

US EPA ARCHIVE DOCUMENT



This document contains Appendix A from the 2004 Holland America Oosterdam Data report. Appendix A contains data on pathogens, sample numbers excepting pathogens, and field measurements collected onboard the Oosterdam September 14 through September 24, 2004. The report and all the appendices for this sampling event can be downloaded from http://www.epa.gov/owow/oceans/cruise_ships/oosterdam.html

Holland America Oosterdam
2004 Analytical Results
Appendix A

March 2006

Appendix A

ANALYTICAL RESULTS

Appendix A-1

**Pathogen Indicator Sample Numbers and Sample Collection Times
Holland America Oosterdam**

Sampling Point (SP)	Approximate Sample Collection Time	Sample Numbers				
		9/18/04 - 9/19/04	9/19/04 - 9/20/04	9/20/04 - 9/21/04	9/21/04 - 9/22/04	9/22/04 - 9/23/04
		Day 1	Day 2	Day 3	Day 4	Day 5
Accommodations Wastewater (SP-1)	0915			65792		
Laundry Wastewater (SP-2)	1125	65796				
Galley Wastewater (SP-3)	2220		65801			
Food Pulper Wastewater, Centrifuge System (SP-5)	1620					65808
Influent to Graywater Wastewater Treatment System (SP-6)	~1030 ~1455	65812 65813	65816 65817	65820 65821	65824 65825	65828 65829
Influent to Graywater UV Disinfection (SP-7)	~1045 ~1435 ~2205	65832 65833 65834	65836 65837 65838	65840 65841 65842	65844 65845 65846	65848 65849 65850
Effluent from Graywater Wastewater Treatment System (SP-8)	~1045 ~1440 ~2210	65852 65853 65854	65856 65857 65858	65860 65861 65862	65864 65865 65866	65868 65869 65870
Effluent to Graywater Wastewater Treatment System Duplicate (SP-9)	~1045	65872, 66014	65876, 66015	65880, 66016		
Influent to Sewage/Graywater Wastewater Treatment System (SP-11)	~1025 ~1415	65896 65897	65900 65901	65904 65905	65908 65909	65912 65913

**Appendix A-1
(continued)
Pathogen Indicator Sample Numbers and Sample Collection Times
Holland America Oosterdam**

Sampling Point (SP)	Approximate Sample Collection Time	Sample Numbers				
		9/18/04 - 9/19/04	9/19/04 - 9/20/04	9/20/04 - 9/21/04	9/21/04 - 9/22/04	9/22/04 - 9/23/04
		Day 1	Day 2	Day 3	Day 4	Day 5
Influent to Sewage/Graywater UV Disinfection (SP-12)	~1030 ~1425 ~2130	65916 65917 65918	65920 65921 65922	65924 65925 65926	65928 65929 65930	65932 65933 65934
Effluent to Sewage/Graywater Wastewater Treatment System (SP-13)	~1000 ~1345 ~2210	65936 65937 65938	65940 65941 65942	65944 65945 65946	65948 65949 65950	65952 65953 65954
Effluent to Sewage/Graywater Wastewater Treatment System Duplicate (SP-14)	~1000			65964, 66011	65968, 66012	65972, 66013
Final Combined Treated Effluent (SP-16)	~2205 ~0600	65980 65981	65984 65985 65986	65988 65989 65990	65992 65993 65994	65996 65997 65998
Source Water (SP-17)	0615		66000			

**Appendix A-1
(continued)
Pathogen Indicators Analytical Results
Holland America Oosterdam**

SP-1, Accommodations Wastewater Characterization	Grab 1		Unit
Day 3	65792		
Pathogen Indicators			
E. coli	10,700		MPN/100 mL
Enterococci	450		MPN/100 mL
Fecal Coliform	120,000,000		CFU/100 mL
SP-2, Laundry Wastewater Characterization	Grab 1		Unit
Day 1	65796		
Pathogen Indicators			
E. coli	7,700		MPN/100 mL
Enterococci	272		MPN/100 mL
Fecal Coliform	17,000		CFU/100 mL
SP-3, Galley Wastewater Characterization	Grab 1		Unit
Day 2	65801		
Pathogen Indicators			
E. coli	3,880		MPN/100 mL
Enterococci	2,690		MPN/100 mL
Fecal Coliform	1,900		CFU/100 mL
SP-5, Food Pulper Wastewater Characterization, Centrifuge	Grab 1		Unit
Day 5	65808		
Pathogen Indicators			
E. coli	100,000		MPN/100 mL
Enterococci	1,600,000		MPN/100 mL
Fecal Coliform	100,000		CFU/100 mL
SP-6, Influent to Graywater Treatment System	Grab 1	Grab 2	Unit
Day 1	65812	65813	
Pathogen Indicators			
E. coli	29,100	46,100	MPN/100 mL
Enterococci	100	> 2,420	MPN/100 mL
Fecal Coliform	7,400,000	21,000,000	CFU/100 mL

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**Appendix A-1
(continued)
Pathogen Indicators Analytical Results
Holland America Oosterdam**

SP-6, Influent to Graywater Treatment System	Grab 1	Grab 2	Unit	
Day 2	65816	65817		
Pathogen Indicators				
E. coli	46,100	72,700		
Enterococci	97.0	305		
Fecal Coliform	10,000,000	2,900,000	CFU/100 mL	
SP-6, Influent to Graywater Treatment System	Grab 1	Grab 2	Unit	
Day 3	65820	65821		
Pathogen Indicators				
E. coli	36,500	36,500		
Enterococci	933	414		
Fecal Coliform	5,400,000	7,700,000	CFU/100 mL	
SP-6, Influent to Graywater Treatment System	Grab 1	Grab 2	Unit	
Day 4	65824	65825		
Pathogen Indicators				
E. coli	86,600	23,800		
Enterococci	2,100	733		
Fecal Coliform	13,000,000	21,000,000	CFU/100 mL	
SP-6, Influent to Graywater Treatment System	Grab 1	Grab 2	Unit	
Day 5	65828	65829		
Pathogen Indicators				
E. coli	120,000	38,700		
Enterococci	3,500	ND(100)		
Fecal Coliform	130,000,000	ND(2.00)	CFU/100 mL	
SP-7, Influent to Graywater Treatment System UV	Grab 1	Grab 2	Grab 3	Unit
Disinfection				
Day 1	65832	65833	65834	
Pathogen Indicators				
E. coli	ND(1.00)	35.9	8.60	
Enterococci	ND(1.00)	ND(1.00)	ND(1.00)	
Fecal Coliform	78,000	5,900	7,200	CFU/100 mL

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**Appendix A-1
(continued)
Pathogen Indicators Analytical Results
Holland America Oosterdam**

SP-7, Influent to Graywater Treatment System UV Disinfection	Grab 1	Grab 2	Grab 3	Unit
Day 2	65836	65837	65838	
Pathogen Indicators				
E. coli	104	35.5	77.1	MPN/100 mL
Enterococci	1.00	ND(1.00)	ND(1.00)	MPN/100 mL
Fecal Coliform	2,200	1,000	3,800	CFU/100 mL
SP-7, Influent to Graywater Treatment System UV Disinfection	Grab 1	Grab 2	Grab 3	Unit
Day 3	65840	65841	65842	
Pathogen Indicators				
E. coli	9.80	12.2	14.6	MPN/100 mL
Enterococci	ND(1.00)	ND(1.00)	ND(1.00)	MPN/100 mL
Fecal Coliform	1,300	1,300	50.0	CFU/100 mL
SP-7, Influent to Graywater Treatment System UV Disinfection	Grab 1	Grab 2	Grab 3	Unit
Day 4	65844	65845	65846	
Pathogen Indicators				
E. coli	14.6	27.5	6.30	MPN/100 mL
Enterococci	ND(1.00)	ND(1.00)	ND(1.00)	MPN/100 mL
Fecal Coliform	120	1,800	2,600	CFU/100 mL
SP-7, Influent to Graywater Treatment System UV Disinfection	Grab 1	Grab 2	Grab 3	Unit
Day 5	65848	65849	65850	
Pathogen Indicators				
E. coli	7.50	ND(1.00)	ND(1.00)	MPN/100 mL
Enterococci	ND(1.00)	ND(1.00)	ND(1.00)	MPN/100 mL
Fecal Coliform	210	13.0	18.0	CFU/100 mL
SP-8, Effluent from Graywater Treatment System Day 1	Grab 1 65852	Grab 2 65853	Grab 3 65854	Unit
Pathogen Indicators				
E. coli	ND(1.00)	ND(1.00)	ND(1.00)	MPN/100 mL
Enterococci	ND(1.00)	ND(1.00)	ND(1.00)	MPN/100 mL
Fecal Coliform	ND(1.00)	2.00	ND(2.00)	CFU/100 mL

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**Appendix A-1
(continued)
Pathogen Indicators Analytical Results
Holland America Oosterdam**

SP-8, Effluent from Graywater Treatment System Day 2	Grab 1 65856	Grab 2 65857	Grab 3 65858	Unit
Pathogen Indicators				
E. coli	ND(1.00)	ND(1.00)	ND(1.00)	MPN/100 mL
Enterococci	ND(1.00)	ND(1.00)	ND(1.00)	MPN/100 mL
Fecal Coliform	1.00	ND(1.00)	ND(2.00)	CFU/100 mL
SP-8, Effluent from Graywater Treatment System Day 3	Grab 1 65860	Grab 2 65861	Grab 3 65862	Unit
Pathogen Indicators				
E. coli	ND(1.00)	EXCLUDE	ND(1.00)	MPN/100 mL
Enterococci	ND(1.00)	EXCLUDE	ND(1.00)	MPN/100 mL
Fecal Coliform	ND(2.00)	EXCLUDE	ND(2.00)	CFU/100 mL
SP-8, Effluent from Graywater Treatment System Day 4	Grab 1 65864	Grab 2 65865	Grab 3 65866	Unit
Pathogen Indicators				
E. coli	ND(1.00)	ND(1.00)	ND(1.00)	MPN/100 mL
Enterococci	ND(1.00)	ND(1.00)	ND(1.00)	MPN/100 mL
Fecal Coliform	ND(2.00)	ND(2.00)	ND(2.00)	CFU/100 mL
SP-8, Effluent from Graywater Treatment System Day 5	Grab 1 65868	Grab 2 65869	Grab 3 65870	Unit
Pathogen Indicators				
E. coli	ND(1.00)	6.30	ND(1.00)	MPN/100 mL
Enterococci	ND(1.00)	ND(1.00)	ND(1.00)	MPN/100 mL
Fecal Coliform	ND(2.00)	ND(2.00)	ND(2.00)	CFU/100 mL
SP-9, Duplicate of Effluent from Graywater Treatment System Day 1	Grab 1 65872			Unit
Pathogen Indicators				
E. coli	ND(1.00)			MPN/100 mL
Enterococci	ND(1.00)			MPN/100 mL
Fecal Coliform	ND(1.00)			CFU/100 mL

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**Appendix A-1
(continued)
Pathogen Indicators Analytical Results
Holland America Oosterdam**

SP-9, Duplicate of Effluent from Graywater Treatment System	Grab 1	Unit
Day 1	66014	
Pathogen Indicators		
E. coli	ND(1.00)	MPN/100 mL
Enterococci	ND(1.00)	MPN/100 mL
Fecal Coliform	1.00	CFU/100 mL
SP-9, Duplicate of Effluent from Graywater Treatment System	Grab 1	Unit
Day 2	65876	
Pathogen Indicators		
E. coli	ND(1.00)	MPN/100 mL
Enterococci	ND(1.00)	MPN/100 mL
Fecal Coliform	1.00	CFU/100 mL
SP-9, Duplicate of Effluent from Graywater Treatment System	Grab 1	Unit
Day 2	66015	
Pathogen Indicators		
E. coli	ND(1.00)	MPN/100 mL
Enterococci	ND(1.00)	MPN/100 mL
Fecal Coliform	2.00	CFU/100 mL
SP-9, Duplicate of Effluent from Graywater Treatment System	Grab 1	Unit
Day 3	65880	
Pathogen Indicators		
E. coli	ND(1.00)	MPN/100 mL
Enterococci	ND(1.00)	MPN/100 mL
Fecal Coliform	ND(2.00)	CFU/100 Ml

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**Appendix A-1
(continued)
Pathogen Indicators Analytical Results
Holland America Oosterdam**

SP-9, Duplicate of Effluent from Graywater Treatment System	Grab 1		Unit
Day 3	66016		
Pathogen Indicators			
E. coli	ND(1.00)		MPN/100 mL
Enterococci	ND(1.00)		MPN/100 mL
Fecal Coliform	ND(2.00)		CFU/100 mL
SP-11, Influent to Sewage/Graywater Treatment System	Grab 1	Grab 2	Unit
Day 1	65896	65897	
Pathogen Indicators			
E. coli	7,700,000	13,000,000	MPN/100 mL
Enterococci	1,480,000	1,310,000	MPN/100 mL
Fecal Coliform	20,000,000	84,000,000	CFU/100 mL
SP-11, Influent to Sewage/Graywater Treatment System	Grab 1	Grab 2	Unit
Day 2	65900	65901	
Pathogen Indicators			
E. coli	6,130,000	14,100,000	MPN/100 mL
Enterococci	1,990,000	1,940,000	MPN/100 mL
Fecal Coliform	19,000,000	11,000,000	CFU/100 mL
SP-11, Influent to Sewage/Graywater Treatment System	Grab 1	Grab 2	Unit
Day 3	65904	65905	
Pathogen Indicators			
E. coli	4,880,000	13,000,000	MPN/100 mL
Enterococci	748,000	1,150,000	MPN/100 mL
Fecal Coliform	3,900,000	14,000,000	CFU/100 mL

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**Appendix A-1
(continued)
Pathogen Indicators Analytical Results
Holland America Oosterdam**

SP-11, Influent to Sewage/Graywater Treatment System	Grab 1	Grab 2	Unit	
Day 4	65908	65909		
Pathogen Indicators				
E. coli	4,880,000	9,210,000	MPN/100 mL	
Enterococci	677,000	960,000	MPN/100 mL	
Fecal Coliform	49,000,000	6,900,000	CFU/100 mL	
SP-11, Influent to Sewage/Graywater Treatment System	Grab 1	Grab 2	Unit	
Day 5	65912	65913		
Pathogen Indicators				
E. coli	4,610,000	7,270,000	MPN/100 mL	
Enterococci	738,000	465,000	MPN/100 mL	
Fecal Coliform	58,000,000	3,500,000	CFU/100 mL	
SP-12, Influent to Sewage/Graywater Treatment System UV Disinfection	Grab 1	Grab 2	Grab 3	Unit
Day 1	65916	65917	65918	
Pathogen Indicators				
E. coli	4.10	30.1	7.50	MPN/100 mL
Enterococci	13.4	58.9	2.00	MPN/100 mL
Fecal Coliform	55.0	42.0	2.00	CFU/100 mL
SP-12, Influent to Sewage/Graywater Treatment System UV Disinfection	Grab 1	Grab 2	Grab 3	Unit
Day 2	65920	65921	65922	
Pathogen Indicators				
E. coli	27.9	21.3	17.3	MPN/100 mL
Enterococci	19.9	37.3	326	MPN/100 mL
Fecal Coliform	37.0	36.0	18.0	CFU/100 mL
SP-12, Influent to Sewage/Graywater Treatment System UV Disinfection	Grab 1	Grab 2	Grab 3	Unit
Day 3	65924	65925	65926	
Pathogen Indicators				
E. coli	38.3	39.3	345	MPN/100 mL
Enterococci	12.2	921	> 2,420	MPN/100 mL
Fecal Coliform	20.0	38.0	280	CFU/100 mL

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(continued)
Pathogen Indicators Analytical Results
Holland America Oosterdam**

SP-12, Influent to Sewage/Graywater Treatment System UV Disinfection	Grab 1	Grab 2	Grab 3	Unit
Day 4	65928	65929	65930	
Pathogen Indicators				
E. coli	308	69.7	199	MPN/100 mL
Enterococci	921	125	178	MPN/100 mL
Fecal Coliform	780	56.0	47.0	CFU/100 mL
SP-12, Influent to Sewage/Graywater Treatment System UV Disinfection	Grab 1	Grab 2	Grab 3	Unit
Day 5	65932	65933	65934	
Pathogen Indicators				
E. coli	10.8	ND(1.00)	55.4	MPN/100 mL
Enterococci	12.1	ND(1.00)	23.1	MPN/100 mL
Fecal Coliform	30.0	30.0	30.0	CFU/100 mL
SP-13, Effluent from Sewage/Graywater Treatment System	Grab 1	Grab 2	Grab 3	Unit
Day 1	65936	65937	65938	
Pathogen Indicators				
E. coli	ND(1.00)	ND(1.00)	ND(1.00)	MPN/100 mL
Enterococci	1.00	ND(1.00)	ND(1.00)	MPN/100 mL
Fecal Coliform	ND(1.00)	ND(1.00)	ND(1.00)	CFU/100 mL
SP-13, Effluent from Sewage/Graywater Treatment System	Grab 1	Grab 2	Grab 3	Unit
Day 2	65940	65941	65942	
Pathogen Indicators				
E. coli	ND(1.00)	ND(1.00)	ND(1.00)	MPN/100 mL
Enterococci	ND(1.00)	1.00	1.00	MPN/100 mL
Fecal Coliform	ND(1.00)	ND(1.00)	ND(2.00)	CFU/100 mL
SP-13, Effluent from Sewage/Graywater Treatment System	Grab 1	Grab 2	Grab 3	Unit
Day 3	65944	65945	65946	
Pathogen Indicators				
E. coli	ND(1.00)	ND(1.00)	ND(1.00)	MPN/100 mL
Enterococci	ND(1.00)	ND(1.00)	ND(1.00)	MPN/100 mL
Fecal Coliform	ND(2.00)	ND(2.00)	ND(2.00)	CFU/100 mL

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(continued)
Pathogen Indicators Analytical Results
Holland America Oosterdam**

SP-13, Effluent from Sewage/Graywater Treatment System	Grab 1	Grab 2	Grab 3	Unit
Day 4	65948	65949	65950	
Pathogen Indicators				
E. coli	ND(1.00)	ND(1.00)	ND(1.00)	MPN/100 mL
Enterococci	ND(1.00)	ND(1.00)	ND(1.00)	MPN/100 mL
Fecal Coliform	ND(2.00)	ND(2.00)	ND(2.00)	CFU/100 mL
SP-13, Effluent from Sewage/Graywater Treatment System	Grab 1	Grab 2	Grab 3	Unit
Day 5	65952	65953	65954	
Pathogen Indicators				
E. coli	ND(1.00)	13.2	ND(1.00)	MPN/100 mL
Enterococci	ND(1.00)	184	ND(1.00)	MPN/100 mL
Fecal Coliform	ND(2.00)	ND(2.00)	ND(2.00)	CFU/100 mL
SP-14, Duplicate of Effluent from Sewage/Graywater Treatment System	Grab 1			Unit
Day 3	65964			
Pathogen Indicators				
E. coli	ND(1.00)			MPN/100 mL
Enterococci	ND(1.00)			MPN/100 mL
Fecal Coliform	ND(2.00)			CFU/100 mL
SP-14, Duplicate of Effluent from Sewage/Graywater Treatment System	Grab 1			Unit
Day 3	65011			
Pathogen Indicators				
E. coli	ND(1.00)			MPN/100 mL
Enterococci	ND(1.00)			MPN/100 mL
Fecal Coliform	ND(2.00)			CFU/100 mL
SP-14, Duplicate of Effluent from Sewage/Graywater Treatment System	Grab 1			Unit
Day 4	65968			
Pathogen Indicators				
E. coli	ND(1.00)			MPN/100 mL
Enterococci	ND(1.00)			MPN/100 mL
Fecal Coliform	ND(2.00)			CFU/100 Ml
SP-14, Duplicate of Effluent from Sewage/Graywater Treatment System	Grab 1			Unit
Day 4	66012			
Pathogen Indicators				
E. coli	ND(1.00)			MPN/100 mL
Enterococci	ND(1.00)			MPN/100 mL
Fecal Coliform	ND(2.00)			CFU/100 mL

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(continued)
Pathogen Indicators Analytical Results
Holland America Oosterdam**

SP-14, Duplicate of Effluent from Sewage/Graywater Treatment System Day 5	Grab 1		Unit
Pathogen Indicators	65972		
E. coli	ND(1.00)		MPN/100 mL
Enterococci	ND(1.00)		MPN/100 mL
Fecal Coliform	ND(2.00)		CFU/100 mL
SP-14, Duplicate of Effluent from Sewage/Graywater Treatment System Day 5	Grab 1		Unit
Pathogen Indicators	66013		
E. coli	ND(1.00)		MPN/100 mL
Enterococci	ND(1.00)		MPN/100 mL
Fecal Coliform	ND(2.00)		CFU/100 mL

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**Appendix A-1
(continued)
Pathogen Indicators Analytical Results
Holland America Oosterdam**

SP-16, Final Combined Discharge from Graywater and Sewage/Graywater Treatment Systems	Grab 1	Grab 2	Unit	
Day 1	65980	65981		
Pathogen Indicators				
E. coli	ND(1.00)	49.6	MPN/100 mL	
Enterococci	2.00	10.9	MPN/100 mL	
Fecal Coliform	ND(1.00)	ND(1.00)	CFU/100 mL	
SP-16, Final Combined Discharge from Graywater and Sewage/Graywater Treatment Systems	Grab 1	Grab 2	Grab 3	Unit
Day 2	65984	65985	65986	
Pathogen Indicators				
E. coli	8.30	ND(1.00)	ND(1.00)	MPN/100 mL
Enterococci	1.00	ND(1.00)	ND(1.00)	MPN/100 mL
Fecal Coliform	3.00	ND(1.00)	ND(1.00)	CFU/100 mL
SP-16, Final Combined Discharge from Graywater and Sewage/Graywater Treatment Systems	Grab 1	Grab 2	Grab 3	Unit
Day 3	65988	65989	65990	
Pathogen Indicators				
E. coli	ND(1.00)	ND(1.00)	ND(1.00)	MPN/100 mL
Enterococci	ND(1.00)	ND(1.00)	ND(1.00)	MPN/100 mL
Fecal Coliform	ND(2.00)	ND(2.00)	ND(2.00)	CFU/100 mL
SP-16, Final Combined Discharge from Graywater and Sewage/Graywater Treatment Systems	Grab 1	Grab 2	Grab 3	Unit
Day 4	65992	65993	65994	
Pathogen Indicators				
E. coli	ND(1.00)	ND(1.00)	ND(1.00)	MPN/100 mL
Enterococci	ND(1.00)	ND(1.00)	ND(1.00)	MPN/100 mL
Fecal Coliform	2.00	ND(2.00)	ND(2.00)	CFU/100 mL

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(continued)
Pathogen Indicators Analytical Results
Holland America Oosterdam**

SP-16, Final Combined Discharge from Graywater and Sewage/Graywater Treatment Systems	Grab 1	Grab 2	Grab 3	Unit
Day 5	65996	65997	65998	
Pathogen Indicators				
E. coli	ND(1.00)	ND(1.00)	ND(1.00)	MPN/100 mL
Enterococci	ND(1.00)	ND(1.00)	1.00	MPN/100 mL
Fecal Coliform	ND(2.00)	ND(2.00)	ND(2.00)	CFU/100 mL
SP-17, Source Water	Grab 1			Unit
Day 2	66000			
Pathogen Indicators				
E. coli	ND(1.00)			MPN/100 mL
Enterococci	ND(1.00)			MPN/100 mL
Fecal Coliform	ND(1.00)			CFU/100 mL

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> - Average result includes at least one value that exceeds the range of dilutions.

Appendix A-2

**Sample Numbers, Except for Pathogen Indicators
Holland America Oosterdam**

Sampling Point (SP)	Sample Numbers				
	9/18/04 - 9/19/04	9/19/04 - 9/20/04	9/20/04 - 9/21/04	9/21/04 - 9/22/04	9/22/04 - 9/23/04
	Day 1	Day 2	Day 3	Day 4	Day 5
Accommodations Wastewater (SP-1)			65792		
Laundry Wastewater (SP-2)	65796				
Galley Wastewater (SP-3)		65800			
Food Pulper Wastewater, Centrifuge System (SP-5)					65808
Influent to Graywater Wastewater Treatment System (SP-6)	65812	65816	65820	65824	65828
Effluent from Graywater Wastewater Treatment System (SP-8)	65852	65856	65860	65864	65868
Effluent from Graywater Wastewater Treatment System Duplicate (SP-9)	65872	65876	65880	65884	65888
Incinerator Ash (SP-10)					65892
Influent to Sewage/Graywater Treatment System (SP-11)	65896	65900	65904	65908	65912
Effluent from Sewage/Graywater Treatment System (SP-13)	65936	65940	65944	65948	65952

**Appendix A-2
(continued)
Sample Numbers, Except for Pathogen Indicators
Holland America Oosterdam**

Sampling Point (SP)	Sample Numbers				
	9/18/04 - 9/19/04	9/19/04 - 9/20/04	9/20/04 - 9/21/04	9/21/04 - 9/22/04	9/22/04 - 9/23/04
	Day 1	Day 2	Day 3	Day 4	Day 5
Effluent from Sewage/Graywater Treatment System Duplicate (SP-14)	65956	65960	65964	65968	65972
Graywater Screening Solids (SP-15)			65976		
Final Combined Discharge (SP-16)	65980	65984	65988	65992	65996
Source Water (SP-17)		66000			
Trip Blank (SP-18)				66004	
Equipment Blank (SP-19)		66008			
Sewage/Graywater Screening Solids (SP-20)			66009		
Sewage/Graywater Waste Biosludge (SP-21)			66010		

