

Pacific States/British Columbia Oil Spill Task Force

Summary of West Coast Oil Spill Data

Calendar Year 2017

June 2018



CONTACT INFORMATION

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Data analysis and summary report
by Camille Stephens

OIL SPILL DATA PROJECT

Summary of Regional Spill Data (CY 2017)

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)
- Kimberlee Van Patten and Mike Zollitsch (Oregon Department of Environmental Quality)
- Liz Galvez 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 2017 data is provided on the following pages. Highlights include:

- A total of 658 releases occurred during 2017, with a total volume of 510,389 gallons spilled. Of those, 4 releases were over 10,000 gallons.
- An additional 5,350 small spills (less than 42 gallons) occurred during 2017.

Non-Crude Spills

- 641 releases were non-crude spills totaling 498,135 gallons.
- Facilities (49%) were the major sources of non-crude spills during 2017.
- Over half of the total non-crude spill volume was attributable to Equipment failure (65%).
- Underway/in motion was the main activity at the time of the spill (59%).
- Spills with volumes greater than 1,000 gallons comprised 84% of the total non-crude volume during 2017.
- Nearly half (41%) of the non-crude volume was spilled to Land.

Crude Oil Spills

- Crude oil comprised 2% the total volume for 2017.
- Equipment Failure (96%) was the cause of nearly all of the crude oil spill volume during 2017.
- During 2017, crude spills to Fresh water (89%) comprised most of the total volume.

NOTE:

- California's data submission does not include every spill reported to the State in 2017, 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 9,187 Hazardous Materials Spill Reports made to the California Office of Emergency Services, 2,648 were reported as petroleum to land (no waterway involved). The responsibility of response and investigation of spills to land 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 for spills to land are not collected by the CDFW OSPR and therefore are not included in this year's report.

Trends

The 2002-2017 data provides us with an opportunity to look at 16-year trends, which is also shown in this report. Here are the highlights:

- A total of 15,059, releases occurred during the 16-year period 2002-2017, with a total volume of approximately 12.6 million gallons.
- Over the 16-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 16-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 by volume during the 16-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 (29%) were the major spill causes.
- Equipment Failure (46%) and Human Error (36%) 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 Colum-

bia Oil Spill Task Force and its work, are available at www.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 (2017)

Product	Spill Count	Gallons	% Total Volume
Other	10	174,529	34%
Diesel oil / marine gas oil	365	109,455	21%
Jet fuel / kerosene	14	97,416	19%
Gasoline	26	34,649	7%
Asphalt / creosote	10	19,000	4%
Mineral oil / Transformer oil	52	17,734	3%
Crude oil	17	12,254	2%
Aviation gasoline	4	9,250	2%
Bunker C / IFO / HFO	1	9,001	2%
Hydraulic oil	62	7,906	2%
Heating oil	46	6,822	1%
Lube oil / Motor oil	21	4,940	1.0%
Edible / Vegetable oil	9	3,885	0.8%
Oily water mixture	6	1,936	0.4%
Unknown	9	1,027	0.2%
Waste oil	5	510	0.1%
Oily waste	1	75	0.01%
Total	658	510,389	

NOTE:

- California's data submission does not include every spill reported to the State in 2017, 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 9,187 Hazardous Materials Spill Reports made to the California Office of Emergency Services, 2,648 were reported as petroleum to land (no waterway involved). The responsibility of response and investigation of spills to land 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 for spills to land are not collected by the CDFW OSPR and therefore are not included in this year's report.

2017

ANNUAL SUMMARY OF SPILLS

- A total of 658 releases occurred during 2017, with a total volume of 510,389 gallons.
- Diesel oil/marine gas oil was the most frequent product released and comprised 21% of the total volume for 2017.
- An additional 5,350 small spills (less than 42 gallons) occurred during 2017.

Spills Greater Than 10,000 Gallons (2017)

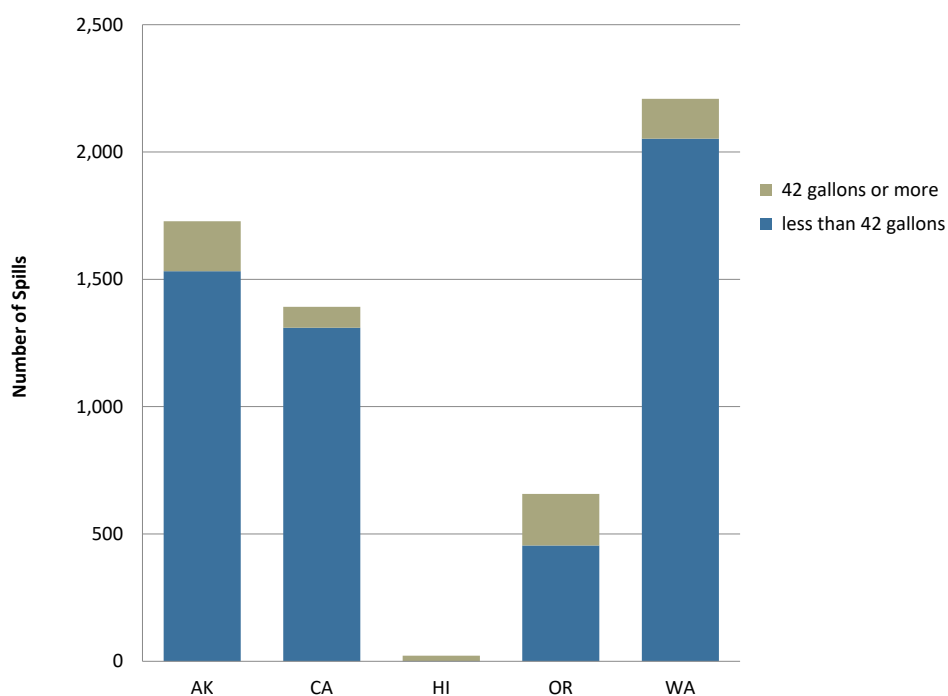
Product	Volume	State	Date	Source Type	Cause Type	Medium
Other	167,202	California	9/4/2017	Facility	Equipment Failure	Fresh Water
Jet fuel / kerosene	83,000	Hawaii	5/9/2017	Pipeline	Equipment Failure	Land
Diesel oil / marine gas oil	35,456	Alaska	2/11/2017	Vessel	External Conditions	Marine
Gasoline	11,600	Oregon	12/15/2017	Vehicle	External Conditions	Land

Summary of Releases with Volume Less Than 42 gallons (2017)

Beginning with the 2016 data, the Task Force began tracking 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).

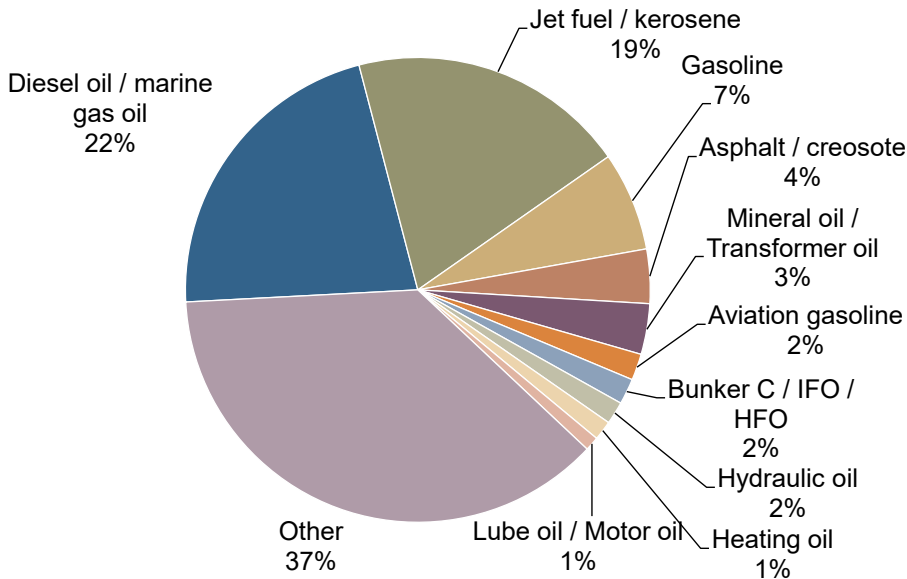
Detailed information about small spills is often limited or unknown because the effort necessary to investigate them is cost-prohibitive. For this reason, we are presenting spill counts only. Small spills are NOT included in the graphs or tables elsewhere in this document.

