

APPENDIX V

Chapter NR 104

INTRASTATE WATERS — USES AND
DESIGNATED STANDARDS

NR 104.01	General (p. 33)	NR 104.07	Variances and additions applicable in the Lake Michigan district (p. 44)
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Note: Chapter NR 104 as it existed on September 30, 1976 was repealed and a new chapter NR 104 was created effective October 1, 1976.

NR 104.01 General. (1) "It is . . . the goal of the state of Wisconsin that, wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish and wildlife and provides for recreation in and on the water be achieved by 1983. . . ." s. 147.01(1)(b), Stats. The long-range goal of Wisconsin water quality standards is, therefore, to permit the use of water resources for all lawful purposes. Surface waters which because of natural conditions are not conducive to the establishment and support of the complete hierarchy of aquatic organisms shall not be degraded below present levels, but shall be upgraded as necessary to support assigned uses. Most surface waters within the state of Wisconsin already meet or exceed the goals specified above. However, certain waters of the state may not meet these goals for the following reasons:

- (a) The presence of in-place pollutants,
- (b) Low natural streamflow,
- (c) Natural background conditions, and
- (d) Irretrievable cultural alterations.

(1m) Where it is determined that one or more of these factors may interfere with the attainment of the statutory objectives, a variance from the criteria necessary to achieve those objectives is provided.

(2) Surface waters within the boundaries of the state shall meet the standards for fish and aquatic life and recreational use with the variances and additions listed below in ss. NR 104.05 to 104.10. A system is provided within which small streams and other surface waters which cannot support high quality uses are granted a variance from the high quality criteria.

(3) Effluent limitations specified in this chapter shall be achieved by industrial, private and municipal dischargers by July 1, 1983 unless an earlier date is otherwise provided in a permit issued under s. 147.02, Stats. Municipal dischargers eligible for state or federal grant-in-aid

shall achieve the specified effluent limitations upon completion of construction or modification of facilities approved by the department of natural resources subsequent to adoption of this chapter unless otherwise provided in a permit issued under s. 147.02, Stats.

History: Cr. Register, September, 1976, No. 249, eff. 10-1-76; am. (1), Register, December, 1977, No. 264, eff. 1-1-78.

NR 104.02 Surface water classifications and effluent limitations. (1) HYDROLOGIC CLASSIFICATION. "Surface waters" as defined in s. NR 102.01(7), may be classified according to their hydraulic or hydrologic characteristics. For purposes of this chapter, surface waters will be classified by the department into one of the following categories:

(a) *Lakes or flowages*. This classification includes bodies of water whose current is more or less stagnant or which lacks a unidirectional current.

(b) *Diffused surface waters*. This classification includes any water from rains, intermittent springs or melting snow which flows on the land surface, through ravines, etc., which are usually dry except in times of runoff. This category does not include waters at the land surface in the vicinity of agricultural or wastewater irrigation disposal systems.

(c) *Wetlands*. This classification includes areas where water is at, near, or above the land surface long enough to be capable of supporting aquatic or hydrophytic vegetation and which have soils indicative of wet conditions.

(d) *Wastewater effluent channels*. This classification includes discharge conveyances constructed primarily for the purpose of transporting wastes from a facility to a point of discharge. Drainage ditches (including those established under ch. 88, Stats.) constructed primarily for the purposes of relieving excess waters on agricultural lands shall not be construed as effluent channels. Modifications made to natural watercourses receiving wastewater effluents for the purpose of increasing or enhancing the natural flow characteristics of the stream shall not be classified as effluent channels.

(e) *Noncontinuous streams*. This classification includes watercourses which have a defined stream channel, but have a natural 7-day $Q_{\cong}$ flow of less than 0.1 cfs and do not exhibit characteristics of being perpetually wet without wastewater discharges.

(f) *Continuous streams*. This classification includes watercourses which have a natural 7-day $Q_{\cong}$ flow of greater than 0.1 cfs or which exhibit characteristics of a perpetually wet environment, are generally capable of supporting a diverse aquatic biota and flow in a defined stream channel.

Note: The application of this classification system is not dependent on the the navigability properties of the watercourse, but is dependent upon the quantity-quality relationships of the surface water.

(2) WATER QUALITY CLASSIFICATION. (a) Whenever the goals as specified in s. 147.01(1)(b), Stats., cannot be attained because of conditions enumerated in s. NR 104.01(1), a variance may provided. Variances from a specific water quality criteria may be given in s. NR 104.05 et. seq. or a variance under one of the categories provided in this chapter may be specified.

