

Region <u>SCR</u>	County <u>Dodge</u>	Report Date <u>11/1908</u>	Classification <u>LFF</u>
Water Body: <u>Kummel Creek</u>			
Discharger: <u>V. of Brownsville WWTP</u>			

**If stream is classified as Limited Forage Fish (LFF) or Limited Aquatic Life (LAL), check any of the following Use Attainability Analysis factors that are identified in the classification report:**

- Naturally occurring pollutant concentrations prevent the attainment of use
- Natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating State water conservation requirements to enable uses to be met
- Human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place
- Dams, diversions or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the water body to its original condition or operate such modification in a way that would result in the attainment of the use
- Physical conditions related to the natural features of the water body, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses habitat
- Controls more stringent than those required by sections 301(b) and 306 of the Act would result in substantial and widespread economic and social impact

**Supporting Evidence in the report (include comments on how complete/thorough data is)**

- Biological Data (fish/invert)
- Chemical Data (temp, D.O., etc.)
- Physical Data (flow, depth, etc.)
- Habitat Description
- Site Description/Map
- Other: slides

**Historical Reports in file:**

- 11/16/88 - Mark Scising
- 9/23/76 - Tom Bainbridge

**Additional Comments/How to improve report:**

- is there any more recent data available?
- Report seems to have a good argument that uncontrollable factors - flow, depth, etc -- limit stream.
- check w/ region to see if info is still accurate.

TRIENNIAL STANDARDS REVIEW FOR KUMMEL CREEK

DODGE COUNTY

11-10-88

Kummel creek has its headwaters located in the northern part of the Town of Lomira in Dodge County just above the Village of Brownsville. Flowing southeasterly, this small shallow creek enters the East branch of the Rock River near the Village of Theresa. Sixteen miles long, in an agricultural watershed, this creek receives limited recreational attention. Some of its best potential is within the downstream reaches where depths are greater and fish and wildlife uses increase. These downstream reaches are within a state wildlife refuge.

The uppermost segment between Brownsville and County Highway HH is designated intermediate fish and aquatic life. The data gathered during 1987 supports this designation. The following narrative will only deal with this segment.

Flows are continuous and USGS has calculated the  $Q_{7,2}$  at 0.13 CFS and the  $Q_{7,10}$  at 0.02 CFS.<sup>(1)</sup> The average flow, based on five measurements between 1972 and 1976 was calculated to be 2.06 CFS (S.D.  $\pm$  1.43). Although the variance classification listed in NR 104 indicates Kummel Creek to be non-continuous, it is recommended this be redesignated continuous, based on field observations and USGS data.

Water quality appears to be acceptable at points above the outfalls for Grande Cheese and the Village of Brownsville WWTP's. A HBI sampling on 11/10/87 was assigned a tolerance value of 3.8 which indicates that oxygen values are sufficient to maintain diverse aquatic life. Oxygen levels below the WWTP mixing zones however, may be more depleted. Fish monitoring on 11/25/87 upstream and downstream of the mix zones demonstrated the existence of a tolerant forage fish base consisting primarily of brook stickleback, Culaea inconstans, with less dense populations of central mudminnows, Umbra limi, and the creek chub, Semotilus atromaculatus. The stickleback and creek chub tolerate silted habitat conditions well and the mudminnow reportedly is capable of tolerating very low oxygen levels.<sup>(3)</sup> All three species are widely distributed in Wisconsin. Fago, (1982), reported 8 species, all tolerant, within the upper half of Kummel Creek.<sup>(5)</sup>

A habitat inventory, conducted above and below the mixing zone reflects the tolerant virtues of the forage fish collected. Silt deposition is severe in observed reaches when velocity allows particles to settle out. Silt depths averaged 0.15 meters in runs and pools. Detrital content of the creek substrate was low, indicating soil sources. Velocity in these reaches was <0.1 FPS.

