

7.0 ALLOCATIONS

A TMDL is the total amount of a pollutant that can be assimilated by the receiving water while still achieving water quality standards. TMDLs are composed of the sum of individual wasteload allocations (WLAs) for regulated sources and load allocations (LAs) for unregulated sources and natural background levels. In addition, the TMDL must include a margin of safety (MOS), either implicitly or explicitly, that accounts for the uncertainty in the relationship between pollutant loads and the quality of the receiving waterbody. Conceptually, this is defined by the equation:

$$\text{TMDL} = \sum \text{WLAs} + \sum \text{LAs} + \text{MOS}$$

7.1 Results by Assessment Location

The following sections present the allowable *E. coli* loads and associated allocations for each of the impaired waterbodies in the Kankakee/Iroquois watershed. The results are arranged for each of the HUC 10 watersheds in each of the six main subwatersheds.

7.1.1 Upper Kankakee Subwatershed

The Upper Kankakee subwatershed has an area of nearly 670 square miles and is comprised of four HUC 10 subwatersheds and 28 HUC 12 subwatersheds as listed in Table 66. The following sections provide a brief description of each HUC 10 subwatershed and the TMDL allocations.

Table 66. Hydrologic Unit Codes (HUC 10 and 12) in the Upper Kankakee Subwatershed

HUC 10	HUC 10 Name	HUC 12	HUC 12 Name	Area (sq. miles)
101	Pine Creek	101	Peter Sarber Ditch-Pine Creek	20.2
		102	Yellow Bank Creek	22.5
		103	Peter Sarber Ditch-Pine Creek	21.8
		104	Headwaters Potato Creek	17.2
		105	Kartoffel Creek-Potato Creek	17.5
		106	Horace Miller Ditch-Pine Creek	15.7
102	Little Kankakee River-Kankakee River	201	Hudson Lake-Geyer Ditch	29.8
		202	Chain-Lakes Ditch-Geyer Ditch	25.4
		203	Geyer Ditch	16.4
		204	Laskowski Ditch-Kankakee River	19.0
		205	Dixon West Place Ditch	20.7
		206	Aldrich Ditch	17.1
		207	Clear Lake Basin	22.8
		208	Lower Fish Lake-Little Kankakee River	50.8
		209	County Line Ditch-Kankakee River	31.4
104	Mill Creek-Kankakee River	401	Breckenridge Ditch	22.0
		402	Kingsberry Creek	15.3
		403	Travis Ditch	38.7
		404	Salisbury Ditch	19.8
		405	Johnani Ditch-Kankakee River	48.0
		406	Headwaters Mill Creek	23.9
		407	Hickleson Ditch-Mill Creek	19.9
		408	Marquardt Ditch-Kankakee River	15.6
107	Robbins Ditch-Kankakee River	701	Jain Ditch	28.9
		702	Amy Kelly Ditch-Robbins Ditch	30.5
		703	Shearin Ditch-Robbins Ditch	25.9
		704	Bailey Ditch-Kankakee River	19.6
		705	Laramore Ditch-Kankakee River	13.4

7.1.1.1 Pine Creek Subwatershed (10-Digit HUC 101)

The Pine Creek subwatershed has an area of nearly 115 square miles and covers portions of La Porte, Marshall, and St. Joseph counties as shown in Figure 46. Cities within this subwatershed include Koontz Lake, Walkerton, and North Liberty. Figure 47 and Figure 48 display NPDES facilities and CAFOs and CFOs within the subwatershed, respectively. Agriculture (66%) is the dominant land use followed by forest (16%) and developed land (7%) (Table 70).

Two stream segments are impaired for *E. coli* in this subwatershed (Table 67) and the 2008 pathogen monitoring locations are listed in Table 68. The summary of 2008 pathogen data in this subwatershed is shown in Table 69. All four sites exceeded the geomean standard and three of the four sites exceeded the maximum 235 #/100 mL standard 100 percent of the time. Reductions to meet the geomean criteria of 125 #/100 mL range from 64 to 85 percent.

Table 67. 303 (d) Listed Streams in the Pine Creek Subwatershed

HUC 12	HUC 12 Name	Segment ID	Waterbody	Stream Length (miles)	Parameter
106	Horace Miller Ditch-Pine Creek	INK0126_00	Pine Creek-Horace Miller Ditch	13.88	<i>E. coli</i>
105	Kartoffel Creek-Potato Creek	INK0125_00	Potato Creek-Kartoffel Creek	15.17	<i>E. coli</i>

Table 68. Station Locations in the Pine Creek Subwatershed

HUC 12	HUC 12 Name	Station #	Stream Name
102	Yellow Bank Creek	ID# 55	Yellow Bank
103	Peter Sarber Ditch-Pine Creek	ID# 57	Pine Cr
105	Kartoffel Creek-Potato Creek	ID# 51	Potato Cr
106	Horace Miller Ditch-Pine Creek	ID# 53	Pine Cr

Table 69. Summary of Pathogen Data in the Upper Kankakee Subwatershed (HUC10-101)

Station #	Period of Record	Total Number of Samples	Percent of Samples Exceeding <i>E. coli</i> WQS (#/100 mL)		Minimum (#/100 mL)	Geomean (#/100 mL)	Average (#/100 mL)	Maximum (#/100 mL)	Percent Reduction Based on Geomean (125/100mL)
			125	235					
55	6/3/2008 - 7/1/2008	5	100	100	416	732	948	2,419	83%
57	6/3/2008 - 7/1/2008	5	100	100	687	828	832	921	85%
51	6/3/2008 - 7/1/2008	5	100	80	225	348	365	548	64%
53	6/3/2008 - 7/1/2008	5	100	100	613	838	870	1,300	85%

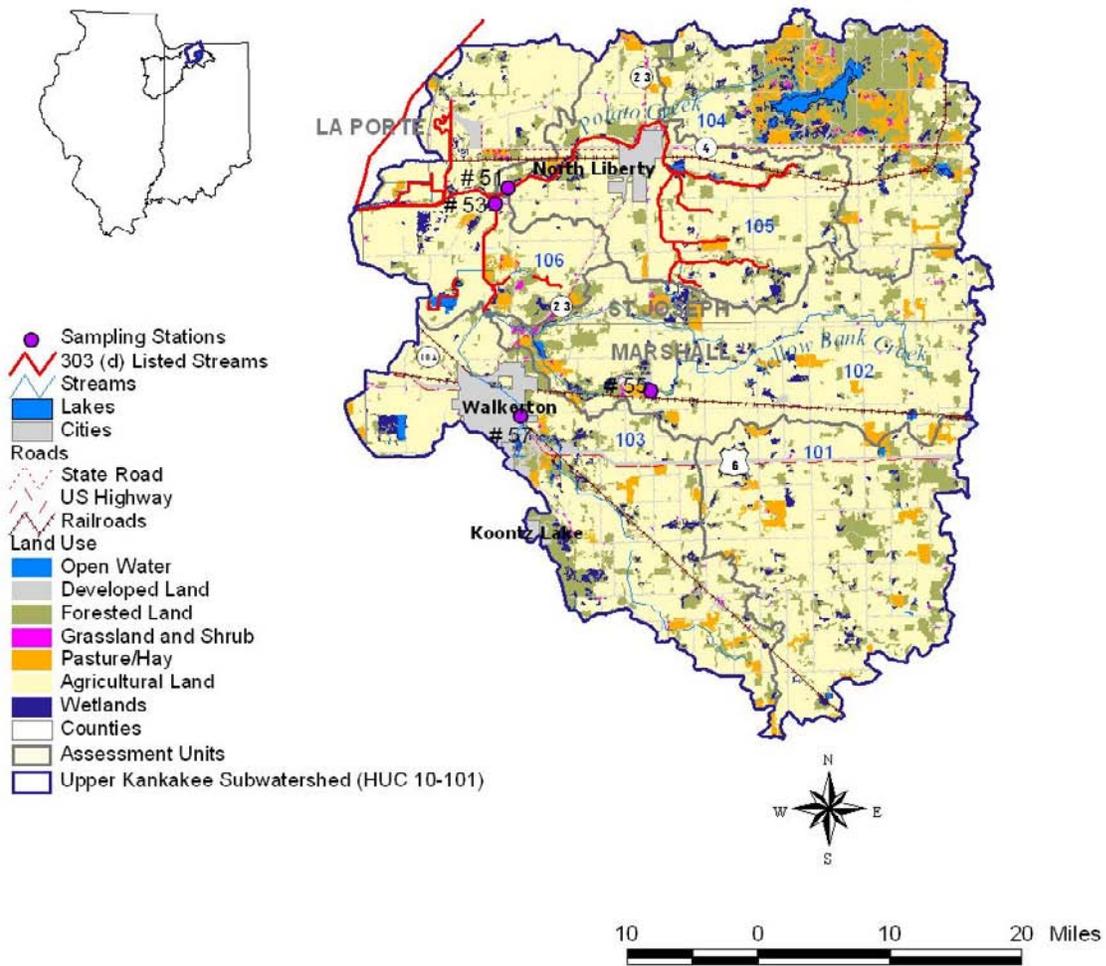


Figure 46. Location of Pine Creek Subwatershed (HUC10-101)

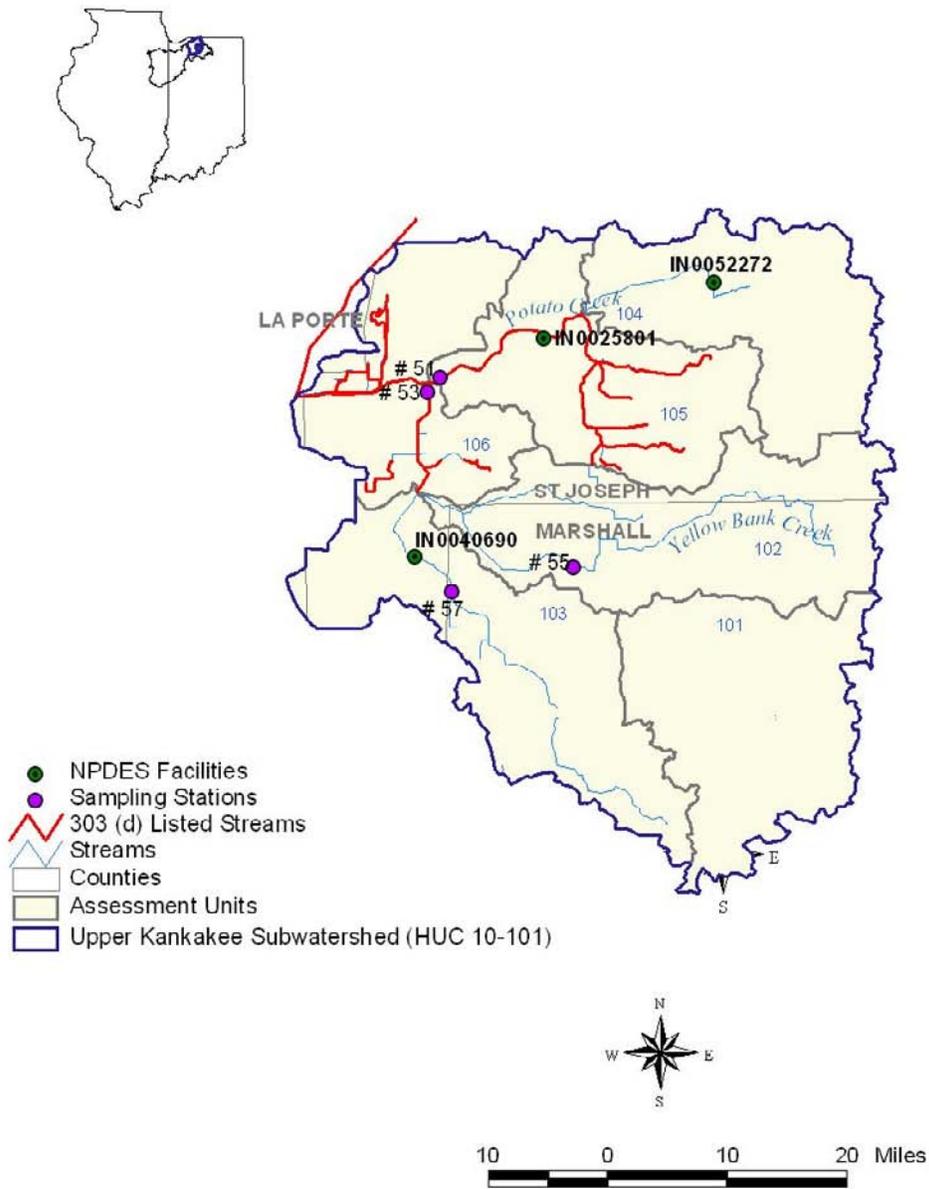


Figure 47. NPDES Facilities in the Pine Creek Subwatershed (HUC10-101)

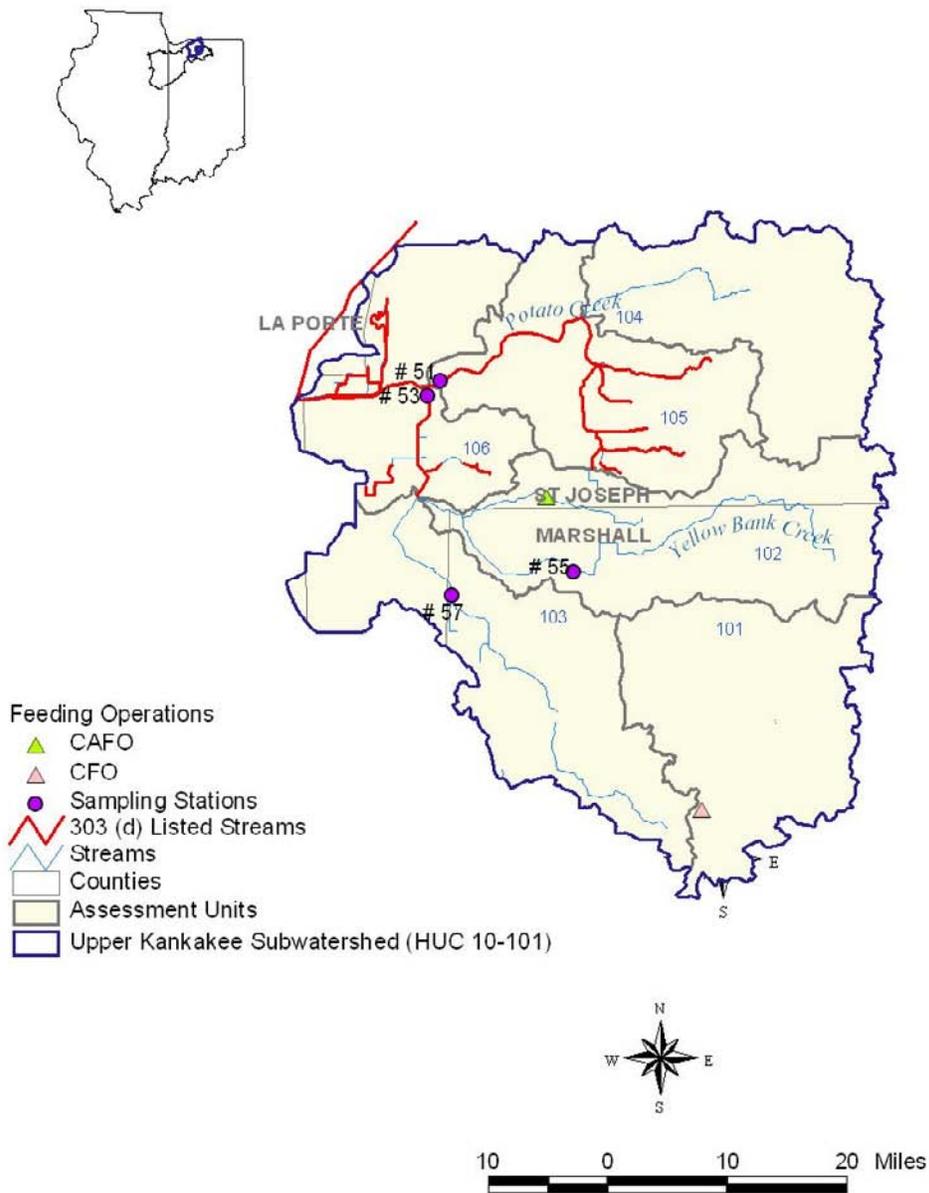


Figure 48. Feeding Operations in the Pine Creek Subwatershed (HUC10-101)

Table 70. Land Use/Land Cover in the Pine Creek Subwatershed

Land Use/Land Cover	Subwatershed		
	Area		Percent
	Acres	Square Miles	
Agricultural Land	48,888.86	76.39	66.43
Forested Land	12,208.32	19.08	16.59
Developed Land	5,351.24	8.36	7.27
Pasture/Hay	3,583.66	5.60	4.87
Wetland	2,436.55	3.81	3.31
Open Water	601.80	0.94	0.82
Grassland and Shrubs	350.27	0.55	0.48
Total	73,420.70	114.72	100.00

Table 71 through Table 74 summarize the subwatershed characteristics as well as the TMDL results for each of the HUC 12 subwatersheds. The TMDL results correspond to the outlet of each HUC 12 subwatershed (i.e., they are based on the flows and loads estimated for the outlet of the subwatershed).

It should be noted that there are no current 303(d) listings in HUC 102 and HUC 103; however, the sampling performed in 2008 suggests that several streams are impaired. Those streams will appear on the 2010 303(d) list in category 4A and TMDLs for those streams are presented here.

There are three NPDES facilities within the Pine Creek subwatershed and the WLAs for the facilities were calculated based on their design flows and *E. coli* permit limits. The individual WLAs are presented in Table 276. There is only one CAFO within this subwatershed and it receives a WLA of zero as described further in Section 7.3.

Table 71. Yellow Bank Creek Characteristics and TMDL Summary (HUC12-102)

Upstream Characteristics					
<i>Drainage Area</i>	20.46 square miles				
<i>Sampling Station</i>	55				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 74.04%; Developed Land:4.61%; Forest:12.85%; Other: 8.5%				
<i>Soils</i>	A: 23.40%; B: 39.01%; C: 36.17%; D: 0.71%; Unknown:0.71%				
<i>NPDES Facilities</i>	None				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	Walkerton Farm (ING802239)				
<i>CFOs</i>	None				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
LA	106.96	60.71	43.83	33.35	24.64
WLA	0.00	0.00	0.00	0.00	0.00
MOS (10%)	11.88	6.75	4.87	3.70	2.74
TMDL = LA+WLA+MOS	118.84	67.46	48.70	37.05	27.38

Table 72. Peter Sarber Ditch-Pine Creek Characteristics and TMDL Summary (HUC12-103)

Upstream Characteristics					
<i>Drainage Area</i>	34.63 square miles				
<i>Sampling Station</i>	57				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 66.96%; Developed Land:9.72%; Forest:15.51%; Other: 7.81%				
<i>Soils</i>	A: 48.93%; B: 41.07%; C: 8.21%; D: 1.79%; Unknown: 0%				
<i>NPDES Facilities</i>	Walkerton Municipal WWTP (IN0040690)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	Leffert Dairy, LLC (6203)				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
LA	179.31	101.04	72.47	54.72	39.99
WLA	1.72	1.72	1.72	1.72	1.72
MOS (10%)	20.11	11.41	8.24	6.27	4.63
TMDL = LA+WLA+MOS	201.14	114.17	82.43	62.71	46.34

Table 73. Kartoffel Creek-Potato Creek Characteristics and TMDL Summary (HUC12-105)

<i>Upstream Characteristics</i>					
<i>Drainage Area</i>	32.90 square miles				
<i>Sampling Station</i>	51				
<i>Listed Segments</i>	INK0125_00				
<i>Land Use</i>	Agriculture: 56.78%; Developed Land:7.03%; Forest:23.12%; Other: 13.07%				
<i>Soils</i>	A: 31.58%; B: 42.11%; C: 21.93%; D: 21.9%; Unknown:2.19%				
<i>NPDES Facilities</i>	North Liberty WWTP (IN0025801)				
	Potato Creek State Park (IN0052272)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	None				
<i>TMDL Allocations (billion/day)</i>					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
LA	170.69	96.33	69.19	52.33	38.34
WLA	1.29	1.29	1.29	1.29	1.29
MOS (10%)	19.11	10.85	7.83	5.95	4.40
TMDL = LA+WLA+MOS	191.09	108.47	78.31	59.57	44.03

Table 74. Horace Miller Ditch-Pine Creek Characteristics and TMDL Summary (HUC12-106)

Upstream Characteristics					
<i>Drainage Area</i>	103.66 square miles				
<i>Sampling Station</i>	53				
<i>Listed Segments</i>	INK0126_00				
<i>Land Use</i>	Agriculture: 66.59%; Developed Land:7.29%; Forest:16.63.12%; Other: 9.50%				
<i>Soils</i>	A: 42.74%; B: 38.26%; C: 16.62%; D: 1.45%; Unknown:0.92%				
<i>NPDES Facilities</i>	North Liberty WWTP (IN0025801)				
	Walkerton Municipal WWTP (IN00406990)				
	Potato Creek State Park (IN0052272)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	Walkerton Farm (2239)				
<i>CFOs</i>	Leffert Dairy, LLC (6203)				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	538.86	304.58	219.05	165.93	121.83
<i>WLA</i>	3.01	3.01	3.01	3.01	3.01
<i>MOS (10%)</i>	60.21	34.18	24.67	18.77	13.87
<i>TMDL = LA+WLA+MOS</i>	602.08	341.77	246.73	187.71	138.71

7.1.1.2 Little Kankakee River-Kankakee River Subwatershed (10-Digit HUC 102)

The Little Kankakee River subwatershed has an area of nearly 233 square miles. Cities within this subwatershed include New Carlisle and South Bend as shown in Figure 49. The subwatershed is predominantly used for agricultural purposes (58%) followed by forest (19%) and developed land (10%) as shown in Table 78. The remaining land categories constitute 13 percent of the subwatershed area. There is only one NPDES facility and one CAFO in this subwatershed as shown in Figure 50 and Figure 51, respectively.

There are four 303 (d) listed segments (Table 75) and six monitoring locations (Table 76) in this subwatershed. The summary of 2008 *E. coli* data in this subwatershed is shown in Table 77. All five sites exceeded the geomean standard. Two of the five sites exceeded the maximum 235 #/100 mL standard 100 percent of the time. Reductions to meet the geomean criteria of 125 #/100 mL range from 29 to 74 percent.

Table 75. 303 (d) Listed Streams in the Little Kankakee River-Kankakee River Subwatershed

HUC 12	Subwatershed Name	Segment ID	Waterbody	Stream Length (miles)	Parameter
206	Aldrich Ditch	INK0112_00	Aldrich Ditch - Schang Ditch	12.31	<i>E. coli</i>
208	Lower Fish Lake-Little Kankakee River	INK011C_00	Little Kankakee River-Byron	17.51	<i>E. coli</i>
209	County Line Ditch-Kankakee River	INK011A_T1001	Kankakee River-Mainstem	2.12	<i>E. coli</i>
		INK011D_T1002	Kankakee River	3.77	<i>E. coli</i>

Table 76. Station Locations in the Little Kankakee River-Kankakee River Subwatershed

HUC 12	Subwatershed Name	Station #	Stream Name
203	Geyer Ditch	ID# 43	Geyer D
204	Laskowski Ditch-Kankakee River	ID# 41	Niespodziany
206	Aldrich Ditch	ID# 45	Aldrich D
208	Lower Fish Lake-Little Kankakee River	ID# 39	L Kankakee
		ID# 49	L Kankakee
209	County Line Ditch-Kankakee River	ID# 47	Kankakee R

Table 77. Summary of Pathogen Data in the Little Kankakee River-Kankakee River Subwatershed

Station #	Period of Record	Total Number of Samples	Percent of Samples Exceeding <i>E. coli</i> WQS (#/100 mL)		Minimum (#/100 mL)	Geomean (#/100 mL)	Average (#/100 mL)	Maximum (#/100 mL)	Percent Reduction Based on Geomean (125/100mL)
			125	235					
43	6/3/2008 - 7/1/2008	5	80	20	102	174	203	461	28%
41	6/3/2008 - 7/1/2008	5	100	100	260	354	372	517	65%
45	6/3/2008 - 7/1/2008	5	80	20	105	175	182	238	29%
39	6/3/2008 - 7/1/2008	5	100	80	214	478	752	2,420	74%
49	6/3/2008 - 7/1/2008	5	100	100	291	354	359	461	65%
47	6/3/2008 - 7/1/2008	5	100	20	172	215	223	345	42%

Table 78. Land Use/Land Cover in the Little Kankakee River-Kankakee River Subwatershed

Land Use/Land Cover	Subwatershed		
	Area		Percent
	Acres	Square Miles	
Agricultural Land	87,398.82	136.56	58.54
Forested Land	28,090.58	43.89	18.81
Developed Land	14,744.72	23.04	9.88
Pasture/Hay	7,976.83	12.46	5.34
Grassland and Shrubs	6,263.73	9.79	4.20
Wetland	2,991.87	4.67	2.00
Open Water	1,835.42	2.87	1.23
Total	149,301.96	233.28	100.00

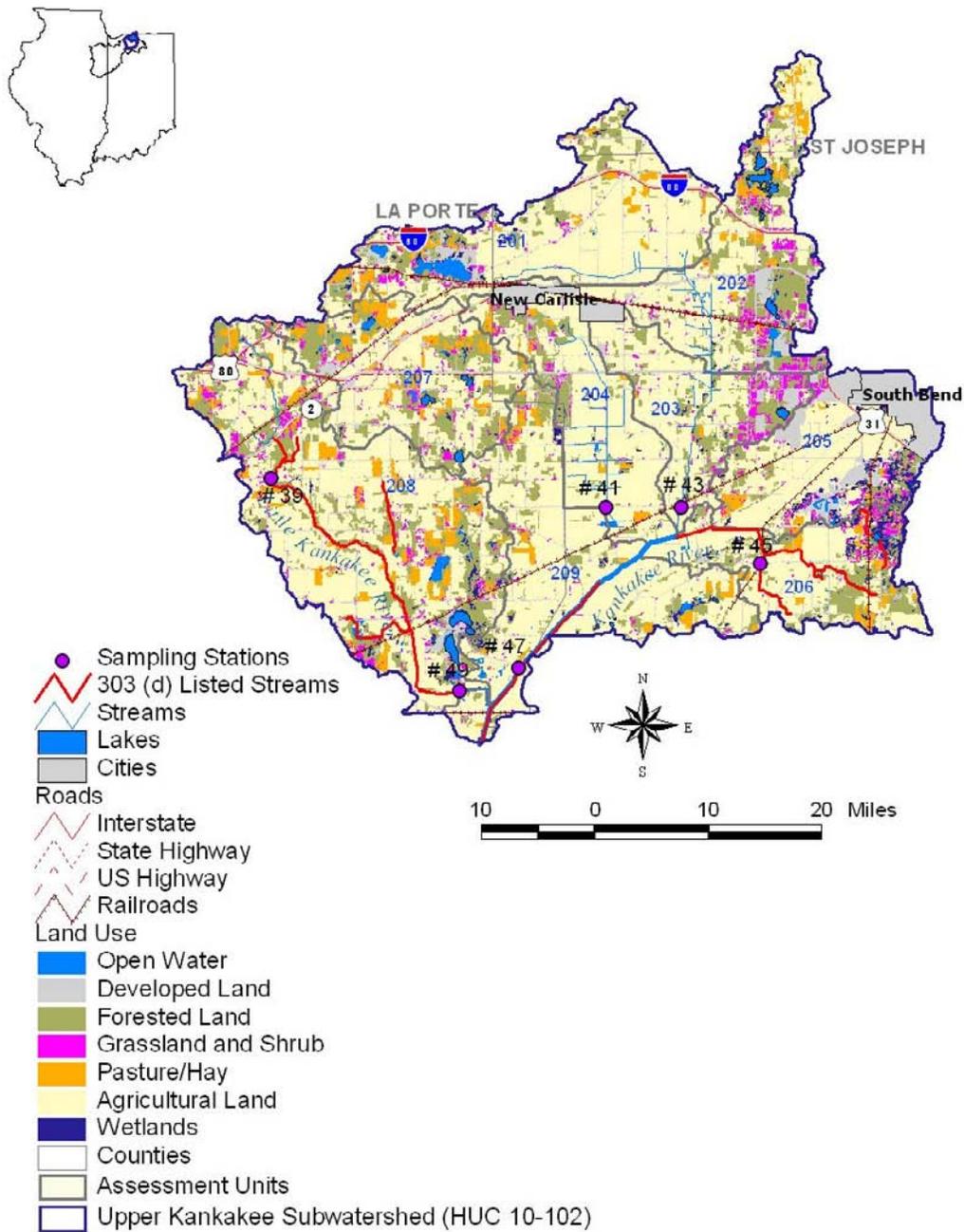


Figure 49. Location of the Little Kankakee River-Kankakee River Subwatershed

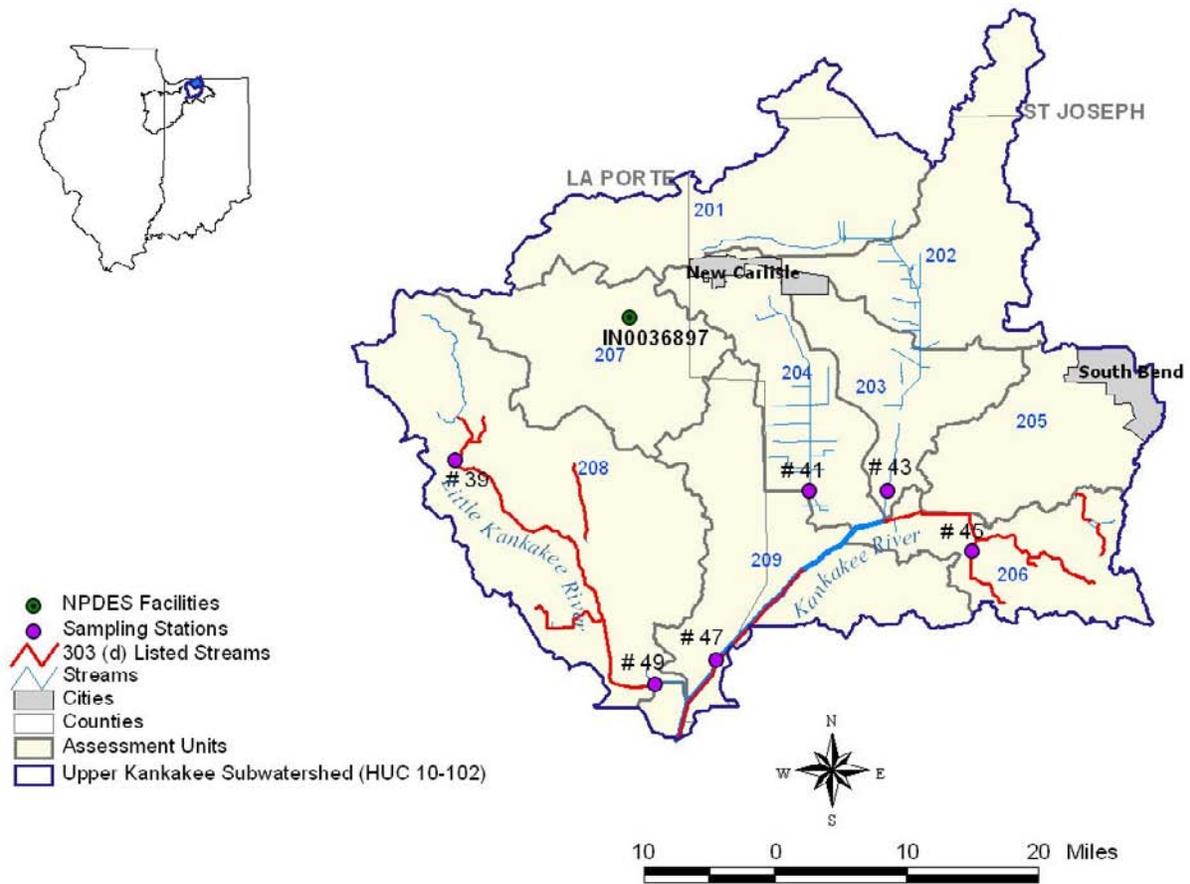


Figure 50. NPDES Facilities in the Little Kankakee River-Kankakee River Subwatershed

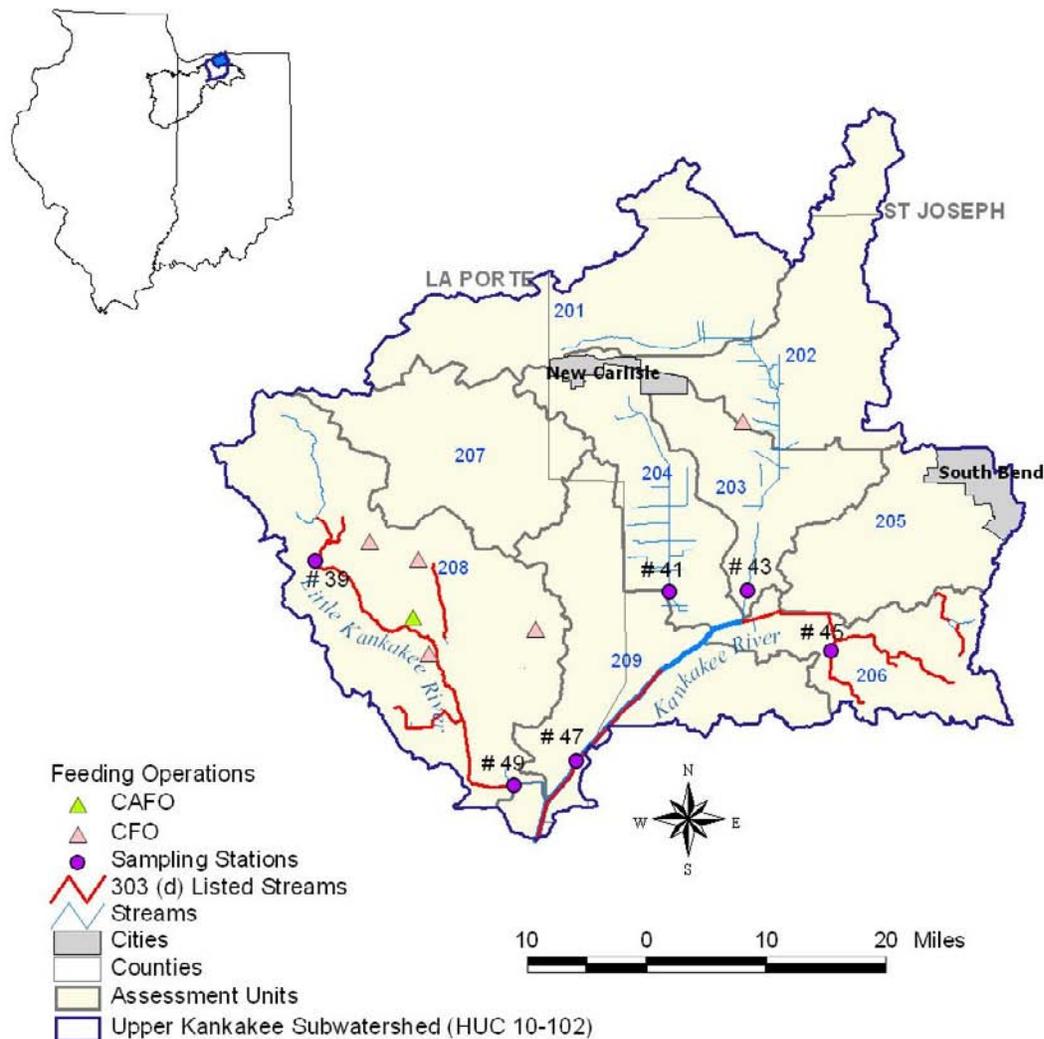


Figure 51. Feeding Operations in the Little Kankakee River-Kankakee River Subwatershed

Table 79 through Table 83 summarize the subwatershed characteristics as well as the TMDL results for each of the HUC 12 subwatersheds. Although there are no current 303(d) listings in HUC 204; the sampling performed in 2008 suggests that several streams are impaired. Those streams will appear on the next 303(d) list and TMDLs for those streams are presented here.

There is one NPDES facility within the Little Kankakee River subwatershed; however it is not upstream of any listed segments. There are two MS4 communities within the Little Kankakee River subwatershed and the WLAs for the communities were calculated based on their area within the subwatershed and *E. coli* standards. The individual WLAs are presented in Table 276. There is only one CAFO within this subwatershed and it receives a WLA of zero as described further in Section 7.3.

Table 79. Geyer Ditch Characteristics and TMDL Summary (HUC12-203)

Upstream Characteristics					
<i>Drainage Area</i>	69.88 square miles				
<i>Sampling Station</i>	43				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 57.44%; Developed Land:10.80%; Forest:19.34%; Other: 12.41%				
<i>Soils</i>	A: 18.26%; B: 68.68%; C: 4.25%; D: 4.56%; Unknown:4.25%				
<i>NPDES Facilities</i>	None				
<i>MS4 Communities</i>	South Bend (INR040114): 0.22 square miles				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	Ginter (6135)				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
LA	364.14	207.35	149.7	113.89	84.16
WLA	1.15	0	0	0	0
MOS (10%)	40.59	23.04	16.63	12.65	9.35
TMDL = LA+WLA+MOS	405.88	230.39	166.33	126.54	93.51

Table 80. Laskowski Ditch-Kankakee River and TMDL Summary (HUC12-204)

Upstream Characteristics					
<i>Drainage Area</i>	18.96 square miles				
<i>Sampling Station</i>	41				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 70.40%; Developed Land:8.14%; Forest:13.89%; Other: 7.56%				
<i>Soils</i>	A: 24.81%; B: 75.19%; C: 0%; D: 0%; Unknown: 0%				
<i>NPDES Facilities</i>	None				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	None				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
LA	99.11	56.26	40.62	30.90	22.83
WLA	0	0	0	0	0
MOS (10%)	11.01	6.25	4.51	3.43	2.54
TMDL = LA+WLA+MOS	110.12	62.51	45.13	34.33	25.37

Table 81. Aldrich Ditch Characteristics and TMDL Summary (HUC12-206)

Upstream Characteristics					
<i>Drainage Area</i>	100.58 square miles				
<i>Sampling Station</i>	45				
<i>Listed Segments</i>	INK0112_00				
<i>Land Use</i>	Agriculture: 55.27%; Developed Land:13.34%; Forest:18.23%; Other: 13.16%				
<i>Soils</i>	A: 28.85%; B: 58.49%; C: 5.80%; D: 3.75%; Unknown:3.11%				
<i>NPDES Facilities</i>	None				
<i>MS4 Communities</i>	South Bend (INR040114): 3.42 square miles				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	Ginter (6135)				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	507.89	298.45	215.46	163.92	121.13
<i>WLA</i>	17.88	0	0	0	0
<i>MOS (10%)</i>	58.42	33.16	23.94	18.21	13.46
<i>TMDL = LA+WLA+MOS</i>	584.19	331.61	239.40	182.13	134.59

Table 82. Lower Fish Lake-Little Kankakee River Characteristics and TMDL Summary (HUC12-208)

Upstream Characteristics					
<i>Drainage Area</i>	50.34 square miles				
<i>Sampling Station</i>	39,49				
<i>Listed Segments</i>	INK011C_00				
<i>Land Use</i>	Agriculture: 55.68%; Developed Land:6.80%; Forest:22.14%; Other: 15.37%				
<i>Soils</i>	A: 38.05%; B: 54.28%; C: 3.24%; D: 3.54%; Unknown:0.88%				
<i>NPDES Facilities</i>	None				
<i>MS4 Communities</i>	La Porte County (INR040107): 0.01 square miles				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	Scher-Way Dairy Farm (6085)				
<i>CFOs</i>	Tuholski Farms, Inc.(280)				
	Farm No 2 (3600)				
	Farm #1 (4208)				
	Farm #2 (4209)				
	Sunset Dairy (6072)				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	263.1	149.37	107.84	82.04	60.63
<i>WLA</i>	0.05	0	0	0	0
<i>MOS (10%)</i>	29.23	16.6	11.98	9.11	6.73
<i>TMDL = LA+WLA+MOS</i>	292.38	165.97	119.82	91.15	67.36

Table 83. County Line Ditch- Kankakee River Characteristics and TMDL Summary (HUC12-209)

Upstream Characteristics					
<i>Drainage Area</i>	201.24 square miles				
<i>Sampling Station</i>	47				
<i>Listed Segments</i>	INK011A_T1001, INK011D_T1002				
<i>Land Use</i>	Agriculture: 59.54%; Developed Land:9.90%; Forest:18.07%; Other: 12.49%				
<i>Soils</i>	A: 34.88%; B: 56.04%; C: 4.12%; D: 3.08%; Unknown:1.88%				
<i>NPDES Facilities</i>	None				
<i>MS4 Communities</i>	La Porte County (INR040107): 0.01 square miles				
	South Bend (INR040114): 3.42 square miles				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	Scher-Way Dairy Farm (ING806085)				
<i>CFOs</i>	Tuholski Farms, Inc.(280)				
	Farm No 2 (3600)				
	Farm #1 (4208)				
	Farm #2 (4209)				
	Ginter (6135)				
	Sunset Dairy (6072)				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	1034.03	597.14	431.1	327.96	242.36
<i>WLA</i>	17.93	0	0	0	0
<i>MOS (10%)</i>	116.88	66.35	47.89	36.44	26.93
<i>TMDL = LA+WLA+MOS</i>	1168.84	663.49	478.99	364.4	269.29

7.1.1.3 Mil Creek-Kankakee River Subwatershed (10-Digit HUC104)

The Mill Creek-Kankakee River subwatershed has an area of nearly 202 square miles. Counties within this subwatershed include St. Joseph, Laporte and Stark and the urban areas listed are Kingsford Heights and LaPorte both of which lie completely within this subwatershed (Figure 52). Figure 52 and Figure 53 show the NPDES facilities and feeding operations, respectively. Similar to other HUC 10-subwatersheds in the Upper Kankakee, agriculture is the dominant land use (Table 87).

E. coli impairments are found throughout this subwatershed (Table 84). Recent IDEM *E. coli* sampling data was collected at three locations (Table 85). A summary of the 2008 data in this subwatershed is shown in Table 86. Sampling at station 35 on Hickleson Ditch indicates that there is no exceedance of the geomean standard, however twenty percent of the samples exceeded the maximum 235 #/100 mL standard at this site. Reductions to meet the geomean criteria of 125 #/100 mL range from zero to 64 percent.

Table 84. 303 (d) Listed Streams in the Mill Creek-Kankakee River Subwatershed

HUC 12	HUC 12 Name	Segment ID	Waterbody	Stream Length (miles)	Parameter
408	Marquardt Ditch-Kankakee River	INK013C_T1007	Kankakee River -Mainstem	4.03	<i>E. coli</i>
405	Johnani Ditch-Kankakee River	INK0138_T1006	Kankakee River -Mainstem	1.64	<i>E. coli</i>
		INK0131_T1003	Kankakee River -Mainstem	3.33	<i>E. coli</i>
		INK0134_T1005	Kankakee River -Mainstem	2.8	<i>E. coli</i>
		INK0138_00	Kankakee River -Long Ditch	15.82	<i>E. coli</i>
		INK0133_T1004	Kankakee River -Mainstem	3.7	<i>E. coli</i>

Table 85. Station Locations in the Mill Creek-Kankakee River Subwatershed

HUC 12	HUC 12 Name	Station #	Stream Name
405	Johnani Ditch-Kankakee River	ID# 37	Kingsbury Cr
407	Hickleson Ditch-Mill Creek	ID# 35	Whitham D
408	Marquardt Ditch-Kankakee River	ID# 33	Kankakee R

Table 86. Summary of Pathogen Data in the Mill Creek-Kankakee River

Station #	Period of Record	Total Number of Samples	Percent of Samples Exceeding <i>E. coli</i> WQS (#/100 mL)		Minimum (#/100 mL)	Geomean (#/100 mL)	Average (#/100 mL)	Maximum (#/100 mL)	Percent Reduction Based on Geomean (125/100mL)
			125	235					
37	6/3/2008 - 7/1/2008	5	100	80	219	331	346	488	62%
35	6/2/2008 - 6/30/2008	5	40	20	66	125	137	236	0%
33	6/2/2008 - 6/30/2008	5	100	80	141	347	409	866	64%

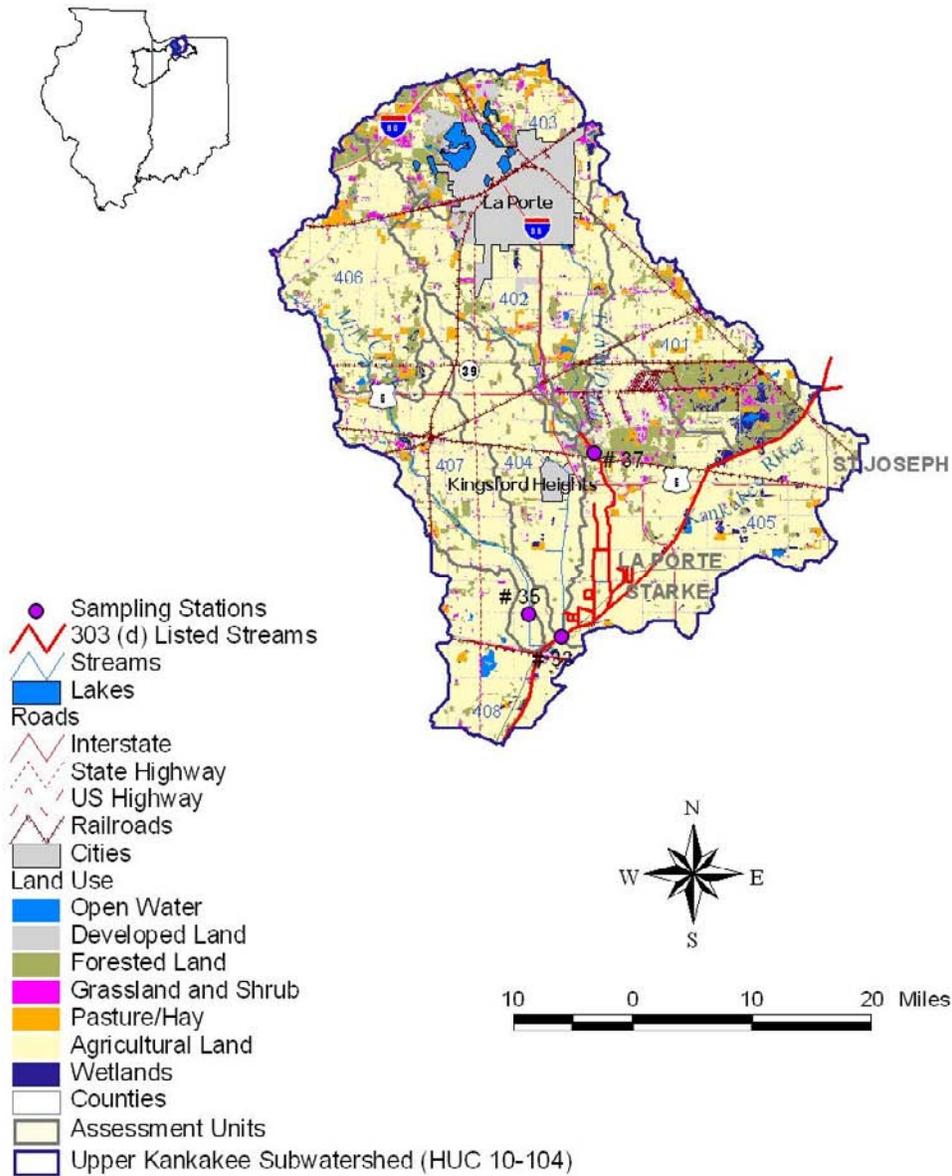


Figure 52. Location of Mill Creek-Kankakee River

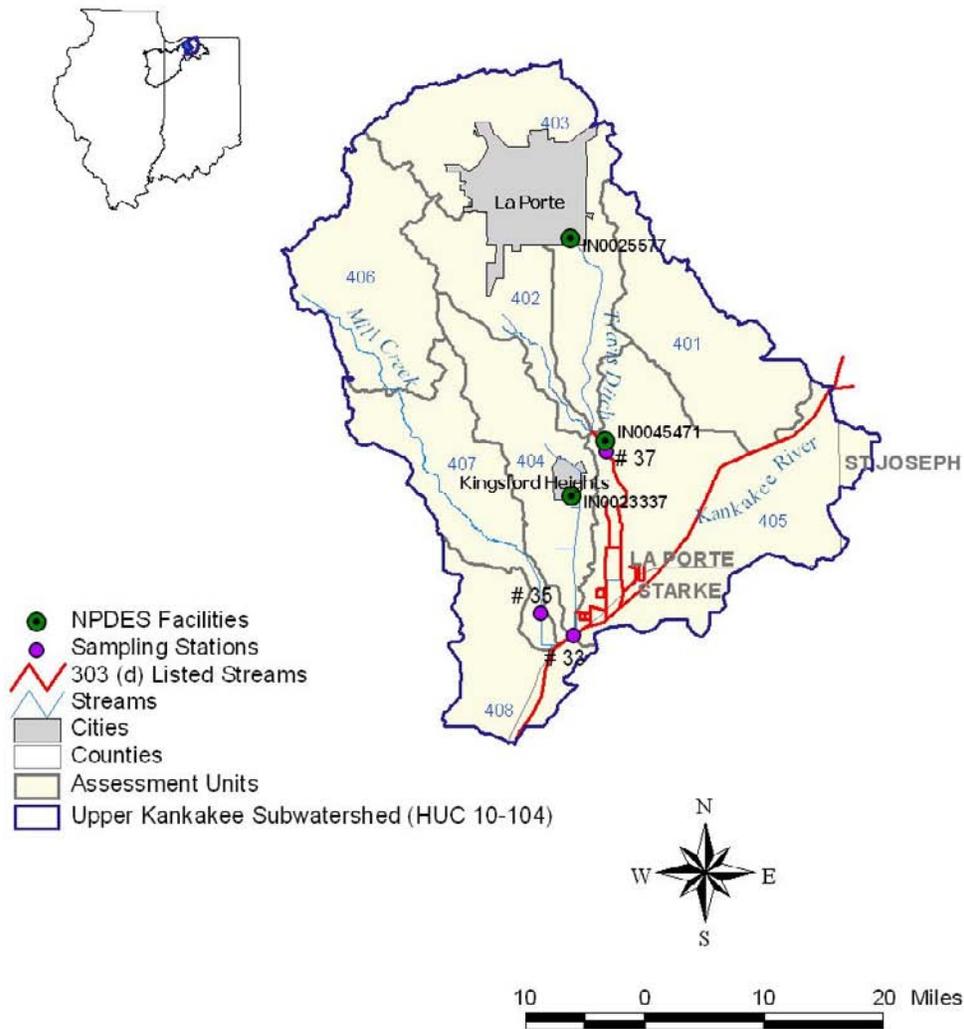


Figure 53. NPDES Facilities in the Mill Creek-Kankakee River

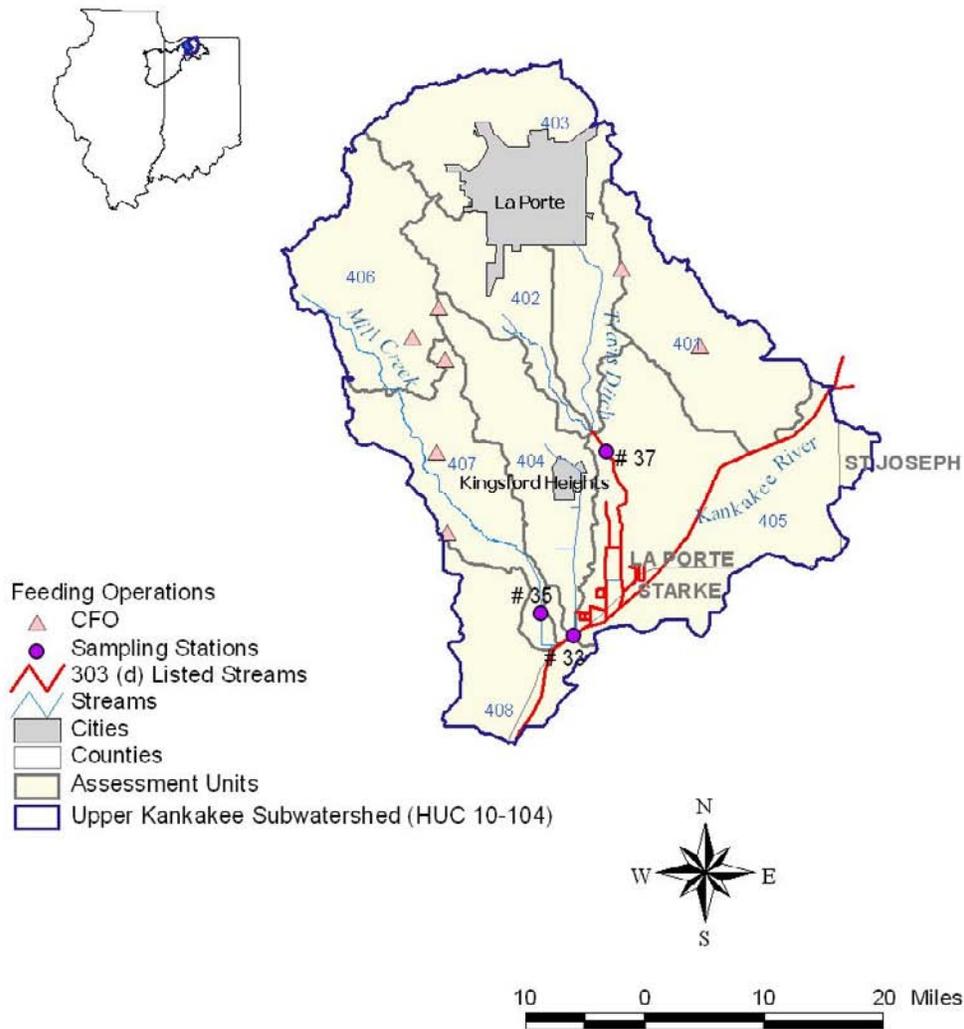


Figure 54. Feeding Operations in the Mill Creek-Kankakee River

Table 87. Land Use/Land Cover in the Mill Creek-Kankakee River Subwatershed

Land Use/Land Cover	Subwatershed		
	Area		Percent
	Acres	Square Miles	
Agricultural Land	85,029.88	132.86	65.48
Forested Land	18,252.09	28.52	14.06
Developed Land	14,443.82	22.57	11.12
Pasture/Hay	4,364.04	6.82	3.36
Grassland and Shrubs	3,948.60	6.17	3.04
Wetland	2,065.60	3.23	1.59
Open Water	1,752.69	2.74	1.35
Total	129,856.72	202.90	100.00

Table 88 through Table 90 summarize the subwatershed characteristics as well as the TMDL results for each of the HUC 12 subwatersheds. There are no current 303(d) listings in HUC 407; however, the sampling performed in 2008 suggests that several streams are impaired. Those streams will appear on the next 303(d) list and TMDLs for those streams are presented here.

There are six NPDES facilities upstream of the Mill Creek subwatershed outlet and the WLAs for the facilities were calculated based on their design flows and *E. coli* permit limits. There are two MS4 communities within the Little Kankakee River subwatershed and the WLAs for the communities were calculated based on their area within the subwatershed and *E. coli* standards. The individual WLAs are presented in Table 276. There are two CAFOs within this subwatershed and they receive a WLA of zero as described further in Section 7.3.

Table 88. Johanni Ditch-Kankakee River Characteristics and TMDL Summary (HUC 12-405)

Upstream Characteristics					
<i>Drainage Area</i>	399.16 square miles				
<i>Sampling Station</i>	37				
<i>Listed Segments</i>	INK0138_T1006, INK0131_T1003, INK0134_T1005, INK0133_T1004				
<i>Land Use</i>	Agriculture: 60.85%; Developed Land:10.38%; Forest:17.36%; Other: 11.41%				
<i>Soils</i>	A: 39.39%; B: 49.44%; C: 6.93%; D: 2.54%; Unknown:1.71%				
<i>NPDES Facilities</i>	North Liberty WWTP (IN0025801)				
	La Porte Municipal STP (IN0025577)				
	Walkerton Municipal WWTP (IN0040690)				
	Kingsbury Utility Corp (IN0045471)				
	Potato Creek State Park (IN0052272)				
<i>MS4 Communities</i>	La Porte County (INR040107): 14.93 square miles				
	South Bend (INR040114): 3.42 square miles				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	Walkerton Farm (ING802239)				
	Scher-Way Dairy Farm (ING806085)				
<i>CFOs</i>	Meadowland Farms (250)				
	Tuholski Farms, Inc. (280)				
	C.L. Rhoads Corp (1110)				
	Farm No 2 (3600)				
	Farm #1 (4208)				
	Farm #2 (4209)				
	Sunset Dairy (6072)				
	Ginter (6135)				
	Leffert Dairy, LLC (6203)				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	1942.67	1136.47	807.12	602.55	432.77
<i>WLA</i>	143.88	47.96	47.96	47.96	47.96
<i>MOS (10%)</i>	231.84	131.6	95.01	72.28	53.41
<i>TMDL = LA+WLA+MOS</i>	2318.39	1316.03	950.09	722.79	534.14

Table 89. Hickleson Ditch-Mill Creek Characteristics and TMDL Summary (HUC 12-407)

Upstream Characteristics					
<i>Drainage Area</i>	29.54 square miles				
<i>Sampling Station</i>	35				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 73.98%; Developed Land:6.08%; Forest:13.10%; Other: 6.84%				
<i>Soils</i>	A: 36.95%; B: 57.63%; C: 3.05%; D: 2.37%; Unknown: 0%				
<i>NPDES Facilities</i>	None				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	Yon Ed Farm, Inc.(2187)				
	Minich (4255)				
	Wil-Minfarm (6096)				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	154.42	87.65	63.28	48.14	35.58
<i>WLA</i>	0	0	0	0	0
<i>MOS (10%)</i>	17.15	9.74	7.03	5.35	3.95
<i>TMDL = LA+WLA+MOS</i>	171.57	97.39	70.31	53.49	39.53

Table 90. Marquardt Ditch-Kankakee River Characteristics and TMDL Summary (HUC 12-408)

<i>Upstream Characteristics</i>	
<i>Drainage Area</i>	463.58 square miles
<i>Sampling Station</i>	33
<i>Listed Segments</i>	INK013C_T1007
<i>Land Use</i>	Agriculture: 63.35%; Developed Land:9.80%; Forest:16.21%; Other: 10.64%
<i>Soils</i>	A: 42.02%; B: 47.76%; C: 6.30%; D: 2.39%; Unknown:1.53%
<i>NPDES Facilities</i>	North Liberty WWTP (IN0025801)
	La Porte Municipal STP (IN0025577)
	Walkerton Municipal WWTP (IN0040690)
	Kingsbury Utility Corp (IN0045471)
	Potato Creek State Park (IN0052272)
	Kingsford Heights Municipal WWTP (IN002337)
<i>MS4 Communities</i>	La Porte County (INR040107): 14.93 square miles
	South Bend (INR040114): 3.42 square miles
<i>CSO Communities</i>	None
<i>CAFOs</i>	Scher-Way Dairy Farm (ING806085)
	Walkerton Farm (ING802239)
<i>CFOs</i>	Meadowland Farms (250)
	Tuholski Farms, Inc. (280)
	C.L. Rhoads Corp (1110)
	Farm No 2 (3600)
	Farm #1 (4208)
	Farm #2 (4209)
	Sunset Dairy (6072)
	Ginter (6135)
	Leffert Dairy, LLC (6203)
	Yon Ed Farm, Inc.(2187)
	Schoof (3983)
	Applegarth (4169)
	Minich (4255)
	Wil-Minfarm (6096)

Table 90. Marquardt Ditch-Kankakee River Characteristics and TMDL Summary (HUC 12-408)

<i>TMDL Allocations (billion/day)</i>					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	2277.42	1325.62	943.12	705.54	508.35
<i>WLA</i>	145.88	49.96	49.96	49.96	49.96
<i>MOS (10%)</i>	269.26	152.84	110.34	83.94	62.03
<i>TMDL = LA+WLA+MOS</i>	2692.56	1528.42	1103.42	839.44	620.34

7.1.1.4 Robbins Ditch-Kankakee River Subwatershed (10-Digit HUC 107)

The Robbins Ditch subwatershed has an area of nearly 118 square miles. Walkerton and Koontz Lake are the two designated cities located in this subwatershed (Figure 55). Land use comprise of agriculture (67%), forest (17%), developed (8%) and the remaining land categories contribute to eight percent of the total subwatershed area (Table 94). A total of three NPDES facilities and one CAFO are present within this subwatershed as shown in Figure 56 and Figure 57, respectively.

There are two segments impaired for *E. coli* and IDEM sampled five *E. coli* monitoring locations in 2008 as shown in Table 91 and Table 92, respectively. The summary of 2008 data in the subwatershed is shown in Table 93. All five sites exceed the geomean standard. Reductions to meet the geomean criteria of 125 #/100 mL range from 39 to 81 percent.

