



# Annual Summary of Oil and Hazardous Substance Spills

Fiscal Year 2011 (July 1, 2010-June 30, 2011)

Alaska Department of Environmental Conservation ■ Division of Spill Prevention and Response ■ January 2012

## Significant Responses

### M/V Golden Seas

Early in the morning of December 3, 2010, the crew of the M/V *Golden Seas* reported to the US Coast Guard (USCG) that the turbocharger on the vessel's only propulsion engine had failed and the vessel was adrift north of Adak Island in the Aleutian chain. The 738-foot-long bulk freighter, en route from Vancouver, BC, to the United Arab Emirates with a cargo of rapeseed, had a combined volume of more than 473,000 gallons of intermediate fuel oil, diesel fuel and lube oil on board. The USCG notified ADEC of the incident at 8:05 AM, and the agencies quickly established a Unified Command (UC) with representatives of the ship's Greek operator, Allseas Marine, SA. Initially, the vessel was unable to hold its position or make headway against the severe weather in the Bering Sea, and it drifted toward Atka Island. As the storm abated around 4:00 PM, the vessel was able to begin moving slowly to the northeast, away from shore. The responsible party (RP) contracted the ocean-going tug *Tor Viking II* (stationed in Dutch Harbor to support Shell Exploration) to assist the *Golden Seas*. The tug left port around 5:00 PM with ADEC's 10-inch Emergency Towing System (ETS) on board to tow the stricken vessel.

Shortly after 8:00 PM on December 4,



The *Golden Seas* in tow with the ADEC Emergency Towing System. (Photo courtesy of USCG)

north of Atka Island, the crews of the *Tor Viking II* and *Golden Seas* succeeded in securing a towline between the vessels. The vessels transited south through Amukta Pass (between Seguam and Amukta Islands) to the lee side of the islands to gain protection from high wind and waves in the Bering Sea. After a tow of more than 500 miles, the *Golden Seas* dropped anchor in Broad Bay in Unalaska Bay early in the afternoon of December 7. The UC had determined through the Potential Places of Refuge decision-making process (which included consultation with marine pilots, local governments, tribes, Native corporations, and state and federal resource trustees) that this was the most favorable anchorage for making repairs to the vessel. Following USCG approval of the completed engine repairs, the *Golden Seas* completed sea trials on the morning of December 13 and departed Dutch Harbor for her original destination.

The ADEC ETS deployed during this incident was cleaned and inspected by a Dutch Harbor contractor, who determined that the cargo net and chafing gear needed to be replaced. Once those replacements were made, the ETS was repacked and restaged at Dutch Harbor for future use.

### Pump Station 1 Booster Pump Piping Incident

On January 8, 2011, Alyeska Pipeline Service Company (APSC) employees discovered a spill of crude oil inside the basement of the booster pump building at Pump Station 1. Approximately 12,927 gallons of crude oil leaked from a 26-inch, concrete-encased discharge pipe, leading to a winter shutdown of the Trans Alaska Pipeline System (TAPS). North Slope oil producers significantly reduced oil production and initiated freeze protection procedures for wells, pipelines and other infrastructure during the shutdown. TAPS was restarted temporarily while

## FY 2011 Summary

### Top 5 Products

Product	Spills	Gallons
Diesel	499	49,136
Aviation Fuel	60	27,134
Crude	40	15,039
Process Water	20	11,608
Ethylene Glycol	105	8,361

### Top 5 Facility Types

Facility Type	Spills	Gallons
Oil Production	258	33,283
Non-Crude Terminal	16	23,497
Mining Operation	407	20,334
Vessel	183	15,235
Other	190	9,069

### Top 5 Causes

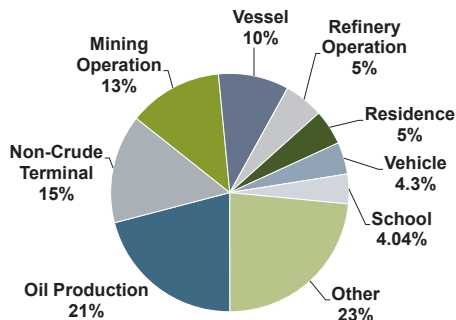
Cause	Spills	Gallons
Human Error	258	60,649
Equipment Failure	309	20,879
Corrosion	9	18,318
Line Failure	277	7,115
Gauge/Site Glass Failure	12	7,071

