

**COMBINED SEWER OVERFLOW  
OPERATIONAL AND MAINTENANCE PLAN**

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**CITY OF DES PLAINES, ILLINOIS  
NPDES PERMIT # ILM580026**



**COMBINED SEWER OVERFLOW  
OPERATIONAL AND MAINTENANCE PLAN**

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## **CHAPTER 1 CSO O&M PLAN OBJECTIVES**

This plan was developed in compliance with the requirements of the City's National Pollutant Discharge Elimination System (NPDES) Combined Sewer Overflow (CSO) General Permit No. ILM580026. The primary objective of this plan is to provide a program for effectively improving the city's combined sewer overflow management. More specifically, the plan has been developed to comply with the following eight requirements of the NPDES CSO permit:

1. Collection system inspection on a regular scheduled basis
2. Sewer, catch basin, manhole, and regulator cleaning and maintenance on a regular scheduled basis
3. Inspections are made and preventative maintenance is performed on all pump/lift stations
4. Collections system replacement, where necessary
5. Detection and elimination of illegal connections
6. Detection, prevention, and elimination of dry weather overflows
7. The collection system is operated to maximize storage capacity and the combined sewer portions of the collection system are operated to delay storm water entry into the system
8. The collection system is operated to maximize treatment

**CHAPTER 2  
COMBINED SEWER OVERFLOW INVENTORY**

**GENERAL INFORMATION**

The City of Des Plaines lies entirely within the Des Plaines River watershed. About one-half of the community drains directly to the Des Plaines River. The rest of the community drains to five local tributaries of the Des Plaines River. The area is relatively flat with ground slopes averaging about 2 feet per 1000 feet.

The entire City falls within the service area of the Metropolitan Water Reclamation District of Greater Chicago (MWRD). The combined sewers of the City drain to MWRD interceptor sewers which empty into Tunnel and Reservoir Plan (TARP) facilities and then on to MWRD wastewater plants for treatment.

**DESCRIPTION OF CSO SYSTEMS**

Six drainage basins within the City are tributary to combined sewer overflows. The Algonquin Road drainage basin has two CSO's which are hydraulically connected through the MWRD interceptor and TARP structures. The seven City of Des Plaines CSO's are listed below:

	<b>CSO Name</b>	<b>Latitude</b>	<b>Longitude</b>	<b>Receiving Waterbody</b>
1	Prairie Ave (W)	42° 2' 17.0" N	87° 52' 58.5" W	Des Plaines River
2	Algonquin Rd (W) (N of bridge)	42° 1' 54.6" N	87° 52' 42.5" W	Des Plaines River
2	Algonquin Rd (W) (S of bridge)	42° 1' 53.5" N	87° 52' 41.9" W	Des Plaines River
4	Oakton St (W)	42° 1' 31.2" N	87° 52' 30.5" W	Des Plaines River
5	Riverview Ave (W)	42° 1' 21.6" N	87° 52' 29.1" W	Des Plaines River
6	Howard Ave (W)	42° 1' 2.1" N	87° 52' 26.3" W	Des Plaines River
7	East of Columbia & Seegers (N)	42° 3' 1.6" N	87° 54' 31.4" W	Weller Creek

None of the CSO's discharge to a "sensitive area" such as wetlands, beaches, endangered species habitat, etc. Nor has there been any Illinois Pollution Control Board issuance of violation at the CSO's.

**Prairie Avenue (W):** (Refer to Table 1)

The combined sewer tributary area is 679 acres. The land use is 83% residential (single and multi-family), 13% commercial (Central Business District), 2% general manufacturing and 2% school. Sanitary/combined sewer sizes range from 8" to 86" in diameter. Approximately 73% of the area has separated storm sewers. There is not a sewage lift station tributary to the CSO.

At the downstream end of the drainage basin, three City of Des Plaines combined sewer pipes (48", 36", and 24") discharge to an MWRDGC-constructed, maintained, and operated junction chamber (aka TARP structure). Normal flow from the Des Plaines combined sewers is conveyed from the TARP structure to the MWRD 4' x 5' Upper Des Plaines intercepting sewer that runs underneath Des Plaines River Road. Wet weather flows in excess of the intercepting sewer capacity are conveyed from the TARP structure to the TARP tunnel via DS-D01. In the event that the MWRD TARP system reaches capacity, the combined sewer overflow from this basin discharges from the TARP structure to the Des Plaines River via two outfall pipes (48" and 36").

The theoretical "full" pipe flow value is 93.4 MGD. The dry-weather flow [based on assumed usage of 300 gpd/c for residential, 2,000 gpd/ac for commercial, 10,000 gpd/ac for manufacturing, 16 gpd/student

and a groundwater infiltration rate of 500 gpd/mi\*in] is 1.10 MGD. The flow for "first flush" conditions, calculated at 10 times the dry-weather flow, is 11.0 MGD. As part of the regional long-term control plan, the MWRD TARP connecting structure and receiving sewer were designed to convey the first-flush and greater volumes to the MWRD treatment plants.

**Algonquin Rd (W) (North of bridge) and Algonquin Rd (W) (South of bridge):** (Refer to Table 2)

The combined sewer tributary area is 621 acres. The land use is 83% residential (single and multi-family), 10% commercial (Central Business District), 3% general manufacturing, 1% institutional, and 3% school. Sanitary/combined sewer sizes range from 8" to 96" in diameter. Approximately 84% of the area has separated storm sewers. There is one sewage lift station with a 4" pump tributary to the CSO.

