

**FY12 INVITATION
PROPOSAL SUMMARY PAGE**

Project Title: Long-term Monitoring: Lingerin Oil - Extending the Tracking of oil levels and weathering (PAH composition) in PWS through time.

Project Period: October 1, 2011 – September 30, 2016

Primary Investigator(s): Mark Carls, principal investigator; Mandy Lindeberg and Jeep Rice, cooperating investigators

Study Location:

Abstract: This project is a component of the integrated Long-term Monitoring of Marine Conditions and Injured Resources and Services submitted by McCammon et. al.

Estimated Budget:

EVOSTC Funding Requested:

(breakdown by fiscal year and must include 9% GA)

Non-EVOSTC Funds to be used:

(breakdown by fiscal year)

Date: May 18, 2011

(NOT TO EXCEED ONE PAGE)

PROJECT PLAN

I. NEED FOR THE PROJECT

A. Statement of Problem

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

Justification

Intertidal areas in western Prince William Sound were extensively coated with Exxon Valdez oil; oil still remains in many beaches, presumably with declining impacts on intertidal invertebrates such as mussels, and also predators such as sea otters and harlequin ducks. This project would revisit approximately 12 of the worst case sites to continue the long term data set that tracks oil quantity and weathering composition in the contaminated sediments, and establish long term oil monitoring sites that would be re-sampled every 5 years over the next 20 years.

This project fills two needs: understanding the “dose” levels (past and present) for species such as mussels, intertidal invertebrates, sea otters, and harlequin ducks; and (2) understanding the natural degradation of quantity and composition of PAH over a long time course. Understanding exposure doses is important to injured species, and this would complement the biomarker analyses of lingering exposure on sea otters and harlequin ducks (Ballachey; Esler). Understanding oil loss over time is important for understanding full recovery of the habitat; in Alaska, this time course is apparently longer than in lower latitude environments. This study would complement and extend previous work, and would complement the remediation studies by Boufadel in 2011-12 as well as the Irvine study outside of PWS in 2011-12.

B. Relevance to 1994 Restoration Plan Goals and Scientific Priorities

Please see pages 2-4 of the integrated proposal titled “Long-Term Monitoring of Marine Conditions and Injured Resources and Services,” and submitted by McCammon et. al

II. PROJECT DESIGN

A. Objectives

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

Project Concept

Continue monitoring a subset of beaches in Prince William Sound where sequestered oil is predicted to linger for long periods of time (decades). At least three predictive data sets will be considered in determining which beaches are monitored: (1) mussel bed time series started in the early 1990s¹, (2) beach surveys that were continued up to 2004², and spatial modeling analysis that was initiated in 2008³. Sampling techniques will allow extension of time series data (where they exist), detailed examination of hydrocarbons present (including PAHs, alkanes, and chemical biomarkers), verification of hydrocarbon source, weathering state, and estimation of the amount of remaining oil at specific sites. In

addition to sediment samples, mussel tissue will also be examined for hydrocarbon loads to determine if PAHs are biologically available without sediment disturbance (such as that created by foraging activities). A limited number of passive samplers may be deployed in pits dug for sampling purposes to demonstrate the potential for biological exposure if (or when) sediment is disturbed.

Chemical analyses will be upgraded to include chemical biomarker data (terpanes, hopanes, and steranes); these compounds are the most recalcitrant compounds to biodegradation and weathering, and will yield a more complete picture of the biodegradation/weathering that has occurred over the last 25 plus years and the future 20 years. Biomarker data have not been collected in the past but are being incorporated in the remediation studies of 2011. We will analyze new samples, but also re-analyze samples collected in the past that are still stored and compliment the future sampling, plus Exxon Valdez source oil. In addition, biomarkers will be measured in a limited number of other known (stored) sources (Constantine Harbor, coal, and Monterey oil) for comparison and contrast with Exxon Valdez oil.

Lastly, to ensure integration between projects and with past monitoring, we will analyze a limited number of sediment samples collected from the intertidal monitoring project (e.g. from sea otter pits) and maintain the hydrocarbon database including new entries of all new sampling.

