

Colonial Pipeline Oil Spill *A 30-year Retrospective*

DWSPP Quarterly Meeting

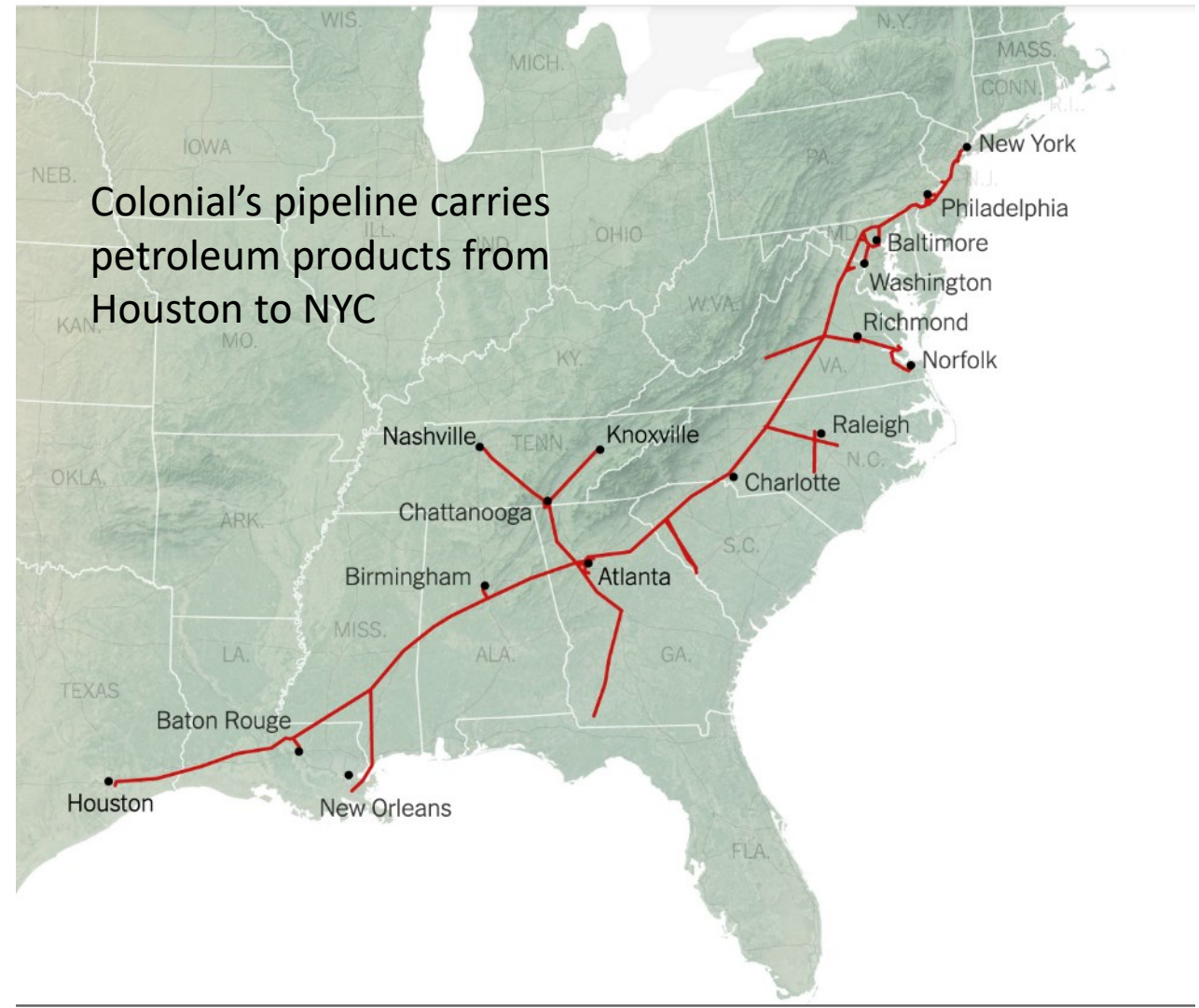
August 2, 2023

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Spill summary

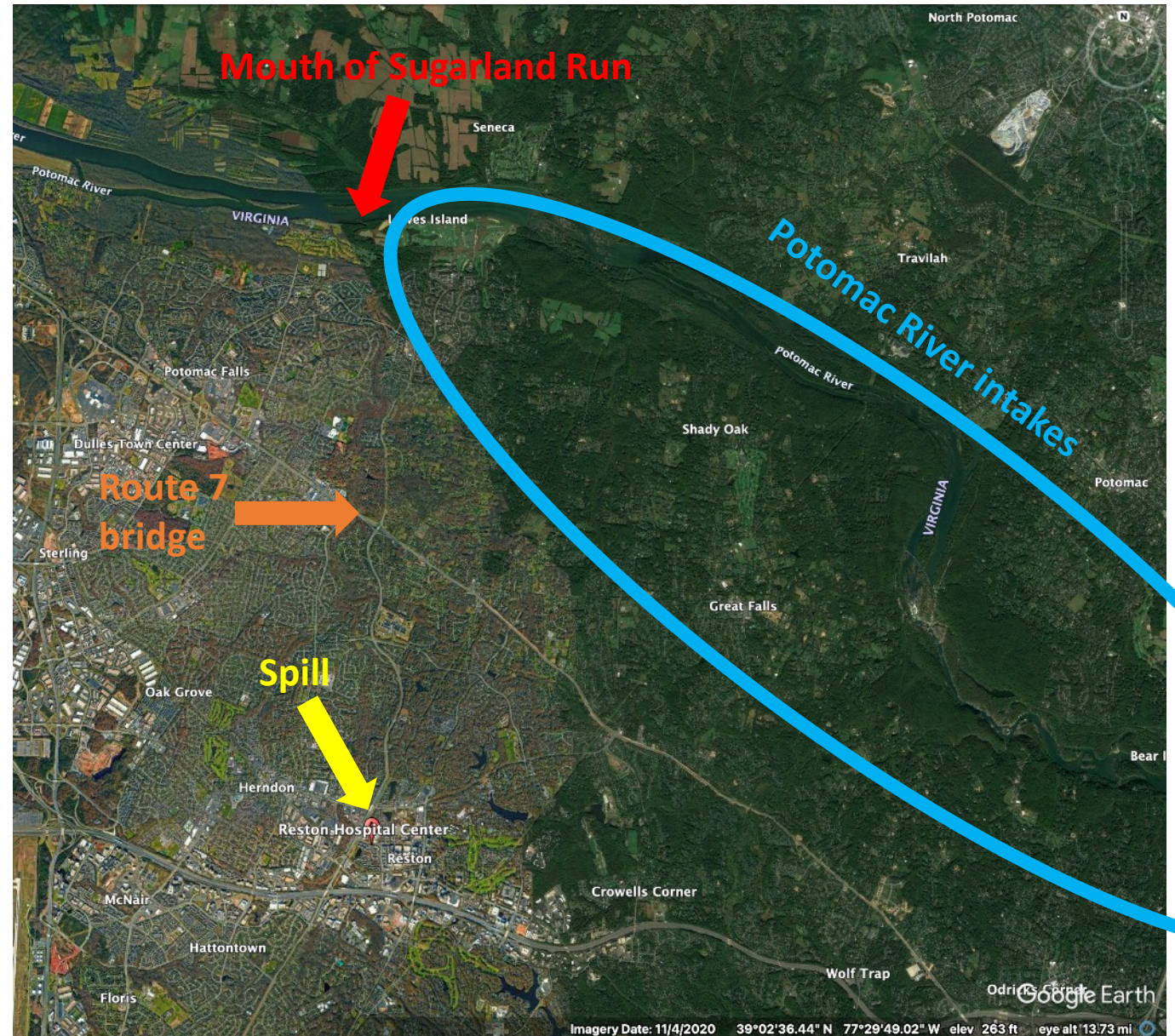
- Rupture occurred March 28, 1993
- 407,736 gallons of No. 2 fuel oil were released
- Oil flowed into Sugarland Run and then into the Potomac River
- Rupture was attributed to damage from 1986 construction activity
- \$25M cleanup costs + \$3.6M-\$4.0M 1998 settlement with US, DC & VA



Day 1 timeline

– March 28, 1993

- 8:48 AM: Colonial operators noticed pressure drop; pumps and valves shut at two pipeline stations – 10 miles SW and 35 miles NE
- 9:00 AM: Police officer observed a 50- to 100-foot geyser of oil behind Reston Hospital Center
- 9:20 AM: County HazMat team arrived
- 9:30 & 10:22: Colonial manually shut two local valves on either side of the river
- 10:20 AM: Fairfax Water is informed but told spill would be contained
- 12:45 PM: Fairfax Water staff observed plume from Route 7 bridge and judged it could not be contained
- By 7:00 PM:
 - Booms deployed at 6 spill-control points on Sugarland Run
 - 150-person crew, 8 tanker and 5 vacuum trucks on the scene
- 7:45 PM: Fairfax Water intake is closed due to arrival of oil