At the downstream end of the drainage basin, two City of Des Plaines combined sewer pipes (30" and 36") discharge to an MWRDGC-constructed, maintained, and operated junction chamber (aka Interceptor structure). Normal flow from the Des Plaines combined sewers is conveyed from the Interceptor structure to the MWRD 4' x 5' Upper Des Plaines intercepting sewer that runs underneath Des Plaines River Road. Wet weather flows in excess of the intercepting sewer capacity are conveyed from the Interceptor structure to a pair of MWRDGC-constructed, maintained, and operated junction chambers (aka TARP structures) from which the flow is conveyed to the TARP tunnel via DS-D02. In the event that the MWRD TARP system reaches capacity, the combined sewer overflow from this basin discharges from the TARP structures to the Des Plaines River via two outfall pipes (30" and 36").

The theoretical "full" pipe flow value is 42.6 MGD. The dry-weather flow [based on assumed usage of 300 gpd/c for residential, 2,000 gpd/ac for commercial, 10,000 gpd/ac for manufacturing, 16 gpd/student and a groundwater infiltration rate of 500 gpd/mi\*in] is 1.15 MGD. The flow for "first flush" conditions, calculated at 10 times the dry-weather flow, is 11.5 MGD. As part of the regional long-term control plan, the MWRD TARP connecting structure and receiving sewer were designed to convey the first-flush and greater volumes to the MWRD treatment plants.

**Oakton Street (W):** (Refer to Table 3)

The combined sewer tributary area is 294 acres. The land use is 61% residential (single and multi-family) and 39% commercial (Central Business District). Sanitary/combined sewer sizes range from 8" to 60" in diameter. Approximately 68% of the area has separated storm sewers. There is not a sewage lift station tributary to the CSO.

At the downstream end of the drainage basin, a 30" City of Des Plaines combined sewer pipe discharges to an MWRDGC-constructed, maintained, and operated junction chamber (aka Interceptor structure). Normal flow from the Des Plaines combined sewers is conveyed from the Interceptor structure to the MWRD 4' x 5' Upper Des Plaines intercepting sewer that runs underneath Des Plaines River Road. Wet weather flows in excess of the intercepting sewer capacity are conveyed from the Interceptor structure to an MWRDGC-constructed, maintained, and operated junction chamber (aka TARP structure). From the TARP structure, the Oakton flows are conveyed to the TARP system at Riverview Avenue to the south, via a 42" diameter intercepting sewer and then finally to the TARP tunnel via DS-D03R. In the event that the MWRD TARP system reaches capacity, the combined sewer overflow from this basin discharges from the TARP structures to the Des Plaines River via a 30" outfall pipe.

The theoretical "full" pipe flow value is 16.2 MGD. The dry-weather flow [based on assumed usage of 300 gpd/c for residential, 2,000 gpd/ac for commercial, 10,000 gpd/ac for manufacturing, 16 gpd/student and a groundwater infiltration rate of 500 gpd/mi\*in] is 0.51 MGD. The flow for "first flush" conditions, calculated at 10 times the dry-weather flow, is 5.1 MGD. As part of the regional long-term control plan, the MWRD TARP connecting structure and receiving sewer were designed to convey the first-flush and greater volumes to the MWRD treatment plants.

**Riverview Ave (W):** (Refer to Table 4)

The combined sewer tributary area is 920 acres. The land use is 51% residential (single and multi-family), 2% commercial (Central Business District), 38% general manufacturing, and 9% school. Sanitary/combined sewer sizes range from 8" to 96" in diameter. Approximately 64% of the area has separated storm sewers. There is not a sewage lift station tributary to the CSO.

At the downstream end of the drainage basin, an 84" City of Des Plaines combined sewer pipe discharges to a City-constructed, maintained, and operated junction chamber (aka City structure). Normal flow from the Des Plaines combined sewers is conveyed from the City structure to the MWRD 4' x 5' Upper Des Plaines intercepting sewer that runs underneath Des Plaines River Road. Wet weather flows are conveyed from the Interceptor structure to an MWRDGC-constructed, maintained, and operated junction chamber (aka TARP structure) from which the flow is conveyed to the TARP tunnel via DS-D03R. In the event that the MWRD TARP system reaches capacity, the combined sewer overflow from this basin discharges from the TARP structure to the Des Plaines River via an 84" outfall pipe.

The theoretical "full" pipe flow value is 253.5 MGD. The dry-weather flow [based on assumed usage of 300 gpd/c for residential, 2,000 gpd/ac for commercial, 10,000 gpd/ac for manufacturing, 16 gpd/student and a groundwater infiltration rate of 500 gpd/mi\*in] is 4.42 MGD. The flow for "first flush" conditions, calculated at 10 times the dry-weather flow, is 44.2 MGD. As part of the regional long-term control plan, the MWRD TARP connecting structure and receiving sewer were designed to convey the first-flush and greater volumes to the MWRD treatment plants.

**Howard Ave (W):** (Refer to Table 5)

The combined sewer tributary area is 145 acres. The land use is approximately 70% general manufacturing, 21% residential (single and multi-family), 8% school (high school and elementary school) and 1% commercial. Sanitary/combined sewer sizes range from 10" in diameter to 60". Approximately 99% of the area has separated storm sewers. There is not a sewage lift station tributary to the CSO.

