Reviewed by CBub Date 3/2004

Region SCR **County** Iowa **Report Date** 11/1983 **Classification** LAL

Water Body: Williams-Rewey Branch

Discharger: Rewey WWTP

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 (protocopies)

Historical Reports in file:

4/17/1983 - Roger Schlesser
9/10/1981 - Roger Schlesser

Additional Comments/How to improve report:

- 83 report doesn't include a formal classification recommendation
- do we need to consider WWTP flow to dry run?
- 81 report suggests LFF b/c of low flow
- check w/ region to see if this situation still holds true.

Stream Reclassification

Rewey STP

Iowa County

November 17, 1983

Williams-Rewey Branch

The Rewey WWTP is located on the southeast edge of the Village. The effluent is piped approximately ½ mile before it is discharged to the Williams-Rewey Branch.

The headwaters of the Williams-Rewey Branch is composed of two main forks; a west fork and a north fork (see attached map). The west fork (which the effluent is discharged to) is basically a dry run with unstable bed and banks. The effluent would flow approximately ½ mile before the juncture with the north fork. The major springs which feed the Williams-Rewey Branch are located on the north fork. Very high quality groundwater enters the west fork at this point.

There was very little sedimentation in the northerly fork, but below the juncture with the west fork, sediment was much more evident on the stream bed. The substrate would be mostly gravel if the sedimentation of the stream was alleviated.

Most of the stream is buffered by semi-wooded pasture, which is not a large contributor of sediment. Some sediment enters the stream from agricultural crops and a barn yard located on the west fork. Also, cattle

A fish survey was also conducted on September 10, 1981. The fish population was both diverse and abundant. A summary of the fish captured is contained in Table II.

The macroinvertebrate sample was taken adjacent to the Robert Ogden buildings on September 10, 1981. The results of the biotic index are contained in Table III. The Biotic Index used (which is an indicator of water quality) was developed by Dr. Hilsenhoff and is published in DNR Technical Bulletin Number 100. Actual biotic index values were taken from the updated report of November 1980.

With a biotic index value of 2.31 the stream was considered to have "good" water quality. With Cheumatopsyche spp. not being included in the biotic index, the value would be 2.14. This would put the stream in the "very good" water quality category. Cheumatopsyche spp. is presently only identified to the genus level. Some species are probably more intolerant than the three value which is given to the genus Cheumatopsyche spp. and would consequently lower the biotic index value of 2.31.

The sample had a good diversity of macroinvertebrates. The dominant species was Gammarus pseudolimneus 32 percent, with Symphitopsyce slossonae 14 percent, Cheumatopsyche spp. 20 percent, and Baetis brunneicolor 14 percent of the total sample. Many other species were present but in small numbers.

With a reduction of sediment and organic material entering the stream, the macroinvertebrate community would substantially improve. Considering the quality of groundwater which enters the stream, it should have a biotic index indicating "excellent" water quality.

Table I

Water Quality Data: Williams-Rewey Branch, 1,200 ft. below juncture of the two forks

September 10, 1981

Time - 11:25 a.m. D. O. - 9.5 mg/l
Temp. - 14.9° C (59° F)
Air Temp. - 28° C (82° F)
Cloud Cover - 5%

