

2006 Small Ship Wastewater Sampling Results

In 2001, Alaska Statute (AS) 46.03.460-46.03.490 established the Commercial Passenger Vessel Environmental Compliance Program (CPVEC), which is administered by the Alaska Department of Environmental Conservation (ADEC) and applies to large¹ and small² commercial passenger vessels. The law requires small vessels to sample their wastewater discharges twice per season. Several key aspects of the CPVEC program, such as payment of environmental compliance fees and compliance with wastewater discharge standards, became effective for small commercial passenger vessels on January 1, 2004.

Small cruise ships are now required to meet standard terms and conditions, or seek alternative terms and conditions in order to discharge blackwater³ and graywater⁴ in Alaska marine waters. Under standard terms and conditions blackwater, graywater and other wastewater must contain no more than 200 fecal coliform per 100 milliliters and no more than 150 milligrams per liter of total suspended solids.

Alaska's original CPVEC law in 2001 established the standard terms and conditions and the alternative terms and conditions. Changes to Alaska's CPVEC law in 2004 established additional alternative terms and conditions AS 46.03.462 (e) also known as a best management practices plan. As part of the 2004 law, the interim protective measures allowed under AS 46.03.463(b) and (c) are now the same as the alternative terms and conditions permitted under AS 46.03.462. For more information about best management practices please see the cruise ship web site at the following address.

http://www.dec.state.ak.us/water/cruise_ships/small_vessel_dischargeoptions.htm

In 2006, all registered small vessels obtained approved Best Management Practices plans. The AMHS ferries obtained approved conditional status Best Management Practices plans, which are up for renewal in 2007. The Best Management Practices regulations, 18 AC 69.046, became effective on May 18, 2006.

Seventeen small ships registered with the CPVEC program in 2006, including five state ferries that operate in Alaska year-round. One small ship, the Bremen did not discharge into Alaskan waters and was not sampled. Table 1 (Parts 1 & 2) summarizes the 2006 small ship sampling results using the median⁵ results for each pollutant. Data from the 16 ships were combined and results show that small-ship effluent does not meet water quality standards at the end of pipe for fecal coliform, chlorine residual, or arsenic, copper, nickel, selenium, and zinc.

¹ A large vessel has >250 overnight passengers as defined in AS 46.03.490(13)

² A small vessel has 50-249 overnight passengers as defined in AS 46.03.490(7)

³ Wastewater from toilets as defined in AS 46.03.490(12).

⁴ As defined in AS 46.03.490(6). Wastewater from galley, dishwasher, bath and laundry.

⁵ The median is the middle of a distribution: half the scores are above the median and half are below the median. The median is less sensitive to extreme scores than an average and is thus a better measure for skewed distributions.

Table 1. Summary 2006 Small Vessels Median Sampling Results –Part 1 (16 vessels)

	Ammonia as N	pH	Biochemical O ₂ Demand	Chemical Oxygen Demand	Total Suspended Solids	Free Chlorine, Residual	Fecal Coliform Bacteria by MPN
Alaska Water Quality Standards	17 *	6.5-8.5	n/a	n/a	150	0.0075	200 **
Units	mg/L	s.u.	mg/L	mg/L	mg/L	mg/L	mg/L
Graywater (17 samples)	0.83	7.21	196	420	48	0.1	6,100
Blackwater (21 samples)	26	7.72	142	691	170	0.1	1,000,000
Mixed Blackwater & Graywater (10 Samples)	11.8	7.44	164.5	742	84.5	0.0	141

* Ammonia standards are based on temperature, pH and salinity. This standard is from Table IX in the *Alaska Water Quality Criteria Manual for Toxics and Other Deleterious Organic and Inorganic Substances* using a pH of 7.0, salinity of 20 g/kg and temperature of 10-15 degrees Celsius. Large ships while stationary have a minimum dilution factor of 10. Ammonia levels greater than 20 mg/L exceed water quality standards in the receiving water.

** The standard in receiving water for consumption of raw shellfish is 14 fecal coliform bacteria per 100 ml. Effluent levels below 200 fc/100ml means that with dilution, the 14 fc/100ml standard will be met in the receiving water.

