

## 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 July 9, 2002) and reporting requirements

*(Procedures for the Preparation and Distribution of Reports\*\**, adopted July 9, 2002).

PROJECT TITLE:           **The Exxon Valdez Hydrocarbon Database**

Printed Name of PI:           Bonita Nelson

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

Printed Name of co-PI:       Jeff Short

Signature of co-PI:           \_\_\_\_\_ Date \_\_\_\_\_

Printed Name of co-PI:       \_\_\_\_\_

Signature of co-PI:           \_\_\_\_\_ Date \_\_\_\_\_

Note: Straley of UAS and Quinn of UAF will be submitting this proposal with their agency approvals.

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

\*\* [www.evostc.state.ak.us/Policies/Downloadables/reportguidelines.pdf](http://www.evostc.state.ak.us/Policies/Downloadables/reportguidelines.pdf)

**FY07 INVITATION  
PROPOSAL SUMMARY PAGE**

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

**Project Period:** November 2006 to October 2008

**Proposers:** Bonita Nelson and Jeff Short of Auke Bay Lab, 11305 Glacier Hwy, Juneau, AK 99801: [bonita.nelson@noaa.gov](mailto:bonita.nelson@noaa.gov), (907) 789-6071; [jeff.short@noaa.gov](mailto:jeff.short@noaa.gov), (907) 789-6065

**Study Location:** The project resides at the Auke Bay Laboratory in Juneau, Alaska, the service provides information about the entire spill area via the internet.

**Abstract:** This project is an on-going service project providing 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 environmental and laboratory Response (National Resource Damage Assessment - NRDA) and Restoration data. Additionally, we provide interpretive services for the hydrocarbon analysis, provide public releases of the database (including FOIA requests) and maintain the hydrocarbon sample archives

**Funding:**

**EVOS Funding Requested (Including G&A) for FY07 = \$ 30.1K**

**Non-EVOS Funds to be used in FY07 = \$ 18.2 K**

**Date:** 28 July, 2006

# THE *EXXON VALDEZ* TRUSTEE HYDROCARBON DATABASE

## I. NEED FOR THE PROJECT

### A. Statement of Problem

The *Exxon Valdez* Trustee Hydrocarbon Database is the archive for all of the sample collection and analytical data collected for environmental and laboratory projects associated with hydrocarbon analysis for Trustee funded projects from 1989 to the present. Currently the database base contains sample collection information for 52,000 samples and the chemical analytical data for 17,000 of those samples. This database has been continuously funded by the Trustee Council since 1989 (Technical Services - #1 continuation with project number –290) and provides investigators and other interested parties with the opportunity to retrieve sample and analysis information which has 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, interpretation of hydrocarbon results and a user friendly public interface which accesses 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 increasing interest. The public version of the database (EVTHD) needs revision to be fully operational with all versions of Windows software and internet accessible. This project is designed to maintain the archival database and its associated storage and interpretative tasks as well as generate a new version of the web based interface to query, view and access analyzed hydrocarbon information.

### B. Relevance to Program Goals and Scientific Priorities

Archiving of the Trustee hydrocarbon sample data ensures that these data are available to principal investigators, government agencies, and other interested public on a timely basis. The database allows direct comparison of Restoration and NRDA data because of its inventory of hydrocarbon samples and information about their collection, storage and analysis. 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. Application of the petroleum weathering model developed under this project (Short and Heintz, 1997) has been used to compare coal samples and Katalla seep with Prince William Sound background samples, and has identified coal as a biologically non-available sources. The Trustee Council Data Policy requires that data produced by Trustee funded projects be made available to other scientists and to the general public and this project continues to facilitate that goal. This database service is expected to have activity as long as hydrocarbon data are collected and requested

## II. PROJECT DESIGN

### A. Objectives

1. Continue maintenance of the Trustee hydrocarbon database by updating the database with new information and continue the sample archiving procedures developed under NRDA, Restoration and GEM protocol.
2. Continue interpretation of hydrocarbon data, including new data produced for the effects of lingering oil for principal investigators and resource managers and for syntheses products as needed.
3. Provide public release of the analyzed hydrocarbon data on CD-ROM and via the internet.

