13.08.01 - Reading File

July 1994

Exxon Valdez Oil Spill Trustee Council
Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178

MEMORANDUM

TO: Ray Thompson/USFS

FROM: Eric F. Myers, Project Coordinator

DATE: 7/29/94

SUBJ: Little Waterfall Creek — NEPA Documentation

Molly McCammon shared the letter you faxed regarding Little Waterfall Creek. I tried to reach you by phone Friday afternoon but got no answer.

In order to verify that the letter would satisfy the NEPA compliance documentation that the Trustee Council has directed to be obtained, I consulted with Maria Lisowski. She said she would call you on Monday to discuss this further. (It appears that the Categorical Exclusion determination may need to be made/signed by the District Ranger.)

Thank you for sharing this memo. I realize that there is plenty of frustration regarding this project. An extra effort to see it through in a timely manner in order for ADF&G to get into the field ASAP would be greatly appreciated.

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MEMORANDUM

TO: Ray Thompson/USFS

FROM: Eric F. Myers, Project Coordinator

DATE: 7/29/94

SUBJ: Status of Project 94139C1/Montague Island Chum

The purpose of this memorandum is to obtain clarification regarding the status of Project 94139C1/Montague Island Chum.

As a result of reviewing the most recent information provided for the Project Status Summary (Quarter Ending June 30), I noted that the status for Project 94139C1/Montague Island Chum indicated that the NEPA documentation has been completed and that work on the project is in progress. Our files do not include a copy of the Detailed Project Description (DPD) for this project nor a copy of the NEPA compliance documentation. (I had understood from previous discussions that a CE was under preparation, but have not yet seen a copy of the completed version.)

As you know, the Trustee Council specifically approved Projects 94139 and 94043 "subject to NEPA compliance... and review of the benefit/cost analyses" of these projects (FY 94 Work Plan Projects as approved by the *Exxon Valdez* Oil Spill Trustee Council, January 31, 1994). A copy of earlier correspondence regarding issue of reviewing the B/C ratios for these projects is attached.

Your assistance in clarifying the status of Project 94139C1/Montague Island Chum is appreciated. For your reference, I have enclosed a worksheet (dated 7/29/94) showing my current understanding of the status of the various sub-projects within 94043 and 94139. Please let me know if you have more current information.

attachment

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TABLE 1

Project 94043/Cutthroat and Dolly Varden Restoration (USFS)

The Draft FY 94 Work Plan indicates that Project 94043 consisted of nine sub-projects for a total FY 94 cost of 182.7. FY 95 costs were identified as 0.0. Project duration was identified as 3 years.

Sub-project Project Location	Lead	FY 94	FY 95	Project Status
Glacier Ranger District				
94043A1 — Eshamy River (W. PWS)	USFS	na	0	No DPD submitted. EA in preparation.
94043A2 — Gumboot Crk (W. PWS)	USFS	na	0	No DPD submitted. EA in preparation.
94043A3 — Stream No. 508 (W. PWS)	USFS	na	0	No DPD submitted. EA in preparation.
94043A4 — Stream No. 509 (W. PWS)	USFS	na	0	No DPD submitted. EA in preparation.
94043A5 — Otter Crk/Lake (Knight I.)	USFS	na	0	No DPD submitted. EA in preparation.
94043A6 — Miners Creek /Lake (N. PWS)	USFS	na	0	No DPD submitted. EA in preparation.
94043A7 — Shrode Creek/Lake (W. PWS)	USFS	na	0	No DPD submitted. EA in preparation.
Cordova Ranger District				
94043B1 — Sockeye Crk/Lake (Knight I.)	USFS	na	0	No DPD submitted. EA in preparation.
94043B2 — Rocky Crk/Bay (Montague)	USFS	na	0	No DPD submitted. EA in preparation.
TOTAL		$ 182.7	0	

[NOTE: na = not available, no breakdown among sub-project costs was provided.]

7/29/94

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TABLE 2

#94139 Salmon Instream Restoration (USFS)

The Draft FY 94 Work Plan indicates that Project 94139 consisted of six sub-projects for a total FY 94 cost of 572.6. FY 95 costs were identified as 202.2. Project duration was identified as 5 years.

Sub-project Project Location	Lead	FY 94	FY 95	Project Status
ADF&G				
94139A1 — Little Waterfall Crk (Afognak)	ADF&G	90.1	15.1	DPD submitted. CE in preparation.
94139A2 — Port Dick Spawn Channel (1) (CI)	ADF&G	131.0	41.9	On hold due to poor B/C ratio
Glacier Ranger District				
94139B1 — Otter Creek bypass (Knight I.)	USFS	72.2	3.5	No DPD submitted. CE in preparation.
94139B2 — Shrode Creek bypass (W. PWS)	USFS	22.3	1.7	No DPD submitted. CE in preparation.
Cordova Ranger District				
94139C1 — Montague Island chum (Montague I)	USFS	86.9	75.5	No DPD. EA prepared (?). Work in progress?
94139C2 — Lowe R. (6.5 Mile Richardson Hwy)	USFS	170.1	64.5	No DPD submitted. EA in preparation.
TOTAL		$ 572.6	202.2	

[NOTE: (1) the Port Dick Spawning Channel project has been deferred due to a low B/C ratio; funds in the amount of 25.0 from this sub-project were reallocated to Project 94320S/Herring Disease.]

7/29/94

Exxon Valdez Oil Spill Trustee Council
Restoration Office
645 "G" Street, Anchorage, AK 99501
Phone: (907) 278-8012 Fax: (907) 276-7178

molly what is ... on this
A

MEMORANDUM

TO: Ray Thompson/USFS
Joe Sullivan/ADF&G

FROM: Molly McCammon, Director of Operations MM

DATE: May 18, 1994

SUBJ: DPDs for Projects #94043 and #94139 - Instream Restoration

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The purpose of this memorandum is to ask for your assistance in making sure that DPDs prepared for instream restoration sub-projects under Project #94043/Cutthroat-Dolly Habitat Restoration and Project #94139/Salmon Instream Habitat-Stock Restoration provide sufficient information to comply with the Trustee Council directive to review the costs and benefits of these projects. As you will recall, when the Trustee Council took action on the FY 94 Work Plan at the January 31, 1994 meeting, Projects #94043 and #94139 were combined and conditionally approved "subject to NEPA compliance... and review of benefit/cost analyses." (See "FY 94 Work Plan Projects as approved by the Trustee Council January 31, 1994")

It is my understanding that DPD's are in various stages of preparation for the sub-projects under #94043 and #94139 as shown in the attached listing. The one instream restoration DPD that has been prepared to date (i.e., Little Waterfall Creek) provides only a brief statement regarding benefits and costs. While the DPD states that "salmon production from this project would generate benefits greater than costs of construction and evaluation," it is not clear whether this analysis included consideration of long-term operations and maintenence costs over the life of the project. The DPD cover page for the Little Waterfall Creek project indicates that the cost of the project "FY 96 and beyond" is $53.7. Are these annual costs? If so, were they factored into the analysis?

As the DPDs for the #94043 and #94139 sub-projects are prepared, it would be helpful to have a section within each DPD that succinctly describes the assumptions and analysis regarding the costs and benefits of that sub-project. Some of the specific considerations would include the cost of construction; long-term operations and maintenance over the anticipated useful life of the project; the incremental number of fish that would be produced as a result of the project; and an explicit identification of the expected value of the fish as well as any other critical assumptions used in the analysis.

One of the projects proposed as part of Project #94139 (i.e., Port Dick) was withdrawn by ADF&G due to a poor cost-benefit ratio. I would appreciate your assistance in obtaining a better understanding of the benefit/cost analysis for the Port Dick project. In the case of Little Waterfall Creek, it is my understanding that the finding of a positive benefit/cost ratio reflected in the DPD was based on work done by Hartman and Richardson (1993) although I have not yet been able to obtain additional information regarding this work. Some additional clarification regarding whether the USFS and ADF&G use similar or identical methodology when assessing benefits and costs would be helpful in order to ensure consistency of evaluation.

I would appreciate the chance to discuss this with you further. Your assistance with this request is appreciated.

cc: Andy Gunther
Dean Hughes
Dave Gibbons
Jerome Montague
Jim Ayers

#94043 Cutthroat/Dolly Restoration

— Eshamy River (W. PWS)	USFS	DPD under development
— Gumboot Crk (W. PWS)	USFS	DPD under development
— Stream No. 508 (W. PWS)	USFS	DPD under development
— Stream No. 509 (W. PWS)	USFS	DPD under development
— Otter Crk/Lake (Knight I.)	USFS	DPD under development
— Sockeye Crk/Lake (Knight I.)	USFS	DPD under development
— Miners Crk/Lake (N. PWS)	USFS	DPD under development
— Shrode Crk/Lake (W. PWS)	USFS	DPD under development
— Rocky Crk/Bay (Montague)	USFS	DPD under development

#94139 Salmon Instream Restoration

— Lowe River (6.5 Mile)	ADF&G	DPD under development
— Montague Island chum	USFS	DPD under development
— Otter Creek bypass	USFS	DPD under development
— Shrode Creek bypass	USFS	DPD under development
— Waterfall Creek bypass	ADF&G	DPD submitted

Exxon Valdez Oil Spill Trustee Council

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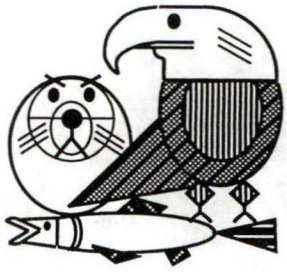

I took some proposals out of this pkg & put them in the projects binder. 8/5 RM

MEMORANDUM

TO: Public Advisory Group Members

FROM: James R. Ayers
Executive Director

DATE: July 27, 1994

RE: Briefing materials for August 2-3 meeting

Enclosed are a number of items for your review for the August 2-3 meeting. Please keep in mind that it is our intent to get briefing materials to you on a regular basis at least 7 to10 days in advance of your meeting. As I mentioned at your last meeting however, due to the short time frame between the proposal submission deadline, the initial review period, and your scheduled meeting, this is the soonest these materials were available. You are literally getting the project spreadsheets "hot off the presses!" Agency and Trustee staff and the Chief Scientist will all be available on both August 2 and 3 to brief you in further detail on these items and answer any questions you may have.

1. Revised agenda

   This agenda is structured so that the Executive Director can participate by teleconference during the morning session.

2. Summary of June 28, 1994 meeting

   The summary prepared by Doug Mutter is available for your review and approval.

3. Briefing on Restoration Reserve

Craig Tillery with the Alaska Department of Law will be available to brief you on the status of the Restoration Reserve and questions about the endowment concept. Enclosed for your review is a draft resolution being considered by the Trustees in conjunction with establishment of the reserve account.

4. "Less than fee" and "public access" draft policies

At the June 28 meeting a work group was appointed by Chairman Phillips (Chuck Totemoff, Pam Brodie, John Sturgeon, and Jim Cloud) to review and comment on draft policies concerning habitat acquisition issues: "less than fee acquisition" and "public access". Enclosed are the draft policies developed by this subcommittee. The subcommittee will report on these drafts. Also available for comment is Walt Sheridan, the federal lead on this issue for Trustee Council staff.

5. EIS comments

Since the August 2 meeting is being held after the final deadline for comments on the Draft EIS for the Draft Restoration Plan, PAG comments were drafted and sent to all members for their review. The final version that was officially submitted is enclosed.

6. Update on Draft FY95 Work Plan

Based on legal advice from federal and state attorneys, all proposed projects submitted for funding this year will be included in some fashion in the Draft FY95 Work Plan that goes out for public review. Enclosed you will find a memorandum providing more details on the effort to develop the Draft FY95 Work Plan as well as tables that summarize the 178 project proposals received in response to the *Invitation to Submit Restoration Projects for Fiscal Year 1995*. This effort included a work session on July 12-13 involving PAG members (Donna Fischer, Gail Evanoff and John French) that reviewed the projects along with the Executive Director, Chief Scientist, a group of highly qualified peer reviewers, and other Trustee and agency staff.

Proposals were categorized based on their overall benefit to restoration and technical merit. This categorization should be considered as strictly non-decisional and has not been reviewed by the Trustee Council. It represents our most current, although very preliminary thoughts based on scientific, staff and legal review and is presented in this fashion in order to provide the public substantive information upon which to comment.

It is important that you carefully review these materials in the next two months. For your October 11 meeting you will be presented a summary of public comments received during the September public review period, and further recommendations and comments from the Chief Scientist in order to assist you in your final review.

7. Supplement Packet of FY95 Brief Project Descriptions

In addition to the Brief Project Descriptions (BPDs) previously provided to the PAG, enclosed you will find an additional set of BPDs, most of which were the result of the Subsistence Restoration Planning effort. Many of these raise legal questions concerning their permissibility under the terms of the EVOS settlement, and the potential for alternative funding sources is also being examined.

Agenda

Exxon Valdez Oil Spill Trustee Council

Public Advisory Group
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone 907-278-8012 Fax 907-276-7178

AGENDA

Exxon Valdez Oil Spill Trustee Council
Public Advisory Group
First floor conference room
645 G Street, Anchorage, Alaska

Tuesday and Wednesday, August 2-3, 1994
9:30 a.m.

DRAFT
7/27/94
noon

PURPOSE:

1. Obtain status reports on restoration activities.

2. Make recommendations on proposed activities and projects for the 1995 Work Plan.

Tuesday

9:30 a.m.	Call to order/roll call/ approval of agenda	Brad Phillips, Chair
9:35	Approval of summary of June 28, 1994 meeting	Brad Phillips, Chair
9:40	Recommendations for FY 1995 PAG Budget	Vern McCorkle Mary McBurney
10:00	Executive Director's Report	Jim Ayers Executive Director
	-- Briefing on Endowment	Craig Tillery
	-- Habitat Protection and Acquisition	
	-- "Less-than-fee" and "public access" policies	Chuck Totemoff, Pam Brodie, Jim Cloud, John Sturgeon, and Walt Sheridan

-- Restoration Plan

-- Draft EIS
-- Implementation and Final Plan

-- Introduction to the 1995 Work Plan

11:30	Public comments	
12:00 p.m.	Lunch	
1:00	Report on 1994 Work Session	Donna Fischer, John French, Gail Evanoff
1:15	Comments on proposed projects for the draft 1995 Work Plan	Brad Phillips, Chair
5:00	Recess	

Wednesday

8:30 a.m.	Ecosystem Management Initiative	Byron Morris, NOAA
9:30	Continue recommendations on the 1995 Work Plan	Brad Phillips, Chair
11:30	Schedule next meeting	
11:35	PAG member comments	
12:00 p.m.	Adjourn	

Summary of June 28, 1994 meeting

Meeting Summary

A. GROUP: Exxon Valdez Oil Spill Public Advisory Group (PAG)

B. DATE/TIME: June 28, 1994

C. LOCATION: Anchorage, Alaska

D. MEMBERS IN ATTENDANCE:

Name	Principal Interest
(King alternate for Andrews)	Sport Hunting and Fishing
Pamela Brodie	Environmental
Kim Benton (for Sturgeon)	Forest Products
Jim Cloud	Public-at-Large
Cliff Davidson (*ex officio*)	Alaska State House
Donna Fischer	Local Government
Brenda Norcross (for French)	Science/Academic
Lew Williams	Public-at-Large
James King	Conservation
Vern McCorkle	Public-at-Large
Mary McBurney (for McCune)	Commercial Fishing
Dan Hall (for McMullen)	Aquaculture
Brad Phillips, Chair	Commercial Tourism
Gail Evanoff (for Totemoff)	Native Landowners
(McCorkle alt. for Eliason)	Public-at-Large

E. NOT REPRESENTED:

Name	Principal Interest
Jim Diehl	Recreation Users
Richard Knecht	Subsistence
Don McCumby (alternate)	Public-at-Large
Drue Pearce (*ex officio*)	Alaska State Senate

F. OTHER PARTICIPANTS:

Name	Organization
Jim Ayers	Executive Director, EVOS Restoration Office
Leslie Holland-Bartels	National Biological Survey
Luke Borer	Sherstone Timber Company
Mark Broderson	AK Dept. Envir. Conservation
L.J. Evans	Restoration Office Staff
Ken Holbrook	U.S. Forest Service
Rod Kuhn	U.S. Forest Service
Phil Kunsberg	Los Alamos National Laboratory
Brion Lettich	Eyak Corporation
Jamie Linxwiler	Eyak

Bob Loeffler	AK Dept. Envir. Conservation
George Matz	Alternate for King
Molly McCammon	Director of Operations, EVOS Restoration Office
Jerome Montague	AK Dept. Fish and Game
Doug Mutter	Designated Federal Officer Dept. of the Interior
Eric Myers	Restoration Office Staff
Donna Platt	Eyak Corporation
Sandy Rabinowitch	National Park Service
Leif Selkregg	IMS
Daryl Schaefermeyer	SAAMS
Walt Sheridan	U.S. Forest Service
Rick Steiner	Self
Kim Sundberg	AK Dept. of Fish and Game
Nancy Swanton	Minerals Management Service
Alex Swiderski	AK Dept. of Law
Thea Thomas	Cordova Dist. Fishermen United
Chuck Totemoff	Chenega
Craig Tillery	AK Dept. of Law

G. SUMMARY:

The meeting was opened June 28 at 9:30 a.m. by Chairperson Brad Phillips. The January 11-12, 1994 meeting summary was accepted (with the addition that Jim Cloud was present).

Phillips initiated a discussion about how meaningful the input and participation of the PAG has been as an advisory mechanism to the Trustee Council. Items that engendered frustration included: not getting the opportunity for input before decisions are made, advice is not listened to or responded to, difficulty in reaching a consensus, unclear what is expected of the PAG, a lot of material to digest in short time periods, a PAG staff person is needed to help digest information, better communication and more frequent meetings are needed. Jim Ayers stated that he hoped the PAG would be a deliberative body looking at the broad picture and that the PAG has been and will continue to be invited to participate in other restoration planning activities.

Jim King noted that the PAG suggestions about an endowment were not discussed in the Draft Environmental Impact Statement (EIS). Vern McCorkle noted that the July 1993 "Williams" protocol listing PAG recommendations for the restoration plan did not appear to be considered or responded to (attachment #2). Ayers said that the endowment issue was held up by Department of Justice lawyers and that the PAG goals of July 1993 would be considered. He also asked for PAG participation in planning and budgeting processes and expressed his desire to work with the PAG to develop specific objectives and staff needs for the PAG.

Ayers also said he would put together a financial overview of alternative #5 at the PAG's request that would reflect Table 2-2 in the draft EIS.

Mary McBurney suggested the PAG have a policy that decision documents be by consensus only. Others stated that while reaching consensus was useful if it could be done, the range of opinion was valued by the Trustee Council as well.

The meeting was opened for public comment. Testimony was presented by: Thea Thomas in support of the Sound Ecosystem Assessment project and she presented a petition signed by 200 fishermen in support of the permit buy-back project; Donna Platt and Luke Borer regarding concerns about the draft policy on purchase of less than fee simple title for habitat protection--which was then discussed (attachment #3); and Rick Steiner in support of Eyak and Sherstone and for flexibility in negotiating habitat protection acquisitions.

Jim Ayers gave the Executive Director's report. The proposed organization (attachment #4) was reviewed, and includes a Coordinating Committee with 2 PAG members participating. PAG members were asked to participate in deliberations on the less than fee simple title policy, the 1995 budget for the PAG, and the 1995 Work Plan (see H. Follow-up).

Molly McCammon presented the FY 1995 and 1996 Work Plan Timelines (attachments #5 and 6). The draft Restoration Plan and EIS are in public review, comments are due August 1 (attachment #7). The final EIS is expected on September 28, 1994. The next Trustee Council meeting is July 11. After the meeting from 5:00 to 8:30 will be a picnic at Valley of the Moon Park in Anchorage, PAG members are invited.

Kim Sundberg gave a presentation on the status of the proposed Institute of Marine Science Improvements at Seward. The draft EIS is in process with the final EIS due on September 23, 1994. The Seward facility is expected to open in June 1997. The project includes a research element, a public element and a research vessel element. Ayers said the financial numbers would be examined to determine which elements were eligible under the settlement agreement. Brenda Norcross raised a question about the role of the University in the operation of the Institute. Sundberg said the University supported the Institute but that it was not a University facility.

Doug Mutter briefed the members on the process for nomination and approval of PAG members for the 1994-1996 term, which begins in October 1994 (a process description

was sent to members with the meeting agenda). Current members wishing to continue PAG service must send a written notice of application to the EVOS Restoration Office by August 1, 1994.

The meeting adjourned at 3:50 p.m. on June 28, 1994.

H. FOLLOW-UP:

1. Phillips will present a summary of PAG actions at the July 11, 1994 Trustee Council meeting.

2. Mutter will send PAG members copies of their original nomination package for review and update if they wish to re-apply for the next term (attachment #1).

3. PAG members to participate with Walt Sheridan and Alex Swiderski in discussions on the less than fee simple title policy: Chuck Totemoff, John Sturgeon, Pam Brodie, and Jim Cloud.

4. PAG members to participate with Ayers to prepare the FY1995 PAG Budget: Vern McCorkle and Mary McBurney.

5. PAG members to participate on July 12-13 with the Work Force to develop the 1995 Work Plan: Donna Fischer, John French, and Gail Evanoff.

6. The August meeting agenda will include a status report from Ayers on the endowment issue.

I. NEXT MEETING: August 2-3, 1994 in Anchorage.

The following meeting is tentatively set for October 11-12, 1994.

J. ATTACHMENTS:

1. PAG member's original nomination submission (for the member only)

Handouts attached for those not present:

2. July 1993 PAG Approach to Restoration
3. Discussion Draft on Acquisition of Less Than Fee Simple Title
4. Handouts on the Restoration Plan and Organization
5. FY 1995 Work Plan Timeline
6. FY 1996 Work Plan Timeline
7. Restoration Plan EIS Public Meeting Schedule
8. Chart of Budgets for Restoration Alternatives
9. Habitat Protection Status Report

K. CERTIFICATION:

PAG Chairperson	**Date**

Restoration Reserve

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RESOLUTION OF THE EXXON VALDEZ TRUSTEE COUNCIL

We, the undersigned, duly authorized members of the Exxon Valdez Trustee Council, after extensive review and consideration of the views of the public, and in furtherance of our decision made at a public meeting of the Trustee Council on January 31, 1994, find as follows:

1. Scientists and other experts have identified a clear continuing need for research and monitoring (and, potentially, associated general restoration activities) after 2001, the year of the last annual payment by Exxon to the Joint Trust Fund. This need arises primarily from the present limitations on scientific understanding of the ecological systems and relationships that may affect the recovery of certain of the species injured by the Exxon Valdez oil spill. The research and monitoring programs adopted or under consideration by the Trustee Council will help fill those gaps in knowledge and may provide a basis for additional future actions to promote or assist recovery of injured species and ecological systems. Moreover, the relatively long life cycles of certain species make long-term programs to monitor recovery and assess any continuing injury essential. For example, sockeye salmon return in five-year cycles. In order to obtain meaningful information about the effects of the oil spill on those runs and its duration, several cycles may need to be examined. Actions to restore injured salmon runs and monitoring of their recovery could take yet additional cycles. Restoration of this species is thus likely to span several decades into the future. Similarly, many other resources such as murres, harlequin ducks, harbor seals, sea

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otters, and herring appear to be recovering slowly, if at all. Long term observation and, potentially, future restoration action are essential to assure the recovery of these species.

2. It is prudent to set aside trust funds in a reserve fund to provide funding for research, monitoring and associated general restoration programs after 2001.

3. Because all restoration needs through the year 2001 are not yet known, the Trustees must have the flexibility to invade the reserve to fund restoration projects that are clearly needed and cannot be funded by other trust funds.

WE THEREFORE resolve to create a reserve account with joint trust funds under the following terms and conditions:

(a) A long term investment sub-account ("Reserve Fund") shall be established in the EXXON VALDEZ Oil Spill Settlement Account in the Court Registry Investment System ("CHRIS") to receive, invest and disburse monies set aside as a reserve for future research, monitoring and general restoration projects. The term of investments shall be as determined yearly by the Trustee Council upon recommendation of the Executive Director. Interest received from investment of the Reserve Fund shall accrue to the Reserve Fund.

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(b) Disbursement of the monies in the Reserve Fund shall be to the Governments upon resolution of the Trustee Council as provided in the Order for Deposit of and Transfer of Settlement Proceeds entered by the United States District Court on December 6, 1991.

(c) The sum of $12,000,000 shall be placed in the Reserve Fund through the 1994 work plan. It is the intent of the Trustee Council that additional monies will be placed in the Reserve Fund from each remaining payment by Exxon. Such funding decisions will be made through the Trustee Council's annual Work Plan process and are subject to the final Restoration Plan. All requests for monies to be placed into the Reserve Account will be made through the United States District Court in the same manner as for other restoration projects.

(d) Expenditures from the Reserve Fund will be made only by the unanimous agreement of the Trustee Council, consistent with the terms of the Memorandum of Agreement and Consent Decree entered by the United States District Court on August 28, 1991. Expenditure of monies in the Reserve Fund for restoration projects shall be made in accordance with applicable law, including the National Environmental Policy Act.

(e) It is the intent of the Trustee Council that the Reserve Fund be available for research, monitoring and associated general restoration projects in the years following the last

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payment into the trust fund by Exxon in the year 2001. However, where there is a showing of need, the Trustee Council may, at any time, use either the principal or interest retained within the Reserve Fund to fund restoration projects permitted under the Memorandum of Agreement.

(f) The Department of Law and Department of Justice are requested to petition the United States District Court to provide any necessary authorization for the Reserve Fund and to seek a waiver of fees from the CHRIS.

Dated this _____ day of _____, 1994 at Anchorage, Alaska.

SIGNATURE BLOCKS

C:\WP51\WPDOCS\RESERVE5

"Less-than-fee" and "public access" draft policies

July 22, 1994 10:46am

DISCUSSION DRAFT PREPARED FOR THE PUBLIC ADVISORY GROUP SUBCOMMITTEE

This draft document has been prepared for a subcommittee of the Public Advisory Group for review, discussion and comment by the Public Advisory Group.

POLICY STATEMENT

General

The purpose of the Comprehensive Habitat Protection Process is to identify and protect habitats that will benefit the recovery of resources and services injured by the Exxon Valdez oil spill. Some of the protection tools available include: fee title acquisition, less than fee acquisitions including conservation easements, acquisition of partial interests, acquisition of commercial timber rights and term easements, land exchanges and cooperative agreements. Following an agreement for protection, acquired parcels or interests will be managed in a manner that is consistent with the restoration objectives for the injured resources and/or services.

Selection of the protection tool for a particular parcel or habitat area will consider the measures necessary to meet restoration objectives for the injured resource or service for that particular parcel. Factors to be considered include such things as habitat requirements, cost effectiveness, restoration benefits to lost or diminished services of providing public access, and the cultural and economic needs of the existing land owners. Each proposed acquisition will address these and other factors on a case-by-case basis in order to ensure consistency with the restoration objectives and cost effective expenditure of settlement funds.

Acquisition of fee simple title

Fee simple title acquisitions have the potential to provide the highest level of habitat protection. Fee simple acquisitions also are more likely to avoid future ambiguities concerning future management, rights of sellers, public access and use, the possibility of development activities incompatible with restoration objectives and other issues that may arise with less than fee simple acquisitions. Fee simple acquisitions are also less complex to negotiate and therefore more likely to be successfully completed. The purchase price for fee simple may be only slightly

greater than the purchase price of lesser interests. Acquisition of commercial timber rights alone may not provide adequate habitat protection. The cost of future management of less than fee interests may be significantly higher than that of fee interests. Therefore, fee simple acquisition will, in many cases, be the preferred method of habitat acquisition and likely to receive a high priority.

Acquisition of less than fee simple title

In some cases, restoration of injured resources and services can be achieved through acquisition of less than a fee simple title interest in the land. There are several reasons to pursue this strategy when it is adequate to meet restoration objectives. First, it may reduce the cost of the protection. Second, less than fee interests may be available that meet restoration objectives when fee simple title is not for sale. Third, it may allow the owner of the residual fee interest to pursue economic, cultural and other activities on the lands that are compatible with restoration objectives.

The density and type of commercial or other development has the potential to reduce the value for restoration purposes of the rights acquired in a less than fee simple transaction. In less than fee simple acquisitions the extent of development, if any, to be permitted should be specified. For example, the number of lodge sites or home sites, their size and location should be identified. The rights reserved to the seller, including the extent of development permitted, if any, must be delineated so as to preserve the value of the land for restoration purposes. The development rights reserved will differ from parcel to parcel depending on the particular needs for restoration and the needs of the seller. In addition to the issue of density and type of development which must be addressed, related concerns such as water usage and sewage disposal, shoreline and stream buffers for habitat values and recreation uses should be addressed to ensure that the rights being acquired will, in fact, provide the level of protection needed to facilitate realization of the restoration objectives now and in the future.

Acquisition of commercial timber rights

In addition to the considerations described above, acquisitions involving commercial timber rights should address the extent of timber removal permitted incidental to the fee owner's exercise of retained rights.[1] The amount of incidental timber removal to be

[1] Normally commercial timber rights are purchased in order to harvest the timber and related development is not an issue. In these acquisitions, where the timber is being purchased in order to protect the habitat, development which could affect that habitat is

allowed must not reduce the value of acquiring the timber rights for restoration purposes. Factors to be considered are the extent of buffers for sensitive areas such as streams and shorelines, limitations on the amount of canopy removal and limitations on the clearing or substantial clearing of areas. Any revenue in excess of removal costs received from the sale of commercial timber removed incident to the exercise of retained rights should be paid to the managing agency.

Because of differing restoration needs for various parcels, the necessary limitations on incidental timber removal may differ for different parcels. The specific development to be permitted on parcels where commercial timber rights have been acquired should be described in sufficient detail to preclude future ambiguity. Descriptions should identify sites for development, including the size, locations and nature of development allowed.

In specific circumstances where it is not possible to identify all the development to be permitted, acquired habitat may be protected by setting limits on the removal of trees incidental to development. Such limitations could be used to assure that restoration objectives are achieved. They are a less preferred method of describing rights to be retained by the seller and must be carefully reviewed on a case-by-case basis. An example of a set of restrictions that could be considered would be as follows:

1) incidental timber removal could be limited to no more than some specified percent of the basal area of a parcel[2];

2) incidental timber removal could be further constrained by specifying the percentage of timber removal within portions of a parcel;

3) the size and juxtaposition of discrete blocks of timber harvested incidental to the fee owner's exercise of retained rights could also be limited;

4) incidental timber removal, if any, could be constrained so that there would not be a disproportionate number of larger trees removed;

5) timber removal could be prohibited within some specific distance of anadromous streams, streams that support nesting of injured species, mean high water of salt water bodies, or fish bearing fresh water body shorelines except as may be specifically

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an important consideration for the Trustee Council.

[2] Basal area is a per acre measure of the cross sectional area at chest height occupied by the standing timber.

agreed upon after consideration of the restoration impact of the proposed removal.

The above is but one example of how incidental removal of timber might be addressed. Other methods might include acreage control rather than basal area, zoning for critical habitat within the overall parcel or some combination of these or other methods. The specific method of addressing incidental timber removal should be tailored to the specific parcel and designed to ensure that restoration objectives are met while, to the extent possible, meeting the needs of the seller for flexibility in the exercise of retained rights.

Public use

In view of the restoration benefits to lost or diminished services of providing public access to natural resources, and because of the expenditure of public funds, public access to lands where a less than fee interest is acquired may be an important acquisition consideration. In fee simple acquisitions public use is, to a large extent, determined by the nature of the state or federal land management status.

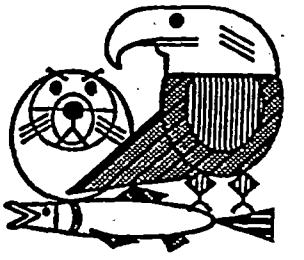
In less than fee simple acquisitions covenants governing public access shall be sought when two conditions are met. The first is that the interest to be acquired, for purposes of restoring natural resources injured by the oil spill, is less than fee simple but the price to be paid for the interest is a substantial portion of the value of fee simple. The second condition is that the acquisition of public use rights will also serve to benefit services lost or diminished as a result of the oil spill. Where the seller proposes to limit public use, the Trustee Council will consider approval of the transaction when it finds that the restoration benefits outweigh the cost of limiting access to the public.

The determination of the specific public access rights to be obtained and the rights to be retained by the land owner will require a careful balancing of public and private needs and values including the need to restore lost services but at the same time protect the legitimate cultural and economic interests of the land owners. Such decisions can only be made on a case-by-case basis.

PAG comments on EIS

Exxon Valdez Oil Spill Trustee Council

Public Advisory Group
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone 907-278-8012 Fax 907-276-7178



July 27, 1994

Rod Kuhn
Restoration Plan EIS Project Director
EVOS Restoration Office
645 G Street
Anchorage, Alaska 99501

Dear Mr. Kuhn:

At a recent meeting of the EVOS Trustee Council Public Advisory Group, the Draft Environmental Impact Statement on the Draft Restoration Plan was discussed.

On behalf of the Public Advisory Group I would like to submit the following comments on the Draft EIS.

1. Implementation Management Structure -- We have been briefed by Executive Director Jim Ayers on the results of the planning workshops he has been holding since January, 1994. Participants have included PAG members, other representatives of the public and spill area communities, EVOS researchers, and agency representatives. This group has reviewed the Draft Restoration Plan and further refined and updated the recovery status and objectives of the injured resources and services, the draft policies, and other elements of the Draft Restoration Plan.

   We believe this "management by objective" implementation approach is an appropriate clarification of the Draft Restoration and would like to see it incorporated into the Final Restoration Plan.

2. In July, 1993, the Public Advisory Group unanimously adopted a set of restoration priorities (attached). We would like to see these elements reflected within the Final Restoration Plan.

3. Establishment of a reserve account is included as a restoration activity in alternative #5 in the DEIS, the "proposed action". The Public Advisory Group would like to see the restoration reserve account action clarified in alternative #5 and in the other alternatives. We would like to see specific criteria attached to the reserve for its expenditure.

Thank you for your consideration of these comments.

Sincerely,

Brad Phillips, Chair
Public Advisory Group

Exxon Valdez Oil Spill Public Advisory Group

--Approach to Restoration (7/15/93)--

The *Exxon Valdez* Oil Spill Trustees should give priority to the projects which are most effective in restoring and protecting injured resources and services. Preference should be given by the Trustees to projects (1) within the spill area as defined in the Restoration plan brochure of April 1993, or (2) outside the spill area within the state of Alaska.

A. Pick-up oil which is fouling the environment and where it makes environmental and economic sense to clean up and with the approval of local residents, landowners and resource users. This includes:

- Monitoring and feasibility studies
- Physical clean-up

B. Restore injured resources and services by taking direct action in pertinent environments. This includes:

- Subsistence
- Cultural
- Recreational
- Commercial
- Fish
- Wildlife
- Habitat

C. Protect habitat critical to resources injured by the oil spill or threatened by potentially injurious actions. This includes:

- Acquisition
- Conservation easements
- Leases
- Trade
- Application of management techniques with landowners

D. The Public Advisory Group is in support of the concept of the establishment of an endowment or trust that will provide funding for the purposes established by the settlement agreement. The use or administration of the endowment or trust should be established by a charter developed and approved by the Trustee Council.

E. Replace and/or enhance injured resources/services through indirect means. This includes:

- Enhancement of equivalent resources to reduce pressure on injured ones
- Increase populations or levels of service over pre-spill conditions

F. Provide funding for facilities which support A through E, above.

Preliminary FY95 Work Plan

Exxon Valdez Oil Spill Trustee Council
Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178

MEMORANDUM

TO: Public Advisory Group

FROM: James R. Ayers, Executive Director

DATE: July 26, 1994

SUBJ: Update on Development of the Draft FY 95 Work Plan

The purpose of this memorandum is to provide you with an update on the effort to prepare a public review draft of the Draft FY 95 Work Plan to be released for public review during the month of September.

As reflected in the "List of FY 95 Projects" (Attachment A) and Tables 1 - 5, some 178 project proposals were received in response to the *Invitation to Submit Restoration Projects for Fiscal Year 1995*. On July 12 - 13, a work session was held including Trustee Council agency liaisons, the Chief Scientist together with core peer reviewers, the Interdisciplinary Work Group Coordinating Committee and representatives of the Public Advisory Group appointed by Chair Brad Phillips (Donna Fischer, Gail Evanoff and John French). (Attachment B)

The fundamental purpose of this work session was to initially review, organize and categorize FY 95 project proposals as part of the effort to develop a Draft FY 95 Work Plan document that would allow for meaningful public comment. After public comment — including another opportunity for PAG review of the Draft FY 95 Work Plan on October 11 — the Executive Director will formulate a recommendation to the Trustee Council regarding FY 95 projects for presentation at a meeting scheduled for late October.

Outline of Draft FY 95 Work Plan

An outline for the structure of the Draft FY 95 Work Plan was presented to the Trustee Council at their July 11, 1994 meeting.

This outline calls for publication of three (3) companion volumes:

1. Summary: Draft FY 95 Work Plan

   This Summary document would consist of tables that identify proposed FY 95 projects by type (i.e., Research, Monitoring, General Restoration, etc.) as well as category for review purposes (i.e., 1, 2, 3, 4, 5 or 6). Additionally, a narrative would discuss proposed projects in the context of the restoration goals, objectives and strategies drawing on the guidance provided in the *Invitation to Submit Restoration Projects for FY 95* and the *Draft Restoration Plan.* The Summary document would receive wide circulation to the Trustee Council mailing list.

2. Draft FY 95 Work Plan — Supplement Volume I

   This document would consist of Brief Project Descriptions (BPDs) for Category 1 and Category 2 projects together with information on how to obtain BPDs for all other projects. This document would receive limited mail circulation, but be widely noticed as available upon request.

3. Draft FY 95 Work Plan — Supplement Volume II

   This document would consist of detailed budget forms for Category 1 and Category 2 projects. This document would be provided to agencies for internal review and available at libraries for public review.

Categories used to organize the Draft FY 95 Work Plan are as follows:

Category 1	=	apparent high restoration benefit, strong technical merit and generally responsive to the *Invitation*
Category 2	=	permissible under settlement but of a lower priority for funding in FY 95
Category 3	=	incomplete, lacking a clear relationship to restoration or otherwise of a low priority for restoration
Category 4	=	significant legal or policy issue or concern associated with the proposal
Category 5	=	closeout projects from FY 94
Category 6	=	carry-forward projects (i.e., FY 94 projects that are to be continued but do not require additional FY 95 funds)

The identification of project categories in no way reflects an action or decision on the part of the Trustee Council regarding any specific project or proposal to

be funded in FY 95. Moreover, it should be noted that the initial review only addressed issues of technical merit, the extent to which proposals were responsive to restoration goals and objectives and the identification of potential legal or policy concerns. Detailed budget information for most projects is only now becoming available and will be the focus of on-going review over the next two months.

[Note: Authorization of FY 95 expenditures for 1) on-going Trustee Council operational costs; 2) projects from FY 94 that need funding for closeout/report writing; and 3) a very few projects from FY 94 that absolutely require interim, first-quarter FY 95 funding will be addressed by the Trustee Council at a meeting scheduled for late August.]

Results of Initial Review

A summary of the initial review and category identification for FY 95 projects is provided in the "Summary of FY 95 Projects" below. Additional detail on individual projects is provided in Tables 1 - 5, attached to this memorandum.

In summary, a total of 178 project proposals have been initially reviewed representing a total FY 95 request of $69.8 million. Research proposals were the most numerous (73 proposals for a total of $18.1 million), followed by General Restoration (65 proposals for $26.6 million), Monitoring (27 proposals for a total of $6.7 million), Habitat Protection and Acquisition (8 proposals for $2.3 million) and Administration/Public Information (4 proposals for $4.1 million). Additionally, it has been proposed that the Trustee Council make an additional deposit into the Restoration Reserve in the amount of $12 million. These proposals will be the subject of on-going public review and comment.

To help put these FY 95 proposals into perspective, in FY 94 the Trustee Council budgeted a total of approximately $35.9 million. This included authorizations for Research and Monitoring ($12.1 million), General Restoration ($5.4 million), Habitat Protection and Acquisition ($2.2 million), Administration/Public Information ($4.2 million) and the Restoration Reserve ($12 million).

On-going Review of Restoration Project Proposals

Once again, it is important to emphasize that **all** project proposals will be subject to on-going review. As a result of the initial technical and policy review, it is apparent that the *Invitation to Submit Restoration Projects for Fiscal Year 1995* provided valuable guidance to those who submitted project proposals. The guidance provided by the *Invitation* also resulted in a number of proposals that address similar issues. Under the direction of the Chief Scientist, a number of working groups are examining opportunities for

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SUMMARY OF FY 95 PROJECTS

Proj. Type/ Proj. Category	Cost FY 95	No.	Cost FY 95	No.
Administration and Public Information	**$4,092.0**	**4**		
Category 1			$4,040.1	2
Category 3			$31.9	1
Category 5			$20.0	1
General Restoration	**$26,599.0**	**65**		
Category 1			$2,078.8	10
Category 2			$2,505.6	8
Category 3			$1,922.2	12
Category 4			$19,582.9	26
Category 5			$509.5	6
Category 6			$0.0	3
Habitat Protection	**$2,328.5**	**8**		
Category 1			$1,420.5	2
Category 2			$458.4	2
Category 3			$305.7	3
Category 5			$143.9	1
Monitoring	**$6,700.4**	**27**		
Category 1			$4,621.2	15
Category 2			$1,308.0	5
Category 3			$342.6	2
Category 4			$84.0	1
Category 5			$344.6	4
Research	**$18,105.5**	**73**		
Category 1			$11,478.5	37
Category 2			$1,818.3	10
Category 3			$4,356.9	21
Category 4			$389.5	4
Category 5			$62.3	1
Restoration Reserve	**$12,000.0**	**1**		
Category 1			$12,000.0	1
TOTAL	**$69,825.4**	**178**		

integration and/or coordination of individual project proposals to better address restoration objectives and to potentially reduce costs. (For example, there were roughly a dozen proposals that addressed forage fish as a restoration concern. These projects are being examined collectively to assess opportunities for consolidation.) The results of these working groups will be made available to the PAG in October to assist in its final review.

* * * * *

I look forward to your review and discussion of the Draft FY 95 Work Plan development effort on August 2 - 3.

attachments:

— Attachment A - List of FY 95 Projects (sorted by Project Number)
— Attachment B - Participants in July 12 - 13 BPD Review Work Session
— Table 1 - Research Projects
— Table 2 - General Restoration Projects
— Table 3 - Monitoring Projects
— Table 4 - Habitat Protection Projects
— Table 5 - Administration/Public Information Projects

List of FY 95 Projects

(sorted by Project Number)

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Cat.	Proj.No.	Title	Proposer	Lead Agency	Proj. Type	Cost FY 95
1	95001	Condition and Health of Harbor Seals	Castellini, UAF	ADFG	Research	$153.8
4	95002	Leave No Trace Education Program	Ford, National Outdoor Leadership School	USFS	General Restoration	$177.7
4	95003	Area E Commercial Salmon Permit Buyback Program	Mykland	ADFG	General Restoration	$11,735.0
2	95005	Harlequin Duck Abundance and Productivity in Western Cook Inlet	DOI	DOI	Monitoring	$40.2
3	95006	Paint River Pink Salmon Development	Mears, Cook Inlet Aquaculture Assn.	ADFG	General Restoration	$173.9
5	95007-CLO*	Closeout: Site-specific Archaeological Restoration	ADNR	ADNR	General Restoration	$191.7
1	95007A	Archaeological Site Restoration - Index Site Monitoring	ADNR	ADNR	Monitoring	$190.9
1	95007B	Archaeological Site Restoration (Site SEW-488)	USFS	USFS	General Restoration	$83.8
3	95009A	Trophics and Community Structure in the Intertidal and Shallow Subtidal	Highsmith, UAF	USFS	Research	$455.4
3	95009B	Primary Productivity as a Factor in the Recovery of Injured Resources in Prince William Sound	Stekoll, UAF	USFS	Research	$218.9
2	95009C	Trophic Dynamics and Energy Flow: Impacts of Herring Spawn and Sea Otter Predation on Nearshore Benthic Community Structure	Highsmith, UAF	USFS	Research	$217.3
1	95009D	Survey and Experimental Enhancement of Octopuses in Intertidal Habitats	Scheel, PWS Science Center	USFS	Research	$159.5
3	95009E	Community Structure of Mobile Foragers Using the Nearshore	USFS	USFS	Research	$280.5
3	95010	Intertidal Fauna and Flora Species Composition, Abundance and Variability Relative to Physical Habitat Controls	Schoch, Oregon State Univ.	DOI	Research	$73.5
1	95013	Killer Whale Monitoring in PWS	Matkin, North Gulf Oceanic Society	NOAA	Monitoring	$105.0
1	95014	Predation by Killer Whales in PWS: Feeding Behavior and Distribution of Predators and Prey	Matkin, North Gulf Oceanic Society	NOAA	Research	$156.9
4	95016	A Tribute to Prince William Sound	Kremen	USFS	General Restoration	$161.0
3	95017	Port Graham Coho Salmon Subsistence Fishery Restoration Project	Daisy, Aquafrarm	ADFG	General Restoration	$587.9
2	95018	Partitioning of Primary Production Between Pelagic and Benthic Communities	Naidu, UAF	ADFG	Research	$197.1
1	95019	Distribution of Forage Fish as Indicated by Puffin Diet Sampling	DOI	DOI	Research	$284.4

List of FY 95 Projects

(sorted by Project Number)

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Cat.	Proj.No.	Title	Proposer	Lead Agency	Proj. Type	Cost FY 95
2	95021	Seasonal Movement and Pelagic Habitat Use by Common Murres from the Barren Islands	DOI	DOI	Research	$251.1
3	95022	Foraging Efficiencies at Temporary Food Patches	Scheel, PWS Science Center	DOI	Research	$183.1
2	95023	Food Web Relationships of Pelagic Species Exhibiting Long-term Decline	Duffy, Alaska Natural Heritage Program	DOI	Research	$168.0
2	95024	Enhancement of Wild Pink Salmon Stocks	Reidel, Native Village of Eyak	ADFG	General Restoration	$350.0
1	95025A	Factors Affecting Recovery of Sea Ducks and Their Prey	DOI	DOI	Research	$393.7
1	95025B	Sea Otter Abundance and Distribution, Food Habits and Population Assessment	DOI	DOI	Research	$162.7
1	95025C	Pigeon Guillemots and River Otters as Bioindicators of Nearshore Ecosystem Health	Roby, UAF	DOI	Research	$179.6
3	95025D	Settlement Rates of Nearshore Invertebrates, Oceanic Processes and Population Recovery: Are They Linked?	DOI	DOI	Research	$435.7
2	95025E	Algal Competition Limiting Recovery in the Intertidal	Stekoll, UAF	DOI	Research	$222.5
2	95025F	Availability and Utilization of Musculus spp. as Food for Sea Ducks and Sea Otters	Dean, Coastal Resources Associates, Inc.	DOI	Research	$4.6
3	95025G	Recruitment Patterns of Nearshore Clam Populations in Prince William Sound	Van Blaricom, UAF	DOI	Research	$121.3
1	95025H	Effects of Predatory Invertebrates on Nearshore Clam Populations in Prince William Sound	Van Blaricom, UAF	DOI	Research	$118.4
3	95025J	Primary Productivity as a Factor in the Recovery of Injured Resources in Prince William Sound	Stekoll, UAF	DOI	Research	$397.0
1	95026	Hydrocarbon Monitoring: Integration of Microbial and Chemical Sediment Data	Braddock, UAF	ADEC	Monitoring	$84.4
2	95027	Kodiak and Alaska Peninsula Comprehensive Shoreline Assessment: Monitoring Surface and Subsurface Oil	ADEC	ADEC	Monitoring	$759.5
2	95029	Population Survey of Bald Eagles in PWS	DOI	DOI	Monitoring	$48.3
1	95030	Productivity Survey of Bald Eagles in PWS	DOI	DOI	Monitoring	$81.9
1	95031	Reproductive Success as a Factor Affecting Recovery of Murrelets in PWS	DOI	DOI	Research	$398.0
1	95033	Kittiwakes as Indicators of Forage Fish Availability	DOI	DOI	Research	$198.5

List of FY 95 Projects

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(sorted by Project Number)

Cat.	Proj.No.	Title	Proposer	Lead Agency	Proj. Type	Cost FY 95
2	95038	Symposium on Seabird Restoration	Harrison, Pacific Seabird Group	DOI	General Restoration	$77.0
1	95039	Common Murre Productivity Monitoring	DOI	DOI	Monitoring	$163.7
5	95039-CLO*	Closeout: Common Murre Population Monitoring	DOI	DOI	Monitoring	$30.5
5	95041A-CLO*	Closeout: Introduced Predator Removal from Islands	DOI	DOI	General Restoration	$20.4
5	95041B-CLO*	Closeout: Introduced Predator Removal from Islands - Follow-up Surveys	DOI	DOI	General Restoration	$50.9
4	95042	Five-year Plan to Remove Predators from Seabird Colonies	Harrison, Pacific Seabird Group	DOI	General Restoration	$75.0
3	95043A	Cordova Cutthroat Trout Habitat	USFS	USFS	General Restoration	$22.7
6	95043B	Carry-forward: Cutthroat and Dolly Varden Rehabilitation in Western PWS	USFS	USFS	General Restoration	$0.0
1	95044	In Situ Formation and Ecotoxicity of Hydrocarbon Degradation Products Produced by Ultramicrobacteria	Button, UAF	NOAA	Research	$118.5
3	95045	Green Island Intertidal Restoration Monitoring	Juday and Foster, UAF	USFS	Monitoring	$113.4
3	95046	Long-term Record in Tree Rings of Climatic Features	Juday, UAF	NOAA	Research	$153.6
3	95047	Seal Contamination	McKee	ADNR	General Restoration	
1	95048	Historical Analysis of Sockeye Salmon Growth	Ruggerone, Natural Resources Consultants	ADFG	Monitoring	$85.0
3	95049	Independent Review of Restoration and Monitoring Projects	Ruggerone, Natural Resources Consultants	ADFG	Administration and Public Information	$31.9
4	95050	A Test of Sonar Accuracy in Estimating Escapement of Sockeye Salmon	Ruggerone, Natural Resources Consultants	ADFG	Research	$79.3
1	95051	Large-scale Coded Wire Tagging of PWS Herring	June, Natural Resources Consultants	ADFG	General Restoration	$190.6
1	95052	Community Involvement and Use of Traditional Knowledge	ADNR	ADNR	General Restoration	$230.6
4	95053	Cordova's Mini-Imaginarium	Trowbridge, PWS Science Center	ADNR	General Restoration	$62.6
2	95054	Montague Riparian Rehabilitation	USFS	USFS	Habitat Protection	$42.7
3	95055	Prehistoric Ecological Baseline for PWS	USFS	USFS	Research	$149.6
2	95057	Movement of Larval and Juvenile Fishes within PWS	Norcross, UAF	NOAA	Research	$300.0
2	95058	Restoration Assistance to Private Landowners	USFS	ADFG	Habitat Protection	$415.7

List of FY 95 Projects

(sorted by Project Number)

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Cat.	Proj.No.	Title	Proposer	Lead Agency	Proj. Type	Cost FY 95
4	95060	Spruce Bark Beetle Infestation Impacts on Injured Fish and Wildlife Species of the *Exxon Valdez* Oil Spill	ADFG	ADFG	Research	$213.9
2	95062	River Otter Recovery Monitoring	ADFG	ADFG	Monitoring	$69.0
1	95064	Monitoring, Habitat Use, and Trophic Interactions of Harbor Seals in PWS	ADFG	ADFG	Research	$309.4
4	95065	PWSAC Pink Salmon Fry Mortality	Olsen, PWS Aquaculture Corporation	ADFG	Research	$52.5
2	95069	Restoration of Salmon Stocks of Special Importance to Native Cultures	ADFG	ADFG	General Restoration	$672.6
3	95071	Monitoring Nearshore Fish Species for Persistence of Oil Exposure and Ecotoxicological Effects	ADFG	NOAA	Research	$225.0
3	95073	Impact of Killer Whale Predation on Harbor Seals in PWS	NOAA	NOAA	Research	$99.5
1	95074	Herring Reproductive Impairment	NOAA	NOAA	Research	$234.8
2	95075	Population Structure of Blue Mussels in Relation to Levels of Oiling and Densities of Vertebrate Predators	NOAA	NOAA	Research	$197.5
1	95076	Effects of Oiled Incubation Substrate on Survival and Straying of Wild Pink Salmon	NOAA	NOAA	Research	$179.9
3	95077	Recreation Impacts in PWS: Human Impacts as a Factor Constraining Long Term Ecosystem Recovery	Ford, National Outdoor Leadership School	ADNR	Research	$117.0
3	95078	Culture, History, and Ecosystems: An Assessment of Cultural/Historical Strategies to Building Long-term Understanding of Ecosystem Dynamics in the *Exxon Valdez* Oil Spill Area	DOI	DOI	Research	$166.7
4	95079	Pink Salmon Restoration Through Small-scale Hatcheries	Van Hyning, NERKA, Inc., and Aquabionics Inc.	ADFG	General Restoration	$150.0
4	95080	Fleming Spit Recreation Area Enhancements	The Cordova Sporting Club	ADNR	General Restoration	$1,365.0
4	95082	"Mor-Pac Hill" Campground Improvements	The City of Cordova	ADNR	General Restoration	$360.0
4	95084	Odiak Camper Park Expansion	The City of Cordova	ADNR	General Restoration	$266.0
4	95085	Cordova Historical Marine Park	The Cordova Planning and Harbor Commiss.	ADNR	General Restoration	$196.5
1	95086A	Coastal Habitat Intertidal Monitoring and Experimental Design Verification	Stekoll, UAF	ADFG	Monitoring	$829.4
3	95086B	Population Dynamics of Eelgrass and Associated Fauna	Stekoll, UAF	ADFG	Research	$64.8
1	95086C	Herring Bay Monitoring and Restoration Studies	Highsmith, UAF	ADFG	Monitoring	$549.1

List of FY 95 Projects
(sorted by Project Number)

DRAFT

Cat.	Proj.No.	Title	Proposer	Lead Agency	Proj. Type	Cost FY 95
1	95087	Sea Urchin Population Dynamics: Changes in Population Density and Availability as Prey of Sea Otters	Jewett, UAF	ADFG	Research	$65.4
1	95089	Information Management System	Executive Director's Office	ADFG	Administration and Public Information	$540.1
1	95090	Mussel Bed Restoration and Monitoring in PWS and Gulf of Alaska	NOAA	NOAA	Monitoring	$261.8
5	95090-CLO*	Closeout: Mussel Bed Restoration and Monitoring	ADEC	ADEC	Monitoring	$154.4
1	95092	Recovery Monitoring of PWS Killer Whales	NOAA	NOAA	Monitoring	$99.5
4	95093	PWSAC: Restoration of Pink Salmon Resources and Services	Olsen, PWS Aquaculture Corporation	ADFG	General Restoration	$2,219.1
3	95094	Recovery of Intertidal Clams in PWS	Jewett, UAF	ADFG	Monitoring	$229.2
3	95095	Quantification of Stream Habitat for Harlequin Ducks and Anadromous Fish Species from Remotely Sensed Data	Podolsky	ADNR	Habitat Protection	$88.0
3	95096	Restoration of Murres by Way of Social Attraction and Predator Removal	Podolsky	DOI	General Restoration	$167.0
3	95097	Restoration of Murres by Way of Transplantation of Chicks: A Feasibility Study	Podolsky	DOI	General Restoration	$176.0
3	95098	Identification of Seabird Feeding Areas from Remotely Sensed Data	Podolsky	DOI	General Restoration	$74.0
3	95099	Murrelet Vocalization in Conjunction with Artificial Nests: A Possible Means of Attraction to Habitat	Podolsky	DOI	General Restoration	$77.0
1	95100	Administrative Budget	Executive Director's Office	ALL	Administration and Public Information	$3,500.0
5	95102-CLO	Closeout: Murrelet Prey and Foraging Habitat in Prince William Sound	DOI	DOI	Research	$62.3
1	95105	Kenai River Ecosystem Restoration Pilot Enclosure Study	ADFG	ADFG	Research	$361.2
1	95106	Subtidal Monitoring: Eelgrass Communities	Jewett, UAF	ADFG	Monitoring	$399.9
4	95107	Subtidal Site Verification	Jewett, UAF	ADFG	Monitoring	$84.0
5	95110-CLO	Closeout: Habitat Protection and Acquisition	ADNR	ADNR	Habitat Protection	$143.9
3	95111	Sustainable Rockfish Yield	ADFG	ADFG	General Restoration	$204.4
3	95112	Rockfish Restoration Objective	ADFG	ADFG	General Restoration	$69.0
3	95113	Energetics of Intertidal Fish: The Connection between Lower and Upper Trophic Levels	Barber, UAF	ADFG	Research	$392.5

List of FY 95 Projects

(sorted by Project Number)

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Cat.	Proj.No.	Title	Proposer	Lead Agency	Proj. Type	Cost FY 95
3	95114	Eelgrass Community Structure Restoration Assessment Using Stable Isotope Tracers	Kline, PWS Science Center	ADFG	Research	$192.1
1	95115	Sound Waste Management Plan	Prince William Sound Economic DevelopmentCouncil	ADEC	General Restoration	$275.9
2	95116	Restoration of Intertidal Oiled Mussel Beds by Nondestructive Manipulation/Flushing with PES-51	Rog, PES Services AK, Inc.	ADEC	General Restoration	$453.2
1	95117-BAA	Harbor Seals and EVOS: Blubber and Lipids as Indices of Food Limitation	Castellini, UAF	NOAA	Research	$184.3
1	95118-BAA	Diet Composition, Reproductive Energetics and Productivity of Seabirds Damaged by the *Exxon Valdez* Oil Spill	Roby, UAF	NOAA	Research	$413.7
3	95119-BAA	Food Limitation on Recovery of Injured Marine Bird Populations	Sydeman, Point Reyes Bird Observatory	NOAA	Research	$124.9
1	95120-BAA	Proximate Composition and Energetic Content of Selected Forage Fish Species in PWS	Worthy, Texas A&M University	NOAA	Research	$38.4
2	95121	Stable Isotope Ratios and Fatty Acid Signatures of Selected Forage Fish Species in PWS	Worthy, Texas A&M University	NOAA	Research	$42.0
3	95122	Mapping Potential Nesting Habitat of Marbeled Murrlets in PWS Using Geographic Databases	DeVelice	USFS	Habitat Protection	$167.5
4	95123	Tatitlek Community Store	Komkoff, Tatitlek IRA Council	ADFG	General Restoration	$300.0
4	95124A	Tatitlek Mariculture Development Project	Daisy, Tatitlek IRA Council	ADFG	General Restoration	$109.5
4	95124B	Tatitlek Mariculture Development Project - Capital Outlay	Daisy, Tatitlek IRA Council	ADFG	General Restoration	$405.0
4	95125	Tatitlek Sockeye Salmon Release Program	Komkoff, Tatitlek Traditional Council	ADFG	General Restoration	$39.0
1	95126	Habitat Protection and Acquisition Support	ADNR	ADNR	Habitat Protection	$1,403.3
4	95127	Tatitlek Coho Salmon Release Program	Komkoff, Tatitlek Traditional Council	ADFG	General Restoration	$39.0
4	95128	Teaching Subsistence Practices and Values	Callaway, NPS	DOI	General Restoration	$69.0
4	95129	Tatitlek Fish and Game Processing Center and Smokery	Komkoff, Tatitlek IRA Council	ADFG	General Restoration	$515.5
4	95130	Mental Health Center	Vlasoff, Chugachmuit and Copper Mountain Foundation	ADFG	General Restoration	$106.1
1	95131	Clam Restoration (Nanwalek, Port Graham, Tatitlek)	Nanwalek and Port Graham Village Councils	ADFG	General Restoration	$447.5
2	95132	Port Graham and Nanwalek Subsistence Baseline	Port Graham Village Council, Nanwalek Village Council	ADFG	General Restoration	$488.2

List of FY 95 Projects
(sorted by Project Number)

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Cat.	Proj.No.	Title	Proposer	Lead Agency	Proj. Type	Cost FY 95
2	95133	English Bay River Sockeye Salmon Subsistence Project	Kvasnikoff, Nanwakek Traditional Council	ADFG	General Restoration	$129.8
4	95134	Chenega Bay Mariculture Development Project	Evanoff, Chenega Bay IRA Council	ADFG	General Restoration	$184.3
4	95135	Subsistence Harvest Support	Chenega Bay Village IRA Council	ADFG	General Restoration	$50.0
4	95136	Skin Sewing Crafts Restoration	Callaway, NPS	DOI	General Restoration	$29.9
1	95137	Prince William Sound Salmon Stock Identification and Monitoring Studies	ADFG	ADFG	General Restoration	$273.4
1	95138	Elders/Youth Conference	Fall, Subsistence Division	ADFG	General Restoration	$77.7
2	95139B	Spawning Channel - Port Dick Creek	ADFG	ADFG	General Restoration	$127.5
3	95139C	Salmon Instream Habitat and Stock Restoration--Pink Creek and Horse Marine Barrier Bypass Development	ADFG	ADFG	General Restoration	$45.7
4	95140	Subsistence Skills Program	Olsen, Valdez Native Association	ADFG	General Restoration	$36.7
4	95141	Afognak Island State Park Interim Support	ADNR	ADNR	General Restoration	$21.5
2	95159	Surveys to Determine Additional Oil Spill Effects and Recovery of Marine Bird and Sea Otter Populations in PWS	DOI	DOI	Monitoring	$391.0
1	95163	Abundance and Distribution of Forage Fish and their Influence on Recovery of Injured Species	NOAA	NOAA	Research	$1,203.7
6	95165	Carry-forward: PWS Herring Stock Genetic Stock Identification	ADFG	ADFG	General Restoration	$0.0
1	95166	Herring Natal Habitats	ADFG	ADFG	Monitoring	$493.3
1	95173	Factors Affecting Recovery of PWS Pigeon Guillemot Populations	DOI	DOI	Research	$353.7
5	95173-CLO*	Closeout: Pigeon Guillemot Recovery Monitoring	DOI	DOI	Monitoring	$55.0
1	95191A	Investigating and Monitoring Oil Related Egg and Alevin Mortalities	ADFG	ADFG	Research	$681.5
1	95191B	Injury to Salmon Eggs and Pre-emergent Fry Incubated in Oiled Gravel (Laboratory Study)	NOAA	NOAA	Research	$165.6
5	95199-CLO	Institute of Marine Science - Seward Improvements EIS	ADF&G	ADFG	General Restoration	$71.7
3	95200	Public Access	USFS	USFS	Habitat Protection	$50.2
1	95244	Seal and Sea Otter Cooperative Subsistence Harvest Assistance	ADFG	ADFG	General Restoration	$54.5
1	95255	Kenai River Sockeye Restoration	ADFG	ADFG	General Restoration	$406.1
1	95258	Sockeye Salmon Overescapement	ADFG	ADFG	Monitoring	$983.3

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List of FY 95 Projects

(sorted by Project Number)

Cat.	Proj.No.	Title	Proposer	Lead Agency	Proj. Type	Cost FY 95
3	95259	Restoration of Coghill Lake Sockeye	ADFG	ADFG	General Restoration	$324.6
5	95266-CLO	Closeout: Shoreline Assessment and Oil Removal	ADEC	ADEC	General Restoration	$93.8
1	95272	Chenega Chinook Release Program	Olsen, PWS Aquaculture Corporation	ADFG	General Restoration	$38.7
2	95279	Subsistence Food Safety Testing	ADFG	ADFG	General Restoration	$207.3
5	95285-CLO	Closeout: Subtidal Sediment Recovery Monitoring	NOAA	NOAA	Monitoring	$104.7
1	95290	Hydrocarbon Data Analysis, Interpretation, and Database Maintenance for Restoration and NRDA Environmental Samples Associated with the *Exxon Valdez* Oil Spill	NOAA	NOAA	Monitoring	$72.2
1	95320A	Salmon Growth and Mortality	ADFG	ADFG	Research	$267.8
4	95320B	PWS Pink Salmon Stock Identification and Monitoring (CWT)	ADFG	ADFG	General Restoration	$260.5
4	95320C	Otolith Thermal Mass Marking of Hatchery Reared Pink Salmon in PWS	ADFG	ADFG	General Restoration	$649.0
2	95320D	PWS Pink Salmon Genetics	ADFG	ADFG	Research	$218.2
1	95320E	Juvenile Salmon and Herring Integration	ADFG	ADFG	Research	$1,032.1
1	95320G	Phytoplankton and Nutrients	McRoy, UAF	ADFG	Research	$227.3
1	95320H	Role of Zooplankton in the PWS Ecosystem	Cooney, UAF	ADFG	Research	$235.1
1	95320I(1)	Isotope Tracers - Food Webs of Marine Mammals and Birds	Schell, Institute of Marine Science	ADFG	Research	$100.1
1	95320I(2)	Isotope Tracers - Food Webs of Fish	Kline, UAF	ADFG	Research	$73.4
3	95320I(3)	Purchase of Isotope Radio Mass Spectrometer	Schell, Institute of Marine Science	ADFG	Research	$257.4
1	95320J	Information Systems and Model Development	Patrick, PWS Science Center	ADFG	Research	$789.6
4	95320K	PWSAC: Experimental Fry Release	Olsen, PWS Aquaculture Corporation	ADFG	Research	$43.8
1	95320M	Observational Physical Oceanography in PWS and the Gulf of Alaska	Salmon, PWS Science Center	ADFG	Research	$545.2
1	95320N	Nearshore Fish	Thomas, PWS Science Center	ADFG	Research	$600.6
3	95320P	Planning and Communication	Scheel, PWS Science Center	ADFG	Research	$66.8
1	95320Q	Avian Predation on Herring Spawn	USFS	ADFG	Research	$124.8
1	95320S	Disease Impacts on PWS Herring Populations (competetive project solicitation under ADF&G two-step, RFQ-RFP process)	ADFG	ADFG	Research	$375.0

List of FY 95 Projects

(sorted by Project Number)

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Cat.	Proj.No.	Title	Proposer	Lead Agency	Proj. Type	Cost FY 95
1	95320T	Juvenile Herring Growth and Habitat Partitioning	ADFG	ADFG	Research	$378.6
1	95320U	Somatic and Spawning Energetics of Herring and Pollock	Paul, UAF	ADFG	Research	$94.4
3	95320V	Herring Predation by Humpback Whales in PWS	Matkin, North Gulf Oceanic Society	ADFG	Research	$181.6
1	95320Y	Variation in Local Predation Rates on Hatchery-Released Fry	Scheel, PWS Science Center	ADFG	Research	$118.9
6	95417	Carry-forward: Waste Oil Disposal Facilities	ADEC	ADEC	General Restoration	$0.0
5	95422-CLO	Closeout: Restoration Plan EIS/Record of Decision	USFS	USFS	Administration and Public Information	$20.0
1	95424	Restoration Reserve	ALL	ALL	Restoration Reserve	$12,000.0
1	95427	Harlequin Duck Recovery Monitoring	ADFG	ADFG	Monitoring	$221.8
5	95428-CLO	Closeout: Subsistence Planning	NOAA	ADFG	General Restoration	$81.0
1	95505B	Data Analysis for Stream Habitat	USFS	USFS	Habitat Protection	$17.2

Total FY 95 Request:	**$69,825.4**
Number of Projects:	**178**

* NOTE: These projects are for report writing and data analysis of FY 94 fieldwork with related projects proposed for continuation in FY 95.

Attachment B

FY 95 Brief Project Description Review
Anchorage Restoration Office — 4th Floor Conference Room
July 12-13 • 8:00 am

Restoration Work Force

Byron Morris
Dave Gibbons
Sandy Rabinowitch
Mark Brodersen
Jerome Montague
Veronica Gilbert

Chief Scientist and Technical Reviewers

Robert Spies
Andy Gunther
Charles Petersen
Chris Haney
Phil Mundy
Stanley Senner

Public Advisory Group

Donna Fischer
Gail Evanof
John French

Coordinating Committee

Dave Irons
Jim Bodkin
Kathy Frost
Alex Wertheimer
Judy Bittner

Trustee Council Staff

Jim Ayers, Executive Director
Molly McCammon, Director of Operations
Eric Myers, Project Coordinator

Table 1 — RESEARCH PROJECTS

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	Project No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
Category 1							**$11,478.5**	
1	95001	Condition and Health of Harbor Seals	Castellini, UAF	ADFG	PWS	NEW	$153.8	Project addresses important injured resource of high priority to subsistence communities. Possible economies if Projects 95064 (monitoring, habitat use, and trophic interactions of seals) and 95117-BAA (seal blubber and lipids as indications of food limitation) are all pursued. Need to examine opportunities for collaboration with community outreach efforts. Proposer has strong qualifications.
1	95009D	Survey and Experimental Enhancement of Octopuses in Intertidal Habitats	Scheel, PWS Science Center	USFS	PWS	NEW	$159.5	Addresses resources (octopus and chiton) important to subsistence communities. Proposal can stand independent of nearshore ecosystem/community structure package. Geographical scope and scale of effort deserve further consideration. Need to coordinate with subsistence community outreach projects.
1	95014	Predation by Killer Whales in PWS: Feeding Behavior and Distribution of Predators and Prey	Matkin, North Gulf Oceanic Society	NOAA	PWS	NEW	$156.9	Good conceptual development and justification articulated in proposal. Results could enhance interpretation of PWS ecosystem work on trophic interactions. Less important than monitoring of killer whales (killer whales thought to be recovering) but still could provide valuable data on resource. Clarification of cost in relation to related Project 95013 (monitor killer whales) needed.

Table 1 — RESEARCH PROJECTS

DRAFT

	Project No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
1	95019	Distribution of Forage Fish as Indicated by Puffin Diet Sampling	DOI	DOI	PWS KEN	NEW	$284.4	Potentially an extremely valuable project although puffins have limited distribution in PWS. This project needs to be further evaluated under the direction of the Chief Scientist in the context of the many other proposals being advanced to study trophic interactions of forage fish.
1	95025A	Factors Affecting Recovery of Sea Ducks and Their Prey	DOI	DOI	PWS	NEW	$393.7	Proposal to address winter ecology of seabirds is important aspect not previously addressed. Possibly should focus effort on harlequins although inclusion of scoters would address valuable issues. Need to coordinate or combine with Project 95427 (harlequin duck recovery monitoring). Questions concerning feasibility of proposed capture techniques.
1	95025B	Sea Otter Abundance and Distribution, Food Habits and Population Assessment	DOI	DOI	PWS	NEW	$162.7	Clear objectives consistent with the *Invitation* although project description needs some further detail. Well qualified proposers. Should possibly be integrated with Projects 95025H (effects of predatory invertebrates on clams), 95009C (trophic dynamics: herring spawn and sea otters), 95087 (sea urchins as sea otter prey) and coordinated with Projects 95244 (seal/sea otter harvest assistance), 95075 (blue mussels), 95090 (mussel bed restoration) and 95159 (marine bird/sea otter survey).

Table 1 — RESEARCH PROJECTS

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	Project No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
1	95025C	Pigeon Guillemots and River Otters as Bioindicators of Nearshore Ecosystem Health	Roby, UAF	DOI	PWS	NEW	$179.6	Clearly stated objectives pertaining to injured resources consistent with the *Invitation*. Reviewers impressed with linkage of two foragers using the same habitat/prey. Effort to define bioindicator is valuable but may not be successful; proposal is responsible in its cautious approach. Should be coordinated with Project 95173 (recovery of pigeon guillemots) to realize possible cost efficiencies.
1	95025H	Effects of Predatory Invertebrates on Nearshore Clam Populations in Prince William Sound	Van Blaricom, UAF	DOI	PWS	NEW	$118.4	Affords opportunity to investigate two injured resources (clams and sea otters) and their interrelationship as predator and prey. Important that investigators on projects addressing higher trophic level predators (sea otters) help define issues of importance to be addressed by project. Should possibly be integrated with 95025B (sea otter abundance, food habits).
1	95031	Reproductive Success as a Factor Affecting Recovery of Murrelets in PWS	DOI	DOI	PWS	NEW	$398.0	Highly responsive to *Invitation*. Clearly articulated relationship to restoration objective for marbeled murrelets. Well qualified proposer.

Table 1 — RESEARCH PROJECTS

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	Project No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
1	95033	Kittiwakes as Indicators of Forage Fish Availability	DOI	DOI	PWS KEN	NEW	$198.5	This project needs to be further evaluated under the direction of the Chief Scientist in the context of the many other proposals being advanced to study trophic interactions of forage fish. Should review this project proposal in relation to Project 95320Y (variation in local predation on hatchery fry).
1	95044	In Situ Formation and Ecotoxicity of Hydrocarbon Degradation Products Produced by Ultramicrobacteria	Button, UAF	NOAA	PWS	NEW	$118.5	Novel issue to be addressed. Need for further review of budget. Potential for collaboration with other projects needs further examination.
1	95064	Monitoring, Habitat Use, and Trophic Interactions of Harbor Seals in PWS	ADFG	ADFG	PWS	Cont'd	$309.4	Project targets an injured resource important to subsistence communities. Good potential to collaborate with other harbor seal projects (Projects 95001 and 95117-BAA). Strong technical merit and excellent qualifications of proposer. Need to coordinate with subsistence community outreach efforts.
1	95074	Herring Reproductive Impairment	NOAA	NOAA	PWS	Cont'd	$234.8	Important attempt to determine if there are persistent, heritable reproductive impacts to herring in view of recent run failures. Responsive to *Invitation.* Strong technical merit. Needs further assessment in the context of other projects proposed to address herring

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Table 1 — RESEARCH PROJECTS

	Project No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
1	95076	Effects of Oiled Incubation Substrate on Survival and Straying of Wild Pink Salmon	NOAA	NOAA	ALL	NEW	$179.9	Proposal responsive to restoration needs, addresses important ecotoxicological issue. Proposer should provide more background on similar work.
1	95087	Sea Urchin Population Dynamics: Changes in Population Density and Availability as Prey of Sea Otters	Jewett, UAF	ADFG	PWS	NEW	$65.4	Project should possibly be integrated with Projects 95025B (sea otter abundance, food habits), 95009C (trophic dynamics: herring spawn and sea otters), 95025H (predatory invertebrates on clams) under direction of Chief Scientist in consultation with investigators working on sea otters. Needs clarification relative to other predator projects. Potentially important if redesigned.
1	95105	Kenai River Ecosystem Restoration Pilot Enclosure Study	ADFG	ADFG	KEN	NEW	$361.2	Further clarification needed on interrelationship of this project to other major Kenai River sockeye projects 95255 (Kenai sockeye restoration) and 95258 (sockeye salmon overescapement). A comprehensive review of the Kenai River sockeye restoration effort is needed.
1	95117-BAA	Harbor Seals and EVOS: Blubber and Lipids as Indices of Food Limitation	Castellini, UAF	NOAA	ALL	NEW	$184.3	Potential opportunities for collaborative effort and cost efficiencies between this project and Projects 95001 (condition and health of harbor seals) and 95064 (monitoring, habitat use and trophic interactions of seals) must be addressed.

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Table 1 — RESEARCH PROJECTS

	Project No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
1	95118-BAA	Diet Composition, Reproductive Energetics and Productivity of Seabirds Damaged by the *Exxon Valdez* Oil Spill	Roby, UAF	NOAA	PWS	NEW	$413.7	This project needs to be further evaluated under the direction of the Chief Scientist in the context of the many other proposals being advanced to study trophic interactions of forage fish. Peer reviewers thought very highly of this project; strong technical merit.
1	95120-BAA	Proximate Composition and Energetic Content of Selected Forage Fish Species in PWS	Worthy, Texas A&M University	NOAA	PWS	NEW	$38.4	This project needs to be further evaluated under the direction of the Chief Scientist in the context of the many other proposals being advanced to study trophic interactions of forage fish. Also, objectives of this project need to be integrated into other projects involving stable isotopes. Project needs to demonstrate a close relationship with other projects including 95163 (forage fish) and 95320U (somatic and spawning energetics of herring and pollock). Strong qualifications of proposer.
1	95163	Abundance and Distribution of Forage Fish and their Influence on Recovery of Injured Species	NOAA	NOAA	PWS KEN	Cont'd	$1,203.7	This project needs to be further evaluated under the direction of the Chief Scientist in the context of the many other proposals being advanced to study trophic interactions of forage fish. Project scope may need to be reduced in light of slow start up of 1994 pilot study. Coordination of hydroacoustics work in 95320N is essential.

Table 1 — RESEARCH PROJECTS

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	Project No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
1	95173	Factors Affecting Recovery of PWS Pigeon Guillemot Populations	DOI	DOI	PWS	Cont'd	$353.7	This project needs to be further evaluated under the direction of the Chief Scientist in the context of the many other proposals being advanced to study trophic interactions of forage fish.
1	95191A	Investigating and Monitoring Oil Related Egg and Alevin Mortalities	ADFG	ADFG	ALL	Cont'd	$681.5	A critical, on-going study effort (together with 95191B) to evaluate the possibility of long-term, heritable damage to salmon. Already extensively peer reviewed in prior years.
1	95191B	Injury to Salmon Eggs and Pre-emergent Fry Incubated in Oiled Gravel (Laboratory Study)	NOAA	NOAA	ALL	Cont'd	$165.6	A critical, on-going study effort (together with 95191A) to evaluate the possibility of long-term, heritable damage to salmon. Already extensively peer reviewed in prior years.
1	95320A	Salmon Growth and Mortality	ADFG	ADFG	PWS	Cont'd	$267.8	This sub-project, as part of the PWS System Investigation, was extensively peer reviewed in FY 94. FY 95 proposal continues first year effort. A peer review of first year progress will take place in the fall of 1994 with information presented to Trustee Council in late October. Note: This sub-project depends on Project 95320B (CWT), a project with policy/legal concerns.

Table 1 — RESEARCH PROJECTS

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	Project No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
1	95320E	Juvenile Salmon and Herring Integration	ADFG	ADFG	PWS	Cont'd	$1,032.1	This sub-project, as part of the PWS System Investigation, was extensively peer reviewed in FY 94. FY 95 proposal continues first year effort. A peer review of first year progress will take place in the fall of 1994 with information presented to Trustee Council in late October. Expansion of predator study to include herring should go forward in cost-effective manner.
1	95320G	Phytoplankton and Nutrients	McRoy, UAF	ADFG	PWS	Cont'd	$227.3	This sub-project, as part of the PWS System Investigation, was extensively peer reviewed in FY 94. FY 95 proposal continues first year effort. A peer review of first year progress will take place in the fall of 1994 with information presented to Trustee Council in late October.
1	95320H	Role of Zooplankton in the PWS Ecosystem	Cooney, UAF	ADFG	PWS	Cont'd	$235.1	This sub-project, as part of the PWS System Investigation, was extensively peer reviewed in FY 94. FY 95 proposal continues first year effort. A peer review of first year progress will take place in the fall of 1994 with information presented to Trustee Council in late October.

Table 1 — RESEARCH PROJECTS

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	Project No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
1	95320I(1)	Isotope Tracers - Food Webs of Marine Mammals and Birds	Schell, Institute of Marine Science	ADFG	PWS	Cont'd	$100.1	Strong technical merit and demonstrated understanding of technical issues involved. Objectives of this project need to be integrated with other projects involving stable isotopes under the direction of the Chief Scientist.
1	95320I(2)	Isotope Tracers - Food Webs of Fish	Kline, UAF	ADFG	PWS	Cont'd	$73.4	Objectives of this project need to be integrated with other projects involving stable isotopes under the direction of the Chief Scientist.
1	95320J	Information Systems and Model Development	Patrick, PWS Science Center	ADFG	PWS	Cont'd	$789.6	This sub-project, as part of the PWS System Investigation, was extensively peer reviewed in FY 94. FY 95 proposal continues first year effort. A peer review of first year progress will take place in the fall of 1994 with information presented to Trustee Council in late October. Important to ensure successful accomplishment of sub-project objectives prior to expansion.

Table 1 — RESEARCH PROJECTS

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	Project No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
1	95320M	Observational Physical Oceanography in PWS and the Gulf of Alaska	Salmon, PWS Science Center	ADFG	PWS	Cont'd	$545.2	This sub-project, as part of the PWS System Investigation, was extensively peer reviewed in FY 94. FY 95 proposal continues first year effort. A peer review of first year progress will take place in the fall of 1994 with information presented to Trustee Council in late October. Need to ensure that this sub-project is more closely coordinated with other bird, forage fish projects.
1	95320N	Nearshore Fish	Thomas, PWS Science Center	ADFG	PWS	Cont'd	$600.6	This sub-project, as part of the PWS System Investigation, was extensively peer reviewed in FY 94. FY 95 proposal continues first year effort. A peer review of first year progress will take place in the fall of 1994 with information presented to Trustee Council in late October. Coordination of hydroacoustics work in Project 95163 is essential.
1	95320Q	Avian Predation on Herring Spawn	USFS	ADFG	PWS	Cont'd	$124.8	This sub-project, as part of the PWS System Investigation, was extensively peer reviewed in FY 94. FY 95 proposal continues first year effort. A peer review of first year progress will take place in the fall of 1994 with information presented to Trustee Council in late October.

Table 1 — RESEARCH PROJECTS

DRAFT

	Project No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
1	95320S	Disease Impacts on PWS Herring Populations (competetive project solicitation under ADF&G two-step, RFQ-RFP process)	ADFG	ADFG	PWS	Cont'd	$375.0	Five responses have been received as a result of the herring disease project solicitation. Under state law, these responses must be evaluated confidentially. Needs to be assessed as part of a comprehensive herring restoration effort. A recommendation regarding whether to proceed with funding for a herring disease project will be made to the Trustee Council in late October. FY 95 budget for this project is only an estimate.
1	95320T	Juvenile Herring Growth and Habitat Partitioning	ADFG	ADFG	PWS	NEW	$378.6	Addresses an injured resource of critical concern to commercial fisheries. Proposal concept is strong, although more complete evaluation of technical merit would require additional information. Needs to be assessed as part of a comprehensive herring restoration effort.
1	95320U	Somatic and Spawning Energetics of Herring and Pollock	Paul, UAF	ADFG	ALL	NEW	$94.4	Clarification of specific restoration objectives needed. Project needs to be evaluated in the context of, and possibly integrated with, other herring projects 95074 (herring reproductive impairment); 95163 (forage fish), 95320E (salmon herring integration), 95320N (nearshore fish); 95320T (juvenile herring growth), 95120 (energetic composition of selected forage fish), 95166 (herring natal habitats) and 95121 (isotope and fatty acid signatures of selected forage fish).

Table 1 — RESEARCH PROJECTS

DRAFT

	Project No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
1	95320Y	Variation in Local Predation Rates on Hatchery-Released Fry	Scheel, PWS Science Center	ADFG	PWS	NEW	$118.9	Potentially valuable information on avian predation on hatchery stocks. Could complement fish predation study information. Should review this project proposal in relation to Project 95033 (kittiwakes as indicators of forage fish). Apparently depends on large-scale hatchery production. Budget needs scrutiny.
Category 2							**$1,818.3**	
2	95009C	Trophic Dynamics and Energy Flow: Impacts of Herring Spawn and Sea Otter Predation on Nearshore Benthic Community Structure	Highsmith, UAF	USFS	PWS	NEW	$217.3	The sea otter elements of this proposal could possibly be combined with Project 95025B (sea otter abundance and distribution, food habits and population). Portions relating to herring spawn could be addressed as part of other herring project efforts.
2	95018	Partitioning of Primary Production Between Pelagic and Benthic Communities	Naidu, UAF	ADFG	PWS	NEW	$197.1	Link to restoration not clear but potentially valuable part of future ecosystem studies.
2	95021	Seasonal Movement and Pelagic Habitat Use by Common Murres from the Barren Islands	DOI	DOI	KEN	NEW	$251.1	Questions concerning whether useful results could be obtained in a short time period. Feasibility study should be completed before funding this project. Could be deferred for consideration in FY 96.

Table 1 — RESEARCH PROJECTS

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	Project No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
2	95023	Food Web Relationships of Pelagic Species Exhibiting Long-term Decline	Duffy, Alaska Natural Heritage Program	DOI	PWS	NEW	$168.0	Needs further evaluation under direction of the Chief Scientist in the context of other proposals to address forage fish. Needs evaluation in context of projects using stable isotope analysis. Revised scope for this project may be needed. Concern regarding collection of carcasses under MBTA.
2	95025E	Algal Competition Limiting Recovery in the Intertidal	Stekoll, UAF	DOI	KEN	NEW	$222.5	A good proposal but very narrowly focused. Species to be addressed by project not regarded as a high priority for restoration. Proposed study area/habitat type is unique.
2	95025F	Availability and Utilization of Musculus spp. as Food for Sea Ducks and Sea Otters	Dean, Coastal Resources Associates, Inc.	DOI	PWS	NEW	$4.6	Although potential cost-effectiveness is high, the methodology is unclear. Cost should be absorbed by another sea duck or sea otter project or possibly as part of a combined clam/mussel/oyster project.
2	95057	Movement of Larval and Juvenile Fishes within PWS	Norcross, UAF	NOAA	PWS	NEW	$300.0	Further clarification of the specific restoration objectives of this project needed. Further consideration needed in the context of other forage fish projects as well as relationship to 95320T (juvenile herring growth). Appears to be dependent upon certain oceanography portions of Project 95320 (PWS System Investigation). Clarification of sampling scale and design needed.

Table 1 — RESEARCH PROJECTS

DRAFT

	Project No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
2	95075	Population Structure of Blue Mussels in Relation to Levels of Oiling and Densities of Vertebrate Predators	NOAA	NOAA	PWS	NEW	$197.5	Project unfocused. Significant questions concerning methodologies. More focused project of reduced scope might have value in coordination with 95025B (sea otter abundance, food habits). Possible that elements of this proposal could be redefined and/or integrated with a revised nearshore/shelfish project.
2	95121	Stable Isotope Ratios and Fatty Acid Signatures of Selected Forage Fish Species in PWS	Worthy, Texas A&M University	NOAA	PWS	NEW	$42.0	This project needs to be further evaluated under the direction of the Chief Scientist in the context of the many other proposals being advanced to study trophic interactions of forage fish. Also, objectives of this project need to be integrated into other projects involving stable isotopes under the direction of the Chief Scientist. Utility of fatty acid studies needs careful assessment.
2	95320D	PWS Pink Salmon Genetics	ADFG	ADFG	PWS	Cont'd	$218.2	Peer reviewer felt more information is needed to fully evaluate the study design. Technical aspects needs further examination.
Category 3							**$4,356.9**	
3	95009A	Trophics and Community Structure in the Intertidal and Shallow Subtidal	Highsmith, UAF	USFS	PWS	NEW	$455.4	Proposal not yet well developed and articulated. (Note: Certain elements of Project 95009A provide for the logistics of the related projects proposed as 95009B, 95009C, etc.).

Table 1 — RESEARCH PROJECTS

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	Project No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
3	95009B	Primary Productivity as a Factor in the Recovery of Injured Resources in Prince William Sound	Stekoll, UAF	USFS	PWS	NEW	$218.9	Proposal does not demonstrate a clear relationship to the restoration mission, nor to the rest of the proposed nearshore ecosystem/community structure proposal package.
3	95009E	Community Structure of Mobile Foragers Using the Nearshore	USFS	USFS	PWS	NEW	$280.5	The issues addressed in this proposal can be better addressed in the context of Project 95320Q. Proposal did not demonstrate a knowledge of the literature in this area. Questions about the methodology proposed.
3	95010	Intertidal Fauna and Flora Species Composition, Abundance and Variability Relative to Physical Habitat Controls	Schoch, Oregon State Univ.	DOI	KEN	NEW	$73.5	Proposal lacked focus. Lack of strong relationship to restoration objectives.
3	95022	Foraging Efficiencies at Temporary Food Patches	Scheel, PWS Science Center	DOI	PWS	NEW	$183.1	This project needs to be further evaluated under the direction of the Chief Scientist in the context of the many other proposals being advanced to study trophic interactions of forage fish. Important topic but not adequately addressed by this proposal. Meaure of efficiency proposed too simplistic. This type of work may be valuable in the future in a more sophisticated form.

Table 1 — RESEARCH PROJECTS

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	Project No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
3	95025D	Settlement Rates of Nearshore Invertebrates, Oceanic Processes and Population Recovery: Are They Linked?	DOI	DOI	PWS	NEW	$435.7	Relationship to restoration objectives unclear. Some interesting ideas but proposal vague, not well defined, too general. No specific hypothesis to test.
3	95025G	Recruitment Patterns of Nearshore Clam Populations in Prince William Sound	Van Blaricom, UAF	DOI	PWS	NEW	$121.3	Substantial methodology questions concerning key proposal assumptions and study design. A basic clam biology investigation. Proposal does not address issue of sediments. Possible that elements of this proposal could be redefined and/or integrated with a revised nearshore/shelfish project.
3	95025J	Primary Productivity as a Factor in the Recovery of Injured Resources in Prince William Sound	Stekoll, UAF	DOI	PWS	NEW	$397.0	Relationship of project to specific restoration objectives not well defined. Questions regarding methodology and sampling techniques. Questions regarding utility of isotope analysis. Project needs to be reevaluated in the context of all other projects proposing the use of stable isotope analysis under the direction of the Chief Scientist.

Table 1 — RESEARCH PROJECTS

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	Project No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
3	95046	Long-term Record in Tree Rings of Climatic Features	Juday, UAF	NOAA	ALL	NEW	$153.6	Proposal presents novel approach to gathering historical data, but utility to on-going ecosystem research not well established. Relationship to specific restoration objectives not clear. If proposal could be refocused to address a specific priority restoration concern, it might be of greater utility.
3	95055	Prehistoric Ecological Baseline for PWS	USFS	USFS	PWS	NEW	$149.6	Relationship to specific restoration objectives not well established. Regarded as a low priority at the April 1994 science management workshop. If proposal could be refocused to address a specific high priority restoration concern it might be of greater utility.
3	95071	Monitoring Nearshore Fish Species for Persistence of Oil Exposure and Ecotoxicological Effects	ADFG	NOAA	PWS KEN AKP	NEW	$225.0	Substantial concerns about the essential concept of the proposal. The utility of the methods is uncertain.
3	95073	Impact of Killer Whale Predation on Harbor Seals in PWS	NOAA	NOAA	PWS	NEW	$99.5	Methodology regarding stable isotopes would not clearly yield desired results. The proposed research would likely provide interesting results but would not appear to get at the issue of how many seals were being taken by killer whales. This project needs further consideration in context of all other projects involving stable isotope analysis.

Table 1 — RESEARCH PROJECTS

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	Project No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
3	95077	Recreation Impacts in PWS: Human Impacts as a Factor Constraining Long Term Ecosystem Recovery	Ford, National Outdoor Leadership School	ADNR	PWS	NEW	$117.0	Proposed project's relationship to restoration of injured resource not well established. Proposal lacks strong rationale regarding the need to investigate human impacts to ecosystem health. Without further documentation of injury to be addressed, project appears to be a low prioity.
3	95078	Culture, History, and Ecosystems: An Assessment of Cultural/Historical Strategies to Building Long-term Understanding of Ecosystem Dynamics in the *Exxon Valdez* Oil Spill Area	DOI	DOI	ALL	NEW	$166.7	Novel approach to provide long-term perspective on ecological processes but not clear how useful this could be in meeting restoration objectives. Need to first identify long-term, historic data needs this project could address. If refocused to address specific high priority restoration concerns, it might be of greater utility. Appears most useful in preparation for future spills. See Project 95055.
3	95086B	Population Dynamics of Eelgrass and Associated Fauna	Stekoll, UAF	ADFG	PWS	Cont'd	$64.8	Need for this project in FY 95 not well established in proposal. Should be reexamined following fundamental review of progress on intertidal work to date. Not recommended unless needed by sea otter studies or report on 1993 field work is finished and substantiates the need for further work.

Table 1 — RESEARCH PROJECTS

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	Project No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
3	95113	Energetics of Intertidal Fish: The Connection between Lower and Upper Trophic Levels	Barber, UAF	ADFG	PWS KEN	NEW	$392.5	This project needs to be further evaluated under the direction of the Chief Scientist in the context of the many other proposals being advanced to study trophic interactions of forage fish with particular emphasis on relationship to other proposed pigeon guillemot studies. Project not sufficiently driven by questions pertaining to predators.
3	95114	Eelgrass Community Structure Restoration Assessment Using Stable Isotope Tracers	Kline, PWS Science Center	ADFG	PWS	NEW	$192.1	Objectives of this project need to be integrated with those other projects involving stable isotopes under the direction of the Chief Scientist. Issues addresed by this project are of a lower priority than those proposed in other projects.
3	95119-BAA	Food Limitation on Recovery of Injured Marine Bird Populations	Sydeman, Point Reyes Bird Observatory	NOAA	OUT	NEW	$124.9	Good technical proposal addressing limitation on sea bird recovery, however, focus on California data may not provide useful information for Alaska birds.
3	95320I(3)	Purchase of Isotope Radio Mass Spectrometer	Schell, Institute of Marine Science	ADFG	PWS	NEW	$257.4	Need for equipment not well substantiated by proposal. Need to examine all projects that propose the use of isotope analysis in order to develop consistent approach to the use of this technique.

