

Pacific States/British Columbia Oil Spill Task Force

Summary of West Coast Oil Spill Data

Calendar Year 2016

May 2017



CONTACT INFORMATION

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Data analysis and summary report
by Camille Stephens

OIL SPILL DATA PROJECT

Summary of Regional Spill Data (CY 2016)

The Task Force's regional oil spill database, which was launched in 2003, is a unique and valuable resource that enables us to track regional trends in spills and related causal factors. Using a standardized data dictionary to ensure uniform entries, we collect data on all spills of a barrel (42 gallons) or larger.

DATABASE WORKGROUP

Database Workgroup provides staff-level coordination to help ensure that data is collected in a consistent manner by all Task Force member agencies. The Pacific States/British Columbia Oil Spill Task Force Data Dictionary (available at oilspilltaskforce.org/ourwork/data-project/) was developed by the Database Workgroup and establishes standardized terms and definitions for collecting spill data.

Workgroup members include:

- Bill Steele (Alaska Department of Environmental Conservation)
- Cathy Conway, Adrian Chatigny, and Damon Williams (California Department of Fish and Wildlife, Office of Spill Prevention and Response)
- Mike Zollitsch (Oregon Department of Environmental Quality)
- Steven Mow and Curtis Martin (Hawaii Department of Human Health)
- Jack Barfield (Washington Department of Ecology)

The British Columbia Ministry of Environment monitors the project, is developing a spill database, and plans to join the Task Force project as soon as possible.

DATA LIMITATIONS

- Each agency that assists in the creation and maintenance of the Task Force database in no way guarantees the accuracy of the information and no guarantee of accuracy shall be expressed or implied.
- Only spills of one barrel (42 gallons) or larger are included in our Database.
- Detailed information about small spills is often limited or unknown because the effort necessary to investigate them is cost-prohibitive. For this reason, we are presenting spill counts only.
- The Task Force oil spill database is created and maintained for informational purposes only. The data it contains reflects the respective agencies' best information at the time it was entered in the database. This means that

recorded quantities may be under-reported. It remains an ongoing challenge to refine the information entered to a level of specificity that supports effective analysis while also taking into account the varied collection capabilities of member agencies.

HIGHLIGHTS

The 2016 data is provided on the following pages. Highlights include:

- A total of 564 releases occurred during 2016, with a total volume of 326,814 gallons spilled. Of those, 3 releases were over 10,000 gallons.

Non-Crude Spills

- 547 releases were non-crude spills totaling 237,687 gallons.
- Vessels (45%) and Vehicles (37%) were the major sources of non-crude spills during 2016, more than three-quarters of the total non-crude volume.
- Over half of the total non-crude spill volume was attributable to Organizational/management failure (38%) or Human error (36%).
- Nearly half (47%) of the non-crude volume was spilled to Marine waters.

Crude Oil Spills

- 17 Crude oil releases totaling 89,127 gallons occurred in 2016.
- Crude oil releases comprised 27% the total volume for 2016.
- Human error (51%) was the cause of about half of the crude oil spill volume during 2016
- Mechanical failure (98.7%) comprised virtually all spill volume due to Equipment Failure.
- During 2016, crude spills to Marine (50%) and Fresh water (47%) comprised most of the total volume.

NOTE:

- California's data submission does not include every spill reported to the State in 2016, compared to previous years. This resulted in a significant drop in the California data presented regarding the total number of spills and the total volume for the year, especially for spills to land. Out of the 6,975 Hazardous Materials Spill Reports 2,473

were reported as petroleum to land (no waterway involved). The responsibility of response and investigation of spills fall under the jurisdiction of agencies other than California Department of Fish and Wildlife, Office of Spill Prevention and Response (CDFW OSPR). Causal data, oil types and volumes are not collected by the CDFW OSPR and therefore are not included in this year's report.

- Hawaii's data submission for 2016 was incomplete due to issues encountered in their new data management system.

Trends

The 2002-2016 data provides us with an opportunity to look at 15-year trends, which is also shown in this report. Here are the highlights:

- A total of 14,401, releases occurred during the 15-year period 2002-2016, with a total volume of approximately 12.1 million gallons.
- Over the 15-year period, the combined volume of Non-Crude spills was more than 2.5 times that for Crude Oil spills.
- The top two Crude Oil spills during the 13-year period were 463,848 gallons in California (2008) and a 267,000 gallon spill in Alaska (2006). The combined volume of these two incidents comprised 23% of the total Crude Oil volume released for the period.
- Overall, Facilities (50%) and Pipelines (19%) were the major sources of spills during the 13-year period.
- Facilities were the source of 53% of the Non-Crude spill volume.
- Pipelines (53%) and Facilities (43%) were the major sources of Crude Oil spills.
- Overall, Equipment Failure (54%) and Human Error (30%) were the major spill causes.
- Equipment Failure (45%) and Human Error (37%) were the predominant causes for Non-Crude spills
- 78% of the total Crude Oil spill volume was due to Equipment Failure.

FOR MORE INFORMATION

Data summaries for calendar years 2002 – 2012, as well as other information about the Pacific States/British Columbia Oil Spill Task Force and its work, are available at www.oilspilltaskforce.org.

oilspilltaskforce.org. Summaries for years prior to 2012 are included in the Task Force Annual Reports for those years. Beginning with calendar year 2012, the data summary was created as a separate document available at oilspilltaskforce.org/ourwork/data-project/

For questions specifically related to this report or the Task Force's data project, contact Sarah Brace, Executive Coordinator at Sarah@VedaEnv.com.

Summary of Releases by Product (2016)

Product	Spill Count	Gallons	% Total Volume
Diesel oil / marine gas oil	338	178,438	54.6%
Crude oil	17	89,127	27.3%
Gasoline	29	29,764	9.1%
Hydraulic oil	53	5,520	1.7%
Other	11	4,844	1.5%
Mineral oil / transformer oil	37	4,677	1.4%
Lube oil / motor oil	26	4,571	1.4%
Aviation gasoline	6	3,306	1.0%
Jet fuel / kerosene	12	2,122	0.6%
Heating oil	10	1,215	0.4%
Waste oil	6	1,105	0.3%
Oily water mixture	7	1,060	0.3%
Unknown	8	755	0.2%
Bunker C / IFO / HFO	2	180	0.06%
Edible / vegetable oil	1	80	0.02%
Oily waste	1	50	0.02%
Total	564	326,814	

NOTE:

- California's data submission does not include every spill reported to the State in 2016, compared to previous years. This resulted in a significant drop in the California data presented regarding the total number of spills and the total volume for the year, especially for spills to land. Out of the 6,975 Hazardous Materials Spill Reports 2,473 were reported as petroleum to land (no waterway involved). The responsibility of response and investigation of spills fall under the jurisdiction of agencies other than California Department of Fish and Wildlife, Office of Spill Prevention and Response (CDFW OSPR). Causal data, oil types and volumes are not collected by the CDFW OSPR and therefore are not included in this year's report.
- Hawaii's data submission for 2016 was incomplete due to issues encountered in their new data management system.

2016

ANNUAL SUMMARY OF SPILLS

- A total of 564 releases occurred during 2016, with a total volume of 326,814 gallons.
- Diesel oil/marine gas oil was the most frequent product released and comprised nearly half the total volume for 2016.
- An addition 5,102 small spills (less than 42 gallons) occurred during 2016.

Spills Greater Than 10,000 Gallons (2016)

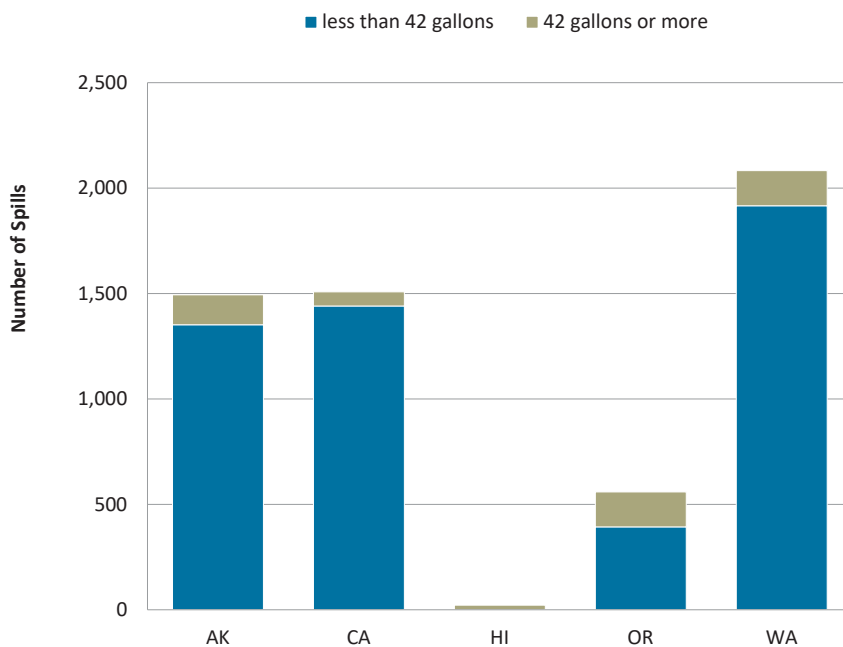
Product	Volume	State	Date	Source Type	Cause Type	Medium
Diesel oil / marine gas oil	87,000	Alaska	7/26/2016	Vessel	Organizational/man- agement failure	Marine
Crude oil	44,755	California	6/23/2016	Pipeline	Human error	Marine
Crude oil	42,000	Oregon	6/3/2016	Vehicle	Equipment failure	Fresh water

Summary of Releases with Volume Less Than 42 gallons (2016)

Beginning in 2016, the Task Force will track the number of spills with volumes less than 42 gallons. This data will be used to help target outreach and spill prevention efforts such as the Pacific Oil Spill Prevention Education Team (POSPET).

