

**Analysis of Crude Oil Tanker Ballast Water Data
for Valdez & Prince William Sound, Alaska**

Final Report

Presented To:

Prince William Sound Regional Citizens' Advisory Council
3709 Spenard Road Suite 100
Anchorage, AK 99503

April 30, 2014

Presented By:

Danielle Verna
P.O. Box 1243
Cordova, AK 99574
Telephone: 907-301-0954
Email: verna.danielle@gmail.com

Executive Summary

This report describes ballast water source and management data reported by crude oil tankers arriving to Valdez and Prince William Sound, Alaska from 2005 through 2012. The analysis includes the following:

- Annual number of vessels that discharged ballast water
- Annual volumes of ballast water discharge
- Ballast water source locations
- Ballast water management locations
- Ballast water management rates
- Ballast water management methods

Between 2005 and 2012, 18 crude oil tankers reported discharging 54,642,270 metric tons of ballast water to Valdez and Prince William Sound. The majority of ballast water was sourced from locations on the west coast of the United States, such as Anacortes, WA, Benicia, CA, and Bellingham, WA, resulting in 97% coastwise ballast discharge. The remainder (3%) was sourced from distant locations such as Hawaii and Singapore. Of the 28% of ballast water that was reported to be managed, flow-through ballast water exchange was the preferred method (71%), followed by empty-refill exchange (27%), and alternate methods (2%).

Trends in data should be considered in the context of changes in policy during the time period. For example, the Environmental Protection Agency's 2008 Vessel General Permit (VGP) significantly changed the management and record keeping requirements for crude oil tankers involved in coastwise trade. The VGP went into effect in Alaska on February 6, 2009.

Data described in this report were obtained from the National Ballast Information Clearinghouse.

National Ballast Information Clearinghouse 2009. NBIC Online Database. Electronic publication, Smithsonian Environmental Research Center & United States Coast Guard. Available from <http://invasions.si.edu/nbic/search.html>; searched 6 August 2013.

Table of Contents

Executive Summary.....	i
Table of Contents.....	ii
List of Tables.....	iii
List of Figures.....	iv
Definitions & Acronyms.....	v
A. Valdez: Vessels.....	1
B. Valdez: Ballast Water Source.....	3
C. Valdez: Ballast Water Management.....	12
D. Prince William Sound.....	18
Appendix 1.....	22

Tables

Table A.1. Reported annual number of arrivals by crude oil tankers that discharged ballast water in Valdez, Alaska, 2005 through 2012.....	1
Table B.1. Reported annual volume of ballast water discharged by crude oil tankers in Valdez, Alaska, 2005 through 2012.....	4
Table B.2. Reported source locations and volume of ballast water discharged by crude oil tankers in Valdez, Alaska, 2005 through 2012.....	5
Table C.1. Reported annual volume of managed and unmanaged ballast water discharged by crude oil tankers in Valdez, Alaska, 2005 through 2012.....	13
Table D.1. Reported annual number of arrivals by crude oil tankers that discharged ballast water in Prince William Sound, Alaska, 2005 through 2012.....	18
Table D.2. Reported annual volume of ballast water discharged by crude oil tankers in Prince William Sound, Alaska, 2005 through 2012.....	19
Table D.3. Reported source locations and volume of ballast water discharged by crude oil tankers in Prince William Sound, Alaska, 2005 through 2012.....	20
Table D.4. Reported annual volume of managed and unmanaged ballast water discharged by crude oil tankers in Prince William Sound, Alaska, 2005 through 2012.....	21

Figures

Figure A.1. Reported annual number of arrivals by crude oil tankers that discharged ballast water in Valdez, Alaska, 2005 through 2012.....	2
Figure B.1. Reported annual volume of ballast water discharged by crude oil tankers in Valdez, Alaska, 2005 through 2012.....	9
Figure B.2. Reported global source locations of ballast water discharged by crude oil tankers in Valdez, Alaska, 2005 through 2012.....	10
Figure B.3. Reported west coast source locations of ballast water discharged by crude oil tankers in Valdez, Alaska, 2005 through 2012.....	11
Figure C.1. Reported annual volume of managed and unmanaged ballast water discharged by crude oil tankers to Valdez, Alaska, 2005 through 2012. Managed ballast water is depicted by location: coastal or mid ocean.....	14
Figure C.2. Reported annual volume of managed and unmanaged ballast water discharged by crude oil tankers to Valdez, Alaska, 2005 through 2012. Managed ballast water is depicted by method: alternate, empty-refill or flow-through.....	15
Figure C.3. Reported global management locations of ballast water discharged by crude oil tankers in Valdez, Alaska, 2005 through 2012.....	16
Figure C.4. Reported west coast management locations of ballast water discharged by crude oil tankers in Valdez, Alaska, 2005 through 2012.....	17

Definitions & Acronyms

Coastwise:	Ballast water does not transit beyond the combined exclusive economic zones of the United States and Canada
Overseas:	Ballast water transits beyond the combined exclusive economic zones of the United States and Canada
Coastal:	Within the combined exclusive economic zones of the United States and Canada; may pertain to ballast water origin or management location
Mid Ocean:	Beyond the combined exclusive economic zones of the United States and Canada; may pertain to ballast water origin or management location
Source:	Source locations indicate the ports or geographic coordinates where ballast water was taken onboard prior to management, as reported in the “BW Source” section of the National Ballast Information Clearinghouse Reporting Form
Management:	Management locations indicate the endpoint geographic coordinates where ballast water was exchanged, as reported in the “BW Management Practices” section of the National Ballast Information Clearinghouse Reporting Form
BWE:	Ballast Water Exchange
COTP:	Captain of the Port
EEZ:	Exclusive Economic Zone; as defined in 33 CFR 151.1504, for the purpose of ballast water management the exclusive economic zone is considered to be the area extending outward 200 nautical miles from the baseline of the United States and the equivalent zone of Canada
MT:	Metric Tons

A. Valdez: Vessels

There were 17 crude oil tankers that reported discharging ballast water in Valdez, Alaska between 2005 and 2012.

Table A.1. Reported annual number of arrivals by crude oil tankers that discharged ballast water in Valdez, Alaska, 2005 through 2012.

