Appendix 12

CDM Study for Gary Sanitary District

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Inspiration to reality.

In 2003 CDM completed a study for the Gary Sanitary District outlining water quality data along the Little Calumet River. The study conducted sampling at a total of eight (8) locations, seven (7) of which were along the Little Calumet River and the other located along Deep River. Figure 1 shows the location of these sampling results. Each location was tested a total of six (6) times, three for dry weather and three for wet weather.

The parameters being tested were limited in scope for this study. Those parameters that overlapped with the sampling conducted as part of this watershed plan can be seen in Figures 2 to 7. The tables created by CDM to show the concentration levels found in the various sampling events are shown after the figures. One table represents the dry weather results and the other the wet weather results for each of the eight sampling locations.

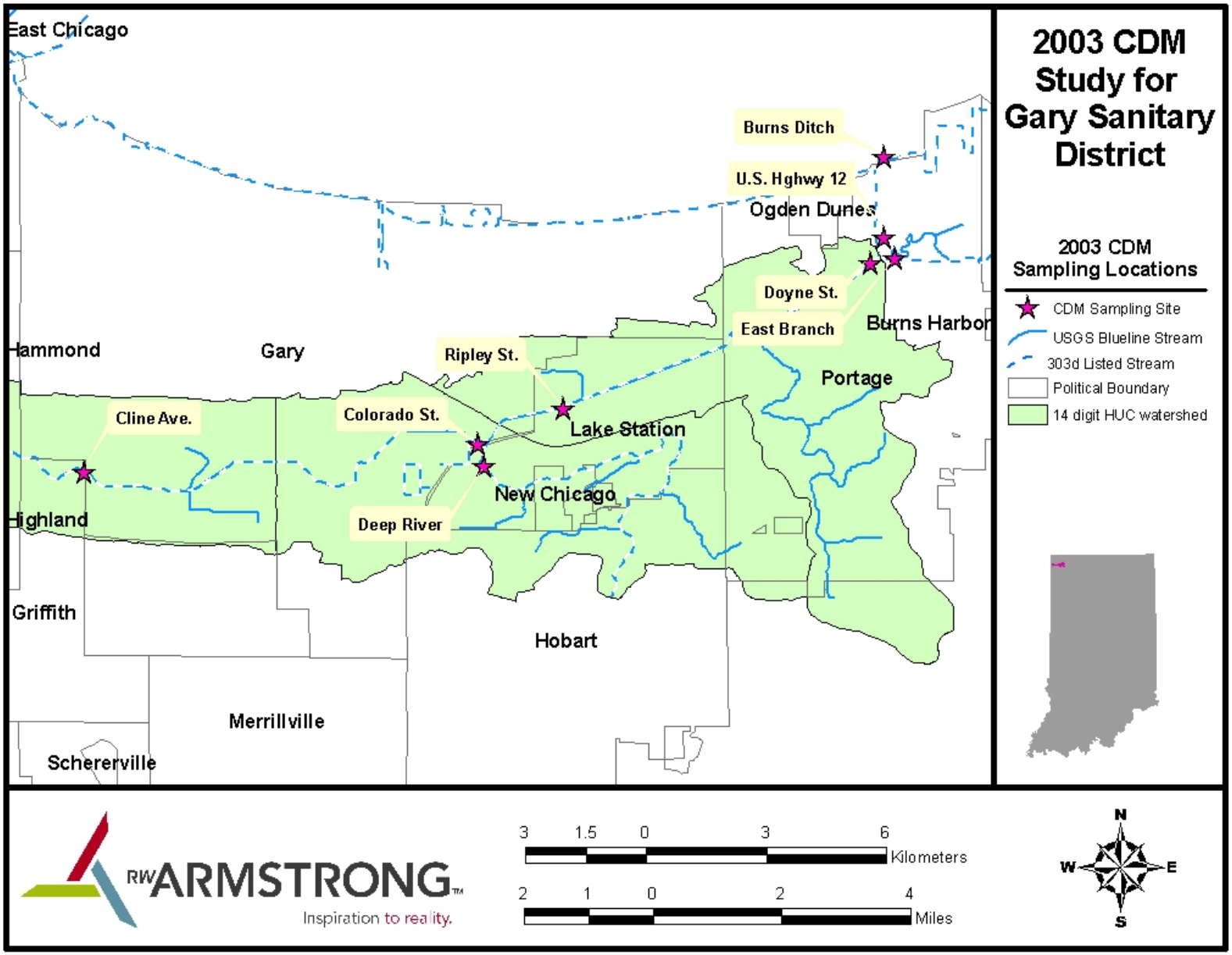

Figure 1: CDM sampling locations for the 2003 report compiled for the Gary Sanitary District.

