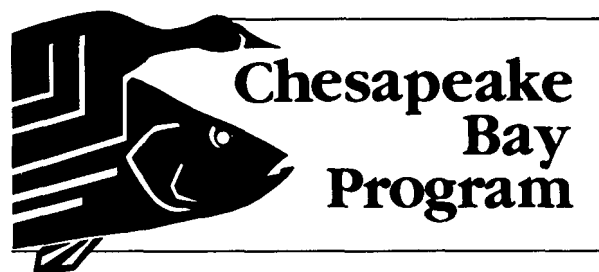


August 1988

Point Source Atlas



The Chesapeake Bay Program: Point Source Atlas

**A Report of the
Chesapeake Bay Liaison Office**

August 1988

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Table of Contents

Introduction	1
The Pollutants: Nutrients.....	5
Municipal Nutrients	5
Industrial Nutrients.....	16
The Pollutants: Toxicants	21
Municipal Toxicants.....	21
Industrial Toxicants	31
Federal Dischargers	31
Data Availability	38
Data Dictionary Atlas 85 Data Set	40

List of Tables

Table 1	Point Source Nutrient Loads
Table 2	Municipal Flow and Pollutant Loads by Basin
Table 3	Municipal Facilities Subject to Regional Nutrient Control Policies
Table 4	Municipal Mean Flow and Mean Nutrient Discharge Concentrations by Basin
Table 5	Pollutant Loads and Flow from Municipal Plants with Flows Greater than 0.5 MGD
Table 6	Pollutant Loads and Flow from Municipal Plants with Flows Less than 0.5 MGD
Table 7	Municipal Flow and Pollutant Loads Discharged AFL by Basin
Table 8	Municipal Flow and Pollutant Loads Discharged BFL by Basin
Table 9	Municipal Flow and Pollutant Loads by State
Table 10	Municipal Flow and Pollutant Loads Discharged AFL by State
Table 11	Municipal Flow and Pollutant Loads Discharged BFL by State
Table 12	Design Flow Capacity and Estimates of Year 2000 Flow
Table 13	Type and Number of Industrial Dischargers with Potential to Discharge Nutrients and Estimated Concentration
Table 14	Industrial Nutrient Loads AFL and BFL by Basin
Table 15	Municipal Dischargers Required to Develop Pretreatment Programs
Table 16	Municipal Dischargers 1985 Total Residual Chlorine (TRC) Discharge and Status of Current (1988) Chlorine Control
Table 17	Municipal Plants with Ammonia or TKN Permit Limits
Table 18	Municipal Dischargers Where Biomonitoring Tests Have Been Conducted and Toxicity Reduction Studies (TRE) Are Underway or Planned Because of Toxicity
Table 19	TRE Status of Municipal Dischargers
Table 20	Types of Industrial Dischargers with the Potential to Discharge Toxicants and Estimated Toxic Concentrations
Table 21	Industrial Dischargers Where Biomonitoring Tests Have Been Conducted and Toxicity Reduction Studies (TRE) Are Underway or Planned because of Toxicity
Table 22	TRE Status of Industrial Dischargers
Table 23	Inventory of Major Federal Dischargers

List of Figures

- Figure 1 Major Industrial and Municipal Dischargers in Bay Watershed
- Figure 2 Fall Line and Major Drainage Basins
- Figure 3 Point Source Nitrogen Loads
- Figure 4 Point Source Phosphorus Loads
- Figure 5 Municipal Flow and Nutrient Loads
- Figure 6 Location of Municipal Dischargers Subject to Regional Nutrient Control Policies
- Figure 7 Percentage of Flow and Nutrient Loadings from Plants Subject to Regional Nutrient Control Policies
- Figure 8 Total Municipal Flow Discharged AFL and BFL
- Figure 9 Discharged Municipal Flow and Nitrogen Loads
- Figure 10 Discharged Municipal Flow and Phosphorus Loads
- Figure 11 Municipal Flow and Nutrient Loads by State
- Figure 12 Municipal Dischargers with Pretreatment Programs
- Figure 13 Municipal Dischargers with Biomonitoring and TRE
- Figure 14 Industrial Dischargers with Biomonitoring and TRE

Introduction

A computerized data base of Chesapeake Bay point source dischargers has been developed to document information on point source pollutant input to the Bay. Installed on the Chesapeake Bay Program computer and available to registered users, the Chesapeake Bay point source data base (Atlas 85) provides a central repository for locational and administrative data on almost 6,000 point source dischargers located in the commonwealths of Virginia and Pennsylvania, the states of Maryland, New York, West Virginia and Delaware, and the District of Columbia.

Point sources of pollution are defined as municipal and industrial plants that discharge waste to a water body from a discrete pipe or ditch. Municipal point sources are wastewater treatment plants that receive and treat both domestic wastewater and wastewater generated by local commercial and industrial activities. These wastewaters contain large amounts of organic matter, including nutrients such as phosphorus and nitrogen, that may cause significant depletion of dissolved oxygen (DO) in the receiving stream. Heavy metals, chlorinated hydrocarbons and other toxic substances may also be present.

Industrial point sources are commercial and industrial plants that carry out diverse and complex manufacturing processes which require solvents, catalysts, and other chemicals that contaminate discharged wastewater. These wastewaters may also contain large amounts of oxygen demanding substances. In the Bay watershed, there are 461 different types of industrial activity, including coal mining, iron and steel production, electric power generation, seafood processing, inorganic and organic chemical manufacturing, concrete manufacturing, and petroleum refining.

The point source data base contains information on 1345 municipal dischargers and 4651 industrial dischargers. Of these, 205 municipal and 192 industrial dischargers have been designated as major dischargers. The location and distribution of major dischargers are displayed in Figure 1. It is important to note that this point source map shows only the general location of sources and is intended primarily to illustrate the number and geographic distribution of selected categories of point sources.

The point source data base provides 1985 wastewater characteristics for more than 500 municipal dischargers and estimates nutrient and toxicant wastewater concentrations for 93 different types of industrial activities with the potential to generate and discharge these pollutants.

The information in the point source data base was initially compiled from federal data bases such as the Environmental Protection Agency (EPA) Needs Survey and Permit Compliance System; it was then refined and expanded with state and facility data. A more complete description of data sources may be found in the data base documentation file available from the Chesapeake Bay Liaison Office.

All effluent data are annual averages for the calendar year 1985. As such, the information in the data base serves as the baseline from which progress towards meeting the Bay Agreement commitment to reduce nutrient loads, reduce toxic discharges and control conventional pollutants can be measured. Importantly, municipal wastewater characteristics and industrial nutrient loads are consistent with state estimates presented in state nutrient reduction strategies (April 1988). These estimates include industrial nutrient sources not available during preparation of the report, "A Commitment Renewed" (Implementation Committee, February

1988). As a result, industrial nutrient loads (and percentages of point source total) are slightly higher than those cited in the earlier report.

Other applications of the data base include evaluation of point source management alternatives, tracking program implementation, model input and loading calculations. Descriptive statistics and analyses derived from the data base are presented in the following discussions. The final section contains a data dictionary and describes how the data base may be accessed and used for other analyses.

The point source loadings presented are discharged pollutant loads. Discharged pollutant loads are "end of pipe" loads and do not reflect natural physical and chemical decay processes that occur as the loads are transported from the upper watershed to the Chesapeake Bay. The fall line (defined as the point on the Bay tributaries, usually marked by a waterfall, which signalizes the boundary between the resistant crystalline rocks of the Piedmont Plateau and the less resistant sediments of the Atlantic Coastal Plain) creates a natural divide to characterize nutrient input to the Bay basin. Above the fall line (AFL) pollutant loads are greatly influenced by decay processes, dependent upon their distance from the Bay; below the fall line (BFL) pollutant loads are not generally considered to be reduced by these processes because of their proximity to the Bay. The fall line and the eight major drainage basins in the Chesapeake Bay watershed are illustrated in Figure 2. Loads are calculated in million of pounds per year from flow and effluent concentration data contained in the point source data base. Nutrient and conventional pollutants information is presented, followed by information on toxic pollutants.

Figure 1
Major Industrial and Municipal Dischargers in Bay Watershed

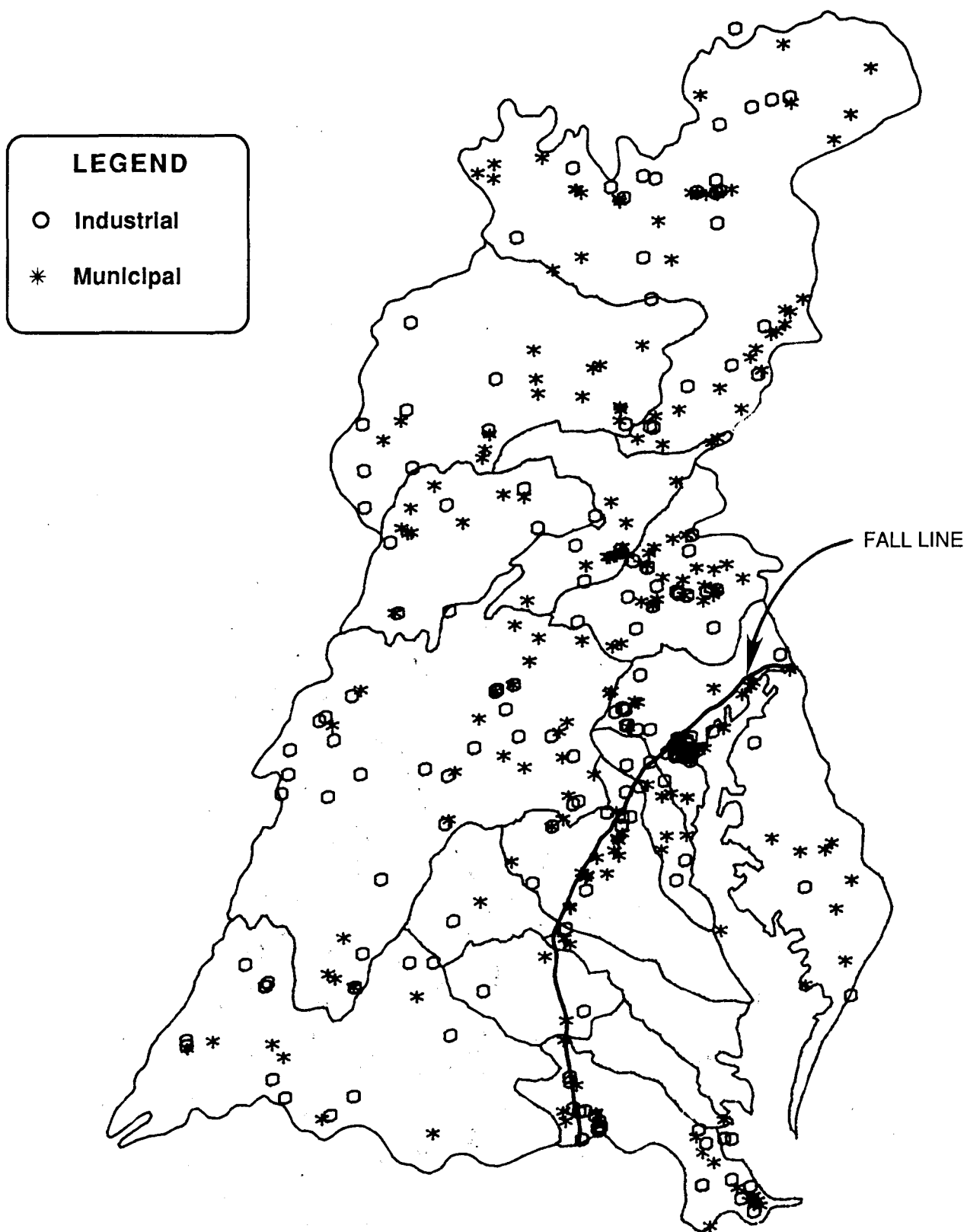
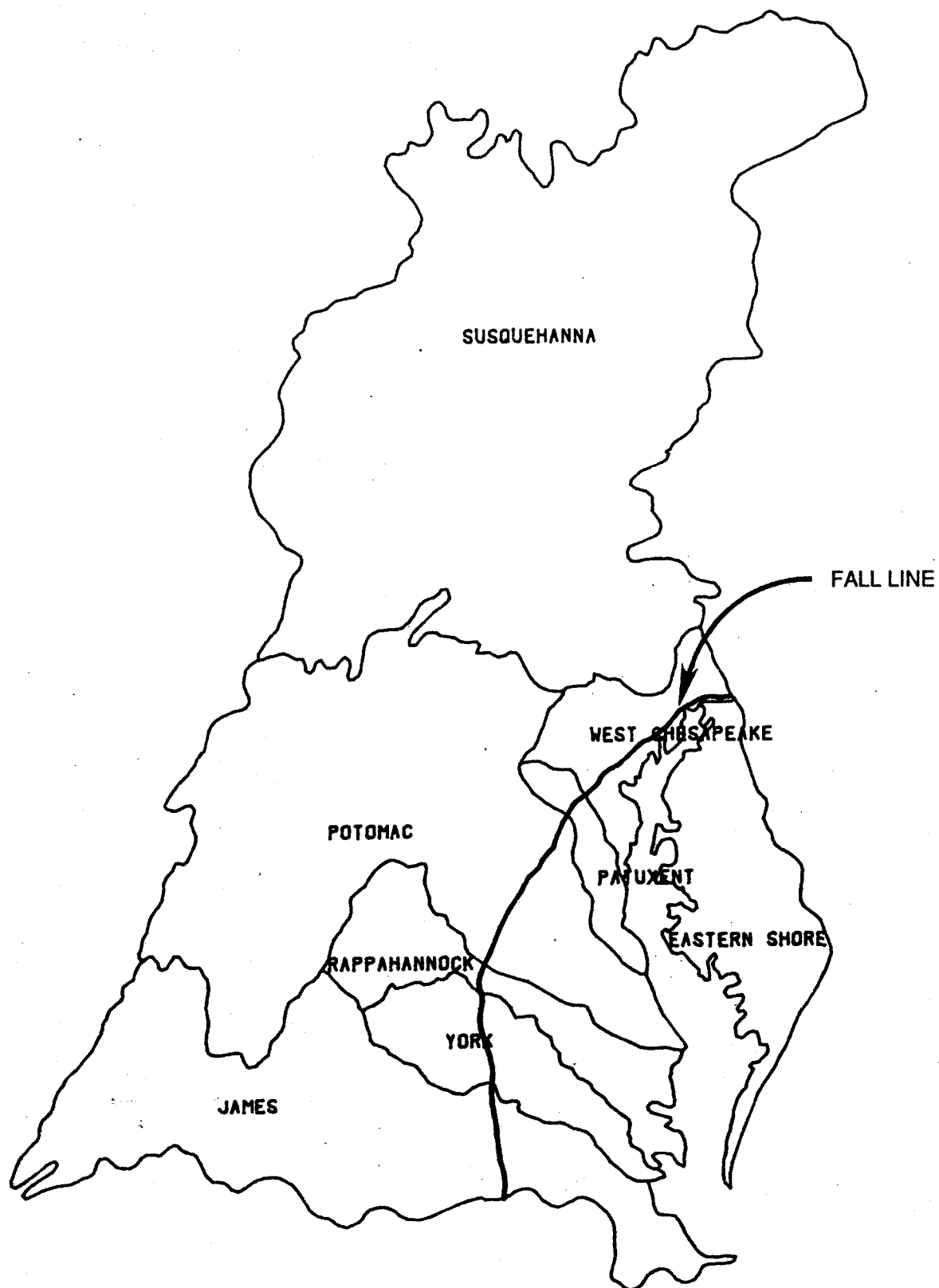


Figure 2
Fall Line and Major Drainage Basins



The Pollutants: Nutrients

Municipal facilities are the major point source of nutrients to the Bay, discharging 94.0 percent of the total phosphorus and 88.3 percent of the total nitrogen loads (Table 1). Municipal and industrial nutrient loads presented in Table 1 are illustrated in Figures 3 and 4. The table and figures show that municipal sources BFL are the major source of nitrogen; municipal sources AFL are the major source of phosphorus. Table 1 shows that these sources discharge 59.6 percent of the nitrogen and 52.0 percent of the phosphorus loads respectively.

Table 1
Point Source Nutrient Loads

POINT SOURCE	PHOSPHORUS		NITROGEN	
	Load	%	Load	%
Municipal				
AFL	7.3	52.0	26.2	28.7
BFL	5.9	42.0	54.4	59.6
Total Municipal	13.2	94.0	80.6	88.3
Industrial				
AFL	0.39	2.8	2.1	2.3
BFL	0.45	3.2	8.5	9.4
Total Industrial	0.84	6.0	10.6	11.7
Municipal and Industrial				
AFL	7.69	54.8	28.3	31.0
BFL	6.35	45.2	62.9	69.0
Total Point Source	14.04	100.0	91.2	100.0

Municipal load in millions of pounds per year based on 365 operating days

Industrial load in millions of pounds per year based on 250 operating days

% = Percent relative to total point source load.

MUNICIPAL NUTRIENTS

Municipal flows and nutrient loads are presented by basin in Table 2. Flows and nutrient loads for the four largest basins are illustrated in Figure 5. The largest municipal flows are discharged within the Potomac (521.3 million gallons/day (mgd)) and Susquehanna (336.2 mgd) basins. The largest nitrogen loads are also discharged within the Potomac (24.4 million pounds/year) and Susquehanna (18.6 million pounds/year) basins. The largest phosphorus loads are discharged within the Susquehanna (5.0 million pounds/year) and James (3.6 million pounds/year) basins.

