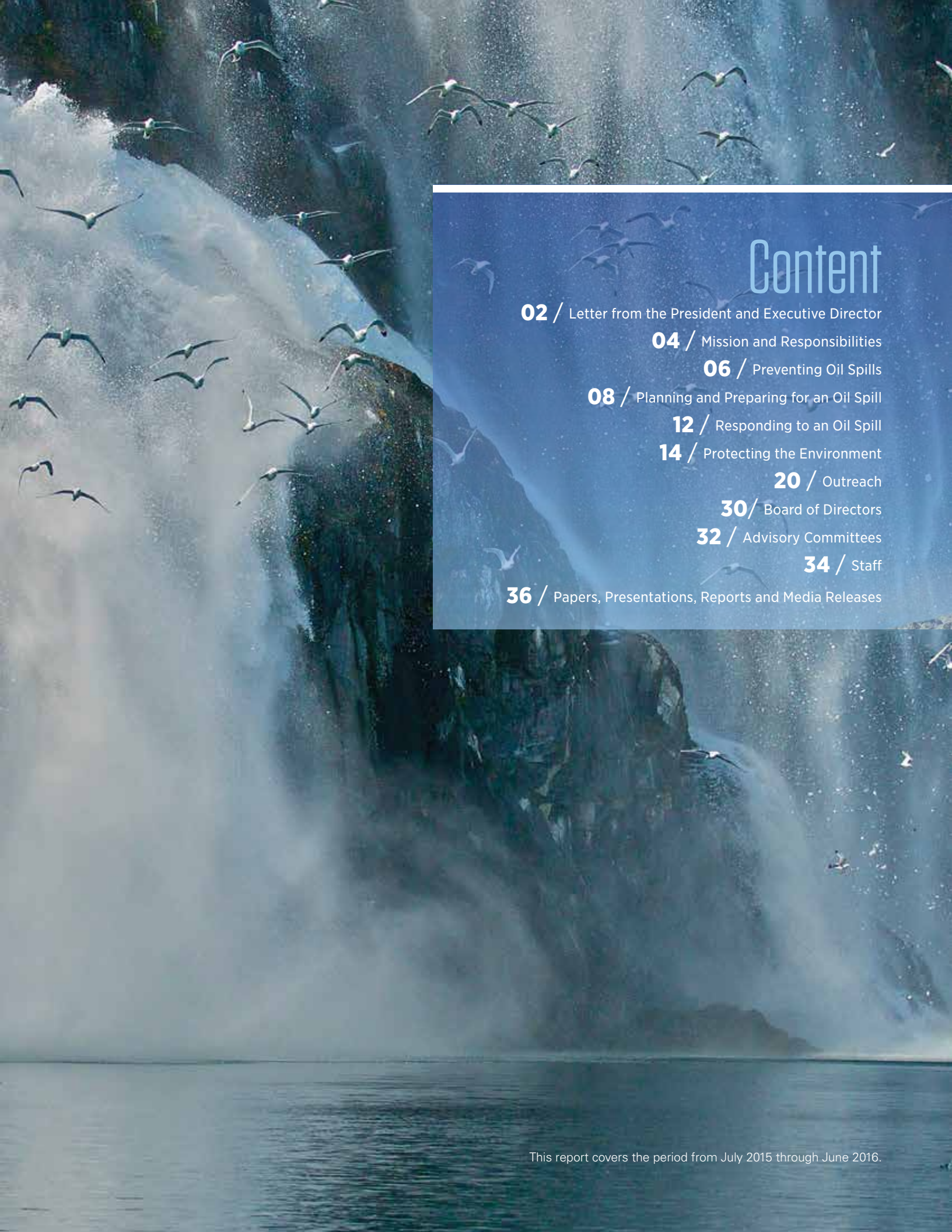
2015–2016 REPORT TO THE STAKEHOLDERS

CITIZENS PROMOTING ENVIRONMENTALLY SAFE OPERATION OF THE ALYESKA TERMINAL AND ASSOCIATED TANKERS

PRINCE WILLIAM SOUND RCAC

Regional Citizens' Advisory Council



Content

This report covers the period from July 2015 through June 2016.

Letter from the President & Executive Director

DONNA SCHANTZ
Executive Director

AMANDA BAUER
President of the Board of Directors

We dedicate this edition of the annual report to all those who came before us and worked tirelessly to put safety measures in place since the 1989 oil spill to protect Prince William Sound. We also recognize those who are continuing the journey by carrying the mission forward.

In 1990, just after the worst oil spill the U.S. had ever seen, Congress was tasked with creating legislation that would prevent such a disaster from happening again. One goal of the resulting legislation, the Oil Pollution Act of 1990, was to foster long-term partnership and build trust between industry, government, and local communities. To help accomplish this, the Act mandated regional citizens' advisory councils to help monitor the oil industry in Prince William Sound and Cook Inlet.

Great visionaries began this experiment in building partnership and trust. While some of these people are no longer with us, we still share the vision that motivated them.

Today, the council still works to find common ground between citizens, the oil industry, and regulators in order to develop the trust necessary to build and maintain the safest marine transportation system in the world. For example, this past year representatives from Alyeska Pipeline Service Company joined council staff, 90 Seward residents, and local media on a public tour to show how the oil industry trains mariners to respond if there should be another oil spill. Read more about that tour on page 23.

THE YEAR AHEAD

CHANGES TO THE ESCORT SYSTEM REQUIRE PARTNERSHIP

The future of the system of escort and oil-spill response tugs and barges in Prince William Sound is perhaps the most crucial issue we face in the immediate future. Alyeska recently announced it is hiring a new contractor to provide these important oil spill prevention and response services. Crowley Marine Services has held the contract since 1995, and has provided docking services for oil tankers at the Valdez Marine Terminal since start-up in 1977. As of June 2018, the new contractor will be Edison Chouest Offshore.

This transition must be handled carefully, as it will entail extensive training for new crews on complex equipment in the challenging, and potentially unfamiliar, environments of Prince William Sound and the Gulf of Alaska.

While our concern is heightened over the coming changes, we are dedicated to working with Alyeska, regulators, and the new contractor, to develop the trust and partnership that will make sure the highest of standards of care are preserved for oil spill prevention and response in Prince William Sound and the Gulf of Alaska.

OTHER CHANGES

In this report, we focus on the work we have done this year to monitor and advise industry and regulators on oil spill prevention and response plans as well as changes to government policies, permits, and regulations. We have also shared our recommendations to improve safety, environmental protections, and the process for citizen involvement with our industry and government partners. Some of our concerns included in this report include:

- A recent proposal by the federal and state group that plans oil spill response in Alaska that could have weakened how the public gets information and provides input during an oil spill response.
- Low oil flow through the trans-Alaska pipeline has resulted in a severe reduction in state revenue, leading to serious budget problems. Major efforts to cut costs include changes to staff and a reduction in the number of oil spill drills and exercises.

We have also seen some positive changes, such as:

- An update to the dispersant use plan for Alaska that had not been updated since the Exxon Valdez oil spill.
- Alyeska has embarked upon a major effort to internally inspect all of the underground piping at the Valdez Marine Terminal, some of which had not been inspected since the terminal was built in the 1970s.

Other good news, as well as issues of concern, can be found elsewhere in this report.

The lack of crude oil spills in Prince William Sound since 1989 should be celebrated as a sign that the partnership envisioned after the Exxon Valdez spill has been a success. It indicates that the prevention measures put in place since then have been effective. Even the best of systems can be improved, so now, more than ever, we at the council will remain vigilant, and work together to combat the complacency identified as a root cause of the Exxon spill.

