

US EPA ARCHIVE DOCUMENT



# **Twenty-Year Trend Analysis of Oil Spills in EPA Jurisdiction**

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# *Perceptions* about US oil spill trends

**Oil spillage has increased dramatically.**

**There are more spills occurring more frequently in more places with more damage.**

**Things are only going to get worse ...**



**Reality: Greater public awareness and media exposure after notorious and tragic spill events leads to *perception* that spillage is on the rise in the US.**

1999 Olympic Pipeline, Whatcom Creek    1989 Exxon Valdez, Prince William Sound



Photo by Whatcom County, WA



Photo by NOAA



***Reality: Greater public awareness and enforcement by EPA and state officials has lead to greater compliance in reporting of smaller spills.***

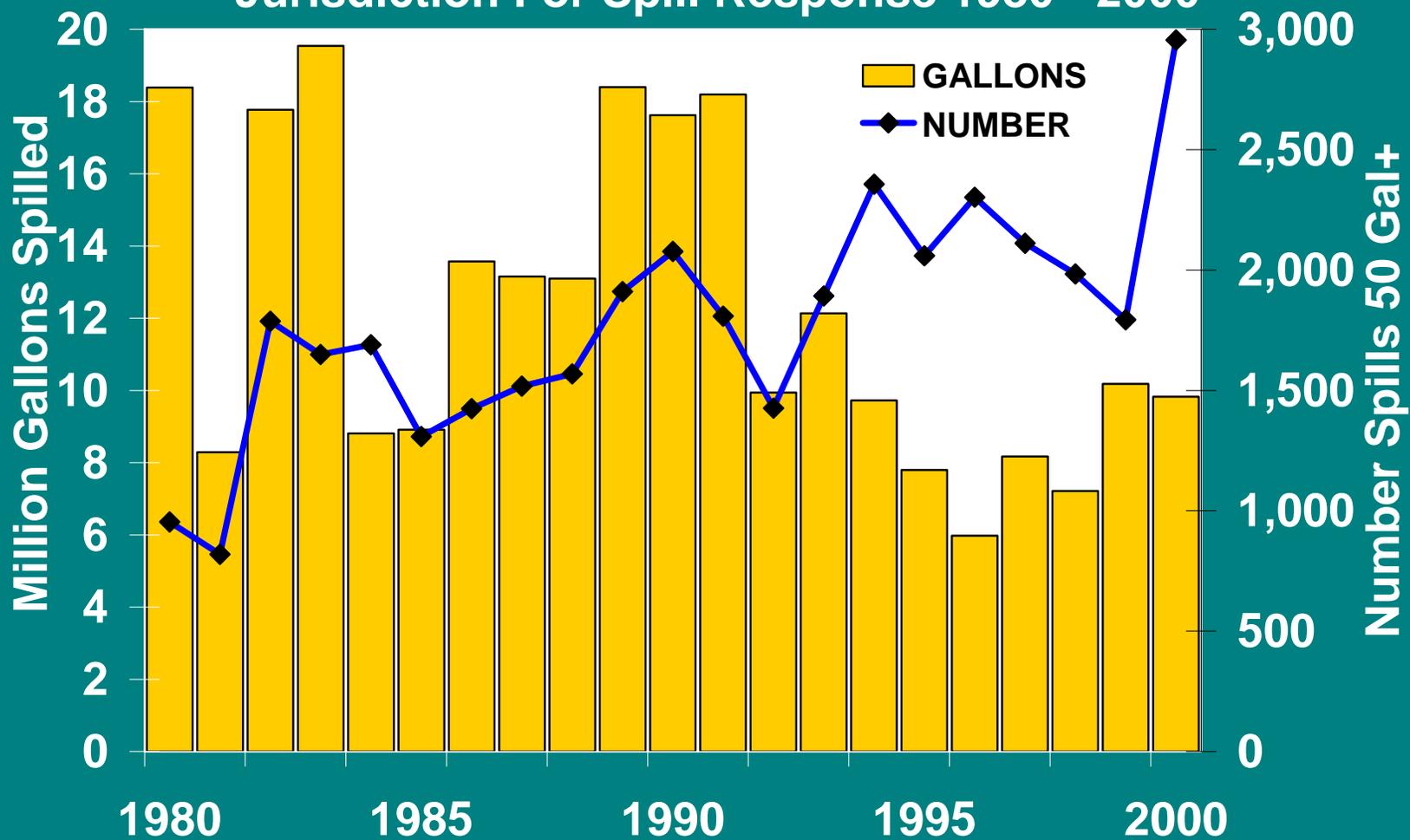


## **EPA Oil Spill Jurisdiction Oil Spill Database developed to analyze trends over last 20+ years**

- **EPA Jurisdiction Oil Spill Database includes spills of at least 50 gallons into non-marine navigable waters (and adjoining shorelines) in EPA spill response jurisdiction that occurred since 1980. (Great Lakes not included – USCG jurisdiction)**
- **Total of 42,860 incidents representing over 304 million gallons**



