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February 9, 2004 Trustee Council teleconference

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Exxon Valdez Oil Spill Trustee Council

441 W. 5th Ave., Suite 500 • Anchorage, Alaska 99501-2340 • 907/278-8012 • fax 907/276-7178

AGENDA
EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
TELECONFERENCE MEETING
February 9, 2004 2:00 p.m.
441 West 5th Avenue, Suite 500, Anchorage

DRAFT

Trustee Council Members:

GREGG RENKES
Attorney General
State of Alaska

JAMES BALSIGER
Administrator, Alaska Region
National Marine Fisheries Service

ERNESTA BALLARD
Commissioner
Alaska Department of
Environmental Conservation

DRUE PEARCE
Senior Advisor to the Secretary
for Alaskan Affairs
U.S. Department of the Interior

KEVIN DUFFY
Commissioner
Alaska Department of Fish
and Game

JOE MEADE
Forest Supervisor
U.S. Department of Agriculture
Forest Service

Meeting in Anchorage, Trustee Council Office, 441 West 5th Avenue, Suite 500
_____ Federal Chair

1. Call to Order – 2:00 p.m.
   - Approval of Agenda
   - Approval of Meeting Notes
     November 10, 2003

2. Public comment – 2:05 p.m.

3. Executive Director comments – Gail Phillips
   - Report on January 15, 2004 PAC meeting, request a joint TC/PAC meeting
   - January 15, 2004 PAC meeting report – Chuck Meacham, PAC Vice-chair
   - Update on ARLIS book project
   - Update on 15th Anniversary

- President's budget justification
- Research Planning Workshop project 040471

4. Discussion and approval of deferred continuing projects from November 10, 2003 Trustee Council meeting*
   - Stabeno, Surface nutrients over the shelf and basin in summer-bottom up control of ecosystem diversity (040654)
   - Willette, Monitoring dynamics of the Alaska coastal current and development of applications for management of Cook Inlet salmon (040670)

5. Discussion and approval for additional funding for funded projects from November 10, 2003 Trustee Council meeting*
   - UAF/Weingartner, Long-term monitoring of the Alaska Coastal (040340)
   - Science Management (040630)

6. Current Discussion and approval of FY 05 Invitation*

7. Discussion and approval to proceed with application for NOS Grant*

Adjourn

* Indicates action items.

Exxon Valdez Oil Spill Trustee Council

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DRAFT

Community Involvement Workshop
March 9-10, 2004
Seward City Library, Seward, Alaska

Tuesday, March 9

3:00pm	Depart Anchorage via personal vehicle Gail Phillips, Phil Mundy, Brenda Norcross, Brett Huber, Cherri Womac	
5:00	Arrive Seward	
6:00	Dinner with participants at Harbor Club (provided)	

Wednesday, March 10 - Seward City Library

8:30am	Welcome Introductions	Gail Phillips
8:45	Trustee Council goals for the workshop	Drue Pearce
8:45	Brief History of Community Involvement/Subsistence projects funded by the Trustee Council	
9:00	Define Community: Tribal and other communities	
9:15	Briefing on Science Plan/FY05 Invitation Categories	Brett Huber
9:45	Proposal writing session	Brenda Norcross
noon	Lunch (provided)	
1:30pm	Design structure to evaluate CI projects	Phil Mundy
2:30	Establish criteria for Community Involvement guidelines - review TEK protocols	
	Depart Seward	
	Arrive Anchorage	

Exxon Valdez Oil Spill Trustee Council

441 W. 5th Ave., Suite 500 • Anchorage, Alaska 99501-2340 • 907/278-8012 • fax 907/276-7178

TRUSTEE COUNCIL MEETING NOTES
Anchorage, Alaska
November 10, 2003

DRAFT

By Gregg Renkes
Trustee Council Member

DRAFT

Trustee Council Members Present:

Joe Meade, USFS
Drue Pearce, DOI
James Balsiger, NMFS
Kevin Duffy, ADF&G
Ernesta Ballard, ADEC
*Gregg Renkes, ADOL

*Chair

Meeting convened at 10:05 a.m., November 10, 2003 in Anchorage at the EVOS Conference Room.

1. Approval of the Agenda

APPROVED MOTION: Approved the agenda for the November 10, 2003 meeting. (Attachment A)

Motion by Duffy, second by Ballard

Public comment period began at 10:10 a.m.

Public comment received from 16 individuals in Anchorage, Cordova, Kodiak, Fairbanks, Valdez, and Virginia.

Public comment period closed at 11:45 a.m.

2. Approval of the Meeting Notes

APPROVED MOTION: Approved the September 3, 2003 meeting notes. (Attachment B)

Motion by Ballard, second by Duffy

3. Trustee Council and EVOS staff Investment Training
On September 26, 2003 Michael O'Leary, Executive Vice President, Callan Associates presented investment training to the EVOS staff and

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Investment Working Group (IWG). The Trustee Council was also invited to attend. Mr. Callan's presentation was designed to give the EVOS staff and IWG as custodians of the Investment Fund a better understanding of investment strategies. He touched on capital market theory, asset allocation concepts, historical perspectives, endowment and foundation spending policies, market projections, and alternative asset allocation policies. Even though EVOS has money managers to manage the fund it is important that the staff and the Council have an understanding of its function and through continued education, keep up with the current market trends. Paula Banks recently attended an Asset Allocation Summit in San Francisco the message again was echoed, to understand what your money managers are doing and keep up with the current market trends.

4. Approval of FY 04 Work Plan

APPROVED MOTION:	Approve for funding FY 04 Watershed projects by: Finney, Honnold, Walker, Heintz and Knudsen. (Knudsen met fund contingency criteria by responding to STAC recommendations in revised proposal submitted to EVOS office.)
	Motion by Duffy, second by Balsiger
APPROVED MOTION:	Approve for funding FY 04 Alaska Coastal Current projects by: Batten, Cokelet, Okkonen, Weingartner and Matkin.
	Motion by Balsiger, second by Pearce
APPROVED MOTION:	Approved for funding FY 04 Community Involvement projects by: Adams, Schneider and DeLorenza.
	Motion by Pearce, second by Meade
APPROVED MOTION:	Approve for funding FY 04 Lingering Oil projects by: Fall, Irons, Nelson and Rosenberg. Fund contingent on providing final reports to EVOS office projects by: Rice, Irvine and Bodkin.
	Motion by Balsiger, second by Ballard
APPROVED MOTION:	Approve for funding FY 04 Data Management projects by: Keifer, Macklin and Saupe.

Motion by Balsiger, second by Meade

FAILED MOTION: Funding for FY 04 Modeling projects.

APPROVED MOTION: Approve for funding FY 04 Nearshore projects by: Bishop, Bodkin, Konar, Ruesink and Thorne.

Motion by Balsiger, second by Ballard

APPROVED MOTION: Approved for funding FY 04 Synthesis projects by: Eckert. Fund contingent upon meeting the following criteria: publish in Alaska, copyright to the Trustee Council and under Trustee Council's guidance project by: Spies.

Motion by Duffy, second by Meade

5. Adopt Resolution

APPROVED MOTION: Adopted Resolution 04-01 of the *Exxon Valdez* Oil Spill Trustee Council regarding the FY 04 Work Plan.

Motion by Ballard, second by Balsiger

6. Memorandum of Agreement

APPROVED MOTION: Approved accepting the Memorandum of Agreement between the Alaska Marine Highway System, Department of Transportation and the *Exxon Valdez* Oil Spill Trustee Council.

Motion by Ballard, second by Pearce

7. Science-related organizations in State

APPROVED MOTION: Approved EVOS staff preparing a report identifying various science-related organizations in the State; their sponsors, their funding sources and their area of scientific expertise.

Motion by Ballard, second by Duffy

8. Executive Session

APPROVED MOTION: Approved moving to executive session to discuss litigation issues.

Motion by Duffy, second by Meade

EXECUTIVE SESSION
Off the record: 6:00 p.m.
On the record: 6:15 p.m.

Meeting adjourned at 6:20 p.m. Motion by Ballard, second by Balsiger

Meeting Summary

A. GROUP: *Exxon Valdez* Oil Spill (EVOS) Public Advisory Committee (PAC)

B. DATE/TIME: January 15, 2004

C. LOCATION: Anchorage, Alaska

D. MEMBERS IN ATTENDANCE:

Name	Principal Interest
John Devens	Regional Monitoring
Gary Fandrei	Aquaculture/Mariculture
RJ Kopchak	Public-at-Large
Pat Lavin	Conservation/Environmental
Chuck Meacham	Science/Technical
Brenda Norcross	Science/Technical and STAC
Ed Page	Marine Transportation
Martin Robards	Conservation/Environmental
Stan Senner	Conservation/Environmental
Ed Zeine	Local Government

E. NOT REPRESENTED:

Name	Principal Interest
Torie Baker	Commercial Fishing
John Gerster	Public-at-Large
Charlie Hughey	Subsistence
Pat Norman	Native Landowner
Gerald Sanger	Commercial Tourism
Scott Smiley	Public-at-Large
Stacy Studebaker	Recreation Users
Michael Vigil	Tribal Government
Vacant	Sport Hunting & Fishing
Vacant	Science/Technical

F. OTHER PARTICIPANTS:

Name	Organization
Paula Banks	Trustee Council Staff
Dede Bohn	U.S. Geological Survey
Brenda Hall	Trustee Council Staff
Brett Huber	Alaska Department of Fish and Game
Barat La Porte	Patton Boggs
Phil Mundy	Trustee Council Staff
Doug Mutter	Designated Federal Officer, Dept. of the Interior
Gail Phillips	Trustee Council Executive Director
Cherri Womac	Trustee Council Staff

G. SUMMARY:

The meeting was opened by Chuck Meacham, Vice-chair, at 9:00 a.m. Doug Mutter read the roll call, a quorum was present. The summary of the August 14, 2003, PAC meeting was approved.

Gail Phillips gave the Executive Director's report. She noted that the annual Marine Science Symposium being held this week and co-sponsored by the Trustee Council was going well. She stated that Brett Huber and Kate Williams had both resigned from the PAC, and that their efforts were greatly appreciated. Meacham and R.J. Kopchak asked that letters and tokens of appreciation be given to both.

Phillips stated that since the PAC term is up this October, and the nomination process for new PAC members is time-consuming, the open seats will remain vacant until the next term. PAC Vice-chair, Chuck Meacham, will chair the PAC meetings until the end of the term.

Mutter provided a summary of the process for renewing the PAC charter and nominating and appointing new PAC members for a two-year term, as required under the Federal Advisory Committee Act. The next two-year term will begin in October 2004. Current PAC members may be nominated to serve for another term.

Phillips said the Trustee Council was planning a teleconference work session next week on the small parcel habitat program. She said there would be a community involvement workshop in Seward in March to examine the status and process for funding community involvement projects. She reported on efforts to commemorate the 15th anniversary of the oil spill this spring. Information is being compiled for a CD and a brochure. This and other background information on the status of restoration will be available for PAC members to use in presentations in their communities.

Phillips stated that Brenda Hall is serving as the Program Manger to track EVOS-funded projects.

The floor was opened for public comment. None was offered.

Stan Senner asked what decision needed to be made by the Trustee Council regarding the small parcel habitat program. Phillips said that the issue before the Trustee Council since last fall was the disposition of the small parcel habitat pilot project with The Nature Conservancy and the Alaska Conservation Foundation. The Trustee Council has not had time to delve into the issue and has taken no action. She said next week's teleconference is to bring them up to speed, not to take action. Senner stated that it appeared views on this question from the PAC, as a body, were not being sought by the Trustee Council, which would be a departure for the past 10 years of Trustee Council procedure. He said the PAC does not have any information on the pilot program or its outcome on which to make a recommendation. Meacham said the PAC is always free to comment on items relevant to the Trustee Council. Phillips stated that the 1-year pilot project was over the end of September and the Trustee Council has to decide whether to renew the project and to approve expenditures from last year.

Senner, Pat Lavin, and Brenda Norcross asked that the PAC be provided materials relevant to this project and the decision to be made so the PAC could make appropriate recommendations to

the Trustee Council. Gary Fandrei recalled that the PAC asked the Trustee Council, at the last PAC meeting, if the Trustee Council wished to have PAC input on the small parcel habitat program and the settlement re-opener clause. Huber stated that these requests were made of the Trustee Council. Kopchak agreed with Senner and said he was concerned about the de-construction of a traditional advisory process. He said the PAC should be able to do more than comment as individuals. John Devens agreed and suggested sending a motion to the Trustee Council. He noted two issues: 1) is the PAC involved in these decisions, and 2) where do we stand on the small parcel program. He went on to say that if there was no formal way for the PAC to advise the Trustee Council, then why are we here?

Martin Robards asked if no action was taken, did that mean there was no small parcel program? Phillips said there has been no program since September when the pilot contract ended, but some details remained to be resolved. Meacham stated that some recommendations have been generated by the PAC, rather that as a request from the Trustee Council. Senner suggested a meeting with the PAC and Trustee Council to discuss the advisory process and perhaps other issues. He said the PAC is a requirement of the court settlement.

Devens moved, second by Zeine, that **the PAC requests the EVOS Executive Director to contact the Trustee Council to set up a joint meeting with the Trustee Council and the PAC to discuss the advisory process.** The motion was passed unanimously.

Cherri Womac updated the PAC on the community involvement efforts. On December 11, an informal teleconference was held--some PAC members participated--to discuss community involvement issues and project proposals. It was decided to hold a workshop this spring in Seward focused on community involvement, to: 1) address how to write proposals, 2) address how proposals will be evaluated, 3) review the GEM Science Plan and FY05 invitation for proposals, and 4) review the current EVOS traditional ecological knowledge protocol. Phillips said that PAC members were welcome to attend the March 9 workshop. Robards suggested they invite Patricia Cochran, of the Alaska Native Science Commission to participate.

Norcross said that some proposal writers wanted community involvement proposals to be reviewed in a manner different from the process for scientific studies. Senner said that they have been, but proposals still need to have a clear definition of the activity, a description of the relevance to restoration, show the capability of researchers to accomplish the work, and demonstrate experience/successful results from past efforts. Norcross agreed, noting that some proposals in the past have not met these standards. Senner noted that EVOS staff have always been available to assist proposal writers. Many who submit proposals have false expectations that by simply submitting a proposal, they will get funded, which is not the case.

Phil Mundy presented a status report on the GEM Science Plan. Public comments were due on the Plan by January 5. Several comments were submitted, but he expects no major changes to the Plan. The Plan will be updated on the website. Mundy noted that the FY 2004 work plan includes many new project starts, especially in the watershed area.

Mundy went on to discuss the FY 2005 invitation to submit proposals. He said the nearshore area is ripe for moving ahead with monitoring. (Regarding monitoring projects: he expects to form partnerships with other organizations, Knight Island will be one monitoring site, and the National Science Foundation may participate as part of their Long Term Ecological Research program.) Continuing projects may require additional work. Proposals related to the Alaska

Coastal Current may center around picking up key elements of the past GLOBEC efforts, since that program is coming to an end. Watershed projects are in good shape for the next three years. He expects work to continue with modeling, workshops, and data management and communications.

The group discussed when it might be possible to have a joint session with the Trustee Council. Phillips said probably in a couple of months.

Kopchak moved, second by Senner, the following motion: "Whereas, the PAC has taken a formal position in support of the EVOS GEM and work plan; and whereas, this support is the result of four years of planning and review by EVOS staff, STAC, and PAC; and whereas, the small parcel program deferred by the Trustees represents a program that has continued support by the PAC, communities, Tribes, and stakeholders; therefore it is resolved that the PAC requests the EVOS Trustees to continue with the small parcel acquisition program." Devens suggested that additional research on this issue was needed before coming forward with a position. After some discussion the motion was withdrawn. Meacham asked of Phillips that she share with the PAC any public documents on the small parcel program that the Trustee Council will be examining. Phillips said she would share PAC sentiments and perspectives on this question with the Trustee Council.

Senner moved, second by Kopchak, that **the PAC ask the Trustee Council to invite a PAC recommendation on the future of the small parcel program**. The motion was passed unanimously.

Huber announced that his position with the Alaska Department of Fish and Game is EVOS Program Coordinator. He will oversee ADFG projects and serve as EVOS liaison. He is available to PAC members who wish to discuss projects.

The meeting adjourned at 10:35 a.m.

H. FOLLOW-UP:

1. Phillips will request the Trustee Council to set up a joint meeting with the Trustee Council and the PAC to discuss the advisory process.
2. Phillips will provide the PAC with information about the small parcel program.
3. Phillips will forward to the Trustee Council, the PAC request for an invitation to make a recommendation on the small parcel program.

I. NEXT MEETINGS:

–PAC members are invited to attend the March 9-10 EVOS Community Involvement Workshop in Seward
–Possibly a joint PAC work session with the Trustee Council this spring

J. ATTACHMENTS: (Handouts, for those not present)

1. Huber resignation notice
2. Williams resignation notice
3. Master Table Appendix A of 2004 Work Plan

K. CERTIFICATION:

PAC Chairperson	**Date**

Alaska Resources Library and Information Services (ARLIS)

FY 03 Department of Interior Appropriation Project: Progress Report

January 2004

Summary: Alaska Resources Library and Information Services (ARLIS) received an FY 03 Congressional appropriation, administered by the Department of Interior, of $497,000 to catalog and digitize a large collection of valuable research materials essential to the management of natural resources in Alaska.

Original proposal: $9 million over 6 years at $1.5 million/year. To catalog the backlog of valuable natural resources materials and provide digital access over the Internet to special collections located at ARLIS.

FY 03 - Year 1: $497,000: Funding was transferred into a cooperative agreement with the University of Alaska Anchorage, the administrator of ARLIS funding. This cooperative agreement allows continued spending of these funds beyond FY 03, thus providing the time necessary to complete the project, due to the delayed passage of the FY 03 budget. $80,000 was used for digitizing and $417,000 for cataloging. With an intern cataloging team and an outsourcing agreement with UAA, the following major collections were cataloged:

- Arctic Gas Collection: 39 linear feet of engineering and environmental reports and studies prepared in support of the 1974 Arctic Gas proposal. These materials are vital to the current natural gas pipeline initiative.
- SuHydro: A feasibility study of more than 3,000 documents that evaluated the development requirements and collected baseline environmental data for the Susitna Hydroelectric Project. The original cost of the research was $132 million. These reports are now accessible at a fraction of the cost of redoing the research, and in time to meet the needs of recently renewed interest in this project.
- ARCO/BP collections: Materials selected from the disbanded oil company libraries, focused on the environmental, geological, and business aspects of oil production.

	Number completed April - Dec 2003	Percentage of total
Unique items found nowhere else	1,709	13.29%
Items unique to Alaska	2,268	17.64%
Items unique to Southcentral Alaska	1,198	9.31%
Items new to ARLIS	1,183	9.20%
Added copies	6,498	50.54%
Total	12,856	
$417,000/12,856 = $32.43 per item		

12,856 new items are now available at ARLIS. Of the total number of items cataloged, over 13% are unique items found nowhere else. A third of the total are items new to Alaska and half are new to ARLIS. As of December 31, 2003, the cost per item to catalog, process, and shelve a book is $32.43. This is significantly less than the average cost of $50 per item, due to a production oriented approach and the use of intern catalogers.

Digitizing of 200 volumes (30 linear feet, 150,000 pages) of the Outer Continental Shelf Environmental Assessment Program Reports is currently in progress. Upon completion, these reports will be available full-text over the Internet to anyone who needs them.

Future work: Many important reports remain uncataloged, including pre- and post statehood reports documenting Alaska commercial fisheries, historic management decisions, use of fishery resources statewide, subsistence patterns, and life histories of the species from a regional perspective; U.S. Federal Power Commission Hearings on Alaska Natural Gas Transportation System Project - 81 cubic foot boxes containing the combined Hearing records for the Arctic Gas proposal, 1974, and the El Paso Gas Proposal, 1975 Docket no Cp75-96; and many extensive collections of professional materials from individuals and government agencies. Topics include geology, oil and gas development, land use planning, subsistence, and cultural and biological resources.

These documents are Alaska's natural resources history. Access to this information is critical for current decision-making, permitting, and energy development. Until the backlog is cataloged, this wealth of resource information vital to state and national political decisions about Alaska remains largely inaccessible.

AGENDA: RESEARCH PLANNING WORKSHOP
PROJECT 040471: UPDATE OF THE STATUS OF SUBSISTENCE USES IN EXXON VALDEZ OIL SPILL AREA COMMUNITIES

Hilton Garden Inn
100 West Tudor (SE corner of Tudor Road and C Street)
Anchorage, AK
February 3 and 4, 2004

Sponsored by:

Exxon Valdez Oil Spill Trustee Council
Bristol Bay Native Association
Chugach Regional Resources Association
Kodiak Area Native Association
Division of Subsistence, Alaska Department of Fish and Game

Purpose: Review findings of previous research on subsistence uses in the EVOS area, discuss research methods, and develop recommendations for research topics and interview questions for next round of household surveys for Project 040471.

DAY ONE
(Note: each agenda item includes a question/answer period.)

8:30	Greetings, Introductions, Agenda	Jim Fall, ADF&G Patty Brown-Schwalenberg, CRRC Ralph Andersen, BBNA Alex Panamaroff III, KANA
9:00	Why We Are Here: EVOS Trustee Council Evaluation of Natural Resource Services	EVOS TC Representative Gail + Brett Invite to CI meeting in Seward Mar 9+10
9:15	Overview of Previous Findings about Subsistence and the Oil Spill, and Overview of Proposed Project	Jim Fall, ADF&G
10:00	Break	
10:15	Community Reports & Open Discussion	

Lunch Break: 12 Noon - 1:30

1:30	Continue Community Reports	
2:15	Research Methods	Panel, ADF&G
2:45	Data Management Methods	Robert Walker, ADF&G
3:00	Break	
3:15	Small Group Discussions	
4:30	Recess for the day	

DAY TWO

8:30	Continue Small Group Discussions	
10:00	Break	
10:15	Small Group Reports	Group chairs and/or reporters

Lunch Break 12 Noon - 1:30

1:30	Discussion of Group Reports and Previous Research	
3:00	Break	
3:15	Summarize Recommendations of Group Formation of Survey Instrument Drafting Committee	
4:00	Wrap Up: What's Next?	Fall, Brown-Schwalenberg, Andersen, and Panamaroff

4:30 Adjourn

Draft 2/2/2004

GAIL PHILLIPS REMARKS TO SUBSISTENCE RESEARCH PLANNING WORKSHOP
FEBRUARY 3, 2004

Introduction

Welcome

Thanks for your participation in this workshop over the next two days and in the survey effort to come.

The Trustee Council and I recognize the importance of subsistence to the fifteen predominantly Alaskan Native communities (with a total population of about 2,200 people) in the oil spill area who rely heavily on harvests of subsistence resources. Harvest of subsistence resources, such as fish, shellfish, seals, deer, and waterfowl are critical to the communities within the spill area. Many families in other communities also rely on the subsistence resources of this region.

Following the spill, the injury to Subsistence was specifically identified and enumerated on the Injured Resources and Services list

In November 1994, the *Exxon Valdez* Oil Spill Trustee Council adopted an official list of resources and services injured by the spill as part of its *Restoration Plan*. This list has served three main purposes in the Restoration Program:

1. It has highlighted injuries caused by the oil spill and cleanup efforts and helped the Trustees and the public track the status of important fish, wildlife, and other resources and services.

2. It has helped guide the *Restoration Plan*. This was especially important in 1994 when the plan was first adopted, but the list still serves to highlight resources that are in need of consideration.

3. Finally, taken as a whole, the list of injured resources has helped the Trustees and the public track recovery of the overall ecosystem and the functions and human services that it provides.

It should be noted that the analysis of these resources and their recovery status only pertains to recovery from the effects of the 1989 oil spill. Many of these resources are also experiencing the effects of other natural and human factors resulting in significant population declines. Many of the species that may be "recovered" or

"recovering" from the effects of the oil spill are vital parts of the oil-impacted ecosystem that is the focus of the Trustee Council's long-term monitoring program – GEM – the Gulf of Alaska Ecosystem Monitoring and Research Program.

The survey being planned over the next two days is an example of the GEM program as a continuation of the Restoration Plan.

The *Restoration Plan* states that the Injured Resources and Services list will be reviewed periodically and updated to reflect results from scientific studies and other information. With each review, a resource's progress toward a recovery objective is evaluated. It's this process that this workshop and your survey are designed to support.

The following goals and objectives are used in assessing the status of the resources and services injured by the oil spill:

Restoration Goal: Recovery of all injured resources and services, including the ecosystem as a whole.

Recovery Goal of Injured Resources and Services: A return to conditions that would have existed had the spill not occurred.

Recovery Objective: A specific, measurable parameter that is used to signal the recovery status of an injured resource or service.

It was a survey of the same type as this one being planned that provided the basis for listing subsistence as a service injured by the spill.

Household interviews conducted with subsistence users in communities throughout the spill area in 1989 indicated that subsistence harvests of fish and wildlife in most of the communities declined substantially following the spill. Key factors in the reduced harvests included reduced availability of fish and wildlife, concern about possible health effects of eating oiled fish and wildlife, and disruption of the traditional lifestyle due to cleanup and related activities.

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The Recovery Goal for subsistence is:
A return to conditions that would have existed had the spill not occurred.

The Recovery Objective is:

Subsistence will have recovered when injured resources used for subsistence are healthy and productive and exist at pre-spill levels. In addition, there is recognition that people must be confident that the resources are safe to eat and that the cultural values provided by gathering, preparing, and sharing food are being reintegrated into community life.

The Trustee Council has shown its understanding of the importance of subsistence in the region through the substantial dedication of effort and resources over the years.

The following Restoration Strategies have been employed:

Restoring injured resources used for subsistence, such as harbor seals, herring and octopus; replacing or enhancing subsistence resources such as creating a coho run near Tatitlek and reestablishing clam populations near several villages; removing residual oil on Chenega beaches and testing subsistence foods for their safety; protecting subsistence resources from further degradation, primarily through the habitat protection program; monitoring recovery of subsistence use through periodic surveys; and increasing the involvement of subsistence users in the restoration process through two Youth Area Watch programs, elders-youth conferences, video documentaries, and a local facilitator/community involvement project.

The Council's commitment to these restoration strategies remains strong as does our commitment to involve the subsistence users in the restoration process. This survey effort is an example of both of those commitments. In addition, the GEM Program will benefit subsistence uses by fostering increased understanding of the natural forces and human impacts that cause change in marine ecosystems, developing tools to respond to these changes, and eventually being able to predict them.

The status of subsistence recovery has been guided by past survey projects. Following the initial survey in 1989, household interviews were repeated each year 1990-93 and again in 1998. These surveys have provided the most pertinent and important information available regarding status. Here are some of the details revealed in their results:

By 1993, the estimated size of the subsistence harvest and participation in subsistence activities appeared to have returned to pre-spill levels in some communities, with the harvest rebounding first in the communities of the Alaska Peninsula, Kodiak Island, and the lower Kenai Peninsula and lagging behind a year or more in the Prince William Sound communities.

Many other subsistence resources injured by the spill, including clams, mussels and harbor seals, have still not recovered from the effects of the spill. In addition, in 1998, household interviews indicated that subsistence users continued to feel the effects of the spill. Subsistence continues to recover from the effects of the oil spill, but has not yet fully recovered.

The percentage of those interviewed who reported that subsistence uses are lower than before the spill has declined. Concerns about food safety and effects on the traditional lifestyle have lessened. Concerns about resource availability and greater harvest effort remain, but harvest levels in all communities interviewed are at or approaching pre-spill levels.

Subsistence harvests in 1998 varied among communities from 250-500 pounds per person usable weight, indicating continued strong dependence on subsistence resources.

Regarding resource availability, subsistence users continued to report scarcity of a number of important subsistence resources, including harbor seals, herring, clams, and crab. These observations are generally consistent with scientific studies funded by the Trustee Council that continue to find that some subsistence species (e.g., harbor seals, Pacific herring, clams) are not recovered from the effects of the spill.

According to those interviewed, the 1998 increase in pounds harvested at a time of continued reduced resource availability reflects greater harvest effort (traveling farther, spending more time and money) than would have been required before the spill to achieve a similar harvest. It also reflects increased reliance on fish in the subsistence diet. Increased fish harvests and decreased marine mammal and shellfish harvests occurred in most communities where interviews were conducted. The cultural and nutritional importance of each resource varies, and these changes in diet composition remain a serious concern to subsistence users.

The decline in shellfish consumption reflects food safety concerns as well as reduced availability of shellfish. From 1989-94, subsistence foods were tested for evidence of hydrocarbon contamination, with no or very low concentrations of petroleum hydrocarbons found in most subsistence foods. However, because some shellfish can readily accumulate hydrocarbons, subsistence users have been advised not to eat shellfish from beaches where oil can be seen or smelled on the surface or subsurface. By 1998, a large majority of those interviewed expressed confidence about most foods except certain shellfish, such as clams, and concerns about the presence of PSP (paralytic shellfish poisoning) in clams outweighed concerns about lingering hydrocarbon contamination from the oil spill.

Subsistence users continue to emphasize that the value of subsistence cannot be measured in pounds alone. Harvest levels do not encompass the cultural value of traditional and customary use of natural resources. Following the oil spill, there was concern that the spill disrupted opportunities for young people to learn cultural subsistence practices and techniques, and that this knowledge may be lost to them in the future. In 1998, the number of subsistence users reporting a decline in the influence of elders in teaching subsistence skills and values had decreased and the number reporting that young adults are learning enough subsistence skills had increased. Also, the number reporting less sharing of subsistence resources, another integral aspect of subsistence culture had decreased. However, many of those interviewed continue to express concern about these elements of the traditional lifestyle, with more than 50 percent responding that the traditional way of life has not recovered since the spill.

In the 1998 household interviews, a number of subsistence users commented that some of the current influences on subsistence may not be attributable to the oil spill. Factors such as demographic changes in village populations, ocean warming, increased competition for subsistence resources by other people (e.g., sport fishing charters) and predators (e.g., sea otters), and increased awareness of PSP and other contaminants may play a role in resource availability, food safety, and participation in traditional practices.

Past survey projects have provided a great deal of insight to the Trustee Council, with information specific to the time the survey was conducted, as well as an opportunity to assess progress over time. I fully expect that this survey project – another in-depth snap-shot in the time series we have developed since 1989 – will be very important to attaining a better understanding of where we are today; 15 years after the *Exxon Valdez* spill.

The Trustee Council and I appreciate your efforts in this project and look forward to your results.

I would be happy to address questions.

Exxon Valdez Restoration Program

The budget incorporates the receipts and mandatory spending associated with the civil and criminal settlements related to the 1989 *Exxon Valdez* oil spill in the Prince William Sound and surrounding areas. Funding from the settlements, including interest, is provided to Federal and Alaska State natural resource trustee agencies to restore the natural resources and services damaged by the spill. The *Exxon Valdez* Oil Spill Trustee Council consists of 3 State and 3 Federal trustees who oversee restoration of the injured ecosystem through the use of civil settlement funds. The criminal settlement funds are managed separately by the Federal and Alaska State governments, but are coordinated with the Council.

The Exxon Corporation made the final payment on the $900 million civil settlement in September of 2001. The settlement includes a re-opener provision valid from September 2002 to September 2006, which provides an opportunity for the Trustee governments to claim up to an additional $100 million for natural resource injury that could not have been known or anticipated at the time of settlement.

The civil settlement and interest earned to date total roughly $957 million. Of that amount, $216.4 million reimbursed Exxon and the Federal and State agencies for past response and damage assessment activities. To date, the Trustee Council has spent $366.2 million and committed an additional $39.6 million for habitat protection efforts (land acquisition) on 645,903 acres of land. Another $176.8 million has been used to fund research, monitoring, and marine science-based restoration activities, while $31.8 million has been used for scientific management, public information and participation, and administration. The balance of $127.4 million is invested in *Exxon Valdez* Investment Fund, with annual earnings on $27.2 million earmarked for future habitat protection, and annual earnings on $100.2 million earmarked for the Gulf Ecosystem Monitoring (GEM) program.

EXXON VALDEZ RESTORATION PROGRAM BUDGET
Civil and Criminal Settlements
[in thousands of dollars]

	FY 2003 Actual	FY 2004 Estimate	FY 2005 Estimate
National Oceanic and Atmospheric Administration	1,521	1,350	1,024
U.S. Forest Service	1,130	0	0
Department of the Interior	1,217	954	623
Subtotal, Federal Government	3,868	2,304	1,647
State of Alaska	3,515	3,077	1,677
Total Restoration Program	7,383	5,381	3,324

EXXON VALDEZ OIL SPILL RESTORATION PROGRAM

Authorities

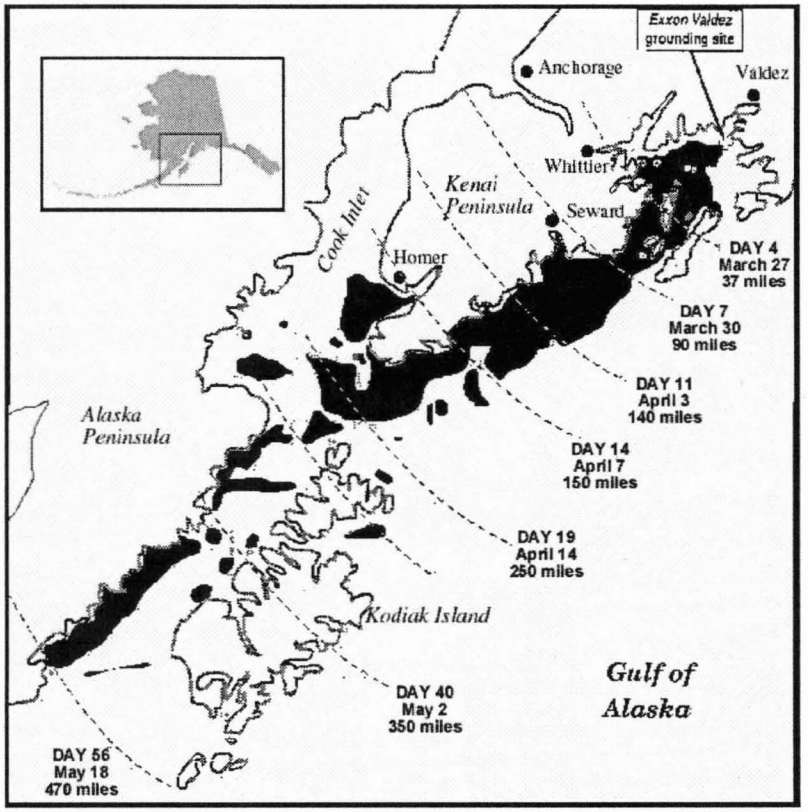
Section 207 of the 1992 Dire Emergency Supplemental Appropriations Act and Transfer for Relief from the Effect of Natural Disasters, for Other Urgent Needs, and for Incremental Costs of Operation Desert Shield/Desert Storm Act of 1992 (P.L. 102-229);

Section 311(f) of the Federal Water Pollution Control Act, as amended (33 U.S.C. 1321 (f);

Memorandum of Agreement and Consent Decree (MOA) approved and entered on August 28, 1991, in United States v. State of Alaska, No. A91-081 CV, and the Agreement and Consent Decree (Consent Decree) approved and entered on October 8, 1991, in United States v. Exxon Corporation, et al, No. A91-082 CV and State of Alaska v. Exxon Corporation, et al, No. A91-083 CV; and Plea Agreement in United States v. Exxon Corporation, et al, No. A90-015-1CR & 2CR.

Background

In March of 1989, the tanker Exxon Valdez ran aground on Bligh Reef in Prince William Sound, Alaska, spilling approximately 11 million gallons of North Slope crude oil. Over the next four weeks, the oil moved through southwestern Prince William Sound, into the Kodiak Island archipelago and along the western coast of the Gulf of Alaska, causing extensive injury to natural resources and services (human uses) in the spill impact area.



Immediately following the spill, efforts were initiated to clean the oiled beaches and assess the extent of damage. Federal agencies, the State of Alaska, local governments, native organizations, private citizens, and the Exxon Corporation and its contractors mobilized response efforts. In the water, containment booms were deployed to corral the oil. On the beaches, high-pressure hot-water washing, manual rock washing, and bioremediation techniques were among the methods used to remove oil from the shoreline.

Civil Settlement and EVOS Investment Fund: In October 1991, the U.S. District Court approved a civil settlement for claims by the federal and state governments for recovery of damages resulting from the spill as well as a plea agreement that resolved various criminal charges against Exxon. Exxon agreed to pay $900 million with annual payments stretched over a 10-year period. The final payment was made in September of 2001. The Consent Decree with Exxon also included a reopener provision valid between September 2002 and September 2006, that provides an opportunity for the Trustee governments to claim up to an additional $100 million to restore natural resources that suffered a substantial loss, the injury of which could not have been known or anticipated from data available at the time of the 1991 settlement.

Under terms of the civil settlement, certain costs relating to cleanup, damage assessment and litigation were recognized as eligible for reimbursement to the governments. All reimbursements due the Federal agencies have been completed and the money deposited into separate accounts within those agencies for use in accordance with applicable law. This included $11.7 million to the Department of the Interior, $20.2 million to the Department of Agriculture, $17.5 million to the Department of Commerce, $15.7 million to the Coast Guard and $4.5 million to the Environmental Protection Agency. Reimbursements due the State of Alaska were satisfied with the last payment, made in September 2001. In addition, the agreement stipulated that Exxon continue to perform cleanup work and was entitled to a credit against future payments.

