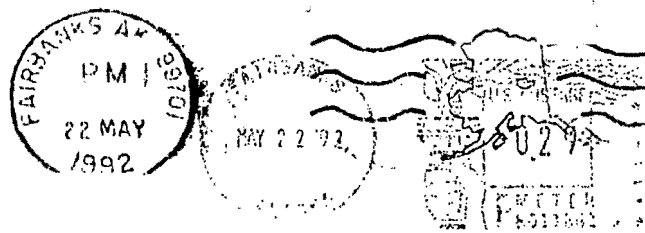
✓11.3.2 6of8

6of8

T. Royer
UNIVERSITY OF ALASKA FAIRBANKS
Institute of Marine Science
School of Fisheries and Ocean Sciences
Fairbanks, Alaska 99775-1080

Document ID Number
☐ A-92 WPWG
☑ B-93 WPWG
☐ C-RFWG
☐ D-PAG
☐ E-MISC.



MAY 26 REC'D

Exxon Valdez Oil Spill Restoration Team
645 "G" Street
Anchorage, AK
99501

ID # 920603093

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

Ecosystem

✓ Checked for Completeness

✓ ID stamped/Input completed
✓ Name
NO Affiliation
✓ Costs

✓ Category

Restoration / Monitoring

✓ Lead Agency

NOAA

✓ Cooperating Agency(ies)

None identified

(Y) N Passed initial screening criteria

Type: P/S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
		✓	3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

920603093

EXXON *DEZ* OIL SPILL TRUSTEE CO IL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project:
Research and monitoring facility and Program

Justification: (Link to Injured Resource or Service)
Monitoring of hydrocarbons + other contaminates - Cook Inlet and Kodiak Island

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach)

Site monitoring stations in Kodiak, Shelikoff, Cook Inlet, Tuxedni and Seldovia Bay

Estimated Duration of Project: —

Estimated Cost per Year: $1,250,000/year, plus purchase of facility.

Other Comments:

Name, Address, Telephone:
Henry Kroll
PO Box 181
Seldovia, AK 99663
234-7496

Oil spill restoration is a public process. Your ideas and suggestions will not be proprietary, and you will not be given any exclusive right or privilege to them.

also copy to Indo 92

Henry Kroll
P.O. Box 181
Seldovia, Alaska 99663

1/26/92

Dave Gibbons
Interm Administrative Director
645 G. Street
Anchorage, Alaska 99501

Dear Mr. Gibbons:

I have recently returned from a disastrous tanner crab fishing trip, the first ever in my forty year fishing career. I set forty tanner crab pots in Nuka Bay, rocky bay, and a few in other strategic places where we commercial fishermen have historically found crab.

The seven legal sized crab caught as a result of all this effort wouldn't feed two families. Mike Miller, owner of the eighty foot Independence, also fished these areas with similar results.

Their were a few under-sized crab in upper Nuka Bay but they were weak and didn't have any meat in them. They were starving to death.

We received reports that two boats from Seward tried to deliver some crab to Seward Fisheries but they were unacceptable because their was no meat in them.

Never before in my life have I had a fishing trip end in such utter failure. It's almost as if the outer coast between Seward and Homer has been sterilized. Has Hickle sold us out by settleing the state's oil claim to cheaply?

We fishermen are beginning to wonder if the massive oil spill that inundated this area in March and April two years ago has somehow depleted the spring plankton bloom that occurs each year between February and May, killing off the majority of the eggs, seeds, and larvae that perpetuate this vital source of food for all marine life.

The problem is we don't know for sure and we are not in a position to argue the point. We have no data to back up such an assertion.

We have no environmental monitoring or long term water sampling data to determine if the ever increasing amounts of hydrocarbons on the water's surface are having a detrimental affect on plankton growth and the survival of shellfish spat.

Why has fishery management refused to let us fish tanner crab on the west side of Cook Inlet ans Shelikoff Strait? Is it because these areas have been killed by the Exxon spill? Why did fish and game let the herring seiners take three thousand tons of herring from Kamashak Bay? Is it because the plankton was doomed and the herring would starve to death anyway?

As little as twelve years ago we had a three and a half

million pound king crab fishery and a four million pound tanner fishery in lower Cook Inlet. If this fishery existed today, the money calculated at today's price to fishermen living in the towns of Homer and Seldovia would be somewhere around $24,000,000.00. The processors profit on this product would be another $24,000,000.00. Most of this money would have been spent in these communities.

Kodiak has a similar situation only the monetary figures would be considerably higher; in the neighborhood of a hundred million dollars.

Currently in upper Cook Inlet we have twenty year-old, leaking, oil pipelines, mountains of oil-contaminated radioactive underwater drill tailings, oil wells that leak around the drill pipes. Occasionally there is a gas blow-out like the one that occurred back in 1987 where the natural gas erupted next to the drill pipe and shot nine hundred feet into the air for two weeks finally settled down to five hundred feet for another twenty days. Does natural gas have oil in it? How does it mix with sea water? We don't know.

I distinctly remember a rig fire where six people lost their lives and a considerable amount of oil was spilled in the winter with no clean-up due to pack ice. A few months later the Glacier Bay hit a rock in Cook Inlet coating fisherman's nets during the peak of the July salmon season.

For twenty years ballast water was dumped without treatment into Cook Inlet. Ever increasing amounts of tanker and shipping traffic, add ever increasing amounts of oil to the surface of the water in lower Cook Inlet.

Cook Inlet has a unique situation where the water table is turned over by thirty foot tides and glacier mud causes such turbidity that small amounts of oil are visually undetectable.

The environmental trade-off's of drilling and pumping oil in such a place seem at first glance to be acceptable because there is very little sea life in upper Cook Inlet however the oil dosn't stop their. It eventually floats to the surface five to twenty-five miles off from Anchor Point where the currents aren't swift enough to turn over the water-table.

Currents carry contaminated water from upper Cook Inlet down the West side into Kameshak Bay and Southwest into Shelikoff Strait where it eventually winds up on the beaches and bays affecting the ecosystems of the mainland and Kodiak Island.

It should be obvious even to the uninformed that even a small sheen of oil on the surface of the water is going to suffocate and poison all surface feeding microorganisms because oil severely depletes the water's ability to pick up life giving oxygen and carbon dioxide. If there is not enough carbon dioxide then plant or phytoplankton cannot grow in sufficient quantities to feed the rest of the microcosm. If there is not enough oxygen zooplankton will suffocate; hence the bottom of the food chain is killed.

When shrimp and crab spat hatch out of their eggs in March

they go immediately to the surface of the water to feed on plant plankton. If the plankton has absorbed traces of hydrocarbons and other complex molecules not normally found in the ocean, these complex molecules build up in their digestive tracts. They cannot be eliminated, eventually accumulating in quantities enough to kill. The spat die from several causes, starvation, poison, suffocation and cancer.

Shellfish spat hatch two times each year, at the beginning of the two plankton blooms. The biggest bloom starts at the end of February and ends in may. A smaller bloom that produces approximately two thirds of the amount of sea life begins in August and ends in October. If even small traces of oil are present during these critical times it disrupts the food chains affecting all of us who live by the sea!.

Has the state made a bad environmental trade-off in Cook Inlet? The amount of revenue going into the state coffers from Cook Inlet Oil development not counting the state oil carried by tankers from Valdez to refineries in Kenai is approximately sixty million dollars each year. If we still had a crab fishery the hundred million plus in revenues derived from fishing would be going directly into the private sector.

Think of the millions of people that would have benefited from eating all that seafood.

We are twenty-five years overdue for long term hydrocarbon monitoring stations in Kodiak, Shelikoff, Cook Inlet, Tuxedni Bay and Seldovia Bay. Think of the benefits that such long term statistics would be to your Exxon litigation or environmental monitoring in general. Even just one data base such as the amount of hydrocarbons in the water would allow us to ascertain the magnitude and approximate location of a spill enabling us to help direct cleac-up crews toward the center of a spill.

Studies are currently under way to determine if Alaska's salmon contain harmful levels of PCB's. We all need to know rather or not we should eat the food harvested from the sea. Chances are increasing that some time during our lives we will eat something that will kill us. It probably won't kill us quickly but if nothing is done many people will die slow and agonizing deaths. Humans on this planet will die out from ignorance and apathy more than any other cause. We will have to be ever more conscience of what we eat or we will cease to exist.

The cost of a monitoring program is small compared to what is at stake. The approximately cost of one monitoring station handling six water samples a week is $250,000.00 per year. The cost to process one sample is $200. A boat should be sent out at low tide approximately fifteen miles from Anchor Point for the lower Cook Inlet samples. The samples taken in Tuxedni Bay could be taken from the cannery dock at high tide. In Seldovia the samples should be taken in the middle of the entrance of the bay using a skiff at or near high tide to eliminate chances of local contamination from the bay. The samples would be taken in sterilized jars at weekly intervals on the surface and one

meter deep. The jars could be sent to the University of Alaska or any independent laboratory for spectral analysis of hydrocarbons and other contaminates. We will keep and correlate all data on our computers. Printouts in graph and other form will be made available to the public.

Dr. Jere Murray and myself would be available to take the samples in Seldovia bay and lower Cook Inlet. We can form the independent environmental monitoring corporation or use my New Wave Seafood Corporation. If we decide to go non-profit, I have a non-profit corporation set up for educational purposes.

Seldovia is an ideal location for a permanent educational, environmental research and monitoring facility. In the future we envision purchasing an existing facility where the samples can be processed and the records stored. A two to five million-dollar grant would enable us to set up and operate this facility permanently by investing the principal and using a portion of the interest to operate the facility. Picture a marine institute with ocean science classes teaching people of all ages, fifty P.H.D.'s doing independent research for various firms leasing lab facilities, plankton biomass sampling to keep tabs on the recovery of Cook Inlet and Kodiak Island waters. Picture new and more efficient aquaculture and mariculture food production.

My phone number is (907) 234-7496. Dr. Jere Murray's phone is (907) 234-7646.

What better purpose could a small amount of the money received from the state of Alaska's nine hundred million dollar Exxon settlement be used for other than an independent environmental monitoring program?

We urge you to help secure the funding for this program out of the state Exxon settlement. We are also seeking funding from congress and other sorces.

How would it look If the State of Alaska refused to fund this simple monitoring program out of the Exxon settlement and some other organization did so?

Sincerely,

Henry Kroll

Henry Kroll

P.S. Please help me by giving a copy to your local representative and endorcing my position on this.

CC Ted Stevens, Frank Murkowski, Larry Slone, Gail Phillips, Mike S. Navarre, Homer News, Alaska Commercial Fisherman,

Dear Mr. HERRFURTH, WHY KILL THIS VITAL FOOD PRODUCING AREA FOR THE SMALL AMOUNT OF OIL IT CONTAINS? DRILL IN ANWAR OR THE DESERT NOT HERE! CARL ROSIER IS WHOLEY RESPONSIBLE FOR THE ENVIRONMENTAL KILL THAT IS TAKING PLACE IN COOK INLET.

Feds may expand Cook Inlet lease sale area

by Hal Spence
Staff Writer

Oilers may be shuttling platforms around a much bigger monopoly board if a proposal to expand a Cook Inlet lease sale area is OK'd by the Department of the Interior.

The U. S. Mineral Management Service, a division of the Interior department, recently issued a request for comments on new alternatives to the proposed five-year comprehensive Outer Continental Shelf (OCS) Natural Gas and Oil Resource Management Program for 1992-1997. That is the same plan it sought comments on late last summer.

The alternative plan proposes to expand two areas in Cook Inlet collectively known as Oil and Gas Lease Sale 149. Currently, sale 149 covers 429,000 acres extending from just south of Kalgin Island to just below Anchor Point, plus another 738,000 acres northwest of Kodiak Island in the Shelikof Strait.

The oil industry apparently wants more space from which to choose.

According to the service, responses to calls for comments on the proposed five-year plan included "several industry commentors" who requested that the proposed Cook Inlet leasing area be enlarged, based on new geological and geophysical information.

The management service said it is considering the industry request and may enlarge Sale 149 to include approximately 761 blocks, consisting of 3.7 million acres. At the same time, it proposes keeping the original limit on the total number of leases in the area to no more than 250. (See map).

Asked what new information prompted the oil industry to request an expanded search area, John Schindler, chief of the service's Environmental Assessment Section in Anchorage, said he could not say for sure but believes it may have to do with a new method of assessing oil and gas potential from geological data.

"There's a lot of hearsay," he said, "but the rumor is that the two wells recently discovered near Kalgin Island in Cook Inlet were the result of applying a new method of looking at the seismic work."

Schindler said it is hard to predict whether the area will be expanded or not, but that public reaction is likely to have an effect on the decision.