Figure 3
Point Source Nitrogen Loads

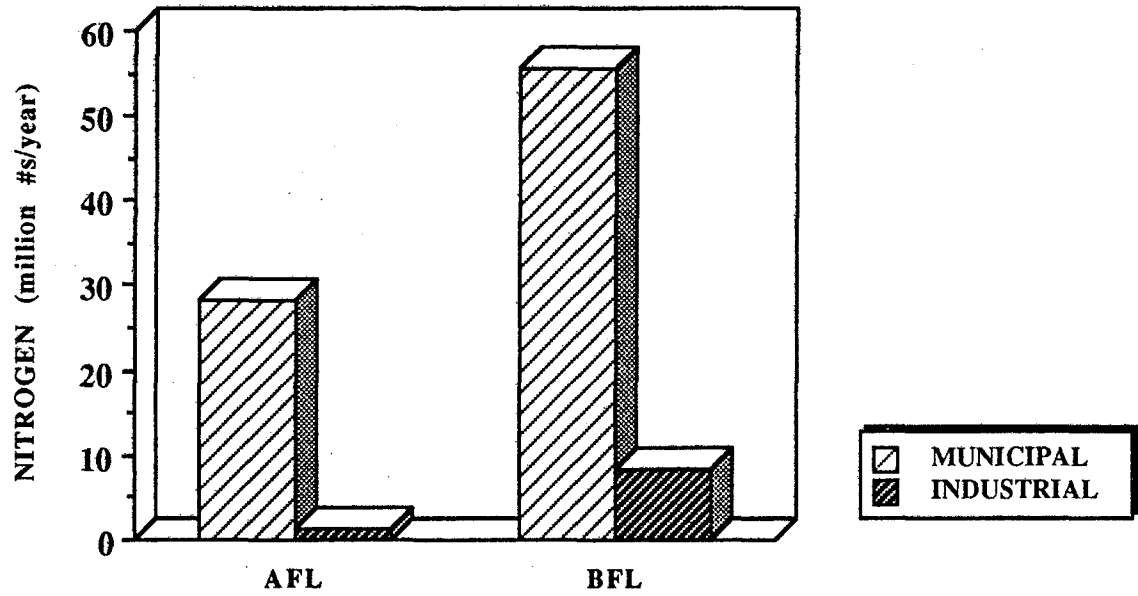


Figure 4
Point Source Phosphorus Loads

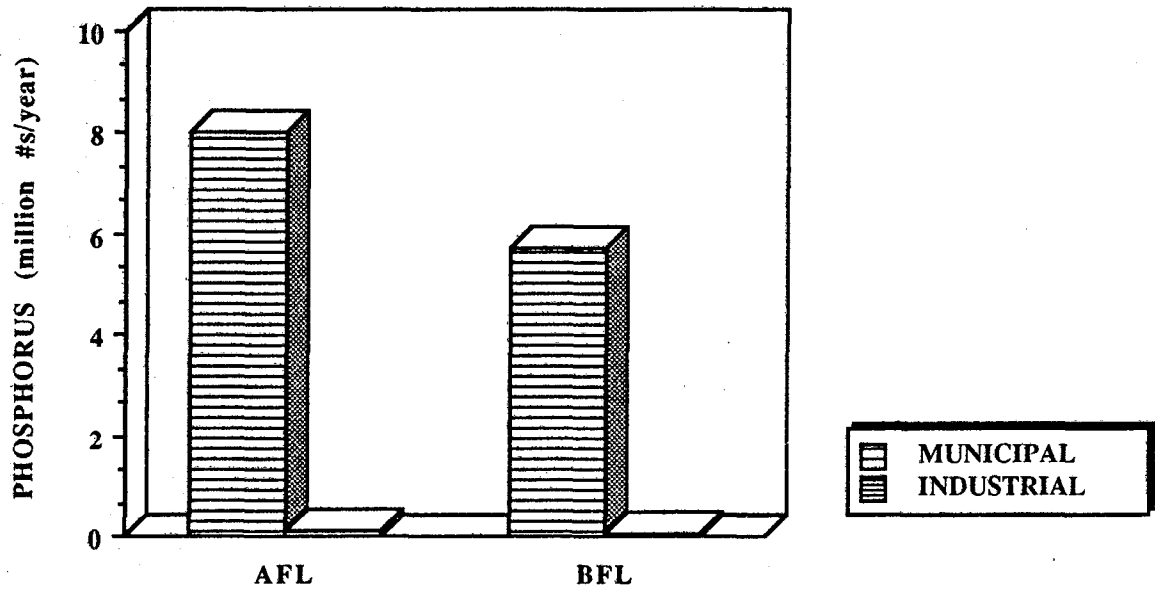


Table 2
Municipal Flow and Pollutant Load by Basin

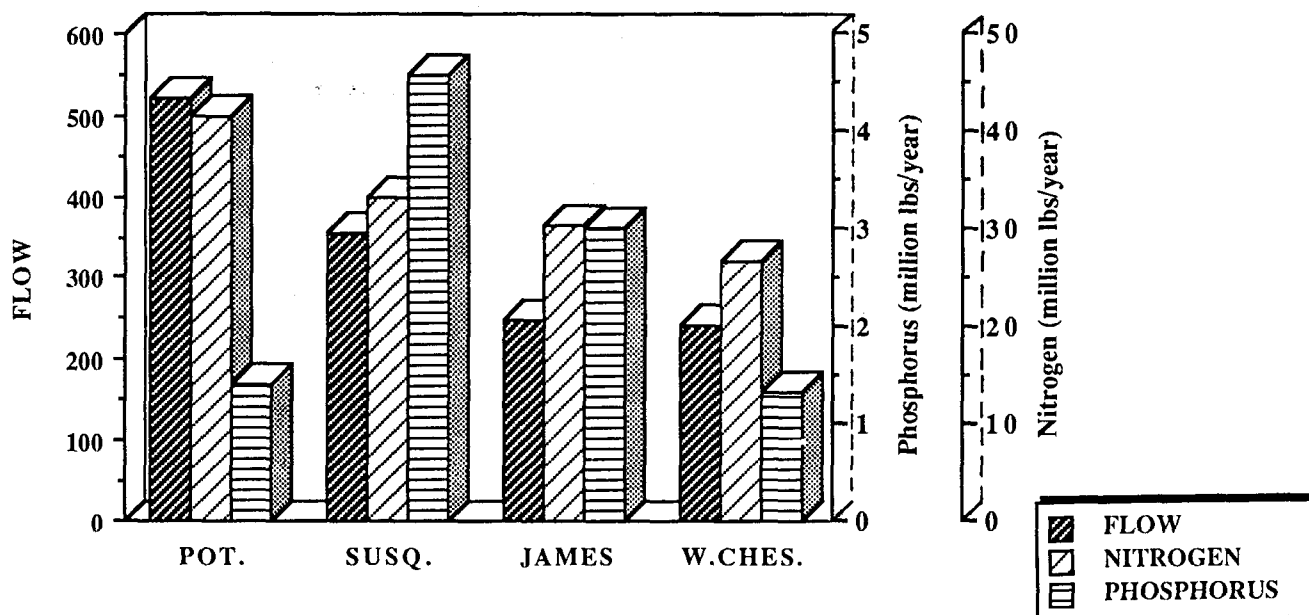
BASIN	FLOW	PHOSPHORUS LOAD	NITROGEN LOAD	BOD 5	TSS
Susquehanna	336.2	5.0	18.6	29.8	27.8
E. Shore	21.9	0.4	1.2	1.7	1.8
W. Chesapeake	243.8	1.8	15.4	24.2	28.8
Patuxent	35.6	0.4	1.9	0.5	0.8
Potomac	521.3	1.6	24.4	9.9	7.4
Rappahannock	8.3	0.1	0.5	0.5	0.5
York	11.9	0.2	0.6	0.4	0.5
James	250.5	3.6	18.0	22.7	17.3

Flow in millions of gallons per day

Load in millions of pounds per year

Includes all municipal dischargers in MD, VA, PA, NY, WV, DE and Washington DC

Figure 5
Municipal Flow and Nutrient Loads



Maryland, Pennsylvania, Virginia and the District of Columbia have developed and implemented regional policies to control phosphorus. Only Maryland's Nutrient Control Strategy for the Patuxent River basin requires nitrogen control at selected dischargers, but, the strategy had not yet been implemented in 1985. Phosphorus control policies affect dischargers in the lower Susquehanna, West Chesapeake, Patuxent and upper Potomac river basins. Locations of dischargers subject to the policies are shown in Figure 6. Specific facilities subject to nutrient

Figure 6
Location of Municipal Dischargers Subject to
Regional Nutrient Control Policies

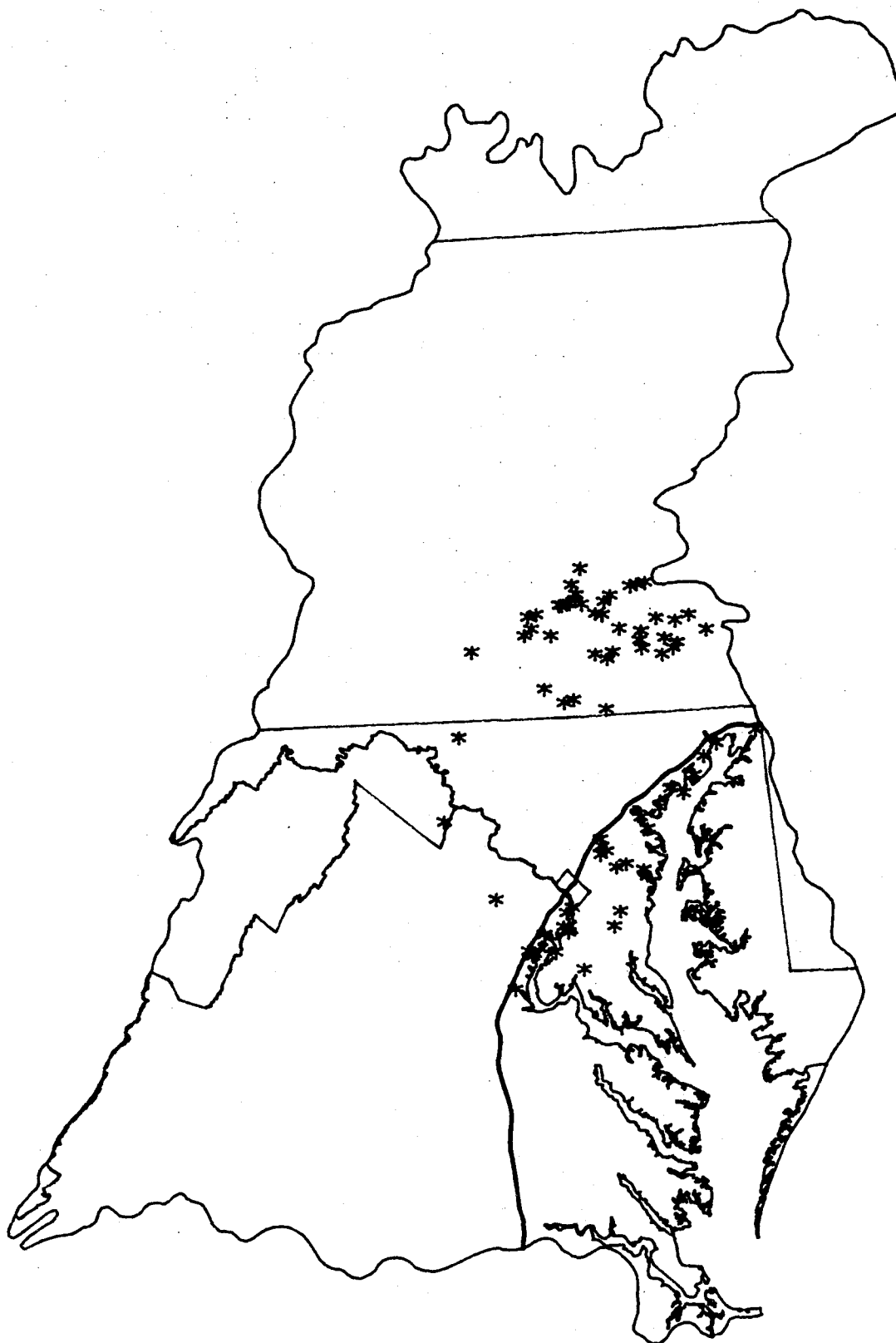
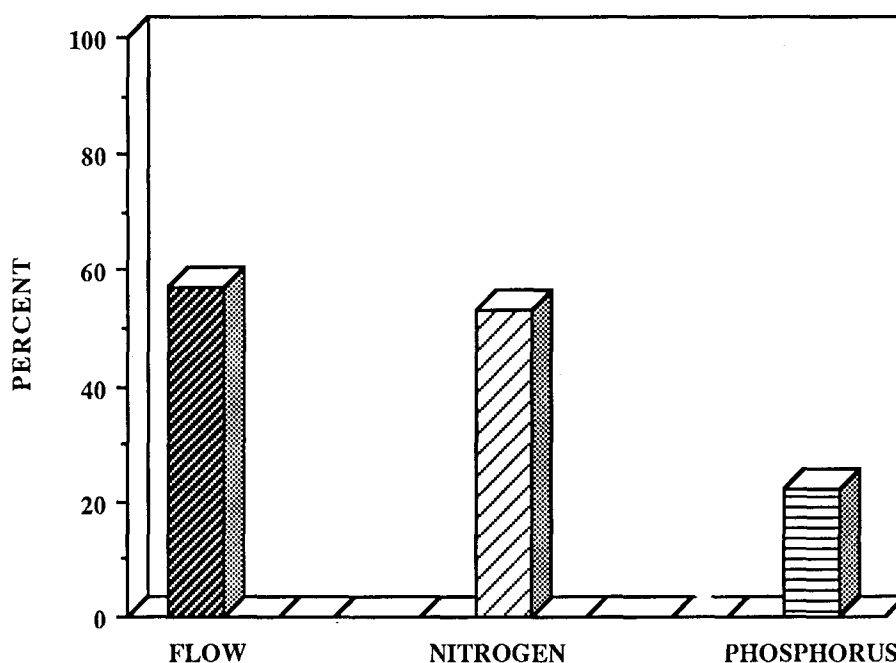


Figure 7
Percentage of Flow and Nutrient Loadings
Basin-wide from Plants Subject to
Regional Phosphorus Control Policies



control policies, policy requirements, and 1985 operational data are listed in Table 3. Figure 7 summarizes basin level data and shows, basin-wide, the phosphorus controlled plants account for 57 percent of the total flow, and 53 percent of the total nitrogen, but only 22 percent of the total phosphorus load. A more complete description of the regional nutrient control policies may be found in Chapter 3 of the report "A Commitment Renewed."

Flow-weighted mean nutrient concentrations from municipal discharges are shown in Table 4. Mean nitrogen concentrations range from 15.6 to 24.0 mg/l. Phosphorus concentrations range from 1.1 to 6.7 mg/l with the lowest mean effluent concentration occurring in the Potomac River. The Potomac has the largest flow subject to a phosphorus policy (440 mgd) and the most stringent phosphorus discharge limits (0.18 mg/l).

Facilities with operational flows less than 0.5 mgd account for 83 percent of the total number of municipal plants. However, they account for only a little more than 3 percent of the total flow, 3 percent of the total nitrogen load and about 7 percent of the total phosphorus load discharged by municipal plants (Tables 5 and 6). Because of the large number of these plants and the small percentage of the nutrient load they contribute, most data gathering and analysis focuses on discharges with flows greater than 0.5 mgd.

The distinction between municipal loads discharged AFL and BFL is important because AFL loads are likely to be decreased by physical and chemical processes as they are transported to the Bay. As stated earlier, however, this discussion deals with discharged loads and does not account for decay processes which are difficult to quantify. Quantification of the decay processes is the domain of the watershed model. Municipal loadings AFL and BFL for each basin are presented in Tables 7 and 8. Municipal flow discharged AFL and BFL is illustrated

TABLE 3. MUNICIPAL FACILITIES SUBJECT TO REGIONAL NUTRIENT CONTROL POLICIES

POLICY	BASIN	FACILITY NAME	FALLINE	FLOW	PHOSPHORUS				
					LIMIT	EFFLUENT	NITROGEN	BOD 5	TSS
PATX	PATUXENT	BOWIE CITY STP	AFL	2.420	1.00	4.400	18.00	17.0000	34.0000
PATX	PATUXENT	PATUXENT-ANNE ARUNDEL CO.	AFL	4.000	1.00	7.000	22.00	12.0000	11.0000
PATX	PATUXENT	PARKWAY	AFL	4.600	1.00	2.900	19.00	2.0000	3.0000
PATX	PATUXENT	HORSEPEN	AFL	2.760	1.00	7.000	18.00	3.0000	5.0000
PATX	PATUXENT	WESTERN BRANCH	BFL	10.800	1.00	3.300	14.40	1.0000	1.2500
PATX	PATUXENT	MARYLAND CITY WASTEWATER TREAT	AFL	0.650	1.00	7.000	24.00	16.0000	21.0000
PATX	PATUXENT	LITTLE PATUXENT STP	AFL	9.100	1.00	0.400	18.00	3.0000	7.0000
PATX	PATUXENT	MD CORRECTIONAL INSTITUTE	AFL	1.300	1.00	7.000	18.00	21.0000	24.0000
PATX	W CHESAP	FORT GEORGE G MEADE	AFL	1.900	1.00	0.400	18.00		
POTM	POTOMAC	BLUE PLAINS	BFL	300.700	0.18	0.120	13.40	1.9000	1.6800
POTM	POTOMAC	LA PLATA, TOWN OF	BFL	0.800	2.00	7.000	18.00	25.0000	25.0000
POTM	POTOMAC	PISCATAWAY	BFL	12.900	0.18	0.180	14.40	1.4000	3.9000
POTM	POTOMAC	CHARLES CNTY SAN DIST MATTAWOM	BFL	4.400	0.18	3.900	12.70	18.2125	13.9125
POTM	POTOMAC	DALE SERVICE CORP. PLANT # 8	BFL	0.840	0.18	0.330	15.00	5.5000	3.5800
POTM	POTOMAC	DALE SERVICE CORP. PLANT # 1	BFL	2.040	0.18	0.180	15.00	2.9700	2.0800
POTM	POTOMAC	UPPER OCCOQUAN SEWAGE AUTH-REG	BFL	9.400	0.10	0.025	20.90	0.3913	0.1105
POTM	POTOMAC	MOONEY - PRINCE WM. CO.	BFL	7.580	0.18	0.160	26.40	2.0000	2.2100
POTM	POTOMAC	ALEXANDRIA CITY SANITARY AUTHO	BFL	35.600	0.18	0.150	18.40	14.4200	5.8500
POTM	POTOMAC	LOWER POTOMAC, FAIRFAX CO	BFL	32.980	0.18	0.140	19.00	5.6000	0.4400
POTM	POTOMAC	FAIRFAX CO-LITTLE HUNTING CR	BFL	3.820	0.18	0.190	24.00	12.1200	8.9300
POTM	POTOMAC	ARLINGTON	BFL	26.560	0.18	0.560	20.30	7.8000	4.7000
POTM	POTOMAC	U.S. MARINE CORPS BASE-MAINSID	BFL	1.450	0.18	0.200	14.87	5.7000	10.0000
POTM	POTOMAC	AQUIA SANITARY DISTRICT	BFL	1.140	0.18	0.590	14.49	2.5700	1.8400
UPCB	W CHESAP	BETH STEEL (FROM BACK R STP)	BFL	99.800	2.00	1.800	22.00	50.5000	57.7500
UPCB	E SHORE	TOWN COMMISSIONERS OF PERRYVIL	BFL	0.600	2.00	0.700	18.00	12.1375	13.8500
UPCB	W CHESAP	ABERDEEN PROVING GROUND-EDGEWO	BFL	1.300	2.00	1.000	16.60	4.2857	4.7143
UPCB	W CHESAP	BACKRIVER	BFL	65.800	0.20	1.800	22.00	25.0000	37.1250
UPCB	W CHESAP	ABERDEEN, TOWN OF STP	BFL	1.100	2.00	0.400	18.00	9.0000	19.0000
UPCB	W CHESAP	PATAPSCO	BFL	41.600	2.00	3.400	19.00	15.8750	20.2500
UPCB	W CHESAP	AA COUNTY BROADNECK	BFL	3.200	2.00	7.000	24.20	11.4075	14.0125
UPCB	W CHESAP	ANNE ARUNDEL CO DPW-COX CREEK	BFL	9.200	2.00	3.000	20.00	13.6875	13.7750
UPCB	W CHESAP	SOD RUN	BFL	5.800	2.00	1.400	26.80	17.2500	14.7500
UPCB	E SHORE	ELKTON SEWAGE TREATMENT PLANT	BFL	0.800	2.00	2.700	18.00	44.8750	64.7500
UPCB	SUSQUEHANNA	LITITZ SEWAGE AUTHORITY	AFL	1.767	2.00	1.450	39.54	8.8000	8.7000
UPCB	SUSQUEHANNA	SHIPPENSBURG BOROUGH AUTHORITY	AFL	1.550	2.00	1.000	24.56	2.3000	8.6000
UPCB	SUSQUEHANNA	MIDDLETOWN WASTEWATER TREATMEN	AFL	0.956	2.00	1.200	24.56	15.0000	15.0000
UPCB	SUSQUEHANNA	DOVER TOWNSHIP SEWER AUTHORITY	AFL	1.600	2.00	7.500	23.95	6.6000	7.3000
UPCB	SUSQUEHANNA	MECHANICSBURG BOROUGH MUNICIPA	AFL	0.837	2.00	1.220	26.20	4.3000	8.3000
UPCB	SUSQUEHANNA	MANHEIM BOROUGH AUTH	AFL	0.420	2.00	7.500	23.09	35.0000	24.0000
UPCB	SUSQUEHANNA	NEW OXFORD MUNICIPAL FACILITY	AFL	0.611	2.00	5.700	15.64	13.1000	6.9500
UPCB	SUSQUEHANNA	MOUNT JOY SEWAGE TREATMENT PLA	AFL	0.774	2.00	1.900	22.80	4.0000	4.0000
UPCB	SUSQUEHANNA	MARYSVILLE MUNICIPAL AUTHORITY	AFL	0.457	2.00	0.290	17.73	2.1000	3.6000
UPCB	SUSQUEHANNA	MARIETTA DONEGAL JOINT AUTHORI	AFL	0.325	2.00	7.500	17.73	18.0000	25.0000

PATX = Patuxent nutrient control strategy

POTM = Potomac Strategy

UPCB = Upper Chesapeake Bay Phosphorus Control Policy

Flow in million of gallons per day

Concentrations in milligrams per liter

TABLE 3. MUNICIPAL FACILITIES SUBJECT TO REGIONAL NUTRIENT CONTROL POLICIES (Cont.)