> "...many people believe that complacency on the part of the industry and government personnel responsible for monitoring the operation of the Valdez terminal and vessel traffic in Prince William Sound was one of the contributing factors to the Exxon Valdez oil spill..."
>
> "...only when local citizens are involved in the process will the trust develop that is necessary to change the present system from confrontation to consensus..."
>
> FROM OIL POLLUTION ACT OF 1990

MISSION AND RESPONSIBILITIES

The Prince William Sound Regional Citizens' Advisory Council is an independent non-profit corporation guided by its mission: citizens promoting environmentally safe operation of the Alyeska terminal and associated tankers. The council was formed after the Exxon Valdez oil spill to provide a voice for citizens affected by decisions related to the Alyeska pipeline in Valdez and the oil tankers that use it.

The council's 18 member organizations are communities in the region affected by the 1989 Exxon Valdez oil spill, as well as Alaska Native, aquaculture, commercial fishing, environmental, recreation, and tourism groups.

Consistent with its mission, the council's structure and responsibilities stem from two documents. The first is a contract with Alyeska Pipeline Service Company, which operates the trans-Alaska pipeline as well as the Valdez Marine Terminal. Most of the council's operating funds come from this contract.

The second guiding document, passed after the council was created, is the Oil Pollution Act of 1990 (the Act), which required citizen oversight councils for Prince William Sound and Cook Inlet. Their purpose is to promote partnership and cooperation among local citizens, industry, and government; to build trust; and to provide citizen oversight of oil terminals and tankers.

The Act allows pre-existing organizations to fulfill the requirement for citizen oversight, which our council has done for Prince William Sound since 1990. Each year, the U.S. Coast Guard certifies that the council fosters the general goals and purpos-

PURPOSE OF CITIZEN OVERSIGHT COUNCILS

PROMOTE PARTNERSHIP & CO-OPERATION

BUILD TRUST

PROVIDE OVERSIGHT OF ENVIRONMENTAL COMPLIANCE

COUNCIL'S ROLE

es of the Act and is broadly representative of the communities and interests as envisioned in the Act.

The council's contract with Alyeska predates the Act, but the similarities in the powers and duties given the council in the two documents are not coincidental. Many people who helped establish the council also promoted citizen involvement requirements in the federal law.

FUNCTIONS

In accordance with the provisions of the two documents, the council performs a variety of functions aimed at reducing pollution from crude oil transportation through Prince William Sound and the Gulf of Alaska:

- We monitor, review, and comment on oil spill prevention and response plans prepared by Alyeska and shipping companies moving oil through Prince William Sound.
- We monitor, review, and comment on the environmental protection capabilities of Alyeska and the tanker operators, as well as on the environmental, social, and economic impacts of their activities.
- We review and make recommendations on government policies, permits, and regulations relating to the oil terminal and tankers.

As part of these undertakings, the council regularly retains experts in various fields to conduct independent research and technical analysis on issues related to oil transportation safety.

The Alyeska contract also calls for the council to increase public awareness of the company's capabilities for oil spill prevention and response and environmental protections, as well as the actual and potential environmental impacts of terminal and tanker operations. The contract states that the council may work on other related issues not specifically identified when the contract was written.

FUNDING

The council was initially funded at $2 million a year. The funding is renegotiated every three years; current Alyeska funding is approximately $3.6 million a year.

Although the council works closely with and is funded chiefly by Alyeska, the council is an independent advisory group. The contract is explicit: "Alyeska shall have no right…to have any degree of control over the formation or operation of the corporation."

Pictured on left: Board members in Kodiak for annual September meeting. Each year the council meets in Valdez and Anchorage, and rotates through one of seven communities affected by the Exxon Valdez oil spill.

PREVENTING OIL SPILLS

To ensure a maximum level of safety, the council reviews all aspects of the oil transportation system in Prince William Sound. These include operations of oil tankers and the Valdez Marine Terminal, oil spills and other incidents, and the adequacy and maintenance of the Coast Guard's Vessel Traffic Service.

WEATHER AND CLIMATE RESEARCH IN PRINCE WILLIAM SOUND

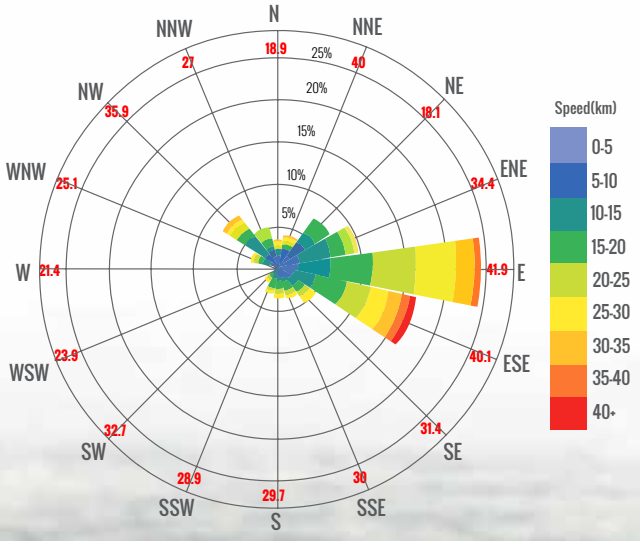
Weather and climate have a larger impact on maritime operations in Prince William Sound every year. Accurate forecasts are critical when making decisions about oil transport, terminal and port activities, spill planning, spill drills, and spill cleanup. Wind, waves, sea currents, and other environmental factors can affect the safe navigation of vessels and the ability to prevent, respond to, contain, and clean up an oil spill.

The council has been working closely with weather scientists at the University of Alaska Anchorage's Experimental Forecast Facility. The facility's researchers help us with accurate accounts of climate conditions.

EFFECTS OF WIND ON SAFE MOORING LOCATIONS AND SPILL RESPONSE

In one current project, the university's forecast facility is studying potential safe mooring locations for a disabled tanker. They are developing two weather-related products. The first is to develop three different scenarios that reflect "typical" wind patterns found in the Sound. These scenarios can be replicated in the ship bridge simulator to train students.

The second part of the effort is to develop graphics that show historic wind data, termed "wind roses."



Wind roses like the one above can help determine where a disabled tanker or oil slick is likely to move at a particular time of year.

These wind roses are based on five years of historic climate data and give a graphical depiction of the prevailing winds in both magnitude and direction. Thirty-two sites were evaluated in the Sound for each of the four seasons and for the entire year.

MESOSCALE METEOROLOGY

In another partnership with the university's forecast facility, the council is helping develop "mesoscale" weather models for Prince William Sound. Mesoscale meteorology studies the atmosphere at scales of five to 5,000 miles, a finer scale than traditional weather forecasting. Most of the weather phenomena of interest to mariners occurs at this scale. This mesoscale modeling provides easy-to-understand graphic depictions of weather forecasts in the Sound.

WEATHER MONITORING

The council operates weather stations at Cape St. Elias and Nuchek, runs a satellite-based camera at Nuchek, and supports four mesoscale weather forecasts daily in Prince William Sound. The data from these projects can help make informed decisions and give scientifically justified advice to our industry and government agency colleagues.

HOW FAR MIGHT A TANKER DRIFT WITHOUT POWER?

The council collaborated with the university's forecast facility and naval architects from the firm Robert Allan Ltd. to evaluate the distance and direction, under various weather conditions, that a disabled tanker could drift before running aground at the Hinchinbrook Entrance.

Two tugs are required to escort loaded tankers through Hinchinbrook Entrance. After the tanker leaves Prince William Sound, one tug remains as a sentinel, or rescue tug. That tug stays stationed near the entrance until the tanker is 17 miles out to sea, and is an important measure to prevent a spill in the narrow passage of Hinchinbrook Entrance and in the Gulf of Alaska.

This project will help the council make recommendations to the industry and regulatory agencies about:

- Performance capabilities of the rescue tug stationed at Hinchinbrook Entrance
- Improvements to the tugs' firefighting and towing capabilities
- The rescue tug's distance from a tanker as well as its position and location during poor weather at Hinchinbrook Entrance.

PLANNING AND PREPARING FOR AN OIL SPILL

The council and our industry and regulatory counterparts devote considerable resources to preventing oil spills, and reducing the likelihood of another spill, but the risk cannot be eliminated entirely. A quick and effective response must be ready if prevention measures fail.