The civil settlement and Investment Fund is controlled by the provisions of the MOA and the Consent Decree. The governments act as co-trustees in the collection and use of all natural resource damage recoveries as a result of the oil spill. The Trustee Council consists of three State Trustees (AK Dept. of Fish & Game, AK Dept. of Environmental Conservation, AK Dept. of Law) and three Federal Trustees (Interior, Commerce (NOAA), and Agriculture (Forest Service), who jointly oversee the restoration of the injured ecosystem through the use of the civil settlement funds. The MOA provides the rules for spending natural resource damage recoveries. These rules stipulate that the civil settlement and restoration funds must be used '.....for the purposes of restoring, replacing, enhancing, or acquiring the equivalent of natural resources injured as a result of the oil spill and the reduced or lost services provided by such resources.....' Additionally, the MOA requires that all decisions.....shall be made by the unanimous agreement of the Trustees'.

Since complete recovery from the *Exxon Valdez* oil spill may not occur for decades, the Trustee Council recognized the need for settlement funds to support restoration activities beyond the last Exxon payment received in September 2001. After a year and a half of public review and meetings throughout the spill region, in March of 1999, the Trustee Council adopted a resolution concerning long-term restoration needs. The resolution called for the continuation of its dual efforts of marine science and habitat protection as the best long-term approach for restoration of

the oil spill-damaged ecosystem, with special emphasis in the future on monitoring and research. The resolution also led to the creation of the Exxon Valdez Oil Spill (EVOS) Investment Fund. In October 2000, pursuant to Court Order and Public Law 106-113, all civil settlement balances held in the Court Registry Investment System, including any future payments, (net of reimbursements) were placed into an account with the Alaska Department of Revenue, to be invested according to the Trustee Council's approved policies in a mix of domestic and international equities and fixed income. In October of 2002, at the direction of the Trustee Council, the funds in the EVOS Investment Fund were divided into three distinct accounts within the Investment Fund: the Research sub-account; the Habitat sub-account; and the Koniag sub-account.

Table 1

PAST AND ESTIMATED FUTURE USES

(Dollars in Millions)

TOTAL RESTORATION FUNDING (as of 9/30/03)		**$960.9**
Exxon Payments	900.8 (a)	
Accrued interest (minus fees)	60.1	
EXPENDITURES		
Reimbursement for Damage Assessment and Response		**$216.4**
Governments (including litigation and cleanup)	176.5	
Exxon (for cleanup after 1/1/92)	39.9	
Research, Monitoring and General Restoration		**$177.3**
FY 1992 - FY 2003 Work Plans & Special Projects	169.5	
FY 2004 Work Plan & Special Projects (authorized to date)	4.8	
FY 2005 Work Plan & Special Projects (authorized to date)	1.6	
FY 2006 Work Plan & Special Projects (authorized to date)	1.4	
Habitat Protection and Acquisition		**$407.4**
Large Parcel and Small Parcel habitat protection programs (past expenditures, outstanding offers, estimated future commitments and parcel evaluation costs - includes funds for Koniag conservation easement and Afognak offers.)		
Public Information, Science Management & Administration		**$32.4**
FY 1992 - FY 2003 Work Plans	30.8	
FY 2004 Work Plan (authorized to date)	1.6	
FY 2005 Work Plan (authorized to date)		
INVESTMENT FUND DESIGNATIONS (b)		**$127.4**
Gulf Ecosystem Monitoring (GEM)	100.2	
Habitat Protection	27.2	

(a) Reimbursements to governments reduced by $2.7 million included in FY92 Work Plan.

(b) Includes investment earnings as of 9/30/03.

Past and estimated future uses of the civil settlement are outlined in Table 1. Future costs in the table are estimates made for planning purposes. The Trustee Council will base actual funding decisions upon the determination of what is necessary for restoration at that particular time.

Another important aspect of the Consent Decree and MOA is the requirement to provide for meaningful public participation, including establishment of a public advisory group to advise the Trustees. The Trustee Council formed the Public Advisory Group (PAG) in October 1992. In 2002, a new charter was approved, renaming the PAG the Public Advisory Committee. The Committee now consists of twenty members who reflect a balanced representation from the public at large, as well as members from 14 principal interests.

Criminal Plea Agreement and Restitution Fund: As part of the criminal plea agreement, the court fined Exxon $150 million. The court remitted $125 million in recognition of Exxon's cooperation in cleaning up the spill and paying private claims. Of the remaining $25 million, $12 million went to the North American Wetlands Conservation Fund and $13 million was paid to the Victims of Crime Fund. Exxon also paid restitution of $50 million to the United States and $50 million to the State of Alaska. The $50 million paid to the United States was deposited in the DOI Natural Resource Damage Assessment and Restoration Fund where available balances earn interest until expended. The Federal Restitution Fund is discussed at the end of the Exxon Valdez section.

Exxon Valdez Program Performance Measures

The overall mission of the Trustee Council is to restore the environment injured by the *Exxon Valdez* oil spill to its pre-spill status as a healthy, productive ecosystem while taking into account the importance of the quality of life and the need for viable opportunities to establish and sustain a reasonable standard of living. The success of the program has been and will continue to be measured against the recovery of individual resources or services. Indicators of recovery include increased numbers of individuals, reproductive success, improved growth and survival rates, and normal age and sex composition of the injured population. However, for some species, actual injury and recovery may never be completely known.

In general, resources and services are deemed to have recovered when they return to conditions that would have existed had the spill not occurred. For resources that were in decline before the spill, recovery may consist of stabilizing the populations at a lower level. For some resources, little is known about their pre-spill status; therefore the nature and extent of injury and recovery are difficult to define. However, full ecological recovery involves restoring the ecosystem as well as restoring the individual resources. The ecosystem will have recovered when the population of flora and fauna are again present at former or pre-spill abundances, healthy and productive; there is a full complement of age classes at the level that would have been present had the spill not occurred; and the public has the same opportunities for the use of resources as they would have had if the oil spill had not occurred.

Based on injuries identified through damage assessment, the Trustee Council developed a List of Injured Resources and Services, which was included in the Restoration Plan, consisting of 28 distinct resources or species, as well as identifying lost or diminished human services. In August of 2002, the Trustee Council adopted an updated List of Injured Resources and Services (See Table 2). Of the 28 species or resources listed, seven are considered to have fully recovered

from the devastating effects of the spill. This represents the addition of five resources to the previous list published in 1999. The Trustee Council declared archeological resources, the black oystercatcher, common murres, pink salmon, and sockeye salmon to be fully recovered, joining the bald eagle and the river otter as the other species to have bounced back completely from the oil spill injuries. Further, the Trustee Council declared in August 2002 that the human services of subsistence, commercial fishing, recreation/tourism and passive use are each recovering from the spill, but have not fully recovered.

Table 2

LIST OF INJURED RESOURCES AND SERVICES

Updated August 2002

INJURED RESOURCES:

Recovered

Archaeological resources *	Common murre	Sockeye salmon
Bald eagle	Pink salmon	
Black oystercatcher	River otter	

* Archaeological resources are not renewable in the same way that biological resources are, but there has been significant progress toward the recovery objective.

Recovering

Clams	Killer whale (AB pod)	Sea Otter
Designated wilderness	Marbled murrelet	Sediments
Intertidal communities	Mussels	

Not Recovered

Common loon	Harbor seal	Pacific herring
Cormorants (3 species)	Harlequin duck	Pigeon guillemot

Recovery Unknown

Cutthroat trout	Kittlitz's murrelet	Subtidal communities
Dolly Varden	Rockfish	

LOST OR REDUCED HUMAN SERVICES:

Recovering

Commercial fishing
Passive uses
Recreation and tourism (sport fishing, sport hunting and other recreational uses)
Subsistence

NOTE: Those resources that have been re-categorized in the August 2002 update are underlined.

2004 Work Plan and Associated Projects: The FY 2004 Exxon Valdez work plan incorporates the first full year of the Gulf Ecosystem Monitoring and Research (GEM) Program, along with other ongoing restoration and research projects. (www.evostc.state.ak.us) The FY 2004 budget totals $4.76 million, as identified below in Table 3. Additional dollars are released as needed, primarily for approved land acquisition activities. For FY 2005 and beyond, the annual Work Plan will consist of two major components. These are continued investigations of the effects of lingering oil, and a long-term baseline monitoring and research program (GEM Program).

For the first time, the Trustee Council has authorized funding for projects spanning multiple years. Funding in the FY 2004 work plan includes funds for FY 2005 projects in the amount of $1.58 million and funding in FY 2006 in the amount of $1.39 million.

Table 3

FY 2004 EVOS Trustee Council Workplan Budget

(Dollars in Millions)

	FY 2004 Authorized Budget
Total, FY 2004 External Projects (Authorized as of November 10, 2003)	$3.21
Total, FY 2004 Internal Projects (Authorized as of September 3, 2003)	$1.55
Total, FY 2004 Authorized	$4.76
Total, FY 2005 Authorized External Projects	$1.58
Total, FY 2006 Authorized External Projects	$1.39
Total, FY 2004-2006 Authorized	$7.73

Gulf of Alaska Ecosystem Monitoring and Research (GEM) Program

The northern Gulf of Alaska provides hundreds of millions of dollars in income from the seafood, recreation, and tourism industries, as well as significant subsistence resources on which many Alaskans depend. A comprehensive understanding of the Gulf of Alaska and the ability to share such information is critical managing human impacts on the gulf's ecosystem and thereby sustaining the human activities that rely on it. To that end, the Exxon Valdez Trustee Council recently began implementation of the GEM Program. Funded with an endowment of approximately $90 million from the Exxon Valdez settlement, the GEM program is the ultimate legacy of the EVOS Restoration Program. The mission of the GEM program is to sustain a healthy and biologically diverse marine ecosystem in the northern Gulf of Alaska, through a long-term commitment to collect and analyze data and to promote future science-based natural

resource stewardship decision-making. The GEM Program development is scheduled to occur through FY 2007 (see table 4) and to promote future science-based natural resource stewardship decision-making. Table 4 provides the timeline of the GEM Program development.

Table 4
Gulf of Alaska Ecosystem Monitoring and Research (GEM) Program Implementation Schedule

*	March 1999	Trustee Council decides to endow GEM Program.
*	2000	Draft GEM Program developed.
*	2000 - 2002	Intensive review by public, resource agencies, user groups, scientists, and the National Research Council.
*	Fall 2002	GEM Program officially begins, focusing on synthesis of existing data.
*	2003	Pilot monitoring projects begin.
*	2003 - 2007	Components added until program fully implemented.

At the heart of the GEM Program is a core monitoring program, which is combined with other monitoring efforts conducted by other resource agencies and researchers, seeks to leverage funding, and is aimed at detecting long-term environmental change over time. Foremost in the process is the ability to detect environmental change and distinguish between natural forces and human-caused impacts. The process incorporates interagency cooperation and collaboration, along with significant community involvement to provide accessible and informative data of the Gulf of Alaska ecosystem. Numerous opportunities for public involvement will include the use of citizen volunteers to assist in observations and data gathering, and Alaskan Natives will be consulted for traditional resource knowledge.

The GEM program recognizes that science-based marine resource management, including oil spill response strategies, require an ecosystem approach which takes into consideration multiple complex processes and dynamic relationships. GEM research consists of two principal areas of study, natural changes and potential impacts of human activity. Natural changes research focuses on the effects of climate and oceanography on the natural resources of the gulf. Research into the potential impacts of human activity focuses on the impacts of fishing, tourism, oil spills and other contaminants, and subsistence activities, all in an effort to establish critical baseline data for launching effective oil spill response actions and for understanding and mitigating oil spill damages. Ultimately this information can also be used by resource managers to set reasonable standards to ensure human activities are sustainable.

The GEM Program is organized into the study of four general habitat types, which are watersheds, intertidal and subtidal zones, the Alaska Coastal Current, and offshore habitat. These systems are highly interdependent, thus there will be significant overlap in their respective studies. Intensive studies within each habitat will illuminate patterns that can be compared to

patterns revealed in the other habitats, helping scientists better understand the relationships between these habitats and distinguish the forces that affect productivity in each habitat type.

Watersheds: Watersheds are freshwater and terrestrial habitats from the mountains to the extent of a river's plume. They provide rearing habitat for anadromous fish and seabirds such as murrelets and their rivers are pathways for nutrient exchange between terrestrial and marine ecosystems. Woody debris and vegetation from land are also imported to the marine environment, providing a carbon source and habitat for some species. Rivers also deposit iron, sediments and sometimes pollution and contaminants, all of which have varying effects on the sea life downstream. As rocks are worn down by glaciers and weathering, minerals and silt are carried by rivers to the ocean. Development and clear-cut logging can affect watersheds by removing vegetation and increasing soil erosion. Contaminants found in watersheds may be of local origin, and indeed, most contaminated watersheds are located near towns and cities. However, contaminants are also introduced by atmospheric processes from as far away as Asia. So far, contaminants from far-away sources have been detected only at very low levels.

Intertidal and Subtidal Habitat: These areas of the nearshore habitat are brackish and salt-water coastal habitats which extend offshore to 20 meters in depth. These shallow areas are some of the most productive habitats in the Gulf of Alaska and may be the most threatened. These habitats were the most severely affected by the Exxon Valdez oil spill and many still harbor oil. In general, these areas have abundant invertebrates such as barnacles, crabs and shellfish and juveniles of many species.

Nearshore habitats provide important feeding grounds for larger animals. Terrestrial and aquatic birds, mammals, invertebrates, large fish and even humans depend on food from these rich meeting places of sea and river nutrients. In addition to their importance as feeding grounds, these areas provide nurseries for young marine organisms, unique habitats for specialized animals and are major sources of seaweed production. At the same time, contaminants such as persistent organic pollutants (POPs) may be found in high concentrations in several invertebrate species of the inter- and subtidal zones, providing pathways and potential threats to wildlife and human health. For research purposes, some invertebrate species make excellent biological pollution indicators.

Alaska Coastal Current: Just beyond the subtidal zone up to about 30 miles offshore flows the Alaska Coastal Current. This low-salinity channel extends from the mouth of the Columbia River to the end of the Alaska Peninsula. The current is shaped by the tremendous influx of freshwater from the glaciers and thousands of streams flowing into the gulf. Because it is fed in part by ice melt, the current flows at its maximum in late summer and at its minimum in winter. The Alaska Coastal Current is an ever-changing part of the gulf that plays many important ecological roles. For example, it supplies plankton to Prince William Sound and carries fish and invertebrate eggs from one place to another. However, the same coastal flow that benefits so many species may also distribute marine pollutants as seen in the Exxon Valdez oil spill. A future toxic spill could spread across the entire gulf by this current.

The success of many species depends on the specific shape of the current, which is influenced by climate, season and sea-floor topography. Juvenile pollock are kept in areas rich in food supply by eddies, circular side currents formed as larger currents move around land masses.

Oceanographic features can have a major influence on biological production in the water column, so understanding how they work provides an important piece of the ecological puzzle.

Offshore Habitat: The offshore region refers to the continental shelf break and the Alaska gyre, a large-scale counterclockwise circulation off the coast. Most large animals of the outer continental shelf and deep sea are fish, the most common being flounder, ocean perch, pollock, halibut and cod. Salmon also use this habitat before they return to the watersheds to spawn. One of the most important processes in this part of the gulf is upwelling, which occurs slowly in the middle of the gyre and at a higher rate in the summer over the shelf break. This upward lift pulls rich deep-sea nutrients to the surface where they can be used by photosynthetic phytoplankton, the primary producers of the marine ecosystem. This process is mediated by climate, especially the Pacific Decadal Oscillation, which can slow down or speed up the wind-driven transport (and perhaps the supply) of deep-water nutrients across the shelf to support inshore production. Offshore currents may also carry pollutants originating from as far away as Asia or from deep-ocean dumping and accidents at sea.

Habitat Protection

Habitat protection and acquisition is one of the principal tools of restoration. The long-term protection of threatened habitat, considered essential for the well-being and recovery of species injured by the oil spill, has been and continues to be a key component of the Exxon Valdez restoration program. The Trustee Council has dedicated nearly 60 percent of the available settlement funds – roughly $407 million – for habitat protection efforts totaling nearly 645,000 acres in the spill region. Habitat protection efforts have focused on the acquisition and protection of key habitats, preventing further damage for extensive development and logging, and allowing the ecosystem to recover. Additional benefits accrue to commercial fishing, subsistence, recreation, and tourism, all of which are dependent upon a healthy productive ecosystem.

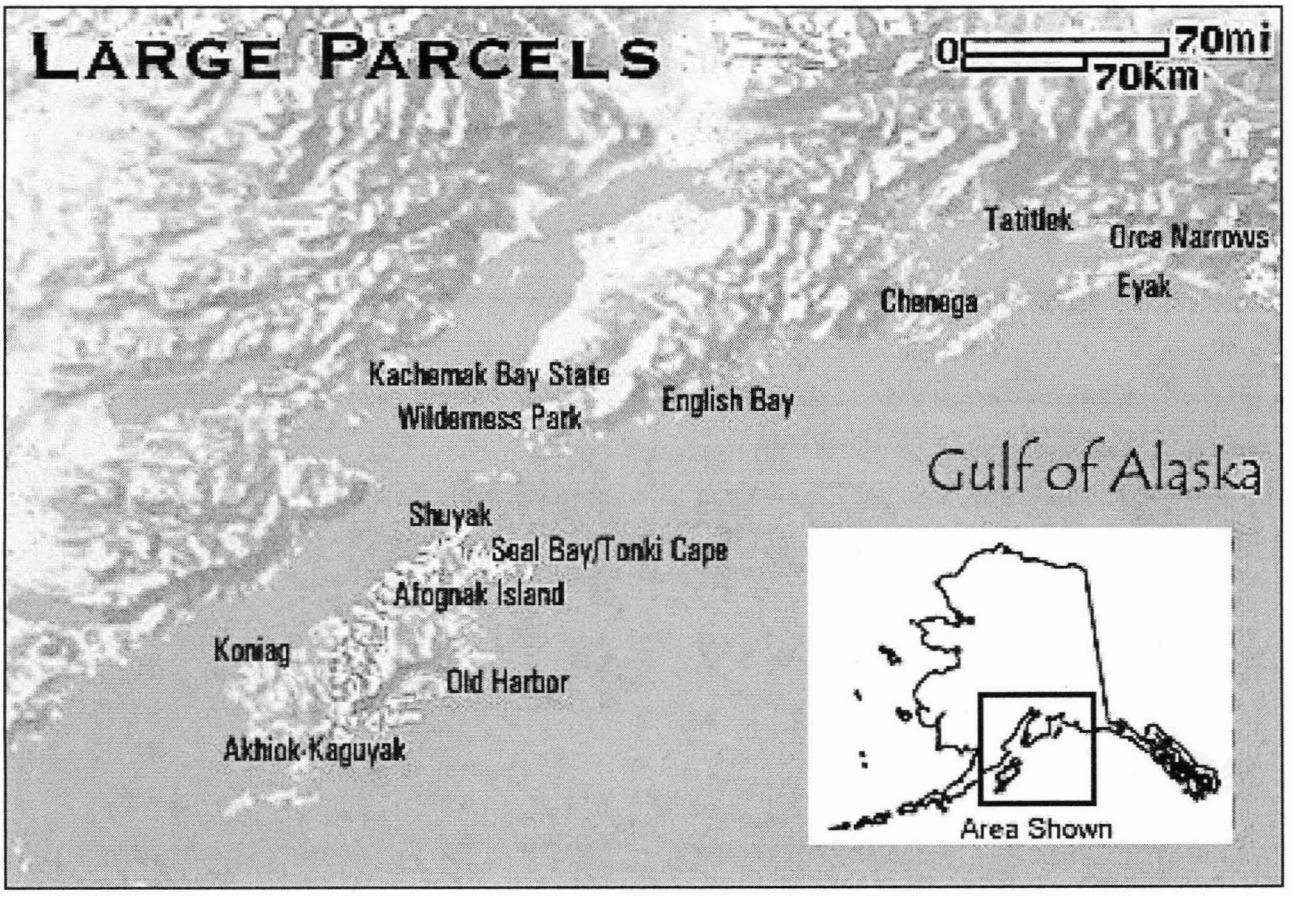
In March 1999, the Council unanimously elected to set aside $25 million for ongoing small parcel acquisitions. The Trustee Council is considering focusing on small tracts of valuable habitat. The Trustee Council has not yet decided on how to manage these funds. If managed as an endowment, and after inflation proofing, investment earnings from the endowment are expected to be about $1.25 million per year, or as an alternative, the Trustees could elect to spend the $25 million principal. In either case, the acquisition program will focus primarily on small tracts of valuable habitat

The Exxon Valdez habitat protection program was split into two programs based on the size of the land purchases: Large Parcel (generally in excess of 1,000 acres); and Small Parcels (less than 1,000 acres).

Large Parcel Program

The large parcel acquisitions are completed for the exception of the Koniag easement. Most large parcels acquired by the Trustee Council were owned by Native corporations. The Large Parcel Program worked only with willing sellers to craft protection agreements that provide for the highest of benefits to the resources, Native Alaskans and the general public. Lands are protected through a creative mix of fee simple purchases, conservation easements and timber easements. Some agreements also provide for the retention of Alaskan Native shareholder home

sites as an allowed use. Most agreements provide for public access for camping, hunting and fishing, restrict development, and maintain subsistence uses, while protecting injured resources and providing economic benefits to the Native corporations.



The Trustee Council's Large Parcel Program is essentially complete, with over 635,000 acres protected throughout the spill region. Table 5 on the following page reflects those large parcels protected in terms of acreage, coastal miles, and salmon rivers.

Table 5

COMPLETED LARGE PARCEL ACQUISITIONS

Parcel Description	Acreage	Coastal Miles	Salmon Rivers	Total Price	EVOS Trustee Share	Other
Afognak Joint Venture	41,750	99	18	$74,023,342	$74,023,342	$0
Akhiok-Kaguyak, Inc.	115,973	202	39	$46,000,000	$36,000,000	$10,000,000
Chenega	59,520	190	45	$34,000,000	$24,000,000	$10,000,000
English Bay	32,537	123	31	$15,371,420	$14,128,074	$1,243,346
Eyak	75,425	189	80	$45,129,854	$45,129,854	$0
Kachemak Bay State Park	23,800	37	3	$22,000,000	$7,500,000	$14,500,000
Koniag (fee title)	59,674	41	11	$26,500,000	$19,500,000	$7,000,000
Koniag (limited easement) 1/	55,402			$32,100,000	$31,950,000	$150,000
Old Harbor 3/	31,609	183	13	$14,500,000	$11,250,000	$3,250,000
Orca Narrows	2,052		2	$3,450,000	$3,450,000	$0
Seal Bay / Tonki Cape	41,549	112	5	$39,549,333	$39,549,333	$0
Shuyak Island	26,665	31	8	$42,000,000	$42,000,000	$0
Tatitlek	69,814	212	50	$34,719,461	$24,719,461	$10,000,000
Large Parcel Totals	**635,770**	**1,419**	**305**	**$429,343,410**	**$373,200,065**	**$56,143,345**

1/ For Kachemak Bay State Park inholdings, other funding is a State of Alaska contribution of $7 million from the Exxon plea agreement and $7.5 million from the civil settlement with the Alyeska Pipeline Service Company. For all other parcels, funding from other sources consists of a Federal contribution from the Exxon plea agreement

2/ Thus far, the Trustee Council has paid $2,150,000 from civil settlement funds (along with an additional $150,000 from other sources (EVOS criminal settlement)). Through July 2012, the Trustee Council will pay an additional $4,554,504 for the easement. Koniag can then choose whether to accept the remainder of the earmarked funds to sell the land in fee.

3/ As part of the protection package, the Old Harbor Native Corporation agreed to protect an additional 65,000 acres of land on Sitkalidak Island as a private wildlife refuge.

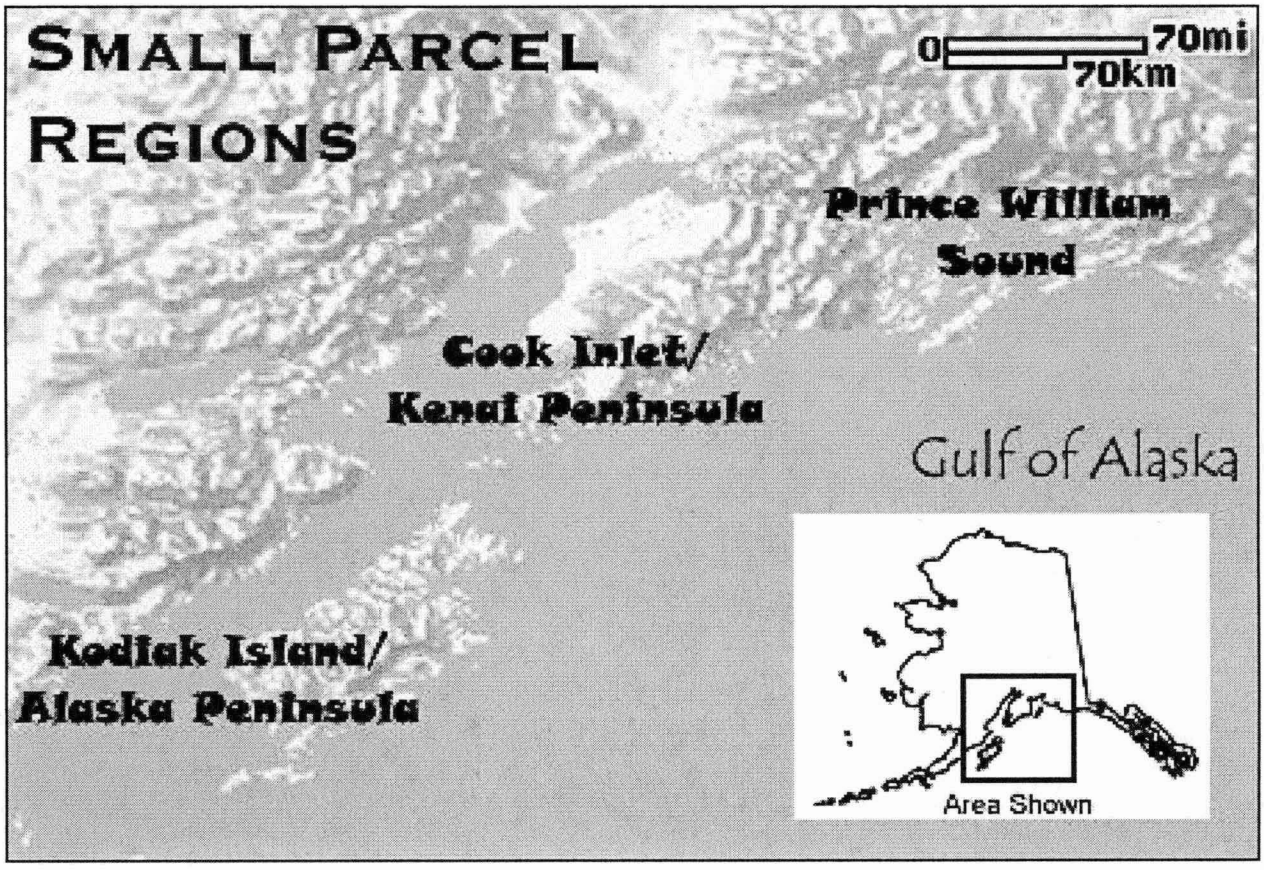
Small Parcel Program - The Small Parcel program focuses on the acquisition and protection of smaller tracts of land, typically 1,000 acres or less. These small parcels are located throughout the spill region -- on coves, along important stretches of river, at the mouth of rivers, adjacent to valuable tidelands, and often close to spill-area communities. Such parcels possess unique habitat qualities and strategic restoration values for natural resource recovery, as well as for recreational and subsistence use.

All small parcels are purchased from willing sellers. The nomination period is open-ended and nominations continue to be received and evaluated. As of January 2003, over 8,000 acres have been acquired through the program. The Small Parcel program is broken down into three principal regions: Prince William Sound; Cook Inlet / Kenai Peninsula; and Kodiak Island / Alaska Peninsula. Table 6 shows the current summary of small parcel purchases

Table 6

COMPLETED SMALL PARCEL ACQUISITIONS

	Total Acres	Value
Prince William Sound	1,391.9	$3,037,300
Cook Inlet / Kenai Peninsula	5,795.6	$16,293,100
Kodiak / Alaska Peninsula	2,049.9	$3,034,050
Totals	9,237.4	$22,364,450



Protection of the Kenai River has been a primary focus of the small parcel program. The Trustee Council has acquired nearly 5,000 acres along the Kenai River and its tributaries, including the Kasilof, Ninilchik, and Moose Rivers. Some of the Kenai River parcels have been developed to provide appropriate access to the river, including parking, sanitation facilities, and light-penetrating grated walkways to protect the riverbank vegetation from getting trampled during the sport fishing season. This provides access while allowing other public areas to recover from the impacts of overuse. In addition to the funds spent on acquisition, the Trustee Council also contributed nearly $2 million to restore riverbank habitat that was degraded from trampling. In the Kodiak Archipelago, the Trustee Council has protected nearly 1,900 acres in small parcels,

including 105 acres in Three Saints Bay, one of the most scenic bays in the archipelago, and 56 acres at the mouth of the Ayakulik River, which is second only to the Karluk River for sockeye and chinook salmon production potential.

Koniag Inc.

In December 1995, the federal government entered into an agreement to purchase from Koniag, Inc., surface title to 59,674 acres of prime habitat for bear, salmon, bald eagles, and other species in the Kodiak National Wildlife Refuge. The Council contributed $19.5 million to this acquisition and the federal government contributed $7 million from the federal restitution fund, for a total purchase price of $26.5 million. The 1995 agreement also protected through a non-development easement an additional 55,402 acres along the Karluk and Sturgeon rivers until December 2001, in order to provide the Trustee Council and Koniag Inc. additional time to work out an agreement for the long-term protection of these lands. The Trustee Council paid an additional $2.0 million for this original non-development easement.

In 2002, Koniag and the Trustee Council closed on an agreement that provided for a ten to twenty-year conservation easement for these lands, with an option for Koniag to sell these lands to the United States. The Trustee Council has placed $29,800,000 into a special account within the EVOS Investment Fund for such an acquisition. Earnings from the Koniag account are used to make annual payments to Koniag for the conservation easement. In the event Koniag decides to sell these lands to the United States, Koniag will receive the balance of funds remaining in the special account.

Federal Criminal Restitution Fund Program for Restoration

As part of the criminal settlement, Exxon agreed to pay restitution of $50 million to the United States and $50 million to the State of Alaska. While the criminal restitution funds are not under the authority of the Trustee Council, the governments have coordinated activities funded through the criminal settlement to maximize restoration benefits. The Trustees continue to use the criminal settlement funds and earned interest within the context of the Restoration Plan and FEIS published by the Trustee Council. Allocations of the Federal Restitution Fund are reflected in

Table 7

FEDERAL CRIMINAL RESTITUTION FUNDS

(dollars in thousands)

Deposit (December 1991)	50,000
Interest Income (as of December 2003)	13,281
Total, Restitution Program	$63,281

ALLOCATION OF CRIMINAL RESTITUTION FUNDS

PROJECT PURPOSE:	INTERIOR	USFS	NOAA	
Small Parcel Land Acquisition	9,540	1,571	0	
Large Parcel Land Acquisition	20,500	20,000	0	
Restoration Projects	0	868	0	
Shoreline Monitoring	0	0	3,390	
Oil Spill Research	0	0	6,648	
Projects Approved to Date	$30,040	$22,439	$10,038	$62,516
Balance Available for Additional Work				$765

Table 7.

RESOLUTION 04-02 OF THE
***EXXON VALDEZ* OIL SPILL TRUSTEE COUNCIL**
REGARDING THE FY 04 WORK PLAN

We, the undersigned, duly authorized members of the *Exxon Valdez* Oil Spill Trustee Council do hereby certify that, in accordance with the Memorandum of Agreement and Consent Decree entered as settlement of United States of America v. State of Alaska, No. A91-081 Civil, U.S. District Court for the District of Alaska, and after public meetings, unanimous agreement has been reached to expend funds received in settlement of State of Alaska v. Exxon Corporation, et al., No. A91-083 CIV, and United States of America v. Exxon Corporation, et al., No. A91-082 CIV, U.S. District Court for the District of Alaska, for necessary natural resource damage assessment and restoration activities for fiscal year 2004 as described in Attachment A. The following Fiscal Year 2004 Work Plan projects:

1. UAF/Weingartner, Long-term monitoring of the Alaska Coastal Current (040340) is funded at an additional $4,905 (includes $4,500 for facilities and administration costs and $405 GA).

2. Stabeno, Surface nutrients over the shelf and basin in summer-bottom up control of ecosystem diversity (040654) is funded at $49,500.

3. Willette, Monitoring dynamics of the Alaska Coastal Current and development of applications for management of Cook Inlet salmon (040670) is funded at $89,800.

4. Scientific Management under GEM and Lingering Oil Programs (040630) is funded an additional $70,000.

The monies are to be distributed according to the following schedule:

Alaska Department of Fish & Game	$164,705
Alaska Department of Natural Resources	0
SUBTOTAL TO STATE OF ALASKA	$164,705
U.S. Department of the Interior	0
National Oceanic & Atmospheric Administration	$49,500
SUBTOTAL TO UNITED STATES OF AMERICA	$49,500
TOTAL APPROVED	$214,205

Funds must be spent in accordance with Attachment A, with the following conditions: (1) If a Principal Investigator (PI) has an overdue report or manuscript from a previous year, no funds may be expended on a project involving the PI unless the report is submitted or a schedule for submission is approved by the Executive Director; (2) a project's lead agency must demonstrate to the Executive Director that requirements of the National Environmental Policy Act (NEPA) are met before any project funds may be expended (with the exception of funds spent to prepare NEPA documentation); and (3) a PI for each project must submit a signed form to the Executive Director indicating their agreement to abide by the Trustee Council's data and report requirements before any project funds may be expended.

By unanimous consent, we hereby request the Alaska Department of Law and the Assistant Attorney General of the Environmental and Natural Resources Division of the United States Department of Justice to take such steps as may be necessary to make available for the Fiscal Year 2004 Work Plan, the amount of $214,205 from the appropriate account designated by the Executive Director.

Approved by the Council at its meeting of February 9, 2004 held in Anchorage, Alaska as affirmed by our signatures affixed below.

JOE L. MEADE
Forest Supervisor
Forest Service Alaska Region
U.S. Department of Agriculture

for GREGG RENKES
Attorney General
State of Alaska

DRUE PEARCE
Senior Advisor to the Secretary
for Alaskan Affairs
U.S. Department of the Interior

JAMES W. BALSIGER
Administrator, Alaska Region
National Marine Fisheries Service
U.S. Department of Commerce

KEVIN DUFFY
Commissioner
Alaska Department of Fish and Game

ERNESTA BALLARD
Commissioner
Alaska Department of Environmental Conservation

Attachment A:
FY 04-06 Numbers Spreadsheet, Court Notice, FY 04, February 9, 2004

FY 04 - FY 06 Attachment A Numbers Spreadsheet
Court Notice
Second Expenditure Authorization for FY 04
February 9, 2004

Projects approved for Funding February 9, 2004

NOAA	$ 49,500		DNR Total	$ -
DOI	$ -		ADFG	$ 164,705
Total to United States to NR	$ 49,500		Total to State to GeFONSI	$ 164,705

Approved	Agency	Cooperating Agency	Listing	Project Number	FY04	FY05	FY06	Decision	Amount Funded FY 04 Including GA
9-Feb	ADFG		Weingartner-FY04-Alaska C	40340	$ 4,905			fund	$ 4,905
9-Feb	ADFG		Willette, Monitoring Dynamic	40670	$ 89,800	$ 68,000	$ 27,900	fund	$ 89,800
9-Feb	ADFG		GEM- Admin	40630	$ 70,000	$ -	$ -	fund	$ 70,000
			Total Funding For ADFG Feb 9, 2004		$ 164,705	$ 68,000	$ 27,900		$ 164,705
9-Feb	NOAA		Stabeno - Bottom Control of	40654	$ 49,500	$ -	$ -	fund	$ 49,500
			Total Funding for NOAA Feb 9, 2004		$ 49,500	$ -	$ -		$ 49,500

FY 04 EVOS FUNDING RECOMMENDATIONS February 9, 2004	Fund	Fund Contingent	Total Funding by Agency (Includes GA)	GA
NOAA	$ 49,500	$ -	$ 49,500	$ 4,100
DNR Total	$ -			$ -
ADFG	$ 164,705	$ -	$ 164,705	$ 20,337
DOI				
EVOS Admin funding*				
Total	$ 214,205		$ 214,205	$ 24,437

*The total allocation of $5,000,000 does not include the additional NOS grant funding
*The total projects funded of $4,974,204 does not include the NOS Grant

$	5,000,000	Trustee Council Authorization FY 04 Allocation*
$	4,760,002	Total project including State, Eves recommendations and Fund
$	214,205	Projects Approved February 9, 2004
$	4,974,207	Total Projects Approved to date*
$	25,793	Remaining un-committed FY 04 funds
$	607,310	FY 03 Surplus Operational Admin lapsed funds
$	25,793	Remaining un-committed FY 04 funds
$	633,103	Total Remaining FY 03 Lapse plus Remaining FY 04 allocation

Attachment A

Trustee Council Use Only
Project No: _____
Date Received: _____

GEM PROPOSAL SUMMARY PAGE

Project Title: Surface Nutrients Over the Shelf and Basin in Summer – Bottom up Control of Ecosystem Diversity

Project Period: October 1st to September 30th FY 04

Proposer(s):

Phyllis J. Stabeno, NOAA/PMEL, 7600 Sand Point Way NE, Seattle, WA 98115
Phone: 206-526-6453, FAX: 206-526-6485, Email: stabeno@pmel.noaa.gov

Calvin W. Mordy, Joint Institute for the Study of the Atmosphere and Ocean, Univ. of Washington, 7600 Sand Point Way NE, Seattle, WA 98115
Phone: 206-526-6870, FAX : 206-526-6744, Email: mordy@pmel.noaa.gov

Study Location: Yakutat to Kodiak Island / Shelikof Strait

Abstract:

This proposal is for continuation of Project 030654 funded in FY03. Our goal is to better understand the extraordinary variability of nutrients (spatial, interannual and decadal), and factors controlling nearshore communities and zooplankton and juvenile salmon distributions in the northern GOA. We propose monitoring nitrate over the shelf and basin. Underway samples will be collected as part of the NMFS-OCC/GLOBEC salmon survey in July/August of 2004. This survey includes a transit across the central GOA and 10 cross-shelf oceanographic and juvenile salmon transects from Yakutat to Kodiak Island. This will be the broadest nutrient survey of the northern GOA. Nutrient maps will be used to support NPZ models and satellite-derived models of nitrate and new production, to examine mechanisms of nutrient supply such as mixing over banks and transport up submarine canyons, and to assist resource management of salmon and other commercially important species.

