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Coastal Impact Assistance Program

State of Alaska, Department of Natural Resources,
Office of Project Management and Permitting

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ciap Surge

news 2014

Contaminants

Of the 134 CIAP funded project in Alaska, 33 projects address contaminants, for a total of nearly \$18 million in grant funds. Some of the projects measure the presence of contaminants in fish and wildlife, while others focus on the removal of contaminants or minimizing their impact on the coastal environment.

acknowledgements

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Information contained in this newsletter is taken from progress reports, agency websites and interviews with project contacts.

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Cover photo: Starfish and red algae, Posliedni Point, Afognak Island. ShoreZone Imagery.

CIAP Protects Alaska's Natural Resources

Projects Minimize Contaminants Impact on the Environment

A contaminant is any physical, chemical, biological, or radiological substance or matter that has an adverse effect on air, water or soil. Contamination can occur from public, industrial, or commercial facilities, as well as households and non point sources, such as roads and parking lots. Contaminants include petroleum, polychlorinated biphenyls (PCBs), solvents and metals. Some chemical and metal contaminants also occur naturally. The impact of contaminants goes beyond the aesthetics. Some pollutants resist breakdown and accumulate in the food chain. These contaminants can then be consumed or absorbed by fish and wildlife, which in turn may be eaten by humans.

Petroleum is the most common contaminant in Alaska and is most likely to enter the environment through leaking storage tanks and other facilities, transportation accidents, and spills caused by improper handling and disposal practices.

Facts about contaminants:

Over 80% of items in landfills can be recycled, but they are not.

Americans generate 30 billion foam cups, 220 million tires and 1.8 billion disposable diapers every year.

How long does it take for litter to break down in the ocean?

- Cigarette butts: 1-5 years
- Plastic bags: 10-20 years
- Foam cups and tin cans: 50 years
- Aluminum cans: at least 80 years
- Plastic bottles: 450 years
- Fine fishing net: at least 600 years (much longer for heavier nets)
- Glass bottles: 1 million years

Six million tons of debris enters the world's oceans every year, weighing about the same as a million elephants.

Hydrocarbon Contaminant Assessment of Pribilof Rock Island Sandpipers in Cook Inlet

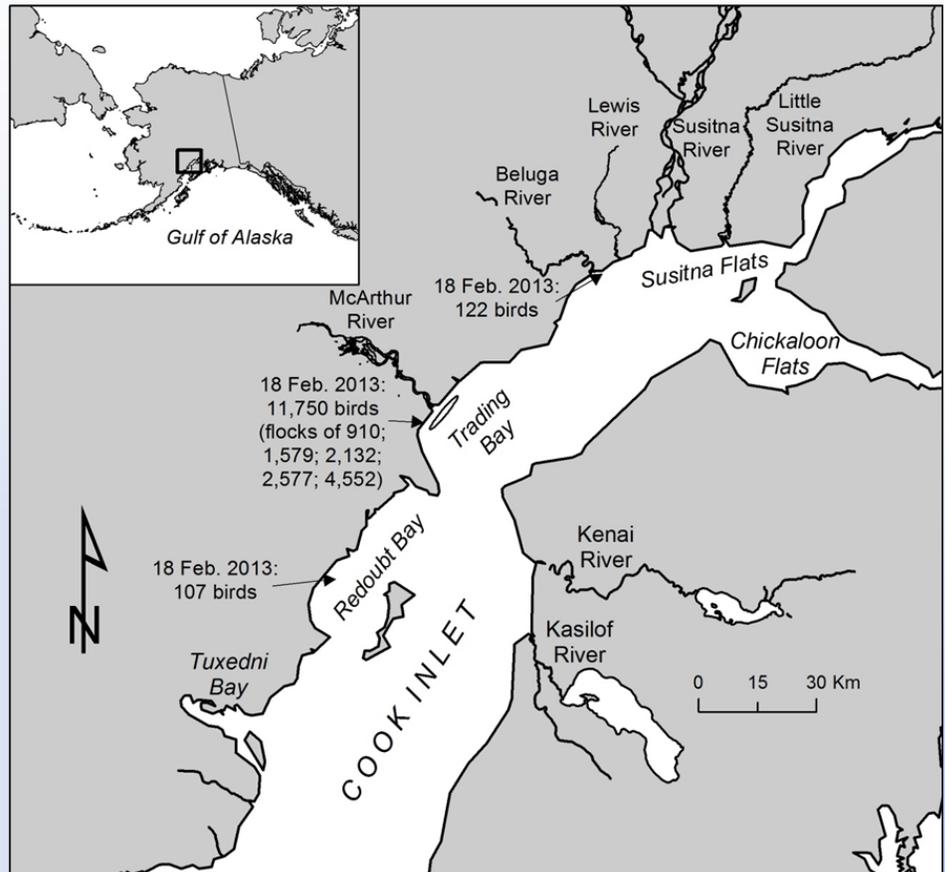
Project Manager: Kelly Nesvacil
Project Dates: Feb. 2011-Dec. 2015
Total CIAP Funding: \$136,400

The objective of this project is to analyze the background levels of hydrocarbon contamination in Pribilof Island Rock Sandpipers in Cook Inlet to determine possible impacts of additional oil development in this region. Almost the entire world population of Pribilof Island Rock Sandpipers overwinters along Cook Inlet's mud and sand flats, feeding on tiny clams and invertebrates exposed by the shifting ice floes. This puts these birds at serious risk of exposure to contaminants and oil spills. Cook Inlet is an area with existing oil and gas development and high marine vessel activity which may result in inadvertent spills or discharge.