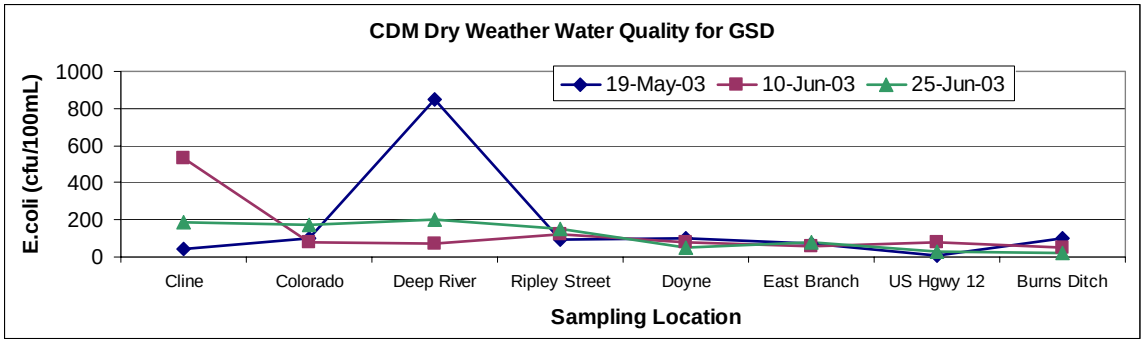

Figure 2: *E.coli* dry weather sampling results from the 2003 report by CDM.

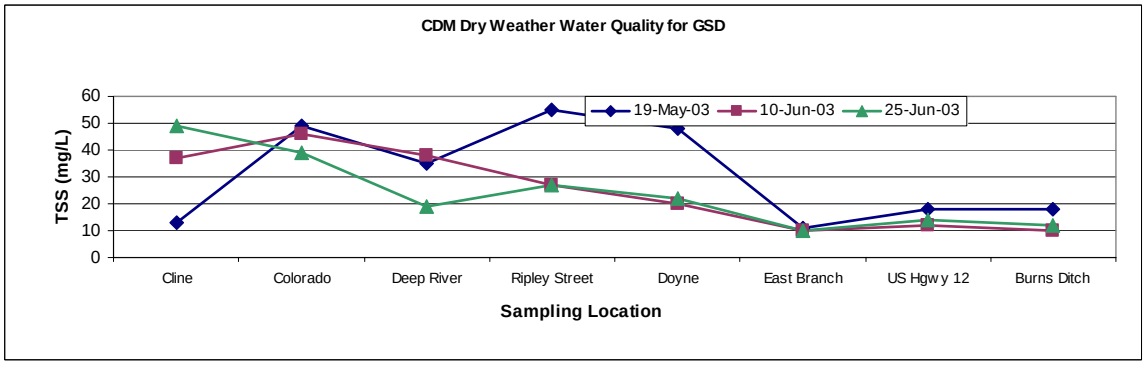

Figure 3: TSS dry weather sampling results from the 2003 report by CDM.

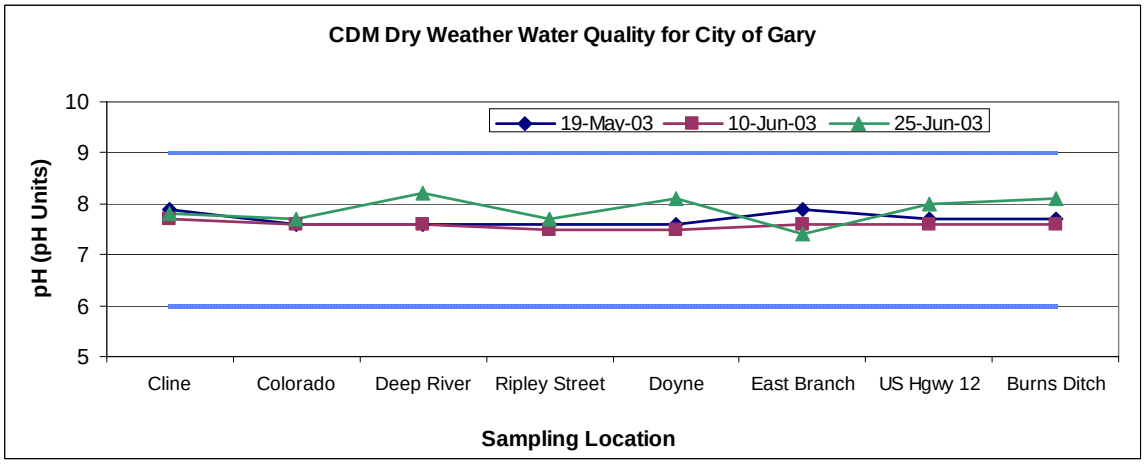

Figure 4: pH units for dry weather sampling from the 2003 report by CDM.

