

Mixed GW/BW - 2008-2012 Data

	(mg/L)	(µg/L)	(µg/L)	(µg/L)
	Ammonia	Copper	Nickel	Zinc
# of samples (n)	744	751	751	751
Median	27	7.5	9.8	78
Average	34.7	15.5	12.5	89.7
Std Dev	29.7	24.9	18.9	63.1
Max	160	370	420	450
Min	0.1	0	0	0.5
95th Percentile	97.85	58	25	210
99th Percentile	130	125	42.6	295

Ship	2008-2012 Date	Sample data			
		(mg/L) Ammonia	(µg/L) Copper	(µg/L) Nickel	(µg/L) Zinc
Coral Princess	5/15/2008	23	17.2	17.5	208
Coral Princess	5/23/2008	74	17	9.5	170
Coral Princess	5/29/2008	100	19.1	7.62	132
Coral Princess	6/12/2008	59	31.4	10.5	151
Coral Princess	6/20/2008	33	88.1	12	125
Coral Princess	7/10/2008	20	25.8	9.28	159
Coral Princess	7/18/2008	25	18	7.82	98.8
Coral Princess	7/28/2008	58	31	7.2	98
Coral Princess	8/1/2008	24	20.3	8.1	173
Coral Princess	8/7/2008	68	19	6.7	140
Coral Princess	9/4/2008	42	24	7.7	150
Coral Princess	9/12/2008	51	30	9.2	140
Coral Princess	9/10/2009	67	16.00	6.70	130.00
Coral Princess	9/18/2009	51	11.00	8.00	140.00
Coral Princess	5/24/2011	23	8.6	6.6	190
Coral Princess	5/25/2011	21	11	6.4	170
Coral Princess	6/1/2011		6.6	14	75
Coral Princess	6/14/2011	65			
Coral Princess	6/15/2011	29	12	8.9	90
Coral Princess	7/13/2011	35	7.7	7.3	56
Coral Princess	7/19/2011	37	4.5	5.8	100
Coral Princess	8/2/2011	39	11	5.5	110
Coral Princess	8/11/2011	13	4.8	8.1	67
Coral Princess	9/7/2011	25	13	10	110
Coral Princess	9/14/2011	27	13	7.1	86
Coral Princess	5/18/2012	69	19	10	54
Coral Princess	5/25/2012	84	9.7	10	72
Coral Princess	6/8/2012	23	16	13	100
Coral Princess	6/22/2012	28	6.7	13	89
Coral Princess	7/20/2012	23	12	6.4	100
Coral Princess	7/26/2012	23	18	20	85
Coral Princess	8/10/2012	29	13	12	100
Coral Princess	8/17/2012	19	22	7.5	110
Coral Princess	9/7/2012	23	23	11	86
Dawn Princess	5/11/2008	26	5.58	8.15	94.2
Dawn Princess	5/23/2008	23	6.48	4.56	134
Dawn Princess	5/31/2008	33	5.5	3.3	150
Dawn Princess	6/12/2008	15	7.25	3.88	232
Dawn Princess	6/20/2008	26	5.09	3.12	222
Dawn Princess	6/30/2008	28	6	3	120
Dawn Princess	7/10/2008	5.4	8.52	4.7	114
Dawn Princess	7/20/2008	23	5.11	3.66	121
Dawn Princess	8/21/2008	53	7.2	3.6	260
Dawn Princess	8/29/2008	15	7.4	4.5	150
Dawn Princess	9/8/2008	25	12	4.4	140

Ship	Date	(mg/L) Ammonia	(µg/L) Copper	(µg/L) Nickel	(µg/L) Zinc
Dawn Princess	9/18/2008	44	8.4	4.4	220
Dawn Princess	9/7/2012	7.4	4.8	7.2	82
Diamond Princess	6/10/2008	110	7.81	18.5	106
Diamond Princess	6/18/2008	100	8.6	15	84
Diamond Princess	7/8/2008	89	35.3	13	59.8
Diamond Princess	7/16/2008	73	17.5	28.4	97.5
Diamond Princess	8/5/2008	67	14.2	8.9	112
Diamond Princess	8/27/2008	70	11	11	130
Diamond Princess	9/2/2008	78	6.4	12	110
Diamond Princess	9/10/2008	120	5.5	12	50
Diamond Princess	5/20/2009	69	9.70	10.00	100.00
Diamond Princess	5/26/2009	79	10.00	9.50	100.00
Diamond Princess	6/3/2009	82	5.00	13.00	81.00
Diamond Princess	6/13/2009	68	6.10	9.60	79.00
Diamond Princess	6/17/2009	100	6.70	12.00	120.00
Diamond Princess	7/1/2009		8.60	11.00	150.00
Diamond Princess	7/15/2009	74	4.10	14.00	160.00
Diamond Princess	7/29/2009	92	7.20	14.00	170.00
Diamond Princess	8/12/2009	86	21.00	15.00	240.00
Diamond Princess	8/31/2009	45	11.00	11.00	150.00
Diamond Princess	9/9/2009	55	11.00	19.00	200.00
Diamond Princess	9/15/2009	41	8.90	16.00	240.00
Diamond Princess	5/25/2011	52	6.6	16	180
Diamond Princess	5/31/2011		5.7	20	150
Diamond Princess	6/8/2011	52	3.5	15	160
Diamond Princess	6/15/2011	86	9.3	14	100
Diamond Princess	7/6/2011	68	6.3	14	160
Diamond Princess	7/20/2011	70	4.5	15	190
Diamond Princess	8/3/2011	80	4.7	13	79
Diamond Princess	8/17/2011	82	5.4	11	99
Diamond Princess	9/7/2011	150	8.3	14	110
Diamond Princess	9/14/2011	79	5.7	14	110
Diamond Princess	5/22/2012	87	4.4	14	57
Diamond Princess	5/30/2012	99	5.2	15	40
Diamond Princess	6/13/2012	110	4.9	23	60
Diamond Princess	6/20/2012	96	7.2	20	58
Diamond Princess	7/11/2012	0.1	5.2	24	31
Diamond Princess	7/18/2012	34	4.7	14	55
Diamond Princess	8/1/2012	96	6.4	15	52
Diamond Princess	8/15/2012	8.7	11	15	85
Diamond Princess	9/5/2012	37	14	12	180
Diamond Princess	9/12/2012	54	24	15	160
Disney Wonder	5/7/2011	8.7	3.6	12	170
Disney Wonder	5/14/2011	8.4	7.6	16	220
Disney Wonder	6/11/2011	19	2.5	12	170
Disney Wonder	6/18/2011	26	2.1	11	79
Disney Wonder	7/9/2011	20	3.2	9.2	150
Disney Wonder	7/16/2011	27	1.7	10	100
Disney Wonder	8/6/2011	31	2.6	9	210
Disney Wonder	8/13/2011	18	0.25	9.4	150
Disney Wonder	9/3/2011	25	3.8	8.2	180
Disney Wonder	5/25/2012	1.4	4.4	11	190
Disney Wonder	6/8/2012	39	7.1	11	140
Disney Wonder	6/15/2012	12	5.5	10	150
Disney Wonder	7/13/2012	27	17	16	210
Disney Wonder	7/20/2012	21	4.4	18	170
Disney Wonder	8/10/2012	8.8	12	18	220
Disney Wonder	8/17/2012	17	7.6	14	160
Disney Wonder	9/7/2012	7	18	13	180