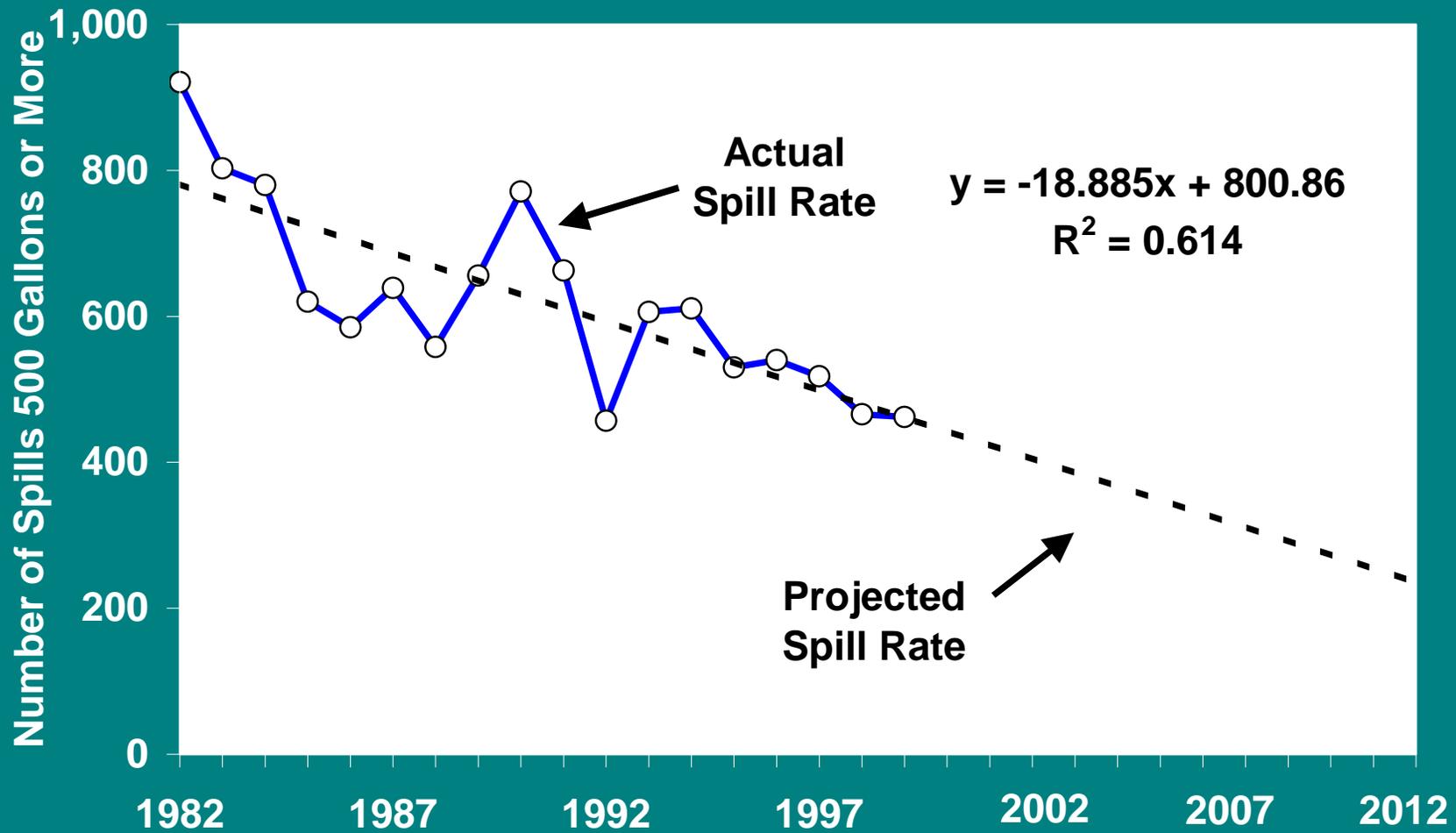
### Oil Spills Into Navigable Waterways in EPA Jurisdiction For Spill Response 1980 - 2000



