

### PROPOSAL SIGNATURE FORM

**THIS FORM MUST BE SIGNED BY THE PROPOSED PRINCIPAL INVESTIGATOR AND SUBMITTED ALONG WITH THE PROPOSAL.** If the proposal has more than one investigator, this form must be signed by at least one of the investigators, and that investigator will ensure that Trustee Council requirements are followed. Proposals will not be reviewed until this signed form is received by the Trustee Council Office.

By submission of this proposal, I agree to abide by the Trustee Council’s data policy (Trustee Council Data Policy\*, adopted March 17, 2008) and reporting requirements (Procedures for the Preparation and Distribution of Reports\*\*, adopted June 27, 2007).

**PROJECT TITLE:** \_\_\_\_\_

Printed Name of PI **Mark G. Carls**

Email: **mark.carls@noaa.gov**

Mailing Address **17109 Pt. Lena Loop Rd.**

City, State, Zip **Juneau, AK 99801**

Phone: **907 789-6019**

Signature of PI: \_\_\_\_\_ Date: \_\_\_\_\_

Printed Name of PI **Marie Larsen**

Email: **marie.larsen@noaa.gov**

Mailing Address **17109 Pt. Lena Loop Rd.**

City, State, Zip **Juneau, AK 99801**

Phone: **907 789-6611**

Signature of PI: \_\_\_\_\_ Date: \_\_\_\_\_

Printed Name of PI \_\_\_\_\_

Email: \_\_\_\_\_

Mailing Address \_\_\_\_\_

City, State, Zip \_\_\_\_\_

Phone: \_\_\_\_\_

Signature of PI: \_\_\_\_\_ Date: \_\_\_\_\_

\* [www.evostc.state.ak.us/Policies/data.cfm](http://www.evostc.state.ak.us/Policies/data.cfm)

\*\* [www.evostc.state.ak.us/Policies/reporting.cfm](http://www.evostc.state.ak.us/Policies/reporting.cfm)

**FY10 INVITATION  
PROPOSAL SUMMARY PAGE**

**Project Title:** The *Exxon Valdez* Trustee Hydrocarbon Database

**Project Period:** October 1, 2009 – September 30, 2010

**Primary Investigator(s):** Mark Carls (NOAA/NMFS, Auke Bay Laboratories)  
Marie Larsen (NOAA/ NMFS, Auke Bay Laboratories)

**Study Location:** Project resides at Auke Bay Laboratories – TSMRI, Juneau, AK

**Abstract:** This is an on-going service project that provides data and sample archiving services for all samples collected for hydrocarbon analysis in support of *Exxon Valdez* Oil Spill Trustee Council projects. These data represent samples collected since the oil spill in 1989 to the present and include National Resource Damage Assessment (NRDA) studies (environmental and laboratory) and Restoration and Recovery data. This project serves as an archive for chemical analyses and sample data and storage of physical samples that have not been analyzed and provides copies of the ACCESS database to interested parties. The project also responds to several Freedom of Information Act (FOIA) requests each year for information associated with these data. Interpretative services for these data are available.

**Estimated Budget:**

**EVOS Funding Requested** (*must include 9% GA*)

FY10	FY11	FY12	FY13	Total
\$9.3K	\$9.3K	\$9.3K	\$9.3K	\$37.2K

**Non-EVOS Funds to be used:**

FY10	FY11	FY12	FY13	Total
\$9.3K	9.3	9.3	9.3	\$37.2K

(NOT TO EXCEED ONE PAGE)

## PROJECT PLAN

### I. NEED FOR THE PROJECT

#### A. Statement of Problem

The *Exxon Valdez* Trustee Hydrocarbon Database project is the archive for all samples collected for hydrocarbon analysis by Trustee funded projects from 1989 to present, and the analytical data generated by these samples. This database provides investigators and other interested parties with the opportunity to retrieve sample and analysis information which have been quality controlled and archived under a chain of custody protocol. This service project also provides for the storage and disposal of archival environmental samples, archival and interpretation of hydrocarbon results, archival of the quality assurance data, archival of the collection data, and an ACCESS database containing all of the analyzed data. Although the number of Trustee funded projects requiring hydrocarbon analysis have diminished over time, the need for the archived data as well and analyses concerning lingering oil distribution is of current interest. As long as oil continues to linger in Prince William Sound, and as long as new data are entered into the database with the 20 years of archived results, this project is needed. . These data continue to be used in peer reviewed manuscripts. This project is designed to maintain the archival database and its associated storage and interpretative tasks as well as continue to provide access to the data