Width averages 2 - 3 meters. Depth is limiting in much of the variance segment. Pool depths are generally less than 2 feet deep and runs are shallow. Riffles are rare, as only one was observed downstream of STH 49. This is not surprising as the gradient is 4 feet/mile.<sup>(8)</sup> Instream vegetation and overhead bank vegetation provide the available fish habitat. Very little overhead shading occurs yet stream banks are relatively stable.

Various upstream reaches within the variance segment have been ditched and straightened. These reaches do not provide sufficient habitat.

The habitat rating value is 217 (see attached) which indicates poor quality.<sup>(2)</sup> Much of this is due to row crop erosion upstream of Brownsville and the past ditching activity. Siltation is severe and runoff related NPS impacts are significant.

There are indications that some point source organic overload may be occurring. Two point sources are at this location. One is from the Brownsville municipal WWTP and the other is from Grande Cheese Company. During the field investigation, it was unclear which outfall was municipal as the two discharges are located close to each other. Sphaerotilus, a filamentous bacteria, was present in the mix zone and indicates a high organic strength discharge. Also, during the field investigation, one of the outfalls was discharging a turbid looking wastewater. In light of these observations, it is recommended that these permits be reviewed for compliance with limits.

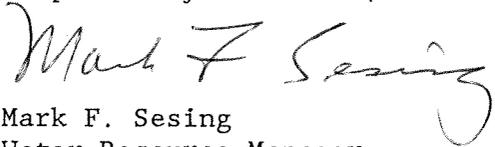
#### Summary and Recommendations

The upper reaches of Kummel creek are impacted by controllable and uncontrollable factors. Uncontrollable factors include low flows, instream habitat, urban runoff, and ditching. Controllable factors include cropland and barnyard runoff and the two point sources discussed.

Fish species reflect a tolerant and low diversity fish community. Habitat quality is lacking due to physical stream conditions including shallow depths and low flows. Even with the elimination of controllable factors, the aquatic community here would likely remain unbalanced.

It is, therefore, recommended that Kummel creek, from Brownsville WWTP downstream to CTH "HH" remain classified intermediate fish and aquatic life, use class D, but with a "continuous" hydrologic classification.