**Increase in number of total spills reported.**

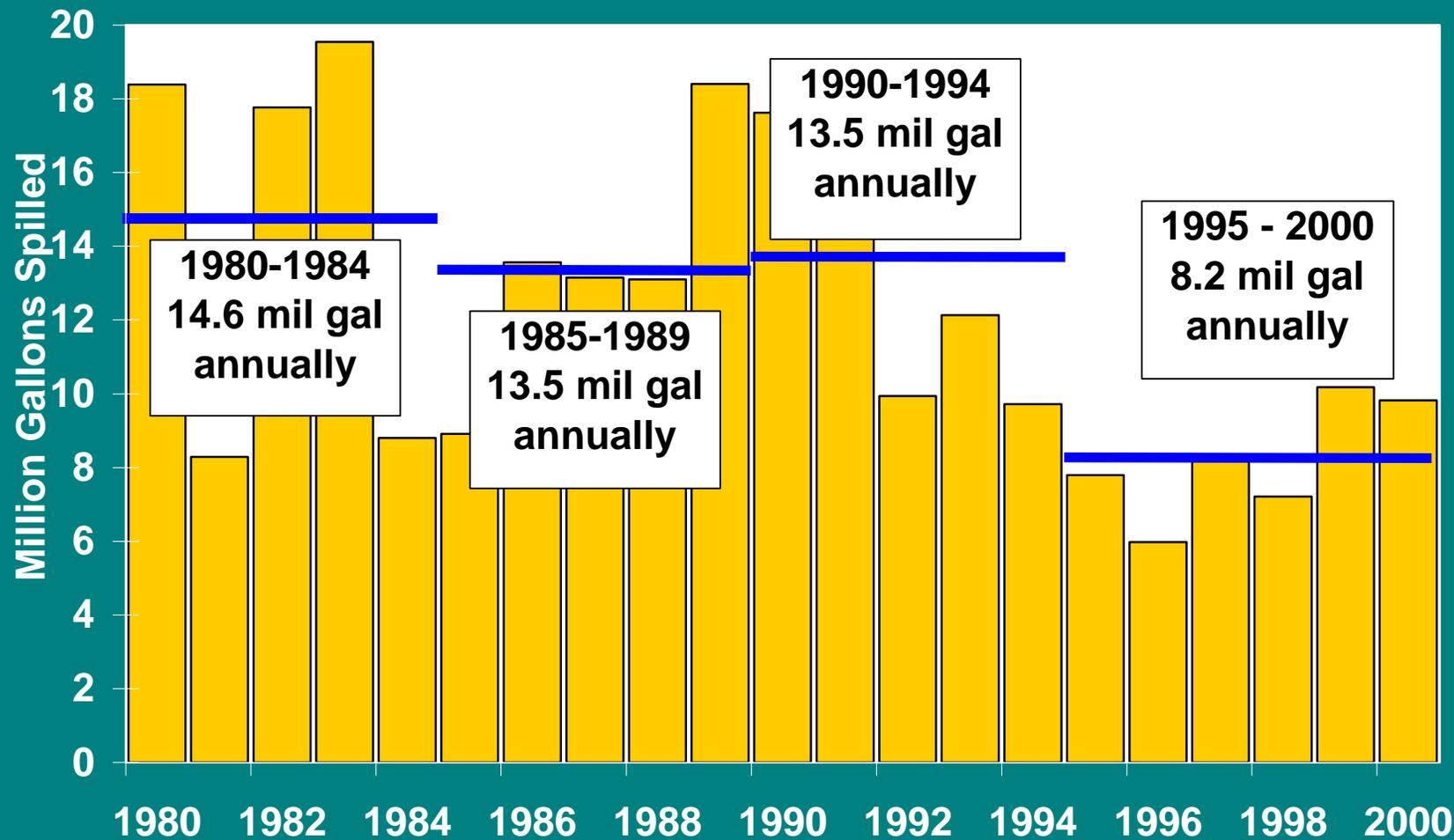


### Number of Oil Spills Into EPA Jurisdiction Navigable