Table 1. Summary 2006 Small Vessels Median Sampling Results – Part 2 (16 vessels)

	Arsenic, dissolved	Copper, dissolved	Lead, dissolved	Nickel, dissolved	Selenium, dissolved	Zinc, dissolved
Alaska Water Quality Standards	36	3.1	8.1	8.2	71	81
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Median (16 samples)	39	144	1.58	11.4	160	54.45

Wastewater results for individual ships

Tables 2 through 5 show the 2006 twice-per-season sampling results for each of the 16 ships that reported. Samples were analyzed for conventional and priority pollutants (see Table 6). Results highlighted in yellow are outside the standard terms and conditions or appropriate water quality standard. The small ships operating under best management practice plans do not need to meet standard terms and conditions, so no enforcement action was required.

Bacteria

Small ships continue to try to balance bacterial disinfection and chlorine use. Chlorine is used to disinfect bacteria, but it is toxic to marine organisms and high residuals must be avoided. The median chlorine residual result is almost 2 times the Alaska’s marine water quality standard (AMWQS). The maximum chlorine residual results for small-ship graywater and blackwater were 6.8 mg/L and 14 mg/L, respectively—more than 1800 times (AMWQS). The fecal coliform standard is 200 colonies per 100 ml to meet AMWQS for secondary-contact recreation. The most stringent AMWQS is 14 colonies per 100 ml to collect shellfish for raw consumption, and is the standard used to protect all

uses of all waters. Blackwater has the highest median fecal coliform results. At 1,000,000 colonies per 100 ml, the median is more than 70,000 times the AMWQS for raw consumption of shellfish. The maximum fecal coliform result for mixed blackwater or graywater was from the Spirit of Discovery. At 11,000,000 colonies per 100 ml, this is almost 1 million times AMWQS for raw shellfish consumption.

Other Pollutants

One of the two samples for each ship was analyzed for 167 “priority pollutants:” 13 total metals, 12 dissolved metals; 72 volatile organic compounds (VOCs); 70 bases, neutral, acids (BNAs). Some small ships have separate graywater and blackwater discharges. The department allowed these ships to sample priority pollutants⁶ on only one of their wastewater discharges per season.

Most of the priority pollutants were not detected in small ship discharges. Table 5 includes only priority pollutants with medians that exceeded the practical quantitation limit (PQL) or a pollutant with a maximum value 10 times the PQL. Alaska uses dissolved metal concentration (a subset of total recoverable metals) for its water quality standards, but Table 5 also includes the total recoverable metals results for informational purposes. The pollutants not listed here are considered not detected and the analysis of those pollutants is unnecessary.

Currently there are no AMWQS for 3&4-methylphenol, 2-cholorphenol, bromoform, chloroform, benzoic acid and phenol. However, there are Alaska Marine Water Quality Standards (AMWQS) for arsenic, chromium, copper, lead, selenium, nickel and zinc.

With one exception, all small ships met the AMWQS for dissolved chromium. The Empress of the North exceeded the AMWQS for chromium by 401 microgram per liter (ug/L). Most small ships that operated in Alaska in 2006 exceeded the AMWQS for nickel and selenium. All small ships exceeded the AMWQS for copper. Four ships exceeded the AMWQS for lead, five for arsenic, and six for zinc.

⁶ The priority pollutants analysis can be found in the Large Ship Unannounced Sampling Report.

Table 2. 2006 Small Ship Graywater Unannounced Sampling (not including priority pollutants)