Ship	Date	(mg/L) Ammonia	(µg/L) Copper	(µg/L) Nickel	(µg/L) Zinc
Golden Princess	5/12/2008	21	9.26	6.92	179
Golden Princess	5/15/2008	29	8.3	6	180
Golden Princess	5/19/2008	27	11.3	7.3	225
Golden Princess	6/9/2008	36	10.2	6.33	203
Golden Princess	6/16/2008	51	10.7	4.89	106
Golden Princess	6/30/2008	42	5.1	5.3	93
Golden Princess	7/7/2008	22	14.5	7.36	156
Golden Princess	7/21/2008	21	6.72	6.47	269
Golden Princess	8/11/2008	33	17	6.8	150
Golden Princess	8/18/2008	38	41	9.4	350
Golden Princess	9/1/2008	63	11	5.7	130
Golden Princess	9/8/2008	46	35	6.9	210
Golden Princess	5/11/2009	43	14.00	7.90	250.00
Golden Princess	5/18/2009	35	23.00	6.80	290.00
Golden Princess	6/1/2009	17	13.00	7.50	250.00
Golden Princess	6/8/2009	59	37.00	7.70	200.00
Golden Princess	6/15/2009	27	15.00	11.00	220.00
Golden Princess	7/6/2009	17	10.00	7.70	130.00
Golden Princess	7/13/2009	70	15.00	11.00	190.00
Golden Princess	7/20/2009	40	12.00	6.60	130.00
Golden Princess	8/3/2009	35	39.00	12.00	450.00
Golden Princess	8/10/2009	23	51.00	10.00	300.00
Golden Princess	9/7/2009	28	18.00	6.20	280.00
Golden Princess	9/14/2009	37	35.00	12.00	330.00
Golden Princess	8/10/2010	0.56	3.15	9.79	120
Golden Princess	8/12/2010	0.1	3	7.06	95.5
Golden Princess	9/14/2010	0.1	6.28	8.12	88.1
Golden Princess	9/21/2010	7.5	7.31	6.28	86.1
Golden Princess	5/17/2011	0.37	5.7	10	140
Golden Princess	5/24/2011	1	5.5	14	130
Golden Princess	6/7/2011	0.17	5.6	11	70
Golden Princess	6/14/2011	1.9	2.3	10	6.8
Golden Princess	7/12/2011	1	4.4	10	150
Golden Princess	7/19/2011	0.63	5.2	11	98
Golden Princess	8/2/2011	0.7	2.9	14	79
Golden Princess	8/16/2011	1.5			
Golden Princess	8/29/2011		5.7	12	110
Golden Princess	9/6/2011	24	10	12	70
Golden Princess	9/13/2011	4.8	3.7	12	30
Golden Princess	5/29/2012	14	22	10	240
Golden Princess	6/12/2012	8.7	5.5	9.1	120
Golden Princess	6/19/2012	0.27	5.4	9.4	150
Golden Princess	7/10/2012	9	7.6	6.9	200
Golden Princess	7/17/2012	74	33	7	110
Golden Princess	8/7/2012	50	26	8.9	150
Golden Princess	8/21/2012	1.5	7.4	12	140
Golden Princess	9/4/2012	0.12	5.1	7.3	80
Golden Princess	9/11/2012	0.13	3.8	7.3	120
Island Princess	5/22/2008	22	23.2	14.5	92.5
Island Princess	5/30/2008	24	37.2	9.51	135
Island Princess	6/5/2008	70	40.8	9.14	228
Island Princess	6/13/2008	64	22.5	8.68	87.4
Island Princess	6/19/2008	38	22	9.3	360
Island Princess	7/11/2008	12	40	9	120
Island Princess	7/17/2008	26	29.5	8.36	164
Island Princess	8/8/2008	87	5.4	7.9	38
Island Princess	8/14/2008	83	5.4	6.8	39
Island Princess	8/22/2008	76	5.6	7.9	73
Island Princess	9/5/2008	75	5.2	6.2	77

Ship	Date	(mg/L) Ammonia	(µg/L) Copper	(µg/L) Nickel	(µg/L) Zinc
Island Princess	9/11/2008	98	7	7.2	18
Island Princess	5/14/2009	130	13.00	6.50	140.00
Island Princess	5/27/2009	120	5.20	8.60	88.00
Island Princess	5/28/2009	160	10.00	8.20	88.00
Island Princess	6/11/2009	130	5.50	9.90	87.00
Island Princess	6/25/2009	110	8.00	7.10	130.00
Island Princess	7/9/2009	85	5.20	6.00	130.00
Island Princess	7/22/2009	80	6.10	5.80	160.00
Island Princess	8/14/2009	120	14.00	9.80	200.00
Island Princess	8/20/2009	120	12.00	7.00	140.00
Island Princess	9/3/2009	100	7.90	6.90	190.00
Island Princess	9/11/2009	97	4.00	9.00	50.00
Island Princess	8/6/2010	46	8.29	8.01	116
Island Princess	8/13/2010	61	14.6	7.08	101
Island Princess	8/20/2010	81	13.5	6.43	84.2
Island Princess	8/26/2010	61	17.2	4.95	95.1
Island Princess	9/3/2010	67	18	6.75	109
Island Princess	9/30/2010	17	11.8	5.46	83.1
Island Princess	5/21/2011	87	60	6.5	100
Island Princess	5/30/2011		18	6	130
Island Princess	6/4/2011	28	45	8.2	150
Island Princess	6/12/2011	41	15	7.3	82
Island Princess	7/11/2011	25	8.3	7.1	56
Island Princess	7/24/2011	65	3.2	7.4	98
Island Princess	8/8/2011	26	4.3	6.8	120
Island Princess	8/27/2011	32	21	9.2	72
Island Princess	9/4/2011	59	8	7.7	77
Island Princess	9/10/2011	91	8.8	8	45
Island Princess	5/19/2012	51	13	7.8	72
Island Princess	5/27/2012	110	8.2	6.3	11
Island Princess	6/17/2012	62	16	4.7	71
Island Princess	6/24/2012	49	6.2	7.9	33
Island Princess	7/1/2012	32	11	5.4	73
Island Princess	7/15/2012	52	15	5.7	64
Island Princess	8/12/2012	79	11	5	39
Island Princess	8/19/2012	40	13	6.7	42
Island Princess	9/16/2012	91	17	5.4	23
Island Princess	9/23/2012	94	28	5.1	22
Norwegian Jewel	5/23/2012	32	1.7	4	24
Norwegian Jewel	5/30/2012	35	1.3	5.3	32
Norwegian Jewel	6/13/2012	41	1.1	4.3	55
Norwegian Jewel	6/20/2012	34	1.5	5.6	46
Norwegian Jewel	7/11/2012	29	2.9	5.7	95
Norwegian Jewel	7/18/2012	37	3.4	7.1	110
Norwegian Jewel	8/15/2012	32	2.1	10	160
Norwegian Jewel	8/28/2012	3.5	2.9	5.7	150
Norwegian Jewel	9/5/2012	31	2.6	5.3	140
Norwegian Jewel	9/18/2012	23	3	5.2	130
Norwegian Pearl	5/6/2008	49	18	6.1	98
Norwegian Pearl	5/13/2008	18	9.2	6.91	94.4
Norwegian Pearl	6/3/2008	27	5.7	4	67
Norwegian Pearl	6/17/2008	38	19.3	9.43	50.3
Norwegian Pearl	6/24/2008	23	4.84	5.74	105
Norwegian Pearl	7/15/2008	26	9.43	6.06	54.7
Norwegian Pearl	7/22/2008	25	3.53	3.47	67.1
Norwegian Pearl	8/12/2008	34	6.9	5.1	110
Norwegian Pearl	8/19/2008	41	12	4.9	110
Norwegian Pearl	9/2/2008	27	8.5	3.8	73
Norwegian Pearl	9/9/2008	36	8.8	5	62

Ship	Date	(mg/L) Ammonia	(µg/L) Copper	(µg/L) Nickel	(µg/L) Zinc
Norwegian Pearl	5/12/2009	9.6	15.00	5.40	110.00
Norwegian Pearl	5/19/2009	41	20.00	6.20	71.00
Norwegian Pearl	5/26/2009	45	9.30	5.00	77.00
Norwegian Pearl	6/2/2009	45	11.00	5.20	110.00
Norwegian Pearl	6/9/2009	50	12.00	4.90	93.00
Norwegian Pearl	7/7/2009	56	26.00	8.50	52.00
Norwegian Pearl	7/14/2009	35	14.00	5.20	77.00
Norwegian Pearl	7/28/2009	38	43.00	12.00	31.00
Norwegian Pearl	8/4/2009	41	18.00	6.10	87.00
Norwegian Pearl	8/18/2009	42	13.00	5.70	66.00
Norwegian Pearl	9/1/2009	48	22.00	6.20	86.00
Norwegian Pearl	9/8/2009	43	22.00	6.20	100.00
Norwegian Pearl	5/12/2010	0.52	21	3.5	83
Norwegian Pearl	5/19/2010	11	5.3	4.9	100
Norwegian Pearl	5/25/2010	1.9	22	16	82
Norwegian Pearl	6/2/2010	12	5	4.6	64
Norwegian Pearl	6/9/2010	21	6.2	0	200
Norwegian Pearl	7/7/2010	22	7	1.9	45
Norwegian Pearl	7/14/2010	26	7.8	4.8	54
Norwegian Pearl	8/4/2010	14	5.7	6.5	35
Norwegian Pearl	8/11/2010	26	9.4	5.2	25
Norwegian Pearl	8/18/2010	12	11	6.4	50
Norwegian Pearl	9/8/2010	13	7.5	4.4	67
Norwegian Pearl	9/15/2010	22	6.2	6	45
Norwegian Pearl	5/11/2011	14	8	16	220
Norwegian Pearl	5/18/2011	23	4.5	4.6	36
Norwegian Pearl	6/8/2011	17	3.4	4.4	83
Norwegian Pearl	6/15/2011	24	3.1	4	31
Norwegian Pearl	7/6/2011	20	3.1	3.6	37
Norwegian Pearl	7/20/2011	28	5.3	4.2	83
Norwegian Pearl	8/10/2011	31	4.2	4.7	110
Norwegian Pearl	8/24/2011	26	4.6	3.7	37
Norwegian Pearl	9/7/2011	31	4.2	4.5	31
Norwegian Pearl	9/14/2011	29	3.9	4.2	45
Norwegian Pearl	5/9/2012	33	4.8	6.6	40
Norwegian Pearl	5/16/2012	21	4.4	5.8	93
Norwegian Pearl	6/13/2012	28	1.8	4.2	150
Norwegian Pearl	6/20/2012	24	2.6	4.9	77
Norwegian Pearl	7/18/2012	20	6.7	7	57
Norwegian Pearl	7/25/2012	19	2.8	6.3	67
Norwegian Pearl	8/8/2012	18	2.7	4.4	49
Norwegian Pearl	8/15/2012	22	6.3	4.7	22
Norwegian Pearl	9/5/2012	21	2.9	8	86
Norwegian Pearl	9/19/2012	24	4.5	4.8	57
Norwegian Star	5/6/2008	40	6	13	74
Norwegian Star	5/13/2008	32	2.27	8.09	79.4
Norwegian Star	6/3/2008	6.6	1.5	8.9	26
Norwegian Star	6/17/2008	19	2.52	6.89	58.4
Norwegian Star	6/24/2008	22	1.99	8.73	111
Norwegian Star	7/15/2008	29	1.38	9.6	63.6
Norwegian Star	7/29/2008	43	2.15	8.38	69.9
Norwegian Star	8/12/2008	20	3.7	13	100
Norwegian Star	8/19/2008	26	2.3	13	110
Norwegian Star	8/26/2008	20	4.6	11	94
Norwegian Star	9/2/2008	11	2.2	11	160
Norwegian Star	9/9/2008	17	12	14	140
Norwegian Star	4/29/2009	33	3.40	14.00	91.00
Norwegian Star	5/5/2009	26	5.60	12.00	82.00
Norwegian Star	5/12/2009	28	6.00	7.10	35.00