	2005	2006	2007	2008	2009	2010	2011	2012	Total
Vessel 1	23	19	12	2	21	23	10	23	133
Vessel 2	0	7	22	1	24	26	18	23	121
Vessel 3	9	8	3	0	20	20	23	10	93
Vessel 4	13	8	10	0	6	19	24	13	93
Vessel 5	0	0	0	0	24	25	16	23	88
Vessel 6	12	7	20	19	23	6	0	0	87
Vessel 7	0	1	1	0	24	12	23	23	84
Vessel 8	0	0	0	0	19	21	13	24	77
Vessel 9	0	0	0	0	4	18	25	18	65
Vessel 10	0	0	0	0	19	17	12	16	64
Vessel 11	0	0	0	0	20	12	16	15	63
Vessel 12	0	0	0	0	14	14	17	16	61
Vessel 13	9	19	3	1	9	0	0	0	41
Vessel 14	0	0	0	0	1	4	17	14	36
Vessel 15	7	0	0	0	0	0	0	0	7
Vessel 16	1	2	0	1	1	0	0	0	5
Vessel 17	1	0	0	0	0	0	0	0	1

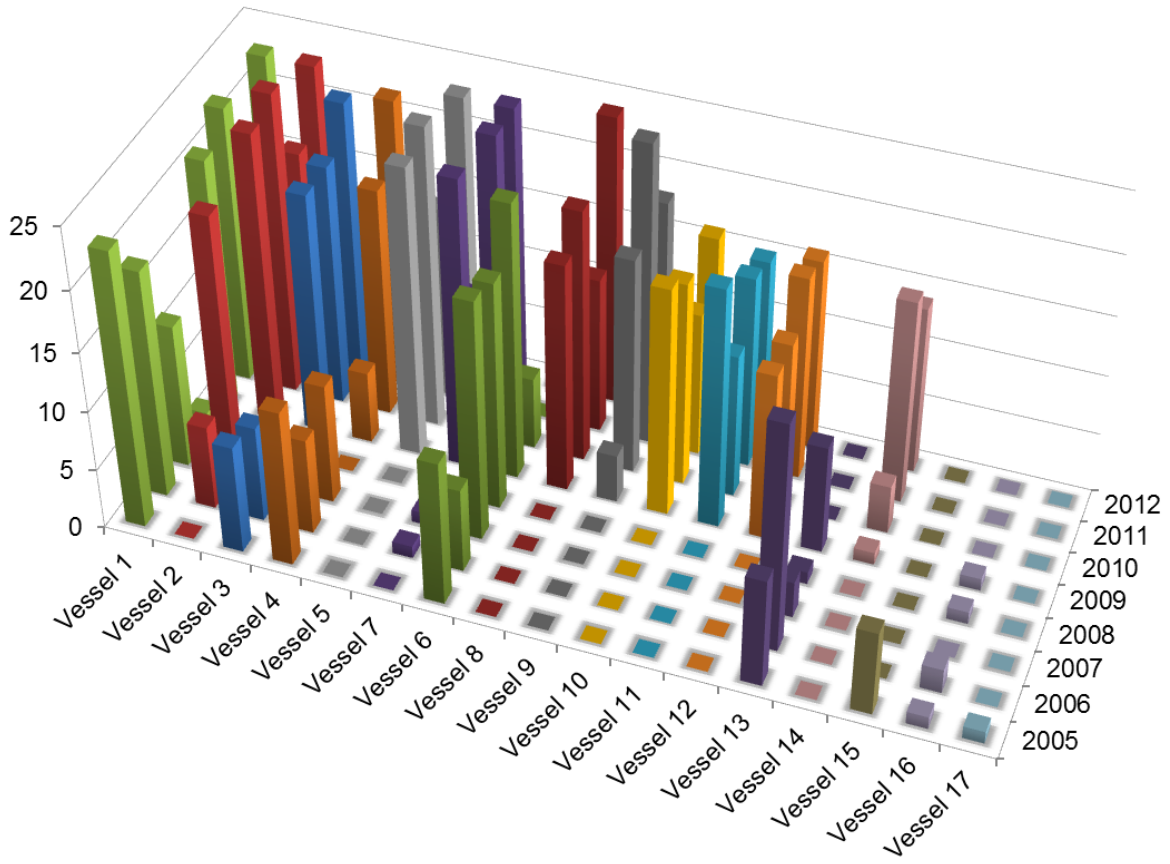


Figure A.1. Reported annual number of arrivals by crude oil tankers that discharged ballast water in Valdez, Alaska, 2005 through 2012.

B. Valdez: Ballast Water Source

Crude oil tankers reported discharging 52,805,080 metric tons (MT) of ballast water to Valdez, Alaska between 2005 and 2012. The reported volume of ballast discharge increased from 549,407 MT to 10,947,911 MT (1893%) between 2008 and 2009. The vast majority of ballast discharge was sourced on the west coast of the United States, including the dominant ports of Anacortes, WA, Benicia, CA, Bellingham, WA, Long Beach, CA, and Tacoma, WA.

See Tables B.1 – B.2. and Figures B.1. – B.3.

Table B.1. Reported annual volume of ballast water discharged by crude oil tankers in Valdez, Alaska, 2005 through 2012. Total discharge volume is shown as a percentage of coastwise, overseas, or unknown type and further divided into coastal or mid ocean origin.

Annual Ballast Water Discharge Volume (x1000 MT) – Valdez Sources									
	2005	2006	2007	2008	2009	2010	2011	2012	Total
Discharge Volume	3,411.9	2,984.1	2,661.7	549.4	10,947.9	10,650.2	10,818.3	10,781.7	52,805.1
Coastwise	3,097.2 (90.8%)	2,784.9 (93.3%)	2,659.5 (99.9%)	506.5 (92.2%)	10,606.9 (96.9%)	10,347.9 (97.2%)	10,558.6 (97.6%)	10,564.9 (98.0%)	51,126.4 (96.8%)
Coastal Origin	3,097.2	2,784.9	2,659.5	506.5	10,606.9	10,347.9	10,558.6	10,564.9	51,126.4
Mid Ocean Origin	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Overseas	279.4 (8.2%)	199.2 (6.7%)	2.1 (0.1%)	42.9 (7.8%)	314.6 (2.9%)	268.0 (2.5%)	259.6 (2.4%)	216.8 (2.0%)	1,582.6 (3.0%)
Coastal Origin	182.1	103.0	2.1	42.9	32.8	204.6	223.4	130.5	921.5
Mid Ocean Origin	97.3	96.2	0.0	0.0	281.8	63.3	36.3	86.3	661.2
Unknown	35.3 (1.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	26.4 (0.2%)	34.4 (0.3%)	0.0 (0.0%)	0.0 (0.0%)	96.1 (0.2%)
Coastal Origin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mid Ocean Origin	35.3	0.0	0.0	0.0	26.4	34.4	0.0	0.0	96.1

Table B.2. Reported source locations and volume of ballast water discharged by crude oil tankers in Valdez, Alaska, 2005 through 2012. Source locations reported as geographic coordinates are not listed. Source locations are listed in decreasing order of total ballast discharge. Percentages represent proportion of total annual contributions.