		Ammonia as N	pH	Biochemical O ₂ Demand	Chemical Oxygen Demand	Total Suspended Solids	Total Chlorine	Free Chlorine	Fecal Coliform Bacteria by MPN	Conductivity	Hexane- Extractable Materials	Total Organic Carbon	Alkalinity	Total Nitrate & Nitrite	Total Phospho- rus	Total Kjeldahl Nitrogen	Total Settleabl e Solids
Reportable Limit (PQL)		0.1	0.1	2	10	4	0.1	0.1	2	2	5	1	2	1	0.05	1	0.1
Units		mg/L	s.u.	mg/L	mg/L	mg/L	mg/L	mg/L	MPN/100ml	umhos/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ml/L
Alaska Marine Water Quality Standards		17	6.5-8.5	n/a	n/a	150	0.0075	n/a	200	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Vessel Name	Sample Date																
Clipper Odyssey	7/16/06	460.00	9.00	999	2,830	817	2.2	N/A	0	5,530	0.0	12.0	1,750.0	0.00	82.00	657.00	40.00
Spirit of 98	6/29/06	0.00	7.21	11	12	5	0.7	0.0	7	119	0.0	6.6	37.0	0.00	0.09	0.00	0.00
Spirit of 98	8/24/06	2.00	7.20	265	430	78	0.1	0.1	0	149	0.0	14.0	47.4	0.00	12.00	4.65	0.40
Spirit of Alaska	6/27/07	0.27	5.96	204	230	46	0.0	0.0	5,900	316	5.9	55.0	67.7	0.00	1.70	3.82	0.00
Spirit of Alaska	8/5/06	1.40	6.90	196	420	168	0.0	0.0	6,100	309	0.0	21.0	90.8	0.00	1.90	8.95	1.50
Spirit of Columbia	6/16/06	1.10	5.40	324	320	48	1.1	1.1	73,000	175	39.0	110.0	29.0	0.00	0.91	9.62	0.00
Spirit of Columbia	8/25/06	0.55	6.00	272	730	58.0	1.1	1.1	1,000,000	140	10.0	100.0	9.4	0.00	1.50	18.50	0.00
Spirit of Discovery	6/26/06	0.57	6.35	2,910	2,410	1,520.0	0.0	0.0	200,000	444	200.0	160.0	61.2	0.00	7.10	38.70	3.70
Spirit of Discovery	8/21/06	0.00	7.58	62	1,000	20.0	0.0	0.0	41,000	363	0.0	42.0	157.0	0.00	1.70	2.10	0.00
Spirit of Endeavor	7/6/06	0.42	7.58	110	420	20.0	0.1	0.0	0	46	0.0	51.0	70.5	0.00	0.77	5.31	0.50
Spirit of Endeavor	8/17/06	1.40	9.10	145	265	50.0	1.0	0.2	100	523	6.0	39.0	134.0	0.00	1.70	13.10	0.00
Yorktown Clipper	6/13/06	5.60	7.22	63	240	52.0	0.0	0.0	210,000	273	13.0	22.0	76.6	0.00	1.50	11.90	0.00
Yorktown Clipper	8/22/06	1.10	6.97	95	240	44.0	0.1	0.1	110,000	213	5.7	31.0	45.0	0.00	1.40	13.00	0.22
Sea Bird	6/18/06	1.00	7.41	298	555	27.0	0.0	0.0	890,000	624	11.0	150.0	166.0	0.00	1.40	10.10	0.00
Sea Bird	9/7/06	0.00	7.67	158	330	18.0	0.0	0.0	0	559	0.0	62.0	89.2	0.00	0.82	3.32	0.00
Sea Lion	6/3/06	0.15	7.56	156	312	43.0	6.8	1.5	0	774	20.0	62.0	94.8	0.00	2.00	12.40	0.00
Sea Lion	6/17/06	0.83	6.42	323	470	48.0	0.0	0.0	47,000	280	0.0	140.0	21.3	0.00	0.89	5.55	0.00
Minimum		0.00	5.40	11	12	5.0	0.0	0.0	0	46	0.0	6.6	9.4	0.00	0.09	0.00	0.00
Maximum		460.00	9.10	2,910	2,830	1,520.0	6.8	1.5	1,000,000	5,530	200.0	160.0	1,750.0	0.00	82.00	657.00	40.00
Median		0.83	7.21	196	420	48.0	0.1	0.0	6,100	309	5.7	51.0	70.5	0.00	1.50	9.62	0.00

Table 3. 2006 Small Ship Blackwater Unannounced Sampling (not including priority pollutants)