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 3 65792	Unit
SP-1, Accommodations Wastewater Characterization		
Classical Pollutants		
Alkalinity	ND(20.0)	mg/L
Ammonia As Nitrogen (NH ₃ -N)	ND(0.0500)	mg/L
Available Cyanide	4.20	ug/L
Biochemical Oxygen Demand (BOD)	376	mg/L
Chemical Oxygen Demand (COD)	1,730	mg/L
Chloride	175	mg/L
Hardness	43.3	mg/L
Hexane Extractable Material (HEM)	47.0	mg/L
Nitrate/Nitrite (NO ₂ + NO ₃ -N)	0.100	mg/L
Settleable residue	15.0	mL/L
Silica Gel Treated HEM (SGT-HEM)	ND(6.00)	mg/L
Sulfate	103	mg/L
P121 Total Cyanide	ND(0.00500)	mg/L
Total Dissolved Solids (TDS)	379	mg/L
Total Kjeldahl Nitrogen (TKN)	34.1	mg/L
Total Organic Carbon (TOC)	79.7	mg/L
Total Phosphorus	2.31	mg/L
Total Suspended Solids (TSS)	430	mg/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).
 NC - Not collected.
 ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 3 65792	Unit
SP-1, Accommodations Wastewater Characterization		
Total and Dissolved Metals		
Aluminum, Total	1,400	ug/L
P114 Antimony, Total	ND(2.00)	ug/L
P115 Arsenic, Total	ND(2.00)	ug/L
Barium, Total	292	ug/L
P117 Beryllium, Total	ND(0.0700)	ug/L
Boron, Total	232	ug/L
P118 Cadmium, Total	0.880	ug/L
Calcium, Total	4,800	ug/L
P119 Chromium, Total	77.1	ug/L
Cobalt, Total	0.880	ug/L
P120 Copper, Total	988	ug/L
Iron, Total	2,570	ug/L
P122 Lead, Total	ND(0.620)	ug/L
Magnesium, Total	7,610	ug/L
Manganese, Total	33.8	ug/L
P123 Mercury, Total	0.130	ug/L
Molybdenum, Total	4.04	ug/L
P124 Nickel, Total	85.8	ug/L
P125 Selenium, Total	ND(1.40)	ug/L
P126 Silver, Total	4.96	ug/L
Sodium, Total	153,000	ug/L
P127 Thallium, Total	ND(0.800)	ug/L
Tin, Total	14.3	ug/L
Titanium, Total	14.9	ug/L
Vanadium, Total	4.19	ug/L
Yttrium, Total	ND(0.310)	ug/L
P128 Zinc, Total	10,100	ug/L
Aluminum, Dissolved	202	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 3 65792	Unit
SP-1, Accommodations Wastewater Characterization		
Total and Dissolved Metals		
P114 Antimony, Dissolved	ND(2.00)	ug/L
P115 Arsenic, Dissolved	ND(2.00)	ug/L
Barium, Dissolved	191	ug/L
P117 Beryllium, Dissolved	ND(0.0700)	ug/L
Boron, Dissolved	258	ug/L
P118 Cadmium, Dissolved	ND(0.0800)	ug/L
Calcium, Dissolved	4,020	ug/L
P119 Chromium, Dissolved	0.890	ug/L
Cobalt, Dissolved	2.37	ug/L
P120 Copper, Dissolved	26.3	ug/L
Iron, Dissolved	1,120	ug/L
P122 Lead, Dissolved	2.04	ug/L
Magnesium, Dissolved	7,050	ug/L
Manganese, Dissolved	23.4	ug/L
P123 Mercury, Dissolved	ND(0.0500)	ug/L
Molybdenum, Dissolved	ND(1.60)	ug/L
P124 Nickel, Dissolved	28.2	ug/L
P125 Selenium, Dissolved	ND(1.40)	ug/L
P126 Silver, Dissolved	ND(0.770)	ug/L
Sodium, Dissolved	79,500	ug/L
P127 Thallium, Dissolved	ND(0.800)	ug/L
Tin, Dissolved	ND(0.940)	ug/L
Titanium, Dissolved	ND(0.620)	ug/L
Vanadium, Dissolved	ND(0.470)	ug/L
Yttrium, Dissolved	ND(0.310)	ug/L
P128 Zinc, Dissolved	1,910	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 3 65792	Unit
SP-1, Accommodations Wastewater Characterization		
Volatile and Semivolatile Organics		
P011 1,1,1-Trichloroethane	ND(5.00)	ug/L
P015 1,1,2,2-Tetrachloroethane	ND(5.00)	ug/L
P014 1,1,2-Trichloroethane	ND(5.00)	ug/L
P013 1,1-Dichloroethane	ND(5.00)	ug/L
P029 1,1-Dichloroethene	ND(5.00)	ug/L
P008 1,2,4-Trichlorobenzene	ND(11.0)	ug/L
P025 1,2-Dichlorobenzene	ND(11.0)	ug/L
P010 1,2-Dichloroethane	ND(5.00)	ug/L
P032 1,2-Dichloropropane	ND(5.00)	ug/L
P026 1,3-Dichlorobenzene	ND(11.0)	ug/L
P027 1,4-Dichlorobenzene	ND(11.0)	ug/L
P042 2,2'-Oxybis(1-chloropropane)	ND(11.0)	ug/L
P021 2,4,6-Trichlorophenol	ND(11.0)	ug/L
P031 2,4-Dichlorophenol	ND(11.0)	ug/L
P034 2,4-Dimethylphenol	ND(22.0)	ug/L
P059 2,4-Dinitrophenol	ND(56.0)	ug/L
P035 2,4-Dinitrotoluene	ND(11.0)	ug/L
P036 2,6-Dinitrotoluene	ND(11.0)	ug/L
P019 2-Chloroethyl vinyl ether	ND(10.0)	ug/L
P020 2-Chloronaphthalene	ND(11.0)	ug/L
P024 2-Chlorophenol	ND(11.0)	ug/L
P057 2-Nitrophenol	ND(11.0)	ug/L
P028 3,3'-Dichlorobenzidine	ND(22.0)	ug/L
4,6-Dinitro-2-methylphenol	ND(56.0)	ug/L
4-Bromophenyl phenyl ether	ND(11.0)	ug/L
P022 4-Chloro-3-methylphenol	ND(11.0)	ug/L
4-Chlorophenyl phenyl ether	ND(11.0)	ug/L
P058 4-Nitrophenol	ND(56.0)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 3 65792	Unit
SP-1, Accommodations Wastewater Characterization		
Volatile and Semivolatile Organics		
P001 Acenaphthene	ND(11.0)	ug/L
P077 Acenaphthylene	ND(11.0)	ug/L
P078 Anthracene	ND(11.0)	ug/L
P004 Benzene	ND(5.00)	ug/L
P072 Benzo(a)anthracene	ND(11.0)	ug/L
P073 Benzo(a)pyrene	ND(11.0)	ug/L
P074 Benzo(b)fluoranthene	ND(11.0)	ug/L
Benzo(g,h,i)perylene	ND(11.0)	ug/L
P075 Benzo(k)fluoranthene	ND(11.0)	ug/L
P043 Bis(2-chloroethoxy)methane	ND(11.0)	ug/L
Bis(2-Chloroethyl)ether	ND(11.0)	ug/L
P066 Bis(2-ethylhexyl) phthalate	ND(11.0)	ug/L
P048 Bromodichloromethane	ND(5.00)	ug/L
Bromoform	ND(5.00)	ug/L
P046 Bromomethane	ND(10.0)	ug/L
P067 Butyl benzyl phthalate	ND(11.0)	ug/L
Carbon tetrachloride	ND(5.00)	ug/L
P007 Chlorobenzene	ND(5.00)	ug/L
P016 Chloroethane	ND(10.0)	ug/L
P023 Chloroform	5.12	ug/L
P045 Chloromethane	ND(10.0)	ug/L
P076 Chrysene	ND(11.0)	ug/L
cis-1,3-Dichloropropene	ND(5.00)	ug/L
Dibenz(a,h)anthracene	ND(11.0)	ug/L
P051 Dibromochloromethane	ND(5.00)	ug/L
P070 Diethyl phthalate	ND(11.0)	ug/L
P071 Dimethyl phthalate	ND(11.0)	ug/L
P068 Di-n-butyl phthalate	ND(11.0)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 3 65792	Unit
SP-1, Accommodations Wastewater Characterization		
Volatile and Semivolatile Organics		
P069 Di-n-octyl phthalate	ND(11.0)	ug/L
P038 Ethylbenzene	ND(5.00)	ug/L
P039 Fluoranthene	ND(11.0)	ug/L
P080 Fluorene	ND(11.0)	ug/L
P009 Hexachlorobenzene	ND(11.0)	ug/L
P052 Hexachlorobutadiene	ND(11.0)	ug/L
P012 Hexachloroethane	ND(11.0)	ug/L
P083 Indeno(1,2,3-cd)pyrene	ND(11.0)	ug/L
P054 Isophorone	ND(11.0)	ug/L
P044 Methylene chloride	ND(5.00)	ug/L
P055 Naphthalene	ND(11.0)	ug/L
P056 Nitrobenzene	ND(11.0)	ug/L
N-Nitroso Di-n-propylamine	ND(11.0)	ug/L
P064 Pentachlorophenol	ND(56.0)	ug/L
P081 Phenanthrene	ND(11.0)	ug/L
P065 Phenol	62.0	ug/L
P084 Pyrene	ND(11.0)	ug/L
P085 Tetrachloroethene	ND(5.00)	ug/L
P086 Toluene	87.0	ug/L
P030 trans-1,2-Dichloroethene	ND(5.00)	ug/L
P033 trans-1,3-Dichloropropene	ND(5.00)	ug/L
P087 Trichloroethene	ND(5.00)	ug/L
Trichlorofluoromethane	ND(5.00)	ug/L
P088 Vinyl chloride	ND(10.0)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65796	Unit
SP-2, Laundry Wastewater Characterization		
Classical Pollutants		
Alkalinity	35.9	mg/L
Ammonia As Nitrogen (NH3-N)	ND(0.0500)	mg/L
Available Cyanide	11.6	ug/L
Biochemical Oxygen Demand (BOD)	106	mg/L
Chemical Oxygen Demand (COD)	323	mg/L
Chloride	13.0	mg/L
Hardness	2.00	mg/L
Hexane Extractable Material (HEM)	9.00	mg/L
Nitrate/Nitrite (NO2 + NO3-N)	0.0580	mg/L
Settleable residue	ND(0.120)	mL/L
Silica Gel Treated HEM (SGT-HEM)	ND(6.00)	mg/L
Sulfate	3.22	mg/L
P121 Total Cyanide	0.00700	mg/L
Total Dissolved Solids (TDS)	93.0	mg/L
Total Kjeldahl Nitrogen (TKN)	3.27	mg/L
Total Organic Carbon (TOC)	69.1	mg/L
Total Phosphorus	0.380	mg/L
Total Suspended Solids (TSS)	24.0	mg/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).
 NC - Not collected.
 ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65796	Unit
SP-2, Laundry Wastewater Characterization		
Total and Dissolved Metals		
Aluminum, Total	1,270	ug/L
P114 Antimony, Total	ND(2.00)	ug/L
P115 Arsenic, Total	ND(2.00)	ug/L
Barium, Total	12.7	ug/L
P117 Beryllium, Total	ND(0.0700)	ug/L
Boron, Total	148	ug/L
P118 Cadmium, Total	ND(0.0800)	ug/L
Calcium, Total	457	ug/L
P119 Chromium, Total	ND(0.270)	ug/L
Cobalt, Total	ND(0.660)	ug/L
P120 Copper, Total	35.3	ug/L
Iron, Total	117	ug/L
P122 Lead, Total	ND(0.620)	ug/L
Magnesium, Total	209	ug/L
Manganese, Total	3.34	ug/L
P123 Mercury, Total	ND(0.0500)	ug/L
Molybdenum, Total	ND(1.60)	ug/L
P124 Nickel, Total	3.09	ug/L
P125 Selenium, Total	ND(1.40)	ug/L
P126 Silver, Total	ND(0.770)	ug/L
Sodium, Total	19,400	ug/L
P127 Thallium, Total	ND(0.800)	ug/L
Tin, Total	ND(0.940)	ug/L
Titanium, Total	1.59	ug/L
Vanadium, Total	ND(0.470)	ug/L
Yttrium, Total	ND(0.310)	ug/L
P128 Zinc, Total	151	ug/L
Aluminum, Dissolved	317	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).
 NC - Not collected.
 ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65796	Unit
SP-2, Laundry Wastewater Characterization		
Total and Dissolved Metals		
P114 Antimony, Dissolved	ND(2.00)	ug/L
P115 Arsenic, Dissolved	ND(2.00)	ug/L
Barium, Dissolved	0.990	ug/L
P117 Beryllium, Dissolved	0.0800	ug/L
Boron, Dissolved	108	ug/L
P118 Cadmium, Dissolved	0.240	ug/L
Calcium, Dissolved	318	ug/L
P119 Chromium, Dissolved	0.980	ug/L
Cobalt, Dissolved	1.90	ug/L
P120 Copper, Dissolved	35.6	ug/L
Iron, Dissolved	94.8	ug/L
P122 Lead, Dissolved	2.36	ug/L
Magnesium, Dissolved	230	ug/L
Manganese, Dissolved	5.29	ug/L
P123 Mercury, Dissolved	ND(0.0500)	ug/L
Molybdenum, Dissolved	ND(1.60)	ug/L
P124 Nickel, Dissolved	4.46	ug/L
P125 Selenium, Dissolved	ND(1.40)	ug/L
P126 Silver, Dissolved	0.960	ug/L
Sodium, Dissolved	21,800	ug/L
P127 Thallium, Dissolved	ND(0.800)	ug/L
Tin, Dissolved	ND(0.940)	ug/L
Titanium, Dissolved	0.720	ug/L
Vanadium, Dissolved	ND(0.470)	ug/L
Yttrium, Dissolved	ND(0.310)	ug/L
P128 Zinc, Dissolved	82.4	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65796	Unit
SP-2, Laundry Wastewater Characterization		
Volatile and Semivolatile Organics		
P011 1,1,1-Trichloroethane	ND(5.00)	ug/L
P015 1,1,2,2-Tetrachloroethane	ND(5.00)	ug/L
P014 1,1,2-Trichloroethane	ND(5.00)	ug/L
P013 1,1-Dichloroethane	ND(5.00)	ug/L
P029 1,1-Dichloroethene	ND(5.00)	ug/L
P008 1,2,4-Trichlorobenzene	ND(10.0)	ug/L
P025 1,2-Dichlorobenzene	ND(10.0)	ug/L
P010 1,2-Dichloroethane	ND(5.00)	ug/L
P032 1,2-Dichloropropane	ND(5.00)	ug/L
P026 1,3-Dichlorobenzene	ND(10.0)	ug/L
P027 1,4-Dichlorobenzene	ND(10.0)	ug/L
P042 2,2'-Oxybis(1-chloropropane)	ND(10.0)	ug/L
P021 2,4,6-Trichlorophenol	ND(10.0)	ug/L
P031 2,4-Dichlorophenol	ND(10.0)	ug/L
P034 2,4-Dimethylphenol	ND(20.0)	ug/L
P059 2,4-Dinitrophenol	ND(50.0)	ug/L
P035 2,4-Dinitrotoluene	ND(10.0)	ug/L
P036 2,6-Dinitrotoluene	ND(10.0)	ug/L
P019 2-Chloroethyl vinyl ether	ND(10.0)	ug/L
P020 2-Chloronaphthalene	ND(10.0)	ug/L
P024 2-Chlorophenol	ND(10.0)	ug/L
P057 2-Nitrophenol	ND(10.0)	ug/L
P028 3,3'-Dichlorobenzidine	ND(20.0)	ug/L
4,6-Dinitro-2-methylphenol	ND(50.0)	ug/L
4-Bromophenyl phenyl ether	ND(10.0)	ug/L
P022 4-Chloro-3-methylphenol	ND(10.0)	ug/L
4-Chlorophenyl phenyl ether	ND(10.0)	ug/L
P058 4-Nitrophenol	ND(50.0)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65796	Unit
SP-2, Laundry Wastewater Characterization		
Volatile and Semivolatile Organics		
P001 Acenaphthene	ND(10.0)	ug/L
P077 Acenaphthylene	ND(10.0)	ug/L
P078 Anthracene	ND(10.0)	ug/L
P004 Benzene	ND(5.00)	ug/L
P072 Benzo(a)anthracene	ND(10.0)	ug/L
P073 Benzo(a)pyrene	ND(10.0)	ug/L
P074 Benzo(b)fluoranthene	ND(10.0)	ug/L
Benzo(g,h,i)perylene	ND(10.0)	ug/L
P075 Benzo(k)fluoranthene	ND(10.0)	ug/L
P043 Bis(2-chloroethoxy)methane	ND(10.0)	ug/L
Bis(2-Chloroethyl)ether	ND(10.0)	ug/L
P066 Bis(2-ethylhexyl) phthalate	42.0	ug/L
P048 Bromodichloromethane	ND(5.00)	ug/L
Bromoform	ND(5.00)	ug/L
P046 Bromomethane	ND(10.0)	ug/L
P067 Butyl benzyl phthalate	ND(10.0)	ug/L
Carbon tetrachloride	ND(5.00)	ug/L
P007 Chlorobenzene	ND(5.00)	ug/L
P016 Chloroethane	ND(10.0)	ug/L
P023 Chloroform	6.00	ug/L
P045 Chloromethane	ND(10.0)	ug/L
P076 Chrysene	ND(10.0)	ug/L
cis-1,3-Dichloropropene	ND(5.00)	ug/L
Dibenz(a,h)anthracene	ND(10.0)	ug/L
P051 Dibromochloromethane	ND(5.00)	ug/L
P070 Diethyl phthalate	ND(10.0)	ug/L
P071 Dimethyl phthalate	ND(10.0)	ug/L
P068 Di-n-butyl phthalate	ND(10.0)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65796	Unit
SP-2, Laundry Wastewater Characterization		
Volatile and Semivolatile Organics		
P069 Di-n-octyl phthalate	ND(10.0)	ug/L
P038 Ethylbenzene	ND(5.00)	ug/L
P039 Fluoranthene	ND(10.0)	ug/L
P080 Fluorene	ND(10.0)	ug/L
P009 Hexachlorobenzene	ND(10.0)	ug/L
P052 Hexachlorobutadiene	ND(10.0)	ug/L
P012 Hexachloroethane	ND(10.0)	ug/L
P083 Indeno(1,2,3-cd)pyrene	ND(10.0)	ug/L
P054 Isophorone	ND(10.0)	ug/L
P044 Methylene chloride	ND(5.00)	ug/L
P055 Naphthalene	ND(10.0)	ug/L
P056 Nitrobenzene	ND(10.0)	ug/L
N-Nitroso Di-n-propylamine	ND(10.0)	ug/L
P064 Pentachlorophenol	ND(50.0)	ug/L
P081 Phenanthrene	ND(10.0)	ug/L
P065 Phenol	52.0	ug/L
P084 Pyrene	ND(10.0)	ug/L
P085 Tetrachloroethene	ND(5.00)	ug/L
P086 Toluene	ND(5.00)	ug/L
P030 trans-1,2-Dichloroethene	ND(5.00)	ug/L
P033 trans-1,3-Dichloropropene	ND(5.00)	ug/L
P087 Trichloroethene	ND(5.00)	ug/L
Trichlorofluoromethane	ND(5.00)	ug/L
P088 Vinyl chloride	ND(10.0)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65796	Unit
SP-2, Laundry Wastewater Characterization		
Dioxins and Furans		
1,2,3,4,6,7,8-HpCDD	ND(61.3)	pg/L
1,2,3,4,6,7,8-HpCDF	ND(61.3)	pg/L
1,2,3,4,7,8,9-HpCDF	ND(61.3)	pg/L
1,2,3,4,7,8-HxCDD	ND(61.3)	pg/L
1,2,3,4,7,8-HxCDF	ND(61.3)	pg/L
1,2,3,6,7,8-HxCDD	ND(61.3)	pg/L
1,2,3,6,7,8-HxCDF	ND(61.3)	pg/L
1,2,3,7,8,9-HxCDD	ND(61.3)	pg/L
1,2,3,7,8,9-HxCDF	ND(61.3)	pg/L
1,2,3,7,8-PeCDD	ND(61.3)	pg/L
1,2,3,7,8-PeCDF	ND(61.3)	pg/L
2,3,4,6,7,8-HxCDF	ND(61.3)	pg/L
2,3,4,7,8-PeCDF	ND(61.3)	pg/L
2,3,7,8-TCDD	ND(12.3)	pg/L
2,3,7,8-TCDF	ND(12.3)	pg/L
Octachlorodibenzo-p-dioxin	ND(123)	pg/L
Octachlorodibenzofuran	ND(123)	pg/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 2 65800	Unit
SP-3, Galley Wastewater Characterization		
Classical Pollutants		
Alkalinity	75.9	mg/L
Ammonia As Nitrogen (NH3-N)	ND(0.0500)	mg/L
Available Cyanide	ND(2.00)	ug/L
Biochemical Oxygen Demand (BOD)	801	mg/L
Chemical Oxygen Demand (COD)	1,740	mg/L
Chloride	45.0	mg/L
Hardness	12.2	mg/L
Hexane Extractable Material (HEM)	51.0	mg/L
Nitrate/Nitrite (NO2 + NO3-N)	0.0270	mg/L
Settleable residue	3.40	mL/L
Silica Gel Treated HEM (SGT-HEM)	ND(6.00)	mg/L
Sulfate	108	mg/L
P121 Total Cyanide	ND(0.00500)	mg/L
Total Dissolved Solids (TDS)	631	mg/L
Total Kjeldahl Nitrogen (TKN)	40.6	mg/L
Total Organic Carbon (TOC)	298	mg/L
Total Phosphorus	10.6	mg/L
Total Suspended Solids (TSS)	564	mg/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).
 NC - Not collected.
 ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 2 65800	Unit
SP-3, Galley Wastewater Characterization		
Total and Dissolved Metals		
Aluminum, Total	178	ug/L
P114 Antimony, Total	ND(2.00)	ug/L
P115 Arsenic, Total	2.89	ug/L
Barium, Total	222	ug/L
P117 Beryllium, Total	ND(0.0700)	ug/L
Boron, Total	180	ug/L
P118 Cadmium, Total	ND(0.0800)	ug/L
Calcium, Total	2,580	ug/L
P119 Chromium, Total	3.53	ug/L
Cobalt, Total	ND(0.660)	ug/L
P120 Copper, Total	417	ug/L
Iron, Total	579	ug/L
P122 Lead, Total	63.8	ug/L
Magnesium, Total	1,400	ug/L
Manganese, Total	22.3	ug/L
P123 Mercury, Total	ND(0.0500)	ug/L
Molybdenum, Total	ND(1.60)	ug/L
P124 Nickel, Total	47.2	ug/L
P125 Selenium, Total	ND(1.40)	ug/L
P126 Silver, Total	ND(0.770)	ug/L
Sodium, Total	58,800	ug/L
P127 Thallium, Total	ND(0.800)	ug/L
Tin, Total	2.10	ug/L
Titanium, Total	2.17	ug/L
Vanadium, Total	ND(0.470)	ug/L
Yttrium, Total	ND(0.310)	ug/L
P128 Zinc, Total	3,260	ug/L
Aluminum, Dissolved	108	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 2 65800	Unit
SP-3, Galley Wastewater Characterization		
Total and Dissolved Metals		
P114 Antimony, Dissolved	ND(2.00)	ug/L
P115 Arsenic, Dissolved	3.37	ug/L
Barium, Dissolved	127	ug/L
P117 Beryllium, Dissolved	ND(0.0700)	ug/L
Boron, Dissolved	244	ug/L
P118 Cadmium, Dissolved	0.0850	ug/L
Calcium, Dissolved	2,190	ug/L
P119 Chromium, Dissolved	1.43	ug/L
Cobalt, Dissolved	1.96	ug/L
P120 Copper, Dissolved	335	ug/L
Iron, Dissolved	332	ug/L
P122 Lead, Dissolved	30.7	ug/L
Magnesium, Dissolved	1,350	ug/L
Manganese, Dissolved	21.3	ug/L
P123 Mercury, Dissolved	ND(0.0500)	ug/L
Molybdenum, Dissolved	ND(1.60)	ug/L
P124 Nickel, Dissolved	49.1	ug/L
P125 Selenium, Dissolved	ND(1.40)	ug/L
P126 Silver, Dissolved	ND(0.770)	ug/L
Sodium, Dissolved	66,800	ug/L
P127 Thallium, Dissolved	ND(0.800)	ug/L
Tin, Dissolved	1.38	ug/L
Titanium, Dissolved	ND(0.620)	ug/L
Vanadium, Dissolved	ND(0.470)	ug/L
Yttrium, Dissolved	ND(0.310)	ug/L
P128 Zinc, Dissolved	2,390	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 2 65800	Unit
SP-3, Galley Wastewater Characterization		
Volatile and Semivolatile Organics		
P011 1,1,1-Trichloroethane	ND(5.00)	ug/L
P015 1,1,2,2-Tetrachloroethane	ND(5.00)	ug/L
P014 1,1,2-Trichloroethane	ND(5.00)	ug/L
P013 1,1-Dichloroethane	ND(5.00)	ug/L
P029 1,1-Dichloroethene	ND(5.00)	ug/L
P008 1,2,4-Trichlorobenzene	ND(10.0)	ug/L
P025 1,2-Dichlorobenzene	ND(10.0)	ug/L
P010 1,2-Dichloroethane	ND(5.00)	ug/L
P032 1,2-Dichloropropane	ND(5.00)	ug/L
P026 1,3-Dichlorobenzene	ND(10.0)	ug/L
P027 1,4-Dichlorobenzene	ND(10.0)	ug/L
P042 2,2'-Oxybis(1-chloropropane)	ND(10.0)	ug/L
P021 2,4,6-Trichlorophenol	ND(10.0)	ug/L
P031 2,4-Dichlorophenol	ND(10.0)	ug/L
P034 2,4-Dimethylphenol	ND(20.0)	ug/L
P059 2,4-Dinitrophenol	ND(50.0)	ug/L
P035 2,4-Dinitrotoluene	ND(10.0)	ug/L
P036 2,6-Dinitrotoluene	ND(10.0)	ug/L
P019 2-Chloroethyl vinyl ether	ND(10.0)	ug/L
P020 2-Chloronaphthalene	ND(10.0)	ug/L
P024 2-Chlorophenol	ND(10.0)	ug/L
P057 2-Nitrophenol	ND(10.0)	ug/L
P028 3,3'-Dichlorobenzidine	ND(20.0)	ug/L
4,6-Dinitro-2-methylphenol	ND(50.0)	ug/L
4-Bromophenyl phenyl ether	ND(10.0)	ug/L
P022 4-Chloro-3-methylphenol	33.0	ug/L
4-Chlorophenyl phenyl ether	ND(10.0)	ug/L
P058 4-Nitrophenol	ND(50.0)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 2 65800	Unit
SP-3, Galley Wastewater Characterization		
Volatile and Semivolatile Organics		
P001 Acenaphthene	ND(10.0)	ug/L
P077 Acenaphthylene	ND(10.0)	ug/L
P078 Anthracene	ND(10.0)	ug/L
P004 Benzene	ND(5.00)	ug/L
P072 Benzo(a)anthracene	ND(10.0)	ug/L
P073 Benzo(a)pyrene	ND(10.0)	ug/L
P074 Benzo(b)fluoranthene	ND(10.0)	ug/L
Benzo(g,h,i)perylene	ND(10.0)	ug/L
P075 Benzo(k)fluoranthene	ND(10.0)	ug/L
P043 Bis(2-chloroethoxy)methane	ND(10.0)	ug/L
Bis(2-Chloroethyl)ether	ND(10.0)	ug/L
P066 Bis(2-ethylhexyl) phthalate	22.0	ug/L
P048 Bromodichloromethane	ND(5.00)	ug/L
Bromoform	ND(5.00)	ug/L
P046 Bromomethane	ND(10.0)	ug/L
P067 Butyl benzyl phthalate	ND(10.0)	ug/L
Carbon tetrachloride	ND(5.00)	ug/L
P007 Chlorobenzene	ND(5.00)	ug/L
P016 Chloroethane	ND(10.0)	ug/L
P023 Chloroform	ND(5.00)	ug/L
P045 Chloromethane	ND(10.0)	ug/L
P076 Chrysene	ND(10.0)	ug/L
cis-1,3-Dichloropropene	ND(5.00)	ug/L
Dibenz(a,h)anthracene	ND(10.0)	ug/L
P051 Dibromochloromethane	ND(5.00)	ug/L
P070 Diethyl phthalate	ND(10.0)	ug/L
P071 Dimethyl phthalate	ND(10.0)	ug/L
P068 Di-n-butyl phthalate	ND(10.0)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 2 65800	Unit
SP-3, Galley Wastewater Characterization		
Volatile and Semivolatile Organics		
P069 Di-n-octyl phthalate	ND(10.0)	ug/L
P038 Ethylbenzene	ND(5.00)	ug/L
P039 Fluoranthene	ND(10.0)	ug/L
P080 Fluorene	ND(10.0)	ug/L
P009 Hexachlorobenzene	ND(10.0)	ug/L
P052 Hexachlorobutadiene	ND(10.0)	ug/L
P012 Hexachloroethane	ND(10.0)	ug/L
P083 Indeno(1,2,3-cd)pyrene	ND(10.0)	ug/L
P054 Isophorone	ND(10.0)	ug/L
P044 Methylene chloride	ND(5.00)	ug/L
P055 Naphthalene	ND(10.0)	ug/L
P056 Nitrobenzene	ND(10.0)	ug/L
N-Nitroso Di-n-propylamine	ND(10.0)	ug/L
P064 Pentachlorophenol	ND(50.0)	ug/L
P081 Phenanthrene	ND(10.0)	ug/L
P065 Phenol	64.0	ug/L
P084 Pyrene	ND(10.0)	ug/L
P085 Tetrachloroethene	ND(5.00)	ug/L
P086 Toluene	ND(5.00)	ug/L
P030 trans-1,2-Dichloroethene	ND(5.00)	ug/L
P033 trans-1,3-Dichloropropene	ND(5.00)	ug/L
P087 Trichloroethene	ND(5.00)	ug/L
Trichlorofluoromethane	ND(5.00)	ug/L
P088 Vinyl chloride	ND(10.0)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 2 65800	Unit
SP-3, Galley Wastewater Characterization		
Pesticides		
1,2-Dibromo-3-chloropropane	ND(0.200)	ug/L
4,4'-DDD	ND(0.200)	ug/L
4,4'-DDE	ND(0.100)	ug/L
4,4'-DDT	ND(0.100)	ug/L
Acephate	ND(20.0)	ug/L
Alachlor	ND(0.200)	ug/L
Aldrin	ND(0.200)	ug/L
alpha-BHC	ND(0.0500)	ug/L
alpha-Chlordane	ND(0.100)	ug/L
Atrazine	ND(10.0)	ug/L
Azinphos Ethyl	ND(2.00)	ug/L
Azinphos Methyl	ND(1.00)	ug/L
Benfluralin	ND(0.200)	ug/L
beta-BHC	ND(0.100)	ug/L
Bromacil	ND(1.00)	ug/L
Bromoxynil Octanoate	ND(0.500)	ug/L
Butachlor	ND(0.500)	ug/L
Captafol	ND(2.00)	ug/L
Captan	ND(1.00)	ug/L
Carbophenothion	ND(1.00)	ug/L
Chlorfenvinphos	ND(2.00)	ug/L
Chlorobenzilate	ND(1.00)	ug/L
Chloroneb	ND(1.00)	ug/L
Chloropropylate	ND(1.00)	ug/L
Chlorothalonil	ND(0.200)	ug/L
Chlorpyrifos	ND(2.00)	ug/L
cis-Permethrin	ND(2.00)	ug/L
Coumaphos	ND(5.00)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 2 65800	Unit
SP-3, Galley Wastewater Characterization		
Pesticides		
Crotoxyphos	ND(5.00)	ug/L
Dacthal (DCPS)	ND(0.0500)	ug/L
DEF	ND(2.00)	ug/L
delta-BHC	ND(0.0500)	ug/L
Demeton A	ND(4.00)	ug/L
Demeton B	ND(4.00)	ug/L
Diallate A	ND(2.00)	ug/L
Diallate B	ND(2.00)	ug/L
Diazinon	ND(2.00)	ug/L
Dichlofenthion	ND(2.00)	ug/L
Dichlone	ND(0.200)	ug/L
Dichlorvos	ND(5.00)	ug/L
Dicofol	ND(1.00)	ug/L
Dicrotophos	ND(2.00)	ug/L
Dieldrin	ND(0.0400)	ug/L
Dimethoate	ND(2.00)	ug/L
Dioxathion	ND(5.00)	ug/L
Disulfoton	ND(2.00)	ug/L
Endosulfan I	ND(0.100)	ug/L
Endosulfan II	ND(1.00)	ug/L
Endosulfan Sulfate	ND(0.100)	ug/L
Endrin	ND(0.200)	ug/L
Endrin Aldehyde	ND(0.100)	ug/L
Endrin Ketone	ND(0.100)	ug/L
EPN	ND(2.00)	ug/L
Ethalfuralin	ND(0.100)	ug/L
Ethion	ND(2.00)	ug/L
Ethoprop	ND(2.00)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 2 65800	Unit
SP-3, Galley Wastewater Characterization		
Pesticides		
Etridiazole	ND(0.200)	ug/L
Famphur	ND(5.00)	ug/L
Fenarimol	ND(0.200)	ug/L
Fensulfothion	ND(5.00)	ug/L
Fenthion	ND(2.00)	ug/L
gamma-BHC	ND(0.0500)	ug/L
gamma-Chlordane	ND(0.0500)	ug/L
Heptachlor	ND(0.100)	ug/L
Heptachlor Epoxide	ND(0.0500)	ug/L
Hexamethylphosphoramide	ND(2.00)	ug/L
Isodrin	ND(0.100)	ug/L
Isopropalin	ND(0.200)	ug/L
Kepone	ND(1.00)	ug/L
Leptophos	ND(2.00)	ug/L
Malathion	ND(2.00)	ug/L
Merphos A	ND(2.00)	ug/L
Merphos B	ND(2.00)	ug/L
Methamidophos	ND(20.0)	ug/L
Methoxychlor	ND(0.200)	ug/L
Methyl Parathion	ND(2.00)	ug/L
Methyl Trithion	ND(5.00)	ug/L
Metribuzin	ND(0.100)	ug/L
Mevinphos	ND(5.00)	ug/L
Mirex	ND(0.200)	ug/L
Monocrotophos	ND(20.0)	ug/L
Naled	ND(2.00)	ug/L
Nitrofen	ND(0.200)	ug/L
Norflurazon	ND(1.00)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 2 65800	Unit
SP-3, Galley Wastewater Characterization		
Pesticides		
Parathion (ethyl)	ND(2.00)	ug/L
PCB 1016	ND(1.00)	ug/L
PCB 1221	ND(1.00)	ug/L
PCB 1232	ND(1.00)	ug/L
PCB 1242	ND(1.00)	ug/L
PCB 1248	ND(1.00)	ug/L
PCB 1254	ND(1.00)	ug/L
PCB 1260	ND(1.00)	ug/L
Pendamethalin	ND(0.500)	ug/L
Pentachloronitrobenzene (PCNB)	ND(0.0500)	ug/L
Perthane	ND(10.0)	ug/L
Phorate	ND(2.00)	ug/L
Phosmet	ND(5.00)	ug/L
Phosphamidon E	ND(1.00)	ug/L
Phosphamidon Z	ND(1.00)	ug/L
Propachlor	ND(0.100)	ug/L
Propanil	ND(1.00)	ug/L
Propazine	ND(1.00)	ug/L
Ronnel	ND(2.00)	ug/L
Simazine	ND(8.00)	ug/L
Strobane	ND(5.00)	ug/L
Sulfotep	ND(2.00)	ug/L
Sulprofos	ND(2.00)	ug/L
Tepp	ND(2.00)	ug/L
Terbacil	ND(2.00)	ug/L
Terbufos	ND(2.00)	ug/L
Terbuthylazine	ND(5.00)	ug/L
Tetrachlorvinphos	ND(2.00)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).
 NC - Not collected.
 ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 2 65800	Unit
SP-3, Galley Wastewater Characterization		
Pesticides		
Tokuthion	ND(2.00)	ug/L
Toxaphene	ND(5.00)	ug/L
trans-Permethrin	ND(2.00)	ug/L
Triadimefon	ND(1.00)	ug/L
Trichlorfon	ND(5.00)	ug/L
Trichloronate	ND(2.00)	ug/L
Tricresylphosphate	ND(20.0)	ug/L
Trifluralin	ND(0.100)	ug/L
Trimethylphosphate	ND(2.00)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).
NC - Not collected.
ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 5 65808	Unit
SP-5, Food Pulper Wastewater Characterization, Centrifuge		
Classical Pollutants		
Alkalinity	ND(200)	mg/L
Ammonia As Nitrogen (NH3-N)	5.96	mg/L
Available Cyanide	0.0534	ug/L
Biochemical Oxygen Demand (BOD)	50,200	mg/L
Chemical Oxygen Demand (COD)	25,300	mg/L
Chloride	2,250	mg/L
Nitrate/Nitrite (NO2 + NO3-N)	0.951	mg/L
Settleable residue	1,000	mL/L
Sulfate	612	mg/L
P121 Total Cyanide	ND(0.249)	mg/L
Total Kjeldahl Nitrogen (TKN)	362	mg/L
Total Organic Carbon (TOC)	77,500	mg/L
Total Phosphorus	371	mg/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).
 NC - Not collected.
 ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 5 65808	Unit
SP-5, Food Pulper Wastewater Characterization, Centrifuge		
Total and Dissolved Metals		
Aluminum, Total	3.92	ug/L
P114 Antimony, Total	ND(0.0411)	ug/L
P115 Arsenic, Total	ND(0.0411)	ug/L
Barium, Total	1.14	ug/L
P117 Beryllium, Total	ND(0.00137)	ug/L
Boron, Total	ND(0.0630)	ug/L
P118 Cadmium, Total	0.0151	ug/L
Calcium, Total	630	ug/L
P119 Chromium, Total	0.532	ug/L
Cobalt, Total	ND(0.00548)	ug/L
P120 Copper, Total	2.32	ug/L
Iron, Total	112	ug/L
P122 Lead, Total	0.103	ug/L
Magnesium, Total	105	ug/L
Manganese, Total	5.22	ug/L
P123 Mercury, Total	ND(0.00274)	ug/L
Molybdenum, Total	0.0562	ug/L
P124 Nickel, Total	0.285	ug/L
P125 Selenium, Total	0.110	ug/L
P126 Silver, Total	ND(0.0151)	ug/L
Sodium, Total	1,050	ug/L
P127 Thallium, Total	ND(0.699)	ug/L
Tin, Total	ND(0.0493)	ug/L
Titanium, Total	0.210	ug/L
Vanadium, Total	ND(0.0137)	ug/L
Yttrium, Total	ND(0.00822)	ug/L
P128 Zinc, Total	3.22	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 5 65808	Unit
SP-5, Food Pulper Wastewater Characterization, Centrifuge		
Volatile and Semivolatile Organics		
P011 1,1,1-Trichloroethane	ND(0.685)	ug/L
P015 1,1,2,2-Tetrachloroethane	ND(0.685)	ug/L
P014 1,1,2-Trichloroethane	ND(0.685)	ug/L
P013 1,1-Dichloroethane	ND(0.685)	ug/L
P029 1,1-Dichloroethene	ND(0.685)	ug/L
P008 1,2,4-Trichlorobenzene	ND(233)	ug/L
P025 1,2-Dichlorobenzene	ND(233)	ug/L
P010 1,2-Dichloroethane	ND(0.685)	ug/L
P032 1,2-Dichloropropane	ND(0.685)	ug/L
P026 1,3-Dichlorobenzene	ND(233)	ug/L
P027 1,4-Dichlorobenzene	ND(233)	ug/L
P042 2,2'-Oxybis(1-chloropropane)	ND(233)	ug/L
P021 2,4,6-Trichlorophenol	ND(233)	ug/L
P031 2,4-Dichlorophenol	ND(233)	ug/L
P034 2,4-Dimethylphenol	ND(452)	ug/L
P059 2,4-Dinitrophenol	ND(1,140)	ug/L
P035 2,4-Dinitrotoluene	ND(233)	ug/L
P036 2,6-Dinitrotoluene	ND(233)	ug/L
P019 2-Chloroethyl vinyl ether	ND(1.37)	ug/L
P020 2-Chloronaphthalene	ND(233)	ug/L
P024 2-Chlorophenol	ND(233)	ug/L
P057 2-Nitrophenol	ND(233)	ug/L
P028 3,3'-Dichlorobenzidine	ND(452)	ug/L
4,6-Dinitro-2-methylphenol	ND(1,140)	ug/L
4-Bromophenyl phenyl ether	ND(233)	ug/L
P022 4-Chloro-3-methylphenol	ND(233)	ug/L
4-Chlorophenyl phenyl ether	ND(233)	ug/L
P058 4-Nitrophenol	ND(1,140)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 5 65808	Unit
SP-5, Food Pulper Wastewater Characterization, Centrifuge		
Volatile and Semivolatile Organics		
P001 Acenaphthene	ND(233)	ug/L
P077 Acenaphthylene	ND(233)	ug/L
P078 Anthracene	ND(233)	ug/L
P004 Benzene	ND(0.685)	ug/L
P072 Benzo(a)anthracene	ND(233)	ug/L
P073 Benzo(a)pyrene	ND(233)	ug/L
P074 Benzo(b)fluoranthene	ND(233)	ug/L
Benzo(g,h,i)perylene	ND(233)	ug/L
P075 Benzo(k)fluoranthene	ND(233)	ug/L
P043 Bis(2-chloroethoxy)methane	ND(233)	ug/L
Bis(2-Chloroethyl)ether	ND(233)	ug/L
P066 Bis(2-ethylhexyl) phthalate	ND(233)	ug/L
P048 Bromodichloromethane	ND(0.685)	ug/L
Bromoform	ND(0.685)	ug/L
P046 Bromomethane	ND(1.37)	ug/L
P067 Butyl benzyl phthalate	ND(233)	ug/L
Carbon tetrachloride	ND(0.685)	ug/L
P007 Chlorobenzene	ND(0.685)	ug/L
P016 Chloroethane	ND(1.37)	ug/L
P023 Chloroform	ND(0.685)	ug/L
P045 Chloromethane	ND(1.37)	ug/L
P076 Chrysene	ND(233)	ug/L
cis-1,3-Dichloropropene	ND(0.685)	ug/L
Dibenz(a,h)anthracene	ND(233)	ug/L
P051 Dibromochloromethane	ND(0.685)	ug/L
P070 Diethyl phthalate	ND(233)	ug/L
P071 Dimethyl phthalate	ND(233)	ug/L
P068 Di-n-butyl phthalate	ND(233)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 5 65808	Unit
SP-5, Food Pulper Wastewater Characterization, Centrifuge		
Volatile and Semivolatile Organics		
P069 Di-n-octyl phthalate	ND(233)	ug/L
P038 Ethylbenzene	ND(0.685)	ug/L
P039 Fluoranthene	ND(233)	ug/L
P080 Fluorene	ND(233)	ug/L
P009 Hexachlorobenzene	ND(233)	ug/L
P052 Hexachlorobutadiene	ND(233)	ug/L
P012 Hexachloroethane	ND(233)	ug/L
P083 Indeno(1,2,3-cd)pyrene	ND(233)	ug/L
P054 Isophorone	ND(233)	ug/L
P044 Methylene chloride	ND(0.685)	ug/L
P055 Naphthalene	ND(233)	ug/L
P056 Nitrobenzene	ND(233)	ug/L
N-Nitroso Di-n-propylamine	ND(233)	ug/L
P064 Pentachlorophenol	ND(1,140)	ug/L
P081 Phenanthrene	ND(233)	ug/L
P065 Phenol	ND(233)	ug/L
P084 Pyrene	ND(233)	ug/L
P085 Tetrachloroethene	ND(0.685)	ug/L
P086 Toluene	ND(0.685)	ug/L
P030 trans-1,2-Dichloroethene	ND(0.685)	ug/L
P033 trans-1,3-Dichloropropene	ND(0.685)	ug/L
P087 Trichloroethene	ND(0.685)	ug/L
Trichlorofluoromethane	ND(0.685)	ug/L
P088 Vinyl chloride	ND(1.37)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam

	Day 1 65812	Day 2 65816	Day 3 65820	Day 4 65824	Day 5 65828	Unit
SP-6, Influent to Graywater Treatment System						
Classical Pollutants						
Alkalinity	31.8	43.1	56.4	50.2	35.9	mg/L
Ammonia As Nitrogen (NH ₃ -N)	ND(0.0500)	ND(0.0500)	ND(0.0500)	ND(0.0500)	ND(0.0500)	mg/L
Available Cyanide	3.91	2.84	3.18	3.35	2.21	ug/L
Biochemical Oxygen Demand (BOD)	149	132	146	143	145	mg/L
Chemical Oxygen Demand (COD)	538	335	403	359	392	mg/L
Chloride	13.0	13.0	25.0	25.0	17.0	mg/L
Hardness	5.39	5.18	5.42	8.88	5.82	mg/L
Hexane Extractable Material (HEM)	143	37.0	51.0	47.0	43.0	mg/L
Nitrate/Nitrite (NO ₂ + NO ₃ -N)	0.0110	0.0160	0.0160	0.120	0.0170	mg/L
Settleable residue	0.530	1.10	0.590	3.00	0.500	mL/L
Silica Gel Treated HEM (SGT-HEM)	7.00	ND(6.00)	ND(6.00)	ND(6.00)	ND(6.00)	mg/L
Sulfate	11.9	12.0	12.2	10.8	6.91	mg/L
P121 Total Cyanide	ND(0.00500)	ND(0.00500)	ND(0.00500)	ND(0.00500)	ND(0.00500)	mg/L
Total Dissolved Solids (TDS)	86.0	95.0	132	160	64.0	mg/L
Total Kjeldahl Nitrogen (TKN)	9.87	0.380	10.2	15.5	9.44	mg/L
Total Organic Carbon (TOC)	54.7	44.5	60.4	56.3	51.3	mg/L
Total Phosphorus	1.47	3.94	1.13	1.13	0.850	mg/L
Total Suspended Solids (TSS)	95.0	73.0	86.0	99.0	93.0	mg/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65812	Day 2 65816	Day 3 65820	Day 4 65824	Day 5 65828	Unit
SP-6, Influent to Graywater Treatment System						
Total and Dissolved Metals						
Aluminum, Total	653	672	702	1,020	673	ug/L
P114 Antimony, Total	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ug/L
P115 Arsenic, Total	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ug/L
Barium, Total	134	134	137	137	135	ug/L
P117 Beryllium, Total	ND(0.0700)	ND(0.0700)	ND(0.0700)	ND(0.0700)	ND(0.0700)	ug/L
Boron, Total	ND(18.0)	ND(18.0)	ND(18.0)	ND(18.0)	74.3	ug/L
P118 Cadmium, Total	ND(0.0800)	ND(0.0800)	ND(0.0800)	ND(0.0800)	ND(0.0800)	ug/L
Calcium, Total	1,640	1,570	1,600	1,960	1,640	ug/L
P119 Chromium, Total	2.76	3.50	3.80	9.52	6.67	ug/L
Cobalt, Total	ND(0.660)	ND(0.660)	ND(0.660)	ND(0.660)	ND(0.660)	ug/L
P120 Copper, Total	156	289	219	197	204	ug/L
Iron, Total	366	339	334	423	406	ug/L
P122 Lead, Total	5.41	9.34	7.36	6.91	7.88	ug/L
Magnesium, Total	317	305	346	968	417	ug/L
Manganese, Total	7.65	6.95	7.61	8.87	8.19	ug/L
P123 Mercury, Total	ND(0.0500)	ND(0.0500)	ND(0.0500)	0.0550	0.0850	ug/L
Molybdenum, Total	ND(1.60)	ND(1.60)	ND(1.60)	ND(1.60)	ND(1.60)	ug/L
P124 Nickel, Total	14.5	17.7	16.6	18.5	18.3	ug/L
P125 Selenium, Total	ND(1.40)	ND(1.40)	ND(1.40)	ND(1.40)	ND(1.40)	ug/L
P126 Silver, Total	ND(0.770)	ND(0.770)	ND(0.770)	2.27	2.27	ug/L
Sodium, Total	16,000	20,300	24,800	26,400	18,800	ug/L
P127 Thallium, Total	ND(0.800)	ND(0.800)	ND(0.800)	ND(0.800)	ND(0.800)	ug/L
Tin, Total	ND(0.940)	1.03	ND(0.940)	6.92	2.45	ug/L
Titanium, Total	1.47	1.69	1.76	3.51	1.79	ug/L
Vanadium, Total	0.810	ND(0.470)	0.840	0.890	ND(0.470)	ug/L
Yttrium, Total	ND(0.310)	ND(0.310)	ND(0.310)	ND(0.310)	ND(0.310)	ug/L
P128 Zinc, Total	667	598	924	870	895	ug/L
Aluminum, Dissolved	279	223	183	209	271	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65812	Day 2 65816	Day 3 65820	Day 4 65824	Day 5 65828	Unit
SP-6, Influent to Graywater Treatment System						
Total and Dissolved Metals						
P114 Antimony, Dissolved	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ug/L
P115 Arsenic, Dissolved	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ug/L
Barium, Dissolved	73.5	40.1	25.9	25.3	78.4	ug/L
P117 Beryllium, Dissolved	ND(0.0700)	ND(0.0700)	ND(0.0700)	ND(0.0700)	ND(0.0700)	ug/L
Boron, Dissolved	114	95.0	59.0	69.6	ND(18.0)	ug/L
P118 Cadmium, Dissolved	ND(0.0800)	ND(0.0800)	ND(0.0800)	ND(0.0800)	ND(0.0800)	ug/L
Calcium, Dissolved	1,450	1,130	761	1,200	1,630	ug/L
P119 Chromium, Dissolved	0.390	0.760	0.660	0.640	0.370	ug/L
Cobalt, Dissolved	2.14	1.72	3.16	3.85	5.11	ug/L
P120 Copper, Dissolved	70.6	205	100	77.1	92.0	ug/L
Iron, Dissolved	199	192	165	179	212	ug/L
P122 Lead, Dissolved	1.01	4.47	1.84	1.58	2.20	ug/L
Magnesium, Dissolved	268	239	234	929	464	ug/L
Manganese, Dissolved	9.00	7.30	9.43	11.0	14.9	ug/L
P123 Mercury, Dissolved	ND(0.0500)	ND(0.0500)	ND(0.0500)	ND(0.0500)	ND(0.0500)	ug/L
Molybdenum, Dissolved	ND(1.60)	ND(1.60)	ND(1.60)	ND(1.60)	ND(1.60)	ug/L
P124 Nickel, Dissolved	13.7	15.5	12.7	12.6	14.6	ug/L
P125 Selenium, Dissolved	ND(1.40)	ND(1.40)	ND(1.40)	ND(1.40)	ND(1.40)	ug/L
P126 Silver, Dissolved	ND(0.770)	ND(0.770)	ND(0.770)	ND(0.770)	ND(0.770)	ug/L
Sodium, Dissolved	19,100	23,900	23,800	30,700	23,200	ug/L
P127 Thallium, Dissolved	ND(0.800)	ND(0.800)	ND(0.800)	ND(0.800)	ND(0.800)	ug/L
Tin, Dissolved	ND(0.940)	ND(0.940)	ND(0.940)	1.04	ND(0.940)	ug/L
Titanium, Dissolved	0.920	ND(0.620)	ND(0.620)	ND(0.620)	0.630	ug/L
Vanadium, Dissolved	ND(0.470)	ND(0.470)	ND(0.470)	ND(0.470)	ND(0.470)	ug/L
Yttrium, Dissolved	ND(0.310)	ND(0.310)	ND(0.310)	ND(0.310)	ND(0.310)	ug/L
P128 Zinc, Dissolved	130	134	252	160	172	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam

	Day 1 65812	Day 2 65816	Day 3 65820	Day 4 65824	Day 5 65828	Unit
SP-6, Influent to Graywater Treatment System						
Volatile and Semivolatile Organics						
P011 1,1,1-Trichloroethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P015 1,1,2,2-Tetrachloroethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P014 1,1,2-Trichloroethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P013 1,1-Dichloroethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P029 1,1-Dichloroethene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P008 1,2,4-Trichlorobenzene	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P025 1,2-Dichlorobenzene	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P010 1,2-Dichloroethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P032 1,2-Dichloropropane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P026 1,3-Dichlorobenzene	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P027 1,4-Dichlorobenzene	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P042 2,2'-Oxybis(1-chloropropane)	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P021 2,4,6-Trichlorophenol	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P031 2,4-Dichlorophenol	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P034 2,4-Dimethylphenol	ND(20.0)	ND(20.0)	ND(22.0)	ND(21.0)	ND(24.0)	ug/L
P059 2,4-Dinitrophenol	ND(50.0)	ND(50.0)	ND(56.0)	ND(52.0)	ND(59.0)	ug/L
P035 2,4-Dinitrotoluene	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P036 2,6-Dinitrotoluene	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P019 2-Chloroethyl vinyl ether	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ug/L
P020 2-Chloronaphthalene	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P024 2-Chlorophenol	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P057 2-Nitrophenol	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P028 3,3'-Dichlorobenzidine	ND(20.0)	ND(20.0)	ND(22.0)	ND(21.0)	ND(24.0)	ug/L
4,6-Dinitro-2-methylphenol	ND(50.0)	ND(50.0)	ND(56.0)	ND(52.0)	ND(59.0)	ug/L
4-Bromophenyl phenyl ether	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P022 4-Chloro-3-methylphenol	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
4-Chlorophenyl phenyl ether	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P058 4-Nitrophenol	ND(50.0)	ND(50.0)	ND(56.0)	ND(52.0)	ND(59.0)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam

	Day 1 65812	Day 2 65816	Day 3 65820	Day 4 65824	Day 5 65828	Unit
SP-6, Influent to Graywater Treatment System						
Volatile and Semivolatile Organics						
P001 Acenaphthene	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P077 Acenaphthylene	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P078 Anthracene	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P004 Benzene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P072 Benzo(a)anthracene	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P073 Benzo(a)pyrene	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P074 Benzo(b)fluoranthene	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
Benzo(g,h,i)perylene	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P075 Benzo(k)fluoranthene	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P043 Bis(2-chloroethoxy)methane	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
Bis(2-Chloroethyl)ether	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P066 Bis(2-ethylhexyl) phthalate	19.0	23.0	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P048 Bromodichloromethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
Bromoform	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P046 Bromomethane	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ug/L
P067 Butyl benzyl phthalate	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
Carbon tetrachloride	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P007 Chlorobenzene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P016 Chloroethane	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ug/L
P023 Chloroform	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P045 Chloromethane	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ug/L
P076 Chrysene	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
cis-1,3-Dichloropropene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
Dibenz(a,h)anthracene	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P051 Dibromochloromethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P070 Diethyl phthalate	ND(10.0)	14.0	14.0	12.0	12.2	ug/L
P071 Dimethyl phthalate	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P068 Di-n-butyl phthalate	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam

	Day 1 65812	Day 2 65816	Day 3 65820	Day 4 65824	Day 5 65828	Unit
SP-6, Influent to Graywater Treatment System						
Volatile and Semivolatile Organics						
P069 Di-n-octyl phthalate	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P038 Ethylbenzene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P039 Fluoranthene	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P080 Fluorene	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P009 Hexachlorobenzene	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P052 Hexachlorobutadiene	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P012 Hexachloroethane	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P083 Indeno(1,2,3-cd)pyrene	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P054 Isophorone	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P044 Methylene chloride	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P055 Naphthalene	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P056 Nitrobenzene	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
N-Nitroso Di-n-propylamine	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P064 Pentachlorophenol	ND(50.0)	ND(50.0)	ND(56.0)	ND(52.0)	ND(59.0)	ug/L
P081 Phenanthrene	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P065 Phenol	47.0	55.0	62.0	51.0	32.0	ug/L
P084 Pyrene	ND(10.0)	ND(10.0)	ND(11.0)	ND(10.0)	ND(12.0)	ug/L
P085 Tetrachloroethene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P086 Toluene	ND(5.00)	ND(5.00)	ND(5.00)	6.00	ND(5.00)	ug/L
P030 trans-1,2-Dichloroethene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P033 trans-1,3-Dichloropropene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P087 Trichloroethene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
Trichlorofluoromethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P088 Vinyl chloride	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65852	Day 2 65856	Day 3 65860	Day 4 65864	Day 5 65868	Unit
SP-8, Effluent from Graywater Treatment System						
Classical Pollutants						
Alkalinity	23.6	23.6	ND(10.0)	34.9	19.5	mg/L
Ammonia As Nitrogen (NH ₃ -N)	ND(0.0500)	ND(0.0500)	ND(0.0500)	ND(0.0500)	ND(0.0500)	mg/L
Available Cyanide	3.57	2.31	7.48	ND(2.00)	ND(2.00)	ug/L
Biochemical Oxygen Demand (BOD)	27.9	25.9	24.8	23.9	37.3	mg/L
Chemical Oxygen Demand (COD)	68.0	56.0	58.0	48.0	77.0	mg/L
Chloride	8.00	12.0	17.0	17.0	13.0	mg/L
Hardness	1.17	0.750	0.440	1.30	1.90	mg/L
Hexane Extractable Material (HEM)	ND(6.00)	ND(6.00)	ND(6.00)	ND(6.00)	ND(6.00)	mg/L
Nitrate/Nitrite (NO ₂ + NO ₃ -N)	ND(0.0100)	ND(0.0100)	0.0270	0.0380	0.0160	mg/L
Settleable residue	ND(0.110)	ND(0.110)	ND(0.110)	ND(0.110)	ND(0.110)	mL/L
Silica Gel Treated HEM (SGT-HEM)	ND(6.00)	ND(6.00)	ND(6.00)	ND(6.00)	ND(6.00)	mg/L
Sulfate	2.17	2.70	4.17	2.80	3.43	mg/L
P121 Total Cyanide	ND(0.00500)	ND(0.00500)	ND(0.00500)	ND(0.00500)	ND(0.00500)	mg/L
Total Dissolved Solids (TDS)	ND(10.0)	35.0	52.0	67.0	ND(10.0)	mg/L
Total Kjeldahl Nitrogen (TKN)	0.120	0.0800	0.470	6.49	3.38	mg/L
Total Organic Carbon (TOC)	16.5	16.0	12.9	13.3	20.4	mg/L
Total Phosphorus	0.150	0.120	0.220	0.170	0.210	mg/L
Total Suspended Solids (TSS)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	mg/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

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**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65852	Day 2 65856	Day 3 65860	Day 4 65864	Day 5 65868	Unit
SP-8, Effluent from Graywater Treatment System						
Total and Dissolved Metals						
Aluminum, Total	ND(8.80)	ND(8.80)	ND(8.80)	28.0	21.8	ug/L
P114 Antimony, Total	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ug/L
P115 Arsenic, Total	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ug/L
Barium, Total	26.8	14.6	11.9	8.60	31.9	ug/L
P117 Beryllium, Total	ND(0.0700)	ND(0.0700)	ND(0.0700)	ND(0.0700)	ND(0.0700)	ug/L
Boron, Total	ND(18.0)	ND(18.0)	ND(18.0)	83.0	57.5	ug/L
P118 Cadmium, Total	ND(0.0800)	ND(0.0800)	0.0900	ND(0.0800)	ND(0.0800)	ug/L
Calcium, Total	352	213	117	164	502	ug/L
P119 Chromium, Total	ND(0.270)	ND(0.270)	ND(0.270)	ND(0.270)	ND(0.270)	ug/L
Cobalt, Total	ND(0.660)	ND(0.660)	ND(0.660)	ND(0.660)	ND(0.660)	ug/L
P120 Copper, Total	26.8	22.5	172	35.6	97.7	ug/L
Iron, Total	419	222	490	193	720	ug/L
P122 Lead, Total	3.74	ND(0.620)	30.3	2.42	7.21	ug/L
Magnesium, Total	70.2	53.3	34.9	216	156	ug/L
Manganese, Total	8.18	5.27	8.16	3.77	14.0	ug/L
P123 Mercury, Total	ND(0.0500)	ND(0.0500)	ND(0.0500)	ND(0.0500)	ND(0.0500)	ug/L
Molybdenum, Total	ND(1.60)	ND(1.60)	ND(1.60)	ND(1.60)	ND(1.60)	ug/L
P124 Nickel, Total	2.64	2.23	3.09	2.81	5.22	ug/L
P125 Selenium, Total	ND(1.40)	ND(1.40)	ND(1.40)	ND(1.40)	ND(1.40)	ug/L
P126 Silver, Total	ND(0.770)	ND(0.770)	ND(0.770)	ND(0.770)	ND(0.770)	ug/L
Sodium, Total	12,500	11,900	11,600	20,000	14,200	ug/L
P127 Thallium, Total	ND(0.800)	ND(0.800)	ND(0.800)	ND(0.800)	ND(0.800)	ug/L
Tin, Total	ND(0.940)	ND(0.940)	ND(0.940)	ND(0.940)	ND(0.940)	ug/L
Titanium, Total	ND(0.620)	ND(0.620)	ND(0.620)	ND(0.620)	ND(0.620)	ug/L
Vanadium, Total	ND(0.470)	ND(0.470)	ND(0.470)	ND(0.470)	ND(0.470)	ug/L
Yttrium, Total	ND(0.310)	ND(0.310)	ND(0.310)	ND(0.310)	ND(0.310)	ug/L
P128 Zinc, Total	236	237	702	196	572	ug/L
Aluminum, Dissolved	ND(8.80)	ND(8.80)	ND(8.80)	ND(8.80)	ND(8.80)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

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**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65852	Day 2 65856	Day 3 65860	Day 4 65864	Day 5 65868	Unit
SP-8, Effluent from Graywater Treatment System						
Total and Dissolved Metals						
P114 Antimony, Dissolved	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ug/L
P115 Arsenic, Dissolved	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ug/L
Barium, Dissolved	11.3	5.37	7.34	2.58	21.7	ug/L
P117 Beryllium, Dissolved	ND(0.0700)	ND(0.0700)	ND(0.0700)	ND(0.0700)	ND(0.0700)	ug/L
Boron, Dissolved	58.4	83.7	74.3	ND(18.0)	ND(18.0)	ug/L
P118 Cadmium, Dissolved	ND(0.0800)	ND(0.0800)	ND(0.0800)	ND(0.0800)	ND(0.0800)	ug/L
Calcium, Dissolved	290	256	ND(7.00)	ND(7.00)	478	ug/L
P119 Chromium, Dissolved	ND(0.270)	ND(0.270)	0.410	ND(0.270)	ND(0.270)	ug/L
Cobalt, Dissolved	1.26	1.32	ND(0.660)	2.14	3.61	ug/L
P120 Copper, Dissolved	4.74	11.7	46.9	2.96	24.9	ug/L
Iron, Dissolved	190	197	436	103	343	ug/L
P122 Lead, Dissolved	2.05	1.89	14.7	ND(0.620)	2.50	ug/L
Magnesium, Dissolved	61.6	61.7	ND(6.30)	196	170	ug/L
Manganese, Dissolved	8.35	7.27	8.13	6.21	14.1	ug/L
P123 Mercury, Dissolved	ND(0.0500)	ND(0.0500)	ND(0.0500)	ND(0.0500)	ND(0.0500)	ug/L
Molybdenum, Dissolved	ND(1.60)	ND(1.60)	ND(1.60)	ND(1.60)	ND(1.60)	ug/L
P124 Nickel, Dissolved	3.10	3.69	3.90	ND(0.310)	5.24	ug/L
P125 Selenium, Dissolved	ND(1.40)	ND(1.40)	ND(1.40)	ND(1.40)	ND(1.40)	ug/L
P126 Silver, Dissolved	ND(0.770)	ND(0.770)	ND(0.770)	ND(0.770)	ND(0.770)	ug/L
Sodium, Dissolved	11,500	14,000	12,000	18,600	14,000	ug/L
P127 Thallium, Dissolved	ND(0.800)	ND(0.800)	ND(0.800)	ND(0.800)	ND(0.800)	ug/L
Tin, Dissolved	ND(0.940)	ND(0.940)	ND(0.940)	ND(0.940)	ND(0.940)	ug/L
Titanium, Dissolved	ND(0.620)	ND(0.620)	ND(0.620)	ND(0.620)	ND(0.620)	ug/L
Vanadium, Dissolved	ND(0.470)	ND(0.470)	ND(0.470)	ND(0.470)	ND(0.470)	ug/L
Yttrium, Dissolved	ND(0.310)	ND(0.310)	ND(0.310)	ND(0.310)	ND(0.310)	ug/L
P128 Zinc, Dissolved	147	228	594	147	268	ug/L

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**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65852	Day 2 65856	Day 3 65860	Day 4 65864	Day 5 65868	Unit
SP-8, Effluent from Graywater Treatment System						
Volatile and Semivolatile Organics						
P011 1,1,1-Trichloroethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P015 1,1,2,2-Tetrachloroethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P014 1,1,2-Trichloroethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P013 1,1-Dichloroethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P029 1,1-Dichloroethene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P008 1,2,4-Trichlorobenzene	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P025 1,2-Dichlorobenzene	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P010 1,2-Dichloroethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P032 1,2-Dichloropropane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P026 1,3-Dichlorobenzene	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P027 1,4-Dichlorobenzene	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P042 2,2'-Oxybis(1-chloropropane)	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P021 2,4,6-Trichlorophenol	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P031 2,4-Dichlorophenol	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P034 2,4-Dimethylphenol	ND(40.0)	ND(40.0)	ND(44.0)	ND(40.0)	ND(44.0)	ug/L
P059 2,4-Dinitrophenol	ND(100)	ND(100)	ND(110)	ND(100)	ND(110)	ug/L
P035 2,4-Dinitrotoluene	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P036 2,6-Dinitrotoluene	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P019 2-Chloroethyl vinyl ether	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ug/L
P020 2-Chloronaphthalene	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P024 2-Chlorophenol	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P057 2-Nitrophenol	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P028 3,3'-Dichlorobenzidine	ND(40.0)	ND(40.0)	ND(44.0)	ND(40.0)	ND(44.0)	ug/L
4,6-Dinitro-2-methylphenol	ND(100)	ND(100)	ND(110)	ND(100)	ND(110)	ug/L
4-Bromophenyl phenyl ether	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P022 4-Chloro-3-methylphenol	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
4-Chlorophenyl phenyl ether	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P058 4-Nitrophenol	ND(100)	ND(100)	ND(110)	ND(100)	ND(110)	ug/L

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Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam

	Day 1 65852	Day 2 65856	Day 3 65860	Day 4 65864	Day 5 65868	Unit
SP-8, Effluent from Graywater Treatment System						
Volatile and Semivolatile Organics						
P001 Acenaphthene	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P077 Acenaphthylene	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P078 Anthracene	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P004 Benzene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P072 Benzo(a)anthracene	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P073 Benzo(a)pyrene	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P074 Benzo(b)fluoranthene	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
Benzo(g,h,i)perylene	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P075 Benzo(k)fluoranthene	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P043 Bis(2-chloroethoxy)methane	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
Bis(2-Chloroethyl)ether	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P066 Bis(2-ethylhexyl) phthalate	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P048 Bromodichloromethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
Bromoform	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P046 Bromomethane	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ug/L
P067 Butyl benzyl phthalate	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
Carbon tetrachloride	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P007 Chlorobenzene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P016 Chloroethane	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ug/L
P023 Chloroform	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P045 Chloromethane	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ug/L
P076 Chrysene	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
cis-1,3-Dichloropropene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
Dibenz(a,h)anthracene	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P051 Dibromochloromethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P070 Diethyl phthalate	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P071 Dimethyl phthalate	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P068 Di-n-butyl phthalate	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L

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**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65852	Day 2 65856	Day 3 65860	Day 4 65864	Day 5 65868	Unit
SP-8, Effluent from Graywater Treatment System						
Volatile and Semivolatile Organics						
P069 Di-n-octyl phthalate	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P038 Ethylbenzene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P039 Fluoranthene	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P080 Fluorene	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P009 Hexachlorobenzene	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P052 Hexachlorobutadiene	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P012 Hexachloroethane	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P083 Indeno(1,2,3-cd)pyrene	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P054 Isophorone	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P044 Methylene chloride	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P055 Naphthalene	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P056 Nitrobenzene	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
N-Nitroso Di-n-propylamine	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P064 Pentachlorophenol	ND(100)	ND(100)	ND(110)	ND(100)	ND(110)	ug/L
P081 Phenanthrene	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P065 Phenol	60.0	71.0	67.0	71.0	71.0	ug/L
P084 Pyrene	ND(20.0)	ND(20.0)	ND(22.0)	ND(20.0)	ND(22.0)	ug/L
P085 Tetrachloroethene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P086 Toluene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P030 trans-1,2-Dichloroethene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P033 trans-1,3-Dichloropropene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P087 Trichloroethene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
Trichlorofluoromethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P088 Vinyl chloride	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65872	Day 2 65876	Day 3 65880	Day 4 65884	Day 5 65888	Unit
SP-9, Duplicate of Effluent from Graywater Treatment System						
Classical Pollutants						
Alkalinity	NC	NC	ND(10.0)	NC	NC	mg/L
Ammonia As Nitrogen (NH ₃ -N)	NC	NC	NC	0.130	ND(0.0500)	mg/L
Available Cyanide	3.33	NC	7.68	NC	NC	ug/L
Biochemical Oxygen Demand (BOD)	NC	29.4	NC	22.5	NC	mg/L
Chemical Oxygen Demand (COD)	NC	NC	NC	53.0	81.0	mg/L
Chloride	NC	NC	17.0	NC	NC	mg/L
Hardness	NC	NC	0.290	NC	NC	mg/L
Nitrate/Nitrite (NO ₂ + NO ₃ -N)	NC	NC	NC	0.0160	0.0380	mg/L
Settleable residue	NC	NC	NC	NC	ND(0.100)	mL/L
Sulfate	NC	NC	4.17	NC	NC	mg/L
P121 Total Cyanide	ND(0.00500)	NC	ND(0.00500)	NC	NC	mg/L
Total Dissolved Solids (TDS)	NC	NC	56.0	NC	NC	mg/L
Total Kjeldahl Nitrogen (TKN)	NC	NC	NC	6.99	3.33	mg/L
Total Organic Carbon (TOC)	NC	NC	NC	13.4	21.5	mg/L
Total Phosphorus	NC	NC	NC	0.170	0.230	mg/L
Total Suspended Solids (TSS)	NC	NC	ND(5.00)	NC	NC	mg/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65872	Day 2 65876	Day 3 65880	Day 4 65884	Day 5 65888	Unit
SP-9, Duplicate of Effluent from Graywater Treatment System						
Total and Dissolved Metals						
Aluminum, Total	NC	NC	ND(8.80)	NC	NC	ug/L
P114 Antimony, Total	NC	NC	ND(2.00)	NC	NC	ug/L
P115 Arsenic, Total	NC	NC	ND(2.00)	NC	NC	ug/L
Barium, Total	NC	NC	9.66	NC	NC	ug/L
P117 Beryllium, Total	NC	NC	ND(0.0700)	NC	NC	ug/L
Boron, Total	NC	NC	ND(18.0)	NC	NC	ug/L
P118 Cadmium, Total	NC	NC	ND(0.0800)	NC	NC	ug/L
Calcium, Total	NC	NC	103	NC	NC	ug/L
P119 Chromium, Total	NC	NC	ND(0.270)	NC	NC	ug/L
Cobalt, Total	NC	NC	ND(0.660)	NC	NC	ug/L
P120 Copper, Total	NC	NC	157	NC	NC	ug/L
Iron, Total	NC	NC	427	NC	NC	ug/L
P122 Lead, Total	NC	NC	25.0	NC	NC	ug/L
Magnesium, Total	NC	NC	33.4	NC	NC	ug/L
Manganese, Total	NC	NC	227	NC	NC	ug/L
P123 Mercury, Total	NC	NC	ND(0.0500)	NC	NC	ug/L
Molybdenum, Total	NC	NC	ND(1.60)	NC	NC	ug/L
P124 Nickel, Total	NC	NC	2.80	NC	NC	ug/L
P125 Selenium, Total	NC	NC	ND(1.40)	NC	NC	ug/L
P126 Silver, Total	NC	NC	ND(0.770)	NC	NC	ug/L
Sodium, Total	NC	NC	10,600	NC	NC	ug/L
P127 Thallium, Total	NC	NC	ND(0.800)	NC	NC	ug/L
Tin, Total	NC	NC	ND(0.940)	NC	NC	ug/L
Titanium, Total	NC	NC	ND(0.620)	NC	NC	ug/L
Vanadium, Total	NC	NC	ND(0.470)	NC	NC	ug/L
Yttrium, Total	NC	NC	ND(0.310)	NC	NC	ug/L
P128 Zinc, Total	NC	NC	621	NC	NC	ug/L
Aluminum, Dissolved	NC	NC	33.1	NC	NC	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam

	Day 1 65872	Day 2 65876	Day 3 65880	Day 4 65884	Day 5 65888	Unit
SP-9, Duplicate of Effluent from Graywater Treatment System						
Total and Dissolved Metals						
P114 Antimony, Dissolved	NC	NC	ND(2.00)	NC	NC	ug/L
P115 Arsenic, Dissolved	NC	NC	ND(2.00)	NC	NC	ug/L
Barium, Dissolved	NC	NC	9.51	NC	NC	ug/L
P117 Beryllium, Dissolved	NC	NC	ND(0.0700)	NC	NC	ug/L
Boron, Dissolved	NC	NC	72.1	NC	NC	ug/L
P118 Cadmium, Dissolved	NC	NC	ND(0.0800)	NC	NC	ug/L
Calcium, Dissolved	NC	NC	ND(7.00)	NC	NC	ug/L
P119 Chromium, Dissolved	NC	NC	0.500	NC	NC	ug/L
Cobalt, Dissolved	NC	NC	ND(0.660)	NC	NC	ug/L
P120 Copper, Dissolved	NC	NC	47.2	NC	NC	ug/L
Iron, Dissolved	NC	NC	463	NC	NC	ug/L
P122 Lead, Dissolved	NC	NC	14.9	NC	NC	ug/L
Magnesium, Dissolved	NC	NC	ND(6.30)	NC	NC	ug/L
Manganese, Dissolved	NC	NC	8.20	NC	NC	ug/L
P123 Mercury, Dissolved	NC	NC	ND(0.0500)	NC	NC	ug/L
Molybdenum, Dissolved	NC	NC	ND(1.60)	NC	NC	ug/L
P124 Nickel, Dissolved	NC	NC	4.65	NC	NC	ug/L
P125 Selenium, Dissolved	NC	NC	ND(1.40)	NC	NC	ug/L
P126 Silver, Dissolved	NC	NC	ND(0.770)	NC	NC	ug/L
Sodium, Dissolved	NC	NC	12,400	NC	NC	ug/L
P127 Thallium, Dissolved	NC	NC	ND(0.800)	NC	NC	ug/L
Tin, Dissolved	NC	NC	ND(0.940)	NC	NC	ug/L
Titanium, Dissolved	NC	NC	ND(0.620)	NC	NC	ug/L
Vanadium, Dissolved	NC	NC	ND(0.470)	NC	NC	ug/L
Yttrium, Dissolved	NC	NC	ND(0.310)	NC	NC	ug/L
P128 Zinc, Dissolved	NC	NC	626	NC	NC	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam

	Day 1 65872	Day 2 65876	Day 3 65880	Day 4 65884	Day 5 65888	Unit
SP-9, Duplicate of Effluent from Graywater Treatment System						
Volatile and Semivolatile Organics						
P011 1,1,1-Trichloroethane	NC	ND(5.00)	NC	NC	NC	ug/L
P015 1,1,2,2-Tetrachloroethane	NC	ND(5.00)	NC	NC	NC	ug/L
P014 1,1,2-Trichloroethane	NC	ND(5.00)	NC	NC	NC	ug/L
P013 1,1-Dichloroethane	NC	ND(5.00)	NC	NC	NC	ug/L
P029 1,1-Dichloroethene	NC	ND(5.00)	NC	NC	NC	ug/L
P008 1,2,4-Trichlorobenzene	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P025 1,2-Dichlorobenzene	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P010 1,2-Dichloroethane	NC	ND(5.00)	NC	NC	NC	ug/L
P032 1,2-Dichloropropane	NC	ND(5.00)	NC	NC	NC	ug/L
P026 1,3-Dichlorobenzene	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P027 1,4-Dichlorobenzene	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P042 2,2'-Oxybis(1-chloropropane)	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P021 2,4,6-Trichlorophenol	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P031 2,4-Dichlorophenol	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P034 2,4-Dimethylphenol	ND(40.0)	ND(40.0)	NC	NC	NC	ug/L
P059 2,4-Dinitrophenol	ND(100)	ND(100)	NC	NC	NC	ug/L
P035 2,4-Dinitrotoluene	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P036 2,6-Dinitrotoluene	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P019 2-Chloroethyl vinyl ether	NC	EXCLUDE	NC	NC	NC	
P020 2-Chloronaphthalene	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P024 2-Chlorophenol	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P057 2-Nitrophenol	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P028 3,3'-Dichlorobenzidine	ND(40.0)	ND(40.0)	NC	NC	NC	ug/L
4,6-Dinitro-2-methylphenol	ND(100)	ND(100)	NC	NC	NC	ug/L
4-Bromophenyl phenyl ether	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P022 4-Chloro-3-methylphenol	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
4-Chlorophenyl phenyl ether	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P058 4-Nitrophenol	ND(100)	ND(100)	NC	NC	NC	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65872	Day 2 65876	Day 3 65880	Day 4 65884	Day 5 65888	Unit
SP-9, Duplicate of Effluent from Graywater Treatment System						
Volatile and Semivolatile Organics						
P001 Acenaphthene	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P077 Acenaphthylene	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P078 Anthracene	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P004 Benzene	NC	ND(5.00)	NC	NC	NC	ug/L
P072 Benzo(a)anthracene	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P073 Benzo(a)pyrene	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P074 Benzo(b)fluoranthene	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
Benzo(g,h,i)perylene	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P075 Benzo(k)fluoranthene	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P043 Bis(2-chloroethoxy)methane	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
Bis(2-Chloroethyl)ether	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P066 Bis(2-ethylhexyl) phthalate	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P048 Bromodichloromethane	NC	ND(5.00)	NC	NC	NC	ug/L
Bromoform	NC	ND(5.00)	NC	NC	NC	ug/L
P046 Bromomethane	NC	ND(10.0)	NC	NC	NC	ug/L
P067 Butyl benzyl phthalate	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
Carbon tetrachloride	NC	ND(5.00)	NC	NC	NC	ug/L
P007 Chlorobenzene	NC	ND(5.00)	NC	NC	NC	ug/L
P016 Chloroethane	NC	ND(10.0)	NC	NC	NC	ug/L
P023 Chloroform	NC	ND(5.00)	NC	NC	NC	ug/L
P045 Chloromethane	NC	ND(10.0)	NC	NC	NC	ug/L
P076 Chrysene	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
cis-1,3-Dichloropropene	NC	ND(5.00)	NC	NC	NC	ug/L
Dibenz(a,h)anthracene	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P051 Dibromochloromethane	NC	ND(5.00)	NC	NC	NC	ug/L
P070 Diethyl phthalate	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P071 Dimethyl phthalate	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P068 Di-n-butyl phthalate	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam

	Day 1 65872	Day 2 65876	Day 3 65880	Day 4 65884	Day 5 65888	Unit
SP-9, Duplicate of Effluent from Graywater Treatment System						
Volatile and Semivolatile Organics						
P069 Di-n-octyl phthalate	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P038 Ethylbenzene	NC	ND(5.00)	NC	NC	NC	ug/L
P039 Fluoranthene	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P080 Fluorene	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P009 Hexachlorobenzene	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P052 Hexachlorobutadiene	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P012 Hexachloroethane	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P083 Indeno(1,2,3-cd)pyrene	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P054 Isophorone	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P044 Methylene chloride	NC	ND(5.00)	NC	NC	NC	ug/L
P055 Naphthalene	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P056 Nitrobenzene	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
N-Nitroso Di-n-propylamine	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P064 Pentachlorophenol	ND(100)	ND(100)	NC	NC	NC	ug/L
P081 Phenanthrene	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P065 Phenol	65.0	51.0	NC	NC	NC	ug/L
P084 Pyrene	ND(20.0)	ND(20.0)	NC	NC	NC	ug/L
P085 Tetrachloroethene	NC	ND(5.00)	NC	NC	NC	ug/L
P086 Toluene	NC	ND(5.00)	NC	NC	NC	ug/L
P030 trans-1,2-Dichloroethene	NC	ND(5.00)	NC	NC	NC	ug/L
P033 trans-1,3-Dichloropropene	NC	ND(5.00)	NC	NC	NC	ug/L
P087 Trichloroethene	NC	ND(5.00)	NC	NC	NC	ug/L
Trichlorofluoromethane	NC	ND(5.00)	NC	NC	NC	ug/L
P088 Vinyl chloride	NC	ND(10.0)	NC	NC	NC	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 5 65892	Unit
SP-10, Incinerator Ash		
Total and Dissolved Metals		
Aluminum, Total	43,500	mg/kg
P114 Antimony, Total	6.92	mg/kg
P115 Arsenic, Total	4.37	mg/kg
Barium, Total	427	mg/kg
P117 Beryllium, Total	0.350	mg/kg
Boron, Total	324	mg/kg
P118 Cadmium, Total	0.330	mg/kg
Calcium, Total	179,000	mg/kg
P119 Chromium, Total	71.7	mg/kg
Cobalt, Total	18.2	mg/kg
P120 Copper, Total	920	mg/kg
Iron, Total	8,530	mg/kg
P122 Lead, Total	14.2	mg/kg
Magnesium, Total	8,900	mg/kg
Manganese, Total	450	mg/kg
P123 Mercury, Total	ND(0.0200)	mg/kg
Molybdenum, Total	15.5	mg/kg
P124 Nickel, Total	97.4	mg/kg
P125 Selenium, Total	ND(0.230)	mg/kg
P126 Silver, Total	18.0	mg/kg
Sodium, Total	30,800	mg/kg
P127 Thallium, Total	ND(5.10)	mg/kg
Tin, Total	29.3	mg/kg
Titanium, Total	2,660	mg/kg
Vanadium, Total	96.6	mg/kg
Yttrium, Total	2.73	mg/kg
P128 Zinc, Total	572	mg/kg

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).
 NC - Not collected.
 ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 5 65892	Unit
SP-10, Incinerator Ash		
Volatile and Semivolatile Organics		
P008 1,2,4-Trichlorobenzene	ND(170)	ug/kg
P025 1,2-Dichlorobenzene	ND(170)	ug/kg
P026 1,3-Dichlorobenzene	ND(170)	ug/kg
P027 1,4-Dichlorobenzene	ND(170)	ug/kg
P042 2,2'-Oxybis(1-chloropropane)	ND(170)	ug/kg
P021 2,4,6-Trichlorophenol	ND(170)	ug/kg
P031 2,4-Dichlorophenol	ND(170)	ug/kg
P034 2,4-Dimethylphenol	ND(330)	ug/kg
P059 2,4-Dinitrophenol	ND(830)	ug/kg
P035 2,4-Dinitrotoluene	ND(170)	ug/kg
P036 2,6-Dinitrotoluene	ND(170)	ug/kg
P020 2-Chloronaphthalene	ND(170)	ug/kg
P024 2-Chlorophenol	ND(170)	ug/kg
P057 2-Nitrophenol	ND(170)	ug/kg
P028 3,3'-Dichlorobenzidine	ND(330)	ug/kg
4,6-Dinitro-2-methylphenol	ND(830)	ug/kg
4-Bromophenyl phenyl ether	ND(170)	ug/kg
P022 4-Chloro-3-methylphenol	ND(170)	ug/kg
4-Chlorophenyl phenyl ether	ND(170)	ug/kg
P058 4-Nitrophenol	ND(830)	ug/kg
P001 Acenaphthene	ND(170)	ug/kg
P077 Acenaphthylene	ND(170)	ug/kg
P078 Anthracene	ND(170)	ug/kg
P072 Benzo(a)anthracene	ND(170)	ug/kg
P073 Benzo(a)pyrene	ND(170)	ug/kg
P074 Benzo(b)fluoranthene	ND(170)	ug/kg
Benzo(g,h,i)perylene	ND(170)	ug/kg
P075 Benzo(k)fluoranthene	ND(170)	ug/kg

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 5 65892	Unit
SP-10, Incinerator Ash		
Volatile and Semivolatile Organics		
P043 Bis(2-chloroethoxy)methane	ND(170)	ug/kg
Bis(2-Chloroethyl)ether	ND(170)	ug/kg
P066 Bis(2-ethylhexyl) phthalate	ND(170)	ug/kg
P067 Butyl benzyl phthalate	ND(170)	ug/kg
P076 Chrysene	ND(170)	ug/kg
Dibenz(a,h)anthracene	ND(170)	ug/kg
P070 Diethyl phthalate	ND(170)	ug/kg
P071 Dimethyl phthalate	ND(170)	ug/kg
P068 Di-n-butyl phthalate	ND(170)	ug/kg
P069 Di-n-octyl phthalate	ND(170)	ug/kg
P039 Fluoranthene	ND(170)	ug/kg
P080 Fluorene	ND(170)	ug/kg
P009 Hexachlorobenzene	ND(170)	ug/kg
P052 Hexachlorobutadiene	ND(170)	ug/kg
P012 Hexachloroethane	ND(170)	ug/kg
P083 Indeno(1,2,3-cd)pyrene	ND(170)	ug/kg
P054 Isophorone	ND(170)	ug/kg
P055 Naphthalene	ND(170)	ug/kg
P056 Nitrobenzene	ND(170)	ug/kg
N-Nitroso Di-n-propylamine	ND(170)	ug/kg
P064 Pentachlorophenol	ND(830)	ug/kg
P081 Phenanthrene	ND(170)	ug/kg
P065 Phenol	250	ug/kg
P084 Pyrene	ND(170)	ug/kg

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).
 NC - Not collected.
 ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 5 65892	Unit
SP-10, Incinerator Ash		
Dioxins and Furans		
1,2,3,4,6,7,8-HpCDD	ND(9.53)	PG/G
1,2,3,4,6,7,8-HpCDF	6.00	PG/G
1,2,3,4,7,8,9-HpCDF	ND(9.53)	PG/G
1,2,3,4,7,8-HxCDD	ND(9.53)	PG/G
1,2,3,4,7,8-HxCDF	5.20	PG/G
1,2,3,6,7,8-HxCDD	ND(9.53)	PG/G
1,2,3,6,7,8-HxCDF	ND(9.53)	PG/G
1,2,3,7,8,9-HxCDD	ND(9.53)	PG/G
1,2,3,7,8,9-HxCDF	ND(9.53)	PG/G
1,2,3,7,8-PeCDD	ND(9.53)	PG/G
1,2,3,7,8-PeCDF	ND(9.53)	PG/G
2,3,4,6,7,8-HxCDF	ND(9.53)	PG/G
2,3,4,7,8-PeCDF	ND(9.53)	PG/G
2,3,7,8-TCDD	ND(1.91)	PG/G
2,3,7,8-TCDF	5.70	PG/G
Octachlorodibenzo-p-dioxin	12.5	PG/G
Octachlorodibenzofuran	ND(19.1)	PG/G

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).
 NC - Not collected.
 ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65896	Day 2 65900	Day 3 65904	Day 4 65908	Day 5 65912	Unit
SP-11, Influent to Sewage/Graywater Treatment System						
Classical Pollutants						
Alkalinity	529	537	508	650	564	mg/L
Ammonia As Nitrogen (NH ₃ -N)	ND(0.0500)	ND(0.0500)	ND(0.0500)	ND(0.0500)	ND(0.0500)	mg/L
Available Cyanide	45.5	36.2	75.6	72.2	76.5	ug/L
Biochemical Oxygen Demand (BOD)	919	1,380	690	736	717	mg/L
Chemical Oxygen Demand (COD)	2,490	2,830	1,800	1,960	2,040	mg/L
Chloride	125	95.0	125	145	145	mg/L
Hardness	51.8	28.5	51.3	40.7	44.4	mg/L
Hexane Extractable Material (HEM)	52.0	85.0	62.0	50.0	48.0	mg/L
Nitrate/Nitrite (NO ₂ + NO ₃ -N)	0.0170	0.0160	0.0290	0.0370	0.0350	mg/L
Settleable residue	20.0	51.0	39.0	ND(0.130)	0.660	mL/L
Silica Gel Treated HEM (SGT-HEM)	7.00	8.00	8.00	6.00	6.00	mg/L
Sulfate	113	121	131	153	96.5	mg/L
P121 Total Cyanide	ND(0.00500)	ND(0.00500)	ND(0.00500)	ND(0.00500)	ND(0.00500)	mg/L
Total Dissolved Solids (TDS)	756	608	596	842	788	mg/L
Total Kjeldahl Nitrogen (TKN)	192	197	192	200	182	mg/L
Total Organic Carbon (TOC)	262	225	271	302	267	mg/L
Total Phosphorus	23.1	24.2	20.9	23.3	31.8	mg/L
Total Suspended Solids (TSS)	650	1,110	635	560	680	mg/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65896	Day 2 65900	Day 3 65904	Day 4 65908	Day 5 65912	Unit
SP-11, Influent to Sewage/Graywater Treatment System						
Total and Dissolved Metals						
Aluminum, Total	1,360	847	1,460	1,330	1,630	ug/L
P114 Antimony, Total	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ug/L
P115 Arsenic, Total	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ug/L
Barium, Total	318	185	309	234	273	ug/L
P117 Beryllium, Total	ND(0.0700)	ND(0.0700)	ND(0.0700)	ND(0.0700)	ND(0.0700)	ug/L
Boron, Total	ND(18.0)	ND(18.0)	ND(18.0)	98.5	121	ug/L
P118 Cadmium, Total	0.380	0.220	0.520	0.380	0.470	ug/L
Calcium, Total	13,900	6,870	13,700	9,550	11,200	ug/L
P119 Chromium, Total	8.63	4.52	12.6	7.66	8.78	ug/L
Cobalt, Total	ND(0.660)	ND(0.660)	ND(0.660)	ND(0.660)	ND(0.660)	ug/L
P120 Copper, Total	384	372	542	468	490	ug/L
Iron, Total	1,190	820	1,560	1,220	1,460	ug/L
P122 Lead, Total	7.85	7.94	10.7	10.1	13.4	ug/L
Magnesium, Total	4,130	2,760	4,150	4,100	3,980	ug/L
Manganese, Total	68.8	44.1	58.7	65.7	62.6	ug/L
P123 Mercury, Total	0.240	0.190	0.220	0.190	0.260	ug/L
Molybdenum, Total	2.43	ND(1.60)	2.08	1.82	ND(1.60)	ug/L
P124 Nickel, Total	22.8	20.9	35.5	28.1	32.1	ug/L
P125 Selenium, Total	ND(1.40)	ND(1.40)	2.85	2.70	2.99	ug/L
P126 Silver, Total	3.11	1.24	5.28	2.40	2.52	ug/L
Sodium, Total	81,500	61,900	88,100	103,000	90,800	ug/L
P127 Thallium, Total	ND(8.00)	ND(0.800)	ND(8.00)	ND(8.00)	ND(0.800)	ug/L
Tin, Total	6.52	5.20	8.83	8.79	8.47	ug/L
Titanium, Total	2.79	2.38	3.29	3.01	3.63	ug/L
Vanadium, Total	1.50	0.540	1.64	1.63	ND(0.470)	ug/L
Yttrium, Total	ND(0.310)	ND(0.310)	ND(0.310)	ND(0.310)	ND(0.310)	ug/L
P128 Zinc, Total	1,440	1,000	3,190	1,580	1,730	ug/L
Aluminum, Dissolved	235	310	244	408	464	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65896	Day 2 65900	Day 3 65904	Day 4 65908	Day 5 65912	Unit
SP-11, Influent to Sewage/Graywater Treatment System						
Total and Dissolved Metals						
P114 Antimony, Dissolved	ND(2.00)	ND(2.00)	ND(2.00)	2.78	ND(2.00)	ug/L
P115 Arsenic, Dissolved	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ug/L
Barium, Dissolved	84.7	59.4	88.7	73.9	100	ug/L
P117 Beryllium, Dissolved	ND(0.0700)	ND(0.0700)	ND(0.0700)	ND(0.0700)	ND(0.0700)	ug/L
Boron, Dissolved	109	129	ND(18.0)	ND(18.0)	ND(18.0)	ug/L
P118 Cadmium, Dissolved	ND(0.0800)	ND(0.0800)	ND(0.0800)	ND(0.0800)	ND(0.0800)	ug/L
Calcium, Dissolved	5,770	3,080	5,170	4,480	6,360	ug/L
P119 Chromium, Dissolved	2.06	1.83	4.11	2.91	3.51	ug/L
Cobalt, Dissolved	5.78	9.36	5.46	13.7	23.3	ug/L
P120 Copper, Dissolved	56.6	153	86.6	130	125	ug/L
Iron, Dissolved	903	882	550	938	1,230	ug/L
P122 Lead, Dissolved	1.41	3.22	2.50	3.12	2.57	ug/L
Magnesium, Dissolved	3,110	2,800	3,350	3,740	3,930	ug/L
Manganese, Dissolved	64.7	62.5	33.0	86.4	96.3	ug/L
P123 Mercury, Dissolved	ND(0.0500)	ND(0.0500)	0.0570	0.0550	ND(0.0500)	ug/L
Molybdenum, Dissolved	ND(1.60)	ND(1.60)	ND(1.60)	ND(1.60)	ND(1.60)	ug/L
P124 Nickel, Dissolved	21.1	29.1	27.3	28.1	33.3	ug/L
P125 Selenium, Dissolved	ND(1.40)	ND(1.40)	ND(1.40)	ND(1.40)	ND(1.40)	ug/L
P126 Silver, Dissolved	ND(0.770)	ND(0.770)	ND(0.770)	ND(0.770)	ND(0.770)	ug/L
Sodium, Dissolved	92,900	94,100	84,100	107,000	106,000	ug/L
P127 Thallium, Dissolved	ND(0.800)	ND(0.800)	ND(0.800)	ND(0.800)	ND(0.800)	ug/L
Tin, Dissolved	2.19	2.58	2.49	2.94	2.49	ug/L
Titanium, Dissolved	0.840	0.960	ND(0.620)	0.670	0.840	ug/L
Vanadium, Dissolved	0.560	0.560	0.490	0.760	0.730	ug/L
Yttrium, Dissolved	ND(0.310)	ND(0.310)	ND(0.310)	ND(0.310)	ND(0.310)	ug/L
P128 Zinc, Dissolved	409	524	644	569	459	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam

	Day 1 65896	Day 2 65900	Day 3 65904	Day 4 65908	Day 5 65912	Unit
SP-11, Influent to Sewage/Graywater Treatment System						
Volatile and Semivolatile Organics						
P011 1,1,1-Trichloroethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P015 1,1,2,2-Tetrachloroethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P014 1,1,2-Trichloroethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P013 1,1-Dichloroethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P029 1,1-Dichloroethene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P008 1,2,4-Trichlorobenzene	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P025 1,2-Dichlorobenzene	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P010 1,2-Dichloroethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P032 1,2-Dichloropropane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P026 1,3-Dichlorobenzene	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P027 1,4-Dichlorobenzene	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P042 2,2'-Oxybis(1-chloropropane)	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P021 2,4,6-Trichlorophenol	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P031 2,4-Dichlorophenol	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P034 2,4-Dimethylphenol	ND(20.0)	ND(20.0)	ND(22.0)	ND(25.0)	ND(24.0)	ug/L
P059 2,4-Dinitrophenol	ND(50.0)	ND(50.0)	ND(56.0)	ND(63.0)	ND(59.0)	ug/L
P035 2,4-Dinitrotoluene	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P036 2,6-Dinitrotoluene	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P019 2-Chloroethyl vinyl ether	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ug/L
P020 2-Chloronaphthalene	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P024 2-Chlorophenol	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P057 2-Nitrophenol	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P028 3,3'-Dichlorobenzidine	ND(20.0)	ND(20.0)	ND(22.0)	ND(25.0)	ND(24.0)	ug/L
4,6-Dinitro-2-methylphenol	ND(50.0)	ND(50.0)	ND(56.0)	ND(63.0)	ND(59.0)	ug/L
4-Bromophenyl phenyl ether	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P022 4-Chloro-3-methylphenol	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
4-Chlorophenyl phenyl ether	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P058 4-Nitrophenol	ND(50.0)	ND(50.0)	ND(56.0)	ND(63.0)	ND(59.0)	ug/L

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ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65896	Day 2 65900	Day 3 65904	Day 4 65908	Day 5 65912	Unit
SP-11, Influent to Sewage/Graywater Treatment System						
Volatile and Semivolatile Organics						
P001 Acenaphthene	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P077 Acenaphthylene	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P078 Anthracene	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P004 Benzene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P072 Benzo(a)anthracene	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P073 Benzo(a)pyrene	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P074 Benzo(b)fluoranthene	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
Benzo(g,h,i)perylene	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P075 Benzo(k)fluoranthene	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P043 Bis(2-chloroethoxy)methane	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
Bis(2-Chloroethyl)ether	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P066 Bis(2-ethylhexyl) phthalate	49.0	94.0	45.0	47.0	47.0	ug/L
P048 Bromodichloromethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
Bromoform	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P046 Bromomethane	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ug/L
P067 Butyl benzyl phthalate	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
Carbon tetrachloride	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P007 Chlorobenzene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P016 Chloroethane	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ug/L
P023 Chloroform	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P045 Chloromethane	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ug/L
P076 Chrysene	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
cis-1,3-Dichloropropene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
Dibenz(a,h)anthracene	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P051 Dibromochloromethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P070 Diethyl phthalate	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P071 Dimethyl phthalate	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P068 Di-n-butyl phthalate	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L

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NC - Not collected.

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**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65896	Day 2 65900	Day 3 65904	Day 4 65908	Day 5 65912	Unit
SP-11, Influent to Sewage/Graywater Treatment System						
Volatile and Semivolatile Organics						
P069 Di-n-octyl phthalate	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P038 Ethylbenzene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P039 Fluoranthene	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P080 Fluorene	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P009 Hexachlorobenzene	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P052 Hexachlorobutadiene	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P012 Hexachloroethane	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P083 Indeno(1,2,3-cd)pyrene	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P054 Isophorone	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P044 Methylene chloride	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P055 Naphthalene	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P056 Nitrobenzene	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
N-Nitroso Di-n-propylamine	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P064 Pentachlorophenol	ND(50.0)	ND(50.0)	ND(56.0)	ND(63.0)	ND(59.0)	ug/L
P081 Phenanthrene	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P065 Phenol	95.0	67.0	60.0	100	150	ug/L
P084 Pyrene	ND(10.0)	ND(10.0)	ND(11.0)	ND(13.0)	ND(12.0)	ug/L
P085 Tetrachloroethene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P086 Toluene	ND(5.00)	ND(5.00)	6.00	7.00	7.00	ug/L
P030 trans-1,2-Dichloroethene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P033 trans-1,3-Dichloropropene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P087 Trichloroethene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
Trichlorofluoromethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P088 Vinyl chloride	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ug/L

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ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65896	Day 2 65900	Day 3 65904	Day 4 65908	Day 5 65912	Unit
SP-11, Influent to Sewage/Graywater Treatment System						
Pesticides						
1,2-Dibromo-3-chloropropane	NC	ND(0.200)	NC	NC	NC	ug/L
4,4'-DDD	NC	ND(0.200)	NC	NC	NC	ug/L
4,4'-DDE	NC	ND(0.100)	NC	NC	NC	ug/L
4,4'-DDT	NC	ND(0.100)	NC	NC	NC	ug/L
Acephate	NC	ND(20.0)	NC	NC	NC	ug/L
Alachlor	NC	ND(0.200)	NC	NC	NC	ug/L
Aldrin	NC	ND(0.200)	NC	NC	NC	ug/L
alpha-BHC	NC	ND(0.0500)	NC	NC	NC	ug/L
alpha-Chlordane	NC	ND(0.100)	NC	NC	NC	ug/L
Atrazine	NC	ND(10.0)	NC	NC	NC	ug/L
Azinphos Ethyl	NC	ND(2.00)	NC	NC	NC	ug/L
Azinphos Methyl	NC	ND(1.00)	NC	NC	NC	ug/L
Benfluralin	NC	ND(0.200)	NC	NC	NC	ug/L
beta-BHC	NC	ND(0.100)	NC	NC	NC	ug/L
Bromacil	NC	ND(1.00)	NC	NC	NC	ug/L
Bromoxynil Octanoate	NC	ND(0.500)	NC	NC	NC	ug/L
Butachlor	NC	ND(0.500)	NC	NC	NC	ug/L
Captafol	NC	ND(2.00)	NC	NC	NC	ug/L
Captan	NC	ND(1.00)	NC	NC	NC	ug/L
Carbophenothion	NC	ND(1.00)	NC	NC	NC	ug/L
Chlorfenvinphos	NC	ND(2.00)	NC	NC	NC	ug/L
Chlorobenzilate	NC	ND(1.00)	NC	NC	NC	ug/L
Chloroneb	NC	ND(1.00)	NC	NC	NC	ug/L
Chloropropylate	NC	ND(1.00)	NC	NC	NC	ug/L
Chlorothalonil	NC	ND(0.200)	NC	NC	NC	ug/L
Chlorpyrifos	NC	ND(2.00)	NC	NC	NC	ug/L
cis-Permethrin	NC	ND(2.00)	NC	NC	NC	ug/L
Coumaphos	NC	ND(5.00)	NC	NC	NC	ug/L

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Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam

	Day 1 65896	Day 2 65900	Day 3 65904	Day 4 65908	Day 5 65912	Unit
SP-11, Influent to Sewage/Graywater Treatment System						
Pesticides						
Crotoxyphos	NC	ND(5.00)	NC	NC	NC	ug/L
Dacthal (DCPS)	NC	ND(0.0500)	NC	NC	NC	ug/L
DEF	NC	ND(2.00)	NC	NC	NC	ug/L
delta-BHC	NC	ND(0.0500)	NC	NC	NC	ug/L
Demeton A	NC	ND(4.00)	NC	NC	NC	ug/L
Demeton B	NC	ND(4.00)	NC	NC	NC	ug/L
Diallate A	NC	ND(2.00)	NC	NC	NC	ug/L
Diallate B	NC	ND(0.100)	NC	NC	NC	ug/L
Diazinon	NC	ND(2.00)	NC	NC	NC	ug/L
Dichlofenthion	NC	ND(2.00)	NC	NC	NC	ug/L
Dichlone	NC	ND(0.200)	NC	NC	NC	ug/L
Dichlorvos	NC	ND(5.00)	NC	NC	NC	ug/L
Dicofol	NC	ND(1.00)	NC	NC	NC	ug/L
Dicrotophos	NC	ND(2.00)	NC	NC	NC	ug/L
Dieldrin	NC	ND(0.0400)	NC	NC	NC	ug/L
Dimethoate	NC	ND(2.00)	NC	NC	NC	ug/L
Dioxathion	NC	ND(5.00)	NC	NC	NC	ug/L
Disulfoton	NC	ND(2.00)	NC	NC	NC	ug/L
Endosulfan I	NC	ND(0.100)	NC	NC	NC	ug/L
Endosulfan II	NC	ND(1.00)	NC	NC	NC	ug/L
Endosulfan Sulfate	NC	ND(0.100)	NC	NC	NC	ug/L
Endrin	NC	ND(0.200)	NC	NC	NC	ug/L
Endrin Aldehyde	NC	ND(0.100)	NC	NC	NC	ug/L
Endrin Ketone	NC	ND(0.100)	NC	NC	NC	ug/L
EPN	NC	ND(2.00)	NC	NC	NC	ug/L
Ethalfuralin	NC	ND(0.100)	NC	NC	NC	ug/L
Ethion	NC	ND(2.00)	NC	NC	NC	ug/L
Ethoprop	NC	ND(2.00)	NC	NC	NC	ug/L

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NC - Not collected.