This study includes counting Pribilof Island Rock Sandpipers in Cook Inlet in the winter and testing their direct environment for contaminant analysis. Prey will be collected from the beach substrate for subsequent contaminant analysis. Semipermeable membrane devices (SMD) will be deployed on the mud flats of Cook Inlet to measure hydrocarbon levels in this environment. These same measurements will be taken on the breeding grounds on St. Paul Island to determine if birds may be exposed to hydrocarbons there prior to migration to Cook Inlet. Differences in hydrocarbon levels in the Cook Inlet and St. Paul samples will be ascertained.

did you know...

A Pribilof Island Rock Sandpiper breeding pair is usually monogamous, with pair bonds lasting several years. Nests are typically built on the ground, on rocks or in low, damp areas.



Above. Distribution of rock sandpipers on February 18, 2013 survey of



Cook Inlet. Surveys using fixed wing aircraft are conducted to determine high use areas of the sandpipers in Cook Inlet.

Left. Pribilof Island Rock Sandpiper, St. Paul Pribilof Islands, AK. Photo by John Schwarz. www.birdspix.com

Right. A semipermeable membrane device (SMD) deployed at the mudflats staging area on St. Paul Island in August 2013. The SMD is collected after one month of deployment and is tested to determine the presence and magnitude of hydrocarbons.



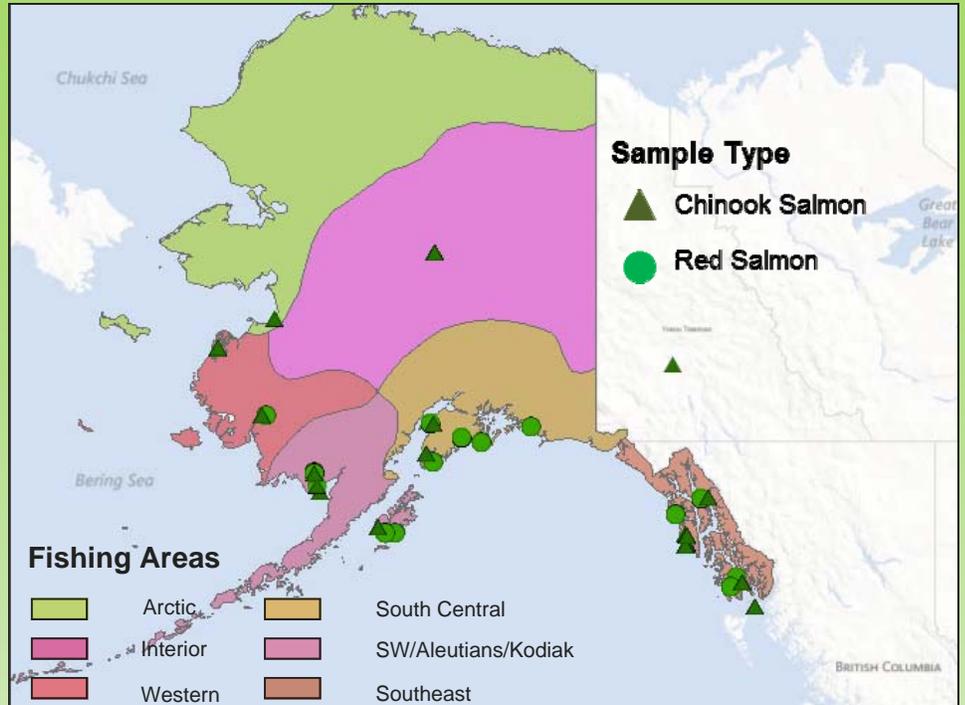
Environmental Contaminant Monitoring in Alaska Fish

Project Manager: Bob Gerlach
Project Dates: Jul. 2009-May 2016
Total CIAP Funding: \$2,075,000

This project assesses the impact of environmental contaminants on the coast and marine ecosystems in Alaska's oceans by testing muscle tissue and homogenized whole fish from a variety of fish species. The primary source of these contaminants is long-range transport from distant sources, primarily industrial regions of Asia.

Atmospheric conditions, weather patterns, and ocean currents carry the contaminants such as Polychlorinated Biphenyls (PCBs) congeners, dioxins, furans, brominated fire retardants Polybrominated Dipenyl Ethers (PBDEs), and heavy metals such as mercury. However, local contamination can occur secondary to industrial development projects; mining, solid waste disposal sites and accidental discharges. The adverse biological effects on the marine ecosystem from exposures to these contaminants can range from altered growth and development and reduced reproductive capacity to decreased resistance to infection and disease. They will also impact the endangered marine mammals and seabirds that feed on marine life and specifically the fish.

