Date 6/26/2000

Facility Name BATAVIA

Receiving Water BATAVIA CREEK

Evaluated by WILL WAWRZYN

This stream classification is not included in the revised code because (select one):

___ The discharger is no longer at this location.

___ A new classification has resulted in a full fish and aquatic life designation.
New survey date _____ Please provide copy of new classification report.

___ This receiving water should be added to the database and to the code. Specify information, as it should be included in code.

_____

_____

_____

_____

_____

_____

_____

✓ Other (please explain)
THE FACILITY WAS NEVER CONSTRUCTED AND AT PRESENT, THERE ARE NO CONCRETE ANY PLANS TO DO SO. IN THE EVENT THAT THIS FACILITY WERE TO BE CONSTRUCTED, BATAVIA CREEK WOULD BE CLASSIFIED AS EITHER A COLDWATER COMMUNITY OR WARMWATER COMMUNITY.

Bub, Laura A

From: Masnado, Robert G
Sent: Thursday, December 12, 2002 2:43 PM
To: Bub, Laura A
Subject: FW: Design Limits for Tn of Scott

Ditto to last message. Thanks.

From: Fratrick, Jackie A
Sent: Tuesday, December 10, 2002 4:20 PM
To: Novotny, Gerry; Schmidt, James W; Wawrzyn, William G
Cc: Heckel, Corey D; Gayan, Sharon L; Masnado, Robert G; D'Antuono, James R
Subject: RE: Design Limits for Tn of Scott

Hi. See my comments, below:

Jackie Fratrick
WI DNR - Effluent Limits Calculator

407 Pilot Court, Suite 100
Waukesha, WI 53188
Phone (262) 574-2135
Fax (262)574-2117
Main Office Phone (262)574-2100

From: Wawrzyn, William G
Sent: Tuesday, December 10, 2002 11:10 AM
To: Novotny, Gerry; Schmidt, James W; Fratrick, Jackie A
Cc: Heckel, Corey D; Gayan, Sharon L; Masnado, Robert G
Subject: RE: Design Limits for Tn of Scott

I've reviewed the limits proposed for the Town of Scott proposed facility. We have no recent water quality data for Batavia Cr. The limits appropriately assume the stream to be classified as a Warm Water Sport Fish Community as evidenced by fish community and habitat samples obtained in the fall of 2001 at CTY SS and four additional sites sampled by Fago (1976 and 1978) and Bozek (1986). The fish community includes a diverse forage fish community, including intolerant and coolwater species. Habitat is adequate to support all of the resident fish species early life stages. The stream has a low width to depth ratio and as a result, is well connected to its floodplain. This feature combined with the extensive wet meadow that border the stream make the stream and corridor excellent northern pike spawning and development habitat.

The location of the discharge is of some importance as I've observed flows upstream of the community to be at or near 0 cfs during summer low flow periods. The stream is very productive as evidenced by the extensive filamentous algae growth during the September 2001 survey. This observed productivity may actually result in pH levels elevated above the assumed 8.21 su summer levels. As I noted, I'm not sure where the outfall location will be. I agree that the critical stream flows are not as precise as they could be, as USGS had done daily stream gaging in 1999. The 7Q10 and 7Q2 values I used do not take these data into account. DNR no longer has a budget with USGS to determine critical flows from stream data, but I have noted to Gerry and to Steve Arandt (the consultant) that the flow data exists, and recommended that the consultant contact USGS for critical flow determinations. Re precise outfall location, this would probably be a factor in the planning itself, and if a ch. 30 permit would be needed, we could certainly take the specific location into account.

Re the pH value used for the limits: I can do one of two things: assume a higher pH in terms of ammonia limits (but the question then is, what pH to assume), or qualify the design limits to note that ammonia limits may vary in the future in the event that stream data determines that a different pH is more representative. It was my intent to include the latter in the cover letter anyway.