Table 91. 303 (d) Listed Streams in the Robbins Ditch-Kankakee River

HUC 12	HUC 12 Name	Segment ID	Waterbody	Stream Length (miles)	Parameter
705	Laramore Ditch Kankakee River	INK0147_T1009	Kankakee River	7.29	<i>E. coli</i>
		INK0146_T1008	Kankakee River	1.39	<i>E. coli</i>

Table 92. Station Locations in the Robbins Ditch-Kankakee River

HUC 12	HUC 12 Name	Station #	Stream Name
701	Jain Ditch	ID# 61	Jain D
702	Amy Kelly Ditch-Robbins Ditch	ID# 59	Robbins D
703	Shearin Ditch-Robbins Ditch	ID# 23	Robbins D
704	Bailey Ditch-Kankakee River	ID# 21	Bailey D
705	Laramore Ditch-Kankakee River	ID# 11	Kankakee R

Table 93. Summary of Pathogen Data in the Robbins Ditch-Kankakee River

Station #	Period of Record	Total Number of Samples	Percent of Samples Exceeding <i>E. coli</i> WQS (#/100 mL)		Minimum (#/100 mL)	Geomean (#/100 mL)	Average (#/100 mL)	Maximum (#/100 mL)	Percent Reduction Based on Geomean (125/100mL)
			125	235					
61	6/4/2008 - 7/2/2008	5	100	40	152	205	211	261	39%
59	6/4/2008 - 7/2/2008	5	100	80	185	243	246	276	49%
23	6/2/2008 - 7/14/2008	6	83	67	105	284	416	1,414	56%
21	6/2/2008 - 7/14/2008	6	100	100	276	662	848	2,419	81%
11	6/2/2008 - 6/30/2008	5	100	80	192	334	368	579	63%

Table 94. Land Use/Land Cover in the Robbins Ditch-Kankakee River

Land Use/Land Cover	Subwatershed		
	Area		Percent
	Acres	Square Miles	
Agricultural Land	50,901.97	79.53	67.29
Forested Land	12,839.03	20.06	16.97
Developed Land	6,303.31	9.85	8.33
Wetland	2,602.68	4.07	3.44
Pasture/Hay	1,735.78	2.71	2.29
Grassland and Shrubs	796.84	1.25	1.05
Open Water	461.91	0.72	0.61
Total	75,641.52	118.19	100.00

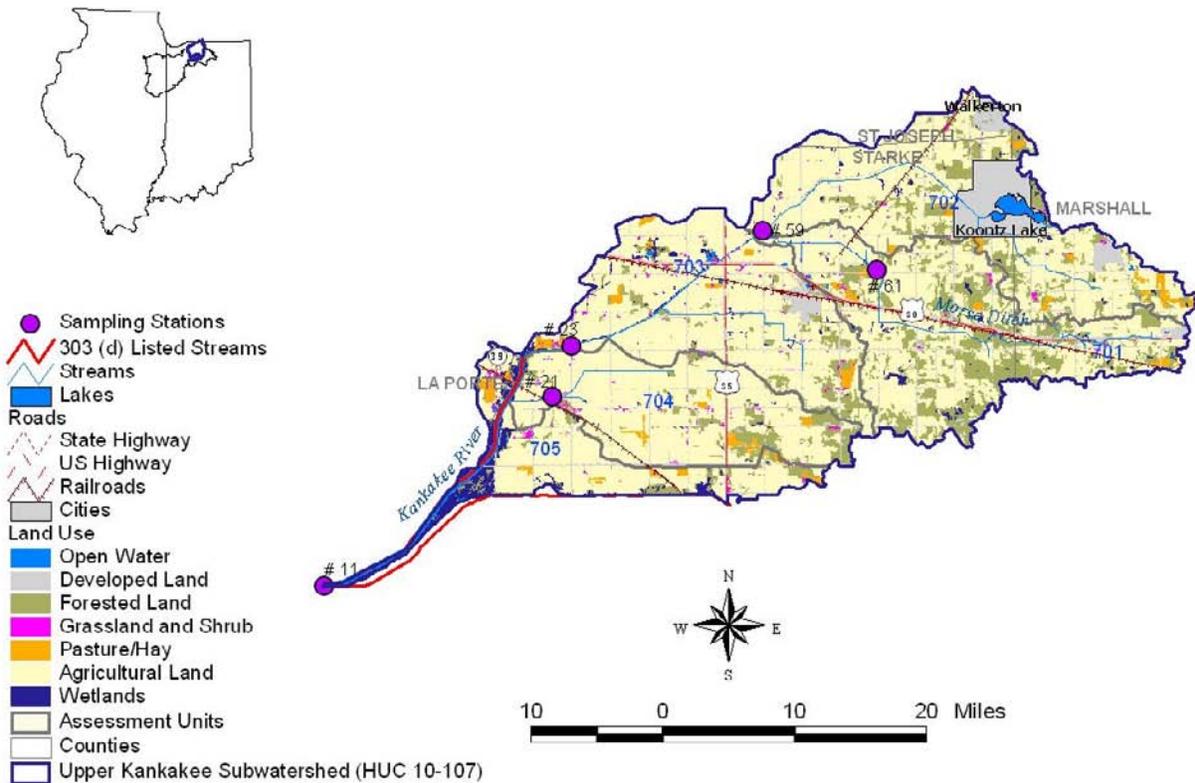


Figure 55. Location of Robbins Ditch-Kankakee River (HUC10-107)

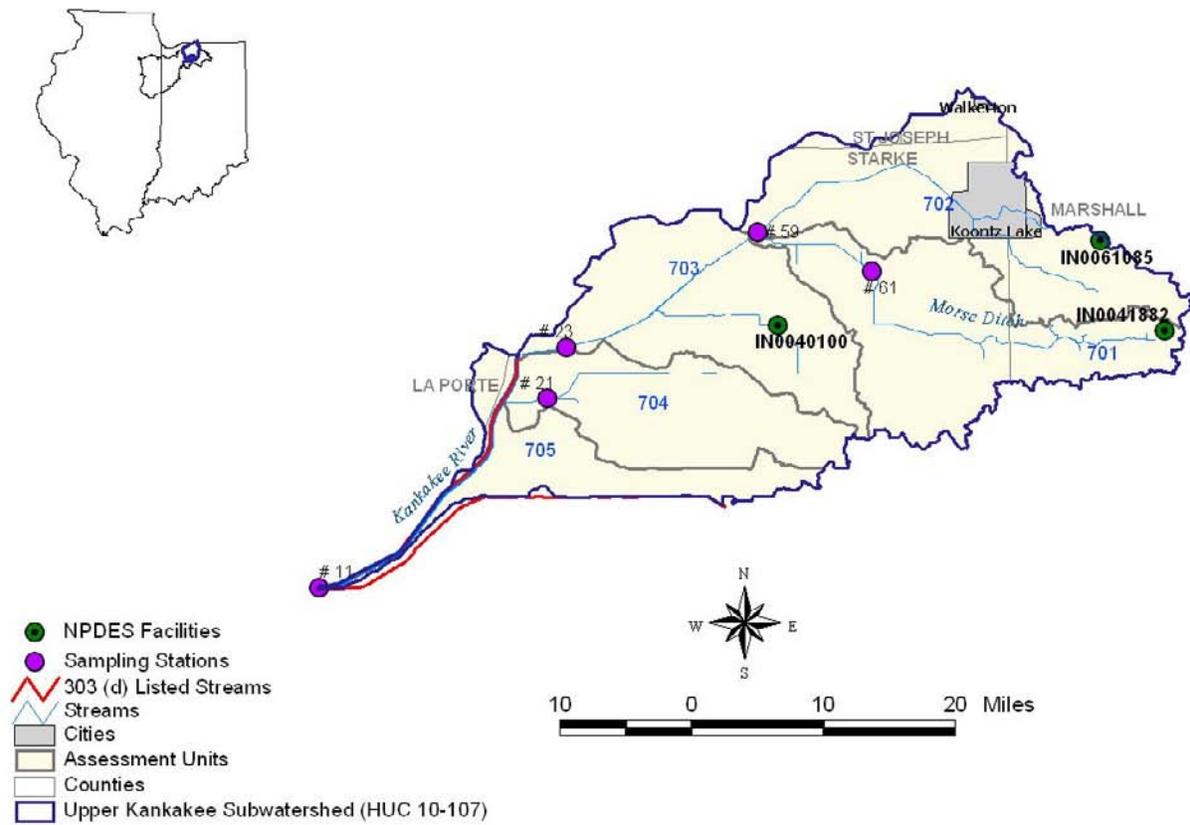


Figure 56. NPDES Facilities in the Robbins Ditch-Kankakee River (HUC10-107)

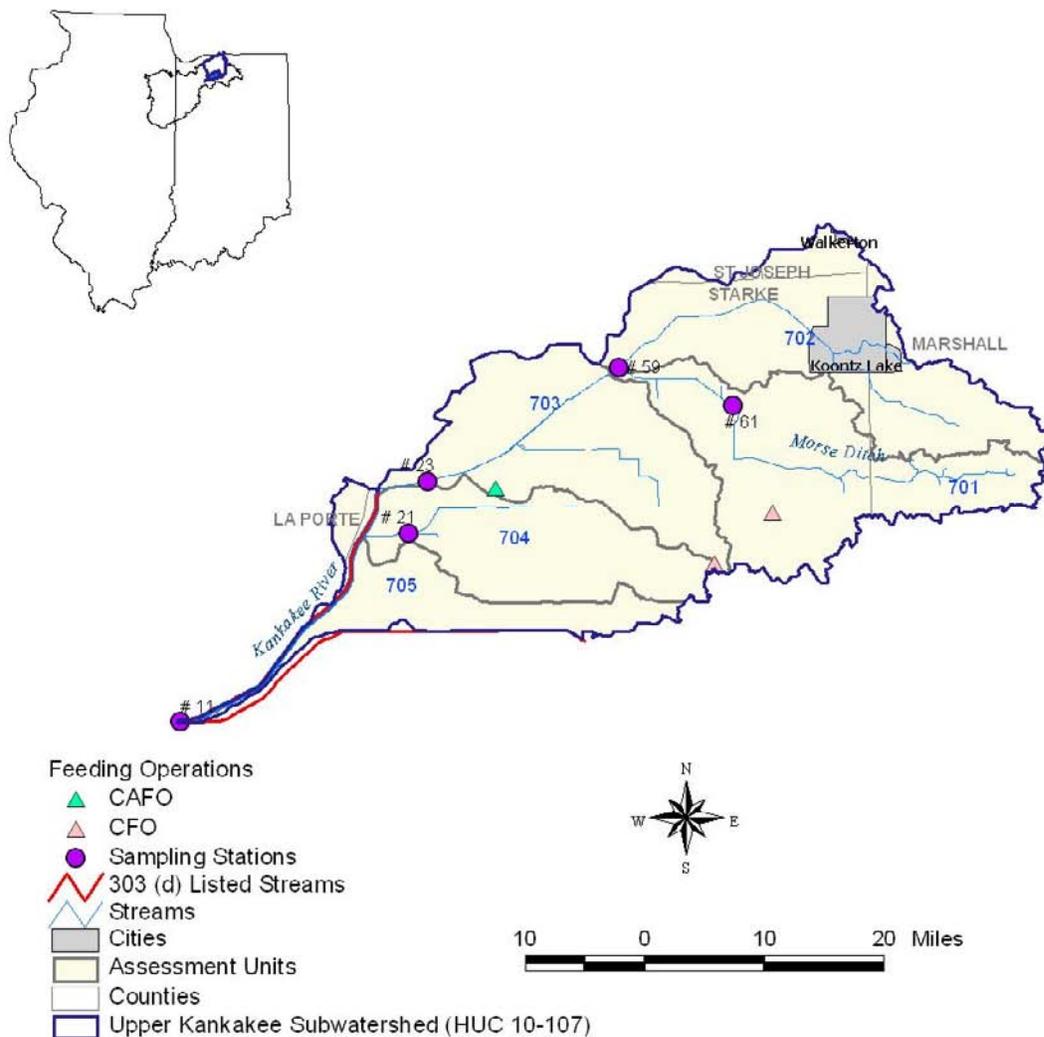


Figure 57. Feeding Operations in the Robbins Ditch-Kankakee River (HUC10-107)

Table 95 through Table 99 summarize the subwatershed characteristics as well as the TMDL results for each of the HUC 12 subwatersheds. There are no current 303(d) listings in HUC 701, HUC 702, HUC 703, or HUC 704; however, the sampling performed in 2008 suggests that several streams are impaired. Those streams will appear on the next 303(d) list and TMDLs for those streams are presented here.

There are three NPDES facilities within the Robbins Ditch subwatershed and the WLAs for the facilities were calculated based on their design flows and *E. coli* permit limits. There are two MS4 communities within the Robbins Ditch subwatershed and the WLAs for the communities were calculated based on their area within the subwatershed and *E. coli* standards. The individual WLAs are presented in Table 276. There is one CAFO within this subwatershed and it receives a WLA of zero as described further in Section 7.3.

Table 95. Jain Ditch Upstream Characteristics and TMDL Summary (HUC12-701)

Upstream Characteristics					
<i>Drainage Area</i>	28.87 square miles				
<i>Sampling Station</i>	61				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 59.25%; Developed Land:8.86%; Forest:28.66%; Other: 3.22%				
<i>Soils</i>	A: 89.64%; B: 8.81%; C: 1.04%; D: 0.52%; Unknown: 0%				
<i>NPDES Facilities</i>	Yogi Bears Jellystone Park (IN0041882)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	Tip Top Farms (4676)				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	150.41	85.17	61.35	46.55	34.27
<i>WLA</i>	0.5	0.5	0.5	0.5	0.5
<i>MOS (10%)</i>	16.77	9.51	6.87	5.23	3.86
<i>TMDL = LA+WLA+MOS</i>	167.68	95.18	68.72	52.28	38.63

Table 96. Amy Kelly Ditch-Robbins Ditch-Kankakee River (HUC12-702)

Upstream Characteristics					
<i>Drainage Area</i>	30.46 square miles				
<i>Sampling Station</i>	59				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 64.02%; Developed Land:9.70%; Forest:19.19%; Other: 7.09%				
<i>Soils</i>	A: 85.22%; B: 10.84%; C: 2.46%; D: 0.00%; 1.48%				
<i>NPDES Facilities</i>	Swan Lake Golf Resort (IN0061085)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	None				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	159.06	90.22	65.08	49.47	36.51
<i>WLA</i>	0.17	0.17	0.17	0.17	0.17
<i>MOS (10%)</i>	17.69	10.04	7.25	5.52	4.08
<i>TMDL = LA+WLA+MOS</i>	176.92	100.43	72.5	55.16	40.76

Table 97. Shearin Ditch-Robbins Ditch Characteristics and TMDL Summary (HUC12-703)

Upstream Characteristics					
<i>Drainage Area</i>	85.17 square miles				
<i>Sampling Station</i>	23				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 65.96%; Developed Land:9.33%; Forest:19.27%; Other: 5.44%				
<i>Soils</i>	A: 90.48%; B: 7.41%; C: 1.23%; D: 0.18%; 0.71%				
<i>NPDES Facilities</i>	Yogi Bears Jellystone Park (IN0041882)				
	Swan Lake Golf Resort (IN0061085)				
	Hamlet Municipal STP (IN0040100)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	N&L Pork, Inc. - Lee Nagai - Home Site (149)				
<i>CFOs</i>	Tip Top Farms (4676)				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	444.07	251.59	181.31	137.66	101.43
<i>WLA</i>	1.14	1.14	1.14	1.14	1.14
<i>MOS (10%)</i>	49.47	28.08	20.27	15.42	11.4
<i>TMDL = LA+WLA+MOS</i>	494.68	280.81	202.72	154.22	113.97

Table 98. Bailey Ditch-Kankakee River Characteristics and TMDL Summary (HUC12-704)

Upstream Characteristics					
<i>Drainage Area</i>	39.21 square miles				
<i>Sampling Station</i>	21				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 77.71%; Developed Land:5.97%; Forest:12.03%; Other: 4.30%				
<i>Soils</i>	A: 93.33%; B: 0.74%; C: 0.00%; D: 5.93%; 0.00%				
<i>NPDES Facilities</i>	None				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	Yankauskas Pork Production (430)				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	204.97	116.35	84	63.9	47.22
<i>WLA</i>	0	0	0	0	0
<i>MOS (10%)</i>	22.77	12.93	9.33	7.1	5.25
<i>TMDL = LA+WLA+MOS</i>	227.74	129.28	93.33	71	52.47

Table 99. Laramore Ditch-Kankakee River Characteristics and TMDL Summary (HUC12-705)

Upstream Characteristics					
<i>Drainage Area</i>	581.78 square miles				
<i>Sampling Station</i>	11				
<i>Listed Segments</i>	INK0147_T1009, INK0146_T1008				
<i>Land Use</i>	Agriculture: 64.07%; Developed Land:9.53%; Forest:16.35%; Other: 10.05%				
<i>Soils</i>	A: 50.89%; B: 40.10%; C: 5.35%; D: 2.32%; Unknown:1.34%				
<i>NPDES Facilities</i>	All facilities upstream of HUC 12-408				
	Yogi Bears Jellystone Park (IN0041882)				
	Swan Lake Golf Resort (IN0061085)				
	Hamlet Municipal STP (IN0040100)				
<i>MS4 Communities</i>	La Porte County (INR040107): 14.93 square miles				
	South Bend (INR040114): 3.42 square miles				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	All facilities upstream of HUC 12-408				
	N&L Pork, Inc. - Lee Nagai - Home Site (ING800149)				
<i>CFOs</i>	All facilities upstream of HUC 12-408				
	Tip Top Farms (4676)				
	Yankauskas Pork Production (430)				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	2894.15	1675.22	1195.19	897.03	649.56
<i>WLA</i>	147.02	51.1	51.1	51.1	51.1
<i>MOS (10%)</i>	337.91	191.81	138.47	105.35	77.85
<i>TMDL = LA+WLA+MOS</i>	3379.08	1918.13	1384.76	1053.48	778.51

7.1.2 Middle Kankakee Subwatershed

The Middle Kankakee subwatershed covers approximately 984 square miles and is comprised of six HUC 10 subwatersheds and 44 HUC 12 units as shown in Table 100.

Table 100. Hydrologic Unit Code (HUC 10 and 12 in the Middle Kankakee Subwatershed)

HUC 10	HU C10 Name	HUC12	HU C 12 Name	Area (sq. miles)
108	Pitner Ditch-Kankakee River	801	Sheldon Arm Hunsley Ditch	19.66
		802	Hanna Arm Tuesburg Ditch	20.09
		803	Eckert Ditch-Kuehn Ditch	21.20
		804	Richman Ditch-Pitner Ditch	22.01
		805	Bessler Ditch-Pitner Ditch	16.85
		806	Origer Ditch-Kankakee River	14.47
		807	Rasmussen Ditch-Kankakee River	29.27
		808	Cook Ditch	26.11
		809	Davis Ditch-Kankakee River	24.18
109	Hodge Ditch	901	Headwaters Wolf Creek	18.01
		902	Hickam Lateral-Wolf Creek	19.83
		903	Delehanty Ditch-Hodge Ditch	19.71
		904	Cook Ditch-Hodge Ditch	26.69
110	Crooked Creek-Kankakee River	001	Bloom Ditch	25.71
		002	West Branch Crooked Creek	15.30
		003	Headwaters Crooked Creek	22.02
		004	Koselki Ditch-Crooked Creek	25.30
		005	Reeves Ditch	28.91
		006	Hannon Ditch-Crooked Creek	16.09
		007	Sievers Creek-Cobb Ditch	31.78
		008	Ahlgrim Ditch	21.12
		009	Cornell Ditch-Phillips Ditch	19.66
		010	Cobb Creek-Kankakee River	37.56
111	Knight Ditch-Kankakee River	101	Dehaan Ditch	36.50
		102	Wentworth Ditch-Knight Ditch	45.07
		103	Brown Levee Ditch-Kankakee River	27.66
112	Beaver Lake Ditch-Kankakee River	201	Gregory Ditch-Mud Lake Ditch	17.16
		202	Mud Lake Ditch-Beaver Lake Ditch	15.78
		203	Lawler Ditch-Beaver Lake Ditch	24.99
		204	Williams Ditch	16.31
		205	Beaver Lake Ditch-Kankakee River	24.46
113	Singleton Ditch	301	East Branch Stony Run	15.79
		302	Fisher Pond- Stony Run	18.27
		303	Spring Run	12.75
		304	Greisel Ditch	16.59
		305	Bryant Ditch-Singleton Ditch	23.52
		306	Cedar Creek	31.30
		307	Brown Ditch	21.37
		308	Bull Run-West Creek	21.52

Table 100. Hydrologic Unit Code (HUC 10 and 12 in the Middle Kankakee Subwatershed)

HUC 10	HU C10 Name	HUC12	HU C 12 Name	Area (sq. miles)
113	Singleton Ditch	309	Klaasville-West Creek	17.83
		310	West Creek	16.25
		311	Bruce Ditch-Singleton Ditch	24.71
		312	Bull Creek-Singleton Ditch	20.72
		313	Singleton Ditch	13.85

7.1.2.1 Pitner Ditch-Kankakee River Subwatershed (10-Digit HUC 108)

The Pitner Ditch subwatershed has an area of nearly 194 square miles and covers portions of LaPorte, Starke and Jasper Counties. Wanatah is the only designated city within this subwatershed (Figure 58). Most of the land is used for agriculture purposes as reported in Table 104. Figure 59 and Figure 60 show the NPDES facilities and feeding operations in this subwatershed.

There is only one listed segment (Table 101) and four monitoring locations (Table 102) in the subwatershed. Table 103 summarizes the 2008 data in this subwatershed. Three of the four sites sampled exceeded the geomean standard and necessary reductions range from 59 to 88 percent.

Table 101. 303 (d) Listed Streams in the Pitner Ditch-Kankakee River

HUC 12	HUC 12 Name	Segment ID	Waterbody	Stream Length (miles)	Parameter
806	Origer Ditch-Kankakee River	INK0183_M1011	Kankakee River-English Lake	3.51	<i>E. coli</i>

Table 102. Station Locations in the Pitner Ditch-Kankakee River

HUC 12	HUC 12 Name	Station #	Stream Name
802	Hanna Arm Tuesburg Ditch	ID# 31	Hunsley D
805	Bessler Ditch-Pitner Ditch	ID# 07	Pitner D
807	Rasmussen Ditch-Kankakee River	ID# 03	Kankakee River
		ID# 05	Elkheim D

Table 103. Summary of Pathogen Data in the Pitner Ditch-Kankakee River

Station #	Period of Record	Total Number of Samples	Percent of Samples Exceeding <i>E. coli</i> WQS (#/100 mL)		Minimum (#/ 100 mL)	Geomean (#/ 100 mL)	Average (#/ 100 mL)	Maximum (#/ 100 mL)	Percent Reduction Based on Geomean (125/ 100mL)
			125	235					
31	6/4/2008 - 6/30/2008	5	100	100	548	1,079	1,223	2,420	88%
7	6/2/2008 - 6/30/2008	5	20	0	108	122	122	142	0%
3	6/2/2008 - 6/30/2008	5	100	60	186	307	330	461	59%
5	6/2/2008 - 6/30/2008	5	100	100	248	338	348	488	63%

Table 104. Land Use/Land Cover in the Pitner Ditch-Kankakee River

Land Use/Land Cover	Subwatershed		
	Area		Percent
	Acres	Square Miles	
Agricultural Land	96158.26	150.25	77.60
Forested Land	12925.31	20.20	10.43
Developed Land	7502.91	11.72	6.05
Grassland and Shrubs	2760.35	4.31	2.23
Wetland	2553.53	3.99	2.06
Pasture/Hay	1473.14	2.30	1.19
Open Water	550.20	0.86	0.44
Total	123,923.70	193.63	100.00

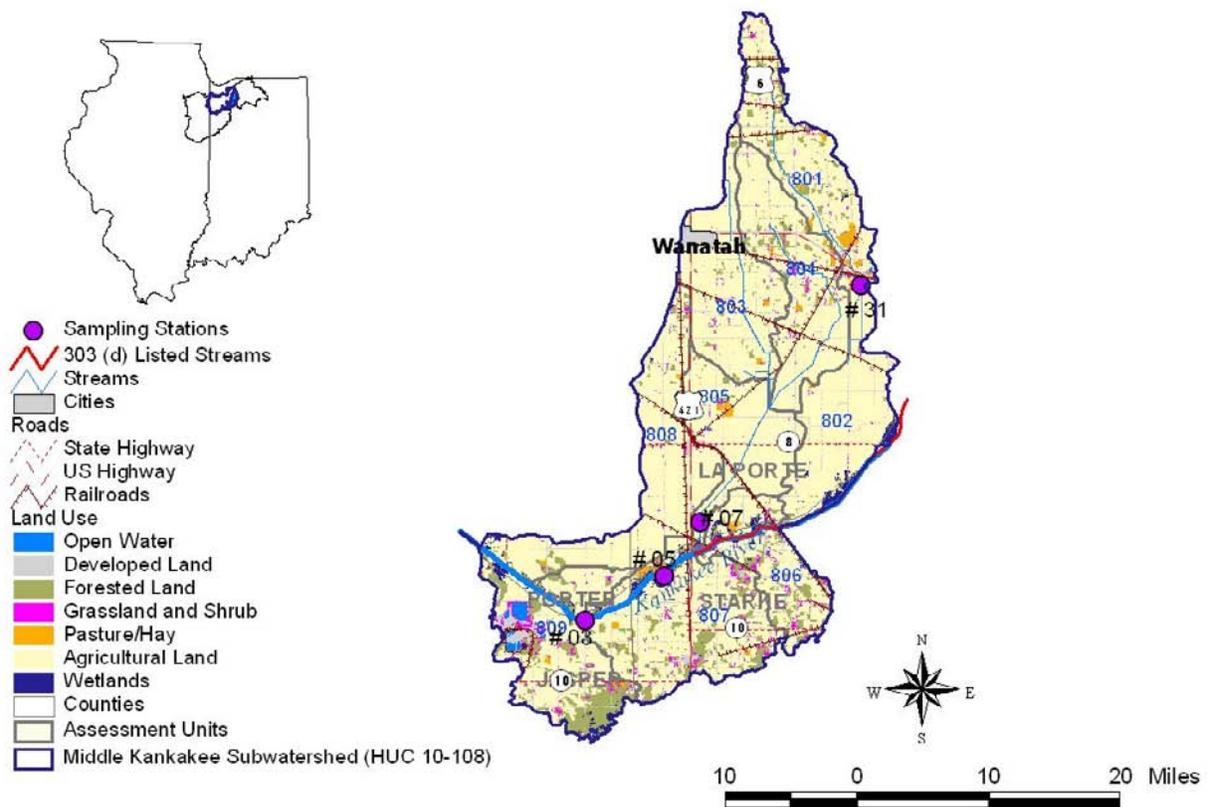


Figure 58. Location of Pitner Ditch-Kankakee River (HUC10-108)

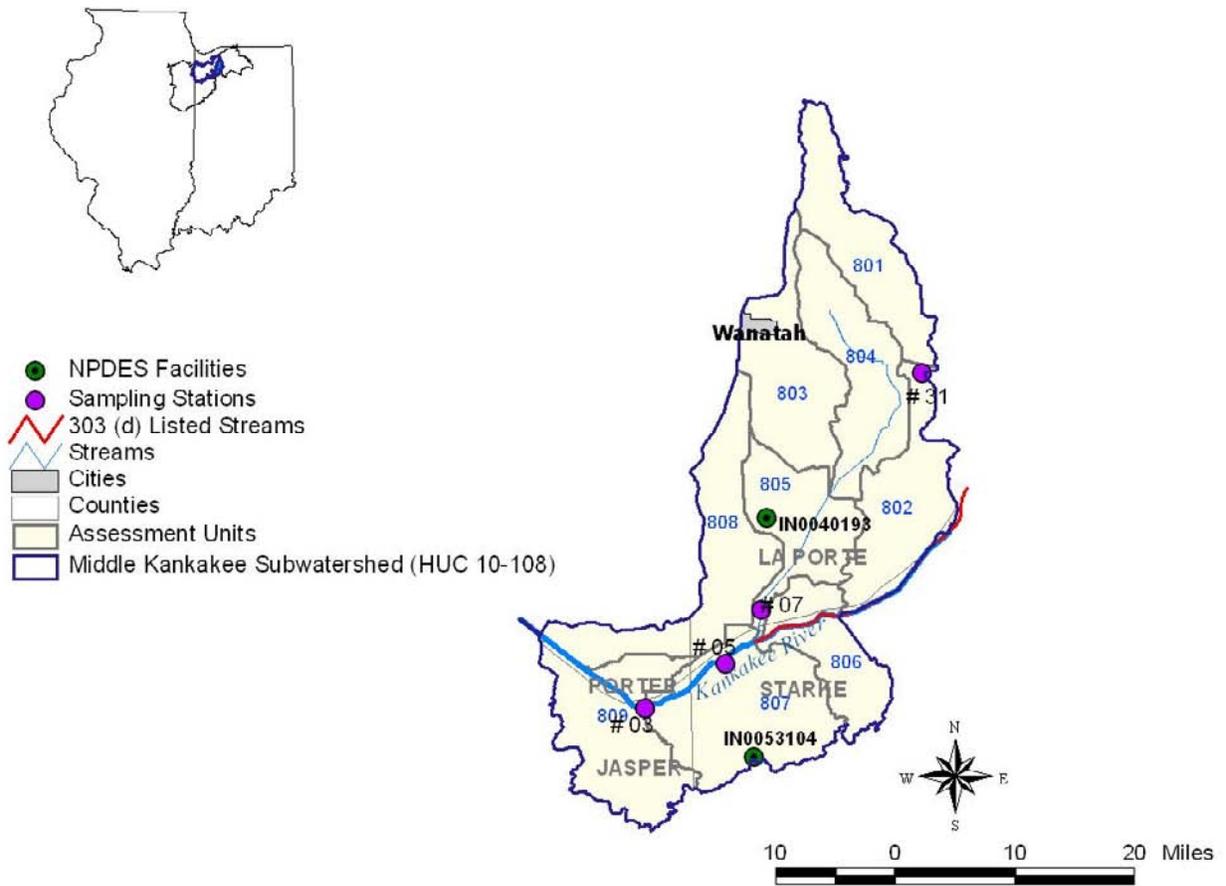


Figure 59. NPDES Facilities in the Pitner Ditch-Kankakee River (HUC10-108)

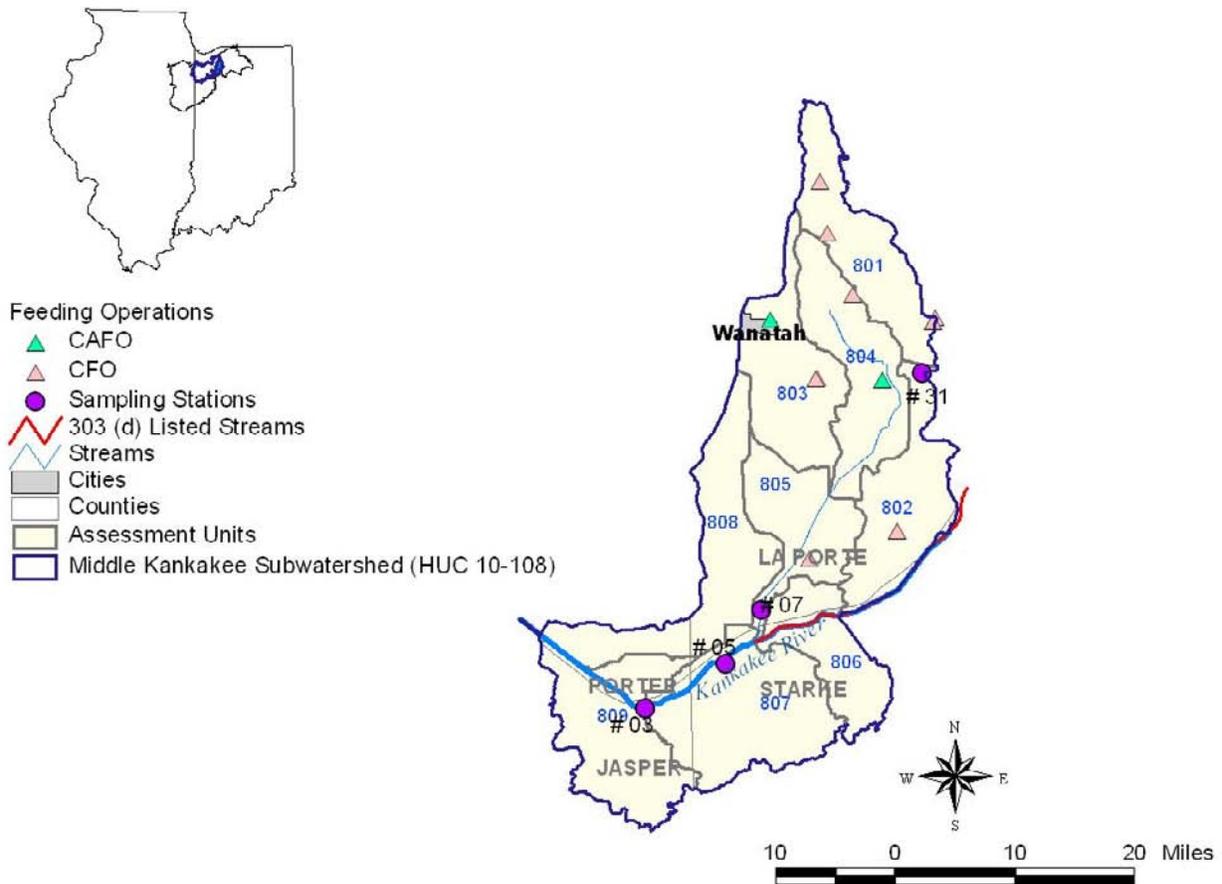


Figure 60. Feeding Operations in the Pitner Ditch-Kankakee River (HUC10-108)

Table 105 through Table 108 summarize the subwatershed characteristics and TMDL results for each of the HUC 12 subwatersheds. It should be noted that there are no current 303(d) listings in HUC 802 or HUC 807; however, the sampling performed in 2008 suggests that several streams are impaired. Those streams will appear on the next 303(d) list and TMDLs for those streams are presented here.

There are two NPDES facilities within the Pitner Ditch subwatershed and the WLAs for the facilities were calculated based on their design flows and *E. coli* permit limits. There are three MS4 communities upstream of the Pitner Ditch subwatershed outlet and the WLAs for the communities were calculated based on their area within the subwatershed and *E. coli* standards. There are three CSO communities with 26 outfalls upstream of this subwatersheds outlet. WLAs for CSO communities were calculated based on the maximum observed CSO flow at each outfall multiplied by the *E. coli* criteria. The individual WLAs are presented in Table 276. There are two CAFOs within this subwatershed and they receive a WLA of zero as described further in Section 7.3.

Table 105. Hanna Arm Tuesburg Ditch Characteristics and TMDL Summary (HUC12-802)

Upstream Characteristics					
<i>Drainage Area</i>	37.14 square miles				
<i>Sampling Station</i>	31				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 81.43%; Developed Land:9.53%; Forest:16.35%; Other: 10.05%				
<i>Soils</i>	A: 64.75%; B: 26.82%; C: 8.43%; D: 0.00%; Unknown:0.00%				
<i>NPDES Facilities</i>	None				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	Farm #2 (2547)				
	Hundt (3045)				
	Farm #1 (3548)				
	Dgm Pork (3992)				
	Hardin Farms (6109)				
	Hoover Farms (6114)				
TMDL Allocations (billion/day)					
	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	244.04	89	40.2	18.09	9.77
<i>WLA</i>	0	0	0	0	0
<i>MOS (10%)</i>	27.12	9.89	4.46	2.01	1.08
<i>TMDL = LA+WLA+MOS</i>	271.16	98.89	44.66	20.1	10.85

Table 106. Bessler Ditch-Pitner Ditch Characteristics and TMDL Summary (HUC12-805)

Upstream Characteristics					
<i>Drainage Area</i>	59.99 square miles				
<i>Sampling Station</i>	7				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 86.92%; Developed Land;5.97%; Forest:4.26%; Other: 2.85%				
<i>Soils</i>	A: 79.08%; B: 12.50%; C: 8.42%; D: 0.00%; Unknown:0.00%				
<i>NPDES Facilities</i>	La Crosse Municipal WWTP (IN0040193)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	Smoker Farms (ING801092)				
	David And Brenda Wolfe (ING806292)				
<i>CFOs</i>	Brian Hunsley (85)				
	Stull Farm (3126)				
	Phegley (3896)				
	Rich-Lou Farms (3925)				
TMDL Allocations (billion/day)					
	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	393.87	143.45	64.61	28.9	15.45
<i>WLA</i>	0.32	0.32	0.32	0.32	0.32
<i>MOS (10%)</i>	43.8	15.97	7.21	3.24	1.75
<i>TMDL = LA+WLA+MOS</i>	437.99	159.74	72.14	32.46	17.52

Table 107. Origer Ditch-Kankakee River Characteristics and TMDL Summary (HUC12-806)

<i>Upstream Characteristics</i>					
<i>Drainage Area</i>	1229.46 square miles				
<i>Sampling Station</i>	None				
<i>Listed Segments</i>	INK0183_M1011				
<i>Land Use</i>	Agriculture: 66.30%; Developed Land:9.03%; Forest:15.00%; Other: 9.67%				
<i>Soils</i>	A: 48.40%; B: 39.20%; C: 9.63%; D: 1.60%; Unknown:1.17%				
<i>NPDES Facilities</i>	All facilities upstream of HUC 12-705, HUC 12-506, HUC 12-604				
<i>MS4 Communities</i>	La Porte County (INR040107): 14.93 square miles				
	South Bend (INR040114): 3.42 square miles				
	Plymouth (INR040064): 6.97 square miles				
<i>CSO Communities</i>	North Judson Municipal (IN0020877)-1 outfall				
	Plymouth Municipal STP (IN0020991-10 outfalls				
	Nappanee Municipal STP (IN0021466)-Discharges Outside of The Kankakee/Iroquois Watershed				
<i>CAFOs</i>	All facilities upstream of HUC 12-705, HUC 12-506, HUC 12-604				
<i>CFOs</i>	All facilities upstream of HUC 12-705, HUC 12-506, HUC 12-604				
<i>TMDL Allocations (billion/day)</i>					
	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	7145.56	2623.55	1139.23	466.92	213.72
<i>WLA</i>	276.02	83.15	83.15	83.15	83.15
<i>MOS (10%)</i>	824.62	300.74	135.82	61.12	32.98
<i>TMDL = LA+WLA+MOS</i>	8246.2	3007.44	1358.2	611.19	329.85

Table 108. Rassmussen Ditch-Kankakee River Characteristics and TMDL Summary (HUC12-807)

Upstream Characteristics					
<i>Drainage Area</i>	1328.35 square miles				
<i>Sampling Station</i>	3, 5				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 67.27%; Developed Land:8.83%; Forest:14.56%; Other: 9.34%				
<i>Soils</i>	A: 50.66%; B: 37.25%; C: 9.46%; D: 1.53%; Unknown:1.10%				
<i>NPDES Facilities</i>	All facilities upstream of HUC 12-705, HUC 12-506, HUC 12-604				
	La Crosse Municipal WWTP (IN0040193)				
	Little Co Of Mary Health Facility (IN0053104)				
<i>MS4 Communities</i>	La Porte County (INR040107): 14.93 square miles				
	South Bend (INR040114): 3.42 square miles				
	Plymouth (INR040064): 6.97 square miles				
<i>CSO Communities</i>	North Judson Municipal (IN0020877)-1 outfall				
	Plymouth Municipal STP (IN0020991-10 outfalls				
	Nappanee Municipal STP (IN0021466)-Discharges Outside of The Kankakee/Iroquois Watershed				
<i>CAFOs</i>	All facilities upstream of HUC 12-705, HUC 12-506, HUC 12-604				
	Smoker Farms (ING801092)				
	David And Brenda Wolfe (ING806292)				
<i>CFOs</i>	All facilities upstream of HUC 12-705, HUC 12-506, HUC 12-604				
	Farm #2 (2547)				
	Hundt (3045)				
	Farm #1 (3548)				
	Dgm Pork (3992)				
	Hardin Farms (6109)				
	Hoover Farms (6114)				
	Brian Hunsley (85)				
	Stull Farm (3126)				
	Rich-Lou Farms (3925)				
TMDL Allocations (billion/day)					
	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	7731.51	2836.92	1235.31	509.88	236.66
<i>WLA</i>	276.53	83.66	83.66	83.66	83.66
<i>MOS (10%)</i>	889.78	324.51	146.55	65.95	35.59
<i>TMDL = LA+WLA+MOS</i>	8897.82	3245.09	1465.52	659.49	355.91

7.1.2.2 Hodge Ditch Subwatershed (HUC 10-109)

The Hodge Ditch subwatershed has an area of nearly 84 square miles. This subwatershed is covered by portions of Jasper and Porter counties (Figure 61). Nearly 61 percent of the land is used for agriculture (Table 111). There are three NPDES facilities in this subwatershed (Figure 62). No feeding operations exist within this subwatershed. There are no listed segments in the Hodge Ditch subwatershed. IDEM sampled two sites in this HUC 10 subwatershed (Table 109). Table 110 summarizes the 2008 data in this subwatershed. Both sites exceeded the geomean standard and both require a reduction of approximately 40 percent to meet the geomean standard.

Table 109. Station Locations in the Hodge Ditch Subwatershed

HUC 12	HU C12 Name	Station #	Stream Name
902	Hickam Lateral-Wolf Creek	ID# 10	Wolf Cr
904	Cook Ditch-Hodge Ditch	ID# 12	Hodge D

Table 110. Summary of Pathogen Data in the Hodge Ditch Subwatershed

Station #	Period of Record	Total Number of Samples	Percent of Samples Exceeding <i>E. coli</i> WQS (#/100 mL)		Minimum (#/100 mL)	Geomean (#/100 mL)	Average (#/100 mL)	Maximum (#/100 mL)	Percent Reduction Based on Geomean (125/100mL)
			125	235					
10	6/3/2008 - 7/1/2008	5	100	60	155	215	221	291	42%
12	6/3/2008 - 7/1/2008	5	100	20	166	195	199	285	36%

Table 111. Land Use/Land Cover in the Hodge Ditch Subwatershed

Land Use/Land Cover	Subwatershed		
	Area		Percent
	Acres	Square Miles	
Agricultural Land	39164.24	61.19	72.74
Forested Land	7855.40	12.27	14.59
Developed Land	3782.48	5.91	7.02
Grassland and Shrubs	2203.03	3.44	4.09
Pasture/Hay	610.03	0.95	1.13
Wetland	209.72	0.33	0.39
Open Water	16.90	0.03	0.03
Total	53,841.80	84.13	100.00

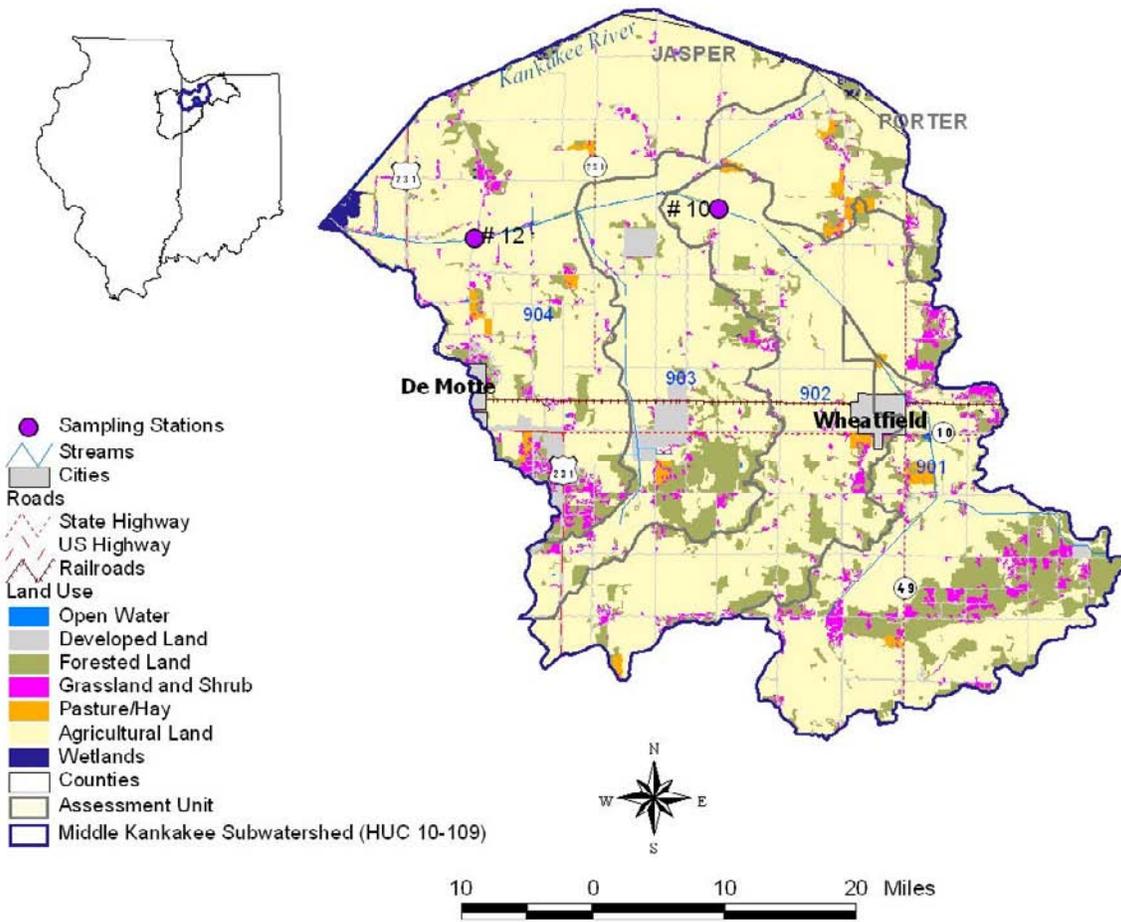


Figure 61. Location of Hodge Ditch Subwatershed (HUC10-109)

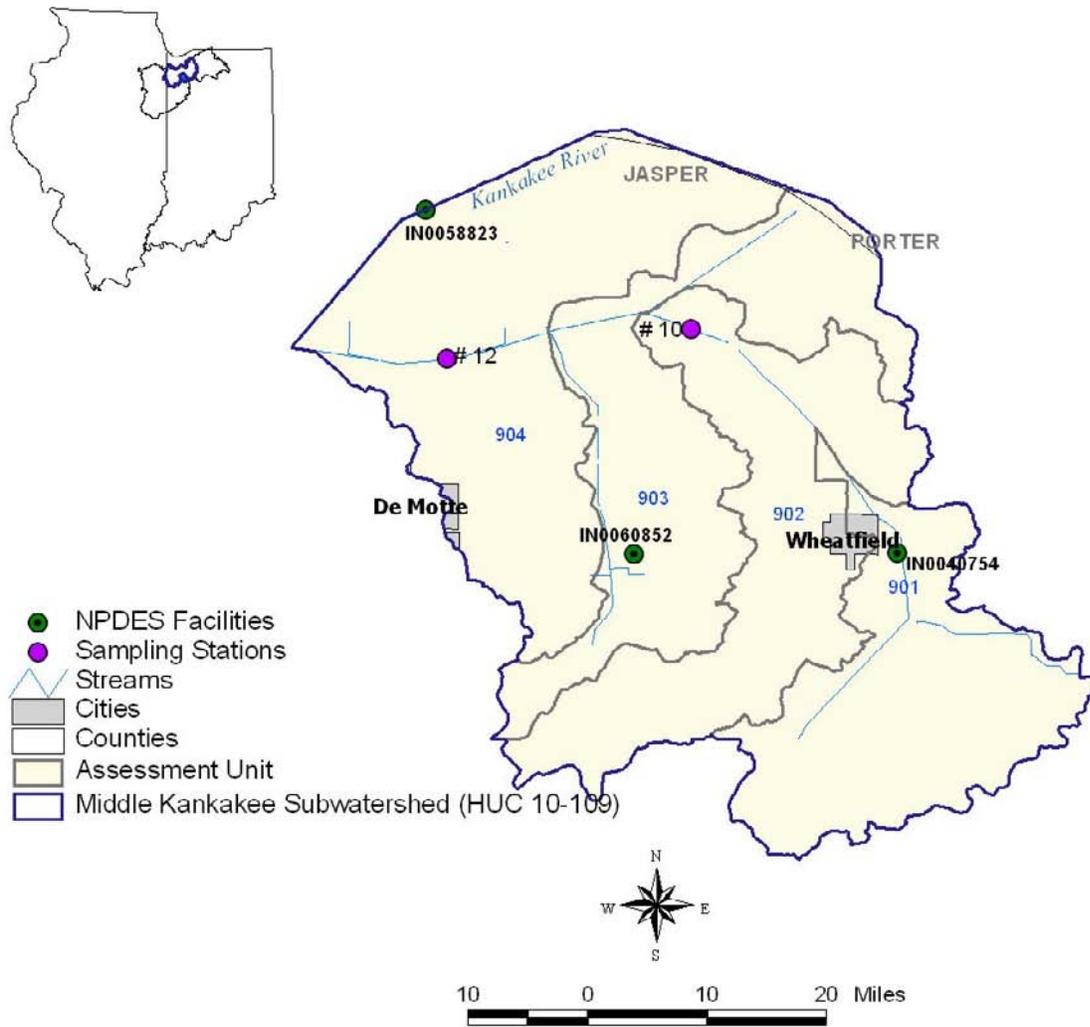


Figure 62. NPDES Facilities in the Hodge Ditch Subwatershed (HUC10-109)

Table 112 and Table 113 summarize the subwatershed characteristics as well as the TMDL results for each of the HUC 12 subwatersheds. It should be noted that there are no current 303(d) listings in either HUC; however, the sampling performed in 2008 suggests that several streams are impaired. Those streams will appear on the next 303(d) list and TMDLs for those streams are presented here.

There are three NPDES facilities within the Hodge Ditch subwatershed and the WLAs for the facilities were calculated based on their design flows and *E. coli* permit limits. The individual WLAs are presented in Table 276.

Table 112. Hickman Lateral-Wolf Creek Characteristics and TMDL Summary (HUC12-902)

Upstream Characteristics					
<i>Drainage Area</i>	37.80 square miles				
<i>Sampling Station</i>	10				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 69.68%; Developed Land:6.18%; Forest:18.13%; Other: 6.02%				
<i>Soils</i>	A: 60.96%; B: 35.06%; C: 1.99%; D: 1..99%; Unknown:0.00%				
<i>NPDES Facilities</i>	Wheatfield Municipal WWTP (IN0040754)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	None				
TMDL Allocations (billion/day)					
	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	248.02	90.22	40.55	18.05	9.58
<i>WLA</i>	0.36	0.36	0.36	0.36	0.36
<i>MOS (10%)</i>	27.6	10.07	4.55	2.04	1.1
<i>TMDL = LA+WLA+MOS</i>	275.98	100.65	45.46	20.45	11.04

Table 113. Crook Ditch-Hodge Ditch Characteristics and TMDL Summary (HUC12-904)

<i>Upstream Characteristics</i>					
<i>Drainage Area</i>	84.14 square miles				
<i>Sampling Station</i>	12				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 72.73%; Developed Land:7.02%; Forest:14.59%; Other: 5.66%				
<i>Soils</i>	A: 63.64%; B: 25.13%; C: 10.34%; D: 0.89%; Unknown:0.00%				
<i>NPDES Facilities</i>	Wheatfield Municipal WWTP (IN0040754)				
	Martis Place Bomars River LDG (IN0058823)				
	Town Of Monterey WWTP (IN0060852)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	None				
<i>TMDL Allocations (billion/day)</i>					
	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	552.33	201.09	90.52	40.43	21.57
<i>WLA</i>	0.55	0.55	0.55	0.55	0.55
<i>MOS (10%)</i>	61.43	22.4	10.11	4.55	2.45
<i>TMDL = LA+WLA+MOS</i>	614.31	224.04	101.18	45.53	24.57

7.1.2.3 Crooked Creek-Kankakee River Subwatershed (HUC10-110)

The Crooked Creek subwatershed has an area of approximately 243 square miles and lies within Porter, La Porte and Jasper counties (Figure 63). As with above watersheds, agriculture is the dominant land use (Table 117). There are 11 facilities in the subwatershed as shown in Figure 64. There are no CAFOs; however, there is one CFO in the subwatershed (Figure 65).

Among the HUC12 units present in this subwatershed, HUC12-010 is the only one that has listed 303 (d) segments (Table 114). IDEM monitoring locations (Table 115) demonstrate impairments at all but one monitoring location (Table 116). Station # 06 did not exceed the geomean standard, however 20 percent of 2008 samples did exceed 235/100mL. The required reductions range from 0 to 87 percent.

Table 114. 303 (d) Listed Streams in the Crooked Creek-Kankakee River Subwatershed

HUC 12	HUC 12 Name	Segment ID	Waterbody	Stream Length (miles)	Parameter
010	Cobb Creek-Kankakee River	INK019F_M1113	Kankakee River	0.59	<i>E. coli</i>
		INK019F_M1104	Kankakee River	6.08	<i>E. coli</i>

Table 115. Station Locations in the Crooked Creek-Kankakee River Subwatershed

HUC 12	HUC 12 Name	Station #	Stream Name
001	Bloom Ditch	ID# 29	Slocum D
105	Reeves Ditch	ID# 04	Heinold Ditch
		ID# 25	Greiger D
006	Hannon Ditch-Crooked Creek	ID# 27	Crooked Cr
007	Sievers Creek-Cobb Ditch	ID# 06	Cobb D
009	Cornell Ditch-Phillips Ditch	ID# 08	Phillips Ditch
010	Cobb Creek-Kankakee River	ID# 02	Kankakee River
		ID# 16	Kankakee R

Table 116. Summary of Crooked Creek-Kankakee River Subwatershed

Station #	Period of Record	Total Number of Samples	Percent of Samples Exceeding <i>E. coli</i> WQS (#/100 mL)		Minimum (#/100 mL)	Geomean (#/100 mL)	Average (#/100 mL)	Maximum (#/100 mL)	Percent Reduction Based on Geomean (125/100mL)
			125	235					
29	6/4/2008 - 6/30/2008	5	100	100	613	949	1,096	2,419	87%
4	6/2/2008 - 6/30/2008	5	80	80	116	321	371	649	61%
25	6/2/2008 - 7/14/2008	6	100	67	158	284	306	488	56%
27	6/2/2008 - 7/14/2008	6	100	83	152	689	878	1,986	82%
6	6/3/2008 - 7/1/2008	5	20	20	31	64	120	435	0%
8	6/3/2008 - 7/1/2008	5	100	100	387	522	550	866	76%
2	6/3/2008 - 7/1/2008	5	100	60	140	241	258	411	48%
16	6/3/2008 - 7/1/2008	5	80	40	96	239	284	525	48%

Table 117. Land Use/Land Cover in the Crooked Creek-Kankakee River Subwatershed

Land Use/Land Cover	Subwatershed		
	Area		Percent
	Acres	Square Miles	
Agricultural Land	116508.41	182.04	74.84
Forested Land	12085.11	18.88	7.76
Developed Land	12801.89	20.00	8.22
Pasture/Hay	7533.15	11.77	4.84
Grassland and Shrubs	4577.09	7.15	2.94
Wetland	1601.68	2.50	1.03
Open Water	580.45	0.91	0.37
Total	155,687.78	243.26	100.00

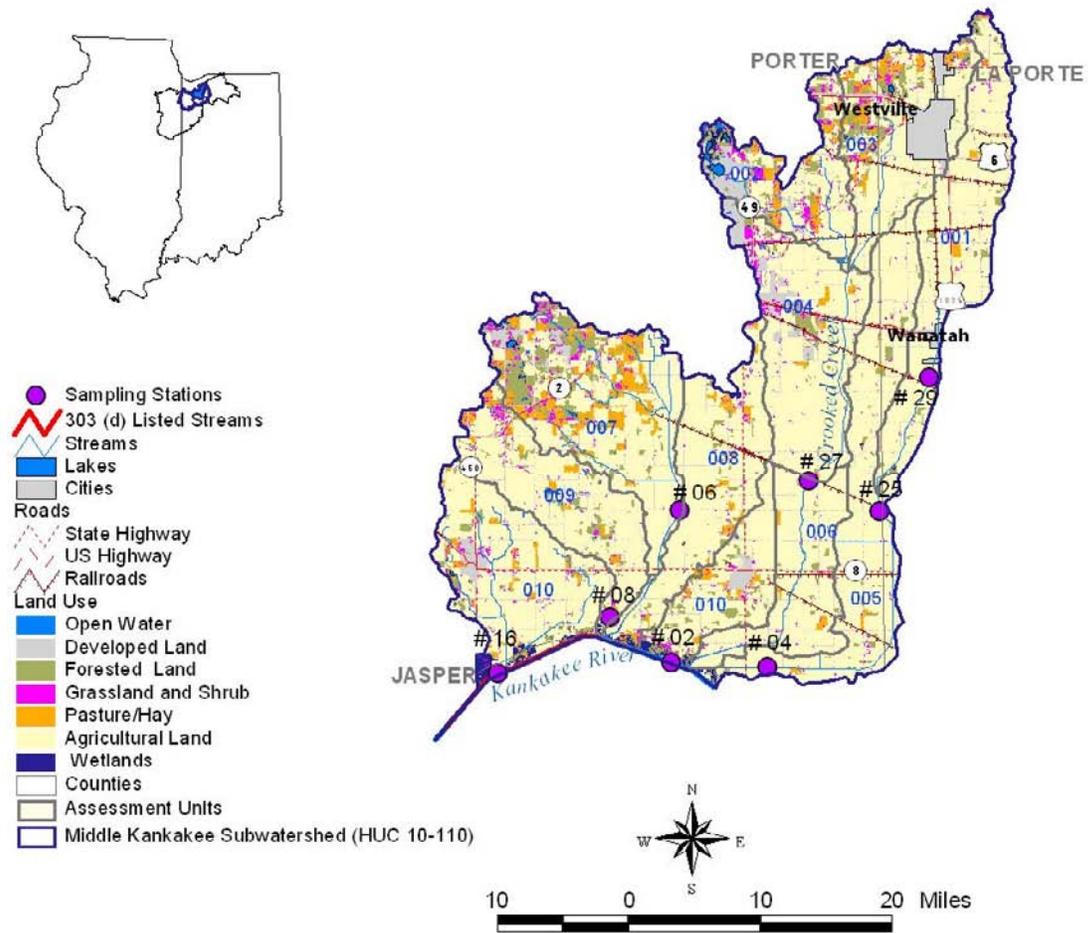


Figure 63. Location of Crooked Creek-Kankakee River (HUC10-110)

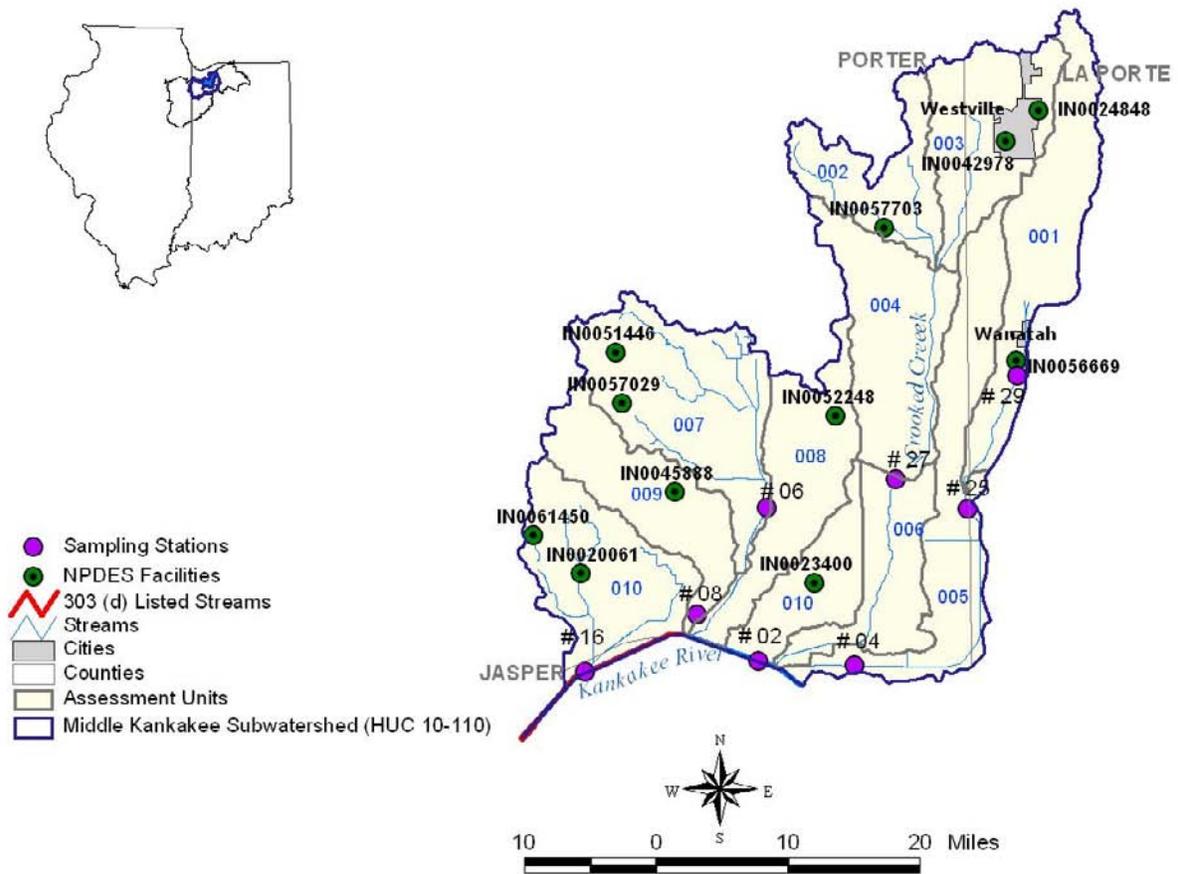


Figure 64. NPDES Facilities in the Crooked Creek-Kankakee River (HUC10-110)

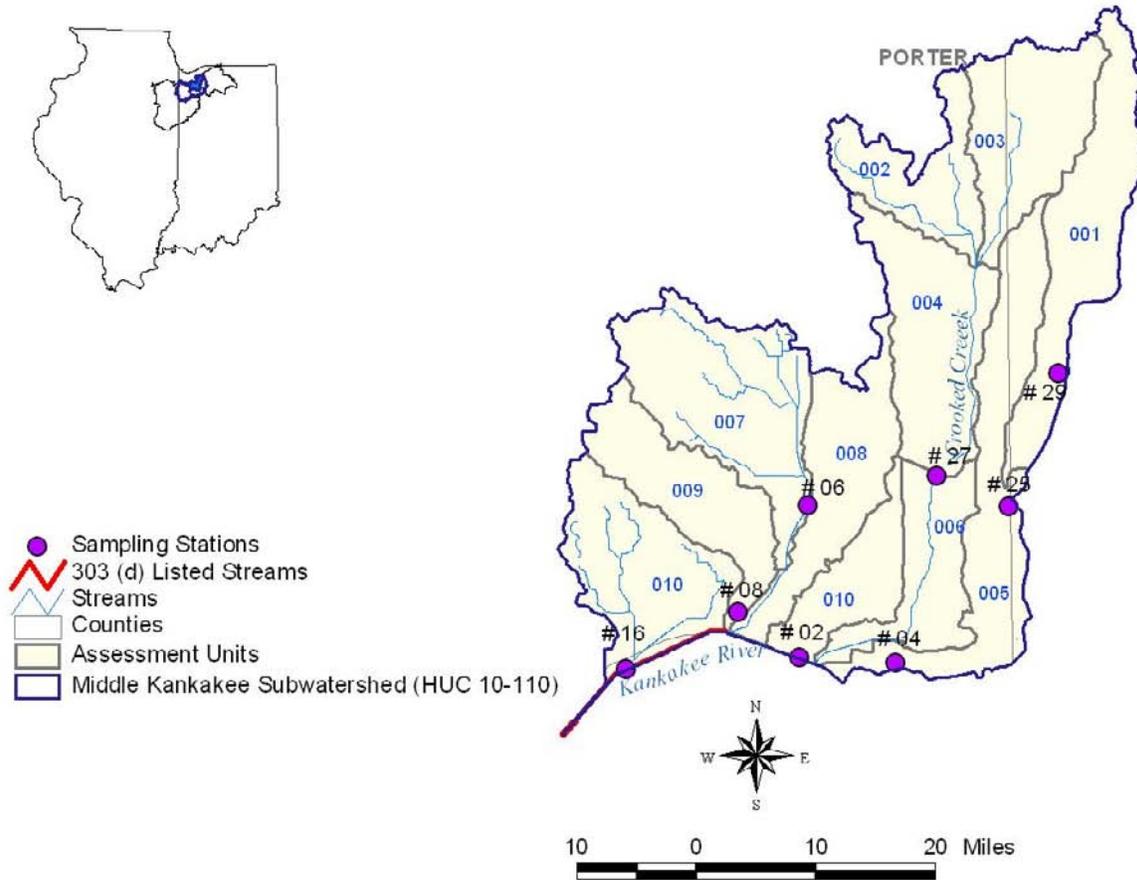


Figure 65. Feeding Operations in the Crooked Creek-Kankakee River (HUC10-110)

Table 118 through Table 123 summarize the subwatershed characteristics as well as the TMDL results for each of the HUC 12 subwatersheds. It should be noted that there are no current 303(d) listings in HUC 001, HUC 005, HUC 006, HUC 007, and HUC 009; however, the sampling performed in 2008 suggests that several streams are impaired. Those streams will appear on the next 303(d) list and TMDLs for those streams are presented here.