Respectfully Submitted,

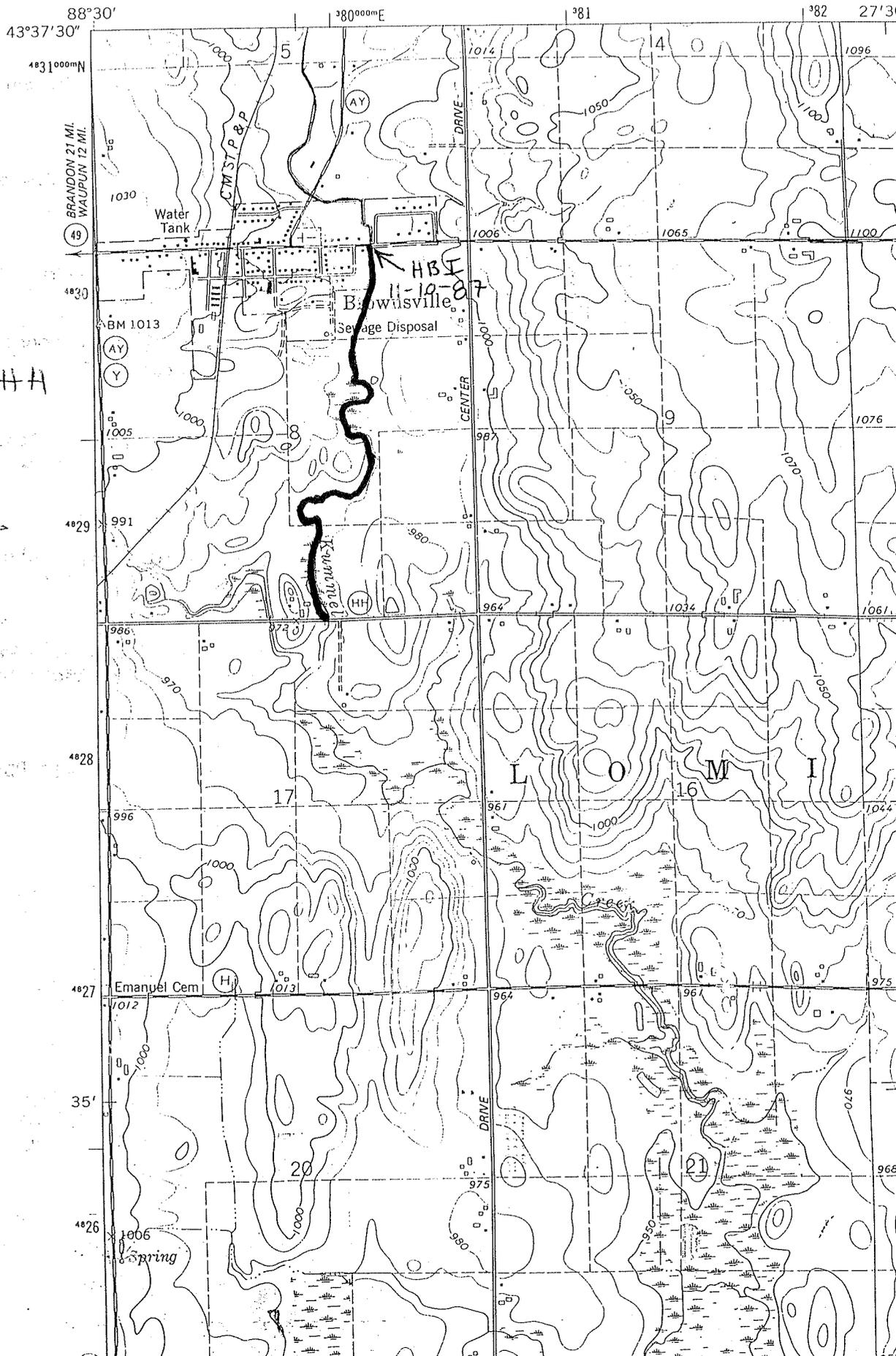


Mark F. Sesing  
Water Resource Manager

MFS:lr

327, 11 NE  
(OAKFIELD)

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY



Section w/  
variance ;  
STP → CO. Hwy. HH  
outfall  
intermediate

Stream Kumard Ck. Reach Location Brownsville WATP outfall diversion to CTH HH Reach Score/Rating 217  
 County Dick Date 11-10-87 Evaluator Sering, M Classification INT D (FORAGE)

Rating Item	Category			
	Excellent	Good	Fair	Poor
Watershed Erosion	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. 14	Heavy erosion evident. Probable erosion from any run off. 16
Watershed Nonpoint Source	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). 14	Obvious sources (major wetland drainage, high use urban or industrial area, feed lots, impoundment). 16
Bank Erosion, Failure	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. 8	Moderate frequency and size. Some "raw" spots. Erosion potential during high flow. 16	Many eroded areas. "Raw" areas frequent along straight sections and bends. 20
Bank Vegetative Protection	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. 9	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	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. 10	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	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. 15	Heavy deposits of fine material, increased bar development. 18
Bottom Scouring and Deposition	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. 16	More than 50% of the bottom changing nearly year long. Pools almost absent due to deposition. 20
Bottom Substrate/ Available Cover	Greater than 50% rubble, gravel or other stable habitat. 2	30-50% rubble, gravel or other stable habitat. Adequate habitat. 7	10-30% rubble, gravel or other stable habitat. Habitat availability less than desirable. 17	Less than 10% rubble gravel or other stable habitat. Lack of habitat is obvious. 22
Avg. Depth Riffles and Runs	Cold >1' 0 Warm >1.5' 0	6" to 1' 6 10" to 1.5' 6	3" to 6" 18 6" to 10" 18	<3" 24 <6" 24
Avg. Depth of Pools	Cold >4' 0 Warm >5' 0	3' to 4' 6 4' to 5' 6	2' to 3' 18 3' to 4' 18	<2' 24 <3' 24
Flow, at Rep. Low Flow	Cold >2 cfs 0 Warm >5 cfs 0	1-2 cfs 6 2-5 cfs 6	.5-1 cfs 18 1-2 cfs 18	<.5 cfs 24 <1 cfs 24
Pool/Riffle, Run/Bend Ratio (distance between riffles + stream width)	5-7. Variety of habitat. Deep riffles and pools. 4	7-15. Adequate depth in pools and riffles. Bends provide habitat. 8	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	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. 14	Stream does not enhance aesthetics. Condition of stream is offensive. 16