At the downstream end of the drainage basin, a 60" City of Des Plaines combined sewer pipe discharges to an MWRD-constructed, maintained, and operated junction chamber (aka Interceptor structure). There is a timber gate control device to control dry and wet weather sewage flows into the MWRD 4' x 5' Upper Des Plaines intercepting sewer that runs underneath Des Plaines River Road. In the event that the intercepting sewer reaches capacity, the combined sewer overflow from this basin discharges from the Interceptor structure to the Des Plaines River via a 60" outfall pipe

The theoretical "full" pipe flow value is 46.2 MGD. However, the majority of the area that was once tributary to this 60" combined sewer (~500 acres) was diverted to the Riverview Avenue CSO tributary area as part of a relief sewer project coordinated with the MWRD TARP. Therefore, "full" pipe flows are unlikely. The dry-weather flow [based on assumed usage of 300 gpd/c for residential, 2,000 gpd/ac for commercial, 10,000 gpd/ac for manufacturing, 16 gpd/student and a groundwater infiltration rate of 500 gpd/mi\*in] is 1.08 MGD. The flow for "first flush" conditions, calculated at 10 times the dry-weather flow, is 10.8 MGD. However, since 99 percent of the area tributary to this CSO is now served by separate storm sewer, the first flush flow can be expected to be substantially smaller. The MWRD Interceptor structure is equipped with a timber gate with an overflow elevation (40.14) set 2.74 feet above the tributary sewer invert in order to maximize the flow conveyed to the MWRD treatment plants.

**East of Columbia & Seegers (N):** (Refer to Table 6)

The combined sewer tributary area is 356 acres. The land use is 62% residential (single and multi-family), 22% general manufacturing, 12% commercial (Central Business District), and 3% school.

Sanitary/combined sewer sizes range from 8" to 96" in diameter. Approximately 78% of the area has separated storm sewers. There is one sewage lift station with a 6" pump tributary to the CSO.

At the downstream end of the drainage basin, a 36" City of Des Plaines combined sewer pipe discharges to an MWRDGC-constructed, maintained, and operated junction chamber (aka Interceptor structure). Normal and wet-weather flows are conveyed from the Interceptor structure to an MWRDGC-constructed, maintained, and operated Control structure and then into the MWRD 54" Upper Des Plaines Intercepting Sewer. The basin is indirectly tributary to the TARP tunnel DS-UD5 via the Upper Des Plaines Intercepting Sewer. In the event that the Intercepting Sewer or the MWRD TARP system reaches capacity, the combined sewer overflow from the basin discharges from the Interceptor Structure to Weller Creek via a 36" outfall pipe.

The theoretical "full" pipe flow value is 26.4 MGD. The dry-weather flow [based on assumed usage of 300 gpd/c for residential, 2,000 gpd/ac for commercial, 10,000 gpd/ac for manufacturing, 16 gpd/student and a groundwater infiltration rate of 500 gpd/mi\*in] is 0.94 MGD. The flow for "first flush" conditions, calculated at 10 times the dry-weather flow, is 9.4 MGD. As part of the regional long-term control plan, the MWRD TARP connecting structure and receiving sewer were designed to convey the first-flush and greater volumes to the MWRD treatment plants.

**TABLE 1: PRAIRIE AVE  
COMBINED SEWER OVERFLOW**

**Prairie CSO Basin - Sewer Pipe lengths by Type and Diameter**

Pipe Diameter	Storm		Sanitary		Combined	
	Linear Feet	Pipe Diameter	Linear Feet	Pipe Diameter	Linear Feet	Pipe Diameter
Unknown	5,614	8"	17,164	Unknown	25	
5"	7	10"	12,636	8"	1,435	
6"	56	12"	9,060	10"	12,078	
8"	2,209	15"	336	12"	18,034	
10"	4,140	18"	2,028	14"	351	
12"	22,612	24"	720	15"	7,919	
15"	12,207			18"	8,420	
18"	4,977			24"	14,092	
21"	3,955			30"	232	
24"	3,284			36"	2,899	
27"	952			42"	929	
30"	3,729			48"	4,153	
33"	801			84"	554	
36"	1,473			86"	40	
39"	1,207					
48"	5,741					
54"	4,767					
60"	342					
72"	1,034					
120"	895					
<b>Total Feet:</b>	<b>80,000</b>		<b>41,943</b>	<b>Total Feet:</b>	<b>71,161</b>	

**Prairie CSO - Breakdown of Tributary Area by Zoning**

	sq ft	ac	%	# of Sanitary Connections
Residential	23,968,460	550	82.9%	1,990
Commercial	3,851,481	88	13.3%	96
Manufacturing	644,113	15	2.2%	13
Institutional	0	0	0.0%	0
School	437,619	10	1.5%	7
<b>Total</b>	<b>28,901,673</b>	<b>663</b>	<b>100%</b>	<b>2,106</b>

**Prairie CSO Trib Sewer - Flow Characteristics**

	cfs	MGD
Dry Flow	1.71	1.1
First Flush Flow	17.06	11.0
Full Flow	144.52	93.4

**Prairie CSO - Breakdown of Tributary Area by Type of Sewer**

	sq ft	ac	%
Combined	8,125,309	187	27.5%
Separate Sewer	21,455,340	493	72.5%
<b>Total</b>	<b>29,580,649</b>	<b>679</b>	<b>100%</b>

**TABLE 2: ALGONQUIN RD  
COMBINED SEWER OVERFLOW**

Algonquin CSO's Basin - Sewer Pipe lengths by Type and Diameter						
Pipe Diameter	Storm		Sanitary		Combined	
	Linear Feet	Pipe Diameter	Linear Feet	Pipe Diameter	Linear Feet	Pipe Diameter
Unknown	6,762	Unknown	0	Unknown	36	Unknown
8"	94	8"	19,693	8"	3,387	8"
10"	2,583	10"	16,892	10"	8,830	10"
12"	14,915	12"	19,637	12"	11,983	12"
15"	11,750	15"	1,906	15"	6,224	15"
18"	10,421	18"	2,852	18"	10,118	18"
21"	3,345			20"	443	20"
24"	5,513			21"	1,400	21"
27"	613			24"	3,087	24"
30"	1,307			30"	6,350	30"
33"	1,297			36"	418	36"
36"	1,731			39"	54	39"
42"	5,951			54"	330	54"
48"	3,359			86"	42	86"
48"x60"	1,400			96"	202	96"
54"	5,357					
60"	1,965					
78"	1,401					
120"	1,016					
<b>Total Feet:</b>	<b>80,780</b>			<b>Total Feet:</b>	<b>52,904</b>	