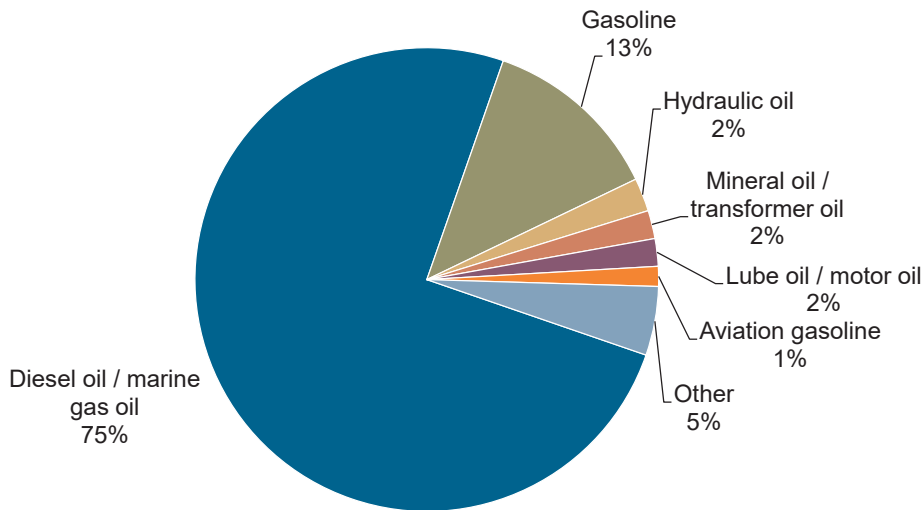
Detailed information about small spills is often limited or unknown because the effort necessary to investigate them is cost-prohibitive. For this reason, we are presenting spill counts only. Small spills are NOT included in the graphs or tables elsewhere in this document.

State	Less Than 42 Gallons	42 Gallons or More
Alaska	1,352	142
California	1,441	67
Hawaii	(no data)	22
Oregon	393	166
Washington	1,876	167
Total	5,102	564



Non-Crude Spills by Product, All States (2016)

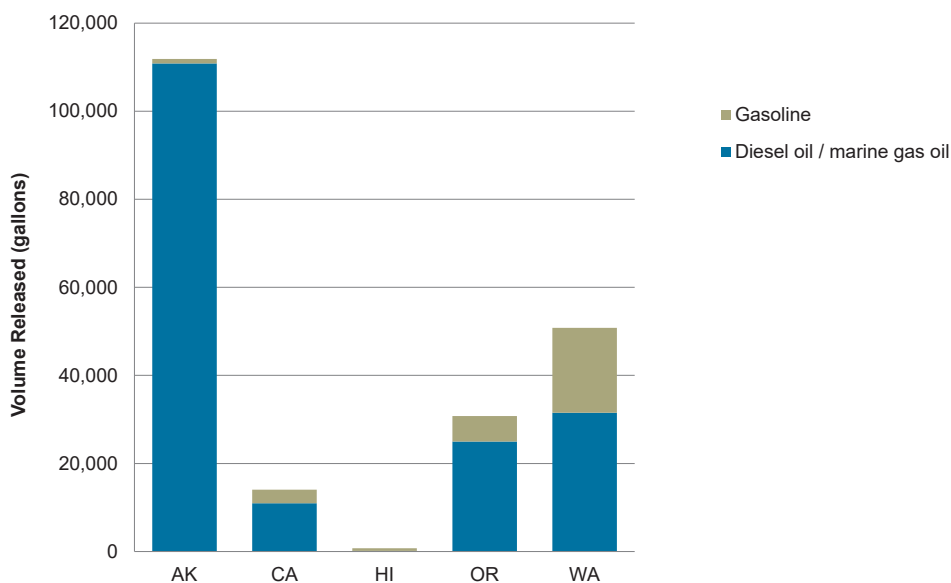
(percent total volume)



NOTE: "Other" includes classifications comprising 1% or less of the total volume released: Jet fuel/kerosene, Heating oil, Waste oil, Oily water mixture, Unknown, Bunker C/IFO/HFO, Edible/vegetable oil, Oily waste

Non-Crude Spills by Product and State (2016)

(5% or more total volume)



2016

NON-CRUDE SPILLS

Total Spills	547
Total Volume (gal)	237,687
Average Spill Size (gal)	435

Summary by Product

Top Products

Product	Gallons
Diesel oil / marine gas oil	178,438
Gasoline	29,764
Hydraulic oil	5,520
Other	11,411
Mineral oil / transformer oil	4,677

- 547 non-crude spills totalling 237,687 gallons occurred during 2016.

2016

NON-CRUDE SPILLS

Summary by Source

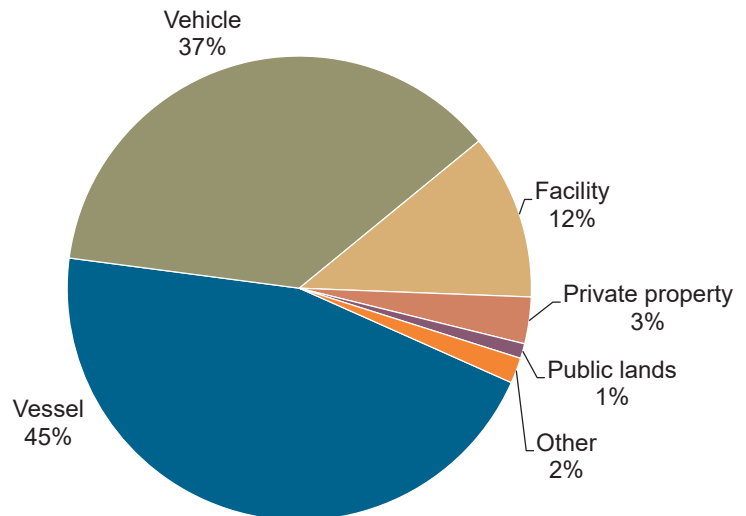
Top Sources

Source	Gallons
Vessel	107,939
Vehicle	87,935
Facility	27,404
Private property	7,727
Public lands	2,450

- Vessels (45%) and Vehicles (37%) were the major sources of non-crude spills during 2016.
- Vessels and Vehicles comprised more than three-quarters of the non-crude spill volume during 2016

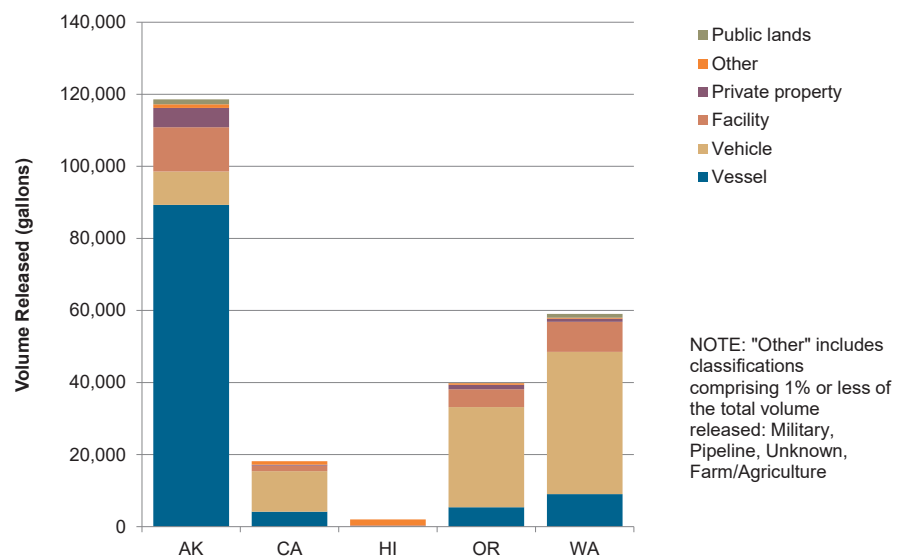
Non-Crude Spills by Source, All States (2016)

(percent total volume)



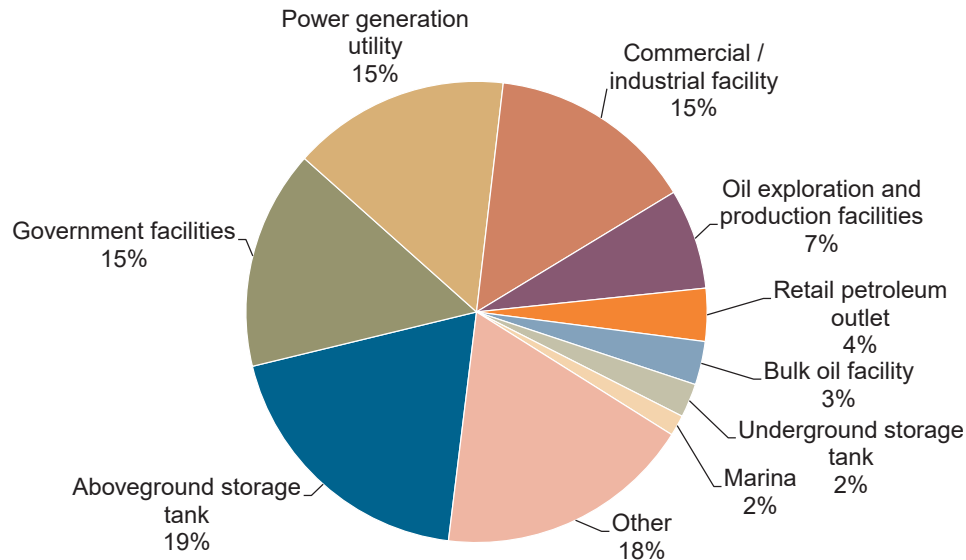
NOTE: "Other" includes classifications comprising 1% or less of the total volume released: Military, Pipeline, Unknown, Farm/Agriculture

Non-Crude Spills by Source and State (2016)