There are ten NPDES facilities within the Crooked Creek subwatershed and the WLAs for the facilities were calculated based on their design flows and *E. coli* permit limits. There are five MS4 communities upstream of the Crooked Creek subwatershed outlet and the WLAs for the communities were calculated based on their area within the subwatershed and *E. coli* standards. There are three CSO communities with 26 outfalls upstream of this subwatersheds outlet. WLAs for CSO communities were calculated based on the maximum observed CSO flow at each outfall and *E. coli* standards. The individual WLAs are presented in Table 276. There are no CAFOs within this subwatershed, however WLAs of zero will apply to all CAFOs upstream of this subwatershed as described further in Section 7.3.

Table 118. Bloom Ditch Characteristics and TMDL Summary (HUC12-001)

Upstream Characteristics					
<i>Drainage Area</i>	24.32 square miles				
<i>Sampling Station</i>	29				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 86.45%; Developed Land:6.86%; Forest:4.08%; Other: 2.61%				
<i>Soils</i>	A: 58.96%; B: 21.97%; C: 18.50%; D: 0.58%; Unknown:0.00%				
<i>NPDES Facilities</i>	Wanatah Wastewater Treatment Plant (IN0056669)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	Taber Veal (3515)				
	Kresel (4898)				
TMDL Allocations (billion/day)					
	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	196.29	54.59	26.84	14.32	6.16
<i>WLA</i>	0.37	0.37	0.37	0.37	0.37
<i>MOS (10%)</i>	21.84	6.11	3.02	1.63	0.73
<i>TMDL = LA+WLA+MOS</i>	218.5	61.07	30.23	16.32	7.26

Table 119. Reeves Ditch Characteristics and TMDL Summary (HUC12-005)

Upstream Characteristics					
<i>Drainage Area</i>	53.19 square miles				
<i>Sampling Station</i>	4, 25				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 88.66%; Developed Land:5.18%; Forest:3.67%; Other: 2.48%				
<i>Soils</i>	A: 67.57%; B: 20.81%; C: 11.08%; D: 0.54%; Unknown:0.00%				
<i>NPDES Facilities</i>	Wanatah Wastewater Treatment Plant (IN0056669)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	Taber Veal (3515)				
	Bucher Hog Farm (1053)				
	Kresel (4898)				
TMDL Allocations (billion/day)					
	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	429.73	119.83	59.14	31.76	13.91
<i>WLA</i>	0.37	0.37	0.37	0.37	0.37
<i>MOS (10%)</i>	47.79	13.36	6.61	3.57	1.59
<i>TMDL = LA+WLA+MOS</i>	477.89	133.56	66.12	35.70	15.87

Table 120. Hannon Ditch-Crooked Creek Characteristics and TMDL Summary (HUC12-006)

Upstream Characteristics					
<i>Drainage Area</i>	77.32 square miles				
<i>Sampling Station</i>	27				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 69.77%; Developed Land:12.18%; Forest:8.42%; Other: 9.62%				
<i>Soils</i>	A: 28.24%; B: 60.98%; C: 9.61%; D: 0.98%; Unknown:0.20%				
<i>NPDES Facilities</i>	Westville WWTP (IN0024848)				
	Westville Correctional Center (IN0042978)				
	Washington Twp School WWTP (IN0057703)				
<i>MS4 Communities</i>	Porter County (INR040140): 0.58 square miles				
	Hillsborough County-Valparaiso (INR04073): 0.27 square miles				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	Good (2325)				
TMDL Allocations (billion/day)					
	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	612.95	169.34	81.11	41.32	15.37
<i>WLA</i>	12.27	5.39	5.39	5.39	5.39
<i>MOS (10%)</i>	69.47	19.41	9.61	5.19	2.31
<i>TMDL = LA+WLA+MOS</i>	694.69	194.14	96.11	51.9	23.07

Table 121. Sievers Creek-Cobb Ditch Characteristics and TMDL Summary (HUC12-007)

Upstream Characteristics					
<i>Drainage Area</i>	31.79 square miles				
<i>Sampling Station</i>	6				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 58.25%; Developed Land:6.70%; Forest:16.72%; Other: 18.33%				
<i>Soils</i>	A: 3.41%; B: 40.49%; C: 55.12%; D: 0.98%; Unknown:0.00%				
<i>NPDES Facilities</i>	Lake Eliza Conservancy Dist (IN0051446)				
	Boone Grove High School WWTP (IN0057029)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	None				
TMDL Allocations (billion/day)					
	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	256.56	71.34	35.07	18.71	8.04
<i>WLA</i>	0.5	0.5	0.5	0.5	0.5
<i>MOS (10%)</i>	28.56	7.98	3.95	2.13	0.94
<i>TMDL = LA+WLA+MOS</i>	285.62	79.82	39.52	21.34	9.48

Table 122. Cornell Ditch-Phillips Ditch Characteristics and TMDL Summary (HUC12-009)

Upstream Characteristics					
<i>Drainage Area</i>	19.64 square miles				
<i>Sampling Station</i>	8				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 78.94%; Developed Land:5.48%; Forest:6.92%; Other: 8.67%				
<i>Soils</i>	A: 3.73%; B: 37.31%; C: 58.21%; D: 0.00%; Unknown:0.75%				
<i>NPDES Facilities</i>	Boone Grove Elementary & Middle Schools (IN0045888)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	None				
TMDL Allocations (billion/day)					
	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	158.7	44.27	21.86	11.76	5.16
<i>WLA</i>	0.11	0.11	0.11	0.11	0.11
<i>MOS (10%)</i>	17.65	4.93	2.44	1.31	0.59
<i>TMDL = LA+WLA+MOS</i>	176.46	49.31	24.41	13.18	5.86

Table 123. Cobb Creek-Kankakee River Characteristics and TMDL Summary (HUC12-010)

Upstream Characteristics					
<i>Drainage Area</i>	1,507.83 square miles				
<i>Sampling Station</i>	2,16				
<i>Listed Segments</i>	INK019F_M1113, INK019F_M1104				
<i>Land Use</i>	Agriculture: 68.56%; Developed Land:8.68%; Forest:13.52%; Other: 9.237%				
<i>Soils</i>	A: 48.50%; B: 37.50%; C: 11.63%; D: 1.38%; Unknown:0.98%				
<i>NPDES Facilities</i>	All facilities upstream of HUC12-807				
	Wanatah Wastewater Treatment Plant (IN0056669)				
	Westville WWTP (IN0024848)				
	Westville Correctional Center (IN0042978)				
	Washington Twp School WWTP (IN0057703)				
	Lake Eliza Conservancy Dist (IN0051446)				
	Boone Grove High School WWTP (IN0057029)				
	Boone Grove Elementary & Middle Schools (IN0045888)				
	Hebron WWTP (IN0061450)				
	Hebron Municipal WWTP (IN0020061)				
<i>MS4 Communities</i>	Kouts Municipal WWTP (IN0023400)				
	La Porte County (INR040107): 14.93 square miles				
	South Bend (INR040114): 3.42 square miles				
	Plymouth (INR040064): 6.97 square miles				
	Porter County (INR040140): 2.96 square miles				
<i>CSO Communities</i>	Hillsborough County-Valparaiso (INR04073): 1.90 square miles				
	North Judson Municipal (IN0020877)-1 outfall				
	Plymouth Municipal STP (IN0020991-10 outfalls				
<i>CAFOs</i>	Nappanee Municipal STP (IN0021466)-Discharges Outside of The Kankakee/Iroquois Watershed				
<i>CFOs</i>	All facilities upstream of HUC12-807				
	All facilities upstream of HUC12-807				
	Bucher Hog Farm (1053)				
	Kresel (4898)				
	Taber Veal (3515)				
TMDL Allocations (billion/day)					
	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	11,830	3,316	1,595	819	313
<i>WLA</i>	362	92	92	92	92
<i>MOS (10%)</i>	1,355	378	187	101	45
<i>TMDL = LA+WLA+MOS</i>	13,547	3,786	1,874	1,012	450

7.1.2.4 Knight Ditch-Kankakee River Subwatershed (HUC10-111)

The Knight Ditch subwatershed has an area of approximately 109 square miles and includes the cities of DeMotte and Roselawn (Figure 66). About 70 percent of the land is used for agriculture (Table 126). There are five NPDES facilities (Figure 67) and three CAFOs (Figure 68) in the subwatershed. The

available *E. coli* data are summarized in Table 125 and indicate that reductions of 37 to 79 percent are needed to achieve a geomean of 125 #/100 mL.

Table 124. Station Locations in the Knight Ditch-Kankakee River Subwatershed

HUC 12	HUC 12 Name	Station #	Stream Name
101	Dehaan Ditch	ID# 20	Dehaan D
103	Brown Levee Ditch-Kankakee River	ID# 14	Kankakee R

Table 125. Summary of Pathogen Data in the Knight-Kankakee River Subwatershed

Station #	Period of Record	Total Number of Samples	Percent of Samples Exceeding <i>E. coli</i> WQS (#/100 mL)		Minimum (#/100 mL)	Geomean (#/100 mL)	Average (#/100 mL)	Maximum (#/100 mL)	Percent Reduction Based on Geomean (125/100mL)
			125	235					
20	6/3/2008 - 7/1/2008	5	100	100	249	602	700	1,300	79%
14	6/3/2008 - 7/1/2008	5	100	20	153	198	203	285	37%

Table 126. Land Use/Land Cover in the Knight Ditch-Kankakee River Subwatershed

Land Use/Land Cover	Subwatershed		
	Area		Percent
	Acres	Square Miles	
Agricultural Land	44670.94	69.80	63.96
Forested Land	11641.88	18.19	16.67
Developed Land	6360.245	9.94	9.11
Grassland and Shrubs	3079.712	4.81	4.41
Wetland	2920.255	4.56	4.18
Pasture/Hay	700.541	1.09	1.00
Open Water	464.5826	0.73	0.67
Total	69,838.15	109.12	100.00

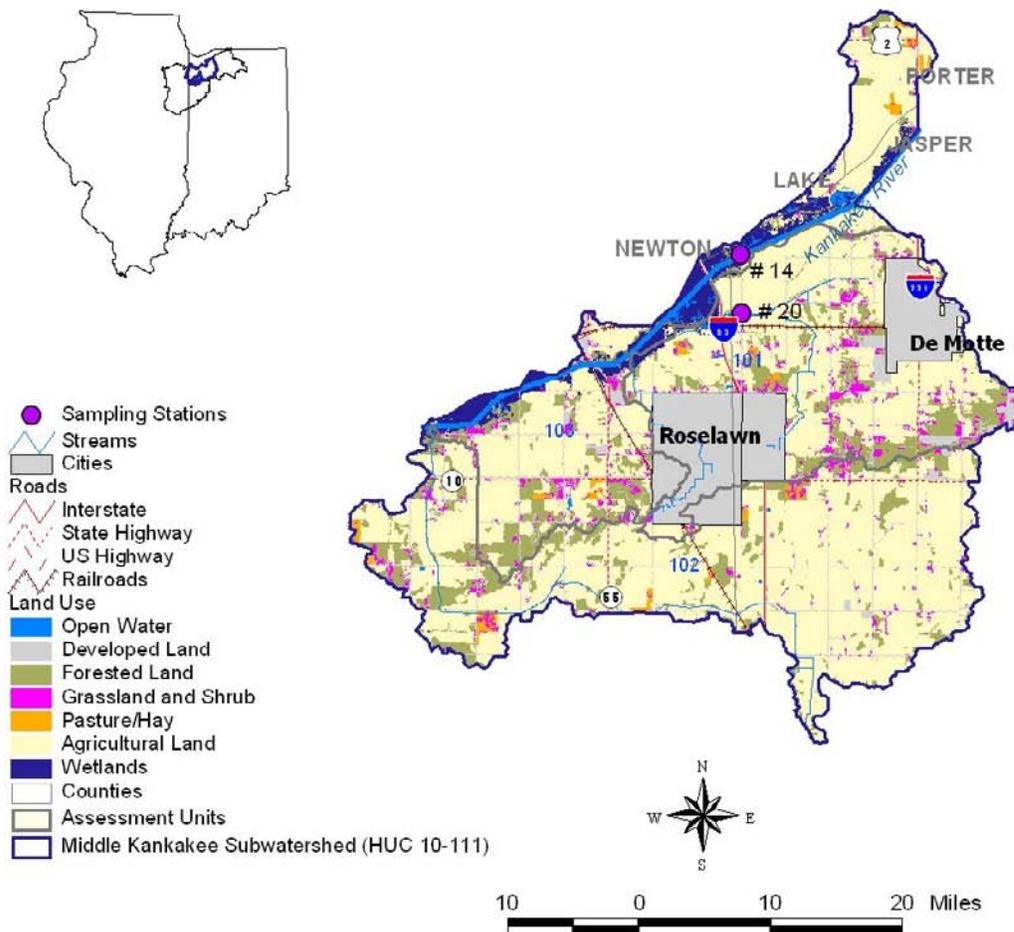


Figure 66. Location of Knight Ditch-Kankakee River (HUC10-111)

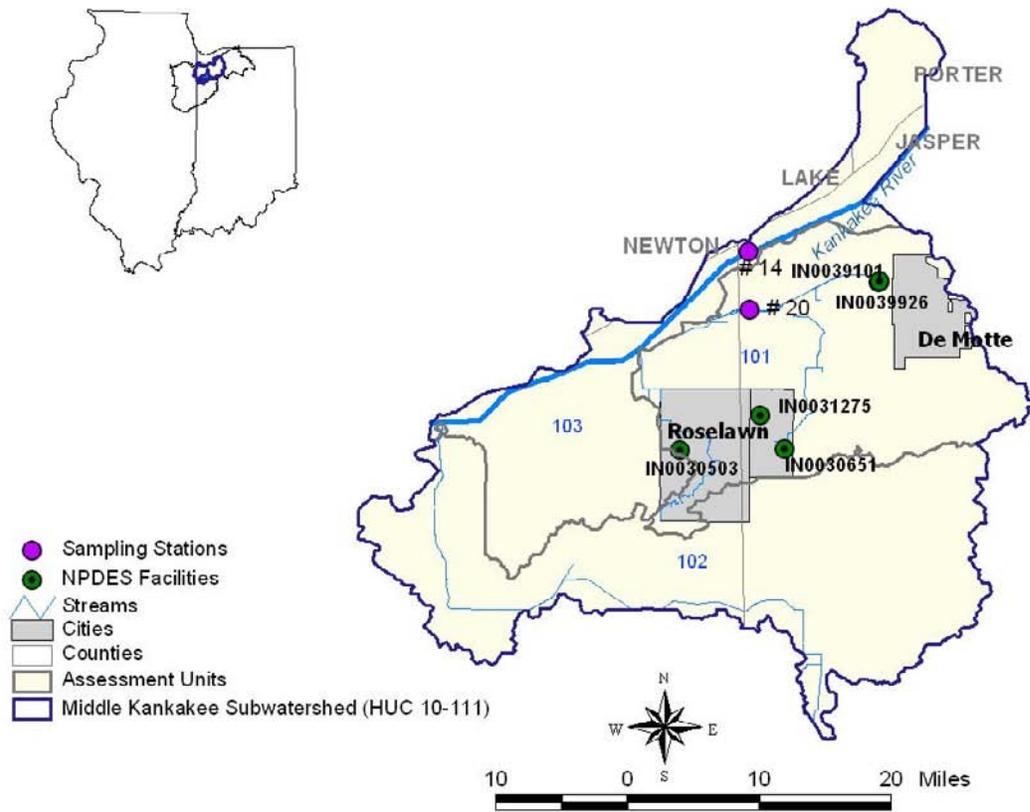


Figure 67. NPDES Facilities in the Knight Ditch-Kankakee River (HUC10-111)

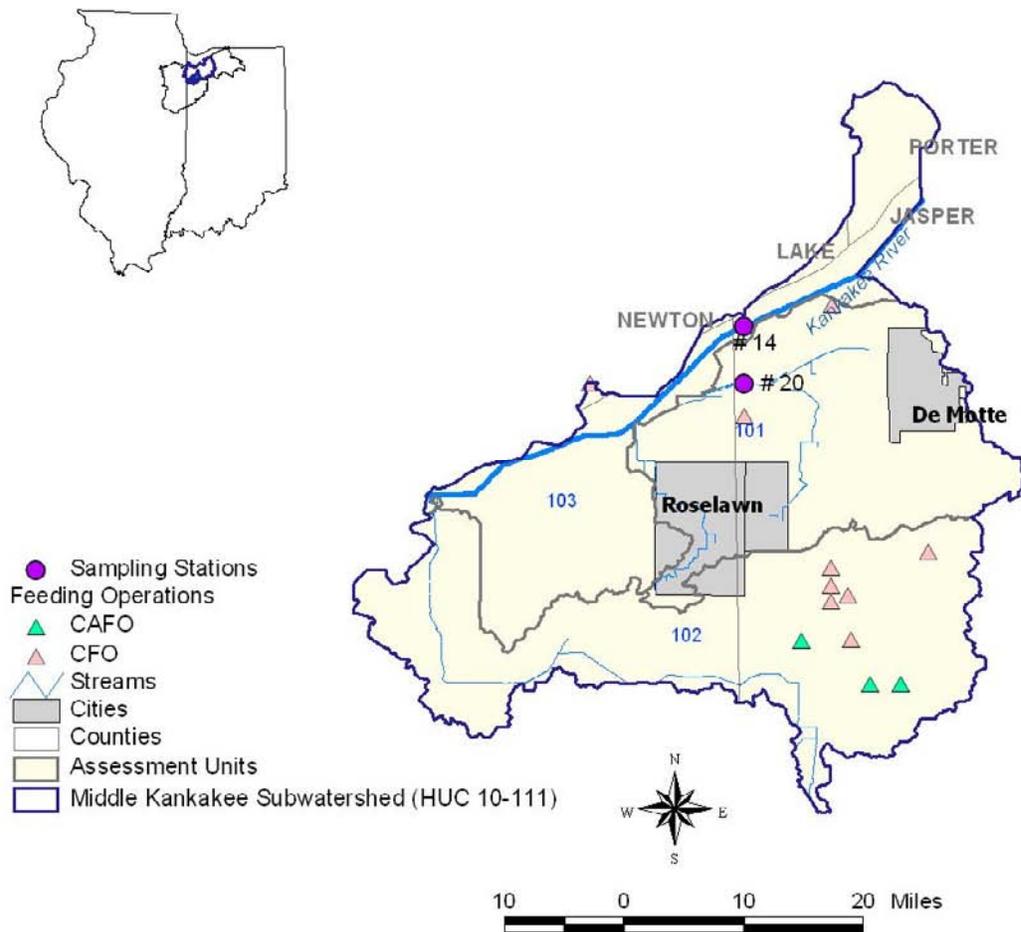


Figure 68. Feeding Operations in the Knight Ditch-Kankakee River (HUC10-111)

Table 127 and Table 128 summarize the subwatershed characteristics as well as the TMDL results for each of the HUC 12 subwatersheds. It should be noted that there are no current 303(d) listings in either HUC; however, the sampling performed in 2008 suggests that several streams are impaired. Those streams will appear on the next 303(d) list and TMDLs for those streams are presented here.

There are five NPDES facilities within the Knight Ditch subwatershed and the WLAs for the facilities were calculated based on their design flows and *E. coli* permit limits. There are five MS4 communities upstream of the Knight Ditch subwatershed outlet and the WLAs for the communities were calculated based on their area within the subwatershed and *E. coli* standards. There are three CSO communities with 26 outfalls upstream of this subwatersheds outlet. WLAs for CSO communities were calculated based on the maximum observed CSO flow at each outfall and *E. coli* standards. The individual WLAs are presented in Table 276. There are three CAFOs within this subwatershed and they receive a WLA of zero as described further in Section 7.3.

Table 127. Dehann Ditch Characteristics and TMDL Summary (HUC12-101)

<i>Upstream Characteristics</i>					
<i>Drainage Area</i>	36.46 square miles				
<i>Sampling Station</i>	20				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 57.40%; Developed Land:14.64%; Forest:19.43%; Other: 8.54%				
<i>Soils</i>	A: 80.65%; B: 14.92%; C: 3.23%; D: 0.40%; Unknown:0.81%				
<i>NPDES Facilities</i>	Lincoln Elementary School (IN0030503)				
	South Haven Sewer Works WWTP (IN0030651)				
	Kankakee Rest Area (IN0031275)				
	Water Services Co Of Indiana (IN0039101)				
	Demotte Municipal WWTP (IN0039926)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	Walstra (3993)				
	Devries Farms Inc (92)				
<i>TMDL Allocations (billion/day)*</i>					
	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	238.28	86.08	38.16	16.46	8.29
<i>WLA</i>	12.94	12.94	12.94	12.94	12.94
<i>MOS (10%)</i>	27.91	11.00	5.68	3.27	2.36
<i>TMDL = LA+WLA+MOS</i>	279.13	110.02	56.78	32.67	23.59

* Design flows from the NPDES facilities were added to the flow estimates to account for the possibility that the facilities could discharge at this level. Without these modifications the WLA would exceed the TMDL during low flows.

Table 128. Brown Levee Ditch-Kankakee River Characteristics and TMDL Summary (HUC12-103)

Upstream Characteristics					
<i>Drainage Area</i>	1,701.08 square miles				
<i>Sampling Station</i>	14				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 68.56%; Developed Land:8.68%; Forest:13.52%; Other: 9.237%				
<i>Soils</i>	A: 48.50%; B: 37.50%; C: 11.63%; D: 1.38%; Unknown:0.98%				
<i>NPDES Facilities</i>	All facilities upstream of HUC12-010 and HUC12-904				
	Lincoln Elementary School (IN0030503)				
	South Haven Sewer Works WWTP (IN0030651)				
	Kankakee Rest Area (IN0031275)				
	Water Services Co Of Indiana (IN0039101)				
	Demotte Municipal WWTP (IN0039926)				
<i>MS4 Communities</i>	La Porte County (INR040107): 14.93 square miles				
	South Bend (INR040114): 3.42 square miles				
	Plymouth (INR040064): 6.97 square miles				
	Porter County (INR040140): 2.96 square miles				
	Hillsborough County-Valparaiso (INR04073): 1.90 square miles				
<i>CSO Communities</i>	North Judson Municipal (IN0020877)-1 outfall				
	Plymouth Municipal STP (IN0020991-10 outfalls				
	Nappanee Municipal STP (IN0021466)-Discharges Outside of The Kankakee/Iroquois Watershed				
<i>CAFOs</i>	All facilities upstream of HUC12-010 and HUC12-904				
	Bos Dairy Site # 4 (ING806155)				
	Dekock Feedlot, Inc. (ING804410)				
	Dekock Feedlot Inc. (ING801782)				
<i>CFOs</i>	All facilities upstream of HUC12-010 and HUC12-904				
	Hamstrafarms (1063)				
	Vander Molen (3716)				
	Walstra (3993)				
	Hamstra Brothers (4344)				
	Jonkman (2466)				
	H & H Feedlots (4432)				
	Northern Trust Farm #180 (4692)				
	Devries Farms Inc (92)				
Mathis (2003)					
TMDL Allocations (billion/day)					
	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	10,848	3,972	1,736	724	342
<i>WLA</i>	330	105	105	105	105
<i>MOS (10%)</i>	1,242	453	205	92	50
<i>TMDL = LA+WLA+MOS</i>	12,420	4,530	2,046	921	497

7.1.2.5 Beaver Lake Ditch-Kankakee River Subwatershed (HUC 10-112)

The Beaver Lake Ditch has an area of approximately 99 square miles lies within Jasper Kankakee, Lake, and Newton counties and does not encompass any urban areas (Figure 69). As in all of the above discussed subwatersheds, agriculture is the dominant land use here as well (Table 131). There is only one NPDES facility and two CAFOs as shown in Figure 70 and Figure 71 respectively. None of the impaired segments lie within this subwatershed; however, sampling at the two HUC 12s (Table 129) has indicated impaired conditions (Table 130). The reductions needed to achieve a geomean of 125 #/100 mL range from 29 to 78 percent.

Table 129. Stations Located in the Beaver Lake Ditch-Kankakee River Subwatershed

HUC 12	HUC 12 Name	Station #	Stream Name
203	Lawler Ditch-Beaver Lake Ditch	ID# 40	Lawler D
		ID# 42	Beaver Lake
205	Beaver Lake Ditch-Kankakee River	ID# 36	Kankakee R
		ID# 38	Beaver Lake

Table 130. Summary of Pathogen Data in the Beaver Lake Ditch-Kankakee River Subwatershed

Station #	Period of Record	Total Number of Samples	Percent of Samples Exceeding <i>E. coli</i> WQS (#/100 mL)		Minimum (#/100 mL)	Geomean (#/100 mL)	Average (#/100 mL)	Maximum (#/100 mL)	Percent Reduction Based on Geomean (125/100mL)
			125	235					
40	6/3/2008 - 7/1/2008	5	80	40	96	204	232	411	39%
42	6/3/2008 - 7/1/2008	5	100	60	133	222	231	308	44%
36	6/3/2008 - 7/1/2008	5	80	40	112	175	184	249	29%
38	6/3/2008 - 7/1/2008	5	100	100	365	560	595	866	78%

Table 131. Land Use/Land Cover in the Beaver Lake Ditch-Kankakee River Subwatershed

Land Use/Land Cover	Subwatershed		
	Area		Percent
	Acres	Square Miles	
Agricultural Land	44,267.74	69.17	70.18
Forested Land	9,086.57	14.20	14.41
Developed Land	4,136.31	6.46	6.56
Grassland and Shrubs	2,393.18	3.74	3.79
Wetland	1,318.13	2.06	2.09
Pasture/Hay	1,150.89	1.80	1.82
Open Water	723.45	1.13	1.15
Total	63,076.26	98.56	100.00

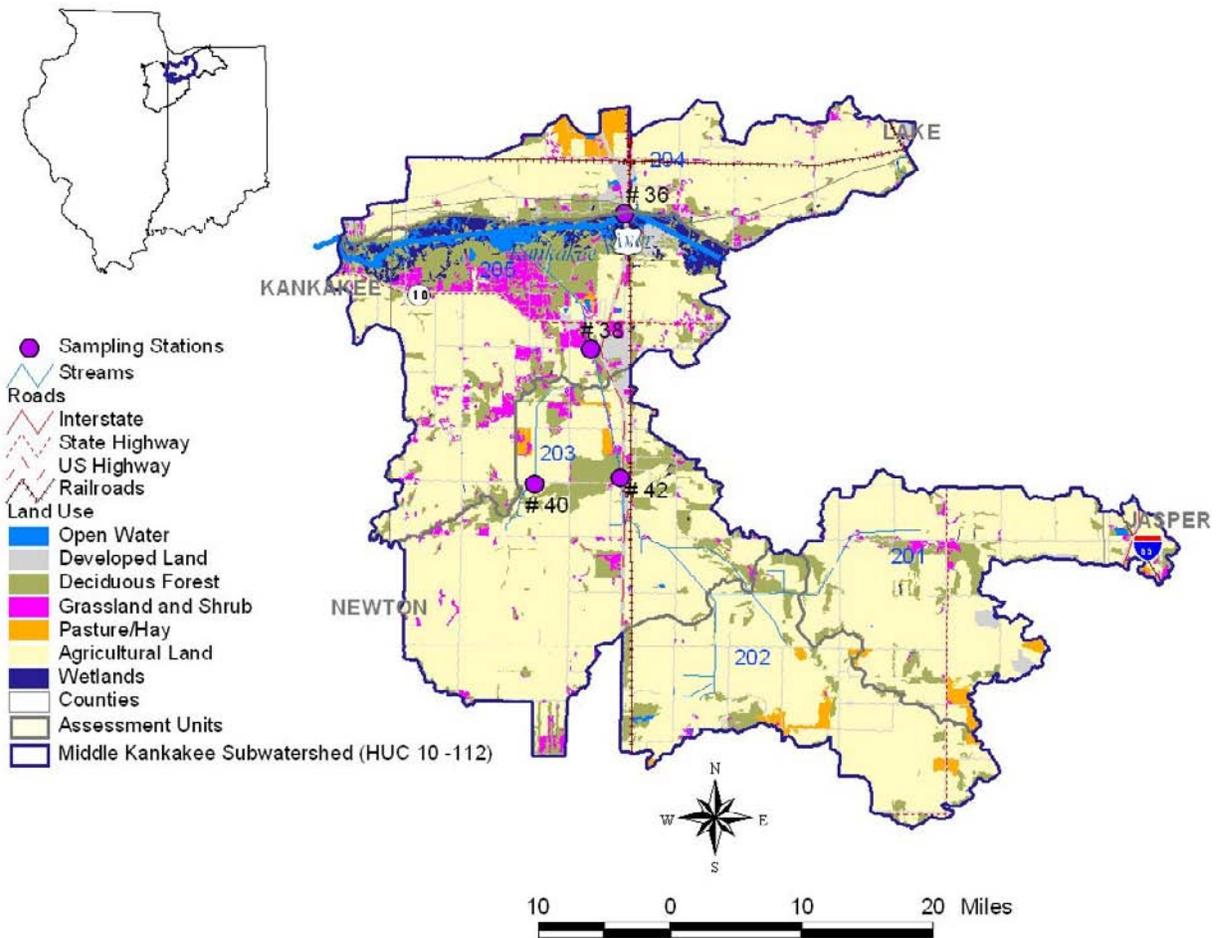


Figure 69. Location of Beaver Lake Ditch-Kankakee River Subwatershed (HUC10-112)

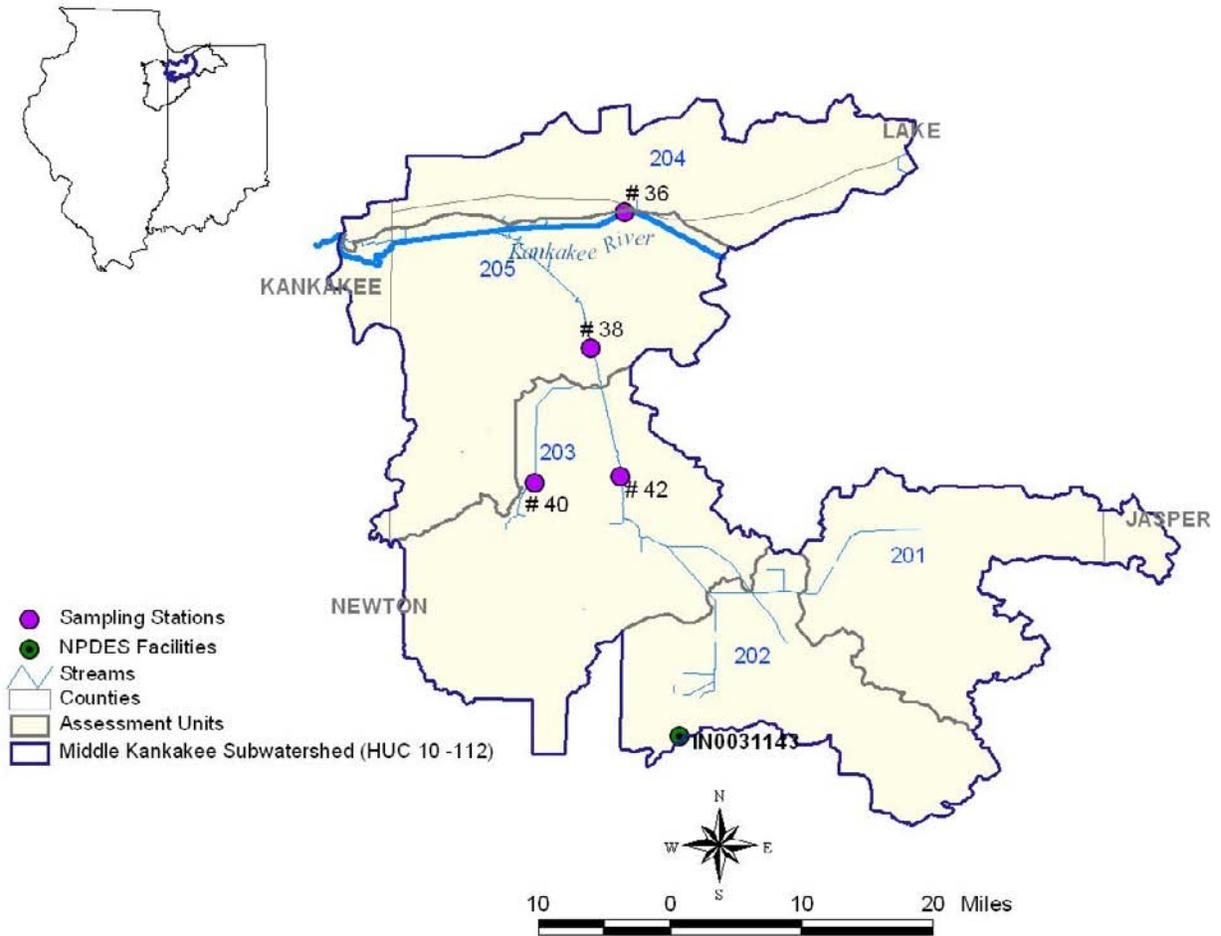


Figure 70. NPDES Facilities in the Beaver Lake Ditch-Kankakee River Subwatershed (HUC10-112)

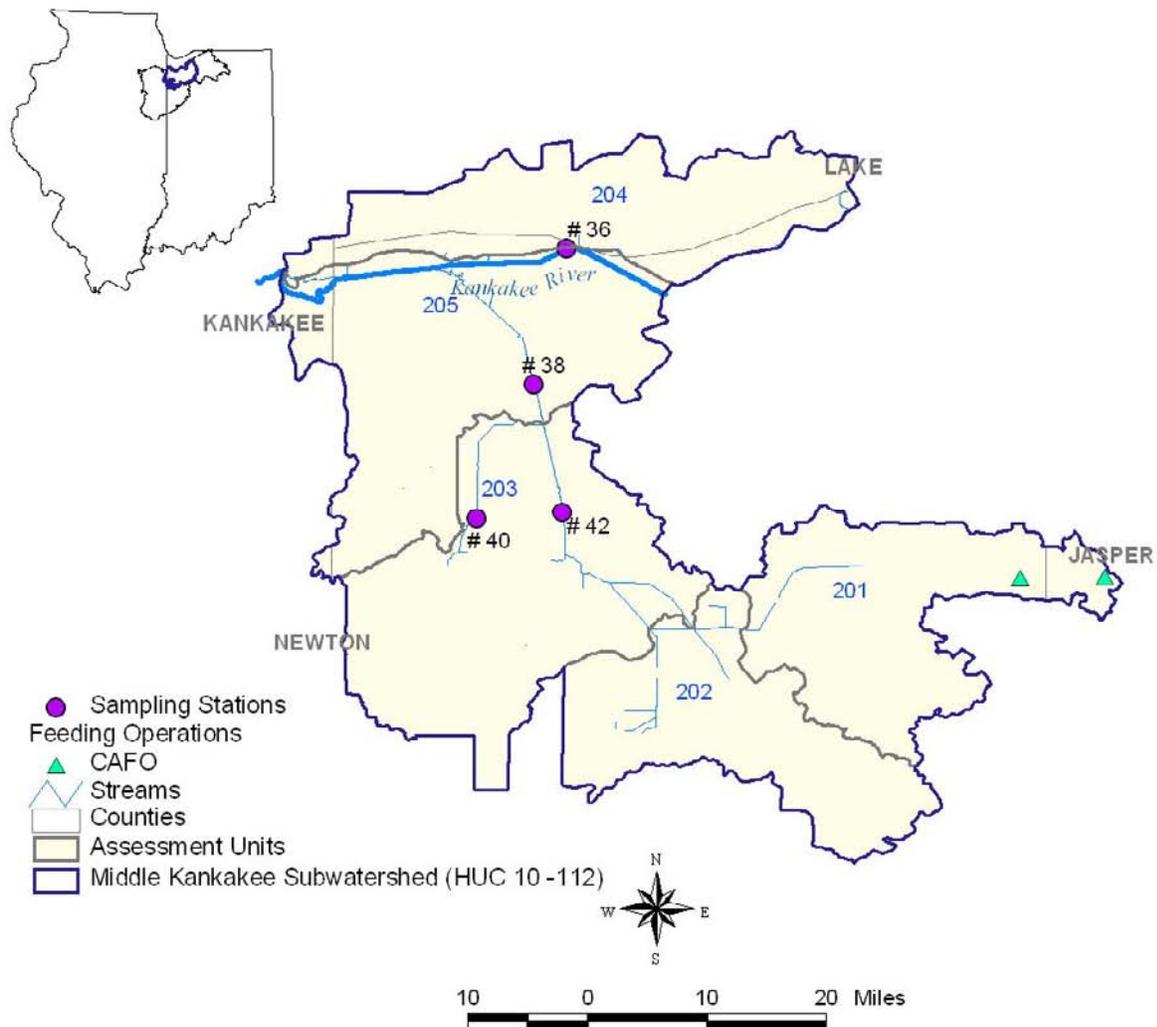


Figure 71. Feeding Operations in the Beaver Lake Ditch-Kankakee River Subwatershed (HUC10-112)

Table 132 and Table 133 summarize the subwatershed characteristics as well as the TMDL results for each of the HUC 12 subwatersheds. It should be noted that there are no current 303(d) listings in these HUCs; however, the sampling performed in 2008 suggests that several streams are impaired. Those streams will appear on the next 303(d) list and TMDLs for those streams are presented here.

There is one NPDES facility within the Beaver Lake Ditch subwatershed and the WLAs for the facilities were calculated based on their design flows and *E. coli* permit limits. There are five MS4 communities upstream of the Beaver Lake Ditch subwatershed outlet and the WLAs for the communities were calculated based on their area within the subwatershed and *E. coli* standards. There are three CSO communities with 26 outfalls upstream of this subwatersheds outlet. WLAs for CSO communities were calculated based on the maximum observed CSO flow at each outfall and *E. coli* standards. The

individual WLAs are presented in Table 276. There are two CAFOs within this subwatershed and they receive a WLA of zero as described further in Section 7.3.

Table 132. Lawler Ditch-Beaver Lake Ditch Characteristics and TMDL Summary (HUC12-203)

<i>Upstream Characteristics</i>					
<i>Drainage Area</i>	57.86 square miles				
<i>Sampling Station</i>	40,42				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 78.62%; Developed Land:5.38%; Forest:11.90%; Other: 4.90%				
<i>Soils</i>	A: 79.22%; B: 16.36%; C: 4.42%; D: 0.00%; Unknown:0.00%				
<i>NPDES Facilities</i>	North Newton Jr Sr High School (IN0031143)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	Fair Oaks Dairy Farm North (ING806015)				
	Herrema Dairy (ING806154)				
<i>CFOs</i>	None				
<i>TMDL Allocations (billion/day)</i>					
	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	380.06	138.52	62.48	28.04	15.07
<i>WLA</i>	0.14	0.14	0.14	0.14	0.14
<i>MOS (10%)</i>	42.24	15.41	6.96	3.13	1.69
<i>TMDL = LA+WLA+MOS</i>	422.44	154.07	69.58	31.31	16.90

Table 133. Beaver Lake Ditch-Kankakee River Characteristics and TMDL Summary (HUC12-205)

Upstream Characteristics					
<i>Drainage Area</i>	1,799.67 square miles				
<i>Sampling Station</i>	36, 38				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 68.56%; Developed Land:8.52%; Forest:13.80%; Other: 9.12%				
<i>Soils</i>	A: 51.10%; B: 35.96%; C: 10.62%; D: 1.43%; Unknown:0.90%				
<i>NPDES Facilities</i>	All facilities upstream of HUC12-103 ^a				
	North Newton Jr Sr High School (IN0031143)				
<i>MS4 Communities</i>	La Porte County (INR040107): 14.93 square miles				
	South Bend (INR040114): 3.42 square miles				
	Plymouth (INR040064): 6.97 square miles				
	Porter County (INR040140): 2.96 square miles				
	Hillsborough County-Valparaiso (INR04073): 1.90 square miles				
<i>CSO Communities</i>	North Judson Municipal (IN0020877)-1 outfall				
	Plymouth Municipal STP (IN0020991-10 outfalls				
	Nappanee Municipal STP (IN0021466)-Discharges Outside of The Kankakee/Iroquois Watershed				
<i>CAFOs</i>	All facilities upstream of HUC12-103 ^a				
	Fair Oaks Dairy Farm North (ING806015)				
	Herrema Dairy (ING806154)				
<i>CFOs</i>	All facilities upstream of HUC12-103 ^a				
TMDL Allocations (billion/day)					
	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	11,495	4,207	1,842	771	367
<i>WLA</i>	330	106	106	106	106
<i>MOS (10%)</i>	1,314	479	216	97	53
<i>TMDL = LA+WLA+MOS</i>	13,139	4,792	2,164	974	526

^a Refers to Middle Kankakee HUC12

7.1.2.6 Singleton Ditch Subwatershed (HUC10-113)

The Singleton Ditch subwatershed has an area of nearly 254 square miles. Lake Delecarlia and Lowell are the two cities that lie completely within the subwatershed (Figure 72). Agriculture is the dominant land use in this subwatershed (Table 137). NPDES facilities and feeding operations in this subwatershed are displayed in Figure 73 and Figure 74, respectively. As listed in Table 134, one 303(d) listed segment is reported in this subwatershed. This segment was not sampled in 2008. *E. coli* data at seven locations (Table 135) suggested impaired conditions (Table 136). Station # 22 samples did not exceed the geomean standard, however 20 percent of samples did exceed the not-to-exceed standard. The required reduction based on the geomean of five samples ranges from 0 to 80 percent in this subwatershed.

Table 134. 303 (d) Streams in the Singleton Ditch Subwatershed

HUC 12	HUC 12 Name	Segment ID	Waterbody	Stream Length (miles)	Parameter
305	Bryant Ditch-Singleton Ditch	INK01D3_00	Singleton Ditch-Bryant Ditch	39.69	<i>E. coli</i>

Table 135. Station Locations in the Singleton Ditch Subwatershed

HUC 12	HU C 12 Name	Station #	Stream Name
302	Fisher Pond- Stony Run	ID# 18	Stony Run D
304	Greisel Ditch	ID# 24	Griesel D
306	Cedar Creek	ID# 26	Cedar Cr
		ID# 28	Cedar Cr
307	Brown Ditch	ID# 22	Brown D
308	Bull Run-West Creek	ID# 30	West Cr
310	West Creek	ID# 32	West Cr
311	Bruce Ditch-Singleton Ditch	ID# 34	Singleton D

Table 136. Summary of Pathogen Data in the Singleton Ditch Subwatershed

Station #	Period of Record	Total Number of Samples	Percent of Samples Exceeding <i>E. coli</i> WQS (#/100 mL)		Minimum (#/100 mL)	Geomean (#/100 mL)	Average (#/100 mL)	Maximum (#/100 mL)	Percent Reduction Based on Geomean (125/100mL)
			125	235					
18	6/3/2008 - 7/1/2008	5	100	100	517	635	641	770	80%
24	6/3/2008 - 7/1/2008	5	100	100	282	429	489	1,046	71%
26	6/3/2008 - 7/1/2008	5	100	100	378	485	500	687	74%
28	6/3/2008 - 7/1/2008	5	100	80	192	426	575	1,553	71%
22	6/3/2008 - 7/1/2008	5	60	20	42	125	152	291	0%
30	6/3/2008 - 7/1/2008	5	100	100	248	509	589	1,120	75%
32	6/3/2008 - 7/1/2008	5	100	100	245	561	740	1,733	78%
34	6/3/2008 - 7/1/2008	5	100	100	291	379	388	517	67%

Table 137. Land Use/Land Cover in the Singleton Ditch Subwatershed

Land Use/Land Cover	Subwatershed		
	Area		Percent
	Acres	Square Miles	
Agricultural Land	111,924.88	174.88	68.87
Forested Land	14,865.92	23.23	9.15
Developed Land	16,737.59	26.15	10.30
Grassland and Shrubs	9,321.87	14.57	5.74
Pasture/Hay	7,149.52	11.17	4.40
Open Water	2,090.28	3.27	1.29
Wetland	429.67	0.67	0.26
Total	162,519.72	253.94	100.00

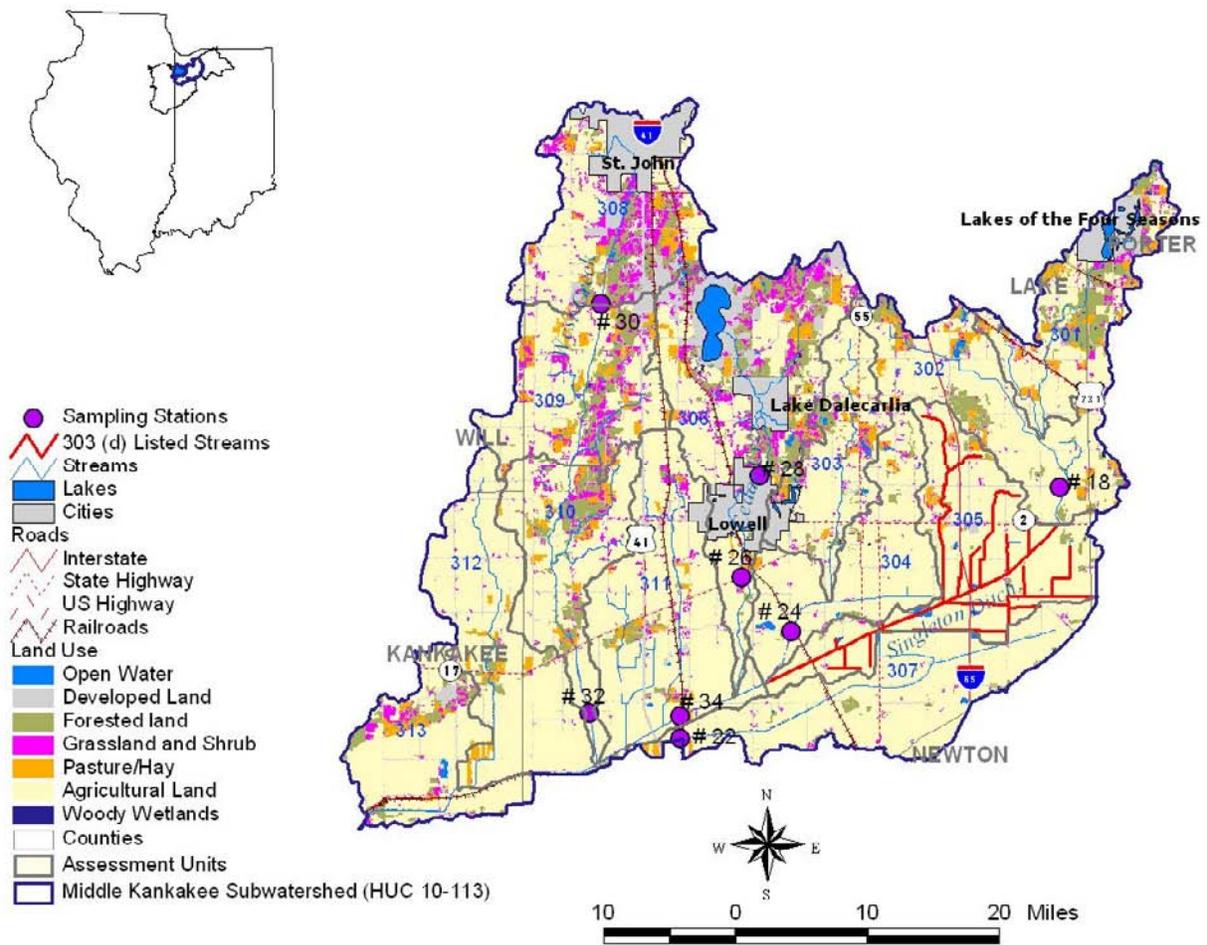


Figure 72. Location of Singleton Ditch Subwatershed (HUC10-113)

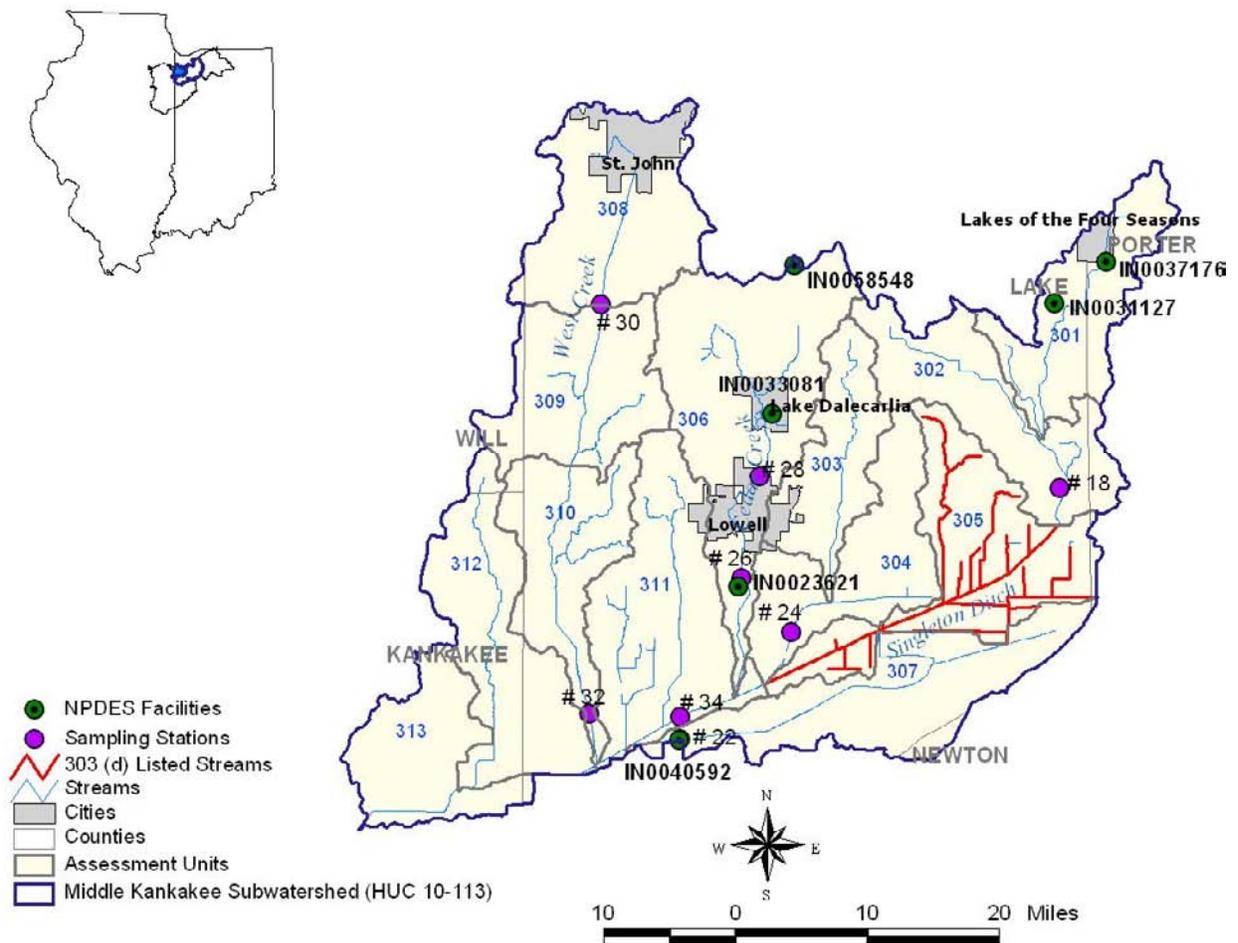


Figure 73. NPDES Facilities in the Singleton Ditch Subwatershed (HUC10-113)

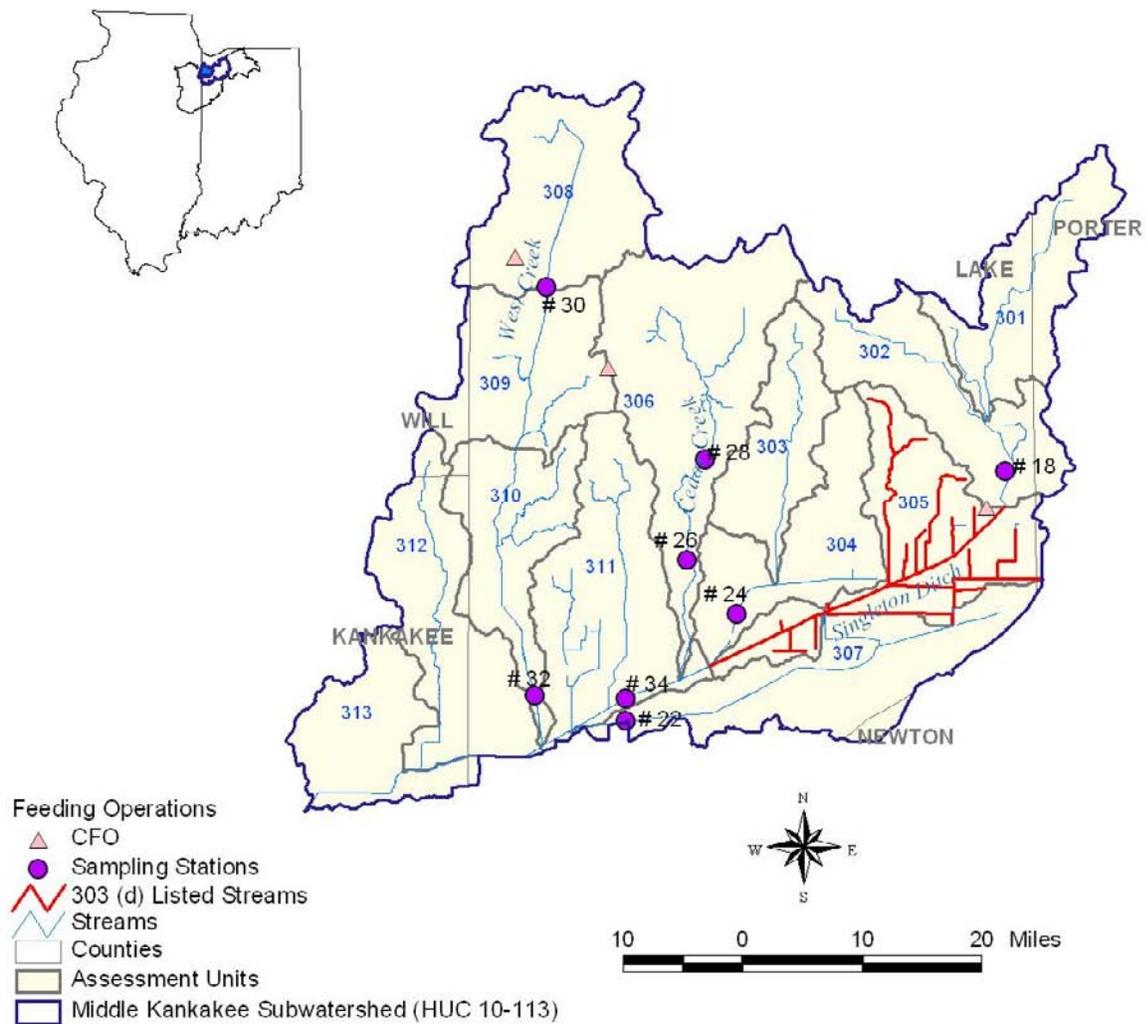


Figure 74. Feeding Operations in the Singleton Ditch Subwatershed (HUC10-113)

Table 138 through Table 145 summarize the subwatershed characteristics as well as the TMDL results for each of the HUC 12 subwatersheds. It should be noted that there are no current 303(d) listings in HUC 407; however, the sampling performed in 2008 suggests that several streams are impaired. Those streams will appear on the next 303(d) list and TMDLs for those streams are presented here.

There are six NPDES facilities within the Mill Creek subwatershed and the WLAs for the facilities were calculated based on their design flows and *E. coli* permit limits. There are six MS4 communities upstream of the Beaver Lake Ditch subwatershed outlet and the WLAs for the communities were calculated based on their area within the subwatershed and *E. coli* standards. There is one CSO community with 1 outfall upstream of this subwatershed's outlet. WLAs for CSO communities were calculated based on the maximum observed CSO flow at each outfall and *E. coli* standards. The individual WLAs are presented in Table 276. There are no CAFOs within this subwatershed.

Table 138. Fish Pond-Stony Run Characteristics and TMDL Summary (HUC12-302)

Upstream Characteristics					
<i>Drainage Area</i>	34.07 square miles				
<i>Sampling Station</i>	18				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 61.59%; Developed Land:10.76%; Forest:14.29%; Other: 13.36%				
<i>Soils</i>	A: 2.68%; B: 11.61%; C: 82.59%; D: 0.89%; Unknown:2.23%				
<i>NPDES Facilities</i>	Winfield Elementary School (IN0031127)				
	Twin Lakes Utilities (IN0037176)				
<i>MS4 Communities</i>	Lakes of the Four Seasons POA (INR040007): 1.09 square miles				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	None				
TMDL Allocations (billion/day)					
	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	261.43	71.75	32.87	15.33	3.9
<i>WLA</i>	14.07	5.25	5.25	5.25	5.25
<i>MOS (10%)</i>	30.6	8.55	4.23	2.29	1.01
<i>TMDL = LA+WLA+MOS</i>	306.1	85.55	42.35	22.87	10.16

Table 139. Greisel Ditch Characteristics and TMDL Summary (HUC12-304)

Upstream Characteristics					
<i>Drainage Area</i>	29.30 square miles				
<i>Sampling Station</i>	24				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 80.37%; Developed Land:7.03%; Forest:5.43%; Other: 7.17%				
<i>Soils</i>	A: 9.47%; B: 29.47%; C: 57.89%; D: 2.11%; Unknown:1.05%				
<i>NPDES Facilities</i>	None				
<i>MS4 Communities</i>	Town of Lowell (INR040046): 0.91 square miles				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	None				
TMDL Allocations (billion/day)					
	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	229.57	66.21	32.78	17.70	7.87
<i>WLA</i>	7.36	0.00	0.00	0.00	0.00
<i>MOS (10%)</i>	26.32	7.36	3.64	1.97	0.87
<i>TMDL = LA+WLA+MOS</i>	263.25	73.57	36.42	19.67	8.74

Table 140. Bryant Ditch-Singleton Ditch Characteristics and TMDL Summary (HUC12-305)

Upstream Characteristics					
<i>Drainage Area</i>	57.57 square miles				
<i>Sampling Station</i>	None				
<i>Listed Segments</i>	INK01D3_00				
<i>Land Use</i>	Agriculture: 71.87%; Developed Land:9.01%; Forest:9.59%; Other: 9.54%				
<i>Soils</i>	A: 16.45%; B: 22.72%; C: 58.49%; D: 0.52%; Unknown:1.83%				
<i>NPDES Facilities</i>	Winfield Elementary School (IN0031127)				
	Twin Lakes Utilities (IN0037176)				
<i>MS4 Communities</i>	Lakes of the Four Seasons POA (INR040007): 1.09 square miles				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	Bryantfarm (1467)				
TMDL Allocations (billion/day)					
	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	451.45	124.85	59.15	29.53	10.2
<i>WLA</i>	14.07	5.25	5.25	5.25	5.25
<i>MOS (10%)</i>	51.72	14.45	7.16	3.86	1.72
<i>TMDL = LA+WLA+MOS</i>	517.24	144.55	71.56	38.64	17.17

Table 141. Cedar Creek Characteristics and TMDL Summary (HUC12-306)

<i>Upstream Characteristics</i>					
<i>Drainage Area</i>	31.29 square miles				
<i>Sampling Station</i>	26,28				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 37.56%; Developed Land:21.75%; Forest:17.79%; Other: 22.90%				
<i>Soils</i>	A: 3.88%; B: 9.22%; C: 80.58%; D: 0.49%; Unknown:5.83%				
<i>NPDES Facilities</i>	Lowell WWTP (IN0023621)				
	Dalecarlia Utilities Lake Dale (IN0033081)				
	Buckhill Estates WWTP (IN0058548)				
<i>MS4 Communities</i>	Town of Lowell (INR040046): 2.82 square miles				
	City of Crown Point (INR040054): 0.35 square miles				
	Town of Cedar Lake (INR040075): 6.35 square miles				
	Lake County (INR040124): 9.38 square miles				
<i>CSO Communities</i>	Lowell Municipal STP (IN0023621)-1 outfall				
<i>CAFOs</i>	None				
<i>CFOs</i>	Huseman Farm Inc.(810)				
<i>TMDL Allocations (billion/day)*</i>					
	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	450.73	95.74	34.83	17.68	4.94
<i>WLA</i>	496.84	19.23	19.23	19.23	19.23
<i>MOS (10%)</i>	105.29	12.77	6	4.09	2.68
<i>TMDL = LA+WLA+MOS</i>	1052.86	127.74	60.06	41	26.85

* Design flows from the NPDES facilities and Lowell Municipal STP CSO were added to the originally estimated flows. Without these modifications the WLA would exceed the TMDL during high and low flows.

