



# Pollutant Load Results and Load Reductions

September 9, 2010

V3 Companies  
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# Updated Pollutant Load Results

*Lower DuPage River Watershed - Existing Conditions Non Point Source Pollution Loading Results By Subwatershed*

Subwatershed	Acres	Chloride (lbs)		Sediment (tons)		Nitrogen (lbs)		Phosphorus (lbs)		Fecal Coliform (cfu in billions)	
		Total	lbs/acre	Total	tons/acre	Total	lbs/acre	Total	lbs/acre	Total	per acre
1	8,173.30	2,607,723.73	319.05	404	0.05	29,403.93	3.60	4,137.69	0.51	25,511.71	3.12
2	12,215.64	4,286,011.82	350.86	1,946	0.16	63,603.77	5.21	9,864.57	0.81	40,673.72	3.33
3 <sup>C</sup>	10,575.44	4,725,927.37	446.88	1,006	0.10	50,626.48	4.79	7,463.33	0.71	37,288.29	3.53
4	8,689.10	2,065,761.44	237.74	1,935	0.22	49,823.04	5.73	7,977.41	0.92	25,102.72	2.89
5	11,352.80	3,445,064.72	303.46	1,144	0.10	51,575.11	4.54	7,352.85	0.65	26,774.48	2.36
6	11,752.56	2,764,880.65	235.26	2,610	0.22	66,198.98	5.63	10,707.39	0.91	38,310.57	3.26
7	6,052.22	1,997,408.17	330.03	1,165	0.19	34,304.15	5.67	5,409.20	0.89	16,364.60	2.70
8 <sup>F</sup>	4,824.71	1,962,751.06	406.81	519	0.11	24,284.82	5.03	3,641.13	0.75	18,373.80	3.81
9	7,075.33	2,281,129.80	322.41	1,258	0.18	40,870.79	5.78	6,302.60	0.89	25,853.79	3.65
10	9,138.54	3,820,313.56	418.04	836	0.09	43,556.97	4.77	6,491.63	0.71	31,927.81	3.49
11 <sup>S,N,P</sup>	11,748.24	3,043,847.33	259.09	2,740	0.23	71,081.79	6.05	11,435.40	0.97	32,991.56	2.81
12	6,130.45	2,651,271.67	432.48	614	0.10	27,503.95	4.49	4,162.70	0.68	16,068.78	2.62