State	Less Than 42 Gallons	42 Gallons or More
Alaska	1,532	196
California	1,310	82
Hawaii	1	21
Oregon	455	202
Washington	2,052	157
Total	5,350	658



Non-Crude Spills by Product, All States (2017)

(percent total volume)



NOTE: "Other" includes classifications comprising 1% or less of the total volume released: Lube oil/Motor oil, Edible/Vegetable Oil, Oily Water Mixture, Unknown, Waste Oil, Oily waste

Non-Crude Spills by Product and State (2017)

(5% or more total volume)



2017

NON-CRUDE SPILLS

Total Spills 641
Total Volume (gal) 498,135
Average Spill Size (gal) 777

Summary by Product

Top Products

Product	Gallons
Other	174,529
Diesel oil / marine gas oil	109,455
Jet fuel / kerosene	97,416
Gasoline	34,649
Asphalt / creosote	19,000

- 641 non-crude spills totalling 498,135 gallons occurred during 2017.

2017

NON-CRUDE SPILLS

Summary by Source

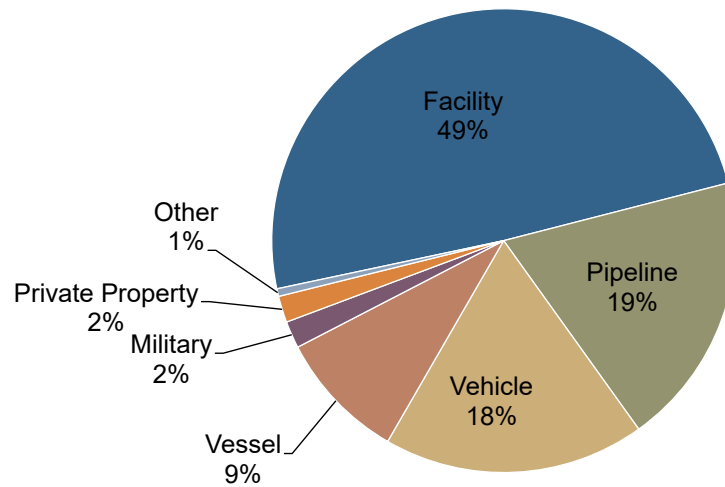
Top Sources

Source	Gallons
Facility	245,733
Pipeline	95,167
Vehicle	90,841
Vessel	45,174
Military	9,398

- Facilities (49%) were the major sources of non-crude spills during 2017.
- Facilities (49%), Pipelines (19%) and Vehicles (18%) comprised more than three-quarters of the non-crude spill volume during 2017

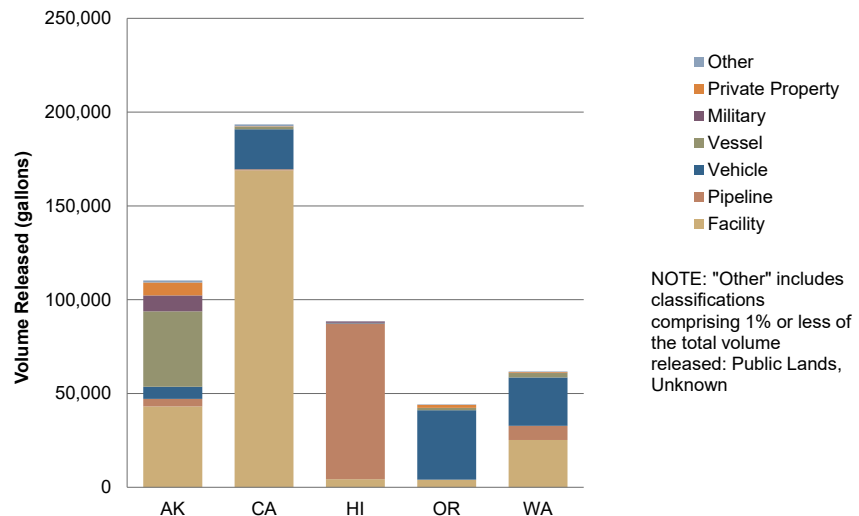
Non-Crude Spills by Source, All States (2017)

(percent total volume)



NOTE: "Other" includes classifications comprising 1% or less of the total volume released: Public Lands, Unknown

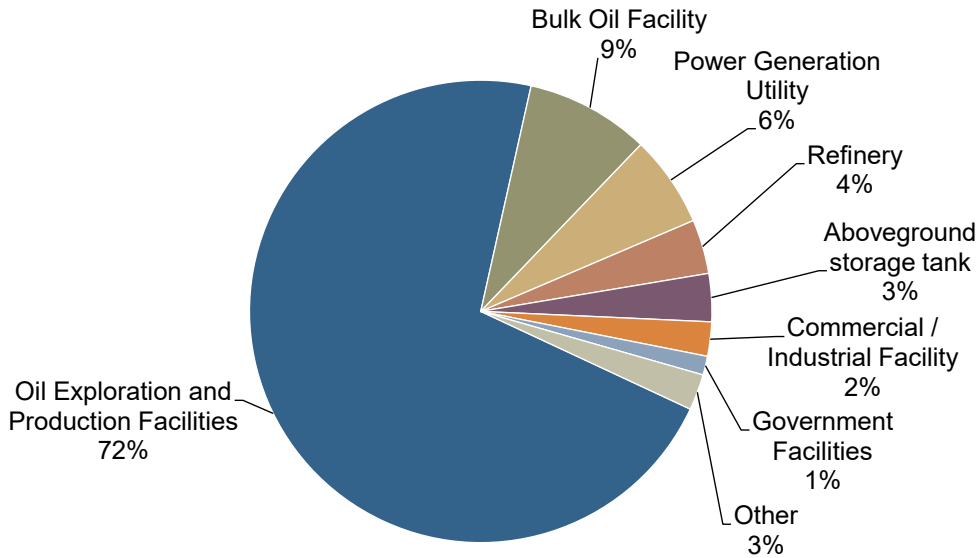
Non-Crude Spills by Source and State (2017)



NOTE: "Other" includes classifications comprising 1% or less of the total volume released: Public Lands, Unknown

Non-Crude Spills -- Facility Detail (2017)

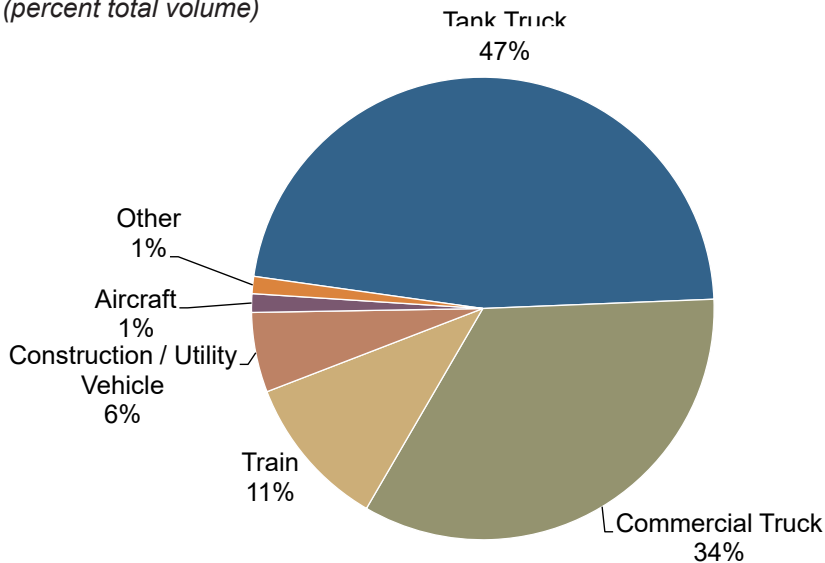
(percent total volume)



NOTE: "Other" includes classifications comprising 1% or less of the total volume released: Underground Storage Tank, Drum or container, Marine Terminal, Retail Petroleum Outlet, Marina, Leaking Drum or Container

Non-Crude Spills -- Vehicle Detail (2017)

(percent total volume)



NOTE: For graphing purposes, "Other" includes Facility classifications comprising less than 1% of the total volume released: Non-commercial vehicle

2017

NON-CRUDE SPILLS

Summary by Source (continued)

- Nearly three-quarters of the non-crude spill volume for Facilities was from Oil Exploration and Production Facilities (72%).
- Tank Trucks (47%), and Commercial Trucks (34%) comprised more than 75% of the total non-crude spill volume for Vehicles during 2017.