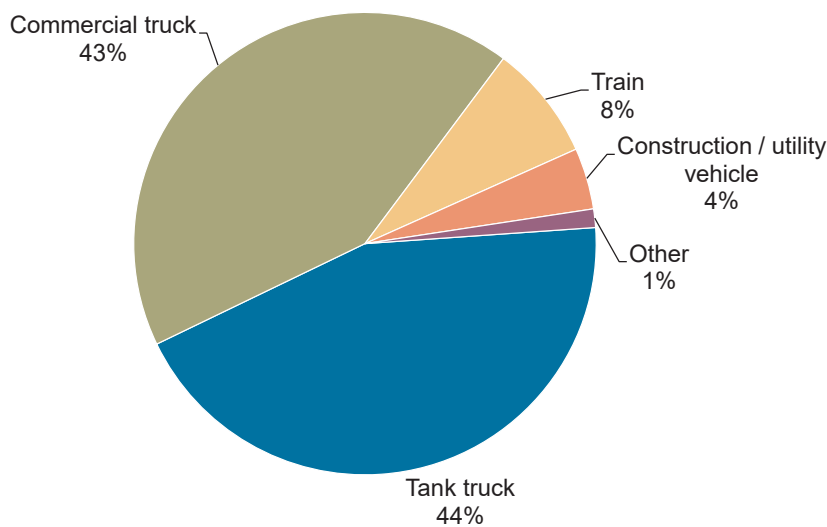
Non-Crude Spills -- Facility Detail (2016)

(percent total volume)



Non-Crude Spills -- Vehicle Detail (2016)

(percent total volume)



NOTE: "Other" includes classifications comprising 1% or less of the total volume released: Non-commercial vehicle, Aircraft, Bus or public transportation

2016

NON-CRUDE SPILLS

Summary by Source (continued)

- More than 60% of the non-crude spill volume for Facilities was from Aboveground Storage Tanks (19%), Government Facilities (15%), Power Generation Utilities (15%), and Commercial/Industrial Facilities (15%).
- Tank Trucks (44%), and Commercial Trucks (43%) comprised nearly 90% of the total non-crude spill volume for Vehicles during 2016.

2016

NON-CRUDE SPILLS

Summary by Cause

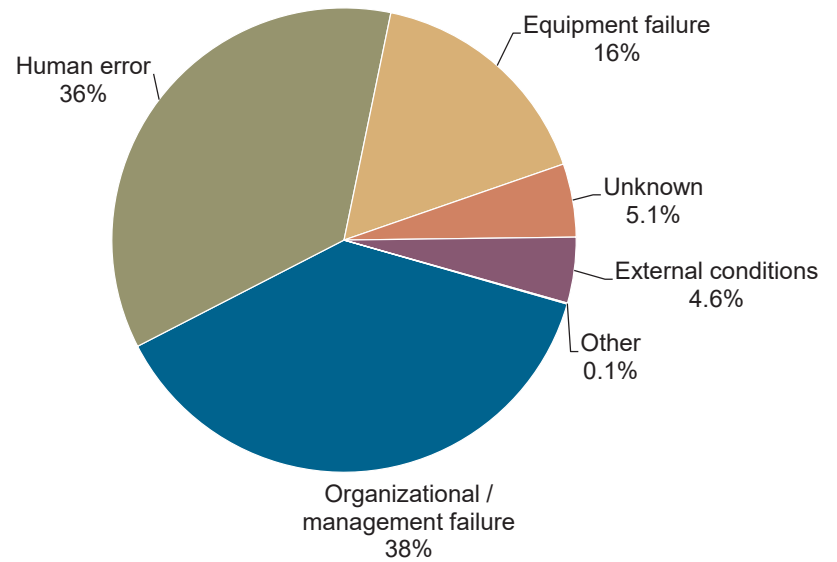
Top Causes

Cause	Gallons
Organizational / management failure	90,302
Human error	85,096
Equipment failure	39,110
Unknown	12,136
External conditions	10,883

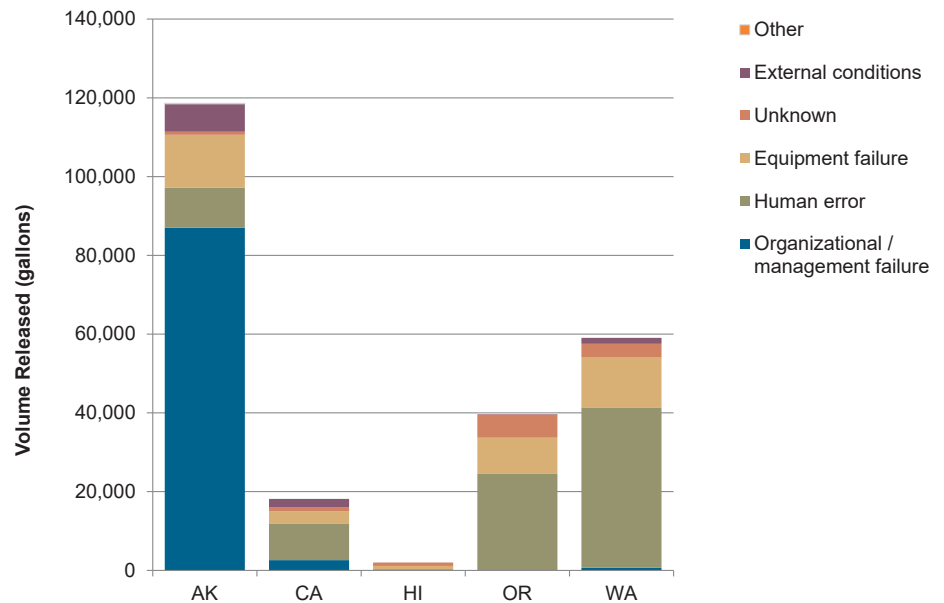
- Over half of the total non-crude spill volume was attributable to Organizational/management failure (38%) or Human error (36%).

Non-Crude Spills by Cause, All States (2016)

(percent total volume)

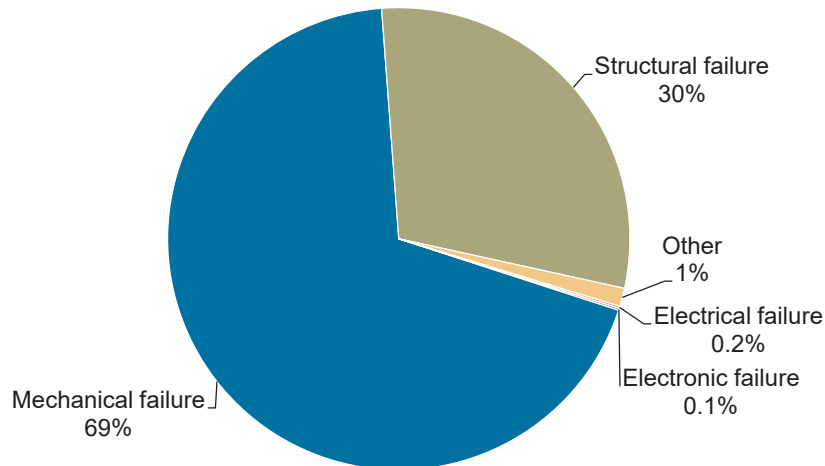


Non-Crude Spills by Cause and State (2016)



Non-Crude Spills -- Equipment Failure Detail (2016)

(percent total volume)



2016

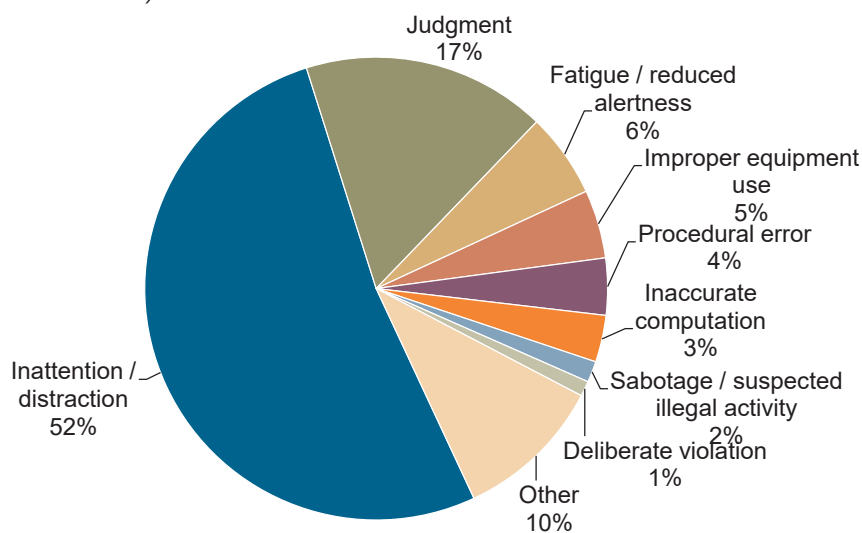
NON-CRUDE SPILLS

Summary by Cause (continued)

- Over two-thirds of the total Equipment Failure spill volume was due to Mechanical failure (69%).
- Releases due to Inattention/distraction (52%) comprised about half the total non-crude volume for 2016.

Non-Crude Spills -- Human Error Detail (2016)

(percent total volume)



NOTE: "Other" includes classifications comprising 1% or less of the total volume released: Communications, Inexperience, Illness

2016

NON-CRUDE SPILLS

Summary by Activity

Top Activities

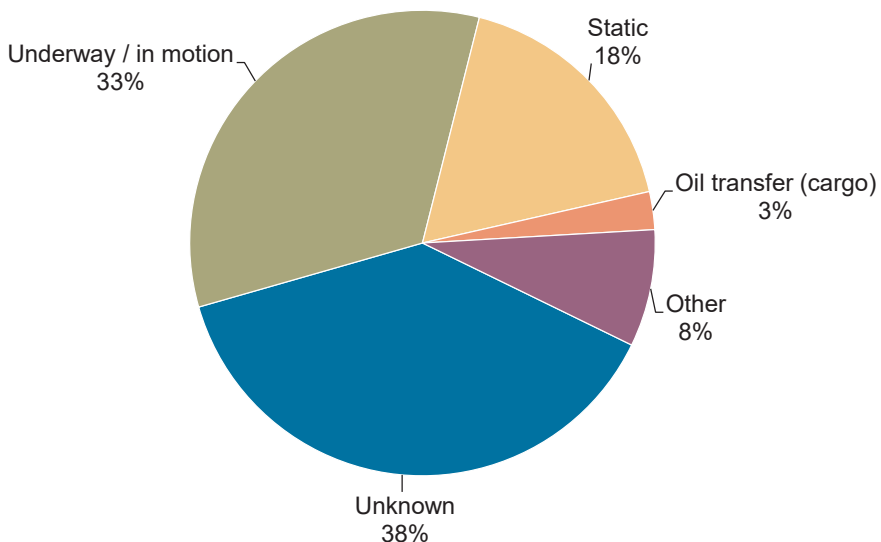
Activity	Gallons
Unknown	91,129
Underway / in motion	79,324
Static	41,626
Oil transfer (cargo)	6,262
Other	19,346

- Underway/in motion was the main activity at the time of the spill (33%).