State and federal laws require operators of oil tankers and the Valdez Marine Terminal to prepare detailed plans showing how they will respond to oil spills should prevention measures fail. The council devotes significant resources to ensure plans are in place to prevent and respond to spills both in Prince William Sound and at the terminal. Other planning and preparedness efforts of interest to the council include the Alaska Regional Response Team and associated committees, as well as government response plans for Prince William Sound, Kodiak, and Cook Inlet.

The council promotes compliance, enforcement, and funding for state and federal regulations and oversight. Along with local communities, the council encourages incorporating local knowledge of sensitive areas into contingency planning.

UPDATES TO OIL SPILL CONTINGENCY PLAN FOR THE TERMINAL AND TANKERS

During the past year, the council reviewed and submitted comments on changes to the oil spill contingency plan for the Valdez Marine Terminal on how a response would proceed. The contingency plan covering the terminal is valid until 2019.

The council is currently reviewing and providing feedback on a proposed updated to the spill contingency plan for oil tankers in Prince William Sound. That plan is up for renewal in 2017. The first public review period began in May, and contained modifications due to the introduction of a new, improved type of oil skimmer that is more efficient. The council's review focuses on availability of equipment and personnel to respond to a spill.

EDUCATING OUR STAKEHOLDERS ABOUT OIL SPILL MANAGEMENT

The council continued a series of community workshops this year to educate stakeholders about how large oil spills are managed, and how communities can interact with response leaders to stay informed and share their concerns during a large incident.

These workshops cover the basics of the incident command system. This system, first developed in the 1970's to manage rapidly moving wildfires, is a standardized structure that has been adopted to manage a variety of emergencies and incidents. The workshop instructors describe the process as it pertains to oil spills, and how stakeholders fit into the system.

The workshop also covers the various responding agencies' roles and jurisdictions, current prevention and response capabilities in Prince William Sound, and how these have improved since 1989. Workshop participants included city officials such as mayors, harbormasters, city managers, local emergency responders, and representatives from local agencies and other non-profits who would be affected by a spill or large incident. This year, workshops took place in Kodiak and Valdez.

Crucial Skimmer

According to recent testing, this new type of skimmer is more efficient than older weir skimmers, meaning less water will be skimmed up along with the crude oil. This means less storage would be needed for the oil/water mix collected from oil spills.

MONITORING ALYESKA'S SPILL RESPONSE PROGRAM FOR FISHING VESSELS

The council met with a group of mariners who are under contract with Alyeska's Ship Escort/Response Vessel System, or SERVS, to train and help respond in case of an oil spill. The group discussed the general health of the program, and any concerns or topics of relevance with the fleet. The fishermen represented the ports of Kodiak, Homer, Seward, Whittier, Cordova, and Valdez.

Other topics included the upcoming review for the tankers' oil spill contingency plan, the transition of the spill response contract from Crowley to Edison Chouest, and council projects such as spill surrogates (see page 13) and mesoscale weather modelling (see page 7).

EVALUATING ALASKA NORTH SLOPE CRUDE OIL FOR SPILL RESPONSE PLANNING

Properties of crude oil, such as viscosity (how thick the oil is) or density (the ratio between mass and volume) can vary over time. Understanding these properties and how they change is vital in predicting how oil would behave in the marine environment in the event of a spill, as well as predicting the effectiveness of both mechanical and non-mechanical spill remediation technologies. The council obtained a sample of Alaska North Slope crude oil in 2015 and sent it to Environment Canada for testing of its physical and chemical properties. Environment Canada provided the Council with analytical results for a wide variety of properties including viscosity, density, dispersant effectiveness, and the tendency to form an emulsion. Current, accurate, and comprehensive understanding of these chemical and physical properties is critical for useful spill response planning. The results from Environment Canada were shared with local regulators and industry partners involved in Prince William Sound oil spill response planning.

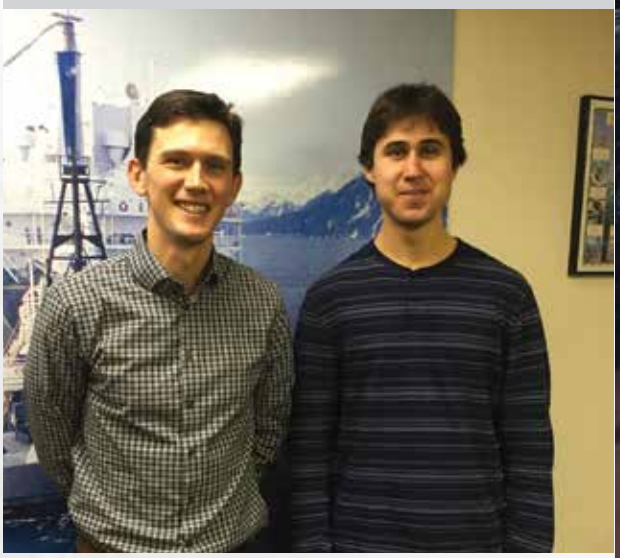
MONITORING DRILLS AND EXERCISES

Both the Oil Pollution Act of 1990 and the council's contract with Alyeska task the council with monitoring the operational readiness of SERVS and the oil shipping companies.

The council observes, monitors, and reports on spill response drills, exercises, and train-

Intern Researches Crude Oil Properties Effect on Spill Response Technologies

Council intern Seth Suydam, originally from Seldovia and currently studying petroleum engineering at the Colorado School of Mines, investigated how the physical and chemical properties of crude oil would influence the effectiveness of those spill remediation technologies including in-situ burning, dispersant application, and using skimmers. Suydam's work looked at how the properties of 2015 Alaska North Slope crude oil would influence when those spill remediation technologies would be most effective in Prince William Sound. His work helped confirm that spill remediation technologies currently available for response in Prince William Sound are appropriate for the current properties of Alaska North Slope crude.



Intern Seth Suydam (right) worked with council project manager Austin Love (left) to analyze properties of crude oil.

13 DRILLS AND EXERCISES OBSERVED IN ONE YEAR

This map shows the location of the mock spill from the annual shippers' exercise.

Annual Oil Shippers' Exercise

Every year, the companies who ship oil from the Valdez terminal take turns conducting a major oil spill drill in partnership with SERVS. Last year, BP and the Alaska Tanker Company took their turn, conducting a multiple day exercise with SERVS. This exercise focused on a worst-case scenario of over 500,000 barrels, or 21 million gallons, of crude oil spilled near Montague Island. The spill responders had to simulate how they would take shelter with their equipment during a storm, and then resume oil spill recovery response operations once weather subsided.

ing in the Prince William Sound/Northern Gulf of Alaska region to provide citizens, regulatory agencies, and oil spill responders with information about readiness as well as recommendations for improvement.

The council's staff attended 13 drills and exercises in Prince William Sound over the past year. Some of the exercises drilled response tactics for protecting sensitive areas as well as near the shore and in open water, and a large response by the Prince William Sound shippers.

Oil spill exercises were also conducted at the Valdez Marine Terminal during the past year. In the fall, responders conducted an exercise focused on sensitive area protection in Shoup Bay. That exercise included a newly developed response strategy for protecting the head of the bay. Alyeska also conducted an equipment deployment for a large simulated oil spill from a pipeline breach near the pipeline's entrance to the Valdez Marine Terminal.

RESPONDING TO AN OIL SPILL

To respond effectively to an oil spill or to an emergency that could cause one, it takes more than volumes of carefully written and reviewed contingency plans. It also takes equipment, trained people, and a management system to implement the plan.

The council's Oil Spill Prevention and Response Operations program monitors the operational readiness of Alyeska's Ship Escort/Response Vessel System, called SERVS, and the tanker companies, and makes sure the council itself is prepared to respond to oil spills and other emergencies as a conduit for public concerns and as an independent monitor.