Ship	Date	(mg/L) Ammonia	(µg/L) Copper	(µg/L) Nickel	(µg/L) Zinc
Norwegian Star	5/18/2009	2.3	5.50	6.90	47.00
Norwegian Star	6/9/2009	66	4.20	8.70	51.00
Norwegian Star	6/16/2009	11	3.40	8.30	44.00
Norwegian Star	7/7/2009	28	4.20	11.00	82.00
Norwegian Star	7/14/2009	28	2.50	14.00	70.00
Norwegian Star	7/28/2009	32	7.10	13.00	58.00
Norwegian Star	8/4/2009	20	5.40	18.00	95.00
Norwegian Star	8/11/2009	21	3.80	14.00	86.00
Norwegian Star	9/1/2009	21	4.10	13.00	73.00
Norwegian Star	9/8/2009	25	3.50	18.00	90.00
Norwegian Star	5/11/2010	1.7	2.5	12	220
Norwegian Star	5/18/2010	9.6	3	12	46
Norwegian Star	5/25/2010	29	6.6	14	69
Norwegian Star	6/8/2010	23	3.5	10	190
Norwegian Star	6/15/2010	30	2.4	10	70
Norwegian Star	7/6/2010	16	1.4	9.5	39
Norwegian Star	7/27/2010	23	3	11	81
Norwegian Star	8/3/2010	20	1.2	9.5	73
Norwegian Star	8/10/2010	28	2.1	8.9	30
Norwegian Star	8/18/2010	16	2.5	6.9	23
Norwegian Star	9/7/2010	35	3	7.6	59
Norwegian Star	9/14/2010	30	0	7.5	42
Norwegian Star	5/12/2011	9.5	5	4.6	88
Norwegian Star	5/17/2011	9.1	6.4	5.3	110
Norwegian Star	6/7/2011	11	2.8	6.6	31
Norwegian Star	6/14/2011	29	3	4.4	93
Norwegian Star	7/6/2011	18	12	5	39
Norwegian Star	7/12/2011	21	9.6	5.1	94
Norwegian Star	8/9/2011	16	18	6.3	140
Norwegian Star	8/23/2011	12	5.4	5	36
Norwegian Star	9/6/2011	9.6	3.6	7.6	27
Norwegian Star	9/14/2011	15	2.7	5.7	37
Norwegian Sun	5/14/2008	71	5.49	7.37	30.9
Norwegian Sun	5/21/2008	32	4.91	6.03	27.4
Norwegian Sun	5/28/2008	36	3.4	6.8	36
Norwegian Sun	6/4/2008	24	2.81	7.81	19.2
Norwegian Sun	6/11/2008	10	4.03	6.72	15.5
Norwegian Sun	7/2/2008	17	5	5.74	26.3
Norwegian Sun	7/9/2008	12	4.53	6.11	36.8
Norwegian Sun	7/17/2008	32	5.1	4.4	3.9
Norwegian Sun	8/6/2008	22	5.14	4.79	30.6
Norwegian Sun	8/13/2008	29	11	7.2	44
Norwegian Sun	9/3/2008	16	3.4	4.3	38
Norwegian Sun	9/10/2008	28	3.1	5.6	34
Norwegian Sun	5/6/2009	42	4.70	14.00	17.00
Norwegian Sun	5/19/2009	45	2.20	8.80	0.50
Norwegian Sun	5/20/2009	43	4.00	11.00	30.00
Norwegian Sun	6/3/2009	44	3.00	6.70	30.00
Norwegian Sun	6/10/2009	36	2.80	8.20	40.00
Norwegian Sun	7/8/2009	36	3.70	12.00	34.00
Norwegian Sun	7/22/2009	30	4.70	10.00	68.00
Norwegian Sun	8/5/2009	41	3.20	11.00	44.00
Norwegian Sun	8/12/2009	38	3.00	11.00	49.00
Norwegian Sun	8/19/2009	44	4.40	9.80	23.00
Norwegian Sun	9/2/2009	29	8.60	13.00	62.00
Norwegian Sun	9/9/2009	30	8.40	13.00	69.00
Pacific Princess	5/16/2009	40	54.00	19.00	110.00
Pacific Princess	5/25/2009	26	66.00	19.00	130.00
Pacific Princess	6/8/2009	35	36.00	16.00	84.00

Ship	Date	(mg/L) Ammonia	(µg/L) Copper	(µg/L) Nickel	(µg/L) Zinc
Pacific Princess	6/22/2009	31	33.00	21.00	100.00
Pacific Princess	7/6/2009	41	110.00	25.00	150.00
Pacific Princess	7/20/2009	45	100.00	23.00	72.00
Pacific Princess	8/3/2009	51	76.00	17.00	87.00
Pacific Princess	8/31/2009	10	6.20	14.00	120.00
Pacific Princess	9/5/2009	47	28.00	18.00	150.00
Pacific Princess	9/14/2009	41	12.00	13.00	160.00
Regatta	5/20/2011	14	5.4	11	75
Regatta	5/20/2011	13	3.7	11	64
Regatta	5/31/2011		9	12	88
Regatta	5/31/2011		20	13	170
Regatta	6/9/2011	22	8.2	11	120
Regatta	6/9/2011	45	15	13	92
Regatta	6/21/2011	21	3.7	13	130
Regatta	6/25/2011	36	4.2	12	110
Regatta	7/15/2011	5	6.9	7	90
Regatta	7/15/2011	0.15	11	7	110
Regatta	7/29/2011	0.37	6.8	9	46
Regatta	7/29/2011	0.47	4.1	7	77
Regatta	8/11/2011	30	18	8.2	7.3
Regatta	8/11/2011	7.2	11	4.3	15
Regatta	8/19/2011	74	19	5.8	0.5
Regatta	8/19/2011	15	11	5	34
Regatta	9/2/2011	15	26	7.3	30
Regatta	9/2/2011	8.2	6.9	7.8	130
Royal Princess	8/5/2010	130	3.48	21.8	11.4
Royal Princess	8/19/2010	68	20	18	71.7
Royal Princess	8/20/2010	84	13	18.1	40.1
Royal Princess	9/2/2010	120	7.68	38.4	95.8
Royal Princess	9/3/2010	62	9.95	27.3	65.6
Ryndam	5/9/2008	0.44	18.20	17.00	63.70
Ryndam	5/16/2008	1.4	22.20	14.30	75.10
Ryndam	5/26/2008	2	31.00	19.00	110.00
Ryndam	6/13/2008	1.3	16.20	14.10	75.00
Ryndam	6/20/2008	0.1	21.70	11.70	80.70
Ryndam	7/11/2008	0.1	26.60	14.00	84.40
Ryndam	7/18/2008	0.63	12.80	11.10	81.40
Ryndam	8/1/2008	0.93	20.30	13.90	80.60
Ryndam	8/15/2008	10	16.00	11.00	64.00
Ryndam	8/22/2008	16	6.90	11.00	69.00
Ryndam	9/5/2008	6.2	12.00	11.00	72.00
Ryndam	9/12/2008	3.9	8.50	10.00	15.00
Ryndam	6/9/2009	6	6.40	16.00	100.00
Ryndam	6/16/2009	13	13.00	15.00	110.00
Ryndam	6/23/2009	30	4.60	14.00	190.00
Ryndam	7/7/2009	34	3.80	14.00	100.00
Ryndam	7/21/2009	30	3.60	17.00	150.00
Ryndam	8/25/2009	45	6.90	15.00	160.00
Ryndam	8/30/2009	32	7.30	12.00	82.00
Ryndam	9/1/2009	36	5.40	13.00	110.00
Ryndam	9/8/2009	28	3.30	12.00	100.00
Ryndam	9/15/2009	31	4.30	11.00	68.00
Ryndam	5/12/2010	15	3.4	14	170
Ryndam	5/20/2010	30	5.5	18	170
Ryndam	6/2/2010	6.6	9.7	12	160
Ryndam	6/3/2010	16	10	16	180
Ryndam	7/1/2010	22	39	16	110
Ryndam	7/7/2010	24	2.7	8.5	91
Ryndam	7/15/2010	18	3	13	92