¹Underway/In Motion: (1) Vessel underway conducting normal operations, no oil movements in progress (oil movements include ballasting, tank washing, internal transfers); (2) Vehicle in motion conducting designed function

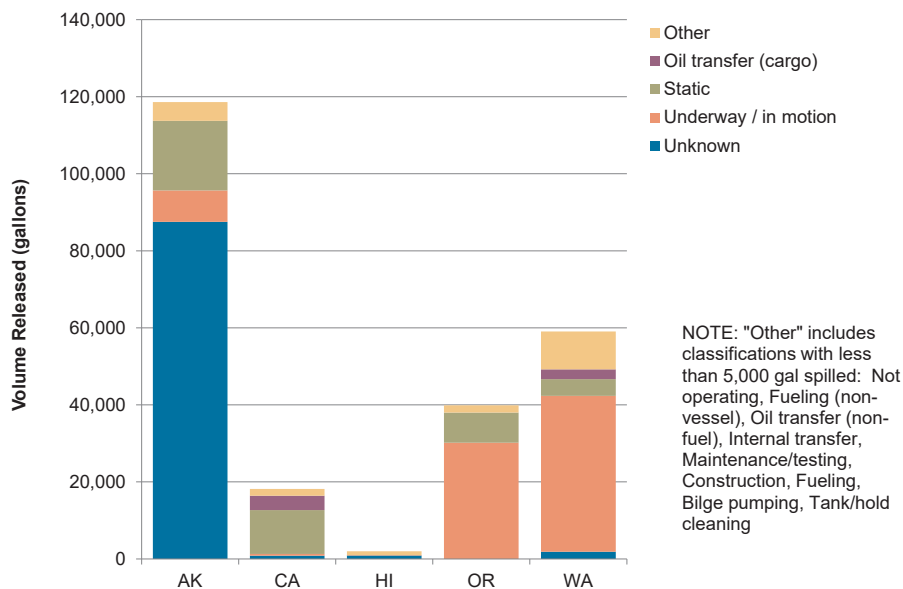
Non-Crude Spills by Activity (2016)

(percent total volume)



NOTE: "Other" includes classifications with less than 5,000 gal spilled: Not operating, Fueling (non-vessel), Oil transfer (non-fuel), Internal transfer, Maintenance/testing, Construction, Fueling, Bilge pumping, Tank/hold cleaning

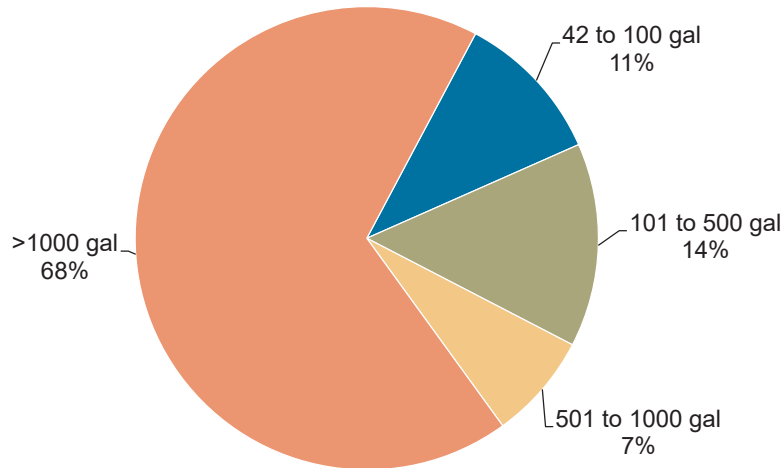
Non-Crude Spills by Activity and State (2016)



NOTE: "Other" includes classifications with less than 5,000 gal spilled: Not operating, Fueling (non-vessel), Oil transfer (non-fuel), Internal transfer, Maintenance/testing, Construction, Fueling, Bilge pumping, Tank/hold cleaning

Non-Crude Spills by Spill Size (2016)

(percent total volume)



2016

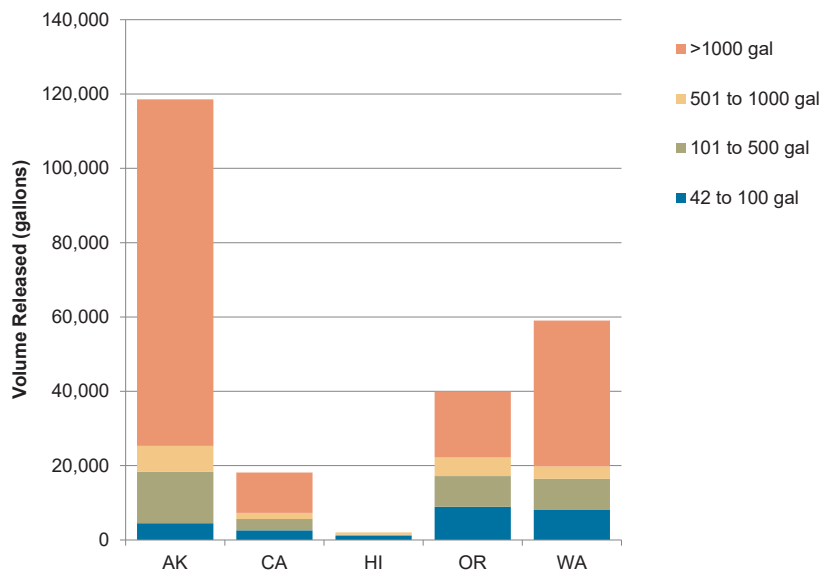
NON-CRUDE SPILLS

Summary by Spill Size

Size Class	Gallons
42 to 100 gal	25,195
101 to 500 gal	33,822
501 to 1000 gal	17,611
>1000 gal	161,059

- Spills with volumes greater than 1,000 gallons comprised 68% of the total non-crude volume during 2016.

Non-Crude Spills by Spill Size and State (2016)



2016

NON-CRUDE SPILLS

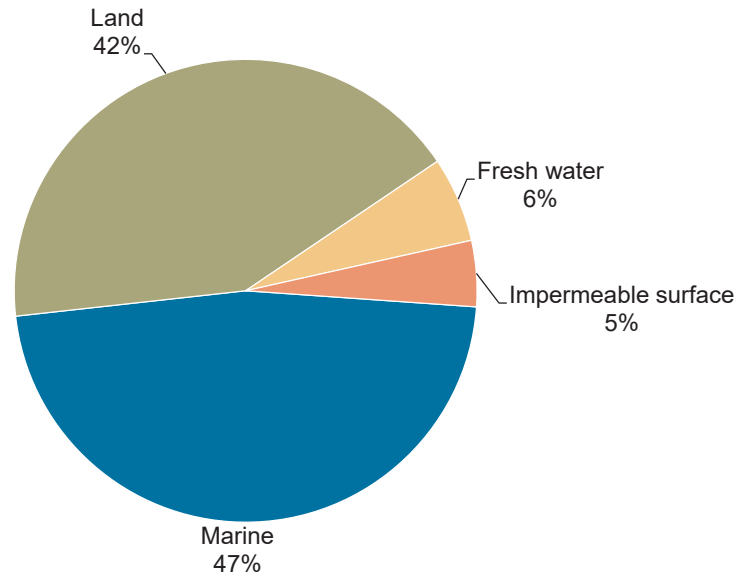
Summary by Medium

Medium	Gallons
Marine	112,035
Land	100,551
Fresh water	14,140
Impermeable surface	10,961

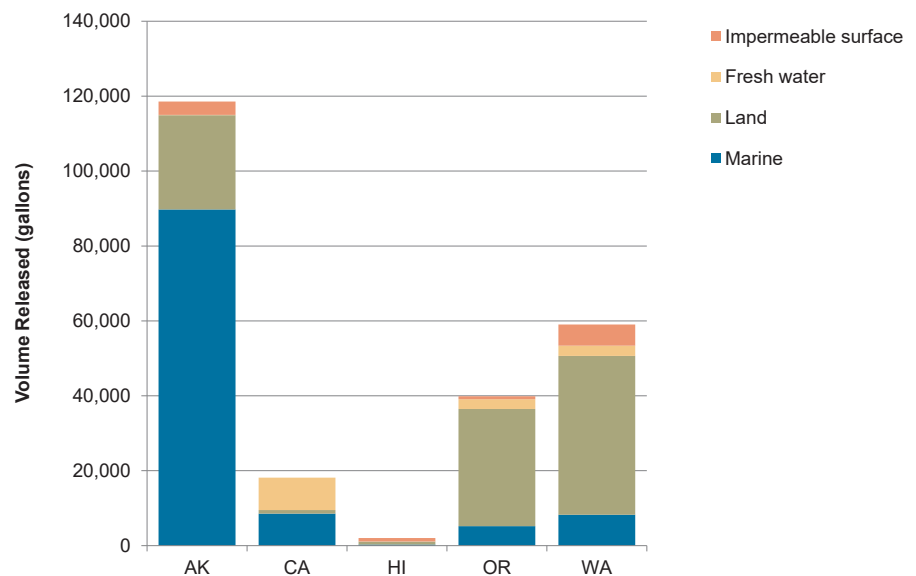
- Nearly half (47%) of the non-crude volume was spilled to Marine waters.