F - Highest Subwatershed for Fecal Coliform

C - Highest ranked subwatershed for Chloride

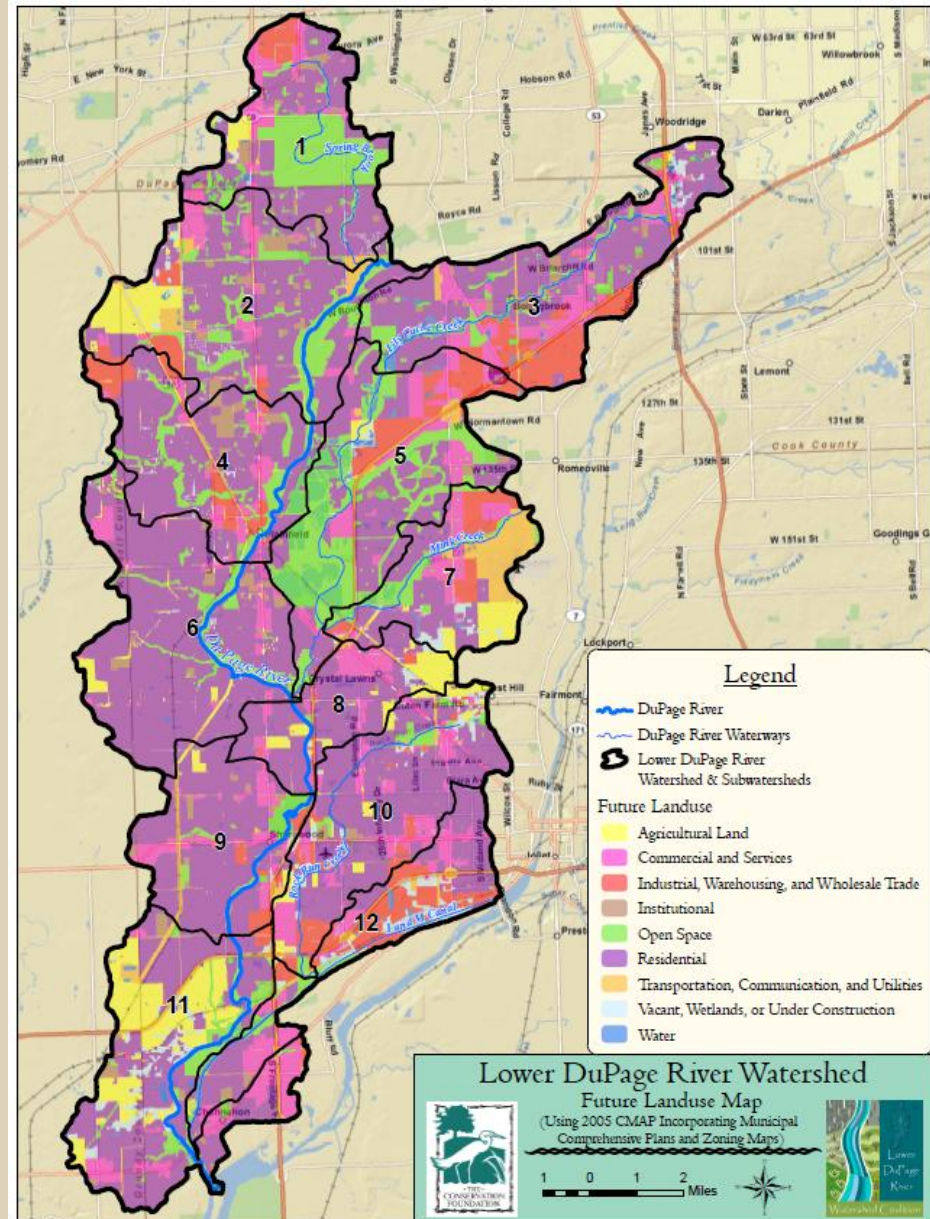
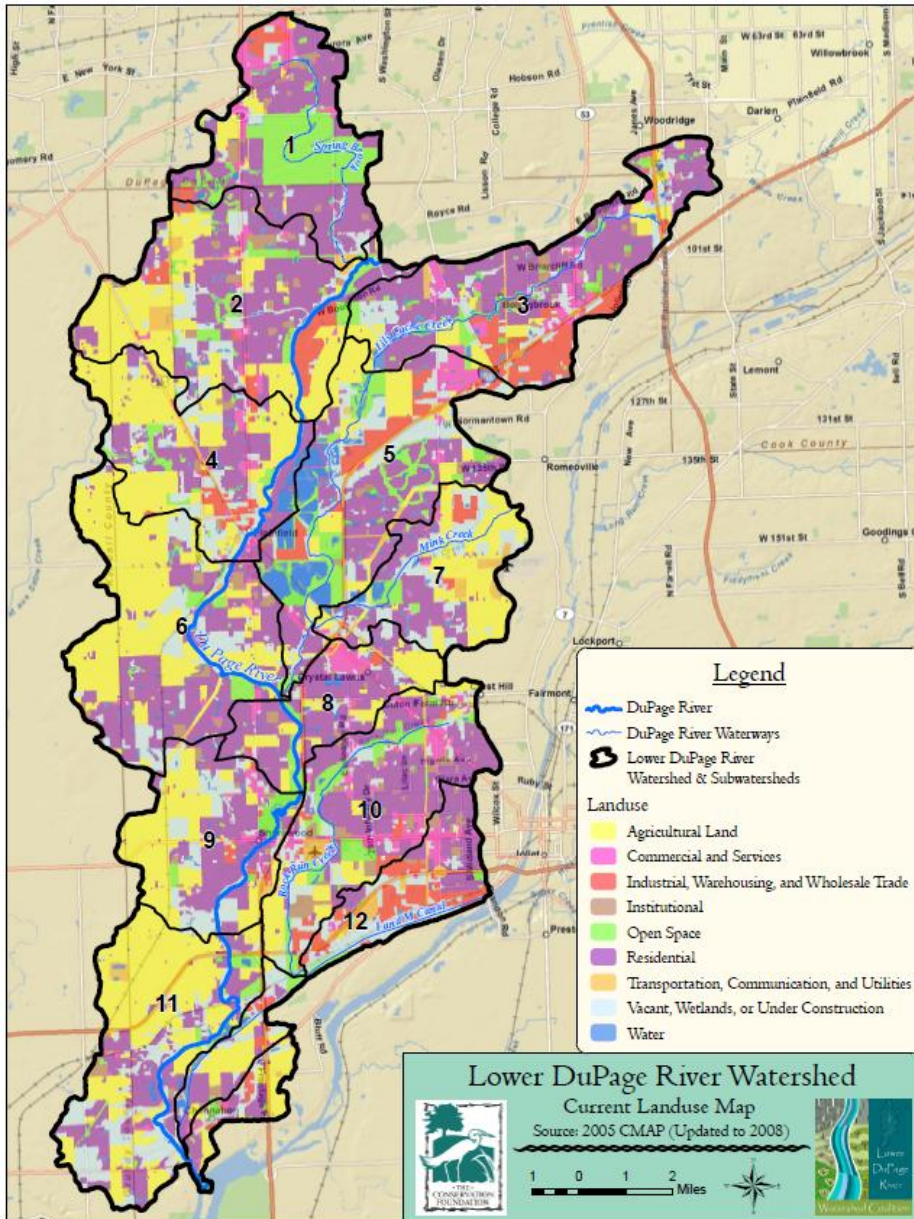
P - Highest ranked subwatershed for Phosphorus

