Ohio EPA Policy	**Small Discharger Final Effluent Limitations**	
DSW-0100.003 **Removed**	Statutory references: Rule references:	Ohio EPA, Division of Surface Water Revision 0, August 1, 1988 Revision 1, February 22, 1989 Revision 2, September 30, 1999 Removed, December 21, 2006
THIS POLICY DOES NOT HAVE THE FORCE OF LAW Pursuant to Section 3745.30 of the Revised Code, this policy was reviewed and removed.		

This policy does not meet the definition of policy contained in Section 3745.30 of the Ohio Revised Code. Ohio EPA is removing this document from the Division of Surface Water Policy Manual and is considering addressing this topic in internal guidance.

For more information contact:

Ohio EPA, Division of Surface Water
Permits & Compliance Section
P.O. Box 1049
Columbus, OH 43216-1049
(614) 644-2001

H:\RulePolicyGuid_Effective\Policy\2006ManualUpdate\01_03r.wpd

Ohio EPA Policy DSW-0100.003 **Final**	**Small Discharger Final Effluent Limitations**	
	Statutory references: ORC 6111.03, ORC 6111.041 Rule references: OAC 3745-1-07, OAC 3745-2-10, OAC 3745-33-05	Ohio EPA, Division of Surface Water Revision 0, August 1, 1988 Revision 1, February 22, 1989 Revision 2, September 30, 1999
THIS POLICY DOES NOT HAVE THE FORCE OF LAW Pursuant to Section 3745.30 of the Revised Code, this policy was reviewed on the last revision date.		

Purpose
To describe procedures for the issuance of final NPDES permit limitations that are consistent with water quality standards to small dischargers (0.25 MGD or less) treating sewage without the requirement for site-specific field data. *This document provides necessary information to generate scientifically valid water quality based limits. Further rationale can be found in the materials listed on page 4. The limits derived from this policy can be superseded by limits derived from a comprehensive water quality report or other detailed water quality study.*

Background
During the development of the policy, small publicly owned dischargers statewide with design flows of 0.25 MGD or less were examined for their current final table permit limits and their 1985 performance. In addition, an analysis of pH and temperature conditions in the waters of the state was conducted, on a basin-by-basin basis using data retrieved from the STORET system. The resultant pH and temperature were used to determine a generalized basin-wide NH_3-N water quality standard to be used in the recommendations for final effluent limitations for such small discharges. The details of the pH and temperature analysis can be found in the technical support document for this policy (available upon request).

Procedure
This policy is applicable to all *existing* publicly, semi-publicly, or industrially owned wastewater treatment plants with an average design flow of 0.25 MGD or less. Wastewaters treated at these facilities should be primarily of a sanitary nature.

This policy is not applicable if there is the potential for interaction with other discharges, or if a controlled discharge lagoon is utilized as the primary means of wastewater treatment. Controlled discharge lagoon effluent limits are covered under the Ohio EPA Lagoons Design Criteria; Wastwater Teatment Policy (DSW-0400.023).

For dischargers that have an existing facility constructed to meet limits more stringent than that determined through this policy, current final effluent limits shall be maintained. *The limits derived from this policy can be superseded by limits derived from a comprehensive water quality report or other detailed water quality study.* Discharges to lakes or reservoirs should have permit limits consistent with the Ohio EPA State Lakes Policy (DSW-0100.005). Limitations for new sources of pollution should be consistent with the requirements of the Section 3745-31 of the Ohio Administrative Code.

This policy is based upon the allocation of NH_3-N using background critical low flow conditions ($Q_{30,10}$) in the receiving stream. The background critical low flow should be calculated and

adjusted as necessary using information from USGS low flow publications, yields developed by Ohio EPA, or other methods. Once the background flow information is developed, it is to be used to construct a ratio of the background $Q_{30,10}$ flow to the discharge average design flow. The allowable effluent NH_3-N concentration is subsequently derived as explained below. In order to calculate the allowable NH_3-N concentration, the Ohio water quality standards must first be consulted for the receiving stream's aquatic life use designation.