POLICY	BASIN	FACILITY NAME	FALLINE	FLOW	PHOSPHORUS		NITROGEN	BOD 5	TSS
					LIMIT	EFFLUENT			
UPCB	SUSQUEHANNA	ANNVILLE TOWNSHIP	AFL	0.446	2.00	5.000	20.90	3.4000	8.5000
UPCB	SUSQUEHANNA	NEW HOLLAND BOROUGH AUTHORITY	AFL	0.520	2.00	7.500	27.64	16.8000	18.5000
UPCB	SUSQUEHANNA	ELIZABETHTOWN BOROUGH STP	AFL	1.625	2.00	2.820	30.02	14.0000	24.0000
UPCB	SUSQUEHANNA	MT. HOLLY SPRINGS BOROUGH AUTH	AFL	0.224	2.00	0.810	20.90	11.6000	12.4000
UPCB	SUSQUEHANNA	HIGHSPIRE STP	AFL	0.853	2.00	1.560	17.20	15.0000	15.0000
UPCB	SUSQUEHANNA	PALMYRA BOROUGH AUTHORITY	AFL	0.612	2.00	2.900	28.04	6.4000	9.5000
UPCB	SUSQUEHANNA	CARLISLE SUBURBAN AUTHORITY	AFL	0.533	1.00	2.000	20.90	3.5000	4.6000
UPCB	SUSQUEHANNA	DILLSBURG BOROUGH AUTHORITY	AFL	0.451	2.00	0.950	20.90	4.0000	5.0000
UPCB	SUSQUEHANNA	CARLISLE BOROUGH SEWER SYSTEM	AFL	2.570	1.00	0.850	15.25	8.9000	8.4000
UPCB	SUSQUEHANNA	COLUMBIA WASTEWATER TREATMENT	AFL	0.615	2.00	5.300	33.63	31.0000	90.0000
UPCB	SUSQUEHANNA	YORK SEWAGE WASTEWATER TRMT PL	AFL	9.441	2.00	1.800	18.07	20.8000	31.4000
UPCB	SUSQUEHANNA	LEMOYNE BOROUGH MUNICIPAL AUTH	AFL	1.310	2.00	2.000	25.12	7.7000	9.9000
UPCB	SUSQUEHANNA	DERRY TOWNSHIP MUN. AUTH.	AFL	2.480	2	1.30	13.71	11.3	9.0
UPCB	SUSQUEHANNA	MILLERSVILLE BORO OF	AFL	0.587	2	7.50	28.62	17.0	7.0
UPCB	SUSQUEHANNA	NEW CUMBERLAND BORO AUTH-STP	AFL	0.421	2	1.82	24.68	10.8	20.1
UPCB	SUSQUEHANNA	LANCASTER SEW. AUTH. NORTH STP	AFL	8.700	2	2.92	11.50	19.0	28.0
UPCB	SUSQUEHANNA	SWATARA TOWNSHIP	AFL	2.608	2	7.50	23.17	20.0	15.0
UPCB	SUSQUEHANNA	LANCASTER SEWER AUTH-STANLEY D	AFL	9.800	2	6.25	19.55	60.0	61.0
UPCB	SUSQUEHANNA	SPRINGETTSBURG	AFL	9.250	2	3.30	16.57	17.2	32.5
UPCB	SUSQUEHANNA	HANOVER STP, BOROUGH OF	AFL	2.663	2	8.70	19.98	67.4	39.6
UPCB	SUSQUEHANNA	LOWER ALLEN TOWNSHIP AUTHORITY	AFL	2.020	2	1.95	9.45	19.2	13.0
UPCB	SUSQUEHANNA	HARRISBURG SEWERAGE AUTHORITY-	AFL	27.700	2	1.51	15.59	17.1	13.9
UPCB	SUSQUEHANNA	LEBANON CITY AUTHORITY-SEWAGE	AFL	3.980	2	1.40	24.23	7.4	12.1
UPCB	SUSQUEHANNA	EPHRATA BOROUGH WASTEWATER TRE	AFL	2.490	2	1.45	22.82	3.6	5.5
UPCB	SUSQUEHANNA	HAMPDEN TOWNSHIP SEWAGE TREATM	AFL	1.027	2	2.04	12.67	7.9	9.9
UPCB	SUSQUEHANNA	PENN TOWNSHIP SEWAGE TREATMENT	AFL	1.287	2	0.83	2.33	5.5	18.1
UPCB	SUSQUEHANNA	EAST PENNSBORO SOUTH TREATMENT	AFL	1.791	2	1.46	25.56	3.8	7.2
UPCB	SUSQUEHANNA	LANCASTER AREA SEWER AUTHORITY	AFL	4.900	2	7.50	15.10	29.0	40.0
UPCB	SUSQUEHANNA	NEW FREEDOM WTP	AFL	0.786	2	7.50	20.90	14.9	10.7
UPCB	SUSQUEHANNA	S MIDDLETON TWP MUNICIPAL AUTH	AFL	0.269	2	0.98	24.56	7.0	5.6
UPCB	SUSQUEHANNA	HAMPDEN TOWNSHIP SEWER AUTHORI	AFL	1.160	2	2.00	14.41	1.5	1.1

PATX = Patuxent nutrient control strategy

POTM = Potomac Strategy

UPCB = Upper Chesapeake Bay Phosphorus Control Policy

Flow in million of gallons per day

Concentrations in milligrams per liter

Table 4
Municipal Mean Flow and Mean Nutrient Discharge Concentrations* by Basin

BASIN	FLOW	PHOSPHORUS (mg/l)	NITROGEN (mg/l)
Susquehanna	354.3	5.1	18.4
E. Shore	241.4	2.2	21.8
W. Chesapeake	20.4	6.7	18.4
Patuxent	37.5	3.3	17.6
Potomac	522.9	1.1	15.6
Rappahannock	8.1	5.9	18.1
York	11.8	5.4	17.3
James	248.3	4.8	24.0

* Mean nutrient concentrations are flow-weighted

Table 5
**Flow and Pollutant Loads from Municipal Plants
with Flows Greater than 0.5 mgd**

BASIN	FLOW	PHOSPHORUS LOAD	NITROGEN LOAD	BOD 5	TSS
Susquehanna	311.5	4.6	17.1	28.1	26.2
E. Shore	15.9	0.3	0.9	1.2	1.3
W. Chesapeake	241.6	1.7	15.3	24.1	28.6
Patuxent	35.6	0.4	1.9	0.5	0.8
Potomac	507.1	1.4	23.6	8.4	6.3
Rappahannock	7.9	0.1	0.4	0.5	0.4
York	11.3	0.2	0.6	0.3	0.4
James	248.2	3.6	17.9	22.5	17.0
TOTAL	1379.1	12.2	77.6	85.6	81.2

Flow in millions of gallons per day

Loads in millions of pounds per year

Includes municipal dischargers in MD, VA, PA, NY, WV, DE and Washington D.C.

Table 6
Flow and Pollutant Loads from Municipal Plants
with Flows Less than 0.5 mgd

BASIN	FLOW	PHOSPHORUS LOAD	NITROGEN LOAD	BOD 5	TSS
Susquehanna	24.7	0.5	1.5	1.8	1.6
E. Shore	5.9	0.1	0.3	0.5	0.5
W. Chesapeake	2.2	0.0	0.1	0.2	0.2
Patuxent	--	--	--	--	--
Potomac	13.7	0.2	0.8	1.5	1.1
Rappahannock	0.4	0.0	0.0	0.0	0.0
York	0.6	0.0	0.0	0.0	0.1
James	2.3	0.0	0.1	0.2	0.2
TOTAL	49.9	0.9	2.9	4.2	3.6

Flow in millions of gallons per day

Loads in millions of pounds per year

Includes municipal dischargers in MD, VA, PA, NY, WV, DE and Washington D.C.

Table 7
Municipal Flow and Pollutant Loads Discharged AFL by Basin

BASIN	FLOW	PHOSPHORUS LOAD	NITROGEN LOAD	BOD 5	TSS
Susquehanna	336.2	5.0	18.6	29.8	27.8
W. Chesapeake	1.9	0.0	0.1	--	--
Patuxent	24.8	0.3	1.4	0.5	0.8
Potomac	77.7	1.3	4.2	4.7	4.1
Rappahannock	2.9	0.0	0.2	0.1	0.1
York	3.9	0.0	0.1	0.2	0.2
James	29.9	0.6	1.6	1.9	1.3
TOTAL	477.3	7.2	26.2	37.1	34.3

Flow in millions of gallons per day

Loads in millions of pounds per year

Includes municipal dischargers in MD, VA, PA, NY, WV, DE and Washington D.C.

Table 8
Municipal Flow and Pollutant Loads Discharged BFL by Basin

BASIN	FLOW	PHOSPHORUS LOAD	NITROGEN LOAD	BOD 5	TSS
E. Shore	21.9	0.4	1.2	1.7	1.8
W. Chesapeake	241.9	1.8	15.3	24.2	28.8
Patuxent	10.8	0.1	0.5	0.0	0.0
Potomac	443.5	0.3	20.2	5.3	3.4
Rappahannock	5.4	0.1	0.3	0.4	0.4
York	8.0	0.2	0.5	0.2	0.3
James	220.6	3.0	16.4	20.8	15.9
TOTAL	952.1	5.9	54.4	52.6	50.6

Flow in millions of gallons per day

Loads in millions of pounds per year

Includes municipal dischargers in MD, VA, PA, NY, WV, DE and Washington D.C.

in Figure 8, with BFL facilities discharging 66 percent of the total flow. Figure 9 shows municipal flow and nitrogen loads from AFL and BFL. The nitrogen load is directly proportional to the volume of wastewater discharged. Figure 10 shows municipal flow and phosphorus loads from AFL and BFL. The phosphorus load is not proportional to the flow as was the nitrogen load providing further evidence of the impact of phosphorus control policies.

Figure 8
Total Municipal Flow Discharge AFL and BFL

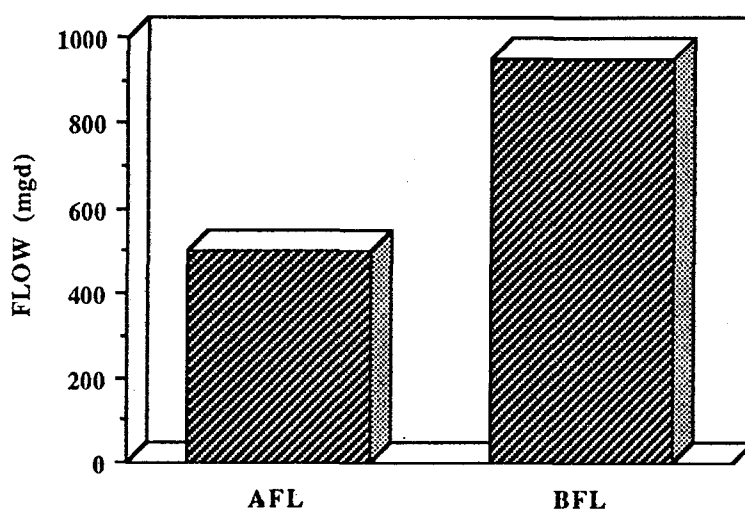


Figure 9
Discharged Municipal Flow and Nitrogen Loads

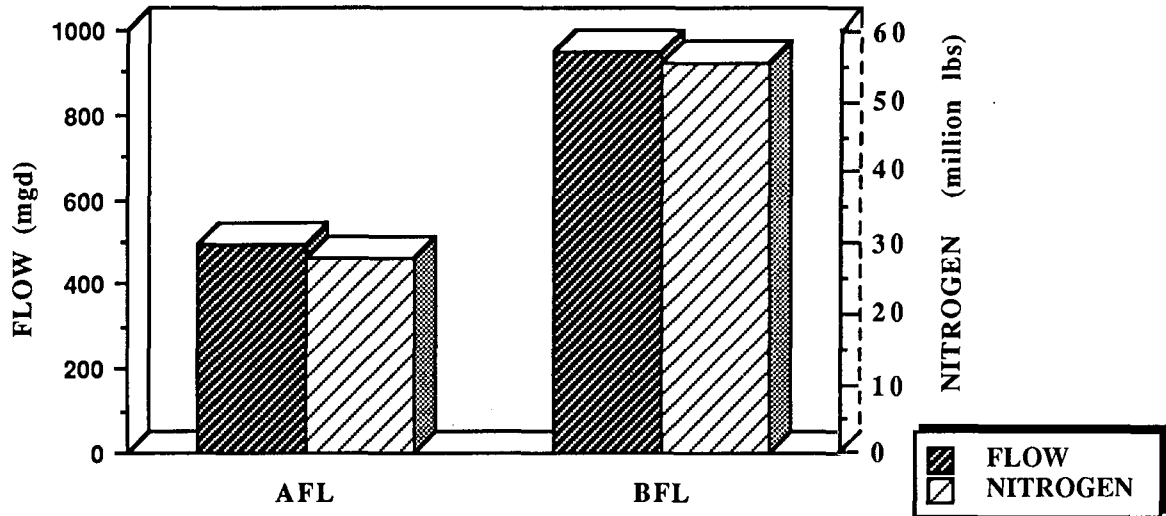
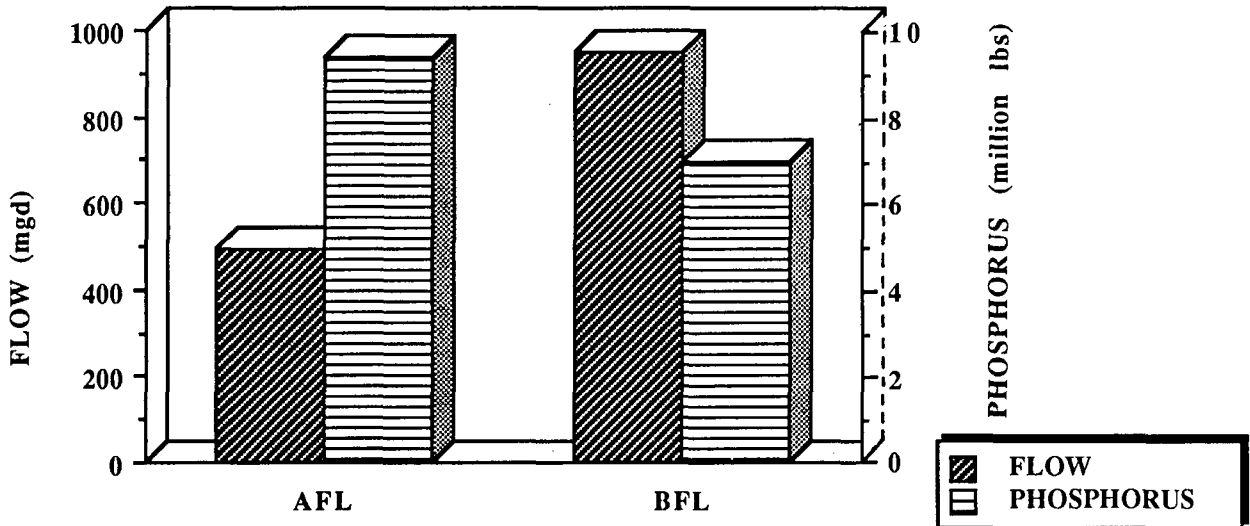


Figure 10
Discharged Municipal Flow and Phosphorus Loads



In the 1987 Chesapeake Bay Agreement, Maryland, Pennsylvania, Virginia and the District of Columbia agreed to the reduction of nutrient loads and control of conventional pollutant loads. Each state's municipal flow and discharged pollutant loads are presented in Table 9 and illustrated in Figure 10.

The largest flow and nutrient loads are discharged in Virginia. Maryland discharges the second highest volume of wastewater and pounds of nitrogen. Pennsylvania discharges the second highest phosphorus load. The most striking feature of Figure 11 is the large flow discharged by the District of Columbia and the very small phosphorus load, which is achieved through the use of the most advanced treatment technology available.

The District of Columbia's Blue Plains sewage treatment plant is a large regional plant serving the Washington Metropolitan area and adjacent high density residential areas in

Table 9
Municipal Flow and Pollutant Loads by State

STATE	FLOW	PHOSPHORUS LOAD	NITROGEN LOAD	BOD 5	TSS
Maryland*	356.4	3.3	21.3	28.8	33.4
Virginia**	418.7	4.5	27.7	27.9	20..6
Pennsylvania	280.0	3.8	14.5	24.1	20.6
Dist. of Columbia	300.7	0.1	12.1	1.7	1.5
Delaware	2.2	0.0	0.1	0.3	0.3
W. Virginia	6.7	0.1	0.3	0.8	0.8
New York	64.7	1.3	4.5	6.2	7.7
TOTAL	1429.4	13.2	80.6	89.8	84.9

* Does not include 126.3 mgd discharged through DC Blue Plains Wastewater Treatment Plant

** Does not include 12.04 mgd discharged through DC Blue Plains Wastewater Treatment Plant

Flow in millions of gallons per day

Loads in millions of pounds per year

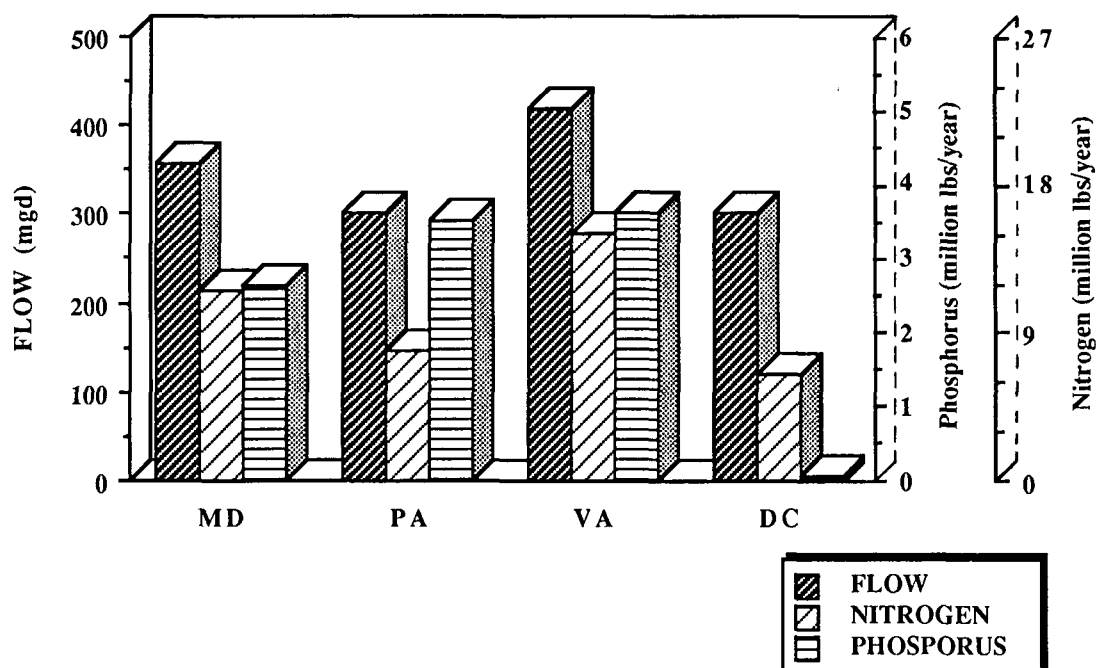
Table 10
Municipal Flow and Pollutant Loads Discharged AFL by State

STATE	FLOW	PHOSPHORUS LOAD	NITROGEN LOAD	BOD 5	TSS
Maryland	63.6	0.9	3.5	2.6	2.5
Virginia	62.3	1.1	3.3	3.5	2.7
Pennsylvania	280.0	3.8	14.5	24.1	20.6
W. Virginia	6.7	0.1	0.3	0.8	0.8
New York	64.7	1.3	4.5	6.2	7.7
TOTAL	477.3	7.2	26.2	37.1	34.3

Flow in millions of gallons per day

Loads in millions of pounds per year

Figure 11
Municipal Flow and Nutrient Loads by State



Maryland and Virginia. These areas contribute 46 percent (138 mgd) of the total flow (309 mgd) at Blue Plains. Under a regional policy that provides for financial participation as well as compatible treatment in nearby plants, these areas contribute financially to the operation of Blue Plains.