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(b) Practices attributable to municipal, industrial, commercial, domestic, agricultural, land development, or other activities shall be controlled so that waters regardless of their hydrologic and water quality classifications meet the general aesthetic and acute toxicity conditions in s. NR 102.02(1).

(3) VARIANCE CATEGORIES. (a) Surface waters not supporting a balanced aquatic community (intermediate aquatic life):

1. Applicability. This category of variance may be applied to either the continuous or noncontinuous stream hydrologic classification.

2. Surface water criteria. The following water quality criteria shall be met in all surface waters included in this variance category:

a. Dissolved oxygen shall not be less than 3 mg/l.

b. Ammonia nitrogen (as N) at all points in the receiving water shall not be greater than 3 mg/l during warm temperature conditions nor greater than 6 mg/l during cold temperatures to minimize the zone of toxicity and to reduce dissolved oxygen depletion caused by oxidation of the ammonia.

c. The pH shall be within the range of 6.0 to 9.0.

d. Other substances may not exceed concentrations determined in accordance with s. NR 102.02(1).

3. Effluent criteria. a. The effluent limitations determined necessary to meet the surface water criteria listed above are enumerated in table 1.

Parameter	Monthly Average (mg/l)	Daily Maximum (mg/ l)	Weekly	
			Average (mg/l)	Other (mg/l)
BOD ₅	15	30	-	-
Total Suspended Solids	20	30	-	-
NH ₃ -N (May-October)	-	-	3	-
NH ₃ -N (November-April)	-	-	6	-
Dissolved Oxygen	-	-	-	4 (minimum)

b. Unless otherwise specified in table 1 above, effluent limitations for sewage treatment works shall be as adopted in ch. NR 210.

c. In addition to the effluent limitations enumerated in table 1 above, effluent limitations for these and any other substance necessary to protect assigned uses shall be met.

(b) Marginal surface waters: 1. Applicability. This variance category may be applied to the continuous or noncontinuous stream hydrologic classification, except that it shall be applied to all surface waters classified as effluent channel, wetland or diffuse surface water.

2. Surface water criteria. The following surface water quality criteria shall be met in all surface waters included in this variance category:

a. Dissolved oxygen shall not be less than 1 mg/l.

b. The pH shall be within the range of 6.0 to 9.0.

c. Other substances may not exceed concentrations determined in accordance with s. NR 102.02(1).

3. Effluent criteria. a. The effluent limitations determined necessary to meet the surface water criteria listed above are enumerated in table 2.

Parameter	Table 2		
	Monthly Average (mg/1)	Weekly Average (mg/1)	Other (mg/1)
BOD ₅	20	30	-
Total Suspended Solids	20	30	-
Dissolved Oxygen	-	-	4 (minimum)

b. Unless otherwise specified in table 2 above, effluent limitations for sewage treatment works shall be as adopted in ch. NR 210.

c. In addition to the effluent limitations enumerated in table 2 above, effluent limitations for these and any other substance necessary to protect assigned uses shall be met.

(4) OTHER CLASSIFICATIONS AND EFFLUENT CRITERIA. (a) *Surface waters significant to the environmental integrity of the state or region.* Under all hydrologic categories, the department reserves the right to require other effluent limitations, including allocation of wasteloads for organic material, toxicants and chlorine residuals if it is determined that the specified surface water is important to the overall environmental integrity of the area. In waters identified as trout streams, located in scientific areas or wild and scenic areas, providing endangered species habitat or of high recreational potential, effluent criteria will be evaluated on a case-by-case basis.

(b) *Surface waters classified for fish and aquatic life.* 1. Streams. Where flowing streams or rivers are specified to achieve fish and aquatic life criteria, wasteload allocation for organic material, toxicants and chlorine residuals shall determine effluent criteria necessary to achieve that standard.

2. Lakes and flowages. Effluent characteristics for discharges to lakes or flowages shall be based upon an evaluation of water quality necessary to protect fish and aquatic life taking into account mixing zone and nutrient removal criteria.

3. Minimum effluent criteria. If it can be reasonably demonstrated that the quality of the surface water is independent of a wastewater discharge, effluent limitations established under ss. 147.04 and 147.06, Stats., shall apply.

