

ANALYSIS OF 2019 ANS OIL SAMPLE

Merv Fingas Spill Science

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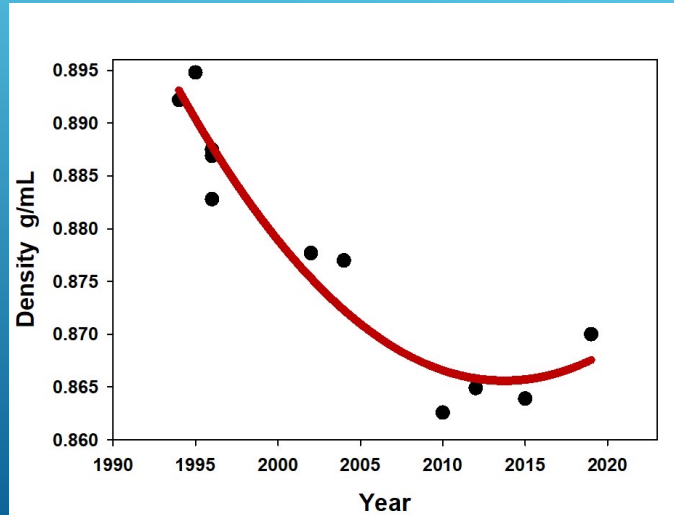
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BACKGROUND

- ▶ PWS RCAC requested Environment Canada to perform an oil analysis of an ANS sample taken from 2019
- ▶ Sample not fully analyzed until 2022 because of Covid shutdown
- ▶ Analysis sent to Merv Fingas to analyze and report on

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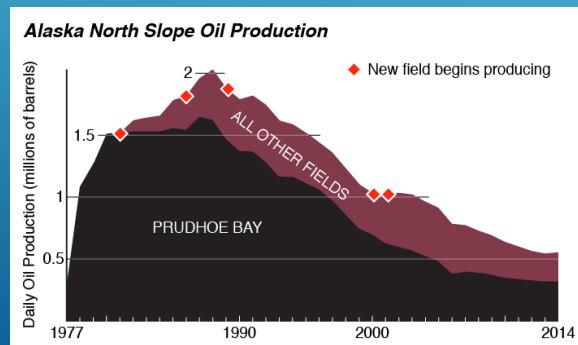
SUMMARY – ANS TURNED INTO A LIGHTER OIL IN THE PAST DECADE



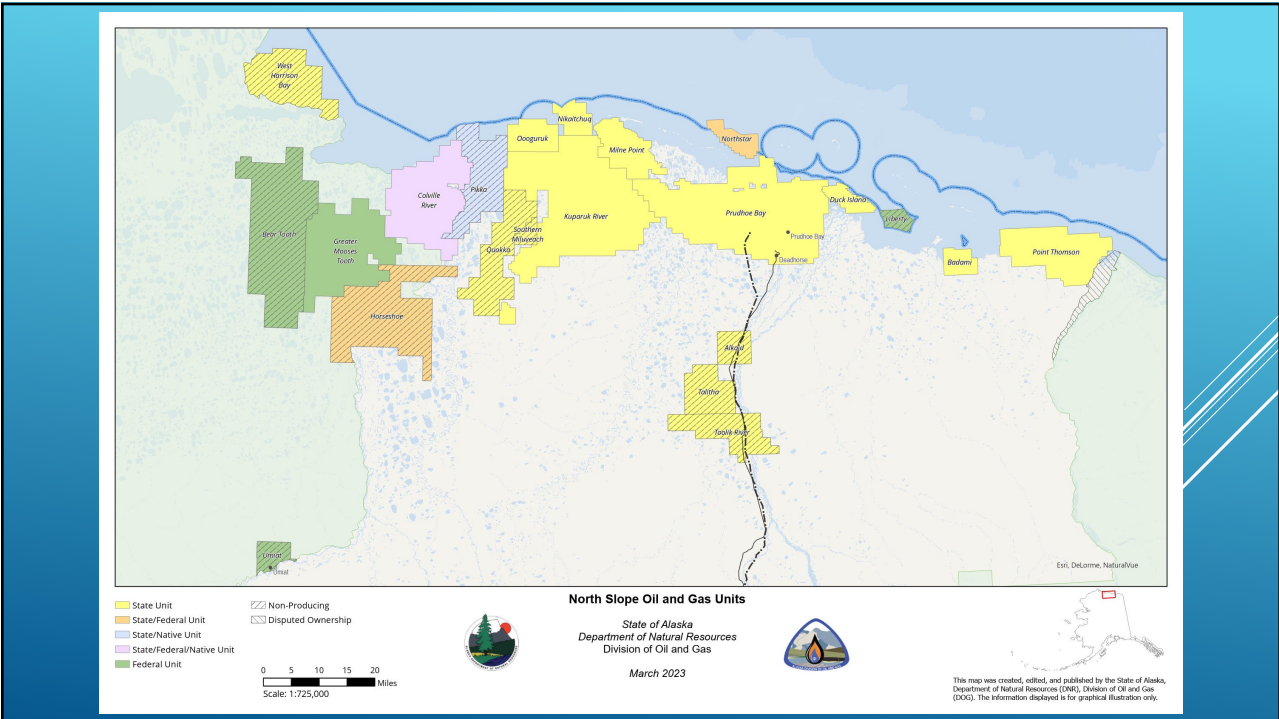
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ORIGIN OF THE CHANGE