Fish are collected from fresh water, surface waters that drain into coastal waters, and marine waters that comprise the coastal ecosystem. Coastal and marine areas of specific interest include: Norton Sound, the Yukon and Kuskokwim Rivers, Bristol Bay, Prince William Sound, and the waters around Juneau and Ketchikan in Southeast Alaska. Global Positioning Satellite (GPS) coordinates and other relevant location



Alaska DEC Fish Tissue Mercury Samples by Site

This map displays the location of lab samples taken to measure levels of mercury found in Red and Chinook salmon. Sample types shown above are safe for unlimited human consumption. <http://dec.alaska.gov/eh/vet/FishTissueSampling.html>

information will be recorded for collection sites and the results mapped. This will allow for a spatial comparison of contaminants in separate fish populations, as well as for accurate re-sampling in the future.

The CIAP funding for this project supports the Department of Environmental Conservation's (DEC) ongoing Fish Monitoring Program. The data collected is evaluated to determine if the current level of contaminants in the fish have any implications to other components of the coastal ecosystems. The data can be used to compare the environmental quality guidelines that have been developed by various organizations for the protection of aquatic life and fish-eating wildlife. These guidelines have been derived using estimated contaminant concentrations rather than analytical data. Information from this program could be used to identify the threshold for effects

in sensitive fish-eating wildlife species, as well as the specific bioaccumulation and biomagnification rates of particular substances.



A fish sample being processed at the DEC lab in Anchorage.

Geographic Response Strategies

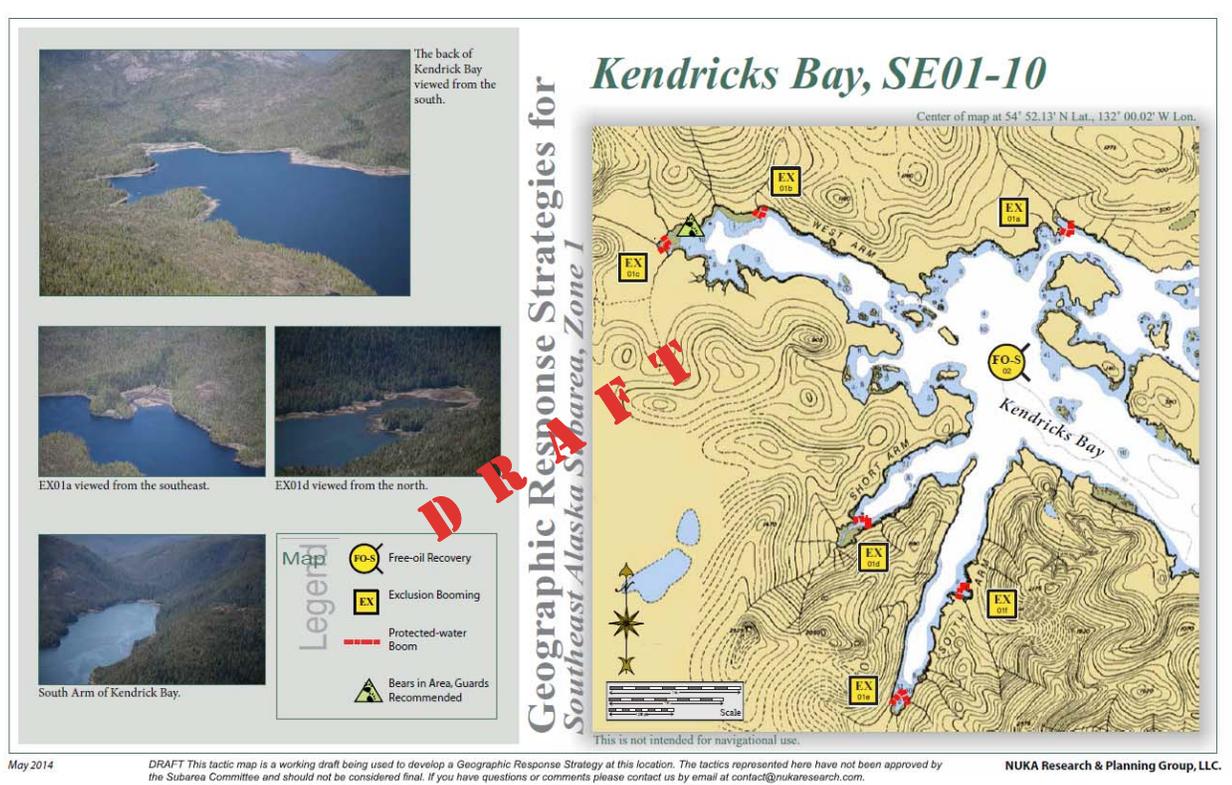
Project Contact: Rick Bernhardt
Project Dates: Oct. 2012-Jun. 2015
Total CIAP Funding: \$510,400

This project will fund the development of Geographic Response Strategies (GRS), consistent with pre-identified spill response tactics for protecting critical coastal and shoreline areas in the event of an oil spill and Nearshore Operations Response Strategy (NORS) to intercept the oil in nearshore waters prior to shoreline impact. GRS and NORS serve as key tools to rapidly respond to an oil spill and deploy the necessary equipment.

CIAP funds will be used to develop over 300 GRS documents for Western Alaska, Bristol Bay, Southeast Alaska, Northwest Arctic and the Aleutian Islands. Each GRS includes maps with bathymetry and photographs of the GRS site(s) and provides detailed information for deployment strategies for each tactic, sensitive resources in the area, contact information, and physical characteristics of the site (prevailing winds, tides, currents, ice issues, etc.)