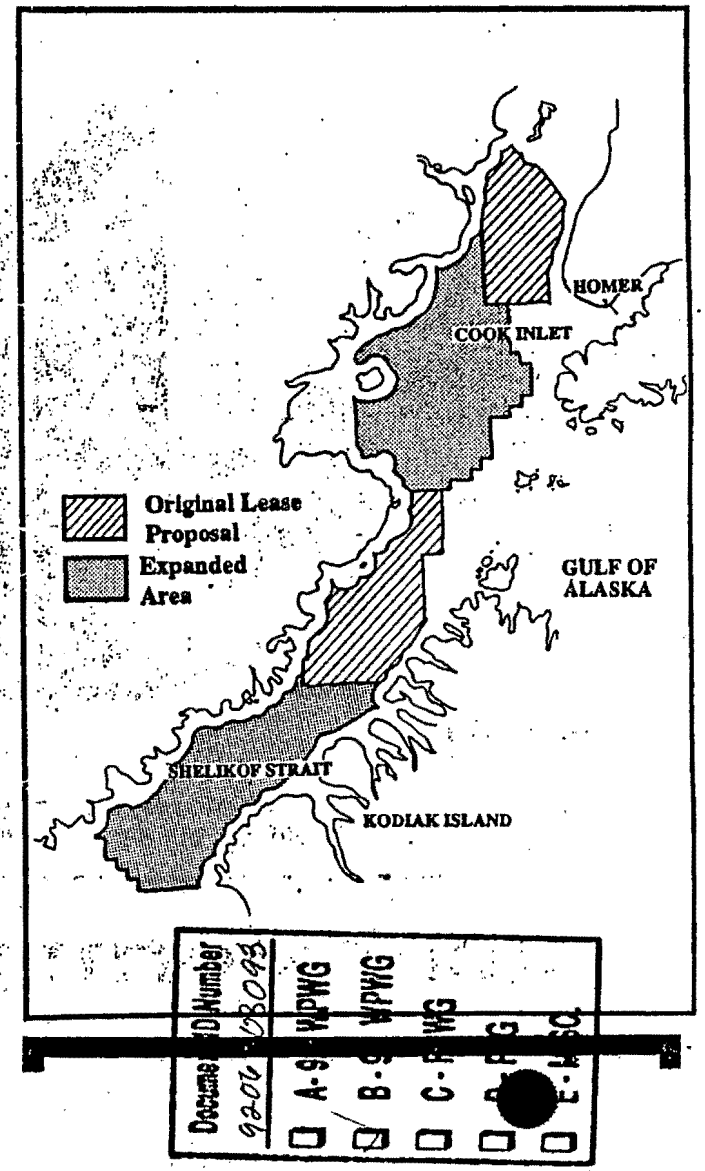
"If comment is heavily against it, I'm sure the secretary (Sec. of the Interior Manuel Luhan) won't do it," he said.

The management service said it is also considering a request by Cook Inlet area residents that Lease Sale 149 be renamed the Cook Inlet/Shelikof Strait lease sale to make it clear that Shelikof Strait is part of the planning area.

While it is considering expanding the Cook Inlet leasing region, the service said comments on the OCS comprehensive plan have led planners to consider reducing the size of proposed leasing areas elsewhere in Alaska. Five so-called "lower potential" planning areas — including Norton Basin, Navarin Basin, St. Matthew-Hall, Hope Basin and St. George Basin — would be reduced to two: Hope Basin and St. George Basin.

Comments are due by Jan. 31. They may be sent to Director, Minerals Management Service (MS-4230), 1849 C Street N.W., Washington, D.C. 20240. Envelopes or packages should be marked "Comments on Proposed five-year Comprehensive Program—Cook Inlet, Hope Basin, St. George Basin Planning Areas."

For further information contact: Paul Stang or Jan Arbegast, Branch of Program Development and Planning at 202-208-3072, or Robert Brock, Regional Supervisor, Leasing and Environment, Alaska OCS Region at 271-6045.



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-99

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

F/S

✓ Checked for Completeness

✓ ID stamped/Input completed
✓ Name
✓ Affiliation
✓ Costs

✓ Category Restoration Monitoring

✓ Lead Agency ~~NOAA~~ ADF&G

✓ Cooperating Agency(ies) USFS ~~ADF&G~~

(Y) N Passed initial screening criteria

Type: F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

1993 PROJECT SCORING SHEET

920615279-99

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project: Monitoring Sites - collector beaches and lagoons.

Justification: When the EXXON VALDEZ disaster occurred no oil monitoring sites on Kodiak Island Archipelago or Alaska Peninsula shores of the Shelikof Strait existed. Concerned agencies were forced to establish sites on an emergency basis to collect baseline data in the path of the oil. Because the above areas are washed by the Alaska Coastal Current and downstream from Prince William Sound, many of the sites were eventually oiled and oil is still present at some of them. Samples from these sites are under analysis. Monitoring presence of EXXON VALDEZ oil is essential to understanding short and long term effects on intertidal and adjacent upland or freshwater habitats. These habitats include spawning areas for salmon, herring, capelin, and sand lance; habitat for clams, mussels, dungeness crab and juveniles of numerous species as well as an extremely productive intertidal ecosystem. Adjacent upland areas contain sea bird rookeries, haulouts and rookeries for the northern sea lion and harbor seals, numerous bald eagle nest sites, and important portions of the habitats of brown bears, sitka blacktail deer foxes and others. Upland areas also include portions of the Katmai National Monument, the Kodiak National Wildlife Refuge and the Alaska Maritime Wildlife Refuge. Adjacent marine areas provide extensive fisheries and habitat for sea otters and other marine mammals. Monitoring of these sites is essential both relative to the EXXON VALDEZ spill and to collect baseline information relative to other oil related activities in the area.

Description of Project: Intertidal sites that were exposed to oil and for which there are specific resource concerns would be monitored four times per year. Twenty sites were identified by the Kodiak Exxon-Valdez Restoration Committee as a preliminary list of critical areas. These will be reviewed by concerned agencies (National Marine Fisheries Service, Alaska Department of Fish and Game, U.S. Fish and Wildlife Service, Alaska Department of Environmental Conservation) and the Kodiak Island Borough. After final sites are determined, sites will be monitored through collection of sediment, representative organisms, intertidal transacts and counts of birds and mammals. Chemical analysis of sediments and representative organisms would be used to determine the presence and concentration of oil until it declines to background levels.

Estimated Duration of project: 1993-2001

Estimated Cost per Year: $500 K

Comments: This proposal addresses Options 27 and 31 in the Exxon Valdez Oil Spill Restoration Framework, Volume I.

CONTACT: Lonnie White, Area Biologist, FRED Division, Alaska Department of Fish & Game, 211 Mission Road, Kodiak, AK 99615
486-4791

II 920615297-45

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

Spot Shrimp

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration - monitoring

✓ Lead Agency

ADF&G

____ Cooperating Agency(ies)

Ⓨ N Passed initial screening criteria

Type: F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

____ Project Number - if assigned ____

93 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

297

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project: Prince William Sound (PWS) ~~Spot Shrimp Survey~~

Justification: (Link to Injured Resource or Service)

Spot shrimp have supported intensive commercial, sport and subsistence fisheries. The harvests from these fisheries confounded the ability of the NRDA project F/S # 15 to identify damages to spot shrimp. Depressed shrimp stocks were identified in EVOS-affected areas prior to the spill. Additionally, this species is prey for a variety of animals identified as damaged under NRDA (sea otters, harlequin ducks, rockfish and chum salmon). Given the condition of the spot shrimp stock in spill-affected areas and their effect on other species, a survey is necessary to monitor the status of the stock.

Description of Project: (eg. goals, objectives, location, rationale, and technical approach)

A survey will be conducted to sample the adult spot shrimp population in PWS. This survey will provide information to support management of the human use of this species and by extension support other damaged species. An historic database already exists for sampling stations established under NRDA, additional stations will be added in oiled areas to provide a more complete analysis of this area. This approach will provide a broader information base for fishery management decisions. Stock parameters such as length frequency, sex, and fecundity as well as catch per unit of effort will be identified. Relative strength of recruitment between years and overall stock structure will allow a determination of the recovery process. There is virtually no understanding of larval drift, settlement characteristics, or juvenile habitat requirements of spot shrimp in PWS. However, this survey addresses life history stages on which a body of knowledge exists and which may further our knowledge on the earlier life stages.

Estimated Duration of Project: Four years

Estimated Cost of Project: $ 88,000

Other Comments: This project is tied to Option 3 of the Restoration Framework category Management of Human Uses entitled, "Increase Management for Fish and Shellfish that Previously Did Not Require Intensive Management" and to option 31, "Develop Comprehensive Monitoring Program" of the Restoration Framework category Other Options also pertains.

Name, Address, Telephone: Charlie Trowbridge
Alaska Department of Fish and Game
Box 669
Cordova, Alaska 99574 ph: 907-424-3212

ID # 920615297 - 25

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS Clams

920610231-06 duplicate dropped

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration monitoring

— Lead Agency

ADF&G

_____ Cooperating Agency(ies)

_____

Ⓝ N Passed initial screening criteria

_____

Type: F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

920615297-25

93 PROJECT SCORING SHEET

Claus

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

29725

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project: Monitoring for recruitment of Littleneck clams

Justification: (Link to Injured Resource or Service)

Preliminary analysis of data collected under Fish/Shellfish Study 13 indicates that littleneck clam growth was adversely affected by exposure to unrefined hydrocarbons. Clams have been identified as prey items for animals in Bird Study 11, (sea ducks), Marine Mammal Study 6, (sea otters), Restoration Project 71 (harlequin ducks) and are gathered for food by subsistence users in Prince William Sound. It is important to establish if the Exxon Valdez Oil Spill (EVOS) and subsequent treatment of oiled beaches has affected relative population density or recruitment potential.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach)

The proposed study would involve monitoring recruitment and establishing relative population indices for beaches inhabited by littleneck clams and collection of hydrocarbon sediment and tissue samples. To document recruitment to selected beaches in Prince William Sound, we plan to examine areas that were unaffected by EVOS and those beaches where oiling has been documented by Fish/Shellfish Study 13 or other NRDA studies. Beach treatment, as documented by the Alaska Department of Environmental Conservation in 1989 and 1990, will be used to establish treatment levels. These treatments included the use of hot, warm, and cold low and high pressure washes, hand cleaning, raking, bioremediation, Corexit 7664 and no treatment. Sampling will be conducted to determine if littlenecks have recruited to oiled beaches in PWS regardless of treatment, since 1989. Larval traps and plankton tows will be deployed offshore at selected beaches to document the presence of clam larvae thereby establishing the potential for recruitment. Observations will be made on site to document behavior of affected users.

Estimated Duration of the Project: Two years.

Estimated Cost per Year: Year 1 = $ 205,000; Year 2 = $140,000.

Other Comments: The ultimate goal of this study is to monitor reestablishment of clam populations to beaches subjected to treatment. This study is applicable to Restoration Option 14 to accelerate recovery of the upper intertidal zone and Restoration Option 31 to develop a comprehensive monitoring program.

Name, Address, Telephone:
J.D. Johnson
Alaska Department of Fish and Game
P.O.Box 669
Cordova, AK 99574 907-424-3212

ID # 9206152079-30

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

Claims

✓ Checked for Completeness

ID stamped/Input completed
Name
Affiliation
Costs

Monitoring
Management Enhancement

✓ Category Restoration

✓ Lead Agency ADF&G

✓ Cooperating Agency(ies) NOAA

Y ✓ N Passed initial screening criteria

Type: F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

92061527 9 30

ASSESSMENT AND QUALITY ASSURANCE OF SHELLFISH RESOURCES

JUSTIFICATION:

During the Exxon Valdez oil spill, Razor Clams, Siliqua patula habitat on the Alaskan Peninsula (Swikshak, Big River and Village beaches; Hallo, Kashvik, and Puale Bays) and on Kodiak Island were impacted by oil. This work is necessary to better assess this damage to the commercially valuable resource and restore market confidence in the quality of clam resources.

DESCRIPTION OF PROJECT:

1. Implementation of assessment of the contamination and health of Razor Clam stocks based on a comparison of existing baseline data with surveys and local testing leading to FDA certification by the National Shellfish Sanitation Program.

2. Institute a program of market quality assurance to include the site selection, purchase and construction of relay and shorebased facilities to hold and test shellfish.

ESTIMATED DURATION OF PROJECT:

The site selection and development of shorebased facilities and laboratory capabilities begins in March (Year 1). The assessment of Razor Clam populations begins in May (Year 1) until October (Year 1), and from May (Year 2) until October (Year 2).

ESTIMATED COST PER YEAR: FY 93 $300,000; FY 94 $200,000.

OTHER COMMENTS:

This proposal addresses Options 2, 3, and 13 in the Exxon Valdez Restoration Framework, Volume I.

NAME, ADDRESS, TELEPHONE:

Mark Donohue
Kodiak Area Native Association
402 Center Ave.
Kodiak, AK 99615

907-486-5725

ID # 920615265

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS Clams

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

~~Damage Assessment~~ Restoration Monitoring

✓ Lead Agency

NOAA

Coordinate w/other clam studies.

Cooperating Agency(ies)

ADF&G

Ⓝ N Passed initial screening criteria

Type: F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

Project Number - if assigned

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

Title of Project:

Prince William Sound Long-Term Monitoring Program: Acute and Chronic Toxicity of Residual Hydrocarbons to Littleneck Clams

Justification:

Assessment of potentially ongoing acute and/or chronic impacts to clam populations from residual hydrocarbons at a site in Prince William Sound.

Description of Project:

This project examines the acute and chronic toxicological effects of residual *Exxon Valdez* oil on littleneck clams (*Protothaca staminea*). Support is being sought for 1993 recovery and analysis of samples deployed into the field in 1992 under the auspices of an ongoing NOAA monitoring effort in Prince William Sound. Preliminary research results have suggested a strong correlation between concentrations of residual petroleum hydrocarbons in sediments and mortality of clams transplanted from an uncontaminated site to an oiled site on Block Island. Elevated sediment concentrations also co-occurred with elevated tissue concentrations in surviving clams.

In 1992, this experiment will be expanded to provide a statistically more robust sample size at the same site, with a longer exposure period. This phase of the experiment—i.e., establishing of study plots and baseline sample collection—will be performed under the current NOAA monitoring program. A total of fifteen marked plots of *Protothaca* clams will be deployed, with five of the plots containing clams that have been marked with calcein dye to facilitate age and growth studies. Samples for sediment chemistry will be collected at each of the fifteen plots when the clams are transplanted, and any native clams found in the transplant areas will be retained for tissue PAH analysis.

In 1993, which is the period for which funding support is being sought, clams will be recovered along with sediment samples from each of the plots. Several parameters to evaluate toxicity of residual PAHs will be measured, including percent mortality among the transplanted clams (acute toxicity), growth of clams during the exposure period (chronic toxicity), accumulated tissue concentrations, residual sediment concentrations, and sediment grain size for the plots.

Logistical requirements for this project are relatively simple and may be piggybacked onto those for other projects. The basic requirement would be vessel or helicopter access to segment EL-11A on Block Island for an approximately four to six hour period during low tide in order to recover transplanted clams and sample sediments. Exact timing of the recovery is not critical, but would preferably occur in July or August to give the clams one full season on-site.

