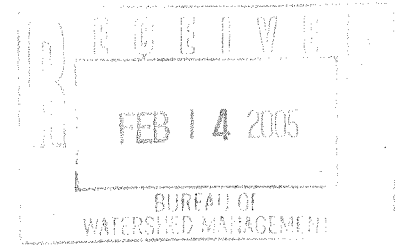


DATE: February 5, 2005

TO: Beatrice Cheese File
Laura Bub – WT/2
Paul LaLiberte – Eau Claire
Pat Oldenburg – Eau Claire
Pete Pfefferkorn – Wisconsin Rapids



FROM: Mark Hazuga - Wausau *Mark Hazuga*

SUBJECT: Removing Squaw Creek Proposed NR 104 Classifications

Squaw Creek has two proposed variance classifications to NR 104 for Beatrice Cheese Inc., now known as Quality Ingredients. The proposal indicates that Squaw Creek should be classified as Limited Aquatic Life from the WWTP outfall at Peach Avenue downstream to the confluence with an unnamed tributary in T25N R3E Sec 2 NW SE. From this point downstream to the confluence with the Little Eau Pleine River the proposed classification is Limited Forage Fish.

Currently, Quality Foods does not have a specific WPDES permit for surface water discharge to Squaw Creek.

Information collected in the mid 1980s indicate the upper reaches of Squaw Creek have been ditched and streamflow is intermittent. Squaw Creek also receives stormwater runoff from Marshfield and agricultural runoff from the watershed. However, whenever streamflow was present forage fish were always observed. The classification report also indicates that people have been observed fishing and catching chubs in the upper stream reaches. According to the report, the lower reaches have less ditching and a larger streambed with pools. Based on the new Use Designation Guidance, this information suggests that the classification of Squaw Creek is higher than the currently proposed NR 104 classifications.

Based on the limited information and the fact that no facility has a specific WPDES permit to discharge to Squaw Creek, the proposed classifications for the stream should not be added to NR 104. This will result in the default classification of Full Fish and Aquatic Life to remain in effect.

Region WCR County Wood Report Date 2/1985 Classification LAL/LFF
 Water Body: Squaw Creek
 Discharger: Beatrice Foods

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
- 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: photos

Historical Reports in file:

2/8/75 - Robert Smith / Robert Derksen
1/85 - Bill Jaeger

Additional Comments/How to improve report:

- What impact does NPS pollutants & "cultural activities" have on class'n?
- is flow limiting factor of class'n?
- Check w/ region on this class'n.

February 8, 1985

3200

Robert Smith/Robert Derksen

Bill Jaeger

Proposed Water Quality Classification of Squaw Creek, Wood County

Attached is a proposed classification report for the stream cited above. I found out from Ed Kreul that Beatrice Foods (formerly Clover Cream Dairy) has revived interest in obtaining a permit to discharge process wastewater to Squaw Creek. The field work for the classification was completed a couple of years ago so I had only to write up the report.

As detailed in the report, the major factor influencing this classification is the lack of base flow during dry periods. I am recommending the upper reaches be classified as capable of supporting little or no aquatic life. This reach would have a dissolved oxygen standard of 1 ppm. The lower reach would be classified as capable of supporting forage fish tolerant of some oxygen stress and would have an oxygen standard of 3 ppm. This classification would result in effluent limits of 20 mg/l BOD and 20 mg/l suspended solids on a monthly average. There would also be a minimum requirement of 4 mg/l of dissolved oxygen in the effluent. These limits are specified in NR 104.02.

Please let me know, if you have any comments or questions on this proposal.

BJ:kjh

Attach.

cc: Tom Bashaw

Jim Schmidt, WRM/2

Squaw Creek, Wood County, Stream Classification

Prepared by William C. Jaeger, North Central District
Water Resource Management Biologist, January 1985

Squaw Creek is located in an intense agricultural area of northwestern Wood County. It originates in the urban area of the City of Marshfield and joins the Little Eau Pleine River in Section 32, Township 26 North, Range 4 East. It is markedly influenced by agricultural practices and the "flashy" nature of the watershed. The upper reaches are strongly affected by urban development and channel modification. It has a watershed area of about 11.2 square miles and is six or seven miles long.