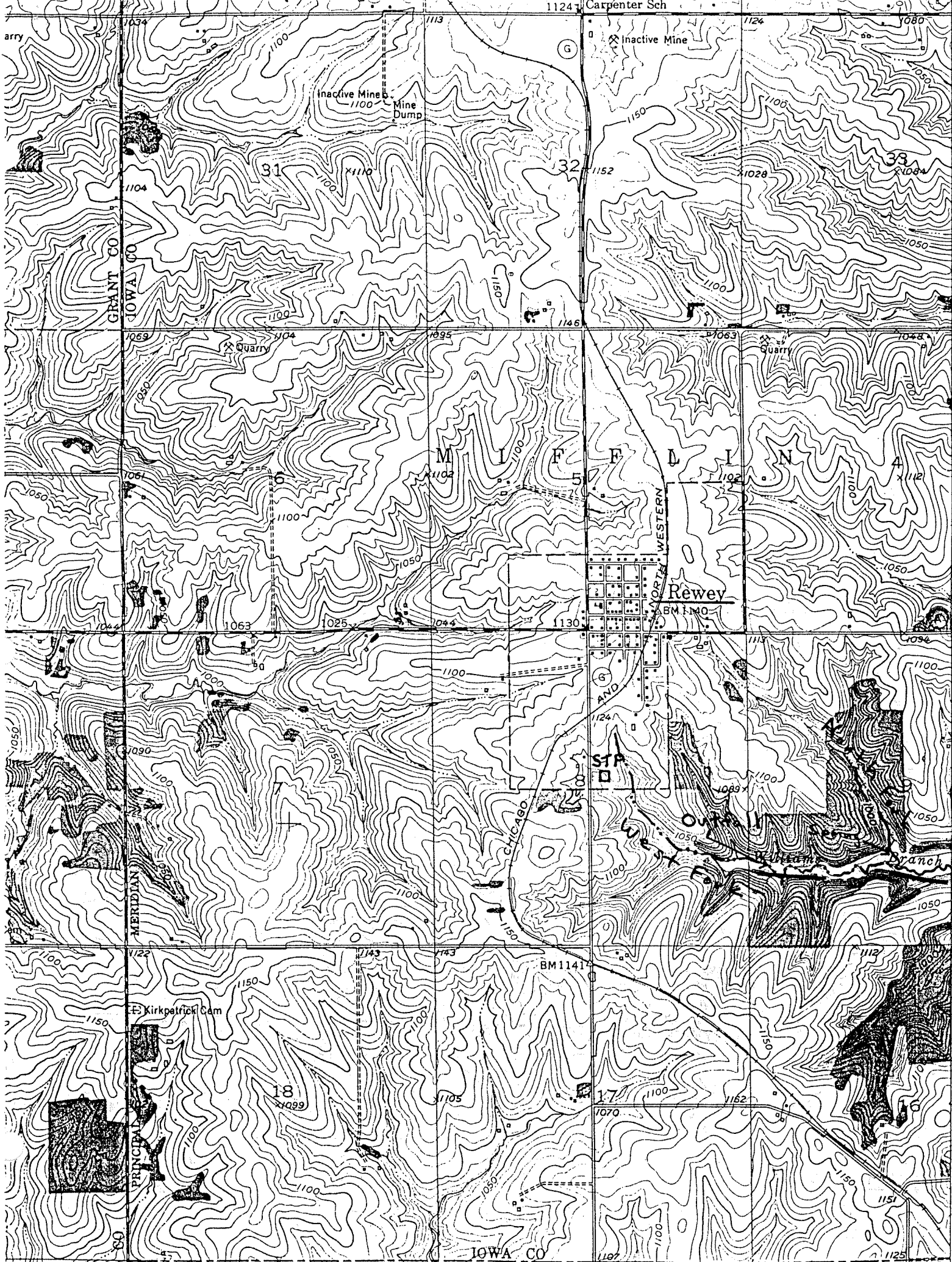
Time - 11:27 a.m. pH - 7.7 (su)