Funding: EVOS Funding Requested: FY 04: $49.5k

Non-EVOS Funds to be Used: FY 04: $184.2k

Date: June 13, 2003

Surface nutrients over the Shelf and Basin in Summer – Bottom up Control of Ecosystem Diversity

INTRODUCTION

The Gulf of Alaska represents one of the most productive marine ecosystems in the world, but is especially sensitive to meteorological and climate forcing. Record high sea-surface temperatures in 1997 and 1998 contributed to notable shifts in biological species and abundance (Mantua, 1997; Minobe, 1997; McFarlane & Beamish, 1999). Also, increasing temperatures and reduced salinities over the past several decades resulted in a thinning of the mixed layer in the central Gulf of Alaska (GOA) and reduced entrainment of nutrients in the upper water column (Freeland et al, 1997). Recent warm events have suppressed upwelling off of Vancouver Island resulting in nutrient depletion and abnormally low chlorophyll concentrations occurring hundreds of kilometers offshore (Whitney et al., 1998, 1999).

It is uncertain if similar nutrient deficiency also occurs in downwelling regions along the Alaskan coast; to date, time series measurements of nutrients are too sparse to support such a claim. While it is generally assumed that surface waters are nutrient depleted in summer, satellite images show regions of high chlorophyll west of Prince William Sound (PWS, Stabeno et al., 2002). We hypothesize that while most of surface water in the northern GOA is depleted of nutrients in summer, there are regions of nutrient pumping (or nutrient hot-spots) that sustain new production – and that these hot spots are the basis for the high productivity and ecosystem diversity observed in the western GOA. Long-term monitoring of nutrient levels in the northern GOA is essential if we are to understand mechanisms which support summertime production, and understand variability of these mechanisms in relation to meteorological and climate forcing on interannual (e.g. El Niño/Southern Oscillation, ENSO), decadal (e.g. the Pacific Decadal Oscillation, PDO), and century (e.g. greenhouse warming) time scales.

This proposal is for continuation of Project 030654 that was funded by GEM in FY03 (the FY03 cruise is forthcoming this July) to measure surface nutrient concentrations across the northern GOA. These results will be combined with data from Fisheries-Oceanography Coordinated Investigations (FOCI), GLOBEC, the Steller Sea Lion Program, and with time-series measurements made from Vancouver Island to Ocean Station Papa (OSP). Results from this project will improve our understanding of mechanisms that supply nutrients to the shelf, our understanding of differences between the eastern and western GOA, and our understanding of bottom-up control of nearshore ecosystems, and plankton and fish distributions. Ultimately, we hope to use this project as a springboard for continued nutrient time-series measurements that will greatly benefit resource management in the northern GOA.

I. NEED FOR THE PROJECT

A. Statement of Problem

Climate forcing greatly impacts processes controlling the distribution of nutrients, and hence productivity in the Gulf of Alaska (GOA). For example, decreases in wind mixing, entrainment, and on-shelf transport of nutrients are predicted to be a consequence of long-term global warming (U.S. GLOBEC, 1996). Indeed, evidence suggests that the North Pacific may already be warming. Long-term records of SST at coastal stations in British Columbia reveal a 1-2°C per century increase (Freeland et al., 1997; Whitney et al., 1999). Concomitant with increasing SST over the past several decades has been a thinning of the mixed layer and reduced winter entrainment of nutrients in surface waters at Ocean Station Papa (OSP) in the southern GOA (Freeland et al., 1997). Along Line-P (Figure 1), the extent of seasonal nutrient depletion was more widespread in the 1990s relative to historic (1970s) observations (Whitney et al., 1998). Most stunning was the westward extent of nitrate depleted surface water in late summertime during the mid 1990s, especially in 1994 when surface waters were depleted westward to 140°W (Figure 1, Whitney et al., 1998). It has been estimated that associated with lower nitrate concentrations along Line-P are chlorophyll concentrations about half of historic levels (Whitney et al., 1999).

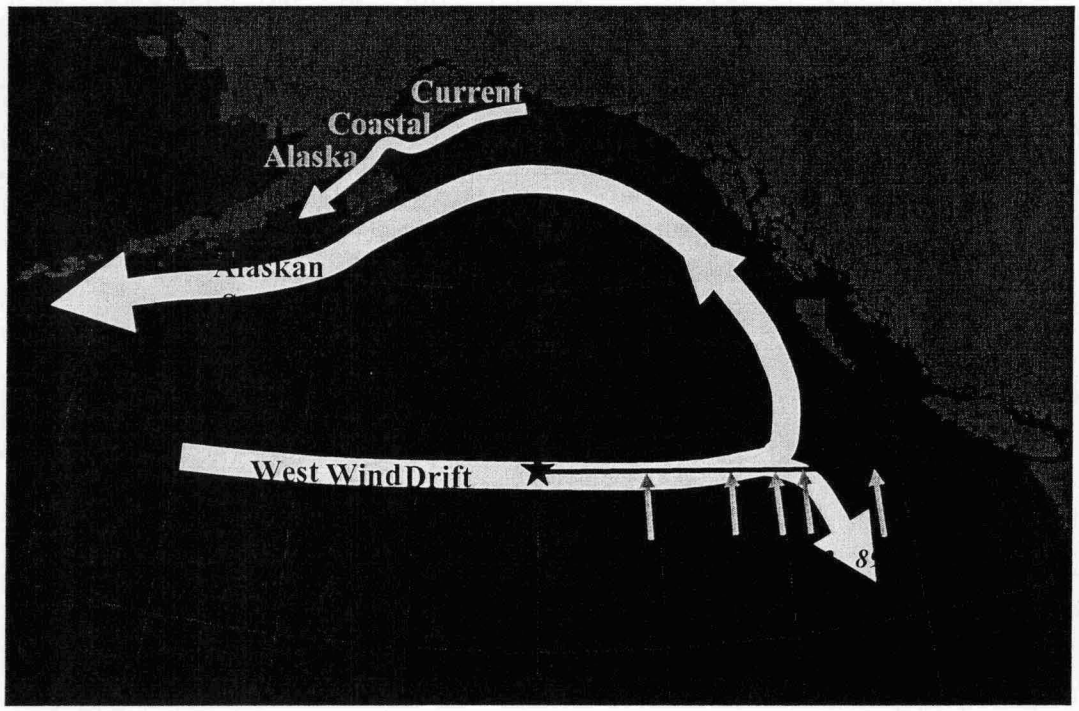


Figure 1. Map of the Gulf of Alaska showing general circulation (after Reeburgh & Kipphut, 1987), the location of Ocean Station Papa (OSP), Line-P, GAK-12, and the seaward extent of late summer nitrate depletion along Line-P (red arrows) for years 89, 92, 94, 95, 96 (after Whitney et al., 1998), 99, and 2000 (Whitney, pers. comm.).

The 97-98 ENSO event had a similar impact on the nitrate field. Warmer waters increased buoyancy of the winter mixed layer suppressing winter entrainment and coastal upwelling. As a result, along Line-P, nutrient concentrations were about half as large as observed in the 1970s with nutrient depletion occurring 1 month earlier than in previous years (Whitney et al., 1999).

Physical forcing in the Northern GOA greatly differs from forcing along Line-P. For example, shifts in the bifurcation of the West Wind Drift can lead to variability in the GOA and perhaps along Line-P (Chelton & Davis, 1982). Also, the conditions off Vancouver Island often favor upwelling (30-40% of summer winds off Vancouver Island are upwelling favorable, N. Bond, pers. comm.), whereas the opposite is true for the northern GOA. Nevertheless, the variability of nitrate was similar for the northern and southern GOA during the 1998 ENSO. GLOBEC-LTOP monitoring data show dramatic changes in the nutrient fields from 1998 to 1999. In 1998, nitrate concentrations shoreward of GAK 12 were lower by about 1/3 relative to 1999, and regions of surface nitrate depletion appeared one month earlier (http://murphydome.ims.uaf.edu:8000/globec/results/). Spatial variability of nitrate depletion could not be determined as the LTOP survey was not broad enough to examine the seaward extent of nitrate depletion.

The oceanography of the northern GOA as recently been reviewed by the principal investigators of this proposal (Stabeno et al., 2003). The principle circulation feature of the GOA is the Alaska Current/Alaskan Stream (e.g., Favorite et al., 1976). The flow generally parallels the continental slope, moving northward then turning westward where the flow becomes faster and more focused (Figure 1). Seasonal variations in the volume transport of the current are relatively small (~13%) compared to estimates of interannual variability (Reed and Schumacher, 1986). The stream acts as a barrier between the central GOA and waters over the shelf.

The central GOA is a region of weak upwelling with nutrients supplied to the surface in abundance through winter entrainment across a deep and weakly stratified mixed layer. It has been characterized as a High Nutrient - Low Chlorophyll (HNLC) region as iron limitation is believed to curtail primary production in summer (Martin et al., 1989), resulting in high nutrients and low chlorophyll concentrations despite warmer temperatures and stronger stratification.

Conditions shoreward of the Alaska Current/Alaskan Stream are much more variable than the central GOA. Strong easterly winds in fall and winter generate downwelling conditions that are generally unfavorable for primary production. In the spring and summer, increased irradiance and a reduction (or even a reversal) in downwelling conditions (weaker alongshore winds) spawn substantial phytoplankton blooms – blooms that deplete nutrients in surface waters.

The most notable oceanographic feature of the shelf is the Alaska Coastal Current (ACC). This current is thought to be wind driven with a strong baroclinic signature. Maximum transport is in winter when downwelling forcing is greatest, and the greatest baroclinic signal is in autumn coinciding with maximum freshwater discharge. The ACC provides critical habitat for numerous fish species; it is a nurturing area for larvae of demersal shelf species, and a migration pathway for juvenile and adult salmonids.

The ultimate control of a complicated ecosystem, such as the one found in the northern GOA, is the physical control that govern the availability of food to the lowest trophic levels. If conditions of physical mixing, nutrient and light availability change primary production or the timing and composition of the primary producers, the entire food web structure can be affected (Napp et al.,

1996). For example, a climate-induced loss of nutrients and primary production along the west coast was thought to impact fish survival (Welch et al., 2000). In the northern GOA, strong evidence suggests significant changes in fish abundance and composition are associated with environmental shifts (Merrick, 1995; Shima, 1996; Mueter, 1999).

In 1977, a regime shift in the PDO to a warm phase was coincident with a ~50% decline in fish biomass (Piatt & Anderson, 1996) – a decline in prey for the top predators. For example, during this time the primary prey of the Steller Sea Lion shifted from mostly rockfish and capelin – which declined greatly in population, to Walleye pollock (Pitcher, 1981, Shima et al., 2000). This change in diet and prey abundance appears to have increased the nutritional stress of adult females resulting in greater reproductive failures (Pitcher et al., 1998). Also, due to the limited foraging range of young Steller sea lions, changes in prey abundance and distributions may have limited the success of these juveniles (Merrick & Loughlin, 1997; Shima, 1996). A study of Steller population dynamics indicated that increased mortality of juveniles due to the 1977 PDO shift could result in a dramatic decline in Steller population similar to the observed trend (Shima, 1996).

It does appear that variability of biological populations is coincident with environmental oscillations. Thus, a careful monitoring of meteorological forcing, climate forcing, and nutrient distributions may help to explain observed biological variability. Time series measurements along Line-P have proven invaluable for understanding the impact of warmer SST and climate events on regional nutrient fields and primary productivity, without which recent conditions could not be put in context. However, these results pertain to the coastal upwelling regime off Vancouver, and may not be representative of conditions in the downwelling regime of the northern GOA. Although several years of GLOBEC monitoring data are now available along the south coast of Alaska, large scale mapping of nutrient fields has not occurred. We have begun underway sampling of nitrate and fluorescence during GLOBEC/FOCI/Steller Sea Lion mooring and hydrographic cruises in May and September (see Section IIC), however the spatial coverage is severely limited.

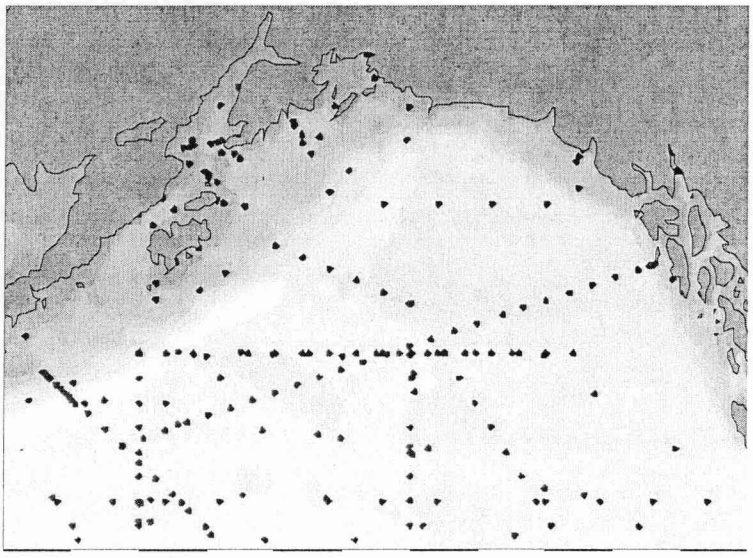


Figure 2. Surface map of NODC and WOCE nitrate data in June-September since 1971.

Nutrient data across the northern GOA are sparse and insufficient for diagnosing spatial and temporal variability, or for understanding mechanisms of nutrient supply to surface waters at the coast and over the shelf. This would best be done in summer, when nutrient depletion over much of the shelf provides the perfect backdrop for identifying local regions of

nutrient pumping, or nutrient hot-spots. But it is evident from a recent map of summertime nitrate in the GOA (Figure 2) that not much can be deduced from this paucity of data.

However, satellite images of ocean color suggest that there are active mechanisms of nutrient supply in the western GOA in summer – mechanisms that may help explain why this downwelling shelf is so productive (Stabeno et al., 2003). Surface waters east of PWS have relatively low chlorophyll concentrations, while concentrations west of PWS can be very high. The most probable mechanisms suggested through our GLOBEC and Steller Sea Lion research are on-shelf transport of deep nutrient-rich water up submerged sea valleys, and tidal/storm mixing over shallow banks (Mordy et al., 2003). (Ekman transport of nutrient rich surface water from the central gyre to the shelf is less important in summer when downwelling winds are weak, and advection of nutrients from eddies and baroclinic instabilities could not account for chlorophyll distributions observed in the western GOA.)

As the supply of nutrients appears critical for both nearshore and shelf ecosystems (see Section IIB), it is our aim to obtain broad high-resolution maps of nitrate using an automated underway nitrate monitor installed on the F/V *Great Pacific* during annual National Marine Fisheries Service (NMFS) Ocean Carrying Capacity (OCC) / GLOBEC salmon surveys in 2003 (funded by GEM) and 2004 (this proposal). These are the last two years of the NMFS-OCC / GLOBEC salmon survey, and 2003 was the final intensive field year for GLOBEC process studies.

Underway nitrate concentrations will be verified from discrete samples collected 4-6 times per day from the underway stream, and from surface samples collected during CTD casts. Discrete samples will be frozen and analyzed at PMEL for nitrate, phosphate, silicic acid and nitrite. The underway system on the ship includes a thermosalinigraph (temperature and salinity), an underway fluorometer, and an ADCP which operates continuously and is corrected for tides to reveal the flow field. The cruise track includes a dead-head from Dutch Harbor to Yakutat which crosses the central GOA, then 8 cross shelf transects from Ocean Cape to Cape Kaguyak, and 2 transects across Shelikof Strait (Figure 3).

As outlined below (Section IIA&B), the objectives of this project are to map surface nutrients across the northern and central GOA, identify mechanisms that supply nutrients to surface waters in summer, parameterize the relationship of nutrient distributions with physics, chlorophyll, zooplankton and fish, and provide a mesoscale context for studies in the western GOA (FOCI, GLOBEC and the Steller Sea Lion Program). This approach is essential for understanding the supply of nutrients to nearshore communities, and the impact of climate events on nutrient supply to the coastal GOA. These results will also be used to improve multi-variate algorithms for estimating nitrate from various biophysical parameters, algorithms that may foster the development of hindcasts to investigate large-scale variability in nitrate prior to, during, and subsequent to the strong ENSO event and PDO regime shift at the end of the last century. Those climate events may portend future biophysical conditions concomitant with global climate change.

The Principal Investigators on this proposal have a long record of accomplishment in the GOA, and are currently involved in numerous field programs in the northern GOA (see Section IIE). C. Mordy has deployed underway nitrate monitors on the most recent GLOBEC cruises, and will be responsible for operation of the underway system. P. Stabeno is a PI on the NMFS-OCC/GLOBEC salmon survey and will be responsible for synthesizing data from these two

projects. Data from the NMFS-OCC/GLOBEC salmon survey include underway measurements and numerous trawls along each of the transects. Each trawl site consists of a CTD, surface tucker net hauls to give zooplankton distributions, analysis of juvenile salmonid stomach contents to compare with zooplankton distributions, and analysis of otoliths for hatchery thermal marks and Genetic Stock Identification techniques to determine home streams of hatchery and wild salmon stocks and their distribution in relation to oceanographic regimes. The NMFS-OCC/GLOBEC salmon survey includes a retrospective analysis of catch per unit effort versus oceanographic and prey factors to better understand what affects the distribution of pink, chum, coho, and sockeye salmon in the northern GOA. Without knowledge of nutrient concentrations, there can be little hope of fully understanding the distributions of plankton, or the distribution of animals dependent on plankton.

Most of the funding of this work will be leveraged from FOCI, GLOBEC, and Steller Sea Lion funds including ship time, the underway nitrate monitor, installation of the underway system, laboratory analysis of frozen discrete samples, computer time, and salary for P. Stabeno. Our request is only for travel, salary for C. Mordy and a technician (D. Wisegarver), and various supplies.

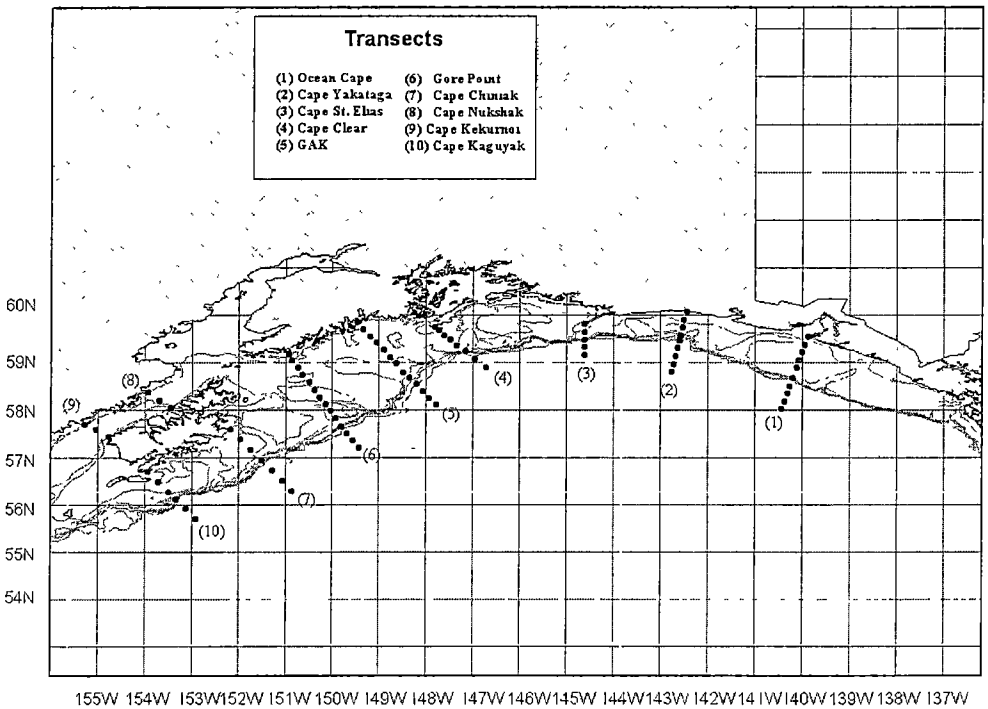


Figure 3. Transects and station locations sampled by the NMFS-OCC program in the Gulf of Alaska July 11 – August 8, 2002. Not shown is the dead-head from Dutch Harbor to Yakutat, or the station-to-station transits

B. Relevance to GEM Program Goals and Scientific Priorities

Given the paucity of nutrient data in the northern GOA, the GEM science plan recognized the need for broad surveys of nutrients in the northern GOA, and specifically identified as a major action to "continue to monitor nitrate over the shelf and basin as part of the NMFS-OCC/GLOBEC salmon survey in July/August 2004". It is also not surprising that the GEM program document makes repeated references to the need for better monitoring of nutrients. These references are found throughout discussions of the Intertidal/Subtidal, ACC, and Offshore habitat areas. The following paragraphs are taken directly from the program document and very clearly demonstrate the relevance of the proposed work to these GEM components.

Intertidal and Subtidal:

> Nutrient supply to fixed plants is not well characterized, but presumably is controlled by oceanographic processes and seasonal cycles of water turnover on the inner shelf as well as some contributions from stream runoff. This process of nutrient supply is essentially the same as for nearshore phytoplankton. Ultimately... the runup of deepwater from the central GOA onto the shelf and some poorly characterized processes for cross-shelf transport of the nutrients are critical to growth of both fixed and floating nearshore algae. The nearshore waters can be depleted of nutrients during the growing season if the warm surface layers where primary productivity is drawing down nutrients is not mixed with deeper waters by wind and tidal action. ... It is suspected that bottom-up forcing through variability of primary production is an important influence on intertidal invertebrate communities on the scale of decades, but there are no long-term data sets to examine this supposition.

Alaska Coastal Current:

> Annual variability of nutrient supply likely has a great influence on long-term variability in primary production. For example, this influence would be consistent with the relationship between the Bakun upwelling index and pink salmon marine survival rates up to 1990 and the differences observed between the volumes of settled plankton in the 1980s and in the 1990s (Brown, unpublished).
>
> What is the variability in the supply of deepwater nutrients to the photic zone of the ACC and their concentrations in that zone on time and space scales appropriate to understanding annual primary production?
> *Specific Information Needs:* Measurements of, or proportional to, macronutrients and micronutrients at appropriate spatial scales.

Offshore:

> How are the supplies of inorganic nitrogen, phosphorus, silicon, and other nutrients essential for plant growth in the euphotic zone annually influenced by climate-driven physical mechanisms in the GOA?
> *Specific Information Needs:* Measurements of inorganic nitrogen, phosphorus, silicon, and other nutrients on time and space scales appropriate to understanding annual variability.
>
> What is the role of the Pacific High Pressure System in determining the timing and duration of the movement of dense slope water onto and across the shelf to renew nutrients in the coastal bottom waters?

Specific Information Needs: Synoptic information on sea level pressure and horizontal and vertical structure of density and nutrients on the outer continental shelf and Alaska Gyre in relation to the ACC on appropriate time and space scales.

Is freshwater runoff a source of iron and silicon that is important to marine productivity in the offshore and adjacent marine waters?
Specific Information Needs: Levels of biologically available silicon and iron from offshore water in relation to the ACC on appropriate time and space scales.

We hope to extend this project into a long-term monitoring program of the nutritional status of the northern GOA, and through a broad interdisciplinary partnership with other programs and modeling and resource management teams, we foresee a monitoring network which closely matches the GEM vision.

The end point for monitoring is a geographically distributed network gathering data on the state of the marine ecosystem in the GEM region, using spatially structured survey methods. This implies a broad spatial scale for monitoring, as a combination of GEM with that of other entities. These data are transformed into information for user groups by using synthesis, research, modeling, data management, and information transfer.

II. PROJECT DESIGN

A. Objectives

The objectives of the proposed research are to examine nutrient supply to nearshore surface waters, explore bottom-up control of plankton and fish distributions along the shelf and in the central GOA, and to parameterize chemical, biological and physical processes influencing these distributions. The specific objectives of this research are:

Objective 1 Map surface nutrients across the northern and central GOA.
Hypothesis: In summer, surface waters over the shelf are depleted in nutrients east of PWS, but relatively abundant in nutrients west of PWS.

Objective 2 Identify mechanisms supplying nutrients to surface waters in summer.
Hypothesis: In summer, nutrients in surface waters are enriched from deep mixing over shallow banks, from flow up submarine canyons, from estuarine flow up Shelikof Strait, and from intrusions of nutrient-rich water from the central GOA.

Objective 3 Parameterize the relationship of nutrient distributions with physics, chlorophyll, zooplankton and fish.
Hypothesis: Nitrate and new production can be predicted from space using ocean color and SST.
Hypothesis: There is a strong correlation between nutrients and the distribution of primary and secondary production.

Objective 4 Provide a mesoscale context for moorings and process studies in the western GOA (FOCE, GLOBEC and the Steller Sea Lion Program), and for research proposed in the eastern GOA (Coastal Ocean Processes).

Objective 5 Initiate a long-term monitoring program of the nutritional status of the northern and central GOA to better understand the impact of interannual and decadal variability, and to provide nutritional forecasts to resource management teams
Hypothesis: Variability in SST alters stratification and entrainment of nutrients in the central GOA thereby reducing nutrient supply to the shelf via Ekman transport and eddies. Decreased nutrient availability leads to lower productivity and changes in plankton bloom dynamics that adversely affect fish recruitment.
Hypothesis: Modelers and resource managers can use knowledge of nutrient variability in habitat critical to the survival of juvenile fish to forecast annual fish stocks and recruitment.

B. Procedural and Scientific Methods

Objective 1. Map surface nutrients across the shelf of the northern GOA.
Method: Install a W.S. Envirotech NAS-2E nitrate monitor on the NOAA chartered F/V *Great Pacific*. This instrument is an automatic shipboard nitrate measurement package that has been deployed by Mordy during FOCI and GLOBEC cruises in the northern GOA in 2001 and 2002. A technician will ride the ship during the first leg to ensure proper operation of the instrument, and adequate calibration sampling by the science party. The nitrate monitor uses standard wet chemistry techniques for diazotizing and coupling reduced nitrate and nitrite, for and measuring the absorbance of the resulting red azo dye. This method is directly comparable to the autoanalyzer that will be used by Mordy to evaluate monitor performance. The automated underway system will sample every 7 minutes with standards analyzed 3-4 times per hour. Standards will be stabilized by pasteurization, with concentrations verified before and after each cruise. This technique for stabilizing standards has been used for moored nitrate analyzers and nitrate concentrations are stable for over 6 months. The NAS-2E makes corrections for background absorbance and sample turbidity.

Discrete calibration samples will be collected from the ship's underway system and from the CTD-bottle rosette. They will be frozen at –20°C, returned to PMEL, and analyzed according to WOCE-JGOFS protocols (Gordon et al., 1993). Mordy has extensive experience conducting nutrient analysis under these protocols, which include blank analysis (refractive index, distilled water reagent blank, low nutrient seawater blank) and high-precision standard preparation using gravimetrically calibrated, temperature corrected pipettes (Eppendorf Maxipettors) and glassware. Standards have been cross-calibrated with standards with other nutrient laboratories (e.g. Lou Gordon at Oregon State University).

The performance measure will be to achieve 2% accuracy and 2% precision relative to high surface concentrations in the central gyre. The data will span the central GOA from Dutch Harbor to Yakutat, and shelf waters from Yakutat to Kodiak and Shelikof Strait.

Objective 2. Identify mechanisms that supply nutrients to surface waters in summer.
Method: Identifying mechanisms of nutrient supply are major goals of the GEM,

FOCI, GLOBEC and Steller Sea Lion programs. However, the FOCI, GLOBEC and Steller Sea Lion programs lack broad nutrient surveys of the GOA. The proposed survey will cross shallow banks and canyons off Kodiak, make two hydrographic transects across Shelikof Strait, and make eight transects to the shelf break where intrusions of water from the central Alaskan Gyre are common. To fully address this objective, data from the proposed survey will be combined with FOCI, GLOBEC, and Steller Sea Lion data including results from moorings, drifters, hydrographic cruises, satellites and meteorological stations. This hypothesis might not be fully realized until completion of our GLOBEC program in 2005.

Objective 3. Parameterize the relationship of nutrients with physics, chlorophyll, zooplankton and fish.

Method: Use stepwise multiple regression techniques described in Section C below to examine spatial and temporal variability in the relationships between nitrate, temperature, salinity and chlorophyll; and compare algorithms from various habitats to algorithms used for satellite estimates in the North Pacific. We will also provide surface nitrate maps to ground truth satellite estimates of nitrate. The performance measure will be to predict nitrate to ± 2 μM.

The second hypothesis assumes strong coupling between primary and secondary production. While this condition may be typical of spring blooms (mostly nitrate based production), it is not necessarily the case in summer when regenerated production dominates. However, off Kodiak Island, there appear to be sources of nitrate, or nutrient "hot spots" in mid-summer. We will use stepwise multiple regression analysis of physical, chemical and biological parameters to test for tight coupling between physical forcing, nutrient supply and the distributions of primary and secondary producers.

Objective 4. Provide a mesoscale context for moorings and process studies in the western GOA (FOCI, GLOBEC and the Steller Sea Lion Program), and for research proposed in the eastern GOA (Coastal Ocean Processes).
See Section IIE.

Objective 5. To initiate a long-term monitoring program of the nutritional status of the northern and central GOA, to better understand the impact of interannual and decadal variability, and to provide nutritional forecasts to resource management teams.

This objective relates to observations in the southern GOA that indicate a decline in nutrients. Although GEM is not focusing on the offshore habitat at this time, a side benefit of this project is that such secondary questions will begin to be addressed. We will combine surface nutrient maps from GEM with those generated by F. Whitney along Line-P to gain an overall picture of nutrient depletion over the gulf.

This objective also assumes that nutrient availability in a key habitat ultimately determines the survival of juvenile fish; that there is strong coupling between nutrients, primary, secondary and tertiary production, and that fish stocks and

recruitment are largely a function of juvenile success. Addressing this very ambitious hypothesis is a long-term goal and cannot be fully realized under this proposal, but requires multi-year monitoring of key habitats. Fishery biologists participating on the NMFS-OCC/GLOBEC salmon survey have identified such habitats (i.e. the ACC), and these areas are a significant component of the NMFS-OCC/GLOBEC survey. Objective 3 addresses coupling between nutrients and secondary production, and NMFS/GLOBEC biologists are testing for tight coupling between secondary producers and juvenile fish. Climate events such as ENSO are known to dramatically alter nutrient fields and severely impact some species. Through long-term studies and future partnerships, we hope to parameterize the nutrient and biological response to such events.

C. Data Analysis and Statistical Methods

The relationship of nutrients with temperature and/or salinity has been noted for many regions of the world's oceans (Smith, 1984; Maeda et al., 1985; Kamykowski & Zentara, 1986). A strong correspondence in upwelling zones (equatorial & coastal) has fostered efforts to estimate nutrients from temperature and/or salinity (Dugdale et al., 1989; Sathyendranath et al., 1991; Garside & Garside, 1995; Dugdale et al., 1997). For example, Garside & Garside (1995) used a multi-variate approach to predict nitrate in the North Atlantic and Pacific with standard errors of 0.5-1.0 μM. The strength of this relationship is a consequence high production that depletes nitrate during seasonal warming.

In the first use of compound remote sensing, Goes et al. (2000) used satellite measurements of temperature and chlorophyll to make basin scale estimates of nitrate and new production in the North Pacific. This advance was particularly important in regions of exceptional production and moderate seasonal warming – regions where the temperature-nitrate relationship was very weak. While the northern GOA appears to fall into this category, there is insufficient data to explore surface temperature-nitrate relationships on broad spatial scales (eastern GOA verses western GOA).

Stepwise multiple linear regression analysis (using StatView software) will be completed on underway nitrate, temperature, salinity and fluorescence in an effort to improve algorithms for estimating nitrate from compound remote sensing. Using underway data from May 2001, we were able to predict nitrate to ±2uM (Figure 4). The temperature range of the data in spring was relatively small; thus, despite several fronts of nitrate and temperature, the temperature-nitrate relationship was not significant. Instead, fluorescence was the most significant independent variable, which reinforces the value of compound remote sensing. Data from this program will be provided in support of ongoing collaborative efforts with remote sensing experts (e.g. J. Goes).

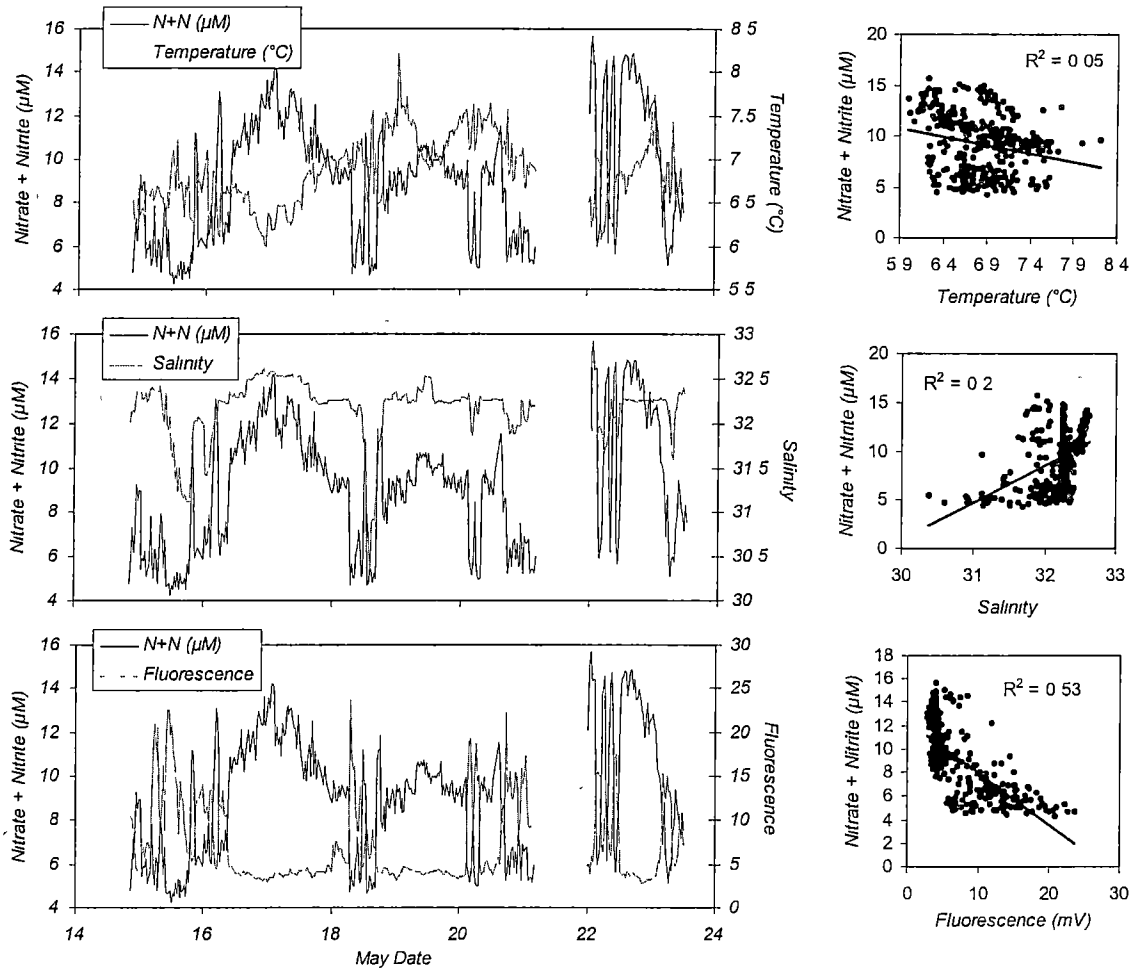


Figure 4. Underway measurements of nitrate, temperature, salinity, and fluorescence off Kodiak Island during the GLOBEC mooring cruise in May 2002.