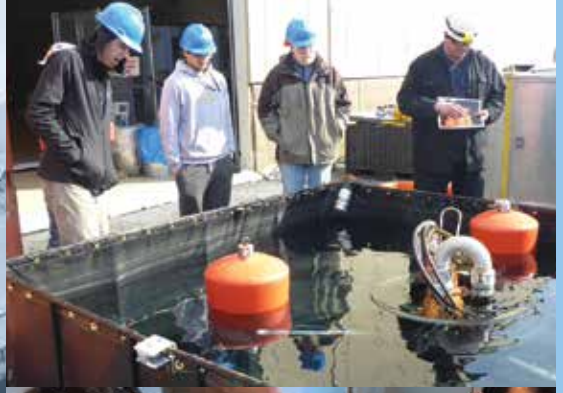
The council's staff, volunteers, and contractors monitor and report on spill response drills, exercises, and training throughout the region to provide citizens, regulators, and responders with information about the state of readiness and any lessons that may lead to recommendations for improvement. The council staff presents annual reports summarizing each year's activities, lessons learned, recommendations, and outstanding issues.

CHANGES TO DISPERSANTS RULES IN ALASKA

The Alaska Regional Response Team, or ARRT, established a new plan earlier this year for how oil spill dispersants, an alternative spill response option, would be used during an oil spill. The ARRT is a group of federal and state agencies that share responsibilities for managing oil and chemical spill responses in Alaska.

The new plan was effective 2016, although parts of the plan will not go into effect until 2018.

The new plan describes two different processes for dispersant use. Dispersants will be "preauthorized" in certain areas, with all other areas marked as "undesignated." Approval to use dispersants in both areas requires consultation between governments, communities, and stakeholders.



In undesignated areas, however, dispersants will be authorized on a case-by-case basis. A list of trade-offs must be considered for each location where dispersants are being considered: sea depth, distance from shore, salinity, temperature, sensitive species, and habitat. These considerations affect the decision whether to use dispersants in undesignated areas.

The Coast Guard intends to hold meetings in a number of affected communities to gather public input to identify areas where dispersants are not recommended. The council will be participating in the process in our region.

CONCERNS ABOUT CHANGES TO THE REGIONAL STAKEHOLDER COMMITTEE

Earlier this year, changes were proposed to the Regional Stakeholder Committee, or RSC, that the council believed would reduce public involvement in oil spill response and cleanup. The RSC is a forum for communication between spill responders and stakeholders affected by an incident, which has been practiced during drills since the Exxon Valdez oil spill.

The ARRT had proposed replacing the RSC with two groups, the "Affected Stakeholders Group", or ASG, and the "Tribal and Local Government Group." The council would have become a member of the ASG, unable to access information allowed for in the current plan. The council would no longer have access to the Incident Action Plan (which provides details of the response) or direct communication with the authorities that make decisions about the response.

The council worked to raise awareness about this issue during the public comment period. Based on comments received from the council, and communities and stakeholders potentially impacted by the proposed changes, the Alaska Department of Environmental Conservation announced that the proposal had been withdrawn.

While the council's concerns have been alleviated for now, monitoring of a new proposal that could affect stakeholder input continues.

SIMULATING OIL ON WATER DURING DRILLS

The council is leading a workgroup to find a suitable, environmentally friendly surrogate for oil to be used during drills and exercises. A material such as wood chips would provide a floating target for responders to practice with during on-water exercises and training events.

PROTECTING THE ENVIRONMENT

The Oil Pollution Act directs our council to review, monitor, and comment on Alyeska's environmental protection capabilities, as well as the actual and potential environmental impacts of terminal and tanker operations. The Act also calls on the council to develop recommendations on environmental policies and permits.

Under the leadership of the Scientific Advisory Committee and the Terminal Operations and Environmental Monitoring Committee, the council commissions scientific studies to determine actual or potential risks, document levels of pollution and biological effects, and better understand new technologies and the environmental costs or benefits that might be associated with their use.

MONITORING OPERATIONS AT THE TERMINAL

Besides posing the risk of a major oil spill caused by an earthquake or accident, the Valdez terminal produces ongoing air and water pollution from routine operations, as allowed by its permits from regulatory agencies. The council monitors terminal operations to minimize the risk of spills and ensure that the pollution emitted is within or below regulatory limits and encourages agencies to set limits at the lowest feasible levels.

INSPECTIONS OF CRUDE OIL STORAGE TANKS

As part of our regular work, the council monitors the aboveground crude oil storage tanks at the Valdez Marine Terminal. This year, the council reviewed inspection records for Tank 12.

The review, conducted by Harvey Consulting, indicates the integrity of the tank is being well maintained. The inspection reports were thorough,

Crude oil storage tanks at the Valdez Marine Terminal.

ANNUAL TANKER EMISSIONS REDUCED BY SWITCHING FROM 2.7% TO 0.1% SULFUR FUEL

- ↓ **33 TONS** PARTICULATE MATTER
- ↓ **426 TONS** SULFUR OXIDES
- ↓ **29 TONS** NITROGEN OXIDE

REDUCTION COMPARISON

426 TONS SULFUR OXIDES

=

EMISSIONS FROM APPROXIMATELY 444,000 HEAVY-DUTY DIESEL TRUCKS

technically justified, and completed in accordance with industry standards by certified inspectors. The review further indicated that corrosion mitigation measures, such as cathodic protection and internal coatings, are being properly monitored and maintained according to standard industry practice. Based on the results of this review the council made two recommendations to Alyeska to improve the maintenance of Tank 12. First, increase the number of inspection points on the tank's shell and roof. Second, evaluate corrosion trends using all available inspection records.

ENVIRONMENTAL SCIENCE

The council monitors the environment of Prince William Sound and adjoining waters for impacts from oil-industry operations. Scientific research into such impacts, as well as research into the effects of some oil spill response tactics, makes up a large part of the work done under this program.

AIR POLLUTANTS REDUCED BY HUNDREDS OF TONS PER YEAR

This year, a council study found that using low-sulfur fuel has resulted in far less air pollution emitted from Prince William Sound's oil tankers than just a few years ago. The study, conducted by Starcrest Consulting Group, compared the air pol-

lution data from tankers that traveled through Prince William Sound during 2014 to data from previous years. The researchers found that nitrogen oxide emissions are somewhat reduced but particulate matter and sulfur dioxide emissions are substantially reduced. By switching to 0.1 percent sulfur fuel from the 2.7 percent sulfur fuel used prior to 2012, tankers in the Sound reduced emissions by approximately 426 tons of sulfur dioxide, 33 tons of particulate matter, and 29 tons of nitrogen oxides annually. A reduction of 33 tons of particulate matter is the equivalent to the emissions from about 5,000 heavy-duty diesel trucks in a year, while a reduction of 426 tons of sulfur dioxide would be equal to the emissions from approximately 444,000 heavy-duty diesel trucks.

CHEMICAL DISPERSANTS

For many years, the council has been concerned about the effectiveness of dispersants in the cold waters of our region, as well as the toxicity of the chemicals, especially when mixed with oil. This concern has led to a number of studies on subjects including swirling flask laboratory testing, photo-enhanced toxicity, test tanks, re-surfacing of dispersed oil, dispersants policy, and other related subjects.

DATABASE OF RESEARCH ON DISPERSANTS

Every year, the council updates a comprehensive database of research about dispersants. The database is complemented by an overview of recent science conducted on dispersants, including key points, new trends, and areas where research is lacking.

STATE OF THE SCIENCE FOR DISPERSANTS IN ARCTIC WATERS

The council, along with the State of Alaska, the U.S. Coast Guard, the Oil Spill Recovery Institute, and others, were invited by the Coastal Response Research Center to participate on the

Continued on page 18

The council's research, conducted over many years, does not support the claims of dispersant proponents regarding effectiveness of dispersants in our cold and low salinity waters. New research also reveals increasing concerns about low-level chronic toxic effects from oil and dispersed oil (see page 18).