### B-C. Procedural and Scientific and Statistical Methods

Data associated with hydrocarbon samples are added to the existing Trustee hydrocarbon database. The samples and data currently reside at the Auke Bay Laboratory of NMFS. 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. A new user interface for the public release of the database will be developed using *Exxon Valdez Oil Spill of 1989: State/Federal Trustee Council Hydrocarbon Database 1989-1995 (EVTHD)* as a template. This will continue to include data collected from Trustee funded projects including sampling and analytical quality control procedures

The petroleum weathering model developed under this project has been used to reject the hypothesis that the hydrocarbons comprising the background PAH source are derived from the Katalla oil seep. Analysis of sediment and mussel samples collected from locations near the Katalla oil seep as well as coal deposits east of PWS supports the conclusion that PAH derived from coal characterize the background hydrocarbon signal (Short et al., 1999). We will continue to use this information and analyses when necessary to demonstrate the generality of the weathering model with other oil sources and the absence of a similar weathering process in coal.

The Auke Bay Laboratory will continue to keep all environmental samples collected for hydrocarbon analysis under all phases of the oil spill process frozen in locked storage.

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

The database is located in Auke Bay, Alaska and covers data collected from the spill area.

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

This project will combine the skills and location advantage of researchers from Auke Bay Laboratory as well as other interested parties.

### **III. SCHEDULE**

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

The primary objective of this project is to provide an ongoing service. An updated database version of newly analyzed data is completed once a fiscal year and included in the annual report.

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

FY 07, 1st quarter (October - December 31, 2006)

Add sample data collected in FY06

FY 07, 2-3 rd quarter (January –June, 2)

January Workshop meeting, data entered as necessary, generate new EVTHD front end

FY 07, 4<sup>th</sup> quarter (June - October, 2007)

Prepare annual report

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

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

This service project does not involve TEK.

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

The data in the hydrocarbon database will be readily available to all resource managers if requested.

### **V. PUBLICATIONS AND REPORTS**

Annual release of updated CD-ROM of EVTHD and manual

### **VI. PROFESSIONAL CONFERENCES**

The AK Marine Sciences Symposium Trustee meetings will be attended by the principal investigators

One meeting is required, an annual Quality Assurance Control meeting attended by ABL=s Senior Analytical Chemist. The results of an international calibration exercise by participant is reviewed for the integrity and credibility of chemical analyses

## Literature Cited

Short, J. W., K.A. Kvenvolden, P.R. Carlson, F. D. Hostettler, R. J. Rosenbauer, & B. A. Wright, 1999. Natural Hydrocarbon Background in Benthic Sediments of Prince William Sound, Alaska: Oil vs. Coal. *Environ. Sci. Technol.* 33:34-42.

Short, J. W., and R. A. Heintz. 1997. Identification of *Exxon Valdez* oil in sediments and tissues from Prince William Sound and the Northwestern Gulf of Alaska based on a PAH weathering model. *Environ. Sci. Technol.* 31:2375-2384.

## BUDGET JUSTIFICATION – FY 2007 = \$30.1K

**Personnel: 7.5K** : 1 month salary for Bonita Nelson for database oversight and maintenance

In-kind contribution = 18.2K

### Travel: 2.5K

Nelson will travel to the Marine Sciences Symposium  
Chemist Marie Larsen will travel to the NIST standards meeting

### Contractual: 14K

Contract labor will be solicited to generate new front-end to public database release and to assist in clerical and physical labor associated with sample storage and data verification

### Commodities: 4K

Software, computer support and office/storage supplies will be purchased as necessary.

### Trustee Agency G&A: \$2.1K

## CURRICULUM VITAE

### Curriculum Vitae for Bonita D. Nelson

National Marine Fisheries Service, Auke Bay Laboratory  
11305 Glacier Highway  
Juneau, AK 99801

email: [bonita.nelson@noaa.gov](mailto:bonita.nelson@noaa.gov)  
Phone: (907) 789-6071

### Education:

MS 1986, University of Alaska-Fairbanks, Juneau, AK (Fisheries)  
BS 1979, University of Illinois, Urbana, IL (Ecology, Ethology, Evolution)

### Professional Experience

Fisheries Biologist, 1986-present, Auke Bay Laboratory.

Principal Co- Investigator for *Exxon Valdez* Oil Spill Trustee Council “The Exxon Valdez Hydrocarbon Database – project 290” from 1995 to the present

## **Publications related to proposed project**

Annual Reports from 1995 – present for “The Exxon Valdez Oil Spill Hydrocarbon Database Project 290.

### **Other Experience:**

Database manager of the Trustee hydrocarbon data for 11 years. Responsibilities include: supervision of data entry of sample and analytical data; processing and dissemination of data after interpretation by chemist; database management including data retrieval for production of the public versions of the database. Nelson has designed and managed databases as well as analyzed data for the radio telemetry and other projects at the Auke Bay Laboratory for 15 years.

