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QUARTERLY PROGRESS REPORT
University of Nevada, Las Vegas
Period Ending May 31, 2006

Cooperative Agreement Number H8R07010001
Task Agreement Number J8R07040005
Education in the Environment: A Hands-on Student Research and Outdoor Learning Experience

Executive Summary

During the past three months, the focus of the university’s efforts has included the following highlights:

- Forever Earth was scheduled for 13 days and benefited 110 individuals.
- The National Park Service piloted the concept of using Forever Earth as a mobile visitor center during busy summer weekends. During five outings, Park Service interpreters contacted 1,365 visitors.
- Forever Earth curricula for 5th, 6th, and 7th grades have been completed.
- A Preliminary Implementation Plan was created by the SNAP Conservation Education and Interpretation team.
- A report on the Clark County School District Teacher Survey: Attitudes, Perceptions, Barriers, and Desires for Field Trip Experiences was completed.
- *Explorations in Off-Highway Vehicle (OHV) Recreation* – a high school Driver Education curriculum manual was developed, produced, and distributed to local schoolteachers.
- The [www.enviroedexchange.org](http://www.enviroedexchange.org) website has been launched, which includes the Field Trip Resource Guide searchable database.

FOREVER EARTH PROGRAM

Forever Earth Operations

Forever Earth was scheduled and operated for 13 days during the most recent quarter (*see table below*). Six trips were for educational purposes; seven were agency functions. More than 110 agency personnel, teachers, and students benefited from using Forever Earth this quarter.
## Forever Earth Bookings – Year 3, 1st Quarter

<table>
<thead>
<tr>
<th>Date(s)</th>
<th>Group</th>
<th>Group Type</th>
<th>Trip Purpose</th>
<th>Length of Trip</th>
<th># of Adults</th>
<th># of Students</th>
<th>Total Pass.</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 1</td>
<td>Jeffers Elem. 5th grade</td>
<td>Educational</td>
<td>Student field trip</td>
<td>6 hrs. (2 trips)</td>
<td>10</td>
<td>26</td>
<td>36</td>
</tr>
<tr>
<td>June 10</td>
<td>NV Dept. of Environ. Protection</td>
<td>Educational</td>
<td>Project WET -- Teacher workshop</td>
<td>7 hrs.</td>
<td>19</td>
<td></td>
<td>19</td>
</tr>
<tr>
<td>June 15</td>
<td>Multi-agency water monitoring group</td>
<td>Agency</td>
<td>Standardization of water quality tests</td>
<td>5 hrs.</td>
<td>17</td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>June 17</td>
<td>National Park Service</td>
<td>Agency</td>
<td>Mobile Visitor Center</td>
<td>11.5 hrs.</td>
<td>2</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>June 28</td>
<td>Public Lands Institute</td>
<td>Educational</td>
<td>Development of 7th grade geology activities</td>
<td>3.5 hrs.</td>
<td>18</td>
<td></td>
<td>18</td>
</tr>
<tr>
<td>July 1</td>
<td>National Park Service</td>
<td>Agency</td>
<td>Mobile Visitor Center</td>
<td>9 hrs.</td>
<td>2</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>July 8</td>
<td>National Park Service</td>
<td>Agency</td>
<td>Mobile Visitor Center</td>
<td>8.5 hrs.</td>
<td>2</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Aug. 5</td>
<td>National Park Service</td>
<td>Agency</td>
<td>Mobile Visitor Center</td>
<td>9 hrs.</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Aug. 11</td>
<td>Forever Resorts</td>
<td>Educational</td>
<td>Grand opening at Temple Bar</td>
<td>3 hrs.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aug. 19</td>
<td>National Park Service</td>
<td>Agency</td>
<td>Mobile Visitor Center</td>
<td>8.25 hrs.</td>
<td>2</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Aug. 24</td>
<td>National Park Service</td>
<td>Agency</td>
<td>Congressional staff meeting</td>
<td>4.5 hrs.</td>
<td>2</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Aug. 25</td>
<td>UNLV – Geoscience Dept.</td>
<td>Educational</td>
<td>Development of teacher workshop</td>
<td>7 hrs.</td>
<td>5</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td><strong>TOTALS</strong></td>
<td>13 Groups</td>
<td>Education -- 6 groups Agency -- 7 groups</td>
<td></td>
<td>Education -- 30.5 hrs. Agency -- 55.75 hrs.</td>
<td>83</td>
<td>27</td>
<td>110</td>
</tr>
</tbody>
</table>