For Warmwater Habitat (WWH) or Exceptional Warmwater Habitat (EWH) stream uses, refer to Table 1 for the applicable allowable effluent NH_3-N concentrations for the corresponding dilution ratio. Linear interpolation may be necessary to derive the limits for background to discharge flow ratios that are not listed in Table 1. Details on this procedure are included in attachment 1. After determining the allowable NH_3-N concentration, Table 4 should be consulted, which provides the associated technology limits for $CBOD_5$, BOD_5, and D.O.

For receiving streams that are not listed in the Ohio water quality standards, or have the Nuisance Prevention (NP) or Limited Resource Water use designation there are two possible applicable scenarios.

Scenario A - If the discharger is located greater than two miles of confluence with the next downstream segment, the same general procedures as described above should be followed, except that Table 3 should be used for the applicable effluent NH_3-N concentration values. This value represents the permit maximum effluent NH_3-N concentration. The maximum value shall be divided by 1.5 to arrive at the appropriate 30-day average NH_3-N permit limit. The resultant 30-day average limit should then be used in conjunction with Table 4 to determine the associated technology limits for $CBOD_5$, BOD_5, and D.O.

Scenario B - If dischargers are within two miles or less of the confluence with the next downstream segment, a comparison of limits required to maintain the NP use with those limits necessary to maintain the next downstream use should be made according to the following process.

1. Determine the allowable NH_3-N for the discharger based on the NP use of the receiving stream using the upstream $Q_{30,10}$ and the same procedure as outlined in scenario A.

2. Determine the allowable effluent NH_3-N value as if the entity discharges directly to the downstream segment with the different use (WWH, EWH, CWH, etc.) immediately below the confluence with the receiving stream, using the available $Q_{30,10}$ dilution value at the confluence. This process trades off the additional dilution available by adding the background flow of the downstream segment against the use of the more restrictive criteria of the downstream segment.

3. The 30-day average allowable NH_3-N values derived from 1 and 2 should be compared, and the most stringent value shall be used. The associated technology limits for $CBOD_5$, BOD_5, and D.O. are then determined for the selected NH_3-N value. This will assure the maintenance of the Nuisance Prevention criteria in the immediate receiving stream, and the more restrictive criteria in the downstream segment. (There may be instances where the additional available dilution from the downstream segment will cause the NP criteria in the immediate receiving stream to be violated).

Linear Interpolation[1] - In some instances, it may be necessary to interpolate between allowable NH_3-N concentrations and ratios in order to derive the correct allowable NH_3-N for a ratio not listed in Table 1. Since the allowable NH_3-N is derived from a mass-balance that essentially varies linearly with dilution flow, a technique known as linear interpolation can be used. After deriving the ratio $Q_{30,10}$ background flow to discharge flow, the proportion (p) of the distance between the ratios greater than and less than the actual ratio is calculated using equation 1. The p value derived from equation 1 is then used in equation 2, along with the allowable NH_3-N values of the ratios greater than and less than the actual ratio, to derive the allowable NH_3-N for the actual background to discharge flow ratio. Equations 1 and 2 are given below, along with examples of their usage.

Equation 1
Calculate p, the proportion of the actual ration between the ratios greater than and less than the actual ratio.

X_1 = ratio less than actual ratio
X_2 = ratio greater than actual ratio
X_i = actual background flow to discharge flow ratio.

$$p = (X_i - X_1)/(X_2 - X_1)$$

Equation 2
Calculate the allowable NH_3-N value, using the allowable NH_3-N values from the ratios greater than and less than the actual background flow to discharge flow ratio.

p = calculated p from equation 1
Z_1 = allowable NH_3-N from ratio less than actual ratio
Z_2 = allowable NH_3-N from ratio greater than actual ratio
Z_i = allowable NH_3-N from actual background to discharge flow ratio.

$$Z_i = pZ_2 + (1-p)Z_1$$

Example:

a) Discharge basin - Scioto River; receiving stream use designation = WWH
Average design flow treatment plant A = 0.075 MGD (0.116 cfs)
Available $Q_{30,10}$ background to discharge flow.