Estimated Duration of Project:

Estimated duration of the project, from mobilization to the field, through biological and chemical analysis, to interpretation and reporting of results, is nine months. If the field collections are made in July, 1993, the final report for the project could be expected in March, 1994.

Estimated Cost per Year:

Estimated cost for the project, based on the assumption of charter vessel support not being shared with other studies and thus provided through this project alone, is $50K. If the project was piggybacked onto another cruise, this would reduce the cost by approximately $4,500. As much of the cost of this project is allocated to analytical chemistry, some economy of funds could be achieved through selective analysis of samples.

Other Comments:

Results from the limited 1991 clam transplant study that provide the rationale for continuation and expansion of this project are available upon request.

Contact Name, Address, Telephone:

Gary Shigenaka
NOAA/Hazardous Materials Response and Assessment Division
7600 Sand Point Way N.E.
Seattle, WA 98115
(206)-526-6402 (voice)
(206)-526-6329 (fax)

ID # 92065-273-33

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

Mussels

✓ Checked for Completeness

ID stamped/Input completed
Name
Affiliation
Costs

✓ Category Restoration Monitoring

✓ Lead Agency NOAA

✓ Cooperating Agency(ies) DOI-FWS; ADFG

(Y) N Passed initial screening criteria

Type: F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

920615 2f3-33

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

9206015273 33

- [ ] A-92 WPWG
- [x] B-93 WPWG
- [ ] C-RFWG
- [ ] D-PAG
- [ ] E-MISC.

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project:
Hydrocarbons in Mussels from Coastal Gulf of Alaska, Cook Inlet, and Shelikof Strait

Justification: (Link to Injured Resource or Service)
Mussels are known to have been heavily contaminated by petroleum hydrocarbons and this study will establish a baseline for periodic monitoring.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach)
To detect and quantify levels of petroleum hydrocarbons in tissues of mussels (Mytiluss spp.) in coastal areas to establish a baseline and for periodic monitoring to help determine future effects of spilled oil.

Areas to be sampled are those areas of the Alaska Outer Continental Shelf along the Exxon Valdez oil spill trajectory in the Gulf of Alaska west of Prince William Sound, Cook Inlet, and Shelikof Strait.

Rationale is to provide baseline data on the present condition of resources vulnerable to spilled oil in the Gulf of Alaska, Cook Inlet, and Shelikof Strait.

Mussels will be collected and analyzed for saturated and polynuclear hydrocarbons using state-of-the-art protocols and standards.

Estimated Duration of Project: Once every other year for 5 years.

Estimated Cost per Year: $200,000

Other Comments:

Name, Address, Telephone:

Minerals Management Service
Alaska Outer Continental Shelf Region
949 E. 36th Avenue
Anchorage, AK 99508-4302
(907) 271-6010

Oil spill restoration is a public process. Your ideas and suggestions will not be proprietary, and you will not be given any exclusive right or privilege to them.

ID #920615297-04

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

Herrig

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration monitoring

✓ Lead Agency

ADF&G

_____ Cooperating Agency(ies)

_____

(Y) N Passed initial screening criteria

_____

Type: F/S

_____

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

920615297-04

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project:

Prince William Sound (PWS) Herring Tagging Feasibility Study

Justification: (Link to Injured Resource or Service)

Herring embryos, larvae, adults were injured by the Exxon Valdez oil spill.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach)

Herring tagging information can be used in conjunction with herring genetic stock identification information to define population distribution and migration. The information derived can aid in calculation of immigration and emigration rates. In addition, tag information may provide insight toward catch rates. Conclusions obtained will improve stock assessment models and forecasting procedures. The information derived can be used in conjunction with spawn deposition information, to direct and monitor restoration. During the first year, different tags and tagging techniques will be tested. Tagged fish will be released and will return for retrieval in future years, however, the primary goal for the first year will be to define the technique. In addition, tagging mortality and tag loss will be measured by releasing fish into impoundments, used in the herring pound fishery, and monitoring them over the course of the spawning season. Herring tagging literature will be reviewed to determine the best course of action. The final product will be a sampling design for the next two years of intensive tagging and four years of recovery.

Estimated Duration of Project: Five years. Year one is tagging feasibility, years two and three would include a full tagging effort, while years four and five would concentrate on tag retrieval and data analysis.

Estimated Cost per Year: $ 112,000 first year; increasing to $150,000 for years two and three and decreasing to $ 60,000 for years four and five.

Other Comments: This project falls within the category of management of human use since the information derived will be used directly in the stock assessment and management of the resource (Restoration Option No. 2. Intensify Management of Fish and Shellfish).

Name, Address, Telephone:

Evelyn Biggs, Herring Research Biologist
Alaska Department of Fish and Game, Div.
Commercial Fisheries, Box 669
Cordova, AK 99574-0669
(907)424-3213

ID # 920615297-05

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS Herring

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category Monitoring

Restoration - ~~Monitoring~~

✓ Lead Agency

ADF&G

_____ Cooperating Agency(ies)

_____

(Y) N Passed initial screening criteria

Type: F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Decision ID Number
920615297 05
☐ A-92 WPWG
☑ B-93 WPWG
☐ C-RPWG
☐ D-PAG
☐ E-MISC.

Title of Project:

Larval Herring Age and Growth in Prince William Sound (PWS) Using Otoliths

---

Justification: (Link to Injured Resource or Service)

Herring embryos, larvae, adults were injured by the Exxon Valdez oil spill.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach)

In 1989, a larval fish trawl survey was conducted resulting in a collection of larval herring from 52 sampling locations within PWS over three depths and a three month period. A selection of approximately 600 otoliths stratified over areas, depths and time could be processed and analyzed for age and daily incremental growth. The information obtained could be used to examine the effects of oil on growth and, with two addition years of data, shed light on processes affecting growth which may in turn affect recruitment. The conclusions from the first year's pilot sampling would go toward designing sample sizes needed to detect and test for differences between areas and years. The information gained would be used in conjunction with results of the larval trawl survey as well as long term population trends in abundance and age composition to further define and understand population dynamics. The conclusions could be used to direct and monitor restoration of the stock. Techniques employed would be similar to those used by Moksness and Wespestad (Fishery Bulletin, U.S. 87:509-513, 1989) where otoliths are ground and prepped for digitizing on a computerized scanner. Peaks mapped between individual rings are analyzed for differences in size and frequency. Ages are back calculated from incremental growth analysis and compared to estimated ages using know spawning dates.

Estimated Duration of Project: Three years (no sample collection necessary the first year)

Estimated Cost per Year: $ 60,000 during the first year; $120,000 for years two and three.

Other Comments: This project falls within the category of management of human use since the information derived will be used directly in the stock assessment and management of the resource (Restoration Option No. 2. Intensify Management of Fish and Shellfish). This project also falls within the confines of Restoration Option No. 31 in terms of the development of a comprehensive monitoring program. Data collection and analysis could be coordinated with the collection of other larval fish and shellfish, and macroplankton.

Name, Address, Telephone:

Evelyn Biggs, Herring Research Biologist, Alaska Department of Fish and Game
Division of Commercial Fisheries, Box 669, Cordova, AK 99574-0669. (907)424-3213.

I 9206152 98 - 42

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

Salmon

__✓__ Checked for Completeness

ID stamped/Input completed
Name
Affiliation
Costs

__✓__ Category

Monitoring

_____ Lead Agency

USFS

_____ Cooperating Agency(ies)

ADFG

(Y) N Passed initial screening criteria

Type: F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
EAS FOR RESTORATION PROJECTS

29842

Title of Project:
Prince William Sound Salmon Stock Genetics
Justification:

Description of Project:
Goal: Develop baseline data on salmonid genetics which will be used by the US FS and other agencies interested in habitat improvement and preserving the genetic diversity in wild fish stocks in Prince William Sound

This project will build upon previous work by USFS, NMFS, ADFG. This included sampling for baseline data in 1991 by NMFS and ADFG and a USFS project to summarize all existing information in Prince William Sound and identifiy phenotypic characteristics of salmon which are indicative of gentypic variation which will be completed in 1992.

Objectives:
-develop sampling scheme based on geographic, temporal, phenotypic differences, oiled and non-oiled, hatchery and wild differences, type of spawning habitat (intertidal, lake, inlet stream).
-determine which stocks will need to be sampled over multiyears to obtain samples without endangering stocks
-sample for both immediate electorphoresis and eventual DNA samples; put a portion of sample in long term storage for use with techniques developed in the future
-after initial data collection, identify further needs and gene pools where more detailed sampling is needed
-sample coho and cut throat trout and dolly varden in order to identify what protocol to use for electorphoresis
-interact with scientists developing cut throat data bases in more southerly portions of the cut throat range.

Estimated Duration of Project:

Five years

Estimated Cost per Year:
$150,000

Other Comments:

Name, Address, Telephone:

Kate Wedemeyer, Fisheries Biologist
US Forest Service Glacier Ranger Station
PO Box 129
Girdwood, AK 99587
907-783-3242

ID # 920615297-36

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS Salmon

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration - ~~Enhancement~~ Monitoring

✓ Lead Agency

ADF&G

_____ Cooperating Agency(ies)

_____

N Passed initial screening criteria

Type: F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

)3 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

29736

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project: Genetic Monitoring of Kodiak Island Sockeye Salmon

Justification: (Link to Injured Resource)

Curtailment of commercial fishing for sockeye salmon in the Kodiak Area during 1989 resulted in overly large spawning escapements. As a result a number of sockeye systems greatly exceeded optimal levels. This overescapement resulted in poor smolt production and will likely result in poor returns beginning in 1994. To improve the rate of recovery, restoration projects including fry planting are being planned for Kodiak Island sockeye populations.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach)

Genetic assessment of the stock structure of sockeye salmon stocks inhabiting the EVOS-affected area has become of paramount importance in the face of stock-specific overescapements resulting from closures in 1989, decline of those same stocks, and the resulting modifications of human use. An understanding of the population genetic structure of Kodiak sockeye salmon is necessary to guide restoration and management decisions for damaged populations.

The objectives of this project are to use genetic stock identification to 1) monitor genetic impacts of proposed federal and state rehabilitation projects on sockeye salmon on Red Lake and 2) provide improved management capabilities for protection of EVOS-damaged Red Lake sockeye intercepted in stock mixtures in the Kodiak area. Sockeye salmon specimens will be collected from the major Kodiak Island spawning populations. Sampling will be designed to include both early and late stocks. Genetic data will be collected using protein and DNA techniques. The data can be used to modify fishing efforts to protect damaged stocks, to identify appropriate broodstocks, and to investigate the impacts of restoration and mitigation including levels of straying between wild and enhanced populations.

Estimated Duration of Project: 3 years

Estimated Cost per Year: $ 275,000

Other Comments: Damage to Kodiak sockeye salmon is documented in Study F/S 27 - Sockeye Salmon Overescapement; restoration projects are outlined in R113 - Red Lake Sockeye Salmon Restoration.

Name, Address, Telephone:
James E. Seeb 267-2385 Lisa W. Seeb 267-2249
Genetics Program, Alaska Dept. Fish and Game
333 Raspberry Road, Anchorage, AK 99518

ID # 920615260

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

Salmon

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category Monitoring

✓ Lead Agency USFS

____ Cooperating Agency(ies)

(Y) N Passed initial screening criteria

Type: F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

____ Project Number - if assigned ____

92061560

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

EXXC *'ALDEZ* OIL SPILL TRUSTEE JNC[illegible]

IDEAS FOR RESTORATION PROJECTS

15260

Title: Restoration Recovery Monitoring of Stream-Rearing Anadromous Salmonids

Justification: Anadromous populations of cutthroat trout and Dolly Varden char and, perhaps, coho salmon suffered significant impacts from the oil spill when they migrated from streams to forage in Prince William Sound (PWS). This study will assess the current condition of stream-rearing populations and their habitats and establish baselines to monitor restoration recovery. Determination of critical riparian habitat will enable managers to effectively acquire land to enhance and protect recovery.

Description: Objectives are to 1) determine condition of riparian habitat, availability of instream habitat, and abundance of stream-rearing anadromous salmonids in oiled and non-oiled areas of PWS; 2) identify streams that are below estimated carrying capacity and needing restoration; 3) implement restoration work to increase fry recruitment or improve habitat in streams with depressed stocks; and 4) establish baselines to monitor recovery of fish populations during restoration efforts in PWS. All streams in oiled and non-oiled areas of PWS will be stratified using the FS Channel Type Classification System, and randomly selected reaches in each stratum will be sampled for habitat and fish populations. Study reaches will be distributed among 10-20 watersheds, one-quarter in non-oiled areas and three-quarters in oiled areas. Habitat measurements will include pool-riffle area, stream flow, water quality (temperature, DO, nutrients), and large woody debris. Late-summer fish densities in oiled and non-oiled areas will be compared to determine if streams are fully seeded. Condition of fish will be examined for indirect oil-related injuries. With information from this study, we will develop and implement a plan to increase fry recruitment or improve habitat in streams needing restoration.

Estimated Duration: 3 years

Estimated Cost per Year: $200,000

Comments: This study will be a cooperative study with the FS Chugach National Forest and complement proposal #39, by Robert Olsen entitled "Fish Limiting Habitat Factor Analysis". Forest Service expertise is required for mapping and ground verification of Channel Types. Additional funds will be required for the FS portion of this study.