Because of these concerns about whether dispersants actually work, as well as the toxic effect they have on sea life, the council does not support the use of dispersants. The council supports mechanical recovery, which removes the oil from the water, as the primary method of oil spill response.

Environmental Monitoring

MONITORING INVASIVE SPECIES

Invasive species, such as the European green crab, can sometimes catch a ride in the ballast water or attach to the hull of a tanker into a new environment where there are no native predators to keep populations in check. If the invaders become established, they can have a significant economic and ecological effect on the area. They can destroy local species and habitat, including commercially important species that are of value to local economies, such as Alaska salmon. Some ports visited by the Prince William Sound oil tankers have known marine invasive species populations.

The council supports citizen-based monitoring for marine invasive species, particularly the European green crab and invasive tunicates. The green crab, a known ballast-water-borne invader, is an efficient and voracious predator that has invaded the West Coast from San Francisco to Vancouver Island. It is feared that the green crab will find its way to Alaska waters.

The monitoring program has evolved into a self-sustaining grassroots system since the council initiated it in 2000. The council continues to support some of the smaller communities to encourage participation for those areas. No green crabs have yet been captured in the council region by these efforts.

BALLAST WATER

The council has been studying the amount and sources of ballast water discharged into Port Valdez and Prince William Sound. This study identifies the number of unique and repeat voyages arriving at the terminal and analyzes the volume, source, and type of ballast water discharged by these vessels into Prince William Sound between 2005 and 2015. This data helps us better understand the risk of aquatic invasive species arriving in our area. One way to reduce invasive species arriving in our waters is to exchange ballast water in open water outside of Alaska, where there are fewer species that could survive in Prince William Sound. The study showed that the amount of ballast water exchanged in open water is increasing.

EFFECTS OF CRUDE OIL EXPOSURE ON THE EMBRYOS OF PINK SALMON AND PACIFIC HERRING

Permanent changes in heart anatomy and physiological performance

AFTER 7–10 MONTHS OF GROWTH IN CLEAN WATER

Continued reduction in aerobic capacity and permanent changes in the heart's anatomy and performance

Organizing Committee for the State of the Science for Dispersants in Arctic Waters Initiative, an initiative funded by NOAA and U.S. EPA. This led to a workshop held January 2015 in Seattle titled the "State of Science for Dispersant Use in Arctic Waters." While the council's work is focused on the Exxon Valdez oil spill impacted region, the science on dispersant use in the Alaskan Arctic is related and increases our knowledge about the effects of using dispersants in the subarctic waters and on species of Prince William Sound.

TOXICITY OF OIL

The council researches and addresses the gaps in knowledge about the chronic toxic effects of oil, dispersed oil, and "in-situ" burn (burning spilled oil) residue under study conditions similar to the cold marine waters in our region.

LOW LEVELS OF CRUDE OIL SHOWN TO HAVE LONG-TERM EFFECTS ON SALMON AND HERRING

This past year the council worked with NOAA Fisheries' laboratories to determine the effects of low levels of crude oil exposure on the embryos of pink salmon and Pacific herring. The exposure was found to cause cardiac abnormalities that lead to permanent changes in heart anatomy and physiological performance. When assessed after 7 to 10 months of growth in clean water, both species showed reduced aerobic capacity and abnormalities in the heart that lead to permanent changes in the heart's anatomy and performance. Recommendations from the report have been transmitted to industry and agency stakeholders and the report has been posted on the council's website. The peer review version of the paper was published at Scientific Reports for Nature.com in August 2015. Since being published it has received a great deal of media attention locally, nationally, and internationally.

MONITORING FOR LINGERING OIL

In 1993, the council started monitoring the region affected by the Exxon Valdez oil spill to assess the

status of hydrocarbon levels in Port Valdez, Prince William Sound, and the Gulf of Alaska. This program monitors the long-term downward trend of lingering oil in the Sound from the Exxon Valdez spill, as well as any new oil spilled since that time.

The Oil Pollution Act of 1990 directs the council to "devise and manage a comprehensive program of monitoring the environmental impacts of the operations of terminal facilities and crude oil tankers while operating in Prince William Sound." This project fulfills this directive.

Today, samples are periodically collected at selected intertidal sites in Prince William Sound and the Gulf of Alaska. Mussel tissues and sediments from the sites are analyzed in a laboratory to determine whether hydrocarbons are accumulating and, if so, the source of the hydrocarbons. The result is the largest chronological data set ever compiled for hydrocarbons in Prince William Sound. The council reports on this data annually. Every fifth year, a more in-depth report summarizes the data and trends of the previous five years. A new five-year trend report was completed this year.

EFFECTS OF HYDROCARBONS ON MUSSELS

This year, the council began studying the effects of hydrocarbons on the genes of mussels and related species. Researchers compiled knowledge about genetic changes in mussel species, tests for how those genetic changes occur, and how to determine whether the "animals" have been exposed to, or injured by, hydrocarbons. They also looked at contemporary methods for evaluating the effects of hydrocarbons on the genome of mussels, identified gaps in existing knowledge, and pinpointed areas for future research. This report will help us improve and update the technologies used in our long term environmental monitoring efforts, while continuing to use mussels as the target species.

DETECTING POLLUTION BY SATELLITE

The council is investigating the potential of using satellite data to detect oil spills in the region. Several European countries use satellite technology as a regular part of their spill detection strategies. This demonstration project gathered information about systems, costs, and availability of various satellite detection capabilities available at this time. The costs continue to come down and public access to satellite data is becoming more easily available. The Sentinel One, a satellite launched in April 2014 by the European Space Agency, now provides free data access to non-profit organizations. Technological advances in radar also provide the capability to identify and track oil spills, proven useful in Europe and Canada.

OUTREACH

The council maintains productive relationships with its 18 member entities, which include communities within the region affected by the 1989 Exxon Valdez oil spill, as well as aquaculture, commercial fishing, environmental, Alaska Native corporations, recreation, and tourism groups.

8

OIL SPILL SCIENCE STATIONS OF HANDS-ON FUN TO FAMILIES IN KODIAK, CORDOVA, AND VALDEZ

ENGAGING THE NEXT GENERATIONS TO PROTECT PRINCE WILLIAM SOUND

FUNDING YOUTH EDUCATION PROGRAMS

The Information and Education Committee helps support regional partners' programs which teach youth about topics related to the council's mission. Youth of all ages participate in a variety of settings to learn about oil spill prevention and response, citizen oversight, the response capabilities in Prince William Sound, and more.

INTERNS HELP COUNCIL ACHIEVE OUR MISSION

The committee recruits youth interns from our region to complete council projects that also incorporate career development opportunities. This year, one high school and two college students helped us educate kids in schools using our oil spill curriculum, monitor Cordova for invasive green crab, and study the properties of Alaska North Slope crude oil (see page 10).

MASTER OF DISASTER

This year the council started a new outreach program that will travel with our board meetings each fall. Volunteers and staff worked together to bring eight oil spill science stations of hands-on fun to families in Kodiak, Cordova, and Valdez this year.

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KIDS AND TEACHERS REACHED THROUGH YOUTH INVOLVEMENT

14

REGIONAL PARTNERS INVOLVED IN OUTREACH AND EDUCATION PROJECTS AND PROGRAM

6

PROJECTS AFFECTING DIFFERENT COMMUNITIES COMPLETED BY THREE INTERNS

COMMUNITY OUTREACH

The council's dedicated outreach coordinator works with staff and volunteers to visit communities in the council's region, attend group member functions, give presentations, coordinate special events involving the council and its member groups, and encourage citizen involvement in the council's work.