b) calculate p (equation 1)
$X_1 = 5$
$X_2 = 10$
$X_i = 6$
$p = (X_i - X_1)/(X_2 - X_1)$
$p = (6 - 5)/(10 - 5)$
$p = 1/6$
$p = 0.2$

[1] Methods taken from Rohlf, F.J. and R.R. Sokal 1981. Statistical Tables, Second Edition. W.H. Freeman and Co., San Francisco, California 219p.

c) calculate allowable NH_3-N, consult table 1 for allowable NH_3-N ratios.

$Z_1 = 4.5$
$Z_2 = 8.0$
$p = 0.2$
$Z_i = pZ_2 + (1 - p)Z_1$
$Z_i = 0.2(8) + (1 -0.2)4.5$
$Z_i = 5.2$

Allowable NH_3-N for this plant is 5.2 mg/l in summer, after consulting Table 2 of the policy, summer effluent limits for this plant should be:

15 mg/l $CBOD_5$
5 mg/l NH_3-N
5 mg/l D.O.

Other related permit issues - Following the issuance of the permit, financial capability analysis will be performed for those entities submitting costs and plans to meet these limits. If the analysis indicates that meeting the recommended limits will result in a widespread social and economic impact, a variance may be considered. Limits will be adjusted to meet water quality criteria associated with the recommended variance. The variance will be evaluated every five years. In the interim, the entity will be required to develop and accumulate a capital improvements fund in order to make reasonable progress towards attaining the limits.

If the time necessary for the implementation of the limits determined from this policy carries beyond July 1, 1988, then enforceable compliance schedule will be negotiated between DSW and the entity to meet the recommended limits.

Related Policy or guidance

Lagoons Design Criteria; Wastewater Treatment policy (DSW-0400.023)
Discharges to State Lakes policy (DSW-0100-005)
Support document for the for Small Discharger Final Effluent Limitations policy
Capital Improvement Fund policy (DSW-0700.002)

For more information contact:

Ohio EPA, Division of Surface Water
Public Permit group leader
P.O. Box 1049
Columbus OH 43216-1049
(614) 644-2001

H:\RulePolicyGuid_Effective\Policy\Policy_Manual\01_03U.WPD

Table 1. Recommended NH_3-N concentration based on the Warmwater Habitat Use criteria for various dilution ratios.

		Ratio (upstream $Q_{30,10}$ flow to discharge flow)									
Basin	WQS	0:1	1:1	2:1	3:1	4:1	5:1	10:1	15:1	20:1	25:1
Maumee:											
Summer	1.0	1.5	2.0	2.5	3.5	4.0	5.0	9.0	12.5	16.5	sec.
Winter	4.0	4.0	8.0	11.5	15.5	sec.	sec.	sec.	sec.	sec.	sec.
Portage:											
Summer	0.7	1.5	1.5	1.5	1.5	1.5	1.5	2.5	3.0	4.0	4.5
Winter	3.0	3.0	5.5	8.0	10.0	13.0	15.0	sec.	sec.	sec.	sec.
Sandusky:											
Summer	0.8	1.5	1.5	2.0	3.0	3.5	4.5	8.0	11.5	15.0	18.5
Winter	2.3	4.5	4.5	6.5	9.0	1.0	13.5	sec.	sec.	sec.	sec.
Huron-Rocky:											
Summer	0.7	1.5	1.5	1.5	2.0	2.5	3.0	5.0	7.0	9.0	11.0
Winter	2.8	3.0	5.0	8.0	10.0	13.0	15.0	sec.	sec.	sec.	sec.
Cuyahoga/Chagrin:											
Summer	1.1	1.5	2.0	3.0	4.0	5.0	5.5	10.5	15.0	sec.	sec.
Winter	4.0	4.0	8.0	11.5	15.5	20.0[a]	sec.	sec.	sec.	sec.	sec.
Grand:											
Summer	1.2	1.5	2.5	3.5	4.5	5.5	7.0	12.5	sec.	sec.	sec.
Winter	4.0	4.0	8.0	12.0	16.0	19.5[a]	sec.	sec.	sec.	sec.	sec.
Mahoning:											
Summer	1.5	1.5	3.0	4.5	5.5	7.0	8.5	15.5	sec.	sec.	sec.
Winter	4.5	4.5	9.0	13.5	17.5[a]	sec.	sec.	sec.	sec.	sec.	sec.
*CORT:											
Summer	0.8	1.5	1.5	2.5	3.0	4.0	4.5	8.5	12.5	sec.	sec.
Winter	2.8	3.0	5.5	8.5	11.0	14.0	sec.	sec.	sec.	sec.	sec.
L. Muskingum R:											
Summer	1.1	1.5	2.0	3.0	4.5	5.5	6.5	12.0	sec.	sec.	sec.
Winter	3.4	3.5	7.0	10.0	13.5	sec.	sec.	sec.	sec.	sec.	sec.