**Algonquin CSO - Breakdown of Tributary Area by Zoning**

	sq ft	ac	%	# of Sanitary Connections
Residential	22,511,289	517	83.4%	2,312
Commercial	2,689,483	62	10.0%	136
Manufacturing	736,901	17	2.7%	19
Institutional	200,340	5	0.7%	0
School	841,902	19	3.1%	2
<b>Total</b>	<b>26,989,915</b>	<b>620</b>	<b>100%</b>	<b>2,469</b>

**Algonquin CSO - Breakdown of Tributary Area by Type of Sewer**

	sq ft	ac	%
Combined	4,426,223	102	16.4%
Separate Sewer	22,623,883	519	83.6%
<b>Total</b>	<b>27,050,106</b>	<b>621</b>	<b>100%</b>

**Algonquin CSO Trib Sewer - Flow Characteristics**

	CFS	MGD
Dry Flow	1.78	1.2
First Flush Flow	17.83	11.5
Full Flow	65.93	42.6

**TABLE 3: OAKTON ST  
COMBINED SEWER OVERFLOW**

Oakton CSO Basin - Sewer Pipe Lengths by Type and Diameter						
Pipe Diameter	Storm		Sanitary		Combined	
	Linear Feet	Pipe Diameter	Linear Feet	Pipe Diameter	Linear Feet	Pipe Diameter
Unknown	1,400		9,480	8"	7,580	8"
4"	101	8"	140	15"	12,769	10"
6"	77				2,078	12"
8"	526				7,512	15"
10"	432		9,620		1,505	18"
12"	5,927				1,017	20"
15"	3,572				3,709	24"
18"	2,972				1,746	27"
21"	889				1,970	30"
24"	439				427	42"
33"	972				380	60"
48"	999					
54"	2,641					
60"	5,646					
<b>Total Feet:</b>	<b>26,593</b>				<b>40,693</b>	<b>Total Feet:</b>

**Oakton CSO - Breakdown of Tributary Area by Zoning**

	sq ft	ac	%	# of Sanitary Connections
Residential	7,662,867	176	61.0%	730
Commercial	4,878,594	112	38.8%	140
Manufacturing	29,801	1	0.2%	1
Institutional	0	0	0.0%	0
School	0	0	0.0%	0
<b>Total</b>	<b>12,571,262</b>	<b>289</b>	<b>100%</b>	<b>871</b>

**Oakton CSO - Breakdown of Tributary Area by Type of Sewer**

	sq ft	ac	%
Combined	4,070,628	93	31.8%
Separate Sewer	8,748,587	201	68.2%
<b>Total</b>	<b>12,819,215</b>	<b>294</b>	<b>100%</b>

**Oakton CSO Trib Sewer - Flow Characteristics**

	cfs	MGD
Dry Flow	0.80	0.5
First Flush Flow	7.97	5.1
Full Flow	25.10	16.2

**TABLE 4: RIVERVIEW AVE  
COMBINED SEWER OVERFLOW**

**Riverview CSO Basin - Sewer Pipe lengths by Type and Diameter**

Pipe Diameter	Storm		Sanitary		Combined	
	Linear Feet	Pipe Diameter	Linear Feet	Pipe Diameter	Linear Feet	Pipe Diameter
Unknown	2,739	Unknown	638	Unknown	29	Unknown
6"	198	6"	139	6"	6,813	6"
8"	1,197	8"	13,182	8"	23,828	8"
10"	2,849	10"	1,030	10"	12,157	10"
12"	8,680	12"	9,192	12"	6,845	12"
15"	7,417	15"	1,033	15"	3,292	15"
16"	217	16"	178	16"	1,913	16"
18"	3,929	18"	459	18"	6,720	18"
20"	82	20"	746	20"	1,941	20"
21"	2,058	21"	514	21"	1,542	21"
24"	5,048	24"	1,287	24"	75	24"
27"	1,862	27"	165	27"	7,014	27"
30"	1,938	30"		30"	529	30"
33"	2,510	33"		33"	421	33"
36"	7,924	36"		36"	563	36"
42"	2,946	42"		42"	5,516	42"
48"	6,983	48"		48"	20	48"
54"	2,842	54"		54"	1,294	54"
60"	651	60"		60"		60"
<b>Total Feet:</b>	<b>62,070</b>	<b>Total Feet:</b>	<b>28,561</b>	<b>Total Feet:</b>	<b>80,511</b>	

**Riverview CSO - Breakdown of Tributary Area by Zoning**

	sq ft	ac	%	# of Sanitary Connections
Residential	20,259,293	465	51.2%	2,132
Commercial	750,322	17	1.9%	32
Manufacturing	14,933,533	343	37.8%	168
Institutional	0	0	0.0%	0
School	3,603,855	83	9.1%	4
<b>Total</b>	<b>39,547,003</b>	<b>908</b>	<b>100%</b>	<b>2,336</b>

**Riverview CSO Trib Sewer - Flow Characteristics**

	cfs	MGD
Dry Flow	6.84	4.4
First Flush Flow	68.42	44.2
Full Flow	392.22	253.5

**Riverview CSO - Breakdown of Tributary Area by Type of Sewer**

	sq ft	ac	%
Combined	14,418,289	331	36.0%
Separate Sewer	25,665,648	589	64.0%
<b>Total</b>	<b>40,083,938</b>	<b>920</b>	<b>100%</b>