(c) *Wastewater treatment lagoons.* Effluents from fill-and-draw wastewater treatment lagoons or domestic waste stabilization ponds discharging to waters receiving a variance in this chapter may be permitted to vary from the limitations specified in table 1 or 2 provided the following conditions are met:

1. The discharge occurs only during the spring and fall of the year when the flow in the receiving water is normally high, and the temperature is low. The rate of discharge shall not exceed that specified in a permit under s. 147.02, Stats., or where no rate is indicated, the allowable discharge quantities shall be determined by the department based upon current evaluation of the receiving water.

2. In lieu of the previous conditions, the discharge from a fill-and-draw lagoon may occur at any time provided the rate does not exceed the assimilative capacity of the receiving water as specified in a permit under s. 147.02, Stats.

3. The dissolved oxygen in the effluent is maintained at a level greater than or equal to 4 mg/l, and the permitted rate of discharge shall be such that the dissolved oxygen and ammonia nitrogen criteria necessary to sustain fish and aquatic life are maintained in the stream during the period of discharge.

4. The effluent limitations do not exceed those established under ss. 147.04 and 147.06, Stats.

(5) CHANGES IN CLASSIFICATION. Surface waters which exhibit changing hydrologic and quality characteristics shall be classified accordingly. Effluent criteria for upstream discharges shall be based upon the most critical downstream classification and shall be specified by the department either on the basis of justified inference or by the application of a wasteload allocation analysis. Any subsequent changes in a stream's morphology or potential may necessitate the reevaluation of the classification.

History: Cr. Register, September, 1976, No. 249, eff. 10-1-76; am. Tables 1 and 2, (2), (3) (a) 2a and d, (3) (b) 2a and c, (4) (c), Register, December, 1977, No. 264, eff. 1-1-78; am. (3) (a) 2a, Register, June, 1978, No. 270, eff. 7-1-78; am. (1) (c), Register, June, 1984, No. 342, eff. 2-1-84; r. (3) (a) 2. b. to d., (b) 2. b. and c., renum. (3) (a) 2. e. to g. and (3) (b) 2. d. and e. to be (3) (a) 2. b. to d. and (3) (b) 2. b. and c. and am (3) (a) 2. g. and (3) (b) 2. c., am. (3) (a) 3. a. and (3) (b) 3. a., Register, October, 1986, No. 370, eff. 11-1-86.

NR 104.03 Classification of surface waters and antidegradation. In no case shall the effluent criteria specified herein cause degradation of surface water quality below present levels. Surface waters which, be reason of their hydrologic classification, are permitted to receive a new effluent of a quality specified in NR 104.02 shall not receive such effluent unless it has been affirmatively demonstrated to the department that such degradation is necessary to protect the public health or to maintain or restore the environmental integrity of a higher value resource. In no case shall a new effluent interfere with or become injurious to any assigned uses made of or presently possible in any surface water.

History: Cr. Register, September, 1976, No. 249, eff. 10-1-76; am. Register, December, 1977, No. 264, eff. 1-1-78.

NR 104.04 Provision for changes. The surface waters specified in this chapter are not intended to be an exclusive listing nor do the specified effluent criteria purport to meet the 1983 water quality goals set forth in ch. 147, Stats. Additions to or deletions from these listings may be made based upon the accumulation of information necessary to make such determination and in accordance with the requirements of ch. 227, Stats.

History: Cr. Register, September, 1976, No. 249, eff. 10-1-76.

NR 104.05 Variances and additions applicable in the southern district. Subject to the provision of NR 104.04, intrastate surface waters in the southern district counties of Columbia, Dane, Dodge, Grant, Green, Iowa, Jefferson, Lafayette, Richland, Rock and Sauk shall meet the criteria for fish and aquatic life and recreational use with exceptions and additions as follows:

Register, October, 1986, No. 370

(1) ADDITION. The public water supply standard shall be met on the Wisconsin river in section 8, township 10 north, range 7 east.

(2) VARIANCE. Surface waters in the southern district subject to a variance under NR 104.02(3) are listed in table 3.