- ▶ The North Slope has several different oil fields with slightly different properties
- ▶ Around 2010 some of the heavier oil producing areas were terminated – this lowered the density and viscosity of the output to the pipeline



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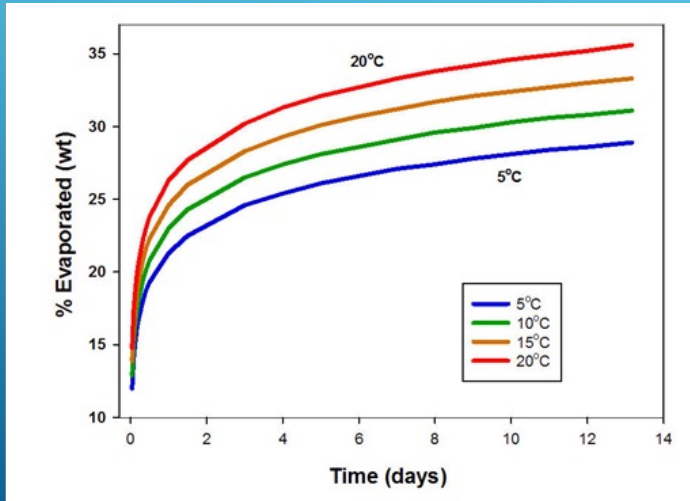
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EFFECTS ON OIL PROPERTIES AND BEHAVIOR OF SPILLED OIL IN THE ENVIRONMENT

- ▶ 1. Evaporation
- ▶ 2. Viscosity
- ▶ 3. Emulsion Formation
- ▶ 4. Composition

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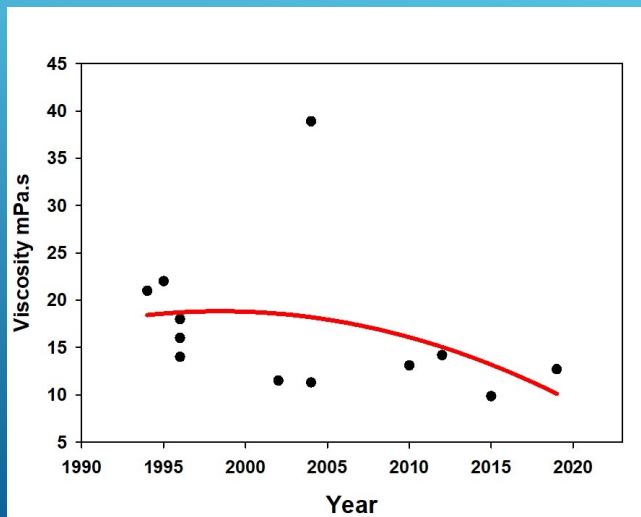
EVAPORATION