2017

NON-CRUDE SPILLS

Summary by Cause

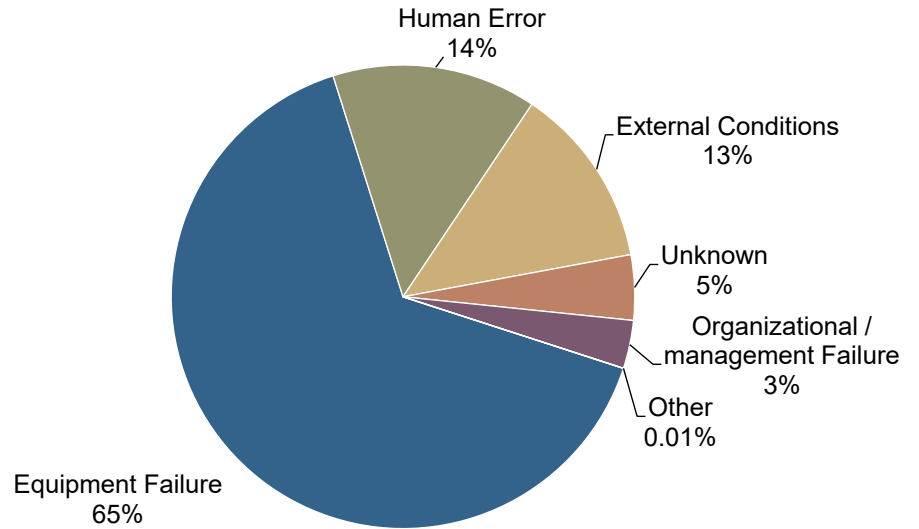
Top Causes

Cause	Gallons
Equipment Failure	324,390
Human Error	71,104
External Conditions	63,210
Unknown	22,663
Organizational / management Failure	16,718

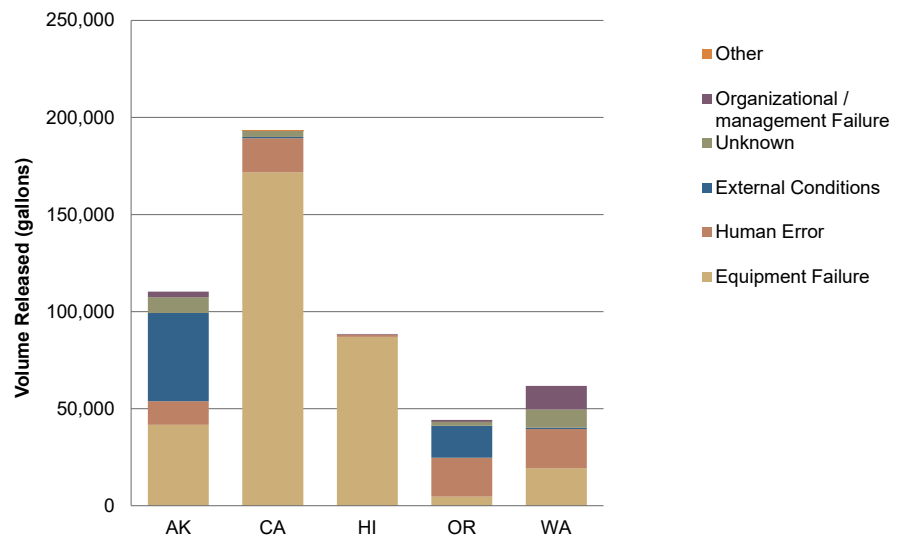
- Over half of the total non-crude spill volume was attributable to Equipment failure (65%).

Non-Crude Spills by Cause, All States (2017)

(percent total volume)

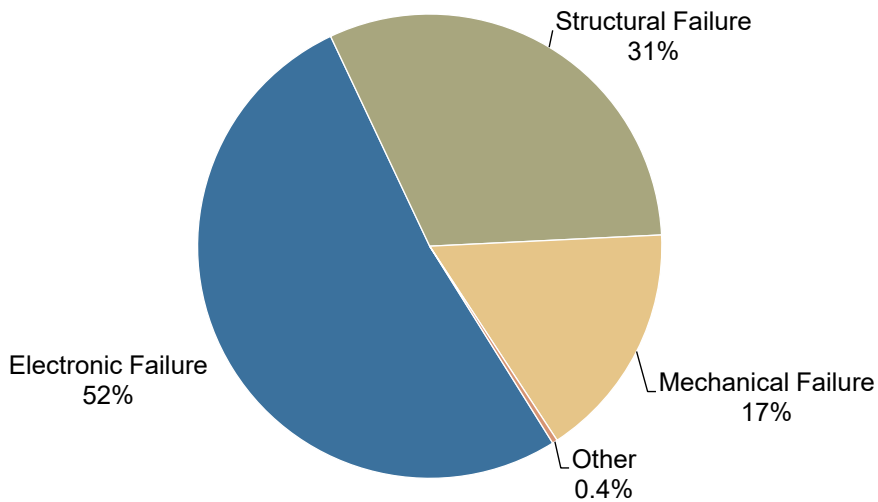


Non-Crude Spills by Cause and State (2017)



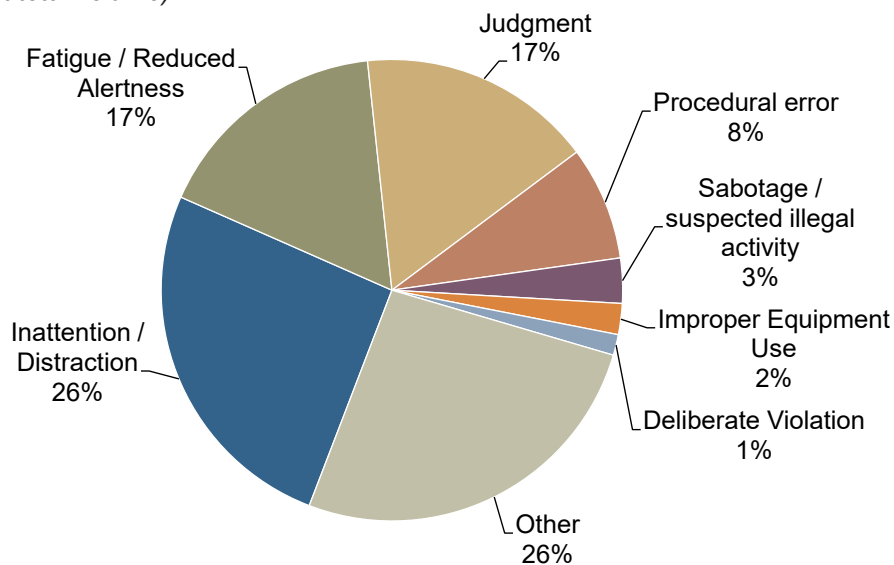
Non-Crude Spills -- Equipment Failure Detail (2017)

(percent total volume)



Non-Crude Spills -- Human Error Detail (2017)

(percent total volume)



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

2017

NON-CRUDE SPILLS

Summary by Cause (continued)

- Over half of the total Equipment Failure spill volume was due to Electronic failure (52%).
- Releases due to Inattention/distraction (26%), Fatigue/Reduced Alertness (17%) or Judgment (17%) comprised over half the total non-crude volume for 2017.

2017

NON-CRUDE SPILLS

Summary by Activity

Top Activities

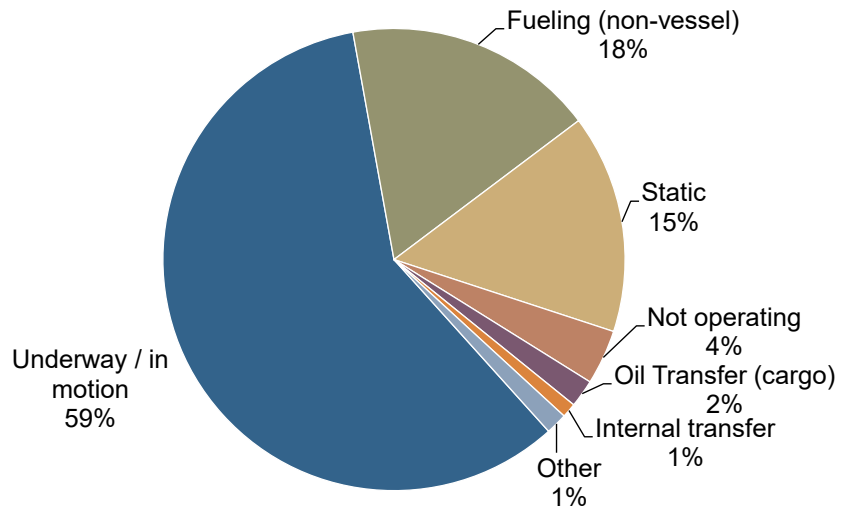
Activity	Gallons
Underway / in motion	292,994
Fueling (non-vessel)	87,582
Static	76,243
Not operating	19,142
Oil Transfer (cargo)	9,653

- Underway/in motion was the main activity at the time of the spill (59%).