Table 142. Brown Ditch Characteristics and TMDL Summary (HUC12-307)

Upstream Characteristics					
<i>Drainage Area</i>	21.35 square miles				
<i>Sampling Station</i>	22				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 89.24%; Developed Land:4.24%; Forest:2.99%; Other: 3.53%				
<i>Soils</i>	A: 63.89%; B: 36.11%; C: 0.00%; D: 0.00%; Unknown:0.00%				
<i>NPDES Facilities</i>	Schneider WWTP (IN0040592)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	None				
TMDL Allocations (billion/day)					
	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	172.33	47.94	23.58	12.59	5.42
<i>WLA</i>	0.31	0.31	0.31	0.31	0.31
<i>MOS (10%)</i>	19.18	5.36	2.65	1.43	0.64
<i>TMDL = LA+WLA+MOS</i>	191.82	53.61	26.54	14.33	6.37

Table 143. Bull Run -West Creek Characteristics and TMDL Summary (HUC12-308)

Upstream Characteristics					
<i>Drainage Area</i>	21.53 square miles				
<i>Sampling Station</i>	30				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 39.24%; Developed Land:25.16%; Forest:12.95%; Other: 22.65%				
<i>Soils</i>	A: 4.20%; B: 11.19%; C: 81.12%; D: 2.10%; Unknown:1.40%				
<i>NPDES Facilities</i>	None				
<i>MS4 Communities</i>	Town of Cedar Lake (INR040075): 0.96 square miles				
	Town of St. John (INR040047): 4.29 square miles				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	Kleine (661)				
TMDL Allocations (billion/day)					
	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	131.65	48.65	24.09	13.01	5.78
<i>WLA</i>	42.45	0	0	0	0
<i>MOS (10%)</i>	19.34	5.41	2.67	1.44	0.64
<i>TMDL = LA+WLA+MOS</i>	193.44	54.06	26.76	14.45	6.42

Table 144. West Creek Characteristics and TMDL Summary (HUC12-310)

Upstream Characteristics					
<i>Drainage Area</i>	55.57 square miles				
<i>Sampling Station</i>	32				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 54.49%; Developed Land:13.45%; Forest:13.06%; Other: 19%				
<i>Soils</i>	A: 4.85%; B: 15.09%; C: 77.36%; D: 2.16%; Unknown:0.54%				
<i>NPDES Facilities</i>	None				
<i>MS4 Communities</i>	Town of Cedar Lake (INR040075): 1.35 square miles				
	Town of St. John (INR040047): 4.29 square miles				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	Kleine (661)				
TMDL Allocations (billion/day)					
	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	403.74	125.58	62.17	33.57	14.92
<i>WLA</i>	45.61	0.00	0.00	0.00	0.00
<i>MOS (10%)</i>	49.92	13.95	6.90	3.73	1.66
<i>TMDL = LA+WLA+MOS</i>	499.27	139.53	69.07	37.30	16.58

Table 145. Bruce Ditch-Singleton Ditch Characteristics and TMDL Summary (HUC12-311)

Upstream Characteristics					
<i>Drainage Area</i>	219.77 square miles				
<i>Sampling Station</i>	34				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 66.57%; Developed Land:11.16%; Forest:9.73%; Other: 12.54%				
<i>Soils</i>	A: 14.41%; B: 23.47%; C: 59.44%; D: 1.03%; Unknown:1.65%				
<i>NPDES Facilities</i>	Winfield Elementary School (IN0031127)				
	Dalecarlia Utilities Lake Dale (IN0033081)				
	Twin Lakes Utilities (IN0037176)				
	Schneider WWTP (IN0040592)				
	Buckhill Estates WWTP (IN0058548)				
	Lowell WWTP (IN0023621)				
<i>MS4 Communities</i>	Town of Lowell (INR040046): 4.16 square miles				
	City of Crown Point (INR040054): 0.35 square miles				
	Town of Cedar Lake (INR040075): 7.70 square miles				
	Lake County (INR040124): 9.38 square miles				
	Lakes of the Four Seasons POA (INR040007): 1.09 square miles				
	Town of St. John (INR040047): 4.29 square miles				
<i>CSO Communities</i>	Lowell Municipal STP (IN0023621)-1 outfall				
<i>CAFOs</i>	None				
<i>CFOs</i>	Bryantfarm (1467)				
	Huseman Farm Inc. (810)				
TMDL Allocations (billion/day)					
	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	1513.98	471.85	221.08	107.98	34.22
<i>WLA</i>	263.11	24.79	24.79	24.79	24.79
<i>MOS (10%)</i>	197.45	55.18	27.31	14.75	6.55
<i>TMDL = LA+WLA+MOS</i>	1974.54	551.82	273.18	147.52	65.56

7.1.3 Yellow River Subwatershed

Within the Yellow River major subwatershed there are three HUC 10 watersheds and 23 HUC 12 subwatersheds as shown in Table 146. The following sections provide a brief description of each HUC 10 subwatershed and the TMDL allocations.

Table 146. Hydrologic Unit Code (HUC 10 and 12) in the Yellow River Subwatershed

HUC 10	HUC 10 Name	HUC 12	HUC 12 Name	Area (sq. miles)
103	Headwaters Yellow River	301	Lateral Ditch No 5	16.81
		302	Kline Rouch Ditch-Yellow River	37.27
		303	Amery Ditch	27.02
		304	Headwaters Stock Ditch	22.71
		305	West Bunch Branch-Stock Ditch	26.14
		306	Fleugel Ditch-Dausman Ditch	17.87
		307	Lemler Ditch-Dausman Ditch	27.03
		308	Dausman Ditch	25.99
		309	Lake of the Woods-Yellow river	34.03
		310	Stone Ditch-Yellow River	22.24
		311	Elmer Seltenright Ditch-Yellow River	18.40
		312	Milner Seltenright Ditch-Yellow River	17.26
105	Yellow River	501	Town of Argos-Wolf Creek	33.97
		502	Dixon Lake-Yellow River	26.18
		503	Clifton Ditch-Yellow River	18.84
		504	Eagle Creek	37.96
		505	Bickle Ditch-Yellow River	21.27
		506	Cavanaugh Ditch-Yellow River	7.66
106	Kline Arm	601	Hook Run-Bogus Run	26.71
		602	Cedar Lake Ditch-Craigmile Ditch	19.90
		603	Craigmile Ditch-Kline Arm	33.12
		604	Pine Creek-Bogus Run	20.37

7.1.3.1 Headwaters Yellow River Subwatershed (HUC10-103)

The Headwaters Yellow River HUC 10 subwatershed has a drainage area of approximately 293 square miles and lies in St. Joseph, Elkhart, Marshall and Kosciusko counties (Figure 75). Cities within the subwatershed include Plymouth, Bremen and Nappanee. Agriculture is the dominant land use and constitutes about 76 percent of the subwatershed area (Table 150). NPDES facilities and CAFOs located in this subwatershed are shown in Figure 76 and Figure 77, respectively. Six waterbody segments are impaired for *E. coli* in this subwatershed as shown in Table 147 and the sampling stations in this subwatershed are listed in Table 148. A summary of the *E. coli* data is shown in Table 149. All samples in this subwatershed exceeded the maximum 235 #/100 mL standard. The required reduction of pathogen concentrations based on the geomean standard of 5 samples ranges from 85 to 93 percent.

Table 147. 303 (d) Listed Streams in the Headwaters Yellow River Subwatershed

HUC 12	HU C12 Name	Segment ID	Waterbody	Stream Length (miles)	Parameter
302	Kline Rouch Ditch-Yellow River	INK0153_T1016	Unnamed Ditch	0.76	<i>E. coli</i>
303	Amery Ditch	INK0154_00	Armey Ditch - Headwaters	17.41	<i>E. coli</i>
		INK0155_00	Yellow River - Armey Ditch - Albert Zeiger Ditch	9.57	<i>E. coli</i>
309	Lake of the Woods-Yellow River	INK0158_00	Yellow River - Riverside Church	14.73	<i>E. coli</i>
305	West Bunch Branch-Stock Ditch	INK0157_00	Stock Ditch - Bunch Branches	14.4	<i>E. coli</i>
312	Milner Seldenright Ditch-Yellow River	INK015F_00	Yellow River - Milner Seldenright Ditch	17.14	<i>E. coli</i>

Table 148. Station Locations in the Headwaters Yellow River Subwatershed

HUC 12	HU C 12 Name	Station #	Stream Name
311	Elmer Seldenright Ditch-Yellow River	77	Elmer Seldenright Ditch
312	Milner Seldenright Ditch-Yellow River	79	Yellow River
309	Lake of the Woods-Yellow river	81	Yellow River
307	Lemler Ditch-Dausman Ditch	83	Dausman D
303	Amery Ditch	85	Armey D
305	West Bunch Branch-Stock Ditch	87	Stock D
309	Lake of the Woods-Yellow river	89	Yellow River

Table 149. Summary of Pathogen Data in the Yellow River Subwatershed

Station #	Period of Record	Total Number of Samples	Percent of Samples Exceeding <i>E. coli</i> WQS (#/100 mL)		Minimum (#/100 mL)	Geomean (#/100 mL)	Average (#/100 mL)	Maximum (#/100 mL)	Percent Reduction Based on Geomean (125/100mL)
			125	235					
85	6/3/2008 - 7/1/2008	5	100	100	770	1,112	1,164	1,733	89%
87	6/3/2008 - 7/1/2008	5	100	100	517	983	1,173	2,419	87%
83	6/3/2008 - 7/1/2008	5	100	100	1,120	1,676	1,762	2,420	93%
81	6/3/2008 - 7/1/2008	5	100	100	461	943	1,205	2,419	87%
89	6/3/2008 - 7/1/2008	5	100	100	1,046	1,347	1,418	2,419	91%
77	6/3/2008 - 7/1/2008	5	100	100	579	1,225	1,384	2,419	90%
79	6/3/2008 - 7/1/2008	5	100	100	461	853	1,050	2,419	85%

Table 150. Land Use/Land Cover in the Headwaters Yellow River Subwatershed

Land Use/Land Cover	Subwatershed		
	Area		Percent
	Acres	Square Miles	
Agricultural Land	142,914	223	76.38
Developed Land	14,462	23	7.73
Forested Land	13,808	22	7.38
Pasture/Hay	10,112	16	5.4
Wetland	4,235	7	2.26
Grassland and Shrubs	863	1	0.46
Open Water	707	1	0.38
Total	187,101	292	100

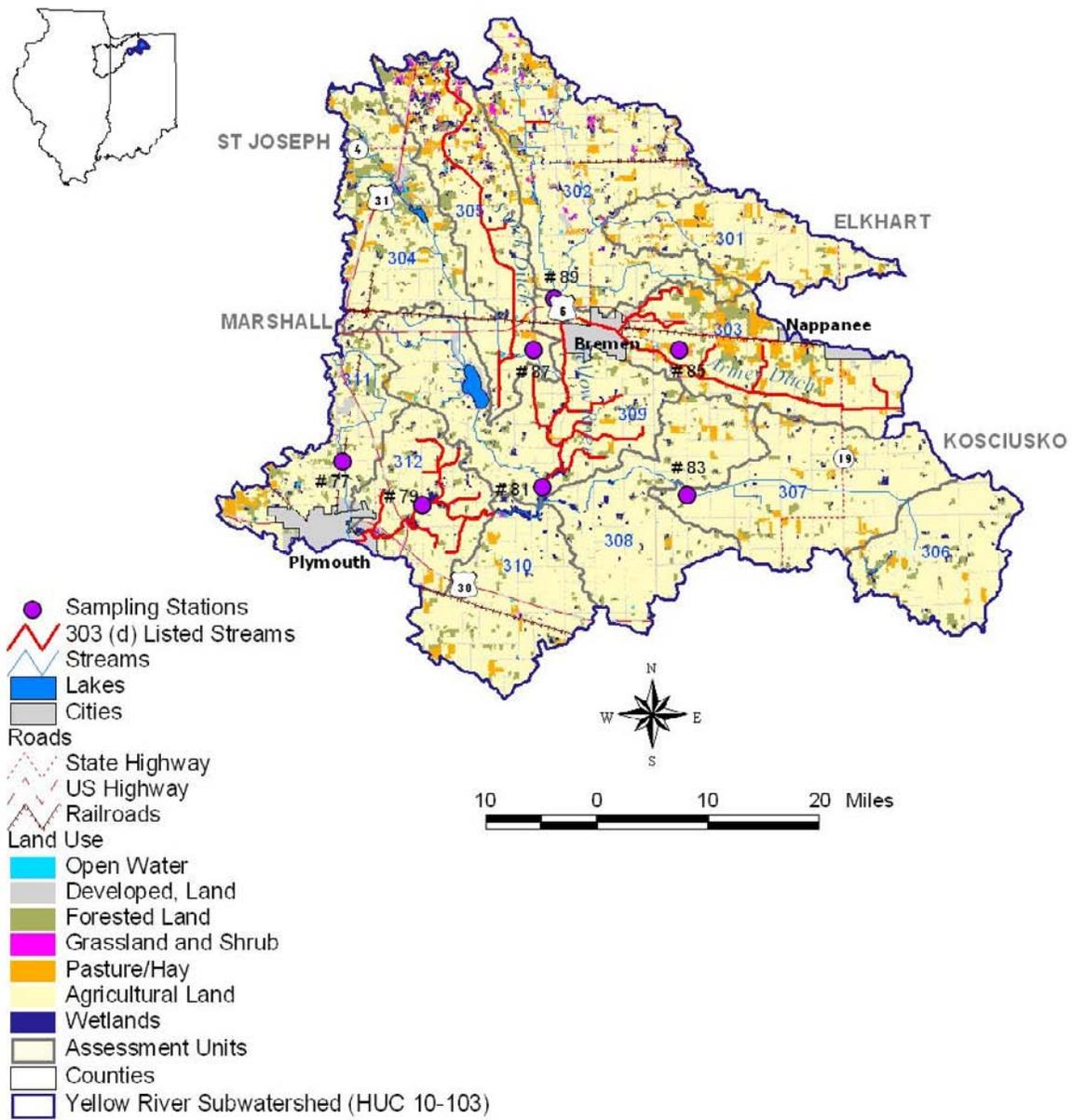


Figure 75. Location of Yellow River Subwatershed (HUC 10-103)

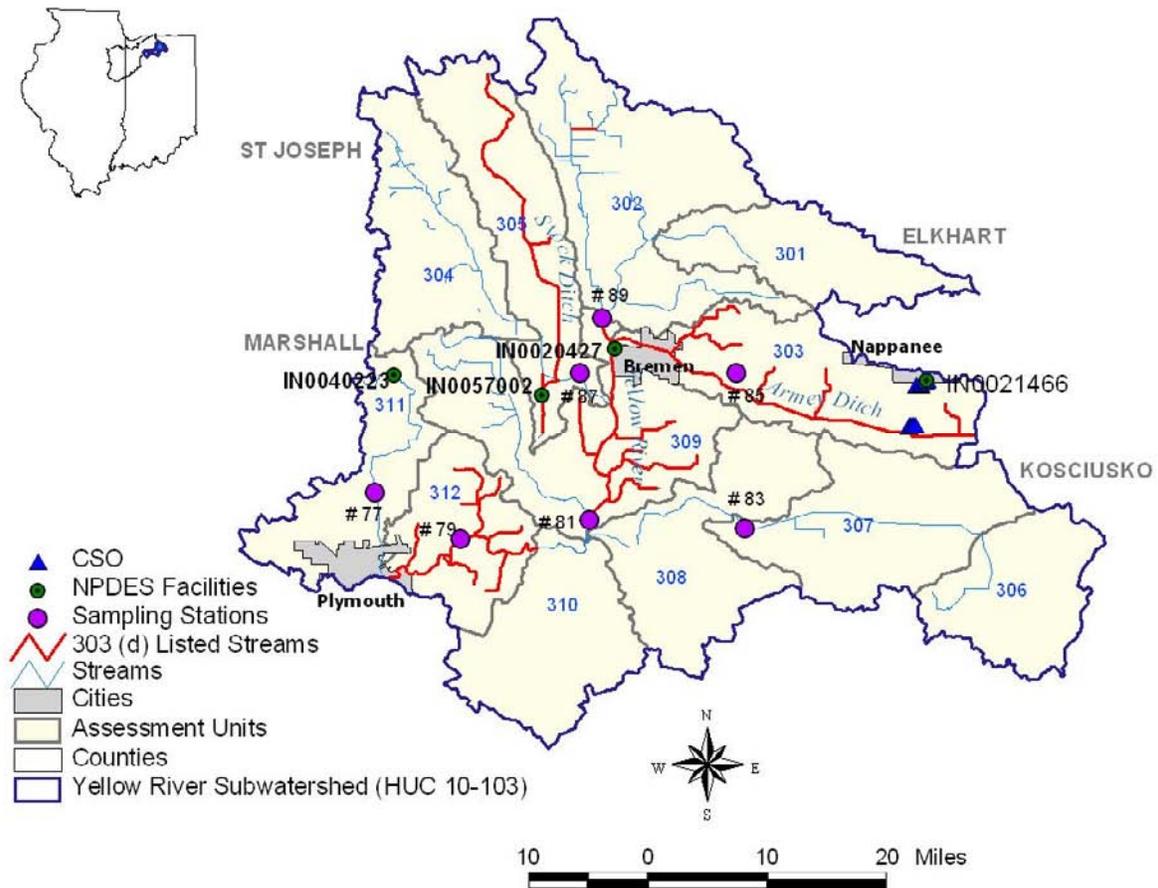


Figure 76. NPDES Facilities in Yellow River Subwatershed (HUC 10-103)

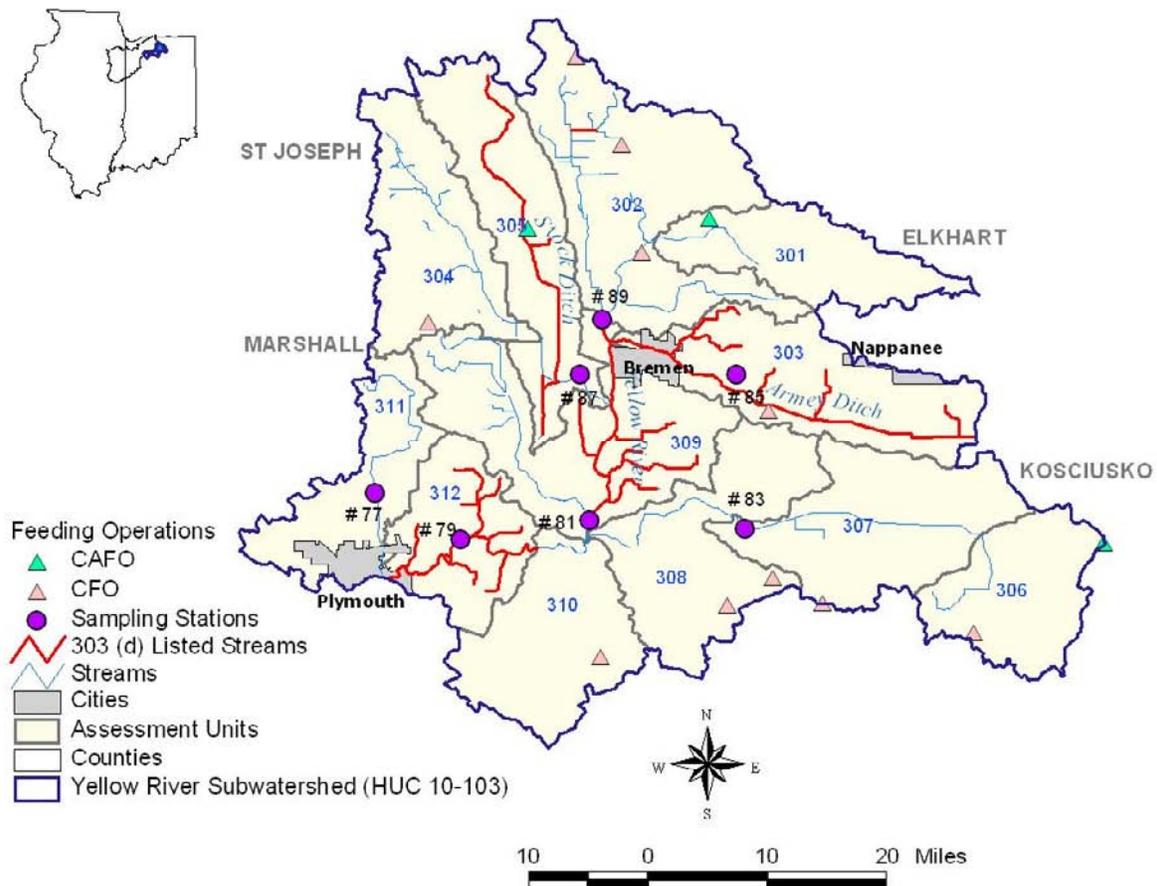


Figure 77. Feeding Operations in the Yellow River Subwatershed (HUC 10-103)

Table 151 through Table 156 summarize the subwatershed characteristics as well as the TMDL results for each of the HUC 12 subwatersheds. It should be noted that there are no current 303(d) listings in HUC 307 or HUC 311; however, the sampling performed in 2008 suggests that several streams are impaired. Those streams will appear on the next 303(d) list and TMDLs for those streams are presented here.

There are four NPDES facilities within the Headwaters Yellow River subwatershed and the WLAs for the facilities were calculated based on their design flows and *E. coli* permit limits. There is one MS4 community upstream of the Headwaters Yellow River subwatershed outlet and the WLAs for the community were calculated based on the area within the watersheds drainage and *E. coli* standards WLAs for CSO communities were calculated based on the maximum observed CSO flow at each outfall and *E. coli* standards. The individual WLAs are presented in Table 276. There are three CAFOs within this subwatershed and they receive a WLA of zero as described further in Section 7.3.

Table 151. Kline Rouch Ditch-Yellow River Characteristics and TMDL Summary (HUC 12-302)

Upstream Characteristics					
<i>Drainage Area</i>	54.09 square miles				
<i>Sampling Station</i>	None				
<i>Listed Segments</i>	INK0_153_T1016				
<i>Land Use</i>	Agriculture: 76%; Developed Land: 6%; Forest: 5%; Other: 13%				
<i>Soils</i>	A: 5%; B: 43%; C: 51%; D 1%				
<i>NPDES Facilities</i>	None				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	Laidig Farm And Management - Site 331 (ID #2240)				
	Pick Of The Chick (ID#3891)				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	455.69	111.90	54.18	29.37	16.20
<i>WLA</i>	0	0	0	0	0
<i>MOS (10%)</i>	50.63	12.43	6.02	3.26	1.80
<i>TMDL = LA+WLA+MOS</i>	506.32	124.33	60.20	32.63	18.00

Table 152. Armery Ditch Characteristics and TMDL Summary (HUC 12-303)

<i>Upstream Characteristics</i>					
<i>Drainage Area</i>	27.02 square miles				
<i>Sampling Station</i>	85				
<i>Listed Segments</i>	INK0154, INK0155_00				
<i>Land Use</i>	Agriculture: 66%; Developed Land: 13%; Forest: 9%; Other: 12%				
<i>Soils</i>	A: 7%; B: 54%; C: 38%; D: 1%				
<i>NPDES facilities</i>	Nappanee Municipal STP (IN0021466)-Discharges outside of the Kankakee/Iroquois Watershed				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	Nappanee Municipal STP (IN0021466)-Discharges Outside of The Kankakee/Iroquois Watershed				
<i>CAFOs</i>	None				
<i>CFOs</i>	Evan L Huff (ID # 4254)				
<i>TMDL Allocations (billion/day)</i>					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	227.64	55.90	27.06	14.67	8.09
<i>WLA</i>	0.00	0.00	0.00	0.00	0.00
<i>MOS (10%)</i>	25.29	6.21	3.01	1.63	0.90
<i>TMDL = LA+WLA+MOS</i>	252.93	62.11	30.07	16.30	8.99

Table 153. West Bunch Branch-Stock Ditch Characteristics and TMDL Summary (HUC 12-305)

<i>Upstream Characteristics</i>					
<i>Drainage Area</i>	44.47 square miles				
<i>Sampling Station</i>	87				
<i>Listed Segments</i>	INK0157_00				
<i>Land Use</i>	Agriculture: 73%; Developed Land: 5%; Forest: 8%; Other: 14%				
<i>Soils</i>	A: 10%; B: 55%; C: 33%; D: 2%				
<i>NPDES Facilities</i>	Lake of the Woods Regional Sewer District (IN0057002)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	Walnut Grove Dairy (INA006440)				
<i>CFOs</i>	None				
<i>TMDL Allocations (billion/day)</i>					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	374.01	91.36	43.9	23.51	12.68
<i>WLA</i>	0.64	0.64	0.64	0.64	0.64
<i>MOS (10%)</i>	41.62	10.22	4.95	2.68	1.48
<i>TMDL = LA+WLA+MOS</i>	416.27	102.22	49.49	26.83	14.8

Table 154. Lemler Ditch Dausman Ditch Subwatershed Characteristics and TMDL Summary (HUC 12-307)

Upstream Characteristics					
<i>Drainage Area</i>	40.11 square miles				
<i>Sampling Station</i>	83				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 86%; Developed Land: 5%; Forest: 5%; Other: 4%				
<i>Soils</i>	A: 22%; B: 58%; C: 19%; D 1%				
<i>NPDES Facilities</i>	None				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	Freed Beer Farms (ID # 2240)				
<i>CFOs</i>	Charles L. Long - Farm #1 (ID# 4330)				
	Shively Veal Inc (ID#)3050				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	337.91	82.98	40.18	21.78	12.02
<i>WLA</i>	0	0	0	0	0
<i>MOS (10%)</i>	37.55	9.22	4.46	2.42	1.33
<i>TMDL = LA+WLA+MOS</i>	375.46	92.2	44.64	24.2	13.35

Table 155. Lake of the Woods-Yellow River Characteristics and TMDL Summary (HUC12-309)

Upstream Characteristics					
<i>Drainage Area</i>	158.33 square miles				
<i>Sampling Station</i>	89				
<i>Listed Segments</i>	INK0158_00				
<i>Land Use</i>	Agriculture: 73%; Developed Land: 7%; Forest: 8%; Other: 12%				
<i>Soils</i>	A: 13%; B: 53%; C: 32%; D: 0.5%; Unknown:1.5%				
<i>NPDES Facilities</i>	Nappanee Municipal STP (IN0021466) -Discharges Outside of The Kankakee/Iroquois Watershed				
	Bremen Municipal WWTP				
	Lake of the Woods Regional Sewer District (IN0057002)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	Nappanee Municipal STP (IN0021466)-Discharges Outside of The Kankakee/Iroquois Watershed				
<i>CAFOs</i>	Fred Beer Farms (ING804010)				
	J & T Laidig Farms (ING800005)				
	Walnut Gove Dairy, LLC (INA006440)				
<i>CFOs</i>	Laidig Farm And Management - Site 331 (ID #2240)				
	Pick Of The Chick (ID#3891)				
	Evan L Huff (ID #4254)				
	Billie Fisher (ID#2276)				
	Todd Lemler (ID#)2372				
	Shively Veal Inc (ID#)3050				
	Charles L. Long - Farm #1 (ID# 4330)				
	Don Haas (ID# 4388)				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	1327.08	320.75	151.79	79.17	40.64
<i>WLA</i>	6.79	6.79	6.79	6.79	6.79
<i>MOS (10%)</i>	148.21	36.39	17.62	9.55	5.27
<i>TMDL = LA+WLA+MOS</i>	1482.08	363.93	176.20	95.51	52.70

Table 156. Elmer Seltenright Ditch-Yellow River Characteristics and TMDL Summary (HUC12-311)

<i>Upstream Characteristics</i>					
<i>Drainage Area</i>	13.44 square miles				
<i>Sampling Station</i>	77				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 61%; Developed Land: 20%; Forest: 12%; Other: 7%				
<i>Soils</i>	A: 26%; B: 62%; C: 10%; D 2%				
<i>NPDES Facilities</i>	Lapaz Municipal WWTP (IN0040223)				
<i>MS4 Communities</i>	Plymouth (INR040064): 2.36 Square Miles				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	None				
<i>TMDL Allocations (billion/day)</i>					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	92.75	27.21	12.87	6.7	3.43
<i>WLA</i>	20.48	0.6	0.6	0.6	0.6
<i>MOS (10%)</i>	12.58	3.08	1.49	0.81	0.44
<i>TMDL = LA+WLA+MOS</i>	125.81	30.89	14.96	8.11	4.47

Table 157. Milner-Seltenright Ditch-Yellow River Characteristics and TMDL Summary (HUC 12-312)

Upstream Characteristics					
<i>Drainage Area</i>	257.20 square miles				
<i>Sampling Station</i>	79				
<i>Listed Segments</i>	INK015F_00				
<i>Land Use</i>	Agriculture: 77%; Developed Land: 7%; Forest: 7%; Other: 9%				
<i>Soils</i>	A: 17%; B: 55%; C: 26%; D: 0.5%; Unknown:1.6%				
<i>NPDES Facilities</i>	Nappanee Municipal STP (IN0021466) -Discharges Outside of The Kankakee/Iroquois Watershed				
	Bremen Municipal WWTP (IN0020427)				
	Lake of the Woods Regional Sewer District (IN0057002)				
<i>MS4 Communities</i>	Plymouth (INR040064): 0.55 Square Miles				
<i>CSO Communities</i>	Nappanee Municipal STP (IN0021466)-Discharges Outside of The Kankakee/Iroquois Watershed				
<i>CAFOs</i>	Fred Beer Farms (ING804010)				
	J & T Laidig Farms (ING800005)				
	Walnut Gove Dairy, LLC (INA006440)				
<i>CFOs</i>	Laidig Farm And Management - Site 331 (ID #2240)				
	Pick Of The Chick (ID#3891)				
	Linda Lizzi (ID # 3710)				
	Evan L Huff (ID #4254)				
	David Dunis (ID # 4388)				
	Billie Fisher (ID#2276)				
	Todd Lemler (ID#)2372				
	Shively Veal Inc (ID#)3050				
	Charles L. Long - Farm #1 (ID# 4330)				
Don Haas (ID# 4388)					
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	2155.40	525.28	250.82	132.85	70.25
<i>WLA</i>	11.42	6.79	6.79	6.79	6.79
<i>MOS (10%)</i>	240.76	59.12	28.62	15.52	8.56
<i>TMDL = LA+WLA+MOS</i>	2407.58	591.19	286.23	155.16	85.60

7.1.3.2 Yellow River Subwatershed (HUC10-Digit 105)

The Yellow River subwatershed has an area of approximately 146 square miles and lies within Stark and Marshall counties. Cities within this subwatershed include Argos, Plymouth and Knox (Figure 78). Agriculture is the dominant land use followed by forest and developed land (Table 161). Possible pathogen sources such as NPDES facilities and feeding operations in this subwatershed are shown in Figure 79 and Figure 80. As listed in Table 158 and Table 159, there are three impaired segments and eight *E. coli* monitoring locations within this subwatershed. Impairments are prevalent at these monitoring sites (Table 160). The required reductions range from 48 to 88 percent in this subwatershed.

Table 158. 303 (d) Listed Streams in the Yellow River Subwatershed

HUC 12	HUC 12 Name	Segment ID	Waterbody	Stream Length (miles)	Parameter
503	Clifton Ditch-Yellow River	INK0165_00	Yellow River - Listenberger/Clifton Ditches	19.72	<i>E. coli</i>
505	Bickle Ditch-Yellow River	INK0166_00	Yellow River - Ober	29.34	<i>E. coli</i>
506	Cavanaugh Ditch-Yellow River	INK016A_00	Yellow River-Knox	20.69	<i>E. coli</i>

Table 159. Station Locations in the Yellow River Subwatershed

HUC 12	HUC 12 Name	Station #	Stream Name
501	Town of Argos-Wolf Creek	ID# 73	Wolf Cr
503	Clifton Ditch-Yellow River	ID# 71	Clifton D
504	Eagle Creek	ID# 67	Harry Cool D
		ID# 75	Unnamed D
505	Bickle Ditch-Yellow River	ID# 69	Yellow River
506	Cavanaugh Ditch-Yellow River	ID# 19	Yellow River
		ID# 63	Yellow River
		ID# 65	Yellow River

Table 160. Summary of Pathogen Data in the Yellow River Subwatershed

Station #	Period of Record	Total Number of Samples	Percent of Samples Exceeding <i>E. coli</i> WQS (#/100 mL)		Minimum (#/100 MI)	Geomean (#/100 MI)	Average (#/100 MI)	Maximum (#/100 MI)	Percent Reduction Based on Geomean (125/100MI)
			125	235					
73	6/4/2008 – 7/2/2008	5	100	100	517	1,085	1,153	1,414	88%
71	6/4/2008 – 7/2/2008	5	100	100	291	589	775	1,986	79%
67	6/4/2008 – 7/2/2008	5	100	80	186	330	370	649	62%
75	6/4/2008 – 7/2/2008	5	100	100	248	772	948	1,414	84%
69	6/4/2008 – 7/2/2008	5	80	40	102	239	293	649	48%
19	6/2/2008 – 6/30/2008	5	100	80	140	591	722	1,046	79%
63	6/2/2008 – 7/14/2008	6	100	83	214	461	543	980	73%
65	6/2/2008 – 7/14/2008	6	100	83	204	445	545	1,300	72%

Table 161. Land Use/Land Cover in the Yellow River Subwatershed

Land Use/Land Cover	Subwatershed		
	Area		Percent
	Acres	Square Miles	
Agricultural Land	54249.89	84.77	58.18
Forested Land	18912.60	29.55	20.28
Developed Land	10653.78	16.65	11.43
Wetland	4607.34	7.20	4.94
Pasture/Hay	2842.86	4.44	3.05
Open Water	1060.60	1.66	1.14
Grassland and Shrubs	915.82	1.43	0.98
Total	93,242.89	145.69	100.00

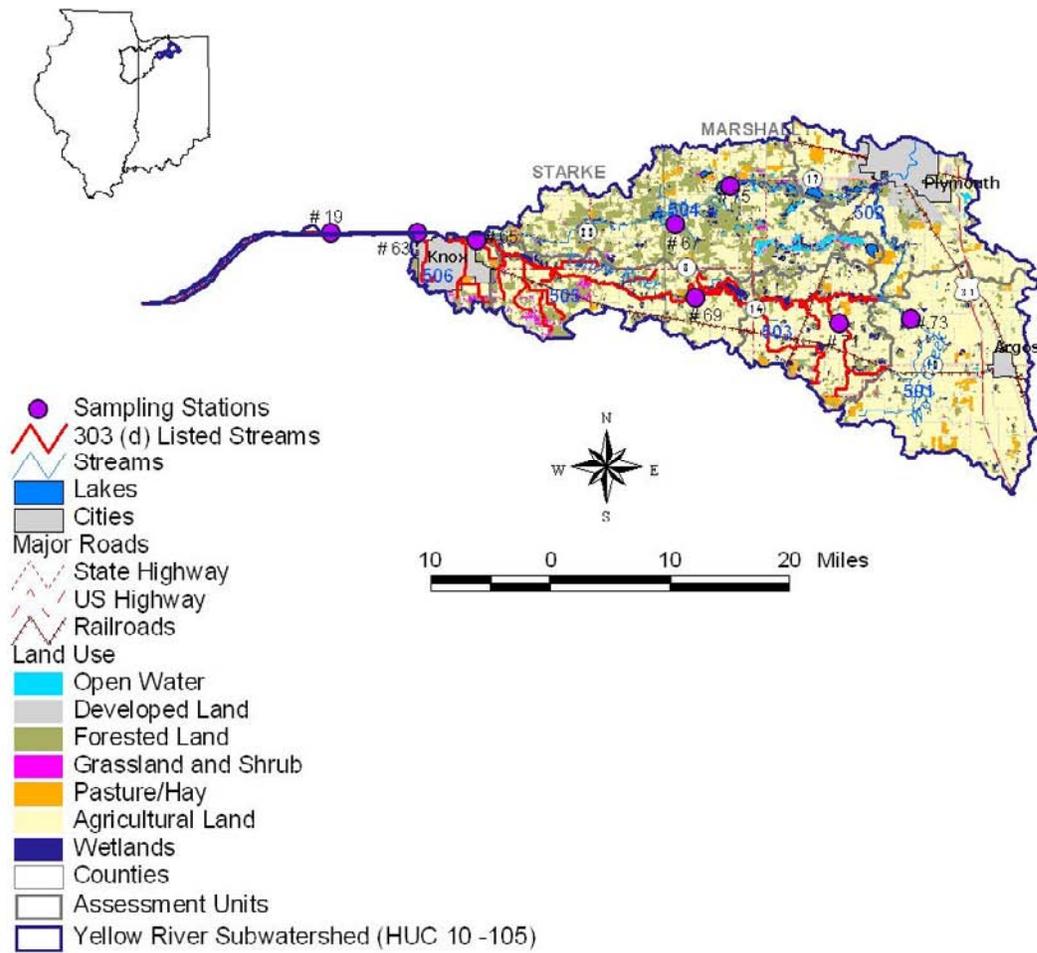


Figure 78. Location of Yellow River Subwatershed (HUC10-105)

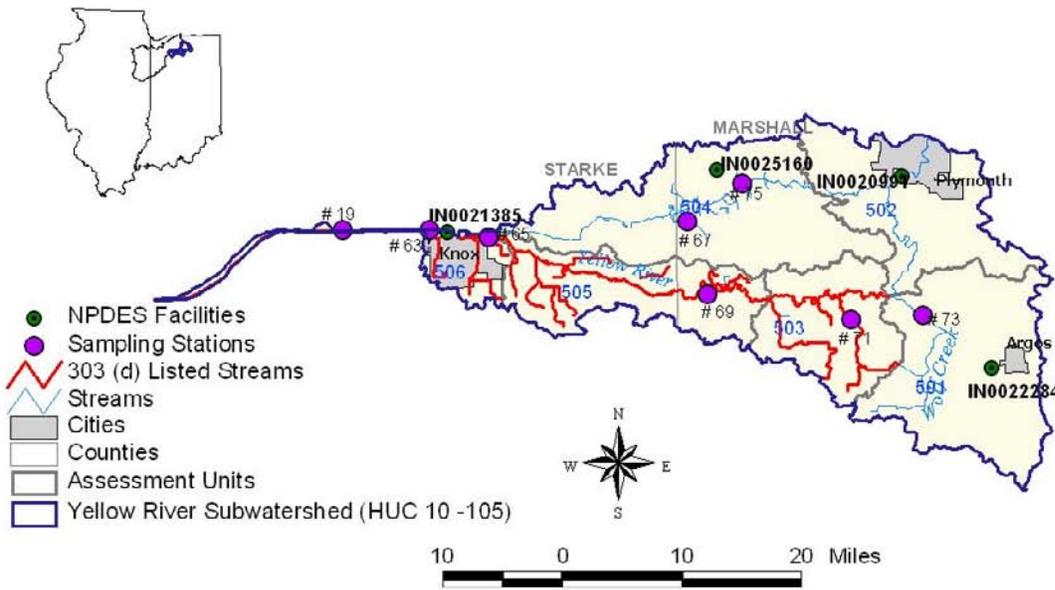


Figure 79. NPDES Facilities in the Yellow River Subwatershed (HUC10-105)

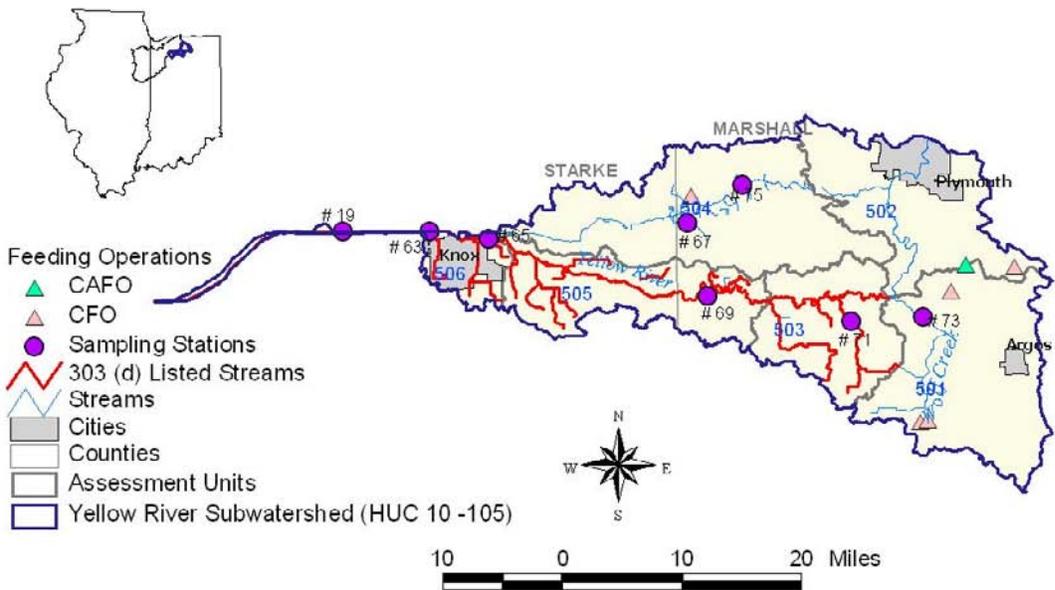


Figure 80. Feeding Operations in the Yellow River Subwatershed (HUC10-105)

Table 162 through Table 166 summarize the subwatershed characteristics as well as the TMDL results for each of the HUC 12 subwatersheds. It should be noted that there are no current 303(d) listings in HUC 501 or HUC 504; however, the sampling performed in 2008 suggests that several streams are impaired. Those streams will appear on the next 303(d) list and TMDLs for those streams are presented here.

There are four NPDES facilities within the Mill Creek subwatershed and the WLAs for the facilities were calculated based on their design flows and *E. coli* permit limits. There is one MS4 community upstream of the Little Kankakee River subwatershed outlet and the WLA for the community was calculated based on the area with the watersheds drainage and *E. coli* standards. There are two CSO communities with 25 outfalls upstream of this subwatershed. WLAs for CSO communities were calculated based on the maximum observed CSO flow at each outfall and *E. coli* standards. The individual WLAs are presented in Table 276. There is one CAFO within this subwatershed and it receives a WLA of zero as described further in Section 7.3.

Table 162. Town of Argos-Wolf Creek Characteristics and TMDL Summary (HUC12-501)

Upstream Characteristics					
<i>Drainage Area</i>	33.96 square miles				
<i>Sampling Station</i>	73				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 79.81%; Developed Land: 8.85%; Forest: 6.07%; Other: 5.27%				
<i>Soils</i>	A: 24.89%; B: 63.56%; C: 9.33%; D 1.78%; Unknown:0.44				
<i>NPDES Facilities</i>	Argos Municipal WWTP (IN0022284)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	Argos Holsteins (2100)				
	Dan Houin (6151)				
	Argos Holsteins (6208)				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	217.96	52.77	25.03	13.11	6.78
<i>WLA</i>	1.00	1.00	1.00	1.00	1.00
<i>MOS (10%)</i>	24.33	5.97	2.89	1.57	0.87
<i>TMDL = LA+WLA+MOS</i>	243.29	59.74	28.92	15.68	8.65

Table 163. Clifton Ditch-Yellow River Characteristics and TMDL Summary (HUC12-503)

Upstream Characteristics					
<i>Drainage Area</i>	329.16 square miles				
<i>Sampling Station</i>	71				
<i>Listed Segments</i>	INK0165_00				
<i>Land Use</i>	Agriculture: 74.46%; Developed Land: 9.01%; Forest: 8.06%; Other: 8.47%				
<i>Soils</i>	A: 22.75%; B: 54.71%; C: 21.52%; D 0.66%; Unknown:0.37				
<i>NPDES Facilities</i>	All the facilities upstream of HUC 12-312 and HUC 12-311				
	Plymouth WWTP (IN0020991)				
	Argos Municipal WWTP (IN0022284)				
<i>MS4 Communities</i>	Plymouth (INR040064): 6.97 Square Miles				
<i>CSO Communities</i>	Plymouth Municipal STP (IN0020991)-10 outfalls				
	Nappanee Municipal STP (IN0021466)-Discharges Outside of The Kankakee/Iroquois Watershed				
<i>CAFOs</i>	All the facilities upstream of HUC 12-312 and HUC 12-311				
	Homestead Dairy (ING804918)				
<i>CFOs</i>	All the facilities upstream of HUC 12-312 and HUC 12-311				
	Houin Brothers Farms(7916)				
	Argos Holsteins (2100)				
	Argos Holsteins (6208)				
	Dan Houin (6151)				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	2687.12	655.99	304.74	153.76	73.65
<i>WLA</i>	85.94	24.95	24.95	24.95	24.95
<i>MOS (10%)</i>	308.12	75.66	36.63	19.85	10.95
<i>TMDL = LA+WLA+MOS</i>	3081.18	756.6	366.32	198.56	109.55

Table 164. Eagle Creek Characteristics and TMDL Summary (HUC 12-504)

Upstream Characteristics					
<i>Drainage Area</i>	37.92 square miles				
<i>Sampling Station</i>	67,75				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 45.12%; Developed Land: 6.76%; Forest: 36.42%; Other: 11.70%				
<i>Soils</i>	A: 70.36%; B: 19.76%; C: 3.95%; D 2.37%; Unknown:3.56				
<i>NPDES Facilities</i>	Convent Ancilla Domini (IN0025160)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	Herbert W Schaller (2215)				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	319.25	78.23	37.76	20.37	11.14
<i>WLA</i>	0.22	0.22	0.22	0.22	0.22
<i>MOS (10%)</i>	35.49	8.71	4.22	2.29	1.26
<i>TMDL = LA+WLA+MOS</i>	354.96	87.16	42.2	22.88	12.62

Table 165. Bickel Ditch-Yellow River Characteristics and TMDL Summary (HUC 12-505)

Upstream Characteristics					
<i>Drainage Area</i>	350.42 square miles				
<i>Sampling Station</i>	69				
<i>Listed Segments</i>	INK0166_00				
<i>Land Use</i>	Agriculture: 73.48%; Developed Land: 8.86%; Forest: 9.05%; Other: 8.60%				
<i>Soils</i>	A: 26.21%; B: 52.31%; C: 20.39%; D 0.74%; Unknown:0.35				
<i>NPDES Facilities</i>	All the facilities upstream of HUC 12-503				
<i>MS4 Communities</i>	Plymouth (INR040064): 6.97 Square Miles				
<i>CSO Communities</i>	Plymouth Municipal STP (IN0020991)-10 outfalls				
	Nappanee Municipal STP (IN0021466)-Discharges Outside of The Kankakee/Iroquois Watershed				
<i>CAFOs</i>	All the facilities upstream of HUC 12-503				
<i>CFOs</i>	All the facilities upstream of HUC 12-503				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	2866.22	699.97	326.03	165.30	80.02
<i>WLA</i>	85.94	24.95	24.95	24.95	24.95
<i>MOS (10%)</i>	328.02	80.55	39.00	21.14	11.66
<i>TMDL = LA+WLA+MOS</i>	3280.18	805.47	389.98	211.39	116.63

Table 166. Cavanaugh Ditch-Yellow River Characteristics and TMDL Summary (HUC 12-506)

Upstream Characteristics					
<i>Drainage Area</i>	395.99 square miles				
<i>Sampling Station</i>	19,63,65				
<i>Listed Segments</i>	INK0166A_00				
<i>Land Use</i>	Agriculture: 70.27%; Developed Land: 8.96%; Forest: 11.66%; Other: 9.11%				
<i>Soils</i>	A: 31.16%; B: 48.59%; C: 18.58%; D 1.01%; Unknown:0.66				
<i>NPDES Facilities</i>	All the facilities upstream of HUC 12-505 and HUC 12-504				
	Knox Municipal WWTP (IN0021385)				
<i>MS4 Communities</i>	Plymouth (INR040064): 6.97 Square Miles				
<i>CSO Communities</i>	Plymouth Municipal STP (IN0020991)-10 outfalls				
	Nappanee Municipal STP (IN0021466)-Discharges Outside of The Kankakee/Iroquois Watershed				
<i>CAFOs</i>	All the facilities upstream of HUC 12-505 and HUC 12-504				
<i>CFOs</i>	All the facilities upstream of HUC 12-505 and HUC 12-504				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	3246.61	790.71	368.14	186.51	90.14
<i>WLA</i>	89.47	28.48	28.48	28.48	28.48
<i>MOS (10%)</i>	370.67	91.02	44.07	23.89	13.18
<i>TMDL = LA+WLA+MOS</i>	3706.75	910.21	440.69	238.88	131.8

7.1.3.3 Kline Arm Subwatershed (HUC10-Digit 106)

The Kline Arm subwatershed has an area of nearly 100 square miles. The subwatershed lies in Starke and Pulaski Counties and contains the city of North Hudson (Figure 81). About 57 percent of the land is used for agriculture (Table 169). The NPDES facilities and feeding operations in this subwatershed are presented in Figure 82 and Figure 83. No listed segments lie in this subwatershed. However, the five monitoring stations (Table 167) show pathogen violations (Table 168). The required reductions of pathogen concentrations based on the geomean of five samples ranges from 68 to 81 percent in this subwatershed.

Table 167. Station Locations in the Kline Arm Subwatershed

HUC 12	HU C12 Name	Station #	Stream Name
601	Hook Run-Bogus Run	ID# 01	Bogus Run
603	Craigmile Ditch-Kline Arm	ID# 15	Craigmile D
		ID# 17	Kline Arm D
604	Pine Creek-Bogus Run	ID# 09	Yellow River
		ID# 13	Bogus Run

Table 168. Summary of Pathogen Data in the Kline Arm Subwatershed

Station #	Period of Record	Total Number of Samples	Percent of Samples Exceeding <i>E. coli</i> WQS (#/100 mL)		Minimum (#/ 100 mL)	Geomean (#/ 100 mL)	Average (#/ 100 mL)	Maximum (#/ 100 mL)	Percent Reduction Based on Geomean (125/ 100mL)
			125	235					
1	6/2/2008 - 6/30/2008	5	100	100	236	522	625	1,414	76%
15	6/2/2008 - 6/30/2008	5	100	100	285	667	773	1,414	81%
17	6/2/2008 - 6/30/2008	5	100	100	326	499	518	770	75%
9	6/2/2008 - 6/30/2008	5	100	60	199	427	499	816	71%
13	6/2/2008 - 6/30/2008	5	100	100	299	395	419	727	68%

Table 169. Land Use/Land Cover in the Kline Arm Subwatershed

Land Use/Land Cover	Subwatershed		
	Area		Percent
	Acres	Square Miles	
Agricultural Land	36,773.51	57.46	57.46
Forested Land	15,012.26	23.46	23.46
Developed Land	5,258.73	8.22	8.22
Grassland and Shrubs	3,496.92	5.46	5.46
Open Water	1,556.76	2.43	2.43
Pasture/Hay	1,219.83	1.91	1.91
Wetland	676.52	1.06	1.06
Total	63,994.53	99.99	100.00

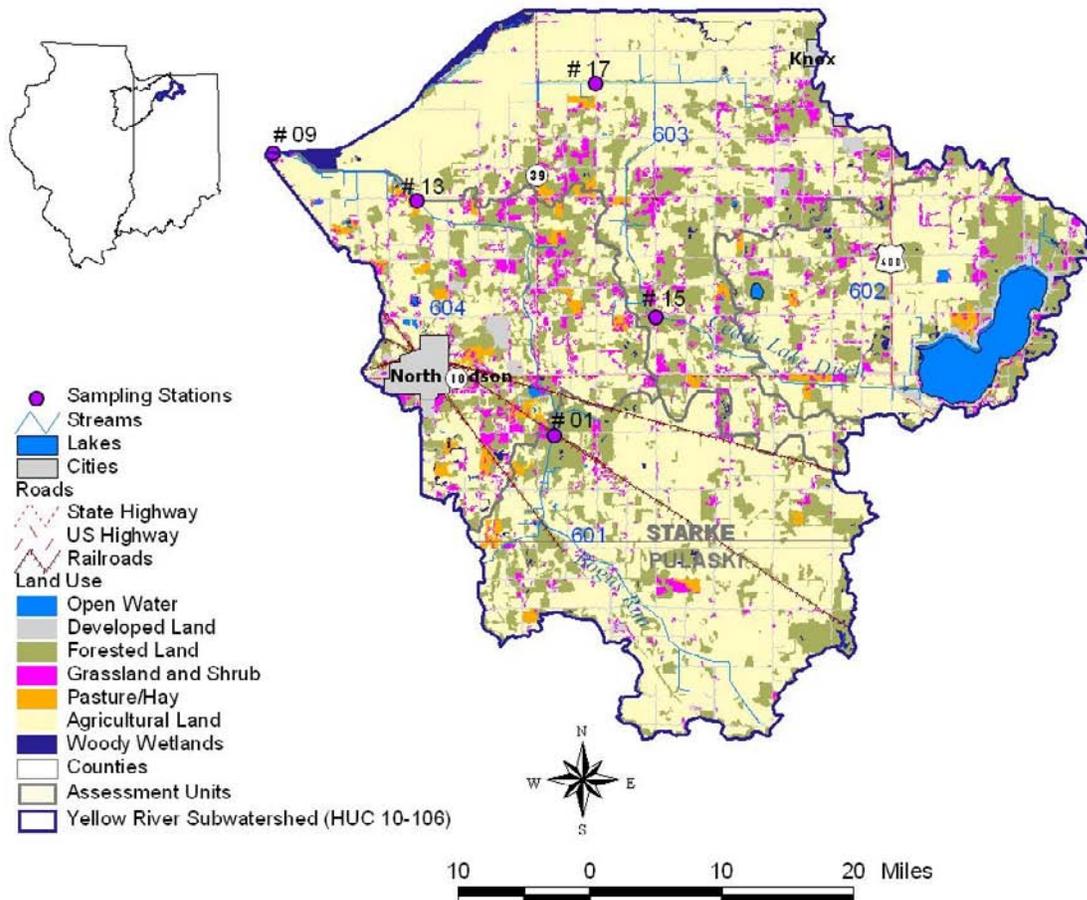


Figure 81. Location of Kline Arm Subwatershed (HUC10-106)

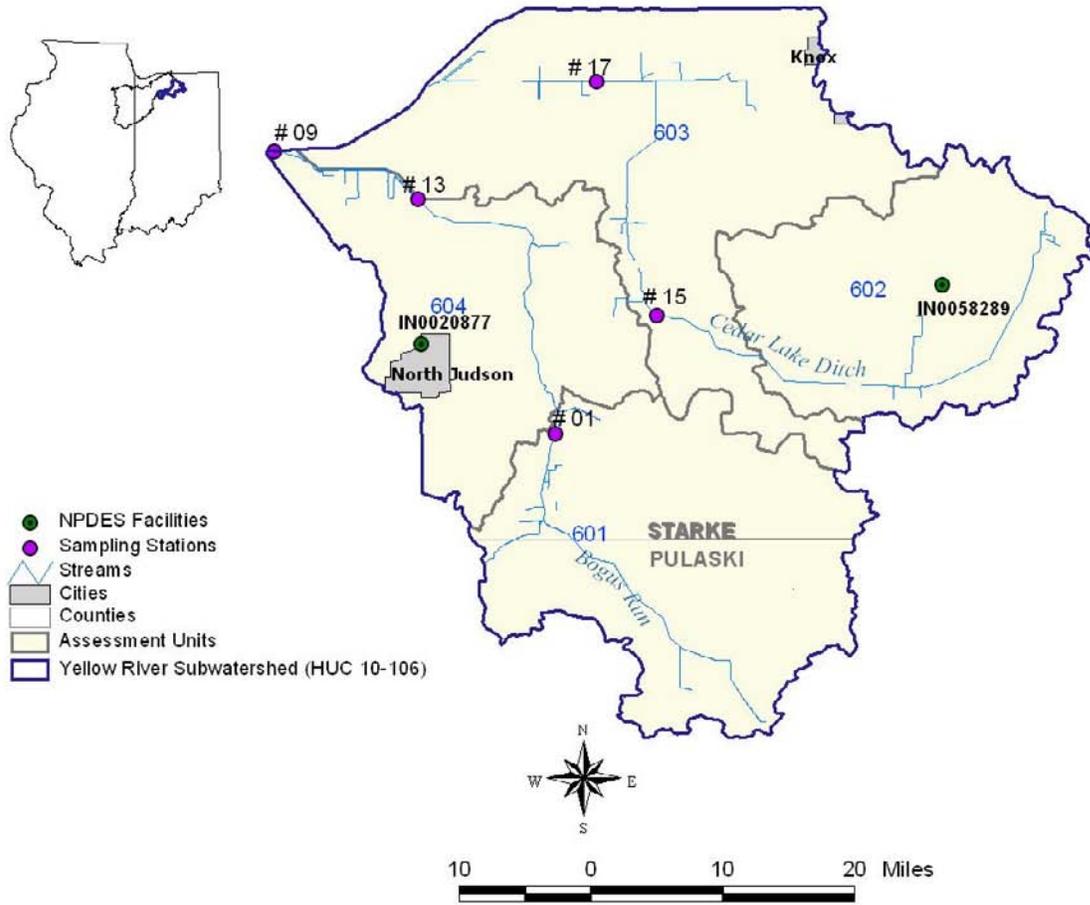


Figure 82. NPDES Facilities in the Kline Arm Subwatershed (HUC10-106)

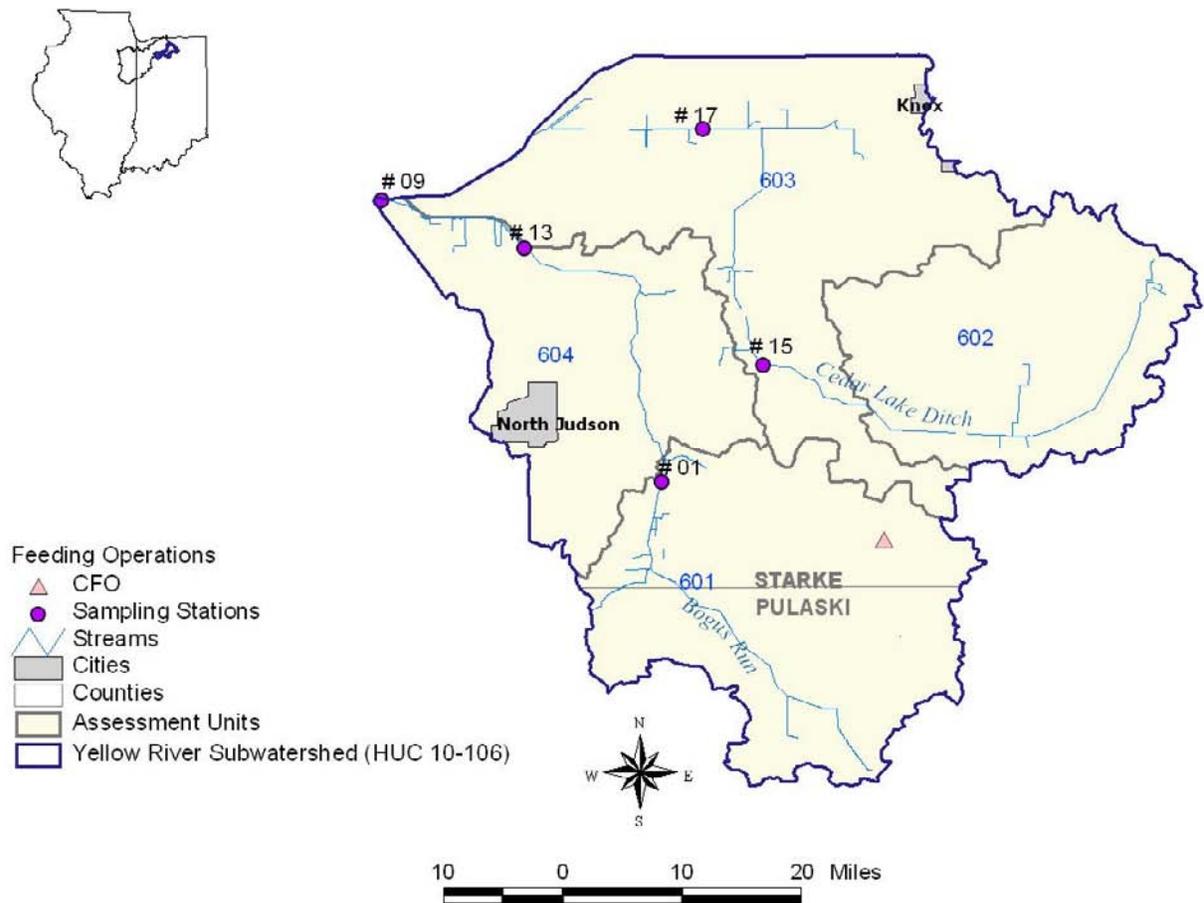


Figure 83. Feeding Operations in the Kline Arm Subwatershed (HUC10-106)

Table 170 through Table 172 summarize the subwatershed characteristics as well as the TMDL results for each of the HUC 12 subwatersheds. It should be noted that there are no current 303(d) listings in this subwatershed; however, the sampling performed in 2008 suggests that several streams are impaired. Those streams will appear on the next 303(d) list and TMDLs for those streams are presented here.

There are two NPDES facilities within the Kline Arm subwatershed and the WLAs for the facilities were calculated based on their design flows and *E. coli* permit limits. There is one CSO community with 1 outfall upstream of this subwatershed. WLAs for CSO communities were calculated based on the maximum observed CSO flow at each outfall and *E. coli* standards. The individual WLAs are presented in Table 276.