Each state's municipal flow and pollutant loads discharged AFL and BFL are presented in Tables 10 and 11. The flow and loads from the District of Columbia include its contribution as well as both Maryland and Virginia's contribution to Blue Plains. Municipal wastewater treatment plants in Pennsylvania are the major source of nutrients discharged AFL and municipal wastewater treatment plants in Virginia are the major source BFL.

Table 12 presents design flow capacity and estimates of year 2000 flows by Maryland, Virginia and the District of Columbia. In any event, the incremental nutrient load increases occurring between 1985 and 2000 must be controlled to meet Bay Agreement commitments. Higher projected flows provide a safety margin in calculating needed reductions.

INDUSTRIAL NUTRIENTS

Categories of dischargers with the potential to discharge industrial nutrients and estimated concentrations are listed in Table 13. Developed by the EPA Effluent Guidelines Division, these default values can be used to target categories of dischargers as potential sources of nutrients. Effluent monitoring, however, is required to quantify loadings. Estimates of industrial nutrient loads discharged by basin AFL and BFL are presented in Table 14.

Table 11
Municipal Flow and Pollutant Loads Discharged BFL by State

STATE	FLOW	PHOSPHORUS LOAD	NITROGEN LOAD	BOD 5	TSS
Maryland*	292.8	2.4	17.8	26.2	30.9
Virginia**	356.4	3.4	24.4	24.4	17.9
Dist. of Columbia	300.7	0.1	12.1	1.7	1.5
Delaware	2.2	0.0	0.1	0.3	0.3
TOTAL	9952.1	5.9	54.4	52.6	50.6

Flow in millions of gallons per day

Loads in millions of pounds per year

* Does not include 126.3 mgd discharged through DC Blue Plains STP

** Does not include 12.04 mgd discharged through DC Blue Plains STP

Table 12
Design Flow Capacity and Estimates of Year 2000 Flow

STATE	1985	2000 (Estimated)	DESIGN CAPACITY
Maryland*	356	491	513
Virginia**	419	653	617
Pennsylvania	280	•	454
Dist. of Columbia	301	352	370
Delaware	2.1	•	2.6
W. Virginia	6.7	•	9.1
New York	64.7	•	65
TOTAL	1429.6	1849.6	2030.7

Flow in millions of gallons per day

State estimates based on water and sewer plans (Maryland) and permitted design flow or lanned expansions (Virginia).

Design flow in millions of gallons per day indicates treatment capacity

• Indicates estimate not available; 1985 estimates used in total

* Does not include projected 150 mgd to be discharged through DC Blue Plains

** Does not include 12 mgd discharged through DC Blue Plains STP in 1985

TABLE 13. TYPE AND NUMBER OF INDUSTRIAL DISCHARGERS WITH POTENTIAL TO DISCHARGE NUTRIENTS AND ESTIMATED CONCENTRATION

SIC CODE	SIC CODE DEFINITION	NUMBER	PHOS	NITR	NH4	TKN
212	BEEF CATTLE, EXCEPT FEEDLOTS	3	41.0	28.5	.	.
213	HOGS	1	41.0	28.5	.	.
241	DAIRY FARMS	2	41.0	28.5	.	.
251	BROILER, FRIER, ROASTER CHICKENS	1	41.0	28.5	.	.
254	POULTRY HATCHERIES	7	41.0	28.5	.	.
921	FISH HATCHERIES AND PRESERVES	27	0.1	0.7	.	.
2011	MEAT PACKING PLANTS	30	2.9	10.8	.	.
2021	CREAMERY BUTTER	2	33.3	36.5	.	.
2022	CHEESE, NATURAL AND PROCESSED	3	33.3	36.5	.	.
2023	CONDENSED AND EVAPORATED MILK	6	33.3	36.5	.	.
2024	ICE CREAM AND FROZEN DESSERTS	4	33.3	36.5	.	.
2026	FLUID MILK	16	33.3	36.5	.	.
2082	MALT BEVERAGES	4	4.5	16.8	.	.
2084	WINES, BRANDY, AND BRANDY SPIRIT	2	4.5	16.8	.	.
2085	DISTILLED AND BLENDED LIQUORS	4	4.5	16.8	.	.
2087	FLAVORING EXTRACTS AND SYRUPS	2	4.5	16.8	.	.
2091	CANNED, CURED FISH AND SEAFOODS	41	.	94.1	6.8	94.1
2092	FRESH,FROZEN PACKAGED FISH	214	.	94.1	6.8	94.1
2621	PAPER MILLS, EXCEPT BUILDING PAP	9	.	1.4	.	.
2631	PAPERBOARD MILLS	9	.	1.4	.	.
2647	SANITARY PAPER PRODUCTS	3	.	1.4	.	.
2648	STATIONARY, TABLETS AND RELATED	1	.	1.4	.	.
2649	CONVERTED PAPER AND PAPERBOARD P	4	.	1.4	.	.
2795	LITHOGRAPHIC PLATEMAKING AND REL	3	.	7.6	.	.
2821	PLASTICS,SYNTHETIC RESINS,ELASTI	10	15.5	33.4	.	.
2823	CELLULOSIC MAN-MADE FIBERS	2	15.5	33.4	.	.
2824	SYNTHETIC ORGANIC FIBERS, EXCEPT	6	15.5	33.4	.	.
2851	PAINT,VARNISH,LACQUER,ENAMEL MFG	7	15.5	33.4	.	.
2865	CYCLIC ORG. CHEM DYES, PIGMENTS	2	15.5	33.4	.	.
2875	FERTILIZERS, MIXING ONLY	2	.	4.4	.	.
2893	PRINTING INK	4	15.5	33.4	.	.
2951	PAVING MIXTURES AND BLOCKS	15	.	0.1	.	.
2952	ASPHALT FELTS AND COATINGS	4	.	0.1	.	.
2992	LUBRICATING OILS AND GREASES	1	.	6.8	.	.
2999	PETROLEUM AND COAL PRODUCTS NEC	1	.	6.8	.	.
3079	MISCELLANEOUS PLASTICS PRODUCTS	25	0.2	0.2	.	.
3111	LEATHER TANNING AND FINISHING	6	.	48.8	.	.
3131	BOOT AND SHOE CUT STOCK AND FIND	1	.	48.8	.	.
3211	FLAT GLASS	3	1.0	.	.	.
3221	GLASS CONTAINERS		1.0	.	.	.
3312	BLAST FURNACES (INC. COKE OVENS)	19	.	2.9	.	.
3321	GRAY AND DUCTILE IRON FOUNDRIES	7	.	6.3	.	.
3322	MALLEABLE IRON FOUNDRIES	2	.	6.3	.	.
3331	PRIM SMELTING,REFINING OF COPPER	2	.	8.5	.	.
3334	PRIMARY PRODUCTION OF ALUMINUM	2	.	8.5	.	.
3336	PRIM SMELT,REFIN OF NONFERROUS	3	.	8.5	.	.
3351	ROLL.,DRAW.,EXTRUD. OF COPPER	2	2.1	.	.	.
3356	ROLL.,DRAW.,EXTRUD. NONFERROUS	2	4	.	52.1	.
3411	METAL CANS	2	8	4.1	.	.
3412	METAL SHIPPING BARRELS,DRUMS,KEG	2	1	4.1	.	.
3652	PHONOGRAPH RECORDS AND PRE-RECOR	2	1	0.2	0.2	.
3672	PRINTED CIRCUIT BOARDS	2	2	1.0	7.3	.
3674	SEMICONDUCTORS AND RELATED DEVIC	2	4	1.0	7.3	.
3679	ELECTRONIC COMPONENTS, NEC	2	5	1.0	7.3	.
3952	LEAD PENCILS, CRAYONS, AND ARTIS	2	1	15.5	33.4	.
7211	POWER LAUNDRIES, FAMILY AND CO..M	2	2	2.7	.	.
7215	COIN-OPERATED LAUNDRIES AND DRY	22	22	2.7	.	.
7217	CARPET AND UPHOLSTERY CLEANING	1	2.7	.	.	.
7395	PHOTOFINISHING LABORATORIES	3	.	21.0	.	.
7542	CAR WASHES	43	21.0	.	.	.
8062	GENERAL MEDICAL AND SURGICAL HOS	15	11.7	33.4	.	.
8063	PSYCHIATRIC HOSPITALS	7	11.7	33.4	.	.
8069	SPECIALTY HOSPITALS, EXCEPT PSYC	2	11.7	33.4	.	.

PHOS = Phosphorus

NITR = Nitrogen

Concentrations in mg per liter

Table 14
Industrial Nutrient Loads* AFL and BFL by Basin

BASIN	PHOSPHORUS LOAD	NITROGEN LOAD
Susquehanna		
AFL	0.124	0.799
BFL	0	0
TOTAL	0.124	0.799
E. Shore		
AFL	0	0
BFL	0.018	0.32
TOTAL	0.018	0.32
W. Chesapeake		
AFL	0	0
BFL	0.010	3.55
TOTAL	0.010	3.55
Patuxent		
AFL	0.011	0.010
BFL	0.004	0.041
TOTAL	0.015	0.051
Potomac		
AFL	0.204	0.76
BFL	0.005	0.30
TOTAL	0.209	1.06
Rappahannock		
AFL	0.0	0.0
BFL	0.008	0.0176
TOTAL	0.008	0.0176
York		
AFL	0	0
BFL	0.167	0.509
TOTAL	0.167	0.509
James		
AFL	0.045	0.55
BFL	0.234	3.76
TOTAL	0.279	4.31
All Basins		
AFL	0.39	2.1
BFL	0.45	8.5
TOTAL	0.84	10.6

* Loads reported in millions of pounds per year based on 250 operating days per year

The Pollutants: Toxicants

MUNICIPAL TOXICANTS

Municipal point sources may discharge toxic substances received from industrial sources or produced by in-plant treatment during chlorine disinfection or decomposition of nitrogenous organic matter. Many industries use local municipal facilities to process their wastes instead of having their own treatment facilities. Industrial wastes, however, often contain heavy metals and toxic substances that are incompatible with normal sewage treatment processes and may interfere with treatment operations, pass through untreated, or contaminate sludge. Consequently, municipal plants that treat significant amounts of industrial wastewater or are larger than 5.0 mgd, are required to implement pretreatment programs.

There are 105 facilities identified in the point source data base required to develop and implement pretreatment programs. Listed in Table 15, their pretreatment programs have been approved by EPA or the delegated state and the municipalities are currently in the process of implementing these plans. Figure 12 shows the location of municipal plants with pretreatment programs. Other information provided in Table 15 includes design flows, industrial input flows, BOD 5 and TSS effluent concentrations.

Municipal plants may produce chlorinated hydrocarbons during chlorine disinfection. Discharge of these and other chlorinated by-products are extremely toxic to aquatic life. Both Virginia and Maryland have undertaken significant efforts to control chlorine toxicity. Virginia has established a chlorine water quality standard based on EPA water quality criteria that requires strict control or total elimination of chlorine from discharged effluent. This standard is being applied to municipal dischargers to determine permit limits as NPDES permits are reissued or reopened.

In Maryland, state water quality standards prohibit the use of chlorine or chlorine compounds in the treatment of wastewaters discharged to waters classified as natural trout waters and require dechlorination for wastewaters discharged to waters classified as shellfish harvesting. Table 16 lists Virginia and Maryland municipal dischargers, 1985 chlorine concentrations and status of current (1988) chlorine control. Only Maryland dischargers currently not providing chlorine control are listed.

Ammonia is another toxic substance discharged by municipal plants. It is produced during the decomposition of nitrogenous organic matter in the treatment process and may have a toxic effect on aquatic life depending upon the pH, dissolved oxygen level and total ammonia concentration of the receiving water. Municipal dischargers with ammonia or total Kjeldahl nitrogen (TKN) limits are listed in Table 17. Some dischargers such as Back River, Western Branch and Parkway do not currently meet these limits but are planning upgrades to provide the required nitrogen control that will be critical in the states' plans to meet nutrient loads reductions.

An effective means of evaluating the toxic potential of discharged effluent is through bio-monitoring. Biomonitoring is the measurement of the acute and chronic toxic effects of discharges on living organisms in a controlled experiment. When toxicity is confirmed, the discharger may be required to conduct a toxicity reduction evaluation (TRE). The overall objective of the TRE is to identify the source(s) of toxicity and develop acceptable control

TABLE 15. MUNICIPAL DISCHARGERS REQUIRED TO DEVELOP PRETREATMENT PROGRAMS

STATE	BASIN	FACILITY NAME	FALLINE	FLOW			BOD 5	TSS
				OPERATIONAL	DESIGN	INDUSTRIAL		
DC	POTOMAC	BLUE PLAINS	BFL	300.700	370.000	.	1.900	1.680
DE	E SHORE	BRIDGEVILLE STP	BFL	0.801	0.500	0.31	51.938	40.250
MD	E SHORE	CAMBRIDGE COMMISSIONERS-WWTR T	BFL	2.200	8.100	0.22	5.913	9.138
MD	E SHORE	ELKTON SEWAGE TREATMENT PLANT	BFL	0.800	1.500	0.07	44.875	64.750
MD	E SHORE	HURLOCK, TOWN OF	BFL	0.500	1.350	0.05	59.625	97.875
MD	E SHORE	SALISBURY CITY WASTEWATER TRTM	BFL	4.600	6.800	2.05	25.625	18.500
MD	E SHORE	TOWN COMMISSIONERS OF PERRYVIL	BFL	0.600	0.728	0.15	12.138	13.850
MD	PATUXENT	HORSEPEN	AFL	2.760	1.000	.	3.000	5.000
MD	PATUXENT	LITTLE PATUXENT STP	AFL	9.100	13.400	0.03	3.000	7.000
MD	PATUXENT	PARKWAY	AFL	4.600	7.500	1.50	2.000	3.000
MD	PATUXENT	PATUXENT-ANNE ARUNDEL CO.	AFL	4.000	4.000	0.08	12.000	11.000
MD	PATUXENT	WESTERN BRANCH	BFL	10.800	30.000	0.70	1.000	1.250
MD	POTOMAC	CUMBERLAND, CITY OF	AFL	10.000	15.000	0.19	9.000	15.000
MD	POTOMAC	FREDERICK CITY WWTP	AFL	4.800	7.000	0.47	63.000	29.000
MD	POTOMAC	FREDERICK CO METRO COMM-BALLIN	AFL	0.268	2.000	0.01	8.000	9.000
MD	POTOMAC	HAGERSTOWN STP, CITY OF	AFL	6.000	8.000	2.00	11.000	7.000
MD	POTOMAC	SENECA CREEK	AFL	4.500	4.500	0.41	1.000	4.000
MD	POTOMAC	PISCATAWAY	BFL	12.900	30.000	2.00	1.400	3.900
MD	W CHESAP	AA COUNTY BROADNECK	BFL	3.200	4.000	0.03	11.408	14.013
MD	W CHESAP	ANNE ARUNDEL CO DPW-COX CREEK	BFL	9.200	15.000	0.40	13.688	13.775
MD	W CHESAP	BACKRIVER	BFL	165.800	175.000	15.86	25.000	37.125
MD	W CHESAP	HAVRE DE GRACE WWTR TREAT PLT	BFL	1.500	1.500	0.85	211.875	72.138
MD	W CHESAP	PATAPSCO	BFL	41.600	87.500	6.24	15.875	20.250
MD	W CHESAP	SOD RUN	BFL	5.800	6.250	0.02	17.250	14.750
PA	POTOMAC	CHAMBERSBURG BOROUGH MAYOR & T	AFL	3.980	5.200	0.30	11.900	8.500
PA	SUSQUEHANNA	ADAMSTOWN BORO SEW AUTH	AFL	0.280	0.300	0.20	29.000	19.000
PA	SUSQUEHANNA	ALTOONA CITY AUTHORITY-EASTERL	AFL	4.970	5.500	1.00	9.800	12.100
PA	SUSQUEHANNA	ALTOONA CITY AUTHORITY-WESTERL	AFL	6.670	6.500	0.11	10.800	9.600
PA	SUSQUEHANNA	BELLEFONTE BOROUGH	AFL	1.340	1.820	0.03	5.000	7.000
PA	SUSQUEHANNA	BERWICK MUN AUTH	AFL	1.800	3.650	0.30	400.000	131.000
PA	SUSQUEHANNA	CARLISLE BOROUGH SEWER SYSTEM	AFL	2.570	6.000	0.70	8.900	8.400
PA	SUSQUEHANNA	COLUMBIA WASTEWATER TREATMENT	AFL	0.615	2.000	.	31.000	90.000
PA	SUSQUEHANNA	CURWENSVILLE MUNICIPAL AUTHORI	AFL	0.600	0.500	0.04	78.000	48.000
PA	SUSQUEHANNA	DANVILLE MUN AUTH	AFL	2.250	3.220	0.07	24.000	9.000
PA	SUSQUEHANNA	DERRY TOWNSHIP MUN. AUTH.	AFL	2.480	5.000	0.35	11.300	9.000
PA	SUSQUEHANNA	GREATER HAZELTON SEWAGE TREATM	AFL	6.270	8.900	0.61	28.000	29.700
PA	SUSQUEHANNA	HANOVER STP, BOROUGH OF	AFL	2.663	3.650	0.32	67.400	39.600
PA	SUSQUEHANNA	HARRISBURG SEWERAGE AUTHORITY-	AFL	27.700	30.900	1.00	17.100	13.900
PA	SUSQUEHANNA	HUNTINGDON, BOROUGH OF	AFL	1.760	3.750	0.80	143.100	142.300
PA	SUSQUEHANNA	KELLY TWP MUN AUTH	AFL	2.150	2.750	0.80	16.000	37.000
PA	SUSQUEHANNA	LACKAWANNA RIVER BASIN SEWER A	AFL	0.597	1.000	0.08	8.600	10.800
PA	SUSQUEHANNA	LACKAWANNA RIVER BASIN SEWER A	AFL	2.740	7.000	0.40	15.800	21.300
PA	SUSQUEHANNA	LANCASTER AREA SEWER AUTHORITY	AFL	4.900	29.730	0.40	29.000	40.000

Flow, operational = 1985 operational discharge in million of gallons per day

Flow, design = 1985 design capacity in million of gallons per day

Flow, industrial = 1985 industrial wastewater treated in million of gallons per day

Bod 5 = 5-day biological oxygen demand in milligrams per liter

Tss = Total suspended solids in mg per liter

. indicates missing values

TABLE 15. MUNICIPAL DISCHARGERS REQUIRED TO DEVELOP PRETREATMENT PROGRAMS (cont.)