Ship	Date	(mg/L) Ammonia	(µg/L) Copper	(µg/L) Nickel	(µg/L) Zinc
Ryndam	8/4/2010	35	3.7	15	110
Ryndam	8/12/2010	10	5.3	15	120
Ryndam	9/1/2010	12	4.6	21	150
Ryndam	9/9/2010	6.8	3.6	26	110
Sapphire Princess	5/20/2008	52	14	12.7	53.1
Sapphire Princess	5/28/2008	92	23.2	15.7	67.1
Sapphire Princess	6/11/2008	7.8	51	24	60
Sapphire Princess	6/17/2008	85	13.9	14.2	47.4
Sapphire Princess	6/25/2008	50	22.9	27	89.9
Sapphire Princess	7/1/2008	37	8.78	9.32	53.3
Sapphire Princess	7/9/2008	40	28.1	43.2	112
Sapphire Princess	7/29/2008	100	5.6	13	92
Sapphire Princess	8/6/2008	100	13.2	18.4	64.3
Sapphire Princess	8/12/2008	71	9.4	13	45
Sapphire Princess	9/3/2008	130	10	20	59
Sapphire Princess	9/9/2008	110	8.2	13	45
Sapphire Princess	5/19/2009	99	7.50	10.00	30.00
Sapphire Princess	5/27/2009	120	42.00	14.00	94.00
Sapphire Princess	6/2/2009	100	130.00	420.00	67.00
Sapphire Princess	6/16/2009	93	46.00	70.00	43.00
Sapphire Princess	6/30/2009	89	130.00	170.00	110.00
Sapphire Princess	7/13/2009	81	56.00	30.00	66.00
Sapphire Princess	7/14/2009	140	21.00	17.00	63.00
Sapphire Princess	7/28/2009	99	60.00	20.00	96.00
Sapphire Princess	8/11/2009	86	44.00	16.00	76.00
Sapphire Princess	8/25/2009	78	41.00	17.00	100.00
Sapphire Princess	9/8/2009	63	47.00	26.00	270.00
Sapphire Princess	9/16/2009	100	87.00	48.00	170.00
Sapphire Princess	8/12/2010	56	154	34.2	62.4
Sapphire Princess	9/2/2010	62	29.7	26.5	98.7
Sapphire Princess	9/8/2010	110	67.5	28.4	102
Sapphire Princess	9/9/2010	81	24.9	28.2	99.1
Sapphire Princess	9/16/2010	91	8.66	15.7	93.3
Sapphire Princess	5/18/2011	12	77	33	140
Sapphire Princess	5/25/2011	34	93	34	60
Sapphire Princess	6/2/2011	52	61	44	140
Sapphire Princess	6/9/2011	160	370	75	130
Sapphire Princess	7/14/2011	0.1	29	32	150
Sapphire Princess	7/21/2011	66	15	31	170
Sapphire Princess	8/11/2011	71	14	26	140
Sapphire Princess	8/24/2011	70	22	29	120
Sapphire Princess	9/8/2011	61	29	28	120
Sapphire Princess	9/14/2011	70	32	22	190
Sapphire Princess	5/23/2012	59	9.6	17	170
Sapphire Princess	5/30/2012	6.5	11	20	160
Sapphire Princess	6/6/2012	61	14	16	140
Sapphire Princess	6/27/2012	1.3	13	19	220
Sapphire Princess	7/11/2012	23	11	17	230
Sapphire Princess	7/25/2012	74	12	13	230
Sapphire Princess	8/8/2012	59	7.7	12	190
Sapphire Princess	8/14/2012	42	18	17	300
Sapphire Princess	8/22/2012	43	9	17	240
Sapphire Princess	9/5/2012	59	13	17	240
Sapphire Princess	9/19/2012	37	10	17	160
Sea Princess	5/27/2009	99	63.00	12.00	48.00
Sea Princess	5/28/2009	46	58.00	12.00	50.00
Sea Princess	6/7/2009	45	16.00	7.10	50.00
Sea Princess	6/17/2009	130	14.00	7.70	77.00
Sea Princess	6/27/2009	76	12.00	7.80	69.00

Ship	Date	(mg/L) Ammonia	(µg/L) Copper	(µg/L) Nickel	(µg/L) Zinc
Sea Princess	7/8/2009	59	9.40	7.70	50.00
Sea Princess	7/17/2009	62	17.00	7.90	62.00
Sea Princess	7/27/2009	85	12.00	8.30	41.00
Sea Princess	8/16/2009	150	12.00	7.00	64.00
Sea Princess	8/26/2009	81	20.00	9.50	81.00
Sea Princess	9/4/2009	120	12.00	7.90	83.00
Sea Princess	9/5/2009	41	5.80	6.70	84.00
Sea Princess	8/5/2010	53	6.1	7.82	29.9
Sea Princess	8/15/2010	61	4.14	7	41.2
Sea Princess	9/4/2010	32	4.41	9.43	9.43
Sea Princess	9/13/2010	49	40.7	7.35	57.9
Sea Princess	9/23/2010	71	3.45	11.4	36.4
Sea Princess	5/14/2011	59	28	4.7	90
Sea Princess	5/24/2011	45	39	5.8	99
Sea Princess	6/3/2011	36	23	6.4	51
Sea Princess	6/23/2011	17	25	4.3	54
Sea Princess	7/3/2011	33	4.1	4.8	8.1
Sea Princess	7/13/2011	41	33	7.1	47
Sea Princess	8/12/2011	59	22	5.6	29
Sea Princess	8/24/2011	67	28	28	43
Sea Princess	9/1/2011	44	18	6.9	67
Sea Princess	9/2/2011	110	13	5.8	62
Sea Princess	5/17/2012	28	24	5.1	43
Sea Princess	5/28/2012	46	24	3.6	45
Sea Princess	6/7/2012	26	23	3.6	51
Sea Princess	6/27/2012	48	0.25	4.8	21
Sea Princess	7/6/2012	48	18	4.1	17
Sea Princess	7/27/2012	55	16	5	33
Sea Princess	8/6/2012	53	13	5.5	29
Sea Princess	8/16/2012	52	16	4.4	18
Sea Princess	9/5/2012	33	16	3.3	23
Sea Princess	9/6/2012	40	9.4	3.2	36
Serenade of the Seas	5/21/2009	28	2.98	9.61	102
Serenade of the Seas	5/28/2009	17	3.93	17.2	141
Serenade of the Seas	6/4/2009	23	3.79	10.6	94.5
Serenade of the Seas	6/25/2009	16	3.02	12	94
Serenade of the Seas	7/2/2009	23	3.84	12.5	133
Serenade of the Seas	7/23/2009	16	4.96	22.1	135
Serenade of the Seas	8/6/2009	23	3.7	12.4	267
Serenade of the Seas	8/20/2009	14	5.02	9.13	60.3
Serenade of the Seas	9/17/2009	15	8.15	28.2	77.8
Serenade of the Seas	9/24/2009	10	4.71	21.1	81.4
Seven Seas Mariner	5/23/2008	42	23.3	7.26	357
Seven Seas Mariner	5/25/2008	19	4.62	5.75	227
Seven Seas Mariner	6/13/2008	33	9.7	4.5	45
Seven Seas Mariner	6/14/2008	29	2.56	5.94	97.3
Seven Seas Mariner	7/18/2008	40	5.87	4.46	35.9
Seven Seas Mariner	7/19/2008	13	2.76	4.24	29.9
Seven Seas Mariner	8/15/2008	11	3.2	4.5	29