#### B. Relevance to 1994 Restoration Plan Goals and Scientific Priorities

Archiving of the Trustee hydrocarbon samples and their data ensures that these data are available to principal investigators, government agencies, and other interested parties on a timely basis. The database allows direct comparison of restoration and NRDA data and contains an inventory of hydrocarbon samples and information about their collection, storage and analysis since the beginning of the spill. The continued use of the methods for hydrocarbon data evaluation and interpretation developed for the *Exxon Valdez* NRDA samples will insure direct comparability of future with previous samples. This will substantially increase the probability that temporal trends in these data will be detected when actually present. Interested parties will be able to get limited assistance with chemical interpretation of hydrocarbon results from their project or other projects that relate to their project. This is not a hypothesis driven project, it is aimed at maintaining hydrocarbon pollution data from the day after the spill until the present. The results we will achieve are 1) to continue adding information from lingering oil surveys, 2) provide interpretation services and information dissemination when necessary, and 3) maintain the historic database and sample collection. The utility of this project is that it maintains the historical record of hydrocarbon assessment for examined resources since the beginning of the spill.

### II. PROJECT DESIGN

#### A. Objectives

1. Continue to: (a) archive physical samples in secured freezers collected by the Trustee researchers; (b) archive collection data and chain of custody sheets for each sample

collected; (c) archive quality assurance data for each sample analyzed in the database, (d) archive analytical data results for each sample analyzed, and (e) maintain and upgrade the Trustee hydrocarbon database by updating the database with new information and continue the sample archiving procedures developed under NRDA and Restoration projects.

2. Continue interpretation of hydrocarbon data, including new data produced for principal investigators and resources managers and for syntheses products as needed.
3. Provide ACCESS database of analyzed data via the internet and respond to all FOIA requests concerning the data (multiple requests per year).
4. Add LTEMP hydrocarbon data set to the database (funded by the Prince William Sound Regional Citizens' Advisory Council).

#### **B. Procedural and Scientific Methods**

1. Data associated with hydrocarbon samples are added to the existing Trustee hydrocarbon ACCESS database. The samples and data currently reside at the Auke Bay Laboratories (ABL) in Juneau, Alaska. Incoming samples are inventoried and stored in laboratory freezers, and sample collection information is entered into the database. Samples are released for hydrocarbon analysis after ABL receives a written request from the responsible project leader. Hydrocarbon data, reported by the analytical laboratory, are matched to the sample collection information and all the data are checked for errors and electronic copies are sent to principal investigators or other requesters. Unused environmental samples are stored in a locked freezer.
2. Requests for data, including FOIA requests, are transmitted in the manner requested.
3. The database and its documentation is updated annually and is available on a CD-ROM or at the agency website: [www.afsc.noaa.gov/ABL](http://www.afsc.noaa.gov/ABL). This is a continuation of project 01290 and previously funded under TS#1, 93090, 94290, 95290, 96290, 97290, 98290, 99290, 00290, 01290, 20209, 03290, 04290, 05290, 06290, 07290, 08290, and 09290.

#### **C. Data Analysis and Statistical Methods**

All data collected for hydrocarbon analysis from 1989 through the present are stored in PWSOIL (the original Trustee Hydrocarbon Database). All analyzed hydrocarbon data from Trustee funded projects are presented in an ACCESS database called PWSOIL PUBLIC which is updated annually.

#### **D. Description of Study Area**

This project/service takes place at the Auke Bay Laboratories (TSMRI), 17109 Pt Lena Loop Rd, Juneau, AK 99801.

#### **E. Coordination and Collaboration with Other Efforts**

This project complements any project that is funded the Trustee Council that collects samples for hydrocarbon analyses or requires use of hydrocarbon data collect in support of the Trustee Council. Specifically it will incorporate data from projects 070801, 070836 and 080840 in FY10.

### **III. SCHEDULE**

#### **A. Project Milestones**

**Objective 1-2.** Data are analyzed after receipt from field collectors and analyzed as soon as possible thereafter. Samples collected in FY09 will be analyzed by the end of the FY09 calendar year. Data collected in FY10 will be analyzed as soon as practical. Data will be entered into the database after quality control procedures have been met.

