

Table 1. Fish Distribution Summary for Darien Creek- Walworth County, Lower Rock River Basin

River Mile			0.8	1.1	1.1	3.4	3.4	4.4	6.4
Location TRS1/41/4			2,15,31,SW,NE	15,31,SW,NE	2,15,32,SW,NW	2,15,33,SW,SE	2,15,33,SW,SE	1,15,3,NW,NW	1,15,3,NW,SE
Sample Date			7/6/92	5/19/75	10/11/94	7/25/68	7/7/92	8/4/78	5/20/75
Sample Length (ft)			350	316	105	NA	250	NA	264
Mean Width (ft)			9.4	12	NA	NA	11	NA	NA
Common Name	Classification *	Status	Number **	Number **	Number **	Number **	Number **	Number **	Number **
Largescale stoneroller	Intolerant						140		
Central stoneroller	Intolerant		17					7	
Stonerollers (unsp)	Intolerant			88				9	99
Horneyhead chub	Intolerant		12	11		+	46	7	
Southern redbelly dace	Intolerant		6	99		+	8	31	99
Blacknose dace	Intolerant		5	21		+	2	8	99
Stonecat	Intolerant			1			1		
Slender madtom	Intolerant	Endangered		1					
Rainbow darter	Intolerant					+		1	
Fantail darter	Intolerant			1			6	5	2
Least darter	Intolerant	Special Concern						4	
Blackchin shiner	Intolerant					+	2		
Golden shiner	Tolerant		4						
Common shiner	Tolerant		71	99	5	+	109	99	99
Bluntnose minnow	Tolerant		1	24	5	+	40	33	99
Johnny darter	Tolerant			53	15	+	17	7	99
Creek chub	Tolerant		41	99	15	+	46	17	99
White sucker	Tolerant		86	99	8	+	51	8	99
Central mudminnow	Very Tolerant		59	2	20		4	1	
Common carp	Very Tolerant			13					
Brook stickleback	Very Tolerant			12	2		3	3	38
Fathead minnow	Very Tolerant		19	77			5		99
Ozark minnow	-	Threatened	4	6			12	5	1
Bigmouth shiner	-		10	26		+	4	29	99
Suckermouth minnow	-			1					
Green sunfish	Sport		7	3	10				3
Black bullhead	Sport		1	2	1				
Smallmouth bass	Sport						6		
Rock bass	Sport				3				
No. of native taxa	27		15/343	20	10	11	18	16	14

* Classification based on Ball (1982)

** "99" indicates a count of greater than or equal to 99. "+" indicates species as being present, no count specified.

Table 2. Fish Distribution Summary for Little Turtle Creek - Waiworth and Rock Counties, Little Rock River Basin

River Mile			2.6	2.6	3.3	3.3	3.3	6.4	6.6	7.3
Location TRS1/41/4			1,15,6,NE,NE	1,15,6,NE,NE	1,15,6,SW,NE	1,15,6,NE,NE	1,15,6,SE,NE	1,15,7,SW,NW	1,15,7,NW,SW	1,15,7,SW,SW
Sample Date			7/23/68	8/28/28	10/11/94	10/11/94	5/19/75	7/25/68	8/4/78	8/4/78
Sample Length (ft)					317	317	422			
Mean Width (ft)										
Common Name	Classification *	Status	Number **							
Largescale stoneroller	Intolerant			+						
Central stoneroller	Intolerant			99	+	+			6	6
Stonerollers (unsp)	Intolerant		+				99	+	32	5
Horneyhead chub	Intolerant		+	21	+	+	19	+	13	19
Southern redbelly dace	Intolerant			8			13		4	4
Blacknose dace	Intolerant					2	10		7	6
Stonecat	Intolerant		+				9			
Slender madtom	Intolerant	Endangered					2			
Rainbow darter	Intolerant		+				14	+		
Fantail darter	Intolerant				+	+	6			
Banded darter	Intolerant		+	1	+	+	23	+		
Blackside darter	Intolerant			1	+	+				
Blackchin shiner	Intolerant									
Blacknose shiner	Intolerant				2					
Rosyface shiner	Intolerant		+	41	+	+	61	+		5
Golden redhorse	Intolerant		+		3	3	28			
Shorthead redhorse	Intolerant				+	1				
Sand shiner	Tolerant			7	+	+	40		21	5
Golden shiner	Tolerant									
Common shiner	Tolerant		+	99	+	+	99	+	99	99
Bluntnose minnow	Tolerant		+	5	+	+	56	+	38	4
Johnny darter	Tolerant				+	+		+		
Creek chub	Tolerant		+	90	+		9	+	5	
White sucker	Tolerant		+	2		+	61	+		1
Northern hogsucker	Tolerant		+	2			2	+		
Brook stickleback	Tolerant		+	15					2	
Spotfin shiner	Tolerant								2	
Bigmouth buffalo	Very Tolerant									
Quillback carpsucker	Very Tolerant						7			
Central mudminnow	Very Tolerant			2						
Common carp	Very Tolerant		+				8			
Fathead minnow	Very Tolerant									
Ozark minnow	-	Threatened		33	+	40	22		12	15
Bigmouth shiner	-		+				23	+	60	10
Suckermouth minnow	-		+	1	1	1	3		2	
Brassy minnow	-							+		