I am not familiar with the models or assumptions used in the attached spread sheet. I assumed that the background dissolved O2 default was 5 mg/l in lieu of the 5.6666 (5.7 mg/l) used in the model. There are two pages in the BOD spreadsheet. The 5.7 mg/l is used as the background based on 1/3 assimilative capacity, which is one third of the

allowed drop between 7 mg/l (the default DO for background when stream data are not available) and the DO standard of 5 mg/l. Also, are we being presumptive in providing them with less restrictive and unpromulgated limits for NH3-N, even if for just planning purposes? Is it appropriate (albeit more costly) to propose more restrictive limits as they could be reduced should the new rules be promulgated in the future? I'm always a little nervous myself about proposing design limits based on rules that have not been promulgated, since we have seen that the rule making process is not always predictable. In this case, the consultant asked us to do some forecasting. Also, the rule process has matured to the point that the folks who are involved are quite confident of the criteria, and an external TAC process has agreed to the elements to determine limits from the criteria. At this stage, the applicable rules are expected to be completed in about a year - before we anticipate any construction for an upgraded plant for the Town of Scott.

I'm also not a fan of proposing design limits that are less restrictive than will appear in a permit, because there is the prospect of building a 20-year plant that is obsolete before any effluent is treated. In this case, though, it's a close call. Although the summer limits are less restrictive under the proposed criteria than the current criteria, the winter limits are more restrictive. Since incidental nitrification in a wastewater plant is more likely in summer because of higher temperatures, even plants that are not designed to nitrify may do so in summer. Winter is anothre story; a plant design needs to be pretty specific to nitrify in low tempratures. My sense is that the inclusion of the limits based on proposed criteria are relevant because the plant would need to meet lower winter limits.

From: Fratrick, Jackie A
Sent: Tuesday, December 03, 2002 3:46 PM
To: Novotny, Gerry; Schmidt, James W; Wawrzyn, William G
Cc: Heckel, Corey D; Gayan, Sharon L
Subject: Design Limits for Tn of Scott

Hi. I have attached a draft of design limits for a potential discharge of an upgraded facility for the Town of Scott for your review:

<<File: Limit Recommendations.doc>>

If anyone wants to look at the accompanying spreadsheets (which are not going to be part of what is sent to Steve Arendt), here are the sheets for BOD and ammonia:

<<File: BOD LIMIT.XLS>><<File: New NH3-N, full assimilative.xls>><<File: New NH3-N, one third assimilative.xls>>

In addition to ammonia limits based on the current criterion, the recommendations include an appendix that gives anticipated limits for ammonia, based on the new criteria and anticipated limit procedures. For the purposes of the recommendations, I assumed that early life stages were present in both summer and winter.

The recommendations aren't specific as to the exact location of a proposed outfall - I'm not aware that this has been considered.

Will, I used typical SE WI default values for stream D.O., pH, temprature and background ammonia. If you have specific data for Batavia Creek, I'd be glad to incorporate these into the final version of thies recommendations.

If possible, I'd like to send this out next Monday at the latest, so I'd appreciate any comments you may have by then. Thanks.

Jackie Fratrick
WI DNR - Effluent Limits Calculator

407 Pilot Court, Suite 100
Waukesha, WI 53188
Phone (262) 574-2135
Fax (262)574-2117
Main Office Phone (262)574-2100

Bub, Laura A

From: Masnado, Robert G
Sent: Thursday, December 12, 2002 2:43 PM
To: Bub, Laura A
Subject: FW: Design Limits for Tn of Scott

Can you keep a copy of this E-mail in a file for Batavia Creek in SER? Thanks.

Bob

From: Wawrzyn, William G
Sent: Tuesday, December 10, 2002 11:10 AM
To: Novotny, Gerry; Schmidt, James W; Fratrick, Jackie A
Cc: Heckel, Corey D; Gayan, Sharon L; Masnado, Robert G
Subject: RE: Design Limits for Tn of Scott

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Sent: Tuesday, December 03, 2002 3:46 PM
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Subject: Design Limits for Tn of Scott

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Jackie Fratrick
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Main Office Phone (262)574-2100

jim schmidt - WRM/2

October 15, 1982 3200

File

OCT 20 1982

Joe Kurz

Stream Classification for Batavia Creek (For Proposed Batavia WWTP)

Batavia Creek discharges to the North Branch of the Milwaukee River in T13N, R21E, Sec. 19 SWSW and is part of the Milwaukee River Drainage Basin. A stream classification was conducted on Batavia Creek on September 8, 1982.