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

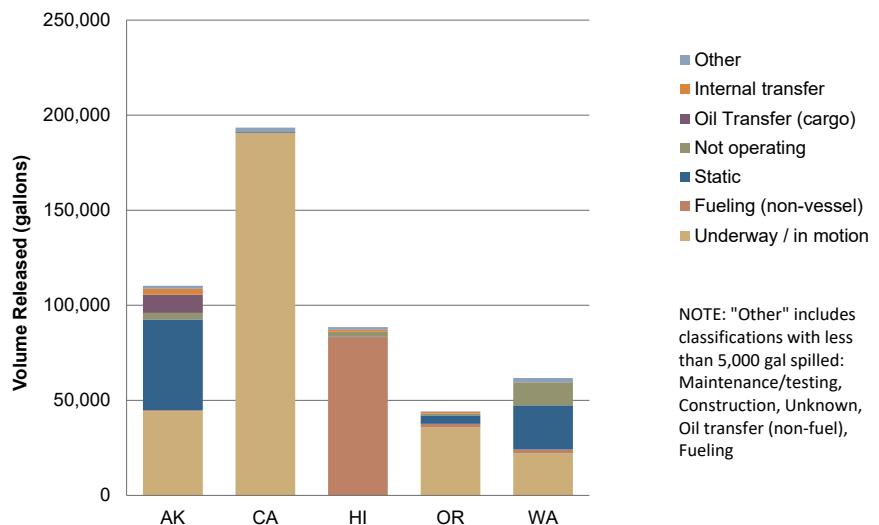
Non-Crude Spills by Activity (2017)

(percent total volume)



NOTE: "Other" includes classifications with less than 5,000 gal spilled: Maintenance/testing, Construction, Unknown, Oil transfer (non-fuel), Fueling

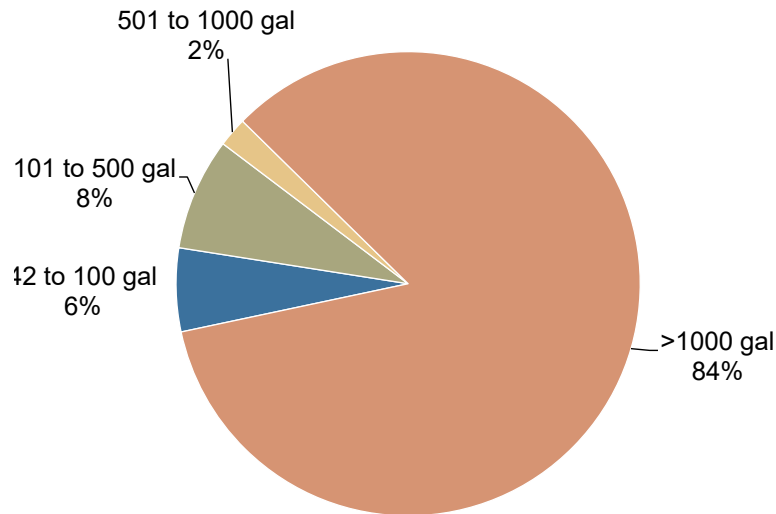
Non-Crude Spills by Activity and State (2017)



NOTE: "Other" includes classifications with less than 5,000 gal spilled: Maintenance/testing, Construction, Unknown, Oil transfer (non-fuel), Fueling

Non-Crude Spills by Spill Size (2017)

(percent total volume)



2017

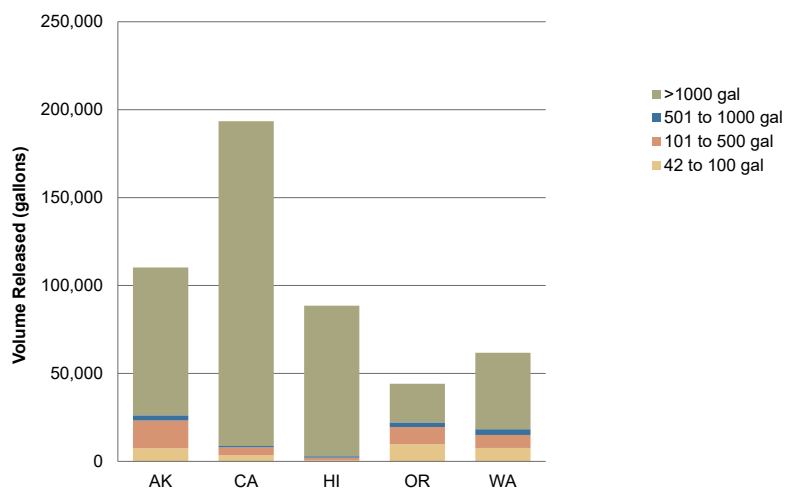
NON-CRUDE SPILLS

Summary by Spill Size

Size Class	Gallons
42 to 100 gal	28,983
101 to 500 gal	38,949
501 to 1000 gal	10,210
>1000 gal	419,993

- Spills with volumes greater than 1,000 gallons comprised 84% of the total non-crude volume during 2017.

Non-Crude Spills by Spill Size and State (2017)



2017

NON-CRUDE SPILLS

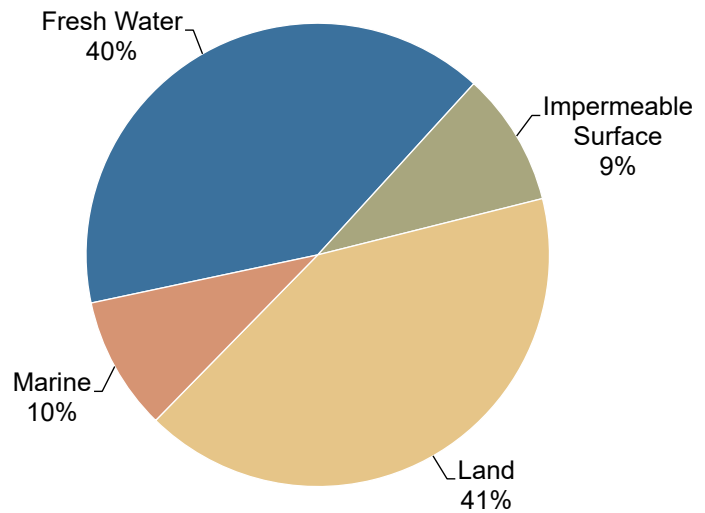
Summary by Medium

Medium	Gallons
Fresh Water	199,734
Impermeable Surface	46,471
Land	205,441
Marine	46,489

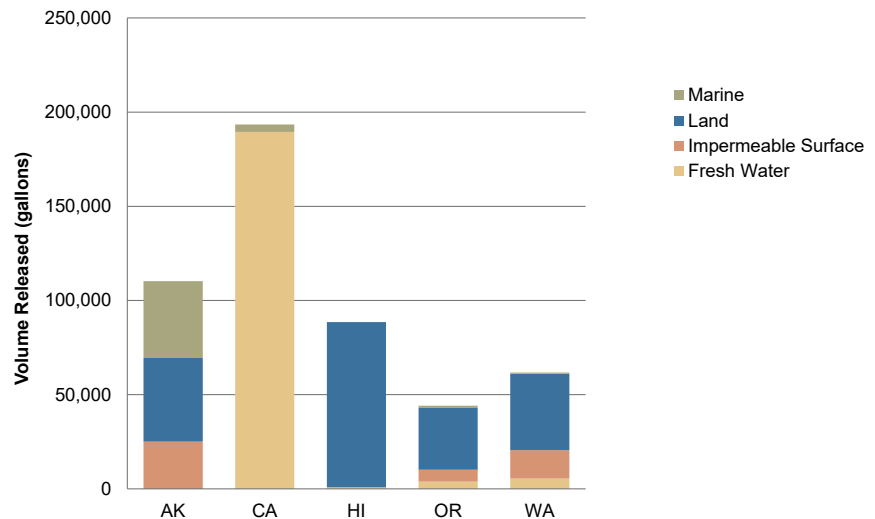
- Over 80% of the of the non-crude volume was spilled to Land (41%) or Fresh Water (40%).

Non-Crude Spills by Medium Impacted (2017)

(percent total volume)

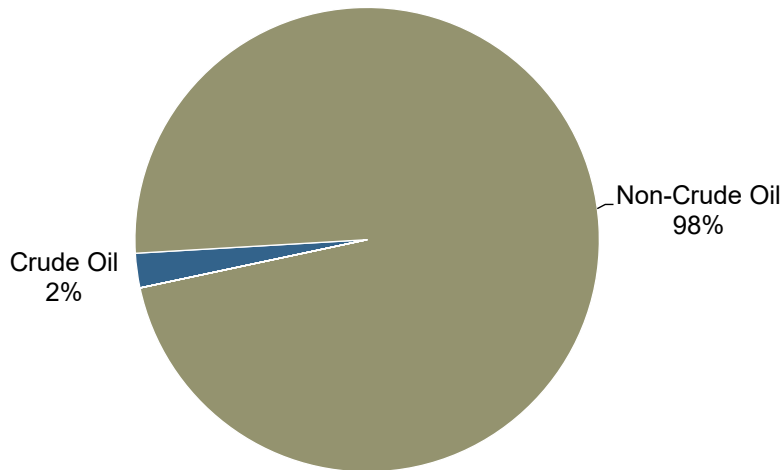


Non-Crude Spills by Medium and State (2017)



Crude Spills vs. Non-Crude Spills, All States (2017)

(percent total volume)



Crude Spills by Source Type and State (2017)



2017

CRUDE SPILLS

Total Spills	17
Total Volume (gal)	12,254
Average Spill Size (gal)	721

Product Type	Gallons
Non-crude Oil	498,135
Crude Oil	12,254
Total	510,389

- 7 crude oil spills totalling 12,254 gallons occurred during 2017.
- Crude oil comprised 2% the total volume for 2017.