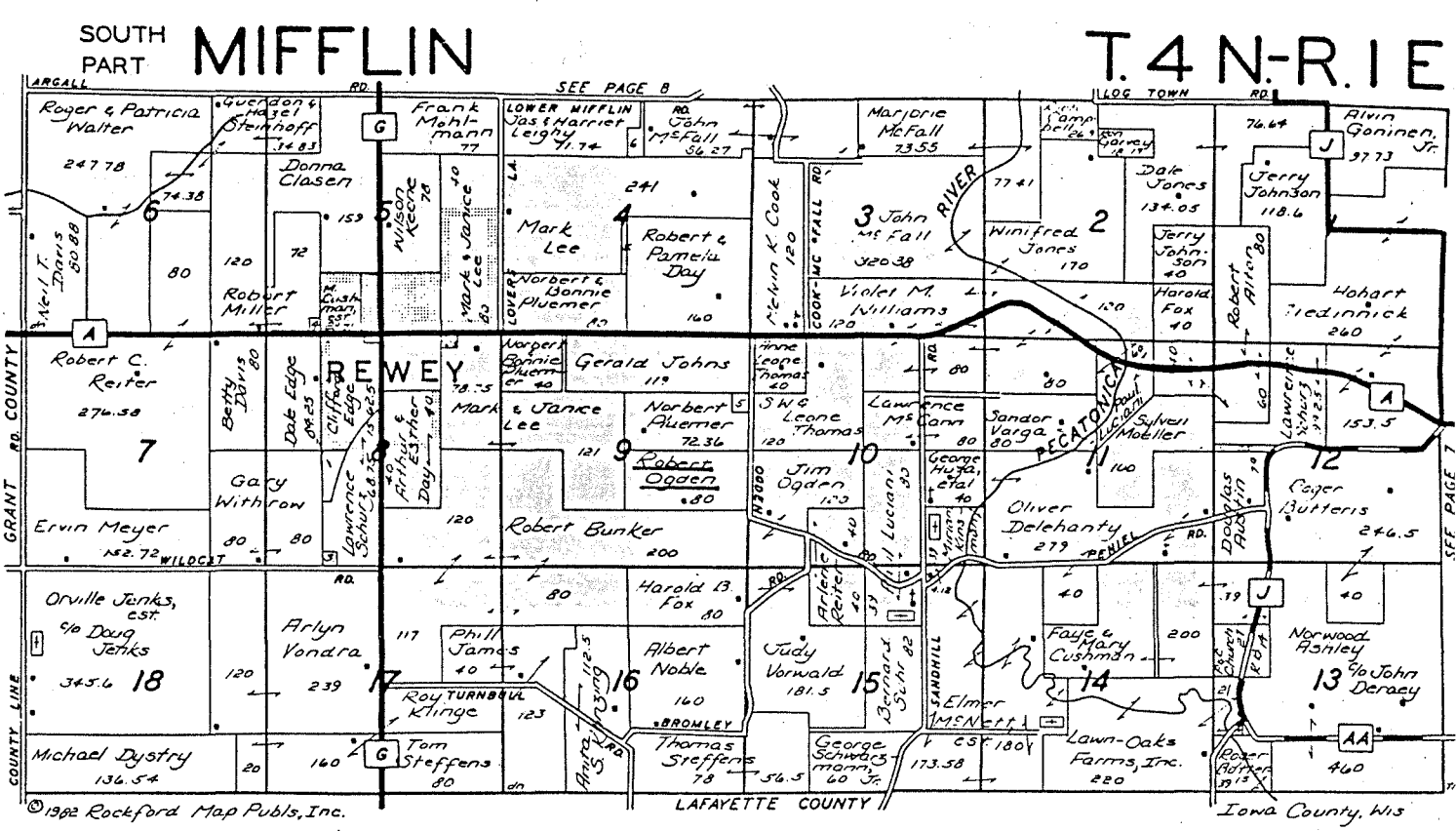
Table II

Fish Survey - Williams-Rewey Branch, Robert Ogden farm upstream to approximately 250' above juncture with the West Fork

September 10, 1981

Fish Species	Population
Bluntnose Minnow	Abundant
Creek Chubs	Abundant
Stonerollers	Abundant
Southern Red Belly Dace	Abundant
White Suckers	Common
Common Shiners	Common
Darter sp.	Common
Brook Stickleback	Common


Carpenter Sch
Inactive Mine
Inactive Mine
Mine Dump
GRANT CO
IOWA CO
Quarry
Quarry
MIFFLIN
Rewey
BM 1140
NORTH WESTERN
CHICAGO AND
STP
Otter Creek
Williams Branch
BM 1141
Kirkpatrick Cem
PRINCIPAL MERIDIAN
IOWA CO



WELL DRILLING

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Linden 623-2734

Williams-Rewey Branch -

Just upstream from juncture of the two forks - West Fork, Note unvegetated bed and banks highly erodible

Williams-Rewey Branch -

Large spring located on North Fork

Williams-Rewey Branch -

North Fork

Williams-Rewey Branch -

Upstream from Robert Ogden farm

Williams-Rewey Branch -

Robert Ogden farm

PPENDIX: Stream System Habitat Rating Form

Williams-

ver Rewey Reach Location Outfall to NE¼SW¼, Sec. 9, T4N, R1E Reach Score/Rating 211

unty Iowa Date 11/17/83 Evaluator Roger Schlesser Classification "E"

