FY12 INVITATION
PROPOSAL SUMMARY PAGE

Project Title: Long-term Monitoring: Synthesis and Conceptual Modeling - Conceptual Ecological Modeling

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

Primary Investigator(s): Tuula Hollmen, Alaska SeaLife Center and University of Alaska Fairbanks, PO Box 1329, Seward, AK 99664; Phone: 907-224-6323; Fax 907-224-6320; Email: tuulah@alaskasealife.org

Study Location: Prince William Sound, outer Kenai coast, and lower Cook Inlet/Kachemak Bay, Alaska

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. Under this research project, we will develop conceptual ecological models to support the synthesis and planning relating to the long term monitoring program in Prince William Sound, outer Kenai coast, and lower Cook Inlet/Kachemak Bay. To develop these models, we will summarize system components, processes, and influences into a synthetic framework. The conceptual models will assist in identification of data needs and development of further long term monitoring priorities, and support ecosystem based understanding, monitoring, and management of resources within our study area. The conceptual models will also provide guidance for development of numerical and quantitative models of system function and responses to external influences. Finally, the conceptual models will provide a communication tool among scientists, resource managers, policy-makers, and the general public, and will offer outreach opportunities for our project by using data visualization and interactive web-based tools. Development of conceptual ecological models is a multi-step, iterative process, responding to evolving understanding of the structure and dynamics of the system by revising and refining models throughout the process. Specific steps of the process involve: defining goals and scope of the modeling, summarizing current understanding of system structure and processes, defining environmental and anthropogenic influences included in the modeling, development of relevant hierarchies and submodels, refining models with increased understanding of system function, and development of interactive and visualization tools to provide methods to use models for long term planning, development of hypotheses, data exploration, and outreach.

Estimated Budget: $395.4K total without the 9% GA
EVOSTC Funding Requested: $431K total including the 9% GA

FFY12	FFY13	FFY14	FFY15	FFY16	TOTAL
$83.1K	$91.9K	$95.6K	$78.6K	$81.9K	**$431.0K**

Non-EVOSTC Funds to be used: In-kind support - Computers and software for modeling

Date: May 23, 2011

PROJECT PLAN

I. NEED FOR THE PROJECT

A. Statement of Problem

In the two decades following the *Exxon Valdez* oil spill (EVOS), and after extensive restoration, research and monitoring efforts, it has been recognized that full recovery from the spill will take decades and requires long-term monitoring of both the injured resources and factors other than residual oil that may continue to inhibit recovery or adversely impact resources that have recovered. Monitoring information is valuable for assessing recovery of injured species, managing those resources and the services they provide, and informing the communities who depend on the resources. In addition, long-term, consistent, scientific data is critical to allow us to detect and understand ecosystem changes and shifts that directly or indirectly (e.g. through food web relationships) influence the species and services injured by the spill.
An integrated monitoring program requires information on environmental drivers and pelagic and benthic components of the marine ecosystem. Additionally, while extensive monitoring data has been collected thus far through EVOS Trustee Council-funded projects as well as from other sources and made publicly available, much of that information needs to be assessed holistically to understand the range of factors affecting individual species and the ecosystem as a whole. Interdisciplinary syntheses of historical and ongoing monitoring data are needed to answer remaining questions about the recovery of injured resources and impacts of ecosystem change. We propose to develop and implement a long-term monitoring program that meets the need for information to guide restoration activities, including data on the status and condition of resources, whether they are recovering, and what factors may be constraining recovery. The ultimate goal of the long-term monitoring program is to provide sound scientific data and products to inform management agencies and the public of changes in the environment and the impacts of these changes on injured resources and services.

The conceptual ecological modeling component of our study plan will provide a framework for 1. exploration, understanding, and synthesis of key components and processes of our study system, 2. refinement and development of further monitoring strategies, and 3. development of outreach and communication tools among scientists, managers, general public, and other interested parties. The conceptual models are developed to support the synthesis of data and to serve as a framework and guide for development of monitoring priorities, to meet the overall goals of the long term monitoring program.