**Collaborators:** Ron Heintz, NOAA- Auke Bay Laboratory

## **Curriculum Vitae for Jeffrey W. Short**

National Marine Fisheries Service, Auke Bay Laboratory  
11305 Glacier Highway  
Juneau, AK 99801

email: [jeff.short@noaa.gov](mailto:jeff.short@noaa.gov)  
Phone: (907) 789-6065

### **Education:**

Ph.D. Fisheries Biology, University of AK- Fairbanks, 2005. Thesis title: “Seasonal Variability of Pristane in Mussels (*Mytilus trossulus*) in Prince William Sound, AK.”

Master of Science Physical Chemistry, Univ. of California at Santa Cruz, 1982

Bachelor of Science, Biochemistry and Philosophy, Univ. of CA at Riverside, 1973

### **Other Experience:**

1989 - Present: Established and managed the hydrocarbon analysis facility at ABL to analyze hydrocarbon samples generated by the *Exxon Valdez* NRDA effort (about 20% of these samples were analyzed at ABL).

1989 - 1992 : Principal Investigator, Exxon Valdez project Air/Water #3; Determination of petroleum hydrocarbons in seawater by direct chemical analysis and through the use of caged mussels deployed along the path of the oil spill.

1991 - 1992 : Principal Investigator, Exxon Valdez project Subtitle #8 ; Development of computer-based statistical methods for global examination of sediment and mussel hydrocarbon data produced for the Exxon Valdez NRDA effort for systematic bias, and for identification of probable sources of hydrocarbons. In addition, this project produced both hard-copy and computer display maps of all the sediment and mussel hydrocarbon data.

1994- 2001 Project leader for analysis of Trustee funded project :Pristane Monitoring in Mussels.

2001- Present: Project leader for Trustee funded project: Evaluation of Lingering Oil in the Intertidal.

## Professional Experience:

Current	Research Chemist (since 19833)
Research Interests	(1) Oil pollution source identification, fate, and effects; (2) Environmental contaminant transport processes; (3) Effects of pristane on marine ecosystem structure
Professional Affiliations	American Chemical Society, American Fisheries Society, Society of Environmental Toxicology and Chemistry, AAAS
Awards	Bronze Medal, U. S. Department of Commerce, "For scientific research and publications describing the long-term, insidious effects of oil pollution on fish embryos at parts per billion levels".
Current Committees	- Alaska Regional Response Team's Science and Technology Committee - Lingering Oil Committee, Exxon Valdez Trustee Council
Reviewer for	- Exxon Valdez Trustee Council - Prince William Sound Regional Citizens' Advisory Council - Cook Inlet Regional Citizens' Advisory Council - National Research Council (USA) - Research Council of Norway - Arctic & Marine Oil spill Program Technical Seminars - Alaska Sea Grant - Environmental Science and Technology - Environmental Toxicology and Chemistry - Marine Environmental Research - National Wildlife Federation - San Francisco Bay Institute
International Collaborations	Sakhalin Research Institute of Fisheries and Oceanography (Russia) Rogaland Research Institute (Norway) Queen's University (Canada)

## Five Recent Publications Related to the Lingering Oil Project:

**Short, J.W.**, Maselko, J.M., Lindeberg, M.R., Harris, P.M., Rice, S.D. 2006. Vertical Distribution and Probability of Encountering Intertidal Exxon Valdez Oil on Shorelines of Three Embayments within Prince William Sound, Alaska. *Environmental Science & Technology* 40(12):3723-3729.



Irvine, G.V., D.H. Mann, and **J.W. Short**. (2006). Persistence of ten-year old *Exxon Valdez* oil on Gulf of Alaska beaches: The importance of boulder armoring. *Marine Pollution Bulletin*(in press).

Payne, J.R., W.B. Driskell, M.R. Lindeberg, W. Fournier, M.L. Larsen, **J.W. Short**, S.D. Rice, and D. Janka. 2005. Dissolved- and particulate-phase hydrocarbons in interstitial water from Prince William Sound intertidal beaches containing buried oil thirteen years after the Exxon Valdez Oil Spill. 2005 International Oil Spill Conference, American Petroleum Institute.

**Short, J. W.**, Lindeberg, M. R., Harris, P. M., Maselko, J. M., Pella, J. J., and Rice, S. D. 2004. An estimate of oil persisting on beaches of Prince William Sound, 12 years after the *Exxon Valdez* oil spill. *Environmental Science and Technology*, 38:19-26.

