

4033-11

TRIENNIAL STANDARDS REVIEW OF AN
UNNAMED TRIBUTARY OF WILLIAMS CREEK
BLUE MOUNDS, WISCONSIN
PECATONICA RIVER DRAINAGE BASIN

WISCONSIN DEPARTMENT OF NATURAL RESOURCES
December, 1989

Prepared by David Marshall

The Village of Blue Mounds discharges treated wastewater to an intermittent tributary of Williams Creek. The unnamed tributary is joined by several other intermittent tributaries which drain rolling cropland. A local cheese factory spreads whey on some of the surrounding croplands. Manure is also spread over most of the sloping fields and runoff is a frequent problem. Part of the tributary has been ditched and most of it is laden with silt. In the lower reaches, groundwater seepage is evidenced by growths of water cress.

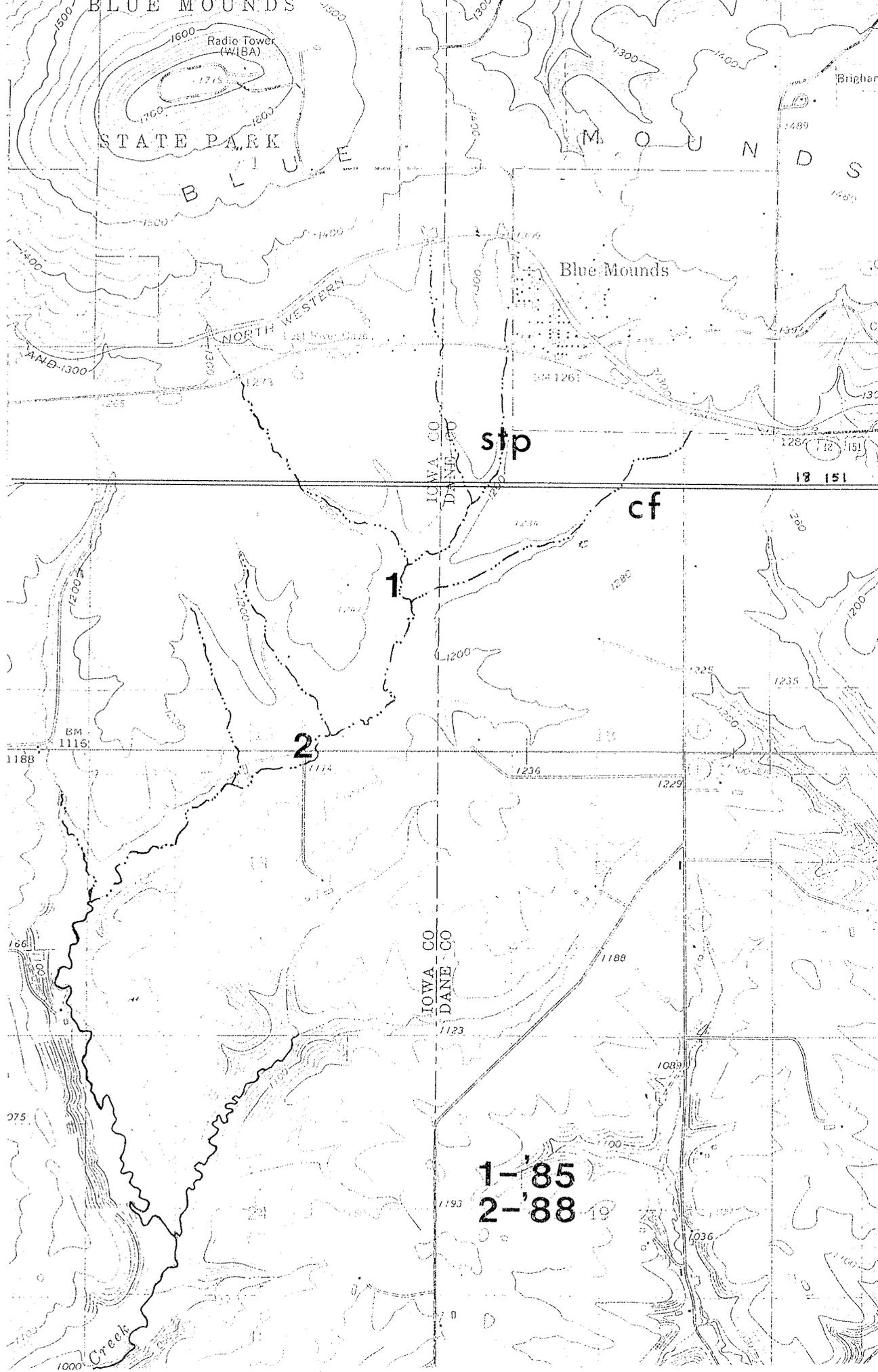
The tributary was sampled for fish and macroinvertebrates in November, 1988. Approximately 100 yards of stream were shocked but no fish were found. The stream dimensions averaged only two feet wide and three inches deep. A previous fish shocking survey was performed upstream in 1985 and revealed only a few creek chubs and sticklebacks.