Table 1 — RESEARCH PROJECTS

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	Project No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
3	95320P	Planning and Communication	Scheel, PWS Science Center	ADFG	PWS	Cont'd	$66.8	Need for this project unclear in view of indirect and General Administration costs provided in each budget. Relationship to restoration objectives unclear.
3	95320V	Herring Predation by Humpback Whales in PWS	Matkin, North Gulf Oceanic Society	ADFG	PWS	NEW	$181.6	Proposed project appears very expensive relative to potential benefit of data. The information that would be collected by this proposal was not regarded as a substantial priority. Proposal can be deferred for future consideration.
Category 4							**$389.5**	
4	95050	A Test of Sonar Accuracy in Estimating Escapement of Sockeye Salmon	Ruggerone, Natural Resources Consultants	ADFG	KEN OUT	NEW	$79.3	Policy issue. Sonar is a standard tool used by ADF&G. Ensuring its accuracy is a part of normal agency management for the department. Equipment proposed for testing is soon to be obsolete.
4	95060	Spruce Bark Beetle Infestation Impacts on Injured Fish and Wildlife Species of the *Exxon Valdez* Oil Spill	ADFG	ADFG	PWS KEN	NEW	$213.9	Policy issue. Proposed project appears to consist of normal agency responsibilies.

Table 1 — RESEARCH PROJECTS

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	Project No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
4	95065	PWSAC Pink Salmon Fry Mortality	Olsen, PWS Aquaculture Corporation	ADFG	PWS	NEW	$52.5	Legal issue. Indications from federal legal counsel are that the proposed use of settlement funds to support hatchery operations will require an EIS prior to a final determination of whether the project would be legally permissible.
4	95320K	PWSAC: Experimental Fry Release	Olsen, PWS Aquaculture Corporation	ADFG	PWS	Cont'd	$43.8	Legal issue. Indications from federal legal counsel are that the proposed use of settlement funds to support hatchery operations will require an EIS prior to a final determination of whether the project would be legally permissible.
Category 5							**$62.3**	
5	95102-CLO	Closeout: Murrelet Prey and Foraging Habitat in Prince William Sound	DOI	DOI	PWS	Closeout	$62.3	Closeout of prior year work. Budget needs further review.

Total FY 95 Request:	**$18,105.5**
Number of Projects:	**73**

Table 2 — GENERAL RESTORATION PROJECTS DRAFT

	Project No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
Category 1							**$2,078.8**	
1	95007B	Archaeological Site Restoration (Site SEW-488)	USFS	USFS	PWS	Cont'd	$83.8	Initial proposal was reduced from 185.2 to 83.8 to reflect FY 94 progress.
1	95051	Large-scale Coded Wire Tagging of PWS Herring	June, Natural Resources Consultants	ADFG	PWS	NEW	$190.6	Proposal provides strong link to restoration. Potentially important part of effort to understand herring stocks. Multi-year project commitment. Need to look further at technique, and ensure resources are adequate to meet objectives. Recovery of data (coded tags) needs further consideration.
1	95052	Community Involvement and Use of Traditional Knowledge	ADNR	ADNR	ALL	NEW	$230.6	Need to coordinate with other community involvement efforts including Projects 95027 (shoreline assessment), 95279 (subsistence food safety testing), 95428-CLO (subsistence planning). Proposal needs further consideration in context of other subsistence priorities.
1	95115	Sound Waste Management Plan	Prince William Sound Economic Development Council	ADEC	PWS	NEW	$275.9	Not yet reviewed by lawyers. Proposal needs to address relationship to injured resources and services, rather than preparation for future spills. If approved after legal review, consider integration with 95417 (waste oil facilities).

Table 2 — GENERAL RESTORATION PROJECTS

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	Project No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
1	95131	Clam Restoration (Nanwalek, Port Graham, Tatitlek)	Nanwalek and Port Graham Village Councils	ADFG	PWS KEN CI	NEW	$447.5	This could potentially be a valuable project to restore clams if success of culture technique is demonstrated first on a pilot project basis. Benefits would be greatest if project could restore injured clam beds. Long-term cost of project needs consideration ($2.25 million). Extent of NEPA analysis not clear.
1	95137	Prince William Sound Salmon Stock Identification and Monitoring Studies	ADFG	ADFG	PWS	Cont'd	$273.4	Provides substantial opportunity to track success of restoration efforts and improve management of chum and sockeye stocks. Could contribute to life-history models of these species.
1	95138	Elders/Youth Conference	Fall, Subsistence Division	ADFG	ALL	NEW	$77.7	Potentially valuable project if conference focused on transfer of knowledge that will contribute to the recovery of injured natural resources. Project could possibly be designed to facilitate exchange of traditional knowledge between subsistence community residents and agency/scientific researchers. Project description needs to be reworked to establish clear project objectives that will contribute to the restoration of natural resources upon which subsistence services depend.

Table 2 — GENERAL RESTORATION PROJECTS

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	Project No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
1	95244	Seal and Sea Otter Cooperative Subsistence Harvest Assistance	ADFG	ADFG	PWS KEN	Cont'd	$54.5	Proposal appears well-prepared, cost effective. Should be integrated with sea otter Projects 95159 (bird and sea otter survey), 95025B (sea otter abundance and distribution) as well as other community outreach efforts. Proposal needs further consideration in context of other subsistence priorities.
1	95255	Kenai River Sockeye Restoration	ADFG	ADFG	KEN	Cont'd	$406.1	Last year of field work for project (report writing in FY 96). Further clarification needed on interrelationship of this project to other major Kenai River sockeye projects 95105 (Kenai River ecosystem pilot enclosure study) and 95258 (sockeye salmon overescapement) as well as review of entire Kenai River sockeye effort.
1	95272	Chenega Chinook Release Program	Olsen, PWS Aquaculture Corporation	ADFG	PWS	Cont'd	$38.7	Potential for cost recovery in long-term. May be eligible for criminal funding.
Category 2							**$2,505.6**	
2	95024	Enhancement of Wild Pink Salmon Stocks	Reidel, Native Village of Eyak	ADFG	PWS	NEW	$350.0	Proposal did not address potentially significant technical problems and genetic concerns. Project needs to be combined with Project 95069 (restoration of salmon stocks of special importance to native cultures). Further consideration needed in context of other subsistence priorities.

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Table 2 — GENERAL RESTORATION PROJECTS

	Project No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
2	95038	Symposium on Seabird Restoration	Harrison, Pacific Seabird Group	DOI	ALL	NEW	$77.0	Potentially of great value although lack of proceedings or publication of results is a problem. Proposer should consider conducting such a symposium as part of a regular Pacific Seabird Group annual meeting.
2	95069	Restoration of Salmon Stocks of Special Importance to Native Cultures	ADFG	ADFG	PWS KEN	NEW	$672.6	Technical merit and effectiveness need further review. Concerns about genetic impacts. Proposal should be combined with Project 95024 (enhancement of wild pink stocks).
2	95116	Restoration of Intertidal Oiled Mussel Beds by Nondestructive Manipulation/Flushing with PES-51	Rog, PES Services AK, Inc.	ADEC	PWS	NEW	$453.2	Proposal as written raises policy issue (public funds should not be used to support private product testing). Idea may be appropriate for a competitive RFP on various alternative cleanup methods for remaining oiled situations (not just mussel beds and not just PES-51).
2	95132	Port Graham and Nanwalek Subsistence Baseline	Port Graham Village Council, Nanwalek Village Council	ADFG	PWS	NEW	$488.2	Questions about scope of project (service area) and expense. Trustee Council previously indicated that 1994 would be last year of subsistence food testing (Project 94279). Budget needs examination. Relationship to Project 95279 (subsistence food safety testing) needs further consideration.

Table 2 — GENERAL RESTORATION PROJECTS

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	Project No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
2	95133	English Bay River Sockeye Salmon Subsistence Project	Kvasnikoff, Nanwakek Traditional Council	ADFG	KEN	NEW	$129.8	Technical questions regarding effectiveness of proposed methods, the potential impact of competition and genetic impacts. Clarification needed regarding status of on-going project effort and alternative funding sources.
2	95139B	Spawning Channel - Port Dick Creek	ADFG	ADFG	KEN	Cont'd	$127.5	Funding for this project was provided in FY 94 as part of Project 94139 but project was delayed due to low cost-benefit ratio (0.4 : 1). Funds were reallocated to address herring disease effort. Project still has support among Kenai commercial fishermen and should be reviewed in light of limited restoration options for this region.
2	95279	Subsistence Food Safety Testing	ADFG	ADFG	ALL	Cont'd	$207.3	Need to coordinate with other community outreach projects including 95027 (shoreline assessment), 95052 (community involvement and use of traditional knowledge), 95428-CLO (subsistence planning) and the Trustee Council's public information program. Cost seems high.
Category 3							**$1,922.2**	
3	95006	Paint River Pink Salmon Development	Mears, Cook Inlet Aquaculture Assn.	ADFG	KEN	NEW	$173.9	Low technical merit; weak link to restoration (Paint River was not damaged by spill). Proposal involves creation of replacement resource to benefit commercial fishermen. Project was pursued prior to EVOS.

Table 2 — GENERAL RESTORATION PROJECTS

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	Project No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
3	95017	Port Graham Coho Salmon Subsistence Fishery Restoration Project	Daisy, Aquafrarm	ADFG	KEN	NEW	$587.9	Extremely high cost per fish produced (about $40/fish amortized over a ten year period). Technical concerns regarding the proposed water supply and possibility of pathogens. Raises legal issue since the project does not address restoration of injured resource but rather seeks to enhance silver salmon production. Not apparent that proposed project would rebuild self-sustaining wild populations or aid the recovery of the ecosystem as a whole.
3	95043A	Cordova Cutthroat Trout Habitat	USFS	USFS	PWS	Cont'd	$22.7	Need to address how the project would evaluate the result of efforts on more than a qualitative level.
3	95047	Seal Contamination	McKee	ADNR	PWS	NEW		Proposal incomplete. A lack of information precludes meaningful consideration.
3	95096	Restoration of Murres by Way of Social Attraction and Predator Removal	Podolsky	DOI	ALL	NEW	$167.0	Concept is not without merit. However, quality of proposal is low -- does not show command of literature and makes many assumptions. Insufficient information to fully evaluate proposal.
3	95097	Restoration of Murres by Way of Transplantation of Chicks: A Feasibility Study	Podolsky	DOI	ALL	NEW	$176.0	Concept is not without merit. However, quality of proposal is low -- does not show command of literature and makes many assumptions. Insufficient information to fully evaluate proposal.

Table 2 — GENERAL RESTORATION PROJECTS

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	Project No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
3	95098	Identification of Seabird Feeding Areas from Remotely Sensed Data	Podolsky	DOI	ALL	NEW	$74.0	Concept is not without merit. However, quality of proposal is low -- does not show command of literature and makes many assumptions. Insufficient information to fully evaluate proposal.
3	95099	Murrelet Vocalization in Conjunction with Artificial Nests: A Possible Means of Attraction to Habitat	Podolsky	DOI	ALL	NEW	$77.0	Concept is not without merit. However, quality of proposal is low -- does not show command of literature and makes many assumptions. Insufficient information to fully evaluate proposal.
3	95111	Sustainable Rockfish Yield	ADFG	ADFG	ALL	NEW	$204.4	Not a high priority. Further work on rockfish should await final report on earlier studies. Proposal would seem to fall within the purview of normal agency responsibility.
3	95112	Rockfish Restoration Objective	ADFG	ADFG	ALL	NEW	$69.0	Not a high priority. Further work on rockfish should await final report on earlier studies. Proposal would seem to fall within the purview of normal agency responsibility.
3	95139C	Salmon Instream Habitat and Stock Restoration--Pink Creek and Horse Marine Barrier Bypass Development	ADFG	ADFG	KOD	Cont'd	$45.7	Low technical merit. Unless maintained, improvements may not yield desired results. Questions regarding incremental benefits to area salmon runs. Cost/benefit needs further consideration.

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Table 2 — GENERAL RESTORATION PROJECTS

	Project No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
3	95259	Restoration of Coghill Lake Sockeye	ADFG	ADFG	PWS	Cont'd	$324.6	Questions about technical feasibility. Needs further review. Effectiveness of fertilizer in this lake is uncertain. ADFG extremely concerned that if Coghill Lake fishery does not recover, these stocks may be designated as endangered. Coghill Lake sockeye problems pre-date EVOS. Restoration of sockeye is considered a replacement resource for commercial fishery in PWS.
Category 4							**$19,582.9**	
4	95002	Leave No Trace Education Program	Ford, National Outdoor Leadership School	USFS	PWS	NEW	$177.7	Raises legal issue. Lack of clear connection to restoration of natural resources injured by EVOS. No evidence provided that recreation is having a significant impact on the recovery of injured resources.
4	95003	Area E Commercial Salmon Permit Buyback Program	Mykland	ADFG	PWS	NEW	$11,735.0	Raises legal issue. No link to restoration. While proposal would perhaps benefit individual permit holders, there is no explanation of how proposal would aid in recovery of natural resources injured by EVOS. Issues dealing with the economic condition of commercial fishermen are outside of the Trustee Council's purview.

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Table 2 — GENERAL RESTORATION PROJECTS

	Project No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
4	95016	A Tribute to Prince William Sound	Kremen	USFS	PWS	NEW	$161.0	Raises legal issue. Does not address an injured resource but rather proposes what is essentially a commercial promotion effort. A national tour as proposed would contravene the Council's past practice of undertaking restoration actions within the spill area.
4	95042	Five-year Plan to Remove Predators from Seabird Colonies	Harrison, Pacific Seabird Group	DOI	OUT	NEW	$75.0	Raises legal issue (some of the species addressed by the project are not recognized as injured) and policy issues (work area is outside spill area and planning effort is part of normal agency responsibility).
4	95053	Cordova's Mini-Imaginarium	Trowbridge, PWS Science Center	ADNR	PWS	NEW	$62.6	Raises legal issue. Does not address an injured resource or service damaged by the spill.
4	95079	Pink Salmon Restoration Through Small-scale Hatcheries	Van Hyning, NERKA, Inc., and Aquabionics Inc.	ADFG	PWS	NEW	$150.0	Raises legal issue. Indications from federal legal counsel are that proposed use of settlement funds to support hatchery operations will require an EIS prior to a final determination of whether the project would be legally permissible.
4	95080	Fleming Spit Recreation Area Enhancements	The Cordova Sporting Club	ADNR	PWS	NEW	$1,365.0	Proposal has merit because Fleming Spit was injured by cleanup workers (mentioned in the Draft Restoration Plan). However, proposal needs to be reworked to more clearly be responsive to spill damage.

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Table 2 — GENERAL RESTORATION PROJECTS

	Project No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
4	95082	"Mor-Pac Hill" Campground Improvements	The City of Cordova	ADNR	PWS	NEW	$360.0	Raises legal issue. The proposal to improve a campground originally built to house oil spill workers that now suffers from lack of maintenance is not a proposal for the restoration of the natural resources or services provided by those resources injured by the spill.
4	95084	Odiak Camper Park Expansion	The City of Cordova	ADNR	PWS	NEW	$266.0	Raises legal issue. The proposal to improve a campground is not a proposal for the restoration of the natural resources or services provided by those resources injured by the spill.
4	95085	Cordova Historical Marine Park	The Cordova Planning and Harbor Commiss.	ADNR	PWS	NEW	$196.5	Raises legal issue. A marine historical park for display of salvaged fishing boats would not be natural resource restoration of any type.
4	95093	PWSAC: Restoration of Pink Salmon Resources and Services	Olsen, PWS Aquaculture Corporation	ADFG	PWS	NEW	$2,219.1	Raises legal issue. Indications from federal legal counsel are that proposed use of settlement funds to support hatchery operations will require an EIS prior to a final determination of whether the project would be legally permissible. Proposer is considering the submission of an alternative proposal.
4	95123	Tatitlek Community Store	Komkoff, Tatitlek IRA Council	ADFG	PWS	NEW	$300.0	Raises legal issue. Not restoration of a natural resource upon which the subsistence service depends.

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Table 2 — GENERAL RESTORATION PROJECTS

	Project No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
4	95124A	Tatitlek Mariculture Development Project	Daisy, Tatitlek IRA Council	ADFG	PWS	NEW	$109.5	Raises legal issues. Clarification regarding the project's natural resource restoration objectives is needed.
4	95124B	Tatitlek Mariculture Development Project - Capital Outlay	Daisy, Tatitlek IRA Council	ADFG	PWS	NEW	$405.0	Raises legal issues. Clarification regarding the project's natural resource restoration objectives is needed.
4	95125	Tatitlek Sockeye Salmon Release Program	Komkoff, Tatitlek Traditional Council	ADFG	PWS	NEW	$39.0	Raises legal issues. Proposed as a replacement resource for subsistence. Questions regarding injured resource (sockeye) being replaced. Technical concerns regarding potential impacts to wild stocks, source of brood stock and potential for disease.
4	95127	Tatitlek Coho Salmon Release Program	Komkoff, Tatitlek Traditional Council	ADFG	PWS	NEW	$39.0	Raises legal issues. Proposed as a replacement resource. Technical merit appears high.
4	95128	Teaching Subsistence Practices and Values	Callaway, NPS	DOI	PWS	NEW	$69.0	Raises legal issues. Does not address natural resource restoration. Direct restoration of service without restoration of resource.
4	95129	Tatitlek Fish and Game Processing Center and Smokery	Komkoff, Tatitlek IRA Council	ADFG	PWS	NEW	$515.5	Raises legal issue. Relationship to restoration of natural resource unclear.

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Table 2 — GENERAL RESTORATION PROJECTS

	Project No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
4	95130	Mental Health Center	Vlasoff, Chugachmuit and Copper Mountain Foundation	ADFG	PWS	NEW	$106.1	Raises legal issue. Relationship to restoration of natural resource unclear.
4	95134	Chenega Bay Mariculture Development Project	Evanoff, Chenega Bay IRA Council	ADFG	PWS	NEW	$184.3	Raises legal issues. Clarification regarding the project's intended natural resource restoration objectives is needed
4	95135	Subsistence Harvest Support	Chenega Bay Village IRA Council	ADFG	PWS	NEW	$50.0	Raises legal issues. Unclear how proposed project restores natural resource. This project previously funded by DCRA.
4	95136	Skin Sewing Crafts Restoration	Callaway, NPS	DOI	PWS	NEW	$29.9	Raises legal issues. Unclear how proposed project restores natural resource.
4	95140	Subsistence Skills Program	Olsen, Valdez Native Association	ADFG	PWS	NEW	$36.7	Raises legal issues. Unclear how proposed project restores natural resource.

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Table 2 — GENERAL RESTORATION PROJECTS

	Project No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
4	95141	Afognak Island State Park Interim Support	ADNR	ADNR	KOD	NEW	$21.5	Raises policy issue (normal agency management responsibilities). Project would provide operational support for park management and to oversee implementation of the terms of the road closure and reforestation provisions agreed to by the seller. Would also develop a plan to convert some existing roads into trails and to revegetate remaining roads.
4	95320B	PWS Pink Salmon Stock Identification and Monitoring (CWT)	ADFG	ADFG	PWS	Cont'd	$260.5	Raises policy issue regarding whether proposal is normal agency responsibility. Also, legal issue since this project involves hatcheries. Indications from federal legal counsel are that proposed use of settlement funds to support hatchery operations will require an EIS prior to a final determination of whether the project would be legally permissible. Possible that funding will be available from other sources.
4	95320C	Otolith Thermal Mass Marking of Hatchery Reared Pink Salmon in PWS	ADFG	ADFG	PWS	Cont'd	$649.0	High technical merit (otolith marking may be superior to CWT). Also, legal issue since this project involves hatcheries. Indications from federal legal counsel are that proposed use of settlement funds to support hatcheries requires EIS prior to determination of whether project is legally permissible. Also, policy issue regarding whether proposal is within normal agency responsibility.

Table 2 — GENERAL RESTORATION PROJECTS

DRAFT

	Project No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
Category 5							**$509.5**	
5	95007-CLO*	Closeout: Site-specific Archaeological Restoration	ADNR	ADNR	ALL	Closeout	$191.7	Completion of prior year project. Cost appears high.
5	95041A-CLO*	Closeout: Introduced Predator Removal from Islands	DOI	DOI	OUT	Closeout	$20.4	Completion of prior year project.
5	95041B-CLO*	Closeout: Introduced Predator Removal from Islands - Follow-up Surveys	DOI	DOI	OUT	Closeout	$50.9	Predator removal is generally effective. Proposal will allow measurable results to be obtained. Budget should be reviewed for possible reduction.
5	95199-CLO	Institute of Marine Science - Seward Improvements EIS	ADF&G	ADFG	ALL	Cont'd	$71.7	Project would closeout the EIS process for the Institute of Marine Science improvements at Seward. Only ADF&G costs reflected here.
5	95266-CLO	Closeout: Shoreline Assessment and Oil Removal	ADEC	ADEC	ALL	Closeout	$93.8	Completion of prior year project. Budget should be reviewed for possible reduction.
5	95428-CLO	Closeout: Subsistence Planning	NOAA	ADFG	ALL	Closeout	$81.0	Need to coordinate with other community outreach efforts including Projects 95027 (shoreline assessment), 95052 (community involvement and traditional knowledge), 95279 (subsistence food safety testing). Proposal needs further consideration in context of other subsistence priorities.

Table 2 — GENERAL RESTORATION PROJECTS

DRAFT

	Project No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
Category 6							**$0.0**	
6	95043B	Carry-forward: Cutthroat and Dolly Varden Rehabilitation in Western PWS	USFS	USFS	PWS	Carry Fwd.	$0.0	Reauthorization of approximately 126.8 will be requested for FY 95. NEPA compliance to be completed in FY 94.
6	95165	Carry-forward: PWS Herring Stock Genetic Stock Identification	ADFG	ADFG	PWS	Carry Fwd.	$0.0	This project was authorized at 62.2 in FY 94 but not implemented due to failure of herring run. FY 95 budget for 95165 will be carry forward funds. (RFP may be issued before end of FY 94 that will encumber FY 94 funds for herring stock identification.)
6	95417	Carry-forward: Waste Oil Disposal Facilities	ADEC	ADEC	ALL	Carry Fwd.	$0.0	Possibly combine with 95115 (PWS waste management plan).

Total FY 95 Request:	**$26,599.0**
Number of Projects:	**65**

* NOTE: These projects are for report writing and data analysis of FY 94 field work that also have related projects proposed for continuation in FY 95.

Table 3 — MONITORING PROJECTS

DRAFT

	Proj.No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
Category 1							**$4,621.2**	
1	95007A	Archaeological Site Restoration - Index Site Monitoring	ADNR	ADNR	ALL	Cont'd	$190.9	Responsive to *Invitation*, but cost appears high.
1	95013	Killer Whale Monitoring in PWS	Matkin, North Gulf Oceanic Society	NOAA	PWS	NEW	$105.0	Same basic methodology as 95092, but with a broader scope (includes AT1 pod). NOAA and North Gulf Oceanic Society should examine possibility of collaborating on single killer whale monitoring project.
1	95026	Hydrocarbon Monitoring: Integration of Microbial and Chemical Sediment Data	Braddock, UAF	ADEC	ALL	NEW	$84.4	Analysis of previously collected data sets (chemical and microbiological). Strong proposal. Responsive to *Invitation*.
1	95030	Productivity Survey of Bald Eagles in PWS	DOI	DOI	PWS	NEW	$81.9	DOI has proposed two bald eagle projects: monitoring productivity (95029) and monitoring population (95030). Last surveys done in 1991. Bald eagles are long-lived birds; therefore, more likely to see decline in productivity than in population.
1	95039	Common Murre Productivity Monitoring	DOI	DOI	KEN	Cont'd	$163.7	Directly responds to *Invitation*.

Table 3 — MONITORING PROJECTS

DRAFT

	Proj.No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
1	95048	Historical Analysis of Sockeye Salmon Growth	Ruggerone, Natural Resources Consultants	ADFG	ALL	NEW	$85.0	Innovative proposal to address damage and recovery of sockeye. Appears cost-effective. Some technical questions need clarification such as statistical power of proposed methodology. Scope of work questions. Investigators are of high quality.
1	95086A	Coastal Habitat Intertidal Monitoring and Experimental Design Verification	Stekoll, UAF	ADFG	PWS	Cont'd	$829.4	Valuable to revisit sites from 1991 but project in need of revised scope of effort. Objectives 1(b) and (c) should be dropped and budget reduced accordingly (retrospective analysis of methodology does not warrant expense; its main contribution would be to prepare for future spills). Question continued need for statisticians. Must decide which geographic areas and habitat types would be appropriate to monitor.
1	95086C	Herring Bay Monitoring and Restoration Studies	Highsmith, UAF	ADFG	PWS	Cont'd	$549.1	Important on-going work. However, need to finish current studies before initiating new ones. Any additional work in FY 96 should be considered on basis of completed reports from prior and on-going studies. Recommend narrowing project to finish work underway and reduce budget accordingly.
1	95090	Mussel Bed Restoration and Monitoring in PWS and Gulf of Alaska	NOAA	NOAA	PWS KEN	Cont'd	$261.8	Important to follow up on prior work to determine effectiveness of techniques being used. Questions regarding need to go outside of PWS for restoration. Further consideration of this proposal needed in the context of other clam, mussel and sea urchin projects.

Table 3 — MONITORING PROJECTS

DRAFT

	Proj.No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
1	95092	Recovery Monitoring of PWS Killer Whales	NOAA	NOAA	PWS	NEW	$99.5	Same basic proposal as 95013 (killer whale monitoring), but with narrower focus. NOAA and North Gulf Oceanic Society should collaborate on single killer whale monitoring project if possible. Questions regarding 20-year duration and sampling methods.
1	95106	Subtidal Monitoring: Eelgrass Communities	Jewett, UAF	ADFG	PWS	NEW	$399.9	History of other spills demonstrates longlasting effects on soft sediment environments. Data suggests that follow-up to FY 93 study needed.
1	95166	Herring Natal Habitats	ADFG	ADFG	PWS	Cont'd	$493.3	Need to coordinate with 95320T (juevenile herring growth). Need to clarify project cost and participation of project personnel.
1	95258	Sockeye Salmon Overescapement	ADFG	ADFG	KEN	Cont'd	$983.3	Future funding should depend upon completion and comprehensive assessment of past work. A phase-out strategy should be developed; examine opportunity to schedule research less frequently. Further clarification needed on interrelationship of this project to other major Kenai River sockeye projects 95105 (Kenai River ecosystem pilot enclosure study) and 95255 (Kenai sockeye restoration).

Table 3 — MONITORING PROJECTS

DRAFT

	Proj.No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
1	95290	Hydrocarbon Data Analysis, Interpretation, and Database Maintenance for Restoration and NRDA Environmental Samples Associated with the *Exxon Valdez* Oil Spill	NOAA	NOAA	ALL	Cont'd	$72.2	Ongoing hydrocarbon interpretation and support services. Provides valuable technical support to many project investigators.
1	95427	Harlequin Duck Recovery Monitoring	ADFG	ADFG	PWS	Cont'd	$221.8	Continuation of ongoing work. Should be contingent upon successful completion of field methodology project from FY 94. Opportunity to integrate or combine with Project 95025A (recovery of sea ducks) needs further consideration.
Category 2							**$1,308.0**	
2	95005	Harlequin Duck Abundance and Productivity in Western Cook Inlet	DOI	DOI	KEN	NEW	$40.2	No compelling reason to undertake this project. No documented injury to harlequin ducks in western Cook Inlet.
2	95027	Kodiak and Alaska Peninsula Comprehensive Shoreline Assessment: Monitoring Surface and Subsurface Oil	ADEC	ADEC	KOD AKP	NEW	$759.5	Concern about expense of project relative to benefit. Methods need clarification. Should be coordinated with subsistence/community outreach Projects 95052 (community involvement and traditional knowledge), 95279 (subsistence food safety testing), and 95428-CLO (subsistence planning). Possibly scaled back to address "hot spots." Perhaps project could be phased. (Last assessment outside of PWS was 1990.)

Table 3 — MONITORING PROJECTS

DRAFT

	Proj.No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
2	95029	Population Survey of Bald Eagles in PWS	DOI	DOI	PWS	NEW	$48.3	Recommended frequency of bald eagle population surveys is every 5 years; survey was last done in 1991. If approved, could be integrated with Project 95030 (productivity of bald eagles).
2	95062	River Otter Recovery Monitoring	ADFG	ADFG	PWS	NEW	$69.0	Damage to river otters by EVOS substantiated but magnitude of injury unclear. Latrine site information would provide limited insights into recovery. Sample size is small. If approved, possibly integrate with Project 95025C (pigeon guillemots and river otters as bioindicators).
2	95159	Surveys to Determine Additional Oil Spill Effects and Recovery of Marine Bird and Sea Otter Populations in PWS	DOI	DOI	PWS	Cont'd	$391.0	Recommended frequency of monitoring is every 3 years; last surveys were done under this project in winter 1994. Could be deferred until 1996. Concern that FY 94 survey was winter only, not in summer, and that each year, additional species have been found to occur in lesser numbers in oiled areas than in unoiled areas. Questions of statistical power of survey methods.
Category 3							**$342.6**	
3	95045	Green Island Intertidal Restoration Monitoring	Juday and Foster, UAF	USFS	PWS	NEW	$113.4	Methodology and objectives vague.

Table 3 — MONITORING PROJECTS

DRAFT

	Proj.No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
3	95094	Recovery of Intertidal Clams in PWS	Jewett, UAF	ADFG	PWS	NEW	$229.2	This project needs further consideration in the context of other clam, mussel and urchin projects under the direction of the Chief Scientist. Need to examine relative to Project 95025G (recruitment of clam populations), 95075 (blue mussels in relation to oiling and predators), and 95087 (sea urchin poulation dynamics). Possible that elements of this proposal could be redefined and/or integrated with a revised nearshore/shelfish project. Involvement of subsistence community needed to provide direction.
Category 4							**$84.0**	
4	95107	Subtidal Site Verification	Jewett, UAF	ADFG	PWS	NEW	$84.0	Proposal is duplicative of 95086A (see 95086A General Objectives 1(b) and (c)). Focus on preparation for future oil spill or disturbance raises legal concern. Retrospective analysis of methodology does not warrant expense.
Category 5							**$344.6**	
5	95039-CLO*	Closeout: Common Murre Population Monitoring	DOI	DOI	KEN	Closeout	$30.5	Analysis of FY 94 data and report writing.
5	95090-CLO*	Closeout: Mussel Bed Restoration and Monitoring	ADEC	ADEC	PWS	Closeout	$154.4	Laboratory analysis of samples and final report writing.

Table 3 — MONITORING PROJECTS

DRAFT

	Proj.No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
5	95173-CLO*	Closeout: Pigeon Guillemot Recovery Monitoring	DOI	DOI	PWS	Closeout	$55.0	Analysis of FY 94 data and report writing.
5	95285-CLO	Closeout: Subtidal Sediment Recovery Monitoring	NOAA	NOAA	KEN	Closeout	$104.7	The BPD for this project has not been submitted.

Total FY 95 Request:	**$6,700.4**
Number of Projects:	**27**

* NOTE: These projects are for report writing and data analysis of FY 94 field work that also have related projects proposed for continuation in FY 95.

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Table 4 — HABITAT PROTECTION & AQUISITION PROJECTS

Proj.No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
Category 1						**$1,420.5**	
1 95126	Habitat Protection and Acquisition Support	ADNR	ADNR	ALL	Cont'd	$1,403.3	Further consideration of budget needed; possible reduction due to lapse of some FY 94 funds. Project funds final six months of support in FY 95. Budget includes funding for negotiators, which Trustee Council has chosen not to fund in the past.
1 95505B	Data Analysis for Stream Habitat	USFS	USFS	ALL	NEW	$17.2	Project would complete data analyses for an existing stream habitat database to establish the relationship between aerial photo channel type interpretations and spawning and rearing habitat.
Category 2						**$458.4**	
2 95054	Montague Riparian Rehabilitation	USFS	USFS	PWS	NEW	$42.7	Proposal needs further clarification regarding injured resources and restoration objectives to be addressed by project.
2 95058	Restoration Assistance to Private Landowners	USFS	ADFG	ALL	NEW	$415.7	This project should be scaled back to a more modest initial effort based on a more complete assessment of demand.

Table 4 — HABITAT PROTECTION & AQUISITION PROJECTS

DRAFT

Proj.No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
Category 3						**$305.7**	
3 95095	Quantification of Stream Habitat for Harlequin Ducks and Anadromous Fish Species from Remotely Sensed Data	Podolsky	ADNR	ALL	NEW	$88.0	Questions regarding the proposed application of remote sensing (whether a sufficiently distinct "signature" for harlequin habitat can be identified). Further informal consideration warranted before funding of proposal.
3 95122	Mapping Potential Nesting Habitat of Marbeled Murrlets in PWS Using Geographic Databases	DeVelice	USFS			$167.5	Benefits to restoration efforts beyond large parcel evaluation process needs further articulation.
3 95200	Public Access	USFS	USFS	PWS	NEW	$50.2	Link to restoration vague. The majority of this project proposal has already been funded from other sources. For remainder of project, benefits to injured resources or services unclear. Brief project description no longer accurately describes proposed project activity.
Category 5						**$143.9**	
5 95110-CLO	Closeout: Habitat Protection and Acquisition	ADNR	ADNR	ALL	Closeout	$143.9	Further examination of budget needed. Proposed budget includes 84.0 that will be carried forward from FY 94, and 60.0 in FY 95 funds. Project funds three months of the work group in FY 95.

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Table 4 — HABITAT PROTECTION & AQUISITION PROJECTS

Proj.No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes

Total FY 95 Request:	**$2,328.5**
Number of Projects:	**8**

Third Work Plan Supplement

DRAFT

Table 5 — ADMINISTRATION AND PUBLIC INFORMATION PROJECTS

	Proj.No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes
Category 1							**$4,040.1**	
1	95089	Information Management System	Executive Director's Office	ADFG	ALL	Cont'd	$540.1	This project transitions the Oil Spill Public Information Center (OSPIC) into a comprehensive system for the management, integration and public dissemination of information and research results obtained through the Trustee Council process.
1	95100	Administrative Budget	Executive Director's Office	ALL	ALL	Cont'd	$3,500.0	Reflects a 17% reduction in costs from FY 94. Reaches goal of administrative budget of 5% of annual Exxon payment.
Category 3							**$31.9**	
3	95049	Independent Review of Restoration and Monitoring Projects	Ruggerone, Natural Resources Consultants	ADFG	ALL	NEW	$31.9	This proposed project would duplicate work already approved by the Trustee Council and implemented through the work of the Chief Scientist and the peer reviewers. A Request for Proposals (RFP) for the services of the Chief Scientist will be issued in the fall and, if interested, the proposer of this project could apply at that time.
Category 5							**$20.0**	
5	95422-CLO	Closeout: Restoration Plan EIS/Record of Decision	USFS	USFS	ALL	Closeout	$20.0	Completes EIS process for the *Draft Restoration Plan.* Record of Decision (ROD) due in late October.

DRAFT

Table 5 — ADMINISTRATION AND PUBLIC INFORMATION PROJECTS

Proj.No.	Title	Proposer	Lead Agency	Loc.	Proj. Type	Cost FY 95	Notes

Total FY 95 Request:	**$4,092.0**
Number of Projects:	**4**

Afognak Island State Park Interim Support

Project Number:	95141
Restoration Category:	General Restoration
Proposed By:	Neil Johannsen, Director Alaska Division of Parks & Outdoor Recreation
Lead Trustee Agency:	Alaska Department of Natural Resources
Cost FY 95:	$21,500 plus additional funds to revegetate road surfaces and develop a plan for conversion of certain roads to trails (Objectives c and d). Cost estimates will be reflected in Draft 1995 Work Plan.
Cost FY 96:	$21,500
Total Cost:	$107,500
Duration:	5 years
Geographic Area:	Afognak Island
Injured Resource or Service:	Marbled murrelet, harlequin duck, black oystercatchers, river otters, harbor seals, sea otters, anadromous fish, bald eagle nests, and recreation.
Contact Person:	Neil Johannsen, Director Alaska Division of Parks & Outdoor Recreation Alaska Department of Natural Resources 3601 C Street, Suite 1200 Anchorage AK 99510 762-2600

Introduction

In November 1993, the Trustee Council purchased 41 million acres of land adjacent to Seal Bay, Afognak Island. In its resolution accepting the seller's offer, the Council found that these lands "include important habitat for several species of wildlife for which significant injury resulting from the oil spill has been documented." The resolution cited important nesting areas for marbled murrelet; nesting and foraging areas for harlequin ducks; adjacent shore used by black oystercatchers and river otters; harbor seal haulouts along the shoreline; concentrations of sea otters off Tolstoi Point; eight documented anadromous streams; ten documented bald eagle nests; and high value wilderness-based recreation such as hunting, boating and fishing.

In May 1994, the Alaska State Legislature designated the land and water around Seal Bay as Afognak Island State Park. A letter of intent accompanying the act stated, in part:

It is the intent of the legislature that sources of funding other than state general funds be sought for the management of Afognak Island State Park. It is also the intent of the legislature that at least five public use cabins be built within Afognak Island State Park. A primary source for these purposes is moneys managed by the Exxon Valdez Trustees Council.

This proposal requests funds necessary to manage and protect Afognak Island State Park until such time as the State can generate moneys for that purpose.

Need for the Project

Until reliable sources of funding for operations and maintenance of the new state park are secured, the most that can be expected is periodic visitation from park rangers out of Kodiak. Interim support for operations will enable field staff and volunteers to monitor use of the new park and discourage resource degradation, as well as inspect actions taken to comply with the road closure plan and reforestation requirements. Compliance with the road closure plan and reforestation requirements is the responsibility of the seller.

The logging roads in the park were created by removing overburden to bedrock and then grading the bedrock. It will take many years for the road beds to revegetate. The statutory road closure requirements, with which sellers must comply, will stabilize the road surfaces but not lead to revegetation. This project will move the overburden back onto the road surfaces leading to revegetation of the road surfaces.

Revegetation of the road surfaces will restore, to some extent, habitat values diminished by roadbuilding. In addition, some roads in the park should be converted to trails provided they serve restoration objectives. For example, they could channel public use away from sensitive habitats or enhance recreational experience.

Project Design

1. **Objectives**

   a. Assurance that public use of Afognak Island State Park is consistent with restoration objectives.

   b. Compliance with the road closure plan and reforestation requirements, which are the responsibilities of the seller.

   c. Restoration of habitat through revegetation of road surfaces.

   d. Conversion of certain roads to trails to meet restoration objectives.

2. **Methods**

   a. Permanent seasonal staff will make occasional visits to the park.

b. Volunteers in Parks (VIPs) will monitor public use of the park and develop a resource inventory for use by staff in forming a master plan for the park.

c. Overburden will be moved onto remainder of roadbeds so they can revert to natural vegetation. This effort will be completed during FY 95.

d. A plan will be developed to convert some existing roads to trails. The plan will be completed in FY 95.

3. Schedule

Recruitment of volunteers would begin in December 1994. Permanent seasonal staff and volunteers would be onsite from late May through August. The trail conversion plan and revegetation efforts will be completed in FY 95.

4. Technical Support

None.

5. Location

Afognak Island State Park.

Project Implementation

Afognak Island State Park will be operated and managed by the Alaska Department of Natural Resources, Division of Parks and Outdoor Recreation, through permanent seasonal staff and Volunteer in Parks (VIPs).

Coordination of Integrated Research Effort

The Division of Parks and Outdoor Recreation will coordinate its actions with other Trustee Council actions on Kodiak, Afognak, and Shuyak Islands.

Public Process

Extensive public review of the decision to acquire lands adjacent to Seal Bay occurred, primarily at Trustee Council meetings. Public debate over the establishment of the Afognak Island State Park took place in legislative hearings and various media. The public will be involved in review of plans for road closures and reforestation, the siting of public use cabins, and other major land management decisions.

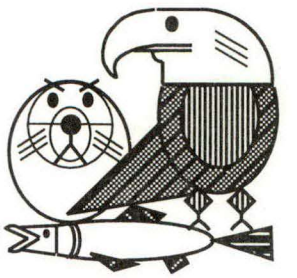
FY 95 Budget

100	Personnel	10.0
200	Travel	8.0
300	Contractual Services	TBD[1]
400	Commodities	2.0
500	Equipment	0.0
600	Capital Outlay	0.0
	Subtotal	20.0
General Administration		1.5
Total Cost		21.5[1]

[1] Additional funds will be needed to revegetate of road surfaces and develop a plan for conversion of certain roads to trails (Objectives c* and d*). Cost estimates will be reflected in Draft 1995 Work Plan.

* The logging roads in the park were created by removing overburden to bedrock and then grading the bedrock. It will take many years for the road beds to revegetate. The statutory road closure requirements, with which sellers must comply, will stabilize the road surfaces but not lead to revegetation. This project will move the overburden back onto the road surfaces leading to revegetation of the road surfaces. Revegetation of the road surfaces will restore, to some extent, habitat values diminished by roadbuilding. In addition, some roads in the park should be converted to trails provided they serve restoration objectives. For example, they could channel public use away from sensitive habitats or enhance recreational experience. The trail conversion plan and revegetation efforts will be completed in FY 95.

Exxon Valdez Oil Spill Trustee Council
Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178



MEMORANDUM

TO: Restoration Work Force
Interdisciplinary Work Group Coordinating Committee

FROM: Eric F. Myers, Project Coordinator

DATE: July 28, 1994

SUBJ: Listing and Tables of FY 95 Projects

Attached you will find a copy of the July 26, 1994 memorandum addressed to the Public Advisory Group which includes a numb
attachments. These most recent versions (dated 7/

— Summary of FY 95 Projects
— List of FY 95 Projects (sorted by Project Num
— Table 1 - Research Projects
— Table 2 - General Restoration Projects
— Table 3 - Monitoring Projects
— Table 4 - Habitat Protection Projects
— Table 5 - Administration/Public Informatio

The Section "Preliminary FY95 Work Plan" was also sent to the RWF + Coordinating and June 5. Committee under this memo.

**In summary, a total of 178 project proposals have b
representing a total FY 95 request of $69.8 million.**
proposals into perspective, in FY 94 the Trustee Co
approximately $35.9 million (*Five Years Later: 199
Exxon Valdez Oil Spill*, p. 19).

For FY 95, Research proposals were the most numerous (73 proposals for a total of $18.1 million), followed by General Restoration (65 proposals for $26.6 million), Monitoring (27 proposals for $6.7 million), Habitat Protection and Acquisition (8 proposals for $2.3 million) and Administration/Public Information (4 proposals for $4.1 million). Also, it has been proposed that the Trustee Council make an additional deposit into the Restoration Reserve in the amount of $12 million.

These proposals will be the subject of on-going public review and comment.

Exxon Valdez Oil Spill Trustee Council
Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178

MEMORANDUM

TO: Restoration Work Force
Interdisciplinary Work Group Coordinating Committee

FROM: Eric F. Myers, Project Coordinator

DATE: July 28, 1994

SUBJ: Listing and Tables of FY 95 Projects

Attached you will find a copy of the July 26, 1994 memorandum addressed to the Public Advisory Group which includes a number of tables and attachments. These most recent versions (dated 7/27/94) include:

— Summary of FY 95 Projects
— List of FY 95 Projects (sorted by Project Number)
— Table 1 - Research Projects
— Table 2 - General Restoration Projects
— Table 3 - Monitoring Projects
— Table 4 - Habitat Protection Projects
— Table 5 - Administration/Public Information Projects

In summary, a total of 178 project proposals have been initially reviewed representing a total FY 95 request of $69.8 million. To help put these FY 95 proposals into perspective, in FY 94 the Trustee Council budgeted a total of approximately $35.9 million (*Five Years Later: 1994 Status Report on the Exxon Valdez Oil Spill*, p. 19).

For FY 95, Research proposals were the most numerous (73 proposals for a total of $18.1 million), followed by General Restoration (65 proposals for $26.6 million), Monitoring (27 proposals for $6.7 million), Habitat Protection and Acquisition (8 proposals for $2.3 million) and Administration/Public Information (4 proposals for $4.1 million). Also, it has been proposed that the Trustee Council make an additional deposit into the Restoration Reserve in the amount of $12 million.

These proposals will be the subject of on-going public review and comment.

Exxon Valdez Oil Spill Trustee Council

Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178

July 27, 1994

John J. Johnson
Mayor, City of Kenai
210 Fidalgo Avenue, Suite 200
Kenai, Alaska 99611-7794

Dear Mr. Johnson:

Thank you for your letter in support of acquiring the Cone property. This parcel is now being reviewed for its benefit to restoration of the resources injured by the *Exxon Valdez* oil spill. Your comments will be forwarded to the Trustee Council as the review process goes forward.

Thank you very much for sending us your comments.

Sincerely,

James R. Ayers
Executive Director

jra/raw

CITY OF KENAI

"Oil Capital of Alaska"

210 FIDALGO AVE., SUITE 200 KENAI, ALASKA 99611-7794
TELEPHONE 907-283-7535
FAX 907-283-3014

All-America City 1992

July 25, 1994

Jim Ayers, Executive Director
Exxon Valdez Oil Spill Trustee Council
645 G Street
Anchorage, AK 99501

RE: Small Parcel Acquisition Program -
Chester Cone Kenai River Property

Dear Mr. Ayers:

The Kenai City Council has learned that Chester Cone has submitted to the Exxon Valdez Oil Spill Trustee Council his application for consideration of the Trustee Council's acquisition of his property on the Kenai River.

It has been the position of the City Council and the City Administration for many years that the Cone property deserves special attention with regard to future use. It is our desire to see this property developed for special public purposes while maintaining the river banks in a manner consistent with habitat creation and protection.

We strongly urge the Council to give every possible consideration on an expedited basis towards the purchase of this most valuable Kenai River property.

Very truly yours,

CITY OF KENAI

John J. Williams
Mayor

JJW/sp

cc: Chester Cone
Jim Butler

D:\WP51\MAYOR\CONE.LTR

CITY OF KENAI, ALASKA
210 Fidalgo, Suite 200
Kenai, AK 99611-7794

Jim Ayers, Executive Director
Exxon Valdez Oil Spill Trustee Council
645 G Street
Anchorage, AK 99501

99501-3451 91

Exxon Valdez Oil Spill Trustee Council
Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178

MEMORANDUM

TO: Public Advisory Group

FROM: James R. Ayers, Executive Director

DATE: July 26, 1994

SUBJ: Update on Development of the Draft FY 95 Work Plan

The purpose of this memorandum is to provide you with an update on the effort to prepare a public review draft of the Draft FY 95 Work Plan to be released for public review during the month of September.

As reflected in the "List of FY 95 Projects" (Attachment A) and Tables 1 - 5, some 178 project proposals were received in response to the *Invitation to Submit Restoration Projects for Fiscal Year 1995*. On July 12 - 13, a work session was held including Trustee Council agency liaisons, the Chief Scientist together with core peer reviewers, the Interdisciplinary Work Group Coordinating Committee and representatives of the Public Advisory Group appointed by Chair Brad Phillips (Donna Fischer, Gail Evanoff and John French). (Attachment B)

The fundamental purpose of this work session was to initially review, organize and categorize FY 95 project proposals as part of the effort to develop a Draft FY 95 Work Plan document that would allow for meaningful public comment. After public comment — including another opportunity for PAG review of the Draft FY 95 Work Plan on October 11 — the Executive Director will formulate a recommendation to the Trustee Council regarding FY 95 projects for presentation at a meeting scheduled for late October.

Outline of Draft FY 95 Work Plan

An outline for the structure of the Draft FY 95 Work Plan was presented to the Trustee Council at their July 11, 1994 meeting.

This outline calls for publication of three (3) companion volumes:

1. Summary: Draft FY 95 Work Plan

   This Summary document would consist of tables that identify proposed FY 95 projects by type (i.e., Research, Monitoring, General Restoration, etc.) as well as category for review purposes (i.e., 1, 2, 3, 4, 5 or 6). Additionally, a narrative would discuss proposed projects in the context of the restoration goals, objectives and strategies drawing on the guidance provided in the *Invitation to Submit Restoration Projects for FY 95* and the *Draft Restoration Plan*. The Summary document would receive wide circulation to the Trustee Council mailing list.

2. Draft FY 95 Work Plan — Supplement Volume I

   This document would consist of Brief Project Descriptions (BPDs) for Category 1 and Category 2 projects together with information on how to obtain BPDs for all other projects. This document would receive limited mail circulation, but be widely noticed as available upon request.

3. Draft FY 95 Work Plan — Supplement Volume II

   This document would consist of detailed budget forms for Category 1 and Category 2 projects. This document would be provided to agencies for internal review and available at libraries for public review.

Categories used to organize the Draft FY 95 Work Plan are as follows:

Category 1	=	apparent high restoration benefit, strong technical merit and generally responsive to the *Invitation*
Category 2	=	permissible under settlement but of a lower priority for funding in FY 95
Category 3	=	incomplete, lacking a clear relationship to restoration or otherwise of a low priority for restoration
Category 4	=	significant legal or policy issue or concern associated with the proposal
Category 5	=	closeout projects from FY 94
Category 6	=	carry-forward projects (i.e., FY 94 projects that are to be continued but do not require additional FY 95 funds)

The identification of project categories in no way reflects an action or decision on the part of the Trustee Council regarding any specific project or proposal to

be funded in FY 95. Moreover, it should be noted that the initial review only addressed issues of technical merit, the extent to which proposals were responsive to restoration goals and objectives and the identification of potential legal or policy concerns. Detailed budget information for most projects is only now becoming available and will be the focus of on-going review over the next two months.

[Note: Authorization of FY 95 expenditures for 1) on-going Trustee Council operational costs; 2) projects from FY 94 that need funding for closeout/report writing; and 3) a very few projects from FY 94 that absolutely require interim, first-quarter FY 95 funding will be addressed by the Trustee Council at a meeting scheduled for late August.]

Results of Initial Review

A summary of the initial review and category identification for FY 95 projects is provided in the "Summary of FY 95 Projects" below. Additional detail on individual projects is provided in Tables 1 - 5, attached to this memorandum.

In summary, a total of 178 project proposals have been initially reviewed representing a total FY 95 request of $69.8 million. Research proposals were the most numerous (73 proposals for a total of $18.1 million), followed by General Restoration (65 proposals for $26.6 million), Monitoring (27 proposals for a total of $6.7 million), Habitat Protection and Acquisition (8 proposals for $2.3 million) and Administration/Public Information (4 proposals for $4.1 million). Additionally, it has been proposed that the Trustee Council make an additional deposit into the Restoration Reserve in the amount of $12 million. These proposals will be the subject of on-going public review and comment.

To help put these FY 95 proposals into perspective, in FY 94 the Trustee Council budgeted a total of approximately $35.9 million. This included authorizations for Research and Monitoring ($12.1 million), General Restoration ($5.4 million), Habitat Protection and Acquisition ($2.2 million), Administration/Public Information ($4.2 million) and the Restoration Reserve ($12 million).

On-going Review of Restoration Project Proposals

Once again, it is important to emphasize that **all** project proposals will be subject to on-going review. As a result of the initial technical and policy review, it is apparent that the *Invitation to Submit Restoration Projects for Fiscal Year 1995* provided valuable guidance to those who submitted project proposals. The guidance provided by the *Invitation* also resulted in a number of proposals that address similar issues. Under the direction of the Chief Scientist, a number of working groups are examining opportunities for

DRAFT

SUMMARY OF FY 95 PROJECTS

Proj. Type/ Proj. Category	Cost FY 95	No.	Cost FY 95	No.
Administration and Public Information	**$4,092.0**	**4**		
Category 1			$4,040.1	2
Category 3			$31.9	1
Category 5			$20.0	1
General Restoration	**$26,599.0**	**65**		
Category 1			$2,078.8	10
Category 2			$2,505.6	8
Category 3			$1,922.2	12
Category 4			$19,582.9	26
Category 5			$509.5	6
Category 6			$0.0	3
Habitat Protection	**$2,328.5**	**8**		
Category 1			$1,420.5	2
Category 2			$458.4	2
Category 3			$305.7	3
Category 5			$143.9	1
Monitoring	**$6,700.4**	**27**		
Category 1			$4,621.2	15
Category 2			$1,308.0	5
Category 3			$342.6	2
Category 4			$84.0	1
Category 5			$344.6	4
Research	**$18,105.5**	**73**		
Category 1			$11,478.5	37
Category 2			$1,818.3	10
Category 3			$4,356.9	21
Category 4			$389.5	4
Category 5			$62.3	1
Restoration Reserve	**$12,000.0**	**1**		
Category 1			$12,000.0	1
TOTAL	**$69,825.4**	**178**		

integration and/or coordination of individual project proposals to better address restoration objectives and to potentially reduce costs. (For example, there were roughly a dozen proposals that addressed forage fish as a restoration concern. These projects are being examined collectively to assess opportunities for consolidation.) The results of these working groups will be made available to the PAG in October to assist in its final review.

* * * * *

I look forward to your review and discussion of the Draft FY 95 Work Plan development effort on August 2 - 3.

attachments:

— Attachment A - List of FY 95 Projects (sorted by Project Number)
— Attachment B - Participants in July 12 - 13 BPD Review Work Session
— Table 1 - Research Projects
— Table 2 - General Restoration Projects
— Table 3 - Monitoring Projects
— Table 4 - Habitat Protection Projects
— Table 5 - Administration/Public Information Projects

Exxon Valdez Oil Spill Trustee Council
Restoration Office
645 "G" Street, Anchorage, AK 99501
Phone: (907) 278-8012 Fax: (907) 276-7178

MEMORANDUM

TO: Bob Storer
Chief Investment Officer

FROM: June Arkoulis-Sinclair
Administrative Officer

DATE: July 26, 1994

RE: Exxon Valdez Oil Spill Long Term Reserve Account

As we discussed, on the telephone, there is a Trustee Council meeting scheduled on August 23 and we would like for you to attend. The Trustee Council has asked that we pull together information regarding options available to maximize earnings on settlement funds held by the Court Registry, State of Alaska and Federal government, and explore a long term reserve fund. We would like to receive your input and any information you can provide regarding investment strategies, asset allocation, etc. for those funds invested by the State of Alaska and the proposed reserve fund.

The long term reserve account would provide funding for future research, monitoring and associated restoration projects in the years following the last payment into the trust fund by Exxon in the year 2001. An annual deposit of $12 million would be made into the fund beginning in FY94 for the next five to eight years.

If you are unable to attend but can provide us with the information that would be helpful. We generally send the Trustee Council members a package of material to review a week or two before a meeting to give them an opportunity to develop any questions they may have.

Thank you for your assistance. If you have any questions, please give me a call at 586-7238.

storer.wpd

Exxon Valdez Oil Spill Trustee Council

Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178

MEMORANDUM

To: Restoration Work Force
Bob Spies, Chief Scientist
June Sinclair, Director of Administration

From: Molly McCammon
Director of Operations

Date: July 26, 1994

Subj: Weekly Restoration Work Force Meeting

The Restoration Work Force (RWF) will meet Wednesday, July 27 at 9:00 a.m. The Juneau location is the Forest Service conference room. The agenda, thus far, includes:

1. PAG meeting, August 2 & 3.
2. Work Plan and budget follow-up.
3. Next RWF meeting - August 4 due to PAG conflict?

Jim Ayers will be hooked in for the meeting.

Informational items:

1. PAG meeting - Bob Spies will be present at the PAG meeting. Each agency should have someone available for both days who can discuss their agency's proposed projects.
2. Institute of Marine Science Infrastructure Improvements public hearings:
   July 26 in Seward
   July 28 in Anchorage
3. EIS comments - Comments must be received or postmarked by August 1.

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*** MULTI TRANSACTION REPORT ***
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INCOMPLETE TX/RX

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	[12] 4654759	J.MONTAGUE
	[13] 7896608	MORRIS-WRIGHT
	[14] 2572510	S.RABINOWITCH
	[15] 5624871	C.FRIES
	[17] 2713992	R.THOMPSON
	[18] 5223148	J.SULLIVAN
	[19] 7863636	L.BARTELS
	[20] 7863350	C.BERG
	[35] 5103737834	B.SPIES
	[38] 2715827	G.BELT
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Exxon Valdez Oil Spill Trustee Council
Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178

FAX COVER SHEET

To: Restoration Work Force Number: _____

From: Molly McCammon Date: July 26, 1994

Comments: Total Pages: 2

Pls forward to the RWF member in your ofc.

RESTORATION WORK FORCE MEMBERS INCLUDE:

Ayers, Jim Loeffler, Bob

Exxon Valdez Oil Spill Trustee Council

Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178

FAX COVER SHEET

To: Restoration Work Force Number: _____

From: Molly McCammon Date: July 26, 1994

Comments: Total Pages: 2

PLS forward to the RWF member in your ofc.

RESTORATION WORK FORCE MEMBERS INCLUDE:

Ayers, Jim	Loeffler, Bob
Bartels, Leslie	Montague, Jerome
Berg, Catherine	Morris, Byron
Brodersen, Mark	Rabinowitch, Sandy
Bruce, David	Spies, Bob
Fries, Carol	Sullivan, Joe
Gibbons, Dave	Thompson, Ray
Gilbert, Veronica	Wright, Bruce

Sent by Rebecca

Exxon Valdez Oil Spill Trustee Council

Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178

July 26, 1994

Becky Long
POB 344
Talkeetna, Alaska 99676

Dear Ms. Long:

Thank you for your letter of July 18, 1994 regarding the Trustee Council actions to protect lands owned by Eyak Corporation. Your comments have been forwarded to all the Trustee Council members.

As you know, the Trustee Council took action on May 3, to protect lands around Cordova owned by Eyak/Sherstone Corporations. The Trustee Council and representatives of Eyak/Sherstone will soon be discussing the details of a comprehensive proposal for protection of Eyak lands as part of its comprehensive habitat protection process. I'm sure your comments will be considered as this progresses.

Thank you again for your continued interest in the *Exxon Valdez* Trustee Council actions.

Sincerely,

James R. Ayers
Executive Director

jra/raw

Exxon Valdez Oil Spill Trustee Council

Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178

July 26, 1994

Rosemarie Ruff
Proposal Officer
University of Alaska, Fairbanks
218 O'Neill Building
Fairbanks, Alaska 99775

Dear Ms. Ruff:

This is to confirm that Project 95044 "*In Situ* Formation and Ecotoxicity of Hydrocarbon Degradation Products Produced by Ultramicrobacteria," submitted by D.K. Button, Institute of Marine Science, University of Alaska, Fairbanks is being considered for funding by the *Exxon Valdez* Oil Spill Trustee Council for FY95.

For purposes of calculating indirect costs, this project should be considered a Trustee Council project.

If you have any questions, or need further information, please don't hesitate to contact me.

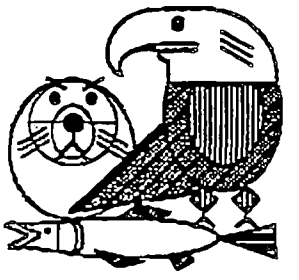
Sincerely,

Molly McCammon
Director of Operations

mm/raw

Exxon Valdez Oil Spill Trustee Council

Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178



MEMORANDUM

To: Alex Swiderski
Assistant Attorney General

John Harmening
U.S. Forest Service

From: Jim Ayers
Executive Director

Date: July 29, 1994

Subj: Appraisal Authorization

You are hereby authorized to undertake an appraisal of certain lands owned by Tatitlek Corporation. The parcels to be appraised are listed in your July 25, 1994 letter (see attached). The parcels include Fee title interest to lands on Heather Island - Columbia Bay and Sawmill Bay, and Commercial Timber Rights and Development Rights on all of Bligh Island, Busby Island and Reef Island.

cc: Dave Gibbons

United States Department of Agriculture
Forest Service
Alaska Region
P.O. Box 21628
Juneau, AK 99802-1628

Reply to: 5420

Date: JUL 25 1994

Mr. James R. Ayers
Executive Director
Exxon Valdez Oil Spill Trustee Council
Restoration Office
645 "G" Street
Anchorage, AK 99501

Dear Mr. Ayers:

Negotiations have progressed with Tatitlek Corporation to the point where specific interests have been identified that require an appraisal. We request that the following interests be scheduled for appraisal as soon as practical:

Fee title interest

Heather Island - Columbia Bay

T. 10 S., R. 10 W., Copper River Meridian (CRM)
Sec. 15, lots 1 to 6, inclusive;
Sec. 16, lots 1 to 10, inclusive;
Secs. 20 and 21 (Fractional), all;
Sec. 22, lots 1 to 5, inclusive;
Sec. 23, lots 1 to 5, inclusive;
Sec. 27, lots 1, 2, and 3;
Sec. 28 to 32 (Fractional), inclusive, all;
Sec. 33.

Sawmill Bay

T. 9 S., R. 9 W., CRM
Sec. 26, lot 5;
Sec. 27, lots 1 to 7, inclusive;
SW1/4NE1/4, NW1/4, NE1/4, SW1/4, W1/2, SW1/4;
Sec. 33, E1/2, E1/2W1/2, SW1/4SW1/4;
Sec. 34, lots 1 to 8, inclusive;
W1/2NW1/4, SE1/4NW1/4, SW1/4;
Sec. 35, lot 2.

Commercial Timber Rights and Development Rights

All of Bligh Island, Busby Island, and Reef Island

The land described is for surface estate only. The subsurface is owned by the Regional Corporation, Chugach Inc. As with other EVOS appraisals for acquisition, we request a subsurface Mineral report.

It is anticipated that additional interests for acquisition, both fee title interest and partial interests, will be identified on the remaining Tatitlek land. Identifications of these parcels are pending recommendations from the Habitat Protection work group following their field trip to the area. After identification of the Highest valued lands, further refining of the remaining lands selection, will be completed. Negotiations along with the Habitat Protection work groups data will provide the identification of parcels requiring additional appraisal requests. This is scheduled for mid August.

In the meantime, we feel it is important to schedule the lands agreed upon to date to insure a completed package will be available in a timely basis. Available timber data and information on Tatitlek Lands have been forwarded to Tim Manley, Timber appraiser/cruiser contractor for his use.

Additional data as requested will be forwarded to Rich Goossens.

Sincerely,

JOHN HARMENING
Realty Specialist

for ALEX SWIDERSKI
Assistant Attorney General

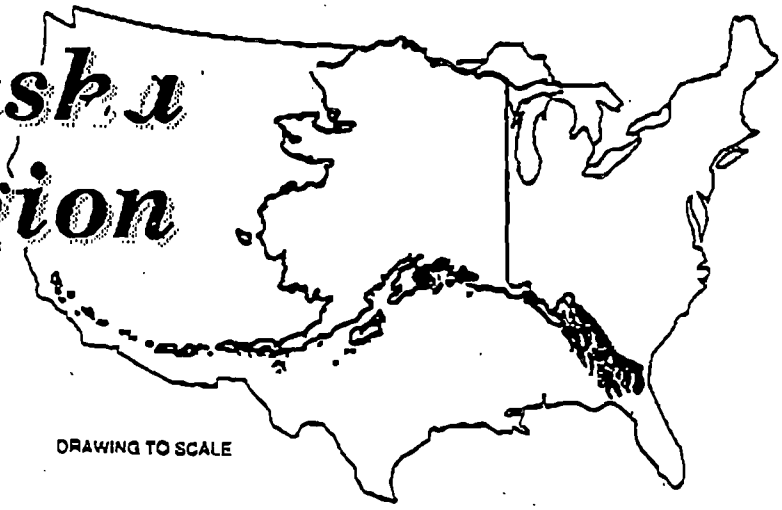
cc:
A.Swiderski
J.Wolfe
D.Gibbons
R.Goossens
Habitat Protection Work Group
B.VanZee

United States Department of Agriculture

Forest Service

Alaska Region

Alaska Region



USDA Forest Service, Regional Office, P.O. Box 21628, Juneau, AK 99802

Cover Page

To: Jim Ayers + Habitat Protection Work Group Fax No.: 276 7178 / 586-7589

Unit: _____ Verification No.: _____

From: John Harmening Fax No.: (907) 586-7843

Unit: LMW Verification No.: _____

Remarks:

Total number of pages (excluding cover): 2

Date Sent: 7/25 Time: 2:15

Exxon Valdez Oil Spill Trustee Council
Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178

MEMORANDUM

To: Robert G. Poe, Jr.
Director, Division of Information &
Administrative Services
Alaska Department of Environmental Conservation

From: Molly McCammon
Director of Operations

Date: July 22, 1994

Subj: Public Meeting Expenditures

The Executive Director of the *Exxon Valdez* Trustee Council has requested that refreshments be provided for an upcoming Public Advisory Group, two-day meeting beginning August 2, 1994. These meetings are long and arduous and refreshments benefit the process. This memo is a request for prior approval to purchase the requested items, as per AAM 35.150.

cc: David Bruce

Robert G. Poe, Jr. _____ Date 7/28/94
Approved

REBECCA WILLIAMS

276 7178

DAVID BRUCE

465 5375

Exxon Valdez Oil Spill Trustee Council

Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178

MEMORANDUM

To: Robert G. Poe, Jr.
Director, Division of Information &
Administrative Services
Alaska Department of Environmental Conservation

From: Molly McCammon
Director of Operations

Date: July 22, 1994

Subj: Public Meeting Expenditures

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cc: David Bruce

Robert G. Poe, Jr._____Date_____
Approved

Exxon Valdez Oil Spill Trustee Council
Restoration Office
645 "G" Street, Anchorage, AK 99501
Phone: (907) 278-8012 Fax: (907) 276-7178

MEMORANDUM

TO: Dave Gibbons

FROM: James B. Ayers
Executive Director

DATE: July 22, 1994

RE: Authorization for Additional Timber Cruise Expenses

The Trustee Council during its July 18 meeting authorized an additional $1.5 million dollars for increase in timber cruise cost.

However, this is to confirm that the authorization for the additional $350,000 for Eyak land timber cruise should not proceed until we have received a detailed cost sheet and a commitment that all work including appraisal will be completed by October. Once we have the information and the commitment we will review it and give written authorization to proceed.

gib1.jra

Exxon Valdez Oil Spill Trustee Council

Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178

MEMORANDUM

To: Agency Liaison

From: Molly McCammon
Director of Operations

Date: July 22, 1994

Subj: FY95 Listing of Projects Review

The FY95 Listing of Projects will be available for pickup from the Executive Director's office in Juneau, from Mary Rivera Monday, July 25, 1994 at 9:00 a.m. For those of you in Anchorage, you may pick up your copy of the FY95 Listing of Projects at the Restoration Office in the Simpson Building.

Please have your comments back to Eric by close of business Tuesday, July 26, 1994, as the Listing of Projects will be distributed to the Public Advisory Group Wednesday, July 27 at Noon.

Exxon Valdez Oil Spill Trustee Council

Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178

July 22, 1994

Mitchell & Hope Cline
POB 727
Cooper Landing, Alaska 99572

Dear Mr. and Mrs. Cline:

Thank you for your letter regarding the Trustee Council actions to protect lands owned by Eyak Corporation. Your comments have been forwarded to all the Trustee Council members.

As you know, the Trustee Council took action on May 3, to protect lands around Cordova owned by Eyak/Sherstone Corporations. The Trustee Council and representatives of Eyak/Sherstone will soon be discussing the details of a comprehensive proposal for protection of Eyak lands as part of its comprehensive habitat protection process. I'm sure your comments will be considered as this progresses.

Thank you again for your continued interest in the *Exxon Valdez* Trustee Council actions.

Sincerely,

James R. Ayers
Executive Director

jra/raw

Exxon Valdez Oil Spill Trustee Council

Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178

July 21, 1994

Michael A. Brain
Royce & Brain
1407 West Thirty First Avenue
Seventh Floor
Anchorage, Alaska 99503-3678

Dear Mr. Brain:

I received your July 7, 1994 letter on July 11, 1994 requesting under the Freedom of Information Act all documents related to negotiations between the Trustee Council and Eyak Corporation/Sherstone, Inc. I am writing to inform you that we will be taking an additional 10 working days to respond to your request because of the need to search for and collect a number of separate records, as well as the need to consult with other agencies that have a substantial interest in this issue. We intend to respond to your request no later than August 5, 1994.

Sincerely,

Molly McCammon

Molly McCammon
Director of Operations

faxed on 7/22.
Hard copy mailed on 7/22.
Produced documents to Brad Johnson on 8/3.

cc: Maria Lisowski, USFS
Alex Swiderski, ADOL

mm/raw

****
*** MULTI TRANSACTION REPORT ***
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TX/RX NO. 1135

INCOMPLETE TX/RX

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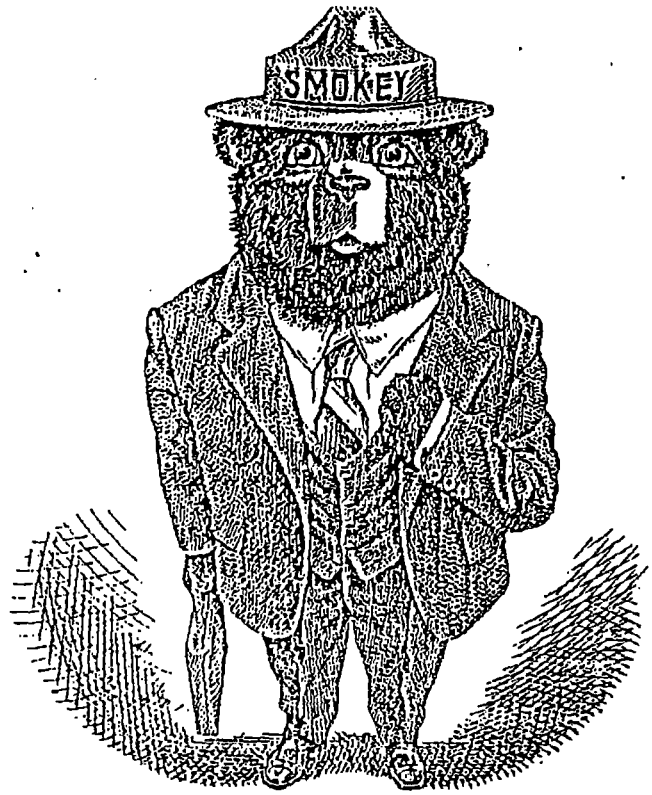


TELECOPY COVER PAGE

UNITED STATES DEPARTMENT OF AGRICULTURE
OFFICE OF THE GENERAL COUNSEL
P.O. BOX 021628
JUNEAU, ALASKA 99802
(907) 586-8826
FAX (907) 586-7251

TO: Molly McCammon UNIT: _____

FAX: _____

FROM: Maria

NUMBER OF PAGES (not including the cover sheet) 2

DATE: 7/20/94 TIME: 245

COMMENTS:

practicable date and expedited in every way.] Repealed. Pub. L. 98-620, Title IV, 402(2), Nov. 8, 1984, 98 Stat. 3335, 3357.

(E) The court may assess against the United States reasonable attorney fees and other litigation costs reasonably incurred in any case under this section in which the complainant has substantially prevailed.

(F) Whenever the court orders the production of any agency records improperly withheld from the complainant and assesses against the United States reasonable attorney fees and other litigation costs, and the court additionally issues a written finding that the circumstances surrounding the withholding raise questions whether agency personnel acted arbitrarily or capriciously with respect to the withholding, the Special Counsel shall promptly initiate a proceeding to determine whether disciplinary action is warranted against the officer or employee who was primarily responsible for the withholding. The Special Counsel, after investigation and consideration of the evidence submitted, shall submit his findings and recommendations to the administrative authority of the agency concerned and shall send copies of the findings and recommendations to the officer or employee or his representative. The administrative authority shall take the corrective action that the Special Counsel recommends.

(G) In the event of noncompliance with the order of the court, the district court may punish for contempt the responsible employee, and in the case of a uniformed service, the responsible member.

(5) Each agency having more than one member shall maintain and make available for public inspection a record of the final votes of each member in every agency proceeding.

(6)(A) Each agency, upon any request for records made under paragraph (1), (2), or (3) of this subsection, shall--

(i) determine within ten days (excepting Saturdays, Sundays, and legal public holidays) after the receipt of any such request whether to comply with such request and shall immediately notify the person making such request of such determination and the reasons therefor, and of the right of such person to appeal to the head of the agency any adverse determination; and

(ii) make a determination with respect to any appeal within twenty days (excepting Saturdays, Sundays, and legal public holidays) after the receipt of such appeal. If on appeal the denial of the request for records is in whole or in part upheld, the agency shall notify the person making such request of the provisions for judicial review of that determination under paragraph (4) of this subsection.

(B) In unusual circumstances as specified in this subparagraph, the time limits prescribed in either clause (i) or clause (ii) of subparagraph (A) may be extended by written notice to the person making such request setting forth the reasons for such extension and the date on which a determination is expected to be dispatched. No such notice shall specify a date that would result in an extension for more than ten working days. As used in this subparagraph, "unusual circumstances" means, but only to the extent reasonably necessary to the proper processing of the particular request--

Molly - he's the applicable law

- it is working days

- you do have unusual circumstance

(i) the need to search for and collect the requested records from field facilities or other establishments that are separate from the office processing the request;

(ii) the need to search for, collect, and appropriately examine a voluminous amount of separate and distinct records which are demanded in a single request; or

(iii) the need for consultation, which shall be conducted with all practicable speed, with another agency having a substantial interest in the determination of the request or among two or more components of the agency having substantial subject-matter interest therein.

* both appear applicable

(C) Any person making a request to any agency for records under paragraph (1), (2), or (3) of this subsection shall be deemed to have exhausted his administrative remedies with respect to such request if the agency fails to comply with the applicable time limit provisions of this paragraph. If the Government can show exceptional circumstances exist and that the agency is exercising due diligence in responding to the request, the court may retain jurisdiction and allow the agency additional time to complete its review of the records. Upon any determination by an agency to comply with a request for records, the records shall be made promptly available to such person making such request. Any notification of denial of any request for records under this subsection shall set forth the names and titles or positions of each person responsible for the denial of such request.

(b) This section does not apply to matters that are--

(1)(A) specifically authorized under criteria established by an Executive order to be kept secret in the interest of national defense or foreign policy and (B) are in fact properly classified pursuant to such Executive order;

(2) related solely to the internal personnel rules and practices of an agency;

(3) specifically exempted from disclosure by statute (other than section 552b of this title), provided that such statute (A) requires that the matters be withheld from the public in such a manner as to leave no discretion on the issue, or (B) establishes particular criteria for withholding or refers to particular types of matters to be withheld;

(4) trade secrets and commercial or financial information obtained from a person and privileged or confidential;

(5) inter-agency or intra-agency memorandums or letters which would not be available by law to a party other than an agency in litigation with the agency;

(6) personnel and medical files and similar files the disclosure of which would constitute a clearly unwarranted invasion of personal privacy;

(7) records or information compiled for law enforcement purposes, but only to the extent that the production of such law enforcement records or information (A) could reasonably be expected to interfere with enforcement proceedings, (B) would deprive a person of a right to a fair trial or an impartial adjudication, (C) could reasonably be expected to constitute an unwarranted invasion

Exxon Valdez Oil Spill Trustee Council

Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178

FAX COVER SHEET

To: Craig Tillery / Alex Swiderski Number: _____

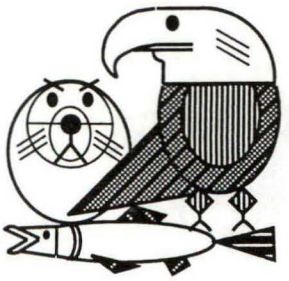
From: Molly McCammon Date: 2/15/94

Comments: Total Pages: 2

Craig / Alex -
this arrived this week.
Please advise.

Document Sent By: Molly

Exxon Valdez Oil Spill Trustee Council
Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178



FAX COVER SHEET

To: Michael A. Brain
Maria Lisowski
Alex Swiderski Number:

From: Molly McCammon Date: July 22, 1994

Comments: Total Pages: 2

PLS deliver

Document Sent By: Rebecca

Royce & Brain
1407 West Thirty First Avenue
Seventh Floor
Anchorage, Alaska 99503-3678

Telephone (907) 258-6792
Facsimile (907) 276-2919

*Raymond H. Royce**
Michael A. Brain

Brent A. Johnson

* ALSO ADMITTED IN MASSACHUSETTS

July 7, 1994

Molly McCammon
Exxon Valdez Trustee Counsel
645 "G" Street
Anchorage, Alaska 99501

Re: Freedom of Information Act Request
Our File No. 1340.1

Dear Ms. McCammon:

This letter is a Freedom of Information Act Request for all documents related to negotiations between the Trustee Counsel and Eyak Corporation/Sherstone, Inc. regarding the Trustee's proposed purchase of timber rights and/or land located in Prince William Sound from Eyak Corporation, Eyak Timber or Sherstone, Inc. This Freedom of Information Act Request includes, but is not limited to, correspondence, transcripts, audio/video tapes, meeting minutes, reports, and memoranda, and any and all documents which reflect, describe, relate to or reference any and all communications, hearings, testimony, or the like, regarding the said purchase or moratorium.

I realize that the information sought is probably voluminous. This office will pay the reasonable expense of having these documents copied. Please give me a call at your earliest opportunity so that we may discuss this request.

Sincerely,

ROYCE & BRAIN

Michael A. Brain

MAB/che

cc: Sound Development, Inc.
1340FIAR.Ltr

LAW OFFICES OF ROYCE & BRAIN
1407 West Thirty-First Avenue, 7th Floor
Anchorage, Alaska 99503-3678

Molly McCammon
Exxon Valdez Trustee Counsel
645 "G" Street
Anchorage, Alaska 99501

Exxon Valdez Oil Spill Trustee Council

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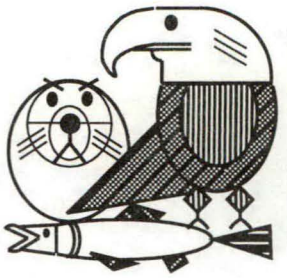

MEMORANDUM

To: Cathy @ G. Frampton's Office
Renee @ P. Janik's Office
Linda @ S. Pennoyer's Office
Carla @ C. Rosier's Office
Martha @ J. Sandor's Office
Vicki @ C. Tillery's Office
Wanda @ D. Williams' Office

From: Rebecca Williams RAW
Exxon Valdez Restoration Office

Date: July 21, 1994

Subj: Confirmation for August Trustee Council Meeting

This memo is **confirming** the decision the Trustee Council (TC) made Monday, July 18, 1994 regarding the next TC meeting on August 23. The August 8 & 29 meetings have been canceled while a meeting was scheduled for Tuesday, August 23 at 10:30 a.m. in Anchorage, at the Simpson Building.

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If you have any questions, please call me at 265-9326 or at the number listed above. Thanks!

****
*** ACTIVITY REPORT ***
****

TRANSMISSION OK

TX/RX NO.	1121	
CONNECTION TEL		5867131
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START TIME	07/21 15:54	
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PAGES	1	
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*** MEMORY LIST ***
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		[12] J.MONTAGUE				
		[13] MORRIS-WRIGHT				
		[15] C.FRIES				
		[17] R.THOMPSON ✓				
		[19] L.BARTELS ✓				
		[35] B.SPIES				
		7863641 Irons				
		7863636 Bodkins				
		7622628 Bettner				
		4526410 Frost				

~~Ayers~~
~~Fanick~~
~~Botelho~~
~~Frampton~~
Pennoyer
~~Rosier~~
~~Sandor~~
~~Craig~~
~~Williams~~

D Williams
271402

Exxon Valdez Oil Spill Trustee Council
Restoration Office
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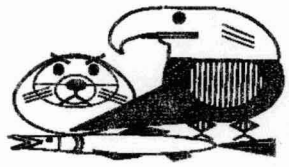

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TRANSMISSION REPORT

THIS DOCUMENT (REDUCED SAMPLE ABOVE)
WAS SENT

** COUNT **
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*** SEND ***

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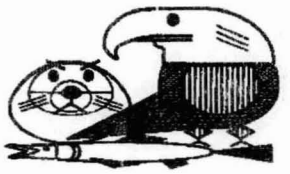
Williams

XEROX TELECOPIER 7021

Exxon Valdez Oil Spill Trustee Council

Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178



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Exxon Valdez Restoration Office

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*** SEND ***

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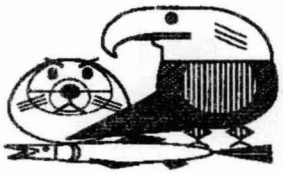
XEROX TELECOPIER 7021

Craig

Exxon Valdez Oil Spill Trustee Council

Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178



MEMORANDUM

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From: Rebecca Williams
Exxon Valdez Restoration Office

Date: July 21, 1994

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Trustee Agencies
State of Alaska: Departments of Fish & Game, Law, and Environmental Conservation
United States: National Oceanic and Atmospheric Administration, Departments of Agriculture and Interior

TRANSMISSION REPORT

THIS DOCUMENT (REDUCED SAMPLE ABOVE)
WAS SENT

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*** SEND ***

NO	REMOTE STATION I. D.	START TIME	DURATION	#PAGES	COMMENT
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Sandor

XEROX TELECOPIER 7021

Exxon Valdez Oil Spill Trustee Council
Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 276-8012 Fax: (907) 276-7178

MEMORANDUM

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Exxon Valdez Restoration Office

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TRANSMISSION REPORT

THIS DOCUMENT (REDUCED SAMPLE ABOVE)
WAS SENT

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*** SEND ***

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XEROX TELECOPIER 7021

Frampton

Exxon Valdez Oil Spill Trustee Council
Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
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MEMORANDUM

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From: Rebecca Williams RW
Exxon Valdez Restoration Office

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*** SEND ***

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XEROX TELECOPIER 7021

Botelho

Exxon Valdez Oil Spill Trustee Council
Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
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MEMORANDUM

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Exxon Valdez Restoration Office

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XEROX TELECOPIER 7021

Janik

Exxon Valdez Oil Spill Trustee Council

Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178

MEMORANDUM

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Carla @ C. Rosier's Office
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From: Rebecca Williams RAW
Exxon Valdez Restoration Office

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TRANSMISSION REPORT

THIS DOCUMENT (REDUCED SAMPLE ABOVE)
COULD NOT BE SENT

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*** SEND ***

NO	REMOTE STATION I. D.	START TIME	DURATION	#PAGES	COMMENT
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Ayers

XEROX TELECOPIER 7021

****
*** MULTI TRANSACTION REPORT ***
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INCOMPLETE TX/RX [28] 5867249 S.PENNOYER

TRANSACTION OK [29] 4652332 C.ROSIER

~~ERROR~~

Exxon Valdez Oil Spill Trustee Council

Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178

MEMORANDUM

To: Restoration Work Force

From: Molly McCammon
Director of Operations

Date: July 21, 1994

Subj: Addendum to Friday's Agenda

Please review the Cook Inlet Seiners and LGL correspondence included in the initial project packet, for the meeting tomorrow, July 22, 1994 at 9:00 a.m.

****
*** MULTI TRANSACTION REPORT ***
****

TX/RX NO. 1117

INCOMPLETE TX/RX

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	[38] 2715827	G.BELT

ERROR

Exxon Valdez Oil Spill Trustee Council

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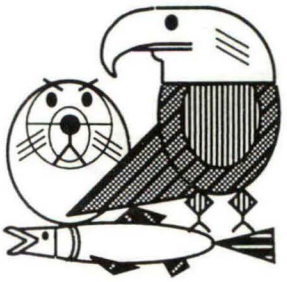

FAX COVER SHEET

DRAFT

To: Restoration Work Force Number: _____

From: Molly Date: July 21, 1994

Comments: Total Pages: 2

Pls forward. Thank you

RESTORATION WORK FORCE MEMBERS INCLUDE:

Ayers, Jim	Loeffler, Bob
Bartels, Leslie	Montague, Jerome
Berg, Catherine	Morris, Byron
Brodersen, Mark	Rabinowitch, Sandy
Bruce, David	Spies, Bob
Fries, Carol	Sullivan, Joe
Gibbons, Dave	Thompson, Ray
Gilbert, Veronica	Wright, Bruce

Myers, Eric
McCammon, Molly

Document Sent By: Rebecca

Exxon Valdez Oil Spill Trustee Council

Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
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MEMORANDUM

TO: Restoration Work Force
Coordinating Committee
Bob Spies, Chief Scientist

FROM: Jim Ayers
Executive Director

Molly McCammon
Director of Operations

DATE: July 20, 1994

RE: Follow-up to Project Review Meeting

First, we wanted to thank you for all your assistance and cooperation during last week's proposal review session. From our perspective, it went very well. Obviously, getting from here to final Trustee action in late October is going to require a lot of work from everyone, including a substantial amount of facilitation. This memo reflects our best thoughts on how to move forward in the next few weeks. Attached is a revised Work Plan timeline (Attachment A). Also attached is the outline for the Draft FY95 Work Plan (Attachment B) that was approved by the Trustee Council. Please feel free to contact us if you need assistance in accomplishing these efforts or wish further clarification.

Attached you will also find a listing of FY95 projects organized by category (Attachment C):

Category 1 - high priority for restoration
Category 2 - lesser priority
Category 3 - low priority
Category 4 - legal or policy issues
Category 5 - report writing/data analysis/closeout for FY94 projects
Category 6 - carry forward
NR - not yet ranked

See Attachment B for further articulation of working definitions of categories.

Specific follow-up includes:

1. Brief Project Descriptions (BPD)

BPDs for Category 1 and 2 proposals will be published and available for public review during the Draft Work Plan public comment period. Many BPDs need some editing, revision, and reformatting. Sandra Schubert at the Restoration Office will work with agency liaisons to accomplish those changes. For those revisions included in Attachment D, the lead agency for the project will be responsible for developing the revised or consolidated BPD under the direction of the Chief Scientist. When revising a BPD, the attached format (Attachment E) should be used for the title page. Revised BPDs are due **August 3** and should be submitted in electronic and hard copy versions to Sandra Schubert. It is recognized that it may not be possible for all the revisions and consolidations to be completed in time to be included in the Draft Work Plan. In these cases, the original BPDs and detailed budgets will be printed for public comment.

2. Budget Follow-up

All revised and final detailed budgets for category 1 and 2 projects (two hard copies plus electronic version) - including interim funding requests - are due to June Arkoulis-Sinclair in Juneau, and one "clean" copy (no FAXes) to Eric Myers in Anchorage, absolutely no later than **July 29, 1994. NO EXCEPTIONS!** If there is a project categorized as a 3 or 4 that an agency feels strongly should be ranked as a category 1, the agency should go ahead and prepare a detailed budget in order to permit further consideration in a timely manner. If project budgets are not submitted within this time frame, it will be difficult, if not impossible, for us to include these projects in the Executive Director's recommendation. It is especially important that project budgets for which report writing/interim funding is proposed be submitted as soon as possible. All detailed budgets will be reviewed, and any problems fixed, prior to publication. June has been reviewing many of the detailed budgets already submitted, and in many cases, has been returning them to the agency liaison to follow-through with recommended changes. **The agency liaisons are responsible for all BPDs and detailed budgets for all category 1 and 2 projects for which they have been assigned lead agency responsibility.**

3. Specific Budget follow-up for projects initially identified as "closeout" projects (Category 5)

95007-CLO detailed budget info should be included in the detailed budget for 95007 in the report writing/interim column. Sandra Schubert will work with the agency liaison to revise the 95007 BPD to reflect the report writing activities.

95039-CLO should be incorporated into 95039 as above.

95041A-CLO and 95041B-CLO detailed budgets should be combined into a single detailed budget for 95041. The A portion should be in the "report/interim" column on the budget form. The B portion should be in the "remaining costs" column. The A and B designations should disappear. A consolidated BPD should be prepared for the entire project.

95090-CLO budget has already been consolidated into the detailed budget for 95090, and a revised BPD is being prepared.

95102-CLO should stay as prepared.

95110-CLO should stay as prepared.

95173-CLO should be consolidated within 95173 in the report writing/interim column. Sandra Schubert will work with the agency liaison to develop a consolidated BPD.

95266-CLO should stay as prepared.

95285-CLO should stay as prepared.

95422-CLO should stay as prepared.

95428-CLO should stay as prepared.

Attachment A

DRAFT

FY95 Work Plan Timeline

Period	Task
05/16 - 06/15	Invitation to submit FY95 Restoration Projects. (Deadline for main process is 6/15; deadline for two experimental procurements is 6/30.) Trustee Council briefed on May 31.
05/27	Identify interim funding needs for first quarter FY95.
06/02	Finalize and distribute FY95 budget instructions to agencies.
06/02 - 06/10	Review and finalize list of FY95 interim funding needs.
06/16 - 06/23	Staff review and organization of project proposals. Review of each agency's projects by that agency's attorneys completed.
06/24	All budgets for FY95 due.
06/28	Public Advisory Group briefing.
06/24 - 07/11	Chief scientist and technical review. Legal review of all projects by all attorneys. Agency review of all projects.
07/11	Trustee Council meeting (less than fee issues).
07/12 - 07/13	Chief Scientist, Interim Science Review Board, Executive Director, Restoration Work Force, and Coordinating Committee. Prioritize project proposals.
07/14 - 08/07	Revise, combine, and add projects if needed. Prepare preliminary Draft Work Plan.
08/01	Draft Administration and Interim Budgets available for review.
08/02	Public Advisory Group review of preliminary Draft FY95 Work Plan.
08/07 - 08/15	Finalize Draft FY95 Work Plan. Finalize Brief Project Descriptions and draft budgets.
08/15 - 09/01	Print and mail Draft FY95 Work Plan.

DRAFT

08/15 - 08/22	Trustee Council meeting to take action on FY95 budgets for administration, carry-forward projects, and 94 reports.
09/01 - 10/01	Review of the Draft FY95 Work Plan by the general public.
10/02 - 10/10	Compile comments received.
10/05 - 10/08	Chief Scientist and core reviewers review Draft FY95 Work Plan.
10/11	Public Advisory Group review of Draft FY95 Work Plan.
10/15	Executive Director prepares final recommendations in response to public comment.
10/21	Trustee Council receives packet of information for 10/31 meeting.
10/31	Trustee Council approves FY95 Work Plan.
11/01 - 12/1	Agencies prepare Detailed Project Descriptions, prepare Requests For Proposals (RFPs) as appropriate.
12/1 - 01/31	Scientific or peer review of Detailed Project Descriptions.
1/15 - 1/20	Principle Investigator Workshop to review results of 1994 field season, modify FY95 projects if needed, and develop FY96 priorities.
02/01 - 02/28	Approve Detailed Project Descriptions (revise if needed) and negotiate contracts.

Attachment B

DRAFT

7/19/94

Outline of Draft FY 95 Work Plan

Note: The following outline represents a draft proposal by staff in order to organize information about the Draft FY 95 Work Plan and provide an opportunity for meaningful public review and comment. The proposal to identify various project categories in no way reflects an action or decision on the part of the Trustee Council regarding any specific project or proposal to be funded in FY 95. Budgets for continuing administrative costs and closeout/report writing for FY 94 projects will require action by the Trustee Council in late August. It is intended that a Draft FY 95 Work Plan will be published for public review and comment in early September. Based on comment received as a result of the PAG and public review, the Executive Director will present a formal recommendation for consideration and action by the Trustee Council at a meeting in late October.

Summary: Draft FY 95 Work Plan

This document would consist of:

— an introduction and several tables that identify Category 1 projects[1] (number, title, sponsor, lead agency, cost) organized according to category (General Restoration, Monitoring, Research, Habitat Protection and Administration) together with a narrative that puts the set of Category 1 projects into the context of the overall restoration goals, objectives and strategies drawing on the guidance provided in the *Invitation to Submit Restoration Projects for FY 95* and the *Draft Restoration Plan*

— a listing of Category 2[2] projects; Category 3[3] projects; Category 4[4] projects as well as identify "closeout" and "carry-forward" projects[5]

Note: this document would receive wide circulation to the Trustee Council mailing list.

Draft FY 95 Work Plan — Supplement Volume I

This document would consist of:

— Brief Project Descriptions for Category 1 and Category 2 projects

— information on how to obtain BPDs for other projects

Note: this document would receive limited mail circulation, but be widely noticed as available upon request.

Attachment B

Draft FY 95 Work Plan — Supplement Volume II

This document would consist of:

— detailed budget forms for Category 1 and Category 2 projects

Note: this document would be provided to agencies for internal review and available at libraries for public review.

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(1) This set of projects will reflect a comprehensive, balanced set of priority FY 95 projects identified by the Executive Director in consultation with the Chief Scientist, Trustee Council agency liaisons, the PAG representatives and the Coordinating Committee on the basis of information available at this time. This set of projects will include General Restoration, Monitoring, Research, Habitat Protection and Administration/Public Information projects of a high priority that are responsive to the guidance (objectives and strategies) provided by the *Invitation to Submit Restoration Projects for FY 95.*

(2) This set of projects will include General Restoration, Monitoring, Research, Habitat Protection and Administration/Public Information projects identified as permissible under the terms of the civil settlement, but of a lower priority in FY 95, together with a statement of the rationale for their designation as Category 2 projects.

(3) This set of projects will include General Restoration, Monitoring, Research, Habitat Protection and Administration/Public Information projects that have been proposed to the Trustee Council that are identified as being incomplete, lacking a clear relationship to restoration or otherwise of low priority, together with a statement of the rationale for their designation as Category 3 projects.

(4) This set of projects will include General Restoration, Monitoring, Research, Habitat Protection and Administration/Public Information projects raising significant legal or policy issues. A specific rationale for why a particular project is proposed for this category will be provided for each project (e.g., not legally permissible under the civil settlement, the proposal would fund a normal agency responsibility).

(5) Closeout projects are those projects from a prior year that will be concluded in FY 95. Carry-forward projects are those projects that were not completed in FY 94, that are to be continued but do not require additional funds in FY 95.