Irvine, G.V., D.H. Mann, **J.W. Short**. 1999. Multi-year persistence of oil mousse on high energy beaches distant from the *Exxon Valdez* spill origin. *Marine Pollution Bulletin*, 38(7): 572-584.

**PERSONS WITH WHOM DR. SHORT HAS COLLABORATED ON A PROJECT OR PUBLICATION WITHIN THE LAST FOUR YEARS:**

Brenda Ballachey, Alaska Science Center, USGS  
James Bodkin, Alaska Science Center, USGS  
Michel Boufadel, Temple University  
Ted Cooney, University of Alaska Fairbanks  
Roger Green, University of Western Ontario  
Lew Haldorson, University of Alaska Fairbanks  
Doug Helton, Damage Assessment Center, NOAA  
Peter Hodson, Queen's University, Canada

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

Discuss the characteristics of the data that your project will produce:

(a) Electronic metadata files (filename: database290 with the following extensions: .faqhtm; .htm;.sql and .xml) emailed to EVOS office

(b) The data descriptions, chain of custody procedures, chemical analysis procedures for hydrocarbon analysis and analytical instrumentation are described in complete detail in:

Larsen, M., Holland, L., Fremgen, D., Lunasin, J., Wells, M., Short, J. 2003. Standard Operating Procedures for the Analysis of Petroleum Hydrocarbons in Seawater, Marine Sediments, and Marine Faunal Tissue at the Auke Bay Laboratory. Auke Bay

Laboratory, Alaska Fisheries Science Center, National Marine Fisheries Service, NOAA, 11305 Glacier Highway, Juneau, Alaska.

and

Short, J., Heintz, R., Nelson, B., Maselko, J., Kendziorek, M., Carls, M., Korn, S. User Manual: Exxon Valdez Oil Spill of 1989: State/Federal Trustee Council Hydrocarbon Database. Annual Report for project 290.

This SOP includes chain-of-custody, calculation methods and data storage procedures, in addition to the details of the analytical procedures. Calculation algorithms are either proprietary and part of the analytical hardware, or are available as Excel spreadsheets. These procedures we use for data collection, chain of custody and analysis have been in place since the Trustee Council started to gather hydrocarbon data from the spill. All of the data in this database is only from Trustee funded projects and follows the protocol established in 1989 and documented in the above citations. Since this project is only involved in data collection, sample transportation and analytical analysis of hydrocarbon sample, the explanation of the processes will be longer than the QA/QC statement allows.

#### **METADATA:**

- [Identification Information](#)
- [Spatial Data Organization Information](#)
- [Distribution Information](#)
- [Metadata Reference Information](#)

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#### *Identification\_Information:*

*Citation:*

*Citation\_Information:*

*Originator:* Bonita Nelson

*Publication\_Date:* 20060910

*Title:* The Exxon Valdez Oil Spill Database

*Geospatial\_Data\_Presentation\_Form:* atlas

*Publication\_Information:*

*Publication\_Place:* Juneau, Alaska

*Publisher:* NOAA Auke Bay Lab

*Description:*

*Abstract:*

The Exxon Valdez Trustee Hydrocarbon Database is the archive for all of the sample collection and analytical data collected for environmental and laboratory projects associated with hydrocarbon analysis for Trustee funded projects from 1989 to the present. Currently the database base contains sample collection information for 52,000 samples and the chemical analytical data for 17,000 of those samples. This database has been continuously funded by the Trustee Council since 1989 until 2006.

*Purpose:*

The purpose of this database is to archive hydrocarbon sample and analysis information collected for Trustee funded projects.

*Time\_Period\_of\_Content:*

*Time\_Period\_Information:*

*Range\_of\_Dates/Times:*

*Beginning\_Date:* 19890323

*Ending\_Date:* 20100101

*Currentness\_Reference:* publication date

*Status:*

*Progress:* In work

*Maintenance\_and\_Update\_Frequency:* None planned

*Spatial\_Domain:*

*Bounding\_Coordinates:*

*West\_Bounding\_Coordinate:* 148.71027

*East\_Bounding\_Coordinate:* 145.61536

*North\_Bounding\_Coordinate:* 61.2702

*South\_Bounding\_Coordinate:* 59.76364

*Keywords:*

*Theme:*

*Theme\_Keyword\_Thesaurus:* Database

*Theme\_Keyword:* Ecological Dynamics

*Access\_Constraints:* Only analyzed data which has passed AQ/QC data is released

*Use\_Constraints:* None

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*Spatial\_Data\_Organization\_Information:*

*Direct\_Spatial\_Reference\_Method:* Point

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*Distribution\_Information:*