Gammarus pseudolimneus and Optioservus larva were abundant during the 1988 survey but no other macroinvertebrates were found. The macroinvertebrates indicated "very good" water quality based on the Hilsenhoff Biotic Index (HBI) value of 4.0 and compares well with a 1985 HBI value (4.02). The intolerant macroinvertebrates reflect groundwater seepage in the area.

In general, channelization, low flows, and agricultural nonpoint source pollution limit the use potential of the unnamed tributary. The intermediate (INT-D) classification accurately depicts these conditions.

\9001\wqlpecatonica.dm





Radio Tower (WIBA)
1715
STATE PARK

Blue Mounds

NORTH WESTERN

stp

cf

1

2

IOWA CO
DANE CO

1-'85
2-'88

Stream Tri. to Williams Cr. Reach Location Entire Reach Score/Rating 245 Poor
 County Dane-Iowa Date 11-88 Evaluator Marshall Classification INT-D

| 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 | 6" to 1' 6 | 3" to 6" 18 | <3" 24 |
| | Warm >1.5' 0 | 10" to 1.5' 6 | 6" to 10" 18 | <6" 24 |
| Avg. Depth of Pools | Cold >4' 0 | 3' to 4' 6 | 2' to 3' 18 | <2' 24 |
| | Warm >5' 0 | 4' to 5' 6 | 3' to 4' 18 | <3' 24 |
| Flow, at Rep. Low Flow | Cold >2 cfs 0 | 1-2 cfs 6 | .5-1 cfs 18 | <.5 cfs 24 |
| | Warm >5 cfs 0 | 2-5 cfs 6 | 1-2 cfs 18 | <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 _____ +F _____ +P _____ = 245 = Score

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

SOUTHERN DISTRICT District Biotic Index Report

HBI _ 4.000 Rep1 _ Rep2 _ Rep3 _____
 Sample ID # _881103-13-01 Waterbody Name _TRIB. TO WILLIAMS-BRANCH
 Water Temp (Celsius) _7.0 ___ Dissolved Oxygen (mg/l) _9.6 _
 Sample Location: S O T O N R O _ Master Waterbody # _
 Project Name _TRIENNIAL STANDARDS Storet Station # _
 Ave. Stream Width (Ft.) at Site _3.0 Ave. Stream Depth (Ft.) at Site _0.5
 Director _MARSHALL, D. Field # 01 Rep 1_
 Measured Velocity (fps) _
 Est. Velocity (fps) _
 Sorter _GEHRING, T. Slow (0.2-0.5)
 Est % of sample sorted _100 Taxonomist _DIMICK, J. Sampled Habitat
 Location Description _1ST. TOWN RD. BRIDGE BELOW STP AT _2. Run____
 _BLUE MOUNDS

Est. Time Spent Sampling (Min.) _ 5__

Sampling Device _1. D Frame

Substrate at Site Location (%)

| | | | | |
|--------------|------------|-----------|--------------|-----------------|
| 0.0 Bedrock | 0.0 Rubble | 20.0 Sand | 0.0 Clay | 0.0 Muck |
| 0.0 Boulders | 0.0 Gravel | 50.0 Silt | 0.0 Detritus | 30.0 Debris/Veg |

Substrate Sampled (%) (Same as above Yes)

| | | | | |
|--------------|------------|----------|--------------|----------------|
| 0.0 Bedrock | 0.0 Rubble | 0.0 Sand | 0.0 Clay | 0.0 Muck |
| 0.0 Boulders | 0.0 Gravel | 0.0 Silt | 0.0 Detritus | 0.0 Debris/Veg |