The council's Information and Education Committee teams up with staff to support the council's mission by:

- Fostering public awareness of our work
- Building participation of current and future generations in the council's environmental stewardship responsibilities

TOURING FISHING VESSEL SPILL RESPONSE TRAINING

This spring, the council partnered with Kenai Fjord Tours and Alyeska to take Seward residents out to see SERVS' local fishing vessel responders' annual oil spill response training. Ninety people spent two hours with us on the water in this pilot project, including curious members of the general public, two high school biology and chemistry classes, and local and statewide media. They learned how local fishermen take part in Alyeska's oil spill response team. Alyeska helped us narrate the oil spill response training, equipment and tactics being used, and the reasons this unique program exists. The council plans to host similar tours in other communities with the SERVS fishing fleet in coming years.

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COMMUNITIES REACHED BY OUTREACH ACTIVITIES

OUTREACH ACTIVITIES

KODIAK ISLAND

PORT LIONS

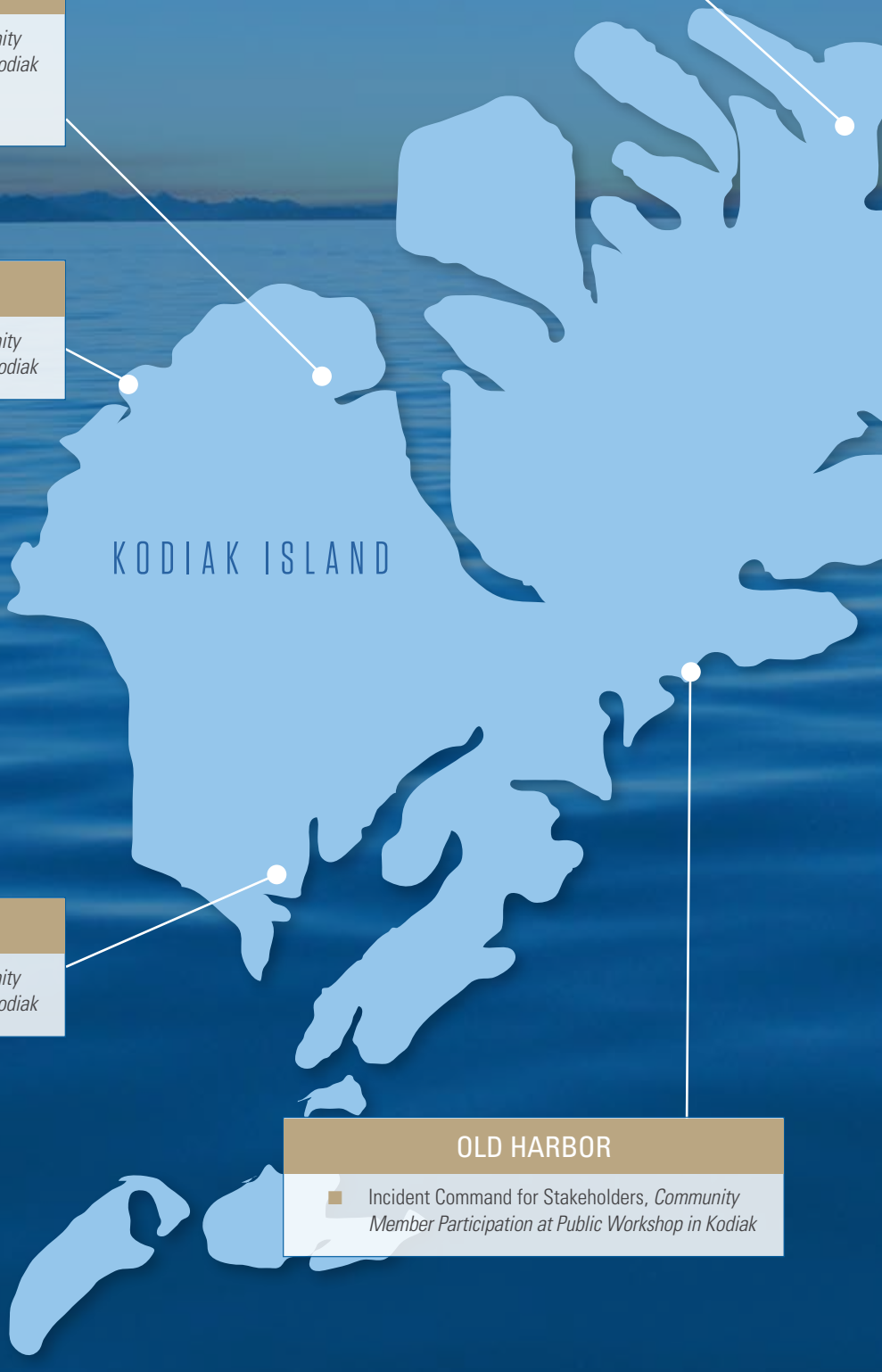
- Incident Command for Stakeholders, *Community Member Participation at Public Workshop in Kodiak*
- Rural Salmon & Science Camp, *Youth Involvement Project*

LARSEN BAY

- Incident Command for Stakeholders, *Community Member Participation at Public Workshop in Kodiak*
- "West Side Stories" Oral History Interviews, *Youth Involvement Project*

KARLUK

- Incident Command for Stakeholders, *Community Member Participation at Public Workshop in Kodiak*



AKHIOK

- Incident Command for Stakeholders, *Community Member Participation at Public Workshop in Kodiak*

OLD HARBOR

- Incident Command for Stakeholders, *Community Member Participation at Public Workshop in Kodiak*

OUZINKIE

- Rural Salmon & Science Camp, *Youth Involvement Project*

KODIAK

- Incident Command for Stakeholders, *Public Workshop*
- Board Meeting and Public Reception
- Public Family Outreach Event, *Youth Involvement Outreach*
- "West Side Stories" *Oral History Interviews, Public Radio Spots & Youth Involvement Project*
- City Council, *Presentation*
- Crab Festival, *Booth Outreach*

OUTREACH ACTIVITIES

PRINCE WILLIAM SOUND AND OUTSIDE

ANCHORAGE

- Coffee with a Scientist, *Presentation*
- Oil Spill-themed Certified Interpretive Guide Course, *Presentations*
- World Wildlife Fund Workshop, *Presentation*
- U.S. Coast Guard Foundation Dinner, *Support & Attendance*
- Alaska Forum on the Environment, Oil Spill Track Presentations, *Youth Internship Presentation, & Booth*
- Incident Command for Stakeholders, *Public Workshop*
- Alaska SeaLife Center Marine Gala, *Support and Attendance*
- Alaska Science and Engineering Fair, *IEC Youth Involvement Project*
- Board Meeting

KENAI

- Salmonfest, *Booth Outreach*

HOMER

- American Fisheries Society – Alaska Chapter Conference, *Presentation*
- Aquatic Invasive Species Monitoring, *Youth Involvement Project*
- City Council, *Presentation*

SELDOVIA

- Aquatic Invasive Species Monitoring, *Youth Involvement Project*

PORT GRAHAM

- Alaska Oil Spill Curriculum Programs, *Youth Internship Presentation*
- Community Visit & Public Reception
- Aquatic Invasive Species Monitoring, *Youth Involvement Project*

KENAI PENINSULA

PRINCE WILLIAM SOUND

WHITTIER

- Xploration Awesome Planet, *Television Series Interview*
- Alaska Oil Spill Curriculum Programs, *Youth Internship Presentation*
- City Council, *Presentation*

VALDEZ

- Gold Rush Days, *Booth Outreach*
- Alaska Oil Spill Curriculum Program, *Presentation*
- Crooked Creek Chum Salmon Incubation Project, *Youth Involvement Project*
- Valdez Schools Career Fair, *Booth Outreach*
- Public Reception
- Alaska North Slope Crude Oil Properties Project Report, *Youth Internship Presentation*
- Public Family Outreach Event, *Youth Involvement Outreach & Youth Internship Presentation*
- City Council, *Presentation*
- Incident Command for Stakeholders, *Public Workshop*
- Board Meeting and Public Reception

TATITLEK

- Peksulineq Cultural Heritage Day, *Attendance*
- Incident Command for Stakeholders, *Public Workshop (in Valdez)*

