Note: This data is provided for facilities to assist with the calculation of the release of ammonia-N through stormwater discharges for TRI reporting. This data is commonly used when a facility does not have analytical samples to carry out their calculations. For the purposes of reporting, assume ammonia-N equals TKN for processing.

connections, spills, and improperly dumped materials, may increase the pollutant loadings discharged in the receiving stream.

EPA reviewed Part 1 Group Storm Water Applications for facilities identified as sampling facilities to determine the types of significant materials from food and kindred products processing that are exposed to storm water. A list of these significant materials is presented in Table U–2. Note that significant materials related to vehicle maintenance (e.g., diesel fuel) and other miscellaneous nonprocessing materials (e.g., lumber) are not included in Table U–2.

TABLE U–2.—SIGNIFICANT MATERIALS EXPOSED TO STORM WATER

Acids (phosphoric, sulfuric)	Feathers
Activated carbon	Feed
Ammonia	Ferric chloride
Animal cages	Fruits, vegetables, coffee beans
Bleach	Gel bone
Blood	Grain (flour, oats, wheat)
Bone meal	Hides
Brewing residuals	Lard
Calcium oxide	Manure
Carbon dioxide	Milk
Caustic soda	Salts (brine)
Chlorine	Skim powder
Cheese	Starch
Coke oven tar	Sugar (sweetner, honey, fructose, syrup)
Detergent	Tallow
Eggs	Wastes (off-spec product, sludge)
Ethyl alcohol	Whey
Fats, greases, shortening, oils	Yeast

Based on the wide variety of industrial activities and significant materials at the facilities included in this sector, EPA believes it is appropriate to divide the food and kindred products industry into subsectors to properly analyze sampling data and determine monitoring requirements. As a result, this sector has been divided into the following subsectors: meat products; dairy products; canned, frozen, and preserved fruits; grain mill products; bakery products; sugar and confectionery products; fats and oils; beverages; miscellaneous food and kindred products; and tobacco products. Tables below include data for the eight pollutants that all facilities were required to monitor for under Form 2F. The tables also list those parameters that EPA has determined may merit further monitoring. A table has not been included for the following subsectors because less than 3 facilities submitted data in that subsector: sugar and confectionery products facilities; and tobacco products facilities.

TABLE U–3.—STATISTICS FOR SELECTED POLLUTANTS REPORTED BY MEAT PRODUCTS FACILITIES SUBMITTING PART II SAMPLING DATA[i] (mg/L)

Pollutant Sample type	No. of facilities		No. of samples		Mean		Minimum		Maximum		Median		95th percentile		99th percentile	
	Grab	Comp[ii]	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp
BOD_5	30	29	51	50	25.9	19.2	0.0	0.0	170.0	81.0	12.0	9.2	102.5	78.7	248.436	182.3
COD	30	29	51	50	184.3	122.8	0.0	0.0	1307.0	1307.0	80.0	72.0	717.3	350.7	1623.7	659.3
Nitrate + Nitrite Nitrogen	30	29	51	50	1.35	1.24	0.00	0.00	4.75	8.66	0.86	0.60	4.54	3.78	8.84	7.10
Total Kjeldahl Nitrogen	30	29	51	50	3.30	3.57	0.00	0.00	18.00	27.00	2.00	1.60	9.59	12.55	16.92	26.07
Oil & Grease	31	N/A	52	N/A	7.7	N/A	0.0	N/A	34.0	N/A	6.6	N/A	25.3	N/A	41.7	N/A
pH	24	N/A	38	N/A	N/A	N/A	5.9	N/A	8.6	N/A	7.7	N/A	8.9	N/A	9.5	N/A
Total Phosphorus	30	29	51	50	20.45	0.94	0.02	0.02	970.00	9.70	0.28	0.28	9.89	3.11	36.98	8.25
Total Suspended Solids	30	29	51	50	397	206	0	0	2540	2120	98	68	2266	902	7830	2618

[i] Applications that did not report the units of measurement for the reported values of pollutants were not included in these statistics. Values reported as non-detect or below detection limit were assumed to be 0.
[ii] Composite samples.