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 submited by McCammon et. al

II. PROJECT DESIGN

A. Objectives

1. *Develop conceptual ecological models, summarizing key components, processes, and functions of the study system*

2. *Develop computer applications and web-based interfaces for interactive data exploration and visualization*

Conceptual ecological models are considered a key element of environmental and biological monitoring programs, and provide a qualitative representation of the structure and dynamic properties of the ecosystem. Models define scope and provide a scientific framework for monitoring programs by describing current understanding of system structure, processes, and function, including key system components and their interactions. Models provide a method to integrate current knowledge of the system originating from a variety of data sources, such us multiple long term studies focusing on different species or components of the system. Models provide critical tools to address uncertainties or incomplete understanding of ecosystem function, and provide the basis for development of causal hypotheses among environmental or anthropogenic stressors, ecological effects, and management actions.

Conceptual models provide tools for further development of long term plans in multiple ways. Models can be utilized to identify information needs and suitable indicators for further development and design of long term monitoring plans. Conceptual, qualitative models facilitate further development of quantitative data models (such as predictive scenario models). Conceptual models provide support tools for restoration planning, and can be used as a basis for management analyses to assess risk reduction and system recovery from pertubations.

Conceptual models provide a schematic framework to organize and illustrate complex system structure and linkages, thus serving as a tool to facilitate understanding and communication among scientists, managers, and the public. Development of interactive data exploration and visualization tools facilitates outreach, education, and communication through web-based applications and presentations. The interactive tools can also be offered for resource managers, policy-makers, general public, and other interested audiences to share data and to explore ecological processes within the study system. The interactive tools can be tailored at different levels of technical complexity to meet the needs of various audiences.

B. Procedural and Scientific Methods

1. *Develop conceptual ecological models, summarizing key components, processes, and functions of the study system*

   Development of conceptual ecological models to support synthesis and planning of the long term monitoring program is a multi-phase process. The goals and scope of the modeling effort will be defined at the start of the process. The scope of the modeling effort is also defined at the start of the process, involving an ecological site description

and definition of spatial and temporal scales. Scales may be incorporated in a hierarchical manner, allowing for specific components of the system to be modeled at different levels of detail (ie. macromodels vs subsystem models). Identification of key components, processes, and functions of the system will be a key step involving the PIs of the benthic, pelagic, and environmental components of the project, and coordination with other scientists and groups with expertise relating to the study system. Our primary study area within the Gulf of Alaska is part of a larger oceanic ecosystem and linked to terrestrial systems, and consideration of influences by wider scale ecological and anthropogenic processes will be part of the model construction process. At the start, this information will reflect the status of the current knowledge of the system, and will be refined as understanding of the system evolves through the research program and collaborations with other programs.

The basic conceptual model will represent the structure, processes, and key interactions of the system. Models to demonstrate knowledge and hypotheses about linkages between specific stressors (environmental and/or anthropogenic) and ecological responses can be incorporated into the system models, and may include a subset of system components. Alterative models and hierarchical (sub)models will be used to address specific goals and needs of the long term research program and further development of monitoring strategies.

The development of the conceptual model(s) is a multi-step, iterative process, responding to evolving understanding of the structure and dynamics of the system by revising and refining models throughout the process. A working group involving scientists with expertise on the physical and biological components of the system, modelers, and other appropriate parties (including resource managers) will be convened to support the development of the conceptual models at all stages of the process. PIs of the environmental and biological components of the monitoring program will have a key role for input in model development, and external collaborators will be involved with specific components of the model. The team will conduct a workshop at the beginning of FFY13 and will hold additional meetings during various stages of the model development. The efforts will be coordinated by the PI of the modeling task.