	Ammonia as N	pH	Biochemical O ₂ Demand	Chemical Oxygen Demand	Total Suspended Solids	Total Chlorine	Fecal Coliform Bacteria by MPN	Conductivity	Free Chlorine	Hexane-Extractable Matreials	Total Organic Carbon	Alkalinity	Total Nitrate & Nitrite	Total Phosphorus	Total Kjeldahl Nitrogen	Total Settleable Solids	
Reportable Limit (PQL)	0.1	0.1	2	10	4	0.1	2	2	0.1	5	1	2	1	0.05	1	0.1	
Units	mg/L	s.u.	mg/L	mg/L	mg/L	mg/L	MPN/100ml	umhos/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ml/L	
Alaska Marine Water Quality	17	6.5-8.5	n/a	n/a	150	0.0075	200	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Vessel Name	Sample Date																
Empress of the North	6/11/06	21	6.66	412	1890	296	0	8,500,000	12200	0	19	150	298	3.2	8.1	41	6
Clipper Odyssey	7/16/06	210	8.3	379	1260	183	2.2	3,400,000	2600	N/A	0	190	785	0	12	257	0
Spirit of 98	6/29/06	120	7.28	233	640	248	11.0	3,000,000	30	0	8.5	91	581	0.00	16	131	0.7
Spirit of 98	8/24/06	93	7.76	110	800	176	0.2	4,500,000	27.5	0.2	0	36	538	0	14	0	0.5
Spirit of Alaska	6/27/06	14	8.49	75.6	240	138	0	5,500	28800	0	0	73	303	0	2.5	32.7	3.5
Spirit of Alaska	8/5/06	38	8.13	0	500	16	0	490,000	18700	0	0	21	140	0	1.6	84.3	0
Spirit of Columbia	6/16/06	30	7.7	138	360	172	1.6	2,000,000	37700	1.6	0	91	310	0	8.7	96.4	2
Spirit of Columbia	8/25/06	28	7.4	232	1000	228	1.9	1,000,000	29600	2.2	8.9	190	180	0	4.6	62.3	19
Spirit of Discovery	6/26/06	92	7.17	271	1750	730	0	1,580,000	30400	0	0	75	740	0	14	114	86
Spirit of Discovery	8/21/06	76	7.53	275	1000	476	0	11,000,000	26400	0	11	120	543	0	14	121	7
Spirit of Endeavor	7/6/06	26	8.59	142	1030	170	2	1,500,000	26000	0.1	0	150	436	52	14	116	10
Spirit of Endeavor	8/17/06	14	7.72	193	710	276	0.1	5,600,000	21800	0	0	89	413	5	8.5	59.7	65
Spirit of Oceanus	7/2/06	2.2	5.3	600	691	70	2.1	200	976	2.1	0	170	35	0	5.7	23.7	0
Spirit of Oceanus	9/3/06	5.1	6.66	331	530	90	0	2,700,000	921	0	6.9	76	106	0	4.1	10.7	1.5
Yorktown Clipper	6/13/06	84	7.78	73.5	450	146	0	7,300	31200	0	1.9	15	234	12	2.4	96.1	26
Yorktown Clipper	8/22/06	140	8.55	20.7	380	126	0.1	9,100	29100	0.1	0	11	548	7.1	2.2	168	1.2
Sea Bird	6/18/06	7.9	7.15	100	480	199	0.1	90,000	24200	0.1	0	66	194	0	1.1	41.8	1
Sea Bird	7/30/07	4.5	7.2	0.34	485	129	0.34	30	19600	0	0	45	69.7	0	4.5	31.3	12
Sea Bird	9/7/06	10	7.32	95.3	350	76	0	107,000	28.2	0	0	56	79.3	0	3.5	33.3	2.7
Sea Lion	6/3/06	7.8	8.01	127	744	101	14	0	32100	1.4	9.5	77	201	4.2	0.69	32.4	3.5
Sea Lion	6/17/06	26	7.95	275	770	168	0	10	30300	0	0	94	194	0	0.94	56.5	0.1
Minimum	2.2	5.3	0	240	16	0	0	0	27.5	0	0	11	35	0	0.69	0	0
Maximum	210	8.59	600	1890	730	14	11000000	37700	2.2	19	190	785	52	16	257	86	
Median	26	7.7	142	691	170	0.1	1000000	24200	0	0	77	298	0	4.6	59.7	2.7	