Table 170. Hook Run-Bogus Run Characteristics and TMDL Summary (HUC12-601)

Upstream Characteristics					
<i>Drainage Area</i>	26.71 square miles				
<i>Sampling Station</i>	1				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 68.24%; Developed Land: 4.80%; Forest: 22.60%; Other: 4.36%				
<i>Soils</i>	A: 95.56%; B: 3.89%; C: 0.00%; D 0.56%; Unknown:0.00				
<i>NPDES Facilities</i>	None				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	Bope Farm (3908)				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	175.51	64.01	28.91	13.01	7.02
<i>WLA</i>	0	0	0	0	0
<i>MOS (10%)</i>	19.5	7.11	3.21	1.44	0.78
<i>TMDL = LA+WLA+MOS</i>	195.01	71.12	32.12	14.45	7.8

Table 171. Craigmile Ditch-Kline Arm Characteristics and TMDL Summary (HUC12-603)

Upstream Characteristics					
<i>Drainage Area</i>	53.00 square miles				
<i>Sampling Station</i>	15,17				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 55.72%; Developed Land: 8.13%; Forest: 23.55%; Other: 12.59%				
<i>Soils</i>	A: 93.18%; B: 1.99%; C: 0.00%; D 0.57%; Unknown:4.26				
<i>NPDES Facilities</i>	Bass Lake Conservancy District (IN0058289)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	None				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	346.91	125.67	56.02	24.47	12.59
<i>WLA</i>	1.34	1.34	1.34	1.34	1.34
<i>MOS (10%)</i>	38.70	14.11	6.37	2.87	1.55
<i>TMDL = LA+WLA+MOS</i>	386.95	141.12	63.73	28.68	15.48

Table 172. Pine Creek-Bogus Run Characteristics and TMDL Summary (HUC12-604)

Upstream Characteristics					
<i>Drainage Area</i>	100.08 square miles				
<i>Sampling Station</i>	9,13				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 57.41%; Developed Land: 8.21%; Forest: 23.44%; Other: 10.94%				
<i>Soils</i>	A: 94.63%; B: 2.39%; C: 0.00%; D 0.45%; Unknown:2.54				
<i>NPDES Facilities</i>	Bass Lake Conservancy District (IN0058289)				
	North Judson Municipal WWTP (IN0020877)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	North Judson Municipal (IN0020877)-1 outfall				
<i>CAFOs</i>	None				
<i>CFOs</i>	Bope Farm (3908)				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	630.39	236.27	104.75	45.17	22.74
<i>WLA</i>	27.23	3.57	3.57	3.57	3.57
<i>MOS (10%)</i>	73.07	26.65	12.03	5.42	2.92
<i>TMDL = LA+WLA+MOS</i>	730.69	266.49	120.35	54.16	29.23

7.1.4 Upper Iroquois Subwatershed

The Upper Iroquois subwatershed has five HUC 10 watersheds and 27 HUC 12 watersheds. Brief descriptions of the HUC 10 watersheds are provided in the following sections.

Table 173. Hydrologic Unit Code (HUC 10 and 12) in the Upper Iroquois Subwatershed

HUC 10	HU C10 Name	HUC 12	HU C12 Name	Area (sq. miles)
201	Oliver Ditch	101	Ringneck Lake-Oliver Ditch	26.58
		102	Lateral No 77 Ditch-Oliver Ditch	25.47
		103	Jungles Ditch-Oliver Ditch	30.32
202	Slough Creek	201	Keefe Ditch	17.00
		202	Jordan Ditch-Slough Creek	32.67
		203	Nessius Ditch-Bice Ditch	21.84
		204	Headwaters Carpenter Creek	23.47
		205	Carpenter Creek	30.67
		206	Bice Ditch-Slough Creek	19.55
203	Bruner Ditch-Iroquois River	301	Headwaters Iroquois River	25.86
		302	Iliff Slough Lateral-Ryan Ditch	25.70
		303	Dexter Ditch-Iroquois River	27.06
		304	Ryan Ditch	28.18
		305	Moore Ditch-Iroquois River	28.82
204	Curtis Creek-Iroquois River	401	Headwaters Curtis Creek	38.65
		402	Turner Ditch-Iroquois River	21.95
		403	Hunter Ditch	42.71
		404	Bower Ditch-Darroch Ditch	17.13
		405	Hickory Branch-Iroquois River	41.34
205	Montgomery Ditch - Iroquois River	501	Clark Ditch-Thompson Ditch	17.54
		502	Whaley Ditch	21.39
		503	Strole Ditch-Iroquois River	20.27
		504	Headwaters Montgomery Ditch	17.67
		505	Kent Ditch-Montgomery Ditch	31.50
		506	Montgomery Ditch	26.25
		507	North Sheldon South Concord Ditch-Iroquois River	11.72
		508	Blackstone Branch-Iroquois River	14.14

7.1.4.1 Oliver Ditch Subwatershed (HUC10-201)

The Oliver Ditch subwatershed has an area of approximately 82 square miles and lies within Jasper, Starke and Pulaski counties (Figure 84). Agriculture (58.03%) followed by forested land (14.83%) are the primary land uses in this subwatershed (Table 176). There is one CAFO and no NPDES facilities within this subwatershed (Figure 85). Sampling at four locations (Table 174) has exceeded the geomean standard (Table 175). The required reductions range from 62 to 80 percent in this subwatershed.

Table 174. Station Locations in the Oliver Ditch Subwatershed

HUC 12	HU C12 Name	Station #	Stream Name
103	Jungles Ditch-Oliver Ditch	ID# 50	Oliver D
		ID# 52	Jungle D
		ID# 54	Oliver D
		ID# 56	Oliver D

Table 175. Summary of Pathogen Data in the Oliver Ditch Subwatershed

Station #	Period of Record	Total Number of Samples	Percent of Samples Exceeding <i>E. coli</i> WQS (#/100 mL)		Minimum (#/100 mL)	Geomean (#/100 mL)	Average (#/100 mL)	Maximum (#/100 mL)	Percent Reduction Based on Geomean (125/100mL)
			125	235					
50	6/2/2008 - 6/30/2008	5	100	60	131	392	527	980	68%
52	6/2/2008 - 6/30/2008	5	100	100	387	628	657	866	80%
54	6/2/2008 - 6/30/2008	5	100	60	199	395	469	921	68%
56	6/2/2008 - 6/30/2008	5	100	40	179	325	419	1,046	62%

Table 176. Land Use/Land Cover in the Oliver Ditch Subwatershed

Land Use/Land Cover	Subwatershed		
	Area		Percent
	Acres	Square Miles	
Agricultural Land	37139.12	58.03	70.52
Forested Land	9490.44	14.83	18.02
Developed Land	2600.01	4.06	4.94
Grassland and Shrubs	1184.47	1.85	2.25
Pasture/Hay	1161.12	1.81	2.20
Wetland	904.25	1.41	1.72
Open Water	188.59	0.29	0.36
Total	52,668.00	82.29	100.00

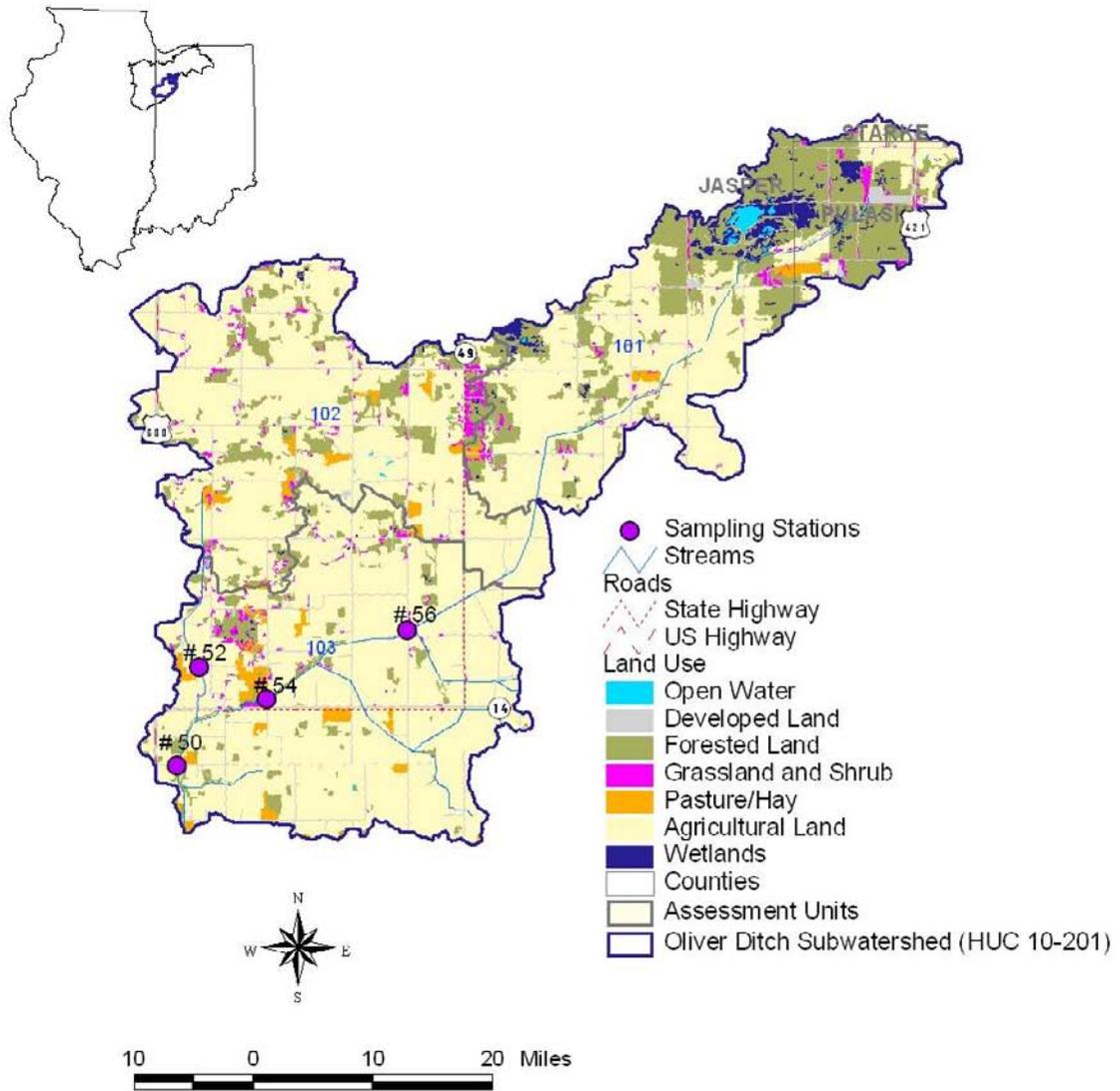


Figure 84. Location of Oliver Ditch Subwatershed (HUC10-201)

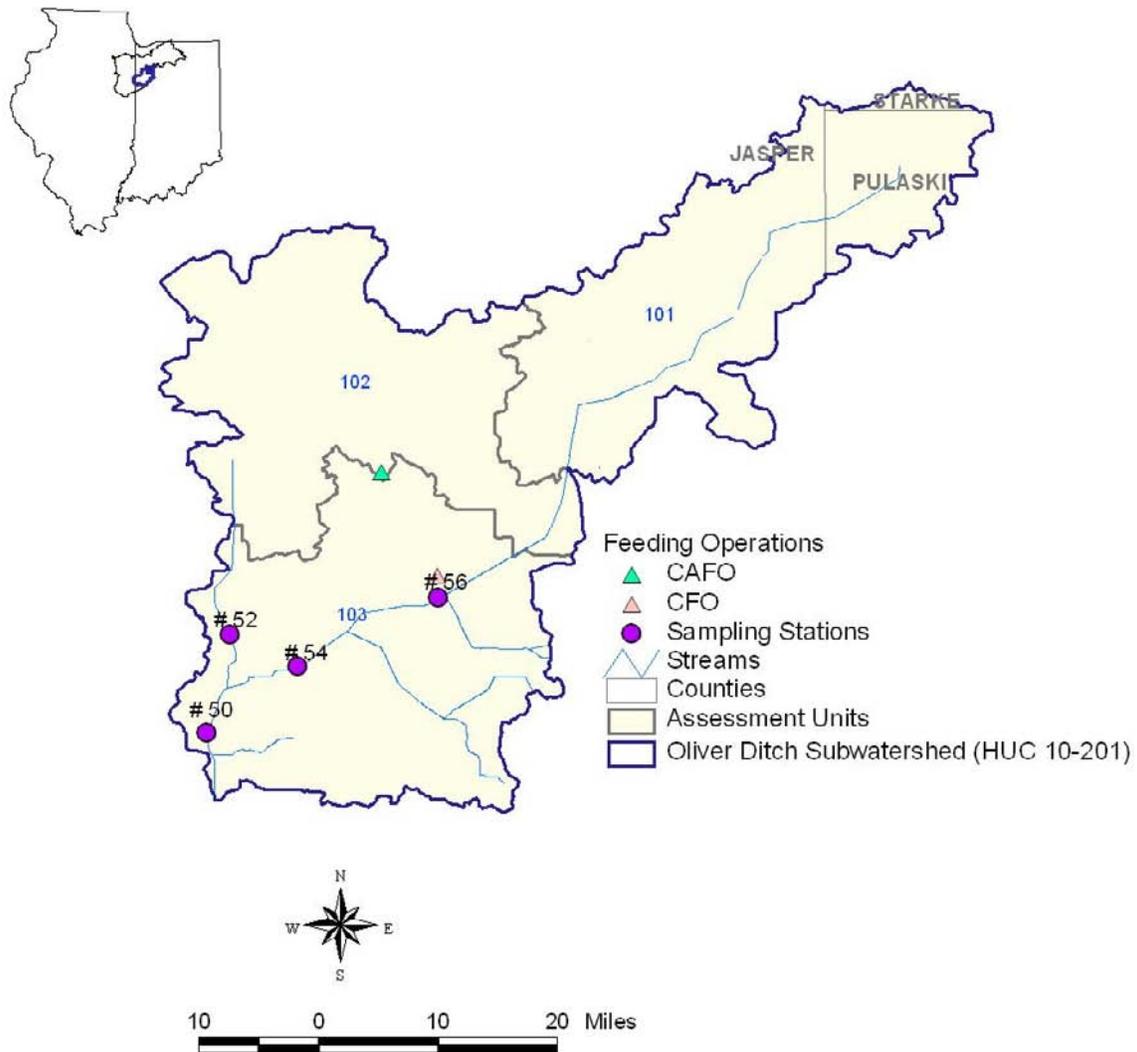


Figure 85. Feeding Operations in the Oliver Ditch Subwatershed (HUC10-201)

Table 177 summarizes the subwatershed characteristics as well as the TMDL results for HUC12-103. It should be noted that there are no current 303(d) listings in HUC 103; however, the sampling performed in 2008 suggests that several streams are impaired. Those streams will appear on the next 303(d) list and TMDLs for those streams are presented here.

There is one CAFO within this subwatershed and it receives a WLA of zero as described further in Section 7.3.

Table 177. Jungles Ditch-Oliver Ditch Characteristics and TMDL Summary (HUC12-103)

<i>Upstream Characteristics</i>					
<i>Drainage Area</i>	82.35 square miles				
<i>Sampling Station</i>	50,52,54,56				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 70.46%; Developed Land:4.93%; Forest:18.01%; Other: 6.60%				
<i>Soils</i>	A: 63.37%; B: 30.55%; C: 3.09%; D: 2.18%; Unknown:0.91%				
<i>NPDES Facilities</i>	None				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	Newberry Farms, LLC (ING806083)				
<i>CFOs</i>	Whitaker Farms (6355)				
<i>TMDL Allocations (billion/day)</i>					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	725.67	194.26	80.38	31.26	12.29
<i>WLA</i>	0.00	0.00	0.00	0.00	0.00
<i>MOS (10%)</i>	80.63	21.58	8.93	3.47	1.36
<i>TMDL = LA+WLA+MOS</i>	806.30	215.84	89.31	34.73	13.65

7.1.4.2 Slough Creek Subwatershed (HUC10-202)

The Slough Creek subwatershed has an area of nearly 145 square miles and includes the cities of Collegeville and Remington (Figure 86). Agriculture account for 84.77 percent of the total subwatershed area followed by forested (6.73%) and developed land (6.05%) as shown in Table 181. Wastewater treatment plants and feeding operations are displayed in Figure 87 and Figure 88, respectively.

There are two listed segments (Table 178) and four sampling stations (Table 179) within this subwatershed. The summary of 2008 data in this subwatershed is shown in Table 180 and the required reductions range from 51 to 86 percent.

Table 178. 303 (d) Listed Streams in the Slough Creek Subwatershed

HUC 12	HU C12 Name	Segment ID	Waterbody	Stream Length (miles)	Parameter
206	Bice Ditch-Slough Creek	INK0235_T1019	Slough Creek	6.8	<i>E. coli</i>
205	Carpenter Creek	INK0238_00	Slough Creek-Carpenter Creek (Lower)	10.21	<i>E. coli</i>

Table 179. Station Locations in the Slough Creek Subwatershed

HUC 12	HUC 12 Name	Station #	Stream Name
204	Headwaters Carpenter Creek	ID# 70	Carpenter Cr
205	Carpenter Creek	ID# 68	Carpenter Cr
206	Bice Ditch-Slough Creek	ID# 64	Slough Cr
		ID# 66	Slough Cr

Table 180. Summary of Slough Creek Subwatershed

Station #	Period of Record	Total Number of Samples	Percent of Samples Exceeding <i>E. coli</i> WQS (#/100 mL)		Minimum (#/100 MI)	Geomean (#/100 MI)	Average (#/100 MI)	Maximum (#/100 MI)	Percent Reduction Based on Geomean (125/100MI)
			125	235					
70	6/4/2008 – 7/2/2008	5	60	40	76	253	636	2,419	51%
68	6/4/2008 – 7/2/2008	5	100	100	411	919	1,128	2,419	86%
64	6/4/2008 – 7/2/2008	5	100	100	365	711	915	2,419	82%
66	6/4/2008 – 7/2/2008	5	100	60	179	583	994	2,419	79%

Table 181. Land Use/Land Cover in the Slough Creek Subwatershed

Land Use/Land Cover	Subwatershed		
	Area		Percent
	Acres	Square Miles	
Agricultural Land	78,614.71	122.84	84.77
Forested Land	6,242.60	9.75	6.73
Developed Land	5,608.78	8.76	6.05
Pasture/Hay	1,871.89	2.92	2.02
Grassland and Shrubs	171.69	0.27	0.19
Open Water	146.34	0.23	0.16
Wetland	89.18	0.14	0.10
Total	92,745.18	144.91	100.00

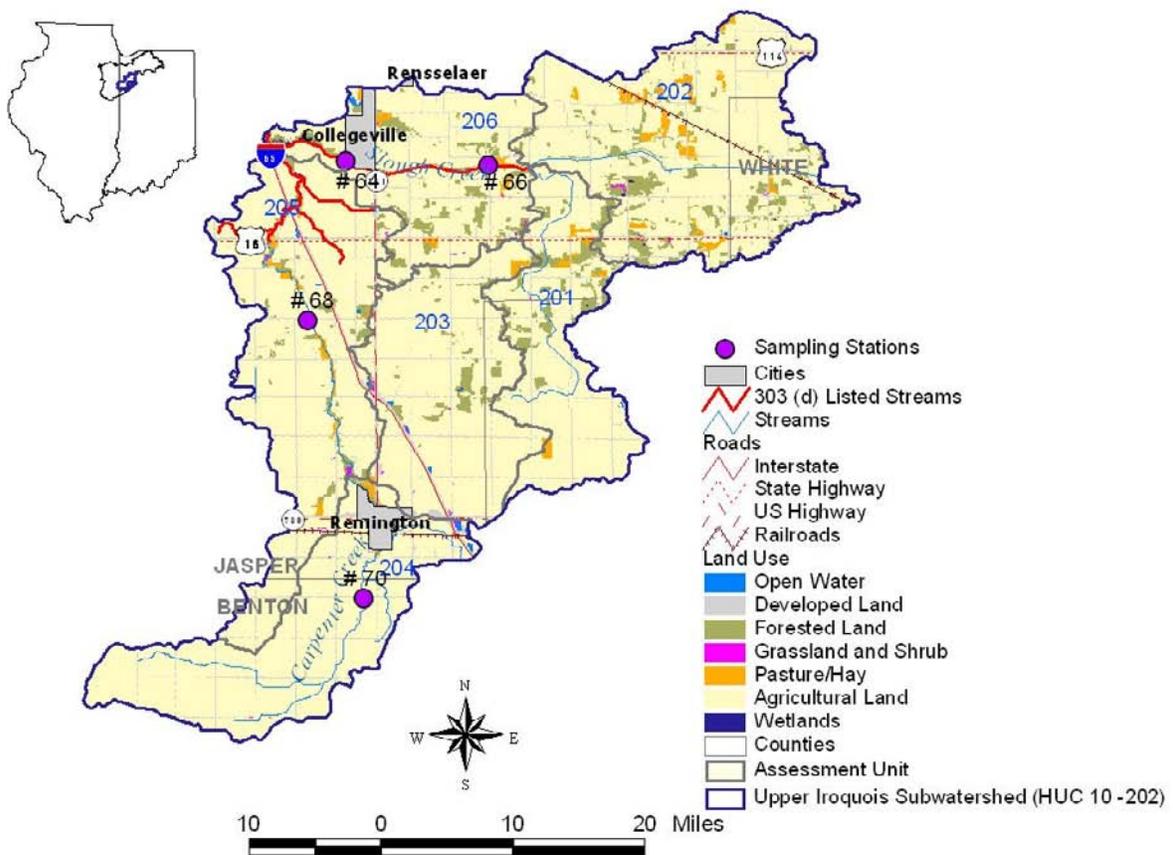


Figure 86. Location of Slough Creek Subwatershed (HUC10-202)

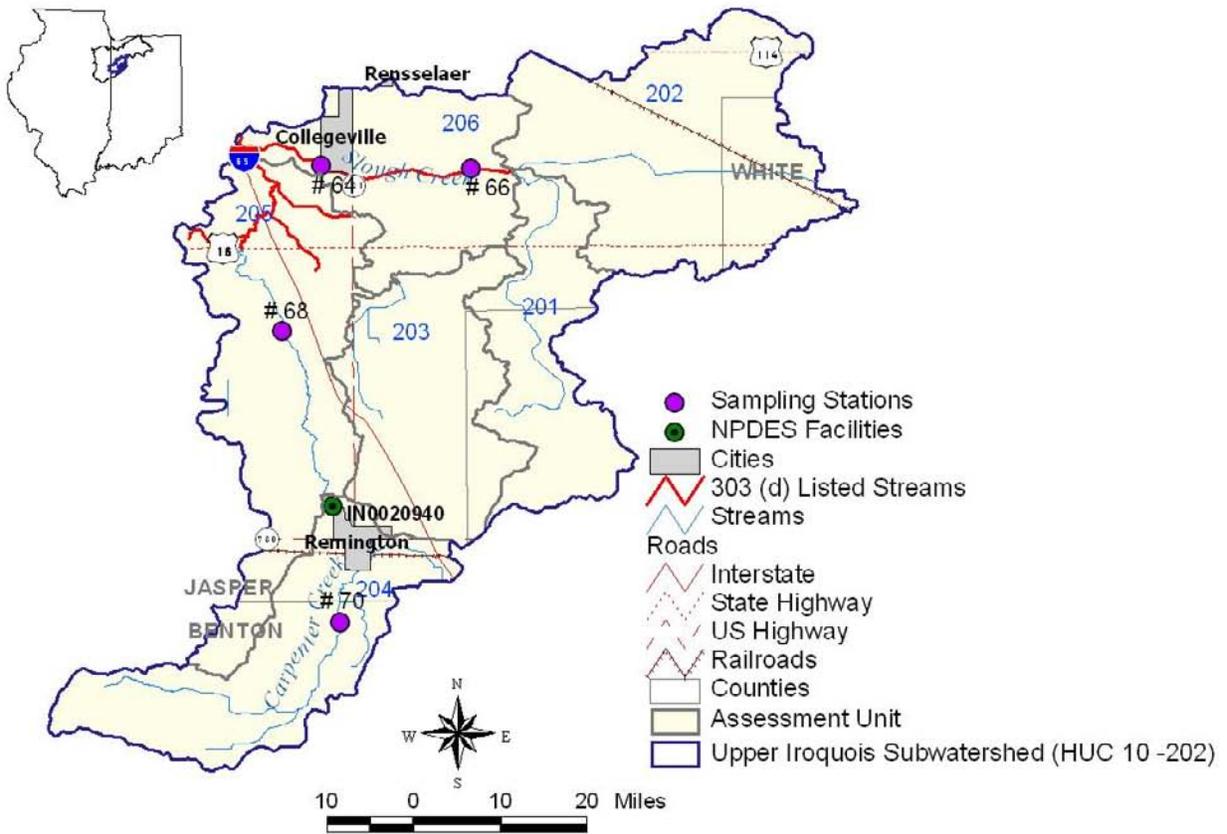


Figure 87. NPDES Facilities in the Slough Creek Subwatershed (HUC10-202)

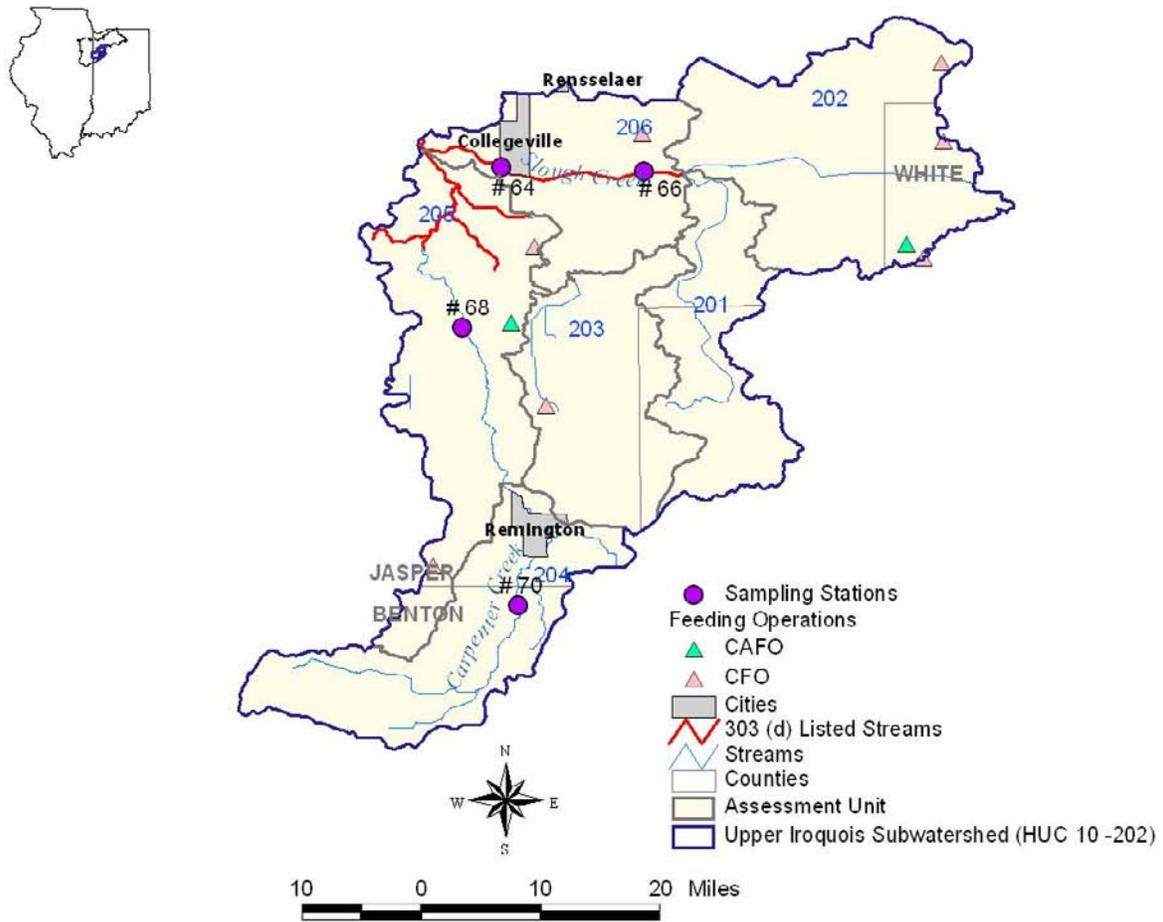


Figure 88. Feeding Operations in the Slough Creek Subwatershed (HUC10-202)

Table 182 through Table 184 summarize the subwatershed characteristics as well as the TMDL results for each of the HUC 12 subwatersheds. It should be noted that there are no current 303(d) listings in HUC 204; however, the sampling performed in 2008 suggests that several streams are impaired. Those streams will appear on the next 303(d) list and TMDLs for those streams are presented here.

There is one NPDES facilities within the Slough Creek subwatershed and the WLAs for that facility were calculated based on design flows and *E. coli* permit limits. The individual WLAs are presented in Table 276. There are two CAFOs within this subwatershed and they receive a WLA of zero as described further in Section 7.3.

Table 182. Headwaters Carpenter Creek Characteristics and TMDL Summary (HUC12-204)

Upstream Characteristics					
<i>Drainage Area</i>	23.46 square miles				
<i>Sampling Station</i>	70				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 90.32%; Developed Land:7.19%; Forest:0.74%; Other: 1.74%				
<i>Soils</i>	A: 0.00%; B: 62.58%; C: 36.77%; D:0.65%; Unknown:0.00%				
<i>NPDES Facilities</i>	Remington WWTP (IN0020940)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	None				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	203.59	55.49	19.83	5.45	0.71
<i>WLA</i>	2.03	2.03	2.03	2.03	2.03
<i>MOS (10%)</i>	22.85	6.39	2.43	0.83	0.3
<i>TMDL = LA+WLA+MOS</i>	228.47	63.91	24.29	8.31	3.04

Table 183. Carpenter Creek Characteristics and TMDL Summary (HUC12-205)

<i>Upstream Characteristics</i>					
<i>Drainage Area</i>	54.09 square miles				
<i>Sampling Station</i>	68				
<i>Listed Segments</i>	INK0238_00				
<i>Land Use</i>	Agriculture: 87.97%; Developed Land:6.85%; Forest:2.96%; Other: 2.22%				
<i>Soils</i>	A: 20.33%; B: 43.18%; C: 32.03%; D:4.46%; Unknown:0.00%				
<i>NPDES Facilities</i>	Remington WWTP (IN0020940)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	Tip Top Pigs Inc #1 (ING802689)				
<i>CFOs</i>	Jasper County Pullets (3506)				
	Ronald Hathaway (4390)				
<i>TMDL Allocations (billion/day)</i>					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	472.15	130.61	48.37	15.21	4.27
<i>WLA</i>	2.03	2.03	2.03	2.03	2.03
<i>MOS (10%)</i>	52.69	14.74	5.60	1.92	0.70
<i>TMDL = LA+WLA+MOS</i>	526.87	147.38	56.00	19.16	7.00

Table 184. Bice Ditch-Slough Creek Characteristics and TMDL Summary (HUC12-206)

Upstream Characteristics					
<i>Drainage Area</i>	145.11 square miles				
<i>Sampling Station</i>	64,66				
<i>Listed Segments</i>	INK0235_T1019				
<i>Land Use</i>	Agriculture: 84.65%; Developed Land:6.04%; Forest:6.72%; Other: 2.59%				
<i>Soils</i>	A: 42.90%; B: 35.03%; C: 19.69%; D:2.28%; Unknown:0.10%				
<i>NPDES Facilities</i>	Remington WWTP (IN0020940)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	White County Egg Farm (ING803422)				
	Tip Top Pigs Inc #1 (ING802689)				
<i>CFOs</i>	Jack Rodibaugh & Sons Inc (516)				
	Frey Farm (745)				
	Mark And Rebecca Streitmatter (2891)				
	White County Pullets (3423)				
	Keith Streitmatter (4260)				
	Jasper County Pullets (3506)				
	Ronald Hathaway (4390)				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	1269.84	353.74	133.16	44.22	14.87
<i>WLA</i>	2.03	2.03	2.03	2.03	2.03
<i>MOS (10%)</i>	141.32	39.53	15.02	5.14	1.88
<i>TMDL = LA+WLA+MOS</i>	1413.19	395.30	150.21	51.39	18.78

7.1.4.3 Bruner Ditch-Iroquois River Subwatershed (HUC10-203)

The Bruner Ditch subwatershed has an area of approximately 136 square miles and lies in Jasper County (Figure 89). Agriculture is the dominant land use (Table 188). There is only one NPDES facility and two CAFOs within the subwatershed as documented in Figure 90 and Figure 91, respectively. The subwatershed has two listed segments (Table 185). Table 186 lists the sampling locations and Table 187 summarizes the 2008 data. The required reductions range from 64 to 80 percent in this subwatershed.

Table 185. 303 (d) Listed Streams in the Bruner Ditch-Iroquois River Subwatershed

HUC 12	HU C12 Name	Segment ID	Waterbody	Stream Length (miles)	Parameter
303	Dexter Ditch-Iroquois River	INK0223_T1003	Iroquois River	3.51	<i>E. coli</i>
305	Moore Ditch_Iroquois River	INK0226_T1004	Iroquois River	10.9	<i>E. coli</i>

Table 186. Station Locations in the Bruner Ditch-Iroquois River Subwatershed

HUC 12	HU C12 Name	Station #	Stream Name
304	Ryan Ditch	ID# 58	Ryan D
305	Moore Ditch-Iroquois River	ID# 60	Iroquois R

Table 187. Summary of Pathogen Data in the Bruner Ditch-Iroquois River Subwatershed

Station #	Period of Record	Total Number of Samples	Percent of Samples Exceeding <i>E. coli</i> WQS (#/100 mL)		Minimum (#/100 mL)	Geomean (#/100 mL)	Average (#/100 mL)	Maximum (#/100 mL)	Percent Reduction Based on Geomean (125/100mL)
			125	235					
58	6/4/2008 - 7/2/2008	5	100	40	162	343	665	2,419	64%
60	6/4/2008 - 7/2/2008	5	100	100	365	631	672	1,120	80%

Table 188. Land Use/Land Cover in the Bruner Ditch-Iroquois River Subwatershed

Land Use/Land Cover	Subwatershed		
	Area		Percent
	Acres	Square Miles	
Agricultural Land	72,477.52	113.25	83.57
Forested Land	4,947.38	7.73	5.70
Developed Land	5,619.67	8.78	6.48
Pasture/Hay	2,570.65	4.02	2.96
Grassland and Shrubs	693.65	1.08	0.80
Open Water	320.69	0.50	0.37
Wetland	97.41	0.15	0.11
Total	86,726.97	135.51	100.00

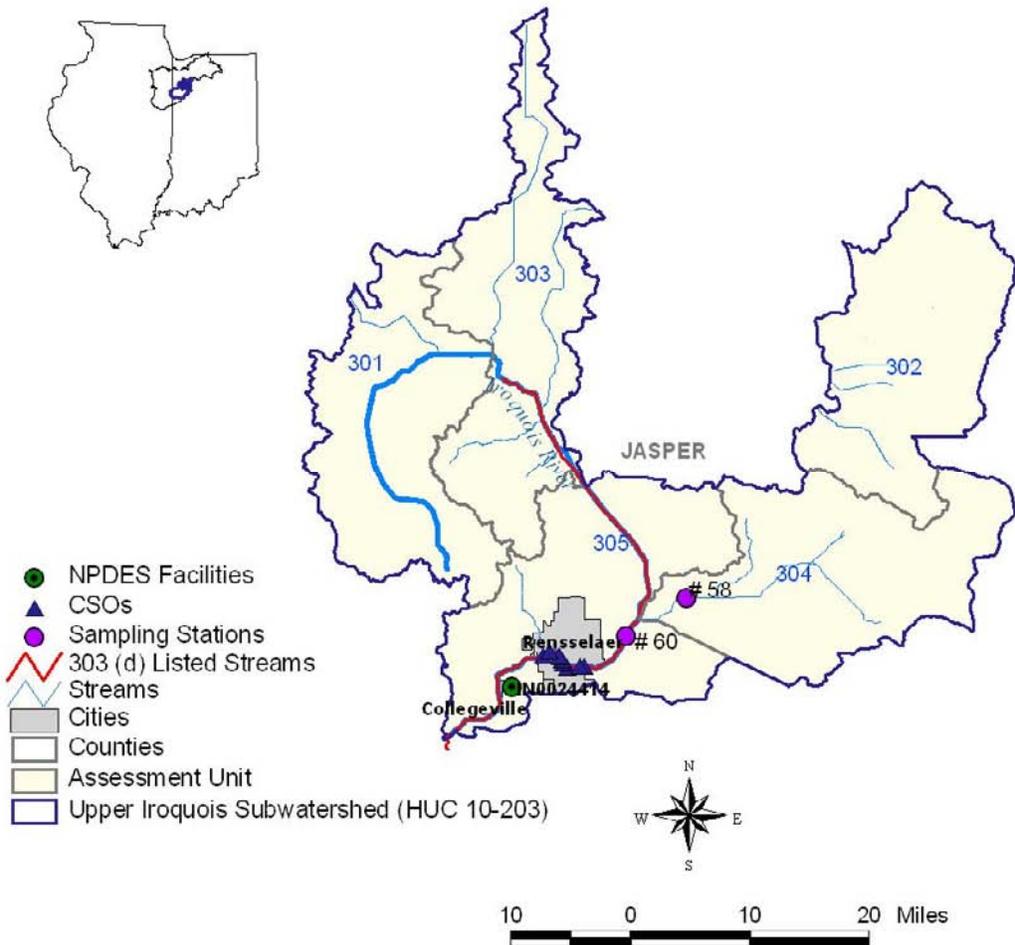


Figure 89. Location of Bruner Ditch-Iroquois River (HUC10-203)

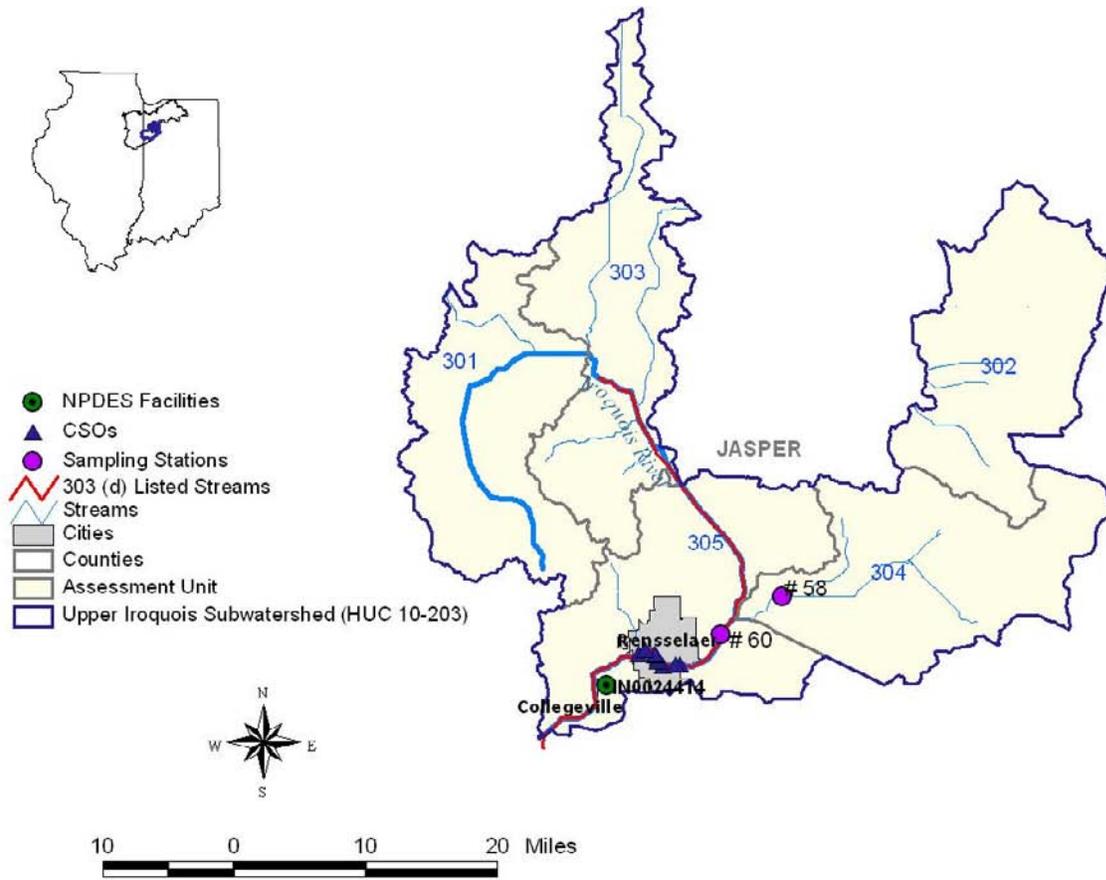


Figure 90. NPDES Facilities in the Bruner Ditch-Iroquois River (HUC10-203)

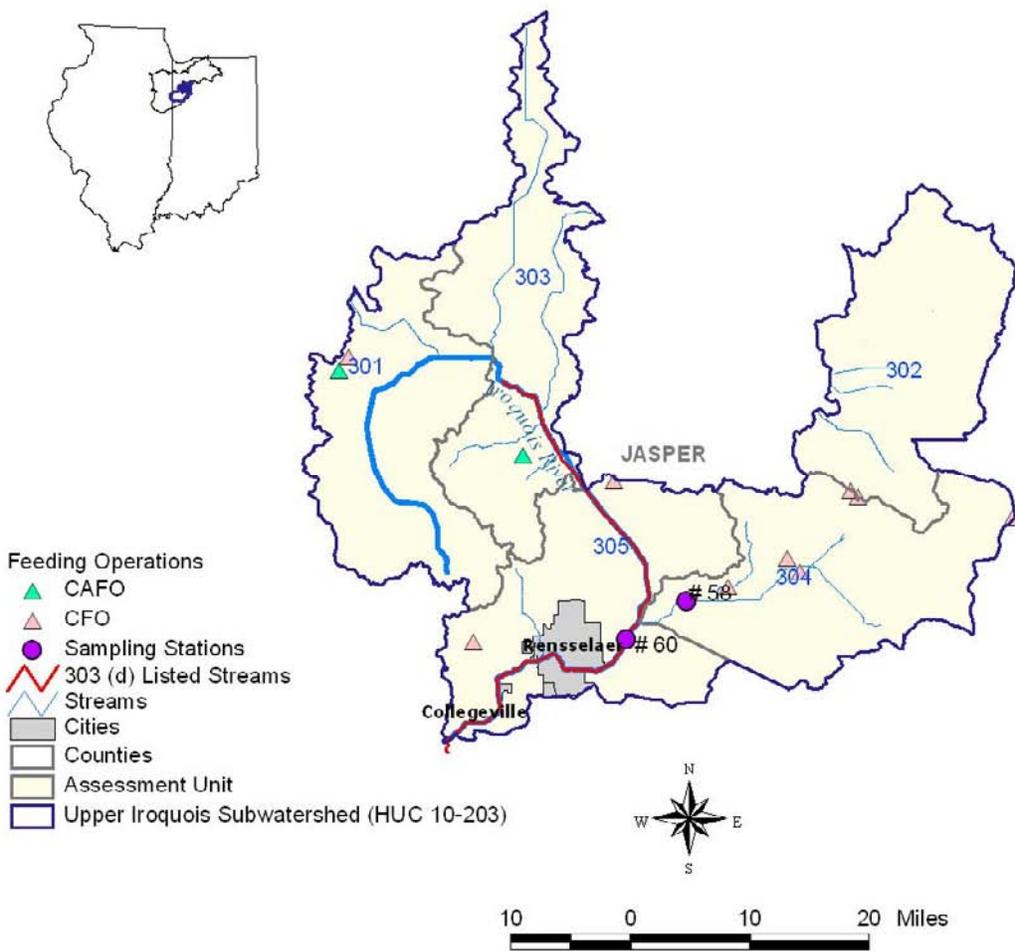


Figure 91. Feeding Operations in the Bruner Ditch-Iroquois River (HUC10-203)

Table 189 through Table 191 summarize the subwatershed characteristics as well as the TMDL results for each of the HUC 12 subwatersheds. It should be noted that there are no current 303(d) listings in HUC 304; however, the sampling performed in 2008 suggests that several streams are impaired. Those streams will appear on the next 303(d) list and TMDLs for those streams are presented here.

There is one NPDES facility within the Bruner Ditch subwatershed and the WLAs for the facility were calculated based on the design flows and *E. coli* permit limits. There is one CSO community with 9 outfalls upstream of this subwatershed. WLAs for CSO communities were calculated based on the maximum observed CSO flow at each outfall and *E. coli* standards. The individual WLAs are presented in Table 276. There are two CAFOs within this subwatershed and they receive a WLA of zero as described further in Section 7.3.

Table 189. Dexter Ditch-Iroquois River Characteristics and TMDL Summary (HUC12-303)

Upstream Characteristics					
<i>Drainage Area</i>	52.93 square miles				
<i>Sampling Station</i>	None				
<i>Listed Segments</i>	INK0223_T1003				
<i>Land Use</i>	Agriculture: 79.61%; Developed Land:6.00%; Forest:8.53%; Other: 5.86%				
<i>Soils</i>	A: 47.98%; B: 45.66%; C: 4.34%; D:1.45%; Unknown:0.58%				
<i>NPDES Facilities</i>	None				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	Grow Feedlots (ING800876)				
	Dairy (ING806045)				
<i>CFOs</i>	Iroquois Valley Swine (3700)				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	466.42	124.86	51.67	20.09	7.89
<i>WLA</i>	0	0	0	0	0
<i>MOS (10%)</i>	51.82	13.87	5.74	2.23	0.88
<i>TMDL = LA+WLA+MOS</i>	518.24	138.73	57.41	22.32	8.77

Table 190. Ryan Ditch-Iroquois River Characteristics and TMDL Summary (HUC12-304)

Upstream Characteristics					
<i>Drainage Area</i>	53.87 square miles				
<i>Sampling Station</i>	58				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 90.36%; Developed Land:3.66%; Forest:3.08%; Other: 2.90%				
<i>Soils</i>	A: 22.65%; B: 56.91%; C: 14.64%; D:5.52%; Unknown:0.28%				
<i>NPDES Facilities</i>	None				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	Bruce Wuethrich Farm (230)				
	Hurley Swine Enterprises #1 (4056)				
	Parkinson & Rodibaugh (4235)				
	G.O.P. Farms (4656)				
	Moore Farms (4337)				
	Northwind Pork LLC (4991)				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	474.71	127.07	52.58	20.45	8.04
<i>WLA</i>	0.00	0.00	0.00	0.00	0.00
<i>MOS (10%)</i>	52.74	14.12	5.84	2.27	0.89
<i>TMDL = LA+WLA+MOS</i>	527.45	141.19	58.42	22.72	8.93

Table 191. Moore Ditch-Iroquois River Characteristics and TMDL Summary (HUC12-305)

Upstream Characteristics					
<i>Drainage Area</i>	217.93 square miles				
<i>Sampling Station</i>	60				
<i>Listed Segments</i>	INK0226_T1004				
<i>Land Use</i>	Agriculture: 78.59%; Developed Land:5.89%; Forest:10.35%; Other: 5.17%				
<i>Soils</i>	A: 42.66%; B: 42.17%; C: 10.80%; D:3.74%; Unknown:0.62%				
<i>NPDES Facilities</i>	Rensselaer Municipal STP (IN0024414)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	Rensselaer Municipal STP (IN0024414)-9 outfalls				
<i>CAFOs</i>	Grow Feedlots (ING800876)				
	Windy Ridge Dairy (ING806045)				
	Newberry Farms, LLC (ING806083)				
<i>CFOs</i>	Bruce Wuethrich Farm (230)				
	Hurley Swine Enterprises #1 (4056)				
	Parkinson & Rodibaugh (4235)				
	G.O.P. Farms (4656)				
	Moore Farms (4337)				
	Pullin Farms Inc. (652)				
	Greg & Mark Bailey (2284)				
	Iroquois Valley Swine (3700)				
	Whitaker Farms (6355)				
Northwind Pork LLC (4991)					
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	1056.13	508.42	207.05	77.05	26.82
<i>WLA</i>	864.35	5.68	5.68	5.68	5.68
<i>MOS (10%)</i>	213.39	57.12	23.64	9.19	3.61
<i>TMDL = LA+WLA+MOS</i>	2133.87	571.22	236.37	91.92	36.11

7.1.4.4 Curtis Creek-Iroquois River Subwatershed (HUC10-204)

The Curtis Creek subwatershed has an area of nearly 162 square miles and is located within Jasper, Newton and Benton counties (Figure 92). A significant portion of the land (86.34%) is used for agriculture. Developed land accounts for 9.83 percent. The remaining land categories comprise 7.58 percent of the total subwatershed area (Table 194). The NPDES facilities and feeding operations that are potential sources of pathogen in this subwatershed are shown in Figure 93 and Figure 94, respectively. Although no segments were listed in 2006, the 2008 data suggest impaired conditions (Table 192 and Table 193). The required reductions range from 75 to 89 percent in this subwatershed.

Table 192. Station Locations in the Curtis Creek-Iroquois River Subwatershed

HUC 12	HU C12 Name	Station #	Stream Name
401	Headwaters Curtis Creek	ID# 62	Curtis Cr
403	Hunter Ditch	ID# 76	Hunter D
404	Bower Ditch-Darroch Ditch	ID# 78	Darroch D
405	Hickory Branch-Iroquois River	ID# 72	Mosquito Cr
		ID# 74	Iroquois R

Table 193. Summary of Pathogen Data in Curtis Creek-Iroquois River Subwatershed

Station #	Period of Record	Total Number of Samples	Percent of Samples Exceeding <i>E. coli</i> WQS (#/100 mL)		Minimum (#/100 mL)	Geomean (#/100 mL)	Average (#/100 mL)	Maximum (#/100 mL)	Percent Reduction Based on Geomean (125/100mL)
			125	235					
62	6/4/2008 - 7/2/2008	5	100	100	326	649	882	2,419	81%
76	6/2/2008 - 6/30/2008	5	100	100	866	1,122	1,144	1,414	89%
78	6/2/2008 - 6/30/2008	5	100	100	276	755	866	1,300	83%
72	6/2/2008 - 6/30/2008	5	100	100	276	544	608	1,120	77%
74	6/2/2008 - 6/30/2008	5	100	80	131	495	805	2,419	75%

Table 194. Land Use/Land Cover in the Curtis Creek-Iroquois River Subwatershed

Land Use/Land Cover	Subwatershed		
	Area		Percent
	Acres	Square Miles	
Agricultural Land	89,350.55	139.61	86.34
Forested Land	4,048.90	6.33	3.91
Developed Land	6,291.75	9.83	6.08
Pasture/Hay	3,008.32	4.70	2.91
Grassland and Shrubs	217.06	0.34	0.21
Open Water	178.80	0.28	0.17
Wetland	394.30	0.62	0.38
Total	103,489.69	161.70	100.00

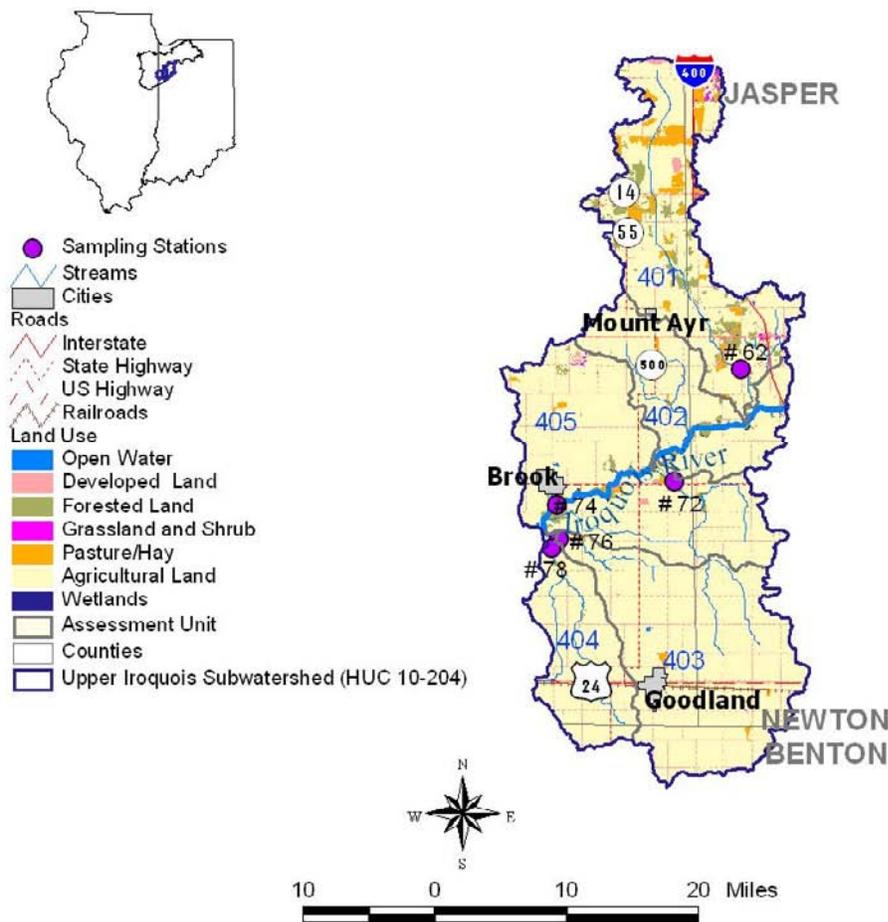


Figure 92. Location of Curtis Creek-Iroquois River Subwatershed (HUC10-204)

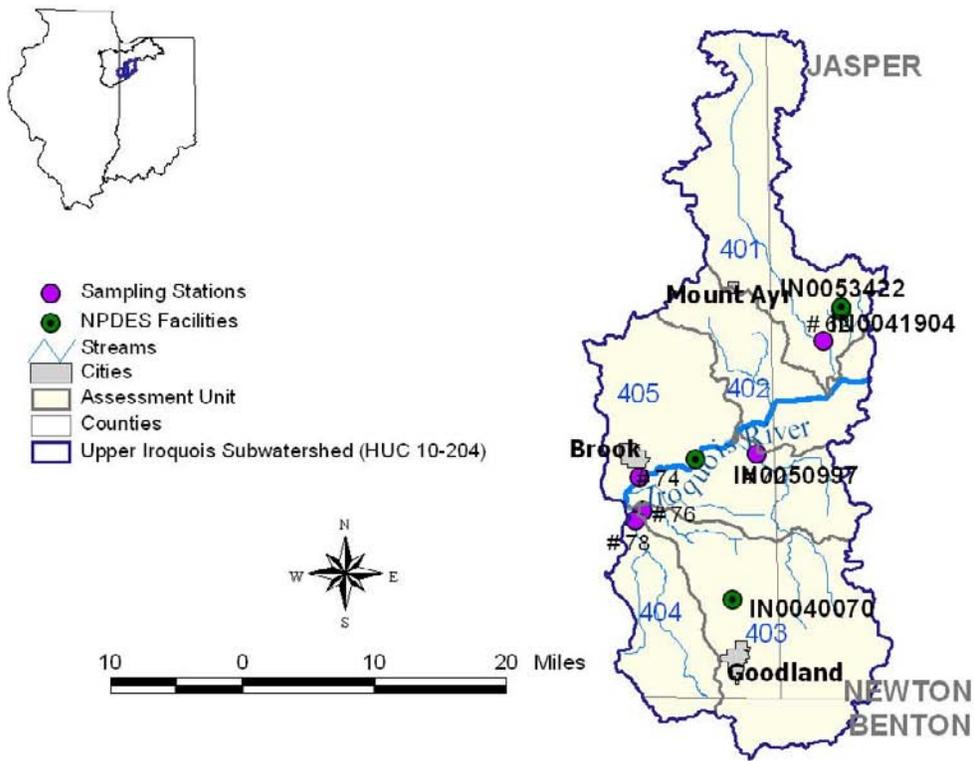


Figure 93. NPDES Facilities in the Curtis Creek-Iroquois River Subwatershed (HUC10-204)

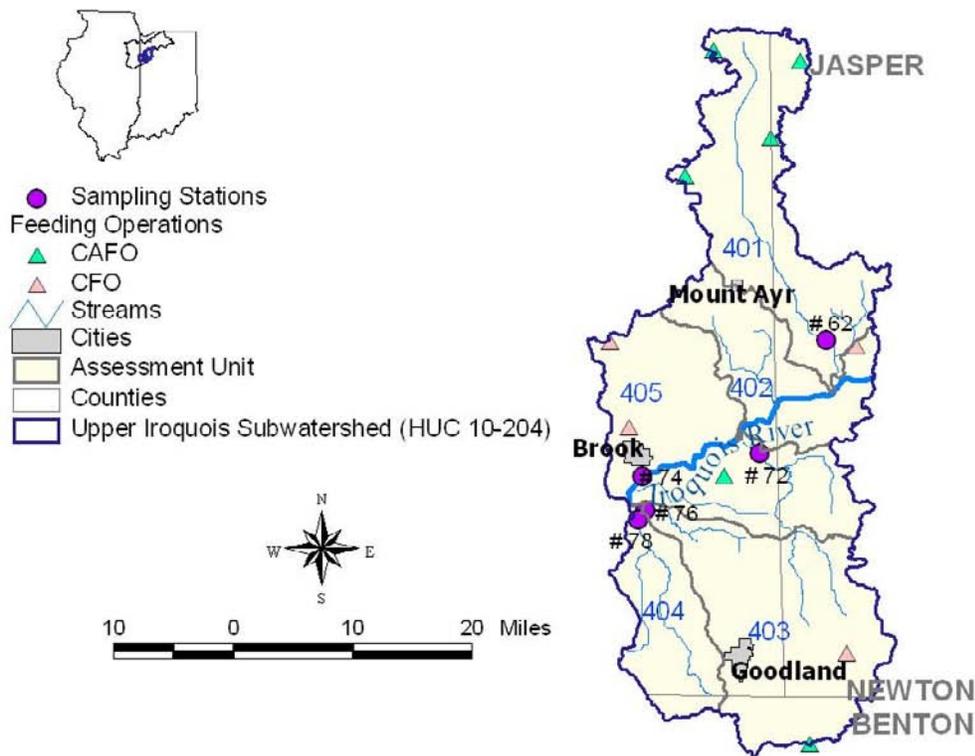


Figure 94. Feeding Operations in Curtis Creek-Iroquois River Subwatershed (HUC10-204)

Table 195 through Table 198 summarize the subwatershed characteristics as well as the TMDL results for each of the HUC 12 subwatersheds. It should be noted that there are no current 303(d) listings in this subwatershed; however, the sampling performed in 2008 suggests that several streams are impaired. Those streams will appear on the next 303(d) list and TMDLs for those streams are presented here.

There are three NPDES facilities within the Mill Creek subwatershed and the WLAs for the facilities were calculated based on their design flows and *E. coli* permit limits. There is one CSO community with 9 outfalls upstream of this subwatershed. WLAs for CSO communities were calculated based on the maximum observed CSO flow at each outfall and *E. coli* standards. The individual WLAs are presented in Table 276. There are six CAFOs within this subwatershed and they receive a WLA of zero as described further in Section 7.3.

Table 195. Headwaters Curtis Creek Characteristics and TMDL Summary (HUC12-401)

Upstream Characteristics					
<i>Drainage Area</i>	38.66 square miles				
<i>Sampling Station</i>	62				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 72.70%; Developed Land:7.73%; Forest:9.50%; Other: 10.07%				
<i>Soils</i>	A: 48.65%; B: 40.93%; C: 8.11%; D:2.32%; Unknown:0.00%				
<i>NPDES Facilities</i>	Trail Tree Inn (IN0041904)				
	Grandmas Home Cooking (IN0053422)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	Cambalot Swine Breeders *				
	Calf Land, LLC (ING803732)				
	Fair Oaks Dairy Farm South (ING806036)				
	Fair Oaks Dairy Farm West (ING806065)				
	Fair Oaks Dairy Farm, LLC. - North Central # 5 (ING806341)				
<i>CFOs</i>	None				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	337.50	93.43	34.67	10.97	3.15
<i>WLA</i>	1.35	1.35	1.35	1.35	1.35
<i>MOS (10%)</i>	37.65	10.53	4.00	1.37	0.50
<i>TMDL = LA+WLA+MOS</i>	376.50	105.31	40.02	13.69	5.00

* ID not available

Table 196. Hunter Ditch Characteristics and TMDL Summary (HUC12-403)

Upstream Characteristics					
<i>Drainage Area</i>	42.66 square miles				
<i>Sampling Station</i>	76				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 92.65%; Developed Land:6.16%; Forest:0.27%; Other: 0.92%				
<i>Soils</i>	A: 6.69%; B: 47.54%; C: 44.01%; D:1.76%; Unknown:0.00%				
<i>NPDES Facilities</i>	Goodland Municipal WWTP (IN0040070)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	Seven Hills Dairy, LLC (ING806207)				
<i>CFOs</i>	Oinker Acres (3279)				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	373.46	104.14	39.29	13.15	4.52
<i>WLA</i>	0.45	0.45	0.45	0.45	0.45
<i>MOS (10%)</i>	41.55	11.62	4.42	1.51	0.55
<i>TMDL = LA+WLA+MOS</i>	415.46	116.21	44.16	15.11	5.52

Table 197. Bower Ditch –Darroch Ditch Characteristics and TMDL Summary (HUC12-404)

Upstream Characteristics					
<i>Drainage Area</i>	59.77 square miles				
<i>Sampling Station</i>	78				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 92.86%; Developed Land:5.84%; Forest:0.53%; Other: 0.77%				
<i>Soils</i>	A: 5.30%; B: 49.75%; C: 43.18%; D:1.77%; Unknown:0.00%				
<i>NPDES Facilities</i>	Goodland Municipal WWTP (IN0040070)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	Seven Hills Dairy, LLC (ING806207)				
<i>CFOs</i>	Oinker Acres (3279)				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	523.43	146.09	55.24	18.6	6.51
<i>WLA</i>	0.45	0.45	0.45	0.45	0.45
<i>MOS (10%)</i>	58.21	16.28	6.18	2.12	0.77
<i>TMDL = LA+WLA+MOS</i>	582.09	162.82	61.87	21.17	7.73

Table 198. Hickory Branch –Iroquois River Characteristics and TMDL Summary (HUC12-405)

Upstream Characteristics					
<i>Drainage Area</i>	524.76 square miles				
<i>Sampling Station</i>	72,74				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 82.65%; Developed Land:5.99%; Forest:7.36%; Other: 4.00%				
<i>Soils</i>	A: 35.58%; B: 39.75%; C: 19.64%; D:4.74%; Unknown:0.29%				
<i>NPDES Facilities</i>	Facilities Upstream of HUC12-206 ^a				
	Trail Tree Inn (IN0041904)				
	Goodland Municipal WWTP (IN0040070)				
	Grandmas Home Cooking (IN0053422)				
	George Ade Mem Health Care Car (IN0050997)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	Rensselaer Municipal STP (IN0024414)-9 outfalls				
<i>CAFOs</i>	Facilities Upstream of HUC12-206 ^a and HUC12-205 ^b				
	Seven Hills Dairy, LLC (ING806207)				
<i>CFOs</i>	Facilities Upstream of HUC12-206 ^a and HUC12-205 ^b				
	Oinker Acres (3279)				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	3731.22	1276.99	479.33	157.69	51.54
<i>WLA</i>	868.24	9.57	9.57	9.57	9.57
<i>MOS (10%)</i>	511.05	142.95	54.32	18.58	6.79
<i>TMDL = LA+WLA+MOS</i>	5110.51	1429.51	543.22	185.84	67.9

a: Refers to Upper Iroquois HUC12

7.1.4.5 **Montgomery Ditch-Iroquois River Subwatershed (HUC10-205)**

The Montgomery Ditch subwatershed has an area of nearly 160 square miles. Incorporated cities with this subwatershed include Sheldon and Kentland (Figure 95). As with the above watersheds, agriculture is the dominant land use covering 88.70 percent of the subwatershed area (Table 201). There are two NPDES facilities (Figure 96) and no CAFO (Figure 97) in this subwatershed. The subwatershed does not have any 303 (d) listed segments within it. The summary of the *E. coli* data at the four monitoring locations (Table 199) is listed in Table 200. The required reductions range from 41 to 85 percent.

