Final Report to the Oil Spill Recovery Institute

Today’s date: August 11, 2009

Name of awardee/grantee: Seward Association for the Advancement of Marine Science dba Alaska SeaLife Center

OSRI Contract Number: 08-10-10

Project title: Crude Awakenings – An Oil Spill Recovery Curriculum

Dates project began and ended: April 1, 2008 – June 30, 2009

PART I - Outline for Final Program or Technical Report

A. Non-technical abstract or summary of project work

A five-lesson oil-spill recovery curriculum was presented to 22 teachers during a two-day teacher workshop in Seward, AK on November 15 and 16, 2008. All lessons were piloted at two rural schools (Port Graham and Nanwalek) prior to the workshop. Revisions based on pilot results were incorporated prior to workshop delivery.

The teacher workshop was open to teachers in the Kenai Peninsula, Anchorage, and Fairbanks area school districts. All teachers who attended paid a $75 registration fee. Arrangements were made with the University of Alaska Anchorage to offer one or two college credits to teachers attending the workshop. Three teachers signed up for the one credit class, and credit was given to them based on their workshop participation, a workshop evaluation, and a brief synopsis of how they might utilize the workshop information in their classrooms. Sixteen teachers signed up for the two-credit option, and delivered the curriculum in their classrooms. A final passing grade was given following teachers’ submission of a 2–3 page write-up of their classroom presentations and photos of students engaged in curriculum activities.

A partnership with Kenai Fjords National Park was undertaken in order to increase the number of teachers we could fund (22 teachers up from a proposed 12) and to purchase workshop materials. Park Service staff (Jim Pfeiffenberger and CJ Rae) assisted with curriculum development and delivery at the workshop. Materials were provided to allow each teacher to build a Remotely Operated Vehicle (ROV), and teachers worked in teams to build these ROVs. The value of each ROV kit was approximately $380.

Please see Section F for:

1. Workshop evaluation.
2. Selections from teachers’ classroom delivery write ups and photos.

B. Review objectives as described in original proposal and state whether these objectives were achieved.

Per the original proposal, “The objective of this curriculum is to educate students about (1) the importance of protecting Alaska’s 44,000 miles of coastline, (2) the chemical properties of different petroleum products found in oil spills, (3) methods of oil spill detection, (4) current containment technology based on the chemical properties of the spill and environmental conditions, (5) methods used
to treat and care for oiled birds and animals, (6) exploration of subsurface oil-spill after effects through the use of student-built Remotely Operated Vehicles (ROVs), and (7) effective problem-solving skills through role-playing scenarios that encourage students to determine a best-management-plan in the event of a local oil spill. The curriculum will be broken into five lessons. Each of the lessons will be designed to be completed in a 50-minute class period, except the ROV-building lesson which will take up to three class periods to complete.”

Alaska SeaLife Center (ASLC) Education staff, with input from staff of Kenai Fjords National Park, developed and delivered a four-part curriculum. The curriculum included the history of the Exxon Valdez oil spill; methods of detecting and cleaning up oil; wildlife rescue and rehabilitation; building and use of remotely operated vehicles used to explore and treat oil spills and impacts; and role playing to learn how organizations and individuals work together to respond effectively in the event of an oil spill. Teachers were introduced to each of the lessons and returned to the classroom with lesson descriptions and all materials needed to recreate them in the classroom. A total of 16 teachers utilized all or part of the curriculum in their classrooms, and their observations and evaluations indicate that students often had not heard about the Exxon Valdez oil spill, and were alarmed at the extent of damage to the coastline and wildlife.

Through hands-on laboratory activities, teachers and their students learned about oil spill detection and safety concerns, including viscosity and volatility. Another hands-on activity gave students an opportunity to try several cleanup measures that are put into play during a spill. Students then learned about basic animal triage in a simulated oil-spill response to birds and mammals coming in from an oil spill, including initial assessment, stabilization, and cleaning of oiled animals. At the workshop, teachers learned how to build small underwater remotely operated vehicles and ran them through simulated oil spill scenarios in the large crabbing tanks made available at the Seward Marine Center. Several teachers returned to the classroom, built ROVs with their students, and utilized them during similar activities. Finally, teachers (and later their students) role-played an imagined oil-spill event and gained an understanding of who comes to the table and what their motivations and insights are based on their agency or personal concerns. All of the proposed goals were thus satisfied.