2. *Develop computer applications and web-based interfaces for interactive data exploration and visualization*

Conceptual models are suited for interactive web-based presentation to offer data exploration and visualization tools to audiences at different levels of technical expertise related to the computations behind the models. We propose to develop such applications to facilitate web-based outreach about the progress of our project and, ultimately, to offer user-friendly and interactive tools that can be tailored to specific audiences with interest in the ecological processes of our study area. These tools will help multiple users visualize the current state and potential future states of the ecosystem. Visualization products are developed using multiple approaches, including mapping and diagrams. Interactive data exploration tools can be produced at different levels of computational and

output complexity, and we propose to begin the development of simple interactive tools representing selected components of the monitoring programs to facilitate outreach and communication efforts for our program. At a later phase, a more comprehensive interactive data exploration modeling tool can be developed and delivered through our project website or other relevant outlets.

C. Data Analysis and Statistical Methods

The conceptual ecological modeling will mostly involve qualitative analyses and synthesis of ecosystem components and processes for a conceptual representation of the study system. Existing data and knowledge of the system will be used to construct the models. Analytical and visualization tools and methods include structural and influence diagrams, tabulated data, narratives, spatial maps, and mathematical modeling. Similar tools will be used for the development of web-based visualization products and data exploration tools, with programming and computational designs to facilitate access and use by audiences with multiple levels of technical background. These tools may be designed to facilitate multi-directional data sharing, for example, facilitating citizen science and volunteer based reporting of data.

Applications will be developed for shared data store to facilitate and support scientific networking, and communication of our research and results through web-based outreach. Development and visualization of conceptual models utilize either existing software packages designed to create and digitize conceptual models, or by programming elements of the models or related interactive tools. For programming, we will use an object-oriented programming language with a graphical user interface to provide a visual representation of the system in a web-based application. The application will allow users to access the web-interface model and supporting documents, pictures, and movies directly from the internet. Hierarchical representation of spatial features and biological inputs allow for flexibility of user-driven inputs and expected output. We will use two- and three-dimensional mapping applications to deliver geographical representations of model components and output.

D. Description of Study Area

The study area will be the same as for the environmental, pelagic, and benthic monitoring components. Please see Figure 1 on page 19 of the integrated proposal titled “Long-Term Monitoring of Marine Conditions and Injured Resources and Services,” and submitted by McCammon et. al.

E. Coordination and Collaboration with Other Efforts

The modeling project will be closely coordinated with the science synthesis and the long term monitoring projects proposed for this integrated study, including pelagic, benthic, and environmental components. The PI of the model development task will work closely with the Science Team Leader, attend the annual PI meetings, and coordinate additional meetings and a workshop to interact and coordinate input from PIs of the monitoring components. Furthermore,

modeling efforts will be closely coordinated with other existing monitoring and ecological research programs, including the Gulf of Alaska Integrated Ecosystem Research Program funded by the North Pacific Research Board, and the Vital Signs Monitoring Program by the National Park Service. Development of web-based applications will be coordinated with other science and outreach team members of our program.

III. SCHEDULE

A. Project Milestones

Objective 1. Develop a conceptual ecological model of the study system.

Draft conceptual ecosystem model: To be met by October 2013
Conceptual ecosystem model: To be met by June 2016

Objective 2. Develop computer applications and web-based interfaces for interactive data exploration and visualization.

First interactive/data visualization tools: To be met by December 2012
Web based interactive conceptual model: To be met by September 2016

B. Measurable Project Tasks

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

Attend PI meeting
Develop goals for conceptual models
Identify data and system components for the modeling
Assemble a modeling team

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

Develop goals for conceptual models
Identify data and system components for the modeling
Assemble a modeling team
Design draft conceptual models
Attend Alaska Marine Science Symposium

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

Attend annual PI meeting
Design draft conceptual models
Prepare for modeling workshop in FFY 13

FFY 12, 4th quarter (July 1, 2012-September 30, 2012)