**Objective 3.** The public release of the database is updated annually at the end of a fiscal year and again when analyses have been completed for that fiscal year. Many samples arrive at ABL too late in the fiscal year for completion within that year because analyses typically require weeks or months to complete.

**Objective 4.** Expand the Trustee database by adding other HC analytical data from environmental sample analysis funded by complimentary funding sources, for example, Prince William Sound Regional Citizens Advisory Council's (RCAC) Long Term Environmental Monitoring Project (LTEMP)

#### **B. Measurable Project Tasks**

##### **FY10, 1st quarter (October 1, 2009 - December 31, 2009)**

Add sample data collected in 2009; add hydrocarbon measurements completed to date. Respond to FOIA requests as needed

##### **FY10, 2nd quarter (January 1, 2010 - March 31, 2010)**

Annual Marine Science Symposium

Complete the addition of LTEMP data to the database.

##### **FY10, 3rd quarter (April 1, 2010 - June 30, 2010)**

Update 2009 hydrocarbon measurement data; receive new samples.

##### **FY10, 4th quarter (July 1, 2010 - September 30, 2010)**

Continue hydrocarbon database update; receive samples, measure hydrocarbon concentrations; prepare annual report.

### **IV. RESPONSIVENESS TO KEY TRUSTEE COUNCIL STRATEGIES**

#### **A. Community Involvement and Traditional Ecological Knowledge (TEK)**

This service project does not involve TEK since it is a data archiving service for analytical hydrocarbon data.

#### **B. Resource Management Applications**

The data in this database is readily available to anyone who requests it and also will be of value to the Prince William Sound Regional Citizens' Advisory Council as well as the Trustee

Council's investigation into the lingering oil in Prince William Sound and the Gulf of Alaska. The petroleum weathering model developed under this project in the past can still be used to identify hydrocarbons generated from spill versus those from other background sources.

## **V. PUBLICATIONS AND REPORTS**

An annual report accompanied by a copy of the database will be available on September 30, 2010.

## **VII. BUDGET JUSTIFICATION**

Funding for this project is needed to maintain both the integrity of the samples collected for the EVOS research projects and the function of the database where the sampling information and data are stored. Long term archival of physical samples requires periodic organizational handling and repackaging. Archived analytical data and sample information requires periodic hardcopy and electronic duplication to comply with FOIA and informational requests. Archival and response actions require financial resources. Our samples will be moved from one base of operations (Auke Bay Laboratory old site) to a new freezer facility at the present TSMRI site where the chemistry laboratories are located (about 1.5 tons of samples). Packing boxes and long term storage boxes for samples need some replacements (some are 20 years old).

Travel: one trip to AMS meetings.

### **DATA MANAGEMENT AND QUALITY ASSURANCE/ QUALITY CONTROL STATEMENT**

This project involves collecting and processing data, conducting surveys, taking measurements, and modeling. Data management and quality control will be the responsibility of Mark Carls of the Auke Bay Lab, using established scientific protocols. If this proposal is funded, then we will work with EVOSTC to set up a data management plan that continues to archive samples and data from the samples. Computer models will be provided in electronic form along with detailed explanations of how they work. We will use MetaLite, freeware created by USGS for collecting and validating Federal Geographic Data Committee (FGDC)-compliant metadata, as requested.

1. Study design and statistical analyses are given elsewhere in this proposal.
2. Standard scientific protocols will be used for field studies and hypothesis testing.
3. Data characteristics
  - a. Metadata will be provided if the proposal is funded.
4. Our cited literature describes the methods to be used for converting signals to observations.
5. Handling and custody of samples will follow standard ABL protocols.
6. Calibration and evaluation of analytical instruments are routinely performed at ABL using NIST supplied standards.
7. Standard software will be used.

**Curriculum Vitae for Mark G. Carls**

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11305 Glacier Highway  
Juneau, AK 99801

email: [mark.carls@noaa.gov](mailto:mark.carls@noaa.gov)  
Phone: (907) 789-6019  
FAX: (907) 789-6094

**Education**

M.Sc., 1978, biological oceanography, Dalhousie University, Halifax, Nova Scotia.  
B.A., 1975, biology; Magna cum laude, Gustavus Adolphus College, St. Peter, Minnesota.

