

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

RIVER OR STREAM SURVEY

DATE(S) OF FIELD WORK June 27 & 28, 1984

Initial Survey

Resurvey

LEADER Larry Watson
ASSISTANT(S) Rory Freiermuth, Chris Kavanaugh

NAME, LOCATION, AND FLOW CHARACTERISTICS

- (1) Stream Name Silver Spring Creek
(2) Alternate Name(s) none
(3) Tributary Number M-34-37
(4) Counties Wabasha, Olmsted
(5) Watershed Name and Number Zumbro River - 35
(6) Sequence of Waterways to Basin to Zumbro River to Mississippi River

(7) Map(s) Used USGS Quadrangles: Millville - 1972, Zumbro Lake - 1972
(8) Length of Stream 8.0 miles
(9) Average Width - Upper Station 6.2 feet Lower Station 9.0 feet
(10) Mouth Location T. 109N. R. 13W. S. 23
(11) Flow at Mouth 3.7 cfs, Date 061184
(12) Flow at Gaging Station - Minimum -- cfs Average -- cfs
(13) Location of Gaging Station none
*(14) Initial Source of Sustained Flow swamp seepage in T.108N., R.13W., S.9

(15) Gradient 40 ft./mile
(16) Sinuosity 1.9

WATERSHED DESCRIPTION AND USE

- (17) Description of Watershed (soil types, cover types, topography, land usage and ownership)
- a) Entire watershed Outside of the stream valley the soil is silt loam, the topography is gently rolling and land use is mostly agricultural. The valley between the ridge tops and lower valley slopes are steep with limestone outcrops. Percent slope is mostly greater than 30%. The valley floor soils consist of light colored, deep, fertile silt and loam.
- b) Land adjacent to stream The lower 2.2 miles of stream flow through a wild wooded valley. Land use adjacent to the next 3.2 miles of stream is 10% pasture, 10% cropland, 40% wooded pasture and 40% wooded. Land use along the upper 2.6 miles of stream is for row crops. The entire stream corridor is privately owned.

There is an area of interrupted flow from 3.8 to 4.0 miles from the mouth.

GENERAL INFORMATION ON THE STREAM

(18) Reason for Survey Initial survey for inventory and fish management purposes.

(19) Previous Investigations and Surveys None.

(20) Special Problems or Conditions None noted.

(21) Sources of Pollution

Source	Loc. (mi. from mouth)	Substance discharged
non-point agricultural	entire stream	silt and agricultural use chemicals

(22) Erosion

Type	reach
bank*	mile 0.0 to 1.0
bank**	mile 1.2 to 2.8

*Caused by off-road vehicle trail use
 **Caused by livestock.

*Lee Gierok
 (507) MN DOT
 285-7113
 (al)*

(23) Stream Alterations (dredging, channeling) -

(24) Dams and other obstructions (include beaver dams)

Type	Mi. from Mouth	Head (ft.)	Length of Dam (ft.)	Condition or Status
beaver	0.2	1.0	4	no NA inactive
beaver	1.2	1.5	10	yes NA inactive
beaver	2.7	1.0	12	no NA inactive

(25) Use of Water: Fishing _____ Recreation _____ Commercial navigation _____ Power _____ Irrigation _____
 Livestock watering X Other (specify) _____

(26) Access (location and ownership) Land ownership is entirely private. Access is available from crossings at mile 5.2 and 7.9.

(27) Shoreline Developments None noted.

(28) Recreational Boating - a) Navigable reach None.
 b) Type of boating _____

(29) Tributaries and Springs

Names and/or Tributary Numbers	Water Source	Bank (R or L)	Length Miles	Width at Mouth (feet)	Miles from Mouth	Flow * (c.f.s.)	Stage *** (high, normal, low)	Temp. OF				Time	Date
								Mouth		Source			
								Air	Water	Air	Water		
M-34-37-1	Spring seepage	L	15 ft.	1	0.1	0.1	normal	65	54	65	54	0930	052184
M-34-37-2	seepage	L	0.4	1	1.7	<0.1	normal	70	60	70	56	1200	052184
M-34-37-3	seepage	L	bank seepage	NA	2.5	<0.1	normal	52	56	52	56	0900	052384
M-34-37-4	seepage	R	bank seepage	NA	2.7	0.1	normal	60	56	60	56	1000	052384
M-34-37-5	seepage	L	0.3	2	5.1	<0.1	normal	52	48	52	48	0945	052384
M-34-37-6	seepage	L	0.8	5	6.1	0.5	normal	57	56	57	56	1200	052384

Remarks *Visually estimated. **This was an unusually wet year; the above tributaries are probably intermittent during a drier year.