(cont) Table 2. Fish Distribution Summary for Little Turtle Creek - Walworth and Rock Cour

			Lower Rock River Basin							
River Mile			2.6	2.6	3.3	3.3	3.3	6.4	6.6	7.3
Location TRS1/41/4			1,15,6,NE,NE	1,15,6,NE,NE	1,15,6,SW,NE	1,15,6,NE,NE	1,15,6,SE,NE	1,15,7,SW,NW	1,15,7,NW,SW	1,15,7,SW,SW
Sample Date			7/23/68	8/28/28	10/11/94	10/11/94	5/19/75	7/25/68	8/4/78	8/4/78
Sample Length (ft)					317	317	422			
Mean Width (ft)										
Common Name	Classification *	Status	Number **	Number **	Number **	Number **	Number **	Number **	Number **	Number **
Pumpkinseed	Sport				+	1				
Bluegill	Sport		+							
Green sunfish	Sport		+		+	+	2		1	
Yellow bullhead	Sport				+	2				
Smallmouth bass	Sport		+	5	+	84	4	+		
Rock bass	Sport		+		+	+	1	+		1
No. of native taxa	39									

* Classification based on Ball (1982)

** "99" indicates a count of greater than or equal to 99. "+" indicates species as being present, no count specified.

Table 2. Fish Distribution Summary for Little Turtle Creek - Walworth and Rock Counties, La

Rock River Basin

River Mile			9.7	14.1	14	14.3
Location TRS1/41/4			1,14,14,SE,SE	1,14,36,NE,NE	1,14,36,NE,NE	1,15,31,NW,NW
Sample Date			5/19/75	5/19/75	9/29/92	5/3/96
Sample Length (ft)			370	317	450	500
Mean Width (ft)			12	5	6	6
Common Name	Classification *	Status		Number **		Number **
Largescale stoneroller	Intolerant					
Central stoneroller	intolerant		10		4	6
Stonerollers (unsp)	Intolerant					
Horneyhead chub	Intolerant		94			
Southern redbelly dace	Intolerant		53	7	9	203
Blacknose dace	Intolerant		1			6
Stonecat	Intolerant		1			
Slender madtom	Intolerant	Endangered				
Rainbow darter	Intolerant					
Fantail darter	Intolerant					
Banded darter	Intolerant		3			
Blackside darter	Intolerant					
Blackchin shiner	Intolerant					
Blacknose shiner	Intolerant					
Rosyface shiner	Intolerant		11			
Golden redhorse	Intolerant					
Shorthead redhorse	Intolerant					
Sand shiner	Tolerant		4			
Golden shiner	Tolerant					
Common shiner	Tolerant		99	13		
Bluntnose minnow	Tolerant		5		9	3
Johnny darter	Tolerant		11	3	49	76
Creek chub	Tolerant		9	3	13	75
White sucker	Tolerant		99	99	8	87
Northern hogsucker	Tolerant					
Brook stickleback	Tolerant			39	31	37
Spotfin shiner	Tolerant					
Bigmouth buffalo	Very Tolerant		1			
Quillback carpsucker	Very Tolerant					
Central mudminnow	Very Tolerant					
Common carp	Very Tolerant		6			1
Fathead minnow	Very Tolerant			7	1	58
Ozark minnow	-	Threatened	99			
Bigmouth shiner	-		5			
Suckermouth minnow	-					
Brassy minnow	-					