Aquatic Vegetation 0 % of Total Stream Channel at Sampling Site

Observed Instream Water Quality Indicators (Perceived WQ _Fair____)

| | Not Present | Insig- nificant | Sig- nificant | Comments |
|-------------------------|-------------|-----------------|---------------|-------------|
| Turbidity | | 2 | | |
| Chlorine or Toxic Scour | | | | |
| Macrophytes | | 2 | | WATER CRESS |
| Filamentous Algae | | 2 | | |
| Planktonic Algae | | 1 | | |
| Slimes | | 1 | | |
| Iron Bacteria | | 1 | | |

Factors Which May Be Affecting Habitat Quality

| | |
|----------------------------|---|
| Sludge Deposits | |
| Silt and Sediment | 3 |
| Channel Ditching | 3 |
| Down/Up Stream Impoundment | 1 |
| Low Flows | 3 |
| Wetlands | 2 |

Pollutant Sources

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

SAMPLE ID# 881103-13-01

| *** TAXA *** | *** SPECIES *** | TAXONOMIC KEY USED | TOL VAL | ORGANISM ID | ORGANISM COUNT | REP1 | REP2 | REP3 |
|-----------------------|-----------------|--------------------|---------|-------------|----------------|------|------|------|
| COLEOPTERA | | | | | | | | |
| ELMIDAE | | | | | | | | |
| OPTIOSERVUS | | *1 | 4.00 | 07020500 | 71 | 0 | 0 | 0 |
| AMPHIPODA | | | | | | | | |
| GAMMARIDAE | | | | | | | | |
| GAMMARUS | PSEUDOLIMNAEUS | *2 | 4.00 | 09010201 | 50 | 0 | 0 | 0 |
| *** TOTALS: *** | | | | | 121 | | | |
| | | | | | | 0 | | |
| *** BIOTIC INDEX: *** | | | | | 4.000 | | | |

Taxonomic Key Code References

- *1 Milsenhoff 1981
- *2 Holsinger 1972

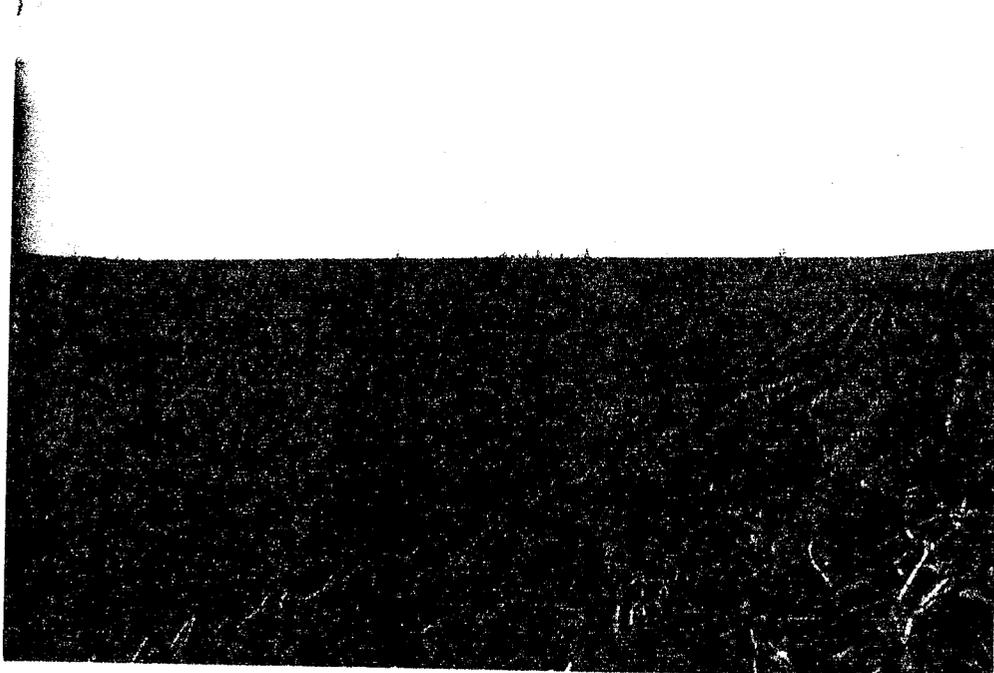


STREAM CLASSIFICATION SURVEY ON WILLIAMS CREEK AND AN UNNAMED
TRIBUTARY BELOW STAUFFER CHEESE,
BLUE MOUNDS, WISCONSIN

Department of Natural Resources - Madison Area
November, 1985
Prepared by Dave Marshall