TABLE U–4.—STATISTICS FOR SELECTED POLLUTANTS REPORTED BY DAIRY PRODUCTS FACILITIES SUBMITTING PART II SAMPLING DATA[i] (mg/L)

Pollutant Sample type	No. of facilities		No. of samples		Mean		Minimum		Maximum		Median		95th percentile		99th percentile	
	Grab	Comp[ii]	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp
BOD_5	33	33	81	81	66.4	49.6	0.0	0.0	1400.0	1360.0	17.0	10.0	185.0	122.4	479.0	297.5
COD	33	33	81	81	214.7	149.3	15.0	0.0	3010.0	2100.0	94.0	78.4	647.0	418.0	1385.3	836.8
Nitrate + Nitrite Nitrogen	33	33	81	81	1.24	0.99	0.00	0.00	25.52	8.88	0.61	0.57	3.53	3.16	7.18	6.31
Total Kjeldahl Nitrogen	33	33	81	81	4.35	3.68	0.00	0.00	32.00	32.40	2.50	2.44	12.40	10.18	22.65	18.04
Oil & Grease	33	N/A	81	N/A	6.1	N/A	0.0	N/A	92.4	N/A	2.0	N/A	26.1	N/A	58.9	N/A
pH	31	N/A	78	N/A	N/A	N/A	4.4	N/A	9.0	N/A	7.0	N/A	8.6	N/A	9.4	N/A
Total Phosphorus	33	33	80	80	1.68	1.07	0.00	0.00	24.40	6.80	0.50	0.38	7.59	4.71	19.51	11.35
Total Suspended Solids	32	32	79	79	225	218	0	0	2667	3110	56	53	967	798	2932	2274

[i] Applications that did not report the units of measurement for the reported values of pollutants were not included in these statistics. Values reported as non-detect or below detection limit were assumed to be 0.
[ii] Composite samples.

TABLE U–5.—STATISTICS FOR SELECTED POLLUTANTS REPORTED BY CANNED, FROZEN, AND PRESERVED FRUITS, VEGETABLES AND FOOD SPECIALTIES FACILITIES SUBMITTING PART II SAMPLING DATA[i] (mg/L)

Pollutant Sample type	No. of facilities		No. of samples		Mean		Minimum		Maximum		Median		95th percentile		99th percentile	
	Grab	Comp[ii]	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp
BOD_5	29	26	71	56	48.9	44.0	0.0	0.0	1550.0	1150.0	9.1	8.5	122.9	98.1	305.3	232.0
COD	27	24	69	55	174.6	153.4	0.0	0.0	3810.0	2820.0	39.0	40.0	522.0	492.0	1293.2	1280.8
Nitrate + Nitrite Nitrogen	28	26	68	57	1.20	0.93	0.00	0.00	14.70	9.60	0.59	0.40	3.89	2.74	8.17	5.53
Total Kjeldahl Nitrogen	30	27	73	59	4.44	3.45	0.00	0.00	64.00	33.90	1.80	1.60	14.27	12.53	32.44	29.35
Oil & Grease	28	N/A	68	N/A	5.3	N/A	0.0	N/A	35.0	N/A	1.2	N/A	27.7	N/A	70.0	N/A
pH	26	N/A	68	N/A	N/A	N/A	4.3	N/A	10.3	N/A	7.1	N/A	8.7	N/A	9.7	N/A
Total Phosphorus	28	26	68	57	1.02	0.95	0.00	0.00	11.80	8.30	0.42	0.54	3.52	3.45	8.18	7.73
Total Suspended Solids	30	27	73	58	147	112	0	0	1840	800	67	49	787	585	2445	1681

[i] Applications that did not report the units of measurement for the reported values of pollutants were not included in these statistics. Values reported as non-detect or below detection limit were assumed to be 0.
[ii] Composite samples.