TABLE 3
SOUTHERN DISTRICT

Surface Water (Facility Affected)	Reach Description	Hydrologic Classification	Applicable Criteria (1)	Effluent Limitations (2)
1. Goose Lake Tributary (Arlington)	Tributary upstream from Goose Lake	Noncontinuous	II	Effluent limitations to be determined B
2. Tributary - East Branch Pecatonica River (Barneveld)	From the Barneveld STP downstream to the East Branch Pecatonica River	Noncontinuous	II	B
3. Williams Creek (Blue Mounds)	From the Blue Mounds STP downstream to the east line of Sec. 14, T6N, R5E	Noncontinuous	I	A
4. Sanders Creek (Boscobel)	From the Boscobel STP downstream to the Wisconsin River	Continuous	I	A
5. Allen Creek (Brooklyn)	Upstream from Butts Corner Road	Continuous	I	A
6. Kummel Creek (Brownsville)	From Brownsville STP downstream to CTH "HH"	Noncontinuous	I	A
7. Spring Brook and Tributary (Clinton)	Tributary from the Clinton STP to Spring Brook	Effluent ditch	II	B
8. Tributary - Dead Creek (Clyman)	Spring Brook in Clinton Township	Continuous	II	NA
9. West Branch Pecatonica River (Cobb)	Tributary from Clyman STP downstream to Dead Creek	Noncontinuous	II	B
	From the Cobb STP downstream to confluence with an unnamed tributary NE¼, NW¼, Sec. 2, T5N, R1E.	Continuous	I	A
10. Door Creek (Cottage Grove)	Door Creek upstream from STH 12 & 18	Noncontinuous	I	A
	From STH 12 & 18 downstream to Lake Kegonsa	Continuous	I	NA
11. Coon Branch (Cuba City)	Upstream from westerly tributary approximately 1 mile above STH "11"	Noncontinuous	II	B
	Downstream from above tributary to confluence with Galena River	Continuous	I	NA
12. Mud Creek and Tributary (Deerfield)	Tributary from Deerfield STP to confluence with Mud Creek	Effluent ditch	II	B
	Mud Creek from above tributary downstream to confluence with Koshkonong Creek	Continuous	I	

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13. Indian Creek and Tributary (Dickeyville)	Tributary from Dickeyville STP to confluence with Indian Creek Indian Creek from above tributary downstream to confluence with Platte River	Noncontinuous Continuous	II I	NA A
14. Dodge Branch (Dodgeville)	Upstream from a point approximately 3,500 feet downstream from STH "191"	Noncontinuous	I	A
15. Tributary - North Branch Crawfish River (Fall River)	Tributary from the Fall River STP downstream to the North Branch Crawfish River	Noncontinuous	II	Effluent limitations to be determined
16. Gregory Branch (Fennimore)	Upstream from STH "61"	Continuous	I	A
17. Tributary - Rock River (Hidden Meadows Mobile Home Park)	Tributary from the Hidden Meadows Mobile Park STP discharge downstream to the Rock River	Noncontinuous	II	B
18. Big Spring Branch (Highland)	Upstream from the North line of Sec. 19, T7N, R1E	Noncontinuous	I	A
19. Pedler Creek (Iowa Co. Nursing Home)	From the Iowa Co. Nursing Home STP downstream to the confluence with an unnamed tributary, SE¼, SE¼, Sec. 34, T6N, R2E	Noncontinuous	I	A
20. Tributary - Wildcat Creek (Iron Ridge)	From the Iron Ridge STP downstream to Wildcat Creek	Noncontinuous	II	B
21. Tributary & Rock River Tributary (Ixonian San. Dist.)	From the Ixonian San. Dist. STP downstream to the juncture with the Rock River Tributary Rock River Tributary from above tributary to confluence with Rock River	Noncontinuous Continuous	II II	B NA
22. Tributary - Menominee River (Jamestown San. Dist. #2)	From Jamestown San. Dist. #2 STP to the Menominee River	Diffused surface water	II	B
23. Dead Creek (Juneau)	Upstream from CTH "M"	Effluent ditch	II	B
24. Sinipee Creek (Kieler San. Dist. #1)	From CHT "M" to St. Helena Rd. From Kieler lagoon outfall to Bluff Road	Continuous Continuous	I I	NA A
25. Rock Creek (Lake Mills)	From the Lake Mills STP downstream to CTH "V"	Noncontinuous	I	A
26. Tributary - Pigeon Creek (Lancaster)	From CTH "V" to Harper's Mill Pond Tributary from Lancaster STP downstream to south line of section 10 Tributary from above point downstream to confluence with Pigeon Creek	Continuous Continuous Continuous	I II I	NA Effluent limitations to be determined
27. Tributary - Baker Creek (Lebanon San. Dist.)	From Lebanon STP downstream to Baker Creek	Noncontinuous	II	B
28. Little Platte River (Livingston)	From Livingston STP downstream to New California Road	Noncontinuous	I	A
29. Tributary-East Branch Rock River (Lomira)	Tributary upstream from confluence with East Branch Rock River.	Noncontinuous	I	A
30. (Madison Metro Sewerage Commission)	From the STP outfall aerator to the Oregon Branch	Effluent ditch	II	Effluent limitations to be determined