Waters (Spills of 500 Gallons or More )



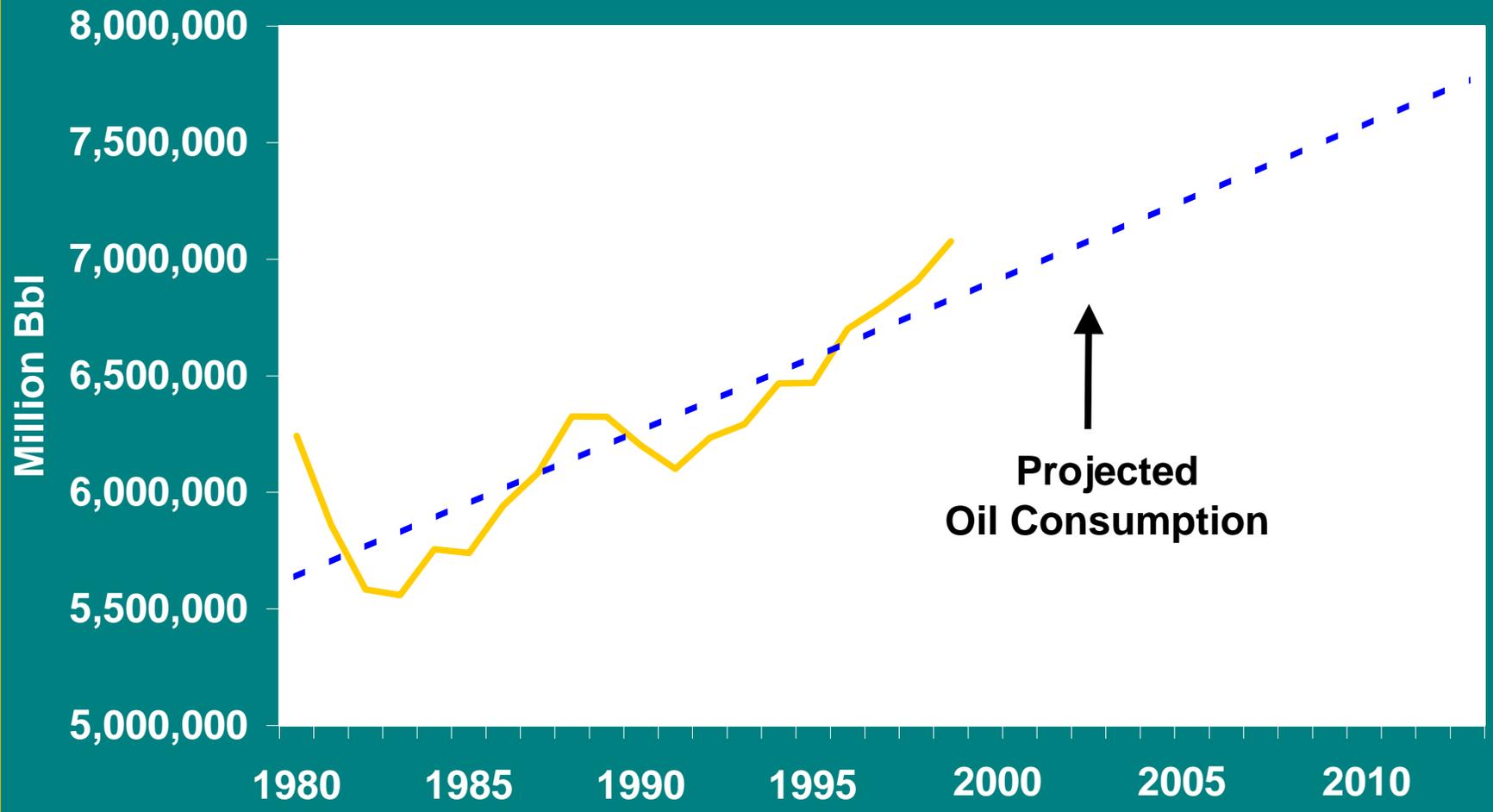
**Decrease in annual *number* of spills of 500+ gallons**