Among the highlights of bookings this quarter:

- Fifth graders from Jeffers Elementary School were divided into two groups and participated in activities both aboard Forever Earth and on shore. Program facilitators included Ellen Anderson, National Park Service; and Dr. Allison Brody, Dr. Jennell Miller, Tyra Jenkins, and Daphne Sewing, Public Lands Institute.

- The Nevada Department of Environmental Protection sponsored a Project WET (Water Education for Teachers) workshop for Clark County School District (CCSD) teachers aboard Forever Earth. Daphne Sewing, Project Manager for the Forever Earth program, participated as one of the facilitators. Also on board were Lissa Howe, National Director
for the Discover A Watershed program, and Mary Kay Riedl, Nevada Project WET Coordinator. Workshop outcomes included content knowledge about the Colorado River watershed and examination of water management issues. Ms. Sewing also took the opportunity to publicize the Forever Earth program to this audience and explain the process for scheduling field trips.

- Agencies responsible for monitoring Lake Mead’s water quality used Forever Earth to compare and discuss and protocols. Water samples were collected for the purpose of standardizing instruments. Ms. Sewing accompanied the group to learn about the tests used by the agencies.

- In June, the National Park Service (NPS) began using Forever Earth as a mobile visitor center on Lake Mead. Using the boat five times, interpreters made 1,229 visitor contacts; conducted three water safety programs attended by 53 children and adults; and hosted 79 visitors aboard Forever Earth. In September 2006, NPS will further assess the success of this trial program.

- A meeting onboard Forever Earth was hosted by the Forever Earth Curriculum Development Team to further develop the 7th grade geology activities. CCSD teachers, NPS interpreters, and a UNLV geology professor participated.

- In July 2006, the Forever Earth boat was featured in two events sponsored by Forever Resorts. Participants in the grand opening activities at Temple Bar were invited aboard to tour the boat and learn about the program. Ms. Sewing hosted 47 people, including Forever Resorts executives Rex Maughan and John Schoppmann and visiting Forever Resorts executives from South Africa. During National Marina Day, visitors to Callville Bay were invited aboard Forever Earth. Sky McClain, National Park Service, hosted 25 people during the day’s activities.

- Ms. Sewing and Dr. Miller accompanied members of UNLV’s Geoscience Department on Forever Earth to assist in developing the itinerary for future teacher workshops. The goals for the workshops include increasing geology content knowledge and providing exciting geology activities for elementary teachers. Plans include using Forever Earth for two workshops beginning in January 2007.

**Forever Earth Curriculum & Assessment**

Curricula for fifth, sixth, and seventh grades were completed this quarter (see attached). The curricula include activities to be conducted aboard Forever Earth and on shore as well as pre- and post-trip activities. The fifth grade program focuses on the razorback sucker and other native Colorado River fish and why these species are endangered. The sixth grade curricula centers on the concept of invasive species and looks at the effects on Lake Mead if zebra mussels are introduced into the lake. Seventh grade students will learn about the geologic processes of the past and present and how these processes define the landforms they see at Lake Mead. Activities are correlated to Nevada State Science Standards, CCSD Science Standards, and themes identified in the Southern Nevada Agency Partnership Conservation Education and Interpretation Strategy.

The Forever Earth curriculum writing team consisted of the following members:

- Daphne Sewing, Project Manager, Public Lands Institute
- Dr. Allison Brody, Public Lands Institute
Further curriculum development and field testing will continue in the next quarter. Activity ideas for fourth grade have been outlined, which will focus upon the water cycle and the importance of Lake Mead to regional water supplies. High school activities will also be developed during the second quarter.