Table 199. Station Locations in the Montgomery Ditch -Iroquois River Subwatershed

HUC 12	HUC 12 Name	Station #	Stream Name
502	Whaley Ditch	ID# 82	Thompson D
503	Strole Ditch-Iroquois River	ID# 80	Iroquois R
505	Kent Ditch-Montgomery Ditch	ID# 86	Montgomery
506	Montgomery Ditch	ID# 84	Montgomery

Table 200. Summary of Pathogen Data in Montgomery Ditch-Iroquois River Subwatershed

Station #	Period of Record	Total Number of Samples	Percent of Samples Exceeding <i>E. coli</i> WQS (#/100 mL)		Minimum (#/100 mL)	Geomean (#/100 mL)	Average (#/100 mL)	Maximum (#/100 mL)	Percent Reduction Based on Geomean (125/100mL)
			125	235					
82	6/2/2008 - 6/30/2008	5	100	80	214	361	414	866	65%
80	6/2/2008 - 6/30/2008	5	80	40	102	211	252	488	41%
86	6/2/2008 - 6/30/2008	5	100	100	345	581	632	1,046	78%
84	6/2/2008 - 6/30/2008	5	100	100	411	813	877	1,300	85%

Table 201. Land Use/Land cover in the Montgomery Ditch -Iroquois River Subwatershed

Land Use/Land Cover	Subwatershed		
	Area		Percent
	Acres	Square Miles	
Agricultural Land	91,053.20	142.27	88.70
Developed Land	6,550.84	10.24	6.38
Forested Land	2,462.12	3.85	2.40
Pasture/Hay	2,023.34	3.16	1.97
Open Water	247.97	0.39	0.24
Wetland	236.85	0.37	0.23
Grassland and Shrubs	78.28	0.12	0.08
Total	102,652.60	160.39	100.00

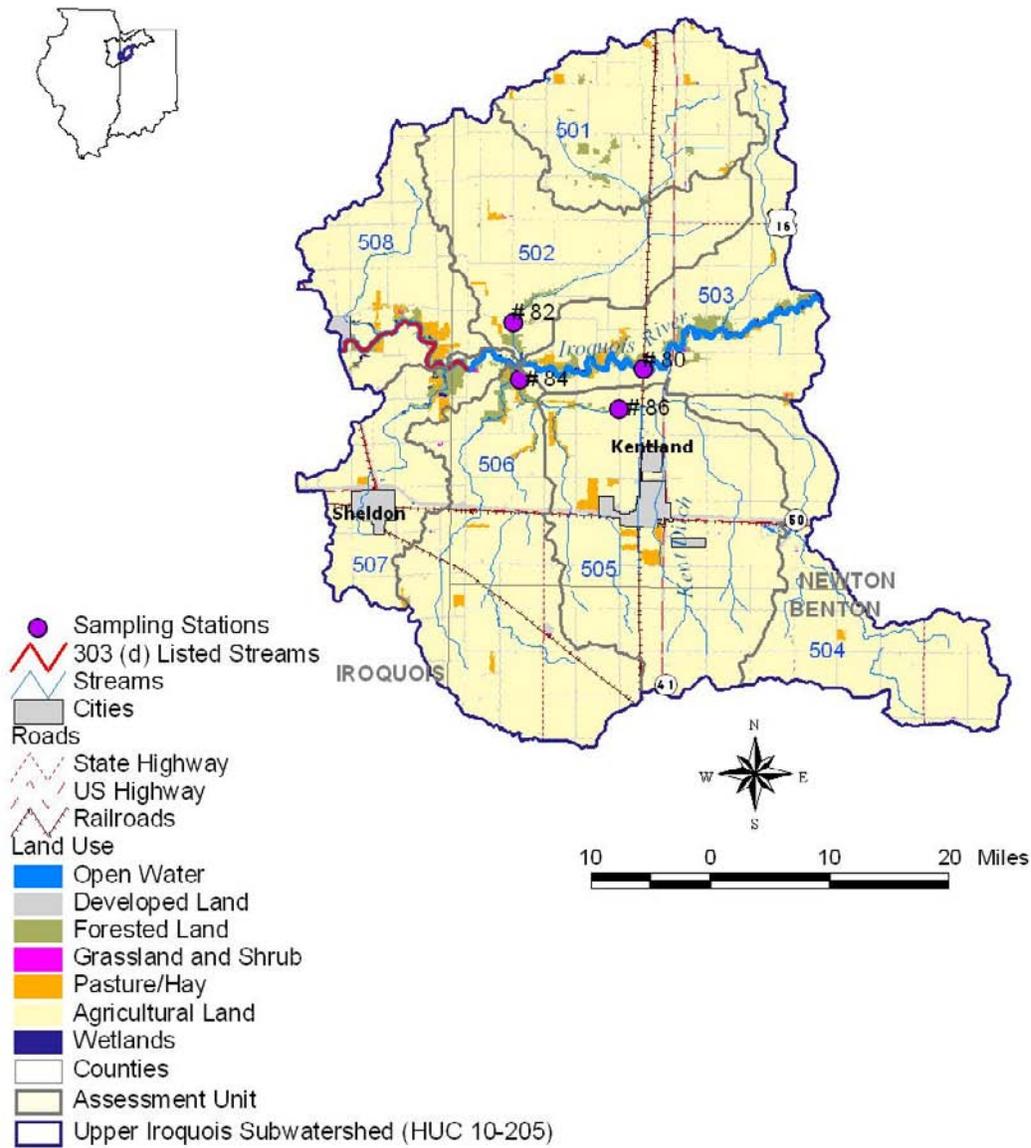


Figure 95. Location of Montgomery Ditch-Iroquois River Subwatershed (HUC10-205)

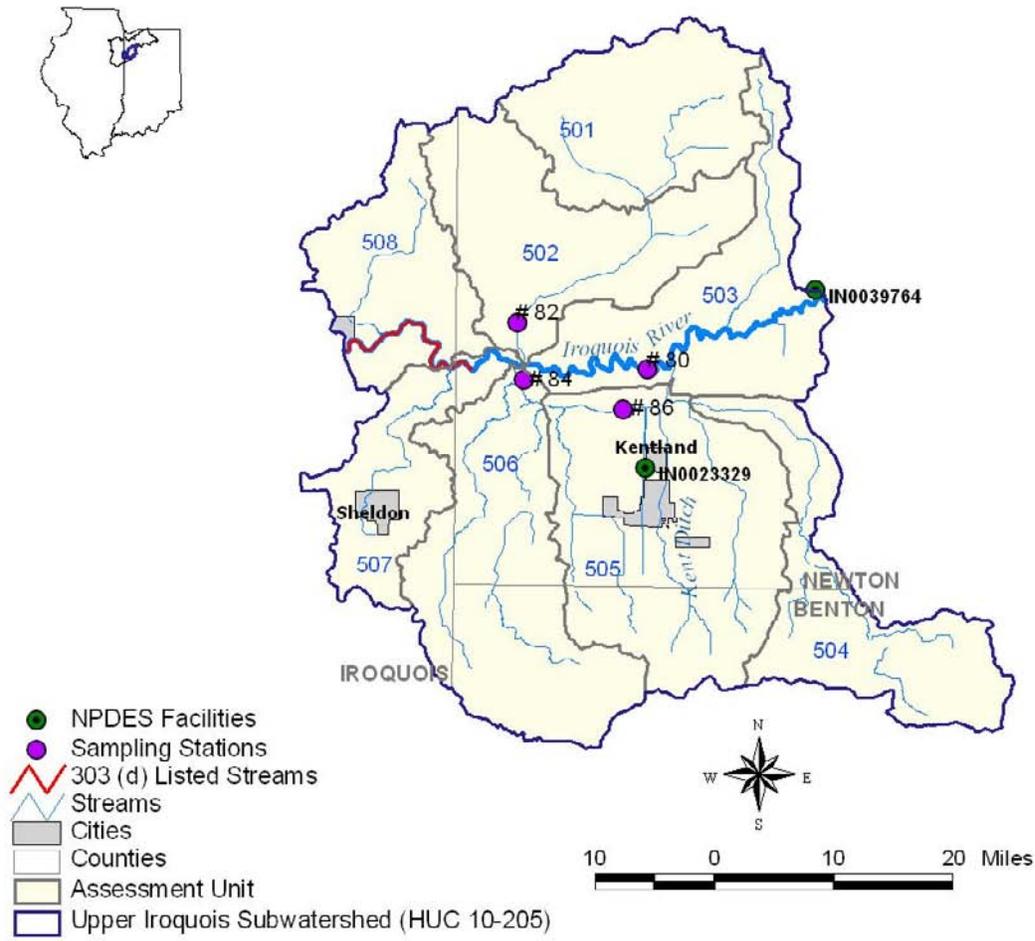


Figure 96. NPDES Facilities in the Montgomery Ditch-Iroquois River Subwatershed (HUC10-205)

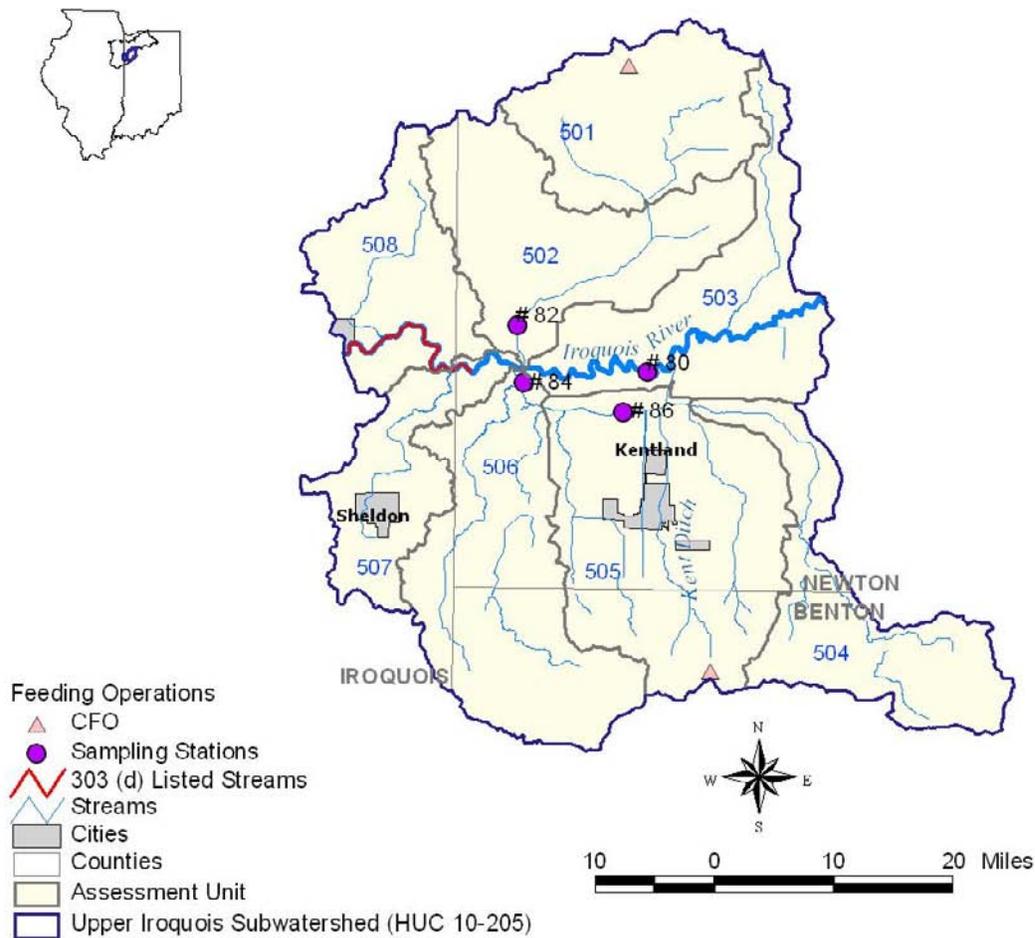


Figure 97. Feeding Operations in the Montgomery Ditch-Iroquois River Subwatershed (HUC10-205)

Table 202 through Table 205 summarize the subwatershed characteristics as well as the TMDL results for each of the HUC 12 subwatersheds. It should be noted that there are no current 303(d) listings in the subwatershed; however, the sampling performed in 2008 suggests that several streams are impaired. Those streams will appear on the next 303(d) list and TMDLs for those streams are presented here.

There are two NPDES facilities within the Montgomery Ditch subwatershed and the WLAs for the facilities were calculated based on their design flows and *E. coli* permit limits. There is one CSO community with 9 outfalls upstream of this subwatershed. WLAs for CSO communities were calculated based on the maximum observed CSO flow at each outfall and *E. coli* standards. The individual WLAs are presented in Table 276. There are two CAFOs within this subwatershed and they receive a WLA of zero as described further in Section 7.3.

Table 202. Whaley Ditch Characteristics and TMDL Summary (HUC 12-502)

Upstream Characteristics					
<i>Drainage Area</i>	38.93 square miles				
<i>Sampling Station</i>	82				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 91.54%; Developed Land:5.44%; Forest:1.95%; Other: 4.00%				
<i>Soils</i>	A: 7.66%; B: 54.60%; C: 32.57%; D:5.17%; Unknown:0.00%				
<i>NPDES Facilities</i>	None				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	Gary A Clark (669)				
TMDL Allocations (billion/day)					
	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	365.13	78.80	25.70	5.28	1.63
<i>WLA</i>	0.00	0.00	0.00	0.00	0.00
<i>MOS (10%)</i>	40.57	8.75	2.86	0.59	0.18
<i>TMDL = LA+WLA+MOS</i>	405.70	87.55	28.56	5.87	1.81

Table 203. Strole Ditch-Iroquois River Characteristics and TMDL Summary (HUC 12-503)

Upstream Characteristics					
<i>Drainage Area</i>	545.01 Square miles				
<i>Sampling Station</i>	80				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 82.69%; Developed Land:5.96%; Forest:7.35%; Other: 4.00%				
<i>Soils</i>	A: 34.47%; B: 40.17%; C: 20.44%; D:4.65%; Unknown:0.28%				
<i>NPDES Facilities</i>	All facilities upstream of HUC12-405 ^a				
	Brook Municipal WWTP (IN0039764)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	Rensselaer Municipal STP (IN0024414)-9 outfalls				
	Brook Municipal WWTP (IN0039764)				
<i>CAFOs</i>	All facilities upstream of HUC12-405 ^a				
<i>CFOs</i>	All facilities upstream of HUC12-405 ^a				
TMDL Allocations (billion/day)					
	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	4243.04	1093.03	349.8	63.95	12.83
<i>WLA</i>	868.72	10.04	10.04	10.04	10.04
<i>MOS (10%)</i>	567.97	122.56	39.98	8.22	2.54
<i>TMDL = LA+WLA+MOS</i>	5679.73	1225.63	399.82	82.21	25.41

a: Refers to Upper Iroquois HUC 12

Table 204. Kent Ditch-Montgomery Ditch Characteristics and TMDL Summary (HUC 12-505)

<i>Upstream Characteristics</i>					
<i>Drainage Area</i>	49.15 square miles				
<i>Sampling Station</i>	86				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 90.50%; Developed Land:7.01%; Forest:0.18%; Other: 2.31%				
<i>Soils</i>	A: 0.92%; B: 50.15%; C: 47.71%; D:1.22%; Unknown:0.00%				
<i>NPDES Facilities</i>	Kentland Municipal WWTP (IN0023329)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	Carl E Funk Farms (1680)				
<i>TMDL Allocations (billion/day)*</i>					
	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	460.07	98.57	31.54	5.76	1.15
<i>WLA</i>	2.18	2.18	2.18	2.18	2.18
<i>MOS (10%)</i>	51.36	11.19	3.74	0.88	0.37
<i>TMDL = LA+WLA+MOS</i>	513.61	111.94	37.46	8.82	3.7

* Design flows from the Kentland Municipal WWTP facility were added to the originally estimated flows. Without these modifications the WLA would exceed the TMDL during low flows.

Table 205. Montgomery Ditch Characteristics and TMDL Summary (HUC 12-506)

Upstream Characteristics					
<i>Drainage Area</i>	75.39 square miles				
<i>Sampling Station</i>	84				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 90.56%; Developed Land:6.48%; Forest:0.73%; Other: 2.23%				
<i>Soils</i>	A: 0.80%; B: 51.29%; C: 45.02%; D:2.89%; Unknown:0.00%				
<i>NPDES Facilities</i>	Kentland Municipal WWTP (IN0023329)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	Carl E Funk Farms (1680)				
TMDL Allocations (billion/day)					
	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	705.01	150.43	47.6	8.06	0.99
<i>WLA</i>	2.18	2.18	2.18	2.18	2.18
<i>MOS (10%)</i>	78.58	16.95	5.53	1.13	0.35
<i>TMDL = LA+WLA+MOS</i>	785.77	169.56	55.31	11.37	3.52

7.1.5 Lower Iroquois Subwatershed

The Lower Iroquois Subwatershed is comprised of nine HUC 10 and forty seven HUC 12 subwatersheds. Note that HUC 10 subwatersheds 206, 208, 209, 211, and 212 do not have impaired segments, but 2008 sampling of monitoring locations showed impairments. Therefore, TMDLs are calculated for these subwatersheds.

Table 206. Hydrologic Unit Code (HUC 10 and 12) in the Lower Iroquois Subwatershed

HUC 10	HU C10 Name	HUC 12	HU C12 Name	Area (sq. miles)
206	Mud Creek	601	071200020601	16.59125
		602	071200020602	18.7441
		603	Headwaters Pigeon Creek	30.8068
		604	Pigeon Creek	15.96917
		605	Whiskey Creek	21.2739
		606	Town of Hickman	19.16795
		607	Fountain Creek	45.60417
		608	Gay Creek	21.97431
		609	Town of Hallock	35.96924
		610	Little Mud Creek-Mud Creek	60.06453
207	Sugar Creek	701	Upper Sugar Creek-Sugar Creek	22.23759
		702	Coon Creek-Mud Creek	38.54219
		703	Kult Ditch-Mud Creek	16.00688
		704	Cole Creek-Mud Creek	15.40805
		705	Yeagers Curve-Sugar Creek	32.14466
		706	Town of Stockland	21.12238
		707	City of Milford-Sugar Creek	15.30333
		708	Jefferson Creek	20.80353
		709	Possum Trot Ditch	16.81788
		710	Coon Creek	30.81923
		711	Sugar Creek	48.07788
208	Spring Creek	801	801	17.07744
		802	Louis Creek	23.43562
		803	City of Roberts	18.92303
		804	Town of Dalrey	41.12784
		805	Headwaters Spring Creek	55.80779
		806	Sharetail Creek	31.4288
		807	Town of Leonard	20.31431
		808	Spring Creek	45.22072
209	Prairie Creek	901	City of Ashkum	10.4721
		902	Prairie Creek	78.95901
210	Gofield Creek-Iroquois River	001	Eastburo Hollow-Iroquois River	52.59964
		002	City of Watseka-Iroquois River	57.56998
211	Pike Creek	101	North Martinton Ditch	37.05092
		102	Pike Creek	34.02338
212	Langan Creek	201	Headwaters Langan Creek	24.28199
		202	Langan Creek	83.05827

Table 206. Hydrologic Unit Code (HUC 10 and 12) in the Lower Iroquois Subwatershed

HUC 10	HU C10 Name	HUC 12	HU C12 Name	Area (sq. miles)
213	Beaver Creek	301	Hanger Ditch-Beaver Creek	23.82794
		302	Deardruff Ditch-Beaver Creek	18.62002
		303	Carlson Ditch-Beaver Creek	17.33211
		304	Hooper Branch	22.00391
		305	North Hooper-Beaver Creek	13.93102
		306	Headwaters Little Beaver Creek	29.04992
		307	Little Beaver Creek	31.93209
		308	Beaver Creek	30.13464
214	Iroquois River	401	Minnie Creek	22.81042
		402	Iroquois River	46.59147

7.1.5.1 **Mud Creek Subwatershed (HUC10-206)**

The Mud creek subwatershed lies in Iroquois, Vermillion, and Ford counties (Figure 98). The two dominant land uses in this subwatershed are agriculture (90.85%) and developed land (5.67%). The remaining land categories all contribute less than 3 percent of the subwatershed area (Table 210). The NPDES facilities are shown in Figure 99. There are no listed segments on the current 303(d) list in this subwatershed, anticipated 2010 303 (d) listed streams are shown in Table 207. There are six monitoring station in the subwatershed (Table 208). Statistical summaries of the water quality data are presented in Table 209. The reductions needed to achieve a geomean of 200 #/100 mL range from 0 to 78 percent.

Table 207. Anticipated 2010 303 (d) Listed Streams in the Mud Creek Subwatershed

HUC 12	HU C12 Name	Segment ID	Waterbody	Stream Length (miles)	Parameter
604	Pigeon Creek	FLIDDc	Pigeon Creek	4.93	Fecal Coliform
605	Whiskey Creek	FLIDAA	Whiskey Creek	16.00	Fecal Coliform
608	Gay Creek	FLIDB	Gay Creek	12.01	Fecal Coliform
609	Town of Hallock	FLIDE-01	Unnamed Trib Mud Creek West	15.08	Fecal Coliform
610	Little Mud Creek-Mud Creek	FLID-02	Mud Creek West	8.18	Fecal Coliform

Table 208. Station Locations in the Mud Creek Subwatershed

HUC 12	HU C12 Name	Station #	Stream Name
604	Pigeon Creek	FLIDD-CP-C3	Pigeon Creek
605	Whiskey Creek	FLIDAA-01	Whisky Creek
607	Fountain Creek	FLIDA-01	Fountain Creek
608	Gay Creek	FLIDB-01	Gay Creek
609	Town of Hallock	FLIDE-01	Unnamed Trib Mud Creek West
610	Little Mud Creek-Mud Creek	FLID-02	Mud Creek West

Table 209. Summary of Pathogen Data in Mud Creek Subwatershed (IL)

Station #	Period of Record	Total Number of Samples	Percent of Samples Exceeding Fecal Coliform WQS (#/100 mL)		Minimum (#/100 mL)	Geomean (#/100 mL)	Average (#/100 mL)	Maximum (#/100 mL)	Percent Reduction Based on Geomean (200/100mL)
			200	400					
FLIDD-CP-C3	10/3/2000 - 9/17/2008	6	60	60	10	514	1,081	2,500	61%
FLIDAA-01	8/19/2008 - 9/17/2008	5	40	20	96	309	924	3,900	35%
FLIDA-01	8/19/2008 - 9/17/2008	5	60	0	60	129	153	222	0%
FLIDB-01	8/19/2008 - 9/17/2008	5	100	60	270	700	1,134	3,600	71%
FLIDE-01	8/19/2008 - 9/17/2008	5	100	100	570	912	1,115	2,780	78%
FLID-02	8/19/2008 - 9/17/2008	5	80	60	108	502	796	2,100	60%

Table 210. Land Use/land Cover in the Mud Creek Subwatershed

Land Use/Land Cover	Subwatershed		
	Area		Percent
	Acres	Square Miles	
Agricultural Land	166132.29	259.58	90.85
Developed Land	10367.34	16.20	5.67
Pasture/Hay	3809.61	5.95	2.08
Forested Land	1715.32	2.68	0.94
Wetland	619.14	0.97	0.34
Open Water	103.64	0.16	0.06
Grassland and Shrubs	106.97	0.17	0.06
Total	182,854.32	285.71	100.00

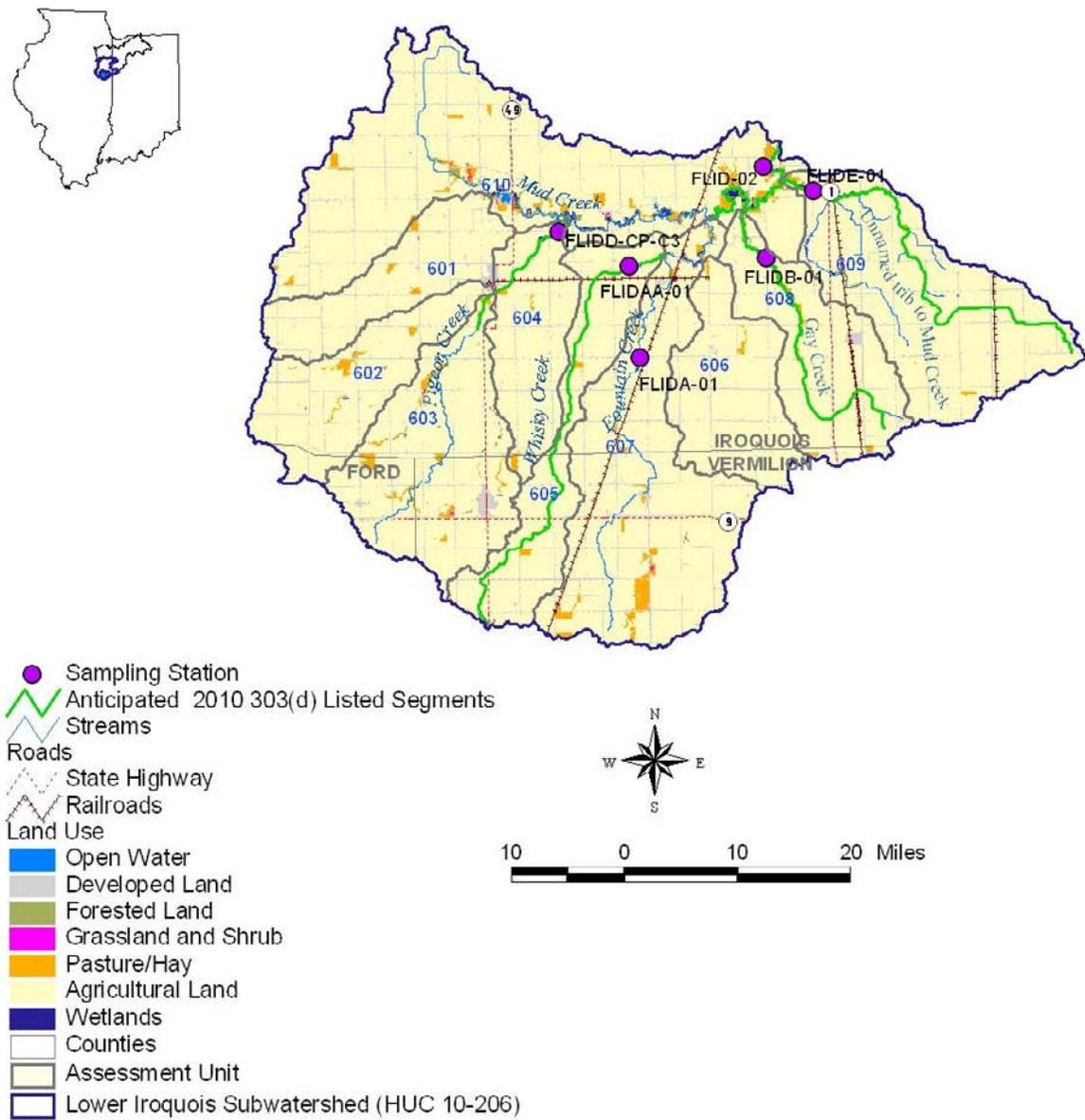


Figure 98. Location of Mud Creek Subwatershed (HUC10-206)

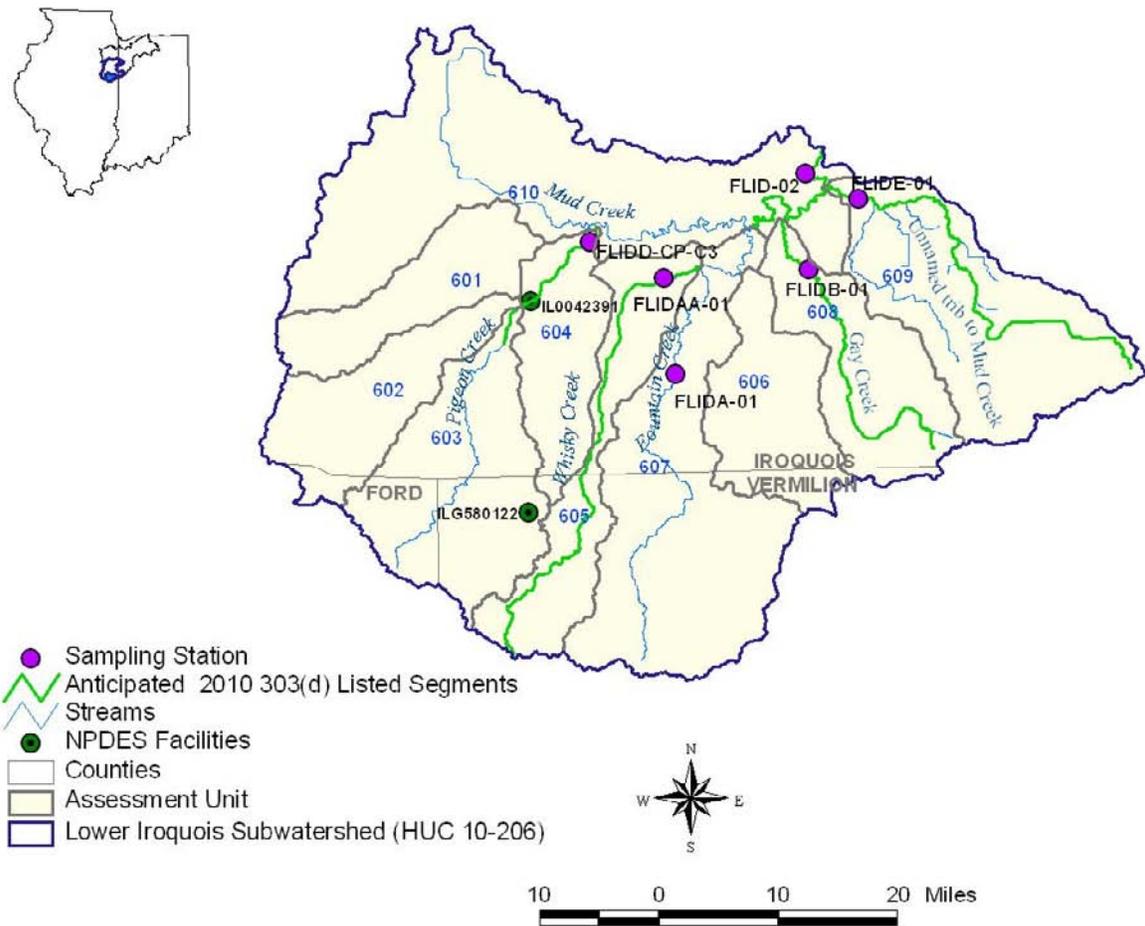


Figure 99. NPDES Facilities in the Mud Creek Subwatershed (HUC10-206)

Table 211 through Table 216 summarize the subwatershed characteristics as well as the TMDL results for each of the HUC 12 subwatersheds. It should be noted that there are no current 303(d) listings in this subwatershed; however, the sampling performed in 2008 suggests that several streams are impaired. Those streams will appear on the next 303(d) list and TMDLs for those streams are presented here.

There are two NPDES facilities within the Mud Creek subwatershed and the WLAs for the facilities were calculated based on their design flows and fecal coliform permit limits. The individual WLAs are presented in Table 276.

Table 211. Pigeon Creek Characteristics and TMDL Summary (HUC12-604)

Upstream Characteristics					
<i>Drainage Area</i>	65.49 square miles				
<i>Sampling Station</i>	FLIDD-CP-C3				
<i>Listed Segments</i>	FLIDDc				
<i>Land Use</i>	Agriculture: 97.52%; Developed Land:6.20%; Forest:0.65%; Other: 2.48%				
<i>Soils</i>	A:0.00%; B: 5.26%; C: 15.22%; D:79.29%; Unknown:0.23%				
<i>NPDES Facilities</i>	Cissna Park STP (IL0042391)				
	Rankin STP (ILG580122)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOS</i>	None				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	849.29	154.54	47.78	10.28	2.78
<i>WLA</i>	4.19	4.19	1.36	1.36	1.36
<i>MOS (10%)</i>	94.83	17.64	5.46	1.29	0.46
<i>TMDL = LA+WLA+MOS</i>	948.31	176.37	54.6	12.93	4.6

Table 212. Whiskey Creek Characteristics and TMDL Summary (HUC12-605)

Upstream Characteristics					
<i>Drainage Area</i>	21.27 square miles				
<i>Sampling Station</i>	FLIDAA-01				
<i>Listed Segments</i>	FLIDAA				
<i>Land Use</i>	Agriculture: 93.69%; Developed Land:0.22%; Forest:0.22%; Other: 0.79%				
<i>Soils</i>	A:0.00%; B: 10.64%; C: 29.43%; D:59.93%; Unknown:0.00%				
<i>NPDES Facilities</i>	None				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	None				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
LA	277.19	51.55	15.96	3.78	1.34
WLA	0.00	0.00	0.00	0.00	0.00
MOS (10%)	30.80	5.73	1.77	0.42	0.15
TMDL = LA+WLA+MOS	307.99	57.28	17.73	4.20	1.49

Table 213. Fountain Creek Characteristics and TMDL Summary (HUC12-607)

Upstream Characteristics					
<i>Drainage Area</i>	86.02 square miles				
<i>Sampling Station</i>	FLIDA-01				
<i>Listed Segments</i>	FLIDA				
<i>Land Use</i>	Agriculture: 91.96%; Developed Land:5.28%; Forest:0.40%; Other: 2.36%				
<i>Soils</i>	A:0.00%; B:19.37%; C: 32.64%; D:47.99%; Unknown:0.00%				
<i>NPDES Facilities</i>	None				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	None				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
LA	1121.02	208.49	64.55	15.29	5.44
WLA	0.00	0.00	0.00	0.00	0.00
MOS (10%)	124.56	23.17	7.17	1.70	0.60
TMDL = LA+WLA+MOS	1245.58	231.66	71.72	16.99	6.04

Table 214. Gay Creek Characteristics and TMDL Summary (HUC12-608)

Upstream Characteristics					
<i>Drainage Area</i>	21.97 square miles				
<i>Sampling Station</i>	FLIDB-01				
<i>Listed Segments</i>	FLIDB-01				
<i>Land Use</i>	Agriculture: 90.48%; Developed Land:6.43%; Forest:0.84%; Other: 2.25%				
<i>Soils</i>	A:0.00%; B:65.97%; C: 4.17%; D:29.86%; Unknown:0.00%				
<i>NPDES Facilities</i>	None				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	None				
TMDL Allocations (billion/day)					
	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	286.32	53.25	16.49	3.91	1.39
<i>WLA</i>	0.00	0.00	0.00	0.00	0.00
<i>MOS (10%)</i>	31.81	5.92	1.83	0.43	0.15
<i>TMDL = LA+WLA+MOS</i>	318.13	59.17	18.32	4.34	1.54

Table 215. Town of Hallock Characteristics and TMDL Summary (HUC12-609)

Upstream Characteristics					
<i>Drainage Area</i>	35.96 square miles				
<i>Sampling Station</i>	FLIDE-01				
<i>Listed Segments</i>	FLIDE-01				
<i>Land Use</i>	Agriculture: 92.23%; Developed Land:5.72%; Forest:0.73%; Other: 1.32%				
<i>Soils</i>	A:0.00%; B:71.31%; C: 2.53%; D:26.16%; Unknown:0.00%				
<i>NPDES Facilities</i>	None				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	None				
TMDL Allocations (billion/day)					
	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	468.64	87.16	26.98	6.39	2.27
<i>WLA</i>	0.00	0.00	0.00	0.00	0.00
<i>MOS (10%)</i>	52.07	9.68	3.00	0.71	0.25
<i>TMDL = LA+WLA+MOS</i>	520.71	96.84	29.98	7.10	2.52

Table 216. Little Mud Creek-Mud Creek Characteristics and TMDL Summary (HUC12-610)

Upstream Characteristics					
<i>Drainage Area</i>	286.02 square miles				
<i>Sampling Station</i>	FLID-02				
<i>Listed Segments</i>	FLIDE-02				
<i>Land Use</i>	Agriculture: 90.76%; Developed Land:5.66%; Forest:0.94%; Other: 2.64%				
<i>Soils</i>	A:0.00%; B:24.54%; C: 20.61%; D:54.74%; Unknown:0.11%				
<i>NPDES Facilities</i>	Cissna Park STP (IL0042391)				
	Rankin STP (ILG580122)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	None				
TMDL Allocations (billion/day)					
	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	3723.26	689.06	213.25	49.47	16.71
<i>WLA</i>	4.19	4.19	1.36	1.36	1.36
<i>MOS (10%)</i>	414.16	77.03	23.85	5.65	2.01
<i>TMDL = LA+WLA+MOS</i>	4141.61	770.28	238.46	56.48	20.08

7.1.5.2 Sugar Creek Subwatershed (HUC10-207)

The Sugar Creek subwatershed incorporates the towns of Watseka, Milford and Fowler as shown in Figure 100, and lies in both Indiana and Illinois. The two dominant land uses in this subwatershed are agriculture (89.73%) and developed land (5.96%). The remaining land categories contribute less than 2 percent of the subwatershed area (Table 222). The NPDES facilities and feeding operations are shown in Figure 101 and Figure 102, respectively.

The listed 303(d) segment lies in Illinois (Table 217). Among the nine monitoring locations, four of them are in Indiana and five in Illinois (Table 219). Furthermore, as Indiana and Illinois use *E. coli* and fecal coliform, respectively for the pathogen standards, separate statistical summaries of the data are presented in Table 220 and Table 221. The required reductions in Indiana range from 47 to 67 percent and the required reductions in Illinois range from 39 to 61 percent. Historical reductions based on the geomean of all samples in the Illinois portion of this watershed are 12 percent.

Table 217. 303 (d) Listed Streams in the Sugar Creek Subwatershed

HUC 12	HU C12 Name	Segment ID	Waterbody	Stream Length (miles)	Parameter
711	Sugar Creek	IL_FLI-02	Sugar Creek	23.14	Fecal Coliform

Table 218. Anticipated 2010 303 (d) Listed Streams in the Sugar Creek Subwatershed (IL)

HUC 12	HU C12 Name	Segment ID	Waterbody	Stream Length (miles)	Parameter
704	Cole Creek-Mud Creek	FLIC-04	Mud Creek-East	4.94	Fecal Coliform
706	Town of Stockland	FLIE-01	Unnamed Trib to Sugar Creek	19.28	Fecal Coliform
707	City of Milford-Sugar Creek	FLI-03	Sugar Creek	14.52	Fecal Coliform

Table 219. Station Locations in the Sugar Creek Subwatershed

HUC 12	HU C12 Name	Station # (State)	Stream Name
702	Coon Creek-Mud Creek	ID# 92 (IN)	Mud Cr
703	Kult Ditch-Mud Creek	ID# 91 (IN)	Finigan D
705	Yeagers Curve-Sugar Creek	ID# 88 (IN)	Sugar Cr
		ID# 90 (IN)	Sugar Cr
711	Sugar Creek	FLI-02 (IL)	Sugar Cr
711	Sugar Creek	FLI-01 (IL)	Sugar Creek
704	Cole Creek-Mud Creek	FLIC-04 (IL)	Mud Creek East
706	Town of Stockland	FLIE-01 (IL)	Unnamed Trib Sugar Creek
707	City of Milford-Sugar Creek	FLI-M-C2 (IL)	Sugar Creek
		FLI-M-D (IL)	Sugar Creek

Table 220. Summary of Pathogen Data in Sugar Subwatershed (IN)

Station #	Period of Record	Total Number of Samples	Percent of Samples Exceeding <i>E. coli</i> WQS (#/100 mL)		Minimum (#/100 mL)	Geomean (#/100 mL)	Average (#/100 mL)	Maximum (#/100 mL)	Percent Reduction Based on Geomean (125/100mL)
			125	235					
92	6/2/2008 - 6/30/2008	5	100	40	144	272	316	579	54%
91	6/2/2008 - 6/30/2008	5	80	60	109	237	255	326	47%
88	6/2/2008 - 6/30/2008	5	100	80	214	381	415	727	67%
90	6/2/2008 - 6/30/2008	5	80	40	115	249	311	687	50%

Table 221. Summary of Pathogen Data in Sugar Creek Subwatershed (IL)

Station #	Period of Record	Total Number of Samples	Percent of Samples Exceeding Fecal Coliform WQS (#/100 mL)		Minimum (#/100 mL)	Geomean (#/100 mL)	Average (#/100 mL)	Maximum (#/100 mL)	Percent Reduction Based on Geomean (200/100mL)
			200	400					
FLIC-04	8/19/2008 - 9/17/2008	5	80	20	110	377	904	3,600	47%
FLIE-01	8/19/2008 - 9/17/2008	5	80	40	200	328	388	788	39%
FLI-M-D	8/19/2008 - 9/17/2008	8	88	38	176	376	436	1,100	47%
FLI-02	3/8/1999 - 6/10/2008	46	50	37	10	227	678	7,455	12%
FLI-01	8/19/2008 - 9/17/2008	5	100	80	292	514	550	860	61%

Table 222. Land Use/land Cover in the Sugar Creek Subwatershed

Land Use/Land Cover	Subwatershed		
	Area		Percent
	Acres	Square Miles	
Agricultural Land	159017.91	248.47	89.73
Developed Land	10569.50	16.51	5.96
Forested Land	3049.69	4.77	1.72
Pasture/Hay	2884.89	4.51	1.63
Wetland	1337.92	2.09	0.75
Grassland and Shrubs	246.63	0.39	0.14
Open Water	106.97	0.17	0.06
Total	177,213.52	276.90	100.00

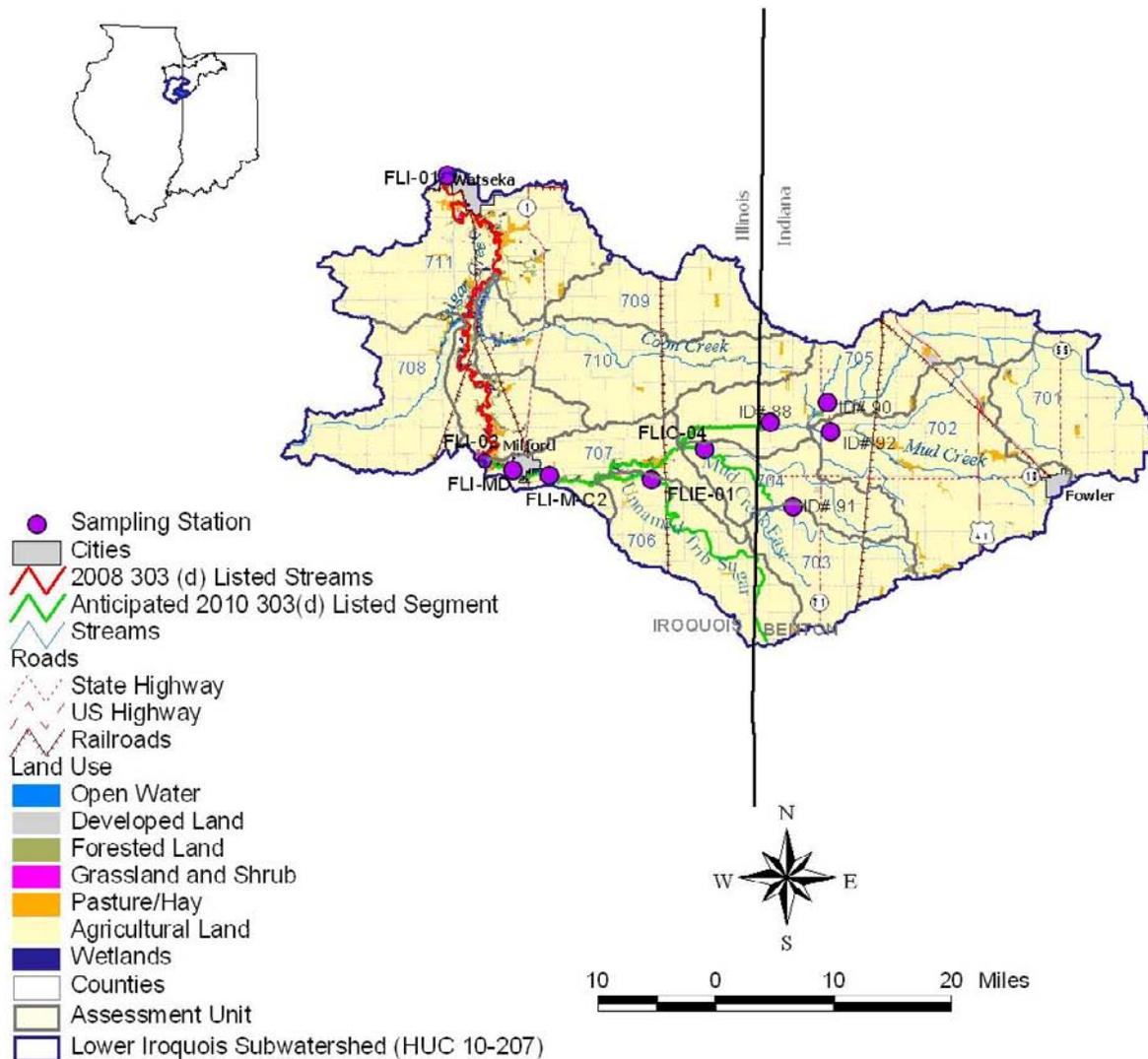


Figure 100. Location of Sugar Creek Watershed (HUC10-207)

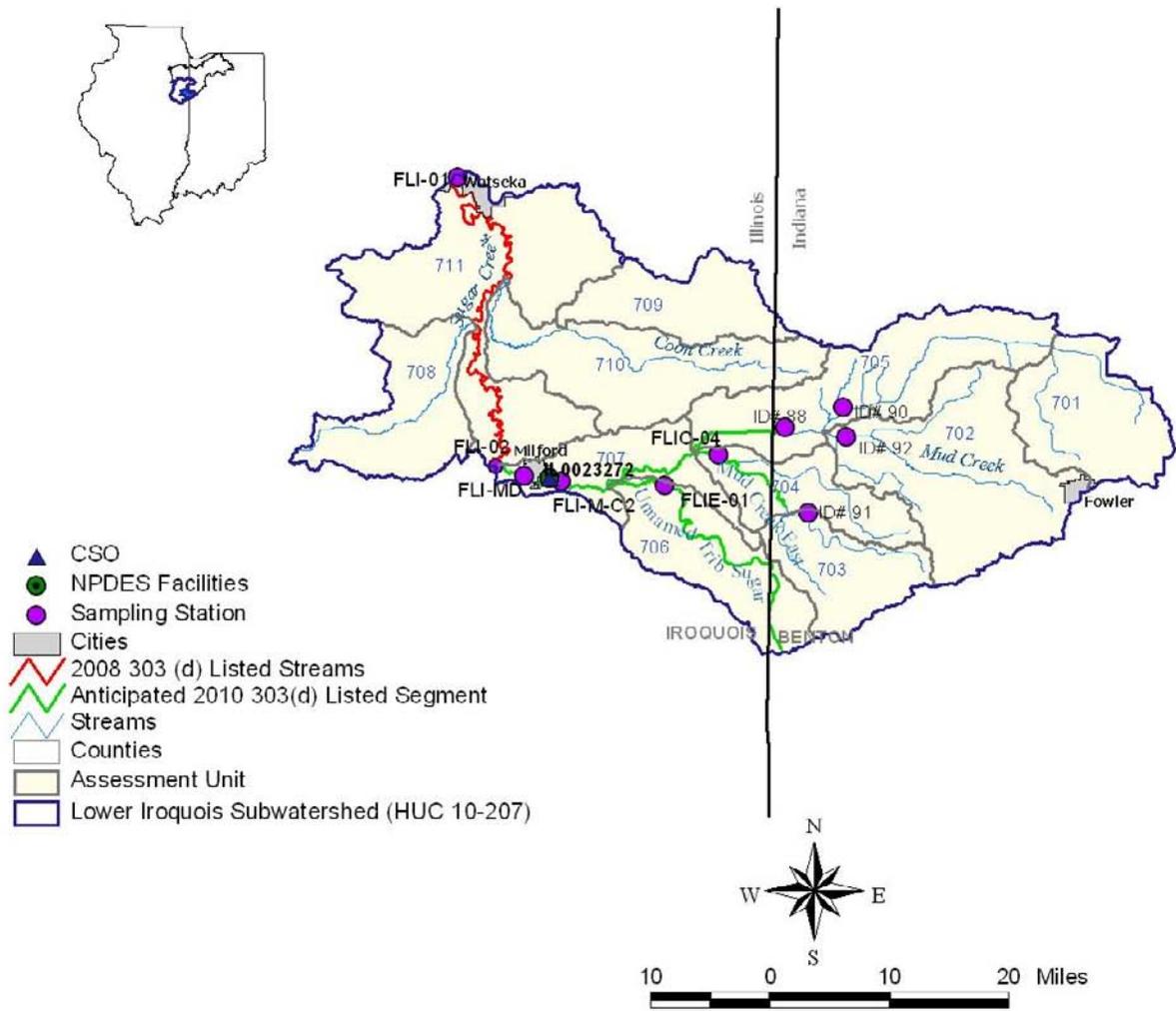


Figure 101. NPDES Facilities in the Sugar Creek Watershed (HUC10-207)

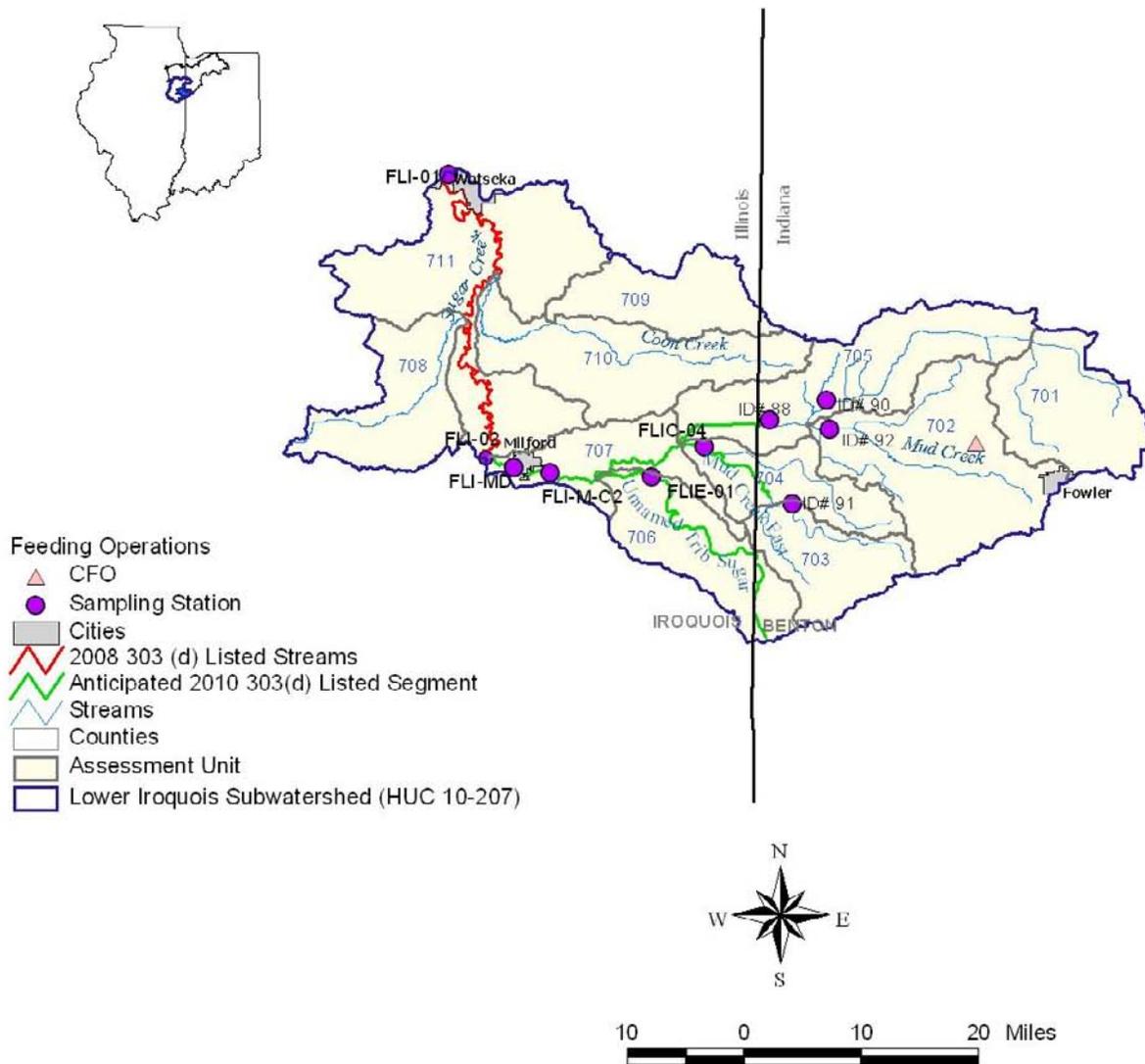


Figure 102. Feeding Operations in the Sugar Creek Watershed (HUC10-207)

Table 223 through Table 229 summarize the subwatershed characteristics as well as the TMDL results for each of the HUC 12 subwatersheds. It should be noted that there are no current 303(d) listings in HUC 702, HUC 703, HUC 704, HUC 705, HUC 706, or HUC 707; however, the 2008 sampling data indicate that the *E. coli* and fecal coliform bacteria criteria are not met in these HUCs and so TMDL results are presented here.

There is one NPDES facility within the Sugar Creek subwatershed and the WLAs for the facility was calculated based on their design flows and *E. coli* and fecal coliform permit limits. There is one CSO community with 10 outfalls upstream of this subwatershed. WLAs for CSO communities were calculated based on the maximum observed CSO flow at each outfall and *E. coli* and fecal coliform standards. The individual WLAs are presented in Table 276.

Table 223. Coon Creek-Mud Creek Characteristics and TMDL Summary (HUC12-702)

Upstream Characteristics					
<i>Drainage Area</i>	38.53 square miles				
<i>Sampling Station</i>	92				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 89.90%; Developed Land:6.11%; Forest:0.53%; Other: 3.46%				
<i>Soils</i>	A: 0.77%; B: 52.51%; C: 44.40%; D:2.32%; Unknown:0.00%				
<i>NPDES Facilities</i>	None				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	Ewen Gravel Hill Farm (1178)				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	361.38	77.99	25.44	5.23	1.62
<i>WLA</i>	0.00	0.00	0.00	0.00	0.00
<i>MOS (10%)</i>	40.15	8.66	2.83	0.58	0.18
<i>TMDL = LA+WLA+MOS</i>	401.53	86.65	28.27	5.81	1.80

Table 224. Kult Ditch-Mud Creek Characteristics and TMDL Summary (HUC12-703)

<i>Upstream Characteristics</i>					
<i>Drainage Area</i>	16.00 square miles				
<i>Sampling Station</i>	91				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 94.44%; Developed Land:4.48%; Forest:0.58%; Other: 0.50%				
<i>Soils</i>	A: 0.00%; B: 45.75%; C: 52.83%; D:1.42%; Unknown:0.00%				
<i>NPDES Facilities</i>	None				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	None				
<i>TMDL Allocations (billion/day)</i>					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
LA	150.07	32.38	10.57	2.17	0.68
WLA	0.00	0.00	0.00	0.00	0.00
MOS (10%)	16.67	3.60	1.17	0.24	0.07
TMDL = LA+WLA+MOS	166.74	35.98	11.74	2.41	0.75

Table 225. Cole Creek-Mud Creek Characteristics and TMDL Summary (HUC12-704)

<i>Upstream Characteristics</i>					
<i>Drainage Area</i>	31.39 square miles				
<i>Sampling Station</i>	FLIC-04				
<i>Listed Segments</i>	FLIC-04				
<i>Land Use</i>	Agriculture: 94.69%; Developed Land:4.42%; Forest:0.59%; Other: 0.30%				
<i>Soils</i>	A:0.00%; B:55.26%; C:39.23%; D:5.50%; Unknown:0.00%				
<i>NPDES Facilities</i>	None				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	None				
<i>TMDL Allocations (billion/day)</i>					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
LA	409.08	76.09	23.55	5.58	1.98
WLA	0.00	0.00	0.00	0.00	0.00
MOS (10%)	45.45	8.45	2.62	0.62	0.22
TMDL = LA+WLA+MOS	454.53	84.54	26.17	6.20	2.20

Table 226. Yeagers Curve-Sugar Creek Characteristics and TMDL Summary (HUC12-705)

Upstream Characteristics					
<i>Drainage Area</i>	92.87 square miles				
<i>Sampling Station</i>	88,90				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 91.88%; Developed Land:5.25%; Forest:0.75%; Other: 2.12%				
<i>Soils</i>	A: 0.65%; B: 44.88%; C: 45.53%; D:8.94%; Unknown:0.00%				
<i>NPDES Facilities</i>	None				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	Ewen Gravel Hill Farm (1178)				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
LA	871.05	187.97	61.32	12.61	3.90
WLA	0.00	0.00	0.00	0.00	0.00
MOS (10%)	96.78	20.88	6.81	1.40	0.43
TMDL = LA+WLA+MOS	967.83	208.85	68.13	14.01	4.33

Table 227. Town of Stockland Characteristics and TMDL Summary (HUC12-706)

Upstream Characteristics					
<i>Drainage Area</i>	21.10 square miles				
<i>Sampling Station</i>	FLIE-01				
<i>Listed Segments</i>	FLIE-01				
<i>Land Use</i>	Agriculture: 92.75%; Developed Land:5.42%; Forest:0.43%; Other: 1.39%				
<i>Soils</i>	A:0.00%; B:71.43%; C:6.43%; D:22.14 %; Unknown:0.00%				
<i>NPDES Facilities</i>	None				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	None				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
LA	274.98	51.14	15.83	3.75	1.33
WLA	0.00	0.00	0.00	0.00	0.00
MOS (10%)	30.55	5.68	1.76	0.42	0.15
TMDL = LA+WLA+MOS	305.53	56.82	17.59	4.17	1.48

Table 228. City of Milford-Sugar Creek Characteristics and TMDL Summary (HUC12-707)

Upstream Characteristics					
<i>Drainage Area</i>	160.65 square miles				
<i>Sampling Station</i>	FLIM-C2				
<i>Listed Segments</i>	FLE-03				
<i>Land Use</i>	Agriculture: 91.46%; Developed Land:5.50%; Forest:0.96%; Other: 2.08%				
<i>Soils</i>	A:0.37%; B:52.11%; C:35.90%; D:11.62 %; Unknown:0.00%				
<i>NPDES Facilities</i>	None				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	Ewen Grvel Hill Farm (1178)				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	2093.62	389.38	120.54	28.55	10.15
<i>WLA</i>	0.00	0.00	0.00	0.00	0.00
<i>MOS (10%)</i>	232.62	43.26	13.39	3.17	1.13
<i>TMDL = LA+WLA+MOS</i>	2326.24	432.64	133.93	31.72	11.28

Table 229. Sugar Creek Characteristics and TMDL Summary (HUC12-711)

Upstream Characteristics					
<i>Drainage Area</i>	563.08 square miles				
<i>Sampling Station</i>	FLI-02				
<i>Listed Segments</i>	IL_FLI-02				
<i>Land Use</i>	Agriculture: 90.23%; Developed Land:5.81%; Forest:1.32%; Other: 2.64%				
<i>Soils</i>	A: 1.29%; B: 36.52%; C: 24.18%; D:37.97%; Unknown:0.05%				
<i>NPDES Facilities</i>	Milford STP (IL0023272)				
	Cissna Park STP (IL0042391)				
	Rankin STP (ILG580122)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	Milford STP (IL0023272)-10 outfalls				
<i>CAFOs</i>	None				
<i>CFOs</i>	Ewen Gravel Hill Farm (1178)				
TMDL Allocations (billion/day)					
	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	7310.63	1348.43	419.62	97.19	32.70
<i>WLA</i>	27.51	16.35	2.88	2.88	2.88
<i>MOS (10%)</i>	815.35	151.64	46.94	11.11	3.95
<i>TMDL = LA+WLA+MOS</i>	8153.49	1516.42	469.44	111.18	39.53

7.1.5.3 Spring Creek Subwatershed (HUC10-208)

The Spring Creek subwatershed incorporates the cities of Gilman and Onarga as shown in Figure 103. The Spring Creek subwatershed lies in Iroquois and Ford counties in Illinois (Figure 103). The two dominant land uses in this subwatershed are agriculture (85.18%) and developed land (9.19%). The remaining land categories contribute less than 2 percent of the subwatershed area (Table 233). The NPDES facilities are shown in Figure 104.

There are no currently listed 303(d) segments in this subwatershed. 2008 sampling at one monitoring station in the subwatershed indicated an impairment that will lead to a listing on the 2010 303 (d) list (Table 230). The monitoring station is located on Spring Creek in HUC 20808 (Table 231). A statistical summary of the water quality is presented in Table 232. The reduction needed to achieve a geomean of 200 #/100 mL is 51 percent.