* Central Ohio River Tribs.

Table 1. Recommended NH_3-N concentration based on the Warmwater Habitat Use criteria for various dilution ratios. (Continued)

		Ratio (upstream $Q_{30,10}$ flow to discharge flow)									
Basin	WQS	0:1	1:1	2:1	3:1	4:1	5:1	10:1	15:1	20:1	25:1
(P1-4,11,12) Mohican/Kokosing:											
Summer	1.0	1.5	2.0	2.5	3.5	4.5	5.0	9.0	13.5	17.5[a]	sec.
Winter	2.8	3.0	5.5	8.0	10.5	13.5	16.0	sec.	sec.	sec.	sec.
(P5-10) Tuscarawas:											
Summer	1.1	1.5	2.0	3.0	4.0	5.0	5.5	10.5	15.0	19.5[a]	sec.
Winter	4.0	4.0	8.0	11.5	15.5[a]	sec.	sec.	sec.	sec.	sec.	sec.
(P17,18) Wills Creek:											
Summer	1.6	1.5	3.0	4.5	6.0	7.5	8.5	16.0[a]	sec.	sec.	sec.
Winter	4.2	4.0	8.0	12.0	16.5[a]	sec.	sec.	sec.	sec.	sec.	sec.
(P16,19) Lower Muskingum:											
Summer	1.2	1.5	2.0	3.0	4.5	5.5	6.5	11.5	16.5[a]	sec.	sec.
Winter	4.4	4.5	8.5	13.0	17.0[a]	sec.	sec.	sec.	sec.	sec.	sec.
Licking River:											
Summer	0.8	1.5	1.5	2.0	2.5	3.5	4.0	7.0	10.0	13.0	16.6[a]
Winter	2.8	3.0	5.5	8.0	10.5	13.5	16.0[a]	sec.	sec.	sec.	sec.
Hocking River:											
Summer	1.1	1.5	2.0	2.5	3.5	4.5	5.0	9.5	13.5	17.5[a]	sec.
Winter	5.3	5.0	10.5	15.5	sec.	sec.	sec.	sec.	sec.	sec.	sec.
*SEORT:											
Summer	1.3	1.5	2.5	3.5	5.0	6.0	7.5	13.5	19.5[a]	sec.	sec.
Winter	3.7	4.0	7.5	11.0	14.5	18.0[a]	sec.	sec.	sec.	sec.	sec.
Little Scioto River:											
Summer	1.8	1.8	3.5	5.5	7.0	9.0	10.5	19[a]	sec.	sec.	sec.
Winter	6.8	7.0	13.5	20.0[a]	sec.	sec.	sec.	sec.	sec.	sec.	sec.

* South East Ohio River Trib.