D. Description of Study Area

The study area extends from Dutch Harbor to Yakutat. There will be a transit from Dutch Harbor to Yakutat, 8 transects from the coast to the shelf break, and 2 transects across Shelikof Strait (Figure 3). Those transects, from east to west, are at Ocean Cape, Icy Bay, Cape St. Elias, Cape Hinchinbrook, Cape Puget, Gore Point, Cape Chiniak, and Cape Kaguyak; and across Shelikif Strait are transects at Cape Nukshak and Cape Kekurnoi. Underway data will also be collected on transits between transects.

E. Coordination and Collaboration with Other Efforts

P. Stabeno directs NOAA's FOCI program, and P. Stabeno and C. Mordy are collaborating PIs on a second GLOBEC project, and two Steller Sea Lion Projects. In all, the PIs annually deploy 25-50 moorings (meteorological, biophysical, nitrate and iron) and numerous drogued drifters,

and conduct 2 hydrographic cruises in the northern GOA. They also collaborate with GLOBEC modelers running high-resolution ocean circulation models, and NPZ models of the GLOBEC region. The combination of GEM nitrate maps with FOCI/GLOBEC/Steller Sea Lion mooring data, drifter, hydrographic and modeling data will help resolve mechanisms of nutrient supply to nearshore ecosystems in summer. C. Mordy is also collaborating with F. Whitney to coalesce nutrient data sets in the Northern GOA, and with J. Goes to improve regional algorithms of nitrate for compound remote sensing.

The proposed work is closely related to an EVOS project mapping temperature and salinity on a ship of opportunity which transits from Valdez to Long Beach, and with a proposal being submitted to GEM under this invitation to begin underway measurements on the Alaska Ferry *Tustemena* as it voyages between the Kenai Peninsula and Kodiak Island.

III. SCHEDULE

A. Project Milestones

Objective 1 Map surface nutrients across the northern and central GOA.
To be met by November 2004

Objective 2 Identify mechanisms supplying nutrients to surface waters in summer.
To be met by March 2005

Objective 3 Parameterize the relationship of nutrient distributions with physics, chlorophyll, zooplankton and fish.
To be met by February 2005

Objective 4 Provide a mesoscale context for mooring and process studies in the western GOA (FOCE, GLOBEC and the Steller Sea Lion Program).
To be met by November 2004

Objective 5 Initiate a long-term monitoring program of the nutritional status of the northern and central GOA to better understand the impact of interannual and decadal variability, and to provide nutritional forecasts to resource management teams.
To be met by November 2004

B. Measurable Project Tasks

Included are measurable tasks from FY03 GEM funding for Survey Cruise I

FY 04, 1st quarter (October 1, 2003-December 31, 2003)

October 31:	Finish lab analyses of all frozen samples – Survey Cruise I
November 31:	Finish nutrient map – Survey Cruise I

FY 04, 2nd quarter (January 1, 2004-March 31, 2004)

January 12:	Attend annual EVOS Workshop
February 15:	Finish parameterization of the relationship of nitrate with biophysical variables – Survey Cruise I

FY 04, 3rd quarter (April 1, 2004-June 30, 2004)

June:	Prepare underway nitrate monitor

FY 04, 4th quarter (July 1, 2004-September 30, 2004)

Mid-July-Mid August:	Conduct underway survey cruise – Survey Cruise II

FY 05, 1st quarter (October 1, 2004-December 31, 2004)

October 31:	Finish lab analyses of all frozen samples – Survey Cruise II
November 31	Finish nutrient maps – Survey Cruise II

FY 05, 2nd quarter (January 1, 2005-March 31, 2005)

(dates not yet known)	Annual EVOS Workshop
February 15	Finish parameterization of the relationship of nitrate with biophysical variables – Survey Cruise II
March 15	Finish analysis of the data set for identifying mechanisms of nutrient supply

FY 05, 3rd quarter (April 1, 2005-June 30, 2005)

April 15	Submit final report (which will consist of draft manuscript for publication) to EVOS

IV. RESPONSIVENESS TO KEY TRUSTEE COUNCIL STRATEGIES

A. Community Involvement and Traditional Ecological Knowledge (TEK)

In the short term, the impact of the project on communities surrounding the northern GOA will be minimal. There will some valuable interaction between local fisherman and scientists that foments mutual respect, and perhaps builds greater cooperation. In the long term, the use of fishing vessels as part of a large monitoring network would provide out-of-season employment for a number of fishermen; and, this work along with future monitoring efforts have great potential for helping resource managers secure sustainable fisheries for years to come.

B. Resource Management Applications

The vision of this program is to establish a long-term monitoring network to report on variability of the nutritional status of the GOA. Ekman transport of nutrient rich water from the central Gulf to the shelf may be a key source of nutrients for spring production; however, there appears to be significant interannual variability in nutrient concentrations, and surface nutrients may be declining. Linking concentrations in early spring with NPZ models of the northern GOA may help resource managers forecast production levels and juvenile fish survival for the upcoming spring, and address problems that may arise from human activities.

V. PUBLICATIONS AND REPORTS

Short term publications (2003-2005) will include progress reports, a final report, and a publication on nutrient distributions in the eastern verses the western GOA in summer. In the long term (2005-7), we expect to synthesize GEM, GLOBEC and Steller Sea Lion research and publish several manuscripts on mechanisms of nutrient supply. In addition, we expect to publish

a collaborative effort with F. Whitney on comparing nutrient depletion along Line-P with variability observed in the Northern GOA.

VI. PROFESSIONAL CONFERENCES

Project results will be presented at the annual GEM and GLOBEC workshops. GEM results will be integrated with data from FOCI, GLOBEC, and the Steller Sea Lion program; hence, funding for travel to these meetings will be covered by these other programs. The topics of posters and/or papers presented will be related to mechanisms of on-shelf nutrient transport, entrainment of nutrients over shallow banks in summer, and the covariance of nutrient and biological distributions (chlorophyll, zooplankton, and salmon).

VII. PERSONNEL

A. Principal Investigator (PI)

1. Phyllis J. Stabeno will be responsible for the synthesis of GEM data with physical, chemical, and biological data collected by PMEL as part of GLOBEC and Steller Sea Lion Program. This includes data from drifters, biophysical moorings, hydrographic sections, and satellites (color and altimetry).

2. Calvin W. Mordy will be responsible for analysis of the underway data, analysis of calibration samples, finalization of all data, the writing of progress reports and a final data report, ensuring compliance with the Trustee Council data management policy, and publication of results. Mordy will also be responsible for linking data with the Station P time series and with satellite models of sea-surface nitrate).

B. Other Key Personnel

David P. Wisegarver has spent several years working with the underway technology, and will install and oversee the underway nitrate monitor. He will prepare all reagents, prepare the on-board standard, program the instrument, and monitor operation of the analyzer during the first cruise leg (Dutch Harbor to Seward). He will also be responsible for training the science party in collection of calibration samples from the underway seawater system and in collection of samples from CTD-Niskin bottles tripped near the surface.

C. Contracts

No components of this project will be contracted out.

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BUDGET JUSTIFICATION

We are requesting a continuation of funds to operate an underway nutrient system on a NMFS-OCC/GLOBEC cruise. This request is a partial re-submission (FY04 only) of a multi-year proposal submitted in 2003. Costs in this proposal have increased by 5.9K over the original FY04 budget due to an increase in monthly salary and higher travel costs at the University of Washington for Mordy. The following is a break-down of the expected costs and cost sharing.

A. Expected Costs

Personnel – $36.6k is requested to fund D. Wisegarver to prepare, install, and operate the instrument (Objective 1), and to fund C. Mordy to QC/QA and manage the data set, to consolidate GEM and FOCI/GLOBEC underway data sets, to parameterize nitrate from other underway measurements (Objective 3), and to prepare manuscripts and data reports.
Travel – $5.8k is requested for round trip travel to the research cruise (D. Wisegarver), and for round trip travel to the annual GEM meeting (C. Mordy).
Contractual – No money is requested for contracts
Commodities – $1.8k is requested for supplies for the underway nitrate meter (reagent bags, tubing, fittings, chemicals, and standards) and for the laboratory autoanalyzer (chemicals, sample bottles, filters, syringes, tubing, glass fittings).
Equipment - $1.2k is requested for a new underway pump

B. Cost Sharing

A total of $184.2k will be leveraged against FOCI and GLOBEC.

P. Stabeno salary – $22.2k. Stabeno will integrate the NMFS-OCC/GLOBEC survey results with the GEM underway nitrate data set (Objective 3).
Shiptime - $135k. Shiptime (27 days) will be paid by NMFS and GLOBEC at $5k/day.
Nitrate Monitor - $22k. The nitrate monitor will be leveraged from FOCI.
Calibration Sample Analysis - $5k Salary for C. Mordy to conduct analysis of discrete nutrient samples will be leveraged from FOCI.

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 04 - FY 06

Budget Category:	Proposed FY 04	Proposed FY 05	Proposed FY 06	TOTAL PROPOSED
Personnel	$36.6	$0.0	$0.0	$36.6
Travel	$5.8	$0.0	$0.0	$5.8
Contractual	$0.0	$0.0	$0.0	$0.0
Commodities	$1.8	$0.0	$0.0	$1.8
Equipment	$1.2	$0.0	$0.0	$1.2
Subtotal	$45.4	$0.0	$0.0	$45.4
General Administration (9% of Subtotal)	$4.1	$0.0	$0.0	$4.1
Project Total	$49.5	$0.0	$0.0	$49.5

Cost-share Funds:
- Stabeno - 1 month salary, $22.2k
- Shiptime - 27 days at $5k/day, $135k
- Nitrate Monitor - $22k
- Calibration Sample Analysis - $5k

Total $184.2k

FY 04-06

Date Prepared.
11-Jun-03

Project Number: 040654
Project Title: Surface nutrients over the Shelf and Basin
Agency: NOAA

FORM 3A
TRUSTEE
AGENCY
SUMMARY

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 04 - FY 06

Personnel Costs:		GS/Range/	Months	Monthly		Personnel
Name	Description	Step	Budgeted	Costs	Overtime	Sum
P. Stabeno	NOAA Oceanographer	15	1.0	N.C.		0.0
C. Mordy	JISAO Oceanographer		2.0	8.3		16.6
D. Wisegarver	NOAA Research Chemist	12/10	1.0	15.0	5.0	20.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
	Subtotal		4.0	23.3	5.0	
					Personnel Total	$36.6

Travel Costs:	Ticket	Round	Total	Daily	Travel
Description	Price	Trips	Days	Per Diem	Sum
					0.0
D. Wisegarver, Participation on 1st leg of research cruise					0.0
Airfare is one-way Seattle to Dutch Harbor, returning Kodiak to Seattle	1.8	1	16		1.8
Dutch Harbor per diem			1	0.2	0.2
Seward per diem			1	0.3	0.3
					0.0
					0.0
C. Mordy, attend annual EVOS workshop in Alaska	2.3	1	4	0.3	3.5
					0.0
					0.0
					0.0
					0.0
				Travel Total	$5.8

FY 04

Project Number: 040654
Project Title: Surface nutrients over the Shelf and Basin
Agency: NOAA

FORM 3B
Personnel
& Travel
DETAIL

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 04 - FY 06

Contractual Costs:	Contract Sum
Description	
If a component of the project will be performed under contract, the 4A and 4B forms are required. **Contractual Total**	$0.0

Commodities Costs:	Commodity Sum
Description	
Underway system: reagent bags, tubing, fittings, chemicals, standards	0.8
Laboratory autoanalyzer. chemicals, sample bottles, filters, syringes, tubing, glass fittings	1.0
Commodities Total	$1.8

FY 04

Project Number: 040654
Project Title: Surface nutrients over the Shelf and Basin
Agency: NOAA

FORM 3B
Contractual & Commodities DETAIL

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 04 - FY 06

New Equipment Purchases: Description	Number of Units	Unit Price	Equipment Sum
			0.0
Underway Pump	1	1.2	1.2
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
		New Equipment Total	$1.2

Existing Equipment Usage: Description	Number of Units	Inventory Agency
Laboratory Autoanalyzer	1	NOAA
Underway Nitrate Analyzer	1	NOAA
Underway Pump	1	NOAA
Underway Flowthrough System	1	NOAA

FY 04

Project Number: 040654
Project Title: Surface nutrients over the Shelf and Basin
Agency: NOAA

FORM 3B
Equipment
DETAIL

CURRENT AND PENDING SUPPORT FORM: P. J. Stabeno

Investigator P. J. Stabeno	Other agencies to which this proposal has been/will be submitted:

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title. Nested Interdisciplinary Models for the Coastal GOA, Haidvogel, et al.

Source of Support: GLOBEC
Total Award Amount. $800K Total Award Period Covered: FY01-FY05
Location of Project: Gulf of Alaska
Months of Your Time Committed to the Project: ,5 FY04 .5 FY 05 FY 06 Sumr: 1

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: Juvenile Salmon Distribution, Helle, et al

Source of Support: GLOBEC
Total Award Amount: $1,100K Total Award Period Covered: FY01-FY05
Location of Project: Gulf of Alaska
Months of Your Time Committed to the Project: .5 FY 04 .5 FY 05 FY 06 Sumr: 1

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: Biophysical Moorings on the Bering Sea Shelf (Winter 2003)

Source of Support: NPRB
Total Award Amount: $100K Total Award Period Covered:
Location of Project: Bering Sea
Months of Your Time Committed to the Project: FY04 FY 05 FY 06 Sumr: 1

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title. Advection of Biochemical Materials on the NGOA Shelf, Stabeno, et al

Source of Support: GLOBEC
Total Award Amount: $2,600K Total Award Period Covered: FY01-FY05
Location of Project. North Pacific Shelf
Months of Your Time Committed to the Project: 3 FY 04 3 FY 05 FY 06 Sumr: 6

*If this project has previously been funded by another entity, please list and furnish information for immediately preceding funding period.

Investigator: P.J. Stabeno	Other agencies to which this proposal has been/will be submitted:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: Biophysical Moorings on the Bering Sea Shelf

Source of Support: NPRB

Total Award Amount: $1,400K Total Award Period Covered: FY03-FY05

Location of Project: Bering Sea

Months of Your Time Committed to the Project 3 FY04 3 FY 05 FY 06 Sumr: 6

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: Surface Nutrients Over the Shelf and Basin in Summer – Bottom up Control of Ecosystem Diversity

Source of Support: GEM

Total Award Amount: $49.5K Total Award Period Covered: FY04

Location of Project: Gulf of Alaska

Months of Your Time Committed to the Project: 1 FY 04 FY 05 FY 06 Sumr: 1

CURRENT AND PENDING SUPPORT FORM: C. W. Mordy

Investigator: Calvin W. Mordy	Other agencies to which this proposal has been/will be submitted:

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: Surface Nutrients Over the Shelf and Basin in Summer – Bottom up Control of Ecosystem Diversity

Source of Support: GEM
Total Award Amount: $49.5K Total Award Period Covered: FY04
Location of Project: Yakutat to Kodiak Island / Shelikof Strait
Months of Your Time Committed to the Project: 2 FY04 FY 05 FY 06 Sumr: 2

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Source of Support: GEM
Total Award Amount: $670.2k Total Award Period Covered: FY04-FY06
Location of Project: Northern Gulf of Alaska
Months of Your Time Committed to the Project: 2 FY 04 3 FY 05 3 FY 06 Sumr: 8

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: Cross-shelf Transport and Post-Bloom New Production Near the Pribilof Islands

Source of Support: NSF
Total Award Amount: $866k Total Award Period Covered: FY04-FY08
Location of Project: Pribilof Islands
Months of Your Time Committed to the Project: 3 FY04 3 FY 05 3 FY 06 Sumr: 9

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: Impact of along shelf and across shelf advection of zooplankton and nutrients on shelf ecosystems of the Gulf of Alaska

Source of Support: GLOBEC
Total Award Amount: $2,064K Total Award Period Covered: FY01-FY05
Location of Project: Northern Gulf of Alaska
Months of Your Time Committed to the Project: 4.5 FY 04 5 FY 05 FY 06 Sumr: 9 5

*If this project has previously been funded by another entity, please list and furnish information for immediately preceding funding period

Investigator: Calvin W. Mordy	Other agencies to which this proposal has been/will be submitted.

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: Collaborative Research: Global Ocean Repeat Hydrography, Carbon and Tracers

Source of Support: NOAA

Total Award Amount. $960 Total Award Period Covered: FY03-FY04

Location of Project: North and Equatorial Atlantic

Months of Your Time Committed to the Project: 2 FY04 FY 05 FY 06 Sumr 2

Trustee Council Use Only
Project No: _____
Date Received: _____

GEM PROPOSAL SUMMARY PAGE

(To be filled in by proposer)

Project Title:	Monitoring dynamics of the Alaska coastal current and development of applications for management of Cook Inlet salmon
Project Period:	FY 04-FY 06
Proposer(s):	T. Mark Willette, Alaska Dept. of Fish and Game, 43961 Kalifornsky Beach Rd, Ste B, Soldotna, Alaska 99669-8367. (907)262-9368 ph, (907)262-4709 fax, mark_willette@fishgame.state.ak.us. W. Scott Pegau, Kachemak Bay Research Reserve, 2181 Homer, Alaska 99603. ph: 907-235-4799 ext. 6, fax 907-235-4794, email: spegau@coas.oregonstate.edu
Study Location:	Cook Inlet

Abstract: This project will use a vessel of opportunity to collect physical oceanographic and fisheries data along a transect across lower Cook Inlet from Anchor Point to the Red River delta. Logistical support for the field sampling will be provided in part by the Alaska Department of Fish and Game which has chartered a vessel annually to fish along this transect each day during July providing inseason projections of the size of salmon runs returning to the inlet. Oceanographic transects in lower Cook Inlet will also be sampled in May and June. The work proposed here is for long-term monitoring of oceanographic conditions in Cook Inlet as part of these ongoing fisheries surveys. Investigators will also use physical oceanographic data collected by the project to improve management of Cook Inlet salmon through improved inseason salmon run projections. Several hypotheses regarding effects of changing oceanographic conditions on salmon migratory behavior will be tested. The oceanographic data collected by the project will also provide for valuable validation of remote sensing products, improved understanding of ocean dynamics in lower Cook Inlet, and a highly powerful statistical evaluation of the oil spill risk analysis models.

Funding:	EVOS Funding Requested:	FY 04	$ 89.8	
		FY 05	$ 68.0	
		FY 06	$ 27.9	TOTAL: $ 163.9
	Non-EVOS Funds to be Used:	FY 04	$ 106.9	
		FY 05	$ 106.9	
		FY 06	$ 106.9	TOTAL: $ 320.7

Date: 6/15/2003 Date proposal prepared

(NOT TO EXCEED ONE PAGE)

GEM RESEARCH PLAN

I. NEED FOR THE PROJECT

A. Statement of Problem

Since 1979, the ADF&G has conducted an offshore test fishing (OTF) project near the southern boundary of the Upper Cook Inlet (UCI) salmon management area (Figure 1). The objective of this project has been to estimate the total run of sockeye salmon, *Oncorhynchus nerka,* returning to UCI before these fish reach commercial harvest areas. Sockeye salmon returning to UCI have been sampled by fishing geographically fixed stations along a transect between Anchor Point and Red River Delta (Figure 1). These data have been extremely important to ADF&G management biologists as they set and adjust commercial fishing times and areas to most effectively harvest sockeye salmon that are surplus to spawning needs. Test fishing results have been reported annually since 1979 (Waltemyer 1983a, 1983b, 1986a, 1986b, Hilsinger and Waltemyer 1987, Hilsinger 1988, Tarbox and Waltemyer 1989, Tarbox 1990, 1992, 1994, 1995, 1996, 1997, 1998a, 1998b, 1999).

In 1999, the Alaska Board of Fisheries adopted a sliding range of inriver escapement goals for late-run Kenai River sockeye salmon that were based upon preseason and inseason projections of the annual return of this salmon stock. The OTF project provides the primary source of information used to project the return of this stock inseason. Achievement of inriver escapement goals and allocation of salmon to commercial, personal use, and recreational user groups is thus largely dependent on the accuracy of these projections. The accuracy of the population estimates provided by the OTF project typically increases as the season progresses. Projections made on July 20 have ranged from -5.4% to +103% of the actual run. The program often fails to accurately predict runs that are earlier than normal. Failure to accurately predict very large runs can result in large escapements, loss of revenue to the commercial fishery, and reduced production in future years due to overgrazing of plankton stocks by large fry populations in rearing lakes. Failure to accurately predict weak runs can result in over harvest by the commercial fishery, loss of fishing opportunities in personal use and recreational fisheries, and reduced production in future years. Improving the accuracy of inseason sockeye salmon population estimates will enable ADF&G to better manage for inriver escapement goals and maximum sustained yield thus benefiting the economy of the UCI area.

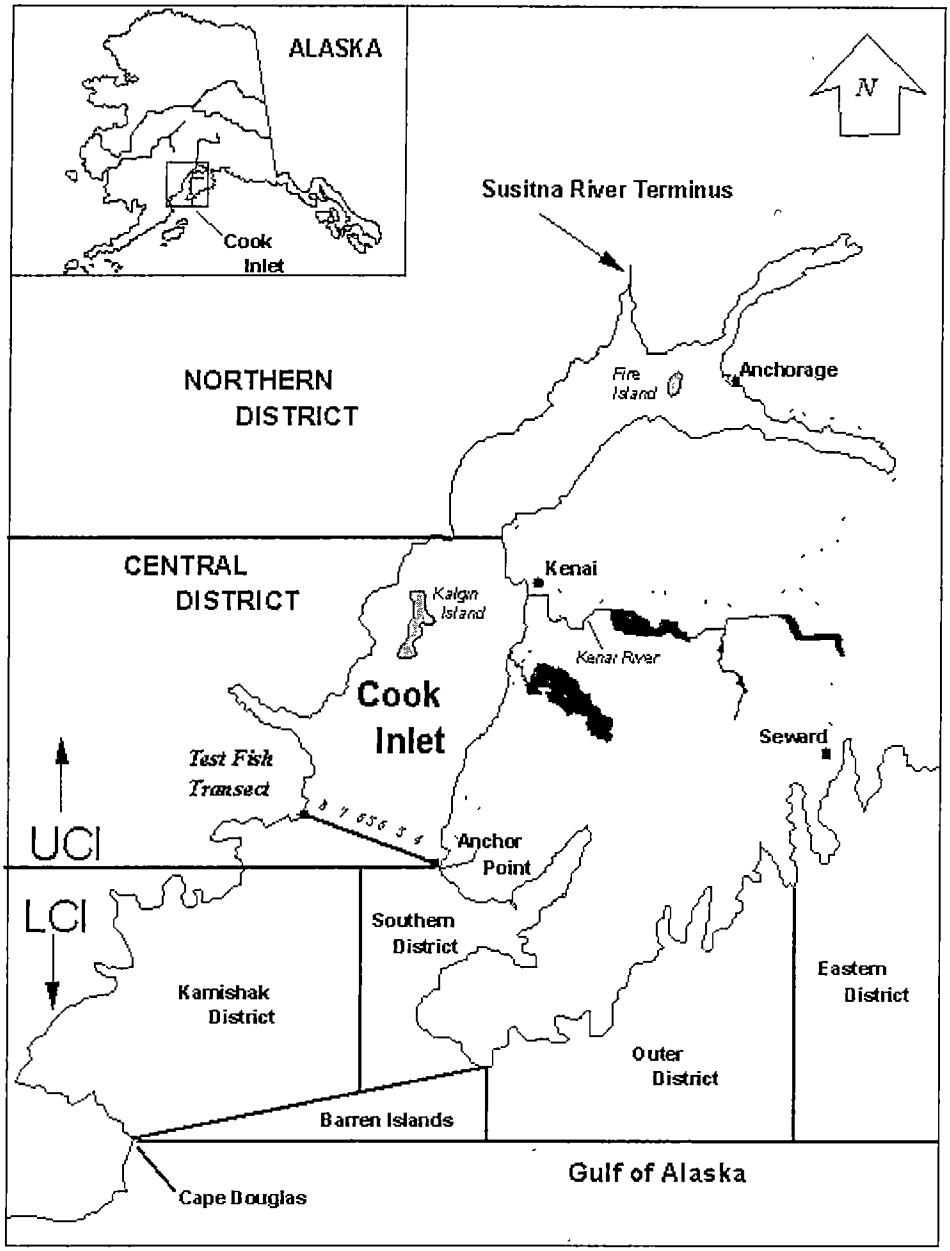

Figure 1 Location of fishing districts and offshore test fish transect in Cook Inlet, Alaska, 2001

Errors in OTF program estimates of run size appear to be due to interannual changes in migratory timing and catchability. Migratory timing is defined as abundance as a function of time in a fixed geographic reference frame (Mundy 1982). The sockeye salmon run entering Cook Inlet normally peaks on July 15, but peak migratory timing has varied from July 6 to July 19. Variations in migratory timing are likely due to a range of biotic and physical factors that affect rates of maturation and migration. Ocean temperature (Burgner 1980), the strength of oceanic fronts (Mundy 1982), and tidal currents (Stasko et al. 1973a) are likely important physical factors affecting both the rate of maturation and migration. Catchability is defined as the fraction of the population captured by a unit of fishing gear. The OTF program estimates cumulative catchability to date from the ratio of cumulative catch per unit effort (CPUE) obtained from the test fishing vessel and estimates of total return to date. Cumulative catchability varies by a factor of 2 among years. Variations in catchability are likely due to biotic factors, e.g. fish size, as well as physical factors that affect the vertical and horizontal distribution (Huse and Holm 1993, Winters and Wheeler 1985) and migration rate of salmon (Hakoyama 1995).

The physical oceanography of Cook Inlet is characterized by a net inflow along the eastern boundary and a net outflow along the western boundary (Burbank 1977). Near the entrance of the inlet the inflowing water includes the ACC. The ACC then turns west and joins the outflowing water. The point at which the ACC turns west remains unresolved. Burbank (1977) shows a major portion of the ACC extending north past Anchor Point, while Muench et al. (1978) indicates that only a small portion of the ACC extends northward of Anchor Point. But, since these two studies were conducted in different years, it seems likely that the different current trajectories observed may simply indicate interannual variability. Driftcards released more recently off Point Adam as part of EVOS project 02671 were primarily recovered off Kenai indicating the surface flow of the ACC has a component that extends far northward of Anchor Point. This northward flowing component is then mixed within Cook Inlet and returns along the western boundary. A significant component of the water along the western boundary originates from Knik Arm and the Susitna River and is typically more turbid than the water further east due to the heavy glacial runoff from these drainages. However, the net flow is a minor component of the circulation, tidal currents largely determine current velocities. Tidal current velocities range from 1-2 kts at the entrance to 5-6 kts at the head of the inlet (Whitney 1999). Three distinct convergence zone, known at tide rips, have been identified in the inlet. The east rip is typically located 2-3 km offshore of the eastern boundary. The west and mid-channel rips are located just east of Kalgin Island. These two rips are associated with a 50-80 m deep channel running north to south along the inlet. During flooding and ebbing conditions, water flows faster through the channel due to lower bottom friction compared to the shallower areas east and west. The result is a surface convergence and strong turbulence along the rips.

The migration of salmon into the inlet is clearly influenced by the strength and location of tide rips. Fishermen working the inlet are very aware of tide rips and use the rips to locate and capture migrating salmon (Wilson and Tomlins 1999). Salmon have likely evolved behaviors that allow them to use tide rips and associated current structures to minimize the energy expended to reach their natal rivers (Scholz et al. 1972, Stasko et al. 1973b). Although tide rips clearly result from strong velocity gradients, they also represent boundaries between waters masses and may be associated with strong salinity gradients.

We propose to collect data to test the following hypotheses regarding effects of changing oceanographic conditions on the migratory behavior and catchability of salmon entering Cook Inlet.

Hypotheses

1. Salmon migration is delayed when fish encounter strong salinity gradients. Turbulence caused by strong tidal currents or winds breaks down salinity gradients increasing the rate of migration.
2. Interannual changes in freshwater outflow from UCI or the northward extent of the ACC affect salmon migratory timing. A stronger outflow or reduced northward flow of the ACC delays the migration, as salmon require more time to acclimate at frontal zones.
3. The variance of relative salmon density is a function of salmon abundance and the structure of tide rips along the OTF transect. When salmon abundance is low (high), relative salmon density is more contagiously (homogeneously) distributed. Strongly (weakly) developed tide rips cause salmon density to be more contagiously (homogeneously) distributed.
4. Salmon use tidal currents in UCI to facilitate their northward migration. On the flood tide, salmon density is highest between the west and mid rips where current speeds are maximum. On the ebb tide, salmon density is highest immediately east of the mid rip and west of the west rip where turbulence reduces the net southward flow.

B. Relevance to GEM Program Goals and Scientific Priorities

This project will monitor the strength, structure, dynamics and mixing of the ACC as it intrudes into lower Cook Inlet (Burbank 1977). The location of the transect off Anchor Point and the high temporal sampling rate provided by the project will enable investigation of interactions between the ACC and processes such as tidal mixing, wind driven circulation, and frontal propagation, improving our understanding of linkages between the ACC and the nearshore estuarine habitat of the inlet.

The physical oceanographic data collected by the project will also be made available to other investigators studying how the dynamics of this current system affect the productivity of the biological resources in the region. The ADCP data in particular will be useful in determining the flow regimes that control larval, sediment, and contaminant dispersal within the inlet. The recent 20-year decline in seabird abundance at Chisik Island on the western end of the OTF transect and a concomitant increase in their abundance at Gull Island in Kachemak Bay (Piatt and Anderson 1996) provides an example of the kind of changes in resource productivity that might be explained by a long time series of physical oceanographic measurements in the region. Increases in turbid, nutrient-poor freshwater inflows into upper Cook Inlet, which flow southward along the west side of the inlet, may be linked to the decline of the Chisik Island seabirds. Studies of the Gull Island population may provide insights into processes sustaining seabird populations throughout the Gulf of Alaska, since this colony is the only one along the coast that has increased in recent years.

The proposed project could also contribute to our understanding of anthropogenic effects on resource productivity in the region by providing data for validation of the Oil Spill Risk Analysis (OSRA) model being developed by the Minerals Management Service for Cook Inlet and Shelikof Strait. The high temporal sampling rate proposed for this project will provide sufficiently numerous observations of temperature, salinity, and current velocity structures along the southern boundary of the inlet for a highly powerful statistical evaluation of the OSRA model.

II. PROJECT DESIGN

A. Objectives

1. Conduct an offshore test fishing (OTF) program to estimate the population size of sockeye salmon returning to Upper Cook Inlet.
2. Measure the horizontal distribution of relative salmon density along the OTF transect using side-looking acoustic equipment.
3. Measure environmental variables as well as the vertical distributions of temperature and salinity along the OTF transect and construct cross sections.
4. Measure the vertical distribution of current velocity along the OTF transect using an acoustic doppler current profiler and construct cross sections.
5. Identify northward incursions of the ACC into Cook Inlet.
6. Conduct statistical analyses to test major hypotheses.

B. Procedural and Scientific Methods

Objective 1

Sockeye salmon returning to Upper Cook Inlet will be sampled by fishing six geographically fixed stations between Anchor Point and Red River Delta (Figure 1). Stations will be numbered consecutively from east to west, with station locations being determined using a differential global positioning system. A chartered test-fishing vessel will sample stations 4 - 8 daily, traveling east to west on odd-numbered days and west to east on even-numbered days.

Sampling will start on 1 July and continue through 30 July. The chartered vessel will fish a 366 m x 10 m drift gill net with 13 cm multi-filament web at each station. Once deployed at a station, gillnets will be fished 30 min before retrieval is started.

All captured salmon will be identified to species and sex. Fork length (mid-eye to fork-of-tail) will be measured to the nearest millimeter. The number of fish caught at each station will be expressed as a catch per unit of effort (CPUE) statistic for each species:

$$CPUE_S = \frac{100\,fm \;x\; 60\,\text{min} \;x\; number\ of\ fish}{fm\ of\ gear \;x\; MFT} \qquad (1)$$

where $CPUE_s$ = CPUE for station s, and
MFT = mean fishing time.

Mean fishing time will be calculated as:

$$MFT = (C - B) + \frac{(B - A) + (D - C)}{2} \qquad (2)$$

where A = time net deployment started,
B = time net fully deployed,
C = time net retrieval started, and
D = time net fully retrieved.

Daily CPUE ($CPUE_d$) will be calculated as:

$$CPUE_d = \sum_{s=1}^{n} CPUE_s\ . \qquad (3)$$

Daily CPUE statistics will be used to estimate the size of the migrating salmon population as described by Mundy (1979).

Objective 2

A Biosonics model DT6000 scientific 200 kHz echosounder will be used to measure relative salmon densities along the OTF transect. A 6.6° circular split-beam transducer will be mounted in a side-looking orientation on a 2.0-m long aluminum sled. Fish will be acoustically sampled at 3-5 pings sec^{-1}, at ranges from 0-100 m, using a pulse width of 0.2 ms, and a –47 dB threshold. Data will be stored on a laptop computer and geo-referenced using a differential global positioning system (DGPS). Later in the laboratory, fish targets will be counted by 20-m range bins using autotracking software.

Acoustic equipment will be operated along transects between the 6 stations fished with the drift gill net each day. Transects will be traversed at 3-6 m sec^{-1} depending on sea state. As sea state increases, the sled will be towed lower in the water column to reduce surface reverberation. However, at Beaufort sea states greater than 5, surface reverberation will preclude useful acoustic estimates (Tarbox and Thorne 1996). The area swept by the sonar along each transect will be calculated by multiplying each 20 m range strata by the length of the transect. Relative salmon densities (no. m^{-2}) will be estimated for 500 m by 20 m report areas. The data from each range strata will be used to evaluate detection characteristics as a function of range (Tarbox and Thorne 1996).

Our estimates of relative salmon density will be based upon assumptions that (1) fish targets can be separated from entrained air and debris in most cases, (2) target strengths of individual fish vary randomly, and (3) nearly all fish targets within the surface layer (0-20 m) are salmon. Tarbox and Thorne (1996) found that fish were often associated with frontal zones as were entrained air and debris, but fish were near these zone and not actually in them, so separation appeared to be possible in most cases. Ping-to-ping target strengths of individual fish are highly variable due to the stochastic nature of the reflectance of sound, and fish movement, orientation, and behavior (Burwen et al. 1998, Dahl and Matheisen 1982, Dawson and Karp 1987, Ehrenberg et al. 1981, Eggers 1994, Love 1969, 1977). These variations in target strength may result in underestimation of actual fish density when target strengths fall below threshold, but relative fish densities can still be estimated if target strengths vary randomly over relatively large spatial scales (i.e. 500 m report lengths). The larger number of pings obtained from each fish at ranges exceeding 60 m increases the probability of fish detection (Tarbox and Thorne 1996). Our assumption that nearly all fish targets in the surface layer are salmon is supported by catches in 291 purse seine (20 m depth) net sets in our study area during July 2002 (Willette et al. 2003).

Objective 3

A conductivity-temperature-depth profiler (CTD) equipped with a fluorometer and transmissometer will be used to measure the vertical distribution of temperature, salinity, fluorescence and turbidity from the surface to the bottom at each fixed station. Additional CTD casts will be made on each side of obvious frontal zones. The data will be used to construct a cross section of the distribution of these variables along the OTF transect each day. A continuously-recording CTD equipped with a transmissometer will also be towed along the entire transect each day. The data from this instrument will enable investigators to better define the location of frontal structures.

Air temperature, wind velocity, tide stage, water depth, and water clarity will also be measured at each station using methods employed over the past 20 years of the OTF program. Wind speed will be measured in knots and direction recorded as 0 (no wind), 1 (north), 2 (northeast), 3 (east), 4 (southeast), 5 (south), 6 (southwest), 7 (west), or 8 (northwest). Tide stage will be classed as flood, ebb or slack by observing the movement of the vessel while drifting with the gill net. Water depth will be measured in fathoms using a Simrad echo sounder, and water clarity will be measured using a 17.5 cm secchi disk.

Objective 4

A 300 kHz acoustic doppler current profiler (ADCP) will be used to measure the vertical distribution of current velocity along the OTF transect. The ADCP will be mounted in a down-looking orientation on a 2-m long aluminum sled. A 2-m cell depth size will be used providing a velocity measure with a standard deviation of 66 mm sec^{-1}. A bottom-tracking algorithm will be used to measure the survey vessel's velocity over the bottom. Absolute current velocity will be calculated in real time by subtracting the vessel's velocity from the relative current velocities measured by the ADCP. Data will be stored on a laptop computer and geo-referenced using a

DGPS. Acoustic equipment will be operated along transects between the 6 stations fished with the drift gill net each day. Transects will be traversed at 3-6 m sec^{-1} depending on sea state.