*Distributor:*

*Contact\_Information:*

*Contact\_Person\_Primary:*

*Contact\_Person:* Bonita Nelson

*Contact\_Organization:* NOAA Auke Bay Lab

*Contact\_Address:*

*Address\_Type:* Mailing and Physical Address

*Address:*

Auke Bay Lab 11305 Glacier Highway

*City:* Juneau

*State\_or\_Province:* Alaska

*Postal\_Code:* 99821

*Country:* USA

*Contact\_Voice\_Telephone:* 907-789-6071

*Distribution\_Liability:* None

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*Metadata\_Reference\_Information:*

*Metadata\_Date:* 20060910

*Metadata\_Contact:*  
*Contact\_Information:*  
*Contact\_Person\_Primary:*  
*Contact\_Person:* Bonita Nelson  
*Contact\_Organization:* NOAA Auke Bay Lab  
*Contact\_Address:*  
*Address\_Type:* Mailing and Physical Address  
*Address:*  
Auke Bay Lab 11305 Glacier Highway  
*City:* Juneau  
*State\_or\_Province:* Alaska  
*Postal\_Code:* 99821  
*Country:* USA  
*Contact\_Voice\_Telephone:* 907-789-6071  
*Metadata\_Standard\_Name:* FGDC Content Standards for Digital Geospatial Metadata  
*Metadata\_Standard\_Version:* FGDC-STD-001-1998

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**2007 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET**

October 1, 2006 - September 30, 2007

<b>Budget Category:</b>	Authorized FY 2006	Proposed FY 2007					
Personnel	\$10.5	\$7.5					
Travel	\$3.9	\$2.5					
Contractual	\$4.5	\$14.0					
Commodities	\$1.5	\$4.0					
Equipment	\$0.0	\$0.0					
Subtotal	\$20.4	\$28.0					
General Administration	\$1.8	\$2.1					
Project Total	\$22.0	\$30.1					
Full-time Equivalentents (FTE)		0.1					
Other Resources							
<p>Comments:                      The Auke Bay Laboratory will provide one month of Marie Larsen's salary (8.7K) and one half month of Jeff Short's salary (6.2 K) and .5 month of Jacek Maselko's salary (3.3K) for a total of 18.2K as well as storage for all paperwork and environmental samples for database related materials (5K).</p>							

**FY07**

Prepared: 7/27/06

Project Number: 070290  
 Project Title: The *Exxon Valdez* Trustee Hydrocarbon Database  
 Agency: NOAA

**2007 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET**

October 1, 2006 - September 30, 2007

<b>Personnel Costs:</b>		GS/Range/ Step	Months Budgeted	Monthly Costs	Overtime	
Name	Position Description					
Bonita Nelson	Fishery Biologist	ZPIII	1.0	7.5		
Subtotal			1.0	7.5	0.0	
<b>Personnel Total</b>						
<b>Travel Costs:</b>		Ticket Price	Round Trips	Total Days	Daily Per Diem	
Description						
Ak marine Science Symposium, Nelson		0.4	1	2	0.2	
NIST qualifying meeting, Larsen		0.9	1	4	0.2	
<b>Travel Total</b>						

**FY07**

Project Number: 070290  
 Project Title: The *Exxon Valdez* Trustee Hydrocarbon  
 Database  
 Agency: NOAA

Prepared: 7/27/06

**2007 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET**

October 1, 2006 - September 30, 2007

<b>Contractual Costs:</b>		
Description		
Development of front end for ACCESS database (EVTHD)		
Data verification, freezer maintenance, disposal of samples		
When a non-trustee organization is used, the form 4A is required.		<b>Contractual Total</b>
<b>Commodities Costs:</b>		
Description		
Software		
		<b>Commodities Total</b>

**FY07**

Project Number: 070290  
 Project Title: The *Exxon Valdez* Trustee Hydrocarbon Database  
 Agency: NOAA

Prepared: 7/27/06

**2007 EXXON VALDEZ TRUSTEE COUNCIL PROJECT BUDGET**

October 1, 2006 - September 30, 2007

<b>New Equipment Purchases:</b>		Number of Units	Unit Price
Description			
Those purchases associated with replacement equipment should be indicated by placement of an R.			<b>New Equipment Total</b>
<b>Existing Equipment Usage:</b>		Number of Units	
Description			
Walk in storage freezer -80 ©		1	
File cabinets		1	
Computer		1	

**FY07**

Project Number: 070290  
 Project Title: The *Exxon Valdez* Trustee Hydrocarbon Database  
 Agency: NOAA