Contact:

Dr. K V. Koski
NMFS Auke Bay Laboratory
11305 Glacier Hwy
Juneau, AK 99801-8626 (907) 789-6024

#920615297 - 37

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

✓ ID stamped/Input completed
✓ Name
✓ Affiliation
✓ Costs

Salmon

✓ Category

Restoration - monitoring

✓ Lead Agency

ADF&G

_____ Cooperating Agency(ies)

_____

Ø N Passed initial screening criteria

_____

Type: F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

3 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

~9737

N VALDEZ OIL SPILL TRUSTEE CO L

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project: Pink Salmon Egg to Pre-emergent Fry Survival in Prince William Sound (Restoration Study 60C)

Justification: Salmon egg mortalities in Prince William Sound (PWS) were 70%, 65%, and 115% higher in oiled streams than in unoiled streams in 1989, 1990, and 1991. Differences between oiled and unoiled streams in 1989 and 1990 were confined to intertidal spawning areas and may be attributed to direct lethal effects of oil deposited in intertidal spawning areas. Large differences were observed across all tide zones in 1991. This may be the consequence of genetic damage to the germ cells of the adults which originated from the 1989 brood year when egg and larval exposures to intertidal oil were greatest. A consequence of this genetic damage may be persistent functional sterility and reduced returns per spawner for populations from oiled streams.

Description of Project: This project will monitor the natural recovery of wild salmon populations from damages to eggs and fry by comparing results of systematic fall egg and spring pre-emergent fry sampling between streams which were oiled and streams which were not. The 31 streams proposed for sampling are streams previously sampled in NRDA Fish/Shellfish #2 and Restoration Study #60C. The project will also use controlled laboratory experiments to determine if differences observed between oiled and unoiled streams in 1989, 1990, and 1991 are consistent with an oiling effect. Eggs from an unoiled hatchery stock of pink salmon will be incubated in simulated clean and oiled intertidal streambed environments. After control and oiled groups emerge as fry, each will be reared to sexual maturity and adults from each group will be spawned to form second generation control and oiled populations. Mortality differences between first generation control and oiled groups will be observed at critical developmental stages and compared to results observed in PWS streams in 1989, 1990. Differences in mortalities among second generation eggs will be observed through hatching and similarly compared to those observed in PWS in 1991.

Estimated Duration of Project: The field monitoring portion of this project should continue until populations stabilize and recover to pre-spill levels or until laboratory results discount an oil effect. The laboratory portion of the experiment will last four years.

Estimated Cost per Year:	Year 1	Year 2	Year 3	Year 4
	$385,000	$670,000	$494,000	$385,000

Other Comments: This is a currently funded project (Restoration Study 60C)

Name, Address, Telephone: Sam Sharr and Andrew Craig
Alaska Department of Fish and Game
P.O. Box 880
Cordova, AK 99574
(907) 424-5900

920618315

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness — Rockfish

ID stamped/Input completed
Name
Affiliation
Costs

✓ Category — ~~Restoration Planning~~ Restoration Monitoring

✓ Lead Agency
ADF&G

✓ Cooperating Agency(ies)
~~USFS~~ NOAA

(Y) N Passed initial screening criteria

Type: ~~Birds~~ F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

9206183(5

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR PUBLIC IDEAS FOR RESTORATION PROJECTS

Title of Project: Monitoring Injury to Rockfish in Prince William Sound

Justification: Rockfish were one of the few species of fish found dead after the Exxon Valdez oil spill. Necropsies of five of these fish concluded that crude oil was the cause of death for these fish. Sampling later in the summer of 1989 found that rockfish from oiled areas were exposed to oil within the two weeks prior to collection. In addition, histopathological evaluations were conducted of tissue samples of rockfish, collected in 1990 and 1991 from oiled and controlled areas. These evaluations reveled a higher level of cellular abnormalities in samples from oiled sites than in the control sites. The pathologists at the laboratory conducting the histopathological evaluation, UC Davis, School of Veterinary Medicine, expressed a high level of concern about the presence and potential persistence of these pathological lesions. Therefore, it is necessary to conduct further sampling of these populations to determine the persistence of these damages. Rockfish continue to be harvested in both sport and commercial fisheries. This may be imprudent, with respect to proper management of these populations, in light of the damage detected in individual fish.

Description of Project: The goal of this project is to determine if sublethal effects, specifically histopathological lesions and mixed function oxidase enzymes (MFOs) are still present in rockfish from oiled areas. The approach will be to sample 20 rockfish from six sites, four sites in Prince William Sound (two oiled and two nonoiled areas), and two additional control sites outside Prince William Sound. The same three demersal rockfish species targeted in 1991 will be collected in 1993. These samples will be evaluated for histopathological lesions and MFOs in the same manner as those collected in 1990 and 1991. Results of the evaluations will be statistically tested to determine if differences between oiled and unoiled area persist.

Estimated Duration of Project: 1 year

Estimated Cost per Year: 117,000

Document ID Number
92061831S

- ☐ A-92 WPWG
- ☑ B-93 WPWG
- ☐ C-RFWG
- ☐ D-PAG
- ☐ E-MISC.

Name, Address, Telephone

Suzanne McCarron
Alaska Department of Fish and Game
333 Raspberry Road
Anchorage, Alaska 99518

(907) 267-2148

Because the Oil Spill Restoration is a public process, your ideas and suggestions will not be proprietary, and you will not be given any exclusive right or privilege to them.

State of Alaska
Department of Fish and Game
Administration
333 Raspberry Road
Anchorage, Alaska 99518-1599

Dana Schmidt-Soldotna FRED
May 20, 1992
From: M.Fraker/J.Sullivan

ID # 9206/5273-32

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS Forage Fish

✓ Checked for Completeness

ID stamped/Input completed
Name
Affiliation
Costs

✓ Category Restoration Monitoring ~~Restoration Management Actions~~

✓ Lead Agency ~~Restoration Mgmt AOFSG~~ NOAA

✓ Cooperating Agency(ies) ~~NOAA~~, DOI - FWS

(Y) N Passed initial screening criteria

Type: F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

9206452 73-32

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

920615 273-32

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project: Determine Abundance and Distribution of Forage Fish and Evaluate Influence on Recovery of Seabirds Impacted by the Spill

Justification: (Link to Injured Resource or Service) A number of bird and mammal species rely on forage fish like capelin and sand lance. An understanding of their basic distribution and abundance and the variation these aspects undergo is essential for understanding natural variation in the marine ecosystems. Consequently it is also essential when we are trying to restore some species impacted by oil spills like murres and need to select appropriate restoration options. This project addresses one of the general needs for an improvement of understanding of the long-range underlying mechanisms that limit populations.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach) One of the difficulties of this project is the lack of good methods to determine this type of data. Hence some of this project's effort must go to developing these methods.

Objectives: 1) Determine the abundance and distribution of age class 0 and 1 forage fish for the continental shelf of northwest Gulf of Alaska and along the Alaska Peninsula on a yearly basis;

2) Refine the ability and the methods to get this data;

3) Expand on our understanding of why these variations of distribution and abundance occur;

4) Determine how this abundance of forage fish relates to what murres or selected seabirds consume.

Project Methods and Feasibility:

It is difficult to design a net that is small enough to catch these small fish, but still fast enough to catch them. This is also an expensive project because it requires the use of large fishing or research vessels over a large period of time. However, if they ever decide to have a commercial fisheries for these forage fish in Alaska like they do elsewhere in the world, then it will become even more important to learn this information and the methods will be invented. The use of hydroacoustic equipment such as found on the M/V Tiglax in combination with sampling and ground-truthing by fishing vessels might be such a method.

Estimated Duration of Project: This type of baseline study should proceed over a 3-5 year period at least so as to begin to understand some of the normal variation that occurs.

Estimated Cost per Year: Only the roughest estimate is offered here and it is based on the fact that large vessels like the M/V Tiglax or larger would be used. Therefore, we would estimate that at least $250,000 or more might be required each year.

Other Comments: None

Name, Address, Telephone: U.S. Fish and Wildlife Service
1011 East Tudor Road
Anchorage, Alaska 99503

(907) 786-3494

27332

Document ID Number
9206IS273

- ☐ A-92 WPWG
- ☑ B-93 WPWG
- ☐ C-RFWG
- ☐ D-PAG
- ☐ E-MISC.

#920615297-10

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

Food Safety

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration monitoring

✓ Lead Agency

ADF&G

_____ Cooperating Agency(ies)

DEC

(Y) N Passed initial screening criteria

Type: F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

EXXON/VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMA OR IDEAS FOR RESTORATION JECTS

TITLE OF PROJECT: SUBSISTENCE FOOD SAFETY TESTING

JUSTIFICATION

Data collected by the Alaska Department of Fish and Game's Division of has shown that subsistence uses of fish and wildlife resources, a vital natural resource service, were injured by the Exxon Valdez oil spill. Annual per capita subsistence harvests declined dramatically in ten of the communities in the path of the spill during the first year after the event. There were also declines in these communities in the breadth of resources used and participation in subsistence activities. While some of some of these communities' harvests demonstrated a limited recovery in the second post-spill year, harvest levels in other affected communities showed no signs of recovery and remained about 60 percent or more below pre-spill levels. Concern over the long term health effects of using resources from the spill area, a loss of confidence on the part of subsistence hunters and fishermen in their own abilities to determine if their traditional foods are safe to eat, and a perceived reduction in available resources, all contribute to the reduced harvest levels.

DESCRIPTION OF PROJECT

The goal of the project is to restore the subsistence uses of fish and wildlife damaged by the Exxon/Valdez Oil Spill. Samples of mussels and rockfish will be collected from the harvest areas of six impacted communities. Community representatives will assist in site selection, as well as collection of samples. Additionally, bile and blubber samples will be taken from five seals harvested for food by subsistence hunters in Prince William Sound. The samples will be analyzed for the presence of hydrocarbon contamination. The results of the tests, along with findings from other damage assessment and restoration studies, will be interpreted by the Oil Spill Health Task Force, and reported to the communities in an informational newsletter and community visits.

ESTIMATED DURATION OF THE PROJECT

Hydrocarbon testing should continue until the results have returned to background levels. The confidence of the subsistence users is likely to lag behind the recovery of the resources to some extent. Continued need for this program should be reevaluated on a yearly basis.

ESTIMATED COST PER YEAR: $308,000 (Final Year, no testing: 36,200)

OTHER COMMENTS

By involving the communities in the monitoring of the recovery of the resources, and by bringing information concerning the safety of the resources back to the communities, it is anticipated that subsistence harvests will begin to approach pre-spill levels, and anxiety about their use will be reduced. This study is consistent with the goals of Restoration Option 30, and some of the goals of options 31 and 33.

James A. Fall
Regional Supervisor
(907) 267-2359

Rita A. Miraglia
Oil Spill Coordinator
(907) 267-2358

Division of Subsistence
Alaska Department of Fish & Game
333 Raspberry Road
Anchorage, AK 99518

ID 9206152 79-25

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

Food Safety

✓ Checked for Completeness

ID stamped/Input completed
Name
Affiliation
Costs

✓ Category Restoration Monitoring

✓ Lead Agency ~~NOAA~~ ~~USDA~~ NOAA

✓ Cooperating Agency(ies) ADF+G DEC

(Y) N Passed initial screening criteria

type - ~~cat~~ F/S

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

9206 15279-25

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

9206/5277 235
-25

EXXON VALDEZ - SPILL RESTORATION PROPOSAL

Document ID Number 9206/5277
☐ A-92 WPWG ☑ B-93 WPWG ☐ C-RPWG ☐ D-PAG ☐ E-MISC.

Title of Project:
"13 Species" - Commercial Species Assessment

Justification:
Alaskan seafood marketing in an intensely competitive worldwide market was aided by perception of production in clean unspoiled waters. Basis for that image may still exist, but perception may have been altered by the highly publicized Exxon Valdez spill.
There is also the lingering possibility that some commercial (or potentially commercial) species may in some predictable spill affected areas have contamination levels that would restrict commercial harvest.

Description of Project:
Goal Compare selected commercial species from high and low risk sites within the spill area to an Alaskan site outside the spill area, a site off the U.S. west coast, a site off the U.S. Gulf of Mexico, and a site off the U.S. northeast coast. Look for evidence of elevated petroleum hydrocarbons and of secondary impacts possibly caused by spill treatments (natural biological toxics at increased concentrations from bioremediation efforts, etc.).
Objectives A) Select sites for comparison. An example of a potential highrisk site for crabs would be the 20 fathom hole off Hallo Bay. A low risk site within the spill zone might be found off the east side of Kodiak. Sites that have been proposed for commercial shellfish harvesting or relaying would merit special consideration. Determine whether sample compositing will be used for area wide comparisons.
B) Select species for evaluation. Species proposed are: razor clams, little neck clams, urchins, mussels, butter clams, red salmon, king salmon, dungeness crab, a tanner crab species, pacific cod, a flatfish species, herring, sablefish. [Note: there is nothing magical about the 13 species -- it is just being put on the table] Choose counterpart commercial species for areas of comparison -- say Atlantic blue crabs as counterparts for dungeness, etc.
C) Select basis of comparisons based both on possible public perceptions and risks. Examples would be high publicity compounds such as PCBs, more predictable compounds such as total aromatic petroleum hydrocarbons, and possible secondary biological toxics such as PSP compounds and domoic acid..
D) Determine courses of action based on possible concentrations of various pollutants to be discovered.
E) Sample and perform assessments. For many analyses, contract laboratories may be the most feasible and cost effective. The University of Alaska School of Fisheries and Ocean Sciences may be able to perform some assessments and the Palmer DEC seafood lab, being the only FDA certified lab, may be the best option for PSP and Domoic acid analyses.
F) Follow up on courses of action determined in Objective D.
G) Repeat sequence at least once -- at 3 to 5 years after initial assessment if no serious spill area contaminations are found. (Additional or more specialized assessments as necessary).
Rational The highest probability is that contaminant levels remain lower in Alaskan waters -- including the spill zone -- than found in most other seafood

producing areas. If that is correct, it needs to be verified and claimed. It is also an obligation to evaluate and react to risks such as possible spill contaminations that may apply to Alaskan commercial species. In some instances, such as certifying shellfish harvesting areas, the U.S. Food and Drug Administration is likely to insist as a prerequisite on verification that oil contamination is not an issue in spill affected areas (The spill region has many potential shellfish harvesting areas having commercial quantities).

Technical Approach Recommend that technical approach be overseen by the University of Alaska School of Fisheries and Ocean Sciences (or Kodiak Fisheries and Industrial Technology Center subsidiary to this school).