Future intentions: The periodic sampling (every 5 years) should be extended for three more cycles, ending on year 40 of the post spill era.

Objectives:

Objective 1. Determine quantity and weathering state at 12 beaches in PWS, in 2014, 25 years post spill.

- a. Year 1 (2012). Retrospective analysis of biomarkers in Exxon Valdez oil, weathered Exxon Valdez oil, and other potential source oils in Prince William Sound (Constantine Harbor, coal, and Monterey oil). (year 2: Draft a biomarker report (and paper).
- b. Year 2 (2013), determine specific subset of beaches to be sampled.
- c. Year 3 (2014). Major field effort, 25 years after the spill.
 - i. Visit 10-12 beaches, collect sediment samples for PAH concentration and weathering profiles
 - ii. using random quadrats, measure the quantity of oil on specific beaches to estimate the quantity present.
 - iii. Collect mussels near oil patches to determine bioavailability in tissues.
 - iv. Place a limited number of passive samplers in disturbed areas to model oil bioavailability resultant from foraging activity. Pair these with samplers deployed without disturbance.

v. year 3,4. Begin and end the chemical analyses of samples collected in primary field effort, using state of the art GCMS, with chemical biomarkers included.

Objective 2- supplemental support analyses: Support on-going intertidal projects with chemical analyses, such as determine PAH levels in sea otter pits or prey items. This will integrate with the sea otter and harlequin duck biomarker measurements in those studies. 10-20 samples per year

Objective 3- Database: Maintain and add new data to the hydrocarbon database.

a. Add new information to hydrocarbon database. (This database contains data from all NRDA hydrocarbon samples from 1989 to present, including numerous data sets from investigators outside ABL.)

b. Prepare a complete FOIA package (100% of the chemical analyses have been FOIAed in the past, and these data will likely also be FOIAed.

Objective 4- Products: prepare annual and final reports as needed; supply collaborators with appropriate data (e.g. sea otter pit data to sea otter PI. Prepare synthesis manuscript summarizing environmental progress after 25 years.

B. Procedural and Scientific Methods

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

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

Methods

1. Chemical analyses: Standard operating procedures developed at the Auke Bay Laboratories for hydrocarbon analysis will be used for all sample analyses. These have resulted in numerous peer-reviewed publications.
2. Beaches will be randomly drawn from the identified group of oiled beaches (n = 12).
3. Beach segments will be up to 100 m long. Sampling by quadrat will be random across beaches, divided by upper, middle, and lower tide intervals; all based on past studies.

4. Beaches will be accessed by charter boat during spring or summer months during one cruise. Passive samplers will be deployed at the front end of the cruise and picked up at the back end.

Project integration

1. This project continues hydrocarbon analyses started prior to 1989 in Prince William Sound and recorded in a hydrocarbon database that encompasses multiple agencies, collection sites, and matrices. This database has been maintained by Auke Bay Laboratory (ABL) personnel since the time of the Exxon Valdez oil spill.
2. The major field sampling of 2014 will use methods developed in earlier studies and will conform to those methods for intercomparison over time.
3. This project will complement “effects” studies by including some sampling/analyses specifically targeted to those projects, and will complement the remediation studies of Boufadel (same analyses with chemical biomarkers included), and will complement the tracking study by Irvine outside of PWS.

Project Logistics:

Major field effort in PWS in 2014 will be on a local charter, consisting of a field crew of up to 6 people. Federal personnel will lead the cruise effort, although some contract labor will likely be used for the labor intensive beach surveys. Laboratory logistics (chem labs, GCMS) will be at the Auke Bay Laboratories in Juneau Alaska. Senior staff will conduct the instrumental analyses, but processing effort will be by contractors.

C. Data Analysis and Statistical Methods

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

D. Description of Study Area

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

E. Coordination and Collaboration with Other Efforts

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

III. SCHEDULE

A. Project Milestones

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

Objective 1. Develop sediment-core chronologies in lake-productivity indicators.
To be met by September 2011

Objective 2. Compare sediment data corresponding to the past few decades to salmon population statistics.
To be met by December 2011

Objective 3. Reconstruct time-series of lake productivity, input of marine-derived nutrients, and salmon escapement.
To be met by April 2012

B. Measurable Project Tasks

Specify, by each quarter of each fiscal year, when critical project tasks (for example, sample collection, data analysis, manuscript submittal, etc.) will be completed. This information will be the basis for the quarterly project progress reports that are submitted to the Trustee Council Office. Please format your schedule like the following example.