Design draft conceptual models
Prepare for modeling workshop in FFY 13
Prepare modeling progress update for annual report

FFY 13, (October 1, 2012-September 30, 2013)

Conduct modeling workshop
Complete first interactive and data visualization tools for selected components
Design draft conceptual models
Continue development of interactive/data visualization tools
Attend annual PI meetings and Alaska Marine Science Symposium
Prepare modeling progress update for annual report

FFY 14, (October 1, 2013-September 30, 2014)

Complete draft conceptual ecosystem models for synthesis report
Continue development of conceptual models
Continue development of interactive/data visualization tools
Attend annual PI meetings and Alaska Marine Science Symposium
Prepare modeling progress update for annual report

FFY 15, (October 1, 2014-September 30, 2015)

Continue development of conceptual models
Continue development of interactive/data visualization tools
Attend annual PI meetings and Alaska Marine Science Symposium
Prepare modeling progress update for annual report

FFY 16, (October 1, 2015-September 30, 2016)

Complete development of conceptual models
Complete development of interactive/data visualization tools
Attend annual PI meetings and Alaska Marine Science Symposium
Prepare modeling results for final report

Alaska SeaLife Center
Budget Justification

Personnel & Fringe
A Research Coordinator (TBD) will dedicate 1 month to the project in Year 1 and 0.5 months in Year 2, and will be responsible for coordinating and preparing for the modeling workshop.

A Post-Doctoral Researcher (TBD) will dedicate 1 month to the project in Year 1, 2 months in Year 2, and 3 months in Years 3-5. The Post-Doc will be responsible for working with PI in all aspects of model construction and development of interactive modeling tools.

A cost of living increase of 5% is included in Years 2-5 for ASLC personnel. ASLC fringe benefits are charged at actual expenses and are estimated at 28% of salary for regular employees. Fringe for regular employees includes the cost of accrued leave, employer contributions to health insurance, required payroll taxes (social security, Medicare, and unemployment), and employer contributions to long-term disability, workers compensation, and other insurance programs.

Personnel and Fringe for PI Hollmen are included below in the Contractual section.

Travel
Travel requested is on an annual basis:

PI Meeting in Anchorage - 1 from out of state, 2 from Seward	
Airfare – Origin TBD to Anchorage, AK x 1 person	$ 800
Per diem/lodging – 2 days/1 night Anchorage, AK @ $225 x 3 ppl	$ 675
Mileage RT Seward – Anchorage @ 300 mi x $0.50/mi x 3ppl	$ 450
Other travel – parking, etc. x 3 ppl	$ 150
	$2,075
Modeling Workshop in ANC - 1 from out of state, 2 from Seward	
Airfare – Origin TBD to Anchorage, AK x 1 person	$ 800
Per diem/lodging – 2 days/1 night Anchorage, AK @ $225 x 3 ppl	$ 675
Mileage RT Seward – Anchorage @ 300 mi x $0.50/mi x 3ppl	$ 450
Other travel – parking, etc. x 3 ppl	$ 150
	$2,075
Alaska Marine Science Symposium – 1 person from Seward	
Per diem/lodging – 6 days/5 nights Anchorage, AK @ $225	$1,350
Mileage RT Seward – Anchorage @ 300 mi x $0.50/mi	$ 150
Other travel – parking, etc.	$ 50
	$1,550

Contractual
PI Hollmén is supported through a contractual arrangement with the University of Alaska Fairbanks. Hollmén will be responsible for overall management and coordination of the conceptual ecological modeling efforts, including model development, workshops, budget management reports and publications. PI will dedicate up to three months per year in Year 1-3, and 2 months per year in Years 4-5.

Commodities
IT hardware, supplies and software relating to model construction, visualization and development of interactive tools will be purchased.

Equipment
No funding is requested for equipment.

Indirect
The Alaska SeaLife Center's 2010 indirect rate is 31.05% of MTDC (modified total direct costs; submitted to the Department of Commerce in April 2010). Equipment and portions of subawards greater than $25,000 are excluded from MTDC.

