

Blue River Sewage Treatment Plant  
Grant County

January 17, 1977

Blue River - Surface Acres = 30.31 Miles, Miles = 25.0, Gradient = 8 feet per mile.

A spring- and seepage-fed stream beginning in Iowa County as "Foreman Creek" and flowing southwest to empty into the Wisconsin River northeast of the Village of Blue River. The regional land form of this watershed is early maturity or late youth with narrow ridges, remnants of flat uplands, and steep, narrow valleys. The floodplain is one-fourth to one mile in width along the main section of the river. The terrain resembles the rimrock country in Montana and Wyoming with evergreen-capped outcrops overlooking much of the stream. The Blue River also has quality trout fishing as well as spectacular scenery. Numerous springs and spring-fed tributaries contribute to the stream assuring favorable temperatures and a stable water supply. Eight of these tributaries are classified as trout streams with Fennimore Fork rated as the best trout water in Grant County. The upper 3.5 miles of the Blue River is considered trout water. This could be extended downstream to include everything above the mouth of Big Rock Branch. Brown and rainbow trout dominate the fishery in this section of stream. Brook trout are also present. A good catfish and smallmouth bass fishery exists in the lower reaches near the Village of Blue River. Trout reproduction is low due to large rubble and rapid runoff. Fishing pressure is heavy during much of the season. The Blue River P.L. 566 Watershed Project was organized in order to reduce some of the flash flooding and heavy bank erosion within the watershed. Eight or nine single-purpose structures and one multi-purpose structure are scheduled to be constructed. Only one of these structures is planned on the main stem of the Blue River.

Recommendations

From the Blue River Sewage Treatment Plant discharge and for the remainder of the Blue River the classification should be continuous fish and aquatic life.

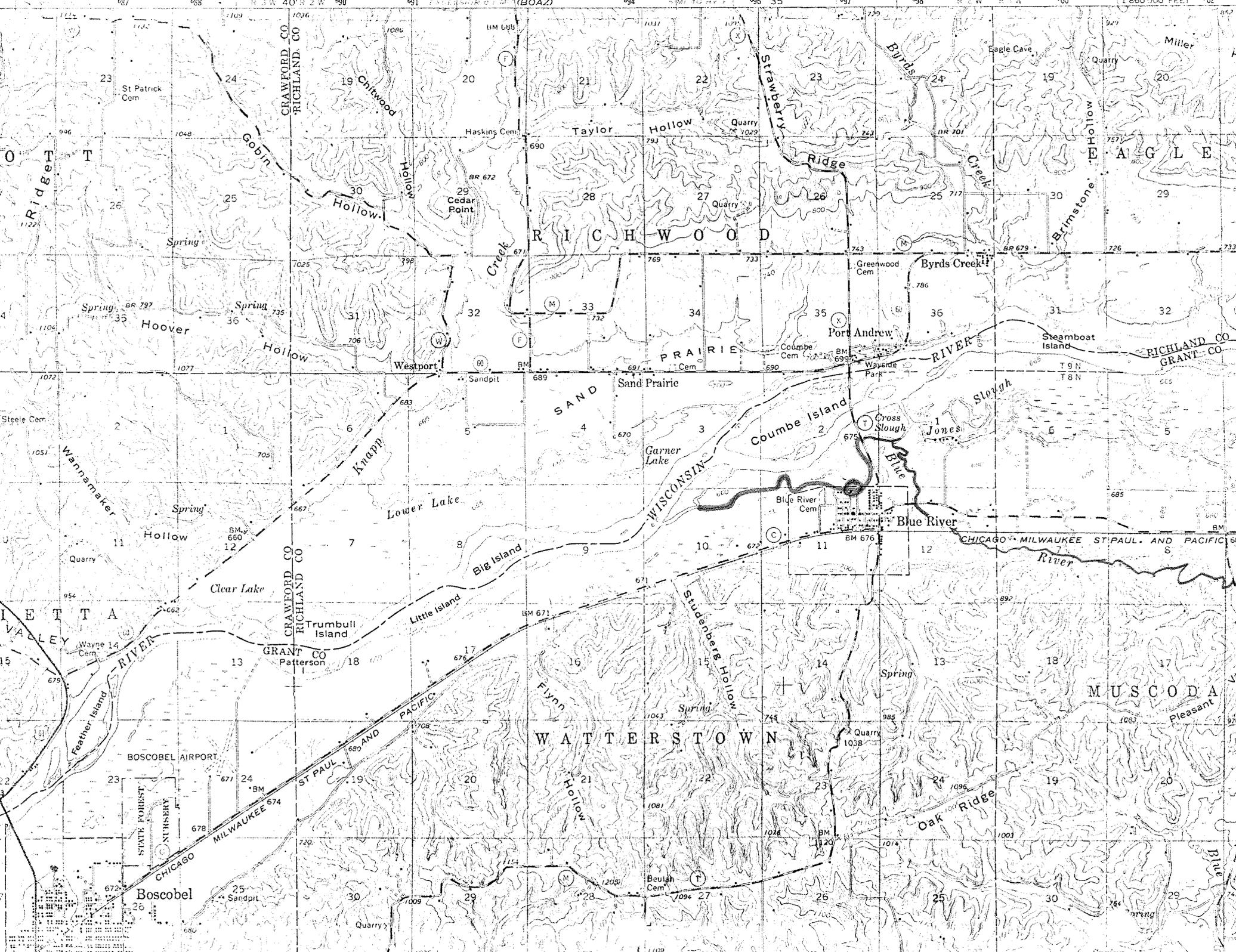
The above recommendations represent a concurrence of opinion of the stream classification team who are as follows:

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



STREAM CLASSIFICATION STUDY ON SPRING CREEK  
NEAR PALMYRA, JEFFERSON COUNTY

David Marshall - Madison Area WRM  
January 1, 1985

General Information

Drainage Basin: Lower Rock - 012  
Drainage Area: 12:31 Square Miles  
Length: 9 Miles  
Average Gradient: 0.9 feet/mile  
Estimated Q<sub>7,10</sub>: 2.7 CFS  
Use Classification: FAL-B

Spring Creek is the outlet stream of Blue Spring Lake in Jefferson County. From the four foot outlet dam in Section 28, T5N, R16E, Spring Creek flows nine miles northwest to the confluence with Scuppernong Creek in Section 18. Most of the stream has been ditched and straightened although 307 acres of wetlands border the stream. Spring Creek could best be characterized as a clear sandy bottom stream with areas of silt deposition. Habitat for macroinvertebrate and fish life is limited.

The most recent flows were measured by USGS in 1973 and 1975. At CTH "H", an October 1973 flow was measured at 9.4 cfs. At the STH "59" bridge, October 1973 and September 1975 flows were measured at 15.2 and 12.7 cfs respectively. Based on these measurements, flow rates are not a limiting factor for aquatic life in Spring Creek.

Fishery and Macroinvertebrate Data

Prior to the classification study, the only recorded fishery data was collected in Section 20 by D. Fago, WDNR Bureau of Research, 1975. At that time, the fishery was dominated by forage species and panfish. On November 11, 1984, an abbreviated fish shocking survey revealed numerous bluegills below the dam in Section 28. In Section 29, Johnny darters, banded darters, and minnows species dominated. Previous published reports indicated that Spring Creek only supported forage fish. This is apparently true in habitat limited areas of the stream but is not an accurate overall description.

On November 11, 1984 representative macroinvertebrate species collected from sections 28 and 29 indicated fair water quality with Biotic Index values of 3.22 and 3.03 respectively. Considering the high quality of water flowing from Blue Spring Lake, lower indices (reflecting good water quality) were anticipated. Perhaps a combination of impoundment impacts, wetland drainage and limited habitat affect the benthic communities.