**TABLE 5: HOWARD AVE  
COMBINED SEWER OVERFLOW**

Howard CSO Basin - Sewer Pipe lengths by Type and Diameter						
Pipe Diameter	Storm		Sanitary		Combined	
	Linear Feet	Pipe Diameter	Linear Feet	Pipe Diameter	Linear Feet	Pipe Diameter
Unknown	579	8"	2,105	Unknown	87	Unknown
10"	146	10"	1,400	10"	707	10"
12"	1,760	12"	183	12"	218	12"
15"	347	24"	252	18"	651	18"
18"	1,658			21"	505	21"
21"	93			24"	5,300	24"
24"	2,499			27"	923	27"
27"	1,108			30"	281	30"
30"	1,020			36"	932	36"
36"	984			48"	760	48"
48"	1,797			54"	195	54"
60"	2,088			60"	1,400	60"
72"	773					
<b>Total Feet:</b>	<b>14,802</b>			<b>Total Feet:</b>	<b>11,959</b>	

Howard CSO - Breakdown of Tributary Area by Zoning					
	sq ft	ac	%	# of Sanitary Connections	
Residential	1,363,334	31	21.6%	87	
Commercial	58,120	1	0.8%	1	
Manufacturing	4,392,181	101	69.6%	65	
Institutional	0	0	0.0%	0	
School	499,664	11	7.9%	1	
<b>Total</b>	<b>6,308,299</b>	<b>145</b>	<b>100%</b>	<b>154</b>	

Howard CSO - Breakdown of Tributary Area by Type of Sewer				
	sq ft	ac	%	
Combined	57,454	1	0.9%	
Separate Sewer	6,246,659	143	99.1%	
<b>Total</b>	<b>6,304,113</b>	<b>145</b>	<b>100%</b>	

Howard CSO Trib Sewer - Flow Characteristics		
	cfs	MGD
Dry Flow	1.67	1.1
First Flush Flow	16.74	10.8
Full Flow	71.43	46.2

**TABLE 6: COLUMBIA-SEEGERS  
COMBINED SEWER OVERFLOW**

Columbia-Seegers CSO Basin - Sewer Pipe Lengths by Type and Diameter						
Pipe Diameter	Storm		Sanitary		Combined	
	Linear Feet	Pipe Diameter	Linear Feet	Pipe Diameter	Linear Feet	Pipe Diameter
Unknown	5,282	Unknown	287	8"	882	8"
8"	1,135	8"	17,159	10"	13,302	10"
10"	3,187	10"	1,107	12"	7,000	12"
12"	4,933	12"	2,952	15"	3,017	15"
15"	4,440	15"	1,041	18"	2,598	18"
18"	3,487	18"	320	21"	3,216	21"
20"	64			24"	1,681	24"
21"	3,398		22,866	27"	241	27"
22"	27			36"	773	36"
24"	4,359			48"	968	48"
27"	789			60"	5,357	60"
30"	347					
32"	62					
36"	4,063					
48"	1,470					
54"	426					
60"	374					
66"	180					
72"	90					
144"	2,459					
<b>Total Feet:</b>	<b>40,572</b>					<b>39,035</b>

**Columbia-Seegers CSO - Breakdown of Tributary Area by Zoning**

	sq ft	ac	%	# of Sanitary Connections
Residential	6,314,082	145	62.0%	848
Commercial	1,285,292	30	12.6%	32
Manufacturing	2,272,520	52	22.3%	21
Institutional	0	0	0.0%	0
School	319,989	7	3.1%	2
<b>Total</b>	<b>10,191,882</b>	<b>234</b>	<b>100%</b>	<b>903</b>

**Columbia-Seegers CSO - Breakdown of Tributary Area by Type of Sewer**

	sq ft	ac	%
Combined	3,464,451	80	22.3%
Separate Sewer	12,038,050	276	77.7%
<b>Total</b>	<b>15,502,501</b>	<b>356</b>	<b>100%</b>

**Columbia-Seegers CSO - Flow Characteristics**

	cfs	MGD
Dry Flow	1.46	0.9
First Flush Flow	14.61	9.4
Full Flow	40.84	26.4

### CHAPTER 3 COMBINED SEWER OPERATION

The following program is aimed at ensuring a proper, satisfactory and safe state of repair for the city's combined sewer system. Among the goals of the program are to reduce excessive inflow/infiltration in the system, to prevent basement sewer backups and adverse surcharging of the manholes, and to minimize the amount solids and contaminants entering the system.

#### INVENTORY

The City is in the process of compiling all of its sewer system records into a geographical information system. The base data has been input and field personnel are supplied with paper copies of the map to mark any necessary changes based upon their field observations. The sewer map will be updated continuously and the latest version will be available on the City's computer network for use by City staff. In addition, updated paper copies will be distributed to field personnel twice a year.

#### INSPECTION

Any special appurtenances in the sewer system, such as lift stations, City-owned junction chambers, combined sewer overflows, flap gates, etc., will be inspected periodically on a schedule established by the Director of Public Works.

**Manholes:** All manholes will be inspected on a five-year cycle. Every manhole will be inspected for the following, and the results of the inspection will be noted for the necessary repair work, if any. As far as practicable, the inspections will be scheduled in the periods of high ground water.