Ms. Sewing has also been working closely with UNLV professors Dr. Greg Schraw and Dr. Lori Olafson to develop assessment tools for the Forever Earth curricula. Student knowledge, performance skills, and attitude will be assessed with pre- and post-trip questionnaires and an on-site evaluation rubric. Additional assessment information will be gathered from teachers using pre- and post-trip survey instruments.

Marketing and Community Outreach
The Forever Earth program was featured in the May edition of CLASS!, a publication written by Clark County School District students and distributed throughout the county’s schools. The article (see attached) highlighted the program through interviews with teachers and students who used the boat for a variety of educational purposes.

On June 11, 2006, Project Manager Daphne Sewing and Larry Mund, Forever Earth captain, made a presentation to 39 members of the Las Vegas Boat Owners Association. Members of the Association were interested in the Forever Earth program’s purpose and goals.

Two opportunities were taken to distribute information about the Forever Earth program to key audiences this quarter. More than 600 new teachers who attended an Educator Appreciation Day at The Mirage Hotel were given resource packets that included information about Forever Earth. Dr. Allison Brody represented the SNAP Conservation Education and Interpretation Team at CCSD’s “Meet Your Community” event on August 15, 2006, where she distributed information about the federal agencies and their environmental education programs, including the Forever Earth program.

**DISCOVER MOJAVE OUTDOOR WORLD**

A presentation proposal submitted by Project Manager Daphne Sewing to the North American Association of Environmental Educators was accepted for its 2006 annual conference. The presentation, “Connecting a Disconnected Youth to the Outdoors,” will highlight the Outdoor World program and the assessment results to date.

Protocol renewal requests for assessing the Outdoor World program have been submitted to UNLV’s Internal Review Board (IRB) (see attached). Primary and secondary data will continue to be collected in the same manner as in the first two years of the program.
STATUS OF YEAR 3 DELIVERABLES – FOREVER EARTH & OUTDOOR WORLD

<table>
<thead>
<tr>
<th>Year Three Deliverables (June 2006 – May 2007)</th>
<th>Percent Complete as of August 31, 2006</th>
<th>Plan for Completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Write curricula for Forever Earth and WOW/Discover Mojave</td>
<td>50 percent complete.</td>
<td>Forever Earth curriculum activities for Grades 5, 6, and 7 have been completed; activities for Grade 4 have been outlined. High school activities will be completed this fall. Curriculum for two additional Outdoor World events will be developed and field tested in Year 3.</td>
</tr>
<tr>
<td>Coordinate Forever Earth uses according to operations plan</td>
<td>25 percent complete.</td>
<td></td>
</tr>
<tr>
<td>Revise and update Forever Earth operations plan as needed.</td>
<td>25 percent complete.</td>
<td></td>
</tr>
<tr>
<td>Manage Forever Earth lab; procure and maintain necessary supplies/equipment</td>
<td>25 percent complete.</td>
<td></td>
</tr>
<tr>
<td>Record, preserve, and share data collected from vessel.</td>
<td>0 percent complete.</td>
<td></td>
</tr>
<tr>
<td>Coordinate 15 southern Nevada WOW/Discover Mojave events.</td>
<td>0 percent complete.</td>
<td>A schedule of activities will be drafted for the RecMobile and Rural Recreation programs and 5th graders at Paradise Professional Development School.</td>
</tr>
<tr>
<td>Operate Forever Earth according to the operations plan.</td>
<td>25 percent complete.</td>
<td></td>
</tr>
</tbody>
</table>

EDUCATION IN THE ENVIRONMENT STRATEGY

Team Meetings
On June 6, 2006, the SNAP Conservation Education & Interpretation (CE&I) team began the process of creating an action plan for the 2006-2007 year (Year 3 of Round 4) (see attached Preliminary Action Plan). This preliminary action plan represents the first step toward the creation of an Implementation Plan that will include a 5-year work plan, as called for in the task agreement. The team plans to continue work on the action plan during an all-day planning meeting scheduled for September 11, 2006.