Top Sources

Source Type	Gallons
Facility	9,090
Pipeline	3,164

- Facilities and Pipelines were the sources of crude spills during 2017.

2017

CRUDE SPILLS

Top Causes

Cause Type	gallons
Equipment Failure	11,794
Organizational / management Failure	350
Human Error	110

- Equipment Failure (96%) was the cause of nearly all of the crude oil spill volume during 2017.

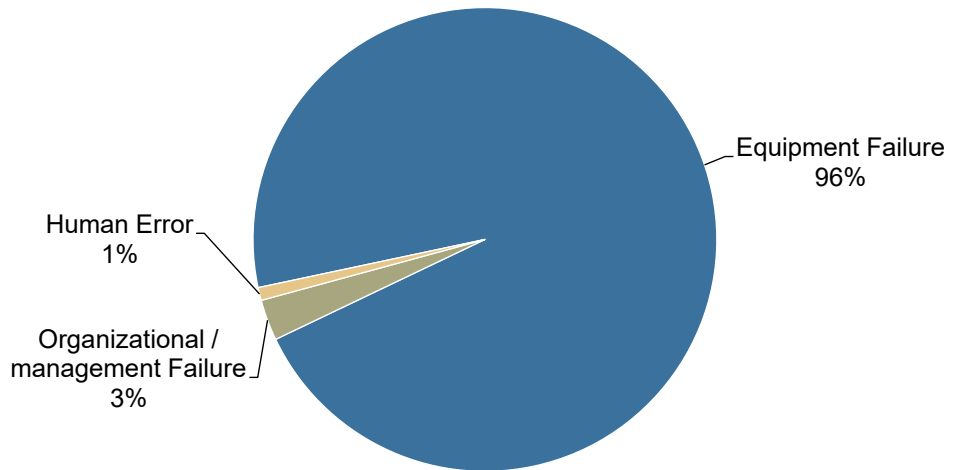
Equipment Failure Detail

Cause	gallons
Electronic Failure	7,728
Structural Failure	3,018
Mechanical Failure	964
Other	84

- Electronic failure (65%) comprised over half spill volume due to Equipment Failure.

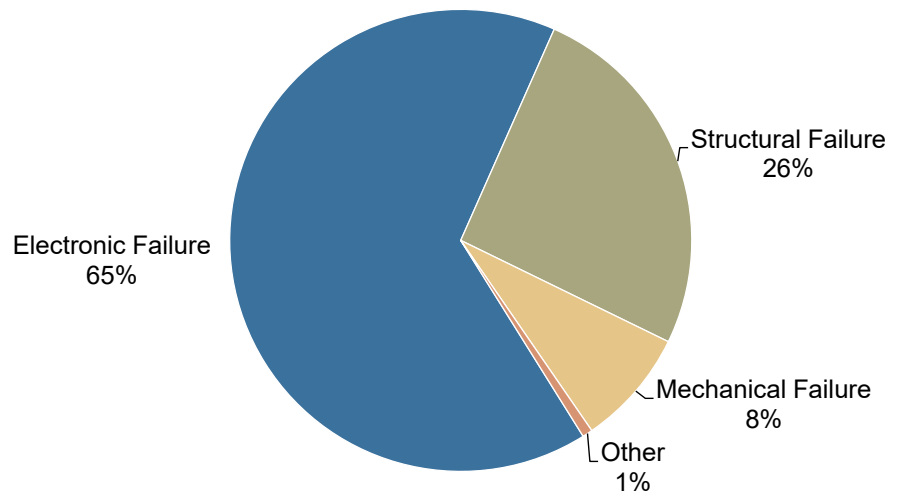
Crude Spills by Cause, All States (2017)

(percent total volume)



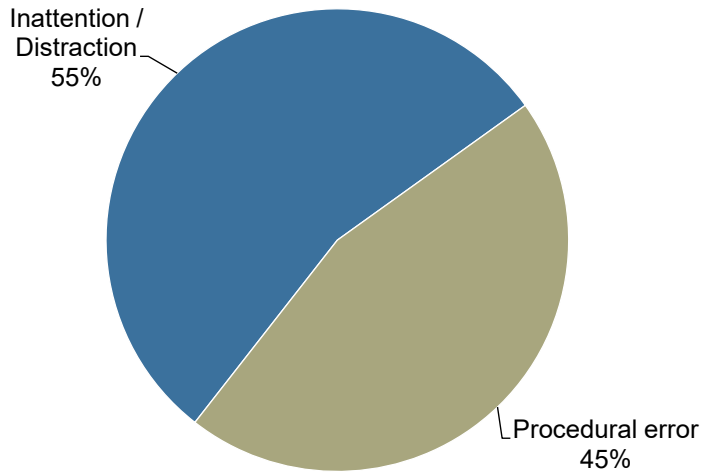
Crude Spills -- Equipment Failure Detail (2017)

(percent total volume)



Crude Spills -- Human Error Detail (2017)

(percent total volume)



2017

CRUDE SPILLS

Human Error Detail

Cause	gallons
Inattention / Distraction	60
Procedural error	50

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

2017

CRUDE SPILLS

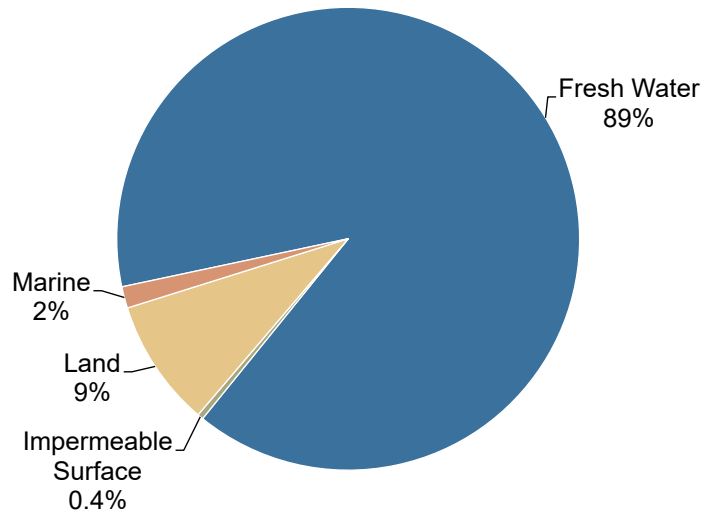
Summary by Medium

Medium	Gallons
Fresh Water	10,926
Impermeable Surface	50
Land	1,094
Marine	184

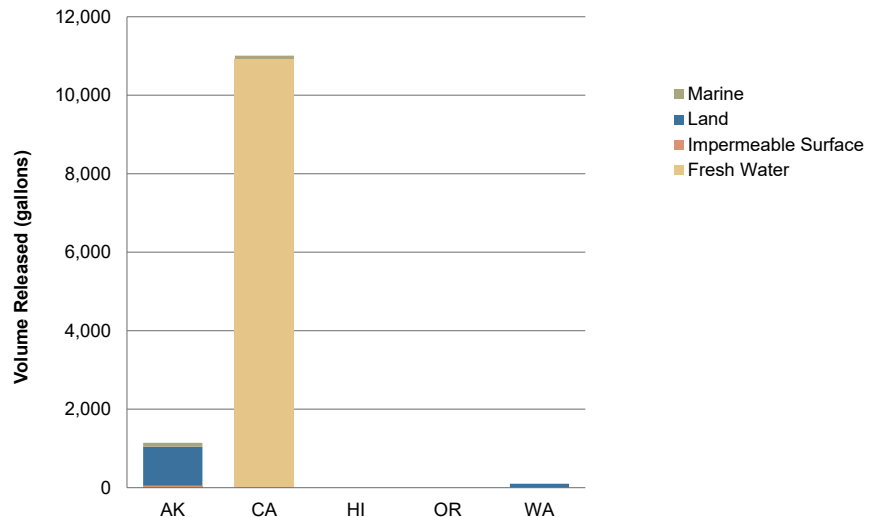
- During 2017, crude spills to Fresh water (89%) comprised most of the total volume.