Table 1. Recommended NH_3-N concentration based on the Warmwater Habitat Use criteria for various dilution ratios. (Continued)

		Ratio (upstream $Q_{30,10}$ flow to discharge flow)									
Basin	WQS	0:1	1:1	2:1	3:1	4:1	5:1	10:1	15:1	20:1	25:1
Scioto River:											
Summer	1.0	1.5	2.0	3.0	4.0	5.0	5.5	10.0	15.1	19.8[a]	sec.
Winter	2.8	3.0	5.5	8.5	11.0	14.0	16.5	sec.	sec.	sec.	sec.
Little Miami River:											
Summer	0.8	1.5	1.5	2.0	3.0	3.5	4.5	8.0	11.5	15.0	sec.
Winter	2.6	2.5	5.0	7.5	10.0	12.5	15.0	sec.	sec.	sec.	sec.
Great Miami River:											
Summer	0.8	1.5	1.5	2.0	3.0	3.5	4.5	8.0	11.5	15.0	sec.
Winter	2.6	2.5	5.0	7.5	10.0	12.5	15.0	sec.	sec.	sec.	sec.
Wabash River:											
Summer	0.9	1.5	1.5	2.0	3.0	3.5	4.0	7.0	10.0	13.0	15.0
Winter	3.4	3.5	7.0	10.0	13.0	15.0	sec.	sec.	sec.	sec.	sec.
*SWORT:											
Summer	0.7	1.5	1.5	2.0	2.5	3.0	3.7	6.7	9.7	12.7	15.7
Winter	2.3	2.3	4.5	6.7	8.9	11.1	13.3	24.3[a]	sec.	sec.	sec.

a This NH_3-N level is greater than those commonly associated with secondary treatment. The number is provided to assist in linear interpolation ratios other than those presented in the table (see Appendix A).

* Southwest Ohio River Tributaries.

Background ammonia nitrogen concentrations were derived from the report entitled "Analysis of Unimpacted Stream Data for the State of Ohio" Appendix B.

Table 2. Recommended NH_3-N concentration for various dilution ratios for discharges into Coldwater habitat (CWH) stream segments within the following basins.[b]

		Ratio (upstream $Q_{30,10}$ flow to discharge flow)										
Basin	WQS	0:1	1:1	2:1	3:1	4:1	5:1	10:1	15:1	20:1	25:1	30:1
Sandusky:												
Summer	0.5	1.5	1.5	1.5	1.7	2.1	2.5	4.5	6.5	8.5	10.5	12.5
Winter	0.9	1.5	1.7	2.5	3/3	4/1	4/9	8/9	12/9	16.9[a]	sec.	sec.
Huron-Rocky:												
Summer	0.3	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Winter	1.2	1.5	2.1	3.0	3.9	4.8	5.7	10.2	14.7	19.2[a]	sec.	sec.
Cuyahoga-Chagrin:												
Summer	0.7	1.5	1.5	1.7	2.3	2.8	3.3	5.9	8.5	11.1	13.7	sec.
Winter	1.7	1.7	3.2	4.7	6.3	7.8	9.3	16.9[a]	sec.	sec.	sec.	sec.
Grand:												
Summer	0.7	1.5	1.5	1.9	2.5	3.1	3.7	6.7	9.7	12.7	15.7	sec.
Winter	1.7	1.7	3.3	4.9	6.5	8.1	9.7	17.7[a]	sec.	sec.	sec.	sec.
Mahoning:												
Summer	1.0	1.5	1.9	2.8	3.7	4.6	5.5	10.0	14.5	19.0[a]	sec.	sec.
Winter	2.8	2.8	5.5	8.2	10.9	13.6	16.3[a]	sec.	sec.	sec.	sec.	sec.
*CORT:												
Summer	0.5	1.5	1.5	1.5	1.9	2.4	2.9	5.3	7.6	10.0	12.4	14.8
Winter	1.2	1.5	2.4	3.6	4.7	5.9	7.1	13.0	18.8[a]	sec.	sec.	sec.
Mohican-Kokosing:												
Summer	0.6	1.5	1.5	1.5	1.9	2.3	2.7	4.8	6.9	9.0	11.1	13.0
Winter	1.2	1.5	2.2	3.2	4.3	5.3	6.3	11.4	16.5[a]	sec.	sec.	sec.