The NORS will initially focus on the Arctic but will develop a model that will be applicable to all coastal areas. The NORS, combined with the GRS, offer greater preparedness in the event of an oil or hazardous substance spill.

Right. An example of a GRS draft tactic map. The goal of GRS documents is to develop action plans to minimize the time involved to decide on appropriate response tactics and consequently minimize the potential for an oil or hazardous substance spill to impact critical fish, wildlife and natural resource habitat. The GRS focuses on specific priority sites along the shoreline.



Spill Response Initiative Projects

The Department of Environmental Conservation received funding for a suite of local and regional spill prevention and response planning projects:

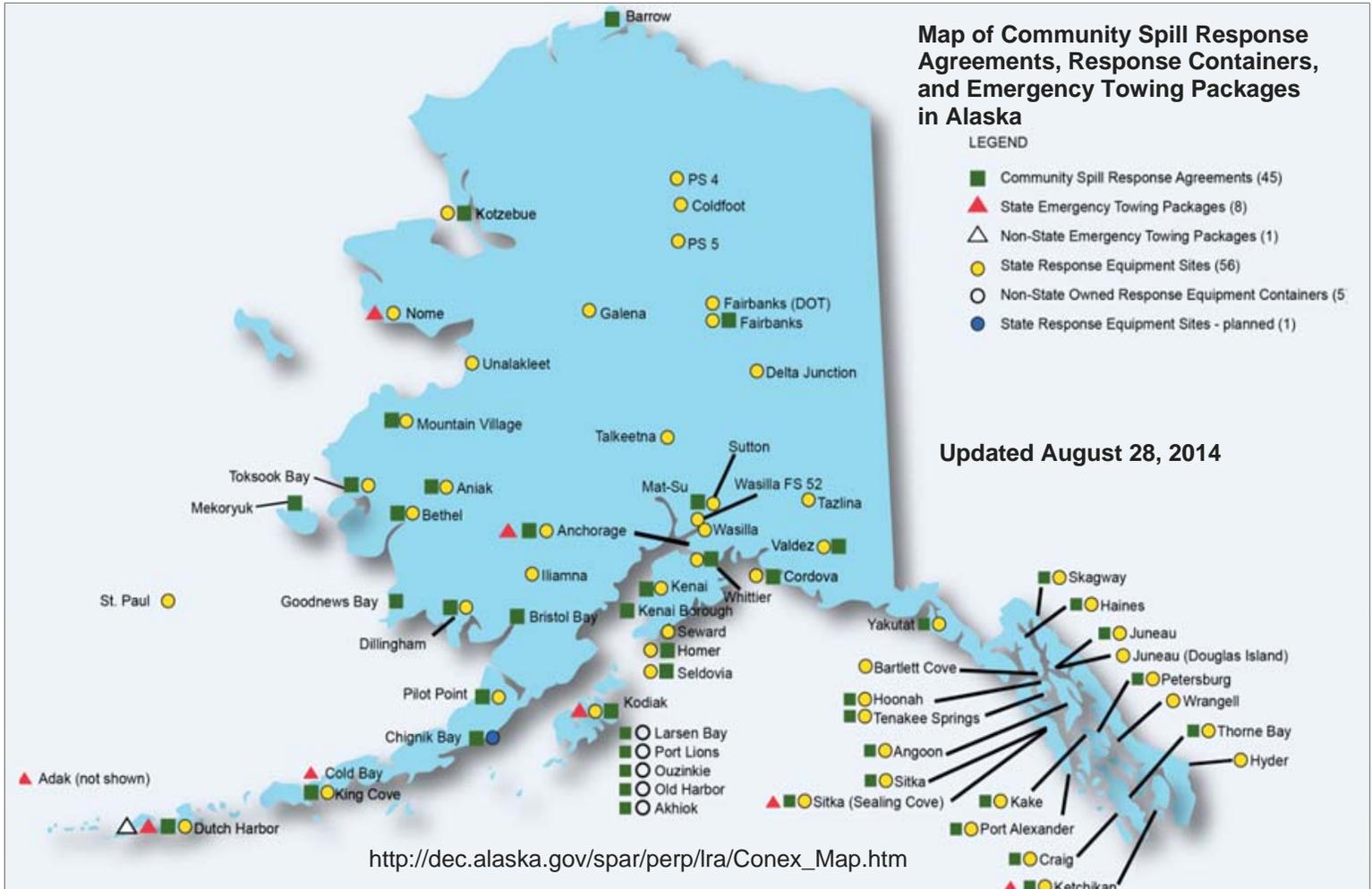
- Geographic Response Strategies (GRS).
- *Coastal Community Spill Response Enhancement* project strengthens local spill response capacity by purchasing, pre-positioning and maintaining spill response containers and response equipment, and maintaining a trained cadre of personnel at the local level. [See page 5 of this issue.](#)
- *Potential Places of Refuge (PPOR)* project includes identification of potential places of refuge for disabled vessels. [See page 6.](#)
- *Emergency Towing System (ETS)* project includes the purchase of ETS packages for immediate deployment in the event a large vessel sustains loss of power or steering, and requires an emergency tow to preclude grounding on Alaska's coastline. [See page 7.](#)

The overall goal of the four inter-related projects is to protect Alaska's pristine coastline from the impacts of an oil or hazardous substance release.