**Professional Experience**

Chief, Chemistry Analytical Task, Auke Bay Lab, 2009- to present  
Fisheries Biologist, 1979-2009, Auke Bay Laboratory.

Principal Investigator for *Exxon Valdez* Oil Spill Trustee Council

- Embryo toxicity: pink salmon, Pacific herring, zebrafish
- Herring Synthesis
- Hydrocarbon chemistry: sampling, interpretation, modeling
- Pink salmon habitat
- Mussel and sediment contamination

Biological Review Teams

- Pacific herring, Lynn Canal, Alaska (chairman)
- Status of Pacific herring in Puget Sound, Washington

Habitat and Ecological Processes Team

**Recent publications** (lead author only)

- Carls MG, Holland L, Larsen M, Collier TK, Scholz NL, Incardona JP. 2008. Fish embryos are damaged by dissolved PAHs, not oil particles. *Aquatic Toxicology* 88:121-127.
- Carls MG, Rice SD. 2007. Fish embryo sensitivity and PAH toxicity. In: Anyakora C (ed), "Environmental impact of polynuclear aromatic hydrocarbons," Research Signpost, Kerala, India, pp. 159-190.
- Carls, M.G. 2006. Nonparametric identification of petrogenic and pyrogenic hydrocarbons in aquatic ecosystems. *Environ Sci Technol.* 40:4233-4239.
- Carls MG, Heintz RA, Marty GD, Rice SD. 2005. Cytochrome P4501A induction in oil-exposed pink salmon *Oncorhynchus gorbuscha* embryos predicts reduced survival potential. *Mar Ecol Prog Ser.* 301:253-265.
- Carls, M.G., S.D. Rice, G.D. Marty, and D.K. Naydan. 2004. Pink salmon spawning habitat is recovering a decade after the *Exxon Valdez* oil spill. *Trans Am Fish Soc* 133:834-844.
- Carls MG, Thedinga JF, Thomas RE. 2004. Observer classification of live, mechanically damaged, and dead pink salmon eggs. *Trans Am Fish Soc* 133:245-251.
- Carls, M.G., L.G. Holland, J.W. Short, R. A. Heintz, and S. D. Rice. 2004. Monitoring polynuclear aromatic hydrocarbons in aqueous environments with passive low-density polyethylene membrane devices. *Environ Toxicol Chem* 23:1416-1424.
- Carls, M.G., P.M. Harris, and S.D. Rice. 2004. Restoration of Oiled Mussel Beds in Prince William Sound, Alaska. *Mar. Environ. Res.* 57:359-376.
- Carls, M.G., Thomas, R.E. Rice, S.D. 2003. Mechanism for transport of oil-contaminated water into pink salmon redds. *Mar. Ecol. Prog. Ser.* 248:245-255.
- Carls, M.G., G.D. Marty, J.E. Hose. 2002. Synthesis of the toxicological impacts of the *Exxon Valdez* oil spill on Pacific herring (*Clupea pallasii*) in Prince William Sound, Alaska, U.S.A. *Can. J. Fish. Aquat. Sci.* 59:1-20.
- Carls, M.G., M.M. Babcock, P.M. Harris, G.V. Irvine, J.A. Cusick, and S.D. Rice. 2001. Persistence of Oiling in Mussel Beds after the *Exxon Valdez* Oil Spill. *Marine Environmental Research* 51:167-190.
- Carls, M. G., J. E. Hose, R. E. Thomas, and S.D. Rice. 2000. Exposure of Pacific herring to weathered crude oil: assessing effects on ova. *Environ. Toxicol. Chem.* 19:1649-1659.
- Carls, M. G., S. D. Rice, and J. E. Hose. 1999. Sensitivity of fish embryos to weathered crude oil: Part 1. Low level exposure during incubation causes malformations and genetic damage in larval Pacific herring (*Clupea pallasii*). *Environmental Toxicology and Chemistry* 18:481-493.

**Recent Collaborators** (excluding ABL staff):

Dr. Mace Barron (P.E.A.K. Research), Frederick C. Funk (consultant, Juneau, AK), Dr. Jo Ellen Hose (Occidental University, CA), Dr. John Incardona (NOAA, Northwest Fisheries Science Center), Dr. John Kern (NOAA Damage Assessment and Restoration Center Northwest, Seattle, WA), Dr. Gary Marty (Animal Health

Centre, Abbotsford, BC), Dr. Brenda Norcross (University of Alaska Fairbanks), Dr. James Payne (Payne Environmental Consultants), Dr. Terrance J. Quinn II (University of Alaska Fairbanks), Dr. Robert Spies (Applied Marine Sciences, Livermore, CA), Dr. Katherine Springman (University of California, Davis), Dr. Bob Thomas (University of California, Chico).



**EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL  
DETAILED BUDGET FORM FY 10- FY 12**

<b>Budget Category:</b>	<b>Proposed FY 10</b>	<b>Proposed FY 11</b>	<b>Proposed FY 12</b>	<b>Proposed FY 13</b>	<b>TOTAL PROPOSED</b>
Personnel	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
Travel	\$1.5	\$1.5	\$1.5	\$1.5	\$6.0
Contractual	\$5.0	\$5.0	\$5.0	\$5.0	\$20.0
Commodities	\$2.0	\$2.0	\$2.0	\$2.0	\$8.0
Equipment	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0
<b>SUBTOTAL</b>	<b>\$8.5</b>	<b>\$8.5</b>	<b>\$8.5</b>	<b>\$8.5</b>	<b>\$34.0</b>
General Administration (9% of subtotal)	\$0.8	\$0.8	\$0.8	\$0.8	\$3.1
<b>PROJECT TOTAL</b>	<b>\$9.3</b>	<b>\$9.3</b>	<b>\$9.3</b>	<b>\$9.3</b>	<b>\$37.1</b>
Other Resources (Cost Share Funds)	\$0.0	\$0.0	\$0.0	\$0.0	\$0.0

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

**FY10 - 13**

**Project Title:**  
**Lead PI:**  
**Agency:**

**FORM 3A  
TRUSTEE AGENCY  
SUMMARY**

**EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL  
DETAILED BUDGET FORM FY 10- FY 12**

<b>Personnel Costs:</b>		GS/Range/ Step	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	0.0	
<b>Personnel Total</b>						<b>\$0.0</b>

<b>Travel Costs:</b>	Ticket Price	Round Trips	Total Days	Daily Per Diem	Travel Sum
Description					
					0.0
Alaska Science Symposium	0.6	1	3	0.3	1.5
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
<b>Travel Total</b>					<b>\$1.5</b>

**FY10**

**Project Title:**  
**Lead PI:**

**FORM 3B  
PERSONNEL &  
TRAVEL DETAIL**





**EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL  
DETAILED BUDGET FORM FY 10- FY 12**

<b>Personnel Costs:</b>		GS/Range/ Step	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	0.0	
<b>Personnel Total</b>						<b>\$0.0</b>

<b>Travel Costs:</b>	Ticket Price	Round Trips	Total Days	Daily Per Diem	Travel Sum
Description					
					0.0
Alaska Science Symposium	0.6	1	3	0.3	1.5
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
<b>Travel Total</b>					<b>\$1.5</b>

**FY11**

**Project Title:**  
**Lead PI:**

**FORM 3B  
PERSONNEL &  
TRAVEL DETAIL**





**EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL  
DETAILED BUDGET FORM FY 10- FY 12**

<b>Personnel Costs:</b>		GS/Range/ Step	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	0.0	
<b>Personnel Total</b>						<b>\$0.0</b>

<b>Travel Costs:</b>	Ticket Price	Round Trips	Total Days	Daily Per Diem	Travel Sum
Description					
					0.0
Alaska Science Symposium	0.6	1	3	0.3	1.5
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
<b>Travel Total</b>					<b>\$1.5</b>

**FY12**

**Project Title:**  
**Lead PI:**

**FORM 3B  
PERSONNEL &  
TRAVEL DETAIL**







**EXXON VALDEZ OIL SPILL TRUSTEE COUNCIL  
DETAILED BUDGET FORM FY 10- FY 12**

<b>Personnel Costs:</b>		GS/Range/ Step	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	0.0	
<b>Personnel Total</b>						<b>\$0.0</b>

<b>Travel Costs:</b>	Ticket Price	Round Trips	Total Days	Daily Per Diem	Travel Sum
Description					
					0.0
Alaska Science Symposium	0.6	1	3	0.3	1.5
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
<b>Travel Total</b>					<b>\$1.5</b>

**FY13**

**Project Title:**  
**Lead PI:**

**FORM 3B  
PERSONNEL &  
TRAVEL DETAIL**