Annual Ballast Water Discharge Volume per Source Location (x1000 MT)									
	2005	2006	2007	2008	2009	2010	2011	2012	Total
Anacortes	1,371.2 (40.2%)	1,151.6 (38.6%)	978.2 (36.7%)	39.6 (7.2%)	1,952.3 (17.8%)	1,653.1 (15.5%)	1,199.9 (11.1%)	1,914.3 (17.8%)	10,260.1 (19.4%)
Benicia	502.4 (14.7%)	512.2 (17.2%)	532.3 (20.0%)	86.5 (15.7%)	1,428.9 (13.1%)	907.8 (8.5%)	637.5 (5.9%)	1,028.4 (9.5%)	5,636.0 (10.7%)
Bellingham	46.3 (1.4%)	0.0	125.4 (4.7%)	11.7 (2.1%)	1,608.1 (14.7%)	979.0 (9.2%)	1,702.3 (15.7%)	1,067.4 (9.9%)	5,540.3 (10.5%)
Long Beach	35.2 (1.0%)	25.1 (0.8%)	49.3 (1.9%)	15.6 (2.8%)	1,572.5 (14.4%)	1,222.9 (11.5%)	1,331.7 (12.3%)	1,246.3 (11.6%)	5,498.5 (10.4%)
Tacoma	99.7 (2.9%)	260.9 (8.7%)	297.5 (11.2%)	0.0	943.6 (8.6%)	999.7 (9.4%)	757.1 (7.0%)	663.1 (6.2%)	4,021.7 (7.6%)
Puget Sound	0.0	96.8 (3.2%)	0.0	0.0	1.1 (0.01%)	326.8 (3.1%)	1,738.6 (16.1%)	1,296.1 (12.0%)	3,459.3 (6.6%)
Richmond (CA)	302.7 (8.9%)	47.1 (1.6%)	71.2 (2.7%)	45.6 (8.3%)	989.3 (9.0%)	1,177.4 (11.1%)	315.5 (2.9%)	401.2 (3.7%)	3,350.1 (6.3%)
San Francisco	131.5 (3.9%)	159.0 (5.3%)	109.9 (4.1%)	54.4 (9.9%)	525.3 (4.8%)	530.1 (5.0%)	637.1 (5.9%)	540.8 (5.0%)	2,688.0 (5.1%)

Rodeo (CA)	163.0 (4.8%)	97.5 (3.3%)	55.3 (2.1%)	25.4 (4.6%)	381.8 (3.5%)	419.6 (3.9%)	278.0 (2.6%)	301.9 (2.8%)	1,722.5 (3.3%)
Port Angeles	62.1 (1.8%)	62.8 (2.1%)	7.5 (0.3%)	11.0 (2.0%)	322.6 (2.9%)	526.1 (4.9%)	213.1 (2.0%)	183.3 (1.7%)	1,388.6 (2.6%)
Ferndale	29.0 (0.8%)	59.5 (2.0%)	46.4 (1.7%)	0.0	106.3 (1.0%)	248.8 (2.3%)	139.4 (1.3%)	279.5 (2.6%)	908.9 (1.7%)
Nikiski	141.7 (4.2%)	88.7 (3.0%)	163.2 (6.1%)	156.9 (28.6%)	142.8 (1.3%)	70.1 (0.7%)	0.0	0.0	763.3 (1.4%)
Singapore	78.8 (2.3%)	0.5 (0.02%)	0.0	10.1 (1.8%)	0.0	151.1 (1.4%)	197.1 (1.8%)	47.9 (0.4%)	485.5 (0.9%)
Strait of Juan de Fuca	0.0	0.0	8.1 (0.3%)	0.0	9.0 (0.1%)	115.9 (1.1%)	213.5 (2.0%)	68.4 (0.6%)	414.9 (0.8%)
Carquinez	0.0	0.0	0.0	0.0	0.0	106.7 (1.0%)	197.9 (1.8%)	0.0	304.6 (0.6%)
El Segundo Terminal	0.0	0.0	20.9 (0.8%)	0.0	62.2 (0.6%)	0.0	0.0	129.1 (1.2%)	212.2 (0.4%)
Point Wells	0.0	0.0	61.3 (2.3%)	51.5 (9.4%)	32.6 (0.3%)	0.0	0.0	0.0	145.4 (0.3%)
Portland (OR)	0.0	0.0	11.3 (0.4%)	0.0	0.0	0.0	43.9 (0.4%)	74.0 (0.7%)	129.3 (0.2%)
San Francisco COTP Zone	0.0	18.9 (0.6%)	16.9 (0.6%)	0.0	0.9 (0.01%)	0.0	0.0	66.7 (0.6%)	103.4 (0.2%)
Unknown	35.3 (1.0%)	0.0	0.0	0.0	26.4 (0.2%)	34.4 (0.3%)	0.0	0.0	96.1 (0.2%)

Vancouver (BC)	0.0	55.9 (1.9%)	0.0	0.0	0.0	0.0	0.0	0.0	55.9 (0.1%)
Puget Sound COTP Zone	0.0	0.0	0.0	0.0	0.0	0.0	0.0	53.3 (0.5%)	53.3 (0.1%)
Gulf of Mexico	0.0	0.0	0.0	0.0	51.4 (0.5%)	0.0	0.0	0.0	51.4 (0.1%)
Columbia River	50.8 (1.5%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.8 (0.1%)
Honolulu	48.1 (1.4%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	48.1 (0.1%)
Houston	0.0	0.0	0.0	24.6 (4.5%)	17.7 (0.2%)	0.0	0.0	0.0	42.3 (0.1%)
West Coast	0.0	0.0	26.0 (1.0%)	0.0	0.0	0.0	0.0	0.0	26.0 (0.05%)
Vancouver (WA)	7.0 (0.2%)	0.0	15.3 (0.6%)	0.0	0.0	0.0	0.0	0.0	22.3 (0.04%)
Hawaii	0.0	0.0	0.0	0.0	0.0	19.1 (0.2%)	0.0	0.0	19.1 (0.04%)
Barbers Point	0.0	17.6 (0.6%)	0.0	0.0	0.0	0.0	0.0	0.0	17.6 (0.03%)
California	0.0	0.0	16.7 (0.6%)	0.0	0.0	0.0	0.0	0.0	16.7 (0.03%)
Willbridge	8.6 (0.3%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.6 (0.02%)

Seattle	0.0	7.5 (0.3%)	0.0	0.0	0.0	0.0	0.0	0.0	7.5 (0.01%)
Homer	0.0	0.0	0.0	6.6 (1.2%)	0.0	0.0	0.0	0.0	6.6 (0.01%)
Richmond (BC)	4.5 (0.1%)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.5 (0.01%)
San Pablo Strait	0.0	0.0	0.0	0.0	3.4 (0.03%)	0.0	0.0	0.0	3.4 (0.01%)
Valdez	0.0	0.0	0.0	0.0	0.2 (0.01%)	1.1 (0.01%)	0.1 (0.00%)	0.1 (0.00%)	1.4 (0.00%)
Total	3,411.9 (100%)	2,984.1 (100%)	2,661.7 (100%)	549.4 (100%)	10,947.9 (100%)	10,650.2 (100%)	10,818.3 (100%)	10,781.7 (100%)	52,805.1 (100%)

