities designed to capture and hold potential overflow volumes until treatment capacity is available. The operation on wet weather storage is simulated such that any hourly flows in excess of POTW treatment would go directly to wet weather storage. Only after all available wet weather storage is filled and EOP/bypass capacity is exceeded will GPRACSO simulate/report an overflow. Available POTW capacity for draining storage is defined as the difference between the maximum POTW treatment rate and the flow entering the simulated POTW for any given hour.

Recognition of conveyance limits of combined sewer interceptor systems. The GPRACSO model assumes that the total interceptor system discharging into a POTW has a capacity greater than the maximum treatment rate of the POTW. As a result, the limiting factor in combined sewer community flow management is the POTW wet weather treatment capacity. It is acknowledged that this assumption is not appropriate for some combined sewer communities, however, maximization of flows to the POTW is a required minimum measure under EPA's CSO policy.

Estimation of Combined Sewer Community Overflow BOD Loads

The GPRACSO model attempts to recognize the major influences on combined sewer system BOD concentration in each hour that it simulates. The influences accounted for include:

- Flushing of accumulated materials in the combined sewer community pipes
- The dilution of sanitary flows by storm water inflow late in the overflow periods
- The daily variation in sanitary flow rate and concentration

The first two influences are lumped into a single load or calculation, referred to as "storm water BOD load" which is the combination of BOD flushed from pipes and BOD washed from the urban surface, independent of any sanitary inflow rates. To help estimate the BOD loadings attributable to storm water (including the flushing of settled pollutant in pipes), the following exponential relationship between time and BOD concentration was developed:

Equation 1. $C = (200 * 10^{-1.5*(t)}) + 15$

where

C = the BOD concentration in mg/L used to calculate the storm water load

t = time in hours since the overflow started

15 = the BOD concentration in mg/L assumed to be in urban storm water

Information from two data sources was used to develop the above relationship. The first data source is multi-event CSO monitoring results of first-flush concentrations in combined sewers for a medium-sized east coast combined sewer community. The second data source used to develop the relationship was from 90th percentile event mean concentration (EMC) BOD concentrations reported in the EPA Nationwide Urban Runoff Program (NURP). The first data source suggests that BOD concentrations at the very start of runoff ranges between 200 and 400 mg/L, but that BOD concentrations decrease rapidly within the first hour of runoff. As a result, the average first hour BOD concentration is set to be 215 mg/L, using the equation above. The second data source suggests a high-end long-term urban runoff BOD concentration in the absence of CSOs is approximately 15mg/L, a feature also provided by the equation above.

Calculation of hourly overflow concentration in storm water/sanitary mix. While the initial storm water inflows into the combined sewer community cause a high concentration of flush load at the beginning of the overflow period, later in the overflow period highly dilute storm water thins the more concentrated sanitary flows. As a result, the GPRACSO hourly model continuously mixes the sanitary flow/BOD load with the storm water runoff/BOD load to calculate the average hourly concentration. It is assumed that the mixing of sanitary and storm water is 100 percent complete for each hour simulated and that any overflows which occur will contain the same pollutant concentration as what enters the simulated POTW. The logic used to select the uniform concentration for any particular hour is:

If EventTime = 0 (the runoff has just started entering the CSS), then
CSCConc(ttt,0) = $(200 * 10^{-1.5*(\text{event time})}) + 15$

If EventTime > 0 (the overflow event is progressing), then
CSCConc(ttt,0) = $(200 * 10^{-1.5*(\text{event time})}) + 15$

If CSCConc(ttt,0) < DWBODconc * hours, then
CSCConc(ttt,0) = (HRDischarge(ttt,0) - HRDWF(ttt,0)) * (CSCConc(ttt,0) + HRDWF(ttt,0) * DWBODconc * hours) / HRDischarge(ttt,0)

EventTime	= time since the start of the overflow event (hours)
CSCConc	= uniform concentration of the storm water/sanitary mixture (mg/L) from the combined sewer community
DWBODconc * hours	= the sanitary flow concentration in the absence of overflow (mg/L) for the "hour" under simulation
HRDischarge(ttt,0)	= the simulated total flow in the combined sewer (mg/d)
HRDWF(ttt,0)	= the hour's sanitary flow rate in the absence of overflow (mg/d)

The CSCConc(ttt,0) value is used to compute the overflow pollutant load, the inflow load entering the POTW, and the pollutant load stored in any wet weather storage that may be present in the system. The assumed concentration for the first hour when overflow occurs is 215 mg/L regardless of when it occurs in the day. For any subsequent hour in which overflow can occur, the BOD concentration is the greater of (1) the value taken from Equation 1 based on the time elapsed since the start of the overflow, or (2) the flow weighted combination of Equation 1 and the sanitary flow concentration based on daily variation. The first flush is recognized as the strongest influence on concentration at the beginning of the event, the dominate role of storm water dilution is recognized later in the event, and the daily variation in sanitary flow concentration is accounted for throughout the event.

Removal efficiencies of POTW and EOP Treatments. All flows passing through POTWs are assumed to have a 87 percent reduction in the inflow BOD load; the effluent concentration would be 13 percent of the influent concentration. All flows passing through EOP treatment are assumed to have 25 percent reduction in the inflow BOD load; the effluent concentration would be 75 percent of the influent concentration. For the purpose of estimating pollutant loadings, bypassed flows are assumed to have a 25 percent reduction in inflow BOD concentration due to the primary treatment it receives.

Summary

Based on data within the GPRACSO data base, the GPRACSO model estimates combined sewer overflow volume, sanitary discharge volume, and annual BOD load for approximately 700 combined sewer communities. Designers of the GPRACSO model have attempted to estimate the annual performance expected under typical rainfall conditions based on historic POTW performance data. Recent POTW upgrades and/or new wet weather management facilities may not be incorporated within the current version of the GPRACSO data base. (Note, EPA is currently collecting data on CSS facilities which can be used to update the GPRACSO data base.) For this reason, the estimates produced by the GPRACSO simulation may not fully recognize current management. In addition, model estimates will vary from the actual overflow measured at any given community for any given year because of natural hydrologic variation.

Extensive efforts were made to account for the majority of physical and hydrologic factors encountered in the generation of sanitary and storm water flows, and the operation of wet weather treatment and storage. As a result, it is expected that the bulk of the model error originates from errors in the basic system data (e.g, the combined sewer service acreage in each CSS). Where GPRACSO results have been compared against much more detailed/sophisticated models, the results have been found to agree within +/-20 percent. When compared against annual overflow estimates based on monitoring data (available for a limited number of cities), the GPRACSO model has been found to be with +/- 20 percent. These error ranges are well within that encountered in total annual rainfall; when identifying a typical rainfall year for each CSS the total annual rainfall was found to range +/- 30 percent throughout a 30 year period. Inaccuracies related to ***mathematical*** model errors generated as the model solves internal algorithms are very small; mathematical errors are less than 0.01 percent for the volume of water and less than 0.01 percent for the mass of pollutant.