

# **Prince William Sound Oil Spill Recovery Institute**

**Annual Work Plan**

**Fiscal Year 2001**

**October 2000 - September 2001**



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## 1.0 Introduction

This Annual Plan describes the oil pollution research and development (R&D) program for the Oil Spill Recovery Institute (OSRI) during Fiscal Year 2001 (FY00: 10/2000-9/2001).

The R&D Grant Program was established to solicit and administer oil pollution R&D projects in three areas.

- Applied Technology
- Predictive Ecology
- Public Education and Outreach

R&D grants within these program areas will be awarded and administered in accordance with the guidelines contained in the OSRI Grant Policy Manual. This manual is available through the OSRI web site.

## 2.0 Program Background

### 2.1 Oil Pollution Research and Development Plans

In 1995, OSRI published an Oil Pollution Research and Technology Plan for the Arctic and Subarctic (Thomas et al. 1995) that serves as the foundation for implementation and management of the OSRI R&D program. This plan used existing oil pollution R&D programs as a guide, particularly the National Oil Pollution Research and Technology Plan, published by the Interagency Coordinating Committee on Oil Pollution Research (ICCOPR 1992). The OSRI plan describes the scope of oil pollution prevention and response R&D, and OSRI's geographic focus on Alaska's oil transport system.

In 1997, OSRI held a workshop to update Arctic and subarctic oil pollution issues for the Advisory Board. At this workshop R&D conducted after the Exxon Valdez Oil Spill (EVOS) was reviewed and the revised national plan for oil pollution research and technology was presented (ICCOPR 1997). Based on this workshop, the OSRI Board endorsed three programs:

- Applied Technology - to conduct research and development on new technologies for preventing and responding to oil spills in the Arctic and Subarctic;
- Predictive Ecology - to develop new capability to predict changes in animal populations at risk to spills; and
- Public Education and Outreach - to make the research process interactive with the public so that goals are clearly defined that have public benefit.

### 2.2 Grant Program Authority

The Oil Pollution Act of 1990 (OPA90) established the Prince William Sound Oil Spill Recovery Institute (OSRI) to conduct R&D programs to develop the best available technologies for dealing with oil pollution in Arctic and Sub-Arctic regions. OPA 90 also mandated that OSRI implement long-term environmental monitoring in conjunction with federal and state agencies in the Greater Prince William Sound region (Title V, Section 5001). Under Title V, Section 5006 of OPA90, Congress authorized OSRI \$23 million over 10

years from the TAPS Fund but only after outstanding claims were resolved. In FY97, after the outstanding TAPS claims were settled, Congress appropriated \$22.4 million of the remaining funds to be held by the U.S. Treasury with the annual interest awarded to OSRI for implementation of the R&D program for the Arctic and Sub-Arctic (Coast Guard Reauthorization Act of 1996).

### **2.3 R&D Grant Policies and Procedures**

OSRI has adopted an R&D grant program based upon policies and procedures that are used by the National Science Foundation (NSF), NOAA's National Undersea Research Program and the EVOS Trustee Council. The basic document that governs the OSRI program is the Grant Policy Manual (GPM). The GPM provides guidance on the various provisions of program management. All OSRI staff, committee members, and board members will follow the guidelines contained in the GPM when processing and managing OSRI grants and projects. The OSRI GPM and other OSRI documents and forms, including Broad Area Announcements (BAAs) for specific projects and application packages, are available on the OSRI web site at [www.pwssc-osri.org](http://www.pwssc-osri.org). These documents can also be requested by mail or in person at the OSRI offices in Cordova.

### **Approach**

OSRI encourages team science for both technology and ecology projects by rating the proposals on the basis of vertical integration of the research team with regulators, managers and user groups. Also, where it is appropriate, the proposals will be rated on the basis of horizontal integration of the research teams with respect to discipline and organization. Proposals that use bioregional, public decision-making processes to establish research goals are encouraged.

## **Roles and Responsibilities**

OSRI will assist in forming R&D teams, and when necessary, take an active part in convening workshops to address important issues, participate in assessments of research issues and planning, and disseminate results. The following roles and responsibilities are assigned:

- **Advisory Board** – Review and approve the bylaws, policies and procedures, resolve grievances, review annual, business and strategic plans and amend budgets, hire and fire the Director.
- **Director** – Prepare the annual plan, the revised business and strategic plan, hire and fire staff, direct the activities of the OSRI staff, work with the Science and Technology Committee to review large proposals, assist researchers to build R&D teams and act as the final award authority for small grants.
- **Science and Technology Committee** – Review all large grant proposals forwarded by the OSRI staff and make recommendations to the Advisory board for grant awards.
- **OSRI Staff** – Provide administrative support to the Director for executing the R&D Grant Program.