STP - Rewey

ting 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. (12) 14	Heavy erosion evident. Probable erosion from any runoff. 16
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). (10) 12	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)
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 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. (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	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
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. (24)
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. (24)
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. Occassional 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 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

umn Total Without Effluent —

umn Total With Effluent —

l Column Scores Without Effluent, E 0 +G 0 +F 53 +P 158 = Reach Score

l Column Scores With Effluent, E 0 +G 0 +F 53 +P 158 = Reach Score

cellent, 71-129 = Good, 130-200 = Fair, >200 = Poor

PPENDIX: Stream System Habitat Rating Form

ea Williams-Rewey Reach Location Below NE¼SW¼, Sec. 9, T4N, R1E Reach Score/Rating 114

unty Iowa Date 11/17/83 Evaluator Roger Schlesser Classification "A"

STP - Rewey

ting Item	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. (12) ~~14~~	Heavy erosion evident. Probable erosion from any runoff. 16
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). (12) ~~16~~	Obvious sources. (Major wetland drainage, high use urban or industrial area, feed lots, impoundment). 20
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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. (10) ~~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 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. (12) ~~14~~	Inadequate, overbank flow common. W/D ratio >25. 16
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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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Rewey

Iowa County

September 10, 1981

Stream Classification

Williams-Rewey Branch

The Village of Rewey has proposed the construction of a wastewater treatment plant on the southeast side of the village. The proposed discharge site is in the SW¼ NE¼, T. 4 N., R. 1 E., Sec. 8. The effluent would be discharged into the headwater area of the Williams-Rewey Branch. The effluent would enter a grassy ravine which eventually evolves into bed and banks due to surface water runoff. This section could be considered a stream, yet it does not carry perennial flow and has very little, if any, macroinvertebrate or fishery value. The bed and banks are very unstable with any significant flow in the channel carrying sediment into the perennial flow section of the Williams-Rewey Branch.

The major springs which feed the Williams-Rewey Branch are actually located on a northerly fork (see attached map). The stream, which the effluent would be discharged to (west fork), joins the northerly fork in the NE¼ SW¼, Sec. 9, T. 4 N., R. 1 E. On the day of the survey the northerly fork had a good flow of very high quality groundwater.

There was very little sedimentation in the northerly fork, but below the juncture with the west fork, sediment was much more evident on the stream bed. The substrate would be mostly gravel if the sedimentation of the stream was alleviated.

Most of the stream is buffered by semi-wooded pasture, which is not a large contributor of sediment. Some sediment enters the stream from agricultural crops and a barn yard located on the west fork. Also cattle have caused some problems with the elimination of vegetation on the stream banks. But the most significant source of sediment to the Williams-Rewey Branch is linked to the unstable bed and banks of the west fork. Surface water runoff easily erodes these unstable bed and banks.

The stream banks below the juncture of the two forks are approximately 70 percent vegetated. Some erosion of the upper bank was quite evident with a loss of soil occurring during high flows but the lower bank was generally in good shape. Much of the stream was totally shaded by vegetation, including watercress, smartweed, sedges, rushes, terrestrial grasses and jewelweed.

Some scouring and deposition of the stream bottom has occurred, but it is not a critical problem. The stream bed was considered to be relatively stable.

The $Q_{7}10$ at the mouth of Williams-Rewey Branch is 0.54 cfs. The stream is relatively small in its headwaters but has some large pools which provide for good fish habitat.

The stream is presently managed as brown trout water but considering the size and the quality of the springs located in the headwaters, a brook trout fishery in this area is a possibility. A stream water temperature taken on September 10, 1981, at 11:25 a.m. approximately 1,200 feet below the two forks was 59° F. with an air temperature of 82° F. This is an indication of the high quality water which enters the stream. A summary of the water quality data is located in Table I.

A fish survey was also conducted on September 10, 1981. The fish population was both diverse and abundant. A summary of the fish captured is contained in Table II.

The macroinvertebrate sample was taken adjacent to the Robert Ogden buildings on 9/10/81. The results of the biotic index are contained in Table III. The Biotic Index used (which is an indicator of water quality) was developed by Dr. Hilsenhoff and is published in DNR Technical Bulletin Number 100. Actual biotic index values were taken from the updated report of November 1980.

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The sample had a good diversity of macroinvertebrates. The dominant species was Gammarus pseudolimneus 32 percent, with Symphitopsyche slossonae 14 percent, Cheumatopsyche spp. 20 percent, and Baetis Brunneicolor 14 percent of the total sample. Many other species were present but in small numbers.