Column Totals:

Column Scores E \_\_\_\_\_ + G 27 + F 102 + P 98 = 217 = Score

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

Sample ID # 871110-14 KE 01 Waterbody Name Kummel Cr. (Kiefer Cr.)  
Y M M D D Cnty Field #

Water Temp (Celsius) 4.0 Dissolved Oxygen (mg/l) 15

Site Location: NW NE 8 13N 17E Master Waterbody # 0863500  
1/16 1/4 Sec. Tn., Rng.

Project Name Triannual Standards Review Storet Station # \_\_\_\_\_

Ave. Stream Width (Ft.) at Site 3' Ave. Stream Depth (Ft.) at Site 0.2'

Collector Sasing, M. Field # 01 Rep 1 Rep 2 Rep 3  
(Last Name, First Initial) Measured Velocity (fps)

Sorter Rust, P

Est. Velocity (fps) V. Slow (<-0.2)  
Slow (0.2-0.5)  
Moderate (0.5-1.5)  
Fast (1.5->)

Est. % of sample sorted 47%

Taxonomist KE  
Location Description Riffle immediately downstream of State Highway 49 in valley of Brownville

Sampled Habitat: 1. Riffle 2. Run  
3. Pool 4. Lake

or suitable substrate available downst. of Brownville outfall  
No riffles  
Est. Time Spent Sampling (Min.) 10

Sampling Device: 1. D Frame 2. Artificial Substrate, 3. Surber, 4. Other

Substrate at Site Location (%)  
Bedrock \_\_\_\_\_ Rubble (2.5 - 10.0" dia.) 30 Sand 10 Clay \_\_\_\_\_ Muck \_\_\_\_\_  
Boulders (10.0" dia.) 50 Gravel (0.1 - 2.5" dia.) \_\_\_\_\_ Silt \_\_\_\_\_ Detritus \_\_\_\_\_ Debris/Veg 10

Substrate Sampled (%) (Same as above \_\_\_\_\_)  
Bedrock \_\_\_\_\_ Rubble (2.5 - 10.0" dia.) 20 Sand \_\_\_\_\_ Clay \_\_\_\_\_ Muck \_\_\_\_\_  
Boulders (10.0 dia.) 80 Gravel (0.1 - 2.5" dia.) \_\_\_\_\_ Silt \_\_\_\_\_ Detritus \_\_\_\_\_ Debris/Veg \_\_\_\_\_

Algal Vegetation 10 % of Total Stream Channel at Sample Site

Observed Instream Water Quality Indicators (Perceived WQ: Excellent, Good, Fair, Poor)

	Not Present	Insignificant	Significant	Comments
Turbidity	1	2	3	Water clarity good; riffles rare as this stream has been channeled for much of its length
Chlorine or Toxic Scour	1	2	3	
Macrophytes	1	2	3	
Filamentous Algae	1	2	3	
Planktonic Algae	1	2	3	
Slimes	1	2	3	
Iron Bacteria	1	2	3	

Factors Which May Be Affecting Habitat Quality

	Not Present	Insignificant	Significant	Comments
Sludge Deposits	1	2	3	channeled for much of its length
Silt and Sediment	1	2	3	
Channel Ditching	1	2	3	
Down/Up Stream Impoundment	1	2	3	
Low Flows	1	2	3	
Wetlands	1	2	3	