Spill impacts

Water supply

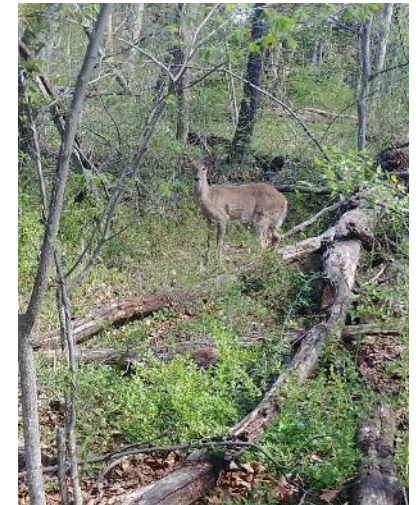
- Fairfax Water's Potomac intake was shut continuously for 11 days and for 2 more days due to remobilization from rain events



Fairfax Water

Environmental & recreational resources

- Severe impacts to Sugarland Run – fish, benthic macroinvertebrates, and riparian wildlife
- Fumes at National Park lands drove away visitors
- Pockets of oil detected as far as Quantico

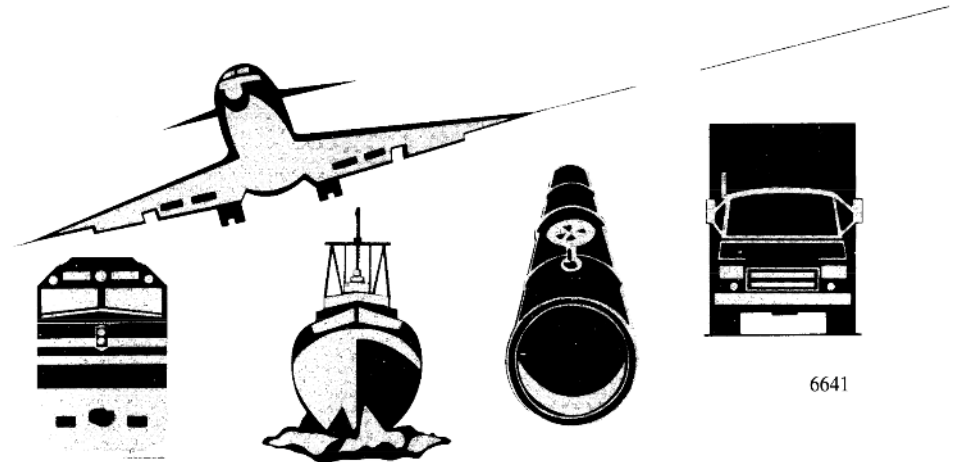


Hearings and studies

- Hearing – House Subcommittee on Investigations & Oversight, Committee on Public Works & Transportation, May 18, 1993
- Colonial Pipeline Oil Spill, Reston, Virginia, Final Restoration Plan and Environmental Assessment, DOI, VADEQ, DCDOH, 1999
- National Transportation Safety Board, Pipeline Special Investigation Report, 2002