STATE	BASIN	FACILITY NAME	FALLINE	FLOW			BOD 5	TSS
				OPERATIONAL	DESIGN	INDUSTRIAL		
PA	SUSQUEHANNA	LANCASTER SEW. AUTH. NORTH STP	AF	8.700	11.790	3.00	19.000	28.000
PA	SUSQUEHANNA	LANCASTER SEWER AUTH-STANLEY D	AFL	9.800	12.000	1.50	60.000	61.000
PA	SUSQUEHANNA	LEBANON CITY AUTHORITY-SEWAGE	AFL	3.980	6.600	0.50	7.400	12.100
PA	SUSQUEHANNA	LOCK HAVEN CITY OF	AFL	2.180	3.750	0.23	14.000	17.000
PA	SUSQUEHANNA	LOGAN TWP. (GREENWOOD AREA) S.T	AFL	0.435	0.600	0.18	10.300	11.100
PA	SUSQUEHANNA	LOWER ALLEN TOWNSHIP AUTHORITY	AFL	2.020	5.950	0.18	19.200	13.000
PA	SUSQUEHANNA	LOWER LACKAWANNA VALLEY SAN. A	AFL	2.290	6.000	2.00	17.800	17.700
PA	SUSQUEHANNA	MIDDLEBURG MUNICIPAL AUTHORITY	AFL	0.250	0.200	0.05	34.000	39.000
PA	SUSQUEHANNA	MILTON MUN AUTH	AFL	1.540	2.600	0.30	33.000	40.000
PA	SUSQUEHANNA	MYERSTOWN BOROUGH	AFL	0.614	1.400	0.14	4.400	8.800
PA	SUSQUEHANNA	PENN TOWNSHIP SEWAGE TREATMENT	AFL	1.287	4.200	0.60	5.500	18.100
PA	SUSQUEHANNA	SAYRE	AFL	1.090	1.94	0.300	143.000	77.0000
PA	SUSQUEHANNA	SCRANTON SEWER AUTH.	AFL	13.500	28.00	7.000	4.300	6.3000
PA	SUSQUEHANNA	SPRINGETTSBURG	AFL	9.250	15.00	1.000	17.200	32.5000
PA	SUSQUEHANNA	ST. MARYS BOROUGH MUN. AUTH.	AFL	.	.	.	.	.
PA	SUSQUEHANNA	SUNBURY CITY MUN AUTH	AFL	3.500	3.50	1.800	30.000	30.0000
PA	SUSQUEHANNA	TYRONE BOROUGH SEWER AUTH-STP	AFL	4.491	9.00	2.000	7.400	19.3000
PA	SUSQUEHANNA	UNION TOWNSHIP MUNICIPAL AUTHO	AFL	0.210	0.30	0.100	29.000	38.0000
PA	SUSQUEHANNA	WILLIAMSPORT SAN AUTH(CENTRAL)	AFL	7.760	7.50	0.100	15.000	11.0000
PA	SUSQUEHANNA	WILLIAMSPORT SAN AUTH(WEST)	AFL	2.670	4.50	0.100	12.000	12.0000
PA	SUSQUEHANNA	WYOMING VALLEY SANITARY AUTHOR	AFL	22.600	50.00	0.820	98.300	55.5000
PA	SUSQUEHANNA	YORK SEWAGE WASTEWATER TRMT PL	AFL	9.441	13.00	6.500	20.800	31.4000
VA	JAMES	LYNCHBURG CITY STP	AFL	13.700	22.00	1.750	16.000	13.0000
VA	JAMES	RIVANNA AUTH-CAMELOT	AFL	0.020	0.07	0.010	64.000	51.0000
VA	JAMES	RIVANNA AUTH-MOORES CREEK	AFL	8.990	15.00	1.300	7.800	7.2000
VA	JAMES	RIVANNA AUTH-SCOTTSVILLE	AFL	0.040	0.05	0.010	35.000	50.0000
VA	JAMES	CHESTERFIELD CO./PROCTOR CREEK	BFL	3.760	12.00	.	10.000	4.3000
VA	JAMES	CHESTERFIELD-FALLING CREEK	BFL	10.110	9.00	.	6.100	5.8000
VA	JAMES	HENRICO COUNTY WASTEWATER TMNT	BFL	.	.	.	.	.
VA	JAMES	HOPEWELL STP CITY OF	BFL	30.820	50.00	27.74	24.800	42.9000
VA	JAMES	HRSD - ARMY BASE	BFL	12.990	14.00	.	6.800	12.4000
VA	JAMES	HRSD - BOAT HARBOR	BFL	15.850	25.00	.	11.900	16.8000
VA	JAMES	HRSD - CHESAPEAKE/ELIZ.	BFL	14.360	30.00	.	8.400	11.3000
VA	JAMES	HRSD - JAMES RIVER	BFL	10.340	20.00	.	5.100	9.2000
VA	JAMES	HRSD - LAMBERTS POINT	BFL	19.970	33.00	.	90.400	39.1000
VA	JAMES	HRSD - NANSEMOND	BFL	6.250	10.00	.	13.200	12.8000
VA	JAMES	HRSD - WILLIAMSBURG	BFL	9.720	9.60	.	7.900	13.6000
VA	JAMES	PETERSBURG WASTEWATER TREATMENT	BFL	8.480	15.00	1.000	29.100	41.6000
VA	JAMES	PORTSMOUTH CITY-PINNERS POINT	BFL	9.310	15.00	2.000	191.000	65.0000
VA	JAMES	RICHMOND CITY OF	BFL	66.100	55.00	7.810	24.200	18.6000
VA	POTOMAC	AUGUSTA COUNTY SERVICE AUTHORITY	AFL	0.280	.	.	11.800	8.1000
VA	POTOMAC	AUGUSTA CO. S.A. STUARTS DRAFT	AFL	0.500	0.70	.	4.700	13.1000
VA	POTOMAC	AUGUSTA CO. S.A. VERONA	AFL	0.280	0.80	.	11.800	8.1000

Flow, operational = 1985 operational discharge in million of gallons per day

Flow, design = 1985 design capacity in million of gallons per day

Flow, industrial = 1985 industrial wastewater treated in million of gallons per day

Bod 5 = 5-day biological oxygen demand in mg per liter

Tss = Total suspended solids in mg per liter

. indicates missing values

TABLE 15. MUNICIPAL DISCHARGERS REQUIRED TO DEVELOP PRETREATMENT PROGRAMS (cont.)

STATE	BASIN	FACILITY NAME	FALLINE	FLOW			BOD 5	TSS
				OPERATIONAL	DESIGN	INDUSTRIAL		
VA	POTOMAC	HARRISONBURG/ROCKINGHAM REG	AFL	6.450	8.00	3.000	8.900	6.8000
VA	POTOMAC	WAYNESBORO DEPT OF UTILITIES-S	AFL	3.190	4.00	0.300	27.200	24.0000
VA	POTOMAC	WINCHESTER CITY DEPT OF UTILIT	AFL	3.640	4.00	.	17.200	7.3000
VA	POTOMAC	ALEXANDRIA CITY SANITARY AUTHO	BFL	35.600	54.00	1.000	14.420	5.8500
VA	POTOMAC	ARLINGTON	BFL	26.560	30.00	.	7.800	4.7000
VA	POTOMAC	FAIRFAX CO-LITTLE HUNTING CR	BFL	3.820	6.60	0.330	12.120	8.9300
VA	POTOMAC	FWSA - OPEQUON	AFL	.	8.00	.	.	.
VA	POTOMAC	LOWER POTOMAC, FAIRFAX CO	BFL	32.980	36.00	1.320	5.600	0.4400
VA	POTOMAC	PR. WILLIAM CO S.A. - MOONEY	BFL	.	12.00	.	.	.
VA	POTOMAC	UPPER OCCOQUAN SEWAGE AUTH-REG	BFL	9.400	15.00	0.300	0.391	0.1105
VA	RAPP	CULPEPER, TOWN OF, WASTE-WATER T	AFL	1.210	3.00	.	5.000	7.2500
VA	RAPP	FREDERICKSBURG	BFL	.	3.50	.	.	.
VA	RAPP	SPOTSYLVANIA CO. - MASSAPONAX	BFL	1.550	3.00	.	27.200	31.2600
VA	RAPP	SPOTSYLVANIA CO.: FMC	BFL	.	2.60	.	.	.
VA	YORK	GORDONSVILLE	AFL	0.550	0.67	0.300	65.200	64.8000
VA	YORK	HRSD YORK STP	BFL	7.360	15.00	.	7.600	10.1000

Flow, operational = 1985 operational discharge in million of gallons per day

Flow, design = 1985 design capacity in million of gallons per day

Flow, industrial = 1985 industrial wastewater treated in million of gallons per day

Bod 5 = 5-day biological oxygen demand in mg per liter

Tss = Total suspended solids in mg per liter

. indicates missing values

Figure 12
Municipal Dischargers with Pretreatment Programs

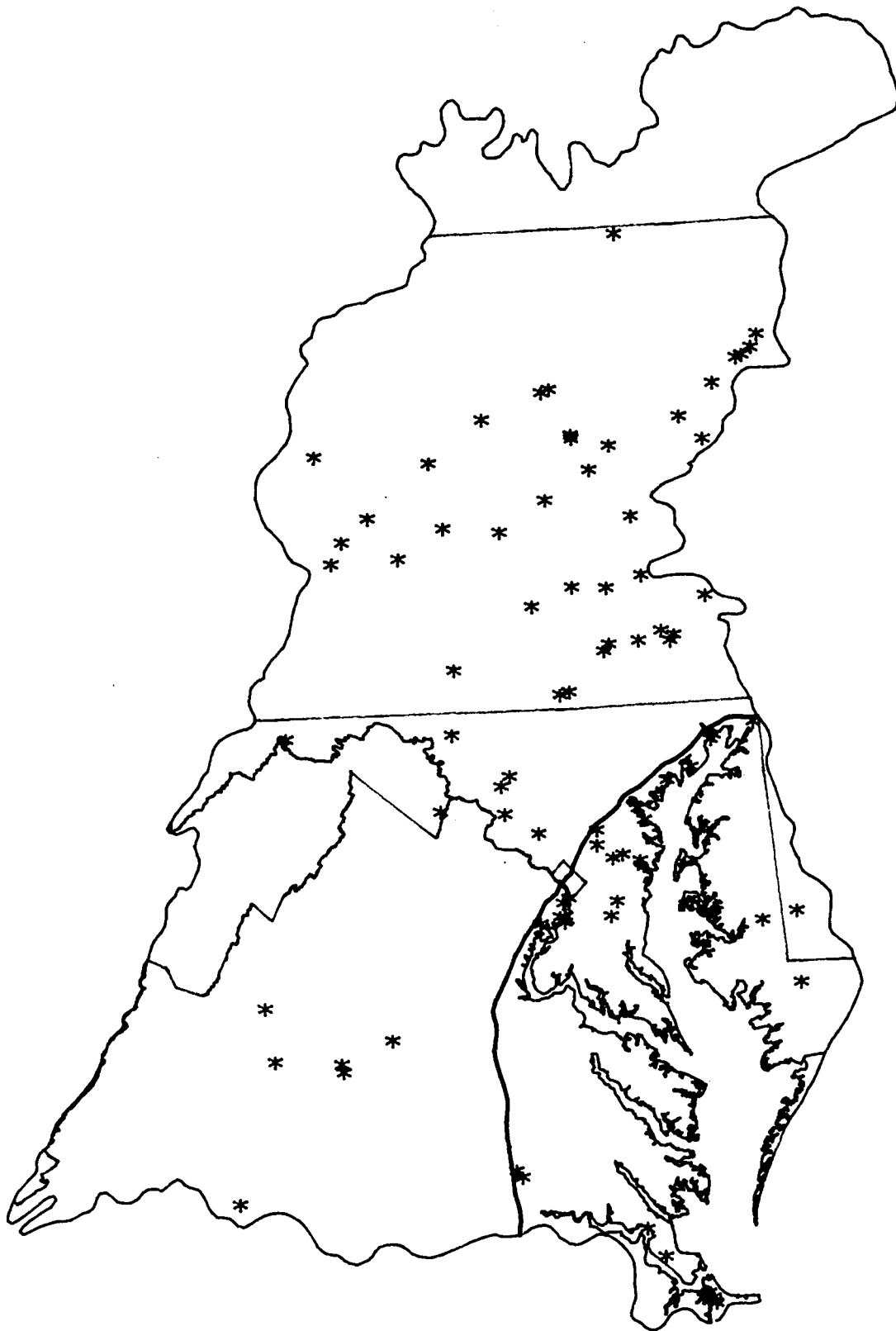


TABLE 16. MUNICIPAL DISCHARGERS 1985 TOTAL RESIDUAL CHLORINE (TRC) DISCHARGE AND STATUS OF CURRENT (1988) CHLORINE CONTROL

STATE	BASIN	FACILITY NAME	NPDES	TRC	STATUS CODE	FLOW	RECEIVING STREAM
DC	POTOMAC	BLUE PLAINS	21199	0.7	3.0	300.700	
MD	E SHORE	CAMBRIDGE COMMISSIONERS-WWTR T	21636	.	4.0	2.200	CHOPTANK R
MD	E SHORE	CHESTERTOWN UTILITIES COMMISSI	20010	.	4.0	0.570	CHESTER RIVER
MD	E SHORE	EASTON WASTE STABILIZATION LAG	20273	.	4.0	1.400	TR OF CHOPTANK R
MD	E SHORE	EWELL STP (SOMERSET CO.SAN.DIS	52230	.	4.0	0.040	FRANCES GUT-CHESAPEAKE BAY
MD	E SHORE	GALENA, TOWN OF	20605	.	4.0	0.010	DYER CREEK
MD	E SHORE	KENT CO SD-FAIRLEE STP.	53333	.	4.0	0.040	FAIRLEE CK
MD	E SHORE	POCOMOKE CITY SEWAGE TREATMENT	22551	.	4.0	0.900	POCOMOKE R
MD	E SHORE	TRAPPE, TOWN COUNCIL OF	20486	.	4.0	0.080	UNNAMED TRIB TO LATRAPPE CREEK
MD	E SHORE	TYLERTON STP (SOMERSET CO.SAN.	52248	.	4.0	0.009	MERLIN GUT-TYLER CR.-CHESAPEAK
MD	POTOMAC	BOWLING GREEN WWTP	22811	.	4.0	0.380	
MD	POTOMAC	CUMBERLAND,CITY OF	21598	.	4.0	10.000	NB POTOMAC R
MD	POTOMAC	HANCOCK SEWAGE TREATMENT LAGOO	24562	.	4.0	0.320	TONOLOWAY C
MD	POTOMAC	MT. AIRY, TOWN OF	22527	.	6.0	0.162	SOUTH BRANCH OF THE PATAPSCO R
MD	POTOMAC	PISCATAWAY	21539	.	4.0	12.900	POTOMAC R
MD	POTOMAC	SOUTHERN CORRECTIONAL CAMP	23914	.	4.0	0.020	
MD	POTOMAC	WHITE ROCK COMMUNITY-FREDERICK	25089	.	6.0	.	
MD	W CHESAP	BACKRIVER	21555	.	4.0	65.800	PATAPSCO R
MD	W CHESAP	PATAPSCO	21601	.	4.0	41.600	PATAPSCO R
VA	E SHORE	CAPE CHARLES,TOWN OF	21288	.	6.0	.	
VA	E SHORE	TANGIER COMMUNITY SVC BUILDING	61328	.	5.0	0.050	
VA	E SHORE	KILMARNOCK,TOWN OF,VA.STP	20788	.	2.0	0.200	DYMER CK.,INDIAN CK.OF CHESAPE
VA	E SHORE	ONANCOCK,TOWN OF	21253	.	5.0	0.110	ONANCOCK CREEK
VA	JAMES	BUENA VISTA,CITY OF,SEWAGE DIS	20991	2.8	2.0	1.880	MAURY RIVER
VA	JAMES	CHESTERFIELD CO./PROCTOR CREEK	60194	2.7	4.0	3.760	
VA	JAMES	CHESTERFIELD-FALLING CREEK	24996	1.0	3.0	10.110	GRINDALL CREEK
VA	JAMES	CLIFTON FORGE CITY	22772	2.0	2.0	1.140	JACKSON RIVER
VA	JAMES	COVINGTON SEW. TREAT. PLANT,CO	25542	2.1	2.0	1.920	JACKSON RIVER
VA	JAMES	FARMVILLE,TOWN OF	21351	2.9	2.0	0.310	
VA	JAMES	FT.EUSTIS-US ARMY TRANSPORTATI	25216	2.5	1.0	1.650	
VA	JAMES	GLASGOW,TOWN OF	21300	2.5	.	0.090	MAURY RIVER
VA	JAMES	HENRICO COUNTY WASTEWATER TMNT	63690	0.0	8.0	.	
VA	JAMES	HOPEWELL STP CITY OF	66630	0.0	.	30.820	
VA	JAMES	HRSD - ARMY BASE	25208	2.0	1.0	12.990	
VA	JAMES	HRSD - BOAT HARBOR	25283	1.8	4.0	15.850	HAMPTON RDS,JAMES RV,MILL CRK,
VA	JAMES	HRSD - CHESAPEAKE/ELIZ.	25275	2.0	1.0	14.360	CHESAPEAKE BAY,L.CREEK COVE
VA	JAMES	HRSD - JAMES RIVER	25241	1.9	4.0	10.340	JAMES RV,NEWMARKET CRK,LAKE MA
VA	JAMES	HRSD - LAMBERTS POINT	25259	2.0	2.0	19.970	ELIZABETH RV,WAYNE CRK-TO-LAFA
VA	JAMES	HRSD - NANSEMOND	64459	1.9	3.0	6.250	
VA	JAMES	HRSD - WILLIAMSBURG	25267	1.9	2.0	9.720	JAMES RIVER
VA	JAMES	LEXINGTON, CITY OF,STP	20567	3.2	2.0	0.870	MAURY RIVER

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Flow = 1985 discharged flow in millions of gallons per day

Status codes:

- 1.0 = Permit under review to meet Va cl water quality standard;
- 2.0 = Permit does or will require cl control;
- 3.0 = Dechlorination, in use;
- 4.0 = Dechlorination, under construction or required (so2 or Na bisulfite);
- 5.0 = Ultra violet, in use;
- 6.0 = Ultra violet, under construction or required;
- 7.0 = Ozone, in use;
- 8.0 = Ozone, under construction.

TABLE 16. MUNICIPAL DISCHARGERS 1985 TOTAL RESIDUAL CHLORINE (TRC) DISCHARGE AND STATUS OF CURRENT (1988) CHLORINE CONTROL (cont.)