For more info:

<http://dec.alaska.gov/spar/perp//grs/home.htm>

Coastal Community Spill Response Enhancement



Project Contact: Rick Bernhardt
Project Dates: Sep. 2010-2015
CIAP Funding: \$200,000

Due to the vast size of the state of Alaska and the remote location of many of its communities, local residents are frequently the first line of defense in responding to oil and hazardous substance releases. This project includes enhancing local spill response capacity by purchasing and pre-positioning and maintaining spill response containers and response equipment, and maintaining a trained cadre of personnel at the local level. Previous vessel groundings on Alaska's coastlines have caused major environmental damage.

By improving the state response system and enhancing the overall

spill response capability, this project will protect coastal areas from the effects of oil spills as well as mitigate potential damage to fish, wildlife, and other natural resources.

CIAP funds were used to purchase containers and response equipment for the following locations:

- Pilot Point
- Kotzebue
- Nome
- Seward
- Chignik Bay
- St. Paul Island

Each location has a container filled with equipment and materials needed to respond to a hazardous spill. DEC trains local responders to properly use the equipment, provides maintenance and restocks the containers as needed.



Above. Prepositioned response containers for Nome.

Below. Interior of a container.



Potential Places of Refuge

Completed CIAP Project!

Project Contact: Rick Bernhardt
Project Dates: Jul. 2010-Jun. 2012
Total CIAP Funding: \$75,000

Alaska's local communities and pristine coastal environment could be significantly impacted if marine spills are not responded to and contained immediately. With the increased risk of vessel accidents/incidents, the need for pre-identified potential places of refuge, geographical response strategies, pre-positioned emergency towing systems, and enhanced local spill response capabilities is critical.

The first line of defense will be to take a distressed vessel under emergency tow to a pre-identified place of refuge. If a spill occurs, the pre-developed geographic response strategies will be used by trained and equipped local spill responders to protect critical sensitive areas and minimize the impact to Alaska's coastline. Without these local and regional spill response enhancements, a stricken vessel could possibly run aground, and the ensuing oil and hazardous substance spill could result in catastrophic and long-term damage to Alaska's coastline. By improving the state's response system and reducing the risk of oil spills, this project both protects coastal areas from the effects of coastal oil spills as well as mitigate potential damage to fish, wildlife and other natural resources. The CIAP funded portion of this larger DEC project identified potential places of refuge (PPOR) for disabled vessels



Above. A map showing the Alaska's 10 PPOR subareas. For more information on the PPOR plans, use this link: <http://dec.alaska.gov/spar/perp/ppor/home.htm>

and created PPOR documents for coastlines of the North Slope, Northwest Arctic, Bristol Bay and Western Alaska subareas.

The planning and response documents will guide decision-making and rapidly implementing spill response tactics in the event of a spill threatening the coastline. This pre-planned action minimizes the time involved to decide on appropriate response tactics, and consequently minimizes the potential for an oil or hazardous substance spill to impact critical fish, wildlife, and natural resource habitat.

The large size of the North Slope Subarea made it necessary to further divide it into three smaller zones. The zones are reflective of the "response zones" to aid in the organization of response efforts. This is the PPOR plan for Zone 2. For more information on the North Slope PPOR Plans use this link: <http://dec.alaska.gov/spar/perp/nspor/index.htm>

Stakeholders for PPOR Zone 02 of the North Slope Subarea			
Year-2011	Contact	Year-2011	Contact
Bureau of Land Management - ANCSA / Public Lands	Arctic Field Office Manager	North Slope Borough	Mayor
Arctic National Wildlife Refuge	Refuge Manager	Arctic Slope Regional Corporation	President / CEO
Alaska Department of Natural Resources	State Historic Preservation Officer	Alaska Eskimo Whaling Commission	Executive Director
Native Allotments	Dept of the Interior-Regional Environmental Officer	City of Barrow	Mayor
		City of Wainwright	Mayor