### Oil Spills Into Navigable Waterways in EPA Jurisdiction For Spill Response 1980 - 2000

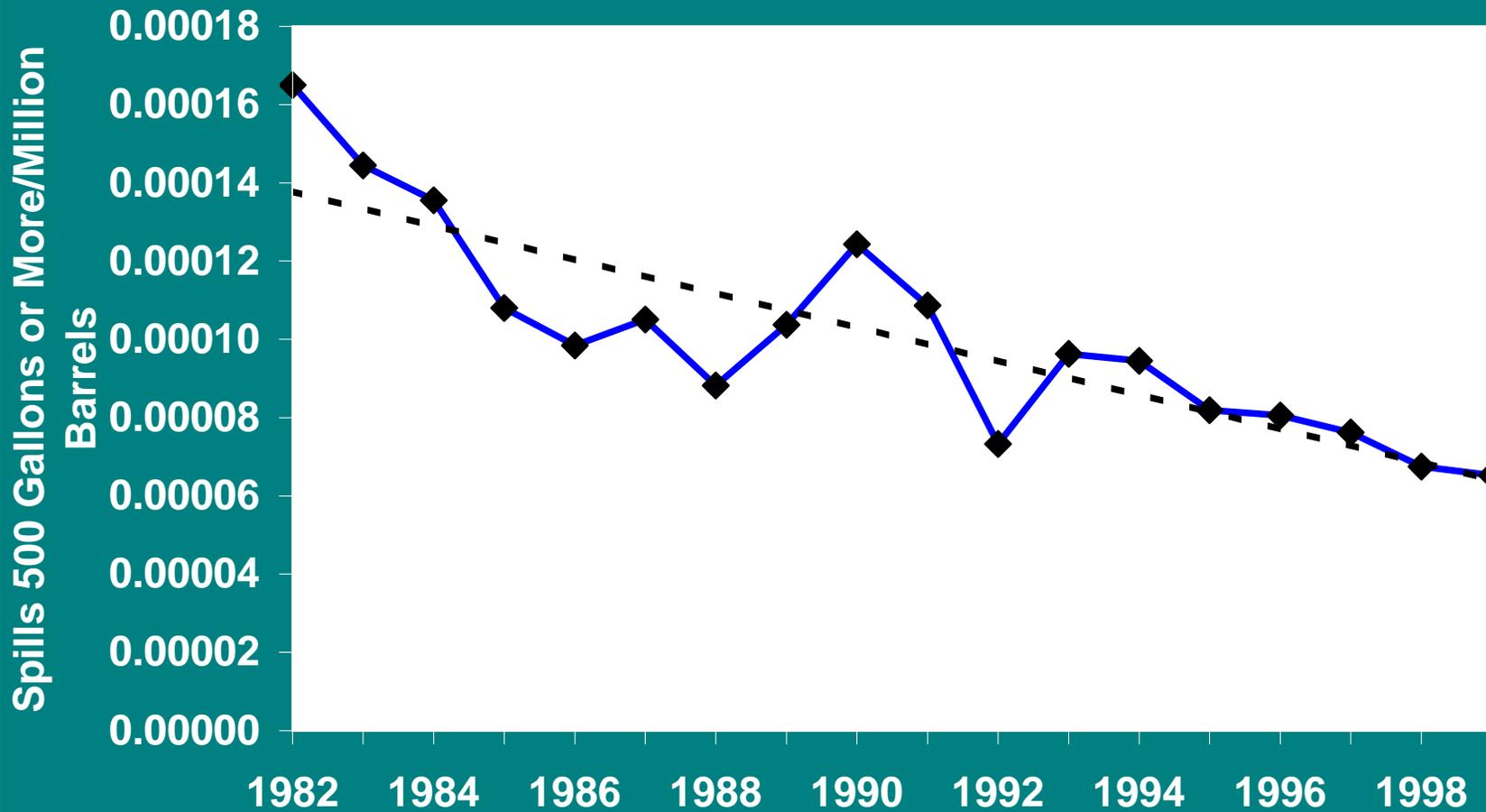


**Average annual spillage volume decreased 44% since 1980s**

### US Petroleum Consumption Based on US Energy Administration Data (Projection by Environmental Research Consulting)



Number of Oil Spills Into EPA Jurisdiction Navigable Waters  
Per Million Barrels US Oil Consumption  
(Spills 500 Gallons or More)



Number spills per bbl consumed decreased 50% since 1980s

## **Annual *numbers* of spills per million bbl oil consumption analyzed rather than volume of spillage**

- Removes confounding factor of spill volumes from very large spills overwhelming annual data
- Any particular spill could be large or small depending on salvage/source control or spill detection
- Spill numbers of moderate-large spills more accurately reflect efficacy of spill prevention measures



## Oil Spill Trends 1980 - 2002

- Average annual volume of oil spilled decreased 44%
- Annual numbers spills 500+ gallons decreased nearly 50%
- Annual number spills 500+ gallons per million bbl oil consumed decreased 50%



# Oil Spill Trends 1980 – 2002

*(continued)*

- 80% of volume spilled came from pipelines (43%) and other facilities (37%)
- Crude oil accounts for greatest volume (43%)
- Light fuels (No. 2, diesel) account for greatest number spills (36%)