Table 2. Fish Distribution Summary for Little Turtle Creek - Walworth and Rock Counties, Lo		Rock River Basin			
River Mile		9.7	14.1	14	14.3
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Sample Date		5/19/75	5/19/75	9/29/92	5/3/96
Sample Length (ft)		370	317	450	500
Mean Width (ft)		12	5	6	6
Common Name	Classification *	Status	Number **		Number **
Pumpkinseed	Sport				
Bluegill	Sport				
Green sunfish	Sport	1			
Yellow bullhead	Sport				
Smallmouth bass	Sport	4			
Rock bass	Sport	1			
No. of native taxa	27				

* Classification based on Ball (1982)

** "99" indicates a count of greater than or equal to 99. "+" indicates species as being present, no count specified.

Appendix 1

Previous Stream Classification and
Disinfection Determinations for
Darien Creek and Little Turtle Creek

Darien, Walworth County
Lower Rock River Drainage Basin

The effluent from the Darien Wastewater Treatment Plant (Section 27, T2N, R15E) discharges to Darien Creek, a tributary of Little Turtle Creek. Little Turtle Creek is tributary to Turtle Creek which in turn flows to the Rock River.

The effluent from the treatment plant discharges to an underground tile which flows approximately one mile before joining a small stream draining agricultural lands. The tile flows underground in a storm sewer for another 0.25 miles before opening to a small ditch. The ditch flows several hundred yards to Darien Creek.

Darien Creek, a small continuous stream, flows for 5.3 miles through an agricultural area. This stream has a sand, gravel and rock substrate and good water clarity. However, fluctuating water levels and lack of bank and instream cover limit the fishery to forage species.

Little Turtle Creek is similar to Darien Creek. Much of the stream has been ditched to improved drainage from the surrounding farm lands. These alterations have resulted in habitat deterioration and increased water temperatures. The stream is managed only for forage fish.

Turtle Creek supports diverse game fish populations and is used extensively for recreational purposes including hunting, fishing and canoeing.

Recommendations

The underground tile and ditch shall be classified as an effluent ditch. The stream flowing into the tile shall be classified as a non-continuous agricultural stream. Darien Creek shall be classified as a continuous intermediate aquatic life stream. Little Turtle Creek shall be classified as a continuous intermediate aquatic life stream. Turtle Creek shall be classified as a continuous fish and aquatic life stream.

CORRESPONDENCE/MEMORANDUM

STATE OF WISCONSIN

Date: November 17, 1988

File Ref:

3200

To: Bizhan Sheikholeslami WW/SED
Duane Schuettpelz WR/2

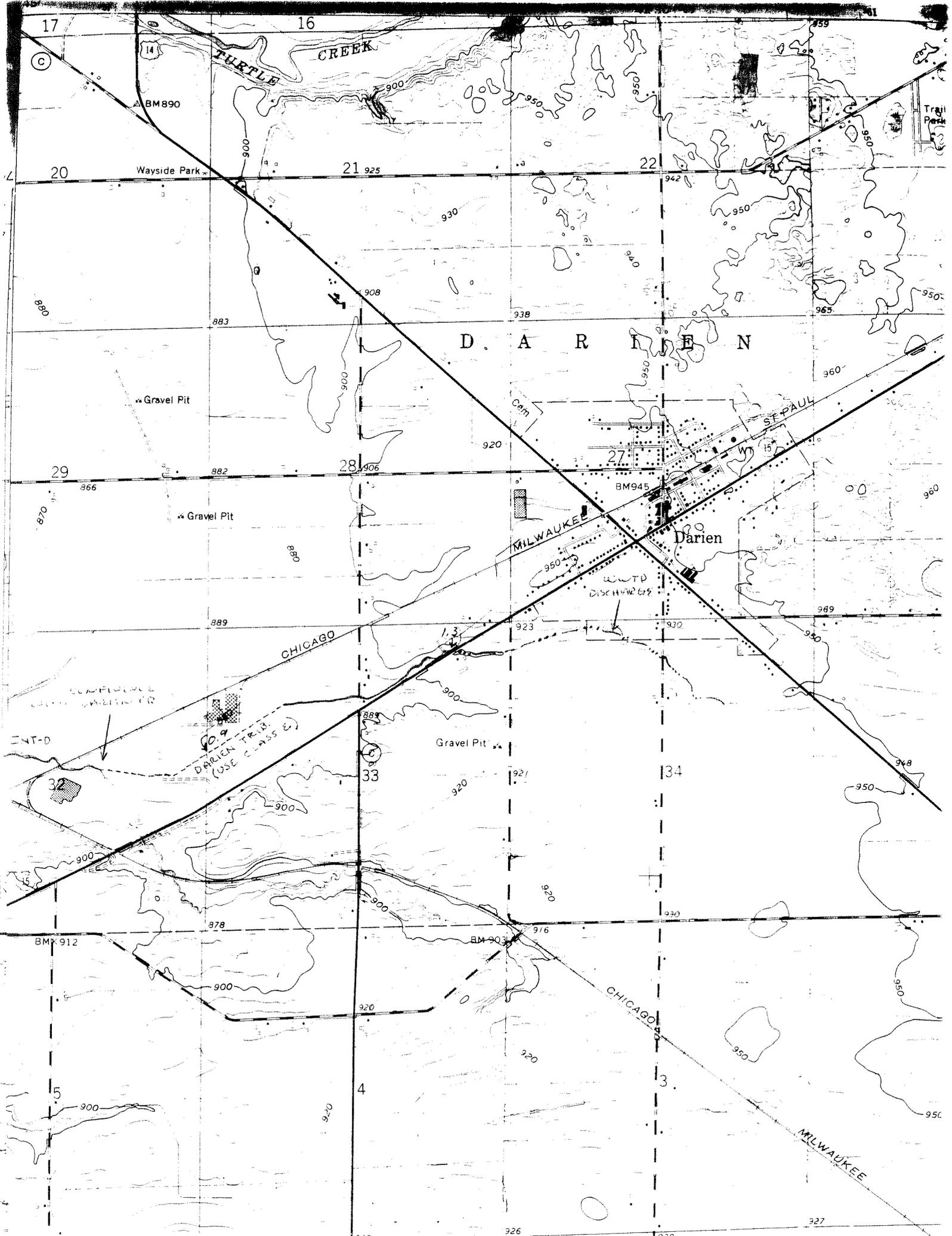
From: Bob Wakeman WR/SED

Subject: Village of Darien - Request for effluent limits

The Village of Darien WWTP discharges to a drain tile which discharges to a tributary of Darien Cr. This tributary is currently classified as Marginal - Use Classification E - capable of supporting very tolerant macroinvertebrates or no aquatic life. The Darien Creek tributary flows approximately 2 miles before joining Darien Creek.

NR 104.02 (3) (b) 3 identifies the effluent limitations determined necessary to meet the designated use classification. Therefore the effluent limits for the Village of Darien should be 20/20 B.O.D/S.S, and D.O 4.0 mg/l.

Disinfection is not required because the stream is not considered to be capable of supporting full body contact recreational activities.



Appendix 2

Historical Water Quality Data and Survey Results
for Darien Creek

CORRESPONDENCE/MEMORANDUM

STATE OF WISCONSIN

Date: September 9, 1983

File Ref: 3210
(James McNelly)