(30) Stream Physical Characteristics

a)	Station no.	1	2	3
b)	Date	062784	062784	062884
c)	Loc. (mi. from mouth)	0.1	0.8	5.1
d)	Length of station (ft.)	956	1215	601
e)	% of station in:			
	Pools	64	45	81
	Riffles and rapids	36	48	19
	Runs			
	Other (list) flat		7	
f)	Average width (ft.)	9.0	10.1	6.2
g)	Average depth (ft.)	0.9	0.8	0.7
h)	Flow (cfs)	3.7	1.8	0.5
i)	High water mark (ft.)	2	2	2
j)	Present stream stage (high, normal, low)	normal	normal	normal
k)	Banks:			
	Average height (ft.)	2	27	13
	Height range	1-8	8-60	5-80
	Erosion (lt., mod., severe)	lt.	lt.	mod.
	% grazed	0	0	100
	% ditched or channeled	0	0	0
l)	Shade ¹	light	moderate	light
m)	Pools ²			
	Average width (ft.)	10.4	10.5	7.0
	Width range (ft.)	7.0-12.3	7.0-16.5	6.0-8.5
	Average depth (ft.)	1.1	1.1	0.7
	Maximum depth (ft.)	2.6	2.7	1.6
	Type -- No. of each			
	A	--	--	--
	B	6	1	--
	C	--	--	--
	D	1	6	5
	Bottom type -- % ³			
	Boulder	1	11	2
	rubble	12	37	10
	gravel	20	16	2
	sand	36	20	11
	silt	31	10	70
	clay		6	5
n)	Riffles and rapids			
	Average width (ft.)	6.5	8.7	2.9
	Width range (ft.)	3.8-9.3	4.0-12.6	1.7-4.6
	Average depth (ft.)	0.6	0.6	0.4
	Maximum depth	1.0	1.2	0.4
	Max. velocity range (fps)	no data	no data	no data
	Bottom type -- %			
	boulder	2	19	6
	rubble	52	61	45
	gravel	31	15	9
	sand	15	5	13
	silt			25
	clay			2

(30) Stream Physical Characteristics (continued)

o) Runs:				
Average width				
Width range				
Average depth				
Maximum depth				
Max. velocity range (fps)				
Bottom type -- %				
Other (describe) flat				
Average width (ft.)		17.5*		
Width range (ft.)		*		
Average depth (ft.)		0.6		
Maximum depth (ft.)		0.7		
Max. velocity range (fps)				
Bottom type -- %				
rubble		15		
gravel		50		
sand		20		
silt		15		
DATA PERTAINING TO SIMILAR REACH				
q) Location (mi. to mi.)	0.0-0.5	0.5-3.8	3.8-8.0	
r) Gradient (ft./mi.)	40	40	38	
s) Sinuosity	1.4	2.1	1.5	
t) Channel changes (slight, mod., exten.)	moderate	slight	slight	

Remarks *Only one flat (86 feet in length) was included in the station. The width of this flat was measured only once.

¹Shade:

- light 0-25 percent shaded
- moderate 26-75 percent shaded
- heavy over 75 percent shaded

²Pool types:

- Type A -- Good cover, 3 ft. or deeper
- B -- Good cover, less than 3 ft.
- C -- Poor cover, 3 ft. or deeper
- D -- Poor cover, less than 3 ft.

³Bottom types:

- Ledge rock -- large mass of solid rock
- Boulder -- over 10" in diameter
- Rubble -- 3" to 10" in diameter
- Gravel -- 1/8" to 3" in diameter
- Sand -- less than 1/8" in diameter
- Silt -- fine material with little grittiness
- Clay -- compact, sticky material
- Muck -- decomposed organic material, usually black
- Detritus -- organic material composed of sticks, leaves, decaying plants, etc.
- Marl -- calcareous material

(31) Characteristics of Water No data.

a)	Station no.			
b)	Date			
c)	Loc. (mi. from mouth)			
d)	Length of station			
e)	Time			
f)	Air temp. °F.			
g)	Water temp. °F.			
h)	Color			
i)	Cause of color			
j)	Secchi disc. (ft.)			
FIELD DETERMINATIONS:				
	Diss. oxygen (ppm)			
	Free carbon dioxide (ppm)			
FIELD DETERMINATION OR LABORATORY ANALYSIS				
(Indicate by F or L)				
	Total alkalinity (ppm)			
	Conductivity (micromhos/cm)			
	pH			
LABORATORY ANALYSIS				
	Total nitrogen (ppm)			
	NH ₃ (ppm)			
	NO ₂ (ppm)			
	NO ₃ (ppm)			
	Total phosphorus (ppm)			
	Orthophosphates (ppm)			
	Sulfate ion (ppm)			
	Chloride ion (ppm)			
	B.O.D. (ppm)			
	or C.O.D. (ppm)			
	Turbidity (JTU)			
	Tot. diss. solids (ppm)			

Remarks No water analysis was done. It is assumed that Silver Spring Creek is a hard water stream of high fertility, similar to other surface drainage systems in this area.