Non-Crude Spills by Medium Impacted (2016)

(percent total volume)

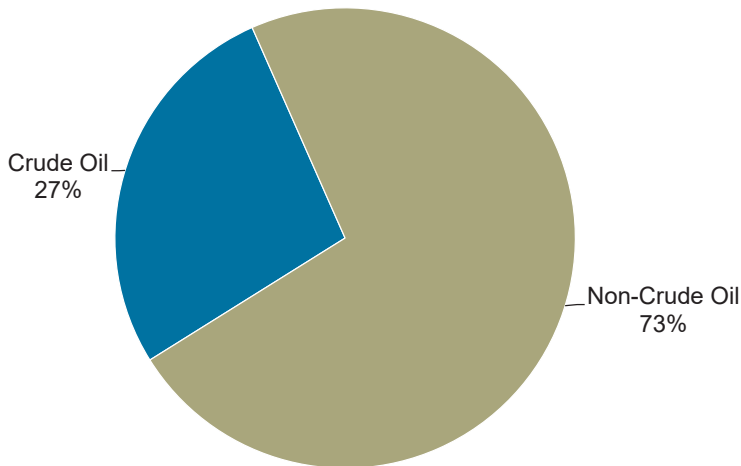


Non-Crude Spills by Medium and State (2016)

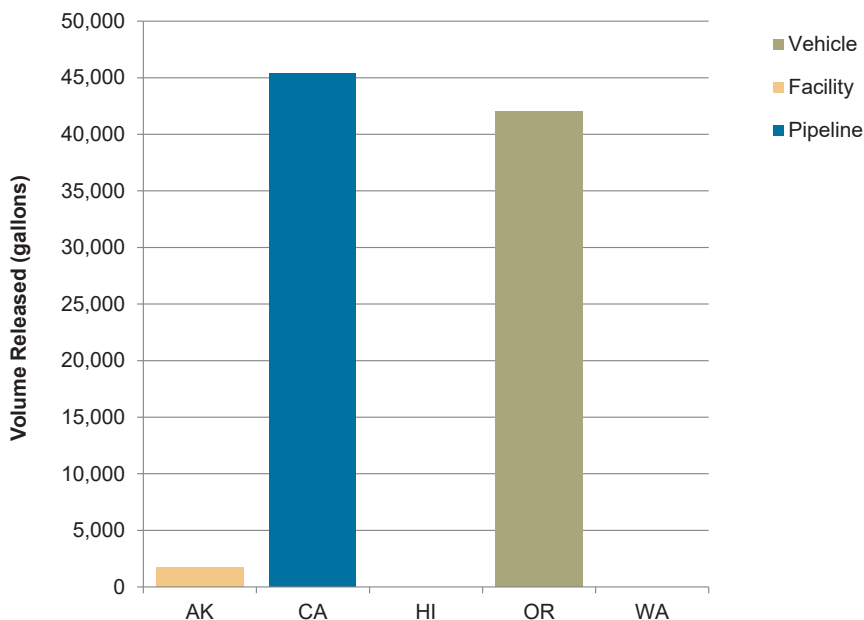


Crude Spills vs. Non-Crude Spills, All States (2016)

(percent total volume)



Crude Spills by Source Type and State (2016)



2016

CRUDE SPILLS

Total Spills	17
Total Volume (gal)	89,127
Average Spill Size (gal)	5,243

Product Type	Gallons
Non-crude Oil	237,687
Crude Oil	89,127
Total	326,814

- Crude oil comprised 27% the total volume for 2016.

Top Sources

Source Type	Gallons
Pipeline	45,401
Vehicle	42,000
Facility	1,726

- Pipelines and Vehicles were the major sources of crude spills during 2016.

2016

CRUDE SPILLS

Top Causes

Cause Type	gallons
Human error	45,594
Equipment failure	43,191
External conditions	300
Unknown	42

- Human error (51%) was the cause of about half of the crude oil spill volume during 2016.

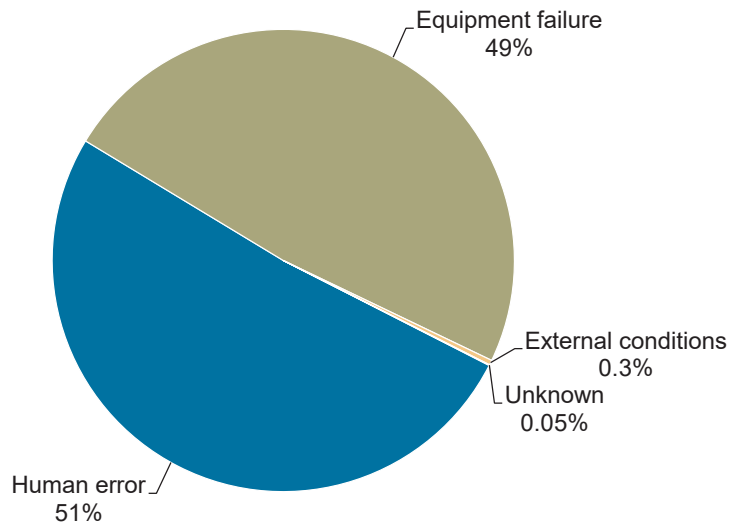
Equipment Failure Detail

Cause	gallons
Mechanical failure	42,642
Structural failure	504
Other	45

- Mechanical failure (98.7%) comprised virtually all spill volume due to Equipment Failure.

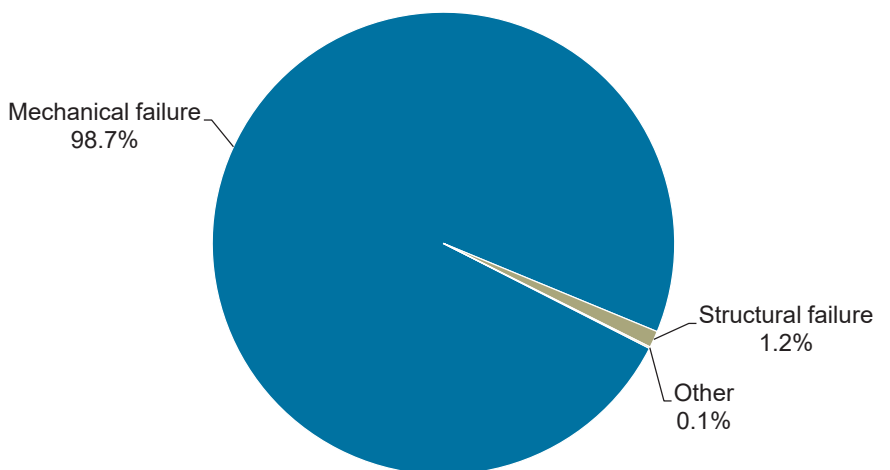
Crude Spills by Cause, All States (2016)

(percent total volume)



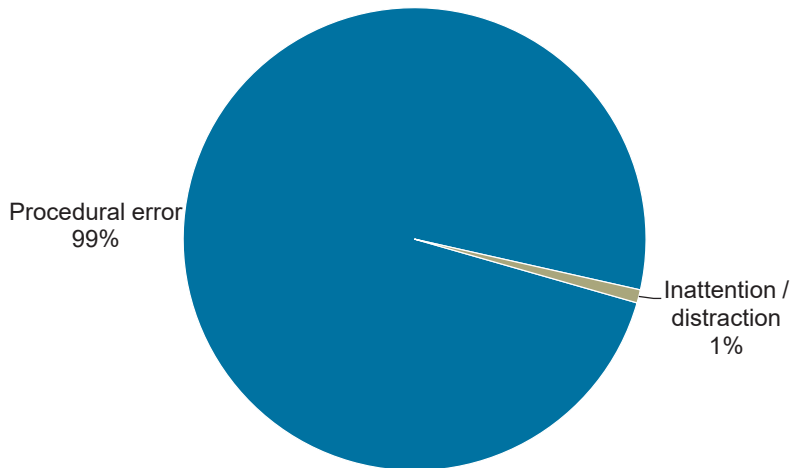
Crude Spills -- Equipment Failure Detail (2016)

(percent total volume)



Crude Spills -- Human Error Detail (2016)

(percent total volume)



2016

CRUDE SPILLS

Human Error Detail

Cause	gallons
Procedural error	45,174
Inattention / distraction	420

- Inattention / distraction (99%) was the main cause of spills attributed to Human Error.

2016

CRUDE SPILLS

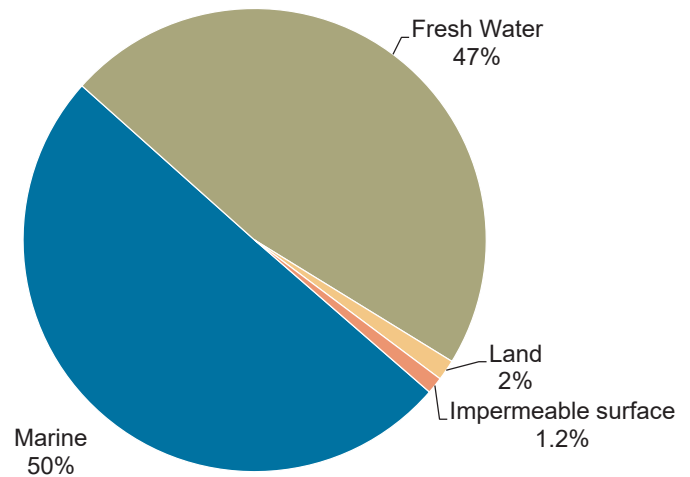
Summary by Medium

Medium	Gallons
Marine	44,755
Fresh Water	42,042
Land	1,291
Impermeable surface	1,039