The intermittent tributary which runs west of Stauffer Cheese to the confluence with Williams Creek was dry when inspected on October 8, October 31, and November 5, 1985. The intermittent nature of this drainage course cannot support permanent aquatic communities. Therefore, the classification of the tributary is marginal (MARG-E).

The current classification of Williams Creek is intermediate fish and aquatic life (INT-D) from the Blue Mounds Wastewater Treatment Plant downstream to Section 14, NE $\frac{1}{4}$, SE $\frac{1}{4}$, T6E, R5E. Based on a reclassification survey, the current classification is correct. Fish samples collected above E. Brigham Road (Section 13) consisted of only three brook sticklebacks and three creek chubs; both species categorized as tolerant forage. The Biotic Index indicated good water quality, however, the stream substrate was covered with silt, sludge, and filamentous algae. The stream above E. Brigham Road had good gradient and numerous riffles. In many areas, groundwater recruitment was revealed by the presence of watercress. A benthic community consisting of mostly Gammarus pseudolimneus is supported by the good reaeration potential in the stream. More diverse aquatic communities are limited by cropland erosion, manure runoff and low flow conditions. The overall habitat was rated as poor.



UNNAMED TRIB.

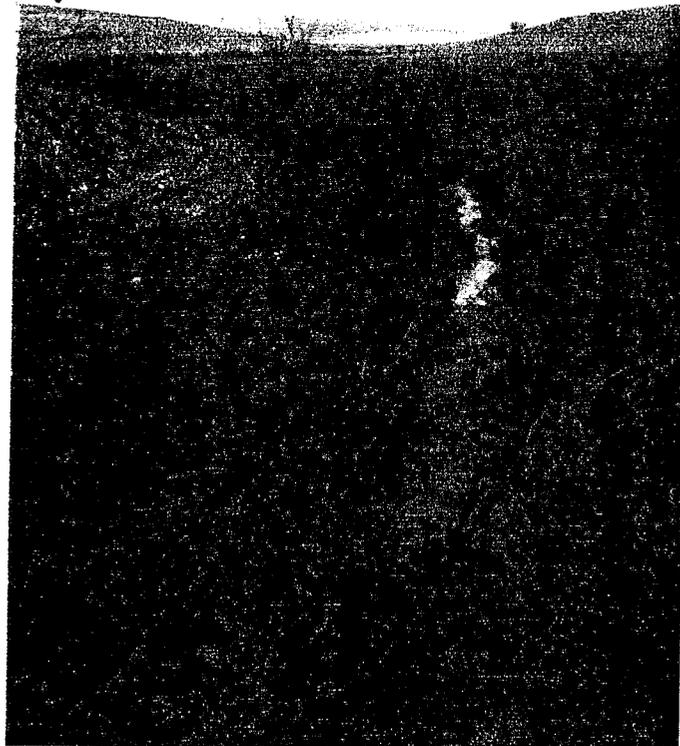
Williams Creek - October 31, 1985
 E. Brigham Road
 Stauffer Cheese - Blue Mounds Stream Class

| <u>Macroinvertebrates Collected</u> | <u>n</u> | <u>a</u> | <u>nxa</u> |
|-------------------------------------|----------|----------------|--------------------|
| Gammarus pseudolimneus | 98 | 2 4 | 196 392 |
| Baetis phoebos | 1 | - | - |
| Orthocladius | 1 | 2 6 | 2 6 |