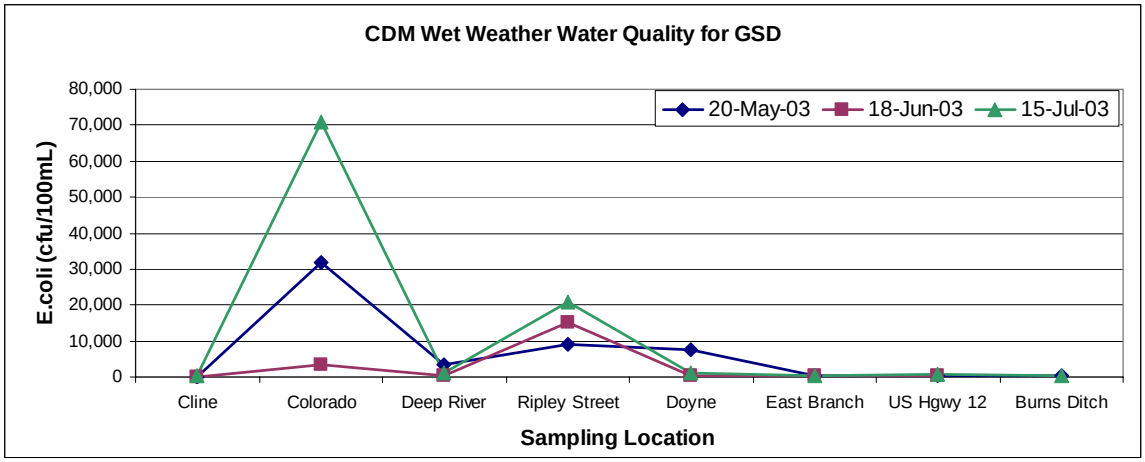

Figure 5: *E.coli* wet weather sampling results from the 2003 study by CDM.

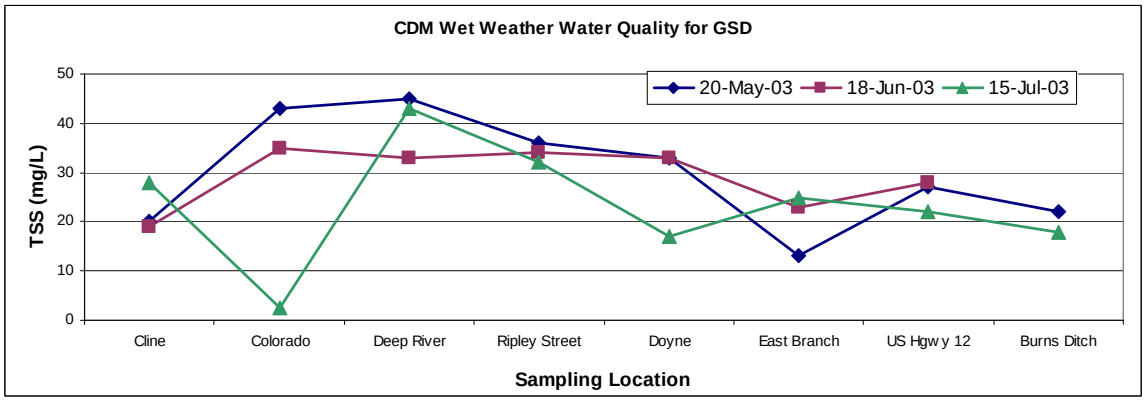

Figure 6: TSS wet weather sampling results from the 2003 study by CDM.