Table 230. Anticipated 2010 303 (d) Listed Streams in the Spring Creek Subwatershed

HUC 12	HU C12 Name	Segment ID	Waterbody	Stream Length (miles)	Parameter
808	Spring Creek	IL-FLH-02	Spring Creek	62.00	Fecal Coliform

Table 231. Station Locations in the Spring Creek Subwatershed

HUC 12	HU C12 Name	Station #	Stream Name
808	Spring Creek	FLH-02	Spring Creek

Table 232. Summary of Pathogen Data in Spring Creek Subwatershed

Station #	Period of Record	Total Number of Samples	Percent of Samples Exceeding Fecal Coliform WQS (#/100 mL)		Minimum (#/100 mL)	Geomean (#/100 mL)	Average (#/100 mL)	Maximum (#/100 mL)	Percent Reduction Based on Geomean (200/100mL)
			200	400					
FLH-02	8/19/2008 - 9/17/2008	5	80	40	188	411	470	840	51%

Table 233. Land Use/land Cover in the Spring Creek Subwatershed

Land Use/Land Cover	Subwatershed		
	Area		Percent
	Acres	Square Miles	
Agricultural Land	137912.50	215.49	85.18
Developed Land	14872.82	23.24	9.19
Forested Land	3097.95	4.84	1.91
Pasture/Hay	3648.82	5.70	2.25
Wetland	1625.03	2.54	1.00
Grassland and Shrubs	289.11	0.45	0.18
Open Water	467.03	0.73	0.29
Total	161,913.26	252.99	100.00

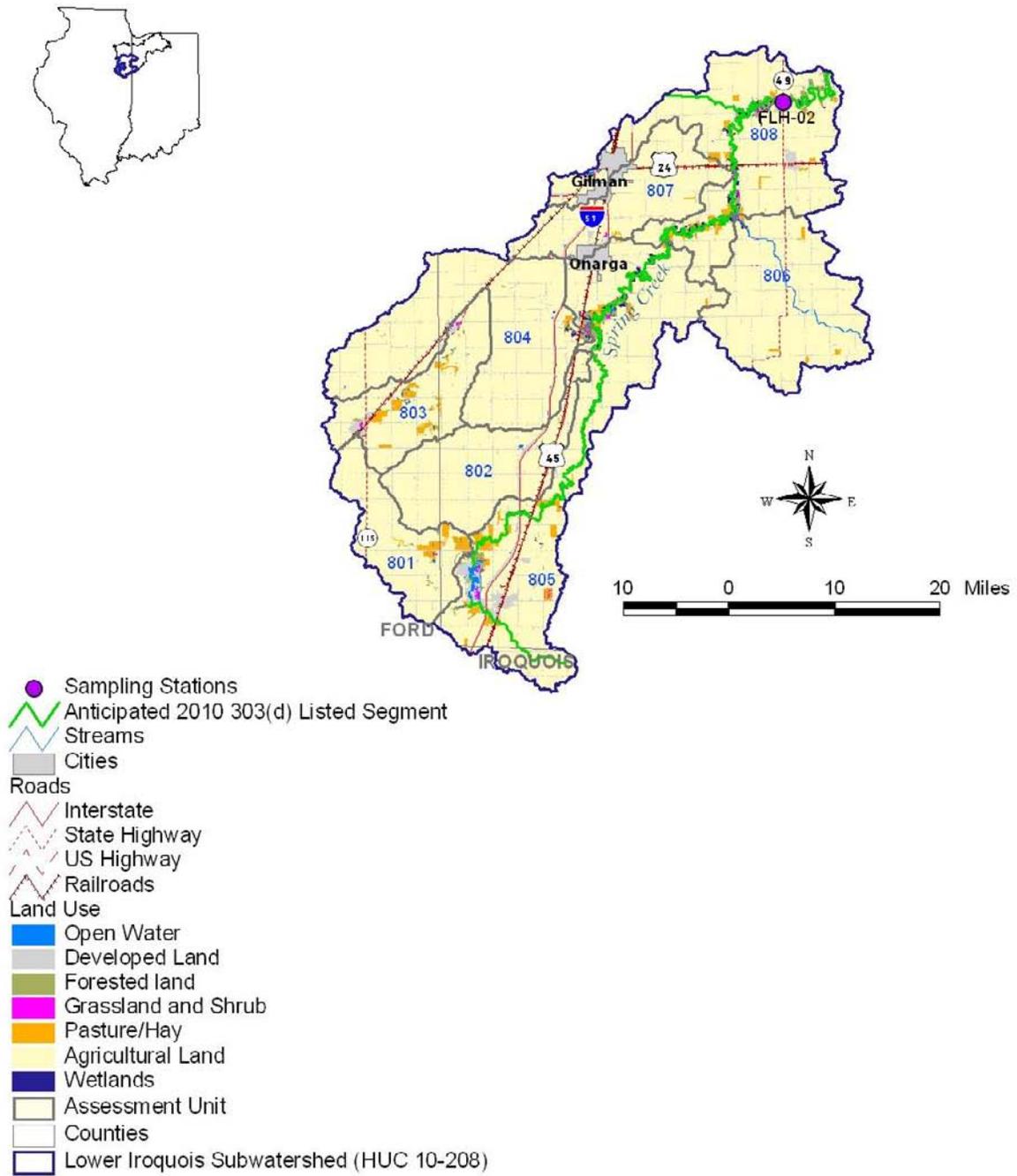


Figure 103. Location of Spring Creek Watershed (HUC10-208)

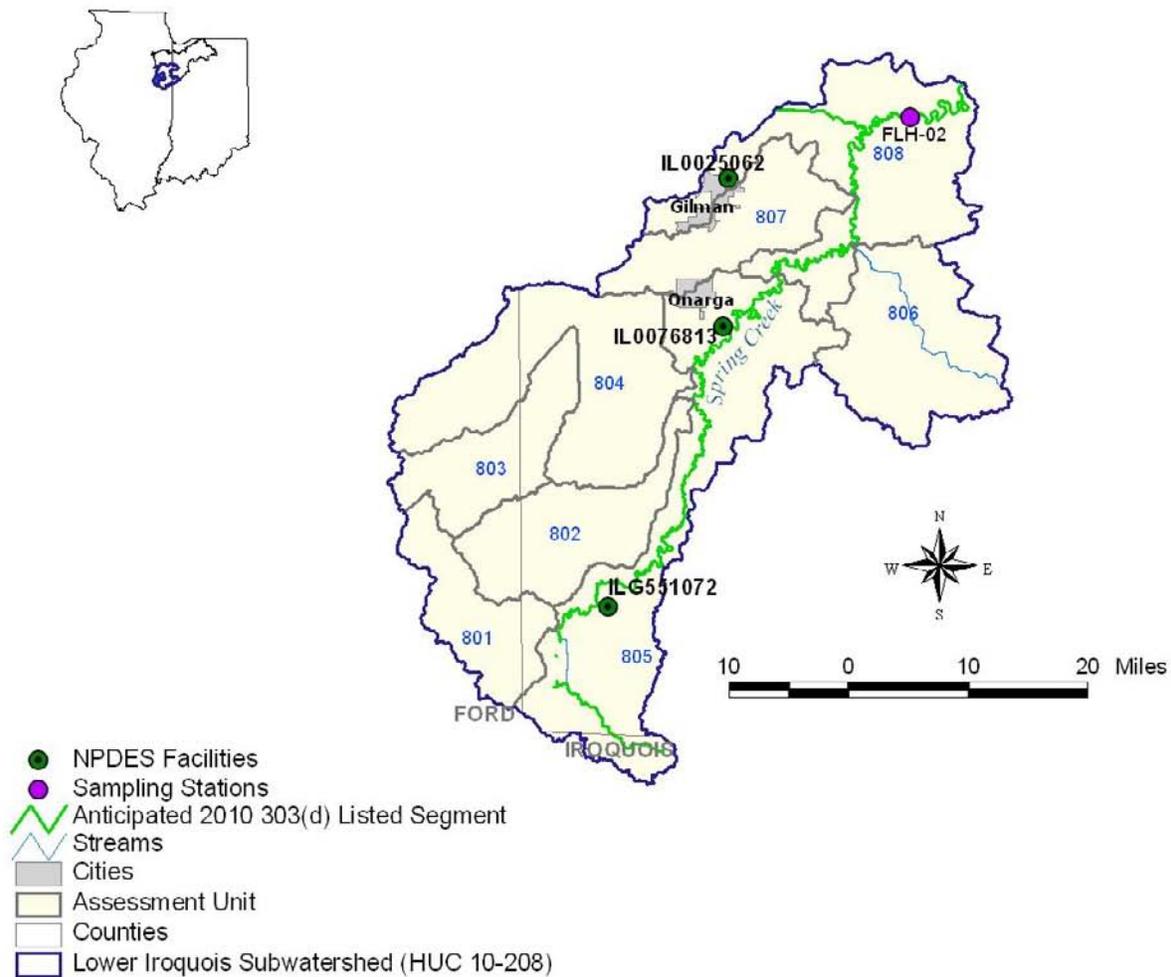


Figure 104. NPDES Facilities in the Spring Creek Watershed (HUC10-208)

Table 234 summarizes the subwatershed characteristics as well as the TMDL results for HUC 12-808. It should be noted that there are no current 303(d) listings in this HUC; however, the 2008 sampling data indicate that the fecal coliform bacteria criteria are not met in this HUC and so TMDL results are presented here.

There are three NPDES facilities within the Spring Creek subwatershed and the WLAs for the facilities were calculated based on their design flows and fecal coliform permit limits. The individual WLAs are presented in Table 276.

Table 234. Spring Creek Characteristics and TMDL Summary (HUC12-808)

Upstream Characteristics					
<i>Drainage Area</i>	253.23 square miles				
<i>Sampling Station</i>	FLH-02				
<i>Listed Segments</i>	FLH-02				
<i>Land Use</i>	Agriculture: 85.10%; Developed Land:9.18%; Forest:1.91%; Other: 3.81%				
<i>Soils</i>	A:1.63%; B:18.29%; C:23.00%; D:56.91 %; Unknown:0.18%				
<i>NPDES Facilities</i>	Gilman-North STP (IL0025062)				
	Onarga STP (IL0076813)				
	Il Dot-I-57 Iroquois County (ILG551072)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	None				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	3121.42	725.53	255.89	77.10	26.71
<i>WLA</i>	15.66	15.66	5.80	5.80	5.80
<i>MOS (10%)</i>	348.56	82.36	29.08	9.21	3.61
<i>TMDL = LA+WLA+MOS</i>	3485.64	823.55	290.77	92.11	36.12

7.1.5.4 Prairie Creek Subwatershed (HUC10-209)

The Prairie Creek subwatershed incorporates the towns of Gilman and Clifton as shown in Figure 105. The Prairie Creek subwatershed lies almost entirely within Iroquois county in Illinois. The two dominant land uses in this subwatershed are agriculture (90.06%) and developed land (8.85%). The remaining land categories contribute less than 1 percent of the subwatershed area (Table 237). The NPDES facilities are shown in Figure 106.

There are no currently listed 303(d) segments in this subwatershed. 2008 sampling at one monitoring station in the subwatershed indicated an impairment that will lead to a listing on the 2010 303 (d) list (Table 235). The monitoring station is located on Spring Creek in HUC 20902 (Table 236). A statistical summary of the water quality is presented in Table 237. The reduction needed to achieve a geomean of 200 #/100 mL is 69 percent.

Table 235. Anticipated 2010 303 (d) Listed Streams in the Prairie Creek Subwatershed

HUC 12	HU C12 Name	Segment ID	Waterbody	Stream Length (miles)	Parameter
902	Prairie Creek	FLG	Prairie Creek	34.35	Fecal Coliform

Table 236. Station Locations in the Prairie Creek Subwatershed

HUC 12	HU C12 Name	Station #	Stream Name
902	Prairie Creek	FLG-01	Prairie Creek

Table 237. Summary of Pathogen Data in Prairie Creek Subwatershed (IL)

Station #	Period of Record	Total Number of Samples	Percent of Samples Exceeding Fecal Coliform WQS (#/100 mL)		Minimum (#/100 mL)	Geomean (#/100 mL)	Average (#/100 mL)	Maximum (#/100 mL)	Percent Reduction Based on Geomean (200/100mL)
			200	400					
FLG-01	8/19/2008 - 9/17/2008	5	80	40	130	645	1,681	4,200	69%

Table 238. Land Use/land Cover in the Prairie Creek Subwatershed

Land Use/Land Cover	Subwatershed		
	Area		Percent
	Acres	Square Miles	
Agricultural Land	51532.02	80.52	90.06
Developed Land	5065.69	7.92	8.85
Forested Land	63.83	0.10	0.11
Pasture/Hay	463.25	0.72	0.81
Wetland	26.69	0.04	0.05
Grassland and Shrubs	3.56	0.01	0.01
Open Water	67.61	0.11	0.12
Total	57,222.63	89.41	100.00

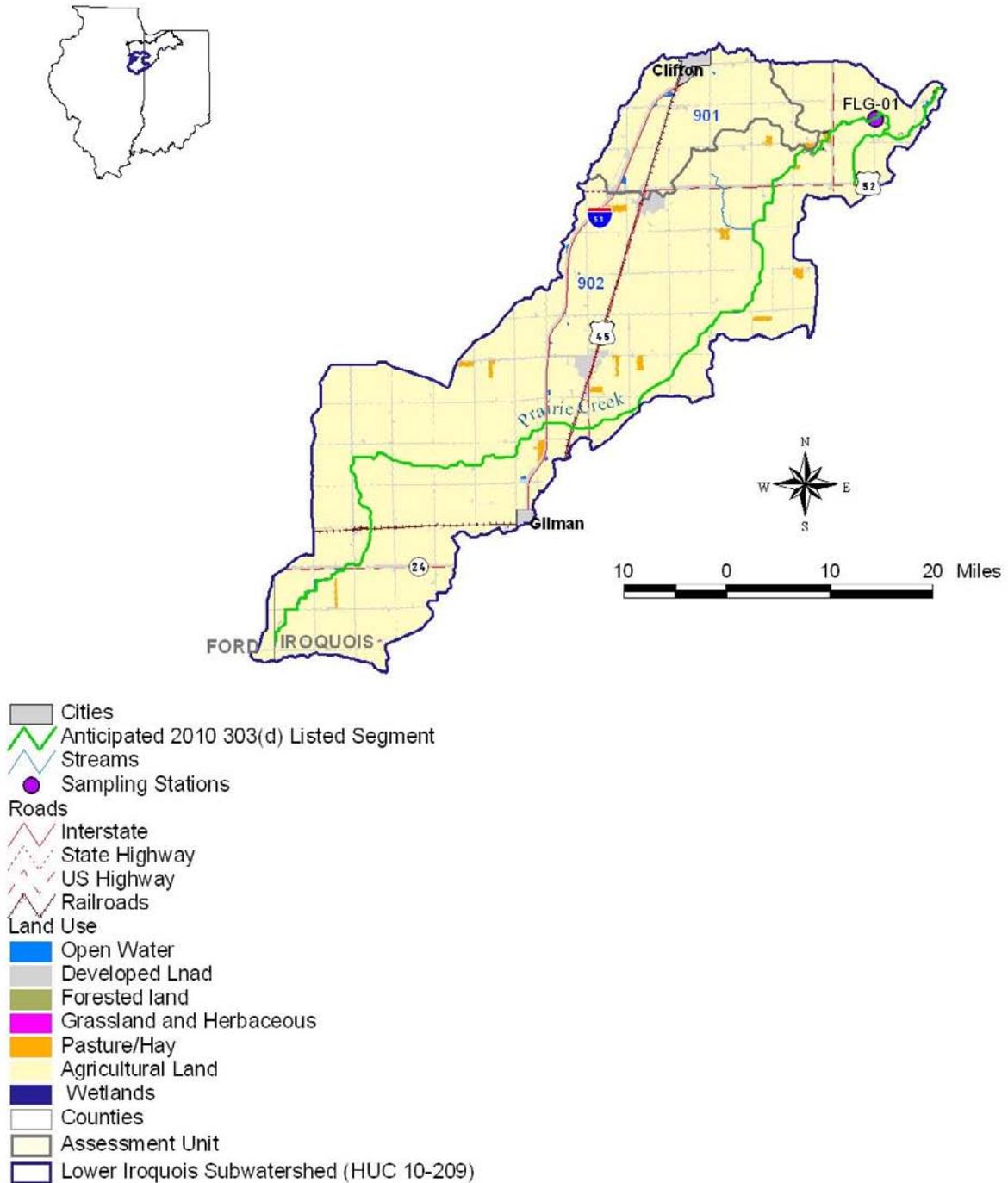


Figure 105. Location of Prairie Creek Watershed (HUC10-209)

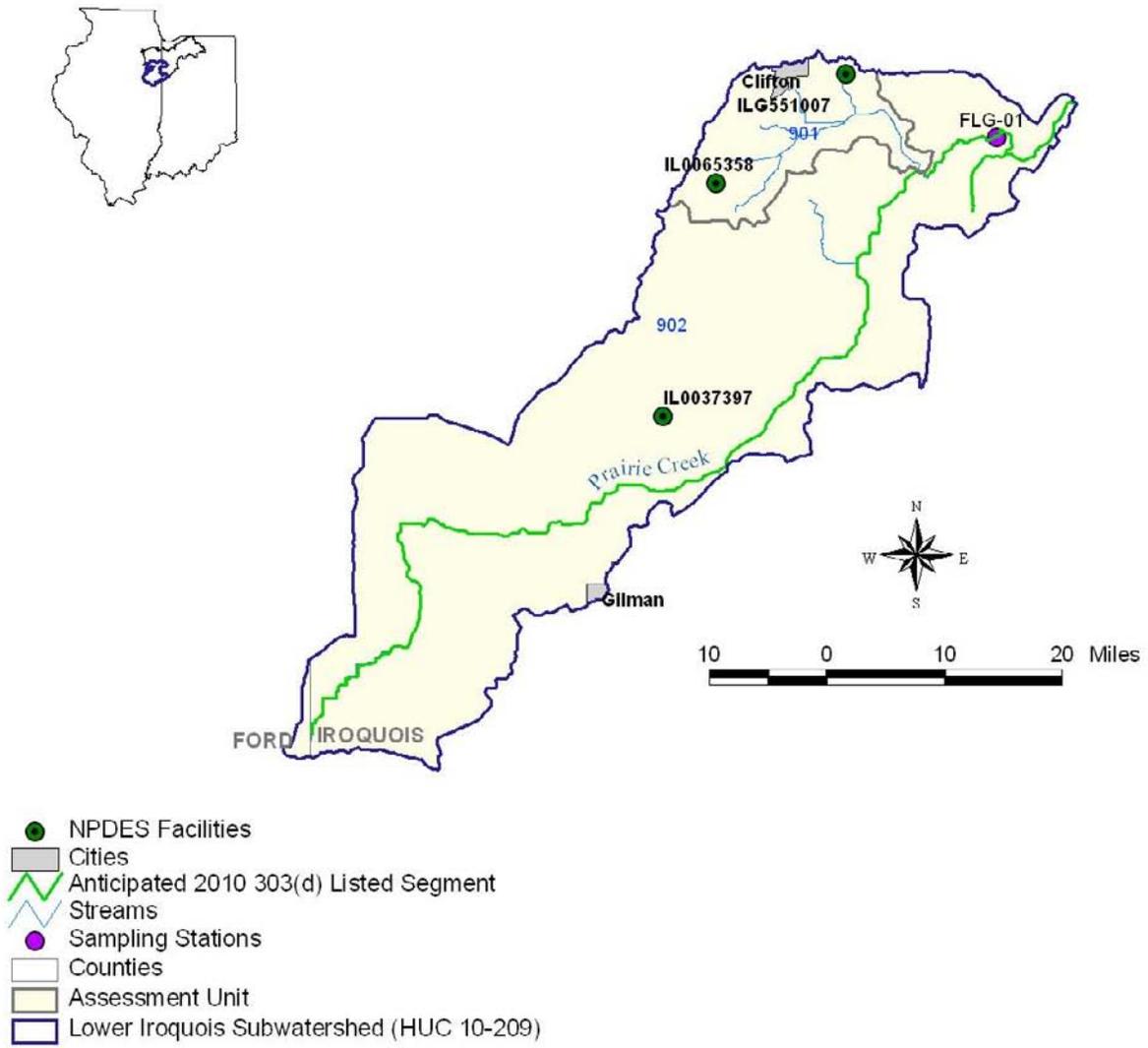


Figure 106. NPDES Facilities in the Prairie Creek Watershed (HUC10-209)

Table 239 summarizes the subwatershed characteristics as well as the TMDL results for HUC 12-809. It should be noted that there are no current 303(d) listings in this HUC; however, the 2008 sampling data indicate that the fecal coliform bacteria criteria are not met in this HUC and so TMDL results are presented here.

There are three NPDES facilities within the Prairie Creek subwatershed and the WLAs for the facilities were calculated based on their design flows and fecal coliform permit limits. The individual WLAs are presented in Table 276.

Table 239. Prairie Creek Characteristics and TMDL Summary (HUC12-902)

Upstream Characteristics					
<i>Drainage Area</i>	89.42 square miles				
<i>Sampling Station</i>	FLG-01				
<i>Listed Segments</i>	FLG				
<i>Land Use</i>	Agriculture: 90.05%; Developed Land:8.85%; Forest:0.11%; Other: 0.991%				
<i>Soils</i>	A:0.33%; B:35.54%; C:13.29%; D:50.67 %; Unknown:0.17%				
<i>NPDES Facilities</i>	Prairieview Luthern Home (IL0037397)				
	Swissland Packing Company (IL0065358)				
	Merkle-Knipprath Nursing Home (ILG551007)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	None				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	1107.04	261.01	91.99	28.85	11.06
<i>WLA</i>	0.72	0.72	0.42	0.42	0.42
<i>MOS (10%)</i>	123.08	29.08	10.27	3.25	1.27
<i>TMDL = LA+WLA+MOS</i>	1230.84	290.81	102.68	32.52	12.75

7.1.5.5 Gofield Creek-Iroquois River Subwatershed (HUC10-210)

The Gofield Creek subwatershed has an area of approximately 110 square miles and completely lies in Iroquois county (Figure 107). Agriculture is the dominant land use here as well (Table 244). There is only one NPDES facility as shown in Figure 108. No feeding operations exist within this subwatershed.

The listed segment and sampling locations are shown in Table 240 and Table 242. Table 243 summarizes the available water quality data. Forty five percent of all data available for FL-04 exceeds the geomean fecal coliform standard and twenty five percent of all data available for FL-04 exceed the not-to-exceed fecal coliform standard. The reductions needed to achieve a geomean of 200 #/100 mL at stations FL-07 and FL-03 is 74 percent.

Table 240. 303 (d) Listed Streams in the Gofield Creek-Iroquois River Subwatershed

HUC 12	HU C12 Name	Segment ID	Waterbody	Stream Length (miles)	Parameter
001	Eastburo Hollow-Iroquois River	IL_FL-04	Iroquois River	22.24	Fecal Coliform

Table 241. Anticipated 2010 303 (d) Listed Streams in the Gofield Creek-Iroquois River Subwatershed

HUC 12	HUC 12 Name	Segment ID	Waterbody	Stream Length (miles)	Parameter
002	City of Watseka-Iroquois River	FL-05	Iroquois River	23.63	Fecal Coliform

Table 242. Station Locations in the Gofield Creek-Iroquois River Subwatershed

HUC 12	HUC12 Name	Station #	Stream Name
001	Eastburo Hollow-Iroquois River	FL-04	Iroquois River
001	Eastburo Hollow-Iroquois River	FL-07	Iroquois River
002	City of Watseka-Iroquois River	FL-03	Iroquois River

Table 243. Summary of Pathogen Data in Gofield Creek-Iroquois River Subwatershed

Station #	Period of Record	Total Number of Samples	Percent of Samples Exceeding Fecal Coliform WQS (#/100 mL)		Minimum (#/100 mL)	Geomean (#/100 mL)	Average (#/100 mL)	Maximum (#/100 mL)	Percent Reduction Based on Geomean (200/100mL)
			200	400					
FL-04	3/31/1999 - 6/10/2008	40	45	25	10	171	551	7,636	0%
FL-07	8/19/2008 - 9/17/2008	5	60	60	164	759	1,229	3,200	74%
FL-03	8/19/2008 - 9/17/2008	5	80	60	68	780	1,563	3,500	74%

Table 244. Land Use/Land Cover in the Gofield Creek-Iroquois River Subwatershed

Land Use/Land Cover	Subwatershed		
	Area		Percent
	Acres	Square Miles	
Agricultural Land	59,132.33	92.39	83.95
Developed Land	5,530.94	8.64	7.85
Forested Land	2,634.03	4.12	3.74
Pasture/Hay	1,524.73	2.38	2.16
Wetland	867.78	1.36	1.23
Grassland and Shrubs	83.62	0.13	0.12
Open Water	666.51	1.04	0.95
Total	70,439.95	110.06	100.00

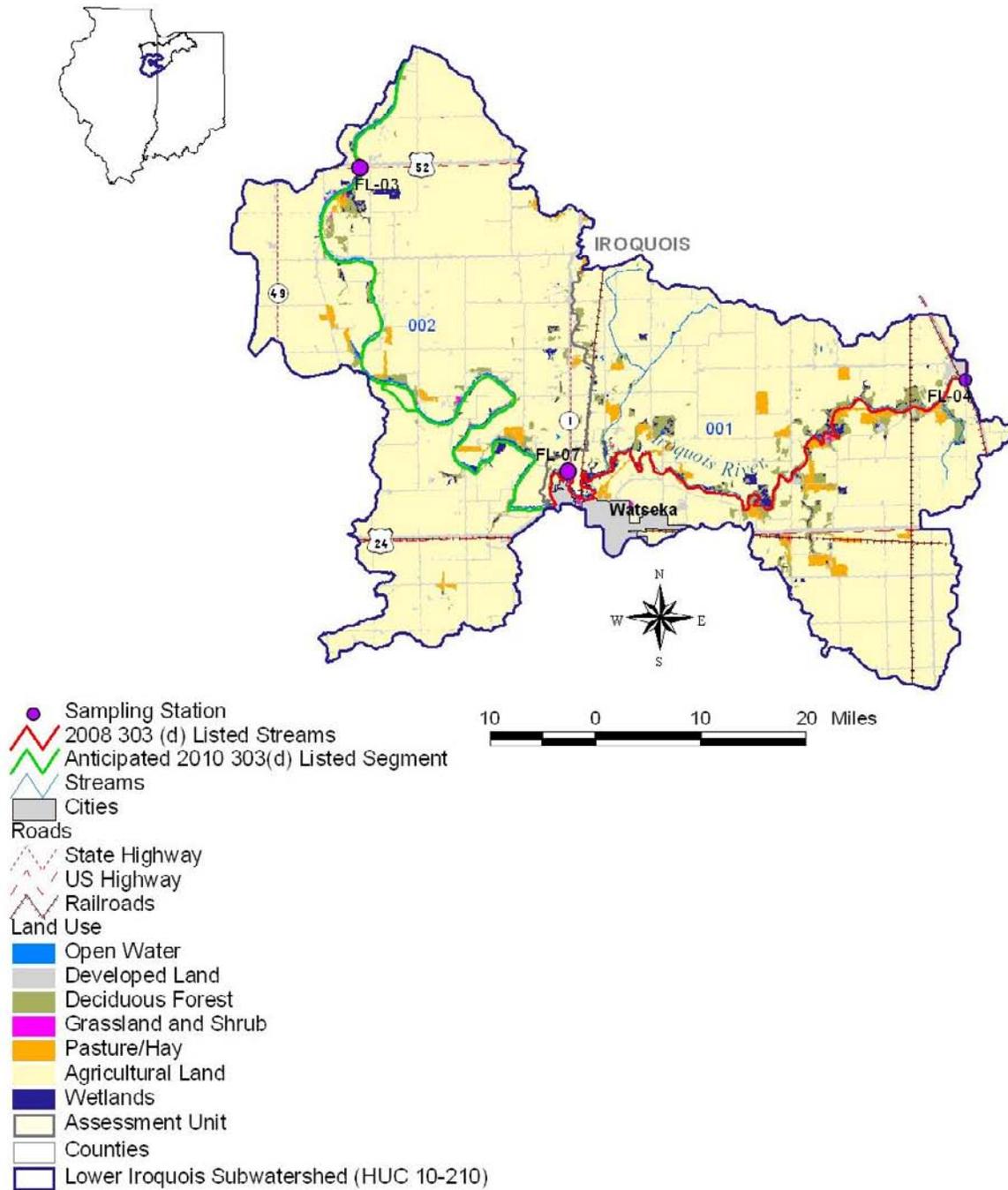


Figure 107. Location of Gofield Creek-Iroquois River (HUC10-210)

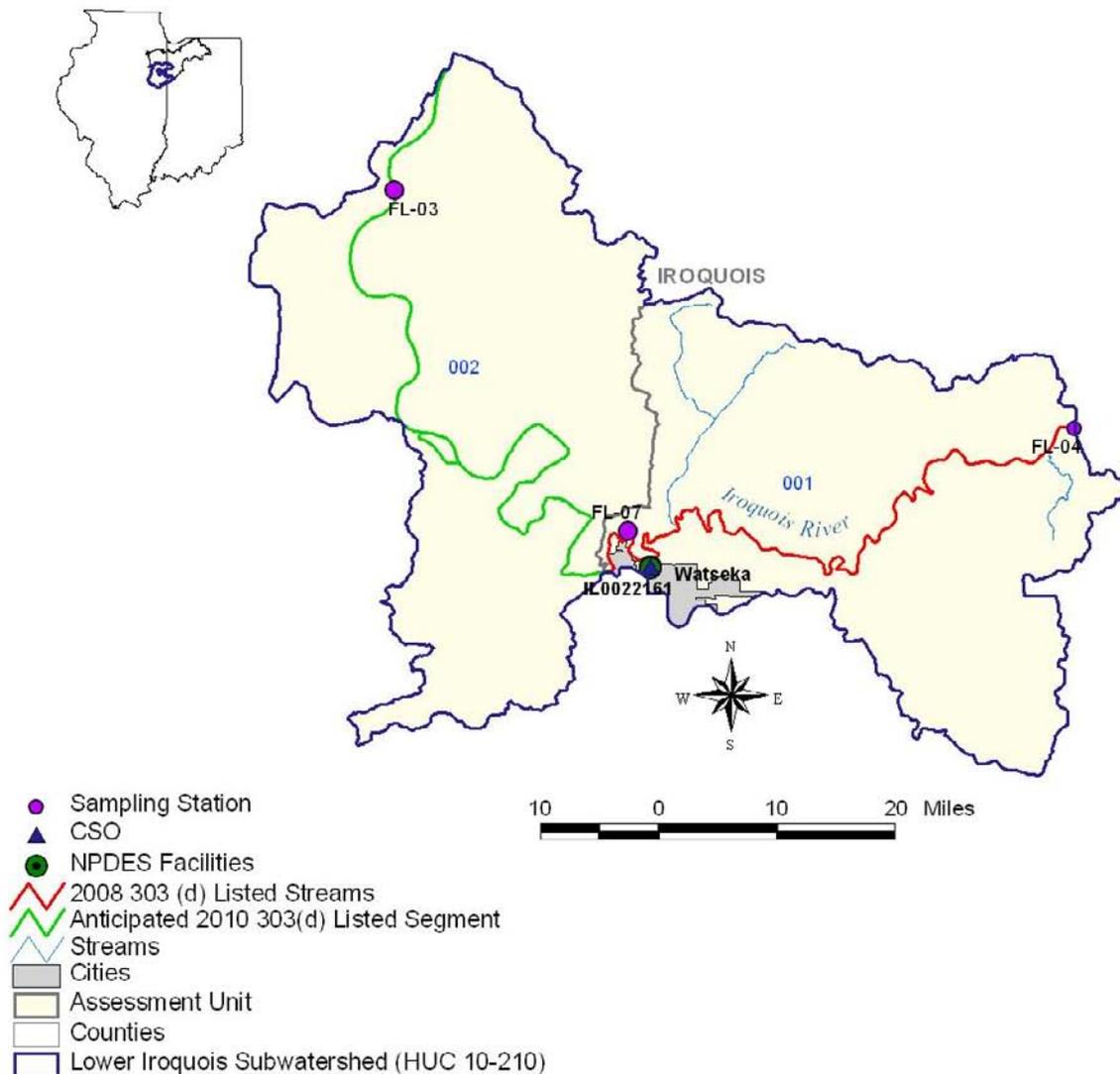


Figure 108. NPDES Facilities in Gofield Creek-Iroquois River (HUC10-210)

Table 245 and Table 246 summarize the subwatershed characteristics as well as the TMDL results for HUC 12-21001 and HUC 12-21002. There are ten NPDES facilities within the Gofield Creek subwatershed and the WLAs for the facilities were calculated based on their design flows and fecal coliform permit limits. There are two CSO communities upstream of this subwatershed. WLAs for CSO communities were calculated based on the maximum observed CSO flow reported in the DMR and fecal coliform standards. The individual WLAs are presented in Table 277.

Table 245. Eastburo Hollow-Iroquois River Characteristics and TMDL Summary (HUC12-001)

Upstream Characteristics					
<i>Drainage Area</i>	737.77 square miles				
<i>Sampling Station</i>	FL-04, FL-07				
<i>Listed Segments</i>	IL_FL-04				
<i>Land Use</i>	Agriculture: 83.78%; Developed Land:6.31%; Forest:6.13%; Other: 3.78%				
<i>Soils</i>	A: 27.01%; B: 44.70%; C: 22.08%; D:5.96%; Unknown:0.24%				
<i>NPDES Facilities</i>	All the facilities upstream of HUC12-503 ^a , HUC 12-506 ^a				
	Watsoka STP (IL0022161)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	Watsoka STP (IL0022161)-6 outfalls				
<i>CAFOs</i>	All the facilities upstream of HUC12-503 ^a , HUC 12-506 ^b				
<i>CFOs</i>	All the facilities upstream of HUC12-503 ^a , HUC 12-506 ^b				
TMDL Allocations (billion/day)					
	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	9051.99	2071.74	730.76	209.85	63.05
<i>WLA</i>	87.69	87.69	31.67	31.67	31.67
<i>MOS (10%)</i>	1015.52	239.93	84.71	26.83	10.52
<i>TMDL = LA+WLA+MOS</i>	10155.20	2399.36	847.14	268.35	105.24

a: Refers to Upper Iroquois HUC12

Table 246. City of Watseka-Iroquois River Characteristics and TMDL Summary (HUC12-002)

Upstream Characteristics					
<i>Drainage Area</i>	1358.36 square miles				
<i>Sampling Station</i>	FL-03				
<i>Listed Segments</i>	FL-05				
<i>Land Use</i>	Agriculture: 86.61%; Developed Land:6.11%; Forest:3.98%; Other: 3.30%				
<i>Soils</i>	A: 15.70%; B: 41.40%; C: 2239%; D:20.30%; Unknown:0.21%				
<i>NPDES Facilities</i>	All the facilities upstream of HUC12-503 ^a , HUC 12-506 ^a				
	Witseka STP (IL0022161)				
	Cissna Park STP (IL0042391)				
	Rankin STP (ILG580122)				
	Milford STP (IL0023272)				
	Gilman-North STP (IL0025062)				
	Onarga STP (IL0076813)				
	Il Dot-I-57 Iroquois County (ILG551072)				
	Prairieview Luthern Home (IL0037397)				
	Swissland Packing Company (IL0065358)				
	Merkle-Knipprath Nursing Home (ILG551007)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	Witseka STP (IL0022161)				
	Milford STP (IL0023272)				
<i>CAFOs</i>	All the facilities upstream of HUC12-503 ^a , HUC 12-506 ^a				
<i>CFOs</i>	All the facilities upstream of HUC12-503 ^a , HUC 12-506 ^a				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	9008.09	2027.84	721.67	200.76	53.96
<i>WLA</i>	131.59	131.59	40.76	40.76	40.76
<i>MOS (10%)</i>	1015.52	239.93	84.71	26.83	10.52
<i>TMDL = LA+WLA+MOS</i>	10155.20	2399.36	847.14	268.35	105.24

a: Refers to Upper Iroquois HUC12

7.1.5.6 **Pike Creek Subwatershed (HUC10-211)**

The Pike Creek subwatershed lies entirely within Iroquois county in Illinois (Figure 109). The two dominant land uses in this subwatershed are agriculture (89.71%) and developed land (7.06%). The remaining land categories contribute less than 2 percent of the subwatershed area (Table 237). There are not any NPDES Facilities or CFOs within the subwatershed.

There are no currently listed 303(d) segments in this subwatershed. 2008 sampling at one monitoring station in the subwatershed indicated an impairment that will lead to a listing on the 2010 303 (d) list (Table 247). The monitoring station is located on Pike Creek in HUC 21102 (Table 236). A statistical summary of the water quality is presented in Table 249. The reduction needed to achieve a geomean of 200 #/100 mL is 44 percent.

Table 247. Anticipated 2010 303 (d) Listed Streams in the Pike Creek Subwatershed

HUC 12	HU C12 Name	Segment ID	Waterbody	Stream Length (miles)	Parameter
102	Pike Creek	FLF-01	Pike Creek	17.95	Fecal Coliform

Table 248. Station Locations in the Pike Creek Subwatershed

HUC 12	HUC12 Name	Station #	Stream Name
102	Pike Creek	FLF-01	Pike Creek

Table 249. Summary of Pathogen Data in Pike Creek Subwatershed (IL)

Station #	Period of Record	Total Number of Samples	Percent of Samples Exceeding Fecal Coliform WQS (#/100 mL)		Minimum (#/ 100 mL)	Geomean (#/ 100 mL)	Average (#/ 100 mL)	Maximum (#/ 100 mL)	Percent Reduction Based on Geomean (200/ 100mL)
			200	400					
FLF-01	8/19/2008 - 9/17/2008	5	80	40	84	358	583	1,800	44%

Table 250. Land Use/land Cover in the Pike Creek Subwatershed

Land Use/Land Cover	Subwatershed		
	Area		Percent
	Acres	Square Miles	
Agricultural Land	40765.92	63.70	89.71
Developed Land	3205.81	5.01	7.06
Forested Land	519.29	0.81	1.14
Pasture/Hay	782.38	1.22	1.72
Wetland	134.99	0.21	0.30
Grassland and Shrubs	23.13	0.04	0.05
Open Water	6.67	0.01	0.01
Total	45,438.20	71.00	100.00

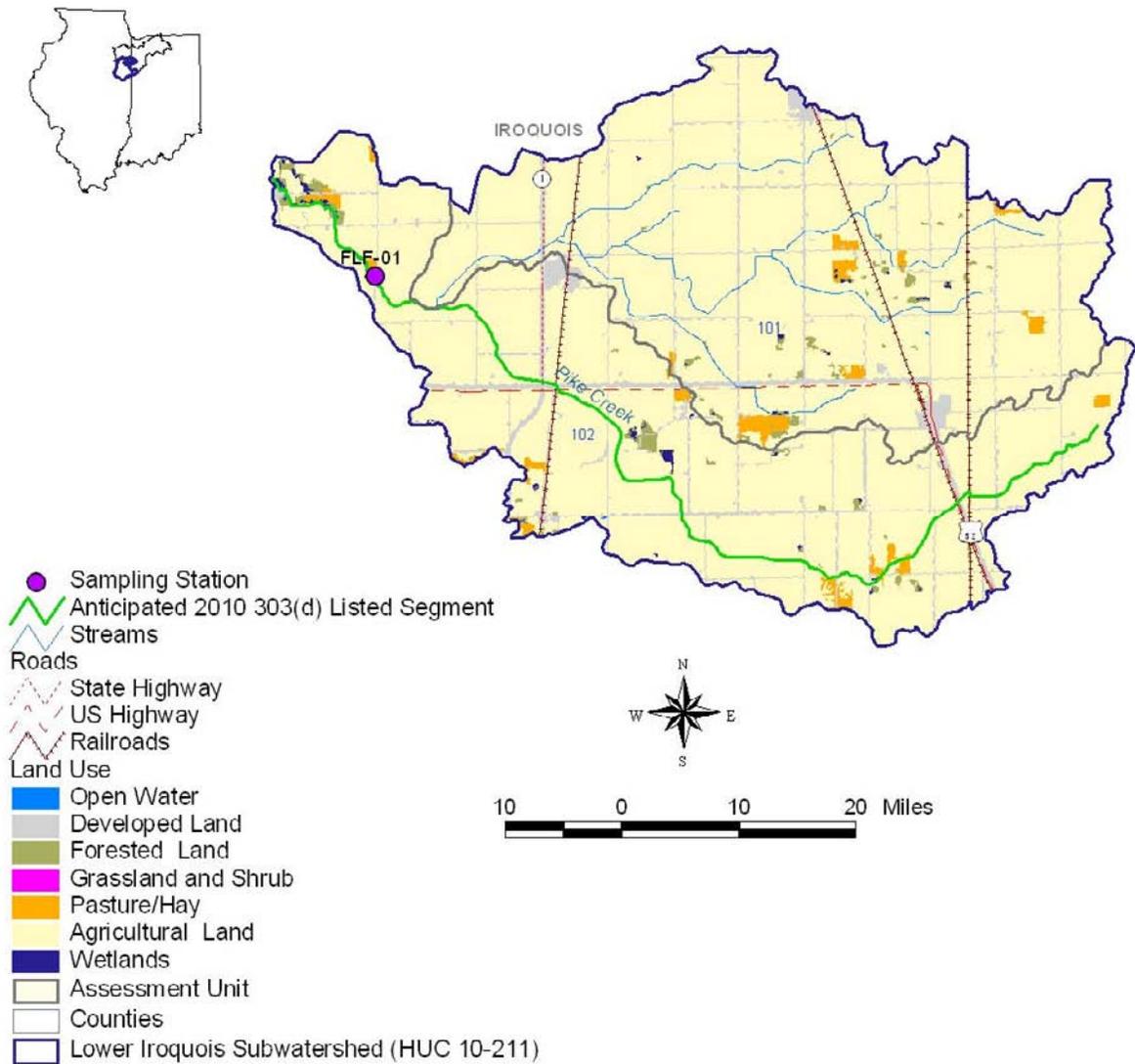


Figure 109. Location of Pike Creek Subwatershed (HUC10-211)

Table 251 summarizes the subwatershed characteristics as well as the TMDL results for HUC 12-102. It should be noted that there are no current 303(d) listings in this HUC; however, the 2008 sampling data indicate that the fecal coliform bacteria criteria are not met in this HUC and so TMDL results are presented here. There are no point sources in this subwatershed.

Table 251. Pike Creek Characteristics and TMDL Summary (HUC12-102)

Upstream Characteristics					
<i>Drainage Area</i>	71.00 square miles				
<i>Sampling Station</i>	FLF-01				
<i>Listed Segments</i>	FLF-01				
<i>Land Use</i>	Agriculture: 89.71%; Developed Land:7.05%; Forest:1.14%; Other: 2.09%				
<i>Soils</i>	A:13.40%; B:49.68%; C:5.91%; D:31.01 %; Unknown:0.00%				
<i>NPDES Facilities</i>	None				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	None				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	879.57	207.81	73.38	23.24	9.12
<i>WLA</i>	0.00	0.00	0.00	0.00	0.00
<i>MOS (10%)</i>	97.73	23.09	8.15	2.58	1.01
<i>TMDL = LA+WLA+MOS</i>	977.30	230.90	81.53	25.82	10.13

7.1.5.7 Langan Creek Subwatershed (HUC10-212)

The Langan Creek subwatershed incorporates the cities of Clifton and Chebanse as shown in Figure 110. The Langan Creek subwatershed lies within Iroquois and Kankakee counties in Illinois (Figure 110). The two dominant land uses in this subwatershed are agriculture (90.59%) and developed land (7.16%). The remaining land categories contribute less than 2 percent of the subwatershed area (Table 255). There are no NPDES Facilities or CFOs within the subwatershed (Figure 110).

There are no currently listed 303(d) segments in this subwatershed. 2008 sampling at one monitoring station in the subwatershed indicated an impairment that will lead to a listing on the 2010 303 (d) list (Table 252). The monitoring station is located on Langan Creek in HUC 21202 (Table 253). A statistical summary of the water quality is presented in Table 254. The reductions needed to achieve a geomean of 200 #/100 mL 56 percent.

Table 252. Anticipated 2010 303 (d) Listed Streams in the Langan Creek Subwatershed

HUC 12	HUC 12 Name	Segment ID	Waterbody	Stream Length (miles)	Parameter
202	Langan Creek	FLE-01	Langan Creek	9.45	Fecal Coliform

Table 253. Station Locations in the Langan Creek Subwatershed

HUC 12	HUC 12 Name	Station #	Stream Name
202	Langan Creek	FLE-01	Langan Creek

Table 254. Summary of Pathogen Data in Langan Creek Subwatershed (IL)

Station #	Period of Record	Total Number of Samples	Percent of Samples Exceeding Fecal Coliform WQS (#/100 mL)		Minimum (#/ 100 mL)	Geomean (#/ 100 mL)	Average (#/ 100 mL)	Maximum (#/ 100 mL)	Percent Reduction Based on Geomean (200/ 100mL)
			200	400					
FLE-01	8/19/2008 - 9/17/2008	5	80	60	48	451	886	2,800	56%

Table 255. Land Use/land Cover in the Langan Creek Subwatershed

Land Use/Land Cover	Subwatershed		
	Area		Percent
	Acres	Square Miles	
Agricultural Land	62190.47	97.17	90.59
Developed Land	4914.68	7.68	7.16
Forested Land	360.72	0.56	0.53
Pasture/Hay	806.85	1.26	1.18
Wetland	282.00	0.44	0.41
Grassland and Shrubs	82.51	0.13	0.12
Open Water	16.68	0.03	0.02
Total	68,653.91	107.27	100.00

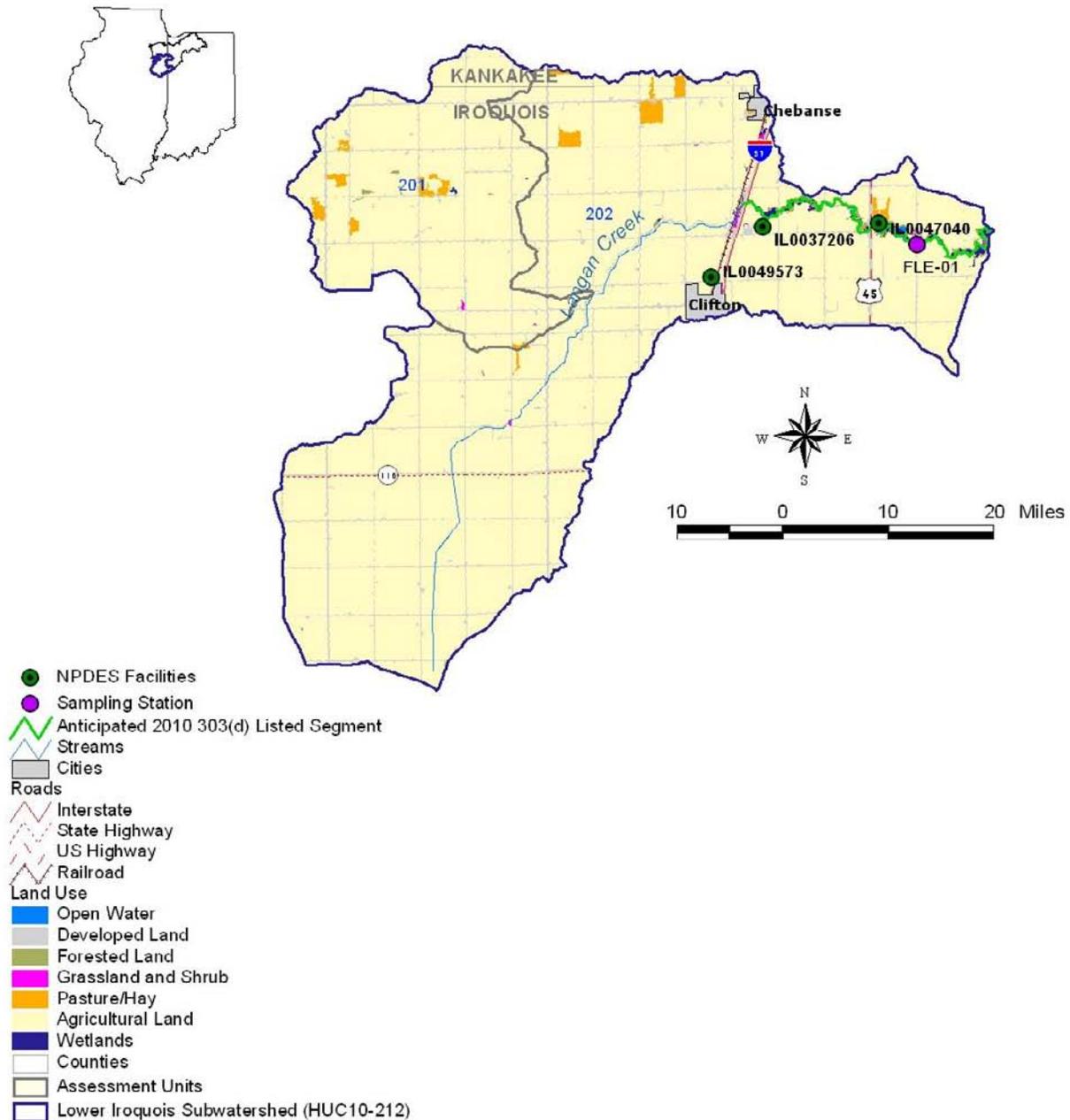


Figure 110. Location and NPDES Facilities in the Langan Creek Subwatershed (HUC10-212)

Table 256 summarizes the subwatershed characteristics as well as the TMDL results for HUC 12-202. It should be noted that there are no current 303(d) listings in this HUC; however, the 2008 sampling data indicate that the fecal coliform bacteria criteria are not met in this HUC and so TMDL results are presented here.

There are three NPDES facilities within the Langan Creek subwatershed and the WLAs for the facilities were calculated based on their design flows and fecal coliform permit limits. The individual WLAs are presented in Table 276.

Table 256. Langan Creek Characteristics and TMDL Summary (HUC12-202)

Upstream Characteristics					
<i>Drainage Area</i>	107.33 square miles				
<i>Sampling Station</i>	FLE-01				
<i>Listed Segments</i>	FLE-01				
<i>Land Use</i>	Agriculture: 90.53%; Developed Land:0.02%; Forest:7.15%; Other: 2.29%				
<i>Soils</i>	A:0.77%; B:39.66%; C:22.01%; D:37.551 %; Unknown:0.00%				
<i>NPDES Facilities</i>	Central Hs&Nash Middle School (IL0037206)				
	Iroquois Mobile Estates (IL0047040)				
	Clifton STP (IL0049573)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	None				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	1325.46	309.98	109.25	33.47	12.11
<i>WLA</i>	4.17	4.17	1.67	1.67	1.67
<i>MOS (10%)</i>	147.74	34.91	12.32	3.90	1.53
<i>TMDL = LA+WLA+MOS</i>	1477.37	349.06	123.24	39.04	15.31

7.1.5.8 Beaver Creek Subwatershed (HUC 10-213)

The Beaver Creek subwatershed has an area of 187 square miles (Figure 111). Agriculture constitutes the primary land use in this area (Table 261). There are no listed segments within this subwatershed and there is only one NPDES facility (Figure 112). Feeding operations are shown in Figure 113.

There are four monitoring locations in this subwatershed (Table 258) and the summary of the 2008 data in is shown in Table 259 and Table 260. The reductions needed to achieve a fecal coliform geomean of 200 #/100 mL for the Illinois station is 48 percent. The reductions needed to achieve an *E. coli* geomean of 125 #/100 mL ranges from 20 to 72 percent.

Table 257. Anticipated 2010 303 (d) Listed Streams in the Beaver Creek Subwatershed

HUC 12	HUC 12 Name	Segment ID	Waterbody	Stream Length (miles)	Parameter
305	North-Hooper Beaver Creek	FLD-03*	Beaver Creek	4.2	Fecal Coliform
308	Beaver Creek			17.87	

*Segment FLD-03 lies in two subwatersheds.

Table 258. Station Locations in the Beaver Creek Subwatershed

HUC 12	HUC 12 Name	Station # (State)	Stream Name
302	Deardruff Ditch-Beaver Creek	ID# 48 (IN)	Beaver Cr
303	Carlson Ditch-Beaver Creek	ID# 44 (IN)	Salisbury D
		ID# 46 (IN)	Beaver Cr
308	Beaver Creek	FLD-03 (IL)	Beaver Creek

Table 259. Summary of Pathogen Data in Beaver Creek (HUC10-213) Subwatershed (IN)

Station #	Period of Record	Total Number of Samples	Percent of Samples Exceeding <i>E. coli</i> WQS (#/100 mL)		Minimum (#/100 mL)	Geomean (#/100 mL)	Average (#/100 mL)	Maximum (#/100 mL)	Percent Reduction Based on Geomean (125/100mL)
			125	235					
48	6/2/2008 - 6/30/2008	5	80	60	120	330	578	1,986	62%
44	6/2/2008 - 6/30/2008	5	80	0	93	156	161	196	20%
46	6/2/2008 - 6/30/2008	5	100	100	326	439	457	727	72%

Table 260. Summary of Pathogen Data in the Beaver Creek Subwatershed (IL)

Station #	Period of Record	Total Number of Samples	Percent of Samples Exceeding Fecal Coliform WQS (#/100 mL)		Minimum (#/ 100 mL)	Geomean (#/ 100 mL)	Average (#/ 100 mL)	Maximum (#/ 100 mL)	Percent Reduction Based on Geomean (200/ 100mL)
			200	400					
FLD-03	8/19/2008 - 9/17/2008	5	100	40	220	388	510	1,380	48%

Table 261. Land Use/Land Cover in the Beaver Creek Subwatershed

Land Use/Land Cover	Subwatershed		
	Area		Percent
	Acres	Square Miles	
Agricultural Land	91,283.82	142.63	76.45
Forested Land	15,463.72	24.16	12.95
Developed Land	7,206.45	11.26	6.04
Pasture/Hay	1,683.30	2.63	1.41
Grassland and Shrubs	1,,602.79	2.50	1.34
Open Water	1,208.71	1.89	1.01
Wetland	957.18	1.50	0.80
Total	119,405.99	186.57	100.00

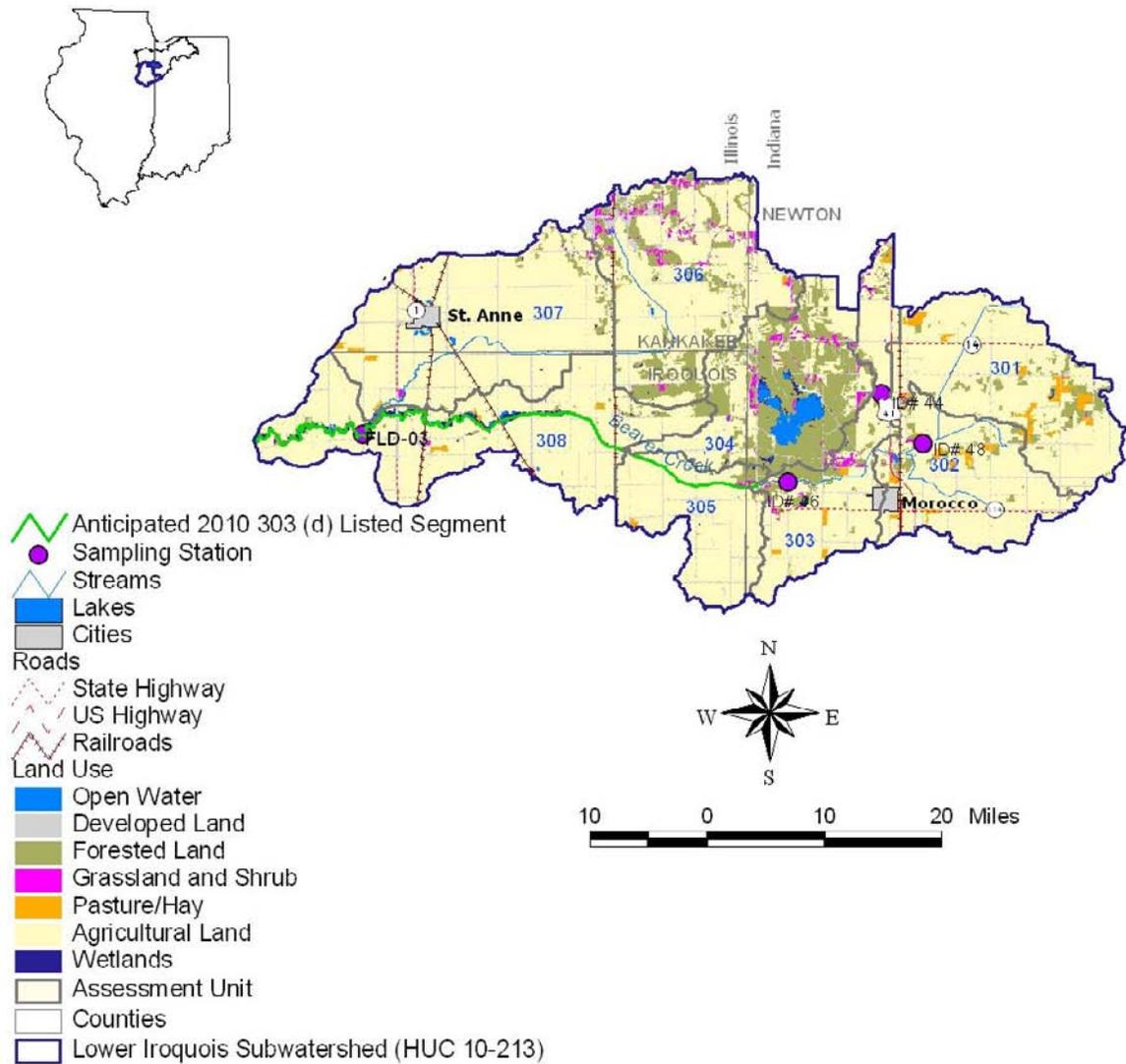


Figure 111. Location of Beaver Lake Ditch-Kankakee River Subwatershed (HUC10-112)

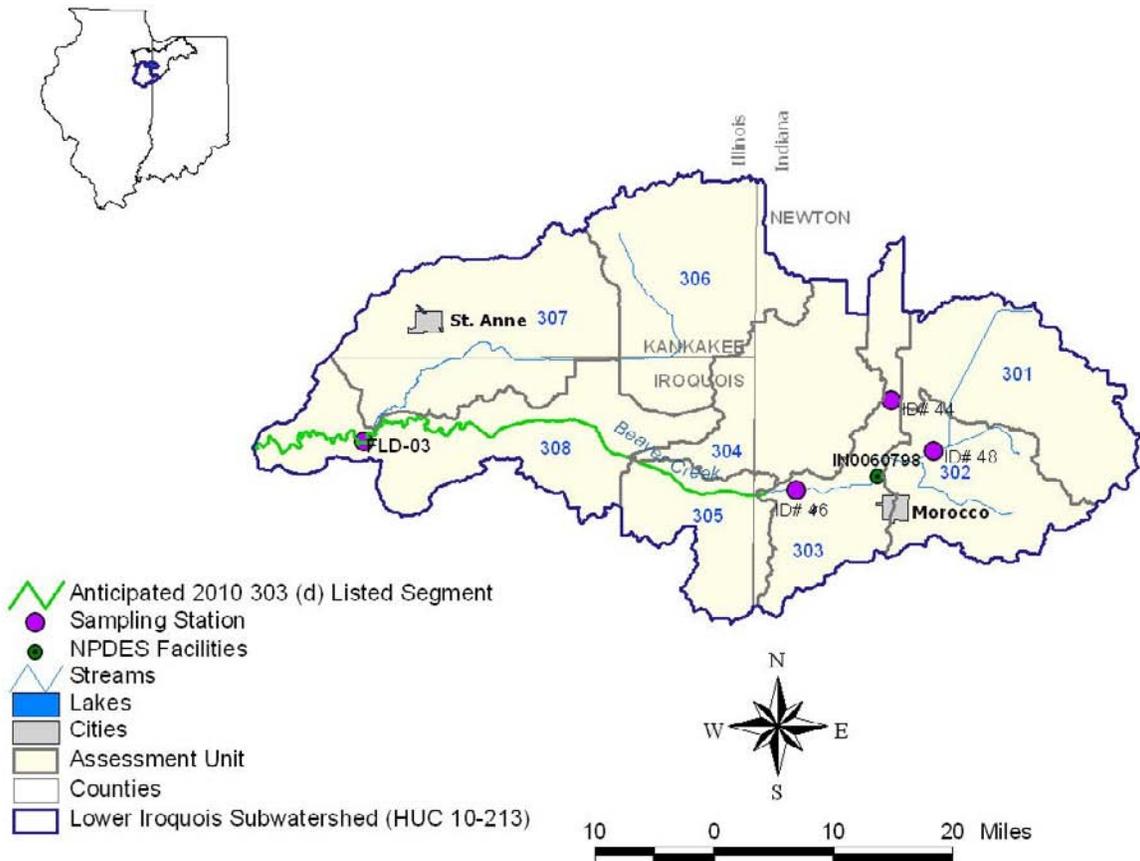


Figure 112. NPDES Facilities in the Beaver Lake Ditch-Kankakee River Subwatershed (HUC10-112)

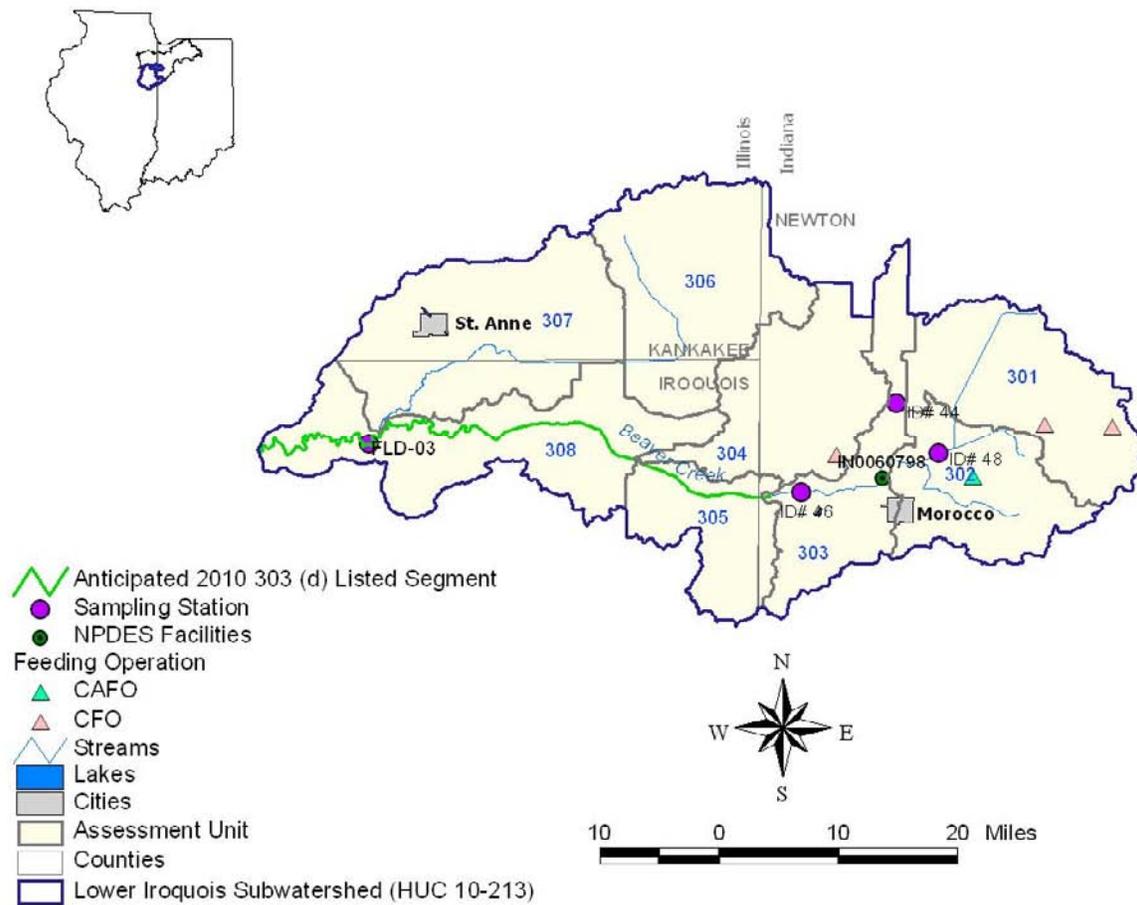


Figure 113. Feeding Operations in the Beaver Lake Ditch-Kankakee River Subwatershed (HUC10-112)

Table 262 through Table 264 summarize the subwatershed characteristics as well as the TMDL results for each of the HUC 12 subwatersheds. It should be noted that there are no current 303(d) listings in this subwatershed; however, the 2008 sampling data indicate that the *E. coli* and fecal coliform bacteria criteria are not met in this subwatershed and so TMDL results are presented here.