Estimated Duration of Project: 10 years (50% completed within first 2 years)

Estimated Cost per year: 200K (10 year average - revised estimate)

Other Comments: Organizations and agencies havinga close interest in this project will include the Kodiak Area Native Association, Alaska Department of Environmental Conservation, KRAA, Fisheries Industrial Technology Center, Alaska Department of Fish & Game, U.S. Fish and Wildlife Service, and National Marine Fisheries Service.

This proposal addresses Options 3 and 30 in the Exxon Valdez Restoration Framework, Volume I.

Name, Address, Telephone:

A) Mark Donahue
Kodiak Area Native Association
402 Center Ave., Kodiak, Alaska 99615
(907-486-1992)

B) Arn Shryock
Kodiak Field Office, ADEC
P.O. Box 515, Kodiak, AK 99615
(907-486-6760)

ID # 920615261-03

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

Small cetaceans

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration - Monitoring

✓ Lead Agency

~~NMFS~~ NOAA

_____ Cooperating Agency(ies)

_____

(Y) N Passed initial screening criteria

Type: MM

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

1993 PROJECT SCORING SHEET 92061526I-03

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

TITLE OF PROJECT: MONITORING OF SMALL CETACEANS IN PRINCE WILLIAM SOUND.

JUSTIFICATION: There are more than 25 species of marine mammals in the Gulf of Alaska and Prince William Sound. The area impacted by the Exxon Valdez oil spill provides a variety of marine habitats seasonally critical for significant numbers of these mammals. Damage assessment studies concentrated on four marine mammal species; harbor seals, Steller sea lions, killer whales, and humpback whales, principally because the historical data base on these species was adequate for comparative purposes and the ability for demonstration of injury was high. However, other species, such as the reclusive harbor porpoise and ubiquitous Dall's porpoise may have been significantly affected by the spill. For the last three years, numerous reports have been received that the number of small cetaceans inhabiting Prince William Sound has declined. The proposed monitoring study will provide information on the status and trends of cetacean populations within the Prince William Sound ecosystem. Cetaceans are high trophic level predators and their distribution, abundance, and vital rates are viable measures of the health and stability of the ecosystem. Changes in food availability, habitat degradation, and ecosystem stability can be inferred by reduced cetacean abundance, declining trends, or reduced reproduction.

DESCRIPTION OF PROJECT: The primary objectives would be to: 1) enumerate small cetacean populations in Prince William Sound, and 2) assess critical habitat for small cetaceans by monitoring distribution and density of each species in the study area. To investigate seasonal trends, surveys would take place at different times of the year (e.g., spring, summer, and fall). Population information would be collected through the use of vessel and aerial survey platforms.

ESTIMATED DURATION OF PROJECT: Five to ten years.

ESTIMATED COST PER YEAR: $200.0K

OTHER COMMENTS: None at this time.

NAME, ADDRESS, TELEPHONE:

Drs. Marilyn E. Dahlheim and Thomas R. Loughlin
National Marine Fisheries Service
National Marine Mammal Laboratory
7600 Sand Point Way N. E.
Seattle, Washington 98115
206/526-4020 or 4040

920615261-02

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS Killer Whale

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- Costs

✓ Category

Restoration - monitoring

✓ Lead Agency

~~NMFS~~ NOAA

_____ Cooperating Agency(ies)

_____

Ⓥ N Passed initial screening criteria

_____

Type: MM

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
/			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
/			2. Technical feasibility.*
/			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

TITLE OF PROJECT: E OF SATELLITE TRANSMIT S TO INVESTIGATE KILLER WHALE ECOLOGY IN PRINCE WILLIAM SOUND.

JUSTIFICATION: Restoration of killer whales could be enhanced through protection of sensitive habitats, minimizing fishery interactions, reducing or redirecting other human-use impacts, and promoting public education. At present, little or no quantitative information exists on habitat needs for killer whales in Prince William Sound and adjacent waters on which to base decisions on whether or not recommendations to limit or otherwise change human-use activities are needed. The placement of satellite transmitters on Prince William Sound killer whales could yield important information on habitat requirements of killer whales that would otherwise be unavailable.

DESCRIPTION OF PROJECT: The primary goal of this project would be to place 3-4 satellite transmitters (PTT) per year on selected individual killer whales from resident and transient pods in Prince William Sound. The primary objective would be to obtain information on the daily and seasonal movements of killer whales in Prince William Sound and adjacent waters. Tagging operations would occur in the southwestern sector of Prince William Sound during September and whales would be tracked throughout the fall and winter period. Considering the limitations of the existing information on killer whale movements and habitat requirements, any data collected from PTT's would provide valuable information on killer whale habitat requirements.

ESTIMATED DURATION OF PROJECT: Three years.

ESTIMATED COST PER YEAR: $180.0K

OTHER COMMENTS: None at this time.

NAME, ADDRESS, TELEPHONE:

Drs. Marilyn E. Dahlheim and Thomas R. Loughlin
National Marine Fisheries Service
National Marine Mammal Laboratory
7600 Sand Point Way N. E.
Seattle, Washington 98115
206/526-4020 or 4040.

ID # 920615261 -01

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration - Monitoring

✓ Lead Agency

~~AMFS~~ NOAA

_____ Cooperating Agency(ies)

_____

(Y) N Passed initial screening criteria

Killer whale

type: mm

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

ID # 9205140005

see 9205140001

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

Killer Whale

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

DAMAGE ASSESSMENT - Killer whale

✓ Lead Agency

NMFS

_____ Cooperating Agency(ies)

_____

@ N Passed initial screening criteria

_____

type: mm

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

SCC 92051400

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project:

Killer Whale Population Dynamics Project

Justification: (Link to Injured Resource or Service)

The killer whales are a resource damaged by the oil spill.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach)

Study killer whale population dynamics to measure short and long term changes in the population

Estimated Duration of Project: 4 years prior to '93, expect 5 years into future

Estimated Cost per Year: $90,000

Other Comments: would like opportunity to bid against other groups and government agencies

Name, Address, Telephone:

Craig O. Matkin, Director
North Gulf Oceanic Society
P.O. Box 15244
Homer, AK 99603
907 235 6590

Oil spill restoration is a public process. Your ideas and suggestions will not be proprietary, and you will not be given any exclusive right or privilege to them.

920615261-01

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

Killer whale

* Restoration Framework, 1992, pp 43-44.

TITLE OF PROJECT: PHOTO-IDENTIFICATION STUDIES OF PRINCE WILLIAM SOUND KILLER WHALES

JUSTIFICATION: To monitor natural recovery of injured populations of killer whales occurring in Prince William Sound.

DESCRIPTION OF PROJECT: The primary objectives would be to 1) enumerate the number of whales inhabiting Prince William Sound, 2) determine reproductive and mortality rates of Prince William Sound killer whales, and 3) establish population trends over time. Photo-identification studies would be conducted each year from June to September employing similar methods as those completed by the National Marine Mammal Laboratory for the years 1989 through 1991. Although the main base of operation would be the southwestern sector of Prince William Sound, other areas of Prince William Sound would be visited routinely to document the presence or absence of killer whales. Additional information on killer whale occurrence would be obtained through aerial surveys and the existing killer whale sighting network. Exact details of field methods are available upon request and are described in detailed in previous NRDA/Restoration reports.

ESTIMATED DURATION OF PROJECT: Ten years.

ESTIMATED COST PER YEAR: $120.0K

OTHER COMMENTS: None at this time.

NAME, ADDRESS, TELEPHONE:

Drs. Marilyn E. Dahlheim and Thomas R. Loughlin
National Marine Fisheries Service
National Marine Mammal Laboratory
7600 Sand Point Way N. E.
Seattle, Washington 98115
206/526-4020 or 4040.

ID 720615079 -14

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

Sea Otters

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration - monitoring

✓ Lead Agency

DOI & FWS

Cooperating Agency(ies)

(Y) N Passed initial screening criteria

Type: MM

RANKING H M L Rank Within Categories

H M L Rank Overall

Project Number - if assigned

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project:
Sea Otter Population Survey and Trends

Justification: (Link to Injured Resource or Service)
This project will result in accurate baseline population monitoring of sea otters and sea birds in the Kodiak Archipelago.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach)
The objective of this project will be to develop a method to accurately and rapidly inventory and provide assessments of the sea otter populations. Development of this capability will provide local, state and Federal agencies the resource information needed to make knowledgeable decisions when responding to environmental catastrophes.

This project will acquire the equipment necessary to accomplish the surveys, i.e. FLIR System, video tape analysis computer software, GPS Navigation System, 386, 100 Mb laptop personal computer.

Flight charges for aerial surveys will be funded by agency.

Estimated Duration of Project: One year to acquire equipment

Estimated Cost per Year: $145,000/year

Other Comments: This type of survey capability would have been invaluable for resource protection decisions during the Exxon Valdez spill.

This proposal addresses Options 4, 13, and 31 in the Exxon Valdez Oil Spill Restoration Framework, Volume I.

Name, Address, Telephone:
Kodiak National Wildlife Refuge
1390 Buskin River Road
Kodiak, Alaska 99615
(907) 487-2600

Oil spill restoration is a public process. Your ideas and suggestions will not be proprietary, and you will not be given any exclusive right or privilege to them.

ID # 920615273-16

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS Sea Otter

✓ Checked for Completeness

ID stamped/Input completed
Name
Affiliation
Costs Sea Otters

✓ Category

~~Management action~~ Restoration Monitoring

Lead Agency

DOI USFW

Cooperating Agency(ies)

Y N Passed initial screening criteria

type - mm

RANKING H M L Rank Within Categories

H M L Rank Overall

Project Number - if assigned

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project: Habitat Utilization by Sea Otters and Designation of Protected Areas.

Justification: Immediate losses of sea otters associated with the *Exxon Valdez* oil spill probably ranged from 3,500 to 5,000 animals, and continuing studies suggest chronic deleterious effects to sea otter populations associated with oil exposure. Broad expanses of sea otter habitat were contaminated with hydrocarbons. Ongoing sampling of sediments and sea otter prey items indicate that sea otters continue to be exposed to hydrocarbons. Survival of sea otters may be affected, delaying recovery of the population. Protection of habitats important to sea otters will promote population recovery over the long-term. Description of foraging, pup rearing, pup weaning and haulout areas will be crucial to identifying valuable habitats for sea otters.

High mortality of juvenile sea otters occurs during their first year. An ongoing (1992-93) USFWS study will provide data on first-year survivorship of sea otters in Prince William Sound (PWS) and on habitat use patterns for otters during the first year of life. This information can be supplemented with existing sea otter data to facilitate long-range planning for sea otter habitat protection.

Description of Project: The proposed restoration project will 1) utilize data from the juvenile survival study to develop a data base on sea otter movements and patterns of habitat use, 2) integrate this information with other sea otter data on distribution and abundance (pre- and post-spill), 3) evaluate available data on commercial, recreational, and subsistence uses of PWS, and 4) identify and evaluate potential sites for protection of sea otter habitat in PWS.

Estimated Duration of Project: The initial phases of this project will focus on compilation and analysis of existing data and will be completed in 1993.
Evaluation of potential sites for protection will occur in 1994.

Estimated Cost per Year:

Year	1993	1994
Cost	83K	165K

Other Comments: None

Name, Address, Telephone: U.S. Fish and Wildlife Service
1011 East Tudor Road
Anchorage, Alaska 99503

(907) 786-3494

ID # 9206152733-15

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

Sea Otters

✓ Checked for Completeness

ID stamped/Input completed
Name
Affiliation
Costs

Sea otters

✓ Category
Monitoring

✓ Lead Agency
DOI-FWS

_____ Cooperating Agency(ies)

(Y) N Passed initial screening criteria

type - mm

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

ID # 920601058-08

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- N/A Name
- ✓ Affiliation
- ✓ Costs

See others Group with 920615273-15

✓ Category

Monitoring

✓ Lead Agency

DOI FWS

_____ Cooperating Agency(ies)

(Y) N Passed initial screening criteria

type MM

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

revised 6/16/92

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Document ID Number 920615273
- ☐ A-92 WPWG
- ☑ B-93 WPWG
- ☐ C-RPWG
- ☐ D-PAG
- ☐ E-MISC.

Title of Project: Monitoring of Sea Otter Population Abundance, Distribution, Reproduction and Mortality in Areas Affected by the *Exxon Valdez* Oil Spill

Justification: Immediate losses of sea otters associated with the *Exxon Valdez* oil spill probably ranged from 3,500 to 5,000 animals. Current sampling of sediments and sea otter prey items indicate exposure of otters to hydrocarbons may be continuing. Preliminary results suggest that this exposure, at a minimum, may be affecting sea otters at an organismic level and, at a maximum, may be affecting survival and therefore recovery of the population. The age distribution of sea otter carcasses recovered in oiled areas of Prince William Sound continues to indicate an increase in mortality of prime-age sea otters. This evidence, together with results from blood and contaminant analyses, suggests that the sea otter population within the spill zone may still be compromised by exposure to oil. The primary objective of this project is to monitor the affected sea otter population through recovery.

Description of Project: The objectives of this restoration project are to: (1) monitor the abundance, distribution and mortality of sea otters in the spill area; (2) identify patterns of habitat use; (3) estimate annual reproduction in affected populations, and (4) construct a population model to evaluate the potential recovery of the sea otters. In addition, beach surveys will record all beach-cast mammal and bird carcasses.

Project Methods and Duration:
In order to monitor and evaluate the recovery of the sea otter population throughout the spill affected area, annual monitoring will be undertaken. Since the spill, detailed data on population size has been collected primarily in the Prince William Sound portion of the spill area. Efficient survey techniques were being developed through RESTORATION FEASIBILITY PROJECT #3, which was conducted in 1991 but not in 1992. Through the information gleaned in the feasibility project and subsequent work by the USFWS, these techniques can be implemented as a pilot project within Prince William Sound in 1993. Survey methodology will be field tested outside Prince William Sound in 1993 and 1994, and a complete monitoring program throughout the entire spill area will be in place from 1994 through 2001. In addition to aerial surveys, reproductive surveys and mortality surveys will be undertaken as part of this project. A population model will be constructed in 1993 based on age structure and age specific reproduction and survival rates estimated from the carcasses recovered following the oil spill. The model will integrate available information on population size, reproduction and survival rates (including data from a 1992-93 USFWS study on juvenile sea otter survival) to predict recovery rates under a range of assumptions, including those related to potential restoration or management strategies. Data collected in subsequent years will be used to refine and update the model.