Table 2. Recommended NH_3-N concentration for various dilution ratios for discharges into Coldwater habitat (CWH) stream segments within the following basins (continued).[b]

		Ratio (upstream $Q_{30,10}$ flow to discharge flow)										
Basin	WQS	0:1	1:1	2:1	3:1	4:1	5:1	10:1	15:1	20:1	25:1	30:1
*SWORT:												
Summer	0.4	1.5	1.5	1.5	1.5	1.6	1.9	3.4	4.9	6.4	7.9	9.4
Winter	0.9	1.5	1.7	2.5	3.3	4.1	4.9	8.9	12.9	16.9[a]	sec.	sec.
Great Miami:												
Summer	0.4	1.5	1.5	1.5	1.5	1.6	2.0	3.5	5.1	6.6	8.2	9.7
Winter	1.1	1.5	2.1	3.1	4.1	5.1	6.2	11.2	16.3[a]	sec.	sec.	sec.

[a] This NH_3-N level is greater than those commonly associated with secondary treatment. The number is provided to assist in linear interpolation ratios other than those presented in the table (see Appendix A).

[b] If CWH segments are contained in basins not listed here, please contact the permits section for development of allowable NH_3-N concentrations for that basin.

* Southwest Ohio River tributaries.

Table 3. Recommended NH_3-N concentration based on the Nuisance Prevention or Limited Resource Water Use criteria for various dilution ratios.

		Ratio (upstream $Q_{30,10}$ flow to discharge flow)									
Basin	WQS	0:1	1:1	2:1	3:1	4:1	5:1	10:1	15:1	20:1	25:1
Maumee:											
Summer	4.9	4.9	9.6	14.3	18.9[a]	sec.	sec.	sec.	sec.	sec.	sec.
Winter	13.0	13.0	25.8[a]	sec.	sec.	sec.	sec.	sec.	sec.	sec.	sec.
Portage:											
Summer	3.4	3.4	6.3	9.1	12.0	14.8	17.7	sec.	sec.	sec.	sec.
Winter	10.2	1.02	19.9[a]	sec.	sec.	sec.	sec.	sec.	sec.	sec.	sec.
Sandusky:											
Summer	4.1	4.1	8.1	12.1	16.1	20.1[a]	sec.	sec.	sec.	sec.	sec.
Winter	8.4	8.4	16.7	25.0[a]	sec.	sec.	sec.	sec.	sec.	sec.	sec.
Huron-Rocky:											
Summer	3.1	3.1	5.9	8.7	11.5	14.3	17.1	sec.	sec.	sec.	sec.
Winter	10.2	10.2	20.0[a]	sec.	sec.	sec.	sec.	sec.	sec.	sec.	sec.
Cuyahoga/Chagrin:											
Summer	5.2	5.2	10.2	15.2	20.3[a]	sec.	sec.	sec.	sec.	sec.	sec.
Winter	13.0	13.0	25.8[a]	sec.	sec.	sec.	sec.	sec.	sec.	sec.	sec.
Grand:											
Summer	5.8	5.8	11.5	17.2	sec.	sec.	sec.	sec.	sec.	sec.	sec.
Winter	13.0	13.0	25.9[a]	sec.	sec.	sec.	sec.	sec.	sec.	sec.	sec.
Mahoning:											
Summer	7.4	7.4	14.7	22.0[a]	sec.	sec.	sec.	sec.	sec.	sec.	sec.
Winter	13.0	13.0	25.9[a]	sec.	sec.	sec.	sec.	sec.	sec.	sec.	sec.
*CORT:											
Summer	4.0	4.0	8.0	12.0	15.9	19.9[a]	sec.	sec.	sec.	sec.	sec.
Winter	10.2	10.2	20.4[a]	sec.	sec.	sec.	sec.	sec.	sec.	sec.	sec.
L. Muskingum R.:											
Summer	5.4	5.4	10.8	16.2	21.5[a]	sec.	sec.	sec.	sec.	sec.	sec.
Winter	12.4	12.4	24.8[a]	sec.	sec.	sec.	sec.	sec.	sec.	sec.	sec.

* Central Ohio River Tribs.