Physical Description

The flow regime is a major factor affecting streams in this area. The soils do not readily infiltrate precipitation, resulting in high volume of runoff. The slopes rapidly carry the runoff away. The soils and geology yield very little base flow. This combination results in large stream channels with frequent periods of little or no stream flow. Surface drainage practices installed on cropland also contribute to the flashiness.

Some of the headwaters are in the storm sewer system of Marshfield. The first two miles of stream below the City has been channelized into a wide ditch to improve drainage. This results in few pools and poor habitat for aquatic life. Despite good vegetative growth, the banks are caving as the stream tries to return to its natural meander. Land use includes commercial, industrial and residential, then changing to undeveloped idle land at the outskirts of town.

Beginning where Squaw Creek enters Section 33, the land use is mainly agricultural, which continues through the rest of its length. Channelization is less dominant but livestock grazing becomes a major factor. Much of the streambank is trampled and the pools are silted in. There are some riffles with gravel and rubble substrate and the bottom is generally stable. Most of the stream is unshaded, although there are areas of woodland along the streambanks. In the west part of section two there is a large gravel pit where Squaw Creek has been deeply channelized with steep banks that are likely sources of eroded material.

A survey was conducted under low flow conditions on August 9, 1983. At this time, there was some flow from the storm sewers in the upper end of the stream. The source was probably cooling water discharges. This flow continued for several miles but disappeared before it reached Stadt Road on the east side of Section 3. Above Stadt Road, parts of the streambed were completely dry. When the survey was continued at CTH "T", the next road one mile east, there was considerable flow in the stream. This could have been from dewatering of the gravel pit in this reach.

Several reaches were evaluated using the habitat rating system (Ball 1981). An initial rating in December of 1982 is considered unreliable because of high stream flows. The survey under low flow conditions in August 1983 rated all reaches to be in the "fair" range of habitat quality. As expected, there seemed to be a general trend of habitat improving the farther downstream the reach was located.

Recommendations

Squaw Creek is extensively degraded by nonpoint pollutants and cultural activities. It supports a fairly diverse aquatic community during much of the year. The fishery consists of forage species. During dry periods at least part of the stream ceases to flow and portions of the streambed dry up. This occurs despite an apparently continuous discharge from the storm sewer system at the headwaters of the stream.

Recognizing that the classification is to reflect low flow conditions, Squaw Creek should be divided into two segments. From the headwaters down to the tributary entering from the south in the center of Section 2, the classification should be "E" (marginal). From this point to its confluence with the Little Eau Pleine River, the use class should be "D" (intermediate). These classifications are described in Tables 1 and 2. The higher use class reflects the larger streambed, pools and watershed of the lower reaches of Squaw Creek. The lower use class reflects the small watershed, intermittent flow and channelization of the upper reaches. If continuous flow throughout the stream would be maintained, such as from a large volume wastewater discharge, the entire stream should probably have the "D" classification.