continued on page 7

# All Products - FY 2011

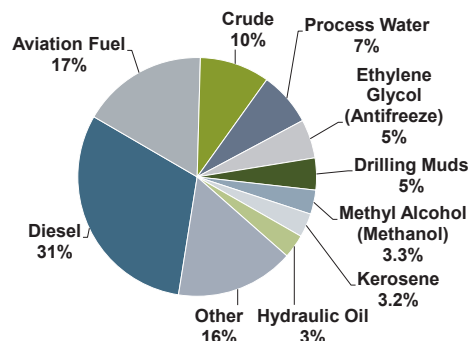
Number of Spills Reported 1,767  
 Total Gallons 159,115

## Volume Released by Facility Type



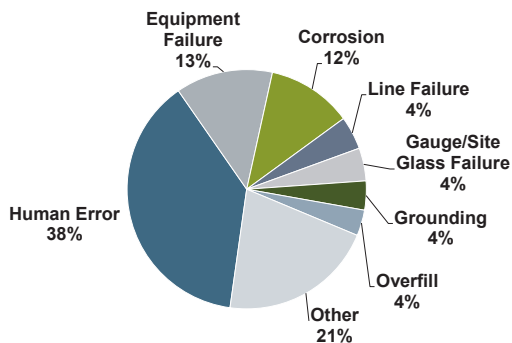
For graphing purposes, 'Other' includes facility categories comprising 4% or less of the total volume released.

## Volume Released by Product



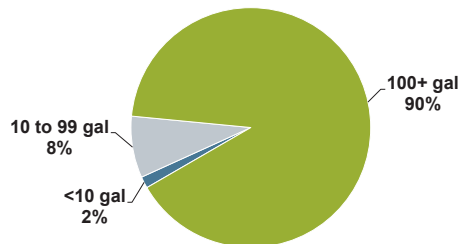
For graphing purposes, 'Other' includes product categories comprising 3% or less of the total volume released.

## Volume Released by Cause



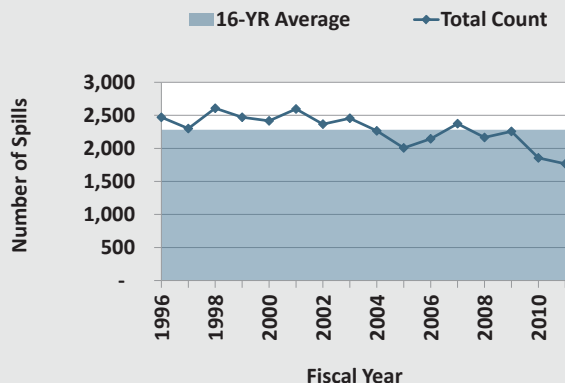
For graphing purposes, 'Other' includes cause categories comprising 3% or less of the total volume released.

## Volume Released by Size Class

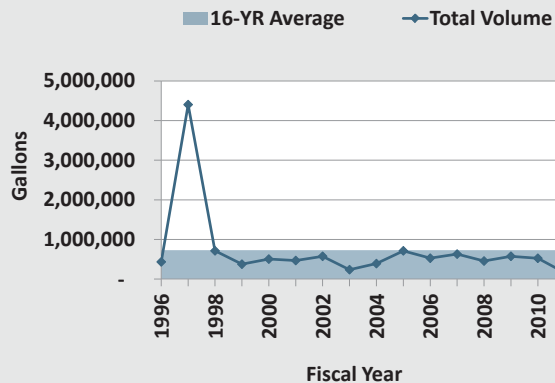


## 16-Year Trend

### Number of Spills by Fiscal Year



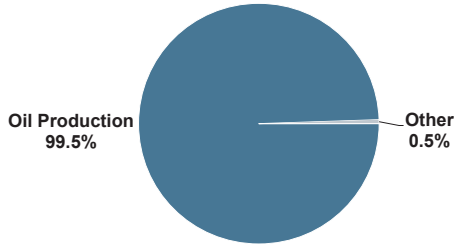
### Total Volume by Fiscal Year\*



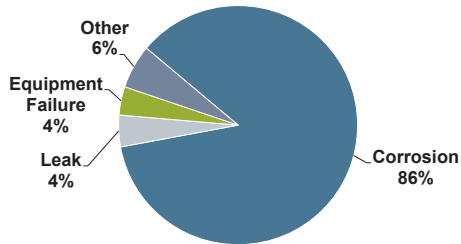
\*Notes: 1/25/1997 (FY 1997) - a barge capsized and lost 3,125,000 gal of Urea (Solid).  
 3/17/1997 (FY 1997) - 995,400 gal of Seawater released at ARCO DS-14 in Prudhoe Bay