## **Types of Funding**

OSRI awards will be divided into three main categories:

### **A. Large Awards** (\$100,000 or greater):

1. Applied technology grants that include proof of concept (alpha testing) of new technologies and pilot implementation projects for new applications of proven technology (beta testing).
2. Applied predictive ecology grants that develop nowcast/forecasting capability. These usually consist of numerical models and their monitoring programs for animal populations at risk.

### **B. Small Awards** (under \$100,000)

1. R & D projects in the area of technology, ecology and education
2. Workshops that have fact-finding or fact-demonstration goals related to technology, ecology and education.
3. Publications of various types that promote the OSRI R&D program to the scientific community and the general public.

### **C. Fellowships & Internships** (under \$100,000 per year)

1. Fellowship Grants to support post-doctoral and graduate students in research related to oil pollution prevention and response in the Arctic and Subarctic.
2. Internships to support high school and undergraduate college students to work with qualified researchers on OSRI projects or those relating to oil pollution prevention and response in the Arctic and Subarctic.
3. Preference will be given to those proposals that fall within one of OSRI's three program areas.

## **Application and Award Process**

OSRI staff, committee members, and board members will follow the guidelines and procedures detailed in the Grants Policy Manual (GPM).

### **3.0 Applied Technology program**

The OSRI 10-year business plan targets 40% of program funds for grants, contracts and workshops in the area of applied technology. The applied technology program is the development component of the OSRI R&D program. As such, it is focused on the engineering and application of new products and technologies. OSRI technology products are anticipated to range from new tools for the prevention and remediation of oil pollution to the implementation of systems that provide new information for decision-makers on natural resources at risk to oil spills.

*For information about individual grants, visit the BAA section of our web site. All costs are approximate and are subject to change. The Applied Technology budget for FY01 is \$579,000 (34% of FY01 projected program spending).*

#### **3.1 Applied Technology – New Programs**

##### **PWS Tide Height Data Collection**

This project seeks to establish automated tide gauges in Cordova, Valdez, Whittier, Chenega Bay, and Tatitlek. These telemetered autonomous instruments will contribute to the understanding of the physical dynamics of PWS and serve as a historical record.

*Funding for this project in FY01 is \$50,000. Operation and maintenance is estimated at \$15,000 a year beginning in FY02.*

##### **PWS Meteorological Data Collection**

This project will establish automated meteorological stations (wind speed, wind direction, temperature, precipitation) at various points within Prince William Sound. Due to the strong geographic influence on meteorological conditions, lack of a systematic reporting system and sparse population these autonomous stations represent the most cost effective method of obtaining the necessary data for determining the movement and weathering of oil spills within PWS.

*Funding for this project in FY01 is \$50,000. Operation and maintenance is estimated at \$15,000 a year beginning in FY02.*

##### **Alaska Responseä Resource Database**

During their winter 2000 meeting the Alaska Regional Response Team (ARRT) identified the need for establishing a statewide database for spill response resources. This database would link all of the state's oil spill cooperatives, via an internet connection, to a central database containing comprehensive data on the status and location of response personnel and resources. During FY00 OSRI received a proposal for initiating Responseä as a database & management system fulfilling the ARRT criteria. This project would issue an RFP for implementing an operational response resource database system within the state of Alaska.

*Funding for this project in FY01 is \$185,000*

#### **3.2 Applied Technology – Continuing Programs**

##### **Nowcast/Forecast Physical Ocean Modeling Project**

The Nowcast/Forecast (N/F) project is the primary initiative of the current OSRI research and development programs. For this reason, the funding for N/F development is split 50/50 between the Predictive Ecology and Applied Technology programs. The goal of this project is to assemble new predictive and measurement

tools for the specific physical and biological conditions and features of Prince William Sound. By working with the public, government organizations and private industry in the region, OSRI hopes to develop key features that provide valuable information and services to the region long into the future. Within the Applied Technology program area this effort is led by Dr. Christopher Mooers at the University of Miami. Dr. Mooers is implementing a Princeton Ocean Model (POM) for Prince William Sound.