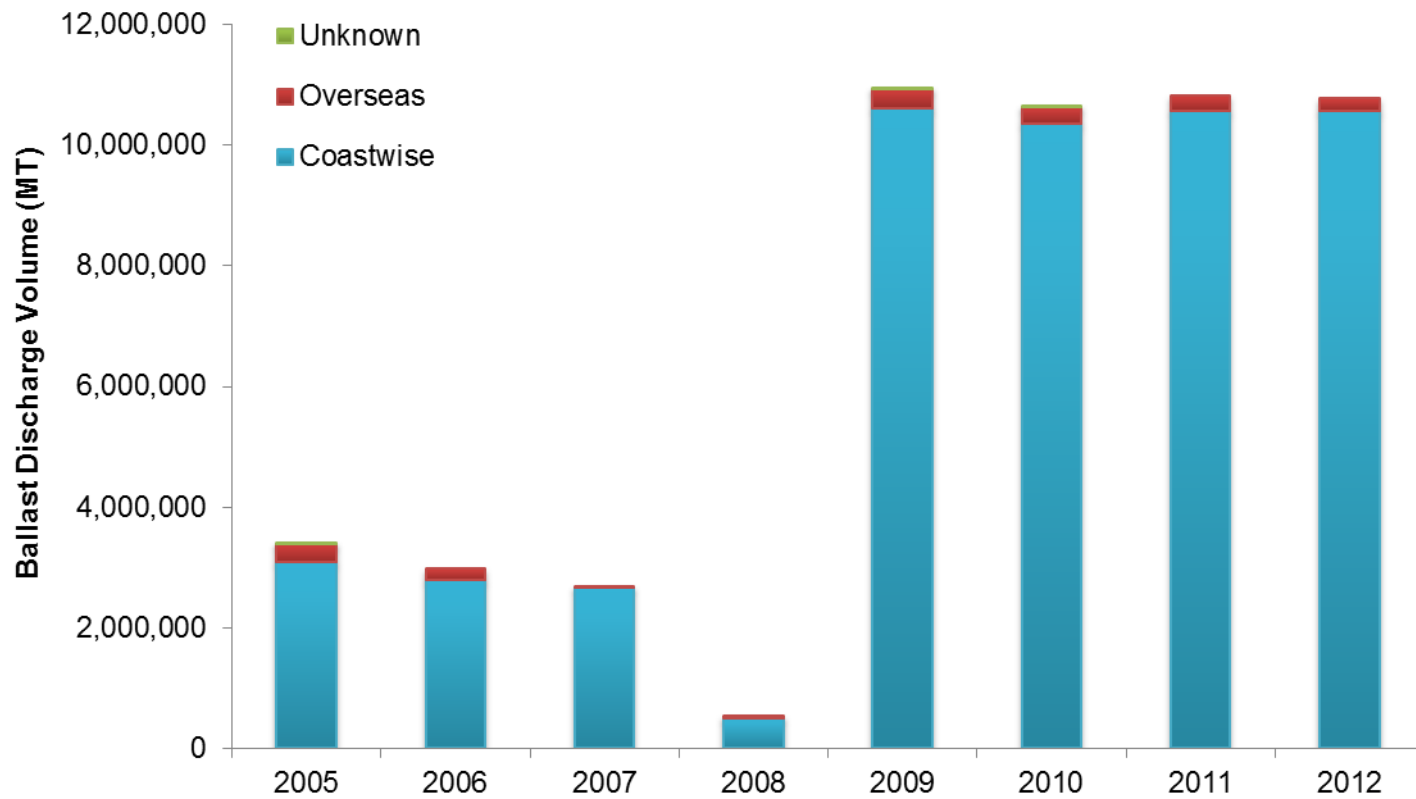


Figure B.1. Reported annual volume of ballast water discharged by crude oil tankers in Valdez, Alaska, 2005 through 2012.

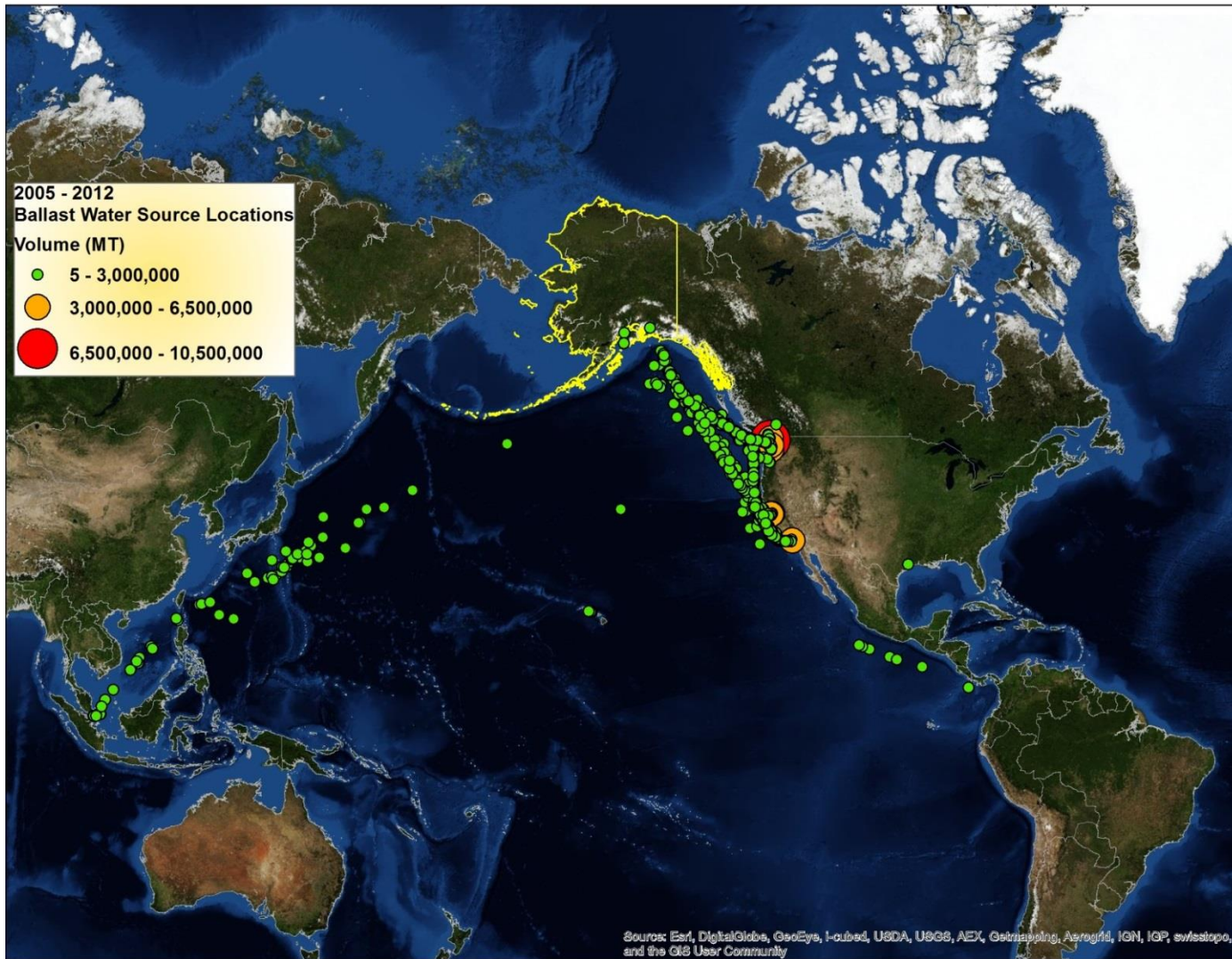


Figure B.2. Reported global source locations of ballast water discharged by crude oil tankers in Valdez, Alaska, 2005 through 2012.