STATE	BASIN	FACILITY NAME	NPDES	TRC	STATUS CODE	FLOW	RECEIVING STREAM
VA	JAMES	LYNCHBURG CITY STP	24970	2.9	2.0	13.700	JAMES RIVER
VA	JAMES	PETERSBURG WASTEWATER TREATMEN	25437	3.6	2.0	8.480	APPOMATTOX RIVER
VA	JAMES	PORTSMOUTH CITY-PINNERS POINT	25003	7.4	.	9.310	ELIZABETH RIVER
VA	JAMES	RICHMOND, CITY OF	63177	4.1	4.0	66.100	
VA	JAMES	RIVANNA AUTH-MOORES CREEK	25518	0.9	2.0	8.990	MOORES CREEK
VA	JAMES	SMITHFIELD STP	23809	2.5	1.0	0.440	PAGAN RIVER
VA	POTOMAC	ABRAMS CRK WSWTR T.P.FREDERICK	31780	2.3	.	0.340	ABRAMS C
VA	POTOMAC	AGUSTA COUNTY SERVICE AUTHORIT	64637	2.4	.	0.280	
VA	POTOMAC	ALEXANDRIA CITY SANITARY AUTHO	25160	2.1	2.4	35.600	HUNTING C
VA	POTOMAC	AQUIA SANITARY DISTRICT	60968	1.4	6.0	1.140	AUSTIN RN
VA	POTOMAC	ARLINGTON	25143	2.1	2.4	26.560	
VA	POTOMAC	AUGUSTA CO. STUARTS DRAFT	66877	2.5	.	0.500	SOUTH RIVER
VA	POTOMAC	AUGUSTA CO. VEROF	64637	2.4	.	0.2800	MIDDLE RIVER
VA	POTOMAC	AUGUSTA CTY.SER. AUTH-FISHERSVI	25291	2.5	2.0	0.7000	CHRISTIANS C
VA	POTOMAC	COLONIAL BEACH, TOWN OF	26409	2.5	4.0	0.4000	MONROE CREEK
VA	POTOMAC	DALE SERVICE CORP. PLANT # 1	24724	2.3	2.0	2.0400	NEABSCO C
VA	POTOMAC	DALE SERVICE CORP. PLANT # 8	24678	2.6	2.0	0.8400	NEABSCO C
VA	POTOMAC	FAIRFAX CO-LITTLE HUNTING CR	25372	2.8	2.0	3.8200	L HUNTING C
VA	POTOMAC	FRONT ROYAL STP	62812	4.9	2.0	1.9700	
VA	POTOMAC	HARRISONBURG/ROCKINGHAM REG	60640	3.4	2.0	6.4500	NORTH R
VA	POTOMAC	LEESBURG, TOWN OF, WTR POLLUTION	21377	2.7	2.0	1.2600	TUSCARORA C
VA	POTOMAC	LOWER POTOMAC, FAIRFAX CO	25364	2.5	3.0	32.9800	POHICK C
VA	POTOMAC	LURAY TOWN OF	62642	2.9	.	0.7400	
VA	POTOMAC	MOONEY - PRINCE WM. CO.	25101	2.9	2.4	7.5800	NEABSCO C
VA	POTOMAC	PURCELLVILLE, TOWN OF, SEWAGE TR	22802	2.9	.	0.2700	TR TO NF GOOSE C
VA	POTOMAC	STAUNTON, CITY OF-STP	64793	2.3	.	2.5800	LEWIS C
VA	POTOMAC	STRASBURG SEWAGE TREATMENT PLA	20311	2.7	.	0.7400	NF SHENANDOAH R
VA	POTOMAC	U.S. MARINE CORPS BASE-MAINSID	28363	4.5	1.0	1.4500	
VA	POTOMAC	UPPER OCCOQUAN SEWAGE AUTH-REG	24988	2.3	.	9.4000	BULL RN
VA	POTOMAC	WAYNESBORO DEPT OF UTILITIES-S	25151	2.5	2.0	3.1900	SOUTH R
VA	POTOMAC	WINCHESTER CITY DEPT OF UTILIT	25135	2.0	2.0	3.6400	ABRAMS C
VA	RAPP	CLAIBORNE RUN SEWAGE TREATMENT	28096	2.3	4.0	0.8800	CLAIBORNE RUN
VA	RAPP	CULFPER, TOWN OF, WASTE-WATER T	61590	2.6	1.0	1.2100	MOUNTAIN RN
VA	RAPP	FMC STP, SPOTS CO	68110	0.0	1.0	0.0000	
VA	RAPP	FREDERICKSBURG CITY STP	25127	3.2	1.0	2.5700	RAPPAHANNOCK R
VA	RAPP	ORANGE, TOWN OF	21385	2.5	.	0.6100	RAPIDAN RIVER
VA	RAPP	REEDVILLE SAN DIST STP	60712	.	1.0	0.0316	COCKRELL CREEK
VA	RAPP	SPOTSYLVANIA CO. - MASSAPONAX	25658	3.6	6.0	1.5500	RAPPAHANNOCK R
VA	RAPP	URBANNA, TOWN OF	26263	.	6.0	0.1119	URBANNA CREEK
VA	RAPP	WARRENTON, TOWN OF-STP	21172	3.0	2.0	1.0500	GREAT RUN

TRC = Total residual chlorine concentration in milligrams per liter

Flow = 1985 discharged flow in millions of gallons per day

Status codes:

- 1.0 = Permit under review to meet Va cl water quality standard;
- 2.0 = Permit does or will require cl control;
- 3.0 = Dechlorination, in use;
- 4.0 = Dechlorination, under construction or required (so2 or Na bisulfite);
- 5.0 = Ultra violet, in use;
- 6.0 = Ultra violet, under construction or required;
- 7.0 = Ozone, in use;
- 8.0 = Ozone, under construction.

TABLE 16. MUNICIPAL DISCHARGERS 1985 TOTAL RESIDUAL CHLORINE (TRC) DISCHARGE AND
STATUS OF CURRENT (1988) CHLORINE CONTROL

STATE	BASIN	FACILITY NAME	NPDES	TRC	STATUS CODE	FLOW	RECEIVING STREAM
VA	YORK	ASHLAND, TOWN OF	24899	2.9	1.0	0.8600	FALLING CREEK
VA	YORK	GLOUCESTER POINT SAN DIST	60381	.	4.0	0.1300	FOX MILL CK.
VA	YORK	GORDONSVILLE	21105	2.2	.	0.5500	TR OF THE SOUTH ANNA R
VA	YORK	HANOVER COUNTY-DOSWELL STP	29521	0.2	1.0	2.5000	NORTH ANNA RIVER
VA	YORK	HRSD YORK STP	64238	1.8	3.0	7.3600	
VA	YORK	MATHEWS COURTHOUSE SANITARY DI	28819	.	6.0	0.0244	PUT IN CREEK

TRC = Total residual chlorine concentration in milligrams per liter

Flow = 1985 discharged flow in millions of gallons per day

Status codes:

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- 2.0 = Permit does or will require cl control;
- 3.0 = Dechlorination, in use;
- 4.0 = Dechlorination, under construction or required (so2 or Na bisulfite);
- 5.0 = Ultra violet, in use;
- 6.0 = Ultra violet, under construction or required;
- 7.0 = Ozone, in use;
- 8.0 = Ozone, under construction.

TABLE 17. MUNICIPAL PLANTS WITH AMMONIA OR TKN PERMIT LIMITS

STATE	BASIN	FACNAME	NPDES	FLOW	AMMONIA	TKN	NITROGEN	RECEIVING STREAM
DC	POTOMAC	BLUE PLAINS	21199	300.700	.	2.40	13.40	
MD		BOWIE STATE COLLEGE WWTP	55191	.	.	9.00	.	
MD		BOWIE, CITY OF	24520	.	.	15.00	.	
MD		MARYLAND HOUSE OF CORRECTION	23434	.	.	5.00	.	
MD		RIDGELEY TOWN OF	50342	.	.	3.00	20.90	
MD	E SHORE	CECILTON, TOWN OF	20443	0.040	.	8.00	18.00	BLACK DUCK CREEK, TRIB OF BOHE
MD	E SHORE	DELMAR, TOWN OF	20532	0.460	.	10.00	18.00	BRANCH OF WICOMICO RIVER
MD	E SHORE	ELKTON SEWAGE TREATMENT PLANT	22641	0.800	.	20.00	18.00	BIG ELK C
MD	E SHORE	FEDERALSBURG SEWAGE TREATMENT	20247	0.740	.	19.00	15.00	MARSHY HOPE C
MD	E SHORE	HURLOCK, TOWN OF	22730	0.500	.	3.00	18.00	WRIGHTS B
MD	E SHORE	TOWN COMMISSIONERS OF PERRYVIL	20613	0.600	.	3.00	18.00	MILL C
MD	PATUXENT	LITTLE PATUXENT STP	55174	9.100	.	3.00	18.00	L PATUXENT R
MD	PATUXENT	MARYLAND CITY WASTEWATER TREAT	23132	0.650	.	10.00	24.00	PATUXENT RIVER
MD	PATUXENT	PARKWAY	21725	4.600	.	3.00	19.00	PATUXENT R
MD	PATUXENT	PATUXENT-ANNE ARUNDEL CO.	21652	4.000	.	3.00	22.00	L PATUXENT R
MD	PATUXENT	WESTERN BRANCH	21741	10.800	.	3.00	14.40	WB PATUXENT R
MD	POTOMAC	BEL ALTON SCHOOL	57614	.	.	6.00	.	PORT TOBACCO RIVER
MD	POTOMAC	CUMBERLAND, CITY OF	21598	10.000	.	20.00	18.00	NB POTOMAC R
MD	POTOMAC	FREDERICK CITY WWTP	21610	4.800	.	3.00	18.00	MONONCACY R
MD	POTOMAC	HAGERSTOWN STP, CITY OF	21776	6.000	.	5.00	18.00	ANTIETAM C
MD	POTOMAC	INDIAN HEAD, TOWN OF	24368	0.280	.	10.00	11.90	TR TO MATTAWOMAN C
MD	POTOMAC	LA PLATA, TOWN OF	20524	0.800	.	5.00	18.00	TRIB OF PORT TOBACCO CREEK
MD	POTOMAC	MEADOWVILLE UTILITIES, INC.	22641	0.800	.	20.00	18.00	
MD	POTOMAC	PISCATAWAY	21539	12.900	.	2.00	14.40	POTOMAC R
MD	POTOMAC	SENECA CREEK	21491	4.500	.	5.00	18.20	GREAT SENECA C
MD	POTOMAC	THURMONT WASTEWATER TREAT. FAC	21121	0.550	.	3.00	9.10	HUNTING C
MD	POTOMAC	US ARMY FORT DETRICK STP	20877	1.200	.	6.00	20.90	
MD	POTOMAC	US ARMY FORT RITCHIE STP	3221	0.450	.	0.65	.	
MD	POTOMAC	WASH.SUB.SAN.COMM-CABIN BRANCH	21041	0.000	.	5.00	20.90	GREAT SENECA C
MD	POTOMAC	WASH.SUB.SAN.COMM-DAMASCUS WTP	20982	0.250	.	8.00	20.90	MAGRUDER BR
MD	POTOMAC	WESTMINSTER WASTE WATER TREATM	21831	2.300	.	17.00	18.00	L PIPE C
MD	W CHESAP	ABERDEEN, TOWN OF STP	21563	1.100	.	7.00	18.00	SWAN C
MD	W CHESAP	BACKRIVER	21555	65.800	2.00	2.00	22.00	PATAPSCO R
MD	W CHESAP	MES-FREEDOM	21512	1.300	.	5.00	18.00	PATAPSCO R NB
MD	W CHESAP	USA HQ, FORT MEADE STP	21717	1.900	.	2.00	18.00	
PA	POTOMAC	GETTYSBURG MUNICIPAL AUTHORITY	21563	1.500	2.50	.	24.87	ROCK C
PA	SUSQUEHANNA	ALTOONA CITY AUTHORITY-EASTERL	27014	4.970	2.00	.	14.06	L JUANITA R
PA	SUSQUEHANNA	ALTOONA CITY AUTHORITY-WESTERL	27022	6.670	1.50	.	20.90	BEAVERDAM B
PA	SUSQUEHANNA	BEDFORD BOROUGH MUNICIPAL AUTH	22209	0.662	6.00	.	32.48	RAYSTOWN B OF JUNIATA R
PA	SUSQUEHANNA	BROWN TWP MUN AUTH-STP	28088	0.224	14.00	.	20.90	KISHACOQUILLAS C
PA	SUSQUEHANNA	DALLAS AREA MUNICIPAL AUTH.	26221	1.790	1.50	.	16.83	TOBY C
PA	SUSQUEHANNA	DERRY TOWNSHIP MUN. AUTH.	26484	2.480	7.00	.	13.71	SWATARA C
PA	SUSQUEHANNA	DILLSBURG BOROUGH AUTHORITY	24431	0.451	2.50	.	20.90	TRIBUTARY OF DOGWOOD RUN
PA	SUSQUEHANNA	EAST PENNSBORO SOUTH TREATMENT	38415	1.791	4.00	.	25.56	SUSQUEHANNA R
PA	SUSQUEHANNA	HAMPDEN TOWNSHIP SEWAGE TREATM	28746	1.027	8.00	.	12.67	CONODOQUINET C
PA	SUSQUEHANNA	HANOVER STP, BOROUGH OF	26875	2.663	1.50	.	19.98	PLUM C
PA	SUSQUEHANNA	HOLLIDAYSBURG REGIONAL WWTP	43273	1.200	2.50	.	17.73	
PA	SUSQUEHANNA	LACKAWANNA RIVER BASIN SEWER A	27065	2.592	3.00	.	10.30	LACKAWANNA R
PA	SUSQUEHANNA	LACKAWANNA RIVER BASIN SEWER A	27090	2.740	2.50	.	16.51	LACKAWANNA R

Flow is 1985 discharged flow in millions of gallons per day

Ammonia and TKN are permit limits in milligrams per liter

Nitrogen is 1985 total nitrogen discharge concentration in milligrams per liter

TABLE 17. MUNICIPAL PLANTS WITH AMMONIA OR TKN PERMIT LIMITS (cont.)

STATE	BASIN	FACNAME	NPDES	FLOW	AMMONIA	TKN	NITROGEN	RECEIVING STREAM
PA	SUSQUEHANNA	LANCASTER AREA SEWER AUTHORITY	42269	4.900	2.25	.	15.10	DRY RN
PA	SUSQUEHANNA	LEBANON CITY AUTHORITY-SEWAGE	27316	3.980	2.00	.	24.23	QUITTAHILL C
PA	SUSQUEHANNA	LOGAN TWP. (GREENWOOD AREA) S.T	32557	0.435	1.50	.	20.90	
PA	SUSQUEHANNA	MECHANICSBURG BOROUGH MUNICIPA	20885	0.837	12.00	.	26.20	TRINDLE SPRING RN
PA	SUSQUEHANNA	MOUNT JOY SEWAGE TREATMENT PLA	21067	0.774	2.00	.	22.80	L CHICKIES C
PA	SUSQUEHANNA	MOUNTAINTOP AREA WSTWTR TMT FA	45985	1.790	3.50	.	20.90	
PA	SUSQUEHANNA	NEW HOLLAND BOROUGH AUTHORITY	21890	0.520	2.5	.	27.64	MILL C
PA	SUSQUEHANNA	NEWVILLE SEWAGE TREATMENT PLA	46221	0.094	10.0	.	20.90	
PA	SUSQUEHANNA	PENN TOWNSHIP SEWAGE TREATMEN	37150	1.287	0.5	.	2.33	OIL C
PA	SUSQUEHANNA	SCRANTON SEWER AUTH.	26492	13.500	2.5	.	11.70	LACKAWANNA R
PA	SUSQUEHANNA	SHIPPENSBURG BOROUGH AUTHORITY	20643	1.550	2.5	.	24.56	MIDDLE SPRING C
PA	SUSQUEHANNA	SPRINGETTSBURG	26808	9.250	2.0	.	16.57	CODORUS C
PA	SUSQUEHANNA	SWATARA TOWNSHIP	26735	2.608	5.0	.	23.17	SWATARA C
PA	SUSQUEHANNA	TYRONE BOROUGH SEWER AUTH-STP	26727	4.491	3.5	.	3.53	L JUANITA R
VA	POTOMAC *	ALEXANDRIA CITY SANITARY AUTH	25160	35.600	.	1	18.40	HUNTING C
VA	POTOMAC *	ARLINGTON	25143	26.560	.	1	20.30	
VA	POTOMAC *	DALE SERVICE CORP. PLANT # 1	24724	2.040	.	1	15.00	NEABSCO C
VA	POTOMAC *	DALE SERVICE CORP. PLANT # 8	24678	0.840	.	1	15.00	NEABSCO C
VA	POTOMAC *	FAIRFAX CO-LITTLE HUNTING CR	25372	3.820	.	1	24.00	L HUNTING C
VA	POTOMAC *	LOWER POTOMAC, FAIRFAX CO	25364	32.980	.	1	19.00	POHICK C
VA	POTOMAC *	MOONEY - PRINCE WM. CO.	25101	7.580	.	1	26.40	NEABSCO C
VA	POTOMAC *	U.S. MARINE CORPS BASE-MAINSI	28363	1.450	.	1	14.87	

Flow is 1985 discharged flow in millions of gallons per day

Ammonia and TKN are permit limits in milligrams per liter

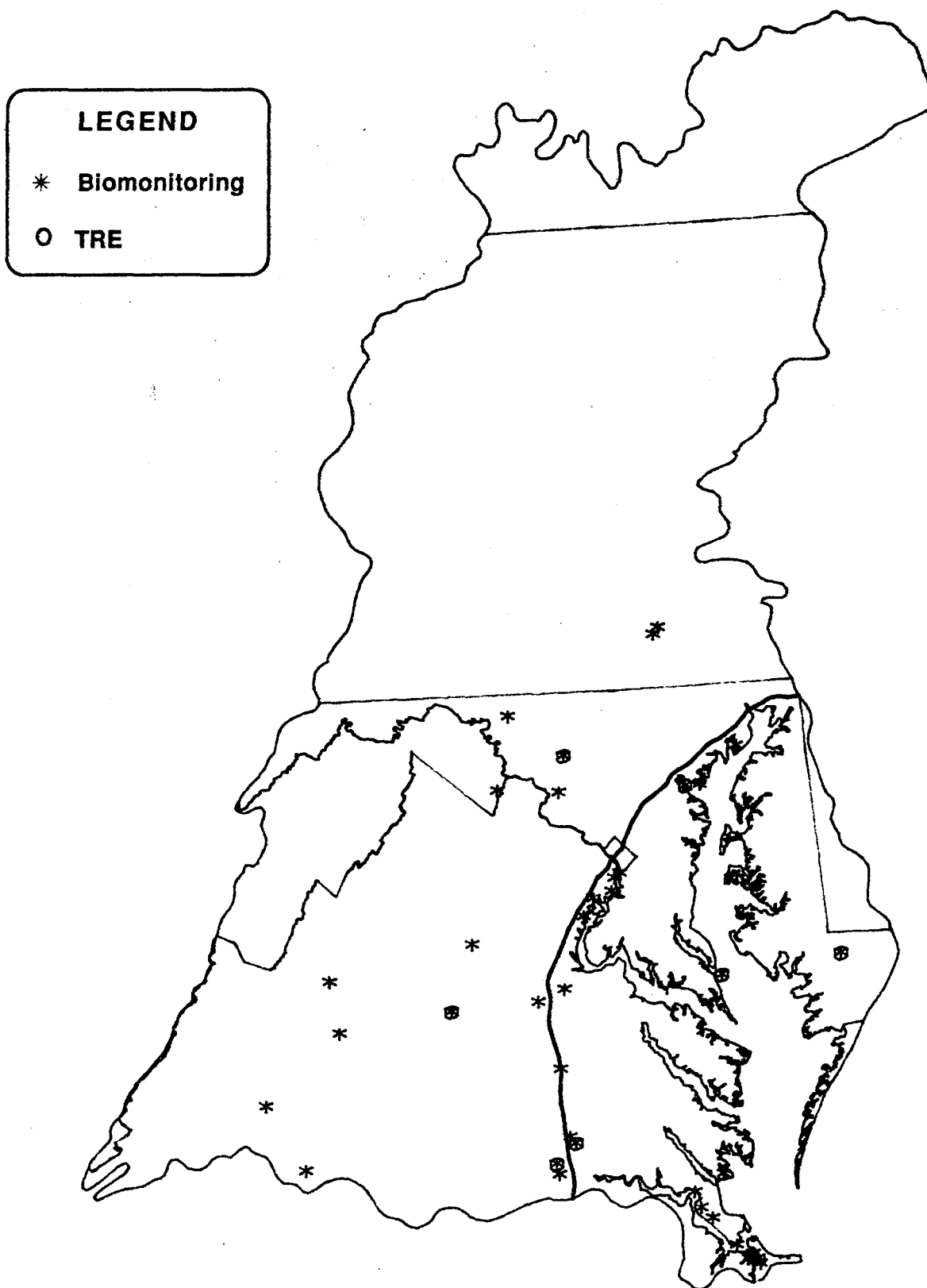
Nitrogen is 1985 total nitrogen discharge concentration in milligrams per liter

* Potomac embayment standard is 1.0 mg/l for total nitrogen but is waived until a technically feasible process with year round reliability is developed and available.