FFY 11, 2nd quarter (January 1, 2011-March 31, 2011)

February: Project funding approved by Trustee Council

FFY 11, 3rd quarter (April 1, 2011-June 30, 2011)

April 30: Core Upper Russian Lake

May 30: Core Delight Lake

FFY 11, 4th quarter (July 1, 2011-September 30, 2011)

September 1: Core Hidden Lake

FFY 12, 1st quarter (October 1, 2011-December 31, 2011)

December 15: *Begin analysis and report writing*

FFY 12, 2nd quarter (January 1, 2012-March 31, 2012)

January 18: *Annual Marine Science Symposium*

FFY 12, 3rd quarter (April 1, 2012-June 30, 2012)

April 15 *Submit final report. This will consist of a draft manuscript for publication to the Trustee Council Office.*

Budget: total \$ 199.2 K from 2012-2016

Note: No federal salaries are included; soft funded labor is, 9% agency overhead is not included. Federal contribution in FTP salaries will exceed 300K.

2012	2013	2014	2015	2016
\$18K	12K	\$155.2K	\$8K	\$6K

2012. Main activity is retrospective sample analysis

25 EVO (previously analyzed) samples including source oil & sediment for weathering series for chemical biomarkers. \$200/sample = \$5K

15 Constantine, coal, and Monterey samples * \$200/sample = 3K

Supplies, contract labor, 1 Anc trip. 10K

0-20 samples from other projects: no charge. \$500 per sample above 20.

2013. Main activity is completion of sample design and draft biomarker report

Supplies, contract labor, 1 Anc trip 12K

0-20 samples from other projects: no charge.

2014. Main activity is field sampling, hydrocarbon measurement

Charter cost \$3000 per day * 14 d = \$42K

Supplies, shipping, FTP trav for field trip 8K

0-20 samples from other projects: no charge

Contract labor (5 diggers for field effort, 30K includes travel to CDV)

Chemical analyses : (assumes 12 beaches) total of 74K

9 sediment samples per beach (3 from each zone) = 108 samples * 500 \$/sample = \$54K

3 mussel samples per beach = 30 samples * 500 \$/sample = \$15K

4 PEMDs per beach at 3 beaches = 12 samples * 400 \$/sample = \$5K

Travel: 1 Anc trip 1.2K;

2015. Main activity: continue hydrocarbon measurement

Supplies, contract labor, 1 Anc trip \$8K

0-20 samples from other projects: no charge

2016. Main activity: complete data analysis, FOIA package, and draft report

Supplies, contract labor, 1 Anc trip: 8K

0-20 samples from other projects: no charge

1. Carls, M.G., Harris, P.M. *Monitoring of oiled mussel beds in Prince William Sound and the Gulf of Alaska*; NOAA / NMFS, Auke Bay Laboratory: Juneau, AK, **2005**.
2. Short, J.W., Irvine, G.V., Mann, D.H., Maselko, J.M., Pella, J.J., Payne, J.R., Driskell, W.B., Rice, S.D., Slightly weathered *Exxon Valdez* oil persists in Gulf of Alaska beach sediments after 16 years. *Environmental Science & Technology* **2007**, 41, 1245-1250.
3. Michel, J. *Report on recent lingering oil studies*; EVOSTC project 070801?: date unknown, **2010?**

**EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 12-FY16**

Budget Category:	Proposed FY 12	Proposed FY 13	Proposed FY 14	Proposed FY 15	Proposed FY 16	TOTAL PROPOSED
Personnel	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Travel	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Contractual	\$1.5	\$1.5	\$4.2	\$1.5	\$1.5	\$10.2
Commodities	\$14.0	\$9.0	\$130.0	\$5.5	\$4.0	\$162.5
Equipment	\$2.5	\$1.5	\$21.0	\$1.0	\$0.5	\$26.5
Indirect Costs (<i>will vary by proposer</i>)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
SUBTOTAL	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
General Administration (9% of subtotal)	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
PROJECT TOTAL	#REF!	#REF!	#REF!	#REF!	#REF!	#REF!
Other Resources (Cost Share Funds)	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0