With a reduction of sediment and organic material entering the stream, the macroinvertebrate community would substantially improve. Considering the quality of groundwater which enters the stream, it should have a biotic index indicating "excellent" water quality.

There is some concern with the proposed discharge at this site. The primary concern is the possible thermal problems connected with a discharge. This is a critical factor in protecting the Williams-Rewey Branch, especially during low flow periods. An increase in water temperatures would have a very detrimental effect on the trout water.

Also, a landowner is considering putting an erosion control dam in the valley the discharge would be in. Problems could arise with the effluent being held within this structure and then released. Also, Doug Knox, from the Iowa County SCS, has looked at the site in regard to the dam and was concerned with the possible bed and bank erosion that would occur in the west fork where there presently is no permanent flow, but would contain flow with a discharge. The bed and banks are presently unstable and additional erosion in this area would further contribute to sedimentation of the trout water section, which could significantly reduce the spawning success of trout. The stream is too valuable of a trout resource to not be totally protected.

Classification Recommendations

The west fork

From the proposed discharge site downstream to the juncture with the north fork ~~the west fork~~ should be classified as marginal. This section of stream is basically a dry run. The stream use class should be class "E".

The Williams-Rewey Branch at this point has an influx of high quality groundwater. With a reduction of sediment and organic material entering the stream, it should have a biotic index indicating "excellent" water quality. It is also presently managed as trout water. For these reasons the Williams-Rewey Branch from the juncture of the west and north forks downstream, should be classified as fish and aquatic life. The stream use class should be class "A".

Roger Schlesser

Roger Schlesser
Water Quality Management Specialist

Table I

Water Quality Data: Williams-Rewey Branch, 1,200 ft. below juncture of the two forks

September 10, 1981

Time - 11:25 a.m. D. O. - 9.5 mg/l
Temp. - 14.9° C (59° F)
Air Temp. - 28° C (82° F)
Cloud Cover - 5%

Time - 11:27 a.m. pH - 7.7 (su)

Table II

Fish Survey - Williams-Rewey Branch, Robert Ogden farm upstream to approximately 250' above juncture with the West Fork

September 10, 1981

Fish Species	Population
Bluntnose Minnow	Abundant
Creek Chubs	Abundant
Stonerollers	Abundant
Southern Red Belly Dace	Abundant
White Suckers	Common
Common Shiners	Common
Darter sp.	Common
Brook Stickleback	Common

TABLE III

Taxonomic List of Macroinvertebrates for MS - 1 - September 10, 1981

Taxa	n	a	nxa
COLEOPTERA			
Optioservus spp. (larvae)	14	2	28
DIPTERA			
CHIRONOMIDAE			
Parametriocnemus spp.	2	3	6
Polypedilum sp.	1	3	3
Tanytarsus sp.	1	3	3
SIMULIIDAE			
Simulium vittatum	5	4	20
TABANIDAE			
Chrysops sp.	1	3	3
TIPULIDAE			
Hexatoma sp.	1	3	3
EPHEMEROPTERA			
Baetis brunneicolor	19	2	38
MEGALOPTERA			
Sialis spp.	2	2	4
TRICHOPTERA			
Cheumatopsyche spp.	26	3	78
Symphitopsyche slossonae	18	2	36
AMPHIPODA			
Gammarus pseudolimneus	43	2	86
Total =	133		308