CHENEGA BAY

- Alaska Oil Spill Curriculum Programs, *Youth Internship Presentation*
- Community Visit & Public Reception
- Incident Command for Stakeholders, *Public Workshop (in Valdez)*
- Chenega Memorial, *Support*

CORDOVA

- Alaska Historical Society and Museums Alaska Conference, *Presentation & Booth Outreach*
- Copper River Nouveau, *Support & Attendance*
- Discovery Room Oil Spill Education, *Youth Involvement Project*
- Aquatic Invasive Species Monitoring, *Youth Internship*
- City Council, *Presentation*

SEWARD

- Tsunami Bowl, *Youth Involvement Project*
- Remotely Operated Vehicle (ROV) Challenge, *Youth Involvement Project*
- Marshall Memorial Fellowship Program, *Presentation*
- Fishing Vessel Program, *Public Outreach Event & Television News*
- City Council, *Presentation*

PRINCE WILLIAM SOUND EVENTS

- Alaska Geographic Teacher Expedition, *Youth Involvement Project*
- Copper River Watershed Stewardship Expedition, *Youth Involvement Project*
- Alaska Geographic Youth Expedition, *Youth Involvement Project*

OUTSIDE THE REGION

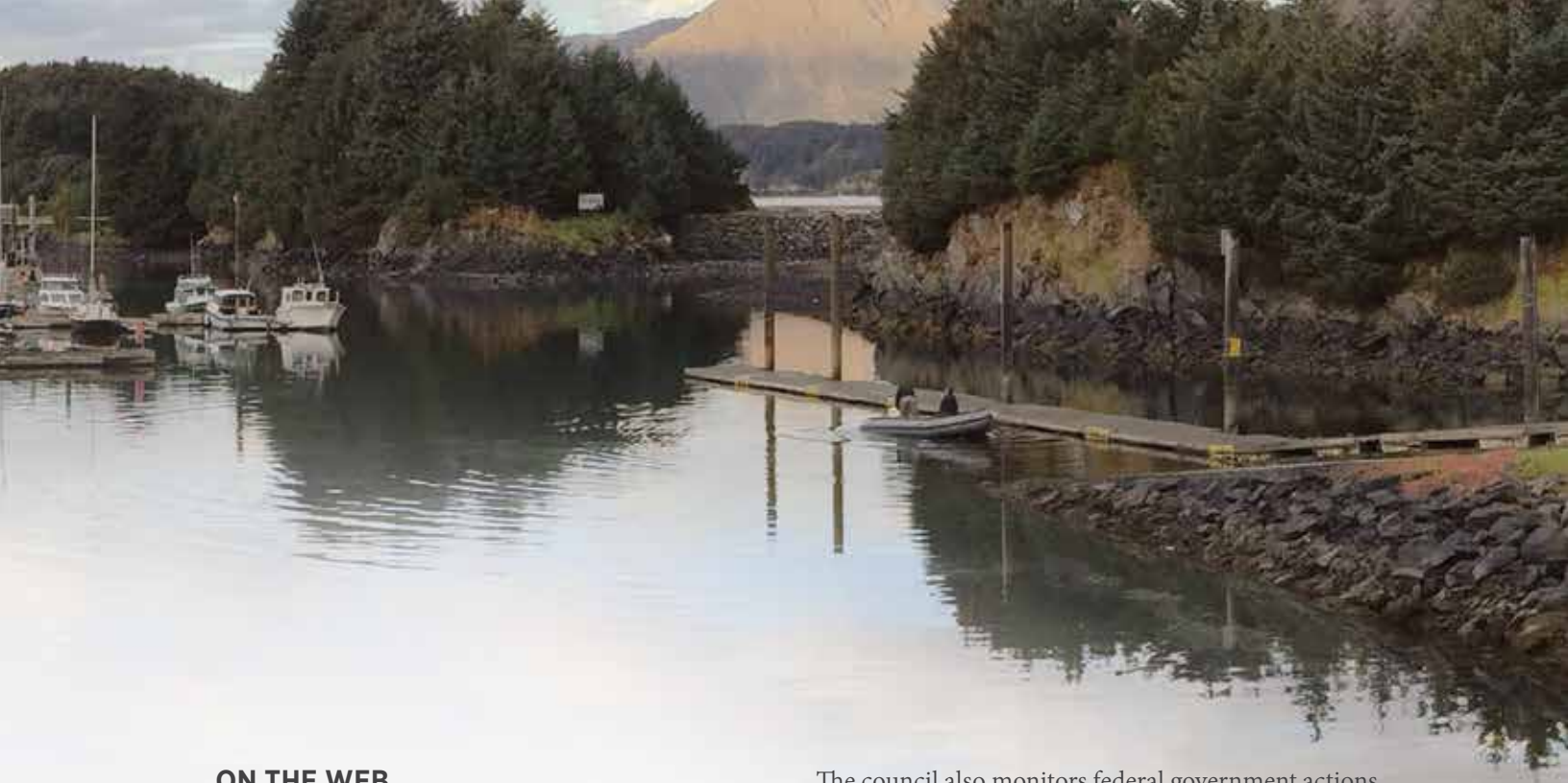
- Alaska Math & Science Conference, *Sitka*
- Clean Gulf, *New Orleans*
- Pacific Marine Expo, *Seattle*
- Oil Spill Technology Symposium, *Fairbanks*
- International Conference on Aquatic Invasive Species, *Winnipeg*
- Arctic Marine Oilspill Program Technical Seminar, *Halifax*
- U.S. Coast Guard Change of Command, *Juneau*
- Clean Pacific, *Seattle*

PUBLICATIONS

The council increases public awareness on a wide range of issues pertaining to crude oil transportation through printed and online publications, such as The Observer and this annual report.

THE OBSERVER NEWSLETTER

The Observer is a free newsletter with nearly 5,000 printed copies distributed throughout Prince William Sound, the northern Gulf of Alaska, lower Cook Inlet, and the Kodiak archipelago, and by request to interested citizens around the world, including regulators and industry. It covers council activities, developments in the oil transportation industry related to our mission, and news about policy and operational issues related to marine oil transportation in Prince William Sound. Major oil spill drills are covered, and Alyeska is invited to submit a column for each issue. In the course of preparing articles for The Observer, the council frequently invites feedback from industry and regulatory personnel. The Observer is available on the council website and as an email newsletter.



ON THE WEB

The council's online presence, including our website and social media, serves as a public communications tool and educational resource to increase public awareness of the council, the history of the council and citizen oversight of the oil industry, and the environmental impacts of the transportation of oil through Prince William Sound. The use of such technologies help us foster dialog and engagement between the council, our constituents, and the online community.

GOVERNMENT RELATIONS

The council monitors state actions, legislation, and regulations that relate to terminal or tanker operations, or to oil spill prevention or response. To track developments in the state capital, the council retains a monitor under contract during the legislative session. This area of council activity is coordinated by a Legislative Affairs Committee made up of members of the council board.

The council also monitors federal government actions and issues through its Legislative Affairs Committee and a contract representative in Washington, D.C.

RECERTIFICATION

The Coast Guard certifies the council as the federally approved citizens' advisory group for Prince William Sound, pursuant to the Oil Pollution Act of 1990. The council has been the certified group since 1991.

Under the annual recertification process, the Coast Guard assesses whether the council fosters the general goals and purposes of the Act and is broadly representative of the communities and interests as envisioned in the Act.

As part of its recertification process, the Coast Guard considers comments from industry, interest groups, and citizens. The council fulfills the Act's requirement for an industry-funded citizens' advisory group, although it was established before the law was enacted.

BOARD OF DIRECTORS

Our 18 member entities include state-chartered cities and boroughs, tiny Alaska Native villages with tribal governments, Native corporations, commercial fishing organizations, an environmental consortium, and groups representing the tourism industry.

HOW IS THE BOARD ORGANIZED?