Batavia Creek originates in T13N, R20E, Sec. 15 SE in the Town of Scott, Sheboygan County (Figure 1). Land use in the Batavia Creek watershed is primarily agricultural with major wetland areas bordering the stream. From the headwaters downstream to the CTH "SS" crossing (~ 2.7 miles) the stream has undergone channelization in a major portion of this reach. Downstream of CTH "SS" the stream retains a natural meandering pattern. No Q7,10 or Q7,2 information is available for this stream. At the time of the survey the stream was at a representative low flow. The flow, measured approximately 100 feet downstream of CTH "A", was 0.96 cfs. The southern headwater tributary is strictly a drainage ditch for a cropland area. The northern headwater tributary contained the major portion of the stream flow.

$Q_{7,10}$ IS 0.1 cfs @ STH 28 BRIDGE (from USGS)

Batavia Creek downstream of CTH "A" has a silt and sand substrate changing further downstream to primarily a silt substrate. The upper bank area is a stable wetland with no visible erosion. Watercress was abundant in the silt bank areas of the stream. The DO of the stream was 8.8 mg/L. A fish shocking survey at this site revealed the presence of white suckers (24), creek chubs (2), central mudminnows (14) and brook sticklebacks (2). Numerous other fish were observed in the stream but not collected.

At STH 28 the stream flow was estimated at approximately 4 cfs. The substrate is primarily sand and rubble overlaid with a heavy layer of silt. Although there was no observable erosion at this site, the heavy silt covering of the substrate indicated erosional problems upstream of this site. DO was 9.4 mg/L. No aquatic macrophytes were observed except a small amount of watercress. Periphyton growth on the rubble was heavy. In a small riffle area the following invertebrates were observed: Heptageniidae, Amphipods, Cheumatopsyche, Pycnopsyche, and other Hydropsychidae. Small schools of minnows were observed. A fish survey conducted at this site on August 10, 1978 found the following species: bluntnose minnow (93), creek chub (64), fantail darter (7), fathead minnow (1), white sucker (24), johnny darter (27), blacknose dace (>98) and brook stickleback (6).

At CTH "SS" steam flow was estimated to be 4 cfs. Upstream of the road crossing no definable channel was present. This area receives heavy use as a cattle pasture. Downstream of the crossing the substrate is primarily rubble overlaid with a heavy covering of silt. This silt apparently causes anaerobic conditions in the substrate and limits periphyton productivity significantly. Filamentous algae was abundant. Other macrophytes abundant at this site included: Sparganium, Ranunculus, Potamogeton pectinatus and Lemna. Sagittaria was a common plant at this site. No invertebrates were observed in the substrate. Several minnow schools and larger fish were observed but no attempt at collection or identification was made. DO was 6.2 mg/L.

Based on the observed stream conditions and the fish distribution information Batavia Creek is classified as capable of supporting warm-water sport fish (Use Class B or full fish and aquatic life).