Attachment C

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List of FY 95 Projects

(sorted by Category 1, 2, 3, 4, 5, 6 or NR)

Cat.	Proj.No.	Title	Proposer	Lead Agency	Proj. Type	Cost FY 95
1	95001	Condition and Health of Harbor Seals	Castellini, UAF	ADFG	Research	$153.8
1	95007A	Archaeological Site Restoration - Index Site Monitoring	ADNR	ADNR	Monitoring	$190.9
1	95007B	Archaeological Site Restoration (Site SEW-488)	USFS	USFS	General Restoration	$185.2
1	95009D	Survey and Experimental Enhancement of Octopuses in Intertidal Habitats	Scheel, PWS Science Center	USFS	Research	$159.5
1	95013	Killer Whale Monitoring in PWS	Matkin, North Gulf Oceanic Society	NOAA	Monitoring	$105.0
1	95014	Predation by Killer Whales in PWS: Feeding Behavior and Distribution of Predators and Prey	Matkin, North Gulf Oceanic Society	NOAA	Research	$156.9
1	95019	Distribution of Forage Fish as Indicated by Puffin Diet Sampling	DOI	DOI	Research	$284.4
1	95025A	Factors Affecting Recovery of Sea Ducks and Their Prey	DOI	DOI	Research	$393.7
1	95025B	Sea Otter Abundance and Distribution, Food Habits and Population Assessment	DOI	DOI	Research	$162.7
1	95025C	Pigeon Guillemots and River Otters as Bioindicators of Nearshore Ecosystem Health	Roby, UAF	DOI	Research	$179.6
1	95025H	Effects of Predatory Invertebrates on Nearshore Clam Populations in Prince William Sound	Van Blaricom, UAF	DOI	Research	$118.4
1	95026	Hydrocarbon Monitoring: Integration of Microbial and Chemical Sediment Data	Braddock, UAF	ADEC	Monitoring	$84.4
1	95030	Productivity Survey of Bald Eagles in PWS	DOI	DOI	Monitoring	$81.9

List of FY 95 Projects

(sorted by Category 1, 2, 3, 4, 5, 6 or NR)

Cat.	Proj.No.	Title	Proposer	Lead Agency	Proj. Type	Cost FY 95
1	95031	Reproductive Success as a Factor Affecting Recovery of Murrelets in PWS	DOI	DOI	Research	$398.0
1	95033	Kittiwakes as Indicators of Forage Fish Availability	DOI	DOI	Research	$198.5
1	95039	Common Murre Productivity Monitoring	DOI	DOI	Monitoring	$163.7
1	95044	In Situ Formation and Ecotoxicity of Hydrocarbon Degradation Products Produced by Ultramicrobacteria	Button, UAF	NOAA	Research	$118.5
1	95048	Historical Analysis of Sockeye Salmon Growth	Ruggerone, Natural Resources Consultants	ADFG	Monitoring	$85.0
1	95051	Large-scale Coded Wire Tagging of PWS Herring	June, Natural Resources Consultants	ADFG	General Restoration	$190.6
1	95052	Community Involvement and Use of Traditional Knowledge	ADNR	ADNR	General Restoration	$230.6
1	95064	Monitoring, Habitat Use, and Trophic Interactions of Harbor Seals in PWS	ADFG	ADFG	Research	$309.4
1	95074	Herring Reproductive Impairment	NOAA	NOAA	Research	$234.8
1	95076	Effects of Oiled Incubation Substrate on Survival and Straying of Wild Pink Salmon	NOAA	NOAA	Research	$179.9
1	95086A	Coastal Habitat Intertidal Monitoring and Experimental Design Verification	Stekoll, UAF	ADFG	Monitoring	$829.4
1	95086C	Herring Bay Monitoring and Restoration Studies	Highsmith, UAF	ADFG	Monitoring	$549.1
1	95087	Sea Urchin Population Dynamics: Changes in Population Density and Availability as Prey of Sea Otters	Jewett, UAF	ADFG	Research	$65.4

List of FY 95 Projects

(sorted by Category 1, 2, 3, 4, 5, 6 or NR)

Cat.	Proj.No.	Title	Proposer	Lead Agency	Proj. Type	Cost FY 95
1	95089	Information Management System	Executive Director's Office	ADFG	Administration and Public Information	$540.1
1	95090	Mussel Bed Restoration and Monitoring in PWS and Gulf of Alaska	NOAA	NOAA	Monitoring	$261.8
1	95092	Recovery Monitoring of PWS Killer Whales	NOAA	NOAA	Monitoring	$99.5
1	95100	Administrative Budget	Executive Director's Office	ALL	Administration and Public Information	$3,500.0
1	95105	Kenai River Ecosystem Restoration Pilot Enclosure Study	ADFG	ADFG	Research	$361.2
1	95106	Subtidal Monitoring: Eelgrass Communities	Jewett, UAF	ADFG	Monitoring	$399.9
1	95115	Sound Waste Management Plan	Prince William Sound Economic DevelopmentCouncil	ADEC	General Restoration	$275.9
1	95126	Habitat Protection and Acquisition Support	ADNR	ADNR	Habitat Protection	$1,403.3
1	95137	Prince William Sound Salmon Stock Identification and Monitoring Studies	ADFG	ADFG	General Restoration	$273.4
1	95163	Abundance and Distribution of Forage Fish and their Influence on Recovery of Injured Species	NOAA	NOAA	Research	$1,203.7
1	95166	Herring Natal Habitats	ADFG	ADFG	Monitoring	$493.3
1	95173	Factors Affecting Recovery of PWS Pigeon Guillemot Populations	DOI	DOI	Research	$353.7
1	95191A	Investigating and Monitoring Oil Related Egg and Alevin Mortalities	ADFG	ADFG	Research	$681.5

List of FY 95 Projects

(sorted by Category 1, 2, 3, 4, 5, 6 or NR)

Cat.	Proj.No.	Title	Proposer	Lead Agency	Proj. Type	Cost FY 95
1	95191B	Injury to Salmon Eggs and Pre-emergent Fry Incubated in Oiled Gravel (Laboratory Study)	NOAA	NOAA	Research	$165.6
1	95244	Seal and Sea Otter Cooperative Subsistence Harvest Assistance	ADFG	ADFG	General Restoration	$54.5
1	95255	Kenai River Sockeye Restoration	ADFG	ADFG	General Restoration	$406.1
1	95258	Sockeye Salmon Overescapement	ADFG	ADFG	Monitoring	$983.3
1	95272	Chenega Chinook Release Program	Olsen, PWS Aquaculture Corporation	ADFG	General Restoration	$38.7
1	95290	Hydrocarbon Data Analysis, Interpretation, and Database Maintenance for Restoration and NRDA Environmental Samples Associated with the Exxon Valdez Oil Spill	NOAA	NOAA	Monitoring	$72.2
1	95320A	Salmon Growth and Mortality	ADFG	ADFG	Research	$267.8
1	95320E	Juvenile Salmon and Herring Integration	ADFG	ADFG	Research	$1,032.1
1	95320G	Phytoplankton and Nutrients	McRoy, UAF	ADFG	Research	$227.3
1	95320H	Role of Zooplankton in the PWS Ecosystem	Cooney, UAF	ADFG	Research	$235.1
1	95320I(1)	Isotope Tracers - Food Webs of Marine Mammals and Birds	Schell, Institute of Marine Science	ADFG	Research	$100.1
1	95320I(2)	Isotope Tracers - Food Webs of Fish	Kline, UAF	ADFG	Research	$73.4
1	95320J	Information Systems and Model Development	Patrick, PWS Science Center	ADFG	Research	$789.6
1	95320M	Observational Physical Oceanography in PWS and the Gulf of Alaska	Salmon, PWS Science Center	ADFG	Research	$545.2
1	95320N	Nearshore Fish	Thomas, PWS Science Center	ADFG	Research	$600.6

List of FY 95 Projects

(sorted by Category 1, 2, 3, 4, 5, 6 or NR)

Cat.	Proj.No.	Title	Proposer	Lead Agency	Proj. Type	Cost FY 95
1	95320Q	Avian Predation on Herring Spawn	USFS	ADFG	Research	$124.8
1	95320S	Disease Impacts on PWS Herring Populations (competetive project solicitation under ADF&G two-step, RFQ-RFP process)	ADFG	ADFG	Research	$375.0
1	95320T	Juvenile Herring Growth and Habitat Partitioning	ADFG	ADFG	Research	$378.6
1	95320U	Somatic and Spawning Energetics of Herring and Pollock	Paul, UAF	ADFG	Research	$94.4
1	95424	Restoration Reserve	ALL	ALL	Restoration Reserve	$12,000.0
1	95427	Harlequin Duck Recovery Monitoring	ADFG	ADFG	Monitoring	$221.8
1	95505B	Data Analysis for Stream Habitat	USFS	USFS	Habitat Protection	$17.2
2	95005	Harlequin Duck Abundance and Productivity in Western Cook Inlet	DOI	DOI	Monitoring	$40.2
2	95009C	Trophic Dynamics and Energy Flow: Impacts of Herring Spawn and Sea Otter Predation on Nearshore Benthic Community Structure	Highsmith, UAF	USFS	Research	$217.3
2	95018	Partitioning of Primary Production Between Pelagic and Benthic Communities	Naidu, UAF	ADFG	Research	$197.1
2	95021	Seasonal Movement and Pelagic Habitat Use by Common Murres from the Barren Islands	DOI	DOI	Research	$251.1
2	95023	Food Web Relationships of Pelagic Species Exhibiting Long-term Decline	Duffy, Alaska Natural Heritage Program	DOI	Research	$168.0
2	95024	Enhancement of Wild Pink Salmon Stocks	Reidel, Native Village of Eyak	ADFG	General Restoration	$350.0

List of FY 95 Projects

(sorted by Category 1, 2, 3, 4, 5, 6 or NR)

Cat.	Proj.No.	Title	Proposer	Lead Agency	Proj. Type	Cost FY 95
2	95025E	Algal Competition Limiting Recovery in the Intertidal	Stekoll, UAF	DOI	Research	$222.5
2	95025F	Availability and Utilization of Musculus spp. as Food for Sea Ducks and Sea Otters	Dean, Coastal Resources Associates, Inc.	DOI	Research	$4.6
2	95025J	Primary Productivity as a Factor in the Recovery of Injured Resources in Prince William Sound	Stekoll, UAF	DOI	Research	$397.0
2	95027	Kodiak and Alaska Peninsula Comprehensive Shoreline Assessment: Monitoring Surface and Subsurface Oil	ADEC	ADEC	Monitoring	$759.5
2	95029	Population Survey of Bald Eagles in PWS	DOI	DOI	Monitoring	$48.3
2	95038	Symposium on Seabird Restoration	Harrison, Pacific Seabird Group	DOI	General Restoration	$77.0
2	95054	Montague Riparian Rehabilitation	USFS	USFS	Habitat Protection	$42.7
2	95057	Movement of Larval and Juvenile Fishes within PWS	Norcross, UAF	NOAA	Research	$300.0
2	95058	Restoration Assistance to Private Landowners	USFS	ADFG	Habitat Protection	$415.7
2	95062	River Otter Recovery Monitoring	ADFG	ADFG	Monitoring	$69.0
2	95069	Restoration of Salmon Stocks of Special Importance to Native Cultures	ADFG	ADFG	General Restoration	$672.6
2	95075	Population Structure of Blue Mussels in Relation to Levels of Oiling and Densities of Vertebrate Predators	NOAA	NOAA	Research	$197.5
2	95116	Restoration of Intertidal Oiled Mussel Beds by Nondestructive Manipulation/Flushing with PES-51	Rog, PES Services AK, Inc.	ADEC	General Restoration	$453.2

List of FY 95 Projects

(sorted by Category 1, 2, 3, 4, 5, 6 or NR)

Cat.	Proj.No.	Title	Proposer	Lead Agency	Proj. Type	Cost FY 95
2	95139B	Spawning Channel - Port Dick Creek	ADFG	ADFG	General Restoration	$127.5
2	95159	Surveys to Determine Additional Oil Spill Effects and Recovery of Marine Bird and Sea Otter Populations in PWS	DOI	DOI	Monitoring	$391.0
2	95320D	PWS Pink Salmon Genetics	ADFG	ADFG	Research	$218.2
3	95006	Paint River Pink Salmon Development	Mears, Cook Inlet Aquaculture Assn.	ADFG	General Restoration	$173.9
3	95009A	Trophics and Community Structure in the Intertidal and Shallow Subtidal	Highsmith, UAF	USFS	Research	$455.4
3	95009B	Primary Productivity as a Factor in the Recovery of Injured Resources in Prince William Sound	Stekoll, UAF	USFS	Research	$218.9
3	95009E	Community Structure of Mobile Foragers Using the Nearshore	USFS	USFS	Research	$280.5
3	95010	Intertidal Fauna and Flora Species Composition, Abundance and Variability Relative to Physical Habitat Controls	Schoch, Oregon State Univ.	DOI	Research	$73.5
3	95022	Foraging Efficiencies at Temporary Food Patches	Scheel, PWS Science Center	DOI	Research	$183.1
3	95025D	Settlement Rates of Nearshore Invertebrates, Oceanic Processes and Population Recovery: Are They Linked?	DOI	DOI	Research	$435.7
3	95025G	Recruitment Patterns of Nearshore Clam Populations in Prince William Sound	Van Blaricom, UAF	DOI	Research	$121.3
3	95043A	Cordova Cutthroat Trout Habitat	USFS	USFS	Research	$22.7
3	95045	Green Island Intertidal Restoration Monitoring	Juday and Foster, UAF	USFS	Monitoring	$113.4

List of FY 95 Projects

(sorted by Category 1, 2, 3, 4, 5, 6 or NR)

Cat.	Proj.No.	Title	Proposer	Lead Agency	Proj. Type	Cost FY 95
3	95047	Seal Contamination	McKee	ADNR	General Restoration	
3	95049	Independent Review of Restoration and Monitoring Projects	Ruggerone, Natural Resources Consultants	ADFG	Administration and Public Information	$31.9
3	95055	Prehistoric Ecological Baseline for PWS	USFS	USFS	Research	$149.6
3	95071	Monitoring Nearshore Fish Species for Persistence of Oil Exposure and Ecotoxicological Effects	ADFG	NOAA	Research	$225.0
3	95073	Impact of Killer Whale Predation on Harbor Seals in PWS	NOAA	NOAA	Research	$99.5
3	95077	Recreation Impacts in PWS: Human Impacts as a Factor Constraining Long Term Ecosystem Recovery	Ford, National Outdoor Leadership School	ADNR	Research	$117.0
3	95078	Culture, History, and Ecosystems: An Assessment of Cultural/Historical Strategies to Building Long-term Understanding of Ecosystem Dynamics in the	DOI	DOI	Research	$166.7
3	95086B	Population Dynamics of Eelgrass and Associated Fauna	Stekoll, UAF	ADFG	Research	$64.8
3	95094	Recovery of Intertidal Clams in PWS	Jewett, UAF	ADFG	Monitoring	$229.2
3	95095	Quantification of Stream Habitat for Harlequin Ducks and Anadromous Fish Species from Remotely Sensed Data	Podolsky	ADNR	Habitat Protection	$88.0
3	95096	Restoration of Murres by Way of Social Attraction and Predator Removal	Podolsky	DOI	General Restoration	$167.0
3	95097	Restoration of Murres by Way of Transplantation of Chicks: A Feasibility Study	Podolsky	DOI	General Restoration	$176.0

List of FY 95 Projects

(sorted by Category 1, 2, 3, 4, 5, 6 or NR)

Cat.	Proj.No.	Title	Proposer	Lead Agency	Proj. Type	Cost FY 95
3	95098	Identification of Seabird Feeding Areas from Remotely Sensed Data	Podolsky	DOI	General Restoration	$74.0
3	95099	Murrelet Vocalization in Conjunction with Artificial Nests: A Possible Means of Attraction to Habitat	Podolsky	DOI	General Restoration	$77.0
3	95111	Sustainable Rockfish Yield	ADFG	ADFG	General Restoration	$204.4
3	95112	Rockfish Restoration Objective	ADFG	ADFG	General Restoration	$69.0
3	95139C	Salmon Instream Habitat and Stock Restoration--Pink Creek and Horse Marine Barrier Bypass Development	ADFG	ADFG	General Restoration	$45.7
3	95259	Restoration of Coghill Lake Sockeye	ADFG	ADFG	General Restoration	$324.6
3	95320I(3)	Purchase of Isotope Radio Mass Spectrometer	Schell, Institute of Marine Science	ADFG	Research	$257.4
3	95320P	Planning and Communication	Scheel, PWS Science Center	ADFG	Research	$66.8
3	95320V	Herring Predation by Humpback Whales in PWS	Matkin, North Gulf Oceanic Society	ADFG	Research	$181.6
4	95002	Leave No Trace Education Program	Ford, National Outdoor Leadership School	USFS	General Restoration	$177.7
4	95003	Area E Commercial Salmon Permit Buyback Program	Mykland	ADFG	General Restoration	$11,735.0
4	95016	A Tribute to Prince William Sound	Kremen	USFS	General Restoration	$161.0
4	95017	Port Graham Coho Salmon Subsistence Fishery Restoration Project	Daisy, Aquafrarm	ADFG	General Restoration	$587.9
4	95042	Five-year Plan to Remove Predators from Seabird Colonies	Harrison, Pacific Seabird Group	DOI	General Restoration	$75.0

List of FY 95 Projects

(sorted by Category 1, 2, 3, 4, 5, 6 or NR)

Cat.	Proj.No.	Title	Proposer	Lead Agency	Proj. Type	Cost FY 95
4	95050	A Test of Sonar Accuracy in Estimating Escapement of Sockeye Salmon	Ruggerone, Natural Resources Consultants	ADFG	Research	$79.3
4	95053	Cordova's Mini-Imaginarium	Trowbridge, PWS Science Center	ADNR	General Restoration	$62.6
4	95060	Spruce Bark Beetle Infestation Impacts on Injured Fish and Wildlife Species of the Exxon Valdez Oil Spill	ADFG	ADFG	Research	
4	95065	PWSAC Pink Salmon Fry Mortality	Olsen, PWS Aquaculture Corporation	ADFG	Research	$52.5
4	95079	Pink Salmon Restoration Through Small-scale Hatcheries	Van Hyning, NERKA, Inc., and Aquabionics Inc.	ADFG	General Restoration	$150.0
4	95080	Fleming Spit Recreation Area Enhancements	The Cordova Sporting Club	ADNR	General Restoration	$1,365.0
4	95082	"Mor-Pac Hill" Campground Improvements	The City of Cordova	ADNR	General Restoration	$360.0
4	95084	Odiak Camper Park Expansion	The City of Cordova	ADNR	General Restoration	$266.0
4	95085	Cordova Historical Marine Park	The Cordova Planning and Harbor Commiss.	ADNR	General Restoration	$196.5
4	95093	PWSAC: Restoration of Pink Salmon Resources and Services	Olsen, PWS Aquaculture Corporation	ADFG	General Restoration	$2,219.1
4	95107	Subtidal Site Verification	Jewett, UAF	ADFG	Monitoring	$84.0
4	95320B	PWS Pink Salmon Stock Identification and Monitoring (CWT)	ADFG	ADFG	General Restoration	$260.5
4	95320C	Otolith Thermal Mass Marking of Hatchery Reared Pink Salmon in PWS	ADFG	ADFG	General Restoration	$649.0

List of FY 95 Projects

(sorted by Category 1, 2, 3, 4, 5, 6 or NR)

Cat.	Proj.No.	Title	Proposer	Lead Agency	Proj. Type	Cost FY 95
4	95320K	PWSAC: Experimental Fry Release	Olsen, PWS Aquaculture Corporation	ADFG	Research	$43.8
5	95007-CLO*	Closeout: Site-specific Archaeological Restoration	ADNR	ADNR	General Restoration	$191.7
5	95039-CLO*	Closeout: Common Murre Population Monitoring	DOI	DOI	Monitoring	$30.5
5	95041A-CLO*	Closeout: Introduced Predator Removal from Islands	DOI	DOI	General Restoration	$20.4
5	95041B-CLO*	Closeout: Introduced Predator Removal from Islands - Follow-up Surveys	DOI	DOI	General Restoration	$50.9
5	95090-CLO*	Closeout: Mussel Bed Restoration and Monitoring	ADEC	ADEC	Monitoring	$154.4
5	95102-CLO	Closeout: Murrelet Prey and Foraging Habitat in Prince William Sound	DOI	DOI	Research	$62.3
5	95110-CLO	Closeout: Habitat Protection and Acquisition	ADNR	ADNR	Habitat Protection	$143.9
5	95173-CLO*	Closeout: Pigeon Guillemot Recovery Monitoring	DOI	DOI	Monitoring	$55.0
5	95266-CLO	Closeout: Shoreline Assessment and Oil Removal	ADEC	ADEC	General Restoration	$93.8
5	95285-CLO	Closeout: Subtidal Sediment Recovery Monitoring	NOAA	NOAA	Monitoring	$104.7
5	95422-CLO	Closeout: Restoration Plan EIS/Record of Decision	USFS	USFS	Administration and Public Information	$20.0
5	95428-CLO	Closeout: Subsistence Planning	NOAA	ADFG	General Restoration	$81.0
6	95043B	Carry-forward: Cutthroat and Dolly Varden Rehabilitation in Western PWS	USFS	USFS	General Restoration	$0.0
6	95165	Carry-forward: PWS Herring Stock Genetic Stock Identification	ADFG	ADFG	General Restoration	$0.0

List of FY 95 Projects

(sorted by Category 1, 2, 3, 4, 5, 6 or NR)

Cat.	Proj.No.	Title	Proposer	Lead Agency	Proj. Type	Cost FY 95
6	95417	Carry-forward: Waste Oil Disposal Facilities	ADEC	ADEC	General Restoration	$0.0
NR	95046	Long-term Record in Tree Rings of Climatic Features	Juday, UAF	NOAA	Research	$153.6
NR	95113	Energetics of Intertidal Fish: The Connection between Lower and Upper Trophic Levels	Barber, UAF	ADFG	Research	$392.5
NR	95114	Eelgrass Community Structure Restoration Assessment Using Stable Isotope Tracers	Kline, PWS Science Center	ADFG	Research	$192.1
NR	95117-BAA	Harbor Seals and EVOS: Blubber and Lipids as Indices of Food Limitation	Castellini, UAF	NOAA	Research	$184.3
NR	95118-BAA	Diet Composition, Reproductive Energetics and Productivity of Seabirds Damaged by the *Exxon Valdez* Oil Spill	Roby, UAF	NOAA	Research	$413.7
NR	95119-BAA	Food Limitation on Recovery of Injured Marine Bird Populations	Sydeman, Poit Reyes Bird Observatory	NOAA	Research	$124.9
NR	95120-BAA	Proximate Composition and Energetic Content of Selected Forage Fish Species in PWS	Worthy, Texas A&M University	NOAA	Research	$38.4
NR	95121	Stable Isotope Ratios and Fatty Acid Signatures of Selected Forage Fish Species in PWS	Worthy, Texas A&M University	NOAA	Research	$42.0
NR	95122	Mapping Potential Nesting Habitat of Marbeled Murrlets in PWS Using Geographic Databases	DeVelice	USFS	Habitat Protection	$167.5
NR	95200	Public Access	USFS	ADNR	Habitat Protection	$50.2
NR	95279	Subsistence Food Safety Testing	ADFG	ADFG	General Restoration	$207.3

List of FY 95 Projects

(sorted by Category 1, 2, 3, 4, 5, 6 or NR)

Cat.	Proj.No.	Title	Proposer	Lead Agency	Proj. Type	Cost FY 95
NR	95320Y	Variation in Local Predation Rates on Hatchery-Released Fry	Scheel, PWS Science Center	ADFG	Research	$118.9

Total FY 95 Request:	**$66,592.5**
Number of Projects:	**160**

* NOTE: These projects are for report writing and data analysis of FY 94 fieldwork with related projects proposed for continuation in FY 95.

DRAFT

ATTACHMENT D

FOLLOW-UP REVISIONS TO BPDS

MAJOR REVISIONS:
All major revisions are anticipated to be completed in time for inclusion in the Draft Work Plan. However, individual BPDs and detailed budgets for already submitted projects still need to be prepared and ready to go.

1. Forage fish projects and BAA proposals

95019	1	95117 - BAA	NR
95163	1	95118 - BAA	NR
95173	1	95119 - BAA	NR
95033	2	95120 - BAA	NR
95023	2		
95022	3		
95113	NR		
95121	NR		

Bob Spies has the lead in putting together a Forage Fish package that will come in the form of a recommendation to the Executive Director by August 1. The BAA proposals and other proposals still Not Ranked are being peer reviewed, and will be ranked at a Work Force meeting on Friday, July 22, at 9 am. Detailed budgets are still due on July 26 for all individual projects ranked in categories 1 and 2.

2. Stable isotopes

95023	2
95025J	2
95073	3
95114	NR
95121	NR
95320-I(1)	1
95320-I(2)	1
95320-I(3)	3

Bob Spies has the lead in reviewing and determining the scope of a possible RFP for stable isotope work. A recommendation will be forthcoming from Bob by August 1. Detailed budgets are still due on July 26 for all category 1 and 2 projects.

3. Community involvement/outreach

95027	2
95052	1
95279	NR
95428CLO	5

Meeting on Thursday, 9 a.m. to review these and subsistence proposals.

4. Nearshore/shellfish

95025G	3
95025H	1
95075	2
95087	1
95090	1
95094	3

Combine/coordinate with sea otter focus. Bob Spies has the lead in conjunction with Jim Bodkins. A recommendation to the Executive Director is due August 1.

5. Subsistence projects

95017	4
95024	2
95052	1
95069	2
95244	1
95272	1
95279	NR
95428CLO	5

Review all other subsistence projects on Thursday, 9 a.m.

MINOR REVISIONS:
These revisions are expected to be accomplished by August 1 and included in the Draft Work Plan.

6. Fleming Spit

95080 appeared to have the most likelihood of having its legal concerns addressed through a rewrite of the project. ADNR will assist in rewriting BPD.

7. Habitat Protection

95126 and 95110 - Budgets will receive further review. In particular, questions regarding personal services need to be resolved. References to carrying out Comparative Benefit Analyses should be removed from BPDs. ADNR has the lead.

8. Harlequin Ducks

95025A and 95427 - Coordinate or combine. Reduce costs. ADF&G and DOI have the lead.

9. Killer whales

95013 and 95092. Questions concerning these two proposals need to be resolved. NOAA has the lead .

10. Waste oil

95115 needs to be examined in conjunction with 95417. Also needs legal review. ADEC has the lead.

11. Mussel bed restoration

95116 needs to be examined with possibility of competitive RFP on various alternative cleanup methods for remaining oiled situations (not just mussel beds and not just PES-51). ADEC has the lead.

LONG TERM FOLLOW-UP:

This follow-up is expected to take place between now and early October in preparation for the final Chief Scientist and Executive Director recommendations to the Trustee Council.

12. Kenai River sockeye

ADF&G will prepare a briefing paper on Kenai River sockeye projects clarifying the interrelationship of the three projects, their long-term and short-term goals and objectives, and their relationship to normal agency management responsibilities. This paper and other sockeye information will be reviewed by the Chief Scientist and others as deemed appropriate before the final recommendations are made in October, and possibly at a review session in the second week of October.

13. Hydroacoustic work

ADF&G and NOAA will put together a matrix on the use of hydroacoustic equipment in

various projects. NOAA has the lead.

14. Herring projects

Bob Spies will coordinate a review of all the various herring projects in conjunction with preparing a final recommendation in October.

15. Coghill Lake sockeye

In conjunction with the Kenai River sockeye review, the Coghill Lake sockeye project will also be assessed. ADF&G should prepare information for that review.

Attachment E

BPD FORMAT -- INSTRUCTIONS FOR REVISIONS

In revising BPDs, please use the following standard format. In the original BPD submissions, the **cost** and **duration** categories, in particular, were interpreted in many different ways. These revised instructions are intended to ensure consistent presentation of project information.

Project Title

Project # (If the revised project is a combination of projects from the original submittal, list the number of each original project.)

Proposed By (name, affiliation/agency)

Lead Trustee Agency

Cooperating Agencies (if applicable)

Cost FY 95 (The amount of funding that will be requested from the Trustees for expenditure in FY 95. Funds for data analysis and report writing on FY94-related work that will be spent in FY 95 should be included here, and separately identified. Data analysis and report-writing funds that will be spent in FY 96 should be included in the FY 96 entry, not the FY 95 entry.) **Please show all dollar amounts in the "$000,000" format.**

FY 96 (The amount of funding that will be requested from the Trustees for expenditure in FY 96. Funds for data analysis and report writing on FY 95-related work that will be spent in FY 96 should be included here, and separately identified.)

Total (FY 95 + FY 96 + all future years. "Unknown" is an acceptable entry.)

Duration (The number of fiscal years for which funding will be requested. This entry may include descriptive phrases such as, "This is first phase of a 6-year study," or "Periodic monitoring is expected.")

Geographic Area (Locations where field work will be conducted -- Prince William Sound, Kenai, Kodiak, Alaska Pensinsula, or Spill Area.)

Injured Resource or Service (The resource or service injured by the spill that the project is designed to restore. For list, see page 5, Table 1, 5/16/94 *Invitation to Submit Restoration Projects for FY 95.*)

Contact Person (Name, address, phone)

Attachment E

Technical Format

The technical document specifications are as follows:

1. All documents should be in WordPerfect v5.1 or v6.0 format, IBM compatible.

2. Primary font type should be Times Roman 12-point for HP Laser III.

3. Text left-justified.

4. Top and bottom margins should be set to 0.75"; left and right should be 0.75".

5. Bold subheadings -- not underlined -- normal font.

6. Double line spacing between sections.

7. Sections which include tabular columns and numbers should use WordPerfect's "math format" (Alt-F7, 3, 1) to align numbers to decimal points. Columns should be separated by tabs.

8. If numeric quantities for units of measure or any number greater than 10, all amounts should be expressed in figures (e.g. 2,200 km, 3.65 million kg., 15 fish, $200 million).

9. Standard abbreviations can be used (usually without periods) if numerals are used (e.g., 5mm, 235g).

10. A pair of parenthesis should be used to enumerate items within text for several reasons: (1) they stand out better, (2) it is clearer than when followed by a period, and (3) see number 1.

****
*** ACTIVITY REPORT ***
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TRANSMISSION OK

TX/RX NO.	1116
CONNECTION TEL	5867589
CONNECTION ID	J.AYERS
START TIME	07/21 10:19
USAGE TIME	10'18
PAGES	27
RESULT	OK

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*** MULTI TRANSACTION REPORT ***
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TX/RX NO. 1115

INCOMPLETE TX/RX

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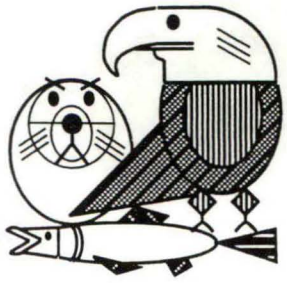
	[10] 5867555	D.GIBBONS
	[11] 4655375	M.BRODERSEN
	[12] 4654759	J.MONTAGUE
	[13] 7896608	MORRIS-WRIGHT
	[15] 5624871	C.FRIES
	[17] 2713992	R.THOMPSON
	[19] 7863636	L.BARTELS
	7863641	
	7863636	
	4526410	
ERROR	[35] 5103737834	B.SPIES
	7622628	

Exxon Valdez Oil Spill Trustee Council
Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178



FAX COVER SHEET

To: Restoration Work Force & Coordinating Committee Number: _____

From: Molly Date: July 21, 1994

Comments: Total Pages: 27

Pls forward to the individuals listed below, in your ofc. Thanks.

RESTORATION WORK FORCE MEMBERS INCLUDE:

Ayers, Jim ✓
Bartels, Leslie ✓
✗ Berg, Catherine
✗ Brodersen, Mark
Bruce, David ✓
Fries, Carol ✓
Gibbons, Dave ✓
✗ Gilbert, Veronica
✗ Loeffler, Bob
Montague, Jerome ✓
Morris, Byron * ✓
✗ Rabinowitch, Sandy
Spies, Bob ✓
✗ Sullivan, Joe
Thompson, Ray ✓
Wright, Bruce ✓
Molly McCammon ✓
✗ Eric Myers

Coordinating Committee:

*Alex Wertheimer ...
✓David Irons 786-3641
✓Jim Badkin 786-3636
✓Judy Bittner 762-2628
✓Kathy Frost 452-6410

Sent by: Rebecca

Exxon Valdez Oil Spill Trustee Council
Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178

MEMORANDUM

TO: Restoration Work Force

FROM: Eric F. Myers, Project Coordinator

DATE: July 20, 1994

SUBJ: Listing of FY 95 Projects — Sorted by Project Number

Attached you will find a listing of proposed FY 95 projects, sorted by project number, with their category (1, 2, 3, 4, 5, 6 or NR) shown.

Category 1	= high priority for restoration
Category 2	= lesser priority
Category 3	= low priority
Category 4	= legal or policy issues
Category 5	= report writing/data analysis/closeout of FY 94 projects
Category 6	= carry forward project
NR	= not yet ranked

Another listing of proposed FY 95 projects, sorted by category will be forthcoming under separate cover.

attachment

List of FY 95 Projects

(sorted by Project Number)

DRAFT

Cat.	Proj.No.	Title	Proposer	Lead Agency	Proj. Type	Cost FY 95
1	95001	Condition and Health of Harbor Seals	Castellini, UAF	ADFG	Research	$153.8
4	95002	Leave No Trace Education Program	Ford, National Outdoor Leadership School	USFS	General Restoration	$177.7
4	95003	Area E Commercial Salmon Permit Buyback Program	Mykland	ADFG	General Restoration	$11,735.0
2	95005	Harlequin Duck Abundance and Productivity in Western Cook Inlet	DOI	DOI	Monitoring	$40.2
3	95006	Paint River Pink Salmon Development	Mears, Cook Inlet Aquaculture Assn.	ADFG	General Restoration	$173.9
5	95007-CLO*	Closeout: Site-specific Archaeological Restoration	ADNR	ADNR	General Restoration	$191.7
1	95007A	Archaeological Site Restoration - Index Site Monitoring	ADNR	ADNR	Monitoring	$190.9
1	95007B	Archaeological Site Restoration (Site SEW-488)	USFS	USFS	General Restoration	$185.2
3	95009A	Trophics and Community Structure in the Intertidal and Shallow Subtidal	Highsmith, UAF	USFS	Research	$455.4
3	95009B	Primary Productivity as a Factor in the Recovery of Injured Resources in Prince William Sound	Stekoll, UAF	USFS	Research	$218.9
2	95009C	Trophic Dynamics and Energy Flow: Impacts of Herring Spawn and Sea Otter Predation on Nearshore Benthic Community Structure	Highsmith, UAF	USFS	Research	$217.3
1	95009D	Survey and Experimental Enhancement of Octopuses in Intertidal Habitats	Scheel, PWS Science Center	USFS	Research	$159.5
3	95009E	Community Structure of Mobile Foragers Using the Nearshore	USFS	USFS	Research	$280.5

List of FY 95 Projects

(sorted by Project Number)

Cat.	Proj.No.	Title	Proposer	Lead Agency	Proj. Type	Cost FY 95
3	95010	Intertidal Fauna and Flora Species Composition, Abundance and Variability Relative to Physical Habitat Controls	Schoch, Oregon State Univ.	DOI	Research	$73.5
1	95013	Killer Whale Monitoring in PWS	Matkin, North Gulf Oceanic Society	NOAA	Monitoring	$105.0
1	95014	Predation by Killer Whales in PWS: Feeding Behavior and Distribution of Predators and Prey	Matkin, North Gulf Oceanic Society	NOAA	Research	$156.9
4	95016	A Tribute to Prince William Sound	Kremen	USFS	General Restoration	$161.0
4	95017	Port Graham Coho Salmon Subsistence Fishery Restoration Project	Daisy, Aquafrarm	ADFG	General Restoration	$587.9
2	95018	Partitioning of Primary Production Between Pelagic and Benthic Communities	Naidu, UAF	ADFG	Research	$197.1
1	95019	Distribution of Forage Fish as Indicated by Puffin Diet Sampling	DOI	DOI	Research	$284.4
2	95021	Seasonal Movement and Pelagic Habitat Use by Common Murres from the Barren Islands	DOI	DOI	Research	$251.1
3	95022	Foraging Efficiencies at Temporary Food Patches	Scheel, PWS Science Center	DOI	Research	$183.1
2	95023	Food Web Relationships of Pelagic Species Exhibiting Long-term Decline	Duffy, Alaska Natural Heritage Program	DOI	Research	$168.0
2	95024	Enhancement of Wild Pink Salmon Stocks	Reidel, Native Village of Eyak	ADFG	General Restoration	$350.0
1	95025A	Factors Affecting Recovery of Sea Ducks and Their Prey	DOI	DOI	Research	$393.7
1	95025B	Sea Otter Abundance and Distribution, Food Habits and Population Assessment	DOI	DOI	Research	$162.7

List of FY 95 Projects

(sorted by Project Number)

Cat.	Proj.No.	Title	Proposer	Lead Agency	Proj. Type	Cost FY 95
1	95025C	Pigeon Guillemots and River Otters as Bioindicators of Nearshore Ecosystem Health	Roby, UAF	DOI	Research	$179.6
3	95025D	Settlement Rates of Nearshore Invertebrates, Oceanic Processes and Population Recovery: Are They Linked?	DOI	DOI	Research	$435.7
2	95025E	Algal Competition Limiting Recovery in the Intertidal	Stekoll, UAF	DOI	Research	$222.5
2	95025F	Availability and Utilization of Musculus spp. as Food for Sea Ducks and Sea Otters	Dean, Coastal Resources Associates, Inc.	DOI	Research	$4.6
3	95025G	Recruitment Patterns of Nearshore Clam Populations in Prince William Sound	Van Blaricom, UAF	DOI	Research	$121.3
1	95025H	Effects of Predatory Invertebrates on Nearshore Clam Populations in Prince William Sound	Van Blaricom, UAF	DOI	Research	$118.4
2	95025J	Primary Productivity as a Factor in the Recovery of Injured Resources in Prince William Sound	Stekoll, UAF	DOI	Research	$397.0
1	95026	Hydrocarbon Monitoring: Integration of Microbial and Chemical Sediment Data	Braddock, UAF	ADEC	Monitoring	$84.4
2	95027	Kodiak and Alaska Peninsula Comprehensive Shoreline Assessment: Monitoring Surface and Subsurface Oil	ADEC	ADEC	Monitoring	$759.5
2	95029	Population Survey of Bald Eagles in PWS	DOI	DOI	Monitoring	$48.3
1	95030	Productivity Survey of Bald Eagles in PWS	DOI	DOI	Monitoring	$81.9
1	95031	Reproductive Success as a Factor Affecting Recovery of Murrelets in PWS	DOI	DOI	Research	$398.0

List of FY 95 Projects

(sorted by Project Number)

Cat.	Proj.No.	Title	Proposer	Lead Agency	Proj. Type	Cost FY 95
1	95033	Kittiwakes as Indicators of Forage Fish Availability	DOI	DOI	Research	$198.5
2	95038	Symposium on Seabird Restoration	Harrison, Pacific Seabird Group	DOI	General Restoration	$77.0
1	95039	Common Murre Productivity Monitoring	DOI	DOI	Monitoring	$163.7
5	95039-CLO*	Closeout: Common Murre Population Monitoring	DOI	DOI	Monitoring	$30.5
5	95041A-CLO*	Closeout: Introduced Predator Removal from Islands	DOI	DOI	General Restoration	$20.4
5	95041B-CLO*	Closeout: Introduced Predator Removal from Islands - Follow-up Surveys	DOI	DOI	General Restoration	$50.9
4	95042	Five-year Plan to Remove Predators from Seabird Colonies	Harrison, Pacific Seabird Group	DOI	General Restoration	$75.0
3	95043A	Cordova Cutthroat Trout Habitat	USFS	USFS	Research	$22.7
6	95043B	Carry-forward: Cutthroat and Dolly Varden Rehabilitation in Western PWS	USFS	USFS	General Restoration	$0.0
1	95044	In Situ Formation and Ecotoxicity of Hydrocarbon Degradation Products Produced by Ultramicrobacteria	Button, UAF	NOAA	Research	$118.5
3	95045	Green Island Intertidal Restoration Monitoring	Juday and Foster, UAF	USFS	Monitoring	$113.4
NR	95046	Long-term Record in Tree Rings of Climatic Features	Juday, UAF	NOAA	Research	$153.6
3	95047	Seal Contamination	McKee	ADNR	General Restoration	
1	95048	Historical Analysis of Sockeye Salmon Growth	Ruggerone, Natural Resources Consultants	ADFG	Monitoring	$85.0
3	95049	Independent Review of Restoration and Monitoring Projects	Ruggerone, Natural Resources Consultants	ADFG	Administration and Public Information	$31.9

List of FY 95 Projects

(sorted by Project Number)

Cat.	Proj.No.	Title	Proposer	Lead Agency	Proj. Type	Cost FY 95
4	95050	A Test of Sonar Accuracy in Estimating Escapement of Sockeye Salmon	Ruggerone, Natural Resources Consultants	ADFG	Research	$79.3
1	95051	Large-scale Coded Wire Tagging of PWS Herring	June, Natural Resources Consultants	ADFG	General Restoration	$190.6
1	95052	Community Involvement and Use of Traditional Knowledge	ADNR	ADNR	General Restoration	$230.6
4	95053	Cordova's Mini-Imaginarium	Trowbridge, PWS Science Center	ADNR	General Restoration	$62.6
2	95054	Montague Riparian Rehabilitation	USFS	USFS	Habitat Protection	$42.7
3	95055	Prehistoric Ecological Baseline for PWS	USFS	USFS	Research	$149.6
2	95057	Movement of Larval and Juvenile Fishes within PWS	Norcross, UAF	NOAA	Research	$300.0
2	95058	Restoration Assistance to Private Landowners	USFS	ADFG	Habitat Protection	$415.7
4	95060	Spruce Bark Beetle Infestation Impacts on Injured Fish and Wildlife Species of the Exxon Valdez Oil Spill	ADFG	ADFG	Research	
2	95062	River Otter Recovery Monitoring	ADFG	ADFG	Monitoring	$69.0
1	95064	Monitoring, Habitat Use, and Trophic Interactions of Harbor Seals in PWS	ADFG	ADFG	Research	$309.4
4	95065	PWSAC Pink Salmon Fry Mortality	Olsen, PWS Aquaculture Corporation	ADFG	Research	$52.5
2	95069	Restoration of Salmon Stocks of Special Importance to Native Cultures	ADFG	ADFG	General Restoration	$672.6
3	95071	Monitoring Nearshore Fish Species for Persistence of Oil Exposure and Ecotoxicological Effects	ADFG	NOAA	Research	$225.0

List of FY 95 Projects

(sorted by Project Number)

Cat.	Proj.No.	Title	Proposer	Lead Agency	Proj. Type	Cost FY 95
3	95073	Impact of Killer Whale Predation on Harbor Seals in PWS	NOAA	NOAA	Research	$99.5
1	95074	Herring Reproductive Impairment	NOAA	NOAA	Research	$234.8
2	95075	Population Structure of Blue Mussels in Relation to Levels of Oiling and Densities of Vertebrate Predators	NOAA	NOAA	Research	$197.5
1	95076	Effects of Oiled Incubation Substrate on Survival and Straying of Wild Pink Salmon	NOAA	NOAA	Research	$179.9
3	95077	Recreation Impacts in PWS: Human Impacts as a Factor Constraining Long Term Ecosystem Recovery	Ford, National Outdoor Leadership School	ADNR	Research	$117.0
3	95078	Culture, History, and Ecosystems: An Assessment of Cultural/Historical Strategies to Building Long-term Understanding of Ecosystem Dynamics in the	DOI	DOI	Research	$166.7
4	95079	Pink Salmon Restoration Through Small-scale Hatcheries	Van Hyning, NERKA, Inc., and Aquabionics Inc.	ADFG	General Restoration	$150.0
4	95080	Fleming Spit Recreation Area Enhancements	The Cordova Sporting Club	ADNR	General Restoration	$1,365.0
4	95082	"Mor-Pac Hill" Campground Improvements	The City of Cordova	ADNR	General Restoration	$360.0
4	95084	Odiak Camper Park Expansion	The City of Cordova	ADNR	General Restoration	$266.0
4	95085	Cordova Historical Marine Park	The Cordova Planning and Harbor Commiss.	ADNR	General Restoration	$196.5
1	95086A	Coastal Habitat Intertidal Monitoring and Experimental Design Verification	Stekoll, UAF	ADFG	Monitoring	$829.4

List of FY 95 Projects

(sorted by Project Number)

Cat.	Proj.No.	Title	Proposer	Lead Agency	Proj. Type	Cost FY 95
3	95086B	Population Dynamics of Eelgrass and Associated Fauna	Stekoll, UAF	ADFG	Research	$64.8
1	95086C	Herring Bay Monitoring and Restoration Studies	Highsmith, UAF	ADFG	Monitoring	$549.1
1	95087	Sea Urchin Population Dynamics: Changes in Population Density and Availability as Prey of Sea Otters	Jewett, UAF	ADFG	Research	$65.4
1	95089	Information Management System	Executive Director's Office	ADFG	Administration and Public Information	$540.1
1	95090	Mussel Bed Restoration and Monitoring in PWS and Gulf of Alaska	NOAA	NOAA	Monitoring	$261.8
5	95090-CLO*	Closeout: Mussel Bed Restoration and Monitoring	ADEC	ADEC	Monitoring	$154.4
1	95092	Recovery Monitoring of PWS Killer Whales	NOAA	NOAA	Monitoring	$99.5
4	95093	PWSAC: Restoration of Pink Salmon Resources and Services	Olsen, PWS Aquaculture Corporation	ADFG	General Restoration	$2,219.1
3	95094	Recovery of Intertidal Clams in PWS	Jewett, UAF	ADFG	Monitoring	$229.2
3	95095	Quantification of Stream Habitat for Harlequin Ducks and Anadromous Fish Species from Remotely Sensed Data	Podolsky	ADNR	Habitat Protection	$88.0
3	95096	Restoration of Murres by Way of Social Attraction and Predator Removal	Podolsky	DOI	General Restoration	$167.0
3	95097	Restoration of Murres by Way of Transplantation of Chicks: A Feasibility Study	Podolsky	DOI	General Restoration	$176.0
3	95098	Identification of Seabird Feeding Areas from Remotely Sensed Data	Podolsky	DOI	General Restoration	$74.0

List of FY 95 Projects

(sorted by Project Number)

Cat.	Proj.No.	Title	Proposer	Lead Agency	Proj. Type	Cost FY 95
3	95099	Murrelet Vocalization in Conjunction with Artificial Nests: A Possible Means of Attraction to Habitat	Podolsky	DOI	General Restoration	$77.0
1	95100	Administrative Budget	Executive Director's Office	ALL	Administration and Public Information	$3,500.0
5	95102-CLO	Closeout: Murrelet Prey and Foraging Habitat in Prince William Sound	DOI	DOI	Research	$62.3
1	95105	Kenai River Ecosystem Restoration Pilot Enclosure Study	ADFG	ADFG	Research	$361.2
1	95106	Subtidal Monitoring: Eelgrass Communities	Jewett, UAF	ADFG	Monitoring	$399.9
4	95107	Subtidal Site Verification	Jewett, UAF	ADFG	Monitoring	$84.0
5	95110-CLO	Closeout: Habitat Protection and Acquisition	ADNR	ADNR	Habitat Protection	$143.9
3	95111	Sustainable Rockfish Yield	ADFG	ADFG	General Restoration	$204.4
3	95112	Rockfish Restoration Objective	ADFG	ADFG	General Restoration	$69.0
NR	95113	Energetics of Intertidal Fish: The Connection between Lower and Upper Trophic Levels	Barber, UAF	ADFG	Research	$392.5
NR	95114	Eelgrass Community Structure Restoration Assessment Using Stable Isotope Tracers	Kline, PWS Science Center	ADFG	Research	$192.1
1	95115	Sound Waste Management Plan	Prince William Sound Economic DevelopmentCouncil	ADEC	General Restoration	$275.9
2	95116	Restoration of Intertidal Oiled Mussel Beds by Nondestructive Manipulation/Flushing with PES-51	Rog, PES Services AK, Inc.	ADEC	General Restoration	$453.2

List of FY 95 Projects

(sorted by Project Number)

Cat.	Proj.No.	Title	Proposer	Lead Agency	Proj. Type	Cost FY 95
NR	95117-BAA	Harbor Seals and EVOS: Blubber and Lipids as Indices of Food Limitation	Castellini, UAF	NOAA	Research	$184.3
NR	95118-BAA	Diet Composition, Reproductive Energetics and Productivity of Seabirds Damaged by the *Exxon Valdez* Oil Spill	Roby, UAF	NOAA	Research	$413.7
NR	95119-BAA	Food Limitation on Recovery of Injured Marine Bird Populations	Sydeman, Poit Reyes Bird Observatory	NOAA	Research	$124.9
NR	95120-BAA	Proximate Composition and Energetic Content of Selected Forage Fish Species in PWS	Worthy, Texas A&M University	NOAA	Research	$38.4
NR	95121	Stable Isotope Ratios and Fatty Acid Signatures of Selected Forage Fish Species in PWS	Worthy, Texas A&M University	NOAA	Research	$42.0
NR	95122	Mapping Potential Nesting Habitat of Marbeled Murrlets in PWS Using Geographic Databases	DeVelice	USFS	Habitat Protection	$167.5
1	95126	Habitat Protection and Acquisition Support	ADNR	ADNR	Habitat Protection	$1,403.3
1	95137	Prince William Sound Salmon Stock Identification and Monitoring Studies	ADFG	ADFG	General Restoration	$273.4
2	95139B	Spawning Channel - Port Dick Creek	ADFG	ADFG	General Restoration	$127.5
3	95139C	Salmon Instream Habitat and Stock Restoration--Pink Creek and Horse Marine Barrier Bypass Development	ADFG	ADFG	General Restoration	$45.7
2	95159	Surveys to Determine Additional Oil Spill Effects and Recovery of Marine Bird and Sea Otter Populations in PWS	DOI	DOI	Monitoring	$391.0

List of FY 95 Projects

(sorted by Project Number)

Cat.	Proj.No.	Title	Proposer	Lead Agency	Proj. Type	Cost FY 95
1	95163	Abundance and Distribution of Forage Fish and their Influence on Recovery of Injured Species	NOAA	NOAA	Research	$1,203.7
6	95165	Carry-forward: PWS Herring Stock Genetic Stock Identification	ADFG	ADFG	General Restoration	$0.0
1	95166	Herring Natal Habitats	ADFG	ADFG	Monitoring	$493.3
1	95173	Factors Affecting Recovery of PWS Pigeon Guillemot Populations	DOI	DOI	Research	$353.7
5	95173-CLO*	Closeout: Pigeon Guillemot Recovery Monitoring	DOI	DOI	Monitoring	$55.0
1	95191A	Investigating and Monitoring Oil Related Egg and Alevin Mortalities	ADFG	ADFG	Research	$681.5
1	95191B	Injury to Salmon Eggs and Pre-emergent Fry Incubated in Oiled Gravel (Laboratory Study)	NOAA	NOAA	Research	$165.6
NR	95200	Public Access	USFS	ADNR	Habitat Protection	$50.2
1	95244	Seal and Sea Otter Cooperative Subsistence Harvest Assistance	ADFG	ADFG	General Restoration	$54.5
1	95255	Kenai River Sockeye Restoration	ADFG	ADFG	General Restoration	$406.1
1	95258	Sockeye Salmon Overescapement	ADFG	ADFG	Monitoring	$983.3
3	95259	Restoration of Coghill Lake Sockeye	ADFG	ADFG	General Restoration	$324.6
5	95266-CLO	Closeout: Shoreline Assessment and Oil Removal	ADEC	ADEC	General Restoration	$93.8
1	95272	Chenega Chinook Release Program	Olsen, PWS Aquaculture Corporation	ADFG	General Restoration	$38.7
NR	95279	Subsistence Food Safety Testing	ADFG	ADFG	General Restoration	$207.3

List of FY 95 Projects

(sorted by Project Number)

Cat.	Proj.No.	Title	Proposer	Lead Agency	Proj. Type	Cost FY 95
5	95285-CLO	Closeout: Subtidal Sediment Recovery Monitoring	NOAA	NOAA	Monitoring	$104.7
1	95290	Hydrocarbon Data Analysis, Interpretation, and Database Maintenance for Restoration and NRDA Environmental Samples Associated with the Exxon Valdez Oil Spill	NOAA	NOAA	Monitoring	$72.2
1	95320A	Salmon Growth and Mortality	ADFG	ADFG	Research	$267.8
4	95320B	PWS Pink Salmon Stock Identification and Monitoring (CWT)	ADFG	ADFG	General Restoration	$260.5
4	95320C	Otolith Thermal Mass Marking of Hatchery Reared Pink Salmon in PWS	ADFG	ADFG	General Restoration	$649.0
2	95320D	PWS Pink Salmon Genetics	ADFG	ADFG	Research	$218.2
1	95320E	Juvenile Salmon and Herring Integration	ADFG	ADFG	Research	$1,032.1
1	95320G	Phytoplankton and Nutrients	McRoy, UAF	ADFG	Research	$227.3
1	95320H	Role of Zooplankton in the PWS Ecosystem	Cooney, UAF	ADFG	Research	$235.1
1	95320I(1)	Isotope Tracers - Food Webs of Marine Mammals and Birds	Schell, Institute of Marine Science	ADFG	Research	$100.1
1	95320I(2)	Isotope Tracers - Food Webs of Fish	Kline, UAF	ADFG	Research	$73.4
3	95320I(3)	Purchase of Isotope Radio Mass Spectrometer	Schell, Institute of Marine Science	ADFG	Research	$257.4
1	95320J	Information Systems and Model Development	Patrick, PWS Science Center	ADFG	Research	$789.6
4	95320K	PWSAC: Experimental Fry Release	Olsen, PWS Aquaculture Corporation	ADFG	Research	$43.8
1	95320M	Observational Physical Oceanography in PWS and the Gulf of Alaska	Salmon, PWS Science Center	ADFG	Research	$545.2

List of FY 95 Projects

(sorted by Project Number)

Cat.	Proj.No.	Title	Proposer	Lead Agency	Proj. Type	Cost FY 95
1	95320N	Nearshore Fish	Thomas, PWS Science Center	ADFG	Research	$600.6
3	95320P	Planning and Communication	Scheel, PWS Science Center	ADFG	Research	$66.8
1	95320Q	Avian Predation on Herring Spawn	USFS	ADFG	Research	$124.8
1	95320S	Disease Impacts on PWS Herring Populations (competetive project solicitation under ADF&G two-step, RFQ-RFP process)	ADFG	ADFG	Research	$375.0
1	95320T	Juvenile Herring Growth and Habitat Partitioning	ADFG	ADFG	Research	$378.6
1	95320U	Somatic and Spawning Energetics of Herring and Pollock	Paul, UAF	ADFG	Research	$94.4
3	95320V	Herring Predation by Humpback Whales in PWS	Matkin, North Gulf Oceanic Society	ADFG	Research	$181.6
NR	95320Y	Variation in Local Predation Rates on Hatchery-Released Fry	Scheel, PWS Science Center	ADFG	Research	$118.9
6	95417	Carry-forward: Waste Oil Disposal Facilities	ADEC	ADEC	General Restoration	$0.0
5	95422-CLO	Closeout: Restoration Plan EIS/Record of Decision	USFS	USFS	Administration and Public Information	$20.0
1	95424	Restoration Reserve	ALL	ALL	Restoration Reserve	$12,000.0
1	95427	Harlequin Duck Recovery Monitoring	ADFG	ADFG	Monitoring	$221.8
5	95428-CLO	Closeout: Subsistence Planning	NOAA	ADFG	General Restoration	$81.0
1	95505B	Data Analysis for Stream Habitat	USFS	USFS	Habitat Protection	$17.2

List of FY 95 Projects

(sorted by Project Number)

Cat.	Proj.No.	Title	Proposer	Lead Agency	Proj. Type	Cost FY 95

Total FY 95 Request:	**$66,592.5**
Number of Projects:	**160**

* NOTE: These projects are for report writing and data analysis of FY 94 fieldwork with related projects proposed for continuation in FY 95.

Exxon Valdez Oil Spill Trustee Council
Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178

FAX COVER SHEET

To: Restoration Work Force Number: _____

From: Molly McCammon Date: 7/20/94

Comments: Total Pages: 13

1. Agenda for Thurs. subsistence & community outreach review session
2. Agenda for Fri. remaining projects review session
3. Project 95122

RESTORATION WORK FORCE MEMBERS INCLUDE:

Ayers, Jim	Loeffler, Bob
Bartels, Leslie	Montague, Jerome
Berg, Catherine	Morris, Byron
Brodersen, Mark	Rabinowitch, Sandy
Bruce, David	Spies, Bob
Fries, Carol	Sullivan, Joe
Gibbons, Dave	Thompson, Ray
Gilbert, Veronica	Wright, Bruce

Document Sent By: _____

AGENDA
SUBSISTENCE and COMMUNITY INVOLVEMENT PROJECTS
REVIEW SESSION
July 21, 1994
9 a.m. - noon
Juneau location: NMFS conference room, 445C

1. Review project proposals already reviewed and categorized

95017	4
95024	2
95052	1
95069	2
95244	1
95272	1
95279	NR
95428CLO	5

2. Review and discuss additional list of subsistence project proposals (see attached)

3. Discuss community involvement and outreach in the following projects:

95027	2
95052	1
95279	NR
95428CLO	5

Subsistence Restoration Planning
List of Project Proposals
July 1994

Community	Project Name	Community Priority	Cost (FY 95)	Preparer
Tatitlek	Community Store	1	300.0	G. Kompkoff
Tatitlek	Mariculture Development Project	2	109.5	D. Daisy
Tatitlek	Mariculture Devleopment Project; Capital Outlay	2	405.0	D. Daisy
Tatitlek	Sockeye Salmon Release	3	39.0	G. Kompkoff
Tatitlek	Coho Salmon Release	4	39.0	G. Kompkoff
Tatitlek	Teaching Subsistence Practices and Values	6	69.0	NPS
Tatitlek	Subsistence Processing Facility	7	500.0 (approx)	DCRA
Tatitlek	Mental Health Center	10	100.0	M. Vlasoff
Tatitlek &	Clam Restoration	5	447.5	D. Daisy
Port Graham &		2		
Nanwalek		2		
Port Graham &	Port Graham and Nanwalek Subsistence Baseline	3	488.2	ADF&G
Nanwalek		3		
Port Graham	Salmon Enhancement	1	587.9	D. Daisy (95017)
Nanwalek	English Bay River Sockeye Salmon	1	129.8	D. Daisy
Chenega Bay	Mariculture Development	1	184.3	D. Daisy
Chenega Bay	Subsistence Harvest Support	2	50.0	DCRA
Cordova &	Skin Sewing Crafts Restoration	2	29.9	NPS
Chenega Bay &		3		
Tatitlek &		8		
Port Graham[1]		4		
Chenega Bay &	Elders/Youth Conference	4	77.7	ADF&G
Tatitlek[2]		9		
Cordova	Wild Salmon Stock Enhancement	1	685.0	Eyak (95024)
Valdez	Subsistence Skills Programs	1	36.7	ADF&G/VNA

[1] Project proposed in these communities. Project would include Cordova, Valdez, Tatitlek, Chenega Bay, Nanwalek, and Port Graham.
[2] Project proposed in Chenega Bay and Tatitlek. Project would include all communities of the oil spill area.

AGENDA
REMAINING PROJECTS STILL NOT RANKED
REVIEW SESSION
July 22, 1994
9 a.m. - noon
Juneau location: NMFS conference room, 445C

Projects still not ranked (excluding the subsistence and community involvement projects that will be addressed at the Thursday session):

Habitat Protection

95200 Public Access

95122 Mapping Potential Nesting Habitat of Marbled Murrelets in PWS (This project was requested by the Habitat Working Group and is attached.)

Research

95046 Long-term Record in Tree Rings of Climatic Features

95113 Energetics of Intertidal Fish: Connection between Lower & Upper Trophic Levls

95114 Eelgrass Community Structure Restoration Assessment Using Stable Isotope Tracers

95117-BAA Harbor Seals and EVOS: Blubber and Lipids as Indices of Food Limitation

95118-BAA Diet Composition, Reproductive Energetics and Productivity of Seabirds Damaged by the EVOS

95119-BAA Food Limitation on Recovery of Injured Marine Bird Populations

95120-BAA Proximate Composition & Energetic Content of Selected Forage Fish Species in PWS

95121 Stable Isotope Ratios and Fatty Acid Signatures of Selected Forage Fish Species in PWS

95320Y Variation in Local Predation Rates on Hatchery-Released Fry

MAPPING POTENTIAL NESTING HABITAT OF THE MARBLED MURRELET IN PRINCE WILLIAM SOUND USING HABITAT MODELS LINKED TO GEOGRAPHIC DATABASES

Project Number: ~~95xxx~~ 95122

Project Leader: Robert L. DeVelice, Ph.D.

Lead Agency: USDA Forest Service

Cost of Project: $167,500

Project Start-up Date: 1 October 1994

Project Completion Date: 31 December 1995

Project Duration: 1.25 years

Geographic Area: Prince William Sound, Alaska

Contact Person: Robert L. DeVelice
Chugach National Forest
3301 C Street, Suite 300
Anchorage, Alaska 99503
907-271-2500

B. Introduction

Marbled murrelets were injured by oil contamination from the *Exxon Valdez* oil spill of March, 1989. Between 9,500 and 14,000 marbled murrelets died from the direct effects of oiling (Ford et al. 1991). This estimated mortality represents approximately 10% of the present total population size within the spill area (Klosiewski and Laing, MS). Presently, there is no known evidence of population recovery within the spill area (Klosiewski and Laing, MS; Kuletz, MS).

Habitat modifications (such as logging) both within and outside the spill area may pose additional threats to the area's marbled murrelet populations. Protection of nesting habitat areas through acquisition and stewardship may reduce the extent of future disturbance so that population recovery may proceed.

This study represents an extension of previous work conducted by the USDI Fish and Wildlife Service and the USDA Forest Service as Restoration Project 93051 Part B (DeVelice et al. 1994; Kuletz et al. 1994). These studies characterize the nesting habitat of marbled murrelets throughout the spill area. The currently proposed work would be an operational application of the conceptual and quantitative models described in DeVelice et

al. (1994) and Kuletz et al. (1994). The models would be linked to geographic databases of vegetation and physical site characteristics in the identification of potential nesting habitat of the marbled murrelet in Prince William Sound. The map outputs from this project will provide a state-of-science means for evaluating habitat protection or acquisition options in reference to marbled murrelets (or other species whose potential habitat can be specified based on vegetation and landscape features).

C. Need for the Project -- Why the Project will Help Restoration

Marbled murrelet populations in Prince William Sound are reportedly not yet recovering from the spill and from the pre-spill population decline (*Exxon Valdez* Oil Spill Trustee Council 1994). However, protection of habitat is thought to be an important strategy for assisting in population recovery (*Exxon Valdez* Oil Spill Trustee Council 1994). Using the best available scientific information, the proposed work would provide a digital map of potential nesting habitat of the marbled murrelet. Land protection/acquisition personnel could directly use this map product in selecting alternative sites with the greatest potential towards ensuring population recovery.

D. Project Design -- Objectives, Methods, Schedule and Location

1. Objectives

Potential habitat of the marbled murrelet in Prince William Sound would be mapped by linking models described in DeVelice et al. (1994) and Kuletz et al. (1994) to spatial databases of vegetation and physical site characteristics. To meet this objective, a spatial database of vegetation types based on satellite imagery would need to be completed as part of this project. A DRAFT version of this digital map (developed by USGS EROS Alaska Field Office and USDA Forest Service Forest Sciences Laboratory personnel, in cooperation with the Chugach National Forest) is currently available for Prince William Sound. This project would verify and refine this vegetation database.

2. Methods

DeVelice et al. (1994) and Kuletz et al. (1994) describe both conceptual and statistical models that relate marbled murrelet occurrences to vegetation and physical site attributes. For example, both reports highlight a preference of marbled murrelets for forested habitats, particularly older forests with numerous mossy platforms (potential nest sites) in the trees. Additionally, DeVelice et al. (1994) indicates that marbled murrelet sightings increase with the proportion of coniferous forest in an area. Both reports show a higher occurrence of marbled murrelets in more sheltered landscape positions (e.g., heads of bays; aspects protected from major storms). Models described in these and other studies relating marbled murrelet occurrences to vegetation type and landscape features would be applied in queries of the digital vegetation type and digital elevation model databases. Ultimately, this process will result in a digital map of potential marbled murrelet habitat in Prince William Sound. The proposed steps involved in this process are as follows:

- The Chugach National Forests DRAFT digital vegetation type map (based on satellite imagery) must be verified and refined before the habitat models can be effectively applied. Existing survey data will be used for initial refinement. Currently, almost 800 detailed sample plots spanning the range of vegetation types are available in the Chugach National Forest vegetation ecology database for Prince William Sound. These plots, 40 randomly-located 1-km radius digital vegetation maps from Prince William Sound, and a digital vegetation map covering Naked, Storey, and Peak islands will be the primary input to the initial supervised classification of the digital vegetation map. All of these plot and polygon coverages reside in digital databases on the Chugach National Forest.

- The marble murrelet habitat models based on vegetation type and landscape features will be linked (via GIS technology) to the digital vegetation map and digital elevation model (basically, a computerized topographical map) covering Prince William Sound.

- During the summer of 1995, field surveys throughout Prince William Sound will be conducted to fill in gaps in the database of vegetation and physical sites for use in verification and refinement of the digital vegetation type map. The survey crews will be directed to sites that, in the aggregate, represent the full range of vegetation and physical site combinations present within Prince William Sound (however, ice fields will not be surveyed). These sample sites will be complementary to those sites already in the Chugach National Forest databases. The vegetation type classification developed by DeVelice et al. (1994) will be used in the identification of vegetation types at each verification site. The precise location of each site will be quantified using a geographical positioning system (GPS).

- Use the data from the summer of 1995 for the supervised classification of the digital vegetation map of Prince William Sound. The marbled murrelet habitat models would then be reapplied to this database (and the digital elevation model) to produce a digital map of potential marbled murrelet habitat. Although the digital vegetation map will initially by applied towards mapping potential habitat of the marbled murrelet, the potential applications of the digital map are vast. Among these applications are: mapping potential habitat for brown bear; assessing biodiversity patterns at the landscape level; assessing the ecological representativeness of alternative networks of nature preserves.

3. Schedule

1994 October	provide GIS/remote sensing analyst with vegetation plot and polygon data for initial verification of digital vegetation map based on satellite imagery
Nov.- Dec.	revise vegetation map based on plot and polygon data
1995 January	create models of marbled murrelet potential habitat that can be linked to the digital vegetation map and the digital elevation model
Feb.-April	apply the models to the digital vegetation and elevation coverages and make initial assessments of their validity
March	secure charter vessel for use in vegetation map verification advertise for field personnel
April	hire field personnel (two biotechnicians) prepare for field work (e.g., organize training for field crew; acquire maps and aerial photographs; order necessary equipment; generate sufficient copies of field forms)

May	safety training vegetation/characterization training identification of locations of field verification sites
June-Aug.	Prince William Sound vegetation map verification surveys
Sept.-Oct.	data entry and refinement of digital vegetation map
Nov.-Dec.	final analysis and report writing
Dec. 31	final report submitted

4. Technical Support

This project will require 18.5 person months of effort. Ecological support will be provided by R.L. DeVelice (six months; Chugach NF) and C. Hubbard (two months; Chugach NF). Habitat capability modeling support will be provided by L. Suring (one month; Chugach NF). GIS/remote sensing analysis will provided by K. Winterberger (three months; Forest Sciences Laboratory). Field work will largely be accomplished by two biotechnicians (total of six months).

Computational, analytic, and data archiving support will be provided by the USDA Chugach National Forest and Forest Sciences Laboratory, and USGS EROS Alaska Field Office (including the extensive use of personal computers and GIS workstations that will be required).

5. Location

The study area includes all of Prince William Sound.

E. Project Implementation -- Who Should Implement the Project

This project would be conducted by ecology and geographic information system personnel of the USDA Forest Service, Chugach National Forest and Forest Sciences Laboratory, and USGS EROS Alaska Field Office (Anchorage, Alaska). Chugach National Forest and Forest Sciences Laboratory personnel have been actively developing geographic databases of vegetation and physical site characteristics in Prince William Sound over the past eight years. Extensive ecological survey in the area has provided Chugach National Forest personnel with unparalleled familiarity with the ecological characteristics present. This experience is necessary for efficient verification of the map products generated by this study. Additionally, Chugach National Forest personnel (in cooperation with the USDI Fish and Wildlife Service) have developed models relating vegetation and physical site characteristics to marbled murrelet occurrences in Prince William Sound (study entitled "Characterization of Upland Nesting Habitat of the Marbled

Murrelet in the Exxon Valdez Oil Spill Area (Project 93051 Part B)" completed in April of 1994). The personnel involved in developing these models would be best qualified towards applying them operationally, as proposed.

F. Coordination of Integrated Research Effort

This project will be independent of other known restoration projects proposed for fiscal year 1995.

G. Public Process

Map outputs from this project (showing potential nesting habitat of the marbled murrelet) would be made available for review by the public and scientific community late in calendar year 1995.

H. Personnel Qualifications

Project Leader: Robert L. DeVelice received his Ph.D. in plant ecology from New Mexico State University, Las Cruces, in 1983. His dissertation involved the development of a vegetation type classification in the southern Rocky Mountains. Robert was a post-doctoral fellow in New Zealand from 1984 - 1987 where he conducted preserves selection and design research. From 1987 - 1989 Robert worked as a contract scientist working on global climatic change research for the US Environmental Protection Agency. Prior to joining the staff of the Chugach National Forest in 1992, Robert worked as the Montana state ecologist for The Nature Conservancy. The focus of much of Robert's work and experience is field vegetation ecology and quantitative plant community analysis. Robert was a co-leader of the study entitled "Characterization of Upland Nesting Habitat of the Marbled Murrelet in the Exxon Valdez Oil Spill Area (Project 93051 Part B)" completed in April of 1994.

Project Scientist: Connie Hubbard received her M.S. in forest science from Oregon State University. Her thesis involved developing a plant association classification for the College of Forestry's research forest lands. Connie has worked for the USDA Forest Service as Forester, Silviculturalist, and Ecologist. She has also worked for both state and private resource management agencies in Idaho and Montana. Connie is currently the District Ecologist for the Glacier Ranger District of the Chugach National Forest. The emphasis of this position is the development and application of community classifications for the Forest, including plant association classification in Prince William Sound. Connie was a co-leader of the study entitled "Characterization of Upland Nesting Habitat of the Marbled Murrelet in the Exxon Valdez Oil Spill Area (Project 93051 Part B)" completed in April of 1994.

Brief Project Description - DeVelice

Project Scientist: Lowell H. Suring received his M.S. in wildlife science from Oregon State University, Corvallis, in 1974. His thesis involved assessing habitat use and activity patterns of Columbian white-tailed deer along the lower Columbia River. Lowell was a leader of the Endangered Species and Wildlife Biometrics units in New York State between 1974 and 1977. From 1977 - 1978 he conducted research on secondary succession in pinyon-juniper woodlands in northwest Colorado. From 1978 - 1984 Lowell held biologist positions with the USDI Fish and Wildlife Service and USDA Forest Service in New Mexico and Minnesota. Since 1984 Lowell has been a major player in the development of wildlife habitat relationships models in the Alaska Region of the USDA Forest Service (this included chairing an interagency effort to assess viability concerns for wildlife species associated with old-growth forests in southeast Alaska). Lowell's professional expertise and interests focus on analyzing habitat use patterns of wildlife and the development/application of habitat assessment techniques. Currently, Lowell is employed by the Chugach National Forest where he is developing and implementing analytic techniques and tools that may be used to evaluate the capability of habitats to support wildlife and the effects of land management activities on habitat capability.

Project Scientist: Kenneth C. Winterberger has done graduate work at the University of Idaho studying remote sensing and it's use in forest mensuration. Ken has worked for the Pacific Northwest Experiment Station, in Alaska, as a remote sensing and inventory specialist since 1976. He has been responsible for land cover classification and inventory projects throughout the state of Alaska; a current project involves the development of a land cover classification derived from Landsat TM and SPOT data. Ken is presently working with a group from the International Boreal Forest Research Association defining and delineating the boreal forest zone on a worldwide basis. Ken is also working with scientists from the Sukachev Institute of Forests in Kasnoyarsk, Russia to develop a methodology to use NOAA AVHRR data to detect and monitor catastrophic forest damage over large areas.

Literature Cited

DeVelice, R.L., C. Hubbard, M. Potkin, T. Boucher, and D. Davidson. 1994. Characterization of upland nesting habitat of the marbled murrelet in the *Exxon Valdez* oil spill area (Project 93051 Part B). USDA Forest Service, Chugach National Forest, Anchorage, Alaska.

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Ford, R.G., M.L. Bonnell, D.H. Varoujean, G.W. Page, B.E. Sharp, D. Heinemann, and J.L. Casey. 1991. Assessment of direct seabird mortality in Prince William Sound and the Western Gulf of Alaska resulting from the Exxon Valdez oil spill. Ecological Consulting, Inc., Portland, Oregon.

Klosiewski, S.P. and K.K. Laing. MS. Marine bird populations of Prince William Sound, Alaska, before and after the Exxon Valdez Oil Spill. NRDA Bird Survey No. 2. U.S. Fish and Wildlife Service, Anchorage, Alaska.

Kuletz, K.J. MS. Assessment of injury to Marbled Murrelets from the Exxon Valdez Oil Spill. NRDA Bird Study No. 6. U.S. Fish and Wildlife Service, Anchorage, Alaska.

Kuletz, K.J., D.K. Marks, N.L. Naslund, N.G. Stevens, and M.B. Cody. 1994. Information needs for habitat protection: marbled murrelet habitat identification. Restoration Project 93051 Part B. U.S. Fish and Wildlife Service, Anchorage, Alaska.

I. Budget ($K)

Personnel	$83.5
Travel	5.0
Contractual Services	60.0
Commodities	1.0
Equipment	3.0
Capital Outlay	0.0
subtotal	$152.5
General Administration	$16.7
total	**$169.2**

Forage Fish Project

Bruce Wright
NOAA/National Marine Fisheries Service

The Trustee Council has initiated a research effort this summer enable scientists to better understand the distribution, abundance, and availability of several small fish which are important as food sources to other species in the oil spill affected area. These "forage fish" include capelin, herring, pollock, sandlance, euphausiids, squid, and other similar species.

Scientists know that the availability of forage fish affects the distribution, abundance, growth and reproductive success of some other species injured by the oil spill, particularly harbor seals, pigeon guillemots, black-legged kittiwakes and marbled murrelets. More and better knowledge about forage fish is needed to aid efforts to restore these injured species.

The project will first involve a reconnaissance survey using a combination of hydroacoustics and net sampling techniques to estimate distribution and abundance of forage fish resources in Prince William Sound. This years' late summer field work will primarily be an exploration effort to locate forage fish schools and identify the fish species detected.

The forage fish study is expected to be a multi-year project. Subsequent years' tasks may include expansion of the survey area, incorporation of characterizing oceanographic parameters, and development of models to estimate productivity of forage fish as related to changing oceanographic conditions.

Coordination with several state and federal agencies is incorporated in the project to insure that forage fish surveys occur in areas appropriate to understand how fish abundance influences marine birds and mammals.

You can help

Residents of Prince William Sound may also have knowledge of areas of high forage fish abundance to contribute to this effort. The forage fish investigators would be interested in learning what residents know about forage fish in the Prince William Sound and oil spill areas. Important information would include spawning locations of capelin or sandlance (researchers have lots of information about herring spawning locations). The presence of abundant marine predator activity, such as seabirds, seals, sea lions, and whales, may be another indication of forage fish concentrations. Some fishing vessels may even locate large concentrations of forage fish species on their fish finders. Any of this information may be useful to the scientists who will be assessing forage fish populations.

If you have information about locations of forage fish concentrations please contact Bruce Wright, at 907/789-6600 or write National Marine Fisheries Service, Auke Bay Fisheries Laboratory, OOSDAR, 11305 Glacier Highway, Juneau, AK 99801-18626. The results of the 1994 forage fish survey work will be made available to the public in an annual report in early 1995.

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Anchorage, AK 99501-3451

Exxon Valdez Oil Spill Trustee Council

Restoration Update

July 1994 Volume 1 Number 4

Draft Oil Spill Restoration Plan and Environmental Impact Statement Released for Comments

A comprehensive Restoration Plan outlining activities to restore injuries from the *Exxon Valdez* oil spill and an accompanying Draft Environmental Impact Statement were released June 18, 1994 by the Trustee Council for public review and comment.

The Draft Restoration Plan is the culmination of a 3-year joint effort by federal and state agencies following the October 1991 court settlement between Exxon Corporation, the United States government and the State of Alaska.

Written comments will be accepted through August 1, 1994 and should be mailed or delivered to: *Exxon Valdez* Oil Spill Trustee Council, Attn: EIS Comments, 645 G Street, Suite 401, Anchorage, AK 99501-3451.

Public meetings have been taking place in Anchorage, Seward, Homer, Kodiak, Cordova and Valdez to provide information and take public comments on both the Draft Restoration Plan and the Draft EIS.

An additional teleconference hearing is scheduled for July 20 beginning at 7:00 pm. Access to the teleconference will be available to residents in all the communities and villages in the oil spill region. Contact an Alaska Legislative Information Office or L.J. Evans at the Trustee Council offices for information about participating in the teleconference meeting.

To deliver comments by telephone, call 278-8012, or dial toll-free within Alaska at 1-800-478-7745, toll-free from outside Alaska at 1-800-283-7745. Fishermen or subsistence users unable to access a regular telephone may provide comments by way of a collect marine operator call, through August 1.

For more information or copies of the Draft Restoration Plan or EIS, contact the Oil Spill Public Information Center at the same address or by calling 907/278-8012, toll-free within Alaska at 1-800-478-7745, toll-free outside Alaska at 1-800-283-7745.

Important Trustee Council Action Dates Coming Up

August 1	•	*DEIS & Draft Restoration Plan Comments and Public Advisory Group nominations due*
August 2	•	*Public Advisory Group meeting*
August 8	•	*Trustee Council Meeting (tentative)*
August 29	•	*Trustee Council Meeting (tentative)*
September 6	•	*Draft 1995 Work Plan out for Public Review*
October 6	•	*Public comment closes on Draft 1995 Work Plan*
October 31	•	*Trustee Council meeting to act on Draft 1995 Work Plan (tentative)*

On May 26, Governor Walter J. Hickel signed HB 447, which established Afognak Island State Park. The park consists of 42,000 acres of prime wildlife habitat and recreational use lands at Seal Bay and Tonki Cape on Afognak Island, purchased in 1993 by the Trustee Council as part of the habitat protection program. Pictured with Gov. Hickel at the signing ceremony are (left to right) *Sen. Fred Zharoff, Laurie Nottingham, Assistant Attorney General and State Trustee Designee Craig Tillery, Walt Ebell, Ralph Eluska and Rep. Cliff Davidson. Photo by Georgene Sink, Kodiak Daily Mirror.*

Oil Spill Region Fisheries Outlook

Commissioner Carl Rosier
Alaska Department of Fish and Game

Fisheries resources provide the primary livelihood for most residents of the *Exxon Valdez* oil spill area. Safely managing fish resources already injured by the oil spill for harvest by commercial, subsistence and recreational users can best be improved through intensified field research and monitoring. While using early information to give us a glimpse of what is happening in this summer's fisheries in the oil spill regions, I would like to show how field work sponsored by the Trustee Council and the Department of Fish and Game will help us do our job better.

For a second year the herring fisheries in Prince William Sound were disastrous. Herring abundance was estimated to be below the threshold of 22,000 tons required to sustain future harvests, and no commercial fisheries were allowed. The decision to not open the fishery was based on biologists' field surveys of herring spawn deposition. Additional field work was initiated this year by the Trustee Council to determine the effect of disease on herring and the ecosystem factors which affect herring production.

It is too early yet to make a call on this year's total pink salmon return to Prince William Sound, but an early fishery in Valdez Arm looks positive. Millions of pink salmon were harvested there for hatchery cost recovery needs in a recent opening. Fisheries biologists launched a long-term field research program this spring to determine ecosystem factors affecting pink salmon production. In-season decisions about management of fish stock are now more accurate with the aid of wide-scale recoveries of coded wire tags from tagged salmon.

While commercial salmon fisheries in Kodiak began slowly, they are now tracking on preseason forecast levels, with the exception of the Ayakulik River. Based on expected poor sockeye returns resulting from oil spill injuries, no commercial openings have been allowed on salmon returning to the Ayakulik system this year. Intensive monitoring at the stream indicates the present return is only meeting escapement requirements at this time.

The Trustee Council has made a significant commitment to achieving a better understanding of the ecosystem processes affected by the oil spill. In most cases the data collection necessary to gain this information can only take place in the real-life laboratories of Prince William Sound and the Gulf of Alaska. The knowledge thus gained will assist and influence agency decisions about management of fish stocks and other resources in order to enhance recovery and restoration. I continue to be optimistic that the Trustees will support good research and monitoring as a necessary part of a comprehensive, balanced approach to restoration.

A Cordova field crew samples pre-emergent pink salmon fry in March 1994 as part of a Trustee Council study. Photo by J. Johnson, ADF&G.

Restoration Update

The Restoration Update is published approximately six times a year by the *Exxon Valdez* Oil Spill Trustee Council. Its purpose is to update interested members of the public about actions, policies and plans of the Trustee Council to restore resources and services injured by the *Exxon Valdez* oil spill.

For more information, mailing address correction or to request future articles on specific subjects, contact:

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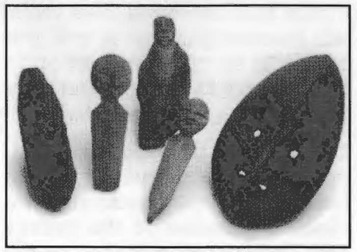
Kodiak Alutiiq Archaeological Repository

Groundbreaking ceremonies were held in Kodiak on May 26 for the construction of the Alutiiq Archaeological Repository, an 18,000 square-foot facility scheduled to be completed in February 1995.



Archaeological artifacts such as these Koniag masks and figurines will be part of the research collection at the Alutiiq Archaeological Repository. The full-sized mask (right) of a short-eared owl was found lying face down inside a storage box in a collapsed late Koniaq house at Karluk.

Representing the Trustee Council, Fish and Game Commissioner Carl Rosier said that the Trustees "found considerable personal satisfaction in funding this outstanding restoration project conceived by the public in Kodiak."

The Archaeological Repository project was established by the Kodiak Area Native Association and the Trustee Council in cooperation with Natives of Kodiak, dedicated to the restoration and preservation of cultural resources injured by the *Exxon Valdez* oil spill. The Trustees approved funding of $1.5 million toward construction of the building. Other sources will provide funding for the total expense of $2.4 million. The Kodiak Area Native Association and Natives of Kodiak will be responsible for furnishing, staffing and maintaining the facility once the structure is complete.

The Repository will provide safe, secure storage and access for the study of artifacts and other data recovered from archaeological sites in the Kodiak region. The center will also help to preserve the knowledge of traditional subsistence practices of the Native community, many of which were disrupted by the oil spill, and further public education to help reduce vandalism damage to archaeological sites and artifacts.

Institute of Marine Science Project DEIS

Meetings to gather comments on the Draft Environmental Impact Statement for the Proposed Institute of Marine Science Infrastructure Improvement Project are scheduled to take place in Seward on July 26 and in Anchorage on July 28, 1994.

Project team members will be available from 5:00 – 8:00 PM to discuss the project and answer questions. A presentation to describe the project will be delivered at 7:00 PM. The formal hearing to take public comment will begin at 8:00 PM. Both oral and written comments will be accepted at the meetings. In addition, written comments will be accepted until August 8, 1994.

The meetings will take place at the following locations:

Seward: Tuesday, July 26
Institute of Marine Science
K.M. Rae Building
125 Third Avenue

Anchorage: Thursday, July 28
Oil Spill Public Information Center
645 G Street, Suite 100

Written comments should be mailed or delivered to: Nancy K. Swanton, EIS Project Manager, 949 East 36th Ave., Room 603, Anchorage, AK 99508-4302. For more information, contact Nancy Swanton at 907/271-6622.

PAG Nominations

Deadline August 1

The *Exxon Valdez* Oil Spill Trustee Council is soliciting nominations for the Nov. 1994 – Oct. 1996 term of the Public Advisory Group. Members of the Public Advisory Group reflect balanced representation from the public at large and the following principal interests: aquaculture, commercial fishing, commercial tourism, environmental, conservation, forest products, local government, native landowners, recreational users, sport hunting and fishing, subsistence, and science/academic. Nominations will be accepted until August 1, 1994.

For more detailed information on the role of the Public Advisory Group or the nomination process, or to obtain copies of documents relating to the Public Advisory Group, contact Doug Mutter, U.S. Department of the Interior, at 907/271-5011.

1995 Work Plan Process Underway

Approximately 160 projects totaling almost $66 million were submitted in response to the invitation to submit 1995 restoration projects. These proposals are undergoing technical, legal and policy review, and will be presented for public comment in a Draft 1995 Work Plan in September.

Following review by the Public Advisory Group and other public comment, and further scientific review, the Trustee Council will consider the plan and take action at the end of October.

For more information contact the Oil Spill Public Information Center, 645 G Street, Anchorage, AK 99501-3451, or call 907/278-8008, toll free within Alaska at 1-800-478-7745, outside Alaska at 1-800-283-7745.

Exxon Valdez Oil Spill Trustee Council
Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178

MEMORANDUM

TO: Jerome Montague/ADF&G

FROM: Molly McCammon, Director of Operations

DATE: July 19, 1994

SUBJ: Sub-project #94320-I/Food Web Dependencies in PWS Using Stable Isotope Tracers

---

The purpose of this memorandum is formally authorize work under sub-project 94320-I/Food Web Dependencies in PWS Using Stable Isotope Tracers consistent with the peer review comments in the enclosed letter from the Chief Scientist (attachment).

In light of the widespread interest in the use of stable isotope tracers evident from many of the projects proposed for FY 95, the caution to take a "go slow" approach is particularly timely.

attachment

cc: Byron Morris
Dave Gibbons
Sandy Rabinowitch
Mark Brodersen
Veronica Gilbert
Joe Sullivan
Dean Hughes
James R. Ayers
Bob Spies
Kathy Frost

APPLIED
marine
SCIENCES

June 30, 1994

TO: James Ayers, Executive Director

FROM: Robert B. Spies
Chief Scientist

THRU: Molly McCammon

CC: Jerome Montague
Joe Sullivan
Ted Cooney
Don Schell

RE: Detailed Project Description #94320 I ("SEA: Confirming food web dependencies in the Prince William Sound Ecosystem using stable isotope tracers")

The Detailed Project Description #94320 I ("SEA: Confirming food web dependencies in the Prince William Sound Ecosystem using stable isotope tracers") arrived in my office on March 21, 1994. Since it was not identified as a project that needed expedited review to meet the 1994 objectives, other reviews of DPDs took precedence. The reviewers comments were received on May 25, 1994.

The reviewer found this to a worthwhile project overall, but cautioned us not to expect too much if certain conditions (not yet known) about carbon and nitrogen sources in Prince William Sound do not pertain. For example if the $^{15}N/^{14}N$ or $^{13}C/^{12}C$ ratios of basal sources of marine production are variable, then it will greatly complicate and may limit the usefulness of this ratio in characterizing the structure of the food web in Prince William Sound. The investigator is certainly aware of these and potentially other limitations, so there is not much risk of misinterpretations in this respect. The data from the first field season will certainly be useful in estimating the prospects for long-term stable isotope studies contributing to ecological studies within the Sound.

I therefore recommend that project #94320 I ("SEA: Confirming food web dependencies in the Prince William Sound Ecosystem using stable isotope tracers") go forward as proposed and that it be subjected to further peer review in late 1994 or early 1995. The objective of the review will be to determine how the study complements other studies currently being carried out and how the results may help the Trustees reach their overall goals for the recovery of Prince William Sound.

My review has been only of a technical nature and I recommend that before this project is approved by you that it be subjected to a budget review.

2155 Las Positas Court, Suite S Livermore, CA 94550 510.373.7142 FAX 510.373.7834

Review of Schell and Kline proposal to Exxon Valdez Oil Spill Trustee Council:

These researchers have considerable experience in this type of work and are highly qualified to conduct the proposed research. As they state, variations in isotope abundances among and between taxa, space and time can provide valuable information on feeding and trophic structure. However, the word "can" must be emphasized. With regard to temporal or spatial changes in diet the ability to isotopically identify times and places of feeding is predicated on the assumption that isotopic abundances of all potential food measurably contrast in time and space. If this is not found by the research, then an important prerequisite of the study is lost. If large variations on time/space scales are found, then one worries that all potential times, places, and prey have been sampled. It is not clear to me that only three regions, three time periods, and four biotic groups as proposed adequately cover all potential food sources for interpreting isotope abundances in predators whose migratory habits may take them well away from PWS prey for most of their life. With regard to trophic level assessment using 15N, biomagnification of this isotope can used to unambiguously identify trophic level when the 15N/14N of the food base is invariant in time and space. However, given that this is not likely to be the case, these variations must be separated from those due to trophic level effects within and between predator taxa. How will this be done? Use of seal whiskers and claws to reconstruct temporal/spatial feeding changes is an interesting idea, yet how will sequential analyses along the length of these samples be correlated with a specific feeding periods/places and how then will intercomparision among seals/months/years/sites be facilitated? Uncertainties, precision, accuracy, sources of error????

In conclusion, there is no question in my mind that these researchers can sample and analyze the many thousand of samples proposed here. I am much less certain that these measurements can be meaningfully interpreted on the scales suggested. Nevertheless, some of the results might lend support to other kinds of evidence (gut analyses, prey distribution, etc.) that address the same hypotheses.

Exxon Valdez Oil Spill Trustee Council

Restoration Office
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DRAFT

AGENDA
EXXON VALDEZ OIL SPILL SETTLEMENT
TRUSTEE COUNCIL
CONTINUATION OF JULY 11, 1994 MEETING
TELECONFERENCE
JULY 18, 1994 @ 3:00 P.M.

7/18/94
1:00 pm
DRAFT

Trustee Council Members:

PHIL JANIK/JIM WOLFE
Regional Forester/Trustee
Alaska Region/Representative
U.S. Department of Agriculture-Forest Service

BRUCE BOTELHO/CRAIG TILLERY
Attorney General/Trustee
State of Alaska/Representative

GEORGE T. FRAMPTON, JR./DEBORAH WILLIAMS
Assistant Secretary/Trustee Representative
U.S. Department of the Interior

STEVE PENNOYER
Director, Alaska Region
National Marine Fisheries Service

CARL L. ROSIER
Commissioner
Alaska Department of Fish & Game

JOHN A. SANDOR
Commissioner
Alaska Department of Environmental Conservation

John Sandor, Chair
Juneau - Forest Service Conference Room 541A
Anchorage - 645 G Street Fourth Floor

1. Call to Order 3:00 p.m.
   - Approval of Agenda
   - Order of the Day

2. Habitat Acquisition Update (Dave Gibbons)
   - Appraisal Schedule & Cost Estimate

3. Future Meeting Schedule
   - August 23, 1994 @ 7:30 or 8:00 a.m. (Simpson Building)
   Tentative Topics to be Discussed
   - Final Restoration Plan
   - EIS Preferred Alternative
   - FY95 Interim Budget
   - Habitat Update

DRAFT

July 18, 1994

FOREST SERVICE STATUS REPORT REGARDING APPRAISAL SERVICES AND APPRAISAL SCHEDULE

At its July 11, 1994, meeting, the Trustee Council requested both a status report regarding the Forest Service contract to conduct appraisals in support of the restoration acquisition program and a current appraisal schedule.

I. Background

The status of the appraisal contract and current appraisal schedule cannot be fully appreciated without a consideration of the historical context in which the Trustee Council's appraisal process has evolved.

A. Standardized Appraisal Process and Appraisal Services Contract.

On November 30, 1993, the HPWG issued its comprehensive habitat protection evaluation and ranking of large parcels, which were evaluated, scored and ranked as high, moderate, or low to represent the degree to which protection of a parcel would benefit the recovery of linked resources and services that occur on the parcel.

At its January 31, 1994, meeting, the Trustee Council approved a resolution proposed by Commissioner Sandor to proceed with a habitat protection program. Among other things, the resolution directed the Executive Director to work with the lead negotiators to develop a standardized appraisal process, including standardized appraisal instructions, to be used to appraise the parcels under consideration for protection. This Council direction launched several initiatives.

First, the Alaska Department of Natural Resources, the U.S. Department of the Interior, and the U.S. Department of Agriculture entered into a Memorandum of Understanding (MOU) regarding the appraisal process to be used to appraise interests in land under consideration for acquisition and habitat protection as part of the Trustee Council restoration process. The parties entered into the MOU to ensure that all appraisals are conducted and reviewed in an efficient and uniform manner. The MOU provides that standard appraisal instructions will be developed and applied to each appraisal of interests in land proposed for acquisition, and that all appraisals will comply with State of Alaska appraisal standards and the *Uniform Appraisal Standards for Federal Land Acquisitions* (UASFLA), 1992. In addition, the parties agreed that an existing

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U.S. Forest Service contract for the procurement of appraisal services would be used to appraise all interests in land proposed to be acquired for purposes of restoration. The responsibility for the overall administration of the appraisal services contract remains with the Forest Service. The parties executed the MOU on March 21, 1994.

Second, in March, 1994, the Executive Director began a process to develop standardized appraisal instructions. The appraisal instructions utilized in the existing Forest Service contract were the basis for development of the standardized instructions. The Executive Director solicited comments on these instructions from landowners interested in participating in the restoration acquisition program and incorporated appropriate comments in the final version. The Department of Justice Chief Appraiser also reviewed the standardized instructions and concurred that the standards met the requirements of UASFLA. The standardized appraisal instructions were finalized on April 21, 1994.