***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	$10.0	$14.4	$19.2	$20.1	$21.0	$84.7
Travel	$5.7	$5.7	$5.7	$5.7	$5.7	$28.5
Contractual	$38.4	$40.2	$42.0	$29.2	$30.6	$180.4
Commodities	$4.0	$4.0	$0.0	$0.0	$0.0	$8.0
Equipment	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
Indirect Costs (*will vary by proposer*)	$18.1	$20.0	$20.8	$17.1	$17.8	$93.8
SUBTOTAL	$76.2	$84.3	$87.7	$72.1	$75.1	$395.4
General Administration (9% of subtotal)	$6.9	$7.6	$7.9	$6.5	$6.8	$35.6
PROJECT TOTAL	$83.1	$91.9	$95.6	$78.6	$81.9	$431.0
Other Resources (Cost Share Funds)	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0

COMMENTS: In this box, identify non-EVOSTC 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.

FY12-16

Program Title: Long-Term Monitoring of Marine Conditions and Injured Resources and Services - Synthesis Component
Team Leader: Tuula Hollmen

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	$10.0	$14.4	$19.2	$20.1	$21.0	**$84.7**
Travel	$5.7	$5.7	$5.7	$5.7	$5.7	**$28.5**
Contractual	$38.4	$40.2	$42.0	$29.2	$30.6	**$180.4**
Commodities	$4.0	$4.0	$0.0	$0.0	$0.0	**$8.0**
Equipment	$0.0	$0.0	$0.0	$0.0	$0.0	**$0.0**
Indirect Costs (*will vary by proposer*)	$18.1	$20.0	$20.8	$17.1	$17.8	**$93.8**
SUBTOTAL	$76.2	$84.3	$87.7	$72.1	$75.1	**$395.4**
General Administration (9% of subtotal)	$6.9	$7.6	$7.9	$6.5	$6.8	**$35.6**
PROJECT TOTAL	$83.1	$91.9	$95.6	$78.6	$81.9	**$431.0**
Other Resources (Cost Share Funds)	$0.0	$0.0	$0.0	$0.0	$0.0	**$0.0**

COMMENTS:

FY12-16

Program Title: Long-Term Monitoring of Marine Conditions and Injured Resources and Services - Synthesis Component
Team Leader: Tuula Hollmen

FORM 3A
NON-TRUSTEE
AGENCY SUMMARY

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

Personnel Costs:		Months	Monthly		Personnel
Name	Project Title	Budgeted	Costs	Overtime	Sum
Research Coordinator - TBD	Long-Term Monitoring of Marine Conditions	1.0	4.2		4.2
Post-Doctoral Researcher - TBD	and Injured Resources and Services -	1.0	5.8		5.8
Monthly costs for both positions include	Synthesis Component				0.0
28% fringe benefits					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
		Subtotal	10.0	0.0	
				Personnel Total	$10.0

Travel Costs: Description	Ticket Price	Round Trips	Total Days	Daily Per Diem	Travel Sum
PI meeting in Anchorage	0.8	1	3	0.43	2.08
Modeling Workshop in Anchorage	0.8	1	3	0.43	2.08
Alaska Marine Science Symposium	0.2	1	6	0.23	1.55
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
				Travel Total	$5.7

FY12

Program Title: Long-Term Monitoring of Marine Conditions and Injured Resources and Services - Synthesis Component
Team Leader: Tuula Hollmen

FORM 3B
PERSONNEL & TRAVEL DETAIL

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

Contractual Costs: Description		Contract Sum
Salary Support - PI Tuula Hollmen @ $12,800/mo x 3 months		38.4
If a component of the project will be performed under contract, the 4A and 4B forms are required.	**Contractual Total**	$38.4

Commodities Costs: Description	Commodities Sum
IT & Modeling Supplies	4.0
Commodities Total	$4.0