S - Highest ranked subwatershed for Sediment

N - Highest ranked subwatershed for Nitrogen



# Existing vs Future Pollutant Loading





# Existing vs Future Pollutant Loading

Land Use Comparison			
Category	Existing	Future	% Change
Agricultural Land	28785.8	6928.0	-75.9%
Commercial and Services	4338.1	11621.0	167.9%
Industrial, Warehousing, and Wholesale Trade	5596.3	7762.0	38.7%
Institutional	2915.8	2822.4	-3.2%
Open Space	8770.9	15419.4	75.8%
Residential	34950.6	55673.0	59.3%
Transportation, Communication, and Utilities	2847.7	3432.4	20.5%
Vacant, Wetlands, or Under Construction	15871.4	3001.0	-81.1%
Water	3652.1	1164.7	-68.1%



# Existing vs Future Pollutant Loading

Chloride (lbs)			Sediment (tons)			Nitrogen (lbs)		
Existing	Future	% Change	Existing	Future	% Change	Total	Future	% Change
2,607,724	3,292,415	26.3%	404	401	-0.9%	29,404	30,737	4.5%
4,286,012	5,800,108	35.3%	1,946	1,039	-46.6%	63,604	56,145	-11.7%
4,725,927	6,705,590	41.9%	1,006	713	-29.1%	50,626	50,465	-0.3%
2,065,761	4,541,396	119.8%	1,935	443	-77.1%	49,823	36,897	-25.9%
3,445,065	5,507,025	59.9%	1,144	587	-48.7%	51,575	44,812	-13.1%
2,764,881	5,575,182	101.6%	2,610	520	-80.1%	66,199	48,434	-26.8%
1,997,408	6,844,752	242.7%	1,165	719	-38.3%	34,304	37,021	7.9%
1,962,751	2,855,012	45.5%	519	489	-5.7%	24,285	25,235	3.9%
2,281,130	4,789,474	110.0%	1,258	429	-65.9%	40,871	37,061	-9.3%
3,820,314	5,444,708	42.5%	836	749	-10.4%	43,557	45,275	3.9%
3,043,847	5,706,527	87.5%	2,740	1,592	-41.9%	71,082	63,915	-10.1%
2,651,272	4,269,058	61.0%	614	477	-22.3%	27,504	29,398	6.9%