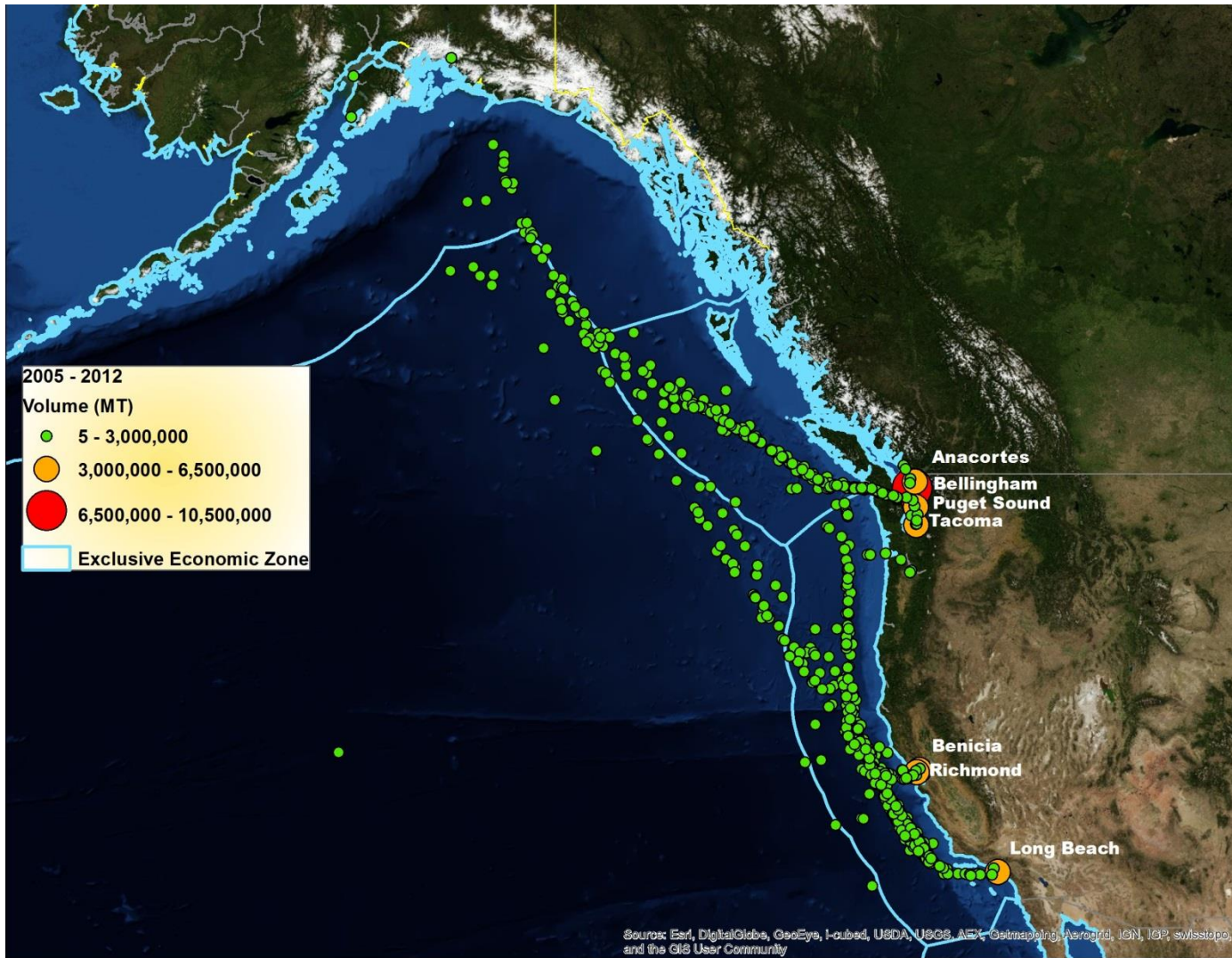


Figure B.3. Reported west coast source locations of ballast water discharged by crude oil tankers in Valdez, Alaska, 2005 through 2012.

C. Valdez: Ballast Water Management

Of the 52,805,080 MT of ballast water discharged by crude oil tankers in Valdez between 2005 and 2012, 15,270,299 MT (29%) was reported to be managed. Average reported management rates increased from 4.5% during 2005 – 2008 to 34.8% during 2009 – 2012. The majority (61.1%) of management occurred within coastal waters. The dominant management method was flow-through ballast water exchange (71.2%), followed by empty-refill exchange (26.7%) and alternate methods (2.1%).

See Table C.1. and Figures C.1. – C.4.

Table C.1. Reported annual volume of managed and unmanaged ballast water discharged by crude oil tankers in Valdez, Alaska, 2005 through 2012. Total discharge volume is shown as a percentage of reported managed and unmanaged ballast. Managed ballast is further portrayed by management location (coastal or mid ocean) and by management method (alternate, empty-refill or flow-through).

Annual Ballast Water Discharge Volume (x1000 MT) – Valdez Management									
	2005	2006	2007	2008	2009	2010	2011	2012	Total
Discharge Volume	3,411.9	2,984.1	2,661.7	549.4	10,947.9	10,650.2	10,818.3	10,781.7	52,805.1
Unmanaged	3,363.7 (98.6%)	2,880.8 (96.5%)	2,646.5 (99.4%)	479.0 (87.2%)	6,667.2 (60.9%)	7,536.8 (70.8%)	6,861.9 (63.4%)	7,098.9 (65.8%)	37,534.8 (71.1%)
Managed	48.2 (1.4%)	103.3 (3.5%)	15.2 (0.6%)	70.4 (12.8%)	4,280.7 (39.1%)	3,113.4 (29.2%)	3,956.4 (36.6%)	3,682.7 (34.2%)	15,270.3 (28.9%)
Type - Coastal	0.0	18.9	15.2	27.2	2,862.1	1,723.2	2,488.7	2,195.2	9,330.5
Type - Mid Ocean	48.2	84.5	0.0	43.2	1,418.6	1,390.1	1,467.6	1,487.5	5,939.8
Method – Alternate	0.0	0.0	0.0	0.0	222.0	11.7	60.5	18.6	312.8
Method – Empty-Refill	48.2	65.6	1.2	60.6	925.2	889.9	1,049.1	1,041.5	4,081.3
Method – Flow-Through	0.0	37.8	14.0	9.8	3,133.5	2,211.7	2,846.8	2,622.6	10,876.2