Objective 5

We will identify possible changes in flow within our study area that are related to changes in flow of the ACC. Northward incursions of the ACC should be identifiable in hydrographic data and mean current fields. To identify the ACC from the hydrographic data, it is necessary to know the hydrographic characteristics of the ACC as it flows into Cook Inlet. To identify the ACC in water current measurements, the data must undergo a process to remove the tidal component of velocity measurements.

To determine the presence of the ACC hydrographically, we will coordinate our efforts with a hydrographic study of lower Cook Inlet that is being planned for 2004. That study will be conducted by the Cook Inlet Regional Citizens Advisory Council (CIRCAC) and will consist of CTD transects across Kennedy Entrance, Stevenson Entrance, Shelikof Strait, and along the Anchor Point to Red River line that the OTF cruise follows. These surveys will be conducted in the odd numbered months in 2004. The Kachemak Bay Research Reserve will be assisting CIRCAC with their study and will have access to the hydrographic data. Coordinating our work with that of CIRCAC will allow us to better identify northward incursions of the ACC and set our high frequency measurements into context with the yearly pattern. We will share expenses for the May CIRCAC cruise and add a June hydrographic survey using the same transects. These cruises will allow us to test our sampling techniques before the July field exercises and provide us with the data necessary to understand springtime changes in ACC flow into Cook Inlet.

De-tiding of ADCP data is not required to determine the position of fronts and the association of fish with current flows. However, de-tiding the data will be necessary to identify incursions of the ACC within our water velocity measurements. Techniques have been described for de-tiding repeat transects made using shipboard ADCP measurements (Candela et al., 1992). However, errors associated with removing the extreme tidal currents in Cook Inlet may limit the value of this technique in determining the mean flow. A more promising approach will be to coordinate our work with the present NOAA study of tides within Cook Inlet. Over the next two years NOAA's Coastal and Estuarine Circulation Analysis Team (CECAT) will be deploying bottom mounted ADCP's in central and lower Cook Inlet. Currently two of these ADCPs are to be deployed just north of our study area. We are working with the NOAA group to coordinate our efforts with the hopes of having the two planned moorings moved south to coincide with our stations. We would then be able to use the tidal information they collect to de-tide our data. Depending on the timing of the NOAA deployment and analysis, the de-tiding effort may not be achieved within the three years of our study, but an effort will be made to ensure that the proper data is available for such efforts.

In addition to the oceanographic shipboard measurements, we will examine the possibility of using CODAR data and modeling results to examine changes in flow of the ACC. A pair of CODAR units were installed during the summer of 2003. The water velocity data has been made

available to us to examine the practicality of using CODAR to observe changes in flow of the ACC. We will coordinate our work with any future CODAR deployments in the area. We will also collaborate with the SALMON project and the MMS funded work of Mark Johnson to evaluate the accuracy and resolution of oceanographic modeling results. The optimal data set is likely to be a mixture of high-resolution shipboard measurements and the non-ship intensive studies of CODAR and modeling.

C. Data Analysis and Statistical Methods

Hypothesis 1:

Salmon migration is delayed when fish encounter strong salinity gradients. Turbulence caused by strong tidal currents or winds breaks down salinity gradients increasing the rate of migration.

The gradient of salinity (Δo/oo m^{-1}) across tide rips will be calculated using CTD data collected on each side of the rip zones. The gradient of salinity across the tide rips will then be plotted against wind speed and tidal current velocities measured using the ADCP. Linear and non-linear regression analyses will be conducted to determine the model that best fits the data and test the hypothesis that strong tidal currents or winds are associated with weaker salinity gradients. We will also examine the feasibility of using our split-beam acoustic system to measure salmon swimming speeds. If practical, this will provide the data needed to directly test whether migration rate is related to salinity gradients. It is unlikely that sufficient data will be available the first year to test this hypothesis. However, the next hypothesis addresses this same issue although many years of data will be required to test it.

Hypothesis 2:

Interannual changes in freshwater outflow from UCI affect salmon migratory timing. A stronger (weaker) outflow delays (accelerates) the migration.

Salmon migratory timing will be estimated using CPUE data from the OTF drift gill net vessel. Cumulative daily $CPUE_t$ will be calculated as:

$$CPUE_t = \sum_{d=1}^{n} CPUE_d \qquad (4)$$

Daily estimates of $CPUE_t$ and $CPUE_d$ will be used to estimate cumulative proportions of $CPUE_t$, and the data will be fit to a non-linear model (Mundy 1979):

$$y_d = 1/(1 + e^{-(a+bd)}) \qquad (5)$$

where: y_d = cumulative proportion of $CPUE_t$ on day d,

a and b = coefficients of model,
d = day of observation.

The mean date of the salmon migration (M) is then estimated as (Tarbox 1999):

$$M = a/b \qquad (6)$$

Average salinity measured west of the west rip will be calculated using all data collected during July each year. The mean date of migration (M) will then be plotted against average salinity. Linear, non-linear, and multiple regression analyses will be conducted to determine the model that best fits the data and test the hypothesis. Covariates in multiple regressions will include salinity in Cook Inlet, and sea surface temperature in the Gulf of Alaska (Burgner 1980). Multiple years of data will be required to test this hypothesis.

Hypothesis 3:

The variance of relative salmon density is a function of salmon abundance and the structure of tide rips along the OTF transect. When salmon abundance is low (high), relative salmon density is more contagiously (homogeneously) distributed. Strongly (weakly) developed tide rips cause salmon density to be more contagiously (homogeneously) distributed.

The mean and variance of relative salmon density along the OTF transect will be calculated for each day and plotted against one another. If the abundance hypothesis is correct, a plot of the variance against the mean density should indicate an asymptote at high salmon densities. Various transformations of the data will be explored to satisfy assumptions for regression analysis (Zar 1984). Linear, non-linear and multiple regression analyses will be conducted to determine the model that best fits the data and test the hypothesis. Covariates in multiple regressions will include the relative salmon density, and the gradients of salinity (Δo/oo m^{-1}) and velocity (Δm/sec m^{-1}) across tide rips (as a measures of the strength of the rips). Since data collected on each day of the cruise will be used as the sample unit in this analysis, spatial autocorrelation should not affect statistical tests. Sufficient data may be available the first year for a preliminary test of this hypothesis.

Hypothesis 4:

Salmon use the tidal currents in UCI to facilitate their northward migration. On the flood tide, salmon density is highest between the west and mid rips where current speeds are maximum. On the ebb tide, salmon density is highest immediately east of the mid rip and west of the west rip where turbulence reduces the net southward flow.

The gradients of salinity, current velocity, and visual observations will be used to determine the location of the west and mid rips each day. The ratio of the mean relative salmon density between and outside of the two rips will be calculated for each day. An analysis of variance will be conducted to test whether the ratio of the two densities is significantly different during the flood versus the ebb tide. Various transformations of the data will be explored to satisfy

assumptions for analysis of variance (Zar 1984). Sufficient data may be available the first year for a preliminary test of this hypothesis.

D. Description of Study Area

This project will be conducted in lower Cook Inlet along a transect running from Anchor Point on the east to the Red River delta on the west. The vessel will operated out of Homer and will return to Homer every other day. The sampling region for this project lies north of latitude 59.675, west of longitude 152.833, south of latitude 60.000 and east of longitude 153.666.

E. Coordination and Collaboration with Other Efforts

The physical oceanographic data collected by this project will be made available to others studying the dynamics of the ACC. The data collected by this project will complement the dataset of physical conditions at station GAK 1 near the mouth of Resurrection Bay. To determine the presence of the ACC hydrographically, we will coordinate our efforts with a hydrographic study of lower Cook Inlet conducted by the CIRCAC which will consist of CTD transects across Kennedy Entrance, Stevenson Entrance, Shelikof Strait, and along the Anchor Point to Red River line. The proposed project could also provide data for validation of the Oil Spill Risk Analysis (OSRA) model being developed by the Minerals Management Service for Cook Inlet and Shelikof Strait, as well as the modeling efforts being conducted by Mark Johnson and SALMON projects. The high temporal sampling rate provided by the proposed project increases the likelihood of encountering clear weather conditions for validation of remote sensing products and will provide sufficiently numerous observations of temperature, salinity, and current velocity structures along the southern boundary of the inlet for a highly powerful statistical evaluation of the OSRA model. We hope that the NOAA CODAR units currently installed will remain during this study so that we can compare in-water measurements against the surface measurements of CODAR. We are working with the NOAA group (CECAT) that is deploying bottom mounted ADCPs to ensure that are programs are complimentary. We will coordinate our measurements with vessel-of-opportunity efforts that will be making similar surface property measurements in Lower Cook Inlet and the Gulf of Alaska.

III. SCHEDULE

A. Project Milestones

Objective 1. Conduct an offshore test fishing (OTF) program to estimate the population size of sockeye salmon returning to Upper Cook Inlet.
To be met annually by August 2004-2005.

Objective 2. Measure the horizontal distribution of relative salmon density along the OTF transect using side-looking acoustic equipment.
To be met annually by December 2004-2005.

Objective 3. Measure environmental variables as well as the vertical distributions of temperature and salinity along the OTF transect and construct cross sections. To be met annually by December 2004-2005.

Objective 4. Measure the vertical distribution of current velocity along the OTF transect using an acoustic doppler current profiler and construct cross sections. To be met annually by December 2004-2005.

Objective 5. Identify northward incursions of the ACC into Cook Inlet. To be met annually by April 2005-2006.

Objective 6. Conduct statistical analyses to test major hypotheses. To be met annually by April 2005-2006.

B. Measurable Project Tasks

FY 04, 2nd quarter (January 1, 2004-March 31, 2004)
(dates not yet known) Annual GEM Workshop

FY 04, 3rd quarter (April 1, 2004-June 30, 2004)
June 1: Award contract for vessel charter

FY 04, 4th quarter (July 1, 2004-September 30, 2004)
August 1: Complete field sampling

FY 05, 1st quarter (October 1, 2004-December 31, 2004)
December 31: Complete analyses of fisheries acoustic and ADCP data

FY 05, 2nd quarter (January 1, 2005-March 31, 2005)
(dates not yet known) Annual GEM workshop
March 31: Complete preliminary tests of major hypotheses if possible.

FY 05, 3rd quarter (April 1, 2005-June 30, 2005)
June 30: Submit annual report to Trustee Council Office.

FY 05, 4th quarter (July 1, 2005-September 30, 2005)
August 1: Complete field sampling

FY 06, 1st quarter (October 1, 2005-December 31, 2005)
December 31: Complete analyses of fisheries acoustic and ADCP data

FY 06, 2nd quarter (January 1, 2006-March 31, 2006)
(dates not yet known) Annual GEM workshop

FY 06, 3rd quarter (April 1, 2006-June 30, 2006)

August 1: Complete tests of major hypotheses, if possible.

FY 06, 4th quarter (July 1, 2006-September 30, 2006)
September 30: Submit final report (which will consist of draft manuscript for publication) to Trustee Council Office.

IV. RESPONSIVENESS TO KEY TRUSTEE COUNCIL STRATEGIES

A. Community Involvement and Traditional Ecological Knowledge (TEK)

This project will utilize the traditional knowledge of local fishers who have observed the migratory behavior of salmon entering the inlet for many years. This knowledge will help the investigators interpret the quantitative data collected during the course of the project. A local hire preference will be employed for all contracts and technicians recruited during the course of the project. The Kachemak Bay Research Reserve will design a program of public education to disseminate knowledge obtained from the project to the community.

B. Resource Management Applications

This project will conduct research needed to improve the accuracy of inseason projections of migratory salmon populations entering Cook Inlet. The tools developed by the project will help ADF&G better manage for inriver escapement goals and maximum sustained yield of the salmon resource in the inlet. The physical oceanographic data collected by the project will also be used by resource managers to better understand the dynamics of the ACC system and how physical conditions affect the productivity of the biological resources in the region.

V. PUBLICATIONS AND REPORTS

A manuscript describing the "Effects of oceanographic conditions on the migratory behavior of salmon entering Cook Inlet" will be submitted to the Fisheries Oceanography during fall of 2006.

VI. PROFESSIONAL CONFERENCES

A manuscript entitled "Effects of oceanographic conditions on the migratory behavior of salmon entering Cook Inlet" will be presented at the annual meeting of the American Fisheries Society, Alaska Chapter in 2006. The location of the meeting is not known at this time.

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Budget Justification:

FY04 & 05:

Personnel

Requested funds: $22.9
In-kind funds: $17.4

Funds requested for S. Pegau (1 mm) and R. Decino (1 mm) are needed to support these staff during the 1 month of field sampling required for this project (objectives 1-4). An additional 1 mm of funding for S. Pegau and 1 mm for M. Willette are needed for data analysis and report writing (objectives 2-6). In-kinds funds support an additional 1 mm for each investigator for data management, data analysis, and report writing (objectives 2-6).

Travel

Requested funds: $1.0
In-kind funds: $0.0

Funds requested for S. Pegau and M. Willette to travel to annual GEM workshop.

Contractual

Requested funds: $37.5
In-kind funds: $37.5

Funds requested for one half of the total vessel charter needed for field sampling (objectives 1-4). In-kind funds support the other half of total charter cost. We request that the EVOS TC fund one half of the total charter cost, because the oceanographic data collected by the project will provide for valuable validation of remote sensing products, improved understanding of ocean dynamics in lower Cook Inlet, and a highly powerful statistical evaluation of ocean circulation models. In the past, the ADFG has funded this fisheries survey from sale of fish captured by the test fishing vessel, but this is not longer possible due to the lower ex-vessel price for salmon in recent years.

Commodities

Requested funds: $1.0
In-kind funds: $0.0

Funds requested for hardware needed to rig acoustic tow body on board charter vessel, as well as, miscellaneous supplies needed for data management (objectives 1-4).

Equipment

Requested funds:$20.0 (FY04 only)
In-kind funds: $52.0

Funds requested for upgrade of DT6000 echosounder to stabilize ping rate and install attitude sensor in transducer. This upgrade will improve estimates of salmon swimming speed and depth distribution. In-kind funds support purchase of a conductivity-temperature-depth profiler, a 200 kHz DT 6000 split-beam sonar system, and Echoview acoustic processing software (objectives 1-4).

FY06:

Personnel

Requested funds: $23.6
In-kind funds: $17.4

Funds requested for R. Decino (1 mm) are needed for data management and analysis (objectives 2-6). An additional 1.5 mm of funding for S. Pegau and 1.5 mm for M. Willette are needed for data analysis, report and manuscript preparation (objectives 2-6). In-kinds funds support an additional 1 mm for each investigator for data management, data analysis, report and manuscript preparation (objectives 2-6).

Travel

Requested funds: $1.0
In-kind funds: $0.0

Funds requested for S. Pegau and M. Willette to travel to annual GEM workshop.

Contractual

Requested funds: $1.0
In-kind funds: $0.0

Funds requested for publication of 1 manuscript.

Commodities

Requested funds: $0.0
In-kind funds: $0.0

No funds requested.

Equipment

Requested funds: $0.0
In-kind funds: $0.0

No funds requested.

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 04 - FY 06

Budget Category:	Proposed FY 04	Proposed FY 05	Proposed FY 06	TOTAL PROPOSED
Personnel	$22.9	$22.9	$23.6	$69.4
Travel	$1.0	$1.0	$1.0	$3.0
Contractual	$37.5	$37.5	$1.0	$76.0
Commodities	$1.0	$1.0	$0.0	$2.0
Equipment	$20.0	$0.0	$0.0	$20.0
Subtotal	$82.4	$62.4	$25.6	$170.4
General Administration (9% of Subtotal)	$7.4	$5.6	$2.3	$15.3
Project Total	$89.8	$68 0	$27.9	$185.7

Cost-share Funds (annual):

Item	Purpose	Source	Amount
Vessel charter	data collection	ADFG	37.5
Personnel	data analysis	ADFG	17.4
CTD & Fisheries Sonar	data collection	ADFG	52.0

FY 04-06

Date Prepared.

Project Number: G-030670
Project Title: Monitoring dynamics of the Alaska coastal current and development of applications for management of Cook Inlet salmon
Agency: ADFG

FORM 3A
TRUSTEE
AGENCY
SUMMARY

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 04 - FY 06

Personnel Costs:		GS/Range/	Months	Monthly		Personnel
Name	Description	Step	Budgeted	Costs	Overtime	Sum
Mark Willette	Fishery Biologist III	18K	1.0	6.7		6.7
Scott Pegau	Senior Scientist	18C	2.0	5.5		11.0
Robert Decino	Fishery Biologist II	16C	1.0	5.2		5.2
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
	Subtotal		4.0	17.4	0.0	
					Personnel Total	$22.9

Travel Costs:	Ticket	Round	Total	Daily	Travel
Description	Price	Trips	Days	Per Diem	Sum
					0.0
Attend annual EVOS workshop	0.1	2	8	0.1	1.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
				Travel Total	$1.0

FY 04

Project Number: G-030670
Project Title: Monitoring dynamics of the Alaska coastal current and development of applications for management of Cook Inlet salmon
Agency: ADFG

FORM 3B
Personnel
& Travel
DETAIL

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 04 - FY 06

Contractual Costs:		Contract Sum
Description		
Vessel charter for 34 days (1/2 of total cost requested)		37.5
If a component of the project will be performed under contract, the 4A and 4B forms are required.	**Contractual Total**	$37.5
Commodities Costs:		Commodity Sum
Description		
Field and laboratory supplies (rigging for two body, diskettes, rite-in-rain paper)		1.0
	Commodities Total	$1.0

FY 04

Project Number: G-030670
Project Title: Monitoring dynamics of the Alaska coastal current and development of applications for management of Cook Inlet salmon
Agency: ADFG

FORM 3B
Contractual & Commodities DETAIL

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 04 - FY 06

New Equipment Purchases: Description	Number of Units	Unit Price	Equipment Sum
			0.0
Biosonics DTX upgrade w/ attitude sensor			20.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
		New Equipment Total	$20.0

Existing Equipment Usage: Description	Number of Units	Inventory Agency
300 kHz portable acoustic doppler current profiler	1	ADFG
200 kHz DT 6000 echosounder with split-beam transducer	1	ADFG
Conductivity-temperature-depth (CTD) profiler w/ fluorometer & transmissometer	1	ADFG
Vessel charter for 34 days (1/2 of total cost)	1	ADFG

FY 04

Project Number: G-030670
Project Title: Monitoring dynamics of the Alaska coastal current and development of applications for management of Cook Inlet salmon
Agency: ADFG

FORM 3B
Equipment
DETAIL

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 04 - FY 06

Personnel Costs:		GS/Range/	Months	Monthly		Personnel
Name	Description	Step	Budgeted	Costs	Overtime	Sum
Mark Willette	Fishery Biologist III	18K	1.0	6.7		6.7
Scott Pegau	Senior Scientist	18C	2.0	5.5		11.0
Robert Decino	Fishery Biologist II	16C	1.0	5.2		5.2
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
	Subtotal		4.0	17.4	0.0	
					Personnel Total	$22.9

Travel Costs:	Ticket	Round	Total	Daily	Travel
Description	Price	Trips	Days	Per Diem	Sum
					0.0
Attend annual EVOS workshop	0.1	2	8	0.1	1.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
				Travel Total	$1.0

FY 05

Project Number: G-030670
Project Title: Monitoring dynamics of the Alaska coastal current and development of applications for management of Cook Inlet salmon
Agency: ADFG

FORM 3B
Personnel
& Travel
DETAIL

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 04 - FY 06

Contractual Costs:	Contract Sum
Description	
Vessel charter for 34 days (1/2 of total cost requested)	37.5
If a component of the project will be performed under contract, the 4A and 4B forms are required. **Contractual Total**	$37.5
Commodities Costs:	Commodity Sum
Description	
Field and laboratory supplies (rigging for two body, diskettes, rite-in-rain paper)	1.0
Commodities Total	$1.0

FY 05

Project Number: G-030670
Project Title: Monitoring dynamics of the Alaska coastal current and development of applications for management of Cook Inlet salmon
Agency: ADFG

FORM 3B
Contractual & Commodities
DETAIL

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 04 - FY 06

New Equipment Purchases: Description	Number of Units	Unit Price	Equipment Sum
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
		New Equipment Total	$0.0

Existing Equipment Usage: Description	Number of Units	Inventory Agency
300 kHz portable acoustic doppler current profiler	1	ADFG
200 kHz DT 6000 echosounder with split-beam transducer	1	ADFG
Conductivity-temperature-depth (CTD) profiler w/ fluorometer & transmissometer	1	ADFG
Vessel charter for 34 days (1/2 of total cost)	1	ADFG

FY 05

Project Number: G-030670
Project Title: Monitoring dynamics of the Alaska coastal current and development of applications for management of Cook Inlet salmon
Agency: ADFG

FORM 3B
Equipment
DETAIL

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 04 - FY 06

Personnel Costs:		GS/Range/	Months	Monthly		Personnel
Name	Description	Step	Budgeted	Costs	Overtime	Sum
						0.0
Mark Willette	Fishery Biologist III	18K	1.5	6.7		10.1
Scott Pegau	Senior Scientist	18C	1.5	5.5		8.3
Robert Decino	Fishery Biologist II	16C	1.0	5.2		5.2
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
						0.0
	Subtotal		4.0	17.4	0.0	
					Personnel Total	$23.6

Travel Costs:	Ticket	Round	Total	Daily	Travel
Description	Price	Trips	Days	Per Diem	Sum
					0.0
Attend annual EVOS workshop	0.1	2	8	0.1	1.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
				Travel Total	$1.0

FY 06

Project Number: G-030670
Project Title: Monitoring dynamics of the Alaska coastal current and development of applications for management of Cook Inlet salmon
Agency: ADFG

FORM 3B
Personnel
& Travel
DETAIL

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 04 - FY 06

Contractual Costs:	Contract Sum
Description	
Publication costs	1.0
Contractual Total	$1.0

Commodities Costs:	Commodity Sum
Description	
Commodities Total	$0.0

FY 06

Project Number: G-030670
Project Title: Monitoring dynamics of the Alaska coastal current and development of applications for management of Cook Inlet salmon
Agency: ADFG

FORM 3B
Contractual & Commodities DETAIL

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 04 - FY 06

New Equipment Purchases: Description	Number of Units	Unit Price	Equipment Sum
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
			0.0
		New Equipment Total	$0.0

Existing Equipment Usage: Description	Number of Units	Inventory Agency

FY 06

Project Number: G-030670
Project Title: Monitoring dynamics of the Alaska coastal current and development of applications for management of Cook Inlet salmon
Agency: ADFG

FORM 3B
Equipment
DETAIL

CURRENT AND PENDING SUPPORT FORM

The following information must be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: T. Mark Willette	Other agencies to which this proposal has been/will be submitted: none

Support: X Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: Kenai Bluff Stabilization Project - Baseline Fisheries Assessment

Source of Support: U.S. Army Corp of Engineers

Total Award Amount: $74.2 Total Award Period Covered: 2003

Location of Project: Kenai River estuary

Months of Your Time Committed to the Project: 0.5 FY04 FY 05 FY 06 Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: Management of Cook Inlet salmon

Source of Support: State of Alaska – General Fund

Total Award Amount: $382.0 Total Award Period Covered: 2004

Location of Project: Cook Inlet

Months of Your Time Committed to the Project: 10.5 FY FY 05 FY 06 Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Source of Support:

Total Award Amount: $ Total Award Period Covered:

Location of Project:

Months of Your Time Committed to the Project: FY04 FY 05 FY 06 Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title.

Source of Support:

Total Award Amount: $ Total Award Period Covered:

Location of Project:

Months of Your Time Committed to the Project. FY 04 FY 05 FY 06 Sumr:

*If this project has previously been funded by another entity, please list and furnish information for immediately preceding funding period.

(USE ADDITIONAL SHEETS AS NECESSARY)

CURRENT AND PENDING SUPPORT FORM

The following information must be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: W. Scott Pegau	Other agencies to which this proposal has been/will be submitted.

Support. ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: Visible remote sensing of the Gulf of Alaska

Source of Support: GEM

Total Award Amount: $77,100 Total Award Period Covered: 12/02-9/03

Location of Project: KBRR

Months of Your Time Committed to the Project: 0 FY04 FY 05 FY 06 Sumr:

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title. Monitoring dynamics of the Alaska coastal current and development of applications for management of Cook Inlet salmon – a pilot study

Source of Support: GEM

Total Award Amount: $96,400 Total Award Period Covered: 12/02-9/04

Location of Project: KBRR

Months of Your Time Committed to the Project: 1 FY 04 FY 05 FY 06 Sumr

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title. GLOBEC NEP: Topographic Control of Mesoscale Variability in the Gulf of Alaska

Source of Support: NSF via subcontract from UAF

Total Award Amount: $52,330 Total Award Period Covered: 3/03-2/06

Location of Project: KBRR

Months of Your Time Committed to the Project: 1 FY04 1 FY 05 FY 06 Sumr:

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: The Prediction of diver visibility and its relation to spectral beam attenuation

Source of Support: ONR via subcontract from WETLabs

Total Award Amount: $94,570 Total Award Period Covered: 9/02-8/04

Location of Project. KBRR

Months of Your Time Committed to the Project: 1 FY 04 FY 05 FY 06 Sumr:

*If this project has previously been funded by another entity, please list and furnish information for immediately preceding funding period.

(USE ADDITIONAL SHEETS AS NECESSARY)

CURRENT AND PENDING SUPPORT FORM

The following information must be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: W. Scott Pegau	Other agencies to which this proposal has been/will be submitted.

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title: Kachemak Bay NERR Operations

Source of Support: NOAA
Total Award Amount: $510,000 Total Award Period Covered: 07/03-06/04
Location of Project: KBRR
Months of Your Time Committed to the Project: 4 FY04 FY 05 FY 06 Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Months of Your Time Committed to the Project: FY 04 FY 05 FY 06 Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Months of Your Time Committed to the Project: FY04 FY 05 FY 06 Sumr·

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support
Project/Proposal Title:

Source of Support:
Total Award Amount: $ Total Award Period Covered:
Location of Project:
Months of Your Time Committed to the Project: FY 04 FY 05 FY 06 Sumr·

*If this project has previously been funded by another entity, please list and furnish information for immediately preceding funding period.

(USE ADDITIONAL SHEETS AS NECESSARY)

STATE OF ALASKA

DEPARTMENT OF FISH AND GAME

EVOS RESTORATION PROGRAM

FRANK MURKOWSKI, GOVERNOR

441 W 5th Avenue, Suite 500
ANCHORAGE, AK 99501-2340
PHONE (907) 265-9329
FAX. (907) 276-7178

Attachment A

MEMORANDUM

TO: Gail Phillips, Executive Director
EVOS Trustee Council

FROM: Brett W. Huber, Coordinator
ADF&G EVOS Restoration Program

DATE: 27 January 2004

SUBJECT: Request for Trustee Council consideration

In the process of establishing the reimbursable services agreement between the Alaska Department of Fish and Game (ADF&G) and the University of Alaska Fairbanks (UAF) for EVOS project # 040340, an error was discovered in the budget submitted for consideration and approved under the FY 04 Work Plan.

As the lead agency for the project, ADF&G is requesting that the Trustee Council consider the UAF request to review and award the additional funding required to remedy the error in the original budget submission. The attached memo from Lesli Walls of UAF Grants and Services dated 1/23/04 explains the discrepancy that exists in the indirect cost category. Also attached is a complete FY 04 revised budget for the project.

Thank you for your consideration. Should you require any additional information, please let me know.

Lesli Walls, Acctg. Techn.
Grant and Contract Services
Phone (907) 474-6669
FAX (907) 474-5506

UNIVERSITY OF ALASKA
FAIRBANKS

Grant and Contract Services
University of Alaska Fairbanks
109 Administrative Services Center
P O Box 757880
Fairbanks, AK 99775-7880

January 23, 2004

Brett Huber
ADFG EVOS Program Coordinator
441 W. 5th Avenue Suite 500
Anchorage, AK 99501-2340

Brett,

As per our discussions on the review of this RSA, I noted a problem there was an error in the F&A charges in regards to the equipment. UAF and EVOS have a negotiated F&A Rate of 25% of the Total Direct Cost. On the budget the Equipment cost was removed from the base calculation in error. This results in a shortage of funds for UAF Indirect cost of $4,500.00 ($18,000 x 25%). We are requesting that the EVOS Trustee Council review and award the additional amount.

I have enclosed the requested full FY04 revised budget and narrative as you requested. If there is any further information you require don't hesitate to ask.

Thank you for your time and attention. I look forward to hearing from you soon.

Lesli Walls
Accounting Technician, Grant and Contract Services

G. Maggie Griscavage
Director – Grant and Contract Services

encl

EXXON VALDEZ OILSPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 04 - FY 06

Budget Category:	Proposed FY 04	Proposed FY 05	Proposed FY 06	TOTAL PROPOSED
Personnel	$26,532 5	$0 0	$0.0	$26,532 5
Travel	$482 0	$0.0	$0 0	$482.0
Contractual	$10,135 0	$0 0	$0 0	$10,135 0
Commodities	$3,850 0	$0.0	$0 0	$3,850.0
Equipment	$18,000 0	$0 0	$0 0	$18,000 0
Subtotal	$58,999 5	$0.0	$0 0	$58,999.5
Indirect (rate will vary by proposer)	$14,749.9			$14,749 9
Project Total	$73,749 4	$0 0	$0 0	$73,749 4
Trustee Agency GA (9% of Project Total)	$6,637.4	$0 0	$0 0	$6,637 4
Total Cost	$80,386 8	$0 0	$0 0	$80,386 8

FY 04-06

Date Prepared

Project Number:
Project Title: Long-Term Monitoring of the Alaska Coastal Current
Proposer: Thomas Weingartner, Institute of Marine Science

FORM 4A NON-TRUSTEE SUMMARY

EXXON VALDEZ OILSPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 04 - FY 06

Personnel Costs:			Months	Monthly		Personnel
Name	Description		Budgeted	Costs	Overtime	Sum
Weingartner			0.5	7858.0		3,929 0
Danielson			1 5	7644.0		11,466 0
Leech			1 5	7425 0		11,137 5
						0.0
						0.0
						0 0
						0.0
						0 0
						0 0
						0 0
						0.0
						0.0
		Subtotal	3.5	22927.0	0.0	
					Personnel Total	$26,532 5

Travel Costs:	Ticket	Round	Total	Daily	Travel
Description	Price	Trips	Days	Per Diem	Sum
RT Fairbanks -Anchorage	250.0	1	2	116.0	482 0
					0 0
					0 0
					0.0
					0.0
					0 0
					0.0
					0.0
					0.0
					0.0
					0 0
					0 0
				Travel Total	$482 0

FY 04

Project Number:
Project Title: Long-Term Monitoring of the Alaska Coastal Current
Proposer: Thomas Weingartner, Institute of Marine Science

FORM 4B
Personnel
& Travel
DETAIL

EXXON VALDEZ OILSPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 04 - FY 06

Contractual Costs:		Contract
Description		Sum
Little Dipper	(2003 Nov 2003, Jan. 04, Feb 04, Jun. 04, Sept 04) 5 full days @ $416/day	2,080 0
Chartered fishing vessel (1 day for mooring)		4,000.0
MicroCat calibrations	(6@$300; 1@$475)	2,275.0
SeaCat Calibration	(1@$615)	615.0
SBE-25 Calibration	(1@$565)	565 0
Shipping (RT Seward –Seattle microcats)		600 0
If a component of the project will be performed under contract, the 4A and 4B forms are required.	**Contractual Total**	$10,135.0

Commodities Costs:	Commodity
Description	Sum
Mooring anchor and lashing chain	400 0
Shackles, sling links, thimbles, pins, misc mooring hardware	1,000.0
Batteries, O-rings, vane assembly parts	2,450 0
Commodities Total	$3,850 0

FY 04

Project Number:
Project Title: Long-Term Monitoring of the Alaska Coastal Current
Name: Thomas Weingartner, Institute of Marine Science

FORM 4B
Contractual & Commodities DETAIL

EXXON VALDEZ OILSPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 04 - FY 06

New Equipment Purchases:	Number	Unit	Equipment
Description	of Units	Price	Sum
Seabird SEACAT with Fluorometer, 0 -100 psia strain gauge	1	18000.0	18,000 0
			0 0
			0 0
			0 0
			0 0
			0.0
			0.0
			0 0
			0.0
			0.0
			0.0
			0 0
			0 0
New Equipment Total			$18,000 0

Existing Equipment Usage:	Number	Inventory
Description	of Units	Agency

FY 04

Project Number:
Project Title: Long-Term Monitoring of the Alaska Coastal Current
Proposer: Thomas Weingartner, Institute of Marine Science

FORM 4B
Equipment
DETAIL

EXXON VALDEZ OILSPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 04 - FY 06

Personnel Costs:			Months	Monthly		Personnel
Name	Description		Budgeted	Costs	Overtime	Sum
						0 0
						0 0
						0 0
						0 0
						0 0
						0 0
						0.0
						0 0
						0 0
						0.0
						0 0
						0 0
		Subtotal	0 0	0.0	0 0	
					Personnel Total	$0.0

Travel Costs:		Ticket	Round	Total	Daily	Travel
Description		Price	Trips	Days	Per Diem	Sum
						0 0
						0.0
						0 0
						0 0
						0 0
						0 0
						0 0
						0 0
						0.0
						0 0
						0 0
						0.0
					Travel Total	$0 0

FY 05

Project Number:
Project Title: Long-Term Monitoring of the Alaska Coastal Current
Proposer: Thomas Weingartner, Institute of Marine Science

FORM 4B
Personnel
& Travel
DETAIL

EXXON VALDEZ OILSPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 04 - FY 06

Contractual Costs:	Contract Sum
Description	
If a component of the project will be performed under contract, the 4A and 4B forms are required. **Contractual Total**	$0.0
Commodities Costs:	Commodity Sum
Description	
Commodities Total	$0 0

FY 05

Project Number:
Project Title: Long-Term Monitoring of the Alaska Coastal Current
Proposer: Thomas Weingartner, Institute of Marine Science

FORM 4B
Contractual & Commodities DETAIL

EXXON VALDEZ OILSPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 04 - FY 06

New Equipment Purchases:		Number	Unit	Equipment
Description		of Units	Price	Sum
				0.0
				0 0
				0 0
				0.0
				0.0
				0 0
				0 0
				0.0
				0.0
				0 0
				0 0
				0 0
				0 0
			New Equipment Total	$0.0

Existing Equipment Usage:		Number	Inventory
Description		of Units	Agency

FY 05

Project Number:
Project Title: Long-Term Monitoring of the Alaska Coastal Current
Proposer: Thomas Weingartner, Institute of Marine Science

FORM 4B
Equipment
DETAIL

EXXON VALDEZ OILSPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 04 - FY 06

Personnel Costs:			Months	Monthly		Personnel
Name	Description		Budgeted	Costs	Overtime	Sum
						0 0
						0 0
						0 0
						0 0
						0 0
						0 0
						0 0
						0.0
						0.0
						0 0
						0.0
						0.0
		Subtotal	0.0	0.0	0 0	
					Personnel Total	$0.0

Travel Costs:	Ticket	Round	Total	Daily	Travel
Description	Price	Trips	Days	Per Diem	Sum
					0 0
					0 0
					0 0
					0 0
					0.0
					0.0
					0.0
					0 0
					0 0
					0.0
					0 0
					0 0
				Travel Total	$0 0

FY 06

Project Number:
Project Title: Long-Term Monitoring of the Alaska Coastal Current
Proposer: Thomas Weingartner, Institute of Marine Science

FORM 4B
Personnel
& Travel
DETAIL

EXXON VALDEZ OILSPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 04 - FY 06

Contractual Costs:	Contract Sum
Description	
Contractual Total	$0 0

Commodities Costs:	Commodity Sum
Description	
Commodities Total	$0.0

FY 06

Project Number:
Project Title: Long-Term Monitoring of the Alaska Coastal Current
Proposer: Thomas Weingartner, Institute of Marine Science

FORM 4B
Contractual & Commodities
DETAIL

EXXON VALDEZ OILSPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 04 - FY 06

New Equipment Purchases: Description	Number of Units	Unit Price	Equipment Sum
			0 0
			0 0
			0 0
			0.0
			0.0
			0.0
			0.0
			0.0
			0 0
			0 0
			0.0
			0 0
			0.0
		New Equipment Total	$0.0

Existing Equipment Usage: Description	Number of Units	Inventory Agency

FY 06

Project Number:
Project Title: Long-Term Monitoring of the Alaska Coastal Current
Proposer: Thomas Weingartner, Institute of Marine Science

FORM 4B
Equipment
DETAIL

Attachment A

Exxon Valdez Oil Spill Trustee Council

441 W. 5th Ave., Suite 500 • Anchorage, Alaska 99501-2340 • 907/278-8012 • fax 907/276-7178

December 2, 2003

Exxon Valdez Oil Spill Trustee Council Members

Re: Final details on the FY 2004 Work Plan requiring your action

Dear Trustees:

Upon review of the transcripts of the Trustee Council meeting of November 10th, two additional actions remain pertaining to the FY 2004 Work Plan.

1. Funding of two continuing projects, now deferred, that cannot be finished without additional funds;
2. Funding of an alternative to the modeling proposals rejected on November 10th.