References

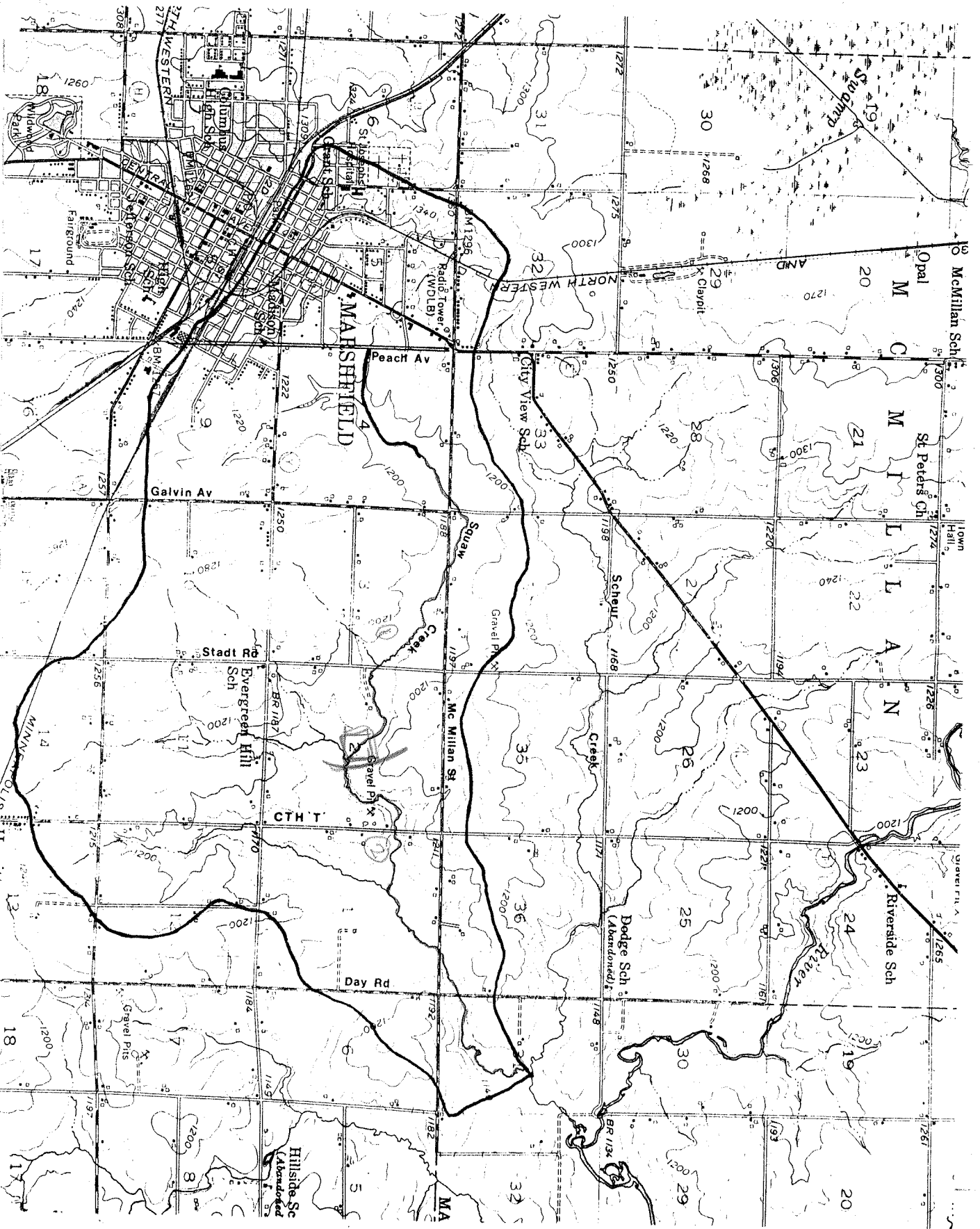
- Ball, Joseph. 1982. Stream classification guidelines for Wisconsin (draft). Wisconsin Department of Natural Resources.
- Hilsenhoff, William L. 1982. Using a biotic index to evaluate water quality in streams. Technical Bulletin No. 132, Wisconsin Department of Natural Resources.

TABLE 1. Stream use classes for aquatic life.

Use Class	Description
A	Capable of supporting cold water sport fish
B	Capable of supporting warm water sport fish
C	Capable of supporting intolerant forage fish*, intolerant macroinvertebrates, or a valuable population of tolerant forage fish
D	Capable of supporting tolerant or very tolerant forage or rough fish*, or tolerant macroinvertebrates
E	Capable of supporting very tolerant macroinvertebrates or no aquatic life

TABLE 2. Physical and chemical criteria guidelines for aquatic life use classes.