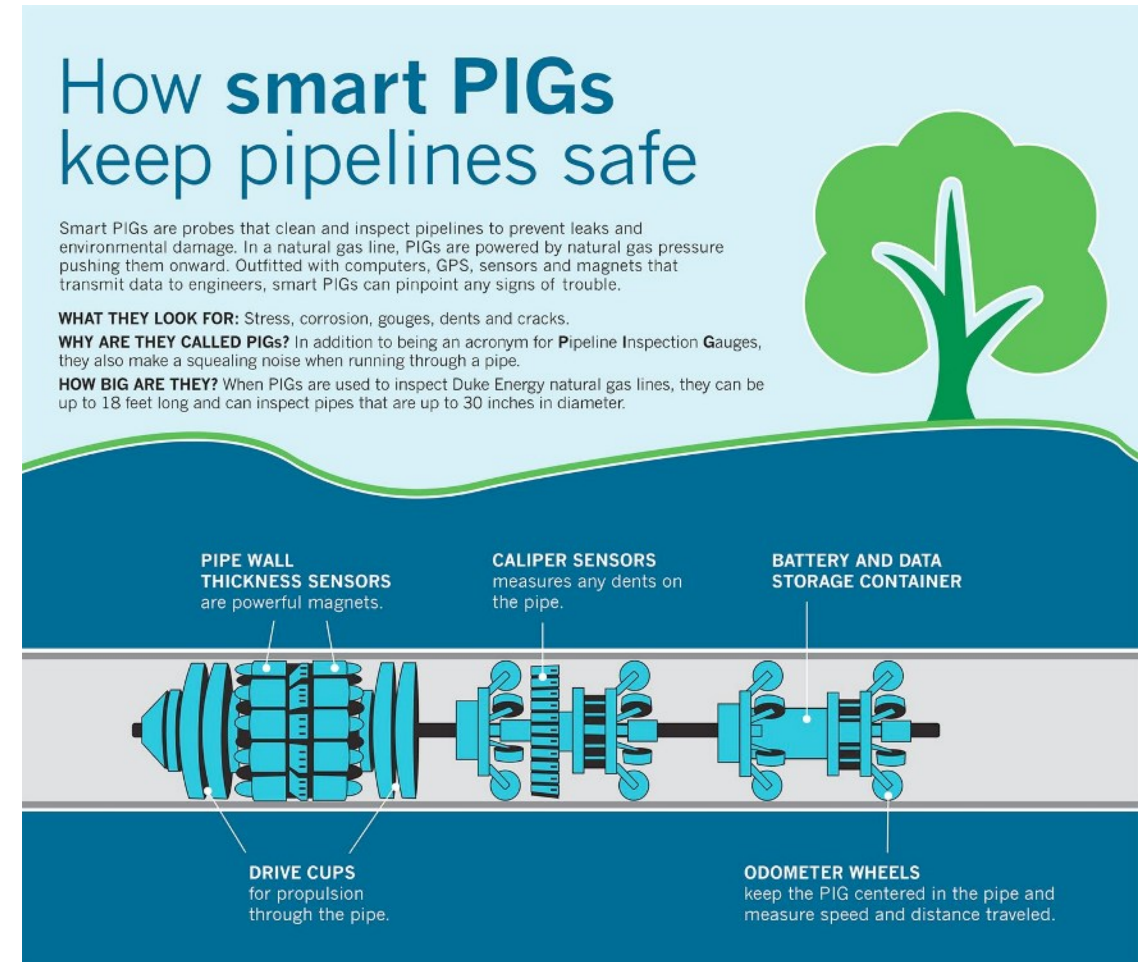
PIPELINE SPECIAL INVESTIGATION REPORT

EVALUATION OF ACCIDENT DATA AND FEDERAL OVERSIGHT OF PETROLEUM PRODUCT PIPELINES



Changes in pipeline safety regulations: 49 CFR 195

- Pipeline integrity monitoring via “smart pigs”
 - Pre-1993: recommended
 - Pipeline assessments – 2000
- Shutoff valve spacing
 - Pre-1993: recommended
 - New requirements in 2022?
- Installation of remote valve control
 - Pre-1993: recommended
 - New requirements in 2022?
- “Unusually sensitive areas” (USAs) defined, including drinking water sources without adequate alternative supply (2000, 2021)





Changes in regional communications

- ICPRB Spill Team notifications
 - Post-1993: CO-OP 24/7 beeper
 - Circa 2010: ICPRB 24/7 answering service
- Communications
 - Early years – telephone
 - 2016: PotomacSpills.groups.io Listserv