TABLE 18. MUNICIPAL DISCHARGERS WHERE BIOMONITORING TESTS HAVE BEEN CONDUCTED AND TOXICITY REDUCTION STUDIES (TRE) ARE UNDERWAY OR PLANNED BECAUSE OF TOXICITY

BASIN	FALLINE	STATE	FACNAME	NPDES	TRE	FLOW85
E SHORE	BFL	MD	SALISBURY CITY WASTEWATER TRTM	21571	YES	4.600
JAMES	AFL	VA	BUENA VISTA, CITY OF, SEWAGE DIS	20991		1.950
JAMES	BFL	VA	CHESTERFIELD CO./PROCTOR CREEK	60194		3.470
JAMES	BFL	VA	CHESTERFIELD-FALLING CREEK	24996	YES	9.210
JAMES	BFL	VA	FT.EUSTIS-US ARMY TRANSPORTATI	25216		1.650
JAMES	BFL	VA	HENRICO COUNTY WASTEWATER TMNT	63690		.
JAMES	BFL	VA	HOPEWELL STP CITY OF	66630	YES	30.820
JAMES	BFL	VA	HRSD - ARMY BASE	25208		12.960
JAMES	BFL	VA	HRSD - BOAT HARBOR	25283		15.500
JAMES	BFL	VA	HRSD - CHESAPEAKE/ELIZ.	25275		14.400
JAMES	BFL	VA	HRSD - JAMES RIVER	25241		9.980
JAMES	BFL	VA	HRSD - LAMBERTS POINT	25259		20.100
JAMES	BFL	VA	HRSD - NASEMOND	64459		6.250
JAMES	BFL	VA	HRSD - WILLIAMSBURG	25267		9.860
JAMES	AFL	VA	LYNCHBURG CITY STP	24970		13.700
JAMES	BFL	VA	PETERSBURG WASTEWATER TREATMEN	25437		8.480
JAMES	BFL	VA	PORTSMOUTH CITY-PINNERS POINT	25003		9.050
JAMES	BFL	VA	RICHMOND CITY OF	63177		66.100
POTOMAC	BFL	DC	BLUE PLAINS	21199		300.700
POTOMAC	AFL	MD	FREDERICK CITY WWTP	21610	YES	4.800
POTOMAC	AFL	MD	HAGERSTOWN STP, CITY OF	21776		6.000
POTOMAC	BFL	MD	PINE HILL RUN W.W.T.P.	21679	YES	1.900
POTOMAC	BFL	VA	ALEXANDRIA CITY SANITARY AUTHO	25160		36.520
POTOMAC	BFL	VA	ARLINGTON	25143		26.560
POTOMAC	BFL	VA	FAIRFAX CO-LITTLE HUNTING CR	25372		3.690
POTOMAC	AFL	VA	HARRISONBURG REG./ROCKINGHAM	60640		6.150
POTOMAC	BFL	VA	LOWER POTOMAC	25364		32.980
POTOMAC	BFL	VA	MOONEY - PRINCE WM. CO.	25101		7.200
POTOMAC	BFL	VA	UPPER OCCOQUAN SEWAGE AUTH-REG	24988		9.400
POTOMAC	AFL	VA	WAYNESBORO DEPT OF UTILITIES-S	25151		3.190
RAPP	AFL	VA	CULPEPER, TOWN OF, WASTE-WATER T	61590		1.090
RAPP	BFL	VA	FMC STP, SPOTS CO	68110		0.000
RAPP	BFL	VA	SPOTSYLVANIA CO. - MASSAPONAX	25658		1.450
SUSQUEHANNA	AFL	PA	SPRINGETTSBURG	26808		9.153
SUSQUEHANNA	AFL	PA	ST. MARYS BOROUGH MUN. AUTH.	26387		.
SUSQUEHANNA	AFL	PA	YORK SEWAGE WASTEWATER TRMT PL	26263		15.900
W CHESAP	BFL	MD	BETH STEEL (FROM BACK R STP)	1201		100.500
W CHESAP	BFL	MD	PATAPSCO	21601	YES	43.000
W CHESAP	BFL	MD	SOD RUN	21709		5.800
YORK	AFL	VA	GORDONSVILLE	21105	YES	0.550
YORK	AFL	VA	HANOVER COUNTY-DOSWELL STP	29521		2.500
YORK	BFL	VA	HRSD YORK STP	64238		7.300

Figure 13
Municipal Dischargers with Biomonitoring and TRE
NPDES Permit Requirements



methods. Municipal point sources where biomonitoring tests have been conducted and TREs are underway or planned are identified in Table 18. The distribution of these facilities is shown in Figure 13. The point source data base is currently the only system available to record and track these data. Table 19 provides additional information on the TRE status of municipal dischargers in Maryland and Virginia.

Table 19
TRE Status of Municipal Dischargers

MUNICIPAL FACILITY	STATE	TOXICITY	TRE STATUS
Gordonsville	VA	Confirmed	Implementing TRE Controls
Hopewell	VA	Confirmed	Developing TRE Study Plan
Falling Creek	VA	Confirmed	Developing TRE Study Plan
Pine Hill Run	MD	Notified	Unknown
Frederick	MD	Notified	Upgrading Treatment
Salisbury	MD	Notified	Evaluating Test Results
Patapsco	MD	Notified	Evaluating Test Results

INDUSTRIAL TOXICANTS

Industrial manufacturing is a complex process that requires the use of many raw materials, catalysts, solvents and other chemicals that are extremely hazardous. Process or cooling wastewater contaminated by these substances may be toxic unless properly treated. Industrial categories with the potential to discharge heavy metals and/or priority pollutants are identified in Table 20. These values are default values developed by the EPA Effluent Guidelines Division and can be used to target categories of industrial dischargers as potential sources of toxicants. Effluent monitoring, however, is required to quantify loadings.

Industrial dischargers may also be required to biomonitor their effluent if toxicity is suspected. Industrial dischargers with biomonitoring or TRE requirements are listed in Table 21. Their locations are shown in Figure 14. Table 22 provides additional information on the TRE status industrial dischargers in Maryland and Virginia.

Federal Dischargers

The Chesapeake Bay Agreement specifically calls for the control and reduction of pollutant loads from federal facilities. The point source data base contains an inventory of 181 wastewater treatment facilities owned by the federal government. This inventory is being used to track progress in meeting this Bay Agreement commitment. Major federal facilities and their pollutant loads are presented in Table 23.

TABLE 20. TYPES OF INDUSTRIAL DISCHARGERS, NUMBER, AND POTENTIAL TOXIC CONCENTRATIONS

SIC	SICDEF	NUMB	AS85	CD85	CR85	CU85	CYAN85	PB85	HG85	NI85	ZN85	PHENOL85	TTI85	TO85	TPB85
2339	WOMENS CLOTHING OUTERWEAR NEC	1	16.5	3.2	62.5	61.1	50.6	55.4	0.8	78.9	516.4	14.1	7	3	10
2341	WOMENS CLOTHING LINGERIE NEC	1	16.5	3.2	62.5	61.1	50.6	55.4	0.8	78.9	516.4	14.1	7	3	10
2611	PULP MILLS	3	.	.	27.2	14.3	2.9	10.0	0.1	13.8	192.9	6.0	23	10	33
2621	PAPER MILLS, EXCEPT BUILDING PAP	9	.	.	27.2	14.3	2.9	10.0	0.1	13.8	192.9	6.0	23	10	33
2631	PAPERBOARD MILLS	9	.	.	27.2	14.3	2.9	10.0	0.1	13.8	192.9	6.0	23	10	33
2645	DIE CUT PAPER AND BOARD	2	.	.	27.2	14.3	2.9	10.0	0.1	13.8	192.9	6.0	23	10	33
2647	SANITARY PAPER PRODUCTS	3	.	.	27.2	14.3	2.9	10.0	0.1	13.8	192.9	6.0	23	10	33
2648	STATIONARY, TABLETS AND RELATED	1	.	.	27.2	14.3	2.9	10.0	0.1	13.8	192.9	6.0	23	10	33
2649	CONVERTED PAPER AND PAPERBOARD P	4	.	.	27.2	14.3	2.9	10.0	0.1	13.8	192.9	6.0	23	10	33
2812	ALKALIES AND CHLORINE	3	54.0	39.0	1609.0	74.0	9.6	346.0	3.3	88.0	464.0	.	34	0	34
2813	INDUSTRIAL GASES	9	54.0	39.0	1609.0	74.0	9.6	346.0	3.3	88.0	464.0	.	34	0	34
2816	INORGANIC PIGMENTS	3	54.0	39.0	1609.0	74.0	9.6	346.0	3.3	88.0	464.0	.	34	0	34
2819	INDUSTRIAL INORG. CHEMICALS NEC	19	54.0	39.0	1609.0	74.0	9.6	346.0	3.3	88.0	464.0	.	34	0	34
2821	PLASTICS, SYNTHETIC RESINS, FLASTI	10	32.4	2.4	669.7	134.5	5322.7	32.8	3.6	89.8	250.3	16589.1	11	451	462
2823	CELLULOSIC MAN-MADE FIBERS	2	32.4	2.4	669.7	134.5	5322.7	32.8	3.6	89.8	250.3	16589.1	11	451	462
2824	SYNTHETIC ORGANIC FIBERS, EXCEPT	6	32.4	2.4	669.7	134.5	5322.7	32.8	3.6	89.8	250.3	16589.1	11	451	462
2851	PAINT, VARNISH, LACQUER, ENAMEL MFG	7	32.4	2.4	669.7	134.5	5322.7	32.8	3.6	89.8	250.3	16589.1	11	451	462
2869	INDUSTRIAL ORGANIC CHEMICALS NEC	9	.	.	.	1.4	18.2	.	.	.	.	102.0	0	3	3
2879	PESTICIDES, AGRI. CHEMICALS NEC	3	.	.	.	1.4	18.2	.	.	.	.	102.0	0	3	3
2892	EXPLOSIVES	1	54.0	39.0	1609.0	74.0	9.6	346.0	3.3	88.0	464.0	.	34	0	34
2899	CHEMICALS AND CHEMICAL PREPS NEC	8	54.0	39.0	1609.0	74.0	9.6	346.0	3.3	88.0	464.0	.	34	0	34
2911	PETROLEUM REFINING	13	0.0	0.3	115.5	9.8	45.5	5.2	0.9	3.4	104.6	13.7	5	1	5
2992	LUBRICATING OILS AND GREASES	1	0.0	0.3	115.5	9.8	45.5	5.2	0.9	3.4	104.6	13.7	5	1	5
2999	PETROLEUM AND COAL PRODUCTS NEC	1	0.0	0.3	115.5	9.8	45.5	5.2	0.9	3.4	104.6	13.7	5	1	5
3111	LEATHER TANNING AND FINISHING	6	.	0.0	4830.0	31.0	68.2	49.0	0.3	49.0	137.0	124.0	11	3	14
3321	GRAY AND DUCTILE IRON FOUNDRIES	7	2.5	2.5	0.9	52.5	.	680.3	.	1.1	1854.0	226.7	.	.	.
3322	MALLEABLE IRON FOUNDRIES	2	2.5	2.5	0.9	52.5	.	680.3	.	1.1	1854.0	226.7	.	.	.
3354	ALUMINUM EXTRUDED PRODUCTS	1	.	2.0	3200.5	8972.1	34.8	27.6	.	20.1	8133.3	28.9	43	0	43

SIC = Standard industrial classification code; classifies commercial and industrial dischargers by the type of activity in which they are engaged.

= Number of dischargers in category

As = arsenic, Cd = cadmium, Cr = chromium, Cu = copper, Pb = lead, Hg = mercury, Ni = nickel, and Zn = zinc

Concentrations are in micrograms per liter

Inorg = inorganic priority pollutants, organic = organic priority pollutants, I+O = total inorganic and organic priority pollutants; Concentrations are in pounds per day

Source: "Summary of Effluent Characteristics and Guidelines for Selected Industrial Point Source Categories: Industry Status Sheets", Revised February 28, 1986, EPA.

TABLE 21. INDUSTRIAL DISCHARGERS WHERE BIOMONITORING TESTS HAVE BEEN CONDUCTED AND TOXICITY REDUCTION STUDIES (TRE) ARE UNDERWAY OR PLANNED BECAUSE OF TOXICITY

BASIN	FALLINE	STATE	FACNAME	NPDES	TRE	SIC	SIC CODE DEFINITION
	AFL	MD	WESTINGHOUSE ELEC CORP IND EQM	841		3612	
	AFL	VA	BABCOCK WILCOX LYNCH	4774		2819	INDUSTRIAL INORG. CHEMICALS NEC
	BFL	VA	COLONNA'S SHIPYARD INC.	53813		7699	
	BFL	VA	VEPCO YORKTOWN	4103		4911	
E SHORE	BFL	MD	NUODEX INC.	345		2869	INDUSTRIAL ORGANIC CHEMICALS NEC
E SHORE	BFL	VA	HOLLY FARMS POULTRY IND-TEMPERANCEVILLE	4049	YES	2016	
JAMES	AFL	VA	ALLIED CHEM CORP FIBERS TECH	5304		7391	
JAMES	BFL	VA	ALLIED CHEM CORP, HOPEWELL	5291		2869	INDUSTRIAL ORGANIC CHEMICALS NEC
JAMES	AFL	VA	ALLIED CHEM CORP-CHESTERFIELD	5312		2824	SYNTHETIC ORGANIC FIBERS, EXCEPT
JAMES	AFL	VA	ALLIED COLLOIDS INC	58254		2899	CHEMICALS AND CHEMICAL PREPS NEC
JAMES	BFL	VA	AMERICAN TOBACCO CO-HANMER DIV	2780		2621	PAPER MILLS, EXCEPT BUILDING PAP
JAMES	BFL	VA	AQUALON CO.	3492		2611	PULP MILLS
JAMES	AFL	VA	BABCOCK AND WILCOX, LYNCHBURG	3697	YES	3443	
JAMES	BFL	VA	BASF CORP. - FIBERS DIV	3654		2824	SYNTHETIC ORGANIC FIBERS, EXCEPT
JAMES	BFL	VA	BENDIX CORP AUTO ELEC NWPT NWS	5282		3714	
JAMES	AFL	VA	BLUE BIRD EAST	58122		3713	
JAMES	AFL	VA	BONDED FIBERS INC-BUENA VISTA	4791	YES	2649	CONVERTED PAPER AND PAPERBOARD P
JAMES	AFL	VA	BURLINGTON IND INC-GLASGOW PLT	4677		2269	
JAMES	BFL	VA	CHASE BAG CO	2798		2645	DIE CUT PAPER AND BOARD
JAMES	AFL	VA	CHESAPEAKE ENERGY CENTER	4081		4911	
JAMES	AFL	VA	COOPER INDUST.	27065	YES	3471	
JAMES	BFL	VA	DOMINION TERMINAL ASSOC	57576		4463	
JAMES	BFL	VA	DUPONT SPRUANCE	4669		2821	PLASTICS, SYNTHETIC RESINS, ELASTI
JAMES	AFL	VA	GENERAL ELECTRIC-CHARLOTTESVIL	54607		3679	ELECTRONIC COMPONENTS, NEC
JAMES	AFL	VA	HERCULES INC-COVINGTON PLANT	3450		2824	SYNTHETIC ORGANIC FIBERS, EXCEPT
JAMES	AFL	VA	HON COMPANY	53155		2522	
JAMES	BFL	VA	ICI AMERICA CORP-HOPEWELL PLT	3077		2821	PLASTICS, SYNTHETIC RESINS, ELASTI
JAMES	AFL	VA	LYNCHBURG FOUNDRY	3310		3321	GRAY AND DUCTILE IRON FOUNDRIES
JAMES	AFL	VA	LYNCHBURG FOUNDRY	6262		3321	GRAY AND DUCTILE IRON FOUNDRIES
JAMES	BFL	VA	MASSEY COAL TERMINAL CORP	57142		4463	
JAMES	AFL	VA	MODINE-BUENA VISTA	2771		3433	
JAMES	BFL	VA	NAROX INC.	50962		2813	INDUSTRIAL GASES
JAMES	BFL	VA	NAVAL SUPPLY CENTER-CRANEY FAC	5487		9199	
JAMES	BFL	VA	NAVY NORFOLK SHIPYARD	5215		3731	
JAMES	BFL	VA	NEWPORT NEWS SHIP AND DRYDOCK	4804		3731	
JAMES	BFL	VA	NORFOLK SHIP BERKELEY	4383	YES	3731	
JAMES	BFL	VA	NORFOLK SHIP BRAMBLETON	4405		3731	
JAMES	AFL	VA	OWENS-ILLINOIS BIG ISLAND	3026		2631	PAPERBOARD MILLS
JAMES	BFL	VA	PHILIP MORRIS, BERMUDA HUNDRED	26557		2131	
JAMES	AFL	VA	REEVES BROS	3034		3069	
JAMES	BFL	VA	REYNOLDS METALS CO	5525		3300	
JAMES	AFL	VA	REYNOLDS METALS RICHMOND	2861		2645	DIE CUT PAPER AND BOARD
JAMES	AFL	VA	SEA HORSE MARINE, INC	51268		5093	
JAMES	BFL	VA	SMITHFIELD PACKING CO	59005		2011	MEAT PACKING PLANTS
JAMES	AFL	VA	SOLITE CORP., NEW CANTON	3468		1499	
JAMES	AFL	VA	ST JOE PAPER CO	53902	YES	2649	CONVERTED PAPER AND PAPERBOARD P
JAMES	BFL	VA	U.S. LANGLEY RESEARCH CENTER	24741		7392	
JAMES	AFL	VA	VEPCO BREMO BLUFF	4138		4911	
JAMES	AFL	VA	VEPCO CHESTERFIELD	4146	YES	4911	

TABLE 21. INDUSTRIAL DISCHARGERS WHERE BIOMONITORING TESTS HAVE BEEN CONDUCTED AND TOXICITY REDUCTION STUDIES (TRE) ARE UNDERWAY OR PLANNED BECAUSE OF TOXICITY (cont.)