Third, the Executive Director also requested that the appropriate staff develop a framework for the appraisal process that could be shared with landowners and the public. Throughout April, 1994, agency negotiators, appraisers, and attorneys formulated a twelve step process for conducting appraisals, reviewing appraisals, and approving appraisals. The draft twelve step process was also submitted to interested landowners for comment and was endorsed by the Council on May 31, 1994. The final twelve step process was issued June 3, 1994.

B. Initiation of Appraisals and Current Schedule.

At the same time the above initiatives detailing the standards and process to be used in conducting appraisals was taking place, negotiations with landowners were occurring. Receipt of permission from the landowners to proceed with an appraisal has varied with each parcel and remains dependent upon the progress of on-going negotiations. The progress of negotiations and thereby the number of parcels to be appraised within the assumed deadline of mid-September has made the confirmation of the completion of any given appraisal difficult. In fact, the Executive Director informed the Council at its April 11, 1994, meeting that the schedule for completion of appraisals was not definitive and that the appraisers were expecting appraisals to be prepared by July, August, or maybe even early September. Transcript at p. 16.

In addition, two issues have been problematic with respect to the scheduling of appraisals, although it does not appear either issue has caused significant delays in the current appraisal schedule. First, the May 6, 1994, purchase agreement with the Eyak Corporation and Sherstone, Inc. for the purchase of approximately

two thousand acres of commercial timber rights required that an appraisal be conducted as soon as possible to meet the 90 day closing requirement stated in the purchase agreement. This required a shift in focus from the Shuyak and Chenega parcels to the Eyak/Sherstone parcel with respect to the performance of the timber appraisal. Second, locating a subcontractor to perform timber appraisals was troublesome. No timber appraisal firm with experience in Alaska was acceptable to the State and/or the private landowners. This results from a potential appearance of a conflict for the Alaska firms because no qualified firm was identified that was not already associated with either the private parties or with Exxon Corporation in the remaining oil spill litigation. Not until mid-May was the Forest Service contract appraiser, Black-Smith and Richards of Anchorage, able to subcontract with Pacific Forest Consultants of Portland, Oregon to perform timber appraisal services under the Forest Service contract.

An appraisal schedule prepared for the Council for its May 31, 1994 meeting indicates that of the five appraisals authorized to be conducted as of that date, the draft appraisal completion date for two was mid-July, one in August, and two in mid-September. The chart attached details, among other things, the expected completion date of the draft appraisal reports for these five parcels, which effectively remain on schedule as reported to the Council in May.

Since the May Council meeting, however, three additional requests have been made by the Executive Director to prepare appraisals, with a presumed target for completion of the draft appraisal report of September 15, along with the other parcels already being appraised. Completion of these draft reports by this target date significantly raises the cost of conducting the appraisals and also may raise the perception that the Council's appraisal process is not reliable.

With respect to costs, several factors affect the estimated cost of conducting an appraisal, including the deadline established for completion of the appraisal. Large parcels containing timber may increase appraisal costs substantially. This results, in part, from deficient or non-existent timber inventory data, which then requires a significant amount of field work to inventory the timber. A significant number of additional timber cruisers may be required to complete the groundwork during this field season in order to meet a September 15 timeframe. There may be substantial risks involved in performing timber appraisals for an estimated 200,000 acres during the remaining 1994 field season. First, the margin for error increases in the timber inventory and grade, which calls into question the validity of the appraisal. This factor therefore requires that the accountability level increase substantially. Timber check cruisers must be available from the lead negotiating agency to ensure the validity of the timber

inventory. In addition, physical risks for the individuals performing the timber inventory work increases as the end of the field season nears.

If the draft completion date for each appraisal requested is to be by mid-September, an increase in contract personnel and cost will certainly occur. Based on discussions with Pacific Forest Consultants, the Forest Service estimate for completing the timber cruises for the Afognak and Eyak large parcels by September 15 is approximately $800,000. This is based on an increase in personnel to approximately 100 people to cruise the estimated 163,000 acres to be appraised, and considers current costs for labor, transportation, overhead, and expenses. It is estimated that if the September 15 draft completion date is not required, and the deadline to complete the timber cruise is late October, the estimate for Eyak is $250,000, assuming that good timber inventory data is available for Afognak. In addition, it must be noted that Pacific Forest Consultants indicates there is only a 50-50 chance that it could meet the September 15 deadline.

The incurred costs associated with the conduct of appraisals currently exceeds the amount authorized by the Council at its May 31st meeting to conduct appraisals. The Council allocated $515,000 to conduct appraisals. The cost of performing the five appraisals authorized at the time of the May 31st meeting, Akhiok-Kaguyak, Chenega, Eyak-Orca Narrows Sub-parcel, Shuyak, and Old Harbor, is $992,617. This does not include the $53,043 that the Federal trustees authorized to be expended from federal restitution funds to conduct an appraisal of the Chenega parcel. The worst case analysis regarding completion of Afognak, Eyak large parcel and Koniag by September 15th brings the estimated total to conduct all appraisals to $1,827,617. This total cost exceeds the $515,000 allocated by the Council by $1,312,617. This estimate does NOT include any appraisal of Tatitlek lands that may be requested for draft completion by September 15.

Finally, it must be emphasized that the attached appraisal schedule provides for an expected date of completion of the draft appraisal report and the cost estimates are based on the September 15 completion date. For acquisitions involving partial interests, significant issues continue to remain undefined, which affect the appraiser's ability to meet this draft completion date. Where less than fee acquisitions are proposed, negotiators must resolve issues such as public access, subsistence rights, ANILCA 22(g), and defining development rights retained by the landowner before a defined partial interest to be acquired is presented to the appraiser for a determination of value of the less than fee interest.

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July 18, 1994

APPRAISAL SCHEDULE & COST ESTIMATES

PARCEL OWNERSHIP	REQUEST FROM E.D.	ACRES TO BE APPRAISED	INTEREST APPRAISED	DRAFT REPORT DATE	ESTIMATED COST
EYAK	5/5/94	2,025	TIMBER	LATE-JULY	$60,320
CHENEGA	9/93*	76,000	FEE/PAR/TIM	LATE-JULY	$450,000
SHUYAK	4/29/94	27,900	FEE/TIMBER	MID-AUGUST	$391,603
AKHIOK	5/6/94	119,885	FEE	MID-SEPT	$63,401
OLD HARBOR	5/6/94	34,134	FEE/PARTIAL	MID-SEPT	$27,291
KONIAG	7/11/94	100,000	FEE	MID-SEPT	$35,000**
AJV	6/23/94	112,658	FEE/TIMBER	MID-SEPT	$200,000**
EYAK	6/17/94	50,000**	FEE/PAR/TIM	MID-SEPT	$600,000**
				LATE-OCT	$250,000**
TATITLEK	not ordered				
CHUGACH	not ordered				
PORT GRAHAM	4/29/94	CANCELLED 5/17 AFTER PRELIMINARY WORK WAS INITIATED			
ENGLISH BAY	not ordered				

ESTIMATED TOTAL	$1,827,617
APPRAISAL FUNDS AUTHORIZED BY TRUSTEE COUNCIL ON 1/31/94	$515,000
ADDITIONAL FUNDS NEEDED	$1,312,617

*Landowner permission given thru 9/93 agreement with Forest Service

**Estimate

DRAFT

Exxon Valdez Oil Spill Trustee Council
Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178

FAX COVER SHEET

To: Trustee Council Number: 271-4102

From: Dave Gibbons Date: July 18, 1994

Comments: Total Pages: 7

The following agenda and document relate to the 3:00 pm. TC teleconference to be held today. Pls forward ASAP. Thank You

Document Sent By: Rebecca

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*** MULTI TRANSACTION REPORT ***
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	[31] 4655070	J.SANDOR yes martha
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Document Sent By: Rebecca

Trustee Agencies
State of Alaska: Departments of Fish & Game, Law, and Environmental Conservation
United States: National Oceanic and Atmospheric Administration, Departments of Agriculture and Interior

TRANSMISSION REPORT

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Linda - here is pg. 2 again for Pennoyer

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XEROX TELECOPIER 7021

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FAX COVER SHEET

To: Agency Liaisons Number:

From: Dave Gibbons Date: July 18, 1994

Comments: Total Pages: 7

Pls forward to the A.L. in your ofc. These documents relate to the 3 p.m. TC teleconference today.

Thank You

Document Sent By: Rebecca

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*** MULTI TRANSACTION REPORT ***
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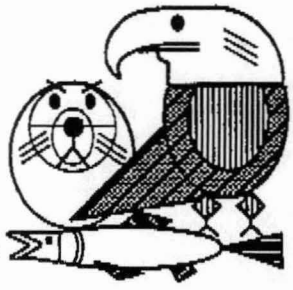

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To: Agency Liaisons Number:

From: Dave Gibbons Date: July 18, 1994

Comments: Total Pages: 7

Pls forward to the A.L. in your ofc. These documents relate to the 3 p.m. TC teleconference today.

Thank You

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*** ACTIVITY REPORT ***
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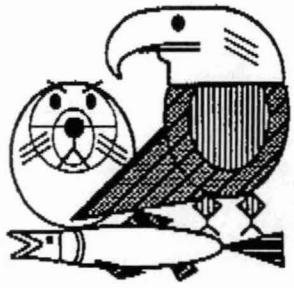

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TRANSMISSION OK

TX/RX NO.	1038
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645 G Street, Suite 401, Anchorage, Alaska 99501-3451
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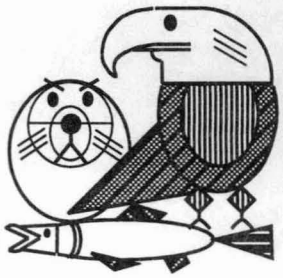


MEMORANDUM

TO: Jim Ayers, Executive Director
Restoration Work Force
Simpson Building Staff
Bob Spies, Chief Scientist

FROM: Molly McCammon
Director of Operations

DATE: July 15, 1994

RE: Update on issues

---

1. Trustee Council teleconference at 3 pm, July 18 to discuss appraisal timelines and funding needs. Juneau site is the USFS conference room; Anchorage site is the EVOS Restoration Office 4th floor conference room. Briefing materials will be FAXED to everyone by Monday noon.

2. Comments on Draft Procedures for Final Reports were due to Molly yesterday!

3. Comments on the Chief Scientist RFP were due to Carol Fries yesterday!

4. Follow-up memo on Draft Work Plan and budgets will be sent out early next week.

5. Restoration Work Force meets Wednesday, July 20 at 9 am. Jim will be tapped in by phone. The Juneau location is the USFS conference room.

6. EIS public meeting in Valdez July 19. EIS teleconference in Anchorage July 20 beginning at 7 pm. Testimony at this teleconference will be transcribed.

7. Meeting to discuss subsistence proposals and community outreach proposals in Anchorage at 9 am Thursday, July 21. Please let me know if you wish to be teleconferenced. Mandatory for all agency liaisons or alternate.

8. Tentative teleconference Friday, July 22 to review and categorize small number of proposals that were not peer reviewed. More information to follow.

Exxon Valdez Oil Spill Trustee Council

Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178

MEMORANDUM

TO: Bill Brighton, DOJ
Louis Milkman, DOJ
Regina Belt, DOJ
Maria Lisowski, USFS
Cathy Chorosteski, NOAA
Barry Roth, DOI
Alex Swiderski, ADOL

FROM: Molly McCammon
Director of Operations

DATE: July 15, 1994

RE: Legal review of Trustee Council projects

In April 1994 the Trustee Council approved funding for a Subsistence Restoration Planning project as part of its effort towards restoration of subsistence resources and services. As part of that effort, a number of project proposals have been developed that were submitted too late to be included in the package sent to you earlier for review. Trustee Agency Liaisons and Trustee Council staff will be meeting with the Subsistence Planning project staff on Thursday, July 21, at 9 am to review these proposals. I would appreciate your preliminary review and thoughts on the permissibility of use of Trustee funds for these projects before that meeting if at all possible. It is expected that many of these projects may be more appropriately considered for funding through the state's criminal restitution funds.

In addition, as you prepare your public memorandum on the legal issues of the earlier list of projects, in particular I would ask that you also mention the use of Trustee funds for not only those proposals that would fund actual hatchery projects and operations, but also those that are indirectly related to hatchery operations:

Project 95320B	PWS Pink Salmon Stock ID and Monitoring (CWT)
Project 95320C	Otolith Marking of Hatchery Reared Pinks in PWS

Project 95320D	PWS Pink Salmon Genetics
Project 95320K	PWSAC: Experimental Fry Release
Project 95065	PWSAC Pink Salmon Fry Mortality
Project 95137	PWS Salmon Stock ID and Monitoring Studies

In addition, I would ask that you review Project 95017 once again. I believe this should be viewed as a replacement project, and not a project restoring an injured resource.

If you have any questions about this, please contact me at 278-8012.

Exxon Valdez Oil Spill Trustee Council

Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178

July 15, 1994

Todd Mittleman
1255 Spruce Street
Berkeley, California 94709

Dear Mr. Mittleman:

Jim Ayers asked me to review the resume you submitted to him on June 30, 1994. Thank you for sending it to us. Mr. Ayers will be out of state when you are in Juneau next week, but if you are in Anchorage I would be happy to meet with you.

I should let you know however, that at this time we have no positions available, but will keep your resume on file. Should we find a need for additional staff we will reassess your resume. In the meantime, thank you again for your interest in the work the Trustee Council is doing. Give me a call if you do happen to be in Anchorage.

Sincerely,

Molly McCammon
Director of Operations

mm/raw

W
Warner Chabot & Associates

June 30, 1994

Mr. James Ayers
Executive Director
Exxon Valdeez Oil Spill Trustee Council
P.O. Box 21668
Juneau, AK 99802

Dear Mr. Ayers:

I am writing because I recently spoke to Greg Dronkert, who referred me to you after I had mentioned to him that I will be up in Juneau later this month, looking for work in the field of marine affairs. Greg, whom I met while working on my master's degree at the University of Washington's School of Marine Affairs in Seattle, told me about your position with Exxon, and I felt that it would not be a bad idea to inquire about the possibilities of providing any services to you on any of the projects you are involved with.

I am presently working at an environmental consulting firm on oil spill contingency plans for two separate Bay Area counties although my background in the marine affairs field covers a wide range of marine affairs topics. I have been involved with projects in the marine affairs field such as an international fisheries policy study for NMFS, studies involving marine resource management and marine environmental policy issues, and an area that could be related to the work you are involved with, the social ramifications of marine policy decisions. The driftnet study I worked on for NMFS focused on the economics and impacts on employment in the fishery, and much of the other work I have done in the field of marine affairs has focused on the social, economic, and political implications of marine related issues.

Regardless of whether you have or know of any work opportunities, I would appreciate the chance to be able to talk to you when I'm up in Juneau later this month. I will be in town from July 21 to July 27 and would greatly appreciate the chance to come in and talk to you any time during that week. I will call later this week to see if you will be in Juneau at that time, and to inquire whether it would be possible to arrange a time to meet based on your convenience. I look forward to talking to you.

Sincerely,

Todd Mittleman

TODD W. MITTLEMAN
1255 Spruce Street
Berkeley, CA 94709
(510) 848-5224

EDUCATION

University of Washington, School of Marine Affairs. Masters of Marine Affairs, August 1992.

Rutgers University, Bachelor of Arts, Political Science, May 1986.

EXPERIENCE

Associate/Co-author - County Oil Spill Contingency Plans
Chabot & Associates, San Francisco
February 1994 - present

Currently co-authoring oil spill contingency plans for two San Francisco Bay area counties (Contra Costa and Alameda). Both plans will enable local government to participate in planning and response efforts in the Unified Command with the Coast Guard and OSPR (CA Dept. of Fish & Game) in the event of a large oil spill. Plan elements include the determination of a key contact, emergency notification procedures, identification of sensitive environmental and economic resources, response strategies, and an inventory of local facilities, resources, and contact numbers that would be consulted during spill response efforts.

Coordinator/Interpreter - North Pacific Marine Research Study
U.S.- Japan Joint Research Cruise, Bering Sea & Gulf of Alaska
July 1993 - September 1993

Coordinated the exchange of information between the Japanese and American scientists on board a Japanese vessel doing research on fish stocks in the Bering Sea and Gulf of Alaska (NMFS/Fisheries Agency of Japan joint survey). Served as an interpreter and intermediary between the scientists, as both sides needed to cooperate in the collection and sharing of data.

Research Associate/Co-author - International High Seas Driftnet Study
NOAA Funded Research Project, University of Washington, Seattle
September 1992 - April 1993

Was hired by NOAA/NMFS to conduct a study with a Professor at the School of Marine Affairs on the driftnet fleets of Japan, Korea, and Taiwan, and the impacts associated with the U.N. moratorium banning driftnetting on the high seas. Conducted field work in each of the three countries to assess the fate and future of the driftnet fleets; interviewed government officials and industry representatives involved with the fishery. Presented the report to the NMFS Honolulu Southwest Fisheries Lab in April.

Coordinator - N. Pacific Marine Science Organization (PICES) Int'l Conference, Seattle
September 1991 - December 1991

Assisted the chairman of PICES, Dr. Warren Wooster, with the planning and organization of an international conference that sought to discuss organizational goals and objectives. PICES, a recently established international organization, is the Pacific counterpart to ICES - the International Council on the Exploration of the Seas. Participating members included government officials and marine scientists from Russia, China, Japan, Canada, and the U.S.

Research Associate
Seattle Maritime Museum Development Project, Seattle
March 1991 - June 1991

Responsible for researching potential inter-cultural programs that could be pursued in the future by the proposed Seattle Maritime Museum. Because plans for the Maritime Museum included a broad range of marine educational and interpretive programs, inter-cultural programs with the local community were of interest to the development team. Researched existing inter-cultural educational programs in the local community and whether similar or cooperative activities could be promoted by the Maritime Museum.

Liaison
C. Itoh & Co., Seattle
September 1989 - September 1990

Represented C. Itoh & Co., a large Japanese trading firm, in their dealings with American companies. Acted as a liaison between visiting executives and U.S. suppliers. Was responsible for informing the head offices in Tokyo and Osaka of political and business developments in the Northwest that would affect trade between Japan and the U.S.

Liaison
Consulate General of Japan, Los Angeles
February 1988 - July 1989

Responsible for assisting the Consul in charge of Cultural Affairs and Public Information in his dealings with events that involved the strengthening of ties between the U.S. and Japan through cultural and informational activities. Transmitted summaries of political events in the U.S. to the Foreign Ministry office in Tokyo, organized "L.A. Japan Week 1988," and worked with the Japanese press during Prime Minister Takeshita's visit to Los Angeles.

Teaching Consultant
Japanese Ministry of Education, Fukuoka, Japan
June 1986 - July 1987

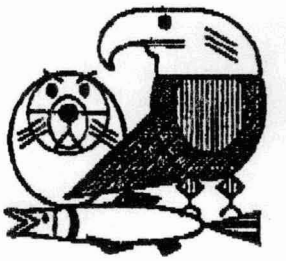
Acted as an English Language Consultant for the Fukuoka Prefectural Government Head Office. Organized seminars that introduced American culture and the English Language to government officials and teachers going abroad. Also visited over 40 Jr. High/High Schools.

LANGUAGES/SKILLS

Speak Japanese. Traveled extensively throughout Northeast and Southeast Asia. SCUBA certification.

RECEIVED
National Marine Fisheries Svc.

Exxon Valdez Oil Spill Trustee Council
Restoration Office
645 "G" Street, Anchorage, AK 99501
Phone: (907) 278-8012 Fax: (907) 276-7178



FAX COVER SHEET

TO: Rebecca	FROM: marylou
OFFICE:	OFFICE: Exeeutive Director's Office
FAX NUMBER:	FAX NUMBER: 586-7589
PHONE NUMBER:	PHONE NUMBER: 586-7238

COMMENTS:
Cc of 5/6/94 memo

DATE: 7/18/94	TOTAL PAGES: 2

Exxon Valdez Oil Spill Trustee Council
Restoration Office
645 "G" Street, Anchorage, AK 99501
Phone: (907) 278-8012 Fax: (907) 276-7178

MEMORANDUM

TO: Dave Gibbons, USFS

FROM: James R. Ayers
Executive Director

DATE: May 6, 1994

RE: Appraisal Authorization

You are hereby authorized to undertake an appraisal for the lands and interests in Kodiak lands property under the ownership of Akhiok-Kaguyak Corporation, Koniag Corporation and Old Harbor Corporation, respectively. Please refer to the Memorandum of Understanding signed by the respective agencies and utilize the existing contract. An individual work order should be prepared for each ownership explicitly outlining the appraisal assignment. Before issuing the work order, a definition of rights to be appraised, a legal description, and a date for submission of the report should be prepared for the appraiser and Contracting Officer's Representative. This should be accomplished in cooperation with Negotiators. The landowner should be advised in writing that the appraisal is, with their permission, proceeding.

JRA/mir

cc: Respective Negotiators
Carol Fries, DNR

Exxon Valdez Oil Spill Trustee Council

Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178

MEMORANDUM

To: Dave Gibbons
USDA, Forest Service

From: Jim Ayers
Executive Director

Date: July 13, 1994

Subj: Appraisal Requests

Per our previous discussion, this is to clarify the appraisals requested to date:

Landowner	Date of Authorization
Afognak Joint Venture	6/23/94 memo to Gibbons from Ayers
Akhiok-Kaguyak Corporation	5/6/94 memo from Gibbons to Ayers
Chenega Corporation	(underway via Forest Service authorization)
Chugach Alaska Corporation	(preliminary negotiations underway, no appraisal requested)
English Bay Corporation	(awaiting further communication from landowner)
Eyak Corporation	6/17/94 memo to Gibbons from Ayers
Kodiak Island Borough	4/29/94 memo to Gibbons from Ayers authorizing appraisals
Koniag Incorporated	5/6/94 memo to Gibbons from Ayers authorizing appraisals
Old Harbor Corporation	5/6/94 memo to Gibbons from Ayers
Port Graham Corporation	5/6/94 memo to Gibbons from Ayers
Tatitlek Corporation	(preliminary negotiations underway, no appraisals requested)

< awaiting further word from Landowner

The Trustee Council will have a teleconference on July 18 at 3:00 p.m. The purpose of the teleconference is to discuss the schedule and "critical path analysis" for completion of appraisals including any additional funds required (e.g., additional cruise costs).

If we can be of any help, please contact Molly or me. The agenda for the July 18, 1994 meeting will be developed at the direction of the Forest Service.

cc: Jim Wolfe

****
*** ACTIVITY REPORT ***
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USAGE TIME	01'05
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RESULT	OK

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*** ACTIVITY REPORT ***
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CONNECTION ID	D.GIBBONS
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USAGE TIME	01'05
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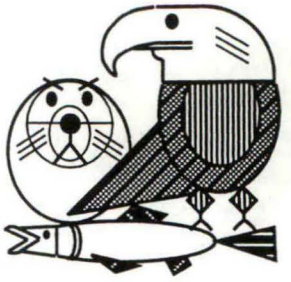
RESULT	OK

Exxon Valdez Oil Spill Trustee Council
Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178



FAX COVER SHEET

To: Kimberly Bowns Number: 586-7843

From: Jim Ayers Date: July 13, 1994

Comments: Total Pages: 3

Pls forward to Ms. Bowns.

MR Ayers wanted you to know he'd sent this memo to Dave Gibbons & cc: to Jim Wolfe, so you would know what was going on.

Document Sent By: Rebecca

****
*** ACTIVITY REPORT ***
****

TRANSMISSION OK

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CONNECTION ID		
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USAGE TIME	01'25	
PAGES	3	
RESULT	OK	

Kimberly Bourns
bcc: 4

Exxon Valdez Oil Spill Trustee Council

Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178

MEMORANDUM

To: John Katz

From: Jim Ayers
Executive Director

Date: July 13, 1994

Subj: Financial Overview

This brief three page financial overview has now been discussed with the State Trustees.

Page one is a copy of the projected budgets for each of the alternatives of the EIS. Page two is a spreadsheet detailing the implementation of alternative five, the proposed alternative. I believe this spreadsheet does reflect the interests and concerns reflected by the State and Feds, and expressed by the principals.

Page three is an overview of the "estimated ranges" of cost of the acquisitions of the respective properties. During the discussion with the State Trustees on the 11th of July there was no objection and seemed to be individual concurrence. I do intend to utilize this approach once the final Restoration Plan and the preferred alternative are adopted. Please advise if you see a problem. Thanks for your help!!

Attachements

2 Alternatives

Alternative 5 represents a modification from that shown in the Draft *Exxon Valdez* Restoration Plan Summary of Alternatives for Public Comment (EVOS Trustee Council, April 1993).

Table 2-2
Comparative Budget Emphasis of Restoration Categories by Alternative

	Projected Budget (in millions of dollars)				
	Alternatives				
Category	1	2	3	4	5
Administration & Public Information	$0	$25	$37	$43	$20-35
Monitoring & Research	0	31	43	50	130-165
General Restoration	0	0	75	217	65-100
Habitat Protection	0	564	465	310	295-325
Restoration Reserve	0	0	0	0	100-130
Reimbursements	25-35	25-35	25-35	25-35	25-35

Note: Reimbursements are determined by the governments; not the Trustee Council and therefore are not part of this analysis.

This table does not reflect the interest earnings that will accrue to the various balances over the payment period and be available for Trustee Council expenditures.

(1)

DRAFT

EVOS FINANCIAL PLAN 2- 680 --- DRAFT EXAMPLE-- If Alt # 5

These are estimates- Annual Actuals will be based on need

Comprehensive Ecosystem Approach 1994-2002

	1994	1995	1996	1997	1998	1999	2000	2001	2002	
Joint Trust Fund Balance	90.8	73.4	54.4	48.2	44.4	41.0	37.4	34.3	36.2	
Estimated Interest earned	3.5	3.0	3.0	3.0	3.0	2.5	2.5	2.5	2.5	
Exxon september payment	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0		
Reimbursements		(5.0)	(5.0)	(5.0)	(5.0)	(5.0)	(5.0)			
FY work plan & other authorized	(15.9)									
Administration, S R B & Public Info		(3.5)	(3.2)	(3.2)	(2.8)	(2.5)	(2.0)	(2.0)	(2.0)	
FY Habitat Protection and Acquisition(1)	(3.0)	(42.0)	(42.0)	(39.6)	(39.6)	(39.6)	(39.6)	(39.6)		
FY General Restoration-Monitor&Research		(17.0)	(17.0)	(17.0)	(17.0)	(17.0)	(17.0)	(17.0)	(17.0)	
Institute of Marine Science		(12.5)								
Subtotal	145.4	66.4	60.2	56.4	53.0	49.4	46.3	48.2	19.7	
Restoration Reserve	(12.0)	(12.0)	(12.0)	(12.0)	(12.0)	(12.0)	(12.0)	(12.0)	122.8	(2)
Land acquisition down payments	(60.0)									
Estimated Remaining Balance	73.4	54.4	48.2	44.4	41.0	37.4	34.3	36.2	142.5	

(1) Payments assume 3.0% rate

(2) Restoration Reserve balance assumes 6.0% earned to 2002

DRAFT

				Eyak			$30-$50			
				Chenega			$25-$35			
				Tatitlik						
				Chugach						
				Port Graham			$10-$15			
				English Bay			$10-$15			
				Kodiak Borough			$30-$40			
				AJV			$70-$85			
				Old Harbor			$15-$20			
				Koniag			$50-$70			
				Akhiok-Kaguyak			$40-$60			
							$280-$390			

Exxon Valdez Oil Spill Trustee Council

Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178

July 12, 1994

Karl Becker
POB 1185
Cordova, Alaska 99574

Dear Karl:

Enclosed, per your July 7, 1994 request you will find a copy of the Agreement between the *Exxon Valdez* Trustee Council, Eyak Corporation and Sherstone Corporation.

If you have any questions, please call me at the number listed above.

Sincerely,

Molly McCammon
Director of Operations

mm/raw

Exxon Valdez Oil Spill Trustee Council

Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178

July 12, 1994

Reed Stoops
240 Main Street #600
Juneau, Alaska 99801

Dear Reed:

Enclosed you will find copies of Habitat Protection Appraisal Process and Habitat Protection Appraisal Standards.

If you have any questions, please call me at the number listed above.

Sincerely,

Molly

Molly McCammon
Director of Operations

mm/raw

Exxon Valdez Oil Spill Trustee Council
Restoration Office
645 "G" Street, Anchorage, AK 99501
Phone: (907) 278-8012 Fax: (907) 276-7178

MEMORANDUM

TO: Dave Gibbons, USFS

FROM: James R. Ayers
Executive Director

DATE: July 11, 1994

RE: Appraisal Authorization

You are hereby authorized to undertake an appraisal of certain lands owned by Koniag, Inc.. The parcels for sale are identified in Exhibit A to a June 7, 1994 letter to Glenn Elison, which is attached to this memo.

Please refer to the Memorandum of Understanding signed by the respective agencies and utilize the existing contract. An individual work order should be prepared for each ownership explicitly outlining the appraisal assignment. Before issuing the work order, a definition of rights to be appraised, a legal description, and a date for submission of the report should be prepared for the appraiser and Contracting Officer's Representative. This should be accomplished in cooperation with Negotiators. The landowner should be advised in writing that the appraisal is, with their permission, proceeding.

The appraisal should establish the base line (fee) value of each parcel, recognizing that the sellers are offering substantially less than fee interest for most parcels. Actual interests to be acquired, if any, have not yet been agreed upon. However, it is anticipated that parcel by parcel interests will be available for incorporation into the final appraisal.

JRA/mir

cc: Alex Swiderski, DOL
Walt Sheridan, USDA, FS

KONIAG, INC.

• 4300 B Street, Suite 407, Anchorage, AK 99503 (907) 561-2668 • FAX (907) 562-5258 •

JN -8 [illegible]

June 7, 1994

Mr. Glen Ellison
U. S. Fish and Wildlife Service
Region Seven
1011 East Tudor Road
Anchorage, Alaska 99503

Re: Koniag Inholdings in
Kodiak National Wildlife Refuge

Dear Mr. Ellison:

This will serve to confirm your conversation with Koniag's counsel, Bill Timme, regarding the proposed appraisal of Koniag's inholdings in the Kodiak National Wildlife Refuge to be performed on behalf of the Exxon Valdez Trustee Council. Koniag consents to the appraisers going on to its lands for the purpose of conducting a physical inspection in conjunction with such appraisal.

It is Koniag's understanding that all of the lands described in Exhibit A, attached to this letter, will be appraised. While Koniag has other lands in the Refuge, it is willing to consider the sale only of those listed in Exhibit A. Koniag also reserves the right to withdraw from consideration all or part of the lands in Exhibit A. Should you be unwilling to appraise all of the lands described in Exhibit A, then Koniag will withdraw its consent.

As you are aware, Koniag is deeply skeptical that the proposed appraisal will determine the fair market value of Koniag's lands. Thus the consent of Koniag should in no way be perceived to be its endorsement of either the process or the result.

You have also requested that Koniag consent to the proposed parcel designation. As you are aware, Koniag has on numerous occasions proposed various configurations of its lands which would be acceptable to it as the boundaries of parcels it is willing to sell. These apparently have all been rejected. For the record, Koniag is not willing to sell its lands based on the proposed parcel configuration unless all of the lands are purchased. While Koniag is willing to explore how the boundaries may be modified to arrive at a satisfactory configuration, until the parties determine that they are sufficiently close in price to warrant further negotiations, such discussions would be an unnecessary expense to both sides.

I repeat Koniag's concern about the unilateral nature in which this process is being pursued. The agencies have approached these acquisitions with a condemnation mentality but they have no condemnation authority. As the result, they have lost touch with the sellers and are producing an adversarial process that unfortunately has increased the likelihood of polarization and failure.

If you have any questions regarding Koniag's position, please feel free to contact our counsel.

Yours truly,

KONIAG, INC.

Uwe L. Gross
Chief Executive Officer

Enclosure

cc: William H. Timme, Esq.
Tim Mahoney
Art Kennedy

KONIAG, INC.
EXHIBIT A – LEGAL DESCRIPTIONS

The following described lands located in the Kodiak Recording District, Third Judicial District, State of Alaska, EXCEPTING THEREFROM the subsurface estate, and all rights, privileges, immunities and appurtenances, of whatsoever nature, accruing unto said estate pursuant to the Alaska Native Claims Settlement Act of December 18, 1971 (85 Stat. 688, 794; 43 U.S.C. 1601, 1613 (f) (1976)):

Seward Meridian, Alaska

T. 30 S., R. 28 W.
Sec. 19, (fractional), $SE\frac{1}{4}$;
Sec. 28, (fractional), $S\frac{1}{2}S\frac{1}{2}$, $NW\frac{1}{4}SW\frac{1}{4}$, $SW\frac{1}{4}NW\frac{1}{4}$;
Sec. 29, (fractional), $N\frac{1}{2}$, $N\frac{1}{2}S\frac{1}{2}$, $S\frac{1}{2}SE\frac{1}{4}$, $SE\frac{1}{4}SW\frac{1}{4}$,
$N\frac{1}{2}SW\frac{1}{4}SW\frac{1}{4}$, $SE\frac{1}{4}SW\frac{1}{4}SW\frac{1}{4}$;
Sec. 30, (fractional), $N\frac{1}{2}$;
Sec. 32, (fractional), $E\frac{1}{2}$, $E\frac{1}{2}SW\frac{1}{4}$.

Containing approximately 1,570 acres.

T. 31 S., R. 28 W.
Sec. 5, (fractional), $N\frac{1}{2}N\frac{1}{2}$, $SE\frac{1}{4}NE\frac{1}{4}$, excluding USS 10562;
Sec. 8, (fractional);
Secs. 9, 14, 15 and 16;
Sec. 17, (fractional), $E\frac{1}{2}$, $NW\frac{1}{4}$, $N\frac{1}{2}SW\frac{1}{4}$;
Sec. 20, (fractional), $E\frac{1}{2}$, $SW\frac{1}{4}$, excluding USS 3971;
Secs. 22, 23 and 24;
Sec. 29, (fractional), $E\frac{1}{2}$;
Sec. 32, (fractional), $E\frac{1}{2}$.

Containing approximately 6,500 acres.

T. 32 S., R. 28 W.
Sec. 21, (fractional), $E\frac{1}{2}$, $E\frac{1}{2}W\frac{1}{2}$;
Sec. 28, (fractional);
Sec. 29, (fractional), $W\frac{1}{2}W\frac{1}{2}$;
Sec. 30, (fractional);
Sec. 32, (fractional), $SW\frac{1}{4}NE\frac{1}{4}$, $SE\frac{1}{4}$, $S\frac{1}{2}NW\frac{1}{4}$, $SW\frac{1}{4}$;
Sec. 33, (fractional), $NE\frac{1}{4}$;
Sec. 34, (fractional), $E\frac{1}{2}$, $N\frac{1}{2}NW\frac{1}{4}$, $N\frac{1}{2}S\frac{1}{2}NW\frac{1}{4}$,
$S\frac{1}{2}SE\frac{1}{4}NW\frac{1}{4}$, $SW\frac{1}{4}$.

Containing approximately 2,000 acres.

T. 29 S., R. 29 W.
Sec. 24, (fractional);
Sec. 25, (fractional), excluding the 14(c)(1) claim of Robert Griggs (approximately $1\frac{1}{2}$ acres);
Sec. 26, (fractional);
Sec. 36, (fractional), excluding the 14(c)(1) claim of Laurel Peterson (approximately $1\frac{1}{2}$ acres).

Containing approximately 1,126 acres.

T. 30 S., R. 29 W.
Sec. 5, (fractional), excluding USS 2586;
Sec. 6;
Sec. 7, $W\frac{1}{2}$, excluding USS 9410;
Sec. 18, $W\frac{1}{2}$;
Sec. 19, $W\frac{1}{2}$.

Containing approximately 1,478 acres.

T. 31 S., R. 29 W.
Secs. 5 to 8, inclusive, excepting approximately 24 acres in Secs. 5, 6 and 7 for the City of Larsen Bay's power project (approved survey pending), Book 97, Page 858;
Sec. 27, $W\frac{1}{2}$;
Sec. 34, $W\frac{1}{2}$.

Containing approximately 3,143 acres.

T. 32 S., R. 29 W.
Sec. 3, $W\frac{1}{2}$;
Secs. 30, 31 and 32.

Containing approximately 2,237 acres.

T. 30 S., R. 30 W.
Secs. 1, 2, 3 and 4;
Secs. 9, 10 and 11;
Sec. 12, excluding USS 9410;
Sec. 13;
Secs. 15 to 19, inclusive;
Secs. 24, 29, 30, 31 and 32, excluding USS 9458;
Sec. 33, $W\frac{1}{2}W\frac{1}{2}SW\frac{1}{4}$, $NW\frac{1}{4}$.

Containing approximately 12,116 acres.

T. 31 S., R. 30 W.
Sec. 2, S½, excluding USS 6732;
Sec. 3, S½;
Sec. 4, S½;
Secs. 5 to 9, inclusive;
Secs. 16 to 21, inclusive;
Secs. 27 to 34, inclusive.

Containing approximately 13,000 acres.

T. 32 S., R. 30 W.
Secs. 2, 3, and 4;
Secs. 9, 10 and 11;
Secs. 13 to 16 inclusive;
Secs. 22, 23 and 24;
Sec. 25, excluding the area within I.C. 1106, and USS 10689;
Secs. 26 and 27;
Secs. 34 and 35;
Sec. 36, excluding the area within I.C. 1106, and USS 10689.

Containing approximately 12,112 acres.

T. 29 S., R. 31 W.
Sec. 13, (fractional), excluding USS 2584 and USS 2588;
Sec. 14, (fractional), that portion within KNWR (PL 96-487);
Sec. 23, that portion within KNWR;
Secs. 24 and 25;
Secs. 26 and 35, those portions within KNWR;
Sec. 36.

Containing approximately 2,725 acres.

T. 30 S., R. 31 W.
Sec. 1;
Secs. 2 and 11, those portions within KNWR (PL 96-487);
Secs. 12 and 13;
Secs. 14 and 23, those portions within KNWR;
Secs. 24 and 25;
Sec. 29, that portion within KNWR;
Sec. 36.

Containing approximately 4,835 acres.

T. 31 S., R. 31 W.
Sec. 1.

Containing approximately 640 acres.

T. 30 S., R. 32 W.
Secs. 25 to 30, inclusive, those portions within KNWR (PL 96-487);
Sec. 31, $E\frac{1}{2}E\frac{1}{2}$, $N\frac{1}{2}NW\frac{1}{4}NE\frac{1}{4}$, $E\frac{1}{2}SW\frac{1}{4}SE\frac{1}{4}$,
$SW\frac{1}{4}SW\frac{1}{4}SE\frac{1}{4}$, $SE\frac{1}{4}SE\frac{1}{4}SW\frac{1}{4}$, $NW\frac{1}{4}$, excluding USS 9386;
Secs. 32 to 36, inclusive.

Containing approximately 3,750 acres.

T. 31 S., R. 32 W.
Secs. 1, 2 and 3;
Secs. 6, 7 and 18;
Secs. 19, 30, 31.

Containing approximately 5,679 acres.

T. 32 S., R. 32 W.
Secs. 6 to 9, inclusive;
Sec. 11;
Secs. 14 to 17, inclusive.

Containing approximately 6,385 acres.

T. 30 S., R. 33 W.
Sec. 25, (fractional), $S\frac{1}{2}SE\frac{1}{4}$, $SE\frac{1}{4}SW\frac{1}{4}$, only portions within KNWR (PL 96-487)
and excluding USS 9386;
Sec. 26, (fractional), $SW\frac{1}{4}SE\frac{1}{4}$, that portion within KNWR (if any);
Sec. 34, (fractional), $SW\frac{1}{4}NE\frac{1}{4}$, $W\frac{1}{2}SE\frac{1}{4}$, $SW\frac{1}{4}$;
Sec. 35, (fractional), excluding USS 1951 and USS 10570.

Containing approximately 120 acres.

T. 31 S., R. 33 W.
Secs. 1 and 2, (fractional), excluding USS 10570, USS 10688 and USS 9386;
Sec. 11, excluding USS 10688;
Sec. 12, (fractional), excluding USS 6724 and USS 10688;
Secs. 13 to 17, inclusive;
Sec. 18, (fractional), excluding USS 1971;
Sec. 19, (fractional), $N\frac{1}{2}$, $N\frac{1}{2}SE\frac{1}{4}$, $SE\frac{1}{4}SE\frac{1}{4}$, $N\frac{1}{2}SW\frac{1}{4}SE\frac{1}{4}$, $SE\frac{1}{4}SW\frac{1}{4}SE\frac{1}{4}$,
$N\frac{1}{2}NE\frac{1}{4}SW\frac{1}{4}$, $SE\frac{1}{4}NE\frac{1}{4}SW\frac{1}{4}$, $NE\frac{1}{4}SE\frac{1}{4}SW\frac{1}{4}$;
Secs. 20 to 25, inclusive;
Secs. 27, 28 and 29;

Sec. 30, (fractional), $E\frac{1}{2}NE\frac{1}{4}$, $E\frac{1}{2}NW\frac{1}{4}NE\frac{1}{4}$, $E\frac{1}{2}E\frac{1}{2}SE\frac{1}{4}$, $W\frac{1}{2}SW\frac{1}{4}$, excluding USS 9453;
Sec. 31, (fractional), $NE\frac{1}{4}NE\frac{1}{4}$, $E\frac{1}{2}NW\frac{1}{4}NE\frac{1}{4}$, $S\frac{1}{2}NE\frac{1}{4}$, $S\frac{1}{2}$, $SE\frac{1}{4}NW\frac{1}{4}$, $W\frac{1}{2}NW\frac{1}{4}$;
Secs. 32, 33, 34 and 36.

Containing approximately 15,157 acres.

T. 32 S., R. 33 W.
Sec. 1;
Secs. 4 to 8, inclusive;
Secs. 17 to 20, inclusive.

Containing approximately 6,375 acres.

T. 31 S., R. 34 W.
Sec. 24, (fractional);
Sec. 26, (fractional), excluding USS 1970 and USS 9453.

Containing approximately 50 acres.

T. 32 S., R. 34 W.
Secs. 10 and 11, (fractional);
Secs. 12 and 13;
Secs. 14 and 23, (fractional), excluding USS 9376;
Secs. 24, 25, 26;
Sec. 27, (fractional), $E\frac{1}{2}NE\frac{1}{4}$, $S\frac{1}{2}$, excluding the portion east of the tidal slough and excluding USS 9377;
Secs. 29 and 31, (fractional);
Sec. 32, (fractional), excluding USS 2311 and USS 6723;
Sec. 33, (fractional), $SE\frac{1}{4}$, but only the spit portion of approximately 35 acres and excluding USS 2304;
Sec. 34, (fractional), excluding USS 9377;
Sec. 35, (fractional), $N\frac{1}{2}$, $SE\frac{1}{4}$, $N\frac{1}{2}SW\frac{1}{4}$, $SE\frac{1}{4}SW\frac{1}{4}$.

Containing approximately 5,505 acres.

Aggregating approximately 106,503 acres.

PRIORITIZED SECTIONS
Prioritization of AA-6677 Larsen Bay Selections

	Description	Tract Acres
	All Seward Meridian	
*	T. 30 S., R. 30 W. Sec. 31, USS 9458	140.0
*	T. 30 S., R. 28 W. Sec. 17 (fractional)	34
	T. 32 S., R. 30 W. Secs. 5, 6 & 7	1905
	T. 31 S., R. 31 W. Secs. 24, 25, 26	1920
	T. 32 S., R. 28 W. Sec. 5 Secs. 16 & 17 Sec. 8	370 740 310
	T. 29 S., R. 30 W. Sec. 24, excluding USS 4658 containing Secs. 23, 22, 21	265 1355
	T. 30 S., R. 31 W. Secs. 2 & 11 Secs. 14 & 13 Secs. 23 & 26 Secs. 35 & 12	1320 1320 1320 1320
	T. 32 S., R. 31 W. Secs. 1, 2 Secs. 11, 12, 13, 14	1320 2560
	T. 31 S., R. 31 W. Secs. 10, 15 Secs. 22, 27	1320 1320

* Koniag hereby requests an actual IC and patent to these at an early date.

PRIORITIZED SECTIONS

Prioritization of AA-6674 Karluk Selections

Description	Tract Acres
All Seward Meridian	
T. 30 S., R. 31 W. Secs. 28 & 30	1320
Approx. 1250 ac. outside refuge - 70 within	
T. 29 S., R. 30 W. Secs. 19 & 20 (fractional)	1054
T. 31 S., R. 33 W. Secs. 26 & 35	1280
T. 32 S., R. 33 W. Secs. 9, 16, 21 & 28	2560
T. 32 S., R. 33 W. Secs. 3, 10, 15, 22	2560
T. 31 S., R. 32 W. Secs. 29, 20, 32, 17	2560
T. 30 S., R. 31 W. Secs. 26 & 27	1280
Approx. 985 ac. outside refuge - 295 within refuge	
T. 31 S., R. 32 W. Secs. 11, 14, 23, 13	2560

M Low
Habitat Acquisit
" Koniag

United States Department of the Interior

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

IN REPLY REFER TO:
ARW

JUN 16 1994

OPTIONAL FORM 99 (7-90) FAX TRANSMITTAL # of pages ▶ 2
To Tim Uyara | From Glenn Elison
Dept./Agency | Phone #
Fax # 907-586-7589 | Fax #
NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

Mr. Bill Timme
Middleton, Timme and Luke
Suite 1600
550 West Seventh Avenue
Anchorage, Alaska 99501

Dear Mr. Timme:

In its June 7, 1994, letter to Glenn Elison, Koniag granted permission to appraise its inholdings within the Kodiak National Wildlife Refuge. Exhibit A to the letter identified parcels of land for sale and areas not for sale. While the amount of land excluded is relatively small, the withholding of these lands from consideration greatly reduces the likelihood that an agreement for purchase by the Exxon Valdez Oil Spill Trustee Council can be consummated.

The packages proposed by Koniag have been reviewed by the Habitat Protection Working Group, the Trustee Council's technical adviser for assessing habitat value of lands considered for purchase. The revisions identified in Exhibit A have greatly devalued the lands for the purposes the Trustee Council was considering acquisition. Instead of having among the highest ranked parcels, in the Exxon Valdez Oil Spill zone, Koniag's packages are now ranked among the lowest. The primary causes of reduced ranking are removal of significant areas of coastal habitat and fragmentation of the packages with private lands.

The Fish and Wildlife Service and the Trustee Council have a strong desire to successfully consummate the negotiations with Koniag for land acquisition, but that can only occur if all parties can obtain their objectives. The withholding of coastal lands thwarts those objectives. The Fish and Wildlife Service, as you know, has access to multiple funding sources, but other sources are very modest in comparison to the funds controlled by the Trustee Council. If Koniag desires to sell its lands within the Kodiak Refuge, the Trustee Council's objectives must be fulfilled.

While we appreciate Koniag's permission to appraise its lands, there is little point in appraising the parcels as configured in Exhibit A. However, we believe their is substantial ground for fruitful discussion on configuration of the parcels to bring them

back to high priority for the Trustee Council. We suggest a meeting as soon as possible to discuss modifications to the packages, if Koniag is truly interested in selling its inholdings. Please contact Glenn Elison, Fish and Wildlife Service negotiator, at 786-3545, if Koniag is interested in further discussions.

for Robert E. Putz
Negotiator

Glenn W. Elison
Negotiator

Exxon Valdez Oil Spill Trustee Council
Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178

MEMORANDUM

TO: Robert Spies, Chief Scientist

FROM: Molly McCammon, Director of Operations

DATE: July 11, 1994

SUBJ: Status of Final Reports

As you will recall, at their May 31 meeting, the Trustee Council indicated that it wanted an analysis of the status of the various projects that have been funded by the Trustee Council with particular regard for those that were delayed or not yet complete.

Staff in the Anchorage Restoration Office have distributed Quarterly Project Status Update forms to all the agencies and asked that information on the status of projects be updated as of June 30. These Quarterly Project Status Update forms were due back to the Anchorage Restoration Office July 7 and will be used to prepare the June 30 quarterly report (some agencies are late). As previously, we will provide you with a copy of the updated "results and references" statements to assure accuracy prior to its being submitted to the Trustee Council.

The purpose of this memorandum is to:

(1) confirm our common understanding regarding the status of specific projects and reports that have been identified as "accepted" as final by the Chief Scientist;

(2) clarify our common understanding regarding the designation of a final report as "accepted" by the Chief Scientist and the recommendation, in turn, to the Executive Director that certain reports be accepted as final (in some cases, pending additional changes); and

(3) solicit your views on what procedures could be used to resolve conflicts of professional opinion that emerge between principle investigators and the recommendations that result from the Chief Scientist's peer review process.

Status of Projects

In order to determine which reports have been "accepted" as final by the Chief Scientist, staff reviewed a tracking spreadsheet provided by your office (updated 6/15/94). Some 32 reports were identified as "accepted" as final on the 6/15/94 spreadsheet. Additionally, staff reviewed the correspondence on file in the Anchorage Restoration Office concerning projects — that is, memos that we have received or been copied with between the Chief Scientist and various investigators concerning the peer review process. The results of this review are attached. (See Attachment A.) As you note, in eighteen (18) cases the 6/15/94 tracking sheet indicates that the Chief Scientist has "accepted" the final report but we do not have a copy of the memorandum of confirmation. This is noted in the attachment as "no memo on file" in the Notes column. (The fact that we apparently don't have certain memos on file could easily be attributable to confusion between the Anchorage and Juneau offices and the fact that a systematic effort to track the status of final reports has only recently been established. Please know that your staff has been extremely helpful and responsive to our requests for information regarding project status.)

Please examine this list to confirm its accuracy. Also, please let us know if there are projects not identified on this list that have been "accepted" during the two-week period between 6/15/30 and 6/30/94.

[Note: By checking with OSPIC, it was determined that only seven of the reports identified as "accepted" by the Chief Scientist are on file at this time in the library — presumably, this reflects the fact that agencies are awaiting final guidance regarding report formatting. The guidance memo on report formatting is currently out for final review and due to be distributed within a few days.]

Acceptance of Final Reports and Approval by Executive Director

A question has emerged regarding the designation of a report as "accepted" by the Chief Scientist and the recommendation, in turn, to the Executive Director that the report be accepted as final.

In those cases where the Chief Scientist has accepted a final report *as submitted* by the investigator, *without any further changes* recommended, there is no ambiguity. However, in some cases, where the Chief Scientist has identified a report as "accepted," the letter of recommendation to the

Executive Director is conditional — that is, the Chief Scientist recommends acceptance of the final report provided there are some further changes made. (See Attachment B.) In this case, it is difficult for the Executive Director to know what action is appropriate. That is, the Chief Scientist's acceptance is *conditional* (qualified by the condition that further changes be made to the report). Unless the Executive Director can confirm that all of the changes deemed necessary by the Chief Scientist have, in fact, been made, acceptance by the Executive Director would not be appropriate.

In order to avoid this ambiguity, I suggest that recommendations by the Chief Scientist for acceptance of reports by the Executive Director be deferred until such time as the Chief Scientist verifies that all needed changes have been made to the report. This may require (unfortunately) yet a further draft for your review and approval but it seems needed in order to avoid any ambiguity and to assure that the contents of final reports are acceptable.

Resolution of Disagreements Resulting from Peer Review

As you know, in some cases, principle investigators have been resistant to making changes recommended as a result of the peer review process. In certain cases, this has resulted in an impasse between the Chief Scientist and individual principle investigators.

I would appreciate your recommendation on what process might be used to resolve such conflicts.

* * * * *

I would appreciate the chance to discuss these issues with you further at your earliest convenience.

attachments

cc: James R. Ayers

STATUS OF REPORTS ACCEPTED BY THE CHIEF SCIENTIST
(Source: EVOS Report Progress Schedule - June 15, 1994 Update

DRAFT

Year	Report Title	OSPIC?	Notes
1994			
94217	PWS Recreation Project. USFS	No	Accepted without condition
1993			
93051	Stream Habitat Assessment/PWS and Lower Kenai Peninsula. ADFG.	Yes	Accept with changes
	(B1) Pilot Study on the Capture and Radio Tagging of Murrelets in PWS, July and August 1993. ADFG	No	No memo on file
93063	Survey and Evaluation of Instream Habitat and Stock Restoration Techniques for Anadromous Fish. ADFG	Yes	No memo on file
93042	Recovery Monitoring of PWS Killer Whales Injured by the EVOS Using Photo Identification Technique. NOAA	No	Accept with changes
1992			
ARC1	Reger, et al 1992. Effect of Crude Oil Contamination on Some Archaeological Sites in the Gulf of Alaska, 1991 Investigations. DNR	No	No memo on file
B02	Marine Bird Populations of PWS Before and After EVOS. DOI	No	Accept with changes
B03	Nysewander, et al 1993. Effects of EVOS on Murres: Perspective from Observations at Breeding Colonies. DOI	No	Accept with changes
B07	Nishimoto and Byrd 1994. Effects of Oil from EVOS on Fork-Tailed Storm Petrels Breeding in the Barren Islands, AK. DOI	No	Accepted without condition
B09	Oakley and Kuletz 1994. Population, Reproduction and Foraging of Pigeon Guillemots at Naked Island, AK, Before and After EVOS. DOI	No	No memo on file
B12	Martin 1993. Effects of EVOS on Migrant Shorebirds Using Rocky Intertidal Habitats of PWS During Spring 1989. DOI	No	Accepted without condition
FS04B	Impact of EVOS on Juvenile Pink and Chum Salmon and their Prey in Critical Nearshore Habitats. NOAA	No	Accepted without condition; format issue noted
FS13	Clams - Effects of Hydrocarbons on Bivalves. ADFG	No	No memo on file
FS27	Schmidt and Tarbox 1993. Sockeye Salmon Overescapement. ADFG	Yes	Accepted without condition
FS30	DiCostanzo and Simonson 1993. Database Management. ADFG	Yes	No memo on file
MM1	Effects of EVOS on Abundance and Distribution of Humpback Whales in PWS. NOAA	No	No memo on file
MM2	Assessment of Injuries to Killer Whales in PWS and Southeast Alaska. NOAA	No	Accepted without condition
MM6	(1)Boat-Based Population Surveys of Sea Otters in PWS in Response to EVOS. DOI.	No	No memo on file
	(2) Sea Otter Detectability in Boat-Based Surveys of PWS. DOI	No	No memo on file
	(3) Bodkin, et al 1993. Age-Specific Reproduction in Female Sea Otters from Southcentral Alaska: Analysis of Reproductive Tracts. DOI	No	No memo on file
	(4)Rebar, et al 1993. Hematology and Clinical Chemistry of Sea Otters Captured in PWS Following EVOS. DOI	No	No memo on file
	(5) Experiments to Determine Drift Patterns and Rates of Recovery of Sea Otter Carcasses Following EVOS. DOI.	No	No memo on file

STATUS OF REPORTS ACCEPTED BY THE CHIEF SCIENTIST
(Source: EVOS Report Progress Schedule - June 15, 1994 Update

DRAFT

	(6) Intersection Model for Estimating Sea Otter Mortality from EVOS Along the Kenai Peninsula. DOI	No	No memo on file
	(7) Lipscomb, et al 1993. Pathological Studies of Sea Otters and Histopathologic Lesions in Sea Otters Exposed to Crude Oil. DOI	No	Accept with changes
R015	Kuletz, et al 1994. Identification of Marbled Murrelet Nesting Habitat in the EVOS Zone. DOI	No	No memo on file
R047	Kuwada and Sundet 1993. Stream Habitat Assessment Project: Afognak Island. ADFG	Yes	No memo on file
R102	Coastal Habitat-Herring Bay Experimental and Monitoring Studies. ADFG	Yes	No memo on file
R103	(1)Recovery Monitoring and Restoration of Intertidal Oiled Mussel Beds in PWS and Gulf of Alaska Impacted by EVOS. NMFS	No	Accept with changes
	(2) Oiled Mussels. DOI	No	No memo on file
ST1B	Hydrocarbon Mineralization Potentials and Microbial Populations in Marine Sediments Following EVOS. ADEC	No	No memo on file
ST2A	Shallow Benthic Effects of EVOS on Shallow Subtidal Communities in PWS. ADFG	Yes	Accepted without condition; format issue noted
ST5	Injury to PWS Spot Shrimp. ADFG	No	Accept with changes

APPLIED
marine
SCIENCES

June 13, 1994

TO: James Ayers
Executive Director

FROM: Robert B. Spies
Chief Scientist

CC: Molly McCammon
Bruce Wright
Malin Babcock

RE: Interim Report for Project R103A, "Recovery Monitoring and Restoration of Intertidal Oiled Mussel Beds in Prince William Sound Impacted by the *Exxon Valdez* Oil Spill"

The interim report for Project R103A, "Recovery Monitoring and Restoration of Intertidal Oiled Mussel Beds in Prince William Sound Impacted by the *Exxon Valdez* Oil Spill" was submitted to my office, and peer reviewed by myself and Andy Gunther. The principal investigator has responded to our comments, and I recommend that the revised report be accepted as final.

I wish to particularly compliment the principal investigator for providing very clear and precise responses to our comments. She suffered the unfortunate fate of having both Andy and myself accompany her (or related investigators) in the field during the summer of 1992, and this undoubtedly lead to additional comments and queries in our reviews.

In preparing the final report for submission to OSPIC, the date on the front of the report should be checked. Although the report is dated June 1993, I believe this is the date of the original submittal. The revised report was delivered to my office in October of 1993.

Consequently, I would recommend that if the principal investigator agrees to address the reviewer's minor comments, that you accept the final report for this project without further review.

2155 Las Positas Court, Suite S Livermore, CA 94550 510 373 7142 FAX 510 373 7834

Exxon Valdez Oil Spill Trustee Council
Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
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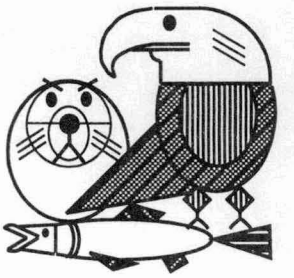

MEMORANDUM

TO: Trustee Council

FROM: James R. Ayers, Executive Director

DATE: July 9, 1994

SUBJ: Policies Regarding Publications and Reference to Trustee Council Funded Research

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The purpose of this memorandum is to recommend that the Trustee Council adopt a policy that addresses the need for a "disclaimer" when Trustee Council funded research is published in articles or other submissions for publication.

Additionally, as discussed below, a separate question has emerged regarding whether the Trustee Council should reserve the opportunity to participate in the peer review process of materials submitted for publication (in books, journals, etc.) that are supported with civil settlement funds.

Reference to Trustee Council Funded Research in Articles or Other Literature

Researchers who have worked on various damage assessment or restoration projects funded by the Trustee Council sometimes seek to have their work published as articles in scientific journals or other professional literature. While this is appropriate and even to be encouraged, it is also important to ensure that the views and positions of the Trustee Council are not inadvertently misconstrued as a result of these publication efforts. The conclusions of individual investigators using data or information from Trustee Council funded projects should be clearly identified as their own unless and until the Trustee Council takes specific action to endorse a particular interpretation or conclusion. It is my understanding from the Chief Scientist, that the Environmental Protection Agency (EPA) maintains a policy along these lines as indicated by the attached excerpt from an article

published in the *Marine Ecology Progress Series* by Dr. Spies, et. al. (see attachment, last page).

Recommendation: Investigators working on projects sponsored by the Trustee Council that are the subject of a journal article or other submission for publication should be directed to include a statement with all such submissions stating:

> "The research described in this paper was supported by the *Exxon Valdez* Oil Spill Trustee Council. However, the findings and conclusions presented by the author(s) are their own and do not necessarily reflect the views or position of the Trustee Council."

Peer Review of Materials Included in Trustee Council Supported Publications

A related policy issue has also emerged regarding what opportunity, if any, the Trustee Council should have to participate in the peer review of materials published as a result of direct funding support from the civil settlement (e.g., a book of papers or journal articles for which civil settlement funds are used to pay page charges). This question was brought to light by the difference of scientific interpretation that has arisen regarding a paper to be included in the marine mammal book that will be published with funding support from the Trustee Council (*Effects of the* Exxon Valdez *on Marine Mammals*).

One possible means of addressing this issue would be for the Trustee Council to adopt a policy providing that if civil settlement funds are used to support the cost of printing a book or other publication, the Trustee Council would expressly reserve the opportunity to participate in the peer review process for the materials to be published as a result of that Trustee Council funding support.

At this point, there is a spectrum of opinion on the need for a policy that addresses this issue. Some agency liaisons are supportive of the concept while others object. There is no consensus of opinion and this is an issue that warrants further discussion. I do not have a recommendation at this time. I did, however, want to bring the issue to your attention.

attachment

Vol. 54: 157–170, 1989 | MARINE ECOLOGY PROGRESS SERIES Mar. Ecol. Prog. Ser. | Published June 8

Stable isotope ratios and contaminant concentrations in a sewage-distorted food web

Robert B. Spies[1], Harold Kruger[2], Robert Ireland[1], David W. Rice, Jr[1]

[1] Environmental Sciences Division, Lawrence Livermore National Laboratory, University of California, Box 5507, Livermore, California 94550, USA

[2] Kruger Laboratories, 24 Blackstone Street, Cambridge, Massachusetts 02139, USA

ABSTRACT: Concentrations of selected neutral organic contaminants and stable isotope ratios of carbon, nitrogen and deuterium/hydrogen in invertebrates and fish were compared from near a large, 60 m deep municipal waste outfall near Los Angeles, California, where waste has a measurable influence on the structure of the marine food web, and from a reference area off Santa Barbara, California. Objectives were to investigate (1) the degree of utilization of sewage organic matter in the food web, especially by 3 species of fish, (2) differences in contaminant accumulation between these benthophagous fish and (3) the behavior of organic contaminants relative to each other and to organic matter through several trophic levels. Isotopically lighter carbon and nitrogen and higher concentrations of most chlorinated hydrocarbons were found in tissues of organisms from near the outfall. On the basis of the $\delta^{13}C$ and $\delta^{15}N$ of the fishes, the estimated contribution of nitrogen and carbon from sewage was about 15 to 20% of their requirements for these elements. The $\delta^{13}C$ and $\delta^{15}N$ values increased in the fishes in the order of *Microstomus pacificus*, *Citharichthys sordidus* and *Zaniolepis latipinnis*. The Cs/K ratio of the latter species was also significantly higher than the former 2 species, also indicating its higher trophic position. *C. sordidus* had the highest wet-weight concentrations of chlorinated hydrocarbons and phthalic acid esters; intermediate concentrations of these compounds were found in *Z. latipinnis* and the lowest concentrations were found in *M. pacificus*. Concentrations of chlorinated hydrocarbons on a lipid-weight basis changed this order so that it more closely resembled the trophic structure revealed by the stable isotope ratio and Cs/K ratio data. Increases of both ΣDDT and Aroclor 1254, from deposit-feeding invertebrates through fish, were evident in foodwebs of the outfall and reference areas as positive correlations with $\delta^{13}C$. A large degree of correlation was evident between contaminants in *Z. latipinnis* but not in the other 2 fish species. These correlations were apparently not a function of liver lipid concentration, but the strengths of the correlations were dependent on the similarities of log K_{ow} values of the correlated compounds.

INTRODUCTION

Over 2×10^5 metric tons of sewage particulate matter are discharged into the Southern California Bight each year (Schafer 1984). Associated with these particles are a variety of xenobiotic contaminants, such as chlorinated hydrocarbons, aromatic hydrocarbons, phthalic acid esters, heterocycles and chlorophenols (Young & Gossett 1980, Eganhouse & Kaplan 1982, Gossett et al. 1982, Schafer 1984). The sewage particles are about 60% organic matter, compared to ca 2% in endogenous marine particulate matter (Sweeney & Kaplan 1980).

As a result of particulate matter settling, sediments have accumulated at the rate of 0.6 to 1.7 g cm^{-2} yr^{-1} (dry) during the 1970's near the Los Angeles County Joint Water Pollution Control Plant (JWPCP) outfall (Stull et al. 1986a). This deposition of particles with a high organic content has had a marked effect on the food web, changing microbial and invertebrate populations in accordance with effects expected from organic enrichment (Pearson & Rosenberg 1978, Stanley et al. 1978, Stull et al. 1986b). The general effect evident in the invertebrate populations was a stimulation of selected species of deposit-feeding infauna, especially polychaetes, while crustaceans, particularly amphipods, became less numerous (Smith & Green 1976, Word & Striplin 1980).

Changes in populations of benthophagous fish were also noted near the JWPCP outfall during the 1970's (Cross et al. 1985; see Spies 1984 for review). One species in particular, the Dover sole (American appella-

0171-8630/89/0054/0157/$ 03.00

ascribe size-related differences in $\delta^{15}N$ in *M. pacificus* mainly to changing diet with size rather than an isotope effect due to metabolism, the specimens analysed from Santa Barbara were much smaller (ca 8 g each) than those from the JWPCP outfall area (from 42 to 110 g each). Therefore, if there were really a relationship between size and $\delta^{15}N$ due to an isotope effect, the use of larger fish from the control area would have resulted in an even greater difference in $\delta^{15}N$ than observed.

The local movement of *Citharichthys sordidus* in and out of the outfall area is a behavior pattern consistent with the ecological data that indicate there is not a strong attraction of this species for the outfall area (Cross et al. 1985). This behavior pattern would be expected to result in both a greater accumulation of those contaminants that were elevated near the outfall and in isotope ratio shifts that were different in the outfall area in some individuals. Therefore, it might be expected that contaminant concentrations and shifts in stable isotope ratios might be correlated. Indeed, Aroclor 1254 and ΣDDT are elevated in these species relative to the SB reference site (Table 7) and their concentrations correlate with $\delta^{15}N$ (Fig. 4). An alternative explanation is that the switch from partly benthic to wholly pelagic prey in larger specimens (Allen 1982) would result in greater contaminant concentrations along with isotopic shifts toward lighter carbon and nitrogen. However, size did not correlate with either of these measures in this species.

It has now been well established that $\delta^{13}C$ increases slightly with each trophic transfer (DeNiro & Epstein 1978, Teeri & Schoeller 1979, Stephenson et al. 1986). This phenomenon has been utilized to interpret the structure of complex food webs where it is not entirely clear that the trophic level assignments should be for animals that feed on organisms from various trophic levels (Haines & Montague 1979, McConnaughey & McRoy 1979a, b, Rau et al. 1983). Data presented here indicate that a combination of $\delta^{13}C$ and $\delta^{15}N$ predicts trophic level better than Cs/K. However, we used about 20 of each species for the isotope ratio analyses and only 5 of each species for the Cs and K analyses. Perhaps with more Cs/K values clearer separations between species, such as those observed from the isotope ratio data, would be evident.

The data support the following conclusions: (1) the 3 species of fish collected in the outfall area obtained about 15 to 20% of their carbon and nitrogen from sewage and this varied little between species; (2) carbon and nitrogen became isotopically heavier and Cs/K increased in the 3 species in the order of: *Microstomus pacificus*, *Citharichthys sordidus* and *Zaniolepis latipinnis*, which suggests strongly that trophic levels increase in this order; (3) *M. pacificus*, a species that apparently occupies a lower trophic level than the other 2 species, accumulated the lowest concentrations of ΣDDT and PCBs; (4) Aroclor 1254 and ΣDDT bioaccumulate through the food web, from invertebrate detritus feeders to predatory fish, although for ΣDDT in fish this may related to lipid content; (5) contaminants tend to correlate positively between individuals of a fish species with increasing trophic level, and the reason for this remains unclear.

Acknowledgements. We are grateful to I. Haydock of the Los Angeles County Sanitation District for making the 'Sea-S-Dee' available for sampling and for the sample of sewage particulate matter. Willard Bascom, director of the Southern California Coastal Water Research Project (SCCWRP) at the time of this study, graciously made laboratory space available for processing field samples. Jeff Cross of SCCWRP was particularly helpful in our field work. Don Baumgartner, Bruce Boese and Henry Lee of EPA's Marine Laboratory, Newport, Oregon have given us support and many helpful suggestions. We thank D. Young, from the same laboratory, for invaluable discussions of the Cs and K data. This work was performed under the auspices of the U.S. Department of Energy by the Lawrence Livermore National Laboratory (LLNL) under Contract No. W-7405-ENG-48. Although the research described in this paper was funded by the U.S. Environmental Protection Agency through Interagency Agreement AD-89-E2A267 to LLNL, it has not been subjected to the Agency's required peer and policy review and therefore does not necessarily reflect the views of the Agency.

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Exxon Valdez Oil Spill Trustee Council
Restoration Office
645 "G" Street, Anchorage, AK 99501
Phone: (907) 278-8012 Fax: (907) 276-7178

MEMORANDUM

TO: Jim Ayers

FROM: June Arkoulis-Sinclair
Administrative Officer

DATE: July 8, 1994

RE: Financial Report

Status of Funds

1. Statement of Exxon Settlement Funds As of June 30, 1994 is attached. I cannot provide the statement for the Joint Trust Fund until next week.

2. Status of settlement funds - as of June 30, 1994 $5,440,472 has been earned on settlement funds (including United States and State of Alaska accounts), $340,831,233 has been disbursed, and the total estimated funds available including receivables from Exxon are approximately $625,190,275.

3. Status of United States and State of Alaska Joint Trust Fund - as of June 30, 1994, the balance in the Joint Trust fund was approximately $75,165,275.

4. Average earnings percentages -

   Court registry - 3.84%
   State of Alaska - 4.78%
   NRDA&R - not available until Monday but expect to be same or close to Court rate because of the type of investments.

5. Court requests - all outstanding requests have been processed and funds transferred.

6. Quarterly Financial Summaries - will be available for the August 8 meeting.

Investment of Funds

1. Court Registry -

*Funds are invested through the Court Registry Investment System (CRIS) and pooled with other District Court funds in a liquidity fund.

*Funds are only invested in Treasury securities.

*Fund provides weekly liquidity similar to a money market fund. At no time are funds ever held at a bank.

*The Registry is in the process of creating a longer term fund. It would be a 3-4 year fund with staggered maturity dates and quarterly liquidity. This would also be a pooled fund.

*The Clerk of Court, Michael Milby was interested in the establishment of a long term reserve account and I will continue to pursue that with him. In this situation, funds may or may not be pooled depending on what our needs and requirements are.

*Mr. Milby has been invited to attend the late August Trustee Council meeting but confirmation of his attendance has not been received.

2. State of Alaska account -

*Settlement funds are pooled with State general funds and invested primarily in U. S. Treasury securities, corporate notes and commercial paper.

*Bob Storer, Chief Investment Officer, Department of Revenue, is pulling information together regarding possible investment strategies for state funds and a reserve account.

3. NRDA&R account -

*Settlement funds are pooled in the NRDA&R account. Investments are restricted to U. S. Treasury securities, bills and bonds.

*Funds are transferred out of this account to individual agency (NOAA, DOI, USFS) accounts when needed. The individual agency accounts do not earn interest, so there is a potential for lost interest if funds are not spent immediately. Funds not transferred are invested. To date funds have been needed immediately after a court request has processed and so they have not remained in the NRDA&R where interest can be earned.

Other Business

1. Audit of Funds - anticipate preparing an RFP for external audit services to be performed in the fall/winter of 94. Scope of audit would include financial activity in FY 92, 93, 94, internal controls, financial procedures, inventory review and related recommendations.

Attachment

694fr.wpd

Statement 1

DRAFT

Statement of Exxon Settlement Funds As of June 30, 1994

Beginning Balance of Settlement	900,000,000
Receipts:	
Interest Earned on Exxon Escrow Account	831,233
Net Interest Earned on Joint Trust Fund (See Note 1)	4,038,655
Interest Earned on United States and State of Alaska Accounts	570,584
Total Interest	5,440,472
Disbursements:	
Reimbursements to United States and State of Alaska	139,111,287
Exxon clean up cost deduction	39,913,688
Joint Trust Fund deposits	161,806,258
Total Disbursements	340,831,233
Funds Available	
Exxon future payments	560,000,000
Balance in Joint Trust Fund (See Statement 2)	75,165,275
Seal Bay acquisition payments due (See Note 3)	(9,975,000)
Other (See Note 2)	TBD
Total Estimated Funds Available	625,190,275

Note 1: Gross interest earned less District Court registry fees.

Note 2: Previously funded projects may have unobligated balances which will be available.

Note 3: Annual payments due in November 1994, 1995 and 1996.

Footnote: Figures as of June 24, 1994, will update through June 30 when additional information received.

Exxon Valdez Oil Spill Trustee Council
Restoration Office
645 "G" Street, Anchorage, AK 99501
Phone: (907) 278-8012 Fax: (907) 276-7178

MEMORANDUM

TO: Alex Swiderski, Department of Law
Dave Gibbons, USDA Forest Service

FROM: James R. Ayers
Executive Director

DATE: July 8, 1994

RE: Appraisals and Timber Cruise

Per our discussion today, I am asking that you meet with the contract appraiser and timber cruise personnel as soon as possible. It is imperative that we establish dates of completion for appraisals.

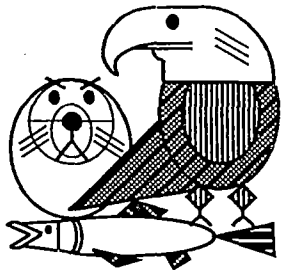
In the event that you determine that appraisals or timber cruises are being delayed for any reason, please bring it to my attention.

If funding is an issue, we will take that to the Trustee Council immediately. As you know, it is our expectation that the appraisals and negotiations are proceeding in a timely fashion and will be completed by Fall.

Please advise.

Exxon Valdez Oil Spill Trustee Council

Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178



MEMORANDUM

TO: Members of the Public Advisory Group

FROM: Molly McCammon
Director of Operations

DATE: July 8, 1994

RE: Comments on Draft EIS

At the June 28 Public Advisory Group meeting, Executive Director Jim Ayers discussed with you the status of the Draft Environmental Impact Statement for the Draft Restoration Plan. The PAG was requested to submit comments on the two documents. There was considerable discussion and support for a number of issues concerning the Restoration Plan. Since the next PAG meeting is scheduled for August 2, and the deadline for comments on the Draft EIS and the Draft Restoration Plan is August 1, Chairman Brad Phillips has asked me to circulate the attached draft letter for your consideration as PAG comments on these documents. Please indicate to me by Friday, July 15 if this letter accurately reflects your views, if you have any suggested additions or deletions, or any other feedback you wish to give. If you have any questions on this or any other matter, don't hesitate to call me.

Thanks for your help on this matter.

July 5, 1994

Rod Kuhn
Restoration Plan EIS Project Director
EVOS Restoration Office
645 G Street
Anchorage, Alaska 99501

DRAFT

Dear Mr. Kuhn:

At a recent meeting of the EVOS Trustee Council Public Advisory Group, the Draft Environmental Impact Statement on the Draft Restoration Plan was discussed.

On behalf of the Public Advisory Group, I would like to submit the following comments on the Draft EIS:

1. Implementation Management Structure -- We have been briefed by Executive Director Jim Ayers on the results of the planning workshops he has been holding since January, 1994. Participants have included PAG members, other representatives of the public and spill area communities, EVOS researchers, and agency representatives. This group has reviewed the Draft Restoration Plan and further refined and updated the recovery status and objectives of the injured resources and services, the draft policies, and other elements of the Draft Restoration Plan.

   We believe this "management by objective" implementation approach is an appropriate clarification of the Draft Restoration and would like to see it incorporated into the Final Restoration Plan.

2. In July, 1993, the Public Advisory Group unanimously adopted a set of restoration priorities (attached). We would like to see these elements reflected within the Final Restoration Plan.

3. Establishment of a reserve account is included as a restoration activity in alternative #5 in the DEIS, the "proposed action". The Public Advisory Group would like to see the restoration reserve account action clarified in alternative #5 and in the other alternatives. We would like to see specific criteria attached to the reserve for its expenditure.

Thank you for your consideration of these comments.

Sincerely,

DRAFT

Brad Phillips, Chair
Public Advisory Group

DRAFT

AGENDA
EXXON VALDEZ OIL SPILL SETTLEMENT
TRUSTEE COUNCIL
CONTINUATION OF MAY 31, 1994 MEETING
ANCHORAGE
JULY 11, 1994 @ 1:00 P.M.

7/7/94
8:17 am
DRAFT

Trustee Council Members:

PHIL JANIK
Regional Forester, Alaska Region
U.S. Department of Agriculture-Forest Service

BRUCE BOTELHO/CRAIG TILLERY
Attorney General/Trustee
State of Alaska/Representative

GEORGE T. FRAMPTON, JR./DEBORAH WILLIAMS
Assistant Secretary/Trustee Representative
U.S. Department of the Interior

STEVEN PENNOYER
Director, Alaska Region
National Marine Fisheries Service

CARL L. ROSIER
Commissioner
Alaska Department of Fish & Game

JOHN A. SANDOR
Commissioner
Alaska Department of Environmental Conservation

Steven Pennoyer, Chair
Juneau - LIO 130 Seward Street -- Anchorage - 645 G Street First Floor

1. Call to Order 1:00 p.m.
   - Approval of Agenda
   - Order of the Day
   - Approval of May 31, 1994 Trustee Council Meeting Notes

2. Public Comment - 1:15 - 2:00 p.m.

3. Public Advisory Group Report (Brad Phillips) 2:00 p.m.

4. Executive Director's Report (Jim Ayers) 2:30 p.m.
   - Restoration Plan Update
     - Implementation
     - EIS Proposed Action
   - Science Review Board Policy Review
   - Chief Scientist Contract

- Overview of Proposals for Draft FY95 Work Plan
- Institute of Marine Science Improvements Update
- Habitat Protection & Acquisition Update
- Publications Policy

DRAFT

5:00 p.m. Adjourn

THE FIRST ANNUAL EVOS TRUSTEE COUNCIL STAFF PICNIC

Monday, July 11, 1994
5:00 to 8:30 pm
Valley of the Moon Park
E Street/Arctic Boulevard & Chester Creek, Anchorage

This is a family oriented activity: spouses, companions and children

WELCOME!

Sheltered picnic area with grill. Bring your choice of grillable or other entree, beverages (but no alcohol — muni regs preclude), and one dish to share (i.e., salad, chips, dessert, etc). Contributions will be accepted at the picnic to defray costs for space rental and paper plates, cups, plastic utensils, ice and charcoal, which will be provided.

The park has a children's playground with swings, slide, and climbing apparatus.

Bring any sports equipment you enjoy playing with or are willing to share. There is a ball field available, though not reserved. There is a grassy area for volleyball, Frisbee, catch or whatever.

RSVP by Friday, July 8, to Tami Yockey at 278– 8012. Please let Tami know how many will be attending and what you are planning to bring (i.e., food, sports equipment)

See you there!

Exxon Valdez Oil Spill Trustee Council
Restoration Office
645 "G" Street, Anchorage, AK 99501
Phone: (907) 278-8012 Fax: (907) 276-7178

MEMORANDUM

TO: Dr. Thomas Loughlin
NMFS/National Marine Mammal Laboratory

FROM: James R. Ayers
Executive Director

DATE: July 7, 1994

RE: Disclaimer for Marine Mammal Book

As you know from our previous discussions, a question of scientific interpretation has arisen regarding one of the papers to be included in the marine mammal book that will be published with funding support from the Trustee Council.

While recognizing that there is nearly always room for disagreement among scientists regarding the interpretation of the same data, and without making any further attempt to resolve the professional disagreement that has been identified, it is important to clearly note that the papers included within the book reflect the views of the respective author(s) and not necessarily those of the Trustee Council.

Accordingly, I request that the following language be included within the book:

> Funding support for the publication of *Effects of the Exxon Valdez on Marine Mammals* was provided by the *Exxon Valdez* Oil Spill Trustee Council. The findings and conclusions presented in the papers included within this book are those of the individual investigators or authors and do not necessarily reflect the views of the Trustee Council.

I appreciate your consideration of this request.

Exxon Valdez Oil Spill Trustee Council

Restoration Office
645 "G" Street, Anchorage, AK 99501
Phone: (907) 278-8012 Fax: (907) 276-7178

TO: Work Plan Reviewers

DATE: July 7, 1994

FROM: Bob Loeffler

TELE: 278-8012
FAX: 276-7178

SUBJECT: Work Plan Supplement #2: Five Proposals (four received as part of the BAA).

Four proposals were received by NOAA as part of their Broad Agency Announcement. They are below:

95117-BAA. Harbor Seals and EVOS: Blubber and lipids as indices of food limitation. $184,316. Dr. Castellini, UAF

95118-BAA. Diet composition, reproductive energetics, and productivity of seabirds damaged by the *Exxon Valdez* Oil Spill. $413,689. Dr. Daniel Roby, UAF.

95119-BAA. Food Limitation on Recovery of Injured Marine Bird Populations. $124,883. William J. Sydeman. Point Reyes Bird Observatory.

95120-BAA. Proximate Composition and Energetic Content of Selected Forage Fish Spies in Prince William Sound. $38,400. Graham Worthy, Texas A & M University.

In addition, we are distributing a proposal that we were holding because we mistakenly believed it duplicated one delivered as part of the BAA. (It was received prior to June 15th).

95121. Stable Isotope Ratios and Fatty Acid Signatures of Selected Forage Fish Species in Prince William Sound, Alaska. $42,000. Graham Worthy, Texas A & M University.

Project 95117-BAA

BAA 52ABNF400104 SFOS 94-186

PROPOSAL 94883

TO: NOAA, WASC Procurement Division
ATTN: WC33
7600 Sand Point Way, NE, BIN C15700
Seattle, WA 98115-6349

FROM: Institute of Marine Science
School of Fisheries and Ocean Sciences
P.O. Box 757220
University of Alaska Fairbanks
Fairbanks, AK 99775-7220

TITLE: Harbor seals and EVOS: Blubber and lipids as indices of food limitation.

PRINCIPAL INVESTIGATORS: Dr. Michael Castellini
Associate Professor

NEW/CONTINUING: NEW

DURATION: 2.5 Years

PROPOSED START DATE: Oct 1, 1994 to March 31, 1997

AMOUNT REQUESTED: $ 184,316

6/15/94
Dr.Michael Castellini /Date
Principal Investigator
(907)474-6825

6/16/94
Joan Osterkamp /Date
Executive Officer
School of Fisheries and Ocean Sciences

6/17/94
A. V. Tyler /Date
Associate Dean
School of Fisheries and Ocean Sciences

16 June 94
Donald M. Schell /Date
Director
Institute of Marine Science

6/17/94
Ted DeLaca /Date
Director, Office of Arctic Research
University of Alaska Fairbanks

Project 95117-BAA

B. Introduction

This proposal deals with the theoretical impact of potential food limitation as a factor in the non-recovery of harbor seals in Prince William Sound (PWS) and northern Gulf of Alaska regions after the Exxon Valdez Oil Spill (EVOS) event in 1989. The hypothesis proposed in the Broad Agency Announcement (52ABNF400104) (BAA) is that food limitation could have a multi-level impact on marine mammals from reproductive success to juvenile survival to adult body condition.

For reasons detailed below, we feel that accurate data on how food may impact reproductive success and juvenile survival cannot be obtained from Alaskan harbor seals in the wild. Therefore, we are proposing that the hypothesis be reconsidered as follows:

IF food limitation does indeed impact reproductive success, juvenile survival or adult body condition, then it follows that there should be differences in body condition of adult harbor seals before and after EVOS and within and outside of the EVOS area.

The University of Alaska is ALREADY addressing the issues of adult body condition in harbor seals in collaboration with Alaska Department of Fish and Game (ADF&G), and has recently submitted requests for additional support of this work through the EVOS FY95 program. However, all of our current work utilizes standardized and clinical methods (such as body shape, size, and veterinary blood chemistry) in order to compare animals both in time and space. The enclosed proposal is to utilize blubber analysis methods to test body condition status of harbor seals. Blubber is a critical fuel source for marine mammals...its quality and energy density are prime descriptive characteristics of the energy available to the animal. We feel that by analyzing the blubber of harbor seals, a picture of metabolic status can be obtained. A key factor to this proposal is that HISTORICAL samples of blubber collected well before the EVOS event have been archived by ADF&G and would be available for analysis. It is our proposal that by working with the ADF&G historical samples and by comparing those samples to ones collected AFTER the EVOS event, we can determine whether or not there has been a shift in the quality of this important body component of harbor seals. By combining these blubber data with the ongoing commitment of UAF to body condition studies of harbor seals in this region, we feel that the restated hypothesis can be tested: That is, we will be able to determine whether or not there has been a shift in the body condition of harbor seals over time and space in relation to EVOS. IF there has been no change, then searching for mechanisms of how body condition could have been altered becomes irrelevant. On the other hand, if we show that there has been a shift, then detailed studies of the responsible factors can be explored. Thus, we provide here a generalized test of the BAA hypothesis...if we can't show any change, then there is no need to explore the mechanisms. If there is a change, then work can focus on the causes whether related to EVOS, ecosystem changes or food limitation.

C. Project need

As noted above, it may be virtually impossible to test the hypothesis as stated in wild populations of harbor seals in Alaskan waters. To fully and completely test this food limitation hypothesis would require years of captive work on the impact of different feeding regimes on the energetics, feeding efficiency, reproductive success and body condition of animals. There are no facilities to do this type of work in Alaska. Furthermore, the application of those findings to the field would be difficult. In the field, harbor seals are elusive and difficult

Project 95117-BA

animals to capture. Repeated captures of the same individuals are essentially impossible. Marking and identification of specific pups in relation to weaning success by the mothers is not possible nor can accurate determinations of diet or changes in diet be determined. For these reasons, body condition of adults may be the ONLY way to address this question and even then, INDIRECT methods to assess potential food limitations on animals must be considered. The University of Alaska proposes to approach the question from a unique perspective: If the BAA hypothesis is valid, then harbor seal body condition should have changed. We can determine whether that shift has occurred. If it has, then addressing the difficult tasks of finding the CAUSE of the shift becomes valid.

This type of analysis is critical to recovery studies. If there has been no change in body condition of harbor seals from before EVOS, then recovery efforts aimed at modifying their health status would not be necessary. On the other hand, if seals are currently compromised, then this provides a direction to follow in terms of enhancing their health and body condition.

C. Project design

1. Objectives. The essential elements of this proposal are very basic and are contained in three tasks:

Task 1.	Obtain and analyze blubber from historical samples.
Task 2.	Obtain and analyze blubber from contemporary samples.
Task 3.	Model changes in blubber with independent data on body condition and change over time relative to EVOS.

2. Methods.

A. Collection of historical samples: The ADF&G has archived, frozen samples of harbor seal blubber collected well before the EVOS event that are available for this analysis. They have given us permission to utilize this collection if personnel from UAF can travel to Anchorage to transfer and collate the samples. About 250-300 samples are arhived.

B. Collection of contemporary samples: UAF currently works with ADF&G on harbor seal projects in the EVOS region and has an RSA with ADF&G to continue this work through Dec, 1994. ADF&G and UAF have recently submitted to the EVOS Trustee Council a MARINE MAMMAL ECOSYSTEMS joint proposal to continue collecting samples through 1996. All field work, and associated costs of logistics are covered in that proposal and are not included here. Blubber samples will be collected by tissue biopsy using standard techniques already being employed.

C. Analysis of blubber: Samples of blubber will be analyzed for quality and density of energy. Four specific tests will be conducted on each sample:

1. Density of blubber.
2. Total lipid content of blubber.
3. Hydration state of blubber.
4. Total energy content of blubber.

These determinations completely describe the energetic state of blubber in terms of its potential as a fuel source. Our hypothesis is that since blubber is a major component of the body tissues of seals (27-30% of body mass (Pitcher 1986)), contains 90% of the lipid fuel

Project 95117-BAA

sources in seals (Beck et al. 1993) and since lipid utilization makes up approximately 85% of the energy utilized by seals (Ryg et al. 1990), then changes in the lipid content, blubber density and energy content should reflect seasonal and interannual changes in body condition of the seals. It is known that the blubber content of an animal and the lipid content of blubber varies with season, age and sex (Pitcher 1986; Ryg et al. 1990; Beck et al. 1993). The archived historical blubber samples have complete data sets on animal condition associated with them, and these data are also collected for the contemporary animals.

Blubber density is determined with an automated pycnometer which is a specialized instrument made to determine the volume and mass (and therefore density) of solid and semi-solid materials. The total lipid content of blubber is determined by organic extraction of lipids using a Soxhlet apparatus and standard extraction techniques. Hydration state of blubber is determined by changes in the wet and dry weight of a sample. Finally, the total energy content of blubber is determined by bomb calorimetry of the sample to determine calories available. One-way and multi-factorial analyses of variance will be performed to assess the affects of age, sex, season and year on these measures of blubber quality.

The density pycnometer will need to be purchased as there is no such instrument at UAF. Lipid extractions using a purchased Soxhlet apparatus will be performed by graduate students. The bomb calorimetry will be carried out as a service contract with other departments at UAF.

References:

Beck, G.G., T.G. Smith and M.O. Smith. 1993. Evaluation of body condition in the northwest Atlantic harp seal (Phoca groenlandica). Can. J. Fish. Aquat. Sci. 50:1372-1381.

Pitcher, K.W. 1986. Variation in blubber thickness of harbor seals in southern Alaska. J. Wildl. Manage. 50:463-466.

Ryg, M., T.G. Smith and N.A. Øritsland. 1990. Seasonal changes in body mass and body composition of ringed seals (Phoca hispida) on Svalbard. Can. J. Zool. 68:470-475.

3. Schedule:

Historical samples will be obtained and analyzed during year one. Field samples will be collected during 2-3 field trips/year with ADF&G and analyzed throughout the period of the proposal. A final report will be presented by March 31, 1997.

4. Technical support:

As noted above, only the bomb calorimetry will be conducted on a pay per sample basis to other departments on campus. All field costs for ship logistics are covered in the MARINE MAMMAL ECOSYSTEMS proposal to the EVOS Trustees.

Project 95117-BA

5. Location:

Laboratory work will be conducted on the UAF campus in Fairbanks. Field work will be conducted in Prince William Sound.

E. Project implementation

All laboratory work will be conducted by UAF personnel. Dr. Castellini has worked on metabolic biochemistry questions in marine mammals for almost 20 years. A short CV is attached. B. Fadely is a PhD student in the laboratory and has a MSc degree in marine mammal nutritional and water balance physiology. Other research associates and graduate students will be necessary on the project during times of intense sample analysis.

F. Coordination of Integrated Research Effort

This project requires the integrated efforts of ADF&G and UAF with both current RSA agreements and proposed coordinated efforts (MARINE MAMMAL ECOSYSTEMS) currently under consideration by the EVOS Trustees for FY95. Without that support, the field component of this project cannot be done. It also requires the donation of historical samples from ADF&G archives.

G. Public processes

Through scientific publications, lectures and generated reports, results from this work will be made available to both the research and public sectors. Dr. Castellini presents many guest lectures each year on marine mammal research at UAF and will include these data in those presentations.

H. Personnel qualifications.

As noted above in section E, Dr. Castellini specializes in metabolic chemistry problems associated with marine mammals. B. Fadely, the PhD student involved in this project, has a Masters degree in marine mammal nutrition and water balance physiology. Research associates and other graduate students in Dr. Castellini's laboratory are all specialists in various fields of marine mammal physiology.