Pollutant Sources

	Not Present	Insignificant	Significant	Comments
Livestock Pasturing	1	2	3	
Barnyard Runoff	1	2	3	
Cropland Runoff	1	2	3	
Tile Drains	1	2	3	
Septic Systems	1	2	3	
Streambank Erosion	1	2	3	
Urban Runoff	1	2	3	
Construction Runoff	1	2	3	
Point Source (Specify Type)	1	2	3	
Other (Specify)	1	2	3	

HBI 3.817 Rep1 Rep2 Rep3  
 Sample ID # 871110-14-01 Waterbody Name KUMMEL (KIEFER) CK.  
 Water Temp (Celsius) 4.0 Dissolved Oxygen (mg/l) 15.0  
 Sample Location: NW NE S B T13N R17E Master Waterbody # 0863500  
 Project Name TRIANNUAL STANDARDS REVIEW Storet Station #  
 Ave. Stream Width (Ft.) at Site 3.0 Ave. Stream Depth (Ft.) at Site 0.2  
 Collector SESING, M Field # 01 Rep 1

Sorter RUST, P Measured Velocity (fps)  
 Est. Velocity (fps)  
 Est % of sample sorted 47 Moderate (0.5-1.5)  
 Taxonomist DIMICK, J Sampled Habitat  
 Location Description KC-RIFFLE IMMED. DOWNSTREAM OF ST. 1. Riffle  
 HWY 49 IN VILLAGE OF BROWNSVILLE. NO RIFFLES OR SUITABLE SUBSTRATE  
 AVAILABLE DOWNSTREAM OF BROWNSVILLE OUTFALL.  
 Est. Time Spent Sampling (Min.) 10

Sampling Device 1. D Frame

Substrate at Site Location (%)

0.0 Bedrock	30.0 Rubble	10.0 Sand	0.0 Clay	0.0 Muck
0.0 Boulders	50.0 Gravel	0.0 Silt	0.0 Detritus	10.0 Debris/Veg

Substrate Sampled (%) (Same as above No\_)

0.0 Bedrock	20.0 Rubble	0.0 Sand	0.0 Clay	0.0 Muck
0.0 Boulders	80.0 Gravel	0.0 Silt	0.0 Detritus	0.0 Debris/Veg

Aquatic Vegetation 10 % of Total Stream Channel at Sampling Site

Observed Instream Water Quality Indicators (Perceived WQ Fair )

	Not Present	Insig- nificant	Sig- nificant	Comments
Turbidity	1			WATER CLARITY GOOD
Chlorine or Toxic Scour	1			
Macrophytes			3	
Filamentous Algae	1			
Planktonic Algae	1			
Slimes	1			
Iron Bacteria	1			

Factors Which May Be Affecting Habitat Quality

Sludge Deposits	1			
Silt and Sediment		2		
Channel Ditching			3	RIFFLES RARE AS THIS STREAM HAS BEEN CHANNELIZED FOR MUCH OF ITS LENGTH.
Down/Up Stream Impoundment		2		
Low Flows			3	
Wetlands		2		

Pollutant Sources

Livestock Pasturing			3	
Barnyard Runoff			3	
Cropland Runoff			3	
Tile Drains		2		
Septic Systems		2		
Stream Bank Erosion	1			
Urban Runoff			3	
Construction Runoff	1			
Point Source (Specify Type)	1			
Other (Specify)	1			

*** TAXA ***	*** SPECIES ***	TAXONOMIC KEY USED	TOL VAL	ORGANISM ID	ORGANISM COUNT	REP1	REP2	REP3
EPHEMEROPTERA								
EPHEMERELLIDAE								
EPHEMERELLA	AURIVILLII	*1	0.00	02040401	1		0	
TRICHOPTERA								
HYDROPSYCHIDAE								
**POOR SPECIMEN**		*1		04041000	1		0	
LIMNEPHILIDAE								
HESPEROPHYLAX	DESIGNATUS	*1	3.00	04080401	10		0	
COLEOPTERA								
ELMIDAE								
OPTICSERVUS		*1	4.00	07020500	3		0	
DIPTERA								
CHIRONOMIDAE								
LIMNOPHYES		*2	8.00	08053100	1		0	
EPHYDRIDAE		*1	6.00	08080000	1		0	
TIPULIDAE								
DICRANOTA		*1	3.00	08140200	12		0	
AMPHIPODA								
GAMMARIDAE								
GAMMARUS	PSEUDOLIMNEUS	*3	4.00	09010201	81		0	