The Trustee Council agreed to re-consider funding deferred projects during FY 2004; however, given the current work load and the lateness in the fiscal year, I am recommending that you consider funding only two deferred projects in FY 2004 (Stabeno and Willette). The projects are continuing projects (funded in FY 2003) where we need additional investment to get full benefits from money already spent. If acceptable to the Trustee Council, authors of the other deferred projects would be notified not to expect funding in FY 2004. This would allow them to pursue other funding sources, or to consider re-submitting under the FY 2005 Invitation. At present, authors of all deferred proposals are waiting to hear from the Trustee Council.

The Trustee Council agreed to the concept of developing a modeling program; however, it asked for a less costly alternative to the proposals rejected on November 10th. Our Science Director, Dr. Mundy, has recommended that the budget of project 040630, Science Management, be increased by $70,000 to support four workshops and preparation of a modeling report in FY 2004, which would allow us to do the work in-house. The workshops and report would address questions raised by the Trustee Council during the November 10th meeting, including availability of models from state and federal agencies, feasibility of engaging modeling personnel from state or federal agencies on a *pro bono* basis, and methods for making stakeholder input, traditional ecological knowledge, and other forms of community involvement integral components of the modeling process. The cost estimate is based on travel for 48 people, as the total attendance for the work shops at our offices in Anchorage and report preparation by staff.

I recommend that the Trustee Council could take care of these two items in a brief conference call at a time to be determined, if there is general agreement on the course of action recommended. I will e-mail you in several days to get your input.

If more discussion is required, I am hoping that all Trustee Council members will be present for the opening of the Alaskan Marine Science Symposium at the Hotel Captain Cook at 1:00 PM January 12, which would allow us to meet in the morning.

Sincerely,

Gail Phillips
Executive Director

Cc: Phil Mundy, Science Director

Exxon Valdez Oil Spill Trustee Council

441 W. 5th Ave., Suite 500 • Anchorage, Alaska 99501-2340 • 907/278-8012 • fax 907/276-7178

January 9, 2004

Rowan Gould, Alaska Regional Director
U.S. Fish and Wildlife Service
1011 E. Tudor Road
Anchorage, AK 99503-6199

Re: Letter from USFWS of January 6, 2004 on the Science Plan for GEM

Dear Mr. Gould:

Thank you for the comments on the Science Plan for the Gulf of Alaska Ecosystem Monitoring and Research Program. I very much appreciate your support for the GEM Program. I agree that GEM is a visionary program for understanding the lingering effects of the oil spill in the context of other factors responsible for variation in biological productivity in the Gulf of Alaska. Rest assured we intend to continue the practice of annually reviewing the Science Plan in order to keep it responsive to the needs of government agencies and the people of the communities impacted by the oil spill.

I would like to take this opportunity to thank you and to recognize your staff for the many hours of labor contributed to GEM over the past four years. The contributions of your scientists have been, and continue to be essential to the success of GEM. I look forward to working with you to maintain the effective working relationship between our programs.

Sincerely,

Gail Phillips

Gail Phillips
Executive Director

Happy New Year!

CC: Trustee Council
Cam Toohey, DOI

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1011 E. Tudor Rd.
Anchorage, Alaska 99503-6199

IN REPLY REFER TO:

FWS/RD

JAN - 6 2004

Ms. Gail Phillips
Executive Director
Exxon Valdez Trustee Council
441 W. 5th Avenue, Suite 500
Anchorage, Alaska 99501-2340

Dear Ms. Phillips:

The U.S. Fish and Wildlife Service does not have any specific comments on the Science Plan for the Gulf of Alaska Ecosystem Monitoring and Research Program. However, we wish to express our strong continued support of the Science Plan and the overall GEM Program. Many individuals have expended countless hours in the development of GEM, which we believe is a visionary program for understanding factors responsible for variation in productivity in the Gulf of Alaska and in understanding the lingering effects of oil from the spill. While the focus of the annual science plan can, and should be, debated to improve the overall performance of GEM and the involvement of local communities, we believe it is important that the Exxon Valdez Oil Spill Trustee Council move forward with GEM's implementation.

Thank you for the opportunity to comment on the Science Plan for GEM.

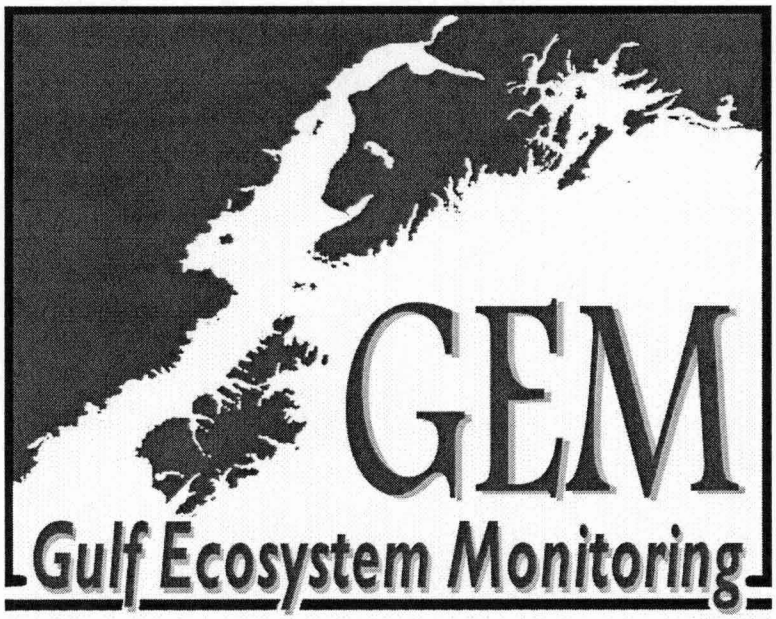
Sincerely,

Acting Regional Director

cc: Drue Pearce, Department of the Interior
Cam Toohey, Department of the Interior

FY 05

DRAFT



INVITATION

DRAFT Issued February 4, 2004

The FY 05 Invitation was issued in an electronic format on the Trustee Council's web page. This paper copy of the invitation was prepared simply to provide documentation for the permanent files

Exxon Valdez Oil Spill Trustee Council

441 W. 5th Ave., Suite 500 • Anchorage, Alaska 99501-2340 • 907/278-8012 • fax 907/-276-7178

Joe Meade, *Forest Supervisor, AK Region, DOA*
James Balsiger, *Administrator, NMFS*
Drue Pearce, *Sr. Advisor to the Secretary, DOI*
Kevin Duffy, *Commissioner, ADF&G*
Ernesta Ballard, *Commissioner, ADEC*
Gregg Renkes, *Attorney General, ADOL*

GULF ECOSYSTEM MONITORING & RESEARCH PROGRAM INVITATION BOOKLET FOR FFY 05

DRAFT

Out for review February 4, 2004

DESCRIPTION

A. Purpose

The *Exxon Valdez* Oil Spill Trustee Council has dedicated funds from its settlement with Exxon Corp. to endow a program of long-term monitoring and ecosystem-based research within the area affected by the 1989 oil spill. The program is called GEM (Gulf of Alaska Ecosystem Monitoring and Research Program), and its mission is to:

> *Sustain a healthy and biologically diverse marine ecosystem in the northern Gulf of Alaska and the human use of the marine resources in that ecosystem through greater understanding of how its productivity is influenced by natural changes and human activities.*

Each year the Trustee Council invites proposals for projects to be included in the annual GEM work plan. This invitation is for federal fiscal year 2005 (October 1, 2004-September 30, 2005). All proposers should be familiar with the GEM Program Document and GEM Science Plan, which are available on the web at http://www.evostc.state.ak.us/gem/documents.html.

B. Proposals are Invited in the Following Categories

Please note that updated proposals in all categories will be accepted from projects that were recommended by the Executive Director for funding or deferral in FY 2004 and proposals from currently funded projects that require modification will also be accepted. See the FY 2004 Work Plan, Appendix A for the list of projects recommended for funding or deferral by the Executive Director in FY 2004.

Alaska Coastal Current. No new proposals are invited.

Community Involvement. No new proposals are invited. The Executive Director is developing the concepts for the Community Involvement program during FY 2004 – FY 2005. A workshop in early March 2004 will start this process.

Data Management and Information Transfer. Proposals are invited to construct a database of metadata describing real time sensors from the northern Gulf of Alaska relevant to GEM.

Lingering Oil Effects. New proposals are invited that address follow-up investigations as indicated by results of work in FY 2004.

Modeling. Proposals are invited to address development of a whole-ecosystem natural resource model as an adaptive management tool for guiding monitoring under GEM, and to describe the process of further developing or implementing existing models that could serve as components of the whole-ecosystem model.

Nearshore. Proposals are invited that complete Shore Zone mapping of the Nearshore target area, select monitoring sites, and establish Standard Operating Procedures (SOP) for nearshore sampling.

Offshore. No new proposals are invited.

Synthesis. Proposals are invited to provide a synthesis of scientific literature and existing data gathering programs for three of four GEM habitats, Watersheds, Alaska Coastal Current, and Offshore,

Watersheds. No new proposals are invited.

More detailed information is available later in this document, entitled "*Detailed descriptions of what is invited by category for FFY 05".*

C. Program Structure

Amount Available for Award. The Trustee Council has set a funding "cap" of $5 million for FY 05, which is augmented by an award of $250 thousand from the National Ocean Service Coastal Services Center (NOAA), for a total available in FY 2005 of $5.25 million. The science management and committees, public outreach and information, and administrative components of the program are expected to cost roughly $1.6 million, leaving $3.7 million for projects. Of the $3.7 million, about $1.7 million is earmarked for continuation of projects begun in FY 04, which leaves approximately $2.0 million for new projects in FY 2005. Cost guidelines/limits for new proposals are provided in the *Detailed descriptions of what is invited by category for FFY 05,* available on page 16 of this document

Projects Continuing from FY 04.
Principal investigators (PIs) receiving funding from the Trustee Council for FY 04 and who were authorized by the Trustee Council to continue their projects in FY 05 need not submit a proposal package. Beginning with the FY 04 funding cycle, the Council has authorized multiple year (up to three years duration) funding. Although funds will continue to be released on an annual basis as they are now, proposals will not need to be

resubmitted each year. Proposals that were funded by the Trustee Council in FY 04 for funding in FY 05 must have an FY 2004 annual report approved by the Science Director before they will receive funding in FY 05. A copy of the annual report form can be found on our website at http http://www.evostc.state.ak.us/admin/index.html.

Eligibility Criteria. Individuals, private industry, government agencies, and other interested parties are eligible to submit proposals.

Public Availability of Proposals. Proposals funded by the Trustee Council are considered public documents and will be available for public review when funded.

Statement of Non-discrimination. The Trustee Council conducts all programs and activities free from discrimination based on race, color, national origin, age, sex, religion, marital status, pregnancy, parenthood, or disability. The Council administers all programs and activities in compliance with Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, Title II of the Americans with Disabilities Act of 1990, the Age Discrimination Act of 1975, and Title IX of the Education Amendments of 1972. If you believe you have been discriminated against in any program, activity, or facility, or if you desire further information, please write to: EVOS Trustee Council, 441 West 5th Avenue, Suite 500, Anchorage, Alaska 99501-2340; or O.E.O. U.S Department of the Interior, Washington, D.C. 20240.

D. Proposal Review Process

Policy and Legal Review. To be eligible for funding, proposals must be designed to restore, replace, enhance, or acquire the equivalent of natural resources injured as a result of the oil spill or the reduced or lost services provided by such resources. The GEM program is one aspect of restoration, which includes long-term observations and ecosystem-based research necessary to understand the status of oil-injured resources. Trustee Council staff will review each proposal for completeness and for adherence to the requirements of this invitation before forwarding them to the Trustee Council for consideration.

Technical and Programmatic Review. All proposals will undergo independent (and anonymous) technical peer review, conducted by nationally or regionally recognized experts. Proposals will be evaluated on the following technical aspects that are essential to all projects; Understanding of the problem, Soundness of the technical approach, Innovation and uniqueness of the proposal, Feasibility, Capabilities, experience, and past performance of the proposer(s) and key personnel, as well as whether facilities or other factors integral to the proposal's success are available to support the proposal, and Cost effectiveness of the proposal.

In addition, proposals and their technical reviews will be examined by the Trustee Council's Scientific and Technical Advisory Committee (STAC) and appropriate subcommittees for both scientific rigor and programmatic suitability. The programmatic criteria applied by the STAC emphasize the following:

1. Responsiveness of the proposal to the invitation.

2. The extent to which the proposal will contribute to meeting the GEM program's goals, hypotheses, and questions. For more information on GEM program goals, see http://www.evostc.state.ak.us/gem/documents.html.

3. The extent to which the proposal will help achieve the restoration objectives identified by the Trustee Council for a given injured resource. The Council's restoration objectives, and the current status of injury, are available at http://www.evostc.state.ak.us/pdf/injupdate02.pdf.

4. How the proposal will contribute to meeting the implementation goals and strategies of the Council, such as leveraging funds from other sources.

5. Degree to which the proposed activities have originated from local communities, and the extent to which the proposed activities been coordinated and vetted with local communities (if any) in the geographic area of the research, as indicated by letters of support, objectives incorporating community participation, and other indications.

6. Degree to which the proposed activities have considered or are able to capitalize on local knowledge or traditional ecological knowledge appropriate to the proposed activities.

7. Degree to which proposed activities are likely to result in resource or environmental management applications, as demonstrated by letters of support from management agencies, involvement of management agency personnel, and letters of support from members of regulated groups, such as commercial fishers and the seafood processing industry.

Budget Review. Trustee Council staff will examine each proposal's budget for consistency with its proposed objectives, and for adherence to the budget instructions contained in this invitation. You may be asked to respond to budget review questions, or to revise your budget to address budgetary concerns.

Public Advisory Committee Review. Proposals will be reviewed by the Trustee Council's Public Advisory Committee (PAC), a 20 member group representing a cross section of interests affected by the oil spill.

Public Comment and Funding Decision. The Trustee Council's Executive Director will develop a funding recommendation based on the reviews described above. The recommendation will be circulated for public comment as the *FY 05 Draft Work Plan.* The Council will then decide which proposals will be funded. Unanimous agreement of all six Council members is required to fund a proposal. Note that the Trustee Council is not legally bound to abide by recommendations of peer reviewers, the STAC, PAC, or the Executive Director, although it is unusual for them not to do so.

Community Involvement. All proposals in any category are expected to declare the extent to which local communities are involved or have been contacted, or that there were no contacts to be made due to the geographic scope of their project. Even if there are no obvious synergies to be derived from contacting the city, borough, tribal or other government entity or community council, it is prudent to let them know you may be working, staging or launching in the area. Proposals that have made appropriate community contacts will be rated higher by the STAC than those without, all other factors being equal.

Akhiok Tribal Council
Mitch Simeonoff, President
PO Box 5072
Akhiok, AK 99615
(907) 836-2313

Chenega IRA Council
Larry Evanoff, President
PO Box 8079
Chenega Bay, AK 99574-8079
(907) 573-5132

Chignik Lake Village Council
Virginia Aleck, President
PO Box 18
Chignik Lake, AK 99548
(907) 845-2212

Chignik Bay Village Council
(907) 749-2445

Chignik Lagoon Village Council
(907) 840-2281

City of Cordova
Scott Hahn, City Manager
PO Box 1210
Cordova, AK 99574
(907) 424-6200

City of Homer
Ron Drathman, City Manager
491 E Pioneer Av
Homer, AK 99603
(907) 235-8121
clerk@xyz.net

City of Kodiak
Linda Reed, City Manager
710 Mill Bay Rd
Kodiak, AK 99615
(907) 486-8640
lfreed@city.kodiak.ak.us

City of Seldovia
John Frohrip, City Manager
PO Drawer B
Seldovia, AK 99663
(907) 234-7643

City of Seward
W.C. Casey, PW Director
PO Box 167
Seward, AK 99664
(907) 224-4005
wckc@cityofseward.net

City of Soldotna
Thomas Boedeker, City Manager
177 N Birch St
Soldotna, AK 99669
(907) 262-9107
boedeker@ci.soldotna.ak.us

City of Valdez
David Dengel, City Manager
PO Box 307
Valdez, AK 99686
(907) 835-4313
ddengel@ci.valdez.ak.us

City of Whittier/Port & Harbor Commission
Dean Rand, Representative
PO Box 608
Whittier, AK 99693
(907) 472-2337
dean@discoveryvoyages.com

Karluk IRA Tribal Council
Alicia Reft, President
PO Box 22
Karluk, AK 99608-0022
(907) 241-2218

Kodiak Island Borough
Pat Carlson, Manager
710 Mill Bay Rd.
Kodiak, AK 99615
(907) 486-9363
info@kib.co.kodiak.ak.us

Larsen Bay Tribal Council
Brad Aga, President
PO Box 35
Larsen Bay, AK 99624-0035
(907) 847-2201

Nanwalek IRA Council
Emilie Swenning, First Chief
PO Box 8012
Nanwalek, AK 99603
(907) 281-2274

Native Village of Afognak
Roger Malutin
PO Box 968
Kodiak, AK 99605
(907) 486-6357

Native Village of Eyak
Bruce Cain, Executive Director
PO Box 1388
Cordova, AK 99574-1388
(907) 424-7738
bruce@nveyak.org

Native Village of Port Lions
Denise May, President
PO Box 69
Port Lions, AK 99550
(907) 454-2234

Native Village of Tatitlek
Gary Kompkoff, President
PO Box 171
Tatitlek, AK 99677
(907) 325-2311

Old Harbor Tribal Council
Al Cratty, Jr.
PO Box 62
Old Harbor, AK 99643
(907) 286-2215

Ouzinkie Tribal Council
Daniel Ellenak
PO Box 130
Ouzinkie, AK 99644
(907) 680-2257

Port Graham Traditional Council
Patrick Norman, Chief
PO Box 5510
Port Graham, AK 99603
(907) 284-2227

Qutekcak Native Tribe
Connie Pavloff, Administrator
203 3rd Ave
Seward, AK 99664
(907) 224-3118

Seldovia Village Tribe
Crystal Collier, Executive Director
PO Drawer L
Seldovia, AK 99663
(907) 234-7898

Valdez Native Tribe
Charlie Hughey, Natural Resources Manager
PO Box 1108
Valdez, AK 99686
(907) 835-4951
vntevos@cvinternet.net

Woody Island Tribal Council
Andy Tuber
PO Box 9009
Kodiak, AK 99615
(907) 486-282

E. Selection Schedule

Feb. 17, 2004	FY 05 Invitation issued
April 15, 2004	FY 04 proposals due
June 16/17, 2004 (tent.)	STAC meets to review proposals
July 7, 2004 (tent.)	Executive Director circulates recommendation for public comment
Mid July 2004	PAC meets to review proposals
August 3, 2004 (tent.)	Trustee Council meets to approve projects
Mid August 2004	Successful proposers notified

F. Proposal Submission Address

All proposals must be received by **5:00 p.m. Thursday, April 15, 2004** at the following address:

Exxon Valdez Oil Spill Trustee Council
441 West 5th Avenue, Suite 500
Anchorage, AK 99501-2340
Phone 907-278-8012
1-800-478-7745 toll free within Alaska
1-800-283-7745 toll free outside Alaska

PROPOSAL PACKAGE

A. General Instructions

Number of Copies. One paper copy and one electronic copy of the proposal package must be submitted. Proposals will not be accepted by fax. The electronic copy may be submitted on an IBM-compatible disk/CD or e-mailed to projects@evostc.state.ak.us. Electronic copies of the narrative sections of the proposal must be in Microsoft Word 2002 (XP) or lower or WordPerfect 9.0 or lower, with any figures or tables imbedded (be advised that color figures or photographs may be reproduced in black and white). Electronic copies of the proposal budget must be in Excel.

Format of Proposals. The proposal package should be paper-clipped (not stapled) in the upper left-hand corner but otherwise unbound, and have 1-inch margins at the top, bottom and sides. The type size must be 12-point Times New Roman font. Also, include page numbers and a footer with the title of your proposal and the lead PI's name. The required summary page (page 1) must be a stand-alone page. All copies must be printed on one side of each sheet only. Extraneous cover sheets that often accompany applications from universities are allowed, but must not be integrated into the proposal package.

Multiple-year Projects. All proposals must be presented by federal fiscal year (October 1-September 30). Effective with the FY 04 funding cycle, the Trustee Council has now adopted the policy to approve projects for multiple years—which means that, funds may be requested for up to three years (FY 05, FY 06 and FY 07). Therefore, the research plan must describe all project years and a completed budget form must be submitted for each fiscal year for which funding is requested. Proposers are encouraged to be thoughtful and thorough in their budget development, as the Council expects to consider revisions to future-year budgets only in the case of unforeseen or unanticipated events or in response to ongoing scientific/technical review. Be advised that multiple-year projects will be allowed to "carry forward" any unspent funds from one fiscal year into the next, so budgeting flexibility will be enhanced under this new policy.

B. Sections of the Proposal Package

- The proposal consists of the following sections in the following order:
- Proposal Summary Page
- Research Plan (including references and literature cited)
- Resumes
- Current and Pending Support Form
- Detailed Budget Form
- Budget Justification
- Data Management and Quality Assurance/Control Statement, including MetaLite metadata file
- Signature Form

Proposal Summary Page
(at http://www.evostc.state.ak.us/nonpdf_docs/invitation/05prop_sum_page.doc)
The summary page includes project title, project period, proposer(s)' name, affiliation, email address for all PI's, study location, key words, a project abstract (a summary of the proposed work in 150 words or less), the amount of EVOS funding requested *(including 9% general administration)*, and the amount of non-EVOS funds also contributing to the proposal.

Research Plan
(at http://www.evostc.state.ak.us/nonpdf_docs/invitation/05research_plan.doc)
The research plan must completely describe the work to be performed, including a statement of the problem the proposal is designed to address, relevance to the GEM program goals and scientific priorities, project objectives, procedural and statistical methods, description of study area, coordination with other efforts, schedule, responsiveness to key Trustee Council strategies, and expected publications, reports and conference participation. **The research plan is limited to 15 consecutively numbered pages formatted as required in A. above**. The page limit is inclusive of figures and tables. References and literature cited should be attached to the research plan, but do not fall within the 15-page limit. The research plan should include a foot note with the proposal title and lead PI's name. Reviewers will be given additional consideration for proposals that have resource management applications.

Resumes
The resumes of all principal investigators and other senior personnel involved in the proposal must be provided. **Each resume is limited to two consecutively numbered pages** and must include the following information:

1. A list of professional and academic credentials, mailing address, and other contact information (including e-mail address).

2. A list of up to five of your most recent publications most closely related to the proposed project and up to five other significant publications. Do not include additional lists of publications, lectures, etc.

3. A list of all persons (including their organizational affiliations) in alphabetical order with whom you have collaborated on a project or publication within the last four years. If there have been no collaborators, this should be indicated.

Current and Pending Support Form
(at www.evostc.state.ak.us/nonpdf_doc/invitation/05current_pending_support.doc)
Any current and pending financial resources that are intended to support research related or similar to that included in the proposal, or that would consume the time of the proposer(s), must be identified for each principal investigator and other senior personnel involved in the proposal.

Detailed Budget Form
(at http://evostc.state.ak.us/admin/inviation/05budgetform_instruction_page.html)
A separate budget form, which outlines probable expenditures to implement the objectives described in your proposal, must be submitted for each fiscal year for which funding is requested from the Trustee Council. This form will be reviewed in conjunction with the budget justification (see below). In order to ensure wise and proper use of GEM funds, Council staff will review each budget for consistency with the objectives contained in the proposal. Proposers may be asked to respond to budget review questions or to revise their budgets to address budgetary concerns.

Budget Justification
This narrative section is in addition to the detailed budget form which is also required (see above). For each fiscal year, and for each budget category (personnel, travel, contractual, commodities, and equipment), this section must list the total amount requested and explain the basis for the request in terms of specific project objectives and activities. Funds from non-EVOS sources, including in-kind contributions, must also be described. In addition, if you are employed by a government agency that has a legislative mandate for the type of work you propose to do, you must explain why the proposed costs are not being covered by your agency's budget. If you are employed by a non-Trustee agency, you must include an explanation of how the indirect costs were calculated. **This justification must not exceed two consecutively numbered pages.**

Data Management and Quality Assurance/Quality Control ("QA/QC") Statement
Any project involving collecting or processing data, conducting surveys, taking environmental measurements, and/or modeling must provide a statement describing the data management and quality assurance/control processes that will be used to ensure the integrity of the data and match data types to project objectives. This statement must present the information listed below and reference the specific page and paragraph number of the research plan containing the information, or state that the item does not apply to the proposed research. If you are employed by an entity that has published its QA/QC procedures, please cite where the information may be obtained in lieu of a statement. **This statement must not exceed three consecutively numbered pages.**

1. Describe the study design, including sample type(s) and location requirements, all statistical analyses that were or will be used to estimate the types and numbers of physical samples required, or equivalent information for studies using survey and interview techniques. Include a description of the metadata essential to interpretation of the results of your work. For example see 3 below.

2. Discuss criteria for determining acceptable data quality in terms of the activities to be performed or hypotheses to be tested.

3. Discuss the characteristics of the data that your project is going to be producing. This section is broken into two parts. Part (a) describes the production of a minimally compliant FGDC metadata record which needs to be submitted by all proposers. Part (b) is specific to projects producing quantitative data and provides specifications for categorizing quantitative data into one of three data groups: physical measurements, species specific measurements, and taxonomic sampling.

   (a) Metadata about your project which meets the minimum requirements dictated by the Federal Government Data Committee (FGDC) must be provided. Free software to facilitate the creation of a minimally compliant FGDC metadata record can be downloaded at http://edcnts11.cr.usgs.gov/metalite. The software--titled MetaLite--requires 26 fields to be registered and then automatically generates the associated FGDC metadata record. You must submit a copy of the metadata file produced by MetaLite with your proposal. In addition to minimal FGDC metadata requirements, proposers must submit more extensive metadata descriptor requirements for project data which have a quantitative characteristic. See (b) below.

   (b) Quantitative datasets can generally be grouped into three categories: physical measurements, species specific measurements and taxonomic sampling. Physical measurements pertain to non-biological oceanographic readings harvested from devices. Species specific datasets are composed of biological analyses limited to a predefined species group or inclusive hierarchical taxonomic structure. Taxonomic sampling datasets consist of information which attempts to characterize various flora and fauna captured/observed during a sampling project. If your proposal would collect quantitative data, you must categorize, with justification, your data by one of the following types--physical measurements, species specific measurements or taxonomic sampling--and then produce a list of fields associated with your quantitative dataset.

4. Define each algorithm to be used to convert signals from sensors to observations. Examples of algorithms of interest would be the conversion of pressure to depth and the conversion of integrated voltages to biomass at depth. When conversion algorithms are lengthy (i.e., computer programs) substitute a source location, such as an ftp site, for the full text. In the case of proprietary conversion algorithms, identify the proprietor and describe how the accuracy of conversion is verified under calibration (see #6 below).

5. Describe the procedures for the handling and custody of samples, including sample collection, identification, preservation, transportation and storage.

6. Describe the procedures that will be used in the calibration and performance evaluation of all analytical instrumentation and all methods of analysis to be used during the project.

7. Discuss the procedures for data reduction and reporting, including a description of all statistical methods, with reference to any statistical software to be used, to make inferences and conclusions. Discuss any computer models to be designed or utilized with associated verification and validation techniques.

Signature Form
(at http://www.evostc.state.ak.us/nonpdf_docs/invitation/05signature_form.doc)
A signed form indicating willingness to abide by the Trustee Council's data and report requirements must be submitted for each Principle Investigator, with each proposal submitted.

C. Additional Instructions for Private Organizations, Non-profits, and Universities from States other than Alaska

If you represent a private organization, a non-profit group, or a university from a state other than Alaska, you should submit your proposal through the Broad Agency Announcement (BAA) process, as well as to the Trustee Council. In most instances, requirements of state and federal law preclude Council funds from being awarded directly to such organizations. Rather, a competitive solicitation process is required. This solicitation can occur before the Council approves funding for a project, through a Broad Agency Announcement (BAA) issued by the National Oceanic and Atmospheric Administration (NOAA). Under the BAA approach, if the Council approves funding for your project, you can begin contract negotiations with NOAA without the further competitive solicitation that is required if you do not apply through the BAA.

As part of this invitation, NOAA is issuing a BAA on behalf of the Trustee Council, requesting proposals for any of the topics identified in this invitation. To submit your proposal through the BAA process, submit an electronic copy, as well as one paper copy, of your proposal to NOAA at the address below by 5:00 p.m. Pacific Daylight (Seattle) time on Thursday, April 15, 2004. (This is in addition to the copies of the proposal that must be submitted to the Trustee Council.) Include the words "submitted under the BAA" as part of your project's title. Faxed proposals will not be accepted.

More information is contained in the Broad Agency Announcement itself (BAA # AB133F-04-RP-0032) which is available from NOAA:

Ms. Sharon Kent
NOAA, WASC, Acquisition Management Division, WC31
7600 Sand Point Way NE
Seattle, WA 98115-6349
Telephone (206) 526-6035
Fax (206) 526-6025
Sharon.S.Kent@noaa.gov

Proposals submitted to NOAA under the BAA will be evaluated by the Trustee Council at the same time as other proposals submitted to the Council.

GENERAL CONDITIONS

Once the Trustee Council approves project funds, the Council's Executive Director will provide spending authorization on a project-by-project basis. To receive authorization to spend, each project must first address any project-specific conditions spelled out by the Council in their approval motion and be current on the Council's reporting and data requirements. Starting in FY 05 the Trustee Council office will now administer each funded project in-house. The person(s) assigned to administer the project must document compliance with the National Environmental Policy Act (NEPA). During project implementation, principal investigators (PIs) must do the following:

Develop a data management plan. In collaboration with the Trustee Council's Data Systems Manager, develop a data management plan. This plan will include procedures to process, document and migrate all data to be collected to archives identified by the Data Systems Manager. In addition, the Data Systems Manager will collaborate with PIs on data formats. (For more information, see *Data Policy* at http://www.evostc.state.ak.us/pdf/admin/datapolicy.pdf).

Provide quarterly reports on the project's progress. The report must indicate whether the project's major tasks (as identified in the research plan) are being accomplished according to schedule and flag any problems being encountered. The report consists of filling out a brief form supplied by the Trustee Council.

Submit annual and final project reports. Annual reports are required on multiple-year projects by September 1 of each fiscal year for which funding is received. Final reports are required upon project completion (and may consist of manuscripts for publication in the peer-reviewed literature). PIs must revise all final reports to respond to peer review comments, if any; revision of annual reports is not required. Final reports are made available to the public through the Alaska Resources Library and Information Services (ARLIS) and on the Trustee Council's web page; annual reports are made available only on the Council's web page. In addition, PIs are encouraged to post reports on their own web pages. (For more information, see *Procedures for the Preparation and Distribution of Reports* at http://www.evostc.state.ak.us/pdf/admin/reportguidelines.pdf). PIs are expected to publish results of their work in the peer-reviewed literature as well.

Attend the Annual EVOS Workshop. All PIs are expected to attend the workshop and some may be asked to present a poster or a talk. The Trustee Council's FY 05 workshop is tentatively scheduled for January 2006.

Possibly attend a technical workshop. In some years, the Trustee Council's Science Director schedules intensive workshops on specific topics. These workshops are usually held in Anchorage, but may occur at other locations. Selection of the dates of the technical workshops takes into account PIs' schedules.

Comply with the Trustee Council's TEK protocols. Protocols for including traditional ecological knowledge in the restoration process were adopted by the Trustee Council in December 1996. These protocols provide guidelines designed to facilitate collaboration between Alaska Natives and EVOS scientists in meeting the Council's restoration goals. (For more information, see *Protocols for Including Indigenous Knowledge in the EVOS Restoration Process* at http://www.evostc.state.ak.us/pdf/admin/protex.pdf).

Maintain samples and data taken during the course of the project. Because the Trustee Council's program is funded by a court-approved settlement with Exxon Corp., it is still subject to potential litigation. Certain requirements have been imposed by state and federal courts regarding destruction of samples and documents related to EVOS. There are significant legal consequences if items are destroyed other than as prescribed by the courts. (For more information, see *Procedures for Destroying Documents or Physical Evidence Related to EVOS* at http://www.evostc.state.ak.us/pdf/admin/prosample.pdf).

If possible, maintain a web site on the project. The web site should include the project's annual and final reports and any additional information that would help inform the public about the project. The web site must include the following statement: "This project was supported by the *Exxon Valdez* Oil Spill Trustee Council. However, any findings and conclusions presented on this web site are the investigators' own and do not necessarily reflect the views or position of the Trustee Council." A link to the project's web site will be provided on the Trustee Council's web site.

Detailed descriptions of what is invited by category for FFY 05 Gulf Ecosystem Monitoring and Research program

Introduction

Updated proposals previously submitted in response to the FFY 04 Invitation in all categories that were recommended by the Executive Director for funding or deferral in FY 2004 will be accepted and proposals from currently funded projects that require modification will also be accepted. See the FY 2004 Work Plan, Appendix A for the list of projects recommended for funding or deferral by the Executive Director in FY 2004.

No new proposals are being invited in the categories of Alaska Coastal Current, Community Involvement, Offshore and Watersheds. These areas are either already under active development, or in the case of Community Involvement, undergoing study preparatory to possible changes in direction. Persons interested in the area of Community Involvement should attend the March 9-10, 2004 Community Involvement meeting (watch the web for an agenda, or contact the Trustee Council office for details).

New proposals are being invited for consideration for funding in federal FY 2005 in the following five categories:

A. Data Management and Information Transfer. Proposals are invited to construct a database of metadata describing real time sensors from the northern Gulf of Alaska relevant to GEM.

B. Lingering Oil Effects. New proposals are invited that address follow-up investigations as indicated by results of work in FY 2004.

C. Modeling. Proposals are invited to address development of a whole-ecosystem natural resource model as an adaptive management tool for guiding monitoring under GEM, and to describe the process of further developing or implementing existing models that could serve as components of the whole-ecosystem model.

D. Nearshore. Proposals are invited that complete Shore Zone mapping of the Nearshore target area, select monitoring sites, and establish Standard Operating Procedures (SOP) for nearshore sampling.

E. Synthesis. Proposals are invited to provide a synthesis of scientific literature and existing data gathering programs for three of four GEM habitats, Watersheds, Alaska Coastal Current, and Offshore,

Each category is described in detail below. Each description has three parts: (1) an explanatory introduction that establishes context (definition and uses or objectives); (2) a

general description or what is invited; and (3) specific examples of what is invited. References to the GEM Science Plan and GEM Program Document in the text below indicate where further information may be found on the GEM Program (both documents available at http://www.evostc.state.ak.us/gem/documents.html).

Details by Invitation Category

A. Data Management and Information Transfer

Definition and Uses of Data Management and Information Transfer within the GEM Program. The Data Management and Information Transfer component of GEM includes the following functions: data receipt, quality control (QC), storage and maintenance, archiving and retrieval, administrative support, and the systems necessary to automate as many of these procedures as possible. This component also includes programs needed to create the custom data and information products that will be provided to the modeling and applications components, and to the users of this information. Data Management and Information Transfer provides the essential function of extracting the full scientific and societal benefits from GEM projects (NRC 2002; GEM Program Document, Chapter 9).

Data generated by GEM projects need to be converted into useful information that is readily available in a timely fashion to the scientific communities, resource managers, resource dependent people and their communities, policy makers, and other members of the public. In addition, data sets and information regarding other research and monitoring activities in the GEM region must be readily accessible to EVOS staff and contractors, GEM committees and working groups (if any), state and federal resource agencies, and concerned members of the public in order to facilitate gap analysis during project selection and implementation, and maximize the use of all data collected (GEM Program Document, Chapter 3).

What is Invited. Proposals are invited to construct a database of metadata describing marine-related real time data sources from the northern Gulf of Alaska relevant to GEM. Metadata descriptions of existing real time data sources would include: sensor location, sensor type, and the administrative entity for sensor. In addition, a description of the actual data stream will be required. This would include a description of the QA/QC procedures used and their flags, a basic syntax structure of the data stream, where the data stream is directed to (who are the user groups?), and where and in what form is the information in the data stream archived. The successful proposal would create a structure for recording the metadata describing the real time sensors and this would include methods such as FGDC metadata records in addition to SensorML or other XML Schemas used in real time data transport description. PIs of the successful proposal will be expected to work with GEM staff to create a list of predefined criteria which adequately describes the various real time sensors. Cost efficiencies through cooperation, coordination, and integration with similar efforts covering related geographic areas are expected. Ways and means of insuring close coordination with GEM modeling efforts

should be described. Consult GEM Program Document Chapters 8 and 9 and NRC Chapter 7 for further background.

Example of Response to the Data Management and Information Transfer Invitation.

1. Creation of real time sensor metadatabase: The proposal would assess and document the current distribution of real time oceanographic sensors in the Gulf of Alaska. The proposal would document the location and specifications of such sensors and also document the data and data streams produced from those sensors. The methods would provide standardized descriptions of real time sensor related metadata. Annual amount of proposal should be in vicinity of $75,000-$90,000. One year of funding is anticipated. However, proposals for annual or other periodic updating may be invited in FY 06.