An immediate need was seen for reworking the Education Matrix to ensure it reflects the needs and includes issues important to all SNAP Conservation Initiative teams. To this end, an assessment instrument was developed to help teams answer the following questions:

1. Is there anything you would like to add or change to the Education matrix, including themes and experiential goals (know, feel, do)? What is missing?
2. What projects are you thinking about? Why are you doing this? E.g., what are the management issues you are trying to address?
3. Who are the audience(s)? Why?
4. What are the specific messages / outcomes / behavior you would like to see? Can we help you reinforce desired behaviors? Change undesirable behaviors?
5. What have you already tried or seen that you would like to replicate or avoid?
6. Are there things you are doing that you might want to share with other teams? What are you looking to do in the future (e.g., future SNPLMA submissions)?

To date, this assessment has been used successfully with the interagency Recreation and Wilderness teams. The assessment questionnaire has also been found to be a useful instrument in the design and planning of new signs for the Desert National Wildlife Refuge complex.

The Interagency Team held two other meetings during the last quarter. On July 5, 2006, the team meeting was devoted to planning for two events. The first was a display at the Clark County School District’s “Meet Your Community Day” on August 15, 2006. The second was preparation for a presentation for the SNAP Board to propose the Round 5 modification (detailed in the May 31, 2006 Quarterly Report) and two Round 7 projects (see attached meeting notes). Project Managers Allison Brody and Daphne Sewing gave this presentation to the SNAP Board on July 28, 2006 (see attached presentation notes).

On August 9, 2006, the team brainstormed ideas for Round 6 deliverables for the Forever Earth, Outdoor World, and CE&I Strategy projects (see attached meeting notes). The team agreed on the need for expanding the Forever Earth and Outdoor World programs as well as providing for the sustainability of these programs. For the CE&I Strategy deliverables, the team agreed on the importance of concentrating on the following strategic priorities:

- Evaluating CE&I programs and services
- Connecting with ethnically diverse audiences
- Creating strategic relationships with “business” audiences, including permittees.

**Progress towards CE&I Team Goals**

Actions taken toward achieving the goals of both the SNAP CE&I Team and the Partners for Education about the Environment are summarized in the attached document. Details of the actions taken this quarter follow.

**Goal #1c – Foster environmental stewardship in Southern Nevada by ensuring programs use best education and interpretive practices for each of our audiences**

Progress toward this goal has occurred on several fronts.

First, Project Manager Allison Brody met with Alan O’Neill and Kim Hutson De Belle from the Outside Las Vegas Foundation on June 27 and August 10, 2006. The goal of these meetings was to characterize the role that private developers should play in developing a sense of ownership and responsibility toward public lands. It was agreed that efforts should be focused on discovering needs and the potential for a collaborative relationship with Focus Property Group, Lake Las Vegas, and Station Casinos (primarily Red Rock Casino). Outside Las Vegas and Lake Las Vegas have created the Southern Nevada Parks Foundation to accept contributions to support conservation initiatives. Dr. Brody will help define and create the education components needed to support this program. And an initial meeting with Focus Property Group has been scheduled for August 30, 2006, to explore opportunities for strategic collaboration.

Second, as noted in the last quarterly report, a survey instrument was designed to determine what types of science and cultural programming will be most useful to Clark County School District (CCSD) teachers, how to structure and deliver this programming, how teachers use field trips
with respect to academic and testing requirements, and how to best develop professional
development opportunities. A preliminary compilation of the results of this survey was included
in the May 31 Quarterly Report. However, since that time an additional 40 teachers responded to
the survey during the course of CCSD professional development workshops held in June 2006,
producing a total of 124 teachers who participated in the survey between October 2005 and June
2006.