Project 95117-BA

I. Budget

Year 1; October 1, 1994 to Sept 30, 1995

Wages				
Personnel	Time	Amount		
M. Castellini	2 months	9466		
J.M. Castellini	3 months	7155		
B. Fadely	6 months	7308		
Total Wages			23929	
Leave				
M. Castellini		1902		
J.M. Castellini		1530		
Total leave			3432	
Benefits				
M. Castellini		3330		
J.M. Castellini		3534		
Total benefits			6864	
TOTAL SALARIES				34225
Travel				
EVOS workshop per diem/Anchorage				
M. Castellini 14 days @ $170		2380		
Sample collection from ADF&G				
B. Fadely 7 days @ $170		1190		
4 RT airfare FBKS/Anch @ $375		1500		
TOTAL TRAVEL				5070
Services				
Bomb calorimetry (175 @ $20)		3500		
Phone		500		
Postage		200		
Cargo shipping		1000		
TOTAL SERVICES				5200

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Commodities		
Organic solvents (lipid extraction)	500	
Soxhlet glassware (5 @ $225)	1125	
Extraction expendables	400	
Freezer inventory supplies	500	
Computer supplies	1000	
TOTAL COMMODITIES		3525
Equipment		
Sample shipper	1000	
Soxhlet heater	1025	
Density meter	10000	
Shipping costs for above items	300	
TOTAL EQUIPMENT		12325
Student aid		
Fadely 1 semester	2530	
TOTAL STUDENT AID		2530
TOTAL DIRECT		62875
INDIRECT		
(41.8% minus equipment and tuition)		20072
TOTAL REQUESTED YEAR 1		82947

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Year 2: Oct 1, 1995 to Sept 30, 1996

All wages taken as Year 1 values * 1.05)

Personnel	Time	Amount		
M. Castellini	2 months	9939		
J.M. Castellini	3 months	7513		
B. Fadely	6 months	7673		
Total Wages			25125	
Leave				
M. Castellini		1998		
J.M. Castellini		1608		
Total leave			3606	
Benefits				
M. Castellini		3498		
J.M. Castellini		3712		
Total benefits			7210	
TOTAL SALARIES				35941
Travel				
2 RT FBKS/Anchorage @ $375		750		
EVOS workshop per diem/Anchorage				
M. Castellini 14 days@ 170		2380		
TOTAL TRAVEL				3130
Services				
Bomb calorimetery (175 @ $20)		3500		
Phone		500		
Postage		200		
Cargo shipping		1000		
TOTAL SERVICES				5200
Commodities				
Organic solvents (lipid extraction)		500		
Extraction expendables		400		
Freezer inventory supplies		500		
Computer supplies		1000		
TOTAL COMMODITIES				2400

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Equipment		
No equipment planned		
TOTAL EQUIPMENT		0
Student aid		
Fadely 1 semester	2530	
TOTAL STUDENT AID		2530
TOTAL DIRECT		49201
INDIRECT		
(41.8% minus equipment and tuition)		19508
TOTAL REQUESTED YEAR 2		68709

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Year 3: Oct 1, 1996 to March 31, 1997

All wages taken as Year 2 values * 1.05)

Personnel	Time	Amount		
M. Castellini	1 months	5218		
J.M. Castellini	1 months	2629		
B. Fadely	3 months	4029		
Total Wages			11876	
Leave				
M. Castellini		1049		
J.M. Castellini		563		
Total leave			1612	
Benefits				
M. Castellini		1836		
J.M. Castellini		1299		
Total benefits			3135	
TOTAL SALARIES				16623
Travel				
1 RT FBKS/Anchorage @ $375		375		
M. Castellini				
Per diem EVOS workshop Anchorage				
M. Castellini 7 days @$170		1190		
TOTAL TRAVEL				1565
Services				
Bomb calorimetry (50 @20)		1000		
Phone		500		
Postage		300		
Publication costs		1000		
TOTAL SERVICES				2800
Commodities				
Organic solvents		400		
Extraction expendables		400		
Computer supplies		650		
TOTAL COMMODITIES				1450

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Equipment		
No equipment planned		
TOTAL EQUIPMENT		0
Student aid		
Fadely 1 semester	2530	
TOTAL STUDENT AID		2530
TOTAL DIRECT		24968
INDIRECT		
(41.8% minus equipment and tuition)		9379
TOTAL REQUESTED YEAR 3		34347

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TOTAL COSTS

Personnel				
Wages				
M. Castellini	24623			
J.M. Castellini	17297			
B. Fadely	19010			
Total wages		60931		
Leave				
M. Castellini	4949			
J.M. Castellini	3700			
Total leave		8649		
Benefits				
M. Castellini	8664			
J.M. Castellini	8545			
Total benefits		17209		
Total salaries			86789	
Travel				
Airfares	2625			
Per diem	5950			
Total travel			8575	
Services			13200	
Commodities			7375	
Equipment			12325	
Student aid			7590	
TOTAL DIRECT				135854
INDIRECT				48462
TOTAL REQUESTED				184316

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Appendix: Castellini CV

NAME: Michael Angelo Castellini
PLACE OF BIRTH: Upland, California, January 22, 1953
EDUCATION:
B.A. Biology 1975 University of California, San Diego
PhD. Marine Biology 1981 Scripps Institution of Oceanography

EMPLOYMENT RECORD:
1976-80 Research assistant, University of California, San Diego
1981 Postdoctoral research fellow, Scripps Institution of Oceanography
1982 NATO postdoctoral fellow, Univ. of British Columbia, Vancouver
1983-86 NIH postdoctoral fellow, University of British Columbia, Vancouver
1986-87 Visiting assistant research physiologist, UC San Diego
1987 Adjunct lecturer, Department of Biology, UC San Diego
1987-89 Assistant research biologist, University of California, Santa Cruz
1990-92 Research associate in Marine Sciences, Univ Calif Santa Cruz
1989-93 Assistant professor marine biology, Univ. of Alaska, Fairbanks
1993- Associate professor marine biology, Univ. of Alaska, Fairbanks

Publications relevant to proposal

Castellini, M.A., D.P. Costa and A.C. Huntley. Fatty acid metabolism in fasting elephant seal pups. Journal of Comparative Physiology B. 157(4):445-449. 1987.

Castellini, M.A., R.W. Davis and G.L. Kooyman. Blood chemistry regulation during repetitive diving in Weddell seals. Physiological Zoology. 61(5):379-386. 1988.

Castellini, J.M., Castellini, M.A. and M.B. Kretzmann. Circulatory water balance in suckling and fasting northern elephant seal pups. Journal of Comparative Physiology B. 160(5):537-542. 1990.

Castellini, M.A. and D.P. Costa. Relationships between plasma ketones and fasting duration in neonatal elephant seals. American Journal of Physiology. 259:R1089-R1090. 1990.

Davis, R.W., M.A. Castellini, T.M. Williams and G.L. Kooyman. Fuel homeostasis in the harbor seal during submerged swimming. Journal of Comparative Physiology B. 160:627-635. 1991.

Castellini, M.A. The biology of diving: biochemical, physiological and behavioral limits. In: Advances in Comparative and Environmental Physiology. Vol 8. R. Gilles, ed. Springer-Verlag, Berlin. pp 105-134. 1991.

Castellini, M.A., G.L. Kooyman and P.J. Ponganis. Metabolic rates of freely diving Weddell seals: Correlations with oxygen stores, swim velocity and diving duration. Journal of Experimental Biology. 165: 181-194. 1992.

Castellini, M.A., J.M. Castellini and V.L. Kirby. Blood glucose handling methods can compromise analytical results: Evidence from marine mammals. Journal of the American Veterinary Association. 201(1): 145-148. 1992.

Castellini, M.A., D.P. Costa and J.M. Castellini. Blood glucose distribution, brain size and diving in small odontocetes. Marine Mammal Science. 8(3): 294-298. 1992.

Castellini, M.A. and L.D. Rea. The biochemistry of natural fasting at its limits. Experientia. 48: 575-582. 1992.

Castellini, M. and D. Calkins. Mass estimates using body morphology in Steller sea lions. Marine Mammal Science. 9: 48-54. 1993.

Castellini, M.A., R.W. Davis, T.R. Loughlin and T.M. Williams. Blood chemistries and body condition of Steller sea lion pups at Marmot Island, Alaska. Marine Mammal Science. 2: 202-208. 1993.

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Project 95118-BAA

IAB Proposal No. 94.102

A Research Proposal

To: NOAA
WASC Procurement Division
7600 Sand Point Way NE
BIN C 15700
Seattle, WA 98115-6349

From: Alaska Cooperative Fish and Wildlife Research Unit
University of Alaska Fairbanks
209 Irving Building
Fairbanks, Alaska 99775-7020

Date: June 28, 1994

Title: **Diet composition, reproductive energetics, and productivity of seabirds damaged by the *Exxon Valdez* Oil Spill**

Amount Requested: $ 413,689

Project Duration: 1 January 1995 - 30 September 1997

David D. Roby 6/28/94
Dr. Daniel Roby, Principal Investigator Date
Alaska Coop. Fish and Wildlife Research Unit
209 Irving Building, University of Alaska Fairbanks
Fairbanks, Alaska 99775
907/474-6673

Gerald F. Shields 6/28/94
Robert G. White, Director Date
Institute of Arctic Biology
Fairbanks, AK 99775-1080

Ted DeLaca/pb 6/28/94
Dr. Ted DeLaca Date
Director, Office of Arctic Research
Fairbanks, AK 99775-1720

Project 95118-BAA

A. COVER PAGE

Project Title: **Diet Composition, Reproductive Energetics, and Productivity of Seabirds Damaged by the *Exxon Valdez* Oil Spill**

A Proposal in Response to: **BAA No. 52ABNF400104**

Principal Investigator: Daniel D. Roby

Lead Agency: University of Alaska Fairbanks

Cost of Project: $413,689

Project Dates: 1 January 1995 - 30 September 1997

Project Duration: 3 years[a]

Geographic Area: Prince William Sound and adjoining portions of the *Exxon Valdez* oil spill area

Contact Person: Daniel D. Roby
Alaska Cooperative Fish and Wildlife Research Unit
209 Irving Building
University of Alaska
Fairbanks, Alaska 99775-0990
907-474-6673

[a] Useful results can be obtained in two years, but to be maximally effective the project should be supported for a minimum of three years.

Project 95118-BAA

BAA No. 52ABNF400104

B. INTRODUCTION

Three seabird species that were damaged by the *Exxon Valdez* oil spill (EVOS) are failing to recover at an acceptable rate: pigeon guillemot (*Cepphus columba*), common murre (*Uria aalge*), and marbled murrelet (*Brachyramphus marmoratus*). Damage from the spill to a fourth species of seabird, black-legged kittiwake (*Rissa tridactyla*), is equivocal, but recent reproductive failures of kittiwakes within the spill area may be due to longer term ecosystem perturbation related to the spill (D. Irons, pers. comm.). The status of pigeon guillemots and marbled murrelets in Prince William Sound (PWS) and the Northern Gulf of Alaska has been of concern for nearly a decade due to declines in numbers of adults observed on survey routes (Laing and Klosiewski 1993).

The failure of these seabirds to recover has been attributed to low reproductive success, but there is a troubling lack of information on the factors ultimately responsible for low productivity. One prevalent hypothesis is that changes in the abundance and species composition of forage fish resources within the spill area has resulted in food provisioning rates that are below the requirements of growing nestlings. Concurrent population declines in some marine mammals, particularly harbor seals, have also been blamed on food limitations. Whether these changes in forage fish availability are related to or have been exacerbated by EVOS is unknown.

Reproductive success in seabirds is largely dependent on foraging constraints experienced by breeding adults. Previous studies on the reproductive energetics of seabirds have indicated that productivity is energy-limited, particularly during brood-rearing (Roby 1991a). Also, the young of most seabird species accumulate substantial fat stores prior to fledging, an energy reserve that is crucial for post-fledging survival. Data on foraging habitats, prey availability, and diet composition are critical for understanding the effects of changes in the distribution and abundance of forage fish resources on the productivity and dynamics of seabird populations.

The composition of forage fish is particularly relevant to reproductive success because it is the primary determinant of the energy density of chick diets. Parent seabirds that transport chick meals in their stomachs (e.g., kittiwakes) or in a specialized pouch (e.g., auklets) normally transport meals that are close to the maximum load. Seabirds that transport chick meals as single prey items held in the bill (e.g., guillemots, murres, murrelets) experience additional constraints on meal size if optimal-sized prey are not readily available. Consequently, seabird parents that provision their young with fish high in lipids are able to support faster growing chicks that fledge earlier and with larger fat reserves. This is because the energy density of lipid is approximately twice that of protein and carbohydrate. Also, forage fish are generally very low in carbohydrate, and metabolism of protein as an energy source requires the energetically expensive process of excreting the resultant nitrogenous waste. While breeding adults can afford to consume prey that is low quality (i.e., low in lipid) when it is abundant, reproductive success is largely dependent on provisioning young with high quality food items. If prey of adequate quality to support normal nestling growth and development are not available, nestlings either starve in the nest or prolong the nestling period and fledge with low fat reserves.

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Forage fish vary considerably in lipid content, lipid:protein ratio, energy density, and nutritional quality. Much of the energy content of prey consumed by seabirds is in the form of neutral lipids, especially triglycerides and wax esters, and wax esters in particular are known to be difficult to digest (Nevenzel 1970, Lee et al. 1972, Benson et al. 1972, Sargent 1976, Clarke 1984, In press). In some seabird prey, such as lanternfishes (Myctophidae), lipids may constitute as much as 50% of dry mass (A. R. Place, pers. comm.); while in other prey, such as juvenile walleye pollock (*Theragra chalcogramma*), lipids are less than 5% of dry mass (J. Wejak, unpubl. data). This means that a given mass of lanternfish has more than twice the energy content of the same mass of juvenile pollock. Published values for lipid content (% dry mass) of other forage fish are intermediate between those of lanternfish and juvenile pollock: herring (Clupeidae)- 36.7%, sandlance (Ammodytidae) - 24.4%, smelt (Osmeridae) - 15.8%, capelin (*Mallotus villosus*) - 15.3% (Montevecchi et al. 1984, Barrett et al. 1987, Massias and Becker 1990). These studies have shown that for a particular species of forage fish, lipid content can vary widely with season, sex, reproductive status, and age class. For example, sandlance can vary from 10% lipid (% dry mass) to 31.5% lipid (Hislop et al. 1991) and gravid female capelin have nearly twice the energy density of male capelin (Montevecchi and Piatt 1984). By increasing the proportion of high-lipid fish in chick diets, parents can increase the energy density of chick meals in order to compensate for the low frequency of chick feeding (Ricklefs 1984a, Ricklefs et al. 1985).

C. PROJECT NEED

This study is relevant to EVOS Restoration Work because it is designed to develop a better understanding of how shifts in the diet of seabirds breeding in PWS affects reproductive success. Unlike marine mammals, seabirds offer the possibility of directly measuring diet composition and feeding rates, and their relation to productivity. By monitoring the composition and provisioning rates of seabird nestling diets, prey preferences can be assessed. Measuring provisioning rates is crucial because even very poor quality prey may constitute an acceptable diet if it can be supplied at a high rate. Understanding the diet composition, foraging niche, and energetic constraints on seabirds breeding within the spill area will be crucial for designing management initiatives to enhance productivity in species that are failing to recover from EVOS. If forage fish that are high in lipids are an essential resource for successful reproduction, then efforts can be focused on assessing stocks of preferred forage fish and the factors that impinge on the availability of these resources within foraging distance of breeding colonies in PWS. As long as the significance of diet composition is not understood, it will be difficult to interpret shifts in the utilization of forage fishes and develop a management plan for effective recovery of damaged species.

There is a definite need for information on the relationship between diet and reproductive success for pigeon guillemots, common murres, and marbled murrelets, all seabird species that are failing to recover from EVOS at an acceptable rate. However, the latter two species pose serious problems for studies of diet composition in the spill area. For common murres it is difficult to collect quantitative data on diet composition, feeding rate, meal size, and chick

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growth rates without seriously impacting productivity because this species nests in dense colonies on narrow ledges where human activity can cause high losses of eggs and chicks. Also, murre chicks leave the nest site to go to sea at only c. 21 days post-hatch, when they are only 20% of adult mass. In addition, the murre colonies most damaged by the spill and slowest to recover are located in the Barren Islands, where few nesting ledges are accessible. Marbled murrelet nests are usually located high in mature conifers and are very difficult to locate. Most nest visits by parents provisioning young occur at night, so monitoring chick diets is highly problematic. While some limited information on chick diets may be obtained as part of on-going EVOS studies of common murres in the Barren Islands (D. Roseneau, pers. comm.) and marbled murrelets breeding on Naked Island (K. Kuletz, pers. comm.), neither of these species are feasible study subjects for assessing the role of diet composition for seabird reproductive success in the spill area.

Guillemots are the most neritic members of the marine bird family Alcidae (i.e., murres, puffins, and auks), and like the other members of the family, capture prey during pursuit-dives. Pigeon guillemots are a well-suited species for monitoring forage fish availability for several reasons: (1) they are a common and widespread seabird species breeding in Prince William Sound (Sowls et al. 1978); (2) they primarily forage within 5 km of the nest site (Drent 1965); (3) unlike most seabird species, they do not breed in large, dense colonies; (4) they raise their young almost entirely on fish; (5) they prey on a wide variety of fishes, including schooling forage fish (e.g., sandlance, herring, smelt) and subtidal/nearshore bottom fish (blennies, sculpins; Drent 1965, Kuletz 1983); (6) the one- or two-chick broods are fed in the nest until the young reach adult body size. In addition, there is strong evidence that most guillemot pairs breeding at Naked Island within the spill area have specialized on schooling forage fish during the chick-rearing period, and that these pairs fail to raise young when forage fish are not available (Kuletz 1983). Guillemots carry whole fish in their bills to the nest-site crevice to feed their young. Thus individual prey items can be identified, weighed, measured, and collected for composition analyses.

Black-legged kittiwakes also breed abundantly in the spill area and rely largely on forage fish during reproduction. Unlike guillemots, kittiwakes are efficient fliers, forage at considerable distances from the nest, and capture prey at or near the surface. Although kittiwakes are highly colonial, cliff-nesting seabirds, they construct nests and can be readily studied at the breeding colony without causing substantial egg loss and chick mortality. Several breeding colonies of black-legged kittiwakes in PWS are easily accessible so that chicks can be weighed regularly without resorting to technical climbing (D. Irons, pers. comm.). Diets fed to kittiwake chicks in PWS consist primarily of schooling forage fish (i.e., sandlance, herring, juvenile walleye pollock), but when forage fish are scarce, euphausiids may be substituted. Like guillemots, kittiwakes can raise one- or two-chick broods, and chicks remain in the nest until nearly adult size. Together with pigeon guillemots, black-legged kittiwakes are excellent bioindicators of the distribution and abundance of preferred forage fish in PWS.

The proposed research is the first focused study to investigate the effects of diet composition on reproductive energetics and productivity of piscivorous seabirds in PWS. The research will result in a fundamental advance in our understanding of the significance of prey composition for pigeon guillemot and

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black-legged kittiwake reproduction, as well as for other seabirds and marine mammals that breed in PWS. The research will also provide new information relevant to several additional areas of study: (1) comparative biochemical composition and physiological condition of forage fishes, (2) factors such as age class, sex, size, and reproductive status as they influence the nutritional quality of forage fishes, (3) responses of breeding seabirds to shifts in prey availability, and (4) the energetic consequences of foraging on different prey with differing energy content. This research will be the first to (1) measure the nutritional quality of various forage fishes used by breeding seabirds in PWS, (2) use data on diet composition and provisioning rates to construct energetics models of chick growth and survival, and (3) monitor fat deposition rates of individual seabird chicks on differing dietary regimes by repeated, noninvasive analysis. In addition, the results will have broader implications for our understanding of dietary constraints on reproductive success in other piscivorous seabirds damaged by the spill (common murre, marbled murrelet) and will enhance our understanding of the adaptive significance of prey preferences in these seabirds. These results are crucial for understanding the factors constraining recovery of marine birds and mammals damaged by the spill.

D. PROJECT DESIGN

1. Objectives

The overall objective of the proposed research is to determine the energy content and nutritional value of various forage fishes used by seabirds breeding in the EVOS area, and to relate differences in prey quality and availability to reproductive success and physiological condition of breeding adults. The proposed research will emphasize pigeon guillemots and black-legged kittiwakes for practical reasons, but prey composition and quality will be evaluated for common murres, marbled murrelets, and tufted puffins as data and samples permit. Specific objectives are enumerated below:

1. To determine the nutritional quality of various forage fish species consumed by seabirds in the EVOS area as a function of size, sex, age class, and reproductive status, including:
    a) lipid content
    b) water content
    c) ash-free lean dry matter (protein) content
    d) energy density (kJ/g fresh mass)
    e) lipid composition (triglyceride, wax ester, mono- and diglyceride, free fatty acid, phospholipid)
2. To determine dietary parameters of pigeon guillemot and black-legged kittiwake chicks in PWS, including:
    a) provisioning rate (meal size X delivery rate)
    b) taxonomic composition of the diet
    c) biochemical composition of the diet
    d) energy density of the diet
3. To determine the relationship between diet and the growth, development, and survival of seabird nestlings. Variables measured will include:
    a) growth rates of total body mass, lean body mass, and total body fat
    b) rates and patterns of flight feather development

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BAA No. 52ABNF400104

c) fledging age and fledgling body mass and fat reserves

4. To determine the contribution of specific forage fish resources to the overall productivity of seabird breeding pairs, including:
   a) body composition (physiological condition) of parents raising chicks
   a) gross foraging efficiency of parents
   b) conversion efficiency of food to biomass in chicks
   c) net production efficiency of the parent/offspring unit

2. Methods

The proposed research approach utilizes a combination of sample/data collection in the field (in conjunction with other EVOS seabird studies in PWS) and laboratory analyses. Sample collection and field data collection will be conducted concurrently during the 1995, 1996, and 1997 breeding seasons at three guillemot and three kittiwake colonies in PWS. Thirty active and accessible nests of each species will be located and marked during early incubation at each of the study colonies during the three breeding seasons. These nests will be closely-monitored until the young fledge or the nesting attempt fails.

Fresh samples of forage fishes for proximate analysis will be collected using three techniques: (1) temporarily placing "necktles" on guillemot chicks to prevent them from swallowing prey delivered by parents and retrieving samples from chicks, (2) temporarily placing screens in the entrance of puffin nest burrows and retrieving the chick meals left by adults, and (3) collections from at sea trawls conducted as part of proposed studies of the distribution and abundance of forage fish in PWS. Kittiwakes transport chick meals in the stomach, so chick diet samples will consist of semi-digested food. Kittiwake meal samples are normally collected when chicks regurgitate during routine weighing and measuring. Fresh fish samples and kittiwake regurgitations will be weighed (± 0.1 g) in the field and immediately frozen for shipment to my laboratory at University of Alaska Fairbanks, where they will be kept in an ultra-low freezer at -70° C until proximate analysis. In the lab, forage fish specimens will be reweighed (± 0.1 mg), identified to species, aged, sexed, measured, and reproductive status (gravid, recently spawned, nonreproductive) determined. Kittiwake regurgitations will be sorted into prey classes to the extent feasible, but otherwise handled as with fresh prey samples. Forage fish specimens will be dried to constant mass in a convection oven at 60° C to determine water content. Lipid content of a subsample of dried forage fish will be determined by solvent extraction using a soxhlet apparatus and petroleum ether as the solvent system. Lean dry fish samples will then be ashed in a muffle furnace at 500° C in order to calculate ash-free lean dry mass by subtraction. A subsample of dried forage fish samples will be combusted in a bomb calorimeter to determine energy density. Energy content of chick diets will be calculated from both the energy densities determined by bomb calorimetry and the composition (water, lipid, lipid-free dry matter, and ash) of forage fish along with published energy equivalents of these fractions (Roby 1991).

The lipid composition of forage fish (percentage wax esters, triglycerides, mono- and diglycerides, free fatty acids, and phospholipids of total lipids) will be determined by extracting total lipids from a subsample of fresh-frozen forage fish using the Bligh and Dyer (1959) technique. Extracted lipids will then be separated into the various lipid classes and quantitated using TLC/FID analysis procedures. This procedure will allow us to determine the percentage of total lipids in forage fish that are in the form of wax esters and other refractory (hard to digest) lipid classes (Roby et al. 1986). My laboratory is equipped with all the instrumentation required for proximate analysis of samples, including a Soxtec HT-12 soxhlet apparatus; an Iatroscan TLC/FID system; and a Parr automated adiabatic bomb calorimeter.

Chick provisioning rates for pigeon guillemots and black-legged kittiwakes in PWS will be determined by monitoring active nests to determine meal delivery rates throughout the 24 h period. Average meal size, taxonomic and biochemical composition of the diet, and average energy density of chick meals will be determined as part of analyses of diet samples collected from guillemot and kittiwake chicks.

Known-age chicks will be weighed and measured regularly to determine individual growth rates throughout the nestling period. Total body fat of chicks at 20 and 30 days post-hatch will be determined by noninvasive (nondestructive) measurement of total body electrical conductivity

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(Walsberg 1988, Roby 1991). Fat reserves of chicks will be measured in the field using a total body electrical conductivity (TOBEC) fat analyzer (SA-3000 Small Animal Body Composition Analyzer from EM-SCAN, Inc., Springfield, IL) that I currently have in my lab. The TOBEC method relies on the major difference in conductivity between lipids and other body constituents to estimate total lean body mass (Pethig 1979; Van Loan and Mayclin 1987). The difference between total body mass, as determined by weighing, and lean body mass, estimated by TOBEC, provides an estimate of total body lipid. A major advantage of the technique is that measurements can be obtained rapidly and repeatedly without harm to the subject. Also, validation studies to date indicate that accuracy is high (r^2 = .996) (Bracco et al. 1983, Walsberg 1988, Roby 1991b). The SA-3000 TOBEC analyzer can be used in the field and powered from a 12 volt battery, so chicks can be measured for TOBEC and returned to their nest in a matter of minutes. Body mass, primary feather development, and total body fat measurements will be used to develop a condition index for each chick at 20 and 30 days post-hatch.

The effects of diet composition on the physiological condition of breeding adults will be monitored using a combination of direct and indirect methods. Attentiveness of adults will be monitored during the incubation period. Adults will be captured on the nest early in the chick-rearing period and body composition determined nondestructively by TOBEC analysis. Frequency of chick meal delivery and meal size will be determined during the chick-rearing period as part of diet composition studies.

Data on chick age-specific body mass, wing chord, and primary feather length will be separated by year and diet, and fit to Gompertz sigmoidal growth models. Growth constants (K), inflection points (I), and asymptotes (A) of fitted curves will be statistically analyzed for significant differences among years and diets. Lipid deposition rates from TOBEC analysis will be compared using slopes of least squares linear regression models. Gross foraging efficiency of adults will be calculated from daily energy expenditure by the following equation:

$$([M \cdot F \cdot D] + DEE) / DEE = GFE,$$

where M is average chick meal mass in grams, F is average frequency of meal delivery in meals day^{-1} $parent^{-1}$, D is energy density of chick meals in kJ/gram, DEE is adult daily energy expenditure in kJ/day, and GFE is adult gross foraging efficiency in kJ consumed/kJ expended. Daily energy expenditures of pigeon guillemots, black-legged kittiwakes, and common murres have been measured previously using the doubly-labeled water technique and are available in the published literature (Birt-Friesen et al. 1990). Net production efficiency of chicks as a function of age will be calculated by regressing the change in body mass over a 24 hour period against the mass of food consumed during the period, as determined by periodic weighing. Comparison of food conversion efficiency of chicks will provide an estimate of the relative energetic efficiency of diets composed of various forage fishes. The net production efficiency of the parent/offspring unit will be calculated for each diet and each year for both species using the equation:

$$CFCE / ([DEE \cdot 2] + [M \cdot F \cdot D]) = TNPE,$$

where CFCE is chick food conversion efficiency in grams of body mass gained per gram food ingested, TNPE is the total net production efficiency of the parent/offspring unit in grams gained by chicks per kJ of energy expended by both parents, and other variables are as described above.

3. Schedule

Field work in Prince William Sound will be conducted during the 1995, 1996, and 1997 breeding seasons. Data collection during three field seasons will be necessary in order to provide minimal information on interannual variation in diet composition and reproductive success. Guillemots and kittiwakes normally lay eggs from late May to late June and raise their young during July and early August. Active, accessible nests of the two study species will be located and marked early in the incubation period during late May and early June. Marked nests will be checked daily during the hatching period to determine hatching date, and chicks will be banded soon after hatching so that individual growth rates can be monitored throughout the nestling period. Samples of chick meals and measurements of chick feeding rates will be collected throughout the nestling

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period. Chicks will be monitored throughout the nestling period in order to determine growth rates, fledgling age and mass, and survival until fledging.

Following the field season, chick meals will be analyzed in the lab in order to determine the taxonomic and biochemical composition of guillemot and kittiwake diets and their relationship to chick growth and survival. These analyses will be completed before the next field season in order to determine the results prior to collecting additional samples from the field. A draft annual report will be prepared in April and a final report will be submitted in June.

Following the analysis of samples collected during the 1997 field season, data collected during the three field seasons will be analyzed for relationships between diet composition and reproductive success by May 1998. The results of these analyses of diet composition and its relation to productivity and chick growth will be prepared in manuscript form and submitted by the end of FY 1998.

4. Technical Support

Laboratory analyses of the biochemical composition and energy content of forage fishes will be conducted in the laboratory of the PI. No analyses will be subcontracted to other laboratories. No new laboratory equipment will need to be purchased for the proposed research with funds provided by the grant. A laboratory technician will be hired to help the PI and graduate research assistant with processing chick meals and diet samples, and with performing of routine laboratory analyses.

5. Location

The proposed field work will be conducted in PWS. PWS supports accessible breeding population of guillemots and kittiwakes that are more than adequate for the proposed research. Field work on guillemots will be conducted at breeding colonies on Naked Island, Fool Island, and Jackpot Island. Approximately 800 pigeon guillemots nest along the shores of Naked Island (Sanger and Cody 1993), as well as smaller number of marbled murrelets and tufted puffins. The Naked Island base camp would offer an ideal base for field studies on guillemots (D. Irons, pers. comm.), and Naked Island supports the highest breeding densities of guillemots in PWS (Sanger and Cody 1993). Fool Island has approximately 80 guillemot nests and Jackpot Island has about 60 guillemot nests and pairs are breeding at high densities in both sites (G. Sanger, pers. comm.).

Field work on kittiwakes in PWS will be conducted at breeding colonies at Shoup Bay, Icy Bay, and Blackstone Bay. Approximately 400 black-legged kittiwakes nest at the Shoup Bay colony, 1,100 at Icy Bay, and 2,000 at Blackstone Bay.

The at-sea foraging distribution of pigeon guillemots near Naked Island Fool Island, and Jackpot Island has been the subject of previous study (Sanger and Cody 1993), as has the species composition of the diet (Kuletz 1983). Kittiwake foraging distribution and reproductive success has been monitored at the Shoup Bay colony for several years (D. Irons, pers. comm.). A field camp operated by the U.S. Fish and Wildlife Service is available for field workers on Naked Island and Shoup Bay and is within walking distance of colonies where adequate numbers of accessible guillemot and kittiwake nests are available.

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E. PROJECT IMPLEMENTATION

The proposed research will be implemented by the University of Alaska Fairbanks, with assistance from and in cooperation with U.S. Fish and Wildlife Service biologists with expertise on the proposed study species in the proposed study area. The PI (Daniel D. Roby) has extensive experience with studies of the reproductive energetics of high latitude seabirds and the relationship between diet composition and productivity. The PI currently has in his laboratory the analytical equipment necessary to accomplish the proposed laboratory analyses and is familiar with the relevant analytical procedures. To the PI's knowledge, the expertise and equipment necessary for the proposed research are not available within the federal and state agencies that compose the Trustees Council. The PI will be assisted by a Graduate Research Assistant (Ph.D. candidate), Field Technician, and undergraduate field assistant who will be carefully selected from the applicant pool as qualified to participate in the proposed research.

F. COORDINATION OF INTEGRATED RESEARCH EFFORT

The research described in this proposal dove-tails nicely with on-going research to assess factors limiting recovery of seabird and marine mammal populations damaged by EVOS . It is also relevant to efforts toward developing seabird models as upper trophic level sentinels of changes in the availability of forage fish, such as sandlance, juvenile pollock, herring, capelin, smelt. The proposed research approach utilizes prey composition, reproduction rates, and energetics models to help identify and quantify the present level of forage fish availability within the PWS ecosystem. This approach is necessary because evaluation of the stocks of various forage fishes is extremely complex due to temporal and spatial variability and unpredictability in the distribution of forage fish in PWS.

Studies of foraging, reproduction, and population recovery following the EVOS are on-going for pigeon guillemots, common murres, and marbled murrelets. Black-legged kittiwakes are currently being used as indicators of ecosystem function and health within PWS. This proposal complements those studies without duplication of effort. The PI on the present proposal will work closely with Drs. David Irons, Kathy Kuletz, and David Roseneau to coordinate data collection in the field so as to minimize project cost and maximize data acquisition.

Cooperators include Dr. David Irons of the Migratory Bird Branch, U.S. Fish and Wildlife Service. Dr. Irons has had extensive experience working in the field with both guillemots and kittiwakes nesting in PWS, and is project leader for on-going studies of the reproductive success and status of these two species in PWS. Close coordination with Dr. Irons research teams at Naked Island and Shoup Bay will be essential for the success of the proposed research.

In order to understand dietary factors responsible for poor reproductive performance of seabirds in PWS, it will be important to conduct simultaneous shipboard work (hydroacoustics) to assess the distribution and abundance of forage fish at sea. That research was recently funded by the Trustees Council and will be invaluable for interpretation of data on diets collected as part of the present proposal. The research presented in this proposal is also highly relevant to a proposal for a Forage Fish Study entitled "Food limitation on recovery of

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injured resources: an ecosystem approach to the restoration of marine birds" (Project Coordinator: Dr. Scott A. Hatch). Dr. Hatch and I have been working closely to insure that the present proposal, if funded, would provide an important component of his larger proposed study without duplication of research he and his Co-PIs have proposed. Similarly, the results of the research proposals described in Dr. Hatch's proposal would substantially enhance interpretation of results from this proposed research.

G. PUBLIC PROCESS

The ideas, methods, and scope of work encompassed in this proposal were introduced and refined at both the April 1994 EVOS restoration planning workshop and at a follow-up meeting of public and government representatives interested in forage fish research. Similar opportunities for public input will be available on an annual basis, including two winter workshops sponsored by the Exxon Valdez Spill Restoration Office.

All the data generated during the proposed study will be duplicated, with one copy remaining in the permanent files of the PI at the University of Alaska Fairbanks, and the other copy will be retained by the Graduate Research Assistant. The Exxon Valdez Trustees Council Restoration Office and any other interested scientist, organization, or agency will be supplied with copies of any reports, thesis, or publications that result from the proposed research. The results of the proposed study will be part of the dissertation of the Graduate Research Assistant.

H. PERSONNEL QUALIFICATIONS

The PI (Daniel D. Roby) will be assisted by a doctoral student (graduate research assistant), a field technician, and two undergraduate research assistants with the field component of this research. They will collect most of the data on feeding rates, food types, and chick growth rates at the colony, assisted by and in cooperation with U.S. Fish and Wildlife Service personnel who are conducting on-going research on guillemots and kittiwakes as part of other EVOS restoration projects. The PI will visit the field sites during the peak of hatching for guillemots and kittiwakes in order to assist in setting up field data collection, validate the TOBEC technique for noninvasive measurement of body composition, and finalize the sampling protocol for chick feeding rates, meals sizes, and chick diet composition. The PI has had prior field research experience with the proposed study species in Alaska and Newfoundland. Laboratory analyses of samples collected in the field will be accomplished in the PI's laboratory at the University of Alaska Fairbanks by the Graduate Research Assistant and the Laboratory Technician under the direct supervision of the PI. Vita of the PI is attached as an appendix to this proposal.

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NOAA Budget			
	Oct94-Sept95 FY 95	Oct94-Sept96 FY 96	Oct96-Sept97 FY 97
SALARY			
Graduate Student, Ph.D.	$16,840	$16,315	$16,804
Field Technician, 4 mo.($8.79/hr;9.22/hr	$8,091	$8,274	$8,462
Lab Technician, 9 mo (10.70,Range 74)	$16,692	$17,193	$17,708
Benefits:			
- Lab Technician -Staff -	$10,951	$11,278	$11,616
TRAVEL			
Presentation at National Meeting - 2 RT		$3,000	$3,000
FAI/Valdez/FAI - 4 RT- $330/rt	$1,320	$1,320	$1,320
Per Diem for volunteer- $300/mo x 2	$2,400	$2,400	$2,400
2 rt Anc for workshop	$1,000	$1,000	$1,000
SERVICES			
Duplication/computer fees	$500	$700	$900
excess baggage	$300	$300	$300
Publication - page charges, reports	$500	$500	$2,400
Lease porta-shelter	$1,350	$1,350	$1,350
Lease - optical equipment	$450	$450	$450
Boat charter to study sites:			
Naked Is., Fool Is., Jackpot Is. & Shoup Bay,	$9,000	$9,000	$9,000
Blackstone, Icy Bay			
Vehicle rental	$800	$800	$800
Lease Zodiac	$800	$800	$800
Lab equipment maintenance	$3,000	$3,000	$3,000
Lease - battery top-loading balance	$1,000	$1,000	$1,000
Lease computer	$1,800	$1,800	$1,800
Lease HP 100 LX Palmtop	$1,200		
Lease Boat motor	$600	$600	$600
Telephone services	$400	$400	$400
EQUIPMENT			
none			
COMMODITIES			
Chemicals	$3,000	$3,000	$3,000
Chroma rods	$600	$600	$600
Thimbles, extraction	$450	$450	$450
Lab Supplies/analysis	$4,500	$4,500	$4,500
Food	$4,000	$4,000	$4,000
Sleeping bags	$1,000	$250	
scales	$350	$150	$150
sample bags	$200	$200	$200
tents	$600	$600	$600
miscellaneous camp supplies	$600	$600	$600
climbing equipment	$2,400		
STUDENT ASSISTANCE			
Tuition	$4,824	$2,512	$2,600
Total Direct Costs	$98,518	$96,342	$99,810
INDIRECT			
41.8%, less tuition & equipment			
	$39,164	$39,221	$40,634
SUBTOTAL COST OF PROJECT	$137,682	$135,563	$140,444
TOTAL COST OF PROJECT		$413,689	

MPH 6/28/94

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Project ~~9511~~ 95119-BAA

A PROPOSAL TO NOAA PROCUREMENT DIVISION AND
EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

EXXON VALDEZ OIL SPILL RESTORATION WORK

Response to Broad Agency Announcement 52ABNF400104

TITLE: Food Limitation on Recovery of Injured Marine Bird Populations

Principal Investigator:	William J. Sydeman
Co-Principal Investigator:	Nadav Nur
Lead Agency:	Point Reyes Bird Observatory Stinson Beach, CA 94970
Date: 30 June 1994	
Total Cost of Project:	$275,815
Fiscal Year 1995:	$124,883
Requested Start Date/Completion Date:	January 1995/December 1996
Project Duration:	Two years
Geographic Area:	Central California
Contact Person:	William J. Sydeman
Address:	Point Reyes Bird Observatory 4990 Shoreline Highway Stinson Beach, CA 94970
Telephone No.	(415) 868-1221 FAX: 868-1946

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INTRODUCTION: PROJECT NEED

In response to **NOAA BAA 52ABNF400104** we propose to investigate the role of food limitation on the recovery of injured marine wildlife resources, with a focus on marine birds of the family Alcidae. Alcids, the group of marine birds most seriously impacted by oil spills (c.f. Page et al. 1990, Piatt et al. 1990), include the Common Murre (Uria aalge), Pigeon Guillemot (Cepphus columba), Marbled Murrelet (Brachyramphus marmoratus), Rhinoceros Auklet (Cerorhinca moncerata) and Cassin's Auklet (Ptychramphus aleuticus). These species were killed or debilitated during the 1989 **Exxon Valdez** oil spill (Piatt et al. 1990), as well as other oil spills along the west coast of North America (e.g. Page et al. 1990).

An investigation of the relationship between forage availability, diet, and effects of diet on demographic factors is needed to explain marine bird population dynamics, forecast the growth and recovery of affected marine bird populations, and guide oil-spill related restoration options for marine birds. Predicting the growth potential and recovery time of affected populations and species requires information on the balance between recruitment rate and adult mortality, immigration and emigration characteristics of a population, and the availability of other, less affected stock to repopulate affected resources and populations (Burgman, Ferson, and Akackaya 1993). Many of these parameters are unknown for alcids (Hudson 1985), although some parameters have been recently estimated (e.g. Emslie, Sydeman, and Pyle 1992; Sydeman 1993; Nur 1993; Beissinger and Nur in prep.).

With extended periods of time, injured alcid populations may recover from catastrophic mortality associated with oil spills. However, the population recovery process may, in some cases, be enhanced with proactive restoration efforts. Restoration projects using decoys and playback of vocalizations (e.g. Podolsky and Kress 1989) have been proposed to restore Common Murre colonies affected by oil spills, such as the **Exxon Valdez**. However, restoration efforts of this type will meet with limited success if ecological resources, such as prey availability, are insufficient to sustain growing or recovering populations. The answers to basic ecological questions, e.g. how food controls or limits marine bird populations and the relationship between resource availability and critical population parameters (reproduction, survival, and recruitment), are thus required to predict the success of proposed restoration projects (see Birkhead and Furness 1985; Croxall and Rothery 1991; Cairns 1992).

Moreover, restoration of injured resources should be guided by knowledge of sensitive demographic traits. Yet, for most seabirds, the sensitivity of the intrinsic rate of population increase or the annual rate of population growth (lambda) to variation in specific demographic traits and/or variation in food supply has not been determined (Nur, Ford and Ainley 1994). Without this type of understanding, restoration may focus upon demographic parameters which have little or no effect on population growth.

To further our understanding of food limits on population growth and seabird demography, we propose a two part investigation involving (1) a retrospective analysis of alcid diet and at-sea foraging ecology in relation to demographic parameters, and (2) development and application of stochastic population models (Caswell 1989; Burgman, et al. 1993) to predict population recovery and estimate the sensitivity of population growth to specific demographic and prey availability parameters. The second part of the study includes application of findings and models developed to Alaskan alcid populations. The core of the proposed work exploits a unique 24-year time-series of alcid ecology, including year-round information on diet, age-specific diet composition, breeding ecology, and oceanic habitat use, collected by Point Reyes Bird Observatory (PRBO) on the Farallon Islands and in the Gulf of the Farallones in central California, 1971-1994 (see Table 1). In conjunction with

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Table 1. Available PRBO data on diet composition, demographic parameters, and foraging ecology of 4 species of alcids in the Gulf of the Farallones, California. na=not available.

Parameter	Common Murre	Pigeon Guillemot	Cassin's Auklet	Rhinoceros Auklet
chick diet	1973-1994	1971-1994	1977-1994[1]	1987-1994
feeding rate	1973-1994	1988-1994	1977-1994	1987-1994
adult diet	1985-1988	na	1985-1988	na
offspring production	1972-1994	1971-1994	1969-1994	1986-1994
chick growth	na	1971-1994[1]	1970-1994[1]	1987-1994
adult condition index	na	na	1978-1994	1987-1994
adult survival	1985-1994	1979-1994	1978-1994	1986-1994
juvenile survival	1992-1994	1979-1994[1]	1978-1994[1]	1987-1994
population size/index	1972-1994	1971-1994	1971-1994	1971-1994
oceanic habitat use	1985-1994	1985-1994	1985-1994	1985-1994

[1] Annual data for these parameters are intermittent.

NOAA/NMFS and CDFG fish and zooplankton stock assessments, these data provide a powerful tool for relating resource availability and marine bird population dynamics.

STUDY DESIGN AND OBJECTIVES

We will investigate the hypothesis that food limits population growth, hence the recovery of injured marine bird populations, through its effects on demographic traits: growth, mortality, reproduction, and recruitment. Our principle goal is to determine the functional relationship between variation in food supplies and demographic parameters for the alcids: Common Murre, Pigeon Guillemot, Rhinoceros Auklet, and Cassin's Auklet. To accomplish this goal, we will:

(1) Investigate temporal (annual, seasonal, and inter-decadal) and spatial variation in the diet of alcids in central California,

(2) Analyze available demographic data (growth, reproduction, survival, and recruitment) for alcids of the Farallon Islands,

(3) Investigate and establish relationships between diet composition and demographic parameters for Farallon Island alcids,

(4) Evaluate the energetic value of different alcid prey using bomb calorimetry (of previously collected samples) and estimate annual prey consumption based on observations of feeding rates and diet composition of chicks,

(5) Develop stochastic population models for 4 species to predict population trajectories and growth,

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(6) Incorporate variation in food availability in population models and project population growth and recovery under varying scenarios of resource availability,

(7) Apply models developed in (5) and (6) to Alaskan populations, utilizing available demographic information (e.g., reproductive success), and

(8) Conduct sensitivity analyses on population growth to guide restoration activities in Alaska under varying scenarios of resource availability, diet composition, and demographic parameters.

In addition, the project will involve the integration of diet and demographic results with NOAA/NMFS fish and zooplankton stock assessments. NMFS, Tiburon Laboratory, has conducted standardized mid-water trawls each year from 1983 to the present on the availability of rockfish (Sebastes spp.) and krill (Euphausidae) in the Gulf of the Farallones (Adams 1993). Farallon Island alcids feed extensively on these prey throughout the year (Ainley and Boekelheide 1990). Thus, the NMFS data provides a unique opportunity to relate an independent measure of resource availability with alcid diet and demographic parameters. Finally, in conjunction with the NMFS cruises, we have conducted censuses of alcids at sea during the breeding and pre-breeding seasons. These data are critical to understanding the relationship between productivity and diet. Birds forage at different locations depending upon the type of prey sought. The distance between the colony and feeding locations varies, hence diet selection may influence feeding rates, chick growth and, ultimately, reproductive success. For this aspect of the project, we will map foraging locations using GIS software and correlate oceanic habitat characteristics with diet and demography. This effort will provide habitat-specific understandings of the relationship between ocean resources and alcid population dynamics.

PRODUCTS

Our investigation will provide the Trustee Council with a comprehensive ecological understanding of the importance of food limitation on the recovery of injured marine bird populations, with a focus on the group of birds most often injured by oil spills. The investigation will help to explain why marine bird resources have not recovered more rapidly following the **Exxon Valdez** oil spill and why, for some colonies, long-term problems persist. The importance of determining the relationship between ocean resources, diet and population dynamics cannot be understated; the successful restoration of affected marine bird populations is wholly dependent upon resource variability and its effect on alcid demography. These relationships have, in general, been inadequately studied. Thus, the project will contribute to the restoration of injured resources through an understanding of basic ecological relationships. Furthermore, our modeling efforts will predict population growth under realistic ecological constraints. Lastly, sensitivity analyses will provide information on which demographic traits strongly influence population growth and which have minimal effects. For example, given the longevity of alcids, we may discover that maximizing adult survival, rather than attempting to increase productivity is more important to the population recovery process. These analysis should guide future restoration programs. Overall, the project will help NOAA and other agencies prioritize management goals and restoration options, given ecological constraints associated with food resources.

PROJECT IMPLEMENTATION AND COORDINATION

PRBO will be the lead organization in the project; our qualifications are listed below. Because of the unique nature of the data available to us, we feel that competitive

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procurement process is not necessary. The project is collaborative with UC Davis, NOAA's NMFS, NSF's GLOBEC program (through James Quinn, UC Davis), USFWS Farallons National Wildlife Refuge, and California Department of Fish & Game.

PUBLIC PROCESS

In addition to public involvement through the usual channels appropriate to activities of the Exxon Valdez Oil Spill Trustee Council (e.g., review by the Public Advisory Group), results of the project will be presented at major scientific conferences to which the public is invited.

STATEMENT OF QUALIFICATIONS

PRBO and its key personnel (PI Sydeman, co-PI Nur; together with D. Ainley and L. Spear) are uniquely qualified to meet the goals of this research program. In addition, Dr. James Quinn (UC Davis) will make an important contribution to research efforts, especially in relation to analysis and modeling of spatial variation in prey distribution. PRBO biologists on the proposed project have over six decades of direct field experience with marine birds and have been involved with oil spill damage assessments in California and elsewhere in the world for the past 25 years. We have investigated and published upon many aspects of seabird ecology over the past decade, including over 20 peer-reviewed scientific contributions specifically concerning alcid demography, population dynamics, and food web interactions (curriculum vitae provided upon request).

William Sydeman is Director of Farallon Island Research at PRBO. He has published extensively on seabird demography including relationship to the environment. He is PI or co-PI on several relevant seabird projects currently being conducted on the Farallon Islands, including two for the Gulf of the Farallones National Marine Sanctuary and the California Department of Fish & Game (Oil Spill Response Program). The latter is a project investigating the long-term effects of chronic oiling on Common Murres of Central California and is being carried out with Nadav Nur and David Ainley, among others.

Nadav Nur is Theoretical Ecologist at PRBO. He has expertise in state-of-the-art analysis of demographic parameters and recently organized a workshop on this subject. He has carried out demographic modeling of Common Murres, Brandt's Cormorants, Western Gulls (this work done with David Ainley; see Nur et al. 1994) and Marbled Murrelets (Nur 1993), as well as terrestrial species, e.g., Osprey (Nur & Geupel 1994). Together with David Ainley he carried out a literature review of marine bird population recovery potential for the **Exxon Valdez** Restoration Working Group (Nur and Ainley 1992).

David Ainley is Director of Marine Research at PRBO. He has been working on prey diet of seabirds for decades, first at the Farallon Islands (summarized in Ainley & Boekelheide 1990), and more recently in the Pacific and the Antarctic (these results summarized in numerous scientific publications in peer-reviewed ecological journals). Since 1985 he has been collaborating with National Marine Fisheries Service regarding habitat characteristics of pelagic seabirds in the Gulf of the Farallones. Current work includes demography of endangered shearwaters on Kauai island (together with Nadav Nur).

Larry Spear is seabird biologist at PRBO. He has extensive experience with calorimetry analyses (see Spear 1993) and with studies of at-sea seabirds in the Gulf of the Farallones and elsewhere in the Pacific Ocean, conducted over the past 15 years. He has published 31 peer-reviewed articles on seabirds in scientific journals.

James Quinn is Professor of Environmental Studies at University of California, Davis. He has worked extensively on spatial modeling of planktonic populations in relation to

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oceanographic factors, work currently supported by the NSF GLOBEC program and Sea Grant. This work would contribute directly to the proposed project, as would the Geographic Information System (GIS) laboratory that Quinn has established at UC Davis.
PRBO has demonstrated its ability to successfully administer large contracts and grants in the past. The institution has administered over $2M in grants and contracts in the past 5 years.

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BUDGET SUMMARY

			Total Project	Fiscal Year
1995				
1.	Personnel		175600.00	75600.00
	Wm. Sydeman	1600 Hours		
	D. Ainley	1200 Hours		
	N. Nur	1040 Hours		
	L. Spear	400 Hours		
	Other	1520 Hours		
	Benefits @ 15%		26340.00	11340.00
2.	Travel/Per Diem		12948.00	4316.00
3.	Contractual Services		3000.00	1500.00
4.	Commodities/Supplies, etc.		1000.00	500.00
5.	Equipment		4000.00	4000.00
6.	Capital Outlay		8500.00	8500.00
7.	General Administration		44427.00	19127.00
8.	Fixed Fee		.00	.00
		TOTAL:	275815.00	124883.00

BUDGET SUMMARY BY TASK

		Personnel	Total Hours
(A)	RETROSPECTIVE DATA ANALYSES:		
1.	Analysis of Annual, Seasonal and Spatial Diet Composition:	4 FTE	800.00
2.	Analysis of Demographic Parameters:	4 FTE	720.00
3.	Relationships Between Diet Composition and Demography, Growth and Condition:	5 FTE	720.00
4.	Consumption of Prey and Prey Bioenergetics:	5 FTE	720.00
5.	Ocean Habitat Use in Relation to Diet:	2 FTE	880.00
(B)	MODEL DEVELOPMENT AND SENSITIVITY ANALYSIS:		
1.	Compilation of published/unpublished Alaskan data	2 FTE	320.00
2.	Model development and application	2 FTE	480.00
(C)	SUMMARY, INTERPRETATION AND REPORT PREPARATION:	5 FTE	1120.00

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Project 95120-BAO

1. Project Title: Proximate Composition and Energetic Content of Selected Forage Fish Species in Prince William Sound, AK

2. Project Leader: Graham A.J. Worthy, Ph.D.

3. Lead Agency: Physiological Ecology Research Laboratory, Marine Mammal Research Program,
Texas A&M University
4700 Avenue U, Bldg 303
Galveston, TX 77551

4. Cost of Project: FY95: $38.4K
FY96: $37.0K
FY97: $37.0K

5. Project Dates: October, 1994 - September 30, 1998

6. Project Duration: 3 Years

7. Geographic Area: Prince William Sound, AK

8. Contact Person: Graham A.J. Worthy
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Project 95120-BAA

INTRODUCTION

As a result of damage assessment studies initiated after the T/V *Exxon Valdez* struck Bligh Reef in March, 1989, it was noted that several pelagic-feeding marine mammal and seabird species found in Prince William Sound, AK were apparently not recovering back to predisturbance population levels. This lack of recovery may be due to a number of factors, including possible food limitations. Food limitations have been suggested to be a problem for a variety of species which are found throughout the Bering Sea and Gulf of Alaska (Wooster 1993). While cause-effect relationships are difficult to demonstrate, changes in the energetic value of prey species can be quantified and these values used in the interpretation of energy availability to the impacted species. In Prince William Sound, two marine mammal species [harbor seals (*Phoca vitulina*), and sea otters (*Enhydra lutris*)] and several seabird species [common murre (*Uria aalge*), harlequin duck (*Histrionicus histrionicus*), marbled murrelet (*Brachyramphus marmoratus*), and pigeon guillemot (*Cepphus columba*)] have been impacted and are not recovering (Anonymous 1993). Others, such as killer whales (*Orcinus orca*) are recovering but may be indirectly inhibiting the recovery of other species if food competition is a problem.

There is increasing interest in the use of energetic models to study interactions between marine mammals or seabirds and their prey species (*e.g.* Jones and DeGange 1988). Often these models are based upon energy transfer between predator and prey (*e.g.* Wooster 1993). Although these models require information on the energy content or proximate composition of these species, few data are available. Those data which have been published have limited application due to the inherent seasonal and annual variability in the value of the prey (Stansby 1976, Hislop *et al.* 1991, Perez 1994). The goal of this proposed research is to assess on a seasonal and annual basis, the value of the major prey species which would be of significance to the mammalian and avian predators listed above. These data will allow for the development of models which may yield reasons for the lack of recovery of these species.

NEED FOR THE PROJECT

This study will provide the background data necessary for future studies of food web dynamics and ecology of many species of fish, birds and mammals of Prince William Sound. In any long term study of foraging ecology, especially those investigating the recovery of impacted species, knowledge of prey species composition and energetic value is critical in the interpretation of consumption rates and therefore the impact of consumer species upon prey species stocks. Compositional analysis will also yield important information on the general quality of the environment by assessing the condition of important prey species.

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PROJECT DESIGN

1. Objectives: The objectives of this study are to assess the seasonal and annual changes in the proximate composition of the major forage fish species in Prince William Sound, AK. Data on the composition and energetic value of prey species for marine mammals and sea birds are very limited. Most data which are available are for commercial species which are consumed by humans. These data are further limited, in their ecological application, because they usually only analyze the edible fillets which people consume. Another major limitation in the database relates to the lack of an appreciation for the magnitude of seasonal variability which occurs. For example, herring (*Clupea harengus*) can vary from as little as 3% lipid to as much as 22% lipid seasonally (Worthy 1985). Knowing the energy content and composition of these species will allow us to further enhance our understanding of the energetics and physiological ecology of the major consumer species in the Sound.

2. Methods: Species which should be collected are listed in Table 1. Samples should be frozen immediately after collection and be representative of the size classes which are known to be consumed by the consumer species in question.

All analytical techniques are described in detail in Worthy and Lavigne (1983) and Hislop *et al.* (1991). Analysis will be performed on freeze-dried, ground fish and will include determinations of water content, total lipid content, total protein content, ash content and energy density. Initially, wet mass, sex and length of each individual specimen will be recorded. Specimens would then be combined, ground and homogenized prior to freeze-drying. Water content will be determined gravimetrically by lyophilization of ground homogenized prey until constant mass has been obtained. This will be accomplished using a LabConco Lyophilizer over a period of 4-5 days. Once the samples are dried, they are finely ground using a Spex 8000 Mixer/Mill. This ground material will be used in all subsequent analyses and will be available for other investigators to use for future studies.

Lipid content will be measure gravimetrically by Soxhlet extraction using petroleum ether as the solvent. Protein content will be assessed using a modified Kjeldahl analysis and ash content will be determined by ashing at 550°C for 24 h in an ashing oven. Ground lyophilized samples will be analyzed for energy content by means of a Parr adiabatic bomb calorimeter.

3. Schedule: It is suggested that sampling be conducted a minimum of two seasons per year, when maximum productivity is occurring. If samples can be opportunistically obtained on a more regular basis, then a more detailed assessment of seasonal changes can be undertaken.

4. Technical Support: Collections will be done during NMFS and ADF&G cruises, charter cruises, and through the purchase of fish from local fishermen. All of the required equipment and expertise for this project are on-site at Texas A&M University - Galveston. This includes all of the specialized equipment required for the

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composition and energetics analysis, as well as archival capabilities for samples and the computer related software for full statistical analysis of the data.

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5. Location: Collections will take place throughout Prince William Sound and surrounding waters.

PROJECT IMPLEMENTATION

This proposal is being submitted by the Physiological Ecology Research Laboratory (PERL) of the Marine Mammal Research Program (MMRP) of Texas A&M University - Galveston. The PERL is already collaborating with National Marine Fisheries Service, National Marine Mammal Laboratory, on two other projects related to the ecology of killer whales and use of stable isotope tracers in Prince William Sound. All of the data obtained in the present study will also be incorporated into the Integrative Marine Mammal Ecosystem Program.

The PERL has 20 years of combined experience in the analysis of prey species of marine mammals for their composition and energetic value. The ultimate aim of the PERL is to develop a library of prey species samples which could be made available to researchers for future analyses, as well as to make available data on long-term changes in prey species energetic values. The PERL currently is involved in similar projects in California, Texas, Florida and eastern Canada.

COORDINATION OF INTEGRATED RESEARCH EFFORT

Collection of prey species will be undertaken by NMFS as well as other agencies operating in Prince William Sound. Additionally dedicated cruises may be required for the collection of certain species. Samples will be archived for potential future use by other investigators interested in this area.

PUBLIC PROCESS

We encourage all aspects of public input into this proposal.

PERSONNEL QUALIFICATIONS

Dr. Graham Worthy's research interests relate to the understanding of the physiological ecology of marine mammals through the study of their energetics, growth and nutrition. His research program integrates laboratory and field based investigations utilizing stable and radioisotopes, calorimetry, compositional analyses, and radio/satellite tracking techniques in an attempt to elucidate the capabilities of different species to withstand normal seasonal variation in their environment. Worthy's program includes on-going investigations into the life history parameters and the physiological ecology of manatees, cetaceans, and pinnipeds. The overall program centers around the energy requirements of marine mammals and how the availability and

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quantity of food impacts their survival and growth. To that end Worthy is involved in studies investigating the thermoregulatory capabilities, water balance, feeding ecology and free-ranging energetics of several important species of marine mammals.

Tamara Miculka's research experience is in the analysis of prey species for proximate composition. Miculka has been involved in studies relating to the seasonal changes in prey species composition of the 13 major prey species of the bottlenose dolphin in the Banana River region of Florida, analysis of diet of captive marine mammals at Sea World parks, annual variability in the composition of herring in three California bay systems, and the assessment of assimilation efficiency in captive marine mammals. Miculka has also been involved in studies of the composition and insulative quality of cetacean and manatee blubber, and metabolism and thermoregulatory capabilities of manatees.

BUDGET

	FY95	FY96	FY97
1. Personnel:	$15.5K	$15.5K	$15.5K
2. Travel:	$ 3.0K	$ 3.0K	$ 3.0K
3. Contractual Services		$ 0.0K	$ 0.0K $ 0.0K
4. Commodities	$ 3.5K	$ 3.5K	$ 3.5K
5. Equipment	$ 1.0K	$ 0.0K	$ 0.0K
6. Capital Outlay	$ 0.0K	$ 0.0K	$ 0.0K
7. General Administration		$ 3.5K	$ 3.5K $ 3.5K
8. Indirect Costs (45%)		$11.9K	$11.5K $11.5K
Total Project Costs	$38.4K	$37.0K	$37.0K

Project 95120-BAA

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Table 1: Forage fish species, of significance in the Prince William Sound System, which are proposed to be studied for composition and energetic value in the present study. Suggested species were determined by assessing their importance to the various seabirds and marine mammals which are found in Prince William Sound. Some species are of importance only to the larger species such as killer whales (*Orcinus orca*).

Common Name	Scientific Name
Pacific herring	*Clupea harengus pallasi*
Rockfish	*Sebastes sp.*
Cutthroat trout	*Salmo clarkii*
Capelin	*Mallotus villosus*
Rainbow smelt	*Osmerus mordax*
Sand lance	*Ammodytes hexapterus*
Eulachon	*Thaleichthys pacificus*
Pacific cod	*Gadus macrocephalus*
Walleye pollock	*Theragra chalcogramma*
Sablefish	*Anopoploma fimbria*
Pacific sandfish	*Trichodon trichodon*
Pink salmon	*Onchorhynchus gorbuscha*
Sockeye salmon	*O. nerka*
King salmon	*O. tshawytscha*
Silver salmon	*O. kisutch*
Chum salmon	*O. iceta*

Project 95121

1. Project Title: Stable isotope ratios and fatty acid signatures of selected forage fish species in Prince William Sound, AK

2. Project Leader: Graham A.J. Worthy, Ph.D.

3. Lead Agency: Physiological Ecology Research Laboratory
Marine Mammal Research Program
Texas A&M University
Galveston, TX 77551

4. Cost of Project: FY95: $42K
FY96: $13K

5. Project Dates: May 1, 1995-April 30, 1996

6. Project Duration: 1 year

7. Geographic Area: Prince William Sound, AK

8. Contact Person: Graham A.J. Worthy
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Project 95121

INTRODUCTION

Food web dynamics is a central topic of ecology and fisheries and wildlife management. Evaluating the flow of energy between predator and prey is an important process in marine ecosystem dynamics (Platt *et al.* 1981). Until recently, stomach content analysis of dead animals and scat analysis provided the only sources of information on the diet of marine mammals and fish. Although widely used, these techniques have several limitations in both their methodology and results. Such limitations of these techniques provide the initiative to explore alternative methods of determining diets. Although its origins are in geology and geochemistry (Craig 1953; McMullen and Thode 1963; Bowen 1966), the use of naturally occurring carbon and nitrogen stable isotopes have recently come forth as a powerful tool to trace ecosystem dynamics and predator prey relationships.

Previous studies on marine mammals, birds, and fish (Fry 1988; Schell *et al.* 1989; Hobson 1990; Ostrom *et al.* 1993; Abend 1993) using carbon and nitrogen stable isotope tracers have shown that the isotopic composition of a prey is reflected in the tissues of the predator. The trophic level of the predator is also reflected based on its diet (Rau 1983; Hobson 1990; Wada 1991; Ostrom *et al.* 1993). Trophic level refers to the number of successive transfers of energy from resource to consumer. This technique uses differences in the ratios of carbon ($^{13}C/^{12}C$) and nitrogen ($^{15}N/^{14}N$) to trace diet through carbon and nitrogen pathways. The carbon isotope ratio $^{13}C/^{12}C$ indicates the source of the diet, whereas the nitrogen isotope ratio $^{15}N/^{14}N$ reflects the trophic level of the animal (DeNiro and Epstein 1978, 1981; Minagawa and Wada 1984).

An advantage over traditional stomach content analysis is that the ratios of the stable carbon and nitrogen isotopes reflect the actual prey items that assimilate into the predator's tissues over time, providing a more accurate indication of their dietary history. The time course of the dietary history of an animal determined using stable isotope tracers and various tissues will depend upon the turnover rates of the tissue examined. Since individual tissue turnover rates vary based on their metabolism (Thompson 1953), analyses of stable isotopes of different tissues from the predator can provide information on the relative time frame of prey consumption (Tieszen *et al.* 1983). This approach with various fish tissues will depend upon the growth rate of the fish species. Slow growing fish may take years for a change in the isotopic ratio to occur in a tissue, whereas the isotope ratio in a fast growing fish may show up sooner (Hesslein *et al.* 1993).

If the predator consumes multiple foods, isotope values can indicate, but not prove, that a certain type of food was ingested. However, isotope tracers can sometimes prove when a food item was not consumed and assimilated (Gearing 1991). Recently, an additional method has been proposed for understanding marine food webs, even determining prey items and diet of marine mammals, through the use of fatty acid signatures (Iverson 1993). In overview, fatty acids are essentially the building blocks of lipids. Organisms are able to biosynthesize and modify fatty acids, but are subjected to biochemical limitations and differences in these processes depending on the phylogenetic group or even species. Specific fatty acids cannot be synthesized by animals, noted as essential fatty acids, and therefore can only originate from the diet. Lipids from marine organisms are characterized by an exceptionally complex array of fatty

acids and substantial differences in fatty acid composition exist among species and prey types, as well as within species by geographical regions (Cook 1985; Iverson 1993). In carnivores and marine mammals, dietary fatty acids are often deposited in body tissue without modification (e.g. Iverson et al. submitted) and therefore it is possible to trace fatty acids obtained from the diet and to compare arrays in the tissues of the predator to those in the prey consumed.

In addition to fatty acid patterns, fatty acids may sometimes be used as individual tracers. For instance, a study by Hooper *et al.* (1973) indicated that jellyfish were a component of the diet of sunfish (*Mola mola*) on the basis of a single unusual fatty acid which was initially found in leatherback turtles (*Dermochelys coriacea coriacea*) (Ackman *et al.* 1972) whose diet is exclusively jellyfish. The combination of using stable isotope tracers and fatty acid signatures will trace food webs beyond to what is presently possible with existing methods.

However biological markers can also have multiple sources resulting in ambiguous results. The use of stable isotopes or fatty acids may not fully decipher the diet of an animal on their own. The use of a third approach could interpret such data whose resolution is not well defined for successful analysis. This new approach in food web analysis will be the analysis of the isotopic ratio of the fatty acids themselves. This will provide a higher resolution that may differentiate isotopic ratios and fatty acid signatures that are similar. Investigations suggest that the stable isotope compositions of discrete molecular structures more accurately reflect their origin and history than either isotopic composition or structure alone. The higher cost of this analysis preclude the use on a routine basis and will be used to interpret in situation where the results of tracers and signatures are similar.

The strength of the combination of these three methodologies will be the ability to define and identify individual stocks of prey that are being consumed by marine mammals, fish and birds. This would provide valuable data on marine mammal-fishery, bird-fishery interactions and for fisheries management of the specific fish stocks (herring, cod, salmon) that marine mammals and birds may be impacting.

Since predators are not 100% efficient in assimilating all of the biomass ingested, the energy available to the predator from prey must be determined. This will be accomplished by using bomb calorimetry and compositional analysis to determine caloric values. This project will initiate and complement a full study of fish energetics being submitted separately.

NEED FOR THE PROJECT

This study will provide the background data necessary for future studies of food web dynamics and ecology of food resources used by many species (whales, seals, birds and fish) within Prince William Sound. With increasing pressure on our natural resources, especially fisheries, new techniques of life history interpretation and science are needed. The combination of tracer techniques will greatly enhance the knowledge available on the physiological ecology of predator-prey relationships with the Sound.

Project 95121

PROJECT DESIGN

The objectives of this study are to provide baseline diet, energy, and trophic level data of fish species which are prey of marine mammals and birds in Prince William Sound. Knowing the stable isotope ratios, fatty acid signatures, and caloric values of prey fish will further enhance our understanding of the food web structure of Prince William Sound and provide comparative results with stomach analysis.

It is suggested that sampling be conducted a minimum of two seasons when maximum productivity is occurring. Fish species to be sampled would be those that are known prey of marine mammals, seabirds, and large fish species. These would include capelin (*Mallotus villosus*), herring (*Clupea harengus pallasi*), sand lance (*Ammodytes hexapterus*), pollock (*Pollachius virens*), surf smelt (*Hypomesus pretiosus*), squid (*Gonatopsis makka, Berryteuthis magister*), salmon (*Oncorhynchus sp.*), as well as macrozooplankton and euphausiids.

Twelve samples from each species per sampling area would be collected. Samples will be stored frozen and shipped to Texas A&M for processing and analysis. A brief synopsis of the analytical techniques follows.

Isotope Analysis:

Carbon and nitrogen occur naturally in two stable forms. Lighter forms ^{12}C and ^{14}N are more abundant than the heavier isotopes ^{13}C and ^{15}N. The common vernacular is to refer to the heavier isotope concentrations as a ratio in *d* notation in part per thousand noted (ppt) as determined from:

$$dX = [(R_{sample}/R_{standard}) - 1] \times 1{,}000$$

where X is ^{13}C or ^{15}N and R is the corresponding ratio $^{13}C/^{12}C$ or $^{15}N/^{14}N$. For this study, stable isotope values will be measured using a carbon-nitrogen isotope ratio gas mass spectrometer. The stable isotope value of a predator is directly related to its diet as follows:

$$d_{tissue} = d_{diet} + \Delta_{dt}$$

where Δ_{dt} represents the isotopic fractionation factor between dietary and consumer tissue (Hobson 1990). Carbon isotope ratios are similar for marine systems typically differing between prey protein and consumer protein by +1ppt (DeNiro and Epstein 1978; Tieszen *et al.* 1983), while nitrogen isotope ratios differ between dietary protein and consumer tissue by 3-4ppt (Minagawa and Wada 1984; Dickson 1986; Fry 1988).

Fatty acid Analysis:

Tissue samples will be extracted in 2:1 chloroform/methanol (volume/volume) with 0.01% BHT (weight/volume) by the Folch method (Folch *et al.* 1957) as modified by Iverson (1988). Fatty acid methyl esters will be prepared directly from aliquots of the chloroform extract by the addition of borontriflouride in methanol, sealing under nitrogen, and heating at 100°C for one hour. Following transesterification, methyl esters will be extracted and purified in hexane.

Analyses of fatty acid methyl esters will be performed according to Iverson *et al.* (1992) using temperature programmed capillary gas liquid chromatography on a Perkin Elmer Autosystem II Capillary FID Chromatograph fitted with a 30m x 0.25 mm i.d. column (J&W DB-23) and linked to a computerized integration system (Turbochrom 4 software). Identifications of fatty acids and isomers will be determined from known standard mixtures (Nu Check Prep., Elysian, MN) and silver-nitrate chromatography (Iverson 1988; Iverson *et al.* 1992). Fatty acids will be designated by shorthand IUPAC nomenclature of carbon chain length:number of double bonds and location (n-x) of the double bond nearest the terminal methyl group.

Fatty acid data will be analyzed using a multivariate statistic method (tree-based regression models) which has been successfully applied to the analysis of these types of data (Iverson, Smith and Bowen, unpublished data).

Stable isotope-fatty acid analysis:

A gas chromatograph-isotope mass spectrometer will be used to analyze the stable isotope ratios of individual fatty acid molecules. This instrument performs stable carbon isotope analyses of individual compounds separated by gas-chromatography. This technique of using a gas chromatograph-isotope ratio mass spectrometer combines the separatory power of capillary gas chromatography with the precision of an mass spectrometer.

PROJECT IMPLEMENTATION

This proposal is being submitted by the Physiological Ecology Research Laboratory (PERL) of the Marine Mammal Research Program at Texas A&M University-Galveston. The uniqueness and strength of this proposal is the association of PERL with the stable isotope labs at Texas A&M University-College Station, and the fatty acid lab at Dalhousie University, Halifax that will be combining to analyze the samples. Data collected would be available to other agencies involved in restoration projects.

COORDINATION OF INTEGRATED RESEARCH EFFORT

Collection of prey species will be undertaken by NMFS. Sample analysis will be multifaceted within Texas A&M University (Depts. of Marine Biology, Oceanography, and Rangeland Ecology and Management) and Dalhousie University, Halifax, Nova Scotia (Dept. of Biology).

PUBLIC PROCESS

We encourage all aspects of public process of this proposal.

Project 95121

PERSONNEL QUALIFICATIONS

Graham Worthy's research interests relate to the understanding of the physiological ecology of marine mammals through the study of their energetics, growth and nutrition. His research program integrates laboratory and field based investigations utilizing stable and radioisotopes, calorimetry, compositional analyses and radio/satellite tracking techniques in an attempt to elucidate the capabilities of different species to withstand normal seasonal variation in their environment. Worthy's program includes ongoing investigations into the life history parameters and the physiological ecology of manatees, cetaceans, and pinnipeds. The overall program centers around the energy requirements of marine mammals and how the availability and quality of food impacts their survival and growth. To that end Worthy is involved in studies investigating the thermoregulatory capabilities, milk production, water balance, feeding ecology and free-ranging energetics of several important species of marine mammals.

Luis Cifuentes research involves the understanding of oceanographic and estuarine processes using stable isotope tracers. Recently his ecological research with stable isotope tracers has involved the assessment of the stock structure of the king mackerel (*Scomberomorus cavalla*) in the Gulf of Mexico, determination of the source of DDT found in bottle nose dolphins (*Tursiops truncatus*) stranded along the Texas coastline, and the tracing of carbon through the microbial loop. Geochemical and organic chemistry research includes using lipids as tracers of carbon flow in non-photosynthetic ecosystems, application of gas chromatograph isotope ratio mass spectrometer (GC/IRMS) to tracing carbon sources in colloidal organic matter, distribution of stable carbon isotope ratios as an indicator of the source of atmospheric particulate organic carbon, and defining intrinsic tracers of pollutants in the marine environment Cifuentes has over 8 years of experience running mass spectrometers and recently obtained a GC/IRMS through NSF funding, which will be used in this project.

Dr. Thomas Boutton is a specialist in the application of stable isotopes to the study of nutrient cycling, ecophysiology and biological change in the terrestrial environment. Last May, Dr. Boutton sponsored a workshop at TAMU University entitled: "Stable Isotopes: Recent Advances in Plant Biochemistry, Physiology, and Ecology". Among the more than 180 participants were well-known scientists from the US and Canada. Dr. Boutton (see vitae) has been involved in the management and direction of stable isotope laboratories continuously since 1979, and established new laboratories at Augustana College and Texas A&M University.

Sara Iverson has worked extensively on marine mammal fatty acid metabolism. Her early studies led to the development of the use of fatty acid signatures in determining marine food webs. Currently, Iverson has assembled a collaborative group of scientists to work on fatty acids as indicators of diet and to develop statistical models for analysis of such data. This research program is looking at marine mammal/fisheries interactions in eastern Canada, specifically that of harp seals and grey seals in relation to cod and other commercial fish stocks. This program is describing the fatty acid patterns of seals and their prey species as part of a broad ecological survey and is related to the current proposal in that it provides some of the underlying framework and financial support for sample collection and captive studies.

Alan Abend has a broad background in marine and terrestrial wildlife research and husbandry. For his masters degree, he studied the distribution and diet of long-finned pilot whales (*Globicephala melas*) using carbon and nitrogen stable isotopes. This research was, in part, initiated by and reported to the International Council for the Exploration of the Seas Pilot Whale Study Group.

BUDGET

	FY95	FY96
1. Personnel:	$12.3K	$ 4.0K
2. Travel:	$ 4.0K	$ 1.0K
3. Contractual Services:	$ 9.1K	$ 1.3K
4. Commodities:	$ 1.5K	$ 0.5K
5. Equipment:	$ 0.0K	$ 0.0K
6. Capital Outlay:	$ 0.0K	$ 0.0K
7. General Administration:	$ 2.0K	$ 2.0K
8. Indirect Costs (45%):	$13.0K	$ 4.0K
Total Project Costs:	$41.9K	$12.8K

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Exxon Valdez Oil Spill Trustee Council

Restoration Office
645 "G" Street, Anchorage, AK 99501
Phone: (907) 278-8012 Fax: (907) 276-7178

TO: Reviewers

DATE: July 6, 1994

TELE: 278-8012
FAX: 276-7178

FROM: Molly McCammon
Director of Operations

SUBJECT: New Proposals

Five additional proposals were received since the June 15th deadline. Please review these proposals (as time allows), and we will include them in next week's meeting to the extent we are able.

Habitat Protection

95110-Closeout. Closeout: Habitat Protection Data Acquisition and Support: $140,000. This project was included in the Table of Contents of the *Preliminary Review Draft* for $60,000, but the project description was not available at that time.

General Restoration

95115. Sound Waste Management Plan. $275,900. Submitted by Prince William Sound Economic Development Council.

95116. Restoration of Intertidal Oiled Mussel Beds by Non-destructive Manipulation/Flushing with PES-51. $435,186. Submitted by a coalition: PES Services, Inc. Chenega Corporation, UAF, University of California - Santa Cruz, and Foss Environmental Services Inc.

Research

95114. Eelgrass Community Structure Restoration Assessment Using Stable Isotope Tracers. $192,100. Submitted by Prince William Sound Science Center.

95113. Energetics of Intertidal Fish: The connection between lower and upper trophic levels. $392,552. Submitted by UAF

Project 95110 - Closeout

***EXXON VALDEZ* OIL SPILL PROJECT DESCRIPTION**

Project Title: Habitat Protection-Data Acquisition and Support

Principal Investigator: Habitat Work Group

Lead Agency: Alaska Department of Natural Resources

Cooperating Agencies: Alaska Department of Fish and Game; U.S. Department of Interior, Fish and Wildlife Service; U.S. Department of Agriculture, Forest Service

Project Cost: $140K

Project Term: October 1, 1994 to December 31, 1994

Geographic Area of Project: Prince William Sound, Kenai Peninsula, Alaska Peninsula, and Kodiak Archipelago

B. INTRODUCTION

This project is designed to support habitat protection activities of the Trustee Council and is a close-out of project 94110. In 1993 Habitat Protection Work Group conducted a survey and assessment of selected parcels of private land within the oil spill zone. The lands were scored, ranked and mapped using the Trustee Council approved Evaluation Process to determine the value of these areas to injured resources and services and the benefits that could be achieved through habitat protection. The evaluation was done using a variety of available data and information gathered from various agencies and technical experts, data collected during The Nature Conservancy Workshop, Natural Resource Damage Assessment reports, and site reconnaissance field visits.

In 1994, a method was developed for nominating, processing, evaluating and ranking parcels of private land less than 1000 acres, i.e., *The Small Parcel Process*. Responses to the solicitation for nominations of small parcels are currently being processed and evaluated.
Evaluations, starting with field surveys, of large and small parcels submitted this Spring will also continue into the Fall.

C. NEED

The need for the close-out work on project 94110 is to complete evaluations of lands nominated during this summer and fall and to prepare reports. Results of large parcel evaluations will be submitted to the Trustee Council as a supplement to Volume I of the Comprehensive Habitat Protection Process document. The results of the Small Parcel Process will be submitted to the Trustee Council as a separate volume of the Process.

D. PROJECT DESIGN

1. Objectives:

- Evaluation, restoration unit design, scoring and ranking of selected private parcels.

- Mapping of evaluation units.

- Preparation of supplement to Volume I of the Comprehensive Habitat Protection Process document for Trustee Council review and negotiations with landowners.

- Preparation of Volume III *Small Parcel Evaluation and Ranking Comprehensive Habitat Protection Process* for Trustee Council review and negotiations with landowners.

2. Methods:

Existing data and data obtained by HPWG in 1993 and 1994 will be analyzed to fill data gaps to the maximum extent possible. This will include some additional programming, data base management, and GIS work to sort data and to map resource information where appropriate.

Primary and secondary evaluations, for large and small parcels, will be conducted by the HWG using evaluation formats developed by the group.

Comparative Benefit Analysis will be carried out on all parcels or packages of parcels that have completed evaluations and appraisals. This technique, developed in 1994, utilizes appraisal values, parcel or package score and acreage to facilitate the acquisition of those lands that result in the greatest benefit at the lowest cost.

Volume III and the supplement to Volume I will be prepared in a format consistent with Volumes I and II.

3. Schedule

Evaluation and ranking of small parcels will occur during this summer and fall. It is anticipated that negotiations for small parcels will commence in January, 1995. Field surveys of recently nominated large parcels will occur this summer. Evaluation results, including scoring and ranking, of both large and small parcels will be submitted to the Trustee Council in the fall.

4. Technical Support:

The Alaska Department of Natural Resources LRIS group will produce all maps. The HWG will produce all documents.

5. Location:

The analysis will cover all selected lands within the oil spill zone. Lands are located within

Prince William Sound, Kenai Peninsula, Kodiak/Afognak Archipelago and on the Alaska Peninsula.

E. PROJECT IMPLEMENTATION

The proposed project is a continuation of 94110. Habitat protection projects were started in 1992 by the Restoration Planning Work Group and outlined in concept in Volume I of the *Restoration Framework*. Implementation of this project would be by the Habitat Work Group. This group includes four members representing ADNR, USFS, ADF&G and USFWS. The HWG includes three individuals who have been working on the spill since early 1989 and who participated in the genesis and development of habitat protection as a restoration strategy. All four members are authors of the *Comprehensive Habitat Protection Process* report and participated in the development of the *Small Parcel Process*.

F. COORDINATION OF INTEGRATED RESEARCH EFFORT

All habitat protection efforts including this project are dependent upon the results of on-going research and monitoring projects. For example, the Large Parcel Element used information from the anadromous fish stream catalog, colonial seabird catalog, bald eagle nesting maps, and data from Trustee Council funded studies on black oystercatchers, marbled murrelets and pigeon guillemots.

G. PUBLIC PROCESS

The public has reviewed and commented favorably on all habitat protection efforts and has been highly supportive of habitat protection as a major restoration strategy into the future. All reports published as part of the Comprehensive Habitat Protection Process have been reviewed by the public. Input from natural resource and services specialists in the public sector was collected in a workshop conducted by The Nature Conservancy.

H. PERSONNEL QUALIFICATIONS

Resumes of all HWG members are available on request.

I. BUDGET

Personnel	$ 73.2
Travel	6.0
Contractual	48.0
Commodities	2.4
Equipment	0.0
Subtotal	129.6

Project 95110

General Administration	14.3
Total	$ 143.9

95113

SFOS 94-179

PROPOSAL

94936

TO: *Exxon Valdez* Oil Spill Trustee Council
Restoration Office
645 G Street, Suite 402
Anchorage, AK 99501

FROM: School of Fsheries and OceanSciences
P.O. Box 757220
University of Alaska Fairbanks
Fairbanks, AK 99775-7220

TITLE: Energetics of Intertidal Fish: The connection between lower and upper trophic levels

PRINCIPAL INVESTIGATOR: Willard E. Barber
Associate Professor
SS# 527-50-6406

NEW/CONTINUING: New

PROPOSED START DATE: October 1, 1994

PROPOSED DURATION: 2 Years

AMOUNT REQUESTED: $396,552

Willard E. Barber/R² 6/22/94
Willard E. Barber /Date
Principal Investigator
(907) 474-7177

6/24/94
Vera Alexander /Date
Dean
School of Fisheries and Ocean Sciences

Joan Osterkamp 6-23-94
Joan Osterkamp /Date
Executive Officer
School of Fisheries and Ocean Sciences

Ted DeLaca /Date
Director, Office of Arctic Research
University of Alaska Fairbanks

Project 95113
SFOS 94-179

ENERGETICS OF INTERTIDAL FISH:

THE CONNECTION BETWEEN LOWER AND UPPER TROPHIC LEVELS

Project Leader:	W. E. Barber, Associate Professor School of Fisheries and Ocean Sciences University of Alaska Fairbanks Fairbanks, AK 99775-7220
Cost:	FY 95 - $140,284 FY 96 - $147,580 FY 97 - $108,688
Start-up/Completion:	1 January 1995 to 1 June 1997
Duration:	3.5 years
Geographic Area:	Prince William Sound and Cook Inlet
Contact:	W. E. Barber, Ph. D. School of Fisheries and Ocean Sciences University of Alaska Fairbanks Fairbanks, AK 99775-7220 (907) 474-7177; FAX 474-7204

Introduction:

The recent emphasis on understanding ecosystem processes to interpret the influenced of the Exxon Valdez oil spill on the numerous impacted species, and their recovery, has brought to the forefront the interaction between forage species and their predators. A number of the impacted birds and mammals prey not only on subtidal and pelagic organisms fishes but also those inhabiting the intertidal area. This is particularly true of the pigeon guillemot and river otter. The intertidal area bore the brunt of the spill, impacting plants, invertebrates, and fishes. To understand the influence of the spill on species such as these and their recovery, from an ecosystem perspective, intertidal fishes must be considered and incorporated into models developed. This study proposes to study the bioenergetic aspects of the three fish species inhabiting the intertidal area of Prince William Sound utilized by pigeon guillemot and river otter.

Objectives:

1. Determine the seasonal changes in energy content of the high cockscomb prickleback ((Anoplarchus purpurescens), the cresent gunnel (Pholis ornata), and the tidepool sculpin (Oligocottus maculosus).
2. Determine prey organisms of these three fish species.
3. Determine the energy content of major prey species of these three intertidal fish species.

Methods and Materials:

Energy content (kJ/g), percent water, total energy (kJ), will be determined for the major body components (gonads, body, gastrointestinal tract, and liver) will be determined. This will be done for four size groups of each species and four seasons. For the four seasons foods will be determined and for the major prey species energy content determined for each species. Samples will be dried and energy determined using a Parr adiabatic bomb calorimeter following standard methods.

Budget:	FY95	FY96	FY97
SALARIES	103.8	109.9	80.7
TRAVEL	6.6	6.6	5.3
CONTRACTUAL	2.5	2.5	3.2
COMMODITIES	4.0	4.0	1.4
EQUIPMENT	0.0	0.0	0.0
SUBTOTAL	116.9	122.9	90.6
ADMINISTRATIVE COSTS	23.4	24.7	18.1
TOTAL	140.3	147.6	108.7

Abstracted Qualifications

Education:

Arizona State University, 1961-1967; B.A. and M.S.

Michigan State University, 1967-1970; Ph.D.

Experience:

Assistant and Associate Professor, School of Fisheries and Ocean Sciences, 1976 to present.

Project Leader, Fisheries and Wildlife Division, Victoria (Australia), 1975-1976.

Research Scientist and Officer in Charge, Commonwealth Scientific Industrial Research Organization, Brisbane, Australia, 1971-1975.

Example Publications:

Barber, W. E., M. Vallarino, and W. P. Erickson. Manuscript. The biology and impact of the Exxon Valdez oil spill on the biology of the high cockscomb in Prince William Sound, Alaska. Marine Biology Progress Series, Submitted.

Barber, W. E., L.L. McDonald, W. P. Erickson, and M. Vallarino. Manuscript. Effect of the Exxon Valdez Oil Spill on Intertidal Fish: a Field Study. Transactions of the American Fisheries Society, in press.

West, R. L., M. W. Smith, W. E. Barber, J. B. Reynolds, and H. Hop. 1992. Autumn migration and overwintering of Arctic Grayling in coastal streams of the Arctic National Wildlife Refuge, Alaska. Transactions of the American Fisheries Society 121:709-715.

Barber, W. E., and J. N. Taylor. 1990. The importance of goals, objectives, and values in the fisheries management process and organization: a review. North American Journal of Fisheries Management 10:365-373.

Project 95113
SFOS 94-179

Budget
FY95

SALARIES AND BENEFITS			
Wages	***Mos.***		
Barber, W.	2.00	$13,892	
Smith, R.	2.00	$15,528	
Technician	6.00	$21,565	
Ph.D. Student	12.00	$16,247	
Leave Accrual			
Barber, W.		$2,792	
Smith, R.		$3,121	
Technician		$4,615	
Ph.D. Student		$0	
Benefits			
Barber, W.		$4,888	
Smith, R.		$5,464	
Technician		$10,655	
Ph.D. Student		$0	
TOTAL SALARIES AND WAGES			$98,767
TRAVEL			
4 R/T Fairbanks-Cordova (@$300/trip)		$1,200	
Per diem - Cordova (12 days @$103/day)		$1,236	
3 R/T Fairbanks-Anchorage (@$300/trip)		$900	
Per diem - Anchorage (12 days @170/day)		$2,040	
4 R/T Anchorage-Seward (@$300/trip)		$1,200	
R/T Fairbanks-National Meeting			
Per diem - Meeting (5 days @$140/day)			
TOTAL TRAVEL			$6,576
SERVICES			
Communications (FAX, phone, photocopy, etc.)		$400	
Report Preparation (@$35/hour)		$2,100	
TOTAL SERVICES			$2,500
SUPPLIES			
Jars		$300	
Chemicals		$1,000	
Office		$100	
Miscellaneous lab glassware		$500	
Standards		$1,000	
Preservatives		$1,100	
TOTAL SUPPLIES			$4,000
EQUIPMENT			
None requested			
TOTAL EQUIPMENT			$0
TUITION			
2 Semesters		$5,060	
TOTAL TUITION			$5,060
TOTAL DIRECT COSTS			$116,903
INDIRECT COSTS			$23,381
TOTAL FUNDING REQUESTED			$140,284

Project 95113
SFOS 94-179

Budget
FY96

SALARIES AND BENEFITS			
Wages	***Mos.***		
Barber, W.	2.00	$14,585	
Smith, R.	2.00	$16,304	
Technician	6.00	$22,647	
Ph.D. Student	12.00	$18,197	
Leave Accrual			
Barber, W.		$2,932	
Smith, R.		$3,277	
Technician		$4,846	
Ph.D. Student		$0	
Benefits			
Barber, W.		$5,132	
Smith, R.		$5,737	
Technician		$11,190	
Ph.D. Student		$0	
TOTAL SALARIES AND WAGES			$104,847
TRAVEL			
4 R/T Fairbanks-Cordova (@$300/trip)		$1,200	
Per diem - Cordova (12 days @$103/day)		$1,236	
3 R/T Fairbanks-Anchorage (@$300/trip)		$900	
Per diem - Anchorage (12 days @170/day)		$2,040	
4 R/T Anchorage-Seward (@$300/trip)		$1,200	
R/T Fairbanks-National Meeting			
Per diem - Meeting (5 days @$140/day)			
TOTAL TRAVEL			$6,576
SERVICES			
Communications (FAX, phone, photocopy, etc.)		$400	
Report Preparation (@$35/hour)		$2,100	
TOTAL SERVICES			$2,500
SUPPLIES			
Jars		$300	
Chemicals		$1,000	
Office		$100	
Miscellaneous lab glassware		$500	
Standards		$1,000	
Preservatives		$1,100	
TOTAL SUPPLIES			$4,000
EQUIPMENT			
None requested			
TOTAL EQUIPMENT			$0
TUITION			
2 Semesters		$5,060	
TOTAL TUITION			$5,060
TOTAL DIRECT COSTS			$122,983
INDIRECT COSTS			$24,597
TOTAL FUNDING REQUESTED			$147,580

Project 95113
SFOS 94-179

Budget
FY97

SALARIES AND BENEFITS			
Wages	***Mos.***		
Barber, W.	2.00	$15,313	
Smith, R.	1.00	$8,559	
Technician	3.00	$11,890	
Ph.D. Student	12.00	$18,197	
Leave Accrual			
Barber, W.		$3,078	
Smith, R.		$1,720	
Technician		$2,544	
Ph.D. Student		$0	
Benefits			
Barber, W.		$5,389	
Smith, R.		$3,012	
Technician		$5,875	
Ph.D. Student		$0	
TOTAL SALARIES AND WAGES			$75,577
TRAVEL			
4 R/T Fairbanks-Cordova (@$300/trip)		$1,200	
Per diem - Cordova (12 days @$103/day)		$1,236	
3 R/T Fairbanks-Anchorage (@$300/trip)		$900	
Per diem - Anchorage (12 days @170/day)			
4 R/T Anchorage-Seward (@$300/trip)			
R/T Fairbanks-National Meeting		$1,300	
Per diem - Meeting (5 days @$140/day)		$700	
TOTAL TRAVEL			$5,336
SERVICES			
Communications (FAX, phone, photocopy, etc.)		$400	
Report Preparation (@$35/hour)		$2,800	
TOTAL SERVICES			$3,200
SUPPLIES			
Jars			
Chemicals		$200	
Office		$100	
Miscellaneous lab glassware		$500	
Standards		$600	
Preservatives			
TOTAL SUPPLIES			$1,400
EQUIPMENT			
None requested			
TOTAL EQUIPMENT			$0
TUITION			
2 Semesters		$5,060	
TOTAL TUITION			$5,060
TOTAL DIRECT COSTS			$90,573
INDIRECT COSTS			$18,115
TOTAL FUNDING REQUESTED			$108,688

Project 95114

A

EXXON VALDEZ OIL SPILL
Brief Project Description

Project Title:	Eelgrass Community Structure Restoration Assessment Using Stable Isotope Tracers
Name of Principal Investigator:	Dr. Thomas C. Kline, Jr. Prince William Sound Science Center
Lead Agency:	Alaska Department of Fish and Game
Cost of Project :	$ 192.1K
Project Start-up Date:	March 1995
Duration of Project:	One year
Geographic Area:	Western Prince William Sound
Contact Person:	Joe Sullivan

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B. Introduction.

Stable isotope ratios of carbon ($^{13}C/^{12}C$) can serve as effective tracers of energy supply in the study area due to conservative transfer of carbon isotope ratios between the lower tropic levels (primary producers such as eelgrass, invertebrates, and forage fishes, etc.) of Prince William Sound waters up to the top consumers. Isotope ratio analysis of harmed species, their prey and their predators can provide insight into both habitat usage and assist in quantifying amounts of food derived from various areas. Nitrogen stable isotope ratios ($^{15}N/^{14}N$), in turn, provide excellent definition of relative trophic level. The heavy isotope of nitrogen is enriched by about 0.34 % with each feeding process and thus can accurately indicate the relative trophic status of species within an ecosystem. The combined use of $^{15}N/^{14}N$ and $^{13}C/^{12}C$ measurements can be used to reconstruct food web structure. The data obtained from these measurements are unique in that they trace material actually assimilated and thus can be used for more accurate ecosystem modeling.

It can be postulated that natural stable isotope abundance of Prince William Sound (PWS) biota will shift because of changes in trophic level, food web structure, and primary producer in the context of species and community recovery following the Exxon Valdez Oil Spill (EVOS), thus providing an independent tool to verify, quantify and model ecosystem processes during ecosystem recovery and restoration. The tracer nature of the approach will enable the integration of ecosystem components. It will enable us to monitor both "top down" (predatory) and "bottom up" shifts (food supply) during recovery and restoration of harmed species and habitats.

This project is part of an interdisciplinary effort focused on the food web dynamics of eelgrass beds in PWS. The study is providing an integrating function to projects focusing on several levels in the food chains and will employ the stable isotope ratios of carbon and nitrogen to trace trophic transfers of carbon and nitrogen between levels. One focus will concern building the data base regarding eelgrass communities whereas the remaining work will seek to build a comprehensive base of isotopic data for the PWS region. In cases where regional gradients in isotope ratios exist, it may also be possible to identify critical habitats used by marine biota.

This project is designed to supplement the on-going EVOS eelgrass community monitoring project that is under the direction of Stephen C. Jewett (UAF), the FY95 BPD is already submitted. The stable isotope analysis in this project is anticipated to provide that project an added dimension for use in collaborative data interpretation.