Estimated Cost per Year:

Year	1993	1994	1995	1996 to 2001
Cost	$337K	256K	256K	170K per year

Other Comments: None

Name, Address, Telephone: U.S. Fish and Wildlife Service
1011 East Tudor Road
Anchorage, Alaska 99503

(907) 786-3494

OPTIONAL FORM 99 (7-90)

FAX TRANSMITTAL # of pages ▶

To: Raymond From: Carol Hopkins

Dept./Agency Phone # 6/16/92

Fax # REVISED

NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

SEA OTTERS IN THE KODIAK ARCHIPELAGO: POPULATION STATUS AND TRENDS

EXXON VALDEZ OIL SPILL SETTLEMENT FUND STUDY PROPOSAL

OBJECTIVE:
The Kodiak National Wildlife Refuge proposes development of a method to accurately inventory and provide assessments of the sea otter population along the coast of the Kodiak Island Archipelago. The U.S. Fish and Wildlife Service is mandated to conserve sea otters and their habitats. Development of this capability will provide local, state, and federal agencies the resource information to make knowledgeable decisions when responding to the wide range of possible enviromental catastrophies that may impact the coastline of the Kodiak Archipelago.

EQUIPMENT REQUIRED:
The principle component in developing the proposed inventory capability is a forward-looking, thermal, infrared, (FLIR) detection system with video tape archiving, gyro-operated focusing, GPS navigation compatable with track plotting. The FLIR system utilized by the United States Coast Guard Search and Rescue helicopters is the recommended manufacturer.
An avionic GPS with personal computer interface downloading capabilities would also be required and this would be connected to a 386 laptop personal computer to archive position data and to operate the software to analyse F.L.I.R. generated video tape. Funding to conduct preliminary survey work and subsequent annual surveys would be sought from the Fish and Wildlife Service or other federal agencies.

ESTIMATED EQUIPMENT COSTS (THOUSAND $):

FLIR System	$125
Video tape analysis computer software	$ 10
GPS Navigation System	$ 3
386, 100Mb laptop personal computer	$ 5
TOTAL	$145

JUSTIFICATION:
The inability to quickly assess numbers of sea otters and other marine wildlife resources threatened by the approaching oil spill was an obvious deficiency highlighted in Kodiak's early preparations to battle the Exxon Valdez oil spill. Unfortunately, to combat this lack of basic information, observers pressed into duty were often inexperienced and only minimally trained to perform the required surveys. Enviromentally sensitive species such as sea otters, as well as other marine and land mammals need to be enumerated prior to an impact occurring if that impact is to be correctly evaluated and mitigated. Current data available for coastal refuge wildlife

resources are minimal and not valid for the non-refuge coastal habitats in the remainder of the archipelago. A permanent inventory record of Kodiak's coastal wildlife resources and the capability to quickly inventory oilspill threatened shorelines needs to be considered a primary part of any furture "oilspill prepareness plan". The FLIR system also detects oil on the surface of the water to improve spill tracking and deployment of cleanup efforts.
The recently proposed Minerals Management Service Oil Lease Sale #149 emphasizes the ongoing potential for enviromental impacts from oil industry activity and underscores that these threats will not lessen with time.

ID # 9206/5273-21

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

Sea Offers

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category
Restoration Monitoring

✓ Lead Agency
DOI USFWS

✓ Cooperating Agency(ies)

(Y) N Passed initial screening criteria

typo - MM

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project: A Radio-Telemetry Project to Monitor Recovery of Sea Otters Affected by the *Exxon Valdez* Oil Spill

Justification: Injuries to the sea otter population from the *Exxon Valdez* oil spill have been severe. A large number of otters were lost following the initial exposure: estimates of acute mortality range from 3,500 to 5,000 sea otters. NRDA studies have demonstrated that post-spill survival rates are low. Chronic exposure to hydrocarbons through prey items may be adversely affecting the otters and depressing survival rates. The potential for recovery of affected sea otter populations is not known. Population modelling will be used to evaluate the potential for recovery of affected otters. The modelling effort will be updated as additional data become available during the recovery process. A 1992-93 USFWS study on juvenile sea otter survival will provide key data in support of the modelling effort.

Survival and reproduction rates of the sea otter population exposed to oil may be changing over time. Continued long-term monitoring of sea otters in oiled areas is needed to evaluate population status and understand how the individual components of the population are or are not recovering. If we do not do long-term monitoring of specific population components, we will not understand the factors continuing to limit population recovery and will not be able to consider appropriate restoration goals. Radio-telemetry for monitoring individual sea otters would provide rates of survival and reproduction; these estimates would be used to update the population model and refine predictions of recovery. Additional data on otter movements and habitat use in oiled areas would be obtained.

Description of Project: Post-spill reproduction, survival and movements will be monitored in a long-term radio-telemetry project. Eighty sea otter pups are scheduled to be implanted in 1992, in a USFWS study of juvenile survival. This project consists of supplementing the sample of surviving otters from that study with 50 additional transmitter implants in each of the following three years (1993, 1994 and 1995; total of 150 implanted sea otters). Otters will be monitored through 1998 to provide estimates of survivorship and reproduction, and to obtain data on habitat use. These estimates will be used to project recovery rates of the sea otter population.

Estimated Duration of Project: 1993 to 1998

Estimated Cost per Year:

Year	1993	1994	1995	1996	1997	1998
Cost	$450K	478K	492K	402K	414K	314K

ıer Comments: None

Name, Address, Telephone: U.S. Fish and Wildlife Service
1011 East Tudor Road
Anchorage, Alaska 99503

(907) 786-3494

ID # 920615273-22

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

✓ Checked for Completeness

Sea Otters

- ID stamped/Input completed
- Name
- Affiliation
- Costs

✓ Category Restoration Monitoring

✓ Lead Agency DOI w/FWS

✓ Cooperating Agency(ies)

(Y) N Passed initial screening criteria

type - mm

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project: Surveys to monitor marine bird and Sea Otter populations in the area of the *EXXON VALDEZ* Oil Spill

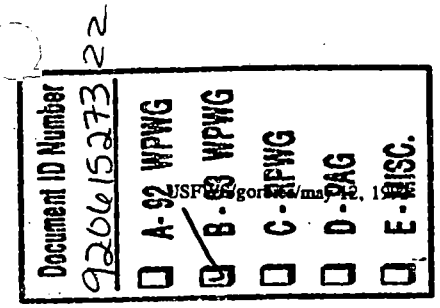
Justification: (Link to Injured Resource or Service) This study addresses all marine bird species and sea otters. More than 30,000 carcasses representing over 90 species of birds were collected the spill zone in 1989. In addition, both direct and lingering population effects of the spill have been demonstrated in NRDA studies on cormorants, harlequin ducks, black oystercatchers, black-legged kittiwakes, arctic terns, marbled murrelets, common murres and pigeon guillemots. Intensive studies on sea otters have revealed evidence of damage to populations of this mammal. This project is an important tool to monitor recovery of populations of bird and mammal species damaged by the oil spill. It also provides habitat use and distribution information used by other studies to document needs to acquire or protect habitat and to restore food and nesting resources.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach) This project would continue population surveys established in Prince William Sound (NRDA Bird Study 2/Marine Mammal Study 6), and extend surveys to the remainder of the spill zone. Restoration of injured marine bird species will require population estimates to determine whether declines continue, and to document recovery. These surveys provide a cost-effective, statistically rigorous method for monitoring populations. Even when baseline data do not exist, repeated surveys can show whether populations are stable. Surveys also provide valuable information on the distribution and habitat use of these species. NRDA surveys have already been used for these purposes by investigators of harlequin ducks, marbled murrelets, black oystercatchers and sea otters. Survey methods are flexible enough to provide for collection of more detailed information (such as age class data) when such information is requested by investigators of particular species.

Objective A: To support restoration studies on marine bird and sea otter ecology by monitoring population recovery or continuing declines in Prince William Sound, using surveys established by NRDA Bird Study 2.

Objective B: To support restoration studies on marine bird ecology in the remainder of the oil spill zone by establishing and maintaining near-shore population surveys on the lower Kenai Peninsula, lower Cook Inlet, Kodiak and Afognak Islands and the Alaska Peninsula.

Objective C: To support restoration studies (particularly murre winter distribution study) as for Objective B by establishing and maintaining pelagic population surveys in the northern Gulf of Alaska. This objective would be designed to facilitate the murre winter distribution study.



PROJECT METHODS:

Objective A: Prince William Sound Surveys.

1993. Boat surveys will be conducted in March and July using methods developed by NRDA Bird Study 2, so that results will be comparable to those collected during the three years since the spill. The current design is powerful enough to detect small population changes (e.g. 15%) for some species. However, previously collected data can now be used to further improve the design for other species, possibly lowering costs at the same time. For example, the design of the offshore strata will be altered because analyses of previously collected data indicate that variances can be decreased by doing so. Such alteration will not affect the ability to compare population estimates among years.

Other analyses aimed at reducing survey variances, detecting population changes, and identifying habitat use and distribution will continue. Such analyses include exploration of post-stratification by habitat (using shoreline type or bathymetry to define habitats), examination of observer differences, and calculation of optimal sampling unit size and number of samples. Completed population estimates and statistical tests (Laing 1991) may be re-calculated when final oiling definitions are developed. This study supports studies on individual species. As such, we welcome requests to collect specific information during surveys. For example, we have agreed to collect pup ratio data for the sea otter study.

1994 until determination of recovery of damaged species (i.e. populations are stabilized). Surveys will be conducted on an annual or biannual basis.

Objective B: Surveys outside Prince William Sound.

1993. Statistically rigorous survey methods will be designed for the following areas in the oil spill zone: lower Kenai Peninsula, lower Cook Inlet, Kodiak and Afognak Islands, and the Alaska Peninsula. To design these surveys, it will be necessary to gather data from previous studies done in these areas, and to coordinate with FWS and NPS scientists and managers concerning logistical constraints. Survey design for these areas may not be identical, depending on these constraints, but will produce comparable population estimates.

1994 until determination of recovery of damaged species (i.e. populations are stabilized). Surveys will be conducted. Annual scheduling of surveys will be determined in 1993.

Objective C: Pelagic/murre distribution surveys.

1993. Data from all previous pelagic surveys will be reviewed, and a statistically rigorous study design for surveys will be developed. Design will be developed in conjunction with the murre winter distribution study.

1994 until determination of recovery of important species (i.e. populations are stabilized). Surveys will be conducted. Annual scheduling of surveys will be determined in 1993.

Estimated Duration of Project: Population monitoring of the oil spill zone would conclude when population recovery was complete for damaged species. For areas where no baseline data exist, this point would be reached when populations were stable. Studies on individual species would also be used to determine recovery.

Estimated Cost per Year:

1993:	Conduct Surveys	$253,000
	Design Surveys for Obj. B & C	$ 22,000
TOTAL 1993 COST:		$275,000

1994-2001:
Several options exist for the cost of this study after 1993, depending upon which objectives are funded. Each objective will cost $275,000 each year it is implemented. The best information (i.e. population estimates for the entire spill zone) would be gained by funding all objectives in a given year, but this option would be the most expensive. Two possible options are listed below.

Option A: Fund Objectives A & B in alternating years, & Objective C annually: Annual rotation of PWS and near-shore surveys, and annual pelagic surveys outside Prince William Sound
Per year implemented $550,000

Option B: Fund Objectives A, B & C annually (or every two years): Annual PWS and near-shore surveys, and annual pelagic surveys outside Prince William Sound
Per year implemented $825,000

Other Comments: None

Name, Address, Telephone:
U.S. Fish and Wildlife Service
1011 East Tudor Road
Anchorage, Alaska 99503

(907) 786-3494

ID #920615279-14

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

_____ Checked for Completeness

✓ ID stamped/Input completed
✓ Name
✓ Affiliation
— Costs

_____ Category
Monitoring

_____ Lead Agency
DOI / FWS

_____ Cooperating Agency(ies)

(Y) N Passed initial screening criteria

Type - Marine Mammals

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

EX V VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project:
Sea Otter Population Survey and Trends

Justification: (Link to Injured Resource or Service)
This project will result in accurate baseline population monitoring of sea otters and sea birds in the Kodiak Archipelago.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach)
The objective of this project will be to develop a method to accurately and rapidly inventory and provide assessments of the sea otter populations. Development of this capability will provide local, state and Federal agencies the resource information needed to make knowledgeable decisions when responding to environmental catastrophes.

This project will acquire the equipment necessary to accomplish the surveys, i.e. FLIR System, video tape analysis computer software, GPS Navigation System, 386, 100 Mb laptop personal computer.

Flight charges for aerial surveys will be funded by agency.

Estimated Duration of Project: One year to acquire equipment

Estimated Cost per Year: $145,000/year

Other Comments: This type of survey capability would have been invaluable for resource protection decisions during the Exxon Valdez spill.

This proposal addresses Options 4, 13, and 31 in the Exxon Valdez Oil Spill Restoration Framework, Volume I.

Name, Address, Telephone:
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1390 Buskin River Road
Kodiak, Alaska 99615
(907) 487-2600

Oil spill restoration is a public process. Your ideas and suggestions will not be proprietary, and you will not be given any exclusive right or privilege to them.

ID # 920615297-14

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

Harbor Seals

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

~~Damage Assessments~~ Restoration Monitoring

✓ Lead Agency

ADF&G

Cooperating Agency(ies)

NOAA

Ø N Passed initial screening criteria

Type: MM

RANKING H M L Rank Within Categories

H M L Rank Overall

Project Number - if assigned

920615297-14

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

hs

* Restoration Framework, 1992, pp 43-44.