1. **Inflow through the lid:** Is the manhole located where storm runoff could accumulate around and over the lid, and enter the manhole through pick/vent holes, or through the space between the lid and the frame? This could be remedied by installation of a gasket seal cover or solid watertight cover with concealed pick holes.
2. **Frame Seal:** The manhole frame should be sealed watertight with the cone or adjustment rings. If signs of water leakage are noted, the frame should be removed and resealed.
3. **Adjustment Rings:** The existing adjustment rings between the frame and cone will be inspected for water tightness. If a leak(s) is observed, the frame and the rings should be removed and resealed. Any brick/block adjustment rings should be removed and replaced with precast concrete rings.
4. **Manhole Walls:** To be inspected for signs of leaks. Leaking walls may be repaired by chemical grout sealing. Poured-in-place concrete liners or guniting may be considered for brick/block manholes with multiple defects.
5. **Manhole Base and Pipe Invert(s):** To be inspected for signs of leaks. Chemical grouting is the most likely repair method.
6. **Bench:** To be inspected for erosion of the bench. Eroded benches should be repaired by an appropriate method, ranging from application of mortar of an appropriate type to repouring of the bench.

**7. Steps:** To be inspected for leaks at the holes the steps are grouted into, and the condition of the step itself. Possible repair methods include regrouting and/or replacement of the step.

**Sewers:** All sewer opening(s) in a manhole shall be visually inspected using a high intensity lamp and a mirror, to the extent visible from the manhole for the signs of obstructions, roots, sediment deposits and other defects.

Sewer reaches are televised in conjunction with ongoing paving and water main improvements. The tapes of televised sewers are retained by the city.

**Detention Pond Inspection:** Detention ponds shall be inspected annually and cleaned or repaired as necessary.

**Creek and Outfall Structures:** All creeks and outfall structures shall be inspected twice annually and be cleaned or repaired as necessary.

**Flow Monitoring:** If visual or other inspections indicate possible excess flow problems in certain subsystems, flow monitoring should be performed at key manholes. Smoke testing, dye testing and excavations may be required in some subsystems where complaints or backup causes are difficult to locate.

**Building Inspections:** If other inspections indicate that the increased flow may be a source of inflow/infiltration (I/I) located on private property, an inspection of such property, including any building(s) on it, will be conducted.

Maintenance staff, meter readers, and building inspectors will be familiarized with the sewer use ordinance so that unauthorized connections to the sewer can be identified and disconnected. Also, they will ensure that these connections are not reconnected later.

**Rehabilitation and Maintenance Work:** The rehabilitation work determined necessary to be done, as a result of the inspections described above, will be scheduled as soon as possible. Contemporary and modern methods suitable for such repairs will be used. When necessary, an outside contractor will be used to make the appropriate repairs.

## MAINTENANCE

**Catch Basin Cleaning:** This procedure is performed using a vactor-type machine. The operation occurs on a five-year cycle between March 15th and November 1st, or more often as necessary. The material removed during the cleaning process is disposed of as "landscape" waste.

Procedure for Catch Basin Cleaning:

1. Arrive at location with vactor truck. Remove cover and position the suction tube to proper angle.
2. Hook up suction tube to hose.
3. Lower tube, suck out debris and mud. High pressure water nozzle is used to loosen debris
4. After cleaning, inspect structure and sewer for any repairs that may be necessary.

**Sewer Flushing:** Jetting and/or root cutting is performed on all sewers once every five years. Sewers with a history of problems are serviced more frequently as necessary.

**Procedure for Root Cutting:**

1. Arrive at location with jet truck.
2. Attach proper size root cutter to jet hose, i.e. for a 10" sewer line use 10" root cutter.
3. Root cutting proceeds from manhole to manhole. Maximum length of 600'.
4. Debris and roots are pulled backed to the point of entry manhole. This removed material is disposed of as "landscape" waste.
5. After completion of process, inspect structure and sewer for any repairs that may be necessary.

**Procedure for Sewer Flushing:**

1. Arrive at location with jet truck.
2. Attach proper jetting head to jet hose.
3. Insert jet hose into sewer.
4. Jet sewer using water under high pressure to remove any blockages and clean line.
5. Inspect structure and sewer for any repairs that may be necessary.

**Street Sweeping:** To reduce litter and other materials from streets and curbsides, the City of Des Plaines maintains a street sweeping program that sweeps 247 residential lane miles twice a month. Business district streets are swept three times a week. During leaf collection season, streets are swept weekly according to a defined schedule. Street sweepings do not occur during below freezing temperatures or after a heavy rainfall.

### **RECORD KEEPING**

The Director will maintain the dated records for a minimum of five years. Records shall be kept regarding collapsed and blocked sewers, basement backups, street flooding, collection system complaints, inspection logs, and excess flow levels at combined sewer overflows. Said records will be in such a form that can be easily accessed for reference or review. The data collected will form the basis for projecting a sequence of future maintenance work.

## **CHAPTER 4 COMBINED SEWER IMPROVEMENTS**

### **CAPITAL IMPROVEMENTS**

In 1986, Harza Engineering Company was contracted to create a Stormwater Management Master Plan for the City of Des Plaines. The objective of this plan was to perform a comprehensive technical assessment of the existing sewer system, recommend system improvement projects that would reduce the frequency and severity of flooding, and evaluate economic feasibility over a 20-year period for these proposed public improvements. A majority of the 24 projects recommended in the plan were completed before the plan was replaced by an updated Stormwater Management Master Plan.

In response to flooding from a significant storm event on October 13, 2001, Christopher Burke Engineering was contracted to create an updated Stormwater Management Master Plan. The updated plan was completed in 2003. The plan identified twelve problem areas in the City and recommended a series of projects, including combined sewer separation and relief sewers, to alleviate flooding. As of this report, 2 of the recommended projects have been completed. The remainder of the projects will be incorporated into the City's Capital Improvement Program in the years to come.

In addition to above, it is City practice to add storm sewer to combined sewer streets, as the streets come up for reconstruction.