31. Brewery (Furnance) Creek (Mineral Point)	Brewery Creek upstream from confluence with Mineral Point Branch	Continuous	II	B (Note: the above limitation shall remain in effect until significant nonpoint source problems can be corrected)
32. Tributary - Blue River (Montfort)	From the Montfort STP downstream to the Blue River	Continuous	I	A
33. Little Grant River (Mount Hope)	From the Mt. Hope STP downstream to the west boundary of Sec. 10, T5N, R4W	Noncontinuous	I	A
34. West Branch Sugar River (Mt. Horeb)	From Mt. Horeb STP downstream to CTH "JG".	Continuous	I	A
35. Tributary - Austin Branch (Orchard Manor)	Drainage from Orchard Manor outfall to Austin Branch	Diffused surface waters	II	Effluent limitations to be determined
36. Oregon Branch - Badfish Creek (Oregon)	From the Oregon outfall downstream to juncture with the Madison Met effluent ditch	Noncontinuous	II	Effluent limitations to be determined
	From this point downstream to CTH "A"	Continuous	I	
37. Swan Creek and Tributary (Orfordville)	Tributary from Orfordville STP outfall to Swan Creek.	Effluent ditch	II	NA
	Swan Creek from confluence with above tributary to Dicky Road.	Noncontinuous	I	A
38. Tributary - Blake Fork (Patch Grove)	Tributary from the Patch Grove STP downstream to Blake Fork	Noncontinuous	I	A
39. Tributary - Honey Creek (Plain)	From the Plain STP downstream to Honey Creek	Continuous	I	Effluent limitations to be determined
40. Randolph Branch - Tributary	From the Randolph STP downstream to Beaver Creek Tributary	Noncontinuous	II	Effluent limitations to be determined
Beaver Creek (Randolph)	Tributary to Beaver Creek upstream from Beaver Creek	Noncontinuous	I	A
41. Tributary-Beaver Dam River (Reeseville)	Tributary from Reeseville STP to confluence with Beaver Dam River	Noncontinuous	I	
42. Conley - Smith Creek (Ridgeway)	From the Ridgeway STP downstream to the south boundary of Sec. 14, T6N, R4E	Noncontinuous	I	Effluent limitations to be determined
43. Tributary - Rocky Run Creek (Rio)	From the Rio STP downstream to Rocky Run Creek	Noncontinuous	II	B
44. Tributary - Narrows Creek (Sauk Co. Health Care Center)	From the Sauk County Health Care Center STP downstream to Narrows Creek	Noncontinuous	I	A
45. Duck Creek and Tributary (Sullivan)	Tributary from the Sullivan STP to Duck Creek	Effluent channel	II	Effluent limitations to be determined
	Duck Creek from the effluent ditch downstream juncture with northerly drainage ditch in Sec. 5, T6N, R16E	Noncontinuous	I	
46. Koshkonong Creek (Sun Prairie)	Koshkonong Creek upstream from first bridge above Sun Prairie STP	Noncontinuous	II	Effluent limitations to be determined
	Koshkonong Creek from above location to CTH "T".	Continuous	II	A
47. Badger Mill Creek (Verona)	Badger Mill Creek from road at Verona STP downstream to STH "69".	Continuous	I	

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48. Tributary - Mur- Tributary from Oakwood State Camp Noncontinuous II B
phy Creek (Wis- STP downstream to Murphy Creek
consin
Department of
Health & Social
Services - Oak-
wood State
Camp)

- (1) Criteria I requires the maintenance of surface water criteria specified in NR 104.02(3)(a)2.
Criteria II requires the maintenance of surface water criteria specified in NR 104.02(3)(b)2.
- (2) Effluent limitation A requires those limits specified in NR 104.02(3)(a)3.
Effluent limitation B requires those limits specified in NR 104.02(3)(b)3.
NA—Not applicable

History: Cr. Register, September, 1976, No. 249, eff. 10-1-76; am. table 3, r. (3), Register, December, 1977, No. 264, eff. 1-1-78.