FY12

Program Title: Long-Term Monitoring of Marine Conditions and Injured Resources and Services - Synthesis Component
Team Leader: Tuula Hollmen

FORM 3B
CONTRACTUAL & COMMODITIES 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

FY12

Program Title: Long-Term Monitoring of Marine Conditions and Injured Resources and Services - Synthesis Component
Team Leader: Tuula Hollmen

FORM 3B
EQUIPMENT DETAIL

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

Personnel Costs:		Months	Monthly		Personnel
Name	Project Title	Budgeted	Costs	Overtime	Sum
Research Coordinator - TBD	Long-Term Monitoring of Marine Conditions	0.5	4.4		2.2
Post-Doctoral Researcher - TBD	and Injured Resources and Services -	2.0	6.1		12.2
Monthly costs for both positions include	Synthesis Component				0.0
28% fringe benefits					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
		Subtotal	10.5	0.0	
				Personnel Total	$14.4

Travel Costs: Description	Ticket Price	Round Trips	Total Days	Daily Per Diem	Travel Sum
PI meeting in Anchorage	0.8	1.0	3.0	0.43	2.08
Modeling Workshop in Anchorage	0.8	1.0	3.0	0.43	2.08
Alaska Marine Science Symposium	0.2	1.0	6.0	0.23	1.55
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
				Travel Total	$5.7

FY13

Program Title: Long-Term Monitoring of Marine Conditions and Injured Resources and Services - Synthesis Component
Team Leader: Tuula Hollmen

FORM 3B
PERSONNEL & TRAVEL DETAIL

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

Contractual Costs: Description		Contract Sum
Salary Support - PI Tuula Hollmen @ $13,400/mo x 3 months		40.2
If a component of the project will be performed under contract, the 4A and 4B forms are required.	**Contractual Total**	$40.2

Commodities Costs: Description	Commodities Sum
IT & Modeling Supplies	4.0
Commodities Total	$4.0

FY13

Program Title: Long-Term Monitoring of Marine Conditions and Injured Resources and Services - Synthesis Component
Team Leader: Tuula Hollmen

FORM 3B
CONTRACTUAL & COMMODITIES 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

FY13

Program Title: Long-Term Monitoring of Marine Conditions and Injured Resources and Services - Synthesis Component
Team Leader: Tuula Hollmen

FORM 3B
EQUIPMENT DETAIL

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

Personnel Costs:		Months	Monthly		Personnel
Name	Project Title	Budgeted	Costs	Overtime	Sum
	Long-Term Monitoring of Marine Conditions				0.0
Post-Doctoral Researcher - TBD	and Injured Resources and Services -	3.0	6.4		19.2
	Synthesis Component				0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
		Subtotal	6.4	0.0	
				Personnel Total	$19.2

Travel Costs: Description	Ticket Price	Round Trips	Total Days	Daily Per Diem	Travel Sum
PI meeting in Anchorage	0.8	1.0	3.0	0.43	2.1
Modeling Workshop in Anchorage	0.8	1.0	3.0	0.43	2.1
Alaska Marine Science Symposium	0.2	1.0	6.0	0.23	1.6
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
				Travel Total	$5.7

FY14

Program Title: Long-Term Monitoring of Marine Conditions and Injured Resources and Services - Synthesis Component
Team Leader: Tuula Hollmen

FORM 3B
PERSONNEL & TRAVEL DETAIL

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

Contractual Costs: Description		Contract Sum
Salary Support - PI Tuula Hollmen @ $14,000/mo x 3 months		42.0
If a component of the project will be performed under contract, the 4A and 4B forms are required.	**Contractual Total**	$42.0

Commodities Costs: Description	Commodities Sum
Commodities Total	$0.0

FY14

Program Title: Long-Term Monitoring of Marine Conditions and Injured Resources and Services - Synthesis Component
Team Leader: Tuula Hollmen