North Slope SUBAREA

Map

Location

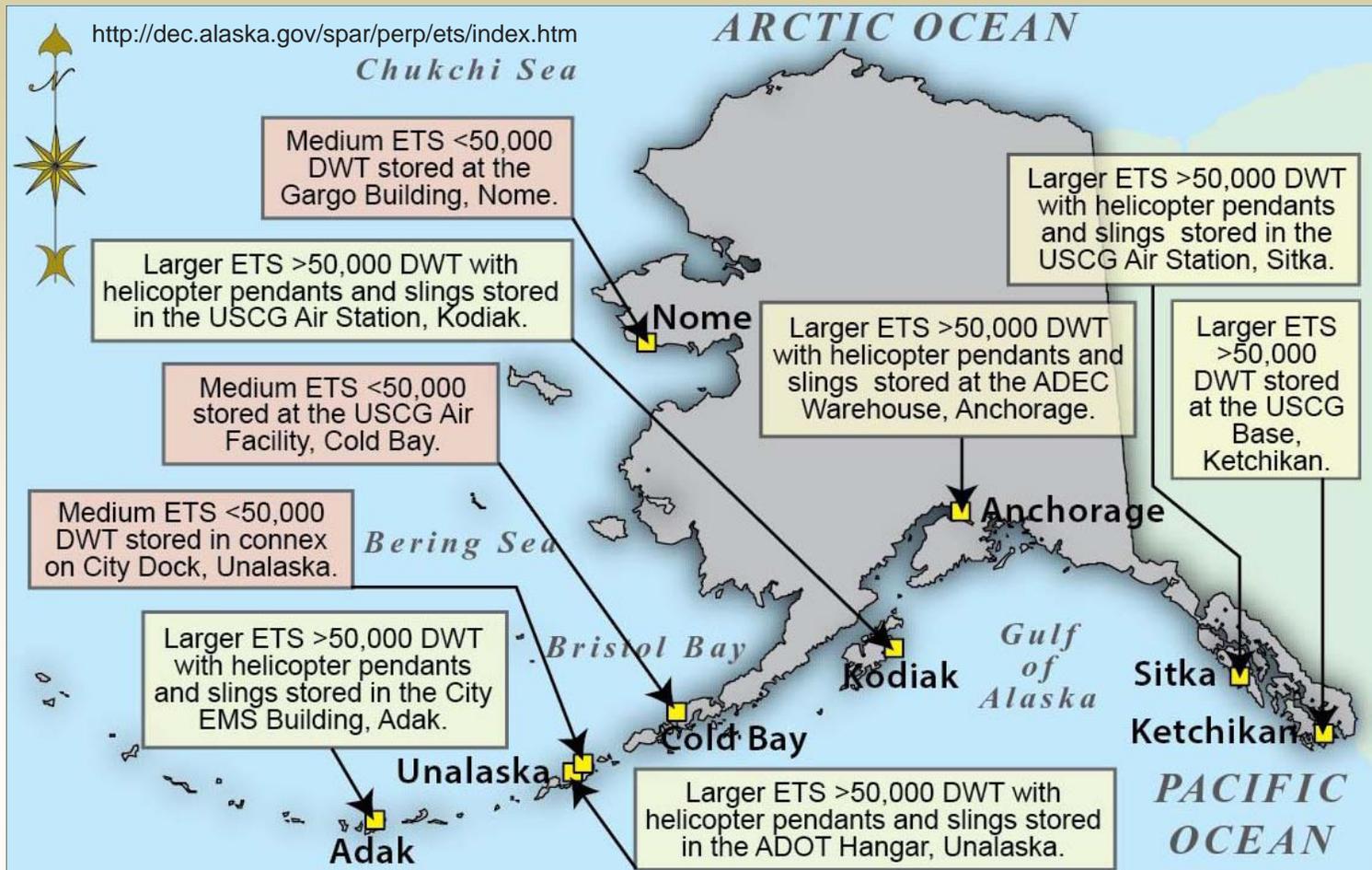
- Anchorage
- Mooring
- Dook/pier
- Crane
- Airport
- Consult ACS Tech Manual
- Private Cabins
- Public Use Cabins
- Boat Harbor

North Slope PPOR Map 02

USGS 1:1,587,870 Quadrangle Map Reference - Arctic Coast Map 16003_1

Emergency Towing Systems

Completed CIAP Project!



Map of ETS Location Sites

Project Contact: Rick Bernhardt
Project Dates: Jul. 2010-Jun. 2013
Total CIAP Funding: \$250,000

The Emergency Towing System (ETS) program came into existence following the near grounding of the SALICA FRIGO on March 9, 2007 in Unalaska Bay. The Mayor of Unalaska convened a Disabled Vessel workgroup to address the possibility of future groundings and to discuss local emergency response solutions. This initial meeting prompted the ETS workgroup, whose goal was to develop emergency towing capabilities for disabled vessels in the Aleutian Subarea using locally available tugboats in conjunction with ETS equipment stationed in Unalaska.

The ETS consists of a tow line capable of towing a distressed ves-

sel, a messenger line to assist in deploying the tow line, lighted buoy, and chafing gear. There are currently two sizes of ETS utilized in Alaska. The larger size (10 inch tow line) is capable of towing vessels greater than 50,000 deadweight tonnage (DWT). The smaller system (7 inch tow line) can tow vessels less than 50,000 DWT. Additionally the messenger line is capable of towing vessels under 2000 DWT.

The ETS may be deployed from the stern of a rescue tug, or lowered to the ship's deck via helicopter. CIAP funds purchased and stored 10-inch Emergency Towing Systems for Sitka, the Navy Supervisor of Salvage warehouse at Fort Richardson, and Ketchikan. An additional system (7 inch) was purchased for Nome.



Above. DEC readying a 10" tow line.
 Below. Tug to ship ETS deployment.



Alaska Clean Harbors: Educating for Long Term Pollution Reduction for Alaska's Harbors

Project Contact: Rachel Lord
Project Dates: Jul. 2011-Aug. 2015
Total CIAP Funding: \$282,615

Alaska's harbors are the gateway through which hundreds of thousands of recreational and commercial boaters access Alaskan waters every year. These 100+ harbors (nearly all owned by local municipalities) also pose some of the most vexing pollution and environmental protection issues facing the state, including spills of boat-based oils and fuels, dumping of batteries and plastics, and unregulated boat maintenance activities that contaminate coastal habitats with potentially toxic bottom paints.