NR 104.06 Variances and additions applicable in the southeast district. Subject to the provisions of NR 104.04, intrastate surface waters in the southeast district counties of Kenosha, Milwaukee, Ozaukee, Racine, Walworth, Washington and Waukesha shall meet the criteria for fish and aquatic life and recreational use with exceptions and additions as follows.

(1) VARIANCE. Surface waters in the southeast district subject to a variance under NR 104.02(3) are listed in table 4.

(2) OTHER VARIANCES. (a) The following surface waters in the southeast district shall meet the standards for fish and aquatic life except that the dissolved oxygen shall not be lowered to less than 2 mg/l at any time, nor shall the membrane filter fecal coliform count exceed 1,000 per 100 ml as a monthly geometric mean based on not less than 5 samples per month nor exceed 2,000 per 100 ml in more than 10% of all samples during any month:

1. Underwood creek in Milwaukee and Waukesha counties below Jeanne boulevard.
2. Barnes creek in Kenosha county.
3. Pike creek, a tributary of Pike river, in Kenosha county.
4. Pike river in Racine county.
5. Indian creek in Milwaukee county.
6. Honey creek in Milwaukee county.
7. Menomonee river in Milwaukee county below the confluence with Honey creek.
8. Kinnickinnic river in Milwaukee county.
9. Lincoln creek in Milwaukee county.

(b) The following surface waters in the southeast district shall meet the standards for fish and aquatic life except that the dissolved oxygen shall not be lowered to less than 2 mg/l at any time, nor shall the membrane filter fecal coliform count exceed 1,000 per 100 ml as a monthly geometric mean based on not less than 5 samples per month nor exceed 89DF at any time at the edge of the mixing zones established by the department under s. NR 102.03 (4):

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ORCHARD MANOR

Grant County

April 15, 1981

Stream Classification

Tributary to Pigeon Creek

Orchard Manor Nursing Home (Grant County Home and County Farm) is a county retirement center located in Southwestern Wisconsin about 1.5 miles southeast of the City of Lancaster. They operate a trickling filter plant followed by a polishing pond.

The effluent is discharged to a small draw which ultimately leads to the headwaters of Austin Branch. Austin Branch is classified as trout water which requires relatively stringent effluent limits from the Orchard Manor STP. For this reason, two possible alternate discharge sites in the Pigeon Creek watershed were evaluated.

The two alternate discharge areas are located west of STH "81" and "35". The drainage pattern from this area is in a westerly direction with surface water flowing to an unnamed tributary which enters Pigeon Creek in the NW $\frac{1}{4}$ SW $\frac{1}{4}$, Sec. 15, T. 4 N., R. 3 W.

There are two ravines or dry runs which form the upper end of the tributary's drainage basin. The northerly ravine originates in the NE $\frac{1}{4}$ NW $\frac{1}{4}$, Sec. 14, R. 3 W., T. 4N. The southerly ravine originates in the SE $\frac{1}{4}$ NE $\frac{1}{4}$, Sec. 14, R. 3 W., T. 4 N. (See attached map). Either one of these two ravines could be selected as a possible alternate discharge site. The land on which they are located is part of the county farm.

The northerly ravine drains through a barn yard just west of the county farm property line. From this point on it remains a dry run ditch until the juncture with the unnamed tributary. The agricultural land on the county farm is in contour strips which significantly reduce soil erosion. The land surrounding the dry run is semi-wooded and is intensively pastured.

The southerly ravine is also surrounded by contour strips. It drains into a large cornfield, below which it becomes a dry run. It remains a dry run until approximately 600' above Stage Rd., where a small spring forms the headwaters of the unnamed tributary. Small amounts of water cress were present in the stream from this point until the juncture with the northerly dry run, approximately 400' below Stage Road.

The surrounding land below this juncture is semi-wooded pasture and remains so for the remainder of the stream thread. Since most of the land surrounding the stream is pasture, soil erosion in the watershed is not a significant problem. Most of the farms have good land management except for two barnyards which contribute some sediment and nutrients to the stream.

Sedimentation problems of the streambed is primarily linked to streambank failure. In some sections less than 50% of the streambank is vegetated. Many raw areas were present, with a high potential for erosion during flood flows.

Scouring and deposition has eliminated most of the pools. The stream is mostly "flat water" with only an occasional riffle. In the "flat water " areas up to 8" of silt has accumulated. Because of the raw banks and the lack of pools, adequate fish habitat is almost non-existent.