TABLE U–6.—STATISTICS FOR SELECTED POLLUTANTS REPORTED BY GRAIN MILL PRODUCTS FACILITIES SUBMITTING PART II SAMPLING DATA[i] (mg/L)

Pollutant Sample type	No. of facilities		No. of samples		Mean		Minimum		Maximum		Median		95th percentile		99th percentile	
	Grab	Comp[ii]	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp
BOD_5	72	70	77	75	86.4	73.9	0.0	0.0	713.0	968.0	20.0	21.0	296.2	249.8	770.8	613.7
COD	72	70	77	74	273.9	211.4	0.0	0.0	2000.0	2040.0	89.0	81.0	937.4	640.9	2170.9	1339.3
Nitrate + Nitrite Nitrogen	73	71	79	75	1.62	1.08	0.00	0.00	44.90	17.70	0.36	0.50	6.51	5.29	18.50	13.97
Total Kjeldahl Nitrogen	72	70	77	74	10.3	7.62	0.00	0.00	78.00	75.00	4.00	3.00	39.01	25.19	88.55	51.97
Oil & Grease	73	N/A	78	N/A	4.4	N/A	0.0	N/A	44.0	N/A	0.00	N/A	21.6	N/A	46.2	N/A
pH	73	N/A	78	N/A	N/A	N/A	5.0	N/A	8.9	N/A	7.0	N/A	8.2	N/A	8.8	N/A
Total Phosphorus	72	70	77	74	8.17	2.90	0.08	0.06	314.00	19.70	1.74	1.70	18.69	10.52	48.77	22.82
Total Suspended Solids	72	70	77	74	324	320	4	4	3300	4530	112	110	1468	1233	4338	3469
Zinc, Total	17	17	17	17	1.409	1.342	0.060	0.110	13.500	7.350	0.30	0.31	4.775	4.793	13.091	11.564

[i] Applications that did not report the units of measurement for the reported values of pollutants were not included in these statistics. Values reported as non-detect or below detection limit were assumed to be 0.
[ii] Composite samples.

TABLE U–7.—STATISTICS FOR SELECTED POLLUTANTS REPORTED BY BAKERY PRODUCTS FACILITIES SUBMITTING PART II SAMPLING DATA[i] (mg/L)

Pollutant Sample type	No. of facilities		No. of samples		Mean		Minimum		Maximum		Median		95th percentile		99th percentile	
	Grab	Comp[ii]	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp
BOD_5	16	17	32	34	18.8	17.5	4.0	0.0	82.0	85.0	13.0	11.50	45.7	46.6	74.6	79.4
COD	16	17	32	34	103.7	92.3	16.2	14.0	514.0	426.0	72.0	59.0	270.3	238.2	465.9	407.8
Nitrate + Nitrite Nitrogen	16	17	32	34	0.47	0.56	0.00	0.00	1.94	1.90	0.40	0.46	1.29	1.64	2.00	2.67
Total Kjeldahl Nitrogen	16	17	32	34	2.89	2.41	0.00	0.00	10.00	6.60	2.40	2.15	9.15	6.33	16.22	10.14
Oil & Grease	16	N/A	32	N/A	14.0	N/A	0.0	N/A	93.0	N/A	5.0	N/A	63.6	N/A	149.9	N/A
pH	14	N/A	30	N/A	N/A	N/A	6.1	N/A	8.4	N/A	7.1	N/A	8.3	N/A	8.9	N/A
Total Phosphorus	16	17	32	34	0.56	0.49	0.00	0.00	2.10	1.80	0.47	0.38	1.51	1.71	2.47	3.23
Total Suspended Solids	16	17	32	34	140	64	2	2	410	200	103	41	888	295	2686	750

[i] Applications that did not report the units of measurement for the reported values of pollutants were not included in these statistics. Values reported as non-detect or below detection limit were assumed to be 0.
[ii] Composite samples.