Number of Spills Reported 40  
 Total Gallons 15,039

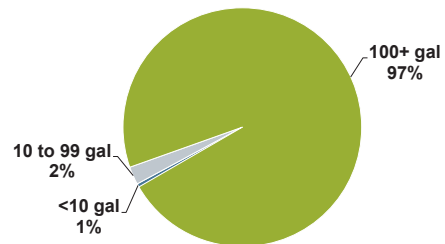
## Volume Released by Facility Type



## Volume Released by Cause

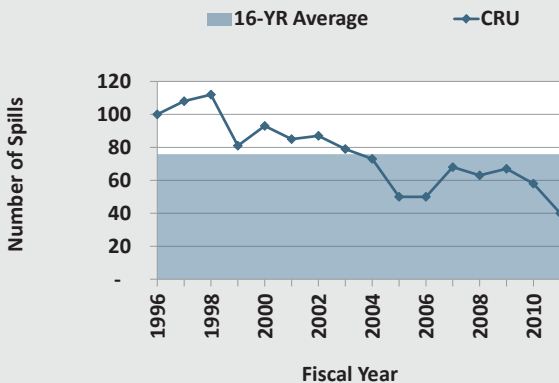


## Volume Released by Size Class

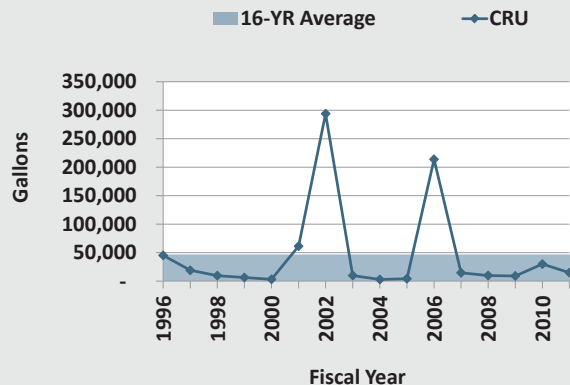


For graphing purposes, 'Other' includes cause categories comprising 3% or less of the total volume released.

## Number of Spills by Fiscal Year



## Total Volume by Fiscal Year\*

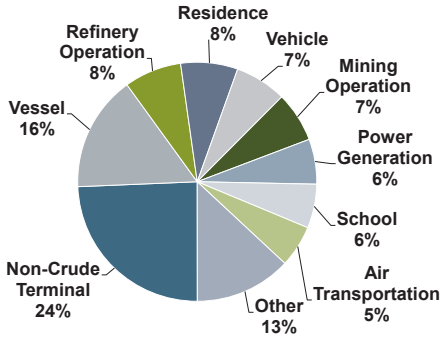


\*Notes: 10/4/2001 (FY 2002) - TAPS Bullet Hole Release; 285,600 gal Crude  
 3/2/2006 (FY 2006) - BP GC-2 Oil Transit Line Release; 212,252 gal Crude

# Non-crude Oil - FY 2011

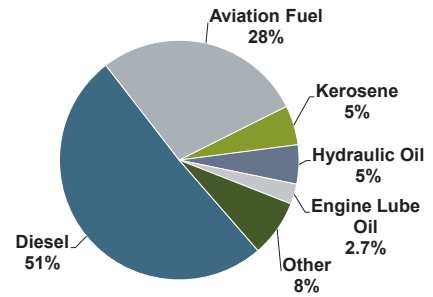
Number of Spills Reported 1,318  
 Total Gallons 96,523

## Volume Released by Facility Type



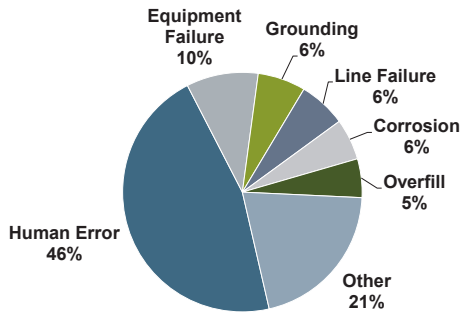
For graphing purposes, 'Other' includes facility categories comprising 4% or less of the total volume released.