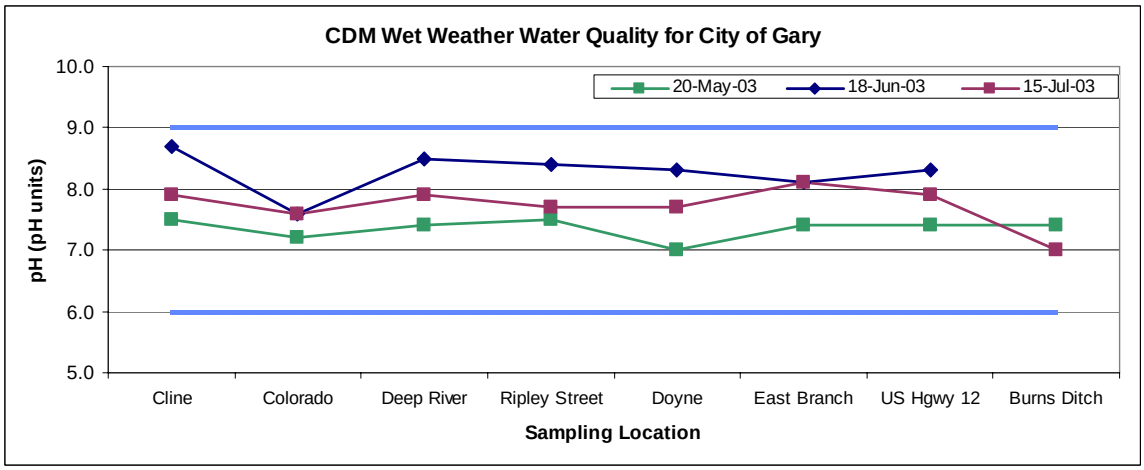

Figure 7: pH units for the wet weather sampling for the 2003 study by CDM.

DRY WEATHER

Analyte	Runits	Date	Site #1 Cline Av	Site #2 Colorado Av	Site #3 Deep River	Site #3A Ripley St	Site #4 Doyne	Site #5 East Branch	Site #6 US 12	Site #7 Burns Ditch
E-Coli	cfu/100ml	05/19/03	40	100	850	90	100	70	10	100
* Yellow highlight represents		06/10/03	530	80	70	120	80	60	80	50
E.coli exceedance samples		06/25/03	190	170	200	150	50	80	30	20
Biochemical Oxygen Demand	mg/L	05/19/03	< 2.0	3.7	< 2.0	2.8	2.8	< 2.0	< 2.0	2.6
		06/10/03	5	4.7	3.5	5.3	3.5	< 2.0	< 2.0	3.2
		06/25/03	7.1	5.6	5.3	4.4	5.3	< 2.0	2.3	2.6
Specific Conductance	µmhos/cm	05/19/03	890	830	790	860	860	620	710	720
		06/10/03	1,200	1,000	880	990	1,000	610	730	680
		06/25/03	930	960	900	1000	1000	510	630	650
Total Suspended Solids	mg/L	05/19/03	13	49	35	55	48	11	18	18
		06/10/03	37	46	38	27	20	10	12	10
		06/25/03	49	39	19	27	22	10	14	12
pH	pH units	05/19/03	7.9	7.6	7.6	7.6	7.6	7.9	7.7	7.7
		06/10/03	7.7	7.6	7.6	7.5	7.5	7.6	7.6	7.6
		06/25/03	7.8	7.7	8.2	7.7	8.1	7.4	8.0	8.1
Dissolved Oxygen	mg/L	05/19/03	8.3	6.6	6.6	7.2	6.3	7.4	7.3	7.4
		06/10/03	8.4	7.9	8.4	7.4	8.4	8.7	8.3	8.4
		06/25/03	11.0	5.8	6.6	7.0	11.5	7.9	8.7	8.4
Water Depth*	ft	05/19/03	2.0	1.5	***1.5***	4.6	2.8	9.0	10.4	***10.0***
Bold , ***Italics*** are estimates		06/10/03	2.0	1.5	***1.5***	3.4	3.7	7.6	7.4	***8.0***
		06/25/03	***2.0***	***1.5***	***1.5***	***3.4***	***3.7***	***7.6***	***7.4***	***8.0***
Water Velocity*	ft/sec	05/19/03	0.0	2.8	***1.0***	2.5	1.1	1.8	1.8	***1.5***
Bold , ***Italics*** are estimates		06/10/03	0.0	1.7	***1.0***	1.0	0.4	1.7	0.8	***1.5***
		06/25/03	0.0	***1.7***	***1.0***	***1.0***	***0.4***	***1.7***	***0.8***	***1.5***