This project will work directly with harbors throughout the state to address these issues and begin making changes to protect Alaska's coastal environment with an understanding of the importance of our commercial and recreational fisheries to our communities and our economy.

Clean Harbor certification, a primary tool used in this project for pollution reduction, is a voluntary process that encourages the use of best management practices at harbor facilities in order to reduce the production of point and nonpoint source pollution and mitigate environmental effects. A Clean Harbor Pledge is signed by harbors that are actively working towards certification. Alaska Clean Harbor staff and volunteers then work with harbor staff to implement best management practices and monitor pollution reduction through this process.

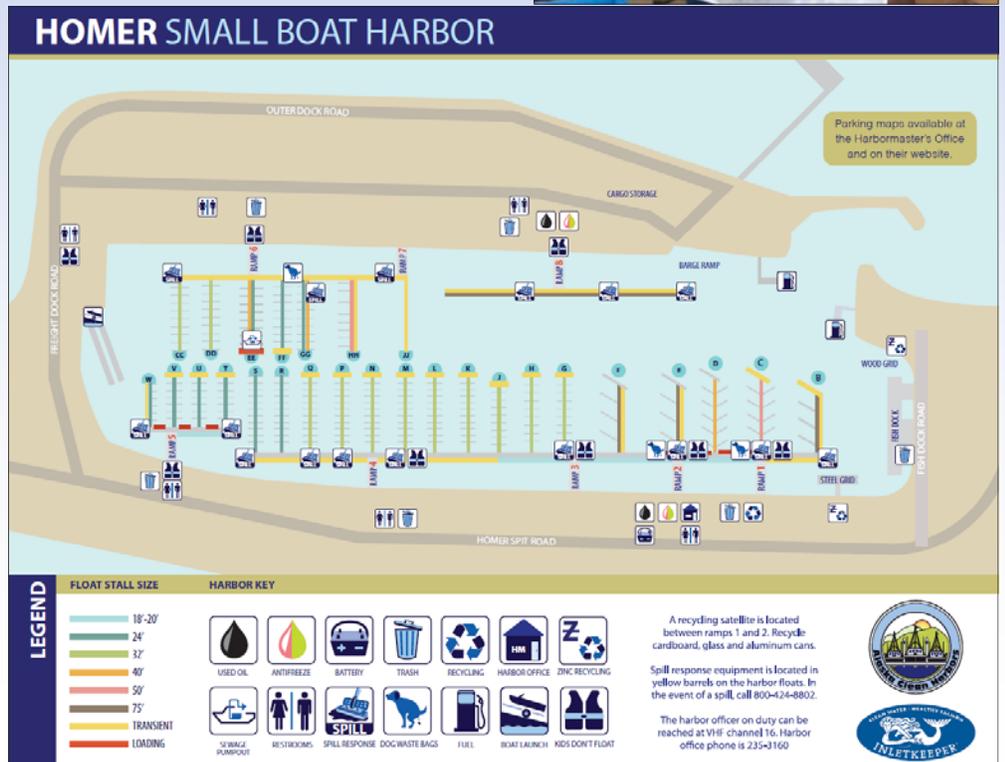
Right, A harbor map created by the Alaska Clean Harbors project for the City of Homer that directs boaters on waste disposal, sewage dumps, restroom and shower facilities, etc. The reverse side of the map lists important harbor information including basic rules and practices, contact information and details regarding the harbor's services and amenities. Each participating harbor will develop a map during the certification process.



Above, Portage Cove Small Boat Harbor in Haines.



Right, Stephanie Scott (Haines Borough Mayor), and harbor staff receiving their Clean Harbors certification.



Educational Pamphlet: Protecting Coastline and Wildlife from Fuel and Oil Debris

Project Dates: Jul. 2011-Jul. 2012
Budget: \$16,000
Project Manager: Anne Bailey

There are approximately 500 commercial fishing vessels working the Aleutians East Borough's (AEB) waters and accessing the harbors and coastal facilities in the region. The AEB has identified fuel spills and the improper disposal of plastics and other materials as a hazard that affects the regions coastline and wildlife. Providing an educational pamphlet to the commercial fishing operators and public is an effective strategy to address the effects oil and debris have on the coastline and wildlife and provide information on prevention technologies and techniques.

Under the direction of the AEB administrator and natural resources director, a pamphlet was developed to address the effects fuel oil has on wildlife; the way commercial fishing operators can prevent and reduce fuel spills, it explains that the discharge of oil is illegal; and addresses the effects the disposal of plastics and other

Completed CIAP Project!



The front cover of the pamphlet developed by AEB.

materials in the ocean have on the surrounding coastline and wildlife.

The pamphlets were distributed to the known commercial fishing vessels and are available to the public at the Akutan Harbor, False Pass Harbor, King Cove Harbor, Sand Point Harbor and all City offices in the region and on the AEB website commercial fisheries link at www.aleutianseast.org.

cps project summary

Recreation Area Sanitation



The seasonal toilet facility in Hope is open June–September, providing services for thousands of visitors in a sensitive riparian and coastal area.