# Oil Spill Trends 1980 – 2002

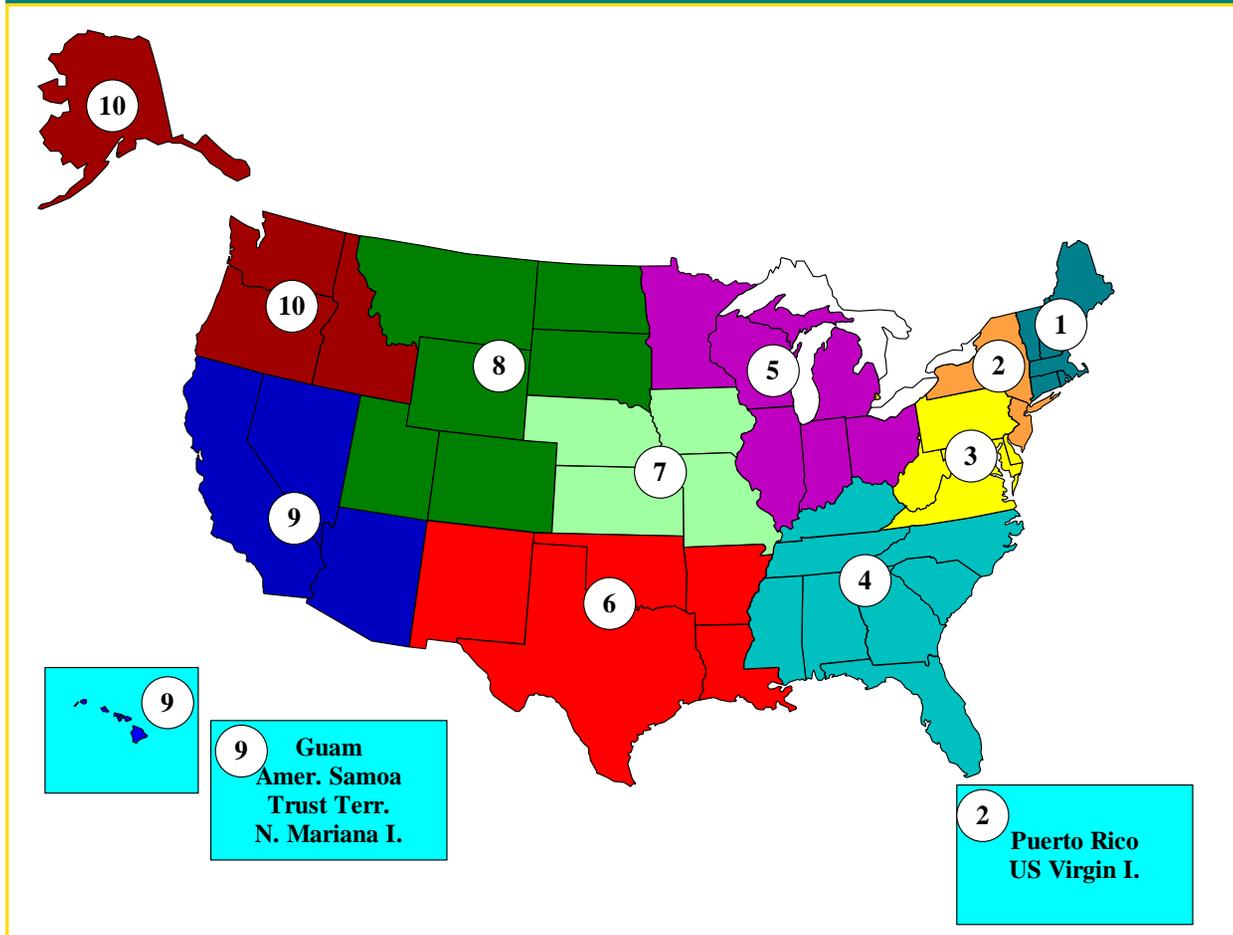
*(continued)*

- Nearly 40% spills have no reported cause
- Of spills with known causes, largest percent of number (24%) and volume (42%) due to structural failure (e.g., corrosion).
- Operational error accounts for 22% of spills, though spills tend to be smaller than for structural failure
- Explosions and fires (rare) cause largest average volume of spill – also most casualties