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Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam

	Day 1 65896	Day 2 65900	Day 3 65904	Day 4 65908	Day 5 65912	Unit
SP-11, Influent to Sewage/Graywater Treatment System						
Pesticides						
Etridiazole	NC	ND(0.200)	NC	NC	NC	ug/L
Famphur	NC	ND(5.00)	NC	NC	NC	ug/L
Fenarimol	NC	ND(0.200)	NC	NC	NC	ug/L
Fensulfothion	NC	ND(5.00)	NC	NC	NC	ug/L
Fenthion	NC	ND(2.00)	NC	NC	NC	ug/L
gamma-BHC	NC	ND(0.0500)	NC	NC	NC	ug/L
gamma-Chlordane	NC	ND(0.0500)	NC	NC	NC	ug/L
Heptachlor	NC	ND(0.100)	NC	NC	NC	ug/L
Heptachlor Epoxide	NC	ND(0.0500)	NC	NC	NC	ug/L
Hexamethylphosphoramide	NC	ND(2.00)	NC	NC	NC	ug/L
Isodrin	NC	ND(0.100)	NC	NC	NC	ug/L
Isopropalin	NC	ND(0.200)	NC	NC	NC	ug/L
Kepone	NC	ND(1.00)	NC	NC	NC	ug/L
Leptophos	NC	ND(2.00)	NC	NC	NC	ug/L
Malathion	NC	ND(2.00)	NC	NC	NC	ug/L
Merphos A	NC	ND(2.00)	NC	NC	NC	ug/L
Merphos B	NC	ND(2.00)	NC	NC	NC	ug/L
Methamidophos	NC	ND(20.0)	NC	NC	NC	ug/L
Methoxychlor	NC	ND(0.200)	NC	NC	NC	ug/L
Methyl Parathion	NC	ND(2.00)	NC	NC	NC	ug/L
Methyl Trithion	NC	ND(5.00)	NC	NC	NC	ug/L
Metribuzin	NC	ND(0.100)	NC	NC	NC	ug/L
Mevinphos	NC	ND(5.00)	NC	NC	NC	ug/L
Mirex	NC	ND(0.200)	NC	NC	NC	ug/L
Monocrotophos	NC	ND(20.0)	NC	NC	NC	ug/L
Naled	NC	ND(2.00)	NC	NC	NC	ug/L
Nitrofen	NC	ND(0.200)	NC	NC	NC	ug/L
Norflurazon	NC	ND(1.00)	NC	NC	NC	ug/L

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NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam

	Day 1 65896	Day 2 65900	Day 3 65904	Day 4 65908	Day 5 65912	Unit
SP-11, Influent to Sewage/Graywater Treatment System						
Pesticides						
Parathion (ethyl)	NC	ND(2.00)	NC	NC	NC	ug/L
PCB 1016	NC	ND(1.00)	NC	NC	NC	ug/L
PCB 1221	NC	ND(1.00)	NC	NC	NC	ug/L
PCB 1232	NC	ND(1.00)	NC	NC	NC	ug/L
PCB 1242	NC	ND(1.00)	NC	NC	NC	ug/L
PCB 1248	NC	ND(1.00)	NC	NC	NC	ug/L
PCB 1254	NC	ND(1.00)	NC	NC	NC	ug/L
PCB 1260	NC	ND(1.00)	NC	NC	NC	ug/L
Pendamehalin	NC	ND(0.500)	NC	NC	NC	ug/L
Pentachloronitrobenzene (PCNB)	NC	ND(0.0500)	NC	NC	NC	ug/L
Perthane	NC	ND(10.0)	NC	NC	NC	ug/L
Phorate	NC	ND(2.00)	NC	NC	NC	ug/L
Phosmet	NC	ND(5.00)	NC	NC	NC	ug/L
Phosphamidon E	NC	ND(1.00)	NC	NC	NC	ug/L
Phosphamidon Z	NC	ND(1.00)	NC	NC	NC	ug/L
Propachlor	NC	ND(0.100)	NC	NC	NC	ug/L
Propanil	NC	ND(1.00)	NC	NC	NC	ug/L
Propazine	NC	ND(1.00)	NC	NC	NC	ug/L
Ronnel	NC	ND(2.00)	NC	NC	NC	ug/L
Simazine	NC	ND(8.00)	NC	NC	NC	ug/L
Strobane	NC	ND(5.00)	NC	NC	NC	ug/L
Sulfotep	NC	ND(2.00)	NC	NC	NC	ug/L
Sulprofos	NC	ND(2.00)	NC	NC	NC	ug/L
Tepp	NC	ND(2.00)	NC	NC	NC	ug/L
Terbacil	NC	ND(2.00)	NC	NC	NC	ug/L
Terbufos	NC	ND(2.00)	NC	NC	NC	ug/L
Terbuthylazine	NC	ND(5.00)	NC	NC	NC	ug/L
Tetrachlorvinphos	NC	ND(2.00)	NC	NC	NC	ug/L

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**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65896	Day 2 65900	Day 3 65904	Day 4 65908	Day 5 65912	Unit
SP-11, Influent to Sewage/Graywater Treatment System						
Pesticides						
Tokuthion	NC	ND(2.00)	NC	NC	NC	ug/L
Toxaphene	NC	ND(5.00)	NC	NC	NC	ug/L
trans-Permethrin	NC	ND(2.00)	NC	NC	NC	ug/L
Triadimefon	NC	ND(1.00)	NC	NC	NC	ug/L
Trichlorfon	NC	ND(5.00)	NC	NC	NC	ug/L
Trichloronate	NC	ND(2.00)	NC	NC	NC	ug/L
Tricresylphosphate	NC	ND(20.0)	NC	NC	NC	ug/L
Trifluralin	NC	ND(0.100)	NC	NC	NC	ug/L
Trimethylphosphate	NC	ND(2.00)	NC	NC	NC	ug/L

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Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam

	Day 1 65896	Day 2 65900	Day 3 65904	Day 4 65908	Day 5 65912	Unit
SP-11, Influent to Sewage/Graywater Treatment System						
Polychlorinated Biphenyls						
Decachloro biphenyl	ND(557)	NC	NC	NC	NC	pg/L
PCB-1	ND(223)	NC	NC	NC	NC	pg/L
PCB-2	17.5	NC	NC	NC	NC	pg/L
PCB-3	ND(223)	NC	NC	NC	NC	pg/L
PCB-4	ND(557)	NC	NC	NC	NC	pg/L
PCB-5	ND(55.7)	NC	NC	NC	NC	pg/L
PCB-6	121	NC	NC	NC	NC	pg/L
PCB-7	ND(55.7)	NC	NC	NC	NC	pg/L
PCB-8	ND(557)	NC	NC	NC	NC	pg/L
PCB-9	ND(55.7)	NC	NC	NC	NC	pg/L
PCB-10	ND(55.7)	NC	NC	NC	NC	pg/L
PCB-11	1,900	NC	NC	NC	NC	pg/L
PCB-12+PCB-13	ND(111)	NC	NC	NC	NC	pg/L
PCB-14	ND(111)	NC	NC	NC	NC	pg/L
PCB-15	ND(557)	NC	NC	NC	NC	pg/L
PCB-16	367	NC	NC	NC	NC	pg/L
PCB-17	360	NC	NC	NC	NC	pg/L
PCB-18+PCB-30	704	NC	NC	NC	NC	pg/L
PCB-19	ND(111)	NC	NC	NC	NC	pg/L
PCB-20+PCB-28	1,080	NC	NC	NC	NC	pg/L
PCB-21+PCB-33	603	NC	NC	NC	NC	pg/L
PCB-22	399	NC	NC	NC	NC	pg/L
PCB-23	ND(223)	NC	NC	NC	NC	pg/L
PCB-24	ND(223)	NC	NC	NC	NC	pg/L
PCB-25	ND(223)	NC	NC	NC	NC	pg/L
PCB-26+PCB-29	ND(223)	NC	NC	NC	NC	pg/L
PCB-27	ND(223)	NC	NC	NC	NC	pg/L
PCB-31	891	NC	NC	NC	NC	pg/L

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Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam

	Day 1 65896	Day 2 65900	Day 3 65904	Day 4 65908	Day 5 65912	Unit
SP-11, Influent to Sewage/Graywater Treatment System						
Polychlorinated Biphenyls						
PCB-32	ND(223)	NC	NC	NC	NC	pg/L
PCB-34	ND(223)	NC	NC	NC	NC	pg/L
PCB-35	ND(223)	NC	NC	NC	NC	pg/L
PCB-36	ND(223)	NC	NC	NC	NC	pg/L
PCB-37	ND(557)	NC	NC	NC	NC	pg/L
PCB-38	ND(223)	NC	NC	NC	NC	pg/L
PCB-39	ND(223)	NC	NC	NC	NC	pg/L
PCB-40+PCB-41+PCB-71	ND(557)	NC	NC	NC	NC	pg/L
PCB-42	ND(223)	NC	NC	NC	NC	pg/L
PCB-43	ND(223)	NC	NC	NC	NC	pg/L
PCB-44+PCB-47+PCB-65	849	NC	NC	NC	NC	pg/L
PCB-45+PCB-51	ND(223)	NC	NC	NC	NC	pg/L
PCB-46	ND(223)	NC	NC	NC	NC	pg/L
PCB-48	ND(223)	NC	NC	NC	NC	pg/L
PCB-49+PCB-69	ND(557)	NC	NC	NC	NC	pg/L
PCB-50+PCB-53	ND(223)	NC	NC	NC	NC	pg/L
PCB-52	654	NC	NC	NC	NC	pg/L
PCB-54	ND(557)	NC	NC	NC	NC	pg/L
PCB-55	ND(557)	NC	NC	NC	NC	pg/L
PCB-56	ND(223)	NC	NC	NC	NC	pg/L
PCB-57	ND(557)	NC	NC	NC	NC	pg/L
PCB-58	ND(557)	NC	NC	NC	NC	pg/L
PCB-59+PCB-62+PCB-75	ND(223)	NC	NC	NC	NC	pg/L
PCB-60	ND(557)	NC	NC	NC	NC	pg/L
PCB-61+PCB-70+PCB-74+PCB-76	1,190	NC	NC	NC	NC	pg/L
PCB-63	ND(557)	NC	NC	NC	NC	pg/L
PCB-64	279	NC	NC	NC	NC	pg/L
PCB-66	ND(557)	NC	NC	NC	NC	pg/L

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Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam

	Day 1 65896	Day 2 65900	Day 3 65904	Day 4 65908	Day 5 65912	Unit
SP-11, Influent to Sewage/Graywater Treatment System						
Polychlorinated Biphenyls						
PCB-67	ND(557)	NC	NC	NC	NC	pg/L
PCB-68	ND(557)	NC	NC	NC	NC	pg/L
PCB-72	ND(557)	NC	NC	NC	NC	pg/L
PCB-73	ND(557)	NC	NC	NC	NC	pg/L
PCB-77	ND(557)	NC	NC	NC	NC	pg/L
PCB-78	ND(557)	NC	NC	NC	NC	pg/L
PCB-79	ND(557)	NC	NC	NC	NC	pg/L
PCB-80	ND(557)	NC	NC	NC	NC	pg/L
PCB-81	ND(557)	NC	NC	NC	NC	pg/L
PCB-82	ND(557)	NC	NC	NC	NC	pg/L
PCB-83+PCB-99	ND(557)	NC	NC	NC	NC	pg/L
PCB-84	ND(557)	NC	NC	NC	NC	pg/L
PCB-85+PCB-116+PCB-117	ND(223)	NC	NC	NC	NC	pg/L
PCB-86+PCB-87+PCB-97+PCB-108+PCB-119+PC		ND(557)	NC	NC	NC	NC pg/L
PCB-88+PCB-91	ND(557)	NC	NC	NC	NC	pg/L
PCB-89	ND(557)	NC	NC	NC	NC	pg/L
PCB-90+PCB-101+PCB-113	ND(1,110)	NC	NC	NC	NC	pg/L
PCB-92	ND(557)	NC	NC	NC	NC	pg/L
PCB-93+PCB-95+PCB-98+PCB-100+PCB-102	ND(557)	NC	NC	NC	NC	pg/L
PCB-94	ND(557)	NC	NC	NC	NC	pg/L
PCB-96	ND(557)	NC	NC	NC	NC	pg/L
PCB-103	ND(557)	NC	NC	NC	NC	pg/L
PCB-104	ND(557)	NC	NC	NC	NC	pg/L
PCB-105	ND(223)	NC	NC	NC	NC	pg/L
PCB-106	ND(557)	NC	NC	NC	NC	pg/L
PCB-107+PCB-124	ND(1,110)	NC	NC	NC	NC	pg/L
PCB-109	ND(223)	NC	NC	NC	NC	pg/L
PCB-110+PCB-115	ND(1,110)	NC	NC	NC	NC	pg/L

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Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam

	Day 1 65896	Day 2 65900	Day 3 65904	Day 4 65908	Day 5 65912	Unit
SP-11, Influent to Sewage/Graywater Treatment System						
Polychlorinated Biphenyls						
PCB-111	ND(1,110)	NC	NC	NC	NC	pg/L
PCB-112	ND(1,110)	NC	NC	NC	NC	pg/L
PCB-114	ND(557)	NC	NC	NC	NC	pg/L
PCB-118	ND(557)	NC	NC	NC	NC	pg/L
PCB-120	ND(557)	NC	NC	NC	NC	pg/L
PCB-121	ND(557)	NC	NC	NC	NC	pg/L
PCB-122	ND(557)	NC	NC	NC	NC	pg/L
PCB-123	ND(557)	NC	NC	NC	NC	pg/L
PCB-126	ND(557)	NC	NC	NC	NC	pg/L
PCB-127	ND(1,110)	NC	NC	NC	NC	pg/L
PCB-128+PCB-166	ND(557)	NC	NC	NC	NC	pg/L
PCB-129+PCB-138+PCB-160+PCB-163	958	NC	NC	NC	NC	pg/L
PCB-130	ND(557)	NC	NC	NC	NC	pg/L
PCB-131	ND(557)	NC	NC	NC	NC	pg/L
PCB-132	ND(557)	NC	NC	NC	NC	pg/L
PCB-133	ND(557)	NC	NC	NC	NC	pg/L
PCB-134+PCB-143	ND(557)	NC	NC	NC	NC	pg/L
PCB-135+PCB-151+PCB-154	ND(557)	NC	NC	NC	NC	pg/L
PCB-136	ND(223)	NC	NC	NC	NC	pg/L
PCB-137	ND(1,110)	NC	NC	NC	NC	pg/L
PCB-139+PCB-140	ND(557)	NC	NC	NC	NC	pg/L
PCB-141	ND(223)	NC	NC	NC	NC	pg/L
PCB-142	ND(1,110)	NC	NC	NC	NC	pg/L
PCB-144	ND(557)	NC	NC	NC	NC	pg/L
PCB-145	ND(1,110)	NC	NC	NC	NC	pg/L
PCB-146	ND(557)	NC	NC	NC	NC	pg/L
PCB-147+PCB-149	ND(557)	NC	NC	NC	NC	pg/L
PCB-148	ND(1,110)	NC	NC	NC	NC	pg/L

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Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam

	Day 1 65896	Day 2 65900	Day 3 65904	Day 4 65908	Day 5 65912	Unit
SP-11, Influent to Sewage/Graywater Treatment System						
Polychlorinated Biphenyls						
PCB-150	ND(1,110)	NC	NC	NC	NC	pg/L
PCB-152	ND(1,110)	NC	NC	NC	NC	pg/L
PCB-153+PCB-168	1,070	NC	NC	NC	NC	pg/L
PCB-155	ND(1,110)	NC	NC	NC	NC	pg/L
PCB-156+PCB-157	ND(557)	NC	NC	NC	NC	pg/L
PCB-158	ND(223)	NC	NC	NC	NC	pg/L
PCB-159	ND(1,110)	NC	NC	NC	NC	pg/L
PCB-161	ND(1,110)	NC	NC	NC	NC	pg/L
PCB-162	ND(1,110)	NC	NC	NC	NC	pg/L
PCB-164	ND(557)	NC	NC	NC	NC	pg/L
PCB-165	ND(1,110)	NC	NC	NC	NC	pg/L
PCB-167	ND(557)	NC	NC	NC	NC	pg/L
PCB-169	ND(557)	NC	NC	NC	NC	pg/L
PCB-170	ND(557)	NC	NC	NC	NC	pg/L
PCB-171+PCB-173	ND(1,110)	NC	NC	NC	NC	pg/L
PCB-172	ND(1,110)	NC	NC	NC	NC	pg/L
PCB-174	ND(557)	NC	NC	NC	NC	pg/L
PCB-175	ND(1,110)	NC	NC	NC	NC	pg/L
PCB-176	ND(1,110)	NC	NC	NC	NC	pg/L
PCB-177	ND(557)	NC	NC	NC	NC	pg/L
PCB-178	ND(557)	NC	NC	NC	NC	pg/L
PCB-179	ND(557)	NC	NC	NC	NC	pg/L
PCB-180+PCB-193	620	NC	NC	NC	NC	pg/L
PCB-181	ND(1,110)	NC	NC	NC	NC	pg/L
PCB-182	ND(1,110)	NC	NC	NC	NC	pg/L
PCB-183+PCB-185	ND(1,110)	NC	NC	NC	NC	pg/L
PCB-184	ND(1,110)	NC	NC	NC	NC	pg/L
PCB-186	ND(1,110)	NC	NC	NC	NC	pg/L

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NC - Not collected.

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**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65896	Day 2 65900	Day 3 65904	Day 4 65908	Day 5 65912	Unit
SP-11, Influent to Sewage/Graywater Treatment System						
Polychlorinated Biphenyls						
PCB-187	ND(557)	NC	NC	NC	NC	pg/L
PCB-188	ND(557)	NC	NC	NC	NC	pg/L
PCB-189	ND(557)	NC	NC	NC	NC	pg/L
PCB-190	ND(557)	NC	NC	NC	NC	pg/L
PCB-191	ND(1,110)	NC	NC	NC	NC	pg/L
PCB-192	ND(1,110)	NC	NC	NC	NC	pg/L
PCB-194	ND(557)	NC	NC	NC	NC	pg/L
PCB-195	ND(1,110)	NC	NC	NC	NC	pg/L
PCB-196	ND(1,110)	NC	NC	NC	NC	pg/L
PCB-197+PCB-200	ND(1,110)	NC	NC	NC	NC	pg/L
PCB-198+PCB-199	ND(557)	NC	NC	NC	NC	pg/L
PCB-201	ND(1,110)	NC	NC	NC	NC	pg/L
PCB-202	ND(1,110)	NC	NC	NC	NC	pg/L
PCB-203	ND(1,110)	NC	NC	NC	NC	pg/L
PCB-204	ND(1,110)	NC	NC	NC	NC	pg/L
PCB-205	ND(1,110)	NC	NC	NC	NC	pg/L
PCB-206	ND(1,110)	NC	NC	NC	NC	pg/L
PCB-207	ND(5,570)	NC	NC	NC	NC	pg/L
PCB-208	ND(5,570)	NC	NC	NC	NC	pg/L
PCB-209	ND(557)	NC	NC	NC	NC	pg/L
Total Dichloro Biphenyls	2,020	NC	NC	NC	NC	pg/L
Total Heptachloro Biphenyls	ND(1,110)	NC	NC	NC	NC	pg/L
Toal Hexachloro Biphenyls	2,030	NC	NC	NC	NC	pg/L
Total Monochloro Biphenyls	ND(223)	NC	NC	NC	NC	pg/L
Total Nonachloro Biphenyls	ND(1,110)	NC	NC	NC	NC	pg/L
Total Octachloro Biphenyls	ND(1,110)	NC	NC	NC	NC	pg/L
Total PCBs	11,400	NC	NC	NC	NC	pg/L
Total Pentachloro Biphenyls	ND(1,110)	NC	NC	NC	NC	pg/L

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NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65896	Day 2 65900	Day 3 65904	Day 4 65908	Day 5 65912	Unit
SP-11, Influent to Sewage/Graywater Treatment System						
Polychlorinated Biphenyls						
Total Tetrachloro Biphenyls	2,970	NC	NC	NC	NC	pg/L
Total Trichloro Biphenyls	4,400	NC	NC	NC	NC	pg/L

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**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65936	Day 2 65940	Day 3 65944	Day 4 65948	Day 5 65952	Unit
SP-13, Effluent from Sewage/Graywater Treatment System						
Classical Pollutants						
Alkalinity	321	436	321	362	332	mg/L
Ammonia As Nitrogen (NH ₃ -N)	2.49	0.160	0.0800	0.0800	ND(0.0500)	mg/L
Available Cyanide	4.08	4.41	3.49	3.22	3.34	ug/L
Biochemical Oxygen Demand (BOD)	3.87	5.89	3.93	4.42	3.18	mg/L
Chemical Oxygen Demand (COD)	148	112	102	111	123	mg/L
Chloride	125	85.0	125	145	145	mg/L
Hardness	37.6	34.4	32.2	34.1	32.3	mg/L
Hexane Extractable Material (HEM)	ND(6.00)	ND(5.00)	ND(5.00)	ND(6.00)	ND(6.00)	mg/L
Nitrate/Nitrite (NO ₂ + NO ₃ -N)	0.0950	0.0160	0.0770	0.0310	0.0590	mg/L
Settleable residue	ND(0.100)	ND(0.120)	ND(0.130)	ND(0.110)	ND(0.100)	mL/L
Silica Gel Treated HEM (SGT-HEM)	ND(6.00)	ND(5.00)	ND(5.00)	ND(6.00)	ND(6.00)	mg/L
Sulfate	43.5	34.9	52.4	53.2	14.6	mg/L
P121 Total Cyanide	ND(0.00500)	ND(0.00500)	ND(0.00500)	ND(0.00500)	ND(0.00500)	mg/L
Total Dissolved Solids (TDS)	470	434	444	493	511	mg/L
Total Kjeldahl Nitrogen (TKN)	4.13	83.2	68.6	73.3	64.0	mg/L
Total Organic Carbon (TOC)	45.4	36.0	42.2	30.5	33.9	mg/L
Total Phosphorus	23.7	14.4	11.1	10.4	13.1	mg/L
Total Suspended Solids (TSS)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	mg/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65936	Day 2 65940	Day 3 65944	Day 4 65948	Day 5 65952	Unit
SP-13, Effluent from Sewage/Graywater Treatment System						
Total and Dissolved Metals						
Aluminum, Total	126	138	75.3	108	111	ug/L
P114 Antimony, Total	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ug/L
P115 Arsenic, Total	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ug/L
Barium, Total	76.0	73.8	75.2	75.9	69.3	ug/L
P117 Beryllium, Total	ND(0.0700)	ND(0.0700)	ND(0.0700)	ND(0.0700)	ND(0.0700)	ug/L
Boron, Total	ND(18.0)	ND(18.0)	158	116	132	ug/L
P118 Cadmium, Total	0.110	ND(0.0800)	ND(0.0800)	ND(0.0800)	ND(0.0800)	ug/L
Calcium, Total	9,560	8,790	8,600	8,960	8,500	ug/L
P119 Chromium, Total	0.800	0.530	1.81	1.75	1.63	ug/L
Cobalt, Total	ND(0.660)	ND(0.660)	ND(0.660)	ND(0.660)	ND(0.660)	ug/L
P120 Copper, Total	65.7	6.51	5.92	3.49	7.80	ug/L
Iron, Total	773	749	266	541	901	ug/L
P122 Lead, Total	8.43	3.74	2.05	2.10	7.07	ug/L
Magnesium, Total	3,340	3,020	2,620	2,850	2,690	ug/L
Manganese, Total	54.6	55.6	14.4	45.1	41.3	ug/L
P123 Mercury, Total	ND(0.0500)	ND(0.0500)	ND(0.0500)	ND(0.0500)	ND(0.0500)	ug/L
Molybdenum, Total	ND(1.60)	ND(1.60)	ND(1.60)	ND(1.60)	ND(1.60)	ug/L
P124 Nickel, Total	25.4	28.6	24.3	30.1	33.2	ug/L
P125 Selenium, Total	ND(1.40)	ND(1.40)	ND(1.40)	ND(1.40)	ND(1.40)	ug/L
P126 Silver, Total	ND(0.770)	ND(0.770)	ND(0.770)	ND(0.770)	ND(0.770)	ug/L
Sodium, Total	103,000	101,000	104,000	120,000	114,000	ug/L
P127 Thallium, Total	ND(0.800)	ND(0.800)	ND(0.800)	ND(0.800)	ND(0.800)	ug/L
Tin, Total	ND(0.940)	ND(0.940)	ND(0.940)	ND(0.940)	ND(0.940)	ug/L
Titanium, Total	ND(0.620)	ND(0.620)	ND(0.620)	ND(0.620)	ND(0.620)	ug/L
Vanadium, Total	ND(0.470)	ND(0.470)	ND(0.470)	ND(0.470)	ND(0.470)	ug/L
Yttrium, Total	ND(0.310)	ND(0.310)	ND(0.310)	ND(0.310)	ND(0.310)	ug/L
P128 Zinc, Total	955	568	354	720	1,050	ug/L
Aluminum, Dissolved	114	116	77.5	116	161	ug/L

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**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65936	Day 2 65940	Day 3 65944	Day 4 65948	Day 5 65952	Unit
SP-13, Effluent from Sewage/Graywater Treatment System						
Total and Dissolved Metals						
P114 Antimony, Dissolved	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ug/L
P115 Arsenic, Dissolved	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ug/L
Barium, Dissolved	69.7	64.7	73.6	80.1	88.6	ug/L
P117 Beryllium, Dissolved	ND(0.0700)	ND(0.0700)	ND(0.0700)	ND(0.0700)	ND(0.0700)	ug/L
Boron, Dissolved	118	114	ND(18.0)	ND(18.0)	ND(18.0)	ug/L
P118 Cadmium, Dissolved	0.130	ND(0.0800)	ND(0.0800)	ND(0.0800)	ND(0.0800)	ug/L
Calcium, Dissolved	8,630	7,920	8,090	9,330	10,900	ug/L
P119 Chromium, Dissolved	1.44	1.24	1.32	1.43	2.02	ug/L
Cobalt, Dissolved	ND(0.660)	1.60	ND(0.660)	1.93	3.76	ug/L
P120 Copper, Dissolved	58.6	6.33	4.65	3.60	10.5	ug/L
Iron, Dissolved	801	736	293	507	1,130	ug/L
P122 Lead, Dissolved	7.43	5.08	1.76	2.03	7.98	ug/L
Magnesium, Dissolved	3,020	2,710	2,530	3,000	3,460	ug/L
Manganese, Dissolved	51.1	53.2	16.4	50.4	64.7	ug/L
P123 Mercury, Dissolved	0.0610	ND(0.0500)	0.0770	ND(0.0500)	0.0950	ug/L
Molybdenum, Dissolved	ND(1.60)	ND(1.60)	ND(1.60)	ND(1.60)	ND(1.60)	ug/L
P124 Nickel, Dissolved	25.0	28.7	22.9	29.6	41.2	ug/L
P125 Selenium, Dissolved	ND(1.40)	ND(1.40)	ND(1.40)	ND(1.40)	ND(1.40)	ug/L
P126 Silver, Dissolved	ND(0.770)	ND(0.770)	ND(0.770)	ND(0.770)	ND(0.770)	ug/L
Sodium, Dissolved	104,000	102,000	93,900	117,000	134,000	ug/L
P127 Thallium, Dissolved	ND(0.800)	ND(0.800)	ND(0.800)	ND(0.800)	ND(0.800)	ug/L
Tin, Dissolved	ND(0.940)	ND(0.940)	ND(0.940)	ND(0.940)	ND(0.940)	ug/L
Titanium, Dissolved	ND(0.620)	ND(0.620)	ND(0.620)	ND(0.620)	ND(0.620)	ug/L
Vanadium, Dissolved	ND(0.470)	ND(0.470)	ND(0.470)	ND(0.470)	ND(0.470)	ug/L
Yttrium, Dissolved	ND(0.310)	ND(0.310)	ND(0.310)	ND(0.310)	ND(0.310)	ug/L
P128 Zinc, Dissolved	884	528	358	687	1,360	ug/L

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Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam

	Day 1 65936	Day 2 65940	Day 3 65944	Day 4 65948	Day 5 65952	Unit
SP-13, Effluent from Sewage/Graywater Treatment System						
Volatile and Semivolatile Organics						
P011 1,1,1-Trichloroethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P015 1,1,2,2-Tetrachloroethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P014 1,1,2-Trichloroethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P013 1,1-Dichloroethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P029 1,1-Dichloroethene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P008 1,2,4-Trichlorobenzene	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P025 1,2-Dichlorobenzene	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P010 1,2-Dichloroethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P032 1,2-Dichloropropane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P026 1,3-Dichlorobenzene	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P027 1,4-Dichlorobenzene	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P042 2,2'-Oxybis(1-chloropropane)	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P021 2,4,6-Trichlorophenol	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P031 2,4-Dichlorophenol	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P034 2,4-Dimethylphenol	ND(20.0)	ND(20.0)	ND(47.0)	ND(44.0)	ND(42.0)	ug/L
P059 2,4-Dinitrophenol	ND(50.0)	ND(50.0)	ND(120)	ND(110)	ND(110)	ug/L
P035 2,4-Dinitrotoluene	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P036 2,6-Dinitrotoluene	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P019 2-Chloroethyl vinyl ether	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ug/L
P020 2-Chloronaphthalene	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P024 2-Chlorophenol	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P057 2-Nitrophenol	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P028 3,3'-Dichlorobenzidine	ND(20.0)	ND(20.0)	ND(47.0)	ND(44.0)	ND(42.0)	ug/L
4,6-Dinitro-2-methylphenol	ND(50.0)	ND(50.0)	ND(120)	ND(110)	ND(110)	ug/L
4-Bromophenyl phenyl ether	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P022 4-Chloro-3-methylphenol	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
4-Chlorophenyl phenyl ether	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P058 4-Nitrophenol	ND(50.0)	ND(50.0)	ND(120)	ND(110)	ND(110)	ug/L

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**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65936	Day 2 65940	Day 3 65944	Day 4 65948	Day 5 65952	Unit
SP-13, Effluent from Sewage/Graywater Treatment System						
Volatile and Semivolatile Organics						
P001 Acenaphthene	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P077 Acenaphthylene	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P078 Anthracene	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P004 Benzene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P072 Benzo(a)anthracene	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P073 Benzo(a)pyrene	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P074 Benzo(b)fluoranthene	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
Benzo(g,h,i)perylene	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P075 Benzo(k)fluoranthene	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P043 Bis(2-chloroethoxy)methane	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
Bis(2-Chloroethyl)ether	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P066 Bis(2-ethylhexyl) phthalate	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P048 Bromodichloromethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
Bromoform	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P046 Bromomethane	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ug/L
P067 Butyl benzyl phthalate	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
Carbon tetrachloride	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P007 Chlorobenzene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P016 Chloroethane	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ug/L
P023 Chloroform	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P045 Chloromethane	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ug/L
P076 Chrysene	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
cis-1,3-Dichloropropene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
Dibenz(a,h)anthracene	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P051 Dibromochloromethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P070 Diethyl phthalate	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P071 Dimethyl phthalate	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P068 Di-n-butyl phthalate	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L