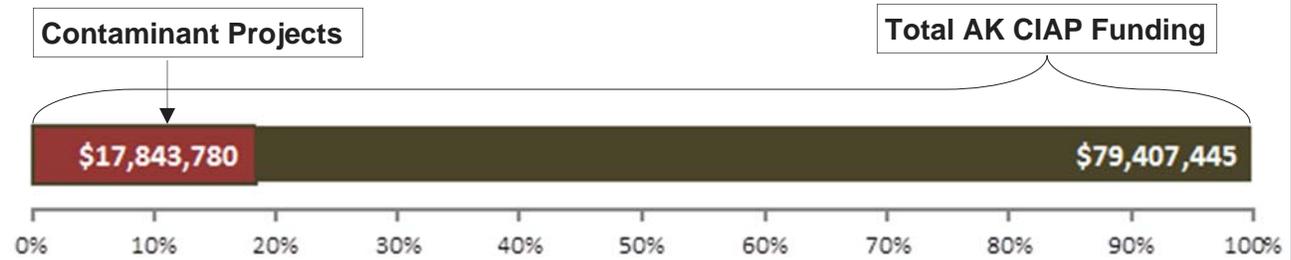
Kenai Peninsula Borough

Project Dates: Mar. 2011-Dec. 2013
Budget: \$36,272
Project Manager: Tom Dearlove, tdearlove@borough.kenai.ak.us

This project provides for the collection of waste during periods of high visitor counts in the community of Hope and at the Kenai River Center. Hope is a seaside community with no public waste disposal system so this effort is an attempt to avoid the habitat damage (litter and random human waste disposal) that has been recorded at other popular ocean side recreation areas such as the mouth of the Kasilof and Kenai Rivers.

The Kenai River Center provides one of the most highly utilized recreational fishing access points on the Kenai River. Waste collection here is of critical importance in the conservation and protection of coastal environments.

Alaska CIAP Contaminant Investigation and Removal Projects



CIAP Funding: Direct to CPSs		Project Budget
Municipality of Anchorage		
Ship Creek Water Quality Improvements		\$ 600,000.00
Bristol Bay Borough		
Preliminary Fish Wastes Disposal Study		\$ 21,804.00
Kenai Peninsula Borough		
Adopt-A-Stream Program		\$ 209,272.00
Recreation Area Sanitation		\$ 36,272.00
River Debris Removal		\$ 49,272.00
Kodiak Island Borough		
Metal Debris and Household Hazardous Waste Clean Up and Removal from Communities in the KIB		\$ 2,187,452.00
Lake Peninsula Borough		
Lake and Peninsula Borough Scrap Backhaul Project		\$ 976,521.00
Northwest Arctic Borough		
Protecting Coastal Areas through Region-wide Waste Management Improvement		\$ 758,004.00
Protection of Coastal Areas from Marine Debris		\$ 107,262.00
CIAP Funding: Direct to State		Project Budget
Local and Regional Spill Prevention and Response Planning (DEC)		\$ 1,035,400.00
Stikine and Taku Rivers Mining Activity Risk Assessment (DFG)		\$ 58,000.00
Fish Monitoring Program (DEC)		\$ 2,075,000.00
Alaska Monitoring and Assessment Program - Chukchi Sea Coastal Survey (DEC)		\$ 2,423,940.00
Hydrocarbon Contaminant Assessment of Pribilof Island Rock Sandpipers in Cook Inlet (DFG)		\$ 136,400.00
WEAR (DEC)		\$ 1,400,000.00
Offshore Oil/Gas Wastewater Study (DEC)		\$ 350,000.00
Mercury Deposition (DEC)		\$ 250,000.00
Net and Debris Removal in Key Locations in the Waters Associated within KGB (Oceans Alaska)		\$ 61,500.00
Alaska Clean Harbors: Educating for Long-term Pollution Reduction for Alaska's Harbors (Cook Inletkeeper)		\$ 282,615.00
Alaska Marine Debris Removal and Assessment (Marine Conservation Alliance Foundation)		\$ 988,562.00
White Mountain River/Bay Clean-Up (City of White Mountain)		\$ 6,210.00
Seward NE Harbor Fish Cleaning Station (City of Seward)		\$ 579,000.00
Fish Waste Compost Project for Improved Nushagak Watershed Environment (UAF)		\$ 81,189.00
Educational Pamphlet: Protecting the Coastline and Wildlife from Fuel Oil and Debris		\$ 16,000.00
New Stuyahok Landfill Improvement to Protect the Coastal Environment		\$ 11,700.00
Improving Waste Disposal to Protect Coastal Areas:- An Education and Implementation Project		\$ 156,181.00
Protecting Coastal Areas through Waste Management Improvement		\$ 85,692.85
Yukon-Kuskokwim Clean Coast Initiative-Solid Waste Assessment, Best Practices Training, and Clean Up		\$ 2,472,650.00
Debris Clean-up from Ward Cove Dock		\$ 342,188.00
Skagway Small Boat Harbor Improvement – Phase B		\$ 85,693.00
Total \$ of all Alaska CIAP Contaminant Removal Projects		\$ 17,843,780