B. Lingering Oil Effects

Objectives for Lingering Oil Effects in FY 05. The Trustee Council continues to be concerned about *Exxon Valdez* oil remaining in the marine environment and any effects it may be having on injured resources. Injured resources are identified and their current status described on the Trustee Council's web site at http://www.evostc.state.ak.us/facts/status.html. Current objectives for the Lingering Oil Effects component of the Council's program are focused on examining the fate and effects of the remaining oil on injured resources and services and especially populations of two species in western Prince William Sound, harlequin ducks and sea otters. These populations have shown continuing exposure to hydrocarbons in localities where potentially toxic forms of oil from the *Exxon Valdez* are known to persist. **Persons interested in proposing for lingering oil should also see the information in section D. Nearshore below.**

The reasons that some populations of injured species in Prince William Sound have not met the criteria established for their recovery in the nearly 15 years since the oil spill are still not clear. For some species it has not been possible to clearly separate the possible toxic effects of oiling from the possible effects of natural causes such as climate change and predation. For this reason, GEM projects that address injured species and ecosystems are designed to understand the effects of natural forces on populations and their productivity. The knowledge gained may permit at least a retrospective understanding of oil injury versus other impacts for species injured by *Exxon Valdez* oil, and provide the background on natural forces necessary to understand effects of oiling in future oil spills.

What is Invited. Follow up investigations as indicated by result of work in FY 2004 are invited. Proposals are invited to examine the fate and effects of *Exxon Valdez* oil in western Prince William Sound. Proposals specifically addressing these effects on populations of sea otters and harlequin ducks are of interest. In addition to the objectives and examples described here, proposers may use this invitation to suggest other approaches to aid the recovery of other resources and services that were identified by the Trustee Council as having been injured by the oil spill. However, the Trustee Council's

emphasis in FY 05 will be on incorporating lingering oil investigations into the overall framework of the GEM Program as its primary restoration activity. **Coordination of proposals with the efforts to develop nearshore monitoring in FY 05 is advisable.**

Examples of Responses to the Lingering Oil Effects Invitation.

1. Bioavailability of Lingering Oil in Prince William Sound: Research conducted in Prince William Sound in 2001 estimated that about 28 acres of intertidal beach remain contaminated from spilled *Exxon Valdez* oil. The Trustee Council is interested in periodic monitoring of the bioavailability of this oil in the food web, and especially to sea otters and harlequin ducks in the affected areas of Prince William Sound. Annual amount of proposals should be in vicinity of $85,000. Coordination with nearshore monitoring efforts is advisable. Multiple years (up to three) of funding are anticipated.

2. Long-term monitoring of injured species. The Trustee Council is interested in proposals to design, coordinate and integrate with projects in other categories (i.e.nearshore), and to implement cost effective periodic monitoring of oil-injured species with other categories of monitoring such as the nearshore (section D, below). Annual amount of proposals should be about $35,000. Multiple years (up to three) of funding are anticipated.

C. Modeling

Definition and Uses of Modeling within the GEM Program. One of the top overall priorities for the GEM Program is to develop a whole-ecosystem natural resource model as an adaptive management tool for guiding the GEM monitoring program (see GEM Program Document, Chapter 8, and NRC 2002, Chapter 7). An interdisciplinary biophysical modeling effort is essential to developing monitoring efforts in all of the habitat types, as well as the data management and information transfer component of the program. Modeling helps to understand the limitations on what can be learned from sampling in different time and space scales through simulations based on data from the projects. The ultimate long-term purpose of the model is to describe, in relation to biological and physical variables, the abundance through time of seabird, marine mammal and fish species that are selected for relevance to management interests. Modeling is also used to identify and refine measures, such as time series of biological or physical measurements that are best suited to communicate publicly the current status of the ecosystem for the GEM contribution to a Gulf of Alaska section in a North Pacific Ecosystem Status Report now under development by PICES and others.

What is Invited. Proposals are invited that address how an interdisciplinary biophysical model of the northern Gulf of Alaska would be developed in the short-term. As envisioned, building the model would start from existing physical and biological models; hence, the means of cooperation, coordination, integration, and achieving cost efficiencies with existing modeling efforts must be emphasized in a successful proposal. Ways and means of communicating the contents, functions and outputs from the model to

a variety of different disciplines and across a variety of common operating systems should also be carefully described, as well as data assimilation strategies for selecting time and space scales for biological and physical monitoring.

Examples of Responses to the Modeling Invitation.

1. Building the Infrastructure Necessary to Create, Develop and Maintain the GEM Model: The proposal would assemble an interdisciplinary team with experience in biological and physical modeling in the Gulf of Alaska. Team members should have experience in, or knowledge of, existing biological and physical modeling programs, such as SEA, FOCI and GLOBEC. Methods would address all aspects of interdisciplinary cooperation and partnerships, software development, hardware acquisition, use of existing products, and data management and information transfer with respect to all GEM projects and activities, as well as other relevant data acquisition activities. Annual amount of proposal should be in vicinity of $120,000. Three years of funding should be proposed, as the initiation of a long-term GEM activity.

2. Implementation of Components of the GEM Model: The proposal would describe a one-year effort to develop a plan for implementing one of the smaller, but critical, components of the GEM model, such as the SEA (Restoration Project /320) pink salmon survival model, over a three-year period. The proposal would show how to address all aspects including assembling an interdisciplinary team of implementers, staging, scheduling and executing field sampling, estimating parameters from data, acquiring and developing essential software and hardware, and data management and information transfer. A three-year proposal in the vicinity of $100,000 for an initial planning phase is expected, followed by two years of implementation at approx. $150K per year. Leveraging of funding by collaboration with existing sampling programs is absolutely essential to success of the proposal of the three-year plan may be invited during FY 06 depending on the outcome of the planning effort.

D. Nearshore

Objectives for Nearshore in FY 05. Complete the recommendations from project report G-030687, Alternative Sampling Designs for Nearshore Monitoring by Tom Dean and Jim Bodkin. **Persons interested in nearshore monitoring should also see section B. Lingering Oil above.**

What is Invited.

a) Complete ShoreZone mapping of the Nearshore target area, not already completed by earlier projects in GEM , Alyeska, CIRCAC et al.
b) Use ShoreZone mapping information to choose specific GEM nearshore sample sites.

c) Establish standard operating procedures (SOP) and methods that will be common for all sampling, including a consideration of how much sampling can be completed at a site on one tidal cycle.

Examples of Responses to the Nearshore Invitation.

1. Mapping of shoreline habitats. The proposal would describe an approach to mapping the remaining unsurveyed shoreline habitats in accord with the recommendations of project report G-030687, Alternative Sampling Designs for Nearshore Monitoring by Tom Dean and Jim Bodkin http://www.evostc.state.ak.us/pdf/GEM_final_reports/030687.pdf. A one-year proposal with dollar amount proportional to the area to be surveyed is expected.

2. Implementation of GEM nearshore monitoring. The proposal would describe a two year process for selecting and implementing long term monitoring sites in the nearshore habitats of the GEM area in the Spring of calendar year 2006. The process would incorporate information from, and coordinate with, all relevant GEM nearshore projects, including any ongoing ShoreZone mapping and lingering oil efforts, be consistent with the GEM Program Document, incorporate significant community involvement, and incorporate management agency partners with plans for developing management applications. The implementation of sites in CY 2006 would not necessarily be carried out by this project, but might be accomplished by other GEM projects implemented in FFY 2006, or by projects funded by sources other than GEM. The successful proposal would engage the relevant agencies and organizations now involved in nearshore monitoring and research such as the National Park Service, U.S. Fish and Wildlife Service, USGS including the Alaska Science Center, Prince William Sound and Cook Inlet Citizens Advisory Councils, Alaska Department of Environmental Conservation, Kachemak Bay Research Reserve (Alaska Department of Fish and Game), NOAA including National Ocean Service, National Data Buoy Center, and National Marine Fisheries Service, Oil Spill Recovery Institute and Prince William Sound Science Center, Alaska Sea Life Center and others. A two-year proposal in the vicinity of $200,000 per year is expected.

3. Standard operating procedures for nearshore monitoring. The proposal would develop standard operating procedures for nearshore sampling for the GEM program, to include time and effort analyses of sampling procedures for non-ice conditions which can be used to develop tidally dependent schedules of sampling site visits. Development of sampling strategies for minimizing costs is expected. The proposal would focus on the resources identified by project report G-030687 Alternative Sampling Designs for Nearshore Monitoring by Tom Dean and Jim Bodkin, however periodic sampling for oil-injured species and resources, fate and effects of oil and other contaminants should also be addressed (see the FY 04 GEM project of Short). Jim Bodkin's and Thomas Dean's DPD can be found at http://www.evostc.state.ak.us/pdf/04_DPD_Budgets/Bodkin_Near_DPD_FINAL.pdf, visit http://www.evostc.state.ak.us/pdf/04_DPD_Budgets/Short_DPD_FINALpdf.pdf to view Jeff Short's DPD. The schedule would call for a working draft to be posted

on the Trustee Council's web site by May 1, 2005 with a finished product available no later than October 1, 2005. Consultation with ongoing GEM projects is required, and the finished product should reflect Data Management and Information Transfer procedures and protocols of the Trustee Council, AOOS and IOOS . A proposal for a one year project of approximately $200,000 is expected.

E. Synthesis

Definition and Uses of Synthesis within the GEM Program. The required scientific guidance for implementing the GEM program is based on putting together ideas, pieces of information from the scientific literature, and the potential relations among existing data gathering programs, including GEM (see Chapter 3 of the GEM Program Document for further information), to form a larger picture. Synthesis is the entry point to the cycle of monitoring and research.

Synthesis builds on past experience to update the current understanding of the northern Gulf of Alaska marine ecosystems. It brings together existing data and information from any number of disciplines, times and regions to evaluate different aspects of the GEM Program's conceptual foundation, central hypotheses and related ideas, working from the perspective of a habitat type. Synthesis has three broad uses. First, it is used to provide direction for developing and refining hypotheses to be tested and, combined with research and monitoring, to update and refine the GEM Science Plan. In this respect, synthesis is an ongoing evaluative process throughout the life of the GEM Program and will help ensure that the program is meeting its goals and objectives. Second, synthesis is intended to produce communication tools such as publications, oral presentations and other media to inform scientists, stakeholders and other members of the public about the developing understanding of the factors responsible for change in the marine environment. Third, synthesis may be used to identify opportunities to solve resource management problems, by showing how to match existing data from GEM and other sources with practical resource management problems.

The primary purposes of the synthesis activities in FY 05 are to (1) fully develop the introduction to three habitat types (Alaska Coastal Current, Watersheds, Offshore) in the GEM Science Plan and (2) point out options for projects that might be implemented in FY 06 and beyond.

What is Invited. Proposals are invited to provide a synthesis of scientific literature and existing data gathering programs to serve as the introduction to the GEM Science Plan sections for three of the four GEM habitat types: Alaska Coastal Current, Offshore and Watersheds. Bearing in mind that the boundaries of habitats are not rigidly drawn (Chapter 2, GEM Program Document), proposals should concentrate on one habitat type. However, each proposal must address linkages of its habitat type with the other habitat types. In addition, proposals should demonstrate how the synthesis would proceed from the primary source documents for GEM--the GEM Program Document, the GEM Science Plan, and the National Research Council's GEM review book (*A Century of Ecosystem*

Science, 2002), and *Exxon Valdez* Oil Spill Restoration Plan - Update on Injured Resources and Services (August 2002), all found at http://www.evostc.state.ak.us/gem/documents.html)--to incorporate scientific literature and data gathering activities not addressed in the source documents. In addition, synthesis documents should incorporate, to the extent they are available, the results of Restoration Program research, as developed in the three-year EVOS Restoration Project /600 (Synthesis of the Ecological Findings from the EVOS Damage Assessment and Restoration Program). Methods should include consultation with EVOS staff and contractors, GEM committees and relevant working groups (if any), state and federal resource agencies and concerned members of the public. At a minimum, the results of the synthesis are to be presented orally at a public meeting and should be suitable for publication as a review article, as well as incorporation into the relevant sections of the GEM Science Plan and the Gulf of Alaska section of a North Pacific Ecosystem Status Report now under development by the North Pacific Science Organization (PICES; see Modeling section of this document).

Examples of Responses to the Synthesis Invitation.

1. Alaska Coastal Current (ACC) Synthesis: The proposed synthesis document(s) would address recent advances in biology and physical sciences relevant to the ACC, discuss how recent advances might change existing concepts, point out leading and emerging hypotheses and describe how these might support or change the GEM Science Plan's working concepts for the habitat type. It would identify and synthesize major monitoring and research efforts located in the northern Gulf of Alaska, demonstrating a working knowledge of these projects and listing examples, such as FOCI, NDBC moorings, GLOBEC/PMEL moorings and cruises, OCC cruises, and NASA/NESDIS remote sensing. It would point out how these information types may relate to GEM Science Plan working concepts and selection of GEM monitoring projects and the GEM contribution to a Gulf of Alaska section in a North Pacific Ecosystem Status Report now under development by PICES. Possible linkages of the ACC to the nearshore, offshore, and watershed habitat types based on recent and historical literature would be examined. It would identify and prioritize gaps in knowledge relative to the GEM Science Plan's working concepts. Methods would include consultation with appropriate parties identified in the above section, as well as substantial coordination and cooperation with existing GEM ACC projects. Direct costs of proposals should be in vicinity of $85,000 per year, and proposals may cover up to three years of work. An Offshore Synthesis project would have similar elements as they apply to the shelf break and Alaska Gyre.

2. Watershed Synthesis: Recognizing that substantial work toward synthesis needs to be accomplished for the watershed habitat type, a proposed synthesis document would build on the watershed sections of the GEM Science Plan and GEM Program Document to incorporate recent advances in biology and physical sciences. It would address opportunities and needs for establishing watershed monitoring sites during FY 06. In addition, the synthesis document would discuss how recent advances in scientific knowledge might relate to existing concepts,

point out leading and emerging hypotheses, and describe how these might support or change the GEM Science Plan's working concepts for the habitat type. The document would identify and synthesize major monitoring and research efforts located in the watershed habitat type, including work undertaken or funded by state and federal resource agencies, tribes and native corporations. Building on results from GEM Project 02612 (Kenai River Watershed), it would point out how existing and emerging information types might relate to GEM Science Plan working concepts, selection of GEM monitoring projects, and the GEM contribution to a Gulf of Alaska section in a North Pacific Ecosystem Status Report now under development by PICES. It would identify and prioritize gaps in knowledge relative to the GEM Science Plan's working concepts. Methods would include consultation with appropriate parties identified above, as well as substantial coordination and cooperation with existing GEM nearshore (intertidal/subtidal) projects. Direct costs of proposals should be in vicinity of $85,000 per year, and proposals may cover up to three years of work.

Trustee Council Use Only Project No: ____ Date Received: ____	**GEM PROPOSAL SUMMARY PAGE** **(To be filled in by proposer)**		
Project Title:	Maximum 80 characters		
Project Period:	Federal fiscal years--October 1st to September 30th--for which funding will be requested from the Trustee Council; for example "FY 05-FY 06"		
Proposer(s):	Name, affiliation and email address of proposer(s)		
Study Location:	General area in which field work will be conducted; e.g., Prince William Sound, Kodiak, Kenai Peninsula		
Abstract:	A brief (150 words or less) summary of the project. Include what question(s) the project will address, what products the project will produce, and where and when the work will be done. The abstract may be edited for clarity, brevity, and readability by Trustee Council staff.		
Funding:	EVOS Funding Requested: (must include 9%GA)	FY 05 $ FY 06 $ FY 07 $	TOTAL:
	Non-EVOS Funds to be Used:	FY 05 $ FY 06 $ FY 07 $	TOTAL:
Date:	Date proposal prepared		

(NOT TO EXCEED ONE PAGE)

GEM RESEARCH PLAN

I. NEED FOR THE PROJECT

A. Statement of Problem

Identify the problem the project is designed to address. Describe the background and history of the problem. Include a scientific literature review that covers the most significant previous work history related to the project.

B. Relevance to GEM Program Goals and Scientific Priorities

Discuss how the project will evaluate the hypotheses or questions posed in the GEM Program Document and the GEM Science Plan. Describe the results you expect to achieve during the project, the benefits of success as they relate to the topic under which the proposal was submitted, and the potential recipients of these benefits. Discuss the utility of the research proposed for addressing the objectives described in the invitation.

II. PROJECT DESIGN

A. Objectives

List the objectives of the proposed research, the hypotheses being tested during the project, and briefly state why the intended research is important.

B. Procedural and Scientific Methods

For each objective listed in A. above, identify the specific methods that will be used to meet the objective. In describing the methodologies for collection and analysis, identify measurements to be made and the anticipated precision and accuracy of each measurement and describe the sampling equipment in a manner that permits an assessment of the anticipated raw-data quality.

If applicable, discuss alternative methodologies considered, and explain why the proposed methods were chosen. In addition, projects that will involve the lethal collection of birds or mammals must comply with the Trustee Council's policy on collections, available at http://www.evostc.state.ak.us/pdf/admin/collectionspolicy.pdf.

C. Data Analysis and Statistical Methods

Describe the process for analyzing data. Discuss the means by which the measurements to be taken could be compared with historical observations or with regions that are thought to have similar ecosystems. Describe the statistical power of the proposed sampling program for detecting a significant change in numbers. To the extent that the variation to be expected in the response variable(s) is known or can be approximated, proposals should demonstrate that the sample sizes and sampling times (for dynamic processes) are of sufficient power or robustness to adequately test the hypotheses. For environmental measurements, what is the measurement error associated with the devices and approaches to be used?

D. Description of Study Area

Where will the project be undertaken? Describe the study area, including if applicable decimally-coded latitude and longitude readings of sampling locations or the bounding coordinates of the sampling region (e.g., 60.8233, -147.1029, 60.4739, -147.7309 for the north, east, south and west bounding coordinates). The formula for converting from degree minute seconds to decimal degrees is: degrees + (minutes/60) + (seconds/3600) so 121°8'6" = 121. + (8/60) + (6/3600) = 121.135

E. Coordination and Collaboration with Other Efforts

Indicate how your proposed project relates to, complements or includes collaborative efforts with other proposed or existing projects funded by the Trustee Council, or with other relevant projects in progress in the northern Gulf of Alaska. Describe any coordination that has taken or will take place (with other Council funded projects, ongoing agency operations, activities funded by other marine research entities, etc.) and what form the coordination will take (shared field sites, research platforms, sample collection, data management, equipment purchases, etc.). If the proposed project requires or includes collaboration with other agencies, organizations or scientists to accomplish the work, such arrangements should be fully explained and the names of agency or organization representatives involved in the project should be provided. If your proposal is in conflict with another project, note this and explain why.

III. SCHEDULE

A. Project Milestones

For each project objective listed above (II.A.), specify when critical project tasks will be completed. Project reviewers will use this information in conjunction with annual project reports to assess whether projects are meeting their objectives and are suitable for continued funding. Please format your information like the following example.

Objective 1. Develop sediment-core chronologies in lake-productivity indicators.
To be met by September 2005

Objective 2. Compare sediment data corresponding to the past few decades to salmon population statistics.
To be met by December 2005

Objective 3. Reconstruct time-series of lake productivity, input of marine-derived nutrients, and salmon escapement.
To be met by April 2006

B. Measurable Project Tasks

Specify, by each quarter of each fiscal year, when critical project tasks (for example, sample collection, data analysis, manuscript submittal, etc.) will be completed. This information will be

the basis for the quarterly project progress reports which are submitted to the Trustee Council Office. Please format your schedule like the following example.

FY 05, 1st quarter (October 1, 2004-December 31, 2004)
October: Project funding approved by Trustee Council

FY 05, 2nd quarter (January 1, 2005-March 31, 2005)
January 12-16 (tentative): Annual GEM Workshop

FY 05, 3rd quarter (April 1, 2005-June 30, 2005)
April 30: Core Upper Russian Lake
May 30: Core Delight Lake

FY 05, 4th quarter (July 1, 2005-September 30, 2005)
September 1: Core Hidden Lake

FY 06, 1st quarter (October 1, 2005-December 31, 2005)
December 15: Finish lab analyses of all three lakes

FY 06, 2nd quarter (January 1, 2006-March 31, 2006)
(dates not yet known) Annual GEM Workshop

FY 06, 3rd quarter (April 1, 2006-June 30, 2006
April 15 Submit final report. This will consist of a draft manuscript for publication to the Trustee Council Office

IV. RESPONSIVENESS TO KEY TRUSTEE COUNCIL STRATEGIES

A. Community Involvement and Traditional Ecological Knowledge (TEK)

Although not every proposal will have circumstances that allow involvement with local communities and incorporation of local knowledge, reviewers will give additional consideration to proposals that demonstrate meaningful community involvement and/or make use of traditional ecological knowledge (TEK). Use this section to address the following questions, if applicable: How will affected communities be informed about the project and be given an opportunity to provide their input? How will research findings and other project information be communicated to local communities? To what extent will local hire be used for the acquisition of such things as vessels, technicians, and equipment? To what extent will traditional and local knowledge be incorporated into the project? Do not simply provide a statement that a proposal is expected to benefit a community without demonstrating that one or more representatives of the community have been contacted prior to proposal submission and have agreed to work with the proposers in developing the community involvement components of the proposal. Community contacts should be identified in this section.

If you would like assistance in developing a community involvement or traditional knowledge component for your proposal, contact the Trustee Council Office. Please note that in December

1996 the Trustee Council adopted protocols for including traditional knowledge in EVOS projects. See *Protocols for Including Indigenous Knowledge in the EVOS Restoration Process* available at http://www.evostc.ak.us/pdf/admin/protex.pdf .)

B. Resource Management Applications

Reviewers will be given additional consideration for proposals that have resource management applications. One of the goals of GEM is to "solve", which is defined in the GEM Program Document as development of tools, technologies and information that can help resource managers and regulators improve management of marine resources and address problems that may arise from human activities. Use this section to describe how your proposal might result in knowledge or products that would contribute to meeting this goal. Do not simply provide a statement that a proposal is expected to have resource management applications without demonstrating that one or more representatives of a resource management agency have been contacted prior to proposal submission and have agreed to work with the proposers in developing the resource management components of the proposal. Resource management agency contacts should be identified in this section.

V. PUBLICATIONS AND REPORTS

If you are requesting funding for publication of project results in a peer-reviewed journal, provide the subject/title of each manuscript, the name of the peer-reviewed journal(s) to which you plan to submit it, and when the manuscript will be submitted. The Trustee Council expects publication of project results in peer-reviewed journals as soon as scientifically appropriate and logistically possible. The Council has adopted a policy regarding an acknowledgment and disclaimer to be used in publishing results of projects it has supported. For more information, see *Procedures for the Preparation and Distribution of Reports* available at http://www.evostc.state.ak.us/pdf/admin/reportguidelines.pdf.

In addition to publications, annual reports are required on multi-year projects by September 1 of each fiscal year for which funding is received; final reports are required upon project completion. With approval of the Science Director, the publications discussed above may satisfy a portion of the report requirements. For more information, see *Procedures for the Preparation and Distribution of Reports* at http://www.oilspill.state.ak.us/pdf/admin/reportguidelines.pdf.

VI. PROFESSIONAL CONFERENCES

The Trustee Council encourages presentation of project results at professional conferences (in addition to the annual GEM workshop), and may provide limited travel support for particularly important opportunities. If you are requesting travel funds for conference attendance, provide in this section the name and sponsor of the conference, when and where the conference will be held, and your anticipated role in the conference.

GEM DETAILED BUDGET INSTRUCTIONS

The required budget form, detailing the amount of funding requested from the Trustee Council for each federal fiscal year, must be submitted as part of the proposal package. The form is in addition to the budget justification that is also required as part of the proposal package. An electronic copy of the budget form (created in Excel) is available at http://www.evostc.state.ak.us/admin/invitation/budgetform_instruction_page.html.

Funds may be requested for up to three years (FY 05, FY 06 and FY 07). Proposers are encouraged to be thoughtful and thorough in their budget development, as the Trustee Council expects to consider revisions to future-year budgets only in the case of unforeseen or unanticipated events or in response to ongoing scientific/technical review. Be advised that projects will be allowed to "carry forward" any unspent funds from one fiscal year into the next.

Each budget will be reviewed for consistency with the objectives contained in the proposal and for adherence to the budget instructions that follow. Proposers may be asked to respond to budget review questions, or to revise their budgets to address budgetary concerns.

Fiscal Year. The Trustee Council awards funds on the federal fiscal year (October 1-September 30). As noted above, your budget must address all fiscal years for which funds are requested.

Project Number. For projects that received funding in FY 04, use the last three digits of the FY 04 project number preceded by "050" (for example, project 040290 would become 050290). For new projects, leave the number blank.

Rules for Numbers. Show costs in thousands of dollars. For example, show $86,423 as $86.4. When the number "5" follows the digit to be rounded, round to the higher amount. For example, round $26,752 to $26.8.

Indirect Costs. Indirect costs are costs incurred for common or joint purposes that cannot be specifically identified with a particular project. Examples of indirect costs are lease costs, copying, phones, faxes, internet access, equipment maintenance, vehicle leasing, training, payroll and personnel functions, clerical support, administrative supervision, accounting, auditing, and mail and messenger services. These items should be budgeted for separately only if they are incurred because of a specific project and documentation of the expense is maintained.

- Trustee agencies (Alaska Department of Environmental Conservation, Alaska Department of Fish and Game, Alaska Department of Natural Resources, National Oceanic and Atmospheric Administration, US Forest Service, and US Department of the Interior) should cover these costs through the Trustee Council's general administration (GA) formula. The GA rate is 9% of each project's total direct costs.
- Non-Trustee organizations should cover these costs through their indirect cost rate. These rates will be reviewed on a project-by-project basis. However, proposers affiliated with the University of Alaska must use the indirect rate agreed to by the University for Trustee Council-funded projects. The agreement provides for an indirect cost rate of 25 percent of total direct costs (TDC). TDC includes all direct costs except (1) equipment

for which ownership resides with the University and (2) subcontract costs in excess of $25,000. Regarding subcontracts, the indirect rate is 25 percent of the first $25,000 of each subcontract, plus 5 percent of each subcontract's costs in excess of $25,000 and less than $250,000, plus 2 percent of each subcontract's costs in excess of $250,000.

Direct Costs. Direct costs are costs specifically identified with a particular project. Examples of direct costs are compensation of employees for the time spent executing the project, acquisition of materials or equipment for purposes outlined in the research plan, project-specific travel, and contractual services specified in the research plan. For most projects, the following direct costs should be included:

1. NEPA (National Environmental Policy Act) Compliance: All projects funded by the Trustee Council must comply with NEPA. Due to their research nature, most projects receive a categorical exclusion (CE) from NEPA. However, for a few projects, an environmental assessment (EA) may be required. If a project will likely require an EA, include the costs for preparing it in the project budget.

2. Workshop Attendance: All principal investigators are required to attend the Annual GEM Workshop. The annual workshop is usually held the first or second week in January. Unless you reside in Anchorage, include funds in your budget for travel and per diem for the PI (and co-PI, if appropriate) to attend this workshop.

3. Report Writing: Annual reports are required on multiple-year projects and must be submitted by September 1 of each fiscal year for which funding is received; annual reports on projects funded for FY 04 will be due September 1, 2004. For continuing projects, continuation of your project is determined by the projects progress outlined in your annual report. Final reports are required upon project completion. Identify in the description field on the appropriate budget forms any funds that have been included for report writing and preparation. (For more information, see *Procedures for the Preparation and Distribution of Reports* at http://www.evostc.state.ak.us/pdf/admin/reportguidelines.pdf.)

Many projects will also include the following direct costs:

4. Manuscript Preparation and Publication: The Trustee Council may contribute a maximum of $1,000 in page costs per project and 1.5 months of personnel time per manuscript toward publication of study results in the peer reviewed literature. Specify in your research plan the subject/title of each manuscript, the name of the peer reviewed journal(s) to which you plan to submit it, and when the manuscript will be submitted.

5. Professional Conferences: The Trustee Council may fund attendance at one professional conference (in addition to the Annual GEM Workshop) per year for each PI (and co-PI, if appropriate). Specify in your research plan the name and sponsor of the conference, when and where the conference will be held, and your anticipated role in the conference.

Budget Forms. One set of forms is for Trustee agencies; a separate set of forms is for non-Trustee organizations. Sample forms and instructions for completing them follow. The budget form must be completed for each fiscal year (FY 05-07) for which funding is being requested from the Trustee Council. Electronic copies of the forms (created in Excel) are available at http://www.evostc.state.ak.us/admin/invitation/budgetform_instruction_page.html or from the Trustee Council Office (on an IBM disk/CD or by e-mail).

Trustee Agency Form
Multi-Trustee Agency Summary (Form 2A)

This form is used when multiple Trustee agencies are cooperating on a project. If only one Trustee agency is involved, this form is not required.

How to Complete the Form...

1. *Proposed Funding (FY 05, 06, 07, TOTAL)* - No input required. All the information is linked to the individual agency forms.
2. *Proposed Trustee Agency Totals* - Total requested by each agency. These fields are not linked and the information must be entered manually.
3. *Project Identification Field* - Enter the project number (if known), title, and lead agency.
4. *Date Prepared* - Enter the date this budget was prepared.

		PROPOSED TRUSTEE AGENCY TOTALS (FY 05 – 07)					
		ADEC	ADF&G	ADNR	USFS	DOI	NOAA
		-2-					
Budget Category:	Proposed FY 04	Proposed FY 05	Proposed FY 06	TOTAL PROPOSED			
	-1-	-1-	-1-	-1-			
Personnel							
Travel							
Contractual							
Commodities							
Equipment							
Subtotal							
General Administration (9% of subtotal)							
Project Total							

FY 05-07

Project Number:
Project Title: -3-
Lead Agency:

FORM 2A MULTI-TRUSTEE AGENCY SUMMARY

Date Prepared: -4-

Trustee Agency Form, page 1 of 4
Summary (Form 3A)

This form summarizes the proposed expenditures contained on the Trustee Agency Detail forms.

How to Complete the Form...

1. *Proposed Funding (FY 05, 06, 07, TOTAL)* - No input required. All the information is linked to the Detail forms.
2. *Cost-share Funds* - Enter the amount of funds from other sources that the project leverages and any agency contribution.
3. *Project Identification Field* - Enter the project number (if known), title, and your agency.
4. *Data Prepared* – Enter the date this budget was prepared.

Budget Category:	Proposed FY 05	Proposed FY 06	Proposed FY 07	TOTAL PROPOSED
	-1-	-1-	-1-	-1-
Personnel				
Travel				
Contractual				
Commodities				
Equipment				
Subtotal				
General Administration (9% of subtotal)				
Project Total				

Cost-share Funds: -2-
In this box, identify non-EVOS funds or in-kind contributions used as cost-share for the work in this proposal. List the amount of funds, the source of funds, and the purpose for which the funds will be used. Do not include funds that are not directly and specifically related to the work being proposed in this proposal.

FY 05-07

Project Number:
Project Title: -3-
Agency:

FORM 3A
TRUSTEE
AGENCY
SUMMARY

Date Prepared: -4-

Trustee Agency Form, page 2 of 4
Personnel & Travel Detail (Form 3B)

"Personnel" means compensation of employees, including benefits, for the time and effort devoted to the execution of the project. "Travel" means the cost of transportation by public conveyance and per diem. All travel must be budgeted at round-trip economy rates.

How to Complete the Form...

1. *Name* - Enter the first initial and last name of each person budgeted.
2. *Position Description* - Enter the position title.
3. *GS/Range/Step* - Enter the appropriate general schedule (GS) and step, or range and step.
4. *Months Budgeted* - Enter the number of months for each position.
5. *Monthly Costs* - Enter the monthly sum of salary and benefits for each position.
6. *Overtime* - Enter the estimated overtime cost for each position, if any.
7. *Personnel Sum* - The form automatically calculates: (Months Budgeted x Monthly Costs) + Overtime
8. *Travel Description* - Include name of traveler, destination, and trip purpose.
9. *Ticket Price* - Enter the round trip economy-rate ticket price.
10. *Round Trips* - Enter the number of round trips.
11. *Total Days* - Enter the total number of days in travel status.
12. *Daily Per Diem* - Enter the daily per diem rate.
13. *Travel Sum* - The form automatically calculates: (Ticket Price x Round Trips) + (Total Days x Daily Per Diem)
14. *Project Identification Field* - Enter the project number, title, and your agency.

Personnel Costs:		GS/Range/	Months	Monthly		Personnel
Name	Description	Step	Budgeted	Costs	Overtime	Sum
-1-	-2-	-3-	-4-	-5-	-6-	-7-
	Subtotal					
					Personnel Total	

Travel Costs:	Ticket	Round	Total	Daily	Travel
Description	Price	Trips	Days	Per Diem	Sum
-8-	-9-	-10-	-11-	-12-	-13-
				Travel Total	

FY 05

Project Number:
Project Title: -14-
Agency:

FORM 3B
Personnel
& Travel
DETAIL

Trustee Agency Form, page 3 of 4
Contractual & Commodities Detail (Form 3B)

"Contractual" covers such items as vessel charters, equipment rental or lease, professional services, communications, and printing. "Commodities" are expendable supplies with an estimated life of less than one year and a unit value of less than $1,000.

How to Complete the Form...

1. *Contractual Description* - List the items or services to be purchased. If a significant portion of the project will be performed under contract, and the likely contractor is known, the Non-Trustee Organization forms are also required.
2. *Contractual Sum* - Enter the proposed contractual cost.
3. *Commodities Description* – List the items to be purchased.
4. *Commodities Sum* - Enter the proposed commodities cost.
5. *Project Identification Field* - Enter the project number, title, and your agency.

Contractual Costs:	Contract Sum
Description	
- 1 -	- 2 -
If a component of the project will be performed under contract, the 4A and 4B forms are required — **Contractual Total**	
Commodities Costs:	Commod Sum
Description	
- 3 -	- 4 -
Commodities Total	

FY 05	Project Number. Project Title: - 5 - Lead Agency:	FORM 3B Contractual & Commodities DETAIL

Trustee Agency Form, page 4 of 4
Equipment Detail (Form 3B)

"Equipment" means non-expendable items having an estimated life of more than one year and a unit value greater than $1,000. Equipment previously purchased by the Trustee Council should be used to the maximum extent possible. Before requesting funds for new equipment, contact your Trustee Agency project manager to determine if suitable equipment is already available. Equipment items with an original per unit cost of $5,000 or more belong to the acquiring Trustee agency on behalf of the Council. At the end of the project, the Council's Executive Director shall determine if such equipment shall be used for another Council project or if the item shall remain with the acquiring agency. (For further information, see *EVOS Financial Procedures* at http://www.evostc.state.ak.us/pdf/admin/profinancial.pdf.)

How to Complete the Form...

1. *New Equipment Description* - List the equipment and how the cost estimate was obtained.
2. *Number of Units* - Enter the number of units to be purchased.
3. *Unit Price* - Enter the unit price.
4. *Equipment Sum* - The form automatically calculates: Number of Units x Unit Price
5. *Existing Equipment Description* - Describe existing equipment which will be used.
6. *Number of Units* - Enter the number of existing units which will be used.
7. *Inventory Agency* - Enter the agency which currently has the equipment on inventory.
8. *Project Identification Field* - Enter the project number, title, and your agency.

New Equipment Purchases: Description		Number of Units	Unit Price	Equipment Sum
-1-		-2-	-3-	-4-
			New Equipment Total	

Existing Equipment Usage: Description	Number of Units	Inventory Agency
-5-	-6-	-7-

FY 05

Project Number:
Project Title: -8-
Agency:

FORM 3B
Equipment
DETAIL

Non-Trustee Organization Form, page 1 of 4
Summary (Form 4A)

This form summarizes the proposed expenditures contained on the Non-Trustee Organization Detail forms.

How to Complete the Form...

1. *Proposed Funding (FY 05, 06, 07, TOTAL)* - No input required. All the information is linked to the Detail forms.
2. *Indirect* – Enter the proposed indirect project cost.
3. *Trustee Agency GA* – No input required; the form automatically calculates: Project Total x .09. (Each project is administered by one of the Trustee agencies; the approved administrative fee is 9% of total project cost.)
4. *Cost-share Funds* - Enter the amount of funds from other sources that the project leverages and any organization contribution.
5. *Project Identification Field* - Enter the project number (if known), title, and your organization.
6. *Date Prepared* – Enter the date this budget was prepared.

Budget Category:	Proposed FY 04	Proposed FY 05	Proposed FY 06		TOTAL PROPOSED
	-1-	-1-	-1-		-1-
Personnel					
Travel					
Contractual					
Commodities					
Equipment					
Subtotal					
Indirect (rate will vary by proposer)	-2-				
Project Total					
Trustee Agency GA (9% of Project Total)	-3-				
Total Cost					

Cost-share Funds: -4-

In this box, identify non-EVOS funds or in-kind contributions used as cost-share for the work in this proposal. List the amount of funds, the source of funds, and the purpose for which the funds will be used. Do not include funds that are not directly and specifically related to the work being proposed in this proposal.

FY 05-07

Project Number:
Project Title: -5-
Proposer:

FORM 4A
NON-
TRUSTEE
SUMMARY

Date Prepared: -6-

Non-Trustee Organization Form, page 2 of 4
Personnel & Travel Detail (Form 4B)

"Personnel" means the compensation of employees, including benefits, for the time and effort devoted to the project and includes tuition for students. "Travel" means the cost of transportation by public conveyance and per diem. All travel must be budgeted at round-trip economy rates.