EXX VALDEZ OIL SPILL TRUSTEE UNCIL 92065 297-14

FORMAT FOR PUBLIC IDEAS FOR RESTORATION PROJECTS

Title of Project: Habitat Use and Behavior of Harbor Seals in PWS

Justification: (Link to Injured Resource or Service) From 1988 to 1990, counts of harbor seals (Phoca vitulina) in PWS at oiled trend count sites declined 35 percent compared to 13 percent at unoiled sites. Since then, counts during the fall molt have increased at a substantially slower rate in oiled compared to unoiled sites. The number of seals counted during pupping was lower in 1991 than in 1989 or 1990. This, coupled with an unusually low number of seals seen hauled out during field work in May 1992, makes any statement of recovery suspect. It is particularly important that we understand what factors are limiting population recovery from the EVOS. We cannot assume, given the ongoing decline and the absence of recovery in oiled areas that the number of seals will return to pre-spill levels.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach) The goal of this study is to characterize population mixing, movements between haulout sites, seasonal changes in haulout patterns, habitats used for feeding, and feeding behavior. Twelve satellite-linked time depth recorders (PTT's) will be attached to harbor seals to describe haulout behavior relative to season, time of day and tide; use of particular haulouts; and frequency of movement between PWS and adjacent waters such as the Copper River Delta. A 1991 pilot study demonstrated clearly that the project is feasible. Prey availability in feeding areas could be assessed through hydroacoustic studies and test-trawling if additional funds were made available.

This study will be used to identify areas of biological significance to harbor seals, interpret survey data, refine survey methods, and recommend actions necessary to safeguard seal habitat. This project will be coordinated and managed by ADF&G. Cooperators will include Texas A&M University, the University of Alaska Sea Grant Program, the National Marine Mammal Lab, and Cordova residents.

Estimated Duration of Project: Two (2) years

Estimated Cost per Year: $165,000 per year

Other Comments: Harbor seals have experienced a significant decline since the early 1980s and were clearly impacted by the EVOS. They are hunted for food and skins by PWS residents, viewed by recreational users, and interact with commercial salmon fisheries in PWS and the Copper River Delta. A continued decline or the absence of data to indicate their recovery could result in a more restrictive legal classification that could interfere with commercial fishing activities in and adjacent to PWS.

Name, Address, Telephone

Kathryn J. Frost
Alaska Dept of Fish and Game
1300 College Road
Fairbanks AK 99701
(907) 456-5156

Because the Oil Spill Restoration is a public process, your ideas and suggestions will not be proprietary, and you will not be given any exclusive right or privilege to them.

920615297 - 15

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

Harbor Seals

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration - Monitoring

✓ Lead Agency

ADF&G

____ Cooperating Agency(ies)

(Y) N Passed initial screening criteria

Type: MM

RANKING H M L Rank Within Categories

H M L Rank Overall

____ Project Number - if assigned ____

9 20015247-13

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES NO UNKNOWN

_✓_ ___ ___ 1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.

_✓_ ___ ___ 2. Technical feasibility.*

_✓_ ___ ___ 3. Consistency with applicable Federal and State laws and policies.*

RS

Comments:

* Restoration Framework, 1992, pp 43-44.

920615 29715

EXX[illegible] VALDEZ OIL SPILL TRUSTEE [illegible]NCIL

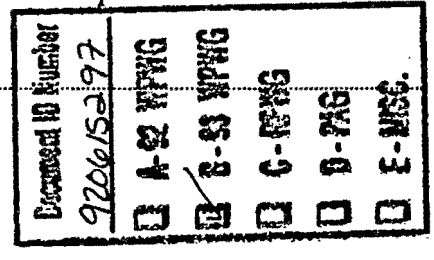
FORMAT FOR PUBLIC IDEAS FOR RESTORATION PROJECTS

Title of Project: **Monitoring Trends in Abundance of Harbor Seals in Prince William Sound, Alaska, 1993-1994.**

Justification: (Link to Injured Resource or Service) Following the Exxon Valdez Oil Spill (EVOS), counts of harbor seals (Phoca vitulina) at oiled trend count sites declined 35 percent compared to 13 percent at unoiled sites. Harbor seals encountered oil in the water and on haulouts. Some oiled seals developed potentially lethal lesions in the brain. Since 1990, the number of seals in the oiled area has increased at a substantially slower rate than in unoiled areas. Seventeen percent fewer seals were counted during pupping in 1991 than in 1989 and 1990. During tagging in mid-May 1992, very few harbor seals were seen hauled out anywhere in the central Sound. It is unknown whether these low numbers will be reflected in June pupping surveys.

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach) The goal of this study is to monitor the abundance of harbor seals in oiled and unoiled areas of PWS to determine whether numbers have stabilized or increased since their decline following the EVOS. Harbor seal abundance will be monitored by flying aerial surveys during pupping (early to mid-June) and molting (late August/early September). Pups will be counted separately in June. Each site will be surveyed multiple times to reduce the statistical variance of the counts. Several surveys also will be conducted of the Copper River Delta to increase our understanding of the relationship between seal counts in PWS and the Delta. Counts will be compared to data collected before, during, and after the EVOS to document whether and how rapidly recovery in the oiled area occurs.

The project will be coordinated and managed by ADF&G. Cooperators will include the University of Alaska Sea Grant Program.



Estimated Duration of Project: Two (2) years

Estimated Cost per Year: $39,000 per year

Other Comments: Harbor seals have experienced a significant decline since the early 1980s and were clearly impacted by the EVOS. They are hunted for food and skins by PWS residents, viewed by recreational users, and interact with commercial salmon fisheries in PWS and the Copper River Delta. A continued decline or the absence of data to indicate their recovery could result in a more restrictive legal classification that could interfere with commercial fishing activities in and adjacent to PWS.

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Kathryn J. Frost
Alaska Dept of Fish and Game
1300 College Road
Fairbanks AK 99701
(907) 456-5156

Because the Oil Spill Restoration is a public process, your ideas and suggestions will not be proprietary, and you will not be given any exclusive right or privilege to them.

920615297 -24

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS Sub Tidal

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration - monitoring

✓ Lead Agency

ADF&G

_____ Cooperating Agency(ies)

_____

Ø N Passed initial screening criteria

Type: ST

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

920615297 - 24

..)3 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

29724

EXX VALDEZ OIL SPILL TRUSTEE JNCIL

FORMAT FOR PUBLIC IDEAS FOR RESTORATION PROJECTS

Title of Project: Natural Recovery Monitoring of Subtidal Eelgrass Communities in PWS

Justification: (Link to Injured Resource or Service) Subtidal eelgrass beds contain numerous polychaete worms, small snails and clams, amphipods, copepods, isopods, sea urchins, and sea stars, many of which serve as food for coastal-feeding otters, birds, fishes, crabs and shrimps. Studies in PWS subtidal eelgrass sites in 1990 revealed that almost all components of this habitat were impacted by the Exxon Valdez oil spill (EVOS).

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach) The overall objective is to monitor the natural recovery of the shallow (<20 m) subtidal eelgrass community in western PWS that was impacted by the EVOS. The specific objectives are to; 1) spatially compare richness, diversity, abundance, biomass and feeding strategies of dominant taxa between paired (oiled:control) sites; 2) temporally compare these population parameters with data collected in 1990 and 1991.

Since no baseline information was available for the shallow subtidal regions prior to the spill, it is essential to obtain long-term temporal data to determine the rate and extent of natural recovery to pre-spill conditions or to a stable community. Because of the inherent temporal variability most post-spill subtidal environmental studies elsewhere have been three to five years in duration. To date, we have only two years of data (1990 and 1991) for the eelgrass habitat. Therefore, it is essential to continue to monitor the recovery process for an additional two or three years.

Our approach for 1993 is to monitor the various successional stages of the eelgrass community toward stabilization by comparing components of oiled and unoiled sites. We will again sample many of the same sites that were sampled in 1990 and 1991. Surveys will be conducted at three of the same five pairs of oiled and control eelgrass sites that were sampled in 1991. Methods will be the same as was used in 1990 and 1991. Within this habitat we will determine abundance of eelgrass, infauna, amphipods, small epifauna attached to eelgrass, large epifauna (i.e. crabs and se stars), and juvenile Pacific cod.

Estimated Duration of Project: Two (2) or three (3) years

Estimated Cost per Year: $265,000

Other Comments: This will be a cooperative effort with Coastal Resources Associates.

Name, Address, Telephone
Stephen C. Jewett
Institute of Marine Science
School of Fisheries & Ocean Sciences
University of Alaska Fairbanks
Fairbanks AK 99775-1080
(907) 474-7841

ID # 920615297-12

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS Sub Tidal

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category ~~DAMAGE ASSESSMENT~~ Monitoring

✓ Lead Agency

ADF&G

_____ Cooperating Agency(ies)

_____

(Y) N Passed initial screening criteria

Type: ST

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

920615297-12

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

29712

FORMAT FOR PUBLIC IDEAS FOR RESTORATION PROJECTS

Title of Project: **Injury and Recovery of Deep Benthic Macrofaunal Communities**

Justification: (Link to Injured Resource or Service) Assessment of benthic organisms used as food by bottom-feeding shrimps, crabs, and bottom fishes

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach)

Objectives: To continue to document changes within the deep benthos subsequent to the EVOS by comparing changes in benthic animals related to sediment/oil content at sites occupied in Prince William Sound since at least 1989.

Location: The benthic sites sampled from 1989-1991 as one of the components of the oil assessment studies in PWS.

Rationale: A continued documentation of the health of benthic animals (many which serve as food for bottom predators) at oiled sites within the Sound.

Technical Approach: The project is a continuation of "Injury to Deep Benthic Communities" initiated in 1990, but will include at least one site sampled in 1989. The sampling plan will involve collection of five samples for biology and one sample for sediment/oil content at 40 and 100 m within approximately six oiled and six unoiled sites. A commonality of all sites will be the location adjacent to seagrass (Zostera) beds. Animals will be identified to family level or higher to facilitate the identification process (as successfully accomplished in other pollution-oriented benthic studies elsewhere). Various univariate measures (for example, diversity, evenness) will be applied to abundance data. Trophic types will be examined. Analysis of Variance (ANOVA) will test differences in abundance, biomass, and trophic type between dominant taxa at similar depths within unoiled and oiled sites for each year of study and for combined data collected on subsequent cruises. Taxon composition of all sites will be examined with multivariate techniques. The relationships between faunal composition, sediment parameters, and oil content in sediment at the stations will be examined by factor and discriminant analyses. A statistical assessment of relationships between fauna, sediment and oil composition at stations within oiled and unoiled sites will be accomplished.

Estimated Duration of Project: Three (3) years

Estimated Cost per Year: $275,000 (including 50 percent university overhead but not ship time).

Other Comments:

Name, Address, Telephone
Howard M. Feder
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University of Alaska Fairbanks
Fairbanks AK 99775
(907) 474-7956

Because the Oil Spill Restoration is a public process, your ideas and suggestions will not be proprietary, and you will not be given any exclusive right or privilege to them.

ID # 920612236 - 1,3,4

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

Sub Tidal

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration ~~Recovery~~ Monitoring

✓ Lead Agency

~~ADFG~~ USDA

____ Cooperating Agency(ies)

N/A

(Y) N Passed initial screening criteria

Type: ST

RANKING H M L Rank Within Categories

H M L Rank Overall

____ Project Number - if assigned _____

206122 36 - 1, 2, 4

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

236-04

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

IDEAS FOR RESTORATION PROJECTS

Title of Project: Experimental Studies of Interactions Between Subtidal Epifaunal Invertebrates.

Justification: (Link to Injured Resource or Service)
Changes in the population structure of subtidal epibenthic invertebrates occurred as a result of the EXXON VALDEZ oil spill. Many of these changes persist, and their impact on other trophic levels and potential for recovery are difficult to predict.

Description of Project: (e.g. goal(s), objectives, location, rationale technical approach)
Goals: Determine ecological interactions among key species in the shallow subtidal community in order to assess direct and indirect impacts of the oil on these and associated species, and to predict the rate and course of recovery.
Objective: Conduct experiments to examine interactions among eelgrass, mussels (*Musculus*), helmet crabs, and starfish in the shallow subtidal community. Determine feeding relationships among species, determine the impact of decreased crab and leather star abundance on the population density of other species, and determine the importance of increased *Musculus* abundance on other species.
Location: Experiments will be carried out at one site (either Herring Bay or Sleepy Bay) within the eelgrass habitat in Prince William Sound.
Rationale: Population densities of several species (eg. eelgrass, helmet crabs, and leather stars) declined as the result of oiling, while others (juvenile Pacific cod, juvenile sunflower sea stars, and mussels (*Musculus*) increased. Many of these changes persist. We suspect that the changes observed are a result of direct effects of oil as well as indirect effects such as predator-prey interactions. However, the interactions among species and the effects of changes on higher trophic levels are poorly understood. As a result, interpretation of the overall ecological effect of the changes to subtidal populations, and assessment of recovery, are limited.
Technical Approach: Three or more experiments will be conducted to examine the interactions among epibenthic species in the shallow subtidal eelgrass community. These experiments will entail the removal of crabs, the removal of *Musculus*, and the removal of starfish from within experimental plots in the shallow subtidal, and the subsequent monitoring of the effects of removal on other species. In addition, we will make quantitative observations of feeding by fish and birds; larvae settlement by *Musculus*, juvenile cod, and juvenile starfish; and gut contents of fish, starfish, and crabs within the experimental plots and at the site in general.

Estimated Duration of Project: One year

Estimated Cost per Year: $90,000

Other Comments: This project will benefit from possible shared logistical costs with other restoration projects being carried out in Prince William Sound. This will be a cooperative effort with Mr. Stephen Jewett of the University of Alaska.