WET WEATHER

Analyte	Runits	CollectionDate	Event	Site #1 Cline Av +4 hours*	Site #1 Cline Av +8 hours	Site #2 Colorado Av +4 hours	Site #2 Colorado Av +8 hours	Site #3 Deep River +4 hours	Site #3 Deep River +8 hours	Site #3A Ripley St +4 hours	Site #3A Ripley St +8 hours	Site #4 Doyne +8 hours	Site #4 Doyne +12 hours	Site #5 East Branch +8 hours	Site #5 East Branch +12 hours	Site #6 US 12 +8 hours	Site #6 US 12 +12 hours	Site #7 Burns Ditch +8 hours	Site #7 Burns Ditch +12 hours
E-Coli	cfu/100ml	20-May-03	WW #1	240	170	25,000	32,000	57,000	3,600	5,200	9,000	7,400	4,500	270	160	410	5,400	190	1,100
		18-Jun-03	WW #2	70	120	160,000	3400	250	380	58,000	15,000	230	200	440	400	310	200	No Sample	
		15-Jul-03	WW #3	460	460	12,000	71000	790	1100	11,000	21,000	1100	10000	550	300	700	8900	450	990
Biochemical Oxygen Demand	mg/L	20-May-03	WW #1	4	4	4.6	4.9	4	2.2	4.6	3.1	3.4	6.7	< 2.0	< 2.0	2.2	2.5	< 2.0	2.2
		18-Jun-03	WW #2	5.5	3.7	13	3.1	5.2	2.8	7.0	6.1	2.5	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	No Sample	
		15-Jul-03	WW #3	<2.0	4.4	<2.0	2.6	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Specific Conductance	µmhos/cm	20-May-03	WW #1	920	920	820	770	750	750	800	810	800	830	620	630	740	720	720	730
		18-Jun-03	WW #2	1300	1300	850	990	890	900	980	930	1000	1000	530	570	740	1000	No Sample	
		15-Jul-03	WW #3	760	760	690	700	720	690	700	670	750	710	560	600	680	640	640	650
Total Suspended Solids	mg/L	20-May-03	WW #1	23	20	45	43	48	45	50	36	33	30	13	16	27	25	22	23
		18-Jun-03	WW #2	16	19	39	35	110	33	25	34	33	26	23	20	28	26	No Sample	
		15-Jul-03	WW #3	20	28	6.0	25	43	43	31	32	17	23	25	26	22	33	18	31
pH	pH units	20-May-03	WW #1	7.5	7.5	7.1	7.2	7.4	7.4	7.3	7.5	7.0	7.4	7.4	7.8	7.4	7.5	7.4	7.3
		18-Jun-03	WW #2	8.6	8.7	7.8	7.6	7.9	8.5	7.8	8.4	8.3	7.5	8.1	8.1	8.3	8.2	No Sample	
		15-Jul-03	WW #3	7.8	7.9	7	7.6	7.6	7.9	8	7.7	7.7	7.7	8.1	8.0	7.9	7.9	7.0	7.7
Dissolved Oxygen	mg/L	20-May-03	WW #1	7.6	7.5	5.7	5.5	6.9	6.6	5.5	5.5	5.5	6.4	6.9	7.4	6.1	6.7	6.5	6.6
		18-Jun-03	WW #2	12.2	12.1	4.8	6.4	7.1	7.1	5.9	6.4	7.3	6.3	6.8	6.8	7.0	6.8	No Sample	
		15-Jul-03	WW #3	7.8	8.9	5.2	5.3	7.2	7.5	5.4	5.2	6.4	5.7	6.9	7.2	6.3	6.3	7.1	6.7
Water Depth*	ft	20-May-03	WW #1	2.0	2.0	1.8	1.8	***1.5***	***1.5***	4.5	4.5	4.5	4.6	9.2	9.0	10.5	10.4	***10.0***	***10.0***
		18-Jun-03	WW #2	2.1	2.2	1.5	1.5	***1.5***	***1.5***	4.0	3.7	3.8	3.8	7.9	7.8	8.0	8.0	***8.0***	***8.0***
		15-Jul-03	WW #3	***3.0***	***3.0***	***3.0***	***3.0***	***2.0***	***2.0***	***5.0***	***5.0***	***5.0***	***5.0***	***10.0***	***10.0***	***10***	***10***	***10***	***10***
Water Velocity*	ft/sec	20-May-03	WW #1	0.0	0.0	2.6	2.6	***1.0***	***1.0***	2.5	2.5	1.0	0.8	1.8	1.8	2.0	2.0	***2.0***	***2.0***
		18-Jun-03	WW #2	0.0	0.0	2.3	2.3	***1.0***	***1.0***	1.5	1.6	0.1	0.1	1.9	1.7	1.2	1.1	***1.5***	***1.5***
		15-Jul-03	WW #3	***0.0***	***0.0***	***3.0***	***3.0***	***1.0***	***1.0***	***2.0***	***2.0***	***0.0***	***0.0***	***0.5***	***0.5***	***0.5***	***0.5***	***0***	***0***

* Yellow highlights represent *E.coli* exceedance samples.

***-+5 on 05/20/2003 event**

Bold, ***Italics*** are estimates