Ship	Date	(mg/L) Ammonia	(µg/L) Copper	(µg/L) Nickel	(µg/L) Zinc
Seven Seas Mariner	8/16/2008	9.9	4.7	3.8	47
Seven Seas Mariner	9/13/2008	4.7	11	4.6	63
Seven Seas Mariner	9/14/2008	11	12	3.9	74
Seven Seas Mariner	5/29/2009	16	2.70	8.50	23.00
Seven Seas Mariner	5/30/2009	29	5.50	9.40	50.00
Seven Seas Mariner	6/19/2009	8.3	2.50	5.00	56.00
Seven Seas Mariner	6/20/2009	1.8	2.80	4.60	62.00
Seven Seas Mariner	7/17/2009	7.8	4.40	3.80	41.00
Seven Seas Mariner	7/18/2009	3.4	2.20	4.10	61.00
Seven Seas Mariner	8/7/2009	6.7	6.70	4.00	59.00
Seven Seas Mariner	8/8/2009	0.23	6.00	3.30	50.00
Seven Seas Mariner	9/4/2009	7.4	10.00	5.70	96.00
Seven Seas Mariner	9/5/2009	6.9	6.60	6.10	110.00
Seven Seas Navigator	5/31/2010	21	3.6	12	200
Seven Seas Navigator	6/12/2010	29	5.4	15	150
Seven Seas Navigator	6/19/2010	30	3.1	9.3	20
Seven Seas Navigator	7/3/2010	42	3.4	14	17
Seven Seas Navigator	7/10/2010	40	2.7	15	53
Seven Seas Navigator	8/8/2010	4.7	0	9.5	100
Seven Seas Navigator	8/21/2010	34	8.9	9	64
Seven Seas Navigator	9/5/2010	8.6	7.6	8.4	33
Seven Seas Navigator	9/11/2010	0.45	10	11	110
Seven Seas Navigator	5/19/2011	6.6	5.2	10	130
Seven Seas Navigator	5/28/2011	26	4.7	8.2	24
Seven Seas Navigator	6/11/2011	24	1.7	5.4	27
Seven Seas Navigator	6/25/2011	22	1.8	4.8	14
Seven Seas Navigator	7/2/2011	21	2.7	4.8	7
Seven Seas Navigator	7/9/2011	26	3.4	6.9	9.3
Seven Seas Navigator	8/6/2011	18	2.9	6.1	20
Seven Seas Navigator	8/13/2011	22	8.9	8.6	7
Seven Seas Navigator	9/6/2011	10	2.5	7	24
Seven Seas Navigator	5/5/2012	26	34	28	63
Seven Seas Navigator	5/7/2012	12	5.4	26	76
Seven Seas Navigator	6/3/2012	8.4	7.1	8.6	33
Seven Seas Navigator	7/21/2012	42	7.7	7.6	22
Seven Seas Navigator	7/27/2012	16	12	7.9	37
Seven Seas Navigator	7/29/2012	6.3	20	8.3	41
Seven Seas Navigator	8/4/2012	34	23	22	86
Seven Seas Navigator	8/11/2012	45	0.25	0.25	23
Silver Shadow	6/15/2008	0.65	6.21	17.8	0.5
Silver Shadow	6/26/2008	0.1	4.04	10.8	0.5

Ship	Date	(mg/L) Ammonia	(µg/L) Copper	(µg/L) Nickel	(µg/L) Zinc
Silver Shadow	7/18/2008	0.41	4.03	5.71	4.42
Silver Shadow	7/28/2008	0.45	6.84	7.25	3.61
Silver Shadow	8/4/2008	0.1	3.81	7.19	0.5
Silver Shadow	8/7/2008	0.6	54	10	58
Silver Shadow	8/23/2008	0.18	42	7.4	8.4
Silver Shadow	9/9/2008	0.16	93	12	30
Silver Shadow	9/10/2008	0.17	73	10	6.4
Silver Shadow	6/1/2009	1.2	51.00	15.00	27.00
Silver Shadow	6/9/2009	2.3	58.00	17.00	16.00
Silver Shadow	6/11/2009	0.23	53.00	15.00	25.00
Silver Shadow	7/2/2009	0.54	67.00	23.00	38.00
Silver Shadow	7/13/2009	0.28	64.00	13.00	31.00
Silver Shadow	7/24/2009	0.1	72.00	16.00	18.00
Silver Shadow	8/5/2009	0.46	59.00	15.00	24.00
Silver Shadow	8/21/2009	0.32	50.00	14.00	18.00
Star Princess	5/7/2008	35	140	21	410
Star Princess	5/14/2008	21	135	15.7	110
Star Princess	5/28/2008	34	100	12	130
Star Princess	6/18/2008	27	59.2	13.6	123
Star Princess	6/25/2008	32	55.5	15.7	119
Star Princess	7/16/2008	42	30.1	18.4	113
Star Princess	7/17/2008	30	19	8.5	87
Star Princess	8/13/2008	64	100	19	81
Star Princess	8/20/2008	65	78	20	100
Star Princess	9/3/2008	56	35	9.3	120
Star Princess	9/10/2008	71	60	11	49
Star Princess	5/13/2009	48	11.00	9.20	140.00
Star Princess	5/19/2009	35	12.00	5.90	93.00
Star Princess	5/20/2009	27	17.00	9.60	160.00
Star Princess	6/3/2009	49	15.00	9.80	150.00
Star Princess	6/10/2009	72	15.00	8.50	150.00
Star Princess	7/8/2009	39	9.00	6.90	140.00
Star Princess	7/15/2009	76	12.00	7.20	150.00
Star Princess	7/29/2009	47	14.00	6.00	120.00
Star Princess	8/5/2009	46	17.00	8.10	150.00
Star Princess	8/19/2009	49	15.00	6.50	140.00
Star Princess	9/2/2009	34	15.00	6.20	160.00
Star Princess	9/9/2009	64	26.00	6.60	170.00
Star Princess	5/24/2012	0.29	94	8.7	4.7
Star Princess	5/31/2012	75	150	210	34
Star Princess	6/7/2012	0.8	120	42	32
Star Princess	6/21/2012	1.6	6.9	9.7	31
Star Princess	7/12/2012	86	160	28	56
Star Princess	7/19/2012	17	75	15	53
Star Princess	8/9/2012	0.32	27	2.7	4
Star Princess	8/16/2012	70	48	17	56
Star Princess	8/23/2012	85	66	16	70
Star Princess	9/6/2012	66	18	11	57
Star Princess	9/19/2012	91	46	7	59
Statendam	6/23/2008	13	0.25	13.00	1.70
Statendam	6/30/2008	4.8	0.25	6.01	3.10
Statendam	7/14/2008	24	0.25	14.30	4.75
Statendam	7/28/2008	16	1.12	13.90	5.96
Statendam	8/11/2008	10	0.25	17.00	2.20
Statendam	8/18/2008	11	1.50	15.00	5.30
Statendam	9/1/2008	27	3.20	14.00	7.00
Statendam	9/8/2008	10	2.60	17.00	4.80
Statendam	6/3/2009	47	2.80	18.00	0.50
Statendam	6/4/2009	36	2.00	18.00	22.00

Ship	Date	(mg/L) Ammonia	(µg/L) Copper	(µg/L) Nickel	(µg/L) Zinc
Statendam	6/18/2009	21	7.70	3.60	31.00
Statendam	7/2/2009	29	9.40	15.00	32.00
Statendam	7/16/2009	27	1.60	14.00	24.00
Statendam	8/13/2009	45	9.50	16.00	29.00
Statendam	8/19/2009	26	15.00	15.00	5.60
Statendam	8/27/2009	19	24.00	22.00	32.00
Statendam	9/10/2009	37	2.10	18.00	30.00
Statendam	9/16/2009	52	2.80	18.00	26.00
Statendam	5/19/2010		1.8	19	17
Statendam	5/27/2010	20	2.3	23	30
Statendam	5/28/2010	30			
Statendam	6/2/2010	37	2.3	17	12
Statendam	6/10/2010	24	1.9	18	73
Statendam	6/16/2010	45	2	17	11
Statendam	7/8/2010	27	2	19	50
Statendam	7/14/2010	31	2.3	18	17
Statendam	8/5/2010	32	1.8	25	38
Statendam	8/11/2010	22	2.8	20	31
Statendam	8/25/2010	28	3.5	17	17
Statendam	9/2/2010	25	2.7	17	22
Statendam	9/8/2010	22	1.9	15	110
Statendam	5/25/2011	42	3.1	20	40
Statendam	5/26/2011	41	2.3	26	75
Statendam	6/9/2011	17	3.6	23	73
Statendam	6/16/2011	21	1.9	24	1.4
Statendam	7/14/2011	28	1.3	23	88
Statendam	7/28/2011	40	6.2	18	61
Statendam	8/18/2011	32	8.4	12	76
Statendam	8/25/2011	45	3.4	17	5.5
Statendam	9/1/2011	31	2.3	20	13
Statendam	9/8/2011	34	4.3	28	23
Statendam	5/24/2012	36	2.2	24	12
Statendam	5/31/2012	46	1.8	19	9.4
Statendam	6/14/2012	32	1.5	13	16
Statendam	6/28/2012	34	1.8	12	8.4
Statendam	7/12/2012	28	2.6	13	7.3
Statendam	7/19/2012	33	2	14	9.6
Statendam	8/9/2012	46	2.3	17	4.3
Statendam	8/29/2012	3.8	2.7	15	5.6
Statendam	9/13/2012	30	2.9	18	7.5
Statendam	9/20/2012	33	3	19	7.2
Sun Princess	8/15/2008	100	14.0	9.1	150.0
Veendam	5/11/2008	24	9.53	12.40	69.20
Veendam	5/21/2008	8.2	8.00	12.00	63.00
Veendam	5/27/2008	16	7.15	14.00	101.00
Veendam	6/3/2008	6	8.56	13.60	110.00
Veendam	6/17/2008	7.5	8.70	10.00	140.00
Veendam	7/1/2008	8.2	8.00	12.40	76.40
Veendam	7/8/2008	12	7.67	13.30	108.00
Veendam	7/15/2008	15	5.21	8.84	77.30
Veendam	7/22/2008	6.2	4.10	10.00	71.00
Veendam	8/5/2008	11	3.44	10.50	97.10
Veendam	8/19/2008	12	6.40	17.00	63.00
Veendam	9/2/2008	11	4.10	12.00	57.00
Veendam	9/16/2008	8.8	6.20	12.00	71.00
Volendam	7/2/2008	2.4	16.70	14.80	95.50
Volendam	7/10/2008	11	4.90	10.00	60.00
Volendam	8/7/2008	36	6.60	20.00	44.00
Volendam	8/21/2008	46	4.70	11.00	46.00