$$\text{Biotic Index} = \frac{308}{133} = 2.31$$

Williams-Rewey Branch -
Upper end of watershed,
West Fork

Williams-Rewey Branch -
Upper end of watershed,
West Fork

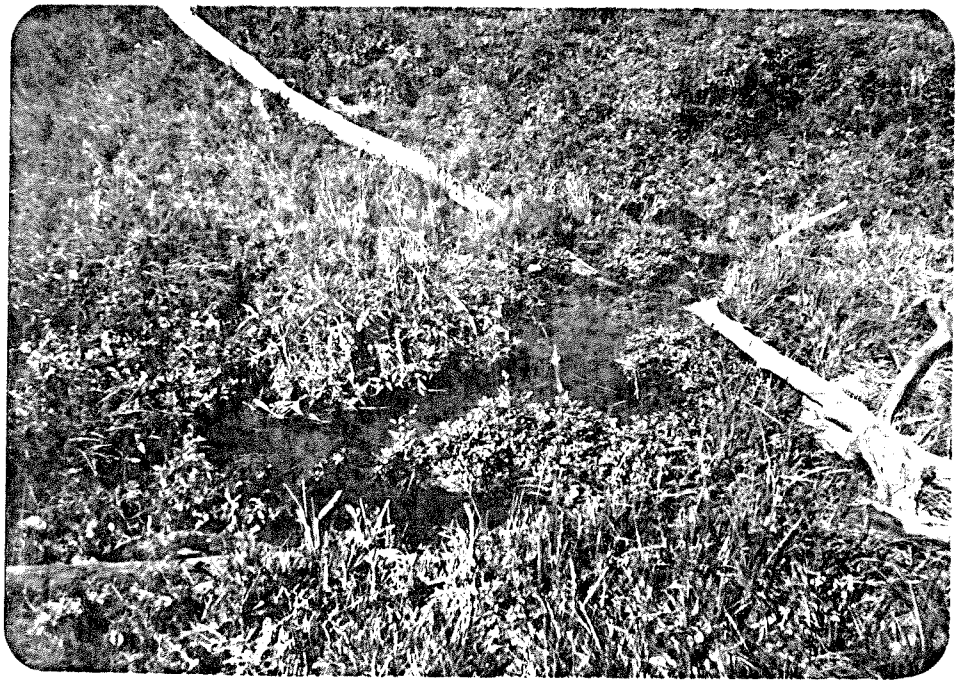
Williams-Rewey Branch -
Looking upstream from juncture
of the two forks - West Fork

Williams-Rewey Branch -

Just upstream from juncture of the two forks - West Fork, Note unvegetated bed and banks - highly erodible