C. Need for Project

The eelgrass community is a significant habitat for the production of terrestrial and aquatic species harmed by EVOS. In addition to the flora, harmed species include epi- and infauna of eelgrass beds as well as transient terrestrial and

Project 95114

aquatic organisms that use the habitat or feed there. The restoration strategy has been to allow the natural recruitment processes re-establish the eelgrass communities. However, the eelgrass and other intertidal to subtidal communities contain organisms that are recovering from EVOS as well as species that are not recovering. In a holistic sense, these communities are not at their pre-spill status. Thus, there is a need to assess the recovery of community structure within eelgrass communities. In particular, there is a need to compare epifauna (e.g. amphipods) in control and oiled areas because of their role as forage for higher trophic levels. The rebound and then return to damaged state by several community species, including amphipods, suggests that although populations may appear to temporally recover, the ecological balance in terms of interorganismic relationships has not. Thus techniques such as natural stable isotope abundance that reveal ecological relationships must supplement studies that focus on assessing population size and structure. This will enable an assessment of restoration not otherwise possible. This assessment could then lead to modifications or development of new restoration strategies based re-establishing normal ecological roles of different species.

A further benefit of this project is that it will provide the needed littoral isotopic signatures for use in conjunction with concurrent pelagic studies to assess the roles of different communities in the recovery of motile species, e.g herring and salmon. This project will also provide an isotopic signature database of forage biota for projects concerned with higher trophic levels (birds and mammals) enabling then to interpret their data.

D. Project Design

1. Objectives:

1.1 Hypotheses.

Hypothesis 1. Carbon and nitrogen stable isotope ratios of biota from Prince William Sound can be used to identify major food sources to top trophic levels and to assign trophic positions to specific consumers of given age classes and habitat.

Hypothesis 2. Isotope ratios in consumers provide a means to validate conceptual food web structures, identify trophic variability by individuals within species, and to validate quantified energy flows in ecosystem models.

1.2 Specific objectives of this project are:

1.2.1. To determine the $^{15}N/^{14}N$ and $^{13}C/^{12}C$ of species collected from oiled and unoiled sites in the stratified sampling design specified in the proposal "Subtidal Monitoring: Eelgrass Communities", Principal Investigator Stephen C. Jewett. These paired site comparisons will be used to assess recovery from the EVOS by comparing food web structure as determined by stable isotope abundance in conjunction with the approach specified in the Jewett proposal.

Project 95114

1.2.2. Synthesize the data obtained in context with conceptual food webs to validate feeding models and expand to other isotope studies being conducted in PWS by Kline and others.

2. Methods.

2.1 Design/Strategy.

Because this project will be done in collaboration with Jewett, sampling will follow his strategy. Briefly, sampling will be conducted at four oiled and four control eelgrass sites. This will enable comparison of site effects and oil effects on community structure. Obtaining isotopic signatures of biota from several littoral sites will also be useful in synthesis of this projects results with those of projects form the adjacent pelagic habitats (PWS system investigations)

2.2 Analytical methods.

The methodology involved in the isotopic analyses and the interpretation of the data are well-established and documented in several publications resulting from prior work of the Principal Investigator. The UAF Stable Isotope Facility has three isotope ratio mass spectrometers including a new automated system which facilitates faster sample processing and allows more replication in small samples.

Field sampling protocols are well established and will be used. Predator isotopic data will be compared with values obtained from prey species in the same habitats. Where samples of prey species are missing or few, we will try to select proxy samples from the same area (zooplankton, benthos) which will enable a similar comparison. After the isotopic values are in hand, we will synthesize the data with past unpublished data and with other literature isotope ratio values to establish a trophic model.

3.Schedules.

Field activities will take place during a two-week cruise in July 1995 as planned by Jewett. Preliminary sample preparation will take place during the cruise followed by laboratory preparation for mass spectrometry at the Prince William Sound Science Center. Mass spectrometric analysis will take place at the UAF stable isotope facility with completion anticipated in December, 1995. The completion of the draft final report is anticipated during February 1996.

4. Technical Support.
Technical Support is being provided for this project through the Jewett project.

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Additional support will come from the University of Alaska Stable Isotope facility; N. Haubenstock will receive prepared samples from Dr. Kline and will report the data to Dr. Kline.

5. Location.

A total of 4 oiled (O) and 4 control (C) sites will be sampled per the Jewett proposal. The paired sites are as follows: Bay of Isles (O) / Drier Bay (C); Herring Bay (O) / Lower Herring Bay (C); Sleepy Bay (O)/ Moose Lips Bay (C); and Clammy bay (O)/ Puffin Bay (C). Analytical work will be carried out using the stable isotope facility at UAF. Sample preparation for stable isotope analysis and data interpretation will take place at the Prince William Sound Science Center.

E. Project Implementation

This project is derived from the Jewett project that has been implemented by ADF&G for the past three years.

F. Coordination of Integrated Research Effort

This project will coordinate via Jewett with the monitoring of oil in subtidal (<20 m) sediments (conducted by NOAA). These projects have several sites in common. This project will also coordinate with other stable isotope projects in the EVOS studies.

G. Public Processes

Results of thie project will be made available to the public via:

1. Final report. A final report will be provided. Technical results in these reports will be shared with EVOS collaborators. Thus they will be apprised of the development of the stable isotope methodology and will provide feedback to the investigators such that areas of their interest will be addressed.

2. Peer-reviewed publications. Peer-reviewed publications will be generated throughout the course of this project. Papers describing isotopic ecology at the species or site level will be generated depending on the outcome of results. Synthesis papers will combine results from species and site level papers and work of other authors. Later papers will bring together results from collaborators.

3. Papers at scientific society meetings. Support is requested for T. Kline to attend at a minimum, one national-level scientific meeting per year, e.g. ASLO to present an above paper and to discuss results with colleagues at other institutions.

4. Public lectures. Through our interactions with our colleagues and other organizations, we conduct lectures to inform the general public on the research being conducted as it affects them. An example was a lecture given by T. Kline at the community college in Barrow on his stable isotope research. These outreach efforts in addition to proving public service, greatly aid in public relations of funding agencies. In this spirit, public lectures will be given as opportunities to do so present themselves.

H. Personnel Qualifications

Dr. Thomas C. Kline, Jr, Principal Investigator and Research Scientist at the Prince William Sound Science Center will be responsible for the implementation of this stable isotope study which will be conducted in close collaboration with the eelgrass project being supervised by Stephen C. Jewett of the University of Alaska Fairbanks. We will be collaborating during data synthesis and interpretation and the writing of reports and scientific papers. We have in the past collaborated on subtidal projects including the development of techniques related to assessment of the EVOS. Dr. Kline's expertise lies in the use of natural stable isotope abundance in aquatic ecological settings. He has been or is involved in stable isotope aquatic ecology studies in southeastern Alaska, Prince William Sound, the Kenai Peninsula, Kodiak Island, Bristol Bay, and the Arctic Coastal Plain. New approaches in the use of $^{15}N/^{14}N$ and $^{13}C/^{12}C$ abundance in fisheries ecology settings have been a product of his research studies. Dr. Kline is also an active scientific diver in the University of Alaska Scientific Diving Program.

I. Budget Summary

	FY95	FY96	Project Total
1. Personnel	34.4	34.0	68.4
2. Travel	1.8	7.1	8.9
3. Contractual Services	33.0	1.5	34.5
4. Commodities	6.0	2.0	8.0
5. Equipment	35.1	0.0	35.1
6. Capital Outlay	0	0	0
7. General Administration	26.5	10.7	37.6
	136.8	55.3	192.1

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Project 95115

EXXON VALDEZ TRUSTEE COUNCIL
FY '95 GENERAL RESTORATION DESCRIPTION

A. TITLE PAGE

Project Title: Prince William Sound Restoration Strategy: Sound Waste Management Plan (SWMP)

Project Leader: Kelley Weaverling, Chair, PWSEDC Solid Waste Management Committee

Lead Agency: Alaska Department of Environmental Conservation

Cooperating agencies:
Prince William Sound Economic Development Council
City of Cordova
City of Valdez
City of Whittier
Alaska Department of Environmental Conservation
Alyeska Pipeline Service Company
Valdez Fisheries Development Association (VFDA)
Prince William Sound Aquaculture Corporation (PWSAC)
Prince William Sound Conservation Alliance (PWSCA)

Cost of Project: FY '95 - $275,900

Project Start-up / Completion Dates: FY '95 - November 1, 1994 - August 1, 1996

Duration: 1 - 2 years, starting with FY '95

Geographic Area: Prince William Sound

Contact Person:

Kelley Weaverling
Vice President
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-or-

Paul A. Roetman
Executive Director
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Project 95115

Prince William Sound Restoration Description:
Sound Waste Management Plan (SWMP)

B. INTRODUCTION

The Sound Waste Management Plan (SWMP) is a comprehensive plan to identify and remove existing oily and other solid waste from the waste stream, of the oil-impacted communities of Prince William Sound. The plan will improve upon current waste management and join past efforts into a unified regional effort. The SWMP, will put into action an oily and solid waste management system that will operate in all Prince William Sound communities to eliminate the potential for further encroachment or damage to the local ecology.

Problem:

Currently each community in Prince William Sound is out of compliance with federal regulations as it relates to permitting of waste sights. There are no regional goals for managing, reducing and handling of oily and solid waste. Because there is no plan, Prince William Sound is at a potential risk to further environmental harm. Prince William Sound Economic Development Council's regional Solid Waste Management Committee was formed, therefore as a task force of the area's largest contributors of waste. This included both cities, villages, industry, and hatchery representatives. They identified the following regional problems:

1. Costs to manage and handle oily and solid waste continue to rise and tap declining revenue resources.
2. Existing landfills have limited life spans.
3. There is no long term solution in sight.

Solution:

A three phase approach is needed to: 1. identify 2. reduce the cost of handling oily and solid waste, and 3. implement an oily and solid waste management plan.

Phase I will identify the options and most cost-effective means for handling and managing oily and solid waste in Prince William Sound. The PWSEDC regional committee will contract a firm to accomplish this phase;
Phase II will handle all required ADEC/EPA permitting to implement a regional management project, and
Phase III is the implementation of the SWMP that includes construction of the identified, chosen project i.e. regional landfill, regional incineration, etc.

*** It is important to note that as a regional project, local input and coordination is crucial to the long-term success of the SWAMP project by creating local ownership. This proposal was developed and intended to be coordinated by PWSEDC's Solid Waste Management Committee in cooperation with ADEC.**

The EVOS Trustee Council has funded a similar project, number 94417 entitled "waste oil disposal facilities." The SWMP broadens that project approach and greatly increases the effectiveness of enhancement and restoration efforts due to its regional coverage, local expertise and long term monitoring.

Funding for SWMP will allow an effective and necessary approach to enhancement, clean-up and collection of valuable data as it relates to oily and solid waste management in Prince William Sound in 1995. The SWMP will restore, enhance and promote long-term preservation of Prince William Sound from the effects of oily and solid waste. This document describes the plan of work to be undertaken during FY '95

C. NEED FOR THE PROJECT

To further enhance, improve the rate of natural recovery of, and reduce future events of marine pollution in Prince William Sound, the SWMP, is crucial. To ensure the protection and preservation of the Prince William Sound oil-impacted region, implementation of this plan is needed. Under EVOS Designated Wilderness Area objectives, "any restoration objective which aids recovery of injured resources, or prevents further injuries, will assist recovery of these areas." This is the SWMP focus.

The current primary waste stream for oily waste are local harbors. From boats, both domestic waste water (sewage) and oily waste are discharged directly into Prince William Sound. The secondary stream is smaller in direct amounts, but no less damaging to the oil-impacted environment. This includes leechates from community landfills that contribute to the total impact of waste to the local ecology. To add to this, all area landfills in Prince William Sound including both cities and villages are out of compliance with federal regulations. **The SWMP is the only regional effort identified to date that could provide a solution to oily and solid waste management in Prince William Sound.**

D. PROJECT DESIGN

1. Objectives:

The development of the Sound Waste Management Plan (SWMP) originated with Prince William Sound Economic Development Council's regional Solid Waste Management Committee. The primary objectives include the development and implementation of a regional strategy to limit the exposure of hazardous waste material in oil-impacted communities in Prince William Sound. The SWMP will provide a design and recommend an oily and solid waste collection and disposal alternative and provide a plan for future management of oily and solid waste in Prince William Sound. The following outlines the objectives to be accomplished in FY '95:

a) Gather background information on the composition and rate of oily and solid waste generation in Prince William Sound

b) Analyze waste management processing and disposal alternatives and select the most appropriate solution for Prince William Sound

c) Address regulatory requirements

d) Establish public participation program to understand and address community concerns and needs

Project 95115

e) Analyze oily and solid waste reduction and recycling options

f) Evaluate sites for a new regional landfill

g) Develop cost estimates for oily and solid waste management alternatives

h) Recommend financial planning to fund oily and solid waste services

2. Methods:
The SWMP will include a scoping of the current Prince William Sound situation by qualified firm. This scoping will determine both the options and costs related to each in implementing a regional oily and solid waste management system.

3. Schedule:
(FY 95 - Plan of Work)
Phase I

Nov 1	Distribute Request for Proposals (RFP's) for regional oily and solid waste management plan.
Dec 1	Coordinating meeting (Review of submitted proposals)
Jan 1995	Select consulting firm and draft contract
Feb 1	Coordinating meeting (contractor and committee)
Mar 1	Review of scoping firm's draft plan findings with PWSEDC Solid Waste Committee comments.
Apr 1	Public Review of findings (held in each PWS community)
Apr 2	Determination of most efficient and cost effective regional oily and solid waste system.

Phase II

Apr 1	Start process for implementation of regional oily and solid waste system.
Apr 15	Scope ADEC/EPA permitting for project implementation
Jun 1	Committee review and evaluation of FY 95 Work Plan.
July 15	Meeting to review draft ADEC/EPA permits
Aug 15	Submit ADEC/EPA permit
Oct 1	Meeting with ADEC/EPA about questions on permit
Nov 1	Submit revised permit

Project 95115

Jan 1996 Coordinating meeting

Phase III

May 1 Initiate construction of permitted facility

Aug 1 Facility complete and operational

4. Technical Support:
Prince William Sound Economic Development Council's Solid Waste Management Committee will play both an evaluative and advisory role to the scoping firm.

5. Location: Prince William Sound

E. PROJECT IMPLEMENTATION

To maintain the direct link from development and implementation of the SWMP, Prince William Sound Economic Development Council's regional Solid Waste Management Committee is the only appropriate entity to implement this regional project. Alaska Department of Environmental Conservation will additionally play an advisory, and coordinating role with the Committee's efforts.

F. COORDINATION OF INTEGRATED RESEARCH

The SWMP program is a coordinated effort of the Prince William Sound Economic Development Council in cooperation with: Department of Environmental Conservation, Alyeska Pipeline Service Company, Chugachmiut, Valdez Fisheries Development Association, Prince William Sound Aquaculture Corporation, Prince William Sound Conservation Alliance, the City of Valdez, the City of Whittier, the City of Cordova, and the Villages of Tatitlek and Chenega.

G. PUBLIC PROCESS

Public involvement has been of the highest priority to all PWSEDC Solid Waste Management Committee meetings. In order to provide a representative cross-section of all Prince William Sound, each community is represented, including both fishing and petroleum industry representatives. The process will continue with public review at local city council and tribal council meetings for comment of the SWMP. An integral part of the SWMP is community education on oily and solid waste issues.

H. PERSONNEL QUALIFICATIONS

Each member of PWSEDC's Solid Waste Management Committee through both experience and knowledge contributes to the overall effectiveness of the SWMP (see committee list appendix A). The expertise of the scoping firm will be procured through the bid process, requiring an evaluative application process.

Project 95115

I. BUDGET (FY '95)

1. Personnel

Phase I & II

PWSEDC will staff and coordinate project efforts	$ -0-

Phase III

To be determined

2. Travel

Phase I & II

10 trips for Solid Waste Committee Members	
14 members @ $200 for airfare	$ 28,000
Room & Board @ $120/day	$ 16,800
2 air trips to Anchorage for 5 principal investigators	$ 2,000
7 days time for 5 principal investigators @ 150/day	$ 5,250

Phase III

To be determined

3. Contractual Services

Phase I

Engineering Consulting Fees	$ 100,000
Accounting Services - project audit	$ 3,500
Teleconferencing fees 10 @ 150	$ 1,500
Copy costs- quarterly reporting @ 200	$ 800

Phase II

Permitting for project implementation	$ 100,000

Phase III

To be determined

4. Commodities

N/A

5. Equipment

N/A

6. Capital outlay

N/A

7. General administration (including environmental compliance)

Phase I & II

7% Administrative Support and Coordination	$ 18,050

Phase III

To be determined

Total Phase I & II	**$ 275,900**

Project 95115

Prince William Sound Economic Development Council

P.O. Box 2353 • Valdez, Alaska 99686
Phone: 835-3775 • Fax: 835-5770
Representing the communities of Chenega Bay, Cordova, Tatitlek, Valdez and Whittier.

Solid Waste Management Committee

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Project 95116

RESTORATION OF INTERTIDAL OILED MUSSEL BEDS BY NON-DESTRUCTIVE MANIPULATION/FLUSHING WITH PES-51®.

Project Team

PES Services, Inc. Chenega Corporation, University of Alaska Fairbanks, University of California - Santa Cruz, Foss Environmental Services, Inc.

Submitted by

Stephen R. Rog and Dennis C. Owens
PES Services, Inc.
Anchorage, AK and San Antonio, TX

June 30, 1994

Project 95116

A. COVER PAGE

1. Project Title: Restoration of Intertidal Oiled Mussel Beds by Non-Destructive Manipulation/Flushing with PES-51®.

2. Project Leader: Mr. Stephen R. Rog

3. Lead Organization:
PES Services AK, Inc.
552 W. 58th, Unit E
Anchorage, AK 99518
Phone: (907) 562-8881
Fax: (907) 562-8883

4. Cost of Project: Cost Estimate - $453,186 for FY95

5. Project Startup/Completion Dates:
Startup: July, 1995
Completion: July, 1996

6. Project Duration: One (1) Year

7. Geographic Area: Chenega Island area

8. Contact Person:
Dennis C. Owens
PES Services, Inc.
P.O. Box 680488
San Antonio, TX 78268-0488
Phone: (210) 680-2950
Fax: (210) 523-5700

B. INTRODUCTION

This project will focus on restoration of the mussel beds in the Chenega area, and as a result contribute to the recovery of injured resources that use these mussels as a food source, e.g. harlequin ducks, sea otters and black oystercatchers. In addition, these mussels are an integral component of the subsistence of humans residing in the Prince William Sound area. These mussel beds were impacted by the 1989 Exxon Valdez oil spill. The Chenega area remains as one of the sites of the most persistent heavy and medium oil residue concentrations (1993 Shoreline Assessment sponsored by the Exxon Valdez Trustee Council). A team of companies and universities to be led by PES Services proposes to work with the Trustees Council and the Alaskan Department of Environmental Conservation (ADEC) on this project. The project will be conducted to demonstrate the efficacy of a non-destructive manipulation/flushing method using PES-51® to remove the oil found in mussel beds and to demonstrate that this method is not toxic to the mussels or other resident fauna. This project builds on the successful demonstration of PES-51® for the removal of persistent oil from a rocky shoreline in Prince William Sound as was funded by the Hazardous Substance Spill Technology Review Council (HSSTRC) in 1993. The shoreline project also demonstrated that there were no observable acute toxic effects from PES-51® on the mussels and other invertebrate fauna observed near the treatment site. It is reasonable to propose, therefore, that PES-51® application to oiled mussel beds will be effective while not being toxic to the mussels and other resident fauna.

Dense clusters of the blue mussel, *Mytilus edulis*, occur on rocky shores throughout the region impacted by the Exxon Valdez oil spill that began in March of 1989. Mussels secrete byssal threads which enable them to attach to the substrate. In addition to providing stability, the matrix of threads extending from a bed of mussels, forms an environment that offers shelter for a diverse mix of marine invertebrates. These other fauna find shelter from wind, waves and sunlight within the mussel threads.

It is documented that liquid oil persists in the sediments and organic materials that compose the mussel beds in the Chenega area (Piper,E. and Gibeaut,J.,1993). These oiled mussel beds offer the opportunity to evaluate the efficacy of new shoreline treatment technology, like PES-51®, to restore these beds and to establish baseline information for future oil spills. Currently, there is no established best method for removal of the oil from within oiled mussel beds. It is, therefore, important to take this opportunity to develop a method of effectively and efficiently removing the oil while not damaging the mussel bed.

C. NEED FOR THE PROJECT

This project is being undertaken to demonstrate the efficacy of a non-destructive/flushing methodology utilizing PES-51® to remove oil persisting in mussel beds in the Chenega Island area. The impact of these oiled mussel beds is evident from information provided in the "Invitation to Submit Restoration Projects for Fiscal Year 1995" in response to which this proposal is submitted:

> "Oil trapped in the sediments beneath certain mussel beds has degraded slowly and has retained toxic components since the spill. The protected beds are one of the few sources of unweathered oil remaining from the oil spill. This oil may be a route for continued exposure and contamination to higher trophic levels such as harlequin ducks that feed on the mussels."

This project will demonstrate that this new shoreline cleaning technology is a minimally intrusive manipulative technique that will remove oil from beneath oiled mussel beds and accelerate natural attenuation processes without harming the mussels and other resident fauna. Restoration of the mussel beds to their pristine condition will enable ADEC to determine whether removal of the persistent oil in the mussel beds is a critical factor in speeding up the recovery of harlequin ducks sea otters and black oystercatchers.

Project 95116

D. PROJECT DESIGN

1. **Objective**: To evaluate the effectiveness of a new shoreline cleaning technology, using PES-51®, to remove oil from an impacted mussel bed and to demonstrate the potential impact of this removal methodology on the mussels and the fauna residing in the nearshore/shoreline.

2. **Methods**: The overall design and performance of the project is shown in Table 1. The project site design will depend in part on the size of oiled mussel beds available for the project. The candidate mussel bed will be selected by the Trustees Council in conjunction with regulatory and recovery agencies, e.g. ADEC, NOAA, etc. If the area is relatively limited, the design will include two mussel bed areas; one oiled bed and another nearby that has no evidence of retained oil (control area). Each of these beds will be divided into three plots; one to be treated with the PES-51® methodology, one that will be treated, but without PES-51®, while the third is left untreated. These six plots will enable us to evaluate the efficacy of the PES-51® on oiled mussel beds as well as the potential for toxicity on mussels and other resident fauna in oiled and non-oiled beds. Measures will be undertaken to minimize the possibility of PES-51® migrating from treated plots to untreated ones. The second approach to be used, if the beds are large enough, will have a randomized block design and include test and control blocks. Choice between these two designs will be made during an initial visit by representatives of the project team and the Trustees Council. With either design, mussel bed, water column and lower and middle tidal zone sediment samples will be obtained for analyses prior to and after treatment with the PES-51® methodology.

Post treatment samples will be obtained at least at one and seven days with other sample times to be determined by the UAF and UCSC associate investigators: One day samples will be analyzed for the potential toxicity on mussels and other resident fauna, whereas the seven day sample will also be analyzed for impact on microbial populations. Subsequent samples are likely to be proposed for the last possible date that access is permitted to the site due to winter weather and then the following spring.

Mussel bed samples will be obtained from the proposed oiled and control areas using the NRDA methods and prepared for hydrocarbon and biological analyses. Hydrocarbon analyses will be conducted on these samples by the Zymax Envirotechnology, Inc. of San Luis Obispo, CA using gas chromatography/mass spectrometry techniques (EPA 8240/8270) to establish baseline levels present in these beds. Biological analyses of the mussels will be conducted by Dr. Highsmith at the UAF and will establish the pretreatment characteristics of the mussel beds in the oiled and control areas. Note that the project design also includes administration of PES-51® to control areas. This is necessary to fully analyze the potential impact of this methodology on mussel beds because: a) mussels and other resident fauna exposed to chronic oiling for four years may be highly susceptible to injury by the treatment, b) conversely, those organisms remaining may be extraordinarily hardy or resistant, and c) the other faunas may be different (samples collected during the initial visit may answer this question prior to the experiment). Additionally, biological analyses will include determination of potential toxicity of the PES-51® treatment on other aquatic life, i.e. the other resident fauna. This phase of the project will be conducted by Dr. Tjeerdema at UCSC. Potential impact of PES-51® treatment on total heterotrophs and hydrocarbon degrading microbes in the lower and middle intertidal zones will be determined by Dr. Braddock at UAF from water column and sediment samples.

3. **Schedule**: Timelines for all critical aspects of the project are also shown Table 1 with all times represented as month and year when the activity will be accomplished.

Project 95116

Table 1: Restoration of Intertidal Oiled Mussel Beds - Project Methodology and Timelines

Activities	PES	UAF	Chenega Corp	UCSC	Foss	Time (mo/yr)
Project Lead	X					
Initial Visit - Project Site Design and Baseline Mussel Bed, Water Column and Sediment Samples	X	X	X		X	6/95
Project Site Preparation	X		X		X	7-8/95
Logistics and Support			X			
PES-51® Application	X		X			9/95
Obtain Post Treatment Mussel, Water and Sediment Samples	X	X				9-10/95, 9/96
Hydrocarbon Analyses	X					7-10/95, 9/96
Analyses of Mussel Bed Samples for Potential Toxicity of Mussels		X				7-10/95, 9/96
Analyses of Mussel Bed Samples for Potential Toxicity of Other Resident Fauna		X		X		7-10/95, 9/96
Microbial Analyses of Water Columns, and Lower and Middle Tidal Zone Sediment Samples		X				7-10/95, 9/96
Hydrocarbon Waste Collection and Disposal	X				X	10/96
Interim and Final Reports	X					11/95, 10/96

4. **Technical Support:** The selected mussel beds will be double boomed and contained prior to the PES-51® treatment. Sea water deluge and flush pumps, air compressors, recovered oil storage tank and equipment and supplies will be staged on a sixty (60) foot landing craft, moored adjacent to or "beached" at the treatment site. Crew support will be provided using a berthing vessel. Foss Environmental Services, Inc. will provide qualified spill response equipment and services including booms, pumps, etc.

Methodology to be employed in this project involves application of PES-51® using a modified version of the air knife, pneumo-hydrodynamic system used at Sleepy Bay in 1993 that was sponsored by HSSTRC. For mussel bed application, the air knives will be regulated for a low pressure fracturing (or dilation) so that PES-51®, via an aerosol infusion, can reduce the interfacial tensions and move through the vertical sections of the oiled mussel beds. During the PES-51® infusion, sea water will follow the route of the PES-51® induced subsurface pathway. In addition, sea water deluge and flushing (low pressure, large quantities) using 6 inch pumps and fire monitors, will be used to move the oil to the double boomed area for collection and recovery. Oil recovered during the project will be contained and collected for disposal in accordance with standard spill techniques, e.g. containment booms, skimmers and absorbents. This oil will be pumped

to the storage tank, excess water will be decanted and the volume of oil recorded. At the completion of the project, the recovered oil will be disposed of or recycled at a permitted facility, e.g. Alaska Pollution Control, Inc., in accordance with state and federal laws and guidelines. Application of PES-51®, operation of the flushing equipment, and recovery of the oil will be handled by Chenega Corporation.

Samples obtained from the mussel beds, water column and lower and middle tidal zone sediments will undergo biological and chemical analyses as described in Section D.2. The work will be performed by Zymax Envirotechnology, Inc. (hydrocarbon analyses), UAF (potential toxicity on mussels and impact on the microbial populations) and UCSC (potential toxicity on other resident fauna). Results of the analytical activities will be provided to PES for evaluation, coordination and archiving. Each associate investigator will generate interim and final reports that will be integrated into the overall project reports that will be developed by PES.

5. **Location:** As was stated earlier, the Chenega areas is known to have some of the most persistent, heavy- and medium oil residue concentrations. For this reason the Chenega area is proposed as the site for this project. Additionally, involvement of the Chenega Corporation throughout the project is likely to serve a secondary purpose, i.e. involving local residents in critical resource restoration activities (1993 Trustee Council sponsored Assessment Survey). ADEC and the National Oceanographic and Atmospheric Administration have surveyed and sampled mussels and sediments from these oiled sites. One of the locations monitored during this survey is proposed for the proposed project.

E. PROJECT IMPLEMENTATION

PES Services is proposed as the lead organization for this project. PES Services, Inc. is well qualified to lead a multidisciplinary team of companies and universities having led the effort that was sponsored by HSSTRC at Sleepy Bay in 1993. The only portion of the project that could be implemented through a competitive contract process is the logistics support of the environmental contractor services. Foss Environmental Services, Inc. is listed as the contractor of choice due to their expertise in oil spills and the use of PES-51® under these conditions. The UAF and UCSC have both established marine science programs dealing with highly specialized testing for marine toxicology of selected species found in the Prince William Sound area. Chenega Corporation is well qualified and experienced in conducting projects as the one described in this proposal having performed similar duties during the 1993 HSSTRC sponsored project. Zymax Envirotechnology, Inc. is recognized for its capabilities in the types of chemical analyses and conducted analyses for PES on previous projects.

F. COORDINATION OF INTEGRATED RESEARCH EFFORT

This project involves collaborative partnerships among three companies and two universities and will involve oversight by a number of state and federal agencies, e.g. ADEC and NOAA, as well as community advisory groups. Depending on the outcome of the competition for funding from the Trustee Council, collaborative efforts may be undertaken with other groups having projects with related objectives and activities.

G. PUBLIC PROCESS

PES Services will make every possible effort to participate in workshops, public meetings, document reviews, etc. that are needed to insure understanding of the objectives and results of the proposed project so as to fulfill the requirements of the Trustee Council. PES Services has taken an aggressive approach to publishing its research and has presented results of the 1993 HSSTRC sponsored project at several national and international oil spill conferences. National Geographic will carry an article about this project in the August, 1994 issue.

H. PERSONNEL QUALIFICATIONS

1. Mr. Steve R. Rog, VP of Oil Spill Response and Industrial Cleaning for PES Services AK, Inc., will be the Project Leader. Mr. Rog has twenty years experience as an environmental geologist, served on an Oil Spill Response Team as the Environmental Coordinator for Tesoro Alaska Petroleum Company; has an extensive working knowledge of the proposed application technology; has been at every major oil spill in 1994 representing PES Services; and also was the manager for the 1993 HSSTRC sponsored project.

2. Dr. Raymond Highsmith is to be an Associate Investigator on this project. He is a Professor at UAF and a lead investigator in the Institute Of Marine Science. He is recognized as a worldwide expert on bivalves found in Alaskan waters.

3. Dr. Ron Tjeerdema is to be an Associate Investigator on this project. He is an Associate Professor at UCSC and a researcher in the Institute of Marine Science and recognized as a worldwide expert on aquatic toxicity testing procedures and protocols. His research team has developed dispersant toxicity testing protocols that have been adopted as industry standards.

4. Dr. Joan Braddock is to be an Associate Investigator on this project. She is a Assistant Professor of Microbiology and is associated with the Institute for Arctic Biology at UAF and has extensive experience in studies of the impact of hydrocarbons on shoreline microbiology and was a participant in the 1993 HSSTRC sponsored project.

5. Mr. Dennis Owens, VP for R&D of PES Services, will be the Project Coordinator responsible for all contract matters relating to the sponsor and subcontracts to the team members. He has twenty years experience as a corrosion oilfield chemist and microbiologist and is one of the developers of PES-51®. Most recently, he was the technical project coordinator for the 1993 HSSTRC sponsored project.

6. Dr. William Alter III, Director of Research and Technology Development for PES Services, will be responsible for coordinating the analyses of data and for integrating the team's reports into those that will be delivered to the Trustees Council. He is an Environmental Physiologist with over 25 years experience in research and development for the Air Force and academia and most recently was a Space Grant Fellow for the National Aeronautics and Space Administration.

7. Gail Evanoff and Chuck Totemoff of the Chenega Corporation and will be responsible for organizing the work crews that will participate in this project. The Chenega Corporation participated in the 1993 HSSTRC sponsored project at Sleepy Bay.

I. BUDGET

The budget was developed on the basis of an initial visit to the Chenega area for selection of the field site, project site design and acquisition of baseline samples, and a proposed 10 day field effort that includes travel to/from project site and one weather day. The costs for efforts in the field by PES and its team members are estimates which are subject to revision after finalizing the field aspects in discussions with the Trustees Council, regulatory and recovery agencies. A more detailed description of the budget appears as an appendix.

1.	Personnel - PES Services, Inc. (only)	48,900
2.	Travel	6,300
3.	Contractual Services	
	a. UAF - Environmental Technology Laboratory	66,297

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	b. UCSC	95,940
	c. Chenega Corporation	31,800
	d. Foss Environmental Services	21,000
	e. Zymax Envirotechnology, Inc.	8,000
	f. Alaska Pollution Control, Inc.	2,000
	g. Videography services	7,500
4.	Commodities	0
5.	Equipment	122,750
6.	Capital Outlay	0
7.	General Administration	1,500
8.	Subtotal Direct	411,987
9.	Indirect (10% MTD)	41,199
10.	Total Estimated Cost	453,186

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APPENDIX: Detailed Description of Budget

1. Personnel

Stephen Rog - Project Management (100 hrs@95/hr)	9,500
and Field Supervision (120hrs@65/hr)	7,800
Dennis Owens - Project Technical Coordination (50 hrs@95/hr)	4,750
William Alter III - Data Analysis and Reports Integration (50hrs@95/hr)	4,750
PES Services AK - Field Crew (3) 10 days (12hr/day)@65/hr	15,600
(2) 5 days (10hr/day)@65/hr	6,500

2. Travel

PES Services, Inc.

Dennis Owens, William Alter - 2 trips to Alaska for Exxon Trustees Meetings

Air Fare To/From Texas and Room/Board	3,800

PES Services AK Travel to/from Project Site

Initial Visit - Float Plane	1,000
Field Demonstration - Float Plane	1,000
Bus Charter Anchorage to Whittier	500

3. Contractual Services

A. UAF-ETL

Personnel: Dr. Raymond Highsmith, lab. tech. & graduate student	20,787
Travel: Airfare and Room & Board for 2 Trustees Council Mtgs.	1,100
Initial Visit, Field Demonstration and Followup Sampel Acq.	2,070
Commodities	2,000
Equipment	0
General Administration/Indirect	10,790
Personnel: Dr. Joan Braddock and graduate student	19,550
Travel: Airfare and Room & Board	1,000
Commodities	8,000
Equipment	0
General Administration	1,000
Subtotal for UAF-ETL	66,297

B. UCSC

Personnel: Dr. Tjeerdema and Scientific Staff	50,000
Travel	5,000
Commodities	10,000
Equipment	0
General Administration/Indirect	30,940
Subtotal for UCSC	95,940

C. Chenega Corporation 31,800

D. Foss Environmental Services, Inc. 21,000

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E.	Zymax Envirotechnology Inc. Hydrocarbon analysis (EPA 8240/8270)	8,000
F.	Alaska Pollution Control, Inc. Oil Recycle or Disposal Est. 1,000 gal.@2/gal	2,000
G.	Videography service Est. 10 days@750/day	7,500
	Subtotal Contracts	166,240
4.	Commodities	0
5.	Equipment	
	Work Barge (or 2 Berthing Vessels and Landing Craft) 10 days@7,500/day	75,000
	Skimmer 10 days@1,000/day	10,000
	Fuel	2,000
	2 Air Knife Systems 10 days@ 500/day	10,000
	PES-51® 3 drums@1,250/each	3,750
	1 Skiff and outboard 10 days@200/day *	2,000
	1 - 5,000 gallon oil storage tank 10 days@150/day *	1,500
	2 - 6" pumps 2 weeks@600/week *	1,200
	For Hose for pumps *	500
	1 - 250 cfm air compressors 2 weeks@600/week *	1,200
	Air Hose for compressor *	500
	Personal Protective Equipment 12 men/10 days@ 30/day	3,600
	Pads, Sorbents, Sweekps, Booms, etc.	3,000
	Containment Boom 500LF@12/LF	6,000
	Miscellaneous Supplies and Freight	2,500
	Subtotal Equipment	122,750

* These items may be provided on-board the Work Barge and be part of the overall rate for the barge. This would reduce the proposed equipment cost by $6,900.

6.	Capital Outlay	0
7.	General Administration	
	a. Reports	1,000
	b. Miscellaneous Communications	500
8.	Subtotal Direct	411,987
9.	Indirect (10% MTD)	41,199
10.	Total Estimated Cost	453,186

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PES-51® Shoreline Restoration of Weathered Subsurface Oil in Prince William Sound, Alaska

By

Steve Rog (1), Dennis Owens (2), Leslie Pearson (3), Mark Tumeo (4),Joan Braddock (4), Tamara Venator (4)

1-Tesoro Alaska Petroleum Co., 2-Petroleum Environmental Services, Inc., 3- Alaska Department of Environmental Conservation, 4-University of Alaska Fairbanks

ABSTRACT

On July 1-7, 1993, a shoreline restoration project was conducted by Tesoro Alaska Petroleum Company and Tesoro Environmental Products Company using PES-51®, a biosurfactant, and a modified air knife injection system on a 120 ft. x 135 ft. area of Sleepy Bay on LaTouche Island in Prince William Sound (Figure 1).

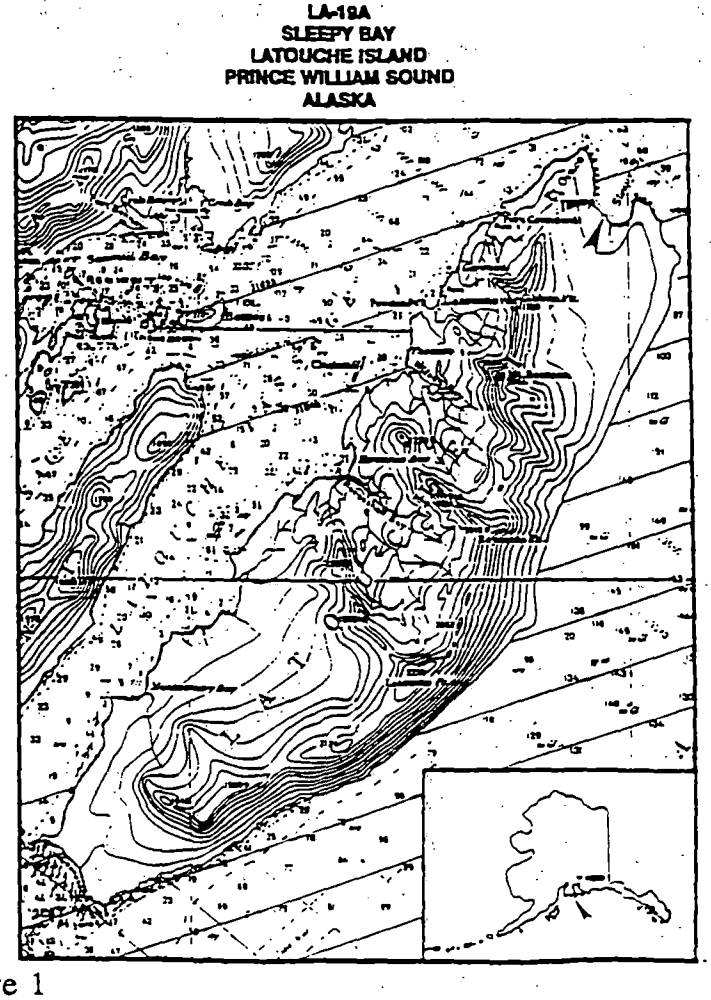

Figure 1

PES-51® contains naturally occurring components and is biodegradable. The product is listed on the National Contingency Plan Product Schedule List as a miscellaneous oil spill agent. The objectives for the project were: to test the effectiveness of PES-51® in removing petroleum contamination from the substrate in the intertidal zone; examine the levels of hydrocarbon in the water resulting from the application; examine the microbial response to the PES-51® treatment; and, nutrient analysis. During the project, the test beach was further subdivided into treatment sections approximately 120 ft long and 20 ft. wide from the upper to lower intertidal zones. Sediment, pore water and oil/water samples were collected by the University of Alaska-Fairbanks (UAF) Environmental Technology Laboratory from the treatment beach and adjacent control beach for geochemical analysis.

Materials

PES-51® is listed as a miscellaneous oil spill agent on the EPA's National Contingency Plan product schedule. PES-51® is a biological hydrocarbon cleanser designed to be used in removing oil from impacted rocks, beaches, concrete, bulkheads, pilings, tanks, oil spill response equipment, and other solid surfaces. PES-51® is composed of biosurfactant, d-limonene, and biospersan. The d-limonene fraction, a citrus derivative, provides solvent characteristics to the mixture and allows it to penetrate into porous surfaces and extract hydrocarbons. It also acts as a suitable carrier solution and re-odorant for the bacterial by-products.

Once the product is applied by spraying, it forms a product/oil mixture. The product is designed to decrease the surface tension between oil/sediment mixtures, allowing the oil to float to the surface after the introduction of water. Because the oil/product mixture does not change the surface chemistry of the hydrocarbon, the mixture is readily adsorbed by oleophillic/hydrophobic materials or by convention skimming or vacuum methods from the water surface. After surface treatment with PES-51®, a temporary molecular protein film is left by the product. This protein film minimizes re-attachment of oil to the treated surface.

Test Site Description

Beach segment LA-19A is naturally divided into two sections by a large outcropping of boulders in the middle and bedrock protrusions on either side. The eastern portion which served as the control site, is composed of small cobble over gravel. The western portion of the beach, which served as the test site, is covered with larger cobble and

boulders over gravel and bedrock. Both sections of LA-19A exhibited an extensive growth of yellow-brown algae in the lower inter tidal zone, as well as sporadic mussels, limpets, starfish, and anemones. Populations seemed somewhat larger along the western portion of the beach.

Treatment History

On July 3, 1989 treatment of LA-19 commenced. Throughout the course of the 1989 season, physical treatment techniques observed by State shoreline monitors consisted of the following:

1. Hand wiping
2. Cold and warm water header hose flood
3. Cold water/high pressure
4. Warm/Hot water, medium pressure wash
5. Hot/steam water, high pressure wash
6. Omni booms

Bioremediation treatment was applied to LA-19 with approximately 220 ga. of Inipol and 948 lbs. of Customblen. LA-19 was demobilized on September 14, 1989 with gross contamination still remaining throughout the segment.

During the 1990 treatment season approximately 21 days were spent at LA-19. Mousse and oil contaminated soils were removed using only manual techniques. Customblen was applied in the upper intertidal zone (UITZ) and behind boulders where concentrations of oil exist.

On May 2, 1991 a multi-agency shoreline assessment team evaluated the oiling conditions at LA-19A. Manual pickup and bioremediation treatment recommendations were made to remove the easily accessible asphalt between the boulders. The Technical Advisory Group (TAG) evaluated the recommendations and decided that no treatment should take place during the 1991 field season. Although shoreline assessment data from 1991 and 1992 indicated a significant amount of surface and subsurface oil on LA-19A no treatment had been applied since 1990.

Oil Characteristics

On June 3, 1993, a shoreline assessment survey was conducted personnel from the Alaska Department of Environmental Conservation/Exxon Valdez Oil Spill (ADEC/EVOS) office. The oiling summary indicated that asphalt and oil contaminated residual sediments were found throughout the mid-intertidal zone (MITZ) to

the upper intertidal zone (UITZ). Within the boulder-cobble interstitial spaces, oiling occurred in distinct patches and was characterized as asphaltic, saturated oil residual and mousse which often extended subsurface. Twenty one pits were dug with an average depth of 10 inches throughout the sub-segment. Sub-surface oiling characteristics ranged from oil-filled pores, high-moderate-low oil residual, oil film and no oil.

Treatment

The western portion of the beach, covering an area roughly 120 ft. long by 135 ft. wide, was treated with 165 gallons of PES-51® over a period of 5 days. A modified air-knife injection system was used to inject compressed air beneath the surface, loosening the substrate, followed by injections of PES-51®. PES-51® was injected as both an aerosol or liquid. The amount of injection and pneumatic agitation was operator dependant, based on the visual efficacy and the amount of oil removed in the injection area. Treated areas were then flushed with cold sea water (55-57F) to liberate the product/oil mixtures for cleanup.

Methodology

The test and control beaches were divided into six 20-foot wide strips that spanned the length of each site. Five shallow pits located at random were dug along each strip. Triplicate sediment composites were collected in sterile plastic bags from strips 1-6 at the test site and strips 2 and 4 at the control site. Triplicate sea water samples were collected in sterile polyurethane bottles offshore of each site, six inches beneath the surface.

On June 6, 1993, researchers completed a preliminary sampling run to verify that contamination existed on the beach and to allow the researchers to better understand the conditions under which the experiment would be performed. Five grab samples of beach material were collected from random locations on the beach. The five grab samples were analyzed for petroleum contamination using a Gas Chromatograph (GC) for constituents in the C-4 to C-16 range (EPA method 8220 and 8270).

At the same time as material was being collected for GC analysis, three replicate composite beach material samples from the five holes and three water column grab samples wee collected for microbiological analysis of the total heterotrophs and oil degrading bacteria populations.

Before and after the application of PES-51®, grab samples of seawater directly below the site were collected and analyzed for petroleum constituents (C4 through C16) using EPA method 8260. Grab samples were also collected in the water column above the treated beach during high tide to determine if any of the petroleum contamination seen floating to the surface and being removed by the skimming was dissolving into the water column. These were also analyzed by Gas Chromatography using EPA Method 8260.

In order to allow consistent, repetitive sampling of the beach material before and after sampling, the beach was divided into six strips, 135 feet long by 20 feet wide, starting at the mean low tide line. A control area which was not treated was selected immediately adjacent to the test plot and similarly divided.

Five holes were randomly spaced along strip 1, strips 2 and 3 combined, strip 4 and strip 5. A composite sample was collected from each of the five holes for GC analysis of constituents in C-4 to C-16 range (EPA method 8220 and 8270). An individual sample was collected from each hole, extracted with a hexane/MTBE mixture and stored. These forty sample extracts (20 for before treatment, 20 from after treatment) were subsequently weighed, dried and gravimetric calculation of contamination performed. The samples were then reconstituted with Freon and analyzed using infra-red spectrophotometry according to Standard Methods (Greenburg, 1992).

Sediment and sea water samples were assayed for numbers of hydrocarbon-degrading microorganisms using the Sheen Screen technique (Brown and Braddock, 1990). Sheen Screen is a miniaturized 5-tube most probable-number (MPN) method using Bushnell-Haas as growth medium and sterile crude oil as the sole carbon source. The serial dilutions were carried out in sterile, 24-well Cell Well plates. The plates were incubated at room temperature for three weeks and then scored. Emulsification of the oil sheen in an individual cell indicated the presence of organisms capable of metabolizing the hydrocarbons. All sediment results were standardized to 100% dry weight. Total heterotrophs were assayed using a similar MPN method. Samples were diluted serially in saline Marine Broth, incubated for one week at room temperature, then scored. Cell turbidity indicated the presence of heterotrophic organisms.

Radiorespirometry was used to assay the hydrocarbon-oxidation potential of microorganisms in the sediment and sea water samples (Brown et al, 1991; Lindstrom et al, 1991). Radiolabelled :14C:-hexadecane, :14C:-phenanthrene, and :14C:-Glutamate were used as representative aliphatic and polycyclic aromatic hydrocarbons

and served as sole carbon sources during incubation. Samples of filtered sea water or sediment slurries were pipetted into sterile Teflon-lined septa vials and injected with the appropriate,radiolabelled hydrocarbon. All samples were run in duplicate. After incubation, the samples were killed and the evolved radiolabelled-CO_2 fixed with NaOH. Later, to recover the carbon, the samples were acidified with HCl and purged with nitrogen g s. The gaseous stream was then bubbled into scintillation vials filled with radiolabelled-CO_2-sorbing phenethylamine cocktail. The radioactivity was measured with a Beckman Instruments model LSC 1800 liquid scintillation counter with automatic quench correction.Quality Assurance. The "5-tube" MPN method employed in the biomass assays is a more reliable statistical procedure than the more commonly used "3-tube" method. Negative controls were also run periodically by preparing sterile media plates that were not inoculated with sample. A number of controls were also run to assure the quality of the data for the biodegradation potentials. They included time-zero killed controls ("blanks") to monitor for abiotic CO2 production, CO2 recovery efficiencies and careful monitoring for leaking vials during the purging process.

RESULTS

The results of the preliminary soil sampling for petroleum contamination are shown in Table 1.

TABLE 1: Soil Contaminant Levels (mg/kg)
Preliminary Sampling (6/04/93)

Constituents	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
Benzene	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND
Xylenes	ND	ND	ND	ND	ND
TPH (Volatile)	ND	ND	ND	ND	ND
TPH (Diesel)	13	11	16	29	6.9
TPH (semivolatile)	1700	410	3700	3900	240

Note that there are no volatile components left in the beach material. This is expected as the crude oil has been weathered for over four years at the time of the sampling. Because of the verified lack of volatile components, these will not be discussed further.

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Beach Remediation Experiment Sampling

Water Sampling: The concentration of volatile petroleum hydrocarbons (BTEX) and total petroleum hydrocarbons (diesel range and semivolatile) as determined by GC in the water column samples are shown in Table 2. The "before treatment" samples were collected in June and immediately before the July application. The "during treatment" samples were collected below the treatment sites during application and from above the treated site as the tide rose and covered the beach. The "after treatment" samples were collected immediately after the tide fell below the treated beach and one month after the beach treatment experiment. In all instances, there was no hydrocarbon contamination found in the water column.

Table 2: Water Column Contaminant Levels (mg/L) Before, During and After Treatment with PES-51®

Constituents	Before Treatment*	During Treatment*	After Treatment*
Benzene	ND**	ND	ND
Toluene	ND	ND	ND
Ethylbenzene	ND	ND	ND
Xylenes	ND	ND	ND
TPH (Volatile)	ND	ND	ND
TPH (Diesel)	ND	ND	ND

* Four to six grab samples taken from the water column for each period. All results were the same.

** Not detectable at limit of method.

Beach Material Sampling: The concentration of total petroleum hydrocarbons (diesel range and semivolatile) as determined by GC in the composite samples analyzed are shown in Table 3. The reduction of semivolatile petroleum hydrocarbons is presented graphically in Figure 3.

Microbial Effects of Treatment

The data collected in the microbial sampling from the preliminary, during treatment and post treatment surveys provide a time-series of information on the effects of the PES-51® treatment on the microbial population. Because of the wide, inherent variability of contamination in a beach environment after a spill, microbiological indices were selected as the most efficient and cost effective way to examine the

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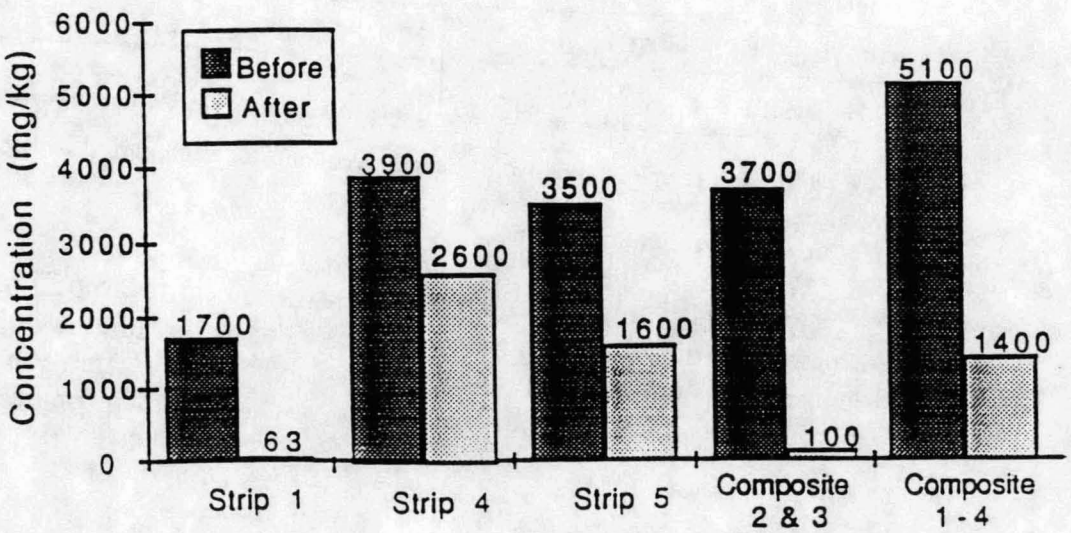
effects of a beach remediation project. The data for the microbial studies are shown graphically in Figures 4 through 7.

Table 3: Soil Contaminant Levels (mg/kg) Before and After Treatment with PES-51®

	Diesel TPH		Semivolatile TPH	
	Before	**After**	**Before**	**After**
Strip 1	13	ND*	1700	63
Strip 4	29	ND	3900	2600
Strip 5	8	ND	3500	1600
Composite Strips 2 & 3	13	ND	3700	100
Composite Strips 1-4	24	ND	5100	1400

ND* Not detected at level of analysis (0.5 mg/kg)

FIGURE 3: Soil Contaminant Levels (mg/kg) Before and After Treatment with PES 51®



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PES-51 Sleepy Bay Study

FIGURE 4a
Sediment Mineralization: Hexadecane

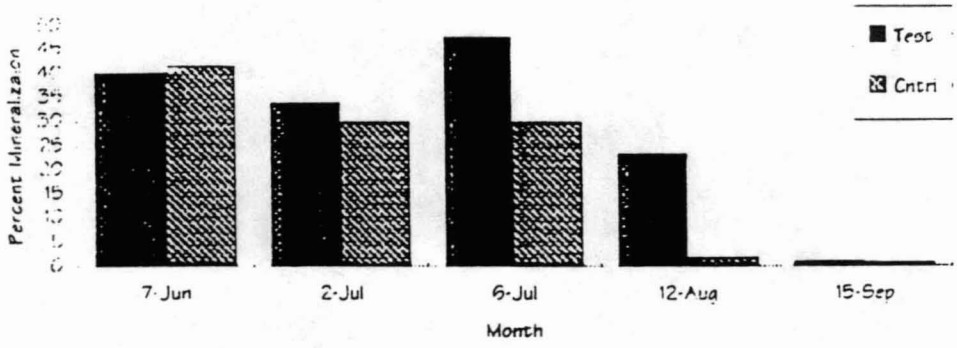


FIGURE 4b
Sediment Mineralization: Phenanthrene

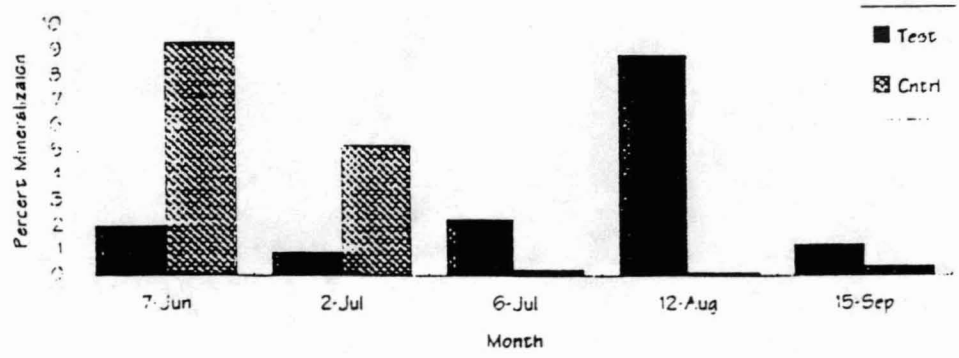
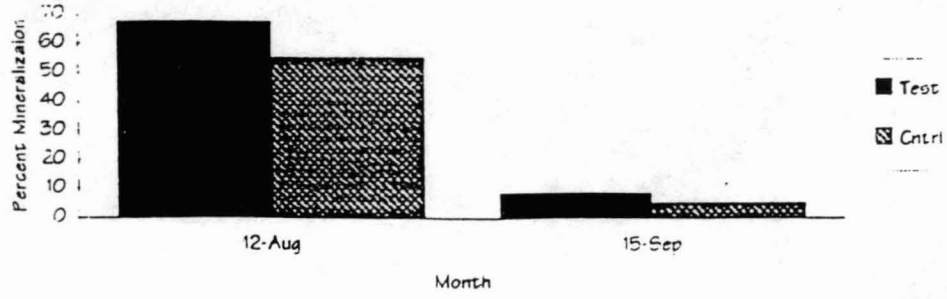


Figure 4c
Sediment Mineralization: Glutamate



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PES-51 Sleepy Bay Study

Figure 5a
Sea Water Mineraiization: Hexadecane

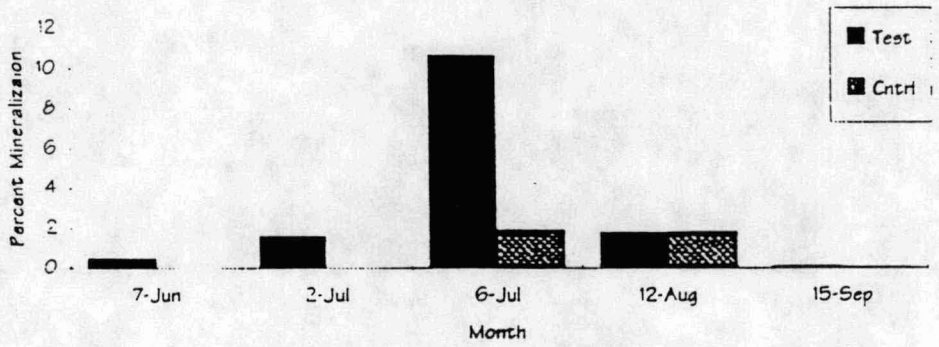


FIGURE 5b
Sea Water Mineraiization: Phenanthrene

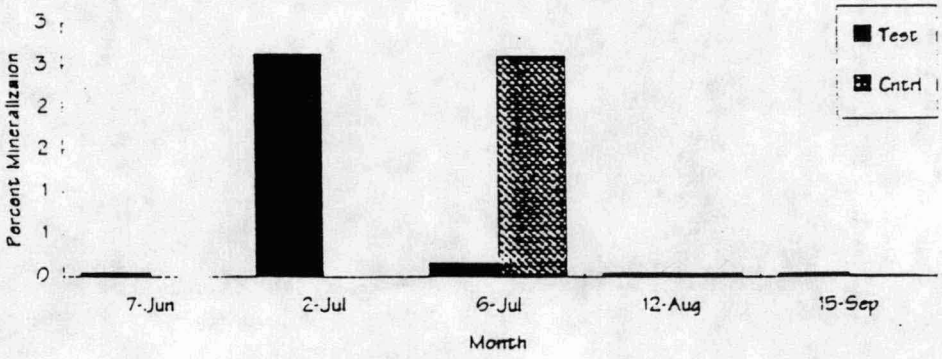
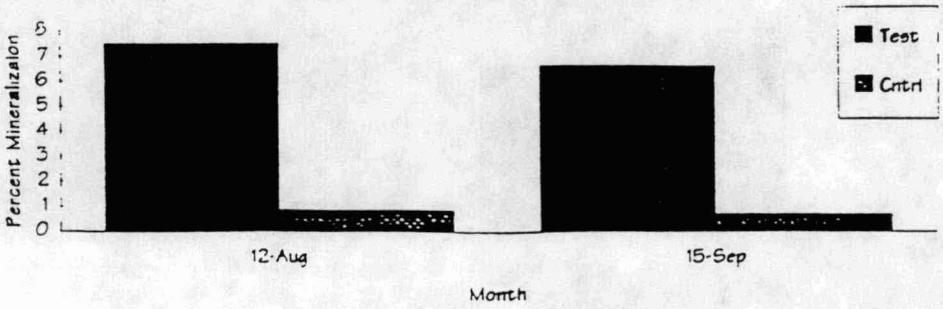


FIGURE 5c
Sea Water Mineraiization: Glutamate



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PES-51 Sleepy Bay Study

FIGURE 6a
Standardized Sheen Screen Sediment MPN Data

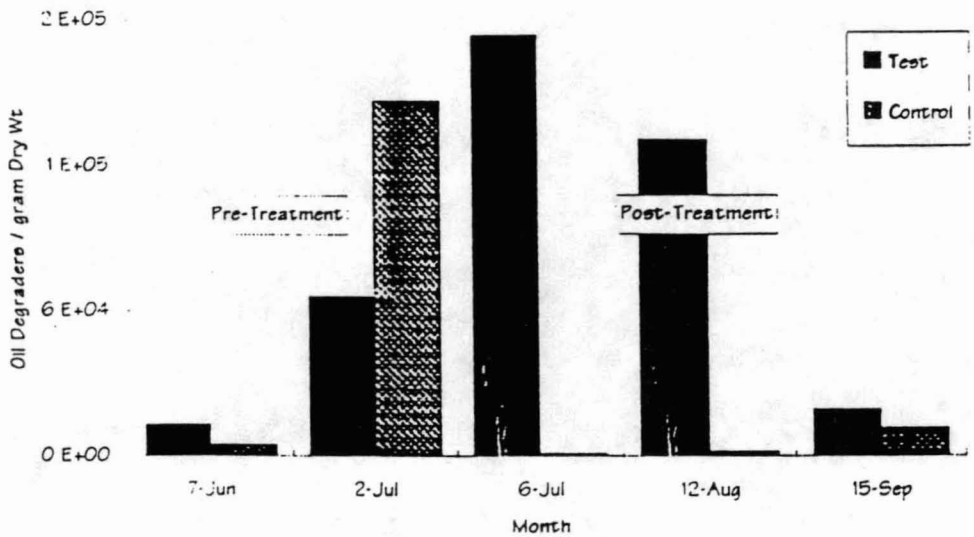
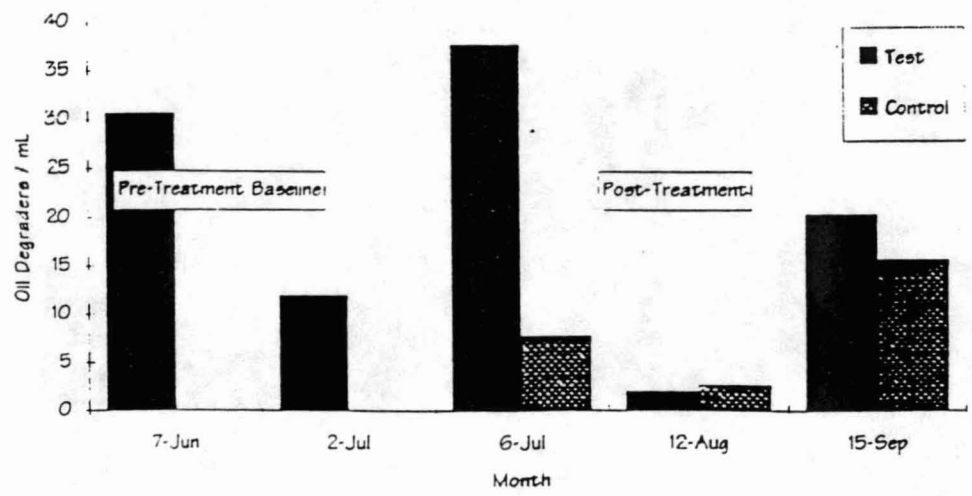


FIGURE 6b
Sheen Screen Sea Water MPN Data



Project 95116

PES-51 Sleepy Bay Study

FIGURE 7a
Standardized Heterotroph Sediment MPN Data

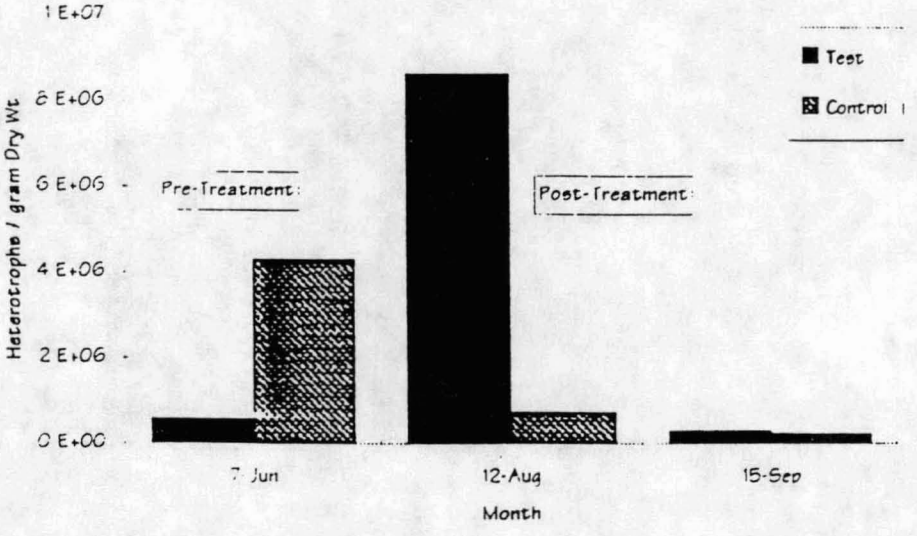
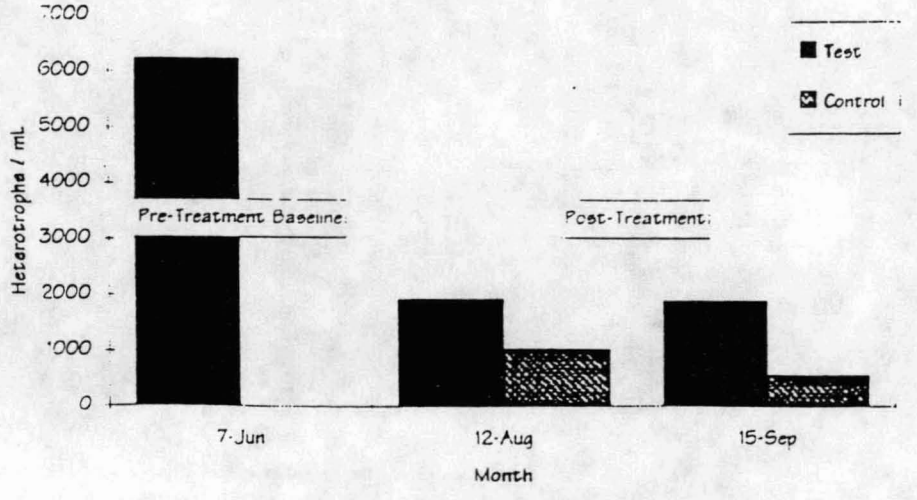


FIGURE 7b
Heterotroph Sea Water MPN Data



Project 95116

Conclusion

The air/PES-51® injection system was extremely effective at removing weathered subsurface oil throughout the five day experiment. The shoreline selected for the test was one of the most difficult types to effectively treat as indicated in the treatment history section of this report.

As can be seen in the data from the preliminary sampling run, the concentration of non-volatile contaminants in the diesel and semivolatile range (up to about C-16) varies significantly from location to location. There appears to be a heavier layer of concentration in the mid-tidal zone (Samples 3 and 4). In all cases, the contamination was found 2 to 4 inches below the surface material and was noted to extend to observed depths of 12 inches.

The treatment process recovered substantial quantities of buried oil but also resulted in some re-oiling of surface sediments. The data from he actual treatment experiment (Table 2) show that diesel-range petroleum hydrocarbons are completely removed to levels below the detection limit of 0.5 mg/kg. Semivolatile petroleum hydrocarbons are reduced an average of 70%. This indicates that treatment with PES-51® significantly reduces the contamination within the beach material below the surface.

The microbial data collected indicates that, unlike many other hydrocarbon cleaners, no inhibition of microbial activity in sediments is caused by treatment. While microbiological tests were not conducted to determine toxic effects, if the PES-51® were extremely toxic, microbe populations may be expected to be effected. Instead, the population counts are for comparison with the large database of information from other beaches in the Prince William Sound area.

There was an enhancement in the numbers and activity of hydrocarbon-degraders immediately following treatment remained elevated relative to the control sediments for about a month. There is also no evidence of increased microbiological activity in sea water samples, indicating that oil was not transported offshore during the treatment process. The data collected from the water column support this conclusion and indicate that the contaminant released from the beach material is not solubilized into the water column. No samples of the water column had detectable petroleum hydrocarbon contamination.

Project 95116

References

Braddock, J.F., J.E. Lindstrom and E.J. Brown. 1990. Microbial hydrocarbon degradation in sediments impacted by the Exxon Valdez oil spill. Final Report to Science Applications International Corporation for the National Oceanic and Atmospheric Administration, NOAA contract number 50-DSNC-8-00141.

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Project 95116

PES®

COMPENDIUM OF PES-51® AQUATIC TOXICITY DATA

P.O. Box 680488 • San Antonio, Texas 78268-0488 • Phone (210) 680-2950 • FAX: (210) 523-5700

Project 95116

TABLE OF CONTENTS

Project 95116

I.INTRODCUTION

Petroleum Environmental Services,Inc. has prepared this compendium of aquatic toxicity data in an effort to provide a single source for this information. The compendium will be updated as more data becomes avaliable.

As you review this information, please keep in mind that each toxicity test is different and requires its own interpretation. The brief interputations are a general explanation of the results.

It should be noted that PES-51®, when used in accordance with the application instructions, has a in the field use concentration of less than 200 ppb. The dilution effect is created by the product application technique which involves instantaneous water diluge. Subsequently, the in the field toxicity of the product is greatly minimized.

Should any questions or comments arise from your reading of this information, please address then to:

Dennis C. Owens
PES,Inc.
P.O. Box 680488
San Antonio,Tx 78268-0488
210-680-2950 or 210-283-2644 Office
210-523-5700 Fax

Project 95116

II. STATE OF CALIFORNIA OIL SPILL CLEANING AGENT TOXICITY DATA

The toxicity tests required by the State of California utilize some of the more sensitive aquatic species. You will note that the average LC50 of 580 mg/l for Acute toxicity is well above the States acceptance level of 400 mg/l for these tests.

It is interesting to note that the state requires that the product (neat) and the test oil (neat) as well as a product/oil mixture be tested for toxicity. The reasoning behind this testing is to insure that the product/oil mixture does not increase toxicity to the environment.

You will note that the product/oil mixture in these tests actually reduced the toxicity of the hydrocarbon by a thousand fold.

Project 95116

OIL SPILL CLEANUP AGENT TOXICITY TESTING

LAB NO.: V-9105003 CLIENT/ID: PETROLEUM ENVIR. SERV. PES-51™

Three test species, fathead minnow (pimphales promelas), inland silversides (menidia beryllina), and brine shrimp (artemia salinas), were exposed to various concentrations of the Osca product, Osca plus No. 6 fuel oil, and Osca plus No. 6 fuel oil after 20 days of degradation. Test procedures follow the protocols given in "Evaluating Oil Spill Cleanup Agents", Publication No. 43 of the California State Water Resources Control Board (CSWRCB) 1970 and verbal guidance provided by CSWRCB.

ACUTE TOXICITY OF AGENT TO AQUATIC ORGANISMS

SPECIES	WATER TYPE	24 HR LC50	48 HR LC50	96 HR LC50
P. promelas	Fresh (42 mg/l)	810 mg/1	810 mg/1	810 mg/1
M. beryllina	Sea (20 ppt)	100 mg/1	100 mg/1	100 mg/1
A. salinas	Sea (20 ppt)	980 mg/1	840 mg/1	N/A

Average LC50 (94 hr for fish + 48hr for Artemia): 580 mg/1 OSCA

ACUTE TOXICITY OF 1:5 MIXTURE OF OSCA AND #6 FUEL OIL TO AQUATIC ORGANISMS

SPECIES	WATER TYPE	24 HR LC50	48 HR LC50	96 HR LC50
P. promelas	Fresh (42 mg/l)	>1600 mg/1	>1600 mg/1	>1600 mg/1
M. beryllina	Sea (20 ppt)	>1600 mg/1	>1600 mg/1	>1600 mg/1
A. salinas	Sea (20 ppt)	>1600 mg/1	>1600 mg/1	N/A

Average LC50 (94 hr for fish + 48hr for Artemia): >1600 mg/1 OSCA

ACUTE TOXICITY AFTER 20 DAYS OF AGING AT 15°C OF 10 TIMES INITIAL 96 HR LC50 CONC.

SPECIES	Pimephales promelas	Menidia beryllina	Artemia salinas
OSCA + #6 Fuel Oil	100% Surv. @ 1600 mg/l	85% Surv. @ 1600 mg/l	0% Surv. @ 1600 mg/l

OSCA = 10,000 mg/l of the 1:5 OSCA to #6 Fuel Oil Mixture (highest conc. used).

Tests were conducted by Enseco, Ventura, California.

Project 95116

III. U.S. EPA NCP LISTING TOXICITY DATA

The results of these tests are very similar to the California toxicity tests with the same organism. The only difference in the tests involve different hydrocarbons ,#2 fuel oil instead of #6 fuel oil.

Additionally, this test contains data on the toxicity of the hydrocarbon. Under normal conditions, the results of the product/oil mixture would be an average of the two numbers (eg. 665 and 58) however, the mixture exhibits a reduction of toxicity by a thousand fold. The reduction in toxicity is directly due to the products ability to form a interfacial barrier that does not allow the water soluble toxic fraction to enter the water column. This phenomeum is unique to this product and caused the EPA to request that the tests be rerun several times in order to verify that this action was for real.

STANDARD DISPERSANT TOXICITY REPORT

Client: Petroleum Environmental Services
P.O. Box 680488
San Antonio, Texas 78268-0488

Testing Facility: United States Testing Company
Biological Services
1415 Park Avenue
Hoboken, New Jersey 07030

Sample Description, Handling & Stability: Sample identified by Client as Petroleum Environmental Service's PES-51 oil spill dispersant: Chemical composition proprietary. Pale yellow, mobile liquid, pale reddish-brown sediment, with with a strong citrus odor. Sample stored in original sealed container, considered stable.
Received 2/ 3/92.

Project: 48 hour acute toxicity versus Artemia sp. (brine shrimp). Toxicity of PES-51 alone, PES-51 + #2 Fuel Oil, #2 Fuel Oil alone, and Dodecyl Sodium Sulfate.
Test dates 5/13 - 15/92.

Summary of Results: Acute toxicity, expressed as LC50, is as follows:

PES-51	PES-51 + #2 Fuel Oil	#2 Fuel Oil	DSS
665 ppm	1,542 ppm	58 ppm	5.0 ppm

STANDARD DISPERSANT TOXICITY REPORT

Client: Petroleum Environmental Services
P.O. Box 680488
San Antonio, Texas 78268-0488

Testing Facility: United States Testing Company
Biological Services
1415 Park Avenue
Hoboken, New Jersey 07030

Sample Description, Handling & Stability: Sample identified by Client as Petroleum Environmental Service's PES-51 oil spill dispersant: Chemical composition proprietary. Pale yellow, mobile liquid, pale reddish-brown sediment, with with a strong citrus odor. Sample stored in original sealed container, considered stable.
Received 2/ 3/92.

Project: 96 hour acute toxicity versus Fundulus heteroclitus (killi fish). Toxicity of PES-51 alone, PES-51 + #2 Fuel Oil, #2 Fuel Oil alone, and Dodecyl Sodium Sulfate.
Test dates 3/5 - 14/92.

Summary of Results: Acute toxicity, expressed as LC50, is as follows:

PES-51	PES-51 + #2 Fuel Oil	#2 Fuel Oil	DSS
1,425 ppm	5,650 ppm	5,200 ppm	7.1 ppm

Project 95116

IV.U.S. EPA TOXICITY DATA

-Oncorhynchus mykiss (Rainbow trout)

These toxicity test are very sensitive due to the fact that the test organisms are juvenile fish (<8 weeks old). Factors such as age and small size generally maximize toxic effect, numerically expressed as the LC50.

There was no significant difference in the response of O.mykiss to USEPA #2 Fuel Oil and to PES-51 in the presence of USEPA #2 Fuel Oil. The 96hr O.mykiss LC50 for PES-51 was determined to be 98 ppm (see USTC Report #065505-1). The 96hr LC50 for both PES-51 + #2 Fuel Oil and #2 Fuel Oil alone was determined to be approximately 500 ppm.

PES-51 in a working mixture of #2 Fuel Oil does not pose a significant toxic threat to this test organism.

-Crassostrea gigas (Pacific oyster) and Mytilus edulis (Bay mussell)

The oyster larvae exhibited and EC50 value of 19 ppm when exposed to PES-51®. PES-51, in the presence of oil, yielded and EC50 of 128 ppb. #2 fuel oil was toxic to oyster larvae at 185 ppb. As with the trout, mysids and urchins, these results demonstrate an expected trend; PES-51 was less toxic than PES-51 plus oil.

The oysters were less sensitive than the urchin to PES-51. This is due to organism life stage. Urchins were tested by first exposing the sperm for one hour, and then adding the eggs; the oyster sperm and egg were mixed together for one hour before exposure. The oysters were exposed as fertilized embryos, and the urchins were not.

The mussel larvae exhibited and EC50 value of 9 ppm when exposed to PES-51. This result was, as expected, very similar to the result of the oyster larvae test (EC50= 19 ppm).

Under actual field use conditions PES-51 will average concentrations of less than 200 ppb.

Project 95116

Report #065625-1
PES-51

United States Testing Company, Inc.

AQUATIC TOXICITY TESTING REPORT

Client: Petroleum Environmental Services, Inc.
P.O. Box 680488
San Antonio, Texas 78268-0488

Testing Facility: United States Testing Company
Biological Services Division
1415 Park Avenue
Hoboken, New Jersey 07030

Sample Description, Handling & Stability: Sample identified by Client as PES-51: Organic Biocleanser, chemical composition proprietary. Yellow, mobile liquid, with a strong citrus odor. Not water soluble. Sample stored in original sealed container, at room temperature, considered stable.
Sample received 3/26/93.

Project: 96 Hour Acute Toxicity of PES-51, in the presence of #2 Fuel Oil, versus Rainbow Trout (O. mykiss)

Test Dates: 6/24 - 28/93

Summary of Results:

PES-51 + #2 Fuel Oil	96hr LC50 = 500 ppm NOEC = 250 ppm
#2 Fuel Oil	96hr LC50 = 518 ppm NOEC = 250 ppm
PES-51	96hr LC50 = 98 ppm * NOEC = 62.5 ppm *

* see USTC Report #065505-1

Project 95116
Report #065505-5
PES-51

United States Testing Company, Inc.

AQUATIC TOXICITY TESTING REPORT

Client: Petroleum Environmental Services, Inc.
P.O. Box 680488
San Antonio, Texas 78268-0488

Testing Facility: United States Testing Company
Biological Services Division
1415 Park Avenue
Hoboken, New Jersey 07030

Sample Description, Handling & Stability: Sample identified by Client as PES-51: Organic Biocleanser, chemical composition proprietary. Yellow, mobile liquid, with a strong citrus odor. Not water soluble. Sample stored in original sealed container, at room temperature, considered stable.
Sample received 3/26/93.

Project: Larval Development vs Pacific Oyster (C. gigas)

Test Dates: 5/21 - 23/93

Summary of Results: 48hr EC50 = 18.7 ppm
No Observed Effect Concentration = 6.25 ppm

AQUATIC TOXICITY TESTING REPORT

Client:

Petroleum Environmental Services, Inc.
P.O. Box 680488
San Antonio, Texas 78268-0488

Testing Facility:

United States Testing Company
Biological Services Division
1415 Park Avenue
Hoboken, New Jersey 07030

Sample Description, Handling & Stability:

Sample identified by Client as PES-51: Organic Biocleanser, chemical composition proprietary. Yellow, mobile liquid, with a strong citrus odor. Not water soluble. Sample stored in original sealed container, at room temperature, considered stable.
Sample received 3/26/93.

#2 Fuel Oil: USEPA Reference Oil (lot WP-681), obtained through Fisher Scientific.

Project:

Larval Development vs Pacific Oyster (C. gigas) PES-51 in the presence of #2 Fuel Oil

Test Dates:

5/21 - 23/93

Summary of Results:

PES-51 + #2 Fuel Oil:	48hr EC50 =	127.7 ppb
	No Observed Effect Concentration =	62.5 ppb
#2 Fuel Oil:	48hr EC50 =	185.3 ppb
	No Observed Effect Concentration =	62.5 ppb

Project 95116
Report# 065505-4
PES-51

United States Testing Company, Inc.

AQUATIC TOXICITY TESTING REPORT

Client:

Petroleum Environmental Services, Inc.
P.O. Box 680488
San Antonio, Texas 78268-0488

Testing Facility:

United States Testing Company
Biological Services Division
1415 Park Avenue
Hoboken, New Jersey 07030

Sample Description, Handling & Stability:

Sample identified by Client as PES-51: Organic Biocleanser, chemical composition proprietary. Yellow, mobile liquid, with a strong citrus odor. Not water soluble. Sample stored in original sealed container, at room temperature, considered stable.
Sample received 3/26/93.

Project:

Larval Development vs Bay Mussel (M. edulis)

Test Dates:

5/28 - 30/93

Summary of Results:

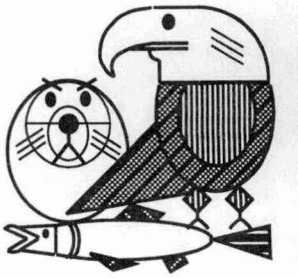
48hr EC50 = 9.6 ppm
No Observed Effect Concentration = 3.125 ppm

Exxon Valdez Oil Spill Trustee Council

Restoration Office

645 G Street, Suite 401, Anchorage, Alaska 99501-3451

Phone: (907) 278-8012 Fax: (907) 276-7178



MEMORANDUM

To: Restoration Work Force

From: Molly McCammon, Director of Operations

Date: July 6, 1994

Subj: Revised Draft Procedures for Reproducing and Distributing Final Reports

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Four agencies submitted comments on the March 4, 1994 draft of Procedures for Reproducing and Distributing Final Reports. A revised draft is attached for your review. Please respond to me with your comments in writing by Thursday, July 14.

From the initial comments received, everyone took exception with the notion that the Restoration Office would reproduce the final reports and charge the project, citing varying procurement procedures and the fact that some projects are closed out or have no spare change. The revised procedures require each agency to reproduce the final reports themselves and submit to the Oil Spill Public Information Center (OSPIC) the requisite number of copies of the final report. Some funding may be available for those 1992 and 1993 projects without report reproduction funding. Once a final process is adopted, please contact me concerning this.

Under these proposed procedures the Restoration Office would exercise a degree of control by requiring that 1) the report be submitted to Carrie Holba in the OSPIC for review of format before it is reproduced, and 2) all submissions be funnelled through the OSPIC so they can shepherd the report through the reproduction and distribution phases. This way the Restoration Office, through the OSPIC, would know what happens to final reports after the Chief Scientist approves them and would make sure they are accessible. Carrie Holba, OSPIC, will be your primary contact, and can be reached at 278-8008.

Again, your comments to me are requested by July 14, 1994.

cc: Jim Ayers, Executive Director
Alex Swiderski, Alaska Department of Law
Dr. Robert Spies, Chief Scientist

PROCEDURES FOR REPRODUCING AND DISTRIBUTING NRDA FINAL REPORTS AND RESTORATION PROJECT REPORTS

1. Report Preparation: The lead agency prepares a final report that meets the following standards in addition to those set forth in "Format for Final Reports" issued in 1992 (See Attachment 1, including 1A and 1B). These standards ensure proper cataloging of final reports and facilitate access to them.

A. Title (See Attachment 2 for sample title pages for NRDA final reports and Restoration Project reports)

- For NRDA final reports, include on the title page the study ID number. An example of the recommended format is:

  "Study ID number: Air/Water Study Number 1."

- For Restoration Project reports, include all project numbers on the title page. If the project number has changed throughout the project, use the following example as a guideline:

  Project number: 95103
  Previous Project Numbers: 94002, 93230

- Include on the title page the individual title, author and lead agency.

- For all NRDA final reports, include on the title page the following uniform title that will link all of the final reports:

  "Exxon Valdez Oil Spill State/Federal Natural Resource Damage Assessment Final Report."

- For all the Restoration Project reports, include on the title page the following uniform title:

  "Exxon Valdez Oil Spill Restoration Project Report."

B. Study History: Each NRDA final report should include a brief history of that specific study, including work plans of which the study was a part and the titles of any study plans or draft reports which contributed to the final report. Each Restoration Project report should include a brief history of that specific project including all project numbers that contributed to or changed throughout the project and any project title changes. The study history should be placed after the title page and before the text of the report. (See Attachment 3 for sample study histories for NRDA final reports and Restoration Project reports)

- Pages: Remove from the pages of the final report all reference to "draft," "interim," or "draft final."

- Margins: The left and right margins of all pages should be at least one inch to allow for two-sided printing and binding.

2. Review as to Form: Upon acceptance of the final report by the Chief Scientist, Dr. Spies will send a copy of the letter of approval to OSPIC. Within 30 days of the date on which the Chief Scientist accepts the final report, the lead agency submits one camera-ready copy of the final report to the Oil Spill Public Information Center (OSPIC), attn. Carrie Holba. Written notification of its receipt will be sent immediately by OSPIC to the PI/Author/Project Leader and the lead agency's Restoration Work Force member. Within 15 days of receipt of the final report, OSPIC will review it for compliance with the standards in the report format and notify the PI/Author/Project Leader and the lead agency's Restoration Work Force member in writing of its findings.

3. Reproduction and Submission: Within 60 days of the date of the letter from OSPIC regarding its review as to form, the lead agency will modify the final report, if necessary, and provide to OSPIC the requisite number of copies. Reproduction standards are presented below:

- Pages: The body of the report should be printed in two-sided format. This standard will reduce the space needed to store report.

- Number of Copies: The lead agency will provide to OSPIC 36 copies of the final report (32 bound copies and 4 camera-ready copies). A camera-ready copy is an unbound copy of the report as it will appear in its final format, that is, two-sided printing with blank pages inserted as appropriate. Bound copies are for libraries; camera-ready copies are for duplication upon request.

- Binding: The Author/PI/Project Leader will submit 32 copies, bound using PERFECT binding, to OSPIC.

4. Future Project Proposals: The schedules and budgets of future project proposals should reflect the time and funding necessary to reproduce 36 copies of the final report that meet the report format standards.

5. Distribution: OSPIC will distribute copies of reports as follows:

- Alaska State Library (18 bound copies) - for distribution to the libraries in the state repository system

- Oil Spill Public Information Center (5 bound copies and 1

camera-ready copy) - for the Administrative Record, OSPIC Reference Collection, Circulating Collection, and Interlibrary Loan.

- National Technical Information System (1 camera-ready copy) - for reproduction upon request.
- Preston Thorgrimson Shidler Gates & Ellis (2 bound copies) - for litigation discovery purposes
- Cordova Public Library (1 bound copy)
- Valdez Consortium Library (1 bound copy)
- Alaska Dept. of Environmental Conservation Library (1 bound copy)
- ADF&G Habitat Division Library (1 bound copy)
- Auke Bay Fisheries Lab Marine Fisheries Service Library (1 bound copy)
- U.S. Fish and Wildlife Service Library (1 bound copy)
- University of Washington Library (1 bound copy)
- Time Frame (1 camera-ready copy) - for reproduction upon request.
- Clay's Printing (1 camera-ready copy) - for reproduction upon request.

The Alaska State Library will distribute its copies to the following libraries:

Alaska Historical Library
E.E. Rasmuson Library (University of Alaska Fairbanks)
University of Alaska Anchorage Consortium Library
Library of Congress
Z.J. Loussac Library
Fairbanks North Star Borough Library
Alaska Resources Library
Washington State Library
Ketchikan Public Library
Sheldon Jackson Library
Northwest Community College Learning Resources Center
A. Holmes Johnson Library (Kodiak)
Kenai Community Library
Kuskokwim Consortium Library (Bethel)
National Library of Canada (Ottawa)
Center for Research Libraries (Chicago)
University of Alaska, Southeast (Juneau)

Attachment 1

2EVS 32.2

FORMAT FOR FINAL REPORTS (1992)

Memorandum

June 2, 1992

To: Pamela Bergmann, DOI
Byron Morris, NOAA

From: John Strand, NOAA JAS
Karen Oakley, FWS KO

Subject: Additional Guidance for Preparation of Damage Assessment Final Reports

We ask that you consider the following materials when developing additional guidelines for preparation of final reports. Essentially, these guidelines are the same as recently adopted by the Fish and Wildlife Service. As to provisions of style, the guidelines follow a convention used by the Journal of Wildlife Management (see Attachment A). Please note that this guidance incorporates the guidance on general format that was previously developed and issued by the Restoration Team.

ADDITIONAL GUIDANCE FOR DAMAGE ASSESSMENT FINAL REPORTS

Nature of the Final Reports

The final report for each Damage Assessment study should be a comprehensive report addressing all data collected over the course of the entire study. The final report should address the original objectives of the study and any changes in the objectives. Although the interim reports are now public, these reports will simply not be as available as the final reports will be. Thus, avoid citing to interim reports in your final report. Think of the final report as both the first and last word on the subject for the purpose of damage assessment under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).

Publication of Results

To preserve the opportunity for investigators to publish results in the peer-reviewed literature, the final reports will not be published as a series. The reports will be simply reports to a sponsoring agency.

Investigators who do not plan to submit results to peer-reviewed journals but who would like their results to be more widely reported will have other opportunities to publish their results. The Trustee Council may sponsor an *Exxon Valdez* oil spill

symposium during 1993, and submitted papers will likely be published in the symposium proceedings.

Format for Final Reports

The Restoration Team has previously provided guidance on the general format of the final reports (Attachment B).

For other matters of style, please refer to Ratti and Ratti (1988), provided as Attachment B. Where conventions different than those in Ratti and Ratti (1988) will be used, the change has been indicated in the margin.

Word Perfect Conventions

Please use Word Perfect 5.0 or 5.1 to help produce reports with a consistent format.

1. Use Format (shift F8) to set up the following standard settings:

   Line
   - Hyphenation - off
   - Justification - left
   - Margins - 1" for both left and right
   - Tabs - 0", every 0.5"
   - Widow Protection - On

   Page
   - Margins - 1" at top and bottom
   - Page numbering - yes, bottom center
   - Header - yes for manuscript, no in final report

   Document
   - Initial Font - Courier 10cpi

2. Use Word Perfect's Table of Contents feature (see pages 735-739 of 5.1 documentation) to create the Table of Contents, List of Figures and List of Tables.

3. Use the Block Protect feature (see page 50) to prevent page breaks from separating headings from the following text. Do not use hard page breaks for this purpose.

4. Use italics (rather than underlining) for latin names and for *T/V Exxon Valdez*. If your printer does not print italics, then use underlining.

5. Regularly use the spell check feature to catch typographical errors. Always do a complete spell check before producing review drafts.

6. Use the space bar, tab key and indent (F4) feature appropriately.

   a. Only use spaces to separate words and sentences.

   b. Use tabs to place characters at set locations across the page, such as when placing a list in the text.

   c. Use indents when you want the text to wrap around at a tab point to the right of the left margin. A hard return is only used at the end of the text to be indented.

9. To make a hanging indent for use in the Literature Cited section, start each citation with indent, shift-tab (F4, shift-tab). Only use a hard return at the end of the complete citation. Example:

   [F4, shift-tab] Byrd, G. V., D. D. Gibson, and D. L. Johnson. 1974. The birds of Adak Island, Alaska. Condor 76:288-300.[hard return]

Other Style Conventions

When referring to the tanker vessel *Exxon Valdez* as a ship, use *T/V Exxon Valdez*. Example: The *T/V Exxon Valdez* ran aground on Bligh Reef.

When referring to the oil spill that occurred because the *T/V Exxon Valdez* ran aground, use *Exxon Valdez* oil spill. After the first mention of the *Exxon Valdez* oil spill in your report, refer to it simply as the spill. Do not use acronyms such as EVOS.

Use the terms "damages" and "injury" as defined by CERCLA regulations (see 43 CFR 11.14).

> Damages means the amount of money sought by the natural resource trustee as compensation for injury, destruction or loss of natural resources
>
> Injury means a measurable adverse change, either long- or short-term, in the chemical or physical quality or the viability of a natural resource resulting either directly or indirectly from exposure to a discharge of oil. Injury encompasses the phrases "destruction" and "loss."
>
> > Destruction means the total and irreversible loss of a natural resource.

Loss means a measurable adverse reduction of a chemical or physical quality or viability of a natural resource.

Avoid reference to interim reports. When you need to cite to information presented in an interim report by another investigator, contact the investigator to determine if the information will be presented in a final report. Cite to final reports whenever possible.

Attachments:

A Format for Final Reports

B Ratti and Ratti (1988), as adapted for Damage Assessment Final Reports

FORMAT FOR NRDA FINAL REPORTS

ATTACHMENT 1A

Principal investigators should follow the format set our below in preparing their final reports. The reports should meet normal scientific standards of completeness and detail that would permit an independent scientific reader to evaluate the reliability and validity of the methods, data, and analyses.

1. Study Title and ID Number: author's names and affiliations.

2. Table of Contents, Lists of Tables, Figures, Appendices

3. Executive Summary

   This should not exceed one page.

4. Introduction

   Provide a short introduction to the report, including the size of the population being investigated and the general area in which field activities are being conducted.

5. Objectives

   These should be the same as the objectives in the damage assessment plan. If any objectives have changed, this section or restoration should describe what has changed and why.

6. Methods

   This should be a clear description of the methods used and the study area. To extent the methodology differs from that described in the damage assessment plan, explain the reason for such deviation.

7. Results

   This should be an objective and clear presentation of the data that have been collected. Investigators should make the presentation in a manner that will make clear to the reader the:

   a. evidence of injury found
   b. evidence that injury found was caused by the Exxon Valdez Oil Spill

8. Discussion

The discussion should interpret the results and explore the meaning and significance of the findings. The relevance to restoration and monitoring should also be discussed here. Where there are unanswered questions, these should be brought out. Where appropriate, the relevant findings from the other EVOS studies and the literature should be included in the discussions.

9. Conclusions

This should be a brief, clear statement of conclusions that are apparent from the discussions; these should include conlcusions related to restoration and monitoring. Where there are major unanswered questions, these could be identified here.

10. Literature Cited

The above is basically the standard format that is widely used in scientific papers and which all scientific investigators will find familiar.

...nage. 52(1):1988

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MANUSCRIPT GUIDELINES FOR THE JOURNAL OF WILDLIFE MANAGEMENT

ATTACHMENT 1B

@ Adapted for use in preparing Damage Assessment Final Reports.