Parameter	Use Class and Criteria				
	A	B	C	D	E
Flow	>.5	>3	>.2	>.1	>0
Water Quality					
Dissolved Oxygen	>4	>3	>3	>1	<1
Temperature	<75	<86	<86	<90	>90
pH	>5,<9.5	>5,<10.5	>5,<10.5	>4,<11	<4,>11
Toxics	<acute	<acute	<acute	acute	>acute
Habitat Rating	<144	<144	<144	>144	>200



APPENDIX: Stream System Habitat Rating Form

Stream Squaw Creek Reach Location Peach Ave to 1000' below (section 4)

Reach Score/Rating 193

County Wood Date 8/10/83 Evaluator Bill Jaeger

Classification _____

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 runoff. 14
Watershed Nonpoint Source	No evidence of significant source. Little potential for future problem. 4	Some potential sources. (roads, urban area, farm fields). 8	Moderate sources. (Small wetlands, tile fields, urban area, intense agriculture). 16	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. 6	Infrequent, small areas, mostly healed over. Some potential in extreme floods. 9	Moderate frequency and size. Some "raw" spots. Erosion potential during high flow. 15	Many eroded areas. "Raw" areas frequent along straight sections and bends. 15
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. 15
Lower Bank Channel Capacity	Ample for present peak flow plus some increase. Peak flows 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. 14
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. 15
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. 16
Bottom Substrate	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. 17
Average Depth at Rep. Low Flow	Greater than 24 inches. 0	12 inches to 24 inches. 6	6 inches to 12 inches. 18	Less than 6 inches. 18
Flow, at Rep. Low Flow	Warm water >5 cfs. Cold water >2 cfs. 0	Warm water 2-5 cfs. Cold water 1-2 cfs. 6	Warm water 0.5-2 cfs. Cold water 0.5-1 cfs. Continuous flow. 18	Less than 0.5 cfs. Stream may cease to flow in very dry years. 18
Pool/Riffle, Run/Bend Ratio	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 inches or shallow riffle. Poor habitat. 16
Aesthetics	Wilderness characteristics, outstanding natural beauty. Usually wooded or unspaced 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. 14

Column Total Without Effluent — .
Column Total With Effluent —

Add Column Scores Without Effluent, E 0 +G 26 +F 45 +P 122 = Reach Score
Add Column Scores With Effluent, E _____ +G _____ +F _____ +P _____ = Reach Score

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

APPENDIX: Stream System Habitat Rating Form

Stream Sprawl Creek Reach Location McMillan Road to 500' above (section 4) Reach Score/Rating 181
 County Wood Date 8/9/83 Evaluator Bill Jaeger Classification _____

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 runoff. 1
Watershed Nonpoint Source	No evidence of significant source. Little potential for future problem. 4	Some potential sources. (roads, urban area, farm fields). 8	Moderate sources. (Small wetlands, tile fields, urban area, intense agriculture). 16	Obvious sources. (Major wetland drainage, high use urban or industrial area, feed lots, impoundment). 2
Bank Erosion, Failure	No evidence of significant erosion or bank failure. Little potential for future problem. 6	Infrequent, small areas, mostly healed over. Some potential in extreme floods. 9	Moderate frequency and size. Some "raw" spots. Erosion potential during high flow. 15	Many eroded areas. "Raw" areas frequent along straight sections and bends. 1
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. 1
Lower Bank Channel Capacity	Ample for present peak flow plus some increase. Peak flows 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. 1
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 development. 1
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. 2
Bottom Substrate	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. 2
Average Depth at Rep. Low Flow	Greater than 24 inches. 0	12 inches to 24 inches. 6	6 inches to 12 inches. 18	Less than 6 inches. 2
Flow, at Rep. Low Flow	Warm water >5 cfs. Cold water >2 cfs. 0	Warm water 2-5 cfs. Cold water 1-2 cfs. 6	Warm water 0.5-2 cfs. Cold water 0.5-1 cfs. Continuous flow. 18	Less than 0.5 cfs. Stream may cease to flow in very dry years. 4
Pool/Riffle, Run/Bend Ratio	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 inches or shallow riffle. Poor habitat. 4
Aesthetics	Wilderness characteristics, outstanding natural beauty. Usually wooded or unspartured 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. 14