# Oil Spill Trends 1980 – 2002

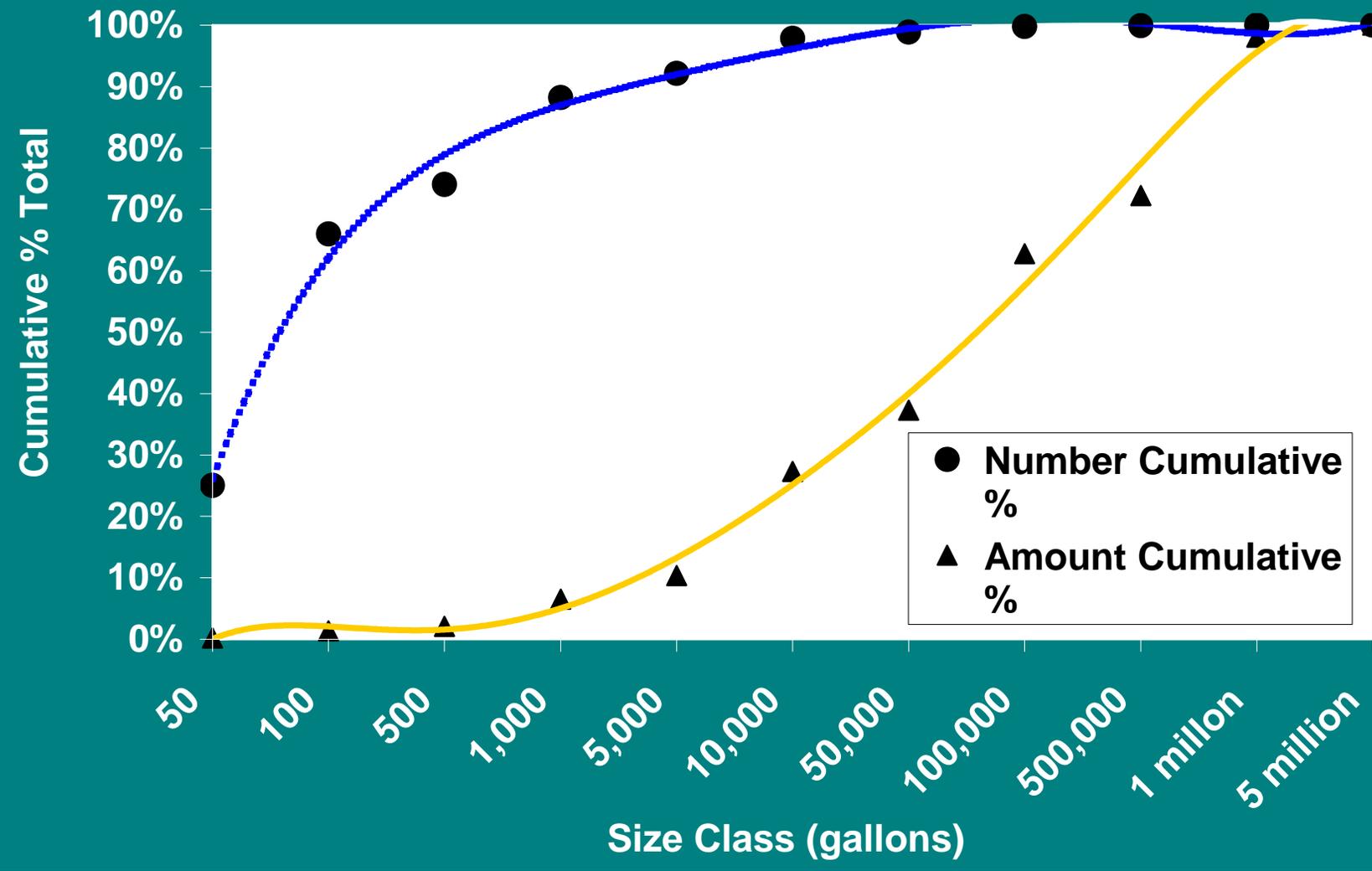
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- EPA Region 6 greatest spill volume/number
- TX largest spill volume (71 million gal); CA next (23 million gal)
- More spills per sq mile in DC, MA, DE, ME, PA, CT
- 80 gal per sq mile spilled across US