To: District Director-Milwaukee

From: George Boronow *GBB*

Subject: Investigation of a discharge into Darien Creek

RECEIVED S.E.D.
SEP 17 2 16 PM '83

On September 6, 1983, I accompanied Robert Bramer and Jeff Dauterman on an investigation of a potentially polluting discharge that was entering Darien Creek via a small tributary ditch in the NW $\frac{1}{4}$ of Section 32, T.2N, R.15E. Water samples were collected at 14:00 p.m. in the tributary ditch just upstream from the junction with Darien Creek (Station 1), Darien Creek just upstream of the tributary ditch (Station 2), and Darien Creek approximately $\frac{1}{2}$ mile downstream at the North Road crossing (Station 3). The attached maps illustrate the station locations. Station 1 was a dark gray color and had a strong, decaying odor. Station 2 was clear, while Station 3 was milky white. Dissolved oxygen was measured at 16:30 p.m. and the results were as follows:

Station 1 - 0.0 mg/l
Station 2 - 9.0 mg/l
Station 3 - 2.0 mg/l

We returned to the stream on September 7, 1983. Another dissolved oxygen analysis was conducted at Stations 1 through 3 between 09:30 and 10:30 a.m. The results were as follows:

Station 1 - 0.4 mg/l
Station 2 - 9.0 mg/l
Station 3 - 4.0 mg/l

Station 1 was a milky white color, Station 2 was clear and Station 3 was murky, but clearer than the day before. Using a seine, fish were collected downstream of the junction of Darien Creek and the ditch, and were also collected at Station 3.

GB:hg

Attachments

c: Jeff Dauterman
Jeff Bode

George - I didn't receive a map with the test.

Were any fish killed?

