

SUBTIDAL STUDY NUMBER 3B

Study Title: Bioavailability and Transport of Hydrocarbons in the Nearshore Water Column

Lead Agency: ADEC

Cooperating Agency: NOAA

JUSTIFICATION

The Alaska Department of Environmental Conservation (ADEC) has deployed sediment traps in Prince William Sound since November 1989 to monitor nearshore sedimentation in the wake of the Exxon Valdez oil spill. These sediment traps capture particulates settling out of the water column, which are then analyzed for hydrocarbon chemistry, organic carbon/nitrogen and mineralogy. The objectives of the ADEC portion of Subtidal Study #3 are, 1) to determine the presence or absence of petroleum hydrocarbons in the water column, and 2) to collect data on the mobility of petroleum hydrocarbons in the near shore. The study will show whether hydrocarbons are present in the particulate matter utilized by filter-feeding organisms in the water column (mussels) and whether there is a continuing input of petroleum hydrocarbons to the subtidal from these settling particulates. Sediment grain size data will provide information relating particle size to hydrocarbon chemistry. These size data are important because many filter feeders show a preference for certain particle size ranges, and because hydrocarbon adsorption and particle settling rates are also dependent on size. Data from sediment cores in the vicinity of the traps will add knowledge of petroleum hydrocarbon contamination of benthic sediments due to mixing and bioturbation. Besides providing a connection between oiled particulates and uptake into the food chain, the sediment traps present an opportunity to investigate the continued mobility and transport of petroleum hydrocarbons into subtidal areas from shorelines where surface or subsurface oiling remains.

The analysis and interpretation of the data collected from 1989 through 1992 from this study should be completed and published because: 1) this study represents the longest monitoring of settling particulates after a major oil spill; 2) the study provides a potential connection between shoreline and subtidal oiling and uptake by marine organisms; and, 3) because the results may shed light on questions regarding the efficacy and environmental benefit of shoreline treatment and the possible continuing inputs of oil from remaining shoreline contamination. Results to date found significant quantities (>200 ppm) of oil in settling particulates two years after the oil spill at several of the study

sites where there is a continued presence of subsurface shoreline oiling.

BUDGET (\$K)

Salaries	\$ 16.5
Travel	4.4
Contractual	25.1
Commodities	0.7
Equipment	0.0
Subtotal	<u>\$ 46.7</u>
General Administration	4.2
Total	<u>\$50.9</u>