In FY98, OSRI obligated \$300K per year for five years with a 50/50 split of program costs between Applied Technology and Predictive Ecology for N/F system development. Spending is targeted for \$300K a year on an annualized basis. The FY01 Applied Technology budget for this program is \$150,000

### **Applied Technology Projects of Opportunity**

As part of the FY01 budget the OSRI board of directors allocated \$100,000 to the Technology Coordinator for funding Projects of Opportunity through the fiscal year. These funds are dedicated to projects arising between budgetary cycles which meet OSRI criteria.

*Funding for this item in FY01 is \$100,000.*

### **Technology Coordinator**

Funding of this position was established in FY99 for providing a Technology Coordinator position within OSRI. The Technology Coordinator has responsibilities for the conversion of the OSRI research and development efforts into products and applications providing tangible services.

The OSRI Board of Directors directed that the Technology Coordinators funding be distributed among the three OSRI program areas beginning in FY01. Funding for FY01 is \$44,000 within Applied Technology.

### **3.3 Applied Technology - Carryover Projects**

#### **MORICE**

Phase IV of MORICE development was completed in FY00, culminating in an offshore proof of concept demonstration in the Beaufort Sea during broken ice conditions. Phase V received funding as part of the OSRI FY00 Annual Plan. Work in Phase V included tank testing of prototype skimmer cartridges in Hamburg Germany as well as additional testing on the North Slope of Alaska. No FY01 funding is anticipated and Phase V completion is scheduled for the first half of the fiscal year.

No new funding in FY01 anticipated. Past funding levels were \$64,000 in FY99 and \$60,000 in FY00.

#### **Small Spill Technology**

A BAA for this project was issued in the first half of FY00, in reply to which OSRI received a single proposal from Cook Inlet Keepers. The project received favorable evaluations and was funded with \$10K in FY00 monies. A second BAA for this project was issued during the second half of FY00 directed at harbor masters of the EVOS region.

No new funding in FY01 anticipated. Funding was \$50,000 in FY00.

#### **Scoping Initiative for Cook Inlet Risk Assessment**

OSRI is committed to serving those Arctic and sub-Arctic regions at risk to oil spills. In an effort to serve the

geographically diverse area of OSRI's concerns, a BAA will seek proposals to perform the initial scoping necessary for executing a Risk Assessment of Cook Inlet.

*No new FY01 funding anticipated. Funding for this project in FY00 was \$25,000.*

### **Remote Sensing Technology Development**

This project is a continuation of the FY99 work plan. The project awarded to Arizona State University is supporting the development of a battery powered reagent-less portable PAH sensor.

*No new FY01 funding anticipated. Contract negotiations are underway with Arizona State University and the project will require approximately \$45,000 in FY00 funding*

### **Three Dimensional Oil Dispersal Simulation**

Contract Awarded to SINTEF for development of their Oil Spill Contingency and Response (OSCAR) model for Prince William Sound. OSCAR utilizes a Princeton Ocean Model (POM) for ocean current modeling. The OSCAR system consists of an oil weathering model, a fates and effects model and a tactical response model. All three components interact within the same GUI (graphical user interface) based on a Windows NT platform. This project is a continuation of the FY99 work plan. Funding occurred in FY00 and work is scheduled for completion in FY01.

No new FY01 funding anticipated. This project received \$171,000 in FY00 funds.

### **Ice Detection in PWS**

The Prince William Sound risk assessment identified ice within the tanker lanes as representing the highest risk factor for future oil spills within the sound. The ice detection project, spearheaded by PWSRCAC, seeks to mitigate this hazard by providing advanced detection and warning of the presence of ice to tankers transiting the sound. By establishing a radar station on Reef Island the ice detection project will enable radar coverage of Columbia Bay, the predominant source of glacial ice, and critical portions of the upper sound tanker lanes.

No new FY01 funding anticipated. This project received \$100,000 in FY00 funds.

## **4.0 Predictive Ecology Program**

The 10-year OSRI business plan targets 40% of the program funds for grants, contracts and workshops in the area of predictive ecology. Predictive Ecology is the research component of the OSRI R&D program. As such, it focuses on the acquisition of knowledge and the identification of gaps in scientific knowledge that may be limiting the development of practical applications of technology. OSRI research efforts range widely from the collection of missing scientific information that yields new understanding, to new predictive or measurement tools that improve the quality and quantity of information on environmental conditions and living resources.