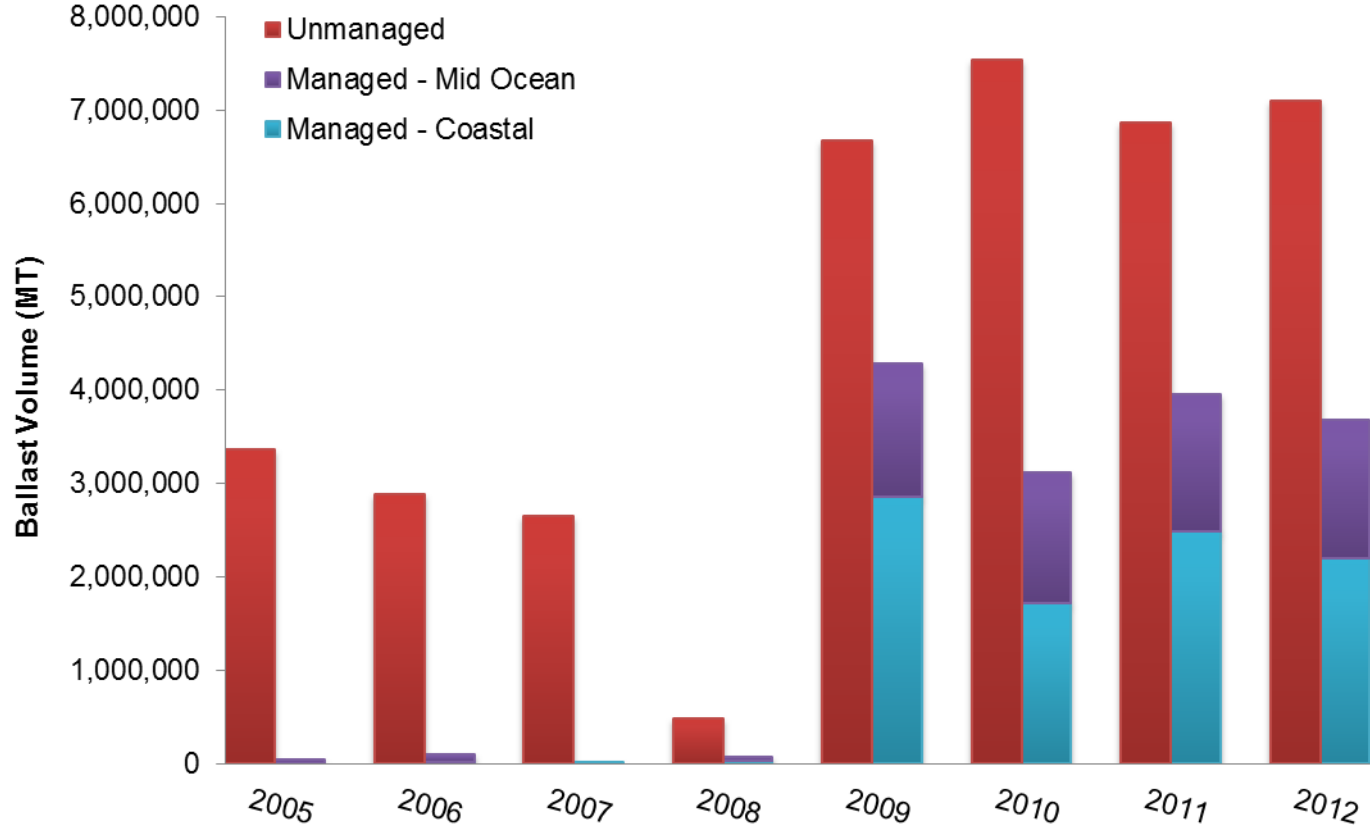


Figure C.1. Reported annual volume of managed and unmanaged ballast water discharged by crude oil tankers in Valdez, Alaska, 2005 through 2012. Managed ballast water is depicted by location: coastal or mid ocean.