In the head waters the substrate consists of mostly silt with only a small amount of rubble-gravel. Silt is also the dominant component of the substrate on the lower section of the stream. Due to the higher flood flows in this section, more of the silt has been scoured out of the riffle areas with rubble-gravel being more evident in these areas.

Stream flow is very small with a USGS estimated Q_{710} of 0.15. No actual flows were taken in the stream, but the Q_{710} estimate seems to be somewhat high. Observations made of the stream reveal that flow is almost indiscernible by the late summer months.

A biotic index sample was taken on April 15, 1981, a short distance above the juncture with Pigeon Creek. The results of the biotic index are contained in Table I. The Biotic Index used (which is an indicator of water quality) was developed by Dr.

Hilsenhoff and is published in D.N.R. Technical Bulletin Number 100. Actual biotic index values were taken from the updated report of November 1980.

With a biotic index value of 4.4 the stream was considered to have "very poor" water quality. The sample was dominated by Asellus intermedius (70%) and Cricotopus spp. (10%), which are both considered to be very tolerant of pollution. The remaining 20% of the sample consisted of organisms with biotic index values of two and three.

On May 20, 1981, fish management personnel conducted a fish survey on approximately 200' of the tributary. The survey was conducted a short distance above the mouth of the stream. Fish captured were as follows:

1. Fathead minnow
2. Bluntnose minnow
3. Creek Chub
4. Green Sunfish
5. Fantail Darter

They were all present in very small numbers with not over 10 fish of any one species in the entire section surveyed. Also, the Green Sunfish were all stunted, with none over an inch in length.

The presence of only pollution tolerant macroinvertebrates and fish in the unnamed tributary is due to a combination of small stream flow and lack of adequate habitat.

Classification Recommendations

From STH "81", "35" downstream to the juncture with the unnamed tributary, the northerly ravine and dry run should be classified as marginal, diffused surface waters.

From STH "81", "35" downstream to the origin of a small spring, the southerly ravine and dry run should be classified as marginal, diffused surface waters.

The unnamed tributary is capable of supporting only a small community of pollution tolerant fish and a tolerant to very tolerant macroinvertebrate community. For this reason it should be classified as intermediate fish and aquatic life from the origin

of the small spring downstream to the juncture with Pigeon Creek. Pigeon Creek is presently classified as full fish and aquatic life.