Name, Address, Telephone:

Dr. Thomas A. Dean
Coastal Resources Associates
2270-L Camino Vida Roble
Carlsbad, CA 92009
619/438-0588

Oil spill restoration is a public process. Your ideas and suggestions will not be proprietary, and you will not be given any exclusive right or privilege to them.

JUN 12 REC'D

Coastal Resources Associates
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(619) 438-0588

Document ID Number
920612236
- [ ] A-92 WPWG
- [x] B-93 WPWG
- [ ] C-RPWG
- [ ] D-PAG
- [ ] E-MISC.

FAX TRANSMITTAL COVER

Deliver To:	Dr. Dave Gibbons
Contact Name:	
Fax Number:	907/276-7178
Sender:	Larry Deysher
Description/Note:	Dave, Here are two proposals I feel are important for the restoration process. Larry

Number of Pages (not including cover):	2
Date Sent: 12 June 92	Time Sent: 1330

ID # 920615263

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS

Sub Tidal

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- ✓ Name
- ✓ Affiliation
- ✓ Costs

✓ Category

Restoration - monitoring

✓ Lead Agency

NOAA

✓ Cooperating Agency(ies)

ADF&G

Ø N Passed initial screening criteria

Type: ST

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

Restoration Framework, 1992, pp 43-44.

Restoration Project Preproposal for EXXON Valdez Oil Spill Trustee Council

Title of project: Natural recovery of subtidal species in Prince William Sound

Justification: There has been extensive and continuing exposure of subtidal fish species to oil in and around Prince William Sound following the EVOS, as documented in Progress Reports from F/S 24 (OY 1 & 2) and ST 7 (OY3). Exposure is generally decreasing with time in species examined in these studies, but could still be documented in OY3. There are some data to suggest that oil has moved from intertidal areas to deeper sediments, due to wind and wave action, and also perhaps due to some cleanup procedures. The rates and extent of natural recovery of these species need to be determined.

Description of project: This project proposes to continue to document the rate and extent of the natural recovery of subtidal fish species from oil exposure following the EVOS. In addition, it is presumed that there has been concomitant exposure of subtidal invertebrate species, including crustaceans and bivalve molluscs. The exposure of subtidal invertebrates to oil needs to be assessed, and such assessment would be done under this proposal. Samples from benthic fish species taken during OY2 showed some evidence of alterations in parameters associated with reproduction, and some evidence of altered histology. However, there are few samples which can be analyzed to assess the potential for these effects to have occurred during OY1. It is therefore necessary to carry out limited assessments of the effects of known exposure to Prudhoe Bay crude oil on: 1) indicators of exposure and 2) biological processes in species indigenous to Prince William Sound, in order to allow a realistic interpretation of the data obtained during OY1. Such limited investigation will be critical both for interpretation of data obtained under the current NRDA and Restoration processes and for evaluation of potential for injury resulting from future oil spill events.

Bile, liver, and muscle from demersal fish species which have shown and/or continue to show exposure to oil will be sampled. Subtidal invertebrate species will also be sampled. Representative sediment samples will be taken from each benthic sampling site for subsequent chemical analysis. All samples will be analyzed for presence of oil and/or oil-derived products by recently developed rapid screening techniques. Several of these techniques are described in the Detailed Study Plans for F/S 24 (OY 1 & 2) and ST 7 (OY3). The use of these screening techniques has been shown to be very cost-effective, and also to result in the timely acquisition of data. Limited laboratory studies will be done in which fish and invertebrate species indigenous to Prince William Sound are exposed to known amounts of Prudhoe Bay crude oil, followed by analysis of tissues by both rapid screening and detailed chemical analysis. The potential for biological effects

(e.g. reproductive dysfunction, histopathological alterations) to occur at these doses will also be assessed.

Estimated duration of project: From two to three sampling seasons. Length of project is dependent on evaluation of results from each sampling year, thus rapid analysis of samples and acquisition of data are stressed.

Estimated cost per year: $230K, exclusive of vessel costs.

Other comments: This project is proposing to use state-of-the art techniques for determining oil exposure in subtidal species of Prince William Sound. These techniques have been largely developed, or optimized for use on oil-exposed organisms, by researchers in this Division. This Division has demonstrated its ability to provide sound chemical, biochemical, and biological data on a timely basis, both under the NRDA process and for the Subsistence Science Project, following the EVOS. Morover, this Division has considerable experience with sampling in and around Prince William Sound, and knowledge of the distribution of the species of interest.

Name, Address, Telephone

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ID # 920615264 -02

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS Sub-Tidal Sediments

✓ Checked for Completeness

- ✓ ID stamped/Input completed
- Name
- ✓ Affiliation
- Costs

✓ Category

~~Restoration - enhancement~~ Monitoring

✓ Lead Agency

NOAA

Cooperating Agency(ies)

~~ADF&G~~ DEC

Ø N Passed initial screening criteria

Type: ST

RANKING H M L Rank Within Categories

H M L Rank Overall

Project Number - if assigned

Critical Factors

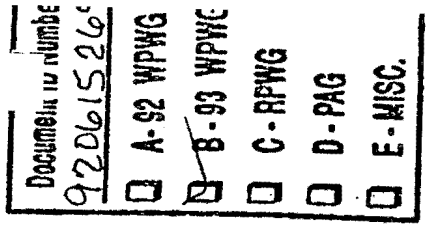
Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

Title of Project: New Field Test of Bioremediation



264-02

Justification:
Contaminated sub-surface shoreline sediments.

Description of Project: Goal: Confirm that Bioremediation is both effective and causes no adverse ecological effects. Objectives: (1) Determine the effectiveness of soluble nutrients and native microorganisms on degrading sub-surface Prudhoe Bay crude oil and (2) determine the extent to which bioremediation enhances recovery of shoreline ecosystems (including infauna and clams) and enhances reduction of tissue contamination in shellfish.. Location: Cobble-boulder shoreline in western or eastern Prince William Sound. Rationale: Due to statistical inadequacies, bioremediation tests in Prince William Sound in 1989 and 1990 failed to convincingly document degradation of sub-surface oil. In addition, no measurements were made to document the improvements bioremediation might bring about in the recovery of intertidal communities, in the recruitment and growth of clams and in the reduction of oil contamination in shellfish.

Technical Approach: A joint Alaska DEC/ EPA/NOAA HMRAD 1993 effort will be devoted to monitoring trends in oil degradation, epibiota, infauna and shellfish contamination at replicate control, oiled, nutrient treated and microbially-enhanced plots. Five such plots along a yet-to-be determined cobble-mixed-soft shoreline will be oiled (less than 1000 g PBCO) and subplots left untreated, treated with repeated nutrient additions or treated with nutrients plus a controlled mix of Prince William Sound shoreline oil-degrading bacteria. Pore-water will be monitored for nutrients and redox, sediment samples for chemical indicies of biodegradation and biological samples for changes in recruitment, abundance, and growth of epibiota and infauna, including clams. Trends of petroleum hydrocarbon contamination will be monitored in selected shellfish. The study will be intensive through the summer of 1993, with a revisit in the summer of 1994. The Alaska DEC has agreed to permit experimental oiling and the EPA has agreed to conducting and funding the treatment and degradation measurements. NOAA HMRAD will conduct biological monitoring with funds from Restoration. We will use the same methods employed in a "core" monitoring program which has been underway since 1990. A five year biology contract is now in place, with work dependent on funding level.

Estimated Duration: 2 years. Cost per year: Total, $250-$300K from .

Contact: Dr. Alan J. Mearns, NOAA HMRAD, 7600 Sand Point Way NE, Seattle, 98115. (206) 526-6336; FAX (206) 526-6329. Lead PI Dr. A. Venosa, EPA, Cincinnati; Co-PI Alex Viteri, AK DEC>

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COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS Sub-Tidal Sediments

✓ Checked for Completeness

ID stamped/Input completed
Name
Affiliation
Costs

✓ Category Restoration Monitoring

✓ Lead Agency NOAA

_____ Cooperating Agency(ies)

(Y) N Passed initial screening criteria

Type: ST

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

9206152 59

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
✓			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
✓			2. Technical feasibility.*
✓			3. Consistency with applicable Federal and State laws and policies.*

Comments:

* Restoration Framework, 1992, pp 43-44.

Title of Project: Recovery Monitoring of Hydrocarbon-Contaminated Subtidal Marine Sediment Resources.

Justification:

NRDA Subtidal Study Number 1 documented injury to subtidal sediments to a depth of at least 20 m at a minimum of 10 sites in Prince William Sound. Recovery rates of subtidal sediments contaminated by petroleum hydrocarbons at boreal latitudes is poorly known. This study would support other restoration studies that require documentation of hydrocarbon contamination of subtidal sediments

Description of Project:

The primary goal of the study will be to determine the level of contamination by oil of subtidal marine sediments in Prince William Sound in 1993 and to determine the extent to which recovery of those sediments has begun. The specific objectives will be to 1) monitor the recovery of hydrocarbon-contaminated, subtidal sediments at selected sites in Prince William Sound and 2) determine occurrence, persistence, and chemical composition of petroleum hydrocarbons in subtidal sediments in 1993. To facilitate comparison of data from this study with those of NRDA Subtidal Study Number 1 the same field methods and a subset of the same sites will be used. Sediments will be sampled at 10 sites in Prince William Sound (5 reference sites and 5 contaminated sites) in June 1993. Sediment samples will be collected at one intertidal station and five subtidal (3, 6, 20, 40 and 100 m) stations. Three composite samples will be collected by divers in the shallow subtidal (3, 6 and 20 m) sites and with a Smith-McIntyre grab at depths below 20 m. All samples will be taken from the surface (top 0-2 cm) of the sediment column.

Estimated Duration of Project: One year.

Estimated Cost per Year: $390K; includes vessel charter, hydrocarbon sample analysis and contract to assess hydrocarbon degrading bacteria.

Other Comments: A study of the recovery of assemblages of hydrocarbon degrading bacteria in subtidal sediments linked with the study proposed above would shed more light on the degree of recovery of subtidal sediment resources in Prince William Sound. Both hydrocarbon and bacterial data would be compared to the NRDA data base.

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Auke Bay Biological Laboratory
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Juneau, AK 99801

ID # 920615273-01

COVER WORKSHEET FOR 1993 IDEA SUBMISSIONS Terrestrial Mammals Brown Bears

✓ Checked for Completeness

ID stamped/Input completed
Name
Affiliation
Costs

✓ Category
Monitoring

✓ Lead Agency
DOI - NPS

_____ Cooperating Agency(ies)
ADF+G

(Y) N Passed initial screening criteria

type - TM

RANKING H M L Rank Within Categories

H M L Rank Overall

_____ Project Number - if assigned _____

EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL

FORMAT FOR PUBLIC IDEAS FOR RESTORATION PROJECTS

Title of Project: Productivity and Survival of Brown Bears in Katmai National Park

Justification: A 1989 damage assessment study determined that 15% of 27 brown bears captured and radio collared on the coast of Katmai National Park probably ingested oil as a result of the Exxon Valdez oil spill. Extrapolation from population density estimates suggests that about 300 bears were possibly contaminated in this way. Two radio collared, reproductive-aged females, known to have ingested oil, have had poor reproductive success. One female lost both yearling cubs within one week in 1989; bile from one carcass found contained 160,000 ppb naphthalene (threshold for exposure is 1,000 ppb). This exposure ranks among the highest observed for mammals following the oil spill.

Description of Project: This study will continue the monitoring of radio-collared brown bears in order to further document reproductive success and survival of the existing sample of bears, including those known to have ingested oil in 1989. This study was continued cooperatively with ADF&G in 1992 utilizing agency funding. As data from 1992 becomes available, it will be used to further evaluate the need for this study.

Estimated Duration of Project: One year.

Estimated Cost per Year: $165,000.

Other Comments: Costs for removal of radio collars from the brown bears are estimated to be $35,000. These costs are included in the above estimate. Collar removal will be conducted at the completion of the study.

For Further Information Contact: Dan Hamson, Chief, Coastal Programs Division, National Park Service, 2525 Gambell Street, Anchorage, Alaska 99503, (907) 257-2526.

see 9205140001

1993 PROJECT SCORING SHEET

Critical Factors

Potential projects must meet all of the following to be considered further. Check the blank for "yes", "no", or "unknown".

YES	NO	UNKNOWN	
/			1. Linkage to resources and/or services injured by the Exxon Valdez oil spill.
/			2. Technical feasibility.*
/			3. Consistency with applicable Federal and State laws and policies.*

Comments:

Killer whale D.A.

* Restoration Framework, 1992, pp 43-44.

EXXON ..DEZ OIL SPILL TRUSTEE CO ..IL

sec 920514001

FORMAT FOR IDEAS FOR RESTORATION PROJECTS

Title of Project: Restoration of Killer Whales in Prince William Sound

Justification: (Link to Injured Resource or Service)
Strong evidence of damage to AB pod & possible other pods in PWS

Description of Project: (e.g. goal(s), objectives, location, rationale, and technical approach)

Goal: To monitor recovery or other changes that occur in PWS killer whale pods 1993-1998.

Rationale: The mortality rate for KW's in AB pod in 1989 and 1990 was approximately 10 times normal. The pod was viewed in oil sheens 6 days after the spill. It is strongly suspected that the unprecedented mortalities are related to the Exxon Valdez Oil spill.

Technical approach: Study is based on the photoidentification of each individual killer whale, a technique perfected in the past ten years of work in PWS.

It is important that projects such as this be open to public competitive bid, rather than simply be doled out to [redacted] government agencies. All of the killer whale work in Prince William Sound (1989-1992) was accomplished by the North Gulf Oceanic Society under contract to NMFS/NMML. It would be much more cost effective to bid it directly.

Estimated Duration of Project: 5 yrs

Estimated Cost per Year: $90,000

Other Comments:

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920514005
- [ ] A-92 WPWG
- [x] B-93 WPWG
- [ ] C-RPWG
- [ ] D-PAG
- [ ] E-MISC.

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Oil spill restoration is a public process. Your ideas and suggestions will not be proprietary, and you will not be given any exclusive right or privilege to them.