Additionally, in the original proposal, “The ultimate objectives of this curriculum are (1) to make students aware of the current state of the science of oil spill response in order that they may participate effectively in the event of a local oil spill, and (2) better prepare students to pursue science education and/or emergency response training beyond the high school level.” These goals are more subjective, but by introducing students to the subject, and allowing them the opportunity to engage in hands-on activities that simulate oil spill detection and response they are better prepared to participate in a real oil spill event should they be called upon to do so.

C. Describe problems or roadblocks encountered in project implementation.

It was our objective to include teachers from throughout the state. As a result, we were able to obtain additional funding from the National Park Service (NPS) to pay for a travel stipend. Advertising for the teacher workshop went out to Kenai Peninsula Borough and Anchorage schools on September 10, 2008, and to Fairbanks North Star Borough Schools on September 12, 2008. Other districts were to be contacted within the next week; however, the workshop filled within four days of the first posting! Kenai and Anchorage schools made up all but two of the 24 spots, with two teachers calling in from Fairbanks. These two Fairbanks-based teachers later withdrew. In hindsight we would have put out the notice to remote schools first, giving them a chance to sign up before opening registration to teachers from Anchorage and the Kenai Peninsula.
D. **Highlight accomplishments, whether or not they were part of the original proposal.**

Bringing the NPS into the workshop planning and delivery was an important move both in terms of their funding support and because of the role the Park played during the spill, a role which the Park employees skillfully shared.

We were also fortunate to have two ASLC staff members who were involved in the spill share their experiences with participating teachers. Dr. Pam Tuomi and Darryl Schaefermeyer gave heartfelt accounts of their roles during the spill; Dr. Tuomi as a young veterinarian responding to oiled animals, and Mr. Schaefermeyer as Seward City Planner. Teachers gave strong feedback about the value of these eyewitness accounts.

Filling the workshop roster so quickly was certainly gratifying, and was due in large part to the willingness of both Anchorage and Kenai school district offices to post and promote the workshop.

The highlight of the workshop, and undoubtedly the draw for many teachers, was the construction and deployment of ROVs, and the fact that for a very minimal enrollment fee ($75) teachers could take an ROV (valued at over $300) back to their classrooms.

Finally, providing teachers with quality food catered by area restaurants and putting them up in the comfortable and historic Hotel Seward for the $75 enrollment fee gave teachers a sense of being valued and given upscale treatment, and several teachers commented positively on this.

E. **Conclusions.**

The Crude Awakenings Workshop and resulting classroom experience came at exactly the right time. Many teachers delivered the program on the anniversary of the spill and took advantage of ongoing media coverage to augment their lesson plans. Several teachers are already making plans to incorporate portions of the curriculum into next year’s lessons plans, and are also inquiring about future teacher workshops at the ASLC. There seemed to be universal consensus the workshop and curriculum were a success, and that students, many having not heard of the spill, were engaged and alerted to the need for an appropriate oil spill response in the event of a future spill.

F. **Appendix including copies of all written reports or publications completed or in progress, resulting from the project work.**

Copies of workshop evaluations and selections from teachers’ classroom delivery write ups and photos are attached as Appendix A in the following pages.

1. Workshop Evaluation - Crude Awakenings

2-day Oil Spill Response and Recovery Workshop for teachers with students in grades 7 –12
November 15 and 16, 2008 at the Alaska SeaLife Center

Grade level(s) you teach: 19 teachers taught 6 – 12 and 3 taught K - 3

Number of years teaching: 1 – 30 years with 4 teachers over 18 yrs and 9 under 5 yrs

Subjects you teach: Science – 13, Math – 3, other: 6

Number of students you teach each term: 2,072 total

How did you learn about this workshop? Through District, colleagues, on line, called ASLC

Rate us! How useful were each of the lessons in terms of taking them back to your students?