Table 4. 2006 Small Ship Unannounced Sampling Blackwater and Graywater Mixed Results (not including priority pollutants)

	Ammonia as N	pH	Biochemical O ₂ Demand	Chemical Oxygen Demand	Total Suspended Solids	Total Chlorine	Free Chlorine	Fecal Coliform Bacteria by MPN	Conductivity	Hexane- Extractable MateriaIs	Total Organic Carbon	Alkalinity	Total Nitrate & Nitrite	Total Phosphor us	Total Kjeldahl Nitrogen	Total Settleable Solids	
Reportable Limit (PQL)	0.1	0.1	2	10	4	0.1	0.1	2	2	5	1	2	1	0.05	1	0.1	
Units	mg/L	s.u.	mg/L	mg/L	mg/L	mg/L	mg/L	MPN/100ml	umhos/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ml/L	
Alaska Marine Water Quality	17	6.5-8.5	n/a	n/a	150	0.0075	n/a	200	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	
Vessel Name	Sample Date																
Columbia	5/22/06	18.00	7.35	182	926	134.0	1.4	0.3	5,200	31,900	0.0	81.0	168.0	0.00	5.00	30.20	0.00
Columbia	6/26/06	1.7	7.18	63.1	454	60	8.8	7.9	5	28700	0	36	103	0	3	8.89	0
Kennicott	5/2/06	0.53	7.7	8.73	830	13	3.8	3.4	0	42300	0	3	103	0	0	1.33	0
Kennicott	8/22/06	0	7.69	5.45	300	41	4	3.4	24	26000	0	2.1	67.1	0	0.054	0.94	0
Malaspina	5/6/06	14.2	7.21	128	726	70.3	19	5.6	0	30300	0	66	122	0	3.2	18.9	0
Malaspina	6/10/06	32	7.03	235	585	82	0	0	5700000	16400	7.8	88	222	5.8	6.4	47.7	0
Matanuska	5/8/06	9.44	6.91	191	758	148	6.3	1	182	31800	0	58	116	0	1.7	13	0.3
Matanuska	6/5/06	15	7.52	185	858	87	5.4	0.41	100	25400	23	110	117	0	4.7	31.6	0
Taku	5/5/06	15.8	8.09	224	908	142	0	0.11	213000	26400	0	79	245	0	6.9	47.9	1
Taku	8/11/06	8.5	8.32	147	455	188	0	0	430000	19000	0	6.2	98.7	0	3.9	23.4	7.5
	Minimum	0.00	6.91	5.45	300	13.0	0.00	0.00	0	16,400	0.0	2.1	67.1	0.0	0.00	0.94	0.0
	Maximum	32.00	8.32	235.00	926	188.0	19.00	7.90	5,700,000	42,300	23.0	110.0	245.0	5.8	6.90	47.90	7.5
	Median	11.82	7.44	164.50	742	84.5	3.90	0.71	141	27,550	0.0	62.0	116.5	0.0	3.55	21.15	0.0