There is one NPDES facility within the Beaver Creek subwatershed and the WLAs for the facility was calculated based on their design flows and *E. coli* and fecal coliform bacteria permit limits. The individual WLAs are presented in Table 276. There is one CAFO within this subwatershed and it receives a WLA of zero as described further in Section 7.3.

Table 262. Deardruff ditch-Beaver Creek Characteristics and TMDL Summary (HUC12-302)

Upstream Characteristics					
<i>Drainage Area</i>	42.40 square miles				
<i>Sampling Station</i>	44, 48				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 83.07%; Developed Land:5.59%; Forest:6.58%; Other: 4.76%				
<i>Soils</i>	A: 67.84%; B: 22.97%; C: 8.48%; D:0.71%; Unknown:0.00%				
<i>NPDES Facilities</i>	None				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	Storey Pork Farm (ING803684)				
	Gibson Fine Swine, Inc. (3855)				
<i>CFOs</i>	Sow Production Site (2484)				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	367.41	104.44	36.06	9.87	3.40
<i>WLA</i>	0.00	0.00	0.00	0.00	0.00
<i>MOS (10%)</i>	40.82	11.60	4.01	1.09	0.38
<i>TMDL = LA+WLA+MOS</i>	408.23	116.04	40.07	10.96	3.78

Table 263. Carlson Ditch-Beaver Creek Subwatershed Characteristics and TMDL Summary (HUC12-303)

Upstream Characteristics					
<i>Drainage Area</i>	59.71 square miles				
<i>Sampling Station</i>	46				
<i>Listed Segments</i>	None				
<i>Land Use</i>	Agriculture: 80.59%; Developed Land:6.03%; Forest:8.58%; Other: 4.81%				
<i>Soils</i>	A: 65.22%; B: 22.51%; C: 10.74%; D:1.53%; Unknown:0.00%				
<i>NPDES Facilities</i>	Morocco WWTP (IN0060798)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	Storey Pork Farm (INg803684)				
	Gibson Fine Swine, Inc. (3855)				
<i>CFOs</i>	Sow Production Site (2484)				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	516.7	146.37	50.08	13.19	4.08
<i>WLA</i>	0.71	0.71	0.71	0.71	0.71
<i>MOS (10%)</i>	57.49	16.34	5.64	1.54	0.53
<i>TMDL = LA+WLA+MOS</i>	574.9	163.42	56.43	15.44	5.32

Table 264. Beaver Creek Subwatershed Characteristics and TMDL Summary (HUC12-308)

Upstream Characteristics					
<i>Drainage Area</i>	186.63 square miles				
<i>Sampling Station</i>	FLD-03				
<i>Listed Segments</i>	FLD-03				
<i>Land Use</i>	Agriculture: 76.42%; Developed Land:6.03%; Forest:12.95%; Other: 4.60%				
<i>Soils</i>	A:47.24%; B:24.57%; C:10.28%; D:16.94 %; Unknown:0.97%				
<i>NPDES Facilities</i>	Morocco WWTP (IN0060798)				
<i>MS4 Communities</i>	None				
<i>CSO Communities</i>	None				
<i>CAFOs</i>	None				
<i>CFOs</i>	None				
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	2310.88	545.12	191.73	59.96	22.82
<i>WLA</i>	1.14	1.14	1.14	1.14	1.14
<i>MOS (10%)</i>	256.89	60.69	21.43	6.78	2.66
<i>TMDL = LA+WLA+MOS</i>	2568.91	606.95	214.30	67.88	26.62

7.1.5.9 Iroquois River Subwatershed (HUC10-214)

The Iroquois River subwatershed has an area of nearly 69 square miles and lies entirely in Illinois. The land in this subwatershed is primarily used for agricultural purposes (Table 268). The subwatershed does not have NPDES facilities or feeding operations within its borders (Figure 114).

There is one listed segment in the subwatershed (Table 265). The sampling station (Table 266) located on Iroquois River shows pathogen violations (Table 267). Twenty six percent of all data observed at station FL-02 exceeds the geomean standard while 12 percent of all samples exceed the not-to-exceed standard.

Table 265. 303 (d) Listed Streams in the Iroquois River Subwatershed

HUC 12	HUC 12 Name	Segment ID	Waterbody	Stream Length (miles)	Parameter
402	Iroquois River	IL_FL_02	Iroquois River	11.37	Fecal Coliform

Table 266. Station Locations in the Iroquois River Subwatershed

HUC 12	HUC 12 Name	Station #	Stream Name
402	Iroquois River	FL-02	Iroquois River

Table 267. Summary of Pathogen Data in the Iroquois River Subwatershed

Station #	Period of Record	Total Number of Samples	Percent of Samples Exceeding Fecal Coliform WQS (#/100 mL)		Minimum (#/100 mL)	Geomean (#/100 mL)	Average (#/100 mL)	Maximum (#/100 mL)	Percent Reduction Based on Geomean (200/100mL)
			200	400					
FL-02	3/8/1999 - 6/18/2008	42	26	12	10	84	198	2,500	0%

Table 268. Land Use/Land Cover in the Iroquois River Subwatershed

Land Use/Land Cover	Subwatershed		
	Area		Percent
	Acres	Square Miles	
Agricultural Land	38306.91	59.85	86.32
Developed Land	3019.89	4.72	6.80
Forested Land	1040.14	1.63	2.34
Pasture/Hay	996.10	1.56	2.24
Wetland	371.84	0.58	0.84
Grassland and Shrubs	106.97	0.17	0.24
Open Water	534.41	0.84	1.20
Total	44,376.27	69.34	100.00

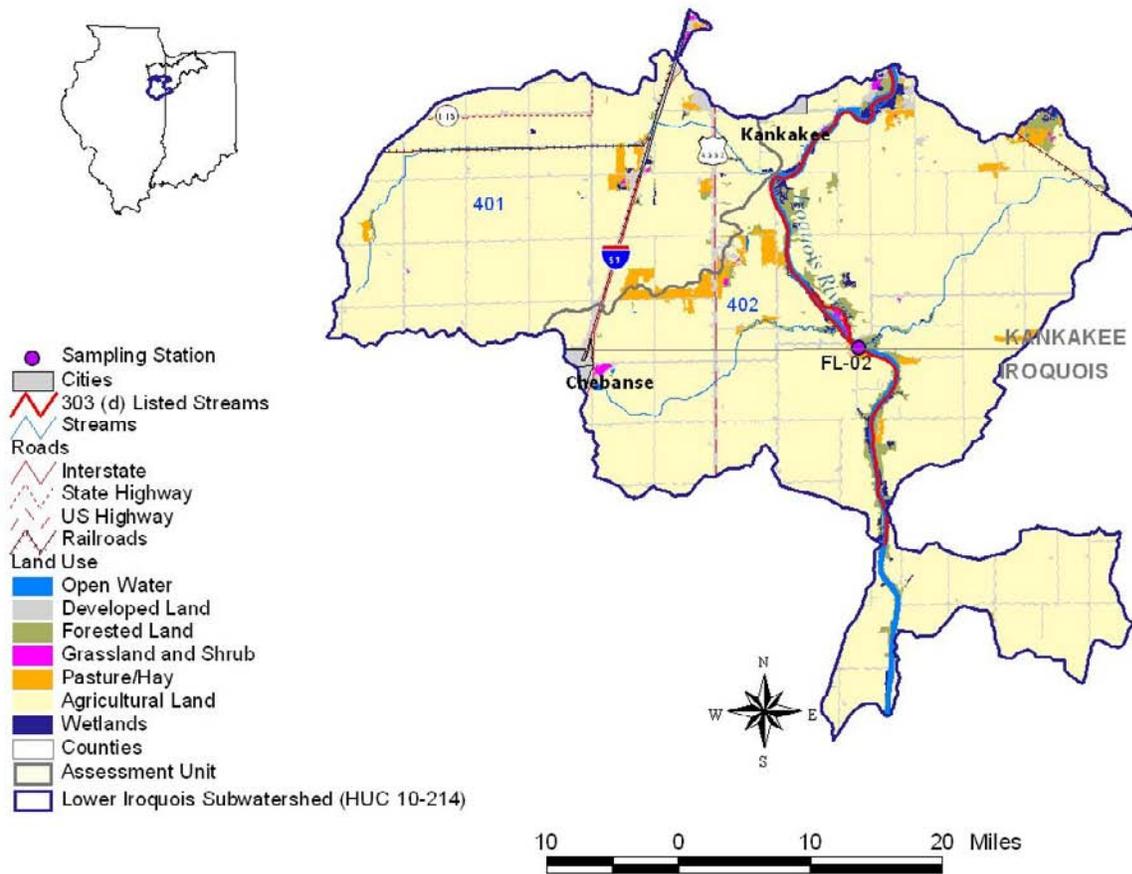


Figure 114. Location of Iroquois River Subwatershed (HUC10-214)

Table 269 summarizes the subwatershed characteristics as well as the TMDL results for HUC 12-402. There are two MS4 communities within the Iroquois River subwatershed and the WLAs for the communities were calculated based on their area within the subwatershed and fecal coliform standards. The individual WLAs are presented in Table 276. WLAs for CSO communities were calculated based on the maximum observed CSO flow reported in the DMR and fecal coliform standards.

Table 269. Iroquois River Characteristics and TMDL Summary (HUC12-402)

Upstream Characteristics					
<i>Drainage Area</i>	2135.30 square miles				
<i>Sampling Station</i>	FL_02				
<i>Listed Segments</i>	IL_FL_02				
<i>Land Use</i>	Agriculture: 85.97%; Developed Land:6.69%; Forest:4.03%; Other: 3.30%				
<i>Soils</i>	A: 15.10%; B: 36.68%; C: 20.92%; D:27.03%; Unknown:0.27%				
<i>NPDES Facilities</i>	All facilities upstream HUC12-001 ^a				
	Cissna Park STP (IL0042391)				
	Rankin STP (ILG580122)				
	Milford STP (IL0023272)				
	Gilman-North STP (IL0025062)				
	Onarga STP (IL0076813)				
	Il Dot-I-57 Iroquois County (ILG551072)				
	Prairieview Luthern Home (IL0037397)				
	Swissland Packing Company (IL0065358)				
	Merkle-Knipprath Nursing Home (ILG551007)				
	Central Hs&Nash Middle School (IL0037206)				
	Clifton STP (IL0049573)				
	Morocco WWTP (IL0060798)				
	Iroquois Mobile Estates (IL0047040)				
<i>MS4 Communities</i>	City of Kankakee (ILR400363): 0.069 square miles				
	Kankakee County (ILR400260): 0.068 square miles				
<i>CSO Communities</i>	Watseka STP (IL0022161)-6 outfalls				
	Milford STP (IL0023272)-10 outfalls				
	Rensselaer Municipal STP (IN0024414)-9 outfalls				
<i>CAFOs</i>	All facilities upstream HUC12-001 ^a				
	Storey Pork Farm (3684)				
<i>CFOs</i>	All facilities upstream HUC12-001 ^a				
	Ewen Gravel Hill Farm (1178)				
	Sow Production Site (2484)				
	Gibson Fine Swine, Inc.(3855)				
C Bar C Farms (3277)					
TMDL Allocations (billion/day)					
<i>Allocation Category</i>	<i>High Flows</i>	<i>Moist Conditions</i>	<i>Mid-Range Flows</i>	<i>Dry Conditions</i>	<i>Low Flows</i>
<i>LA</i>	24612.76	4468.02	1791.04	487.03	154.28
<i>WLA</i>	1512.45	1512.45	43.57	43.57	43.57
<i>MOS (10%)</i>	2902.80	664.50	203.85	58.95	21.98
<i>TMDL = LA+WLA+MOS</i>	29028.01	6644.97	2038.46	589.55	219.83

a: Refers to Lower Iroquois HUC12

7.1.6 Lower Kankakee Subwatershed

The Lower Kankakee subwatershed has five HUC 10 and 26 HUC 12 units (Table 270). The only sampling stations are located in HUC 10-118. Therefore information is only presented for this subwatershed. There are no listed segments in this subwatershed.

Table 270. Hydrologic Unit Code (HUC 10 and 12) in the Lower Kankakee Subwatershed

HUC 10	HUC 10 Name	HUC 12	Subwatershed Name	Area (sq. miles)
114	Spring Creek-Kankakee River	401	Pike Creek	26.01
		402	Trim Creek	37.82
		403	Mirror Lake-Kankakee River	37.64
		404	Tower Creek	17.81
		405	Spring Creek	27.59
		406	Farr Creek-Kankakee River	39.95
115	Rock Creek	501	Black Walnut Creek	20.59
		502	South Branch Rock Creek	39.53
		503	Headwaters Rock Creek	36.60
		504	Rock Creek	24.52
116	Horse Creek	601	Lehigh Raymond Run	16.09
		602	East Branch Horse Creek	56.32
		603	West Branch Horse Creek	31.45
		604	Horse Creek	24.48
117	Forked Creek	701	South Branch Forked Creek	35.62
		702	Headwaters Forked Creek	60.08
		703	Forked Creek	40.04
118	Kankakee River	801	Exline Slough	43.93
		802	Bur Creek Ditch	26.24
		803	Baker Creek	27.21
		804	Terry Creek	12.44
		805	Rayns Creek-Kankakee River	63.31
		806	City of Wilmington-Kankakee River	21.50
		807	Headwaters Prairie Creek	33.36
		808	Prairie Creek	18.22
		809	Kankakee River	17.75

7.1.6.1 Kankakee River Subwatershed (HUC 10-118)

The Kankakee River subwatershed has an area of approximately 263 square miles and includes the sampling stations listed in Table 271 and shown in Figure 115. Table 272 summarizes fecal coliform data for this subwatershed. Agriculture is the dominant land use followed by developed land (Table 273).

There are no feeding operations within this subwatershed and the NPDES facilities are shown in Figure 116. It should be noted that the impairment status for segment F-01 previously relied on data from station F-01; impairment status is now based on data collected at station F-16.

Table 271. Station Locations in the Kankakee River Subwatershed

HUC 12	HUC 12 Name	Station #	Stream Name
806	City of Wilmington-Kankakee River	F-16	Kankakee River
809	Kankakee River	F-01	Kankakee River

Table 272. Summary of Pathogen Data in the Kankakee River Subwatershed

Station #	Period of Record	Total Number of Samples	Percent of Samples Exceeding Fecal Coliform WQS (#/100 mL)		Minimum (#/100 mL)	Geomean (#/100 mL)	Average (#/100 mL)	Maximum (#/100 mL)	Percent Reduction Based on Geomean (200/100mL)
			200	400					
F-16	1/14/2003 - 6/18/2008	16	25	0	20	61	104	240	0%
F-01	3/30/1999 - 9/19/2002	21	38	19	7	110	652	8,900	0%

Table 273. Land Use/Land Cover in the Kankakee River Subwatershed

Land Use/Land Cover	Subwatershed		
	Area		Percent
	Acres	Square Miles	
Agricultural Land	105,089.60	164.20	62.52
Developed Land	26,906.33	42.04	16.01
Forested Land	13,080.10	20.44	7.78
Pasture/Hay	8,126.72	12.70	4.83
Wetland	555.54	0.87	0.33
Grassland and Shrubs	9,524.02	14.88	5.67
Open Water	4815.27	7.52	2.86
Total	168,097.59	262.65	100.00

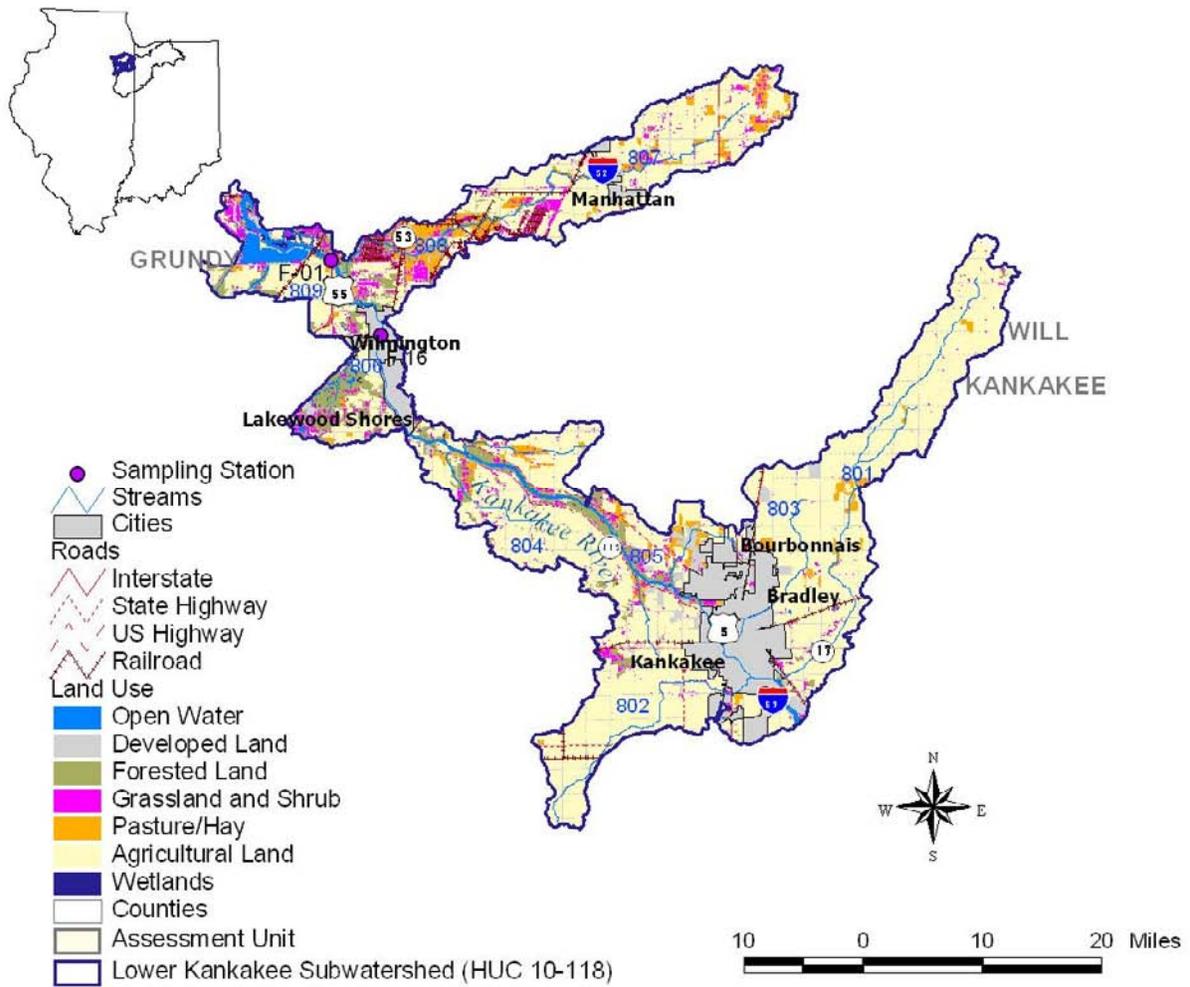


Figure 115. Location of Kankakee River Subwatershed (HUC 10-118)

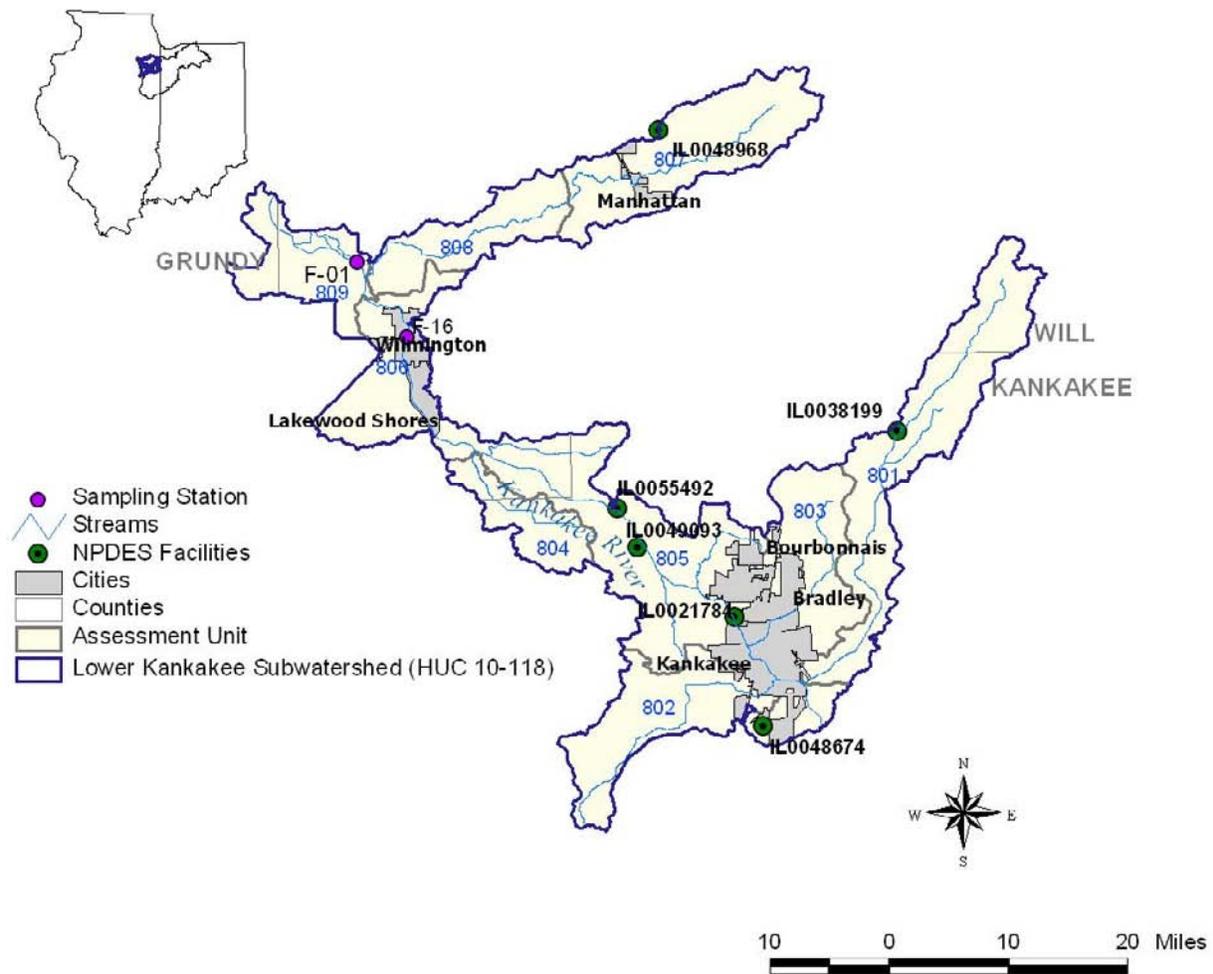


Figure 116. NPDES Facilities in the Kankakee River Subwatershed (HUC10-118)

Table 274 through Table 275 summarize the subwatershed characteristics for each of the HUC 12 subwatersheds. It should be noted that there are no current 303(d) listings in this subwatershed and the sampling performed in 2008 does not suggest any new impairment; therefore no TMDLs were developed.

Table 274. City of Wilmington-Kankakee River Characteristics (HUC12-806)

<i>Upstream Characteristics</i>	
<i>Drainage Area</i>	5025.01 square miles
<i>Sampling Station</i>	F-16
<i>Listed Segments</i>	None
<i>Land Use</i>	Agriculture: 77.09%; Developed Land:8.24%; Forest:8.09%; Other: 6.57%
<i>Soils</i>	A: 27.57%; B: 34.73%; C: 22.47%; D:14.59%; Unknown:0.65%
<i>NPDES Facilities</i>	All facilities in the entire Kankakee/Iroquois watershed excluding IL0048968*
<i>MS4 Communities</i>	All MS4s in the entire Kankakee/Iroquois watershed*
<i>CSO Communities</i>	Watseka STP (IL0022161)-6 outfalls
	Milford STP (IL0023272)-10 outfalls
	Grant Park STP (IL0050717)-2 outfalls
	North Judson Municipal (IN0020877)-1 outfall
	Plymouth Municipal STP (IN0020991)-10 outfalls
	Nappanee Municipal STP (IN0021466)-Discharges Outside of The Kankakee/Iroquois Watershed
	Lowell Municipal STP (IN0023621)-1 outfall
<i>CAFOs</i>	All facilities in the entire Kankakee/Iroquois watershed*
<i>CFOs</i>	All facilities in the entire Kankakee/Iroquois watershed *

*HUC12-806 is near the mouth of the Kankakee River; all sources listed previously in the document are upstream of this HUC.

Table 275. Kankakee River Characteristics (HUC12-809)

<i>Upstream Characteristics</i>	
<i>Drainage Area</i>	4955.62 square miles
<i>Sampling Station</i>	F-01
<i>Listed Segments</i>	None
<i>Land Use</i>	Agriculture: 76.79%; Developed Land:8.26%; Forest:8.09%; Other: 6.85%
<i>Soils</i>	A: 27.26%; B:34.55%; C: 22.88%; D:14.62%; Unknown:0.70%
<i>NPDES Facilities</i>	All facilities in the entire Kankakee/Iroquois watershed excluding IL0048968*
<i>MS4 Communities</i>	All MS4s in the entire Kankakee/Iroquois watershed*
<i>CSO Communities</i>	All CSOs in the entire Kankakee/Iroquois watershed*
<i>CAFOs</i>	All facilities in the entire Kankakee/Iroquois watershed*
<i>CFOs</i>	All facilities in the entire Kankakee/Iroquois watershed*

*HUC12-806 is at the mouth of the Kankakee River; all sources listed previously in the document are upstream of this HUC

7.2 Load Allocations

Load Allocations represent the portion of the allowable load that is reserved for nonpoint sources and natural background. Load allocations for the Kankakee/Iroquois watershed TMDLs are based on subtracting the WLAs and the MOS from the allowable load for each pollutant. The Load Allocations are presented by individual location in Section 7.1. CFOs receive a zero discharge permit from the state of Indiana and therefore receive a load allocation (LA) of zero for all pollutants.

7.3 Wasteload Allocations

There are 87 known NPDES facilities within the Kankakee/Iroquois watershed with the potential to discharge fecal coliform or *E. coli*. Seventy of these facilities discharge to streams with TMDLs. As required by the Clean Water Act, individual WLAs were developed for these permittees as part of the TMDL development process. For Indiana, WLAs were calculated based on each facility's average design flow multiplied by *E. coli* permit limits and appropriate conversion factors. For Illinois, each facility's maximum design flow was used to calculate the WLA for the high flow and moist flow zones and the average design flow was used for all other flow zones. Illinois assumes that facilities will have to discharge at their maximum flow during both high and moist flows based on the following:

For municipal NPDES permits in Illinois, page 2 of the NPDES permit lists 2 design flows: a design average flow (DAF) and a design maximum flow (DMF). These are defined in 35 Ill. Adm. Code 370.211(a) and (b) (see <http://www.ipcb.state.il.us/documents/dsweb/Get/Document-12042/>). Since rain (and to a certain extent, high ground water) causes influent flows to wastewater treatment facilities to increase and precipitation also leads to higher river levels, a correlation between precipitation and treatment flows exists. The load limits in these permits gives a tiered load limit, one based on DAF for flows of DAF and below, and another load limit in the permit for flows above DAF through DMF.

Indiana *E. coli* WLAs are based on the already established permit limits. The *E. coli* WLA is based on the 125 #/100 mL standard. Illinois fecal coliform WLAs are based on the already established permit limits. The fecal coliform WLA is based on the 200 #/100 mL standard.

There are four CSOs in the Indiana portion of the watershed and three in the Illinois portion of the watershed (Table 277). One CSO in Illinois does not discharge to any 303 (d) listed segments and therefore did not receive a WLA. The WLAs for all the CSOs were calculated to be equal to the maximum observed daily flow (as reported on the 2006 discharge monitoring reports) multiplied by 125#/100 mL for *E. coli* and 200#/100 mL for fecal coliform. During the development of Long-Term Control Plans for the CSO communities each state may decide to modify the WLA if deemed appropriate.

There are seven permitted MS4 communities in the Indiana portion of the watershed and 11 in the Illinois portion of the watershed (Table 278). Seven of the Illinois MS4 communities do not discharge to impaired stream segments; these communities therefore did not receive a WLA. Different WLAs were established for each MS4 depending on the area of the MS4 upstream of the each assessment location. The jurisdictional areas of townships, municipalities, and urbanized areas were used as surrogates for the regulated area of each MS4. These areas were then used to calculate WLAs based on the proportion of the upstream drainage area located within the MS4 boundaries by multiplying that proportional area by the loading capacity of the assessment location. The MS4 WLAs therefore are equal to the estimated flows from the MS4 multiplied by either 125#/100 mL for *E. coli* or 200#/100 mL for fecal coliform.

Indiana has identified 28 CAFOs in the Kankakee/Iroquois watershed and the WLAs for each is set to zero. The zero allocation is based on the Effluent Limitations Guidelines and New Source Performance Standards requiring, in general, zero discharge from these areas. This limit on load is reasonable due to the requirement for the proper design, construction, operation, and maintenance of the structures to contain all manure, litter, and process wastewater including the runoff and direct precipitation from a 25 year, 24-hour rainfall event. Further, the allocation is based on the conditions of the NPDES general permit providing that water quality standards shall not be exceeded in the event of an overflow from production areas. No CAFOs were identified by IEPA in the Illinois portion of the watershed; therefore the WLA for Illinois CAFOs is also zero (Table 279).

WLAs from illicitly connected onsite systems (i.e., straight pipe dischargers) in the watershed are set equal to zero.

Table 276. Individual WLAs for NPDES Facilities in the Kankakee/Iroquois watershed TMDLs.

Major Subwatershed	Facility Name	Permit ID	Applicable to the Loading Capacities at the Following Segments	Design Flow (MGD)	Fecal coliform WLA (Billion/day)	<i>E. Coli</i> WLA (Billion/day)	Max Design Flow (MGD)	Fecal coliform WLA (Billion/day)
Lower Iroquois	Central Hs&Nash Middle School	IL0037206	IL_FL_02	0.01	0.08		0.026	0.20
	Cissna Park STP	IL0042391	IL_FLI-02, IL_FL_02, FL-05	0.10	0.76		0.25	1.89
	Clifton STP	IL0049573	IL_FL_02	0.20	1.51		0.5	3.79
	Gilman-North STP	IL0025062	IL_FL_02, FL-05	0.50	3.79		1.15	8.71
	Il Dot-I-57 Iroquois County	ILG551072	IL_FL_02, FL-05	0.02	0.12		0.0405	0.31
	Iroquois Mobile Estates	IL0047040	IL_FL_02	0.01	0.08		0.025	0.19
	Merkle-Knipprath Nursing Home	ILG551007	IL_FL_02, FL-05	0.02	0.11		0.0375	0.28
	Milford STP	IL0023272	IL_FLI-02, IL_FL_02, FL-05	0.20	1.51		1.3	9.84
	Morocco WWTP	IN0060798	HUC21303, IL_FL_02	0.15	1.14	0.71	0.15	1.14
	Onarga STP	IL0076813	IL_FL_02, FL-05	0.25	1.89		0.878	6.65
	Prairieview Luthern Home	IL0037397	IL_FL_02, FL-05	0.01	0.09		0.03	0.23
	Rankin STP	ILG580122	IL_FLI-02, IL_FL_02, FL-05	0.08	0.61		0.304	2.30
	Swissland Packing Company	IL0065358	IL_FL_02, FL-05	0.03	0.21		0.03	0.23
Watseka STP	IL0022161	IL_FL-04, IL_FL_02, FL-05	1.60	12.11		4	30.28	
Middle Kankakee	Boone Grove Elem & Middle Sch	IN0045888	HUC11009, INK019F_M1113, INK019F_M1104, HUC11103, HUC11205	0.02	0.17	0.11	0.02	0.17
	Boone Grove High School WWTP	IN0057029	HUC11007, INK019F_M1113, INK019F_M1104, HUC11103, HUC11205	0.02	0.14	0.09	0.02	0.14
	Buckhill Estates WWTP	IN0058548	HUC11306, HUC11312	0.02	0.15	0.09	0.02	0.15
	Dalecarlia Utilities Lake Dale	IN0033081	HUC11306, HUC11312	0.04	0.33	0.21	0.04	0.33
	Demotte Municipal WWTP	IN0039926	HUC11101, HUC11103, HUC11205	0.50	3.76	2.35	0.50	3.76

Table 276. Individual WLAs for NPDES Facilities in the Kankakee/Iroquois watershed TMDLs.

Major Subwatershed	Facility Name	Permit ID	Applicable to the Loading Capacities at the Following Segments	Design Flow (MGD)	Fecal coliform WLA (Billion/day)	<i>E. Coli</i> WLA (Billion/day)	Max Design Flow (MGD)	Fecal coliform WLA (Billion/day)
Middle Kankakee	Hebron Municipal WWTP	IN0020061	INK019F_M1113, INK019F_M1104, HUC11103, HUC11205	0.03	0.19	0.12	0.03	0.19
	Hebron WWTP	IN0061450	INK019F_M1113, INK019F_M1104, HUC11103, HUC11205	0.03	0.19	0.12	0.03	0.19
	Kankakee Rest Area	IN0031275	HUC11101, HUC11103, HUC11205	0.05	0.37	0.23	0.05	0.37
	Kouts Municipal WWTP	IN0023400	INK019F_M1113, INK019F_M1104, HUC11103, HUC11205	0.33	2.50	1.56	0.33	2.50
	La Crosse Municipal WWTP	IN0040193	HUC10805, HUC10807, INK019F_M1113, INK019F_M1104, HUC11103, HUC11205	0.07	0.51	0.32	0.07	0.51
	Lake Eliza Conservancy Dist	IN0051446	HUC11007, INK019F_M1113, INK019F_M1104, HUC11103, HUC11205	0.09	0.66	0.41	0.09	0.66
	Lincoln Elementary School	IN0030503	HUC11101, HUC11103, HUC11205	0.03	0.26	0.16	0.03	0.26
	Little Co Of Mary Health Fac	IN0053104	INK019F_M1113, INK019F_M1104, HUC11103, HUC11205	0.04	0.30	0.19	0.04	0.30
	Lowell WWTP	IN0023621	HUC11306, HUC11312	4.00	30.28	18.93	4.00	30.28
	Martis Place Bomars River Ldg	IN0058823	HUC10904, HUC11103, HUC11205	0.01	0.06	0.04	0.01	0.06
	Morgan Township School	IN0052248	INK019F_M1113, INK019F_M1104, HUC11103, HUC11205	0.01	0.10	0.06	0.01	0.10
	North Newton Jr Sr High School	IN0031143	HUC11203, HUC11205	0.03	0.23	0.14	0.03	0.23
	Schneider WWTP	IN0040592	HUC11307, HUC11312	0.07	0.49	0.31	0.07	0.49
South Haven Sewer Works WWTP	IN0030651	HUC11101, HUC11103, HUC11205	2.00	15.14	9.46	2.00	15.14	

Table 276. Individual WLAs for NPDES Facilities in the Kankakee/Iroquois watershed TMDLs.

Major Subwatershed	Facility Name	Permit ID	Applicable to the Loading Capacities at the Following Segments	Design Flow (MGD)	Fecal coliform WLA (Billion/day)	<i>E. Coli</i> WLA (Billion/day)	Max Design Flow (MGD)	Fecal coliform WLA (Billion/day)
Middle Kankakee	Town Of Monterey WWTP	IN0060852	HUC10904, HUC11103, HUC11205	0.03	0.23	0.15	0.03	0.23
	Twin Lakes Utilities	IN0037176	HUC11302, INK01D3_00, HUC11312	1.10	8.33	5.20	1.10	8.33
	Wanatah Wastewater Trmt Plant	IN0056669	HUC11001, HUC11005, INK019F_M1113, INK019F_M1104, HUC11103, HUC11205	0.08	0.59	0.37	0.08	0.59
	Washington Twp School WWTP	IN0057703	HUC11006, INK019F_M1113, INK019F_M1104, HUC11103, HUC11205	0.04	0.30	0.19	0.04	0.30
	Water Services Co Of Indiana	IN0039101	HUC11101, HUC11103, HUC11205	0.16	1.17	0.73	0.16	1.17
	Westville Correctional Center	IN0042978	HUC11006, INK019F_M1113, INK019F_M1104, HUC11103, HUC11205	0.75	5.68	3.55	0.75	5.68
	Westville WWTP	IN0024848	HUC11006, INK019F_M1113, INK019F_M1104, HUC11103, HUC11205	0.35	2.65	1.66	0.35	2.65
	Wheatfield Municipal WWTP	IN0040754	HUC10902, HUC10904, HUC11103, HUC11205	0.08	0.58	0.36	0.08	0.58
	Winfield Elementary School	IN0031127	HUC11302, INK01D3_00, HUC11312	0.01	0.08	0.05	0.01	0.08
Upper Iroquois	Brook Municipal WWTP	IN0039764	HUC20503, IL_FL-04, IL_FL_02, FL-05	0.10	0.76	0.47	0.10	0.76
	George Ade Mem Health Care Ctr	IN0050997	HUC20405, IL_FL-04, HUC20503, IL_FL_02	0.01	0.11	0.07	0.01	0.11
	Goodland Municipal WWTP	IN0040070	HUC20403, HUC20404, HUC20405, IL_FL-04, HUC20503, IL_FL_02	0.10	0.72	0.45	0.10	0.72
	Grandmas Home Cooking	IN0053422	HUC20401, HUC20405, IL_FL-04, HUC20503, IL_FL_02	0.03	0.22	0.14	0.03	0.22

Table 276. Individual WLAs for NPDES Facilities in the Kankakee/Iroquois watershed TMDLs.

Major Subwatershed	Facility Name	Permit ID	Applicable to the Loading Capacities at the Following Segments	Design Flow (MGD)	Fecal coliform WLA (Billion/day)	<i>E. Coli</i> WLA (Billion/day)	Max Design Flow (MGD)	Fecal coliform WLA (Billion/day)
Upper Iroquois	Kentland Municipal WWTP	IN0023329	HUC20505, IL_FL-04, HUC20506, IL_FL_02, FL-05	0.46	3.48	2.18	0.46	3.48
	Remington WWTP	IN0020940	HUC20204, INK0235_T1019, INK0238_00, HUC20405, IL_FL-04, HUC20503	0.43	3.25	2.03	0.43	3.25
	Rensselaer Municipal STP	IN0024414	INK0226_T1004, HUC20405, IL_FL-04, HUC20503, IL_FL_02	1.20	9.08	5.68	1.20	9.08
	Trail Tree Inn	IN0041904	HUC20401, HUC20405, IL_FL-04, HUC20503, IL_FL_02	0.26	1.94	1.21	0.26	1.94
Upper Kankakee	Hamlet Municipal STP	IN0040100	INK0147_T1009, INK0146_T1008, INK0183_M1011, HUC10807, INK019F_M1113, INK019F_M1104, HUC11103, HUC11205, HUC10703	0.10	0.76	0.47	0.10	0.76
	Kingsbury Utility Corp	IN0045471	INK0138_T1006, INK0131_T1003, INK0134_T1005, INK0133_T1004, INK013C_T1007, INK0147_T1009, INK0146_T1008, INK0183_M1011, HUC10807, INK019F_M1113, INK019F_M1104, HUC11103, HUC11205	2.50	18.93	11.83	2.50	18.93

Table 276. Individual WLAs for NPDES Facilities in the Kankakee/Iroquois watershed TMDLs.

Major Subwatershed	Facility Name	Permit ID	Applicable to the Loading Capacities at the Following Segments	Design Flow (MGD)	Fecal coliform WLA (Billion/day)	<i>E. Coli</i> WLA (Billion/day)	Max Design Flow (MGD)	Fecal coliform WLA (Billion/day)
Upper Kankakee	Kingsford Heights Municipal WWTP	IN0023337	INK013C_T1007, INK0147_T1009, INK0146_T1008, INK0183_M1011, HUC10807, INK019F_M1113, INK019F_M1104, HUC11103, HUC11205	0.42	3.19	2.00	0.42	3.19
	La Porte Municipal STP	IN0025577	INK0138_T1006, INK0131_T1003, INK0134_T1005, INK0133_T1004, INK013C_T1007, INK0147_T1009, INK0146_T1008, INK0183_M1011, HUC10807, INK019F_M1113, INK019F_M1104, HUC11103, HUC11205	7.00	53.00	33.12	7.00	53.00
	North Liberty WWTP	IN0025801	INK0126_00, INK0125_00, INK0138_T1006, INK0131_T1003, INK0134_T1005, INK0133_T1004, INK013C_T1007, INK0147_T1009, INK0146_T1008, INK0183_M1011, HUC10807, INK019F_M1113, INK019F_M1104, HUC11103, HUC11205	0.18	1.36	0.85	0.18	1.36

Table 276. Individual WLAs for NPDES Facilities in the Kankakee/Iroquois watershed TMDLs.

Major Subwatershed	Facility Name	Permit ID	Applicable to the Loading Capacities at the Following Segments	Design Flow (MGD)	Fecal coliform WLA (Billion/day)	<i>E. Coli</i> WLA (Billion/day)	Max Design Flow (MGD)	Fecal coliform WLA (Billion/day)
Upper Kankakee	Potato Creek State Park	IN0052272	INK0126_00, INK0125_00, INK0138_T1006, INK0131_T1003, INK0134_T1005, INK0133_T1004, INK013C_T1007, INK0147_T1009, INK0146_T1008, INK0183_M1011, HUC10807, INK019F_M1113, INK019F_M1104, HUC11103, HUC11205	0.09	0.70	0.44	0.09	0.70
	Swan Lake Golf Resort	IN0061085	INK0147_T1009, INK0146_T1008, INK0183_M1011, HUC10807, INK019F_M1113, INK019F_M1104, HUC11103, HUC11205, HUC10702, HUC10703	0.04	0.27	0.17	0.04	0.27
	Walkerton Municipal WWTP	IN0040690	HUC10103, INK0126_00, INK0138_T1006, INK0131_T1003, INK0134_T1005, INK0133_T1004, INK013C_T1007, INK0147_T1009, INK0146_T1008, INK0183_M1011, HUC10807, INK019F_M1113, INK019F_M1104, HUC11103, HUC11205	0.36	2.76	1.72	0.36	2.76

Table 276. Individual WLAs for NPDES Facilities in the Kankakee/Iroquois watershed TMDLs.

Major Subwatershed	Facility Name	Permit ID	Applicable to the Loading Capacities at the Following Segments	Design Flow (MGD)	Fecal coliform WLA (Billion/day)	<i>E. Coli</i> WLA (Billion/day)	Max Design Flow (MGD)	Fecal coliform WLA (Billion/day)
Upper Kankakee	Yogi Bears Jellystone Park	IN0041882	INK0147_T1009, INK0146_T1008, INK0183_M1011, HUC10807, INK019F_M1113, INK019F_M1104, HUC10701, HUC11103, HUC11205, HUC10703	0.11	0.79	0.50	0.11	0.79
Yellow River	Argos Municipal WWTP	IN0022284	INK0183_M1011, HUC10807, INK019F_M1113, INK019F_M1104, HUC11103, HUC11205, HUC10501, INK0165_00, INK0166A_00, INK0166_00	0.21	1.61	1.00	0.21	1.61
	Bass Lake Conservancy District	IN0058289	INK0183_M1011, HUC10807, INK019F_M1113, INK019F_M1104, HUC11103, HUC11205, HUC10601, HUC10604, HUC10603	0.28	2.15	1.34	0.28	2.15
	Bremen Municipal WWTP	IN0020427	INK0183_M1011, HUC10807, INK019F_M1113, INK019F_M1104, HUC11103, HUC11205, INK0158_00, INK015F_00, INK0165_00, INK0166A_00, INK0166_00	1.30	9.84	6.15	1.30	9.84
	Convent Ancilla Domini	IN0025160	INK0183_M1011, HUC10807, INK019F_M1113, INK019F_M1104, HUC11103, HUC11205, HUC10504	0.05	0.35	0.22	0.05	0.35

Table 276. Individual WLAs for NPDES Facilities in the Kankakee/Iroquois watershed TMDLs.

Major Subwatershed	Facility Name	Permit ID	Applicable to the Loading Capacities at the Following Segments	Design Flow (MGD)	Fecal coliform WLA (Billion/day)	<i>E. Coli</i> WLA (Billion/day)	Max Design Flow (MGD)	Fecal coliform WLA (Billion/day)
Yellow River	Knox Municipal WWTP	IN0021385	INK0183_M1011, HUC10807, INK019F_M1113, INK019F_M1104, HUC11103, HUC11205, INK0166A_00	0.70	5.30	3.31	0.70	5.30
	Lake Of The Woods Reg Sew Dist	IN0057002	INK0183_M1011, HUC10807, INK019F_M1113, INK019F_M1104, HUC11103, HUC11205, INK0157_00, INK0158_00, INK015F_00, INK0165_00, INK0166A_00, INK0166_00	0.14	1.02	0.64	0.14	1.02
	Lapaz Municipal WWTP	IN0040223	INK0183_M1011, HUC10807, INK019F_M1113, INK019F_M1104, HUC11103, HUC11205, HUC10311, INK0165_00, INK0166A_00, INK0166_00	0.13	0.95	0.60	0.13	0.95
	North Judson Municipal WWTP	IN0020877	INK0183_M1011, HUC10807, INK019F_M1113, INK019F_M1104, HUC11103, HUC11205, HUC10604	0.47	3.56	2.22	0.47	3.56
	Plymouth WWTP	IN0020991	INK0183_M1011, INK019F_M1113, INK019F_M1104, HUC11103, HUC11205, INK0165_00, INK0166A_00, INK0166_00	3.50	26.50	16.56	3.50	26.50

*Fecal Coliform WLA values for Indiana Permits are represented here for the purpose of calculating the total WLA for the TMDL only. This fecal coliform WLA will not be incorporated into Indiana facility permits. It is assumed that by meeting their *E. coli* WLA Indiana permits will also be meeting the Fecal coliform WLA. The two standards are considered equal.

Table 277. Individual WLAs for CSO Communities in the Kankakee/Iroquois watershed TMDLs.

Major Subwatershed	Permit #	Facility	Fecal coliform WLA (Billion/day)	<i>E. Coli</i> WLA (Billion/day)	Applicable to the Loading Capacities at the Following Segments
Lower Iroquois	IL0023272	Milford STP	13.48		IL_FLI-02, IL_FL_02, FLI-01, FL-05
Lower Iroquois	IL0022161	Watseka STP	37.85		IL_FL-04, IL_FL_02, FL-05
Upper Iroquois	IN0024414	Rensselaer Municipal STP		858.67	INK0226_T1004, HUC20405, IL_FL-04, HUC20503, IL_FL_02, FL-05
Middle Kankakee	IN0023621	Lowell Municipal STP		203.64	HUC11306, HUC11311
Yellow	IN0020991	Plymouth Municipal STP		2.84	HUC10807, INK0183_M1011, INK019F_M1113, INK019F_M1104, HUC11103, HUC11205, INK0165_00, INK0166A_00, INK0166_00
Yellow	IN0020877	North Judson Municipal		23.66	INK0183_M1011, HUC10807, INK019F_M1113, INK019F_M1104, HUC11103, HUC11205, HUC10604

Table 278. Individual WLAs for MS4 Communities in the Kankakee/Iroquois watershed TMDLs.

Major Subwatershed	Facility	Permit ID	Applicable to the Loading Capacities at the Following Segments	Area in Drainage (sq miles)	Fecal coliform WLA (Billion/day)	E. Coli WLA (Billion/day)
Lower Kankakee	City of Kankakee	ILR400363	IL_FL_02	0.069	0.84	
	Kankakee County	ILR400260	IL_FL_02	0.068	0.83	
	City of Crown Point	INR040054	HUC11311	0.35		2.83
	City of Crown Point	INR040054	HUC11306	0.35		5.07
	Hillsborough County-Valparaiso	INR04073 Co-Permit	HUC11006	0.27		2.18
	Hillsborough County-Valparaiso	INR04073 Co-Permit	HUC11103,HUC11205	1.9		12.48
	Hillsborough County-Valparaiso	INR04073 Co-Permit	INK019F_M1113, INK019F_M1104	1.9		15.36
	Lake County	INR040124	HUC11311	9.38		75.85
	Lake County	INR040124	HUC11306	9.38		135.97
	Lakes of the Four Seasons POA	INR040007	HUC11311,HUC11302,INK01D3_00	1.09		8.81
	Porter County	INR040140	HUC11006	0.58		4.69
	Porter County	INR040140	HUC11103,HUC11205	2.96		19.45
	Porter County	INR040140	INK019F_M1113, INK019F_M1104	2.96		23.93
	Town of Cedar Lake	INR040075	HUC11308	0.96		7.76
	Town of Cedar Lake	INR040075	HUC11310	1.35		10.92
	Town of Cedar Lake	INR040075	HUC11306	6.35		92.05
	Town of Cedar Lake	INR040075	HUC11311	7.7		62.26
	Town of Lowell	INR040046	HUC11304	0.91		7.36
Middle Kankakee	Town of Lowell	INR040046	HUC11306	2.82		40.88
	Town of Lowell	INR040046	HUC11311	4.16		33.64
	Town of St. John	INR040047	HUC11311,HUC11308,HUC11310	4.29		34.69
Upper Kankakee	La Porte County	INR040107	INK011C_00,INK011A_T1001,INK011D_T1002	0.01		0.05
	La Porte County	INR040107	INK0138_T1006, INK0131_T1003, INK0134_T1005, INK0133_T1004,INK013C_T1007,INK0147_T1009, INK0146_T1008	14.93		78.04
	La Porte County	INR040107	HUC11103,HUC11205,INK0183_M1011,HUC10807	14.93		98.10
	La Porte County	INR040107	INK019F_M1113, INK019F_M1104	14.93		120.73
	South Bend	INR040114	HUC10203	0.22		1.15

Table 278. Individual WLAs for MS4 Communities in the Kankakee/Iroquois watershed TMDLs.

Major Subwatershed	Facility	Permit ID	Applicable to the Loading Capacities at the Following Segments	Area in Drainage (sq miles)	Fecal coliform WLA (Billion/day)	<i>E. Coli</i> WLA (Billion/day)
Upper Kankakee	South Bend	INR040114	INK0112_00,INK013C_T1007,INK0147_T1009,INK0146_T1008,INK011A_T1001,INK011D_T1002,INK0138_T1006,INK0131_T1003, INK0134_T1005, INK0133_T1004	3.42		17.88
	South Bend	INR040114	INK0183_M1011,HUC11103,HUC11205,HUC10807	3.42		22.47
	South Bend	INR040114	INK019F_M1113,INK019F_M1104	3.42		27.65
Yellow	Plymouth	INR040064	INK015F_00	0.55		4.63
	Plymouth	INR040064	HUC10311	2.36		19.88
	Plymouth	INR040064	INK0183_M1011,HUC10807,HUC11205,HUC11103	6.97		45.80
	Plymouth	INR040064	INK019F_M1113,INK019F_M1104	6.97		56.36
	Plymouth	INR040064	INK0166A_00,INK0165_00,INK0166_00	6.97		58.72

Table 279. Individual WLAs for CAFOs in the Kankakee/Iroquois watershed TMDLs.

Major Subwatershed	HUC 10	HUC 10 Name	NPDES ID	Operation Name	<i>E. Coli</i> WLA (Billion/day)
Upper Kankakee	712000101	Pine Creek	ING802239	Walkerton Farm	0
	712000102	Little Kankakee River-Kankakee River	ING806085	Scher-Way Dairy Farm	0
	712000107	Robbins Ditch-Kankakee River	ING800149	N&L Pork, Inc. - Lee Nagai - Home Site	0
Middle Kankakee	712000108	Pitner Ditch-Kankakee River	ING806292	David And Brenda Wolfe	0
			ING801092	Smoker Farms	0
	712000111	Knight Ditch-Kankakee River	ING804410	Dekock Feedlot, Inc.	0
			ING801782	Dekock Feedlot Inc.	0
			ING802170	Bos Farms-Dry Cow Facility	0
			ING806155	Bos Dairy Site # 4	0
	712000112	Beaver Lake Ditch-Kankakee River	ING806015	Fair Oaks Dairy Farm North	0
			ING806154	Herrema Dairy	0
Yellow River	712000103	Headwaters Yellow River	ING8040910	Fred Beer Farms, Inc.	0
			INA006440	Walnut Grove Dairy, LLC	0
			ING800005	J & T Laidig Farms	0
712000105	Yellow River	ING804918	Homestead Dairy	0	
Upper Iroquois	712000201	Oliver Ditch	ING806083	Newberry Farms, LLC	0
	712000202	Slough Creek	ING802689	Tip Top Pigs Inc #1	0
			ING803422	White County Egg Farm	0
	712000203	Bruner Ditch-Iroquois River	ING800876	Grow Feedlots	0
			ING806045	Windy Ridge Dairy	0
	712000204	Curtis Creek-Iroquois River	ING806207	Seven Hills Dairy, LLC	0
			ING803372	Newton County Egg Farm	0
			N/A	Cambalot Swine Breeders	0
			ING806036	Fair Oaks Dairy Farm South	0
			ING803732	Calf Land, LLC	0
ING806341			Fair Oaks Dairy Farm, LLC. - North Central # 5	0	
ING806065	Fair Oaks Dairy Farm West	0			
Lower Iroquois	712000213	Beaver Creek	ING803684	Storey Pork Farm	0

7.4 Margin of Safety

Section 303(d) of the Clean Water Act and U.S. EPA regulations at 40 CFR 130.7 require that “TMDLs shall be established at levels necessary to attain and maintain the applicable narrative and numeric water quality standards with seasonal variations and a margin of safety which takes into account any lack of knowledge concerning the relationship between limitations and water quality.” U.S. EPA guidance explains that the MOS may be implicit (i.e., incorporated into the TMDL through conservative assumptions in the analysis) or explicit (i.e., expressed in the TMDL as loadings set aside for the MOS).

A moderate explicit MOS has been applied as part of all the Kankakee/Iroquois watershed TMDLs by reserving ten percent of the allowable load (see allocation tables in Section 7.1). Ten percent was considered an appropriate MOS based on the following considerations:

- The use of the load duration curve approach minimizes a great deal of uncertainty associated with the development of TMDLs because the calculation of the loading capacity is simply a function of flow multiplied by the target value. Most of the uncertainty is therefore associated with the estimated flows in each assessed segment which were based on extrapolating flows from the nearest downstream USGS gage.
- The fecal coliform and *E. coli* TMDLs include an implicit MOS in that they were based on the geometric mean component of the standard rather than the not-to-exceed standard. Using the not-to-exceed standard would have resulted in larger loading capacities. The ten percent MOS helps to ensure that allocations will not exceed the load associated with the minimum flow in each zone.
- An additional implicit MOS for fecal coliform and *E. coli* is included because the load duration analysis does not address die-off of pathogens

7.5 Seasonal Variation

A TMDL must consider seasonal variation in the derivation of the allocation. The load duration approach accounts for seasonality by evaluating allowable loads on a daily basis over the entire range of observed flows and presenting daily allowable loads that vary by flow. Seasonal variations for fecal coliform and *E. coli* are also addressed in this TMDL by only assessing conditions during the season when the water quality standard applies (April through October).

8.0 PUBLIC PARTICIPATION

Public participation is an important and required component of the TMDL development process. The following public meetings were held in the watershed to discuss this project:

- Kickoff public meetings were held in Rensaleer, IN on May 19, 2008 and Kankakee, IL on May 20, 2008. IDEM, IEPA, and Tetra Tech explained the TMDL process during these meetings, presented initial information regarding the Kankakee/Iroquois watershed, and answered questions from the public.
- Draft TMDL public meetings will be held in the watershed in the Spring of 2009. The draft findings of the TMDL will be presented at these meetings and the public will have the opportunity ask questions and provide information to be included in the final TMDL report.

IDEM and IEPA will also accept and address written comments on the draft TMDL report for a period of 30 days following its release.

9.0 IMPLEMENTATION AND REASONABLE ASSURANCE

Rural and, to a lesser extent, urban runoff are considered to be the primary sources of the bacteria impairments in the Kankakee/Iroquois watershed. Although several NPDES facilities have been found to be in violation of their permit limits for bacteria, the majority of facilities discharge effluent that meets water quality standards. Meeting bacteria water quality standards in the watershed will therefore rely primarily on encouraging activities to address runoff from urban and agricultural areas. This section provides a brief description of the types of appropriate practices and the programs that are in place to promote them.

Rural and urban runoff is reduced through the implementation of Best Management Practices (BMPs). A BMP may be structural, something that is built or involves changes in landforms or equipment. BMPs may also be managerial, that is, changing a specific way of using or handling infrastructure or resources. BMPs should be selected based on the goals of a watershed management plan, a TMDL implementation plan, or an equivalent process. Livestock owners, farmers, and urban planners can implement BMPs outside of a watershed management plan. However, the success of BMPs is typically enhanced if they are coordinated as part of a larger planning effort. The following is a partial list of BMPs that may be used to reduce pathogen loads:

- Riparian Area Management - Management of riparian areas protects stream banks and river banks with a buffer zone of vegetation, either grasses, legumes, or trees.
- Manure Collection and Storage - Collecting, storing, and handling manure in such a way that nutrients or bacteria do not run off into surface waters or leach down into ground water.
- Conservation Tillage – Use of tillage practices and residue management to control erosion and surface transport of pollutants from fields used for crop production.
- Contour Row Crops - Farming with row patterns and field operations aligned at or nearly perpendicular to the slope of the land.
- Manure Nutrient Testing - If manure application is desired, sampling and chemical analysis of manure should be performed to determine nutrient content for establishing the proper manure application rate in order to avoid overapplication and run-off.
- Drift Fences - Drift fences (short fences or barriers) can be installed to direct livestock movement. A drift fence parallel to a stream keep animals out and prevents direct input of *E. coli* to the stream.
- Pet Clean-up / Education - Education programs for pet owners can improve water quality of runoff from urban areas.

- Septic Management/Public Education - Programs for management of septic systems can provide a systematic approach to reducing septic system pollution. Education on proper maintenance of septic systems as well as the need to remove illicit discharges could alleviate some anthropogenic sources of pathogens.

Participation of landowners will be essential to reducing nonpoint sources of pollution and improving water quality, but resistance to change and upfront costs may deter participation. However, educational efforts and cost share programs can increase participation to levels needed to protect water quality. The following provides a brief summary of a few of the federal cost share programs that are available; other federal programs and programs that are unique to each state are also available.

9.1 Nonpoint Source Management Program

Illinois EPA and Indiana DEM receive federal funds through Section 319(h) of the Clean Water Act to help implement the Nonpoint Source Management Program. The purpose of the Program is to work cooperatively with local units of government and other organizations toward the mutual goal of protecting the quality of water by controlling NPS pollution. The program emphasizes funding for implementing cost-effective corrective and preventative BMPs on a watershed scale; funding is also available for BMPs on a non-watershed scale and the development of information/education NPS pollution control programs. The maximum federal funding available is 60 percent, with the remaining 40 percent coming from local match. The program period is two years unless otherwise approved. Applications are accepted June 1 through August 1.

9.2 Environmental Quality Incentives Program (EQIP)

Several cost share programs are available to landowners who voluntarily implement resource conservation practices in the Kankakee/Iroquois watershed. The most comprehensive is the NRCS Environmental Quality Incentives Program (EQIP) which offers cost sharing and incentives to farmers who utilize approved conservation practices to reduce pollutant loading from agricultural lands.

9.3 Conservation Reserve Program (CRP)

The Farm Service Agency of the USDA supports the Conservation Reserve Program (CRP) which rents land converted from crop production to grass or forestland for the purposes of reducing erosion and protecting sensitive waters. This program is available to farmers who establish vegetated filter strips or grassed waterways. The program typically provides 50 percent of the upfront cost to establish vegetative cover and \$185/ac/yr for up to 15 years.

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