Roger Schlessner

Roger Schlessner
Water Quality Biologist

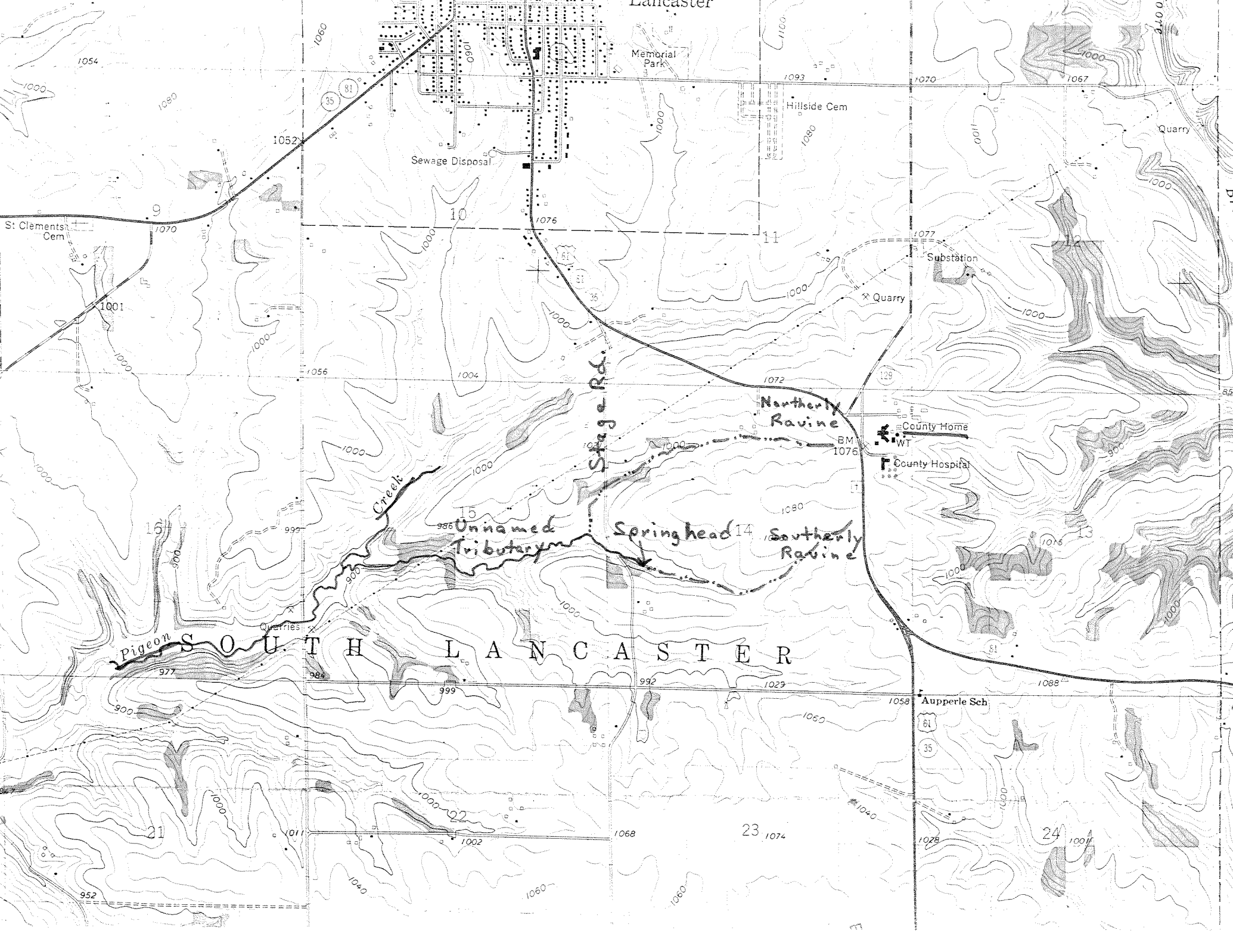


Table 1

4/15/81

Taxa	(n)	Biotic Index Value (a)	nx a
COLEOPTERA			
<u>Optioservus fastiditus</u>	1	2	2
<u>Optioservus</u> spp. (larvae)	3	2	6
<u>Stenelmis</u> spp. (larvae)	2	3	6
DIPTERA			
CHIRONOMIDAE			
<u>Cricotopus</u> spp.	10	4	40
<u>Eukiefferiella</u> spp.	2	2	4
<u>Parametriocnemus</u> spp.	2	3	6
<u>Polypedilum</u> spp.	2	3	6
<u>Thienemannimyia</u> complex	2	3	6
EPHEMEROPTERA			
<u>Stenacron interpunctatum</u>	2	3	6
TRICHOPTERA			
<u>Cheumatopsyche</u> spp.	1	3	3
<u>Chimarra ferialis</u>	2	1	2
<u>Hydropsyche betteni</u>	1	3	3
ISOPODA			
<u>Asellus intermedius</u>	70	5	350
Total	<u>100</u>		<u>440</u>
Biotic Index = $\frac{440}{100} = 4.4$			



Northerly ravine, below
STH "81", "35"



Northerly dry run, above
Stage Road



Northerly dry run, below
Stage Road



Unnamed tributary,
below Stage Road.



Unnamed tributary, just
upstream of juncture with
northerly dry run

Orchard Manor
Grant County

January 24, 1977

Orchard Manor discharges to a dry run which drains into the Austin Branch.

Austin Branch - Surface Acres = 2.25 Miles, Miles = 3.1, Gradient = 65 feet per mile.

A moderate gradient spring-fed stream beginning one mile east of Lancaster and emptying into the Platte River three miles north of Ellenboro. Two and one-half miles of this stream are considered trout water but water temperatures approach the maximum tolerance for trout on hot summer days. Brown trout fingerlings and yearlings are stocked by the Lancaster Sportsmans Club and the Department of Natural Resources. Fishing pressure is heavy during the early season. Forage fish are common throughout the stream and only a few smallmouth bass are found even though the water quality and instream cover are excellent for this species. Flooding and heavy bank erosion are severe use problems. Muskrats are found throughout the stream. Upland game species including deer, raccoon, squirrels, ruffed grouse, and quail are found nearby.

Recommendations

From the Orchard Manor outfall to the juncture with the Austin Branch the classification should be diffused surface waters. From this juncture and for the remainder of the Austin Branch 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 Schlessner - Natural Resources Technician

Respectfully submitted,


Thomas Bainbridge
Stream Classification Coordinator

RS:js