35,652,091    61,331,247    72.0%    16,178    8,158    -49.6%    552,834    505,395    -8.6%



# Existing vs Future Pollutant Loading

Phosphorus (lbs)			Fecal Coliform (cfu in billions)		
Total	Future	% Change	Total	Future	% Change
4,138	4,155	0.4%	25,512	26,143	2.5%
9,865	7,808	-20.8%	40,674	46,967	15.5%
7,463	7,255	-2.8%	37,288	41,028	10.0%
7,977	5,046	-36.7%	25,103	35,588	41.8%
7,353	5,701	-22.5%	26,774	32,204	20.3%
10,707	6,536	-39.0%	38,311	56,858	48.4%
5,409	5,792	7.1%	16,365	20,730	26.7%
3,641	3,787	4.0%	18,374	23,031	25.3%
6,303	5,129	-18.6%	25,854	35,776	38.4%
6,492	6,813	4.9%	31,928	43,908	37.5%
11,435	9,441	-17.4%	32,992	44,155	33.8%
4,163	4,282	2.9%	16,069	20,486	27.5%

84,946

71,746

-15.5%

335,242

426,875

27.3%



# Load Reductions

**Table 1: Water Quality Targets**

<b>Parameter</b>	<b>Target</b>	<b>Source</b>
Chloride	75 mg/L	20% of the Illinois Water Quality Standards, Title 35: Environmental Protection (500 mg/L)
Sediment	50 mg/L	US EPA recommendation for good to moderate fisheries for suspended sediment concentration (Range 25-80 mg/L)
Nitrogen	1.16 mg/L	US EPA Ambient Water Quality Recommendations for Nutrient Ecoregion VI (Range 1.16-3.26 mg/L)
Phosphorus	.118 mg/L	US EPA Ambient Water Quality Recommendations for Nutrient Ecoregion VI (Range 0.063-0.118)
Fecal Coliform	200 CFU/100mL	50% of the Illinois Water Quality Standards, Title 35: Environmental Protection (400 CFU/100mL)



# Load Reductions

Table 2: Chloride Pollutant Loading

Subbasin	Area (acres)	Flow Rate (cfs)	Current NPS Loading	Current Point Source Loading	Total Current Loading	Target Loading		Reduction
			Load (lb/year)	Load (lb/year)	Load (lb/year)	Concentration (mg/L)	Load (lb/year)	Load (lb/year)
1	8,173	12.5	2,607,724	N/A	2,607,724	75	1,844,560	763,164 (29%)
2	12,216	18.6	4,286,012	N/A	4,286,012	75	2,744,700	1,541,312 (36%)
3	10,575	16.1	4,725,927	N/A	4,725,927	75	2,375,780	2,350,147 (50%)
4	8,689	13.3	2,065,761	2,884	2,068,645	75	1,962,600	106,045 (5%)
5	11,353	17.3	3,445,065	N/A	3,445,065	75	2,552,860	892,205 (26%)
6	11,753	17.9	2,764,881	N/A	2,764,881	75	2,641,400	123,481 (4%)
7	6,052	9.2	1,997,408	N/A	1,997,408	75	1,357,600	639,808 (32%)
8	4,825	7.4	1,962,751	N/A	1,962,751	75	1,091,980	870,771 (44%)
9	7,075	10.8	2,281,130	N/A	2,281,130	75	1,593,700	687,430 (30%)
10	9,139	13.9	3,820,314	N/A	3,820,314	75	2,051,140	1,769,174 (46%)
11	11,748	17.9	3,043,847	285,204	3,329,051	75	2,641,400	687,651 (21%)
12	6,130	9.4	2,651,272	2,077,080	4,728,352	75	1,387,100	3,341,252 (71%)
<b>Total</b>	<b>107,728</b>	<b>164.3</b>	<b>35,652,092</b>	<b>2,365,168</b>	<b>38,017,260</b>	<b>75</b>	<b>24,244,820</b>	<b>13,772,440 (36%)</b>