Williams-Rewey Branch -

Large spring located on North Fork



Williams-Rewey Branch -

North Fork

Williams-Rewey Branch -

Juncture of two forks, West Fork enters on lower left hand corner

Williams-Rewey Branch -

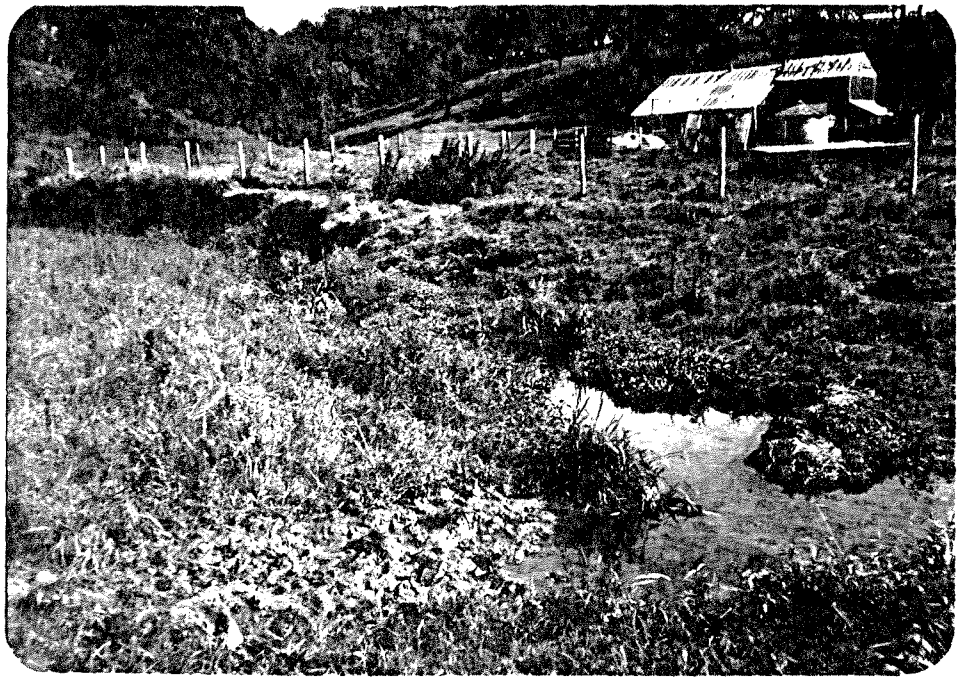
Below juncture

Williams-Rewey Branch -

Below juncture

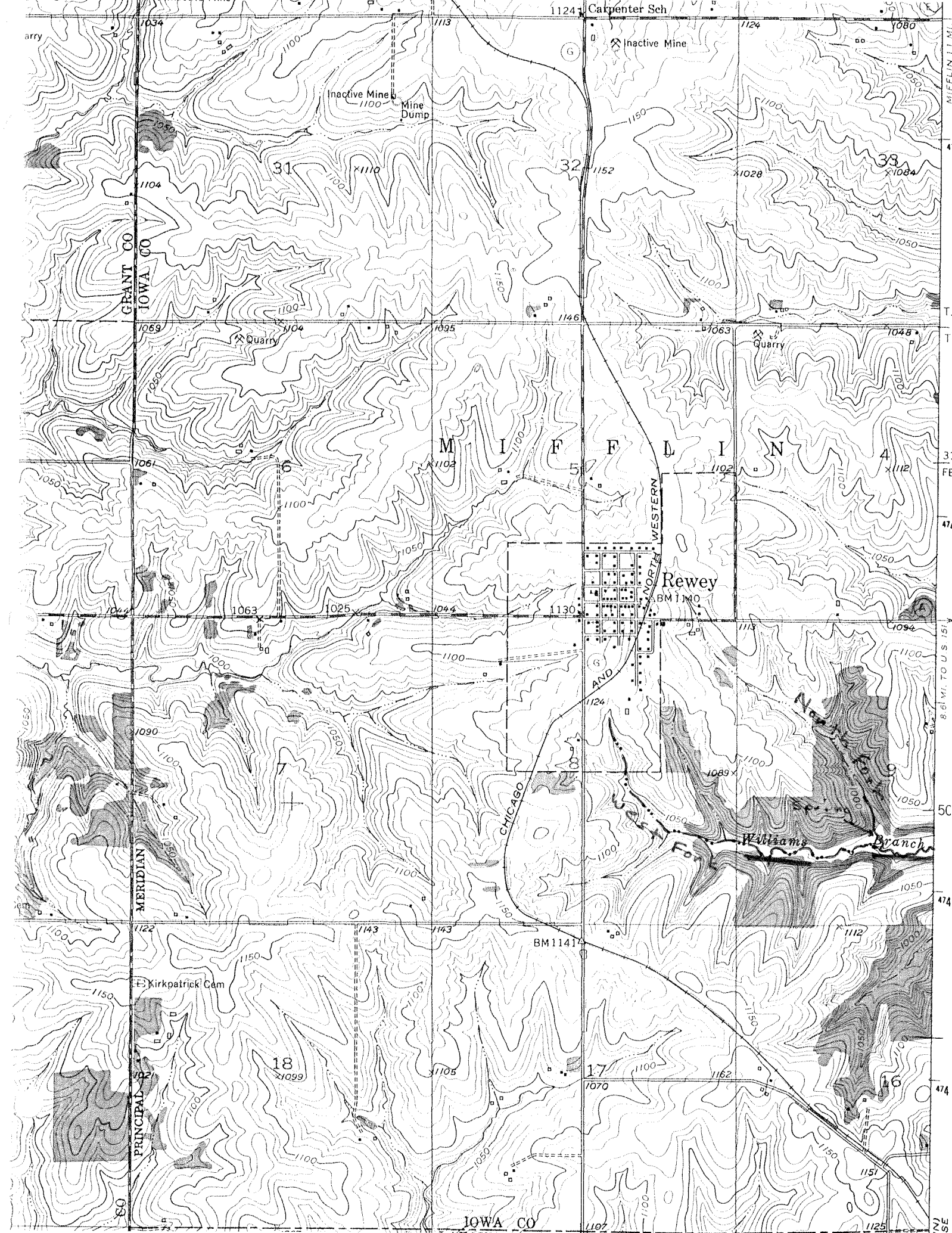
Williams-Rewey Branch -

Upstream from Robert Ogden farm



Williams-Rewey Branch -

Robert Ogden farm


Carpenter Sch
Inactive Mine
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IOWA CO
Quarry