Table 5. 2006 Small Ship Sampling Priority Pollutants

			3&4-Methyl phenol	2-choloro phenol	bromoform	chloroform	Benzoic Acid	Phenol	Arsenic, total	Arsenic, dissolved	Chromium, total	Chromium, dissolved
Reportable Limit (PQL)			5	5	2	2	130	5	2.5	2.5	2.5	2.5
Units			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Alaska Marine Water Quality Standards			N/A	N/A	N/A	N/A	N/A	N/A	N/A	36	N/A	50
Vessel Name	Sample Date	Sample										
Columbia	6/26/06	Mixed	0	0	220	0	0	0	53.5	57.1	16.7	10.8
Kennicott	8/22/06	Mixed	0	0	0	0	0	0	43.8	37.1	6.02	6.48
Malaspina	6/10/06	Mixed	120	0	44	12	0	22	33.1	27.3	316	229
Matanuska	6/5/06	Mixed	11	0	0	0	0	0	122	73.6	16.8	20.2
Taku	8/11/06	Mixed	11	0	0	0	0	0	45.3	39	8.17	5.45
Empress of the North	6/11/06	Black	53	0	0	11	250	18	29.8	28	362	451
Spirit of 98	8/24/06	Grey	0	0	0	16	0	0	0	0	0	0.285
Spirit of Alaska	8/5/06	Grey	12	0	0	0	0	0	0	0.504	2.56	0.287
Spirit of Columbia	8/25/06	Black	130	0	0	0	840	15	55.4	48.7	14.7	11.8
Spirit of Discovery	8/21/06	Grey	28	0	0	0	0	0	3.39	2.98	1.98	1.45
Spirit of Endeavor	8/17/06	Black	51	0	0	0	360	7.4	49.8	51.1	6.95	3.19
Spirit of Oceanus	9/3/06	Black	24	0	0	8.3	0	0	1.42	2.21	18.2	14
Yorktown Clipper	8/22/06	Grey	12	0	0	0	0	0	0	0	2.38	1.84
Sea Bird	9/7/06	Black	7.2	0	62	0	0	0	58.5	67	10.8	10.8
Sea Lion	6/17/06	Black	17	0	250	3	0	0	73.8	63	11.2	7.43
Clipper Odyssey	7/16/06	Grey	0	0	0	290	0	0	0	0	3.59	2.82
MIN			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.29
MAX			130.00	0.00	250.00	290.00	840.00	22.00	122.00	73.60	362.00	451.00
MEDIAN			12.00	ND	0.00	0.00	0.00	0.00	38.45	32.55	9.49	6.96

Table 5. 2006 Small Ship Sampling Priority Pollutants continued

			Copper, total	Copper, dissolved	Lead, total	Lead, dissolved	Nickel, total	Nickel, dissolved	Selenium, total	Selenium, dissolved	Zinc, total	Zinc, dissolved
Reportable Limit (PQL)			1	1	1	1	1	1	2.5	2.5	2.5	2.5
Units			ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Alaska Marine Water Quality Standards			N/A	3.1	N/A	8.1	N/A	8.2	N/A	71	N/A	81
Vessel Name	Sample Date	Sample										
Columbia	6/26/06	Mixed	10.8	26.5	5.65	5.65	13.4	13.4	200	185	116	116
Kennicott	8/22/06	Mixed	93.4	34.5	12.1	12.9	12.2	11.7	160	129	104	80.6
Malaspina	6/10/06	Mixed	149	4.72	6.86	0	19.2	15.3	145	132	140	18.5
Matanuska	6/5/06	Mixed	493	213	3.91	0.107	36.7	31.3	279	304	151	51.6
Taku	8/11/06	Mixed	105	5.45	92.5	1.53	17.2	14.7	136	128	282	38.1
Empress of the North	6/11/06	Black	139	6.04	8.62	4.14	9.72	6.65	127	135	333	10.5
Spirit of 98	8/24/06	Grey	506	86.4	35	1.6	4.68	4.3	0	0	243	135
Spirit of Alaska	8/5/06	Grey	200	11.2	12.6	0.403	5.34	3.44	0	0	880	37.9
Spirit of Columbia	8/25/06	Black	1730	4.64	100	17.9	24.6	15.3	183	178	539	6.1
Spirit of Discovery	8/21/06	Grey	33.4	15.9	4.15	0	4.03	3.59	2.82	0	328	177
Spirit of Endeavor	8/17/06	Black	35.8	8.26	68.4	35.5	16	11.1	132	142	373	12.7
Spirit of Oceanus	9/3/06	Black	2170	55.7	8.73	1.22	9.34	8.1	0	0	649	314
Yorktown Clipper	8/22/06	Grey	251	11.8	17.8	11.9	4.69	2.54	0	0	266	57.3
Sea Bird	9/7/06	Black	27.3	18.9	2.09	1.56	14.8	15.5	205	229	75.5	42.6
Sea Lion	6/17/06	Black	155	91.3	3.29	1.49	17.7	15.3	271	244	191	91.9
Clipper Odyssey	7/16/06	Grey	121	92.3	2.88	1.14	8.31	7.46	0	0	164	144
MIN			10.80	4.64	2.09	0.00	4.03	2.54	0.00	0.00	75.50	6.10
MAX			2170.00	213.00	100.00	35.50	36.70	31.30	279.00	304.00	880.00	314.00
MEDIAN			144.00	17.40	8.68	1.55	12.80	11.40	134.00	130.50	254.50	54.45