# Load Reductions

**Table 3: Sediment Pollutant Loading**

Subbasin	Area (acres)	Flow Rate (cfs)	Current NPS Loading	Current Point Source Loading	Total Current Loading	Target Loading		Reduction
			Load (ton/year)	Load (ton/year)	Load (ton/year)	Concentration (mg/L)	Load (ton/year)	Load (ton/year)
1	8,173	12.5	404	N/A	404	50	615	N/A (0%)
2	12,216	18.6	1,946	99	2,045	50	915	1,130 (55%)
3	10,575	16.1	1,006	58	1,064	50	792	272 (26%)
4	8,689	13.3	1,935	148	2,083	50	654	1,429 (69%)
5	11,353	17.3	1,144	N/A	1,144	50	851	293 (26%)
6	11,753	17.9	2,610	N/A	2,610	50	880	1,730 (66%)
7	6,052	9.2	1,165	0	1,165	50	453	712 (61%)
8	4,825	7.4	519	8	527	50	364	163 (31%)
9	7,075	10.8	1,258	N/A	1,258	50	531	727 (58%)
10	9,139	13.9	836	9	845	50	684	161 (19%)
11	11,748	17.9	2,740	13	2,753	50	880	1,873 (68%)
12	6,130	9.4	614	123	737	50	462	275 (37%)
<b>Total</b>	<b>107,728</b>	<b>164.3</b>	<b>16,177</b>	<b>458</b>	<b>16,635</b>	<b>50</b>	<b>8,081</b>	<b>8,554 (51%)</b>



# Load Reductions

Table 4: Nitrogen Pollutant Loading

Subbasin	Area (acres)	Flow Rate (cfs)	Current NPS Loading	Current Point Source Loading	Total Current Loading	Target Loading		Reduction
			Load (lb/year)	Load (lb/year)	Load (lb/year)	Concentration (mg/L)	Load (lb/year)	Load (lb/year)
1	8,173	12.5	29,404	N/A	29,404	1.16	28,520	884 (3%)
2	12,216	18.6	63,604	18,754	82,358	1.16	42,460	39,898 (48%)
3	10,575	16.1	50,626	N/A	50,626	1.16	36,740	13,886 (27%)
4	8,689	13.3	49,823	11,187	61,010	1.16	30,360	30,650 (50%)
5	11,353	17.3	51,575	N/A	51,575	1.16	39,480	12,095 (23%)
6	11,753	17.9	66,199	N/A	66,199	1.16	40,860	25,339 (38%)
7	6,052	9.2	34,304	18	34,322	1.16	21,000	13,322 (39%)
8	4,825	7.4	24,285	1,205	25,490	1.16	16,880	8,610 (34%)
9	7,075	10.8	40,871	N/A	40,871	1.16	24,640	16,231 (40%)
10	9,139	13.9	43,557	2,175	45,732	1.16	31,720	14,012 (31%)
11	11,748	17.9	71,082	2,811	73,893	1.16	40,860	33,033 (45%)
12	6,130	9.4	27,504	N/A	27,504	1.16	21,460	6,044 (22%)
<b>Total</b>	<b>107,728</b>	<b>164.3</b>	<b>552,834</b>	<b>36,150</b>	<b>588,984</b>	<b>1.16</b>	<b>374,980</b>	<b>214,004 (36%)</b>