How to Complete the Form...

1. *Name* - Enter the first initial and last name of each person budgeted.
2. *Position Description* - Enter the position title.
3. *Months Budgeted* - Enter the number of months for each position.
4. *Monthly Costs* - Enter the monthly sum of salary and benefits for each position.
5. *Overtime* - Enter the estimated overtime cost for each position, if any.
6. *Personnel Sum* - The form automatically calculates: (Months Budgeted x Monthly Costs) + Overtime
7. *Travel Description* - Include name of traveler, destination, and trip purpose.
8. *Ticket Price* - Enter the round trip economy-rate ticket price.
9. *Round Trips* - Enter the number of round trips.
10. *Total Days* - Enter the total number of days in travel status.
11. *Daily Per Diem* - Enter the daily per diem rate.
12. *Travel Sum* - The form automatically calculates: (Ticket Price x Round Trips) + (Total Days x Daily Per Diem)
13. *Project Identification Field* - Enter project number, title, and your organization.

Personnel Costs:			Months Budgeted	Monthly Costs	Overtime	Personnel Sum
	- 1 -	- 2 -	- 3 -	- 4 -	- 5 -	- 6 -
		Subtotal	0.0	0.0	0.0	
					Personnel Total	

Travel Costs:		Ticket Price	Round Trips	Total Days	Daily Per Diem	Travel Sum
	- 7 -	- 8 -	- 9 -	- 10 -	- 11 -	- 12 -
					Travel Total	

FY 05	Project Number: Project Title: - 13 - Proposer:		FORM 4B Personnel & Travel DETAIL

Non-Trustee Organization Form, page 3 of 4
Contractual & Commodities Detail (Form 4B)

"Contractual" covers such items as vessel charters, equipment rental or lease, professional services, communications, and printing. "Commodities" are expendable supplies with an estimated life of less than one year and a unit value of less than $1,000.

How to Complete the Form...

1. *Contractual Description* - List the items or services to be purchased.
2. *Contractual Sum* - Enter the proposed contractual cost.
3. *Commodities Description* – List the items to be purchased.
4. *Commodities Sum* - Enter the proposed commodities cost.
5. *Project Identification Field* - Enter project number, title, and your organization.

Contractual Costs:	Contract Sum
Description	
- 1 -	- 2 -
Contractual Total	

Commodities Costs:	Commodity Sum
Description	
- 3 -	- 4 -
Commodities Total	

FY 05	Project Number: Project Title: - 5 - Proposer:	FORM 4B Contractual & Commodities DETAIL

Non-Trustee Organization Form, page 4 of 4
Equipment Detail (Form 4B)

"Equipment" means non-expendable items having an estimated life of more than one year and a unit value greater than $1,000. Equipment previously purchased by the Trustee Council should be used to the maximum extent possible. Before requesting funds for new equipment, contact the project manager at your administering Trustee agency to determine if suitable equipment is already available. All equipment purchased remains the property of the Trustee agency until the end of the project, at which time the agency may, under certain circumstances, transfer the equipment title to the contractor. If the original per unit cost of the equipment was $5,000 or more, the Council's Executive Director has the authority to direct that the equipment be transferred to another Council-funded project, rather than remaining with the Trustee agency or being transferred to a contractor.

How to Complete the Form...

1. *New Equipment Description* - List the equipment and how the cost estimate was obtained.
2. *Number of Units* - Enter the number of units to be purchased.
3. *Unit Price* - Enter the unit price.
4. *Equipment Sum* - No input necessary. The form automatically calculates: Number of Units x Unit Price
5. *Existing Equipment Description* - Describe existing equipment which will be used.
6. *Number of Units* - Enter the number of existing units which will be used.
7. *Project Identification Field* - Enter project number, title, and your organization.

New Equipment Purchases: Description		Number of Units	Unit Price	Equipment Sum
-1-		-2-	-3-	-4-
			New Equipment Total	

Existing Equipment Usage: Description		Number of Units
-5-		-6-

FY 05

Project Number:

Project Title: -7-
Proposer:

FORM 3B
Equipment
DETAIL

GEM PROPOSAL SIGNATURE FORM

THIS FORM MUST BE SIGNED BY THE PROPOSED PRINCIPAL INVESTIGATOR AND SUBMITTED ALONG WITH THE PROPOSAL. If the proposal has more than one investigator, this form must be signed by at least one of the investigators, and that investigator will ensure that Trustee Council requirements are followed. Proposals will not be reviewed until this signed form is received by the Trustee Council Office.

By submission of this proposal, I agree to abide by the Trustee Council's data policy (*Trustee Council/GEM Data Policy**, adopted July 9, 2002) and reporting requirements (*Procedures for the Preparation and Distribution of Reports***, adopted July 9, 2002).

PROJECT TITLE: _____

Printed Name of PI: _____

Signature of PI: _____ Date _____

Printed Name of co-PI: _____

Signature of co-PI: _____ Date _____

Printed Name of co-PI: _____

Signature of co-PI: _____ Date _____

* Available at http://www.evostc.state.ak.us/pdf/admin/datapolicy.pdf

** Available at http://www.evostc.state.ak.us/pdf/admin/reportguidelines.pdf

Exxon Valdez Oil Spill Trustee Council

441 W. 5th Ave., Suite 500 • Anchorage, Alaska 99501-2340 • 907/278-8012 • fax 907/276-7178

MEMORANDUM

TO: Trustee Council

THRU: Gail Phillips, Executive Director

FROM: Phil Mundy, Science Director

DATE: February 2, 2004

SUBJECT: Further information on NOS Grant to GEM for FY 2005

To provide more background information for the council members to use at the February 9 meeting, and to respond to the questions from Council members Balsiger and Pearce, the following supplemental information on the FY 2004 NOS grant of $750K to the Gulf Ecosystem Monitoring (GEM) Program is provided.

1. What are the limitations on how the funds are expended?

Even though this is an earmark, a formal "grant application" has to be submitted to National Ocean Service (NOS) that describes in detail how the funds will be spent, the time frame and so forth. (Attachment 1 paragraph 2 describes experience with last year's grant application.) The grant application is peer reviewed according to the criteria set forth in Attachment 2, which basically relate to how well the activities described in the application support the establishment of the Integrated and Sustained Ocean Observing System (IOOS). GEM has goals and objectives in common with IOOS, which is the probable origin of the grant. Economic development *per se* is not part of this phase of IOOS, although economic returns are being addressed by IOOS in out years. The preferred alternative, below, has utility for economic development and understanding recovery of oil-injured resources.

Further details are provided in Attachment 1: NOS Grant to GEM and Attachment 2: Example of review request from NOS for an application such as the one we would be submitting.

2. When is the grant application due?

In order to get the funding processed in a timely fashion, NOS asked to receive the paper work by February 15 next. This is obviously not possible given the need for Council consideration and action, so we have asked for more time.

3. Why is the alternative of devoting the grant to a single project, the Hinchinbrook-Montague project, recommended by the Science Director as the preferred alternative, and what are the other alternatives? (see Attachment 1)

Option 1. Allocate the funding to fund a single project, the Hinchinbrook-Montague Project. The rationales are that this is consistent with both the GEM Science Plan and IOOS, it supports many other EVOS activities including lingering oil investigations, and it would require a relatively small amount of staff time to accomplish. The Hinchinbrook-Montague Project is preferred because 1) it is the best match between GEM Science Plan needs and the IOOS criteria applied by NOS, 2) it has been in planning between the Prince William Sound Regional Citizens Advisory Council (PWSRCAC), the Oil Spill Recovery Institute (OSRI), University of Alaska Fairbanks (UAF) and GEM for over two years, which would permit a proposal and budget to be submitted to NOS in the time frame available, 3) it would provide information necessary to distinguish impacts of oiling on PWS herring, seabirds and nearshore resources from natural forcing factors that were identified in the Sound Ecosystem Assessment studies funded by the Trustee Council under the Restoration Program, 4) it would provide information critical to effective oil spill response and management decisions, such as when and if to use dispersants, in the form of real time surface current vectors, 5) it would support the development of the PWS pink salmon forecast model, identified by the Cordova community as a top priority for GEM in their areas, and as important for economic development in the fishery, 6) it would support development and improvement of other modeling efforts important to economic development and oil spill response such as the SEA herring model and the Princeton Ocean Circulation Model used in PWS by OSRI.

Option 2. One alternative is to do the same thing in FY 2004 that we did in FY 2003; ask to apply the funding to administration over the next three years, FY 2004 – FY 2007 (see Attachment 1). The rationales are that NOS accepted this last year, so they should accept it this year, and we already have the budgets done. This is not the preferred alternative because 1) it would assume that the Council would authorize funding levels of $5.5M in FY 2005 and 2006 and $5.25M in FY 2007, which is by no means certain based on experience in FY 2004, 2) it presumes that the Trustee Council would choose to continue the current administrative structure through FY 2007, which is by no means certain, 3) it does not save the staff any work relative to any other alternative, since the NOS budgets for FY 2004 and FY 2005 now in place would have to be re-written and re-negotiated with Charleston, 4) it is by no means certain that NOS would continue to accept this option as consistent with IOOS implementation given our experience with Trustee Council funding levels in FY 2004 (see Attachment 1, paragraph 2), as NOS does have the option of rejecting plans for expenditures that are outside the bounds of IOOS implementation.

Option 3. Another alternative is to use the grant to fund the recommended but deferred projects from FY 2004 (see FY 2004 Work Plan, Appendix B) that fall within the IOOS requirements (Bechtol, Bird, Devens, Kline, Mazumder, McNutt, Schumacher and

Vaughn; total FY 2004 request = $807K). The rationales are that these projects have been approved by the peer review process and the Executive Director as being scientifically sound and necessary for GEM implementation, and they would certainly meet the IOOS requirements (Attachment 2). This is not the preferred option because 1) most of these projects were designed as three-year projects, and so would have to be re-written and re-evaluated to see if one year's results would be worthwhile, 2) eight PI's would have to be contacted and agree to re-write their proposals and schedules, and one or more might not be interested, 3) the projects total more than $750K in FY 2004, so the STAC would have to be called in to advise on priorities, which adds expense, and 4) the staff does not have the time to pursue this option, which amounts to re-doing a major portion of the FY 2004 Work Plan now in place, and the more immediate needs of the FY 2005 process are now upon us.

Variations on option 3, such as funding several three-year recommended deferred, IOOS compatible projects in their entirety, are also not preferred due primarily to the lack of staff resources necessary to bring this to fruition.

Option 4. The null alternative is for the Council to reject the funding. The rationales for this are not obvious, but might be that the Council does not know what to do with the money, and/or that the staff is not capable of spending the money. This is not the preferred alternative because 1) The Council has a Science Plan that specifies actions through FY 2007consistent with the Restoration Program that could be done now but for lack of funds, so the Council does in fact know what to do with the money, and 2) there are options for spending the money consistent with Council responsibilities for which adequate staff resources exist.

CC: Ken Holbrook, Ron Kline, Pete Hagen, Brett Huber, Dede Bohn, Craig Tillery

Attachment 1

February 2, 2004

NOS Grant to GEM

Origin and purpose

The NOAA National Ocean Service grant is earmarked for the Gulf of Alaska Ecosystem and Monitoring Program and it comes via the NOAA/Coastal Services Center (CSC) in Charleston, S.C. Although the funds were not requested by staff, it appears that the intent is to support the development of those parts of GEM that support the Integrated and Sustained Ocean Observing System (IOOS) now being developed under a federal interagency consortium known as Ocean.US. GEM gained national prominence and recognition with Ocean.US as an example of a regional marine observing program that is focused toward specific needs of coastal communities and natural resource management agencies. The money comes through NOS/CSC, which has been prominent in the development of IOOS. *An application to NOS is required in order to receive the money, and the application must state how the money will be used to further the objectives of IOOS. The application is vetted through a peer review process which examines how well the purposes of IOOS would be served by the activities described, and NOS has the option of rejecting uses of the funding that are not consistent with IOOS implementation.*

FY 2003 was the first year we received the grant, and the staff argued successfully in its application to NOS to have the money applied to the administration of GEM over a three year period in equal increments. The application was initially rejected by the peer review process, since the funds were expected to have been spent on collection of data and purchase of observing system elements, i.e. moorings and buoys, water chemistry instruments and current measuring devices, in accordance with IOOS objectives. EVOS staff convinced the review staff in Charleston that underwriting the administrative expenses of GEM would make funds available for data collection and observing system elements that would not be available otherwise, since the Trustee Council works under a fixed annual spending cap. Our theory was that the Trustee Council would be able to annually spend $5.25M in FY 04 – 06 with NOS funding of $750K evenly distributed across three years, as opposed to $5M each year without NOS. Unfortunately as of this date, the EVOSTC has authorized spending only $4.8M in FY 2004, leaving our theory $450K short of validation.

Recommended use of FY 2004 funds

Now that administrative expenses have been partially deferred in FY 2004 - 2006, the Science Director recommends spending the FY 2004 amount (approx. $750K) on data collection and equipment necessary to measure the exchange of water between the Gulf of Alaska and Prince William Sound (Hinchinbrook-Montague project). As explained in the Science Plan, nutrients and food for a formerly injured species, pink salmon, and a currently injured species, herring, are carried into Prince William Sound in variable

quantities each year, as revealed by the oil spill restoration studies known as the Sound Ecosystem Assessment (SEA). The dependence of salmon and herring on the flow of nutrients and food is a key to understanding changes in these populations that are so important to the economy and economic development in Prince William Sound. A committee of fishing interests and local scientific and policy leaders in the community of Cordova has identified forecasts of availabilities of pink salmon and herring as the top priorities for improving the value of these fisheries to the local economy. By measuring the exchange of water between PWS and the Gulf, increases or decreases in the survival of young herring and salmon may be understood, in conjunction with other biological and physical factors influencing survival, making it possible to eventually separate the effects of natural variation from human caused factors.

Multiple proposals from the Prince William Sound Science Center (PWSSC) and the University of Alaska Fairbanks (UAF) would be modified in order to consolidate them for submittal to NOS as a single package for a total of about $750K. The funds would go for purchase of high frequency radar (circa $300K) to measure the direction and strength of surface currents, acoustic Doppler current profilers (ADCP) (2 @ circa $30K ea.) and water quality instruments (SeaCats) (8 @ circa $5K ea.) to measure currents at depth, moorings and buoys (2 @ 80K ea.) on which to mount the instruments, and deployment of the equipment (circa $190K).

The Hinchinbrook-Montague Project is recommended because it is the best fit at this time for GEM and IOOS, and it is not feasible for GEM alone to fund a project with such high capital costs in a single year during the start-up of GEM. The information to be gathered by the Hinchinbrook-Montague Project is recommended as a top priority by the Science Plan, and it is supported by the local communities and by PWSSC, Oil Spill Recovery Institute (OSRI) and Prince William Sound Regional Citizens Advisory Council (PWSRCAC).

Operational costs in subsequent years are expected to be borne by the OSRI /PWSSC and the PWSRCAC for their use in oil spill prevention and response, and by GEM for use in understanding the long term effects of oiling on herring and nearshore resources. All three operational entities, OSRI, PWSRCAC and GEM have long-term funding, and additional financial support is anticipated from the National Science Foundation as part of the Long Term Ecological Research site (LTER) proposal being headed by PWSSC.

The alternative of funding administration to a fuller extent is not recommended, as this did not turn out as expected in FY 2004, and as a consequence it no longer seems a viable option under the terms set out by NOS.

Attachment 2

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Coastal Services Center
2234 South Hobson Avenue
Charleston, South Carolina 29405-2413

December 3, 2003

Phil Mundy
Gulf of Alaska Ecosystem Monitoring and Research Program
Exxon Valdez Oil Spill Trustee Council
441 West 5th Avenue Suite 500
Anchorage, AK 99501-2340

EXAMPLE

Dear Phil:

In anticipation of the FY04 appropriation, the University of Maryland Center for Environmental Science has submitted to the NOAA Coastal Services Center an unsolicited proposal requesting NOAA support for a project entitled: "The Alliance for Coastal Technologies (ACT)." The proposal is enclosed. The Coastal Services Center anticipates that Congress will direct NOAA to support this proposal. It is the Center's objective to use the peer review process to ensure that the most logical approach is followed and the best possible activities are undertaken in support of this project.

I am requesting your written review and comments because of your background and experience in this area. The input of experts like you is critical in the evaluation of this proposal. Your candid, professional opinion of the merit of the proposed activity will be very helpful to our collaborator and the Center. Enclosed is a set of review guidelines including the criteria on which to base your review.

Comments from all reviewers will be sent anonymously to the Principal Investigator. The P.I. will be required to respond to these comments prior to NOAA funding the award.

We are trying to provide the grant funding and allow this activity to get underway at the earliest possible date consistent with a critical review. In order for us to meet this goal, please return your review comments (with conflict of interest form if applicable) by email to Jeff.Payne@noaa.gov on or before December 23, 2003. You need not return the proposal. If you have any questions, please call me at 843-740-1207 or Geno Olmi at 843-740-1230 (Geno.Olmi@noaa.gov). Either of us can be contacted at NOAA Coastal Services Center, 2234 South Hobson Avenue, Charleston, SC 29405.

Effective management of this and other Federal grant programs is heavily dependent upon cooperation from knowledgeable individuals. I recognize that the time and effort required of reviewers is significant. Your help is greatly appreciated, and on behalf of the Coastal Services Center, I thank you in advance. I look forward to receiving your comments.

Regards,

Jeffrey L. Payne
Deputy Director

Thanks for your help again
Phil. Jeff

Evaluation Criteria (With Weights)

1. **Importance/relevance (30 points)**
   This criterion ascertains whether there is intrinsic value in the proposed work and/or relevance to NOAA, federal, regional, state, or local activities. Questions relevant to this criterion include: How well does the proposal demonstrate that the project will enhance the development of a national coastal ocean observing system? Are the goals and objectives clearly articulated and relevant to the stated need? Does the proposal demonstrate that it will significantly address relevant science and management issues?

2. **Technical/scientific merit (25 points)**
   This criterion assesses whether the approach is technically sound and/or innovative, if the methods are appropriate, and whether there are clear project goals and objectives. Questions relevant to this criterion include: Is the approach appropriate for the stated goals and objectives? Are the goals and objectives achievable within the proposed time-frame? Do the proposed approaches incorporate current advances in the development of an Integrated Ocean Observing System? Does the proposal promote interoperability with other components of a national ocean observing system?

3. **Overall qualifications of applicants (15 points)**
   This criterion ascertains whether the applicant possesses the necessary education, experience, training, facilities, and administrative resources to accomplish the project. Questions relevant to this criterion include: Does the proposal demonstrate institutional and regional support for the project? Are the investigators (current and proposed) and the organizational framework qualified to conduct a project of the nature and scope proposed?

4. **Project costs (15 points)**
   This criterion evaluates the budget to determine if it is realistic and commensurate with the project needs and time-frame. Questions relevant to this criterion include: Does the proposal demonstrate that the budget is commensurate with project needs? Is the duplication of effort reduced through strategic partnerships?

5. **Outreach and education (15 points)**
   This criterion assesses whether the project provides a focused and effective education and outreach strategy regarding NOAA's mission to protect the Nation's natural resources. Questions relevant to this criterion include: Does the proposed project engage external partners to make effective use of complimentary capabilities and competencies beneficial to this project? Does the proposal demonstrate that information generated by the project will reach its target audience and have a positive impact on the development of regional and national observing system infrastructure?

PROPOSAL EVALUATION FORM

Proposal Number: CSC-DO-04-01

Proposal Title: Alliance for Coastal Technologies (ACT): A partnership of research institutions, state and regional resource managers, and private sector companies to evaluate, share information on, and foster the development of innovative sensor and sensor platform technologies for the monitoring/surveillance of coastal environments.

Please complete and sign this proposal evaluation form and return by 23 December 2003 to:

Jeff Payne
NOAA Coastal Services Center
2234 South Hobson Ave.
Charleston, SC 29405-2413

Please refer to the "Evaluation Criteria" included in the proposal package to assist in your evaluation of this proposal (evaluation criteria have been changed from prior years). Please provide comments on this page or on a separate page. If you choose to print your response on a separate sheet of paper, please return this signed form with your review.

Importance/relevance: **Score - ____ out of 30 points**

Technical/scientific merit: **Score - ____ out of 25 points**

Overall qualifications of applicants: **Score - ____ out of 15 points**

Project costs: **Score - ____ out of 15 points**

Outreach and education: **Score - ____ out of 15 points**

Total: **Score - ____ out of 100 points**

Overall Impression:

Excellent **Very Good** **Good** **Fair** **Poor**

Name of reviewer (please print or type):_____

Signature of reviewer:_____ **Date:**_____

Exxon Valdez Oil Spill Trustee Council

441 W. 5th Ave., Suite 500 • Anchorage, Alaska 99501-2340 • 907/278-8012 • fax 907/276-7178

Scientists: Exxon oil spill effects linger

Continued exposure prevents wildlife from recovering

By Sonya Senkowsky
Contributing writer

More than 300 people attended a marine science conference this week in Anchorage where scientists shared the results of the latest work on such diverse topics as climate change in the North Pacific, jellyfish in the Bering Sea and the continuing toll of the Exxon Valdez oil spill on marine life.

Science Scene

Chronicle photo/Robert DeBerry

Scientists who spoke during a symposium Tuesday about unexpectedly long-term impacts of the Exxon Valdez oil spill are, from left, James Bodkin, of the U.S. Geological Survey's Alaska Science Center; Dan Esler, of Simon Fraser University Centre for Wildlife Ecology; and Brenda Ballachey, also with the Alaska Science Center.

Welcoming participants Monday, Exxon Valdez Oil Spill Trustee Council executive director Gail Phillips called the gathering "the most diverse collection of marine science organizations to be found anywhere."

Highlights of the three-day Marine Science in Alaska symposium, held in conjunction with the annual meeting of the Exxon Valdez Oil Spill Trustee Council, included a Tuesday session on continuing impacts of the Exxon Valdez oil spill, with presentations by researchers who caused a stir with an overview of their work published Dec. 19 in the journal Science.

Jeff Short of the Alaska Fisheries Science Center's Auke Bay laboratory gave more details on that research.

In 2001, researchers conducted a random sampling of beaches that had been oiled by the spill, digging pits to look for subsurface oil; they found it in more than half the beaches studied. "Today, there's very little oil left," said Short. "But our study implies there was much more oil

See Spill, page 12A

Anchorage Chronicle 1-15-04

Exxon Valdez Oil Spill Trustee Council

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Spill ...

FROM PAGE 1 A

in the 1990s than previously thought, by factors of 10 or more."

Previously, scientists thought oil would likely be found in the upper intertidal region of the shore. In fact, oil has been found at lower tide levels, in some cases forming an asphalt "pavement" that is unlikely to disperse, said Short.

The remaining oil is likely the reason some animal recovery levels have not met expectations, researchers explained. Simply put: The animals couldn't recover because they continued to be exposed.

Short's colleagues believe they have evidence that some animals continue to be exposed to oil. Researchers tested six species for the presence of an enzyme that is "a sensitive and specific" indicator of oil exposure, said Brenda Ballachey of the U.S. Geological Survey Alaska Science Center. All six had it. For some animals, such as sea otters, feeding habits may be compounding the problem.

"Sea otters are effectively restoring oiled habitats by excavating for those bivalves – and in the process they're becoming exposed to the residual oil," said the Science Center's James Bodkin. "So not only were sea otters extremely susceptible at the front end of the oil spill ... but they seem to be suffering the consequences of exploring that habitat over the long period."

The symposium also provided a forum to crow about the launch of the Gulf of Alaska Ecosystem Monitoring and Research program, or GEM. Funded by an unusual mechanism – a $120 million endowment established in 1999 by the Trustee Council – GEM is now entering its first year of research after four years of planning, said science director Phil Mundy. The goal: to detect long-term changes in birds, fish and mammals in Southcentral Alaska.

The promise of the program, according to a brochure distributed at the meeting, is "indefinite, guaranteed funding." The idea is for GEM to offer a steady stream of research funding at a rate of $5 million per year, without need for additional support. In a time of strained budgets, GEM's unusual funding is "being watched across the United States," said Mundy.

The second annual meeting, co-sponsored by the Trustee Council/GEM and marine programs throughout the state, featured more than 60 scientific presentations, including sessions on fisheries oceanography, killer whales and stellar sea lions, and undersea research and exploration.

"We hope that more and more members of the general public interested in natural resource management issues will take advantage of it as a great place to learn about what's going on," said Mundy.

Oil spill recovery researcher Ballachey said she viewed the meeting as the opportunity to correct "the public perception that things are back to normal" since the spill.

Other meeting sponsors were the North Pacific Research Board, the Alaska Ocean Observing System, NOAA Alaska Fisheries Science Center, the Pollock Conservation Cooperative Research Center, the Oil Spill Recovery Institute, the Alaska Sealife Center and the Kachemak Bay Research Reserve.

Exxon Valdez Oil Spill Trustee Council

441 W. 5th Ave., Suite 500 • Anchorage, Alaska 99501-2340 • 907/278-8012 • fax 907/276-7178

VALDEZ

Study shows Exxon oil still polluting Sound

Subsurface toxins beyond expected levels

By Kate Golden
For the Vanguard

Aerial shots of lush growth in Prince William Sound don't tell the whole story of its recovery from 1989's Exxon Valdez oil spill, according to authors of a Dec. 19 review article in Science magazine that synthesizes 14 years of post-spill research.

"Exxon Valdez had struck an absolute marine wonderland," Charles "Pete" Peterson, lead author, said. The spill was the "worst scenario."

But, he acknowledged, the spill provided a fundamentally unique opportunity for scientists to learn from such mistakes by assessing the damage on a "virtually pristine" ecosystem.

"And when we did," he said, "we were basically horrified."

Peterson is a professor of marine sciences at the University of North Carolina in Chapel Hill. Other authors were Stanley Rice and Jeffrey Short from the National Marine Fisheries Service's Auke Bay Laboratory in Juneau; Daniel Esler from the Center for Wildlife Ecology at Simon Fraser University in British Columbia; James Bodkin and Brenda Ballachey from the Alaska Science Center in Anchorage; and David Irons from U.S. Department of Game's Fish and Wildlife Service in Anchorage.

It's still out there

Oil lasted for more than a decade "in surprising amounts and in toxic forms," the study said.

Scientists digging holes in the Sound in 2001 found oily messes just 15 centimeters under the surface in tidal areas. And, 12 years after the spill, they found it seven to eight times more often than they expected.

> *"It's the dirty little secret in aquatic toxicology. After being exposed to toxins, if an organism doesn't die right away, that's not the whole story."*
>
> **– Jeffrey Short, author**

In tidal areas, oiled water hits the surface of the shore and the oil sticks to it; then capillary action pulls it underneath the surface. Superficial oil is exposed to multiple bombardments from air, sunlight, water and wind. But under the surface, it is protected and therefore degrades much more slowly.

In the past, scientists have defined toxicity based on short-term exposures to chemicals in oil. They expose laboratory organisms to find the concentrations of chemicals that will cause mortality in a few days. Then they apply the results, inferring "what must have died" in a spill such as that of the Exxon Valdez, Peterson said.

Under this paradigm, it was thought that oil's devastation would be entirely short-term.

Peterson called the method valuable but "fundamentally flawed" for its shortsightedness.

"It's the dirty little secret in aquatic toxicology," author Short said. "After being exposed to toxins, if an organism doesn't die right away, that's not the whole story."

Years after the Exxon Valdez ran aground, the 3- to 5-ringed compounds in partially weathered oil - polycyclic aromatic hydrocarbons, or PAHs, persisted. These, the Science study showed, continue to be toxic years after the initial spill event.

If pink salmon lay their eggs in gravel with sequestered oil, the exposed embryos' mortality rates are much higher than usual. If the embryos do make it, they end up smaller on average, a so-called sub-lethal effect of the oil.

The exposed herring and salmon grow up with "abnormalities." But a salmon-marking study showed that small fry are half as likely to live through their pelagic phase, and therefore less likely to reproduce.

" 'Sub lethal' is just a word, a pejorative that has little meaning. They (sub-lethal exposures) can indeed translate into losses," Peterson said.

Consequences for policy?

Ecotoxicology's old paradigm considered effects of chemicals in the short term and for single species. The science study argues for redefinition of that paradigm with more emphasis on ecosystem-wide, long-term effects.

There are cascading effects here, too. Exxon, most notably, is still vulnerable to government lawsuits for another $100 million in "unanticipated damages," and will be until September 2006. A multi-billion dollar civil suit is also pending against the company.

Anchorage Chronicle 1-15-04

Exxon Valdez Oil Spill Trustee Council

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DATE: January 29, 2004

TO: EVOS Trustees

FROM: Gail Phillips

RE: EVOSTC FY 2005 Invitation for Proposals & GEM Science Plan

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Last week I sent out a memo to the TC requesting that each member review the draft 2005 Invitation for Projects and get back with me as soon as you could with your ideas and comments.

As of today, I have only received recommendations back from Commissioner Ballard (memo dated 1-26-04) which was copied to each of you. I thank her for her comments and recommendations because this gives us the opportunity of providing more in-depth information for you before the Council meeting on February 9th when you will be addressing approval of the Invitation. In addition, on January 2nd, Commissioner Ballard provided us with her comments regarding the GEM Science Plan, which was also copied to each of you. The Science Plan and the Invitation are closely related. Commissioner Ballard's two memos point out the need for us to achieve a common understanding on some key points regarding GEM and the Restoration program before proceeding. I will state below my understanding of the key points raised in Commissioner Ballard's memos, which I hope we will all have a chance to discuss.

GEM is a logical continuation of the Restoration program, not a departure. The GEM Program Document is the latest in the series of Restoration Plans that have guided actions by the concerned governments since 1990. The development of Restoration Plans within a process of public input is required by the Memorandum of Agreement and Consent Decree governing Council actions. In the 15 years since the spill there have been three major comprehensive plans developed at the direction of the Trustees, and each has served as the governing document for directing Council action in subsequent years. In each case extensive public and agency input and legal review has been a part of plan development. The Restoration Plans are the 1990 Plan which was the first under the newly created trustee council and consisted of five volumes (approximately 400 pages), the 1994 Plan which was equally extensive and was developed under the auspices of Environmental Impact Statement (NEPA) and served to guide project development for 1995 through 2002, and the GEM Program Document developed within the bounds of the 1994 Plan. During development of the GEM Program Document, 1999 – 2002, many of the same questions now being raised by the State trustees were addressed. The GEM Program Document provided answers to the questions that incorporated the results of three years of intensive public hearings, legal review, and two years of independent

scientific review by the National Research Council. The GEM Program Document was found to be consistent with legal and regulatory the guidelines (e.g. NEPA) established in the earlier plans before being formally adopted by vote of the Trustee Council in July 2002.

The ecosystem approach guides Council actions. Throughout the development of the restoration plans, developing and implementing an ecosystem approach to address problems created by the oil spill have been a primary focus of the Trustee funding priorities. For instance, both the President and the Governor issued statements that mentioned the importance of restoring ecosystem health when establishing the Trustee Council. The 1990 Restoration Plan specifically lists the objective of incorporating an ecosystem approach to restoration and evaluation of injury. The integrated EVOS studies that began in the mid 1990's (Sound Ecosystem Assessment, SEA; Nearshore Vertebrate Predator, NVP; Apex predator experiments, APEX) were designed to bring an ecosystem perspective to understanding impacts on the injured species and services. Those studies, as well as the extensive process (public comment, agency review, EIS analysis and associated record of decision as required by NEPA) gave rise to the development of the GEM program as the structure under which long-term funding decisions can be made. ***At its core GEM reflects the consensus which arose from ten years of oil spill studies that ecosystem damage was both the most important and the most intractable problem to solve because recovery of injured species and services could not be evaluated without the ability to detect and understand causes of ecosystem change. GEM has not 'moved beyond restoration,' since it is the logical extension of the basic Restoration concept of detecting and understanding damages to spill-injured resources through an ecosystem-based approach, as the fulfillment of the ultimate responsibility of the Restoration Program to the state and the nation.***

Changes to the GEM Program Document require deliberate action. As explained above, the GEM Program Document was specifically developed to be consistent with the preceding governing authorities under which the Council operates. The Science Plan, the Invitation and ultimately the Work Plan describing Council activities are all derived from and designed to be consistent with the GEM Program Document. Actions that fall outside the framework provided by the GEM Program document need the same sort of deliberate analysis for consistency with governing authorities that were part of the development of GEM. As a consequence, any action the Trustees make, including ones of policy changes, must be consistent with the consent decree, the MOAs, and state and federal law (with NEPA on top). A very deliberative and open process is required to effect change, and the Trustees must be willing to invest time and energy before they head down the path to toward fundamentally altering the GEM Program.

The GEM framework can meet the needs of the Trustee agencies and the public. GEM provides a flexible framework within which a variety of types of investigations can occur. Proposed actions (project proposals) are evaluated for consistency with the Science Plan through a multi-stage process of scientific peer review, review by stakeholders, and open public review, as demonstrated in the FY 2004 Work Plan adopted in November 2003. The review process results in a coherent set of actions directed toward the specific

purposes of the GEM program that is subject to Council review and action. The open and deliberate nature of the process provides Trustee Council agencies and the public the means to apply emphasis to areas of particular interest within the GEM framework, subject to Council approval and availability of funding.

Direction and funding of GEM is in statute and agreements. The issue of whether the Council structure should continue was considered by the council during the development of GEM and agreed upon. However if the State and Federal Trustees come to agreement on long-term direction for the funds after the litigation window closes in 2006, then certainly a new structure along with attendant changes in the MOU, federal law and court approval could be considered to make the process more efficient.

According to prior action by the TC, I believe it would be appropriate for the Council to continue to fund GEM indefinitely in order to insure that the goals of the Settlement Agreement and the mandates of the Consent Decree are achieved. GEM is designed to address injured resources and direct restoration activities, and to provide for the resource management needs of the trustees. As mentioned above GEM was crafted to cover an ecosystem perspective which makes it flexible in accommodating needs of agencies and the public. The Invitation for proposals that went forth last year was modified after agency comment to support data needs of management agencies in the context of understanding ecosystem impacts by human activities. That modification was a demonstration of the flexibility of the GEM framework. Certainly, if you feel there are projects that fall within the scope of the Science Plan and GEM Program document that we should be including, please give me those specifics as soon as possible so that we may include them in the Invitation.

Long-term monitoring of on-going direct impacts from the spill is in process. The largest single category of funding in FY 2004 is lingering impacts of oiling (see Work Plan, Figure 1, p. 9), in which all projects are focused on fate and effects of oil in the environment and injured species. The second largest category of FY 2004 funding is the nearshore where all efforts are directed toward the design and implementation of on-going monitoring of direct impacts to the nearshore resources identified as injured by the 1989 spill. The third largest category of funding is the watershed area where all efforts are directed toward design of monitoring for on-going direct impacts of the oil spill to resources in the watershed environments potentially injured by the oil spill (i.e. injured species or formerly injured species such as Harlequin ducks and river otters). It should be noted that efforts in the Alaska Coastal Current and Offshore are either directed at design of monitoring to ongoing injuries for injured species (i.e. herring, sea birds and some nearshore species) or formerly injured species (i.e. pink salmon), or for establishing the ecological context necessary to correctly interpret direct measures of on-going direct impacts to injured resources from the spill.

Direct support of state resource management decisions through applied research is in process. Although the GEM Program Document establishes support of management decisions as one of its five goals, it also notes that developing successful management applications requires time for monitoring data to accumulate, and the cooperation and

initiative of management agencies in making their specific needs known to the GEM Program. Nonetheless, the first GEM Invitation, Phase II of FY 2003 was successful in procuring a project designed to provide Cook Inlet sockeye fishery regulators with oceanographic data relevant to the design of their emergency orders for in-season fishery regulation. The addition of oceanographic instrumentation and the expertise of a physical oceanographer to the long-term test fishing project at Anchor Point will help fishery managers better interpret test fishing data used in regulations. The oceanographic data are relevant to the understanding of injuries due to oiling because they help measure the extent and strength of the Alaska Coastal Current, which is thought to be a factor in determining the trends in abundance of an injured species, PWS herring. All of the watershed projects are designed to ultimately provide information to decision makers in fish and wildlife management, in addition to providing measures of damages to injured species that share the watershed and marine environments.

The synthesis necessary to plan and implement GEM was completed in July, 2002. The GEM Program Document is primarily composed of a synthesis of all scientific social and economic information relevant to injured resources and their ecosystems in the oil spill affected area as of the time of adoption of GEM by the Trustee Council. As determined by an independent committee of scientists selected and supervised by the National Research Council, the scientific synthesis was sufficient for the purposes of planning and implementing GEM. The synthesis of the ecological findings of the restoration program now in progress under Dr. Robert Spies is expected to be an important addition to the GEM Program Document and other syntheses, such as the Bodkin-Dean synthesis of nearshore research recently completed. The Spies synthesis effort is expected to be useful in planning and implementation of GEM in FY 2006 and beyond.

I really look forward to discussing these issues with you at your earliest convenience. Thank you for taking the time and effort to go through this.

Gail Phillips
Executive Director