Tables 6 Conventional and Priority Pollutants

Conventional Pollutants	Method	Reportable Limit (PQL) mg/L
Ammonia- Total	350.3	0.10
Biochemical Oxygen Demand	405.1	2.0
Chemical Oxygen Demand	410.4	10
Chlorine, residual	SM 4500	0.1
Chlorine, free	SM 4500	0.1
Alkalinity	SM 2320 B	2.0
Settable Solids	160.5	0.10 (ml/L)
Total Suspended Solids	160.2	4.0
Fecal Coliform	SM 9221E or SM 9222 D	2 (FC/100 ml)
Specific Conductance-Conductivity	120.1	2 (µmHos/cm)
Total Organic Carbon	SM 5310 B	1.0
Oil and Grease	1664	5.0
Total Kjeldahl Nitrogen	EPA various	1.0
Total Phosphorus	EPA 365.2	0.050
pH	150.1	0.10 standard units
Priority Pollutants	Method	Reportable Limit (PQL)
Total Recoverable Metals		Ug/l
Antimony	200.8	2.5
Arsenic	200.8	2.5
Beryllium	200.8	1.0
Cadmium	200.8	1.0
Chromium	200.8	2.5
Copper	200.8	1.0
Lead	200.8	1.0
Mercury (Total)	245.1	1.0
Nickel	200.8	1.0
Selenium	200.8	2.5
Silver	200.8	1.0
Thallium	200.8	1.0
Zinc	200.8	2.5
Dissolved Metals		
Antimony	200.8	2.5
Arsenic	200.8	2.5
Beryllium	200.8	1.0
Cadmium	200.8	0.5

Chromium	200.8	2.5
Copper	200.8	1.0
Lead	200.8	1.0
Nickel	200.8	1.0
Selenium	200.8	2.5
Silver	200.8	1.0
Thallium	200.8	1.0
Zinc	200.8	2.5
VOCs		
1,1,1,2-Tetrachloroethane	624	2
1,1,1-Trichloroethane	624	2
1,1,2,2-Tetrachloroethane	624	2
1,1,2-Trichloroethane	624	2
1,1-Dichloroethane	624	2
1,1-Dichloroethene	624	2
1,1-Dichloropropene	624	2.5
1,2,3-Trichlorobenzene	624	2.8
1,2,3-Trichloropropane	624	2.5
1,2,4-Trichlorobenzene	624	2.8
1,2,4-Trimethylbenzene	624	2.7
1,2-Dibromo-3-Chloropropane	624	10
1,2-Dichlorobenzene	624	2
1,2-Dichloroethane	624	2
1,2-Dichloroethane	624	2
1,2-Dichloropropane	624	2
1,3,5-Trimethylbenzene	624	2
1,3-Dichlorobenzene	624	2
1,3-Dichloropropane	624	2
1,4-Dichlorobenzene	624	2
2,2-Dichloropropane	624	2
2-Butanone	624	50
2-Chloroethyl Vinyl Ether	624	10
2-Chlorotoluene	624	2.1
2-Hexanone	624	20
4-Chlorotoluene	624	2
4-Isopropyltoluene	624	2.8
4-Methyl-2-Pentanone	624	20
Acetone	624	50
Acrolein	624	100
Acrylonitrile	624	10