B.I. = ~~2.01~~ Good Water Quality 4.02

Fish Specimens Collected

| | |
|--------------------|---|
| Brook Sticklebacks | 3 |
| Creek Chubs | 3 |



Stream Williams Reach Location E. Brigham Rd - 25 yds. upstream Reach Score/Rating 216/Poor
 County Dane Date 10-31-85 Evaluator Marshall Classification INT-D

| 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 | 6" to 1' 6 | 3" to 6" 18 | <3" 24 |
| | Warm >1.5' 0 | 10" to 1.5' 6 | 6" to 10" 18 | <6" 24 |
| Avg. Depth of Pools | Cold >4' 0 | 3' to 4' 6 | 2' to 3' 18 | <2' 24 |
| | Warm >5' 0 | 4' to 5' 6 | 3' to 4' 18 | <3' 24 |
| Flow, at Rep. Low Flow | Cold >2 cfs 0 | 1-2 cfs 6 | .5-1 cfs 18 | <.5 cfs 24 |
| | Warm >5 cfs 0 | 2-5 cfs 6 | 1-2 cfs 18 | <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: _____ 7 _____ 137 _____ 72

Column Scores E _____ +G 7 +F 137 +P 72 = 216 = Score

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

Blue Mounds
Iowa County
December 6, 1976

Williams Creek (Barneveld)- Surface area = 5.3 acres, Length = 4.9 miles,
Gradient = 32.6 feet per mile.

Williams Creek is a spring fed stream which begins on the Military Ridge and flows southerly into the upper section of the East Branch of the Pecatonica River. Although its gradient is not extreme, about 95 percent of its watershed is cleared for farming. Land use contributes to floods and subsequent bank erosion which are common. Forage fishes consist of bluntnose and stoneroller minnows, common shiners, redbelly dace, creek chubs, hornyhead chubs, northern redhorse, stonecats, white suckers, and hogsuckers. Aquatic game assets are limited to some muskrats in areas where bank cover and deeper water exist.

The streams sport fishery is composed of trout and smallmouth bass, with trout living in the upper and middle portions and smallmouth bass living in the lower portion of the stream.

Recommendations

From the Blue Mounds sewage treatment discharge downstream to the east line of Section 14, NE $\frac{1}{4}$ SE $\frac{1}{4}$ T6N, R5E the classification should be non-continuous surface waters not supporting a balanced aquatic community. From this point and for the remainder of Williams 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:

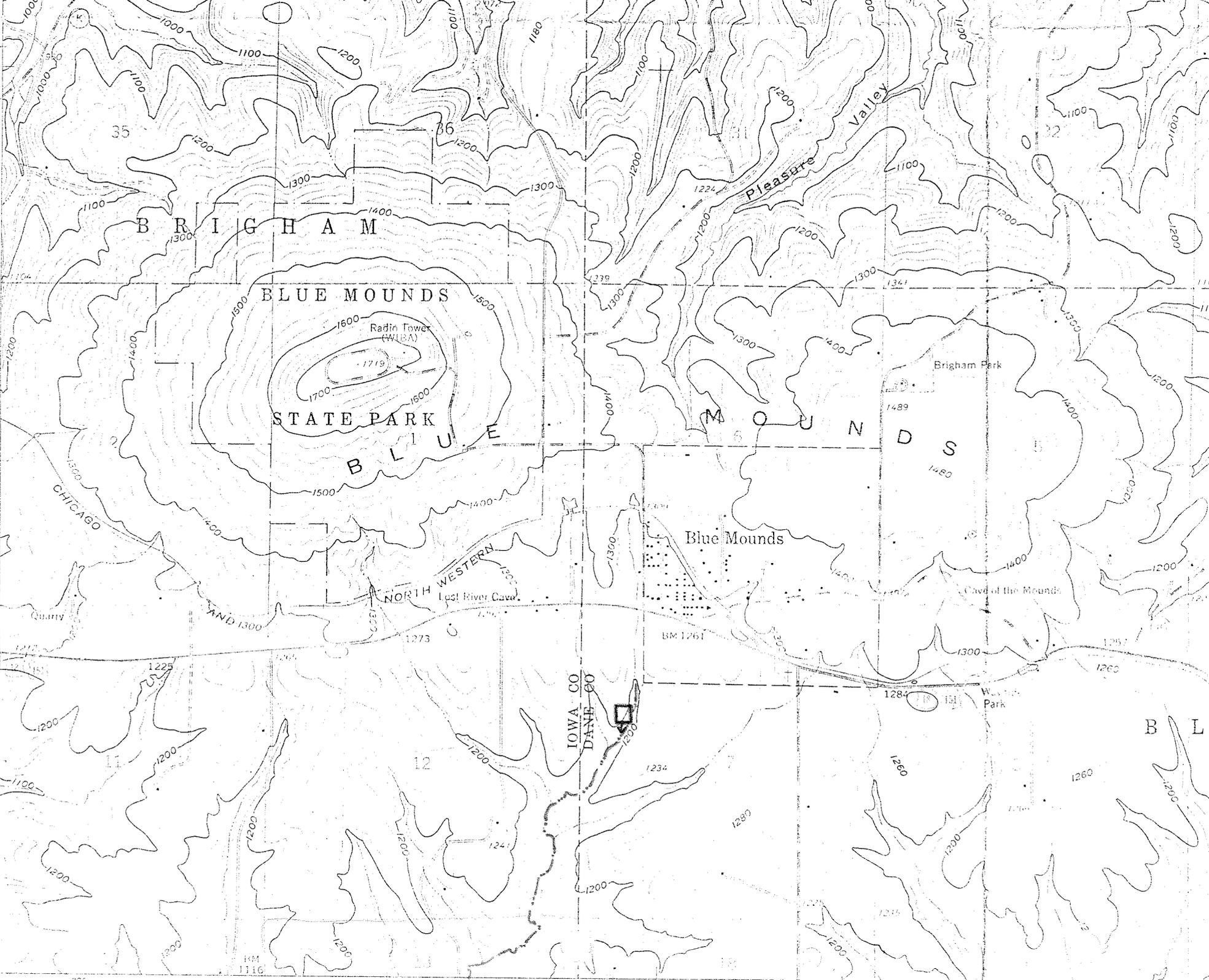
| | |
|------------------|------------------------------|
| Dennis Iverson | District Engineer |
| Gene Van Dyck | Area Fish Manager |
| Tom Bainbridge | District Biologist |
| Roger Schlessler | Natural Resources Technician |