### Oil Spill Sizes EPA Jurisdiction Navigable Waters 1980 - 2002



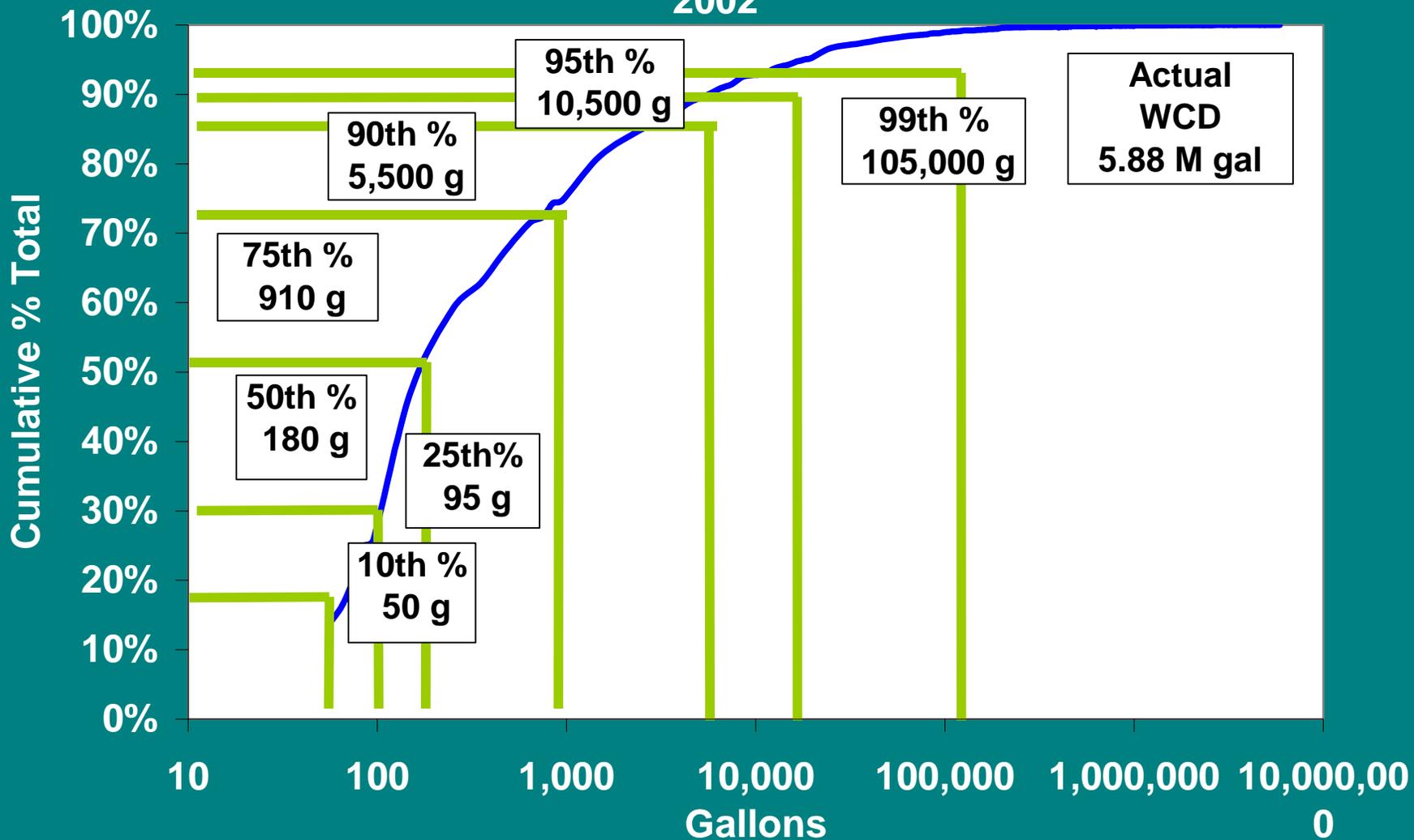
**95% of spills (50 gal+) are < 10,500 gallons**



- Analysis only includes spills of 50 gallons or more.
- There are many spills smaller than this that occur on a frequent basis.
- A study conducted by ERC on vessel spills in US marine waters showed that 99% of spills are less than 50 gallons but these spills add up to only 20% of the total volume spilled.
- Extrapolating to EPA jurisdiction spills, there would be about **4.3 million spills** since 1980.



### Probability Distribution Function of Oil Spill Sizes For Spills into Navigable Waters in EPA Jurisdiction 1980 - 2002



**Potential WCD = 14.5 million gallons (largest tankship)**

## Conclusions

- Overall, **oil spillage down** in US inland waterways under EPA response jurisdiction.
  - Spill prevention programs and regulation
  - Concern by industry/consumer over cost/damage
- Rate of spill reporting increased.
  - Public awareness and enforcement of federal and state regulations
- Still average of **8 million gallons spilling annually** in EPA waters. Areas of greatest concern are oil production and storage facilities and pipelines (structural failure).





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**The EPA Jurisdiction Oil Spill Database and the EPA Facility Oil Spill Database were developed from Environmental Research Consulting's proprietary databases for us by the EPA Oil Program Center and EPA Regional Offices.**