Column Total Without Effluent —
 Column Total With Effluent —
 Add Column Scores Without Effluent, E 0 +G 26 +F 93 +P 62 = Reach Score 181
 Add Column Scores With Effluent, E _____ +G _____ +F _____ +P _____ = Reach Score _____
 <70 = Excellent, 71-129 = Good, 130-200 = Fair, >200 = Poor

APPENDIX: Stream System Habitat Rating Form

in Squaw Creek Reach Location State Rd to 500 ft above (section 3)

Reach Score/Rating 186

County Wood

Date 8/9/83

Evaluator Bill Jaeger

Classification _____

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 runoff. 14
Watershed Nonpoint Source	No evidence of significant source. Little potential for future problem. 4	Some potential sources. (roads, urban area, farm fields). 8	Moderate sources. (Small wetlands, tile fields, urban area, intense agriculture). 16	Obvious sources. (Major wetland drainage, high use urban or industrial area, feed lots, impoundment). 16
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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. 15
Lower Bank Channel Capacity	Ample for present peak flow plus some increase. Peak flows 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. 14
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. 15
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. 16
Bottom Substrate	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. 17
Average Depth at Rep. Low Flow	Greater than 24 inches. 0	12 inches to 24 inches. 6	6 inches to 12 inches. 18	Less than 6 inches. 18
Flow, at Rep. Low Flow	Warm water >5 cfs. Cold water >2 cfs. 0	Warm water 2-5 cfs. Cold water 1-2 cfs. 6	Warm water 0.5-2 cfs. Cold water 0.5-1 cfs. Continuous flow. 18	Less than 0.5 cfs. Stream may cease to flow in very dry years. 18
Pool/Riffle, Run/Bend Ratio	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 inches or shallow riffle. Poor habitat. 16
Aesthetics	Wilderness characteristics, outstanding natural beauty. Usually wooded or unpastured 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. 14

Column Total Without Effluent —
 Column Total With Effluent —

Add Column Scores Without Effluent, E 0 + G 15 + F 103 + P 68 = Reach Score 186
 Add Column Scores With Effluent, E _____ + G _____ + F _____ + P _____ = Reach Score _____

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

APPENDIX: Stream System Habitat Rating Form

Stream Sprawl Creek Reach Location 300ft below to 800ft above Day Rd. (Sec 3436) Reach Score/Rating 172
 County Wood Date 8/9/83 Evaluator Bill Jaeger Classification _____

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 runoff. 18
Watershed Nonpoint Source	No evidence of significant source. Little potential for future problem. 4	Some potential sources. (roads, urban area, farm fields). 8	Moderate sources. (Small wetlands, tile fields, urban area, intense agriculture). 16	Obvious sources. (Major wetland drainage, high use urban or industrial area, feed lots, impoundment). 20
Bank Erosion, Failure	No evidence of significant erosion or bank failure. Little potential for future problem. 6	Infrequent, small areas, mostly healed over. Some potential in extreme floods. 9	Moderate frequency and size. Some "raw" spots. Erosion potential during high flow. 15	Many eroded areas. "Raw" areas frequent along straight sections and bends. 18
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Lower Bank Channel Capacity	Ample for present peak flow plus some increase. Peak flows 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. 18
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 by 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
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Average Depth at Rep. Low Flow	Greater than 24 inches. 0	12 inches to 24 inches. 6	6 inches to 12 inches. 18	Less than 6 inches. 20
Flow, at Rep. Low Flow	Warm water >5 cfs. Cold water >2 cfs. 0	Warm water 2-5 cfs. Cold water 1-2 cfs. 6	Warm water 0.5-2 cfs. Cold water 0.5-1 cfs. Continuous blow. 18	Less than 0.5 cfs. Stream may cease to flow in very dry years. 20
Pool/Riffle, Run/Bend Ratio	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 inches or shallow riffle. Poor habitat. 20
Aesthetics	Wilderness characteristics, outstanding natural beauty. Usually wooded or unpatented corridor. 8	High natural beauty. Trees, historic site. Some development may be visible. 10	Common setting, not offensive. Developed but uncluttered area. 18	Stream does not enhance aesthetics. Condition of stream is offensive. 20