JK:jm

cc: Jim Schmidt - WRM/2
Dan Moran - WRM/2
Frank Schultz

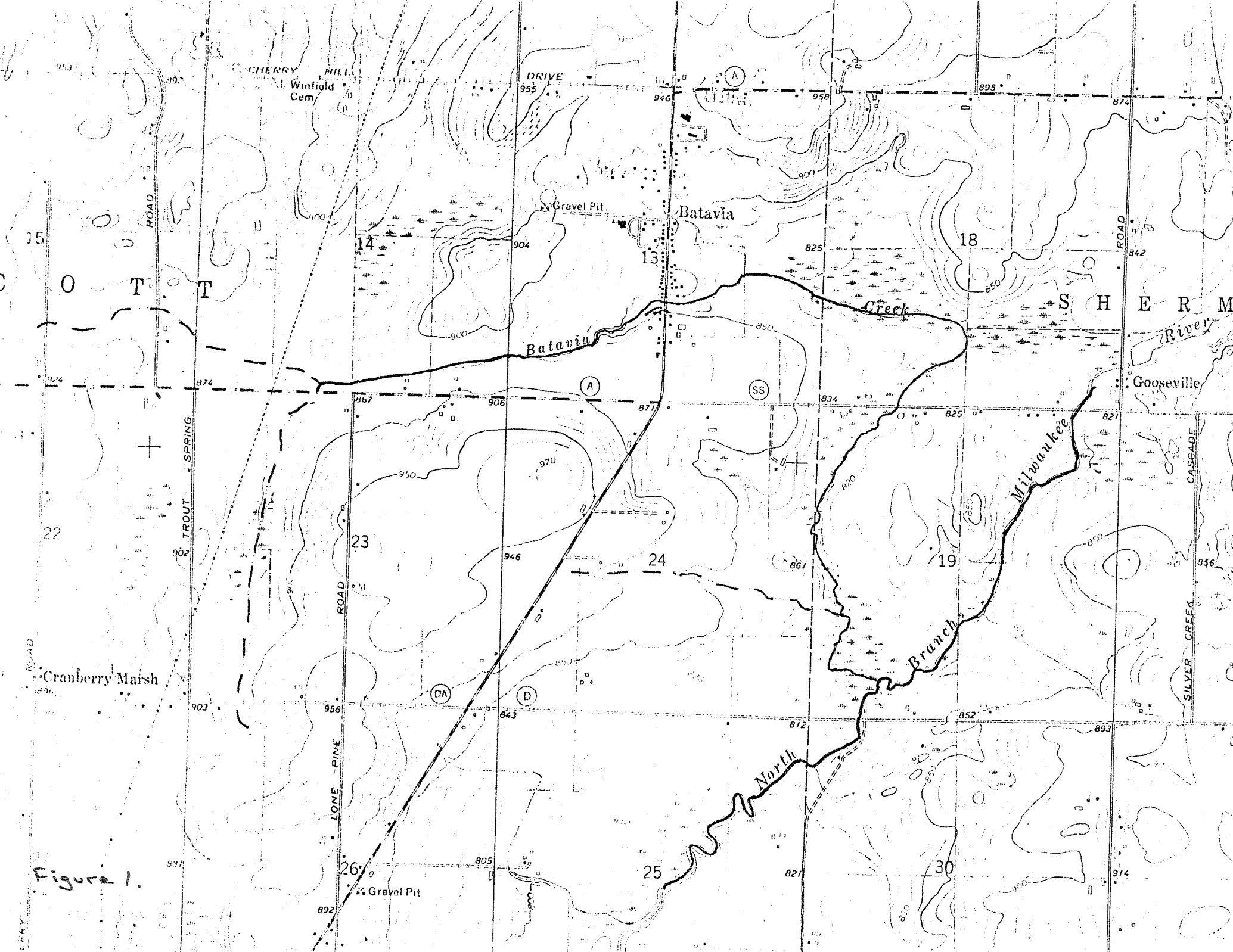
CHERRY HILL
Winfield Cem
DRIVE
Gravel Pit
Batavia
ROAD
Batavia Creek
S H E R M
River
Gooseville
TROUT SPRING
LONE PINE
SILVER CREEK
CASCADE
Milwaukee
Branch
North
Cranberry Marsh
Gravel Pit
13
14
15
18
19
22
23
24
25
26
30

Figure 1.

STREAM SYSTEM HABITAT RATING FORM

Stream Batavia Cr Reach Location Downstream of CTH "A" Reach Score/Rating 160

County Sheboygan Date 9/9/82 Evaluator J. Kurz Classification

Rating Item	Category							
	Excellent		Good		Fair		Poor	
1. 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.	16
2. 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
3. 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
4. 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
5. 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 to 25.	14	Inadequate, overbank flow common. W/D ratio >25.	(16)
6. Lower Bank Deposition	Little or no enlargement of channel or point bars.	6	Some new increase in bar formation, mostly from course gravel.	9	Moderate deposition of new gravel and course sand on old and some new bars.	15	Heavy deposits of fine material, increased bar development.	(18)
7. Bottom Scouring and Deposition	Less than 5% of the bottom affected by scouring and deposition.	4	5 to 30% affected. Scour at constrictions and where grades steepen. Some deposition in pools.	(8)	30 to 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