# Load Reductions

Table 5: Phosphorus Pollutant Loading

Subbasin	Area (acres)	Flow Rate (cfs)	Current NPS Loading	Current Point Source Loading	Total Current Loading	Target Loading		Reduction
			Load (lb/year)	Load (lb/year)	Load (lb/year)	Concentration (mg/L)	Load (lb/year)	Load (lb/year)
1	8,173	12.5	4,138	N/A	4,138	0.118	2,900	1,238 (30%)
2	12,216	18.6	9,865	N/A	9,865	0.118	4,320	5,545 (56%)
3	10,575	16.1	7,463	N/A	7,463	0.118	3,740	3,723 (50%)
4	8,689	13.3	7,977	0	7,977	0.118	3,080	4,897 (61%)
5	11,353	17.3	7,353	N/A	7,353	0.118	4,020	3,333 (45%)
6	11,753	17.9	10,707	N/A	10,707	0.118	4,160	6,547 (61%)
7	6,052	9.2	5,409	N/A	5,409	0.118	2,140	3,269 (60%)
8	4,825	7.4	3,641	N/A	3,641	0.118	1,720	1,921 (53%)
9	7,075	10.8	6,303	N/A	6,303	0.118	2,500	3,803 (60%)
10	9,139	13.9	6,492	N/A	6,492	0.118	3,220	3,272 (50%)
11	11,748	17.9	11,435	N/A	11,435	0.118	4,160	7,275 (64%)
12	6,130	9.4	4,163	N/A	4,163	0.118	2,180	1,983 (48%)
<b>Total</b>	<b>107,728</b>	<b>164.3</b>	<b>84,946</b>	<b>0</b>	<b>84,946</b>	<b>0.118</b>	<b>38,140</b>	<b>46,806 (55%)</b>



# Load Reductions

Table 6: Fecal Coliform Pollutant Loading

Subbasin	Area (acres)	Flow Rate (cfs)	Current NPS Loading	Current Point Source Loading	Total Current Loading	Target Loading		Reduction
			Load (CFU in billions/year)	Load (CFU in billions/year)	Load (CFU in billions/year)	Concentration (CFU/100mL)	Load (CFU in billions/year)	Load (CFU in billions/year)
1	8,173	12.5	25,512	N/A	25,512	200	22,300	3,212 (13%)
2	12,216	18.6	40,764	52,000	92,764	200	33,200	59,564 (64%)
3	10,575	16.1	37,288	N/A	37,288	200	28,700	8,588 (23%)
4	8,689	13.3	25,103	20,360	45,463	200	23,700	21,763 (48%)
5	11,353	17.3	26,774	N/A	26,774	200	30,900	N/A (0%)
6	11,753	17.9	38,311	N/A	38,311	200	32,000	6,311 (16%)
7	6,052	9.2	16,365	4	16,369	200	16,400	N/A (0%)
8	4,825	7.4	18,374	10,500	28,874	200	13,200	15,674 (54%)
9	7,075	10.8	25,854	N/A	25,854	200	19,300	6,554 (25%)
10	9,139	13.9	31,928	12,100	44,028	200	24,800	19,228 (44%)
11	11,748	17.9	32,992	1,060	34,052	200	32,000	2,052 (6%)
12	6,130	9.4	16,069	N/A	16,069	200	16,800	N/A (0%)
<b>Total</b>	<b>107,728</b>	<b>164.3</b>	<b>335,334</b>	<b>96,024</b>	<b>431,358</b>	<b>200</b>	<b>293,300</b>	<b>138,058 (32%)</b>



# BMPs

- Agricultural/Rural
  - Buffer/Filter Strips
  - Cover Crops
  - Conservation Tillage
  - Grassed Waterways
  - Nutrient/Waste Management
  - Wetland Restoration
- Policy/Regulation
  - Conservation Easement
  - Low Impact Development (LID)
  - Road Salt Application and Storage
  - Water Quality Ordinance



# BMPs

- Urban
  - Bioretention (Rain Garden)
  - Constructed Wetland/Naturalized Detention
  - Filtration Basin
  - Green Roofs
  - Infiltration Trench
  - Manufactured Products for Stormwater Inlet
  - Naturalized Stream Buffer
  - Pervious Pavement/Permeable Pavers
  - Rain Barrels
  - Vegetated Swale/Bio Swale