Ship	Date	(mg/L) Ammonia	(µg/L) Copper	(µg/L) Nickel	(µg/L) Zinc
Volendam	8/27/2008	24	5.70	10.00	37.00
Volendam	9/4/2008	28	4.70	11.00	31.00
Volendam	9/10/2008	23	3.90	9.10	0.50
Volendam	5/18/09	18	5.4	23.0	110.0
Volendam	5/14/2010	0.65	69	20	120
Volendam	5/21/2010	1.5	56	21	110
Volendam	5/28/2010	4.3	43	16	110
Volendam	6/4/2010	5.5	15	9.6	160
Volendam	6/11/2010	6.1	18	12	160
Volendam	6/25/2010	3.7	26	0.25	88
Volendam	7/2/2010	4.1	39	15	110
Volendam	7/9/2010	9.9	44	22	250
Volendam	8/6/2010	18	5.2	7.7	130
Volendam	8/13/2010	3.3	15	34	130
Volendam	9/3/2010	17	20	8.8	93
Volendam	9/10/2010	11	27	10	120
Volendam	5/27/2011	0.24	45	15	220
Volendam	5/30/2011		24	14	170
Volendam	6/3/2011	4.6	12	13	93
Volendam	6/17/2011	1.5	45	12	110
Volendam	7/1/2011	1.4	29	16	100
Volendam	7/15/2011	2.4	19	14	180
Volendam	8/5/2011	4.7	9.6	8.4	77
Volendam	8/12/2011	10	3.1	7.2	64
Volendam	8/19/2011	8.7	6	7	51
Volendam	9/2/2011	3.7	8.5	9.8	99
Volendam	5/4/2012	13	58	19	110
Volendam	5/11/2012	13	13	12	71
Volendam	6/1/2012	14	4.4	6.3	69
Volendam	6/15/2012	6.3	12	6.3	50
Volendam	7/6/2012	15	6.9	7.8	58
Volendam	7/20/2012	14	5.5	8.4	64
Volendam	8/3/2012	21	5.1	8.3	100
Volendam	8/10/2012	11	7	7.4	70
Volendam	9/7/2012	11	4.1	9.1	43
Volendam	9/14/2012	27	4.2	7.6	42
Zaandam	5/14/2008	2.4	52.00	11.80	99.50
Zaandam	5/22/2008	12	6.93	9.40	103.00
Zaandam	6/5/2008	18	6.16	12.40	108.00
Zaandam	6/11/2008	2.2	5.10	6.70	97.00
Zaandam	6/19/2008	11	3.49	11.30	30.50
Zaandam	7/9/2008	5.9	7.81	10.10	51.50
Zaandam	7/17/2008	12	8.28	12.00	59.70
Zaandam	8/14/2008	19	6.40	10.00	60.00
Zaandam	8/15/2008	24	6.20	8.60	68.00
Zaandam	8/28/2008	11	6.60	8.40	58.00
Zaandam	9/3/2008	1.7	11.00	9.80	61.00
Zaandam	9/11/2008	6.4	3.80	6.00	3.20
Zaandam	5/10/2009	19	8.10	9.90	88.00
Zaandam	5/17/2009	12	9.80	9.10	55.00
Zaandam	5/27/2009	1.7	3.30	9.00	55.00
Zaandam	6/7/2009	6.3	5.90	6.80	46.00
Zaandam	6/14/2009	15	5.80	6.70	78.00
Zaandam	7/12/2009	2.9	5.00	9.10	110.00
Zaandam	7/22/2009	3.5	4.80	11.00	30.00
Zaandam	8/2/2009	39	8.00	12.00	85.00
Zaandam	8/16/2009	20	4.10	17.00	63.00
Zaandam	9/6/2009	14	3.90	15.00	76.00
Zaandam	9/13/2009	8	4.50	9.40	46.00

Ship	Date	(mg/L) Ammonia	(µg/L) Copper	(µg/L) Nickel	(µg/L) Zinc
Zaandam	7/11/2010	3.6	6	9.5	85
Zaandam	7/18/2010	6.1	9.8	11	80
Zaandam	8/1/2010	26	1.7	9.8	72
Zaandam	8/8/2010	37	0.25	9.2	57
Zaandam	8/22/2010	48	5.2	10	45
Zaandam	9/5/2010	44	5.3	10	49
Zaandam	9/28/2010	8.6	29	19	130
Zaandam	5/18/2011	35	10	33	71
Zaandam	5/26/2011	33	4.1	25	80
Zaandam	6/1/2011		2.7	16	21
Zaandam	6/23/2011	16	2.8	5.4	63
Zaandam	6/29/2011	18	3.8	8.9	56
Zaandam	7/21/2011	18	3.6	11	75
Zaandam	7/27/2011	13	2.8	8.9	76
Zaandam	8/10/2011	21	1.5	9.6	35
Zaandam	8/18/2011	20	6.8	11	67
Zaandam	8/24/2011	19	4.9	10	24
Zaandam	9/1/2011	15	4.5	8.2	44
Zaandam	9/15/2011	25	3.4	9.1	18
Zaandam	5/8/2012	0.68	3.6	14	42
Zaandam	5/16/2012	36	34	13	40
Zaandam	6/7/2012	1.8	6.9	7.8	67
Zaandam	6/13/2012	0.31	3.7	9.7	53
Zaandam	7/5/2012	6.8	3.2	9.4	47
Zaandam	7/19/2012	28	2.5	9.1	43
Zaandam	8/2/2012	8.8	4.8	12	55
Zaandam	8/16/2012	21	12	4	17
Zaandam	9/5/2012	22	3	8.1	59
Zaandam	9/13/2012	17	4.1	8.3	55

Graywater - 2008-2012 Data

	(mg/L)	(µg/L)	(µg/L)	(µg/L)
	Ammonia	Copper	Nickel	Zinc
# of samples	93	93	93	93
Median	0.6	4.3	5.8	39.8
Average	0.8	10.1	9.1	78.6
Std dev	1.2	16.5	11.0	87.0
Max	7.4	100	45	400
Min	0.1	0.25	0.201	0.5
95th Percentile	2.64	38.2	32.2	228
99th Percentile	6.572	90.8	44.08	335.6