Rat Item	Cate Excellent		Good		Fair		Poor	
8. Bottom Substrate	Greater than 50% rubble, gravel or other stable habitat.	2	30 to 50% rubble, gravel or other stable habitat. Adequate habitat.	7	10 to 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)
9. Average Depth at Rep. Low Flow	Greater than 24".	0	12" to 24".	6	6" to 12".	18	Less than 6".	(24)
10. Flow, at Rep. Low Flow	Warm water, >5 cfs. Cold water, >2 cfs	0	Warm water, 2 to 5 cfs. Cold water, 1 to 2 cfs.	6	Warm water, .5 to 2 cfs. Cold water, .5 to 1 cfs. Continuous flow.	(18)	Less than .5 cfs. Stream may cease to flow in very dry years.	24
11. Pool/Riffle, Run/Bend Ratio	5 to 7. Variety of habitat. Deep riffles and pools.	4	7 to 15. Adequate depth in pools and riffles. Bends provide habitat.	8	15 to 25. Occassional riffle or bend. Bottom contours provide some habitat.	(16)	Greater than 25. Essentially a straight stream. Generally all "flat water" or shallow riffle. Poor habitat.	20
12. 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 inhance aesthetics. Condition of stream is offensive.	16

Column Total Without Effluent --

Column Total With Effluent --

Add Column Scores Without Effluent, E 20 + G 26 + F 34 + P 80 = Reach Score

Add Column Scores With Effluent, E____ + G____ + F____ + P____ = Reach Score

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

0258T

STREAM SYSTEM TAT RATING FORM

Stream Batavia Cr. Reach Location @ STH 28 Reach Score/Rating 135

County Sheboygan Date 9/9/82 Evaluator J. Kurz Classification

Rating Item	Category							
	Excellent		Good		Fair		Poor	
1. 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.	16
2. 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). cropland, pasture	(16)	Obvious sources. (Major wetland drainage, high use urban or industrial area, feed lots, impoundment).	20
3. 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
4. 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
5. 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 to 25.	(14)	Inadequate, overbank flow common. W/D ratio >25.	16
6. Lower Bank Deposition	Little or no enlargement of channel or point bars.	(6)	Some new increase in bar formation, mostly from course gravel.	9	Moderate deposition of new gravel and course sand on old and some new bars.	15	Heavy deposits of fine material, increased bar development.	18
7. Bottom Scouring and Deposition	Less than 5% of the bottom affected by scouring and deposition.	4	5 to 30% affected. Scour at constrictions and where grades steepen. Some deposition in pools.	(8)	30 to 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

Rating Item	Category							
	Excellent		Good		Fair		Poor	
8. Bottom Substrate	Greater than 50% rubble, gravel or other stable habitat.	2	30 to 50% rubble, gravel or other stable habitat. Adequate habitat.	7	10 to 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
9. Average Depth at Rep. Low Flow	Greater than 24".	0	12" to 24".	6	6" to 12".	(18)	Less than 6".	24
10. Flow, at Rep. Low Flow	Warm water >5 cfs. Cold water, >2 cfs	0	Warm water, 2 to 5 cfs. Cold water, 1 to 2 cfs.	(6)	Warm water, .5 to 2 cfs. Cold water, .5 to 1 cfs. Continuous blow.	18	Less than .5 cfs. Stream may cease to flow in very dry years.	24
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Column Total Without Effluent --

Column Total With Effluent --

Add Column Scores Without Effluent, E 6 + G 50 + F 79 + P 0 = Reach Score

Add Column Scores With Effluent, E____ + G____ + F____ + P____ = Reach Score

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

0258T

STREAM SYSTEM TAT RATING FORM

Stream Batavia CC Reach Location @ CTH "SS" Reach Score/Rating 134

County Sheboygan Date 9/9/82 Evaluator J. Kurz Classification

Rating Item	Category							
	Excellent		Good		Fair		Poor	
1. 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.	16
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Column Total With Effluent --

Add Column Scores Without Effluent, E 12 + G 42 + F 80 + P 0 = Reach Score

Add Column Scores With Effluent, E____ + G____ + F____ + P____ = Reach Score

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0258T