By

John T. Ratti and Leslie W. Ratti

1988. J. Wildl. Manage. 52(1, Suppl.). 34 pp.
The Wildlife Society, Inc., Bethesda, MD

1 January 1988
John T. Ratti
Department of Fish & Wildlife Resources
University of Idaho
Moscow, ID 83843
208-885-6434

RH: JWM Manuscript Guidelines · Ratti and Ratti

MANUSCRIPT GUIDELINES FOR THE JOURNAL OF WILDLIFE MANAGEMENT

JOHN T. RATTI, Department of Fish and Wildlife Resources, University of Idaho, Moscow, ID 83843

LESLIE W. RATTI,[1] The Wildlife Society, c/o Department of Fish and Wildlife Resources, University of Idaho, Moscow, ID 83843

Abstract: This publication provides guidelines for preparing manuscripts submitted to The Journal of Wildlife Management (JWM) for publication consideration. Authors should submit manuscripts in the format and style presented in these guidelines. Proper preparation increases the probability and speed of acceptance.

J. WILDL. MANAGE. 00(0):000-000

Key words: author, format, guidelines, instructions, manuscript, The Journal of Wildlife Management.

These guidelines update Gill and Healy (1980) and those on the back cover of some issues of JWM. This update was prepared to make the guidelines more available to authors by publication in JWM, to include basic format changes, and to provide additional examples. Authors should review a recent issue of JWM but should understand that there are differences between articles in final printed form and correct format of submitted manuscripts (e.g., key words, placement of tables and figures, and line spacing). Check the most recent JWM issues for instructions that may supersede these guidelines and the name and address of the current editor in chief. Papers

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[1]Present address: ThoroGold Farm, 2457 W. Twin Road, Moscow, ID 83843.

that obviously deviate from JWM format and style may be returned for correction before review.

Special thanks go to S. L. Beasom for major contributions to this manuscript. We received helpful review comments from B. B. Ackerman, C. E. Braun, D. E. Capen, J. D. Gill, F. S. Guthery, G. B. Healy, H. E. Hodgdon, R. L. Kirkpatrick, F. L. Knopf, P. R. Krausman, N. A. Lawrence, K. R. Rautenstrauch, and P. E. White. Portions of this manuscript have been extracted from Gill and Healy (1980) with permission of The Wildlife Society. This is Contribution 293, University of Idaho Forest, Wildlife, and Range Experiment Station.

POLICY

Referees and editors judge each submitted manuscript on data originality, ideas, interpretations, accuracy, conciseness, clarity, appropriate subject matter, and contribution to existing literature. Prior publication or concurrent submission to other refereed journals precludes publication in JWM (see additional information in section on Transmittal Letter and Submission). The JWM, Wildlife Society Bulletin, and Wildlife Monographs have identical quality standards. Fisheries papers are discouraged unless information is part of an account that mainly concerns terrestrial vertebrates.

PAGE CHARGES AND COPYRIGHTS

Current policies and charges are explained in the acknowledgment sent to authors when manuscripts are accepted for publication. Page charges may change annually; in 1987 they were $50/page for the first 10 pages plus $95 for each succeeding page. Authors pay for alterations to page proofs (in 1987, $2/reset line) except for typesetting and editorial errors. If a manuscript not in the public domain is accepted for publication, authors or their employers must transfer copyright interest to The Wildlife Society. Publications authored by federal government employees are in the public

domain. Manuscript submission implies entrusting a clear copyright (or equivalent trust in public domain work) to the editor-in-chief until the manuscript is either rejected, withdrawn, or accepted for publication. If accepted, The Wildlife Society retains the copyright.

COPY

Use good-quality white paper, 215 x 280 mm (8.5 x 11 inches) or metric size A4. Do not hyphenate words at the right margin. If your manuscript is typed with a computer word processor, do not right-justify the text. Manuscripts produced on poor-quality dot matrix printers are not acceptable.

Margins should be ~~3 cm (1 3/16 inches)~~ 1 inch on all sides. ~~Do not violate margin boundaries to begin a new paragraph or the Literature Cited section at the top of a new page; i.e., do not leave >3 cm of space at the bottom of a page.~~ Type the senior author's last name (upper left) and page numbers (upper right) on pages 2 through the Literature Cited and on tables and figure title pages, but not on the first page, figures, or illustrations. Underline words in the text only to indicate italics for scientific names or emphasis (rarely). Keep the original copy and submit 4 good-quality photographic copies. Submit a transmittal letter (see below) with your manuscript.

RUNNING HEAD, TITLE, AND AUTHORS

Page 1 of the manuscript should ~~begin with the date (update with each revision), corresponding author's name, address, and telephone number, single-spaced in the upper left corner.~~ ~~Thereafter,~~ all text is double-spaced, ~~including~~ except tables.

~~The running head (RH) is the first line following the correspondent's address. The RH is limited to 45 characters, left-justified, and typed in upper- and lower-case letters followed by a dot (or raised period) and the last name(s) of 1 or 2 authors. For >2 authors use the name of the first author followed by "et al." Single underline the author's name(s). The RH is~~

← header

Use widow/orphan protection

the date (center)

Use italics if available on your printer

to the Oil Spill Office.

follow format shown on following page.

Attachment 2

Cover Page - NRDA Final Reports

Title: Exxon Valdez Oil Spill Damage Assessment to Mussel Beds in Prince William Sound

Study ID Number: Fish/Shellfish Number 60

Exxon Valdez Oil Spill
State/Federal Natural Resource Damage Assessment Final Report

Author: Gretchen Smith

Lead Agency: Alaska Dept. of Fish and Game

Publication Date: February 28, 1991

Cover Page - Restoration Project Reports

Title: River Otter Monitoring

Project Number: 95103

Previous Project Numbers: 94002, 93230

Exxon Valdez Oil Spill Restoration Project Report

Author: Mike Jones

Lead Agency: U.S. Fish and Wildlife Service

Publication Date: January 1, 1995

Attachment 2

The first page of **ALL** reports should include:

Study History (text)

Abstract (text)

Conclusion (Brief Summary, text)

Key Words (list)

Attachment 3

SAMPLE STUDY HISTORY FOR NRDA FINAL REPORTS

Fish/Shellfish Study Number 60 began as a detailed study plan in 1989 under the title, Injury to Mussel Beds. A draft report was issued in 1990 under the title, Exxon Valdez Oil Spill Damage Assessment to Mussel Beds in Prince William Sound. Subtidal Study Number 45 is connected to the draft report under the same title. A final report was issued in 1991 under the same title.

Attachment 3

SAMPLE STUDY HISTORY FOR RESTORATION PROJECT REPORTS

Previous project number 93230 was funded in FFY92 as River Otter Monitoring and Recovery. Funding for project number 93230 ended in FFY93. In FFY 94, project number 93230 became project number 94002 under the same title. At the start of FFY95, project number 94002 became project number 95103 under the title River Otter Monitoring.

Oil Spill Public Information Center
645 G Street ■ Anchorage, Alaska 99501 ■ (907) 278-8008 ■ Fax: (907) 276-7178

, 1994

Dear (insert Principal Investigator's name):

The OSPIC staff has received the report listed below for review of format.

Within 15 days, you will be notified in writing of the outcome of the review. If revisions are needed in the title page or study history, you will be advised. When the format is complete and satisfactory, you will be instructed to provide 32 bound copies and 4 camera-ready copies to the OSPIC **within 60 days** for distribution.

The public is eager for the results of your hard work. Our goal is to make this publication process as expeditious and accurate as possible. We greatly appreciate your efforts in helping us provide public access in a timely manner. If you have any questions or comments, please don't hesitate to contact me at the numbers listed.

Sincerely,

Carrie A. Holba
Director

cc: (insert Restoration Work Force representative for Lead Agency)

Oil Spill Public Information Center
645 G Street ■ Anchorage, Alaska 99501 ■ (907) 278-8008 ■ Fax: (907) 276-7178

, 1994

Dear (insert Principal Investigator's name):

The OSPIC staff has reviewed the format of the report listed below.

The following revisions are necessary to ensure complete and accurate database records for this report:

Please modify the Cover Page and/or the First Page accordingly and submit copies of these pages to the OSPIC **within 30 days.** Please delay reproduction of this report until the revisions have been approved.

A prompt response ensures public access to this valuable information in a timely manner. We greatly appreciate your assistance. If you have any questions or comments, please don't hesitate to contact me at the numbers listed.

Sincerely,

Carrie A. Holba
Director

cc: (insert Restoration Work Force representative for Lead Agency)

Oil Spill Public Information Center
645 G Street ■ Anchorage, Alaska 99501 ■ (907) 278-8008 ■ Fax: (907) 276-7178

, 1994

Dear (insert Principal Investigator's name):

The OSPIC staff has reviewed the format of the report listed below and found it to be satisfactory.

Please provide 32 bound copies and 4 camera-ready copies of this report to the OSPIC **within 60 days** of receiving this letter. The OSPIC staff will distribute the reports to the appropriate libraries, copy centers, and the National Technical Information Service.

The public is eager for the results of your hard work. Our goal is to make this publication process as expeditious and accurate as possible. We greatly appreciate your efforts in helping us provide public access in a timely manner. If you have any questions or comments, please don't hesitate to contact me at the numbers listed.

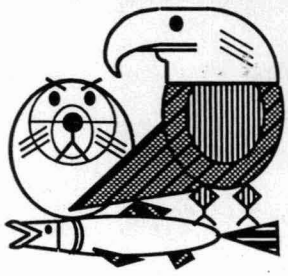
Sincerely,

Carrie A. Holba
Director

cc: (insert Restoration Work Force representative for Lead Agency)

Exxon Valdez Oil Spill Trustee Council

Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178



MEMORANDUM

To: Restoration Work Force

From: Molly McCammon
Director of Operations

Date: July 6, 1994

Subj: Response to Chief Scientist RFP

Attached for your review is the latest draft of the Chief Scientist RFP. Please submit your written comments to Carol Fries by Thursday, July 14, 1994.

Request for Proposals
ASPS 95-0047
Scientific Support for Exxon Valdez Oil Spill Trustee Council

1. INTRODUCTION AND INSTRUCTIONS

1.1 Purpose of this Request for Proposals (RFP)

The Department of Natural Resources Office of the Commissioner, Exxon Valdez Oil Spill Project Office, is soliciting detailed proposals for Scientific support for the Exxon Valdez Oil Spill Trustee Council and its Executive Director in order to ensure that Restoration of impacted areas can proceed with the full benefit of scientific knowledge related to the Exxon Valdez Oil Spill.

1.2 Minimum Qualifications Required for Proposal Submission

The prime contractor must have on staff a project manager who will act as a single point of contact. The project manager must have at least a Ph.D. level of training in a scientific discipline related to the restoration of resources and services injured by the Exxon Valdez Oil Spill and five years of field experience. For further information regarding scientific areas of discipline desired refer to section 6.4. Failure to demonstrate this requirement in the proposal will result in the proposal being declared non-responsive.

1.3 Issuing Office

Mailing Address:
Department of Natural Resources
Commissioner's Office
P.O. Box 107005
Anchorage, AK 99510-7005

Physical Address:
Department of Natural Resources
Commissioner's Office
3601 C Street, Suite 1210
Anchorage, Alaska

Telephone: 907-762-2459

Contact: Carol Fries, Natural Resources Manager

One (1) free RFP, with associated contract documents may be picked up or requested from the following location during the regular working hours of 8:00 a.m. to 12:00 noon and 1:00 p.m. to 5:00 p.m., Monday through Friday excluding State holidays.

The State assumes no liability for incorrect addresses or delivery of RFP packages by public or private carriers.

1.4 Mailing Address and Deadline for Receipt of Proposals

Offerors must submit four (4) copies of their proposal to the issuing office located at 3601 C Street, Suite 1210, in a sealed envelope(s) clearly labeled:

Department of Natural Resources
Commissioner's Office
RFP No. **95-0047**
Scientific Support, Exxon Valdez Oil Spill Restoration
(Offeror's Name)
Due August 16, 1994
Attention: Carol Fries, Project Manager

Proposals must be received by the issuing office no later than 5:00 p.m. August 30, 1994. Failure to meet the deadline will result in disqualification of the proposal without review.

1.5 Questions About the RFP

Any technical or procedural questions regarding the RFP or contractual documents should be directed to the Project Manager, Carol Fries at the address above. All questions that require clarification or interpretation of this RFP that cannot be answered by careful review of the document must be received in writing at the issuing office address no later than ten (10) calendar days before the due date for proposals. The Project Manager will respond in writing if the question cannot be answered by directing the offeror to the appropriate section of the RFP. Copies of any written response to questions will be made available to all parties that receive the RFP.

Any correspondence concerning protest of the intent to award a contract (See Section 2.23) should be addressed to:

Chris Rutz, Procurement Officer
Department of Natural Resources
Administrative Support
3601 C Street, Suite 1134
Anchorage, AK 99503
Phone: (907) 762-2534

1.6 Location of Work

The anticipated primary location where the work will be performed, completed, and managed is Anchorage, Alaska; however travel may be involved to other locations depending on the methodology developed in the offeror's proposal. It is also possible that some of the work, review of reports, synthesis of information may be done at the contractor's primary business location. However, it should be clearly understood that travel to Alaska and some associated field work will be required.

1.7 Roles of Government Organizations and Contacts for the Contract and RFP Process

Exxon Valdez Oil Spill Trustee Council -- as specified in the Settlement and Consent Decree (Attachment) is composed of representatives from three federal agencies; Department of the Interior, Department of Agriculture, and Department of Commerce, and three state agencies; Department of Environmental Conservation, Department of Fish and Game, and the Department of Natural Resources.

State of Alaska	Represented by:	U.S. Government	Represented by:
Dept. of Environmental Conservation (DEC)	DEC	Department of Interior	National Park Service US Fish & Wildlife Service
Dept. of Fish & Game (ADF&G)	ADF&G	Dept. of Commerce	Nat. Oceanic & Atmospheric Admin.
Dept. of Law (DOL)	Dept. of Natural Resources (DNR)	Dept. of Agriculture	US Forest Service

Executive Director -- provides the organizational and administrative structure through which the Trustees direct Restoration efforts. The Executive Director works with various Trustee Agency representatives through the Restoration Work Force with input from Peer Reviewers and the Public Advisory Group to develop and implement a cohesive, integrated Restoration program. (Attachment: Exxon Valdez Oil Spill Trustee Council, Organization Chart)

Restoration Work Force -- is composed of representatives from the six Trustee agencies or their representatives. The Restoration Work Force is responsible for presenting agency concerns and issues to the Executive Director and serves as a conduit from the Trustee Council to normal agency operations.

Peer Reviewers -- provide independent technical and scientific review of Exxon Valdez Oil Spill Trustee Council funded projects and programs.

Public Advisory Group -- a group of 17 members representing a variety of public interest groups and the public at large whose mission is to advise the Trustee Council on matters pertaining to injury assessment, restoration activities or other use of natural resource damage recoveries obtained by the Governments.

Principle Investigators -- scientists or agency representatives in charge of the management of a particular restoration project. Principle Investigators may be agency employees, from the private sector, or individuals under contract to an agency or another entity.

Commissioner, Department of Natural Resources -- responsible for the operations, policies of the Department of Natural Resources and thereby responsible for the administration of this contract subject to Trustee Council approval and funding.

Contract Project Manager -- as indicated in this RFP has delegated authority to solicit proposals, participate in the proposal evaluation committee, make recommendations for negotiations, and negotiate the final terms and conditions of the contract subject to the Procurement Officer's approval. The Project Manager is also responsible for contract administration which includes approving deliverables, accepting proposals for changes, and approving invoices.

The Procurement Officer -- as defined by this RFP, is responsible for reviewing the work of the Project Manager and evaluation committee to assure compliance with State procurement policy and DNR guidelines, making determinations with respect to a protest or claim as required by law, and final review and approval of the contract, for the Commissioner of DNR.

For further clarification of the entities and individuals involved in this process please refer to the organizational chart included as an attachment.

1.8 Funding of the Contract

A contract resulting from this RFP is subject to the availability of appropriations for the purpose of the contract. The project is funded by the Exxon Valdez Oil Spill Trustee Council, which is charged with managing Exxon Valdez Oil Spill Settlement funds. Approximately $400,000 is anticipated to be available for the project annually. Final issuance of the contract will not occur until authorization has been received by DNR from the Exxon Valdez Oil spill Trustee Council to receive and expend these funds.

1.9 Period of Performance

The period of performance for this contract is anticipated to be from November 1, 1994 through September 30, 1994, with up to 5 options for annual renewal, subject to funding availability and approval of the Trustee Council.

1.10 Solicitation and Advertising

In accordance with 2 AAC 12.220. Notice of this solicitation for proposals is being published in the state administrative journal as well as in Anchorage, Juneau, and Fairbanks newspapers, newspapers in other spill area communities, *Science* published by the American Association for the Advancement of Science and Alaska Journal of Commerce.

2. STANDARD PROPOSAL INFORMATION

2.1 Required Review

Offerors shall carefully review this solicitation without delay, for defects and questionable or objectionable matter. Questions, objections or comments must be made in writing and received by the Project Manager, Carol Fries at the Issuing Office, no later than ten (10) days before the due date of proposals. This allows issuance of any necessary amendments in order to prevent the opening of a defective solicitation upon which award could not be made, but which would result in the exposure of the offeror's proposals. Protests based upon any omission, error, or the content of the solicitation will be disallowed if not made in writing before the time set for opening. Copies of comments should be forwarded to Chris Rutz, Procurement Officer, Department of Natural Resources, Division of Management, 3601 C Street, Suite 1134, Anchorage, Alaska, 99503, for forwarding to the Commissioner of the Department of Administration as required.

2.2 Addenda to the RFP

Addenda to this request for proposals may be issued at the State's option. An interested offeror, however, may request modifications to the scope, specifications, or administrative requirements. Final acceptance or denial of the request is the decision of the procurement officer. Failure of the procurement officer to respond in writing to a request for addenda to the RFP shall be considered a rejection of the request. All addenda will be in writing and issued to all persons who receive copies of this RFP.

2.3 Incurred Costs

No costs incurred by offerors in preparation of proposal(s), including travel and personal expenses, may be charged as an expense of performing the contract. The State shall not be subject to payment for costs incurred for proposal preparation or contract preparation as a result of valid and legal termination of this RFP or termination of the contract resulting from this award of the RFP.

2.4 Authorized Signature

Proposals must be signed by an individual authorized to bind the offeror to its provisions. The proposal must remain valid for at least ninety (90) days from the proposal receipt deadline. In responding to this RFP the individual signing the response is certifying under penalty of perjury that the price submitted was independently arrived at without collusion.

2.5 Offeror's Certification

By signature on their proposal, offerors certify that they are complying with: 1) the laws of the State of Alaska; 2) the applicable portion of the Federal Civil Rights Act of 1964; 3) the Equal Employment Opportunity Act, the Americans With Disability Act (ADA) and the regulations issued thereunder by the federal government; and 4) all terms and conditions set out in this RFP. If any offeror fails to comply with 1) through 4) of this paragraph, the State reserves the right to disregard the proposal, terminate the contract, or consider the contractor in default.

2.6 Conflict of Interest

Each proposal shall include a statement indicating whether or not the firm or any individual working on the contract (employee or subcontractor) has a possible conflict of interest. If there is a conflict of interest or any appearance of such a conflict -- a brief description of the nature of the conflict must be included in the statement. Any entity, individual, employee of an organization, or any individual receiving or applying for, or having a personal or financial interest in Exxon Valdez Oil Spill projects, current or proposed, is considered to have a potential conflict of interest. If, in the opinion of the Evaluation Committee, there is a significant conflict of interest the offeror's proposal will be rejected as non-responsive.

2.7 Disclosure of Proposal Contents

AS 36.30.230 requires that the procurement officer open proposals so as to avoid disclosure of contents to competing offerors during the process of negotiations. To the extent that the offeror designates and the procurement officer concurs, trade secrets and other proprietary data contained in proposals may be considered confidential. Any material considered confidential must be clearly noted in the proposal and include a brief statement as to the need for confidentiality. All proposals and related information will become public information after issuance of the notice of intent to award.

AS 36.30.510 requires that the contract files include a copy of each proposal submitted and be open to reasonable inspection by the public. All proposals and material submitted become the property of the State and may be returned only at the state's option. All proposals submitted will be kept on file by the DNR for a minimum of two years.

2.8 Subcontractors

The offerors may subcontract portions of the project tasks; however, the successful contractor will be required to comply with AS 36.30.115 during the performance of this contract. All offerors are required to submit the names and addresses of all subcontractors and the type and percentage of work they will be providing on this project.

The successful contractor must also supply proof of all subcontractor's Alaska business licenses within five (5) days from the date the Notice of Intent To Award is issued according to AS 36.30.210(a). Failure to do so will result in the cancellation of the award.

If the successful contractor proposes to accomplish more than 50% of the work through subcontractors, they must provide a written statement that they are not operating as a joint venture with the other contractors and will be solely responsible for all work products, profits, and losses, as they relate to the performance of this contract. Failure to provide this statement may result in the proposal being declared a "joint venture" proposal for the purpose of calculating the Alaska proposer preference.

During the term of this contract, the contractor may be requested to provide additional technical and/or scientific expertise which may require subcontracting. At the time of the request, the above conditions will apply to any additional subcontractors.

2.9 Joint Ventures

Joint Ventures will be acceptable for the performance of this contract. For a joint venture proposal to be considered responsive, the offer must provide the following information as it relates to the joint venture:

a. proof of a valid Alaska business license for the joint venture (Note: this must be a separate license for the joint venture for the purposes of this contract.) Refer to Section 2.10 for information regarding evidence of an Alaska business license;

b. documentation of the legal relationship of the parties to the agreement and a clear understanding of who will be responsible for appropriate portions of the contract;

In order for the Joint Venture to qualify for the Alaskan Proposer preference they must also provide evidence, as appropriate, that each party to the venture qualifies as an Alaska vendor in accordance with Section 2.16 of this RFP. Joint venture proposals that are offered by a combination of qualified Alaskan and non-Alaskan vendors can be responsive however they will not be entitled to the Alaska Proposer preference.

2.10 Licenses

All offerors are required to hold a valid Alaska business license and the necessary applicable professional licenses required by Alaska Statute. For more information on these licenses, contact the Department of Commerce and Economic Development, at 907-465-2550 for Business Licenses and 907-465-2534 for Occupational Licenses.

AS 36.30.210(a) requires that offerors submit evidence of a valid Alaska business license when submitting offers in response to proposals. **If evidence of a valid Alaska business license is not submitted with the proposal - the offeror's proposal will be rejected as non-responsive.** Acceptable evidence that the offeror possesses a valid Alaska business license may consist of any one of the following:

a. copy of the Alaska business license;
b. a certification by the offeror in the proposal that the offeror has a valid Alaska business license with the license numbers included in the proposal;
c. a canceled check for the Alaska business license fee;
d. a copy of the Alaska business license application with a receipt stamp from the State's business license office; or
e. a sworn notarized affidavit that the offeror has applied and paid for the Alaska business license.

Proposals submitted by joint ventures are required to have a license in the name of the joint venture. The business licenses should be in the name of the offeror, unless otherwise required by the Department of Commerce & Economic Development.

2.11 Multiple or Alternate Proposals

In accordance with 2 AAC 12.830, multiple or alternate proposals may be considered responsive.

2.12 Correction, Modification, or Withdrawal of Proposals

A proposal may be corrected, modified or withdrawn by providing a written request from an authorized agent of the offeror to the Project Manager before the time and date set for receipt of the proposals. After proposals are opened modifications may be allowed prior to completion of the evaluation process if the evaluation committee determines that it is in the best interest of the state to solicit modifications or best and final offers. Modifications to proposals or best and final offers will be solicited in accordance with AS 36.30.240 and 2 AAC 12.290.
The apparent successful offeror may be requested to modify or correct his proposal during contract negotiations to the extent it is in the best interests of the State.

2.13 Right of Rejection

Offerors must comply with all of the terms of the RFP, with AS 36.30, the State Procurement Code, and all applicable local, state, and federal laws, codes, and regulations.

The procurement officer, based on recommendations of the evaluation committee, may reject any proposals that do not comply with all of the material and substantial terms, conditions, and performance requirements of the RFP.

Minor informalities, that do not affect responsiveness; that are merely a matter of form or format; that do not change the relative standing or otherwise prejudice other offers; that do not change the meaning or scope of the RFP; that are trivial, negligible, or immaterial in nature; that do not reflect a material change in the work; or, that do not constitute a substantial reservation against a requirement or provision may be waived by the procurement officer.

The state reserves the right to reject all proposals if it is determined that an award would not be in the best interest of the state.

2.14 Evaluation of Proposals

All proposals received will be reviewed and evaluated by a committee that will be made up of State employees and other representatives as appropriate, including but not limited to, the Executive Director of the Exxon Valdez Oil Spill Trustee Council, and/or his representative/s, provided the evaluation committee is made up of at least the procurement officer and two employees of the purchasing agency in accordance with 2 AAC 12.260.

The evaluation will be based on the evaluation factors set out in section 6 of this RFP.

2.15 Cost Evaluation Formula

The distribution of points based on cost must be determined as follows per AS 36.30.040, .210, .250, and 2 AAC 12.260 (d). The lowest priced proposal receives the maximum number of points allocated to price. Other allocations are determined by this formula:

$$\frac{\text{(Price of Lowest Cost Proposal) x (Maximum Points for Cost)}}{\text{Price of Each Higher Cost Proposal}} = \text{Points awarded for cost}$$

Cost proposals from Alaskan proposers will be reduced by 5 percent for this calculation. (Reference 2 AAC 12.260 (d)).

For the purposes of evaluating cost in accordance with this formula offerors will be asked to provide costs information for a sample task included as an attachment entitled **Sample Task**. The above formula will be applied to the total costs submitted in response to the sample task.

2.16 Alaska Vendor Preference

In determining whether a proposal is advantageous to the State, the Evaluation Committee shall take into account whether the offeror qualifies as an Alaskan vendor under AS 36.30.170(b). The Alaskan Vendor's Preference consists of a 5 percent price-based preference (see Section 2.15 above) and a 10 percent overall evaluation point preference according to 2 AAC 12.260 (e).

An "Alaska Vendor" means a person who:

a. Holds a current Alaska business license;
b. Submits a bid for services under the name as appearing on the person's current Alaska business license;
c. Has maintained a place of business within the state staffed by the bidder or an employee of the bidder for a period of six (6) months immediately preceding the date of the RFP;
d. Is incorporated or qualified to do business under the laws of the state, is a sole proprietorship, and the proprietor is a resident of the state or is a partnership, and all partners are residents of the state; and
e. If a joint venture, is composed entirely of ventures that qualify under parts (a) through (d) of this subsection.

It is the responsibility of the offeror to include in the proposal an affidavit of their qualification for this preference. In the case of joint ventures, the proof of a valid Alaska business license will be required for each firm in the joint venture, and for the joint venture, itself.

The joint venture partners must qualify under Item (c) above. If a joint venture was recently established, it may still qualify for Alaska preference provided the principal firms qualify under AS 36.30.170(b).

2.17 Interviews for Clarification

The Evaluation Committee (EC) may interview offerors to provide clarification of certain points in proposals prior to completion of the evaluation process. The purpose would be to give the EC a more complete understanding of the responsiveness of the contractors proposal. Material changes to proposals will not be allowed during the request for clarifications however, additional information may be requested for the purposes of clarification, and all offerors will be given similar opportunities for clarification. Interviews will be conducted in such a manner that information derived from competing offerors is not disclosed. Interviews will be scheduled at the convenience of the issuing office. AS 44.62.310 does not apply to meetings with offerors conducted under this section. Interviews may be conducted by teleconference.

2.18 Discussions for Best and Final Offers

The Evaluation Committee (EC) may require written or oral submittals from offerors for the purpose of clarification in accordance with AS 36.30.240 and 2AAC 12.290. The purpose of these submittals will be to ensure full understanding of the requirements of the RFP in order for the EC to more clearly determine the best proposal when two or more responses are similarly scored after the preliminary evaluation. Discussions will be limited to sections of the RFP identified by the

Evaluation Committee (EC). Discussions will be with only the most qualified offerors who have submitted a proposal deemed reasonably susceptible for award by the EC. Discussions, if held, will be after the preliminary evaluation of proposals has been completed by the EC. If modifications are made as a result of these discussions they will be put in writing. Following discussions, the EC may set a time for best and final proposal submissions from those offerors with whom discussions were held. Reevaluation of the best and final proposals will be limited to the specific sections of the RFP opened to discussion by the procurement officer.

2.19 Contract Negotiations

Upon completion of the evaluation process contract negotiations will commence. It is anticipated that all contract negotiations will be held at the Department of Natural Resources, Office of the Commissioner, Suite 1210, located at 3601 C Street, Anchorage, Alaska, or by teleconference.

2.20 Failure to Negotiate

If the selected offeror fails to provide the necessary information for negotiations in a timely manner, negotiate in good faith, or cannot perform the contract within the amount of budgeted funds available for the project, the State may terminate negotiations and negotiate with the next highest ranked contractor, or terminate the award of the contract.

2.21 Notice of Intent to Award

After completion of the evaluation process and contractor negotiations the issuing office will issue a Notice of Intent to Award to all offerors. This notice will contain the names and addresses of all the offerors including the intended recipient of the contract.

2.22 Payment of Taxes

If it is discovered that the potential contractor is in arrears on taxes, the contract shall not be awarded until the Department of Revenue approves of the payment provisions of the contract.

2.23 Informal Debriefing

Any unsuccessful offeror may request and receive an informal debriefing either ten (10) working days after the Notice of Intent to Award is mailed out or, if there is an appeal, upon completion of the appeal process. The debriefing shall be limited to the offeror's proposal, concentrating on the areas considered deficient or inferior. The merits of other proposals will not be discussed. A formal review may be requested by writing to Carol Fries at the issuing office address.

2.24 Aggrieved Offerors

In accordance with AS 36.30.560 an interested party may protest an award of contract, or the proposed award of a contract, or a solicitation by an agency. The protest shall be received in writing at the address below within ten (10) calendar days after the Notice of Intent to Award is issued.

Chris Rutz, Procurement Officer
Department of Natural Resources
Administrative Support
3601 C Street, Suite 1134
Anchorage, AK 99503
Phone: (907) 762-2534

The protest must include the following information:

a. the name, address, and telephone number of the protester;
b. the signature of the protester or the protester's representative;
c. identification of the contracting agency and the solicitation or contract at issue;
d. a detailed statement of the legal and factual grounds of the protest, including copies of relevant documents, and;
e. the form of relief requested.

Protests filed by telex or telegram are not acceptable because they do not contain a signature. Fax copies of the protest containing a signature are acceptable.

All offerors will be notified of any protests. Review of protests, decisions of the procurement officer, hearings and appeals will be conducted in accordance with AS 36.30, the State Procurement Code, and Article 8 "Legal and Contractual Remedies."

3. STANDARD CONTRACT INFORMATION

3.1 Contract Approval

This RFP does not obligate the State to perform until a contract is signed and approved by both parties. If approved, it is effective from the date of approval by the State. The State shall not be responsible for work done, even in good faith, prior to approval of the contract by the Commissioner of DNR, or his designee.

3.2 Proposal as Part of the Contract

The successful proposal may become an integral part of the contract. It will not, however, be considered the total binding obligation for the contract. Any and all proposal conditions may be included, at the discretion of the issuing office, as a part of the final contract.

3.3 Additional Terms and Conditions

The State reserves the right to include additional terms and conditions during the contract negotiations. These terms and conditions must be within the scope of the original RFP and contract documents, and will be limited to cost, clarification, definition, and administrative and legal requirements.

3.4 Insurance Requirements

The successful offeror must secure satisfactory insurance coverage as required by the Department of Administration, Division of Risk Management. Failure to provide evidence of adequate coverage is a material breach and grounds for termination of the contract. Please review form 02-093 B-2, Appendix B2, Indemnity and Insurance, for details on required coverage. A copy is included in as an attachment for your reference.

3.5 Standard Contract Provisions

The successful offeror will be required to sign the standard agreement form for professional services, form 02-093. A copy is included as an attachment for your reference. The contractor will also be required to comply with the general contract provisions of Appendix A. Any alteration of these general provisions must be approved by the Department of Law before the contract can be accepted by the DNR Procurement Officer.

3.6 Contract Type Resulting from the RFP

The contract awarded as a result of this RFP will be a fixed fee cost reimbursable contract. This contracting method has been determined to be the most practical because of the variable nature of the tasks required to accomplish the scope of work anticipated during the contract period. The contractor will be expected to provide estimated cost proposals for assigned tasks or projects within the scope of the contract which will be subject to the approval of the executive director, contract manager, and procurement officer. The state will reimburse the contractor based on pre-negotiated fixed fee(s), price schedule(s), and allowable reimbursable costs with an anticipated not to exceed limit for each budget period.

3.7 Contract Funding Requirements

This contract is subject to Exxon Valdez Oil Spill Trustee Council approval and funding. Funding available and contract periods may vary depending upon Trustee Council actions and resolutions. Final issuance of this contract and any subsequent amendments will not occur until authorization has been received by DNR to take such action and receive and expend Trustee Council funds in support of this project.

3.8 Payment Procedures

The State will pay only for services rendered.

The State intends to pay the contractor a negotiated sum based upon satisfactory completion of tasks, review of the required deliverables, and submission of an invoice from the contractor. Up to 30 percent of each invoiced amount may be withheld pending completion of the project.

No payment shall be made until the invoice has been approved and authorized by the Project Manager.

3.9 Contract Personnel

The State reserves the right to approve or disapprove any change in the successful offeror's project team members whose participation in the project is specifically offered in the proposal. Similarly, changes in the amount of participation by key project members will require State approval. This is to ensure that persons with vital experience and skill remain fully involved in the project.

Requests for any change in contractor personnel shall be submitted in writing to the State for the State's review and sign-off before the change is made. Contractor personnel changes, not approved by the State, may be cause for the State to terminate the contract.

3.10 Ownership of Documents

All data generated as a result of this contract will be delivered to the State and/or the Exxon Valdez Oil Spill Restoration Office either in Juneau or Anchorage, at the direction of Project Manager. During the period of performance, the information may not be disclosed to third parties, except as expressly provided in the contract, without written permission of the Project Manager or Executive Director.

3.11 Reimbursement to the State for Unacceptable Deliverables

The contractor is responsible for quality, occurrence and completion of all work identified by the contract. All work shall be subject to evaluation and inspection by the State at all times to assure satisfactory progress, to be certain that work is being performed in accordance with the contract specifications, terms and conditions, and to determine if corrections and modifications are necessary. Should such inspections indicate substantial failure on the part of the contractor, the State may terminate the contract for default. Furthermore, the State may require the contractor to reimburse any monies paid (pro rata based on the identified proportion of unacceptable products received) and any associated damage costs.

3.12 Termination for Default

If the contractor refuses or fails to perform the work, or any separable part thereof, with such diligence as will ensure its completion within the written contracted time frame, the State may, by

written notice to the contractor, terminate the right to proceed with the work or such part of the work as to which there have been delays. This clause does not restrict State termination rights under the general contract provisions of Appendix A, which is attached to this RFP.

3.13 Contract Changes

During the course of performing the work required by this contract, the contractor may be requested to perform additional work within the general scope of the contract. Such direction shall come from either the Exxon Valdez Oil Spill Trustee Council in the form of a request or resolution, the Executive Director appointed by the Trustee Council, or the Project Manager in writing.

When additional work is required, the Executive Director, through the Project Manager shall forward to the contractor a description of the work to be accomplished and request that a proposal be offered within a given time period. The Executive Director, through the Contract Manager, shall then act upon the proposal submitted by the contractor, either granting or denying in writing permission to proceed with the described work.

Under no circumstances shall additional work proceed by the contractor beyond the time frame or not to exceed amounts specified in the contract without an approved written contract amendment by the Procurement Officer.

4. BACKGROUND INFORMATION

Pursuant to the grounding of the T/V *Exxon Valdez* on March 24, 1989, various state and federal agencies conducted damage assessment studies necessary for the pursuit of litigation. The position of Chief Scientist provided unbiased scientific and technical advice and expertise to the Principal Investigators, Government Agencies, and litigation team in order to ensure the validity of study results and provide a sound scientific basis for litigation efforts.

Exxon and the Federal and State Governments reached agreement on a settlement on September 31, 1991. The Settlement and Consent Decree agreed to by Exxon, The State of Alaska and the Federal Government provided for the establishment of a joint State and Federal entity, the Trustee Council, to administer the Settlement funds. The funds are controlled by six trustees, three state and three federal who appoint advisors to assist them. Following the settlement of government lawsuits against Exxon, the need for unbiased scientific input to the Trustee Council remains crucial to the development of a Restoration Initiative based on sound scientific principles which will withstand the test of time as well as public and scientific scrutiny.

The Restoration Initiative has moved forward. The Trustees have hired an Executive Director who has instituted a broad ecosystem based approach to restoration and the scientific studies which will support the development and implementation of restoration policies and projects. The executive director of the Restoration Office has adopted an adaptive management approach to the restoration process which assumes that scientific knowledge is continually evolving. Management thus becomes a continually changing entity requiring flexibility and adaptability to accommodate uncertainty. Scientific expertise is needed in order to ensure that the Trustee Council fully benefits from the information derived from Exxon Valdez Oil Spill (EVOS) related studies and that objective science continues to provide a reliable, responsive framework within which to direct Restoration efforts.

For information on Trustee Council programs, please refer to the Attachments for background information such as the Settlement and Consent Decree, a map of the area affected by the oil spill, the Draft Restoration Plan, and a flow chart depicting the organizational structure and the relationships of participating entities, agencies and individuals. Additional information about Trustee Council actions, programs and projects can be obtained from:

Oil Spill Public Information Center
645 "G" Street, Anchorage, 99501
Phone: (907) 278-8008.

5. SCOPE of WORK

I. Project Goals & Objectives

The primary goal of this contract is to provide scientific and technical expertise to the Exxon Valdez Oil Spill Trustee Council at the direction of the Executive Director. The following objectives should be addressed:

- Provide a primary point of contact for the integration and synthesis of historical and ongoing scientific knowledge regarding the Exxon Valdez Oil Spill, its effects, and the progress of restoration.

- Apply scientific knowledge gained from Exxon Valdez Oil Spill related studies in the implementation of an adaptive management process based upon continually changing scientific information in order to administer Restoration programs and funds cost effectively, expeditiously, and with maximum benefit to injured resources and services.

- Integrate and apply scientific knowledge of the oil spill affected area and its ecological relationships within a complex sociopolitical framework.

- Ensure that Exxon Valdez Oil Spill funded scientific research is unbiased and of the highest quality.

- Foster interagency cooperation

The contractor will consider these objectives and formulate a plan for addressing the needs of the Trustee Council and the Executive Director.

II. Project Tasks

The contractor will be expected to address the following tasks and may in addition identify other areas of the Restoration process which would benefit from continued coordinated scientific input.

- Provide unbiased technical and scientific support to the Trustee Council, Executive Director, Restoration Work Force and other restoration projects and activities.

- Provide, organize, administer, and chair a group of Core Peer Reviewers (Attachment; Scientific Review) whose purpose as individual scientific experts is to :

    1. Assist with the implementation of an adaptive management process in developing and reviewing an Annual Workplan designed to restore the marine and terrestrial ecosystems impacted by the Exxon Valdez Oil Spill
    2. Provide techncial and scientific input to Trustee Council funded projects.
    3. Apply historical knowledge of the Exxon Vladez oil spill, and
    4. Review and contribute to the synthesis of information gained from scientific research surrounding the Exxon Valdez oil spill.

- Facilitate interagency cooperation in the development of broad based ecosystem studies designed to provide a framework for directed restoration activities.

- Assess the impact of the oil spill through interdisciplinary research coordinated among principle investigators working within an ecological system.

- Direct research and data collection, facilitate the management and use of existing data.

- Through peer review, ensure that EVOS funded studies are of the highest quality by:

    * Evaluating the methodology employed.
    * Determining whether reasonable hypotheses were tested.
    * Determining whether observations, measurements or experiments were adequately controlled and replicated.
    * Determining whether results were analyzed by valid statistical procedures.
    * Ensuring that the research is not designed to produce a desired result.

- Additional tasks may be required of the contractor as determined by the Executive Director and / or the Trustee Council as needed.

Deliverables

It is anticipated that the contractor will be required to provide, at a minimum, the following deliverables:

- Written briefings or reports on projects to the Trustee Council, the Executive Director, and the Department of Natural Resources project manager.

- A quarterly statement of tasks accomplished to the Department of Natural Resources and the Executive Director for distribution to the Trustee Council members or their designates.

- A quarterly statement of any tasks assigned to subcontractors, their status, and cost.

- An annual status report reflecting the general health of the ecosystem and specifically the status of recovery of injured resources and services.

- A directory, including name, contact, area of expertise, and resumes, of all individuals involved in the project and any subcontractors who may be retained throughout the course of the contract. This directory shall be updated quarterly and copies provided to the Project Manager, the Executive Director and the Restoration Office.

- It is expected that additional reports and documents will be required in support of as yet unspecified tasks associated with this contract.

III. Proposed Schedule

It is anticipated that this contract will be awarded by October 31, 1994 with the initial period of performance to run from November 1, 1994 through September 31, 1995, with an option to renew annually for a total of five additional years, subject to the approval of the Executive Director and/or the Trustee Council and funding authorization of the Trustee Council

The Trustee Council operates on a Federal Fiscal year commencing October 1, and terminating September 30, annually. The current organizational structure provides for initial development of annual work plans approximately a year in advance with field work scheduled to commence in the late spring of each year. Field work associated with restoration projects is generally completed in early fall and report writing and close-out work has been completed by April 15 of the following spring.

Tasks associated with this project do not conform to a clearly specified timetable and therefor, flexibility in terms of scheduling and a commitment of time is expected.

IV. Proposed Sample Project

To allow you to more clearly understand the nature of the work that will be requested, an Attachment, Sample Task, is included in this packet. This is An Expression of Interest and a Project Description for a project that is expected to begin during the first year of this contract. It is anticipated that the work will be performed by an independent contractor with oversight by the State of Alaska, Department of Fish and Game. Responsibility for oversight and scientific support of this project could be considered a typical assignment for anyone providing scientific support to the Trustee Council. The successful contractor will be responsible for oversight of this project as part of an annual workplan from publication of "Expression of Interest" through the completion of the project and dissemination of its results. This is only one of many projects that are anticipated to be started and completed during the term of the proposed contract.

In order to more clearly understand your proposed methodology you will be required to provide a proposal detailing how you would handle this project in Section 6. You should include any participation or input you would expect from the Trustee Council, Trustee Agencies, the Executive Director, technical and/or scientific review, and/or the administrative staff.

6. PROPOSAL FORMAT AND CONTENT

This chapter gives the requirements for proposal format and contents. Proposals must follow the format outlined below. Failure to follow the format outlined in this chapter or to cover the information listed in this proposal may result in a lower score and could result in disqualification of the proposal.

1. Introduction

Include a letter of transmittal containing the complete name and address of the firm; name, mailing address, and telephone number of the contact on the proposal; a statement of commitment to the project; a statement indicating the name of the individual meeting the minimum qualifications required by this RFP (Section 1.1a), a statement confirming that the proposal is valid for 90 days; an authorized signature, and certification, as appropriate, whether your firm qualifies as an Alaskan vendor under Section 2.16.

Title page showing:

Exxon Valdez Oil Spill Restoration Scientific Support
ASPS 95-0047
Firm Name
Date

A paginated table of contents

2. Understanding of the Project.

This section should include a brief discussion of your understanding of the services required, your knowledge of Exxon Valdez Oil Spill Damage Assessment and Restoration studies and the mission of the Restoration office and the Executive Director. Include a summary of any potential problems you believe may be encountered in the performance of this contract as well as expectations you would have of the State, the Project Manager, the Executive Director, or the Trustee Council.

3. Organization

Describe your firm's organization and how it would handle the required time commitment. Include a statement of intent that the project manger identified in the Introduction above (Reference Section 1.2), shall actively lead and supervise the proposed work, and shall take full responsibility for timely completion of all objectives and tasks. Describe who will be responsible for the various tasks and subtasks, including a complete listing of any tasks you would propose to subcontract. Provide the proportion of time each of the people will be spending upon each of the tasks and subtasks. Identify any other projects, current or proposed that key personnel may be involved in during the course of this contract. The information should be sufficient for the evaluation committee to assess the commitment to the project of the firm's key personnel. Include a listing of specific tasks, if any, you expect to be provided by the State, the Project Manager, the Restoration Work Force and restoration staff.

In addition provide a cost schedule including detailed personnel costs for key personnel and subcontractors (hourly rate) referenced above, associated overhead, and profit, as well as anticipated travel, supply, and contractual costs. To the degree it is practical, costs and the allocation of individuals' time should be specified by tasks or type of services provided.

Include a proposed billing schedule detailing hourly rates, overhead, profit and any other associated costs. Also include any other proposed payment terms or conditions that may be different than those indicated in Section 3.6 of this RFP such as standard or proposed terms for administering price increases during the term of the contract.

4. Personnel Qualifications and Experience.

Provide personnel qualifications and experience resumes for key personnel, including the contractor, and/or his employees, and any subcontractors, who will be involved in the project. References to previous work history should clearly show title, specific duties and assignments completed, with specific reference to work similar to that sought by this RFP. Include this information for any subcontractor's personnel who will play a key role in the project.

Include a concise description of your firm's experience in working with: oil spills, arctic or subarctic environments, biological effects of oil pollution, restoration of oil contaminated environments, sampling of biological populations, biological diversity in ecological systems, the ecological basis of sustainability, quantitative models of disturbances, ecosystem resilience, design of statistical analysis for environmental research, intergovernmental coordination, and governmental and other management structures. Provide detailed information for not more than three projects similar to the work called for in this RFP that are at least 50% complete or have been completed within the last three years. Include for each:

a. A brief description of the project.
b. Description of expertise required which is relevant to this project or experience specified above.
c. Primary person responsible for project.
d. Scheduled and actual start and completion dates.
e. Location of the project.
f. Name/number of contract and client's name, address, and telephone number.
g. Show initial estimated costs and actual costs where available.

5. Conflict of Interest

Because of the nature of the contract and the need for objectivity and public credibility, list any current or past positions held, or work performed for, trustee agencies of the Exxon Valdez Oil Spill Trustee Council or in support of any Exxon Valdez Oil Spill related projects by any individual, entity, or subcontractor associated with this project.

In addition, the proposal must include a statement indicating whether or not the firm or any individuals working on the contract has/have a possible conflict of interest (Reference Section 2.6). If there is a conflict of interest, the nature of the conflict must be included in the statement. The Commissioner, DNR, in accordance with recommendations from the evaluation committee, reserves the right to cancel the award or disqualify an offeror if, in the judgment of the evaluation committee, any interest disclosed from any source could give the appearance of a conflict or cause for speculation as to the objectivity of the contractor completing the tasks required in this project. The Commissioner's determination, in consultation with the Executive Director, regarding any questions of conflict of interest shall be final.

6. Methodology.

This section should include in as much detail as possible an explanation of how you would accommodate the need for scientific support required by the Trustee Council and the Executive Director.

At a minimum you should describe how you would propose to address the stated goals, objectives and associated tasks. Describe the proposed methods and proceedures to be employed. Describe how your methodology will affect the long term restoration of injured resources and services. In addition, you should explore the relationship of your proposal to the present state of knowledge and to work in progress surrounding the Exxon Valdez Oil Spill, both damage assessment and restoration. A general plan of work should be outlined, including the broad design of activities and tasks to be undertaken.

7. Sample Task

Please provide a detailed proposal for providing scientific support for the sample task included as an Attachment; Sample Task. This is an opportunity for the proposer to detail the level and extent of scientific support appropriate, on a project basis, for development of a broad based ecosystem approach to restoration. Apply the methodology described above to the problem at hand. Include any participation, input or support you would expect from the Trustee Council, Trustee Agencies, the Executive Director, scientific or technical experts and/or administrative staff.

8. Cost Proposal

Please provide a detailed cost proposal for completing the tasks outlined in section 7 immediately above, related to the project described in the Attachment entitled Sample Task. Provide detailed costs by task as you define them in your proposal in section 7 above. Costs must be based on pricing schedules, terms, and conditions, you would expect to use in the contract. However, for evaluation purposes, your cost proposal will be treated as a lump sum, fixed price proposal to accomplish the tasks associated with this project. (Reference Section 2.15)

Actual costs for completing this project will vary depending on the final negotiated contract terms and conditions.

7. EVALUATION CRITERIA and CONTRACTOR SELECTION

All proposals received will be reviewed and evaluated by a committee that will be made up of, but not limited to, the Executive Director, his representative/s and staff DNR. Other representatives may be added as appropriate. The committee will evaluate each offeror's proposal based upon the Evaluation Criteria which are outlined below.

Proposals will initially be reviewed to assure compliance with minimum responsiveness requirements:

1) is the proposal signed
2) has the offeror submitted evidence of having a valid Alaska Business license
3) was the proposal received by the deadline for receipt of proposals.
4) the proposal provides evidence of having a Ph.D.. scientist responsible for the project who meets the minimum qualifications and experience requirements listed in section 1.2.

Proposals that fail to meet these requirements will be rejected as non-responsive and will not be evaluated.

The evaluation committee will then evaluate the proposals based on the evaluation criteria and weighting listed in this section. The evaluation members may consider additional questions within each criteria category as determined appropriate by the procurement officer and/or project manager.

5% Understanding the Project

At a minimum this section will be evaluated against the following questions:
Does the contractor demonstrate an understanding of the intent of the Exxon Valdez Oil Spill Settlement and the Mission Statement adopted by the Trustee Council? Does the contractor demonstrate an understanding of the need for scientific support for the Trustee Council and the Executive Director? Does the contractor demonstrate an understanding of the Exxon Valdez Oil Spill Natural Resources Damage Assessment process, associated scientific studies, and past and ongoing Restoration Studies? Is the proposal relevant and utilitarian? Has the contractor discussed any possible problems that may arise during performance of the project?

15% Organization

At a minimum this section will be evaluated against the following questions:
Is the individual responsible for project implementation, supervision, and point of contact clearly specified? To what degree are the most qualified and experienced people involved in the project? Are the persons with appropriate experience and qualifications working on this project on appropriately assigned tasks? Is sufficient time allocated for project support and implementation? If subcontractors are utilized, is this use realistic and clearly defined? Are personnel costs, overhead, profit and other associated costs realistic and competitive? Does the contractor offer a reasonable and affordable cost proposal? Does the contractor offer a fixed fee structure? Are price schedules provided for related services or alternate levels of service? Are the proposed costs fixed for the anticipated full term of the contract? If not fixed, are cost increases or decreases based on a fixed rate or percentage or are they open for negotiation? Is the method for adjusting costs associated with the addition or deletion of tasks to the contract, adequately addressed? Do the methods provide maximum flexibility at minimum additional expense and contract administration? Does the contractor have realistic expectations of other organizations and individuals involved in this process?

35% Firm and Employee Experience and Qualifications

At a minimum this section will be evaluated against the following questions:

Does the offeror have experience in working with intergovernmental organizations and management structures? Does the proposer have experience in conducting and publishing research in the areas of oil spills, arctic and subarctic environments, restoration of oil contaminated environments, biological effects of oil pollution, sampling of biological populations, biological diversity in ecological systems, the ecological basis of sustainability, quantitative models of disturbances, ecosystem resilience, and design of statistical analysis for environmental research. Has the proposer completed any similar type projects in the last three years? Does the contractor/personnel have experience in analyzing data and compiling reports? Does the contractor have experience building consensus between groups of differing viewpoints? Are the examples of previous work relevant? Did the contractor demonstrate the ability to complete projects on schedule? Does the firm have a good history of completing tasks within these types of projects on time?

30% Methodology

At a minimum this section will be evaluated against the following questions:
Has the contractor included all objectives and tasks identified in the RFP. Has the contractor proposed a methodology that is acceptable to the Executive Director? Is the proposed process for the provision of scientific support adequate to meet the ever changing needs of the Trustee Council and the Executive Director? Does the contractor provide for adequate levels of support for all components of the project? Does the organization of the firm provide a clear understanding of who will be responsible for implementation of project methodology? Is the approach proposed technically and scientifically sound? Does the proposed methodology take advantage of past and ongoing research surrounding the Exxon Valdez Oil Spill? Is the project budget reasonable based on what is proposed to be accomplished? Are the expectations the contractor has for the Trustee Council, Executive Director, restoration staff, project manager and any other participants in the process reasonable?

5% Cost

The distribution of points based on cost will be determined as follows per AS 36.30.040, .210, .250, and 2 AAC 12.260(d). The lowest priced proposal will receive 5% of total points. Higher priced proposals will be scored by this formula:

$$\frac{\text{(Price of Lowest Cost Proposal) x (Maximum Points for Cost)}}{\text{Price of Each Higher Cost Proposal}} = \text{Points awarded for cost}$$

This formula will be applied to the lump sum cost proposed in completing the sample project defined in section 6.6. Cost proposals from Alaska vendors will be reduced by 5% for this calculation. Ref 2 AAC 12.260.

10% AK Proposer Evaluation Factor

10% of the total points available will be awarded to qualified Alaskan Vendors in accordance with 2 AAC 12.260.(e) For a definition of "Alaskan vendor" refer to Section 2.16 of this RFP.

Upon completion of the evaluations, the DNR Procurement Officer will review the evaluation process to assure procedures were followed in accordance with this RFP and existing State of Alaska statutes and regulations. This process may include reviewing score sheets, proposals, discussions or any other materials presented to the Evaluation Committee. The Procurement Officer may recommend that proposals be reevaluated prior to beginning negotiations if he has reason to suspect an error was committed during the evaluation process.

All decisions of the Evaluation Committee will be documented in writing and made a part of the contract file.

The Evaluation Committee will recommend for negotiations to the Commissioner of the Department of Natural Resources, the contractor(s) whose proposal best meets the requirements of the project based on the criteria outlined in this RFP.

8. ATTACHMENTS

Standard Agreement Form

Appendix A

Appendix B1

Sample Task

Expression of Interest; Investigations of Disease Factors Affecting Declines of Pacific Herring Populations in Prince William Sound Alaska.

Settlement and Consent Decree

Mission Statement

Map of Oil Spill Area

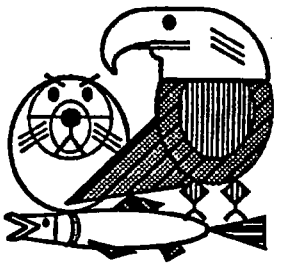
Organizational Chart

Scientific Review

Draft Restoration Plan

Exxon Valdez Oil Spill Trustee Council

Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone 907-278-8012 Fax 907-276-7178



Dear Proposer:

July 6, 1994

Thank you for submitting a restoration proposal for the Draft 1995 Work Plan.

Your proposal has been sent out for independent scientific and technical review. It is also being reviewed for legal and policy considerations. Approximately 155 proposals--totaling $67 million--were received during the FY95 solicitation process. Funding is available for only a portion of those projects submitted. Last year's funding for restoration projects totaled approximately $17 million. An additional $12 million was set aside in a restoration reserve.

The draft 1995 Work Plan is scheduled to be available for public comment by early September 1994. The Trustee Council is expected to decide which projects will be included in the final 1995 Work plan on October 31st, 1994. A copy of the final 1995 Work Plan will be forwarded to you following that meeting.

In the meantime, I appreciate your participation in the development of the 1995 Work Plan and look forward to your continued interest.

If you have any further comments or questions, please don't hesitate to contact either myself or any of the staff at the Anchorage Restoration Office.

Molly McCammon
Director of Operations

Exxon Valdez Oil Spill Trustee Council
Restoration Office
645 "G" Street, Anchorage, AK 99501
Phone: (907) 278-8012 Fax: (907) 276-7178

MEMORANDUM

TO: Trustee Council

FROM: James R. Ayers
Executive Director

DATE: July 5, 1994

RE: Trustee Council Briefing Materials for July 11 Meeting

Thank you for your recent comments regarding issues before the Trustee Council. I have received oral comments from each of you and a June 14, 1994 memo from Commissioner Sandor. Attached is the July 11th meeting agenda (see attached #1). The issues on that agenda are addressed below. You should consider this memo and attachments as your briefing packet for the July 11 meeting. In addition, we have completed a review of the various other issues and timelines in light of your comments.

Meeting Schedules: We have revised the meeting dates to accommodate the Public Advisory Group and your respective schedules. That revised schedule was sent on June 20 (see attached #2). The best dates for the August meetings are August 8 and 29. A mid-August teleconference may be necessary for selection of the final alternative for the EIS. The actual dates for the September and October meetings will be established depending on completion of tasks and your schedules.

Science Review Board: The establishment of a small group of core scientists, what we have been calling the Science Review Board (SRB), to provide guidance on our science program has been supported by the Council as a means to develop and strengthen an Adaptive Mangement Process. This science review group, chaired by the Chief Scientist, would build on our foundation of the peer review process and improve continuity and consistency. The substantive questions in establishing the SRB remain the size of the group, the selection of its members, and its place in our organizational structure. In addition, we have recently been advised that creation of a group like a formal Science Review Board may fall under the Federal Advisory Committee Act, 41 CFR 101-6.10.

Therefore, based on your comments and the information above, I propose that we develop our core science review group through the Chief Scientist. As we discussed, the Chief Scientist will be selected by Request for Proposal (RFP) as we discussed and be responsible for identifying core reviewers for their independent perspectives. The core reviewers will be selected, as are other senior staff per the Memorandum of Understanding on the hiring of the Executive Director, by the Executive Director with the explicit concurrence of the Trustee Council.

The Chief Scientist will select the core reviewers with the express permission of the Executive Director and concurrence of the Trustee Council. A member of the core reviewers can be removed by the Chief Scientist with the express consent of the Executive Director in consultation with the Trustee Council (see attached #3).

Further, I recommend that we explore the process required under FACA to determine if the SRB should be recognized so as to avoid any challenges of their work.

Organization Diagrams Changes to previous drafts have been made based on your comments and a new draft is attached (see attached #4).

FY'95 Administration: Some Trustee Council members have commented that each agency has unique situations regarding the EVOS process. Specifically, some agencies have a large number of restoration projects while others are involved in the process but have fewer projects. Therefore, agencies may have different funding needs. We have requested Liaisons to develop budgets with a target of $150,000, with the understanding that some agencies may require additional funds. Justification must be submitted with the FY'95 budget requests. This will ensure that everyone has opportunities for good, quick information transfer and participation. I remain hopeful we can attain our goal of 5% for FY'95 and am confident we will for FY'96.

FY'95 Projects: We have received over $65 million in project proposals including the restoration reserve (see attached #5). It appears that an $18-25 million work plan, not including the reserve, is consistent with Trustee Council direction, and would address the necessary restoration. This would also provide for our long term balanced approach.

We plan to provide an overview of the projects during the meeting on July 11th, identifying those that have legal questions. Trustee Council guidance on the issue of a funding range for priorities would be appreciated. Immediately following, the scientists and the work force will perform a review and compile a restoration package of projects in the range of $18-25 million, or whatever the Council determines, for review and subsequent release to the public on August 8.

Restoration Plan and EIS: The Draft Restoration Plan and the EIS are moving along. The final plan and the final EIS with a preferred alternative will be a decision before you in August. As discussed earlier and as reflected in the timeline, the Final EIS will be printed and released by September 28. The PAG and some Council members have requested further discussion on the allocations described in the proposed alternative #5.

Finances: We are pursuing the establishment of the long term reserve account which will provide funding for future research, monitoring and associated restoration projects in the years following the last payment into the trust fund by Exxon in the year 2001. If $12 million per year (FY94 through FY2002), is deposited into the reserve with interest averaging 6%, the Trustee Council could have a reserve balance of approximately $120 to $150 million in 2002. Disbursement of the monies shall be made to the United States and the State of Alaska upon resolution of the Trustee Council. It is our assumption that the conditions of the Court decree would apply. Attached you will find a draft resolution that is being circulated to attorneys for their comments (see attached #6).

As proposed, the reserve account would be established within the Court Registry and will be a part of the Court Registry Investment System. We have discussed the reserve with Mr. Michael Milby, the Clerk of Court of the United States District Court in Houston, and he informed us that the establishment of a reserve is possible. This type of account has been done before and could be handled in one of two ways, either unique or pooled with other funds. We will continue to work with Mr. Milby and have invited him to attend the August 29 Trustee Council meeting to provide you with a briefing and advice.

Institute of Marine Science Improvements: At the July 11 meeting you will also receive an update on this project. Attached for your review is a revised draft project description including purpose and need (see attached #7).

Habitat Acquisition: "Less than fee simple" policies: The PAG discussed the issue of "less than fee simple" acquisitions, including public access, and took public testimony about this issue. The PAG recommended we take the time to work with a PAG subcommittee to develop a draft policy that would reflect the various interests. We have asked the Alaska Department of Law (Alex Swiderski) and the U.S. Forest Service (Walt Sheridan) to work with the PAG to make an effort to develop recommendations for the Trustee Council's consideration. It is likely that this will come before the council during the August meeting, which is still timely and will not cause any delays in protection efforts.

I hope this is helpful and look forward to seeing you on the 11th of July.

List of attachments:

#1. Agenda
#2. Proposed meeting schedule
#3. SRB
#4. Organizational diagram
#5. List of projects
#6. Draft reserve resolution
#7. Institute of Marine Science project description

Exxon Valdez Oil Spill Trustee Council
Restoration Office
645 "G" Street, Anchorage, AK 99501
Phone: (907) 278-8012 Fax: (907) 276-7178

MEMORANDUM

TO: Carol Fries
Commissioner's Office
Department of Natural Resources

FROM: James R. Ayers
Executive Director

DATE: July 5, 1994

RE: Project 94320 J: Dr. Mooers

I am concerned about the Applied Marine Sciences letter dated June15 from Andrew Gunther to Carol Fries. It appears to me that there is at least the appearance of impropriety.

There is no situation I can think of that would provide tolerance for an independent reviewer participating as a collaborator in a project. Under no circumstances should the review of a collaborator on a project be the determinant recommendation for the funding of a project. This situation needs immediate and clear direction to Dr. Mooers.

Exxon Valdez Oil Spill Trustee Council
Restoration Office
645 "G" Street, Anchorage, AK 99501
Phone: (907) 278-8012 Fax: (907) 276-7178

MEMORANDUM

TO: Carol Fries
Department of Natural Resources

FROM: James R. Ayers
Executive Director

DATE: July 5, 1994

RE: Scientific Review: Core Reviewers

I have reviewed the Federal Advisory Committee Act (41 CFR 101-6.10) and the comments submitted by Maria Lisowski. It is clear that the intent of the Federal Advisory Committee Act (FACA) is to establish guidelines regarding committees or other groups advising federal officials. In order to comply with FACA, we will take both interim and long term action.

First, by way of this memo I am asking you and Dr. Spies to ensure that we maintain independent, individual recommendations from the scientific peer reviewers for our review of the proposed FY95 projects.

Secondly, by way of this memo I am requesting that, once the concept of core reviewers or Science Review Board is approved by the Trustee Council, you and Maria Lisowski explore the requisite process to determine if our proposed Science Review Board needs to be recognized as a federal Advisory Committee.

If you have any questions or require futher guidance, please contact me or Molly McCammon.

cc: Maria Lisowski
Dr. Spies

Exxon Valdez Oil Spill Trustee Council
Restoration Office
645 "G" Street, Anchorage, AK 99501
Phone: (907) 278-8012 Fax: (907) 276-7178

MEMORANDUM

TO: Trustee Council

FROM: James R. Ayers
Executive Director

DATE: July 5, 1994

RE: Recognition Award for Charles R. Peterson

The purpose of this memorandum is to bring to your attention the fact that Dr. Charles H. Peterson, one of the Trustee Council's most highly regarded and long-standing scientific peer reviewers, recently received a prestigious scholarship recognition award from the Pew Scholars Program in Conservation and the Environment. The Pew Conservation Scholars Program, established in 1988 by the Pew Charitable Trusts, is designed to encourage conservation scientists who are applying themselves to the conservation of biological diversity and related environmental issues. A recent press release announcing the 1994 Pew Conservation Scholars Award is attached for your reference.

As you know, Dr. Peterson, a professor at the Institute of Marine Science of the University of North Carolina at Chapel Hill, is a marine ecologist with particular expertise in intertidal ecosystems who has been actively involved in the review of research and monitoring projects sponsored by the Trustee Council for the past several years. Dr. Peterson is one of the "core" technical reviewers who has been playing a key role in helping to develop the Trustee Council's ecosystem approach to restoration. As indicated by the receipt of this prestigious award, the Trustee Council is fortunate to have the talent and expertise of Dr. Peterson to assist in accomplishing the restoration mission. At the same time, the fact that one of our "core" peer reviewers is so highly regarded reflects well on the Trustee Council.

I would suggest that a brief resolution of recognition by the Trustee Council regarding this award might be in order. A draft is attached for your consideration.

RESOLUTION

WHEREAS, Dr. Charles H. Peterson has served as one of the Trustee Council's most highly regarded scientific peer reviewers; and

WHEREAS, Dr. Peterson has been extremely diligent in his efforts to provide the Trustee Council and the public with sound information and advise; and

WHEREAS, Dr. Peterson has made an important contribution to the Trustee Council's effort to develop an ecosystem approach to the restoration of resources and services injured by the *Exxon Valdez* oil spill; and

WHEREAS, the Pew Scholars Program in Conservation and the Environment recently recognized Dr. Peterson's exceptional professional contribution to the conservation of biological diversity and related environmental issues,

THEREFORE BE IT RESOLVED, that the *Exxon Valdez* Oil Spill Trustee Council commends Dr. Peterson for the receipt of this prestigious award from the Pew Charitable Trusts.

Exxon Valdez Oil Spill Trustee Council
Restoration Office
645 "G" Street, Anchorage, AK 99501
Phone: (907) 278-8012 Fax: (907) 276-7178

July 5, 1994

V to file.
This ltr came fr JNS (marglow)

Mr. Charles W. Totemoff, President
Chenega Corporation
3333 Denali Street, Suite 220-H
Anchorage, Alaska 99503

Dear Mr. Totemoff: Chuck

Thank you for expressing your concerns regarding the Trustee Council's Twelve Step Process for appraising, reviewing, and approving appraisals. I have talked with those staff mentioned. This response is meant to clarify the process and hopefully answer any additional questions you may have.

First, It should be understood that the appraisal process is specifically designed to be fair and reasonable and include landowner participation. The landowner, or your representative, is encouraged to share information about the property and anything that may contribute to its value. It is the intent of the Twelve Step Process and flow chart to be inclusive regarding when and how this information is made available.

Chuck, please understand that while this information is welcomed, the appraiser stil is required andl must be allowed to make an objective analysis without undue influence by either the governments or the landowner. In the review of these appraisals, there are legal and professional standards regarding the scope and nature of the review, the confidentiality of the work, and the fiduciary responsibility the appraisers have to their clients and the landowners. Therefore, in the latter steps of the process, after the landowner has sumbitted comments on the approved Appraisal Report, it is less likely that additional participation by the landowner will be helpful, although you will, obviously, continue to have interaction with the negotiation team.

You suggest that it may be late in the Twelve Step Process when a landowner may choose to conduct their own appraisal because they become unhappy with the government's approved appraisal. While it is possible that this may occur, it is hoped that the early and frequent participation by the landowner throughout the appraisal

process will allow the landowner and the governments to be satisfied equally with the appraisal and the conslusions of value.

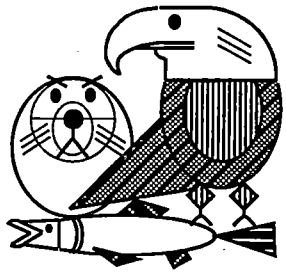
We are working together on a very challenging effort. It is not easy, but I believe we can do this responsibly. Please let me know if I can provide further clarification regarding this matter.

Sincerely,

James R. Ayers
Executive Director

Exxon Valdez Oil Spill Trustee Council

Restoration Office
645 G Street, Suite 402, Anchorage, Alaska 99501
Phone: (907) 278-8012 Fax: (907) 276-7178



July 5, 1994

Susan Kitchen
340 Naples Street
Chula Vista, CA 91911

Dear Ms. Kitchen:

Your letter to Governor Hickel concerning the *Exxon Valdez* oil spill has been forwarded to me for reply.

In October of 1991, Exxon Corporation and Exxon Shipping settled with the State and Federal governments for civil damages resulting from the 1989 spill. The settlement amount of $900 million was unprecedented, not only in terms of the amount but also the swiftness of its resolution. For comparison, it took almost 14 years for plaintiffs injured by the *Amoco Cadiz* spill of 1978 to settle with the tanker's owners, and for $235 million, some 26 % of the *Exxon Valdez* settlement.

A Trustee Council representing the state and federal government was set up to manage the settlement funds for "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..." The Trustee Council has developed a balanced, comprehensive, ecosystem-based approach to restoration which, we believe, will address this mission through general restoration, research and monitoring, and habitat protection.

You mention lingering injuries in the spill region. Our scientists continue to confirm that there are injuries to individual species and to ecosystems affected by the spill. Our 1994 Status Report – a copy is enclosed for your use – contains a section entitled "Summary of Injuries" beginning on page 7 which spells out the most current information we have available on this subject. Scientists are currently conducting studies in Prince William Sound and other areas as part of research and monitoring efforts which will add to our understanding of these injuries, and aid in developing effective strategies for restoration and recovery.

One strategy for aiding restoration is to protect habitat important to species injured by the spill, particularly if the habitat harbors the species during a critical life stage, such as breeding or nesting. The Trustees have moved to protect habitat thus far in each of the regions affected by the spill, through purchase of lands on Afognak Island, near Kodiak; inholdings in Kachemak Bay State Park, near Homer on the Kenai Peninsula; and commercial timber rights on lands near Cordova, in Prince

William Sound. The Trustees have allocated approximately 42% of expenditures thus far for habitat protection. In evaluating each habitat protection opportunity, Trustee Council staff must rate the potential effect on species which were injured by the spill of protecting those lands from future or pending commercial development such as logging. If the link to an injured species is not clear, the Trustees can not take action to purchase or otherwise protect habitat.

General or direct restoration programs are also underway. For example, mussel beds in Prince William Sound — an important food source for a number of species showing lingering problems — continue to hold oil from the *Exxon Valdez*. A project planned for this summer will remove the oil, and the mussels will be returned to clean substrates. The mussels will then flush the oil out of their tissues, thereby removing a continuing source of petroleum contamination in the food chain.

The Trustees are indeed looking to the health of the entire ecosystem, not just in Prince William Sound but throughout the spill region. The Trustees have also made a commitment to public involvement in the process, and we thank you for your suggestions.

Sincerely yours,

Molly McCammon

Molly McCammon
Director of Operations

cc: James R. Ayers
Governor Hickel

pom from Calif.

May 9, 1994

Dear Governor,

I am writing to you about the on going environmental crisis in Prince William Sound. I am disgusted that 70% of the 240 million received from Exxon intended for rehabilitation, has instead been wasted on administrative costs, etc. Exxon claims that there are no residual effects left from the oil spill.

Outside Magazine reported that studies by biologists show contaminated salmon eggs, stunted growth in juveniles, and damage in multiple generations. There have also been declines in otters, seals and herring. Since the heavy toxins like tar, asphaltics, etc., are still around, it only makes since that they are still around in the food web.

Although many people think that time is the only thing that will heal the sound, I think that there are other things that threaten it. One biologist has suggested that settlement money could be better used by acquiring forest land adjacent to the sound. I think that he is right. Increased logging along the sound will increase sediment runoff , changing it's composition forever.

You spend millions of dollars to promote Alaska tourism, and I think it would be disturbing to see the ugly scars of clear cut forest next to the sound. You have to think about the future of the land. Someday, Prince William Sound will renew itself but it is up to you to save the land that is tied to it.

Please see to it that the rest of the money is not spent in vain. The money will be well spent if the **entire** ecosystem of Prince William Sound is protected.

Sincerely,

Susan Kitchen

Susan Kitchen

Exxon Valdez Oil Spill Trustee Council

Restoration Office
645 "G" Street, Anchorage, AK 99501
Phone: (907) 278-8012 Fax: (907) 276-7178

TO: Reviewers

DATE: July 6, 1994

FROM: Molly McCammon
Director of Operations

TELE: 278-8012
FAX: 276-7178

SUBJECT: New Proposals

Five additional proposals were received since the June 15th deadline. Please review these proposals (as time allows), and we will include them in next week's meeting to the extent we are able.

Habitat Protection

95110-Closeout. Closeout: Habitat Protection Data Acquisition and Support: $140,000. This project was included in the Table of Contents of the *Preliminary Review Draft* for $60,000, but the project description was not available at that time.

General Restoration

95115. Sound Waste Management Plan. $275,900. Submitted by Prince William Sound Economic Development Council.

95116. Restoration of Intertidal Oiled Mussel Beds by Non-destructive Manipulation/Flushing with PES-51. $435,186. Submitted by a coalition: PES Services, Inc. Chenega Corporation, UAF, University of California - Santa Cruz, and Foss Environmental Services Inc.

Research

95114. Eelgrass Community Structure Restoration Assessment Using Stable Isotope Tracers. $192,100. Submitted by Prince William Sound Science Center.

95113. Energetics of Intertidal Fish: The connection between lower and upper trophic levels. $392,552. Submitted by UAF

Project 95110 - Closeout

EXXON VALDEZ OIL SPILL PROJECT DESCRIPTION

Project Title: Habitat Protection-Data Acquisition and Support

Principal Investigator: Habitat Work Group

Lead Agency: Alaska Department of Natural Resources

Cooperating Agencies: Alaska Department of Fish and Game; U.S. Department of Interior, Fish and Wildlife Service; U.S. Department of Agriculture, Forest Service

Project Cost: $140K

Project Term: October 1, 1994 to December 31, 1994

Geographic Area of Project: Prince William Sound, Kenai Peninsula, Alaska Peninsula, and Kodiak Archipelago

B. INTRODUCTION

This project is designed to support habitat protection activities of the Trustee Council and is a close-out of project 94110. In 1993 Habitat Protection Work Group conducted a survey and assessment of selected parcels of private land within the oil spill zone. The lands were scored, ranked and mapped using the Trustee Council approved Evaluation Process to determine the value of these areas to injured resources and services and the benefits that could be achieved through habitat protection. The evaluation was done using a variety of available data and information gathered from various agencies and technical experts, data collected during The Nature Conservancy Workshop, Natural Resource Damage Assessment reports, and site reconnaissance field visits.

In 1994, a method was developed for nominating, processing, evaluating and ranking parcels of private land less than 1000 acres, i.e., *The Small Parcel Process*. Responses to the solicitation for nominations of small parcels are currently being processed and evaluated.
Evaluations, starting with field surveys, of large and small parcels submitted this Spring will also continue into the Fall.

C. NEED

The need for the close-out work on project 94110 is to complete evaluations of lands nominated during this summer and fall and to prepare reports. Results of large parcel evaluations will be submitted to the Trustee Council as a supplement to Volume I of the Comprehensive Habitat Protection Process document. The results of the Small Parcel Process will be submitted to the Trustee Council as a separate volume of the Process.

D. PROJECT DESIGN

1. Objectives:

- Evaluation, restoration unit design, scoring and ranking of selected private parcels.

- Mapping of evaluation units.

- Preparation of supplement to Volume I of the Comprehensive Habitat Protection Process document for Trustee Council review and negotiations with landowners.

- Preparation of Volume III *Small Parcel Evaluation and Ranking Comprehensive Habitat Protection Process* for Trustee Council review and negotiations with landowners.

2. Methods:

Existing data and data obtained by HPWG in 1993 and 1994 will be analyzed to fill data gaps to the maximum extent possible. This will include some additional programming, data base management, and GIS work to sort data and to map resource information where appropriate.

Primary and secondary evaluations, for large and small parcels, will be conducted by the HWG using evaluation formats developed by the group.

Comparative Benefit Analysis will be carried out on all parcels or packages of parcels that have completed evaluations and appraisals. This technique, developed in 1994, utilizes appraisal values, parcel or package score and acreage to facilitate the acquisition of those lands that result in the greatest benefit at the lowest cost.

Volume III and the supplement to Volume I will be prepared in a format consistent with Volumes I and II.

3. Schedule

Evaluation and ranking of small parcels will occur during this summer and fall. It is anticipated that negotiations for small parcels will commence in January, 1995. Field surveys of recently nominated large parcels will occur this summer. Evaluation results, including scoring and ranking, of both large and small parcels will be submitted to the Trustee Council in the fall.

4. Technical Support:

The Alaska Department of Natural Resources LRIS group will produce all maps. The HWG will produce all documents.

5. Location:

The analysis will cover all selected lands within the oil spill zone. Lands are located within

Prince William Sound, Kenai Peninsula, Kodiak/Afognak Archipelago and on the Alaska Peninsula.

E. PROJECT IMPLEMENTATION

The proposed project is a continuation of 94110. Habitat protection projects were started in 1992 by the Restoration Planning Work Group and outlined in concept in Volume I of the *Restoration Framework*. Implementation of this project would be by the Habitat Work Group. This group includes four members representing ADNR, USFS, ADF&G and USFWS. The HWG includes three individuals who have been working on the spill since early 1989 and who participated in the genesis and development of habitat protection as a restoration strategy. All four members are authors of the *Comprehensive Habitat Protection Process* report and participated in the development of the *Small Parcel Process*.

F. COORDINATION OF INTEGRATED RESEARCH EFFORT

All habitat protection efforts including this project are dependent upon the results of on-going research and monitoring projects. For example, the Large Parcel Element used information from the anadromous fish stream catalog, colonial seabird catalog, bald eagle nesting maps, and data from Trustee Council funded studies on black oystercatchers, marbled murrelets and pigeon guillemots.

G. PUBLIC PROCESS

The public has reviewed and commented favorably on all habitat protection efforts and has been highly supportive of habitat protection as a major restoration strategy into the future. All reports published as part of the Comprehensive Habitat Protection Process have been reviewed by the public. Input from natural resource and services specialists in the public sector was collected in a workshop conducted by The Nature Conservancy.

H. PERSONNEL QUALIFICATIONS

Resumes of all HWG members are available on request.

I. BUDGET

Personnel	$ 73.2
Travel	6.0
Contractual	48.0
Commodities	2.4
Equipment	0.0
Subtotal	129.6

Project 95110

General Administration	14.3
Total	$ 143.9

95113

SFOS 94-179

PROPOSAL

94006

TO: *Exxon Valdez* Oil Spill Trustee Council
Restoration Office
645 G Street, Suite 402
Anchorage, AK 99501

FROM: School of Fsheries and OceanSciences
P.O. Box 757220
University of Alaska Fairbanks
Fairbanks, AK 99775-7220

TITLE: Energetics of Intertidal Fish: The connection between lower and upper trophic levels

PRINCIPAL INVESTIGATOR: Willard E. Barber
Associate Professor
SS# 527-50-6406

NEW/CONTINUING: New

PROPOSED START DATE: October 1, 1994

PROPOSED DURATION: 2 Years

AMOUNT REQUESTED: $396,552

Willard E. Barber/R³ 6/22/94
Willard E. Barber /Date
Principal Investigator
(907) 474-7177

Vera Alexander 6/24/94
Vera Alexander /Date
Dean
School of Fisheries and Ocean Sciences

Joan Osterkamp 6-23-94
Joan Osterkamp /Date
Executive Officer
School of Fisheries and Ocean Sciences

Ted DeLaca /Date
Director, Office of Arctic Research
University of Alaska Fairbanks

Project 95113
SFOS 94-179

ENERGETICS OF INTERTIDAL FISH:

THE CONNECTION BETWEEN LOWER AND UPPER TROPHIC LEVELS

Project Leader:	W. E. Barber, Associate Professor School of Fisheries and Ocean Sciences University of Alaska Fairbanks Fairbanks, AK 99775-7220
Cost:	FY 95 - $140,284 FY 96 - $147,580 FY 97 - $108,688
Start-up/Completion:	1 January 1995 to 1 June 1997
Duration:	3.5 years
Geographic Area:	Prince William Sound and Cook Inlet
Contact:	W. E. Barber, Ph. D. School of Fisheries and Ocean Sciences University of Alaska Fairbanks Fairbanks, AK 99775-7220 (907) 474-7177; FAX 474-7204

Introduction:

The recent emphasis on understanding ecosystem processes to interpret the influenced of the Exxon Valdez oil spill on the numerous impacted species, and their recovery, has brought to the forefront the interaction between forage species and their predators. A number of the impacted birds and mammals prey not only on subtidal and pelagic organisms fishes but also those inhabiting the intertidal area. This is particularly true of the pigeon guillemot and river otter. The intertidal area bore the brunt of the spill, impacting plants, invertebrates, and fishes. To understand the influence of the spill on species such as these and their recovery, from an ecosystem perspective, intertidal fishes must be considered and incorporated into models developed. This study proposes to study the bioenergetic aspects of the three fish species inhabiting the intertidal area of Prince William Sound utilized by pigeon guillemot and river otter.

Objectives:

1. Determine the seasonal changes in energy content of the high cockscomb prickleback ((Anoplarchus purpurescens), the cresent gunnel (Pholis ornata), and the tidepool sculpin (Oligocottus maculosus).
2. Determine prey organisms of these three fish species.
3. Determine the energy content of major prey species of these three intertidal fish species.

Methods and Materials:

Energy content (kJ/g), percent water, total energy (kJ), will be determined for the major body components (gonads, body, gastrointestinal tract, and liver) will be determined. This will be done for four size groups of each species and four seasons. For the four seasons foods will be determined and for the major prey species energy content determined for each species. Samples will be dried and energy determined using a Parr adiabatic bomb calorimeter following standard methods.

Budget:	FY95	FY96	FY97
SALARIES	103.8	109.9	80.7
TRAVEL	6.6	6.6	5.3
CONTRACTUAL	2.5	2.5	3.2
COMMODITIES	4.0	4.0	1.4
EQUIPMENT	0.0	0.0	0.0
SUBTOTAL	116.9	122.9	90.6
ADMINISTRATIVE COSTS	23.4	24.7	18.1
TOTAL	140.3	147.6	108.7

Abstracted Qualifications

Education:

Arizona State University, 1961-1967; B.A. and M.S.

Michigan State University, 1967-1970; Ph.D.

Experience:

Assistant and Associate Professor, School of Fisheries and Ocean Sciences, 1976 to present.

Project Leader, Fisheries and Wildlife Division, Victoria (Australia), 1975-1976.

Research Scientist and Officer in Charge, Commonwealth Scientific Industrial Research Organization, Brisbane, Australia, 1971-1975.

Example Publications:

Barber, W. E., M. Vallarino, and W. P. Erickson. Manuscript. The biology and impact of the Exxon Valdez oil spill on the biology of the high cockscomb in Prince William Sound, Alaska. Marine Biology Progress Series, Submitted.

Barber, W. E., L.L. McDonald, W. P. Erickson, and M. Vallarino. Manuscript. Effect of the Exxon Valdez Oil Spill on Intertidal Fish: a Field Study. Transactions of the American Fisheries Society, in press.

West, R. L., M. W. Smith, W. E. Barber, J. B. Reynolds, and H. Hop. 1992. Autumn migration and overwintering of Arctic Grayling in coastal streams of the Arctic National Wildlife Refuge, Alaska. Transactions of the American Fisheries Society 121:709-715.

Barber, W. E., and J. N. Taylor. 1990. The importance of goals, objectives, and values in the fisheries management process and organization: a review. North American Journal of Fisheries Management 10:365-373.

Project 95113
SFOS 94-179

Budget
FY95

SALARIES AND BENEFITS			
Wages	***Mos.***		
Barber, W.	2.00	$13,892	
Smith, R.	2.00	$15,528	
Technician	6.00	$21,565	
Ph.D. Student	12.00	$16,247	
Leave Accrual			
Barber, W.		$2,792	
Smith, R.		$3,121	
Technician		$4,615	
Ph.D. Student		$0	
Benefits			
Barber, W.		$4,888	
Smith, R.		$5,464	
Technician		$10,655	
Ph.D. Student		$0	
TOTAL SALARIES AND WAGES			$98,767
TRAVEL			
4 R/T Fairbanks-Cordova (@$300/trip)		$1,200	
Per diem - Cordova (12 days @$103/day)		$1,236	
3 R/T Fairbanks-Anchorage (@$300/trip)		$900	
Per diem - Anchorage (12 days @170/day)		$2,040	
4 R/T Anchorage-Seward (@$300/trip)		$1,200	
R/T Fairbanks-National Meeting			
Per diem - Meeting (5 days @$140/day)			
TOTAL TRAVEL			$6,576
SERVICES			
Communications (FAX, phone, photocopy, etc.)		$400	
Report Preparation (@$35/hour)		$2,100	
TOTAL SERVICES			$2,500
SUPPLIES			
Jars		$300	
Chemicals		$1,000	
Office		$100	
Miscellaneous lab glassware		$500	
Standards		$1,000	
Preservatives		$1,100	
TOTAL SUPPLIES			$4,000
EQUIPMENT			
None requested			
TOTAL EQUIPMENT			$0
TUITION			
2 Semesters		$5,060	
TOTAL TUITION			$5,060
TOTAL DIRECT COSTS			$116,903
INDIRECT COSTS			$23,381
TOTAL FUNDING REQUESTED			$140,284

Project 95113
SFOS 94-179

Budget
FY96

SALARIES AND BENEFITS			
Wages	***Mos.***		
Barber, W.	2.00	$14,585	
Smith, R.	2.00	$16,304	
Technician	6.00	$22,647	
Ph.D. Student	12.00	$18,197	
Leave Accrual			
Barber, W.		$2,932	
Smith, R.		$3,277	
Technician		$4,846	
Ph.D. Student		$0	
Benefits			
Barber, W.		$5,132	
Smith, R.		$5,737	
Technician		$11,190	
Ph.D. Student		$0	
TOTAL SALARIES AND WAGES			$104,847
TRAVEL			
4 R/T Fairbanks-Cordova (@$300/trip)		$1,200	
Per diem - Cordova (12 days @$103/day)		$1,236	
3 R/T Fairbanks-Anchorage (@$300/trip)		$900	
Per diem - Anchorage (12 days @170/day)		$2,040	
4 R/T Anchorage-Seward (@$300/trip)		$1,200	
R/T Fairbanks-National Meeting			
Per diem - Meeting (5 days @$140/day)			
TOTAL TRAVEL			$6,576
SERVICES			
Communications (FAX, phone, photocopy, etc.)		$400	
Report Preparation (@$35/hour)		$2,100	
TOTAL SERVICES			$2,500
SUPPLIES			
Jars		$300	
Chemicals		$1,000	
Office		$100	
Miscellaneous lab glassware		$500	
Standards		$1,000	
Preservatives		$1,100	
TOTAL SUPPLIES			$4,000
EQUIPMENT			
None requested			
TOTAL EQUIPMENT			$0
TUITION			
2 Semesters		$5,060	
TOTAL TUITION			$5,060
TOTAL DIRECT COSTS			$122,983
INDIRECT COSTS			$24,597
TOTAL FUNDING REQUESTED			$147,580

Project 95113
SFOS 94-179

Budget
FY97

SALARIES AND BENEFITS			
Wages	***Mos.***		
Barber, W.	2.00	$15,313	
Smith, R.	1.00	$8,559	
Technician	3.00	$11,890	
Ph.D. Student	12.00	$18,197	
Leave Accrual			
Barber, W.		$3,078	
Smith, R.		$1,720	
Technician		$2,544	
Ph.D. Student		$0	
Benefits			
Barber, W.		$5,389	
Smith, R.		$3,012	
Technician		$5,875	
Ph.D. Student		$0	
TOTAL SALARIES AND WAGES			$75,577
TRAVEL			
4 R/T Fairbanks-Cordova (@$300/trip)		$1,200	
Per diem - Cordova (12 days @$103/day)		$1,236	
3 R/T Fairbanks-Anchorage (@$300/trip)		$900	
Per diem - Anchorage (12 days @170/day)			
4 R/T Anchorage-Seward (@$300/trip)			
R/T Fairbanks-National Meeting		$1,300	
Per diem - Meeting (5 days @$140/day)		$700	
TOTAL TRAVEL			$5,336
SERVICES			
Communications (FAX, phone, photocopy, etc.)		$400	
Report Preparation (@$35/hour)		$2,800	
TOTAL SERVICES			$3,200
SUPPLIES			
Jars			
Chemicals		$200	
Office		$100	
Miscellaneous lab glassware		$500	
Standards		$600	
Preservatives			
TOTAL SUPPLIES			$1,400
EQUIPMENT			
None requested			
TOTAL EQUIPMENT			$0
TUITION			
2 Semesters		$5,060	
TOTAL TUITION			$5,060
TOTAL DIRECT COSTS			$90,573
INDIRECT COSTS			$18,115
TOTAL FUNDING REQUESTED			$108,688

Project 95114

A2

EXXON VALDEZ OIL SPILL
Brief Project Description

Project Title:	**Eelgrass Community Structure Restoration Assessment Using Stable Isotope Tracers**
Name of Principal Investigator:	**Dr. Thomas C. Kline, Jr. Prince William Sound Science Center**
Lead Agency:	**Alaska Department of Fish and Game**
Cost of Project :	**$ 192.1K**
Project Start-up Date:	**March 1995**
Duration of Project:	**One year**
Geographic Area:	**Western Prince William Sound**
Contact Person:	**Joe Sullivan**

Project 95114

B. Introduction.

Stable isotope ratios of carbon ($^{13}C/^{12}C$) can serve as effective tracers of energy supply in the study area due to conservative transfer of carbon isotope ratios between the lower tropic levels (primary producers such as eelgrass, invertebrates, and forage fishes, etc.) of Prince William Sound waters up to the top consumers. Isotope ratio analysis of harmed species, their prey and their predators can provide insight into both habitat usage and assist in quantifying amounts of food derived from various areas. Nitrogen stable isotope ratios ($^{15}N/^{14}N$), in turn, provide excellent definition of relative trophic level. The heavy isotope of nitrogen is enriched by about 0.34 % with each feeding process and thus can accurately indicate the relative trophic status of species within an ecosystem. The combined use of $^{15}N/^{14}N$ and $^{13}C/^{12}C$ measurements can be used to reconstruct food web structure. The data obtained from these measurements are unique in that they trace material actually assimilated and thus can be used for more accurate ecosystem modeling.

It can be postulated that natural stable isotope abundance of Prince William Sound (PWS) biota will shift because of changes in trophic level, food web structure, and primary producer in the context of species and community recovery following the Exxon Valdez Oil Spill (EVOS), thus providing an independent tool to verify, quantify and model ecosystem processes during ecosystem recovery and restoration. The tracer nature of the approach will enable the integration of ecosystem components. It will enable us to monitor both "top down" (predatory) and "bottom up" shifts (food supply) during recovery and restoration of harmed species and habitats.

This project is part of an interdisciplinary effort focused on the food web dynamics of eelgrass beds in PWS. The study is providing an integrating function to projects focusing on several levels in the food chains and will employ the stable isotope ratios of carbon and nitrogen to trace trophic transfers of carbon and nitrogen between levels. One focus will concern building the data base regarding eelgrass communities whereas the remaining work will seek to build a comprehensive base of isotopic data for the PWS region. In cases where regional gradients in isotope ratios exist, it may also be possible to identify critical habitats used by marine biota.

This project is designed to supplement the on-going EVOS eelgrass community monitoring project that is under the direction of Stephen C. Jewett (UAF), the FY95 BPD is already submitted. The stable isotope analysis in this project is anticipated to provide that project an added dimension for use in collaborative data interpretation.

C. Need for Project

The eelgrass community is a significant habitat for the production of terrestrial and aquatic species harmed by EVOS. In addition to the flora, harmed species include epi- and infauna of eelgrass beds as well as transient terrestrial and

Project 95114

aquatic organisms that use the habitat or feed there. The restoration strategy has been to allow the natural recruitment processes re-establish the eelgrass communities. However, the eelgrass and other intertidal to subtidal communities contain organisms that are recovering from EVOS as well as species that are not recovering. In a holistic sense, these communities are not at their pre-spill status. Thus, there is a need to assess the recovery of community structure within eelgrass communities. In particular, there is a need to compare epifauna (e.g. amphipods) in control and oiled areas because of their role as forage for higher trophic levels. The rebound and then return to damaged state by several community species, including amphipods, suggests that although populations may appear to temporally recover, the ecological balance in terms of interorganismic relationships has not. Thus techniques such as natural stable isotope abundance that reveal ecological relationships must supplement studies that focus on assessing population size and structure. This will enable an assessment of restoration not otherwise possible. This assessment could then lead to modifications or development of new restoration strategies based re-establishing normal ecological roles of different species.

A further benefit of this project is that it will provide the needed littoral isotopic signatures for use in conjunction with concurrent pelagic studies to assess the roles of different communities in the recovery of motile species, e.g herring and salmon. This project will also provide an isotopic signature database of forage biota for projects concerned with higher trophic levels (birds and mammals) enabling then to interpret their data.

D. Project Design

1. Objectives:

1.1 Hypotheses.

Hypothesis 1. Carbon and nitrogen stable isotope ratios of biota from Prince William Sound can be used to identify major food sources to top trophic levels and to assign trophic positions to specific consumers of given age classes and habitat.

Hypothesis 2. Isotope ratios in consumers provide a means to validate conceptual food web structures, identify trophic variability by individuals within species, and to validate quantified energy flows in ecosystem models.

1.2 Specific objectives of this project are:

1.2.1. To determine the $^{15}N/^{14}N$ and $^{13}C/^{12}C$ of species collected from oiled and unoiled sites in the stratified sampling design specified in the proposal "Subtidal Monitoring: Eelgrass Communities", Principal Investigator Stephen C. Jewett. These paired site comparisons will be used to assess recovery from the EVOS by comparing food web structure as determined by stable isotope abundance in conjunction with the approach specified in the Jewett proposal.