## Volume Released by Product



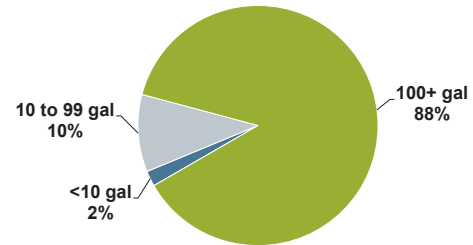
For graphing purposes, 'Other' includes product categories comprising 2% or less of the total volume released.

## Volume Released by Cause



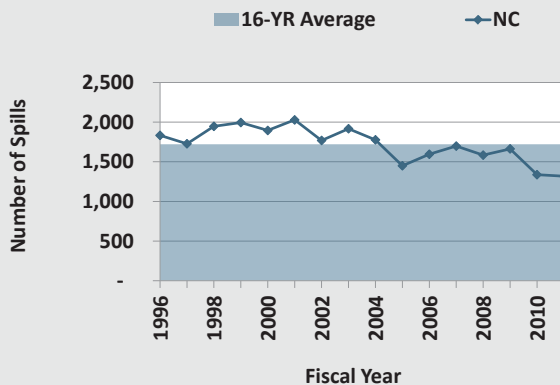
For graphing purposes, 'Other' includes cause categories comprising 3% or less of the total volume released.

## Volume Released by Size Class

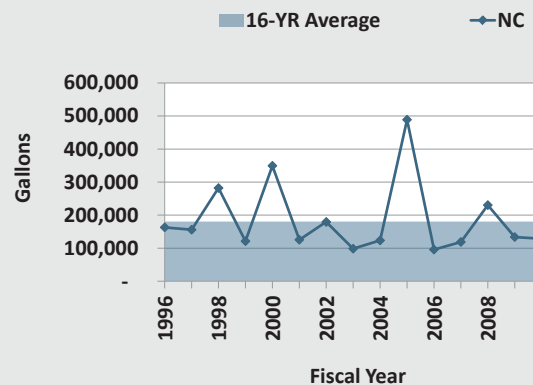


## 16-Year Trend

### Number of Spills by Fiscal Year



### Total Volume by Fiscal Year\*

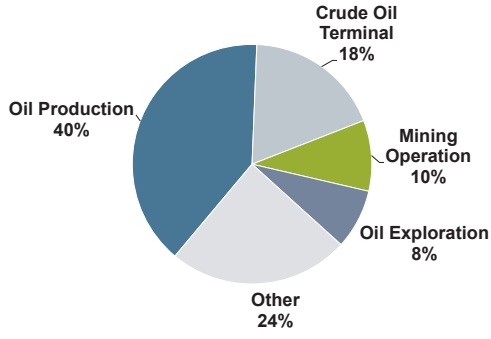


\*Notes: 12/8/2004 (FY 2005) - the M/V Selendang Ayu broke apart, releasing 321,052 gal of IFO 380 and 4,680 gal of Diesel

# Hazardous Substances - FY 2011

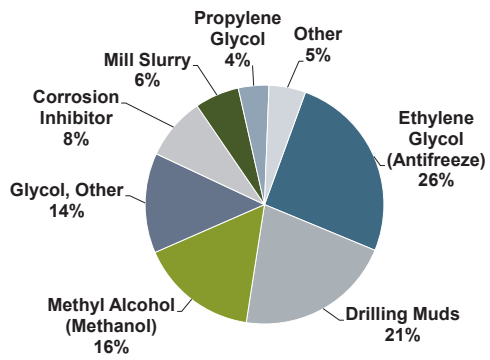
Number of Spills 380  
 Total Gallons 32,559

## Volume Released by Facility Type



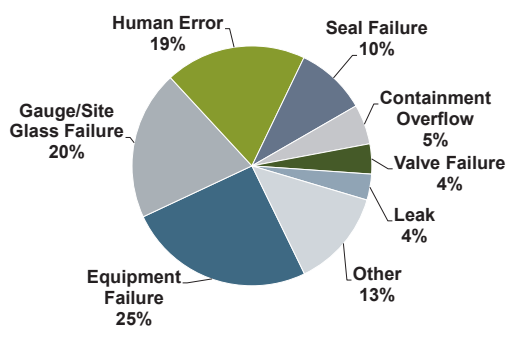
For graphing purposes, 'Other' includes facility categories comprising 4% or less of the total volume released.