Crude Oil Spills by Medium Impacted (2017)

(percent total volume)



Crude Spills by Medium and State (2017)



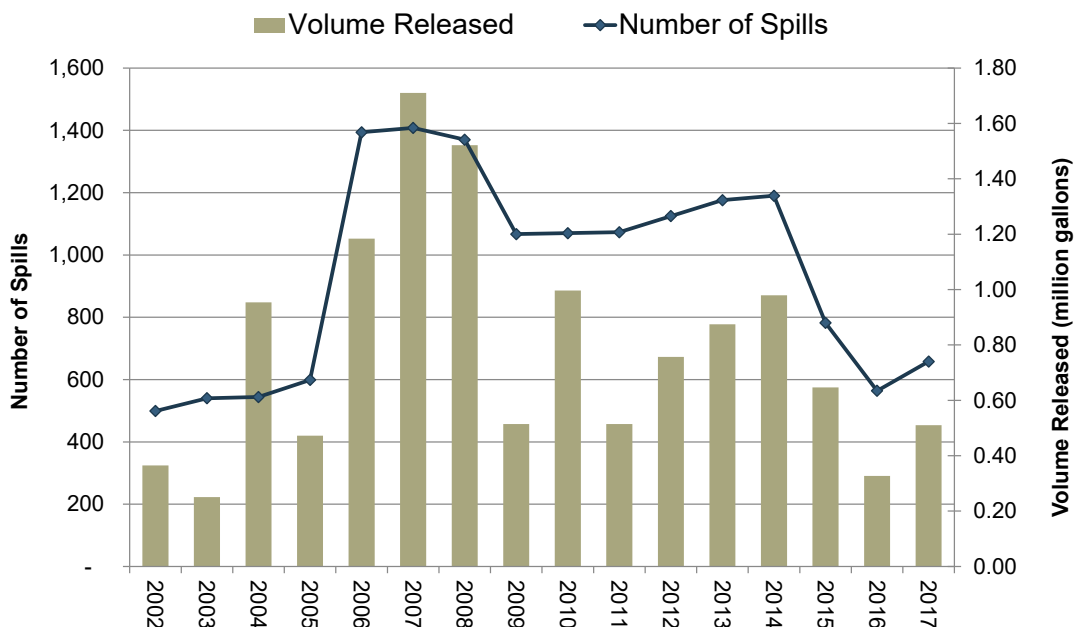
SUMMARY OF SPILLS (2002-2017)

- A total of 15,059 releases occurred during the 16-year period 2002-2017, with a total volume of approximately 12.6 million gallons.

Releases by Product (2002-2017)

Product	Spill Count	Gallons	% Total Volume
Crude oil	1,509	3,230,480	26%
Diesel oil / marine gas oil	7,322	3,176,560	25%
Oily water mixture	599	1,674,222	13%
Other	400	758,295	6%
Bunker C / IFO / HFO	103	744,427	6%
Gasoline	612	723,741	6%
Asphalt / creosote	176	594,359	5%
Mineral oil / Transformer oil	1,469	443,564	4%
Jet fuel / kerosene	318	376,686	3.0%
Aviation gasoline	173	165,368	1.3%
Lube oil / Motor oil	592	139,598	1.1%
Waste oil	343	139,313	1.1%
Unknown	157	136,191	1.1%
Hydraulic oil	840	106,834	0.8%
Heating oil	334	74,675	0.6%
Edible / Vegetable oil	89	61,567	0.5%
Oily waste	6	20,467	0.2%
LNG / LPG	16	12,590	0.1%
Cutter stock	1	100	0.001%
Total	15,059	12,579,037	

Number of Spills and Volume Released (2002-2017)



2002-2017

Summary by Product

- Over the 16-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 16-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.

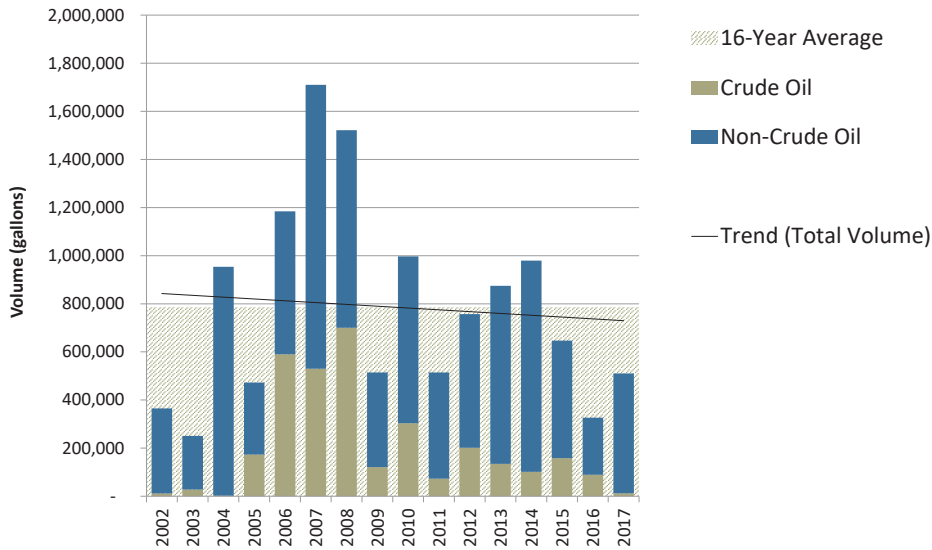
Non-Crude Oil Spills

- Diesel Oil/Marine Gas Oil comprised 25% of the total spill volume and 34% of the Non-Crude spill volume for the period.

Crude vs. Non-Crude Spills by Year (2002-2017)

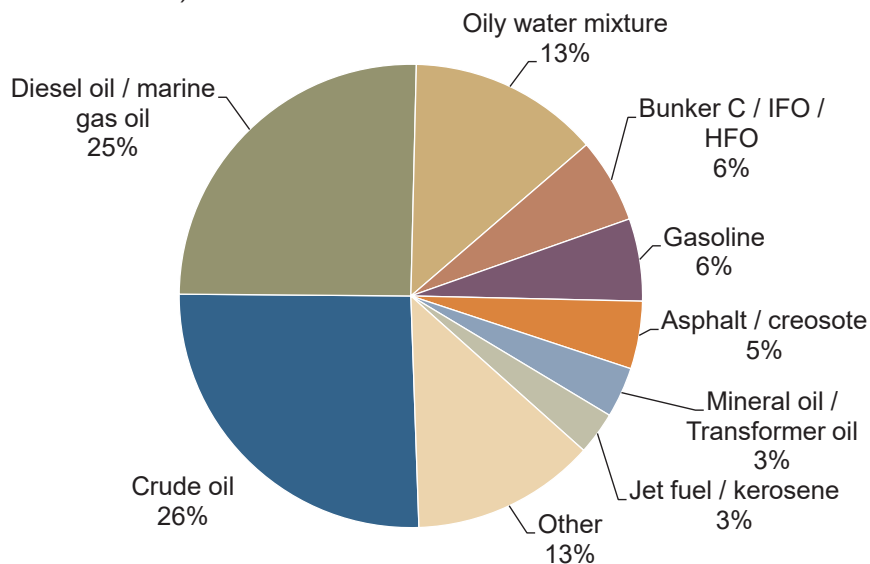
Year	Non-Crude Oil		Crude Oil		Total	
	Spill Count	Gallons	Spill Count	Gallons	Spill Count	Gallons
2002	481	353,759	18	11,424	499	365,183
2003	524	222,531	16	28,015	540	250,546
2004	538	951,906	6	2,018	544	953,924
2005	580	299,516	19	172,871	599	472,387
2006	1,152	594,120	242	589,867	1,394	1,183,987
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
2017	641	498,135	17	12,254	658	510,389
16-YR Total	13,550	9,348,557	1,509	3,230,480	15,059	12,579,037
16-YR AVG	847	584,285	94	201,905	941	786,190

Crude vs. Non-Crude Spills (2002-2017)



Spills by Product (2002-2017)

(percent total volume)



NOTE: includes products comprising 2% or less of the total volume released: Aviation gasoline, Lube oil/Motor oil, Waste oil, Unknown, Hydraulic oil, Heating oil, Edible/Vegetable oil, Oily waste, LNG/LPG, Cutter stock

2002-2017

Summary by Source

- Overall, Facilities (50%) and Pipelines (19%) were the major sources of spills by volume during the 16-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.