COMMENTS: Portions of permanent staff salaries will be donated, including Dr. Jeep Rice, Mark Carls, Marie Larsen, Larry Holland, Josie Lunasin, and Mandy Lindeberg

FY12-16

Program Title:
Team Leader:

SUMMARY

**EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 12-FY16**

Budget Category:	Proposed FY 12	Proposed FY 13	Proposed FY 14	Proposed FY 15	Proposed FY 16	TOTAL PROPOSED
Personnel	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Travel	\$1.5	\$1.5	\$4.2	\$1.5	\$1.5	\$10.2
Contractual	\$14.0	\$9.0	\$130.0	\$5.5	\$4.0	\$162.5
Commodities	\$2.5	\$1.5	\$21.0	\$1.0	\$0.5	\$26.5
Equipment	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
SUBTOTAL	\$18.0	\$12.0	\$155.2	\$8.0	\$6.0	\$199.2
General Administration (9% of subtotal)	\$1.6	\$1.1	\$14.0	\$0.7	\$0.5	\$17.9
PROJECT TOTAL	\$19.6	\$13.1	\$169.2	\$8.7	\$6.5	\$217.1
Other Resources (Cost Share Funds)	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0

COMMENTS: Portions of permanent staff salaries will be donated, including Dr. Jeep Rice, Mark Carls, Marie Larsen, Larry Holland, Josie Lunasin, and Mandy Lindeberg

FY12-16

**Program Title: Lingering Oil Monitoring
Team Leader: Mark Carls
Agency: NOAA / NMFS / Auke Bay Laboratories**

**FORM 4A
TRUSTEE AGENCY
SUMMARY**

**EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 12-FY16**

Personnel Costs:		Months Budgeted	Monthly Costs	Overtime	Personnel Sum
Name	Project Title				
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
		Subtotal	0.0	0.0	
Personnel Total					\$0.0

Travel Costs:	Ticket Price	Round Trips	Total Days	Daily Per Diem	Travel Sum
Description					0.0
one trip, Alaska Marine Science Symposium	0.5	1	5	0.2	1.5
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
Travel Total					\$1.5

FY12

Program Title: Lingering Oil Monitoring
Team Leader: Mark Carls
Agency: NOAA / NMFS / Auke Bay Laboratories

**FORM 4B
PERSONNEL & TRAVEL
DETAIL**

**EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 12-FY16**

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

Existing Equipment Usage: Description	Number of Units	Inventory Agency
muffle furnace		
HPLC		
GC/FID		
GC/MS		
ACE - accelerated solvent extractor		
steam tables		
glassware		
freezers		
balances		
computers		

FY12

Program Title: Lingering Oil Monitoring
Team Leader: Mark Carls
Agency: NOAA / NMFS / Auke Bay Laboratories

**FORM 4B
EQUIPMENT DETAIL**

**EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 12-FY16**

Personnel Costs:		Months Budgeted	Monthly Costs	Overtime	Personnel Sum
Name	Project Title				
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
		Subtotal	0.0	0.0	
					Personnel Total
					\$0.0

Travel Costs:	Ticket Price	Round Trips	Total Days	Daily Per Diem	Travel Sum
Description					0.0
one trip, Alaska Marine Science Symposium	0.5	1	5	0.2	1.5
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					Travel Total
					\$1.5

FY13

Program Title: Lingering Oil Monitoring
Team Leader: Mark Carls
Agency: NOAA / NMFS / Auke Bay Laboratories

**FORM 4B
PERSONNEL & TRAVEL
DETAIL**

**EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 12-FY16**

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

Existing Equipment Usage: Description	Number of Units	Inventory Agency
muffle furnace		
HPLC		
GC/FID		
GC/MS		
ACE - accelerated solvent extractor		
steam tables		
glassware		
freezers		
balances		
computers		