(32) Temperature Profile

Date	Location (miles from mouth)	Water Temp. (°F)	Air Temp. (°F)	Water Stage	Time	Cloud Cover
082984	Mouth (0.0)	62	80	normal	1300	partial
082984	Sta. 2 (0.8)	64	80	normal	1315	partial
082984	Bridge (5.1)	70	80	normal	1330	partial
082984	Source (8.0)	74	80	normal	1345	partial

Remarks The air temperature on 082984 was not extremely hot; however, two or three hot days and nights had preceded it. Temperatures are within the range for long term brown trout survival; however, they may not represent maximum stream temperatures.

(33) Biological Characteristics

a)	Station no.	1	2	3	
b)	Date	062784	062784	062884	
c)	Loc. (miles from mouth)	0.1	0.8	5.1	
d)	Length of station (ft.)	956	1215	601	
e)	Aquatic plants or filamentous algae: ¹				
	Species	Abundance	Abundance	Abundance	Abundance
	Filamentous algae	O	O	C	
	Water cress	R	P		
	Reed canary grass	O		O	

f) Distribution of aquatic plants Very few aquatic plants are present in this stream.

g) Common invertebrates:
 order or family (check blank if present)

Hydropsychidae	X	X	X	
Heptageniidae	X	X		
Baetidae	X	X	X	
Tabanidae	X			
Chironomidae	X			
Assellidae	X			
Belostomatidae		X		
Gerridae		X		
Physidae		X		
Dytiscidae		X	X	
Simuliidae		X	X	
Ephydriidae			X	

Remarks Invertebrates were sampled by visual inspections; therefore, the list may not be complete.

¹Plant or algae abundance:
 A — abundant
 C — common
 O — occasional
 R — rare
 P — present

(37) Escape Cover for Gamefish

Similar reach		Type ¹ and Amount ² of Cover
1	0.0 to 0.5 mile	LJ-S, OV-O, IV-S
2	0.5 to 3.8 miles	B-O, LJ-S, OV-S
3	3.8 to 8.0 miles	B-S, OV-S, LJ-S

¹Cover types:

- LJ - log jam
- B - boulders
- OV - overhanging vegetation
- UB - undercut bank
- IV - instream vegetation

²Amount of cover:

- S - scarce
- O - occasional
- F - frequent

(38) Portion of Stream Suitable for Gamefish None.

Species	Suitable Reach (mi. to mi.)

(39) History of Stream and Fishing Conditions

a) Comparisons with past investigations and surveys No information available.

b) History of fishing conditions No information is available.

(40) Discussion of Fishery (continued)

b) Fish management problems The low flow in the upper reaches and the low quality pools which are present limit the cover available for fish. The upper reaches are agricultural lands with pasture and row crops contributing to erosion and agricultural runoff.

(41) Ecological Classification of Waterway Class IV (Rough fish-forage fish)

(42) Summary The temperature profile taken on Silver Spring Creek this summer indicated marginal water temperatures for brown trout. These temperatures appear to be cooler than what was expected and may be a result of increased stream volume caused by the unusually wet year and high ground water levels. Fish species composition is indicative of a warm water stream. Low flow and shallow pools limit the potential for developing a trout fishery in this stream.

(43) Credits and Signatures

a) Funding F29R4

b) Field work by

Name of crew leader Larry D. Watson
Name of aide(s) Rory Freiermuth
Chris Kavanaugh

c) Completed report by

Name Larry D. Watson
Title Natural Resources Technician (Fisheries)

Approved by

William D. Johnson
Regional Fisheries Manager

Date

4/16/85

Typist's Initials: bkd

Station Descriptions Silver Spring Creek

Station 1

The station begins .1 mile from the mouth at the head of a well defined riffle just downstream of the lower stream crossing. It ends 956 feet upstream at the head of a split riffle at the second crossing.

Station 2

The station begins .8 mile from the mouth at the head of a well defined riffle, just downstream of a motorcycle crossing and old bridge abutment. It ends 1,215 feet upstream at the head of a long riffle, just downstream of a long pool.