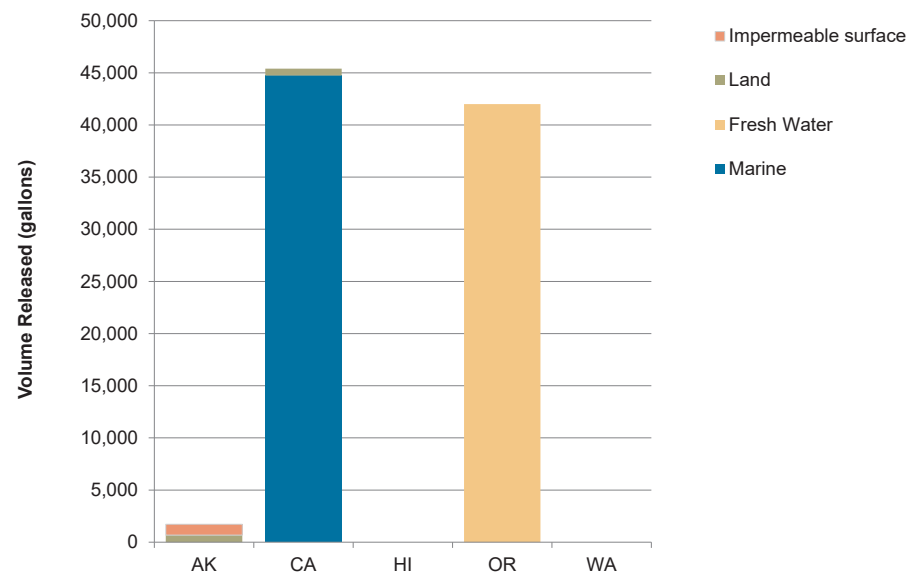
- During 2016, crude spills to Marine (50%) and Fresh water (47%) comprised most of the total volume.

Crude Oil Spills by Medium Impacted (2016)

(percent total volume)



Crude Spills by Medium and State (2016)



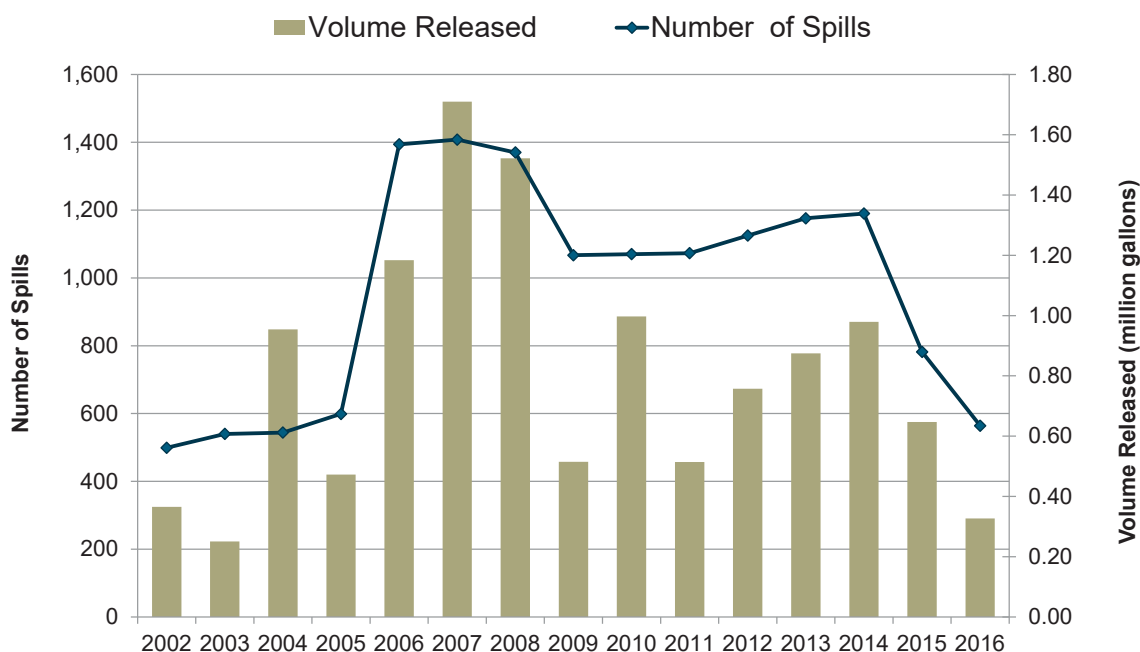
SUMMARY OF SPILLS (2002-2016)

- A total of 14,401 releases occurred during the 15-year period 2002-2016, with a total volume of approximately 12.1 million gallons.

Releases by Product (2002-2016)

Product	Spill Count	Gallons	% Total Volume
Crude oil	1,492	3,218,226	26.7%
Diesel oil / marine gas oil	6,957	3,067,105	25.4%
Oily water mixture	593	1,672,286	13.9%
Bunker C / IFO / HFO	102	735,426	6.1%
Gasoline	586	689,092	5.7%
Other	390	583,766	4.8%
Asphalt / creosote	166	575,359	4.8%
Mineral oil / transformer oil	1,417	425,830	3.5%
Kerosene / jet fuel	304	279,270	2.3%
Aviation gasoline	167	154,511	1.3%
Waste oil	338	138,803	1.2%
Unknown	148	135,164	1.1%
Lube oil / motor oil	571	134,658	1.1%
Hydraulic oil	778	98,928	0.8%
Heating oil	288	67,853	0.6%
Edible / vegetable oil	80	57,682	0.5%
Oily waste	5	20,392	0.2%
LNG / LPG	16	12,590	0.1%
Aviation fuel	2	1,607	0.01%
Cutter stock	1	100	0.001%
Total	14,401	12,068,648	

Number of Spills and Volume Released (2002-2016)



2002-2016

Summary by Product

- Over the 15-year period, the combined volume of Non-Crude spills was more than 2.5 times that for Crude Oil spills.

Crude Oil Spills

- The top two Crude Oil spills during the 13-year period were 463,848 gallons in California (2008) and a 267,000 gallon spill in Alaska (2006). The combined volume of these two incidents comprised 23% of the total Crude Oil volume released for the period.

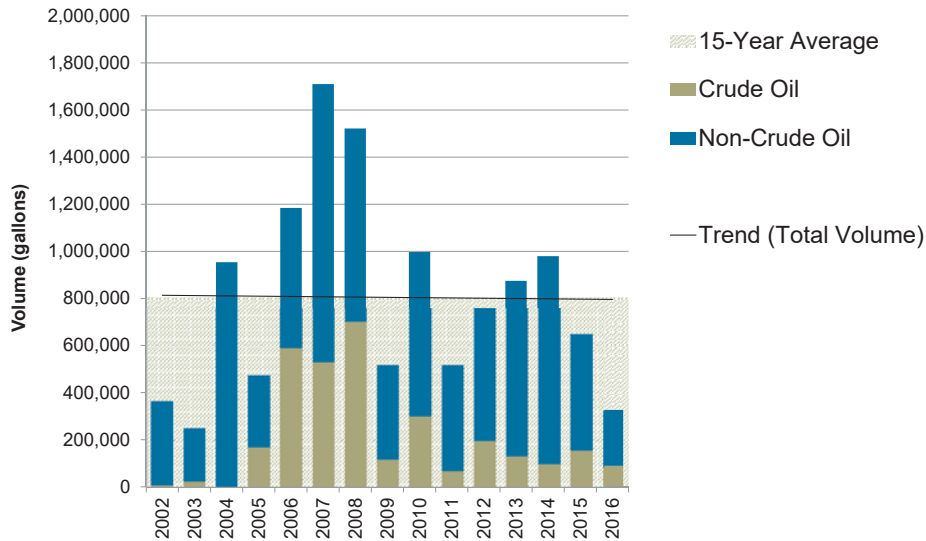
Non-Crude Oil Spills

- Diesel Oil/Marine Gas Oil comprised 25% of the total spill volume and 35% of the Non-Crude spill volume for the period.

Crude vs. Non-Crude Spills by Year (2002-2016)

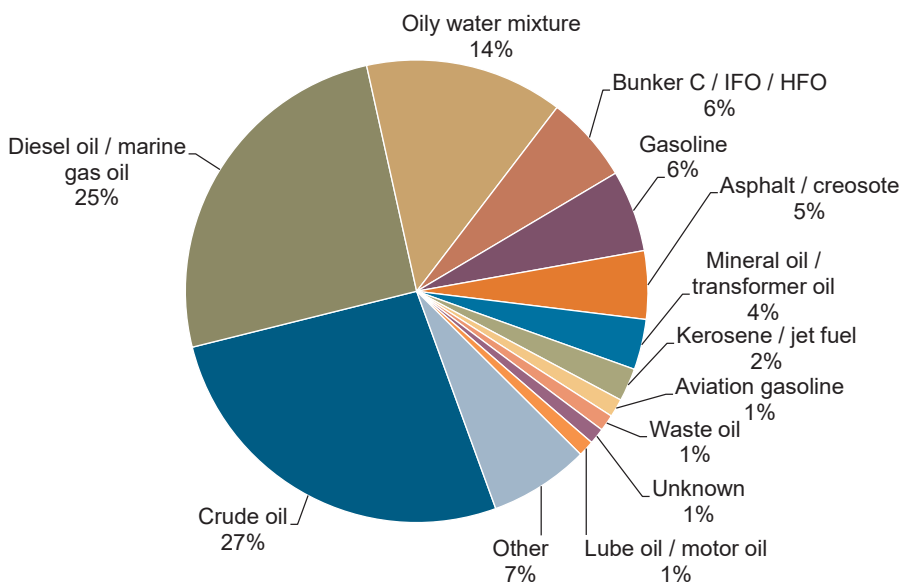
Year	Non-Crude Oil		Crude Oil		Total	
	Spill Count	Gallons	Spill Count	Gallons	Spill Count	Gallons
2002	481	353,759	18	11,424	499	365,183
2003	524	222,531	16	28,015	540	250,546
2004	538	951,906	6	2,018	544	953,924
2005	580	299,516	19	172,871	599	472,387
2006	1,152	594,120	242	589,867	1,394	1,183,987
2007	1,200	1,179,794	208	530,288	1,408	1,710,082
2008	1,145	821,392	225	700,297	1,370	1,521,689
2009	933	393,768	134	120,972	1,067	514,740
2010	941	693,159	129	303,808	1,070	996,967
2011	945	441,172	128	73,004	1,073	514,176
2012	1,000	555,203	125	201,812	1,125	757,015
2013	1,081	740,141	95	134,692	1,176	874,833
2014	1,100	877,689	90	101,713	1,190	979,402
2015	742	488,585	40	158,318	782	646,903
2016	547	237,687	17	89,127	564	326,814
15-YR Total	12,909	8,850,422	1,492	3,218,226	14,401	12,068,648
15-YR AVG	861	590,028	99	214,548	960	804,577

Crude vs. Non-Crude Spills (2002-2016)



Spills by Product (2002-2016)

(percent total volume)



NOTE: "Other" includes products comprising 1% or less of the total volume released: Hydraulic oil, Heating Oil, Edible/Vegetable oil, Oily Waste, LNG/LPG, Aviation fuel, Cutter Stock

2002-2016

Summary by Source

- Overall, Facilities (50%) and Pipelines (19%) were the major sources of spills during the 15-year period.
- Facilities were the source of 53% of the Non-Crude spill volume.
- Pipelines (53%) and Facilities (43%) were the major sources of Crude Oil spills.