## Volume Released by Product



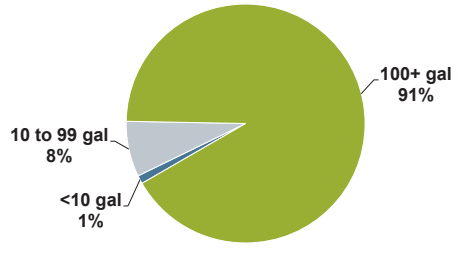
For graphing purposes, 'Other' includes product categories comprising 2% or less of the total volume released.

## Volume Released by Cause

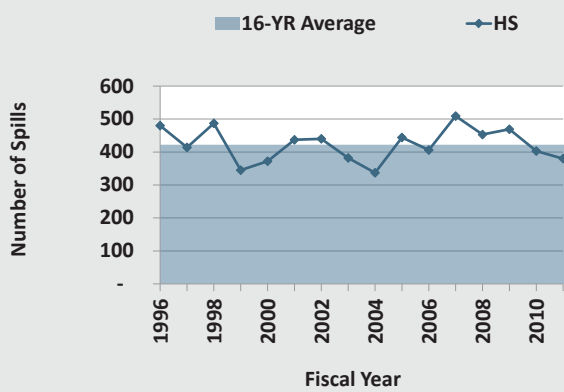


For graphing purposes, 'Other' includes cause categories comprising 3% or less of the total volume released.

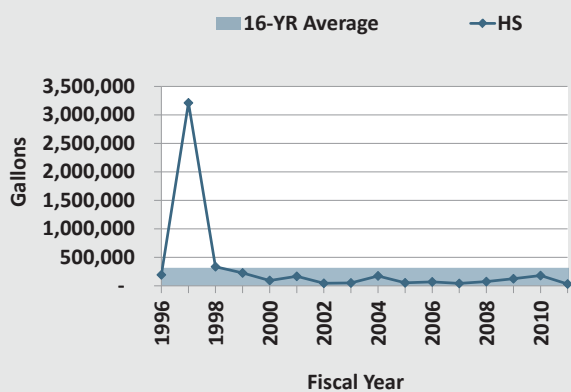
## Volume Released by Size Class



### Number of Spills by Fiscal Year



### Total Volume by Fiscal Year\*



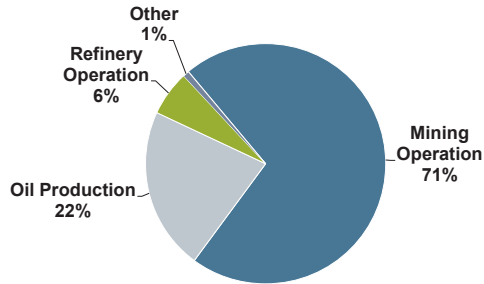
\*Notes: 1/25/1997 (FY 1997) - a barge capsized and lost 3,125,000 gal of Urea (Solid).

16-Year Trend

# Process Water - FY 2011

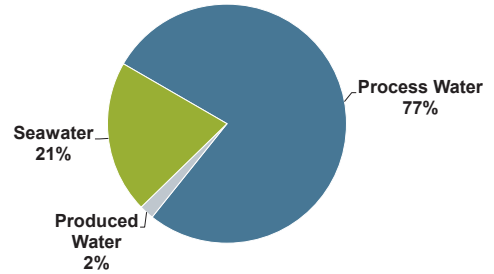
Number of Spills Reported 29  
 Total Gallons 14,994

## Volume Released by Facility Type

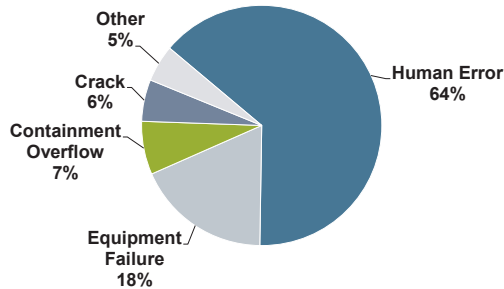


For graphing purposes, 'Other' includes facility categories comprising 4% or less of the total volume released.