*What actions are the wardens taking?
What is the source of pollutants?*

*Please do not confuse with these numbers
of this name.*

6-25-79

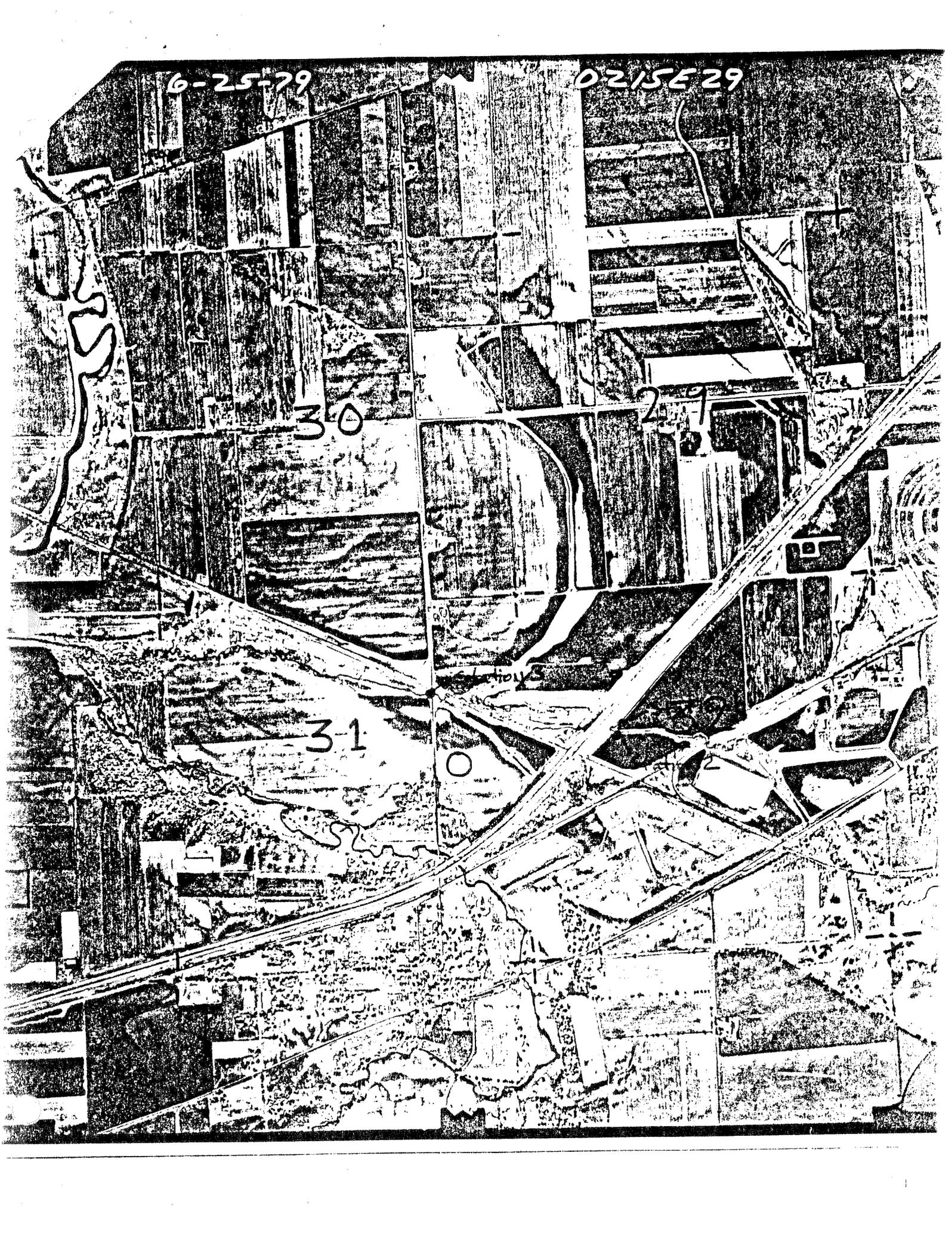
0215E29

30

29

31

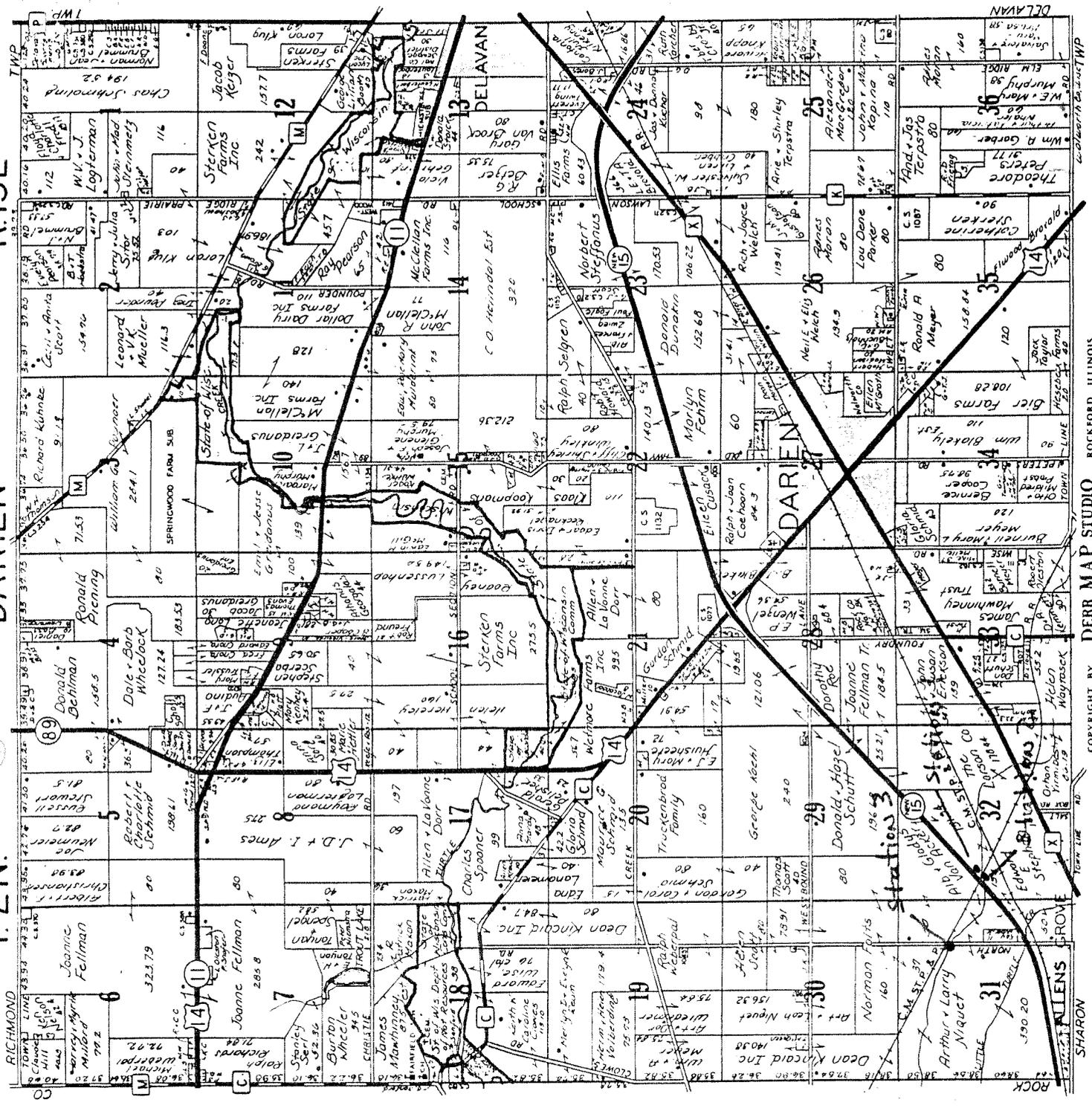
0



T. 2N.

DARIEN

R. 15E



ROCKFORD, ILLINOIS
 DERR MAP STUDIO
 COPYRIGHT BY

Appendix 3

Stream System Habitat Rating Forms
for Darien Creek

Stream DARIEN CREEK Reach Location T2N, R15E, S. 33, SW, SE Reach Score/Rating 164 - FAIR
 County WALLWORTH Date 7/7/92 Evaluator W. WAWRZYN Classification WATER SPORT
UPSTREAM OF CTRC DC-002

Rating Item	Category			
	Excellent	Good	Fair	Poor
Watershed Erosion <u>14</u>	No evidence of significant erosion. Stable forest or grass land. Little potential for future erosion. 8	Some erosion evident. No significant "raw" areas. Good land mgmt. practices in area. Low potential for significant erosion. 10	Moderate erosion evident. Erosion from heavy storm events obvious. Some "raw" areas. Potential for significant erosion. <u>14</u>	Heavy erosion evident. Probable erosion from any run off. 16
Watershed Nonpoint Source <u>14</u>	No evidence of significant source. Little potential for future problem. 8	Some potential sources (roads, urban area, farm fields). 10	Moderate sources (small wetlands, tile fields, urban area, intense agriculture). <u>14</u>	Obvious sources (major wetland drainage, high use urban or industrial area, feed lots, impoundment). 16
Bank Erosion, Failure <u>ROSENT PASTURING</u> <u>12</u>	No evidence of significant erosion or bank failure. Little potential for future problem. 4	Infrequent, small areas, mostly healed over. Some potential in extreme floods. <u>8</u>	Moderate frequency and size. Some "raw" spots. Erosion potential during high flow. <u>16</u>	Many eroded areas. "Raw" areas frequent along straight sections and bends. 20
Bank Vegetative Protection <u>7</u>	90% plant density. Diverse trees, shrubs, grass. Plants healthy with apparently good root system. 6	70-90% density. Fewer plant species. A few barren or thin areas. Vegetation appears generally healthy. <u>9</u>	50-70% density. Dominated by grass, sparse trees and shrubs. Plant types and conditions suggest poorer soil binding. 15	<50% density. Many raw areas. Thin grass, few if any trees and shrubs. 18
