



United States  
Environmental Protection  
Agency

Office of Water  
(4303)  
Washington, DC 20460

EPA-821-B-01-008  
January 2002

---

# Environmental Assessment of Proposed Effluent Limitations Guidelines and Standards for the Meat and Poultry Products Industry Point Source

---

## Table of Contents

<b>Executive Summary .....</b>	ES-1
<b>1.0 Introduction .....</b>	1-1
1.1 Definition of MPP .....	1-1
1.2 Water Quality Issues Related to MPP .....	1-1
1.3 Potential Environmental Impacts of MPP .....	1-2
1.4 Organization of Report .....	1-3
<b>2.0 Methodology .....</b>	2-1
2.1 Introduction .....	2-1
2.2 Overview of Water Quality Assessment Approach .....	2-1
2.2.1 Characterize Effluent Discharges .....	2-3
2.2.2 Ensure MPP Survey Data is Model Read .....	2-4
2.3 Overview of NWPCAM 1.1 .....	2-4
2.3.1 Types of Water Pollutant Problems and Policies that Can Be Analyzed with NWPCAM .....	2-5
2.4 Pollutant Parameters Modeled Using NWPCAM 1.1 .....	2-6
2.4.1 Dissolved Oxygen (DO) .....	2-6
2.4.2 Biochemical Oxygen Demand (BOD) .....	2-6
2.4.3 Total Kjeldahl Nitrogen (TKN) .....	2-8
2.4.4 Total Suspended Solids (TSS) .....	2-9
2.4.5 Fecal Coliform Bacteria (FCB) .....	2-9
2.4.6 Nutrients (Total Nitrogen and Total Phosphorus) .....	2-10
2.5 Water Quality Modeling .....	2-11
2.6 Water Use Support Determinations .....	2-11
2.7 Facility Effluent Data Inputs for NWPCAM .....	2-14
2.8 Model Runs .....	2-14
2.9 Creating Municipal and Industrial Select Tables .....	2-16
2.10 Direct Industrial Dischargers .....	2-16
2.11 Indirect Industrial Dischargers .....	2-16
2.12 POTWs .....	2-17
<b>3.0 Data Sources .....</b>	3-1
3.1 Point Source Loads Used in NWPCAM to Estimate Baseline Water Quality Conditions ..	3-1
3.1.1 Municipal and Industrial Dischargers .....	3-2
3.1.1.1 Primary Data Sources .....	3-2
3.1.1.2 Typical Pollutant Concentrations .....	3-4
3.1.1.3 Inventory of Point Source Facilities .....	3-4
3.1.2 Urban Runoff and Combined Sewer Overflows .....	3-5
3.1.2.1 Primary Data Sources .....	3-5

3.1.2.2 Typical Pollutant Concentrations .....	3-6
3.1.2.3 Primary Data Sources for Urban Runoff Estimates .....	3-7
3.2 Nonpoint Source Loads .....	3-7
3.3 Facility-Specific Loading Data .....	3-9
<b>4.0 Results .....</b>	<b>4-1</b>
4.1 WQEA Results Summary .....	4-1
4.1.1 Treatment Options Modeled .....	4-3
4.1.2 Facilities Modeled .....	4-4
4.1.3 Simplified Environmental Scale-up Factor .....	4-4
4.1.4 Limitations of the WQEA .....	4-5
4.2 Documented Environmental Effects .....	4-6
<b>5.0 References .....</b>	<b>5-1</b>

## **Table of Contents (continued)**

### **APPENDICES**

A:	Preamble Correction .....	A-1
B:	Equations used to update municipal facility loadings .....	B-1
C:	Modules .....	C-1

## List of Tables

	<u>Page No.</u>
Table ES-1	Regulatory Treatment Options . . . . . ES-3
Table ES-2	Water Quality Criteria By Use . . . . . ES-4
Table ES-3	Empirical Calculation of Criteria from the Baseline Scenario . . . . . ES-6
Table ES-4	Benefit Scenarios Modeled (97 facilities) . . . . . ES-7
Table ES-5	Water Quality Index (WQI) Baseline and Proposed Treatment Level Statistics . . . . . ES-8
Table 2-1	Regulatory Treatment Options . . . . . 2-3
Table 2-2	Water Quality Criteria Threshold By Use . . . . . 2-12
Table 2-3	Empirical Calculation of Criteria from the Baseline Scenario . . . . . 2-13
Table 2-4	Benefit Scenarios Modeled . . . . . 2-15
Table 2-5	Fraction of Pollutant Retained as a Function of Treatment Level . . . . . 2-17
Table 2-6	Default Effluent Characteristics by Treatment Level . . . . . 2-20
Table 3-1	Effluent Characteristics of rban Runoff and CSOs . . . . . 3-6
Table 3-2	National Summary of Annual Load Estimates for Urban and Rural Runoff and CSOs (as metric tons/day) . . . . . 3-7
Table 4-1	Benefit Scenarios Modeled (97 facilities) . . . . . 4-2
Table 4-2	Water Quality Index (WQI) Baseline and Proposed Treatment Level Statistics . . . . . 4-3
Table 4-3	MPP Regulatory Treatment Options . . . . . 4-4
Table 4-4	Documented Environmental Effects of MPP Wastes on Water Quality . . . . . 4-8
Table IX.G-1	Modeled Environmental Benefits (97 facilities) . . . . . A-1

# **Environmental Assessment**

of Proposed Effluent Limitations Guidelines

and Standards for the

## **Meat and Poultry Products**

Industry Point Source

January 2002

U.S. Environmental Protection Agency  
Office of Science and Technology  
Engineering and Analysis Division  
1200 Pennsylvania Avenue, N.W.  
Washington, D.C. 20460

Charles Tamulonis  
Task Manager

## **ACKNOWLEDGMENTS AND DISCLAIMER**

The Engineering and Analysis Division, of the Office of Science and Technology, has reviewed and approved this report for publication. The Office of Science and Technology directed, managed, and reviewed the work of Tetra Tech in preparing this report. Neither the United States Government nor any of its employees, contractors, subcontractors (Research Triangle Institute.), or their employees make any warranty, expressed or implied, or assumes any legal liability or responsibility for any third party's use of or the results of such use of any information, apparatus, product, or process discussed in this report, or represents that its use by such party would not infringe on privately owned rights.