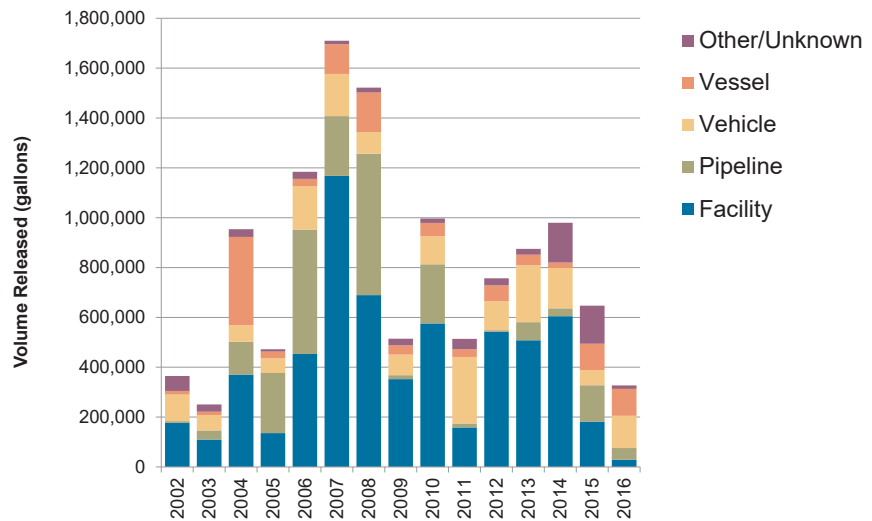
Non-Crude Oil Spill Sources

Source	gallons
Facility	4,689,126
Vehicle	1,812,464
Vessel	1,171,451
Other/Unknown	578,007
Pipeline	577,930
Military	10,429
Public Lands	10,065
Farm/Agriculture	950
Total	8,850,422

Crude Oil Spill Sources

Source	gallons
Pipeline	1,714,557
Facility	1,368,180
Vehicle	74,444
Other/Unknown	55,711
Vessel	5,334
Total	3,218,226

Annual Spill Volume by Source (2002-2016)



Annual Spill Volume by Cause (2002-2016)

2002-2016

Summary by Cause

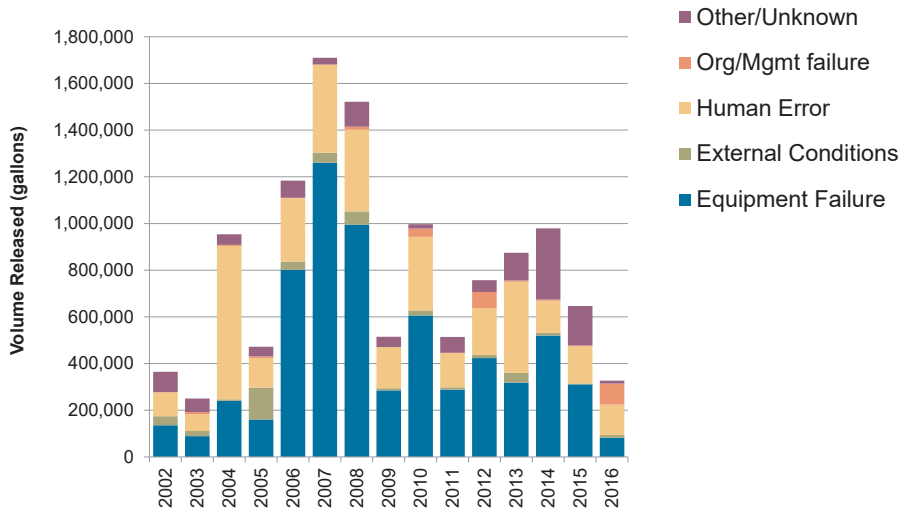
- Overall, Equipment Failure (54%) and Human Error (30%) were the major spill causes.
- Equipment Failure (45%) and Human Error (37%) were the predominant causes for Non-Crude spills
- 78% of the total Crude Oil spill volume was due to Equipment Failure.

Non-Crude Oil Spills

Cause	gallons
Equipment Failure	4,008,243
Human Error	3,316,649
Other/Unknown	1,028,282
External Conditions	300,912
Organizational / Management Failure	196,336

Crude Oil Spills

Cause	gallons
Equipment Failure	2,508,600
Human Error	300,730
Other/Unknown	200,219
External Conditions	159,096
Organizational / Management Failure	49,581





Spills Greater Than 10,000 Gallons (2002-2016)

Number of Spills	149	Crude Spills	38
Releases to Water	31	Non-crude Spills	111

Product	Volume	State	Date	Source Type	Cause Type	Medium
Crude Oil	463,848	California	04/24/08	Pipeline	Equipment Failure	Land
Diesel Oil	420,000	California	10/30/07	Facility	Equipment Failure	Land
Bunker C/IFO/HFO	321,052	Alaska	12/08/04	Vessel	Human Error	Marine
Bunker C/IFO/HFO	270,000	Washington	08/25/04	Facility	Human Error	Land
Crude Oil	267,000	Alaska	03/02/06	Pipeline	Equipment Failure	Land
Asphalt/Creosote	203,000	Washington	01/22/14	Facility	Equipment Failure	Land
Other	193,200	California	01/04/10	Facility	Equipment Failure	Land
Crude Oil	191,562	Alaska	05/25/10	Pipeline	Equipment Failure	Impermeable Surface
Diesel Oil	145,000	Alaska	03/23/08	Vessel	Human Error	Marine
Diesel Oil	142,800	Alaska	01/11/10	Facility	Human Error	Marine
Crude Oil	140,000	California	05/19/15	Pipeline	Equipment Failure	Marine
Oily Water Mixture	128,000	California	11/26/08	Facility	Equipment Failure	Land
Crude Oil	126,000	California	03/09/07	Facility	Equipment Failure	Land
Crude Oil	126,000	California	03/23/05	Pipeline	External Conditions	Fresh Water
Aviation gasoline	115,353	California	11/22/04	Pipeline	Equipment Failure	Land
Other	112,000	Oregon	05/04/11	Vehicle	Equipment Failure	Land
Oily Water Mixture	100,000	California	09/07/12	Facility	Equipment Failure	Fresh Water
Crude Oil	87,192	California	01/10/07	Facility	Equipment Failure	Land
Diesel oil/Marine Gas Oil	87,000	Alaska	07/26/16	Vessel	Org/mgmt failure	Marine
Gasoline	80,000	California	08/31/13	Vehicle	Human Error	Land
Diesel oil/Marine gas oil	75,000	Hawaii	01/22/15	Vessel	Human Error	Marine
Asphalt/creosote	71,000	Washington	02/08/15	Facility	Equipment Failure	Land
Mineral Oil/Transformer Oil	70,000	California	04/16/13	Facility	Human Error	Fresh Water
Oily Water Mixture	63,000	California	01/17/12	Facility	Equipment Failure	Land
Crude Oil	63,000	California	04/23/07	Facility	Equipment Failure	Land
Oily Water Mixture	63,000	California	07/29/08	Facility	Unknown	Land
Asphalt/Creosote	60,000	California	12/27/14	Facility	Unknown	Land
Diesel Oil	58,800	California	07/07/07	Facility	Human Error	Land
Oily Water Mixture	58,128	California	04/06/14	Facility	Equipment Failure	Land
Bunker C/IFO/HFO	58,000	California	11/07/07	Vessel	Human Error	Marine
Crude Oil	44,755	California	06/23/16	Pipeline	Human Error	Marine
Waste Oil	44,000	Washington	01/31/14	Private Property	Unknown	Impermeable surface
Crude Oil	42,000	California	06/12/07	Pipeline	Equipment Failure	Land
Mineral Oil/Transformer Oil	42,000	California	12/08/10	Facility	Equipment Failure	Land
Crude oil	42,000	Oregon	06/03/16	Vehicle	Equipment Failure	Fresh Water
Crude Oil	42,000	California	10/23/12	Facility	Org/mgmt failure	Fresh Water
Oily Water Mixture	42,000	California	08/11/15	Unknown	Unknown	Land
Crude Oil	40,000	California	04/17/07	Pipeline	Equipment Failure	Land
Oily water mixture	37,306	California	11/11/06	Facility	Equipment Failure	Impermeable Surface
Oily Water Mixture	36,750	California	06/24/09	Facility	Equipment Failure	Land
Unknown	35,910	California	12/03/13	Facility	Equipment Failure	Land
Oily water mixture	33,600	California	04/14/06	Pipeline	Equipment Failure	Impermeable Surface
Kerosene/jet fuel	33,600	California	02/15/10	Vessel	Org/mgmt failure	Marine
Oily Water Mixture	33,600	California	11/09/14	Unknown	Unknown	Land