VOCs continued		
Benzene	624	2
Bromobenzene	624	2
Bromochloromethane	624	2
Bromodichloromethane	624	2
Bromoform	624	2
Bromomethane	624	5
Carbon Disulfide	624	2
Carbon Tetrachloride	624	2
Chlorobenzene	624	2
Chloroethane	624	5
Chloroform	624	2
Chloromethane	624	5
Cis-1,2-Dichloroethene	624	2
Cis-1,3-Dichloropropene	624	2.3
Dibromochloromethane	624	2
Dibromomethane	624	2
Dichlorodifluoromethane	624	5
Ethylbenzene	624	2
Hexachlorobutadiene	624	2
Iodomethane	624	5
Isopropylbenzene	624	2.6
m&p Xylenes	624	2
Methylene Chloride	624	5
Naphthalene	624	2.8
n-Butylbenzene	624	2.8
n-Propylbenzene	624	2
O-Xylene	624	2.3
sec-Butylbenzene	624	2.3
Styrene	624	2.6
tert-Butyl Methyl Ether	624	2
tert-Butylbenzene	624	3.0
Tetrachloroethene	624	2
Toluene	624	2
Trans 1,2-Dichloroethene	624	2
trans-1,3-Dichloropropene	624	2.1
trans-1,4-Dichloro-2 Buten	624	10
Trichloroethene	624	2
Trichlorofluoromethane	624	2
Trichlorotrifluoroethane	624	2

Vinyl Acetate	624	5
Vinyl Chloride	624	2
BNAs		
1,2,4-Trichlorobenzene	625	5
1,2-Dichlorobenzene	625	5
1,2-Diphenylhydrazine	625	5
1,3-Dichlorobenzene	625	5
1,4-Dichlorobenzene	625	5
2,4,5-Trichlorophenol	625	5
2,4,6-Trichlorophenol	625	5
2,4-Dichlorophenol	625	5
2,4-Dimethylphenol	625	25
2,4-Dinitrophenol	625	100
2,4-Dinitrotoluene	625	5
2,6-Dinitrotoluene	625	5
2-Chloronaphthalene	625	10
2-Chloronaphthalene	625	10
2-Chlorophenol	625	5
2-Methylnaphthalene	625	5
2-Methylphenol	625	5
2-Nitroaniline	625	100
2-Nitrophenol	625	5
3&4-Methylphenol	625	5
3,3'-Dichlorobenzidine	625	20
3-Nitroaniline	625	50
4,6-Dinitro-2-methylphenol	625	25
4-Bromophenyl Phenyl ether	625	5
4-chloro-3-methylphenol	625	5
4-Chloroaniline	625	5
4-Chlorophenyl methylsulfone	625	20
4-Chlorophenyl Phenyl ether	625	5
4-Nitroaniline	625	50
4-Nitrophenol	625	100
Acenaphthene	625	5
Acenaphthylene	625	5
Anthracene	625	5
Benzidine	625	200
Benzo (A) Anthracene	625	5
Benzo (A) Pyrene	625	5
Benzo (B) Fluoranthene	625	5

BNAs continued		
Benzo (g,h,i) Perylene	625	5
Benzo (K) Fluoranthene	625	5
Benzoic Acid	625	130
Benzyl Alcohol	625	10
Bis (2-Chloroethoxy) methane	625	5
Bis (2-chloroethyl) ether	625	5
Bis (2-Chloroisopropyl) ether	625	5
Bis (2-Ethylhexyl) Phthalate	625	2.5
Butyl Benzyl Phthalate	625	5
Chrysene	625	5
Dibenzo (a,h) Anthracene	625	5
Dibenzofuran	625	5
Diethyl Phthalate	625	5
Dimethyl Phthalate	625	5
Di-N-Butyl Phthalate	625	5
Di-N-Octyl Phthalate	625	5
Fluoranthene	625	5
Fluorene	625	5
Hexachlorobenzene	625	5
Hexachlorobutadiene	625	5
Hexachlorocyclopentadiene	625	10
Hexachloroethane	625	5
Indeno (1,2,3-CD) Pyrene	625	5
Isophorone	625	5
Napthalene	625	10
Nitrobenzene	625	5
N-Nitrosodimethylamine	625	5
N-Nitrosodi-N-Propylamine	625	5
N-Nitrosodiphenylamine	625	10
Pentachlorophenol	625	5
Phenanthrene	625	5
Phenol	625	5
Pyrene	625	5