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**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65936	Day 2 65940	Day 3 65944	Day 4 65948	Day 5 65952	Unit
SP-13, Effluent from Sewage/Graywater Treatment System						
Volatile and Semivolatile Organics						
P069 Di-n-octyl phthalate	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P038 Ethylbenzene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P039 Fluoranthene	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P080 Fluorene	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P009 Hexachlorobenzene	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P052 Hexachlorobutadiene	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P012 Hexachloroethane	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P083 Indeno(1,2,3-cd)pyrene	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P054 Isophorone	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P044 Methylene chloride	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P055 Naphthalene	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P056 Nitrobenzene	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
N-Nitroso Di-n-propylamine	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P064 Pentachlorophenol	ND(50.0)	ND(50.0)	ND(120)	ND(110)	ND(110)	ug/L
P081 Phenanthrene	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P065 Phenol	48.0	60.0	71.0	69.0	69.0	ug/L
P084 Pyrene	ND(10.0)	ND(10.0)	ND(24.0)	ND(22.0)	ND(21.0)	ug/L
P085 Tetrachloroethene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P086 Toluene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P030 trans-1,2-Dichloroethene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P033 trans-1,3-Dichloropropene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P087 Trichloroethene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
Trichlorofluoromethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P088 Vinyl chloride	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ug/L

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**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65956	Day 2 65960	Day 3 65964	Day 4 65968	Day 5 65972	Unit
SP-14, Duplicate of Effluent from Sewage/Graywater Treatment System						
Classical Pollutants						
Alkalinity	NC	NC	315	NC	349	mg/L
Ammonia As Nitrogen (NH ₃ -N)	NC	NC	NC	ND(0.0500)	NC	mg/L
Available Cyanide	ND(2.00)	NC	NC	NC	NC	ug/L
Biochemical Oxygen Demand (BOD)	NC	NC	NC	3.90	NC	mg/L
Chemical Oxygen Demand (COD)	NC	NC	NC	104	NC	mg/L
Chloride	NC	NC	125	NC	135	mg/L
Hardness	37.8	NC	34.6	NC	NC	mg/L
Nitrate/Nitrite (NO ₂ + NO ₃ -N)	NC	NC	NC	0.0350	NC	mg/L
Settleable residue	ND(0.130)	NC	NC	NC	ND(0.110)	mL/L
Sulfate	NC	NC	34.7	NC	45.4	mg/L
P121 Total Cyanide	0.00600	NC	NC	NC	NC	mg/L
Total Dissolved Solids (TDS)	NC	NC	439	NC	517	mg/L
Total Kjeldahl Nitrogen (TKN)	NC	NC	NC	70.6	NC	mg/L
Total Organic Carbon (TOC)	NC	NC	NC	29.6	NC	mg/L
Total Phosphorus	NC	NC	NC	11.3	NC	mg/L
Total Suspended Solids (TSS)	NC	NC	ND(5.00)	NC	ND(5.00)	mg/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65956	Day 2 65960	Day 3 65964	Day 4 65968	Day 5 65972	Unit
SP-14, Duplicate of Effluent from Sewage/Graywater Treatment System						
Total and Dissolved Metals						
Aluminum, Total	123	NC	80.2	NC	NC	ug/L
P114 Antimony, Total	ND(2.00)	NC	ND(2.00)	NC	NC	ug/L
P115 Arsenic, Total	ND(2.00)	NC	ND(2.00)	NC	NC	ug/L
Barium, Total	78.3	NC	79.9	NC	NC	ug/L
P117 Beryllium, Total	ND(0.0700)	NC	ND(0.0700)	NC	NC	ug/L
Boron, Total	ND(18.0)	NC	157	NC	NC	ug/L
P118 Cadmium, Total	0.100	NC	ND(0.0800)	NC	NC	ug/L
Calcium, Total	9,590	NC	9,190	NC	NC	ug/L
P119 Chromium, Total	0.700	NC	2.15	NC	NC	ug/L
Cobalt, Total	ND(0.660)	NC	ND(0.660)	NC	NC	ug/L
P120 Copper, Total	51.7	NC	5.60	NC	NC	ug/L
Iron, Total	742	NC	279	NC	NC	ug/L
P122 Lead, Total	6.68	NC	2.20	NC	NC	ug/L
Magnesium, Total	3,360	NC	2,830	NC	NC	ug/L
Manganese, Total	50.8	NC	15.5	NC	NC	ug/L
P123 Mercury, Total	ND(0.0500)	NC	ND(0.0500)	NC	NC	ug/L
Molybdenum, Total	ND(1.60)	NC	ND(1.60)	NC	NC	ug/L
P124 Nickel, Total	23.9	NC	26.9	NC	NC	ug/L
P125 Selenium, Total	ND(1.40)	NC	3.73	NC	NC	ug/L
P126 Silver, Total	ND(0.770)	NC	ND(0.770)	NC	NC	ug/L
Sodium, Total	103,000	NC	110,000	NC	NC	ug/L
P127 Thallium, Total	ND(0.800)	NC	ND(0.800)	NC	NC	ug/L
Tin, Total	ND(0.940)	NC	1.10	NC	NC	ug/L
Titanium, Total	ND(0.620)	NC	ND(0.620)	NC	NC	ug/L
Vanadium, Total	ND(0.470)	NC	ND(0.470)	NC	NC	ug/L
Yttrium, Total	ND(0.310)	NC	ND(0.310)	NC	NC	ug/L
P128 Zinc, Total	854	NC	380	NC	NC	ug/L
Aluminum, Dissolved	111	NC	80.1	NC	NC	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65956	Day 2 65960	Day 3 65964	Day 4 65968	Day 5 65972	Unit
SP-14, Duplicate of Effluent from Sewage/Graywater Treatment System						
Total and Dissolved Metals						
P114 Antimony, Dissolved	ND(2.00)	NC	ND(2.00)	NC	NC	ug/L
P115 Arsenic, Dissolved	ND(2.00)	NC	ND(2.00)	NC	NC	ug/L
Barium, Dissolved	70.4	NC	75.4	NC	NC	ug/L
P117 Beryllium, Dissolved	ND(0.0700)	NC	ND(0.0700)	NC	NC	ug/L
Boron, Dissolved	156	NC	ND(18.0)	NC	NC	ug/L
P118 Cadmium, Dissolved	ND(0.0800)	NC	ND(0.0800)	NC	NC	ug/L
Calcium, Dissolved	8,740	NC	8,340	NC	NC	ug/L
P119 Chromium, Dissolved	1.20	NC	1.40	NC	NC	ug/L
Cobalt, Dissolved	ND(0.660)	NC	3.07	NC	NC	ug/L
P120 Copper, Dissolved	49.1	NC	4.70	NC	NC	ug/L
Iron, Dissolved	760	NC	235	NC	NC	ug/L
P122 Lead, Dissolved	6.41	NC	1.60	NC	NC	ug/L
Magnesium, Dissolved	3,080	NC	2,690	NC	NC	ug/L
Manganese, Dissolved	48.1	NC	19.0	NC	NC	ug/L
P123 Mercury, Dissolved	ND(0.0500)	NC	ND(0.0500)	NC	NC	ug/L
Molybdenum, Dissolved	ND(1.60)	NC	ND(1.60)	NC	NC	ug/L
P124 Nickel, Dissolved	24.2	NC	22.7	NC	NC	ug/L
P125 Selenium, Dissolved	ND(1.40)	NC	ND(1.40)	NC	NC	ug/L
P126 Silver, Dissolved	ND(0.770)	NC	ND(0.770)	NC	NC	ug/L
Sodium, Dissolved	101,000	NC	94,300	NC	NC	ug/L
P127 Thallium, Dissolved	ND(0.800)	NC	ND(0.800)	NC	NC	ug/L
Tin, Dissolved	ND(0.940)	NC	ND(0.940)	NC	NC	ug/L
Titanium, Dissolved	ND(0.620)	NC	ND(0.620)	NC	NC	ug/L
Vanadium, Dissolved	ND(0.470)	NC	ND(0.470)	NC	NC	ug/L
Yttrium, Dissolved	ND(0.310)	NC	ND(0.310)	NC	NC	ug/L
P128 Zinc, Dissolved	813	NC	345	NC	NC	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam

	Day 1 65956	Day 2 65960	Day 3 65964	Day 4 65968	Day 5 65972	Unit
SP-14, Duplicate of Effluent from Sewage/Graywater Treatment System						
Volatile and Semivolatile Organics						
P011 1,1,1-Trichloroethane	NC	ND(5.00)	NC	ND(5.00)	NC	ug/L
P015 1,1,2,2-Tetrachloroethane	NC	ND(5.00)	NC	ND(5.00)	NC	ug/L
P014 1,1,2-Trichloroethane	NC	ND(5.00)	NC	ND(5.00)	NC	ug/L
P013 1,1-Dichloroethane	NC	ND(5.00)	NC	ND(5.00)	NC	ug/L
P029 1,1-Dichloroethene	NC	ND(5.00)	NC	ND(5.00)	NC	ug/L
P008 1,2,4-Trichlorobenzene	NC	ND(10.0)	NC	NC	NC	ug/L
P025 1,2-Dichlorobenzene	NC	ND(10.0)	NC	NC	NC	ug/L
P010 1,2-Dichloroethane	NC	ND(5.00)	NC	ND(5.00)	NC	ug/L
P032 1,2-Dichloropropane	NC	ND(5.00)	NC	ND(5.00)	NC	ug/L
P026 1,3-Dichlorobenzene	NC	ND(10.0)	NC	NC	NC	ug/L
P027 1,4-Dichlorobenzene	NC	ND(10.0)	NC	NC	NC	ug/L
P042 2,2'-Oxybis(1-chloropropane)	NC	ND(10.0)	NC	NC	NC	ug/L
P021 2,4,6-Trichlorophenol	NC	ND(10.0)	NC	NC	NC	ug/L
P031 2,4-Dichlorophenol	NC	ND(10.0)	NC	NC	NC	ug/L
P034 2,4-Dimethylphenol	NC	ND(20.0)	NC	NC	NC	ug/L
P059 2,4-Dinitrophenol	NC	ND(50.0)	NC	NC	NC	ug/L
P035 2,4-Dinitrotoluene	NC	ND(10.0)	NC	NC	NC	ug/L
P036 2,6-Dinitrotoluene	NC	ND(10.0)	NC	NC	NC	ug/L
P019 2-Chloroethyl vinyl ether	NC	NC	NC	ND(10.0)	NC	ug/L
P019 2-Chloroethyl vinyl ether	NC	EXCLUDE	NC	NC	NC	
P020 2-Chloronaphthalene	NC	ND(10.0)	NC	NC	NC	ug/L
P024 2-Chlorophenol	NC	ND(10.0)	NC	NC	NC	ug/L
P057 2-Nitrophenol	NC	ND(10.0)	NC	NC	NC	ug/L
P028 3,3'-Dichlorobenzidine	NC	EXCLUDE	NC	NC	NC	
4,6-Dinitro-2-methylphenol	NC	ND(50.0)	NC	NC	NC	ug/L
4-Bromophenyl phenyl ether	NC	ND(10.0)	NC	NC	NC	ug/L
P022 4-Chloro-3-methylphenol	NC	ND(10.0)	NC	NC	NC	ug/L
4-Chlorophenyl phenyl ether	NC	ND(10.0)	NC	NC	NC	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65956	Day 2 65960	Day 3 65964	Day 4 65968	Day 5 65972	Unit
SP-14, Duplicate of Effluent from Sewage/Graywater Treatment System						
Volatile and Semivolatile Organics						
P058 4-Nitrophenol	NC	EXCLUDE	NC	NC	NC	
P001 Acenaphthene	NC	ND(10.0)	NC	NC	NC	ug/L
P077 Acenaphthylene	NC	ND(10.0)	NC	NC	NC	ug/L
P078 Anthracene	NC	ND(10.0)	NC	NC	NC	ug/L
P004 Benzene	NC	ND(5.00)	NC	ND(5.00)	NC	ug/L
P072 Benzo(a)anthracene	NC	ND(10.0)	NC	NC	NC	ug/L
P073 Benzo(a)pyrene	NC	ND(10.0)	NC	NC	NC	ug/L
P074 Benzo(b)fluoranthene	NC	ND(10.0)	NC	NC	NC	ug/L
Benzo(g,h,i)perylene	NC	ND(10.0)	NC	NC	NC	ug/L
P075 Benzo(k)fluoranthene	NC	ND(10.0)	NC	NC	NC	ug/L
P043 Bis(2-chloroethoxy)methane	NC	ND(10.0)	NC	NC	NC	ug/L
Bis(2-Chloroethyl)ether	NC	ND(10.0)	NC	NC	NC	ug/L
P066 Bis(2-ethylhexyl) phthalate	NC	ND(10.0)	NC	NC	NC	ug/L
P048 Bromodichloromethane	NC	ND(5.00)	NC	ND(5.00)	NC	ug/L
Bromoform	NC	ND(5.00)	NC	ND(5.00)	NC	ug/L
P046 Bromomethane	NC	ND(10.0)	NC	ND(10.0)	NC	ug/L
P067 Butyl benzyl phthalate	NC	ND(10.0)	NC	NC	NC	ug/L
Carbon tetrachloride	NC	ND(5.00)	NC	ND(5.00)	NC	ug/L
P007 Chlorobenzene	NC	ND(5.00)	NC	ND(5.00)	NC	ug/L
P016 Chloroethane	NC	ND(10.0)	NC	ND(10.0)	NC	ug/L
P023 Chloroform	NC	ND(5.00)	NC	ND(5.00)	NC	ug/L
P045 Chloromethane	NC	ND(10.0)	NC	ND(10.0)	NC	ug/L
P076 Chrysene	NC	ND(10.0)	NC	NC	NC	ug/L
cis-1,3-Dichloropropene	NC	ND(5.00)	NC	ND(5.00)	NC	ug/L
Dibenz(a,h)anthracene	NC	ND(10.0)	NC	NC	NC	ug/L
P051 Dibromochloromethane	NC	ND(5.00)	NC	ND(5.00)	NC	ug/L
P070 Diethyl phthalate	NC	ND(10.0)	NC	NC	NC	ug/L
P071 Dimethyl phthalate	NC	ND(10.0)	NC	NC	NC	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65956	Day 2 65960	Day 3 65964	Day 4 65968	Day 5 65972	Unit
SP-14, Duplicate of Effluent from Sewage/Graywater Treatment System						
Volatile and Semivolatile Organics						
P068 Di-n-butyl phthalate	NC	ND(10.0)	NC	NC	NC	ug/L
P069 Di-n-octyl phthalate	NC	ND(10.0)	NC	NC	NC	ug/L
P038 Ethylbenzene	NC	ND(5.00)	NC	ND(5.00)	NC	ug/L
P039 Fluoranthene	NC	ND(10.0)	NC	NC	NC	ug/L
P080 Fluorene	NC	ND(10.0)	NC	NC	NC	ug/L
P009 Hexachlorobenzene	NC	ND(10.0)	NC	NC	NC	ug/L
P052 Hexachlorobutadiene	NC	ND(10.0)	NC	NC	NC	ug/L
P012 Hexachloroethane	NC	ND(10.0)	NC	NC	NC	ug/L
P083 Indeno(1,2,3-cd)pyrene	NC	ND(10.0)	NC	NC	NC	ug/L
P054 Isophorone	NC	ND(10.0)	NC	NC	NC	ug/L
P044 Methylene chloride	NC	ND(5.00)	NC	ND(5.00)	NC	ug/L
P055 Naphthalene	NC	ND(10.0)	NC	NC	NC	ug/L
P056 Nitrobenzene	NC	ND(10.0)	NC	NC	NC	ug/L
N-Nitroso Di-n-propylamine	NC	ND(10.0)	NC	NC	NC	ug/L
P064 Pentachlorophenol	NC	ND(50.0)	NC	NC	NC	ug/L
P081 Phenanthrene	NC	ND(10.0)	NC	NC	NC	ug/L
P065 Phenol	NC	60.0	NC	NC	NC	ug/L
P084 Pyrene	NC	ND(10.0)	NC	NC	NC	ug/L
P085 Tetrachloroethene	NC	ND(5.00)	NC	ND(5.00)	NC	ug/L
P086 Toluene	NC	ND(5.00)	NC	ND(5.00)	NC	ug/L
P030 trans-1,2-Dichloroethene	NC	ND(5.00)	NC	ND(5.00)	NC	ug/L
P033 trans-1,3-Dichloropropene	NC	ND(5.00)	NC	ND(5.00)	NC	ug/L
P087 Trichloroethene	NC	ND(5.00)	NC	ND(5.00)	NC	ug/L
Trichlorofluoromethane	NC	ND(5.00)	NC	ND(5.00)	NC	ug/L
P088 Vinyl chloride	NC	ND(10.0)	NC	ND(10.0)	NC	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 3 65976	Unit
SP-15, Graywater Screening Solids		
Classical Pollutants		
Alkalinity	1,130	mg/L
Ammonia As Nitrogen (NH3-N)	148	mg/L
Available Cyanide	0.474	ug/L
Chemical Oxygen Demand (COD)	15,200	mg/L
Chloride	79.8	mg/L
Nitrate/Nitrite (NO2 + NO3-N)	2.20	mg/L
Sulfate	486	mg/L
P121 Total Cyanide	ND(0.250)	mg/L
Total Kjeldahl Nitrogen (TKN)	733	mg/L
Total Organic Carbon (TOC)	9,960	mg/L
Total Phosphorus	53.0	mg/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).
 NC - Not collected.
 ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 3 65976	Unit
SP-15, Graywater Screening Solids		
Total and Dissolved Metals		
Aluminum, Total	131	ug/L
P114 Antimony, Total	0.260	ug/L
P115 Arsenic, Total	ND(0.0771)	ug/L
Barium, Total	49.6	ug/L
P117 Beryllium, Total	ND(0.00257)	ug/L
Boron, Total	ND(0.118)	ug/L
P118 Cadmium, Total	0.0239	ug/L
Calcium, Total	568	ug/L
P119 Chromium, Total	3.06	ug/L
Cobalt, Total	ND(0.0103)	ug/L
P120 Copper, Total	33.2	ug/L
Iron, Total	272	ug/L
P122 Lead, Total	1.60	ug/L
Magnesium, Total	37.5	ug/L
Manganese, Total	1.72	ug/L
P123 Mercury, Total	0.00874	ug/L
Molybdenum, Total	0.414	ug/L
P124 Nickel, Total	3.34	ug/L
P125 Selenium, Total	0.170	ug/L
P126 Silver, Total	1.43	ug/L
Sodium, Total	504	ug/L
P127 Thallium, Total	ND(0.131)	ug/L
Tin, Total	ND(0.0925)	ug/L
Titanium, Total	1.37	ug/L
Vanadium, Total	0.910	ug/L
Yttrium, Total	ND(0.0154)	ug/L
P128 Zinc, Total	177	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 3 65976	Unit
SP-15, Graywater Screening Solids		
Volatile and Semivolatile Organics		
P011 1,1,1-Trichloroethane	ND(4.78)	ug/L
P015 1,1,2,2-Tetrachloroethane	ND(4.78)	ug/L
P014 1,1,2-Trichloroethane	ND(4.78)	ug/L
P013 1,1-Dichloroethane	ND(4.78)	ug/L
P029 1,1-Dichloroethene	ND(4.78)	ug/L
P008 1,2,4-Trichlorobenzene	ND(8,370)	ug/L
P025 1,2-Dichlorobenzene	ND(8,370)	ug/L
P010 1,2-Dichloroethane	ND(4.78)	ug/L
P032 1,2-Dichloropropane	ND(4.78)	ug/L
P026 1,3-Dichlorobenzene	ND(8,370)	ug/L
P027 1,4-Dichlorobenzene	ND(8,370)	ug/L
P042 2,2'-Oxybis(1-chloropropane)	ND(8,370)	ug/L
P021 2,4,6-Trichlorophenol	ND(8,370)	ug/L
P031 2,4-Dichlorophenol	ND(8,370)	ug/L
P034 2,4-Dimethylphenol	ND(16,700)	ug/L
P059 2,4-Dinitrophenol	ND(40,600)	ug/L
P035 2,4-Dinitrotoluene	ND(8,370)	ug/L
P036 2,6-Dinitrotoluene	ND(8,370)	ug/L
P019 2-Chloroethyl vinyl ether	ND(9.56)	ug/L
P020 2-Chloronaphthalene	ND(8,370)	ug/L
P024 2-Chlorophenol	ND(8,370)	ug/L
P057 2-Nitrophenol	ND(8,370)	ug/L
P028 3,3'-Dichlorobenzidine	ND(16,700)	ug/L
4,6-Dinitro-2-methylphenol	ND(40,600)	ug/L
4-Bromophenyl phenyl ether	ND(8,370)	ug/L
P022 4-Chloro-3-methylphenol	ND(8,370)	ug/L
4-Chlorophenyl phenyl ether	ND(8,370)	ug/L
P058 4-Nitrophenol	ND(40,600)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 3 65976	Unit
SP-15, Graywater Screening Solids		
Volatile and Semivolatile Organics		
P001 Acenaphthene	ND(8,370)	ug/L
P077 Acenaphthylene	ND(8,370)	ug/L
P078 Anthracene	ND(8,370)	ug/L
P004 Benzene	ND(4.78)	ug/L
P072 Benzo(a)anthracene	ND(8,370)	ug/L
P073 Benzo(a)pyrene	ND(8,370)	ug/L
P074 Benzo(b)fluoranthene	ND(8,370)	ug/L
Benzo(g,h,i)perylene	ND(8,370)	ug/L
P075 Benzo(k)fluoranthene	ND(8,370)	ug/L
P043 Bis(2-chloroethoxy)methane	ND(8,370)	ug/L
Bis(2-Chloroethyl)ether	ND(8,370)	ug/L
P066 Bis(2-ethylhexyl) phthalate	20,100	ug/L
P048 Bromodichloromethane	ND(4.78)	ug/L
Bromoform	ND(4.78)	ug/L
P046 Bromomethane	ND(9.56)	ug/L
P067 Butyl benzyl phthalate	ND(8,370)	ug/L
Carbon tetrachloride	ND(4.78)	ug/L
P007 Chlorobenzene	ND(4.78)	ug/L
P016 Chloroethane	ND(9.56)	ug/L
P023 Chloroform	5.74	ug/L
P045 Chloromethane	ND(9.56)	ug/L
P076 Chrysene	ND(8,370)	ug/L
cis-1,3-Dichloropropene	ND(4.78)	ug/L
Dibenz(a,h)anthracene	ND(8,370)	ug/L
P051 Dibromochloromethane	ND(4.78)	ug/L
P070 Diethyl phthalate	ND(8,370)	ug/L
P071 Dimethyl phthalate	ND(8,370)	ug/L
P068 Di-n-butyl phthalate	ND(8,370)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 3 65976	Unit
SP-15, Graywater Screening Solids		
Volatile and Semivolatile Organics		
P069 Di-n-octyl phthalate	ND(8,370)	ug/L
P038 Ethylbenzene	13.1	ug/L
P039 Fluoranthene	ND(8,370)	ug/L
P080 Fluorene	ND(8,370)	ug/L
P009 Hexachlorobenzene	ND(8,370)	ug/L
P052 Hexachlorobutadiene	ND(8,370)	ug/L
P012 Hexachloroethane	ND(8,370)	ug/L
P083 Indeno(1,2,3-cd)pyrene	ND(8,370)	ug/L
P054 Isophorone	ND(8,370)	ug/L
P044 Methylene chloride	ND(4.78)	ug/L
P055 Naphthalene	ND(8,370)	ug/L
P056 Nitrobenzene	ND(8,370)	ug/L
N-Nitroso Di-n-propylamine	ND(8,370)	ug/L
P064 Pentachlorophenol	ND(40,600)	ug/L
P081 Phenanthrene	ND(8,370)	ug/L
P065 Phenol	ND(8,370)	ug/L
P084 Pyrene	ND(8,370)	ug/L
P085 Tetrachloroethene	ND(4.78)	ug/L
P086 Toluene	19.1	ug/L
P030 trans-1,2-Dichloroethene	ND(4.78)	ug/L
P033 trans-1,3-Dichloropropene	ND(4.78)	ug/L
P087 Trichloroethene	ND(4.78)	ug/L
Trichlorofluoromethane	ND(4.78)	ug/L
P088 Vinyl chloride	ND(9.56)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65980	Day 2 65984	Day 3 65988	Day 4 65992	Day 5 65996	Unit
SP-16, Final Combined Discharge from Graywater and Sewage/Graywater Treatment Systems						
Classical Pollutants						
Alkalinity	161	146	138	98.4	155	mg/L
Ammonia As Nitrogen (NH ₃ -N)	ND(0.0500)	ND(0.0500)	ND(0.0500)	ND(0.0500)	ND(0.0500)	mg/L
Available Cyanide	ND(2.00)	ND(2.00)	7.60	ND(2.00)	9.00	ug/L
Biochemical Oxygen Demand (BOD)	17.5	19.8	17.0	18.9	15.0	mg/L
Chemical Oxygen Demand (COD)	129	74.0	80.0	75.0	86.0	mg/L
Chloride	595	75.0	75.0	475	45.0	mg/L
Hardness	114	24.3	20.1	113	18.8	mg/L
Hexane Extractable Material (HEM)	ND(6.00)	ND(5.00)	ND(6.00)	ND(6.00)	ND(6.00)	mg/L
Nitrate/Nitrite (NO ₂ + NO ₃ -N)	0.0630	0.0790	0.0690	0.0170	0.0560	mg/L
Settleable residue	ND(0.110)	ND(0.100)	ND(0.110)	ND(0.110)	ND(0.110)	mL/L
Silica Gel Treated HEM (SGT-HEM)	ND(6.00)	ND(5.00)	ND(6.00)	ND(6.00)	ND(6.00)	mg/L
Sulfate	89.2	16.6	20.0	68.4	23.2	mg/L
P121 Total Cyanide	ND(0.00500)	ND(0.00500)	ND(0.00500)	ND(0.00500)	ND(0.00500)	mg/L
Total Dissolved Solids (TDS)	1,190	256	259	998	257	mg/L
Total Kjeldahl Nitrogen (TKN)	2.94	22.0	0.840	0.460	31.4	mg/L
Total Organic Carbon (TOC)	21.7	20.7	19.5	12.6	21.9	mg/L
Total Phosphorus	3.61	4.06	31.6	2.82	6.31	mg/L
Total Suspended Solids (TSS)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	mg/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65980	Day 2 65984	Day 3 65988	Day 4 65992	Day 5 65996	Unit
SP-16, Final Combined Discharge from Graywater and Sewage/Graywater Treatment Systems						
Total and Dissolved Metals						
Aluminum, Total	ND(8.80)	ND(8.80)	27.6	30.5	66.0	ug/L
P114 Antimony, Total	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ug/L
P115 Arsenic, Total	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ug/L
Barium, Total	48.7	30.1	29.9	18.8	42.4	ug/L
P117 Beryllium, Total	ND(0.0700)	ND(0.0700)	ND(0.0700)	ND(0.0700)	ND(0.0700)	ug/L
Boron, Total	159	ND(18.0)	88.8	146	101	ug/L
P118 Cadmium, Total	ND(0.0800)	ND(0.0800)	ND(0.0800)	ND(0.0800)	ND(0.0800)	ug/L
Calcium, Total	10,400	3,770	3,580	8,470	4,180	ug/L
P119 Chromium, Total	ND(0.270)	ND(0.270)	0.810	0.340	0.900	ug/L
Cobalt, Total	ND(0.660)	ND(0.660)	ND(0.660)	ND(0.660)	ND(0.660)	ug/L
P120 Copper, Total	8.59	6.14	6.62	4.33	15.5	ug/L
Iron, Total	332	284	194	114	525	ug/L
P122 Lead, Total	ND(0.620)	ND(0.620)	1.30	ND(0.620)	3.95	ug/L
Magnesium, Total	21,300	3,620	2,710	22,400	2,020	ug/L
Manganese, Total	22.4	19.8	8.22	7.32	21.9	ug/L
P123 Mercury, Total	ND(0.0500)	ND(0.0500)	ND(0.0500)	0.0510	0.0510	ug/L
Molybdenum, Total	ND(1.60)	ND(1.60)	ND(1.60)	ND(1.60)	ND(1.60)	ug/L
P124 Nickel, Total	10.4	9.88	12.3	6.76	17.6	ug/L
P125 Selenium, Total	ND(1.40)	ND(1.40)	ND(1.40)	ND(1.40)	ND(1.40)	ug/L
P126 Silver, Total	ND(0.770)	ND(0.770)	ND(0.770)	ND(0.770)	ND(0.770)	ug/L
Sodium, Total	196,000	61,800	61,100	219,000	64,900	ug/L
P127 Thallium, Total	ND(8.00)	ND(0.800)	ND(0.800)	ND(8.00)	ND(0.800)	ug/L
Tin, Total	ND(0.940)	ND(0.940)	ND(0.940)	ND(0.940)	ND(0.940)	ug/L
Titanium, Total	ND(0.620)	ND(0.620)	ND(0.620)	ND(0.620)	ND(0.620)	ug/L
Vanadium, Total	ND(0.470)	ND(0.470)	ND(0.470)	ND(0.470)	ND(0.470)	ug/L
Yttrium, Total	ND(0.310)	ND(0.310)	ND(0.310)	ND(0.310)	ND(0.310)	ug/L
P128 Zinc, Total	454	335	295	326	662	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65980	Day 2 65984	Day 3 65988	Day 4 65992	Day 5 65996	Unit
SP-16, Final Combined Discharge from Graywater and Sewage/Graywater Treatment Systems						
Total and Dissolved Metals						
Aluminum, Dissolved	ND(8.80)	ND(8.80)	ND(8.80)	ND(8.80)	73.8	ug/L
P114 Antimony, Dissolved	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ug/L
P115 Arsenic, Dissolved	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ND(2.00)	ug/L
Barium, Dissolved	44.9	28.3	30.3	22.7	41.9	ug/L
P117 Beryllium, Dissolved	ND(0.0700)	ND(0.0700)	ND(0.0700)	ND(0.0700)	ND(0.0700)	ug/L
Boron, Dissolved	204	93.6	135	181	ND(18.0)	ug/L
P118 Cadmium, Dissolved	ND(0.0800)	ND(0.0800)	ND(0.0800)	ND(0.0800)	ND(0.0800)	ug/L
Calcium, Dissolved	12,700	3,760	3,830	9,910	4,210	ug/L
P119 Chromium, Dissolved	0.360	0.390	0.440	0.280	0.290	ug/L
Cobalt, Dissolved	ND(0.660)	1.13	1.67	2.47	1.85	ug/L
P120 Copper, Dissolved	4.90	5.77	6.17	2.03	10.2	ug/L
Iron, Dissolved	292	296	167	82.9	412	ug/L
P122 Lead, Dissolved	1.72	1.05	0.770	ND(0.620)	2.43	ug/L
Magnesium, Dissolved	30,500	3,650	2,940	26,900	2,020	ug/L
Manganese, Dissolved	21.4	22.2	11.3	12.3	24.2	ug/L
P123 Mercury, Dissolved	ND(0.0500)	ND(0.0500)	ND(0.0500)	0.0720	0.120	ug/L
Molybdenum, Dissolved	ND(1.60)	ND(1.60)	ND(1.60)	ND(1.60)	ND(1.60)	ug/L
P124 Nickel, Dissolved	10.8	11.8	12.0	7.72	16.1	ug/L
P125 Selenium, Dissolved	ND(1.40)	ND(1.40)	ND(1.40)	ND(1.40)	ND(1.40)	ug/L
P126 Silver, Dissolved	ND(0.770)	ND(0.770)	ND(0.770)	ND(0.770)	ND(0.770)	ug/L
Sodium, Dissolved	283,000	68,700	62,000	246,000	61,200	ug/L
P127 Thallium, Dissolved	ND(8.00)	ND(0.800)	ND(0.800)	ND(0.800)	ND(0.800)	ug/L
Tin, Dissolved	ND(0.940)	ND(0.940)	ND(0.940)	ND(0.940)	ND(0.940)	ug/L
Titanium, Dissolved	ND(0.620)	ND(0.620)	ND(0.620)	ND(0.620)	ND(0.620)	ug/L
Vanadium, Dissolved	ND(0.470)	ND(0.470)	ND(0.470)	ND(0.470)	ND(0.470)	ug/L
Yttrium, Dissolved	ND(0.310)	ND(0.310)	ND(0.310)	ND(0.310)	ND(0.310)	ug/L
P128 Zinc, Dissolved	322	299	284	222	573	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65980	Day 2 65984	Day 3 65988	Day 4 65992	Day 5 65996	Unit
SP-16, Final Combined Discharge from Graywater and Sewage/Graywater Treatment Systems						
Volatile and Semivolatile Organics						
P011 1,1,1-Trichloroethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P015 1,1,2,2-Tetrachloroethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P014 1,1,2-Trichloroethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P013 1,1-Dichloroethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P029 1,1-Dichloroethene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P008 1,2,4-Trichlorobenzene	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P025 1,2-Dichlorobenzene	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P010 1,2-Dichloroethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P032 1,2-Dichloropropane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P026 1,3-Dichlorobenzene	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P027 1,4-Dichlorobenzene	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P042 2,2'-Oxybis(1-chloropropane)	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P021 2,4,6-Trichlorophenol	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P031 2,4-Dichlorophenol	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P034 2,4-Dimethylphenol	ND(20.0)	ND(40.0)	ND(44.0)	ND(44.0)	ND(44.0)	ug/L
P059 2,4-Dinitrophenol	ND(50.0)	ND(100)	ND(110)	ND(110)	ND(110)	ug/L
P035 2,4-Dinitrotoluene	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P036 2,6-Dinitrotoluene	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P019 2-Chloroethyl vinyl ether	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ug/L
P020 2-Chloronaphthalene	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P024 2-Chlorophenol	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P057 2-Nitrophenol	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P028 3,3'-Dichlorobenzidine	ND(20.0)	ND(40.0)	ND(44.0)	ND(44.0)	ND(44.0)	ug/L
4,6-Dinitro-2-methylphenol	ND(50.0)	ND(100)	ND(110)	ND(110)	ND(110)	ug/L
4-Bromophenyl phenyl ether	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P022 4-Chloro-3-methylphenol	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
4-Chlorophenyl phenyl ether	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65980	Day 2 65984	Day 3 65988	Day 4 65992	Day 5 65996	Unit
SP-16, Final Combined Discharge from Graywater and Sewage/Graywater Treatment Systems						
Volatile and Semivolatile Organics						
P058 4-Nitrophenol	ND(50.0)	ND(100)	ND(110)	ND(110)	ND(110)	ug/L
P001 Acenaphthene	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P077 Acenaphthylene	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P078 Anthracene	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P004 Benzene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P072 Benzo(a)anthracene	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P073 Benzo(a)pyrene	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P074 Benzo(b)fluoranthene	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
Benzo(g,h,i)perylene	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P075 Benzo(k)fluoranthene	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P043 Bis(2-chloroethoxy)methane	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
Bis(2-Chloroethyl)ether	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P066 Bis(2-ethylhexyl) phthalate	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P048 Bromodichloromethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
Bromoform	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P046 Bromomethane	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ug/L
P067 Butyl benzyl phthalate	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
Carbon tetrachloride	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P007 Chlorobenzene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P016 Chloroethane	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ug/L
P023 Chloroform	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P045 Chloromethane	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ug/L
P076 Chrysene	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
cis-1,3-Dichloropropene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
Dibenz(a,h)anthracene	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P051 Dibromochloromethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P070 Diethyl phthalate	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L