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MIFFLIN
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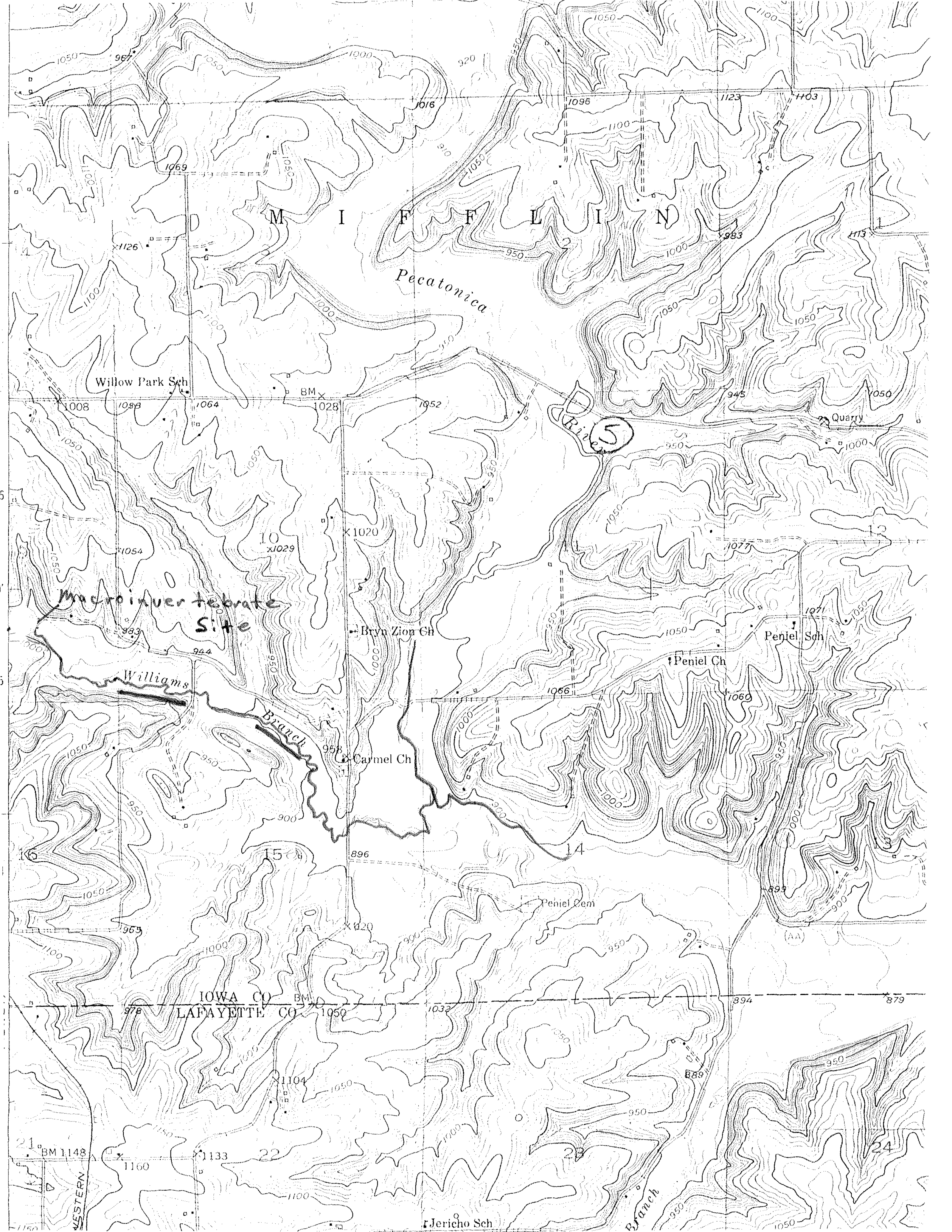
BM1140
NORTH WESTERN AND CHICAGO
North Fork
West Fork
Williams Branch
Sp
BM1141
Kirkpatrick Cem
PRINCIPAL MERIDIAN
IOWA CO
31
32
33
4
5
6
7
8
9
17
18
16



M I F F L I N
Pecatonica
River
5
Willow Park Sch
BM 1028
Macroinvertebrate Site
Williams Branch
Bryn Zion Ch
Carmel Ch
Peniel Sch
Peniel Ch
Peniel Cem
Quarry
IOWA CO
LAFAYETTE CO
Jericho Sch
Branch
10
11
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