TABLE U–8.—STATISTICS FOR SELECTED POLLUTANTS REPORTED BY FATS AND OILS MANUFACTURING FACILITIES SUBMITTING PART II SAMPLING DATA[i] (mg/L)

Pollutant Sample type	No. of facilities		No. of samples		Mean		Minimum		Maximum		Median		95th percentile		99th percentile	
	Grab	Comp[ii]	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp
BOD_5	12	12	19	19	68.0	38.6	0.0	0.0	180.0	75.0	57.0	41.0	240.7	108.0	466.2	177.1
COD	12	12	19	19	322.6	191.1	17.0	9.60	1040.0	840.0	230.0	150.0	1253.4	640.1	2622.1	1216.4
Nitrate + Nitrite Nitrogen	12	12	19	19	2.69	1.65	0.32	0.23	18.30	4.90	1.37	1.01	7.97	4.82	15.95	8.58
Total Kjeldahl Nitrogen	12	12	19	19	19.60	7.96	0.00	0.0	240.00	65.2	3.40	2.75	55.66	24.1	156.55	53.5
Oil & Grease	11	N/A	18	N/A	28.5	N/A	0.0	N/A	150.0	N/A	7.8	N/A	178.1	N/A	527.7	N/A
pH	11	N/A	17	N/A	N/A	N/A	5.7	N/A	10.0	N/A	7.6	N/A	10.0	N/A	11.1	N/A
Total Phosphorus	12	12	19	19	0.91	1.96	0.00	0.00	8.11	15.8	0.37	0.23	3.18	6.75	7.65	21.73
Total Suspended Solids	10	11	17	18	635	442	3	0	4850	3060	290	175	3746	1725	12233	4158

[i] Applications that did not report the units of measurement for the reported values of pollutants were not included in these statistics. Values reported as non-detect or below detection limit were assumed to be 0.
[ii] Composite samples.

TABLE U–9.—STATISTICS FOR SELECTED POLLUTANTS REPORTED BY BEVERAGES FACILITIES SUBMITTING PART II SAMPLING DATA[i] (mg/L)

Pollutant Sample type	No. of facilities		No. of samples		Mean		Minimum		Maximum		Median		95th percentile		99th percentile	
	Grab	Comp[ii]	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp
BOD_5	18	15	29	23	16.8	8.61	1.0	1.0	153.0	35.0	6.0	5.0	52.7	25.1	115.4	45.6
COD	18	15	29	23	70.1	42.1	9.0	5.0	270.0	88.0	49.0	46.0	214.3	125.2	401.6	217.3
Nitrate + Nitrite Nitrogen	18	15	29	23	0.60	0.65	0.00	0.04	1.90	2.10	0.41	0.60	1.67	2.12	2.85	3.96
Total Kjeldahl Nitrogen	18	15	29	23	1.54	0.95	0.31	0.27	7.45	2.9	1.00	0.74	3.82	2.11	6.35	3.15

TABLE U–9.—STATISTICS FOR SELECTED POLLUTANTS REPORTED BY BEVERAGES FACILITIES SUBMITTING PART II SAMPLING DATA[i] (mg/L)—Continued

Pollutant Sample type	No. of facilities		No. of samples		Mean		Minimum		Maximum		Median		95th percentile		99th percentile	
	Grab	Comp[ii]	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp
Oil & Grease	18	N/A	29	N/A	1.7	N/A	0.0	N/A	7.0	N/A	1.2	N/A	4.3	N/A	6.4	N/A
pH	18	N/A	29	N/A	N/A	N/A	4.8	N/A	8.9	N/A	7.3	N/A	8.9	N/A	9.8	N/A
Total Phosphorus	18	15	29	23	0.51	0.36	0.05	0.06	5.40	2.70	0.26	0.20	1.39	0.94	2.79	1.71
Total Suspended Solids	18	15	29	23	29	9.7	3	0	170	36	18	5	95	32	193	65
Zinc, Total	10	8	11	9	0.179	0.141	0.000	0.000	0.440	0.400	0.13	0.07	0.549	0.517	0.922	0.969

[i] Applications that did not report the units of measurement for the reported values of pollutants were not included in these statistics. Values reported as non-detect or below detection limit were assumed to be 0.
[ii] Composite samples.