Station 3

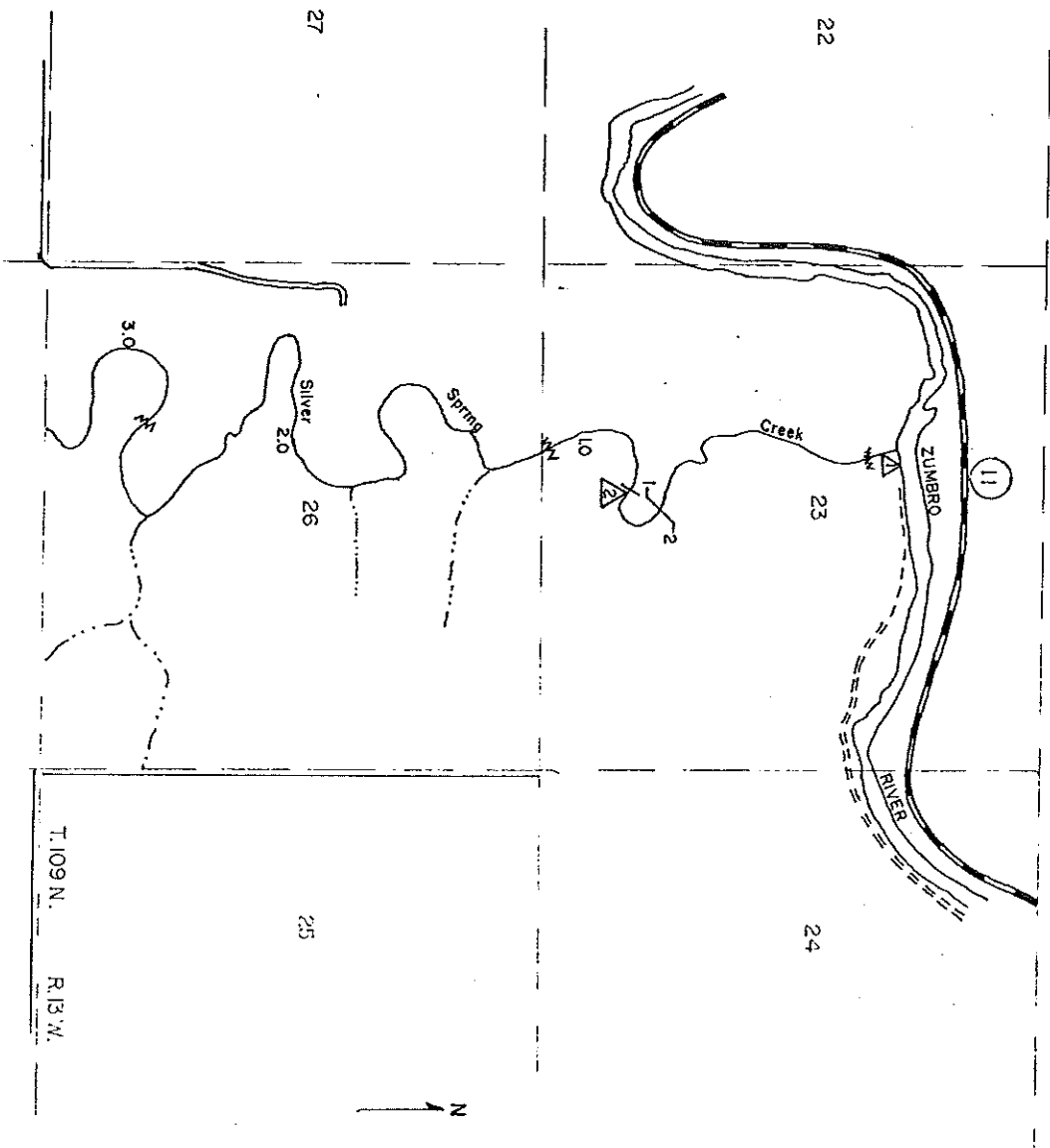
The station begins 5.1 miles from the mouth, at the head of a low gradient riffle. The station ends 601 feet upstream at the head of a low gradient riffle. This area is heavily pastured and is located just downstream from the bridge access at mile 5.2.



FISHERIES RECOMMENDATIONS FOR STREAM MANAGEMENT

Stream Name (Alternate Name in parenthesis) Silver Spring Creek	Upper End T.R.S. 108N.,13W.,9	Lower End T.R.S. 109N.,13W.,23	Tributary Number M-34-37
Reach (mile to mile) entire stream	Ecological Classification Class IV	Counties Wabasha, Olmsted	
Management Goal: No management other than environmental protection is warranted.			
Stocking Recommendations: None is recommended.			
Habitat Improvement Recommendations: None is recommended.			
Land Acquisition Recommendations: None is recommended.			
Other Recommendations: None.			
Additional Survey Work Recommended: None is recommended.			
Area Fisheries Supervisor's Signature <i>Jan K. Denton</i>		Date 040385	
Regional Fisheries Supervisor's Signature <i>William D. Johnson</i>		Date 4/16/85	

SILVER SPRING CREEK
WABASHA - OLMSTED CO.



Scale 2 5/8" = 1 Mile

T. 109 N. R. 13 W.