(1) Not very – (4) Very Useful

Lesson 1: “Fetched Up Hard Aground” 1 (2) 2 (0) 3 (3) 4 (17)
Lesson 2: “Build an ROV” 1 (0) 2 (0) 3 (8) 4 (14)
Lesson 3: “Wildlife Rescue” 1 (1) 2 (2) 3 (6) 4 (13)
Lesson 4: “Oil Spill Response Squad” 1 (0) 2 (2) 3 (3) 4 (17)

How do you see yourself integrating these lessons into your classroom?

“Bio-ecology/environmental ed curriculum – will use!”
“I can use many of the lessons “as-is” and also looking to use ROV in stream and lake”
“These lessons will work well as a supplement to my Alaska Studies course”
“These activities fit great with ecosystem and current events studies”
“Use to make the ’89 spill real historically and to show how oil spills could impact their future – why we need to be prepared”

Overall, did the workshop meet your expectations?

“By far! As an Alaskan teacher exposing my students to these jobs and skills to allow them to invest in our state for future employment”
“Yes, it met my expectations and more! This class was great!”
“It went far beyond!”
“The ROV-making took more time than I thought it would, but it was interesting. Presentations were varied and useful. Overall, yes.”
“Absolutely – loved it!”

What was the most useful aspect of the workshop?

“ ‘Oil spill squad’ really fit my teaching style and got me excited to work with my science teachers”
“Review of oil spill impacts, need to revisit and be ready for future if needed!”
“I don’t feel like anything was not useful”
“Actually doing the lessons. ROV.”
“Good background information, good presentations; good lab ideas, good ROV lab. The smaller/quicker labs were also relevant and provided good hands-on info.”
“My whole viewpoint has changed about the value of this science center and of its relationship with the city of Seward and Park Service.”
Section F

What would you change about the workshop?
“PowerPoint or pictures to accompany Seward Historical Perspective talk”
“Nothing it was wonderful!”
“Another day to get out on the water and test our ROV’s”
“Make the ROV class a separate class since it took so long.”
“Make it two workshops – or a longer one during the summer. Too much information for 2 days – 12
hours on Saturday was really long.”
“It would have been cool to have had several students with me.”

How would you rate this workshop compared to others you’ve attended?
“A 10!”
“Very very high”
“Great. Loved labs and location.”
“Very high, extremely well-organized and administered”
“Much more informative”
“I would rate this in the top 3” (from a teacher who’s been teaching for 11 years)
“One of the best” (from a teacher who’s been teaching for 23 years)
“This was exciting and so professionally set up that it cannot be compared to most workshops!”

What times of year are best for you to attend future workshops?
Fall: 10 votes
Spring: 8 votes
Summer: 4 votes

What other subjects would you like to see presented in a workshop format?
Water quality
How to be an advocate for Natural Resources and wildlife (2)
Weather of Resurrection Bay
Global climate change (2)
Alaska history
Salmon life cycle, commercial fishing
Geology
Marine animals (5)

Any other comments?
“Excellent workshop! Thanks!”
“I felt really enriched by the workshop. Hotel was great, catered food was fine, staff was super friendly,
presenters were awesome. Long day Saturday – I felt like I would have rather punched through the
day instead of breaking for dinner – hard to come back.”
“Thank you – thank you – thank you – I appreciate all the hard work in writing the grant then organizing
the workshop – awesome experience!”
“Thank you so much for this class. It is not often that we educators get this kind of 1st class treatment!”
2. Selections from Teachers’ Classroom Write-ups

**Mary Banaszak:** “My job title is Teacher of the Visually Impaired for the Anchorage School District; I work with a variety of students receiving services for visual impairments and/or blindness. I was able to select pieces of the Crude Awakenings Workshop and align components to highlight or expand upon concepts being taught in the classroom. What I was able to do includes: at the primary level, conduct simple experiments with measurement (saltwater composition) and viscosity and discuss how oil in the environment can affect wildlife; at the middle school level, support a visually impaired special needs student as he built the basic rectangular framework for an ROV unit; and finally, at the high school level, adapted a bathymetric map of the Prince William Sound region into a tactual format and used it in an Oceanography class (incorporating oil spill-related lessons) for a high school Braille reader (blind student).”