Lower Bank Channel Capacity <u>10</u>	Ample for present peak flow plus some increase. Peak flow contained. W/D ratio <7. 8	Adequate. Overbank flows rare. W/D ratio 8-15. <u>10</u>	Barely contains present peaks. Occasional overbank flow. W/D ratio 15-25. 14	Inadequate, overbank flow common. W/D ratio >25. 16
Lower Bank Deposition <u>15</u>	Little or no enlargement of channel or point bars. 6	Some new increase in bar formation, mostly from coarse gravel. 9	Moderate deposition of new gravel and coarse sand on old and some new bars. <u>15</u>	Heavy deposits of fine material, increased bar development. 18
Bottom Scouring and Deposition <u>6</u>	Less than 5% of the bottom affected by scouring and deposition. 4	5-30% affected. Scour at constrictions and where grades steepen. Some deposition in pools. 8	30-50% affected. Deposits and scour at obstructions, constrictions and bends. Some filling of pools. <u>16</u>	More than 50% of the bottom changing nearly year long. Pools almost absent due to deposition. 20
Bottom Substrate/Available Cover <u>12</u>	Greater than 50% rubble, gravel or other stable habitat. 2	30-50% rubble, gravel or other stable habitat. Adequate habitat. <u>7</u>	10-30% rubble, gravel or other stable habitat. Habitat availability less than desirable. <u>17</u>	Less than 10% rubble gravel or other stable habitat. Lack of habitat is obvious. 22
Avg. Depth Riffles and Runs <u>10</u>	Cold >1' 0 Warm >1.5' 0	6" to 1' 6 10" to 1.5' <u>6</u>	3" to 6" 18 6" to 10" 18	<3" 24 <6" 24
Avg. Depth of Pools <u>13</u>	Cold >4' 0 Warm >5' 0	3' to 4' 6 4' to 5' 6	2' to 3' 18 3' to 4' <u>18</u>	<2' 24 <3' 24
Flow, at Rep. Low Flow <u>18</u>	Cold >2 cfs 0 Warm >5 cfs 0	1-2 cfs 6 2-5 cfs 6	.5-1 cfs 18 1-2 cfs <u>18</u>	<.5 cfs 24 <1 cfs 24
Pool/Riffle, Run/Bend Ratio (distance between riffles ÷ stream width) <u>2</u>	5-7. Variety of habitat. Deep riffles and pools. 4	7-15. Adequate depth in pools and riffles. Bends provide habitat. <u>8</u>	15-25. Occasional riffle or bend. Bottom contours provide some habitat. 16	>25. Essentially a straight stream. Generally all flat water or shallow riffle. Poor habitat. 20
Aesthetics <u>12</u>	Wilderness characteristics, outstanding natural beauty. Usually wooded or un-pastured corridor. 8	High natural beauty. Trees, historic site. Some development may be visible. 10	Common setting, not offensive. Developed but uncluttered area. <u>12</u>	Stream does not enhance aesthetics. Condition of stream is offensive. 14