### **ADMINISTRATIVE PROCEDURES FOR NEW DEVELOPMENT**

The City of Des Plaines will not issue a building permit until approval is granted by the MWRDGC for compliance with its Sewer Permit Ordinance. In addition, the City updated its Building Code in April of 2004 to include the following four requirements of the NPDES CSO general permit:

1. Prohibit introduction of new inflow sources to a sanitary sewer
2. Require that new construction tributary to the combined sewer system be designed to minimize and/or delay inflow contribution to the combined sewer system.
3. Require that inflow sources on the combined sewer system be connected to a storm sewer, within a reasonable period of time, if a storm sewer becomes available
4. Provide that any new building domestic waste connection shall be distinct from the building inflow connection, to facilitate disconnection if a storm sewer becomes available.

## **CHAPTER 5 OTHER CSO PERMIT EFFORTS**

Pursuant to the NPDES CSO Permit Requirements, the City of Des Plaines is also responsible for reporting of any wet or dry weather overflow discharges, public notification of any discharges, and creation of a Pollution Prevention Plan.

### **DISCHARGE MONITORING**

The MWRD has installed telemetry equipment at TARP drop shafts along the Des Plaines River, [including four of the drop shafts to which Des Plaines CSO's are tributary: DS-D01, DS-D02, DS-D03R, DS-UD5] in order to monitor combined sewer overflows. The MWRD will submit quarterly Discharge Monitoring Reports to the IEPA detailing any overflows at these representative locations.

Per a September 27, 2006 letter from the MWRD, the IEPA and MWRD had reached agreement that the MWRD discharge monitoring would be used to meet the municipality requirements for discharge monitoring. The City accepted the MWRD monitoring through an October 6, 2006 correspondence to the MWRD and IEPA.

### **PUBLIC NOTIFICATION PROGRAM**

The MWRD has created a public notification program that involves signage at CSO locations, email/website notification of CSO events, and extensive information on the TARP. In order to avoid a redundancy in efforts, the MWRD invited TARP municipalities to make use of the MWRD Public Notification Program for their own public notification compliance. The City of Des Plaines has accepted the MWRD offer by providing a link to the MWRD CSO webpage from its own website and by using the MWRD signage as a model for its own signage at the CSO's.

### **POLLUTION PREVENTION PLAN**

As required by the CSO Permit, the City has created an independent Pollution Prevention Plan. The plan complements, and in some areas is repetitive of this Operational and Maintenance Plan and the City's NPDES Phase II Plan.

**APPENDIX A**  
**CSO OPERATIONAL PLAN CHECKLIST AND CERTIFICATION**

# CSO OPERATIONAL PLAN CHECKLIST AND CERTIFICATION

(To be Completed by Permittee)

Facility Name CITY OF DES PLAINES

NPDES No. ILM580026

**Section I.** *The following information should be included in the CSO Operational Plan.*

### General Information

Included Administrative  
Yes No N/A Acceptance

- Describe the collection system including all outfalls and overflows, control (diversion) structures, treatment facilities, pumping stations, and associated capacities ..... (CH2)
- Describe the relationship to other collection entities, esp. other CSO collection entities ..... (CH2)
- Has the Illinois Pollution Control Board issued any orders, currently in effect, regarding any of these outfalls? If yes, include a copy of the Board Order with the Plan. ..... (None, CH2)
- Are any of these outfalls to sensitive areas (designated Outstanding National Resource Waters, National Marine Sanctuaries, bathing beaches, shellfish beds, waters with threatened or endangered species and their habitat, contact recreation, or drinking water intakes)? If yes, explain in the space provided at the end of the at the Section II. (No, CH2)
- Describe efforts undertaken to minimize the discharge of pollutants from all CSO outfalls ..... (CH3,4)
- Describe efforts undertaken to maximize storage of pollutants in the collection system ..... (CH2)
- Describe the pollution prevention aspects of this Operational Plan ..... (CH5)
- Describe efforts to monitor CSO impacts and the efficacy of CSO controls ..... (CH5)
- Describe the public notification program for CSO occurrences and impacts ..... (CH5)
- Latitude and longitude information given for each outfall ..... (CH2)

### Maintenance

- Schedule for regular street cleaning in combined sewer areas ..... (CH3)
- Added emphasis for leaf removal ..... (CH3)
- Schedule for catch basin cleaning ..... (CH3)
- Schedule for routine cleaning of trunk and interceptor sewers ..... (CH3)
- Stop planks at highest level practical without causing basement backups or excessive street flooding ..... (CH2)
- Date system stop planks last adjusted \_\_\_\_\_ (month) \_\_\_\_\_ (day) \_\_\_\_\_ (year)
- Describe your procedures for:
  - Cleaning screening equipment after and, if necessary, during each storm .....
  - Regulating diversion and bypass valves .....
  - Reducing solids deposition in the combined sewer system ..... (CH3)

### Inspections and Monitoring

- Schedule to inspect regulator and diversion structures included ..... (CH3)
- Routine pump/lift station inspection and preventive maintenance discussed ..... (CH3)
- Schedule to inspect sewers (e.g., televise, etc.) included ..... (CH3)
- Schedule to inspect surface water anti-intrusion devices (e.g., flapgates, etc.) ..... (CH3)
- Describe your procedures for finding and eliminating illegal sewer connections ..... (CH3)
- Describe your procedures for finding and eliminating dry-weather overflows ..... (CH3)

**Section II.** *Information in the following section should be included in the Plan and kept on file by the permittee. This information will be verified by IEPA during a facility inspection. The submission of the information in Section II to the Agency should only be done when requested. DO NOT SUBMIT THE INFORMATION REQUESTED IN THE FOLLOWING SECTION WITH THE CSO OPERATIONAL PLAN.*

### Maps and Diagrams

Included IEPA Field  
Yes No N/A Verification

- Sewer system map included .....
- Combined sewers and sanitary sewers tributary to combined sewers marked .....
- Storm sewers using combined sewers as a transport link marked .....
- All major interceptors and trunk sewers marked .....
- Sewer sizes, slope, and material indicated ..... (Sizes only)
- Manholes and catch basins identified .....
- All CSOs, treatment plant bypasses, outfalls, and their receiving waters identified .....
- All control (diversion) structures, including valves, marked .....
- All pump and lift stations and their capacities marked .....
- Diagram of CSO Treatment Facilities ..... (MWRD)
- All unit processes and associated capacities identified .....