Ship	Date	(mg/L) Ammonia	(µg/L) Copper	(µg/L) Nickel	(µg/L) Zinc
Carnival Spirit	7/19/2008	0.1	0.25	0.50	3.99
Carnival Spirit	7/26/2008	0.1	0.25	0.50	9.29
Carnival Spirit	8/2/2008	0.42	0.86	0.50	6.93
Carnival Spirit	8/16/2008	0.48	0.39	0.50	5.10
Carnival Spirit	9/12/2008	0.1	0.70	0.50	5.36
Carnival Spirit	9/19/2008	0.1	1.18	0.50	9.96
Carnival Spirit	5/8/2009	0.1	1.70	0.26	11.20
Carnival Spirit	5/30/2009	0.1	0.65	0.50	3.42
Carnival Spirit	6/20/2009	0.1	0.66	0.50	9.86
Carnival Spirit	6/27/2009	0.1	0.97	0.50	11.80
Carnival Spirit	7/11/2009	0.1	0.25	0.49	32.40
Carnival Spirit	7/25/2009	0.1	0.34	0.22	5.80
Carnival Spirit	8/8/2009	0.1	0.38	1.41	3.82
Carnival Spirit	8/15/2009	0.1	11.70	0.50	10.00
Carnival Spirit	9/4/2009	0.1	0.55	0.20	2.93
Carnival Spirit	9/11/2009	0.1	0.26	0.26	4.33
Carnival Spirit	5/15/2010	0.1	2.85	0.448	16
Carnival Spirit	6/5/2010	0.55	1.71	0.414	9.42
Carnival Spirit	6/12/2010	0.72	1.89	0.5	11.4
Carnival Spirit	7/10/2010	0.93	1.19	0.5	8.39
Carnival Spirit	7/17/2010	0.59	3.1	0.5	7.8
Carnival Spirit	8/7/2010	0.87	2.94	0.5	17.2
Carnival Spirit	8/28/2010	0.53	7.88	0.5	10.1
Carnival Spirit	9/4/2010	0.59	7.77	2.38	170
Carnival Spirit	9/9/2010	0.56	1.51	0.5	7.73
Carnival Spirit	5/15/2011	0.83	7.28	0.5	36.3
Carnival Spirit	5/22/2011	0.63	1.43	0.5	3.73
Carnival Spirit	6/12/2011	0.52	4.31	0.5	0.5
Carnival Spirit	6/19/2011	0.63	2.08	0.5	0.5
Carnival Spirit	7/10/2011	0.62	1.37	0.5	0.5
Carnival Spirit	7/17/2011	1.2	1.43	0.5	3.73
Carnival Spirit	8/14/2011	0.63	1.25	0.5	20.3
Carnival Spirit	8/28/2011	0.49	0.5	0.5	0.5
Carnival Spirit	9/11/2011	0.736	2.72	0.5	0.5
Carnival Spirit	9/18/2011	0.1	1.28	0.5	0.5
Carnival Spirit	5/19/2012	0.47	2.1	0.25	11
Carnival Spirit	5/26/2012	0.64	3	0.25	10
Carnival Spirit	6/2/2012	0.44	3.2	0.25	10
Carnival Spirit	6/9/2012	0.65	2.1	0.25	5.6
Carnival Spirit	7/7/2012	0.71	2.9	0.25	4.4
Carnival Spirit	7/14/2012	0.64	2.8	0.25	6.6
Carnival Spirit	8/4/2012	0.63	2.9	0.25	3.5
Carnival Spirit	8/18/2012	0.63	2.3	0.25	4.7
Carnival Spirit	9/1/2012	0.57	3.5	0.25	9.1
Carnival Spirit	9/8/2012	0.71	2.9	0.25	24
Golden Princess	8/9/2010	0.1	3.58	8.72	131
Golden Princess	8/16/2010	0.1	2.04	8.48	90.5

Ship	Date	(mg/L)	(µg/L)	(µg/L)	(µg/L)
		Ammonia	Copper	Nickel	Zinc
Golden Princess	9/13/2010	0.44	9.3	12.2	37
Golden Princess	9/20/2010	0.46	1.86	8.85	39.8
Golden Princess	5/16/2011	0.13	9.3	11	120
Golden Princess	5/23/2011	0.22	9.4	14	120
Golden Princess	6/6/2011	0.1	8.4	8.9	41
Golden Princess	6/13/2011	0.13	3.7	6	69
Golden Princess	7/11/2011	0.78	4.3	8.3	120
Golden Princess	7/18/2011	0.19	6.8	11	93
Golden Princess	8/1/2011	0.51	3.3	14	100
Golden Princess	8/15/2011	0.1	14	12	75
Golden Princess	9/5/2011	6.5	6.5	11	69
Golden Princess	9/12/2011	0.19	4.3	10	15
Golden Princess	5/28/2012	0.21	7.3	7.3	170
Golden Princess	6/11/2012	1.8	4.6	6.3	100
Golden Princess	6/18/2012	0.21	8.6	6.2	120
Golden Princess	7/9/2012	7.4	9.4	4.9	75
Golden Princess	7/16/2012	0.3	6.5	5.8	110
Golden Princess	8/6/2012	0.12	4.9	8.9	90
Golden Princess	8/20/2012	0.55	9.1	9.9	140
Golden Princess	9/3/2012	0.1	6.2	11	100
Golden Princess	9/10/2012	0.13	6.4	7.8	110
Sapphire Princess	8/11/2010	2.1	14.7	17.7	102
Sapphire Princess	8/18/2010	3.5	14.2	20.8	114
Sapphire Princess	9/8/2010	2.3	11.3	24.7	90.9
Sapphire Princess	9/15/2010	2.6	10.1	17.1	101
Sapphire Princess	5/18/2011	2.7	100	45	200
Sapphire Princess	5/25/2011	1.7	90	44	64
Sapphire Princess	6/8/2011	1.8	30	31	110
Sapphire Princess	6/15/2011	2.3	43	27	60
Sapphire Princess	7/13/2011	1.1	32	34	200
Sapphire Princess	7/20/2011	1.3	22	34	170
Sapphire Princess	8/3/2011	1	15	24	160
Sapphire Princess	8/10/2011	1.3	27	38	400
Sapphire Princess	9/7/2011	2.6	37	25	190
Sapphire Princess	9/14/2011	0.42	40	24	220
Sapphire Princess	5/22/2012	0.94	16	19	150
Sapphire Princess	5/30/2012	0.93	14	21	200
Sapphire Princess	6/5/2012	0.35	15	19	170
Sapphire Princess	6/27/2012	0.77	13	17	190
Sapphire Princess	7/11/2012	0.56	12	18	220
Sapphire Princess	7/25/2012	2.5	16	16	220
Sapphire Princess	8/8/2012	1	9.5	14	240
Sapphire Princess	8/14/2012	2.7	65	22	260
Sapphire Princess	8/22/2012	0.65	9.6	18	330
Sapphire Princess	9/5/2012	0.67	14	19	270
Sapphire Princess	9/19/2012	0.19	12	19	190

Ship	Date	Effluent Type	Temperature (°C)			
Coral Princess	5/18/2012	Mixed	35.7			
Coral Princess	5/25/2012	Mixed	34.1			
Coral Princess	6/8/2012	Mixed	35.6			
Coral Princess	6/22/2012	Mixed	35.4			
Coral Princess	7/20/2012	Mixed	37.5			
Coral Princess	7/26/2012	Mixed	34.6			
Coral Princess	8/10/2012	Mixed	36.1			
Coral Princess	8/17/2012	Mixed	37.2			
Coral Princess	9/7/2012	Mixed	36			
Diamond Princess	5/22/2012	Mixed	34			
Diamond Princess	5/30/2012	Mixed	31.2			
Diamond Princess	6/13/2012	Mixed	33.3			
Diamond Princess	6/20/2012	Mixed	31.8			
Diamond Princess	7/11/2012	Mixed	31.9			
Diamond Princess	7/18/2012	Mixed	35.4			
Diamond Princess	8/1/2012	Mixed	32.9			
Diamond Princess	8/15/2012	Mixed	30.8			
Diamond Princess	9/5/2012	Mixed	31.9			
Diamond Princess	9/12/2012	Mixed	29.7			
Disney Wonder	5/25/2012	Mixed	30.2			
Disney Wonder	6/8/2012	Mixed	31.8			
Disney Wonder	6/15/2012	Mixed	30.7			
Disney Wonder	7/13/2012	Mixed	30.2			
Disney Wonder	7/20/2012	Mixed	31.6			
Disney Wonder	8/10/2012	Mixed	29.4			
Disney Wonder	8/17/2012	Mixed	28.9			
Disney Wonder	9/7/2012	Mixed	30.9			
Golden Princess	5/29/2012	Mixed	30.4			
Golden Princess	6/12/2012	Mixed	29			
Golden Princess	6/19/2012	Mixed	31			
Golden Princess	7/10/2012	Mixed	32.6			
Golden Princess	7/17/2012	Mixed	32.8			
Golden Princess	8/7/2012	Mixed	30.2			
Golden Princess	8/21/2012	Mixed	32.7			
Golden Princess	9/4/2012	Mixed	33.2			
Golden Princess	9/11/2012	Mixed	33.9			
Golden Princess	5/28/2012	Graywater	32.1			
Golden Princess	6/11/2012	Graywater	32.3			
Golden Princess	6/18/2012	Graywater	32.8			
Golden Princess	7/9/2012	Graywater	31			
Golden Princess	7/16/2012	Graywater	31.1			
Golden Princess	8/6/2012	Graywater	33			
Golden Princess	8/20/2012	Graywater	32.6			
Golden Princess	9/3/2012	Graywater	33.6			
Golden Princess	9/10/2012	Graywater	34			
Island Princess	5/19/2012	Mixed	35.5			
Island Princess	5/27/2012	Mixed	37.3			
Island Princess	6/17/2012	Mixed	36.3			
Island Princess	6/24/2012	Mixed	36.9			
Island Princess	7/1/2012	Mixed	36.1			
Island Princess	7/15/2012	Mixed	37.2			
Island Princess	8/12/2012	Mixed	36.4			
Island Princess	8/19/2012	Mixed	37.5			
Island Princess	9/16/2012	Mixed	34.5			
Island Princess	9/23/2012	Mixed	33.8			
Norwegian Jewel	5/23/2012	Mixed	27.1			
Norwegian Jewel	5/30/2012	Mixed	26.7			
Norwegian Jewel	6/13/2012	Mixed	25.9			
Norwegian Jewel	6/20/2012	Mixed	26.8			
Norwegian Jewel	7/11/2012	Mixed	25.8			
Norwegian Jewel	7/18/2012	Mixed	27.7			
Norwegian Jewel	8/15/2012	Mixed	28.8			
Norwegian Jewel	8/28/2012	Mixed	28.4			
Norwegian Jewel	9/5/2012	Mixed	25.1			
Norwegian Jewel	9/18/2012	Mixed	26.9			
Norwegian Pearl	5/9/2012	Mixed	25.2			
Norwegian Pearl	5/16/2012	Mixed	28.6			
Norwegian Pearl	6/13/2012	Mixed	31.6			
Norwegian Pearl	6/20/2012	Mixed	28.9			
Norwegian Pearl	7/18/2012	Mixed	25.5			
Norwegian Pearl	7/25/2012	Mixed	31			
Norwegian Pearl	8/8/2012	Mixed	31.1			
					Averages	
				Coral Princess	35.8	mixed
				Diamond Princess	32.29	mixed
				Disney Wonder	30.46	mixed
				Golden Princess	31.76	mixed
				Golden Princess	32.5	GW
				Island Princess	36.15	mixed
				Norwegian Jewel	26.92	mixed
				Norwegian Pearl	29.36	mixed
				Norwegian Sun	30.95	mixed (2009 data)
				Regatta	27.31	mixed (2011 data)
				Sapphire Princess	32.69	mixed
				Sapphire Princess	32.17	GW
				Seven Seas Navigator	23.09	mixed
				Silver Shadow	13.33	mixed (2009 data)
				Star Princess	26.84	mixed
				Statendam	27.73	mixed
				Volendam	24.81	mixed
				Zaandam	25.92	mixed
				Overall average	28.94	