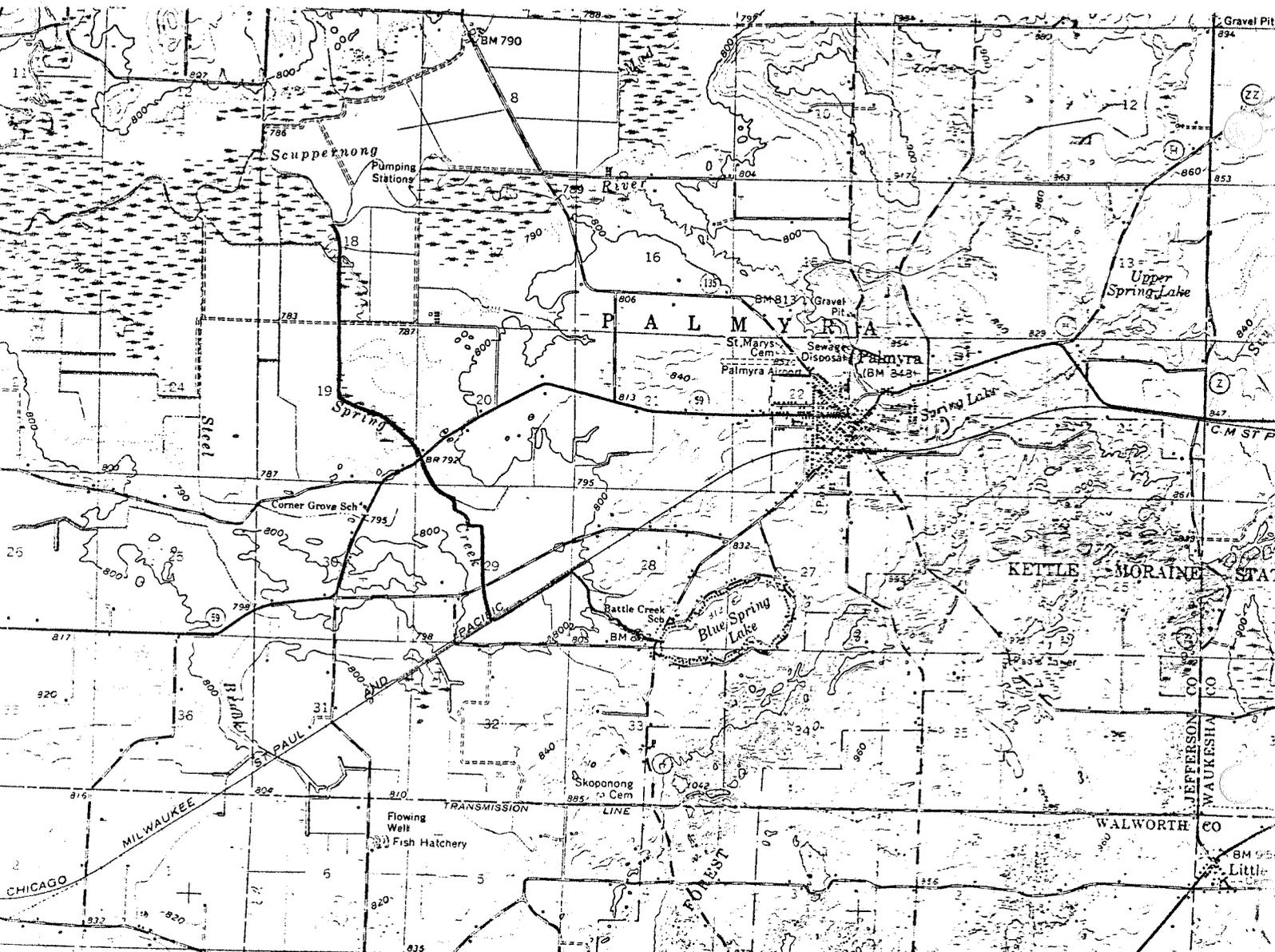
## Habitat Rating

Using the Stream System Habitat Rating Form, Spring Creek has a reach score of 166 from Section 29 upstream to the headwaters at Blue Spring Lake. The "Fair" score of 166 primarily reflected unstable sand substrates and stream channel modifications.

## Conclusions and Recommendations

Natural stream characteristics of Spring Creek have been altered by ditching and straightening. Stream straightening coupled with sandy-silty substrates limit the habitat and productivity in much of the creek. Even though habitat is limited, good water quality and adequate flows coming from Blue Spring Lake supports a warm water sport fishery.

After evaluating available use class criteria, Spring Creek is classified full fish and aquatic life (FAL-B) the entire length.



Macroinvertebrate Data

Spring Creek at CTH "H"  
T5N, R16E, Sec. 28  
November 14, 1984

<u>Species</u>	<u>Number (n)</u>	<u>(a)</u>	<u>(nxa)</u>
Odonata			
<u>Enallagma sp.</u>	1	3	3
Trichoptera			
<u>Cheumatopsyche sp.</u>	79	3	237
<u>Hydropsyche betteni</u>	1	3	3
<u>Hydropsyche cuanis</u>	10	3	30
Diptera			
<u>Simulium vittatum</u>	10	4	40
Amphipoda			
<u>Hyalella azteca</u>	14	4	56
Isopoda			
<u>Asellus intermedius</u>	<u>1</u>	5	<u>5</u>
TOTALS	116		374

Biotic Index = 3.22/Fair Water Quality

Spring Creek at Marsh Road  
Section 29

	Number (n)	(a)	(nxa)
Trichoptera			
<u>Cheumatopsyche</u> sp.	4	3	12
<u>Hydropsyche</u> <u>cuanis</u>	3	3	9
Coleoptera			
<u>Dubiraphia</u> larva	2	2	4
Diptera			
<u>Bezza</u> sp.	1	3	3
<u>Chrysops</u> sp.	1	2	2
<u>Clinotanypus</u> sp.	79	3	241
<u>Cryptochironomus</u> sp.	1	3	3
<u>Hexatoma</u> sp.	1	2	2
<u>Pilaria</u> sp.	3	2	6
<u>Simulium</u> <u>vittatum</u>	25	4	100
<u>Tipula</u> sp.	1	2	2
Amphipoda			
<u>Gammarus</u> <u>pseudolimneus</u>	29	2	58
Isopoda			
<u>Asellus</u> <u>intermedius</u>	6	5	30
TOTALS	156		472