**CSO OPERATIONAL PLAN CHECKLIST AND CERTIFICATION (CONT'D)**

(To be Completed by Permittee)

**Section II. (cont'd)**

Included IEPA Field  
Yes No N/A Verification

**Sewer System Characterization**

Drainage area and population tributary to each overflow indicated.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sewer capacity immediately upstream and downstream of each overflow indicated.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Description of structural and physical condition of sewer system.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Age of system included.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bottlenecks in the system included..... (Stormwater Master Plan - 2003)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Average dry weather flow rate through sewer at each overflow (diversion structure)..... (MWRD)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Year last monitored.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Land use and zoning classification in the vicinity of each overflow indicated... (City Zoning Map)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Projected growth tributary to each overflow indicated.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
List of non-residential sewer users tributary to each overflow.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dischargers of toxics indicated.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dischargers of high strength wastewater indicated.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
High-volume dischargers indicated.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Percent pervious area developed and kept current for each sewerage basin.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Record Keeping**

Logs should be maintained on the following subjects:

Collapsed and blocked sewers.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Basement backups, street flooding, and other collection system complaints.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Regulator and diversion structure inspections.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CSO and excess flow retention basin levels.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Explain all 'No' and 'N/A' (and 'Yes' for the question on sensitive areas) on a separate sheet and attach.**

***I attest that this form has been completed by me or by others under my direct supervision and that the information contained herein is, to the best of my knowledge, true and complete.***

\_\_\_\_\_  
(Signature) (Title) (Date)

**NOTE: Signature should be authorized according to 35 Ill. Adm. Code 309.103(e).**

Contact Person: Timothy P. Oakley, P.E Title: Director of Engineering  
 Address: 1420 Miner Street, Suite 504 Phone: (847) 391-5390  
Des Plaines, IL 60016

-----SPACE BELOW RESERVED FOR IEPA USE ONLY-----

ADMINISTRATIVE REVIEW

FIELD VERIFICATION

\_\_\_\_\_  
(Signature) (Date) (Signature) (Date)

IL 532-2544  
WPC 681 Rev. 1/2004

Information required by this form must be provided to comply with 415 ILCS 5/39 (1994). Failure to so provide may result in penalties of up to \$10,000.  
This form has been approved by the Forms Management Center.

## **CITY OF DES PLAINES**

### **CSO OPERATIONAL PLAN CHECKLIST AND CERTIFICATION EXPLANATION OF ITEMS NOT INCLUDED**

#### **Maintenance**

##### **Date system stop planks last adjusted:**

The intercepting structures upstream of the CSO's are MWRDGC-constructed, maintained and operated. The City does not have access to the structures and does not have records for any adjustments.

##### **Describe your procedures for:**

##### **Cleaning screening equipment after and, if necessary, during each storm**

As stated above, the intercepting structures upstream of the CSO's are MWRDGC-constructed, maintained and operated. Therefore, the City does not have access to any screening equipment. As detailed in the plan, the City does perform street sweeping and regular inspection/cleaning of manholes and structures on the combined sewer system.

##### **Regulating diversion and bypass valves**

The City of Des Plaines does not operate/regulate any diversion structures or bypass valves on the combined sewer system.

#### **Maps and Diagrams**

##### **Sewer sizes, slope, and material indicated**

The City does have records on the sewer size, but it is not feasible to produce a listing of material and slopes for each pipe run at this time. The City is currently employing consultants to create a Geographic Information System. The establishment of the initial GIS is a multi-year effort. Placeholders have been inserted for the pipe material and inverts/slopes. However, there is no funding currently available for the significant effort of cataloguing each pipe run throughout the City.

##### **All control (diversion) structures, including valves, marked**

The City does not have any diversion structures or valves on the combined sewer system.

##### **Diagram of CSO Treatment Facilities**

The City of Des Plaines does not own or operate any CSO treatment facilities. All of the City's sewers are tributary to the MWRD interceptor sewers and treatment facilities.

## **Sewer System Characterization**

### **Description of structural and physical condition of sewer system**

#### **Age of System included**

As discussed above, the City does not have a complete inventory of the age, material, or slope of each pipe run throughout the City. The City addresses updates to the sewer system in a number of manners:

- Repairs performed as dictated by results of regular sewer, manhole, and catch basin inspection/cleaning
- Evaluation and repair/replacement, if necessary, of sewers on all streets scheduled for rehabilitation or reconstruction.
- Implementation of sewer relief projects in flood-prone areas as outlined in the 2003 Stormwater Master Plan

#### **Average dry weather flow rate through sewer at each overflow (diversion structure)**

The City has included a calculated dry weather flow rate for the City sewers upstream of the CSO's. The City does not have information regarding the dry weather flow through the MWRD interceptor sewers.

#### **List of non-residential sewer users tributary to each overflow**

The City does not maintain a list of non-residential sewer users tributary to the CSO's. As the City's geographic information system develops, this information can be compiled.

During regular sewer inspections, the City crews investigate for any unusual flows (i.e. excess flow, color, unusual odors). If unusual flows are detected, the crews will investigate to identify, and if necessary eliminate, the source of the flow.