Submitted by,


Tom Bainbridge
Stream Classification Coordinator

TB:mad

2'30"
T. 7
T. 6 N
4768
4767
370 000
FELT
PLATE 153 (IOWA U.S. 153) 43 M.C.
BARNEVELD 1:2 M.
4765
43°00'



BRIGHAM
BLUE MOUNDS
STATE PARK

Blue Mounds

IOWA CO
DANE CO

B L



BRINGHAM

Jones Branch

East Branch

Williams Creek

Peatonica Valley

Middlebury Ch. Cem.

Branch

Quarry

4761
4760
57'30"
4759
T. 6 N.
5 MI. TO HY. Z.
BLUE MOUNDS 7 MI.
4758
T. 5 N.
(DALEYVILLE) T. 5 N.
3069 IV NE
4757

Blue Mounds
Iowa County

December 6, 1976

Williams-Barneveld Creek - Surface Acres = 5.3 Miles, Miles = 4.9,
Gradient = 32.6 feet per mile.

Williams-Barneveld Creek is a spring fed stream which begins on the Military Ridge and flows southerly into the upper section of the East Branch of the Pecatonica River. Although its gradient is not extreme, about 95 percent of its watershed is cleared for farming. Land use contributes to floods and subsequent bank erosion which are common. Forage fishes consist of bluntnose and stoneroller minnows, common shiners, redbelly dace, creek chubs, hornyhead chubs, northern redhorse, stonecats, white suckers, and hogsuckers. Aquatic game assets are limited to some muskrats in areas where bank cover and deeper water exist.

The streams sport fishery is composed of trout and smallmouth bass, with trout living in the upper and middle portions and smallmouth bass living in the lower portion of the stream.

Recommendations

From the Blue Mounds sewage treatment discharge downstream to the east line of Section 14, NE $\frac{1}{4}$, SE $\frac{1}{4}$, T6N, R5E the classification should be noncontinuous surface waters not supporting a balanced aquatic community. From this point and for the remainder of Williams-Barneveld 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:

Dennis Iverson - District Engineer
Gene Van Dyck - Area Fish Manager
Tom Bainbridge - District Biologist
Roger Schlessler - Natural Resources Technician

Respectfully submitted,


Thomas Bainbridge
Stream Classification Coordinator

RS:js