TABLE U–10.—STATISTICS FOR SELECTED POLLUTANTS REPORTED BY MISCELLANEOUS FOOD PREPARATIONS AND KINDRED PRODUCTS FACILITIES SUBMITTING PART II SAMPLING DATA[i] (mg/L)

Pollutant Sample type	No. of facilities		No. of samples		Mean		Minimum		Maximum		Median		95th percentile		99th percentile	
	Grab	Comp[ii]	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp	Grab	Comp
BOD_5	7	7	15	15	16.8	11.9	0.0	0.0	67.0	66.0	8.5	4.20	59.0	39.5	118.5	80.6
COD	7	7	15	15	103.1	81.1	13.0	17.0	297.0	504.0	63.0	52.0	371.2	211.4	759.3	384.2
Nitrate + Nitrite Nitrogen	7	7	15	15	0.49	0.47	0.00	0.0	1.17	1.22	0.48	0.38	1.79	1.65	3.11	2.93
Total Kjeldahl Nitrogen	7	7	15	15	2.76	1.96	0.44	0.40	11.90	7.81	1.59	1.35	8.88	5.51	17.42	9.99
Oil & Grease	7	N/A	15	N/A	4.4	N/A	0.0	N/A	16.0	N/A	2.9	N/A	15.7	N/A	28.5	N/A
pH	8	N/A	16	N/A	N/A	N/A	2.3	N/A	8.6	N/A	6.9	N/A	12.0	N/A	N/A	
Total Phosphorus	7	7	15	15	0.52	0.423	0.03	0.03	1.67	1.67	0.30	0.23	2.50	1.91	6.31	4.91
Total Suspended Solids	7	7	15	14	481	132	0	1	2880	1063	179	51	4441	719	21493	2499

[i] Applications that did not report the units of measurement for the reported values of pollutants were not included in these statistics. Values reported as non-detect or below detection limit were assumed to be 0.
[ii] Composite samples.

4. Options for Controlling Pollutants.

One option for controlling pollutants in storm water is to set effluent limitations for these discharges. EPA does not consider this to be feasible because of the lack of performance data necessary to develop limitations.

Pursuant to 40 CFR 122.44(k), permits may contain Best Management Practices (BMPs) to control or abate the discharge of pollutants in storm water, when applicable (and where numeric effluent limitations are infeasible). EPA believes that the most effective BMPs for reducing pollutants in storm water discharges from food and kindred products processing facilities is through exposure minimization and good housekeeping practices. Exposure minimization practices reduce the potential for storm water to come in contact with pollutants. Good housekeeping practices ensure that the facility is responsive to routine and non-routine activities that may increase exposure of pollutants to storm water. The BMPs necessary to address these two concerns are generally uncomplicated and inexpensive practices. They are easy to implement, and require little or no maintenance. Minor capital expenses, such as construction of cement pads or berms/dikes, may be necessary in some cases, although these types of control structures already exist at many food and kindred products processing facilities. In a few instances, more intensive BMPs, such as detention ponds or filtering devices, may be necessary depending on the type of discharge, types and concentrations of contaminants, and volume of flow, although these occurrences are expected to be very low for the sector as a whole. The types of material management practices identified in the storm water group applications for the food and kindred products processing sector, for sampling facilities only, are identified in Table U–11. In fact, part 1 group application data indicate that BMPs are widely implemented at food and kindred products processing facilities.

The selection of the most effective BMPs will be based on site-specific considerations such as: facility size, climate, geographic location, geology/hydrogeology and the environmental setting of each facility, and volume and type of discharge generated. Each facility will be unique in that the source, type, and volume of contaminated storm water will differ. In addition, the fate and transport of pollutants in these discharges will vary. EPA believes that the management practices discussed herein are well suited mechanisms to prevent or control the contamination of storm water discharges associated with food and kindred products processing facilities.

TABLE U–11.—MATERIAL MANAGEMENT PRACTICES[i,ii]

Absorbent mats	Preventative maintenance
Baghouse	Retaining wall
BMPs	Roof drains
Catch basin	Sealed tanks
Concrete pad	Shoveling
Containment	Site inspection
Cover (drums, holding pen, loading, storage)	Spill prevention plan
Curbing	Spillstoppers
Diking	Stone filters
Diversion	Sumps
Drains	Swales
Dust control	Sweeping
Housekeeping	Tarps (i.e., temporary covers)
Indoor storage	Training
Infiltration	V-Strips