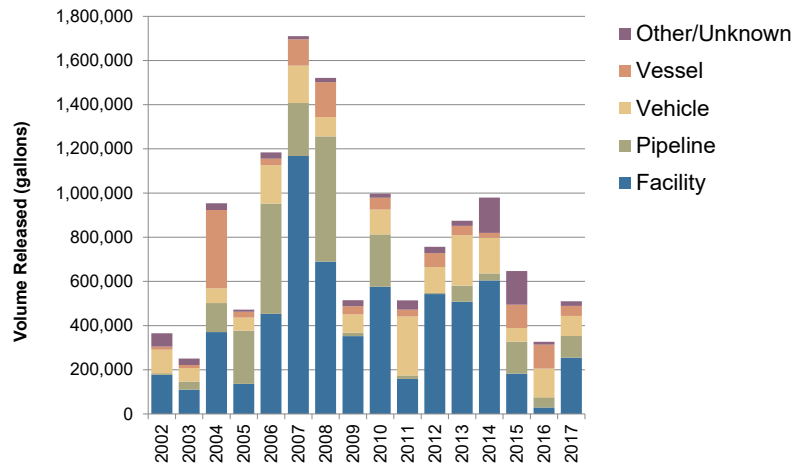
Non-Crude Oil Spill Sources

Source	gallons
Facility	4,934,859
Vehicle	1,903,305
Vessel	1,216,625
Pipeline	673,097
Other/Unknown	588,149
Military	19,827
Public Lands	11,745
Farm / Agriculture	950
Total	9,348,557

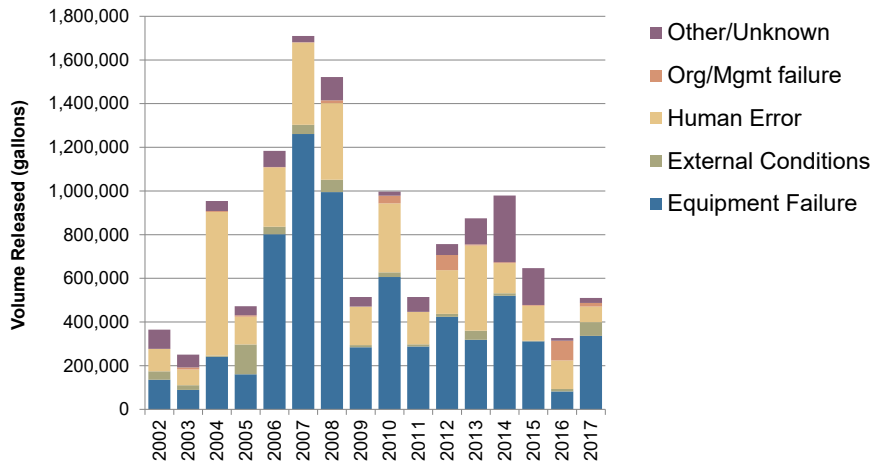
Crude Oil Spill Sources

Source	gallons
Pipeline	1,717,721
Facility	1,377,270
Vehicle	74,444
Other/Unknown	55,711
Vessel	5,334
Total	3,230,480

Annual Spill Volume by Source (2002-2017)



Annual Spill Volume by Cause (2002-2017)



2002-2017

Summary by Cause

- Overall, Equipment Failure (54%) and Human Error (29%) were the major spill causes.
- Equipment Failure (46%) and Human Error (36%) 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	4,332,633
Human Error	3,387,753
Other/Unknown	1,050,995
External Conditions	364,122
Organizational / Management Failure	213,054

Crude Oil Spills

Cause	gallons
Equipment Failure	2,520,394
Human Error	300,840
Other/Unknown	200,219
External Conditions	159,096
Organizational / Management Failure	49,931

Spills Greater Than 10,000 Gallons (2002-2017)

Number of Spills	153	Crude Spills	38
Releases to Water	33	Non-crude Spills	115

Product	Volume	State	Date	Source Type	Cause Type	Medium
Crude oil	463,848	California	4/24/08	Pipeline	Equipment Failure	Land
Diesel oil	420,000	California	10/30/07	Facility	Equipment Failure	Land
Bunker C / IFO / HFO	321,052	Alaska	12/8/04	Vessel	Human Error	Marine
Bunker C / IFO / HFO	270,000	Washington	8/25/04	Facility	Human Error	Land
Crude oil	267,000	Alaska	3/2/06	Pipeline	Equipment Failure	Land
Asphalt / creosote	203,000	Washington	1/22/14	Facility	Equipment Failure	Land
Other	193,200	California	1/4/10	Facility	Equipment Failure	Land
Crude oil	191,562	Alaska	5/25/10	Pipeline	Equipment Failure	Impermeable Surface
Other	167,202	California	9/4/17	Facility	Equipment Failure	Fresh Water
Diesel oil	145,000	Alaska	3/23/08	Vessel	Human Error	Marine
Diesel oil	142,800	Alaska	1/11/10	Facility	Human Error	Marine
Crude oil	140,000	California	5/19/15	Pipeline	Equipment Failure	Marine
Oily water mixture	128,000	California	11/26/08	Facility	Equipment Failure	Land
Crude oil	126,000	California	3/23/05	Pipeline	External Conditions	Fresh Water
Crude oil	126,000	California	3/9/07	Facility	Equipment Failure	Land
Aviation gasoline	115,353	California	11/22/04	Pipeline	Equipment Failure	Land
Other	112,000	Oregon	5/4/11	Vehicle	Equipment Failure	Land
Oily water mixture	100,000	California	9/7/12	Facility	Equipment Failure	Fresh Water
Crude oil	87,192	California	1/10/07	Facility	Equipment Failure	Land
Diesel oil / marine gas oil	87,000	Alaska	7/26/16	Vessel	Organizational / management failure	Marine
Jet Fuel / Kerosene	83,000	Hawaii	5/9/17	Pipeline	Equipment Failure	Land
Gasoline	80,000	California	8/31/13	Vehicle	Human Error	Land
Diesel oil / marine gas oil	75,000	Hawaii	1/22/15	Vessel	Human Error	Marine
Asphalt / creosote	71,000	Washington	2/8/15	Facility	Equipment Failure	Land
Mineral oil / transformer oil	70,000	California	4/16/13	Facility	Human Error	Fresh Water
Crude oil	63,000	California	4/23/07	Facility	Equipment Failure	Land
Oily water mixture	63,000	California	7/29/08	Facility	Unknown	Land
Oily water mixture	63,000	California	1/17/12	Facility	Equipment Failure	Land
Asphalt / creosote	60,000	California	12/27/14	Facility	Unknown	Land
Diesel oil	58,800	California	7/7/07	Facility	Human Error	Land
Oily water mixture	58,128	California	4/6/14	Facility	Equipment Failure	Land
Bunker C / IFO / HFO	58,000	California	11/7/07	Vessel	Human Error	Marine
Crude oil	44,755	California	6/23/16	Pipeline	Human error	Marine
Waste oil	44,000	Washington	1/31/14	Private Property	Unknown	Impermeable surface
Mineral oil / transformer oil	42,000	California	12/8/10	Facility	Equipment Failure	Land
Crude oil	42,000	Oregon	6/3/16	Vehicle	Equipment Failure	Fresh Water
Crude oil	42,000	California	10/23/12	Facility	Organizational / management Failure	Fresh Water
Oily water mixture	42,000	California	8/11/15	Unknown	Unknown	Land
Crude oil	42,000	California	6/12/07	Pipeline	Equipment Failure	Land
Crude oil	40,000	California	4/17/07	Pipeline	Equipment Failure	Land
Oily water mixture	37,306	California	11/11/06	Facility	Equipment Failure	Impermeable Surface
Oily water mixture	36,750	California	6/24/09	Facility	Equipment Failure	Land