Table 3. Recommended NH_3-N concentration based on the Nuisance Prevention Use or Limited Resource Water Use criteria for various dilution ratios. (Continued)

		Ratio (upstream $Q_{30,10}$ flow to discharge flow)									
Basin	WQS	0:1	1:1	2:1	3:1	4:1	5:1	10:1	15:1	20:1	25:1
(P1-4,11,12) Mohican/Kokosing:											
Summer	4.9	4.9	9.6	14.3	19.1[a]	sec.	sec.	sec.	sec.	sec.	sec.
Winter	10.2	10.2	20.2[a]	sec.	sec.	sec.	sec.	sec.	sec.	sec.	sec.
(P5-10) Tuscarawas:											
Summer	5.4	5.4	10.6	15.8	21.1[a]	sec.	sec.	sec.	sec.	sec.	sec.
Winter	13.0	13.0	25.8[a]	sec.	sec.	sec.	sec.	sec.	sec.	sec.	sec.
(P17,18) Wills Creek:											
Summer	8.1	8.1	16.0	23.9[a]	sec.	sec.	sec.	sec.	sec.	sec.	sec.
Winter	13.0	13.0	25.8[a]	sec.	sec.	sec.	sec.	sec.	sec.	sec.	sec.
(P16,19) Lower Muskingum:											
Summer	5.8	5.8	11.4	17.0	sec.	sec.	sec.	sec.	sec.	sec.	sec.
Winter	13.0	13.0	25.8[a]	sec.	sec.	sec.	sec.	sec.	sec.	sec.	sec.
Licking River:											
Summer	4.0	4.0	7.8	11.6	15.5	19.3[a]	sec.	sec.	sec.	sec.	sec.
Winter	10.2	10.2	20.2[a]	sec.	sec.	sec.	sec.	sec.	sec.	sec.	sec.
Hocking River:											
Summer	5.4	5.4	10.5	15.6	20.8[a]	sec.	sec.	sec.	sec.	sec.	sec.
Winter	13.0	13.0	25.7[a]	sec.	sec.	sec.	sec.	sec.	sec.	sec.	sec.
*SEORT:											
Summer	6.4	6.4	12.7	19.0[a]	sec.	sec.	sec.	sec.	sec.	sec.	sec.
Winter	13.0	13.0	25.9[a]	sec.	sec.	sec.	sec.	sec.	sec.	sec.	sec.
Little Scioto River:											
Summer	8.7	8.7	17.3	sec.	sec.	sec.	sec.	sec.	sec.	sec.	sec.
Winter	13.0	13.0	25.9[a]	sec.	sec.	sec.	sec.	sec.	sec.	sec.	sec.

* South East Ohio River Trib.

Table 3. Recommended NH_3-N concentration based on the Nuisance Prevention Use or Limited Resource Water Use criteria for various dilution ratios. (Continued)

		Ratio (upstream $Q_{30,10}$ flow to discharge flow)									
Basin	WQS	0:1	1:1	2:1	3:1	4:1	5:1	10:1	15:1	20:1	25:1
Scioto River:											
Summer	4.9	4.9	9.7	14.6	19.4[a]	sec.	sec.	sec.	sec.	sec.	sec.
Winter	10.2	10.2	20.3[a]	sec.	sec.	sec.	sec.	sec.	sec.	sec.	sec.
Little Miami River:											
Summer	3.8	3.8	7.5	11.2	14.9	18.6[a]	sec.	sec.	sec.	sec.	sec.
Winter	7.8	7.8	15.5	23.2[a]	sec.	sec.	sec.	sec.	sec.	sec.	sec.
Great Miami River:											
Summer	3.9	3.9	7.7	11.5	15.3	19.1[a]	sec.	sec.	sec.	sec.	sec.
Winter	9.5	9.5	18.9[a]	sec.	sec.	sec.	sec.	sec.	sec.	sec.	sec.
Wabash River:											
Summer	4.4	4.4	8.5	12.6	16.7	20.8[a]	sec.	sec.	sec.	sec.	sec.
Winter	12.4	12.4	24.5[a]	sec.	sec.	sec.	sec.	sec.	sec.	sec.	sec.
*SWORT:											
Summer	3.5	3.5	6.9	10.3	13.7	17.1	sec.	sec.	sec.	sec.	sec.
Winter	8.4	8.4	16.7	12.0[a]	sec.	sec.	sec.	sec.	sec.	sec.	sec.