Ship	Date	Effluent Type	Temperature (°C)	
Norwegian Pearl	8/15/2012	Mixed	31.4	
Norwegian Pearl	9/5/2012	Mixed	30.4	
Norwegian Pearl	9/19/2012	Mixed	29.9	
Norwegian Sun	5/6/2009	Mixed	31.4	
Norwegian Sun	5/19/2009	Mixed	30.3	
Norwegian Sun	5/20/2009	Mixed	28.5	
Norwegian Sun	6/3/2009	Mixed	31	
Norwegian Sun	6/10/2009	Mixed	28.7	
Norwegian Sun	7/1/2009	Mixed	31.5	
Norwegian Sun	7/8/2009	Mixed	31.8	
Norwegian Sun	7/22/2009	Mixed	31.2	
Norwegian Sun	8/5/2009	Mixed	32	
Norwegian Sun	8/12/2009	Mixed	31.3	
Norwegian Sun	8/19/2009	Mixed	31.4	
Norwegian Sun	9/2/2009	Mixed	31	
Norwegian Sun	9/9/2009	Mixed	32.2	
Regatta	5/20/2011	Mixed	25.5	Port
Regatta	5/20/2011	Mixed	27.3	Starboard
Regatta	5/31/2011	Mixed	25.3	Port
Regatta	5/31/2011	Mixed	27.1	Starboard
Regatta	6/9/2011	Mixed	26.5	Port
Regatta	6/9/2011	Mixed	26.5	Starboard
Regatta	6/21/2011	Mixed	25.4	Port
Regatta	6/21/2011	Mixed	29.2	Starboard
Regatta	7/15/2011	Mixed	36.9	Port
Regatta	7/15/2011	Mixed	36.9	Starboard
Regatta	7/29/2011	Mixed	32	Port
Regatta	7/29/2011	Mixed	26.9	Starboard
Regatta	8/11/2011	Mixed	28.9	Port
Regatta	8/11/2011	Mixed	28.9	Starboard
Regatta	8/19/2011	Mixed	21.6	Port
Regatta	8/19/2011	Mixed	21.6	Starboard
Regatta	9/2/2011	Mixed	22.5	Port
Regatta	9/2/2011	Mixed	22.5	Starboard
Sapphire Princess	5/23/2012	Mixed	30.5	
Sapphire Princess	5/30/2012	Mixed	34	
Sapphire Princess	6/6/2012	Mixed	33.5	
Sapphire Princess	6/27/2012	Mixed	34	
Sapphire Princess	7/11/2012	Mixed	31.2	
Sapphire Princess	7/25/2012	Mixed	33.6	
Sapphire Princess	8/8/2012	Mixed	32.6	
Sapphire Princess	8/14/2012	Mixed	33.5	
Sapphire Princess	8/22/2012	Mixed	31.7	
Sapphire Princess	9/5/2012	Mixed	33	
Sapphire Princess	9/19/2012	Mixed	32	
Sapphire Princess	5/22/2012	GW	31.2	
Sapphire Princess	5/30/2012	GW	32	
Sapphire Princess	6/5/2012	GW	34.1	
Sapphire Princess	6/27/2012	GW	33	
Sapphire Princess	7/11/2012	GW	31.7	
Sapphire Princess	7/25/2012	GW	32.9	
Sapphire Princess	8/8/2012	GW	31	
Sapphire Princess	8/14/2012	GW	31.3	
Sapphire Princess	8/22/2012	GW	33	
Sapphire Princess	9/5/2012	GW	32.1	
Sapphire Princess	9/19/2012	GW	31.6	
Seven Seas Navigator	5/5/2012	Mixed	20.8	
Seven Seas Navigator	5/7/2012	Mixed	17.9	
Seven Seas Navigator	6/3/2012	Mixed	24.4	
Seven Seas Navigator	7/21/2012	Mixed	21.6	
Seven Seas Navigator	7/27/2012	Mixed	27.1	
Seven Seas Navigator	7/29/2012	Mixed	27.8	
Seven Seas Navigator	8/4/2012	Mixed	22.4	
Seven Seas Navigator	8/11/2012	Mixed	22.7	
Silver Shadow	6/1/2009	Mixed	10.7	
Silver Shadow	6/9/2009	Mixed	16.7	
Silver Shadow	6/11/2009	Mixed	12.2	
Silver Shadow	7/2/2009	Mixed	12.5	
Silver Shadow	7/13/2009	Mixed	15.7	
Silver Shadow	7/24/2009	Mixed	10.7	
Silver Shadow	8/5/2009	Mixed	15.1	

Ship	Date	Effluent Type	Temperature (°C)
Silver Shadow	8/21/2009	Mixed	12.7
Silver Shadow	8/28/2009	Mixed	13.7
Star Princess	5/24/2012	Mixed	9.1
Star Princess	5/31/2012	Mixed	32.6
Star Princess	6/7/2012	Mixed	30.7
Star Princess	6/21/2012	Mixed	14.8
Star Princess	7/12/2012	Mixed	32.9
Star Princess	7/19/2012	Mixed	32.9
Star Princess	8/9/2012	Mixed	11.7
Star Princess	8/16/2012	Mixed	32.8
Star Princess	8/23/2012	Mixed	31.5
Star Princess	9/6/2012	Mixed	33.9
Star Princess	9/19/2012	Mixed	32.3
Statendam	5/24/2012	Mixed	25.9
Statendam	5/31/2012	Mixed	25.4
Statendam	6/14/2012	Mixed	27.3
Statendam	6/28/2012	Mixed	28.2
Statendam	7/12/2012	Mixed	28.5
Statendam	7/19/2012	Mixed	29.9
Statendam	8/9/2012	Mixed	25.1
Statendam	8/29/2012	Mixed	32.5
Statendam	9/13/2012	Mixed	27.8
Statendam	9/20/2012	Mixed	26.7
Volendam	5/4/2012	Mixed	22.8
Volendam	5/11/2012	Mixed	22.5
Volendam	6/1/2012	Mixed	24.5
Volendam	6/15/2012	Mixed	26.9
Volendam	7/6/2012	Mixed	26.7
Volendam	7/20/2012	Mixed	25.6
Volendam	8/3/2012	Mixed	25.1
Volendam	8/10/2012	Mixed	25.2
Volendam	9/7/2012	Mixed	24.7
Volendam	9/14/2012	Mixed	24.1
Zaandam	5/8/2012	Mixed	23.1
Zaandam	5/16/2012	Mixed	25
Zaandam	6/7/2012	Mixed	26
Zaandam	6/13/2012	Mixed	27
Zaandam	7/5/2012	Mixed	26
Zaandam	7/19/2012	Mixed	26.8
Zaandam	8/2/2012	Mixed	26.6
Zaandam	8/16/2012	Mixed	26.6
Zaandam	9/5/2012	Mixed	25.7
Zaandam	9/13/2012	Mixed	26.4