Each member entity chooses one representative to our board. The lone exception is Valdez. It has two representatives, giving our board a total of 19 members. The board meets three times a year. The January meeting is in Anchorage, the May meeting is in Valdez, and the September meeting rotates among other member communities in the oil spill region.

WHO SERVES ON THE BOARD?

The names and faces change, but current and recent board members have included commercial fishermen, a schoolteacher, the chief executive of a regional Native corporation, tour-boat operators, an oilfield engineer, small business owners, scientists, and a village mayor.

Executive Committee

AMANDA BAUER
President
City of Valdez

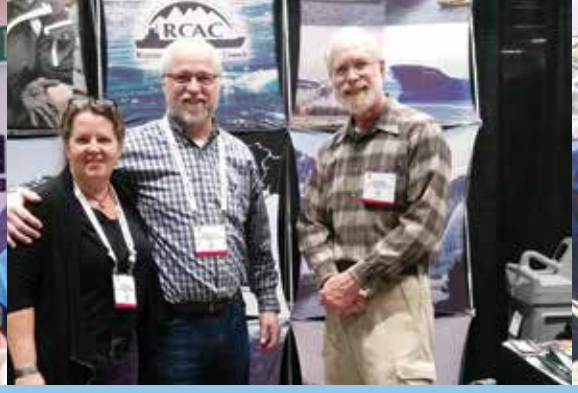
THANE MILLER
Vice President
Prince William Sound Aquaculture Corp.

BOB SHAVELSON
Secretary
Oil Spill Region Environmental Coalition

WAYNE DONALDSON
Treasurer
City of Kodiak

Ex-Officio Board Members (Non-Voting)

- Steve Russell, *Alaska Dept. of Environmental Conservation*
- Lee McKinley, *Alaska Department of Fish and Game, Division of Sport Fish*
- Robert Skorkowski, *U.S. Forest Service*
- Graham Smith, *Alaska Dept. of Natural Resources*
- Kevin Kearney, *U.S. Bureau of Land Management*
- Colin Blair, *Alaska Div. of Homeland Security & Emergency Management*
- Chris Field, *U.S. Environmental Protection Agency*
- Phillip Johnson, *U.S. Department of the Interior*
- Commander Joe Lally, *U.S. Coast Guard, Marine Safety Unit, Valdez*
- W. Scott Pegau, *Oil Spill Recovery Institute, Cordova*
- Catherine Berg, *U.S. National Oceanic and Atmospheric Administration*


Other Directors

ROBERT ARCHIBALD
City of Homer

ROBERT BEEDLE
City of Cordova

MIKE BENDER
City of Whittier

MELISSA BERNS
Kodiak Village Mayors Association

AL BURCH
Kodiak Island Borough

PATIENCE ANDERSEN FAULKNER
Cordova District Fishermen United

MAKO HAGGERTY
Kenai Peninsula Borough

LUKE HASENBANK
Alaska State Chamber of Commerce

JOHN JOHNSON
Chugach Alaska Corporation

JIM LABELLE
Port Graham Corporation

DOROTHY MOORE
City of Valdez

ORSON SMITH
City of Seward

ALISHA CHARTIER
City of Seldovia

ROY TOTEMOFF
Community of Tatitlek

MICHAEL VIGIL
Chenega Corporation & Chenega IRA Council

ADVISORY COMMITTEES

Five standing committees advise the Board of Directors and the council staff on projects and activities. Committee volunteers also assist the staff on individual projects. The advisory committees are made up of interested citizens, technical experts, and members of the council board. Committee volunteers are selected through an annual application process. They are appointed to two-year terms and may serve consecutive terms.

OIL SPILL PREVENTION AND RESPONSE COMMITTEE

Mission: Minimize the risks and impacts associated with oil transportation through strong spill prevention and response measures, adequate contingency planning, and effective regulations

- Chair: John LeClair, Anchorage
- Vice-chair: Jerry Brookman, Kenai
- Robert Beedle, Cordova*
- Mike Bender, Whittier*
- Colin Daugherty, Anchorage
- David Goldstein, Whittier
- Jim Herbert, Seward
- Gordon Scott, Girdwood
- Alisha Chartier, Seldovia*

PORT OPERATIONS AND VESSEL TRAFFIC SYSTEMS

Mission: Monitor port and tanker operations in Prince William Sound and recommend improvements in the vessel traffic navigation systems and monitors the vessel escort system

- Chair: Amanda Bauer, Valdez*
- Vice-chair: Pat Duffy, Valdez
- Robert Archibald, Homer*
- Cliff Chambers, Seward
- Pete Heddell, Whittier
- Orson Smith, Seward*
- Jeremy Talbott, Valdez

SCIENTIFIC ADVISORY COMMITTEE

Mission: Promote the environmentally safe operation of the terminal and tankers through independent scientific research, environmental monitoring, and review of scientific work

- Chair: John Kennish, Anchorage
- Vice-chair: Paula Martin, Soldotna
- Sarah Allan, Anchorage
- Jeffrey Brooks, Anchorage
- Wayne Donaldson, Kodiak*
- Roger Green, Hope
- Davin Holen, Anchorage
- Dorothy M. Moore, Valdez*
- Debasmita Misra, Fairbanks
- Mark Udevitz, Anchorage

TERMINAL OPERATIONS AND ENVIRONMENTAL MONITORING

Mission: Identify actual and potential sources of episodic and chronic pollution at the Valdez Marine Terminal

- Chair: Harold Blehm, Valdez
- Vice-chair: Mikkel Foltmar, Anchorage
- Amanda Bauer, Valdez*
- Steve Goudreau, Valdez
- Tom Kuckertz, Anchorage
- George Skladal, Anchorage

INFORMATION AND EDUCATION COMMITTEE

Mission: Foster public awareness, responsibility, and participation through information and education

- Chair: Cathy Hart, Anchorage
- Vice-chair: Linda Robinson, Homer
- Trent Dodson, Kodiak
- Jane Eisemann, Kodiak
- Patience Andersen Faulkner, Cordova*
- Ruth E. Knight, Valdez
- Andrea Korbe, Whittier
- Kate Morse, Cordova

**member of board of directors*

Staff

- Donna Schantz, Executive Director
- Joe Banta, Project Manager
- Gregory Dixon, Financial Manager
- Jennifer Fleming, Executive Assistant
- Amanda Johnson, Project Manager
- Austin Love, Project Manager
- Leigh Lubin, Administrative Assistant
- Lisa Matlock, Outreach Coordinator
- Natalie Novik, Administrative Assistant
- Shawna Popovici, Project Manager Assistant
- Roy Robertson, Project Manager
- Jeremy Robida, Project Manager
- Alan Sorum, Project Manager
- Linda Swiss, Project Manager
- Nelli Vanderburg, Project Manager Assistant
- Walt Wrede, Director of Administration

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Credits

Editor: Amanda Johnson Designer: Shaila Abdullah

PAPERS, PRESENTATIONS, REPORTS, AND MEDIA RELEASES

2015 Prince William Sound RCAC Annual Drill Monitoring Report (report). Citizens' council. January 2016. Document number: 752.431.160101.2015AnnualRpt.pdf

ADEC Spill Prevention and Response Division, Prince William Sound Unit Staffing (comments). Citizens' council. June 2016. Document number: 600.105.160613.ADECStaffing.pdf

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Tanker Pollutant Loading to the Prince William Sound Airshed (report). Starcrest Consulting Group, LLC. October 2015. Document number: 557.431.151001.TnkrPollution.pdf

Tug Bollard Pull Requirements for Rescue Towing in Prince William Sound (memo). Robert Allan, LTD. April 2016. Document number: 801.109.160426.RALTugPullReq.pdf

Winter Species in Prince William Sound 1989-2016 (report): Prince William Sound Science Center. July 2016. Document number: 900.431.160901.WinterSpecies.pdf

These are just a few of the many reports, papers, presentations, and media releases produced or compiled by the council in the past year. For further information, or to obtain copies, visit the council website or contact our Anchorage office (see back cover for contact information).

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