[a] This NH_3-N level is greater than those commonly associated with secondary treatment. The number is provided to assist in linear interpolation ratios other than those presented in the table (see Appendix A).

* Southwest Ohio River Tributaries.

Background ammonia nitrogen concentrations were derived from the report entitled "Analysis of Unimpacted Stream Data for the State of Ohio" Appendix B.

Table 4. Summary of 30-day Average Limits for $CBOD_5$, BOD_5, and D.O. for use with the NH_3-N concentration from Table 1.

Allowable NH_3-N (mg/l)	$CBOD_5$ limit (mg/l)	BOD_5 limit (mg/l)	D.O. limit (mg/l[a]
1-2	10	13	6
>2-5	15	20	5
>5-8	20	25	5
>8-11	25	30	5

[a] WWH use only. Exceptional warmwater habitat use, all D.O. values shall be 6 mg/l. For Nuisance Prevention use, limits will be determined on a case-by-case basis.

<u>Maumee</u>

pH	S	8.0
	W	7.9
Temp	S	22
	W	8
NH_3-N		0.22

<u>Portage</u>

pH	S	8.2
	W	8.1
Temp	S	22
	W	8
NH_3-N		0.54

<u>Sandusky</u>

pH	S	8.2
	W	8.2
Temp	S	19
	W	9
NH_3-N		0.10

<u>Huron/Rocky</u>

pH	S	8.2
	W	8.1
Temp	S	23
	W	8
NH_3-N		0.30

<u>Cuyahoga/Chagrin</u>

pH	S	8.0
	W	7.9
Temp	S	21
	W	8
NH_3-N		0.18

<u>Grand</u>

pH	S	7.9
	W	7.9
Temp	S	22
	W	6
NH_3-N		0.10

<u>Mahoning</u>

pH	S	7.8
	W	7.7
Temp	S	21
	W	7
NH_3-N		0.10

<u>CORT</u>

pH	S	8.1
	W	8.1
Temp	S	22
	W	6
NH_3-N		0.025

<u>Little Muskingum River</u>

pH	S	7.9
	W	8.0
Temp	S	23
	W	7
NH_3-N		0.025

Mohican/Kokosing		
pH	S	8.0
	W	8.1
Temp	S	22
	W	9
NH_3-N	0.18	

Tuscarawas		
pH	S	7.9
	W	7.9
Temp	S	23
	W	10
NH_3-N	0.18	

Wills Creek		
pH	S	7.7
	W	7.7
Temp	S	22
	W	14
NH_3-N	0.18	

Lower Muskingum		
pH	S	7.9
	W	7.8
Temp	S	22
	W	11
NH_3-N	0.18	

Licking River		
pH	S	8.1
	W	8.1
Temp	S	22
	W	10
NH_3-N	0.18	

Hocking River		
pH	S	8.0
	W	7.7
Temp	S	23
	W	11
NH_3-N	0.28	

SEORT		
pH	S	7.8
	W	7.9
Temp	S	23
	W	11
NH_3-N	0.08	

Little Scioto		
pH	S	7.5
	W	7.4
Temp	S	25
	W	13
NH_3-N	0.06	

Scioto River		
pH	S	8.0
	W	8.1
Temp	S	22
	W	10
NH_3-N	0.06	

Little Miami		
pH	S	8.1
	W	8.2
Temp	S	23
	W	11
NH_3-N	0.10	

Great Miami		
pH	S	8.2
	W	8.1
Temp	S	20
	W	11
NH_3-N	0.09	

Wabash River		
pH	S	7.9
	W	8.0
Temp	S	26
	W	5
NH_3-N	0.3[a]	