Column Total Without Effluent —
 Column Total With Effluent —
 Add Column Scores Without Effluent, E 0 +G 25 +F 123 +P 24 = Reach Score 172
 Add Column Scores With Effluent, E _____ +G _____ +F _____ +P _____ = Reach Score _____
 <70 = Excellent, 71-129 = Good, 130-200 = Fair, >200 = Poor

*** NORTH CENTRAL DISTRICT BENTHOS REPORT ***

SAMPLE ID#: 821203-72-01
 SAMPLE LOCATION: NE NE 04 25N03E
 PROJECT NAME: CLOVER CREAM STREAM
 COLLECTOR: JAEGER W.
 SORTER: JAEGER W.
 TAXONOMIST: MONTZ P.
 LOCATION DESCRIPTION: 200 FT. ABOVE MCMILLAN RD.

WATERBODY NAME: SQUAW CREEK
 PRIMARY STATION#:
 FIELD NUMBERS: 01-01

WATER TEMP(CELCIUS):
 AVERAGE STREAM WIDTH(FT) AT SAMPLE SITE: 6
 AVERAGE STREAM DEPTH(FT) AT SAMPLE SITE: 1.2
 AVERAGE CURRENT VELOCITY (MEASURED FPS):
 ESTIMATED CURRENT VELOCITY: MODERATE
 SAMPLED HABITAT: RIFFLE/RUN

SAMPLING DEVICE: D FRAME NET
 COMMENTS:

SUBSTRATE SAMPLED: 50% SAND 40% GRAVEL 10% RUBBLE

*** TAXA ***

				TAXONOMIC	TOL	ORGANISM	ORGANISM		
				KEY USED	VAL	ID	COUNT		
							REP1	REP2	REP3
TRICHOPTERA	HYDROPSYCHIDAE	HYDROPSYCHE	ARINALE	HILS(84)	6.0	04040212	1	0	0
EPHEMEROPTERA	HEPTAGENIIDAE	STENACRON	INTERPUNCTATUM	HILS(81)	7.0	02060501	15	0	0
EPHEMEROPTERA	HEPTAGENIIDAE	STENONEMA	FEMORATUM	HILS(82)	6.0	02060602	10	0	0
EPHEMEROPTERA	LEPTOPHLEBIIDAE	LEPTOPHLEBIA		HILS(81)	4.0	02070100	18	0	0
EPHEMEROPTERA	CAENIDAE	CAENIS		HILS(81)	99.0	02030200	25	0	0
COLEOPTERA	ELMIDAE	OPTIOSERVUS	FASTIDITUS	HILS(82)	4.0	07020501	1	0	0
COLEOPTERA	ELMIDAE	OPTIOSERVUS		HISL(81)	4.0	07020500	4	0	0
COLEOPTERA	ELMIDAE	DUBIRAPHIA	VITTATA	HILS(82)	6.0	07020204	2	0	0
COLEOPTERA	ELMIDAE	DUBIRAPHIA		HILS(81)	6.0	07020200	4	0	0
AMPHIPODA	TALITRIDAE	HYALLELA	AZTECA	PENNAK(78)	8.0	09020101	3	0	0
DIPTERA	TABANIDAE	CHRYSOPS		HILS(81)	5.0	08130100	1	0	0
TOTALS:							84		
								0	
									0
BIOTIC INDEX:							5.559		
									0.000



SQUAW CREEK 200 ft. above Stadt Road



SQUAW CREEK 50 ft. above Day Road



SQUAW CREEK 500 ft. Below Peach Avenue



SQUAW CREEK immediately below McMillan Street