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

Product	Volume	State	Date	Source Type	Cause Type	Medium
Unknown	35,910	California	12/3/13	Facility	Equipment Failure	Land
Diesel oil	35,456	Alaska	2/11/17	Vessel	External Conditions	Marine
Oily water mixture	33,600	California	4/14/06	Pipeline	Equipment Failure	Impermeable Surface
Kerosene / jet fuel	33,600	California	2/15/10	Vessel	Organizational / management Failure	Marine
Oily water mixture	33,600	California	11/9/14	Unknown	Unknown	Land
Diesel oil / marine gas oil	32,000	California	1/25/13	Vehicle	External Conditions	Fresh Water
Oily water mixture	31,500	California	12/3/09	Facility	Equipment Failure	Land
Oily water mixture	31,500	California	6/10/08	Facility	External Conditions	Land
Diesel oil / marine gas oil	30,847	Alaska	8/15/15	Facility	Equipment Failure	Land
Oily water mixture	30,240	California	4/20/07	Facility	Equipment Failure	Land
Oily water mixture	30,000	California	2/3/14	Vehicle	Other	Fresh Water
Diesel oil	30,000	Oregon	5/9/02	Other	External Conditions	Fresh Water
Crude oil	29,400	California	10/1/06	Facility	Equipment Failure	Impermeable Surface
Gasoline	29,400	California	8/14/05	Pipeline	Human Error	Land
Gasoline	27,500	California	4/25/07	Vehicle	Equipment Failure	Land
Gasoline	27,000	Washington	3/23/12	Facility	Equipment Failure	Land
Jet Fuel / kerosene	27,000	Hawaii	1/13/14	Facility	Equipment Failure	Land
Crude oil	26,460	California	1/30/06	Pipeline	Human Error	Land
Oily water mixture	26,250	California	6/17/09	Facility	Equipment Failure	Land
Crude oil	26,250	California	6/11/08	Facility	Equipment Failure	Land
Crude oil	25,200	California	11/24/12	Facility	Equipment Failure	Land
Crude oil	25,200	California	11/27/05	Pipeline	Equipment Failure	Land
Oily water mixture	25,200	California	7/7/15	Unknown	Unknown	Land
Diesel oil	24,500	Washington	10/27/10	Facility	Equipment Failure	Land
Gasoline	24,500	Hawaii	10/6/04	Unknown	Equipment Failure	Land
Oily water mixture	24,360	California	5/9/14	Facility	Human Error	Land
Kerosene / jet fuel	24,000	Washington	3/1/05	Pipeline	Equipment Failure	Land
Kerosene / jet fuel	22,388	California	5/18/11	Vehicle	Unknown	Marine
Oily water mixture	21,546	California	6/27/08	Facility	Equipment Failure	Land
Crude oil	21,336	California	6/1/10	Pipeline	Equipment Failure	Land
Oily water mixture	21,000	California	3/29/07	Pipeline	Human Error	Land
Crude oil	21,000	California	12/10/13	Pipeline	Unknown	Land
Unknown	21,000	Oregon	1/13/11	Vehicle	Equipment Failure	Land
Crude oil	21,000	California	11/6/06	Facility	Unknown	Land
Oily water mixture	21,000	California	7/11/08	Facility	Equipment Failure	Land
Oily water mixture	21,000	California	4/10/14	Facility	Equipment Failure	Land
Other	21,000	California	6/4/03	Facility	Equipment Failure	Marine
Diesel oil	21,000	California	5/18/06	Pipeline	Equipment Failure	Land
Crude oil	20,622	California	9/6/08	Facility	Equipment Failure	Land
Asphalt / creosote	20,575	Washington	4/30/13	Facility	Human Error	Land
Diesel oil / marine gas oil	20,000	California	4/13/13	Vessel	Unknown	Marine
Asphalt / creosote	20,000	Washington	10/6/14	Vehicle	Unknown	Land
Oily waste	20,000	Washington	11/13/14	Facility	Equipment Failure	Impermeable surface
Mineral oil / transformer oil	20,000	Washington	3/25/13	Facility	Equipment Failure	Land
Diesel oil	20,000	California	12/8/09	Facility	Human Error	Land

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

Product	Volume	State	Date	Source Type	Cause Type	Medium
Diesel oil	20,000	California	11/7/12	Vessel	Organizational / management Failure	Marine
Diesel oil	20,000	California	5/2/05	Pipeline	Equipment Failure	Land
Crude oil	18,900	California	5/15/06	Facility	Human Error	Land
Gasoline	18,900	Hawaii	2/13/08	Facility	Human Error	Land
Diesel oil	18,200	Washington	11/3/06	Facility	Equipment Failure	Land
Crude oil	17,640	California	5/27/12	Facility	Equipment Failure	Land
Bunker C / IFO / HFO	17,000	California	9/14/11	Private Property	Equipment Failure	Marine
Gasoline	16,800	California	3/24/06	Vehicle	Unknown	Land
Crude oil	16,800	California	6/2/06	Facility	Equipment Failure	Impermeable Surface
Bunker C / IFO / HFO	16,800	California	8/7/07	Facility	Equipment Failure	Land
Oily water mixture	16,800	California	4/9/14	Facility	Equipment Failure	Land
Crude oil	16,800	California	10/13/06	Pipeline	Equipment Failure	Land
Crude oil	16,800	California	12/3/09	Facility	Equipment Failure	Land
Waste oil	15,750	Washington	6/12/06	Facility	Equipment Failure	Land
Diesel oil	15,000	Oregon	10/31/05	Facility	Human Error	Fresh Water
Diesel oil	15,000	Washington	8/1/08	Facility	Equipment Failure	Impermeable Surface
Other	14,700	California	12/4/04	Pipeline	Equipment Failure	Fresh Water
Crude oil	14,700	California	3/2/14	Unknown	Unknown	Land
Diesel oil	14,680	Alaska	12/8/04	Vessel	Human Error	Marine
Edible / vegetable oil	14,400	California	4/8/13	Facility	Human Error	Land
Oily water mixture	14,070	California	7/29/07	Facility	Human Error	Land
Diesel oil	14,000	Hawaii	11/1/11	Vessel	Equipment Failure	Land
Oily water mixture	14,000	California	9/16/06	Pipeline	Equipment Failure	Land
Crude oil	14,000	California	3/7/03	Pipeline	Equipment Failure	Land
Oily water mixture	13,659	California	1/10/07	Facility	Equipment Failure	Land
Kerosene / jet fuel	13,630	Alaska	10/30/08	Facility	Equipment Failure	Land
Bunker C / IFO / HFO	13,524	Washington	4/7/05	Facility	Human Error	Land
Crude oil	13,500	Alaska	11/29/09	Facility	Equipment Failure	Land
Oily water mixture	13,440	California	1/21/07	Facility	External Conditions	Land
Diesel oil	13,000	Hawaii	7/20/06	Vessel	Equipment Failure	Marine
Mineral oil / transformer oil	13,000	Hawaii	3/22/07	Vessel	Equipment Failure	Marine
Asphalt / creosote	13,000	Oregon	8/11/04	Vehicle	Equipment Failure	Land
Crude oil	12,852	California	6/28/10	Facility	Equipment Failure	Fresh Water
Oily water mixture	12,684	California	4/3/08	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
Oily water mixture	12,600	California	12/3/09	Facility	Equipment Failure	Land
Oily water mixture	12,600	Alaska	1/29/07	Facility	Equipment Failure	Land
Crude oil	12,600	California	11/9/14	Unknown	Unknown	Land
Crude oil	12,600	California	7/15/07	Facility	Equipment Failure	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
Diesel oil	12,248	Alaska	4/24/05	Facility	Human Error	Land
Other / unknown	12,118	Alaska	12/18/02	Facility	Other	Land
Mineral oil / transformer oil	12,096	California	9/30/07	Pipeline	Equipment Failure	Land

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

Product	Volume	State	Date	Source Type	Cause Type	Medium
Diesel oil	12,045	Alaska	1/19/12	Facility	Human Error	Impermeable Surface
Crude oil	12,012	California	6/28/12	Facility	Equipment Failure	Land
Crude oil	12,000	California	3/15/07	Facility	Equipment Failure	Land
Oily water mixture	11,970	California	5/1/07	Pipeline	Equipment Failure	Land
Oily water mixture	11,760	California	12/10/13	Facility	Unknown	Land
Crude oil	11,676	California	3/4/06	Facility	Equipment Failure	Land
Other / unknown	11,611	Alaska	2/26/02	Facility	Other	Land
Gasoline	11,600	Oregon	12/15/17	Vehicle	External Conditions	Land
Gasoline	11,300	Oregon	12/13/15	Vehicle	Human Error	Land
Gasoline	11,000	Washington	3/23/09	Vehicle	Human Error	Land
Gasoline	11,000	Washington	11/27/03	Vehicle	Unknown	Fresh Water
Diesel oil	11,000	Alaska	11/17/03	Facility	Human Error	Land
Gasoline	11,000	Oregon	12/2/02	Vehicle	Human Error	Fresh Water
Diesel oil	10,584	Hawaii	8/5/05	Pipeline	Equipment Failure	Land
Other	10,500	Washington	9/13/07	Facility	Human Error	Land
Oily water mixture	10,500	California	5/29/06	Pipeline	Equipment Failure	Fresh Water
Oily water mixture	10,500	California	4/11/08	Facility	Human Error	Land
Oily water mixture	10,500	California	8/12/06	Pipeline	Equipment Failure	Land
Oily water mixture	10,080	California	9/29/14	Unknown	Unknown	Land
Crude oil	10,080	California	7/21/08	Pipeline	Equipment Failure	Land
Asphalt / creosote	10,080	California	2/13/13	Facility	Equipment Failure	Land