\*\*\* TOTALS: \*\*\* 110

0

\*\*\* BIOTIC INDEX: \*\*\* 3.817

## Taxonomic Key Code References

- \*1 HILSENHOFF 1981,82
- \*2 HILSENHOFF 1981,85
- \*3 HOLSINGER 1972

11-10-87

25m g

	R	gR	P
Stream Reach Type	NA	NA	50
Stream Reach Length			
Stream Reach Depth (ft.)	.5	1	2
z present	.8	1.7	3
z max. present			
z low flow			
Stream Reach Width (ft.)	8	10	12
x present	10	15	15
x high flow			
x low flow			
Substrate Size (Min. 10%)			
Detritus (P/Present)	5	20	20
Clay			
Silt	80	80	80
Sand			
Gravel .25"-3.0"			
Rubble 3.01"-12.0"	15		
Boulder >12.01"			
Bedrock			
Velocity x present (m e)	.1	<.1	<.1
Vel. max. present		.1	.1
Gradient	↓	↓	↓
Bottom Deposition (Min. 10%)			
% area bottom covered	100	100	100
x depth sediment	.5	.5	.5
max. depth sediment	>1	>1	>1
deposition type	3	3	3
Material Comp. (Min. 10%)			
detritus	10	20	20
silt	90	80	80
sand			
gravel			
Overhead Bank Cover			
x bank width *0! <.25! <.5' etc.	NA	NA	<.5
% of reach (10% Min.)			50
x depth below bank *			.5
x bank + veg. width *	1	2	2
% of reach (10% Min.)	90	50	50
x depth below bank+veg.*	.3	.3	.7
Instream Cover Rating	ff	gf	gf
↓ Cover Material (Min. 10%)			
1=np rock/bould. (P/Present)			
2=ff log/tree/rots			20
3=gf debris (other)			
4=fg instream veg.	20	50	20
5=gg bank+veg. (terrestrial)	80	50	80
depth/channel morph.			30
% Shading (0,25,50,75,100)	0	10	0
Aquatic Veg. (Min. 10%) macro	20	20	10
% coverage meso	NA	NA	NA
Floodplain Vegetation Type	ROW CROPS	PASTURE	←
Purple Loosestrife	Shrub wetland	SHRUB WETL.	
Lower Bank Height			
Bank Stability % >90 >70 >50 <50 >90		>90	>90
Lower Bank Deposition			
Channelization	YES	?	
Comments	BACTERIA SLIMES	possible	

heavy lateral deposition, bar formation, mid-stream bar, heavy silt deposits

Duckweed, water hyacinth, Foreign noted in all segments, Water clarity generally good! NPS upstream must be severe!

Brownsville Sewage Treatment Plant  
Dodge County  
September 23, 1976

Kummel Creek (Lomira Creek) - Surface Acres = 23.3, length = 16.0 miles,  
gradient = 4.0 feet per mile

A generally broad, but shallow stream originating north of Brownsville and flowing south to the East Branch Rock River at Theresa station. The fishery consists primarily of rough fish and forage species. Lack of depth is a problem, and the construction of instream devices could prove beneficial by narrowing the channel to make the habitat more suitable for game fish species.

Recommendations

From the Brownsville sewage treatment plant outfall downstream to CTH "HH" the classification should be noncontinuous surface waters not supporting a balanced aquatic community. From this point and for the remainder of Kummel Creek the classification should be continuous fish and aquatic life.

The above recommendations represent a concurrence of opinion of the stream classification team who are as follows:

Robert Weber - District Engineer  
Jim Congdon - Area Fish Manager  
Tom Bainbridge - District Biologist  
Roger Schlessler - Natural Resources Technician

Respectfully submitted,

  
Thomas Bainbridge  
Stream Classification Coordinator

RS:lg