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**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 1 65980	Day 2 65984	Day 3 65988	Day 4 65992	Day 5 65996	Unit
SP-16, Final Combined Discharge from Graywater and Sewage/Graywater Treatment Systems						
Volatile and Semivolatile Organics						
P071 Dimethyl phthalate	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P068 Di-n-butyl phthalate	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P069 Di-n-octyl phthalate	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P038 Ethylbenzene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P039 Fluoranthene	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P080 Fluorene	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P009 Hexachlorobenzene	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P052 Hexachlorobutadiene	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P012 Hexachloroethane	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P083 Indeno(1,2,3-cd)pyrene	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P054 Isophorone	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P044 Methylene chloride	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P055 Naphthalene	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P056 Nitrobenzene	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
N-Nitroso Di-n-propylamine	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P064 Pentachlorophenol	ND(50.0)	ND(100)	ND(110)	ND(110)	ND(110)	ug/L
P081 Phenanthrene	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P065 Phenol	66.0	40.0	72.0	49.0	38.0	ug/L
P084 Pyrene	ND(10.0)	ND(20.0)	ND(22.0)	ND(22.0)	ND(22.0)	ug/L
P085 Tetrachloroethene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P086 Toluene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P030 trans-1,2-Dichloroethene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P033 trans-1,3-Dichloropropene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P087 Trichloroethene	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
Trichlorofluoromethane	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ND(5.00)	ug/L
P088 Vinyl chloride	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ND(10.0)	ug/L

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**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 2 66000	Unit
SP-17, Source Water		
Classical Pollutants		
Alkalinity	ND(10.0)	mg/L
Ammonia As Nitrogen (NH3-N)	ND(0.0500)	mg/L
Available Cyanide	ND(2.00)	ug/L
Biochemical Oxygen Demand (BOD)	ND(2.00)	mg/L
Chemical Oxygen Demand (COD)	28.0	mg/L
Chloride	4.40	mg/L
Hardness	2.91	mg/L
Nitrate/Nitrite (NO2 + NO3-N)	0.0160	mg/L
Settleable residue	ND(0.120)	mL/L
Sulfate	13.9	mg/L
P121 Total Cyanide	ND(0.00500)	mg/L
Total Dissolved Solids (TDS)	ND(10.0)	mg/L
Total Kjeldahl Nitrogen (TKN)	0.320	mg/L
Total Organic Carbon (TOC)	1.05	mg/L
Total Phosphorus	ND(0.0100)	mg/L
Total Suspended Solids (TSS)	ND(5.00)	mg/L

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**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 2 66000	Unit
SP-17, Source Water		
Total and Dissolved Metals		
Aluminum, Total	ND(8.80)	ug/L
P114 Antimony, Total	ND(2.00)	ug/L
P115 Arsenic, Total	ND(2.00)	ug/L
Barium, Total	185	ug/L
P117 Beryllium, Total	ND(0.0700)	ug/L
Boron, Total	ND(18.0)	ug/L
P118 Cadmium, Total	ND(0.0800)	ug/L
Calcium, Total	1,000	ug/L
P119 Chromium, Total	ND(0.270)	ug/L
Cobalt, Total	ND(0.660)	ug/L
P120 Copper, Total	193	ug/L
Iron, Total	118	ug/L
P122 Lead, Total	42.8	ug/L
Magnesium, Total	96.8	ug/L
Manganese, Total	2.67	ug/L
P123 Mercury, Total	ND(0.0500)	ug/L
Molybdenum, Total	ND(1.60)	ug/L
P124 Nickel, Total	66.0	ug/L
P125 Selenium, Total	ND(1.40)	ug/L
P126 Silver, Total	ND(0.770)	ug/L
Sodium, Total	6,640	ug/L
P127 Thallium, Total	ND(0.800)	ug/L
Tin, Total	ND(0.940)	ug/L
Titanium, Total	ND(0.620)	ug/L
Vanadium, Total	ND(0.470)	ug/L
Yttrium, Total	ND(0.310)	ug/L
P128 Zinc, Total	1,140	ug/L
Aluminum, Dissolved	ND(8.80)	ug/L

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**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 2 66000	Unit
SP-17, Source Water		
Total and Dissolved Metals		
P114 Antimony, Dissolved	ND(2.00)	ug/L
P115 Arsenic, Dissolved	ND(2.00)	ug/L
Barium, Dissolved	181	ug/L
P117 Beryllium, Dissolved	ND(0.0700)	ug/L
Boron, Dissolved	ND(18.0)	ug/L
P118 Cadmium, Dissolved	ND(0.0800)	ug/L
Calcium, Dissolved	912	ug/L
P119 Chromium, Dissolved	ND(0.270)	ug/L
Cobalt, Dissolved	2.30	ug/L
P120 Copper, Dissolved	14.0	ug/L
Iron, Dissolved	ND(9.80)	ug/L
P122 Lead, Dissolved	0.790	ug/L
Magnesium, Dissolved	92.9	ug/L
Manganese, Dissolved	4.09	ug/L
P123 Mercury, Dissolved	ND(0.0500)	ug/L
Molybdenum, Dissolved	ND(1.60)	ug/L
P124 Nickel, Dissolved	3.62	ug/L
P125 Selenium, Dissolved	ND(1.40)	ug/L
P126 Silver, Dissolved	ND(0.770)	ug/L
Sodium, Dissolved	3,880	ug/L
P127 Thallium, Dissolved	ND(0.800)	ug/L
Tin, Dissolved	ND(0.940)	ug/L
Titanium, Dissolved	ND(0.620)	ug/L
Vanadium, Dissolved	ND(0.470)	ug/L
Yttrium, Dissolved	ND(0.310)	ug/L
P128 Zinc, Dissolved	24.9	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 2 66000	Unit
SP-17, Source Water		
Volatile and Semivolatile Organics		
P011 1,1,1-Trichloroethane	ND(5.00)	ug/L
P015 1,1,2,2-Tetrachloroethane	ND(5.00)	ug/L
P014 1,1,2-Trichloroethane	ND(5.00)	ug/L
P013 1,1-Dichloroethane	ND(5.00)	ug/L
P029 1,1-Dichloroethene	ND(5.00)	ug/L
P008 1,2,4-Trichlorobenzene	ND(20.0)	ug/L
P025 1,2-Dichlorobenzene	ND(20.0)	ug/L
P010 1,2-Dichloroethane	ND(5.00)	ug/L
P032 1,2-Dichloropropane	ND(5.00)	ug/L
P026 1,3-Dichlorobenzene	ND(20.0)	ug/L
P027 1,4-Dichlorobenzene	ND(20.0)	ug/L
P042 2,2'-Oxybis(1-chloropropane)	ND(20.0)	ug/L
P021 2,4,6-Trichlorophenol	ND(20.0)	ug/L
P031 2,4-Dichlorophenol	ND(20.0)	ug/L
P034 2,4-Dimethylphenol	ND(40.0)	ug/L
P059 2,4-Dinitrophenol	ND(100)	ug/L
P035 2,4-Dinitrotoluene	ND(20.0)	ug/L
P036 2,6-Dinitrotoluene	ND(20.0)	ug/L
P019 2-Chloroethyl vinyl ether	ND(10.0)	ug/L
P020 2-Chloronaphthalene	ND(20.0)	ug/L
P024 2-Chlorophenol	ND(20.0)	ug/L
P057 2-Nitrophenol	ND(20.0)	ug/L
P028 3,3'-Dichlorobenzidine	ND(40.0)	ug/L
4,6-Dinitro-2-methylphenol	ND(100)	ug/L
4-Bromophenyl phenyl ether	ND(20.0)	ug/L
P022 4-Chloro-3-methylphenol	ND(20.0)	ug/L
4-Chlorophenyl phenyl ether	ND(20.0)	ug/L
P058 4-Nitrophenol	ND(100)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 2 66000	Unit
SP-17, Source Water		
Volatile and Semivolatile Organics		
P001 Acenaphthene	ND(20.0)	ug/L
P077 Acenaphthylene	ND(20.0)	ug/L
P078 Anthracene	ND(20.0)	ug/L
P004 Benzene	ND(5.00)	ug/L
P072 Benzo(a)anthracene	ND(20.0)	ug/L
P073 Benzo(a)pyrene	ND(20.0)	ug/L
P074 Benzo(b)fluoranthene	ND(20.0)	ug/L
Benzo(g,h,i)perylene	ND(20.0)	ug/L
P075 Benzo(k)fluoranthene	ND(20.0)	ug/L
P043 Bis(2-chloroethoxy)methane	ND(20.0)	ug/L
Bis(2-Chloroethyl)ether	ND(20.0)	ug/L
P066 Bis(2-ethylhexyl) phthalate	ND(20.0)	ug/L
P048 Bromodichloromethane	ND(5.00)	ug/L
Bromoform	ND(5.00)	ug/L
P046 Bromomethane	ND(10.0)	ug/L
P067 Butyl benzyl phthalate	ND(20.0)	ug/L
Carbon tetrachloride	ND(5.00)	ug/L
P007 Chlorobenzene	ND(5.00)	ug/L
P016 Chloroethane	ND(10.0)	ug/L
P023 Chloroform	24.0	ug/L
P045 Chloromethane	ND(10.0)	ug/L
P076 Chrysene	ND(20.0)	ug/L
cis-1,3-Dichloropropene	ND(5.00)	ug/L
Dibenz(a,h)anthracene	ND(20.0)	ug/L
P051 Dibromochloromethane	ND(5.00)	ug/L
P070 Diethyl phthalate	ND(20.0)	ug/L
P071 Dimethyl phthalate	ND(20.0)	ug/L
P068 Di-n-butyl phthalate	ND(20.0)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 2 66000	Unit
SP-17, Source Water		
Volatile and Semivolatile Organics		
P069 Di-n-octyl phthalate	ND(20.0)	ug/L
P038 Ethylbenzene	ND(5.00)	ug/L
P039 Fluoranthene	ND(20.0)	ug/L
P080 Fluorene	ND(20.0)	ug/L
P009 Hexachlorobenzene	ND(20.0)	ug/L
P052 Hexachlorobutadiene	ND(20.0)	ug/L
P012 Hexachloroethane	ND(20.0)	ug/L
P083 Indeno(1,2,3-cd)pyrene	ND(20.0)	ug/L
P054 Isophorone	ND(20.0)	ug/L
P044 Methylene chloride	ND(5.00)	ug/L
P055 Naphthalene	ND(20.0)	ug/L
P056 Nitrobenzene	ND(20.0)	ug/L
N-Nitroso Di-n-propylamine	ND(20.0)	ug/L
P064 Pentachlorophenol	ND(100)	ug/L
P081 Phenanthrene	ND(20.0)	ug/L
P065 Phenol	58.0	ug/L
P084 Pyrene	ND(20.0)	ug/L
P085 Tetrachloroethene	ND(5.00)	ug/L
P086 Toluene	ND(5.00)	ug/L
P030 trans-1,2-Dichloroethene	ND(5.00)	ug/L
P033 trans-1,3-Dichloropropene	ND(5.00)	ug/L
P087 Trichloroethene	ND(5.00)	ug/L
Trichlorofluoromethane	ND(5.00)	ug/L
P088 Vinyl chloride	ND(10.0)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 4 66004	Unit
SP-18, Trip Blank		
Volatile and Semivolatile Organics		
P011 1,1,1-Trichloroethane	ND(5.00)	ug/L
P015 1,1,2,2-Tetrachloroethane	ND(5.00)	ug/L
P014 1,1,2-Trichloroethane	ND(5.00)	ug/L
P013 1,1-Dichloroethane	ND(5.00)	ug/L
P029 1,1-Dichloroethene	ND(5.00)	ug/L
P010 1,2-Dichloroethane	ND(5.00)	ug/L
P032 1,2-Dichloropropane	ND(5.00)	ug/L
P019 2-Chloroethyl vinyl ether	ND(10.0)	ug/L
P004 Benzene	ND(5.00)	ug/L
P048 Bromodichloromethane	ND(5.00)	ug/L
Bromoform	ND(5.00)	ug/L
P046 Bromomethane	ND(10.0)	ug/L
Carbon tetrachloride	ND(5.00)	ug/L
P007 Chlorobenzene	ND(5.00)	ug/L
P016 Chloroethane	ND(10.0)	ug/L
P023 Chloroform	ND(5.00)	ug/L
P045 Chloromethane	ND(10.0)	ug/L
cis-1,3-Dichloropropene	ND(5.00)	ug/L
P051 Dibromochloromethane	ND(5.00)	ug/L
P038 Ethylbenzene	ND(5.00)	ug/L
P044 Methylene chloride	ND(5.00)	ug/L
P085 Tetrachloroethene	ND(5.00)	ug/L
P086 Toluene	ND(5.00)	ug/L
P030 trans-1,2-Dichloroethene	ND(5.00)	ug/L
P033 trans-1,3-Dichloropropene	ND(5.00)	ug/L
P087 Trichloroethene	ND(5.00)	ug/L
Trichlorofluoromethane	ND(5.00)	ug/L
P088 Vinyl chloride	ND(10.0)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 2 66008	Unit
SP-19, Equipment Blank		
Classical Pollutants		
Hardness	0.300	mg/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 2 66008	Unit
SP-19, Equipment Blank		
Total and Dissolved Metals		
Aluminum, Total	ND(8.80)	ug/L
P114 Antimony, Total	ND(2.00)	ug/L
P115 Arsenic, Total	ND(2.00)	ug/L
Barium, Total	18.9	ug/L
P117 Beryllium, Total	ND(0.0700)	ug/L
Boron, Total	ND(18.0)	ug/L
P118 Cadmium, Total	ND(0.0800)	ug/L
Calcium, Total	119	ug/L
P119 Chromium, Total	ND(0.270)	ug/L
Cobalt, Total	ND(0.660)	ug/L
P120 Copper, Total	3.41	ug/L
Iron, Total	30.2	ug/L
P122 Lead, Total	12.6	ug/L
Magnesium, Total	ND(6.30)	ug/L
Manganese, Total	0.720	ug/L
P123 Mercury, Total	ND(0.0500)	ug/L
Molybdenum, Total	ND(1.60)	ug/L
P124 Nickel, Total	ND(0.310)	ug/L
P125 Selenium, Total	ND(1.40)	ug/L
P126 Silver, Total	ND(0.770)	ug/L
Sodium, Total	ND(34.9)	ug/L
P127 Thallium, Total	ND(0.800)	ug/L
Tin, Total	ND(0.940)	ug/L
Titanium, Total	ND(0.620)	ug/L
Vanadium, Total	ND(0.470)	ug/L
Yttrium, Total	ND(0.310)	ug/L
P128 Zinc, Total	13.3	ug/L
Aluminum, Dissolved	ND(8.80)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 2 66008	Unit
SP-19, Equipment Blank		
Total and Dissolved Metals		
P114 Antimony, Dissolved	ND(2.00)	ug/L
P115 Arsenic, Dissolved	ND(2.00)	ug/L
Barium, Dissolved	0.390	ug/L
P117 Beryllium, Dissolved	ND(0.0700)	ug/L
Boron, Dissolved	24.3	ug/L
P118 Cadmium, Dissolved	0.210	ug/L
Calcium, Dissolved	ND(7.00)	ug/L
P119 Chromium, Dissolved	ND(0.270)	ug/L
Cobalt, Dissolved	ND(0.660)	ug/L
P120 Copper, Dissolved	ND(1.40)	ug/L
Iron, Dissolved	15.2	ug/L
P122 Lead, Dissolved	16.6	ug/L
Magnesium, Dissolved	ND(6.30)	ug/L
Manganese, Dissolved	ND(0.110)	ug/L
P123 Mercury, Dissolved	ND(0.0500)	ug/L
Molybdenum, Dissolved	ND(1.60)	ug/L
P124 Nickel, Dissolved	ND(0.310)	ug/L
P125 Selenium, Dissolved	ND(1.40)	ug/L
P126 Silver, Dissolved	ND(0.770)	ug/L
Sodium, Dissolved	83.9	ug/L
P127 Thallium, Dissolved	ND(0.800)	ug/L
Tin, Dissolved	ND(0.940)	ug/L
Titanium, Dissolved	ND(0.620)	ug/L
Vanadium, Dissolved	ND(0.470)	ug/L
Yttrium, Dissolved	ND(0.310)	ug/L
P128 Zinc, Dissolved	ND(1.20)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 2 66008	Unit
SP-19, Equipment Blank		
Volatile and Semivolatile Organics		
P008 1,2,4-Trichlorobenzene	ND(20.0)	ug/L
P025 1,2-Dichlorobenzene	ND(20.0)	ug/L
P026 1,3-Dichlorobenzene	ND(20.0)	ug/L
P027 1,4-Dichlorobenzene	ND(20.0)	ug/L
P042 2,2'-Oxybis(1-chloropropane)	ND(20.0)	ug/L
P021 2,4,6-Trichlorophenol	ND(20.0)	ug/L
P031 2,4-Dichlorophenol	ND(20.0)	ug/L
P034 2,4-Dimethylphenol	ND(40.0)	ug/L
P059 2,4-Dinitrophenol	ND(100)	ug/L
P035 2,4-Dinitrotoluene	ND(20.0)	ug/L
P036 2,6-Dinitrotoluene	ND(20.0)	ug/L
P020 2-Chloronaphthalene	ND(20.0)	ug/L
P024 2-Chlorophenol	ND(20.0)	ug/L
P057 2-Nitrophenol	ND(20.0)	ug/L
P028 3,3'-Dichlorobenzidine	ND(40.0)	ug/L
4,6-Dinitro-2-methylphenol	ND(100)	ug/L
4-Bromophenyl phenyl ether	ND(20.0)	ug/L
P022 4-Chloro-3-methylphenol	ND(20.0)	ug/L
4-Chlorophenyl phenyl ether	ND(20.0)	ug/L
P058 4-Nitrophenol	ND(100)	ug/L
P001 Acenaphthene	ND(20.0)	ug/L
P077 Acenaphthylene	ND(20.0)	ug/L
P078 Anthracene	ND(20.0)	ug/L
P072 Benzo(a)anthracene	ND(20.0)	ug/L
P073 Benzo(a)pyrene	ND(20.0)	ug/L
P074 Benzo(b)fluoranthene	ND(20.0)	ug/L
Benzo(g,h,i)perylene	ND(20.0)	ug/L
P075 Benzo(k)fluoranthene	ND(20.0)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 2 66008	Unit
SP-19, Equipment Blank		
Volatile and Semivolatile Organics		
P043 Bis(2-chloroethoxy)methane	ND(20.0)	ug/L
Bis(2-Chloroethyl)ether	ND(20.0)	ug/L
P066 Bis(2-ethylhexyl) phthalate	ND(20.0)	ug/L
P067 Butyl benzyl phthalate	ND(20.0)	ug/L
P076 Chrysene	ND(20.0)	ug/L
Dibenz(a,h)anthracene	ND(20.0)	ug/L
P070 Diethyl phthalate	ND(20.0)	ug/L
P071 Dimethyl phthalate	ND(20.0)	ug/L
P068 Di-n-butyl phthalate	ND(20.0)	ug/L
P069 Di-n-octyl phthalate	ND(20.0)	ug/L
P039 Fluoranthene	ND(20.0)	ug/L
P080 Fluorene	ND(20.0)	ug/L
P009 Hexachlorobenzene	ND(20.0)	ug/L
P052 Hexachlorobutadiene	ND(20.0)	ug/L
P012 Hexachloroethane	ND(20.0)	ug/L
P083 Indeno(1,2,3-cd)pyrene	ND(20.0)	ug/L
P054 Isophorone	ND(20.0)	ug/L
P055 Naphthalene	ND(20.0)	ug/L
P056 Nitrobenzene	ND(20.0)	ug/L
N-Nitroso Di-n-propylamine	ND(20.0)	ug/L
P064 Pentachlorophenol	ND(100)	ug/L
P081 Phenanthrene	ND(20.0)	ug/L
P065 Phenol	48.0	ug/L
P084 Pyrene	ND(20.0)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).
 NC - Not collected.
 ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

		Day 3 66009	Unit
SP-20, Sewage/Graywater Screening Solids			
Classical Pollutants			
	Alkalinity	ND(1,000)	mg/L
	Ammonia As Nitrogen (NH ₃ -N)	7.33	mg/L
	Available Cyanide	9.20	ug/L
	Chemical Oxygen Demand (COD)	2,390	mg/L
	Chloride	97.4	mg/L
	Nitrate/Nitrite (NO ₂ + NO ₃ -N)	1.41	mg/L
	Sulfate	498	mg/L
P121	Total Cyanide	ND(0.250)	mg/L
	Total Kjeldahl Nitrogen (TKN)	9.87	mg/L
	Total Organic Carbon (TOC)	756	mg/L
	Total Phosphorus	15.8	mg/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 3 66009	Unit
SP-20, Sewage/Graywater Screening Solids		
Total and Dissolved Metals		
Aluminum, Total	3.59	ug/L
P114 Antimony, Total	ND(0.00630)	ug/L
P115 Arsenic, Total	0.00987	ug/L
Barium, Total	1.01	ug/L
P117 Beryllium, Total	ND(0.000210)	ug/L
Boron, Total	0.676	ug/L
P118 Cadmium, Total	0.00252	ug/L
Calcium, Total	44.3	ug/L
P119 Chromium, Total	0.134	ug/L
Cobalt, Total	ND(0.000840)	ug/L
P120 Copper, Total	1.09	ug/L
Iron, Total	4.31	ug/L
P122 Lead, Total	0.0319	ug/L
Magnesium, Total	6.74	ug/L
Manganese, Total	0.170	ug/L
P123 Mercury, Total	ND(0.000420)	ug/L
Molybdenum, Total	0.0206	ug/L
P124 Nickel, Total	0.101	ug/L
P125 Selenium, Total	0.00735	ug/L
P126 Silver, Total	0.0124	ug/L
Sodium, Total	125	ug/L
P127 Thallium, Total	ND(0.0107)	ug/L
Tin, Total	0.288	ug/L
Titanium, Total	ND(0.0298)	ug/L
Vanadium, Total	0.00840	ug/L
Yttrium, Total	ND(0.00126)	ug/L
P128 Zinc, Total	4.05	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 3 66009	Unit
SP-20, Sewage/Graywater Screening Solids		
Volatile and Semivolatile Organics		
P011 1,1,1-Trichloroethane	ND(4.92)	ug/L
P015 1,1,2,2-Tetrachloroethane	ND(4.92)	ug/L
P014 1,1,2-Trichloroethane	ND(4.92)	ug/L
P013 1,1-Dichloroethane	ND(4.92)	ug/L
P029 1,1-Dichloroethene	ND(4.92)	ug/L
P008 1,2,4-Trichlorobenzene	ND(168)	ug/L
P025 1,2-Dichlorobenzene	ND(168)	ug/L
P010 1,2-Dichloroethane	ND(4.92)	ug/L
P032 1,2-Dichloropropane	ND(4.92)	ug/L
P026 1,3-Dichlorobenzene	ND(168)	ug/L
P027 1,4-Dichlorobenzene	ND(168)	ug/L
P042 2,2'-Oxybis(1-chloropropane)	ND(168)	ug/L
P021 2,4,6-Trichlorophenol	ND(168)	ug/L
P031 2,4-Dichlorophenol	ND(168)	ug/L
P034 2,4-Dimethylphenol	ND(332)	ug/L
P059 2,4-Dinitrophenol	ND(820)	ug/L
P035 2,4-Dinitrotoluene	ND(168)	ug/L
P036 2,6-Dinitrotoluene	ND(168)	ug/L
P019 2-Chloroethyl vinyl ether	ND(9.84)	ug/L
P020 2-Chloronaphthalene	ND(168)	ug/L
P024 2-Chlorophenol	ND(168)	ug/L
P057 2-Nitrophenol	ND(168)	ug/L
P028 3,3'-Dichlorobenzidine	ND(332)	ug/L
4,6-Dinitro-2-methylphenol	ND(820)	ug/L
4-Bromophenyl phenyl ether	ND(168)	ug/L
P022 4-Chloro-3-methylphenol	ND(168)	ug/L
4-Chlorophenyl phenyl ether	ND(168)	ug/L
P058 4-Nitrophenol	ND(820)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 3 66009	Unit
SP-20, Sewage/Graywater Screening Solids		
Volatile and Semivolatile Organics		
P001 Acenaphthene	ND(168)	ug/L
P077 Acenaphthylene	ND(168)	ug/L
P078 Anthracene	ND(168)	ug/L
P004 Benzene	ND(4.92)	ug/L
P072 Benzo(a)anthracene	ND(168)	ug/L
P073 Benzo(a)pyrene	ND(168)	ug/L
P074 Benzo(b)fluoranthene	ND(168)	ug/L
Benzo(g,h,i)perylene	ND(168)	ug/L
P075 Benzo(k)fluoranthene	ND(168)	ug/L
P043 Bis(2-chloroethoxy)methane	ND(168)	ug/L
Bis(2-Chloroethyl)ether	ND(168)	ug/L
P066 Bis(2-ethylhexyl) phthalate	ND(168)	ug/L
P048 Bromodichloromethane	ND(4.92)	ug/L
Bromoform	ND(4.92)	ug/L
P046 Bromomethane	ND(9.84)	ug/L
P067 Butyl benzyl phthalate	ND(168)	ug/L
Carbon tetrachloride	ND(4.92)	ug/L
P007 Chlorobenzene	ND(4.92)	ug/L
P016 Chloroethane	ND(9.84)	ug/L
P023 Chloroform	ND(4.92)	ug/L
P045 Chloromethane	ND(9.84)	ug/L
P076 Chrysene	ND(168)	ug/L
cis-1,3-Dichloropropene	ND(4.92)	ug/L
Dibenz(a,h)anthracene	ND(168)	ug/L
P051 Dibromochloromethane	ND(4.92)	ug/L
P070 Diethyl phthalate	ND(168)	ug/L
P071 Dimethyl phthalate	ND(168)	ug/L
P068 Di-n-butyl phthalate	ND(168)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 3 66009	Unit
SP-20, Sewage/Graywater Screening Solids		
Volatile and Semivolatile Organics		
P069 Di-n-octyl phthalate	ND(168)	ug/L
P038 Ethylbenzene	ND(4.92)	ug/L
P039 Fluoranthene	ND(168)	ug/L
P080 Fluorene	ND(168)	ug/L
P009 Hexachlorobenzene	ND(168)	ug/L
P052 Hexachlorobutadiene	ND(168)	ug/L
P012 Hexachloroethane	ND(168)	ug/L
P083 Indeno(1,2,3-cd)pyrene	ND(168)	ug/L
P054 Isophorone	ND(168)	ug/L
P044 Methylene chloride	ND(4.92)	ug/L
P055 Naphthalene	ND(168)	ug/L
P056 Nitrobenzene	ND(168)	ug/L
N-Nitroso Di-n-propylamine	ND(168)	ug/L
P064 Pentachlorophenol	ND(820)	ug/L
P081 Phenanthrene	ND(168)	ug/L
P065 Phenol	ND(168)	ug/L
P084 Pyrene	ND(168)	ug/L
P085 Tetrachloroethene	ND(4.92)	ug/L
P086 Toluene	21.7	ug/L
P030 trans-1,2-Dichloroethene	ND(4.92)	ug/L
P033 trans-1,3-Dichloropropene	ND(4.92)	ug/L
P087 Trichloroethene	ND(4.92)	ug/L
Trichlorofluoromethane	ND(4.92)	ug/L
P088 Vinyl chloride	ND(9.84)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 3 66010	Unit
SP-21, Sewage/Graywater Biosludge		
Classical Pollutants		
Alkalinity	ND(1,000)	mg/L
Ammonia As Nitrogen (NH ₃ -N)	136	mg/L
Available Cyanide	493	ug/L
Chemical Oxygen Demand (COD)	332	mg/L
Chloride	251	mg/L
Nitrate/Nitrite (NO ₂ + NO ₃ -N)	8.33	mg/L
Sulfate	1,600	mg/L
P121 Total Cyanide	ND(0.251)	mg/L
Total Kjeldahl Nitrogen (TKN)	1,260	mg/L
Total Organic Carbon (TOC)	4,060	mg/L
Total Phosphorus	192	mg/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 3 66010	Unit
SP-21, Sewage/Graywater Biosludge		
Total and Dissolved Metals		
Aluminum, Total	22.4	ug/L
P114 Antimony, Total	ND(0.00420)	ug/L
P115 Arsenic, Total	0.00560	ug/L
Barium, Total	3.79	ug/L
P117 Beryllium, Total	ND(0.000140)	ug/L
Boron, Total	0.626	ug/L
P118 Cadmium, Total	0.00700	ug/L
Calcium, Total	103	ug/L
P119 Chromium, Total	0.253	ug/L
Cobalt, Total	ND(0.000560)	ug/L
P120 Copper, Total	6.90	ug/L
Iron, Total	13.8	ug/L
P122 Lead, Total	0.153	ug/L
Magnesium, Total	32.8	ug/L
Manganese, Total	0.554	ug/L
P123 Mercury, Total	0.00350	ug/L
Molybdenum, Total	0.0559	ug/L
P124 Nickel, Total	0.192	ug/L
P125 Selenium, Total	0.0375	ug/L
P126 Silver, Total	0.0554	ug/L
Sodium, Total	137	ug/L
P127 Thallium, Total	ND(0.00714)	ug/L
Tin, Total	0.339	ug/L
Titanium, Total	0.153	ug/L
Vanadium, Total	0.0328	ug/L
Yttrium, Total	0.00111	ug/L
P128 Zinc, Total	21.4	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 3 66010	Unit
SP-21, Sewage/Graywater Biosludge		
Volatile and Semivolatile Organics		
P011 1,1,1-Trichloroethane	ND(0.0700)	ug/L
P015 1,1,2,2-Tetrachloroethane	ND(0.0700)	ug/L
P014 1,1,2-Trichloroethane	ND(0.0700)	ug/L
P013 1,1-Dichloroethane	ND(0.0700)	ug/L
P029 1,1-Dichloroethene	ND(0.0700)	ug/L
P008 1,2,4-Trichlorobenzene	ND(11.0)	ug/L
P025 1,2-Dichlorobenzene	ND(11.0)	ug/L
P010 1,2-Dichloroethane	ND(0.0700)	ug/L
P032 1,2-Dichloropropane	ND(0.0700)	ug/L
P026 1,3-Dichlorobenzene	ND(11.0)	ug/L
P027 1,4-Dichlorobenzene	ND(11.0)	ug/L
P042 2,2'-Oxybis(1-chloropropane)	ND(11.0)	ug/L
P021 2,4,6-Trichlorophenol	ND(11.0)	ug/L
P031 2,4-Dichlorophenol	ND(11.0)	ug/L
P034 2,4-Dimethylphenol	ND(22.0)	ug/L
P059 2,4-Dinitrophenol	ND(56.0)	ug/L
P035 2,4-Dinitrotoluene	ND(11.0)	ug/L
P036 2,6-Dinitrotoluene	ND(11.0)	ug/L
P019 2-Chloroethyl vinyl ether	ND(0.140)	ug/L
P020 2-Chloronaphthalene	ND(11.0)	ug/L
P024 2-Chlorophenol	ND(11.0)	ug/L
P057 2-Nitrophenol	ND(11.0)	ug/L
P028 3,3'-Dichlorobenzidine	ND(22.0)	ug/L
4,6-Dinitro-2-methylphenol	ND(56.0)	ug/L
4-Bromophenyl phenyl ether	ND(11.0)	ug/L
P022 4-Chloro-3-methylphenol	ND(11.0)	ug/L
4-Chlorophenyl phenyl ether	ND(11.0)	ug/L
P058 4-Nitrophenol	ND(56.0)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 3 66010	Unit
SP-21, Sewage/Graywater Biosludge		
Volatile and Semivolatile Organics		
P001 Acenaphthene	ND(11.0)	ug/L
P077 Acenaphthylene	ND(11.0)	ug/L
P078 Anthracene	ND(11.0)	ug/L
P004 Benzene	ND(0.0700)	ug/L
P072 Benzo(a)anthracene	ND(11.0)	ug/L
P073 Benzo(a)pyrene	ND(11.0)	ug/L
P074 Benzo(b)fluoranthene	ND(11.0)	ug/L
Benzo(g,h,i)perylene	ND(11.0)	ug/L
P075 Benzo(k)fluoranthene	ND(11.0)	ug/L
P043 Bis(2-chloroethoxy)methane	ND(11.0)	ug/L
Bis(2-Chloroethyl)ether	ND(11.0)	ug/L
P066 Bis(2-ethylhexyl) phthalate	59.0	ug/L
P048 Bromodichloromethane	ND(0.0700)	ug/L
Bromoform	ND(0.0700)	ug/L
P046 Bromomethane	ND(0.140)	ug/L
P067 Butyl benzyl phthalate	ND(11.0)	ug/L
Carbon tetrachloride	ND(0.0700)	ug/L
P007 Chlorobenzene	ND(0.0700)	ug/L
P016 Chloroethane	ND(0.140)	ug/L
P023 Chloroform	ND(0.0700)	ug/L
P045 Chloromethane	ND(0.140)	ug/L
P076 Chrysene	ND(11.0)	ug/L
cis-1,3-Dichloropropene	ND(0.0700)	ug/L
Dibenz(a,h)anthracene	ND(11.0)	ug/L
P051 Dibromochloromethane	ND(0.0700)	ug/L
P070 Diethyl phthalate	ND(11.0)	ug/L
P071 Dimethyl phthalate	ND(11.0)	ug/L
P068 Di-n-butyl phthalate	ND(11.0)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