**John Harro:** “After taking the Crude Awakening class in November of 2008, I have discovered that I have gained a whole new understanding of the impact of the spill. The spill has many far reaching affects – some of which we may not know for decades into the future. As we see some species in decline we will be forced to wonder if the Exxon Valdez is to blame or whether there are other factors that are the cause.

I found the lessons to be very captivating and very useful in helping students understand the ramifications of the spill. One of the things that I took away from the workshop is the importance of recycling! I believe that if we can help students understand the benefits of recycling and help them critically assess their power as consumers we will be far ahead of where we are right now. In my classroom we recycle batteries, paper, ink cartridges, cell phones and perhaps most importantly, we shut down the equipment if it is not being used. This workshop has helped me once again commit to the effort to conserve and to help students see the value of saving energy because of the impact on our world.”

**Patrick Dwyer:** “Over the course of a week and a half I had my students learn about the oil spill and do various hands on activities. It was amazing to hear the kid’s stories about how their parents were affected by the spill. Some of their parents chose to work for Exxon and help with the clean-up and others refused. Also we did a collaborative effort here at Soldotna Middle School between science and leadership classes. The students learned the background information about the spill and did some labs to re-create spills in science class. In leadership class they had to do some critical thinking and problem solving pretending that there was another spill and they had a specific job.”

**Sarah Rodriguez:** “The unit started with a presentation of the Oil spill response PowerPoint. Surprisingly, many students had not heard of the Exxon Valdez oil spill. We talked about the causes of the spill, and how ill prepared we were for it. Students discussed reasons for the lack of response and slow response time. They talked about impacts to specific groups of people (fisherman, native community, oil companies) and how they have managed to try and recover following the spill.”

**Konrad Mittelstadt:** “I think the hardest part was trying to find empathy from my students with an event that happened while most of their parents were in college or even high school. But still, I had a few families that were indirectly affected by the spill and those students knew a lot about the incident. I really tried to emphasize that after all of those years, oil could still be found just under the surface in many places in Prince William Sound. I thought the video illustrated that point well. I also
have a lot of families that work on the slope and or work for the big oil companies in Anchorage, and I found their viewpoint interesting. I believed it was important for the students to know what people did for a living and how it could affect their lives along with others. For the most part bringing in these lessons brought current events and history that still influences Alaskans of all ages. I really lucked out doing the lessons on the actual anniversary of the oil spill and it brought back a lot of memories for me.”

**Lindsay Weingartner:** “Even though I did these activities as part of my chemistry unit, I think students also gained an understanding of the impacts of a spill on the environment. It was important for them to already have the knowledge of how different molecules behave in solutions so they could understand why an oil spill was so difficult to clean up. Next year, I plan on incorporating the Viscosity Lab into these activities, so the students will understand the different types of crude oil and fuel spills. It would also tie into their knowledge of liquid density and again to the chemistry unit.”

**Susan Tifental:** “Student learning is optimized through variety in the presentation of information. Opportunities including real world situations accompanied with hands-on experimentation offer the best possible learning environment. The lessons and information presented in the Crude Awakenings Teacher Workshop provide both, with the added bonus of proximity. With 2009 as the 20th anniversary of the *Exxon Valdez* oil spill, there is no better time to both find out what today’s students know about the spill and it’s after effects. The information in these lessons is very relevant to the students in Alaska, particularly the south central portion of the state. Hands on activities related to real life events increases not only the interest but also student engagement. The more they understand about both successes and failures in the past, the more prepared they can be as the leaders of tomorrow.”
Part II - Final Financial Statement

See attached Excel spreadsheet (Appendix I – Fin Rpt Form).