Biotic Index = 3.03/Fair Water Quality

Spring Creek Fish Distribution Data  
 WDNR Bureau of Research  
 T5N, R16E, Sec. 20  
 May 14, 1975

<u>Species</u>	<u>Number</u>	<u>Classification</u>
Banded Darter	3	Intolerant Forage
Bluntnose Minnow	3	Tolerant Forage
Fathead Minnow	3	Very Tolerant Forage
Common Shiner	3	Tolerant Forage
Spotfin Shiner	2	Tolerant Forage
Golden Redhorse	1	Intolerant Forage
Brook Stickleback	1	Tolerant Forage
Carp	1	Rough
Bluegill	1	Sport
Black Crappie	2	Sport
Green Sunfish	4	Sport

Abbreviated Fish Shocking Survey  
 Section 29, November 11, 1984

Banded Darter	Common	Intolerant Forage
Johnny Darter	Common	Tolerant Forage
Bluntnose Minnow	Common	Tolerant Forage

Section 28, November 11, 1984

Bowfin	Scarce	Rough
Bluegill	Abundant	Sport
Pumpkinseed	Scarce	Sport
Green Sunfish	Scarce	Sport
Northern Pike	Scarce	Sport

## References

- Ball, Joseph, 1981. Stream Classification Guidelines for Wisconsin. WDNR.
- Becker, George C., 1983. Fishes of Wisconsin. University of Wisconsin Press.
- Fago, Donald M., 1981. Data collected from Southern District streams for the Fish Distribution Study. WI DNR, Fisheries Research Section.
- Hilsenhoff, William A., 1982. Using a Biotic Index to Evaluate Water Quality in Streams. WNDR Technical Bulletin No. 132.
- WDNR 1968. Surface Water Resources of Jefferson County.
- WDNR 1980. Area wide Water Quality Management Plan for the Rock River Basin. Rock River Task Force.
- U.S. Department of Interior Geological Survey, 1978. Low-Flow Characteristics of Streams in the Rock-Fox River Basin, WI.

STREAM SYSTEM HABITAT RATING FORM

Stream Spring

Reach Location Marsh Rd - CTH 'H'

Reach Score/Rating 166 Fair

County Jeff

Date 11-14-84 Evaluator Marshall J Last

Classification FAL B

Rating Item	Category							
	Excellent		Good		Fair		Poor	
1. <u>Watershed Erosion</u>	No evidence of significant erosion. Stable forest or grass land. Little potential for future erosion.	8	Some erosion evident. No significant "raw" areas. Good land mgmt. practices in area. Low potential for significant erosion.	10	Moderate erosion evident. Erosion from heavy storm events obvious. Some "raw" areas. Potential for significant erosion.	14 15	Heavy erosion evident. Probable erosion from any runoff.	16
2. <u>Watershed Nonpoint Source</u>	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 17	Obvious sources. (Major wetland drainage, high use urban or industrial area, feed lots, impoundment).	20
3. <u>Bank Erosion, Failure</u>	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 16	Many eroded areas. "Raw" areas frequent along straight sections and bends.	18
4. <u>Bank Vegetative Protection</u>	90% plant density. Diverse trees, shrubs, grass. Plants healthy with apparently good root system.	6	70-90% density. Fewer plant species. A few barren or thin areas. Vegetation appears generally healthy.	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 17
5. <u>Lower Bank Channel Capacity</u>	Ample for present peak flow plus some increase. Peak flows contained. W/D ratio $\leq 7$ .	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. <u>Lower Bank Deposition</u>	Little or no enlargement of channel or point bars.	6	Some new increase in bar formation, mostly from coarse gravel.	9	Moderate deposition of new gravel and coarse sand on old and some new bars.	15	Heavy deposits of fine material, increased bar development.	18
7. <u>Bottom Scouring and Deposition</u>	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. <u>Bottom Substrate</u>	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. <u>Average Depth at Rep. Low Flow</u>	Greater than 24".	0	12" to 24".	6	6" to 12".	18	Less than 6".	24
10. <u>Flow, at Rep. Low Flow</u>	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
11. <u>Pool/Riffle, Run/Bend Ratio</u>	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 17	Greater than 25. Essentially a straight stream. Generally all "flat water" or shallow riffle. Poor habitat.	20
12. <u>Aesthetics</u>	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 12	Stream does not enhance aesthetics. Condition of stream is offensive.	16

Column Total Without Effluent --

Column Total With Effluent --

Add Column Scores Without Effluent, E 0 + G 16 + F 93 + P 57 = Reach Score 166

Add Column Scores With Effluent, E \_\_\_\_\_ + G \_\_\_\_\_ + F \_\_\_\_\_ + P \_\_\_\_\_ = Reach Score

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

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