FY13

Program Title: Lingering Oil Monitoring
Team Leader: Mark Carls
Agency: NOAA / NMFS / Auke Bay Laboratories

**FORM 4B
EQUIPMENT DETAIL**

**EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 12-FY16**

Personnel Costs:		Months Budgeted	Monthly Costs	Overtime	Personnel Sum
Name	Project Title				
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
Subtotal			0.0	0.0	
Personnel Total					\$0.0

Travel Costs:	Ticket Price	Round Trips	Total Days	Daily Per Diem	Travel Sum
Description					0.0
Alaska Marine Science Symposium	0.5	1	5	0.2	1.5
Cordova	0.4	2	30	0.01	1.1
field workers air travel to Cordova	0.4	4	0	0.0	1.6
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
Travel Total					\$4.2

FY14

Program Title: Lingering Oil Monitoring
Team Leader: Mark Carls
Agency: NOAA / NMFS / Auke Bay Laboratories

**FORM 4B
PERSONNEL & TRAVEL
DETAIL**

**EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 12-FY16**

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

Existing Equipment Usage: Description	Number of Units	Inventory Agency
muffle furnace		
HPLC		
GC/FID		
GC/MS		
ACE - accelerated solvent extractor		
steam tables		
glassware		
freezers		
balances		
computers		

FY14

Program Title: Lingering Oil Monitoring
Team Leader: Mark Carls
Agency: NOAA / NMFS / Auke Bay Laboratories

**FORM 4B
EQUIPMENT DETAIL**

**EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 12-FY16**

Personnel Costs:		Months Budgeted	Monthly Costs	Overtime	Personnel Sum
Name	Project Title				
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
		Subtotal	0.0	0.0	
Personnel Total					\$0.0

Travel Costs:	Ticket Price	Round Trips	Total Days	Daily Per Diem	Travel Sum
Description					0.0
one trip, Alaska Marine Science Symposium	0.5	1	5	0.2	1.5
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
Travel Total					\$1.5

FY15

Program Title: Lingering Oil Monitoring
Team Leader: Mark Carls
Agency: NOAA / NMFS / Auke Bay Laboratories

**FORM 4B
PERSONNEL & TRAVEL
DETAIL**

**EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 12-FY16**

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

Existing Equipment Usage: Description	Number of Units	Inventory Agency
muffle furnace		
HPLC		
GC/FID		
GC/MS		
ACE - accelerated solvent extractor		
steam tables		
glassware		
freezers		
balances		
computers		

FY15

Program Title: Lingering Oil Monitoring
Team Leader: Mark Carls
Agency: NOAA / NMFS / Auke Bay Laboratories

**FORM 4B
EQUIPMENT DETAIL**

**EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 12-FY16**

Personnel Costs:		Months Budgeted	Monthly Costs	Overtime	Personnel Sum
Name	Project Title				
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
		Subtotal	0.0	0.0	
					Personnel Total
					\$0.0

Travel Costs:	Ticket Price	Round Trips	Total Days	Daily Per Diem	Travel Sum
Description					0.0
one trip, Alaska Marine Science Symposium	0.5	1	5	0.2	1.5
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					Travel Total
					\$1.5

FY16

Program Title: Lingering Oil Monitoring
Team Leader: Mark Carls
Agency: NOAA / NMFS / Auke Bay Laboratories

**FORM 4B
PERSONNEL & TRAVEL
DETAIL**

**EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 12-FY16**

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

Existing Equipment Usage: Description	Number of Units	Inventory Agency
muffle furnace		
HPLC		
GC/FID		
GC/MS		
ACE - accelerated solvent extractor		
steam tables		
glassware		
freezers		
balances		
computers		

FY16

Program Title: Lingering Oil Monitoring
Team Leader: Mark Carls
Agency: NOAA / NMFS / Auke Bay Laboratories

**FORM 4B
EQUIPMENT DETAIL**

**EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 12-FY16**

12 13 14 15 16

**EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 12-FY16**

x

**EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 12-FY16**



**EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 12-FY16**



**EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL
DETAILED BUDGET FORM FY 12-FY16**



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