**Appendix A-2
(continued)
Analytical Results, Except Pathogen Indicators
Holland America Oosterdam**

	Day 3 66010	Unit
SP-21, Sewage/Graywater Biosludge		
Volatile and Semivolatile Organics		
P069 Di-n-octyl phthalate	ND(11.0)	ug/L
P038 Ethylbenzene	ND(0.0700)	ug/L
P039 Fluoranthene	ND(11.0)	ug/L
P080 Fluorene	ND(11.0)	ug/L
P009 Hexachlorobenzene	ND(11.0)	ug/L
P052 Hexachlorobutadiene	ND(11.0)	ug/L
P012 Hexachloroethane	ND(11.0)	ug/L
P083 Indeno(1,2,3-cd)pyrene	ND(11.0)	ug/L
P054 Isophorone	ND(11.0)	ug/L
P044 Methylene chloride	ND(0.0700)	ug/L
P055 Naphthalene	ND(11.0)	ug/L
P056 Nitrobenzene	ND(11.0)	ug/L
N-Nitroso Di-n-propylamine	ND(11.0)	ug/L
P064 Pentachlorophenol	ND(56.0)	ug/L
P081 Phenanthrene	ND(11.0)	ug/L
P065 Phenol	380	ug/L
P084 Pyrene	ND(11.0)	ug/L
P085 Tetrachloroethene	ND(0.0700)	ug/L
P086 Toluene	ND(0.0700)	ug/L
P030 trans-1,2-Dichloroethene	ND(0.0700)	ug/L
P033 trans-1,3-Dichloropropene	ND(0.0700)	ug/L
P087 Trichloroethene	ND(0.0700)	ug/L
Trichlorofluoromethane	ND(0.0700)	ug/L
P088 Vinyl chloride	ND(0.140)	ug/L

EXCLUDE - Data excluded from the data set (see data review narratives in Appendix D for details).

NC - Not collected.

ND - Not detected (number in parentheses is detection limit).

Appendix A-3

**Analytical Results Collected Onboard (Field Measurements)
Holland America Oosterdam - 18 September through 23 September 2004**

Field measurement data and observations for each grab and grab composite sample for each sampling point. Figures 2-1 through 2-3 identify sampling point locations. Duplicate samples were not collected for field measurements; consequently, sampling points SP-9 and SP-14 are not shown on this table.

Sampling Point	Sample Collection Time	Temperature (°C)	Turbidity (NTU)	pH	Sulfide (mg/L)	Salinity (ppt)	Conductivity (uS/cm)	Free Chlorine (mg/L) (a)	Total Chlorine (mg/L) (a)	Comments
Accommodations Wastewater (SP-1)	1002 on 9/20/04	27.5	61.3	6	0.33	0.1	164.2	0.00	0.00	Turbid, with suspended black sediment
	1530 on 6/20/04	24	166	6	1.30	0.1	146.2	0.00	0.00	
	0045 on 9/21/04	22	270	6	1.40	0.1	151.4	0.00	0.00	
	0915 on 9/21/04	23	74.0	5	0.50	0.9	169.0	0.00	0.00	
Laundry Wastewater (SP-2)	1125 on 9/18/04	25	34.1	7	0.09	0.1	159.5	0.40	0.48	Turbid, frothy, whitish-gray color, warm
	1615 on 9/18/04	28	28.2	6	0.10	0.1	113.0	0.00	0.08	
	2230 on 9/18/04	22.5	48.6	7	0.16	0.1	179.2	0.00	0.04	
	0300 on 9/19/04	26	36.4	7	0.16	0.1	107.8	0.10	0.20	
Galley Wastewater (SP-3)	1135 on 9/19/04	36	98.4	8	0.5	0.2	596	0.08	0.36	Turbid, light brown, gritty with chunks of food solids
	1451 on 9/19/04	33.5	57.5	9	0.3	0.4	815	0.10	0.24	
	2200 on 9/19/04	34.5	250	9	0.3	1.0	829	0.03	0.05	
	0220 on 9/20/04	30	280	6	0.1	0.1	106.2	0.09	0.01	
Food Pulper (Centrifuge) (SP-5)	1620 on 9/22/04	24	NA	5	NA	NA	NA	NA	NA	Milky, light brown/organge, strong odor, turbid

NA - Not analyzed.

(a) Equipment used to measure free and total chlorine onboard is not suitable for measuring ultra-low levels of chlorine (detection limit of 0.02 mg/L compared to a standard of 0.01 mg/L) and is subject to various interferences, such as oxidized forms of manganese. Accordingly, field measurements should not be used to assess compliance with cruise ship discharge standards.

(b) Reading exceeds calibration range of 440 NTU.

**Appendix A-3
(continued)**
Analytical Results Collected Onboard (Field Measurements)
Holland America Oosterdam - 18 September through 23 September 2004

Sampling Point	Sample Collection Time	Temperature (°C)	Turbidity (NTU)	pH	Sulfide (mg/L)	Salinity (ppt)	Conductivity (uS/cm)	Free Chlorine (mg/L) (a)	Total Chlorine (mg/L) (a)	Comments
Influent to Graywater Treatment System (SP-6) Day 1	1115 on 9/18/04	26	37.7	6	0.40	0.1	132.0	(a)	(a)	Gray, floating and suspended solids
	1550 on 9/18/04	28	41.4	6	0.37	0.1	140.2	(a)	(a)	
	2230 on 9/18/04	26	108	5	1.4	0.1	190.7	0.00	0.05	
	0245 on 9/19/04	25	140	5	1.4	0.1	173.3	0.00	0.00	
Influent to Graywater Treatment System (SP-6) Day 2	1105 on 9/19/04	26	75.1	5	0.7	0.1	146.5	(a)	(a)	Gray, floating and suspended solids
	1420 on 9/19/04	26	56.4	6	0.6	0.1	165.3	(a)	(a)	
	2200 on 9/19/04	26	72.4	6	1.0	0.1	178.1	0.1	0.00	
	0320 on 9/20/04	25	64.3	6	0.90	0.1	184.6	0.49	0.00	
Influent to Graywater Treatment System (SP-6) Day 3	1045 on 9/20/04	24	39.9	6	0.8	0.1	185.1	0.00	0.00	Gray, floating and suspended solids
	1455 on 9/20/04	25	37.8	6	0.85	0.1	188.9	0.00	NA	
	2200 on 9/20/04	25	61.6	6	0.9	0.1	192.6	0.00	0.01	
	0255 on 9/21/04	25.5	169	6	1.5	0.1	187.6	0.00	0.00	
Influent to Graywater Treatment System (SP-6) Day 4	0946 on 9/21/04	22.5	60.2	6	0.90	0.1	203.0	(a)	(a)	Gray, floating and suspended solids
	1405 on 9/21/04	25	54.7	6	0.8	0.1	240.1	0.00	0.00	
	2150 on 9/21/04	24.5	114	6	0.7	0.1	175.8	0.00	0.00	
	0200 on 9/22/04	23.5	152	6	1.5	0.1	193.4	0.03	0.00	

NA - Not analyzed.

(a) Equipment used to measure free and total chlorine onboard is not suitable for measuring ultra-low levels of chlorine (detection limit of 0.02 mg/L compared to a standard of 0.01 mg/L) and is subject to various interferences, such as oxidized forms of manganese. Accordingly, field measurements should not be used to assess compliance with cruise ship discharge standards.

(b) Reading exceeds calibration range of 440 NTU.

**Appendix A-3
(continued)**
Analytical Results Collected Onboard (Field Measurements)
Holland America Oosterdam - 18 September through 23 September 2004

Sampling Point	Sample Collection Time	Temperature (°C)	Turbidity (NTU)	pH	Sulfide (mg/L)	Salinity (ppt)	Conductivity (uS/cm)	Free Chlorine (mg/L) (a)	Total Chlorine (mg/L) (a)	Comments
Influent to Graywater Treatment System (SP-6) Day 5	0955 on 9/22/04	26	108	6	0.95	0.1	186.4	0.00	0.00	Gray, floating and suspended solids
	1415 on 9/22/04	27	76.3	6	1.6	0.1	160.1	0.10	0.05	
	2220 on 9/22/04	24.5	118	6	1.05	0.1	134.8	0.04	0.00	
	0210 on 9/23/04	24.5	63.3	6	0.70	0.1	139.7	0.00	0.00	
Influent to Graywater UV Disinfection (SP-7) Day 1	1500 on 9/18/04	29.5	NA	6	NA	NA	NA	NA	NA	Clear, no color, no solids
Influent to Graywater UV Disinfection (SP-7) Day 2	1055 on 9/19/04	29	NA	6	NA	0.1	113.3	NA	NA	Clear, no color, no solids
	1510 on 9/19/04	28.5	NA	6	NA	0.0	78.3	NA	NA	
	2200 on 9/19/04	28.5	1.30	6	0.28	0.0	90.6	0.03	0.07	
	0320 on 9/20/04	25.5	2.30	6	0.77	0.0	90.3	0.00	0.00	
Influent to Graywater UV Disinfection (SP-7) Day 3	1130 on 9/20/04	26	NA	6	0.28	0.0	80.7	0.05	(b)	Clear, no color, no solids
	1500 on 9/20/04	27	NA	6	0.16	0.0	83.5	0.00	0.00	
	2200 on 9/20/04	26	1.0	6	0.34	0.0	94.3	0.00	0.00	
	0255 on 9/21/04	27	1.1	6	0.28	0.0	92.7	0.01	0.00	

NA - Not analyzed.

(a) Equipment used to measure free and total chlorine onboard is not suitable for measuring ultra-low levels of chlorine (detection limit of 0.02 mg/L compared to a standard of 0.01 mg/L) and is subject to various interferences, such as oxidized forms of manganese. Accordingly, field measurements should not be used to assess compliance with cruise ship discharge standards.

(b) Reading exceeds calibration range of 440 NTU.

**Appendix A-3
(continued)**
Analytical Results Collected Onboard (Field Measurements)
Holland America Oosterdam - 18 September through 23 September 2004

Sampling Point	Sample Collection Time	Temperature (°C)	Turbidity (NTU)	pH	Sulfide (mg/L)	Salinity (ppt)	Conductivity (uS/cm)	Free Chlorine (mg/L) (a)	Total Chlorine (mg/L) (a)	Comments
Influent to Graywater UV Disinfection (SP-7) Day 4	0955 on 9/21/04	25.5	NA	6	NA	0.0	87.8	NA	NA	Clear, no color, no solids
	1400 on 9/21/04	26	NA	6	NA	0.1	165.9	0.00	0.00	
	2150 on 9/21/04	25	0.7	6	0.25	0.1	117.8	0.02	0.00	
	0200 on 9/22/04	25	0.5	6	0.5	0.1	129.4	0.00	0.01	
Influent to Graywater UV Disinfection (SP-7) Day 5	1000 on 9/22/04	26	0.0	6	0.38	0.1	117.8	0.00	0.01	Clear, no color, no solids
	1415 on 9/22/04	29	0.7	6	NA	0.0	98.1	NA	NA	
	2220 on 9/22/04	25.5	1.3	6	0.43	0.0	79.2	0.00	0.00	
	0210 on 9/23/04	26	1.3	6	0.24	0.0	77.8	0.01	0.00	
Effluent from Graywater Treatment System (SP-8) Day 1	1100 on 9/18/04	29	75.8	6	0.13	0.0	74.2	0.00	0.00	Clear, no color, no solids
	1545 on 9/18/04	30	4.3	6	0.23	0.1	306.1	(b)	(b)	
	2320 on 9/18/04	28	2.5	6	0.36	0.0	79.5	0.00	0.01	
	0240 on 9/19/04	29	4.1	8	0.06	0.1	223.9	0.05	0.04	
Effluent from Graywater Treatment System (SP-8) Day 2	1100 on 9/19/04	28	0.0	6	0.16	0.0	88.9	0.01	0.04	Clear, no color, no solids
	1545 on 9/19/04	28.5	0.0	6	0.30	0.0	80.9	0.01	0.04	
	2200 on 9/19/04	27	2.0	6	0.21	0.0	91.2	0.02	0.00	
	0320 on 9/20/04	27	2.6	6	0.37	0.0	809.	0.01	0.00	

NA - Not analyzed.

(a) Equipment used to measure free and total chlorine onboard is not suitable for measuring ultra-low levels of chlorine (detection limit of 0.02 mg/L compared to a standard of 0.01 mg/L) and is subject to various interferences, such as oxidized forms of manganese. Accordingly, field measurements should not be used to assess compliance with cruise ship discharge standards.

(b) Reading exceeds calibration range of 440 NTU.

**Appendix A-3
(continued)**
Analytical Results Collected Onboard (Field Measurements)
Holland America Oosterdam - 18 September through 23 September 2004

Sampling Point	Sample Collection Time	Temperature (°C)	Turbidity (NTU)	pH	Sulfide (mg/L)	Salinity (ppt)	Conductivity (uS/cm)	Free Chlorine (mg/L) (a)	Total Chlorine (mg/L) (a)	Comments
Effluent from Graywater Treatment System (SP-8) Day 3	1135 on 9/20/04	26	0.1	6	0.24	0.0	82.2	0.04	0.00	Clear, no color, no solids
	1505 on 9/20/04	26	0.06	6	0.18	0.0	82.8	0.00	0.00	
	2200 on 9/20/04	25	1.2	6	0.31	0.0	83.2	0.01	0.00	
	0255 on 9/21/04	27	1.1	6	0.29	0.0	81.8	0.00	0.04	
Effluent from Graywater Treatment System (SP-8) Day 4	0955 on 9/21/04	24.5	0.1	6	0.36	0.0	85.1	0.00	0.00	Clear, no color, no solids
	1410 on 9/21/04	26	0.4	6	0.26	0.1	166.4	0.00	0.00	
	2130 on 9/21/04	25.5	2.0	6	0.55	0.1	117.7	0.01	0.00	
	0200 on 9/22/04	25.5	3.1	6	0.24	0.1	162.4	0.03	0.02	
Effluent from Graywater Treatment System (SP-8) Day 5	1000 on 9/22/04	26	1.8	6	0.36	0.1	116.3	0.00	0.01	Clear, no color, no solids
	1415 on 9/22/04	28	1.0	6	0.20	0.0	96.7	0.03	0.04	
	2220 on 9/22/04	26.5	1.4	6	0.36	0.0	78.9	0.00	0.00	
	0210 on 9/23/04	25.5	1.5	6	0.29	0.0	73.1	0.01	0.04	
Incinerator Ash (SP-10)		NA	NA	NA	NA	NA	NA	NA	NA	Gray, gritty
Influent to Sewage/Graywater Treatment System (SP-11) Day 1	1100 on 9/18/04	27	435	7	0.80	0.8	1721	0.3	0.70	Orange/brown, turbid, floating solids, settleable solids, strong odor
	1430 on 9/18/04	29	396	6	2.7	0.9	1834	0.10	0.50	
	2230 on 9/18/04	25	634	7	5.7	1.0	2046	0.00	0.50	
	0230 on 9/19/04	29	1,080	7	7.6	0.9	1760	0.39	0.70	

NA - Not analyzed.

(a) Equipment used to measure free and total chlorine onboard is not suitable for measuring ultra-low levels of chlorine (detection limit of 0.02 mg/L compared to a standard of 0.01 mg/L) and is subject to various interferences, such as oxidized forms of manganese. Accordingly, field measurements should not be used to assess compliance with cruise ship discharge standards.

(b) Reading exceeds calibration range of 440 NTU.

**Appendix A-3
(continued)**
Analytical Results Collected Onboard (Field Measurements)
Holland America Oosterdam - 18 September through 23 September 2004

Sampling Point	Sample Collection Time	Temperature (°C)	Turbidity (NTU)	pH	Sulfide (mg/L)	Salinity (ppt)	Conductivity (uS/cm)	Free Chlorine (mg/L) (a)	Total Chlorine (mg/L) (a)	Comments
Influent to Sewage/Graywater Treatment System (SP-11) Day 2	1029 on 9/19/04	28	570	6	7.1	0.8	1737	(a)	(a)	Orange/brown, turbid, floating solids, settleable solids, strong odor
	1415 on 9/19/04	27	440.5	7	5.1	0.9	1810	(a)	0.50	
	2200 on 9/19/04	28	573	7	5.7	1.0	1949	(a)	(a)	
	0205 on 9/20/04	29.5	1400	7	5.4	0.9	1739	0.00	0.00	
Influent to Sewage/Graywater Treatment System (SP-11) Day 3	1010 on 9/20/04	27	382	7	5.3	0.8	1672	0.00	0.00	Orange/brown, turbid, floating solids, settleable solids, strong odor
	1435 on 9/20/04	21.5	315	6.5	4.0	1.0	1986	0.00	0.00	
	2200 on 9/20/04	27	555	7	5.2	0.9	1875	0.00	0.00	
	0215 on 9/21/04	27	745	7	0.9	0.9	1765	0.00	0.00	
Influent to Sewage/Graywater Treatment System (SP-11) Day 4	1010 on 9/21/04	27	454	6.5	6.1	0.7	1408	(a)	(a)	Orange/brown, turbid, floating solids, settleable solids, strong odor
	1418 on 9/21/04	26	384	7	4.8	1.0	1873	(a)	(a)	
	2150 on 9/21/04	25.5	900	7	7.4	1.1	2115	0.00	0.00	
	0200 on 9/22/04	25.5	1625	7	8.0	0.5	1145	0.62	2.2	
Influent to Sewage/Graywater Treatment System (SP-11) Day 5	0952 on 9/22/04	27.5	320	7	6.5	1.0	1938	0.00	0.00	Orange/brown, turbid, floating solids, settleable solids, strong odor
	1350 on 9/22/04	26	550	6	5.0	0.5	1925	0.00	0.00	
	2220 on 9/22/04	25.5	1885	6	6.9	0.8	1636	0.03	0.00	
	0210 on 9/23/04	25	750	7	5.7	0.9	1866	0.00	0.00	

NA - Not analyzed.

(a) Equipment used to measure free and total chlorine onboard is not suitable for measuring ultra-low levels of chlorine (detection limit of 0.02 mg/L compared to a standard of 0.01 mg/L) and is subject to various interferences, such as oxidized forms of manganese. Accordingly, field measurements should not be used to assess compliance with cruise ship discharge standards.

(b) Reading exceeds calibration range of 440 NTU.

**Appendix A-3
(continued)**
Analytical Results Collected Onboard (Field Measurements)
Holland America Oosterdam - 18 September through 23 September 2004

Sampling Point	Sample Collection Time	Temperature (°C)	Turbidity (NTU)	pH	Sulfide (mg/L)	Salinity (ppt)	Conductivity (uS/cm)	Free Chlorine (mg/L) (a)	Total Chlorine (mg/L) (a)	Comments
Influent to Sewage/Graywater UV Disinfection (SP-12) Day 1	1100 on 9/18/04	32	NA	7	NA	NA	NA	NA	NA	Clear, yellow
	1420 on 9/18/04	33	NA	6	NA	0.6	1341	0.01	0.04	
Influent to Sewage/Graywater UV Disinfection (SP-12) Day 2	1016 on 9/19/04	32.5	NA	6	NA	0.6	1204	0.01	0.03	Clear, yellow
	1420 on 9/19/04	32	NA	7	NA	0.6	1324	NA	NA	
Influent to Sewage/Graywater UV Disinfection (SP-12) Day 3	1015 on 9/20/04	31	NA	6.5	0.03	0.5	1147	0.00	0.00	Clear, yellow
	1445 on 9/20/04	30	NA	6.5	0.04	0.6	1281	0.00	0.00	
Influent to Sewage/Graywater UV Disinfection (SP-12) Day 4	1020 on 9/21/04	32	NA	7	NA	0.5	1184	0.00	0.00	Clear, yellow
	1425 on 9/21/04	32	NA	7	NA	0.6	1271	0.01	0.00	
	2130 on 9/21/04	NA	NA	NA	NA	NA	NA	NA	NA	
Influent to Sewage/Graywater UV Disinfection (SP-12) Day 5	0957 on 9/22/04	32	NA	7	0.06	0.8	1629	0.00	0.02	Clear, yellow
	1400 on 9/22/04	31.5	NA	7	NA	0.7	1544	NA	NA	

NA - Not analyzed.

(a) Equipment used to measure free and total chlorine onboard is not suitable for measuring ultra-low levels of chlorine (detection limit of 0.02 mg/L compared to a standard of 0.01 mg/L) and is subject to various interferences, such as oxidized forms of manganese. Accordingly, field measurements should not be used to assess compliance with cruise ship discharge standards.

(b) Reading exceeds calibration range of 440 NTU.

**Appendix A-3
(continued)**
Analytical Results Collected Onboard (Field Measurements)
Holland America Oosterdam - 18 September through 23 September 2004

Sampling Point	Sample Collection Time	Temperature (°C)	Turbidity (NTU)	pH	Sulfide (mg/L)	Salinity (ppt)	Conductivity (uS/cm)	Free Chlorine (mg/L) (a)	Total Chlorine (mg/L) (a)	Comments
Effluent from Sewage/Graywater Treatment System (SP-13) Day 1	1100 on 9/18/04	32	0.5	7	0.03	0.6	1304	0.00	0.03	Yellow tint, slight odor, no solids
	1420 on 9/18/04	33	0.2	6	0.01	0.6	1301	0.00	0.00	
	2230 on 9/18/04	28	0.3	7	0.04	0.6	1234	0.02	0.06	
	0220 on 9/19/04	31	0.0	7	0.05	0.6	1240	0.00	0.00	
Effluent from Sewage/Graywater Treatment System (SP-13) Day 2	1016 on 9/19/04	32.5	0.0	6	0.03	0.5	1199	0.00	0.03	Yellow tint, slight odor, no solids
	1426 on 9/19/04	32	0.2	6	0.03	0.6	1338	0.01	0.04	
	2200 on 9/19/04	33	0.8	7	0.04	0.08	1651	0.00	0.00	
	0320 on 9/20/04	29	0.4	7	0.07	0.7	1468	0.03	0.02	
Effluent from Sewage/Graywater Treatment System (SP-13) Day 3	0950 on 9/20/04	29	0.5	7	0.03	0.6	1141	0.00	0.00	Yellow tint, slight odor, no solids
	1430 on 9/20/04	26.5	0.0	7	0.05	0.6	1165	0.03	0.00	
	2200 on 9/20/04	31	2.0	7	0.05	0.6	1314	0.00	0.00	
	0255 on 9/21/04	28	1.8	7	0.05	0.6	1323	0.05	0.00	
Effluent from Sewage/Graywater Treatment System (SP-13) Day 4	1000 on 9/21/04	32	0.0	7	0.05	0.5	1125	0.00	0.00	Yellow tint, slight odor, no solids
	1415 on 9/21/04	32	0.0	7	0.07	0.5	1316	0.01	0.00	
	2150 on 9/21/04	30	1.2	7	0.18	0.7	1533	0.03	0.00	
	0200 on 9/22/04	27	0.7	7	0.06	0.8	1671	0.00	0.00	

NA - Not analyzed.

(a) Equipment used to measure free and total chlorine onboard is not suitable for measuring ultra-low levels of chlorine (detection limit of 0.02 mg/L compared to a standard of 0.01 mg/L) and is subject to various interferences, such as oxidized forms of manganese. Accordingly, field measurements should not be used to assess compliance with cruise ship discharge standards.

(b) Reading exceeds calibration range of 440 NTU.

**Appendix A-3
(continued)**
Analytical Results Collected Onboard (Field Measurements)
Holland America Oosterdam - 18 September through 23 September 2004

Sampling Point	Sample Collection Time	Temperature (°C)	Turbidity (NTU)	pH	Sulfide (mg/L)	Salinity (ppt)	Conductivity (uS/cm)	Free Chlorine (mg/L) (a)	Total Chlorine (mg/L) (a)	Comments
Effluent from Sewage/Graywater Treatment System (SP-13) Day 5	0945 on 9/22/04	33	0.0	7	0.04	0.7	1454	0.02	0.02	Yellow tint, slight odor, no solids
	1300 on 9/22/04	34	0.9	7	0.04	0.7	1467	0.02	0.04	
	2220 on 9/22/04	30.5	1.2	7	0.05	0.6	1347	0.06	0.02	
	0220 on 9/23/04	31	0.2	7	0.05	0.7	1447	0.04	0.06	
Graywater Screening Solids (SP-15)		NA	NA	NA	NA	NA	NA	NA	NA	Dark brown, small chunks, strong odor, slightly wet
Final Combined Effluent from Graywater and Sewage/Graywater Treatment Systems (SP-16) Day 1	2240 on 9/18/04	16.5	60.7	7	0.01	28.6	4082	0.08	0.04	Slightly yellow tint, no solids
	0600 on 9/19/04	27	4.0	7.0	0.04	0.7	4352	0.03	0.02	
Final Combined Effluent from Graywater and Sewage/Graywater Treatment Systems (SP-16) Day 2	1127 on 9/19/04	21	0.8	7	0.00	29.4	41.58	0.05	0.08	Slightly yellow tint, no solids
	1445 on 9/19/04	30	0.5	7	0.11	0.3	717	0.02	0.05	
	2220 on 9/19/04	27.5	0.0	6	0.38	0.1	142.3	0.01	0.00	
	0225 on 9/20/04	18	0.5	8	0.05	22.6	32.16	0.03	0.02	

NA - Not analyzed.

(a) Equipment used to measure free and total chlorine onboard is not suitable for measuring ultra-low levels of chlorine (detection limit of 0.02 mg/L compared to a standard of 0.01 mg/L) and is subject to various interferences, such as oxidized forms of manganese. Accordingly, field measurements should not be used to assess compliance with cruise ship discharge standards.

(b) Reading exceeds calibration range of 440 NTU.

**Appendix A-3
(continued)**
Analytical Results Collected Onboard (Field Measurements)
Holland America Oosterdam - 18 September through 23 September 2004

Sampling Point	Sample Collection Time	Temperature (°C)	Turbidity (NTU)	pH	Sulfide (mg/L)	Salinity (ppt)	Conductivity (uS/cm)	Free Chlorine (mg/L) (a)	Total Chlorine (mg/L) (a)	Comments
Final Combined Effluent from Graywater and Sewage/Graywater Treatment Systems (SP-16) Day 3	1025 on 9/20/04	31	0.2	7	0.09	0.6	1401	0.00	0.00	Slightly yellow tint, no solids
	1435 on 9/20/04	28	0.0	7	0.12	0.2	463.8	0.01	0.00	
	2210 on 9/20/04	26.5	0.5	7	0.11	0.2	376.8	0.03	0.03	
	0305 on 9/21/04	26	1.5	7	0.25	NA	NA	NA	NA	
Final Combined Effluent from Graywater and Sewage/Graywater Treatment Systems (SP-16) Day 4	0950 on 9/21/04	26	0.1	6	0.43	0.0	88.9	0.00	0.00	Slightly yellow tint, no solids
	1140 on 9/21/04	27.5	0.0	6	0.23	0.1	166.5	0.00	0.00	
	2150 on 9/21/04	26.5	0.6	6	0.12	12.8	20.44	0.07	0.01	
	0230 on 9/22/04	25.5	0.9	7	0.22	0.2	450.9	0.03	0.05	
Final Combined Effluent from Graywater and Sewage/Graywater Treatment Systems (SP-16) Day 5	1005 on 9/22/04	29	0	6	0.25	0.2	377.2	0.03	0.00	Slightly yellow tint, no solids
	1400 on 9/22/04	28.5	1.9	6	0.16	0.2	517	0.03	0.02	
	2220 on 9/22/04	28	1.3	6	0.32	0.2	361.3	0.05	0.03	
	0210 on 9/23/04	29	0.8	7	0.07	0.5	1073	0.01	0.01	
Source Water (SP-17) Day 2		NA	NA	NA	NA	NA	NA	NA	NA	Clear
Sewage/Graywater Screening Solids (SP-20) Day 3		NA	NA	NA	NA	NA	NA	NA	NA	Brown sludge with shredded toilet paper, strong odor

NA - Not analyzed.

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(b) Reading exceeds calibration range of 440 NTU.

**Appendix A-3
(continued)**
Analytical Results Collected Onboard (Field Measurements)
Holland America Oosterdam - 18 September through 23 September 2004

Sampling Point	Sample Collection Time	Temperature (°C)	Turbidity (NTU)	pH	Sulfide (mg/L)	Salinity (ppt)	Conductivity (uS/cm)	Free Chlorine (mg/L) (a)	Total Chlorine (mg/L) (a)	Comments
Sewage/Graywater Waste Biosludge (SP-21)		NA	NA	NA	NA	NA	NA	NA	NA	Chunky, brown, strong smell, thick

NA - Not analyzed.

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(b) Reading exceeds calibration range of 440 NTU.