Column Totals:

Column Scores E _____ +G _____ +F _____ +P _____ = 164 = Score

*Side pasture reach
some pools in reach
12 inches end bays, also degree of vegetation, parking road*

<70 = Excellent, 71-129 = Good, 130-200 = Fair, >200 = Poor

*3-100% 12-25% Pool depth in reach over 10' in places
vegetation, little and 12' out side reach. 12' more sand gravel*

A.3 Darien Creel upstream of North Road., Walworth Co. July 7, 1992.



A.4 Darien Creek upstream of CTH C, Walworth Co. Looking upstream from upstream limit of fish collection reach. Note eroded bank as a result of cattle pasturing. Sample DC-002. July 7, 1992.



A.5 Darien Creek upstream of CTH C, Walworth Co. Looking downstream toward fish collection reach. Immediately downstream of previous pasture photo. Cattle are fenced from stream bank resulting in stable bank and wet meadow bank community. Sample DC-002. July 7, 1992.



A.6 Darien Creek upstream of CTH C, Walworth Co. and midway through fish collection site. Typical run reach. Sample DC-002. July 7, 1992.



A.7 Darien Creek downstream of CTH C, Walworth Co. Typical of shaded woody corridor reach. July 7, 1992.



A.8 Unnamed Tributary to Darien Creek upstream of Peter Rd., Walworth Co. Previously ditched with meandering being reestablished. Narrow grass and shrub buffer adjacent to row crops. July 16, 1992.



A.9 Darien Creek upstream of CTH K looking upstream. Headwaters of Darien Creek ditched with high potential of agricultural runoff via row crops. July 16, 1992.



A.10 Darien Creek downstream of CTH K, Walworth Co. July 16, 1992.



A.11 Darien Creek looking downstream of Townline Rd., Walworth Co. July 16, 1992.



A.12 Darien Creek looking downstream of Townline Rd., Walworth Co.
July 16, 1992.



A.13 Darien Creek looking downstream of CTH X and upstream of Larsen Co. discharge, Walworth Co. July 16, 1992.



Darien, Walworth County
Lower Rock River Drainage Basin

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