FORM 3B
CONTRACTUAL & COMMODITIES 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

FY14

Program Title: Long-Term Monitoring of Marine Conditions and Injured Resources and Services - Synthesis Component
Team Leader: Tuula Hollmen

FORM 3B
EQUIPMENT DETAIL

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

Personnel Costs:		Months	Monthly		Personnel
Name	Project Title	Budgeted	Costs	Overtime	Sum
	Long-Term Monitoring of Marine Conditions				0.0
Post-Doctoral Researcher - TBD	and Injured Resources and Services -	3.0	6.7		20.1
	Synthesis Component				0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
		Subtotal	6.7	0.0	
				Personnel Total	$20.1

Travel Costs: Description	Ticket Price	Round Trips	Total Days	Daily Per Diem	Travel Sum
PI meeting in Anchorage	0.8	1.0	3.0	0.43	2.1
Modeling Workshop in Anchorage	0.8	1.0	3.0	0.43	2.1
Alaska Marine Science Symposium	0.2	1.0	6.0	0.23	1.6
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
				Travel Total	$5.7

FY15

Program Title: Long-Term Monitoring of Marine Conditions and Injured Resources and Services - Synthesis Component
Team Leader: Tuula Hollmen

FORM 3B
PERSONNEL & TRAVEL DETAIL

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

Contractual Costs: Description		Contract Sum
Salary Support - PI Tuula Hollmen @ $14,600/mo x 2 months		29.2
If a component of the project will be performed under contract, the 4A and 4B forms are required.	**Contractual Total**	$29.2

Commodities Costs: Description	Commodities Sum
Commodities Total	$0.0

FY15

Program Title: Long-Term Monitoring of Marine Conditions and Injured Resources and Services - Synthesis Component
Team Leader: Tuula Hollmen

FORM 3B
CONTRACTUAL & COMMODITIES 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

FY15

Program Title: Long-Term Monitoring of Marine Conditions and Injured Resources and Services - Synthesis Component
Team Leader: Tuula Hollmen

FORM 3B
EQUIPMENT DETAIL

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

Personnel Costs:		Months	Monthly		Personnel
Name	Project Title	Budgeted	Costs	Overtime	Sum
	Long-Term Monitoring of Marine Conditions				0.0
Post-Doctoral Researcher - TBD	and Injured Resources and Services -	3.0	7.0		21.0
	Synthesis Component				0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
		Subtotal	7.0	0.0	
				Personnel Total	$21.0

Travel Costs: Description	Ticket Price	Round Trips	Total Days	Daily Per Diem	Travel Sum
PI meeting in Anchorage	0.8	1.0	3.0	0.43	2.1
Modeling Workshop in Anchorage	0.8	1.0	3.0	0.43	2.1
Alaska Marine Science Symposium	0.2	1.0	6.0	0.23	1.6
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
					0.0
				Travel Total	$5.7

FY16

Program Title: Long-Term Monitoring of Marine Conditions and Injured Resources and Services - Synthesis Component
Team Leader: Tuula Hollmen

FORM 3B
PERSONNEL & TRAVEL DETAIL

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

Contractual Costs: Description		Contract Sum
Salary Support - PI Tuula Hollmen @ $15,300/mo x 2 months		30.6
If a component of the project will be performed under contract, the 4A and 4B forms are required.	**Contractual Total**	$30.6

Commodities Costs: Description	Commodities Sum
Commodities Total	$0.0

FY16	**Program Title: Long-Term Monitoring of Marine Conditions and Injured Resources and Services - Synthesis Component** **Team Leader: Tuula Hollmen**	**FORM 3B CONTRACTUAL & COMMODITIES 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

FY16

Program Title: Long-Term Monitoring of Marine Conditions and Injured Resources and Services - Synthesis Component
Team Leader: Tuula Hollmen

FORM 3B
EQUIPMENT DETAIL