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VISCOSITY

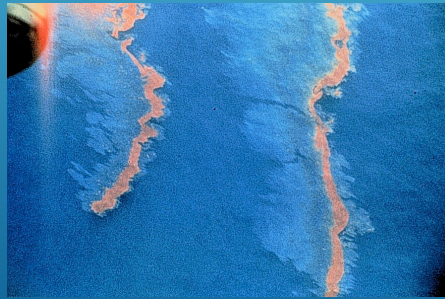
PUMPABILITY



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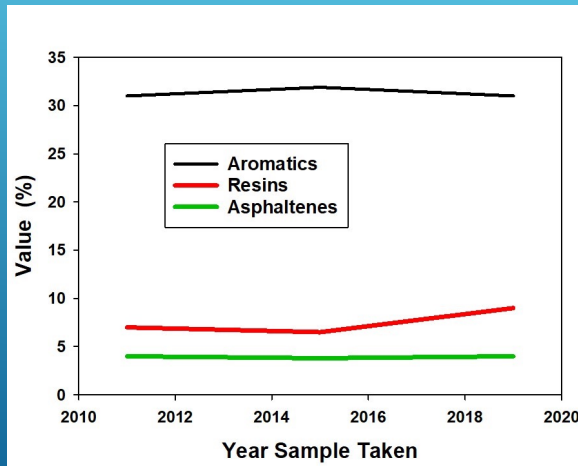
EMULSION FORMATION

- ▶ The latest sample does not form a stable emulsion
- ▶ Highly weathered ANS will entrain water



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COMPOSITION



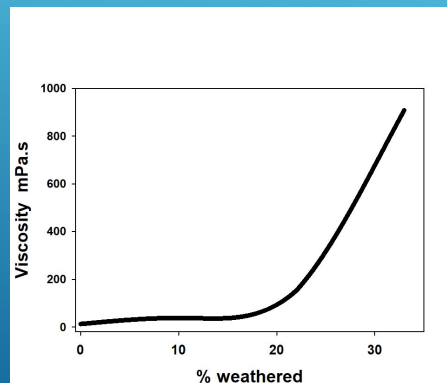
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EFFECT ON SPILL BEHAVIOR, EFFECTS

- ▶ Evaporation – recently about 33% would evaporate at 20°C (room temperature) over about 7 days
- ▶ Weathered ANS would not be dispersible
- ▶ Weathered ANS would be hard to recover (but easier than before)

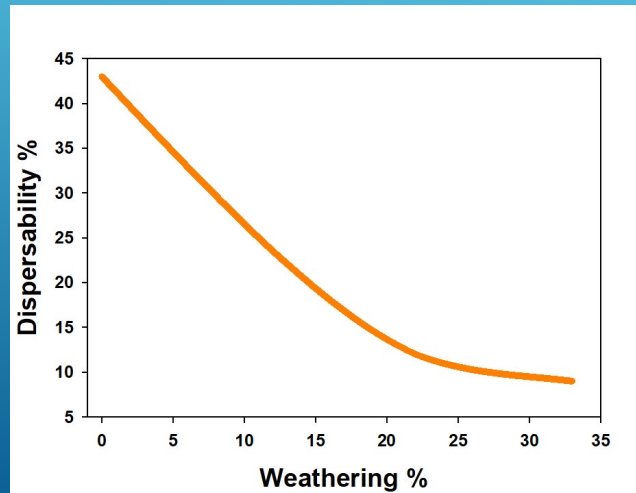
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VISCOSITY INCREASE WITH WEATHERING



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DISPERSIBILITY



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SUMMARY

- ▶ ANS has slowly turned into a lighter oil
- ▶ This is good for economics and oil spill countermeasures
- ▶ ANS is however still an oil that when spilled is best dealt with booms and skimmers

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