## Volume Released by Product

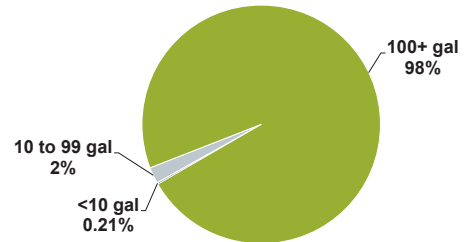


## Volume Released by Cause



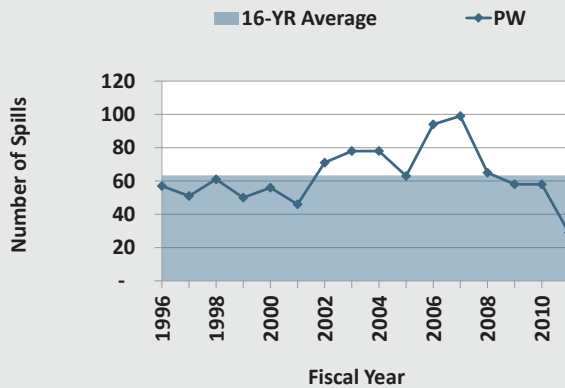
For graphing purposes, 'Other' includes cause categories comprising 3% or less of the total volume released.

## Volume Released by Size Class

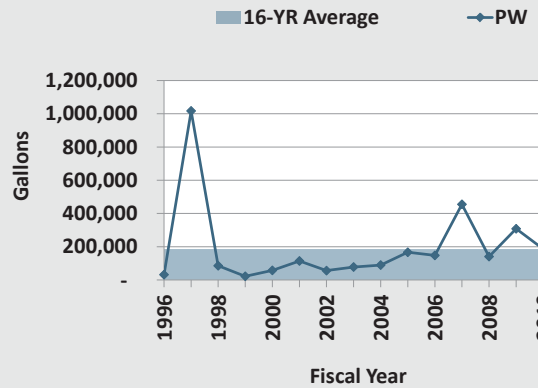


### 16-Year Trend

#### Number of Spills by Fiscal Year



#### Total Volume by Fiscal Year\*



\*Notes: 3/17/1997 (FY 1997) - 995,400 gal of Seawater released at ARCO DS-14 in Prudhoe Bay

**Process Water (Oil Exploration and Production Operations):** Process water includes seawater (and occasionally freshwater), produced water and commingled or mixed water.

Seawater is typically from the Beaufort Sea that has undergone primary treatment at the Seawater Treatment Plant.

Produced Water is produced with the primary reservoir three-phase production after passing through the separation and treatment.

Commingled or mixed water is typically a mix of seawater and produced water, although other combinations exist in the operations on the North Slope.

The percentage of crude oil occurring in process water can vary somewhat based on the source of the spill.

**Process Water (Mining Operations):** Process water for mining operations includes water taken from tailing ponds for the milling process (reclaim water), water that has been through the water treatment plant but not the sand filter (process water), water that has been through both the water treatment and sand filter (discharge water), water mixed with ground ore materials (slurry) or water used in the milling and product recovery process (process solution water).

**Spill:** a discharge or release of oil or a hazardous substance to the lands, waters or air of the State of Alaska as defined in Alaska Statutes 46.03.826(9).

## DISCLAIMER

The data presented and summarized in this report is provisional only due to ongoing quality assurance/quality control on the part of data entry staff and primary users. Additional on-going reviews will further refine the accuracy of the data.

## NOTES:

- Some spill incidents involve releases of multiple substances. In FY 2011, there were 1,718 spill incidents, resulting in 1,767 oil and hazardous substance releases.
- Some releases (such as gases and solids) are reported in pounds rather than gallons. In FY 2011, twenty-nine (29) releases totalling 2,985 pounds were reported to DEC. For graphing purposes, spill quantities reported in pounds were converted to gallons using a conversion factor of 8 pounds per gallon.