*For information about individual grants, visit the BAA section of our web site. All costs are approximate and are subject to change. The Predictive Ecology budget for FY01 is \$764,000 (45% of FY01 projected program spending).*

### **4.1 Predictive Ecology – New Programs**

#### **Hinchinbrook Entrance ADCP**

The exchange of water and nutrients between PWS and the Gulf of Alaska plays a vital role in the health and vitality of the sound's ecology. Recent research has highlighted the variability and complexity of this exchange and demonstrated the relative accessibility and economy of collecting this data via a telemetered Acoustic Doppler Current Profiler (ADCP). This project will fund the installation of an ADCP and telemetry equipment within Hinchinbrook Entrance for a period of five years.

*Funding for this project in FY01 is \$50,000. Operation and maintenance is estimated at \$15,000 a year beginning in FY02.*

#### **Current Validation Program**

This project will utilize CODE and STD to verify currents within PWS. As an adjunct project to PWSNF this project will provide specific oceanographic data for ground-truthing the Princeton Ocean Model and physical NF system.

*Funding for this project in FY01 is \$50,000, with FY02 through FY05 at \$15,000 per year.*

#### **LIDAR Proof of Concept Study**

This one-year project builds upon the acoustic monitoring program initiated in FY00. LIDAR (Light Detection And Range) in conjunction with established acoustic methods represents the potential for precise estimates of these key fisheries. Funding within this project will enable a proof of concept effort to establish the viability of this technique.

*The FY01 budget for this area is \$100,000.*

### **4.2 Predictive Ecology – Continuing Programs**

#### **Nowcast/Forecast Observational Oceanography Program**

The development of the N/F capability for Prince William Sound is ongoing in FY01. N/F system development is a combined effort encompassing both the Applied Technology and Predictive Ecology programs of OSRI. Recognizing that the numerical models that were developed and/or implemented by the SEA program are relatively new applications, there will be a long-term effort to evaluate and improve their predictions through a variety of observations and field tests. This effort is lead by Dr. Shari Vaughan,

principal investigator of the physical oceanography observational program at the Prince William Sound Science Center.

In FY98, OSRI obligated \$300,000 per year for five years with an equal program cost share between Applied Technology and Predictive Ecology for N/F system development. Observational oceanography is the research component of this project assigned to the Predictive Ecology Program. The FY01 budget for this program is \$150,000.

### **Coupling of the SEA Phytoplankton Model with the PWSPOM**

This project is a continuation of support for Dr. J. Wang at the University of Alaska at Fairbanks International Arctic Research Center (UAFIARC) for efforts in coupling the Sound Ecosystem Assessment (SEA) phytoplankton model with the Prince William Sound Princeton Ocean Model (PWSPOM). The funding supports Dr. Meibing Jin, a Research Assistant Professor who was initially an OSRI funded postdoctoral research associate. The objective is to couple the PWSPOM and the SEA phytoplankton model developed by Dr. David Eslinger. Cooperation between the OSRI postdoctoral physical oceanographer, Dr. Wang and Dr. Jin is a primary objective.

Funding for this item in FY01 is \$60,000.

### **Intertidal Resources at Risk to Oil Spill**

Continued funding for Dr. Mary Anne Bishop of PWSSC and Dr. Pete Peterson of UNC for their investigation of resources at risk on the Copper River Delta.

Funding for this item in FY01 is \$100,000.

### **Zooplankton Monitoring**

The SEA program found that Neocalanus copepods and pteropods represent the bulk of forage for planktivorous fishes (herring, walleye pollock, salmon fry, etc.) during the PWS spring bloom. Given the importance of zooplankton as forage for dominant fishes and their risk due to oil spills, OSRI committed funds to initiate long-term monitoring of their population. FY01 includes continued funding for Dr. Richard Thorne's acoustical monitoring program through the PWSSC.

Funding for this item in FY01 is \$75,000.

### **Herring and Pollock Monitoring**

The SEA program found Pacific herring and walleye pollock to represent the bulk of the forage for piscivorous wildlife in the Sound in addition to supporting independent commercial fisheries. Given their importance as a commercial resource, their position as the dominant fish in the ecosystem and their trophic position as forage fishes for piscivorous wildlife, all of which are at risk to oil spills, OSRI will commit funds to the initiation of long-term monitoring of their biomass. Monitoring will be conducted using the advanced acoustic technologies developed during the SEA program.

Funding for this item in FY01 is \$75,000.