The analysis of the survey results was updated to include these additional respondents, resulting
in a document titled “Clark County School District Teacher Survey: Attitudes, Perceptions,
Barriers, and Desires for Field Trip Experiences” (see attached) – that has been prepared for
distribution to the SNAP Conservation Education and Interpretation Team and members of
Partners for Education about the Environment and CHOLLA (Connecting Hands: Offering
Lifelong Learning Adventures). We believe this analysis will allow agency CE&I education staff
to better tailor programs to meet the needs of this specific audience and to address barriers that
may be preventing teachers from taking field trips. Ideally, this information will help agencies
create experiences that will have significant and lasting impacts on student learning.

Finally, Dr. Brody is working with Clark County and a subcommittee of Partners for Education
about the Environment to bring an EE and Diversity Workshop to Las Vegas. The workshop,
offered by the Environmental Education and Training Partnership (EETAP), offers an opportunity
to explore multicultural issues as they occur in the real world of conservation education and
interpretation. It is anticipated that the workshop will occur in early 2007.

**Goal #2: Develop and maintain a workforce with exemplary skills and knowledge of
Education & Interpretive (E&I) practices, as well as knowledge about natural,
historical, and cultural resources.**

The Nevada Natural Resource Education Council partnered with the Public Lands Institute to
submit a proposal to EETAP for funding a state certification program in conservation education
and interpretation. The establishment of a Southern Nevada Certification Program in CE&I
would be one part of a larger strategy to create a larger pool of skilled educators in Southern
Nevada. These skilled educators – including staff, volunteers, and cooperating associations –
would serve the needs of SNAP as well as area-wide informal education organizations that
support the messages of SNAP. The overall strategy to develop and foster CE&I literacy among
area-wide educators includes the establishment of a Certification program, a Master’s degree
program, and an Interagency Training Program. The relationships among these three programs
are diagrammed in the attached document: Three Approaches to CE&I Literacy.

**Goal #4: EE efforts should have mutual benefits for SNAP and individual federal
agencies**

Allison Brody headed up a cooperative project between the CE&I team and the SNAP
Recreation/OHV team to create *Explorations in Off-Highway Vehicle (OHV) Recreation*, a high
school Driver Education extension module. This curriculum manual (see attached) contains
activities, background information, and scenarios that are designed to:

- increase knowledge about the natural world OHV recreationists will encounter in
  their exploration of Southern Nevada;
- increase knowledge of responsible use of off-highway vehicles and principles of
  “Tread Lightly” and “Leave No Trace” – both nonprofit organizations dedicated
to increasing awareness about enjoying public and private lands while minimizing impacts;

- increase awareness, knowledge, and understanding of land ethics;
- and allow youth to analyze personal values regarding recreational experiences, including OHV.

The Explorations in OHV Recreation curriculum activities were created and designed by Project Manager Allison Brody, Jennell Miller (PLI), Sky McClain (NPS), and Katharine August (BLM). The curriculum manual was designed to be used by high school teachers in the Clark County School District (CCSD) teaching Driver Education, which is being reinitiated this fall after several years’ absence. Driver Education will be taught by approximately 70 teachers to about 20,000 sophomores. The Explorations in OHV Recreation curriculum manual is well-suited for incorporation into the CCSD Driver Education course because 1) it gives students the tools they need to make responsible choices, whether driving a car or an OHV; and 2) many CCSD high school students who graduate from this Driver Education course will engage in OHV recreation. Although students might receive instruction on how to safely operate OHVs, this curriculum manual provides the knowledge and tools to promote responsible OHV recreation.

Allison Brody and Sky McClain coordinated with the CCSD Driver Education instructor, Ron Morraco, to pilot the curriculum activities during three Driver Education teacher trainings held on May 20, June 24, and July 15, 2006. The teachers gave constructive feedback for each activity, resulting in several changes over the course of the piloting program. As well, teachers gained content knowledge and learned how to facilitate the activities. Importantly, because teachers are not required to use this curriculum extension, the training sessions allowed the facilitators to present a compelling case for inclusion of the Explorations in OHV Recreation curriculum. Most teachers indicated that they liked the curriculum, and many indicated an intention to use it during the CCSD Driver Education course (see Table 1).

### Table 1. Results of an evaluation given teachers following training on the Explorations in OHV Recreation curriculum manual.