## Significant Responses - continued from page 1

APSC crews designed and fabricated a pipe to bypass the damaged discharge pipe. TAPS was shutdown a second time for installation of the bypass before resuming normal operation on January 17. Based on lessons learned from the incident, APSC managers reevaluated “cold restart” procedures for a TAPS winter shutdown, installed pump station oil recirculation pipe loops that add heat to oil in transit, and reassessed out-of-service infrastructure. Oil production resumed without incident after the bypass was installed, and no infrastructure damage resulted from the winter shutdown. No oil was discovered on the gravel pad and subsequent testing confirmed that the release was entirely confined to the pump building.

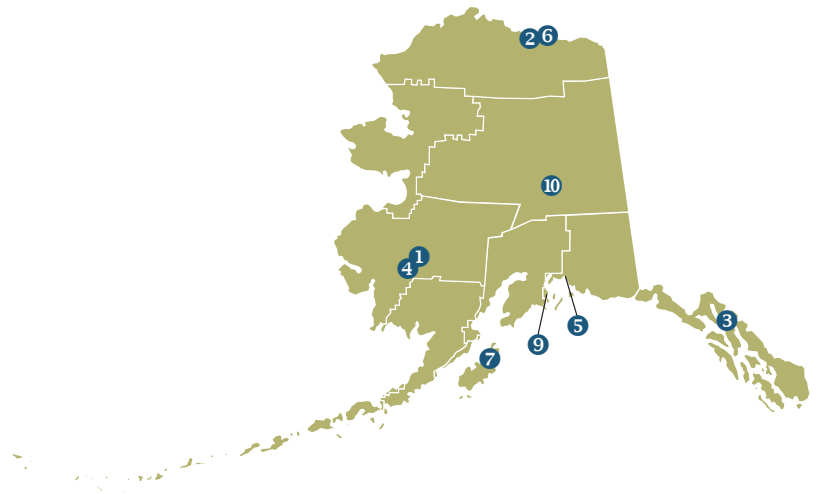
## Crooked Creek Flooding

In May 2011, the Kuskokwim River flooded the villages of Crooked Creek and Red Devil. The flood caused significant property damage in Crooked Creek, including the destruction of nearly one fourth of the homes in the village. ADEC coordinated oil and hazardous material emergency response with the Division of Homeland Security and Emergency Management and contracted Emerald Alaska Inc. to remove approximately six tons of contaminated soil and hazardous materials from the village.



The 24-inch bypass line, under construction, enters the metering building at PS 1. (Photo courtesy of ADEC)

# Top 10 Releases During FY 2011



Map Key	Spill Date	Spill Name	Product	Gallons
①	03/08/2011	Crowley Aniak Tank Farm (to containment)	Aviation Fuel	23,000
②	01/08/2011	Alyeska PS1 Booster Pump Leak (see note)	Crude	12,927
③	04/23/2011	Greens Creek Mine, Pond A	Process Water	7,000
④	09/25/2010	Tuluksak School Tank Farm	Diesel	5,000
⑤	02/17/2011	Valdez Marine Terminal Powerhouse A Boiler	Ethylene Glycol (Antifreeze)	5,000
⑥	06/14/2011	Point MacIntyre Drill Site 1	Methyl Alcohol (Methanol)	5,000
⑦	02/11/2011	F/V Midnite Sun Grounding, Afognak Island	Diesel	4,500
⑧	11/04/2010	Big State Logistics Tractor Trailer, Honolulu Creek	Diesel	3,040
⑨	07/26/2010	F/V Cape Cross, Prince William Sound	Diesel	3,000
⑩	12/22/2010	Fort Wainwright, RBK 05	Propylene Glycol	3,000

NOTE: No oil was discovered on the gravel pad and subsequent testing confirmed that the release was entirely confined to the pump building.

## Total Volume by Subarea

SubAreaName	Gallons
Bristol Bay (BB)	979
Kodiak Island (KI)	5,839
Aleutian (AL)	8,173
Northwest Arctic (NW)	8,943
Prince William Sound (PW)	12,918
Southeast Alaska (SE)	13,131
Cook Inlet (CI)	21,010
Interior Alaska (IN)	22,068
Western Alaska (WE)	29,570
North Slope (NS)	36,485