### **Technology Coordinator**

Funding of this position was established in FY99 for providing a Technology Coordinator position within OSRI. The Technology Coordinator has responsibilities for the conversion of the OSRI research and development efforts into products and applications providing tangible services.

The OSRI Board of Directors directed that the Technology Coordinators funding be distributed among the three OSRI program areas beginning in FY01. Funding for FY01 is \$44,000 within Predictive Ecology.

### **Geographic Information System for Living Resources at Risk to Oil**

Project awarded to Resource Planning, Inc. OSRI is also negotiating a five-year agreement with NOAA-HAZMAT for completion of the Alaska coastal GIS effort.

*FY01 budget for this area is \$60,000. FY01 monies are earmarked for OSRI cooperative effort with NOAA-HAZMAT. The RPI proposal will be executed with \$120,000 in FY99 & FY00 funds.*

### **4.3 Predictive Ecology – Carryover Programs**

#### **Sentinel Rockfish Project**

This project funds Dr. Thomas Kline of the Prince William Sound Science Center in his efforts to document movement within the food web of PWS and the Gulf of Alaska.

*No new FY01 required. This project received \$60,000 in FY00 funds.*

## **5.0 Public Education and Outreach Program**

The 10-year OSRI business plan authorizes 20% of the program funds for grants, contracts and workshops in the area of public education and outreach. In many cases, the direction of research and development is constrained due to a lack of public and professional awareness. The objective of the OSRI education and outreach program is to minimize this impediment.

*For specific information about individual grants, visit the BAA section of our web site. All costs are approximate and are subject to change. The Public Education and Outreach budget for FY01 totals \$372,000 (22% of FY01 projected program spending).*

### **5.1 Public Education and Outreach – New Programs**

#### **Oiled Wildlife Rehabilitation Standards**

Rehabilitation standards developed following the EVOS incident have placed the state of Alaska in a leadership position for rehabilitation standards of oiled wildlife. In FY01 OSRI will undertake an effort to extend this knowledge to the wider spill community at state, federal and international levels.

The FY01 budget for this program is \$30,000.

### **5.2 Public Education and Outreach – Continuing Programs**

#### **BAA: K-12 Environmental Science Education Programs**

Included within this program is ongoing support and expansion the award winning “Science of the Sound” project in Prince William Sound. Twenty-five thousand dollars is dedicated towards this multi-faceted education project incorporating hands-on class-room teaching, outreach trips to regional villages and other remote communities, and a series of summer camps for a variety of age groups. OSRI would like to establish additional working partnerships with other regional organizations to establish and extend similar programs to the greater community affected by the EVOS event.

*The FY01 budget for this program is \$75,000.*

#### **BAA: Science Planning Workshops**

OSRI has maintained an open BAA for proposals to hold science planning workshops that tackle difficult issues in the region by bringing together international groups of scholars, researchers, managers, developers and the public to review, discuss and plan the direction of research and management in the region.

*Funding of two to three workshops is anticipated from FY01 funding of \$75,000.*

#### **BAA: Graduate Level Fellowships**

This is an open BAA for grants supporting one to three graduate fellows working on projects related to the OSRI mission. The fellowships will be available on a yearly basis.

The FY01 budget for this program is \$100,000.

#### **BAA: Student Internships**

This is an open BAA for grants supporting high school and college undergraduate students for assisting in research related to pollution in the marine environment. Internships are available on a quarterly basis.

The FY01 budget for this program is \$30,000.

### **OSRI Website**

Support for the OSRI web site maintenance and continuing development of inter-net and intra-net capabilities.

The FY01 budget for this program area is \$15,000.

### **Technology Coordinator**

Funding of this position was established in FY99 for providing a Technology Coordinator position within OSRI. The Technology Coordinator has responsibilities for the conversion of the OSRI research and development efforts into products and applications providing tangible services.

The OSRI Board of Directors directed that the Technology Coordinators funding be distributed among the three OSRI program areas beginning in FY01. Funding for FY01 is \$22,000 within Public Education and Outreach.

### **Communication and Extension Services**

Funding for public dissemination and projection of OSRI's scientific and educational information. This includes the publication of OSRI's newsletter.

The FY01 budget for this area is \$15,000.

### **Annual Report**

The OSRI will contract for an Annual Report to be produced that details each of the programs executed by the OSRI in FY01.

*This report will require \$10,000 of FY01 funds.*