<table>
<thead>
<tr>
<th>Evaluation Questions</th>
<th>Average score (5 point Likert scale, 1=strongly disagree; 5=strongly agree)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The activities that were demonstrated today are age appropriate.</td>
<td>4</td>
</tr>
<tr>
<td>I am likely to use all or part of the Explorations in OHV Recreation curriculum.</td>
<td>3.7</td>
</tr>
<tr>
<td>The activities demonstrated today will give students knowledge about how to minimize impacts as outdoor recreationists.</td>
<td>4.2</td>
</tr>
<tr>
<td>The Explorations in OHV Recreation curriculum will give students knowledge about regulations affecting outdoor recreationists.</td>
<td>4.1</td>
</tr>
<tr>
<td>The Explorations in OHV Recreation curriculum will give students knowledge about the plants, animals, and the desert ecosystem they might encounter while recreating outdoors.</td>
<td>4.1</td>
</tr>
<tr>
<td>The Explorations in OHV Recreation curriculum will help students question and evaluate decisions they make as</td>
<td>4.1</td>
</tr>
</tbody>
</table>
Driver Education teachers will receive the curriculum module by September 15, 2006. The extent that Driver Education teachers use the curriculum manual will be assessed using a variety of methods. Teachers will be asked to provide digital photos of students engaged in and completing activities from the curriculum manual; teachers will respond to questionnaires emailed once per quarter; and – to further provide an indication of use as well as to allow qualitative observation and collection of quantitative data – Allison Brody and/or Sky McClain will facilitate a classroom activity for up to ten teachers.

**Goal #5: Maintain and participate in an area-wide cooperative CE&I effort.**

Several tools are being employed to accomplish this goal, including a bi-monthly listserv (see attached posts of these listings). Allison Brody facilitated meetings for Partners for Education about the Environment on June 16 and July 21, 2006 (see attached meeting notes). A website created to support Partners for Education about the Environment was launched on August 14, 2006. This website (www.enviroedexchange.org) houses the Field Trip Resource Guide, a searchable database designed to give an in-depth overview of field trip opportunities for CCSD teachers. The website was marketed to teachers at two events – the CCSD “Meet Your Community Day” on August 15, 2006, and a Teacher Resource Day (August 16, 2006) hosted by the Siegfried and Roy Secret Garden and Dolphin Habitat Education team. More than 800 bookmarks with the website address have been distributed at these events and to the staff at the CCSD office of K-12 Math, Science and Instructional Technology. In addition, a link to the website can be found on the CCSD Interact website.

**Community Outreach**

Project Manager Allison Brody participated in the Walking Box Ranch Stakeholder vision workshop held on June 14, 2006. The goals of the meeting were to 1) have a full discussion of the suggestions that have been put forward for the future use of the ranch, 2) examine the implications and cost/benefits of the various suggestions, and 3) move towards a consensus or possibly identify multiple potential plans for future use.

The Fish and Wildlife Service Desert National Refuge Complex office received a request for a presentation at the annual meeting of the Natural Resources and Information Council, which agency staff were not available to fulfill. At the agency’s request, Allison Brody gave the presentation on August 1, 2006, about the public lands surrounding Las Vegas and the role of MSHCP and SNPLMA in their management (see attached presentation).
### Summary of Year 2 Deliverables – EE Strategy

<table>
<thead>
<tr>
<th>Year Two Deliverables (June 2005 – May 2006)</th>
<th>Percent Complete as of August 31, 2006</th>
<th>Plan for Completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop Implementation Plan to include, but not limited to, a five-year work plan with annual work tasks, which becomes Section III (final section) in the area-wide Outdoor Environmental Education Strategy.</td>
<td>Plan 20% complete</td>
<td>Team members will review and modify draft plan during a planning session scheduled for September 11, 2006. Implementation plan will be developed for Strategic Issues and additional objectives that emerge through the process.</td>
</tr>
</tbody>
</table>

Submitted by:

Margaret N. Rees  
Principal Investigator  

Date: August 31, 2006