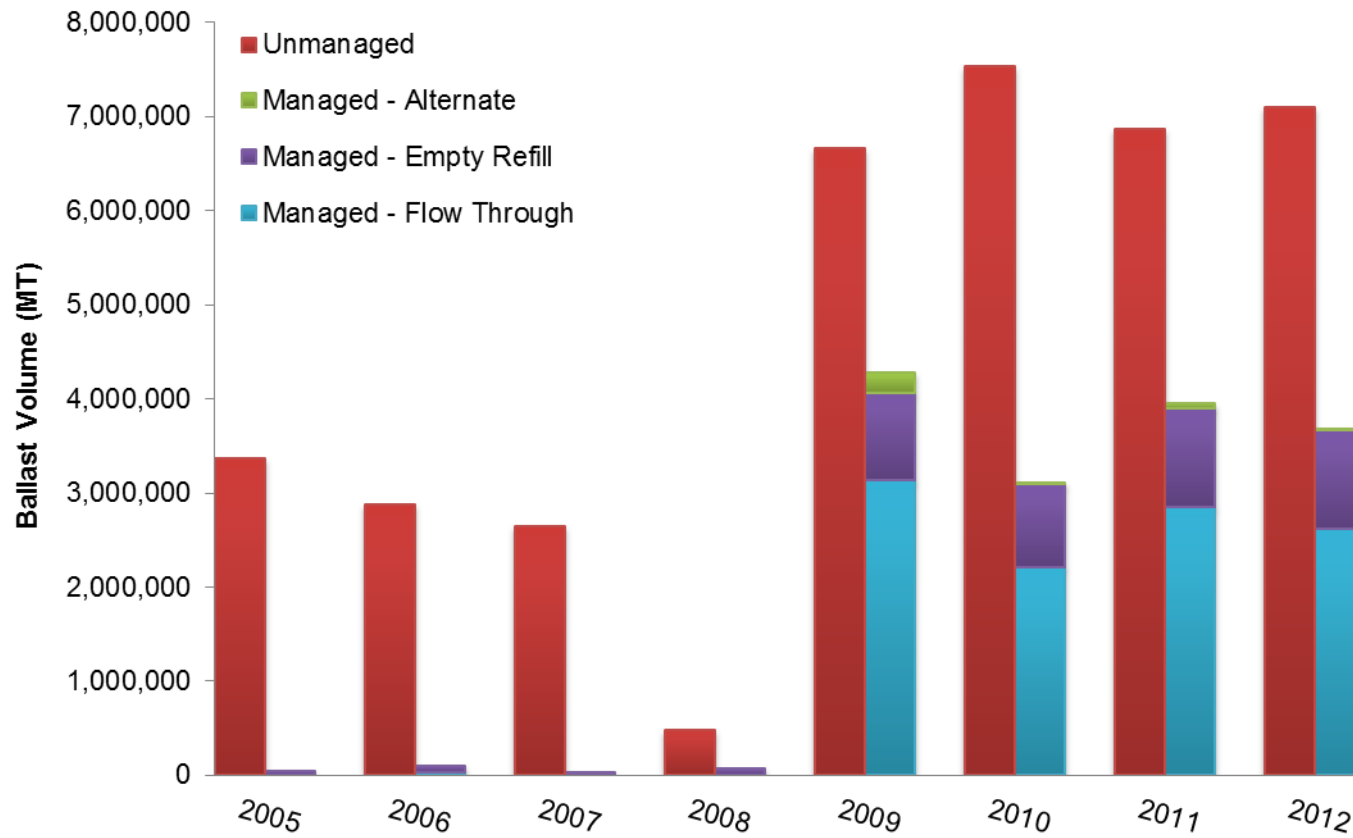


Figure C.2. Reported annual volume of managed and unmanaged ballast water discharged by crude oil tankers in Valdez, Alaska, 2005 through 2012. Managed ballast water is depicted by method: alternate, empty-refill or flow-through.



Figure C.3. Reported global management locations of ballast water discharged by crude oil tankers in Valdez, Alaska, 2005 through 2012.

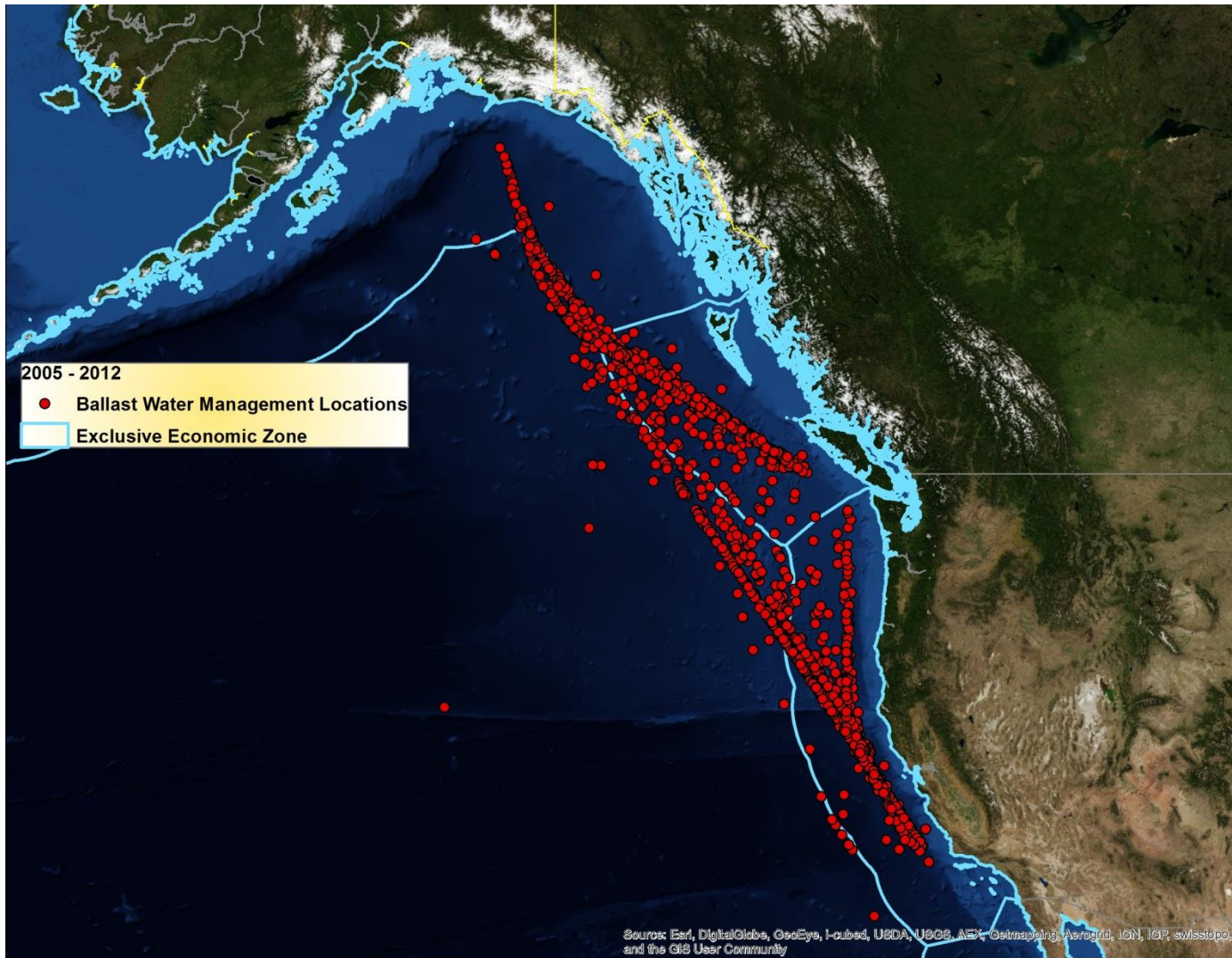


Figure C.4. Reported west coast management locations of ballast water discharged by crude oil tankers in Valdez, Alaska, 2005 through 2012.

D. Prince William Sound

The following data include vessel reports to Prince William Sound, Prince William Sound Captain of the Port Zone, and Knowles Head Anchorage. Seven crude oil tankers reported discharging 1,837,190 MT of ballast water between 2005 and 2012. No ballast was reported discharged during 2008 or 2012. The majority (96.8%) of ballast was coastwise. Of the ballast water reported to be managed (8.3%), empty-refill exchange was the only method used.

Table D.1. Reported annual number of arrivals by crude oil tankers that discharged ballast water in Prince William Sound, Alaska, 2005 through 2012. Vessel numbers correspond to tankers that discharged ballast in Valdez, with the addition of Vessel 18.

	2005	2006	2007	2008	2009	2010	2011	2012	Total
Vessel 3	11	17	0	0	9	7	1	0	45
Vessel 7	0	1	1	0	16	2	2	0	22
Vessel 8	0	0	0	0	13	6	0	0	19
Vessel 4	3	8	3	0	0	0	5	0	19
Vessel 1	0	0	0	0	1	1	0	0	2
Vessel 18	1	0	0	0	0	0	0	0	1
Vessel 15	1	0	0	0	0	0	0	0	1

Table D.2. Reported annual volume of ballast water discharged by crude oil tankers in Prince William Sound, Alaska, 2005 through 2012. Total discharge volume is shown as a percentage of coastwise or overseas and further divided into coastal or mid ocean origin.