Spills Greater than 10,000 Gallons -- *continued*

Product	Volume	State	Date	Source Type	Cause Type	Medium
Diesel Oil/Marine Gas Oil	32,000	California	01/25/13	Vehicle	External Conditions	Fresh Water
Oily Water Mixture	31,500	California	06/10/08	Facility	External Conditions	Land
Oily Water Mixture	31,500	California	12/03/09	Facility	Equipment Failure	Land
Diesel oil/Marine Gas Oil	30,847	Alaska	08/15/15	Facility	Equipment Failure	Land
Oily Water Mixture	30,240	California	04/20/07	Facility	Equipment Failure	Land
Oily Water Mixture	30,000	California	02/03/14	Vehicle	Other	Fresh Water
Diesel Oil	30,000	Oregon	05/09/02	Other	External Conditions	Fresh Water
Gasoline	29,400	California	08/14/05	Pipeline	Human Error	Land
Crude Oil	29,400	California	10/01/06	Facility	Equipment Failure	Impermeable Surface
Gasoline	27,500	California	04/25/07	Vehicle	Equipment Failure	Land
Jet fuel/Kerosene	27,000	Hawaii	01/13/14	Facility	Equipment Failure	Land
Gasoline	27,000	Washington	03/23/12	Facility	Equipment Failure	Land
Crude Oil	26,460	California	01/30/06	Pipeline	Human Error	Land
Crude Oil	26,250	California	06/11/08	Facility	Equipment Failure	Land
Oily Water Mixture	26,250	California	06/17/09	Facility	Equipment Failure	Land
Crude Oil	25,200	California	11/24/12	Facility	Equipment Failure	Land
Oily Water Mixture	25,200	California	07/07/15	Unknown	Unknown	Land
Crude Oil	25,200	California	11/27/05	Pipeline	Equipment Failure	Land
Diesel Oil	24,500	Washington	10/27/10	Facility	Equipment Failure	Land
Gasoline	24,500	Hawaii	10/06/04	Unknown	Equipment Failure	Land
Oily Water Mixture	24,360	California	05/09/14	Facility	Human Error	Land
Kerosene/Jet Fuel	24,000	Washington	03/01/05	Pipeline	Equipment Failure	Land
Kerosene/Jet fuel	22,388	California	05/18/11	Vehicle	Unknown	Marine
Oily Water Mixture	21,546	California	06/27/08	Facility	Equipment Failure	Land
Crude Oil	21,336	California	06/01/10	Pipeline	Equipment Failure	Land
Crude Oil	21,000	California	11/06/06	Facility	Unknown	Land
Crude Oil	21,000	California	12/10/13	Pipeline	Unknown	Land
Oily Water Mixture	21,000	California	03/29/07	Pipeline	Human Error	Land
Unknown	21,000	Oregon	01/13/11	Vehicle	Equipment Failure	Land
Diesel Oil	21,000	California	05/18/06	Pipeline	Equipment Failure	Land
Oily Water Mixture	21,000	California	07/11/08	Facility	Equipment Failure	Land
Oily Water Mixture	21,000	California	04/10/14	Facility	Equipment Failure	Land
Other	21,000	California	06/04/03	Facility	Equipment Failure	Marine
Crude Oil	20,622	California	09/06/08	Facility	Equipment Failure	Land
Asphalt/Creosote	20,575	Washington	04/30/13	Facility	Human Error	Land
Asphalt/Creosote	20,000	Washington	10/06/14	Vehicle	Unknown	Land
Oily Waste	20,000	Washington	11/13/14	Facility	Equipment Failure	Impermeable surface
Mineral Oil/Transformer Oil	20,000	Washington	03/25/13	Facility	Equipment Failure	Land
Diesel Oil/Marine Gas Oil	20,000	California	04/13/13	Vessel	Unknown	Marine
Diesel Oil	20,000	California	12/08/09	Facility	Human Error	Land
Diesel Oil	20,000	California	11/07/12	Vessel	Org/mgmt failure	Marine
Diesel Oil	20,000	California	05/02/05	Pipeline	Equipment Failure	Land
Gasoline	18,900	Hawaii	02/13/08	Facility	Human Error	Land
Crude Oil	18,900	California	05/15/06	Facility	Human Error	Land
Diesel Oil	18,200	Washington	11/03/06	Facility	Equipment Failure	Land
Crude Oil	17,640	California	05/27/12	Facility	Equipment Failure	Land

Spills Greater than 10,000 Gallons -- *continued*

Product	Volume	State	Date	Source Type	Cause Type	Medium
Bunker C/IFO/HFO	17,000	California	09/14/11	Private Property	Equipment Failure	Marine
Crude Oil	16,800	California	10/13/06	Pipeline	Equipment Failure	Land
Bunker C/IFO/HFO	16,800	California	08/07/07	Facility	Equipment Failure	Land
Crude Oil	16,800	California	12/03/09	Facility	Equipment Failure	Land
Crude Oil	16,800	California	06/02/06	Facility	Equipment Failure	Impermeable Surface
Oily Water Mixture	16,800	California	04/09/14	Facility	Equipment Failure	Land
Gasoline	16,800	California	03/24/06	Vehicle	Unknown	Land
Waste Oil	15,750	Washington	06/12/06	Facility	Equipment Failure	Land
Diesel Oil	15,000	Oregon	10/31/05	Facility	Human Error	Fresh Water
Diesel Oil	15,000	Washington	08/01/08	Facility	Equipment Failure	Impermeable Surface
Crude Oil	14,700	California	03/02/14	Unknown	Unknown	Land
Other	14,700	California	12/04/04	Pipeline	Equipment Failure	Fresh Water
Diesel Oil	14,680	Alaska	12/08/04	Vessel	Human Error	Marine
Edible/Vegetable Oil	14,400	California	04/08/13	Facility	Human Error	Land
Oily Water Mixture	14,070	California	07/29/07	Facility	Human Error	Land
Diesel Oil	14,000	Hawaii	11/01/11	Vessel	Equipment Failure	Land
Crude Oil	14,000	California	03/07/03	Pipeline	Equipment Failure	Land
Oily water mixture	14,000	California	09/16/06	Pipeline	Equipment Failure	Land
Oily Water Mixture	13,659	California	01/10/07	Facility	Equipment Failure	Land
Kerosene/jet fuel	13,630	Alaska	10/30/08	Facility	Equipment Failure	Land
Bunker C/IFO/HFO	13,524	Washington	04/07/05	Facility	Human Error	Land
Crude Oil	13,500	Alaska	11/29/09	Facility	Equipment Failure	Land
Oily Water Mixture	13,440	California	01/21/07	Facility	External Conditions	Land
Diesel Oil	13,000	Hawaii	07/20/06	Vessel	Equipment Failure	Marine
Mineral oil/Transformer oil	13,000	Hawaii	03/22/07	Vessel	Equipment Failure	Marine
Asphalt/Creosote	13,000	Oregon	08/11/04	Vehicle	Equipment Failure	Land
Crude Oil	12,852	California	06/28/10	Facility	Equipment Failure	Fresh Water
Oily Water Mixture	12,684	California	04/03/08	Facility	Equipment Failure	Land
Oily Water Mixture	12,600	California	10/15/12	Facility	Equipment Failure	Land
Asphalt/creosote	12,600	California	11/13/09	Facility	Human Error	Land
Crude Oil	12,600	California	11/09/14	Unknown	Unknown	Land
Oily Water Mixture	12,600	California	10/12/07	Pipeline	Equipment Failure	Land
Crude Oil	12,600	California	11/26/07	Facility	Equipment Failure	Land
Oily water mixture	12,600	Alaska	01/29/07	Facility	Equipment Failure	Land
Crude Oil	12,600	California	07/15/07	Facility	Equipment Failure	Land
Oily Water Mixture	12,600	California	12/03/09	Facility	Equipment Failure	Land
Diesel Oil	12,248	Alaska	04/24/05	Facility	Human Error	Land
Other/Unknown	12,118	Alaska	12/18/02	Facility	Other	Land
Mineral oil/Transformer oil	12,096	California	09/30/07	Pipeline	Equipment Failure	Land
Diesel Oil	12,045	Alaska	01/19/12	Facility	Human Error	Impermeable Surface
Crude Oil	12,012	California	06/28/12	Facility	Equipment Failure	Land
Crude Oil	12,000	California	03/15/07	Facility	Equipment Failure	Land
Oily Water Mixture	11,970	California	05/01/07	Pipeline	Equipment Failure	Land
Oily Water Mixture	11,760	California	12/10/13	Facility	Unknown	Land
Crude Oil	11,676	California	03/04/06	Facility	Equipment Failure	Land
Other/Unknown	11,611	Alaska	02/26/02	Facility	Other	Land

Spills Greater than 10,000 Gallons -- continued

Product	Volume	State	Date	Source Type	Cause Type	Medium
Gasoline	11,300	Oregon	12/13/15	Vehicle	Human Error	Land
Diesel Oil	11,000	Alaska	11/17/03	Facility	Human Error	Land
Gasoline	11,000	Washington	11/27/03	Vehicle	Unknown	Fresh Water
Gasoline	11,000	Oregon	12/02/02	Vehicle	Human Error	Fresh Water
Gasoline	11,000	Washington	03/23/09	Vehicle	Human Error	Land
Diesel Oil	10,584	Hawaii	08/05/05	Pipeline	Equipment Failure	Land
Oily Water Mixture	10,500	California	04/11/08	Facility	Human Error	Land
Oily water mixture	10,500	California	05/29/06	Pipeline	Equipment Failure	Fresh Water
Oily water mixture	10,500	California	08/12/06	Pipeline	Equipment Failure	Land
Other	10,500	Washington	09/13/07	Facility	Human Error	Land
Asphalt/Creosote	10,080	California	02/13/13	Facility	Equipment Failure	Land
Oily Water Mixture	10,080	California	09/29/14	Unknown	Unknown	Land
Crude Oil	10,080	California	07/21/08	Pipeline	Equipment Failure	Land