BASIN	FALLINE	STATE	FACNAME	NPDES	TRE	SIC	SIC CODE DEFINITION
JAMES	BFL	VA	VEPCO FIREFIGHTING CTR	58742		4911	
JAMES	AFL	VA	VEPCO SURRY	4090		4911	
JAMES	BFL	VA	VIRGINIA CHEMICALS INC	3387	YES	2819	INDUSTRIAL INORG. CHEMICALS NEC
JAMES	AFL	VA	VIRGINIA FIBRE CORP-RIVERVILLE	6408		2631	PAPERBOARD MILLS
JAMES	AFL	VA	WESTVACO CORP COVINGTON HALL	3646		2611	PULP MILLS
PATUXENT	AFL	MD	WR GRACE WASHINGTON R&D CENTER	141		7391	
POTOMAC	BFL	MD	MINERAL PIGMENTS CORP BLTVILLE	3425		2816	INORGANIC PIGMENTS
POTOMAC	AFL	MD	W.D.BYRON & SONS, INC. SUB GDN S	53431	YES	3111	LEATHER TANNING AND FINISHING
POTOMAC	AFL	VA	ADOLPH COORS CO	56766		2082	MALT BEVERAGES
POTOMAC	AFL	VA	AILEEN INC, EDINBURG	1864		2231	
POTOMAC	AFL	VA	AVTEX FIBERS INC, FRONT ROYAL	2208	YES	2823	CELLULOSIC MAN-MADE FIBERS
POTOMAC	AFL	VA	DUPONT WAYNESBORO	2160		2821	PLASTICS, SYNTHETIC RESINS, ELASTI
POTOMAC	AFL	VA	GENICOM CORP.	2402		3662	
POTOMAC	AFL	VA	HOLLY FARMS POULTRY INDUSTRIES	54453		2016	
POTOMAC	AFL	VA	MERCK & CO INC STONEWALL PLANT	2178		2833	
POTOMAC	AFL	VA	O'SULLIVAN CORP WINCHESTER	2534		3069	
POTOMAC	AFL	VA	REYNOLDS METALS CO GROTTOS	1767		3079	MISCELLANEOUS PLASTICS PRODUCTS
POTOMAC	AFL	VA	ROCCO FARMS FOODS, EDINBURG	1902		2016	
POTOMAC	AFL	VA	ROCCO FURTHER PROCESSING, INC.	1791		2011	MEAT PACKING PLANTS
POTOMAC	AFL	VA	ROCKINGHAM POULTRY, ALMA	1961		2016	
POTOMAC	AFL	VA	ROCKINGHAM POULTRY, BROADWAY	2011		2016	
POTOMAC	AFL	VA	VEPCO POSSUM POINT	2071		4911	
POTOMAC	AFL	VA	WAMPLER FOODS-HINTON	2313		2016	
POTOMAC	AFL	VA	WAYNE TEX, INC.	1856	YES	2297	
SUSQUEHANNA	AFL	PA	BOWEN MCLAUGHLIN YORK CO	9253		3713	
SUSQUEHANNA	AFL	PA	PH GLATFELTER CO-WASTE TREAT	8869		2648	STATIONARY, TABLETS AND RELATED
SUSQUEHANNA	AFL	PA	YORK INTERNATIONAL COPR	8541		3559	
W CHESAP	BFL	MD	BETHLEHEM STEEL	1201		3312	BLAST FURNACES (INC. COKE OVENS)
W CHESAP	BFL	MD	BETHLEHEM STEEL	1201		3312	BLAST FURNACES (INC. COKE OVENS)
W CHESAP	BFL	MD	CHEMETALS CORP	1775	YES	2819	INDUSTRIAL INORG. CHEMICALS NEC
W CHESAP	BFL	MD	CONOCO, INC.	540		2869	INDUSTRIAL ORGANIC CHEMICALS NEC
W CHESAP	BFL	MD	ESSEX INDUSTRIAL CHEMICALS, IN	1015		2819	INDUSTRIAL INORG. CHEMICALS NEC
W CHESAP	BFL	MD	FMC CORPORATION	299		2869	INDUSTRIAL ORGANIC CHEMICALS NEC
W CHESAP	BFL	MD	KENNECOTT REFINING CORP BALTO	507		3331	PRIM SMELTING, REFINING OF COPPER
W CHESAP	BFL	MD	MOBAY CORP.	1252		2899	CHEMICALS AND CHEMICAL PREPS NEC
W CHESAP	BFL	MD	SCM CORPORATION	1261	YES	2816	INORGANIC PIGMENTS
YORK	BFL	VA	AMERICAN OIL YORKTOWN	3018		2911	PETROLEUM REFINING
YORK	BFL	VA	CHESAPEAKE CORP, WEST POINT	3115		2621	PAPER MILLS, EXCEPT BUILDING PAP
YORK	AFL	VA	EMERSON ELECTRIC	57011		3423	
YORK	AFL	VA	VEPCO NORTH ANNA	52451		4911	

Figure 14
Industrial Dischargers with Biomonitoring and TRE
NPDES Permit Requirements

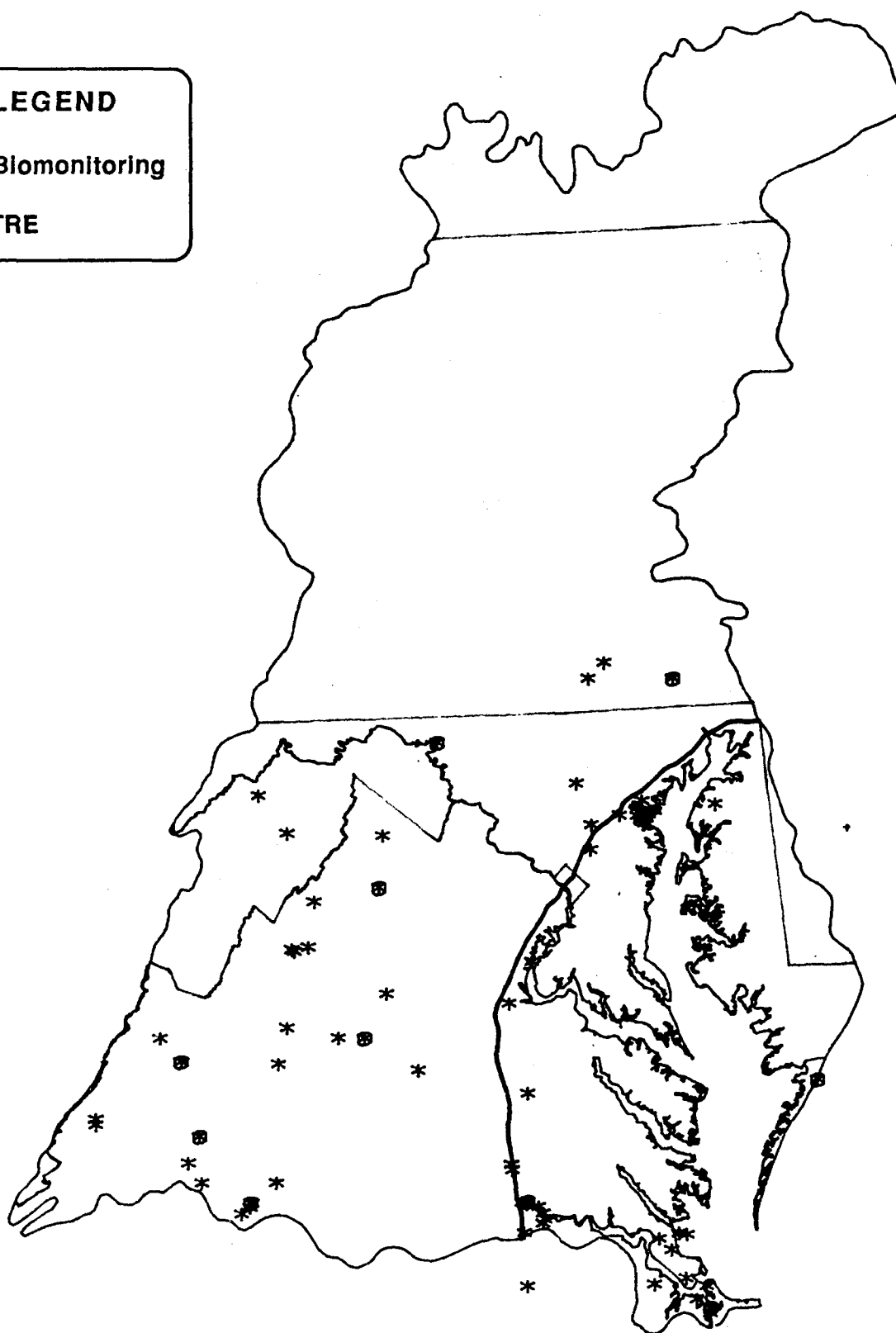
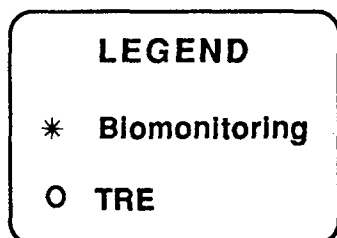


Table 22
TRE Status of Industrial Dischargers

INDUSTRIAL FACILITY	STATE	TOXICITY	TRE STATUS
Waynetex Corp. Waynesboro	VA	Confirmed	Developing TRE Study Plan
Avtex Fibers, Inc. Front Royal	VA	Confirmed	Conducting TRE
Virginia Chemicals Portsmouth	VA	Confirmed	TRE Completed
Georgia Bonded Fibers Buena Vista	VA	Confirmed	Conducting TRE
Cooper Industry Earlsville	VA	Confirmed	Implementing TRE Controls
St. Joe Paper Co. Chesapeake City	VA	Confirmed	TRE Completed
VA Power Fire Fighting Chesterfield	VA	Confirmed	TRE Completed
Holly Farms Temperanceville	VA	Confirmed	Developing TRE Study Plan
Babcock and Wilcox Lynchburg	VA	Confirmed	Developing TRE Study Plan
Norshipco, Berkeley Portsmouth	VA	Confirmed	Developing TRE Study Plan
Chemetals Foremans Corner	MD	Confirmed	TRE Completed and Cause of Toxicity Identified
W.D. Byron Williamsport	MD	Confirmed	TRE Study Underway
SCM Baltimore	MD	Confirmed	TRE Study Plan Completed

Confirmed Toxicity indicates that toxicity initially determined to be present under state compliance programs or as a requirement of discharge permits was also found in subsequent facility sponsored biological testing.

Data Availability

The preceding discussions and data were presented as an introduction to the type of data available in the point source data base and how it might be used. A complete listing of the variables contained in the data base and their definitions may be found in the Data Dictionary (see page 40). The data base may be accessed through CHESSEE, an information retrieval system available to authorized users. The reader is encouraged to access the data base and conduct specific analyses of interest. Over time, the data base will be expanded and improved. Questions on accessing the data base or suggestions to improve the accuracy or applicability of the data base should be directed to the Chesapeake Bay Liaison Office, attention Dave Clements (301-266-6873).

TABLE 23. INVENTORY OF MAJOR FEDERAL DISCHARGERS

BASIN	STATE	FACILITY	NAME	NPDES	SIC	DISTYPE	FLOW	PHOSPHORUS	NITROGEN	BOD 5	TSS
	VA	U.S. NAVY-FLEET COMBAT DIRECTI		24261	9711	IND	.	.	.	.	.
JAMES	VA	NAVAL AIR STATION OCEANA		29131	4321	IND	.	.	.	.	.
JAMES	VA	NAVAL SUPPLY CENTER-CRANEY FAC		5487	9199	IND	.	.	.	.	.
JAMES	VA	NAVY NORFOLK SHIPYARD		5215	3731	IND	.	.	.	.	.
JAMES	VA	NAVY AIR REWORK		4413	4582	IND	.	.	.	.	.
JAMES	VA	FT.EUSTIS-US ARMY TRANSPORTATI		25216	9711	MUN	1.65	0.0317	0.093	0.0485	0.0910800
PATUXENT	MD	U.S. NAVAL AIR STATION- PATUXE		20150	4521	IND	.	.	.	.	.
POTOMAC	PA	LETTERKENNY ARMY DEPOT/IW		10502	9199	IND	.	.	.	.	.
POTOMAC	MD	NAVAL ORDNANCE STATION		3158	3483	IND	.	0.0041	0.253	0.0073	.
POTOMAC	VA	U.S. MARINE CORPS - QUANTICO		2151	8062	IND	.	.	.	.	.
POTOMAC	MD	U.S.NAVAL ORDNANCE STATION-SIT		20885	9711	IND	.	.	.	.	.
POTOMAC	DC	US CAPITOL POWER PLANT		116	4961	IND	.	.	.	.	.
POTOMAC	MD	US NAVAL SURF WEAP-WHITE OAK		2283	3483	IND	.	.	.	.	.
POTOMAC	VA	USASAFS VINT HILL FARMS STA WR		32140	9711	IND	.	.	.	.	.
POTOMAC	VA	U.S. MARINE CORPS BASE-MAINSID		28363	4952	MUN	1.45	0.0009	0.065	0.0248	0.0435000
W CHESAP	MD	ABERDEEN PROVING AREA-ABERDEEN		21237	4952	MUN	1.10	0.0116	0.059	0.0156	0.0138188
W CHESAP	MD	ABERDEEN PROVING GROUND-EDGEWO		21229	4952	MUN	1.30	0.0039	0.065	0.0167	0.0183857
W CHESAP	MD	USA HQ, FORT MEADE STP		21717	4952	MUN	1.90	0.0029	0.103	.	.
YORK	VA	NAVY WEAPONS CENTER		5185	3483	IND	.	.	.	.	.

Flow in millions of gallons per day

Phosphorus, nitrogen, bod 5 and tss are discharged loads in millions of pounds per year

DATA DICTIONARY ATLAS85 DATA SET

NUMBER OF OBSERVATIONS: 5996

NUMBER OF VARIABLES: 79

VARIABLE	TYPE	LENGTH	POSITION	DEFINITION (LABEL)
ADDRESS	CHAR	30	332	FACILITY ADDRESS
AS85	NUM	8	8	TOTAL ARSENIC IN EFFLUENT (MG/L)
AUTNAME	CHAR	25	206	AUTHORITY NAME
BASIN	CHAR	20	598	RIVER DRAINAGE BASIN
BOD85	NUM	8	271	1985 MUNICIPAL 5 DAY BOD EFF. (MG/L)
BODL85	NUM	8	287	1985 INDUSTRIAL BOD5 LOAD (LBS/DAY)
CATLUNIT	NUM	8	324	USGS CATALOGING UNIT NUMBER
CD85	NUM	8	16	TOTAL CADMIUM IN EFFLUENT (MG/L)
CEN00	NUM	8	634	COUNTY CENSUS POP IN 2000
CEN85	NUM	8	626	COUNTY CENSUS POP IN 1985
CFLCODE	NUM	8	650	COUNTY CODE FOR FALL LINE LOCATIONS 1=BFL, 2=AFL/BFL, 3=AFL BOUNDARY 4=BFL BOUNDARY, 5=AFL
CITY	CHAR	25	481	CITY
COUNTY	CHAR	20	506	COUNTY
CR85	NUM	8	24	TOTAL CHROMIUM IN EFFLUENT (MG/L)
CU85	NUM	8	32	TOTAL COPPER IN EFFLUENT (MG/L)
CYAN85	NUM	8	40	TOTAL CYANIDE IN EFFLUENT (MG/L)
DELTA	NUM	8	693	PERCENT CHANGE IN COUNTY POPULATION
DESIGN	NUM	8	425	1985 MUNICIPAL DESIGN FLOW (MGD)
DISTYPE	CHAR	3	760	MUNICIPAL (MUN) OR INDUSTRIAL (IND)
DRW	CHAR	30	362	DISCHARGE RECEIVING WATER
FACILITY	CHAR	33	392	DISCHARGER NAME
FACNAME	CHAR	40	441	FACILITY NAME
FALLINE	CHAR	3	725	LOCATION ABOVE (AFL) OR BELOW (BFL)
FINLAT	NUM	6	526	LATITUDE OF DISCHARGER
FINLON	NUM	6	532	LONGITUDE OF DISCHARGER
FLOW85	NUM	8	263	1985 MUNICIPAL FLOW IN MGD
HG85	NUM	8	56	TOTAL MERCURY IN EFFLUENT (MG/L)
IFLOW	NUM	8	752	INDUSTRIAL FLOW TO MUNICIPAL PLANT (MGD)
LBOD85	NUM	8	558	5 DAY BOD EFFLUENT LIMIT (MG/L)
LNH3	NUM	8	618	AMMONIA EFFLUENT LIMIT (MG/L)
LTKN	NUM	8	582	TKN EFFLUENT LIMIT (MG/L)
LTN	NUM	8	574	TOTAL NITROGEN EFFLUENT LIMIT (MG/L)
LTP	NUM	8	542	TOTAL PHOSPHORUS EFFLUENT LIMIT (MG/L)
LTRC	NUM	8	590	TOTAL RESIDUAL CL EFFLUENT LIMIT (MG/L)
LTSS	NUM	8	566	TOTAL SUSP. SOLIDS EFFLUENT LIMIT (MG/L)
MADI	CHAR	1	189	'M' DENOTES MAJOR DISCHARGER
MFLOW	NUM	8	701	1985 SUMMER WASTEWATER FLOW (MGD)
MTN	NUM	8	744	1985 SUMMER NITROGEN EFFLUENT (MG/L)
MTP	NUM	8	433	1985 SUMMER PHOSPHORUS EFFLUENT (MG/L)
NH4	NUM	8	112	DEFAULT NH4 CONCENTRATION (MG/L) BASED ON SIC
NH385	NUM	8	247	1985 MUNICIPAL AMMONIA EFFLUENT (MG/L)
NI85	NUM	8	64	TOTAL NICKEL IN EFFLUENT (MG/L)
NMP	NUM	8	728	NATIONAL MUNICIPAL POLICY DISCHARGERS
NPDES	NUM	8	144	NATL. POLLUTION DISCH. ELIM. SYS. NUMBER

DATA DICTIONARY ATLAS85 DATA SET (cont.)

VARIABLE	TYPE	LENGTH	POSITION	DEFINITION (LABEL)
ORDER	NUM	2	680	ALTERNATE BASIN VARIABLE
OWN	CHAR	3	682	OWNERSHIP , 'PRI', 'FED' OR 'PUB'
PB85	NUM	8	48	TOTAL LEAD IN EFFLUENT (MG/L)
PERD	NUM	8	190	NPDES PERMIT EXPIRATION DATE
PERF	NUM	8	198	NPDES PERMIT ISSUANCE DATE
PHENOL85	NUM	8	80	TOTAL PHENOL IN EFFLUENT (MG/L)
POLICY	CHAR	4	538	REGIONAL NUTRIENT CONTROL POLICY PATX=PATUXENT NUT. CONTROL STRAT. POTO=POTOMAC STRATEGY UPCB=UPPER BAY PHOS. CONTROL POL.
PTREAT	CHAR	8	664	PRETREATMENT REQUIREMENT
PTSTAT	CHAR	8	672	PRETREATMENT PROGRAM STATUS
RECWATER	CHAR	13	311	RECEIVING WATER BODY
RWAT	CHAR	35	154	RECEIVING WATER
SEGMENT	NUM	8	736	2-D WATER QUALITY MODEL SEGMENT
SFLO00	NUM	8	709	STATE YEAR 2000 ESTIMATED FLOW IN MGD
SIC	NUM	8	0	STANDARD INDUSTRIAL CLASS. CODE NUMBER
SICDEF	CHAR	32	763	SIC DEFINITION
STATE	CHAR	2	152	STATE
TKN	NUM	8	120	DEFAULT TKN CONCENTRATION (MG/L) BASED ON SIC
TKN85	NUM	8	255	1985 MUNICIPAL TKN EFFLUENT (MG/L)
TMP	CHAR	3	658	REQUIRED TOXIC MONITORING PLAN
TN	NUM	8	128	DEFAULT NITROGEN CONCENTRATION (MG/L) BASED ON SIC
TN85	NUM	8	239	1985 MUNICIPAL TOTAL NITROGEN EFF.(MG/L)
TNL85	NUM	8	295	1985 INDUSTRIAL NITROGEN LOAD (LBS/DAY)
TP	NUM	8	136	DEFAULT PHOSPHORUS CONCENTRATION (MG/L) BASED ON SIC
TP85	NUM	8	231	1985 MUNICIPAL TOT PHOSPHORUS EFF.(MG/L)
TPL85	NUM	8	303	1985 INDUSTRIAL PHOSPHORUS LOAD(LBS/DAY)
TPP85	NUM	8	104	TOTAL PRIORITY POLLUTANTS (LBS/DAY)
TRC85	NUM	8	550	1985 MUNICIPAL TOT RESIDUAL CL EFF(MG/L)
TRE	CHAR	3	661	TOXICITY REDUCTION EVALUATION REQUIRED
TRTY	NUM	8	685	MUNICIPAL TREATMENT PROCESS VARIABLE 'TRTY' TREATMENT CODES DEFINED

TRTY
CODE

DEFINITION

10 EXTENDED AERATION (EA)

16 EA WITH ALUM

17 EA WITH FILTRATION

18 EA WITH ALUM PLUS FILTRATION

20 CONVENTIONAL (OTHER) ACTIVATED SLUDGE (A/S)

26 A/S WITH ALUM

27 A/S WITH FILTRATION

28 A/S WITH ALUM PLUS FILTRATION

DATA DICTIONARY ATLAS85 DATA SET (cont.)

VARIABLE TYPE		LENGTH	POSITION	DEFINITION (LABEL)
			30	ACTIVATED SLUDGE WITH NITRIFICATION (AS/N)
			36	AS/N WITH ALUM
			37	AS/N WITH FILTRATION
			38	AS/N WITH ALUM PLUS FILTRATION
			40	FIXED FILM OR TRICKLING FILTER (TF)
			46	TF WITH ALUM
			47	TF WITH FILTRATION
			48	TF WITH ALUM PLUS FILTRATION
			50	PRIMARY OR OTHER TREATMENT
TSS85	NUM	8	279	1985 MUNICIPAL TOT SUS.SOLIDS EFF.(MG/L)
TTI85	NUM	8	88	TOT INORG. PRIO. POLL. IN EFF.(LBS/DAY)
TO85	NUM	8	96	TOT ORG. PRIO. POLL. IN EFF.(LBS/DAY)
VA2000	NUM	8	717	VIRGINIA YEAR 2000 ESTIMATED FLOW
ZN85	NUM	8	72	TOTAL ZINC IN EFFLUENT (MG/L)