Annual Ballast Water Discharge Volume (x1000 MT) – Prince William Sound Sources									
	2005	2006	2007	2008	2009	2010	2011	2012	Total
Discharge Volume	673.3	807.0	13.8	0.0	235.0	80.3	27.9	0.0	1,837.2
Coastwise	619.6 (92.0%)	807.0 (100%)	13.8 (100%)	0.0 (0.0%)	230.0 (97.9%)	80.3 (100%)	27.9 (100%)	0.0 (0.0%)	1,778.5 (96.8%)
Coastal Origin	619.6	807.0	13.8	0.0	230.0	80.3	27.9	0.0	1,778.5
Mid Ocean Origin	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Overseas	53.7 (8.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	5.0 (2.1%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	58.6 (3.2%)
Coastal Origin	49.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	49.3
Mid Ocean Origin	4.4	0.0	0.0	0.0	5.0	0.0	0.0	0.0	9.3

Table D.3. Reported source locations and volume of ballast water discharged by crude oil tankers in Prince William Sound, Alaska, 2005 through 2012. Source locations provided as geographic coordinates are not listed. Source locations are listed in decreasing order of total ballast discharge.

Annual Ballast Water Discharge Volume per Source Location (x1000 MT)									
	2005	2006	2007	2008	2009	2010	2011	2012	Total
Anacortes	215.8	406.8	0.0	0.0	96.4	24.7	7.4	0.0	751.0
Benicia	197.0	204.3	9.6	0.0	43.1	6.6	0.0	0.0	460.6
Richmond (CA)	133.3	27.1	0.0	0.0	7.8	3.2	0.0	0.0	171.4
Ferndale	0.0	111.4	0.0	0.0	5.5	4.0	0.0	0.0	121.0
Tacoma	0.0	0.0	3.5	0.0	26.6	23.3	4.7	0.0	58.1
San Francisco COTP Zone	54.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	54.3
Barbers Point	49.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	49.3
Bellingham	0.0	39.8	0.0	0.0	3.8	4.0	0.0	0.0	47.7
San Francisco	15.5	16.9	0.0	0.0	4.0	4.0	0.0	0.0	40.5
Rodeo (CA)	0.0	0.7	0.0	0.0	35.4	0.0	2.7	0.0	38.8
Puget Sound	0.0	0.0	0.0	0.0	0.0	0.0	8.2	0.0	8.2
Port Angeles	0.0	0.0	0.0	0.0	0.7	7.1	0.0	0.0	7.8
Gulf of Mexico	0.0	0.0	0.0	0.0	4.3	0.0	0.0	0.0	4.3
Columbia River	3.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8
Carquinez	0.0	0.0	0.0	0.0	0.0	0.0	2.5	0.0	2.5
Long Beach	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.7
Strait of Juan de Fuca	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.7
Total	673.3	807.0	13.8	0.0	235.0	80.3	27.9	0.0	1,837.2

Table D.4. Reported annual volume of managed and unmanaged ballast water discharged by crude oil tankers in Prince William Sound, Alaska, 2005 through 2012. Total discharge volume is shown as a percentage of reported managed and unmanaged ballast. Managed ballast is further portrayed by management location (coastal or mid ocean) and by management method (alternate, empty-refill or flow-through).

Annual Ballast Water Discharge Volume (x1000 MT) – Prince William Sound Management									
	2005	2006	2007	2008	2009	2010	2011	2012	Total
Discharge Volume	673.3	807.0	13.8	0.0	235.0	80.3	27.9	0.0	1,837.2
Unmanaged	673.3 (100%)	807.0 (100%)	13.8 (100%)	0.0 (0.0%)	140.2 (59.7%)	31.9 (39.7%)	19.4 (69.6%)	0.0 (0.0%)	1,685.5 (91.7%)
Managed	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	0.0 (0.0%)	94.8 (40.3%)	48.4 (60.3%)	8.5 (30.4%)	0.0 (0.0%)	151.7 (8.3%)
Type - Coastal	0.0	0.0	0.0	0.0	48.4	18.2	5.6	0.0	72.3
Type - Mid Ocean	0.0	0.0	0.0	0.0	46.4	30.2	2.9	0.0	79.4
Method – Alternate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Method – Empty-Refill	0.0	0.0	0.0	0.0	94.8	48.4	8.5	0.0	151.7
Method – Flow-Through	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Appendix 1. Ballast Water Reporting Form for the National Ballast Information Clearinghouse. See <http://invasions.si.edu/nbic/submit.html> for submission requirements and methods.

OMB Control Number 1625-0069
Exp. Date: 31-May-2015

BALLAST WATER REPORTING FORM

IS THIS AN AMENDED BALLAST REPORTING FORM? YES NO

1. VESSEL INFORMATION		2. VOYAGE INFORMATION		3. BALLAST WATER USAGE AND CAPACITY	
Vessel Name:		Arrival Port:		<i>Specify Units Below (m³, MT, LT, ST)</i>	
IMO Number:		Arrival Date (D/M/YYYY):		Total Ballast Water on Board:	
Owner:		Agent:		Volume	Units No. of Tanks in Ballast
Type:		Last Port:	Country of Last Port:	Total Ballast Water Capacity:	
GT:				Volume	Units Total No. of Tanks on Ship
Call Sign:		Next Port:	Country of Next Port:		
Flag:					

4. BALLAST WATER MANAGEMENT Total No. Ballast Water Tanks to be discharged:

Of tanks to be discharged, how many: Underwent Exchange: Underwent Alternative Management:

Please specify alternative method(s) used, if any:

If no ballast treatment conducted, state reason why not:

Ballast management plan on board? YES NO Management plan implemented? YES NO

IMO ballast water guidelines on board [res. A.868(20)]? YES NO

5. BALLAST WATER HISTORY: Record all tanks to be deballasted in port state of arrival; IF NONE, GO TO #6 (Use additional sheets as needed)

Tanks/ Holds <small>List multiple sources/tanks separately</small>	BW SOURCE				BW MANAGEMENT PRACTICES						BW DISCHARGE			
	DATE D/M/YYYY	PORT or LAT. LONG.	VOLUME (units)	TEMP (units)	DATE D/M/YYYY	ENDPOINT LAT. LONG.	VOLUME (units)	% Exch	METHOD (ER/FT/ ALT)	SEA HT. (m)	DATE D/M/YYYY	PORT or LAT. LONG.	VOLUME (units)	SALINITY (units)
			m3	C			m3		ER				m3	sg
			m3	C			m3		ER				m3	sg
			m3	C			m3		ER				m3	sg
			m3	C			m3		ER				m3	sg
			m3	C			m3		ER				m3	sg
			m3	C			m3		ER				m3	sg
			m3	C			m3		ER				m3	sg
			m3	C			m3		ER				m3	sg

Ballast Water Tank Codes: Forepeak = FP, Aftpeak = AP, Double Bottom = DB, Wing = WT, Topside = TS, Cargo Hold = CH, Other = O

6. RESPONSIBLE OFFICER'S NAME AND TITLE, PRINTED AND SIGNATURE:

Released 12-Aug-2010
Send form by e-mail
OR
Submit form on-line
OR
Save as text file
NBICReportingForm.pdf