Project 95114

1.2.2. Synthesize the data obtained in context with conceptual food webs to validate feeding models and expand to other isotope studies being conducted in PWS by Kline and others.

2. Methods.

2.1 Design/Strategy.

Because this project will be done in collaboration with Jewett, sampling will follow his strategy. Briefly, sampling will be conducted at four oiled and four control eelgrass sites. This will enable comparison of site effects and oil effects on community structure. Obtaining isotopic signatures of biota from several littoral sites will also be useful in synthesis of this projects results with those of projects form the adjacent pelagic habitats (PWS system investigations)

2.2 Analytical methods.

The methodology involved in the isotopic analyses and the interpretation of the data are well-established and documented in several publications resulting from prior work of the Principal Investigator. The UAF Stable Isotope Facility has three isotope ratio mass spectrometers including a new automated system which facilitates faster sample processing and allows more replication in small samples.

Field sampling protocols are well established and will be used. Predator isotopic data will be compared with values obtained from prey species in the same habitats. Where samples of prey species are missing or few, we will try to select proxy samples from the same area (zooplankton, benthos) which will enable a similar comparison. After the isotopic values are in hand, we will synthesize the data with past unpublished data and with other literature isotope ratio values to establish a trophic model.

3.Schedules.

Field activities will take place during a two-week cruise in July 1995 as planned by Jewett. Preliminary sample preparation will take place during the cruise followed by laboratory preparation for mass spectrometry at the Prince William Sound Science Center. Mass spectrometric analysis will take place at the UAF stable isotope facility with completion anticipated in December, 1995. The completion of the draft final report is anticipated during February 1996.

4. Technical Support.
Technical Support is being provided for this project through the Jewett project.

Project 95114

Additional support will come from the University of Alaska Stable Isotope facility; N. Haubenstock will receive prepared samples from Dr. Kline and will report the data to Dr. Kline.

5. Location.

A total of 4 oiled (O) and 4 control (C) sites will be sampled per the Jewett proposal. The paired sites are as follows: Bay of Isles (O) / Drier Bay (C); Herring Bay (O) / Lower Herring Bay (C); Sleepy Bay (O)/ Moose Lips Bay (C); and Clammy bay (O)/ Puffin Bay (C). Analytical work will be carried out using the stable isotope facility at UAF. Sample preparation for stable isotope analysis and data interpretation will take place at the Prince William Sound Science Center.

E. Project Implementation

This project is derived from the Jewett project that has been implemented by ADF&G for the past three years.

F. Coordination of Integrated Research Effort

This project will coordinate via Jewett with the monitoring of oil in subtidal (<20 m) sediments (conducted by NOAA). These projects have several sites in common. This project will also coordinate with other stable isotope projects in the EVOS studies.

G. Public Processes

Results of this project will be made available to the public via:

1. Final report. A final report will be provided. Technical results in these reports will be shared with EVOS collaborators. Thus they will be apprised of the development of the stable isotope methodology and will provide feedback to the investigators such that areas of their interest will be addressed.

2. Peer-reviewed publications. Peer-reviewed publications will be generated throughout the course of this project. Papers describing isotopic ecology at the species or site level will be generated depending on the outcome of results. Synthesis papers will combine results from species and site level papers and work of other authors. Later papers will bring together results from collaborators.

3. Papers at scientific society meetings. Support is requested for T. Kline to attend at a minimum, one national-level scientific meeting per year, e.g. ASLO to present an above paper and to discuss results with colleagues at other institutions.

4. Public lectures. Through our interactions with our colleagues and other organizations, we conduct lectures to inform the general public on the research being conducted as it affects them. An example was a lecture given by T. Kline at the community college in Barrow on his stable isotope research. These outreach efforts in addition to proving public service, greatly aid in public relations of funding agencies. In this spirit, public lectures will be given as opportunities to do so present themselves.

H. Personnel Qualifications

Dr. Thomas C. Kline, Jr, Principal Investigator and Research Scientist at the Prince William Sound Science Center will be responsible for the implementation of this stable isotope study which will be conducted in close collaboration with the eelgrass project being supervised by Stephen C. Jewett of the University of Alaska Fairbanks. We will be collaborating during data synthesis and interpretation and the writing of reports and scientific papers. We have in the past collaborated on subtidal projects including the development of techniques related to assessment of the EVOS. Dr. Kline's expertise lies in the use of natural stable isotope abundance in aquatic ecological settings. He has been or is involved in stable isotope aquatic ecology studies in southeastern Alaska, Prince William Sound, the Kenai Peninsula, Kodiak Island, Bristol Bay, and the Arctic Coastal Plain. New approaches in the use of $^{15}N/^{14}N$ and $^{13}C/^{12}C$ abundance in fisheries ecology settings have been a product of his research studies. Dr. Kline is also an active scientific diver in the University of Alaska Scientific Diving Program.

I. Budget Summary

	FY95	FY96	Project Total
1. Personnel	34.4	34.0	68.4
2. Travel	1.8	7.1	8.9
3. Contractual Services	33.0	1.5	34.5
4. Commodities	6.0	2.0	8.0
5. Equipment	35.1	0.0	35.1
6. Capital Outlay	0	0	0
7. General Administration	26.5	10.7	37.6
	136.8	55.3	192.1

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Project 95115

EXXON VALDEZ TRUSTEE COUNCIL
FY '95 GENERAL RESTORATION DESCRIPTION

A. TITLE PAGE

Project Title: Prince William Sound Restoration Strategy: Sound Waste Management Plan (SWMP)

Project Leader: Kelley Weaverling, Chair, PWSEDC Solid Waste Management Committee

Lead Agency: Alaska Department of Environmental Conservation

Cooperating agencies:
Prince William Sound Economic Development Council
City of Cordova
City of Valdez
City of Whittier
Alaska Department of Environmental Conservation
Alyeska Pipeline Service Company
Valdez Fisheries Development Association (VFDA)
Prince William Sound Aquaculture Corporation (PWSAC)
Prince William Sound Conservation Alliance (PWSCA)

Cost of Project: FY '95 - $275,900

Project Start-up / Completion Dates: FY '95 - November 1, 1994 - August 1, 1996

Duration: 1 - 2 years, starting with FY '95

Geographic Area: Prince William Sound

Contact Person:
Kelley Weaverling
Vice President
PWSEDC
Valdez, AK 99686
Tel: (907) 424-7261
Fax: (907) 424-7259

-or-

Paul A. Roetman
Executive Director
PWSEDC
Valdez, AK 99686
Tel: (907) 835-3775
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Project 95115

Prince William Sound Restoration Description:
Sound Waste Management Plan (SWMP)

B. INTRODUCTION

The Sound Waste Management Plan (SWMP) is a comprehensive plan to identify and remove existing oily and other solid waste from the waste stream, of the oil-impacted communities of Prince William Sound. The plan will improve upon current waste management and join past efforts into a unified regional effort. The SWMP, will put into action an oily and solid waste management system that will operate in all Prince William Sound communities to eliminate the potential for further encroachment or damage to the local ecology.

Problem:

Currently each community in Prince William Sound is out of compliance with federal regulations as it relates to permitting of waste sights. There are no regional goals for managing, reducing and handling of oily and solid waste. Because there is no plan, Prince William Sound is at a potential risk to further environmental harm. Prince William Sound Economic Development Council's regional Solid Waste Management Committee was formed, therefore as a task force of the area's largest contributors of waste. This included both cities, villages, industry, and hatchery representatives. They identified the following regional problems:

1. Costs to manage and handle oily and solid waste continue to rise and tap declining revenue resources.
2. Existing landfills have limited life spans.
3. There is no long term solution in sight.

Solution:

A three phase approach is needed to: 1. identify 2. reduce the cost of handling oily and solid waste, and 3. implement an oily and solid waste management plan.

Phase I will identify the options and most cost-effective means for handling and managing oily and solid waste in Prince William Sound. The PWSEDC regional committee will contract a firm to accomplish this phase;
Phase II will handle all required ADEC/EPA permitting to implement a regional management project, and
Phase III is the implementation of the SWMP that includes construction of the identified, chosen project i.e. regional landfill, regional incineration, etc.

*** It is important to note that as a regional project, local input and coordination is crucial to the long-term success of the SWAMP project by creating local ownership. This proposal was developed and intended to be coordinated by PWSEDC's Solid Waste Management Committee in cooperation with ADEC.**

The EVOS Trustee Council has funded a similar project, number 94417 entitled "waste oil disposal facilities." The SWMP broadens that project approach and greatly increases the effectiveness of enhancement and restoration efforts due to its regional coverage, local expertise and long term monitoring.

Funding for SWMP will allow an effective and necessary approach to enhancement, clean-up and collection of valuable data as it relates to oily and solid waste management in Prince William Sound in 1995. The SWMP will restore, enhance and promote long-term preservation of Prince William Sound from the effects of oily and solid waste. This document describes the plan of work to be undertaken during FY '95

C. NEED FOR THE PROJECT

To further enhance, improve the rate of natural recovery of, and reduce future events of marine pollution in Prince William Sound, the SWMP, is crucial. To ensure the protection and preservation of the Prince William Sound oil-impacted region, implementation of this plan is needed. Under EVOS Designated Wilderness Area objectives, "any restoration objective which aids recovery of injured resources, or prevents further injuries, will assist recovery of these areas." This is the SWMP focus.

The current primary waste stream for oily waste are local harbors. From boats, both domestic waste water (sewage) and oily waste are discharged directly into Prince William Sound. The secondary stream is smaller in direct amounts, but no less damaging to the oil-impacted environment. This includes leechates from community landfills that contribute to the total impact of waste to the local ecology. To add to this, all area landfills in Prince William Sound including both cities and villages are out of compliance with federal regulations. **The SWMP is the only regional effort identified to date that could provide a solution to oily and solid waste management in Prince William Sound.**

D. PROJECT DESIGN

1. Objectives:

The development of the Sound Waste Management Plan (SWMP) originated with Prince William Sound Economic Development Council's regional Solid Waste Management Committee. The primary objectives include the development and implementation of a regional strategy to limit the exposure of hazardous waste material in oil-impacted communities in Prince William Sound. The SWMP will provide a design and recommend an oily and solid waste collection and disposal alternative and provide a plan for future management of oily and solid waste in Prince William Sound. The following outlines the objectives to be accomplished in FY '95:

a) Gather background information on the composition and rate of oily and solid waste generation in Prince William Sound

b) Analyze waste management processing and disposal alternatives and select the most appropriate solution for Prince William Sound

c) Address regulatory requirements

d) Establish public participation program to understand and address community concerns and needs

Project 95115

e) Analyze oily and solid waste reduction and recycling options

f) Evaluate sites for a new regional landfill

g) Develop cost estimates for oily and solid waste management alternatives

h) Recommend financial planning to fund oily and solid waste services

2. Methods:
The SWMP will include a scoping of the current Prince William Sound situation by qualified firm. This scoping will determine both the options and costs related to each in implementing a regional oily and solid waste management system.

3. Schedule:
(FY 95 - Plan of Work)
Phase I

Nov 1	Distribute Request for Proposals (RFP's) for regional oily and solid waste management plan.
Dec 1	Coordinating meeting (Review of submitted proposals)
Jan 1995	Select consulting firm and draft contract
Feb 1	Coordinating meeting (contractor and committee)
Mar 1	Review of scoping firm's draft plan findings with PWSEDC Solid Waste Committee comments.
Apr 1	Public Review of findings (held in each PWS community)
Apr 2	Determination of most efficient and cost effective regional oily and solid waste system.

Phase II

Apr 1	Start process for implementation of regional oily and solid waste system.
Apr 15	Scope ADEC/EPA permitting for project implementation
Jun 1	Committee review and evaluation of FY 95 Work Plan.
July 15	Meeting to review draft ADEC/EPA permits
Aug 15	Submit ADEC/EPA permit
Oct 1	Meeting with ADEC/EPA about questions on permit
Nov 1	Submit revised permit

Jan 1996 Coordinating meeting

Phase III

May 1 Initiate construction of permitted facility

Aug 1 Facility complete and operational

4. Technical Support:
Prince William Sound Economic Development Council's Solid Waste Management Committee will play both an evaluative and advisory role to the scoping firm.

5. Location: Prince William Sound

E. PROJECT IMPLEMENTATION

To maintain the direct link from development and implementation of the SWMP, Prince William Sound Economic Development Council's regional Solid Waste Management Committee is the only appropriate entity to implement this regional project. Alaska Department of Environmental Conservation will additionally play an advisory, and coordinating role with the Committee's efforts.

F. COORDINATION OF INTEGRATED RESEARCH

The SWMP program is a coordinated effort of the Prince William Sound Economic Development Council in cooperation with: Department of Environmental Conservation, Alyeska Pipeline Service Company, Chugachmiut, Valdez Fisheries Development Association, Prince William Sound Aquaculture Corporation, Prince William Sound Conservation Alliance, the City of Valdez, the City of Whittier, the City of Cordova, and the Villages of Tatitlek and Chenega.

G. PUBLIC PROCESS

Public involvement has been of the highest priority to all PWSEDC Solid Waste Management Committee meetings. In order to provide a representative cross-section of all Prince William Sound, each community is represented, including both fishing and petroleum industry representatives. The process will continue with public review at local city council and tribal council meetings for comment of the SWMP. An integral part of the SWMP is community education on oily and solid waste issues.

H. PERSONNEL QUALIFICATIONS

Each member of PWSEDC's Solid Waste Management Committee through both experience and knowledge contributes to the overall effectiveness of the SWMP (see committee list appendix A). The expertise of the scoping firm will be procured through the bid process, requiring an evaluative application process.

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I. BUDGET (FY '95)

1. Personnel	
Phase I & II	
PWSEDC will staff and coordinate project efforts	$ -0-
Phase III	
To be determined	
2. Travel	
Phase I & II	
10 trips for Solid Waste Committee Members	
14 members @ $200 for airfare	$ 28,000
Room & Board @ $120/day	$ 16,800
2 air trips to Anchorage for 5 principal investigators	$ 2,000
7 days time for 5 principal investigators @ 150/day	$ 5,250
Phase III	
To be determined	
3. Contractual Services	
Phase I	
Engineering Consulting Fees	$ 100,000
Accounting Services - project audit	$ 3,500
Teleconferencing fees 10 @ 150	$ 1,500
Copy costs- quarterly reporting @ 200	$ 800
Phase II	
Permitting for project implementation	$ 100,000
Phase III	
To be determined	
4. Commodities	
N/A	
5. Equipment	
N/A	
6. Capital outlay	
N/A	
7. General administration (including environmental compliance)	
Phase I & II	
7% Administrative Support and Coordination	$ 18,050
Phase III	
To be determined	
Total Phase I & II	**$ 275,900**

Project 95115

Prince William Sound Economic Development Council

P.O. Box 2353 • Valdez, Alaska 99686
Phone: 835-3775 • Fax: 835-5770
Representing the communities of Chenega Bay, Cordova, Tatitlek, Valdez and Whittier.

Solid Waste Management Committee

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Cordova
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Kelley Weaverling
Board of Directors, PWSEDC
Cordova
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Chugachmiut Corp.
Chenega Bay
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Appendix A

Project 95116

RESTORATION OF INTERTIDAL OILED MUSSEL BEDS BY NON-DESTRUCTIVE MANIPULATION/FLUSHING WITH PES-51®.

Project Team

PES Services, Inc. Chenega Corporation, University of Alaska Fairbanks, University of California - Santa Cruz, Foss Environmental Services, Inc.

Submitted by

Stephen R. Rog and Dennis C. Owens
PES Services, Inc.
Anchorage, AK and San Antonio, TX

June 30, 1994

Project 95116

A. COVER PAGE

1. Project Title: Restoration of Intertidal Oiled Mussel Beds by Non-Destructive Manipulation/Flushing with PES-51®.

2. Project Leader: Mr. Stephen R. Rog

3. Lead Organization:
PES Services AK, Inc.
552 W. 58th, Unit E
Anchorage, AK 99518
Phone: (907) 562-8881
Fax: (907) 562-8883

4. Cost of Project: Cost Estimate - $453,186 for FY95

5. Project Startup/Completion Dates:
Startup: July, 1995
Completion: July, 1996

6. Project Duration: One (1) Year

7. Geographic Area: Chenega Island area

8. Contact Person:
Dennis C. Owens
PES Services, Inc.
P.O. Box 680488
San Antonio, TX 78268-0488
Phone: (210) 680-2950
Fax: (210) 523-5700

B. INTRODUCTION

This project will focus on restoration of the mussel beds in the Chenega area, and as a result contribute to the recovery of injured resources that use these mussels as a food source, e.g. harlequin ducks, sea otters and black oystercatchers. In addition, these mussels are an integral component of the subsistence of humans residing in the Prince William Sound area. These mussel beds were impacted by the 1989 Exxon Valdez oil spill. The Chenega area remains as one of the sites of the most persistent heavy and medium oil residue concentrations (1993 Shoreline Assessment sponsored by the Exxon Valdez Trustee Council). A team of companies and universities to be led by PES Services proposes to work with the Trustees Council and the Alaskan Department of Environmental Conservation (ADEC) on this project. The project will be conducted to demonstrate the efficacy of a non-destructive manipulation/flushing method using PES-51® to remove the oil found in mussel beds and to demonstrate that this method is not toxic to the mussels or other resident fauna. This project builds on the successful demonstration of PES-51® for the removal of persistent oil from a rocky shoreline in Prince William Sound as was funded by the Hazardous Substance Spill Technology Review Council (HSSTRC) in 1993. The shoreline project also demonstrated that there were no observable acute toxic effects from PES-51® on the mussels and other invertebrate fauna observed near the treatment site. It is reasonable to propose, therefore, that PES-51® application to oiled mussel beds will be effective while not being toxic to the mussels and other resident fauna.

Dense clusters of the blue mussel, *Mytilus edulis*, occur on rocky shores throughout the region impacted by the Exxon Valdez oil spill that began in March of 1989. Mussels secrete byssal threads which enable them to attach to the substrate. In addition to providing stability, the matrix of threads extending from a bed of mussels, forms an environment that offers shelter for a diverse mix of marine invertebrates. These other fauna find shelter from wind, waves and sunlight within the mussel threads.

It is documented that liquid oil persists in the sediments and organic materials that compose the mussel beds in the Chenega area (Piper,E. and Gibeaut,J.,1993). These oiled mussel beds offer the opportunity to evaluate the efficacy of new shoreline treatment technology, like PES-51®, to restore these beds and to establish baseline information for future oil spills. Currently, there is no established best method for removal of the oil from within oiled mussel beds. It is, therefore, important to take this opportunity to develop a method of effectively and efficiently removing the oil while not damaging the mussel bed.

C. NEED FOR THE PROJECT

This project is being undertaken to demonstrate the efficacy of a non-destructive/flushing methodology utilizing PES-51® to remove oil persisting in mussel beds in the Chenega Island area. The impact of these oiled mussel beds is evident from information provided in the "Invitation to Submit Restoration Projects for Fiscal Year 1995" in response to which this proposal is submitted:

> "Oil trapped in the sediments beneath certain mussel beds has degraded slowly and has retained toxic components since the spill. The protected beds are one of the few sources of unweathered oil remaining from the oil spill. This oil may be a route for continued exposure and contamination to higher trophic levels such as harlequin ducks that feed on the mussels."

This project will demonstrate that this new shoreline cleaning technology is a minimally intrusive manipulative technique that will remove oil from beneath oiled mussel beds and accelerate natural attenuation processes without harming the mussels and other resident fauna. Restoration of the mussel beds to their pristine condition will enable ADEC to determine whether removal of the persistent oil in the mussel beds is a critical factor in speeding up the recovery of harlequin ducks sea otters and black oystercatchers.

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D. PROJECT DESIGN

1. **Objective**: To evaluate the effectiveness of a new shoreline cleaning technology, using PES-51®, to remove oil from an impacted mussel bed and to demonstrate the potential impact of this removal methodology on the mussels and the fauna residing in the nearshore/shoreline.

2. **Methods**: The overall design and performance of the project is shown in Table 1. The project site design will depend in part on the size of oiled mussel beds available for the project. The candidate mussel bed will be selected by the Trustees Council in conjunction with regulatory and recovery agencies, e.g. ADEC, NOAA, etc. If the area is relatively limited, the design will include two mussel bed areas; one oiled bed and another nearby that has no evidence of retained oil (control area). Each of these beds will be divided into three plots; one to be treated with the PES-51® methodology, one that will be treated, but without PES-51®, while the third is left untreated. These six plots will enable us to evaluate the efficacy of the PES-51® on oiled mussel beds as well as the potential for toxicity on mussels and other resident fauna in oiled and non-oiled beds. Measures will be undertaken to minimize the possibility of PES-51® migrating from treated plots to untreated ones. The second approach to be used, if the beds are large enough, will have a randomized block design and include test and control blocks. Choice between these two designs will be made during an initial visit by representatives of the project team and the Trustees Council. With either design, mussel bed, water column and lower and middle tidal zone sediment samples will be obtained for analyses prior to and after treatment with the PES-51® methodology.

Post treatment samples will be obtained at least at one and seven days with other sample times to be determined by the UAF and UCSC associate investigators. One day samples will be analyzed for the potential toxicity on mussels and other resident fauna, whereas the seven day sample will also be analyzed for impact on microbial populations. Subsequent samples are likely to be proposed for the last possible date that access is permitted to the site due to winter weather and then the following spring.

Mussel bed samples will be obtained from the proposed oiled and control areas using the NRDA methods and prepared for hydrocarbon and biological analyses. Hydrocarbon analyses will be conducted on these samples by the Zymax Envirotechnology, Inc. of San Luis Obispo, CA using gas chromatography/mass spectrometry techniques (EPA 8240/8270) to establish baseline levels present in these beds. Biological analyses of the mussels will be conducted by Dr. Highsmith at the UAF and will establish the pretreatment characteristics of the mussel beds in the oiled and control areas. Note that the project design also includes administration of PES-51® to control areas. This is necessary to fully analyze the potential impact of this methodology on mussel beds because: a) mussels and other resident fauna exposed to chronic oiling for four years may be highly susceptible to injury by the treatment, b) conversely, those organisms remaining may be extraordinarily hardy or resistant, and c) the other faunas may be different (samples collected during the initial visit may answer this question prior to the experiment). Additionally, biological analyses will include determination of potential toxicity of the PES-51® treatment on other aquatic life, i.e. the other resident fauna. This phase of the project will be conducted by Dr. Tjeerdema at UCSC. Potential impact of PES-51® treatment on total heterotrophs and hydrocarbon degrading microbes in the lower and middle intertidal zones will be determined by Dr. Braddock at UAF from water column and sediment samples.

3. **Schedule**: Timelines for all critical aspects of the project are also shown Table 1 with all times represented as month and year when the activity will be accomplished.

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Table 1: Restoration of Intertidal Oiled Mussel Beds - Project Methodology and Timelines

Activities	PES	UAF	Chenega Corp	UCSC	Foss	Time (mo/yr)
Project Lead	X					
Initial Visit - Project Site Design and Baseline Mussel Bed, Water Column and Sediment Samples	X	X	X		X	6/95
Project Site Preparation	X		X		X	7-8/95
Logistics and Support			X			
PES-51® Application	X		X			9/95
Obtain Post Treatment Mussel, Water and Sediment Samples	X	X				9-10/95, 9/96
Hydrocarbon Analyses	X					7-10/95, 9/96
Analyses of Mussel Bed Samples for Potential Toxicity of Mussels		X				7-10/95, 9/96
Analyses of Mussel Bed Samples for Potential Toxicity of Other Resident Fauna		X		X		7-10/95, 9/96
Microbial Analyses of Water Columns, and Lower and Middle Tidal Zone Sediment Samples		X				7-10/95, 9/96
Hydrocarbon Waste Collection and Disposal	X				X	10/96
Interim and Final Reports	X					11/95, 10/96

4. **Technical Support:** The selected mussel beds will be double boomed and contained prior to the PES-51® treatment. Sea water deluge and flush pumps, air compressors, recovered oil storage tank and equipment and supplies will be staged on a sixty (60) foot landing craft, moored adjacent to or "beached" at the treatment site. Crew support will be provided using a berthing vessel. Foss Environmental Services, Inc. will provide qualified spill response equipment and services including booms, pumps, etc.

Methodology to be employed in this project involves application of PES-51® using a modified version of the air knife, pneumo-hydrodynamic system used at Sleepy Bay in 1993 that was sponsored by HSSTRC. For mussel bed application, the air knives will be regulated for a low pressure fracturing (or dilation) so that PES-51®, via an aerosol infusion, can reduce the interfacial tensions and move through the vertical sections of the oiled mussel beds. During the PES-51® infusion, sea water will follow the route of the PES-51® induced subsurface pathway. In addition, sea water deluge and flushing (low pressure, large quantities) using 6 inch pumps and fire monitors, will be used to move the oil to the double boomed area for collection and recovery. Oil recovered during the project will be contained and collected for disposal in accordance with standard spill techniques, e.g. containment booms, skimmers and absorbents. This oil will be pumped

to the storage tank, excess water will be decanted and the volume of oil recorded. At the completion of the project, the recovered oil will be disposed of or recycled at a permitted facility, e.g. Alaska Pollution Control, Inc., in accordance with state and federal laws and guidelines. Application of PES-51®, operation of the flushing equipment, and recovery of the oil will be handled by Chenega Corporation.

Samples obtained from the mussel beds, water column and lower and middle tidal zone sediments will undergo biological and chemical analyses as described in Section D.2. The work will be performed by Zymax Envirotechnology, Inc. (hydrocarbon analyses), UAF (potential toxicity on mussels and impact on the microbial populations) and UCSC (potential toxicity on other resident fauna). Results of the analytical activities will be provided to PES for evaluation, coordination and archiving. Each associate investigator will generate interim and final reports that will be integrated into the overall project reports that will be developed by PES.

5. **Location:** As was stated earlier, the Chenega areas is known to have some of the most persistent, heavy- and medium oil residue concentrations. For this reason the Chenega area is proposed as the site for this project. Additionally, involvement of the Chenega Corporation throughout the project is likely to serve a secondary purpose, i.e. involving local residents in critical resource restoration activities (1993 Trustee Council sponsored Assessment Survey). ADEC and the National Oceanographic and Atmospheric Administration have surveyed and sampled mussels and sediments from these oiled sites. One of the locations monitored during this survey is proposed for the proposed project.

E. PROJECT IMPLEMENTATION

PES Services is proposed as the lead organization for this project. PES Services, Inc. is well qualified to lead a multidisciplinary team of companies and universities having led the effort that was sponsored by HSSTRC at Sleepy Bay in 1993. The only portion of the project that could be implemented through a competitive contract process is the logistics support of the environmental contractor services. Foss Environmental Services, Inc. is listed as the contractor of choice due to their expertise in oil spills and the use of PES-51® under these conditions. The UAF and UCSC have both established marine science programs dealing with highly specialized testing for marine toxicology of selected species found in the Prince William Sound area. Chenega Corporation is well qualified and experienced in conducting projects as the one described in this proposal having performed similar duties during the 1993 HSSTRC sponsored project. Zymax Envirotechnology, Inc. is recognized for its capabilities in the types of chemical analyses and conducted analyses for PES on previous projects.

F. COORDINATION OF INTEGRATED RESEARCH EFFORT

This project involves collaborative partnerships among three companies and two universities and will involve oversight by a number of state and federal agencies, e.g. ADEC and NOAA, as well as community advisory groups. Depending on the outcome of the competition for funding from the Trustee Council, collaborative efforts may be undertaken with other groups having projects with related objectives and activities.

G. PUBLIC PROCESS

PES Services will make every possible effort to participate in workshops, public meetings, document reviews, etc. that are needed to insure understanding of the objectives and results of the proposed project so as to fulfill the requirements of the Trustee Council. PES Services has taken an aggressive approach to publishing its research and has presented results of the 1993 HSSTRC sponsored project at several national and international oil spill conferences. National Geographic will carry an article about this project in the August, 1994 issue.

H. PERSONNEL QUALIFICATIONS

1. Mr. Steve R. Rog, VP of Oil Spill Response and Industrial Cleaning for PES Services AK, Inc., will be the Project Leader. Mr. Rog has twenty years experience as an environmental geologist, served on an Oil Spill Response Team as the Environmental Coordinator for Tesoro Alaska Petroleum Company; has an extensive working knowledge of the proposed application technology; has been at every major oil spill in 1994 representing PES Services; and also was the manager for the 1993 HSSTRC sponsored project.

2. Dr. Raymond Highsmith is to be an Associate Investigator on this project. He is a Professor at UAF and a lead investigator in the Institute Of Marine Science. He is recognized as a worldwide expert on bivalves found in Alaskan waters.

3. Dr. Ron Tjeerdema is to be an Associate Investigator on this project. He is an Associate Professor at UCSC and a researcher in the Institute of Marine Science and recognized as a worldwide expert on aquatic toxicity testing procedures and protocols. His research team has developed dispersant toxicity testing protocols that have been adopted as industry standards.

4. Dr. Joan Braddock is to be an Associate Investigator on this project. She is a Assistant Professor of Microbiology and is associated with the Institute for Arctic Biology at UAF and has extensive experience in studies of the impact of hydrocarbons on shoreline microbiology and was a participant in the 1993 HSSTRC sponsored project.

5. Mr. Dennis Owens, VP for R&D of PES Services, will be the Project Coordinator responsible for all contract matters relating to the sponsor and subcontracts to the team members. He has twenty years experience as a corrosion oilfield chemist and microbiologist and is one of the developers of PES-51®. Most recently, he was the technical project coordinator for the 1993 HSSTRC sponsored project.

6. Dr. William Alter III, Director of Research and Technology Development for PES Services, will be responsible for coordinating the analyses of data and for integrating the team's reports into those that will be delivered to the Trustees Council. He is an Environmental Physiologist with over 25 years experience in research and development for the Air Force and academia and most recently was a Space Grant Fellow for the National Aeronautics and Space Administration.

7. Gail Evanoff and Chuck Totemoff of the Chenega Corporation and will be responsible for organizing the work crews that will participate in this project. The Chenega Corporation participated in the 1993 HSSTRC sponsored project at Sleepy Bay.

I. BUDGET

The budget was developed on the basis of an initial visit to the Chenega area for selection of the field site, project site design and acquisition of baseline samples, and a proposed 10 day field effort that includes travel to/from project site and one weather day. The costs for efforts in the field by PES and its team members are estimates which are subject to revision after finalizing the field aspects in discussions with the Trustees Council, regulatory and recovery agencies. A more detailed description of the budget appears as an appendix.

1.	Personnel - PES Services, Inc. (only)	48,900
2.	Travel	6,300
3.	Contractual Services	
	a. UAF - Environmental Technology Laboratory	66,297

	b. UCSC	95,940
	c. Chenega Corporation	31,800
	d. Foss Environmental Services	21,000
	e. Zymax Envirotechnology, Inc.	8,000
	f. Alaska Pollution Control, Inc.	2,000
	g. Videography services	7,500
4.	Commodities	0
5.	Equipment	122,750
6.	Capital Outlay	0
7.	General Administration	1,500
8.	Subtotal Direct	411,987
9.	Indirect (10% MTD)	41,199
10.	Total Estimated Cost	453,186

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APPENDIX: Detailed Description of Budget

1. Personnel

Stephen Rog - Project Management (100 hrs@95/hr)	9,500
and Field Supervision (120hrs@65/hr)	7,800
Dennis Owens - Project Technical Coordination (50 hrs@95/hr)	4,750
William Alter III - Data Analysis and Reports Integration (50hrs@95/hr)	4,750
PES Services AK - Field Crew (3) 10 days (12hr/day)@65/hr	15,600
(2) 5 days (10hr/day)@65/hr	6,500

2. Travel

PES Services, Inc.

Dennis Owens, William Alter - 2 trips to Alaska for Exxon Trustees Meetings

Air Fare To/From Texas and Room/Board	3,800

PES Services AK Travel to/from Project Site

Initial Visit - Float Plane	1,000
Field Demonstration - Float Plane	1,000
Bus Charter Anchorage to Whittier	500

3. Contractual Services

A. UAF-ETL

Personnel: Dr. Raymond Highsmith, lab. tech. & graduate student	20,787
Travel: Airfare and Room & Board for 2 Trustees Council Mtgs.	1,100
Initial Visit, Field Demonstration and Followup Sampel Acq.	2,070
Commodities	2,000
Equipment	0
General Administration/Indirect	10,790
Personnel: Dr. Joan Braddock and graduate student	19,550
Travel: Airfare and Room & Board	1,000
Commodities	8,000
Equipment	0
General Administration	1,000
Subtotal for UAF-ETL	66,297

B. UCSC

Personnel: Dr. Tjeerdema and Scientific Staff	50,000
Travel	5,000
Commodities	10,000
Equipment	0
General Administration/Indirect	30,940
Subtotal for UCSC	95,940

C. Chenega Corporation 31,800

D. Foss Environmental Services, Inc. 21,000

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E.	Zymax Envirotechnology Inc. Hydrocarbon analysis (EPA 8240/8270)	8,000
F.	Alaska Pollution Control, Inc. Oil Recycle or Disposal Est. 1,000 gal.@2/gal	2,000
G.	Videography service Est. 10 days@750/day	7,500
	Subtotal Contracts	166,240
4.	Commodities	0
5.	Equipment	
	Work Barge (or 2 Berthing Vessels and Landing Craft) 10 days@7,500/day	75,000
	Skimmer 10 days@1,000/day	10,000
	Fuel	2,000
	2 Air Knife Systems 10 days@ 500/day	10,000
	PES-51® 3 drums@1,250/each	3,750
	1 Skiff and outboard 10 days@200/day *	2,000
	1 - 5,000 gallon oil storage tank 10 days@150/day *	1,500
	2 - 6" pumps 2 weeks@600/week *	1,200
	For Hose for pumps *	500
	1 - 250 cfm air compressors 2 weeks@600/week *	1,200
	Air Hose for compressor *	500
	Personal Protective Equipment 12 men/10 days@ 30/day	3,600
	Pads, Sorbents, Sweekps, Booms, etc.	3,000
	Containment Boom 500LF@12/LF	6,000
	Miscellaneous Supplies and Freight	2,500
	Subtotal Equipment	122,750
6.	Capital Outlay	0
7.	General Administration	
	a. Reports	1,000
	b. Miscellaneous Communications	500
8.	Subtotal Direct	411,987
9.	Indirect (10% MTD)	41,199
10.	Total Estimated Cost	453,186

* These items may be provided on-board the Work Barge and be part of the overall rate for the barge. This would reduce the proposed equipment cost by $6,900.

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PES-51® Shoreline Restoration of Weathered Subsurface Oil in Prince William Sound, Alaska

By

Steve Rog (1), Dennis Owens (2), Leslie Pearson (3), Mark Tumeo (4),Joan Braddock (4), Tamara Venator (4)

1-Tesoro Alaska Petroleum Co., 2-Petroleum Environmental Services, Inc., 3- Alaska Department of Environmental Conservation, 4-University of Alaska Fairbanks

ABSTRACT

On July 1-7, 1993, a shoreline restoration project was conducted by Tesoro Alaska Petroleum Company and Tesoro Environmental Products Company using PES-51®, a biosurfactant, and a modified air knife injection system on a 120 ft. x 135 ft. area of Sleepy Bay on LaTouche Island in Prince William Sound (Figure 1).

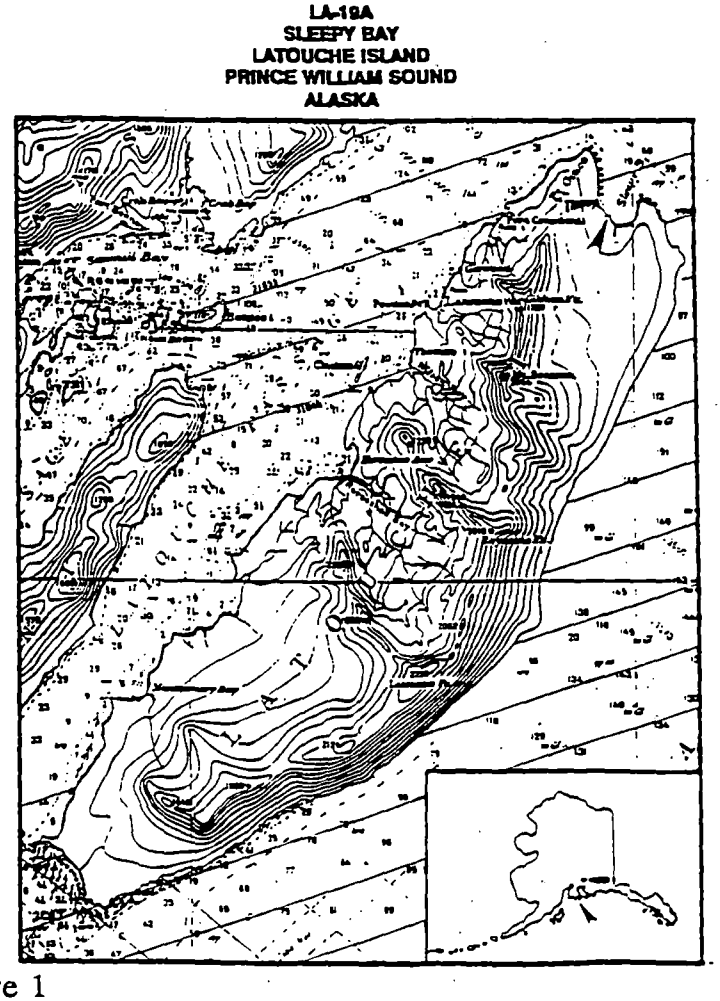

Figure 1

PES-51® contains naturally occurring components and is biodegradable. The product is listed on the National Contingency Plan Product Schedule List as a miscellaneous oil spill agent. The objectives for the project were: to test the effectiveness of PES-51® in removing petroleum contamination from the substrate in the intertidal zone; examine the levels of hydrocarbon in the water resulting from the application; examine the microbial response to the PES-51® treatment; and, nutrient analysis. During the project, the test beach was further subdivided into treatment sections approximately 120 ft long and 20 ft. wide from the upper to lower intertidal zones. Sediment, pore water and oil/water samples were collected by the University of Alaska-Fairbanks (UAF) Environmental Technology Laboratory from the treatment beach and adjacent control beach for geochemical analysis.

Materials

PES-51® is listed as a miscellaneous oil spill agent on the EPA's National Contingency Plan product schedule. PES-51® is a biological hydrocarbon cleanser designed to be used in removing oil from impacted rocks, beaches, concrete, bulkheads, pilings, tanks, oil spill response equipment, and other solid surfaces. PES-51® is composed of biosurfactant, d-limonene, and biospersan. The d-limonene fraction, a citrus derivative, provides solvent characteristics to the mixture and allows it to penetrate into porous surfaces and extract hydrocarbons. It also acts as a suitable carrier solution and re-odorant for the bacterial by-products.

Once the product is applied by spraying, it forms a product/oil mixture. The product is designed to decrease the surface tension between oil/sediment mixtures, allowing the oil to float to the surface after the introduction of water. Because the oil/product mixture does not change the surface chemistry of the hydrocarbon, the mixture is readily adsorbed by oleophillic/hydrophobic materials or by convention skimming or vacuum methods from the water surface. After surface treatment with PES-51®, a temporary molecular protein film is left by the product. This protein film minimizes re-attachment of oil to the treated surface.

Test Site Description

Beach segment LA-19A is naturally divided into two sections by a large outcropping of boulders in the middle and bedrock protrusions on either side. The eastern portion which served as the control site, is composed of small cobble over gravel. The western portion of the beach, which served as the test site, is covered with larger cobble and

boulders over gravel and bedrock. Both sections of LA-19A exhibited an extensive growth of yellow-brown algae in the lower inter tidal zone, as well as sporadic mussels, limpets, starfish, and anemones. Populations seemed somewhat larger along the western portion of the beach.

Treatment History

On July 3, 1989 treatment of LA-19 commenced. Throughout the course of the 1989 season, physical treatment techniques observed by State shoreline monitors consisted of the following:

1. Hand wiping
2. Cold and warm water header hose flood
3. Cold water/high pressure
4. Warm/Hot water, medium pressure wash
5. Hot/steam water, high pressure wash
6. Omni booms

Bioremediation treatment was applied to LA-19 with approximately 220 ga. of Inipol and 948 lbs. of Customblen. LA-19 was demobilized on September 14, 1989 with gross contamination still remaining throughout the segment.

During the 1990 treatment season approximately 21 days were spent at LA-19. Mousse and oil contaminated soils were removed using only manual techniques. Customblen was applied in the upper intertidal zone (UITZ) and behind boulders where concentrations of oil exist.

On May 2, 1991 a multi-agency shoreline assessment team evaluated the oiling conditions at LA-19A. Manual pickup and bioremediation treatment recommendations were made to remove the easily accessible asphalt between the boulders. The Technical Advisory Group (TAG) evaluated the recommendations and decided that no treatment should take place during the 1991 field season. Although shoreline assessment data from 1991 and 1992 indicated a significant amount of surface and subsurface oil on LA-19A no treatment had been applied since 1990.

Oil Characteristics

On June 3, 1993, a shoreline assessment survey was conducted personnel from the Alaska Department of Environmental Conservation/Exxon Valdez Oil Spill (ADEC/EVOS) office. The oiling summary indicated that asphalt and oil contaminated residual sediments were found throughout the mid-intertidal zone (MITZ) to

the upper intertidal zone (UITZ). Within the boulder-cobble interstitial spaces, oiling occurred in distinct patches and was characterized as asphaltic, saturated oil residual and mousse which often extended subsurface. Twenty one pits were dug with an average depth of 10 inches throughout the sub-segment. Sub-surface oiling characteristics ranged from oil-filled pores, high-moderate-low oil residual, oil film and no oil.

Treatment

The western portion of the beach, covering an area roughly 120 ft. long by 135 ft. wide, was treated with 165 gallons of PES-51® over a period of 5 days. A modified air-knife injection system was used to inject compressed air beneath the surface, loosening the substrate, followed by injections of PES-51®. PES-51® was injected as both an aerosol or liquid. The amount of injection and pneumatic agitation was operator dependant, based on the visual efficacy and the amount of oil removed in the injection area. Treated areas were then flushed with cold sea water (55-57F) to liberate the product/oil mixtures for cleanup.

Methodology

The test and control beaches were divided into six 20-foot wide strips that spanned the length of each site. Five shallow pits located at random were dug along each strip. Triplicate sediment composites were collected in sterile plastic bags from strips 1-6 at the test site and strips 2 and 4 at the control site. Triplicate sea water samples were collected in sterile polyurethane bottles offshore of each site, six inches beneath the surface.

On June 6, 1993, researchers completed a preliminary sampling run to verify that contamination existed on the beach and to allow the researchers to better understand the conditions under which the experiment would be performed. Five grab samples of beach material were collected from random locations on the beach. The five grab samples were analyzed for petroleum contamination using a Gas Chromatograph (GC) for constituents in the C-4 to C-16 range (EPA method 8220 and 8270).

At the same time as material was being collected for GC analysis, three replicate composite beach material samples from the five holes and three water column grab samples wee collected for microbiological analysis of the total heterotrophs and oil degrading bacteria populations.

Before and after the application of PES-51®, grab samples of seawater directly below the site were collected and analyzed for petroleum constituents (C4 through C16) using EPA method 8260. Grab samples were also collected in the water column above the treated beach during high tide to determine if any of the petroleum contamination seen floating to the surface and being removed by the skimming was dissolving into the water column. These were also analyzed by Gas Chromatography using EPA Method 8260.

In order to allow consistent, repetitive sampling of the beach material before and after sampling, the beach was divided into six strips, 135 feet long by 20 feet wide, starting at the mean low tide line. A control area which was not treated was selected immediately adjacent to the test plot and similarly divided.

Five holes were randomly spaced along strip 1, strips 2 and 3 combined, strip 4 and strip 5. A composite sample was collected from each of the five holes for GC analysis of constituents in C-4 to C-16 range (EPA method 8220 and 8270). An individual sample was collected from each hole, extracted with a hexane/MTBE mixture and stored. These forty sample extracts (20 for before treatment, 20 from after treatment) were subsequently weighed, dried and gravimetric calculation of contamination performed. The samples were then reconstituted with Freon and analyzed using infra-red spectrophotometry according to Standard Methods (Greenburg, 1992).

Sediment and sea water samples were assayed for numbers of hydrocarbon-degrading microorganisms using the Sheen Screen technique (Brown and Braddock, 1990). Sheen Screen is a miniaturized 5-tube most probable-number (MPN) method using Bushnell-Haas as growth medium and sterile crude oil as the sole carbon source. The serial dilutions were carried out in sterile, 24-well Cell Well plates. The plates were incubated at room temperature for three weeks and then scored. Emulsification of the oil sheen in an individual cell indicated the presence of organisms capable of metabolizing the hydrocarbons. All sediment results were standardized to 100% dry weight. Total heterotrophs were assayed using a similar MPN method. Samples were diluted serially in saline Marine Broth, incubated for one week at room temperature, then scored. Cell turbidity indicated the presence of heterotrophic organisms.

Radiorespirometry was used to assay the hydrocarbon-oxidation potential of microorganisms in the sediment and sea water samples (Brown et al, 1991; Lindstrom et al, 1991). Radiolabelled :14C:-hexadecane, :14C:-phenanthrene, and :14C:-Glutamate were used as representative aliphatic and polycyclic aromatic hydrocarbons

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and served as sole carbon sources during incubation. Samples of filtered sea water or sediment slurries were pipetted into sterile Teflon-lined septa vials and injected with the appropriate,radiolabelled hydrocarbon. All samples were run in duplicate. After incubation, the samples were killed and the evolved radiolabelled-CO_2 fixed with NaOH. Later, to recover the carbon, the samples were acidified with HCl and purged with nitrogen g s. The gaseous stream was then bubbled into scintillation vials filled with radiolabelled-CO_2-sorbing phenethylamine cocktail. The radioactivity was measured with a Beckman Instruments model LSC 1800 liquid scintillation counter with automatic quench correction.Quality Assurance. The "5-tube" MPN method employed in the biomass assays is a more reliable statistical procedure than the more commonly used "3-tube" method. Negative controls were also run periodically by preparing sterile media plates that were not inoculated with sample. A number of controls were also run to assure the quality of the data for the biodegradation potentials. They included time-zero killed controls ("blanks") to monitor for abiotic CO2 production, CO2 recovery efficiencies and careful monitoring for leaking vials during the purging process.

RESULTS

The results of the preliminary soil sampling for petroleum contamination are shown in Table 1.

TABLE 1: Soil Contaminant Levels (mg/kg)
Preliminary Sampling (6/04/93)

Constituents	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
Benzene	ND	ND	ND	ND	ND
Toluene	ND	ND	ND	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND
Xylenes	ND	ND	ND	ND	ND
TPH (Volatile)	ND	ND	ND	ND	ND
TPH (Diesel)	13	11	16	29	6.9
TPH (semivolatile)	1700	410	3700	3900	240

Note that there are no volatile components left in the beach material. This is expected as the crude oil has been weathered for over four years at the time of the sampling. Because of the verified lack of volatile components, these will not be discussed further.

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Beach Remediation Experiment Sampling

Water Sampling: The concentration of volatile petroleum hydrocarbons (BTEX) and total petroleum hydrocarbons (diesel range and semivolatile) as determined by GC in the water column samples are shown in Table 2. The "before treatment" samples were collected in June and immediately before the July application. The "during treatment" samples were collected below the treatment sites during application and from above the treated site as the tide rose and covered the beach. The "after treatment" samples were collected immediately after the tide fell below the treated beach and one month after the beach treatment experiment. In all instances, there was no hydrocarbon contamination found in the water column.

Table 2: Water Column Contaminant Levels (mg/L) Before, During and After Treatment with PES-51®

Constituents	Before Treatment*	During Treatment*	After Treatment*
Benzene	ND**	ND	ND
Toluene	ND	ND	ND
Ethylbenzene	ND	ND	ND
Xylenes	ND	ND	ND
TPH (Volatile)	ND	ND	ND
TPH (Diesel)	ND	ND	ND

* Four to six grab samples taken from the water column for each period. All results were the same.

** Not detectable at limit of method.

Beach Material Sampling: The concentration of total petroleum hydrocarbons (diesel range and semivolatile) as determined by GC in the composite samples analyzed are shown in Table 3. The reduction of semivolatile petroleum hydrocarbons is presented graphically in Figure 3.

Microbial Effects of Treatment

The data collected in the microbial sampling from the preliminary, during treatment and post treatment surveys provide a time-series of information on the effects of the PES-51® treatment on the microbial population. Because of the wide, inherent variability of contamination in a beach environment after a spill, microbiological indices were selected as the most efficient and cost effective way to examine the

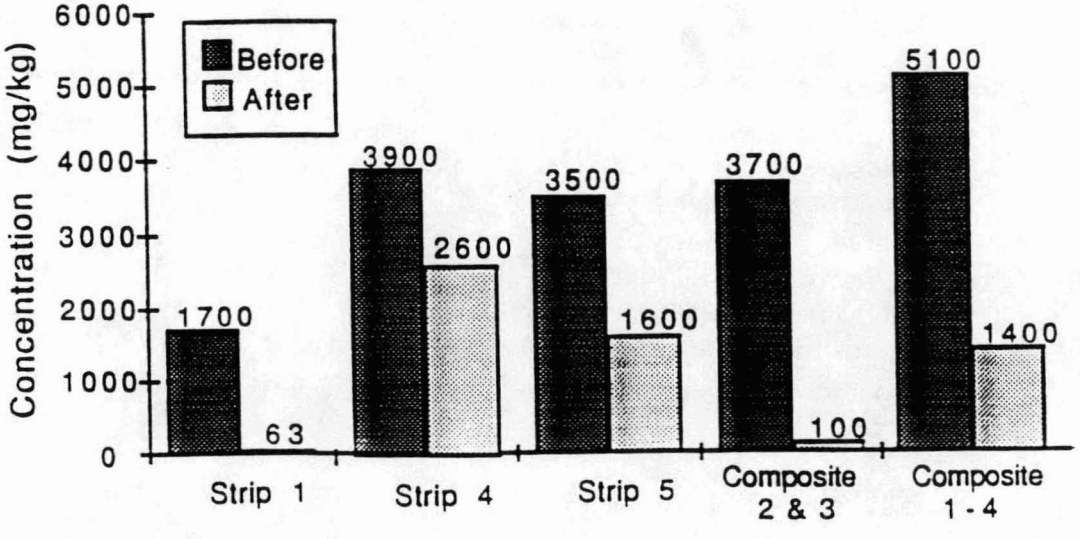
effects of a beach remediation project. The data for the microbial studies are shown graphically in Figures 4 through 7.

Table 3: Soil Contaminant Levels (mg/kg)
Before and After Treatment with PES-51®

	Diesel TPH		Semivolatile TPH	
	Before	**After**	**Before**	**After**
Strip 1	13	ND*	1700	63
Strip 4	29	ND	3900	2600
Strip 5	8	ND	3500	1600
Composite Strips 2 & 3	13	ND	3700	100
Composite Strips 1-4	24	ND	5100	1400

ND* Not detected at level of analysis (0.5 mg/kg)

FIGURE 3: Soil Contaminant Levels (mg/kg)
Before and After Treatment with PES 51®



Project 95116

PES-51 Sleepy Bay Study

FIGURE 4a
Sediment Mineralization: Hexadecane

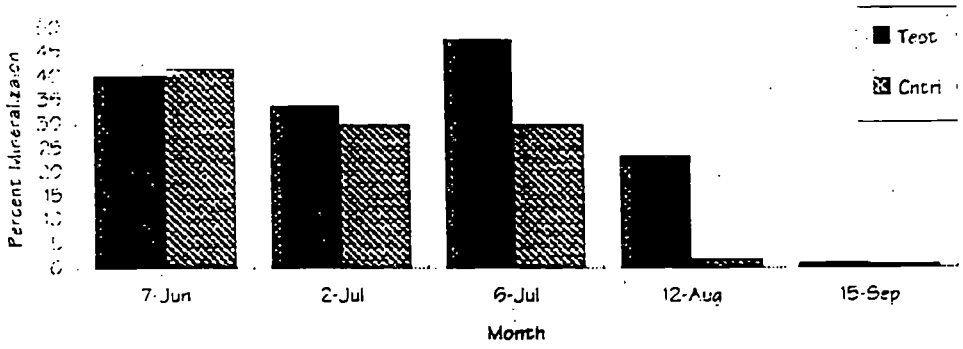


FIGURE 4b
Sediment Mineralization: Phenanthrene

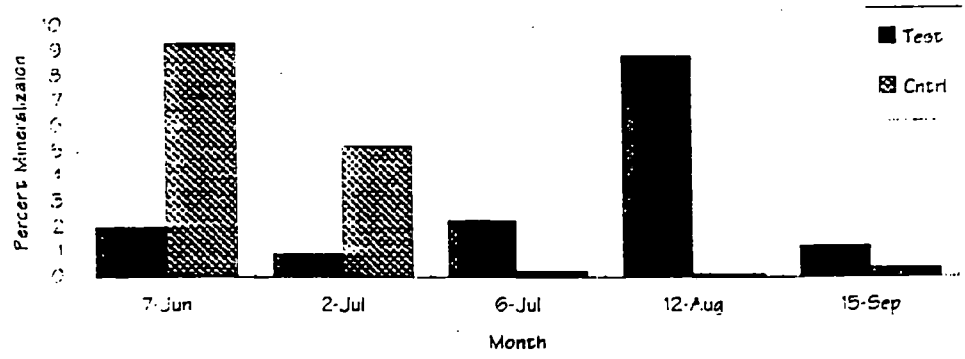
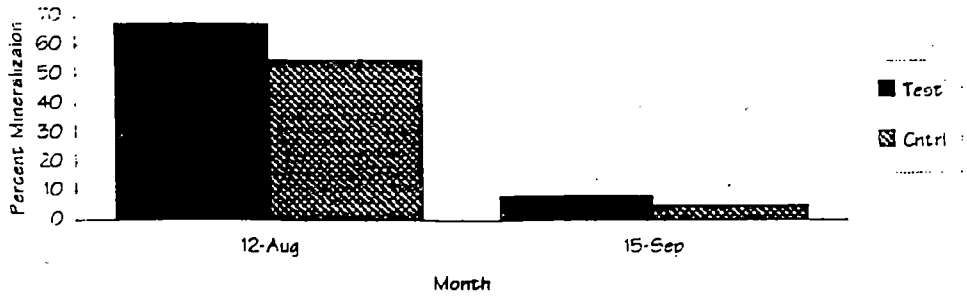


Figure 4c
Sediment Mineralization: Glutamate



Project 95116

PES-51 Sleepy Bay Study

Figure 5a
Sea Water Mineralization: Hexadecane

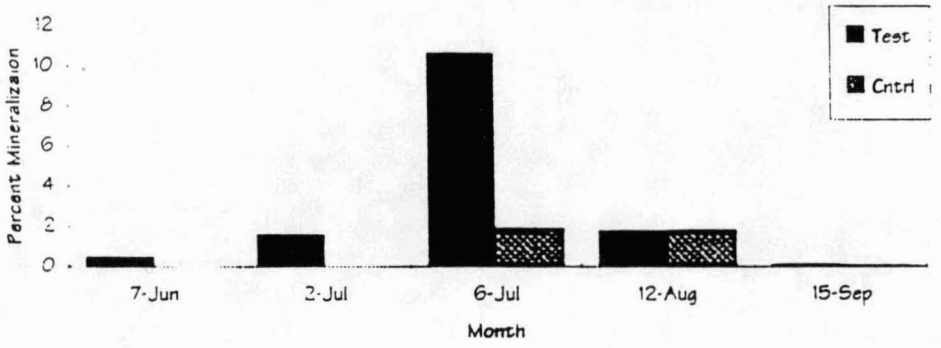


FIGURE 5b
Sea Water Mineralization: Phenanthrene

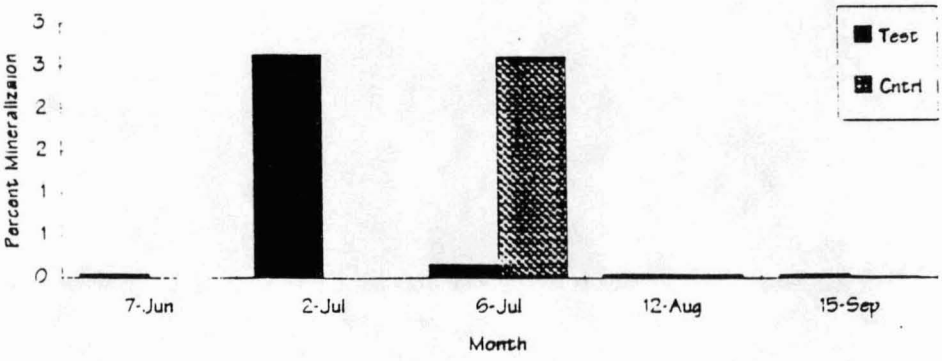
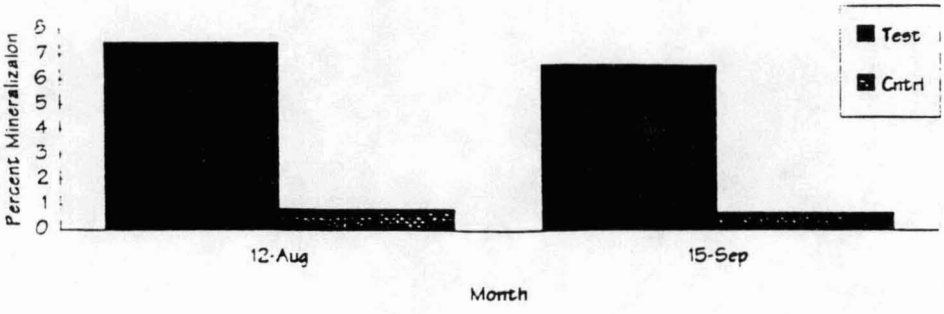


FIGURE 5c
Sea Water Mineralization: Glutamate



Project 95116

PES-51 Sleepy Bay Study

FIGURE 6a
Standardized Sheen Screen Sediment MPN Data

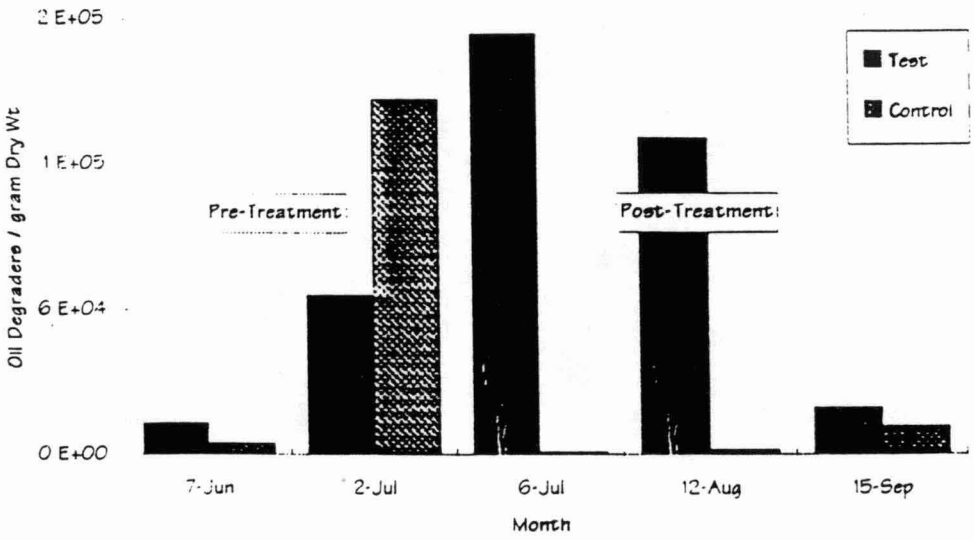
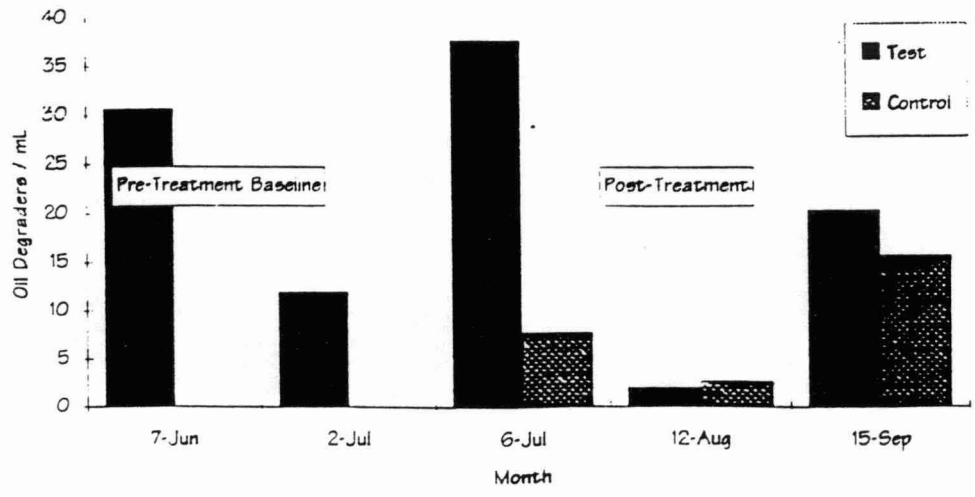


FIGURE 6b
Sheen Screen Sea Water MPN Data



Project 95116

PES-51 Sleepy Bay Study

FIGURE 7a
Standardized Heterotroph Sediment MPN Data

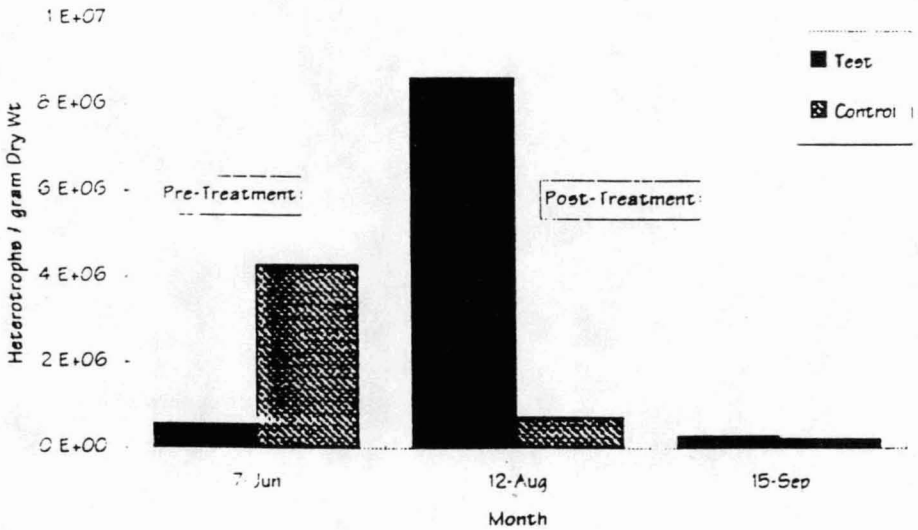
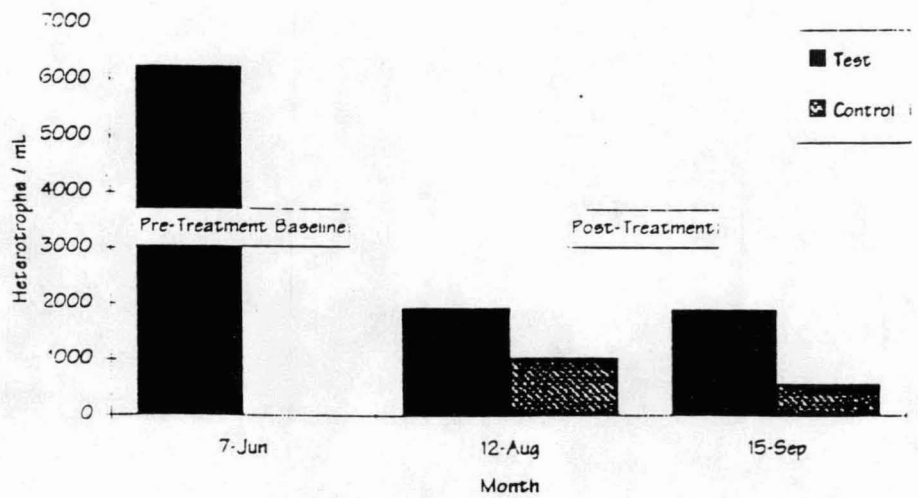


FIGURE 7b
Heterotroph Sea Water MPN Data



Project 95116

Conclusion

The air/PES-51® injection system was extremely effective at removing weathered subsurface oil throughout the five day experiment. The shoreline selected for the test was one of the most difficult types to effectively treat as indicated in the treatment history section of this report.

As can be seen in the data from the preliminary sampling run, the concentration of non-volatile contaminants in the diesel and semivolatile range (up to about C-16) varies significantly from location to location. There appears to be a heavier layer of concentration in the mid-tidal zone (Samples 3 and 4). In all cases, the contamination was found 2 to 4 inches below the surface material and was noted to extend to observed depths of 12 inches.

The treatment process recovered substantial quantities of buried oil but also resulted in some re-oiling of surface sediments. The data from he actual treatment experiment (Table 2) show that diesel-range petroleum hydrocarbons are completely removed to levels below the detection limit of 0.5 mg/kg. Semivolatile petroleum hydrocarbons are reduced an average of 70%. This indicates that treatment with PES-51® significantly reduces the contamination within the beach material below the surface.

The microbial data collected indicates that, unlike many other hydrocarbon cleaners, no inhibition of microbial activity in sediments is caused by treatment. While microbiological tests were not conducted to determine toxic effects, if the PES-51® were extremely toxic, microbe populations may be expected to be effected. Instead, the population counts are for comparison with the large database of information from other beaches in the Prince William Sound area.

There was an enhancement in the numbers and activity of hydrocarbon-degraders immediately following treatment remained elevated relative to the control sediments for about a month. There is also no evidence of increased microbiological activity in sea water samples, indicating that oil was not transported offshore during the treatment process. The data collected from the water column support this conclusion and indicate that the contaminant released from the beach material is not solubilized into the water column. No samples of the water column had detectable petroleum hydrocarbon contamination.

Project 95116

References

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Project 95116

PES®

COMPENDIUM OF PES-51® AQUATIC TOXICITY DATA

P.O. Box 680488 • San Antonio, Texas 78268-0488 • Phone (210) 680-2950 • FAX: (210) 523-5700

Project 95116

TABLE OF CONTENTS

Project 95116

I. INTRODCUTION

Petroleum Environmental Services,Inc. has prepared this compendium of aquatic toxicity data in an effort to provide a single source for this information. The compendium will be updated as more data becomes avaliable.

As you review this information, please keep in mind that each toxicity test is different and requires its own interpretation. The brief interputations are a general explanation of the results.

It should be noted that PES-51®, when used in accordance with the application instructions, has a in the field use concentration of less than 200 ppb. The dilution effect is created by the product application technique which involves instantaneous water diluge. Subsequently, the in the field toxicity of the product is greatly minimized.

Should any questions or comments arise from your reading of this information, please address then to:

Dennis C. Owens
PES,Inc.
P.O. Box 680488
San Antonio,Tx 78268-0488
210-680-2950 or 210-283-2644 Office
210-523-5700 Fax

Project 95116

II. STATE OF CALIFORNIA OIL SPILL CLEANING AGENT TOXICITY DATA

The toxicity tests required by the State of California utilize some of the more sensitive aquatic species. You will note that the average LC50 of 580 mg/l for Acute toxicity is well above the States acceptance level of 400 mg/l for these tests.

It is interesting to note that the state requires that the product (neat) and the test oil (neat) as well as a product/oil mixture be tested for toxicity. The reasoning behind this testing is to insure that the product/oil mixture does not increase toxicity to the environment.

You will note that the product/oil mixture in these tests actually reduced the toxicity of the hydrocarbon by a thousand fold.

Project 95116

OIL SPILL CLEANUP AGENT TOXICITY TESTING

LAB NO.: V-9105003 CLIENT/ID: PETROLEUM ENVIR. SERV. PES-51™

Three test species, fathead minnow (pimphales promelas), inland silversides (menidia beryllina), and brine shrimp (artemia salinas), were exposed to various concentrations of the Osca product, Osca plus No. 6 fuel oil, and Osca plus No. 6 fuel oil after 20 days of degradation. Test procedures follow the protocols given in "Evaluating Oil Spill Cleanup Agents", Publication No. 43 of the California State Water Resources Control Board (CSWRCB) 1970 and verbal guidance provided by CSWRCB.

ACUTE TOXICITY OF AGENT TO AQUATIC ORGANISMS

SPECIES	WATER TYPE	24 HR LC50	48 HR LC50	96 HR LC50
P. promelas	Fresh (42 mg/l)	810 mg/1	810 mg/1	810 mg/1
M. beryllina	Sea (20 ppt)	100 mg/1	100 mg/1	100 mg/1
A. salinas	Sea (20 ppt)	980 mg/1	840 mg/1	N/A

Average LC50 (94 hr for fish + 48hr for Artemia): 580 mg/1 OSCA

ACUTE TOXICITY OF 1:5 MIXTURE OF OSCA AND #6 FUEL OIL TO AQUATIC ORGANISMS

SPECIES	WATER TYPE	24 HR LC50	48 HR LC50	96 HR LC50
P. promelas	Fresh (42 mg/l)	>1600 mg/1	>1600 mg/1	>1600 mg/1
M. beryllina	Sea (20 ppt)	>1600 mg/1	>1600 mg/1	>1600 mg/1
A. salinas	Sea (20 ppt)	>1600 mg/1	>1600 mg/1	N/A

Average LC50 (94 hr for fish + 48hr for Artemia): >1600 mg/1 OSCA

ACUTE TOXICITY AFTER 20 DAYS OF AGING AT 15°C OF 10 TIMES INITIAL 96 HR LC50 CONC.

SPECIES	Pimephales promelas	Menidia beryllina	Artemia salinas
OSCA + #6 Fuel Oil	100% Surv. @ 1600 mg/l	85% Surv. @ 1600 mg/l	0% Surv. @ 1600 mg/l

OSCA = 10,000 mg/l of the 1:5 OSCA to #6 Fuel Oil Mixture (highest conc. used).

Tests were conducted by Enseco, Ventura, California.

Project 95116

III. U.S. EPA NCP LISTING TOXICITY DATA

The results of these tests are very similar to the California toxicity tests with the same organism. The only difference in the tests involve different hydrocarbons ,#2 fuel oil instead of #6 fuel oil.

Additionally, this test contains data on the toxicity of the hydrocarbon. Under normal conditions, the results of the product/oil mixture would be an average of the two numbers (eg. 665 and 58) however, the mixture exhibits a reduction of toxicity by a thousand fold. The reduction in toxicity is directly due to the products ability to form a interfacial barrier that does not allow the water soluble toxic fraction to enter the water column. This phenomeum is unique to this product and caused the EPA to request that the tests be rerun several times in order to verify that this action was for real.

Project 95116 Report #064553

United States Testing Company, Inc. Petroleum Environmental

STANDARD DISPERSANT TOXICITY REPORT

Client: Petroleum Environmental Services
P.O. Box 680488
San Antonio, Texas 78268-0488

Testing Facility: United States Testing Company
Biological Services
1415 Park Avenue
Hoboken, New Jersey 07030

Sample Description, Handling & Stability: Sample identified by Client as Petroleum Environmental Service's PES-51 oil spill dispersant: Chemical composition proprietary. Pale yellow, mobile liquid, pale reddish-brown sediment, with with a strong citrus odor. Sample stored in original sealed container, considered stable. Received 2/ 3/92.

Project: 48 hour acute toxicity versus Artemia sp. (brine shrimp). Toxicity of PES-51 alone, PES-51 + #2 Fuel Oil, #2 Fuel Oil alone, and Dodecyl Sodium Sulfate. Test dates 5/13 - 15/92.

Summary of Results: Acute toxicity, expressed as LC50, is as follows:

PES-51	PES-51 + #2 Fuel Oil	#2 Fuel Oil	DSS
665 ppm	1,542 ppm	58 ppm	5.0 ppm

STANDARD DISPERSANT TOXICITY REPORT

Client: Petroleum Environmental Services
P.O. Box 680488
San Antonio, Texas 78268-0488

Testing Facility: United States Testing Company
Biological Services
1415 Park Avenue
Hoboken, New Jersey 07030

Sample Description,
Handling & Stability: Sample identified by Client as Petroleum Environmental Service's PES-51 oil spill dispersant: Chemical composition proprietary. Pale yellow, mobile liquid, pale reddish-brown sediment, with with a strong citrus odor. Sample stored in original sealed container, considered stable.
Received 2/ 3/92.

Project: 96 hour acute toxicity versus Fundulus heteroclitus (killi fish). Toxicity of PES-51 alone, PES-51 + #2 Fuel Oil, #2 Fuel Oil alone, and Dodecyl Sodium Sulfate.
Test dates 3/5 - 14/92.

Summary of Results: Acute toxicity, expressed as LC50, is as follows:

PES-51	PES-51 + #2 Fuel Oil	#2 Fuel Oil	DSS
1,425 ppm	5,650 ppm	5,200 ppm	7.1 ppm

Project 95116

IV.U.S. EPA TOXICITY DATA

-Oncorhynchus mykiss (Rainbow trout)

These toxicity test are very sensitive due to the fact that the test organisms are juvenile fish (<8 weeks old). Factors such as age and small size generally maximize toxic effect, numerically expressed as the LC50.

There was no significant difference in the response of O.mykiss to USEPA #2 Fuel Oil and to PES-51 in the presence of USEPA #2 Fuel Oil. The 96hr O.mykiss LC50 for PES-51 was determined to be 98 ppm (see USTC Report #065505-1). The 96hr LC50 for both PES-51 + #2 Fuel Oil and #2 Fuel Oil alone was determined to be approximately 500 ppm.

PES-51 in a working mixture of #2 Fuel Oil does not pose a significant toxic threat to this test organism.

-Crassostrea gigas (Pacific oyster) and Mytilus edulis (Bay mussell)

The oyster larvae exhibited and EC50 value of 19 ppm when exposed to PES-51®. PES-51, in the presence of oil, yielded and EC50 of 128 ppb. #2 fuel oil was toxic to oyster larvae at 185 ppb. As with the trout, mysids and urchins, these results demonstrate an expected trend; PES-51 was less toxic than PES-51 plus oil.

The oysters were less sensitive than the urchin to PES-51. This is due to organism life stage. Urchins were tested by first exposing the sperm for one hour, and then adding the eggs; the oyster sperm and egg were mixed together for one hour before exposure. The oysters were exposed as fertilized embryos, and the urchins were not.

The mussel larvae exhibited and EC50 value of 9 ppm when exposed to PES-51. This result was, as expected, very similar to the result of the oyster larvae test (EC50= 19 ppm).

Under actual field use conditions PES-51 will average concentrations of less than 200 ppb.

Project 45116

Report #065625-1
PES-51

United States Testing Company, Inc.

AQUATIC TOXICITY TESTING REPORT

Client: Petroleum Environmental Services, Inc.
P.O. Box 680488
San Antonio, Texas 78268-0488

Testing Facility: United States Testing Company
Biological Services Division
1415 Park Avenue
Hoboken, New Jersey 07030

Sample Description, Handling & Stability: Sample identified by Client as PES-51: Organic Biocleanser, chemical composition proprietary. Yellow, mobile liquid, with a strong citrus odor. Not water soluble. Sample stored in original sealed container, at room temperature, considered stable.
Sample received 3/26/93.

Project: 96 Hour Acute Toxicity of PES-51, in the presence of #2 Fuel Oil, versus Rainbow Trout (O. mykiss)

Test Dates: 6/24 - 28/93

Summary of Results:

PES-51 + #2 Fuel Oil	96hr LC50 = 500 ppm NOEC = 250 ppm
#2 Fuel Oil	96hr LC50 = 518 ppm NOEC = 250 ppm
PES-51	96hr LC50 = 98 ppm * NOEC = 62.5 ppm *

* see USTC Report #065505-1

Project 95116
Report #065505-5
PES-51

United States Testing Company, Inc.

AQUATIC TOXICITY TESTING REPORT

Client: Petroleum Environmental Services, Inc.
P.O. Box 680488
San Antonio, Texas 78268-0488

Testing Facility: United States Testing Company
Biological Services Division
1415 Park Avenue
Hoboken, New Jersey 07030

Sample Description, Handling & Stability: Sample identified by Client as PES-51: Organic Biocleanser, chemical composition proprietary. Yellow, mobile liquid, with a strong citrus odor. Not water soluble. Sample stored in original sealed container, at room temperature, considered stable.
Sample received 3/26/93.

Project: Larval Development vs Pacific Oyster (C. gigas)

Test Dates: 5/21 - 23/93

Summary of Results: 48hr EC50 = 18.7 ppm
No Observed Effect Concentration = 6.25 ppm

AQUATIC TOXICITY TESTING REPORT

Client: Petroleum Environmental Services, Inc.
P.O. Box 680488
San Antonio, Texas 78268-0488

Testing Facility: United States Testing Company
Biological Services Division
1415 Park Avenue
Hoboken, New Jersey 07030

Sample Description, Handling & Stability: Sample identified by Client as PES-51: Organic Biocleanser, chemical composition proprietary. Yellow, mobile liquid, with a strong citrus odor. Not water soluble. Sample stored in original sealed container, at room temperature, considered stable.
Sample received 3/26/93.

#2 Fuel Oil: USEPA Reference Oil (lot WP-681), obtained through Fisher Scientific.

Project: Larval Development vs Pacific Oyster (C. gigas)
PES-51 in the presence of #2 Fuel Oil

Test Dates: 5/21 - 23/93

Summary of Results:

PES-51 + #2 Fuel Oil:	48hr EC50 =	127.7 ppb
	No Observed Effect Concentration =	62.5 ppb
#2 Fuel Oil:	48hr EC50 =	185.3 ppb
	No Observed Effect Concentration =	62.5 ppb

Project 95116
Report# 065505-4
PES-51

United States Testing Company, Inc.

AQUATIC TOXICITY TESTING REPORT

Client: Petroleum Environmental Services, Inc.
P.O. Box 680488
San Antonio, Texas 78268-0488

Testing Facility: United States Testing Company
Biological Services Division
1415 Park Avenue
Hoboken, New Jersey 07030

Sample Description, Handling & Stability: Sample identified by Client as PES-51: Organic Biocleanser, chemical composition proprietary. Yellow, mobile liquid, with a strong citrus odor. Not water soluble. Sample stored in original sealed container, at room temperature, considered stable.
Sample received 3/26/93.

Project: Larval Development vs Bay Mussel (M. edulis)

Test Dates: 5/28 - 30/93

Summary of Results: 48hr EC50 = 9.6 ppm
No Observed Effect Concentration = 3.125 ppm

DRAFT

MEMORANDUM

TO: Participants in the July 12-13 Project Proposal Review Process

FROM: Molly McCammon, Director of Operations

DATE: July 5, 1994

SUBJ: Process for Evaluation of Project Proposals on July 12-13

The purpose of this memorandum is to suggest a process for the efficient evaluation of the many proposed FY 95 projects within the limited time available on July 12-13.

Partcipation in the Review Process

More than twenty individuals are anticipated to attend the July 12-13 project evaluation meeting. This includes members of the Restoration Work Force, the Chief Scientist and the technical reviewers, the Coordinating Committee and other Trustee Council Staff (Attachment A).

Give the large number of projects, it is essential to organize the review efficiently. A draft agenda is attached (Attachment B).

As a matter of process, I recommend:

— an initial statement by the Chief Scientist regarding the project merit reflecting the individual comments of the technical reviewers;

— comments by Trustee Council agency liasons; and

— further discussion at the direction of the Executive Director.

In order to make progress, it will be important to keep the discussion on any given project limited and focused (if discussion of each project were kept to

only 5 minutes, it would take a solid 13 hours of discussion to address all projects).

Recommendation to Eliminate Some Projects from Further Review

More than 155 projects have been proposed. All project proposals received have been distributed to all reviewers.

In order to facilitate an efficient process on July 12-13, Trustee Council staff has attempted to identify, from among those project submissions, proposals that do not warrant further review. The recommendation to eliminate a project from further consideration will be based on a review using a variety of criteria.

DRAFT

only 5 minutes, it would take a solid 13 hours of discussion to address all projects).

Recommendation to Eliminate Some Projects from Further Review

More than 155 projects have been proposed. All project proposals received have been distributed to all reviewers.

In order to facilitate an efficient process on July 12-13, Trustee Council staff has attempted to identify, from among those project submissions, proposals that do not warrant further review. The recommendation to eliminate a project from further consideration will be based on a review using a variety of criteria (Attachment C).

DRAFT

Attachment A

FY 95 Brief Project Description Evaluation
Anchorage Restoration Office — 4th Floor Conference Room
July 12-13 • 8:00 am

Restoration Work Force

Byron Morris
Dave Gibbons
Sandy Rabinowitch
Mark Brodersen
Jerome Montague
Veronica Gilbert

Chief Scientists and Technical Reviewers

Robert Spies
Andy Gunther
Charles Petersen
Chris Haney
Phil Mundy
Stanley Senner

Public Advisory Group

Donna Fischer
Gail Ivanof
John French

Coordinating Committee

Dave Irons
Jim Bodkin
Kathy Frost
Alex Wertheimer
Judy Bittner

Trustee Council Staff

Jim Ayers
Molly McCammon
Eric Myers

Exxon Valdez Oil Spill Trustee Council

Restoration Office
645 G Street, Suite 401, Anchorage, Alaska 99501-3451
Phone: (907) 278-8012 Fax: (907) 276-7178

Attachment B

DRAFT

Draft Meeting Agenda
Proposed Project Review
July 12-13, 1994

Tuesday, July 12, 1994

8:00am - 9:00am	Review list of project proposals with legal and policy concerns (i.e., projects to be eliminated)
9:00am - 12:00pm	Review major ecosystem/integrated packages; other research
12:00pm - 1:00pm	Lunch
1:00pm - 5:00pm	Review major ecosystem/integrated packages; other research (continued)
5:00pm - 6:30pm	Dinner break
6:30pm - 10:00pm	Develop monitoring package

Wednesday, July 13, 1994

8:00am - 12:00pm	Review General Restoration Projects

1. Subsistence
2. Commercial fishing
3. Recreation and Tourism
4. Other

12:00pm - 1:00pm	Lunch
1:00pm - 5:00pm	Review project package based on injured resource list and research priorities identified in solicitation invitation

Exxon Valdez Oil Spill Trustee Council
Restoration Office
645 "G" Street, Anchorage, AK 99501
Phone: (907) 278-8012 Fax: (907) 276-7178

MEMORANDUM

TO: Trustee Council

FROM: James R. Ayers
Executive Director

DATE: July 5, 1994

RE: Recognition Award for Charles R. Peterson

The purpose of this memorandum is to bring to your attention the fact that Dr. Charles H. Peterson, one of the Trustee Council's most highly regarded and long-standing scientific peer reviewers, recently received a prestigious scholarship recognition award from the Pew Scholars Program in Conservation and the Environment. The Pew Conservation Scholars Program, established in 1988 by the Pew Charitable Trusts, is designed to encourage conservation scientists who are applying themselves to the conservation of biological diversity and related environmental issues. A recent press release announcing the 1994 Pew Conservation Scholars Award is attached for your reference.

As you know, Dr. Peterson, a professor at the Institute of Marine Science of the University of North Carolina at Chapel Hill, is a marine ecologist with particular expertise in intertidal ecosystems who has been actively involved in the review of research and monitoring projects sponsored by the Trustee Council for the past several years. Dr. Peterson is one of the "core" technical reviewers who has been playing a key role in helping to develop the Trustee Council's ecosystem approach to restoration. As indicated by the receipt of this prestigious award, the Trustee Council is fortunate to have the talent and expertise of Dr. Peterson to assist in accomplishing the restoration mission. At the same time, the fact that one of our "core" peer reviewers is so highly regarded reflects well on the Trustee Council.

I would suggest that a brief resolution of recognition by the Trustee Council regarding this award might be in order. A draft is attached for your consideration.

RESOLUTION

WHEREAS, Dr. Charles H. Peterson has served as one of the Trustee Council's most highly regarded scientific peer reviewers; and

WHEREAS, Dr. Peterson has been extremely diligent in his efforts to provide the Trustee Council and the public with sound information and advise; and

WHEREAS, Dr. Peterson has made an important contribution to the Trustee Council's effort to develop an ecosystem approach to the restoration of resources and services injured by the *Exxon Valdez* oil spill; and

WHEREAS, the Pew Scholars Program in Conservation and the Environment recently recognized Dr. Peterson's exceptional professional contribution to the conservation of biological diversity and related environmental issues,

THEREFORE BE IT RESOLVED, that the *Exxon Valdez* Oil Spill Trustee Council commends Dr. Peterson for the receipt of this prestigious award from the Pew Charitable Trusts.

Exxon Valdez Oil Spill Trustee Council
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FAX COVER SHEET

TO: Deborah Williams	FROM: James R. Ayers
OFFICE: Department of Interior	OFFICE: Executive Director's Office
FAX NUMBER: 271-4102	FAX NUMBER: 586-7589
PHONE NUMBER: 271-4962	PHONE NUMBER: 586-7238

COMMENTS:

Copy also sent to Frampton

OPTIONAL FORM 99 (7-90) This rec. is A-OK w/DLW

FAX TRANSMITTAL # of pages ▸ 3

To Rebecca Williams	From Ron Lindsey
Dept./Agency CACI	Phone # 271-5485
Fax #	Fax # ✓ 4102

NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

DATE: July 5, 1994	TOTAL PAGES: 3

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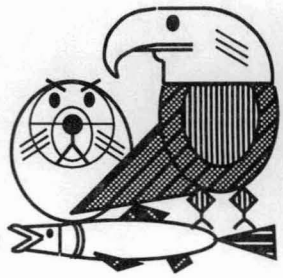

MEMORANDUM

To: Restoration Work Force

From: Molly McCammon
Director of Operations

Date: July 5, 1994

Subj: July 6 RWF Meeting

Tomorrow's Restoration Work Force meeting will be begin at 9:00 a.m., in the **NMFS** conference room in Juneau.

Topics to be discussed will include:

1) Discuss agenda for July 11 Trustee Council meeting
2) Discuss process for July 12-13 meeting

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MEMORANDUM

TO: Jim Ayers, Executive Director
Restoration Work Force
Simpson Building Staff
Bob Spies, Chief Scientist

FROM: Molly McCammon
Director of Operations

DATE: July 5, 1994

RE: Update on Issues and Activities

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1. PAG Meeting Update
   A summary of the PAG meeting is attached.

2. Legal Review of FY95 Projects
   A memo has been sent (attached) to all the attorneys indicating which projects we are most interested in having them review by July 12 for their permissibility under the consent decree.

3. Trustee Council Meeting Schedule
   - July 11
   - August 8
   - Mid-August teleconference (only if necessary) to select final alternative for FEIS
   - August 29
   - Late September
   - October 31

4. Science Review Board
   In responding to comments from John Sandor and others, staff are revising the proposed Science Review Board (SRB) paper to focus more on the "core reviewer" concept to be included in the Chief Scientist contract. A new draft will be available for review very shortly. The RFP for the Chief Scientist contract will probably go out in mid-July. The current contract may be extended through the October meeting to ensure continuity for this

work plan cycle. It is likely that we will pursue FACA compliance for the SRB.

5. FY95 Work Plan
   Jim Ayers will be asking the Trustees at their July 11 meeting to approve, in concept, the development of an $18-25 million work plan.

6. Restoration Plan
   The Trustees will be briefed on July 11 about the proposal to incorporate the Implementation Management Structure in some fashion into the final Restoration Plan.

7. FY95 Budgets
   Diskettes and hard copies of the FY95 budgets should be sent to June Sinclair in Juneau. A hard copy should also be sent to the Anchorage office.

8. Habitat Policy Group
   Jim Ayers asked Mark Kuwada with the Habitat Protection Work Group to join Alex Swiderski (ADOL) and Walt Sheridan (USFS) in meeting with the PAG subcommittee on public access and "less than fee simple" issues. The PAG members are Chuck Totemoff, Pam Brodie, Jim Cloud, and John Sturgeon.

9. July 12-13 Project Review
   Staff will outline a draft procedure for reviewing project proposals on July 12-13. Byron Morris and Jerome Montague will circulate this to the various federal and state liaisons.

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MEMORANDUM

TO: Alex Swiderski, Alaska Department of Law
Gina Belt, U.S. Department of Justice
Bill Brighton, U.S. Department of Justice
Louise Milkman, U.S. Department of Justice
Barry Roth, U.S. Department of Justice
Cathy Chorostecki, NOAA
Maria Lisowski, U.S. Forest Service

FROM: James R. Ayers
Executive Director

DATE: June 30, 1994

RE: Legal Review of Project Proposals

On June 23, you were sent a packet of project proposals for your legal review. In order to expedite this review, I would like you to focus you attention on the following proposed projects. It would be extremely helpful, if you would have your responses regarding these projects to me no later than July 11, 1995.

95079 Pink Salmon Restoration Through Small-Scale Hatcheries
95042 Five-Year Plan to Remove Predators From Seabird Colonies
95003 Area E Commercial Salmon Permit Buyback Program
95093 PWSAC: Restoration of Pink Salmon Resources and Services
95424 Restoration Reserve (proposed Trustee resolution)
95017 Port Graham Coho Salmon Subsistence Fishery Restoration Project

Services - Recreation and Tourism

95002 Leave No Trace Education Program
95016 A Tribute to Prince William Sound
95053 Cordova's Mini-Imaginarium
95067 Overescapement Information Brochure
95080 Fleming Spit Recreation Area Enhancements
95082 "Mor-Pac Hill" Campground Improvements
95084 Odiak Camper Spark Expansion
95085 Cordova Historical Marine Park
95056 Monitoring Visual Sensitivity in PWS

Thank you for your assistance in the Trustee Council efforts!

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MEMORANDUM

TO: Restoration Work Force

FROM: Molly McCammon
Director of Operations

DATE: July 1, 1994

RE: Summary of June 28, Public Advisory Group Meeting

Members and alternates present:

Brad Phillips, Chair	Mary McBurney
Donna Fischer	Dan Hull
Pam Brodie	Vern McCorkle
Jim Cloud	Lew Williams
Jim King	Kim Benton
Brenda Norcross	Gail Evanoff

1. The members of the Public Advisory Group spent the morning discussing their role in the EVOS process and expressing dissatisfaction with their ability to provide meaningful input to the Trustees. They requested a larger budget, more frequent meetings, and a designated staff person to provide support to the group. They also requested that specific goals and objectives for public participation be included in the Implementation Management Structure (restoration objectives and strategies).

2. During the public comment period, four people testified:

   Thea Thomas spoke in support of the SEA projects. In addition, she brought to the attention of the PAG a petition in support of the permit buy-back project proposal.

   Donna Platt, president of Eyak Corporation, expressed concerns about the proposed public access policy.

   Luke Borer, President of Sherstone Timber, gave a number of specific

comments about the "less than fee simple" acquisition policy.

Rick Steiner expressed support for working with Eyak Corporation to reach some agreement on acquisition issues surrounding the Eyak Corporation proposal.

3. The PAG requested an update at its next meeting on the endowment issue, including a response to their request for a legal opinion on the issue of endowments.

4. The PAG requested a 10 year financial plan be developed to lay out possible long term funding scenarios of the Draft Restoration Plan consistent with the EIS process. They also asked that goals and objectives be more clear in the final Restoration Plan and voiced their support for the Implementation Management Structure. They also asked that the document referred to as the "Williams Protocol" be included in the EIS record. This document details the restoration priorities adopted by the PAG in July, 1993.

5. Chairman Phillips appointed a subcommittee to work with Alex Swiderski (Alaska Department of Law), Walt Sheridan (Forest Service), and Mark Kuwada (Habitat Working Group), in developing policies on "less than fee simple" acquisition and public access. Subcommittee members are:
   Chuck Totemoff - landowner
   Pam Brodie - environmental
   John Sturgeon - forest products
   Jim Coud - public

6. The PAG received a briefing on the Institute of Marine Science proposed infrastructure improvements in Seward.

7. Chairman Phillips appointed Vern McCorkle and Mary McBurney to work with Trustee staff in developing the PAG budget.

8. Chairman Phillips appointed Donna Fischer, John French, and Gail Evanoff to track development of the FY95 Draft Work Plan.

9. Doug Mutter and Jim Ayers discussed the nomination process for new PAG members, since all terms expire October 22, 1994. Nominations are being solicited through newspaper ads and the Trustee Council newsletter.

10. The PAG scheduled its next meetings for August 2, and October 11-12.

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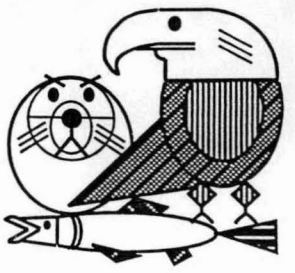

MEMORANDUM

TO: James R. Ayers, Executive Director

FROM: Eric Myers, Project Coordinator

DATE: July 4, 1994

SUBJ: Follow-up on Questions Related to Boat Purchase by PWSSC

This is simply to confirm that I did speak with Joe Sullivan on Friday afternoon regarding the reported boat purchase by the PWS Science Center as part of the PWS System Investigation (Project #94320).

Specifically, Joe will determine:

1. how much the boat cost;
2. who authorized the purchase;
3. what process was used to purchase the boat; and
4. to what account the charge was made.

Joe will respond directly to you in writing regarding his findings.

cc: Joe Sullivan
Molly McCammon