Changes in time of travel tools

1-dimensional (1-D)
computer models –
dissolved contaminants

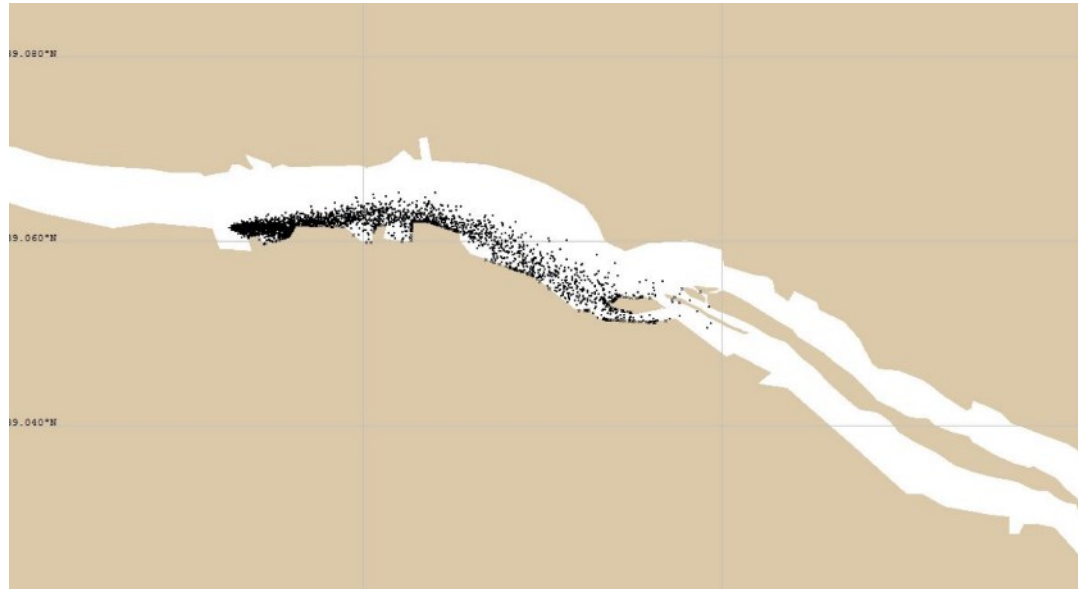
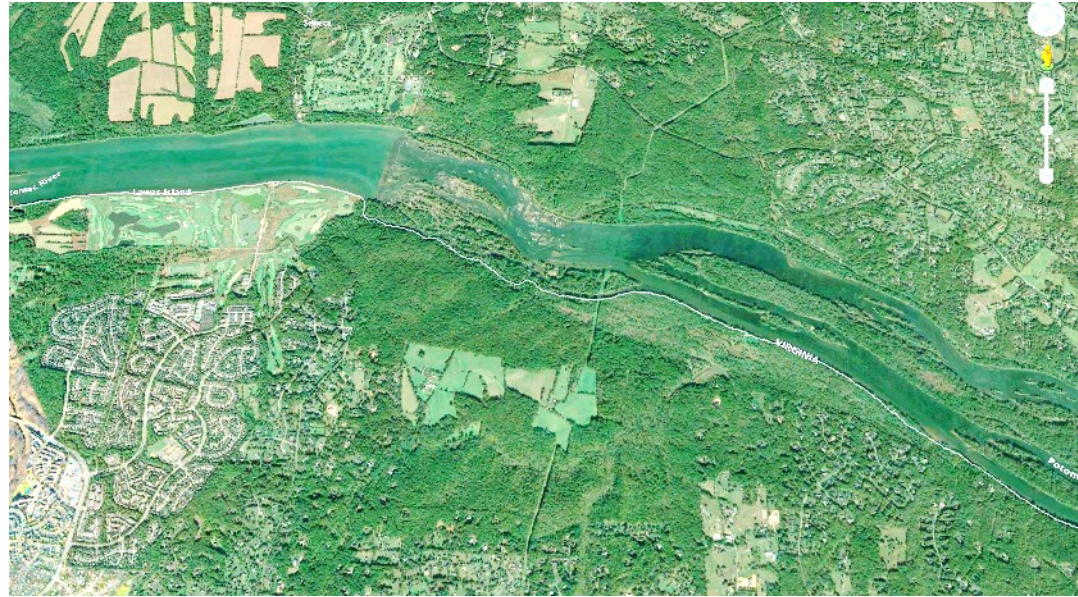
- ERSM (ICPRB), 1985
- RiverSpill/ICWATER (federal agencies), 2002
- WaterSuite (Corona/MWCOG)

2-dimensional (2-D)
computer models –
floating contaminants



ICPRB 2-D oil spill modeling

- NOAA's GNOME oil transport model
 - Patuxent Reservoir
 - Occoquan Reservoir
 - Potomac mainstem
- DELFT3D 2-D flow model
 - Potomac mainstem



Changes in mitigation strategies

- Regional spill vulnerability
 - DC & Arlington acutely vulnerable
 - WSSC Water quite vulnerable
 - Fairfax Water would become vulnerable post-1993
- Path to increasing resiliency
 - 2014-15: CO-OP Travilah Quarry feasibility studies
 - 2016: MWCOG resiliency study
 - 2017: CO-OP water supply alternatives study
 - 2020: USACE value planning study
 - 2021: ICPRB initiated outreach to Congress
 - 2022: WRDA 2022 authorized USACE feasibility study on secondary water source for our region
 - Outreach to obtain funding for USACE study



Needs and next steps

Exercises

- Exercise use of ICPRB's 2-D oil spill modeling tools
- Engage with Colonial and PHMSA to learn about changes in our region since 1993

Response

- Find funding for real-time version of ICPRB's 2-D Potomac River oil spill model

Mitigation

- Continue progress on implementing supplemental storage for the region
- Find funding for lower cost measures in USACE's value planning study?